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WIND TUNNEL TESTING OF INTERACTIONS OF HIGH ALTITUDE ROCKET PLUMES WITH THE FREE STREAM

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ARO, Inc.

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NOTICES

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FOREWORD

The work reported herein was performed for the Air Force Rocket Propulsion Laboratories (AFRPL), Air Force Systems Command (AFSC), under Program Element 62302F. Technical direction was provided by the Aerospace Corporation.

The results presented were obtained by ARO, Inc. (a subsidiary of Sverdrup & Parcel and Associates, Inc.), contract operator of the Arnold Engineering Development Center (AEDC), AFSC, Arnold Air Force Station, Tennessee, under Contract F40600-72-C-0003. The tests were conducted from April 21 through August 27 and October 26 through 29, 1970, under ARO Projects VT0030 and VQ0145. The manuscript was submitted for publication on February 25, 1971.

This technical report has been reviewed and is approved.

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ABSTRACT

Interactions of model rocket plumes and the free stream at varying simulated altitudes have been investigated in an altitude simulation chamber. Free-stream variables were Mach number, gas, total temperature, and total pressure. Model rocket parameter variables were exhaust gas, area ratio, chamber total pressure and total temperature, and the orientation of the model relative to the free stream. In addition to pitot probe measurements, plume photographs and density measurements were obtained using the electron beam technique.

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NOMENCLATURE

A/A^*	Area ratio, nozzle exit area to throat area
Ar	Argon
B	See Eq. (2)
C_F	Thrust coefficient
CO_2	Carbon dioxide
L	Length
M	Mach number
N	Number density
N_2	Nitrogen
p	Pressure
R	Radius
RD	Model rocket reservoir density
RE	Model rocket nozzle exit radius
Re	Reynolds number

r^*	Critical throat radius
S	See Eq. (15)
$\bar{S}$	See Eq. (16)
T_o	Total temperature
w	Velocity ratio (Eq. (4))
x, y	Horizontal and vertical distances
α	Angle of orientation of model with free-stream vector
γ	Ratio of specific heats
λ	Mean free path
ρ	Density

SUBSCRIPTS

c	Model rocket chamber
o	Wind tunnel plenum chamber
p	Pitot
t_2	Total conditions downstream of a shock wave
∞	Free-stream conditions

SUPERSCRIPT

*	Critical conditions (M = 1)

SECTION I
INTRODUCTION

High altitude rocket exhaust plumes are observable primarily through radiative phenomena. The radiative phenomena are thought to be strongly dependent on the interaction of the exhaust plume and the free stream.

An experimental investigation has been conducted of the interaction of plumes with low density supersonic and hypersonic flow. The investigation was performed at simulated pressure altitudes from 65 to 95 km in the Aerospace Research Chamber (10V) at AEDC.

The test objective was to determine the effects of several free-stream and model rocket parameters on the plume-free-stream interactions. This was accomplished by independently varying the free-stream Mach number, gas, total temperature and total pressure and the model rocket parameters of area ratio, rocket exhaust gas, total temperature, total pressure, and model rocket orientation with respect to free-stream flow.

The free-stream Mach numbers were approximately 3.5 and 7.8 with nitrogen gas and 11.45 with argon. The free-stream mean free path ranged from 0.06 to 1.34 in.

The model rocket was oriented at α = 0, 90, and 180 deg. Exhaust gases used in the model rocket were carbon dioxide, argon, and nitrogen. The parameter p_c/q_∞ ranged from about 5.0×10^3 to 6.0×10^5.

The data taken were (1) pitot probe measurements, (2) plume photographs using the electron beam flow visualization technique, and (3) density measurements using the electron beam technique.

This report describes the model rocket nozzles, instrumentation, other test equipment items and data gathering techniques. Calibration data for the Mach number 3 and 6 wind tunnel nozzles are presented.

SECTION II
TEST EQUIPMENT

2.1 AEROSPACE RESEARCH CHAMBER (10V)

The experimental data were obtained in Chamber 10V of the Aerospace Division of the von Kármán Gas Dynamics Facility at AEDC.

This chamber is a horizontal cylindrical vacuum tank 10 ft in diameter and 20 ft long (Fig. 1, Appendix I). The principal pumping capacity of the chamber is provided by 620 ft^2 of 78°K liquid-nitrogen and 240 ft^2 of 20°K gaseous-helium cryosurfaces. A total of 8 kw of gaseous-helium refrigeration capacity is available. This system is capable of continuous pumping of nitrogen at mass flow rates of about 15 gm/sec at a chamber pressure of about 10^{-5} torr.

2.2 WIND TUNNEL NOZZLES

Interchangeable nozzles were used to obtain a range of Mach numbers. The M3 (nominal Mach number 3) and M6 (nominal Mach number 6) nozzles were used for this series of tests. The M3 nozzle was a 10-deg half-angle conical nozzle, 64 in. long with a throat diameter of 10.66 in. and an exit diameter of 30 in. The M6 nozzle was a 20-deg half-angle conical nozzle 60 in. long with a throat diameter of 3.08 in. and an exit diameter of 42.4 in. The nozzle walls were cooled with liquid nitrogen to reduce the boundary-layer growth on the nozzle wall and to maintain the nozzle wall at a constant temperature. Mach number 3 and Mach number 6 data were obtained with nitrogen as the gas. Mach number 11 data were obtained in the M6 nozzle with argon as the gas. Typical flow conditions for the M3 and M6 nozzles are shown in Fig. 2.

The plenum supply pressure (p_o) and pitot pressure (p_p) were measured with Baratron® differential pressure transducers referenced to a pressure of 10^{-5} torr or lower. Total temperatures (T_o) were measured using a Chromel® -Alumel® thermocouple.

A 1-in.-diam, 10-deg internally chamfered pitot tube was used to determine nozzle flow conditions. Significant external-flow viscous corrections had to be applied to the pitot data. The necessary viscous correction data were obtained by Stephenson and are given in Ref. 1. The pitot probe was mounted on a remotely controlled scanner which permitted radial and axial pitot surveys. The usable uniform flow core diameter of both nozzles varied from about 20 in. for high unit Reynolds numbers until it vanished at low unit Reynolds numbers.

Figure 3 presents M_∞, λ_∞, and Re_∞/in. at a distance of 10 in. from the nozzle exit as a function of p_o for the M3 nozzle. The axial Mach number gradient at p_o = 0.30 and 0.50 torr is shown in Fig. 4.

For the M6 nozzle with nitrogen as the test gas, λ_∞ and Re_∞/in. at the nozzle exit plane and at a distance of 10 in. downstream are presented in Fig. 5 as a function of p_o. The Mach number variations at the exit plane and for x = 10 in. are shown in Fig. 6 for T_o = 280 and 866°K. Centerline axial Mach number gradients for p_o = 3.0 and 6.0 torr and at T_o = 280 and 866°K are shown in Fig. 7.

For the M6 nozzle with argon as the test gas, M_∞ versus p_o, Mach number gradient, and λ_∞ and Re_∞/in. versus p_o are shown in Figs. 8, 9, and 10, respectively.

Pitot profiles for the M3 nozzle using nitrogen at p_o = 0.3 torr and T_o = 280°K are shown in Fig. 11. Pitot profiles for the M6 nozzle using nitrogen at p_o = 3.0 and 6.0 torr and at T_o = 280 and 866°K are presented in Fig. 12. Pitot profiles for the M6 nozzle using argon at p_o = 2.0 torr and T_o = 280°K are shown in Fig. 13.

2.3 MODEL ROCKET NOZZLES

The three model rocket nozzles used to generate the plumes are shown in Fig. 14. The models were made of 304 stainless steel. All had a 15-deg half-angle expansion cone. During the test the throat diameter of each nozzle increased. The erosion was attributed to carbon dioxide dissociation at the higher temperature runs. The throat diameter dimension changes are listed in Table I, Appendix II. The nozzle exit diameter did not change.

Two model rocket adapters were used during the test, one for orienting the model at α = 0 or 180 deg to the free-stream flow and the other for orienting the model at α = 90 deg to the free-stream flow. The models were positioned so that for each case the plume would be in approximately the same relative position with respect to the electron beam, the wind tunnel nozzle, and a window through which photographs were obtained.

A schematic of the α = 0 or 180-deg adapter is presented in Fig. 15a, and a photograph of the installation in Fig. 15b. Similar illustrations for the α = 90-deg adapter are shown in Figs. 16a and b.

For the α = 0 and 180-deg installation the model rocket was supported by a strut entering the free-stream flow at about 45 deg from the top of the wind tunnel nozzle. The model rockets were mounted 4 in. above the tunnel nozzle centerline in order to utilize a maximum of the isentropic core undisturbed by the support hardware. For α = 0 deg (rocket exhausting downstream) the rocket exit was placed 7.7 in. downstream from the exit plane of the tunnel nozzle; for α = 180 deg this distance was 20.9 in. A sketch of the installation is presented in Figs. 17a and b.

The model was positioned 4 in. below the tunnel nozzle centerline and 12.8 in. from the tunnel nozzle exit plane for the α = 90-deg case as shown in Fig. 17c. The model was supported by a strut mounted in the bottom quadrant of Chamber 10V.

A section of the plume gas supply tubing was used as a resistance heating element to heat the plume gas (see Fig. 15). An 11-v a-c power unit variable from 0 to 4 kw supplied energy to the heating section.

The temperature in the model rocket chamber (T_c) was measured with a Chromel-Alumel thermocouple. The model rocket chamber pressure was measured with a 500-psi Consolidated Electrodynamics Corporation (CEC) pressure transducer.

2.4 ELECTRON BEAM APPARATUS

An electron beam fluorescence technique was used for flow visualization of the plume and to measure density profiles of the plumes. The location of the electron beam apparatus relative to the model rockets is shown in Fig. 1. A schematic of the electron gun is shown in Fig. 18.

The electron beam technique utilizes the fluorescence produced in the flow by collisions of gas atoms and molecules with a collimated beam of high energy electrons. In each single species gas, a characteristic fluorescence spectrum is produced. For gas species discrimination in a mixed flow, it is necessary to choose fluorescent wavelength intervals carefully such that each is predominantly occupied by one species only. In addition each wavelength interval must represent a fast excitation-emission process and its emission intensity must be proportional to the gas species density.

In the flow visualization mode, the electron beam swept the plume centerline over an angle of about ±30 deg from the vertical in a fan shape, and the fluorescence was recorded by a camera outside the chamber. For densities, a simple and compact optical detector was mounted upon the horizontal-vertical scanner having a movement plane parallel to the sweep plane, and the 15 kv, 1 ma electron beam was angularly deflected until optical alignment with the detector was achieved.

In this way, any flow point of interest could be quickly reached. A 75-Hz sweep of 10 deg imposed on the deflection ensured that the entire beam was observed at any point.

A sketch of the optical detector is presented in Fig. 19. The detector consisted of focusing lenses, a six-position filter wheel with drive motor, and a 1P28 photomultiplier tube; it was designed to view a circular plume section 0.125 in. in diameter. Phototube signals were read directly on a Keithley® picoammeter. Narrow bandpass filters chosen were 3246 Å for carbon dioxide, 4610 Å for argon, 3918 Å for nitrogen with argon, and 4278 Å for nitrogen with carbon dioxide.

Three types of calibrations were needed. First, the detector response was a function of its position relative to the electron gun; that is, a spatial mapping in a uniform density or static gas was necessary. Second, since each filter transmitted radiation from each gas, superposition of fluorescence existed in a mixed gas flow, and filter signal ratios had to be measured for each gas to acquire species separation. Third, for absolute number densities of each gas and relative number densities between all gases, the filter signal of each gas at a known density was needed.

SECTION III
TEST CONDITIONS

A summary of the test conditions is listed in Table II. The test matrix is divided into 12 "cases" according to the free-stream parameters of Mach number and gas and the model parameters of orientation, plume gas, and rocket nozzle area ratio. The free-stream conditions are shown in Table III. Note that the free-stream parameters are listed for a distance of 10 in. downstream of the wind tunnel nozzle exit. This distance was arbitrarily chosen as a convenient reference point. Free-stream parameters at other points may be obtained from the wind tunnel calibration data in Section II.

Test conditions for the plume photographs, pitot scans, and density runs are listed in Tables IV, V, and VI. The test matrix was designed to vary the parameters singly within each case. An attempt was made to obtain matching photographs, pitot data, and density data for each test condition, but because of time and other restrictions, this was not possible for all cases.

SECTION IV
EXPERIMENTAL RESULTS

4.1 PLUME PHOTOGRAPHS

Using the electron beam fluorescence technique, plume photographs were made of all cases. Selected photographs are shown in Figs. 20 through 23. The model rocket is located 4 in. above the wind tunnel centerline in order to take maximum advantage of the free-stream isentropic core. This is one of the reasons for the asymmetry of the plumes. Only the lower portion of the plumes was read for the 0-deg cases.

Figure 20a shows a CO_2 plume at $\alpha = 0$ deg in N_2 free-stream flow at M = 7.9 and $\lambda = 0.059$ in. Figure 20b shows a similar plume (M = 7.4) for $\lambda = 0.85$ in. Note that the outside boundary shock is not visible for Fig. 20b ($\lambda = 0.85$ in.).

Figure 21 shows an argon plume at $\alpha = 180$ deg in N_2 free-stream flow, and Figs. 22a and b show argon plumes in free-stream N_2 at $\alpha = 90$ deg.

Photographs of each test condition were taken on 2.5- by 3.5-in. Polaroid® film for a quick look at the setup and to ascertain the correct exposure settings. Black-and-white photographs were also taken of most runs. An observed shock jump phenomenon was investigated primarily with Polaroid photography (Section 4.2). Color photographs were made of selected runs.

Plume boundaries were read directly from 4- by 5-in. black-and-white negatives with a Benson-Lehner Telereadex® film reader. The model rocket assembly (Figs. 15 and 16) was used as the fiducial length. The rocket model exit corresponded to x = 0, y = 0.

The plume boundaries obtained from photographs are presented in graphic and tabular form. The test conditions for each photograph are listed in Table IV.

In Table VII the plume boundaries are given in x and y coordinates (inches) for all cases and in the normalized form $\bar{X}$ versus $\bar{Y}$, where $\bar{X} = X/RE\,(q_\infty/p_c)^{1/2}$, for $\alpha = 0$ and 180 deg. For $\alpha = 90$ deg, the x and y coordinates and the angle formed by the nozzle exit and the plume boundary at that point are listed.

Graphically (Appendix III), the data are presented in the normalized form $\bar{X}$ versus $\bar{Y}$ for the α = 0-deg cases, and in x-y coordinates for the 90- and 180-deg cases. Because of the large number of graphs the listing of Table IV is not repeated in the illustration listing.

At model rocket chamber pressures of 10 psi or lower the plume boundaries were diffused and difficult to determine from photographs of the α = 0-deg plumes. Also, the accuracy of the pressure transducer was 0.25 percent of full scale or about 1.25 psia. These factors combined to increase data scatter at the small chamber pressures.

A summary plot of the α = 0-deg plumes inner shock boundary for $p_c \geq 10$ psi is presented in Fig. 24. It appears that the parameters $\bar{X}$ and $\bar{Y}$ are useful in correlating plume boundaries for varying p_c/q_∞ for a given case but do not adequately correlate changes in γ and A/A^*.

4.2 SHOCK JUMP

An interesting phenomenon observed during this test was the "jump" of the plume boundary shock location for some of the α = 180-deg runs. Figure 23 is a photograph of the jump. The jump occurred at the following conditions: p_o = 6 torr, T_o = 280°K, λ_∞ = 0.07 in., A/A^* = 26.3, r_e = 0.1243 in., $p_c/q_\infty = 8.85 \times 10^3$, p_c = 5 psi, with argon as the plume gas. When T_c was increased from below 340°K to above 340°K the shock would jump out, hence this is referred to as the hot shock. Cooling T_c from the hot shock position to below 344°K would result in the shock jumping back to the cold shock position. The jump was very repeatable when approached from either direction. The variation of the shock standoff distance with the model rocket chamber temperature is shown in Fig. 25. At a model rocket chamber pressure of 6.25 psia, the jump occurred at a T_c of about 358°K.

The conditions described above were repeated with a smaller rocket nozzle with r_e = 0.0325 in. The jump was not observed with the smaller rocket nozzle. In Fig. 26 the normalized shock standoff S/RE versus the parameter $\sqrt{p_c/q_\infty}$ is compared for the two rocket models. Apparently all S/RE values for the small nozzle correspond to the cold shock case. It is speculated that the shock jump is associated with condensation. Because of time limitations, the effects of model rocket dimensions, model rocket chamber conditions, and free-stream parameters on the jump phenomenon were not further investigated.

A closed form analytical result for the centerline plume boundary location for plumes exhausting counter to a supersonic free stream can be obtained as follows. Assume the plume flow field is adequately described by the results presented in Ref. 2. The gas density along the plume centerline is given by

$$\frac{\rho}{\rho_c} = \frac{4B}{(x/r^*)^2} \tag{1}$$

where

$$B = \left(\frac{2}{\gamma_p + 1}\right)^{\frac{1}{\gamma_p - 1}} \frac{\lambda}{4\sqrt{\pi}} \frac{w^*}{w} \tag{2}$$

$$\lambda = \frac{1}{\sqrt{\pi}} \frac{1}{1 - \frac{C_F}{wC_{F_{max}}}} \tag{3}$$

$$w = \frac{V}{V_{max}} \tag{4}$$

$$C_F = \left\{\frac{2\gamma_p^2}{\gamma_p - 1}\left(\frac{2}{\gamma_p + 1}\right)^{\frac{\gamma_p + 1}{\gamma_p - 1}}\left[1 - \left(\frac{p_e}{p_c}\right)^{\frac{\gamma_p - 1}{\gamma_p}}\right]\right\}^{\frac{1}{2}} + \frac{A}{A^*}\frac{p_e}{p_c} \tag{5}$$

$$C_{F_{max}} = \frac{2\gamma_p}{\sqrt{\gamma_p^2 - 1}}\left(\frac{2}{\gamma_p + 1}\right)^{\frac{1}{\gamma_p - 1}} \tag{6}$$

Certainly for the measurements made here, $w \to 1$ and hence

$$\frac{w^*}{w} \to w^* = \left(\frac{\gamma_p - 1}{\gamma_p + 1}\right)^{\frac{1}{2}} \tag{7}$$

which simplifies B and λ in Eqs. (2) and (3). It is assumed that the free-stream and plume centerline static pressures behind the shocks are equal. (Calculations have also been carried out by matching the stagnation pressures behind the shocks with almost identical results.) The free-stream static pressure behind a normal shock is given by

$$\frac{p_{2,\infty} - p_{1,\infty}}{q_\infty} = \frac{4(M_\infty^2 - 1)}{(\gamma_\infty + 1)M_\infty^2} \tag{8}$$

For $M_\infty > 3$, $p_{2,\infty}/q_\infty$ is given rather accurately by

$$\frac{p_{2,\infty}}{q_\infty} = \frac{4}{\gamma_\infty + 1} \tag{9}$$

The plume static pressure behind a normal shock is given by

$$\frac{p_{2,p}}{p_c} = \frac{2\gamma_p M_p^2 - (\gamma_p - 1)}{\gamma_p + 1} \left[\frac{2}{(\gamma_p - 1)M_p^2 + 2}\right]^{\frac{\gamma_p}{\gamma_p - 1}} = \frac{2\gamma_p M_p^2 - (\gamma_p - 1)}{\gamma_p + 1} \left(\frac{\rho}{\rho_c}\right)^{\gamma_p} \tag{10}$$

For the conditions of these measurements the following approximations are made

$$\frac{\rho}{\rho_c} = \left(\frac{1}{1 + \frac{\gamma_p - 1}{2} M_p^2}\right)^{\frac{1}{\gamma_p - 1}} \approx \left[\frac{2}{(\gamma_p - 1)M_\infty^2}\right]^{\frac{1}{\gamma_p - 1}} \tag{11}$$

$$\frac{p_{2,p}}{p_c} = \frac{2\gamma_p M_p^2}{\gamma_p + 1} \left(\frac{\rho}{\rho_c}\right)^{\gamma_p} \tag{12}$$

Solving for M_p^2 from Eq. (11) and substituting in Eq. (12) gives

$$\frac{p_{2,p}}{p_c} = \frac{4\gamma_p}{\gamma_p - 1} \frac{1}{\gamma_p + 1} \frac{\rho}{\rho_c} \tag{13}$$

Using Eqs. (9) and (13) to equate $p_{2,p} = p_{2,\infty}$ gives

$$\frac{\rho_c}{\rho} \approx \frac{p_c}{q_\infty} \frac{\gamma_\infty + 1}{\gamma_p + 1} \frac{\gamma_p}{\gamma_p - 1} \tag{14}$$

Using Eq. (1) for ρ_c/ρ and defining S as the value of x at this point where the pressures are matched, one obtains

$$\left(\frac{S}{r^*}\right)^2 = \frac{\gamma_\infty + 1}{\gamma_p + 1} \frac{4\gamma_p}{\gamma_p - 1} B \frac{p_c}{q_\infty} \tag{15}$$

Since B is a function of γ_p and A/A^* only, solutions for

$$\bar{S} = \frac{S}{r^*}\left(\frac{q_\infty}{p_c} \frac{1}{\gamma_\infty + 1}\right)^{1/2} = \left[\frac{4\gamma_p B}{(\gamma_p + 1)(\gamma_p - 1)}\right]^{1/2} \tag{16}$$

can be calculated for convenience of application and these are presented in Fig. 27. Comparisons between experimental data and Eq. (16) are presented in Fig. 26.

4.3 PITOT PRESSURE MEASUREMENTS

Plume pitot-pressure measurements were made only for the α = 0-deg cases. Two probes were used: a 0.125-in.-diam tube with a 1.0-psia pressure transducer and a 0.50-in.-diam tube with a 3.0-torr Baratron transducer. Both probes had a 10-deg internal chamfer. The probes were mounted on a remotely controlled scanner (Fig. 1). The 0.125-in.-diam probe was used for near-field radial pitot surveys, and the 0.50-in.-diam probe was used for far-field radial and axial centerline pitot surveys. Maximum scanner travel along the centerline of the plume axis was 30 in. from the exit plane of the model rocket. Therefore, axial probe position was bounded near the exit plane by a pressure limit and by the scanner travel at the far limit. The pitot data were recorded by an x-y plotter.

In Appendix IV, axial pitot data are presented in the normalized form of p/p_c versus X/RE and radial pitot data are presented in the normalized form of p/p_{max} versus Y/RE where p_p is the observed pitot pressure, $p_{p_{max}}$ the maximum observed pitot reading at the particular axial location, p_c the model rocket chamber pressure, RE the model rocket exit radius, and x or y the axial and radial distances. Positive values of Y/RE indicate the region of plume flow below the model centerline. A summary of the test conditions for the pitot surveys is given in Table V.

In order to observe the effect of the model rocket and mounting hardware on free-stream flow, a group of radial pitot scans were made without plume flow. Data taken at M = 3.65, 7.80, and 7.90 are presented in Figs. IV-1 through IV-8 in Appendix IV. The parameter Y/RE was calculated using a value of RE = 0.1243 in. in order to compare the data with and without plume flow for the A/A^* = 26.3 cases.

Radial pitot data with plume flow [cases 1 through 8] are presented in graphic form in Figs. IV-9 through IV-38 and in tabular form in Table VIII. Axial pitot data are presented in Figs. IV-39 through IV-45 of Appendix IV.

4.4 DENSITY MEASUREMENTS

The test conditions for the density measurements are listed in Table VI. Measurements were made along the axial centerline of the plume and radially at several values of x for the 0- and 180-deg cases. For the α = 90-deg case, measurements were made at various values of y above the model exit plane.

The density data are shown in Figs. V-I to V-118, Appendix V, and in Table IX. Densities are normalized to the model rocket reservoir density and distances to the model rocket nozzle exit radii. Density data for free-stream calibration runs (no plume flow) are normalized to the wind tunnel plenum density. The number densities of plume gases are shown by circles and the free-stream gas by triangles.

Comparisons of measured absolute number densities with gas dynamic predictions were possible when radial measurements were extended into the free stream. For nitrogen and argon the measured densities were about 85 and 40 percent of predicted densities respectively. Nitrogen densities associated with CO_2 plumes were actually about 70 percent of predicted values, but the data of case 8 (nitrogen plume in nitrogen free-stream flow) indicates a probable 20-percent minimum increase to these free-stream values. The data have not been presented with this correction, however, because with the carbon dioxide and nitrogen filters used the measured fluorescent intensities are functions of the rotational temperature, which was not measured.

Plots are shown where the free-stream density values are not constant. This was attributed to the presence of shocks off the upstream part of the electron beam system, as well as free-stream nonuniformity. Vertical plane misalignment of the electron beam caused low axial centerline densities of the plume gas and increased free-stream densities to be obtained near the nozzle; the beam was sweeping outside the plume gas into the free stream.

As a result of calibrations obtained during October, 1970, sonic orifice experiments in Chamber 10V, the originally derived densities in N_2-Ar mixtures were corrected and are presented in this report. A nonlinear density-fluorescent intensity relationship in argon, possibly attributable to flow condensation, was found. The electron beam calibration is described in Ref. 3.

Examination of relative number densities from day to day, and with respect to 4-, 8-, and 12-in. radial plots reveals a ±10-percent variation. Equipment shifts and rotational temperature dependencies limited the determination of absolute number densities to an estimated error range of ±40 percent. Spatial locations of shock density peaks are considered to have a ±2-percent accuracy.

4.5 COMPARISON OF MEASUREMENTS

For radial pitot and density measurements, the centerline of the plume ($y = 0$) for the $\alpha = 0$- and 180-deg cases was located by the maxima or minima that occurred between the inner plume shocks. The centerline of the plume photographs was determined by bisecting the inner shock boundaries. When comparing radial distances determined by photographs and pitot or density measurements the inner shock boundary should be used as an index because of the difference in centerline determination.

A comparison of pitot probe pressure profile and electron beam density profile is presented in Fig. 28 for a nitrogen plume in nitrogen free stream at M = 7.4. It is apparent that the locations of the peaks are similar but differ in relative height. The pitot probe was 0.5 in. in diameter and, therefore, averaged the pressure peaks. The electron beam system had an effective probe size of about 0.125 in.

Plume boundaries determined from photographs and radial pressure data are compared in Fig. 29 to the boundaries as determined from radial density data at x = 4, 8, and 12 in. for a number of α = 0-deg cases. The open symbols represent the photographic boundaries, and closed symbols represent pressure boundaries. Generally, the correlation is considered good.

SECTION V
CONCLUDING COMMENTS

A fairly large volume of plume and free-stream interaction data has been obtained in Chamber 10V. This report is primarily a first look at the data, and the experimental results are presented in a form that will be useful for further analysis. The plume-pitot data have not been corrected for viscous effects. The uncertainty owing to this lack of correction is generally on the order of 1 percent in these data, with possible increases to the order of 10 percent for the lowest impact pressures.

It was observed that the parameters $\overline{X}$ and $\overline{Y}$ are useful in correlating plume shock boundaries for varying p_c/q_∞ within a particular case for α = 0 deg but does not adequately correlate changes in γ_c and A/A^*.

The plume boundary jump for the α = 180-deg model orientation was an unexpected phenomenon. This jump is attributed to condensation in the highly expanded and cooled exhaust gas.

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1. Whitfield, D. L. and Stephenson, W. B. "Sphere Drag in the Free-Molecular and Transitional Flow Regimes." AEDC-TR-70-32 (AD704122), April 1970.

2. Jarvinen, P. O., Hill, J. A. F., Draper, J. S., and Good, R. E. "High Altitude Rocket Plumes." Mithras Report MC 65-120-R3, June 1966.

3. Price, L. L., Powell, H. M., and Moskalik, R. S. "Species Number Density Measurements in Plume Interactions with Free Stream Using an Electron Beam Technique." AEDC-TR-71-193.

APPENDIX
I. ILLUSTRATIONS

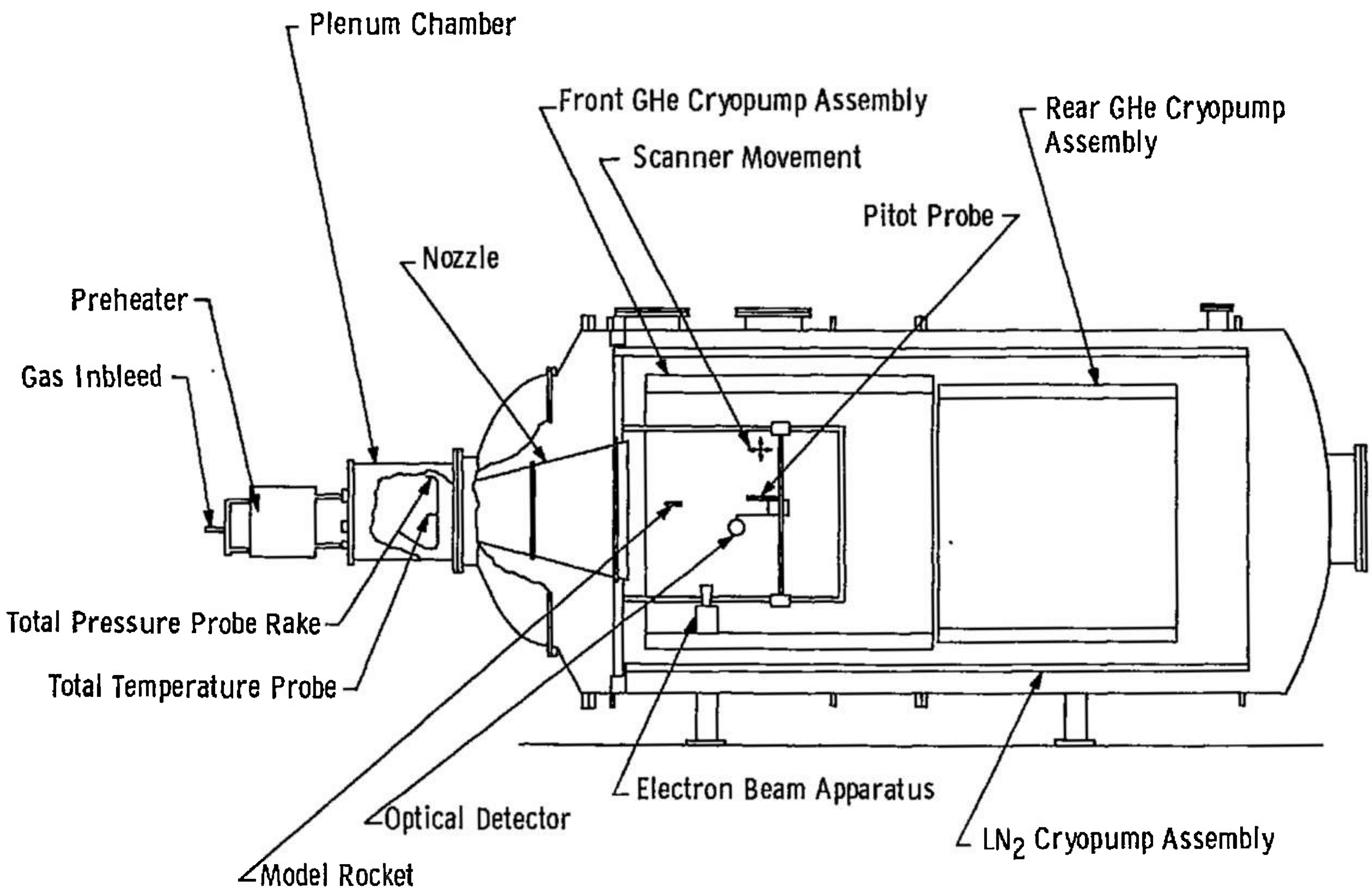


Fig. 1 Aerospace Research Chamber (10V)

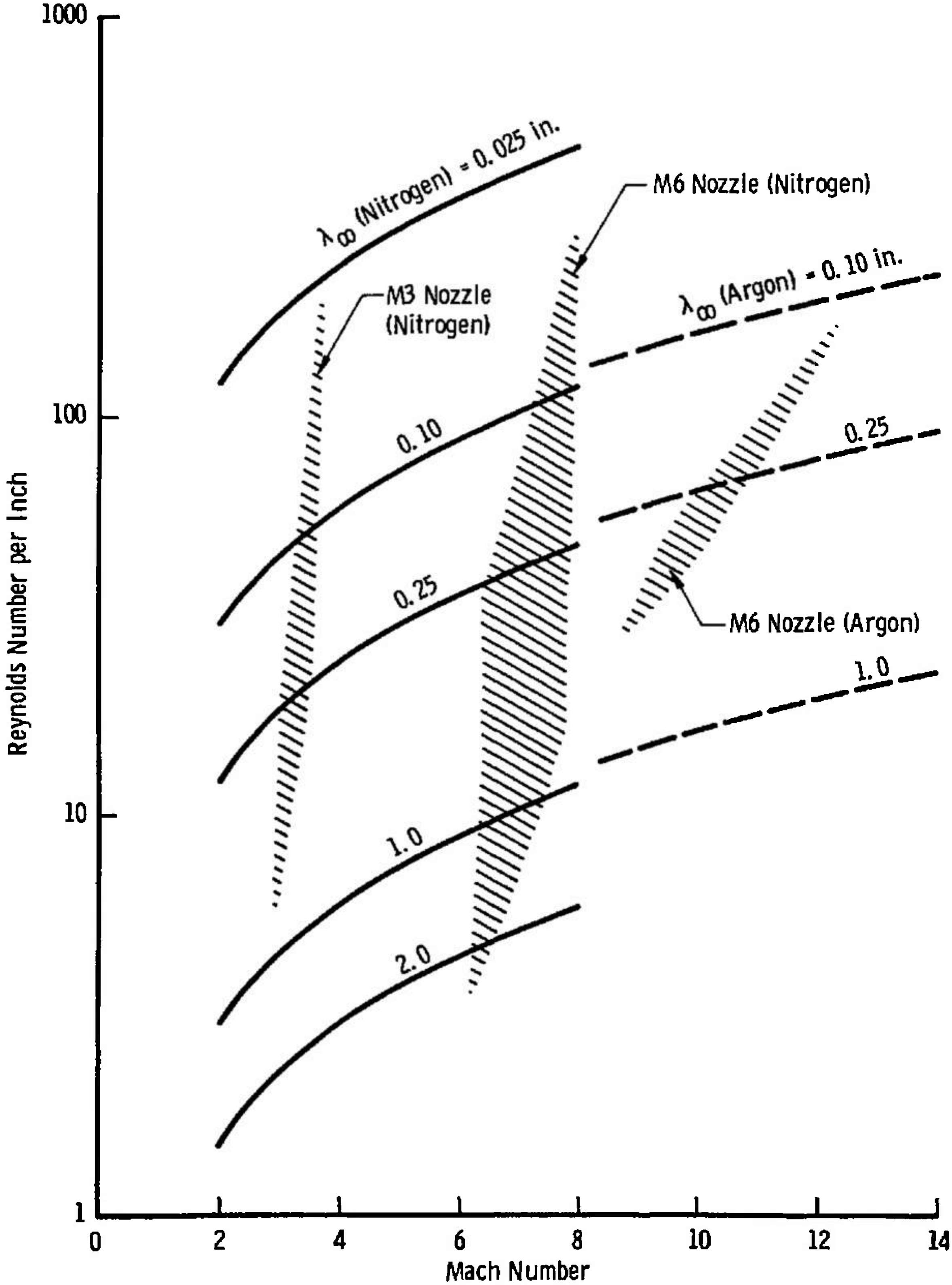


Fig. 2 Flow Conditions in the M3 and M6 Nozzles

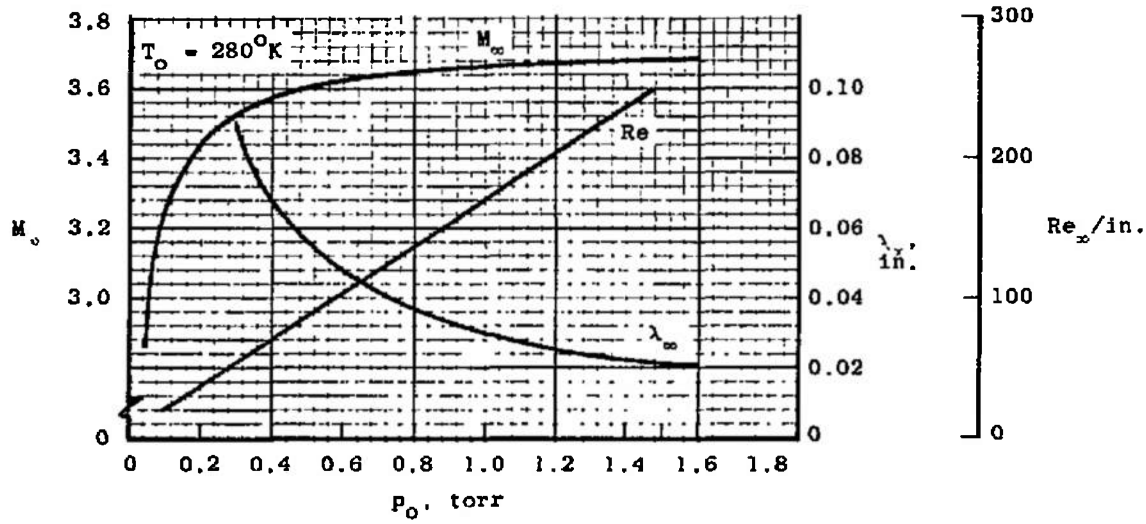


Fig. 3 Mach Number, λ_∞, and Re_∞/in. versus p_o at x = 10 in., M3 Nozzle

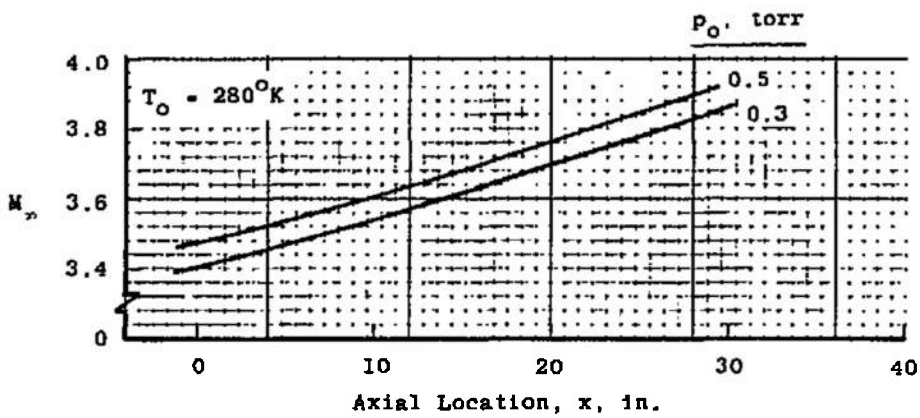
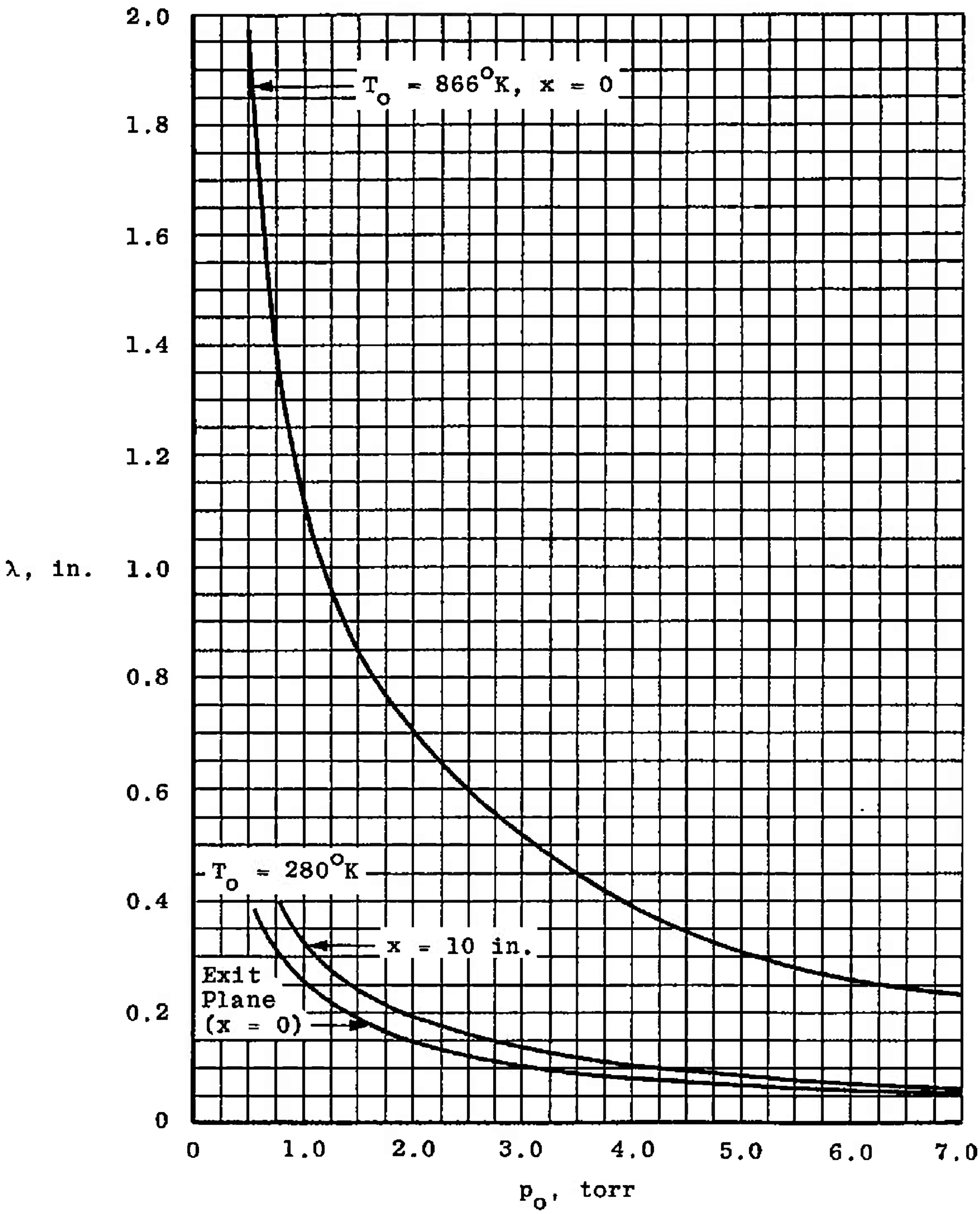
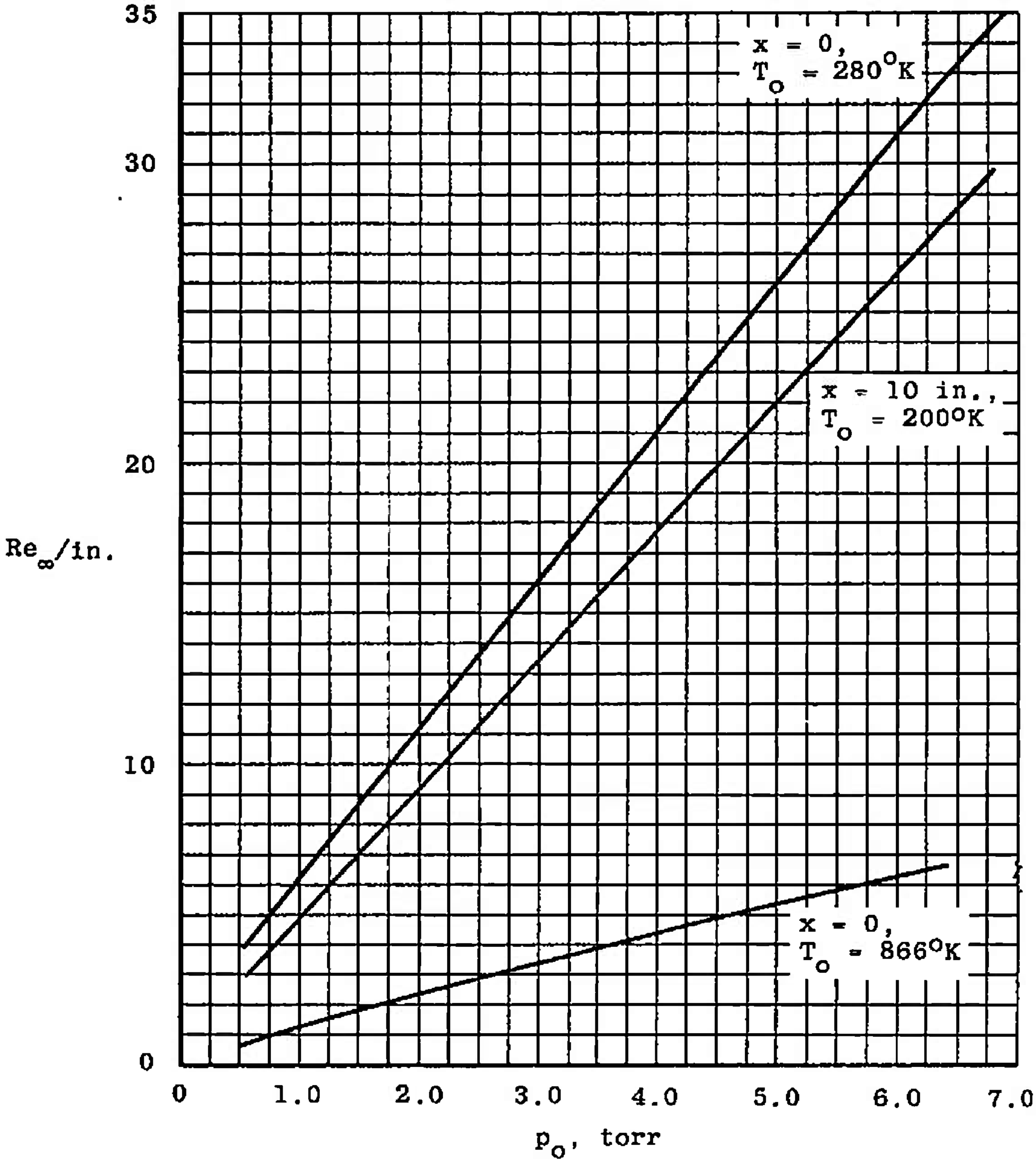


