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PARTICULATE EMISSIONS FROM AIRCRAFT ENGINES

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Aircraft Environmental Support Office
Naval Aviation Depot
Naval Air Station
San Diego, California 92135-7058

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PARTICULATE EMISSIONS FROM GAS TURBINE ENGINES

AESO REPORT NO. 2-80
JUNE 1980

PARTICULATE EMISSIONS FROM GAS TURBINE ENGINES

AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
NAVAL AVIATION DEPOT
NAVAL AIR STATION
SAN DIEGO, CALIFORNIA 92135-7058

PREFACE

The Commander, Naval Air Systems Command provides the Aircraft Environmental Support Office to the Naval Environmental Protection Support Service, through the Commanding Officer, Naval Aviation Depot North Island. The Aircraft Environmental Support Office is responsible for managing and issuing air emissions and noise level data from naval air operations and related maintenance functions.

The Naval Facilities Engineering Command, through the Naval Environmental Protection Support Service, assigned the Aircraft Environmental Support Office the task of preparing a handbook of Particulate Emissions from Aircraft Engines. The purpose of this handbook is to report data for particulate measurements and to give information about particulate measurements and their interpretation. This handbook is intended for operators of test facilities, officers at Naval Aviation Depots and Aircraft Intermediate Maintenance Depots, and other personnel who need to estimate the amount of particulate emissions coming from the operation of aircraft engines. The handbook includes examples of emissions data for those engines most likely to be operated at naval air installations.

The first printing of *Particulate Emissions from Aircraft Engines* only contains mass emissions data obtained by the Aircraft Environmental Support Office, and little else. We expect to add information as soon as we can. We already have reserved sections for visible emissions and particle size distribution. Rather than wait for the completion of these sections, we are making the first printing of this handbook without them. We expect to obtain emissions data from other engines, to include computer and calculator programs for evaluation of particulate emissions, and to develop additional correlations. With these changes in mind, the format is loose-leaf or spiral-bound. In this way we can expand sections and appendixes through the issue of additional pages rather than by issue of a new report.

This copy of AESO Report No. 2-90 contains all additions and revisions to February 1, 1992.

We look forward to receiving comments from users and readers of this Handbook.

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PARTICULATE EMISSIONS FROM AIRCRAFT ENGINES

AESO Report No. 2-90, June, 1990

EXECUTIVE SUMMARY

The Aircraft Environmental Support Office is one of four specialty offices within the Naval Environmental Protection Support Service which offers technical support to the naval community. The Aircraft Environmental Support Office is primarily responsible for the management and distribution of emissions data for gaseous and particulate air pollutants from aircraft engines. This handbook, *Particulate Emissions From Aircraft Engines*, is a summary of particulate emissions data collected by the Aircraft Environmental Support Office since 1981.

This handbook is intended for environmental personnel at military installations who must provide regulatory agencies with information about particulate matter emitted from their engine test facilities. Most users will find that the sections on visible emissions and particulate emission rates and concentrations contain all the information normally required to make permit applications, emission inventories and related regulatory documents. Also, the section on particle size distributions is appropriate to design applications. Together these sections provide a comprehensive treatment of particulate emissions from aircraft engines.

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PARTICULATE EMISSIONS FROM AIRCRAFT ENGINES

1 INTRODUCTION

Particulate emissions from aircraft engines are an obvious source of air contamination. Although military aircraft engines are exempt from state and local regulations, the stationary facilities for testing them, such as test cells, are not. Test cells are emission sources due solely to the aircraft engines that operate within them. Personnel, responsible for operating these facilities, often must interact with federal, state or local regulatory agencies to ensure compliance with environmental requirements.

The more common environmental requirements to affect test cells include the filing of permit applications, the preparation of emission inventories, compliance with discharge and opacity limits and the preparation of environmental impact assessments. Any of these requirements could involve characterizing the particulate emissions from an existing or proposed engine test facility.

The Aircraft Environmental Support Office has collected data to address three areas of regulatory concern - visible emissions, particulate emission rates, and particle size distributions. Each of these areas appears as its own section in the handbook. Since the Office developed and supervised all data collection programs, we believe that the data reliably characterize particulate emissions from several of the more common gas turbine engines in the navy inventory.

2 BACKGROUND INFORMATION

Particulate matter is one of the criteria pollutants for which the Administrator of the Environmental Protection Agency has established National Primary and Secondary Ambient Air Quality Standards. The primary and secondary standards define levels of air quality sufficient to protect the public health and welfare. For particulate matter the national primary and secondary standards are set at the same level. These standards consider only particulate matter smaller than 10 microns. This is the PM_{10} standard.

The national standards are attained when ambient air quality levels within a control region are at or below prescribed daily and annual average concentrations. The primary and secondary federal standard is 50 micrograms per cubic meter (annual arithmetic mean). Also, not to exceed 150 micrograms per cubic meter, averaged over a 24-hour period, more than one day per calendar year. (1)

The existence of national standards does not preclude state and local regulatory agencies from enforcing stricter standards. These agencies may adopt stricter control measures. Prohibitions on particulate emissions generally appear as discharge limits on stationary sources, or as restrictions on the opacity of visible emissions. The regulatory concern surrounding engine test facilities is directed toward compliance with these prohibitions.

3 *VISIBLE EMISSIONS*

THIS SECTION IS RESERVED FOR VISIBLE EMISSIONS DATA

4 PARTICULATE EMISSION RATES

The regulation of particulate discharges traditionally has been associated with the large scale, steady state combustion of fossil fuels at conventional power plants. As concern about the ecological and health effects of suspended particulates grew, environmental agencies extended existing regulation to less conventional sources. A regulatory precedent now exists for the treatment of engine test facilities as stationary sources of combustion particulates. As such, they are subject to limits on the discharge of particulate matter.

The severity of discharge limits may vary among regulatory agencies, and reflects the general level of air quality for the affected area. Discharge limits usually are expressed as maximum particulate concentrations at the point of discharge. Although the numeric value, units and conditions that define a discharge limit are largely arbitrary, the methods used to measure particulate concentrations are well established. The Code of Federal Regulations documents applicable source sampling procedures in detail. (2)

The Aircraft Environmental Support Office has been collecting particulate emissions data, through source testing, since 1981. The data from three separate test programs, representing six engine designations, are consolidated into this section of the handbook. (3, 4, 5, 6) The engines, all turbofans or turbojets, include the J79-GE-8C, J79-GE-8D, J79-GE-10B, J52-P-6B, TF30-P-414, F404-GE-400, TF34-GE-400A, T58-GE-5, T58-GE-8F, T64-GE-6B, and T64-GE-415 designations.

SUMMARY TABLES AND FIGURES

Each summary table provides particulate emissions data for a distinct engine designation or group of designations that differ only by suffix letter (provided only minor modifications - those that do not affect combustion properties - are indicated). Table entries are average values, derived directly from the individual test files identified in the subtitle. The test files are reproduced in Appendix A.

Each table provides general information, stack gas data and particulate emissions data at three nominal engine power settings - idle, military and an intermediate setting.

General information includes the number of emissions tests performed at each power setting, a representative fuel flow rate, the fuel type and its heat of combustion.

Number of tests

The number of tests represents the size of the sample from which the averages were derived. This number may not include all of the emissions tests performed in the original test program. A few tests were rejected because they were unrepresentative, or they deviated from the accepted test procedures.

Fuel flow rate

The fuel flow through a military gas turbine engine is difficult to stabilize, and can demonstrate a wide range of variability within a set

operating mode. The fuel flow rates given in the summary tables are representative values drawn from performance records for each engine.

Fuel type

All of the engines represented in the summary tables used JP-5 military aviation turbine fuel during the emission tests. Some of the tests used fuel containing ferrocene (dicyclopentadienyl iron) to control the opacity of the smoke plume. Summary Tables for tests using the ferrocene additive include the phrase *with ferrocene additive* in the caption of the table. The data files identify ferrocene use by the phrase (*with ferrocene*) after the type of fuel. Ferrocene was added to the fuel as a 10% solution in coal tar naphtha. The ferrocene solution was pumped in to the fuel supply line as needed, to control the visibility of the smoke plume.

Heat of combustion

The National Institute for Petroleum and Energy Research publishes net heats of combustion for several aviation turbine fuels. The indicated value for JP-5 has been rounded to the nearest 100 Btu.

Stack gas data include the temperature, actual and corrected flow rates and carbon dioxide concentration as measured at the exhaust plane of the test cell. Their values are used to adjust particulate loadings to specified conditions in the individual test files, but they appear here only for comparative purposes.

The particulate emissions data, derived from measurements made at the exhaust plane of the test cell, are divided into two groupings - partial emissions, designated as the front half, and total emissions. These groupings refer to the point within the sampling assembly at which the particulate matter is collected.

The standard EPA test method provides a determination of the particulate mass which deposits inside the sampling probe, and which is captured by the filter assembly. These components of the sampling train are referred to as the front half. The *front half* particulate catch accounts for material that would exist in particulate form at about 248°F (the filtration temperature).

If condensable organic gases (contaminants or byproducts of incomplete combustion) are suspected to be present in the engine exhaust, a modified test method is necessary. The modification involves the additional recovery of condensed matter from the impinger system. This *back half* particulate catch accounts for material that exists in particulate form at ambient temperatures (about 68°F), but was not captured in the earlier components of the sampling train. The material recovered from the impingers, combined with the front half particulate catch, represents the total emitted particulate mass.

Evidence from the three test programs indicates that condensable materials can contribute significantly to the total mass of particulate emissions. However, it is at the discretion of the overseeing regulatory authority to request a determination of total particulate emissions. Frequently this is not required, and the partial particulate determination is sufficient.

Each grouping of emissions data, partial or total, includes expressions of both particulate concentration and emission rate.

Grains/cu ft at stack conditions

The *grains/cu ft at stack conditions* refers to the particulate concentration as derived from measurements of particulate mass and sample volume made at the exhaust plane of the test cell stack. It is the actual particulate concentration, uncorrected to any prescribed temperature, pressure, carbon dioxide concentration or moisture content.

Grains/std cu ft, dry

The *grains/std cu ft, dry* is the particulate concentration adjusted to moisture free, standard pressure (29.92 inches of Hg) and standard temperature (68°F) conditions.

Grains/std cu ft, dry, corrected to 1% CO₂

The *grains/std cu ft, dry* may be normalized to a carbon dioxide concentration of 1%. Standardization to a fixed percent carbon dioxide allows comparison of the adjusted particulate concentration to the relevant discharge limit, without bias from the test cell design and the design's capacity to augment the engine exhaust with excess air.

Grains/std cu ft, dry corrected to 12% CO₂

The *grains/std cu ft, dry* may also be normalized to a carbon dioxide concentration of 12%. Power plants that burn fossil fuels typically emit exhaust with a carbon dioxide concentration near 12%. Concentrations near 1% are more representative of carbon dioxide levels at the exhaust plane of a gas turbine engine test cell.

Pounds/hour

The particulate emission rate, expressed in *pounds/hour*, represents the amount of particulate matter generated by the engine under actual engine operating conditions. It is based on the actual, stack gas flow rate through the test cell and the uncorrected particulate concentration.

Pounds/thousand pounds fuel

The particulate emission rate can be expressed in terms of JP-5 fuel consumption.

Pounds/million Btu

The particulate emission rate also can be expressed in terms of the energy released through combustion of the JP-5 fuel.

The disadvantage of using the summary tables to estimate particulate emissions from engine testing is that only three discrete power settings are represented. Engine testing is a dynamic operation that involves not a finite

number of discrete power settings, but a full range of settings more accurately described as a curve.

Figures 1 and 2 show the variation of particulate emission rate and particulate concentration in terms of fuel flow rate. These figures would have similar variations if they were presented in terms of power setting - thrust or rpm. The figures enable test cell personnel to interpolate between the discrete test data to estimate emissions data at an arbitrary fuel flow rate.

Figure 1 shows how the particulate emission rate based on fuel consumption decreases as fuel flows increase, while Figure 2 shows a similar decrease in particulate concentration with increasing fuel flow. Figure 3 is a plot of emission index vs. fuel flow rate.

The figures suggest reasonably consistent performance among the engine designations, and allow for their comparison. Because gas turbine engines perform more efficiently at higher power settings, the associated particulate concentrations and emission rates based on fuel consumption decrease as fuel flow rates increase. However, because fuel flow rates are substantially higher, the hourly particulate production rate does increase with increasing fuel flow rate - as indicated in the summary tables.

TABLE 1. PARTICULATE MASS EMISSIONS FROM THE J79-GE-8C/8D ENGINE
(Summary of Files 1 through 17)

	ENGINE POWER SETTING	
	Idle	30% Thrust
Number of tests	7	10
Fuel flow rate (lbs/hr)	1189	2893
Fuel type: JP-5		
Heat of combustion (Btu/lb): 18500		
STACK GAS DATA		
Temperature (°F)	230.3	225.7
Actual flow rate (cfm)	205250	445051
Corrected flow rate (cfm, dry, corrected to to standard conditions)	154080	336154
Carbon dioxide (volume percent, dry basis)	0.54	0.51
PARTICULATE EMISSIONS DATA		
Partial emissions (front half)		
grain/cu ft at stack conditions	0.008	0.009
grain/std cu ft, dry	0.010	0.012
grain/std cu ft, dry, corrected to 1% CO ₂	0.019	0.024
grain/std cu ft, dry, corrected to 12% CO ₂	0.230	0.289
pound/hour	13.69	34.45
pound/million Btu	0.62	0.64
pound/thousand pound fuel	11.55	11.93
Total emissions		
grain/cu ft at stack conditions	0.013	0.012
grain/std cu ft, dry	0.017	0.015
grain/std cu ft, dry, corrected to 1% CO ₂	0.032	0.031
grain/std cu ft, dry, corrected to 12% CO ₂	0.385	0.369
pound/hour	22.69	44.41
pound/million Btu	1.03	0.83
pound/thousand pound fuel	19.12	15.34

Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at Test Cell 19, Building 397, Naval Air Rework Facility, North Island.

TABLE 2. PARTICULATE MASS EMISSIONS FROM THE J79-GE-8C/8D ENGINE
(Summary of Files 18 through 27)

	ENGINE POWER SETTING
	Military
Number of tests	10
Fuel flow rate (lbs/hr)	9259
Fuel type: JP-5	
Heat of combustion (Btu/lb): 18500	
STACK GAS DATA	
Temperature (°F)	395
Actual flow rate (cfm)	863488
Corrected flow rate (cfm, dry, corrected to to standard conditions)	522431
Carbon dioxide (volume percent, dry basis)	1.05
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions	0.009
grain/std cu ft, dry	0.015
grain/std cu ft, dry, corrected to 1% CO ₂	0.014
grain/std cu ft, dry, corrected to 12% CO ₂	0.171
pound/hour	67.27
pound/million Btu	0.39
pound/thousand pound fuel	7.29
Total emissions	
grain/cu ft at stack conditions	0.013
grain/std cu ft, dry	0.022
grain/std cu ft, dry, corrected to 1% CO ₂	0.021
grain/std cu ft, dry, corrected to 12% CO ₂	0.251
pound/hour	98.51
pound/million Btu	0.58
pound/thousand pound fuel	10.66

Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at Test Cell 19, Building 397, Naval Air Rework Facility, North Island.

	ENGINE POWER SETTING
	Military
Number of tests	6
Fuel flow rate (lbs/hr)	9366
Fuel type: JP-5	
Heat of combustion (Btu/lb): 18500	
STACK GAS DATA	
Temperature (°F)	404.2
Actual flow rate (cfm)	789586
Corrected flow rate (cfm, dry, corrected to to standard conditions)	463573
Carbon dioxide (volume percent, dry basis)	1.07
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions	0.010
grain/std cu ft, dry	0.017
grain/std cu ft, dry, corrected to 1% CO ₂	0.016
grain/std cu ft, dry, corrected to 12% CO ₂	0.187
pound/hour	65.58
pound/million Btu	0.38
pound/thousand pound fuel	7.03
Total emissions	
grain/cu ft at stack conditions	0.015
grain/std cu ft, dry	0.025
grain/std cu ft, dry, corrected to 1% CO ₂	0.024
grain/std cu ft, dry, corrected to 12% CO ₂	0.284
pound/hour	99.96
pound/million Btu	0.58
pound/thousand pound fuel	10.68

Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at Test Cell A, Building 545, NAS Miramar.

TABLE 4. PARTICULATE MASS EMISSIONS FROM THE J79-GE-8C/8D ENGINE
(Summary of Files 1 through 33)

	ENGINE POWER SETTING
	Military
Number of tests	16
Fuel flow rate (lbs/hr)	9299
Fuel type: JP-5	
Heat of combustion (Btu/lb): 18500	
STACK GAS DATA	
Temperature (°F)	N/A
Actual flow rate (cfm)	N/A
Corrected flow rate (cfm, dry, corrected to to standard conditions)	N/A
Carbon dioxide (volume percent, dry basis)	N/A
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions	0.009
grain/std cu ft, dry	0.016
grain/std cu ft, dry, corrected to 1% CO ₂	0.015
grain/std cu ft, dry, corrected to 12% CO ₂	0.177
pound/hour	66.64
pound/million Btu	0.39
pound/thousand pound fuel	7.19
Total emissions	
grain/cu ft at stack conditions	0.014
grain/std cu ft, dry	0.023
grain/std cu ft, dry, corrected to 1% CO ₂	0.022
grain/std cu ft, dry, corrected to 12% CO ₂	0.263
pound/hour	99.05
pound/million Btu	0.58
pound/thousand pound fuel	10.67

Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at Test Cell 19, Building 397, Naval Air Rework Facility, North Island and at Test Cell A, Building 545, NAS Miramar.

