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DEVELOPMENT OF EMISSIONS MEASUREMENT TECHNIQUES FOR AFTERBURNIN--ETC(U)
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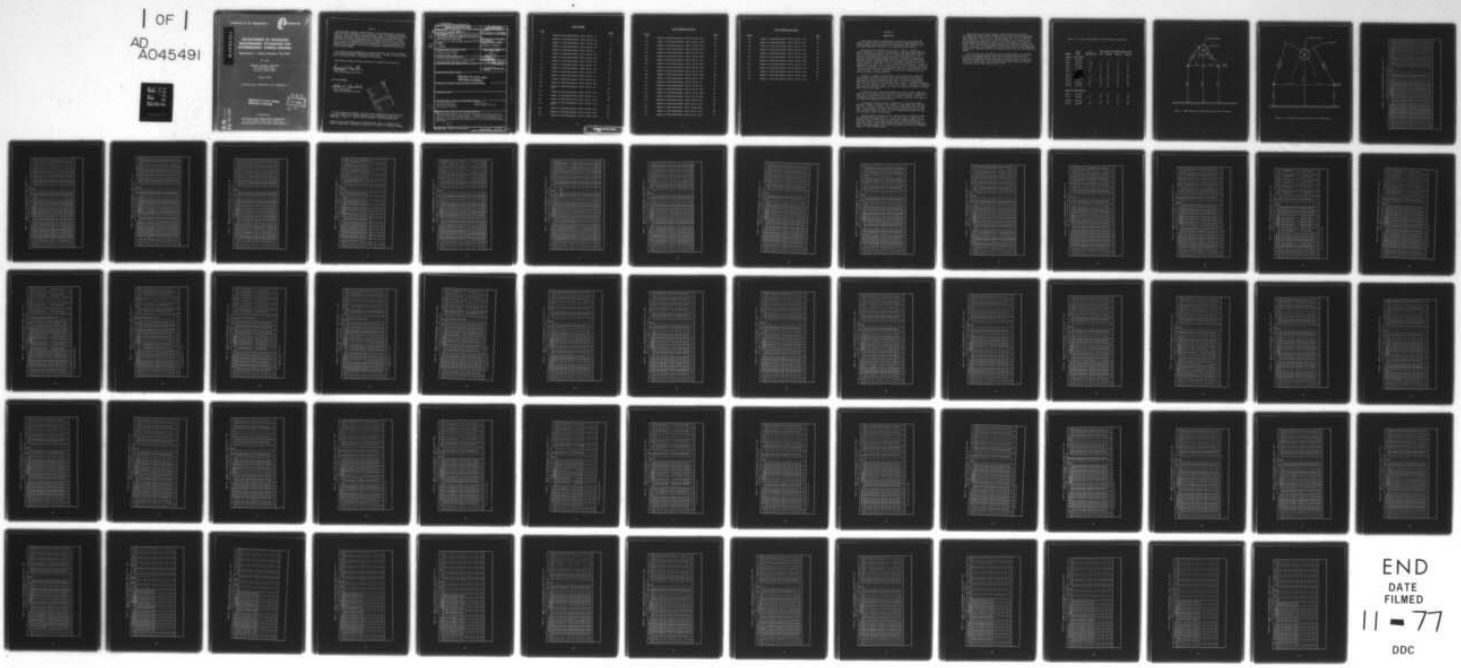

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AFAPL-TR-75-52, Supplement 1

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# DEVELOPMENT OF EMISSIONS MEASUREMENT TECHNIQUES FOR AFTERBURNING TURBINE ENGINES

## Supplement 1 - Engine Emissions Test Data

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October 1975

Technical Report AFAPL-TR-75-52, Supplement 1



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Prepared for

AIR FORCE AERO PROPULSION LABORATORY
Air Force Wright Aeronautical Laboratories
Wright-Patterson Air Force Base, Ohio 45433

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## REPORT DOCUMENTATION PAGE

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| | |
|---|---|
| 1. REPORT NUMBER: AFAPL-TR-75-52 - Supplement 1 | 2. GOVT ACCESSION NO. |
| 3. RECIPIENT'S CATALOG NUMBER: Technical rept. | |
| 4. TITLE (and Subtitle): DEVELOPMENT OF EMISSIONS MEASUREMENT TECHNIQUES FOR AFTERBURNING TURBINE ENGINES, SUPPLEMENT 1 - ENGINE EMISSIONS TEST DATA | 5. TYPE OF REPORT & PERIOD COVERED |
| | 6. PERFORMING ORG. REPORT NUMBER: R75AEG458 |
| 7. AUTHOR(s): T.F. Lyon | 8. CONTRACT OR GRANT NUMBER(s): F33615-73-C-2047 |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS: General Electric Company, Aircraft Engine Group, Cincinnati, Ohio 45215 | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: Project 1900 |
| 11. CONTROLLING OFFICE NAME AND ADDRESS: Air Force Aero Propulsion Laboratory (AFAPL/SFF), Air Force Wright Aeronautical Laboratories, Wright-Patterson AFB, Ohio 45433 | 12. REPORT DATE: Oct 75 |
| | 13. NUMBER OF PAGES: 67 |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) | 15. SECURITY CLASS. (of this report): Unclassified |
| | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE |

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Afterburner Emissions
Emissions Measurements
Environmental Pollution
Exhaust Plume
Turbine Engine Emissions

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Comprehensive emissions test data taken throughout the exhaust plumes of J85-5 and J79-15 afterburning engines. Measurements were obtained on both engines at four power settings (military, minimum A/B, intermediate A/B, and maximum A/B) and five axial stations (0, 3, 6, 12 and 24 nozzle diameters downstream).

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## LIST OF TABLES

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## SECTION 1.0

## INTRODUCTION

This volume contains a comprehensive tabulation of the afterburning engine emissions test data acquired under Contract F33615-73-C-2047. The overall program involved the definition, development, and demonstration of emissions measurement techniques for afterburning turbine engines.

The program was divided into three phases. Phase I, completed in October 1973, was the system definition study. This phase involved development of the analytical model of the exhaust plume and preliminary planning of the emission measurement system to be used on the engine tests. In Phase II, the emissions measurement system was constructed and installed at the General Electric Edwards Flight Test Center at Edwards Air Force Base. Detailed emissions measurements were made throughout the plumes of two afterburning engines, a J85-5 and a J79-15. The measured emissions levels were compared with the predictions of the analytical studies of Phase I. Phase III consisted of refinement of the measurement system and plume model, and definition of the final emissions measurement procedures in a format similar to that of SAE ARP 1256. Emissions measurements on the same two engines were then made to demonstrate these procedures.

In Phase II, complete plume profiles on both engines were obtained at five different axial stations and at four engine power settings, namely, military(Mil), minimum afterburning (Min A/B), intermediate afterburning (Mid A/B), and maximum afterburning (Max A/B). A total of twenty separate test conditions were thus investigated for each engine in the Phase II measurements. In the subsequent tables in this volume, Tables 1 through 20 are Phase II measurements on the J85-5 engine, and Tables 21 through 40 are Phase II measurements on the J79-15 engine.

In Phase III, more limited measurements were made on the two engines to demonstrate the measurement procedures which had been developed. Measurements were made at the same four power levels at two axial stations. Tables 41 through 48 give Phase III measurements on the J85-5, and Tables 49 through 56 give Phase III measurements on the J79-15.

To facilitate locating data for a particular test condition, Figure 1 presents a complete listing of table numbers for each engine test condition. Also shown in Figure 1 (Column 3) is the type of probe system used for each test. For each engine, the high-temperature probes were used for the three axial stations nearest the engine, and the low-temperature probes were used for the two more remote axial stations.

Figure 2 shows the high-temperature probe geometry, and Figure 3 shows the low-temperature probe geometry. In each case, the No. 1 probe axis of rotation was on the right side of the engine (aft looking forward), so that this probe swept an arc through the upper right and lower left quadrants. Similarly, the No. 2 probe swept through the upper left and lower right quadrants. The upper quadrant is positive radial position and the lower quadrant negative in the following tables.

Each table gives the probe number, radial probe position, measured gas composition, fuel-air ratio, emission indices, total and static pressures, total temperature, and flow rates. The gas composition is the "as-measured" value which is on a "wet" basis for HC, NO and $NO_x$ and on a "semi-dry" basis for CO and $CO_2$, as explained in the text of the main volume of this report. Static pressure was measured only when using the low-temperature probes. The listed static pressure was the ambient pressure when using the high-temperature probes. Similarly, total temperature was measured only with the low-temperature probes and was calculated from the gas composition when using the high-temperature probes.

Data in these tables should be utilized with due regard to the accuracy of each of the measured values, especially at downstream locations where concentrations approach ambient levels due to the high dilution factor. In some cases, examination of overall integrated emissions levels, as tabulated in the main report volume, will identify certain inconsistencies indicating uncertainty in particular measured local values.

Figure 1. Listing of Table Numbers for Each Engine Test Condition.

| Engine | Probe Type | Axial Station (ft) | Table Number for Engine Power Level | | | |
|---|---|---|---|---|---|---|
| | | | Mil | Min A/B | Mid A/B | Max A/B |
| **PHASE II TEST SERIES:** | | | | | | |
| J85-5 | Hi-Temp | 0 | 1 | 2 | 3 | 4 |
| J85-5 | Hi-Temp | 3.75 | 5 | 6 | 7 | 8 |
| J85-5 | Hi-Temp | 7.5 | 9 | 10 | 11 | 12 |
| J85-5 | Lo-Temp | 15 | 13 | 14 | 15 | 16 |
| J85-5 | Lo-Temp | 30 | 17 | 18 | 19 | 20 |
| J79-15 | Temp | 0 | 21 | 22 | 23 | 24 |
| J79-15 | Temp | 7.5 | 25 | 26 | 27 | 28 |
| J79-15 | Hi-Temp | 15 | 29 | 30 | 31 | 32 |
| J79-15 | Lo-Temp | 30 | 33 | 34 | 35 | 36 |
| J79-15 | Lo-Temp | 60 | 37 | 38 | 39 | 40 |
| **PHASE III TEST SERIES:** | | | | | | |
| J85-5 | Hi-Temp | 0 | 41 | 42 | 43 | 44 |
| J85-5 | Lo-Temp | 30 | 45 | 46 | 47 | 48 |
| J79-15 | Hi-Temp | 0 | 49 | 50 | 51 | 52 |
| J79-15 | Lo-Temp | 60 | 53 | 54 | 55 | 56 |

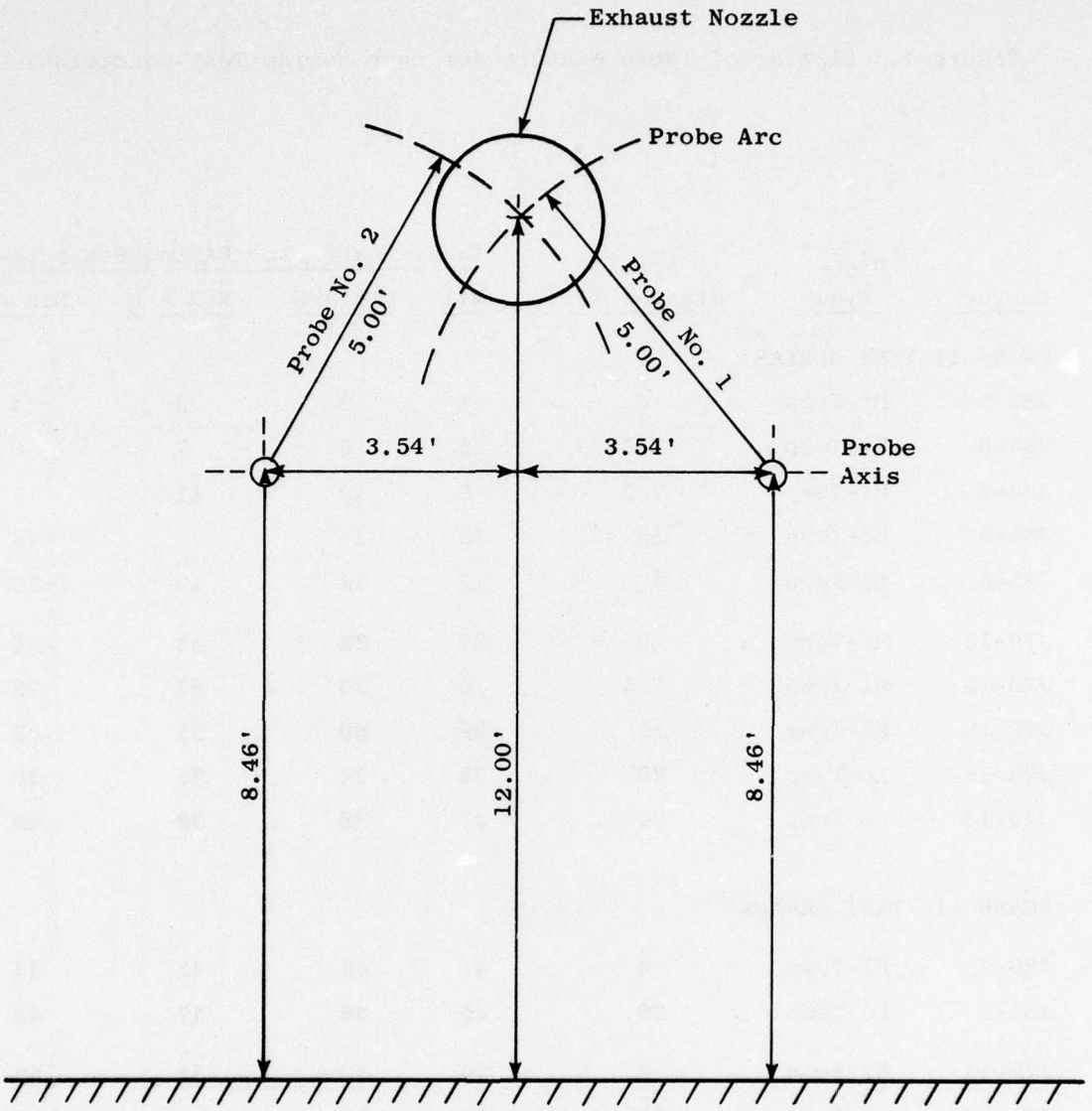


Figure 2. High Temperature Probe Geometry; Aft Looking Forward.

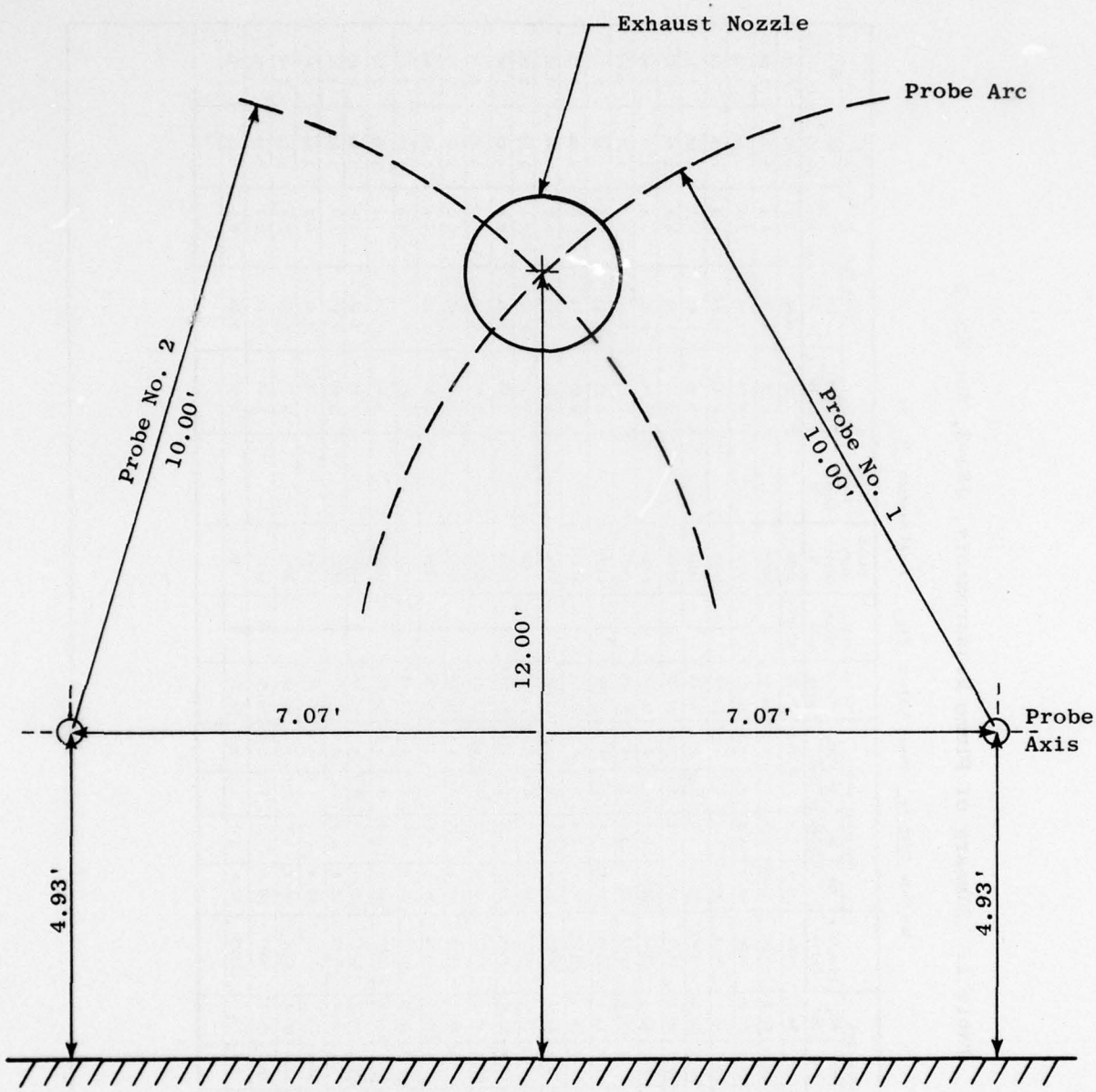


Figure 3. Low Temperature Probe Geometry; Aft Looking Forward.

## Table 1. Summary of Plume Measurements, J85-5, Run No. 3.

Run Date 2/25/74, Power Setting MIL, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | 6.35 | 404 | 2.13 | 48.2 | 12.0 | 24.6 | .0104 | 37.0 | 2.3 | 1.8 | 3.8 | 17.78 | 13.67 | 1278 | | 2.32 | 0.86 | 5.3 | 0.42 | 0.88 |
| 1 | 5.24 | 741 | 3.92 | 57.6 | 22.2 | 43.8 | .0190 | 37.0 | 1.5 | 1.9 | 3.7 | 28.48 | | 1838 | | 6.39 | 2.36 | 9.6 | 1.21 | 2.36 |
| 1 | 3.85 | 744 | 4.05 | 47.7 | 25.3 | 47.6 | .0196 | 36.0 | 1.2 | 2.1 | 3.9 | 28.64 | | 1874 | | 6.55 | 2.36 | 7.9 | 1.38 | 2.55 |
| 1 | 2.79 | 736 | 4.07 | 42.2 | 25.7 | 50.7 | .0197 | 35.4 | 1.1 | 2.1 | 4.2 | 28.89 | | 1881 | | 6.62 | 2.34 | 7.3 | 1.39 | 2.78 |
| 1 | 1.58 | 698 | 4.01 | 37.7 | 27.5 | 49.8 | .0194 | 34.1 | 1.0 | 2.3 | 4.1 | 28.84 | | 1863 | | 5.54 | 1.89 | 5.5 | 1.27 | 2.27 |
| 1 | 0.65 | 688 | 3.96 | 36.3 | 27.8 | 50.5 | .0191 | 34.1 | 0.9 | 2.3 | 4.3 | 27.76 | | 1848 | | 6.27 | 2.14 | 5.6 | 1.44 | 2.70 |
| 1 | -1.56 | 668 | 3.93 | 35.1 | 29.1 | 50.5 | .0190 | 33.4 | 0.9 | 2.5 | 4.3 | 26.84 | | 1839 | | 6.05 | 2.02 | 5.4 | 1.51 | 2.60 |
| 1 | -2.24 | 673 | 3.77 | 35.1 | 28.1 | 49.9 | .0182 | 35.0 | 0.9 | 2.5 | 4.4 | 27.61 | | 1792 | | 6.05 | 2.12 | 5.4 | 1.51 | 3.99 |
| 1 | -4.01 | 711 | 3.69 | 42.1 | 25.3 | 47.8 | .0179 | 37.7 | 1.2 | 2.3 | 4.3 | 28.58 | | 1769 | | 6.17 | 2.33 | 7.4 | 1.42 | 2.65 |
| 1 | -4.72 | 706 | 3.57 | 38.4 | 25.0 | 48.1 | .0173 | 38.7 | 1.1 | 2.3 | 4.5 | 28.64 | | 1732 | | 6.05 | 2.34 | 6.6 | 1.39 | 2.72 |
| 1 | -6.32 | 331 | 1.69 | 37.0 | 12.8 | 24.7 | .0082 | 38.4 | 2.2 | 2.5 | 4.8 | 17.58 | | 1126 | | 1.91 | 0.73 | 4.2 | 0.48 | 0.92 |
| 1 | -7.23 | 181 | 0.70 | 31.0 | 6.2 | 12.2 | .0034 | 50.1 | 4.3 | 2.8 | 5.6 | 14.39 | | 802 | | 0.40 | 2.02 | 17.4 | 1.13 | 2.29 |
| 2 | 5.31 | 607 | 2.59 | 41.5 | 16.4 | 36.2 | .0126 | 45.7 | 1.6 | 2.1 | 4.6 | 14.54 | | 1428 | | 3.68 | 1.68 | 5.9 | 0.77 | 1.69 |
| 2 | 4.58 | 746 | 3.42 | 39.7 | 23.5 | 47.7 | .0166 | 42.6 | 1.2 | 2.3 | 4.6 | 14.29 | | 1689 | | 5.87 | 2.50 | 7.0 | 1.35 | 2.70 |
| 2 | 3.49 | 726 | 3.45 | 36.2 | 25.5 | 48.5 | .0168 | 41.1 | 1.1 | 2.4 | 4.6 | 19.28 | | 1697 | | 5.89 | 2.42 | 6.5 | 1.41 | 2.71 |
| 2 | 2.41 | 686 | 3.43 | 33.0 | 27.1 | 49.2 | .0166 | 39.1 | 1.0 | 2.6 | 4.7 | 28.28 | | 1691 | | 5.87 | 2.30 | 5.9 | 1.53 | 2.76 |
| 2 | 1.38 | 666 | 3.44 | 32.0 | 28.3 | 49.8 | .0167 | 37.9 | 0.9 | 2.7 | 4.8 | 27.45 | | 1695 | | 5.85 | 2.22 | 5.3 | 1.58 | 2.81 |
| 2 | 0.64 | 671 | 3.44 | 31.2 | 27.9 | 49.7 | .0167 | 38.2 | 0.9 | 2.7 | 4.8 | 28.39 | | 1693 | | 5.85 | 2.24 | 5.3 | 1.58 | 2.81 |
| 2 | -1.17 | 686 | 3.44 | 33.4 | 28.2 | 50.1 | .0167 | 39.0 | 1.0 | 2.7 | 4.8 | 27.86 | | 1695 | | 5.85 | 2.28 | 5.9 | 1.58 | 2.81 |
| 2 | -2.53 | 676 | 3.44 | 31.5 | 27.5 | 49.9 | .0167 | 38.4 | 0.9 | 2.6 | 4.8 | 27.45 | | 1695 | | 5.86 | 2.25 | 5.3 | 1.52 | 2.81 |
| 2 | -3.62 | 719 | 3.41 | 31.8 | 26.5 | 49.7 | .0165 | 41.2 | 0.9 | 2.6 | 4.8 | 27.86 | | 1684 | | 5.86 | 2.41 | 5.3 | 1.52 | 2.81 |
| 2 | -4.71 | 696 | 3.36 | 28.6 | 26.5 | 50.4 | .0163 | 40.4 | 0.9 | 2.6 | 5.0 | 28.58 | | 1671 | | 5.77 | 2.33 | 5.2 | 1.50 | 2.89 |
| 2 | -5.80 | 365 | 1.80 | 26.9 | 15.5 | 29.5 | .0087 | 39.6 | 1.5 | 2.8 | 5.3 | 16.82 | | 1171 | | 1.82 | 0.72 | 2.7 | 0.51 | 0.96 |
| 2 | -6.90 | 226 | 0.52 | 22.9 | 2.8 | 5.7 | .0025 | 82.9 | 4.2 | 1.7 | 3.5 | 13.70 | | 739 | | 0.06 | 0.05 | 0.3 | 0.01 | 0.02 |

## Table 2. Summary of Plume Measurements, J85-5, Run No. 4-1.

Run Date 2/26/74, Power Setting MIN A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-4}$) | NO ($\times 10^{-6}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | 6.17 | 2076 | 3.66 | 4501 | 3.8 | 30.2 | .0205 | 95.7 | 107.6 | 0.3 | 2.4 | 25.65 | 13.60 | 1759 | | 6.40 | 6.12 | 6.89 | 1.9 | 1.54 |
| 1 | 5.10 | 2331 | 5.51 | 2014 | 4.1 | 41.4 | .0281 | 78.1 | 35.6 | 0.2 | 2.4 | 28.79 | | 2281 | | 8.42 | 6.58 | 3.00 | 1.7 | 2.02 |
| 1 | 4.03 | 2302 | 6.19 | 1470 | 5.0 | 46.0 | .0309 | 69.9 | 23.7 | 0.3 | 2.4 | 28.48 | | 2459 | | 8.80 | 6.15 | 2.09 | 2.6 | 2.11 |
| 1 | 2.96 | 2154 | 5.87 | 1994 | 3.9 | 44.6 | .0296 | 68.3 | 33.5 | 0.2 | 2.5 | 28.33 | | 2373 | | 8.56 | 5.85 | 2.87 | 1.7 | 2.14 |
| 1 | 1.58 | 2080 | 5.11 | 3439 | 3.5 | 42.9 | .0268 | 73.2 | 63.6 | 0.2 | 2.6 | 27.97 | | 2166 | | 8.05 | 5.89 | 5.12 | 1.6 | 2.09 |
| 1 | 0.96 | 2022 | 4.83 | 3795 | 3.6 | 42.6 | .0256 | 74.4 | 73.2 | 0.2 | 2.7 | 27.50 | | 2089 | | 7.74 | 5.76 | 5.67 | 1.5 | 2.09 |
| 1 | -0.72 | 1878 | 4.80 | 3191 | 3.6 | 44.4 | .0251 | 70.5 | 62.8 | 0.2 | 2.9 | 28.17 | | 2081 | | 7.78 | 5.48 | 4.89 | 1.6 | 2.26 |
| 1 | -1.56 | 1872 | 4.85 | 2928 | 4.1 | 45.3 | .0252 | 70.0 | 57.4 | 0.3 | 2.9 | 16.04 | | 2094 | | 3.34 | 2.34 | 1.92 | 1.0 | 0.97 |
| 1 | -2.59 | 1913 | 5.35 | 1633 | 4.8 | 49.2 | .0270 | 66.9 | 30.1 | 0.3 | 3.0 | 25.24 | | 2234 | | 7.24 | 4.84 | 2.18 | 2.2 | 2.17 |
| 1 | -3.65 | 1806 | 5.85 | 808 | 8.2 | 51.9 | .0288 | 59.1 | 14.0 | 0.5 | 2.9 | 25.29 | | 2367 | | 7.51 | 4.44 | 1.05 | 3.8 | 2.18 |
| 1 | -4.72 | 2170 | 5.61 | 1406 | 5.0 | 48.1 | .0281 | 72.6 | 24.8 | 0.3 | 2.8 | 27.66 | | 2305 | | 8.09 | 5.87 | 2.01 | 2.4 | 2.27 |
| 1 | -5.79 | 2355 | 4.74 | 3924 | 3.8 | 41.6 | .0255 | 87.3 | 76.2 | 0.2 | 2.7 | 28.38 | | 2070 | | 7.95 | 6.94 | 6.06 | 1.6 | 2.15 |
| 2 | 6.23 | 2138 | 3.61 | 6593 | 3.8 | 28.9 | .0214 | 94.7 | 151.5 | 0.3 | 2.2 | 24.24 | | 1741 | | 6.31 | 5.98 | 9.56 | 1.9 | 1.39 |
| 2 | 5.14 | 3308 | 6.05 | 3356 | 4.0 | 40.0 | .0317 | 98.1 | 52.9 | 0.2 | 2.1 | 28.13 | | 2427 | | 8.96 | 8.79 | 4.74 | 1.8 | 1.88 |
| 2 | 4.41 | 2286 | 6.82 | 1256 | 4.9 | 46.2 | .0337 | 63.5 | 18.7 | 0.2 | 2.3 | 28.08 | | 2617 | | 9.13 | 5.80 | 1.71 | 1.8 | 2.10 |
| 2 | 3.32 | 2179 | 6.68 | 1669 | 4.6 | 47.1 | .0332 | 61.5 | 25.2 | 0.2 | 2.3 | 28.03 | | 2578 | | 9.06 | 5.57 | 2.28 | 1.8 | 2.08 |
| 2 | 2.24 | 2351 | 6.19 | 2567 | 3.8 | 45.5 | .0315 | 70.1 | 40.6 | 0.2 | 2.4 | 28.08 | | 2456 | | 8.85 | 6.20 | 3.59 | 1.8 | 2.12 |
| 2 | 1.22 | 2285 | 5.63 | 3444 | 3.6 | 43.6 | .0293 | 73.4 | 58.4 | 0.2 | 2.4 | 28.13 | | 2307 | | 8.54 | 6.27 | 4.99 | 1.7 | 2.05 |
| 2 | -0.63 | 2056 | 5.02 | 4244 | 3.5 | 42.5 | .0268 | 72.3 | 78.5 | 0.2 | 2.6 | 28.13 | | 2142 | | 8.14 | 5.89 | 6.39 | 1.6 | 2.12 |
| 2 | -1.49 | 1913 | 5.57 | 2670 | 3.7 | 45.1 | .0285 | 63.2 | 46.6 | 0.2 | 2.6 | 28.13 | | 2290 | | 8.34 | 5.27 | 3.89 | 1.7 | 2.17 |
| 2 | -2.36 | 1776 | 6.69 | 1148 | 5.9 | 49.4 | .0328 | 50.7 | 17.5 | 0.3 | 2.5 | 28.08 | | 2580 | | 8.97 | 4.55 | 1.57 | 2.7 | 2.24 |
| 2 | -3.43 | 1842 | 6.80 | 738 | 8.6 | 51.7 | .0331 | 52.1 | 11.1 | 0.4 | 2.6 | 28.08 | | 2609 | | 9.01 | 4.69 | 1.00 | 3.6 | 2.34 |
| 2 | -4.53 | 2507 | 6.45 | 1679 | 4.2 | 47.1 | .0323 | 72.8 | 26.0 | 0.2 | 2.4 | 28.03 | | 2526 | | 8.92 | 6.49 | 2.32 | 1.8 | 2.14 |
| 2 | -5.26 | 2650 | 4.58 | 6725 | 3.8 | 36.8 | .0262 | 95.4 | 126.8 | 0.2 | 2.3 | 27.87 | | 2023 | | 8.14 | 7.77 | 10.32 | 1.6 | 1.87 |
| | | | | | | | | | | | | | | | | | | | | |

## Table 3. Summary of Plume Measurements, J85-5, Run No. 4-2.

Run Date 2/26/74, Power Setting MID A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-4}$) | NO ($\times 10^{-6}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -7.23 | 3325 | 5.37 | 1109 | 4.0 | 39.3 | .0274 | 114.1 | 20.1 | 0.2 | 2.3 | 23.34 | 13.55 | 2271 | | 6.74 | 7.69 | 1.35 | 1.3 | 1.55 |
| 1 | -5.79 | 1193 | 8.68 | 55.5 | 40.8 | 65.3 | .0410 | 27.1 | 0.7 | 1.6 | 2.6 | 27.04 | | 3064 | | 9.82 | 2.66 | 0.07 | 15.7 | 2.55 |
| 1 | -4.36 | 1383 | 9.46 | 48.7 | 53.8 | 77.8 | .0445 | 28.7 | 0.6 | 2.0 | 2.9 | 26.89 | | 3239 | | 10.27 | 2.95 | 0.06 | 20.5 | 2.98 |
| 1 | -3.30 | 1781 | 8.92 | 229 | 37.5 | 76.5 | .0424 | 39.0 | 2.7 | 1.5 | 3.0 | 26.78 | | 3122 | | 9.95 | 3.88 | 0.27 | 14.9 | 2.98 |
| 1 | -1.90 | 2557 | 7.47 | 1204 | 6.6 | 59.9 | .0367 | 65.0 | 16.5 | 0.3 | 2.7 | 25.91 | | 2791 | | 8.92 | 5.80 | 1.47 | 2.7 | 2.41 |
| 1 | -0.95 | 2988 | 7.03 | 1767 | 4.0 | 54.2 | .0352 | 79.4 | 25.2 | 0.2 | 2.5 | 24.98 | | 2686 | | 8.43 | 6.69 | 2.12 | 1.7 | 2.11 |
| 1 | 0.96 | 3680 | 6.92 | 2293 | 3.7 | 51.9 | .0353 | 97.6 | 32.6 | 0.2 | 2.4 | 25.45 | | 2664 | | 8.64 | 8.43 | 2.81 | 1.7 | 2.07 |
| 1 | 1.92 | 3815 | 7.38 | 1689 | 4.2 | 55.7 | .0371 | 95.9 | 22.9 | 0.2 | 2.5 | 26.01 | | 2779 | | 9.07 | 8.70 | 2.08 | 1.8 | 2.27 |
| 1 | 3.31 | 2368 | 8.84 | 438 | 25.2 | 70.1 | .0424 | 51.8 | 5.2 | 1.0 | 2.7 | 26.99 | | 3109 | | 10.05 | 5.21 | 0.52 | 10.1 | 2.71 |
| 1 | 4.38 | 1354 | 9.43 | 79.4 | 48.2 | 73.6 | .0444 | 28.2 | 0.9 | 1.8 | 2.8 | 27.30 | | 3232 | | 10.39 | 2.93 | 0.09 | 18.7 | 2.91 |
| 1 | 5.81 | 1174 | 8.86 | 39.8 | 43.4 | 64.1 | .0417 | 26.1 | 0.5 | 1.7 | 2.5 | 27.20 | | 3103 | | 9.98 | 2.60 | 0.05 | 17.0 | 2.50 |
| 1 | 6.89 | 2785 | 5.89 | 811 | 4.0 | 41.6 | .0294 | 89.0 | 13.7 | 0.2 | 2.3 | 25.19 | | 2403 | | 7.58 | 6.75 | 1.04 | 1.5 | 1.74 |
| 2 | -7.10 | 2650 | 7.87 | 709 | 12.7 | 53.0 | .0383 | 64.5 | 9.3 | 0.5 | 2.3 | 26.42 | | 2887 | | 9.29 | 5.99 | 0.86 | 4.6 | 2.14 |
| 2 | -5.82 | 1225 | 9.28 | 28.0 | 50.7 | 69.8 | .0436 | 26.0 | 0.3 | 1.9 | 2.7 | 26.94 | | 3197 | | 10.16 | 2.64 | 0.03 | 19.3 | 2.74 |
| 2 | -4.55 | 1652 | 9.53 | 68.5 | 52.8 | 78.6 | .0450 | 34.0 | 0.8 | 2.0 | 2.9 | 27.09 | | 3255 | | 10.41 | 3.54 | 0.08 | 20.8 | 3.02 |
| 2 | -3.46 | 2450 | 9.12 | 335 | 35.2 | 75.9 | .0437 | 52.0 | 3.9 | 1.3 | 2.9 | 27.15 | | 3173 | | 10.28 | 5.35 | 0.40 | 13.4 | 2.98 |
| 2 | -2.57 | 3460 | 7.62 | 1715 | 5.4 | 58.2 | .0381 | 84.8 | 22.7 | 0.2 | 2.5 | 26.99 | | 2832 | | 9.51 | 8.06 | 2.16 | 1.9 | 2.38 |
| 2 | -1.69 | 3696 | 6.77 | 3114 | 3.4 | 49.5 | .0350 | 98.8 | 44.5 | 0.2 | 2.3 | 26.89 | | 2627 | | 9.10 | 8.99 | 4.05 | 1.8 | 2.09 |
| 2 | -0.63 | 3376 | 7.04 | 2618 | 3.8 | 49.7 | .0359 | 88.0 | 36.6 | 0.2 | 2.3 | 26.78 | | 2691 | | 9.16 | 8.06 | 3.35 | 1.8 | 2.11 |
| 2 | 1.02 | 2507 | 8.26 | 883 | 13.2 | 60.1 | .0401 | 58.2 | 11.1 | 0.5 | 2.5 | 26.89 | | 2976 | | 9.71 | 5.65 | 1.08 | 4.9 | 2.43 |
| 2 | 1.83 | 1924 | 9.31 | 222 | 38.5 | 72.0 | .0442 | 40.3 | 2.6 | 1.4 | 2.7 | 26.99 | | 3209 | | 10.28 | 4.14 | 0.27 | 14.4 | 2.78 |
| 2 | 3.25 | 1495 | 9.73 | 83.5 | 53.5 | 77.3 | .0458 | 30.3 | 0.9 | 1.9 | 2.8 | 26.94 | | 3297 | | 10.47 | 3.17 | 0.09 | 19.9 | 2.93 |
| 2 | 4.33 | 1191 | 9.85 | 25.1 | 60.0 | 79.0 | .0462 | 23.8 | 0.3 | 2.2 | 2.9 | 27.15 | | 3322 | | 10.58 | 2.52 | 0.03 | 23.3 | 3.07 |
| 2 | 5.42 | 1534 | 8.43 | 67.2 | 36.1 | 61.2 | .0400 | 35.6 | 0.8 | 1.5 | 2.5 | 26.73 | | 3010 | | 9.59 | 3.41 | 0.08 | 14.4 | 2.40 |
| | | | | | | | | | | | | | | | | | | | | |

## Table 4. Summary of Plume Measurements, J85-5, Run No. 4-3.

Run Date 2/26/74, Power Setting MAX A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index lb/1000 lb Fuel | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-5}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| 1 | -7.59 | 1163 | 5.11 | 15.3 | 20.2 | 38.3 | .0247 | 44.4 | 0.3 | 1.3 | 2.5 | 18.71 | 13.55 | 2179 | | 4.60 | 2.04 | 0.14 | 0.60 | 1.15 |
| 1 | -6.51 | 4675 | 10.97 | 6.9 | 57.6 | 85.1 | .0527 | 81.6 | 0.1 | 1.8 | 2.7 | 25.86 | | 3586 | | 11.02 | 8.99 | 0.11 | 1.98 | 2.98 |
| 1 | -5.08 | 8396 | 11.92 | 8.5 | 70.2 | 102 | .0585 | 131.4 | 0.1 | 2.0 | 3.0 | 26.17 | | 3804 | | 11.91 | 15.65 | 0.12 | 2.38 | 3.57 |
| 1 | -3.65 | 9786 | 11.45 | 40.2 | 61.6 | 99.7 | .0571 | 157.2 | 0.4 | 1.8 | 2.9 | 26.11 | | 3721 | | 11.78 | 18.52 | 0.47 | 2.12 | 3.42 |
| 1 | -2.24 | 6532 | 10.04 | 346 | 32.3 | 78.8 | .0496 | 121.6 | 3.6 | 1.1 | 2.7 | 25.45 | | 3404 | | 10.52 | 12.79 | 3.79 | 1.16 | 2.84 |
| 1 | -0.95 | 5502 | 9.07 | 820 | 13.1 | 61.9 | .0451 | 113.1 | 9.2 | 0.5 | 2.3 | 25.14 | | 3186 | | 9.84 | 11.13 | 9.05 | 0.49 | 2.26 |
| 1 | 0.73 | 5603 | 9.12 | 816 | 13.5 | 59.3 | .0454 | 114.5 | 9.1 | 0.5 | 2.2 | 24.62 | | 3197 | | 9.67 | 11.07 | 8.80 | 0.48 | 2.13 |
| 1 | 1.92 | 6684 | 9.85 | 428 | 25.1 | 68.5 | .0489 | 126.3 | 4.5 | 0.9 | 2.1 | 24.98 | | 3366 | | 10.26 | 12.96 | 4.62 | 0.92 | 2.15 |
| 1 | 3.67 | 9091 | 11.20 | 68.3 | 51.3 | 87.8 | .0558 | 149.8 | 0.6 | 1.6 | 2.7 | 25.76 | | 3666 | | 11.43 | 17.12 | 0.69 | 1.83 | 3.09 |
| 1 | 4.74 | 10133 | 12.10 | 14.4 | 68.9 | 102 | .0601 | 154.3 | 0.1 | 1.9 | 2.9 | 26.37 | | 3853 | | 12.22 | 18.86 | 0.12 | 2.32 | 3.54 |
| 1 | 6.17 | 5519 | 11.16 | 7.2 | 54.8 | 79.5 | .0539 | 94.1 | 0.1 | 1.7 | 2.5 | 26.17 | | 3630 | | 11.30 | 10.63 | 0.11 | 1.92 | 2.83 |
| 1 | 7.25 | 2286 | 6.31 | 78.4 | 15.1 | 38.4 | .0308 | 69.7 | 1.3 | 0.8 | 0.8 | 21.74 | | 2505 | | 6.59 | 4.59 | 0.86 | 0.53 | 0.53 |
| 2 | -8.00 | 1907 | 5.79 | 76.5 | 19.4 | 43.6 | .0282 | 63.6 | 1.4 | 1.1 | 2.5 | 19.93 | | 2368 | | 7.63 | 4.85 | 1.07 | 0.84 | 1.91 |
| 2 | -6.55 | 7713 | 11.92 | 5.7 | 66.6 | 95.2 | .0582 | 121.4 | 0.1 | 1.9 | 2.8 | 26.32 | | 3799 | | 11.93 | 9.26 | 0.08 | 1.45 | 2.14 |
| 2 | -5.46 | 8744 | 11.55 | 10.0 | 61.9 | 93.4 | .0571 | 140.5 | 0.1 | 1.8 | 2.8 | 25.09 | | 3734 | | 11.29 | 15.86 | 0.11 | 2.03 | 3.16 |
| 2 | -4.19 | 11473 | 11.07 | 52.5 | 50.2 | 87.0 | .0563 | 187.5 | 0.5 | 1.5 | 2.6 | 24.93 | | 3657 | | 11.18 | 20.96 | 0.56 | 1.68 | 2.91 |
| 2 | -2.93 | 9984 | 10.45 | 198 | 37.2 | 79.0 | .0530 | 173.8 | 1.9 | 1.2 | 2.5 | 24.62 | | 3520 | | 10.65 | 18.51 | 2.02 | 1.28 | 2.66 |
| 2 | -1.36 | 6143 | 8.54 | 1591 | 6.4 | 57.3 | .0434 | 131.5 | 18.6 | 0.2 | 2.2 | 25.59 | | 3071 | | 9.84 | 12.94 | 18.3 | 0.20 | 2.16 |
| 2 | -0.63 | 5738 | 8.93 | 1184 | 10.5 | 62.7 | .0448 | 118.9 | 13.4 | 0.4 | 2.3 | 25.59 | | 3156 | | 9.98 | 11.87 | 13.37 | 0.40 | 2.30 |
| 2 | 1.49 | 7038 | 10.93 | 149 | 44.0 | 79.7 | .0537 | 120.7 | 1.4 | 1.4 | 2.5 | 25.90 | | 3596 | | 11.20 | 13.52 | 1.57 | 1.57 | 2.80 |
| 2 | 2.53 | 7780 | 11.72 | 26.7 | 59.5 | 90.9 | .0574 | 124.3 | 0.2 | 1.8 | 2.7 | 26.00 | | 3760 | | 11.70 | 14.54 | 0.23 | 2.11 | 3.16 |
| 2 | 3.78 | 10133 | 12.34 | 7.7 | 76.5 | 105 | .0611 | 154.5 | 0.1 | 2.1 | 2.9 | 26.47 | | 3900 | | 12.38 | 18.76 | 0.12 | 2.60 | 3.56 |
| 2 | 4.87 | 11275 | 12.30 | 7.4 | 73.9 | 97.3 | .0615 | 167.7 | 0.1 | 2.0 | 2.7 | 26.42 | | 3899 | | 12.42 | 20.83 | 0.12 | 2.48 | 3.36 |
| 2 | 5.79 | 4911 | 10.07 | 6.8 | 42.5 | 66.4 | .0488 | 92.9 | 0.1 | 1.5 | 2.3 | 25.02 | | 3399 | | 10.21 | 9.49 | 0.10 | 1.53 | 2.35 |
| | | | | | | | | | | | | | | | | | | | | |

## Table 5. Summary of Plume Measurements, J85-5, Run No. 5.

Run Date 2/27/74, Power Setting MIL, Axial Station 3.75 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 2 | -8.37 | 255 | 1.25 | 33.6 | 10.8 | 18.4 | .0061 | 39.8 | 2.7 | 2.8 | 4.8 | 15.78 | 13.57 | 977 | | 1.15 | .458 | 3.11 | .322 | .552 |
| 2 | -6.91 | 353 | 1.89 | 35.3 | 15.3 | 27.2 | .0092 | 36.4 | 1.9 | 2.6 | 4.7 | 18.38 | | 1207 | | 2.28 | .830 | 4.33 | .593 | 1.07 |
| 2 | -5.46 | 452 | 2.59 | 37.2 | 19.3 | 35.3 | .0126 | 34.2 | 1.4 | 2.4 | 4.5 | 23.36 | | 1436 | | 3.98 | 1.36 | 5.57 | .955 | 1.79 |
| 2 | -4.37 | 598 | 3.01 | 37.9 | 22.7 | 41.5 | .0146 | 38.9 | 1.3 | 2.5 | 4.6 | 26.37 | | 1568 | | 4.99 | 1.94 | 6.49 | 1.25 | 2.30 |
| 2 | -3.28 | 653 | 3.37 | 38.1 | 25.7 | 46.4 | .0163 | 38.0 | 1.1 | 2.5 | 4.6 | 28.24 | | 1679 | | 5.72 | 2.17 | 6.29 | 1.43 | 2.63 |
| 2 | -1.53 | 646 | 3.51 | 36.6 | 27.9 | 48.5 | .0170 | 36.1 | 1.1 | 2.6 | 4.6 | 28.44 | | 1722 | | 5.91 | 2.13 | 6.50 | 1.54 | 2.72 |
| 2 | -0.69 | 634 | 3.50 | 37.0 | 28.0 | 48.9 | .0169 | 35.5 | 1.1 | 2.7 | 4.6 | 28.50 | | 1719 | | 5.91 | 2.10 | 6.50 | 1.60 | 2.72 |
| 2 | 1.32 | 627 | 3.40 | 38.5 | 27.0 | 47.5 | .0165 | 36.0 | 1.1 | 2.6 | 4.6 | 28.34 | | 1690 | | 5.77 | 2.08 | 6.35 | 1.50 | 2.65 |
| 2 | 2.71 | 543 | 2.86 | 39.4 | 22.4 | 40.8 | .0139 | 37.1 | 1.4 | 2.6 | 4.7 | 25.80 | | 1524 | | 4.73 | 1.75 | 6.62 | 1.23 | 2.22 |
| 2 | 3.78 | 402 | 2.29 | 38.6 | 17.8 | 32.4 | .0111 | 34.5 | 1.7 | 2.6 | 4.7 | 21.18 | | 1337 | | 3.24 | 1.12 | 5.51 | .842 | 1.52 |
| 2 | 5.59 | 295 | 1.54 | 36.5 | 12.6 | 22.3 | .0075 | 37.5 | 2.4 | 2.7 | 4.7 | 16.77 | | 1086 | | 1.60 | .60 | 3.84 | .432 | .752 |
| 2 | 6.32 | 217 | 1.02 | 34.5 | 9.2 | 15.9 | .0049 | 41.2 | 3.3 | 2.9 | 5.0 | 15.11 | | 905 | | 0.91 | .334 | 2.67 | .235 | .405 |
| 2 | 7.05 | 185 | 0.81 | 34.4 | 7.8 | 14.1 | .0039 | 44.6 | 4.2 | 3.1 | 5.6 | 14.64 | | 842 | | 0.55 | .245 | 2.31 | .171 | .308 |
| 2 | 8.51 | 117 | 0.42 | 32.7 | 5.4 | 8.7 | .0020 | 53.4 | 7.5 | 4.0 | 6.5 | 13.97 | | 706 | | 0.19 | .101 | 1.43 | .076 | .124 |

NOTE: Only Probe #2 Data Listed. Probe #1 Position NO.