Fig. 4 Centerline Axial Free-Stream Mach Number Variation, M3 Nozzle

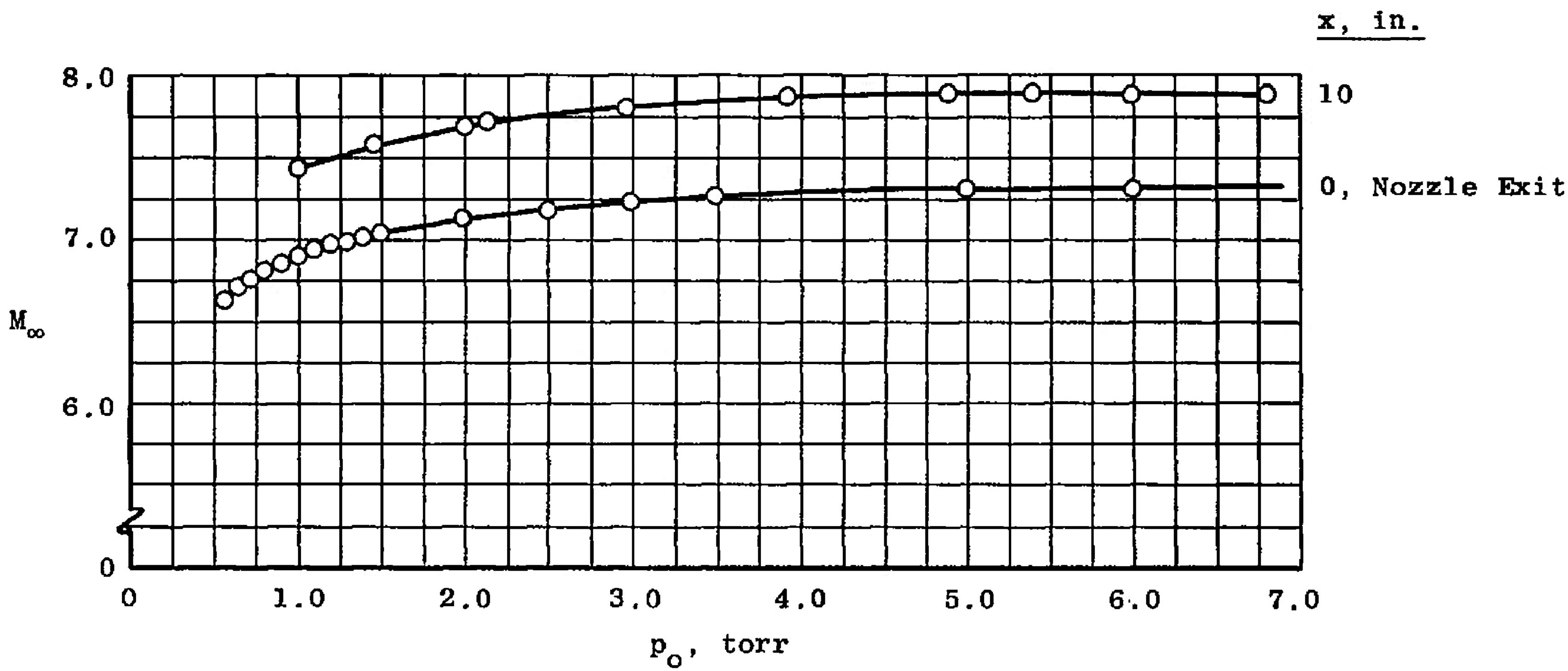


a. λ_∞ versus p_o

Fig. 5 λ_∞ versus p_o, Re_∞ versus p_o, Nitrogen, M6 Nozzle

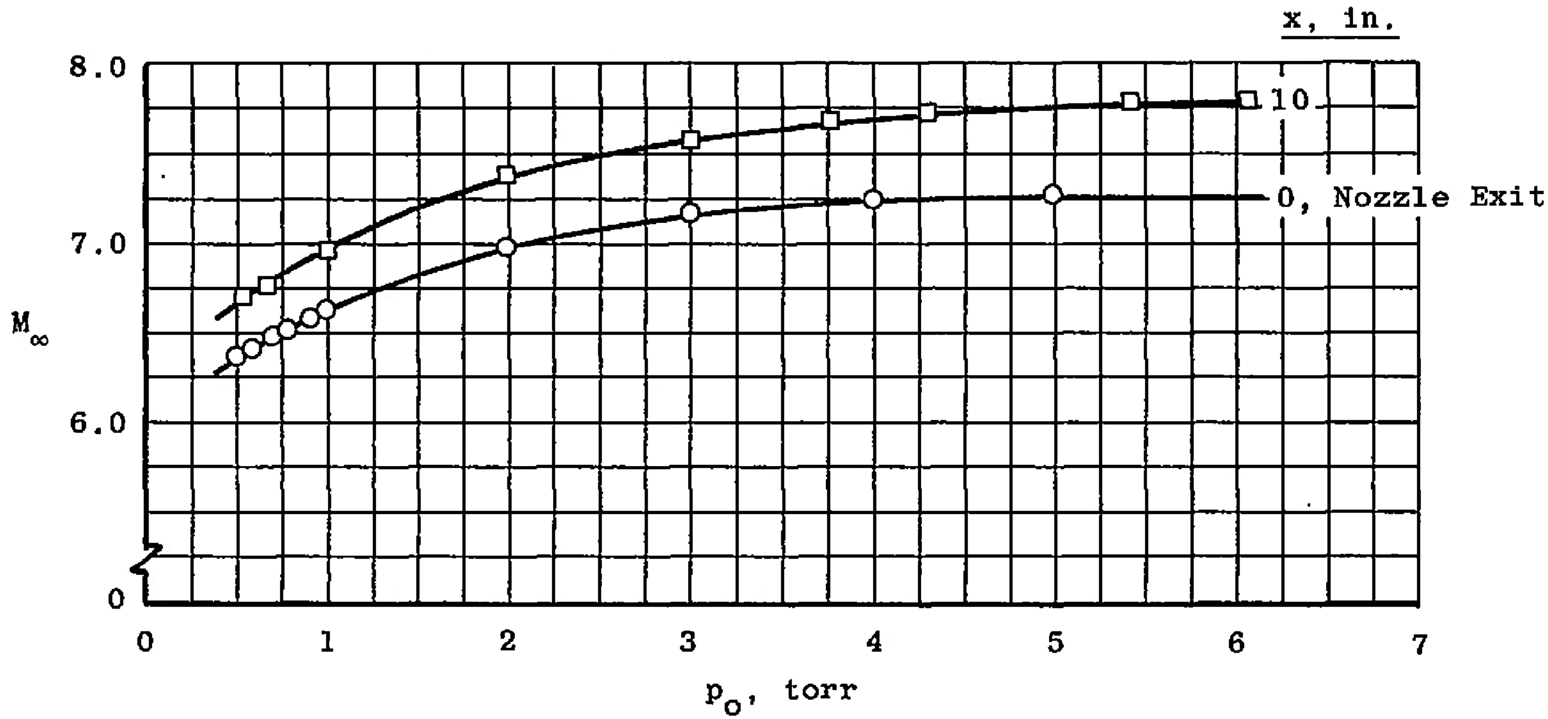


b. Re_∞ versus p_o
Fig. 5 Concluded

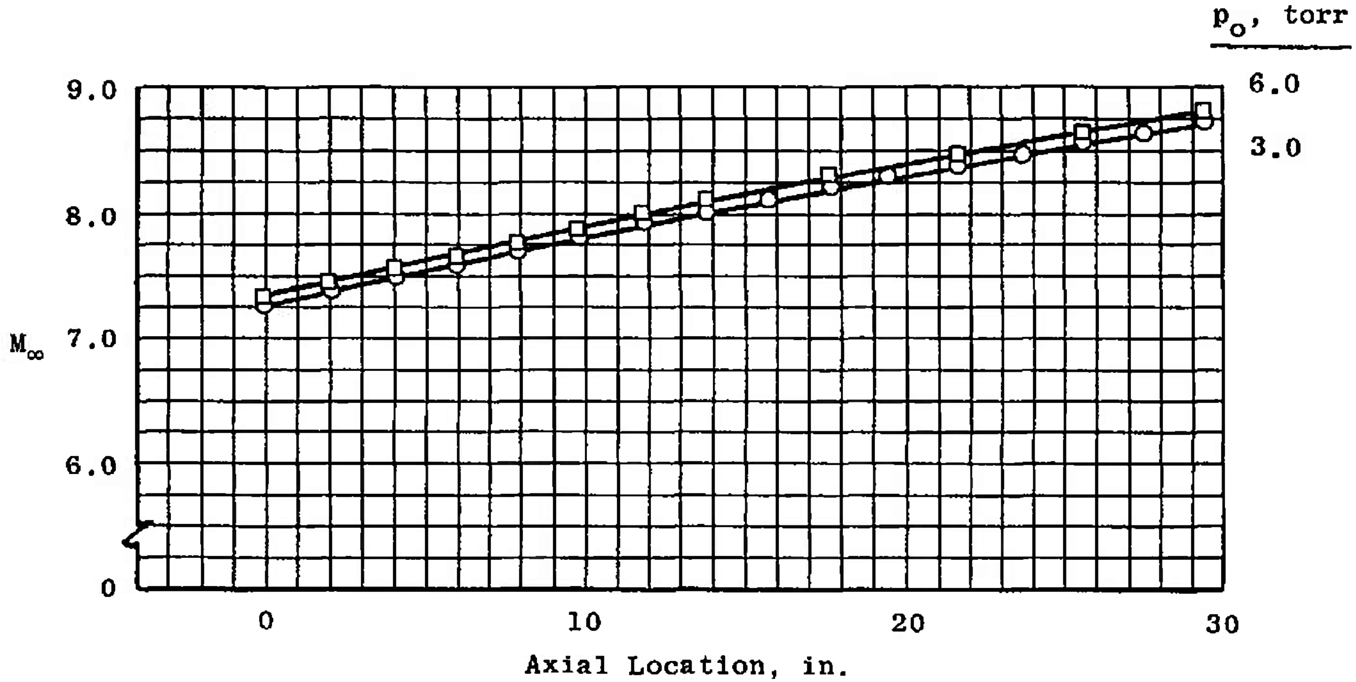


a. Nitrogen, T_o = 280°K

Fig. 6 Centerline Mach Number versus p_o, M6 Nozzle

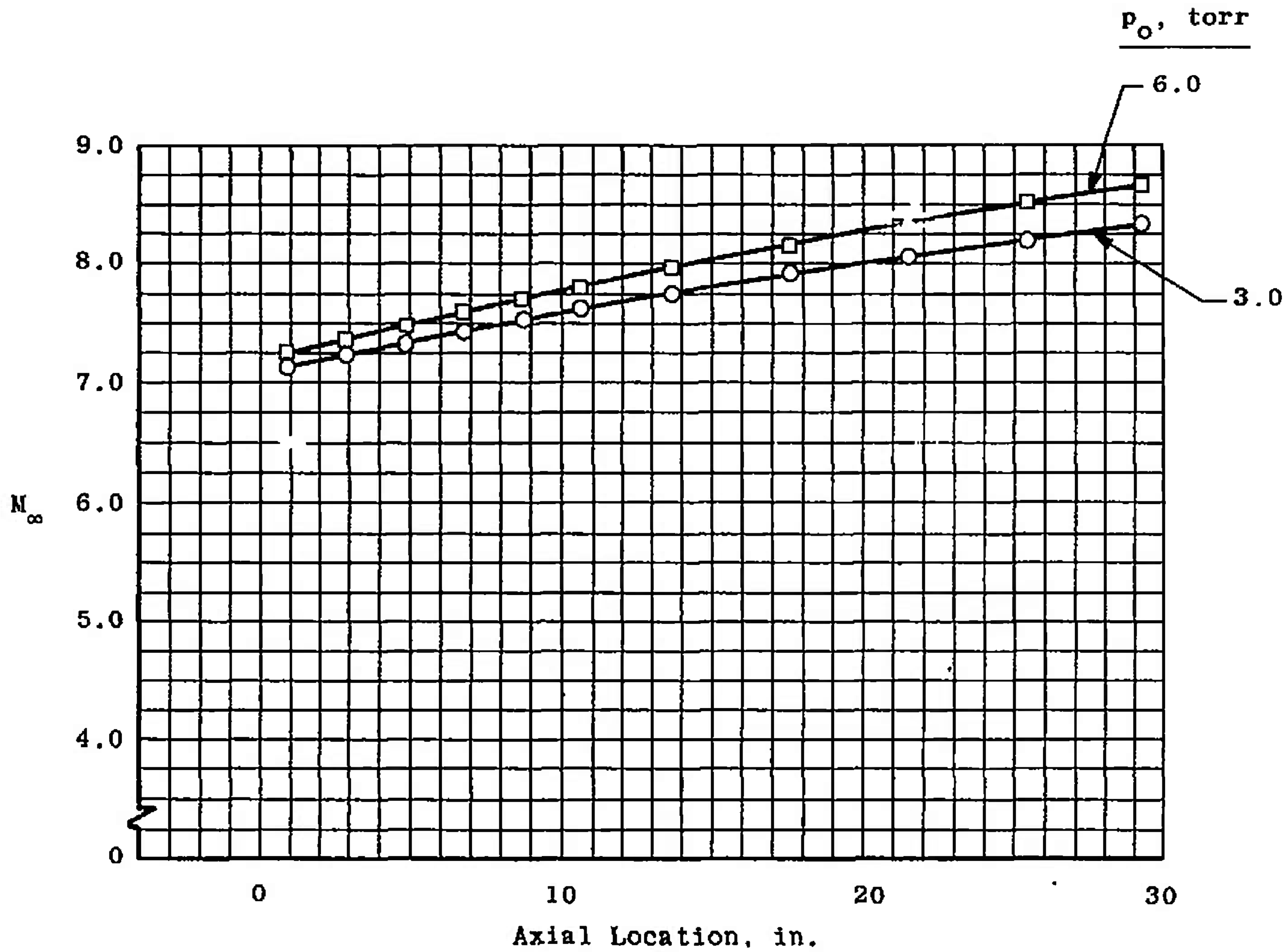


b. Nitrogen, T_o = 866°K
Fig. 6 Concluded



a. $T_o = 280°K$

Fig. 7 Centerline Axial Mach Number Variation, M6 Nozzle



b. T_o = 866°K
Fig. 7 Concluded

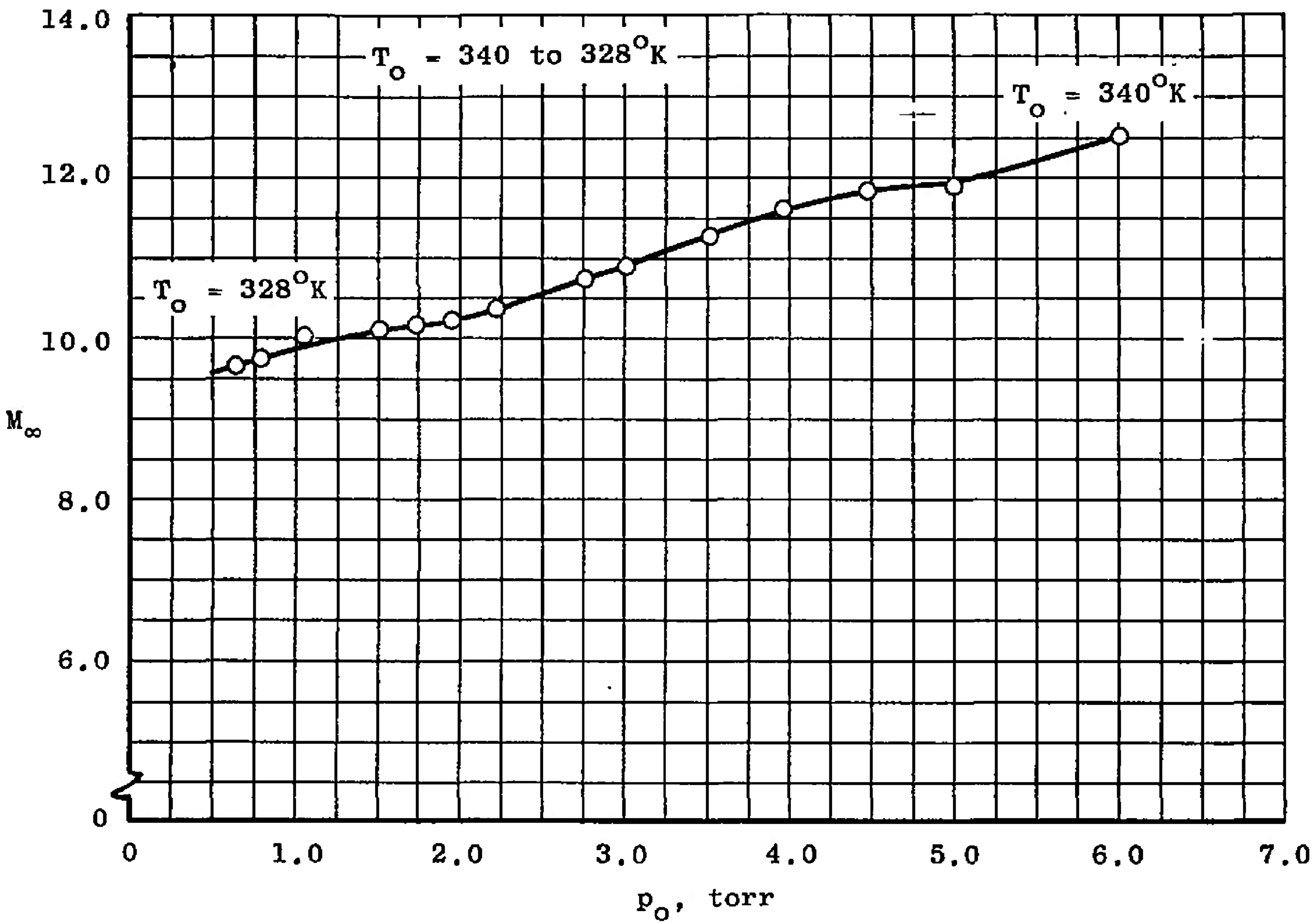


Fig. 8 Mach Number versus p_o, Argon, M6 Nozzle

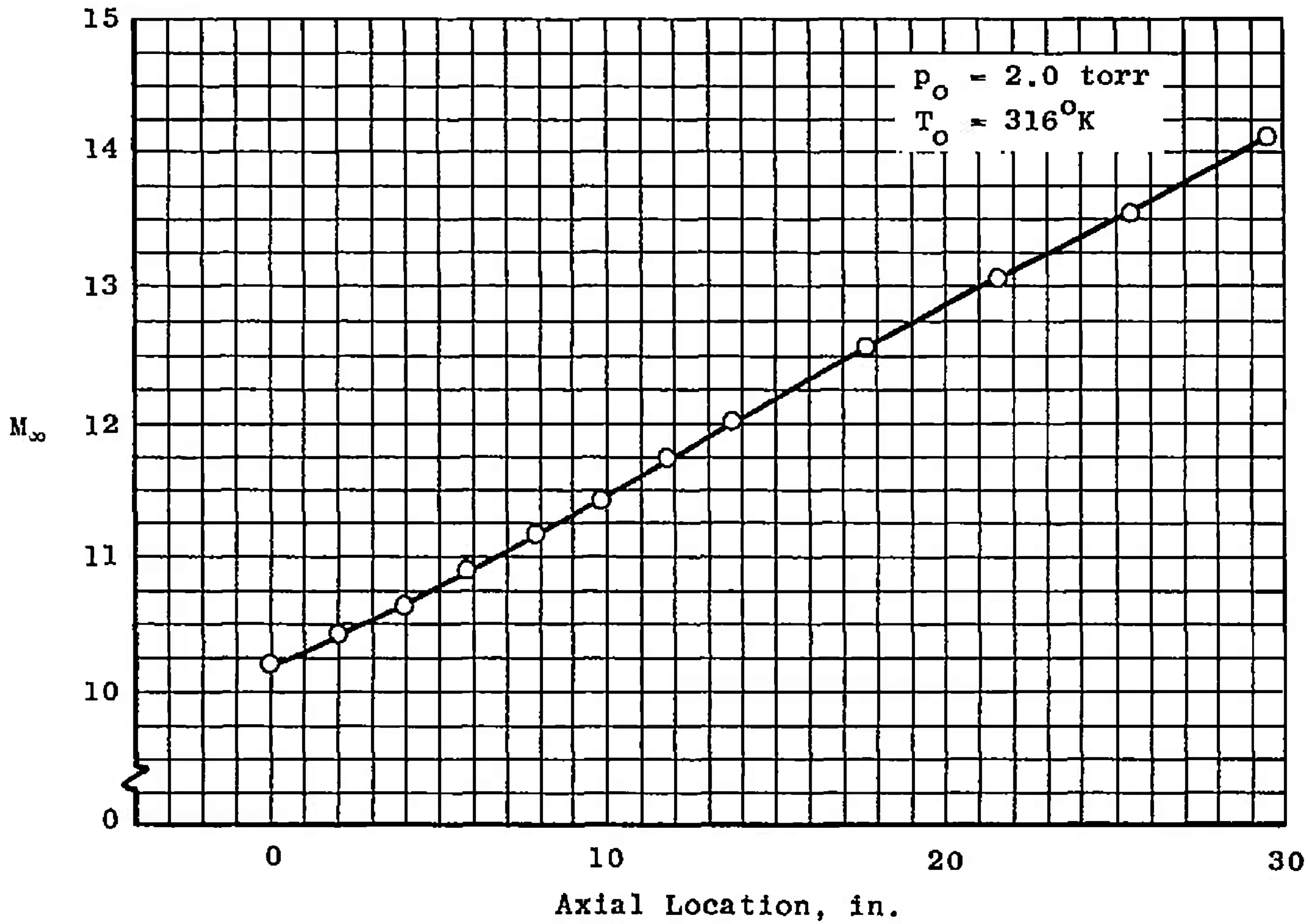


Fig. 9 Mach Number versus Axial Location, Argon, M6 Nozzle

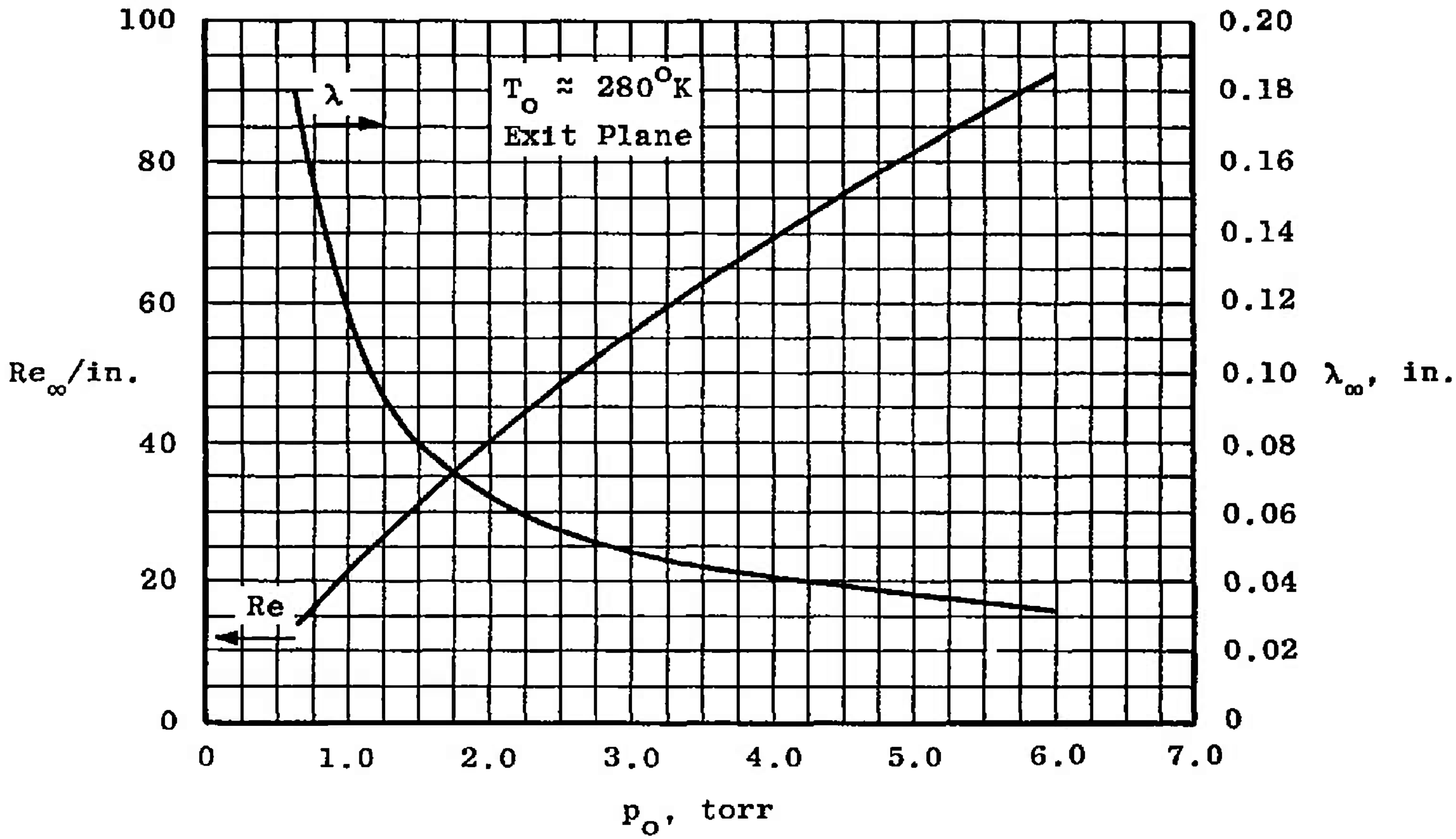


Fig. 10 Re_∞ and λ_∞ versus p_o, Argon, M6 Nozzle

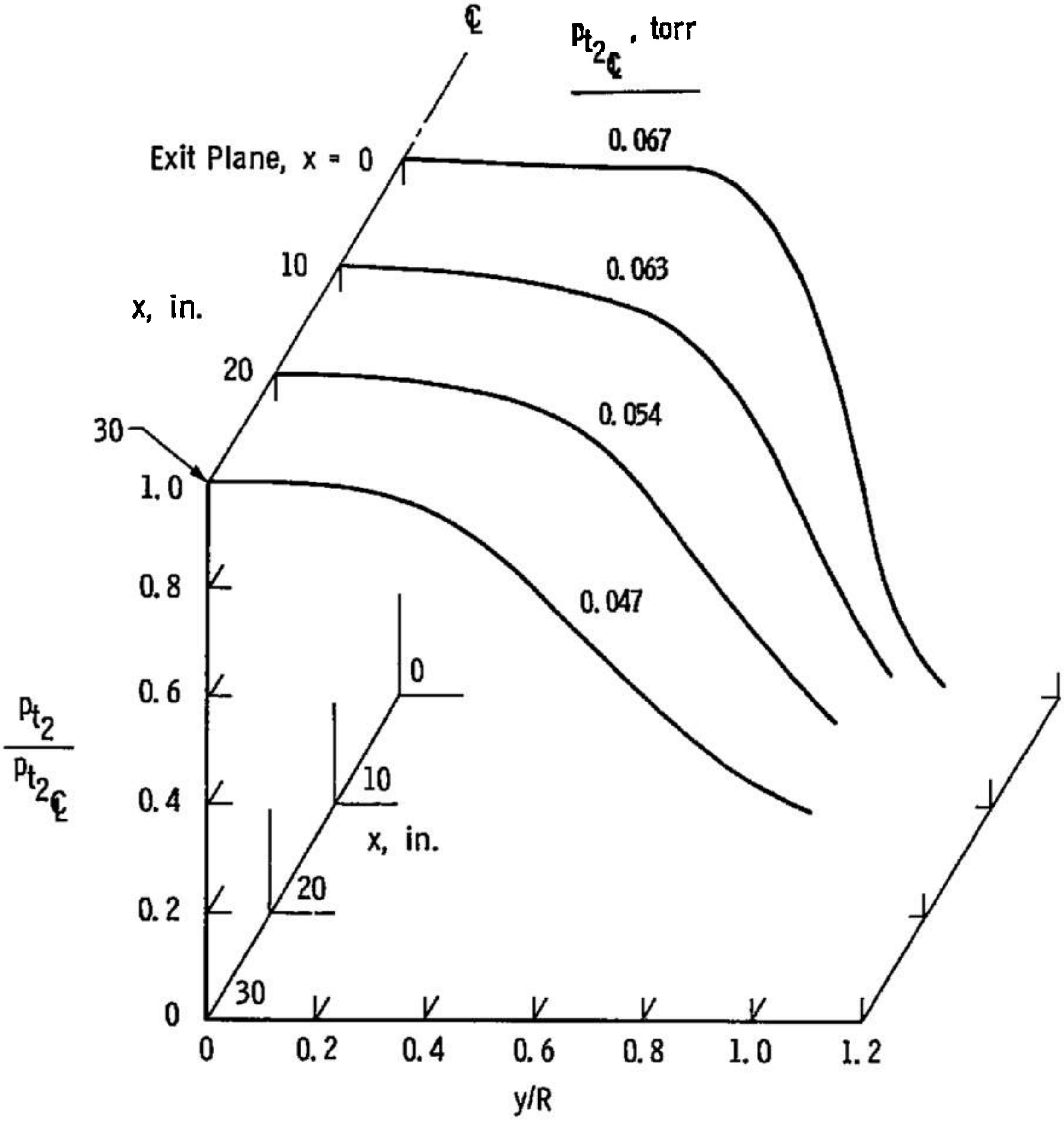
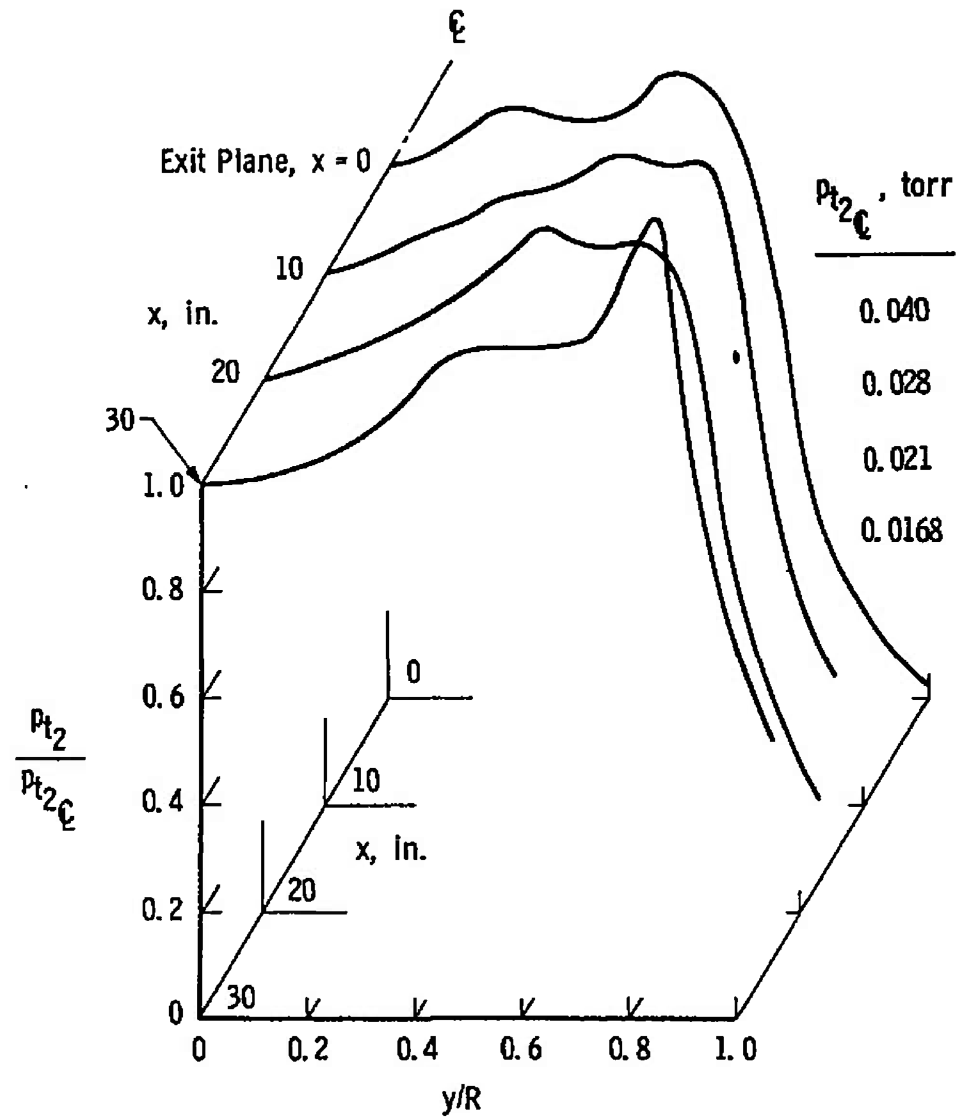
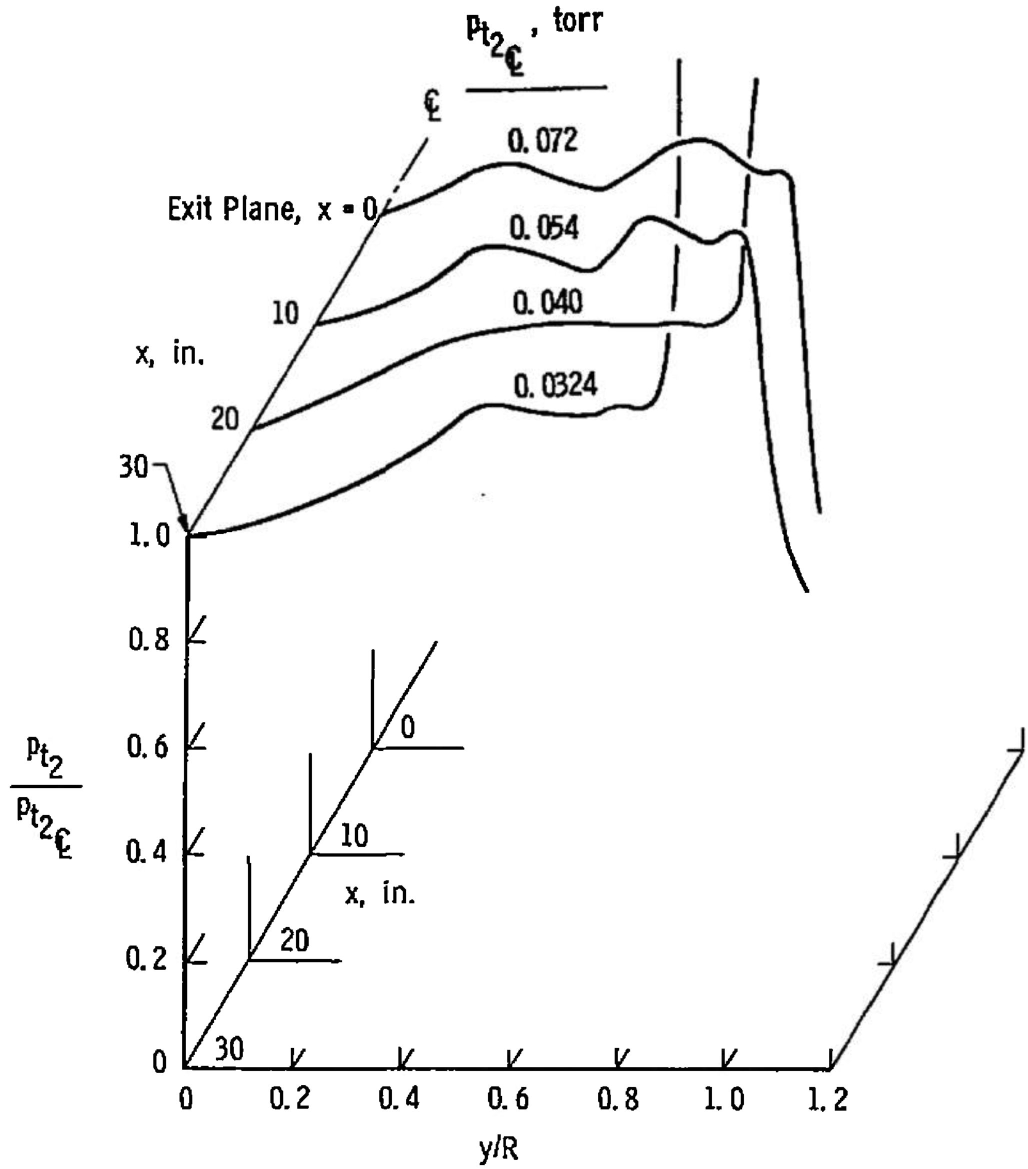


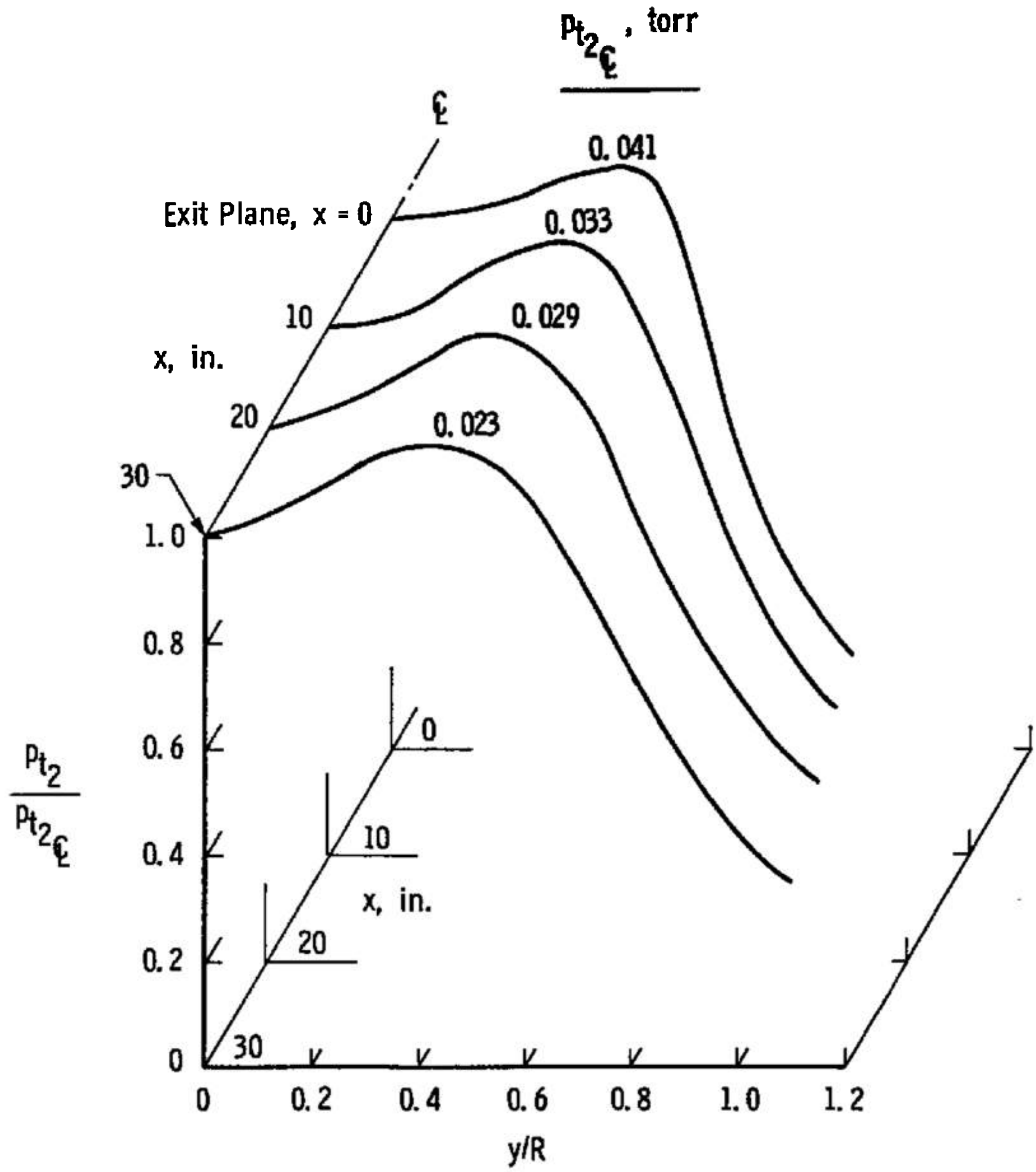
Fig. 11 Pitot Profiles for the M3 Nozzle, p_o = 0.3 Torr, T_o = 280°K, Nitrogen



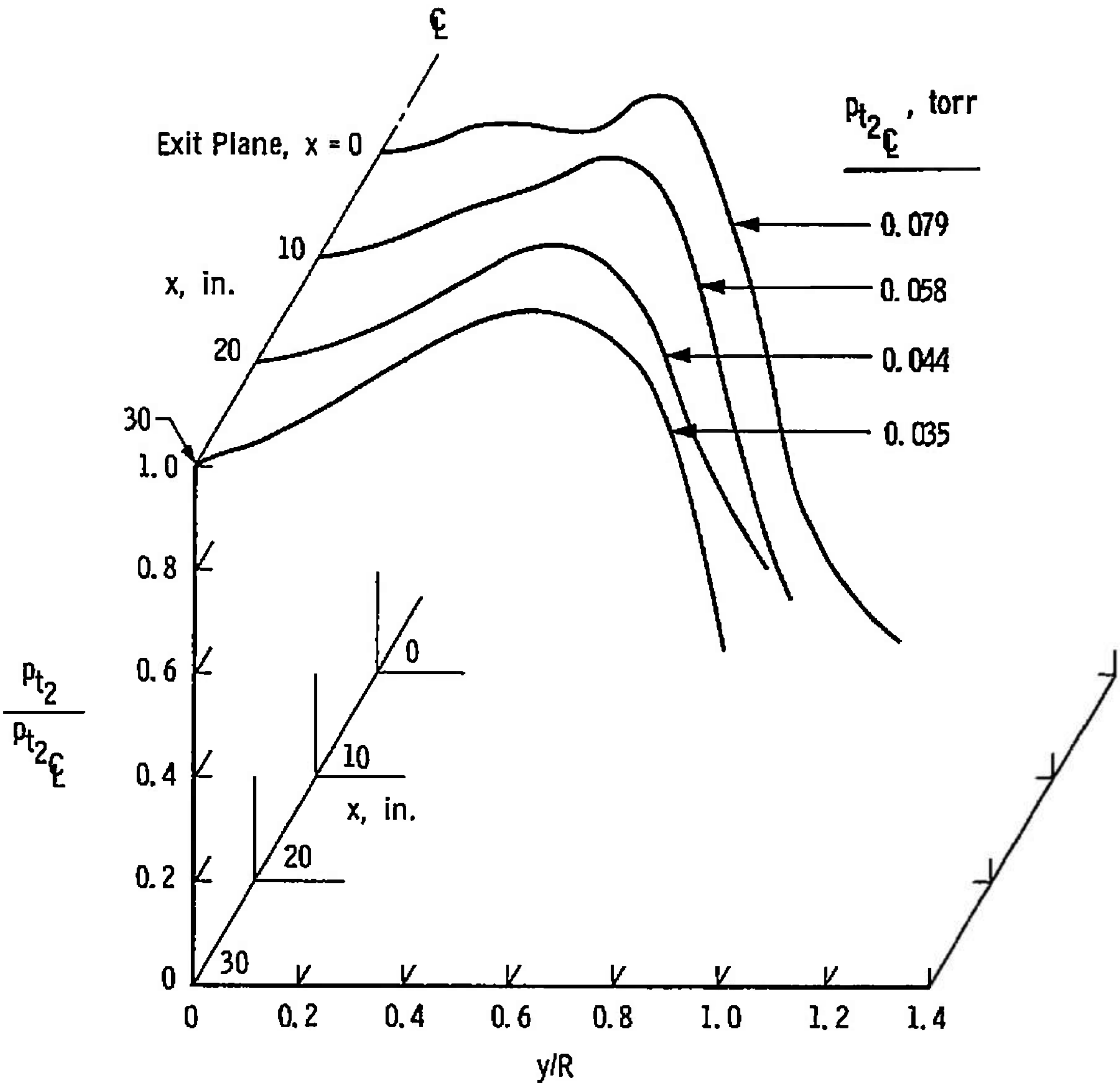
a. p_o = 3.0 Torr, T_o = 280°K
Fig. 12 Pitot Profiles for the M6 Nozzle, Nitrogen



b. p_o = 6.0 Torr, T_o = 280°K
Fig. 12 Continued



c. p_o = 3.0 Torr, T_o = 866°K
Fig. 12 Continued



d. p_o = 6.0 Torr, T_o = 866°K
Fig. 12 Concluded

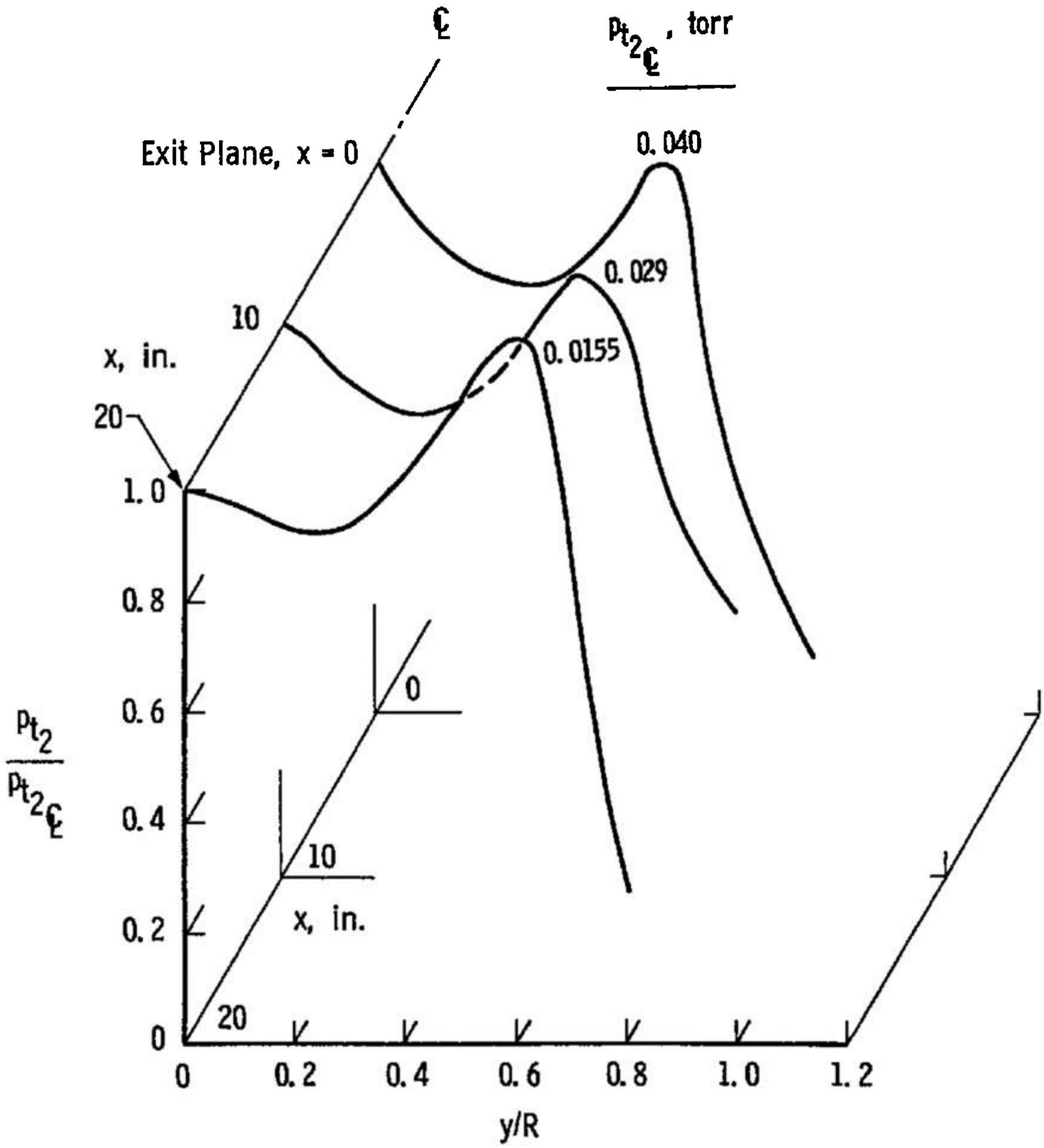
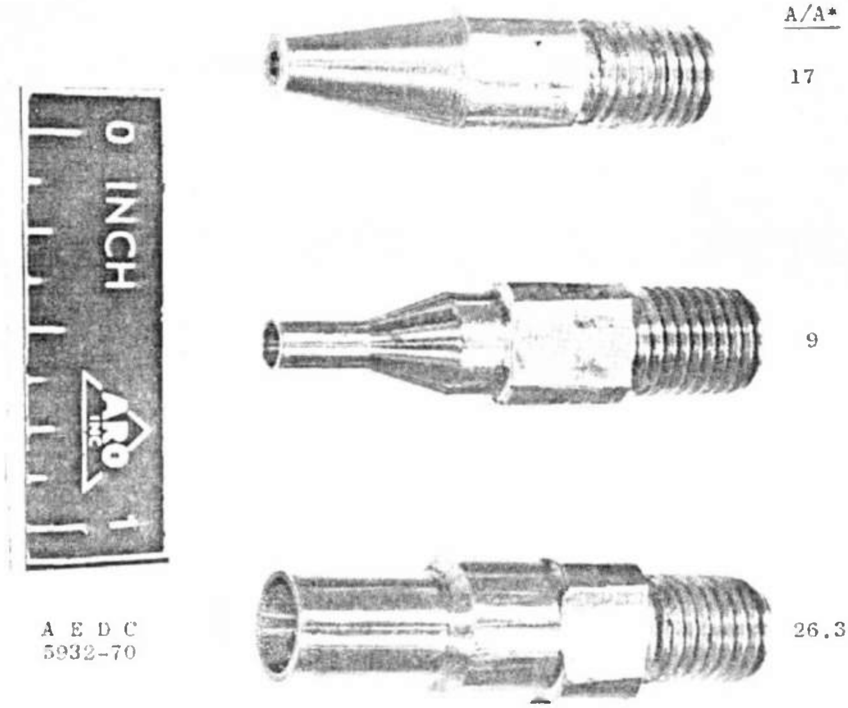
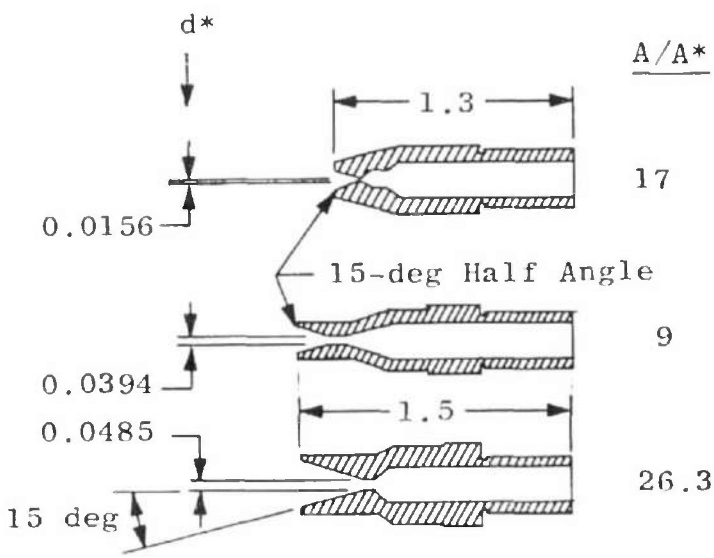


Fig. 13 Pitot Profiles for the M6 Nozzle, Argon, p_o = 2.0 Torr, $T_o \approx 300°K$

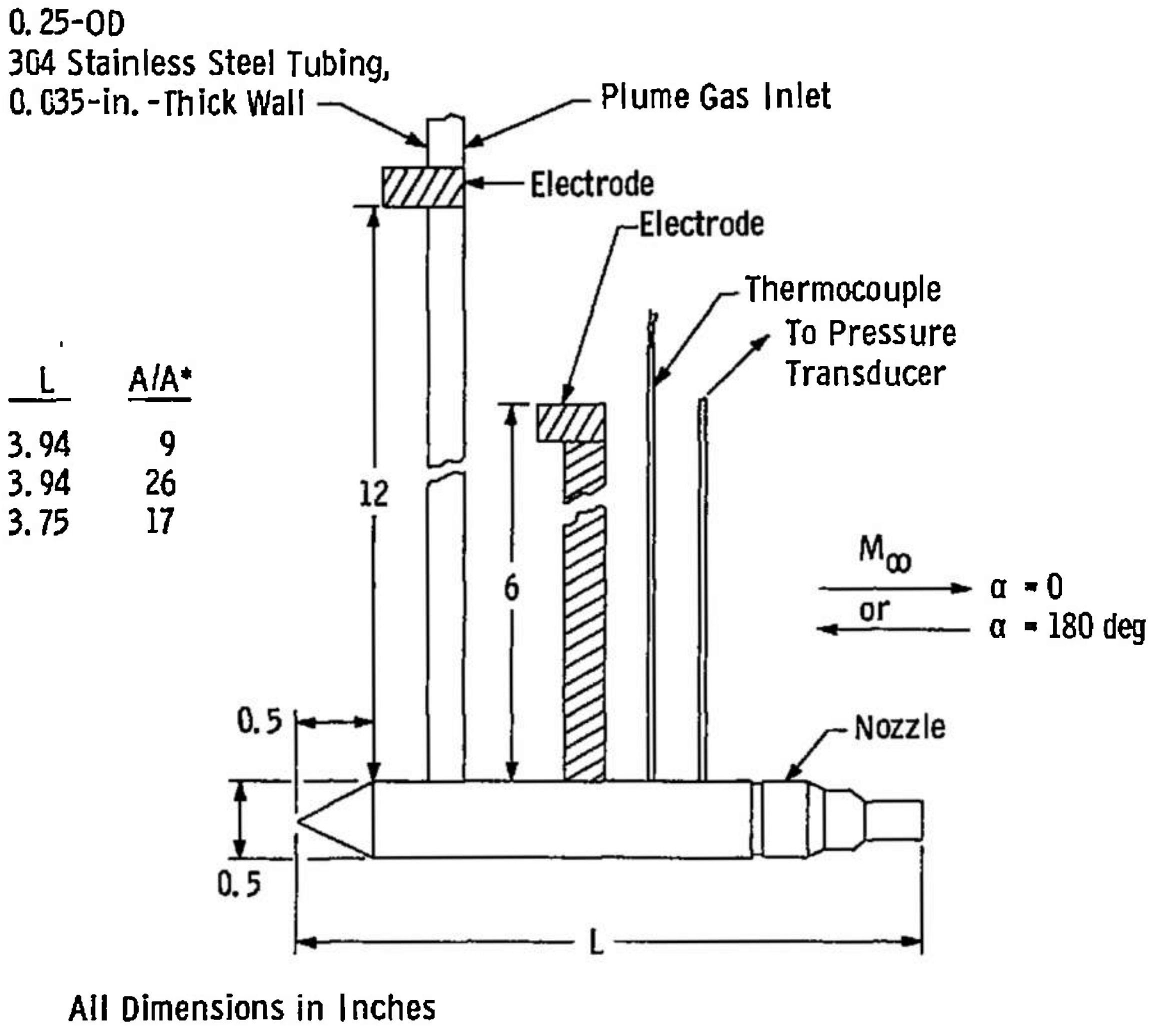


a. Photograph



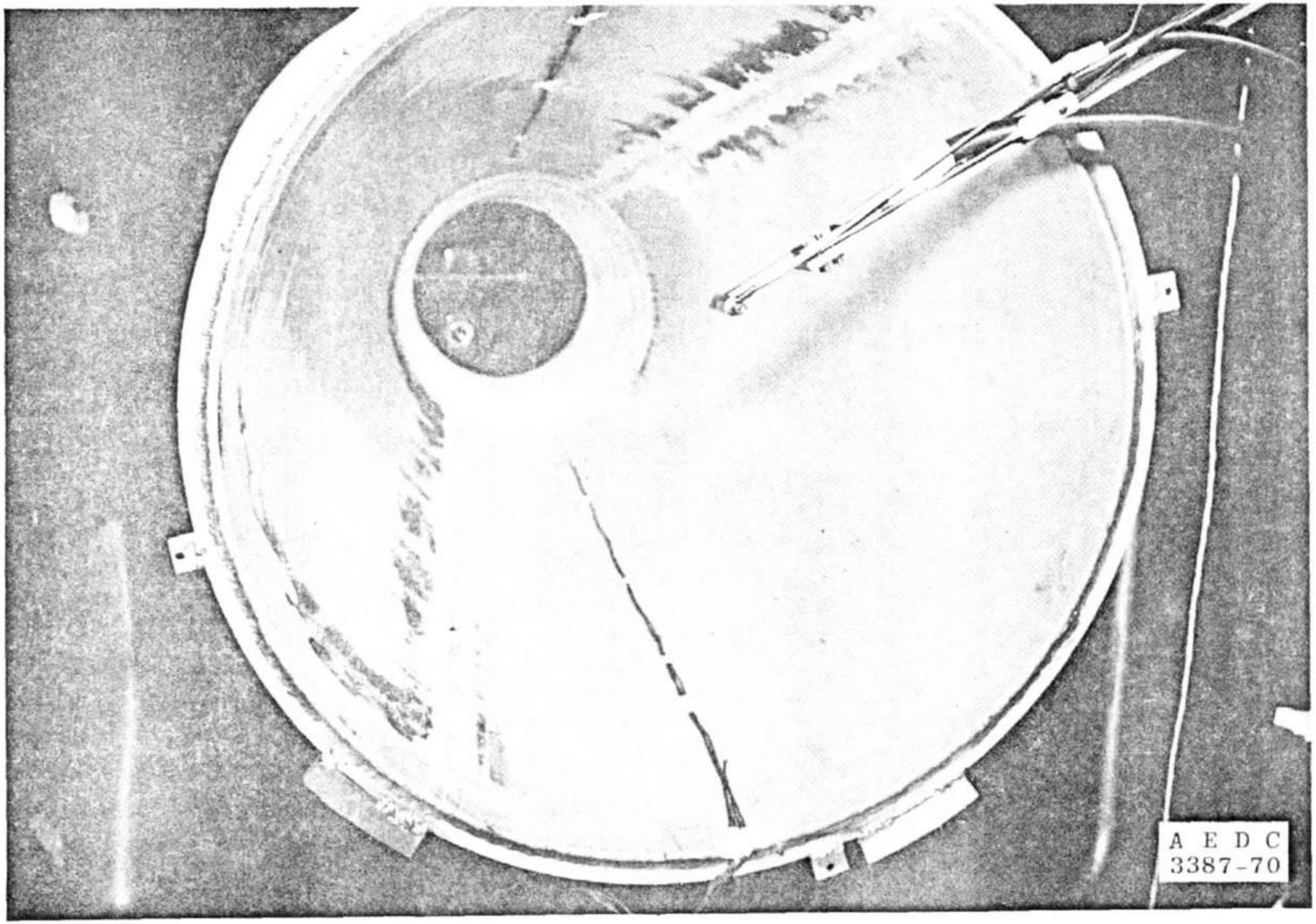
All Dimensions in Inches

b. Schematic
Fig. 14 Model Rocket Nozzles

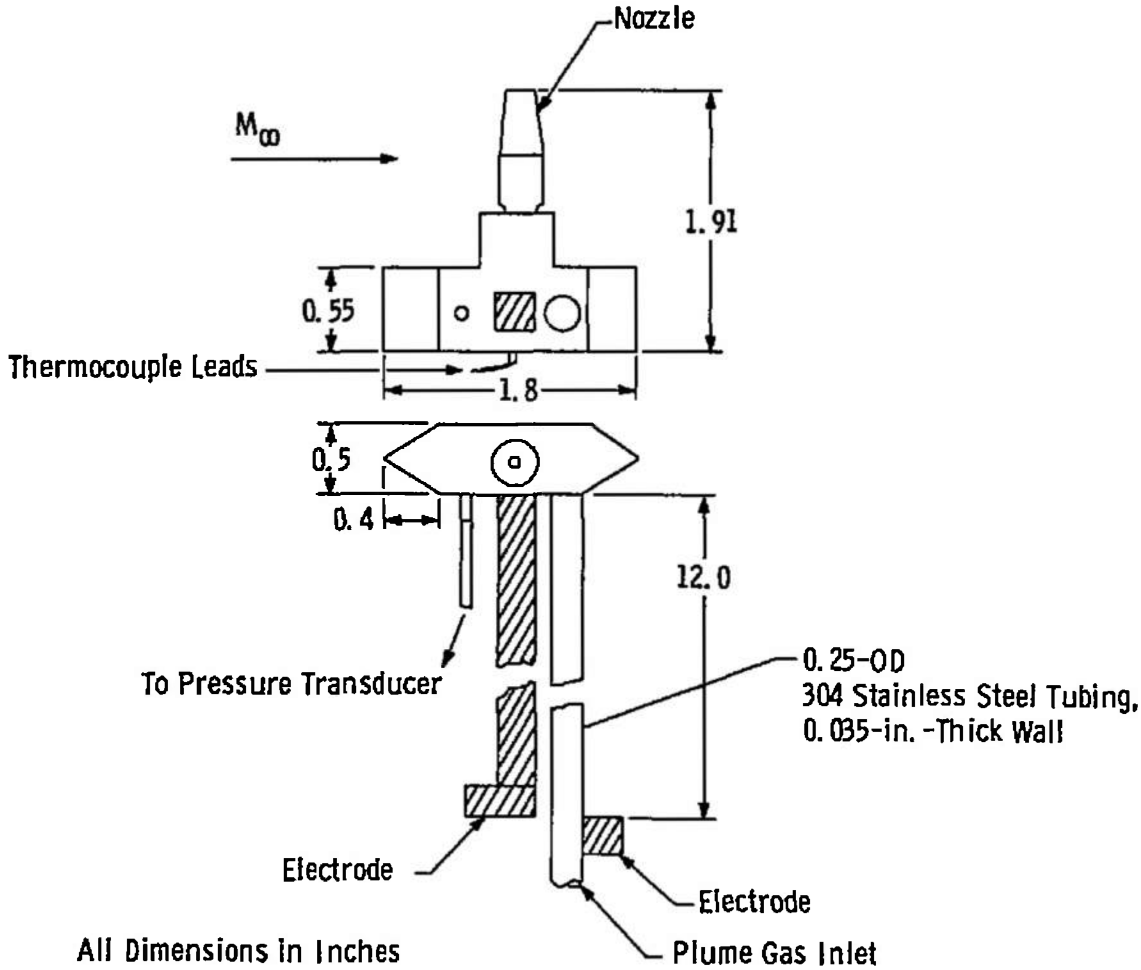


a. Schematic

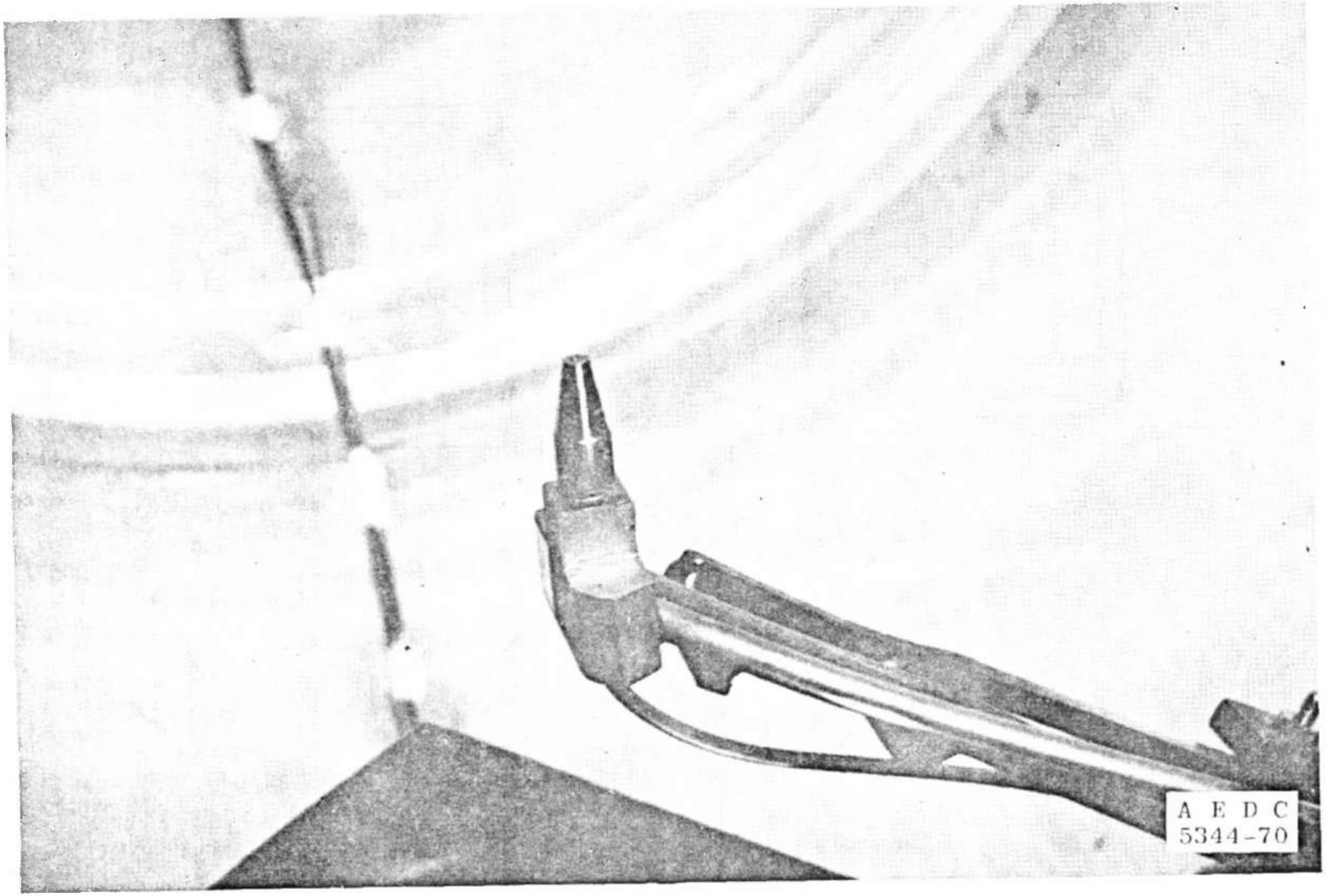
Fig. 15 Model Rocket Assembly for α = 0 and 180 deg