**TABLE 5. PARTICULATE MASS EMISSIONS FROM THE J79-GE-8D ENGINE
WITH FERROCENE ADDITIVE (Summary of Files 34 through 45)**

	ENGINE POWER SETTING
	Military
Number of tests	12
Fuel flow rate (lbs/hr)	9243
Fuel type: JP-5	
Heat of combustion (Btu/lb): 18500	
STACK GAS DATA	
Temperature (°F)	395
Actual flow rate (cfm)	835800
Corrected flow rate (cfm, dry, corrected to to standard conditions)	504700
Carbon dioxide (volume percent, dry basis)	1.01
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions	0.008
grain/std cu ft, dry	0.013
grain/std cu ft, dry, corrected to 1% CO ₂	0.014
grain/std cu ft, dry, corrected to 12% CO ₂	0.170
pound/hour	59.60
pound/million Btu	0.35
pound/thousand pound fuel	6.45
Total emissions	
grain/cu ft at stack conditions	0.015
grain/std cu ft, dry	0.024
grain/std cu ft, dry, corrected to 1% CO ₂	0.025
grain/std cu ft, dry, corrected to 12% CO ₂	0.304
pound/hour	105.10
pound/million Btu	0.62
pound/thousand pound fuel	11.37

Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at Test Cell 19, Building 397, Naval Air Rework Facility, North Island.

**TABLE 6. PARTICULATE MASS EMISSIONS FROM THE J79-GE-8D ENGINE
WITH FERROCENE ADDITIVE (Summary of Files 46 and 47)**

	ENGINE POWER SETTING
	Military
Number of tests Fuel flow rate (lbs/hr) Fuel type: JP-5 Heat of combustion (Btu/lb): 18500	2 9243
STACK GAS DATA	
Temperature (°F) Actual flow rate (cfm) Corrected flow rate (cfm, dry, corrected to to standard conditions) Carbon dioxide (volume percent, dry basis)	416.4 824326 479092 1.06
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions grain/std cu ft, dry grain/std cu ft, dry, corrected to 1% CO ₂ grain/std cu ft, dry, corrected to 12% CO ₂ pound/hour pound/million Btu pound/thousand pound fuel	0.005 0.008 0.008 0.095 33.92 0.20 3.67
Total emissions	
grain/cu ft at stack conditions grain/std cu ft, dry grain/std cu ft, dry, corrected to 1% CO ₂ grain/std cu ft, dry, corrected to 12% CO ₂ pound/hour pound/million Btu pound/thousand pound fuel	0.007 0.012 0.011 0.132 47.10 0.28 5.10
Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at Test Cell A, Building 545, NAS Miramar	

**TABLE 7. PARTICULATE MASS EMISSIONS FROM THE J79-GE-8D ENGINE
WITH FERROCENE ADDITIVE (Summary of Files 34 through 47)**

	ENGINE POWER SETTING
	Military
Number of tests	14
Fuel flow rate (lbs/hr)	9243
Fuel type: JP-5	
Heat of combustion (Btu/lb): 18500	
STACK GAS DATA	
Temperature (°F)	N/A
Actual flow rate (cfm)	N/A
Corrected flow rate (cfm, dry, corrected to to standard conditions)	N/A
Carbon dioxide (volume percent, dry basis)	N/A
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions	0.008
grain/std cu ft, dry	0.012
grain/std cu ft, dry, corrected to 1% CO ₂	0.013
grain/std cu ft, dry, corrected to 12% CO ₂	0.159
pound/hour	55.93
pound/million Btu	0.33
pound/thousand pound fuel	6.05
Total emissions	
grain/cu ft at stack conditions	0.014
grain/std cu ft, dry	0.022
grain/std cu ft, dry, corrected to 1% CO ₂	0.023
grain/std cu ft, dry, corrected to 12% CO ₂	0.279
pound/hour	96.81
pound/million Btu	0.56
pound/thousand pound fuel	10.47
Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at Test Cell 19, Building 397, Naval Air Rework Facility, North Island and at Test Cell A, Building 545, NAS Miramar.	

TABLE 8. PARTICULATE MASS EMISSIONS FROM THE J79-GE-8C/8D ENGINE
(Summary of Tables 2, 3, 5, and 6)

	ENGINE POWER SETTING
	Military
Number of tests	30
Fuel flow rate (lbs/hr)	9273
Fuel type: JP-5	
Heat of combustion (Btu/lb): 18500	
STACK GAS DATA	
Temperature (°F)	N/A
Actual flow rate (cfm)	N/A
Corrected flow rate (cfm, dry, corrected to to standard conditions)	N/A
Carbon dioxide (volume percent, dry basis)	N/A
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions	0.009
grain/std cu ft, dry	0.014
grain/std cu ft, dry, corrected to 1% CO ₂	0.014
grain/std cu ft, dry, corrected to 12% CO ₂	0.169
pound/hour	61.64
pound/million Btu	0.36
pound/thousand pound fuel	6.66
Total emissions	
grain/cu ft at stack conditions	0.014
grain/std cu ft, dry	0.023
grain/std cu ft, dry, corrected to 1% CO ₂	0.023
grain/std cu ft, dry, corrected to 12% CO ₂	0.271
pound/hour	98.01
pound/million Btu	0.57
pound/thousand pound fuel	10.58

Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at Test Cell 19, Building 397, Naval Air Rework Facility, North Island and at Test Cell A, Building 545, NAS Miramar.

TABLE 9. PARTICULATE MASS EMISSIONS FROM THE J79-GE-10B ENGINE
(Summary of Files 48 through 65)

	ENGINE POWER SETTING		
	Idle	30% Thrust	Military
Number of tests	6	7	5
Fuel flow rate (lbs/hr)	1249	2954	9886
Fuel type: JP-5			
Heat of combustion (Btu/lb): 18500			
STACK GAS DATA			
Temperature (°F)	223.9	225.7	413.6
Actual flow rate (cfm)	197418	431380	859372
Corrected flow rate (cfm, dry, corrected to to standard conditions)	149861	325466	512129
Carbon dioxide (volume percent, dry basis)	0.55	0.52	1.06
PARTICULATE EMISSIONS DATA			
Partial emissions (front half)			
grain/cu ft at stack conditions	0.006	0.005	0.004
grain/std cu ft, dry	0.008	0.006	0.006
grain/std cu ft, dry, corrected to 1% CO ₂	0.014	0.012	0.006
grain/std cu ft, dry, corrected to 12% CO ₂	0.170	0.144	0.070
pound/hour	9.82	17.33	26.56
pound/million Btu	0.42	0.32	0.15
pound/thousand pound fuel	7.87	5.84	2.69
Total emissions			
grain/cu ft at stack conditions	0.012	0.008	0.006
grain/std cu ft, dry	0.015	0.010	0.010
grain/std cu ft, dry, corrected to 1% CO ₂	0.028	0.019	0.010
grain/std cu ft, dry, corrected to 12% CO ₂	0.336	0.234	0.116
pound/hour	19.62	28.12	43.81
pound/million Btu	0.85	0.51	0.24
pound/thousand pound fuel	15.73	9.50	4.43

Note: All entries are averages, derived directly from the individual test files in Appendix A.

TABLE 10. PARTICULATE MASS EMISSIONS FROM THE J52-P-6B ENGINE
(Summary of Files 66 through 77)

	ENGINE POWER SETTING		
	Idle	30% rpm	Military
Number of tests	5	4	3
Fuel flow rate (lbs/hr)	849	2660	6765
Fuel type: JP-5			
Heat of combustion (Btu/lb): 18500			
STACK GAS DATA			
Temperature (°F)	167.6	213.6	325.4
Actual flow rate (cfm)	172104	416136	709725
Corrected flow rate (cfm, dry, corrected to to standard conditions)	140118	317962	458079
Carbon dioxide (volume percent, dry basis)	0.34	0.46	0.77
PARTICULATE EMISSIONS DATA			
Partial emissions (front half)			
grain/cu ft at stack conditions	0.007	0.007	0.005
grain/std cu ft, dry	0.009	0.009	0.007
grain/std cu ft, dry, corrected to 1% CO ₂	0.027	0.019	0.010
grain/std cu ft, dry, corrected to 12% CO ₂	0.327	0.227	0.116
pound/hour	11.08	23.43	29.12
pound/million Btu	0.70	0.47	0.23
pound/thousand pound fuel	13.00	8.78	4.30
Total emissions			
grain/cu ft at stack conditions	0.011	0.010	0.009
grain/std cu ft, dry	0.014	0.013	0.013
grain/std cu ft, dry, corrected to 1% CO ₂	0.042	0.028	0.017
grain/std cu ft, dry, corrected to 12% CO ₂	0.498	0.335	0.207
pound/hour	16.91	34.90	52.13
pound/million Btu	1.08	0.71	0.42
pound/thousand pound fuel	19.94	13.13	7.75

Note: All entries are averages, derived directly from the individual test files in Appendix A.

TABLE 11. PARTICULATE MASS EMISSIONS FROM THE TF30-P-414 ENGINE
(Summary of Files 78 through 94)

	ENGINE POWER SETTING		
	Idle	85% rpm	Military
Number of tests	6	6	5
Fuel flow rate (lbs/hr)	1040	2885	8009
Fuel type: JP-5			
Heat of combustion (Btu/lb): 18500			
STACK GAS DATA			
Temperature (°F)	159.2	200.0	324.7
Actual flow rate (cfm)	189575	436292	795029
Corrected flow rate (cfm, dry, corrected to to standard conditions)	157299	340143	517203
Carbon dioxide (volume percent, dry basis)	0.35	0.46	0.76
PARTICULATE EMISSIONS DATA			
Partial emissions (front half)			
grain/cu ft at stack conditions	0.003	0.004	0.002
grain/std cu ft, dry	0.004	0.005	0.003
grain/std cu ft, dry, corrected to 1% CO ₂	0.010	0.010	0.004
grain/std cu ft, dry, corrected to 12% CO ₂	0.123	0.124	0.052
pound/hour	4.78	13.78	14.79
pound/million Btu	0.25	0.26	0.10
pound/thousand pound fuel	4.60	4.76	1.85
Total emissions			
grain/cu ft at stack conditions	0.006	0.006	0.003
grain/std cu ft, dry	0.007	0.008	0.005
grain/std cu ft, dry, corrected to 1% CO ₂	0.020	0.017	0.007
grain/std cu ft, dry, corrected to 12% CO ₂	0.239	0.208	0.084
pound/hour	9.35	22.85	23.86
pound/million Btu	0.48	0.43	0.16
pound/thousand pound fuel	8.96	7.98	2.98

Note: All entries are averages, derived directly from the individual test files in Appendix A.

TABLE 12. PARTICULATE MASS EMISSIONS FROM THE F404-GE-400 ENGINE
(Summary of Files 95 through 105)

	ENGINE POWER SETTING		
	Idle	86% rpm	Military
Number of tests	5	2	4
Fuel flow rate (lbs/hr)	835	3957	8579
Fuel type: JP-5			
Heat of combustion (Btu/lb). 18500			
STACK GAS DATA			
Temperature (°F)	173.5	257.8	381.9
Actual flow rate (cfm)	193418	537300	837083
Corrected flow rate (cfm, dry, corrected to to standard conditions)	159351	389954	515991
Carbon dioxide (volume percent, dry basis)	0.45	0.82	0.93
PARTICULATE EMISSIONS DATA			
Partial emissions (front half)			
grain/cu ft at stack conditions	0.004	0.002	0.003
grain/std cu ft, dry	0.004	0.002	0.004
grain/std cu ft, dry, corrected to 1% CO ₂	0.010	0.003	0.004
grain/std cu ft, dry, corrected to 12% CO ₂	0.121	0.032	0.053
pound/hour	6.10	7.34	18.44
pound/million Btu	0.40	0.11	0.12
pound/thousand pound fuel	7.30	2.06	2.15
Total emissions			
grain/cu ft at stack conditions	0.006	0.005	0.003
grain/std cu ft, dry	0.007	0.006	0.005
grain/std cu ft, dry, corrected to 1% CO ₂	0.017	0.008	0.006
grain/std cu ft, dry, corrected to 12% CO ₂	0.199	0.094	0.079
pound/hour	10.34	21.72	24.10
pound/million Btu	0.67	0.33	0.16
pound/thousand pound fuel	12.38	6.10	2.81

Note: Fuel flow rates are representative. All other entries are averages, derived directly from the individual files in Appendix A.

TABLE 13. PARTICULATE MASS EMISSIONS FROM THE TF34-GE-400A ENGINE
(Summary of Files 106 through 113)

	ENGINE POWER SETTING		
	Idle	75%	94%
Number of tests	5	3	2
Fuel flow rate (lbs/hr)	450	500	2805
Fuel type: JP-5			
Heat of combustion (Btu/lb): 18500			
STACK GAS DATA			
Temperature (°F)	101.2	103	146
Actual flow rate (cfm)	178438	325658	759800
Corrected flow rate (cfm, dry, corrected to to standard conditions)	166756	305055	679100
Carbon dioxide (volume percent, dry basis)	0.16	0.16	0.24
PARTICULATE EMISSIONS DATA			
Partial emissions (front half)			
grain/cu ft at stack conditions	N/A	N/A	N/A
grain/std cu ft, dry	N/A	N/A	N/A
grain/std cu ft, dry, corrected to 1% CO ₂	N/A	N/A	N/A
grain/std cu ft, dry, corrected to 12% CO ₂	N/A	N/A	N/A
pound/hour	N/A	N/A	N/A
pound/million Btu	N/A	N/A	N/A
pound/thousand pound fuel	N/A	N/A	N/A
Total emissions			
grain/cu ft at stack conditions	0.001	0.001	-
grain/std cu ft, dry	0.001	0.001	0.001
grain/std cu ft, dry, corrected to 1% CO ₂	0.007	0.008	0.004
grain/std cu ft, dry, corrected to 12% CO ₂	0.082	0.100	0.005
pound/hour	1.47	3.43	5.92
pound/million Btu	0.18	0.37	0.11
pound/thousand pound fuel	3.26	6.85	2.11

Note: All entries are averages, derived directly from the individual test files in Appendix A. The data were obtained at the AIMD Test Cell, Naval Air Station, North Island.

TABLE 14. PARTICULATE MASS EMISSIONS FROM THE T58-GE-5/8F ENGINE
(Summary of Files 114 and 115)

	ENGINE POWER SETTING
	Various
Number of tests	2
Fuel flow rate (lbs/hr)	423
Fuel type: JP-5	
Heat of combustion (Btu/lb): 18500	
STACK GAS DATA	
Temperature (°F)	500.8
Actual flow rate (cfm)	N/A
Corrected flow rate (cfm, dry, corrected to to standard conditions)	12023
Carbon dioxide (volume percent, dry basis)	1.50
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions	N/A
grain/std cu ft, dry	0.011
grain/std cu ft, dry, corrected to 1% CO ₂	0.007
grain/std cu ft, dry, corrected to 12% CO ₂	0.085
pound/hour	1.06
pound/million Btu	0.14
pound/thousand pound fuel	2.54
Total emissions	
grain/cu ft at stack conditions	N/A
grain/std cu ft, dry	0.018
grain/std cu ft, dry, corrected to 1% CO ₂	0.012
grain/std cu ft, dry, corrected to 12% CO ₂	0.141
pound/hour	1.76
pound/million Btu	0.23
pound/thousand pound fuel	4.20

Note: All entries are averages, derived from the individual test files in Appendix A. The data were obtained at Test Cell 11 at Naval Air Rework Facility, North Island as preliminary source testing.

TABLE 15. PARTICULATE MASS EMISSIONS FROM THE T64-GE-6B/415 ENGINE
(Summary of Files 116 and 117)

	ENGINE POWER SETTING
	Various
Number of tests	2
Fuel flow rate (lbs/hr)	1006
Fuel type: JP-5	
Heat of combustion (Btu/lb): 18500	
STACK GAS DATA	
Temperature (°F)	449.2
Actual flow rate (cfm)	N/A
Corrected flow rate (cfm, dry, corrected to to standard conditions)	19865
Carbon dioxide (volume percent, dry basis)	2.20
PARTICULATE EMISSIONS DATA	
Partial emissions (front half)	
grain/cu ft at stack conditions	N/A
grain/std cu ft, dry	0.008
grain/std cu ft, dry, corrected to 1% CO ₂	0.004
grain/std cu ft, dry, corrected to 12% CO ₂	0.042
pound/hour	1.42
pound/million Btu	0.07
pound/thousand pound fuel	1.33
Total emissions	
grain/cu ft at stack conditions	N/A
grain/std cu ft, dry	0.013
grain/std cu ft, dry, corrected to 1% CO ₂	0.006
grain/std cu ft, dry, corrected to 12% CO ₂	0.070
pound/hour	2.34
pound/million Btu	0.12
pound/thousand pound fuel	2.21

Note: All entries are averages, derived from the individual test files in Appendix A. The data were obtained at Test Cells 9 and 10 at Naval Air Rework Facility, North Island as preliminary source testing.