# Table 6. Summary of Plume Measurements, J85-5, Run No. 6-1.

Run Date 2/28/74, Power Setting MIN A/B, Axial Station 3.75 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -9.74 | 700 | 1.10 | 1050 | 2.0 | 11.5 | .0061 | 109 | 83.0 | 0.5 | 3.0 | 14.48 | 13.61 | 916 | | 0.75 | .818 | 62.3 | .038 | .225 |
| | -8.66 | 932 | 1.47 | 1112 | 1.9 | 15.1 | .0089 | 111 | 67.3 | 0.4 | 3.0 | 15.41 | | 1046 | | 1.31 | 1.45 | 88.2 | .052 | .393 |
| | -7.59 | 1193 | 2.04 | 1361 | 2.1 | 18.9 | .0110 | 104 | 60.4 | 0.3 | 2.7 | 16.60 | | 1246 | | 2.11 | 2.19 | 127 | .063 | .570 |
| | -6.15 | 1559 | 3.09 | 1584 | 2.5 | 26.9 | .0162 | 91.4 | 48.0 | 0.2 | 2.7 | 20.04 | | 1580 | | 3.99 | 3.65 | 192 | .080 | 1.08 |
| | -4.36 | 1809 | 4.49 | 1428 | 3.2 | 38.3 | .0228 | 75.0 | 31.0 | 0.2 | 2.7 | 25.85 | | 1991 | | 6.67 | 5.00 | 207 | .133 | 1.80 |
| | -2.94 | 1847 | 5.17 | 1439 | 4.0 | 44.8 | .0260 | 66.9 | 27.5 | 0.3 | 2.8 | 28.12 | | 2180 | | 7.82 | 5.23 | 215 | .235 | 2.19 |
| | -1.24 | 1907 | 5.13 | 2045 | 3.5 | 45.0 | .0261 | 68.8 | 38.9 | 0.2 | 2.8 | 28.06 | | 2167 | | 7.86 | 5.41 | 306 | .157 | 2.20 |
| | 0.53 | 1999 | 5.10 | 2268 | 3.3 | 43.7 | .0262 | 72.1 | 43.1 | 0.2 | 2.7 | 26.22 | | 2160 | | 7.92 | 5.71 | 341 | .158 | 2.14 |
| | 2.26 | 2022 | 5.03 | 2175 | 3.2 | 41.9 | .0258 | 73.9 | 41.9 | 0.2 | 2.6 | 28.17 | | 2143 | | 7.84 | 5.79 | 328 | .157 | 2.04 |
| | 3.67 | 1897 | 4.20 | 1879 | 2.7 | 35.3 | .0217 | 82.7 | 42.8 | 0.2 | 2.6 | 25.08 | | 1910 | | 6.31 | 5.22 | 270 | .126 | 1.64 |
| | 5.45 | 1654 | 3.10 | 1744 | 2.1 | 27.3 | .0164 | 95.9 | 52.3 | 0.2 | 2.7 | 20.25 | | 1585 | | 4.08 | 3.91 | 213 | .082 | 1.10 |
| | 6.89 | 1322 | 2.09 | 1496 | 1.8 | 20.1 | .0113 | 111 | 64.3 | 0.3 | 2.8 | 17.11 | | 1262 | | 2.34 | 2.60 | 150 | .070 | .655 |
| | 7.96 | 999 | 1.44 | 1236 | 1.7 | 15.2 | .0079 | 120 | 75.3 | 0.3 | 3.0 | 15.26 | | 1036 | | 1.26 | 1.51 | 94.9 | .038 | .378 |
| | 10.12 | 447 | 0.67 | 798 | 1.3 | 8.4 | .0037 | 112 | 101 | 0.6 | 3.5 | 13.77 | | 787 | | 0.21 | .235 | 21.2 | .013 | .074 |
| | 11.55 | 298 | 0.38 | 450 | 1.0 | 5.7 | .0021 | 130 | 98.4 | 0.8 | 4.1 | 13.61 | | 663 | | 0 | 0 | 0 | 0 | 0 |
| 2 | 10.53 | 237 | 0.28 | 469 | 1.5 | 4.8 | .0016 | 136 | 135 | 1.4 | 4.5 | 13.61 | | 616 | | 0 | 0 | 0 | 0 | 0 |
| | 11.78 | 78 | 0.03 | 170.3 | 0.8 | 2.0 | .0001 | 273 | 298 | 4.4 | 11.5 | 13.61 | | 512 | | 0 | 0 | 0 | 0 | 0 |
| | 13.24 | 20 | 0.03 | 40 | 0.4 | 1.2 | .0000 | 103 | 104 | 3.3 | 10.4 | 13.61 | | 511 | | 0 | 0 | 0 | 0 | 0 |
| | 9.07 | 478 | 0.73 | 1077 | 1.9 | 9.0 | .0042 | 108 | 122 | 0.7 | 3.4 | 14.02 | | 806 | | 0.37 | .400 | 45.1 | .026 | .126 |
| | 7.24 | 900 | 1.25 | 1428 | 2.5 | 13.8 | .0070 | 121 | 97.6 | 0.6 | 3.1 | 14.90 | | 966 | | 1.02 | 1.23 | 99.5 | .061 | .316 |
| | 6.15 | 1342 | 2.07 | 1983 | 2.5 | 20.1 | .0115 | 111 | 84.2 | 0.4 | 2.8 | 17.08 | | 1257 | | 2.36 | 2.62 | 199 | .094 | .661 |
| | 4.33 | 1722 | 3.08 | 1926 | 2.8 | 27.9 | .0164 | 99.6 | 57.6 | 0.3 | 2.7 | 20.51 | | 1580 | | 4.17 | 4.15 | 240 | .125 | 1.13 |
| | 3.06 | 1910 | 4.32 | 1532 | 3.2 | 37.0 | .0221 | 81.6 | 34.3 | 0.2 | 2.7 | 25.33 | | 1946 | | 6.43 | 5.25 | 221 | .129 | 1.74 |
| | 1.66 | 2032 | 5.18 | 1459 | 4.2 | 44.0 | .0261 | 73.3 | 27.8 | 0.3 | 2.7 | 27.92 | | 2184 | | 7.80 | 5.72 | 217 | .234 | 2.11 |
| | .68 | 1990 | 5.01 | 1817 | 3.7 | 44.5 | .0255 | 73.5 | 35.4 | 0.2 | 2.8 | 27.98 | | 2138 | | 7.72 | 5.67 | 273 | .154 | 2.16 |
| | -1.36 | 1929 | 4.75 | 2454 | 3.2 | 44.1 | .0246 | 74.0 | 49.5 | 0.2 | 2.9 | 27.98 | | 2064 | | 7.58 | 5.61 | 375 | .152 | 2.20 |
| | -2.93 | 2045 | 4.79 | 2387 | 3.2 | 42.9 | .0248 | 77.9 | 47.8 | 0.2 | 2.8 | 28.18 | | 2075 | | 7.66 | 5.97 | 366 | .153 | 2.14 |

## Table 7. Summary of Plume Measurements, J85-5, Run No. 6-2.

Run Date 2/28/74, Power Setting MID A/B, Axial Station 3.75 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -10.46 | 824 | 2.30 | 125 | 3.9 | 17.9 | .0114 | 68.8 | 5.3 | 0.5 | 2.5 | 15.21 | 13.60 | 1334 | | 1.56 | 1.07 | 8.27 | 0.078 | 0.390 |
| 1 | - 9.19 | 983 | 3.37 | 114 | 7.8 | 24.9 | .0165 | 56.4 | 3.4 | 0.8 | 2.4 | 16.39 | | 1672 | | 2.65 | 1.49 | 9.01 | 0.212 | 0.636 |
| 1 | - 7.75 | 1087 | 4.69 | 64.7 | 13.4 | 34.0 | .0227 | 45.1 | 1.4 | 1.0 | 2.4 | 18.19 | | 2054 | | 4.14 | 1.87 | 5.80 | 0.414 | 0.994 |
| 1 | - 6.32 | 1056 | 6.69 | 36.2 | 26.4 | 45.6 | .0319 | 31.0 | 0.6 | 1.4 | 2.3 | 19.64 | | 2576 | 1431 | 5.84 | 1.81 | 3.50 | 0.818 | 1.34 |
| 1 | - 4.53 | 1089 | 9.02 | 30.7 | 43.9 | 63.5 | .0424 | 23.8 | 0.4 | 1.7 | 2.5 | 25.75 | | 3128 | | 9.59 | 2.28 | 3.84 | 1.63 | 2.40 |
| 1 | - 2.76 | 1410 | 9.84 | 58.1 | 47.2 | 70.5 | .0462 | 28.2 | 0.6 | 1.7 | 2.5 | 26.62 | | 3309 | | 10.42 | 2.94 | 6.25 | 1.77 | 2.61 |
| 1 | - 0.82 | 1553 | 9.75 | 75.5 | 41.9 | 68.4 | .0459 | 31.3 | 0.8 | 1.5 | 2.5 | 26.52 | | 3292 | | 10.35 | 3.24 | 8.28 | 1.55 | 2.59 |
| 1 | 1.11 | 1431 | 10.01 | 50.4 | 46.6 | 69.6 | .0470 | 28.1 | 0.5 | 1.7 | 2.5 | 26.52 | | 3346 | | 10.48 | 2.94 | 5.24 | 1.78 | 2.62 |
| 1 | 2.79 | 1156 | 9.78 | 27.9 | 47.0 | 67.2 | .0458 | 23.3 | 0.3 | 1.7 | 2.4 | 26.32 | | 3295 | | 10.25 | 2.39 | 3.08 | 1.74 | 2.46 |
| 1 | 4.56 | 988 | 7.49 | 26.8 | 29.7 | 49.3 | .0355 | 26.0 | 0.4 | 1.4 | 2.3 | 22.87 | | 2772 | | 7.61 | 1.98 | 3.04 | 1.07 | 1.75 |
| 1 | 6.35 | 948 | 5.01 | 42.0 | 16.0 | 33.3 | .0242 | 37.0 | 0.9 | 1.1 | 2.2 | 18.66 | | 2141 | | 4.50 | 1.67 | 4.05 | 0.495 | 0.99 |
| 1 | 8.14 | 778 | 3.09 | 65.4 | 8.0 | 20.7 | .0151 | 49.0 | 2.1 | 0.9 | 2.2 | 15.93 | | 1582 | | 2.27 | 1.11 | 4.77 | 0.204 | 0.499 |
| 1 | 10.29 | 446 | 1.55 | 75.9 | 3.0 | 12.9 | .0076 | 55.5 | 4.8 | 0.6 | 2.7 | 14.38 | | 1078 | | 0.82 | 0.455 | 3.94 | 0.049 | 0.221 |
| 1 | 11.72 | 275 | 0.82 | 56.7 | 1.8 | 8.4 | .0040 | 64.5 | 6.7 | 0.7 | 3.3 | 13.66 | | 837 | | 0.13 | 0.084 | 0.871 | 0.009 | 0.043 |
| 1 | 13.87 | 118 | 0.34 | 33.2 | 1.3 | 3.0 | .0016 | 67.1 | 9.5 | 1.2 | 2.8 | 13.71 | | 648 | | 0.08 | 0.054 | 0.616 | 0.003 | 0.019 |
| 2 | -11.65 | 763 | 1.72 | 137 | 2.2 | 12.9 | .0086 | 83.9 | 7.7 | 0.4 | 2.4 | 14.28 | | 1143 | | 0.84 | 0.705 | 6.47 | 0.034 | 0.202 |
| 2 | - 9.46 | 1176 | 3.33 | 140 | 3.9 | 22.9 | .0165 | 67.8 | 4.2 | 0.4 | 2.2 | 16.04 | | 1663 | | 2.48 | 1.68 | 10.4 | 0.099 | 0.546 |
| 2 | - 7.64 | 1348 | 6.27 | 72.6 | 17.1 | 40.0 | .0302 | 42.0 | 1.2 | 0.9 | 2.2 | 20.61 | | 2475 | | 6.06 | 2.54 | 7.27 | 0.545 | 1.33 |
| 2 | - 5.82 | 1204 | 8.84 | 31.7 | 38.6 | 59.1 | .0417 | 26.8 | 0.4 | 1.5 | 2.4 | 25.07 | | 3087 | | 9.24 | 2.48 | 3.70 | 1.39 | 2.22 |
| 2 | - 4.01 | 1416 | 10.43 | 31.4 | 49.0 | 73.1 | .0488 | 26.7 | 0.5 | 1.7 | 2.5 | 26.94 | | 3436 | | 10.88 | 2.90 | 5.44 | 1.85 | 2.72 |
| 2 | - 2.22 | 1821 | 9.75 | 121 | 35.8 | 66.1 | .0461 | 36.6 | 1.3 | 1.3 | 2.4 | 26.47 | | 3294 | | 10.35 | 3.79 | 13.5 | 1.35 | 2.48 |
| 2 | - 0.69 | 1635 | 9.98 | 102 | 40.5 | 67.0 | .0470 | 32.2 | 1.1 | 1.4 | 2.4 | 26.58 | | 3341 | | 10.51 | 3.38 | 11.6 | 1.47 | 2.52 |
| 2 | 1.67 | 1034 | 11.00 | 29.8 | 53.1 | 73.8 | .0511 | 18.6 | 0.3 | 1.7 | 2.4 | 27.30 | | 3550 | | 11.31 | 2.10 | 3.39 | 1.92 | 2.71 |
| 2 | 3.42 | 932 | 9.74 | 19.0 | 45.7 | 64.3 | .0455 | 18.9 | 0.2 | 1.7 | 2.4 | 26.00 | | 3283 | | 10.09 | 1.90 | 2.02 | 1.72 | 2.42 |
| 2 | 5.32 | 1187 | 6.77 | 49.0 | 22.7 | 43.0 | .0323 | 34.4 | 0.8 | 1.2 | 2.2 | 21.08 | | 2600 | | 6.51 | 2.24 | 5.21 | 0.781 | 1.43 |
| 2 | 7.05 | 1134 | 3.87 | 126 | 6.2 | 25.5 | .0190 | 56.7 | 3.3 | 0.5 | 2.2 | 16.56 | | 1821 | | 2.98 | 1.69 | 9.83 | 0.149 | 0.656 |
| 2 | 8.87 | 840 | 2.17 | 166 | 2.4 | 15.6 | .0108 | 74.0 | 7.5 | 0.4 | 2.3 | 14.59 | | 1291 | | 1.18 | .873 | 8.85 | 0.047 | 0.271 |
| 2 | 11.06 | 410 | 1.01 | 129 | 1.8 | 9.2 | .0050 | 77.1 | 12.3 | 0.5 | 2.9 | 13.76 | | 892 | | 0.27 | .208 | 3.32 | 0.014 | 0.078 |

## Table 8. Summary of Plume Measurements, J85-5, Run No. 6-3.

Run Date 2/28/75, Power Setting MAX A/B, Axial Station 3.75 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | $Fuel_3$ ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | 12.98 | 210 | 0.72 | 15.9 | 3.7 | 5.5 | .0035 | 56.6 | 2.2 | 1.6 | 2.5 | 13.71 | 13.60 | 806 | | 0.17 | 0.096 | 0.374 | 0.027 | 0.043 |
| 1 | 10.65 | 579 | 2.29 | 16.5 | 9.5 | 17.3 | .0112 | 49.1 | 0.7 | 1.4 | 2.5 | 14.43 | | 1328 | | 1.12 | 0.550 | 0.784 | 0.157 | 0.280 |
| 1 | 8.32 | 1076 | 4.66 | 14.7 | 17.2 | 32.1 | .0226 | 45.1 | 0.3 | 1.2 | 2.3 | 16.34 | | 2045 | | 3.21 | 1.45 | 0.963 | 0.385 | 0.738 |
| 1 | 6.52 | 1932 | 7.97 | 13.5 | 32.9 | 54.4 | .0381 | 47.3 | 0.2 | 1.4 | 2.4 | 20.14 | | 2895 | | 6.78 | 3.21 | 1.36 | 0.949 | 1.63 |
| 1 | 4.20 | 6307 | 12.41 | 13.8 | 56.8 | 85.7 | .0597 | 96.6 | 0.1 | 1.5 | 2.4 | 25.39 | | 3874 | | 11.69 | 11.3 | 1.75 | 1.75 | 2.81 |
| 1 | 2.26 | 6222 | 13.38 | 13.9 | 58.3 | 89.0 | .0638 | 88.7 | 0.1 | 1.6 | 2.4 | 25.65 | | 4060 | | 12.26 | 10.9 | 1.23 | 1.96 | 2.94 |
| 1 | -0.65 | 4196 | 12.83 | 13.9 | 57.4 | 84.1 | .0605 | 61.9 | 0.1 | 1.6 | 2.4 | 25.39 | | 3940 | | 11.73 | 7.26 | 1.17 | 1.88 | 2.82 |
| 1 | -2.41 | 4766 | 13.04 | 13.7 | 60.5 | 89.2 | .0617 | 70.4 | 0.1 | 1.7 | 2.5 | 25.85 | | 3984 | | 12.09 | 8.51 | 1.21 | 2.06 | 3.02 |
| 1 | -4.36 | 5511 | 12.55 | 13.5 | 61.0 | 87.4 | .0599 | 84.0 | 0.1 | 1.5 | 2.5 | 25.70 | | 3896 | | 11.83 | 9.94 | 1.18 | 1.77 | 2.96 |
| 1 | -6.51 | 2152 | 9.07 | 13.1 | 36.0 | 58.1 | .0431 | 46.3 | 0.2 | 1.4 | 2.2 | 21.58 | | 3147 | | 8.02 | 3.71 | 1.60 | 1.12 | 1.76 |
| 1 | -8.83 | 1070 | 5.35 | 13.5 | 17.6 | 33.5 | .0259 | 39.0 | 0.3 | 1.1 | 2.1 | 17.11 | | 2238 | | 3.95 | 1.54 | 1.19 | 0.435 | 0.830 |
| 1 | -10.98 | 631 | 3.14 | 14.5 | 11.4 | 20.5 | .0152 | 39.3 | 0.5 | 1.2 | 2.2 | 15.26 | | 1597 | | 1.94 | 0.762 | 0.970 | 0.233 | 0.427 |
| 2 | 11.78 | 261 | 0.89 | 18.5 | 3.8 | 8.8 | .0043 | 56.8 | 2.0 | 1.4 | 3.2 | 13.60 | | 858 | | 0 | 0 | 0 | 0 | 0 |
| 2 | 9.96 | 514 | 2.20 | 17.7 | 9.4 | 17.6 | .0107 | 45.7 | 0.8 | 1.4 | 2.6 | 14.28 | | 1296 | | 0.98 | 0.448 | 0.784 | 0.137 | 0.255 |
| 2 | 7.41 | 1109 | 4.49 | 15.7 | 16.9 | 31.8 | .0218 | 48.1 | 0.4 | 1.3 | 2.4 | 16.04 | | 1999 | | 2.97 | 1.43 | 1.19 | 0.386 | 0.713 |
| 2 | 5.59 | 2354 | 9.18 | 13.8 | 40.8 | 65.4 | .0437 | 49.9 | 0.2 | 1.6 | 2.5 | 21.32 | | 3174 | | 7.93 | 3.96 | 1.59 | 1.27 | 1.98 |
| 2 | 3.42 | 6967 | 13.15 | 13.6 | 62.7 | 94.0 | .0631 | 101 | 0.1 | 1.7 | 2.5 | 25.85 | | 4021 | | 12.29 | 12.4 | 1.23 | 2.09 | 3.07 |
| 2 | 1.02 | 6527 | 13.73 | 14.0 | 64.2 | 94.0 | .0654 | 90.6 | 0.1 | 1.7 | 2.4 | 26.11 | | 4127 | | 12.65 | 11.5 | 1.27 | 2.15 | 3.04 |
| 2 | -1.53 | 3869 | 12.55 | 14.3 | 55.2 | 815 | .0592 | 59.7 | 0.1 | 1.6 | 2.3 | 25.33 | | 3883 | | 11.56 | 6.90 | 1.16 | 1.85 | 2.66 |
| 2 | -3.28 | 6933 | 13.23 | 14.0 | 56.3 | 86.8 | .0635 | 99.4 | 0.1 | 1.5 | 2.3 | 25.90 | | 4037 | | 12.35 | 12.28 | 1.24 | 1.85 | 2.84 |
| 2 | -5.09 | 7644 | 13.01 | 13.6 | 53.9 | 87.0 | .0629 | 111 | 0.1 | 1.5 | 2.4 | 25.95 | | 4000 | | 12.32 | 13.68 | 1.23 | 1.85 | 2.96 |
| 2 | -7.64 | 2155 | 8.69 | 13.3 | 32.0 | 52.8 | .0415 | 48.3 | 0.2 | 1.3 | 2.1 | 20.66 | | 3063 | | 7.40 | 3.57 | 1.48 | 0.962 | 1.55 |
| 2 | -9.83 | 1081 | 4.75 | 14.5 | 14.4 | 28.8 | .0230 | 44.5 | 0.3 | 1.0 | 2.0 | 16.35 | | 2069 | | 3.26 | 1.45 | 0.978 | 0.326 | 0.652 |
| 2 | -12.01 | 466 | 2.07 | 16.3 | 8.2 | 14.8 | .0101 | 44.0 | 0.8 | 1.3 | 2.3 | 14.18 | | 1253 | | 0.86 | 0.378 | 0.688 | 0.112 | 0.198 |
| 2 | -14.19 | 249 | 0.91 | 16.1 | 4.3 | 6.9 | .0044 | 52.9 | 1.7 | 1.5 | 2.4 | 13.71 | | 865 | | 0.20 | 0.106 | 0.340 | 0.030 | 0.048 |

## Table 9. Summary of Plume Measurements, J85-5, Run No. 7-1.

Run Date 3/1/74, Power Setting MIL, Axial Station 7.5 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -11.53 | 163 | 0.71 | 19.7 | 5.7 | 11.1 | .0034 | 44.4 | 2.7 | 2.6 | 5.0 | 14.57 | 13.61 | 800 | | 0.47 | 0.21 | 1.27 | 0.12 | 0.24 |
| 1 | -9.02 | 241 | 1.15 | 21.4 | 8.2 | 16.2 | .0056 | 40.9 | 1.8 | 2.3 | 4.6 | 15.90 | | 926 | | 1.10 | 0.49 | 1.98 | 0.25 | 0.51 |
| 1 | -6.51 | 322 | 1.59 | 23.2 | 10.5 | 21.6 | .0077 | 39.6 | 1.5 | 2.2 | 4.4 | 18.07 | | 1082 | | 1.94 | 0.77 | 2.91 | 0.43 | 0.85 |
| 1 | -4.01 | 410 | 2.18 | 25.3 | 14.1 | 28.7 | .0106 | 36.8 | 1.2 | 2.1 | 4.3 | 21.88 | | 1282 | | 3.28 | 1.21 | 3.94 | 0.69 | 1.41 |
| 1 | -1.56 | 466 | 2.56 | 27.6 | 16.3 | 33.7 | .0124 | 35.6 | 1.1 | 2.1 | 4.4 | 25.02 | | 1406 | | 4.26 | 1.52 | 4.69 | 0.90 | 1.87 |
| 1 | 1.26 | 458 | 2.48 | 29.1 | 15.4 | 32.5 | .0120 | 36.2 | 1.2 | 2.1 | 4.3 | 24.35 | | 1378 | | 4.05 | 1.47 | 4.86 | 0.85 | 1.74 |
| 1 | 3.67 | 385 | 1.88 | 29.0 | 11.8 | 26.0 | .0091 | 40.0 | 1.5 | 2.1 | 4.5 | 19.87 | | 1181 | | 2.59 | 1.04 | 3.89 | 0.54 | 1.17 |
| 1 | 6.17 | 293 | 1.36 | 26.4 | 8.6 | 18.7 | .0066 | 42.0 | 1.9 | 2.1 | 4.5 | 16.63 | | 996 | | 1.43 | 0.60 | 2.72 | 0.30 | 0.64 |
| 1 | 8.68 | 218 | 0.94 | 23.6 | 6.3 | 13.6 | .0045 | 45.3 | 2.5 | 2.2 | 4.7 | 15.08 | | 868 | | 0.74 | 0.34 | 1.85 | 0.16 | 0.35 |
| 1 | 11.19 | 141 | 0.50 | 20.5 | 4.1 | 8.3 | .0024 | 54.0 | 4.0 | 2.6 | 5.3 | 14.10 | | 723 | | 0.25 | 0.14 | 1.00 | 0.07 | 0.13 |
| 1 | 13.70 | 84.4 | 0.21 | 18.4 | 2.7 | 5.1 | .0009 | 76.7 | 8.4 | 4.0 | 7.7 | 13.74 | | 585 | | 0.06 | 0.46 | 0.50 | 0.02 | 0.05 |
| 2 | -16.52 | 61.1 | 0.13 | 17.0 | 2.3 | 4.0 | .0005 | 90.7 | 12.7 | 5.8 | 9.8 | 13.66 | | 552 | | 0.02 | 0.18 | 0.25 | 0.01 | 0.02 |
| 2 | -13.94 | 116 | 0.40 | 18.0 | 4.2 | 7.5 | .0019 | 55.9 | 4.4 | 3.3 | 6.0 | 14.02 | | 672 | | 0.18 | 0.10 | 0.79 | 0.06 | 0.11 |
| 2 | -11.65 | 176 | 0.72 | 19.3 | 6.0 | 11.7 | .0034 | 47.6 | 2.6 | 2.7 | 5.2 | 14.59 | | 802 | | 0.48 | 0.23 | 1.25 | 0.13 | 0.25 |
| 2 | -8.92 | 257 | 1.18 | 21.3 | 8.4 | 17.4 | .0057 | 42.5 | 1.8 | 2.3 | 4.8 | 16.04 | | 934 | | 1.15 | 0.49 | 2.07 | 0.27 | 0.55 |
| 2 | -6.00 | 359 | 1.78 | 24.4 | 12.3 | 25.1 | .0086 | 39.5 | 1.4 | 2.3 | 4.6 | 19.42 | | 1146 | | 2.40 | 0.95 | 3.36 | 0.55 | 1.10 |
| 2 | -3.28 | 450 | 2.45 | 27.2 | 15.8 | 32.4 | .0119 | 35.9 | 1.1 | 2.1 | 4.4 | 23.77 | | 1370 | | 3.92 | 1.41 | 4.31 | 0.82 | 1.73 |
| 2 | -0.69 | 474 | 2.63 | 27.8 | 17.0 | 34.9 | .0128 | 35.3 | 1.1 | 2.1 | 4.4 | 25.33 | | 1427 | | 4.39 | 1.55 | 4.83 | 0.92 | 1.93 |
| 2 | 2.89 | 407 | 2.00 | 26.9 | 13.5 | 28.4 | .0097 | 39.7 | 1.3 | 2.2 | 4.7 | 21.23 | | 1223 | | 2.98 | 1.18 | 3.87 | 0.66 | 1.40 |
| 2 | 5.59 | 294 | 1.38 | 23.9 | 9.1 | 19.1 | .0067 | 41.7 | 1.7 | 2.1 | 4.5 | 16.77 | | 1002 | | 1.48 | 0.62 | 2.52 | 0.31 | 0.67 |
| 2 | 8.51 | 196 | 0.83 | 20.5 | 6.0 | 12.5 | .0040 | 46.1 | 2.4 | 2.4 | 4.9 | 14.69 | | 834 | | 0.57 | 0.26 | 1.37 | 0.14 | 0.28 |
| 2 | 11.42 | 119 | 0.41 | 18.2 | 3.8 | 7.4 | .0019 | 56.6 | 4.4 | 3.0 | 5.8 | 13.97 | | 674 | | 0.17 | 0.10 | 0.75 | 0.05 | 0.10 |
| 2 | 13.97 | 71.6 | 0.17 | 16.7 | 2.6 | 4.7 | .0007 | 78.4 | 9.2 | 4.7 | 8.4 | 13.66 | | 570 | | 0.03 | 0.02 | 0.28 | 0.01 | 0.03 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

## Table 10. Summary of Plume Measurements, J85-5, Run No. 7-2.

Run Date 3/1/74, Power Setting MIN A/B, Axial Station 7.5 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -17.41 | 282 | 0.48 | 371 | 0.8 | 5.2 | .0025 | 104 | 69.0 | 0.5 | 3.1 | 13.74 | 13.60 | 722 | | 0.14 | 0.15 | 9.66 | 0.007 | 0.043 |
| 1 | -14.20 | 476 | 0.99 | 684 | 0.9 | 9.0 | .0052 | 85.8 | 62.5 | 0.3 | 2.7 | 14.26 | | 889 | | 0.57 | 0.489 | 35.6 | 0.017 | 0.154 |
| 1 | -10.98 | 823 | 1.54 | 951 | 1.2 | 13.4 | .0082 | 85.8 | 56.4 | 0.2 | 2.6 | 15.29 | | 1079 | | 1.28 | 1.23 | 72.2 | 0.026 | 0.333 |
| 1 | - 7.75 | 1220 | 2.56 | 1210 | 1.3 | 19.9 | .0133 | 86.9 | 44.4 | 0.2 | 2.4 | 17.60 | | 1420 | | 2.77 | 2.41 | 123 | 0.055 | 0.665 |
| 1 | - 4.53 | 1574 | 3.68 | 1399 | 1.5 | 27.5 | .0189 | 78.9 | 36.6 | 0.1 | 2.4 | 21.83 | | 1765 | | 4.91 | 3 87 | 180 | 0.049 | 1.18 |
| 1 | - 1.39 | 1771 | 4.32 | 1594 | 1.5 | 31.6 | .0221 | 75.8 | 35.8 | 0.1 | 2.3 | 25.18 | | 1952 | | 6.36 | 4.82 | 228 | 0.064 | 1.46 |
| 1 | 2.09 | 1635 | 3.71 | 1558 | 1.4 | 27.4 | .0192 | 80.8 | 40.2 | 0.1 | 2.3 | 21.93 | | 1776 | | 4.99 | 4.03 | 201 | 0.050 | 1.15 |
| 1 | 5.27 | 1283 | 2.60 | 1292 | 1.2 | 20.2 | .0136 | 89.4 | 46.6 | 0.1 | 2.4 | 17.50 | | 1436 | | 2.78 | 2.49 | 129 | 0.028 | 0.667 |
| 1 | 8.50 | 808 | 1.46 | 969 | 0.9 | 12.9 | .0078 | 98.2 | 60.1 | 0.2 | 2.6 | 14.98 | | 1049 | | 1.12 | 1.0 | 67.3 | 0.022 | 0.291 |
| 1 | 11.72 | 435 | 0.84 | 589 | 0.8 | 8.1 | .0045 | 91.8 | 63.0 | 0.3 | 2.8 | 13.95 | | 849 | | 0.36 | 0.330 | 22.68 | 0.011 | 0.101 |
| 1 | 14.94 | 265 | 0.42 | 371 | 0.5 | 5.0 | .0022 | 109 | 76.7 | 0.4 | 3.4 | 13.69 | | 695 | | 0.10 | 0.109 | 7.67 | 0.004 | 0.034 |
| 2 | -20.51 | 99.2 | 0.06 | 117 | 0.4 | 2.0 | .0002 | 248 | 147 | 1.8 | 8.3 | 13.60 | | 536 | | 0 | 0 | 0 | 0 | 0 |
| 2 | -17.26 | 271 | 0.40 | 398 | 0.8 | 4.8 | .0021 | 116 | 85.8 | 0.6 | 3.4 | 13.71 | | 683 | | 0.11 | 0.128 | 9.44 | 0.007 | 0.037 |
| 2 | -13.83 | 487 | 0.92 | 739 | 0.9 | 8.8 | .0049 | 92.7 | 71.3 | 0.3 | 2.8 | 14.23 | | 872 | | 0.53 | 0.491 | 37.8 | 0.016 | 0.148 |
| 2 | -10.55 | 1000 | 1.76 | 1139 | 1.2 | 15.5 | .0094 | 101 | 59 | 0.2 | 2.6 | 15.63 | | 1158 | | 1.56 | 1.58 | 92.0 | 0.031 | 0.406 |
| 2 | - 7.28 | 1409 | 2.88 | 1430 | 1.5 | 22.1 | .0151 | 88.9 | 46.6 | 0.2 | 2.4 | 18.69 | | 1523 | | 3.38 | 3.00 | 158 | 0.068 | 0.811 |
| 2 | - 4.01 | 1727 | 4.00 | 1717 | 2.1 | 30.0 | .0206 | 79.2 | 41.1 | 0.2 | 2.4 | 23.57 | | 1860 | | 5.70 | 4.51 | 234 | 0.114 | 1.37 |
| 2 | - 0.91 | 1799 | 4.37 | 1619 | 2.1 | 32.8 | .0224 | 76.1 | 35.9 | 0.1 | 2.4 | 25.23 | | 1966 | | 6.42 | 4.89 | 230 | 0.064 | 1.54 |
| 2 | 2.35 | 1650 | 3.75 | 1563 | 2.1 | 28.0 | .0193 | 80.9 | 39.9 | 0.2 | 2.3 | 22.11 | | 1786 | | 5.07 | 4.10 | 202 | 0.010 | 1.17 |
| 2 | 5.96 | 1192 | 2.32 | 1323 | 1.8 | 18.9 | .0123 | 92.4 | 52.7 | 0.2 | 2.5 | 16.82 | | 1345 | | 2.35 | 2.17 | 124 | 0.047 | 0.588 |
| 2 | 8.87 | 739 | 1.28 | 942 | 1.6 | 12.0 | .0069 | 102 | 65.9 | 0.4 | 2.7 | 14.43 | | 985 | | 0.80 | 0.816 | 52.7 | 0.032 | 0.216 |
| 2 | 12.51 | 384 | 0.69 | 608 | 1.4 | 7.4 | .0037 | 97.1 | 77.7 | 0.6 | 3.1 | 13.86 | | 801 | | 0.27 | 0.262 | 20.98 | 0.016 | 0.084 |
| 2 | 15.58 | 204 | 0.27 | 315 | 1.2 | 3.8 | .0014 | 124 | 96.8 | 1.2 | 3.8 | 13.60 | | 624 | | 0.01 | 0.012 | 0.87 | 0.001 | 0.004 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