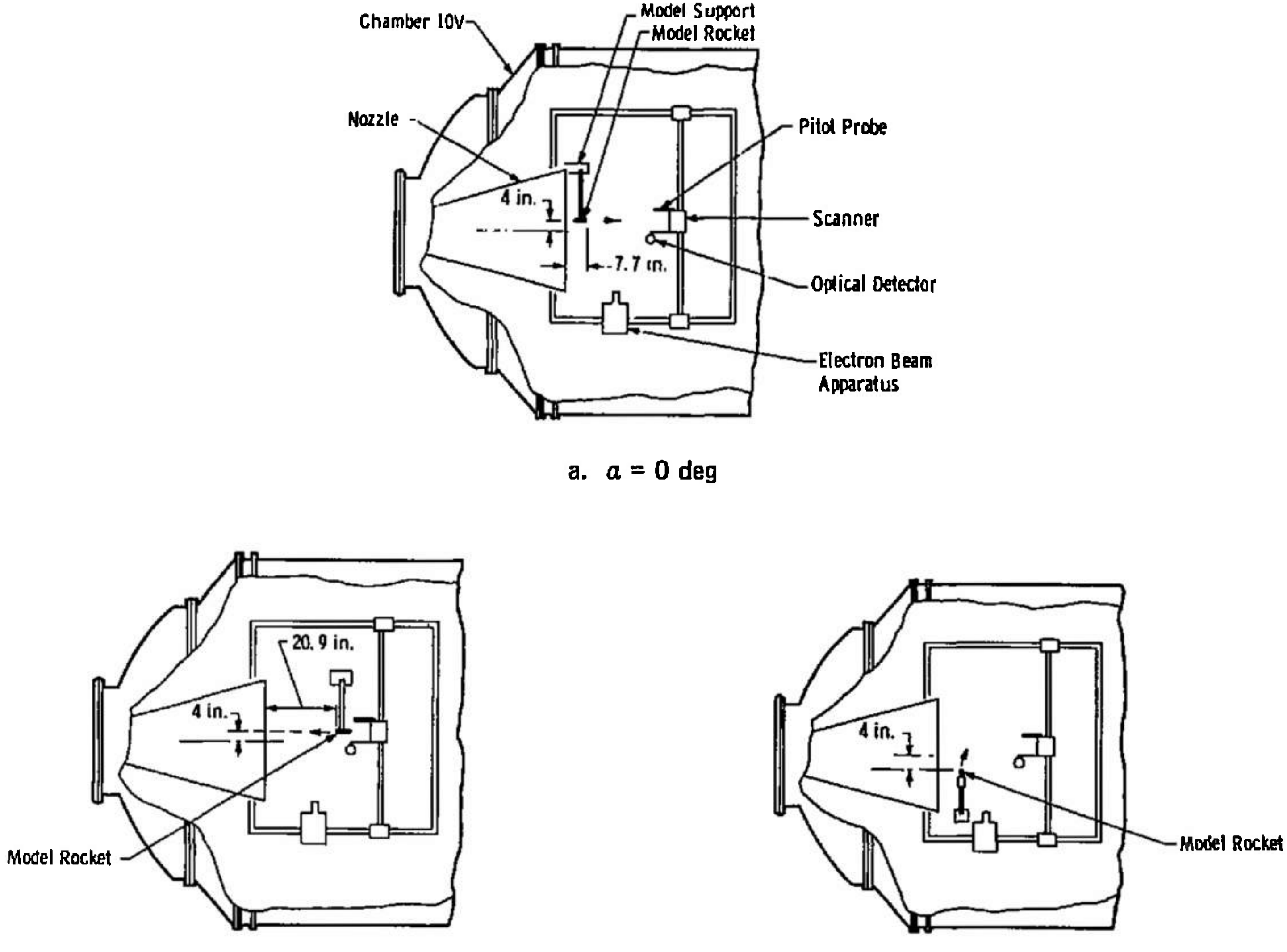
b. Photograph of Installation
Fig. 15 Concluded



a. Schematic
Fig. 16 Model Rocket Assembly for α = 90 deg



b. Photograph of Installation
Fig. 16 Concluded

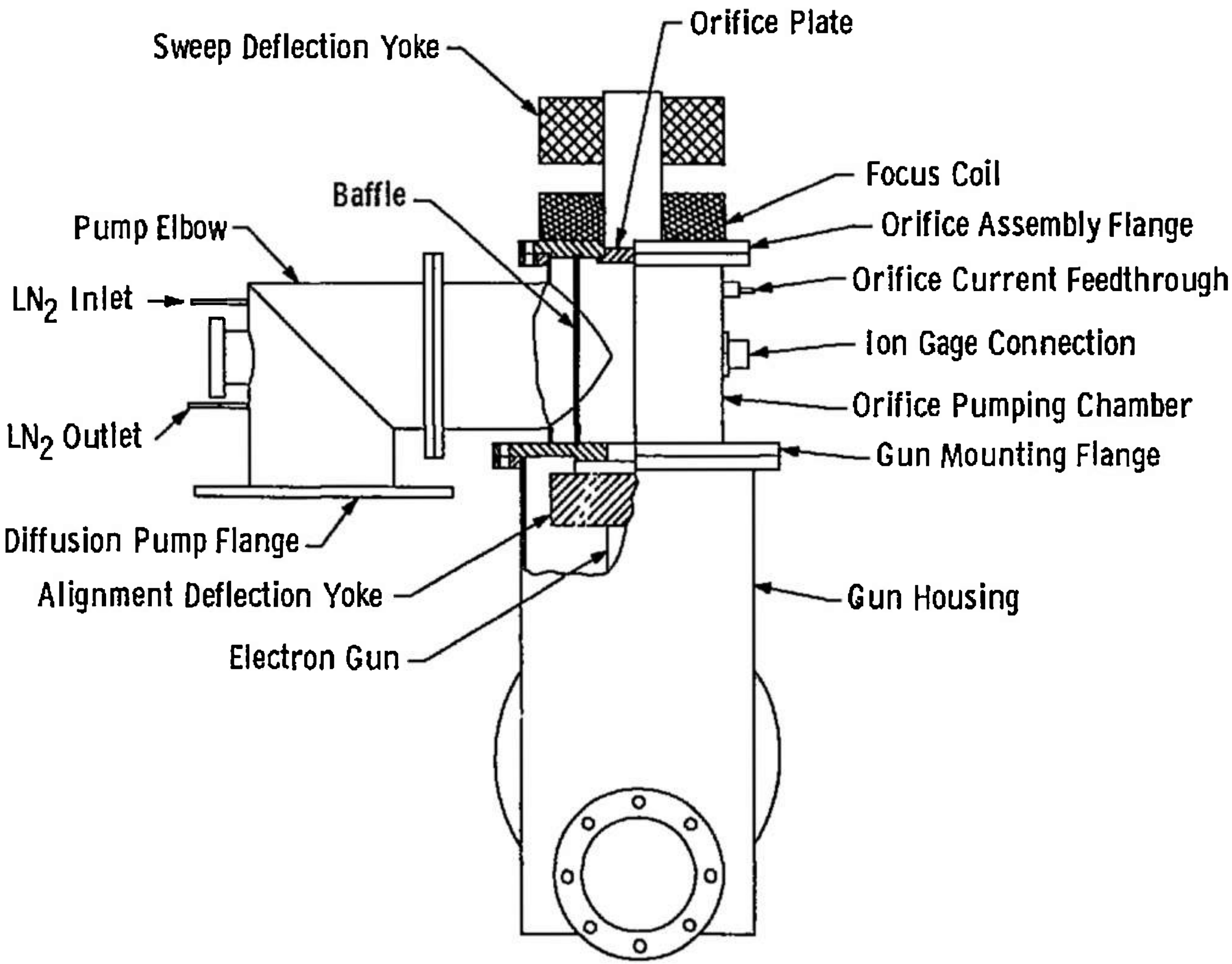


a. α = 0 deg

b. α = 180 deg

c. α = 90 deg

Fig. 17 Schematic of Model Rocket Installation



Vertical Orientation,
Side View

Fig. 18 Electron Beam System Schematic

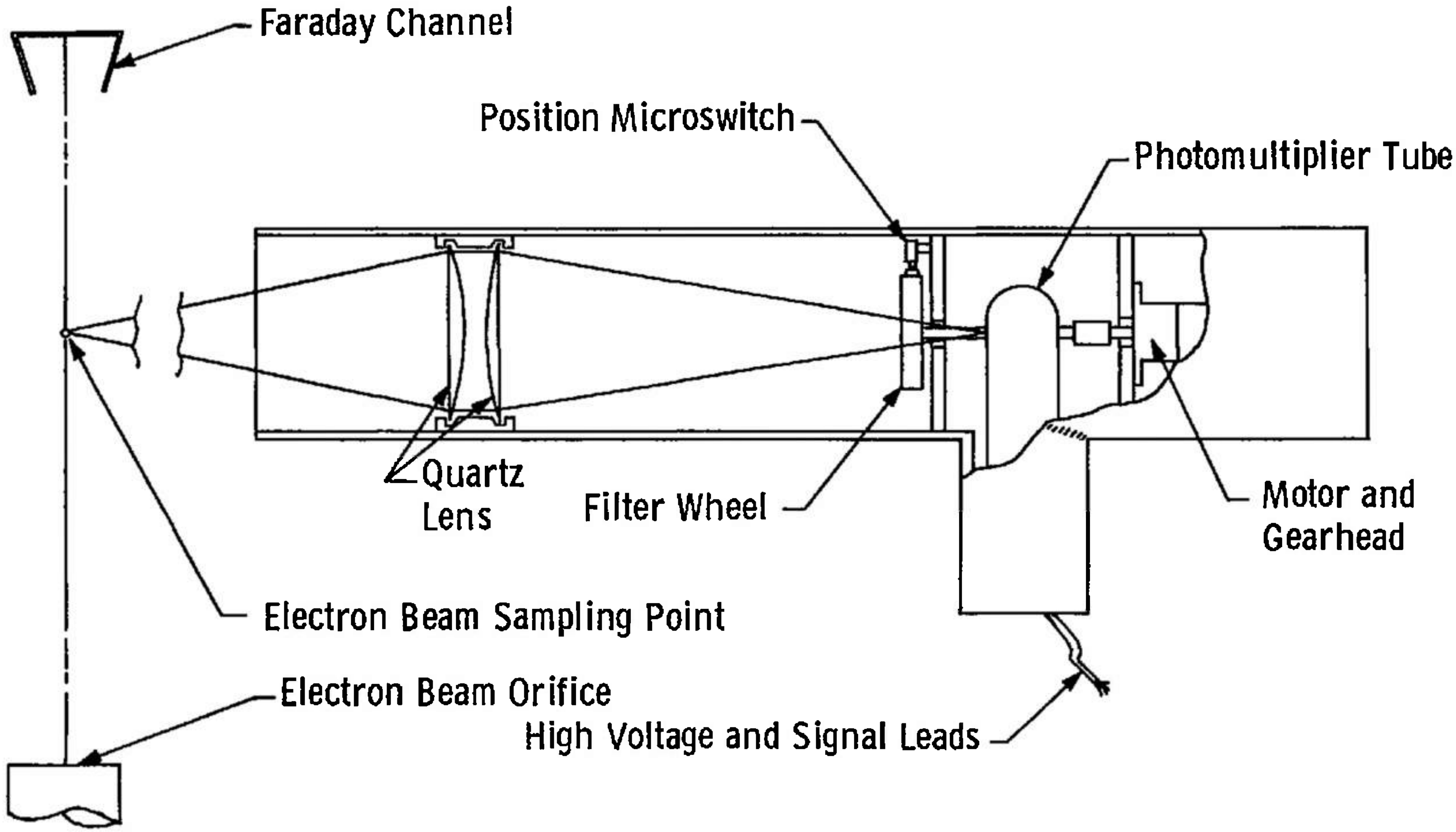
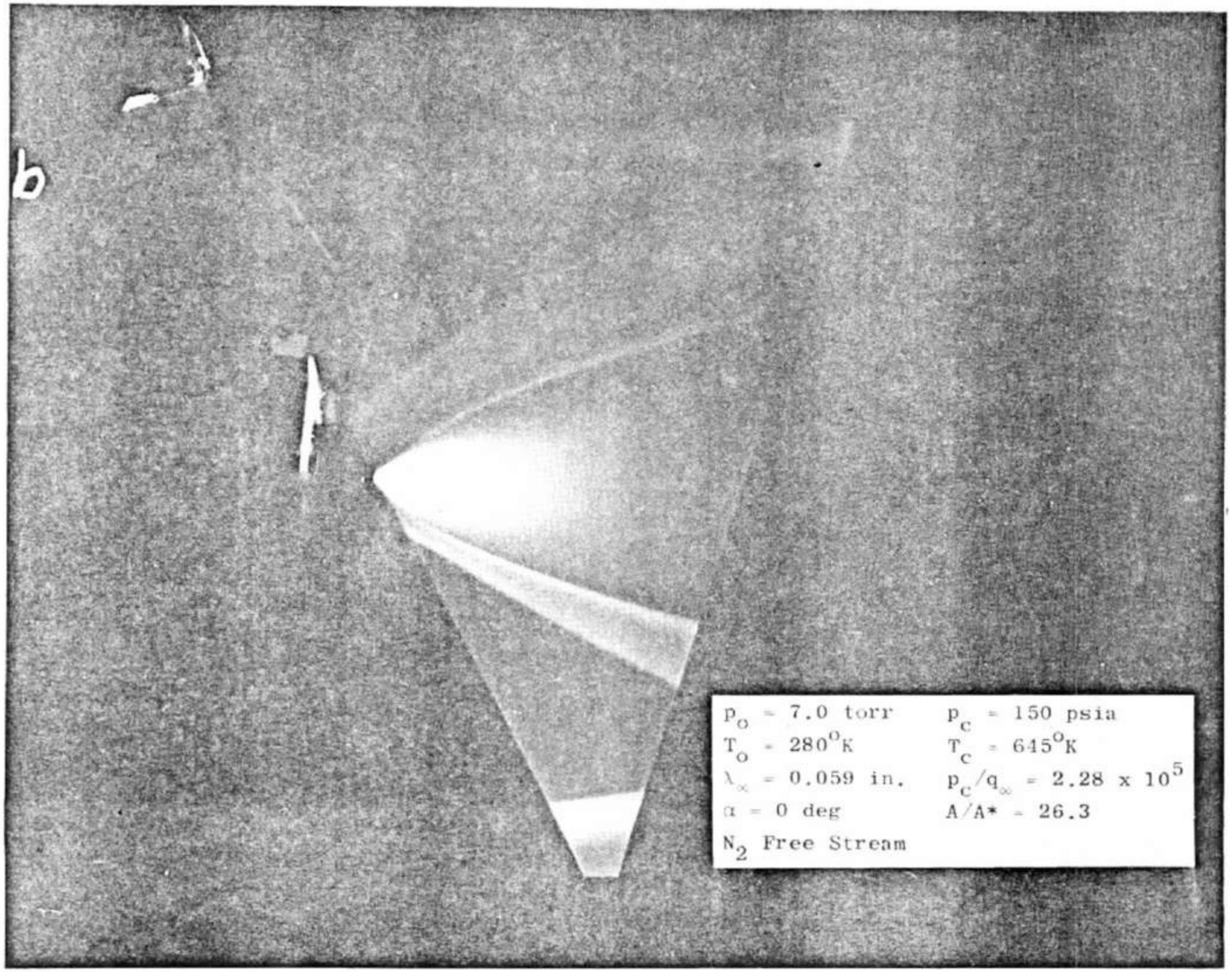
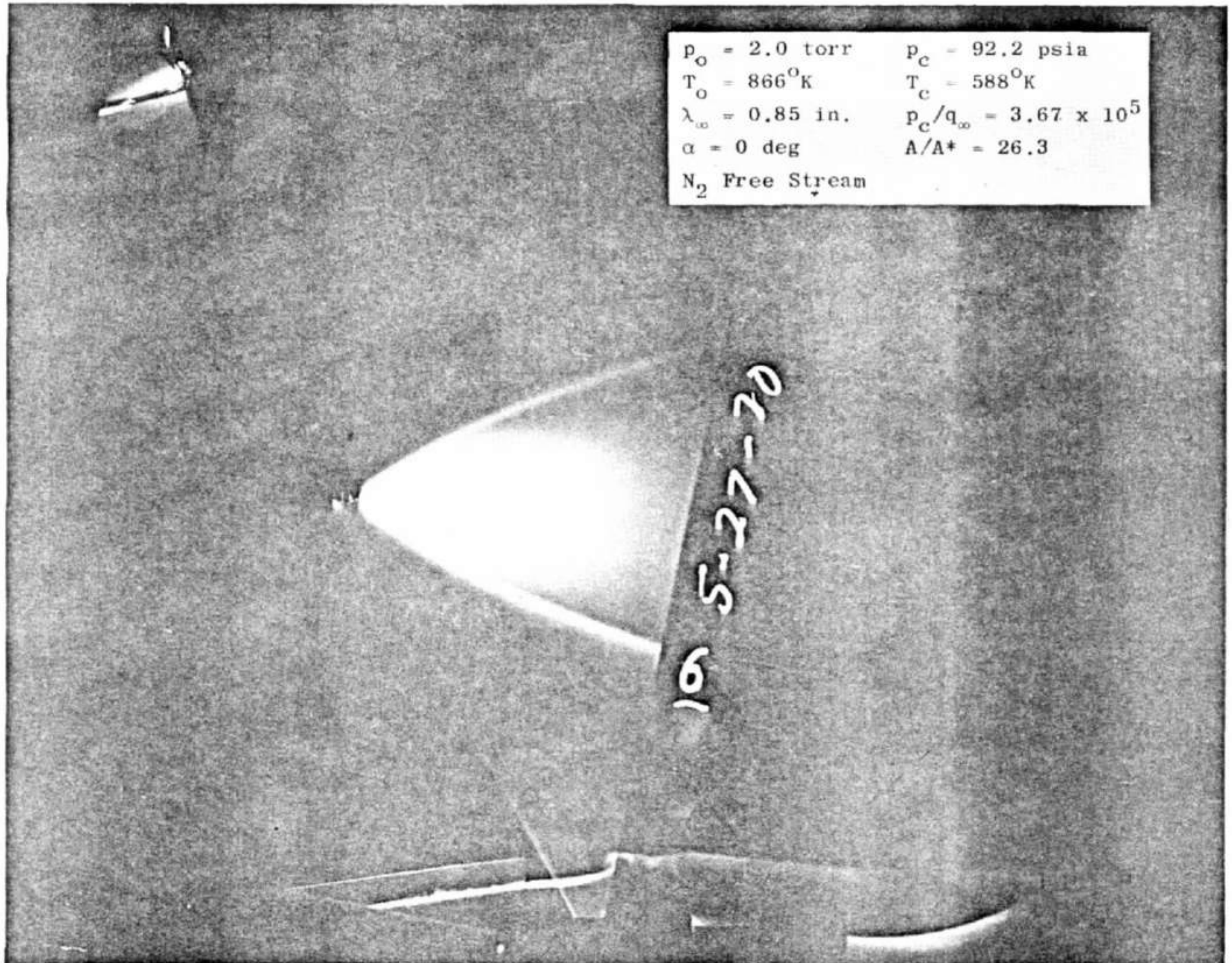


Fig. 19 Optical Detector for Electron Beam Density Measurements



a. λ_∞ = 0.059 in

Fig. 20 CO_2 Plume at α = 0 deg



b. λ_∞ = 0.85 in.
Fig. 20 Concluded

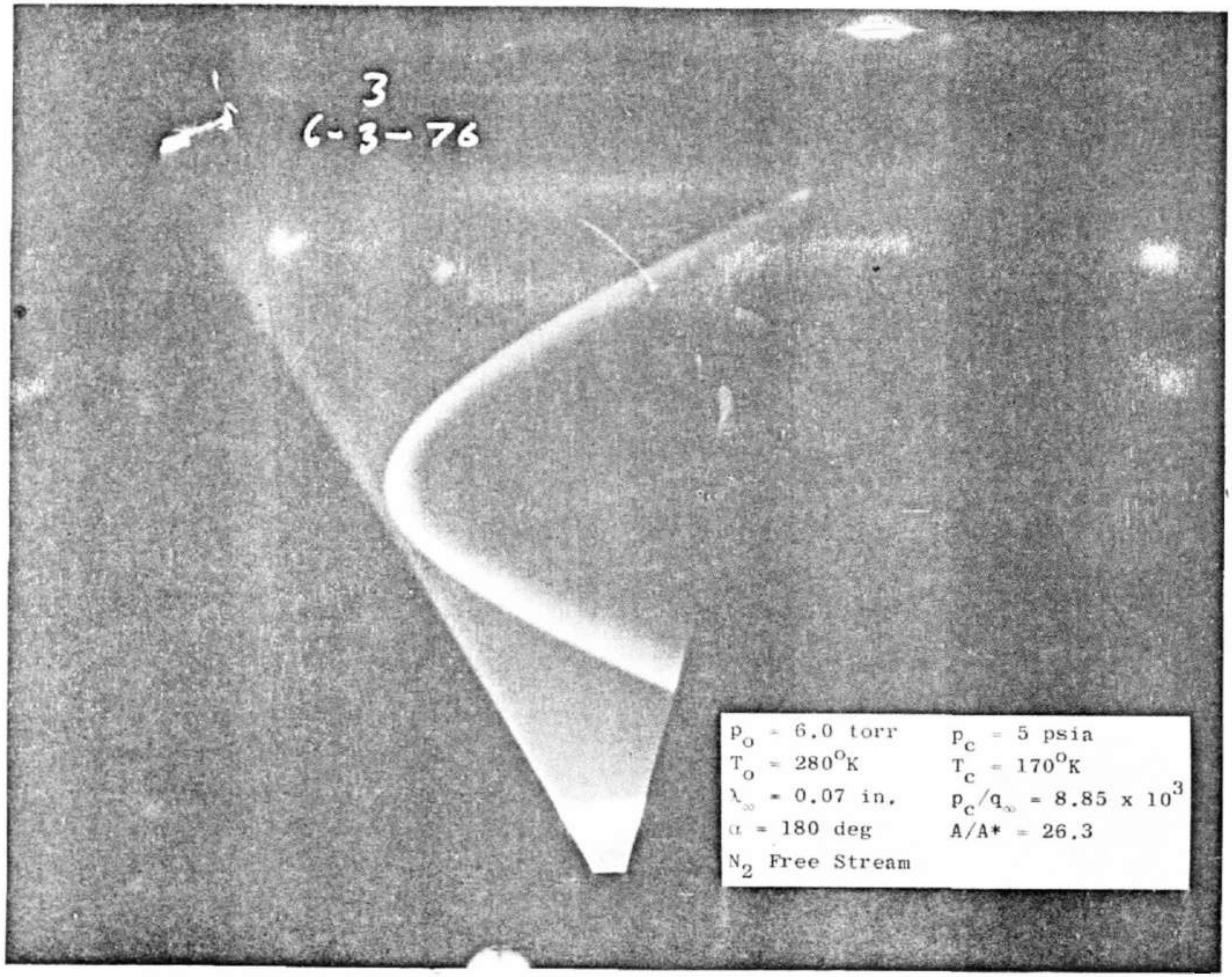
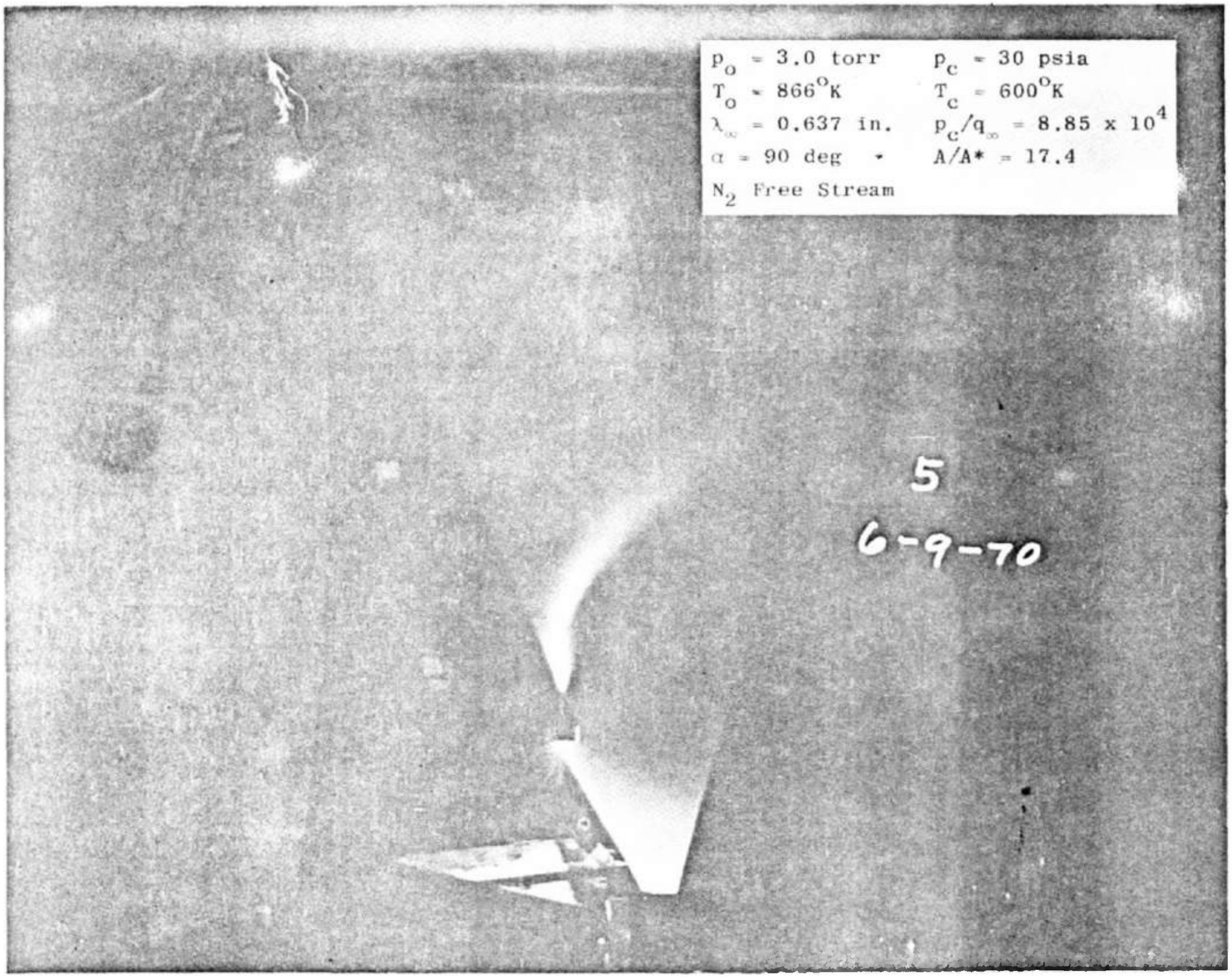
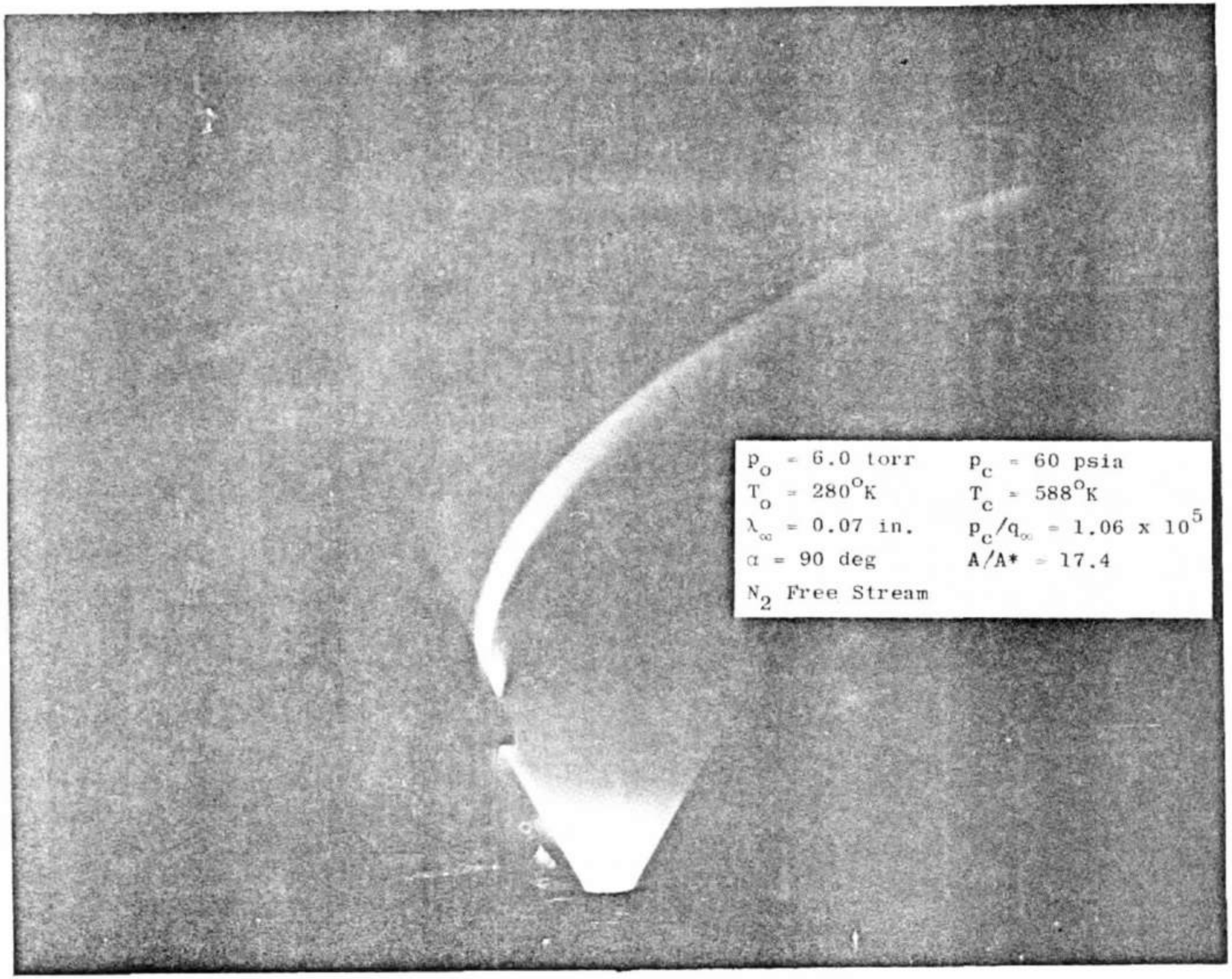


Fig. 21 Argon Plume at α = 180 deg



a. λ_∞ = 0.637 in.
Fig. 22 Argon Plume at α = 90 deg



b. λ_∞ = 0.07 in.
Fig. 22 Concluded

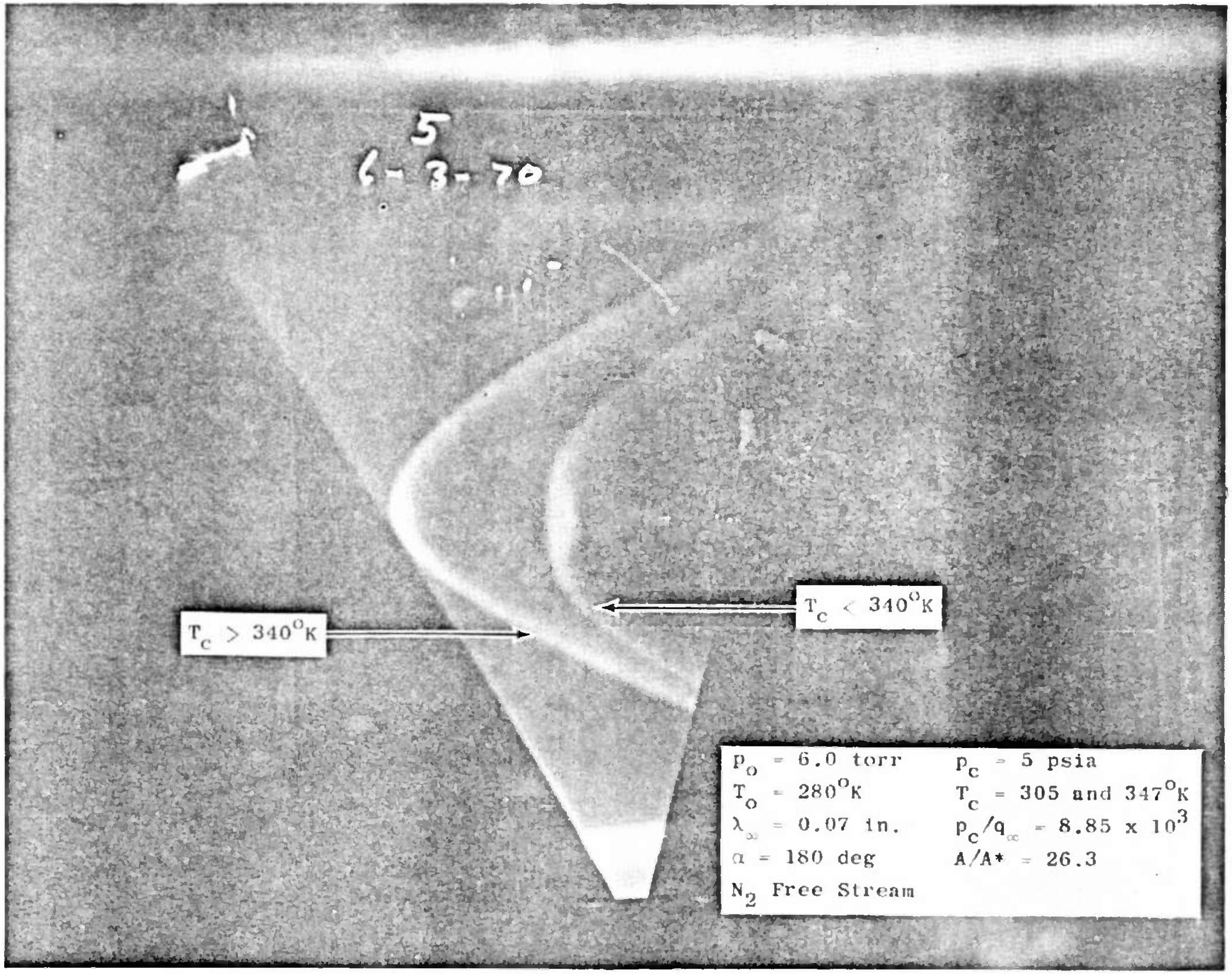


Fig. 23 Argon Plume Showing Shock Jump

Sym	Case	Mach Number	A/A*	Plume Gas
○	1	3.59 to 3.65	9	CO_2
□	2	3.59 to 3.65	9	Ar
△	3	3.59 to 3.65	26.3	CO_2
◇	4	7.40 to 7.90	26.3	CO_2
◺	5	7.80 to 7.90	26.3	Ar
△	6	11.45	26.3	CO_2
▽	7	7.80	9.0	CO_2

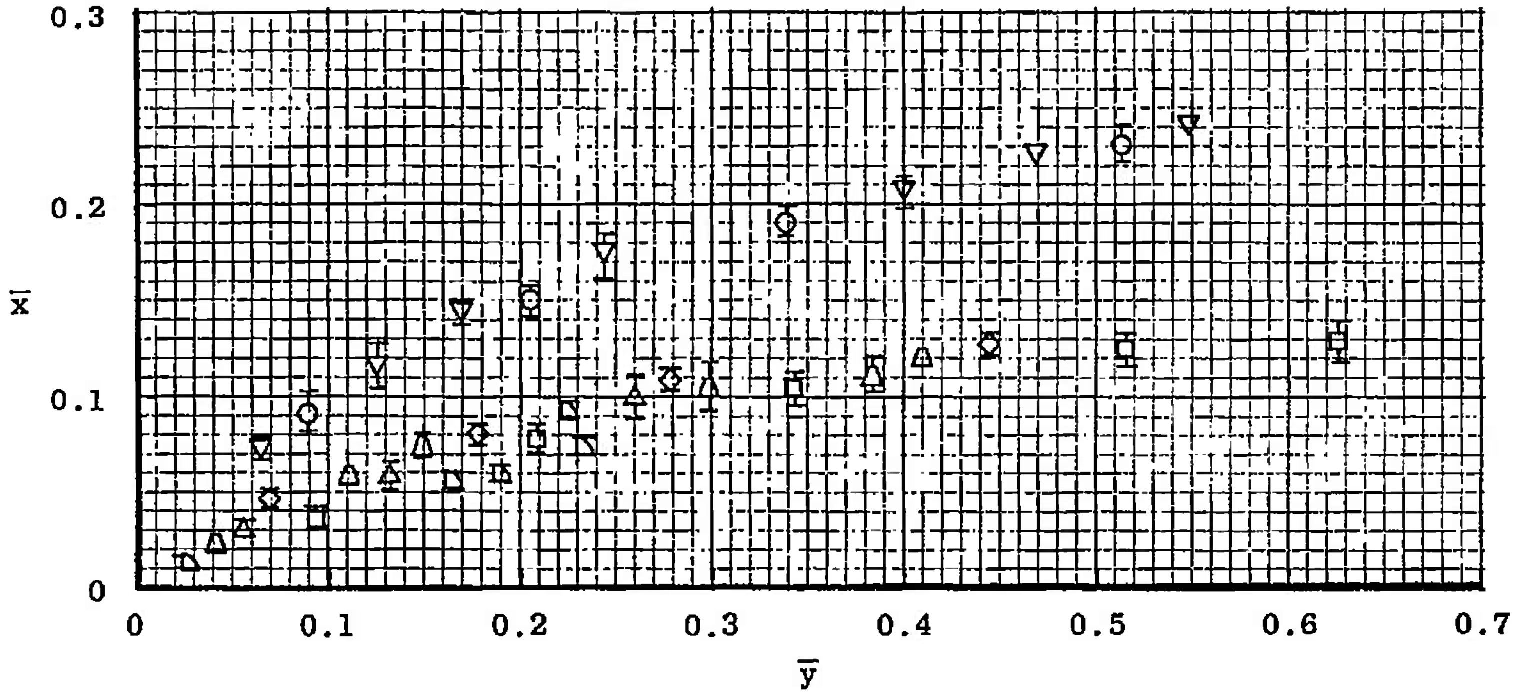


Fig. 24 Comparison of Inner Plume Boundaries

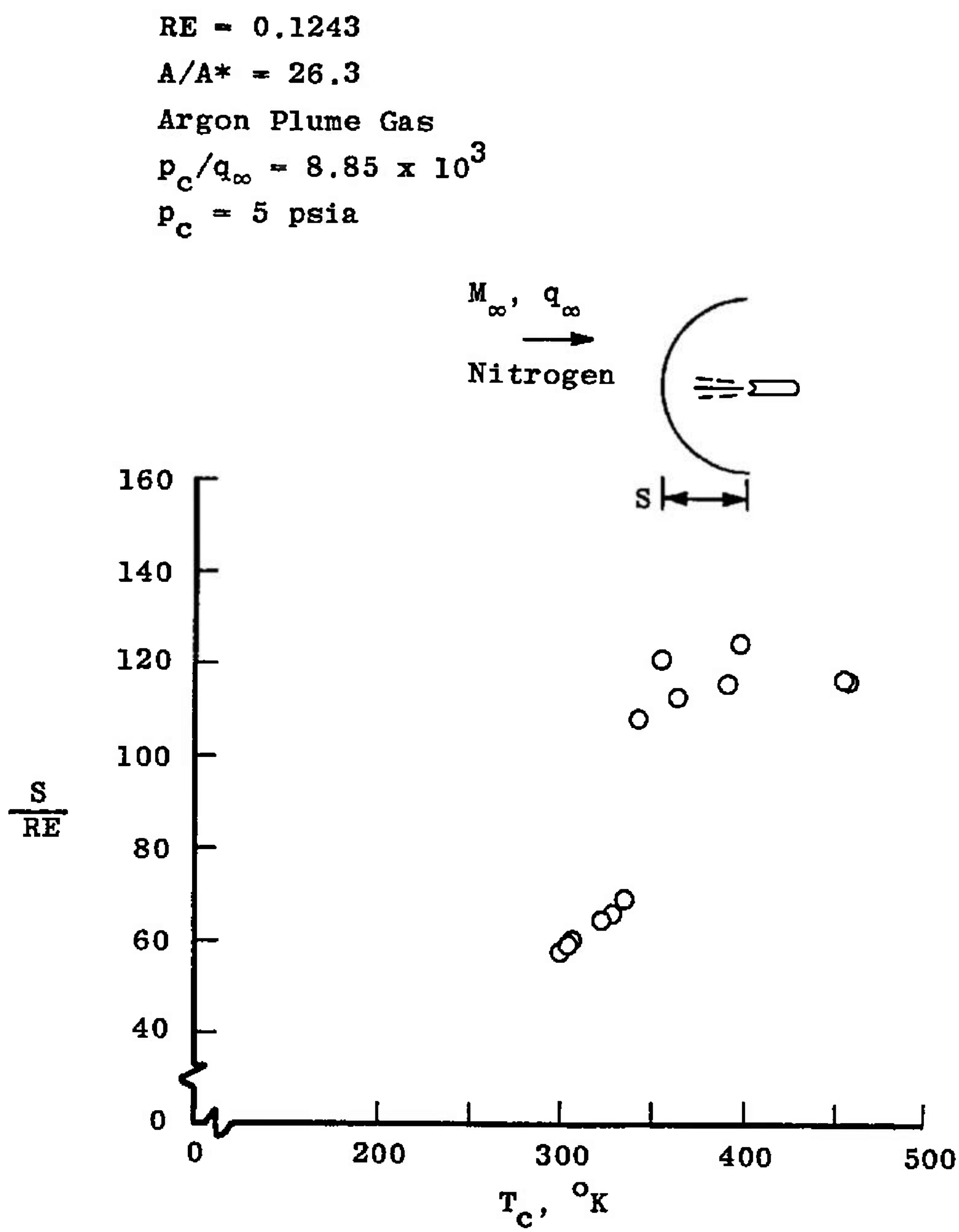


Fig. 25 Plume Shock Standoff versus T_c

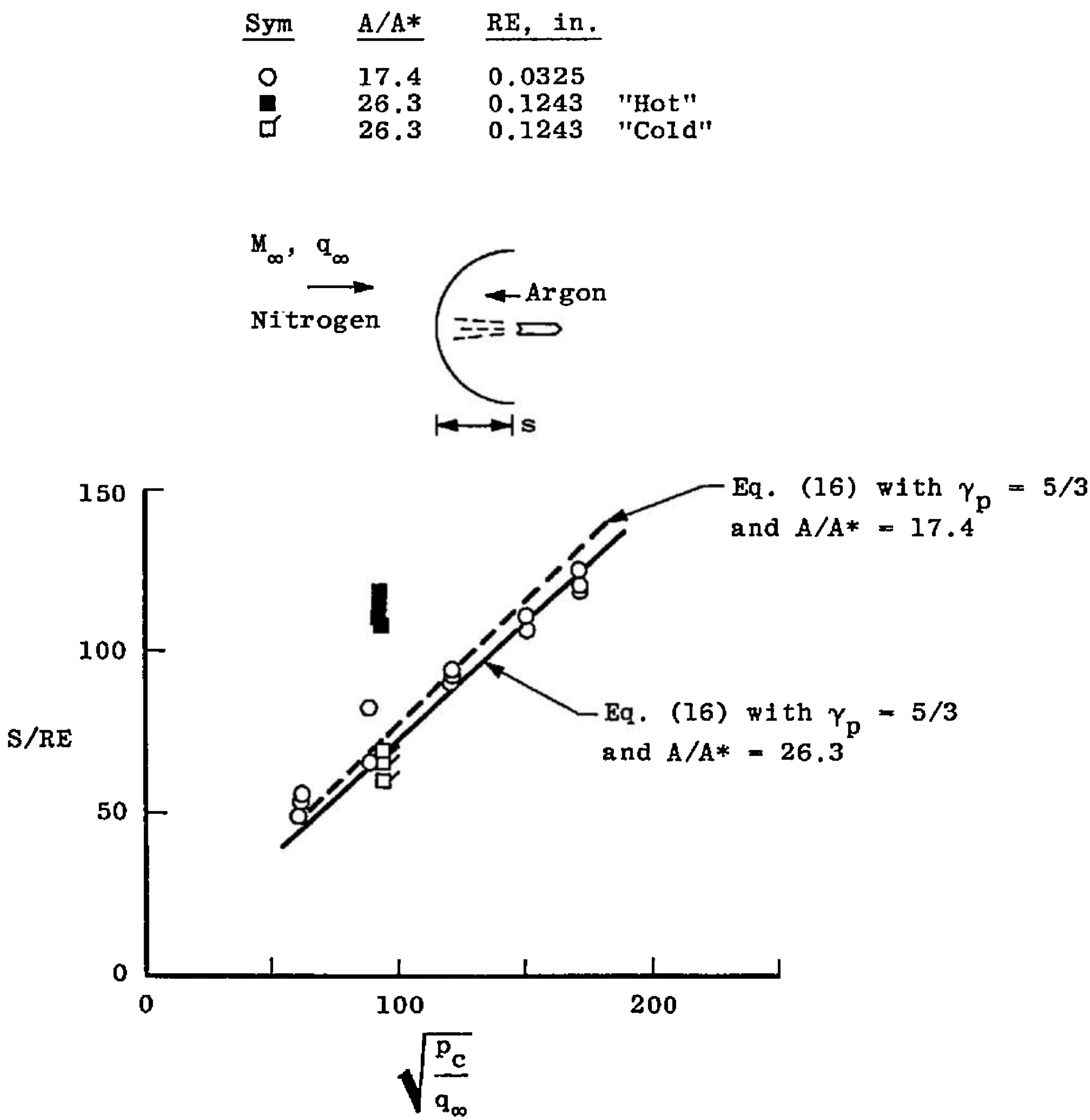


Fig. 26 S/RE versus $\sqrt{p_c/q_\infty}$

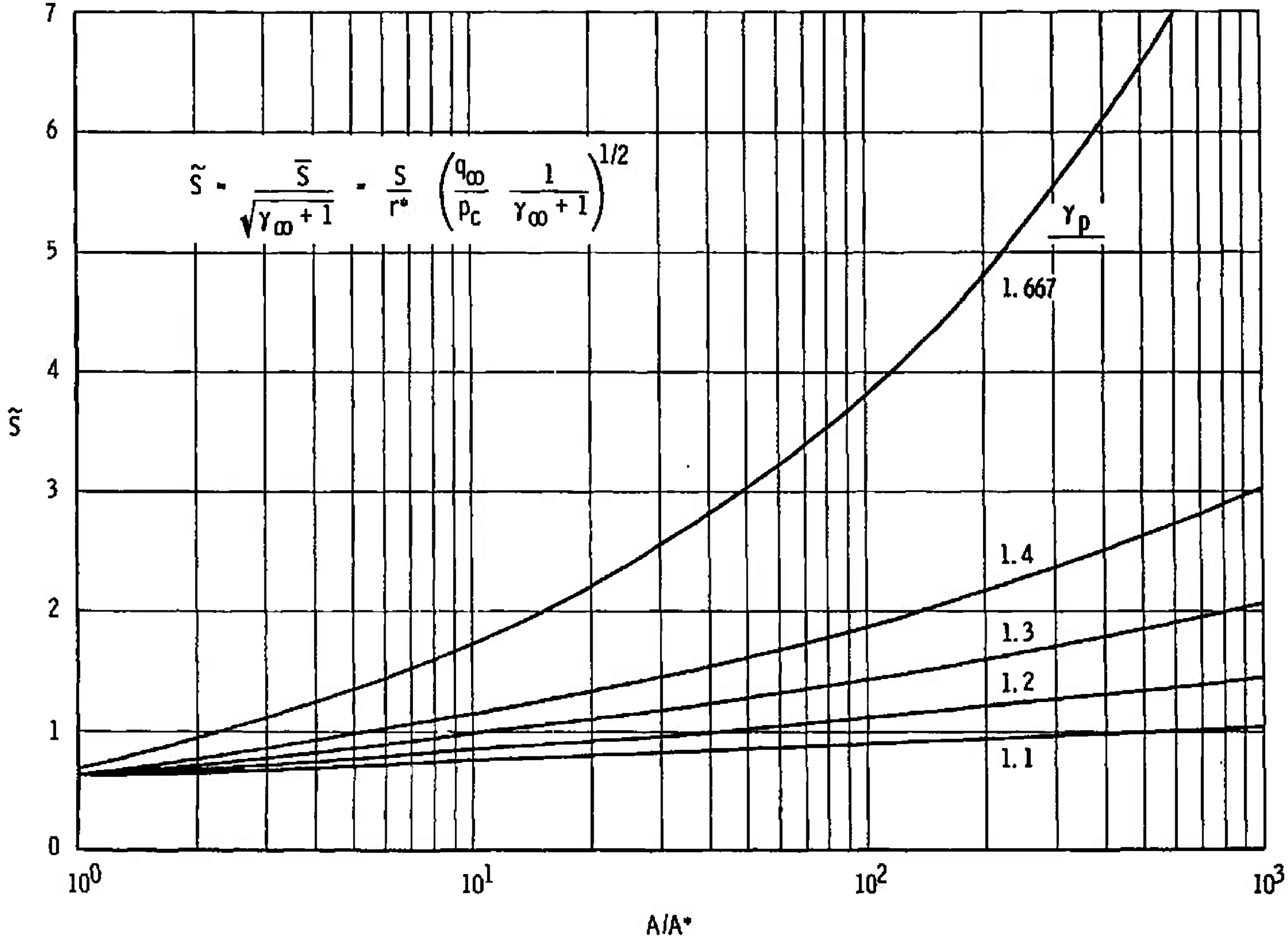


Fig. 27 Theoretical Center Plume Boundary Location for Rocket Nozzle Exhausting Counter to Supersonic Free Stream (α = 180 deg)