FIGURE 1. FUEL FLOW RATE VS. EMISSION INDEX
FOR MILITARY GAS TURBINE ENGINES.

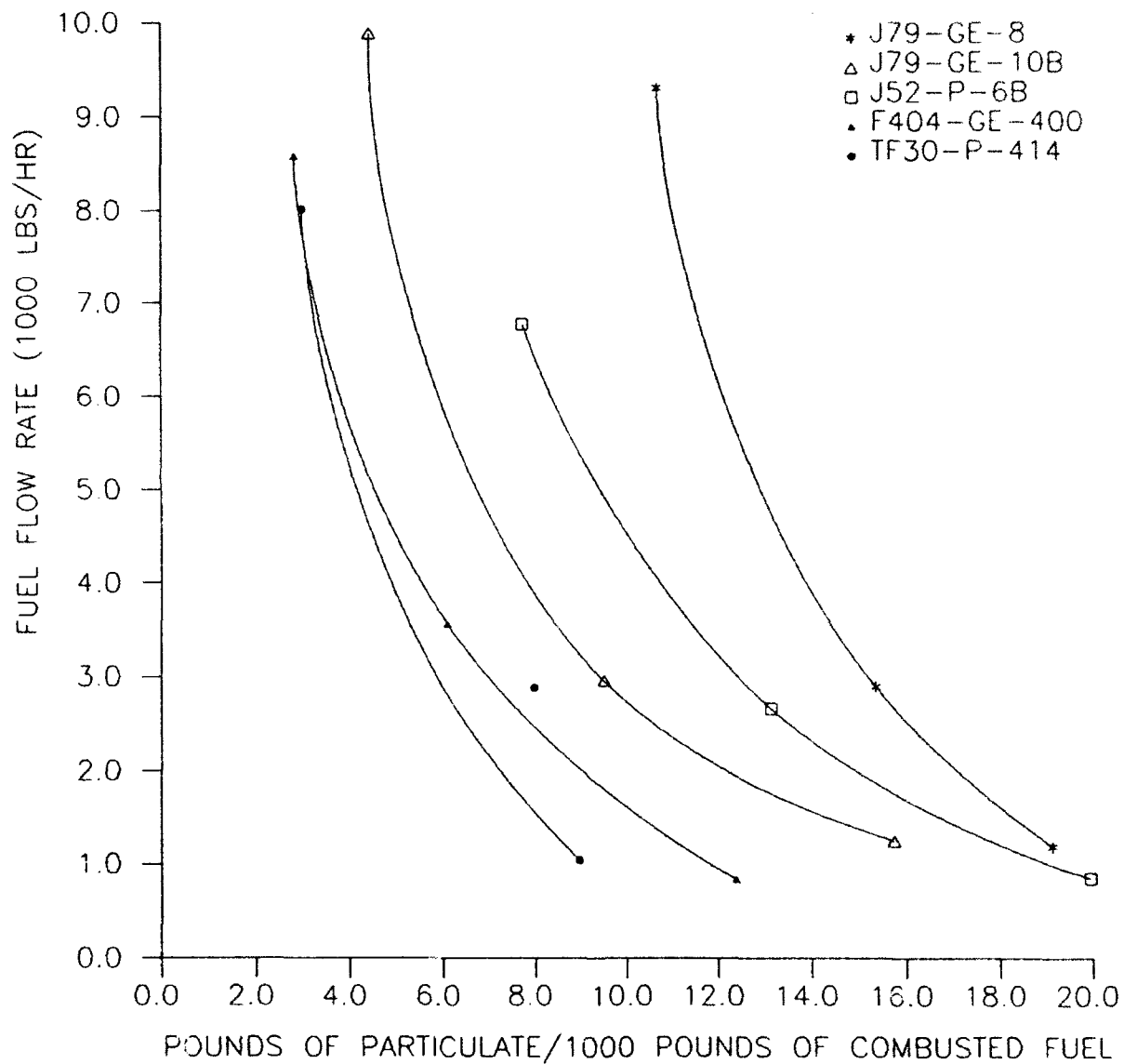


FIGURE 2. TOTAL PARTICULATE EMISSIONS VS. FUEL FLOW RATE FOR MILITARY GAS TURBINE ENGINES.

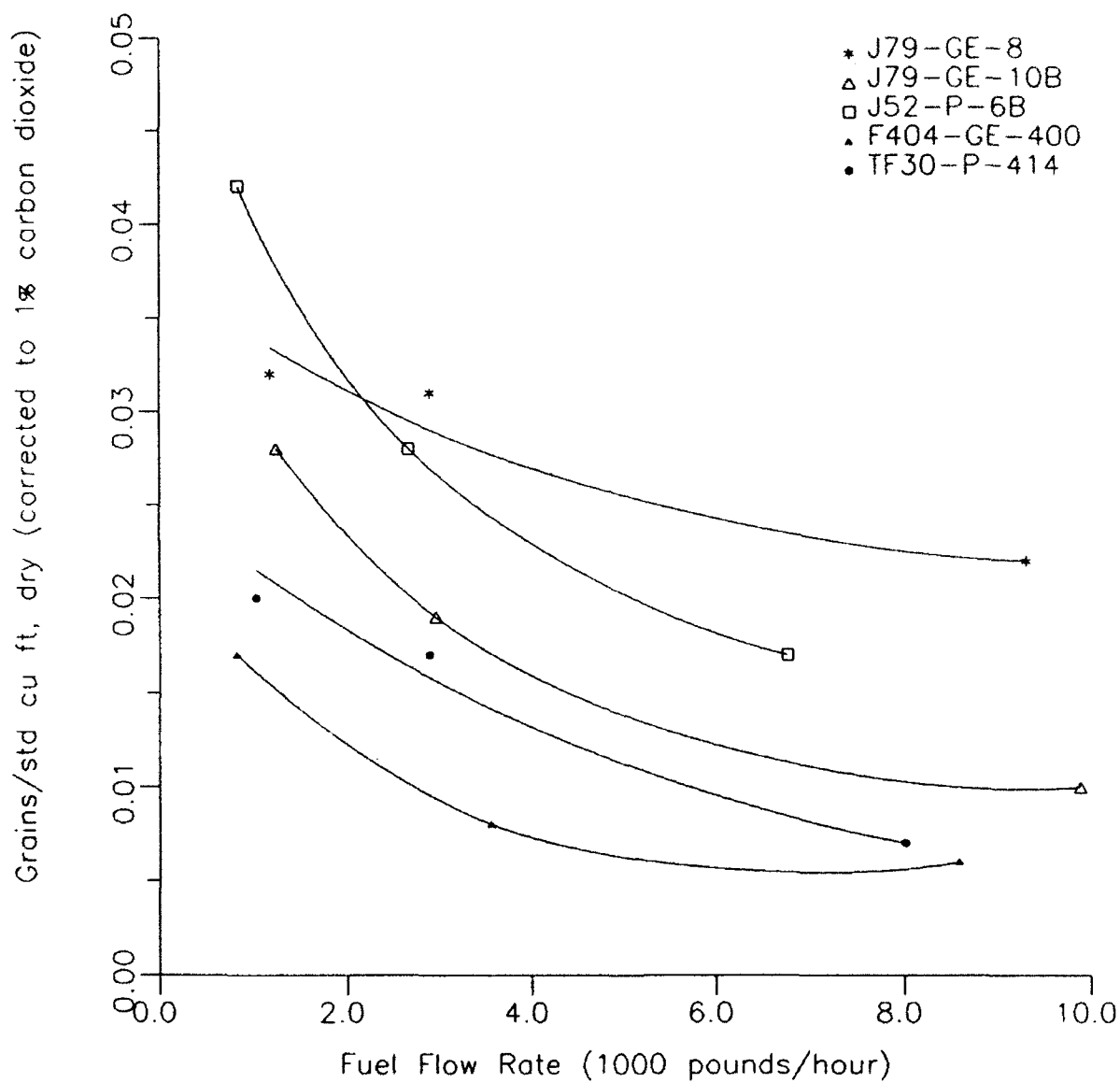
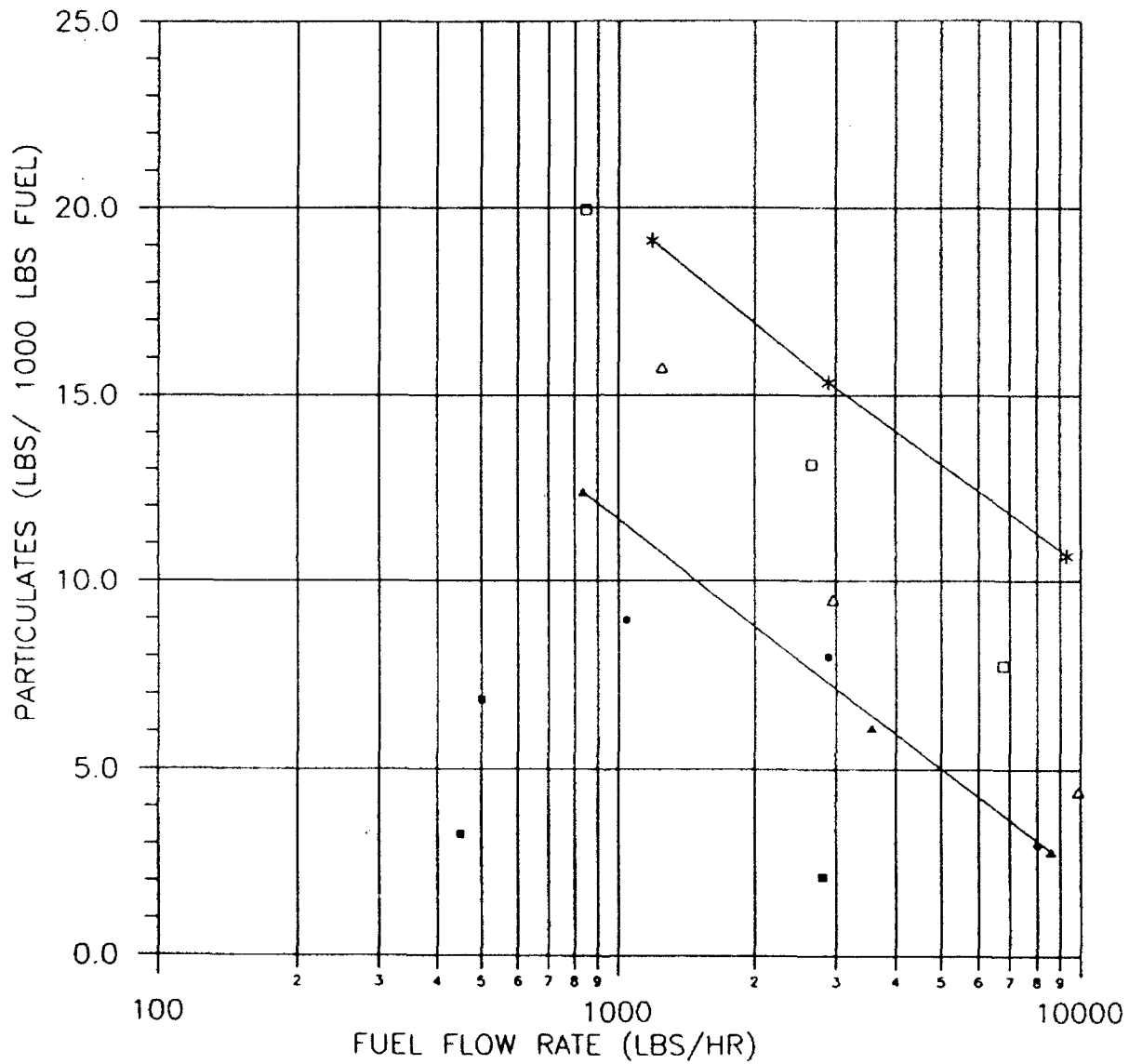


FIGURE 3. EMISSION INDEX VS. FUEL FLOW RATE



LEGEND:

- * J79-GE-8
- △ J79-GE-10B
- J52-P-6B
- ▲ F404-GE-400
- TF30-P-414
- ▼ TF34-GE-400

5 *PARTICLE SIZE DISTRIBUTIONS*

THIS SECTION IS RESERVED FOR PARTICLE SIZE DISTRIBUTIONS

6 REFERENCES

1. 40 Code of Federal Regulations, Part 50.6, revised by Federal Register 24663, July 1, 1987.
2. 40 Code of Federal Regulations, Part 60, [Appendix A, Method 5].
3. Aircraft Environmental Support Office, *Particulate Emissions Test Program - J79-GE-8C, J79-GE-8D and J79-GE-10B Gas Turbine Engines*, AESO Report No. 110-01-81, October, 1981.
4. Aircraft Environmental Support Office, *Particulate Emissions Test Program - J79-GE-8D, J52-GE-6B and TF30-P-414 Gas Turbine Engines*, AESO Report No. 110-01-82, March, 1982.
5. Aircraft Environmental Support Office, *Particulate Emissions Test Program - F404-GE-400 Gas Turbine Engine*, AESO Report No. 110-02-82, April, 1982.
6. Aircraft Environmental Support Office, *Particulate Emissions Test Program - TF34-GE-400 Gas Turbine Engine, AIMD Test Cell, NAS North Island*, AESO Report No. 110-03-82, May, 1982.

FILE 1. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8C
	Serial number:	401123
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1171
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	223.5
	Actual flow rate (cfm)	214521
	Corrected flow rate (cfm)	163893
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.51
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.015	0.018
grains/std cu ft, dry	0.019	0.024
grains/std cu ft, dry, corrected to 1% CO ₂	0.038	0.047
grains/std cu ft, dry, corrected to 12% CO ₂	0.451	0.558
pounds/hour	26.94	33.34
pounds/million Btu	1.24	1.54
pounds/thousand pounds fuel	23.01	28.47
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 12 March 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 14 Reference AESO Report No. 110-01-81, October 1981		

FILE 2. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8C
	Serial number:	401123
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1176
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	222.2
	Actual flow rate (cfm)	234579
	Corrected flow rate (cfm) (standard conditions, dry)	179112
	Carbon dioxide (volume percent, dry basis)	0.53
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.011
grains/std cu ft, dry	0.010	0.014
grains/std cu ft, dry, corrected to 1% CO ₂	0.018	0.027
grains/std cu ft, dry, corrected to 12% CO ₂	0.218	0.322
pounds/hour	14.81	21.82
pounds/million Btu	0.68	1.00
pounds/thousand pounds fuel	12.59	18.55
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 13 March 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 15 Reference AESO Report No. 110-01-81, October 1981		

FILE 3. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1200
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	215.8
	Actual flow rate (cfm)	175108
	Corrected flow rate (cfm) (standard conditions, dry)	134277
	Carbon dioxide (volume percent, dry basis)	0.52
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.008
grains/std cu ft, dry	0.007	0.010
grains/std cu ft, dry, corrected to 1% CO ₂	0.014	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.162	0.241
pounds/hour	8.09	12.04
pounds/million Btu	0.36	0.54
pounds/thousand pounds fuel	6.74	10.03
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 17 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 35 Reference AESO Report No. 110-01-81, October 1981		

FILE 4. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1199
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	230.1
	Actual flow rate (cfm)	220462
	Corrected flow rate (cfm) (standard conditions, dry)	166519
	Carbon dioxide (volume percent, dry basis)	0.57
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.011
grains/std cu ft, dry	0.009	0.015
grains/std cu ft, dry, corrected to 1% CO ₂	0.016	0.026
grains/std cu ft, dry, corrected to 12% CO ₂	0.188	0.311
pounds/hour	12.75	21.06
pounds/million Btu	0.57	0.95
pounds/thousand pounds fuel	10.63	17.56
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 20 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 36 Reference AESO Report No. 110-01-81, October 1981		

FILE 5. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401607
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1190
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	239.5
	Actual flow rate (cfm)	177675
	Corrected flow rate (cfm) (standard conditions, dry)	131620
	Carbon dioxide (volume percent, dry basis)	0.55
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.008	0.021
grains/std cu ft, dry	0.011	0.028
grains/std cu ft, dry, corrected to 1% CO ₂	0.020	0.051
grains/std cu ft, dry, corrected to 12% CO ₂	0.240	0.614
pounds/hour	12.39	31.75
pounds/million Btu	0.56	1.44
pounds/thousand pounds fuel	10.41	26.68
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 6 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 46 Reference AESO Report No. 110-01-81, October 1981		

FILE 6. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA

Engine type J79-GE-8D
 Serial number 401607
 Power setting Idle
 Fuel flow rate (lb/hr) 1188

FUEL DATA

Fuel type JP-5
 Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 253.2
 Actual flow rate (cfm) 218798
 Corrected flow rate (cfm) 156362
 (standard conditions, dry)
 Carbon dioxide (volume percent, dry basis) 0.94

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.013
grains/std cu ft, dry	0.010	0.018
grains/std cu ft, dry, corrected to 1% CO ₂	0.018	0.033
grains/std cu ft, dry, corrected to 12% CO ₂	0.218	0.401
pounds/hour	13.17	24.16
pounds/million Btu	0.60	1.10
pounds/thousand pounds fuel	11.09	20.34

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 7 May 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 47
 Reference AESO Report No. 110-01-81, October 1981