## Table 11. Summary of Plume Measurements, J85-5, Run No. 7-3.

Run Date 3/1/74, Power Setting MID A/B, Axial Station 7.5 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -23.09 | 68.9 | 0.27 | 22.1 | 0 | 1.3 | .0012 | 49.4 | 8.0 | 0 | 1.6 | 13.57 | 13.57 | 618 | | 0 | 0 | 0 | 0 | 0 |
| 1 | -19.55 | 163 | 0.64 | 29.0 | 0.9 | 4.1 | .0031 | 49.2 | 4.4 | 0.4 | 2.1 | 13.64 | | 783 | | 0.12 | 0.006 | 0.528 | 0.005 | 0.025 |
| 1 | -15.99 | 283 | 1.32 | 36.2 | 2.7 | 8.8 | .0064 | 41.9 | 2.7 | 0.7 | 2.2 | 14.00 | | 990 | | 0.53 | 0.222 | 1.43 | 0.037 | 0.117 |
| 1 | -12.41 | 392 | 2.27 | 36.0 | 6.6 | 15.9 | .0110 | 33.8 | 1.6 | 1.0 | 2.3 | 14.82 | | 1318 | | 1.34 | 0.453 | 2.14 | 0.134 | 0.308 |
| 1 | - 8.83 | 493 | 3.99 | 29.4 | 15.2 | 27.0 | .0192 | 24.3 | 0.8 | 1.3 | 2.3 | 17.04 | | 1846 | | 3.22 | 0.782 | 2.58 | 0.419 | 0.741 |
| 1 | - 5.25 | 511 | 5.78 | 20.1 | 23.3 | 38.5 | .0275 | 17.5 | 0.4 | 1.4 | 2.3 | 20.90 | | 2338 | | 5.80 | 1.02 | 2.32 | 0.812 | 1.33 |
| 1 | - 1.72 | 485 | 7.94 | 16.2 | 35.0 | 51.9 | .0373 | 12.1 | 0.2 | 1.6 | 2.3 | 25.07 | | 2870 | | 8.62 | 1.04 | 1.72 | 1.38 | 1.98 |
| 1 | 2.09 | 508 | 7.05 | 18.1 | 28.2 | 44.4 | .0333 | 14.3 | 0.3 | 1.4 | 2.2 | 22.76 | | 2656 | | 7.26 | 1.04 | 2.18 | 1.02 | 1.60 |
| 1 | 5.63 | 507 | 4.50 | 28.5 | 10.2 | 29.7 | .0216 | 22.2 | 0.7 | 1.2 | 2.2 | 17.40 | | 1991 | | 3.65 | 0.810 | 2.56 | 0.438 | 0.803 |
| 1 | 9.21 | 439 | 2.61 | 46.3 | 7.7 | 20.2 | .0126 | 33.0 | 1.8 | 1.0 | 2.6 | 15.08 | | 1429 | | 1.62 | 0.535 | 2.92 | 0.162 | 0.421 |
| 1 | 12.80 | 313 | 1.42 | 38.6 | 2.8 | 10.4 | .0069 | 42.9 | 2.7 | 0.6 | 2.4 | 13.95 | | 1026 | | 0.53 | 0.227 | 1.43 | 0.032 | 0.127 |
| 1 | 16.01 | 203 | 0.83 | 33.6 | 0.7 | 6.0 | .0040 | 47.7 | 4.0 | 0.3 | 2.3 | 13.74 | | 840 | | 0.23 | 0.110 | 0.920 | 0.007 | 0.053 |
| 1 | 19.93 | 92.8 | 0.33 | 24.7 | 0 | 1.9 | .0015 | 54.7 | 7.3 | 0 | 1.9 | 13.59 | | 646 | | 0.03 | 0.016 | 0.219 | 0 | 0.006 |
| 2 | -20.34 | 122 | 0.40 | 26.4 | 0.5 | 2.5 | .0019 | 58.2 | 6.3 | 0.4 | 2.0 | 13.57 | | 683 | | 0 | 0 | 0 | 0 | 0 |
| 2 | -16.90 | 283 | 1.07 | 38.9 | 2.2 | 7.6 | .0052 | 51.4 | 3.6 | 0.7 | 2.3 | 13.76 | | 909 | | 0.30 | 0.154 | 1.08 | 0.021 | 0.069 |
| 2 | -13.10 | 452 | 2.18 | 44.0 | 5.3 | 15.2 | .0106 | 40.4 | 2.0 | 0.8 | 2.3 | 14.54 | | 1292 | | 1.15 | 0.465 | 2.30 | 0.092 | 0.265 |
| 2 | - 9.46 | 682 | 4.10 | 36.2 | 15.5 | 28.4 | .0200 | 32.6 | 0.9 | 1.3 | 2.3 | 16.93 | | 1880 | | 3.24 | 1.06 | 2.92 | 0.421 | 0.745 |
| 2 | - 6.18 | 694 | 5.88 | 22.7 | 24.4 | 40.0 | .0280 | 23.3 | 0.4 | 1.4 | 2.3 | 20.82 | | 2366 | | 5.85 | 1.36 | 2.34 | 0.819 | 1.35 |
| 2 | - 1.87 | 585 | 8.05 | 16.4 | 37.3 | 54.2 | .0379 | 14.4 | 0.2 | 1.6 | 2.4 | 24.76 | | 2897 | | 8.59 | 1.24 | 1.72 | 1.37 | 2.06 |
| 2 | 1.66 | 602 | 7.66 | 17.6 | 32.9 | 48.8 | .0361 | 15.6 | 0.2 | 1.5 | 2.2 | 23.51 | | 2803 | | 7.91 | 1.23 | 1.58 | 1.19 | 1.74 |
| 2 | 5.23 | 660 | 4.98 | 27.7 | 17.9 | 32.8 | .0239 | 26.1 | 0.6 | 1.2 | 2.2 | 18.27 | | 2126 | | 4.30 | 1.12 | 2.58 | 0.516 | 0.946 |
| 2 | 8.87 | 457 | 2.68 | 42.5 | 8.6 | 20.5 | .0130 | 33.5 | 1.6 | 1.1 | 2.5 | 15.01 | | 1450 | | 1.61 | 0.539 | 2.58 | 0.177 | 0.403 |
| 2 | 12.88 | 288 | 1.18 | 39.3 | 2.8 | 9.8 | .0057 | 47.6 | 3.3 | 0.8 | 2.7 | 13.86 | | 941 | | 0.40 | 0.190 | 1.32 | 0.032 | 0.108 |
| 2 | 16.14 | 137 | 0.52 | 29.2 | 0.7 | 3.7 | .0025 | 51.2 | 5.5 | 0.4 | 2.3 | 13.57 | | 737 | | 0 | 0 | 0 | 0 | 0 |
| 2 | 19.76 | 43.2 | 0.16 | 18.8 | 0 | 0.9 | .0007 | 53.1 | 11.6 | 0 | 1.9 | 13.57 | | 570 | | 0 | 0 | 0 | 0 | 0 |

## Table 12. Summary of Plume Measurements, J85-5, Run No. 8.

Run Date 3-4-74, Power Setting MAX A/B, Axial Station 7.5 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -16.70 | 262 | 1.33 | 11.4 | 9.3 | 12.2 | .0064 | 38.4 | 0.8 | 2.3 | 3.0 | 14.05 | 13.67 | 975 | | 0.507 | 0.195 | 0.406 | 0.117 | 0.152 |
| 1 | -14.04 | 363 | 2.08 | 11.2 | 12.9 | 18.5 | .0101 | 34.1 | 0.5 | 2.0 | 2.9 | 14.51 | | 1241 | | 1.05 | 0.358 | 0.525 | 0.201 | 0.305 |
| 1 | -10.82 | 480 | 3.37 | 10.9 | 17.9 | 27.0 | .0162 | 28.1 | 0.3 | 1.8 | 2.7 | 15.70 | | 1648 | | 2.24 | 0.629 | 0.672 | 0.403 | 0.605 |
| 1 | - 7.59 | 851 | 5.26 | 10.6 | 27.2 | 42.7 | .0252 | 31.8 | 0.2 | 1.8 | 2.8 | 18.58 | | 2190 | | 4.59 | 1.46 | 0.918 | 0.826 | 1.29 |
| 1 | - 4.36 | 1526 | 7.84 | 10.4 | 46.0 | 65.3 | .0373 | 38.1 | 0.1 | 2.0 | 2.9 | 22.91 | | 2846 | | 7.89 | 3.01 | 0.789 | 1.58 | 2.29 |
| 1 | - 1.24 | 2091 | 9.41 | 10.3 | 56.7 | 80.2 | .0446 | 43.4 | 0.1 | 2.1 | 3.0 | 25.23 | | 3207 | | 9.73 | 4.22 | 0.973 | 2.04 | 2.92 |
| 1 | 2.26 | 1837 | 8.34 | 9.9 | 47.0 | 68.3 | .0397 | 43.0 | 0.1 | 2.0 | 2.8 | 23.73 | | 2965 | | 8.52 | 3.66 | 0.852 | 1.70 | 2.39 |
| 1 | 5.45 | 1091 | 6.04 | 10.0 | 29.1 | 46.4 | .0290 | 35.4 | 0.2 | 1.6 | 2.6 | 19.36 | | 2400 | | 5.37 | 1.90 | 1.07 | 0.859 | 1.40 |
| 1 | 8.68 | 644 | 3.53 | 10.4 | 16.0 | 28.4 | .0171 | 35.7 | 0.3 | 1.5 | 2.7 | 16.01 | | 1700 | | 2.49 | 0.889 | 0.747 | 0.374 | 0.672 |
| 1 | 11.91 | 384 | 1.84 | 10.7 | 10.3 | 16.4 | .0089 | 40.8 | 0.6 | 1.8 | 2.9 | 14.46 | | 1160 | | 0.931 | 0.380 | 0.559 | 0.168 | 0.270 |
| 1 | 15.13 | 227 | 0.95 | 10.9 | 5.70 | 9.90 | .0046 | 46.6 | 1.1 | 2.0 | 3.4 | 13.84 | | 862 | | 0.257 | 0.120 | 0.283 | 0.051 | 0.087 |
| 2 | -18.54 | 253 | 0.89 | 11.8 | 6.30 | 9.50 | .0043 | 55.3 | 1.3 | 2.3 | 3.4 | 13.81 | | 845 | | 0.220 | 0.122 | 0.286 | 0.051 | 0.075 |
| 2 | -14.92 | 412 | 1.87 | 11.3 | 11.7 | 18.4 | .0091 | 43.1 | 0.6 | 2.1 | 3.2 | 14.49 | | 1169 | | 0.955 | 0.412 | 0.573 | 0.201 | 0.306 |
| 2 | -11.28 | 730 | 3.79 | 10.4 | 18.2 | 30.1 | .0183 | 37.7 | 0.3 | 1.6 | 2.7 | 16.30 | | 1777 | | 2.76 | 1.04 | 0.828 | 0.442 | 0.745 |
| 2 | - 7.64 | 1272 | 6.34 | 10.0 | 30.3 | 48.5 | .0304 | 39.3 | 0.2 | 1.6 | 2.6 | 19.78 | | 2477 | | 5.73 | 2.25 | 1.15 | 0.917 | 1.49 |
| 2 | - 3.82 | 2049 | 8.90 | 9.8 | 53.4 | 75.4 | .0423 | 44.9 | 0.1 | 2.1 | 3.0 | 24.34 | | 3093 | | 9.09 | 4.08 | .909 | 1.91 | 2.73 |
| 2 | 0.63 | 2343 | 9.50 | 9.7 | 58.5 | 84.2 | .0451 | 48.1 | 0.1 | 2.2 | 3.1 | 25.12 | | 3229 | | 9.76 | 4.69 | 0.976 | 2.15 | 3.03 |
| 2 | 3.42 | 1683 | 7.15 | 9.7 | 39.3 | 60.1 | .0343 | 45.9 | 0.1 | 1.9 | 2.9 | 20.92 | | 2681 | | 6.69 | 3.07 | 0.669 | 1.27 | 1.94 |
| 2 | 7.05 | 805 | 4.34 | 9.9 | 18.5 | 32.4 | .0209 | 36.4 | 0.2 | 1.4 | 2.5 | 16.77 | | 1936 | | 3.26 | 1.19 | 0.652 | 0.456 | 0.815 |
| 2 | 10.89 | 427 | 2.21 | 10.6 | 11.6 | 18.5 | .0107 | 37.8 | 0.5 | 1.7 | 2.7 | 14.49 | | 1283 | | 1.07 | 0.404 | 0.535 | 0.182 | 0.289 |
| 2 | 14.33 | 259 | 1.05 | 10.8 | 6.60 | 10.3 | .0051 | 48.1 | 1.0 | 2.0 | 3.2 | 13.81 | | 888 | | 0.254 | 0.122 | 0.254 | 0.051 | 0.081 |
| 2 | 17.95 | 157 | 0.48 | 10.9 | 3.70 | 5.50 | .0023 | 62.8 | 2.2 | 2.4 | 3.6 | 13.67 | | 701 | | 0 | 0 | 0 | 0 | 0 |

## Table 13. Summary of Plume Measurements, J85-5, Run No. 9-1.

Run Date 3/4/74, Power Setting MIL, Axial Station 15 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -26.18 | 49.4 | .10 | 17.0 | 2.8 | 4.4 | .0004 | 90.7 | 23.0 | 8.5 | 13.4 | 13.45 | 13.45 | | 595 | - | - | - | - | - |
| 1 | -20.30 | 83.6 | .25 | 18.0 | 4.3 | 6.6 | .0011 | 63.0 | 9.2 | 5.3 | 8.2 | 13.70 | 13.40 | | 665 | 0.10 | 0.06 | 0.9 | 0.05 | 0.08 |
| 1 | -15.18 | 121.3 | .42 | 20.0 | 5.3 | 9.2 | .0020 | 56.3 | 5.4 | 4.1 | 7.0 | 14.02 | 13.32 | | 740 | 0.25 | 0.14 | 1.4 | 0.10 | 0.18 |
| 1 | -10.57 | 154.7 | .57 | 21.5 | 6.3 | 11.2 | .0027 | 52.9 | 4.1 | 3.6 | 6.3 | 14.56 | 13.27 | | 823 | 0.45 | 0.24 | 1.9 | 0.16 | 0.28 |
| 1 | -7.51 | 181.3 | .68 | 23.4 | 6.9 | 13.0 | .0033 | 51.5 | 3.4 | 3.2 | 6.1 | 15.15 | 13.24 | | 867 | 0.68 | 0.35 | 2.3 | 0.22 | 0.42 |
| 1 | 10.08 | 181.9 | .68 | 22.8 | 7.0 | 12.9 | .0033 | 51.7 | 3.3 | 3.3 | 6.1 | 15.26 | 13.24 | | 869 | 0.70 | 0.36 | 2.3 | 0.23 | 0.43 |
| 1 | 12.64 | 154.7 | .56 | 21.2 | 5.8 | 11.3 | .0027 | 53.3 | 3.7 | 3.3 | 6.4 | 14.61 | 13.27 | | 809 | 0.47 | 0.25 | 1.7 | 0.16 | 0.30 |
| 1 | 17.49 | 112.9 | .38 | 19.4 | 4.8 | 8.4 | .0016 | 62.1 | 5.4 | 4.4 | 7.6 | 14.00 | 13.32 | | 724 | 0.20 | 0.12 | 1.1 | 0.09 | 0.15 |
| 1 | 22.38 | 75.9 | .21 | 17.4 | 3.5 | 6.0 | .0009 | 70.6 | 8.1 | 5.3 | 9.3 | 13.64 | 13.43 | | 606 | 0.07 | 0.05 | 0.6 | 0.37 | 0.07 |
| 1 | 27.74 | 47.9 | .09 | 16.4 | 2.5 | 4.1 | .0003 | 100.0 | 17.1 | 8.6 | 14.0 | 13.47 | 13.45 | | 580 | 0.01 | 0.01 | 0.2 | 0.01 | 0.01 |
| 1 | 33.46 | 24.4 | .01 | 15.0 | 1.7 | 2.4 | 0 | - | | 44.4 | - | 13.42 | 13.51 | | 543 | - | - | - | - | - |
| 2 | -30.58 | 25.5 | .02 | 10.9 | 2.0 | 2.3 | 0 | - | - | 27.5 | - | 13.45 | 13.47 | | 558 | - | - | - | - | - |
| 2 | -24.78 | 52.5 | .11 | 10.6 | 2.9 | 4.5 | .0004 | 93.1 | 9.4 | 8.4 | 13.1 | 13.53 | 13.45 | | 613 | 0.02 | 0.02 | 0.2 | 0.02 | 0.03 |
| 2 | -19.56 | 88.9 | .26 | 11.4 | 4.6 | 7.1 | .0012 | 66.5 | 4.3 | 5.6 | 8.8 | 13.69 | 13.37 | | 689 | 0.10 | 0.07 | 0.4 | 0.06 | 0.09 |
| 2 | -14.16 | 141.0 | .50 | 12.9 | 6.2 | 10.4 | .0024 | 54.7 | 2.5 | 4.0 | 6.6 | 14.19 | 13.29 | | 796 | 0.33 | 0.18 | 0.8 | 0.13 | 0.22 |
| 2 | -9.28 | 198.9 | .76 | 13.9 | 7.7 | 14.1 | .0036 | 50.9 | 1.8 | 3.3 | 6.0 | 15.08 | 13.16 | | 908 | 0.74 | 0.38 | 1.3 | 0.24 | 0.44 |
| 2 | -3.99 | 228.5 | .90 | 14.8 | 8.6 | 16.2 | .0044 | 49.2 | 1.6 | 3.1 | 5.8 | 15.87 | 13.13 | | 978 | 1.06 | 0.52 | 1.7 | 0.33 | 0.61 |
| 2 | 5.66 | 227.3 | .89 | 14.5 | 8.5 | 16.1 | .0043 | 49.5 | 1.6 | 3.1 | 5.8 | 15.82 | 13.13 | | 956 | 1.04 | 0.51 | 1.7 | 0.32 | 0.60 |
| 2 | 10.52 | 204.7 | .78 | 14.1 | 7.5 | 14.5 | .0037 | 51.2 | 1.8 | 3.1 | 6.0 | 15.32 | 13.16 | | 903 | 0.82 | 0.42 | 1.5 | 0.25 | 0.49 |
| 2 | 15.05 | 152.4 | .52 | 12.9 | 5.9 | 11.2 | .0025 | 56.2 | 2.4 | 3.6 | 6.8 | 14.48 | 13.21 | | 796 | 0.42 | 0.24 | 1.0 | 0.15 | 0.29 |
| 2 | 20.22 | 92.3 | .25 | 11.2 | 4.3 | 7.1 | .0012 | 69.5 | 4.2 | 5.3 | 8.8 | 13.74 | 13.34 | | 680 | 0.11 | 0.76 | 0.5 | 0.06 | 0.10 |
| 2 | 25.99 | 45.4 | .07 | 9.7 | 2.2 | 4.0 | .0002 | 121.5 | 13.0 | 9.7 | 17.4 | 13.48 | 13.45 | | 582 | 0.01 | 0.01 | 0.1 | 0.10 | 0.02 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

NOTE: Radial position adjusted for symmetry.

## Table 14. Summary of Plume Measurements, J85-5, Run No. 9-2.

Run Date 3/7/74, Power Setting MIN A/B, Axial Station 15 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -43.01 | 36.9 | - | 78.1 | 0.9 | 1.2 | - | - | - | - | - | 13.42 | 13.48 | | 529 | - | - | - | | |
| 1 | -34.79 | 140 | 0.08 | 114 | 1.2 | 3.4 | .0004 | 256.8 | 104.6 | 3.6 | 10.1 | 13.39 | 13.43 | | 584 | | | | | |
| 1 | -26.64 | 205 | 0.19 | 218 | 1.3 | 4.4 | .0010 | 179.7 | 95.9 | 1.9 | 6.4 | 13.50 | 13.40 | | 658 | 0.05 | 0.09 | 4.8 | 0.01 | 0.03 |
| 1 | -18.88 | 372 | 0.49 | 443 | 1.7 | 7.5 | .0026 | 130.7 | 78.4 | 1.0 | 4.3 | 13.88 | 13.30 | | 841 | 0.28 | 0.37 | 22.0 | 0.03 | 0.12 |
| 1 | -11.70 | 651 | 0.94 | 635 | 1.7 | 11.5 | .0051 | 121.3 | 59.9 | 0.5 | 3.6 | 14.80 | 13.19 | | 1018 | 0.87 | 1.06 | 52.1 | 0.04 | 0.31 |
| 1 | 8.20 | 745 | 1.10 | 704 | 1.8 | 12.8 | .0059 | 118.9 | 57.0 | 0.5 | 3.4 | 15.34 | 13.19 | | 1053 | 1.19 | 1.41 | 67.8 | 0.06 | 0.40 |
| 1 | 11.96 | 600 | 0.84 | 615 | 1.5 | 10.6 | .0045 | 124.5 | 64.5 | 0.5 | 3.6 | 14.59 | 13.24 | | 932 | 0.73 | 0.91 | 47.1 | 0.04 | 0.26 |
| 1 | 19.33 | 382 | 0.48 | 396 | 1.4 | 7.4 | .0026 | 136.7 | 71.4 | 0.8 | 4.4 | 13.83 | 13.32 | | 769 | 0.27 | 0.37 | 19.3 | 0.02 | 0.12 |
| 1 | 26.98 | 219 | 0.19 | 228 | 1.1 | 4.5 | .0010 | 189.8 | 99.5 | 1.5 | 6.4 | 13.50 | 13.43 | | 639 | 0.04 | 0.08 | 4.0 | 0.01 | 0.03 |
| 1 | 35.41 | 76.0 | 0.02 | 95.4 | 0.8 | 1.9 | .0000 | - | - | - | - | 13.42 | 13.51 | | 549 | - | - | - | - | - |
| 1 | 43.37 | 39.2 | - | 45.6 | 0.6 | 1.0 | - | - | - | - | - | 13.42 | 13.51 | | 525 | - | - | - | - | - |
| 2 | -44.86 | 6.2 | - | 16.1 | 0.4 | 0.7 | - | - | - | - | - | 13.43 | 13.50 | | 516 | - | - | - | - | - |
| 2 | -36.71 | 32.8 | - | 31.3 | 0.8 | 1.1 | - | - | - | - | - | 13.43 | 13.47 | | 536 | - | - | - | - | - |
| 2 | -28.07 | 139 | 0.08 | 130 | 1.2 | 2.9 | .0004 | 249.0 | 117.4 | 3.5 | 8.5 | 13.45 | 13.45 | | 604 | 0.01 | 0.02 | 1.17 | 0 | 0.01 |
| 2 | -19.71 | 305 | 0.33 | 339 | 1.4 | 5.8 | .0018 | 156.1 | 87.0 | 1.2 | 4.9 | 13.66 | 13.34 | | 742 | 0.15 | 0.23 | 13.1 | 0.02 | 0.07 |
| 2 | -11.22 | 607 | 0.83 | 624 | 2.0 | 10.3 | .0045 | 127.6 | 66.3 | 0.7 | 3.6 | 14.32 | 13.21 | | 952 | 0.64 | 0.82 | 42.4 | 0.04 | 0.23 |
| 2 | -2.00 | 894 | 1.33 | 888 | 2.1 | 15.0 | .0071 | 118.5 | 59.9 | 0.5 | 3.3 | 15.74 | 13.16 | | 1169 | 1.53 | 1.81 | 91.6 | 0.08 | 0.50 |
| 2 | 6.28 | 918 | 1.35 | 889 | 2.1 | 15.3 | .0073 | 119.4 | 58.8 | 0.5 | 3.3 | 16.40 | 13.10 | | 1186 | 1.80 | 2.15 | 105.8 | 0.09 | 0.59 |
| 2 | 14.25 | 641 | 0.83 | 611 | 1.8 | 9.6 | .0045 | 133.3 | 64.2 | 0.6 | 3.3 | 14.58 | 13.16 | | 958 | 0.75 | 1.0 | 48.2 | 0.05 | 0.25 |
| 2 | 21.89 | 204 | 0.15 | 215 | 1.2 | 3.6 | .0008 | 210.6 | 111.8 | 2.0 | 6.1 | 13.51 | 13.39 | | 654 | 0.04 | 0.08 | 4.47 | 0.01 | 0.24 |
| 2 | 31.05 | 20.2 | - | 30.3 | 0.5 | 1.1 | - | - | - | - | - | 13.40 | 13.45 | | 527 | - | - | - | - | - |
| 2 | 39.06 | 2.8 | - | 11.2 | 0.3 | 0.6 | - | - | - | - | - | 13.43 | 13.45 | | 514 | - | - | - | - | - |

NOTE: Radial position adjusted for symmetry.

## Table 15. Summary of Plume Measurements, J85-5, Run No. 9-3, 10-1.

Run Date 3/7/74 / 3/8/74, Power Setting MID A/B, Axial Station 15 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Totsl Press psis | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -37.19 | 51.6 | 0.14 | 12.8 | 4.6 | 5.5 | .0006 | 69.2 | 8.6 | 10.2 | 12.2 | 13.45 | 13.45 | | 586 | - | - | - | - | - |
| 1 | -28.81 | 96.0 | 0.37 | 14.8 | 5.2 | 7.2 | .0017 | 50.6 | 3.9 | 4.5 | 6.2 | 13.45 | 13.43 | | 673 | 0.03 | 0.02 | 0.1 | 0.14 | 0.02 |
| 1 | -20.41 | 168 | 0.90 | 16.2 | 6.9 | 10.9 | .0043 | 36.6 | 1.8 | 2.5 | 4.0 | 13.64 | 13.38 | | 860 | 0.28 | 0.10 | 0.5 | 0.07 | 0.11 |
| 1 | -11.77 | 250 | 1.58 | 18.0 | 10.0 | 15.2 | .0076 | 31.1 | 1.1 | 2.1 | 3.2 | 14.10 | 13.27 | | 1120 | 0.89 | 0.28 | 1.0 | 0.19 | 0.28 |
| 1 | -3.92 | 289 | 2.36 | 17.8 | 13.6 | 21.1 | .0114 | 24.1 | 0.8 | 1.9 | 3.0 | 15.21 | 13.17 | | 1377 | 1.93 | 0.47 | 1.5 | 0.37 | 0.58 |
| 1 | 8.86 | 292 | 2.39 | 17.2 | 13.9 | 21.5 | .0115 | 24.1 | 0.7 | 1.9 | 3.0 | 15.56 | 13.14 | | 1362 | 2.17 | 0.52 | 1.5 | 0.41 | 0.65 |
| 1 | 14.72 | 214 | 1.47 | 15.9 | 10.0 | 15.6 | .0071 | 28.6 | 1.1 | 2.2 | 3.5 | 14.29 | 13.22 | | 1083 | 0.93 | 0.27 | 1.0 | 0.20 | 0.33 |
| 1 | 22.88 | 132 | 0.74 | 14.2 | 7.2 | 10.5 | .0035 | 35.1 | 1.9 | 3.2 | 4.6 | 13.58 | 13.35 | | 791 | 0.22 | 0.08 | 0.4 | 0.07 | 0.10 |
| 1 | 31.25 | 65.2 | 0.29 | 11.5 | 5.1 | 6.6 | .0013 | 43.2 | 3.8 | 5.6 | 7.3 | 13.42 | 13.45 | | 608 | - | - | - | - | - |
| 1 | 39.75 | 20.2 | 0.04 | 10.4 | 4.2 | 4.5 | .0001 | 101.7 | 26.2 | 34.3 | 37.2 | 13.36 | 13.45 | | 531 | - | - | - | - | - |
| 1 | 47.85 | 7.2 | 0.03 | 10.0 | 3.8 | 4.1 | .0000 | 45.3 | 31.8 | 39.8 | 42.9 | 13.36 | 13.48 | | 511 | - | - | - | - | - |
| 2 | -40.42 | 30.0 | 0.06 | 11.9 | 7.3 | 7.4 | .0002 | 90.0 | 18.0 | 36.0 | 36.5 | 13.66 | 13.68 | | 534 | - | - | - | - | - |
| 2 | -31.88 | 102 | 0.33 | 15.5 | 8.4 | 9.4 | .0015 | 59.7 | 4.6 | 8.1 | 9.1 | 13.61 | 13.63 | | 639 | - | - | - | - | - |
| 2 | -23.37 | 187 | 0.78 | 25.4 | 10.1 | 12.8 | .0037 | 47.0 | 3.2 | 4.2 | 5.3 | 13.72 | 13.58 | | 773 | 0.19 | 0.09 | 0.6 | 0.80 | 0.10 |
| 2 | -15.02 | 310 | 1.48 | 25.9 | 13.2 | 18.8 | .0072 | 40.8 | 1.7 | 2.9 | 4.1 | 14.50 | 13.42 | | 1070 | 1.00 | 0.41 | 1.7 | 0.29 | 0.41 |
| 2 | -7.62 | 389 | 2.45 | 24.7 | 18.4 | 25.5 | .0118 | 31.2 | 1.0 | 2.5 | 3.4 | 16.00 | 13.29 | | 1491 | 2.45 | 0.76 | 2.5 | 0.61 | 0.83 |
| 2 | 6.02 | 398 | 2.67 | 23.6 | 20.2 | 27.5 | .0129 | 29.3 | 0.9 | 2.5 | 3.4 | 16.97 | 13.24 | | 1592 | 3.18 | 0.93 | 2.9 | 0.80 | 1.08 |
| 2 | 12.54 | 354 | 1.94 | 26.7 | 15.0 | 22.1 | .0094 | 35.8 | 1.4 | 2.5 | 3.8 | 15.53 | 13.37 | | 1322 | 1.79 | 0.64 | 2.5 | 0.45 | 0.68 |
| 2 | 20.70 | 214 | 1.09 | 22.4 | 10.9 | 12.3 | .0053 | 38.4 | 2.0 | 3.3 | 3.7 | 14.11 | 13.50 | | 967 | 0.54 | 0.21 | 1.1 | 0.18 | 0.20 |
| 2 | 29.12 | 131 | 0.53 | 15.8 | 8.9 | 9.8 | .0025 | 48.0 | 2.9 | 5.4 | 6.0 | 13.69 | 13.60 | | 663 | 0.10 | 0.05 | 0.3 | 0.05 | 0.06 |
| 2 | 36.67 | 36.6 | 0.14 | 12.3 | 7.4 | 7.7 | .0006 | 49.0 | 8.3 | 16.3 | 16.9 | 13.64 | 13.68 | | 547 | - | - | - | - | - |
| 2 | 46.06 | 15.3 | 0.05 | 10.9 | 6.8 | 6.8 | .0001 | 58.6 | 20.9 | 42.7 | 43.0 | 13.64 | 13.63 | | 512 | - | - | - | - | - |

NOTE: Radial position adjusted for symmetry.

## Table 16. Summary of Plume Measurements, J85-5, Run No. 10-2.

Run Date 3/11/74, Power Setting MAX A/B, Axial Station 15 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -41.98 | 19.2 | 0.10 | 0 | 2.1 | 2.2 | .0004 | 36.5 | 0 | 6.7 | 6.9 | 13.61 | 13.74 | 537 | 495 | - | - | - | - | - |
| 1 | -32.98 | 58.6 | 0.38 | 0 | 4.1 | 4.8 | .0018 | 30.0 | 0 | 3.5 | 4.1 | 13.72 | 13.71 | 658 | 500 | 0.08 | 0.02 | 0 | 0.03 | 0.03 |
| 1 | -23.96 | 113 | 0.96 | 0 | 7.5 | 10.1 | .0046 | 23.2 | 0 | 2.6 | 3.5 | 13.83 | 13.58 | 868 | 543 | 0.27 | 0.06 | 0 | 0.07 | 0.09 |
| 1 | -13.37 | 185 | 1.83 | 0 | 12.8 | 16.2 | .0088 | 20.0 | 0 | 2.3 | 2.9 | 14.31 | 13.45 | 1158 | 706 | 0.84 | 0.17 | 0 | 0.19 | 0.24 |
| 1 | -5.14 | 236 | 2.86 | 0 | 19.1 | 24.4 | .0137 | 16.4 | 0 | 2.2 | 2.9 | 15.48 | 13.32 | 1493 | 961 | 1.90 | 0.31 | 0 | 0.42 | 0.55 |
| 1 | 7.38 | 252 | 3.12 | 0 | 20.4 | 26.8 | .0150 | 16.0 | 0 | 2.2 | 2.9 | 16.10 | 13.35 | 1575 | 1352 | 2.32 | 0.37 | 0 | 0.51 | 0.67 |
| 1 | 13.31 | 209 | 2.11 | 0 | 14.3 | 18.5 | .0101 | 19.6 | 0 | 2.3 | 2.9 | 14.75 | 13.40 | 1253 | 1307 | 1.20 | 0.24 | 0 | 0.28 | 0.35 |
| 1 | 22.27 | 125 | 1.11 | 0 | 7.5 | 10.9 | .0053 | 22.3 | 0 | 2.2 | 3.2 | 13.85 | 13.56 | 909 | 894 | 0.33 | 0.07 | 0 | 0.07 | 0.11 |
| 1 | 31.19 | 67.6 | 0.45 | 0 | 4.3 | 5.9 | .0021 | 29.7 | 0 | 3.1 | 4.3 | 13.72 | 13.69 | 690 | 669 | 0.09 | 0.03 | 0 | 0.03 | 0.04 |
| 1 | 40.41 | 18.6 | 0.08 | 0 | 1.7 | 2.0 | .0002 | 47.1 | 0 | 6.9 | 8.3 | 13.64 | 13.71 | 528 | 551 | - | - | - | - | - |
| 1 | 49.05 | 4.5 | 0.00 | 0 | 0.8 | 0.9 | - | - | - | - | - | 13.64 | 13.74 | 499 | 481 | - | - | - | - | - |
| 2 | -43.12 | 12.2 | 0.03 | 0 | 1.4 | 1.5 | - | - | - | - | - | 13.66 | 13.68 | 510 | 539 | - | - | - | - | - |
| 2 | -34.16 | 44.4 | 0.21 | 0 | 3.4 | 3.2 | .0009 | 41.5 | 0 | 5.3 | 5.0 | 13.69 | 13.63 | 580 | 641 | 0.03 | 0.01 | 0 | 0.02 | 0.02 |
| 2 | -25.29 | 134 | 0.84 | 0 | 6.7 | 9.0 | .0040 | 31.1 | 0 | 2.6 | 3.5 | 13.82 | 13.55 | 836 | 865 | 0.24 | 0.07 | 0 | 0.06 | 0.08 |
| 2 | -16.46 | 234 | 2.05 | 0 | 14.3 | 18.2 | .0098 | 22.6 | 0 | 2.3 | 2.9 | 14.48 | 13.42 | 1232 | 1332 | 1.02 | 0.23 | 0 | 0.23 | 0.30 |
| 2 | -8.01 | 291 | 3.59 | 0 | 22.8 | 30.8 | .0172 | 16.0 | 0 | 2.1 | 2.9 | 16.08 | 13.26 | 1716 | 1886 | 2.54 | 0.41 | 0 | 0.53 | 0.74 |
| 2 | 4.19 | 306 | 4.04 | 0 | 24.6 | 34.6 | .0193 | 15.0 | 0 | 2.1 | 2.9 | 17.03 | 13.24 | 1848 | - | 3.21 | 0.48 | 0 | 0.67 | 0.93 |
| 2 | 11.63 | 271 | 2.75 | 0 | 17.2 | 23.4 | .0132 | 19.5 | 0 | 2.1 | 2.9 | 15.32 | 13.29 | 1459 | - | 1.77 | 0.35 | 0 | 0.37 | 0.51 |
| 2 | 20.35 | 192 | 1.32 | 0 | 10.0 | 12.5 | .0064 | 28.5 | 0 | 2.5 | 3.1 | 14.11 | 13.47 | 978 | - | 0.56 | 0.16 | 0 | 0.14 | 0.17 |
| 2 | 29.31 | 95.9 | 0.55 | 0 | 4.7 | 6.3 | .0026 | 34.4 | 0 | 2.8 | 3.7 | 13.72 | 13.60 | 738 | - | 0.11 | 0.04 | 0 | 0.03 | 0.09 |
| 2 | 37.89 | 26.0 | 0.10 | 0 | 2.1 | 2.4 | .0003 | 51.9 | 0 | 7.0 | 7.9 | 13.61 | 13.66 | 535 | - | - | - | - | - | - |
| 2 | 46.62 | 7.1 | 0.02 | 0 | 1.3 | 1.0 | - | - | - | - | - | 13.66 | 13.68 | 506 | - | - | - | - | - | - |
| 2 | | | | | | | | | | | | | | | | | | | | |
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NOTE: Radial position adjusted for symmetry
Thermocouple #2 out after -8.01 position.

## Table 17. Summary of Plume Measurements, J85-5, Run No. 11-1.

Run Date 3/12/74, Power Setting MIL, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -58.36 | 14.3 | 0.01 | 0 | | 1.5 | 0 | - | 0 | - | - | 13.58 | 13.56 | 502 | 529 | - | - | - | - | - |
| 1 | -47.86 | 21.3 | 0.03 | 0 | 2.1 | 2.4 | 0 | - | 0 | - | - | 13.61 | 13.53 | 506 | 540 | - | - | - | - | - |
| 1 | -37.87 | 33.7 | 0.08 | 0 | 2.7 | 3.7 | .0003 | 79.9 | 0 | 10.7 | 14.3 | 13.66 | 13.51 | 527 | 573 | 0.01 | 0.01 | 0 | 0.01 | 0.01 |
| 1 | -27.05 | 53.8 | 0.16 | 0 | 3.6 | 4.8 | .0007 | 65.0 | 0 | 7.2 | 9.5 | 13.83 | 13.51 | 557 | 619 | 0.05 | 0.03 | 0 | 0.04 | 0.05 |
| 1 | -17.04 | 63.3 | 0.20 | 0 | 3.8 | 5.2 | .0009 | 62.0 | 0 | 6.1 | 8.5 | 13.91 | 13.51 | 573 | 628 | 0.08 | 0.05 | 0 | 0.05 | 0.07 |
| 1 | -3.98 | 66.2 | 0.22 | 0 | 3.9 | 5.7 | .0009 | 59.4 | 0 | 5.8 | 8.4 | 13.93 | 13.48 | 580 | 641 | 0.09 | 0.05 | 0 | 0.05 | 0.08 |
| 1 | 7.47 | 68.7 | 0.23 | 0 | 3.9 | 6.1 | .0010 | 58.7 | 0 | 5.5 | 8.6 | 14.04 | 13.48 | 585 | 649 | 0.11 | 0.06 | 0 | 0.06 | 0.09 |
| 1 | 17.34 | 65.7 | 0.22 | 0 | 3.8 | 5.7 | .0009 | 58.8 | 0 | 5.7 | 8.3 | 13.99 | 13.48 | 581 | 641 | 0.10 | 0.06 | 0 | 0.06 | 0.09 |
| 1 | 27.79 | 55.3 | 0.15 | 0 | 3.2 | 4.7 | .0006 | 71.8 | 0 | 6.9 | 10.0 | 13.80 | 13.45 | 553 | 610 | 0.04 | 0.03 | 0 | 0.03 | 0.04 |
| 1 | 38.32 | 38.7 | 0.08 | 0 | 2.9 | 3.7 | .0003 | 90.2 | 0 | 10.9 | 14.3 | 13.66 | 13.51 | 528 | 586 | 0.01 | 0.01 | 0 | 0.01 | 0.01 |
| 1 | 49.08 | 34.2 | 0.06 | 0 | 2.4 | 3.2 | .0002 | 110.9 | 0 | 12.8 | 17.3 | 13.64 | 13.51 | 519 | 565 | 0.00 | 0 | 0 | 0 | 0 |
| 2 | -48.86 | 26.5 | 0.03 | 0 | 2.4 | 3.0 | 0 | 149.3 | 0 | 22.7 | 27.6 | 13.66 | 13.63 | 509 | - | 0.00 | 0 | 0 | 0 | 0 |
| 2 | -37.90 | 38.1 | 0.08 | 0 | 3.0 | 3.7 | .0002 | 95.2 | 0 | 12.3 | 15.4 | 13.72 | 13.60 | 526 | - | 0.01 | 0.01 | 0 | 0.01 | 0.02 |
| 2 | -26.93 | 57.1 | 0.14 | 0 | 3.5 | 5.0 | .0006 | 75.9 | 0 | 7.6 | 10.9 | 13.77 | 13.55 | 552 | - | 0.04 | 0.03 | 0 | 0.03 | 0.04 |
| 2 | -16.10 | 73.6 | 0.22 | 0 | 4.1 | 6.2 | .0010 | 64.2 | 0 | 5.9 | 8.9 | 14.03 | 13.55 | 583 | - | 0.10 | 0.06 | 0 | 0.06 | 0.09 |
| 2 | -6.03 | 81.6 | 0.26 | 0 | 4.4 | 6.8 | .0011 | 61.8 | 0 | 5.4 | 8.5 | 14.19 | 13.50 | 597 | - | 0.14 | 0.09 | 0 | 0.08 | 0.12 |
| 2 | 9.22 | 79.6 | 0.25 | 0 | 4.3 | 6.9 | .0011 | 61.9 | 0 | 5.5 | 8.9 | 14.22 | 13.50 | 594 | - | 0.14 | 0.09 | 0 | 0.08 | 0.12 |
| 2 | 19.37 | 65.8 | 0.19 | 0 | 3.9 | 5.9 | .0008 | 67.9 | 0 | 6.6 | 10.0 | 13.98 | 13.55 | 569 | - | 0.08 | 0.05 | 0 | 0.05 | 0.08 |
| 2 | 30.29 | 51.9 | 0.13 | 0 | 3.4 | 5.1 | .0005 | 75.6 | 0 | 8.3 | 12.2 | 13.82 | 13.58 | 547 | - | 0.04 | 0.03 | 0 | 0.03 | 0.05 |
| 2 | 41.33 | 34.9 | 0.06 | 0 | 2.8 | 3.9 | .0002 | 108.0 | 0 | 14.1 | 19.9 | 13.69 | 13.60 | 521 | - | 0.01 | 0.01 | 0 | 0.01 | 0.02 |
| 2 | 52.34 | 21.7 | 0.02 | 0 | 2.2 | 2.9 | 0 | - | - | - | - | 13.64 | 13.63 | 504 | - | - | - | - | - | - |
| 2 | 63.26 | 11.1 | 0 | 0 | 1.6 | 1.8 | 0 | - | - | - | - | 13.61 | 13.68 | 497 | - | - | - | - | - | - |
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NOTES: Radial position adjusted for symmetry.
Thermocouple #2 is out.