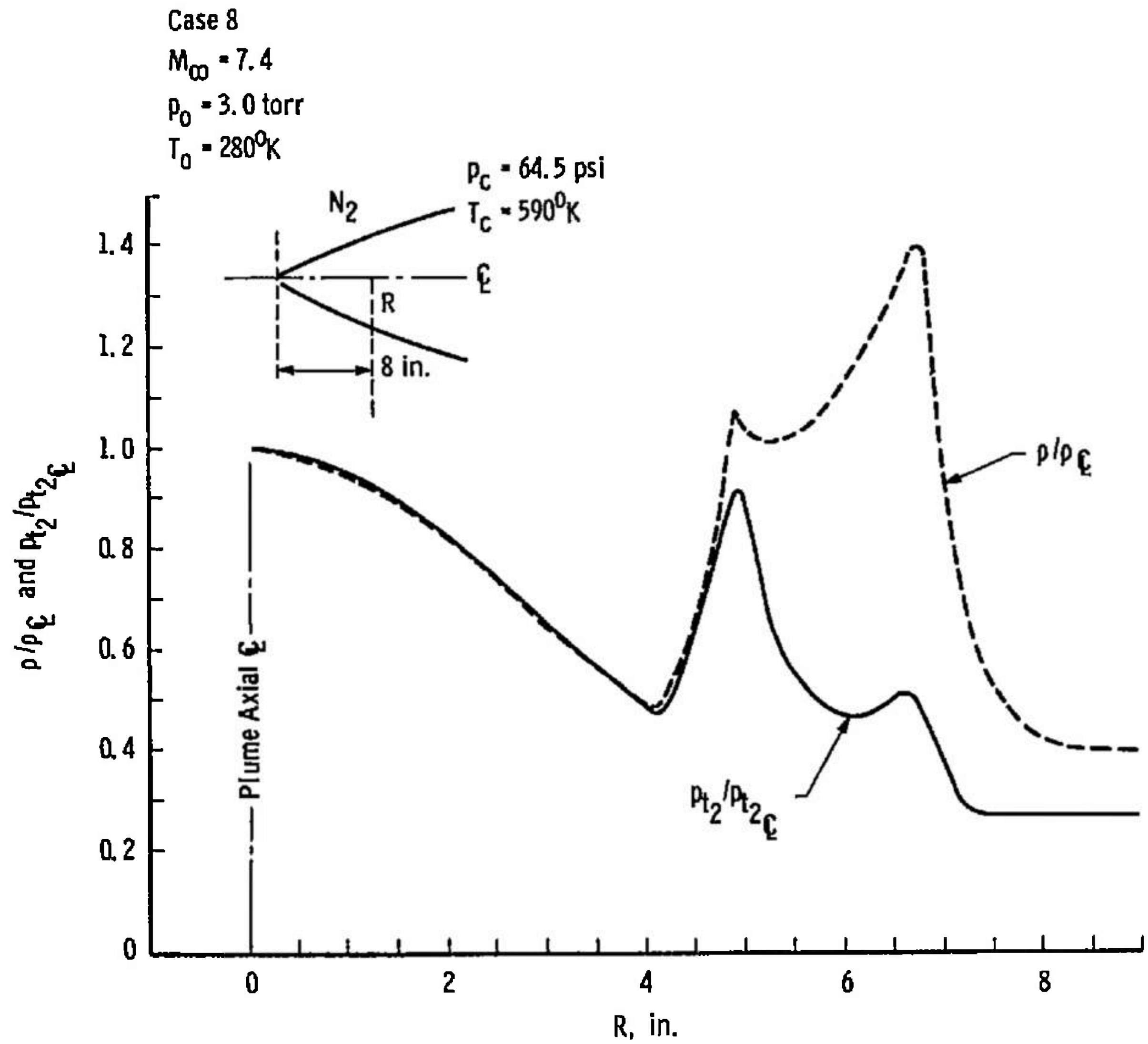


Fig. 28 Relative Pitot Pressure and Density Profiles for an N_2 Plume in N_2 Free Stream

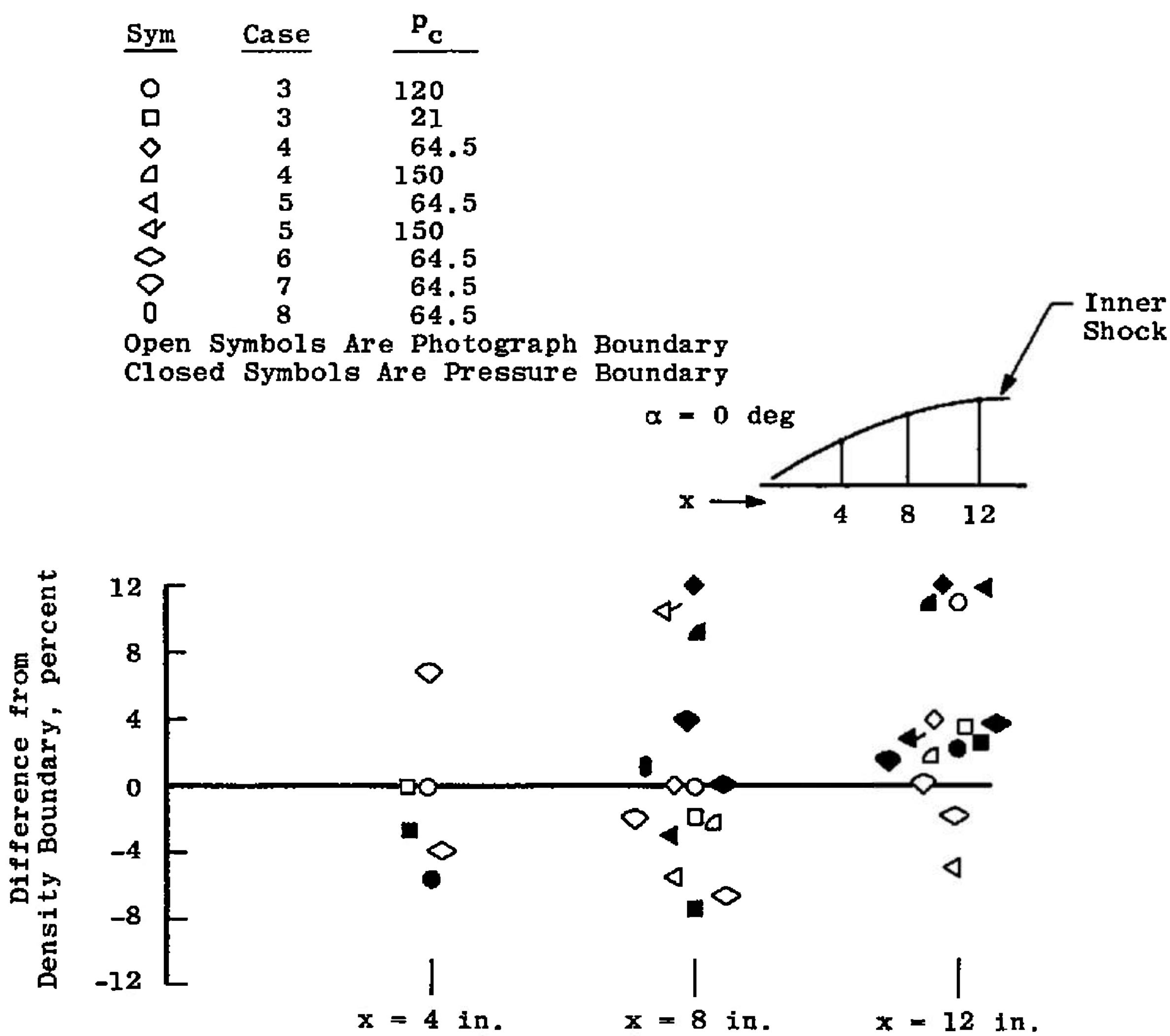


Fig. 29 Comparison of Plume Boundaries Determined from Photographs and Pressure Data to Boundaries Determined from Density Data

APPENDIX II
TABLES

TABLE I
MODEL ROCKET DIMENSIONS

A/A*, average	d_e	d*, pretest	d*, posttest	d*, average
9.0	0.118	0.0388	0.0401	0.0394
17.4	0.065	0.01495	0.01625	0.0156
26.3	0.2485	0.0475	0.04955	0.0485

TABLE II
SUMMARY OF TEST CONDITIONS

Case	Free-Stream Gas	M_∞*	Model A/A*	Plume Gas	Model Orientation, α, deg
1	N_2	3.59 to 3.65	9	CO_2	0
2	N_2	3.59 to 3.65	9	Ar	0
3	N_2	3.59 to 3.65	26.3	CO_2	0
4	N_2	7.40 to 7.90	26.3	CO_2	0
5	N_2	7.80 to 7.90	26.3	Ar	0
6	Ar	11.45	26.3	CO_2	0
7	N_2	7.80	9	CO_2	0
8	N_2	7.80	9	N_2	0
9	N_2	7.90	26.3	Ar	180
10	N_2	7.90	17.4	Ar	180
11	N_2	7.90	17.4	Ar	90
12	N_2	7.90	17.4	CO_2	180

*M_∞ at a distance of 10 in. from the wind tunnel nozzle exit.

TABLE III
FREE-STREAM TEST CONDITIONS

p_o, torr	T_o, °K	M_∞	$q_\infty \times 10^4$, psi	λ, in.	Test Gas
MACH 3 NOZZLE					
0.4	280	3.59	8.06	0.0685	N_2
0.6	280	3.64	11.6	0.0476	N_2
0.7	280	3.65	13.5	0.0413	N_2
MACH 6 NOZZLE					
1.0	280	7.45	1.219	0.347	N_2
2.0	280	7.70	2.106	0.192	N_2
3.0	280	7.80	2.983	0.135	N_2
5.0	280	7.88	4.74	0.0846	N_2
6.0	280	7.90	5.64	0.0696	N_2
7.0	280	7.90	6.57	0.0591	N_2
1.0	866	6.95	1.65	1.34	N_2
2.0	866	7.40	2.51	0.850	N_2
3.0	866	7.58	3.39	0.637	N_2
6.0	866	7.78	6.03	0.346	N_2
2.0	280	11.45	3.17	0.065	Ar

*Conditions 10 in. from the wind tunnel nozzle exit.

TABLE IV
ELECTRON BEAM PHOTOGRAPH TEST CONDITIONS

Case	Mach No.	p_o, torr	T_o, °K	p_c, psia	T_c, °K	Plume Gas	A/A*	p_c/q_∞
				α = 0 deg				
1	3.59	0.4	280	12.0	280	CO_2	9.0	14,900
↓	↓	↓	280	40.0	↓	↓	↓	49,600
↓	↓	↓	280	92.9	↓	↓	↓	115,000
↓	↓	↓	478	120.0	↓	↓	↓	149,000
2	3.59	0.4	280	40.0	700	CO_2	9.0	46,900
2	3.65	0.7	280	21.0	689	CO_2	9.0	14,600
2	3.65	0.7	280	70.0	685	CO_2	9.0	48,600
3	3.59	0.4	280	8.5	700	CO_2	26.3	10,530
↓	↓	↓	↓	28.0	↓	↓	↓	34,700
↓	↓	↓	↓	42.0	↓	↓	↓	52,100
↓	↓	↓	↓	60.0	↓	↓	↓	74,400
↓	↓	↓	↓	97.0	↓	↓	↓	120,300
↓	↓	↓	↓	120.0	650	↓	↓	149,000
↓	↓	↓	↓	170.0	700	↓	↓	213,000
↓	↓	↓	↓	250.0	700	↓	↓	310,000
3	3.64	0.6	280	170.0	700	CO_2	26.3	146,000
3	3.59	0.7	280	21.0	690	CO_2	26.3	14,600
3	3.59	0.7	280	21.0	755	CO_2	26.3	146,000
4	7.70	2.0	280	24.3	588	CO_2	26.3	116,000
↓	7.80	3.0	↓	↓	↓	↓	↓	81,600
↓	7.88	5.0	↓	↓	↓	↓	↓	51,500
↓	7.90	7.0	↓	↓	↓	↓	↓	37,100
4	7.80	3.0	280	10	700	CO_2	26.3	33,400
↓	↓	↓	↓	10	588	↓	↓	33,400
↓	↓	↓	↓	20	700	↓	↓	66,800
↓	↓	↓	↓	40	700	↓	↓	133,600
↓	↓	↓	↓	64.5	588	↓	↓	216,000
↓	↓	↓	↓	↓	670	↓	↓	↓
↓	↓	↓	↓	↓	670	↓	↓	↓
↓	↓	↓	↓	↓	700	↓	↓	↓
↓	↓	↓	↓	90	670	↓	↓	↓
↓	↓	↓	↓	120	658	↓	↓	432,000
↓	↓	↓	↓	150	658	↓	↓	503,000
↓	↓	↓	↓	200	658	↓	↓	668,000

TABLE IV (Continued)

Case	Mach No.	p_o, torr	T_o, °K	p_c, psia	T_c, °K	Plume Gas	A/A*	p_c/q_∞
				α = 0 deg				
4	7.40	2.0	866	7.6	588	CO_2	26.3	30,600
				15.4				61,300
				30.4				122,000
				49.6				198,000
				69.3				276,000
				92.2				367,000
				114.4				456,000
				153.7				612,000
4	7.90	7.0	280	22.4	588	CO_2	26.3	34,100
				92.0	588			140,000
				150	645			228,000
				150	645			228,000
5	7.80	3.0	280	10.0	588	Ar	26.3	33,400
				20.0				66,800
				40.0				133,600
				64.5				216,000
				64.5				216,000
				64.5				216,000
				90	620			302,000
				120	620			432,000
				150	645			503,000
	7.90	7.0		22.4	588			34,300
	7.90	7.0		150	644			228,000
6	11.45	2.0	280	6.3	588	CO_2	26.3	20,300
				10.0				31,500
				20.0				63,000
				40.0				126,000
				64.5				203,000
				90.0				248,000
				120				378,000
				150				472,000
7	7.80	3.0	280	10	588	CO_2	9.0	33,400
				20				66,800
				40				133,600
				64.5				216,000
				90				302,000
				120				432,000
				150				503,000
				200				668,000
8	No Photographs for Case 8							

TABLE IV (Concluded)

Case	Mach No.	p_o, torr	T_o, °K	p_c, psia	T_c, °K	Plume Gas	A/A*	p_c/q_∞
α = 180 deg								
9	7.90	6.0	280	5.0	588	Ar	26.3	8,850
↓	↓	↓	↓	↓	533	↓	↓	↓
↓	↓	↓	↓	↓	305	↓	↓	↓
↓	↓	↓	↓	↓	347	↓	↓	↓
↓	7.80	3.0	↓	2.5	305	↓	↓	8,360
↓	7.80	3.0	↓	2.5	588	↓	↓	8,360
10	7.88	6.0	387	5.0	365	Ar	17.4	8,800
10	7.74	3.0	436	5.0	388	Ar	17.4	16,200
10	7.78	6.0	866	60.0	588	Ar	17.4	99,500
12	7.90	6.0	314	2.5	414	CO_2	17.4	4,420
12	7.90	6.0	308	2.5	317	CO_2	17.4	44,200
12	7.90	6.0	305	2.5	716	CO_2	17.4	44,200

Case	Picture No.	Mach No.	p_o, torr	T_o, °K	p_c, psia	T_c, °K	Plume Gas	A/A*	p_c/q_∞	λ_∞, in.
α = 90 deg										
11	1	7.58	3.0	866	131	588	Ar	17.4	387,000	0.637
↓	2	↓	↓	↓	120	588	↓	↓	354,000	↓
↓	3	↓	↓	↓	90	588	↓	↓	266,000	↓
↓	4	↓	↓	↓	60	600	↓	↓	177,000	↓
↓	5	↓	↓	↓	30	600	↓	↓	88,500	↓
↓	6	↓	↓	↓	10	588	↓	↓	29,500	↓
↓	12	7.90	6.0	280	20	↓	↓	↓	35,400	0.0696
↓	13	↓	↓	↓	60	↓	↓	↓	106,300	↓
↓	14	↓	↓	↓	120	↓	↓	↓	212,500	↓
↓	15	↓	↓	↓	180	↓	↓	↓	319,000	↓
↓	16	↓	↓	↓	240	↓	↓	↓	425,000	↓
↓	17	↓	↓	↓	300	↓	↓	↓	532,000	↓

TABLE V
PITOT SCAN TEST CONDITIONS

Case	Mach No.	p_o, torr	T_o, °K	p_c, psia	T_c, °K	Plume Gas	A/A*	p_c/q_∞	x, in.
---	3.65	0.70	280	---	---	None	26.3	---	2.3, 12.3, 22.3
---	7.80	3.00	280	---	---	None	26.3	---	4, 8, 12
---	7.90	7.00	280	---	---	None	26.3	---	8, 12
1	3.59	0.40	280	12	300	CO_2	9.0	14,850	4, 6, 10, A
1	3.59	0.40	280	120	300	CO_2	9.0	148,500	8
1	3.59	0.40	280	120	477	CO_2	9.0	148,500	8
1	3.59	0.40	280	120	650	CO_2	9.0	148,500	8
2	3.59	0.40	280	40	700	Ar	9	49,500	4, 15.7, A
3	3.59	0.40	280	12	560	CO_2	26.3	14,850	12.1, A
3	3.59	0.40	280	120	644	CO_2	26.3	148,500	1.5, 4, 12.1, 22.3, A
3	3.65	0.70	280	21	686	CO_2	26.3	14,600	1.5, 4, 8, 12.1, A
3	3.65	0.70	280	210	755	CO_2	26.3	146,000	4, 12.1, A
4	7.80	3.00	280	645	588	CO_2	26.3	216,000	8, 12, A
4	7.90	7.00	280	150	644	CO_2	26.3	228,000	8, 12
5	7.80	3.00	280	64.5	588	Ar	26.3	216,000	8, 12
5	7.90	7.00	280	150	644	Ar	26.3	228,000	8
6	11.45	2.00	280	64.5	588	CO_2	26.3	203,000	8, 12
7	7.80	3.00	280	64.5	588	CO_2	9	216,000	8, 12
8	7.80	3.00	280	64.5	588	N_2	9	216,000	8

*A = Axial Survey at Model Centerline

TABLE VI
TEST CONDITIONS FOR DENSITY RUNS

Case	Mach No	p_o, torr	T_o, °K	Free-Stream Gas	p_c, psia	T_c, °K	Plume Gas	A/A*	p_c/q_∞	α, deg	x-cut,* in.
3	3.59	0.4	280	N_2	12	560	CO_2	26.3	14,900	0	A, 2.5, 4.0, 12.1
	3.59	0.4			120	644			149,000		A, 4.0, 8.0, 12.1
	3.65	0.7			21	686			14,600		A, 4.0, 8.0, 12.1
	3.64	0.6			170	700			146,000		A, 4.0, 8.0, 12.1
4	7.80	3.0	280	N_2	0	---	None	26.3**	0	0	8
	7.80	3.0			10	588	CO_2	26.3	33,600		A, 4.0, 8.0, 12.0
	7.80	3.0			64.5	588			216,500		A, 4.0, 8.0, 12.0
	7.90	7.0			22.4	588			34,300		A, 4.0, 8.0, 12.0
	7.90	7.0			150	644			228,000		A, 4.0, 8.0, 12.0
	6.95	1.0	866		0	---	None	26.3**	0		8
	7.40	2.0	866		49.6	588	CO_2	26.3	198,000		A, 4.0, 8.0, 12.0
	7.40	2.0	866		7.69				30,600		A, 4.0, 8.0, 12.0
	7.90	7.0	280		12.73				19,400		A, 4.0, 8.0, 12.0
	7.45	1.0	280		24.3				147,000		A, 4.0, 8.0, 12.0
5	7.80	3.0	280	N_2	10	588	Ar	26.3	33,600	0	A, 4.0, 8.0, 12.0
	7.80	3.0			64.5	588			216,500		A, 4.0, 8.0, 12.0
	7.90	7.0			150	644			228,500		8.0
	7.80	3.0			64.5	477			216,500		A, 8.0
	7.80	3.0			64.5	280			216,500		A, 8.0
	---	---		†None	64.5	588			---		A, 8.0
6	11.45	2.0	280	Ar	64.5	588	CO_2	26.3	203,000	0	A, 4.0, 8.0, 12
7	7.80	3.0	280	N_2	64.5	588	CO_2	9.0	216,000	0	A, 4.0, 8.0, 12
8	7.80	3.0	280	N_2	64.5	588	N_2	9.0	216,000	0	8.0
9	7.90	6.0	280	N_2	5.0	588	Ar	26.3	8,860	180	A, 3.9, 6.9, 9.8
10	7.58	3.0	866	N_2	30.0	588	Ar	17.6	88,600	180	A, 2.0, 3.9, 5.0
	7.58	3.0	866	N_2	3.0	588	Ar	17.6	8,600	180	A
	7.58	3.0	866	N_2	3.0	550	Ar	17.6	8,600	180	1.0
											y-cut, in.
11	7.58	3.0	866	N_2	10	570	Ar	17.6	29,600	90	2.5
	7.58	3.0	866		10	588			29,600		5.0
	7.58	3.0	866		150	588			443,000		2.5, 5.0, 10.0
	7.78	6.0	300		20	588			59,200		2.5, 5.0, 7.5, 10.0

*A = Axial survey along plume centerline

**RE = 0.1243 for normalizing

†RD = 5.407 E 19 for normalizing

TABLE VII
PHOTOGRAPHIC BOUNDARY DATA

CASE=1 4=29=70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	3.59	.40	280.0	.0685	120.0	478.0	CO2	9.0	1.49E 05.	0	.0590	4 29 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR
1.70953	1.96154	.07506	.08613	2.03676	3.81776	.08943	.16763
1.85810	2.07563	.08159	.09114	2.30382	4.01460	.10116	.17628
2.01232	2.18158	.08836	.09579	2.61664	4.25971	.11489	.18704
2.17593	2.27937	.09554	.10009	2.98211	4.52990	.13094	.19890
2.33830	2.37152	.10267	.10413	3.23788	4.76248	.14217	.20912
2.50317	2.46618	.10991	.10829	3.45980	4.95368	.15192	.21751
2.64673	2.55144	.11622	.11203	3.63784	5.09724	.15973	.22382
2.77712	2.63043	.12194	.11550	3.82653	5.22638	.16802	.22949
2.91316	2.70127	.12791	.11861	4.01648	5.35677	.17636	.23521
3.06173	2.77775	.13444	.12197	4.19389	5.50033	.18415	.24151
3.23788	2.85611	.14217	.12541	4.36628	5.64953	.19172	.24807
3.40905	2.94387	.14971	.12926	4.56313	5.80374	.20036	.25484
3.57076	3.02537	.15679	.13284	4.76060	5.94605	.20903	.26109
3.71620	3.10185	.16318	.13620	4.97061	6.10151	.21826	.26791
3.85349	3.16328	.16920	.13890	5.21321	6.27015	.22891	.27532
4.00344	3.23412	.17581	.14201	5.46648	6.46260	.24003	.28377
4.13935	3.29869	.18176	.14484	5.77114	6.65631	.25341	.29227
4.25658	3.35762	.18690	.14743	5.99808	6.81429	.26337	.29921
4.37632	3.40652	.19216	.14958	6.25510	6.97853	.27466	.30642
4.52677	3.46294	.19877	.15205	6.44129	7.12648	.28283	.31292
4.74618	3.53879	.20840	.15539	6.67575	7.29449	.29313	.32029
5.00697	3.63220	.21985	.15949	6.87008	7.43554	.30166	.32649
5.31477	3.74378	.23337	.16439	7.07382	7.56342	.31061	.33210
5.62884	3.86227	.24716	.16959	7.24621	7.67187	.31818	.33687
5.98867	3.98827	.26296	.17512	7.44682	7.79286	.32698	.34218
6.33597	4.10362	.27821	.18019	7.68253	7.93955	.33733	.34862
6.67386	4.20517	.29304	.18465	8.10944	8.19783	.35608	.35996
7.02053	4.29294	.30827	.18850	8.71940	8.57773	.38286	.37664
7.40795	4.42208	.32528	.19417	9.37137	9.00151	.41149	.39525
8.01478	4.58758	.35192	.20144	10.01330	9.43218	.43968	.41416
8.71376	4.78881	.38261	.21027	10.72670	9.87852	.47100	.43376
9.53687	4.98189	.41876	.21875	11.76797	10.50792	.51672	.46139
10.25842	5.16432	.45044	.22676	13.07566	11.23386	.57414	.49327
10.90161	5.30537	.47868	.23295	14.45168	11.97735	.63456	.52592
11.50656	5.40880	.50524	.23750	15.55689	12.59985	.68309	.55325
12.07201	5.52164	.53007	.24245	16.34677	13.12895	.71777	.57648
12.71018	5.64953	.55809	.24807				
13.32077	5.77302	.58490	.25349				
14.02790	5.86957	.61595	.25773				
14.78644	5.94040	.64926	.26084				
15.56065	6.00435	.68325	.26365				
16.20509	6.06429	.71155	.26645				
16.75237	6.14226	.73558	.26970				
17.34352	6.22627	.76154	.27339				
17.97982	6.30212	.78948	.27672				
18.61297	6.37923	.81728	.28011				

TABLE VII (Continued)

CASE-1 4-29-70 PIX NO. 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	3.59	.40	280.0	.0685	40.0	478.0	CO2	9.0	4.96E 04	0	.0590	4 29 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.85947	.78424	.06541	.05968	1.34656	3.03916	.10248	.23129	1
1.01243	.89771	.07705	.06832	1.77472	3.24729	.13506	.24713	2
1.18169	1.02434	.08993	.07796	2.24740	3.43974	.17104	.26178	3
1.33841	1.14909	.10186	.08745	2.70816	3.65477	.20610	.27814	4
1.48573	1.26005	.11307	.09589	3.18021	3.89549	.24203	.29646	5
1.59857	1.34217	.12166	.10214	3.60587	4.20016	.27442	.31965	6
1.74025	1.42179	.13244	.10820	3.92809	4.44841	.29894	.33854	7
1.87440	1.49262	.14265	.11359	4.21082	4.65842	.32046	.35452	8
2.02046	1.56409	.15377	.11903	4.37193	4.79069	.33272	.36459	9
2.15462	1.64433	.16397	.12514	4.54495	4.92986	.34589	.37518	10
2.29943	1.72708	.17500	.13144	4.71797	5.06025	.35906	.38511	11
2.46493	1.81547	.18759	.13816	5.04019	5.21948	.38358	.39722	12
2.62416	1.89007	.19971	.14384	5.48716	5.47305	.41759	.41278	13
2.81035	1.95715	.21388	.14895	6.15355	5.75422	.46831	.43792	14
2.99528	2.01984	.22795	.15372	6.87886	6.13599	.52351	.46697	15
3.19337	2.08629	.24303	.15877	7.65181	6.55225	.58233	.49865	16
3.37329	2.16389	.25672	.16445	8.57522	7.00047	.65261	.53276	17
3.54945	2.23423	.27013	.17003	9.68983	7.58599	.73743	.57732	18
3.73187	2.29316	.28401	.17452	11.12227	8.31193	.84645	.63257	19
3.91430	2.33704	.29789	.17786	12.60612	9.09178	.95938	.69192	20
4.07729	2.36902	.31030	.18029	14.18024	9.83527	1.07917	.74850	21
4.22543	2.40412	.32156	.18296	15.73367	10.53738	1.19739	.80194	22
4.36817	2.44299	.33243	.18592					23
4.53053	2.48875	.34479	.18940					24
4.68851	2.53451	.35681	.19289					25
4.86215	2.58216	.37003	.19651					26
5.02765	2.63043	.38262	.20019					27
5.19441	2.67807	.39531	.20381					28
5.34110	2.72634	.40648	.20749					29
5.50221	2.77587	.41874	.21125					30
5.66144	2.82790	.43086	.21521					31
5.81879	2.87178	.44283	.21855					32
6.00748	2.91692	.45719	.22199					33
6.24633	2.95453	.47537	.22485					34
6.52529	2.99089	.49660	.22762					35
6.80488	3.02286	.51788	.23005					36
7.09012	3.061[illegible]3	.53959	.23301					37
7.38413	3.11063	.56196	.23673					38
7.73143	3.16454	.58839	.24083					39
8.07120	3.21782	.61425	.24489					40
8.45298	3.27048	.64330	.24890					41
8.85042	3.32816	.67355	.25329					42
9.33689	3.38144	.71057	.25734					43
9.91664	3.42658	.75485	.26078					44
10.46968	3.45730	.79678	.26311					45
11.12979	3.48425	.84702	.26517					46
11.84131	3.49554	.90117	.26602					47
12.51459	3.51309	.95241	.26736					48
13.03742	3.53001	.99220	.26865					49
13.46308	3.55196	1.02459	.27032					50
13.87056	3.54506	1.05560	.26979					51
14.19591	3.52124	1.08036	.26798					52
14.50309	3.48488	1.10374	.26521					53
14.93439	3.47924	1.13657	.26478					54
15.46724	3.49115	1.17712	.26569					55
15.97628	3.47171	1.21586	.26421					56
16.42262	3.40589	1.24983	.25920					57
16.88589	3.28051	1.28508	.24966					58
17.43756	3.14573	1.32707	.23940					59
17.96226	3.06424	1.36700	.23320					60
18.43431	3.00907	1.40000	.22900					61
19.13768	2.74515	1.40000	.20892					62
20.19085	2.19850	1.40000	.16731					63

TABLE VII (Continued)

CASE-1 4-29-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	3.59	.40	280.0	.0685	12.0	280.0	CO2	9.0	1.49E 04	0	.0590	4 29 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.40225	.18222	.05585	.02530	1.39241	1.99407	.19334	.27688	1
.52373	.39423	.07272	.05474	1.86686	2.27369	.25922	.31571	2
.66125	.54207	.09182	.07527	2.33214	2.54530	.32382	.35342	3
.82971	.63833	.11521	.08863	2.84212	2.87535	.39464	.39925	4
1.00566	.73803	.13955	.10246	3.36699	3.16988	.46752	.44015	5
1.16435	.83659	.16167	.11616	3.88843	3.50681	.53992	.48693	6
1.31104	.92254	.18204	.12810	4.49238	3.79904	.62378	.52751	7
1.48867	1.00506	.20671	.13955	5.18916	4.13368	.72053	.57397	8
1.69266	1.08757	.23503	.15101	6.08076	4.54510	.84433	.63110	9
1.92187	1.15748	.26686	.16072	6.92995	4.98860	.96224	.69268	10
2.18660	1.21478	.30362	.16868	7.72070	5.39429	1.07204	.74901	11
2.44903	1.26252	.34006	.17504	8.54354	5.77477	1.18630	.80184	12
2.69084	1.31219	.37363	.18220	9.33429	6.13576	1.29609	.85197	13
2.90400	1.36261	.40323	.18920	10.13421	6.50937	1.40000	.90384	14
3.11029	1.40731	.43187	.19541	10.85506	6.80848	1.40000	.94538	15
3.31542	1.43481	.46036	.19923	11.59882	7.14426	1.40000	.99200	16
3.48962	1.44627	.48454	.20082	12.33456	7.48577	1.40000	1.00000	17
3.70965	1.45629	.51510	.20193	12.99925	7.86281	1.40000	1.00000	18
3.96292	1.48180	.55026	.20575					19
4.23911	1.49555	.58861	.20766					20
4.52103	1.51274	.62776	.21005					21
4.77545	1.52305	.66308	.21148					22
5.14790	1.54712	.71480	.21482					23
5.52723	1.56660	.76747	.21753					24
6.01543	1.54941	.83526	.21514					25
6.43946	1.51045	.89414	.20973					26
6.95746	1.47836	.96605	.20527					27
7.45597	1.44742	1.03528	.20098					28
7.98065	1.37980	1.10816	.19159					29
8.45645	1.24500	1.17420	.17981					30
8.93433	1.19186	1.24056	.16549					31
9.38128	1.09788	1.30262	.15244					32
9.89240	.99818	1.37359	.13860					33
10.45624	.88587	1.40000	.12301					34
11.02810	.78387	1.40000	.10884					35
11.54152	.60510	1.40000	.08402					36
11.95408	.47674	1.40000	.06620					37
12.28070	.26217	1.40000	.03724					38
12.48698	.02407	1.40000	.00334					39

TABLE VII (Continued)

CASE-1 4-29-70 PIX NO , 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	3.59	.40	280.0	.0685	92.9	280.0	CO2	9.0	1.15E 05	0	.0590	4 29 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.33490	.86943	.01674	.04345	.54897	1.62459	.02744	.08120	1
.49600	1.06030	.02479	.05299	.77005	2.02779	.03849	.10135	2
.66980	1.24022	.03348	.06199	1.00470	2.39815	.05022	.11986	3
.85454	1.39345	.04271	.06964	1.25423	2.71729	.06269	.13581	4
1.04191	1.53572	.05208	.07676	1.57600	3.08239	.07877	.15406	5
1.23628	1.66837	.06179	.08339	1.93235	3.45275	.09658	.17257	6
1.43985	1.80321	.07196	.09012	2.31190	3.82574	.11555	.19121	7
1.63685	1.92754	.08181	.09634	2.66738	4.15845	.13332	.20784	8
1.84086	2.05405	.09201	.10266	3.02461	4.48284	.15117	.22405	9
2.03610	2.17532	.10177	.10872	3.39278	4.80899	.16957	.24035	10
2.23704	2.29527	.11181	.11472	3.79291	5.15790	.18957	.25779	11
2.42135	2.39552	.12102	.11973	4.20836	5.51337	.21034	.27556	12
2.60565	2.49358	.13023	.12463	4.64001	5.86447	.23191	.29311	13
2.84950	2.60916	.14242	.13041	5.03926	6.17354	.25186	.30856	14
3.19446	2.75450	.15966	.13767	5.42188	6.45197	.27099	.32247	15
3.60204	2.91035	.18003	.14546	5.78961	6.71070	.28937	.33540	16
4.05601	3.06751	.20272	.15332	6.23571	7.01889	.31166	.35081	17
4.50824	3.21942	.22532	.16091	6.74616	7.35992	.33718	.36785	18
5.04802	3.38227	.25230	.16905	7.37437	7.78281	.36857	.38899	19
5.62895	3.55213	.28134	.17754	7.93647	8.15011	.39667	.40735	20
6.32458	3.72418	.31610	.18614	8.50646	8.52879	.42516	.42627	21
7.11170	3.89622	.35545	.19473	9.01691	8.86237	.45067	.44294	22
7.97281	4.04726	.39848	.20228	9.60922	9.25243	.48027	.46244	23
8.79364	4.17202	.43951	.20852	10.10479	9.59259	.50504	.47944	24
9.53217	4.26045	.47642	.21294	10.51586	9.90122	.52559	.49487	25
10.28034	4.32656	.51381	.21624					26
11.09416	4.36158	.55449	.21799					27
11.98679	4.37471	.59910	.21865					28

CASE-2 5-1-70 PIX NO 7

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
7	3.65	.70	280.0	.0-13	21.0	689.0	AR	9.0	1.46E 04	0	.0590	5 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.25177	.05742	.03532	.00805	.07067	2.05834	.00991	.28873	1
.44612	.12073	.06258	.01694	.31361	2.15404	.04399	.30215	2
.64047	.18552	.08984	.02602	.58305	2.27036	.08179	.31847	3
.82451	.25472	.11566	.03573	.88046	2.39845	.12350	.33644	4
1.01592	.31950	.14251	.04482	1.13371	2.50593	.15903	.35151	5
1.21469	.39459	.17039	.05535	1.40020	2.62078	.19641	.36762	6
1.44879	.46968	.20322	.06588	1.73590	2.76359	.24350	.38766	7
1.71823	.54477	.24102	.07642	2.20999	2.95794	.31000	.41492	8
2.02742	.60366	.28439	.08468	2.79746	3.21413	.39241	.45085	9
2.33072	.65078	.32694	.09129	3.50419	3.52627	.49154	.49464	10
2.67378	.68170	.37506	.09562	4.23447	3.84430	.59398	.53925	11
2.99770	.70525	.42049	.09893	5.14291	4.22269	.72141	.59233	12
3.39198	.71409	.47440	.10017	6.02779	4.60403	.84553	.64582	13
3.81927	.73470	.53574	.10306	7.00395	5.01334	.98246	.70323	14
4.32134	.75237	.60616	.10554	7.85203	5.37259	1.10142	.75363	15
4.82194	.78476	.67638	.11008	8.61470	5.68031	1.20840	.79679	16
5.23272	.81274	.73401	.11400	9.23161	5.94092	1.29494	.83335	17
5.60964	.82451	.78688	.11566					18
6.10141	.81569	.85586	.11442					19
6.63587	.79801	.93083	.11194					20
7.20125	.77298	1.01013	.10843					21
7.64737	.74942	1.07271	.10512					22
8.06993	.70673	1.13199	.09913					23
8.44833	.65667	1.18507	.09211					24
8.81052	.58010	1.23587	.08137					25
9.14033	.47851	1.28213	.06712					26
9.44363	.35778	1.32468	.05019					27

TABLE VII (Continued)

CASE-2 5-1-70 PIX NO 8

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
8	3.65	.70	280.0	.0413	70.0	685.0	AR	9.0	4.86E 04	0	.0590	5 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.09977	.18503	.00767	.01423	.11247	2.07703	.00865	.15969	1
.20680	.22070	.01590	.01697	.53452	2.24936	.04110	.17294	2
.31805	.25275	.02445	.01943	1.08598	2.47127	.08349	.19000	3
.44201	.29387	.03398	.02259	1.93735	2.80928	.14895	.21599	4
.57443	.34224	.04416	.02631	2.96649	3.21561	.22807	.24723	5
.73044	.40694	.05616	.03129	4.13652	3.67758	.31803	.28274	6
.87132	.47406	.06699	.03645	5.34161	4.15224	.41068	.31924	7
1.00919	.53694	.07759	.04128	6.56485	4.63416	.50473	.35629	8
1.14100	.60648	.08772	.04663	7.81349	5.11789	.60072	.39348	9
1.33510	.68992	.10265	.05304	9.02282	5.57985	.69370	.42900	10
1.59148	.79574	.12236	.06118					11
1.84604	.89128	.14193	.06852					12
2.07461	.96867	.15950	.07447					13
2.27959	1.02854	.17526	.07908					14
2.52508	1.09142	.19414	.08391					15
2.78146	1.15491	.21385	.08879					16
3.01970	1.20873	.23216	.09293					17
3.22529	1.25287	.24797	.09632					18
3.43631	1.29277	.26419	.09939					19
3.68544	1.33873	.28335	.10293					20
3.99744	1.38952	.30734	.10683					21
4.40862	1.45180	.33895	.11162					22
4.95765	1.52497	.38116	.11724					23
5.58711	1.60357	.42955	.12329					24
6.24680	1.67492	.48027	.12877					25
6.98751	1.73962	.53722	.13375					26
7.69376	1.79344	.59152	.13788					27
8.33652	1.82851	.64094	.14058					28
8.79667	1.84060	.67631	.14151					29
9.22417	1.84121	.70918	.14156					30

CASE-2 5-1-70 PIX NO 9

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
9	3.59	.40	280.0	.0685	40.0	700.0	AR	9.0	4.96E 04	0	.0590	5 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.33439	.19991	.02545	.01521	.64697	2.45341	.04924	.18671	1
.46463	.26170	.03536	.01992	1.36422	2.74419	.10382	.20884	2
.59124	.31864	.04500	.02425	2.32438	3.15006	.17689	.23973	3
.71603	.37316	.05449	.02840	3.49778	3.64923	.26619	.27772	4
.84325	.41799	.06417	.03181	4.64149	4.14536	.35324	.31548	5
.99409	.47069	.07565	.03582	5.77612	4.63120	.43959	.35245	6
1.15704	.52642	.08806	.04006	6.91499	5.12248	.52626	.38984	7
1.31939	.57186	.10041	.04352	8.05265	5.61498	.61284	.42732	8
1.47750	.61366	.11244	.04670	9.12851	6.08083	.69472	.46278	9
1.64227	.65667	.12498	.04997					10
1.82037	.70573	.13854	.05371					11
2.01725	.75783	.15352	.05767					12
2.25048	.80993	.17127	.06164					13
2.54246	.87959	.19349	.06694					14
2.86777	.95411	.21825	.07261					15
3.19125	1.02680	.24287	.07814					16
3.59410	1.10979	.27353	.08446					17
4.10598	1.20429	.31248	.09165					18
4.80687	1.32484	.36582	.10083					19
5.48535	1.42540	.41746	.10848					20
6.23409	1.51627	.47444	.11539					21
6.90651	1.57382	.52561	.11977					22
7.62497	1.61865	.58029	.12319					23
8.29072	1.63924	.63096	.12475					24
8.98676	1.65196	.68393	.12572					25

TABLE VII (Continued)

CASE-3 5-11-70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	3.65	.70	280.0	.0413	21.0	690.0	CO2	26.3	1.46E 04	0	.1243	5 11 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.38507	.41823	.02564	.02785	3.37386	4.27152	.22464	.28440	1
.76930	.55254	.05122	.03679	3.89410	4.48488	.25927	.29861	2
1.18072	.68089	.07861	.04533	4.68380	4.81386	.31185	.32051	3
1.65250	.80755	.11003	.05377	5.69536	5.24568	.37920	.34926	4
2.06563	.91381	.13753	.06084	6.91009	5.74551	.46008	.38254	5
2.48301	1.01411	.16532	.06752	8.20132	6.29550	.54605	.41916	6
2.86128	1.12207	.19051	.07471	9.77647	6.96874	.65093	.46399	7
3.25996	1.22968	.21705	.08127	11.74945	7.82050	.78229	.52070	8
3.68608	1.33288	.24546	.08875	14.12875	8.82016	.94071	.58726	9
4.15081	1.43234	.27637	.09537	16.58795	9.83002	1.10445	.65450	10
4.60219	1.53605	.30642	.10227	18.62723	10.64438	1.24023	.70872	11
5.07142	1.64230	.33766	.10935	20.18963	11.25131	1.34425	.74913	12
5.50750	1.74261	.36670	.11603					13
5.95208	1.80891	.39630	.12044					14
6.35415	1.84172	.42307	.12259					15
6.74943	1.86842	.44939	.12440					16
7.13110	1.90582	.47480	.12689					17
7.49663	1.94067	.49914	.12921					18
7.91910	1.95852	.52726	.13040					19
8.42063	1.98233	.56066	.13199					20
8.97912	2.00528	.59784	.13351					21
9.74162	2.05033	.64861	.13651					22
10.53217	2.08348	.70125	.13872					23
11.41622	2.09368	.76011	.13940					24
12.29688	2.06053	.81874	.13719					25
13.14803	2.02058	.87545	.13453					26
14.13130	1.96447	.94088	.13080					27
15.03915	1.88882	1.00133	.12576					28
15.88921	1.81061	1.05792	.12055					29
16.48935	1.75706	1.09788	.11699					30

TABLE VII (Continued)

CASE=3 5-11-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	3.57	.40	280.0	.0685	120.0	650.0	CO2	26.3	1.49E 05	0	.1243	5 11 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.36472	.49870	.00760	.01039	2.80613	4.00451	.05848	.08346	1
.82125	.76418	.01712	.01593	4.18067	4.94898	.08713	.10315	2
1.42002	1.12725	.02960	.02349	5.50144	5.83722	.11466	.12166	3
2.20736	1.59370	.04601	.03322	6.90906	6.74613	.14400	.14060	4
2.87064	1.97910	.05983	.04125	8.45065	7.70467	.17613	.16058	5
3.44791	2.30743	.07186	.04809	10.33878	8.85259	.21548	.18450	6
3.91932	2.55802	.08169	.05331	12.37494	10.06668	.25792	.20981	7
4.37502	2.77057	.09118	.05774	14.57817	11.34445	.30384	.23644	8
4.79267	2.95252	.09989	.06154	16.49193	12.43366	.34372	.25914	9
5.15243	3.10552	.10739	.06472	18.17412	13.38062	.37878	.27888	10
5.56761	3.27341	.11604	.06822					11
6.03902	3.44378	.12586	.07177					12
6.64689	3.66873	.13853	.07646					13
7.35731	3.91105	.15334	.08151					14
8.28111	4.21540	.17259	.08786					15
9.35461	4.53216	.19497	.09446					16
10.85154	4.94898	.22617	.10315					17
12.53373	5.36498	.26123	.11182					18
14.39622	5.79670	.30004	.12081					19
16.33065	6.17961	.34036	.12879					20
18.18735	6.49720	.37906	.13541					21
19.94811	6.74365	.41576	.14055					22

CASE=3 5-11-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	3.65	.70	280.0	.0413	210.0	755.0	CO2	26.3	1.46E 05	0	.1243	5 11 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.40721	2.35892	.05068	.04967	2.40975	3.60192	.05074	.07584	1
3.78748	2.82917	.07974	.05957	3.52821	4.36705	.07429	.09195	2
5.09828	3.26385	.10734	.06872	4.57040	5.07540	.09623	.10686	3
6.35145	3.67394	.13373	.07735	5.61344	5.77951	.11819	.12169	4
7.41313	4.00185	.15608	.08426	6.68698	6.48617	.14079	.13657	5
8.40957	4.31451	.17706	.09084	7.82747	7.21655	.16481	.15194	6
9.33060	4.58480	.19645	.09653	8.97642	7.93338	.18900	.16704	7
10.35415	4.88729	.21801	.10290	10.14148	8.65614	.21353	.18225	8
11.34127	5.15843	.23879	.10861	11.29128	9.35517	.23774	.19697	9
12.41566	5.43391	.26141	.11441	12.44532	10.03895	.26203	.21137	10
13.55953	5.72020	.28549	.12044	13.72391	10.76594	.28896	.22668	11
14.77542	6.01676	.31109	.12668	15.02369	11.47430	.31632	.24159	12
15.89896	6.27858	.33475	.13219	16.35820	12.17079	.34442	.25625	13
17.05046	6.51583	.35900	.13719	17.55800	12.77662	.36968	.26901	14
18.24601	6.72681	.38417	.14163	18.67645	13.32483	.39323	.28055	15
19.61357	6.94711	.41296	.14627	19.62628	13.76882	.41323	.28990	16
20.85065	7.12081	.43901	.14993	20.46258	14.13316	.43084	.29757	17
22.01909	7.25723	.46361	.15280					18
23.07145	7.33687	.48577	.15448					19
24.20685	7.40212	.50967	.15585					20

TABLE VII (Continued)

CASE-3 5-13-70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	3.64	.60	280.0	.0476	170.0	700.0	CO2	26.3	1.46E 05	0	.1243	5 13 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.39818	1.93749	.05049	.04079	1.88362	2.88116	.03966	.06066	1
2.70840	2.07929	.05703	.04378	2.28301	3.15671	.04807	.06646	2
3.05392	2.22666	.06430	.04688	2.86258	3.53937	.06027	.07452	3
3.42234	2.38580	.07206	.05023	3.69789	4.07499	.07786	.08580	4
3.75919	2.52636	.07915	.05319	4.61555	4.65270	.09718	.09796	5
4.18954	2.70035	.08821	.05686	5.72207	5.33755	.12048	.11238	6
4.65766	2.87683	.09807	.06057	6.93200	6.07440	.14595	.12790	7
5.12825	3.03844	.10797	.06397	8.27072	6.86574	.17414	.14456	8
5.56108	3.18147	.11709	.06699	9.63235	7.65832	.20281	.16124	9
6.01062	3.32513	.12655	.07001	10.81379	8.32645	.22768	.17531	10
6.46574	3.46259	.13614	.07290	11.82743	8.88868	.24902	.18715	11
6.91961	3.59386	.14569	.07567					12
7.49547	3.74371	.15782	.07882					13
8.19827	3.92080	.17261	.08255					14
9.00633	4.11462	.18963	.08663					15
9.80511	4.30533	.20645	.09065					16
10.61689	4.48923	.22354	.09452					17
11.45219	4.66633	.24112	.09825					18
12.24416	4.81432	.25780	.10136					19
12.94386	4.92825	.27253	.10376					20

CASE-3 5-13-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	3.59	.40	280.0	.0085	170.0	700.0	CO2	26.3	2.13E 05	0	.1243	5 13 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.64770	1.31891	.02872	.02299	1.93563	3.05020	.03374	.05317	1
1.84585	1.50467	.03218	.02623	2.44276	3.42606	.04258	.05972	2
2.06257	1.68452	.03595	.02929	3.11584	3.90532	.05431	.06808	3
2.33131	1.85761	.04064	.03238	3.98892	4.50657	.06953	.07856	4
2.67744	2.06567	.04667	.03601	5.03909	5.21556	.08784	.09092	5
3.13751	2.31335	.05469	.04033	6.26388	6.01248	.10919	.10481	6
3.75424	2.62295	.06544	.04572	7.77721	6.97101	.13557	.12152	7
4.52886	2.96537	.07895	.05169	9.38157	7.95864	.16354	.13873	8
5.53693	3.37219	.09652	.05878	10.83299	8.83543	.18884	.15402	9
6.72147	3.77901	.11717	.06587	11.98347	9.50913	.20889	.16576	10
7.94440	4.15734	.13848	.07247					11
8.98404	4.43474	.15661	.07731					12
9.80449	4.64589	.17091	.08099					13
10.69181	4.87995	.18638	.08507					14
11.61938	5.12392	.20255	.08932					15
12.60391	5.37408	.21971	.09368					16

TABLE VII (Continued)

CASE-3 5-13-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	3.59	.40	280.0	.0685	250.0	700.0	CO2	26.3	3.10E 05	0	.1243	5 13 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.13811	1.98207	.03089	.02864	1.88734	3.56848	.02727	.05156	1
2.50778	2.20994	.03624	.03193	2.18641	3.77591	.03159	.05456	2
2.84896	2.41490	.04117	.03489	2.48053	3.96972	.03584	.05736	3
3.12451	2.56970	.04515	.03713	2.80004	4.17344	.04046	.06030	4
3.41182	2.72698	.04930	.03940	3.12822	4.38273	.04520	.06333	5
3.69603	2.87125	.05341	.04149	3.48365	4.61493	.05034	.06668	6
4.00873	3.02234	.05792	.04367	3.83659	4.86138	.05544	.07024	7
4.34496	3.17281	.06278	.04584	4.19387	5.13692	.06060	.07423	8
4.72329	3.34185	.06825	.04829	4.54930	5.40070	.06573	.07804	9
5.07191	3.50160	.07329	.05060	4.92144	5.66634	.07111	.08187	10
5.39204	3.64526	.07791	.05267	5.28553	5.91588	.07637	.08548	11
5.66139	3.75919	.08180	.05432	5.66944	6.20010	.08192	.08959	12
5.98090	3.89604	.08642	.05630	6.05149	6.48865	.08744	.09376	13
6.33323	4.04650	.09151	.05847	6.46450	6.79825	.09341	.09823	14
6.69298	4.19202	.09671	.06057	6.90971	7.11404	.09984	.10279	15
7.04593	4.32205	.10181	.06245	7.44160	7.43851	.10753	.10748	16
7.35801	4.43103	.10632	.06403	7.96112	7.74873	.11503	.11196	17
7.65647	4.53629	.11063	.06555	8.50106	8.08062	.12283	.11676	18
7.93882	4.63722	.11471	.06700	9.07878	8.47506	.13118	.12246	19
8.23419	4.74497	.11898	.06856	9.69427	8.90602	.14008	.12869	20
8.56917	4.85209	.12382	.07011	10.30790	9.35990	.14894	.13524	21
8.92708	4.96478	.12899	.07174	10.81132	9.74628	.15622	.14083	22
9.31346	5.08739	.13457	.07351	11.29491	10.06703	.16320	.14546	23
9.70356	5.22423	.14021	.07549	11.74755	10.30419	.16974	.14889	24
10.09304	5.35488	.14584	.07737					25
10.49924	5.47563	.15171	.07912					26
10.90915	5.59637	.15763	.08086					27
11.34940	5.73198	.16399	.08282					28
11.88068	5.88492	.17167	.08503					29
12.38843	6.02239	.17900	.08702					30
12.86026	6.13756	.18582	.08868					31

CASE-3 5-13-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	3.59	.40	280.0	.0685	97.0	700.0	CO2	26.3	1.20E 05	0	.1243	5 13 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.85018	1.41179	.04292	.03275	2.11211	3.01119	.04899	.06984	1
2.16474	1.54120	.05021	.03575	2.95918	3.51770	.06864	.08159	2
2.48487	1.68981	.05764	.03920	3.93381	4.09294	.09125	.09494	3
2.81490	1.85700	.06529	.04307	5.04404	4.72577	.11700	.10961	4
3.15794	2.01056	.07325	.04664	6.24840	5.41866	.14493	.12569	5
3.49046	2.16288	.08096	.05017	7.50105	6.12270	.17399	.14202	6
3.87003	2.31521	.08977	.05370	8.86330	6.90351	.20558	.16013	7
4.25208	2.45577	.09863	.05696	10.38592	7.76978	.24090	.18022	8
4.67562	2.59199	.10845	.06012	12.06706	8.74008	.27990	.20273	9
5.10534	2.73131	.11842	.06335					10
5.62362	2.89107	.13044	.06706					11
6.17347	3.05578	.14319	.07088					12
6.80011	3.22172	.15773	.07473					13
7.37597	3.36166	.17109	.07797					14
7.91220	3.48427	.18352	.08082					15
8.43790	3.59386	.19572	.08336					16
9.06144	3.72266	.21018	.08635					17
9.69984	3.85950	.22499	.08952					18
10.24598	3.98087	.23766	.09234					19
10.72587	4.07623	.24879	.09455					20
11.27696	4.16415	.26157	.09659					21
11.79709	4.23598	.27363	.09825					22
12.24230	4.29790	.28396	.09969					23
12.56428	4.32267	.29143	.10026					24
12.84974	4.34124	.29805	.10070					25
13.10733	4.35425	.30403	.10100					26