FILE 7. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421252
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1201
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	227.9
	Actual flow rate (cfm)	196100
	Corrected flow rate (cfm)	146780
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.56
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.009
grains/std cu ft, dry	0.006	0.012
grains/std cu ft, dry, corrected to 1% CO ₂	0.011	0.021
grains/std cu ft, dry, corrected to 12% CO ₂	0.130	0.250
pounds/hour	7.65	14.66
pounds/million Btu	0.34	0.66
pounds/thousand pounds fuel	6.37	12.21
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 1 June 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 58 Reference AESO Report No. 110-01-81, October 1981		

FILE 8. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8C
	Serial number:	401123
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2814
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	218.4
	Actual flow rate (cfm)	450932
	Corrected flow rate (cfm) (standard conditions, dry)	345571
	Carbon dioxide (volume percent, dry basis)	0.50
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.007
grains/std cu ft, dry	0.005	0.009
grains/std cu ft, dry, corrected to 1% CO ₂	0.011	0.017
grains/std cu ft, dry, corrected to 12% CO ₂	0.129	0.206
pounds/hour	15.91	25.44
pounds/million Btu	0.31	0.49
pounds/thousand pounds fuel	5.65	9.04
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 7 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 27 Reference AESO Report No. 110-01-81, October 1981 The carbon dioxide analyzer was improperly calibrated. An average, measured concentration of carbon dioxide of 0.50% was used to correct the grain loadings to the desired carbon dioxide basis. (See page 15 of AESO Report No. 110-01-81)		

FILE 9. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE**ENGINE DATA**

Engine type: J79-GE-8C
Serial number: 401123
Power setting: 30% Thrust
Fuel flow rate (lb/hr) 2878

FUEL DATA

Fuel type: JP-5
Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 222.2
Actual flow rate (cfm) 460793
Corrected flow rate (cfm)
(standard conditions, dry) 352045
Carbon dioxide (volume
percent, dry basis) 0.50

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.007
grains/std cu ft, dry	0.007	0.010
grains/std cu ft, dry, corrected to 1% CO ₂	0.013	0.019
grains/std cu ft, dry, corrected to 12% CO ₂	0.157	0.231
pounds/hour	19.74	28.99
pounds/million Btu	0.37	0.54
pounds/thousand pounds fuel	6.86	10.07

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 9 April 1981
Test Cell 19, multiple point sampling at the stack exit plane
Test number 28
Reference AESO Report No. 110-01-81, October 1981

FILE 10. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2838
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	226.9
	Actual flow rate (cfm)	432430
	Corrected flow rate (cfm) (standard conditions, dry)	327725
	Carbon dioxide (volume percent, dry basis)	0.45
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.010	0.012
grains/std cu ft, dry	0.013	0.016
grains/std cu ft, dry, corrected to 1% CO ₂	0.029	0.036
grains/std cu ft, dry, corrected to 12% CO ₂	0.347	0.435
pounds/hour	36.60	45.87
pounds/million Btu	0.70	0.87
pounds/thousand pounds fuel	12.90	16.16
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 25 February 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 5 Reference AESO Report No. 110-01-81, October 1981		

FILE 11. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2774
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	221.9
	Actual flow rate (cfm)	440206
	Corrected flow rate (cfm) (standard conditions, dry)	337383
	Carbon dioxide (volume percent, dry basis)	0.45
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.015	0.018
grains/std cu ft, dry	0.020	0.023
grains/std cu ft, dry, corrected to 1% CO ₂	0.044	0.052
grains/std cu ft, dry, corrected to 12% CO ₂	0.524	0.624
pounds/hour	56.85	67.71
pounds/million Btu	1.11	1.32
pounds/thousand pounds fuel	20.49	24.41
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 26 February 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 6 Reference AESO Report No. 110-01-81, October 1981		

FILE 12. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2786
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	220.2
	Actual flow rate (cfm)	438812
	Corrected flow rate (cfm) (standard conditions, dry)	332875
	Carbon dioxide (volume percent, dry basis)	0.46
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.010	0.012
grains/std cu ft, dry	0.013	0.015
grains/std cu ft, dry, corrected to 1% CO ₂	0.029	0.032
grains/std cu ft, dry, corrected to 12% CO ₂	0.342	0.385
pounds/hour	37.43	42.08
pounds/million Btu	0.73	0.82
pounds/thousand pounds fuel	13.44	15.10
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 27 February 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 7 Reference AESO Report No. 110-01-81, October 1981		

FILE 13. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	3015
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	225.2
	Actual flow rate (cfm)	442641
	Corrected flow rate (cfm) (standard conditions, dry)	333736
	Carbon dioxide (volume percent, dry basis)	0.48
PARTICULATE EMISSIONS DATA	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.012	0.013
grains/std cu ft, dry	0.015	0.018
grains/std cu ft, dry, corrected to 1% CO ₂	0.032	0.037
grains/std cu ft, dry, corrected to 12% CO ₂	0.386	0.438
pounds/hour	44.14	50.15
pounds/million Btu	0.79	0.90
pounds/thousand pounds fuel	14.64	16.63
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 2 March 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 8 Reference AESO Report No. 110-01-81, October 1981		

FILE 14. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA

Engine type: J79-GE-8D
 Serial number: 401607
 Power setting: 30% Thrust
 Fuel flow rate (lb/hr) 3160

FUEL DATA

Fuel type: JP-5
 Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 239.4
 Actual flow rate (cfm) 493625
 Corrected flow rate (cfm)
 (standard conditions, dry) 363685
 Carbon dioxide (volume
 percent, dry basis) 0.54

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.011
grains/std cu ft, dry	0.010	0.016
grains/std cu ft, dry, corrected to 1% CO ₂	0.018	0.029
grains/std cu ft, dry, corrected to 12% CO ₂	0.211	0.345
pounds/hour	29.61	48.37
pounds/million Btu	0.51	0.83
pounds/thousand pounds fuel	9.37	15.31

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 22 April 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 38
 Reference AESO Report No. 110-01-81, October 1981

FILE 15. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401607
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2949
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	227.2
	Actual flow rate (cfm)	427523
	Corrected flow rate (cfm) (standard conditions, dry)	320382
	Carbon dioxide (volume percent, dry basis)	0.59
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.014	0.018
grains/std cu ft, dry	0.019	0.023
grains/std cu ft, dry, corrected to 1% CO ₂	0.031	0.040
grains/std cu ft, dry, corrected to 12% CO ₂	0.378	0.477
pounds/hour	50.97	64.37
pounds/million Btu	0.93	1.18
pounds/thousand pounds fuel	17.28	21.83
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 23 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 39 Reference AESO Report No. 110-01-81, October 1981		

FILE 16. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401607
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2912
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	224.0
	Actual flow rate (cfm)	440487
	Corrected flow rate (cfm) (standard conditions, dry)	333155
	Carbon dioxide (volume percent, dry basis)	0.55
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.010
grains/std cu ft, dry	0.010	0.013
grains/std cu ft, dry, corrected to 1% CO ₂	0.017	0.024
grains/std cu ft, dry, corrected to 12% CO ₂	0.207	0.294
pounds/hour	27.12	38.46
pounds/million Btu	0.50	0.71
pounds/thousand pounds fuel	9.31	13.21
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 5 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 45 Reference AESO Report No. 110-01-81, October 1981		

FILE 17. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401607
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2804

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	231.2
	Actual flow rate (cfm)	423075
	Corrected flow rate (cfm) (standard conditions, dry)	314980
	Carbon dioxide (volume percent, dry basis)	0.56

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.009
grains/std cu ft, dry	0.010	0.012
grains/std cu ft, dry, corrected to 1% CO	0.017	0.022
grains/std cu ft, dry, corrected to 12% CO ₂	0.207	0.260
pounds/hour	26.11	32.69
pounds/million Btu	0.50	0.63
pounds/thousand pounds fuel	9.31	11.66

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 11 May 1981
Test Cell 19, multiple point sampling at the stack exit plane
Test number 48
Reference AESO Report No. 110-01-81, October 1981

FILE 18. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA	Engine type:	J79-GE-8C
	Serial number:	401123
	Power setting:	Military
	Fuel flow rate (lb/hr)	9424

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	387.8
	Actual flow rate (cfm)	895412
	Corrected flow rate (cfm)	549269
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.99

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.008	0.015
grains/std cu ft, dry	0.012	0.024
grains/std cu ft, dry, corrected to 1% CO ₂	0.012	0.024
grains/std cu ft, dry, corrected to 12% CO ₂	0.149	0.291
pounds/hour	57.77	113.16
pounds/million Btu	0.33	0.65
pounds/thousand pounds fuel	6.13	12.01

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 30 March 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 23
 Reference AESO Report No. 110-01-81, October 1981

FILE 19. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8C
	Serial number:	401123
	Power setting:	Military
	Fuel flow rate (lb/hr)	9386
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	396.1
	Actual flow rate (cfm)	862877
	Corrected flow rate (cfm) (standard conditions, dry)	525424
	Carbon dioxide (volume percent, dry basis)	1.00
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.006
grains/std cu ft, dry	0.007	0.009
grains/std cu ft, dry, corrected to 1% CO ₂	0.007	0.009
grains/std cu ft, dry, corrected to 12% CO ₂	0.087	0.113
pounds/hour	32.74	42.38
pounds/million Btu	0.19	0.24
pounds/thousand pounds fuel	3.49	4.52
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 3 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 26 Reference AESO Report No. 110-01-81, October 1981		

FILE 20. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type	J79-GE-8D
	Serial number	401607
	Power setting	Military
	Fuel flow rate (lb/hr)	9274
FUEL DATA	Fuel type	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	398.9
	Actual flow rate (cfm)	869177
	Corrected flow rate (cfm) (standard conditions, dry)	525310
	Carbon dioxide (volume percent, dry basis)	1.04
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.010	0.015
grains/std cu ft, dry	0.017	0.024
grains/std cu ft, dry, corrected to 1% CO ₂	0.017	0.024
grains/std cu ft, dry, corrected to 12% CO ₂	0.199	0.282
pounds/hour	77.83	110.22
pounds/million Btu	0.45	0.64
pounds/thousand pounds fuel	8.39	11.88
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 27 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 40 Reference AESO Report No. 110-01-81, October 1981		

FILE 21. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE**ENGINE DATA**

Engine type: J79-GE-8D
Serial number: 401607
Power setting: Military
Fuel flow rate (lb/hr) 9141

FUEL DATA

Fuel type: JP-5
Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 398.9
Actual flow rate (cfm) 866183
Corrected flow rate (cfm) 518932
(standard conditions, dry)
Carbon dioxide (volume percent, dry basis) 1.03

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.012	0.018
grains/std cu ft, dry	0.021	0.029
grains/std cu ft, dry, corrected to 1% CO ₂	0.020	0.029
grains/std cu ft, dry, corrected to 12% CO ₂	0.239	0.342
pounds/hour	91.19	130.60
pounds/million Btu	0.54	0.77
pounds/thousand pounds fuel	9.98	14.29

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 28 April 1981
Test Cell 19, multiple point sampling at the stack exit plane
Test number 41
Reference AESO Report No. 110-01-81, October 1981

FILE 22. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421252
	Power setting:	Military
	Fuel flow rate (lb/hr)	9334

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	397.7
	Actual flow rate (cfm)	843895
	Corrected flow rate (cfm)	508616
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	1.08

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.010
grains/std cu ft, dry	0.009	0.017
grains/std cu ft, dry, corrected to 1% CO ₂	0.008	0.016
grains/std cu ft, dry, corrected to 12% CO ₂	0.095	0.187
pounds/hour	37.36	73.39
pounds/million Btu	0.22	0.43
pounds/thousand pounds fuel	4.00	7.86

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 21 May 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 53
 Reference AESO Report No. 110-01-81, October 1981

FILE 23. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421252
	Power setting:	Military
	Fuel flow rate (lb/hr)	9294
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	390.0
	Actual flow rate (cfm)	817658
	Corrected flow rate (cfm) (standard conditions, dry)	494701
	Carbon dioxide (volume percent, dry basis)	1.12
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.010	0.015
grains/std cu ft, dry	0.016	0.026
grains/std cu ft, dry, corrected to 1% CO ₂	0.014	0.023
grains/std cu ft, dry, corrected to 12% CO ₂	0.174	0.274
pounds/hour	68.72	108.37
pounds/million Btu	0.40	0.63
pounds/thousand pounds fuel	7.39	11.66
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 28 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 57 Reference AESO Report No. 110-01-81, October 1981		

FILE 24. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421252
	Power setting:	Military
	Fuel flow rate (lb/hr)	9288

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	388.7
	Actual flow rate (cfm)	805656
	Corrected flow rate (cfm) (standard conditions, dry)	485772
	Carbon dioxide (volume percent, dry basis)	1.20

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.009	0.014
grains/std cu ft, dry	0.015	0.024
grains/std cu ft, dry, corrected to 1% CO ₂	0.013	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.152	0.240
pounds/hour	63.27	99.81
pounds/million Btu	0.37	0.58
pounds/thousand pounds fuel	6.81	10.75

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 2 June 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 59
 Reference AESO Report No. 110-01-81, October 1981

FILE 25. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	Military
	Fuel flow rate (lb/hr)	9026
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	389.0
	Actual flow rate (cfm)	871431
	Corrected flow rate (cfm) (standard conditions, dry)	537073
	Carbon dioxide (volume percent, dry basis)	1.05
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.013	0.018
grains/std cu ft, dry	0.021	0.029
grains/std cu ft, dry, corrected to 1% CO ₂	0.020	0.028
grains/std cu ft, dry, corrected to 12% CO ₂	0.241	0.335
pounds/hour	97.23	135.10
pounds/million Btu	0.58	0.81
pounds/thousand pounds fuel	10.77	14.97
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 19 February 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 1 Reference AESO Report No. 110-01-81, October 1981		

FILE 26. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	Military
	Fuel flow rate (lb/hr)	9197
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	401.8
	Actual flow rate (cfm)	896898
	Corrected flow rate (cfm) (standard conditions, dry)	540126
	Carbon dioxide (volume percent, dry basis)	1.00
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.010	0.012
grains/std cu ft, dry	0.016	0.019
grains/std cu ft, dry, corrected to 1% CO ₂	0.016	0.019
grains/std cu ft, dry, corrected to 12% CO ₂	0.196	0.232
pounds/hour	75.77	89.36
pounds/million Btu	0.45	0.53
pounds/thousand pounds fuel	8.24	9.72
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 23 February 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 3 Reference AESO Report No. 110-01-81, October 1981		

FILE 27. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	Military
	Fuel flow rate (lb/hr)	9223

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	400.8
	Actual flow rate (cfm)	905745
	Corrected flow rate (cfm)	539083
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	1.03

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.009	0.011
grains/std cu ft, dry	0.015	0.018
grains/std cu ft, dry, corrected to 1% CO ₂	0.015	0.017
grains/std cu ft, dry, corrected to 12% CO ₂	0.179	0.208
pounds/hour	70.80	82.66
pounds/million Btu	0.41	0.48
pounds/thousand pounds fuel	7.68	8.96

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 24 February 1981
Test Cell 19, multiple point sampling at the stack exit plane
Test number 4
Reference AESO Report No. 110-01-81, October 1981

FILE 28. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401117
	Power setting:	Military
	Fuel flow rate (lb/hr)	9045
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	397.9
	Actual flow rate (cfm)	772622
	Corrected flow rate (cfm) (standard conditions, dry)	456924
	Carbon dioxide (volume percent, dry basis)	1.02
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.016	0.023
grains/std cu ft, dry	0.027	0.039
grains/std cu ft, dry, corrected to 1% CO ₂	0.027	0.038
grains/std cu ft, dry, corrected to 12% CO ₂	0.319	0.453
pounds/hour	106.06	150.80
pounds/million Btu	0.63	0.90
pounds/thousand pounds fuel	11.73	16.67
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 22 September 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 1 Reference AESO Report No. 110-01-82, March 1982		

FILE 29. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401117
	Power setting:	Military
	Fuel flow rate (lb/hr)	9160
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	394.0
	Actual flow rate (cfm)	777642
	Corrected flow rate (cfm) (standard conditions, dry)	463133
	Carbon dioxide (volume percent, dry basis)	1.01
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.012
grains/std cu ft, dry	0.012	0.020
grains/std cu ft, dry, corrected to 1% CO ₂	0.012	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.139	0.239
pounds/hour	46.49	79.88
pounds/million Btu	0.27	0.47
pounds/thousand pounds fuel	5.07	8.72
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 23 September 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 2 Reference AESO Report No. 110-01-82, March 1982		

FILE 30. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401117
	Power setting:	Military
	Fuel flow rate (lb/hr)	9166
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	400.4
	Actual flow rate (cfm)	784159
	Corrected flow rate (cfm) (standard conditions, dry)	465181
	Carbon dioxide (volume percent, dry basis)	1.02
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.008	0.012
grains/std cu ft, dry	0.014	0.021
grains/std cu ft, dry, corrected to 1% CO ₂	0.013	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.159	0.242
pounds/hour	53.96	81.93
pounds/million Btu	0.32	0.48
pounds/thousand pounds fuel	5.89	8.94
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 24 September 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 3 Reference AESO Report No. 110-01-82, March 1982		