## Table 18. Summary of Plume Measurements, J85-5, Run No. 11-2.

Run Date 3/12/74, Power Setting MIN A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel$_3$ ($\times 10^{-3}$) | CO$_4$ ($\times 10^{-4}$) | HC$_6$ ($\times 10^{-6}$) | NO$_5$ ($\times 10^{-5}$) | $NO_x$$_5$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -62.78 | 60.7 | 0.01 | 74.4 | 1.8 | 2.4 | - | - | - | - | - | 13.61 | 13.61 | 510 | 551 | - | - | - | - | - |
| 1 | -49.49 | 118 | 0.07 | 119 | 2.0 | 3.4 | .0003 | 241 | 122 | 6.7 | 11.4 | 13.61 | 13.58 | 534 | 591 | - | - | - | - | - |
| 1 | -36.93 | 171 | 0.15 | 189 | 2.2 | 4.2 | .0008 | 186 | 103 | 3.9 | 7.5 | 13.72 | 13.58 | 563 | 634 | 0.04 | 0.07 | 4.1 | 0.02 | 0.03 |
| 1 | -23.70 | 252 | 0.28 | 256 | 2.3 | 5.7 | .0015 | 152 | 77.5 | 2.3 | 5.7 | 13.88 | 13.56 | 617 | 691 | 0.12 | 0.18 | 9.3 | 0.03 | 0.07 |
| 1 | -11.85 | 294 | 0.36 | 323 | 2.3 | 6.3 | .0019 | 140 | 77.4 | 1.8 | 5.0 | 14.04 | 13.48 | 655 | 731 | 0.19 | 0.27 | 14.7 | 0.03 | 0.10 |
| 1 | 11.34 | 306 | 0.37 | 333 | 2.3 | 6.7 | .0020 | 141 | 76.9 | 1.8 | 5.0 | 14.18 | 13.51 | 661 | 737 | 0.23 | 0.32 | 17.7 | 0.04 | 0.12 |
| 1 | 20.52 | 255 | 0.28 | 279 | 2.1 | 5.9 | .0015 | 153 | 84.2 | 2.1 | 5.8 | 13.96 | 13.53 | 617 | 700 | 0.14 | 0.21 | 11.8 | 0.03 | 0.08 |
| 1 | 33.00 | 197 | 0.21 | 223 | 2.1 | 4.4 | .0011 | 159 | 90.4 | 2.8 | 5.9 | 13.80 | 13.56 | 586 | 656 | 0.07 | 0.11 | 6.3 | 0.02 | 0.04 |
| 1 | 46.42 | 160 | 0.14 | 170 | 2.0 | 4.1 | .0007 | 184 | 98.2 | 3.8 | 7.8 | 13.69 | 13.61 | 560 | 623 | 0.03 | 0.06 | 3.0 | 0.01 | 0.02 |
| 1 | 59.86 | 87.2 | 0.03 | 85.0 | 1.9 | 2.7 | .0001 | 368 | 180 | 12.8 | 19.0 | 13.61 | 13.61 | 517 | 569 | - | - | - | - | - |
| 1 | 72.43 | 43.5 | 0 | 33.6 | 1.6 | 2.3 | - | - | - | - | - | 13.64 | 13.61 | 504 | 538 | - | - | - | - | - |
| 2 | -61.36 | 37.2 | 0 | 33.3 | 1.9 | 2.0 | - | - | - | - | - | 13.64 | 13.66 | 504 | - | - | - | - | - | - |
| 2 | -47.29 | 77.8 | 0.02 | 93.2 | 2.1 | 2.7 | .0000 | 406 | 244 | 18.3 | 23.2 | 13.66 | 13.66 | 513 | - | 0.00 | 0 | 0 | 0 | 0 |
| 2 | -32.97 | 158 | 0.13 | 169 | 2.4 | 4.2 | .0007 | 190 | 102 | 4.8 | 8.2 | 13.77 | 13.55 | 558 | - | 0.04 | 0.08 | 4.1 | 0.02 | 0.03 |
| 2 | -18.75 | 273 | 0.28 | 263 | 2.6 | 6.1 | .0015 | 163 | 78.8 | 2.5 | 6.0 | 13.95 | 13.55 | 618 | - | 0.14 | 0.23 | 11.0 | 0.04 | 0.08 |
| 2 | - 5.92 | 342 | 0.43 | 364 | 2.7 | 7.1 | .0023 | 136 | 72.9 | 1.8 | 4.7 | 14.22 | 13.52 | 691 | - | 0.27 | 0.37 | 19.7 | 0.05 | 0.13 |
| 2 | 12.24 | 314 | 0.39 | 315 | 2.6 | 6.8 | .0021 | 138 | 69.8 | 1.9 | 4.9 | 14.22 | 13.55 | 670 | - | 0.25 | 0.35 | 17.5 | 0.05 | 0.12 |
| 2 | 26.37 | 222 | 0.22 | 238 | 2.3 | 5.6 | .0012 | 165 | 88.8 | 2.8 | 6.9 | 13.93 | 13.52 | 592 | - | 0.11 | 0.18 | 9.8 | 0.03 | 0.08 |
| 2 | 40.47 | 133 | 0.09 | 127 | 2.1 | 3.6 | .0004 | 231 | 111 | 5.9 | 10.4 | 13.66 | 13.58 | 540 | - | 0.02 | 0.05 | 2.2 | 0.01 | 0.02 |
| 2 | 54.89 | 56.6 | 0.01 | 28.9 | 1.8 | 2.1 | - | - | - | - | - | 13.58 | 13.63 | 507 | - | - | - | - | - | - |
| 2 | 68.62 | 9.0 | 0 | 3.7 | 1.3 | 1.4 | - | - | - | - | - | 13.61 | 13.66 | 503 | - | - | - | - | - | - |
| 2 | 82.84 | 3.3 | 0 | 0 | 1.2 | 1.3 | - | - | - | - | - | 13.61 | 13.63 | 503 | - | - | - | - | - | - |
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NOTES: Radial position adjusted for symmetry.
Thermocouple #2 is out.

## Table 19. Summary of Plume Measurements, J85-5, Run No. 11-3, 12-1.

Run Date 3/13/74 (3/12/74), Power Setting MID A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel$_3$ ($\times 10^{-3}$) | CO ($\times 10^{-5}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -72.60 | 11.9 | 0 | 0 | 1.6 | 1.7 | - | - | - | - | - | 13.61 | 13.61 | 508 | 529 | - | - | - | - | - |
| 1 | -59.47 | 28.4 | 0.02 | 0 | 2.3 | 2.5 | - | - | - | - | - | 13.61 | 13.61 | 516 | 527 | - | - | - | - | - |
| 1 | -46.73 | 60.8 | 0.15 | 0 | 3.0 | 4.2 | .0006 | 78.4 | 0 | 6.3 | 8.9 | 13.69 | 13.58 | 564 | 525 | 0.03 | 0.24 | 0 | 0.02 | 0.03 |
| 1 | -32.79 | 86.2 | 0.34 | 0 | 3.6 | 6.2 | .0015 | 49.7 | 0 | 3.5 | 5.9 | 13.80 | 13.53 | 647 | 543 | 0.10 | 0.50 | 0 | 0.04 | 0.06 |
| 1 | -19.49 | 106.1 | 0.41 | 0 | 4.1 | 7.0 | .0019 | 50.3 | 0 | 3.2 | 5.5 | 13.99 | 13.51 | 682 | 798 | 0.18 | 0.91 | 0 | 0.06 | 0.10 |
| 1 | -1.75 | 128.1 | 0.53 | 0 | 4.7 | 8.0 | .0025 | 47.2 | 0 | 2.9 | 4.8 | 14.12 | 13.48 | 738 | 843 | 0.26 | 1.23 | 0 | 0.08 | 0.12 |
| 1 | 11.20 | 130.8 | 0.55 | 0 | 4.4 | 8.2 | .0026 | 46.5 | 0 | 2.6 | 4.8 | 14.07 | 13.51 | 746 | 839 | 0.26 | 1.21 | 0 | 0.07 | 0.12 |
| 1 | 22.04 | 113.2 | 0.44 | 0 | 4.0 | 7.2 | .0021 | 49.8 | 0 | 2.9 | 5.2 | 13.91 | 13.51 | 698 | 782 | 0.17 | 0.85 | 0 | 0.05 | 0.09 |
| 1 | 35.43 | 84.8 | 0.29 | 0 | 3.3 | 5.4 | .0013 | 56.7 | 0 | 3.6 | 6.0 | 13.77 | 13.51 | 624 | 713 | 0.08 | 0.45 | 0 | 0.03 | 0.05 |
| 1 | 48.91 | 58.1 | 0.16 | 0 | 2.7 | 4.4 | .0007 | 68.6 | 0 | 5.3 | 8.6 | 13.69 | 13.53 | 570 | 665 | 0.03 | 0.21 | 0 | 0.02 | 0.03 |
| 1 | 61.84 | 42.8 | 0.08 | 0 | 2.3 | 3.2 | .0003 | 106.0 | 0 | 9.2 | 13.1 | 13.66 | 13.56 | 537 | 613 | 0.01 | 0.11 | 0 | 0.01 | 0.01 |
| 1 | 74.76 | 17.2 | 0 | 0 | 1.9 | 2.0 | - | - | - | - | - | 13.64 | 13.61 | 508 | 569 | - | - | - | - | - |
| 2 | -70.21 | 50.9 | 0.07 | 11.2 | 3.4 | 3.3 | .0002 | 136 | 15.0 | 14.8 | 14.5 | 13.64 | 13.60 | 539 | - | 0.01 | 0.14 | 0.2 | 0.01 | 0.01 |
| 2 | -55.78 | 72.0 | 0.16 | 12.4 | 4.1 | 4.1 | .0007 | 86.2 | 7.5 | 8.1 | 8.0 | 13.64 | 13.63 | 573 | - | 0.02 | 0.17 | 0.2 | 0.02 | 0.02 |
| 2 | -41.26 | 112 | 0.44 | 13.9 | 5.3 | 6.0 | .0020 | 49.9 | 3.1 | 3.9 | 4.4 | 13.72 | 13.58 | 699 | - | 0.10 | 0.50 | 0.3 | 0.04 | 0.04 |
| 2 | -26.68 | 175 | 0.75 | 15.3 | 6.7 | 8.7 | .0036 | 45.2 | 2.0 | 2.9 | 3.7 | 13.85 | 13.52 | 820 | - | 0.25 | 1.13 | 0.5 | 0.07 | 0.09 |
| 2 | -12.54 | 227 | 1.04 | 16.2 | 7.6 | 11.0 | .0050 | 42.5 | 1.5 | 2.4 | 3.4 | 14.22 | 13.50 | 899 | - | 0.52 | 2.21 | 0.8 | 0.12 | 0.18 |
| 2 | 6.83 | 228 | 1.12 | 16.3 | 7.9 | 11.5 | .0054 | 39.7 | 1.4 | 2.3 | 3.3 | 14.37 | 13.47 | 924 | - | 0.62 | 2.46 | 0.9 | 0.14 | 0.20 |
| 2 | 19.68 | 190 | 0.87 | 15.7 | 6.7 | 9.8 | .0042 | 42.8 | 1.8 | 2.5 | 3.7 | 13.98 | 13.47 | 853 | - | 0.35 | 1.50 | 0.6 | 0.09 | 0.13 |
| 2 | 33.82 | 140 | 0.60 | 14.1 | 5.6 | 7.7 | .0029 | 45.2 | 2.3 | 3.0 | 4.1 | 13.74 | 13.55 | 769 | - | 0.14 | 0.63 | 0.3 | 0.04 | 0.06 |
| 2 | 48.59 | 88.9 | 0.37 | 13.5 | 4.9 | 5.8 | .0017 | 46.6 | 3.6 | 4.3 | 5.1 | 13.66 | 13.58 | 667 | - | 0.06 | 0.28 | 0.2 | 0.03 | 0.03 |
| 2 | 63.04 | 58.0 | 0.13 | 13.0 | 3.6 | 4.1 | .0005 | 81.9 | 9.2 | 8.5 | 9.6 | 13.61 | 13.60 | 563 | - | 0.00 | 0 | 0 | 0 | 0 |
| 2 | 77.28 | 47.7 | 0.10 | 13.0 | 3.7 | 4.1 | .0004 | 92.1 | 12.6 | 11.8 | 13.1 | 13.61 | 13.60 | 548 | - | 0.00 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | | | | | | | |
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NOTES: Radial position adjusted for symmetry.
Thermocouple #2 is out.

## Table 20. Summary of Plume Measurements, J85-5, Run No. 12-2.

Run Date 3/13/74, Power Setting MAX A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-5}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -67.15 | 60.9 | 0.24 | 14.5 | 5.3 | 5.3 | .0011 | 49.4 | 5.9 | 7.0 | 7.1 | 13.61 | 13.35 | 608 | 641 | 0.01 | 0.05 | 0.1 | 0.01 | 0.01 |
| 1 | -54.03 | 71.1 | 0.35 | 14.6 | 6.0 | 6.3 | .0016 | 39.2 | 4.1 | 5.5 | 5.7 | 13.58 | 13.32 | 661 | 693 | 0 | 0 | 0 | 0 | 0 |
| 1 | -40.22 | 103 | 0.61 | 14.5 | 7.3 | 8.2 | .0029 | 32.8 | 2.3 | 3.9 | 4.4 | 13.66 | 13.30 | 773 | 784 | 0.10 | 0.39 | 0.4 | 0.06 | 0.06 |
| 1 | -26.91 | 134 | 0.88 | 14.2 | 9.2 | 10.3 | .0042 | 30.1 | 1.6 | 3.4 | 3.9 | 13.85 | 13.24 | 856 | 903 | 0.29 | 0.87 | 0.5 | 0.10 | 0.11 |
| 1 | -13.62 | 153 | 1.11 | 14.3 | 10.1 | 12.2 | .0053 | 27.1 | 1.3 | 3.0 | 3.6 | 14.02 | 13.27 | 920 | 965 | 0.45 | 1.22 | 0.6 | 0.14 | 0.16 |
| 1 | 6.32 | 159 | 1.15 | 14.2 | 10.6 | 12.8 | .0055 | 27.4 | 1.2 | 3.0 | 3.7 | 14.15 | 13.27 | 932 | 998 | 0.53 | 1.45 | 0.6 | 0.16 | 0.20 |
| 1 | 16.36 | 142 | 1.01 | 14.4 | 9.7 | 11.9 | .0049 | 27.6 | 1.4 | 3.1 | 3.8 | 13.99 | 13.27 | 893 | 950 | 0.40 | 1.10 | 0.6 | 0.12 | 0.15 |
| 1 | 29.92 | 142 | 0.95 | 14.3 | 8.2 | 11.3 | .0045 | 29.3 | 1.5 | 2.8 | 3.9 | 13.80 | 13.22 | 876 | 867 | 0.27 | 0.79 | 0.4 | 0.08 | 0.11 |
| 1 | 43.52 | 93.4 | 0.50 | 14.4 | 6.5 | 7.3 | .0023 | 36.5 | 2.8 | 4.2 | 4.7 | 13.66 | 13.32 | 731 | 735 | 0.09 | 0.33 | 0.3 | 0.04 | 0.04 |
| 1 | 56.88 | 83.9 | 0.43 | 14.5 | 6.4 | 7.1 | .0020 | 38.2 | 3.3 | 4.8 | 5.4 | 13.61 | 13.24 | 697 | 715 | 0.02 | 0.08 | 0.1 | 0.01 | 0.11 |
| 1 | 70.80 | 43.8 | 0.08 | 14.7 | 4.0 | 3.6 | .0003 | 99.4 | 16.8 | 15.1 | 13.6 | 13.58 | 13.40 | 545 | 586 | - | - | - | - | - |
| 1 | 83.40 | 43.4 | 0.12 | 14.6 | 4.2 | 4.7 | .0005 | 67.2 | 11.3 | 10.7 | 12.0 | 13.58 | 13.32 | 561 | 595 | - | - | - | - | - |
| 2 | -67.16 | 41.0 | 0.08 | 14.5 | 4.0 | 4.2 | .0003 | 96.1 | 17.1 | 15.3 | 16.4 | 13.61 | 13.63 | 544 | - | 0.00 | 0 | 0 | 0 | 0 |
| 2 | -52.50 | 74.4 | 0.28 | 14.5 | 5.3 | 6.0 | .0013 | 51.0 | 5.0 | 6.0 | 6.8 | 13.64 | 13.58 | 627 | - | 0.04 | 0.20 | 0.2 | 0.02 | 0.03 |
| 2 | -37.62 | 108 | 0.53 | 14.5 | 7.2 | 8.6 | .0025 | 39.8 | 2.7 | 4.4 | 5.3 | 13.72 | 13.55 | 742 | - | 0.12 | 0.48 | 0.3 | 0.05 | 0.06 |
| 2 | -22.59 | 148 | 0.89 | 14.5 | 9.9 | 11.5 | .0043 | 32.4 | 1.6 | 3.6 | 4.2 | 13.95 | 13.52 | 862 | - | 0.34 | 1.10 | 0.5 | 0.12 | 0.14 |
| 2 | -7.51 | 177 | 1.17 | 14.1 | 11.1 | 14.7 | .0056 | 29.7 | 1.2 | 3.1 | 4.1 | 14.29 | 13.47 | 940 | - | 0.61 | 1.81 | 0.7 | 0.19 | 0.25 |
| 2 | 8.23 | 175 | 1.21 | 13.6 | 11.2 | 14.6 | .0058 | 28.4 | 1.1 | 3.0 | 4.0 | 14.32 | 13.47 | 953 | - | 0.63 | 1.79 | 0.7 | 0.19 | 0.25 |
| 2 | 23.32 | 139 | 0.86 | 13.0 | 9.3 | 11.0 | .0041 | 31.6 | 1.5 | 3.5 | 4.2 | 13.90 | 13.52 | 852 | - | 0.30 | 0.95 | 0.5 | 0.11 | 0.13 |
| 2 | 38.26 | 95.4 | 0.53 | 12.7 | 6.7 | 8.5 | .0025 | 35.4 | 2.4 | 4.1 | 5.2 | 13.66 | 13.55 | 742 | - | 0.09 | 0.32 | 0.2 | 0.37 | 2.47 |
| 2 | 53.23 | 48.0 | 0.11 | 13.0 | 4.2 | 4.7 | .0004 | 82.7 | 11.2 | 12.1 | 13.3 | 13.58 | 13.60 | 556 | - | 0 | 0 | 0 | 0 | 0 |
| 2 | 68.01 | 26.6 | 0.03 | 13.1 | 3.3 | 3.2 | 0 | - | - | - | - | 13.61 | 13.60 | 526 | - | 0.00 | 0 | 0 | 0 | 0 |
| 2 | 82.54 | 24.5 | 0.03 | 13.3 | 3.0 | 3.1 | 0 | - | - | - | - | 13.61 | 13.66 | 526 | - | 0.00 | 0 | 0 | 0 | 0 |

NOTES: Radial position adjusted for symmetry.
Thermocouple #2 is out.

## Table 21. Summary of Plume Measurements, J79-15, Run No. 24-1.

Run Date 4/4/74, Power Setting MIL, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | $Fuel_{-3}$ ($\times 10^{-3}$) | $CO_{-4}$ ($\times 10^{-4}$) | $HC_{-6}$ ($\times 10^{-6}$) | $NO_{-5}$ ($\times 10^{-5}$) | $NO_{x-5}$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -11.43 | 11.6 | 1.20 | 0 | 40.2 | 43.9 | .0057 | 1.9 | 0 | 11.2 | 12.2 | 15.34 | 13.70 | 949 | | .94 | .02 | 0 | 1.05 | 1.15 |
| 1 | -9.27 | 28.4 | 2.91 | 0 | 89.6 | 98.3 | .0138 | 2.0 | 0 | 10.4 | 11.4 | 26.31 | | 1523 | | 4.79 | .10 | 0 | 4.98 | 5.46 |
| 1 | -6.38 | 36.2 | 3.55 | 0 | 109 | 122 | .0168 | 2.0 | 0 | 10.4 | 11.6 | 31.36 | | 1718 | | 6.39 | .13 | 0 | 6.65 | 7.41 |
| 1 | -3.87 | 36.9 | 3.44 | 0 | 104 | 114 | .0163 | 2.1 | 0 | 10.3 | 11.3 | 32.03 | | 1685 | | 6.37 | .13 | 0 | 6.56 | 7.20 |
| 1 | -1.39 | 39.6 | 3.39 | 2.0 | 101 | 113 | .0161 | 2.3 | .10 | 10.1 | 11.2 | 30.33 | | 1673 | | 6.04 | .14 | .6 | 6.10 | 6.76 |
| 1 | 1.01 | 40.7 | 3.36 | 0 | 98.1 | 111 | .0160 | 2.4 | 0 | 9.9 | 11.2 | 31.41 | | 1663 | | 6.18 | .15 | 0 | 6.12 | 6.92 |
| 1 | 3.80 | 38.8 | 3.39 | 0 | 101 | 113 | .0161 | 2.3 | 0 | 10.1 | 11.3 | 31.92 | | 1671 | | 6.30 | .14 | 0 | 6.36 | 7.18 |
| 1 | 6.32 | 40.0 | 3.51 | 0 | 107 | 118 | .0167 | 2.3 | 0 | 10.3 | 11.4 | 32.23 | | 1708 | | 6.50 | .15 | 0 | 6.70 | 7.41 |
| 1 | 8.84 | 40.7 | 3.48 | 0 | 106 | 119 | .0166 | 2.3 | 0 | 10.3 | 11.5 | 31.20 | | 1700 | | 6.29 | .14 | 0 | 6.48 | 7.23 |
| 1 | 11.36 | 23.5 | 1.96 | 0 | 61.6 | 69.1 | .0093 | 2.4 | 0 | 10.5 | 11.8 | 19.20 | | 1217 | | 2.46 | .06 | 0 | 2.58 | 2.90 |
| 1 | 12.44 | 13.1 | 1.04 | 0 | 35.9 | 40.1 | .0049 | 2.5 | 0 | 11.4 | 12.7 | 15.18 | | 902 | | .799 | .02 | 0 | .91 | 1.01 |
| 2 | 11.43 | 15.3 | 1.27 | 0 | 43.8 | 49.1 | .0060 | 2.4 | 0 | 11.5 | 12.9 | 15.99 | | 972 | | 1.16 | .03 | 0 | 1.33 | 1.50 |
| 2 | 8.75 | 32.8 | 2.80 | 0 | 90.9 | 101 | .0133 | 2.3 | 0 | 10.9 | 12.1 | 32.96 | | 1490 | | 5.70 | .13 | 0 | 6.21 | 6.90 |
| 2 | 7.42 | 41.4 | 3.39 | 0 | 106 | 120 | .0161 | 2.4 | 0 | 10.6 | 12.0 | 33.11 | | 1671 | | 6.49 | .16 | 0 | 6.88 | 7.79 |
| 2 | 5.22 | 40.1 | 3.30 | 0 | 103 | 117 | .0157 | 2.4 | 0 | 10.6 | 12.0 | 33.42 | | 1644 | | 6.43 | .15 | 0 | 6.82 | 7.72 |
| 2 | 3.21 | 38.4 | 3.18 | 0 | 102 | 113 | .0151 | 2.4 | 0 | 10.8 | 12.0 | 33.68 | | 1609 | | 6.32 | .15 | 0 | 6.83 | 7.58 |
| 2 | 0.67 | 40.5 | 3.18 | 0 | 99.4 | 112 | .0151 | 2.5 | 0 | 10.6 | 11.9 | 33.53 | | 1607 | | 6.29 | .16 | 0 | 6.67 | 7.49 |
| 2 | -1.42 | 42.7 | 3.24 | 0 | 101 | 112 | .0154 | 2.6 | 0 | 10.5 | 11.7 | 33.53 | | 1626 | | 6.37 | .17 | 0 | 6.69 | 7.45 |
| 2 | -4.54 | 41.4 | 3.24 | 0 | 104 | 117 | .0154 | 2.5 | 0 | 10.8 | 12.2 | 33.48 | | 1628 | | 6.37 | .16 | 0 | 6.88 | 7.77 |
| 2 | -6.02 | 37.9 | 3.26 | 0 | 108 | 119 | .0155 | 2.3 | 0 | 11.2 | 12.3 | 33.11 | | 1634 | | 6.34 | .15 | 0 | 7.10 | 7.80 |
| 2 | -8.23 | 38.3 | 3.05 | 0 | 98.1 | 111 | .0145 | 2.5 | 0 | 10.8 | 12.3 | 31.30 | | 1570 | | 5.79 | .14 | 0 | 6.25 | 7.12 |
| 2 | -10.97 | 22.5 | 1.75 | 0 | 63.0 | 70.4 | .0083 | 2.6 | 0 | 12.0 | 13.4 | 18.84 | ↓ | 1149 | | 2.20 | .06 | 0 | 2.64 | 2.95 |
| 2 | -12.42 | 12.9 | 0.82 | 0 | 31.3 | 34.1 | .0093 | 3.1 | 0 | 12.5 | 13.6 | 14.95 | | 842 | | .599 | .02 | 0 | .75 | .81 |

## Table 22. Summary of Plume Measurements, J79-15, Run No. 24-2.

Run Date 4/4/74, Power Setting MIN A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-4}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -13.59 | 59.2 | 0.76 | 56.4 | 22.7 | 27.7 | .0036 | 15.2 | 7.3 | 9.7 | 11.8 | 14.46 | 13.68 | 824 | | .447 | .07 | .03 | .43 | .53 |
| 1 | -10.71 | 228 | 2.57 | 207 | 59.6 | 81.2 | .0124 | 17.4 | 8.1 | 7.7 | 10.4 | 22.50 | | 1414 | | 3.78 | .66 | .31 | 2.91 | 3.93 |
| 1 | -7.66 | 911 | 4.90 | 535 | 73.8 | 119 | .0238 | 36.1 | 11.1 | 5.0 | 8.1 | 32.28 | | 2107 | | 8.22 | 2.97 | .91 | 4.11 | 6.66 |
| 1 | -4.94 | 1211 | 8.48 | 126 | 102 | 134 | .0401 | 28.1 | 1.6 | 4.2 | 5.5 | 32.34 | | 3002 | | 11.29 | 3.18 | .18 | 4.75 | 6.22 |
| 1 | -2.08 | 2367 | 8.13 | 1488 | 50.2 | 114 | .0397 | 55.4 | 18.9 | 2.1 | 4.8 | 31.92 | | 2927 | | 11.22 | 2.12 | 2.12 | 2.35 | 5.38 |
| 1 | 1.01 | 4334 | 6.13 | 7062 | 7.3 | 78.9 | .0343 | 118 | 103 | 0.3 | 3.8 | 30.89 | | 2450 | | 10.42 | 12.27 | 10.71 | .31 | 3.95 |
| 1 | 3.80 | 2695 | 7.95 | 2067 | 38.4 | 104 | .0394 | 63.8 | 26.4 | 1.6 | 4.4 | 31.46 | | 2887 | | 11.07 | 7.08 | 2.93 | 1.78 | 4.88 |
| 1 | 6.68 | 794 | 8.39 | 64.9 | 98.5 | 127 | .0395 | 18.7 | 0.8 | 4.1 | 5.3 | 31.87 | | 2978 | | 11.04 | 2.06 | .09 | 4.51 | 5.83 |
| 1 | 9.56 | 615 | 4.90 | 271 | 72.7 | 113 | .0236 | 24.6 | 5.7 | 5.0 | 7.8 | 32.03 | | 2106 | | 8.09 | 1.99 | .46 | 4.05 | 6.31 |
| 1 | 12.44 | 285 | 2.69 | 184 | 48.5 | 75.4 | .0130 | 20.8 | 6.9 | 5.9 | 9.3 | 21.52 | | 1455 | | 3.69 | .77 | .26 | 2.18 | 3.43 |
| 1 | 14.60 | 115 | 1.05 | 64.5 | 22.9 | 34.9 | .0050 | 21.5 | 6.1 | 7.1 | 10.8 | 14.82 | | 905 | | .716 | .15 | .04 | .51 | .77 |
| 2 | 13.73 | 210 | 1.68 | 96.4 | 34.9 | 54.5 | .0081 | 24.5 | 5.7 | 6.8 | 10.6 | 16.87 | | 1122 | | 1.71 | .42 | .10 | 1.16 | 1.81 |
| 2 | 9.97 | 454 | 3.53 | 238 | 68.3 | 107 | .0171 | 25.2 | 6.8 | 6.4 | 10.1 | 30.05 | | 1713 | | 6.24 | 1.57 | .42 | 3.99 | 6.30 |
| 2 | 8.18 | 728 | 5.32 | 172 | 81.8 | 125 | .0255 | 26.9 | 3.4 | 5.2 | 8.0 | 31.92 | | 2219 | | 8.47 | 2.28 | .29 | 4.40 | 6.78 |
| 2 | 5.62 | 1289 | 8.30 | 302 | 90.5 | 127 | .0395 | 30.4 | 3.9 | 3.8 | 5.3 | 31.76 | | 2962 | | 11.03 | 3.34 | .43 | 4.18 | 5.83 |
| 2 | 3.41 | 4061 | 7.11 | 3607 | 17.6 | 92.9 | .0370 | 103 | 49.0 | 0.8 | 4.1 | 31.14 | | 2697 | | 10.70 | 11.02 | 5.24 | .86 | 4.39 |
| 2 | 1.04 | 4300 | 5.68 | 8028 | 4.9 | 75.2 | .0327 | 123 | 122 | 0.2 | 3.7 | 31.09 | | 2333 | | 10.25 | 12.67 | 12.57 | .21 | 3.81 |
| 2 | -1.79 | 3037 | 7.47 | 2271 | 35.8 | 103 | .0375 | 75.6 | 30.5 | 1.6 | 4.5 | 31.45 | | 2777 | | 10.77 | 8.16 | 3.29 | 1.73 | 4.86 |
| 2 | -5.29 | 1098 | 8.75 | 147 | 106 | 139 | .0413 | 24.7 | 1.8 | 4.3 | 5.6 | 31.92 | | 3061 | | 11.36 | 2.82 | .21 | 4.90 | 6.38 |
| 2 | -7.49 | 1098 | 6.99 | 172 | 95.2 | 136 | .0334 | 30.8 | 2.6 | 4.7 | 6.7 | 32.18 | | 2649 | | 10.06 | 3.11 | .47 | 4.75 | 6.77 |
| 2 | -9.88 | 1110 | 4.89 | 410 | 72.3 | 119 | .0239 | 43.9 | 8.5 | 4.9 | 8.1 | 31.92 | | 2109 | | 8.14 | 3.57 | .69 | 3.99 | 6.59 |
| 2 | -12.8 | 298 | 1.80 | 110 | 31.9 | 53.2 | .0088 | 32.3 | 6.1 | 5.8 | 9.6 | 16.77 | | 1166 | | 1.78 | 0.57 | 0.11 | 1.03 | 1.71 |
| | | | | | | | | | | | | | | | | | | | | |
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## Table 23. Summary of Plume Measurements, J79-15, Run No. 25-1.

Run Date 4/8/74, Power Setting MIN A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | $Fuel_3$ ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-4}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -14.47 | 955 | 1.07 | 1929 | 4.4 | 24.4 | .0064 | 141 | 144 | 1.1 | 6.0 | 14.51 | 13.60 | 908 | | .812 | 1.14 | 1.17 | .09 | 49 |
| 1 | -11.60 | 2237 | 3.88 | 4613 | 7.0 | 63.8 | .0217 | 97.6 | 105 | 0.5 | 4.8 | 22.14 | | 1820 | | 5.64 | 5.50 | .59 | .28 | 27 |
| 1 | -8.73 | 2745 | 8.24 | 998 | 60.3 | 118 | .0402 | 63.6 | 12.6 | 2.5 | 4.9 | 31.98 | | 2954 | | 11.31 | 7.19 | 1.43 | 2.83 | 5.54 |
| 1 | -5.86 | 4866 | 11.2 | 15.2 | 129 | 160 | .0537 | 83.3 | 0.1 | 4.1 | 5.0 | 32.28 | | 3609 | | 13.50 | 11.25 | .01 | 5.54 | 6.75 |
| 1 | -2.99 | 5290 | 11.3 | 61.8 | 133 | 167 | .0543 | 89.4 | 0.6 | 4.1 | 5.2 | 31.20 | | 3632 | | 13.24 | 11.84 | .08 | 5.43 | 6.88 |
| 1 | -0.50 | 5035 | 8.64 | 1674 | 43.0 | 112 | .0434 | 108 | 19.6 | 1.6 | 4.3 | 30.43 | | 3063 | | 11.45 | 12.37 | 2.24 | 1.83 | 4.92 |
| 1 | 3.22 | 4594 | 8.81 | 1471 | 45.9 | 113 | .0438 | 97.3 | 17.0 | 1.7 | 4.3 | 30.89 | | 3098 | | 11.65 | 11.34 | 1.98 | 1.98 | 5.01 |
| 1 | 5.73 | 2397 | 11.1 | 21.5 | 127 | 156 | .0520 | 42.4 | 0.2 | 4.1 | 5.0 | 32.13 | | 3565 | | 13.15 | 5.58 | .03 | 5.39 | 6.58 |
| 1 | 8.61 | 3034 | 9.81 | 212 | 104 | 138 | .0469 | 59.7 | 2.3 | 3.7 | 4.9 | 32.28 | | 3310 | | 12.45 | 7.43 | .29 | 4.61 | 6.10 |
| 1 | 11.48 | 2426 | 5.43 | 4734 | 9.8 | 83.4 | .0291 | 78.6 | 81.0 | 0.5 | 4.7 | 29.55 | | 2247 | | 8.95 | 7.03 | 7.25 | .05 | 4.21 |
| 1 | 14.35 | 1286 | 1.96 | 2740 | 4.3 | 36.9 | .0113 | 108 | 118 | 0.6 | 5.2 | 15.85 | | 1222 | | 1.91 | 2.06 | 2.25 | .11 | .99 |
| 2 | 16.13 | 1056 | 1.69 | 1042 | 4.6 | 34.9 | .0090 | 111 | 55.8 | 0.8 | 6.1 | 15.27 | | 1126 | | 1.38 | 1.53 | .77 | .01 | .84 |
| 2 | 13.19 | 1971 | 5.77 | 1148 | 32.9 | 95.9 | .0287 | 64.6 | 19.9 | 1.9 | 5.5 | 27.61 | | 2342 | | 8.15 | 5.26 | 1.62 | 1.55 | 4.48 |
| 2 | 10.25 | 1292 | 9.46 | 28.9 | 113 | 140 | .0445 | 26.9 | 0.3 | 4.2 | 5.2 | 32.18 | | 3218 | | 11.98 | 3.22 | .04 | 5.03 | 6.23 |
| 2 | 7.30 | 2949 | 11.0 | 24.5 | 136 | 165 | .0520 | 52.2 | 0.2 | 4.4 | 5.3 | 31.97 | | 3556 | | 13.11 | 6.84 | .03 | 5.77 | 6.95 |
| 2 | 4.34 | 4781 | 8.81 | 1283 | 51.2 | 117 | .0438 | 101 | 14.9 | 1.9 | 4.4 | 30.67 | | 3101 | | 11.57 | 11.69 | 1.72 | 2.20 | 5.09 |
| 2 | 1.40 | 5968 | 6.92 | 5188 | 9.7 | 83.7 | .0378 | 148 | 69.1 | 0.4 | 3.7 | 30.05 | | 2656 | | 10.70 | 15.84 | 7.39 | .04 | 3.96 |
| 2 | -1.60 | 4645 | 8.64 | 1331 | 47.4 | 114 | .0430 | 100 | 15.7 | 1.8 | 4.4 | 30.78 | | 3060 | | 11.48 | 11.48 | 1.80 | 2.07 | 5.05 |
| 2 | -4.55 | 5324 | 11.3 | 35.3 | 143 | 174 | .0544 | 89.9 | 0.3 | 4.4 | 5.4 | 31.71 | | 3636 | | 13.42 | 12.07 | .04 | 5.90 | 7.25 |
| 2 | -7.50 | 2389 | 10.1 | 20.0 | 118 | 151 | .0479 | 46.0 | 0.2 | 4.1 | 5.3 | 32.08 | | 3370 | | 12.51 | 5.75 | .03 | 5.13 | 6.63 |
| 2 | -10.45 | 1846 | 8.09 | 965 | 58.5 | 117 | .0391 | 44.0 | 12.5 | 2.5 | 4.9 | 31.04 | | 2910 | | 10.83 | 4.77 | 1.35 | 2.71 | 5.31 |
| 2 | -13.40 | 1286 | 1.95 | 1500 | 3.6 | 33.7 | .0106 | 115 | 68.7 | 0.5 | 5.1 | 15.32 | | 1216 | | 1.58 | 1.82 | 1.09 | .08 | .81 |

## Table 24. Summary of Plume Measurements, J79-15, Run No. 25-2.

Run Date 4/8/74, Power Setting MAX A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-3}$) | HC ($\times 10^{-5}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -14.63 | 1286 | 3.19 | 23 | 34 | 55 | .0158 | 77.3 | 0.7 | 3.5 | 5.6 | 15.85 | 13.590 | 1624 | | 2.31 | 0.18 | 0.16 | 0.81 | 1.29 |
| 1 | -11.60 | 3525 | 8.35 | 2 | 83 | 116 | .0405 | 80.9 | 0.0 | 3.4 | 4.8 | 25.85 | | 2998 | | 9.40 | 0.76 | 0 | 3.20 | 4.51 |
| 1 | -8.90 | 4967 | 11.27 | 0 | 125 | 159 | .0541 | 84.3 | 0.0 | 3.9 | 4.9 | 31.20 | | 3639 | | 13.18 | 1.11 | 0 | 5.14 | 6.46 |
| 1 | -6.02 | 10472 | 11.92 | 1 | 138 | 171 | .0595 | 161.2 | 0.0 | 3.9 | 4.9 | 30.17 | | 3809 | | 13.65 | 2.20 | 0 | 5.32 | 6.69 |
| 1 | -2.99 | 5188 | 10.62 | 167 | 110 | 152 | .0515 | 92.8 | 1.7 | 3.6 | 5.0 | 30.43 | | 3506 | | 12.55 | 1.16 | 2.13 | 4.52 | 6.28 |
| 1 | -0.55 | 5832 | 7.77 | 2943 | 20 | 97 | .0405 | 134 | 36.8 | 0.8 | 4.0 | 28.42 | | 2877 | | 10.45 | 1.40 | 38.5 | 0.84 | 4.18 |
| 1 | 2.69 | 5086 | 8.38 | 1900 | 33 | 106 | .0424 | 112 | 22.8 | 1.3 | 4.2 | 30.07 | | 3013 | | 11.17 | 1.25 | 25.5 | 1.45 | 4.69 |
| 1 | 5.55 | 1949 | 11.26 | 21 | 122 | 156 | .0540 | 82.4 | 0.2 | 3.8 | 4.9 | 31.51 | | 3634 | | 13.27 | 1.09 | 0.27 | 5.04 | 6.50 |
| 1 | 8.61 | 6545 | 11.47 | 3 | 125 | 158 | .0557 | 108 | 0.0 | 3.8 | 4.8 | 31.46 | | 3691 | | 13.53 | 1.46 | 0 | 5.14 | 6.49 |
| 1 | 11.48 | 1975 | 9.13 | 30 | 89 | 119 | .0434 | 42.2 | 0.4 | 3.4 | 4.6 | 29.81 | | 3161 | | 11.07 | 0.47 | 0.44 | 3.76 | 5.31 |
| 1 | 14.35 | 1551 | 3.20 | 496 | 8 | 45 | .0162 | 90.8 | 15.0 | 0.8 | 4.4 | 16.16 | | 1631 | | 2.52 | 0.23 | 3.78 | 0.20 | 1.11 |
| 2 | 16.13 | 1523 | 4.49 | 51 | 40 | 68 | .0220 | 65.5 | 1.1 | 3.0 | 5.0 | 16.77 | | 2005 | | 3.39 | 0.22 | 0.37 | 1.02 | 1.70 |
| 2 | 13.19 | 4866 | 11.04 | 0 | 114 | 147 | .0531 | 84.3 | 0.0 | 3.6 | 4.7 | 28.34 | | 3590 | | 12.01 | 1.01 | 0 | 4.32 | 5.64 |
| 2 | 10.25 | 6647 | 12.94 | 0 | 142 | 171 | .0621 | 97.5 | 0.0 | 3.9 | 4.7 | 30.78 | | 3980 | | 14.14 | 1.38 | 0 | 5.51 | 6.65 |
| 2 | 7.30 | 6273 | 12.83 | 0 | 145 | 174 | .0615 | 93.1 | 0.0 | 4.0 | 4.8 | 30.99 | | 3954 | | 14.13 | 1.32 | 0 | 5.51 | 6.78 |
| 2 | 4.34 | 4798 | 10.07 | 878 | 64 | 124 | .0492 | 90.0 | 9.1 | 2.2 | 4.2 | 29.74 | | 3384 | | 12.02 | 1.08 | 10.9 | 2.64 | 5.05 |
| 2 | 1.40 | 6240 | 7.58 | 7026 | 6 | 84 | .0418 | 138.9 | 84.8 | 0.2 | 3.3 | 28.81 | | 2822 | | 11.02 | 1.53 | 93.4 | 0.22 | 3.64 |
| 2 | -1.60 | 5137 | 9.05 | 1963 | 34 | 110 | .0454 | 104.9 | 22.0 | 1.3 | 4.0 | 29.58 | | 3163 | | 11.48 | 1.20 | 25.3 | 1.49 | 4.59 |
| 2 | -4.55 | 5832 | 12.19 | 41 | 139 | 173 | .0585 | 91.2 | 0.4 | 4.0 | 5.0 | 30.73 | | 3826 | | 13.63 | 1.24 | 0.55 | 5.45 | 6.82 |
| 2 | -7.50 | 8995 | 12.66 | 0 | 149 | 179 | .0620 | 132.4 | 0.0 | 4.1 | 4.9 | 30.83 | | 3942 | | 14.20 | 1.88 | 0 | 5.82 | 6.96 |
| 2 | -10.45 | 11457 | 12.50 | 7 | 151 | 178 | .0624 | 167.7 | 0.1 | 4.1 | 4.9 | 30.73 | | 3928 | | 14.27 | 2.39 | 0.14 | 5.85 | 6.99 |
| 2 | -13.40 | 2010 | 5.33 | 2 | 42 | 70 | .0261 | 72.5 | 0.0 | 2.6 | 4.4 | 17.76 | | 2241 | | 4.32 | 0.31 | 0 | 1.12 | 1.90 |