TABLE VII (Continued)

CASE-3 5-13-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	3.59	.40	280.0	.0685	60.0	700.0	CO2	26.3	7.44E 04	0	.1243	5 13 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.10282	1.32448	.06202	.03906	1.81117	2.68983	.05342	.07934	1
2.44648	1.46194	.07216	.04312	2.63038	3.18643	.07758	.09398	2
2.74927	1.58455	.08109	.04674	3.50222	3.69727	.10330	.10905	3
3.00129	1.68486	.08852	.04969	4.38521	4.20130	.12934	.12392	4
3.26011	1.78207	.09616	.05256	5.27005	4.68924	.15544	.13831	5
3.53071	1.88114	.10414	.05548	6.16604	5.18584	.18186	.15295	6
3.86260	1.99508	.11393	.05884	7.19702	5.74498	.21227	.16945	7
4.22917	2.11582	.12474	.06241	8.37660	6.37224	.24706	.18795	8
4.65952	2.24400	.13743	.06619	9.72895	7.08185	.28695	.20888	9
5.08305	2.37155	.14992	.06995	11.01565	7.74811	.32490	.22853	10
5.56232	2.50468	.16406	.07387	12.21753	8.35741	.36035	.24650	11
6.02796	2.62295	.17779	.07736					12
6.51837	2.73317	.19226	.08061					13
7.06698	2.82605	.20844	.08335					14
7.57969	2.90964	.22356	.08582					15
8.06576	2.98581	.23790	.08807					16
8.48434	3.06321	.25024	.09035					17
8.90974	3.15299	.26279	.09300					18
9.35990	3.25330	.27607	.09595					19
9.79706	3.34309	.28896	.09860					20
10.30419	3.42606	.30392	.10105					21
10.77974	3.49108	.31794	.10297					22
11.25157	3.55238	.33186	.10478					23
11.67015	3.60315	.34421	.10627					24
12.13869	3.65331	.35803	.10775					25
12.55685	3.67870	.37036	.10850					26
12.93643	3.68427	.38155	.10867					27
13.25965	3.67931	.39109	.10852					28
13.58845	3.68365	.40079	.10865					29

TABLE VII (Continued)

CASE-3 5-13-70 PIX NO 6

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
6	3.59	.40	280.0	.0085	42.0	700.0	CO2	26.3	5.21E 04	0	.1243	5 13 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR
2.44834	1.42479	.08629	.05022	2.13068	2.85515	.07510	.10063
2.89974	1.56349	.10220	.05511	2.65267	3.16290	.09350	.11148
3.29231	1.68176	.11604	.05928	3.20934	3.47931	.11312	.12263
3.63102	1.78393	.12798	.06288	3.80254	3.80935	.13402	.13426
3.93133	1.87681	.13856	.06615	4.42793	4.14558	.15607	.14612
4.24774	1.96536	.14972	.06927	5.05271	4.48428	.17809	.15805
4.56664	2.04399	.16096	.07204	5.78213	4.87128	.20380	.17169
4.87376	2.11025	.17178	.07438	6.53942	5.26634	.23049	.18562
5.17469	2.18394	.18239	.07698	7.39145	5.70473	.26052	.20107
5.46820	2.25700	.19273	.07955	8.28558	6.16480	.29203	.21728
5.80195	2.33254	.20450	.08221	9.23668	6.64531	.32556	.23422
6.15737	2.39508	.21702	.08442	10.29490	7.17720	.36285	.25297
6.54190	2.46320	.23058	.08682	11.32773	7.67752	.39926	.27060
6.94005	2.54122	.24461	.08957	12.34756	8.16050	.43520	.28763
7.31405	2.62295	.25779	.09245				
7.69857	2.68797	.27134	.09474				
8.05400	2.73255	.28387	.09631				
8.39580	2.77651	.29592	.09786				
8.72955	2.83100	.30768	.09978				
9.07816	2.87744	.31997	.10142				
9.41934	2.89540	.33199	.10205				
9.73576	2.91398	.34315	.10271				
10.02183	2.94432	.35323	.10378				
10.32276	2.97652	.36384	.10491				
10.61812	3.01677	.37425	.10633				
10.94506	3.04773	.38577	.10742				
11.28315	3.08488	.39769	.10873				
11.65653	3.10284	.41085	.10936				
12.02496	3.13008	.42383	.11032				
12.40453	3.15794	.43721	.11130				
12.76243	3.19262	.44982	.11253				
13.09742	3.17714	.46163	.11198				
13.39030	3.15423	.47195	.11117				
13.64975	3.10779	.48110	.10954				

TABLE VII (Continued)

CASE-3 5-13-70 PIX NO 7

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
7	3.59	.40	280.0	.0085	28.0	700.0	CO2	26.3	3.47E 04	0	.1243	5 13 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.13997	1.05512	.09242	.04557	2.06381	2.74184	.08913	.11841	1
2.42357	1.17401	.10467	.05070	2.53007	3.03968	.10927	.13128	2
2.70407	1.28299	.11678	.05541	3.02791	3.34928	.13077	.14465	3
3.00376	1.39073	.12973	.06006	3.49170	3.60996	.15080	.15591	4
3.33566	1.49228	.14406	.06445	3.94310	3.86074	.17029	.16674	5
3.67498	1.59321	.15872	.06881	4.45642	4.11771	.19246	.17784	6
4.00873	1.67743	.17313	.07244	4.98336	4.38769	.21522	.18950	7
4.34744	1.76288	.18776	.07614	5.56417	4.68119	.24031	.20217	8
4.68552	1.83842	.20236	.07940	6.04096	4.92392	.26090	.21265	9
4.99760	1.91396	.21584	.08266	6.49793	5.14683	.28063	.22228	10
5.32702	1.97960	.23006	.08550	6.97039	5.36974	.30104	.23191	11
5.67253	2.03718	.24499	.08798	7.53510	5.63353	.32543	.24330	12
6.04406	2.08920	.26103	.09023	8.11468	5.92517	.35046	.25590	13
6.40815	2.13192	.27676	.09207	8.66639	6.19329	.37428	.26748	14
6.73076	2.16969	.29069	.09370	9.09055	6.40258	.39260	.27652	15
7.03417	2.21156	.30379	.09547	9.58901	6.62673	.41413	.28620	16
7.35925	2.26257	.31783	.09772	10.19521	6.91590	.44031	.29868	17
7.73325	2.32883	.33398	.10058	11.03051	7.29795	.47639	.31518	18
8.12954	2.38270	.35110	.10290	11.80452	7.64904	.50981	.33035	19
8.51035	2.42666	.36755	.10480	12.45902	7.93759	.53808	.34281	20
8.87320	2.45515	.38322	.10603					21
9.24535	2.48549	.39929	.10734					22
9.59024	2.49044	.41418	.10756					23
9.93019	2.50592	.42887	.10823					24
10.27694	2.51273	.44384	.10852					25
10.66766	2.53750	.46072	.10959					26
11.10048	2.53998	.47941	.10970					27
11.52402	2.54245	.49770	.10980					28
11.95561	2.53998	.51634	.10970					29
12.37790	2.52450	.53458	.10903					30
12.79711	2.49911	.55268	.10793					31
13.16553	2.45700	.56859	.10611					32
13.47204	2.42852	.58183	.10488					33
13.73334	2.40375	.59312	.10381					34

TABLE VII (Continued)

CASE-3 5-13-70 PIX NO 8

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
8	3.59	.40	280.0	.0685	8.5	700.0	CO2	26.3	1.05E 04	0	.1243	5 13 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.36971	.99382	.26418	.07792	1.59755	2.55050	.12525	.19996	1
3.63969	1.05760	.28535	.08292	2.09787	2.89231	.16447	.22676	2
3.87746	1.11023	.30399	.08704	2.65267	3.23906	.20797	.25394	3
4.08180	1.14305	.32001	.08961	3.24959	3.55671	.25477	.27885	4
4.33753	1.18082	.34006	.09258	3.93319	3.89418	.30836	.30530	5
4.65518	1.21798	.36497	.09549	4.67004	4.23288	.36613	.33186	6
5.01989	1.25884	.39356	.09869	5.53259	4.63599	.43375	.36346	7
5.50163	1.28547	.43133	.10078	6.49236	5.06757	.50900	.39730	8
6.19638	1.29661	.48579	.10165	7.49300	5.51216	.58745	.43215	9
7.00259	1.29661	.54900	.10165	8.56732	5.97842	.67168	.46871	10
7.77845	1.29661	.60983	.10165	9.60263	6.42301	.75284	.50356	11
8.35555	1.28175	.65507	.10049	10.73763	6.90289	.84183	.54119	12
8.83977	1.25575	.69304	.09845	11.87944	7.38030	.93135	.57861	13
9.30541	1.21055	.72954	.09491					14
9.79087	1.16163	.76760	.09107					15
10.30109	1.10157	.80760	.08636					16
10.78345	1.03841	.84542	.08141					17

CASE-4 5-28-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	7.70	2.00	280.0	.1920	24.3	588.0	CO2	26.3	1.16E 05	0	.1243	5 28 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
4.19238	2.39590	.09903	.05659	2.83056	3.46503	.06686	.08185	1
5.29715	2.82355	.12512	.06670	4.05451	4.15324	.09577	.09810	2
6.40308	3.23426	.15125	.07640	5.25100	4.80991	.12403	.11362	3
7.45527	3.59823	.17610	.08499	6.44398	5.44028	.15221	.12851	4
8.72011	4.00310	.20598	.09456	7.59782	6.02568	.17947	.14233	5
10.37989	4.49910	.24518	.10627	8.82936	6.62859	.20856	.15657	6
12.48952	5.11604	.29502	.12085	10.11465	7.23268	.23892	.17084	7
				11.55359	7.89753	.27291	.18655	8

TABLE VII (Continued)

CASE-4 5-28-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	7.80	3.00	280.0	.1350	24.3	588.0	CO2	26.3	8.16E 04	0	.1243	5 28 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.51956	.97273	.04280	.02740	1.79123	2.34507	.05045	.06604	1
1.82511	1.12288	.05140	.03162	2.54312	2.73416	.07162	.07700	2
2.12307	1.26835	.05979	.03572	3.26405	3.09930	.09193	.08729	3
2.41226	1.40214	.06794	.03949	4.01011	3.46035	.11294	.09746	4
2.74760	1.54702	.07738	.04357	4.74506	3.79687	.13364	.10693	5
3.27866	1.74157	.09234	.04905	5.61263	4.17778	.15807	.11766	6
3.94701	1.97175	.11116	.05553	6.64437	4.62237	.18713	.13018	7
4.68547	2.22589	.13196	.06269	7.78477	5.12364	.21924	.14430	8
5.31993	2.43095	.14983	.06846	8.96899	5.64359	.25260	.15894	9
6.04612	2.65354	.17028	.07473	10.12926	6.14719	.28527	.17313	10
6.81905	2.87146	.19205	.08087	11.31640	6.64671	.31871	.18719	11
7.90687	3.15539	.22268	.08887	12.52282	7.14388	.35268	.20120	12
9.01281	3.42413	.25383	.09643					13
10.11757	3.66892	.28494	.10333					14
11.02955	3.84477	.31063	.10828					15
11.90939	3.98[illegible]32	.33541	.11230					16

CASE-4 5-28-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.88	5.00	280.0	.0846	24.3	588.0	CO2	26.3	5.15E 04	0	.1243	5 28 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.45977	1.91567	.12265	.06791	3.03212	2.82530	.10749	.10016	1
4.91974	2.34157	.17441	.08301	4.33552	3.44516	.15370	.12213	2
6.47144	2.76162	.22942	.09790	5.75518	4.10125	.20403	.14539	3
8.14407	3.16065	.28871	.11205	7.36939	4.82393	.26125	.17101	4
9.64085	3.48489	.34178	.12354	9.03209	5.54544	.32019	.19659	5
10.85486	3.72442	.38481	.13203	10.69479	6.24534	.37914	.22140	6
11.85272	3.90612	.42019	.13847	12.27920	6.89325	.43531	.24437	7
12.74950	4.05276	.45198	.14367					8
13.66030	4.19063	.48427	.14856					9

CASE-4 5-28-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.90	7.00	280.0	.0591	24.3	588.0	CO2	26.3	3.71E 04	0	.1243	5 28 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.68158	1.52307	.11200	.06362	1.18831	2.09794	.04963	.08763	1
3.88508	1.88646	.16227	.07879	1.80058	2.26854	.07521	.09475	2
5.02315	2.20895	.20981	.09226	2.43446	2.48412	.10168	.10376	3
6.10396	2.48821	.25495	.10393	3.21089	2.78908	.13411	.11649	4
7.08896	2.72774	.29609	.11393	4.14448	3.19103	.17311	.13328	5
8.07688	2.93923	.33735	.12277	5.30533	3.68762	.22159	.15402	6
9.07707	3.12559	.37913	.13055	6.53629	4.20933	.27301	.17581	7
10.29985	3.31196	.43020	.13833	7.90220	4.78479	.33006	.19985	8
11.68855	3.50884	.48821	.14656	9.37327	5.38595	.39150	.22496	9
				11.03071	6.04729	.46073	.25258	10
				12.75593	6.71448	.53279	.28045	11

TABLE VII (Continued)

CASE-4 5-18-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	7.80	3.00	280.0	.1350	10.0	700.0	CO2	26.3	3.34E 04	0	.1243	5 18 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.98365	.96709	.13134	.04257	2.43205	2.41415	.10706	.10627	1
3.22543	1.05425	.14199	.04641	2.78665	2.58010	.12267	.11358	2
3.51675	1.16528	.15481	.05130	3.28751	2.80755	.14472	.12359	3
3.88150	1.30796	.17087	.05758	3.99970	3.11260	.17607	.13702	4
4.25401	1.43691	.18726	.06325	5.00141	3.52511	.22017	.15518	5
4.62950	1.55630	.20379	.06851	6.25505	4.01940	.27535	.17694	6
5.02290	1.66734	.22111	.07340	7.64957	4.54592	.33674	.20011	7
5.45750	1.78136	.24024	.07842	9.19214	5.10767	.40464	.22484	8
5.93268	1.89418	.26116	.08338	10.78068	5.64315	.47457	.24841	9
6.43175	1.99388	.28313	.08777	12.46115	6.18580	.54855	.27230	10
6.96007	2.08402	.30639	.09174					11
7.53674	2.16043	.33177	.09510					12
8.16416	2.22132	.35939	.09778					13
8.79635	2.26848	.38722	.09986					14
9.41839	2.29[illegible]74	.41460	.10115					15
10.00581	2.31385	.44046	.10186					16

CASE-4 5-21-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.80	3.00	280.0	.0591	10.0	588.0	CO2	26.3	3.34E 04	0	.1243	5 21 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.91851	1.40586	.17249	.06189	3.18782	2.73830	.14033	.12054	1
4.49757	1.59988	.19799	.07043	3.95015	3.07559	.17389	.13539	2
5.14588	1.79449	.22652	.07899	4.66771	3.38124	.20548	.14884	3
5.88194	1.97597	.25893	.08698	5.44138	3.69047	.23953	.16246	4
6.65621	2.12760	.29301	.09366	6.27952	4.00626	.27643	.17636	5
7.47585	2.25416	.32909	.09923	7.29378	4.37818	.32108	.19273	6
8.37190	2.35684	.36854	.10375	8.45070	4.79426	.37200	.21105	7
9.25005	2.43325	.40719	.10711	9.71091	5.23841	.42748	.23060	8
10.16401	2.48877	.44743	.10956	11.05886	5.70046	.48682	.25094	9
10.97827	2.52996	.48327	.11137	12.42712	6.15715	.54705	.27104	10
11.88626	2.56458	.52324	.11289					11
12.76023	2.58786	.56171	.11392					12

TABLE VII (Continued)

CASE=4 5-18-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	7.80	3.00	280.0	.1350	20.0	700.0	CO2	26.3	6.68E 04	0	.1243	5 18 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.36324	1.33354	.10469	.04151	2.54952	2.75708	.07936	.08582	1
3.58427	1.48416	.11157	.04620	2.94628	2.95852	.09171	.09209	2
3.85244	1.62131	.11992	.05047	3.31425	3.14282	.10316	.09783	3
4.19716	1.77193	.13065	.05516	3.67182	3.31425	.11429	.10316	4
4.58228	1.91336	.14263	.05956	4.06735	3.50039	.12661	.10896	5
4.96862	2.05725	.15466	.06404	4.46656	3.68346	.13903	.11466	6
5.45171	2.20787	.16970	.06872	4.95209	3.90326	.15415	.12150	7
5.99541	2.37074	.18662	.07379	5.43579	4.11634	.16920	.12813	8
6.61749	2.54217	.20598	.07913	6.07011	4.38880	.18895	.13661	9
7.27078	2.70749	.22632	.08428	6.72708	4.66494	.20940	.14521	10
8.01531	2.87097	.24949	.08937	7.48876	4.98577	.23310	.15519	11
9.01026	3.04791	.28046	.09487	8.27614	5.30354	.25761	.16508	12
9.99848	3.19547	.31123	.09947	9.05496	5.61641	.28186	.17482	13
10.91567	3.31793	.33977	.10328	9.81541	5.90969	.30553	.18395	14
11.57815	3.40058	.36040	.10585	10.62973	6.22318	.33087	.19371	15
12.22104	3.47467	.38041	.10816	11.55427	6.56422	.35965	.20433	16
12.89455	3.54692	.40137	.11041	12.58412	6.93954	.39171	.21601	17

CASE=4 5-18-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.80	3.00	280.0	.1350	40.0	700.0	CO2	26.3	1.33E 05	0	.1243	5 18 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.57953	1.63973	.05690	.03617	2.29490	2.79613	.05063	.06168	1
2.81284	1.72148	.06205	.03798	2.69648	3.01452	.05948	.06650	2
3.00975	1.80740	.06639	.03987	3.22516	3.29795	.07115	.07275	3
3.21203	1.91182	.07086	.04217	3.99549	3.69774	.08814	.08157	4
3.48412	2.03415	.07686	.04487	4.80760	4.11603	.10606	.09080	5
3.86064	2.18630	.08517	.04823	5.61434	4.52178	.12385	.09975	6
4.27692	2.34861	.09439	.05181	6.38467	4.90605	.14085	.10823	7
4.69065	2.49718	.10348	.05509	7.36565	5.37804	.16249	.11864	8
5.09163	2.63800	.11232	.05819	8.50295	5.90672	.18757	.13030	9
5.51946	2.77703	.12176	.06126	9.65100	6.42764	.21290	.14179	10
6.02367	2.93993	.13288	.06485	10.82351	6.93841	.23877	.15306	11
6.56965	3.11178	.14493	.06865	12.10284	7.49334	.26699	.16530	12
7.18962	3.30332	.15860	.07287					13
7.80303	3.48233	.17213	.07682					14
8.36273	3.63508	.18448	.08020					15
8.85978	3.76159	.19545	.08298					16
9.35683	3.88212	.20641	.08564					17
9.92906	4.01518	.21903	.08857					18
10.53889	4.15600	.23249	.09168					19
11.15886	4.28847	.24616	.09460					20
11.81165	4.42691	.26056	.09766					21
12.53604	4.56832	.27654	.10078					22
13.33800	4.72406	.29423	.10421					23

CASE-4 5-21-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.80	3.00	280.0	.0591	64.5	588.0	CO2	26.3	2.16E 05	0	.1243	5 21 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.33714	1.70136	.04046	.02945	2.36400	2.85292	.04092	.04938	1
2.69950	1.93836	.04673	.03355	2.97888	3.25528	.05156	.05635	2
3.37348	2.31684	.05840	.04010	3.73703	3.72330	.06469	.06445	3
4.29639	2.78009	.07437	.04812	4.58712	4.21938	.07940	.07304	4
5.40855	3.27080	.09362	.05662	5.47600	4.72084	.09479	.08172	5
6.45145	3.67674	.11168	.06365	6.39116	5.22468	.11063	.09044	6
7.49018	4.04447	.12966	.07001	7.40541	5.78046	.12819	.10006	7
8.50204	4.37937	.14717	.07581	8.43638	6.34638	.14604	.10986	8
9.51629	4.69457	.16473	.08126	9.41660	6.88366	.16300	.11916	9
10.49532	4.99485	.18168	.08646	10.44936	7.45854	.18088	.12911	10
11.47853	5.27065	.19870	.09124	11.57285	8.08954	.20033	.14003	11
12.47368	5.52854	.21592	.09570					12

CASE-4 5-19-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	7.80	3.00	280.0	.1350	64.5	670.0	CO2	26.3	2.16E 05	0	.1243	5 19 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.59570	1.05126	.02762	.01820	1.64585	2.28341	.02849	.03953	1
1.87508	1.20528	.03246	.02086	2.14969	2.64398	.03721	.04577	2
2.23923	1.39691	.03876	.02418	2.68696	2.99918	.04651	.05192	3
2.65293	1.61122	.04592	.02789	3.23020	3.32632	.05592	.05758	4
3.07559	1.81359	.05324	.03139	3.86598	3.686[illegible]9	.06692	.06381	5
3.47317	1.99806	.06012	.03459	4.70352	4.131[illegible]3	.08142	.07151	6
3.92149	2.19745	.06788	.03804	5.77091	4.677[illegible]6	.09990	.08096	7
4.39370	2.39445	.07606	.04145	6.88545	5.22[illegible]6	.11919	.09051	8
4.95007	2.61712	.08569	.04530	8.05551	5.79598	.13944	.10033	9
5.58226	2.86008	.09663	.04951	9.33064	6.40011	.16152	.11079	10
6.36728	3.15498	.11022	.05461	10.65173	7.02156	.18438	.12154	11
7.25975	3.47974	.12567	.06023	11.90775	7.60599	.20613	.13166	12
8.22863	3.81583	.14244	.06605					13
9.19274	4.14416	.15913	.07174					14
10.30012	4.49041	.17830	.07773					15
11.54957	4.86053	.19993	.08414					16

TABLE VII (Continued)

CASE-4 5-19-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.80	3.00	280.0	.1350	64.5	670.0	CO2	26.3	2.16E 05	0	.1243	5 19 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.33109	2.28162	.05766	.03950	2.84217	3.24155	.04920	.05611	1
3.78538	2.48817	.06553	.04307	3.42959	3.60570	.05937	.06242	2
4.38474	2.74487	.07590	.04751	4.12446	4.02238	.07140	.06963	3
5.15065	3.04813	.08916	.05276	4.88978	4.45459	.08464	.07711	4
6.07118	3.37407	.10509	.05841	5.70225	4.89217	.09871	.08468	5
7.09976	3.70062	.12290	.06406	6.46697	5.29035	.11194	.09158	6
8.16475	4.02238	.14133	.06963	7.31288	5.71598	.12659	.09894	7
9.25005	4.33818	.16012	.07509	8.47339	6.27296	.14668	.10859	8
10.34429	4.66174	.17906	.08070	9.88761	6.91948	.17116	.11978	9
11.46958	4.97992	.19854	.08620	11.46361	7.62569	.19844	.13200	10
12.55606	5.27781	.21735	.09136					11

CASE-4 5-18-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.80	3.00	280.0	.1350	64.5	700.0	CO2	26.3	2.16E 05	0	.1243	5 18 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.74040	1.77426	.04744	.03071	2.76913	3.20731	.04793	.05552	1
3.07682	1.96042	.05326	.03394	3.21390	3.47309	.05563	.06012	2
3.43538	2.14719	.05947	.03717	3.81190	3.83046	.06598	.06631	3
3.90887	2.37406	.06766	.04110	4.63737	4.30874	.08027	.07459	4
4.40571	2.59793	.07626	.04497	5.48679	4.78104	.09498	.08276	5
5.01090	2.85653	.08674	.04945	6.27994	5.21023	.10871	.09019	6
5.58556	3.08460	.09669	.05339	7.03118	5.61130	.12171	.09713	7
6.27575	3.35157	.10863	.05802	7.81176	6.01775	.13522	.10417	8
6.96653	3.61756	.12059	.06253	8.77910	6.51459	.15197	.11277	9
7.74531	3.89211	.13407	.06737	9.81708	7.03837	.16994	.12184	10
8.63184	4.18124	.14942	.07238	10.87900	7.56992	.18832	.13104	11
9.55728	4.45600	.16544	.07713	11.93673	8.09191	.20663	.14007	12
10.56114	4.73315	.18282	.08193					13
11.52728	4.98157	.19954	.08623					14
12.53473	5.23298	.21698	.09058					15

TABLE VII (Continued)

CASE-4 5-19-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	7.80	3.00	280.0	.1350	90.0	670.0	CO2	26.3	3.02E 05	0	.1243	5 19 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.68995	2.11685	.03938	.03099	3.09827	3.56391	.04536	.05217	1
3.23080	2.36340	.04730	.03460	3.70718	3.92687	.05427	.05749	2
3.80867	2.62368	.05576	.03841	4.45399	4.36206	.06520	.06386	3
4.42593	2.89769	.06479	.04242	5.29333	4.83545	.07749	.07079	4
5.11066	3.19200	.07482	.04673	6.11058	5.30288	.08946	.07763	5
5.88672	3.51496	.08618	.05146	6.90634	5.75777	.10111	.08429	6
6.71352	3.83732	.09828	.05618	7.83463	6.27833	.11469	.09191	7
7.52062	4.13342	.11010	.06051	8.86978	6.83769	.12985	.10010	8
8.29191	4.39549	.12139	.06435	9.94671	7.38989	.14561	.10818	9
9.16647	4.68502	.13419	.06859	11.05827	7.94567	.16189	.11632	10
10.18609	5.01037	.14912	.07335	12.23191	8.52115	.17907	.12475	11
11.34481	5.36676	.16608	.07857					12
12.54174	5.72195	.18360	.08377					13

CASE-4 5-19-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.80	3.00	280.0	.1350	120.0	658.0	CO2	26.3	4.32E 05	0	.1243	5 19 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.26013	1.89299	.02766	.02317	2.73472	3.42064	.03347	.04187	1
2.84695	2.22670	.03485	.02726	3.42541	3.81583	.04193	.04671	2
3.43914	2.54011	.04210	.03109	4.12924	4.21819	.05054	.05163	3
4.01223	2.82546	.04911	.03458	4.96858	4.69696	.06082	.05749	4
4.62234	3.11379	.05658	.03811	5.88314	5.21035	.07201	.06378	5
5.27542	3.40571	.06457	.04169	6.99529	5.83180	.08562	.07138	6
5.95358	3.68987	.07287	.04516	8.11103	6.45802	.09928	.07905	7
6.61980	3.95791	.08103	.04845	9.21065	7.07409	.11274	.08659	8
7.26990	4.20505	.08898	.05147	10.31205	7.70031	.12622	.09425	9
8.06267	4.49399	.09869	.05501	11.34481	8.28295	.13886	.10138	10
8.93902	4.80561	.10942	.05882	12.28385	8.81127	.15036	.10785	11
9.81717	5.11902	.12016	.06266					12
10.53652	5.36735	.12897	.06570					13
11.35854	5.63002	.13903	.06891					14
12.24086	5.87478	.14983	.07191					15
13.22765	6.12491	.16191	.07497					16

TABLE VII (Continued)

CASE-4 5-19-70 PIX NO 6

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
6	7.80	3.00	280.0	.1350	150.0	658.0	CO2	26.3	5.03E 06	0	.1243	5 19 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.42310	2.09178	.02749	.02373	3.15916	3.99910	.03584	.04536	1
2.70129	2.32281	.03084	.02635	3.64808	4.28863	.04138	.04865	2
3.02365	2.56876	.03430	.02914	4.28982	4.68442	.04866	.05314	3
3.42123	2.82008	.03881	.03199	5.10827	5.19782	.05795	.05896	4
3.90239	3.08812	.04427	.03503	5.98641	5.74942	.06791	.06522	5
4.53339	3.39676	.05142	.03853	6.90455	6.31833	.07832	.07167	6
5.32258	3.77524	.06038	.04282	7.93791	6.94932	.09004	.07883	7
6.27415	4.22296	.07117	.04790	9.20587	7.71345	.10443	.08750	8
7.22692	4.65338	.08198	.05279	10.48876	8.47518	.11898	.09614	9
8.24535	5.08260	.09353	.05765	11.68747	9.17841	.13258	.10411	10
9.37481	5.51182	.10634	.06252					11
10.64218	5.97208	.12072	.06774					12
11.78896	6.37086	.13373	.07227					13
12.74411	6.70337	.14456	.07604					14

CASE-4 5-19-70 PIX NO 7

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
7	7.80	3.00	280.0	.1350	200.0	658.0	CO2	26.3	6.68E 05	0	.1243	5 19 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.06492	1.96105	.02033	.01930	2.50906	3.56570	.02470	.03510	1
2.55682	2.33057	.02517	.02294	3.01888	3.94537	.02972	.03884	2
3.14125	2.73412	.03092	.02691	3.66301	4.40982	.03606	.04341	3
3.80926	3.15439	.03750	.03105	4.47488	4.98410	.04405	.04906	4
4.54951	3.58003	.04478	.03524	5.40675	5.63420	.05322	.05546	5
5.38825	4.02477	.05304	.03962	6.38220	6.29445	.06282	.06196	6
6.37086	4.50712	.06271	.04436	7.38272	6.96305	.07267	.06854	7
7.32840	4.96321	.07214	.04885	8.44055	7.63823	.08308	.07519	8
8.44055	5.44436	.08308	.05359	9.49898	8.31638	.09350	.08186	9
9.74016	6.00014	.09588	.05906	10.42608	8.89664	.10263	.08757	10
11.17288	6.58398	.10998	.06481	11.16871	9.34138	.10994	.09195	11
12.53099	7.13677	.12335	.07025	11.82358	9.70494	.11638	.09553	12

TABLE VII (Continued)

CASE-4 5-21-70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	7.90	7.00	280.0	.0591	22.4	588.0	CO2	26.3	3.41E 04	0	.1243	5 21 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.98075	1.11932	.08629	.04876	1.64226	1.79986	.07155	.07841	1
2.34728	1.26916	.10226	.05529	2.37892	2.16581	.10364	.09436	2
2.75740	1.41840	.12013	.06179	3.39556	2.61771	.14793	.11404	3
3.26841	1.57600	.14239	.06866	4.70830	3.15558	.20512	.13748	4
3.91851	1.74972	.17072	.07623	6.06402	3.66898	.26419	.15984	5
4.59547	1.91508	.20021	.08343	7.49675	4.21580	.32661	.18367	6
5.34765	2.07865	.23298	.09056	8.94858	4.77218	.38986	.20791	7
6.17744	2.23267	.26913	.09727	10.45055	5.32378	.45529	.23194	8
7.11289	2.38668	.30988	.10398	11.58360	5.73449	.50466	.24983	9
8.11700	2.53235	.35363	.11033	12.38951	6.02820	.53977	.26263	10
9.13065	2.66487	.39779	.11610					11
10.23564	2.79382	.44593	.12172					12
11.33108	2.89112	.49365	.12596					13
12.43428	2.96395	.54172	.12913					14

CASE-4 5-21-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	7.90	7.00	280.0	.0591	92.0	588.0	CO2	26.3	1.40E 05	0	.1243	5 21 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.89120	1.51690	.04066	.03262	2.35863	2.57533	.05071	.05537	1
2.43922	1.81001	.05245	.03892	2.98843	2.92455	.06426	.06288	2
3.05529	2.11268	.06569	.04543	3.74360	3.34661	.08049	.07196	3
3.78538	2.43922	.08139	.05245	4.59547	3.81523	.09881	.08203	4
4.52861	2.74248	.09737	.05897	5.63241	4.37698	.12110	.09411	5
5.40556	3.05947	.11623	.06578	6.77581	4.98529	.14568	.10719	6
6.41026	3.38661	.13783	.07282	8.12655	5.68912	.17473	.12232	7
7.62092	3.74897	.16386	.08061	9.43511	6.35355	.20287	.13661	8
8.83157	4.10058	.18989	.08817	10.78963	7.01141	.23199	.15075	9
10.01058	4.42653	.21524	.09518	12.11729	7.64002	.26054	.16427	10
11.02125	4.69397	.23697	.10093					11
11.94656	4.91664	.25687	.10571					12
12.77814	5.09872	.27475	.10963					13

TABLE VII (Continued)

CASE-4 5-21-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	7.90	7.00	280.0	.0591	150.0	645.0	CO2	26.3	2.28E 05	0	.1243	5 21 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.16700	1.85359	.03651	.03123	1.95567	2.62368	.03295	.04421	1
2.43504	1.99209	.04103	.03356	2.30968	2.82068	.03891	.04752	2
2.74905	2.16163	.04632	.03642	2.66905	3.02723	.04497	.05100	3
3.09409	2.33475	.05213	.03934	3.04693	3.26304	.05134	.05498	4
3.42123	2.50130	.05764	.04214	3.47078	3.50839	.05848	.05911	5
3.73882	2.64458	.06299	.04456	3.89344	3.76748	.06560	.06348	6
4.06059	2.79919	.06841	.04716	4.31012	4.03611	.07262	.06800	7
4.39608	2.94127	.07408	.04956	4.67666	4.26893	.07879	.07193	8
4.76262	3.09469	.08024	.05214	5.04857	4.50354	.08506	.07588	9
5.22945	3.27856	.08811	.05524	5.39780	4.71069	.09094	.07937	10
5.75240	3.48571	.09692	.05873	5.71539	4.89097	.09630	.08241	11
6.24251	3.68390	.10518	.06207	6.04193	5.08379	.10180	.08565	12
6.71054	3.85344	.11306	.06492	6.37922	5.28020	.10748	.08896	13
7.12782	3.99:10	.12009	.06738	6.79292	5.52973	.11445	.09317	14
7.65196	4.16924	.12892	.07025	7.23348	5.78404	.12187	.09745	15
8.16296	4.34534	.13753	.07321	7.79284	6.10342	.13130	.10283	16
8.68292	4.52802	.14629	.07629	8.41668	6.45862	.14181	.10882	17
9.14259	4.69099	.15404	.07904	9.14378	6.85500	.15406	.11550	18
9.68643	4.86351	.16320	.08194	9.85179	7.22871	.16599	.12179	19
10.22251	5.03365	.17223	.08481	10.55084	7.58928	.17777	.12787	20
10.74844	5.18707	.18110	.08739	11.17945	7.91343	.18836	.13333	21
11.21049	5.32557	.18888	.08973	11.66001	8.17610	.19645	.13776	22
11.72150	5.47242	.19749	.09220	11.98476	8.37071	.20193	.14103	23
12.18893	5.59062	.20537	.09419					24
12.56144	5.66106	.21164	.09538					25

CASE-4 5-19-70 PIX NO 9

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
9	7.90	7.00	280.0	.0591	150.0	645.0	CO2	26.3	2.28E 05	0	.1243	5 19 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.61540	1.56346	.02722	.02634	1.81956	2.57175	.03066	.04333	1
1.89896	1.74852	.03199	.02946	2.46966	2.94963	.04161	.04970	2
2.31326	1.98313	.03897	.03341	3.19080	3.37288	.05376	.05683	3
2.93172	2.29654	.04940	.03869	4.02895	3.86598	.06788	.06514	4
3.71494	2.66010	.06259	.04482	4.94172	4.39728	.08326	.07409	5
4.49100	3.00634	.07567	.05065	5.92492	4.96679	.09983	.08368	6
5.29512	3.33467	.08921	.05618	6.97261	5.56018	.11748	.09368	7
6.23654	3.69285	.10508	.06222	7.85254	6.04611	.13230	.10187	8
7.35049	4.08387	.12384	.06881	8.67994	6.48190	.14624	.10921	9
8.56652	4.49041	.14433	.07566	9.46615	6.88008	.15949	.11592	10
9.67628	4.83725	.16303	.08150	10.38250	7.34929	.17493	.12382	11
10.78844	5.15901	.18177	.08692	11.28332	7.80478	.19011	.13150	12
11.83373	5.43302	.19938	.09154	12.04386	8.18326	.20292	.13788	13
12.71784	5.65629	.21428	.09530	12.64382	8.46921	.21303	.14269	14
13.32974	5.80255	.22459	.09776					15

TABLE VII (Continued)

CASE-4 5-27-70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	7.40	2.00	866.0	.8500	7.7	588.0	CO2	26.3	3.06E 04	0	.1243	5 27 70

X	Y	XBAR	YBAR	X	Y	
2.03670	.64214	.09367	.02953			1
2.41262	.75005	.11096	.03450			2
2.74881	.84789	.12642	.03899			3
3.08559	.93801	.14191	.04314			4
3.50598	1.03466	.16124	.04758			5
4.03012	1.13664	.18535	.05227			6
4.63610	1.24455	.21322	.05724			7
5.31796	1.35009	.24458	.06209			8
6.05853	1.45919	.27863	.06711			9
6.89693	1.56355	.31719	.07191			10
7.81300	1.66020	.35932	.07635			11
8.75931	1.73728	.40285	.07990			12
9.72163	1.78827	.44710	.08224			13
10.51675	1.81198	.48367	.08333			14
11.19387	1.81258	.51481	.08336			15

CASE-4 5-27-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	7.40	2.00	866.0	.8500	15.4	588.0	CO2	26.3	6.13E 04	0	.1243	5 27 70

X	Y	XBAR	YBAR	X	Y	
1.70763	.61012	.05549	.01983			1
1.88669	.73819	.06131	.02399			2
2.18019	.88405	.07084	.02873			3
2.55433	1.04059	.08300	.03381			4
3.05891	1.22202	.09940	.03971			5
3.54867	1.38152	.11531	.04489			6
4.02242	1.51730	.13070	.04930			7
4.52996	1.64537	.14720	.05346			8
5.04403	1.76692	.16390	.05741			9
5.60612	1.89203	.18216	.06148			10
6.11011	2.00231	.19854	.06506			11
6.63011	2.10963	.21544	.06855			12
7.18628	2.21162	.23351	.07186			13
7.86873	2.31953	.25568	.07537			14
8.60871	2.42329	.27973	.07874			15
9.38366	2.51994	.30491	.08188			16
10.11296	2.58753	.32861	.08408			17
10.88258	2.63615	.35361	.08566			18
11.68837	2.66995	.37980	.08676			19

TABLE VII (Continued)

CASE-4 5-27-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	7.40	2.00	866.0	.8500	30.4	588.0	CO2	26.3	1.22E 05	0	.1243	5 27 70

X	Y	XBAR	YBAR	X	Y	
1.60802	.97655	.03704	.02249			1
2.01654	1.12834	.04645	.02599			2
2.42389	1.28309	.05583	.02955			3
2.86799	1.45682	.06606	.03355			4
3.34529	1.63174	.07705	.03758			5
3.81726	1.80072	.08792	.04148			6
4.35149	1.98334	.10023	.04568			7
4.97940	2.18494	.11469	.05033			8
5.71641	2.41143	.13167	.05554			9
6.43267	2.61837	.14816	.06031			10
7.08844	2.80099	.16327	.06451			11
7.67544	2.95693	.17679	.06811			12
8.28319	3.11109	.19079	.07166			13
8.96150	3.27651	.20641	.07547			14
9.65819	3.43423	.22246	.07910			15
10.26831	3.56231	.23651	.08205			16
10.75985	3.65717	.24783	.08424			17

CASE-4 5-27-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.40	2.00	866.0	.8500	49.6	588.0	CO2	26.3	1.98E 05	0	.1243	5 27 70

X	Y	XBAR	YBAR	X	Y	
1.68984	.96054	.03055	.01737			1
2.11082	1.24337	.03816	.02248			2
2.58042	1.51849	.04665	.02745			3
3.13658	1.78649	.05671	.03230			4
3.78525	2.07584	.06844	.03753			5
4.54597	2.37467	.08219	.04293			6
5.34405	2.66699	.09662	.04822			7
6.22488	2.95533	.11264	.05345			8
7.16137	3.23738	.12948	.05853			9
8.15630	3.52258	.14747	.06369			10
9.19986	3.80541	.16633	.06880			11
10.23679	4.07104	.18507	.07360			12
11.28459	4.32244	.20402	.07815			13

TABLE VII (Continued)

CASE-4 5-27-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.40	2.00	866.0	.8500	69.3	588.0	CO2	26.3	2.76E 05	0	.1243	5 27 70

X	Y	XBAR	YBAR	X	Y	
1.19178	.98011	.01825	.01501			1
2.64327	1.74498	.04048	.02672			2
4.17065	2.50452	.06387	.03835			3
5.80713	3.24805	.08893	.04974			4
7.26158	3.82497	.11120	.05857			5
8.75575	4.36216	.13408	.06680			6
10.25645	4.87030	.15706	.07458			7

CASE-4 5-27-70 PIX NO 6

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
6	7.40	2.00	866.0	.8500	92.2	588.0	CO2	26.3	3.67E 05	0	.1243	5 27 70

X	Y	XBAR	YBAR	X	Y	
3.28541	2.32685	.04363	.03090			1
4.11610	2.75177	.05466	.03654			2
5.22843	3.28541	.06943	.04363			3
6.54117	3.88011	.08687	.05153			4
7.88415	4.45940	.10470	.05922			5
9.11092	4.97169	.12099	.06602			6

CASE-4 5-27-70 PIX NO 7

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
7	7.40	2.00	866.0	.8500	114.4	588.0	CO2	26.3	4.56E 05	0	.1243	5 27 70

X	Y	XBAR	YBAR	X	Y	
3.56112	2.40313	.04243	.02863			1
4.59578	2.97946	.05475	.03550			2
5.88006	3.63405	.07005	.04329			3
7.23430	4.27026	.08619	.05087			4
8.52214	4.84184	.10153	.05768			5

TABLE VII (Continued)

CASE-4 5-27-70 PIX NO 8

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
8	7.40	2.00	866.0	.8500	153.7	588.0	CO2	26.3	6.12E 05	0	.1243	5 27 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.72542	3.03104	.01774	.03117					1
2.81225	3.70461	.02892	.03810					2
3.91569	4.36869	.04027	.04493					3
4.97499	4.96814	.05121	.05109					4
5.94647	5.47331	.06115	.05629					5
7.11216	6.04726	.07314	.06219					6
8.53281	6.74514	.08775	.06937					7

CASE-5 5-22-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	7.80	3.00	280.0	.1350	10.0	588.0	AR	26.3	3.34E 04	0	.1243	5 22 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.29304	.44952	.05692	.01979	.32953	4.34295	.01451	.19118	1
2.68935	.84352	.11839	.03713	1.41004	5.08021	.06207	.22363	2
4.11372	1.23155	.18109	.05421	2.46548	5.77091	.10853	.25404	3
5.57092	1.61659	.24524	.07116	3.50720	6.41922	.15439	.28258	4
6.94694	1.96045	.30581	.08630	4.49996	7.01738	.19809	.30891	5
8.25788	2.28162	.36352	.10044	5.56316	7.63942	.24489	.33629	6
				6.68546	8.28116	.29430	.36454	7

CASE-5 5-22-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	7.80	3.00	280.0	.1350	20.0	588.0	AR	26.3	6.68E 04	0	.1243	5 22 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.59928	.56414	.04978	.01756	.89366	4.21938	.02782	.13134	1
2.99201	1.01664	.09313	.03165	2.03149	5.07782	.06323	.15806	2
4.40146	1.40288	.13701	.04367	3.10842	5.87060	.09676	.18274	3
5.88552	1.73181	.18320	.05391	4.18595	6.64368	.13030	.20680	4
7.39884	2.00940	.23031	.06255	5.21931	7.37795	.16246	.22966	5
9.01365	2.29535	.28057	.07145	6.33445	8.17192	.19717	.25437	6
10.67203	2.58070	.33219	.08033	7.54988	9.04170	.23501	.28144	7
				8.95455	10.05058	.27873	.31285	8

TABLE VII (Continued)

CASE-5 5-22-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.80	3.00	280.0	.1350	40.0	588.0	AR	26.3	1.33E 05	0	.1243	5 22 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.89299	.86143	.04176	.01900	.27580	4.03671	.00608	.08905	1
2.76158	1.21603	.06092	.02683	.63398	4.52145	.01399	.09974	2
3.70599	1.57839	.08175	.03482	1.27155	5.05992	.02805	.11162	3
4.80083	1.95149	.10591	.04305	2.23147	5.67539	.04923	.12520	4
5.90821	2.27266	.13033	.05013	3.33706	6.34997	.07362	.14008	5
6.93500	2.51802	.15299	.05555	4.61099	7.08305	.10172	.15625	6
7.80657	2.68457	.17221	.05922	6.01029	7.85135	.13259	.17320	7

CASE-5 5-22-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.80	3.00	280.0	.1350	64.5	588.0	AR	26.3	2.16E 05	0	.1243	5 22 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.40161	1.09245	.04157	.01891	2.20640	2.67025	.03819	.04622	1
2.88575	1.30736	.04995	.02263	3.06663	3.01828	.05308	.05225	2
3.35139	1.50675	.05801	.02608	4.04566	3.39556	.07003	.05878	3
3.83613	1.69718	.06640	.02938	4.97395	3.73882	.08610	.06472	4
4.41578	1.90851	.07644	.03304	5.96432	4.09282	.10324	.07085	5
4.99425	2.10133	.08645	.03637	6.95529	4.45339	.12040	.07709	6
5.56256	2.28520	.09629	.03956	8.09133	4.87784	.14006	.08444	7
6.33683	2.51324	.10969	.04350	9.30735	5.32378	.16111	.09216	8
7.13558	2.74427	.12352	.04750	10.56815	5.77210	.18294	.09992	9
8.08357	3.00634	.13993	.05204					10
9.07752	3.26841	.15713	.05658					11
10.04879	3.52152	.17395	.06096					12
10.84395	3.72151	.18771	.06442					13

TABLE VII (Continued)

CASE-5 5-26-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	7.80	3.00	280.0	.1350	64.5	588.0	AR	26.3	2.16E 05	0	.1243	5 26 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.71374	.75098	.02967	.01300	2.84911	2.84022	.04932	.04916	1
2.15567	.94377	.03732	.01634	3.38062	3.05436	.05852	.05287	2
2.57387	1.14427	.04455	.01981	3.87178	3.24300	.06702	.05614	3
2.98021	1.32816	.05159	.02299	4.33566	3.40553	.07505	.05895	4
3.36816	1.48536	.05830	.02571	4.80013	3.55680	.08309	.06157	5
3.74484	1.62002	.06482	.02804	5.28715	3.69382	.09152	.06394	6
4.25202	1.80806	.07360	.03130	5.75992	3.82967	.09971	.06629	7
4.79539	1.99610	.08301	.03455	6.27837	3.98746	.10868	.06902	8
5.43782	2.22033	.09413	.03843	6.88047	4.23245	.11910	.07326	9
5.95093	2.39295	.10301	.04142	7.50036	4.48693	.12983	.07767	10
6.42905	2.53709	.11129	.04392	8.06626	4.73903	.13963	.08203	11
6.84606	2.64268	.11851	.04575	8.54734	4.92767	.14796	.08530	12
7.30519	2.74709	.12645	.04755	9.02131	5.16851	.15616	.08947	13
7.87110	2.90013	.13625	.05020	9.52137	5.37909	.16482	.09311	14
8.44413	3.05970	.14617	.05296	10.08728	5.61993	.17461	.09728	15
9.01834	3.23410	.15611	.05598	10.65793	5.79848	.18449	.10037	16
9.53027	3.37172	.16497	.05837	11.22799	5.99839	.19436	.10383	17
10.01372	3.49629	.17334	.06052	11.74348	6.18109	.20328	.10700	18
10.46574	3.61196	.18116	.06252	12.28151	6.37032	.21260	.11027	19
10.93970	3.72230	.18937	.06443	12.78038	6.55955	.22123	.11355	20
11.41248	3.82195	.19755	.06616	13.23299	6.74996	.22907	.11684	21
11.89593	3.88839	.20592	.06731					22
12.29930	3.97263	.21290	.06877					23
12.72106	4.05389	.22020	.07017					24
13.12206	4.10906	.22715	.07113					25
13.54204	4.10550	.23443	.07107					26

CASE-5 5-26-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.80	3.00	280.0	.1350	64.5	588.0	AR	26.3	2.16E 05	0	.1243	5 26 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.55536	.49828	.02692	.00863	1.59451	2.05542	.02760	.03558	1
1.91365	.70709	.03313	.01224	2.36210	2.50506	.04089	.04336	2
2.51574	1.02089	.04355	.01767	3.39307	3.00868	.05873	.05208	3
3.23528	1.36257	.05600	.02359	4.61328	3.50934	.07986	.06075	4
4.09898	1.73865	.07095	.03010	6.12592	4.06991	.10604	.07045	5
4.95496	2.04712	.08577	.03544	7.55493	4.56938	.13078	.07910	6
5.95034	2.36863	.10300	.04100	8.87301	5.02911	.15359	.08705	7
7.08808	2.70141	.12270	.04676	10.05880	5.44671	.17412	.09428	8
8.29108	3.03478	.14352	.05253	11.32824	5.88924	.19609	.10194	9
9.62518	3.36519	.16661	.05825	12.49802	6.29558	.21634	.10898	10
10.81513	3.64044	.18721	.06302	13.47501	6.63429	.23326	.11484	11
12.07626	3.90382	.20904	.06758					12
13.32197	4.15533	.23061	.07193					13

TABLE VII (Continued)

CASE-5 5-26-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.80	3.00	280.0	.1350	64.5	588.0	AR	26.3	2.16E 05	0	.1243	5 26 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.73166	.78658	.04729	.01362	2.42735	2.36329	.04202	.04091	1
3.15580	1.08792	.05463	.01883	3.34977	2.83844	.05799	.04913	2
3.86466	1.46578	.06690	.02537	4.29058	3.28333	.07427	.05684	3
4.77996	1.86916	.08274	.03236	5.28062	3.69679	.09141	.06399	4
5.73145	2.22685	.09921	.03855	6.20541	4.06101	.10742	.07030	5
6.64319	2.52523	.11499	.04371	7.21206	4.45727	.12484	.07716	6
7.63086	2.82895	.13209	.04897	8.17600	4.84581	.14153	.08388	7
8.80064	3.16529	.15234	.05479	9.24435	5.27410	.16002	.09130	8
10.20948	3.53841	.17673	.06125	10.34413	5.70713	.17906	.09879	9
11.70195	3.89551	.20256	.06743	11.57382	6.18465	.20035	.10706	10
13.09418	4.20101	.22666	.07272	12.63564	6.60167	.21873	.11428	11
14.28294	4.44006	.24724	.07686	13.49103	6.94216	.23353	.12017	12

CASE-5 5-22-70 PIX NO 6

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
6	7.80	3.00	280.0	.1350	90.0	620.0	AR	26.3	3.02E 05	0	.1243	5 22 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.87150	1.02977	.02740	.01508	1.07275	4.71546	.01570	.06903	1
2.81889	1.47272	.04127	.02156	2.33415	5.46884	.03417	.08006	2
3.89224	1.93358	.05698	.02831	3.83075	6.33743	.05608	.09278	3
5.05156	2.38072	.07395	.03485	5.43063	7.24124	.07950	.10601	4
6.18759	2.76815	.09058	.04052	6.94097	8.07282	.10161	.11818	5
7.22871	3.10006	.10582	.04538	8.23938	8.76650	.12062	.12834	6
8.28833	3.42064	.12134	.05008	9.45779	9.40227	.13846	.13764	7
9.38496	3.71255	.13739	.05435					8
10.60935	4.00626	.15532	.05865					9

CASE-5 5-22-70 PIX NO 7

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
7	7.80	3.00	280.0	.1350	120.0	620.0	AR	26.3	4.32E 05	0	.1243	5 22 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.26192	1.30378	.02769	.01596	.66443	4.35370	.00813	.05329	1
3.44332	1.84702	.04215	.02261	1.69659	5.09275	.02077	.06234	2
4.52861	2.30192	.05543	.02818	2.67084	5.75479	.03269	.07044	3
5.56674	2.68875	.06814	.03291	3.62062	6.35176	.04432	.07775	4
6.50160	3.01410	.07958	.03689	4.57518	6.92127	.05600	.08472	5
7.45854	3.34900	.09129	.04099	5.60316	7.52003	.06858	.09205	6
8.37847	3.65883	.10255	.04478	6.62995	8.11461	.08115	.09932	7
9.41302	4.00507	.11522	.04902	7.75702	8.75038	.09495	.10711	8
10.50547	4.36445	.12859	.05342	8.82082	9.34616	.10797	.11440	9
				9.86254	9.92343	.12072	.12146	10

TABLE VII (Continued)

CASE-5 5-22-70 PIX NO 8

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
8	7.80	3.00	280.0	.1350	150.0	645.0	AR	26.3	5.03E 05	0	.1243	5 22 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.34788	1.39870	.02663	.01587	1.14081	4.91246	.01294	.05572	1
3.56928	2.00403	.04049	.02273	2.24341	5.59301	.02545	.06344	2
4.79486	2.57533	.05439	.02921	3.43377	6.31295	.03895	.07161	3
6.03954	3.10245	.06851	.03519	4.76979	7.10692	.05411	.08062	4
7.37556	3.61704	.08366	.04103	6.11178	7.88478	.06933	.08944	5
8.87694	4.15610	.10070	.04714	7.41436	8.62920	.08410	.09788	6
10.32996	4.64144	.11718	.05265	8.76769	9.38078	.09946	.10641	7
11.65882	5.05753	.13225	.05737	10.08043	10.08700	.11435	.11442	8
				11.41167	10.78844	.12945	.12238	9

CASE-5 5-26-70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	7.90	7.00	280.0	.0591	22.4	588.0	AR	26.3	3.43E 04	0	.1243	5 26 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.39367	.90759	.14742	.03942	2.23516	2.25295	.09709	.09787	1
3.70391	.99894	.16089	.04339	2.84971	2.39710	.12379	.10413	2
4.16126	1.12114	.18076	.04870	3.65408	2.60116	.15873	.11299	3
4.90276	1.28338	.21297	.05574	4.55752	2.85030	.19797	.12381	4
5.96991	1.46816	.25933	.06378	5.57722	3.14571	.24227	.13665	5
7.19545	1.63425	.31256	.07099	6.63607	3.46129	.28827	.15036	6
8.44057	1.77840	.36665	.07725	7.86517	3.80594	.34166	.16533	7
9.58899	1.90534	.41654	.08277	9.28350	4.18914	.40327	.18197	8
10.71666	2.02339	.46552	.08789	10.74039	4.57235	.46655	.19862	9
11.79746	2.13316	.51247	.09253	12.07923	4.92589	.52471	.21398	10
12.90139	2.23516	.56043	.09709	13.20452	5.21774	.57359	.22665	11
13.97864	2.34015	.60722	.10165					12