FILE 31. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401117
	Power setting:	Military
	Fuel flow rate (lb/hr)	9266
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	406.5
	Actual flow rate (cfm)	850110
	Corrected flow rate (cfm) (standard conditions, dry)	500483
	Carbon dioxide (volume percent, dry basis)	1.07
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.009	0.012
grains/std cu ft, dry	0.015	0.021
grains/std cu ft, dry, corrected to 1% CO ₂	0.014	0.019
grains/std cu ft, dry, corrected to 12% CO ₂	0.165	0.231
pounds/hour	62.83	88.22
pounds/million Btu	0.37	0.51
pounds/thousand pounds fuel	6.78	9.52
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 25 September 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 4 Reference AESO Report No. 110-01-82, March 1982		

FILE 32. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401117
	Power setting:	Military
	Fuel flow rate (lb/hr)	9291
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	407.5
	Actual flow rate (cfm)	772980
	Corrected flow rate (cfm)	450396
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	1.10
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.009	0.012
grains/std cu ft, dry	0.015	0.021
grains/std cu ft, dry, corrected to 1% CO ₂	0.014	0.019
grains/std cu ft, dry, corrected to 12% CO ₂	0.163	0.228
pounds/hour	57.43	80.43
pounds/million Btu	0.33	0.47
pounds/thousand pounds fuel	6.18	8.66
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 28 September 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 5 Reference AESO Report No. 110-01-82, March 1982		

FILE 33. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401117
	Power setting:	Military
	Fuel flow rate (lb/hr)	10270
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	419.0
	Actual flow rate (cfm)	780000
	Corrected flow rate (cfm)	445321
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	1.20
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.010	0.018
grains/std cu ft, dry	0.017	0.031
grains/std cu ft, dry, corrected to 1% CO ₂	0.015	0.026
grains/std cu ft, dry, corrected to 12% CO ₂	0.175	0.310
pounds/hour	66.72	118.52
pounds/million Btu	0.35	0.62
pounds/thousand pounds fuel	6.50	11.54
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 29 September 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 6 Reference AESO Report No. 110-01-82, March 1982		

FILE 34. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA

Engine type	J79-GE-8D
Serial number	421841
Power setting	Military
Fuel flow rate (lb/hr)	9243

FUEL DATA

Fuel type	JP-5 (with ferrocene)
Heat of combustion (Btu/lb)	18500

STACK GAS DATA

Average temperature (°F)	395.4
Actual flow rate (cfm)	882401
Corrected flow rate (cfm) (standard conditions, dry)	526862
Carbon dioxide (volume percent, dry basis)	0.85

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.016	0.033
grains/std cu ft, dry	0.027	0.055
grains/std cu ft, dry, corrected to 1% CO ₂	0.031	0.064
grains/std cu ft, dry, corrected to 12% CO ₂	0.376	0.771
pounds/hour	120.42	246.76
pounds/million Btu	0.70	1.44
pounds/thousand pounds fuel	13.03	26.70

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 6 March 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 11
 Reference AESO Report No. 110-01-81, October 1981

Note: The fuel flow rate is an estimate.

FILE 35. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421841
	Power setting:	Military
	Fuel flow rate (lb/hr)	9243

FUEL DATA	Fuel type:	JP-5 (with ferrocene)
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	396.7
	Actual flow rate (cfm)	177470
	Corrected flow rate (cfm) (standard conditions, dry)	471163
	Carbon dioxide (volume percent, dry basis)	0.90

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.008	0.021
grains/std cu ft, dry	0.014	0.034
grains/std cu ft, dry, corrected to 1% CO ₂	0.015	0.038
grains/std cu ft, dry, corrected to 12% CO ₂	0.184	0.457
pounds/hour	55.63	138.36
pounds/million Btu	0.33	0.81
pounds/thousand pounds fuel	6.02	14.97

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 9 March 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 12
 Reference AESO Report No. 170-01-81, October 1981

Note: The fuel flow rate is an estimate.

FILE 36. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE**ENGINE DATA**

Engine type:	J79-GE-8D
Serial number:	421841
Power setting:	Military
Fuel flow rate (lb/hr)	9243

FUEL DATA

Fuel type:	JP-5 (with ferrocene)
Heat of combustion (Btu/lb)	18500

STACK GAS DATA

Average temperature (°F)	398.0
Actual flow rate (cfm)	778687
Corrected flow rate (cfm) (standard conditions, dry)	473831
Carbon dioxide (volume percent, dry basis)	1.02

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.023	0.027
grains/std cu ft, dry	0.037	0.045
grains/std cu ft, dry, corrected to 1% CO ₂	0.036	0.044
grains/std cu ft, dry, corrected to 12% CO ₂	0.437	0.526
pounds/hour	150.98	181.52
pounds/million Btu	0.88	1.06
pounds/thousand pounds fuel	16.33	19.64

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 10 March 1981
Test Cell 19, multiple point sampling at the stack exit plane
Test number 13
Reference AESO Report No. 110-01-81, October 1981

Note: The fuel flow rate is an estimate.

FILE 37. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA

Engine type: J79-GE-8D
 Serial number: 401123
 Power setting: Military
 Fuel flow rate (lb/hr) 9243

FUEL DATA

Fuel type: JP-5 (with ferrocene)
 Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 399.0
 Actual flow rate (cfm) 860374
 Corrected flow rate (cfm) 520747
 (standard conditions, dry)
 Carbon dioxide (volume percent, dry basis) 1.11

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.006
grains/std cu ft, dry	0.005	0.010
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.009
grains/std cu ft, dry, corrected to 12% CO ₂	0.055	0.109
pounds/hour	22.59	45.19
pounds/million Btu	0.13	0.26
pounds/thousand pounds fuel	2.44	4.89

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 31 March 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 24
 Reference AESO Report No. 110-01-81, October 1981

Note: The fuel flow rate is an estimate.

FILE 38. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE

ENGINE DATA

Engine type: J79-GE-8D
 Serial number: 401123
 Power setting: Military
 Fuel flow rate (lb/hr) 9243

FUEL DATA

Fuel type: JP-5 (with ferrocene)
 Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 402.2
 Actual flow rate (cfm) 866046
 Corrected flow rate (cfm) 521097
 (standard conditions, dry)
 Carbon dioxide (volume percent, dry basis) 1.03

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.003
grains/std cu ft, dry	0.004	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.003	0.005
grains/std cu ft, dry, corrected to 12% CO ₂	0.041	0.062
pounds/hour	15.84	23.67
pounds/million Btu	0.09	0.14
pounds/thousand pounds fuel	1.71	2.56

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 1 April 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 25
 Reference AESO Report No. 110-01-81, October 1981

Note: The fuel flow rate is an estimate.

FILE 39. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401607
	Power setting:	Military
	Fuel flow rate (lb/hr)	9243
FUEL DATA	Fuel type:	JP-5 (with ferrocene)
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	403.9
	Actual flow rate (cfm)	831787
	Corrected flow rate (cfm) (standard conditions, dry)	495157
	Carbon dioxide (volume percent, dry basis)	0.91
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.010	0.017
grains/std cu ft, dry	0.017	0.028
grains/std cu ft, dry, corrected to 1% CO ₂	0.019	0.031
grains/std cu ft, dry, corrected to 12% CO ₂	0.227	0.375
pounds/hour	72.93	120.70
pounds/million Btu	0.43	0.71
pounds/thousand pounds fuel	7.89	13.06
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 29 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 42 Reference AESO Report No. 110-01-81, October 1981 Note: The fuel flow rate is an estimate.		

FILE 40. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401607
	Power setting:	Military
	Fuel flow rate (lb/hr)	9243
FUEL DATA	Fuel type:	JP-5 (with ferrocene)
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	393.7
	Actual flow rate (cfm)	846789
	Corrected flow rate (cfm) (standard conditions, dry)	512284
	Carbon dioxide (volume percent, dry basis)	0.96
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.008	0.012
grains/std cu ft, dry	0.014	0.020
grains/std cu ft, dry, corrected to 1% CO ₂	0.014	0.021
grains/std cu ft, dry, corrected to 12% CO ₂	0.172	0.254
pounds/hour	60.32	89.37
pounds/million Btu	0.35	0.52
pounds/thousand pounds fuel	6.53	9.67
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 30 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 43 Reference AESO Report No. 110-01-81, October 1981 Note: The fuel flow rate is an estimate.		

FILE 41. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401607
	Power setting:	Military
	Fuel flow rate (lb/hr)	9243
FUEL DATA	Fuel type:	JP-5 (with ferrocene)
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	387.6
	Actual flow rate (cfm)	818599
	Corrected flow rate (cfm)	500463
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.98
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.006	0.012
grains/std cu ft, dry	0.009	0.019
grains/std cu ft, dry, corrected to 1% CO ₂	0.010	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.115	0.236
pounds/hour	40.20	82.54
pounds/million Btu	0.24	0.48
pounds/thousand pounds fuel	4.35	8.93
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 1 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 44 Reference AESO Report No. 110-01-81, October 1981 Note: The fuel flow rate is an estimate.		

FILE 42. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type: Serial number: Power setting: Fuel flow rate (lb/hr)	J79-GE-8D 421252 Military 9243
FUEL DATA	Fuel type: Heat of combustion (Btu/lb)	JP-5 (with ferrocene) 18500
STACK GAS DATA	Average temperature (°F) Actual flow rate (cfm) Corrected flow rate (cfm) (standard conditions, dry) Carbon dioxide (volume percent, dry basis)	398.9 866722 521468 1.12
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.006	0.009
grains/std cu ft, dry	0.010	0.015
grains/std cu ft, dry, corrected to 1% CO ₂	0.009	0.013
grains/std cu ft, dry, corrected to 12% CO ₂	0.104	0.158
pounds/hour	43.57	66.06
pounds/million Btu	0.25	0.39
pounds/thousand pounds fuel	4.71	7.15
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 22 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 54 Reference AESO Report No. 110-01-81, October 1981 Note: The fuel flow rate is an estimate.		

FILE 43. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421252
	Power setting:	Military
	Fuel flow rate (lb/hr)	9243
FUEL DATA	Fuel type:	JP-5 (with ferrocene)
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	395.2
	Actual flow rate (cfm)	853189
	Corrected flow rate (cfm)	515858
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.94
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.006	0.010
grains/std cu ft, dry	0.009	0.016
grains/std cu ft, dry, corrected to 1% CO ₂	0.010	0.017
grains/std cu ft, dry, corrected to 12% CO ₂	0.117	0.209
pounds/hour	40.40	72.23
pounds/million Btu	0.24	0.42
pounds/thousand pounds fuel	4.37	7.81
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 26 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 55 Reference AESO Report No. 110-01-81, October 1981 Note: The fuel flow rate is an estimate.		

FILE 44. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	421252
	Power setting:	Military
	Fuel flow rate (lb/hr)	9243
FUEL DATA	Fuel type:	JP-5 (with ferrocene)
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	374.5
	Actual flow rate (cfm)	805449
	Corrected flow rate (cfm) (standard conditions, dry)	488498
	Carbon dioxide (volume percent, dry basis)	1.12
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.012
grains/std cu ft, dry	0.012	0.020
grains/std cu ft, dry, corrected to 1% CO ₂	0.011	0.018
grains/std cu ft, dry, corrected to 12% CO ₂	0.132	0.213
pounds/hour	51.72	83.10
pounds/million Btu	0.30	0.49
pounds/thousand pounds fuel	5.60	8.99
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 27 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 56 Reference AESO Report No. 110-01-81, October 1981 Note: The fuel flow rate is an estimate.		

FILE 45. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type: Serial number: Power setting: Fuel flow rate (lb/hr)	J79-GE-8D 421252 Military 9243
FUEL DATA	Fuel type: Heat of combustion (Btu/lb)	JP-5 (with ferrocene) 18500
STACK GAS DATA	Average temperature (°F) Actual flow rate (cfm) Corrected flow rate (cfm) (standard conditions, dry) Carbon dioxide (volume percent, dry basis)	390.2 841726 508120 1.12
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.006	0.015
grains/std cu ft, dry	0.009	0.026
grains/std cu ft, dry, corrected to 1% CO ₂	0.009	0.023
grains/std cu ft, dry, corrected to 12% CO ₂	0.099	0.274
pounds/hour	40.24	111.23
pounds/million Btu	0.24	0.65
pounds/thousand pounds fuel	4.35	12.03
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 3 June 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 60 Reference AESO Report No. 110-01-81, October 1981 Note: The fuel flow rate is an estimate.		

FILE 46. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401117
	Power setting:	Military
	Fuel flow rate (lb/hr)	9243
FUEL DATA	Fuel type:	JP-5 (with ferrocene)
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	406.9
	Actual flow rate (cfm)	805706
	Corrected flow rate (cfm) (standard conditions, dry)	473813
	Carbon dioxide (volume percent, dry basis)	0.99
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.007
grains/std cu ft, dry	0.009	0.012
grains/std cu ft, dry, corrected to 1% CO ₂	0.009	0.012
grains/std cu ft, dry, corrected to 12% CO ₂	0.109	0.146
pounds/hour	36.49	48.72
pounds/million Btu	0.21	0.28
pounds/thousand pounds fuel	3.95	5.27
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 3 November 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 21 Reference AESO Report No. 110-01-82, March 1982 Note: The fuel flow rate is an estimate.		

FILE 47. PARTICULATE MASS EMISSIONS FROM A J79-GE-8 ENGINE		
ENGINE DATA	Engine type:	J79-GE-8D
	Serial number:	401117
	Power setting:	Military
	Fuel flow rate (lb/hr)	9243
FUEL DATA	Fuel type:	JP-5 (with ferrocene)
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	425.9
	Actual flow rate (cfm)	842945
	Corrected flow rate (cfm) (standard conditions, dry)	484371
	Carbon dioxide (volume percent, dry basis)	1.12
PARTICULATE EMISSIONS DATA	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.006
grains/std cu ft, dry	0.008	0.011
grains/std cu ft, dry, corrected to 1% CO ₂	0.007	0.010
grains/std cu ft, dry, corrected to 12% CO ₂	0.081	0.117
pounds/hour	31.34	45.47
pounds/million Btu	0.18	0.27
pounds/thousand pounds fuel	3.39	4.92
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 4 November 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 22 Reference AESO Report No. 110-01-82, March 1982 Note: The fuel flow rate is an estimate.		

FILE 48. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE

ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433780
	Power setting:	Idle
	Fuel flow rate (lb/hr):	1253

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb):	18500

STACK GAS DATA	Average temperature (°F):	229.5
	Actual flow rate (cfm):	193514
	Corrected flow rate (cfm) (standard conditions, dry):	144938
	Carbon dioxide (volume percent, dry basis):	0.56

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.006	0.012
grains/std cu ft, dry	0.008	0.016
grains/std cu ft, dry, corrected to 1% CO ₂	0.014	0.029
grains/std cu ft, dry, corrected to 12% CO ₂	0.171	0.344
pounds/hour	9.94	19.94
pounds/million Btu	0.43	0.86
pounds/thousand pounds fuel	7.93	15.91

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 14 May 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 50
 Reference AESO Report No. 110-01-81, October 1981

FILE 49. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE

ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433780
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1252

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	232.4
	Actual flow rate (cfm)	172296
	Corrected flow rate (cfm)	129113
	(standard conditions, dry)	
	Carbon dioxide (volume percent dry basis)	0.63

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.013
grains/std cu ft, dry	0.007	0.017
grains/std cu ft, dry, corrected to 1% CO ₂	0.012	0.027
grains/std cu ft, dry, corrected to 12% CO ₂	0.139	0.320
pounds/hour	8.05	18.60
pounds/million Btu	0.35	0.80
pounds/thousand pounds fuel	6.43	14.86

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 13 May 1981
Test Cell 19, multiple point sampling at the stack exit plane
Test number 49
Reference AESO Report No. 110-01-81, October 1981

FILE 50. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	448297
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1279
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	221.2
	Actual flow rate (cfm)	189246
	Corrected flow rate (cfm) (standard conditions, dry)	142580
	Carbon dioxide (volume percent, dry basis)	0.48
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.012
grains/std cu ft, dry	0.009	0.016
grains/std cu ft, dry, corrected to 1% CO ₂	0.019	0.033
grains/std cu ft, dry, corrected to 12% CO ₂	0.224	0.390
pounds/hour	10.94	19.08
pounds/million Btu	0.46	0.81
pounds/thousand pounds fuel	8.55	14.92
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 16 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 34 Reference AESO Report No. 110-01-81, October 1981		

FILE 51. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE**ENGINE DATA**

Engine type:	J79-GE-10B
Serial number:	448297
Power setting:	Idle
Fuel flow rate (lb/hr)	1276

FUEL DATA

Fuel type:	JP-5
Heat of combustion (Btu/lb)	18500

STACK GAS DATA

Average temperature (°F)	222.2
Actual flow rate (cfm)	202933
Corrected flow rate (cfm) (standard conditions, dry)	154759
Carbon dioxide (volume percent, dry basis)	0.59

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.006	0.012
grains/std cu ft, dry	0.008	0.016
grains/std cu ft, dry, corrected to 1% CO ₂	0.013	0.027
grains/std cu ft, dry, corrected to 12% CO ₂	0.152	0.321
pounds/hour	9.94	20.94
pounds/million Btu	0.42	0.89
pounds/thousand pounds fuel	7.79	16.41

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 15 April 1981
Test Cell 19, multiple point sampling at the stack exit plane
Test number 33
Reference AESO Report No. 110-01-81, October 1981