## Table 25. Summary of Plume Measurements, J79-15, Run No. 25-3.

Run Date 4/8/74, Power Setting MIL, Axial Station 7.5 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -17.33 | 10.3 | 0.47 | 0 | 19.4 | 21.0 | .0022 | 4.4 | 0 | 13.5 | 14.6 | 13.95 | 13.57 | 729 | | 0.19 | 0.01 | 0 | 0.26 | 0.28 |
| 1 | -14.11 | 14.9 | 0.92 | 0 | 34.3 | 37.9 | .0043 | 3.3 | 0 | 12.4 | 13.7 | 15.08 | | 875 | | 0.71 | 0.02 | 0 | 0.88 | 0.97 |
| 1 | -10.88 | 21.3 | 1.54 | 0 | 53.7 | 59.6 | .0073 | 2.8 | 0 | 11.6 | 12.9 | 17.76 | | 1081 | | 1.79 | 0.05 | 0 | 2.08 | 2.31 |
| 1 | -7.29 | 30.1 | 2.37 | 0 | 77.9 | 85.6 | .0113 | 2.5 | 0 | 11.0 | 12.1 | 24.35 | | 1360 | | 3.85 | 0.10 | 0 | 4.24 | 4.66 |
| 1 | -3.70 | 38.8 | 3.01 | 0 | 95.2 | 108.8 | .0143 | 2.6 | 0 | 10.7 | 12.2 | 29.81 | | 1561 | | 5.47 | 0.14 | 0 | 5.85 | 6.67 |
| 1 | -0.50 | 43.5 | 3.25 | 0 | 99.4 | 112.3 | .0154 | 2.7 | 0 | 10.4 | 11.7 | 31.36 | | 1633 | | 6.00 | 0.16 | 0 | 6.24 | 7.02 |
| 1 | 3.58 | 42.5 | 3.18 | 0 | 97.0 | 108.5 | .0151 | 2.7 | 0 | 10.3 | 11.6 | 32.08 | | 1612 | | 6.03 | 0.16 | 0 | 6.21 | 6.99 |
| 1 | 7.17 | 37.7 | 2.74 | 0 | 84.1 | 93.4 | .0131 | 2.7 | 0 | 10.3 | 11.5 | 28.73 | | 1478 | | 4.98 | 0.13 | 0 | 5.13 | 5.73 |
| 1 | 10.76 | 28.9 | 2.01 | 0 | 62.8 | 70.5 | .0096 | 2.9 | 0 | 10.4 | 11.7 | 21.11 | | 1243 | | 2.90 | 0.08 | 0 | 3.02 | 3.39 |
| 1 | 13.99 | 20.3 | 1.25 | 0 | 43.4 | 47.5 | .0059 | 3.2 | 0 | 11.5 | 12.6 | 16.47 | | 974 | | 1.28 | 0.04 | 0 | 1.47 | 1.61 |
| 1 | 17.21 | 14.2 | 0.76 | 0 | 27.6 | 29.9 | .0036 | 3.7 | 0 | 12.0 | 13.0 | 14.51 | | 829 | | 0.48 | 0.02 | 0 | 0.58 | 0.62 |
| 2 | 15.40 | 16.9 | 1.06 | 0 | 39.1 | 42.6 | .0050 | 3.2 | 0 | 12.3 | 13.4 | 15.58 | | 912 | | 0.93 | 0.03 | 0 | 1.14 | 1.25 |
| 2 | 12.82 | 22.5 | 1.55 | 0 | 54.8 | 60.7 | .0073 | 2.9 | 0 | 11.8 | 13.1 | 18.01 | | 1084 | | 1.85 | 0.54 | 0 | 1.10 | 1.22 |
| 2 | 9.88 | 29.0 | 2.16 | 0 | 71.7 | 80.1 | .0103 | 2.7 | 0 | 11.1 | 12.4 | 22.79 | | 1290 | | 3.35 | 0.09 | 0 | 3.72 | 4.15 |
| 2 | 6.93 | 35.8 | 2.71 | 0 | 88.1 | 99.4 | .0129 | 2.6 | 0 | 10.9 | 12.3 | 29.17 | | 1469 | | 5.01 | 0.13 | 0 | 5.46 | 6.16 |
| 2 | 3.97 | 39.7 | 3.03 | 0 | 99.0 | 110.8 | .0144 | 2.6 | 0 | 11.0 | 12.3 | 31.82 | | 1568 | | 5.81 | 0.15 | 0 | 6.39 | 7.15 |
| 2 | 1.04 | 41.1 | 3.09 | 0 | 98.8 | 110.8 | .0147 | 2.7 | 0 | 10.8 | 12.1 | 31.82 | | 1585 | | 5.88 | 0.16 | 0 | 6.35 | 7.11 |
| 2 | -2.34 | 41.9 | 3.06 | 0 | 98.3 | 110.1 | .0146 | 2.7 | 0 | 10.8 | 12.1 | 31.66 | | 1577 | | 5.82 | 0.16 | 0 | 6.29 | 7.04 |
| 2 | -4.92 | 34.9 | 2.64 | 0 | 86.5 | 95.4 | .0126 | 2.6 | 0 | 11.0 | 12.2 | 27.82 | | 1444 | | 4.71 | 0.12 | 0 | 5.18 | 5.75 |
| 2 | -7.87 | 27.4 | 2.02 | 0 | 72.5 | 80.9 | .0096 | 2.7 | 0 | 12.0 | 13.4 | 21.44 | | 1244 | | 2.96 | 0.08 | 0 | 3.55 | 3.97 |
| 2 | -10.65 | 20.4 | 1.41 | 0 | 52.8 | 57.6 | .0067 | 2.9 | 0 | 12.4 | 13.6 | 17.08 | | 1032 | | 1.54 | 0.04 | 0 | 1.91 | 2.09 |
| 2 | -13.40 | 14.7 | 0.88 | 0 | 34.3 | 39.5 | .0041 | 3.3 | 0 | 12.9 | 14.9 | 15.01 | | 863 | | 0.67 | 0.02 | 0 | 0.86 | 1.00 |

## Table 26. Summary of Plume Measurements, J79-15, Run No. 25-4.

Run Date 4/8/74, Power Setting MIN A/B, Axial Station 7.5 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-5}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -18.04 | 111 | 0.67 | 48.6 | 14.9 | 24.6 | .0032 | 32.3 | 7.1 | 7.2 | 11.9 | 14.15 | 13.56 | 806 | | 0.35 | 0.11 | 0.25 | 0.25 | 0.42 |
| 1 | -14.47 | 203 | 1.30 | 87.4 | 25.1 | 41.0 | .0063 | 30.6 | 6.7 | 6.3 | 10.3 | 15.34 | | 999 | | 1.05 | 0.32 | 0.70 | 0.66 | 1.08 |
| 1 | -10.88 | 359 | 2.49 | 125.4 | 41.8 | 69.7 | .0121 | 28.2 | 5.1 | 5.5 | 9.2 | 18.84 | | 1406 | | 2.88 | 0.81 | 1.47 | 1.58 | 2.65 |
| 1 | -7.29 | 627 | 4.32 | 113.9 | 65.2 | 96.1 | .0208 | 28.5 | 2.7 | 5.1 | 7.5 | 25.59 | | 1958 | | 6.09 | 1.74 | 1.64 | 3.11 | 4.57 |
| 1 | -3.70 | 1087 | 7.06 | 66.2 | 91.6 | 119 | .0336 | 30.2 | 1.0 | 4.5 | 5.8 | 29.71 | | 2680 | | 9.42 | 2.84 | 0.94 | 4.24 | 5.46 |
| 1 | -0.50 | 1811 | 7.81 | 129 | 83.0 | 116 | .0374 | 45.2 | 1.7 | 3.7 | 5.1 | 28.32 | | 2867 | | 9.66 | 4.37 | 1.64 | 3.57 | 4.93 |
| 1 | 3.58 | 1593 | 7.69 | 109 | 84.1 | 117 | .0367 | 40.5 | 1.5 | 3.8 | 5.3 | 30.02 | | 2836 | | 10.04 | 4.07 | 1.51 | 3.81 | 5.32 |
| 1 | 7.17 | 746 | 5.76 | 55.4 | 76.8 | 105 | .0275 | 25.5 | 1.0 | 4.6 | 6.2 | 29.61 | | 2351 | | 8.29 | 2.11 | 0.83 | 3.81 | 5.14 |
| 1 | 10.76 | 415 | 3.67 | 76.4 | 55.3 | 83.5 | .0176 | 22.3 | 2.1 | 5.1 | 7.6 | 22.91 | | 1767 | | 4.87 | 1.09 | 1.02 | 2.48 | 3.70 |
| 1 | 14.35 | 250 | 2.02 | 70.8 | 34.0 | 53.9 | .0098 | 24.3 | 3.5 | 5.5 | 8.8 | 17.35 | | 1252 | | 2.11 | 0.51 | 0.74 | 1.16 | 1.86 |
| 1 | 17.92 | 149 | 1.12 | 45.3 | 20.3 | 35.1 | .0054 | 26.1 | 4.0 | 5.9 | 10.2 | 14.93 | | 938 | | 0.82 | 0.21 | 0.33 | 0.48 | 0.84 |
| 2 | 19.79 | 112 | 0.70 | 26.9 | 15.6 | 25.4 | .0033 | 31.3 | 3.8 | 7.2 | 11.8 | 14.18 | | 816 | | 0.37 | 0.12 | 0.14 | 0.27 | 0.44 |
| 2 | 16.13 | 212 | 1.40 | 51.9 | 26.0 | 44.1 | .0068 | 29.6 | 3.7 | 6.1 | 10.3 | 15.68 | | 1037 | | 1.21 | 0.36 | 0.45 | 0.74 | 1.25 |
| 2 | 12.46 | 346 | 2.52 | 74.8 | 42.5 | 69.1 | .0122 | 27.0 | 3.0 | 5.6 | 9.1 | 19.10 | | 1415 | | 2.96 | 0.80 | 0.89 | 1.66 | 2.69 |
| 2 | 8.97 | 603 | 4.25 | 71.0 | 64.8 | 94.8 | .0205 | 27.9 | 1.7 | 5.1 | 7.5 | 25.64 | | 1939 | | 6.04 | 1.69 | 1.03 | 3.08 | 4.53 |
| 2 | 5.08 | 1194 | 6.44 | 59.8 | 84.3 | 113 | .0309 | 36.3 | 1.0 | 4.5 | 6.0 | 30.47 | | 2529 | | 9.13 | 3.31 | 0.91 | 4.11 | 5.48 |
| 2 | 1.40 | 1802 | 7.79 | 138 | 78.8 | 113 | .0373 | 45.0 | 1.9 | 3.5 | 5.0 | 29.27 | | 2863 | | 9.93 | 4.47 | 1.89 | 3.48 | 4.97 |
| 2 | -2.34 | 1433 | 7.55 | 87.2 | 85.2 | 118 | .0360 | 37.2 | 1.2 | 3.9 | 5.4 | 30.57 | | 2802 | | 10.07 | 3.75 | 1.21 | 3.93 | 5.44 |
| 2 | -6.03 | 789 | 5.17 | 95.2 | 73.0 | 106 | .0248 | 30.0 | 1.9 | 4.8 | 7.0 | 28.39 | | 2194 | | 7.50 | 2.25 | 1.43 | 3.60 | 5.25 |
| 2 | -9.72 | 504 | 3.32 | 129 | 46.8 | 78.8 | .0161 | 29.7 | 3.9 | 4.7 | 7.9 | 22.06 | | 1665 | | 4.38 | 1.30 | 1.71 | 2.06 | 3.46 |
| 2 | -13.40 | 289 | 1.80 | 96.8 | 29.4 | 51.8 | .0087 | 31.4 | 5.4 | 5.3 | 9.4 | 16.72 | | 1179 | | 1.78 | 0.56 | 0.96 | 0.94 | 1.67 |
| 2 | -17.07 | 164 | 0.95 | 59.6 | 17.8 | 32.5 | .0046 | 33.5 | 6.2 | 6.0 | 11.0 | 14.64 | | 890 | | 0.64 | 0.21 | 0.40 | 0.38 | 0.70 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

## Table 27. Summary of Plume Measurements, J79-15, Run No. 26-1.

Run Date 4/9/74, Power Setting MID A/B, Axial Station 7.5 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-5}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -18.76 | 734 | 1.29 | 608 | 5.00 | 22.9 | .0068 | 103 | 43.1 | 1.2 | 5.3 | 14.26 | 13.53 | 976 | | 0.74 | 0.76 | 3.19 | 0.09 | 0.39 |
| 1 | -14.83 | 1238 | 2.50 | 835 | 6.50 | 39.9 | .0129 | 91.2 | 31.6 | 0.8 | 5.0 | 15.96 | | 1394 | | 2.11 | 1.92 | 6.67 | 0.17 | 1.06 |
| 1 | -11.41 | 1669 | 4.50 | 657 | 19.8 | 68.6 | .0224 | 70.4 | 14.5 | 1.4 | 5.0 | 20.08 | | 1997 | | 4.89 | 3.44 | 7.09 | 0.68 | 2.45 |
| 1 | -7.65 | 1694 | 7.74 | 155 | 67.6 | 107 | .0370 | 42.7 | 2.1 | 3.0 | 4.8 | 27.39 | | 2829 | | 9.37 | 4.00 | 1.97 | 2.81 | 4.50 |
| 1 | -4.23 | 1564 | 10.6 | 6.8 | 119 | 147 | .0495 | 29.1 | 0.1 | 4.0 | 5.0 | 30.79 | | 3458 | | 12.31 | 3.58 | 0.12 | 4.92 | 6.16 |
| 1 | -0.50 | 879 | 10.2 | 0 | 113 | 138 | .0475 | 17.1 | 0 | 4.0 | 4.9 | 29.30 | | 3371 | | 11.50 | 1.97 | 0 | 4.60 | 5.64 |
| 1 | 3.94 | 924 | 10.2 | 0 | 111 | 132 | .0476 | 17.9 | 0 | 3.9 | 4.7 | 29.71 | | 3375 | | 11.65 | 2.09 | 0 | 4.54 | 5.48 |
| 1 | 7.35 | 1647 | 9.13 | 133 | 85.0 | 121 | .0432 | 35.3 | 1.6 | 3.3 | 4.7 | 30.12 | | 3148 | | 11.16 | 3.94 | 1.79 | 3.68 | 5.25 |
| 1 | 10.93 | 2123 | 5.48 | 970 | 19.3 | 76.2 | .0273 | 73.2 | 17.7 | 1.2 | 4.6 | 23.01 | | 2266 | | 6.60 | 4.83 | 11.68 | 0.79 | 3.04 |
| 1 | 15.06 | 1675 | 3.02 | 1711 | 4.30 | 43.5 | .0160 | 99.5 | 52.5 | 0.4 | 4.4 | 17.35 | | 1561 | | 3.07 | 3.05 | 16.12 | 0.12 | 1.35 |
| 1 | 18.63 | 1044 | 1.55 | 1246 | 3.20 | 24.4 | .0085 | 117 | 71.1 | 0.6 | 4.6 | 14.82 | | 1078 | | 1.16 | 1.36 | 8.25 | 0.07 | 0.53 |
| 2 | 21.24 | 824 | 1.33 | 853 | 3.80 | 24.2 | .0071 | 110 | 57.6 | 0.8 | 5.4 | 14.38 | | 962 | | 0.83 | 0.91 | 4.78 | 0.07 | 0.45 |
| 2 | 17.59 | 1322 | 2.52 | 1088 | 5.00 | 40.2 | .0132 | 95.4 | 40.3 | 0.6 | 4.9 | 16.35 | | 1402 | | 2.32 | 2.21 | 9.35 | 0.14 | 1.14 |
| 2 | 13.56 | 1759 | 4.45 | 848 | 15.0 | 66.0 | .0223 | 74.5 | 18.8 | 1.1 | 4.8 | 20.61 | | 1985 | | 5.07 | 3.78 | 9.53 | 0.56 | 2.43 |
| 2 | 9.51 | 1681 | 7.62 | 235 | 65.0 | 104 | .0365 | 43.0 | 3.20 | 2.9 | 4.7 | 27.82 | | 2799 | | 9.42 | 4.05 | 3.01 | 2.73 | 4.43 |
| 2 | 5.45 | 895 | 10.2 | 9.50 | 115 | 135 | .0474 | 17.4 | 0.1 | 4.1 | 4.8 | 30.05 | | 3363 | | 11.73 | 2.04 | 0.12 | 4.81 | 5.63 |
| 2 | 1.40 | 829 | 9.93 | 0.50 | 110 | 131 | .0463 | 16.5 | 0 | 4.0 | 4.7 | 29.17 | | 3314 | | 11.29 | 1.86 | 0 | 4.52 | 5.31 |
| 2 | -2.71 | 1178 | 10.3 | 0 | 122 | 145 | .0481 | 22.6 | 0 | 4.3 | 5.1 | 30.36 | | 3396 | | 11.95 | 2.70 | 0 | 5.14 | 6.09 |
| 2 | -6.77 | 1666 | 8.76 | 80.7 | 95.8 | 126 | .0416 | 37.2 | 1.0 | 3.8 | 5.0 | 29.48 | | 3065 | | 10.70 | 3.98 | 1.07 | 4.07 | 5.35 |
| 2 | -10.82 | 1756 | 5.09 | 527 | 32.1 | 72.8 | .0252 | 65.9 | 10.4 | 2.1 | 4.7 | 21.49 | | 2162 | | 5.75 | 3.79 | 5.98 | 1.21 | 2.70 |
| 2 | -14.87 | 1270 | 2.67 | 804 | 9.90 | 41.7 | .0137 | 88.0 | 28.7 | 1.2 | 4.9 | 16.51 | | 1450 | | 2.43 | 2.14 | 6.97 | 0.29 | 1.19 |
| 2 | -18.90 | 689 | 1.23 | 626 | 5.00 | 21.7 | .0064 | 101 | 46.6 | 1.2 | 5.3 | 14.28 | | 953 | | 0.72 | 0.73 | 3.36 | 0.09 | 0.38 |

## Table 28. Summary of Plume Measurements, J79-15, Run No. 26-2.

Run Date 4/9/74, Power Setting MAX A/B, Axial Station 7.5 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -18.91 | 347 | 2.25 | 0 | 26.7 | 36.3 | .0109 | 30.3 | 0 | 3.9 | 5.3 | 14.57 | 13.54 | 1302 | | 1.21 | 0.37 | 0 | 0.47 | 0.64 |
| 1 | -15.35 | 463 | 3.88 | 0 | 43.8 | 58.5 | .0186 | 23.6 | 0 | 3.8 | 5.1 | 16.52 | | 1806 | | 2.94 | 0.69 | 0 | 1.12 | 1.50 |
| 1 | -11.77 | 727 | 6.10 | 0 | 62.1 | 84.1 | .0291 | 23.5 | 0 | 3.5 | 4.7 | 20.39 | | 2418 | | 5.83 | 1.37 | 0 | 2.05 | 2.74 |
| 1 | -8.18 | 1889 | 9.58 | 0 | 102 | 130 | .0453 | 38.6 | 0 | 3.8 | 4.8 | 27.55 | | 3248 | | 10.62 | 4.10 | 0 | 4.04 | 5.10 |
| 1 | -4.23 | 3528 | 11.4 | 0 | 126 | 156 | .0539 | 60.1 | 0 | 3.9 | 4.9 | 29.71 | | 3639 | | 12.61 | 7.58 | 0 | 4.92 | 6.18 |
| 1 | -0.55 | 1176 | 10.4 | 0 | 113 | 140 | .0484 | 22.4 | 0 | 3.9 | 4.8 | 28.11 | | 3411 | | 11.24 | 2.52 | 0 | 4.38 | 5.40 |
| 1 | 3.76 | 1258 | 10.6 | 0 | 112 | 138 | .0493 | 23.5 | 0 | 3.8 | 4.7 | 29.25 | | 3453 | | 11.75 | 2.76 | 0 | 4.47 | 5.52 |
| 1 | 7.70 | 2433 | 10.4 | 0 | 107 | 134 | .0492 | 45.6 | 0 | 3.6 | 4.5 | 29.76 | | 3433 | | 11.94 | 5.44 | 0 | 4.30 | 5.37 |
| 1 | 11.29 | 975 | 7.45 | 0 | 65.4 | 90.9 | .0353 | 25.8 | 0 | 3.1 | 4.2 | 22.60 | | 2755 | | 7.50 | 1.94 | 0 | 2.33 | 3.15 |
| 1 | 14.87 | 604 | 4.21 | 0 | 35.9 | 52.1 | .0202 | 28.2 | 0 | 2.9 | 4.2 | 16.99 | | 1904 | | 3.34 | 0.94 | 0 | 0.97 | 1.40 |
| 1 | 18.44 | 365 | 2.08 | 0 | 20.4 | 30.0 | .0101 | 34.4 | 0 | 3.2 | 4.7 | 14.51 | | 1248 | | 1.11 | 0.38 | 0 | 0.36 | 0.52 |
| 2 | 23.06 | 379 | 1.71 | 1.2 | 16.6 | 26.1 | .0083 | 43.3 | 0.1 | 3.2 | 5.0 | 14.28 | | 1123 | | 0.85 | 0.37 | 0.09 | 0.27 | 0.43 |
| 2 | 18.69 | 549 | 3.37 | 0 | 35.3 | 48.3 | .0163 | 32.0 | 0 | 3.5 | 4.8 | 15.84 | | 1656 | | 2.37 | 0.76 | 0 | 0.83 | 1.14 |
| 2 | 14.29 | 732 | 5.96 | 0 | 59.9 | 79.0 | .0284 | 24.2 | 0 | 3.4 | 4.5 | 19.83 | | 2381 | | 5.52 | 1.34 | 0 | 1.88 | 2.48 |
| 2 | 9.88 | 1703 | 9.73 | 0 | 103 | 129 | .0459 | 34.3 | 0 | 3.8 | 4.7 | 27.67 | | 3281 | | 10.74 | 3.68 | 0 | 4.08 | 5.05 |
| 2 | 5.45 | 1528 | 10.8 | 0 | 119 | 141 | .0504 | 27.9 | 0 | 4.0 | 4.7 | 30.10 | | 3502 | | 12.21 | 3.41 | 0 | 4.88 | 5.74 |
| 2 | 1.04 | 954 | 10.0 | 0 | 107 | 128 | .0467 | 18.9 | 0 | 3.8 | 4.6 | 28.75 | | 3331 | | 11.21 | 2.12 | 0 | 4.26 | 5.16 |
| 2 | -3.81 | 1769 | 10.8 | 0 | 122 | 145 | .0505 | 32.2 | 0 | 4.0 | 4.8 | 30.16 | | 3504 | | 12.25 | 3.94 | 0 | 4.90 | 5.88 |
| 2 | -7.87 | 2392 | 10.3 | 0 | 113 | 138 | .0486 | 45.4 | 0 | 3.9 | 4.8 | 29.01 | | 3404 | | 11.60 | 5.27 | 0 | 4.52 | 5.57 |
| 2 | -12.30 | 916 | 6.55 | 0 | 58.6 | 77.0 | .0312 | 27.6 | 0 | 3.1 | 4.1 | 20.35 | | 2531 | | 6.08 | 1.68 | 0 | 1.88 | 2.49 |
| 2 | -16.70 | 523 | 3.19 | 0 | 30.2 | 39.6 | .0154 | 32.2 | 0 | 3.2 | 4.1 | 15.42 | | 1602 | | 2.07 | 0.67 | 0 | 0.66 | 0.85 |
| 2 | -20.72 | 295 | 1.38 | 0 | 14.3 | 21.1 | .0067 | 41.8 | 0 | 3.4 | 5.0 | 14.02 | | 1001 | | 0.58 | 0.24 | 0 | 0.20 | 0.29 |

## Table 29. Summary of Plume Measurements, J79-15, Run No. 27-1.

Run Date 4/10/74, Power Setting MIL, Axial Station 15 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -22.80 | 5.6 | 0.16 | 0 | 9.8 | 9.5 | .0006 | 7.0 | 0 | 20.1 | 19.3 | 13.69 | 13.59 | 562 | | 0.03 | 0 | 0 | 0.06 | 0.06 |
| 1 | -23.17 | 7.7 | 0.31 | 0 | 16.6 | 16.8 | .0014 | 5.0 | 0 | 17.6 | 17.8 | 14.05 | | 62 | | 0.15 | 0.01 | 0 | 0.26 | 0.27 |
| 1 | -17.49 | 12.2 | 0.69 | 0 | 29.4 | 31.8 | .0032 | 3.5 | 0 | 14.1 | 15.2 | 14.87 | | 789 | | 0.52 | 0.02 | 0 | 0.73 | 0.79 |
| 1 | -11.77 | 18.0 | 1.16 | 0 | 47.3 | 50.6 | .0055 | 3.1 | 0 | 13.5 | 14.4 | 16.99 | | 926 | | 1.32 | 0.04 | 0 | 1.78 | 1.90 |
| 1 | -6.02 | 25.1 | 1.75 | 0 | 64.6 | 70.9 | .0083 | 2.9 | 0 | 12.3 | 13.5 | 21.78 | | 1133 | | 2.75 | 0.08 | 0 | 3.38 | 3.71 |
| 1 | -0.55 | 29.6 | 2.11 | 0 | 73.7 | 81.1 | .0101 | 2.8 | 0 | 11.7 | 12.8 | 26.52 | | 1256 | | 3.90 | 0.11 | 0 | 4.56 | 4.99 |
| 1 | 3.76 | 29.9 | 2.07 | 0 | 71.0 | 79.0 | .0099 | 2.9 | 0 | 11.5 | 12.7 | 26.10 | | 1242 | | 3.79 | 0.11 | 0 | 4.36 | 4.81 |
| 1 | 11.29 | 20.4 | 1.30 | 0 | 51.0 | 55.5 | .0062 | 3.1 | 0 | 13.0 | 14.1 | 18.58 | | 970 | | 1.74 | 0.05 | 0 | 2.26 | 2.45 |
| 1 | 17.02 | 14.7 | 0.82 | 0 | 34.3 | 36.6 | .0039 | 3.6 | 0 | 13.7 | 14.7 | 15.23 | | 832 | | 0.68 | 0.02 | 0 | 0.93 | 1.00 |
| 1 | 22.70 | 9.7 | 0.40 | 0 | 18.5 | 21.1 | .0018 | 4.8 | 0 | 15.0 | 17.1 | 14.05 | | 671 | | 0.19 | 0.01 | 0 | 0.29 | 0.32 |
| 1 | 28.33 | 5.8 | 0.13 | 0 | 9.2 | 10.1 | .0005 | 8.9 | 0 | 23.2 | 25.5 | 13.59 | | 550 | | 0 | 0 | 0 | 0 | 0 |
| 2 | 29.92 | 7.6 | 0.24 | 0 | 13.6 | 15.4 | .0010 | 6.2 | 0 | 18.4 | 20.8 | 13.81 | | 596 | | 0.08 | 0.01 | 0 | 0.15 | 0.17 |
| 2 | 24.51 | 10.7 | 0.47 | 0 | 22.3 | 24.5 | .0021 | 4.5 | 0 | 15.7 | 17.2 | 14.18 | | 703 | | 0.25 | 0.01 | 0 | 0.39 | 0.43 |
| 2 | 18.69 | 15.2 | 0.84 | 0 | 35.7 | 38.9 | .0040 | 3.6 | 0 | 14.0 | 15.2 | 15.42 | | 836 | | 0.74 | 0.03 | 0 | 1.04 | 1.12 |
| 2 | 12.82 | 21.2 | 1.31 | 0 | 51.0 | 57.1 | .0062 | 3.2 | 0 | 12.9 | 14.4 | 18.33 | | 975 | | 1.71 | 0.05 | 0 | 2.21 | 2.46 |
| 2 | 6.93 | 27.6 | 1.86 | 0 | 67.8 | 76.6 | .0088 | 3.0 | 0 | 12.2 | 13.7 | 24.03 | | 1171 | | 3.22 | 0.10 | 0 | 3.93 | 4.41 |
| 2 | 1.04 | 31.0 | 2.10 | 0 | 76.1 | 84.3 | .0100 | 2.9 | 0 | 12.1 | 13.4 | 27.51 | | 1251 | | 4.02 | 0.12 | 0 | 4.86 | 5.39 |
| 2 | -4.92 | 25.1 | 1.68 | 0 | 62.9 | 70.4 | .0080 | 3.0 | 0 | 12.5 | 14.0 | 21.54 | | 1110 | | 2.63 | 0.08 | 0 | 3.29 | 3.68 |
| 2 | -10.82 | 17.8 | 1.09 | 0 | 43.8 | 49.2 | .0052 | 3.3 | 0 | 13.3 | 14.9 | 16.67 | | 904 | | 1.19 | 0.04 | 0 | 1.58 | 1.77 |
| 2 | -16.70 | 11.4 | 0.56 | 0 | 25.3 | 29.5 | .0026 | 4.0 | 0 | 14.8 | 17.3 | 14.59 | | 744 | | 0.38 | 0.02 | 0 | 0.56 | 0.66 |
| 2 | -22.54 | 8.4 | 0.27 | 0 | 15.7 | 17.2 | .0012 | 6.2 | 0 | 19.1 | 20.8 | 13.81 | | 608 | | 0.09 | 0.01 | 0 | 0.17 | 0.19 |
| 2 | -28.32 | 5.3 | 0.08 | 0 | 7.4 | 7.9 | .0003 | 12.8 | 0 | 29.3 | 31.0 | 13.66 | | 532 | | 0.01 | 0 | 0 | 0.03 | 0.03 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

## Table 30. Summary of Plume Measurements, J79-15, Run No. 27-2.

Run Date 4/10/74, Power Setting MIN A/B, Axial Station 15 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -30.54 | 58.6 | 0.23 | 16.2 | 6.3 | 10.9 | .0010 | 49.5 | 6.8 | 8.7 | 15.1 | 13.69 | 13.58 | 595 | | 0.05 | 0.02 | 0.3 | 0.04 | 0.08 |
| 1 | -24.58 | 105 | 0.52 | 30.0 | 10.8 | 18.9 | .0025 | 39.1 | 5.6 | 6.7 | 11.6 | 13.95 | | 733 | | 0.22 | 0.09 | 1.2 | 0.15 | 0.26 |
| 1 | -18.56 | 198 | 1.06 | 52.4 | 18.7 | 31.2 | .0051 | 36.5 | 4.9 | 5.7 | 9.5 | 14.72 | | 900 | | 0.72 | 0.26 | 3.5 | 0.41 | 0.68 |
| 1 | -12.48 | 324 | 1.98 | 72.6 | 29.8 | 51.5 | .0096 | 32.1 | 3.7 | 4.9 | 8.5 | 17.14 | | 1217 | | 2.04 | 0.65 | 7.5 | 1.00 | 1.73 |
| 1 | -6.38 | 556 | 3.51 | 61.1 | 50.6 | 76.8 | .0170 | 31.1 | 1.8 | 4.8 | 7.3 | 21.98 | | 1705 | | 4.55 | 1.42 | 8.2 | 2.18 | 3.32 |
| 1 | -0.55 | 697 | 4.65 | 33.0 | 68.2 | 91.7 | .0223 | 29.5 | 0.7 | 5.0 | 6.7 | 25.49 | | 2035 | | 6.39 | 1.89 | 4.5 | 3.20 | 4.28 |
| 1 | 5.91 | 614 | 3.96 | 35.9 | 57.7 | 80.8 | .0191 | 30.5 | 0.9 | 4.9 | 6.9 | 24.51 | | 1837 | | 5.55 | 1.69 | 5.0 | 2.72 | 3.83 |
| 1 | 12.01 | 349 | 2.39 | 43.0 | 38.6 | 60.9 | .0116 | 28.7 | 1.8 | 5.3 | 8.4 | 17.86 | | 1354 | | 2.55 | 0.73 | 4.6 | 1.35 | 2.14 |
| 1 | 18.09 | 202 | 1.27 | 36.1 | 20.4 | 35.4 | .0061 | 31.3 | 2.8 | 5.2 | 9.1 | 15.29 | | 965 | | 1.02 | 0.32 | 2.9 | 0.53 | 0.93 |
| 1 | 24.12 | 109 | 0.64 | 21.4 | 13.1 | 21.7 | .0030 | 33.5 | 3.3 | 6.6 | 11.0 | 14.20 | | 776 | | 0.34 | 0.11 | 1.1 | 0.22 | 0.37 |
| 1 | 30.08 | 49.5 | 0.23 | 5.2 | 6.7 | 11.2 | .0010 | 41.6 | 2.2 | 9.3 | 15.5 | 13.59 | | 596 | | 0.01 | 0 | 0 | 0.01 | 0.02 |
| 2 | 32.06 | 70.1 | 0.31 | 13.8 | 8.4 | 14.3 | .0014 | 43.8 | 4.3 | 8.6 | 14.6 | 13.71 | | 632 | | 0.08 | 0.04 | 0.3 | 0.07 | 0.12 |
| 2 | 25.96 | 122 | 0.66 | 25.4 | 13.1 | 22.6 | .0032 | 35.9 | 3.8 | 6.4 | 11.0 | 14.07 | | 785 | | 0.31 | 0.11 | 1.2 | 0.20 | 0.34 |
| 2 | 19.79 | 202 | 1.20 | 39.0 | 20.8 | 36.4 | .0058 | 32.8 | 3.2 | 5.6 | 9.8 | 15.27 | | 945 | | 0.98 | 0.32 | 3.1 | 0.55 | 0.96 |
| 2 | 13.56 | 352 | 2.30 | 53.1 | 36.1 | 58.3 | .0111 | 30.1 | 2.3 | 5.2 | 8.4 | 18.22 | | 1323 | | 2.58 | 0.78 | 5.9 | 1.34 | 2.17 |
| 2 | 7.30 | 549 | 3.84 | 38.1 | 57.5 | 81.3 | .0185 | 28.1 | 1.0 | 5.0 | 7.1 | 23.98 | | 1802 | | 5.32 | 1.49 | 5.3 | 2.66 | 3.78 |
| 2 | 1.04 | 692 | 4.79 | 27.1 | 71.4 | 94.1 | .0230 | 28.4 | 0.6 | 5.0 | 6.7 | 28.13 | | 2073 | | 7.13 | 2.02 | 4.3 | 3.57 | 4.78 |
| 2 | -5.29 | 578 | 3.61 | 52.6 | 54.9 | 77.4 | .0174 | 31.4 | 1.5 | 5.1 | 7.2 | 23.41 | | 1735 | | 4.99 | 1.57 | 7.5 | 2.54 | 3.59 |
| 2 | -11.56 | 350 | 2.18 | 60.0 | 33.9 | 58.3 | .0106 | 31.5 | 2.8 | 5.1 | 8.8 | 17.91 | | 1285 | | 2.40 | 0.76 | 6.7 | 1.22 | 2.11 |
| 2 | -17.80 | 208 | 1.16 | 48.8 | 20.0 | 35.6 | .0056 | 34.9 | 4.2 | 5.6 | 9.9 | 15.11 | | 932 | | 0.91 | 0.32 | 3.8 | 0.51 | 0.90 |
| 2 | -23.99 | 106 | 0.52 | 25.0 | 10.4 | 19.8 | .0024 | 39.7 | 4.7 | 6.5 | 12.3 | 14.02 | | 731 | | 0.24 | 0.10 | 1.1 | 0.16 | 0.30 |
| 2 | -30.12 | 54.3 | 0.18 | 13.1 | 5.7 | 10.2 | .0008 | 57.0 | 6.9 | 9.8 | 17.5 | 13.60 | | 576 | | 0.02 | 0.01 | 0.1 | 0.02 | 0.04 |

## Table 31. Summary of Plume Measurements, J79-15, Run No. 27-3.

Run Date 4/10/74, Power Setting MID A/B, Axial Station 15 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -34.01 | 181 | 0.45 | 85.8 | 2.70 | 9.70 | .0022 | 75.4 | 17.9 | 1.9 | 6.7 | 13.64 | 13.56 | 708 | | 0.09 | 0.07 | 1.6 | 0.02 | 0.06 |
| 1 | -27.40 | 327 | 0.94 | 114 | 4.60 | 15.1 | .0047 | 66.0 | 11.6 | 1.5 | 5.1 | 13.90 | | 877 | | 0.36 | 0.24 | 4.2 | 0.05 | 0.18 |
| 1 | -20.69 | 597 | 1.96 | 159 | 10.1 | 29.6 | .0097 | 58.6 | 8.0 | 1.7 | 4.9 | 14.62 | | 1221 | | 1.13 | 0.66 | 9.0 | 0.19 | 0.55 |
| 1 | -13.91 | 835 | 3.56 | 151 | 25.1 | 53.2 | .0174 | 45.6 | 4.3 | 2.3 | 4.9 | 16.68 | | 1728 | | 2.88 | 1.31 | 12.4 | 0.66 | 1.41 |
| 1 | -7.10 | 872 | 6.24 | 45.3 | 63.9 | 88.0 | .0298 | 27.5 | 0.8 | 3.5 | 4.8 | 22.70 | | 2464 | | 6.77 | 1.86 | 5.4 | 2.37 | 3.25 |
| 1 | -0.55 | 750 | 8.65 | 13.3 | 87.2 | 112 | .0406 | 17.2 | 0.2 | 3.6 | 4.6 | 25.18 | | 3041 | | 9.13 | 1.57 | 1.8 | 3.29 | 4.20 |
| 1 | 6.63 | 1177 | 7.05 | 122 | 57.5 | 89.8 | .0336 | 32.7 | 1.8 | 2.8 | 4.4 | 24.71 | | 2668 | | 8.00 | 2.62 | 14.4 | 2.24 | 3.52 |
| 1 | 13.63 | 1263 | 4.22 | 358 | 21.5 | 54.9 | .0208 | 57.5 | 8.5 | 1.7 | 4.3 | 18.43 | | 1926 | | 4.03 | 2.32 | 34.3 | 0.69 | 1.73 |
| 1 | 20.57 | 843 | 2.15 | 437 | 7.10 | 33.4 | .0108 | 74.0 | 19.6 | 1.0 | 4.9 | 15.18 | | 1287 | | 1.52 | 1.12 | 29.8 | 0.15 | 0.74 |
| 1 | 26.93 | 460 | 0.94 | 376 | 3.30 | 17.4 | .0048 | 89.4 | 36.9 | 1.1 | 5.6 | 13.95 | | 877 | | 0.40 | 0.36 | 14.8 | 0.04 | 0.22 |
| 1 | 33.56 | 249 | 0.46 | 203 | 1.90 | 9.10 | .0023 | 98.9 | 40.6 | 1.3 | 5.9 | 13.64 | | 712 | | 0.09 | 0.89 | 3.7 | 0.01 | 0.05 |
| 2 | 35.61 | 304 | 0.59 | 223 | 2.90 | 11.0 | .0030 | 94.4 | 35.0 | 1.5 | 5.7 | 13.66 | | 765 | | 0.13 | 0.12 | 4.6 | 0.02 | 0.07 |
| 2 | 28.48 | 561 | 1.26 | 335 | 4.70 | 20.4 | .0064 | 83.2 | 25.2 | 1.2 | 5.0 | 14.07 | | 972 | | 0.58 | 0.48 | 14.6 | 0.07 | 0.29 |
| 2 | 21.97 | 846 | 2.26 | 374 | 9.40 | 34.5 | .0113 | 71.0 | 16.1 | 1.3 | 4.9 | 15.16 | | 1322 | | 1.55 | 1.10 | 25.0 | 0.20 | 0.76 |
| 2 | 15.03 | 1171 | 4.04 | 349 | 24.0 | 61.8 | .0199 | 55.8 | 8.7 | 2.0 | 5.0 | 17.91 | | 1870 | | 3.70 | 2.06 | 32.2 | 0.74 | 1.85 |
| 2 | 8.03 | 1090 | 6.29 | 101 | 58.4 | 88.0 | .0301 | 33.9 | 1.7 | 3.2 | 4.8 | 24.14 | | 2480 | | 7.30 | 2.47 | 12.4 | 2.34 | 3.50 |
| 2 | 1.04 | 763 | 8.53 | 18.7 | 87.8 | 113 | .0401 | 17.7 | 0.2 | 3.6 | 4.7 | 28.29 | | 3015 | | 10.08 | 1.78 | 2.0 | 3.63 | 4.74 |
| 2 | -6.03 | 968 | 6.89 | 54.3 | 64.3 | 93.7 | .0328 | 27.6 | 0.8 | 3.2 | 4.7 | 24.45 | | 2627 | | 7.79 | 2.15 | 6.2 | 2.49 | 3.66 |
| 2 | -13.03 | 1026 | 4.11 | 189 | 28.0 | 59.6 | .0201 | 48.4 | 4.6 | 2.3 | 4.8 | 18.33 | | 1890 | | 3.88 | 1.88 | 17.8 | 0.89 | 1.86 |
| 2 | -19.99 | 791 | 2.39 | 230 | 11.6 | 37.5 | .0119 | 63.3 | 9.4 | 1.6 | 5.0 | 15.21 | | 1365 | | 1.63 | 1.03 | 15.3 | 0.26 | 0.82 |
| 2 | -26.89 | 381 | 1.10 | 159 | 5.40 | 20.2 | .0054 | 66.0 | 13.9 | 1.6 | 5.8 | 13.97 | | 919 | | 0.45 | 0.30 | 6.3 | 0.07 | 0.26 |
| 2 | -33.68 | 189 | 0.44 | 85.1 | 2.60 | 9.20 | .0021 | 80.5 | 18.2 | 1.8 | 6.4 | 13.60 | | 702 | | 0.06 | 0.05 | 1.1 | 0.01 | 0.04 |

## Table 32. Summary of Plume Measurements, J79-15, Run No. 27-4.

Run Date 4/10/74, Power Setting MAX A/B, Axial Station 15 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -35.74 | 60.6 | 0.65 | 0 | 6.8 | 10.6 | .0030 | 18.6 | 0 | 3.4 | 5.4 | 13.64 | 13.56 | 783 | | 0.12 | 0.02 | 0 | 0.04 | 0.06 |
| 1 | -28.80 | 125 | 1.42 | 0 | 16.5 | 19.0 | .0068 | 17.5 | 0 | 3.8 | 4.4 | 13.90 | | 1025 | | 0.49 | 0.09 | 0 | 0.19 | 0.22 |
| 1 | -21.75 | 206 | 2.65 | 0 | 29.4 | 36.0 | .0127 | 15.4 | 0 | 3.7 | 4.5 | 14.72 | | 1439 | | 1.42 | 0.22 | 0 | 0.53 | 0.64 |
| 1 | -14.63 | 276 | 4.62 | 0 | 48.1 | 61.8 | .0220 | 11.8 | 0 | 3.6 | 4.6 | 16.83 | | 2026 | | 3.42 | 0.40 | 0 | 1.23 | 1.57 |
| 1 | -7.46 | 465 | 8.04 | 0 | 75.5 | 97.0 | .0377 | 11.5 | 0 | 3.3 | 4.3 | 22.86 | | 2896 | | 7.88 | 0.91 | 0 | 2.60 | 3.39 |
| 1 | -0.55 | 587 | 10.1 | 0 | 99.5 | 125 | .0469 | 11.6 | 0 | 3.5 | 4.4 | 26.00 | | 3354 | | 10.25 | 1.19 | 0 | 3.59 | 4.51 |
| 1 | 6.99 | 359 | 8.29 | 0 | 73.5 | 98.8 | .0388 | 8.6 | 0 | 3.1 | 4.2 | 24.04 | | 2955 | | 8.47 | 0.73 | 0 | 2.63 | 3.56 |
| 1 | 14.16 | 272 | 4.80 | 0 | 43.5 | 60.0 | .0228 | 11.3 | 0 | 3.1 | 4.3 | 17.40 | | 2075 | | 3.79 | 0.43 | 0 | 1.17 | 1.63 |
| 1 | 21.28 | 198 | 2.57 | 0 | 24.2 | 33.7 | .0123 | 15.3 | 0 | 3.1 | 4.4 | 14.67 | | 1414 | | 1.36 | 0.21 | 0 | 0.42 | 0.60 |
| 1 | 28.33 | 118 | 1.10 | 0 | 11.5 | 17.4 | .0052 | 21.2 | 0 | 3.4 | 5.2 | 13.69 | | 915 | | 0.25 | 0.05 | 0 | 0.09 | 0.01 |
| 1 | 35.63 | 38.7 | 0.33 | 0 | 3.8 | 7.5 | .0015 | 22.9 | 0 | 3.7 | 7.3 | 13.59 | | 648 | | 0.04 | 0 | 0 | 0.02 | 0.03 |
| 2 | 37.72 | 99.5 | 0.71 | 0 | 8.0 | 12.4 | .0034 | 27.6 | 0 | 3.7 | 5.7 | 13.71 | | 805 | | 0.18 | 0.05 | 0 | 0.07 | 0.10 |
| 2 | 30.28 | 170 | 1.56 | 0 | 17.3 | 24.0 | .0075 | 21.5 | 0 | 3.7 | 5.1 | 14.07 | | 1078 | | 0.65 | 0.14 | 0 | 0.24 | 0.33 |
| 2 | 23.06 | 247 | 2.98 | 0 | 33.4 | 44.1 | .0143 | 16.4 | 0 | 3.8 | 5.0 | 15.21 | | 1544 | | 1.84 | 0.30 | 0 | 0.70 | 0.92 |
| 2 | 15.76 | 304 | 5.29 | 0 | 52.4 | 73.8 | .0251 | 11.4 | 0 | 3.4 | 4.8 | 18.33 | | 2208 | | 4.47 | 0.51 | 0 | 1.52 | 2.15 |
| 2 | 8.40 | 435 | 8.45 | 0 | 80.6 | 106 | .0395 | 10.2 | 0 | 3.4 | 4.4 | 25.02 | | 2992 | | 8.92 | 0.91 | 0 | 3.03 | 3.92 |
| 2 | 1.04 | 573 | 9.88 | 0 | 103 | 129 | .0460 | 11.5 | 0 | 3.7 | 4.7 | 28.18 | | 3311 | | 10.90 | 1.25 | 0 | 4.03 | 5.12 |
| 2 | -6.40 | 480 | 8.34 | 0 | 80.2 | 107 | .0391 | 11.4 | 0 | 3.4 | 4.5 | 24.40 | | 2968 | | 8.64 | 0.98 | 0 | 2.94 | 3.89 |
| 2 | -13.77 | 294 | 5.04 | 0 | 47.7 | 65.9 | .0240 | 11.6 | 0 | 3.2 | 4.5 | 17.65 | | 2142 | | 4.03 | 0.47 | 0 | 1.29 | 1.81 |
| 2 | -20.72 | 210 | 2.79 | 0 | 29.5 | 37.0 | .0134 | 14.9 | 0 | 3.5 | 4.4 | 14.90 | | 1485 | | 1.59 | 0.24 | 0 | 0.56 | 0.70 |
| 2 | -28.32 | 136 | 1.46 | 0 | 16.2 | 21.3 | .0070 | 18.3 | 0 | 3.7 | 4.8 | 13.86 | | 1040 | | 0.48 | 0.09 | 0 | 0.18 | 0.23 |
| 2 | -35.46 | 60.5 | 0.58 | 0 | 7.5 | 11.7 | .0027 | 20.8 | 0 | 4.3 | 6.6 | 13.56 | | 759 | | 0 | 0 | 0 | 0 | 0 |