CASE-5 5-26-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	7.90	7.00	280.0	.0591	150.0	644.0	AR	26.3	2.28E 05	0	.1243	5 26 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.52154	.86132	.02564	.01451	2.13016	2.49854	.03589	.04210	1
1.90356	1.06834	.03207	.01800	2.57802	2.64268	.04344	.04453	2
2.29863	1.27478	.03873	.02148	3.03597	2.80047	.05115	.04718	3
2.66285	1.45748	.04487	.02456	3.59832	3.00631	.06063	.05065	4
3.01521	1.60400	.05080	.02702	4.12923	3.19139	.06957	.05377	5
3.34977	1.74043	.05644	.02932	4.69098	3.39663	.07904	.05723	6
3.73416	1.89348	.06292	.03190	5.21418	3.59832	.08785	.06063	7
4.09779	2.03229	.06904	.03424	5.80678	3.83738	.09784	.06465	8
4.48930	2.17821	.07564	.03670	6.49430	4.13220	.10942	.06962	9
4.89089	2.32948	.08240	.03925	7.21147	4.44659	.12150	.07492	10
5.32986	2.48430	.08980	.04186	7.90907	4.75802	.13326	.08017	11
5.76348	2.63438	.09711	.04439	8.62802	5.08487	.14537	.08567	12
6.22973	2.79217	.10496	.04704	9.32680	5.38917	.15714	.09080	13
6.75708	2.96004	.11385	.04987	10.04101	5.70831	.16918	.09618	14
7.39180	3.14156	.12454	.05293	10.68403	5.96161	.18001	.10044	15
8.08940	3.32901	.13629	.05609	11.36799	6.26176	.19153	.10550	16
8.76445	3.51765	.14767	.05927	12.02465	6.54116	.20260	.11021	17
9.45612	3.70213	.15932	.06238	12.64395	6.81877	.21303	.11489	18
10.12465	3.86822	.17059	.06517	13.18435	7.05427	.22214	.11885	19
10.84597	4.03788	.18274	.06803	13.69390	7.28206	.23072	.12269	20
11.48188	4.19863	.19345	.07074					21
12.15397	4.34930	.20478	.07328					22
12.76615	4.47091	.21509	.07533					23
13.44773	4.57353	.22657	.07706					24
13.97567	4.65183	.23547	.07838					25
14.42709	4.71234	.24307	.07940					26

TABLE VII (Continued)

CASE-6 6-1-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	11.45	2.00	280.0	.0650	6.3	588.0	CO2	26.3	2.00E 04	0	.1243	6 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.06524	.63139	.11749	.03592	1.28570	2.20457	.07314	.12541	1
2.54025	.81422	.14451	.04632	1.69075	2.47793	.09618	.14096	2
3.23807	1.01998	.18420	.05802	2.33625	2.80597	.13290	.15962	3
4.09638	1.22515	.23303	.06970	3.20162	3.16928	.18213	.18029	4
4.96821	1.39623	.28263	.07943	4.17104	3.53201	.23728	.20093	5
5.74010	1.52144	.32654	.08655	5.09990	3.85005	.29012	.21902	6
6.53433	1.62962	.37172	.09270	5.99818	4.14164	.34122	.23561	7
7.34267	1.72132	.41770	.09792	7.01346	4.46439	.39898	.25397	8
8.15043	1.80187	.46365	.10250	8.13338	4.82477	.46268	.27447	9
8.96641	1.86359	.51007	.10601	9.34501	5.20571	.53161	.29614	10
9.74594	1.91650	.55442	.10902	10.46963	5.55668	.59559	.31610	11
10.57016	1.95354	.60131	.11113	11.59602	5.90706	.65966	.33604	12
11.32559	1.97823	.64428	.11254	12.74768	6.27508	.72518	.35697	13
12.11571	1.99439	.68923	.11374					14
12.86546	2.02115	.73187	.11498					15
13.61599	2.03702	.77457	.11588					16
14.34731	2.04407	.81618	.11628					17

CASE-6 6-1-70 PIX NO 6

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
6	11.45	2.00	280.0	.0650	10.0	588.0	CO2	26.3	3.13E 04	0	.1243	6 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.88710	1.13579	.13129	.05165	1.96295	2.33508	.08926	.10618	1
3.55964	1.34273	.16187	.06106	2.78951	2.80421	.12685	.12752	2
4.40502	1.57671	.20031	.07170	3.54200	3.21455	.16107	.14618	3
5.35974	1.81656	.24373	.08261	4.31860	3.57963	.19638	.16278	4
6.30682	2.02291	.28679	.09199	5.31741	4.01760	.24180	.18269	5
7.30035	2.20280	.33197	.10017	6.67719	4.56668	.30363	.20766	6
8.52667	2.37446	.38774	.10797	8.17277	5.15810	.37164	.23456	7
9.65659	2.50086	.43912	.11372	9.82355	5.79536	.44671	.26353	8
10.72830	2.58610	.48785	.11760	11.44727	6.40617	.52057	.29131	9
11.59131	2.62020	.52710	.11915	13.17272	7.04579	.59901	.32040	10
12.45785	2.62138	.56650	.11920					11
13.38083	2.59727	.60847	.11811					12
14.38788	2.56082	.65426	.11645					13

TABLE VII (Continued)

CASE-6 6-1-70 PIX NO 7

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
7	11.45	2.00	280.0	.0650	20.0	588.0	CO2	26.3	6.30E 04	0	.1243	6 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.14460	.98765	.06874	.03166	1.18517	1.97000	.03799	.06314	1
2.56905	1.18224	.08234	.03789	1.68370	2.36917	.05397	.07594	2
3.08933	1.41033	.09902	.04520	2.23984	2.75659	.07179	.08835	3
3.75070	1.68135	.12022	.05389	3.07463	3.23571	.09855	.10371	4
4.53553	1.97470	.14537	.06329	4.10343	3.75776	.13152	.12044	5
5.47085	2.28334	.17535	.07319	5.23805	4.29273	.16789	.13759	6
6.52434	2.58375	.20912	.08282	6.32799	4.76950	.20283	.15287	7
7.71539	2.86770	.24730	.09192	7.54549	5.27215	.24185	.16898	8
8.98463	3.13048	.28798	.10034	8.94231	5.83593	.28662	.18705	9
10.58015	3.42678	.33912	.10984	10.46649	6.43851	.33548	.20637	10
12.02047	3.66781	.38528	.11756	11.90995	7.00640	.38174	.22457	11
13.34556	3.86240	.42776	.12380	13.28912	7.54491	.42595	.24183	12
14.29440	3.96998	.45817	.12725					13

CASE-6 6-1-70 PIX NO 8

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
8	11.45	2.00	280.0	.0650	40.0	588.0	CO2	26.3	1.26E 05	.0	.1243	6 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.29804	1.50969	.05208	.03422	1.38623	2.26982	.03142	.05144	1
2.80009	1.75072	.06346	.03968	1.77188	2.57317	.04016	.05832	2
3.54024	2.09169	.08024	.04741	2.27688	2.93119	.05160	.06643	3
4.47086	2.49028	.10133	.05644	2.95529	3.35917	.06698	.07613	4
5.57667	2.91591	.12639	.06609	3.85064	3.88239	.08727	.08799	5
6.76596	3.30509	.15335	.07491	4.89943	4.44264	.11104	.10069	6
8.07518	3.68074	.18302	.08342	6.07931	5.04640	.13778	.11437	7
9.44201	4.02818	.21400	.09130	7.36266	5.67779	.16687	.12868	8
10.90349	4.36798	.24712	.09900	8.82179	6.38442	.19994	.14470	9
12.18625	4.64605	.27619	.10530	10.47962	7.16161	.23751	.16231	10
13.29441	4.87474	.30131	.11048	12.29442	7.99816	.27865	.18127	11

TABLE VII (Continued)

CASE-6 6-1-70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	11.45	2.00	280.0	.0650	64.5	588.0	CO2	26.3	2.03E 05	0	.1243	6 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.48852	1.08994	.02658	.01946	1.58729	2.65606	.02834	.04743	1
1.75366	1.27982	.03131	.02285	2.05877	3.00762	.03676	.05370	2
2.09816	1.50792	.03746	.02693	2.76658	3.49556	.04940	.06242	3
2.54260	1.77541	.04540	.03170	3.68839	4.09344	.06586	.07309	4
3.03760	2.04995	.05424	.03660	4.68132	4.68132	.08359	.08359	5
3.60785	2.34507	.06442	.04187	5.60254	5.18631	.10004	.09261	6
4.29391	2.66076	.07667	.04751	6.46261	5.63193	.11540	.10056	7
5.07403	2.99586	.09060	.05349	7.34679	6.07578	.13118	.10849	8
6.01053	3.35564	.10732	.05992	8.38617	6.60253	.14974	.11789	9
7.03697	3.71954	.12565	.06642	9.55253	7.17807	.17057	.12817	10
8.05813	4.04993	.14388	.07232	10.73006	7.74773	.19159	.13834	11
9.08928	4.35563	.16230	.07777					12
10.19097	4.65663	.18197	.08315					13
11.35675	4.96880	.20278	.08872					14
12.45491	5.25039	.22239	.09375					15

CASE-6 6-1-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	11.45	2.00	280.0	.0650	90.0	588.0	CO2	26.3	2.84E 05	0	.1243	6 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.99645	1.64196	.03014	.02479	1.35801	2.74601	.02050	.04145	1
2.39798	1.91121	.03620	.02885	1.82891	3.11520	.02761	.04703	2
2.78481	2.15577	.04204	.03254	2.33860	3.47675	.03530	.05249	3
3.20279	2.39386	.04835	.03614	2.99821	3.90002	.04526	.05888	4
3.64194	2.63078	.05498	.03971	3.77422	4.38326	.05698	.06617	5
4.14635	2.88710	.06259	.04358	4.64135	4.93117	.07007	.07444	6
4.75128	3.17164	.07173	.04788	5.54492	5.49966	.08371	.08302	7
5.48555	3.49556	.08281	.05277	6.46849	6.06873	.09765	.09162	8
6.36620	3.85652	.09611	.05822	7.50023	6.67895	.11323	.10083	9
7.35443	4.24276	.11102	.06405	8.60721	7.31916	.12994	.11049	10
8.44496	4.64193	.12749	.07008	9.82119	8.02580	.14826	.12116	11
9.47552	4.99996	.14304	.07548	11.05693	8.74478	.16692	.13201	12
10.52548	5.34269	.15890	.08065	12.29090	9.46200	.18555	.14284	13
11.64187	5.68131	.17575	.08577					14
12.94168	6.06697	.19537	.09159					15

TABLE VII (Continued)

CASE-6 6-1-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	11.45	2.00	280.0	.0650	120.0	588.0	CO2	26.3	3.78E 05	0	.1243	6 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.79716	1.40034	.02352	.01832	1.63843	2.69133	.02144	.03522	1
2.10463	1.73426	.02754	.02269	1.91768	2.97763	.02509	.03896	2
2.46676	2.05466	.03228	.02689	2.34154	3.33389	.03064	.04362	3
2.93237	2.37682	.03837	.03110	2.93648	3.77304	.03842	.04937	4
3.51143	2.74895	.04595	.03597	3.64429	4.26334	.04769	.05579	5
4.16692	3.12990	.05453	.04096	4.48203	4.83358	.05865	.06325	6
4.90237	3.51849	.06415	.04604	5.47555	5.51083	.07165	.07211	7
5.76538	3.94529	.07544	.05163	6.61429	6.29565	.08655	.08238	8
6.71658	4.37915	.08789	.05730	7.69129	7.04756	.10064	.09222	9
7.78476	4.82359	.10187	.06312	8.71656	7.75890	.11406	.10153	10
9.00462	5.29155	.11783	.06924	9.64424	8.41027	.12620	.11005	11
10.33265	5.78302	.13521	.07567	10.55664	9.04283	.13814	.11833	12
11.69654	6.27508	.15305	.08211	11.37967	9.62543	.14891	.12595	13
13.03692	6.75126	.17059	.08834	12.17979	10.19391	.15938	.13339	14

CASE-6 6-1-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	11.45	2.00	280.0	.0650	150.0	588.0	CO2	26.3	4.72E 05	0	.1243	6 1 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
1.62785	1.40916	.01906	.01650	1.35272	2.68075	.01584	.03139	1
1.98117	1.75131	.02320	.02051	1.84360	3.17046	.02159	.03713	2
2.44266	2.15107	.02860	.02519	2.37329	3.65488	.02779	.04280	3
2.96000	2.55612	.03466	.02993	2.98763	4.15340	.03499	.04864	4
3.56846	2.97175	.04179	.03480	3.73424	4.72130	.04373	.05529	5
4.23453	3.36858	.04959	.03945	4.62136	5.35739	.05412	.06274	6
5.00113	3.78715	.05856	.04435	5.68602	6.10459	.06658	.07148	7
5.88531	4.22454	.06892	.04947	6.82534	6.88530	.07992	.08063	8
6.83827	4.67015	.08008	.05469	8.13455	7.79241	.09526	.09125	9
7.87882	5.13340	.09226	.06011	9.45847	8.71186	.11076	.10202	10
8.95700	5.59137	.10489	.06548	10.64070	9.53489	.12460	.11165	11
10.21155	6.09401	.11958	.07136	11.59073	10.18862	.13573	.11931	12
11.45669	6.56784	.13416	.07691					13
12.65950	7.00876	.14824	.08207					14

TABLE VII (Continued)

CASE-7 6-2-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
2	7.80	3.00	280.0	.1350	10.0	588.0	CO2	9.0	3.34E 04	0	.0590	6 2 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.95765	1.45762	.27430	.13518	2.58132	2.75623	.23940	.25562	1
4.14024	1.82394	.38397	.16916	3.48946	3.16967	.32362	.29396	2
5.33814	2.16141	.49507	.20045	4.56486	3.65024	.42335	.33853	3
6.49776	2.43938	.60261	.22623	5.87525	4.22151	.54488	.39151	4
7.55962	2.66966	.70109	.24759	7.28871	4.82989	.67597	.44793	5
8.46187	2.84399	.78477	.26376	8.66918	5.40646	.80399	.50140	6
9.25812	2.99299	.85861	.27757	9.94894	5.92767	.92268	.54974	7

CASE-7 6-2-70 PIX NO 3

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
3	7.80	3.00	280.0	.1350	20.0	588.0	CO2	9.0	6.68E 04	0	.0590	6 2 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.06366	1.95587	.20091	.12826	2.62372	2.95235	.17206	.19361	1
4.01362	2.29686	.26321	.15062	3.51479	3.41997	.23049	.22428	2
4.97653	2.61607	.32635	.17156	4.41292	3.88346	.28939	.25467	3
6.07314	2.94469	.39827	.19311	5.34109	4.35049	.35026	.28530	4
7.25160	3.27686	.47555	.21489	6.28692	4.82105	.41229	.31616	5
8.47718	3.61137	.55592	.23683	7.22274	5.28219	.47365	.34640	6
				8.09909	5.70858	.53112	.37436	7
				9.00487	6.14675	.59052	.40309	8
				9.94717	6.59729	.65232	.43264	9

CASE-7 6-2-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.80	3.00	280.0	.1350	40.0	588.0	CO2	9.0	1.33E 05	0	.0590	6 2 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.42762	2.41877	.15930	.11241	1.87636	2.93998	.08720	.13664	1
4.42470	2.83868	.20564	.13193	2.39757	3.19794	.11143	.14863	2
5.44120	3.24211	.25288	.15068	3.04069	3.54129	.14132	.16458	3
6.52191	3.64023	.30311	.16918	3.71561	3.92174	.17268	.18226	4
7.57670	4.00655	.35213	.18621	4.45944	4.35343	.20725	.20233	5
8.60322	4.34637	.39984	.20200	5.10610	4.73153	.23731	.21990	6
9.66448	4.66263	.44916	.21670	5.79457	5.12671	.26930	.23827	7
10.62210	4.90822	.49367	.22811	6.55548	5.55193	.30467	.25803	8
11.54084	5.11317	.53636	.23764	7.53665	6.08963	.35027	.28302	9
				8.58201	6.65324	.39885	.30921	10
				9.60736	7.19389	.44650	.33434	11
				10.52492	7.66445	.48915	.35621	12

TABLE VII (Continued)

CASE-7 6-2-70 PIX NO 5

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.80	3.00	280.0	.1350	64.5	588.0	CO2	9.0	2.16E 05	0	.0590	6 2 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
3.54423	2.93645	.12925	.10709	1.76152	3.12903	.06424	.11411	1
4.40291	3.36578	.16057	.12275	2.68497	3.70619	.09792	.13516	2
5.44356	3.85166	.19852	.14047	3.67203	4.34401	.13391	.15842	3
6.63027	4.36462	.24180	.15917	4.68265	5.01364	.17077	.18284	4
7.98012	4.88407	.29103	.17812	5.73509	5.69680	.20915	.20776	5
9.28403	5.34167	.33858	.19480	6.82992	6.37938	.24908	.23265	6
10.51491	5.74922	.38347	.20967	7.99190	7.06550	.29145	.25767	7
11.52141	6.07608	.42017	.22159	9.14445	7.73571	.33349	.28211	8
				10.26343	8.37648	.37429	.30548	9

CASE-7 6-2-70 PIX NO 6

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
6	7.80	3.00	280.0	.1350	90.0	588.0	CO2	9.0	3.02E 05	0	.0590	6 2 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.46648	2.55128	.07607	.07869	1.41875	3.11666	.04376	.09612	1
3.50772	3.17615	.10819	.09796	2.19439	3.69441	.06768	.11394	2
4.67205	3.83929	.14410	.11841	2.95529	4.25449	.09115	.13122	3
5.92237	4.48889	.18266	.13845	3.73152	4.81870	.11509	.14862	4
7.10908	5.04662	.21926	.15565	4.55897	5.41176	.14061	.16691	5
8.23219	5.52483	.25390	.17040	5.52896	6.08668	.17052	.18773	6
9.39770	5.99186	.28985	.18480	6.53722	6.76867	.20162	.20876	7
10.42186	6.38940	.32143	.19706	7.47187	7.38588	.23045	.22780	8
11.30586	6.71743	.34870	.20718	8.32877	7.94361	.25688	.24500	9
				9.12737	8.45716	.28151	.26084	10
				9.88710	8.94009	.30494	.27573	11
				10.56556	9.36589	.32586	.28886	12

TABLE VII (Continued)

CASE-7 6-2-70 PIX NO 7

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
7	7.80	3.00	280.0	.1350	120.0	588.0	CO2	9.0	4.32E 05	0	.0590	6 2 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.67319	3.04952	.06893	.07864	1.87813	3.70325	.04843	.09550	1
3.66261	3.65495	.09445	.09425	2.59369	4.22210	.06688	.10888	2
4.65438	4.23800	.12002	.10929	3.30807	4.76628	.08531	.12291	3
5.58785	4.76216	.14410	.12280	4.01067	5.32872	.10342	.13741	4
6.43298	5.19974	.16589	.13409	4.76393	5.93945	.12285	.15316	5
7.34701	5.64557	.18946	.14558	5.52896	6.53722	.14258	.16858	6
8.40239	6.13497	.21668	.15820	6.30636	7.13323	.16262	.18395	7
9.57143	6.66031	.24682	.17175	7.06550	7.69743	.18220	.19850	8
10.70867	7.15030	.27615	.18439	7.77046	8.21746	.20038	.21191	9
				8.47954	8.72100	.21866	.22489	10
				9.20865	9.22631	.23747	.23792	11
				9.99135	9.75989	.25765	.25168	12

CASE-7 6-2-70 PIX NO 8

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
8	7.80	3.00	280.0	.1350	150.0	588.0	CO2	9.0	5.03E 05	0	.0590	6 2 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.52478	3.11136	.06834	.07436	1.98237	3.98594	.04737	.09526	1
3.35165	3.70266	.08010	.08849	2.53950	4.46769	.06069	.10677	2
4.24919	4.30868	.10155	.10297	3.11019	4.96770	.07433	.11872	3
5.26511	4.95356	.12583	.11838	3.78864	5.57961	.09054	.13334	4
6.32226	5.57489	.15109	.13323	4.49655	6.21507	.10746	.14853	5
7.35997	6.14499	.17589	.14685	5.26452	6.89412	.12581	.16476	6
8.38354	6.66738	.20035	.15934	6.03427	7.55549	.14421	.18056	7
9.27284	7.10908	.22160	.16989	6.86114	8.25574	.16397	.19730	8
10.17745	7.55196	.24322	.18048	7.75161	8.98897	.18525	.21482	9
11.04437	7.96834	.26394	.19043	8.68802	9.70689	.20763	.23198	10
				7.41886	6.70742	.17730	.16029	11
				3.94000	0	.09416	0	12

CASE-7 6-2-70 PIX NO 9

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
9	7.80	3.00	280.0	.1350	200.0	588.0	CO2	9.0	6.68E 05	0	.0590	6 2 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
2.69616	3.61491	.05591	.07496	2.15728	4.56369	.04474	.09464	1
3.67969	4.37405	.07631	.09071	2.56659	4.94767	.05323	.10260	2
4.72270	5.12848	.09794	.10635	3.02008	5.38879	.06263	.11175	3
5.93532	5.93120	.12308	.12300	3.49888	5.86465	.07256	.12162	4
7.05195	6.62026	.14624	.13729	3.93588	6.30282	.08162	.13071	5
8.09320	7.24748	.16783	.15030	4.32575	6.68740	.08971	.13868	6
8.98308	7.75809	.18629	.16088	4.79867	7.13970	.09951	.14806	7
9.84941	8.23101	.20425	.17069	5.43649	7.73277	.11274	.16036	8
10.68217	8.65387	.22152	.17946	6.17326	8.39002	.12802	.17399	9
				6.99188	9.08615	.14500	.18843	10
				7.81286	9.75813	.16202	.20236	11
				8.56552	10.36591	.17763	.21496	12
				9.15564	10.83588	.18987	.22471	13

TABLE VII (Continued)

CASE-9 6-3-70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	7.90	6.00	280.0	.0696	5.0	588.0	AR	26.3	8.85E 03	180.0	.1243	6 3 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
.00195	10.00000	.00017	.86077	0	7.43551	0	.63587	1
-.56861	9.75805	-.04863	.83449	-.70053	7.33153	-.05991	.62698	2
-1.34063	9.37724	-.11465	.80192	-1.33088	7.19182	-.11381	.61503	3
-2.18347	8.96719	-.18673	.76686	-1.91509	7.01571	-.16377	.59997	4
-3.08806	8.52464	-.26408	.72901	-2.45576	6.78826	-.21001	.58052	5
-3.84707	8.11719	-.32899	.69417	-3.11600	6.50363	-.26647	.55618	6
-4.59439	7.70649	-.39290	.65904	-3.87112	6.14297	-.33105	.52533	7
-5.26308	7.32568	-.45009	.62648	-4.62818	5.77256	-.39579	.49366	8
-5.95971	6.92343	-.50966	.59208	-5.37875	5.37940	-.45998	.46004	9
-6.64595	6.49193	-.56835	.55518	-6.06694	5.01159	-.51883	.42858	10
-7.59862	5.85249	-.64982	.50049	-6.64725	4.68602	-.56846	.40074	11
-8.51230	5.18770	-.72795	.44364	-7.13983	4.39489	-.61058	.37584	12
-9.37334	4.50991	-.80159	.38568	-7.63696	4.07777	-.65310	.34872	13
-9.94520	3.97119	-.85049	.33961	-8.15293	3.72425	-.69722	.31849	14
-10.40074	3.48901	-.88945	.29837	-8.64292	3.36034	-.73912	.28737	15
-10.81339	2.98148	-.92474	.25497	-9.07896	2.99903	-.77641	.25647	16
-11.14936	2.51489	-.95347	.21507	-9.47537	2.62732	-.81031	.22468	17
-11.42490	2.08340	-.97703	.17817	-9.85292	2.22896	-.84260	.19062	18
-11.60815	1.71624	-.99271	.14677	-10.19214	1.80981	-.87161	.15477	19
-11.74592	1.34063	-1.00449	.11465	-10.44298	1.39586	-.89306	.11937	20
-11.82910	.90198	-1.01160	.07714	-10.61974	1.01311	-.90818	.08664	21
-11.86484	.50883	-1.01466	.04351	-10.72111	.68688	-.91685	.05874	22
-11.84209	.16246	-1.01271	.01389	-10.75231	.42240	-.91952	.03612	23
-11.74577	-.24304	-1.00443	-.02078	-10.72696	.14816	-.91735	.01267	24
-11.57176	-.72068	-.98959	-.06163	-10.62494	-.17351	-.90862	-.01484	25
-11.33457	-1.23730	-.96931	-.10581	-10.43453	-.58291	-.89234	-.04985	26
-11.07918	-1.65905	-.94747	-.14188	-10.19019	-.99231	-.87144	-.08486	27
-10.81079	-2.01406	-.92452	-.17267	-9.88217	-1.41926	-.84510	-.12137	28
-10.53266	-2.34593	-.90073	-.20062	-9.57154	-1.76108	-.81854	-.15060	29
-10.22918	-2.67930	-.87478	-.22913	-9.21478	-2.10549	-.78803	-.18006	30
-9.89321	-3.01202	-.84605	-.25758	-8.84177	-2.40507	-.75613	-.20568	31
-9.51825	-3.36294	-.81398	-.28759	-8.39338	-2.74039	-.71778	-.23435	32
-9.10495	-3.70216	-.77864	-.31660	-7.93784	-3.04777	-.67883	-.26064	33
-8.67216	-4.04917	-.74163	-.34628	-7.47775	-3.33954	-.63948	-.28559	34
-8.20102	-4.40984	-.70133	-.37712	-7.01571	-3.60793	-.59997	-.30854	35
-7.73963	-4.74451	-.66188	-.40574	-6.55887	-3.87047	-.56090	-.33099	36
-7.29189	-5.06018	-.62359	-.43325	-6.07019	-4.13040	-.51911	-.35322	37
-6.86624	-5.35796	-.58719	-.45820	-5.61140	-4.35590	-.47988	-.37251	38
-6.42370	-5.66728	-.54934	-.48465	-5.11752	-4.57295	-.43764	-.39107	39
-5.92592	-5.99675	-.50677	-.51283	-4.63533	-4.76725	-.39640	-.40769	40
-5.38460	-6.33467	-.46048	-.54173	-4.14275	-4.95571	-.35428	-.42380	41
-4.84328	-6.64875	-.41419	-.56790	-3.65147	-5.12271	-.31227	-.43808	42
-4.29222	-6.93968	-.36706	-.59347	-3.14394	-5.27153	-.26886	-.45081	43
-3.70866	-7.25695	-.31716	-.62009	-2.55323	-5.40345	-.21835	-.46209	44
-3.03347	-7.63306	-.25942	-.65276	-1.96188	-5.50157	-.16778	-.47048	45
-2.38103	-8.00087	-.20362	-.68422	-1.38872	-5.55031	-.11876	-.47465	46
-1.72728	-8.35309	-.14771	-.71434	-.89288	-5.55421	-.07636	-.47498	47
-1.09953	-8.66566	-.09403	-.74107					48

TABLE VII (Continued)

CASE-9 6-3-70 PIX NO 2

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/GIAF	ALPHA	RE	
2	7.90	6.00	280.0	.0696	5.0	533.0	AR	26.3	8.85E 03	180.0	.1243	6 3 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-.72558	9.37018	-.06205	.80132	-.84847	8.02629	-.07256	.68639	1
-1.72684	8.92417	-.14768	.76318	-1.99601	7.46454	-.17069	.63835	2
-2.62277	8.51716	-.22429	.72837	-2.97385	6.99578	-.25432	.59826	3
-3.41727	8.13682	-.29224	.69584	-3.75405	6.62453	-.32104	.56652	4
-4.25663	7.70706	-.36402	.65909	-4.54335	6.25329	-.38854	.53477	5
-5.17596	7.20903	-.44264	.61650	-5.28454	5.88594	-.45192	.50335	6
-6.07774	6.69215	-.51976	.57230	-5.98867	5.51665	-.51214	.47177	7
-6.92361	6.18567	-.59209	.52899	-6.63883	5.15841	-.56774	.44114	8
-7.68755	5.69350	-.65742	.48690	-7.20448	4.83139	-.61611	.41317	9
-8.43719	5.17986	-.72153	.44297	-7.72006	4.52515	-.66020	.38698	10
-9.15367	4.62592	-.78280	.39560	-8.22979	4.17926	-.70379	.35740	11
-9.79994	4.04728	-.83907	.34611	-8.69206	3.83987	-.74333	.32838	12
-10.36428	3.43352	-.88633	.29363	-9.09906	3.50049	-.77813	.29935	13
-10.81224	2.81586	-.92464	.24081	-9.44495	3.17996	-.80771	.27194	14
-11.15228	2.21706	-.95372	.18960	-9.76938	2.83342	-.83546	.24231	15
-11.37919	1.69823	-.97312	.14523	-10.05350	2.46608	-.85975	.21089	16
-11.48842	1.18265	-.98247	.10114	-10.27846	2.09418	-.87899	.17909	17
-11.52157	.71778	-.98530	.06138	-10.46766	1.69043	-.89517	.14456	18
-11.49427	.27502	-.98297	.02352	-10.59704	1.29448	-.90624	.11070	19
-11.41438	-.07347	-.97613	-.00628	-10.66921	.93364	-.91241	.07984	20
-11.26346	-.42586	-.96323	-.03642	-10.64645	.55849	-.91046	.04776	21
-11.05070	-.81791	-.94499	-.06995	-10.53527	.17489	-.90095	.01496	22
-10.79664	-1.21776	-.92331	-.10414	-10.30642	-.26007	-.88138	-.02224	23
-10.52397	-1.58445	-.89995	-.13550	-9.86560	-.76784	-.84369	-.06566	24
-10.23165	-1.91669	-.87499	-.16391	-9.30321	-1.27367	-.79559	-.10892	25
-9.92672	-2.24112	-.84891	-.19166	-8.68685	-1.73399	-.74288	-.14829	26
-9.58343	-2.57790	-.81956	-.22046	-8.10886	-2.08183	-.69345	-.17803	27
-9.22259	-2.91924	-.78870	-.24965	-7.38522	-2.47648	-.63157	-.21178	28
-8.83124	-3.26903	-.75528	-.27956	-6.58162	-2.88543	-.56285	-.24676	29
-8.44109	-3.61882	-.72186	-.30947	-5.71040	-3.30674	-.48834	-.28279	30
-8.03734	-3.96731	-.68734	-.33928	-4.78651	-3.73325	-.40933	-.31926	31
-7.61668	-4.31124	-.65136	-.36869	-3.76185	-4.18901	-.32171	-.35824	32
-7.05819	-4.73385	-.60360	-.40483	-2.63122	-4.65193	-.22502	-.39782	33
-6.37032	-5.21497	-.54478	-.44597	-1.49993	-5.07714	-.12827	-.43419	34
-5.57582	-5.74551	-.47683	-.49134					35
-4.59667	-6.35731	-.39310	-.54366					36
-3.43352	-7.05494	-.29363	-.60332					37
-2.07728	-7.84684	-.17764	-.67105					38

TABLE VII (Continued)

CASE-9 6-3-70 PIX NO 4

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
4	7.90	6.00	280.0	.0696	5.0	305.0	AR	26.3	8.85E 03	180.0	.1243	6 3 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-.92213	8.45121	-.07886	.72273	.02924	6.49973	.00250	.55584	1
-1.86375	7.85141	-.15938	.67144	-.98321	6.03055	-.08408	.51572	2
-2.67930	7.31139	-.22913	.62525	-1.86505	5.60555	-.15950	.47937	3
-3.36749	6.82011	-.28798	.58324	-2.70270	5.14546	-.23113	.44003	4
-4.02838	6.32168	-.34450	.54062	-3.56699	4.59244	-.30504	.39274	5
-4.63728	5.81870	-.39657	.49760	-4.39424	3.97899	-.37579	.34028	6
-5.24034	5.23969	-.44814	.44809	-5.06748	3.37204	-.43336	.28837	7
-5.74851	4.69252	-.49160	.40129	-5.61920	2.74819	-.48054	.23502	8
-6.26774	4.06542	-.53600	.34767	-6.02145	2.19582	-.51494	.18778	9
-6.70573	3.42857	-.57346	.29320	-6.28528	1.76108	-.53750	.15060	10
-7.09824	2.70920	-.60703	.23168	-6.33792	1.44005	-.54201	.12315	11
-7.36532	1.99242	-.62987	.17039	-6.27944	1.12813	-.53700	.09648	12
-7.54143	1.35297	-.64493	.11570	-6.13972	.75187	-.52506	.06430	13
-7.61941	.73822	-.65160	.06313	-6.04094	.35416	-.51661	.03029	14
-7.64931	.10462	-.65415	.00895	-5.99740	-.07473	-.51289	-.00639	15
-7.60127	-.67454	-.65004	-.05769	-6.01235	-.49128	-.51416	-.04201	16
-7.49399	-1.45955	-.64087	-.12482	-6.05914	-.87794	-.51817	-.07508	17
-7.31334	-2.19452	-.62542	-.18767	-6.14492	-1.25550	-.52550	-.10737	18
-7.08784	-2.79563	-.60614	-.23908	-6.20600	-1.51608	-.53072	-.12965	19
-6.79086	-3.35839	-.58074	-.28720	-6.19431	-1.76367	-.52972	-.15083	20
-6.33727	-3.97834	-.54195	-.34022	-6.01235	-2.04636	-.51416	-.17500	21
-5.76346	-4.60544	-.49288	-.39385	-5.70238	-2.42781	-.48766	-.20762	22
-5.09477	-5.22019	-.43569	-.44642	-5.31117	-2.82617	-.45420	-.24169	23
-4.42933	-5.73487	-.37879	-.49043	-4.90957	-3.13354	-.41986	-.26797	24
-3.70086	-6.24369	-.31649	-.53395	-4.47222	-3.40518	-.38246	-.29120	25
-3.01267	-6.67324	-.25764	-.57068	-3.90621	-3.68981	-.33405	-.31554	26
-2.32514	-7.05990	-.19884	-.60375	-3.16279	-4.00174	-.27048	-.34222	27
-1.57327	-7.43616	-.13454	-.63592	-2.27445	-4.32861	-.19451	-.37017	28
-.66869	-7.87610	-.05718	-.67355	-1.35297	-4.59634	-.11570	-.39307	29
				-.44254	-4.81729	-.03785	-.41196	30

CASE-9 6-3-70 PIX NO 5B

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
5	7.90	6.00	280.0	.0696	5.0	347.0	AR	26.3	8.85E 03	180.0	.1243	6 3 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-1.38027	8.03206	-.11804	.68689	-2.65526	5.09607	-.22707	.43581	1
-2.06650	7.60447	-.17672	.65032	-3.47536	4.60869	-.29721	.39413	2
-2.77483	7.14958	-.23730	.61142	-4.34420	3.97054	-.37151	.33955	3
-3.49226	6.66154	-.29865	.56968	-5.15911	3.20763	-.44120	.27431	4
-4.25192	6.11113	-.36362	.52261	-5.70497	2.52269	-.48788	.21574	5
-5.01289	5.51067	-.42869	.47126	-6.05134	1.86570	-.51750	.15955	6
-5.77191	4.81859	-.49360	.41208	-6.18391	1.27434	-.52884	.10898	7
-6.47309	4.02968	-.55357	.34461	-6.22420	.71288	-.53228	.06096	8
-7.00466	3.28366	-.59902	.28081	-6.18651	.26709	-.52906	.02284	9
-7.41471	2.49605	-.63409	.21346	-6.21640	-.14621	-.53161	-.01250	10
-7.69934	1.71624	-.65843	.14677	-6.27749	-.59461	-.53684	-.05085	11
-7.90274	.89613	-.67583	.07664	-6.36781	-1.07220	-.54456	-.08742	12
-7.97358	.18066	-.68188	.01545	-6.36457	-1.43745	-.54428	-.12293	13
-7.93654	-.49128	-.67872	-.04201	-6.18456	-1.87415	-.52889	-.16027	14
-7.81372	-1.21521	-.66821	-.10392	-5.82260	-2.35633	-.49794	-.20151	15
-7.61876	-1.94693	-.65154	-.16650	-5.32807	-2.85671	-.45565	-.24430	16
-7.36143	-2.67865	-.62953	-.22907	-4.75230	-3.28171	-.40641	-.28064	17
-7.04560	-3.31355	-.60253	-.28337	-4.07777	-3.66967	-.34872	-.31382	18
-6.66074	-3.88476	-.56957	-.33222	-3.27521	-4.02513	-.28009	-.34422	19
-6.12802	-4.44948	-.52406	-.38051	-2.34658	-4.35005	-.20068	-.37201	20
-5.46778	-5.02264	-.46759	-.42953	-1.39066	-4.62364	-.11893	-.39540	21
-4.67172	-5.62764	-.39952	-.48126	-.48153	-4.84068	-.04118	-.41397	22
-3.73205	-6.25214	-.31916	-.53467					23
-2.65526	-6.93448	-.22707	-.59302					24

TABLE VII (Continued)

CASE-9 6-3-70 PIX NO 6

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
6	7.80	3.00	280.0	.1350	2.5	305.0	AR	26.3	8.36E 03	180.0	.1243	6 3 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-1.72143	7.21716	-.15147	.63503	-.00195	5.89343	-.00017	.51855	1
-2.76118	6.70963	-.24295	.59037	-.86949	5.60230	-.07651	.49294	2
-3.99849	6.09423	-.35182	.53622	-1.86960	5.26763	-.16450	.46349	3
-5.36186	5.38200	-.47178	.47355	-2.97498	4.88097	-.26176	.42947	4
-6.49583	4.76140	-.57156	.41895	-4.05957	4.48197	-.35720	.39436	5
-7.42381	4.20384	-.65321	.36989	-5.13571	4.04657	-.45188	.35605	6
-8.19452	3.68461	-.72102	.32420	-6.15532	3.59233	-.54160	.31608	7
-8.91520	3.11535	-.78443	.27411	-7.10409	3.08221	-.62508	.27120	8
-9.50916	2.51814	-.83670	.22157	-7.86050	2.58378	-.69163	.22734	9
-9.92311	1.96513	-.87312	.17291	-8.45381	2.07495	-.74384	.18257	10
-10.17785	1.44590	-.89553	.12722	-8.81967	1.55053	-.77603	.13643	11
-10.25973	.92798	-.90274	.08165	-9.01463	1.10473	-.79318	.09720	12
-10.19409	.38796	-.89696	.03414	-9.04582	.68753	-.79593	.06050	13
-9.98549	-.16766	-.87861	-.01475	-8.96089	.39381	-.78844	.03465	14
-9.63848	-.71808	-.84807	-.06318	-8.80603	.06174	-.77483	.00543	15
-9.21998	-1.22625	-.81125	-.10790	-8.61562	-.24044	-.75808	-.02116	16
-8.73519	-1.70519	-.76860	-.15004	-8.36023	-.57836	-.73560	-.05089	17
-8.22052	-2.12824	-.72331	-.18726	-8.01127	-.94877	-.70490	-.08348	18
-7.63631	-2.56103	-.67191	-.22534	-7.59147	-1.31918	-.66796	-.11607	19
-7.02221	-2.98083	-.61787	-.26228	-7.07030	-1.68634	-.62210	-.14838	20
-6.29503	-3.43572	-.55389	-.30230	-6.50948	-2.01906	-.57276	-.17765	21
-5.45803	-3.94975	-.48024	-.34753	-5.87328	-2.35568	-.51678	-.20727	22
-4.49822	-4.50471	-.39579	-.39636	-5.20979	-2.66436	-.45840	-.23443	23
-3.53190	-5.05513	-.31077	-.44479	-4.51706	-2.95549	-.39745	-.26005	24
-2.54154	45.57825	-.22363	-.49082	-3.73205	-3.25701	-.32838	-.28658	25
-1.52453	46.10203	-.13414	-.53691	-2.84047	-3.58389	-.24993	-.31534	26
				-1.77342	-3.96209	-.15604	-.34862	27
				-.61215	-4.36305	-.05386	-.38390	28

TABLE VII (Continued)

CASE-9 6-3-70 PIX NO 9

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
9	7.90	6.00	280.0	.0696	2.5	588.0	AR	26.3	-0	180.0	.1243	6 3 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-.41915	6.72393	0	0	-1.66295	5.05903	0	0	1
-1.33023	6.25539	0	0	-2.38298	4.72176	0	0	2
-2.28810	5.73977	0	0	-3.33954	4.19474	0	0	3
-3.21153	5.21629	0	0	-4.27467	3.61768	0	0	4
-4.04657	4.70357	0	0	-5.20135	2.92559	0	0	5
-4.85758	4.12326	0	0	-5.80635	2.32189	0	0	6
-5.65429	3.43637	0	0	-6.27034	1.74288	0	0	7
-6.37561	2.70660	0	0	-6.54457	1.25290	0	0	8
-6.85520	2.07495	0	0	-6.69209	.78176	0	0	9
-7.14373	1.53558	0	0	-6.73693	.31712	0	0	10
-7.33283	1.01700	0	0	-6.66889	-.15271	0	0	11
-7.43681	.55757	0	0	-6.47894	-.55562	0	0	12
-7.45045	.16896	0	0	-6.19626	-.95917	0	0	13
-7.34518	-.23394	0	0	-5.86549	-1.32438	0	0	14
-7.13138	-.72847	0	0	-5.44569	-1.71624	0	0	15
-6.80451	-1.30229	0	0	-4.86538	-2.15488	0	0	16
-6.32492	-1.92549	0	0	-4.10051	-2.63381	0	0	17
-5.64584	-2.60652	0	0	-3.23817	-3.08546	0	0	18
-4.62429	-3.42922	0	0	-2.35113	-3.49226	0	0	19
-3.44027	-4.24153	0	0	-1.42901	-3.86657	0	0	20
-2.05091	-5.06423	0	0	-.45424	-4.24023	0	0	21
-.62970	-5.83494	0	0					22

CASE-10 6-4-70 PIX NO 11

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
11	7.88	6.00	383.0	.1100	5.0	365.0		17.4	8.00E 03	180.0	.0325	6 4 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-.18353	3.15590	-.06020	1.03514	-.52031	2.15880	-.17066	.70809	1
-.68744	2.94021	-.22548	.96439	-.76312	2.04717	-.25030	.67148	2
-1.21531	2.63181	-.39862	.86324	-1.01602	1.92419	-.33326	.63114	3
-1.74697	2.22061	-.57301	.72836	-1.27712	1.78292	-.41890	.58480	4
-2.24710	1.68832	-.73705	.55377	-1.56849	1.58300	-.51447	.51922	5
-2.64884	1.09422	-.86882	.35891	-1.86554	1.32064	-.61190	.43317	6
-2.93643	.52220	-.96315	.17128	-2.12979	1.00214	-.69857	.32870	7
-3.00832	.10721	-.98673	.03517	-2.30891	.68996	-.75732	.22631	8
-2.96985	-.22894	-.97412	-.07509	-2.39405	.37904	-.78525	.12432	9
-2.83237	-.54932	-.92902	-.18018	-2.40035	.07127	-.78732	.02338	10
-2.66335	-.84511	-.87358	-.27720	-2.32656	-.22641	-.76312	-.07426	11
-2.46531	-1.10494	-.80863	-.36242	-2.16637	-.51968	-.71057	-.17045	12
-2.24899	-1.33199	-.73767	-.43689	-1.94059	-.77258	-.63652	-.25341	13
-1.96960	-1.58678	-.64603	-.52047	-1.67445	-1.00467	-.54922	-.32953	14
-1.64102	-1.83842	-.53826	-.60300	-1.38623	-1.18630	-.45468	-.38911	15
-1.26324	-2.10141	-.41435	-.68927	-1.05764	-1.35406	-.34691	-.44413	16
-.85772	-2.33602	-.28133	-.76622	-.70257	-1.50605	-.23044	-.49399	17
-.42697	-2.55802	-.14005	-.83903	-.31471	-1.64543	-.10322	-.53970	18
.01514	-2.76047	.00496	-.90544	.08325	-1.77283	.02731	-.58149	19

TABLE VII (Continued)

CASE-10 6-4-70 PIX NO 10

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
10	7.74	3.00	433.0	.2390	5.0	388.0	AR	17.4	1.62E 04	180.0	.0325	6 4 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-.40868	4.06786	-.09880	.98339	-.34813	2.86453	-.08416	.69249	1
-.87475	3.86226	-.21147	.93369	-.74735	2.72452	-.18067	.65864	2
-1.42848	3.58224	-.34533	.86599	-1.15792	2.55487	-.27992	.61763	3
-2.04591	3.22654	-.49459	.78000	-1.57858	2.34359	-.38162	.56655	4
-2.54478	2.87525	-.61519	.69508	-1.94122	2.11781	-.46928	.51197	5
-2.99697	2.48613	-.72451	.60101	-2.26665	1.86680	-.54795	.45129	6
-3.35646	2.12349	-.81141	.51334	-2.53153	1.61768	-.61199	.39107	7
-3.64089	1.77283	-.88017	.42857	-2.77561	1.32883	-.67099	.32124	8
-3.84145	1.42470	-.92865	.34441	-2.92760	1.10999	-.70773	.26834	9
-4.00921	1.02043	-.96921	.24669	-2.95598	.82934	-.71460	.20049	10
-4.12651	.65716	-.99757	.15887	-2.90237	.59536	-.70164	.14393	11
-4.17823	.36138	-1.01007	.08736	-2.83867	.33110	-.68624	.08004	12
-4.17003	.10532	-1.00809	.02546	-2.86390	.07127	-.69234	.01723	13
-4.09561	-.24723	-.99010	-.05977	-2.93075	-.17344	-.70850	-.04193	14
-3.96254	-.63824	-.95793	-.15429	-3.01905	-.39543	-.72984	-.09559	15
-3.75378	-1.05386	-.90746	-.25477	-3.02661	-.57455	-.73167	-.13889	16
-3.50341	-1.43479	-.84693	-.34685	-2.93138	-.80096	-.70865	-.19363	17
-3.22275	-1.78923	-.77909	-.43254	-2.70182	-1.11188	-.65315	-.26879	18
-2.91562	-2.11466	-.70484	-.51121	-2.40729	-1.42470	-.58195	-.34441	19
-2.59523	-2.40477	-.62739	-.58134	-2.08438	-1.71102	-.50389	-.41363	20
-2.23701	-2.69109	-.54079	-.65056	-1.70850	-1.97780	-.41302	-.47813	21
-1.85230	-2.96481	-.44778	-.71673	-1.25000	-2.24395	-.30218	-.54246	22
-1.34649	-3.29276	-.32551	-.79601	-.77258	-2.49117	-.18677	-.60223	23
-.80411	-3.61882	-.19439	-.87483	-.38030	-2.67470	-.09194	-.64660	24
-.24029	-3.94488	-.05809	-.95366	-.09271	-2.79642	-.02241	-.67602	25

CASE-10 6-4-70 PIX NO 1

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
1	7.78	6.00	866.0	.3460	60.0	588.0	AR	17.4	9.95E 04	180.0	.0325	6 4 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-1.53636	9.23636	-.14986	.90096	-1.07727	8.34091	-.10508	.81361	1
-2.32273	8.79091	-.22657	.85751	-1.52121	8.10606	-.14839	.79071	2
-3.08788	8.34091	-.30121	.81361	-2.19697	7.71061	-.21430	.75213	3
-3.93333	7.79545	-.38368	.76041	-3.00758	7.20606	-.29337	.70292	4
-4.81818	7.14091	-.46999	.69656	-3.96667	6.55000	-.38693	.63892	5
-5.79848	6.34848	-.56561	.61926	-4.88788	5.81667	-.47679	.56739	6
-6.72424	5.52576	-.65592	.53901	-5.77727	4.99242	-.56354	.48699	7
-7.54697	4.70000	-.73617	.45846	-6.53182	4.18030	-.63715	.40777	8
-8.21818	3.89242	-.80164	.37969	-7.09394	3.45303	-.69198	.33683	9
-8.76970	3.06364	-.85544	.29884	-7.38030	2.83485	-.71991	.27653	10
-9.19848	2.28485	-.89727	.22288	-7.45000	2.33939	-.72671	.22820	11
-9.52273	1.51061	-.92889	.14735	-7.39394	1.90303	-.72124	.18563	12
-9.69545	.83939	-.94574	.08188	-7.39697	1.46667	-.72154	.14307	13
-9.76212	.24091	-.95225	.02350	-7.43636	1.03333	-.72538	.10080	14
-9.75758	-.22879	-.95180	-.02232	-7.46212	.57576	-.72789	.05616	15
-9.71818	-.69242	-.94796	-.06754	-7.50303	.05152	-.73188	.00503	16
-9.63485	-1.13485	-.93983	-.11070	-7.60152	-.57424	-.74149	-.05601	17
-9.50303	-1.61212	-.92697	-.15725	-7.72727	-1.15303	-.75376	-.11247	18
-9.31364	-2.07273	-.90850	-.20218	-7.85758	-1.61667	-.76647	-.15770	19
-9.04242	-2.55909	-.88204	-.24963	-7.83636	-2.02727	-.76440	-.19775	20
-8.68939	-3.08182	-.84761	-.30062	-7.65303	-2.47424	-.74651	-.24135	21
-8.26364	-3.63333	-.80608	-.35441	-7.25152	-3.02576	-.70735	-.29515	22
-7.75758	-4.20758	-.75671	-.41043	-6.79545	-3.56364	-.66286	-.34761	23
-7.18788	-4.77576	-.70114	-.46585	-6.26061	-4.13788	-.61069	-.40363	24
-6.55606	-5.34697	-.63951	-.52157	-5.59091	-4.75303	-.54537	-.46363	25
-5.88333	-5.90152	-.57389	-.57566	-4.76970	-5.41515	-.46526	-.52822	26
-5.11818	-6.46918	-.49925	-.63094	-3.93182	-6.01970	-.38353	-.58719	27
-4.30152	-7.02273	-.41959	-.68503	-2.97273	-6.61970	-.28997	-.64572	28
-3.46818	-7.55455	-.33830	-.73691	-1.98333	-7.20909	-.19346	-.70321	29
-2.59697	-8.07727	-.25332	-.78790	-.89091	-7.83182	-.08690	-.76395	30
-1.66364	-8.61970	-.16228	-.84081					31
-.65000	-9.20000	-.06340	-.89741					32

TABLE VII (Continued)

CASE 12 6-4-70 PIX NO 12

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
12	7.89	6.00	314.0	.0880	2.5	414.0	CO2	17.4	4.42E 03	180.0	.0325	6 4 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-.38030	1.81635	-.17601	.84063	-.10406	1.35091	-.04816	.62522	1
-.68618	1.59372	-.31757	.73759	-.38976	1.18315	-.18038	.54758	2
-1.01413	1.29604	-.46935	.59982	-.63446	1.00151	-.29364	.46351	3
-1.30172	.94791	-.60245	.43870	-.83375	.79087	-.38587	.36602	4
-1.47326	.64329	-.68184	.29772	-.97250	.55878	-.45009	.25861	5
-1.54137	.40426	-.71337	.18710	-1.05764	.35759	-.48949	.16550	6
-1.55714	.19866	-.72066	.09194	-1.08476	.17154	-.50204	.07939	7
-1.52308	-.01829	-.70490	-.00846	-1.05386	-.01387	-.48774	-.00642	8
-1.44929	-.25605	-.67075	-.11851	-.98259	-.23209	-.45476	-.10741	9
-1.33829	-.49004	-.61938	-.22679	-.86781	-.44589	-.40163	-.20636	10
-1.18567	-.71960	-.54874	-.33304	-.70762	-.63572	-.32750	-.29422	11
-.99647	-.93466	-.46118	-.43257	-.50769	-.81231	-.23497	-.37595	12
-.75870	-1.15161	-.35114	-.53298	-.28002	-.98196	-.12960	-.45447	13
-.49760	-1.35469	-.23030	-.62697					14

CASE 12 6-4-70 PIX NO 13

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
13	7.90	6.00	308.0	.0756	25.0	317.0	CO2	17.4	4.42E 04	180.0	.0325	6 4 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-.26110	5.67798	-.03821	.83100	-.95547	2.53910	-.13984	.37161	1
-.64203	5.37714	-.09396	.78697	-1.29352	2.38017	-.18931	.34835	2
-1.10558	5.00631	-.16181	.73269	-1.67066	2.13673	-.24451	.31272	3
-1.64354	4.54970	-.24054	.66587	-2.02006	1.81004	-.29564	.26491	4
-2.17457	4.03002	-.31826	.58981	-2.33792	1.41839	-.34216	.20759	5
-2.63938	3.50341	-.38628	.51274	-2.52775	1.04125	-.36995	.15239	6
-3.02914	2.98121	-.44333	.43631	-2.64316	.71834	-.38684	.10513	7
-3.32682	2.48613	-.48689	.36386	-2.69046	.39291	-.39376	.05750	8
-3.57404	1.95257	-.52308	.28577	-2.67785	.05676	-.39191	.00831	9
-3.75820	1.40578	-.55003	.20574	-2.59839	-.34687	-.38028	-.05077	10
-3.88055	.84384	-.56794	.12350	-2.45648	-.78078	-.35952	-.11427	11
-3.93542	.37525	-.57597	.05492	-2.26413	-1.20207	-.33136	-.17593	12
-3.93731	-.06559	-.57624	-.00960	-2.03961	-1.58363	-.29851	-.23177	13
-3.86541	-.54301	-.56572	-.07947	-1.77157	-1.90590	-.25928	-.27894	14
-3.74054	-1.09107	-.54744	-.15968	-1.49155	-2.18782	-.21829	-.32020	15
-3.58918	-1.59939	-.52529	-.23408	-1.16549	-2.44576	-.17057	-.35795	16
-3.41574	-2.00492	-.49991	-.29343	-.73158	-2.72326	-.10707	-.39856	17
-3.21834	-2.35621	-.47102	-.34484	-.17596	-3.03481	-.02575	-.44416	18
-2.97364	-2.73820	-.43520	-.39958					19
-2.68479	-3.11743	-.39293	-.45625					20
-2.34548	-3.50908	-.34327	-.51357					21
-1.96014	-3.89801	-.28688	-.56932					22
-1.53443	-4.24886	-.22457	-.62184					23
-1.08413	-4.59952	-.15867	-.67316					24
-.61680	-4.94576	-.09027	-.72383					25