FILE 52. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE

ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433959
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1209

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	227.9
	Actual flow rate (cfm)	211066
	Corrected flow rate (cfm)	158995
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.51

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.008	0.013
grains/std cu ft, dry	0.011	0.017
grains/std cu ft, dry, corrected to 1% CO ₂	0.021	0.033
grains/std cu ft, dry, corrected to 12% CO ₂	0.254	0.396
pounds/hour	14.72	22.92
pounds/million Btu	0.66	1.02
pounds/thousand pounds fuel	12.18	18.96

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 21 April 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 37
 Reference AESO Report No. 110-01-81, October 1981

FILE 53. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433959
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1223
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	204.2
	Actual flow rate (cfm)	215454
	Corrected flow rate (cfm) (standard conditions, dry)	168779
	Carbon dioxide (volume percent, dry basis)	0.55
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.009
grains/std cu ft, dry	0.004	0.011
grains/std cu ft, dry, corrected to 1% CO ₂	0.007	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.080	0.245
pounds/hour	5.30	16.26
pounds/million Btu	0.23	0.72
pounds/thousand pounds fuel	4.33	13.30
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 19 March 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 19 Reference AESO Report No. 110-01-81, October 1981		

FILE 54. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433780
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2899
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	218.2
	Actual flow rate (cfm)	417743
	Corrected flow rate (cfm) (standard conditions, dry)	316163
	Carbon dioxide (volume percent, dry basis)	0.52
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.007
grains/std cu ft, dry	0.003	0.009
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.018
grains/std cu ft, dry, corrected to 12% CO ₂	0.062	0.211
pounds/hour	7.27	24.83
pounds/million Btu	0.14	0.46
pounds/thousand pounds fuel	2.51	8.57
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 19 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 52 Reference AESO Report No. 110-01-81, October 1981		

FILE 55. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	448297
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2962
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	232.2
	Actual flow rate (cfm)	399100
	Corrected flow rate (cfm)	298758
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.52
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.004
grains/std cu ft, dry	0.003	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.006	0.010
grains/std cu ft, dry, corrected to 12% CO ₂	0.077	0.122
pounds/hour	8.50	13.53
pounds/million Btu	0.16	0.25
pounds/thousand pounds fuel	2.87	4.57
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 10 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 30 Reference AESO Report No. 110-01-81, October 1981		

FILE 56. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	448297
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2984
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	229.3
	Actual flow rate (cfm)	422476
	Corrected flow rate (cfm) (standard conditions, dry)	317893
	Carbon dioxide (volume percent, dry basis)	0.51
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.004
grains/std cu ft, dry	0.002	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.004	0.010
grains/std cu ft, dry, corrected to 12% CO ₂	0.051	0.115
pounds/hour	5.95	13.27
pounds/million Btu	0.11	0.24
pounds/thousand pounds fuel	1.99	4.45
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 9 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 29 Reference AESO Report No. 110-01-81, October 1981		

FILE 57. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433959
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	3031
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	215.4
	Actual flow rate (cfm)	408848
	Corrected flow rate (cfm) (standard conditions, dry)	314390
	Carbon dioxide (volume percent, dry basis)	0.52
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.011	0.016
grains/std cu ft, dry	0.014	0.020
grains/std cu ft, dry, corrected to 1% CO ₂	0.028	0.039
grains/std cu ft, dry, corrected to 12% CO ₂	0.331	0.472
pounds/hour	38.65	55.07
pounds/million Btu	0.69	0.98
pounds/thousand pounds fuel	12.75	18.17
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 26 March 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 21 Reference AESO Report No. 110-01-81, October 1981		

FILE 58. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433959
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2949
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	228.9
	Actual flow rate (cfm)	444568
	Corrected flow rate (cfm) (standard conditions, dry)	335085
	Carbon dioxide (volume percent, dry basis)	0.54
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.005
grains/std cu ft, dry	0.004	0.007
grains/std cu ft, dry, corrected to 1% CO ₂	0.008	0.012
grains/std cu ft, dry, corrected to 12% CO ₂	0.091	0.149
pounds/hour	11.72	19.20
pounds/million Btu	0.21	0.35
pounds/thousand pounds fuel	3.97	6.51
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 27 March 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 22 Reference AESO Report No. 110-01-81, October 1981		

FILE 59. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433959
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2900
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	226.2
	Actual flow rate (cfm)	452739
	Corrected flow rate (cfm) (standard conditions, dry)	340702
	Carbon dioxide (volume percent, dry basis)	0.53
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.008
grains/std cu ft, dry	0.007	0.010
grains/std cu ft, dry, corrected to 1% CO ₂	0.012	0.019
grains/std cu ft, dry, corrected to 12% CO ₂	0.148	0.227
pounds/hour	19.12	29.26
pounds/million Btu	0.36	0.55
pounds/thousand pounds fuel	6.59	10.09
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 20 March 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 20 Reference AESO Report No. 110-01-81, October 1981		

FILE 60. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433959
	Power setting:	30% Thrust
	Fuel flow rate (lb/hr)	2950
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	230.0
	Actual flow rate (cfm)	474189
	Corrected flow rate (cfm) (standard conditions, dry)	355272
	Carbon dioxide (volume percent, dry basis)	0.48
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.010
grains/std cu ft, dry	0.010	0.014
grains/std cu ft, dry, corrected to 1% CO ₂	0.021	0.029
grains/std cu ft, dry, corrected to 12% CO ₂	0.247	0.341
pounds/hour	30.12	41.68
pounds/million Btu	0.55	0.76
pounds/thousand pounds fuel	10.21	14.13
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 18 March 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 18 Reference AESO Report No. 110-01-81, October 1981		

FILE 61. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	433780
	Power setting:	Military
	Fuel flow rate (lb/hr)	9608
FUEL DATA	Fuel type	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	409.6
	Actual flow rate (cfm)	835981
	Corrected flow rate (cfm) (standard conditions, dry)	496205
	Carbon dioxide (volume percent, dry basis)	1.11
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.005
grains/std cu ft, dry	0.005	0.009
grains/std cu ft, dry, corrected to 1% CO ₂	0.004	0.008
grains/std cu ft, dry, corrected to 12% CO ₂	0.053	0.098
pounds/hour	20.77	38.69
pounds/million Btu	0.12	0.22
pounds/thousand pounds fuel	2.16	4.03
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 18 May 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 51 Reference AESO Report No. 110-01-81, October 1981		

FILE 62. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type:	J79-GE-10B
	Serial number:	448797
	Power setting:	Military
	Fuel flow rate (lb/hr)	10026
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	412.8
	Actual flow rate (cfm)	859218
	Corrected flow rate (cfm) (standard conditions, dry)	516233
	Carbon dioxide (volume percent, dry basis)	1.08
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.006
grains/std cu ft, dry	0.006	0.010
grains/std cu ft, dry, corrected to 1% CO ₂	0.006	0.010
grains/std cu ft, dry, corrected to 12% CO ₂	0.066	0.115
pounds/hour	26.42	45.92
pounds/million Btu	0.14	0.25
pounds/thousand pounds fuel	2.64	4.58
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 14 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 32 Reference AESO Report No. 110-01-81, October 1981		

FILE 63. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE		
ENGINE DATA	Engine type	J79-GE-10B
	Serial number	448297
	Power setting	Military
	Fuel flow rate (lb/hr)	9987
FUEL DATA	Fuel type	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	414.1
	Actual flow rate (cfm)	867449
	Corrected flow rate (cfm) (standard conditions, dry)	524110
	Carbon dioxide (volume percent, dry basis)	1.08
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.004
grains/std cu ft, dry	0.005	0.007
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.006
grains/std cu ft, dry, corrected to 12% CO ₂	0.056	0.078
pounds/hour	22.63	31.36
pounds/million Btu	0.12	0.17
pounds/thousand pounds fuel	2.27	3.14
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 13 April 1981 Test Cell 19, multiple point sampling at the stack exit plane Test number 31 Reference AESO Report No. 110-01-81, October 1981		

FILE 64. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE

ENGINE DATA	Engine type	J79-GE-10B
	Serial number	433959
	Power setting	Military
	Fuel flow rate (lb/hr)	9917

FUEL DATA	Fuel type	JP 5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	614.9
	Actual flow rate (cfm)	879478
	Corrected flow rate (cfm) (standard conditions, dry)	519904
	Carbon dioxide (volume percent, dry basis)	0.83

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.007
grains/std cu ft, dry	0.007	0.012
grains/std cu ft, dry, corrected to 12% CO ₂	0.008	0.014
grains/std cu ft, dry, corrected to 12% CO ₂	0.099	0.172
pounds/hour	30.60	52.98
pounds/million Btu	0.17	0.29
pounds/thousand pounds fuel	3.09	5.34

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 17 March 1981
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number 17
 Reference AESO Report No. 110-01-81, October 1981

FILE 65. PARTICULATE MASS EMISSIONS FROM A J79-GE-10B ENGINE**ENGINE DATA**

Engine type: J79-GE-10B
Serial number: 433959
Power setting: Military
Fuel flow rate (lb/hr) 9892

FUEL DATA

Fuel type: JP-5
Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 416.8
Actual flow rate (cfm) 854.85
Corrected flow rate (cfm) 504.91
(standard conditions, dry)
Carbon dioxide (volume percent, dry basis) 1.19

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.007
grains/std cu ft, dry	0.007	0.012
grains/std cu ft, dry, corrected to 1% CO ₂	0.006	0.010
grains/std cu ft, dry, corrected to 12% CO ₂	0.076	0.117
pounds/hour	32.39	50.09
pounds/million Btu	0.18	0.27
pounds/thousand pounds fuel	3.27	5.06

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 16 March 1981
Test Cell 19, multiple point sampling at the stack exit plane
Test number 16
Reference AESO Report No. 110-01-81, October 1981

FILE 66. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE

ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	Idle
	Fuel flow rate (lb/hr):	814

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb):	18500

STACK GAS DATA	Average temperature (°F):	165.3
	Actual flow rate (cfm):	168754
	Corrected flow rate (cfm) (standard conditions, dry):	137602
	Carbon dioxide (volume percent, dry basis):	0.34

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.011
grains/std cu ft, dry	0.005	0.013
grains/std cu ft, dry, corrected to 1% CO ₂	0.014	0.039
grains/std cu ft, dry, corrected to 12% CO ₂	0.163	0.466
pounds/hour	5.45	15.58
pounds/million Btu	0.36	1.03
pounds/thousand pounds fuel	6.70	19.14

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 21 October 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 15
 Reference AESO Report No. 110-01-82, March 1982

FILE 67. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE**ENGINE DATA**

Engine type: J52-P-6B
Serial number: 649859
Power setting: Idle
Fuel flow rate (lb/hr) 848

FUEL DATA

Fuel type: JP-5
Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 169.3
Actual flow rate (cfm) 179809
Corrected flow rate (cfm)
(standard conditions, dry) 146142
Carbon dioxide (volume
percent, dry basis) 0.34

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.009
grains/std cu ft, dry	0.006	0.012
grains/std cu ft, dry, corrected to 1% CO ₂	0.019	0.034
grains/std cu ft, dry, corrected to 12% CO ₂	0.226	0.410
pounds/hour	8.02	14.56
pounds/million Btu	0.51	0.93
pounds/thousand pounds fuel	9.46	17.17

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE

Measurement at NAVAL AIR STATION, MIRAMAR

Date of measurement 22 October 1981

Test Cell A, multiple point sampling at the stack exit plane

Test number 16

Reference AESO Report No. 110-01-82, March 1982

FILE 68. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE

ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	Idle
	Fuel flow rate (lb/hr)	844

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	166.8
	Actual flow rate (cfm)	184289
	Corrected flow rate (cfm) (standard conditions, dry)	151358
	Carbon dioxide (volume percent, dry basis)	0.33

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.009	0.013
grains/std cu ft, dry	0.011	0.016
grains/std cu ft, dry, corrected to 1% CO ₂	0.034	0.049
grains/std cu ft, dry, corrected to 12% CO ₂	0.410	0.583
pounds/hour	14.62	20.80
pounds/million Btu	0.94	1.33
pounds/thousand pounds fuel	17.32	24.64

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 2 December 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 26
 Reference AESO Report No. 110-01-82, March 1982

FILE 69. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE		
ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	Idle
	Fuel flow rate (lb/hr)	862
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	166.2
	Actual flow rate (cfm)	184008
	Corrected flow rate (cfm) (standard conditions, dry)	150755
	Carbon dioxide (volume percent, dry basis)	0.33
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.012	0.014
grains/std cu ft, dry	0.014	0.017
grains/std cu ft, dry, corrected to 1% CO ₂	0.044	0.053
grains/std cu ft, dry, corrected to 12% CO ₂	0.523	0.635
pounds/hour	18.58	22.56
pounds/million Btu	1.17	1.41
pounds/thousand pounds fuel	21.55	26.17
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 3 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 27 Reference AESO Report No. 110-01-82, March 1982		

FILE 70. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE		
ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	Idle
	Fuel flow rate (lb/hr)	878
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	170.6
	Actual flow rate (cfm)	143659
	Corrected flow rate (cfm)	114731
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.34
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.007	0.009
grains/std cu ft, dry	0.009	0.011
grains/std cu ft, dry, corrected to 1% CO ₂	0.026	0.033
grains/std cu ft, dry, corrected to 12% CO ₂	0.314	0.396
pounds/hour	8.74	11.03
pounds/million Btu	0.54	0.68
pounds/thousand pounds fuel	9.95	12.56
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 10 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 30 Reference AESO Report No. 110-01-82, March 1982		

FILE 71. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE		
ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	85% rpm
	Fuel flow rate (lb/hr)	2602
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	222.3
	Actual flow rate (cfm)	413047
	Corrected flow rate (cfm)	310545
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.49
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.011
grains/std cu ft, dry	0.007	0.014
grains/std cu ft, dry, corrected to 1% CO ₂	0.015	0.030
grains/std cu ft, dry, corrected to 12% CO ₂	0.180	0.355
pounds/hour	19.37	38.21
pounds/million Btu	0.40	0.79
pounds/thousand pounds fuel	7.44	14.68
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 19 October 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 13 Reference AESO Report No. 110-01-82, March 1982		

FILE 72. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE

ENGINE DATA

Engine type: J52-P-6B
 Serial number: 649859
 Power setting: 85% rpm
 Fuel flow rate (lb/hr) 2624

FUEL DATA

Fuel type: JP-5
 Heat of combustion (Btu/lb) 18500

STACK GAS DATA

Average temperature (°F) 210.7
 Actual flow rate (cfm) 445340
 Corrected flow rate (cfm) 342428
 (standard conditions, dry)
 Carbon dioxide (volume percent, dry basis) 0.46

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.006	0.009
grains/std cu ft, dry	0.008	0.012
grains/std cu ft, dry, corrected to 1% CO ₂	0.017	0.026
grains/std cu ft, dry, corrected to 12% CO ₂	0.204	0.316
pounds/hour	22.88	35.40
pounds/million Btu	0.47	0.73
pounds/thousand pounds fuel	8.72	13.49

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 20 October 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 14
 Reference AESO Report No. 110-01-82, March 1982

FILE 73. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE

ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	85% rpm
	Fuel flow rate (lb/hr)	2685

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	210.4
	Actual flow rate (cfm)	410991
	Corrected flow rate (cfm)	315283
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.46

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.007
grains/std cu ft, dry	0.007	0.009
grains/std cu ft, dry, corrected to 1% CO ₂	0.015	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.176	0.246
pounds/hour	18.03	25.20
pounds/million Btu	0.36	0.51
pounds/thousand pounds fuel	6.72	9.39

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 8 December 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 28
 Reference AESO Report No. 110-01-82, March 1982

FILE 74. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE

ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	85% rpm
	Fuel flow rate (lb/hr)	2729

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	211.1
	Actual flow rate (cfm)	395141
	Corrected flow rate (cfm) (standard conditions, dry)	303593
	Carbon dioxide (volume percent, dry basis)	0.44

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.010	0.012
grains/std cu ft, dry	0.013	0.016
grains/std cu ft, dry, corrected to 1% CO ₂	0.029	0.035
grains/std cu ft, dry, corrected to 12% CO ₂	0.346	0.423
pounds/hour	33.43	40.80
pounds/million Btu	0.66	0.81
pounds/thousand pounds fuel	12.25	14.95

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 9 December 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 29
 Reference AESO Report No. 110-01-82, March 1982

FILE 75. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE

ENGINE DATA	Engine type:	J52-P-6B
	Serial number	649859
	Power setting	Military
	Fuel flow rate (lb/hr)	6820

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	333.5
	Actual flow rate (cfm)	680581
	Corrected flow rate (cfm) (standard conditions, dry)	437001
	Carbon dioxide (volume percent, dry basis)	0.11

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.008
grains/std cu ft, dry	0.008	0.012
grains/std cu ft, dry, corrected to 1% CO ₂	0.010	0.015
grains/std cu ft, dry, corrected to 12% CO ₂	0.124	0.185
pounds/hour	29.73	44.55
pounds/million Btu	0.24	0.35
pounds/thousand pounds fuel	4.36	6.53

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 6 October 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 7
 Reference AESO Report No. 110-01-82, March 1982

FILE 76. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE

ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	Military
	Fuel flow rate (lb/hr)	6978