## Table 33. Summary of Plume Measurements, J79-15, Run No. 23-2.

Run Date 4/3/74, Power Setting MIL, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel $(\times 10^{-3})$ | CO $(\times 10^{-5})$ | HC $(\times 10^{-6})$ | NO $(\times 10^{-5})$ | $NO_x$ $(\times 10^{-5})$ |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -49.16 | 6.4 | 0.10 | 0 | 8.6 | 9.9 | .0004 | 12.0 | 0 | 26.8 | 30.8 | 13.66 | 13.58 | 543 | 606 | 0.02 | 0.02 | 0 | 0.05 | 0.06 |
| 1 | -39.24 | 7.9 | 0.20 | 0 | 12.7 | 13.2 | .0008 | 7.9 | 0 | 20.9 | 21.7 | 13.83 | 13.56 | 580 | 647 | 0.07 | 0.06 | 0 | 0.15 | 0.15 |
| 1 | -29.49 | 9.8 | 0.32 | 0 | 17.9 | 19.1 | .0014 | 6.0 | 0 | 18.1 | 19.3 | 14.02 | 13.48 | 635 | 706 | 0.16 | 0.10 | 0 | 0.29 | 0.31 |
| 1 | -20.04 | 11.3 | 0.45 | 0 | 23.3 | 25.6 | .0021 | 5.0 | 0 | 17.0 | 18.6 | 14.75 | 13.38 | 696 | 764 | 0.38 | 0.19 | 0 | 0.65 | 0.71 |
| 1 | -11.81 | 13.1 | 0.58 | 0 | 28.0 | 31.7 | .0027 | 4.5 | 0 | 15.8 | 17.9 | 15.78 | 13.32 | 754 | 816 | 0.68 | 0.31 | 0 | 1.07 | 1.22 |
| 1 | 8.96 | 13.9 | 0.65 | 0 | 30.9 | 34.0 | .0030 | 4.3 | 0 | 15.6 | 17.2 | 16.21 | 13.32 | 778 | 841 | 0.83 | 0.36 | 0 | 1.29 | 1.43 |
| 1 | 15.33 | 13.2 | 0.57 | 0 | 28.0 | 29.7 | .0026 | 4.6 | 0 | 16.2 | 17.2 | 15.32 | 13.30 | 749 | 798 | 0.59 | 0.27 | 0 | 0.96 | 1.01 |
| 1 | 24.39 | 10.8 | 0.36 | 0 | 19.4 | 20.2 | .0016 | 6.0 | 0 | 17.7 | 18.5 | 14.34 | 13.35 | 651 | 728 | 0.25 | 0.15 | 0 | 0.44 | 0.46 |
| 1 | 34.03 | 8.6 | 0.26 | 0 | 15.7 | 17.5 | .0011 | 6.5 | 0 | 19.5 | 21.7 | 14.04 | 13.45 | 607 | 684 | 0.14 | 0.09 | 0 | 0.27 | 0.30 |
| 1 | 43.83 | 6.3 | 0.11 | 0 | 9.3 | 8.8 | .0004 | 11.0 | 0 | 26.8 | 25.2 | 13.69 | 13.56 | 547 | 615 | 0.02 | 0.02 | 0 | 0.05 | 0.05 |
| 1 | 53.65 | 4.8 | 0.03 | 0 | 4.1 | 3.1 | .0000 | 27.3 | 0 | 38.1 | 28.9 | 13.60 | 13.61 | 518 | 560 | 0 | 0 | 0 | 0 | 0 |
| 2 | -56.69 | 4.8 | 0.04 | 0 | 4.4 | 4.7 | .0000 | 25.9 | 0 | 39.0 | 42.0 | 13.60 | 13.60 | 518 | 569 | 0 | 0 | 0 | 0 | 0 |
| 2 | -46.17 | 6.2 | 0.07 | 0 | 10.9 | 7.1 | .0002 | 16.4 | 0 | 47.6 | 30.9 | 13.66 | 13.50 | 531 | 625 | 0.01 | 0.02 | 0 | 0.05 | 0.03 |
| 2 | -35.70 | 8.5 | 0.24 | 0 | 15.6 | 17.8 | .0010 | 7.10 | 0 | 21.4 | 24.4 | 13.85 | 13.47 | 597 | 685 | 0.10 | 0.07 | 0 | 0.21 | 0.24 |
| 2 | -25.25 | 10.4 | 0.40 | 0 | 23.3 | 24.8 | .0018 | 5.20 | 0 | 19.0 | 20.2 | 14.74 | 13.31 | 671 | 773 | 0.34 | 0.18 | 0 | 0.65 | 0.69 |
| 2 | -15.17 | 13.8 | 0.60 | 0 | 30.9 | 33.7 | .0028 | 4.50 | 0 | 16.9 | 18.4 | 15.79 | 13.26 | 762 | 852 | 0.70 | 0.32 | 0 | 1.18 | 1.29 |
| 2 | - 2.46 | 15.6 | 0.73 | 0 | 36 4 | 39.0 | .0034 | 4.20 | 0 | 16.3 | 17.5 | 16.95 | 13.21 | 806 | 914 | 1.06 | 0.45 | 0 | 1.73 | 1.86 |
| 2 | 7.44 | 14.7 | 0.68 | 0 | 33.0 | 36.5 | .0032 | 4.30 | 0 | 16.0 | 17.7 | 16.21 | 13.26 | 787 | 878 | 0.86 | 0.37 | 0 | 1.38 | 1.52 |
| 2 | 17.85 | 12.7 | 0.55 | 0 | 27.4 | 31.9 | .0025 | 4.60 | 0 | 16.4 | 19.0 | 15.16 | 13.29 | 742 | 809 | 0.54 | 0.25 | 0 | 0.89 | 1.03 |
| 2 | 28.33 | 10.3 | 0.34 | 0 | 19.8 | 22.5 | .0015 | 6.00 | 0 | 18.9 | 21.5 | 14.00 | 13.42 | 643 | 709 | 0.18 | 0.11 | 0 | 0.34 | 0.39 |
| 2 | 38.76 | 6.9 | 0.13 | 0 | 11.9 | 10.4 | .0005 | 11.0 | 0 | 31.2 | 27.2 | 13.64 | 13.47 | 551 | 641 | 0.03 | 0.03 | 0 | 0.09 | 0.08 |
| 2 | 49.12 | 6.8 | 0.09 | 0 | 6.80 | 4.4 | .0003 | 14.6 | 0 | 23.9 | 15.5 | 13.60 | 13.52 | 537 | 598 | 0.01 | 0.01 | 0 | 0.02 | 0.02 |
| | | | | | | | | | | | | | | | | | | | | |
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NOTE: Radial position adjusted for symmetry.

## Table 34. Summary of Plume Measurements, J79-15, Run No. 23-3.

Run Date 4/3/74, Power Setting MIN A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-5}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -75.45 | 15.0 | 0.13 | 3.7 | 2.7 | 2.4 | .0005 | 22.5 | 2.8 | 6.6 | 5.9 | 13.58 | 13.64 | | 571 | 0 | 0 | 0 | 0 | 0 |
| 1 | -61.24 | 35.7 | 0.29 | 6.6 | 4.3 | 6.2 | .0013 | 24.6 | 2.3 | 4.9 | 7.1 | 13.61 | 13.61 | | 628 | 0 | 0 | 0 | 0 | 0 |
| 1 | -46.90 | 60.3 | 0.56 | 10.1 | 7.8 | 11.2 | .0026 | 21.3 | 1.8 | 4.5 | 6.5 | 13.72 | 13.56 | | 714 | 0.16 | 0.34 | 0.3 | 0.07 | 0.10 |
| 1 | -32.49 | 109 | 1.09 | 17.5 | 14.1 | 22.2 | .0052 | 19.7 | 1.6 | 4.3 | 6.7 | 14.21 | 13.40 | | 887 | 0.65 | 1.28 | 1.0 | 0.28 | 0.44 |
| 1 | -18.35 | 163 | 1.63 | 23.5 | 19.6 | 32.3 | .0078 | 19.8 | 1.5 | 4.0 | 6.5 | 15.51 | 13.35 | | 1063 | 1.58 | 3.13 | 2.4 | 0.63 | 1.03 |
| 1 | -3.83 | 200 | 2.02 | 25.2 | 23.5 | 38.5 | .0097 | 19.5 | 1.3 | 3.8 | 6.3 | 16.70 | 13.27 | | 1130 | 2.54 | 4.95 | 3.3 | 0.97 | 1.60 |
| 1 | 13.16 | 176 | 1.75 | 22.6 | 20.2 | 34.5 | .0084 | 19.9 | 1.3 | 3.8 | 6.5 | 15.67 | 13.30 | | 1046 | 1.81 | 3.60 | 2.4 | 0.69 | 1.18 |
| 1 | 27.32 | 115 | 1.14 | 16.9 | 13.8 | 22.8 | .0054 | 20.0 | 1.5 | 4.0 | 6.6 | 14.29 | 13.38 | | 857 | 0.74 | 1.48 | 1.1 | 0.30 | 0.49 |
| 1 | 41.39 | 75.1 | 0.81 | 13.0 | 11.0 | 17.7 | .0038 | 18.4 | 1.6 | 4.5 | 7.2 | 13.99 | 13.40 | | 789 | 0.43 | 0.79 | 0.7 | 0.19 | 0.31 |
| 1 | 55.92 | 39.8 | 0.21 | 4.3 | 2.7 | 4.6 | .0009 | 37.1 | 2.0 | 4.2 | 7.1 | 13.58 | 13.61 | | 615 | 0 | 0 | 0 | 0 | 0 |
| 1 | 70.03 | 5.5 | 0.03 | 0.2 | 0.6 | 0.6 | .0000 | 30.7 | 0.6 | 5.5 | 5.7 | 13.55 | 13.64 | | 538 | 0 | 0 | 0 | 0 | 0 |
| 2 | -71.72 | 8.5 | 0.04 | 2.2 | 1.2 | 1.5 | .0000 | 44.5 | 5.8 | 9.9 | 12.6 | 13.53 | 13.63 | | 549 | 0 | 0 | 0 | 0 | 0 |
| 2 | -57.74 | 26.1 | 0.18 | 8.4 | 4.6 | 5.8 | .0008 | 27.7 | 4.5 | 8.0 | 10.1 | 13.56 | 13.58 | | 622 | 0 | 0 | 0 | 0 | 0 |
| 2 | -43.69 | 73.2 | 0.57 | 16.5 | 8.8 | 14.6 | .0027 | 25.4 | 2.9 | 5.1 | 8.4 | 13.77 | 13.47 | | 744 | 0.22 | 0.56 | 0.6 | 0.11 | 0.18 |
| 2 | -29.45 | 126 | 0.95 | 20.7 | 15.0 | 22.6 | .0046 | 26.0 | 2.1 | 5.1 | 7.7 | 14.29 | 13.37 | | 883 | 0.62 | 1.61 | 1.3 | 0.32 | 0.48 |
| 2 | -15.76 | 197 | 1.69 | 25.9 | 22.3 | 36.7 | .0081 | 23.1 | 1.5 | 4.4 | 7.2 | 15.66 | 13.24 | | 1109 | 1.72 | 3.97 | 2.6 | 0.76 | 1.24 |
| 2 | 5.92 | 236 | 2.10 | 27.9 | 26.9 | 44.3 | .0101 | 22.2 | 1.3 | 4.2 | 7.0 | 17.63 | 13.13 | | 1260 | 3.01 | 6.68 | 3.9 | 1.26 | 2.11 |
| 2 | 16.31 | 176 | 1.59 | 22.0 | 19.1 | 34.6 | .0076 | 21.8 | 1.4 | 4.0 | 7.2 | 15.56 | 13.21 | | 1089 | 1.60 | 3.49 | 2.2 | 0.64 | 1.15 |
| 2 | 30.15 | 110 | 0.90 | 14.1 | 12.3 | 20.6 | .0043 | 23.9 | 1.5 | 4.4 | 7.5 | 14.06 | 13.37 | | 850 | 0.51 | 1.22 | 0.8 | 0.22 | 0.38 |
| 2 | 44.27 | 48.7 | 0.38 | 6.6 | 6.2 | 10.8 | .0017 | 25.1 | 1.7 | 5.3 | 9.2 | 13.69 | 13.47 | | 698 | 0.12 | 0.30 | 0.2 | 0.64 | 0.11 |
| 2 | 58.31 | 30.0 | 0.25 | 7.6 | 5.0 | 7.3 | .0011 | 23.6 | 3.0 | 6.5 | 9.4 | 13.58 | 13.50 | | 652 | 0.05 | 0.12 | 0.2 | 0.03 | 0.05 |
| 2 | 71.90 | 17.6 | 0.08 | 0.8 | 1.6 | 3.0 | .0002 | 45.5 | 1.1 | 7.0 | 12.7 | 13.58 | 13.63 | | 572 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | | | | | | | |
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NOTE: Radial position adjusted for symmetry.

## Table 35. Summary of Plume Measurements, J79-15, Run No. 22.

Run Date 4/1/74, Power Setting MID A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | $Fuel_3$ ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -75.67 | 53.4 | 0.12 | 1.0 | 3.0 | 3.3 | .0005 | 85.9 | 0.8 | 7.9 | 8.7 | 13.61 | 13.66 | | 602 | 0 | 0 | 0 | 0 | 0 |
| 1 | -60.28 | 91.3 | 0.36 | 12.6 | 3.4 | 6.3 | .0017 | 49.3 | 3.4 | 3.0 | 5.6 | 13.66 | 13.64 | | 680 | 0.04 | 0.02 | 0.1 | 0.01 | 0.02 |
| 1 | -44.70 | 191 | 0.76 | 27.3 | 4.8 | 11.3 | .0036 | 48.9 | 3.6 | 2.1 | 4.8 | 13.79 | 13.56 | | 807 | 0.25 | 0.12 | 0.9 | 0.05 | 0.12 |
| 1 | -29.18 | 322 | 1.50 | 49.0 | 8.0 | 23.2 | .0073 | 41.9 | 3.3 | 1.7 | 5.1 | 14.31 | 13.42 | | 1046 | 0.88 | 0.37 | 2.9 | 0.15 | 0.45 |
| 1 | -14.70 | 453 | 2.44 | 71.1 | 14.4 | 34.1 | .0119 | 36.3 | 2.9 | 2.0 | 4.6 | 15.75 | 13.30 | | 1337 | 2.28 | 0.83 | 6.6 | 0.46 | 1.05 |
| 1 | 11.27 | 492 | 2.85 | 73.1 | 19.4 | 40.3 | .0138 | 33.8 | 2.6 | 2.3 | 4.7 | 17.33 | 13.24 | | 1457 | 3.55 | 1.20 | 9.2 | 0.82 | 1.67 |
| 1 | 23.16 | 432 | 2.13 | 69.5 | 11.5 | 30.4 | .0104 | 39.6 | 3.3 | 1.8 | 4.7 | 15.40 | 13.30 | | 1267 | 1.87 | 0.74 | 6.2 | 0.34 | 0.88 |
| 1 | 38.64 | 287 | 1.04 | 81.8 | 5.6 | 16.4 | .0051 | 53.2 | 7.7 | 1.7 | 5.1 | 14.10 | 13.48 | | 923 | 0.54 | 0.29 | 4.2 | 0.09 | 0.28 |
| 1 | 54.31 | 129 | 0.34 | 48.2 | 2.4 | 6.2 | .0016 | 72.3 | 13.6 | 2.3 | 5.7 | 13.69 | 13.58 | | 700 | 0.08 | 0.06 | 1.1 | 0.02 | 0.05 |
| 1 | 69.72 | 12.4 | 0.02 | -4.5 | 1.2 | 1.9 | 0 | | 0 | 15.5 | - | 13.61 | 13.69 | | 558 | 0 | 0 | 0 | 0 | 0 |
| 1 | 85.07 | 2.4 | -0.02 | -9.0 | 0.7 | 0.9 | 0 | - | 0 | 884 | - | 13.64 | 13.69 | | 531 | 0 | 0 | 0 | 0 | 0 |
| 2 | -84.61 | 7.8 | -0.01 | -7.2 | 0.7 | 0.9 | 0 | - | 0 | 314 | - | 13.66 | 13.68 | | 543 | 0 | 0 | 0 | 0 | 0 |
| 2 | -65.95 | 28.2 | 0.04 | 0.1 | 1.4 | 1.9 | .00006 | - | 0.2 | 11.2 | - | 13.64 | 13.63 | | 589 | 0 | 0 | 0 | 0 | 0 |
| 2 | -53.79 | 85.8 | 0.27 | 18.0 | 3.3 | 8.0 | .0012 | 60.4 | 6.4 | 3.9 | 9.4 | 13.69 | 13.58 | | 722 | 0.06 | 0.04 | 0.4 | 0.02 | 0.06 |
| 2 | -35.51 | 269 | 1.15 | 43.8 | 7.7 | 18.8 | .0056 | 45.7 | 3.8 | 2.2 | 5.3 | 14.08 | 13.39 | | 985 | 0.61 | 0.28 | 2.3 | 0.13 | 0.32 |
| 2 | -22.20 | 421 | 2.25 | 54.7 | 15.1 | 32.8 | .0109 | 36.6 | 2.4 | 2.2 | 4.8 | 15.45 | 13.21 | | 1322 | 2.00 | 0.73 | 4.8 | 0.44 | 0.96 |
| 2 | - 4.26 | 549 | 3.18 | 82.2 | 22.6 | 46.5 | .0154 | 33.8 | 2.6 | 2.4 | 4.9 | 18.16 | 13.13 | | 1684 | 4.24 | 1.43 | 11.0 | 1.02 | 2.08 |

NOTES: Radial position adjusted for symmetry.
Probe #2 sweep is incomplete.

## Table 36. Summary of Plume Measurements, J79-15, Run No. 23-1.

Run Date 4/3/74, Power Setting MAX A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-5}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -79.95 | 13.8 | 0.12 | 0 | 2.0 | 3.6 | .0005 | 22.2 | 0 | 5.2 | 9.7 | 13.55 | 13.64 | | 606 | 0 | 0 | 0 | 0 | 0 |
| 1 | -62.42 | 31.5 | 0.38 | 0 | 5.9 | 7.4 | .0017 | 16.5 | 0 | 5.1 | 6.4 | 13.58 | 13.56 | | 708 | 0.04 | 0.07 | 0 | 0.02 | 0.03 |
| 1 | -45.62 | 57.0 | 0.90 | 0 | 12.5 | 14.5 | .0043 | 12.6 | 0 | 4.6 | 5.3 | 13.72 | 13.48 | | 894 | 0.28 | 0.35 | 0 | 0.13 | 0.15 |
| 1 | -28.80 | 78.0 | 1.50 | 0 | 19.2 | 24.0 | .0072 | 10.3 | 0 | 4.2 | 5.3 | 14.15 | 13.40 | | 1113 | 0.77 | 0.79 | 0 | 0.32 | 0.41 |
| 1 | -13.10 | 105 | 2.52 | 0 | 33.0 | 38.7 | .0120 | 8.3 | 0 | 4.4 | 5.1 | 15.32 | 13.22 | | 1379 | 2.08 | 1.73 | 0 | 0.92 | 1.06 |
| 1 | 12.28 | 113 | 3.03 | 0 | 40.0 | 47.9 | .0145 | 7.4 | 0 | 4.4 | 5.3 | 17.03 | 13.17 | | 1523 | 3.50 | 2.59 | 0 | 1.54 | 1.86 |
| 1 | 26.64 | 89.2 | 2.16 | 0 | 28.5 | 35.1 | .0103 | 8.2 | 0 | 4.4 | 5.4 | 15.13 | 13.22 | | 1326 | 1.72 | 1.41 | 0 | 0.76 | 0.93 |
| 1 | 43.42 | 44.8 | 0.86 | 0 | 11.9 | 15.7 | .0041 | 10.3 | 0 | 4.5 | 6.0 | 13.72 | 13.48 | | 896 | 0.27 | 0.28 | 0 | 0.12 | 0.16 |
| 1 | 60.19 | 12.3 | 0.15 | 0 | 2.6 | 3.9 | .0006 | 16.6 | 0 | 5.7 | 8.6 | 13.53 | 13.58 | | 630 | 0 | 0 | 0 | 0 | 0 |
| 1 | 77.15 | 5.8 | 0.02 | 0 | 0.4 | 0.5 | – | – | 0 | 5.3 | 7.1 | 13.55 | 13.61 | | 538 | 0 | 0 | 0 | 0 | 0 |
| 1 | 93.35 | 3.0 | 0.01 | 0 | - | 0.1 | – | – | 0 | - | 6.1 | 13.55 | 13.66 | | 516 | 0 | 0 | 0 | 0 | 0 |
| 2 | -88.93 | 6.9 | 0.03 | 0 | 0.8 | 1.0 | .0000 | – | 0 | 8.2 | 10.4 | 13.58 | 13.66 | | 554 | 0 | 0 | 0 | 0 | 0 |
| 2 | -72.48 | 10.8 | 0.08 | 0 | 1.8 | 2.1 | .0003 | 26.9 | 0 | 7.5 | 8.5 | 13.56 | 13.58 | | 604 | 0 | 0 | 0 | 0 | 0 |
| 2 | -55.71 | 28.0 | 0.35 | 0 | 5.8 | 8.8 | .0016 | 15.7 | 0 | 5.3 | 8.1 | 13.64 | 13.52 | | 764 | 0.08 | 0.13 | 0 | 0.04 | 0.06 |
| 2 | -38.65 | 62.0 | 1.16 | 0 | 18.2 | 20.8 | .0055 | 10.7 | 0 | 5.2 | 5.9 | 14.14 | 13.39 | | 1120 | 0.59 | 0.63 | 0 | 0.31 | 0.35 |
| 2 | -21.84 | 95.1 | 2.22 | 0 | 30.3 | 39.0 | .0106 | 8.5 | 0 | 4.6 | 5.9 | 15.19 | 13.18 | | 1489 | 1.71 | 1.45 | 0 | 0.79 | 1.01 |
| 2 | -5.00 | 121 | 3.30 | 0 | 46.9 | 55.9 | .0157 | 7.3 | 0 | 4.8 | 5.7 | 17.84 | 13.05 | | 1854 | 4.00 | 2.92 | 0 | 1.92 | 2.28 |
| 2 | 14.73 | 126 | 2.87 | 0 | 40.0 | 48.0 | .0137 | 8.8 | 0 | 4.7 | 5.6 | 16.71 | 13.05 | | 1648 | 3.07 | 2.70 | 0 | 1.44 | 1.72 |
| 2 | 31.44 | 103 | 1.60 | 0 | 22.9 | 28.2 | .0077 | 12.8 | 0 | 4.7 | 5.8 | 14.50 | 13.29 | | 1211 | 1.03 | 1.32 | 0 | 0.48 | 0.60 |
| 2 | 48.29 | 57.7 | 0.71 | 0 | 9.9 | 13.6 | .0033 | 16.2 | 0 | 4.6 | 6.3 | 13.74 | 13.45 | | 861 | 0.25 | 0.41 | 0 | 0.12 | 0.16 |
| 2 | 64.92 | 51.3 | 0.52 | 0 | 6.1 | 10.2 | .0024 | 19.6 | 0 | 3.8 | 6.4 | 13.64 | 13.47 | | 749 | 0.14 | 0.27 | 0 | 0.05 | 0.09 |
| 2 | 81.19 | 17.0 | 0.08 | 0 | 1.7 | 2.8 | .0003 | 40.9 | 0 | 6.7 | 10.9 | 13.58 | 13.60 | | 602 | 0 | 0 | 0 | 0 | 0 |
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NOTE: Radial position adjusted for symmetry.

## Table 37. Summary of Plume Measurements, J79-15, Run No. 28-1.

Run Date 4/15/74, Power Setting MIL, Axial Station 60 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-5}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -85.48 | 5.9 | 0.17 | 0 | 5.8 | 6.6 | .0007 | 7.1 | 0 | 11.4 | 12.9 | 13.66 | 13.64 | | 565 | 0.02 | 0.01 | 0 | 0.02 | 0.03 |
| 1 | -68.33 | 6.4 | 0.20 | 0 | 7.6 | 7.8 | .0009 | 6.3 | 0 | 12.2 | 12.4 | 13.69 | 13.58 | | 582 | 0.05 | 0.03 | 0 | 0.06 | 0.06 |
| 1 | -50.62 | 7.4 | 0.27 | 0 | 10.1 | 10.0 | .0012 | 5.5 | 0 | 12.4 | 12.3 | 13.83 | 13.61 | | 606 | 0.09 | 0.05 | 0 | 0.11 | 0.11 |
| 1 | -32.38 | 7.9 | 0.34 | 0 | 11.8 | 12.4 | .0015 | 4.6 | 0 | 11.3 | 11.8 | 13.96 | 13.56 | | 626 | 0.16 | 0.07 | 0 | 0.18 | 0.19 |
| 1 | -14.77 | 8.6 | 0.38 | 0 | 13.5 | 14.2 | .0017 | 4.6 | 0 | 11.7 | 12.3 | 14.18 | 13.58 | | 643 | 0.22 | 0.10 | 0 | 0.26 | 0.27 |
| 1 | 6.66 | 8.6 | 0.38 | 0 | 13.8 | 14.6 | .0017 | 4.5 | 0 | 11.8 | 12.5 | 14.21 | 13.58 | | 647 | 0.22 | 0.10 | 0 | 0.26 | 0.28 |
| 1 | 23.96 | 7.9 | 0.36 | 0 | 13.0 | 13.9 | .0016 | 4.4 | 0 | 11.8 | 12.6 | 14.10 | 13.61 | | 639 | 0.19 | 0.08 | 0 | 0.22 | 0.24 |
| 1 | 41.13 | 8.1 | 0.30 | 0 | 10.7 | 12.9 | .0013 | 5.4 | 0 | 11.8 | 14.2 | 13.96 | 13.61 | | 623 | 0.13 | 0.07 | 0 | 0.15 | 0.18 |
| 1 | 59.03 | 7.4 | 0.25 | 0 | 9.9 | 10.1 | .0011 | 5.8 | 0 | 12.9 | 13.1 | 13.83 | 13.61 | | 604 | 0.08 | 0.05 | 0 | 0.10 | 0.10 |
| 1 | 76.61 | 6.1 | 0.17 | 0 | 7.1 | 8.2 | .0007 | 7.1 | 0 | 13.5 | 15.7 | 13.72 | 13.66 | | 584 | 0.03 | 0.02 | 0 | 0.04 | 0.05 |
| 1 | 93.75 | 5.2 | 0.12 | 0 | 4.9 | 5.6 | .0004 | 8.7 | 0 | 13.5 | 15.5 | 13.66 | 13.66 | | 562 | 0 | 0 | 0 | 0 | 0 |
| 2 | -85.35 | 5.6 | 0.14 | 0 | 6.7 | 5.2 | .0005 | 8.2 | 0 | 15.9 | 12.4 | 13.72 | 13.63 | | 541 | 0.03 | 0.02 | 0 | 0.05 | 0.04 |
| 2 | -68.22 | 6.3 | 0.18 | 0 | 8.2 | 7.7 | .0007 | 7.0 | 0 | 14.9 | 14.1 | 13.79 | 13.66 | | 539 | 0.05 | 0.04 | 0 | 0.07 | 0.07 |
| 2 | -50.69 | 7.4 | 0.24 | 0 | 10.2 | 10.3 | .0010 | 6.2 | 0 | 14.0 | 14.1 | 13.79 | 13.55 | | 539 | 0.09 | 0.06 | 0 | 0.13 | 0.13 |
| 2 | -32.88 | 7.9 | 0.28 | 0 | 11.4 | 12.4 | .0012 | 5.6 | 0 | 13.2 | 14.4 | 14.03 | 13.55 | | 606 | 0.14 | 0.08 | 0 | 0.18 | 0.20 |
| 2 | -15.00 | 8.7 | 0.34 | 0 | 13.5 | 14.4 | .0015 | 5.1 | 0 | 12.9 | 13.7 | 14.19 | 13.58 | | 650 | 0.20 | 0.10 | 0 | 0.26 | 0.27 |
| 2 | 6.16 | 9.1 | 0.37 | 0 | 14.3 | 15.0 | .0016 | 4.9 | 0 | 12.8 | 13.4 | 14.37 | 13.52 | | 661 | 0.25 | 0.12 | 0 | 0.32 | 0.34 |
| 2 | 22.12 | 8.6 | 0.34 | 0 | 13.4 | 14.2 | .0015 | 5.0 | 0 | 13.0 | 13.7 | 14.19 | 13.60 | | 650 | 0.19 | 0.10 | 0 | 0.25 | 0.26 |
| 2 | 40.02 | 7.7 | 0.26 | 0 | 10.2 | 11.9 | .0011 | 5.8 | 0 | 12.7 | 14.7 | 14.00 | 13.58 | | 628 | 0.12 | 0.07 | 0 | 0.15 | 0.18 |
| 2 | 57.80 | 6.7 | 0.19 | 0 | 8.7 | 8.8 | .0008 | 6.9 | 0 | 14.9 | 15.0 | 13.82 | 13.60 | | 606 | 0.06 | 0.04 | 0 | 0.09 | 0.09 |
| 2 | 75.30 | 5.3 | 0.11 | 0 | 5.6 | 5.0 | .0004 | 9.6 | 0 | 16.8 | 15.0 | 13.74 | 13.63 | | 576 | 0.02 | 0.02 | 0 | 0.03 | 0.03 |
| 2 | 92.36 | 4.6 | 0.07 | 0 | 3.4 | 3.3 | .0002 | 12.8 | 0 | 15.9 | 15.2 | 13.69 | 13.63 | | 554 | 0.01 | 0.01 | 0 | 0.02 | 0.02 |
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NOTE: Radial position adjusted for symmetry.

## Table 38. Summary of Plume Measurements, J79-15, Run No. 28-2.

Run Date 4/15/74, Power Setting MIN A/B, Axial Station 60 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | $Fuel_3$ ($\times 10^{-3}$) | $CO_5$ ($\times 10^{-5}$) | $HC_6$ ($\times 10^{-6}$) | $NO_5$ ($\times 10^{-5}$) | $NO_{x_5}$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| | 92.49 | 25.7 | 0.14 | -7.8 | 2.7 | 4.0 | .0006 | 35.9 | 0 | 6.2 | 9.2 | 13.72 | 13.60 | | 582 | 0.03 | 0.11 | 0 | 0.02 | 0.03 |
| 2 | 72.20 | 39.0 | 0.23 | -5.7 | 4.5 | 7.0 | .0010 | 32.9 | 0 | 6.3 | 9.8 | 13.77 | 13.60 | | 626 | 0.07 | 0.23 | 0 | 0.04 | 0.07 |
| 2 | 57.47 | 53.6 | 0.39 | -1.9 | 6.4 | 10.4 | .0018 | 27.2 | 0 | 5.4 | 8.7 | 14.00 | 13.55 | | 689 | 0.19 | 0.52 | 0 | 0.10 | 0.17 |
| 2 | 39.42 | 72.8 | 0.51 | 0.6 | 8.1 | 13.6 | .0024 | 27.9 | 0.1 | 5.1 | 8.6 | 14.11 | 13.60 | | 718 | 0.26 | 0.73 | 0 | 0.13 | 0.22 |
| 2 | 21.23 | 87.1 | 0.62 | 2.2 | 9.6 | 15.0 | .0029 | 27.9 | 0.4 | 5.1 | 7.9 | 14.27 | 13.52 | | 760 | 0.38 | 1.06 | 0.2 | 0.19 | 0.30 |
| 2 | 4.91 | 92.4 | 0.65 | 4.0 | 10.2 | 16.3 | .0030 | 28.1 | 0.6 | 5.1 | 8.2 | 14.40 | 13.55 | | 778 | 0.42 | 1.18 | 0.3 | 0.21 | 0.34 |
| 2 | -16.36 | 86.0 | 0.63 | 3.4 | 9.9 | 15.8 | .0030 | 26.8 | 0.5 | 5.1 | 8.1 | 14.29 | 13.50 | | 762 | 0.40 | 1.07 | 0.2 | 0.20 | 0.32 |
| 2 | -34.54 | 74.8 | 0.53 | 1.5 | 9.1 | 14.0 | .0025 | 27.6 | 0.3 | 5.5 | 8.5 | 14.19 | 13.55 | | 740 | 0.30 | 0.83 | 0.1 | 0.17 | 0.26 |
| 2 | -52.63 | 58.3 | 0.38 | -1.2 | 6.7 | 10.9 | .0017 | 30.0 | 0 | 5.6 | 9.3 | 13.95 | 13.58 | | 556 | 0.19 | 0.57 | 0 | 0.11 | 0.18 |
| 2 | -70.42 | 46.0 | 0.28 | -2.5 | 5.4 | 8.5 | .0012 | 32.3 | 0 | 6.2 | 9.8 | 13.82 | 13.63 | | 547 | 0.09 | 0.29 | 0 | 0.06 | 0.09 |
| 2 | -87.78 | 33.4 | 0.18 | -4.9 | 3.8 | 5.9 | .0008 | 35.6 | 0 | 6.7 | 10.4 | 13.77 | 13.68 | | 547 | 0.04 | 1.42 | 0 | 0.03 | 0.04 |
| 1 | -88.07 | 34.0 | 0.20 | -4.0 | 4.4 | 6.5 | .0008 | 33.9 | 0 | 7.2 | 10.6 | 13.72 | 13.77 | | 621 | 0 | 0 | 0 | 0 | 0 |
| 1 | -70.52 | 46.7 | 0.28 | -3.2 | 5.9 | 8.5 | .0013 | 32.7 | 0 | 6.7 | 9.7 | 13.77 | 13.66 | | 649 | 0.07 | 0.23 | 0 | 0.05 | 0.07 |
| 1 | -52.55 | 60.3 | 0.37 | -0.2 | 6.7 | 10.2 | .0017 | 31.8 | 0 | 5.8 | 8.9 | 13.85 | 13.58 | | 684 | 0.14 | 0.45 | 0 | 0.08 | 0.12 |
| 1 | -34.29 | 75.6 | 0.46 | 1.0 | 8.2 | 13.2 | .0021 | 32.6 | 0.2 | 5.8 | 9.4 | 14.07 | 13.64 | | 726 | 0.21 | 0.68 | 0 | 0.11 | 0.20 |
| 1 | -16.01 | 82.4 | 0.54 | 1.1 | 9.2 | 15.0 | .0025 | 30.0 | 0.2 | 5.5 | 9.0 | 14.26 | 13.64 | | 751 | 0.30 | 0.90 | 0.1 | 0.17 | 0.27 |
| 1 | 5.09 | 83.9 | 0.58 | 0.8 | 9.8 | 15.1 | .0027 | 28.7 | 0.1 | 5.5 | 8.5 | 14.34 | 13.56 | | 764 | 0.36 | 1.03 | 0 | 0.20 | 0.31 |
| 1 | 22.14 | 78.4 | 0.53 | 0.8 | 9.0 | 14.7 | .0025 | 28.9 | 0.2 | 5.5 | 8.9 | 14.26 | 13.56 | | 748 | 0.32 | 0.92 | 0.1 | 0.18 | 0.28 |
| 1 | 40.47 | 71.2 | 0.46 | 0.1 | 7.5 | 12.8 | .0021 | 30.6 | 0 | 5.3 | 9.1 | 13.99 | 13.61 | | 720 | 0.20 | 0.61 | 0 | 0.11 | 0.18 |
| 1 | 58.65 | 57.8 | 0.37 | -2.0 | 6.4 | 11.0 | .0017 | 30.5 | 0 | 5.6 | 9.6 | 13.88 | 13.56 | | 693 | 0.15 | 0.46 | 0 | 0.08 | 0.14 |
| 1 | 76.28 | 40.6 | 0.22 | -5.8 | 4.7 | 7.4 | .0010 | 36.2 | 0 | 6.9 | 10.9 | 13.77 | 13.61 | | 639 | 0.06 | 0.22 | 0 | 0.04 | 0.07 |
| 1 | 93.87 | 34.8 | 0.20 | -7.5 | 4.1 | 6.0 | .0009 | 33.8 | 0 | 6.6 | 9.6 | 13.66 | 13.56 | | 615 | 0.05 | 0.17 | 0 | 0.03 | 0.05 |
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NOTE: Radial position adjusted for symmetry.

## Table 39. Summary of Plume Measurements, J79-15, Run No. 28-3.

Run Date 4/15/74, Power Setting MID A/B, Axial Station 60 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -86.42 | 110 | 0.51 | 13.7 | 4.1 | 7.6 | .0024 | 41.9 | 2.6 | 2.6 | 4.8 | 13.64 | 13.38 | | 698 | 0.19 | 0.08 | 0.5 | 0.05 | 0.09 |
| 1 | -69.05 | 148 | 0.63 | 18.3 | 4.1 | 9.9 | .0030 | 45.5 | 2.8 | 2.1 | 5.0 | 13.72 | 13.38 | | 728 | 0.27 | 0.12 | 0.8 | 0.06 | 0.14 |
| 1 | -51.38 | 173 | 0.81 | 30.3 | 4.7 | 12.5 | .0039 | 41.8 | 3.7 | 1.9 | 5.0 | 14.04 | 13.66 | | 796 | 0.35 | 0.15 | 1.3 | 0.07 | 0.18 |
| 1 | -33.74 | 190 | 0.89 | 30.7 | 4.8 | 12.7 | .0043 | 41.4 | 3.4 | 1.7 | 4.6 | 13.96 | 13.38 | | 809 | 0.48 | 0.20 | 1.6 | 0.08 | 0.22 |
| 1 | -17.36 | 244 | 1.11 | 45.8 | 5.7 | 16.7 | .0054 | 42.8 | 4.1 | 1.7 | 4.9 | 14.38 | 13.66 | | 887 | 0.64 | 0.27 | 2.6 | 0.11 | 0.31 |
| 1 | 12.87 | 257 | 1.14 | 51.1 | 5.6 | 16.9 | .0055 | 43.6 | 4.4 | 1.6 | 4.8 | 14.45 | 13.74 | | 890 | 0.66 | 0.29 | 2.9 | 0.11 | 0.32 |
| 1 | 26.53 | 250 | 1.10 | 50.7 | 5.3 | 16.2 | .0053 | 44.2 | 4.5 | 1.6 | 4.8 | 14.31 | 13.45 | | 883 | 0.70 | 0.31 | 3.2 | 0.11 | 0.34 |
| 1 | 43.92 | 225 | 0.95 | 46.1 | 4.7 | 14.8 | .0046 | 45.8 | 4.7 | 1.6 | 5.0 | 14.21 | 13.61 | | 843 | 0.51 | 0.23 | 2.4 | 0.08 | 0.26 |
| 1 | 61.71 | 188 | 0.75 | 38.3 | 3.9 | 12.1 | .0036 | 48.4 | 5.0 | 1.6 | 5.1 | 13.93 | 13.61 | | 775 | 0.30 | 0.15 | 1.5 | 0.05 | 0.15 |
| 1 | 79.34 | 117 | 0.47 | 28.0 | 2.8 | 7.4 | .0022 | 48.2 | 5.8 | 1.9 | 5.1 | 13.88 | 13.87 | | 713 | 0.03 | 0.01 | 0.2 | 0.01 | 0.02 |
| 1 | 98.84 | 95.1 | 0.35 | 19.5 | 2.1 | 5.6 | .0016 | 52.7 | 5.4 | 1.9 | 5.1 | 13.72 | 13.64 | | 671 | 0.07 | 0.37 | 0.4 | 0.01 | 0.04 |
| 2 | -78.69 | 108 | 0.43 | 16.0 | 3.5 | 7.1 | .0020 | 48.3 | 3.6 | 2.6 | 5.2 | 13.69 | 13.47 | | 565 | 0.16 | 0.77 | 0.6 | 0.04 | 0.08 |
| 2 | -60.81 | 134 | 0.53 | 22.7 | 3.8 | 9.4 | .0025 | 48.7 | 4.1 | 2.3 | 5.6 | 13.82 | 13.45 | | 585 | 0.26 | 1.27 | 1.1 | 0.06 | 0.15 |
| 2 | -43.31 | 180 | 0.76 | 29.5 | 4.8 | 11.8 | .0036 | 46.1 | 3.8 | 2.0 | 5.0 | 13.95 | 13.45 | | 587 | 0.44 | 2.03 | 1.7 | 0.09 | 0.22 |
| 2 | -25.26 | 227 | 0.96 | 44.0 | 5.6 | 15.4 | .0047 | 45.7 | 4.5 | 1.9 | 5.2 | 14.24 | 13.58 | | 580 | 0.66 | 3.02 | 3.0 | 0.13 | 0.34 |
| 2 | - 7.35 | 268 | 1.12 | 49.7 | 6.3 | 17.8 | .0054 | 46.5 | 4.4 | 1.8 | 5.1 | 14.40 | 13.50 | | 907 | 0.72 | 3.35 | 3.2 | 0.13 | 0.37 |
| 2 | 14.49 | 268 | 1.14 | 51.1 | 6.4 | 18.4 | .0055 | 45.6 | 4.4 | 1.8 | 5.2 | 14.56 | 13.55 | | 919 | 0.78 | 3.56 | 3.4 | 0.14 | 0.41 |
| 2 | 30.71 | 249 | 1.00 | 43.2 | 5.8 | 16.7 | .0049 | 48.2 | 4.2 | 1.8 | 5.4 | 14.35 | 13.60 | | 870 | 0.60 | 2.89 | 2.5 | 0.11 | 0.32 |
| 2 | 48.87 | 182 | 0.77 | 32.9 | 5.0 | 13.4 | .0037 | 45.7 | 4.2 | 2.1 | 5.6 | 14.11 | 13.58 | | 823 | 0.39 | 1.78 | 1.6 | 0.08 | 0.22 |
| 2 | 66.90 | 147 | 0.60 | 24.0 | 3.8 | 10.4 | .0029 | 47.3 | 3.9 | 2.0 | 5.5 | 13.90 | 13.50 | | 749 | 0.27 | 1.28 | 1.1 | 0.05 | 0.15 |
| 2 | 84.42 | 96.1 | 0.36 | 11.6 | 2.8 | 7.6 | .0017 | 52.1 | 3.2 | 2.5 | 6.8 | 13.77 | 13.66 | | 669 | 0.09 | 0.47 | 0.3 | 0.02 | 0.06 |
| 2 | 102.18 | 55.2 | 0.20 | 4.8 | 1.7 | 3.8 | .0009 | 54.1 | 2.4 | 2.8 | 6.1 | 13.69 | 13.63 | | 624 | 0.03 | 0.02 | .01 | 0.01 | 0.02 |
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NOTE: Radial position adjusted for symmetry.