TABLE VII (Continued)

CASE-12 6-4-70 PIX NO 14

PIX	MACH	PO	TO	LAMBDA	PC	TC	GAS	A/A*	PC/QINF	ALPHA	RE	
14	7.90	6.00	305.0	.0744	25.0	716.0	CO2	17.4	4.42E 04	180.0	.0325	6 4 70

X	Y	XBAR	YBAR	X	Y	XBAR	YBAR	
-.33678	5.92205	-.04929	.86672	-1.05386	2.93075	-.15424	.42893	1
-1.01602	5.48121	-.14870	.80220	-1.62336	2.68668	-.23759	.39321	2
-1.70976	5.00315	-.25023	.73223	-2.17331	2.38080	-.31807	.34844	3
-2.42936	4.42230	-.35555	.64722	-2.62361	2.03141	-.38398	.29731	4
-3.14897	3.77649	-.46086	.55271	-2.97616	1.65300	-.43557	.24192	5
-3.78090	3.05184	-.55335	.44665	-3.17419	1.34902	-.46456	.19743	6
-4.22048	2.42117	-.61769	.35435	-3.29654	1.07783	-.48246	.15774	7
-4.48285	1.83274	-.65608	.26823	-3.36150	.79087	-.49197	.11575	8
-4.61403	1.33640	-.67528	.19559	-3.40943	.48058	-.49899	.07033	9
-4.69917	.87349	-.68774	.12784	-3.44034	.13875	-.50351	.02031	10
-4.75214	.40868	-.69550	.05981	-3.44349	-.15515	-.50397	-.02271	11
-4.77106	-.04856	-.69827	-.00711	-3.40061	-.51652	-.49769	-.07560	12
-4.74647	-.54238	-.69467	-.07938	-3.29213	-.87096	-.48182	-.12747	13
-4.65628	-1.04945	-.68147	-.15359	-3.09536	-1.31307	-.45302	-.19217	14
-4.49609	-1.55399	-.65802	-.22743	-2.82606	-1.72868	-.41361	-.25300	15
-4.27283	-2.04781	-.62535	-.29971	-2.52775	-2.10330	-.36995	-.30783	16
-3.97767	-2.51324	-.58215	-.36782	-2.22376	-2.36882	-.32546	-.34669	17
-3.61251	-2.99319	-.52871	-.43807	-1.85040	-2.55045	-.27081	-.37327	18
-3.22654	-3.43277	-.47222	-.50240	-1.45245	-2.67659	-.21257	-.39173	19
-2.78065	-3.84712	-.40696	-.56304	-1.05386	-2.74344	-.15424	-.40151	20
-2.28431	-4.24571	-.33432	-.62138					21
-1.66562	-4.69664	-.24377	-.68737					22
-1.01224	-5.14001	-.14814	-.75226					23
-.28191	-5.58653	-.04126	-.81761					24
.49193	-6.03557	.07200	-.88333					25

TABLE VII (Continued)

10 7 CASE-11 6-9-70 PIX NO 1

X	Y	ANGLE
0	0	0
-.30954	1.50728	101.60522
-.47686	2.46379	100.95407
-.51172	2.69325	100.03003
-.50754	3.27529	98.80847
-.47826	3.76749	97.23461
-.40436	4.32802	95.33753
-.28305	4.93316	93.28386
-.14780	5.46858	91.54816
-.00837	5.95242	90.08053

X	Y	ANGLE
0	0	0
-.54937	1.88932	106.21311
-.85473	3.23904	104.78241
-.92026	4.08540	102.69439
-.88401	4.89691	100.23305
-.76688	5.71678	97.64041
-.56471	6.50876	94.95862

8 9 CASE-11 6-9-70 PIX NO 2

X	Y	ANGLE
0	0	0
-.26623	1.39388	100.81326
-.41677	2.42675	99.74494
-.43768	3.05399	98.15573
-.40980	3.61433	96.46870
-.35823	4.09104	95.00428
-.25229	4.61653	93.12809
-.10872	5.25214	91.18589

X	Y	ANGLE
0	0	0
-.43628	1.90683	102.88752
-.70530	3.19338	102.45465
-.79730	3.96001	101.38361
-.80427	4.79495	99.52174
-.71367	5.73303	97.09587
-.49483	6.63208	94.26700
-.13939	7.51859	91.06209
.31362	8.38419	87.85776

10 9 CASE-11 6-9-70 PIX NO 3

X	Y	ANGLE
0	0	0
-.19217	1.44265	97.58740
-.28129	2.48564	96.45643
-.26736	3.01619	95.06561
-.20609	3.61497	93.26295
-.10722	4.09678	91.49924
.02089	4.61758	89.74082
.17963	5.10212	87.98360
.39826	5.63829	85.35964
.68512	6.18277	83.67680

X	Y	ANGLE
0	0	0
-.28686	1.77128	99.19917
-.43586	3.02315	98.20399
-.44700	3.86284	96.60076
-.39965	4.78607	94.77330
-.28964	5.69956	92.90918
-.04038	6.50305	90.35579
.27293	7.22715	87.83726
.65170	8.02089	85.35497

11 8 CASE-11 6-9-70 PIX NO 4

X	Y	ANGLE
0	0	0
-.10736	1.06806	95.74022
-.16593	1.79590	95.27865
-.16174	2.23373	94.14153
-.11434	2.75521	92.37630
-.03207	3.26693	90.56242
.07808	3.73542	88.80250
.20636	4.12166	87.13373
.37368	4.59111	85.30609
.55355	4.96523	83.63862
.72784	5.35843	82.26477

X	Y	ANGLE
0	0	0
-.17987	1.53377	96.68868
-.26911	2.72174	95.64665
-.24680	3.55556	93.97063
-.17708	4.42841	92.28989
-.01394	5.22876	90.15279
.25377	5.88410	87.53048
.57307	6.42510	84.90312

TABLE VII (Continued)

8 7 CASE-11 6-9-70 PIX NO 5

X	Y	ANGLE
0	0	0
.01813	1.23678	89.16032
.07390	2.12497	88.00823
.16593	2.59625	86.34321
.27329	2.96715	84.73760
.40017	3.26832	83.01943
.54100	3.56113	81.36176
.69438	3.86510	79.81524

X	Y	ANGLE
0	0	0
-.07390	1.48357	92.85166
-.07251	2.66597	91.55787
.02092	3.47329	89.65499
.17429	4.18161	87.61326
.38344	4.71704	85.35271
.63163	5.15346	83.01239

6 6 CASE-11 6-9-70 PIX NO 6

X	Y	ANGLE
0	0	0
.10876	.72505	81.46923
.20776	1.24514	80.52727
.29002	1.55050	79.40523
.39878	1.84749	77.81963
.49778	2.11242	76.74051

X	Y	ANGLE
0	0	0
.02649	.67625	87.75657
.05159	1.12383	87.37164
.06972	1.33298	87.00609
.10039	1.54492	86.28203
.11712	1.74431	86.15857

10 13 CASE-11 6-9-70 PIX NO 12

X	Y	ANGLE
0	0	0
.04322	.77525	86.80875
.07948	1.28558	86.46235
.11294	1.52680	85.76939
.17290	1.78336	84.46244
.24122	2.00227	83.13048
.32349	2.23512	81.76484
.41969	2.47355	80.37016
.53403	2.72174	78.89907
.65673	2.93229	77.37603

X	Y	ANGLE
0	0	0
-.20357	1.15869	99.96471
-.27887	1.89769	98.35983
-.21891	2.19747	95.68900
-.12688	2.52654	92.87502
-.00697	2.85978	90.13968
.17429	3.30039	86.97705
.37368	3.72427	84.27029
.65813	4.20113	81.09672
.97882	4.63198	78.06788
1.39991	5.14092	74.76723
1.89211	5.66240	71.52273
2.46379	6.21176	68.36508

10 10 CASE-11 6-9-70 PIX NO 13

X	Y	ANGLE
0	0	0
-.11701	1.22860	95.44033
-.15880	2.07413	94.37811
-.11283	2.56724	92.51654
-.04458	3.02832	90.84330
.06965	3.50611	88.86197
.22288	3.96718	86.78451
.43182	4.46168	84.47189
.69370	5.01469	82.12407
1.00294	5.62899	79.89741

X	Y	ANGLE
0	0	0
-.37749	2.42516	98.84753
-.39239	4.19284	95.42776
-.06408	5.26264	90.69759
.33431	6.12350	86.87503
.74524	6.88127	83.81898
1.25089	7.64880	80.71205
1.75932	8.37732	78.13967
2.28308	9.05430	75.84766
2.74136	9.60731	74.07435

TABLE VII (Concluded)

8 8 CASE-11 6-9-70 PIX NO 14

X	Y	ANGLE
0	0	0
-.28277	1.44312	101.08642
-.43043	2.41820	100.09269
-.41789	2.94474	98.07698
-.35103	3.53118	95.67703
-.21730	4.21513	92.95117
-.00696	5.00076	90.07980
.25073	5.84629	87.54422

X	Y	ANGLE
0	0	0
-.68395	2.05324	108.42329
-.95140	3.99922	103.38171
-.77310	5.55377	97.92479
-.33153	7.01082	92.70738
.16437	8.10848	88.83869
.67559	9.05291	85.73211
1.12831	9.80790	83.43751

8 9 CASE-11 6-9-70 PIX NO 15

X	Y	ANGLE
0	0	0
-.39586	1.59878	103.90689
-.61470	2.72922	102.69292
-.63700	3.41501	100.56599
-.59519	4.05619	98.34775
-.49901	4.73362	96.01779
-.31920	5.44589	93.35443
-.07945	6.18465	90.73601

X	Y	ANGLE
0	0	0
-.93390	2.57589	109.92833
-1.36600	4.60817	106.51145
-1.26843	5.97556	101.98428
-.95063	7.18685	97.53495
-.43628	8.51243	92.93399
.24114	9.94115	88.61046
1.02171	11.35176	84.85695
1.83156	12.64946	81.76120

7 11 CASE-11 6-9-70 PIX NO 16

X	Y	ANGLE
0	0	0
-.50426	1.83176	105.39145
-.78703	3.19269	103.84787
-.77867	4.12040	100.70150
-.69091	4.97151	97.91198
-.52515	5.77804	95.19319
-.35103	6.50238	93.89009

X	Y	ANGLE
0	0	0
-1.05309	2.04070	117.29560
-1.63813	3.57018	114.64743
-1.69664	4.75560	109.63469
-1.61306	5.91873	105.24485
-1.41665	7.10833	101.27107
-1.12552	8.20877	97.80725
-.75778	9.22425	94.69633
-.30227	10.30380	91.68036
.19641	11.32206	89.00616
.72295	12.33196	86.64492

8 11 CASE-11 6-9-70 PIX NO 17

X	Y	ANGLE
0	0	0
-.57010	1.63084	109.26824
-.92135	2.85745	107.87135
-1.01893	3.73649	105.75151
-1.00499	4.53987	102.48224
-.90602	5.37062	99.57562
-.72621	6.25573	96.62168
-.48507	7.20497	93.85160

X	Y	ANGLE
0	0	0
-1.15413	1.74653	123.45730
-1.82320	3.14181	120.12668
-1.96676	4.20115	115.08659
-2.00579	5.25353	110.89681
-1.92634	6.34355	106.89194
-1.72423	7.52695	102.90237
-1.47891	8.58351	99.77587
-1.16807	9.62056	96.92263
-.82796	10.56840	94.47960
-.40562	11.60823	92.00124

FINISH

TABLE VIII
PITOT SCAN DATA

CASE	RUN	MACH	PO	TO	PC
*	39	3.65	.70	280.0	0

TC	GAS	A/A*	PC/Q	X	RE
		26.3	-0	2.3	.1243

MAX P, TORR = .1511

Y/RE	P/PMAX
-21.8325	.719565
-17.7309	.604125
-10.6386	.443426
.0641	.219994
1.6022	.233744
4.8066	.307648
13.8429	.796906
18.0941	.960756
19.2690	.990261
20.3585	1.000000
22.1743	.977370
23.7552	.881409
25.6778	.774850
26.4469	.753366
31.2107	.745059
48.3862	.727585
63.7459	.702950
93.8885	.698654

CASE	RUN	MACH	PO	TO	PC
*	40	3.65	.70	280.0	0

TC	GAS	A/A*	PC/Q	X	RE
		26.3	-0	12.3	.1243

MAX P, TORR = .1229

Y/RE	P/PMAX
-46.2524	.638605
-27.4858	.607256
-23.4583	.586122
-14.4820	.496654
-7.9908	.423036
-2.7850	.374428
.0214	.366678
5.3558	.406481
9.8475	.494893
14.7391	.647128
20.1591	.775273
23.2226	.807747
29.3496	.816837
35.6694	.837971
43.4674	.913702
49.1660	.988024
51.4583	1.000000
53.4934	.984502
57.0925	.906657
59.9418	.831279
63.1553	.804861
86.3993	.762592

CASE	RUN	MACH	PO	TO	PC
*	41	3.65	.70	280.0	0

TC	GAS	A/A*	PC/Q	X	RE
		26.3	-0	22.3	.1243

MAX P, TORR = .1139

Y/RE	P/PMAX
-49.6954	.462914
-36.4747	.500190
-26.5698	.486497
-17.4779	.439331
-8.6213	.387980
-2.2248	.385698
.2781	.394066
8.2148	.469380
16.1302	.608596
22.0774	.686573
26.5057	.718905
39.9617	.757703
50.0591	.763408
59.3008	.779003
67.6226	.817421
74.5966	.850514
84.4801	.910232
86.9189	.966527
89.8925	1.000000
92.9516	.990491
97.3158	.977558
101.2520	.951779

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
**	55	7.80	3.00	280.0	0

TC	GAS	A/A*	PC/Q	X	RE
		26.3	-0.	4.00	.1243

MAX P, TORR = .0394

Y/RE	P/PMAX
-15.0765	.593750
-10.4013	.453664
-3.6887	.322198
-.3002	.316810
4.1820	.353448
8.2781	.465517
12.9533	.662716
15.5912	.853448
17.5428	.979526
18.7008	1.000000
19.8589	.971983
21.3387	.880388
23.8693	.773707
26.2069	.720905
31.8901	.705819
42.1627	.696121
60.0057	.742457
70.4069	.768319

CASE	RUN	MACH	PO	TO	PC
**	54	7.80	3.00	280.0	0

TC	GAS	A/A*	PC/Q	X	RE
		26.3	-0	8.00	.1243

MAX P, TORR = .1182

Y/RE	P/PMAX
-12.8461	.451312
-8.4711	.415738
-4.8253	.398850
-1.4369	.388070
-.0429	.385555
3.2812	.400647
7.6133	.431908
14.8406	.551563
19.1512	.664750
22.9905	.808121
28.0084	.982393
29.9170	1.000000
31.5684	.985986
33.7773	.874236
36.2436	.766439
37.8091	.730866
38.9029	.715774
42.2913	.708588
50.4408	.710384
60.7991	.727273
71.2648	.745598
79.6930	.762487

CASE	RUN	MACH	PO	TO	PC
**	53	7.80	3.00	280.0	0

TC	GAS	A/A*	PC/Q	X	RE
		26.3	-0	12.00	.1243

MAX P, TORR = .0610

Y/RE	P/PMAX
-61.1857	.987960
-60.1334	1.000000
-58.6945	.968839
-53.4757	.818933
-46.3456	.611190
-42.3511	.525260
-36.5740	.439566
-27.2962	.343720
-18.2333	.272427
-6.1422	.217186
.0644	.206327
9.8576	.241974
18.5340	.352927
25.1916	.488905
28.8425	.564920
31.2479	.595137
34.2116	.549811
36.8102	.461048
39.1511	.413598
41.9001	.407224
55.0865	.409821

TABLE VIII (Continued)

	CASE	RUN	MACH	PO	TO	PC
**	4	66	7.90	7.00	280.0	0

TC	GAS	A/A*	PC/Q	X	RE
		26.3	-0	8.00	.1243

MAX P, TORR = .1536

Y/RE	P/PMAX
-73.5678	.401387
-72.1833	.407490
-71.0722	.438558
-68.7989	.687101
-67.1750	.966158
-66.4742	1.000000
-65.3632	.989459
-62.0985	.876838
-59.1927	.775035
-55.9108	.664910
-50.4924	.531484
-44.9372	.444383
-40.2025	.380860
-31.5706	.288766
-22.6652	.213592
-15.8451	.166158
-6.7517	.132594
-2.2221	.127878
-.0855	.126491
.9401	.132594
3.4699	.139974
8.3755	.167268
13.1615	.214424
16.9049	.282663
20.2722	.391956
23.9471	.505964
27.2802	.585298
28.6477	.602219
29.9809	.575312
31.2116	.481831
32.2030	.392788
33.3482	.358114
34.5105	.347295
38.8521	.341193
52.5948	.336755
59.6371	.334813
69.0211	.338141
78.2512	.343135
80.9690	.345354

	CASE	RUN	MACH	PO	TO	PC
**	4	67	7.90	7.00	280.0	0

TC	GAS	A/A*	PC/Q	X	RE
		26.3	-0	12.00	.1243

MAX P, TORR = .1037

Y/RE	P/PMAX
-73.7235	1.000000
-70.1460	.889578
-64.5145	.745244
-58.4379	.625310
-52.8406	.536807
-47.2604	.469810
-40.1739	.390405
-31.7865	.322581
-25.7271	.273366
-15.7135	.213813
-7.3604	.188172
-2.0198	.179487
2.4820	.188586
11.8793	.254342
20.6261	.424318
26.6856	.631100
32.4883	.765095
34.4739	.782465
35.6721	.768404
36.4937	.729529
37.7946	.636063
38.8730	.537634
39.7460	.484698
40.4135	.466501
41.0982	.459057
50.9577	.454372
63.0424	.452854
75.2983	.460711
87.4514	.482217

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
1	9	3.59	.40	280.0	12.0

TC	GAS	A/A*	PC/Q	X	RE
300.0	CO2	9.0	1.48E 04	4.00	.0590

MAX P, TORR = .1232

Y/RE	P/PMAX
-63.9254	.657311
-59.8441	.690575
-58.2305	.698891
-54.8847	.686071
-50.7797	.647263
-44.8237	.601178
-43.0915	.587665
-40.3864	.602911
-35.9729	.714335
-33.3153	.852391
-31.8678	.860504
-30.5390	.845807
-28.3322	.624740
-25.3661	.384962
-23.8237	.346154
-22.1153	.333680
-17.4407	.357242
-8.4475	.387734
-4.0339	.400208
-.1424	.399515
4.6508	.399515
11.3898	.381153
17.7254	.356202
19.3153	.351312
22.1153	.375953
26.4576	.496535
29.2102	.694387
31.3458	.911642
32.6034	.978863
33.1254	1.000000
34.6915	.963617
38.3932	.805267
40.1017	.773042
41.4305	.767152
43.1864	.791407
47.6949	.885308
53.2237	.963021
55.4305	.984605
57.5661	.974359
61.6475	.785516
64.8034	.657658
67.2949	.618157
69.1458	.595288
72.6102	.585239
83.3831	.587388

CASE	RUN	MACH	PO	TO	PC
1	8	3.59	.40	280.0	12.0

TC	GAS	A/A*	PC/Q	X	RE
300.0	CO2	9.0	1.48E 04	6.00	.0590

MAX P, TORR = .1096

Y/RE	P/PMAX
-55.0578	.591582
-48.4518	.560016
-41.8220	.604443
-37.9250	.659392
-35.9749	.668745
-34.1705	.656684
-30.9188	.519096
-27.4695	.321902
-25.1483	.255651
-21.3387	.234217
-7.9367	.244415
6.2733	.246298
13.4496	.257210
19.1288	.296571
21.9090	.358740
27.2318	.534863
31.3190	.726812
33.1487	.778254
34.6695	.784879
36.4279	.776306
40.6181	.717849
43.3904	.701481
46.4357	.715900
50.0201	.759158
55.0102	.835542
65.1806	.973889
68.4123	.994934
69.9331	1.000000
72.5232	.991037
75.4098	.924396
77.9411	.830865
80.9827	.719408
83.0975	.672642
86.0916	.642634

CASE	RUN	MACH	PO	TO	PC
1	7	3.59	.40	280.0	12.0

TC	GAS	A/A*	PC/Q	X	RE
300.0	CO2	9.0	1.48E 04	10.00	.0590

MAX P, TORR = .0935

Y/RE	P/PMAX
-46.0693	.487883
-39.3257	.502058
-34.0492	.515775
-30.3579	.502972
-25.0988	.448560
-21.2009	.338363
-15.4511	.219936
-6.9092	.180155
-3.9752	.178784
7.8557	.231367
19.6629	.432099
24.6082	.539095
27.9918	.582533
32.5348	.605396
43.4902	.590306
52.9075	.612254
76.8058	.835391
99.1661	.997714
101.6743	1.000000
107.2348	.964792
114.0730	.799726

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
1	14	3.59	.40	280.0	120.0

TC	GAS	A/A*	PC/O	X	RE
380.0	CO2	9.0	1.40E 05	0.00	.0590

MAX P, TORR = .1969

Y/RE	P/PMAX
-147.2831	.493640
-142.6142	.497846
-135.4450	.498360
-126.6738	.465457
-119.8355	.443813
-116.2985	.437473
-111.8654	.448185
-105.7616	.582860
-102.2446	.809139
-97.4813	1.000000
-95.5949	.966550
-91.3584	.728247
-85.7383	.394483
-82.0598	.312199
-77.9568	.275333
-74.2782	.266288
-69.1377	.279433
-55.1781	.331457
-34.9461	.428298
-13.3937	.524049
-5.4707	.545912
-.1415	.548754
7.1084	.541758
22.1184	.503935
36.0780	.439222
66.2137	.296458
76.9298	.274126
73.1464	.272191
76.2118	.289681
80.0790	.488445
83.9933	.844556
85.3618	.913205
86.8702	.962833
91.5862	.887970
94.0058	.800831
95.7364	.724684
101.0184	.581985
106.8683	.586122
110.4434	.481198
113.2882	.478826
117.9401	.482447
125.6835	.517927
132.5489	.551377
137.8518	.576457
141.6238	.584609
144.7836	.579143
146.2927	.566463
148.9337	.511587
154.3181	.389156
157.8943	.339309
164.6383	.369735
172.8914	.312199
204.2682	.303017
237.9733	.290337
242.5479	.309794
248.4430	.400743
251.5084	.414080
256.5546	.391342

CASE	RUN	MACH	PO	TO	PC
1	13	3.59	.40	280.0	120.0

TC	GAS	A/A*	PC/O	X	RE
577.0	CO2	9.0	1.40E 05	0.00	.0590

MAX P, TORR = .2480

Y/RE	P/PMAX
-136.0659	.337866
-131.7148	.369457
-126.1341	.367063
-114.1486	.350734
-103.8544	.316615
-100.6897	.333833
-96.8116	.324974
-89.1499	.538895
-83.2854	.869320
-81.8646	.928493
-80.1840	.869287
-78.0357	.680826
-72.7860	.401399
-69.4754	.317521
-64.6987	.283180
-57.6991	.305186
-41.4299	.393211
-26.8632	.466053
-4.5676	.537412
-.8040	.535483
4.4938	.534459
11.3034	.522006
24.0728	.488382
36.4640	.429374
53.7737	.343057
61.9138	.302115
64.7933	.293756
67.6310	.329580
71.8402	.598772
75.6237	.964347
77.5828	1.000000
80.9287	.877916
86.6906	.582736
93.6902	.436029
101.0208	.410799
110.9526	.429087
120.0004	.452917
121.9722	.453778
127.6475	.414823
136.0659	.284492
140.7481	.259274
145.9504	.251279
163.2129	.243944
215.1421	.232685
244.4046	.221938
247.9171	.235244
254.8494	.31 645
258.5111	.322416
261.0177	.315251

CASE	RUN	MACH	PO	TO	PC
1	15	3.59	.40	280.0	120.0

TC	GAS	A/A*	PC/O	X	RE
650.0	CO2	9.0	1.40E 05	0.00	.0590

MAX P, TORR = .2502

Y/RE	P/PMAX
-137.7212	.250655
-130.6271	.280636
-124.1477	.312410
-120.1277	.323886
-117.1089	.325608
-113.4592	.324377
-104.9462	.303899
-97.9467	.285550
-94.3050	.281291
-90.7186	.291012
-82.5760	.462811
-79.6910	.644168
-77.8425	.922244
-75.4818	.966743
-73.8738	.921855
-71.3199	.659248
-68.5768	.512615
-65.5580	.399574
-62.2867	.344281
-59.0274	.336009
-54.8142	.354522
-32.9842	.496396
-19.9882	.586358
-10.3182	.597805
-3.4525	.600273
0	.611566
7.5471	.605341
19.9582	.571756
33.1061	.508355
50.6058	.404409
44.0366	.346494
62.8542	.331758
65.1246	.348296
67.7255	.449858
72.2058	.962484
73.5901	1.000000
75.5291	.924278
76.0967	.926442
80.2113	.694463
84.0494	.566186
88.7715	.448203
93.2172	.405472
97.2372	.399738
103.0872	.407602
114.4524	.429063
118.9927	.434469
123.3437	.419889
128.6880	.354930
134.5498	.283393
138.3161	.257864
147.2274	.242628
201.8526	.231815
240.3027	.221330
245.5997	.220347
248.3961	.244436
255.2478	.387831
258.2273	.315695
262.1527	.307339

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
2	29	3.59	.40	280.0	40.0

TC	GAS	A/A*	PC/Q	X	RE
700.0	AR	9.0	4.95E 04	4.00	.0598

MAX P, TORR = .4318

Y/RE	P/PMAX
-67.2684	.158068
-38.4597	.124877
-33.1781	.137364
-30.0091	.177128
-24.9676	.368058
-21.6546	.608610
-20.0221	.652317
-18.1495	.617483
-16.6131	.595465
-14.6925	.622412
-9.8430	.781466
-4.4654	.977325
.2881	1.000000
4.1293	.991127
7.3462	.932961
13.7802	.768321
18.3416	.645744
21.5105	.534012
23.4791	.521853
26.1199	.565560
28.0405	.592179
29.4810	.560960
31.4015	.415380
34.1384	.272757
37.2593	.224450
40.6684	.214262
44.7496	.220835
50.3673	.251397
56.0810	.259284
64.4356	.251068
75.0468	.200789

CASE	RUN	MACH	PO	TO	PC
2	28	3.59	.40	280.0	40.0

TC	GAS	A/A*	PC/Q	X	RE
700.0	AR	9.0	4.95E 04	15.70	.0598

MAX P, TORR = .1272

Y/RE	P/PMAX
-147.4026	.311580
-125.8875	.328313
-111.3050	.323628
-86.3474	.292169
-79.2235	.284137
-69.1831	.293842
-60.4815	.329652
-51.3973	.402276
-41.2613	.557564
-33.0377	.785475
-29.8343	.814926
-27.1091	.765395
-23.5710	.550535
-20.5589	.368139
-15.2040	.267403
-7.9367	.239290
.3347	.236278
8.9407	.244980
17.5946	.327979
23.8101	.615797
30.0734	.947456
33.4680	1.000000
36.7670	.945783
41.5481	.754685
47.7636	.608434
54.2182	.507028
60.3858	.464190
66.1232	.457497
74.2512	.461847
107.9582	.555556
132.2942	.608434
137.3622	.614793
145.2511	.601740
149.3151	.574967

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC	TC	GAS	A/A*	PC/Q	X	RE
3	31	3.59	.40	280.0	12.0	561.0	CO2	26.3	1.48E 04	12.10	.1243

RUN 31 MAX P, TORR = .1037

Y/RE	P/PMAX
-58.3665	.471659
-54.2414	.491932
-50.9368	.506413
-46.0368	.486967
-38.7895	.433595
-32.8639	.396773
-29.5821	.385188
-25.4570	.406289
-20.2152	.552751
-15.2013	.810923
-14.2213	.844849
-12.8994	.796442
-10.9394	.533719
-8.6148	.308647
-7.3385	.255689
-6.0623	.231278
-.0228	.222176
4.0111	.225900
5.6065	.243691
7.4525	.306578
8.7288	.404634
10.5748	.652048
12.1246	.885395
13.1729	.988829
13.8794	1.000000
18.5515	.767894
22.9273	.579230
26.7105	.547787
29.3770	.564750
39.7467	.689284
50.9824	.783202
54.7428	.791891
57.2042	.783306
60.4860	.729830
63.8362	.652048
66.3204	.618535
68.0525	.595780
83.1854	.575921

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
3	33	3.50	.40	280.0	120.0

TC	GAS	A/A*	PC/D	X	RE
644.0	CO2	26.3	1.40E 05	1.00	.1243

MAX P, TORR = 20.0306

Y/RE	P/PMAX
-16.2405	.001520
-12.2361	.006001
-9.1433	.037243
-6.0904	.178617
-4.0366	.414745
-2.5044	.648594
-1.2001	.834110
-.5637	.957116
-.0442	1.000000
.7040	.934007
1.0791	.736747
3.1060	.476564
4.2113	.310470
5.1019	.200006
6.2231	.133772
7.4389	.074607
8.6659	.036230
10.1501	.012660
12.2143	-.001520
14.6236	-.001773

CASE	RUN	MACH	PO	TO	PC
3	34	3.59	.40	280.0	120.0

TC	GAS	A/A*	PC/D	X	RE
644.0	CO2	26.3	1.40E 05	4.00	.1243

MAX P, TORR = 2.4562

Y/RE	P/PMAX
-26.1001	-.007543
-23.0604	.078043
-21.8415	.159405
-21.0346	.100036
-20.2609	.047080
-18.4401	.094020
-13.8610	.241379
-10.3349	.445043
-6.0455	.804300
-1.4259	.973903
-.0063	1.000000
2.1075	.940420
5.6151	.776440
8.4906	.534400
12.4461	.269397
15.5411	.129110
17.6001	.087244
18.5476	.127155
19.0561	.195043
10.4540	.220905
19.9445	.185145
20.6256	.100216
21.6536	.043103
22.7011	.010319

CASE	RUN	MACH	PO	TO	PC
3	35	3.59	.40	280.0	120.0

TC	GAS	A/A*	PC/D	X	RE
644.0	CO2	26.3	1.40E 05	12.10	.1243

MAX P, TORR = .4860

Y/RE	P/PMAX
-65.1969	.161623
-55.7220	.155215
-53.1435	.156995
-50.5104	.173727
-48.7621	.207919
-46.8100	.298327
-43.9271	.564954
-42.7138	.737629
-41.6289	.794505
-41.0003	.754361
-39.6343	.518502
-38.3332	.297615
-37.5527	.243583
-36.4469	.224991
-34.4739	.234073
-28.5540	.296983
-18.0631	.395158
-9.2364	.442462
-2.7536	.463806
-.2385	.474190
6.3527	.463866
14.0714	.438402
25.3093	.344763
31.6770	.274031
32.5659	.246287
34.1270	.314703
35.7740	.644081
36.8372	.956924
37.6028	1.000000
38.7618	.929088
40.1545	.619894
42.4961	.364527
44.7077	.285511
46.3121	.253267
47.7865	.240299
49.6877	.239231
55.5919	.249199
62.5380	.263083
65.8956	.266287

CASE	RUN	MACH	PO	TO	PC
3	36	3.59	.40	280.0	120.0

TC	GAS	A/A*	PC/D	X	RE
644.0	CO2	26.3	1.40E 05	22.30	.1243

MAX P, TORR = .2192

Y/RE	P/PMAX
-71.2170	.160895
-66.5922	.196517
-60.9253	.301009
-57.2993	.641053
-53.7601	.629725
-52.9134	.655650
-51.9363	.670493
-50.7421	.654265
-49.6565	.573521
-48.4406	.433402
-47.3115	.304321
-46.3345	.225315
-45.2408	.180407
-43.5370	.172112
-39.4516	.186420
-26.0553	.214724
-12.0070	.231150
-.0460	.241037
13.3098	.240047
20.5736	.223027
40.5372	.204037
42.1005	.200871
44.2410	.219671
46.0956	.343756
47.9412	.637245
50.6553	.965961
51.6106	1.000000
52.6311	.962596
56.5176	.631506
59.4454	.445076
64.0404	.326143
67.1350	.295468
69.7623	.288739
73.0426	.290520
77.4919	.295666
84.0274	.304572

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
3	42	3.65	.70	280.0	21.0

TC	GAS	A/A*	PC/D	X	RE
686.0	CO2	26.3	1.46E 04	3.50	.1243

MAX P, TORR = 3.9856

Y/RE	P/PMAX
-17.8600	.067221
-11.8103	.060912
-11.2022	.091454
-10.7375	.086883
-9.3108	.100068
-7.5087	.159465
-5.3205	.269181
-3.3032	.534483
-1.3730	.874239
-.4027	.979046
-.0424	1.000000
.6436	.955713
1.4403	.819345
3.1751	.501014
4.4730	.386964
5.5779	.212644
6.8222	.149033
7.7662	.116295
8.4527	.092039
9.8901	.091278
12.1319	.098715
16.5192	.105427

CASE	RUN	MACH	PO	TO	PC
3	43	3.65	.70	280.0	21.0

TC	GAS	A/A*	PC/D	X	RE
686.0	CO2	26.3	1.46E 04	4.88	.1243

MAX P, TORR = 1.0210

Y/RE	P/PMAX
-18.2160	.775244
-16.9859	.780130
-15.0419	.808632
-13.7120	.840191
-12.8250	.907166
-12.2046	.934039
-11.6591	.902280
-11.0081	.859306
-10.6322	.842020
-9.7058	.859935
-8.4181	.889179
-7.1452	.914695
-4.9417	.957655
-2.2355	.988599
-.1925	.991057
.4786	1.000000
1.7328	.987785
5.3054	.935660
8.3210	.872150
9.1347	.867264
9.4243	.887622
10.5573	.957655
10.9210	.985342
11.3382	.959283
12.0227	.897394
13.1459	.824919
14.1192	.807003
17.2319	.805375
20.0664	.825733

126.8971	.645464

CASE	RUN	MACH	PO	TO	PC
3	45	3.65	.70	280.0	21.0

TC	GAS	A/A*	PC/D	X	RE
686.0	CO2	26.3	1.46E 04	8.00	.1243

MAX P, TORR = .2722

Y/RE	P/PMAX
-50.6367	.424209
-46.4733	.401708
-43.2218	.390052
-41.7514	.308435
-39.0591	.402330
-36.3461	.411774
-33.9023	.401857
-31.7270	.363126
-29.0148	.344562
-26.1156	.313877
-25.1420	.292775
-22.7603	.277664
-21.0414	.287423
-19.3639	.330230
-18.6390	.390692
-17.4580	.490347
-16.2908	.624744
-15.6568	.709808
-15.3254	.782622
-14.3729	.842122
-12.6953	.576421
-12.1569	.412780
-11.1034	.326417
-10.5021	.263960
-9.5473	.272312
-7.0414	.281757
-4.5562	.292775
-1.4083	.300331
-.0021	.301747
1.6568	.299071
5.8325	.294821
7.0207	.289692
8.5947	.281284
9.4852	.300488
10.5621	.411283
11.6005	.641476
12.6002	.801178
13.1095	.917047
13.5651	.974704
14.1657	1.000000
14.4763	.975317
15.1390	.863214
16.1952	.699197
17.2515	.561152
18.3405	.462773
19.3634	.410070
20.3373	.419515
21.7455	.424589
24.3550	.476310
26.5296	.513430
30.5266	.566347
34.6272	.600661
36.0160	.604457
37.6301	.602787
38.0313	.584328
41.0059	.530301
43.5739	.462144
45.1093	.420746

CASE	RUN	MACH	PO	TO	PC
3	44	3.65	.70	280.0	21.0

TC	GAS	A/A*	PC/D	X	RE
686.0	CO2	26.3	1.46E 04	12.10	.1243

MAX P, TORR = .2814

Y/RE	P/PMAX
-66.7096	.443970
-59.6051	.502828
-56.4706	.584072
-53.9580	.585443
-44.2063	.448239
-37.4646	.395384
-33.0863	.349946
-30.8225	.340662
-28.7826	.347785
-26.2263	.380790
-22.4638	.474335
-19.2796	.729349
-17.4136	.850880
-16.4100	.871505
-15.4237	.842689
-13.0106	.550805
-10.6224	.278549
-9.2791	.224120
-4.8261	.198282
-.9951	.199360
3.7564	.199146
6.7914	.202848
8.4333	.214301
10.5727	.331910
11.7419	.482810
12.9609	.689861
14.6525	.922519
15.6724	.985697
16.5431	1.000000
17.4885	.976948
18.4835	.895411
19.0510	.819356
20.9712	.705229
23.0111	.586339
25.4491	.512407
26.7675	.492950
28.1006	.482910
30.2503	.499928
33.9570	.540448
38.2855	.593249
44.3814	.644745
49.7289	.696042
54.8536	.734179
57.3910	.747065
59.7792	.758053
61.8191	.739101
63.7097	.716115
65.9984	.652721
69.3817	.565635
71.2972	.540440
73.4093	.524226
78.8349	.515402
91.0743	.503749
108.1048	.491920
116.8707	.485174
120.7327	.481964
122.4890	.497118
126.1756	.667663
66.4112	.407367
67.7159	.400442
82.0057	.393830
83.7869	.343203

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
3	51	3.65	.70	280.0	210.0

TC	GAS	A/A*	PC/Q	X	RE
755.0	CO2	26.3	1.46E 05	4.00	.1243

MAX P, TORR = 8.9844

Y/RE	P/PMAX
-23.8760	.180082
-22.2050	.208731
-21.1874	.244202
-20.3491	.227831
-19.3986	.207367
-17.3206	.234652
-14.8890	.287858
-9.8439	.497954
-6.7376	.687585
-4.4024	.864939
-1.8103	.964529
-.0107	1.000000
1.4675	.972715
2.9564	.937244
5.3465	.807640
8.2158	.639836
13.2073	.373806
16.9457	.259209
19.0880	.231924
19.7521	.222374
20.5019	.287858
21.1660	.360164
22.1086	.306958
23.8439	.207367
25.9862	.208731

CASE	RUN	MACH	PO	TO	PC
3	50	3.65	.70	280.0	210.0

TC	GAS	A/A*	PC/Q	X	RE
755.0	CO2	26.3	1.46E 05	12.10	.1243

MAX P, TORR = .7270

Y/RE	P/PMAX
-53.3826	.124340
-50.3700	.156012
-48.4073	.241056
-46.0565	.412317
-43.9568	.633431
-42.9298	.680938
-42.3364	.637845
-40.8301	.440469
-39.4379	.275073
-38.3880	.219355
-37.7033	.197067
-35.6465	.213490
-31.1988	.256691
-21.0198	.360117
-8.5357	.442229
-1.5520	.463930
5.2721	.450440
17.0487	.404692
25.4703	.336657
35.8775	.245161
38.0308	.229326
39.0727	.293842
40.4649	.590029
41.8114	.926686
42.5418	.970674
42.9982	1.000000
43.7970	.963050
44.6187	.885630
45.6457	.724927
46.5586	.455132
47.7910	.327273
49.4799	.258065
51.6709	.216422
65.2049	.229912
72.4169	.246334
75.1328	.241642
76.9586	.211144
79.0127	.160704

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
4	58	7.88	3.00	280.0	94.5

TC	GAS	A/A*	PC/0	X	RE
580.0	CO2	26.3	2.14E 05	8.00	.1243

MAX P, TORR = .2180

Y/RE	P/PMAX
-49.4473	.164451
-48.2414	.171122
-45.9874	.174348
-43.0542	.200565
-40.0318	.270439
-38.6598	.460195
-37.5191	.479065
-36.9480	.493473
-36.2732	.472006
-35.2553	.404429
-34.0971	.330341
-32.7634	.301767
-31.0787	.322148
-27.2531	.446029
-21.7604	.573240
-16.6362	.758122
-11.0381	.891982
-6.6061	.961350
-2.4918	.996078
-.5009	1.000000
2.0003	.992000
4.7031	.979427
7.9120	.823117
13.8635	.798439
17.7417	.881171
23.9013	.499462
28.6576	.176732
31.6787	.122927
32.3422	.160090
33.7461	.346400
34.7615	.446016
35.3762	.505756
36.1903	.548244
36.6502	.657171
37.1155	.675317
37.6946	.657451
38.3615	.559226
39.3042	.477204
40.1514	.407415
41.4451	.339537
42.6433	.307244
44.1354	.286049
43.3634	.284000
46.9252	.289659
48.4695	.247415
48.6433	.261651
50.7500	.252712
52.4100	.189954
53.0219	.155707
55.1954	.137346
56.4047	.122145
58.7807	.124659

CASE	RUN	MACH	PO	TO	PC
4	58	7.84	3.00	280.0	94.5

TC	GAS	A/A*	PC/0	X	RE
580.0	CO2	26.3	2.14E 05	10.00	.1243

MAX P, TORR = .1168

Y/RE	P/PMAX
-50.6773	.360086
-47.9124	.472102
-45.3071	.641654
-44.3774	.743045
-43.5026	.703719
-42.4279	.720110
-41.0070	.573072
-38.5406	.443631
-38.7701	.414710
-37.7901	.605190
-35.6432	.619473
-36.6410	.502562
-19.3540	.717709
-16.3947	.786471
-12.0744	.804565
-10.8045	.838693
-6.5707	.855417
-1.2599	.873333
.3500	.873133
2.1074	.874017
4.1247	.863030
10.7445	.836340
13.6492	.804169
26.0115	.739791
24.7000	.684406
29.6705	.345144
33.3103	.534301
34.6432	.472182
39.4700	.421526
41.3504	.400032
42.5054	.395601
43.1763	.467346
44.1676	.405346
46.6427	.556003
46.3552	.765739
47.4570	.956220
48.3501	1.000000
49.2000	.944129
40.4775	.894503
52.7424	.633900
54.2423	.516007
56.2247	.402004
58.2896	.457050
59.4272	.446359
61.0719	.458634
63.1543	.977672
65.3942	.495680
66.7462	.487053
67.4944	.448869

CASE	RUN	MACH	PO	TO	PC
4	64	7.90	7.00	280.0	159.0

TC	GAS	A/A*	PC/0	X	RE
644.0	CO2	26.3	2.28E 05	8.00	.1243

MAX P, TORR = .5398

Y/RE	P/PMAX
-59.3034	.182059
-57.4233	.195025
-55.5624	.242170
-53.5030	.195290
-51.2020	.170415
-47.3808	.147058
-46.1568	.142366
-44.2478	.151363
-42.4751	.182508
-40.7536	.256682
-39.4923	.368801
-38.6231	.492723
-37.9872	.540355
-37.1572	.484255
-36.5266	.303435
-35.6483	.290288
-34.8221	.249568
-34.0722	.228367
-32.5552	.230217
-30.6083	.274411
-24.7829	.424988
-19.8748	.590097
-15.4254	.746229
-11.4718	.853136
-7.0746	.929082
-4.4827	.975128
-1.9601	.994972
-.4943	1.000089
1.3295	.995581
3.2385	.982808
8.5451	.942313
9.5279	.893087
12.8887	.816818
18.7661	.643027
22.3134	.532845
27.6975	.399841
31.5036	.311723
33.1858	.280497
33.9017	.272838
34.7088	.282614
35.4069	.351351
36.4925	.477904
37.1572	.660695
37.5433	.762634
38.0947	.839648
38.5098	.784234
39.3449	.644080
39.9014	.533218
40.6173	.430799
41.7252	.345065
43.0035	.291612
44.2137	.274940
45.3216	.278707
46.8727	.278301
49.4464	.299321
50.1623	.304643
50.7247	.293728
[illegible]	[illegible]

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
5	73	7.80	3.00	280.0	64.5

TC	GAS	A/A*	PC/Q	X	RE
588.0	AR	26.3	2.16E 05	8.00	.1243

MAX P, TORR = .3740

Y/RE	P/PMAX
-34.0060	.073328
-32.0660	.082067
-29.5849	.107903
-26.6169	.287447
-24.9218	.356883
-24.1672	.426292
-23.5862	.443389
-22.8639	.414894
-22.1886	.382219
-21.4349	.344225
-20.8068	.335486
-19.9274	.352964
-17.9882	.419453
-13.9130	.823188
-9.9715	.798632
-5.1821	.944149
-3.1092	.991261
-.8323	.995821
.4397	1.000000
2.8737	.977284
4.9151	.941869
7.3648	.877660
9.6889	.787614
12.9880	.658435
15.7974	.521657
18.4513	.414894
20.0538	.359663
20.8539	.348824
21.7818	.366261
22.4399	.417553
23.3821	.504179
23.8846	.517857
24.4342	.489362
25.5962	.337766
26.3343	.254559
27.2451	.201748
28.1245	.171733
29.2551	.160714
30.4171	.155395
31.6891	.161894
33.2123	.164134
34.5314	.164894
35.5835	.147836
36.8397	.116641
37.8290	.096505
39.4465	.077128
41.5350	.069909
61.5723	.069909

CASE	RUN	MACH	PO	TO	PC
5	74	7.80	3.00	280.0	64.5

TC	GAS	A/A*	PC/Q	X	RE
588.0	AR	26.3	2.16E 05	32.00	.1243

MAX P, TORR = .1440

Y/RE	P/PMAX
-47.4243	.194900
-44.7691	.211020
-41.8926	.280258
-40.1049	.334494
-38.0613	.463365
-35.4561	.641633
-34.8407	.752343
-34.0673	.180180
-33.4244	.757913
-32.4651	.684023
-31.3528	.553027
-30.6461	.523740
-29.8510	.501750
-28.3332	.520081
-24.7747	.623474
-21.1158	.714933
-16.9324	.815066
-13.9138	.872216
-10.4057	.934632
-8.7797	.973129
-3.3655	.995311
-1.7708	1.000000
.5483	.943552
2.7153	.985635
5.3125	.973916
8.5505	.938653
11.1040	.900051
14.7403	.837339
18.2318	.763775
23.0038	.637749
25.6054	.564461
27.4393	.531714
28.4081	.505275
29.1250	.491809
29.9185	.512309
30.6260	.549445
31.2602	.590131
31.8740	.714123
32.7455	.882251
33.2577	.916471
33.1380	.927600
34.2690	.900245
36.8867	.711313
37.2347	.574633
38.5702	.435229
39.9146	.377082
41.0031	.357582
42.2299	.352296
44.4890	.361079
46.7035	.380284
47.6267	.304878
48.9253	.374378
50.5275	.320841
52.7403	.239449
53.1916	.206331
54.2041	.180453
55.3471	.175204
57.7120	.146764

65.0314 .179068

CASE	RUN	MACH	PO	TO	PC
5	79	7.90	7.00	280.0	150.0

TC	GAS	A/A*	PC/Q	X	RE
646.0	AR	26.3	2.28E 05	8.00	.1243

MAX P, TORR = .7400

Y/RE	P/PMAX
-47.5332	.101018
-45.2191	.099004
-41.8937	.092632
-39.6402	.090144
-37.4541	.094545
-35.4314	.116364
-34.1000	.154746
-33.1344	.209569
-31.1474	.379904
-30.6600	.437512
-30.3232	.455582
-29.7747	.428856
-29.1062	.358043
-28.5082	.308829
-28.0960	.277321
-27.1003	.261244
-28.1578	.277129
-24.3409	.323036
-21.9439	.401531
-18.2556	.531033
-17.5357	.563449
-15.8338	.607751
-11.2791	.804124
-9.0567	.864482
-6.9251	.928421
-5.3024	.955789
-2.3141	.987177
-.2438	1.000000
1.4227	.897321
4.5002	.960612
7.0966	.925167
9.2586	.870868
11.7598	.803062
15.2738	.660413
18.9927	.533397
22.0495	.396555
24.7484	.330409
25.3008	.319009
26.0830	.334182
26.3978	.386316
27.1521	.481914
28.2148	.631979
28.6091	.655502
29.0090	.636813
29.5367	.536077
30.1175	.411866
30.4488	.314022
31.6603	.232469
32.2482	.217998
33.0059	.204211
33.4743	.212497
35.2771	.231388
36.4427	.251718
37.2484	.252947
38.6083	.236746
38.9968	.111242
39.7167	.316172
40.5395	.084319
41.2786	.079789
51.9724	.073604

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
6	93	11.45	2.00	280.0	64.5

TC	GAS	A/A*	PC/Q	X	RE
588.0	CO2	26.3	2.03E 05	8.00	.1243

MAX P, TORR = .2210

Y/RE	P/PMAX
-48.0326	.124418
-46.8366	.123641
-44.9019	.130047
-41.5954	.155280
-38.9924	.219332
-37.0226	.322787
-35.6683	.395575
-34.7713	.413043
-33.9623	.397904
-33.2763	.361801
-31.6165	.321429
-30.9547	.308424
-29.6005	.319488
-28.2638	.346661
-25.3969	.425542
-21.8794	.531832
-19.0301	.633929
-16.4975	.729425
-13.5603	.816964
-10.3417	.902756
-7.3342	.950311
-2.4623	.991071
-.6508	1.000000
1.3315	.991848
4.6256	.974767
8.4070	.924689
11.0276	.868401
14.6507	.772710
17.7462	.676630
22.2487	.541925
25.9949	.432065
27.4020	.389946
29.5829	.334433
31.3944	.316576
32.0979	.325116
32.8366	.358307
33.6809	.434200
34.4899	.517857
35.0879	.571040
35.6331	.585016
36.3542	.572981
36.7939	.530668
37.5502	.448758
38.5351	.360443
39.6959	.281444
41.1381	.242430
42.2989	.224961
43.9346	.218944
45.8165	.228067
48.1381	.246118
49.5803	.252911
50.4597	.259929
52.1833	.245924
53.2386	.212733
54.5049	.166343
55.7289	.141498
57.4421	.120924
58.4271	.115295

CASE	RUN	MACH	PO	TO	PC
6	94	11.45	2.00	280.0	64.5

TC	GAS	A/A*	PC/Q	X	RE
588.0	CO2	26.3	----	12.00	.1243

MAX P, TORR = .1450

Y/RE	P/PMAX
-55.2107	.201484
-51.2727	.247774
-48.0330	.369139
-46.3258	.483383
-45.1618	.564688
-44.1919	.598220
-43.0667	.569139
-42.1355	.500000
-41.1656	.433234
-40.3314	.393769
-39.5748	.372997
-38.5854	.359347
-37.5767	.375964
-35.5785	.405341
-30.8451	.508012
-26.5966	.609496
-19.6128	.779822
-15.7135	.854303
-12.8036	.906825
-8.8073	.950445
-5.8198	.982196
-2.5801	.996736
-.4074	1.000000
2.2891	.987240
6.3048	.967656
11.1159	.921068
14.5090	.870030
17.8669	.821068
21.4946	.732344
26.8100	.607418
31.1167	.517507
35.3069	.429970
37.2469	.399110
39.0898	.378338
40.1374	.401780
41.6699	.506825
42.7951	.643917
43.8233	.789021
43.9591	.821068
44.4829	.844214
45.2200	.823739
46.1318	.718991
47.1600	.608309
48.9253	.438872
50.2833	.378932
52.4754	.323739
54.6094	.308902
56.8015	.315430
58.5086	.329970
61.7483	.354896
63.6883	.360534
66.0744	.337982
67.6652	.273294
69.2365	.209199

TABLE VIII (Continued)

CASE	RUN	MACH	PO	TO	PC
7	98	7.80	3.00	280.0	64.5

TC	GAS	A/A*	PC/Q	X	RE
588.0	CO2	9.0	2.16E 05	8.00	.0590

MAX P, TORR = .1176

Y/RE	P/PMAX
-106.5868	.408119
-104.4977	.407032
-100.6611	.441464
-95.2672	.574846
-90.7850	.702428
-89.2655	.739036
-87.7841	.760783
-85.8848	.743748
-83.0359	.596593
-80.0351	.474810
-77.6040	.401595
-74.3373	.384197
-70.6527	.400870
-64.7270	.446901
-57.9276	.512505
-47.2158	.648061
-34.6806	.778543
-26.7417	.830736
-21.2718	.881479
-16.0678	.891627
-9.0785	.924610
-2.8869	.926423
-.2659	.943095
2.7349	.939772
7.9389	.924248
14.0926	.898514
24.1967	.846684
32.1356	.782892
41.5569	.703878
51.2802	.606742
61.6502	.509605
68.8294	.442914
71.6403	.417180
74.0714	.415368
76.3125	.426241
78.2118	.467198
80.6049	.598405
83.6437	.854657
85.1251	.966292
86.6445	1.000000
88.0880	.971729
89.9493	.910112
92.4183	.769119
95.4951	.640449
97.9642	.590069
100.5472	.559986
102.9782	.545850
105.4473	.529902
107.7264	.543313
109.7776	.539688
111.5249	.551287
114.2979	.537514
116.2731	.513954
118.2104	.451613
121.8949	.347590
124.0221	.298659
125.8834	.275825