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	326.5
	Actual flow rate (cfm)	723849
	Corrected flow rate (cfm) (standard conditions, dry)	465187
	Carbon dioxide (volume percent, dry basis)	0.77

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.007
grains/std cu ft, dry	0.008	0.011
grains/std cu ft, dry, corrected to 1% CO ₂	0.010	0.015
grains/std cu ft, dry, corrected to 12% CO ₂	0.119	0.175
pounds/hour	30.60	44.87
pounds/million Btu	0.24	0.35
pounds/thousand pounds fuel	4.39	6.43

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR STATION, MIRAMAR
Date of measurement 7 October 1981
Test Cell A, multiple point sampling at the stack exit plane
Test number 8
Reference AESO Report No. 110-01-82, March 1982

FILE 77. PARTICULATE MASS EMISSIONS FROM A J52-P-6B ENGINE		
ENGINE DATA	Engine type:	J52-P-6B
	Serial number:	649859
	Power setting:	Military
	Fuel flow rate (lb/hr)	6498
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	316.2
	Actual flow rate (cfm)	724744
	Corrected flow rate (cfm)	472049
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.76
PARTICULATE EMISSIONS DATA *		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.011
grains/std cu ft, dry	0.007	0.017
grains/std cu ft, dry, corrected to 1% CO ₂	0.009	0.022
grains/std cu ft, dry, corrected to 12% CO ₂	0.105	0.261
pounds/hour	27.03	66.96
pounds/million Btu	0.22	0.56
pounds/thousand pounds fuel	4.16	10.30
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 8 October 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 9 Reference AESO Report No. 110-01-82, March 1982 * Due to a leak in the south side sampling train, all particulate emissions data are based on the sample taken from the north side train. (see page 7 of the reference)		

FILE 78. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE

ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1081

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	166.5
	Actual flow rate (cfm)	222211
	Corrected flow rate (cfm)	182378
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.33

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.008
grains/std cu ft, dry	0.003	0.010
grains/std cu ft, dry, corrected to 1% CO ₂	0.010	0.029
grains/std cu ft, dry, corrected to 12% CO ₂	0.122	0.346
pounds/hour	5.25	14.88
pounds/million Btu	0.26	0.74
pounds/thousand pounds fuel	4.86	13.77

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR STATION, MIRAMAR
Date of measurement 26 October 1981
Test Cell A, multiple point sampling at the stack exit plane
Test number 17
Reference AESO Report No. 110-01-82, March 1982

FILE 79. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1036
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	163.9
	Actual flow rate (cfm)	198201
	Corrected flow rate (cfm)	162637
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.33
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.007
grains/std cu ft, dry	0.004	0.008
grains/std cu ft, dry, corrected to 1% CO ₂	0.013	0.024
grains/std cu ft, dry, corrected to 12% CO ₂	0.154	0.289
pounds/hour	5.90	11.07
pounds/million Btu	0.31	0.58
pounds/thousand pounds fuel	5.69	10.69
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 27 October 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 18 Reference AESO Report No. 110-01-82, March 1982		

FILE 80. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1020
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	163.0
	Actual flow rate (cfm)	175501
	Corrected flow rate (cfm)	144797
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.35
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.006
grains/std cu ft, dry	0.004	0.007
grains/std cu ft, dry, corrected to 1% CO ₂	0.012	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.145	0.242
pounds/hour	5.25	8.77
pounds/million Btu	0.28	0.46
pounds/thousand pounds fuel	5.15	8.60
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 16 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 33 Reference AESO Report No. 110-01-82, March 1982		

FILE 81. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1023
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	156.2
	Actual flow rate (cfm)	189076
	Corrected flow rate (cfm)	157638
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.36
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.005
grains/std cu ft, dry	0.004	0.006
grains/std cu ft, dry, corrected to 1% CO ₂	0.012	0.016
grains/std cu ft, dry, corrected to 12% CO ₂	0.143	0.196
pounds/hour	5.80	7.95
pounds/million Btu	0.31	0.42
pounds/thousand pounds fuel	5.67	7.77
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 17 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 34 Reference AESO Report No. 110-01-82, March 1982		

FILE 82. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1040
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	150.6
	Actual flow rate (cfm)	176113
	Corrected flow rate (cfm) (standard conditions, dry)	149102
	Carbon dioxide (volume percent, dry basis)	0.34
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.006
grains/std cu ft, dry	0.003	0.007
grains/std cu ft, dry, corrected to 1% CO ₂	0.009	0.020
grains/std cu ft, dry, corrected to 12% CO ₂	0.113	0.237
pounds/hour	4.11	8.59
pounds/million Btu	0.21	0.45
pounds/thousand pounds fuel	3.95	8.26
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 23 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 37 Reference AESO Report No. 110-01-82, March 1982		

FILE 83. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE

ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	695016
	Power setting:	Idle
	Fuel flow rate (lb/hr)	1043

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	155.0
	Actual flow rate (cfm)	176349
	Corrected flow rate (cfm)	147244
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.38

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.003
grains/std cu ft, dry	0.002	0.004
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.010
grains/std cu ft, dry, corrected to 12% CO ₂	0.059	0.122
pounds/hour	2.37	4.86
pounds/million Btu	0.12	0.25
pounds/thousand pounds fuel	2.27	4.66

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR STATION, MIRAMAR
Date of measurement 6 January 1982
Test Cell A, multiple point sampling at the stack exit plane
Test number 41
Reference AESO Report No. 110-01-82, March 1982

FILE 84. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE

ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	85% rpm
	Fuel flow rate (lb/hr)	2798

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	207.0
	Actual flow rate (cfm)	438685
	Corrected flow rate (cfm)	334961
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.45

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.009
grains/std cu ft, dry	0.003	0.012
grains/std cu ft, dry, corrected to 1% CO ₂	0.007	0.027
grains/std cu ft, dry, corrected to 12% CO ₂	0.089	0.325
pounds/hour	9.63	34.98
pounds/million Btu	0.19	0.68
pounds/thousand pounds fuel	3.44	12.50

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 28 October 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 19
 Reference AESO Report No. 110-01-82, March 1982

FILE 85. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	85% rpm
	Fuel flow rate (lb/hr)	2773
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	199.2
	Actual flow rate (cfm)	413128
	Corrected flow rate (cfm) (standard conditions, dry)	321092
	Carbon dioxide (volume percent, dry basis)	0.45
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.009
grains/std cu ft, dry	0.006	0.011
grains/std cu ft, dry, corrected to 1% CO ₂	0.014	0.025
grains/std cu ft, dry, corrected to 12% CO ₂	0.170	0.294
pounds/hour	17.53	30.34
pounds/million Btu	0.34	0.59
pounds/thousand pounds fuel	6.32	10.94
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 14 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 31 Reference AESO Report No. 110-01-82, March 1982		

FILE 86. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	85% rpm
	Fuel flow rate (lb/hr)	2716
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	201.6
	Actual flow rate (cfm)	426813
	Corrected flow rate (cfm) (standard conditions, dry)	331760
	Carbon dioxide (volume percent, dry basis)	0.46
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.004
grains/std cu ft, dry	0.004	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.009	0.012
grains/std cu ft, dry, corrected to 12% CO ₂	0.105	0.141
pounds/hour	11.43	15.36
pounds/million Btu	0.23	0.31
pounds/thousand pounds fuel	4.21	5.66
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 15 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 32 Reference AESO Report No. 110-01-82, March 1982		

FILE 87. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	85% rpm
	Fuel flow rate (lb/hr)	2794
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	200.4
	Actual flow rate (cfm)	416262
	Corrected flow rate (cfm) (standard conditions, dry)	323753
	Carbon dioxide (volume percent, dry basis)	0.47
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.005
grains/std cu ft, dry	0.005	0.006
grains/std cu ft, dry, corrected to 1% CO ₂	0.011	0.013
grains/std cu ft, dry, corrected to 12% CO ₂	0.126	0.159
pounds/hour	13.57	17.06
pounds/million Btu	0.26	0.33
pounds/thousand pounds fuel	4.86	6.11
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 21 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 35 Reference AESO Report No. 110-01-82, March 1982		

FILE 88. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type	TF30-P-414
	Serial number	679457
	Power setting	85% rpm
	Fuel flow rate (lb/hr)	2901
FUEL DATA	Fuel type	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	193.2
	Actual flow rate (cfm)	435104
	Corrected flow rate (cfm)	343696
	(standard conditions, 528°)	
	Carbon dioxide (volume percent, dry basis)	0.46
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.005
grains/std cu ft, dry	0.004	0.006
grains/std cu ft, dry, corrected to 1% CO ₂	0.009	0.014
grains/std cu ft, dry, corrected to 12% CO ₂	0.107	0.167
pounds/hour	12.00	18.64
pounds/million Btu	0.22	0.35
pounds/thousand pounds fuel	4.14	6.43
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 22 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 36 Reference AESO Report No. 110-01 82, March 1982		

FILE 89. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE

ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	695016
	Power setting:	85% rpm
	Fuel flow rate (lb/hr)	3328

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	198.3
	Actual flow rate (cfm)	487763
	Corrected flow rate (cfm)	385594
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.46

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.005
grains/std cu ft, dry	0.006	0.006
grains/std cu ft, dry, corrected to 1% CO ₂	0.012	0.014
grains/std cu ft, dry, corrected to 12% CO ₂	0.146	0.163
pounds/hour	18.50	20.71
pounds/million Btu	0.30	0.34
pounds/thousand pounds fuel	5.56	6.22

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR STATION, MIRAMAR
Date of measurement 4 January 1982
Test Cell A, multiple point sampling at the stack exit plane
Test number 40
Reference AESO Report No. 110-01-82, March 1982

FILE 90. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE

ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Military
	Fuel flow rate (lb/hr)	7905

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	326.9
	Actual flow rate (cfm)	827691
	Corrected flow rate (cfm) (standard conditions, dry)	536485
	Carbon dioxide (volume percent, dry basis)	0.72

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.004
grains/std cu ft, dry	0.003	0.006
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.008
grains/std cu ft, dry, corrected to 12% CO ₂	0.054	0.094
ds/hour	14.94	25.88
ds/million Btu	0.10	0.18
pounds/thousand pounds fuel	1.89	3.27

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 13 October 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 10
 Reference AESO Report No. 110-01-82, March 1982

FILE 91. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE

ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Military
	Fuel flow rate (lb/hr)	8001

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	329.2
	Actual flow rate (cfm)	789292
	Corrected flow rate (cfm) (standard conditions, dry)	511156
	Carbon dioxide (volume percent, dry basis)	0.77

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.003
grains/std cu ft, dry	0.002	0.004
grains/std cu ft, dry, corrected to 1% CO ₂	0.003	0.005
grains/std cu ft, dry, corrected to 12% CO ₂	0.036	0.063
pounds/hour	10.21	17.71
pounds/million Btu	0.07	0.12
pounds/thousand pounds fuel	1.28	2.21

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR STATION, MIRAMAR
Date of measurement 14 October 1981
Test Cell A, multiple point sampling at the stack exit plane
Test number 11
Reference AESO Report No. 110-01-82, March 1982

FILE 92. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE		
ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Military
	Fuel flow rate (lb/hr)	8017
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	331.2
	Actual flow rate (cfm)	826616
	Corrected flow rate (cfm)	534906
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.77
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.004
grains/std cu ft, dry	0.004	0.007
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.009
grains/std cu ft, dry, corrected to 12% CO ₂	0.056	0.104
pounds/hour	16.55	30.68
pounds/million Btu	0.11	0.21
pounds/thousand pounds fuel	2.06	3.83
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, MIRAMAR Date of measurement 15 December 1981 Test Cell A, multiple point sampling at the stack exit plane Test number 12 Reference AESO Report No. 110-01-82, March 1982		

FILE 93. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE

ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	679457
	Power setting:	Military
	Fuel flow rate (lb/hr)	8073

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	314.8
	Actual flow rate (cfm)	753517
	Corrected flow rate (cfm)	495917
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.79

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.004
grains/std cu ft, dry	0.004	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.007
grains/std cu ft, dry, corrected to 12% CO ₂	0.054	0.083
pounds/hour	15.20	23.19
pounds/million Btu	0.10	0.16
pounds/thousand pounds fuel	1.88	2.87

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR STATION, MIRAMAR
 Date of measurement 28 December 1981
 Test Cell A, multiple point sampling at the stack exit plane
 Test number 38
 Reference AESO Report No. 110-01-82, March 1982

FILE 94. PARTICULATE MASS EMISSIONS FROM A TF30-P-414 ENGINE

ENGINE DATA	Engine type:	TF30-P-414
	Serial number:	695016
	Power setting:	Military
	Fuel flow rate (lb/hr)	8050

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	321.5
	Actual flow rate (cfm)	778028
	Corrected flow rate (cfm)	507553
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.77

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.003
grains/std cu ft, dry	0.004	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.007
grains/std cu ft, dry, corrected to 12% CO ₂	0.061	0.078
pounds/hour	17.07	21.83
pounds/million Btu	0.11	0.15
pounds/thousand pounds fuel	2.12	2.71

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR STATION, MIRAMAR
Date of measurement 29 December 1981
Test Cell A, multiple point sampling at the stack exit plane
Test number 39
Reference AESO Report No. 110-01-82, March 1982

FILE 95. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE		
ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	Idle
	Fuel flow rate (lb/hr)	835
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	168.9
	Actual flow rate (cfm)	203467
	Corrected flow rate (cfm)	170114
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.55
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.009
grains/std cu ft, dry	0.006	0.010
grains/std cu ft, dry, corrected to 1% CO ₂	0.010	0.019
grains/std cu ft, dry, corrected to 12% CO ₂	0.121	0.226
pounds/hour	8.03	14.95
pounds/million Btu	0.52	0.97
pounds/thousand pounds fuel	9.62	17.90
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 12 February 1982 Test Cell 19, multiple point sampling at the stack exit plane Test number FT IDL 1 Reference AESO Report No. 110-02-82, April 1982		

FILE 96. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE		
ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	Idle
	Fuel flow rate (lb/hr)	835
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	162.7
	Actual flow rate (cfm)	191959
	Corrected flow rate (cfm) (standard conditions, dry)	161596
	Carbon dioxide (volume percent, dry basis)	0.50
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.006
grains/std cu ft, dry	0.004	0.007
grains/std cu ft, dry, corrected to 1% CO ₂	0.008	0.015
grains/std cu ft, dry, corrected to 12% CO ₂	0.097	0.179
pounds/hour	5.58	10.33
pounds/million Btu	0.36	0.67
pounds/thousand pounds fuel	6.68	12.37
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 13 February 1982 Test Cell 19, multiple point sampling at the stack exit plane Test number FT IDL 2 Reference AESO Report No. 110-02-82, April 1982		

FILE 97. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE

ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	Idle
	Fuel flow rate (lb/hr)	835

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	167.4
	Actual flow rate (cfm)	207566
	Corrected flow rate (cfm)	172989
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.52

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.007
grains/std cu ft, dry	0.005	0.008
grains/std cu ft, dry, corrected to 1% CO ₂	0.009	0.015
grains/std cu ft, dry, corrected to 12% CO ₂	0.105	0.183
pounds/hour	6.78	11.75
pounds/million Btu	0.44	0.76
pounds/thousand pounds fuel	8.12	14.07

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 13 February 1982
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number FT IDL 3
 Reference AESO Report No. 110-02-82, April 1982

FILE 98. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE		
ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	Idle
	Fuel flow rate (lb/hr)	835
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	185.6
	Actual flow rate (cfm)	180593
	Corrected flow rate (cfm) (standard conditions, dry)	144365
	Carbon dioxide (volume percent, dry basis)	0.35
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.003	0.004
grains/std cu ft, dry	0.004	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.010	0.015
grains/std cu ft, dry, corrected to 12% CO ₂	0.123	0.183
pounds/hour	4.42	6.61
pounds/million Btu	0.29	0.43
pounds/thousand pounds fuel	5.29	7.92
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 19 February 1982 Test Cell 19, multiple point sampling at the stack exit plane Test number FT IDL 4 Reference AESO Report No. 110-02-82, April 1982		

FILE 99. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE

ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	Idle
	Fuel flow rate (lb/hr)	835

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	182.7
	Actual flow rate (cfm)	183505
	Corrected flow rate (cfm) (standard conditions, dry)	147693
	Carbon dioxide (volume percent, dry basis)	0.34

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.004	0.005
grains/std cu ft, dry	0.004	0.006
grains/std cu ft, dry, corrected to 1% CO ₂	0.013	0.019
grains/std cu ft, dry, corrected to 12% CO ₂	0.158	0.225
pounds/hour	5.68	8.06
pounds/million Btu	0.37	0.52
pounds/thousand pounds fuel	6.80	9.65

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
Date of measurement 19 February 1982
Test Cell 19, multiple point sampling at the stack exit plane
Test number FT IDL 5
Reference AESO Report No. 110-02-82, April 1982

FILE 100. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE		
ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	86% rpm-N2
	Fuel flow rate (lb/hr)	3557
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	257.6
	Actual flow rate (cfm)	518485
	Corrected flow rate (cfm) (standard conditions, dry)	376602
	Carbon dioxide (volume percent, dry basis)	0.81
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.003
grains/std cu ft, dry	0.002	0.004
grains/std cu ft, dry, corrected to 1% CO ₂	0.003	0.005
grains/std cu ft, dry, corrected to 12% CO ₂	0.033	0.066
pounds/hour	7.19	14.32
pounds/million Btu	0.11	0.22
pounds/thousand pounds fuel	2.02	4.03
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 16 February 1982 Test Cell 19, multiple point sampling at the stack exit plane Test number 86%RPM 1 Reference AESO Report No. 110-02-82, April 1982		

FILE 101. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE		
ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	86% rpm-N2
	Fuel flow rate (lb/hr)	3557
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	258.1
	Actual flow rate (cfm)	556115
	Corrected flow rate (cfm) (standard conditions, dry)	403307
	Carbon dioxide (volume percent, dry basis)	0.82
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.006
grains/std cu ft, dry	0.002	0.008
grains/std cu ft, dry, corrected to 1% CO ₂	0.003	0.010
grains/std cu ft, dry, corrected to 12% CO ₂	0.032	0.123
pounds/hour	7.49	29.11
pounds/million Btu	0.11	0.44
pounds/thousand pounds fuel	2.11	8.18
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 16 February 1982 Test Cell 19, multiple point sampling at the stack exit plane Test number 86%RPM 2 Reference AESO Report No. 110-02-82, April 1982		

FILE 102. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE		
ENGINE DATA	Engine type	F404-GE-400
	Serial number	215205
	Power setting	IRP
	Fuel flow rate (lb/hr)	8579
FUEL DATA	Fuel type	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	370.7
	Actual flow rate (cfm)	825152
	Corrected flow rate (cfm) (standard conditions, dry)	515630
	Carbon dioxide (volume percent, dry basis)	0.92
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.003
grains/std cu ft, dry	0.003	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.004	0.005
grains/std cu ft, dry, corrected to 12% CO ₂	0.043	0.063
pounds/hour	14.52	21.43
pounds/million Btu	0.09	0.14
pounds/thousand pounds fuel	1.69	2.50
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 17 February 1982 Test Cell 19, multiple point sampling at the stack exit plane Test number IRP 1 Reference AESO Report No. 110-02-82, April 1982		

FILE 103.

PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE

ENGINE DATA

Engine type:	F404-GE-400
Serial number:	215205
Power setting:	IRP
Fuel flow rate (lb/hr)	8579

FUEL DATA

Fuel type:	JP-5
Heat of combustion (Btu/lb)	18500

STACK GAS DATA

Average temperature (°F)	385.3
Actual flow rate (cfm)	847927
Corrected flow rate (cfm) (standard conditions, dry)	522542
Carbon dioxide (volume percent, dry basis)	0.94

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.005	0.005
grains/std cu ft, dry	0.008	0.009
grains/st' cu ft, dry, corrected to 1% CO ₂	0.008	0.009
grains/std cu ft, dry, corrected to 12% CO ₂	0.097	0.112
pounds/hour	34.17	39.37
pounds/million Btu	0.22	0.25
pounds/thousand pounds fuel	3.98	4.59

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 17 February 1982
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number IRP 2
 Reference AESO Report No. 110-02-82, April 1982

FILE 104. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE

ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	IRP
	Fuel flow rate (lb/hr)	8579

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	384.8
	Actual flow rate (cfm)	801156
	Corrected flow rate (cfm) (standard conditions, dry)	490973
	Carbon dioxide (volume percent, dry basis)	0.93

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.001	0.002
grains/std cu ft, dry	0.002	0.003
grains/std cu ft, dry, corrected to 1% CO ₂	0.002	0.004
grains/std cu ft, dry, corrected to 12% CO ₂	0.029	0.042
pounds/hour	9.53	13.83
pounds/million Btu	0.06	0.09
pounds/thousand pounds fuel	1.11	1.61

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement 18 February 1982
 Test Cell 19, multiple point sampling at the stack exit plane
 Test number IRP 3
 Reference AESO Report No. 110-02-82, April 1982

FILE 105. PARTICULATE MASS EMISSIONS FROM A F404-GE-400 ENGINE		
ENGINE DATA	Engine type:	F404-GE-400
	Serial number:	215205
	Power setting:	IRP
	Fuel flow rate (lb/hr)	8579
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	386.7
	Actual flow rate (cfm)	874096
	Corrected flow rate (cfm)	534819
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.92
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	0.002	0.003
grains/std cu ft, dry	0.003	0.005
grains/std cu ft, dry, corrected to 1% CO ₂	0.004	0.005
grains/std cu ft, dry, corrected to 12% CO ₂	0.044	0.062
pounds/hour	15.54	21.77
pounds/million Btu	0.10	0.14
pounds/thousand pounds fuel	1.81	2.54
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement 18 February 1982 Test Cell 19, multiple point sampling at the stack exit plane Test number IRP 4 Reference AESO Report No. 110-02-82, April 1982		

FILE 106. PARTICULATE MASS EMISSIONS FROM A TF34-GE-400 ENGINE		
ENGINE DATA	Engine type:	TF34-GE-400A
	Serial number:	202042
	Power setting:	Idle
	Fuel flow rate (lb/hr)	450
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	103.8
	Actual flow rate (cfm)	184286
	Corrected flow rate (cfm) (standard conditions, dry)	171038
	Carbon dioxide (volume percent, dry basis)	0.16
PARTICULATE EMISSIONS DATA	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	0.0010
grains/std cu ft, dry	N/A	0.0011
grains/std cu ft, dry, corrected to 1% CO ₂	N/A	0.0070
grains/std cu ft, dry, corrected to 12% CO ₂	N/A	0.0839
pounds/hour	N/A	1.61
pounds/million Btu	N/A	0.19
pounds/thousand pounds fuel	N/A	3.58
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, NORTH ISLAND Date of measurement 13 October 1981 AIMD Test Cell, multiple point sampling across the augmentation tube Test number 1 Reference AESO Report No. 110-03-82, May 1982		

FILE 107. PARTICULATE MASS EMISSIONS FROM A TF34-GE-400 ENGINE		
ENGINE DATA	Engine type:	TF34-GE-400A
	Serial number:	202042
	Power setting:	Idle
	Fuel flow rate (lb/hr)	450
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	98.1
	Actual flow rate (cfm)	174506
	Corrected flow rate (cfm) (standard conditions, dry)	164472
	Carbon dioxide (volume percent, dry basis)	0.16
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	0.0008
grains/std cu ft, dry	N/A	0.0008
grains/std cu ft, dry, corrected to 1% CO ₂	N/A	0.0056
grains/std cu ft, dry, corrected to 12% CO ₂	N/A	0.0674
pounds/hour	N/A	1.13
pounds/million Btu	N/A	0.14
pounds/thousand pounds fuel	N/A	2.51
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, NORTH ISLAND Date of measurement 14 October 1981 AIMD Test Cell, multiple point sampling across the augmentation tube Test number 2 Reference AESO Report No. 110-03-82, May 1982		

FILE 108. PARTICULATE MASS EMISSIONS FROM A TF34-GE-400 ENGINE		
ENGINE DATA	Engine type:	TF34-GE-400A
	Serial number:	202351
	Power setting:	Idle
	Fuel flow rate (lb/hr)	450
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	100.1
	Actual flow rate (cfm)	171736
	Corrected flow rate (cfm) (standard conditions, dry)	161177
	Carbon dioxide (volume percent, dry basis)	0.16
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	0.0012
grains/std cu ft, dry	N/A	0.0013
grains/std cu ft, dry, corrected to 1% CO ₂	N/A	0.0083
grains/std cu ft, dry, corrected to 12% CO ₂	N/A	0.0990
pounds/hour	N/A	1.80
pounds/million Btu	N/A	0.22
pounds/thousand pounds fuel	N/A	4.00
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, NORTH ISLAND Date of measurement 16 October 1981 AIMD Test Cell, multiple point sampling across the augmentation tube Test number 3 Reference AESO Report No. 110-03-82, May 1982		

FILE 109. PARTICULATE MASS EMISSIONS FROM A TF34-GE-400 ENGINE		
ENGINE DATA	Engine type:	TF34-GE-400A
	Serial number:	202351
	Power setting:	Idle
	Fuel flow rate (lb/hr)	450
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	102.9
	Actual flow rate (cfm)	167406
	Corrected flow rate (cfm) (standard conditions, dry)	156001
	Carbon dioxide (volume percent, dry basis)	0.16
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	0.0014
grains/std cu ft, dry	N/A	0.0014
grains/std cu ft, dry, corrected to 1% CO ₂	N/A	0.0091
grains/std cu ft, dry, corrected to 12% CO ₂	N/A	0.1097
pounds/hour	N/A	1.87
pounds/million Btu	N/A	0.22
pounds/thousand pounds fuel	N/A	4.16
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, NORTH ISLAND Date of measurement 21 October 1981 AIMD Test Cell, multiple point sampling across the augmentation tube Test number 8 Reference AESO Report No. 110-03-82, May 1982		

FILE 110. PARTICULATE MASS EMISSIONS FROM A TF34-GE-400 ENGINE		
ENGINE DATA	Engine type:	TF34-GE-400A
	Serial number:	202298
	Power setting:	Idle
	Fuel flow rate (lb/hr)	450
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	100.9
	Actual flow rate (cfm)	194254
	Corrected flow rate (cfm) (standard conditions, dry)	181094
	Carbon dioxide (volume percent, dry basis)	0.16
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	0.0006
grains/std cu ft, dry	N/A	0.0006
grains/std cu ft, dry, corrected to 1% CO ₂	N/A	0.0040
grains/std cu ft, dry, corrected to 12% CO ₂	N/A	0.0480
pounds/hour	N/A	0.93
pounds/million Btu	N/A	0.11
pounds/thousand pounds fuel	N/A	2.07
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, NORTH ISLAND Date of measurement 4 November 1981 AIMD Test Cell, multiple point sampling across the augmentation tube Test number 15 Reference AESO Report No. 110-03-82, May 1982		

FILE 111. PARTICULATE MASS EMISSIONS FROM A TF34-GE-400 ENGINE		
ENGINE DATA	Engine type:	TF34-GE-400A
	Serial number:	202351
	Power setting:	75% rpm
	Fuel flow rate (lb/hr)	500
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	104.6
	Actual flow rate (cfm)	335059
	Corrected flow rate (cfm) (standard conditions, dry)	312835
	Carbon dioxide (volume percent, dry basis)	0.16
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	0.0016
grains/std cu ft, dry	N/A	0.0017
grains/std cu ft, dry, corrected to 1% CO ₂	N/A	0.0107
grains/std cu ft, dry, corrected to 12% CO ₂	N/A	0.1284
pounds/hour	N/A	4.56
pounds/million Btu	N/A	0.49
pounds/thousand pounds fuel	N/A	9.12
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, NORTH ISLAND Date of measurement 22 October 1981 AIMD Test Cell, multiple point sampling across the augmentation tube Test number 9 Reference AESO Report No. 110-03-82, May 1982		

FILE 112. PARTICULATE MASS EMISSIONS FROM A TF34-GE-400 ENGINE		
ENGINE DATA	Engine type:	TF34-GE-400A
	Serial number:	202351
	Power setting:	75% rpm
	Fuel flow rate (lb/hr)	500
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	103.5
	Actual flow rate (cfm)	313850
	Corrected flow rate (cfm)	293476
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	0.16
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	0.0008
grains/std cu ft, dry	N/A	0.0008
grains/std cu ft, dry, corrected to 1% CO ₂	N/A	0.0055
grains/std cu ft, dry, corrected to 12% CO ₂	N/A	0.0657
pounds/hour	N/A	2.01
pounds/million Btu	N/A	0.22
pounds/thousand pounds fuel	N/A	4.02
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, NORTH ISLAND Date of measurement 23 October 1981 AIMD Test Cell, multiple point sampling across the augmentation tube Test number 10 Reference AESO Report No. 110-03-82, May 1982		

FILE 113. PARTICULATE MASS EMISSIONS FROM A TF34-GE-400 ENGINE		
ENGINE DATA	Engine type:	TF34-GE-400A
	Serial number:	202351
	Power setting:	75% rpm
	Fuel flow rate (lb/hr)	500
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	101.0
	Actual flow rate (cfm)	328065
	Corrected flow rate (cfm) (standard conditions, dry)	308854
	Carbon dioxide (volume percent, dry basis)	0.16
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	0.0013
grains/std cu ft, dry	N/A	0.0014
grains/std cu ft, dry, corrected to 1% CO ₂	N/A	0.0089
grains/std cu ft, dry, corrected to 12% CO ₂	N/A	0.1069
pounds/hour	N/A	3.71
pounds/million Btu	N/A	0.40
pounds/thousand pounds fuel	N/A	7.42
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR STATION, NORTH ISLAND Date of measurement 26 October 1981 AIMD Test Cell, multiple point sampling across the augmentation tube Test number 11 Reference AESO Report No. 110-03-82, May 1982		

FILE 114. PARTICULATE MASS EMISSIONS FROM A T58 ENGINE

ENGINE DATA	Engine type:	T58-GE-5
	Serial number:	285226
	Power setting:	N/A
	Fuel flow rate (lb/hr)	437.2

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	542.5
	Actual flow rate (cfm)	N/A
	Corrected flow rate (cfm) (standard conditions, dry)	12995
	Carbon dioxide (volume percent, dry basis)	1.00

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	N/A
grains/std cu ft, dry	0.007	0.012
grains/std cu ft, dry, corrected to 1% CO ₂	0.007	0.012
grains/std cu ft, dry, corrected to 12% CO ₂	0.086	0.144
pounds/hour	0.80	1.34
pounds/million Btu	0.10	0.17
pounds/thousand pounds fuel	1.83	3.06

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement March-April 1983
 Test Cell 11, multiple point sampling at the stack exit plane
 Test number P-3-83
 The engine operated through the full range of power settings during the collection of the particulate sample. The fuel flow rate is the average of that of the lowest and the highest power settings.

FILE 115. PARTICULATE MASS EMISSIONS FROM A T58 ENGINE		
ENGINE DATA	Engine type:	T58-GE-8F
	Serial number:	271401
	Power setting:	N/A
	Fuel flow rate (lb/hr)	408.5
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (°F)	459.1
	Actual flow rate (cfm)	N/A
	Corrected flow rate (cfm)	11050
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	2.00
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	N/A
grains/std cu ft, dry	0.014	0.023
grains/std cu ft, dry, corrected to 1% CO ₂	0.007	0.012
grains/std cu ft, dry, corrected to 12% CO ₂	0.084	0.138
pounds/hour	1.33	2.18
pounds/million Btu	0.18	0.29
pounds/thousand pounds fuel	3.25	5.34
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement March-April 1983 Test Cell 11, multiple point sampling at the stack exit plane Test number P-4-83 The engine operated through the full range of power settings during the collection of the particulate sample. The fuel flow rate is the average of that of the lowest and the highest power settings.		

FILE 116. PARTICULATE MASS EMISSIONS FROM A T64 ENGINE		
ENGINE DATA	Engine type:	T64-GE-6B
	Serial number:	262141
	Power setting:	N/A
	Fuel flow rate (lb/hr)	874.5
FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500
STACK GAS DATA	Average temperature (*F)	395.0
	Actual flow rate (cfm)	N/A
	Corrected flow rate (cfm)	15229
	(standard conditions, dry)	
	Carbon dioxide (volume percent, dry basis)	2.20
PARTICULATE EMISSIONS DATA		
	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	N/A
grains/std cu ft, dry	0.005	0.009
grains/std cu ft, dry, corrected to 1% CO ₂	0.002	0.004
grains/std cu ft, dry, corrected to 12% CO ₂	0.028	0.046
pounds/hour	0.67	1.11
pounds/million Btu	0.04	0.07
pounds/thousand pounds fuel	0.76	1.27
Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND Date of measurement March-April 1983 Test Cell 10, multiple point sampling at the stack exit plane Test number P-6-83 The engine operated through the full range of power settings during the collection of the particulate sample. The fuel flow rate is the average of that of the lowest and the highest power settings.		

FILE 117. PARTICULATE MASS EMISSIONS FROM A T64 ENGINE

ENGINE DATA	Engine type:	T64-GE-415
	Serial number:	264461
	Power setting:	N/A
	Fuel flow rate (lb/hr)	1137

FUEL DATA	Fuel type:	JP-5
	Heat of combustion (Btu/lb)	18500

STACK GAS DATA	Average temperature (°F)	503.3
	Actual flow rate (cfm)	N/A
	Corrected flow rate (cfm) (standard conditions, dry)	24501
	Carbon dioxide (volume percent, dry basis)	2.20

PARTICULATE EMISSIONS DATA

	Partial emissions	Total emissions
grains/cu ft at stack conditions	N/A	N/A
grains/std cu ft, dry	0.010	0.017
grains/std cu ft, dry, corrected to 1% CO ₂	0.005	0.008
grains/std cu ft, dry, corrected to 12% CO ₂	0.056	0.093
pounds/hour	2.16	3.57
pounds/million Btu	0.10	0.17
pounds/thousand pounds fuel	1.90	3.14

Measurement by AIRCRAFT ENVIRONMENTAL SUPPORT OFFICE
 Measurement at NAVAL AIR REWORK FACILITY, NORTH ISLAND
 Date of measurement March-April 1983
 Test Cell 9, multiple point sampling at the stack exit plane
 Test number P-5-83
 The engine operated through the full range of power settings during the collection of the particulate sample. The fuel flow rate is the average of that of the lowest and the highest power settings.