## Table 40. Summary of Plume Measurements, J79-15, Run No. 28-4.

Run Date 4/15/74, Power Setting MAX A/B, Axial Station 60 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-5}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 2 | 98.14 | 13.6 | 0.29 | 0 | 4.5 | 5.6 | .0013 | 9.4 | 0 | 5.1 | 6.3 | 13.64 | 13.39 | | 654 | 0.10 | 0.09 | 0 | 0.05 | 0.06 |
| 2 | 81.11 | 23.5 | 0.51 | 0 | 7.6 | 9.2 | .0024 | 9.1 | 0 | 4.9 | 5.9 | 13.69 | 13.26 | | 742 | 0.23 | 0.21 | 0 | 0.11 | 0.14 |
| 2 | 63.12 | 33.9 | 0.81 | 0 | 11.8 | 13.6 | .0038 | 8.3 | 0 | 4.8 | 5.5 | 13.87 | 13.34 | | 834 | 0.39 | 0.32 | 0 | 0.19 | 0.21 |
| 2 | 45.35 | 43.3 | 1.08 | 0 | 15.3 | 18.0 | .0051 | 8.0 | 0 | 4.6 | 5.5 | 14.29 | 13.50 | | 928 | 0.63 | 0.50 | 0 | 0.29 | 0.35 |
| 2 | 27.20 | 50.0 | 1.26 | 0 | 17.6 | 21.5 | .0060 | 7.9 | 0 | 4.6 | 5.6 | 14.45 | 13.39 | | 992 | 0.83 | 0.66 | 0 | 0.38 | 0.46 |
| 2 | 11.03 | 53.0 | 1.35 | 0 | 18.0 | 21.8 | .0064 | 7.8 | 0 | 4.4 | 5.4 | 14.64 | 13.52 | | 1020 | 0.90 | 0.70 | 0 | 0.40 | 0.49 |
| 2 | -10.87 | 50.3 | 1.26 | 0 | 17.0 | 21.2 | .0060 | 7.9 | 0 | 4.4 | 5.6 | 14.40 | 13.42 | | 932 | 0.82 | 0.65 | 0 | 0.36 | 0.46 |
| 2 | -28.76 | 45.8 | 1.14 | 0 | 16.0 | 18.5 | .0054 | 8.0 | 0 | 4.6 | 5.3 | 14.35 | 13.71 | | 718 | 0.67 | 0.54 | 0 | 0.31 | 0.36 |
| 2 | -46.91 | 39.4 | 0.93 | 0 | 13.1 | 16.1 | .0044 | 8.4 | 0 | 4.6 | 5.7 | 14.06 | 13.66 | | 585 | 0.47 | 0.39 | 0 | 0.22 | 0.27 |
| 2 | -64.65 | 29.8 | 0.67 | 0 | 9.9 | 10.8 | .0031 | 8.9 | 0 | 4.9 | 5.3 | 13.85 | 13.55 | | 580 | 0.29 | 0.26 | 0 | 0.14 | 0.15 |
| 2 | -81.99 | 23.3 | 0.49 | 0 | 7.1 | 8.8 | .0022 | 9.5 | 0 | 4.8 | 5.9 | 13.77 | 13.58 | | 578 | 0.17 | 0.16 | 0 | 0.08 | 0.10 |
| 1 | -90.95 | 24.2 | 0.48 | 0 | 8.9 | 8.6 | .0022 | 10.0 | 0 | 6.1 | 5.9 | 13.55 | 13.27 | | 726 | 0.18 | 0.18 | 0 | 0.11 | 0.11 |
| 1 | -73.21 | 28.1 | 0.60 | 0 | 10.3 | 11.1 | .0028 | 9.2 | 0 | 5.6 | 6.0 | 13.80 | 13.48 | | 778 | 0.23 | 0.21 | 0 | 0.13 | 0.14 |
| 1 | -55.16 | 31.5 | 0.71 | 0 | 11.3 | 13.8 | .0033 | 8.8 | 0 | 5.3 | 6.4 | 13.80 | 13.32 | | 823 | 0.33 | 0.29 | 0 | 0.17 | 0.21 |
| 1 | -37.41 | 34.9 | 0.80 | 0 | 11.5 | 16.2 | .0037 | 8.7 | 0 | 4.7 | 6.7 | 13.93 | 13.40 | | 834 | 0.39 | 0.34 | 0 | 0.18 | 0.26 |
| 1 | -19.42 | 41.0 | 0.98 | 0 | 14.8 | 16.3 | .0046 | 8.3 | 0 | 5.0 | 5.5 | 14.18 | 13.40 | | 905 | 0.56 | 0.46 | 0 | 0.28 | 0.31 |
| 1 | 7.53 | 46.7 | 1.16 | 0 | 16.7 | 19.6 | .0055 | 8.0 | 0 | 4.8 | 5.6 | 14.50 | 13.74 | | 978 | 0.65 | 0.52 | 0 | 0.31 | 0.36 |
| 1 | 21.01 | 47.1 | 1.15 | 0 | 16.5 | 19.2 | .0055 | 8.1 | 0 | 4.7 | 5.5 | 14.37 | 13.43 | | 963 | 0.72 | 0.58 | 0 | 0.34 | 0.40 |
| 1 | 38.49 | 41.0 | 0.98 | 0 | 14.1 | 16.6 | .0046 | 8.3 | 0 | 4.8 | 5.6 | 14.34 | 13.77 | | 919 | 0.48 | 0.40 | 0 | 0.23 | 0.27 |
| 1 | 56.54 | 32.5 | 0.71 | 0 | 11.0 | 12.5 | .0033 | 9.1 | 0 | 5.1 | 5.8 | 13.96 | 13.77 | | 816 | 0.21 | 0.19 | 0 | 0.11 | 0.12 |
| 1 | 74.27 | 28.7 | 0.60 | 0 | 9.8 | 11.7 | .0028 | 9.4 | 0 | 5.3 | 6.4 | 13.74 | 13.51 | | 773 | 0.20 | 0.19 | 0 | 0.11 | 0.13 |
| 1 | 91.83 | 23.5 | 0.43 | 0 | 7.5 | 8.3 | .0020 | 10.9 | 0 | 5.7 | 6.4 | 13.80 | 13.51 | | 726 | 0.16 | 0.17 | 0 | 0.09 | 0.10 |
| | | | | | | | | | | | | | | | | | | | | |
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NOTE: Radial position adjusted for symmetry.

## Table 41. Summary of Plume Measurements, J85-5, Run No. 32-1.

Run Date 12/19/74, Power Setting MIL, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -6.79 | 200 | 1.03 | 5.2 | 10.3 | 11.5 | .0050 | 37.8 | 0.5 | 3.2 | 3.6 | 14.38 | 13.64 | 891 | | 0.73 | 0.28 | 0.4 | 0.23 | 0.26 |
| 1 | -5.72 | 606 | 3.57 | 13.7 | 28.3 | 44.1 | .0172 | 33.3 | 0.4 | 2.6 | 4.1 | 29.16 | | 1719 | | 6.12 | 2.04 | 2.4 | 1.59 | 2.51 |
| 1 | -4.29 | 615 | 3.75 | 12.4 | 31.7 | 49.6 | .0181 | 32.2 | 0.3 | 2.8 | 4.4 | 29.57 | | 1772 | | 6.40 | 2.06 | 1.9 | 1.79 | 2.82 |
| 1 | -2.87 | 604 | 3.81 | 8.5 | 33.3 | 52.8 | .0183 | 31.2 | 0.2 | 2.9 | 4.6 | 29.72 | | 1789 | | 6.49 | 2.02 | 1.3 | 1.88 | 2.99 |
| 1 | -1.82 | 597 | 3.82 | 7.2 | 34.3 | 53.7 | .0184 | 30.7 | 0.2 | 3.0 | 4.7 | 29.82 | | 1793 | | 6.52 | 2.00 | 1.3 | 1.96 | 3.06 |
| 1 | -0.51 | 600 | 3.78 | 7.2 | 33.6 | 54.0 | .0182 | 31.1 | 0.2 | 3.0 | 4.8 | 29.82 | | 1783 | | 6.48 | 2.02 | 1.3 | 1.94 | 3.11 |
| 1 | 1.14 | 603 | 3.77 | 9.1 | 32.4 | 53.1 | .0182 | 31.4 | 0.2 | 2.9 | 4.7 | 29.92 | | 1779 | | 6.49 | 2.04 | 1.3 | 1.88 | 3.05 |
| 1 | 2.19 | 612 | 3.73 | 11.7 | 31.3 | 52.2 | .0180 | 32.3 | 0.3 | 2.8 | 4.7 | 29.97 | | 1767 | | 6.45 | 2.08 | 1.9 | 1.81 | 3.03 |
| 1 | 3.60 | 634 | 3.64 | 15.6 | 28.3 | 50.7 | .0176 | 34.2 | 0.4 | 2.6 | 4.7 | 29.92 | | 1739 | | 6.34 | 2.17 | 2.5 | 1.65 | 2.98 |
| 1 | 4.67 | 660 | 3.60 | 18.9 | 26.0 | 48.8 | .0174 | 36.0 | 0.5 | 2.4 | 4.5 | 29.92 | | 1728 | | 6.31 | 2.27 | 3.2 | 1.51 | 2.84 |
| 1 | 6.09 | 455 | 2.25 | 18.9 | 15.0 | 29.0 | .0109 | 39.5 | 0.8 | 2.2 | 4.2 | 20.61 | | 1307 | | 3.11 | 1.23 | 2.5 | 0.68 | 1.31 |
| 1 | 6.81 | 209 | 0.93 | 9.1 | 7.4 | 12.4 | .0045 | 44.1 | 1.0 | 2.6 | 4.3 | 14.94 | | 864 | | 0.69 | 0.30 | 0.7 | 0.18 | 0.30 |
| 2 | -6.18 | 456 | 2.61 | 5.2 | 22.0 | 37.3 | .0126 | 34.3 | 0.2 | 2.8 | 4.7 | 15.80 | | 1423 | | 1.95 | 0.67 | 0.4 | 0.55 | 0.92 |
| 2 | -5.10 | 616 | 3.65 | 5.2 | 31.2 | 51.7 | .0176 | 33.2 | 0.1 | 2.9 | 4.7 | 29.04 | | 1742 | | 6.19 | 2.06 | 0.6 | 1.80 | 2.91 |
| 2 | -4.02 | 603 | 3.67 | 5.2 | 31.6 | 52.0 | .0177 | 32.3 | 0.1 | 2.9 | 4.7 | 29.23 | | 1748 | | 6.25 | 2.02 | 0.6 | 1.81 | 2.94 |
| 2 | -2.59 | 596 | 3.69 | 5.2 | 31.9 | 52.3 | .0178 | 31.8 | 0.1 | 2.9 | 4.7 | 29.23 | | 1754 | | 6.27 | 1.99 | 0.6 | 1.82 | 2.95 |
| 2 | -1.54 | 591 | 3.67 | 5.2 | 32.1 | 52.5 | .0177 | 31.7 | 0.1 | 2.9 | 4.8 | 29.41 | | 1748 | | 6.28 | 1.99 | 0.6 | 1.82 | 3.01 |
| 2 | -0.62 | 591 | 3.65 | 5.2 | 32.2 | 52.7 | .0176 | 31.8 | 0.1 | 2.9 | 4.8 | 29.41 | | 1744 | | 6.26 | 1.99 | 0.6 | 1.82 | 3.00 |
| 2 | 0.88 | 591 | 3.65 | 6.5 | 31.8 | 52.7 | .0176 | 31.8 | 0.2 | 2.9 | 4.8 | 29.41 | | 1744 | | 6.26 | 1.99 | 1.3 | 1.82 | 3.00 |
| 2 | 1.87 | 597 | 3.62 | 6.5 | 31.3 | 52.8 | .0175 | 32.4 | 0.2 | 2.9 | 4.9 | 29.41 | | 1736 | | 6.23 | 2.02 | 1.2 | 1.81 | 3.05 |
| 2 | 3.29 | 613 | 3.60 | 8.5 | 29.8 | 51.5 | .0174 | 33.4 | 0.2 | 2.8 | 4.8 | 29.23 | | 1728 | | 6.17 | 2.06 | 1.2 | 1.73 | 2.96 |
| 2 | 4.37 | 618 | 3.51 | 9.8 | 28.6 | 50.7 | .0170 | 34.5 | 0.3 | 2.7 | 4.8 | 29.20 | | 1703 | | 6.08 | 2.10 | 1.8 | 1.64 | 2.92 |
| 2 | 5.45 | 625 | 3.46 | 11.1 | 27.5 | 50.0 | .0167 | 35.4 | 0.3 | 2.6 | 4.8 | 29.04 | | 1687 | | 5.99 | 2.12 | 1.8 | 1.56 | 2.88 |
| 2 | 6.53 | 380 | 1.80 | 9.1 | 14.5 | 25.9 | .0087 | 41.3 | 0.5 | 2.6 | 4.7 | 15.10 | | 1155 | | 1.24 | 0.51 | 0.6 | 0.32 | 0.58 |

## Table 42. Summary of Plume Measurements, J85-5, Run No. 32-2.

Run Date 12/19/74, Power Setting MIN A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-4}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -7.14 | 523 | 0.88 | 1148 | 4.0 | 9.3 | .0049 | 99.7 | 110 | 1.2 | 2.9 | 14.89 | 13.63 | 855 | | 0.76 | 0.76 | 0.84 | 0.09 | 0.22 |
| 1 | -5.72 | 2988 | 4.38 | 4850 | 7.1 | 39.9 | .0245 | 115 | 97.7 | 0.5 | 2.6 | 28.91 | | 1977 | | 7.98 | 9.18 | 7.80 | 0.40 | 2.07 |
| 1 | -4.29 | 2440 | 5.53 | 870 | 11.9 | 52.2 | .0277 | 83.0 | 15.7 | 0.7 | 3.1 | 29.61 | | 2290 | | 8.36 | 6.94 | 1.31 | 0.59 | 2.59 |
| 1 | -3.23 | 2001 | 5.57 | 859 | 13.7 | 53.3 | .0276 | 68.2 | 15.5 | 0.8 | 3.2 | 29.16 | | 2294 | | 8.34 | 5.69 | 1.29 | 0.67 | 2.67 |
| 1 | -1.65 | 2145 | 4.80 | 2505 | 6.2 | 47.6 | .0249 | 81.2 | 49.8 | 0.4 | 3.1 | 29.16 | | 2087 | | 7.94 | 6.45 | 3.95 | 0.32 | 2.46 |
| 1 | -0.41 | 2188 | 4.45 | 3616 | 5.1 | 44.2 | .0239 | 86.5 | 74.8 | 0.3 | 3.0 | 29.31 | | 1989 | | 7.84 | 6.78 | 5.86 | 0.24 | 2.35 |
| 1 | 1.31 | 2188 | 4.59 | 3678 | 5.1 | 44.2 | .0246 | 84.1 | 74.1 | 0.3 | 2.9 | 29.36 | | 2028 | | 7.99 | 6.72 | 5.92 | 0.24 | 2.32 |
| 1 | 2.71 | 2129 | 5.19 | 2073 | 6.5 | 46.5 | .0265 | 75.7 | 38.9 | 0.4 | 2.9 | 29.36 | | 2191 | | 8.26 | 6.25 | 3.21 | 0.33 | 2.40 |
| 1 | 3.78 | 2241 | 5.45 | 944 | 8.5 | 48.4 | .0272 | 77.5 | 17.3 | 0.5 | 2.9 | 29.36 | | 2266 | | 8.33 | 6.46 | 1.44 | 0.42 | 2.42 |
| 1 | 5.20 | 3192 | 4.89 | 3277 | 5.5 | 39.5 | .0262 | 115 | 62.0 | 0.3 | 2.5 | 29.36 | | 2122 | | 8.31 | 9.56 | 5.15 | 0.25 | 2.08 |
| 1 | 6.63 | 1805 | 2.70 | 5235 | 4.7 | 24.9 | .0162 | 106 | 157 | 0.5 | 2.5 | 22.53 | | 1465 | | 4.86 | 5.15 | 7.63 | 0.24 | 1.22 |
| 1 | 6.99 | 1241 | 1.56 | 3288 | 3.5 | 16.7 | .0096 | 123 | 165 | 0.6 | 2.8 | 16.00 | | 1089 | | 1.78 | 2.19 | 2.94 | 0.11 | 0.50 |
| 2 | -6.72 | 1345 | 1.89 | 4264 | 5.2 | 20.6 | .0117 | 109 | 177 | 0.7 | 2.8 | 16.00 | | 1198 | | 2.06 | 2.25 | 3.65 | 0.14 | 0.58 |
| 2 | -5.28 | 3580 | 4.89 | 3554 | 6.4 | 41.9 | .0266 | 127 | 66.4 | 0.4 | 2.6 | 28.12 | | 2126 | | 8.09 | 10.27 | 5.37 | 0.32 | 2.10 |
| 2 | -4.20 | 2295 | 5.57 | 778 | 10.2 | 52.2 | .0277 | 78.0 | 14.0 | 0.6 | 3.1 | 28.42 | | 2298 | | 8.17 | 6.37 | 1.14 | 0.49 | 2.53 |
| 2 | -2.77 | 2161 | 5.33 | 1382 | 6.8 | 48.5 | .0268 | 75.8 | 25.6 | 0.4 | 2.9 | 28.54 | | 2232 | | 8.08 | 6.12 | 2.07 | 0.32 | 2.34 |
| 2 | -1.71 | 2188 | 4.74 | 2783 | 5.3 | 44.4 | .0248 | 83.2 | 55.5 | 0.3 | 2.9 | 28.70 | | 2070 | | 7.83 | 6.51 | 4.35 | 0.23 | 2.27 |
| 2 | -0.53 | 2108 | 4.27 | 3616 | 5.2 | 43.5 | .0230 | 86.7 | 77.7 | 0.4 | 3.1 | 28.70 | | 1934 | | 7.52 | 6.52 | 5.84 | 0.30 | 2.33 |
| 2 | 1.36 | 2295 | 4.74 | 2413 | 4.9 | 46.1 | .0247 | 87.7 | 48.4 | 0.3 | 3.0 | 28.73 | | 2072 | | 7.79 | 6.83 | 3.77 | 0.23 | 2.34 |
| 2 | 2.41 | 2214 | 5.33 | 1271 | 6.4 | 49.4 | .0268 | 77.8 | 23.6 | 0.4 | 3.0 | 28.63 | | 2232 | | 8.09 | 6.29 | 1.91 | 0.32 | 2.43 |
| 2 | 3.84 | 2214 | 5.47 | 839 | 8.2 | 49.7 | .0273 | 76.5 | 15.3 | 0.5 | 3.0 | 28.40 | | 2272 | | 8.09 | 6.19 | 1.24 | 0.40 | 2.43 |
| 2 | 4.92 | 2456 | 5.39 | 994 | 6.5 | 47.1 | .0271 | 85.5 | 18.3 | 0.4 | 2.8 | 28.54 | | 2252 | | 8.10 | 6.93 | 1.48 | 0.32 | 2.27 |
| 2 | 6.36 | 3109 | 4.23 | 5406 | 4.8 | 36.5 | .0242 | 122 | 111 | 0.3 | 2.4 | 28.35 | | 1935 | | 7.81 | 9.53 | 8.67 | 0.23 | 1.87 |
| 2 | 7.44 | 1189 | 1.70 | 3647 | 4.1 | 19.3 | .0104 | 108 | 169 | 0.6 | 2.9 | 15.00 | | 1135 | | 1.44 | 1.56 | 2.43 | 0.09 | 0.42 |

## Table 43. Summary of Plume Measurements, J85-5, Run No. 32-3.

Run Date 12/19/74 , Power Setting MID A/B , Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-4}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -8.05 | 1159 | 1.47 | 706 | 3.4 | 12.9 | .0079 | 140 | 43.2 | 0.7 | 2.6 | 15.00 | 13.63 | 1053 | | 1.13 | 1.58 | 0.49 | 0.08 | 0.29 |
| 1 | -6.62 | 2428 | 6.98 | 470 | 18.6 | 54.1 | .0341 | 66.7 | 6.9 | 0.9 | 2.6 | 27.39 | | 2660 | | 8.95 | 5.97 | 0.62 | 0.81 | 2.33 |
| 1 | -4.84 | 978 | 8.63 | 31.9 | 54.9 | 73.5 | .0406 | 22.4 | 0.4 | 2.2 | 3.0 | 28.20 | | 3037 | | 10.15 | 2.27 | 0.04 | 2.23 | 3.05 |
| 1 | -3.41 | 1894 | 8.22 | 341 | 34.3 | 73.5 | .0394 | 44.8 | 4.4 | 1.4 | 3.1 | 28.30 | | 2950 | | 10.03 | 4.49 | 0.44 | 1.40 | 3.11 |
| 1 | -1.65 | 2608 | 7.14 | 1487 | 8.7 | 57.1 | .0354 | 68.9 | 21.1 | 0.4 | 2.7 | 28.15 | | 2698 | | 9.45 | 6.51 | 1.99 | 0.38 | 2.55 |
| 1 | -0.41 | 2955 | 6.64 | 2320 | 6.5 | 51.1 | .0337 | 82.2 | 34.5 | 0.3 | 2.5 | 28.20 | | 2575 | | 9.24 | 7.60 | 3.19 | 0.28 | 2.31 |
| 1 | 1.31 | 3580 | 6.71 | 2320 | 6.9 | 53.3 | .0343 | 97.8 | 33.9 | 0.3 | 2.6 | 28.20 | | 2599 | | 9.35 | 9.14 | 3.17 | 0.28 | 2.43 |
| 1 | 3.07 | 3076 | 8.22 | 588 | 30.0 | 72.6 | .0401 | 71.5 | 7.4 | 1.2 | 3.0 | 28.45 | | 2961 | | 10.22 | 7.31 | 0.76 | 1.23 | 3.07 |
| 1 | 4.49 | 1669 | 8.99 | 111 | 56.3 | 76.7 | .0426 | 36.4 | 1.3 | 2.2 | 3.0 | 28.66 | | 3123 | | 10.61 | 3.86 | 0.14 | 2.33 | 3.18 |
| 1 | 6.27 | 1922 | 7.65 | 156 | 31.5 | 53.4 | .0367 | 48.8 | 2.1 | 1.4 | 2.4 | 28.45 | | 2817 | | 9.65 | 4.72 | 0.20 | 1.35 | 2.32 |
| 1 | 7.70 | 2188 | 2.33 | 1086 | 3.7 | 18.8 | .0127 | 164 | 41.8 | 0.5 | 2.4 | 17.01 | | 1359 | | 2.48 | 4.07 | 1.04 | 0.12 | 0.60 |
| 2 | -7.81 | 1350 | 1.48 | 588 | 3.4 | 12.8 | .0079 | 161 | 35.7 | 0.7 | 2.6 | 14.82 | | 1060 | | 1.06 | 1.71 | 0.38 | 0.07 | 0.28 |
| 2 | -6.36 | 1837 | 7.79 | 234 | 34.2 | 57.7 | .0374 | 45.9 | 3.2 | 1.5 | 2.6 | 27.20 | | 2849 | | 9.38 | 4.31 | 0.30 | 0.14 | 0.24 |
| 2 | -4.92 | 1606 | 8.69 | 38.4 | 53.3 | 73.5 | .0412 | 36.2 | 0.5 | 2.1 | 3.0 | 27.80 | | 3055 | | 10.12 | 3.66 | 0.51 | 2.13 | 3.04 |
| 2 | -3.12 | 2618 | 7.93 | 470 | 30.5 | 70.0 | .0385 | 63.4 | 6.2 | 1.3 | 3.0 | 27.93 | | 2890 | | 9.80 | 6.21 | 0.61 | 1.27 | 2.94 |
| 2 | -1.71 | 3358 | 6.85 | 1796 | 8.1 | 56.7 | .0346 | 90.8 | 26.0 | 0.4 | 2.7 | 28.12 | | 2634 | | 9.34 | 8.48 | 2.43 | 0.37 | 2.52 |
| 2 | -0.53 | 3302 | 6.24 | 3061 | 5.5 | 49.4 | .0324 | 95.7 | 47.3 | 0.3 | 2.5 | 28.00 | | 2476 | | 9.02 | 8.63 | 4.27 | 0.27 | 2.26 |
| 2 | 1.36 | 2483 | 7.79 | 870 | 18.8 | 63.2 | .0380 | 61.0 | 11.5 | 0.8 | 2.7 | 28.12 | | 2854 | | 9.80 | 5.98 | 1.13 | 0.78 | 2.65 |
| 2 | 2.76 | 1726 | 8.93 | 0 | 53.1 | 79.9 | .0423 | 37.9 | 0 | 2.1 | 3.1 | 28.12 | | 3112 | | 10.39 | 3.94 | 0 | 2.18 | 3.22 |
| 2 | 4.56 | 1407 | 9.15 | 38.4 | 60.3 | 81.7 | .0431 | 30.2 | 0.5 | 2.3 | 3.1 | 28.12 | | 3156 | | 10.51 | 3.17 | 0.05 | 2.42 | 3.26 |
| 2 | 6.00 | 1241 | 8.86 | 15.6 | 58.6 | 79.1 | .0418 | 27.6 | 0.2 | 2.3 | 3.1 | 28.12 | | 3092 | | 10.30 | 2.84 | 0.02 | 2.37 | 3.19 |
| 2 | 7.44 | 3497 | 6.13 | 1000 | 6.0 | 46.0 | .0310 | 106 | 16.2 | 0.3 | 2.4 | 26.84 | | 2456 | | 8.35 | 8.85 | 1.35 | 0.25 | 2.00 |
| 2 | 7.97 | 2054 | 2.25 | 1086 | 3.1 | 19.7 | .0122 | 160 | 43.2 | 0.4 | 2.6 | 15.81 | | 1332 | | 1.96 | 3.14 | 0.85 | 0.08 | 5.10 |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

## Table 44. Summary of Plume Measurements, J85-5, Run No. 33-1.

Run Date 12/20/74, Power Setting MAX A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-5}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -8.57 | 468 | 1.89 | 21.5 | 11.6 | 12.0 | .0092 | 48.3 | 1.1 | 2.0 | 2.1 | 15.34 | 13.67 | 1190 | | 1.37 | 0.66 | 0.13 | 0.27 | 0.29 |
| 1 | -6.79 | 3602 | 11.11 | 4.1 | 67.3 | 78.2 | .0528 | 62.7 | 0 | 2.1 | 2.5 | 26.53 | | 3592 | | 11.29 | 7.08 | 0 | 2.37 | 2.82 |
| 1 | -5.01 | 9410 | 12.38 | 6.4 | 88.2 | 103 | .0610 | 141 | 0.1 | 2.5 | 2.9 | 27.69 | | 3888 | | 12.88 | 18.16 | 0.13 | 3.22 | 3.74 |
| 1 | -3.58 | 9757 | 11.75 | 66.3 | 76.4 | 94.8 | .0584 | 153 | 0.6 | 2.2 | 2.7 | 27.69 | | 3768 | | 12.57 | 19.23 | 0.75 | 2.77 | 3.39 |
| 1 | -1.82 | 6825 | 10.46 | 435 | 46.8 | 77.2 | .0516 | 122 | 4.3 | 1.5 | 2.5 | 27.14 | | 3482 | | 11.46 | 13.98 | 4.92 | 1.72 | 2.87 |
| 1 | -0.51 | 5737 | 9.82 | 818 | 29.2 | 66.5 | .0485 | 109 | 8.6 | 1.0 | 2.3 | 27.14 | | 3336 | | 11.05 | 12.05 | 9.50 | 1.11 | 2.54 |
| 1 | 1.14 | 6364 | 9.88 | 874 | 28.4 | 64.9 | .0491 | 120 | 9.1 | 1.0 | 2.2 | 27.14 | | 3354 | | 11.14 | 13.37 | 10.14 | 1.11 | 2.45 |
| 1 | 2.89 | 11755 | 11.3 | 130 | 59.9 | 85.6 | .0573 | 189 | 1.2 | 1.8 | 2.5 | 27.85 | | 3686 | | 12.54 | 23.70 | 1.50 | 2.26 | 3.14 |
| 1 | 4.31 | 13117 | 12.2 | 28.5 | 82.5 | 102 | .0621 | 193 | 0.2 | 2.3 | 2.8 | 28.40 | | 3889 | | 13.37 | 25.80 | 0.27 | 3.08 | 3.74 |
| 1 | 6.09 | 6929 | 11.9 | 10.5 | 73.4 | 89.7 | .0580 | 109 | 0.1 | 2.1 | 2.6 | 28.35 | | 3786 | | 12.72 | 13.87 | 0.13 | 2.68 | 3.31 |
| 1 | 7.52 | 1927 | 4.62 | 151 | 13.7 | 30.5 | .0229 | 79.7 | 3.3 | 1.0 | 2.2 | 19.85 | | 2042 | | 4.82 | 3.84 | 1.59 | 0.48 | 1.06 |
| 2 | -8.34 | 991 | 2.84 | 75.0 | 7.9 | 21.1 | .0140 | 67.2 | 2.6 | 0.9 | 2.4 | 16.00 | | 1505 | | 2.17 | 1.46 | 0.56 | 0.20 | 0.52 |
| 2 | -6.54 | 8773 | 11.65 | 13.4 | 60.9 | 83.8 | .0575 | 140 | 0.1 | 1.8 | 2.5 | 26.26 | | 3740 | | 11.86 | 16.60 | 0.19 | 2.13 | 2.97 |
| 2 | -5.10 | 10438 | 11.52 | 19.8 | 63.2 | 90.9 | .0578 | 166 | 0.2 | 1.9 | 2.7 | 27.47 | | 3729 | | 12.42 | 20.62 | 0.25 | 2.36 | 3.35 |
| 2 | -3.30 | 7150 | 10.37 | 290 | 37.7 | 76.4 | .0514 | 128 | 2.9 | 1.2 | 2.5 | 27.08 | | 3468 | | 11.40 | 14.59 | 3.31 | 1.37 | 2.85 |
| 2 | -1.88 | 5923 | 8.77 | 1441 | 12.2 | 60.1 | .0443 | 124 | 16.5 | 0.5 | 2.3 | 26.75 | | 3108 | | 10.37 | 12.86 | 17.11 | 0.52 | 2.39 |
| 2 | -0.62 | 5300 | 8.36 | 2538 | 7.5 | 53.0 | .0427 | 116 | 30.1 | 0.3 | 2.1 | 26.40 | | 3005 | | 10.07 | 11.68 | 30.31 | 0.30 | 2.11 |
| 2 | 1.19 | 9845 | 10.77 | 305 | 41.6 | 82.5 | .0544 | 167 | 2.9 | 1.3 | 2.6 | 27.40 | | 3572 | | 11.97 | 19.99 | 3.47 | 1.56 | 3.11 |
| 2 | 2.58 | 14527 | 11.75 | 25.0 | 70.9 | 98.2 | .0606 | 220 | 0.2 | 2.0 | 2.8 | 27.25 | | 3804 | | 12.76 | 28.07 | 0.26 | 2.55 | 3.57 |
| 2 | 4.01 | 13401 | 11.95 | 9.3 | 79.9 | 104 | .0609 | 201 | 0.1 | 2.2 | 2.9 | 27.20 | | 3835 | | 12.75 | 25.63 | 0.13 | 2.81 | 3.70 |
| 2 | 5.81 | 13725 | 11.88 | 7.0 | 77.0 | 102 | .0608 | 207 | 0.1 | 2.2 | 2.9 | 27.30 | | 3824 | | 12.78 | 26.46 | 0.13 | 2.81 | 3.71 |
| 2 | 7.25 | 6105 | 10.58 | 6.4 | 48.7 | 71.7 | .0516 | 109 | 0.1 | 1.6 | 2.3 | 26.30 | | 3503 | | 11.10 | 12.10 | 0.11 | 1.78 | 2.55 |
| 2 | 8.33 | 1808 | 3.68 | 278 | 5.7 | 24.1 | .0185 | 92.9 | 7.4 | 0.5 | 2.1 | 17.90 | | 1771 | | 3.51 | 3.26 | 2.60 | 0.18 | 0.74 |

## Table 45. Summary of Plume Measurements, J85-5, Run No. 31-1.

Run Date 12/18/74, Power Setting MIL, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^-$ ) | CO ($\times 10^-$ ) | HC ($\times 10^-$ ) | NO ($\times 10^-$ ) | $NO_x$ ($\times 10^-$ ) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -61.47 | 7.0 | 0.02 | 4.5 | 0.1 | 0.2 | - | 68.8 | 21.9 | 1.3 | 2.7 | 13.64 | | | | | | | | |
| 1 | -48.99 | 16.4 | 0.05 | 4.6 | 0.6 | 0.7 | .0001 | 61.1 | 8.6 | 3.6 | 4.1 | 13.64 | | | | | | | | |
| 1 | -37.37 | 28.7 | 0.11 | 4.6 | 1.4 | 1.3 | .0004 | 50.1 | 4.0 | 4.1 | 3.9 | 13.64 | | | | | | | | |
| 1 | -25.16 | 43.6 | 0.18 | 5.1 | 2.7 | 2.5 | .0008 | 47.2 | 2.8 | 4.8 | 4.3 | 13.98 | | | | | | | | |
| 1 | -12.88 | 57.4 | 0.26 | 5.6 | 3.7 | 3.9 | .0012 | 43.2 | 2.1 | 4.6 | 4.8 | 14.00 | | | | | | | | |
| 1 | -0.13 | 65.4 | 0.30 | 5.6 | 4.2 | 4.5 | .0013 | 43.1 | 1.8 | 4.6 | 4.8 | 14.50 | | | | | | | | |
| 1 | 12.17 | 63.3 | 0.28 | 5.6 | 4.0 | 4.4 | .0013 | 44.3 | 2.0 | 4.6 | 5.0 | 14.20 | | | | | | | | |
| 1 | 24.44 | 51.2 | 0.23 | 5.2 | 3.4 | 3.5 | .0010 | 42.9 | 2.2 | 4.6 | 4.9 | 13.85 | | | | | | | | |
| 1 | 36.65 | 39.4 | 0.16 | 5.1 | 2.3 | 2.6 | .0006 | 48.5 | 3.1 | 4.6 | 5.3 | 13.60 | | | | | | | | |
| 1 | 48.75 | 23.9 | 0.10 | 4.7 | 1.7 | 1.8 | .0003 | 48.0 | 4.7 | 5.5 | 6.1 | 13.64 | | | | | | | | |
| 1 | 60.73 | 17.1 | 0.06 | 4.2 | 0.8 | 1.0 | .0001 | 59.1 | 7.3 | 4.8 | 5.7 | 13.64 | | | | | | | | |
| 1 | 72.36 | 10.4 | 0.04 | 4.1 | 0.8 | 0.8 | .00007 | 46.0 | 9.1 | 5.5 | 5.5 | 13.64 | | | | | | | | |

## Table 46. Summary of Plume Measurements, J85-5, Run No. 31-2.

Run Date 12/18/74, Power Setting MIN A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-}$) | CO ($\times 10^{-}$) | HC ($\times 10^{-}$) | NO ($\times 10^{-}$) | $NO_x$ ($\times 10^{-}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -91.87 | 4.1 | 0.04 | 5.3 | 0.2 | 0.2 | .00007 | 18.7 | 12.1 | 1.3 | 1.3 | 13.64 | | | | | | | | |
| 1 | -66.50 | 21.8 | 0.07 | 28.7 | 0.3 | 0.3 | .0002 | 56.0 | 36.9 | 1.1 | 1.1 | 13.64 | | | | | | | | |
| 1 | -53.54 | 56.0 | 0.12 | 70.1 | 0.8 | 0.7 | .0005 | 87.3 | 54.6 | 1.9 | 1.7 | 13.64 | | | | | | | | |
| 1 | -40.37 | 109 | 0.23 | 127 | 1.6 | 1.5 | .0011 | 87.0 | 50.9 | 2.1 | 2.0 | 13.64 | | | | | | | | |
| 1 | -27.07 | 200 | 0.35 | 210 | 2.4 | 2.8 | .0018 | 102 | 53.6 | 2.0 | 2.3 | 13.80 | | | | | | | | |
| 1 | -13.57 | 282 | 0.49 | 274 | 2.8 | 3.7 | .0025 | 103 | 50.2 | 1.7 | 2.2 | 14.00 | | | | | | | | |
| 1 | -0.13 | 315 | 0.56 | 319 | 2.9 | 4.3 | .0029 | 102 | 51.7 | 1.5 | 2.3 | 14.20 | | | | | | | | |
| 1 | 13.32 | 290 | 0.50 | 303 | 2.7 | 4.3 | .0026 | 103 | 54.0 | 1.6 | 2.5 | 14.05 | | | | | | | | |
| 1 | 26.72 | 224 | 0.40 | 229 | 2.4 | 3.5 | .0020 | 101 | 52.1 | 1.8 | 2.6 | 13.80 | | | | | | | | |
| 1 | 40.04 | 145 | 0.27 | 159 | 1.8 | 2.5 | .0013 | 96.4 | 53.1 | 2.0 | 2.8 | 13.64 | | | | | | | | |
| 1 | 53.23 | 85.5 | 0.18 | 115 | 1.5 | 1.8 | .0008 | 85.4 | 57.3 | 2.5 | 2.9 | 13.64 | | | | | | | | |
| 1 | 66.25 | 50.4 | 0.10 | 63.7 | 1.0 | 1.1 | .0004 | 88.4 | 55.8 | 2.9 | 3.1 | 13.64 | | | | | | | | |
| 1 | 79.07 | 23.9 | 0.07 | 25.5 | 0.6 | 0.6 | .0002 | 67.9 | 36.1 | 2.7 | 2.7 | 13.64 | | | | | | | | |

## Table 47. Summary of Plume Measurements, J85-5, Run No. 31-3.

Run Date 12/18/74, Power Setting MID A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-}$) | CO ($\times 10^{-}$) | HC ($\times 10^{-}$) | NO ($\times 10^{-}$) | $NO_x$ ($\times 10^{-}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -91.87 | 2.7 | 0.04 | 6.4 | 0.3 | 0.3 | .00005 | 13.8 | 16.0 | 2.8 | 2.8 | 13.64 | | | | | | | | |
| 1 | -75.52 | 4.8 | 0.05 | 5.6 | 0.4 | 0.4 | .0001 | 19.3 | 11.2 | 2.8 | 2.8 | 13.64 | | | | | | | | |
| 1 | -60.70 | 14.9 | 0.10 | 5.8 | 1.3 | 1.2 | .0003 | 30.2 | 5.9 | 4.2 | 3.9 | 13.64 | | | | | | | | |
| 1 | -45.92 | 36.2 | 0.25 | 6.8 | 2.9 | 2.9 | .0011 | 28.3 | 2.7 | 3.7 | 3.7 | 13.64 | | | | | | | | |
| 1 | -30.66 | 66.6 | 0.51 | 8.1 | 4.7 | 5.5 | .0024 | 25.7 | 1.6 | 3.0 | 3.5 | 13.80 | | | | | | | | |
| 1 | -15.57 | 102 | 0.76 | 8.3 | 6.5 | 8.1 | .0036 | 26.4 | 1.1 | 2.8 | 3.4 | 14.00 | | | | | | | | |
| 1 | -0.13 | 116 | 0.94 | 8.8 | 7.1 | 9.5 | .0045 | 24.5 | 0.9 | 2.5 | 3.3 | 14.20 | | | | | | | | |
| 1 | 15.32 | 102 | 0.79 | 9.0 | 5.9 | 8.1 | .0037 | 25.6 | 1.1 | 2.4 | 3.3 | 14.00 | | | | | | | | |
| 1 | 30.41 | 70.8 | 0.51 | 7.3 | 4.6 | 5.9 | .0024 | 27.3 | 1.4 | 2.9 | 3.7 | 13.80 | | | | | | | | |
| 1 | 45.67 | 44.4 | 0.30 | 6.5 | 3.0 | 3.8 | .0013 | 29.3 | 2.2 | 3.3 | 4.1 | 13.64 | | | | | | | | |
| 1 | 60.46 | 22.1 | 0.16 | 5.3 | 1.5 | 1.8 | .0006 | 27.3 | 3.3 | 3.1 | 3.6 | 13.64 | | | | | | | | |
| 1 | 75.28 | 11.4 | 0.80 | 4.8 | 0.8 | 0.8 | .0003 | 28.0 | 5.9 | 3.4 | 3.4 | 13.64 | | | | | | | | |

## Table 48. Summary of Plume Measurements, J85-5, Run No. 31-4.

Run Date 12/18/74, Power Setting MAX A/B, Axial Station 30 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel (x $10^-$ ) | CO (x $10^-$ ) | HC (x $10^-$ ) | NO (x $10^-$ ) | $NO_x$ (x $10^-$ ) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -91.90 | 2.7 | 0.02 | 4.4 | 0.3 | 0.4 | 0 | 27.3 | 21.7 | 5.5 | 6.9 | 13.64 | | | | | | | | |
| 1 | -76.11 | 5.1 | 0.04 | 3.7 | 0.5 | 0.3 | .00006 | 25.0 | 9.1 | 4.0 | 2.7 | 13.64 | | | | | | | | |
| 1 | -61.32 | 15.3 | 0.09 | 4.2 | 1.4 | 1.4 | .0003 | 32.4 | 4.5 | 5.0 | 5.0 | 13.64 | | | | | | | | |
| 1 | -46.27 | 35.8 | 0.35 | 4.0 | 3.7 | 3.8 | .0016 | 20.1 | 1.1 | 3.4 | 3.5 | 13.65 | | | | | | | | |
| 1 | -31.04 | 64.1 | 0.71 | 4.1 | 6.7 | 6.9 | .0034 | 17.8 | 0.6 | 3.1 | 3.2 | 13.80 | | | | | | | | |
| 1 | -15.57 | 97.2 | 1.29 | 4.1 | 9.9 | 10.8 | .0062 | 14.9 | 0.3 | 2.5 | 2.8 | 14.25 | | | | | | | | |
| 1 | -0.13 | 113 | 1.62 | 3.9 | 10.9 | 12.8 | .0078 | 13.9 | 0.2 | 2.2 | 2.6 | 14.50 | | | | | | | | |
| 1 | 15.18 | 97.2 | 1.22 | 3.9 | 9.2 | 11.1 | .0058 | 15.8 | 0.3 | 2.5 | 3.0 | 14.00 | | | | | | | | |
| 1 | 30.54 | 68.7 | 0.74 | 3.7 | 6.6 | 7.9 | .0035 | 18.3 | 0.5 | 2.9 | 3.5 | 13.80 | | | | | | | | |
| 1 | 45.78 | 40.3 | 0.38 | 3.5 | 3.9 | 4.1 | .0017 | 20.7 | 0.9 | 3.3 | 3.5 | 13.64 | | | | | | | | |
| 1 | 60.83 | 20.3 | 0.15 | 3.6 | 1.6 | 1.7 | .0006 | 27.6 | 2.5 | 3.6 | 3.7 | 13.64 | | | | | | | | |
| 1 | 75.63 | 7.6 | 0.06 | 3.5 | 0.8 | 0.8 | .0001 | 26.0 | 6.0 | 4.3 | 4.7 | 13.64 | | | | | | | | |
| 1 | 90.11 | 3.8 | 0.02 | 3.4 | 0.3 | 0.3 | 0 | 31.1 | 14.0 | 3.4 | 4.5 | 13.64 | | | | | | | | |

## Table 49. Summary of Plume Measurements, J79-15, Run No. 40-1.

Run Date 1/9/75, Power Setting MIL, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-5}$) | HC ($\times 10^{-6}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -13.29 | 21.0 | 0.76 | 2.9 | 24.9 | 24.9 | .0036 | 5.5 | 0.4 | 10.7 | 10.7 | 1438 | 13.56 | 809 | | 0.46 | 0.25 | 0.2 | 0.49 | 0.49 |
| 1 | -11.11 | 40.2 | 2.15 | 2.4 | 65.1 | 72.7 | .0102 | 3.7 | 0.1 | 10.1 | 11.3 | 21.00 | | 1263 | | 3.05 | 1.13 | 0.3 | 3.08 | 3.45 |
| 1 | -8.93 | 56.4 | 3.28 | 1.2 | 111 | 119 | .0156 | 3.4 | 0 | 11.4 | 12.3 | 33.50 | | 1620 | | 6.44 | 2.19 | 0 | 7.34 | 7.92 |
| 1 | -4.56 | 59.3 | 3.23 | 1.2 | 103 | 113 | .0154 | 3.7 | 0 | 10.8 | 11.8 | 34.50 | | 1607 | | 6.54 | 2.42 | 0 | 7.06 | 7.72 |
| 1 | -2.38 | 60.1 | 3.14 | 2.9 | 98.5 | 109 | .0150 | 3.8 | 0.1 | 10.6 | 11.7 | 34.60 | | 1578 | | 6.44 | 2.45 | 0.6 | 6.82 | 7.53 |
| 1 | -0.41 | 61.2 | 3.11 | 1.2 | 96.3 | 106 | .0148 | 3.9 | 0 | 10.4 | 11.5 | 34.60 | | 1568 | | 6.39 | 2.49 | 0 | 6.65 | 7.35 |
| 1 | 2.06 | 60.9 | 3.11 | 0.6 | 95.4 | 106 | .0148 | 3.9 | 0 | 10.3 | 11.5 | 34.70 | | 1568 | | 6.40 | 2.50 | 0 | 6.59 | 7.36 |
| 1 | 4.24 | 62.3 | 3.24 | 2.4 | 103 | 114 | .0154 | 3.8 | 0.1 | 10.8 | 11.9 | 34.50 | | 1608 | | 6.55 | 2.49 | 0.7 | 7.07 | 7.79 |
| 1 | 6.42 | 63.1 | 3.30 | 0.6 | 105 | 117 | .0157 | 3.8 | 0 | 10.7 | 12.0 | 34.25 | | 1628 | | 6.59 | 2.50 | 0 | 7.05 | 7.91 |
| 1 | 8.60 | 62.0 | 3.14 | 0 | 100 | 112 | .0150 | 3.9 | 0 | 10.8 | 12.0 | 33.80 | | 1578 | | 6.32 | 2.46 | 0 | 6.83 | 7.58 |
| 1 | 13.33 | 30.9 | 1.08 | 1.2 | 33.1 | 36.2 | .0051 | 5.7 | 0.1 | 10.1 | 11.1 | 15.50 | | 896 | | 0.94 | 0.54 | 0.1 | 0.95 | 1.04 |
| 2 | -12.29 | 34.4 | 1.29 | 1.2 | 41.7 | 43.4 | .0061 | 5.3 | 0.1 | 10.7 | 11.1 | 15.00 | | 963 | | 0.95 | 0.50 | 0.1 | 1.02 | 1.05 |
| 2 | -10.45 | 53.3 | 2.68 | 0.6 | 86.6 | 95.6 | .0127 | 4.0 | 0 | 10.9 | 12.0 | 25.10 | | 1433 | | 4.36 | 1.74 | 0 | 4.75 | 5.23 |
| 2 | -8.23 | 61.7 | 3.31 | 0.6 | 108 | 119 | .0158 | 3.7 | 0 | 10.9 | 12.1 | 34.00 | | 1631 | | 6.57 | 2.43 | 0 | 7.16 | 7.95 |
| 2 | -6.38 | 64.2 | 3.31 | 1.8 | 105 | 117 | .0158 | 3.9 | 0.1 | 10.7 | 12.0 | 34.50 | | 1631 | | 6.65 | 2.59 | 0.7 | 7.12 | 7.98 |
| 2 | -4.18 | 66.0 | 3.19 | 11.2 | 97.8 | 112 | .0152 | 4.1 | 0.4 | 10.3 | 11.8 | 34.50 | | 1594 | | 6.49 | 2.66 | 2.6 | 6.68 | 7.66 |
| 2 | -2.37 | 64.8 | 3.12 | 4.1 | 97.6 | 110 | .0148 | 4.1 | 0.1 | 10.5 | 11.9 | 34.80 | | 1571 | | 6.44 | 2.64 | 0.6 | 6.76 | 7.66 |
| 2 | -0.84 | 63.4 | 3.04 | 0.6 | 96.0 | 107 | .0145 | 4.2 | 0 | 10.6 | 11.8 | 35.00 | | 1547 | | 6.36 | 2.67 | 0 | 6.74 | 7.50 |
| 2 | 1.99 | 62.8 | 3.01 | 4.1 | 94.9 | 106 | .0143 | 4.2 | 0.1 | 10.6 | 11.8 | 35.00 | | 1536 | | 6.31 | 2.65 | 0.6 | 6.69 | 7.45 |
| 2 | 3.78 | 62.6 | 3.04 | 1.2 | 96.9 | 109 | .0145 | 4.1 | 0 | 10.7 | 12.0 | 35.00 | | 1547 | | 6.36 | 2.61 | 0 | 6.81 | 7.63 |
| 2 | 5.98 | 64.2 | 3.14 | 0 | 105 | 117 | .0150 | 4.1 | 0 | 11.3 | 12.6 | 34.80 | | 1578 | | 6.47 | 2.65 | 0 | 7.31 | 8.15 |
| 2 | 7.82 | 65.6 | 3.17 | 0 | 102 | 115 | .0151 | 4.1 | 0 | 10.8 | 12.2 | 34.20 | | 1588 | | 6.42 | 2.63 | 0 | 6.93 | 7.83 |
| 2 | 10.41 | 56.8 | 2.65 | 0.6 | 87.9 | 98.2 | .0126 | 4.3 | 0 | 11.1 | 12.4 | 28.00 | | 1424 | | 4.80 | 2.06 | 0 | 5.33 | 5.95 |
| 2 | 12.63 | 36.3 | 1.25 | 1.2 | 41.3 | 45.1 | .0059 | 5.8 | 0.1 | 10.9 | 12.0 | 16.00 | | 947 | | 1.19 | 0.69 | 0.1 | 1.30 | 1.43 |

## Table 50. Summary of Plume Measurements, J79-15, Run No. 40-2.

Run Date 1/9/75, Power Setting MIN A B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-4}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -14.01 | 134 | 0.87 | 66.4 | 23.9 | 26.8 | .0042 | 30.2 | 7.6 | 8.9 | 10.0 | 14.90 | 13.56 | 839 | | 0.66 | 0.20 | 0.05 | 0.59 | 0.66 |
| 1 | -11.47 | 358 | 2.71 | 292 | 62.9 | 82.5 | .0132 | 25.8 | 10.8 | 7.6 | 10.0 | 24.70 | | 1448 | | 4.42 | 1.14 | 0.48 | 3.36 | 4.42 |
| 1 | - 8.93 | 878 | 4.66 | 792 | 73.8 | 120 | .0228 | 36.3 | 17.1 | 5.2 | 8.5 | 33.30 | | 2030 | | 8.26 | 3.00 | 1.41 | 4.30 | 7.02 |
| 1 | - 6.01 | 1190 | 8.46 | 233 | 97.6 | 133 | .0401 | 27.6 | 2.9 | 4.0 | 5.5 | 33.40 | | 2991 | | 11.62 | 3.21 | 0.34 | 4.65 | 6.39 |
| 1 | - 3.47 | 2563 | 8.51 | 1387 | 55.8 | 116 | .0415 | 57.4 | 16.9 | 2.2 | 4.6 | 33.00 | | 3011 | | 11.85 | 6.80 | 2.00 | 2.61 | 5.45 |
| 1 | - 0.97 | 3660 | 6.36 | 6411 | 15.6 | 86.6 | .0348 | 98.6 | 92.1 | 0.7 | 4.1 | 32.40 | | 2494 | | 10.88 | 10.73 | 10.02 | 0.76 | 4.46 |
| 1 | 1.71 | 3433 | 7.00 | 4457 | 21.5 | 91.6 | .0366 | 87.7 | 61.1 | 1.0 | 4.1 | 32.80 | | 2654 | | 11.17 | 9.80 | 6.82 | 1.12 | 4.56 |
| 1 | 4.24 | 1113 | 9.04 | 396 | 91.0 | 124 | .0427 | 24.2 | 4.7 | 3.5 | 4.8 | 33.50 | | 3122 | | 12.10 | 2.93 | 0.57 | 4.24 | 5.81 |
| 1 | 7.15 | 807 | 6.15 | 272 | 83.7 | 123 | .0295 | 25.7 | 4.6 | 4.7 | 6.8 | 33.60 | | 2430 | | 9.69 | 2.49 | 0.45 | 4.55 | 6.59 |
| 1 | 9.70 | 584 | 3.95 | 402 | 71.2 | 114 | .0192 | 28.8 | 10.3 | 6.0 | 9.6 | 33.00 | | 1825 | | 7.33 | 2.11 | 0.75 | 4.40 | 7.04 |
| 1 | 12.24 | 434 | 2.90 | 277 | 55.8 | 84.4 | .0141 | 29.2 | 9.6 | 6.3 | 9.6 | 25.20 | | 1507 | | 4.71 | 1.38 | 0.45 | 2.97 | 4.52 |
| 1 | 14.78 | 189 | 1.10 | 101 | 24.6 | 34.9 | .0053 | 33.4 | 9.0 | 7.2 | 10.2 | 15.50 | | 904 | | 0.98 | 0.33 | 0.09 | 0.71 | 1.00 |
| 2 | -14.88 | 194 | 0.85 | 71.7 | 17.5 | 25.3 | .0041 | 44.0 | 8.2 | 6.6 | 9.5 | 14.10 | | 836 | | 0.42 | 0.18 | 0.03 | 0.28 | 0.40 |
| 2 | -12.29 | 701 | 3.35 | 390 | 52.5 | 92.1 | .0164 | 40.5 | 11.6 | 5.1 | 9.0 | 24.00 | | 1649 | | 4.96 | 2.01 | 0.58 | 2.53 | 4.46 |
| 2 | - 9.34 | 1056 | 5.84 | 503 | 71.2 | 120 | .0282 | 35.2 | 8.9 | 4.1 | 6.9 | 33.10 | | 2350 | | 9.35 | 3.29 | 0.83 | 3.83 | 6.45 |
| 2 | - 6.75 | 812 | 8.68 | 74.7 | 108 | 135 | .0408 | 18.5 | 0.9 | 4.4 | 5.5 | 33.10 | | 3039 | | 11.64 | 2.15 | 0.10 | 5.12 | 6.40 |
| 2 | - 3.81 | 1932 | 8.54 | 1018 | 61.8 | 114 | .0412 | 43.6 | 12.5 | 2.5 | 4.6 | 32.80 | | 3016 | | 11.70 | 5.10 | 1.46 | 2.93 | 5.38 |
| 2 | - 1.36 | 3384 | 6.72 | 4666 | 16.7 | 85.9 | .0354 | 89.4 | 66.0 | 0.8 | 4.0 | 32.30 | | 2585 | | 10.84 | 9.69 | 7.15 | 0.87 | 4.34 |
| 2 | 1.65 | 3688 | 6.86 | 939 | 15.8 | 85.9 | .0344 | 101 | 13.7 | 0.8 | 4.1 | 32.30 | | 2634 | | 10.43 | 10.53 | 1.43 | 0.83 | 4.28 |
| 2 | 4.51 | 1775 | 8.45 | 843 | 59.8 | 106 | .0406 | 40.6 | 10.5 | 2.4 | 4.3 | 33.00 | | 2994 | | 11.65 | 4.72 | 1.22 | 2.80 | 5.01 |
| 2 | 7.09 | 848 | 7.19 | 145 | 85.5 | 119 | .0342 | 23.2 | 2.1 | 4.1 | 5.7 | 33.40 | | 2690 | | 10.55 | 2.45 | 0.22 | 4.33 | 6.01 |
| 2 | 10.04 | 680 | 4.17 | 342 | 64.6 | 111 | .0203 | 31.8 | 8.3 | 5.2 | 8.8 | 33.40 | | 1891 | | 7.65 | 2.43 | 0.63 | 3.98 | 6.73 |
| 2 | 12.63 | 348 | 2.25 | 163 | 40.0 | 63.8 | .0109 | 30.3 | 7.2 | 5.8 | 9.3 | 19.50 | | 1298 | | 2.88 | 0.87 | 0.21 | 1.67 | 2.68 |
| 2 | 14.11 | 214 | 1.22 | 81.1 | 23.9 | 36.6 | .0059 | 34.2 | 6.6 | 6.3 | 9.7 | 15.00 | | 940 | | 0.92 | 0.31 | 0.06 | 0.58 | 0.89 |
| | | | | | | | | | | | | | | | | | | | | |

## Table 51. Summary of Plume Measurements, J79-15, Run No. 40-3.

Run Date 1/9/75, Power Setting MID A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | $Fuel_{-3}$ ($\times 10^{-3}$) | $CO_{-4}$ ($\times 10^{-4}$) | $HC_{-4}$ ($\times 10^{-4}$) | $NO_{-5}$ ($\times 10^{-5}$) | $NO_{x-5}$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -15.10 | 404 | 0.82 | 3134 | 5.6 | 21.4 | .0056 | 68.3 | 267 | 1.6 | 6.0 | 14.70 | 13.55 | 831 | | 0.83 | 0.57 | 2.22 | 0.13 | 0.50 |
| 1 | -12.20 | 1411 | 2.65 | 9268 | 7.8 | 54.6 | .0178 | 75.3 | 254 | 0.7 | 4.9 | 23.00 | | 1433 | | 5.52 | 4.16 | 14.02 | 0.39 | 2.70 |
| 1 | -9.29 | 3219 | 5.71 | 7762 | 18.2 | 92.1 | .0322 | 93.8 | 120 | 0.9 | 4.7 | 32.80 | | 2323 | | 10.61 | 9.95 | 12.73 | 0.95 | 4.99 |
| 1 | -6.74 | 3883 | 10.24 | 769 | 119 | 158 | .0495 | 72.4 | 7.9 | 4.0 | 5.3 | 33.00 | | 3409 | | 13.14 | 9.51 | 1.04 | 5.26 | 6.96 |
| 1 | -3.83 | 3219 | 10.23 | 532 | 115 | 155 | .0490 | 60.6 | 5.5 | 3.9 | 5.3 | 32.60 | | 3400 | | 12.91 | 7.82 | 0.71 | 5.03 | 6.84 |
| 1 | -0.97 | 4821 | 7.07 | 4129 | 22.4 | 98.7 | .0374 | 120 | 55.4 | 1.0 | 4.3 | 31.50 | | 2689 | | 10.97 | 13.16 | 6.08 | 1.10 | 4.72 |
| 1 | 2.06 | 4221 | 8.02 | 2328 | 38.2 | 113 | .0405 | 97.0 | 29.0 | 1.6 | 4.6 | 32.00 | | 2913 | | 11.50 | 11.16 | 3.34 | 1.84 | 5.29 |
| 1 | 4.96 | 2011 | 10.52 | 216 | 125 | 155 | .0496 | 37.4 | 2.2 | 4.2 | 5.2 | 33.00 | | 3454 | | 13.07 | 4.89 | 0.29 | 5.49 | 6.80 |
| 1 | 7.51 | 2990 | 8.68 | 730 | 83.5 | 142 | .0421 | 65.9 | 8.8 | 3.3 | 5.6 | 33.00 | | 3059 | | 11.93 | 7.86 | 1.05 | 3.94 | 6.68 |
| 1 | 10.42 | 3219 | 5.23 | 6099 | 14.5 | 87.7 | .0292 | 104 | 104 | 0.8 | 4.9 | 32.90 | | 2201 | | 9.95 | 10.35 | 10.35 | 0.80 | 4.88 |
| 1 | 13.33 | 1723 | 2.98 | 5684 | 8.7 | 58.7 | .0178 | 92.1 | 157 | 0.8 | 5.3 | 23.00 | | 1544 | | 5.30 | 4.88 | 8.32 | 0.42 | 2.81 |
| 1 | 16.23 | 459 | 0.86 | 1844 | 5.6 | 20.3 | .0052 | 83.8 | 170 | 1.7 | 6.1 | 14.50 | | 843 | | 0.69 | 0.58 | 1.17 | 0.12 | 0.42 |
| 2 | -14.88 | 731 | 1.47 | 1575 | 6.2 | 33.2 | .0081 | 85.7 | 93.7 | 1.2 | 6.5 | 14.80 | | 1040 | | 1.12 | 0.96 | 1.05 | 0.13 | 0.73 |
| 2 | -12.29 | 2323 | 5.90 | 2328 | 33.6 | 101 | .0300 | 72.7 | 38.6 | 1.8 | 5.5 | 30.40 | | 2376 | | 9.19 | 6.68 | 3.55 | 1.65 | 5.05 |
| 2 | -9.34 | 2757 | 8.92 | 458 | 92.3 | 144 | .0430 | 59.6 | 5.4 | 3.6 | 5.6 | 32.50 | | 3112 | | 11.90 | 7.09 | 0.64 | 4.28 | 6.66 |
| 2 | -6.75 | 3705 | 11.27 | 27.6 | 153 | 184 | .0535 | 63.6 | 0.3 | 4.8 | 5.8 | 32.20 | | 3622 | | 13.44 | 8.55 | 0.04 | 6.45 | 7.80 |
| 2 | -3.81 | 2892 | 9.53 | 532 | 89.7 | 139 | .0458 | 58.5 | 5.9 | 3.3 | 5.1 | 32.00 | | 3248 | | 12.21 | 7.14 | 0.72 | 4.03 | 6.23 |
| 2 | -1.36 | 4391 | 7.56 | 2919 | 24.8 | 102 | .0388 | 106 | 37.8 | 1.1 | 4.3 | 31.60 | | 2805 | | 11.15 | 11.82 | 4.22 | 1.23 | 4.79 |
| 2 | 1.65 | 4505 | 8.11 | 2113 | 37.1 | 111 | .0410 | 102 | 26.0 | 1.5 | 4.5 | 31.60 | | 2937 | | 11.45 | 11.68 | 2.98 | 1.72 | 5.15 |
| 2 | 4.51 | 2660 | 9.93 | 317 | 93.6 | 136 | .0473 | 51.9 | 3.4 | 3.3 | 4.8 | 31.50 | | 3333 | | 12.27 | 6.37 | 0.42 | 4.05 | 5.89 |
| 2 | 7.09 | 2222 | 10.12 | 56.5 | 121 | 155 | .0479 | 42.9 | 0.6 | 4.2 | 5.4 | 32.50 | | 3372 | | 12.64 | 5.42 | 0.08 | 5.31 | 6.83 |
| 2 | 10.04 | 3110 | 6.46 | 2919 | 26.6 | 103 | .0332 | 87.7 | 43.9 | 1.3 | 5.1 | 32.40 | | 2525 | | 10.35 | 9.08 | 4.54 | 1.35 | 5.28 |
| 2 | 12.63 | 2116 | 4.08 | 3403 | 12.3 | 77.8 | .0220 | 90.9 | 76.2 | 0.9 | 5.7 | 24.50 | | 1877 | | 6.32 | 5.74 | 4.82 | 0.57 | 3.60 |
| 2 | 15.21 | 721 | 1.48 | 1602 | 4.8 | 30.1 | .0082 | 83.8 | 94.5 | 0.9 | 5.8 | 15.00 | | 1044 | | 1.21 | 1.01 | 1.14 | 0.11 | 0.70 |
| | | | | | | | | | | | | | | | | | | | | |

## Table 52. Summary of Plume Measurements, J79-15, Run No. 41-1.

Run Date 1/10/75, Power Setting MAX A/B, Axial Station 0 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-3}$) | CO ($\times 10^{-4}$) | HC ($\times 10^{-5}$) | NO ($\times 10^{-5}$) | $NO_x$ ($\times 10^{-5}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | -16.55 | 726 | 1.77 | 21.9 | 21.4 | 28.3 | .0088 | 78.5 | 1.2 | 3.9 | 5.1 | 14.50 | 13.35 | 1144 | | 1.01 | 0.79 | 0.12 | 0.39 | 0.52 |
| 1 | -13.45 | 2123 | 6.59 | 10.1 | 72.1 | 92.7 | .0319 | 62.4 | 0.2 | 3.7 | 4.8 | 23.00 | | 2549 | | 7.22 | 4.51 | 0.14 | 2.67 | 3.47 |
| 1 | -10.55 | 3919 | 11.15 | 2.4 | 135 | 161 | .0531 | 67.8 | 0 | 4.3 | 5.1 | 32.00 | | 3594 | | 13.31 | 9.02 | 0 | 5.72 | 6.79 |
| 1 | -7.28 | 7916 | 11.88 | 1.8 | 152 | 178 | .0581 | 125 | 0 | 4.4 | 5.2 | 32.50 | | 3771 | | 14.29 | 17.86 | 0 | 6.29 | 7.43 |
| 1 | -4.37 | 4116 | 10.42 | 264 | 111 | 150 | .0501 | 75.7 | 2.7 | 3.7 | 5.0 | 32.10 | | 3442 | | 12.91 | 9.77 | 3.49 | 4.78 | 6.46 |
| 1 | -1.13 | 5355 | 6.69 | 5158 | 19.9 | 94.4 | .0364 | 138 | 71.1 | 0.9 | 4.3 | 30.50 | | 2589 | | 10.61 | 14.64 | 75.44 | 0.95 | 4.56 |
| 1 | 2.24 | 4099 | 8.58 | 1745 | 50.5 | 117 | .0427 | 89.1 | 20.7 | 2.0 | 4.6 | 31.50 | | 3037 | | 11.66 | 10.39 | 24.14 | 2.33 | 5.36 |
| 1 | 5.14 | 4200 | 11.25 | 80.0 | 133 | 159 | .0537 | 71.8 | 0.8 | 4.2 | 5.0 | 32.70 | | 3616 | | 13.64 | 9.79 | 1.09 | 5.73 | 6.82 |
| 1 | 8.42 | 3919 | 11.21 | 33.2 | 137 | 160 | .0534 | 67.4 | 0.3 | 4.3 | 5.0 | 32.80 | | 3606 | | 13.62 | 9.18 | 40.86 | 5.86 | 6.81 |
| 1 | 11.51 | 1938 | 10.02 | 31.4 | 114 | 135 | .0472 | 37.9 | 0.3 | 4.0 | 4.8 | 32.10 | | 3340 | | 12.41 | 4.70 | 0.37 | 4.96 | 5.96 |
| 1 | 14.78 | 1729 | 3.79 | 488 | 23.8 | 57.0 | .0190 | 86.0 | 12.6 | 2.0 | 4.8 | 17.80 | | 1791 | | 3.59 | 3.09 | 4.52 | 0.72 | 1.72 |
| 1 | 16.59 | 751 | 1.34 | 340 | 9.5 | 24.0 | .0069 | 104 | 23.9 | 2.2 | 5.5 | 14.30 | | 986 | | 0.75 | 0.78 | 1.79 | 0.17 | 0.41 |
| 2 | -15.89 | 1134 | 3.23 | 41.5 | 33.5 | 55.1 | .0159 | 67.7 | 1.3 | 3.4 | 5.6 | 15.10 | | 1616 | | 1.94 | 1.31 | 0.25 | 0.66 | 1.09 |
| 2 | -13.06 | 4657 | 10.81 | 9.5 | 123 | 154 | .0520 | 82.5 | 0.1 | 4.0 | 5.0 | 31.20 | | 3529 | | 12.89 | 10.63 | 0.13 | 5.16 | 6.45 |
| 2 | -10.06 | 5326 | 11.56 | 4.7 | 139 | 167 | .0555 | 88.0 | 0 | 4.2 | 5.1 | 31.80 | | 3686 | | 13.62 | 11.99 | 0 | 5.72 | 6.95 |
| 2 | -7.23 | 4285 | 11.51 | 7.1 | 144 | 174 | .0549 | 71.7 | 0.1 | 4.4 | 5.3 | 31.80 | | 3669 | | 13.50 | 9.68 | 0.14 | 5.94 | 7.16 |
| 2 | -4.24 | 3253 | 9.61 | 544 | 83.6 | 133 | .0463 | 65.0 | 6.0 | 3.0 | 4.8 | 31.20 | | 3263 | | 12.04 | 7.83 | 7.22 | 3.61 | 5.78 |
| 2 | -1.37 | 5179 | 7.45 | 3679 | 18.4 | 95.5 | .0391 | 124 | 47.5 | 0.8 | 4.0 | 30.40 | | 2778 | | 10.90 | 13.52 | 51.78 | 0.87 | 4.36 |
| 2 | 2.02 | 5237 | 7.88 | 3195 | 21.2 | 96.6 | .0408 | 120 | 39.6 | 0.9 | 3.9 | 30.40 | | 2882 | | 11.14 | 13.37 | 44.11 | 1.00 | 4.34 |
| 2 | 4.95 | 3391 | 10.08 | 318 | 91.0 | 133 | .0483 | 64.8 | 3.4 | 3.2 | 4.6 | 31.50 | | 3365 | | 12.44 | 8.06 | 4.23 | 3.98 | 5.72 |
| 2 | 7.95 | 4513 | 11.48 | 14.2 | 131 | 161 | .0548 | 75.5 | 0.1 | 4.0 | 4.9 | 32.00 | | 3665 | | 13.57 | 10.25 | 0.14 | 5.43 | 6.65 |
| 2 | 10.95 | 4371 | 11.47 | 7.7 | 132 | 160 | .0547 | 73.3 | 0.1 | 4.1 | 4.9 | 32.00 | | 3661 | | 13.55 | 9.93 | 0.14 | 5.56 | 6.64 |
| 2 | 13.96 | 1886 | 6.63 | 27.9 | 64.1 | 93.6 | .0320 | 55.2 | 0.4 | 3.3 | 4.8 | 21.50 | | 2558 | | 6.67 | 3.68 | 0.27 | 2.20 | 3.20 |
| 2 | 15.83 | 1314 | 3.02 | 169 | 19.7 | 46.8 | .0151 | 82.7 | 5.5 | 2.1 | 5.0 | 15.50 | | 1556 | | 2.10 | 1.74 | 1.16 | 0.44 | 1.05 |

## Table 53. Summary of Plume Measurements, J79-15, Run No. 43-1.

Run Date 1/14/75, Power Setting MIL, Axial Station 60 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel (x $10^-$ ) | CO (x $10^-$ ) | HC (x $10^-$ ) | NO (x $10^-$ ) | $NO_x$ (x $10^-$ ) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | 143.90 | 4.9 | 0.06 | 2.9 | 3.0 | 2.6 | .0002 | 15.1 | 4.6 | 15.4 | 13.5 | 13.70 | | | | | | | | |
| 1 | -96.46 | 5.5 | 0.07 | 3.0 | 3.6 | 3.6 | .0002 | 15.1 | 4.1 | 16.3 | 15.9 | 13.70 | | | | | | | | |
| 1 | -77.83 | 6.2 | 0.10 | 2.7 | 5.0 | 5.0 | .0004 | 11.8 | 2.6 | 15.6 | 15.6 | 13.80 | | | | | | | | |
| 1 | -58.65 | 7.6 | 0.16 | 2.7 | 6.7 | 6.7 | .0006 | 9.4 | 1.7 | 13.8 | 13.6 | 13.90 | | | | | | | | |
| 1 | -39.34 | 8.6 | 0.21 | 3.0 | 9.0 | 9.4 | .0010 | 8.1 | 1.4 | 14.0 | 14.6 | 13.80 | | | | | | | | |
| 1 | -19.59 | 9.6 | 0.26 | 2.8 | 11.9 | 11.9 | .0011 | 7.3 | 1.1 | 14.8 | 14.8 | 14.00 | | | | | | | | |
| 1 | 0.38 | 10.1 | 0.30 | 2.6 | 13.2 | 13.0 | .0013 | 6.6 | 0.9 | 14.3 | 14.1 | 14.40 | | | | | | | | |
| 1 | 20.35 | 10.1 | 0.31 | 2.5 | 13.2 | 13.7 | .0014 | 6.5 | 0.8 | 14.0 | 14.5 | 14.20 | | | | | | | | |
| 1 | 40.17 | 9.6 | 0.28 | 2.5 | 12.3 | 12.3 | .0012 | 6.7 | 0.9 | 14.2 | 14.2 | 14.00 | | | | | | | | |
| 1 | 59.44 | 8.6 | 0.23 | 2.6 | 9.4 | 10.5 | .0010 | 7.6 | 1.1 | 13.6 | 15.2 | 13.90 | | | | | | | | |
| 1 | 78.58 | 8.1 | 0.17 | 2.6 | 8.2 | 7.8 | .0007 | 9.5 | 1.5 | 15.8 | 15.0 | 13.80 | | | | | | | | |
| 1 | 97.18 | 6.7 | 0.11 | 2.5 | 5.5 | 5.7 | .0004 | 12.1 | 2.2 | 16.2 | 16.7 | 13.70 | | | | | | | | |
| 1 | 110.31 | 6.7 | 0.10 | 2.5 | 4.2 | 4.6 | .0003 | 13.6 | 2.5 | 14.0 | 15.2 | 13.70 | | | | | | | | |
| 1 | 143.67 | 4.5 | 0.06 | 2.8 | 2.3 | 3.5 | .0001 | 15.4 | 4.8 | 12.8 | 19.4 | 13.70 | | | | | | | | |

## Table 54. Summary of Plume Measurements, J79-15, Run No. 43-2.

Run Date 1/14/75, Power Setting MIN A/B, Axial Station 60 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-}$) | CO ($\times 10^{-}$) | HC ($\times 10^{-}$) | NO ($\times 10^{-}$) | $NO_x$ ($\times 10^{-}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | 143.67 | 12.7 | 0.07 | 4.7 | 2.0 | 2.0 | .0002 | 35.2 | 6.6 | 9.1 | 9.1 | 13.70 | | | | | | | | |
| 1 | -96.49 | 19.2 | 0.12 | 7.0 | 3.3 | 3.6 | .0004 | 32.5 | 5.9 | 9.1 | 10.1 | 13.80 | | | | | | | | |
| 1 | -77.87 | 28.2 | 0.17 | 8.1 | 4.6 | 4.6 | .0007 | 33.0 | 4.8 | 8.8 | 8.8 | 13.85 | | | | | | | | |
| 1 | -58.71 | 37.7 | 0.25 | 11.9 | 5.9 | 7.3 | .0011 | 30.0 | 4.8 | 7.7 | 9.5 | 13.95 | | | | | | | | |
| 1 | -39.43 | 54.0 | 0.38 | 14.9 | 7.3 | 10.6 | .0018 | 27.7 | 3.8 | 6.2 | 8.9 | 14.00 | | | | | | | | |
| 1 | -19.59 | 66.4 | 0.48 | 17.3 | 8.8 | 12.0 | .0022 | 27.1 | 3.6 | 5.9 | 8.1 | 14.20 | | | | | | | | |
| 1 | 0.38 | 75.8 | 0.57 | 19.8 | 9.6 | 14.7 | .0027 | 26.2 | 3.4 | 5.5 | 8.4 | 14.50 | | | | | | | | |
| 1 | 20.35 | 75.2 | 0.56 | 19.7 | 9.2 | 14.8 | .0026 | 26.6 | 3.5 | 5.4 | 8.6 | 14.50 | | | | | | | | |
| 1 | 40.17 | 66.7 | 0.49 | 17.9 | 8.8 | 13.0 | .0023 | 27.0 | 3.6 | 5.8 | 8.7 | 14.20 | | | | | | | | |
| 1 | 59.44 | 53.7 | 0.37 | 14.9 | 6.8 | 10.9 | .0017 | 28.4 | 3.9 | 6.0 | 9.4 | 14.10 | | | | | | | | |
| 1 | 78.58 | 41.4 | 0.27 | 13.2 | 5.6 | 8.9 | .0012 | 30.2 | 4.8 | 6.7 | 10.7 | 13.90 | | | | | | | | |
| 1 | 97.18 | 31.8 | 0.20 | 10.1 | 4.0 | 6.1 | .0009 | 31.1 | 5.0 | 6.4 | 9.8 | 13.80 | | | | | | | | |
| 1 | 110.31 | 26.3 | 0.14 | 8.9 | 4.0 | 4.2 | .0005 | 37.1 | 6.3 | 9.3 | 9.7 | 13.70 | | | | | | | | |
| 1 | 143.67 | 15.1 | 0.09 | 7.1 | 1.8 | 2.3 | .0003 | 33.7 | 7.9 | 6.7 | 8.3 | 13.70 | | | | | | | | |

## Table 55. Summary of Plume Measurements, J79-15, Run No. 43-3.

Run Date 1/14/75, Power Setting MID A/B, Axial Station 60 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-}$) | CO ($\times 10^{-}$) | HC ($\times 10^{-}$) | NO ($\times 10^{-}$) | $NO_x$ ($\times 10^{-}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | 143.67 | 31.9 | 0.07 | 32.9 | 2.0 | 2.6 | .0002 | 82.9 | 42.8 | 8.6 | 11.3 | 13.70 | | | | | | | | |
| 1 | -96.49 | 64.8 | 0.14 | 61.1 | 2.7 | 4.8 | .0006 | 82.8 | 39.0 | 5.7 | 10.1 | 13.80 | | | | | | | | |
| 1 | -77.87 | 100 | 0.22 | 82.5 | 2.9 | 5.8 | .0010 | 84.7 | 34.9 | 4.1 | 8.1 | 13.90 | | | | | | | | |
| 1 | -58.71 | 145 | 0.32 | 145 | 3.3 | 8.8 | .0016 | 83.3 | 41.8 | 3.1 | 8.4 | 14.00 | | | | | | | | |
| 1 | -39.43 | 225 | 0.47 | 177 | 3.6 | 10.9 | .0024 | 87.6 | 34.6 | 2.3 | 7.0 | 14.10 | | | | | | | | |
| 1 | -19.59 | 290 | 0.55 | 234 | 3.8 | 13.9 | .0028 | 96.1 | 38.9 | 2.1 | 7.6 | 14.30 | | | | | | | | |
| 1 | 0.38 | 339 | 0.70 | 262 | 4.2 | 15.3 | .0035 | 89.4 | 34.7 | 1.8 | 6.7 | 14.50 | | | | | | | | |
| 1 | 20.35 | 342 | 0.69 | 288 | 4.0 | 16.1 | .0035 | 91.1 | 38.5 | 1.8 | 7.1 | 14.60 | | | | | | | | |
| 1 | 40.17 | 308 | 0.61 | 253 | 3.6 | 14.2 | .0031 | 92.9 | 38.4 | 1.8 | 7.1 | 14.50 | | | | | | | | |
| 1 | 59.44 | 252 | 0.48 | 204 | 3.5 | 11.7 | .0024 | 96.0 | 39.0 | 2.2 | 7.3 | 14.10 | | | | | | | | |
| 1 | 78.58 | 177 | 0.36 | 172 | 3.0 | 9.5 | .0018 | 88.6 | 43.0 | 2.5 | 7.8 | 14.00 | | | | | | | | |
| 1 | 97.18 | 110 | 0.24 | 128 | 2.6 | 7.5 | .0011 | 82.7 | 48.6 | 3.2 | 9.3 | 13.90 | | | | | | | | |
| 1 | 110.31 | 95.1 | 0.18 | 83.6 | 2.4 | 5.5 | .0008 | 94.9 | 41.8 | 3.9 | 9.0 | 13.80 | | | | | | | | |
| 1 | 143.67 | 55.0 | 0.11 | 47.5 | 1.7 | 3.5 | .0004 | 92.0 | 39.8 | 4.8 | 9.5 | 13.70 | | | | | | | | |

## Table 56. Summary of Plume Measurements, J79-15, Run No. 43-4.

Run Date 1/14/75, Power Setting MAX A/B, Axial Station 60 ft

| Probe No. | Radial Position in. | Measured Gas Composition | | | | | Fuel/Air Ratio | Emission Index | | | | Total Press psia | Static Press psia | Total Temp (Calc) °R | Total Temp (Meas) °R | Flow Rate, lb/sec-in.$^2$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | CO ppm | $CO_2$ % | HC ppm | NO ppm | $NO_x$ ppm | | CO | HC | NO | $NO_x$ | | | | | Fuel ($\times 10^{-}$) | CO ($\times 10^{-}$) | HC ($\times 10^{-}$) | NO ($\times 10^{-}$) | $NO_x$ ($\times 10^{-}$) |
| | | | | | | | | lb/1000 lb Fuel | | | | | | | | | | | | |
| 1 | 143.67 | 13.4 | 0.18 | 5.7 | 3.6 | 3.6 | .0007 | 15.1 | 3.3 | 6.8 | 6.8 | 13.50 | | | | | | | | |
| 1 | 92.46 | 24.2 | 0.41 | 4.8 | 7.3 | 7.3 | .0019 | 11.7 | 1.2 | 5.8 | 5.8 | 13.50 | | | | | | | | |
| 1 | 78.58 | 26.7 | 0.54 | 4.6 | 8.9 | 10.5 | .0025 | 9.9 | 0.9 | 5.5 | 6.4 | 13.80 | | | | | | | | |
| 1 | 59.44 | 34.7 | 0.78 | 4.6 | 12.1 | 13.7 | .0037 | 8.8 | 0.6 | 5.1 | 5.7 | 14.00 | | | | | | | | |
| 1 | 40.17 | 41.4 | 1.02 | 4.5 | 14.6 | 16.9 | .0048 | 8.1 | 0.4 | 4.7 | 5.5 | 14.10 | | | | | | | | |
| 1 | 20.35 | 44.4 | 1.17 | 4.6 | 16.0 | 18.9 | .0055 | 7.6 | 0.4 | 4.5 | 5.3 | 14.70 | | | | | | | | |
| 1 | 0.38 | 42.5 | 1.15 | 4.6 | 16.0 | 19.0 | .0054 | 7.4 | 0.4 | 4.6 | 5.5 | 14.80 | | | | | | | | |
| 1 | -19.59 | 37.7 | 0.89 | 4.6 | 12.8 | 15.2 | .0042 | 8.4 | 0.5 | 4.7 | 5.6 | 14.20 | | | | | | | | |
| 1 | -39.43 | 32.2 | 0.67 | 4.8 | 10.5 | 12.7 | .0031 | 9.6 | 0.7 | 5.2 | 6.2 | 14.00 | | | | | | | | |
| 1 | -58.71 | 24.6 | 0.46 | 4.7 | 7.8 | 9.3 | .0021 | 10.6 | 1.0 | 5.5 | 6.6 | 13.80 | | | | | | | | |
| 1 | -77.87 | 17.9 | 0.29 | 5.0 | 5.5 | 6.4 | .0013 | 12.1 | 1.7 | 6.1 | 7.1 | 13.80 | | | | | | | | |
| 1 | -91.50 | 16.8 | 0.28 | 4.8 | 5.0 | 6.8 | .0012 | 11.8 | 1.7 | 5.8 | 7.9 | 13.80 | | | | | | | | |
| 1 | 143.67 | 12.7 | 0.16 | 5.3 | 3.6 | 3.6 | .0006 | 15.6 | 3.3 | 7.4 | 7.4 | 13.50 | | | | | | | | |