CASE	RUN	MACH	PO	TO	PC
7	97	7.80	3.00	280.0	64.5

TC	GAS	A/A*	PC/Q	X	RE
588.0	CO2	9.0	2.16E 05	12.00	.0590

MAX P, TORR = .0911

Y/RE	P/PMAX
-130.3151	.449371
-124.9969	.475157
-119.5778	.551101
-114.1719	.656761
-111.2299	.746226
-109.3063	.781289
-107.7976	.805031
-106.0248	.793396
-104.5161	.768711
-101.9513	.658805
-99.9900	.559434
-98.2550	.430031
-96.3691	.385063
-93.6534	.343553
-91.6921	.329874
-89.8816	.318239
-84.0353	.328145
-80.4144	.344340
-68.1184	.402044
-57.4443	.452358
-46.7324	.493396
-36.1337	.534748
-25.3187	.567610
-17.4634	.584277
-9.3917	.597956
-2.0745	.599057
4.2621	.596541
10.9382	.588836
17.2748	.578931
25.5350	.566667
33.0785	.547642
43.7904	.511635
57.2934	.464308
70.1552	.407233
81.9231	.359434
86.6001	.341195
88.9386	.334434
91.3149	.341667
94.2191	.377673
97.1611	.472484
100.0277	.605818
101.8004	.761792
103.4223	.874686
105.7985	.985063
107.0809	1.000000
108.9291	.985535
111.0413	.924874
113.4930	.817296
116.3972	.731132
120.2822	.650472
124.2425	.597642
126.9205	.586635
130.7477	.574371
134.6304	.583176
139.2165	.611164
143.7427	.644340
145.8926	.657547
147.8162	.651101
151.0222	.597013
153.5970	.511006
156.1141	.407390
159.1693	.351887
161.6209	.326415

TABLE VIII (Concluded)

CASE	RUN	MACH	PO	TO	PC	TC	GAS	A/A*	PC/Q	X	RE
8	96	7.83	3.00	280.0	64.5	588.0	N2	9.0	2.16E 05	8.00	.0590

RUN 96 MAX P, TORR = .1199

Y/RE	P/PMAX
-103.4171	.356272
-101.9062	.352688
-98.9223	.360215
-93.8610	.397849
-89.0641	.481362
-84.2672	.594982
-81.8121	.658781
-79.4325	.684588
-76.8640	.633333
-74.8622	.557706
-72.5204	.485305
-70.2919	.439427
-67.6101	.425806
-63.7575	.439427
-58.9228	.482079
-47.9692	.616487
-37.2045	.745878
-29.3103	.833333
-21.2273	.901434
-15.8261	.939068
-10.8025	.970609
-3.3239	.988530
0	1.000000
6.1944	.983871
13.4465	.962724
18.4323	.935484
26.5153	.878853
34.5605	.818280
45.3630	.713978
53.1816	.627599
61.4535	.529391
66.2882	.487455
68.2900	.477061
70.6696	.495341
72.8981	.558065
75.0510	.661290
76.2219	.739785
77.9716	.844444
78.9415	.893548
80.3390	.916487
82.1520	.889247
83.5495	.810394
86.3446	.691039
89.2907	.580645
93.6344	.498925
97.4493	.476703
98.6202	.466667
102.2840	.484946
105.1168	.493190
109.1961	.511111
113.0487	.475986
116.6747	.365950
118.8277	.228315
118.7899	.306093
121.2450	.268100
123.6246	.246953

TABLE IX
DENSITY DATA

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 1	2.0	4.374E-05	1.222E-05
5/12/70	4.0	4.857E-05	8.815E-06
CASE 3	5.9	4.796E-05	8.501E-06
	7.9	5.255E-05	7.415E-06
PO = .4 TORR	9.9	5.458E-05	5.886E-06
TO = 280 DEG K	12.1	5.140E-05	5.122E-06
NITROGEN	15.8	4.482E-05	3.560E-06
M INF = 3.59	19.7	3.575E-05	3.440E-06
	23.7	2.829E-05	2.711E-06
PC = 12.00 PSI	32.2	2.152E-05	1.782E-06
TC = 560 DEG K	48.3	9.585E-06	2.258E-06
CARBON DIOXIDE	64.4	5.904E-06	1.834E-06
ALPHA = 0 DEG	80.5	4.057E-06	1.625E-06
A/A* = 26.3	104.7	2.968E-06	1.619E-06
RE = .1243 IN.	108.8	2.995E-06	1.509E-06
PC/G INF =14900%	112.7	3.129E-06	1.693E-06
LAMBDA INF = .0685 IN.	116.7	3.714E-06	1.729E-06
RESERVOIR DENSITY =	120.8	4.382E-06	1.783E-06
1.068E 19/CCM	124.8	5.288E-06	2.017E-06
	128.8	6.475E-06	2.165E-06
CENTERLINE AXIAL	136.9	8.512E-06	3.254E-06
	144.9	1.180E-05	3.668E-06
	153.0	1.478E-05	4.498E-06
	161.0	1.946E-05	6.272E-06

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 2	-2.9	6.739E-05	5.108E-06
5/12/70	-.8	8.836E-05	4.823E-06
CASE 3	1.2	8.534E-05	4.362E-06
	3.2	6.163E-05	5.194E-06
PO = .4 TORR	5.2	4.135E-05	7.248E-06
TO = 280 DEG K	7.2	1.889E-05	2.270E-05
NITROGEN	9.2	7.814E-06	3.588E-05
M INF = 3.59	11.2	3.293E-06	4.921E-05
	13.2	1.392E-06	6.358E-05
PC = 12.00 PSI	15.2	2.480E-07	7.149E-05
TC = 560 DEG K	17.2	1.272E-07	7.314E-05
CARBON DIOXIDE	19.2	5.970E-08	7.468E-05
ALPHA = 0 DEG	21.2	1.138E-08	8.154E-05
A/A* = 26.3			
RE = .1243 IN.			
PC/G INF =14900%			
LAMBDA INF = .0685 IN.			
RESERVOIR DENSITY =			
1.068E 19/CCM			
2.5 IN. RADIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 3	-20.8	1.370E-06	3.046E-05
5/12/70	-16.9	5.445E-06	2.080E-05
CASE 3	-13.1	1.793E-05	9.292E-06
	-9.2	1.432E-05	3.446E-06
PO = .4 TORR	-7.3	1.540E-05	2.907E-06
TO = 280 DEG K	-4.4	1.910E-05	2.615E-06
NITROGEN	-.4	2.187E-05	2.786E-06
M INF = 3.59	3.6	2.007E-05	2.901E-06
	7.6	1.580E-05	4.559E-06
PC = 12.00 PSI	7.7	1.551E-05	4.587E-06
TC = 560 DEG K	8.7	2.098E-05	6.523E-06
CARBON DIOXIDE	9.6	2.442E-05	1.122E-05
ALPHA = 0 DEG	10.8	1.783E-05	1.729E-05
A/A* = 26.3	11.6	1.905E-05	2.259E-05
RE = .1243 IN.	12.6	9.528E-06	2.679E-05
PC/Q INF =14900.	13.6	7.344E-06	3.577E-05
LAMBDA INF = .0685 IN.	15.6	4.353E-06	4.571E-05
RESERVOIR DENSITY =	15.8	2.719E-06	4.322E-05
1.068E 19/CCM	17.6	1.243E-06	5.598E-05
	19.6	4.729E-07	6.918E-05
4.0 IN. RADIAL	21.6	8.412E-08	7.099E-05
	23.5	8.187E-08	6.317E-05
	23.7	8.143E-08	7.258E-05
	25.7	3.261E-08	7.024E-05
	27.7	3.471E-08	6.523E-05
	29.3	6.226E-08	5.046E-05
	31.7	3.474E-08	4.989E-05
	33.1	3.755E-08	3.999E-05
	37.0	2.145E-08	3.805E-05
	40.8	1.936E-08	3.757E-05
	48.5	1.295E-08	3.683E-05
	56.2	8.782E-09	3.732E-05
	63.9	-9.447E-09	4.079E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 4	-14.9	8.278E-06	7.628E-06
5/12/70	-10.9	9.999E-06	3.598E-06
CASE 3	-6.9	3.891E-06	1.843E-06
	-2.9	2.616E-06	1.404E-06
PO = 14 TORR	5.2	2.934E-06	1.557E-06
TO = 280 DEG K	9.2	7.325E-06	2.348E-06
NITROGEN	13.2	1.199E-05	5.851E-06
M INF = 3.59	17.2	8.290E-06	1.039E-05
	21.2	4.267E-06	1.761E-05
PC = 12.00 PSI	29.2	4.761E-07	3.317E-05
TC = 560 DEG K	37.2	1.852E-08	4.118E-05
CARBON DIOXIDE	45.2	2.320E-08	4.376E-05
ALPHA = 0 DEG	53.2	2.398E-08	4.618E-05
A/A* = 26.3	61.2	5.005E-09	3.587E-05
RE = .1243 IN.	69.3	-1.318E-08	3.262E-05
PC/Q INF =149000	77.3	-2.164E-08	3.281E-05
LAMBDA INF = .0685 IN.	85.3	-2.478E-08	3.361E-05
RESERVOIR DENSITY =	93.3	-5.592E-08	3.706E-05
1.068E 19/CCM	101.3	-7.377E-08	4.078E-05

12.1 IN. RADIAL

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 5	2.0	2.419E-05	.000E 00
5/12/70	3.9	2.367E-05	.000E 00
CASE 3	5.9	2.809E-05	.000E 00
	7.9	3.122E-05	.000E 00
PO = 14 TORR	11.8	3.088E-05	.000E 00
TO = 280 DEG K	15.8	2.815E-05	.000E 00
NITROGEN	23.7	2.146E-05	.000E 00
M INF = 3.59	39.5	1.152E-05	.000E 00
	63.1	4.874E-06	.000E 00
PC =120.00 PSI	86.8	2.571E-06	.000E 00
TC = 644 DEG K	110.5	1.547E-06	.000E 00
CARBON DIOXIDE	134.2	1.064E-06	.000E 00
ALPHA = 0 DEG	157.9	9.098E-07	.000E 00
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF =149,000			
LAMBDA INF = .0685 IN.			
RESERVOIR DENSITY =			
9.310E 19/CCM			

CENTERLINE AXIAL

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 6	-16.2	4.383E-06	2.613E-07
5/12/70	-12.3	7.200E-06	3.291E-07
CASE 3	-8.5	1.104E-05	4.123E-07
	-3.6	1.542E-05	3.378E-07
PO = 14 TORR	-.8	1.622E-05	4.899E-07
TO = 280 DEG K	6.9	1.206E-05	3.819E-07
NITROGEN	14.6	5.680E-06	3.539E-07
M INF = 3.59	16.6	4.681E-06	3.464E-07
	18.5	3.829E-06	4.540E-07
PC =120.00 PSI	22.3	4.098E-06	3.256E-06
TC = 644 DEG K	23.2	2.621E-06	4.560E-06
CARBON DIOXIDE	23.7	2.349E-06	4.884E-06
ALPHA = 0 DEG	24.3	1.589E-06	6.203E-06
A/A* = 26.3	24.7	1.411E-06	6.560E-06
RE = .1243 IN.	25.2	1.088E-06	7.463E-06
PC/Q INF =149,000	26.2	6.230E-07	8.623E-06
LAMBDA INF = .0685 IN.	28.1	2.151E-07	1.047E-05
RESERVOIR DENSITY =	30.0	6.491E-08	1.126E-05
9.310E 19/CCM	32.0	4.070E-08	1.137E-05
	33.9	2.744E-08	1.017E-05
4.0 IN. RADIAL	35.8	2.501E-08	7.212E-06
	37.8	1.801E-08	4.813E-06
	45.5	1.117E-08	4.191E-06
	57.0	2.725E-09	4.833E-06

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 7	-16.2	3.388E-06	1.660E-07
5/12/70	-12.3	4.038E-06	1.457E-07
CASE 3	-8.5	4.496E-06	1.080E-07
	-3.6	4.859E-06	1.274E-07
PO = 14 TORR	-.8	4.958E-06	1.128E-07
TO = 280 DEG K	6.9	4.639E-06	1.311E-07
NITROGEN	14.6	3.786E-06	1.229E-07
M INF = 3.59	22.3	2.681E-06	1.428E-07
	26.2	2.168E-06	2.075E-07
PC =120.00 PSI	30.0	3.064E-06	2.576E-07
TC = 644 DEG K	33.9	3.596E-06	2.463E-06
CARBON DIOXIDE	35.8	1.982E-06	4.041E-06
ALPHA = 0 DEG	37.8	8.087E-07	6.322E-06
A/A* = 26.3	41.6	1.536E-07	8.283E-06
RE = .1243 IN.	45.5	2.416E-08	9.459E-06
PC/Q INF =149,000	53.2	1.350E-08	9.061E-06
LAMBDA INF = .0685 IN.	60.9	7.779E-09	3.953E-06
RESERVOIR DENSITY =	68.6	5.629E-09	3.740E-06
9.310E 19/CCM	76.3	4.277E-09	3.675E-06
	84.0	2.763E-09	3.613E-06
8.0 IN. RADIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 8	-16.2	1.728E-06	1.188E-07
5/12/70	-12.3	1.821E-06	1.215E-07
CASE 3	-8.5	1.909E-06	1.334E-07
	-3.6	1.929E-06	1.261E-07
PO = .14 TORR	-.8	1.985E-06	1.370E-07
TO = 280 DEG K	6.9	1.930E-06	1.350E-07
NITROGEN	14.6	1.799E-06	1.241E-07
M INF = 3.59	22.3	1.566E-06	1.331E-07
	30.0	1.316E-06	1.365E-07
PC =120.00 PSI	33.9	1.182E-06	1.504E-07
TC = 644 DEG K	35.8	1.290E-06	1.626E-07
CARBON DIOXIDE	37.8	2.852E-06	1.603E-07
ALPHA = 0 DEG	39.7	4.090E-06	3.466E-07
A/A* = 26.3	41.6	3.117E-06	1.661E-06
RE = .1243 IN.	45.5	1.114E-06	3.688E-06
PC/Q INF =149,000	47.8	6.241E-07	4.607E-06
LAMBDA INF = .0685 IN.	49.3	4.781E-07	4.972E-06
RESERVOIR DENSITY =	53.2	7.723E-08	6.402E-06
9.310E 19/CCM	60.9	9.670E-09	7.513E-06
	68.6	8.137E-09	7.896E-06
12.1 IN. RADIAL	76.3	-1.446E-09	5.080E-06
	87.8	5.231E-12	3.608E-06

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 9	3.9	6.160E-05	.000E 00
5/12/70	7.9	6.306E-05	.000E 00
CASE 3	15.8	4.375E-05	.000E 00
	23.7	3.116E-05	.000E 00
PO = .17 TORR	39.5	1.270E-05	.000E 00
TO = 280 DEG K	55.2	6.825E-06	.000E 00
NITROGEN	71.0	4.341E-06	.000E 00
M INF = 3.15	86.8	3.031E-06	.000E 00
	94.7	2.437E-06	.000E 00
PC = 21.00 PSI	102.6	2.326E-06	.000E 00
TC = 686 DEG K	110.5	2.160E-06	.000E 00
CARBON DIOXIDE	118.4	2.195E-06	.000E 00
ALPHA = 0 DEG	126.3	2.762E-06	.000E 00
A/A* = 26.3	134.2	3.831E-06	.000E 00
RE = .1243 IN.	150.0	8.903E-06	.000E 00
PC/Q INF =146000	157.9	1.243E-05	.000E 00
LAMBDA INF = .0413 IN.	165.7	1.777E-05	.000E 00
RESERVOIR DENSITY =			
1.530E 19/CCM			
CENTERLINE AXIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 10	-11.6	1.594E-05	6.211E-06
5/12/70	-7.7	1.289E-05	3.340E-06
CASE 3	-2.9	1.647E-05	2.808E-06
	.0	1.728E-05	2.750E-06
PO = 17 TORR	3.9	1.599E-05	2.719E-06
TO = 280 DEG K	7.7	1.314E-05	3.447E-06
NITROGEN	9.6	1.216E-05	3.883E-06
M INF = 3.15	10.8	1.322E-05	4.422E-06
	11.6	1.893E-05	8.033E-06
PC = 21.00 PSI	12.3	1.997E-05	9.333E-06
TC = 686 DEG K	13.5	1.497E-05	1.816E-05
CARBON DIOXIDE	15.4	6.963E-06	3.064E-05
ALPHA = 0 DEG	19.3	9.647E-07	5.992E-05
A/A* = 26.3	27.0	1.754E-07	7.288E-05
RE = .1243 IN.	30.8	1.291E-07	5.746E-05
PC/Q INF =14600;	34.7	8.569E-08	4.293E-05
LAMBDA INF = .0413 IN.	42.4	5.446E-08	4.414E-05
RESERVOIR DENSITY = 1.530E 19/CCM	50.1	5.553E-08	3.977E-05

4.0 IN. RADIAL

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 11	-11.6	5.884E-06	2.451E-06
5/12/70	-9.2	4.640E-06	2.097E-06
CASE 3	-7.7	4.525E-06	1.939E-06
	-5.4	4.579E-06	1.872E-06
PO = 17 TORR	-2.9	4.692E-06	1.831E-06
TO = 280 DEG K	.0	4.607E-06	1.798E-06
NITROGEN	3.9	4.580E-06	1.874E-06
M INF = 3.15	7.7	4.549E-06	2.042E-06
	10.0	4.689E-06	2.323E-06
PC = 21.00 PSI	11.6	6.328E-06	2.588E-06
TC = 686 DEG K	13.5	1.249E-05	4.025E-06
CARBON DIOXIDE	15.4	1.456E-05	8.312E-06
ALPHA = 0 DEG	17.3	9.860E-06	1.404E-05
A/A* = 26.3	19.3	6.478E-06	2.123E-05
RE = .1243 IN.	23.1	2.043E-06	3.647E-05
PC/Q INF =14600;	27.0	2.905E-07	5.082E-05
LAMBDA INF = .0413 IN.	34.7	1.342E-07	6.254E-05
RESERVOIR DENSITY =	42.4	9.161E-08	6.150E-05
1.530E 19/CCM	46.2	8.135E-08	4.678E-05
	50.1	3.752E-08	3.991E-05
8.0 IN. RADIAL	57.8	2.829E-08	3.857E-05
	77.0	2.029E-08	3.600E-05
	88.6	1.818E-09	3.629E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 12	-19.3	4.569E-06	1.037E-05
5/12/70	-15.4	7.896E-06	6.154E-06
CASE 3	-13.5	9.050E-06	4.172E-06
	-11.6	7.640E-06	2.666E-06
PO = 17 TORR	-7.7	2.934E-06	1.689E-06
TO = 280 DEG K	-2.9	2.325E-06	1.479E-06
NITROGEN	.0	2.310E-06	1.473E-06
M INF = 3.15	3.9	2.351E-06	1.542E-06
	7.7	2.764E-06	1.665E-06
PC = 21.00 PSI	9.6	4.167E-06	1.946E-06
TC = 686 DEG K	11.6	7.459E-06	2.451E-06
CARBON DIOXIDE	12.3	8.879E-06	2.771E-06
ALPHA = 0 DEG	13.9	1.090E-05	4.219E-06
A/A* = 26.3	15.4	1.069E-05	6.220E-06
RE = .1243 IN.	16.9	9.283E-06	8.431E-06
PC/Q INF =14600?	19.3	6.715E-06	1.318E-05
LAMBDA INF = .0413 IN.	23.1	3.524E-06	2.075E-05
RESERVOIR DENSITY =	27.0	1.180E-06	3.114E-05
1.530E 19/CCM	30.8	3.302E-07	3.639E-05
	34.7	8.418E-08	4.461E-05
12.4 IN. RADIAL	42.4	9.854E-08	4.936E-05
	50.1	9.136E-08	5.587E-05
	57.8	8.123E-08	4.671E-05
	65.5	2.789E-08	3.667E-05
	77.0	3.592E-09	3.827E-05
	88.6	-1.057E-08	3.830E-05

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 13	2.0	2.893E-05	.000E 00
5/13/70	3.9	2.858E-05	.000E 00
CASE 3	5.9	3.076E-05	.000E 00
	7.9	3.092E-05	.000E 00
PO = 16 TORR	11.8	2.970E-05	.000E 00
TO = 280 DEG K	15.8	2.609E-05	.000E 00
NITROGEN	23.7	2.077E-05	.000E 00
M INF = 3.64	39.5	1.080E-05	.000E 00
	63.1	4.629E-06	.000E 00
PC =170.00 PSI	86.8	2.472E-06	.000E 00
TC = 700 DEG K	110.5	1.495E-06	.000E 00
CARBON DIOXIDE	134.2	1.010E-06	.000E 00
ALPHA = 0 DEG	157.9	9.143E-07	.000E 00
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF =146,000			
LAMBDA INF = .0476 IN.			
RESERVOIR DENSITY =			
1.210E 20/CCM			
CENTERLINE AXIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 14	-8.1	1.097E-05	1.833E-07
5/13/70	-3.2	1.480E-05	1.806E-07
CASE 3	-.4	1.574E-05	1.257E-07
	3.5	1.453E-05	2.082E-07
PO = 16 TORR	7.3	1.210E-05	1.978E-07
TO = 280 DEG K	11.2	8.815E-06	2.131E-07
NITROGEN	15.0	5.843E-06	3.399E-07
M INF = 3.64	18.9	3.867E-06	4.397E-07
	20.4	3.726E-06	5.159E-07
PC =170.00 PSI	22.7	5.113E-06	2.802E-06
TC = 700 DEG K	25.0	1.710E-06	6.806E-06
CARBON DIOXIDE	26.6	6.384E-07	1.047E-05
ALPHA = 0 DEG	30.4	6.943E-08	1.358E-05
A/A* = 26.3	34.3	3.648E-08	1.108E-05
RE = .1243 IN.	38.1	2.120E-08	5.315E-06
PC/Q INF =146,000	45.8	1.327E-08	4.958E-06

LAMBDA INF = .0476 IN.
RESERVOIR DENSITY =
1.210E 20/CCM

4.0 IN. RADIAL

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 15	-3.2	4.945E-06	9.743E-08
5/13/70	-.4	4.971E-06	1.220E-07
CASE 3	7.3	4.777E-06	9.744E-08
	15.0	3.980E-06	1.116E-07
PO = 16 TORR	22.7	2.800E-06	1.669E-07
TO = 280 DEG K	26.6	2.336E-06	2.096E-07
NITROGEN	30.4	2.450E-06	2.401E-07
M INF = 3.64	31.2	3.720E-06	3.814E-07
	32.4	5.549E-06	9.054E-07
PC =170.00 PSI	34.3	3.658E-06	2.806E-06
TC = 700 DEG K	38.1	9.110E-07	7.401E-06
CARBON DIOXIDE	42.0	1.118E-07	1.038E-05
ALPHA = 0 DEG	45.8	3.599E-08	1.091E-05
A/A* = 26.3	53.5	2.259E-08	1.077E-05
RE = .1243 IN.	61.2	8.905E-09	4.875E-06

PC/Q INF =146,000
LAMBDA INF = .0476 IN.
RESERVOIR DENSITY =
1.210E 20/CCM

8.0 IN. RADIAL

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 16	-3.2	2.062E-06	6.544E-08
5/13/70	3.5	2.009E-06	8.004E-08
CASE 3	11.2	1.942E-06	7.299E-08
	18.9	1.761E-06	9.084E-08
PO = 16 TORR	26.6	1.432E-06	1.354E-07
TO = 280 DEG K	34.3	1.180E-06	1.579E-07
NITROGEN	35.8	1.170E-06	1.544E-07
M INF = 3.64	38.1	1.149E-06	1.516E-07
	40.4	4.213E-06	5.904E-07
PC =170.00 PSI	42.0	3.647E-06	1.328E-06
TC = 700 DEG K	45.8	1.255E-06	3.762E-06
CARBON DIOXIDE	49.7	3.705E-07	6.360E-06
ALPHA = 0 DEG	57.4	1.762E-08	8.267E-06
A/A* = 26.3	65.1	1.372E-08	8.639E-06
RE = .1243 IN.	72.8	8.144E-09	8.743E-06
PC/Q INF =146,000	76.7	4.595E-09	5.210E-06
LAMBDA INF = .0476 IN.	84.4	-8.657E-10	3.902E-06
RESERVOIR DENSITY =			
1.210E 20/CCM			

12.1 IN. RADIAL

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 17	-25.4	.000E 00	6.226E-04
5/20/70	-17.7	.000E 00	5.297E-04
CASE 4	-10.0	.000E 00	4.973E-04
	-2.3	.000E 00	4.879E-04
PO = 3.0 TORR	5.4	.000E 00	5.540E-04
TO = 280 DEG K	13.1	.000E 00	7.164E-04
NITROGEN	20.8	.000E 00	1.063E-03
M INF = 7.80	28.5	.000E 00	9.460E-04
	36.2	.000E 00	7.255E-04
PC = .00 PSI	43.9	.000E 00	7.062E-04
TC = 0 DEG K	51.6	.000E 00	6.871E-04
[redacted]	59.3	.000E 00	7.062E-04
ALPHA = 0 DEG	67.0	.000E 00	7.164E-04
A/A* = .0	74.7	.000E 00	7.202E-04
RE = .0000 IN.	82.4	.000E 00	7.411E-04
PC/Q INF = 0.			
LAMBDA INF = .1350 IN.			
RESERVOIR DENSITY =			
1.040E 17/CCM			

8.0 IN. RADIAL

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 18	.0	1.538E-04	5.357E-06
5/20/70	7.9	1.237E-04	2.564E-06
CASE 4	15.8	6.070E-05	1.505E-06
	23.7	3.464E-05	2.339E-06
P0 = 3.0 TORR	31.6	2.084E-05	1.222E-06
T0 = 280 DEG K	39.5	1.405E-05	8.454E-07
NITROGEN	47.4	9.840E-06	7.998E-07
M INF = 7.80	55.2	7.585E-06	4.804E-07
	63.1	5.797E-06	5.034E-07
PC = 10.00 PSI	71.0	4.593E-06	5.377E-07
TC = 588 DEG K	75.0	4.139E-06	4.949E-07
CARBON DIOXIDE	78.9	3.759E-06	4.797E-07
ALPHA = 0 DEG	86.8	3.147E-06	4.293E-07
A/A* = 26.3	94.7	2.684E-06	4.163E-07
RE = .1243 IN.	102.6	2.202E-06	4.025E-07
PC/Q INF =336008	110.5	1.927E-06	3.127E-07
LAMBDA INF = .1350 IN.	118.4	1.613E-06	3.008E-07
RESERVOIR DENSITY =	126.3	1.482E-06	2.542E-07
8.480E 18/CCM	134.2	1.271E-06	2.738E-07
	142.1	1.100E-06	2.670E-07
CENTERLINE AXIAL	150.0	9.715E-07	2.764E-07

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 19	-10.0	1.290E-05	1.219E-06
5/20/70	-2.9	1.843E-05	1.097E-06
CASE 4	1.5	1.835E-05	1.055E-06
	5.4	1.628E-05	8.323E-07
P0 = 3.0 TORR	9.2	1.301E-05	1.206E-06
T0 = 280 DEG K	11.2	1.134E-05	1.380E-06
NITROGEN	12.3	1.057E-05	2.186E-06
M INF = 7.80	13.1	1.004E-05	2.327E-06
	14.6	1.029E-05	4.946E-06
PC = 10.00 PSI	15.0	1.000E-05	3.924E-06
TC = 588 DEG K	16.2	8.551E-06	5.782E-06
CARBON DIOXIDE	16.9	7.020E-06	7.743E-06
ALPHA = 0 DEG	17.7	5.562E-06	1.137E-05
A/A* = 26.3	18.9	2.332E-06	1.894E-05
RE = .1243 IN.	20.8	6.350E-07	1.793E-05
PC/Q INF =336008	28.5	5.366E-08	1.354E-05
LAMBDA INF = .1350 IN.	36.2	2.944E-08	9.635E-06
RESERVOIR DENSITY =	43.9	2.790E-08	9.599E-06
8.480E 18/CCM	51.6	2.172E-08	9.444E-06
4.0 IN. RADIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 20	-10.8	5.407E-06	7.556E-07
5/20/70	-3.6	5.888E-06	6.319E-07
CASE 4	4.6	5.795E-06	5.893E-07
	12.3	4.904E-06	6.294E-07
P0 = 3.0 TORR	14.6	4.748E-06	8.823E-07
T0 = 280 DEG K	16.9	4.942E-06	1.127E-06
NITROGEN	20.0	6.858E-06	2.600E-06
M INF = 7.80	21.6	7.100E-06	4.502E-06
	23.1	6.471E-06	6.347E-06
PC = 10.00 PSI	24.7	5.197E-06	8.586E-06
TC = 588 DEG K	27.7	2.863E-06	1.342E-05
CARBON DIOXIDE	29.3	1.986E-06	1.673E-05
ALPHA = 0 DEG	33.1	5.155E-07	2.695E-05
A/A* = 26.3	35.4	1.579E-07	2.955E-05
RE = .1243 IN.	37.8	3.879E-08	2.568E-05
PC/Q INF =33600.	43.1	7.152E-09	1.127E-05
LAMBDA INF = .1350 IN.	50.8	7.841E-10	1.056E-05
RESERVOIR DENSITY =			
8.480E 18/CCM			

8.0 IN. RADIAL

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 21	-11.2	2.450E-06	6.099E-07
5/20/70	-4.0	2.494E-06	5.538E-07
CASE 4	4.2	2.556E-06	5.175E-07
	11.9	2.348E-06	5.530E-07
P0 = 3.0 TORR	18.1	2.547E-06	7.078E-07
T0 = 280 DEG K	21.2	3.662E-06	1.166E-06
NITROGEN	22.7	4.632E-06	1.793E-06
M INF = 7.80	24.3	5.078E-06	2.331E-06
	25.8	5.155E-06	3.295E-06
PC = 10.00 PSI	27.3	4.737E-06	4.479E-06
TC = 588 DEG K	28.9	4.189E-06	5.681E-06
CARBON DIOXIDE	32.0	2.988E-06	8.799E-06
ALPHA = 0 DEG	35.1	1.843E-06	1.161E-05
A/A* = 26.3	42.8	1.843E-07	2.146E-05
RE = .1243 IN.	44.3	8.698E-08	2.599E-05
PC/Q INF =33600.	45.8	3.976E-08	2.633E-05
LAMBDA INF = .1350 IN.	48.2	-6.402E-09	2.447E-05
RESERVOIR DENSITY =	50.5	2.167E-09	1.553E-05
8.480E 18/CCM	58.2	-1.054E-09	1.033E-05

12.0 IN. RADIAL

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 22	3.9	6.752E-05	6.355E-07
5/20/70	7.9	6.339E-05	3.261E-07
CASE 4	15.8	4.650E-05	2.296E-07
	23.7	2.827E-05	3.187E-07
P0 = 3.0 TORR	31.6	1.904E-05	1.080E-07
T0 = 280 DEG K	39.5	1.331E-05	4.330E-08
NITROGEN	47.4	8.892E-06	1.284E-07
M INF = 7.80	55.2	6.861E-06	4.309E-08
	63.1	5.369E-06	1.247E-07
PC = 64.50 PSI	71.0	4.199E-06	9.553E-08
TC = 588 DEG K	78.9	3.240E-06	1.096E-07
CARBON DIOXIDE	86.8	2.639E-06	1.547E-07
ALPHA = 0 DEG	94.7	2.211E-06	7.873E-08
A/A* = 26.3	102.6	1.872E-06	1.105E-07
RE = .1243 IN.	110.5	1.598E-06	1.055E-07
PC/Q INF = 216,500	118.4	1.414E-06	8.289E-08
LAMBDA INF = .1350 IN.	126.3	1.207E-06	8.051E-08
RESERVOIR DENSITY =	134.2	1.066E-06	6.994E-08
5.470E 19/CCM	142.1	9.203E-07	5.899E-08
	150.0	8.142E-07	6.645E-08
CENTERLINE AXIAL	157.9	7.351E-07	6.383E-08
	165.7	6.687E-07	5.587E-08

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 23	-10.0	1.055E-05	7.844E-08
5/20/70	-2.9	1.671E-05	1.676E-07
CASE 4	1.5	1.673E-05	1.635E-07
	5.4	1.463E-05	9.404E-08
P0 = 3.0 TORR	13.1	7.336E-06	1.199E-07
T0 = 280 DEG K	17.7	4.116E-06	1.861E-07
NITROGEN	20.8	3.101E-06	2.491E-07
M INF = 7.80	22.3	3.340E-06	4.692E-07
	23.9	3.801E-06	1.181E-06
PC = 64.50 PSI	26.2	1.800E-06	3.284E-06
TC = 588 DEG K	28.5	8.336E-07	5.127E-06
CARBON DIOXIDE	30.8	2.434E-07	6.089E-06
ALPHA = 0 DEG	33.1	6.072E-08	5.247E-06
A/A* = 26.3	36.2	2.485E-08	2.267E-06
RE = .1243 IN.	43.9	1.499E-08	1.750E-06
PC/Q INF = 216,500	51.6	1.256E-08	1.680E-06
LAMBDA INF = .1350 IN.	55.5	1.221E-08	1.677E-06
RESERVOIR DENSITY =			
5.470E 19/CCM			
4.0 IN. RADIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 24	-10.8	4.587E-06	9.899E-08
5/20/70	-3.6	5.130E-06	1.103E-07
CASE 4	4.6	5.086E-06	1.315E-07
	12.3	4.251E-06	1.483E-07
P0 = 3.0 TORR	20.0	2.900E-06	1.790E-07
T0 = 280 DEG K	27.7	1.932E-06	1.552E-07
NITROGEN	30.8	1.698E-06	1.910E-07
M INF = 7.80	32.4	2.018E-06	2.451E-07
	33.1	2.411E-06	3.094E-07
PC = 64.50 PSI	35.4	3.239E-06	1.052E-06
TC = 588 DEG K	37.0	2.230E-06	1.773E-06
CARBON DIOXIDE	38.5	1.518E-06	2.534E-06
ALPHA = 0 DEG	40.8	8.599E-07	3.881E-06
A/A* = 26.3	43.1	3.750E-07	5.312E-06
RE = .1243 IN.	47.0	6.357E-08	5.963E-06
PC/Q INF =216,500	49.3	1.675E-08	5.384E-06
LAMBDA INF = .1350 IN.	50.8	1.010E-08	3.503E-06
RESERVOIR DENSITY =	52.4	7.425E-09	2.385E-06
5.470E 19/CCM	54.7	7.690E-09	1.853E-06
	58.6	4.663E-09	1.736E-06
8.0 IN. RADIAL	66.3	4.727E-09	1.736E-06
	74.0	4.914E-09	1.775E-06

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 25	-10.8	2.183E-06	9.227E-08
5/20/70	-3.6	2.198E-06	1.053E-07
CASE 4	4.6	2.149E-06	1.145E-07
	12.3	2.089E-06	9.236E-08
P0 = 3.0 TORR	20.0	1.840E-06	8.195E-08
T0 = 280 DEG K	27.7	1.465E-06	8.286E-08
NITROGEN	35.4	1.123E-06	1.061E-07
M INF = 7.80	37.8	1.071E-06	9.162E-08
	40.1	1.031E-06	1.075E-07
PC = 64.50 PSI	43.1	1.778E-06	1.787E-07
TC = 588 DEG K	44.7	2.432E-06	4.267E-07
CARBON DIOXIDE	46.2	2.397E-06	7.146E-07
ALPHA = 0 DEG	47.0	2.166E-06	9.373E-07
A/A* = 26.3	49.3	1.530E-06	1.472E-06
RE = .1243 IN.	50.8	1.193E-06	1.858E-06
PC/Q INF =216,500	58.6	1.678E-07	4.597E-06
LAMBDA INF = .1350 IN.	62.4	4.109E-08	5.263E-06
RESERVOIR DENSITY =	66.3	1.641E-09	4.461E-06
5.470E 19/CCM	70.1	4.172E-09	1.929E-06
	74.0	1.248E-09	1.594E-06
12.0 IN. RADIAL	81.7	8.583E-10	1.603E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 26	3.9	1.095E-04	4.247E-06
5/20/70	7.9	8.733E-05	3.362E-06
CASE 4	15.8	5.482E-05	2.064E-06
	23.7	3.027E-05	1.940E-06
PO = 7.0 TORR	39.5	1.254E-05	1.060E-06
TO = 280 DEG K	55.2	6.521E-06	8.298E-07
NITROGEN	71.0	3.952E-06	6.944E-07
M INF = 7.90	86.8	2.732E-06	5.800E-07
	102.6	1.886E-06	4.966E-07
PC = 22.40 PSI	118.4	1.423E-06	4.162E-07
TC = 588 DEG K	134.2	1.071E-06	3.747E-07
CARBON DIOXIDE	150.0	8.231E-07	3.592E-07
ALPHA = 0 DEG			
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF =34300.			
LAMBDA INF = .0591 IN.			
RESERVOIR DENSITY =			
1.900E 19/CCM			

CENTERLINE AXIAL

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 27	-10.0	1.029E-05	1.459E-06
5/20/70	-2.9	1.658E-05	1.159E-06
CASE 4	1.5	1.670E-05	1.269E-06
	5.4	1.434E-05	1.157E-06
PO = 7.0 TORR	9.2	1.058E-05	1.388E-06
TO = 280 DEG K	13.1	7.616E-06	1.902E-06
NITROGEN	13.9	8.003E-06	2.302E-06
M INF = 7.90	15.0	1.037E-05	3.831E-06
	16.9	8.325E-06	9.513E-06
PC = 22.40 PSI	18.9	3.945E-06	1.848E-05
TC = 588 DEG K	20.8	1.419E-06	3.013E-05
CARBON DIOXIDE	24.7	9.661E-08	2.506E-05
ALPHA = 0 DEG	28.5	4.957E-08	1.180E-05
A/A* = 26.3	36.2	3.573E-08	1.148E-05
RE = .1243 IN.	43.9	3.008E-08	1.108E-05
PC/Q INF =34300.	51.6	2.501E-08	1.127E-05
LAMBDA INF = .0591 IN.	59.3	1.795E-08	1.105E-05
RESERVOIR DENSITY =			
1.900E 19/CCM			

4.0 IN. RADIAL

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 28	-10.0	4.524E-06	7.333E-07
5/20/70	-2.9	4.895E-06	7.501E-07
CASE 4	5.4	4.763E-06	7.785E-07
	13.1	4.183E-06	7.720E-07
P0 = 7.0 TORR	16.9	3.750E-06	9.256E-07
T0 = 280 DEG K	18.9	4.156E-06	1.104E-06
NITROGEN	20.8	7.279E-06	1.831E-06
M INF = 7.90	22.7	7.962E-06	4.330E-06
	24.7	5.552E-06	7.582E-06
PC = 22.40 PSI	26.6	3.554E-06	1.218E-05
TC = 588 DEG K	28.5	1.743E-06	1.932E-05
CARBON DIOXIDE	30.4	6.252E-07	2.537E-05
ALPHA = 0 DEG	32.4	1.638E-07	3.039E-05
A/A* = 26.3	36.2	4.581E-08	2.160E-05
RE = .1243 IN.	38.1	3.143E-08	1.179E-05
PC/Q INF =34300:	40.1	2.650E-08	1.101E-05
LAMBDA INF = .0591 IN.	43.9	1.646E-08	1.090E-05
RESERVOIR DENSITY =	51.6	1.605E-08	1.035E-05
1.900E 19/CCM	59.3	1.136E-08	1.047E-05
	67.0	8.572E-09	1.054E-05
8.0 IN. RADIAL	74.7	6.210E-09	1.101E-05
	82.4	4.211E-09	1.144E-05

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 29	-10.8	2.187E-06	5.673E-07
5/20/70	-3.6	2.288E-06	5.217E-07
CASE 4	4.6	2.207E-06	5.448E-07
	12.3	2.166E-06	5.332E-07
P0 = 7.0 TORR	20.0	2.215E-06	6.359E-07
T0 = 280 DEG K	22.0	3.033E-06	7.467E-07
NITROGEN	23.9	5.369E-06	1.170E-06
M INF = 7.90	25.8	6.238E-06	2.049E-06
	27.7	5.293E-06	3.571E-06
PC = 22.40 PSI	30.0	3.865E-06	5.957E-06
TC = 588 DEG K	32.4	2.597E-06	9.642E-06
CARBON DIOXIDE	35.4	1.116E-06	1.550E-05
ALPHA = 0 DEG	37.8	4.073E-07	1.933E-05
A/A* = 26.3	40.8	8.115E-08	2.336E-05
RE = .1243 IN.	43.1	5.233E-08	2.570E-05
PC/Q INF =34300:	45.5	3.072E-08	2.640E-05
LAMBDA INF = .0591 IN.	47.0	2.594E-08	2.035E-05
RESERVOIR DENSITY =	50.8	1.766E-08	9.816E-06
1.900E 19/CCM	58.6	9.337E-09	9.910E-06
	66.3	6.512E-09	9.878E-06
12.0 IN. RADIAL	74.0	1.078E-08	9.943E-06
	81.7	3.287E-09	1.046E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 30	3.9	3.841E-05	3.714E-07
5/21/70	7.9	3.679E-05	1.982E-07
CASE 4	15.8	3.081E-05	-1.071E-07
	23.7	2.293E-05	-6.852E-08
PO = 7.0 TORR	39.5	1.194E-05	-4.383E-09
TO = 280 DEG K	55.2	6.702E-06	2.813E-08
NITROGEN	71.0	4.140E-06	2.962E-08
M INF = 7.90	86.8	2.738E-06	4.125E-08
	102.6	1.869E-06	6.234E-09
PC =150.00 PSI	118.4	1.400E-06	4.826E-08
TC = 644 DEG K	134.2	1.068E-06	3.736E-08
CARBON DIOXIDE	150.0	8.178E-07	4.595E-08
ALPHA = 0 DEG	165.7	6.673E-07	4.864E-08
A/A* = 26.3	173.6	6.030E-07	4.921E-08
RE = .1243 IN.			
PC/Q INF =228,000			
LAMBDA INF = .0591 IN.			
RESERVOIR DENSITY =			
1.160E 20/CCM			
CENTERLINE AXIAL			

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 31	-10.0	8.863E-06	2.455E-07
5/21/70	-2.9	1.440E-05	4.306E-07
CASE 4	1.5	1.578E-05	3.558E-08
	5.4	1.277E-05	3.167E-07
PO = 7.0 TORR	13.1	6.629E-06	2.641E-07
TO = 280 DEG K	14.6	5.454E-06	3.064E-07
NITROGEN	16.9	4.139E-06	2.873E-07
M INF = 7.90	20.8	2.699E-06	3.358E-0[illegible]
	22.3	3.195E-06	3.776E-07
PC =150.00 PSI	22.7	3.316E-06	4.813E-07
TC = 644 DEG K	23.9	3.981E-06	7.346E-07
CARBON DIOXIDE	24.7	2.992E-06	1.541E-06
ALPHA = 0 DEG	26.6	1.300E-06	4.179E-06
A/A* = 26.3	28.5	2.905E-07	8.542E-06
RE = .1243 IN.	29.3	1.301E-07	9.190E-06
PC/Q INF =228,000	30.4	3.285E-08	8.563E-06
LAMBDA INF = .0591 IN.	32.4	2.453E-08	3.450E-06
RESERVOIR DENSITY =	34.3	2.006E-08	2.226E-06
1.160E 20/CCM	36.2	1.732E-08	2.052E-06
	43.9	1.346E-08	2.014E-06
4.0 IN. RADIAL	51.6	1.125E-08	2.028E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/R_D	FREE STREAM N/R_D
PAGE 32	-10.0	3.955E-06	1.343E-07
5/21/70	-2.9	4.425E-06	1.097E-07
CASE 4	5.4	4.294E-06	1.291E-07
	13.1	3.693E-06	1.273E-07
PO = 7.0 TORR	20.8	2.686E-06	1.238E-07
TO = 280 DEG K	28.5	1.822E-06	1.253E-07
NITROGEN	30.4	1.609E-06	1.280E-07
M INF = 7.90	30.8	1.557E-06	1.430E-07
	32.4	1.446E-06	1.817E-07
PC =150.00 PSI	34.7	1.816E-06	1.390E-07
TC = 644 DEG K	36.2	3.495E-06	4.021E-07
CARBON DIOXIDE	38.1	3.000E-06	1.314E-06
ALPHA = 0 DEG	40.1	1.632E-06	2.492E-06
A/A* = 26.3	43.9	3.869E-07	5.594E-06
RE = .1243 IN.	47.8	9.134E-08	7.245E-06
PC/Q INF =228,000	51.6	9.747E-09	5.805E-06
LAMBDA INF = .0591 IN.	53.5	1.463E-08	2.322E-06
RESERVOIR DENSITY =	55.5	9.226E-09	2.032E-06
1.160E 20/CCM	57.4	8.076E-09	1.910E-06
	59.3	7.678E-09	1.909E-06
8.0 IN. RADIAL	67.0	7.770E-09	1.885E-06
	70.9	8.124E-09	1.931E-06

	NORMALIZED DISTANCE	PLUME N/R_D	FREE STREAM N/R_D
PAGE 33	-11.6	1.859E-06	9.406E-08
5/21/70	-4.4	1.952E-06	8.972E-08
CASE 4	3.9	1.991E-06	7.251E-08
	11.6	1.890E-06	5.593E-08
PO = 7.0 TORR	19.3	1.600E-06	8.616E-08
TO = 280 DEG K	27.0	1.305E-06	8.663E-08
NITROGEN	30.8	1.167E-06	8.942E-08
M INF = 7.90	34.7	1.035E-06	8.646E-08
	38.5	9.181E-07	9.090E-08
PC =150.00 PSI	42.4	1.014E-06	1.065E-07
TC = 644 DEG K	44.3	2.261E-06	1.650E-07
CARBON DIOXIDE	46.2	2.743E-06	4.041E-07
ALPHA = 0 DEG	48.5	1.870E-06	1.197E-06
A/A* = 26.3	50.1	1.336E-06	1.776E-06
RE = .1243 IN.	52.0	7.821E-07	2.572E-06
PC/Q INF =228,000	53.9	4.462E-07	3.453E-06
LAMBDA INF = .0591 IN.	55.9	1.898E-07	4.321E-06
RESERVOIR DENSITY =	57.8	6.820E-08	5.068E-06
1.160E 20/CCM	61.6	3.817E-09	5.818E-06
	65.5	-9.980E-09	5.951E-06
12.0 IN. RADIAL	67.4	8.001E-09	2.571E-06
	69.3	1.187E-08	1.817E-06
	71.3	1.272E-08	1.701E-06
	73.2	1.364E-08	1.625E-06
	80.9	1.441E-08	1.742E-06
	88.6	1.521E-08	1.775E-06
	96.3	1.788E-08	1.839E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 34	3.9	1.681E-04	.000E 00
5/25/70	7.9	2.361E-04	.000E 00
CASE 5	15.8	1.838E-04	.000E 00
	23.7	1.176E-04	.000E 00
P0 = 3.0 TORR	31.6	7.679E-05	.000E 00
T0 = 280 DEG K	39.5	5.187E-05	.000E 00
NITROGEN	55.2	2.601E-05	.000E 00
M INF = 7.80	71.0	1.561E-05	.000E 00
	86.8	9.961E-06	.000E 00
PC = 10.00 PSI	102.6	6.878E-06	.000E 00
TC = 588 DEG K	118.4	4.892E-06	.000E 00
ARGON	134.2	3.906E-06	.000E 00
ALPHA = 0 DEG	150.0	3.558E-06	.000E 00
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF =33600*			
LAMBDA INF = .1350 IN.			
RESERVOIR DENSITY = 8.480E 18/CCM			
CENTERLINE AXIAL			

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 35	-9.2	2.220E-05	2.105E-06
5/25/70	-5.4	4.801E-05	-6.759E-07
CASE 5	-2.1	7.346E-05	-8.403E-07
	.0	6.939E-05	-9.119E-07
P0 = 3.0 TORR	1.5	7.036E-05	-8.848E-07
T0 = 280 DEG K	3.1	6.607E-05	-8.957E-07
NITROGEN	4.6	5.494E-05	-8.068E-07
M INF = 7.80	6.2	4.491E-05	-7.185E-07
	6.9	3.787E-05	-6.685E-07
PC = 10.00 PSI	7.7	3.339E-05	-3.653E-07
TC = 588 DEG K	8.5	3.144E-05	9.898E-08
ARGON	9.2	2.698E-05	9.062E-07
ALPHA = 0 DEG	10.0	2.169E-05	1.842E-06
A/A* = 26.3	11.6	1.259E-05	5.153E-06
RE = .1243 IN.	13.9	5.673E-06	9.838E-06
PC/Q INF =33600*	16.2	2.884E-06	1.430E-05
LAMBDA INF = .1350 IN.	19.3	1.236E-06	2.066E-05
RESERVOIR DENSITY =	21.6	4.364E-07	2.562E-05
8.480E 18/CCM	25.4	2.077E-07	2.623E-05
	27.7	3.316E-07	1.996E-05
4.0 IN. RADIAL	29.3	3.202E-07	1.686E-05
	37.0	1.950E-07	1.369E-05
	44.7	-7.239E-08	1.355E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 36	-16.9	6.608E-06	5.781E-06
5/25/70	-9.2	1.797E-05	-8.709E-07
CASE 5	-2.1	2.151E-05	-1.539E-06
	-1.5	2.339E-05	-1.719E-06
PO = 3.0 TORR	2.3	2.184E-05	-1.568E-06
T0 = 280 DEG K	6.2	2.126E-05	-1.479E-06
NITROGEN	10.0	1.669E-05	-8.984E-07
M INF = 7.80	10.8	1.605E-05	-7.867E-07
	12.3	1.565E-05	-5.077E-07
PC = 10.00 PSI	13.9	1.816E-05	8.096E-08
TC = 588 DEG K	15.4	1.683E-05	1.912E-06
ARGON	17.7	8.936E-06	5.657E-06
ALPHA = 0 DEG	21.6	3.717E-06	1.043E-05
A/A* = 26.3	25.4	1.266E-06	1.644E-05
RE = .1243 IN.	29.3	4.290E-07	2.464E-05
PC/W INF =33600.	31.6	2.188E-07	2.765E-05
LAMBDA INF = .1350 IN.	33.9	2.377E-07	2.898E-05
RESERVOIR DENSITY =	37.0	2.556E-07	2.307E-05
8.480E 18/CCM	40.8	1.595E-07	1.520E-05
	44.7	-6.759E-08	1.434E-05
8.0 IN. RADIAL	52.4	-1.090E-07	1.360E-05

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 37	-9.2	8.526E-06	-1.792E-07
5/25/70	-2.1	8.811E-06	-3.296E-07
CASE 5	2.3	8.569E-06	-3.154E-07
	6.2	8.559E-06	-3.302E-07
PO = 3.0 TORR	12.3	7.999E-06	-1.471E-07
T0 = 280 DEG K	13.9	8.099E-06	-1.182E-07
NITROGEN	15.4	1.040E-05	6.988E-08
M INF = 7.80	16.9	1.171E-05	4.226E-07
	18.5	1.139E-05	1.789E-06
PC = 10.00 PSI	20.0	8.728E-06	3.112E-06
TC = 588 DEG K	21.6	6.796E-06	4.695E-06
ARGON	25.4	2.987E-06	8.065E-06
ALPHA = 0 DEG	27.7	1.989E-06	9.769E-06
A/A* = 26.3	29.3	1.543E-06	1.142E-05
RE = .1243 IN.	33.1	6.589E-07	1.576E-05
PC/W INF =33600.	37.0	2.909E-07	2.097E-05
LAMBDA INF = .1350 IN.	39.3	9.420E-08	2.297E-05
RESERVOIR DENSITY =	42.4	-1.512E-07	2.510E-05
8.480E 18/CCM	44.7	1.133E-07	2.382E-05
	46.2	1.205E-07	1.939E-05
12.0 IN. RADIAL	48.5	2.338E-07	1.423E-05
	52.4	1.192E-08	1.234E-05
	60.1	-2.630E-07	1.246E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 38	3.9	2.131E-04	6.980E-07
5/25/70	7.9	2.151E-04	4.491E-07
CASE 5	15.8	1.400E-04	3.346E-07
	23.7	8.827E-05	1.770E-07
PO = 3.0 TORR	39.5	3.770E-05	-5.340E-08
TO = 280 DEG K	55.2	1.924E-05	-1.455E-07
NITROGEN	71.0	1.111E-05	-1.977E-07
M INF = 7.80	86.8	6.898E-06	-2.311E-07
	102.6	4.316E-06	-2.434E-07
PC = 64.50 PSI	118.4	2.847E-06	-2.267E-07
TC = 588 DEG K	134.2	2.126E-06	-1.585E-07
ARGON	150.0	1.644E-06	-1.109E-07
ALPHA = 0 DEG			
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF = 216,500			
LAMBDA INF = .1350 IN.			
RESERVOIR DENSITY = 5.470E 19/CCM			
CENTERLINE AXIAL			

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 39	-9.2	2.212E-05	-7.346E-09
5/25/70	-5.4	4.391E-05	3.250E-08
CASE 5	-2.1	5.347E-05	1.145E-08
	.0	5.636E-05	2.545E-08
PO = 3.0 TORR	2.3	5.304E-05	8.984E-09
TO = 280 DEG K	6.2	3.829E-05	-2.682E-08
NITROGEN	10.8	2.047E-05	-2.149E-08
M INF = 7.80	13.9	1.230E-05	1.188E-07
	14.6	1.223E-05	1.789E-07
PC = 64.50 PSI	15.4	1.309E-05	6.630E-07
TC = 588 DEG K	16.2	1.024E-05	1.283E-06
ARGON	16.9	5.964E-06	1.930E-06
ALPHA = 0 DEG	17.7	3.449E-06	2.415E-06
A/A* = 26.3	19.3	1.542E-06	3.229E-06
RE = .1243 IN.	21.6	6.089E-07	4.027E-06
PC/Q INF = 216,500	23.1	4.242E-07	4.570E-06
LAMBDA INF = .1350 IN.	25.4	2.543E-07	5.286E-06
RESERVOIR DENSITY =	27.7	2.330E-07	4.236E-06
5.470E 19/CCM	29.3	1.762E-07	3.363E-06
	33.1	9.739E-08	2.460E-06
4.0 IN. RADIAL	37.0	6.616E-08	2.422E-06
	44.7	7.468E-08	2.138E-06
	52.4	7.543E-08	2.255E-06
	60.1	7.652E-08	2.200E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 40	-9.2	1.243E-05	-1.538E-07
5/25/70	-2.1	1.514E-05	-1.634E-07
CASE 5	-1.5	1.486E-05	-1.638E-07
	2.3	1.454E-05	-1.725E-07
P0 = 3.0 TORR	6.2	1.376E-05	-1.694E-07
T0 = 280 DEG K	10.0	1.231E-05	-1.765E-07
NITROGEN	13.9	1.034E-05	-1.648E-07
M INF = 7.80	14.6	8.924E-06	-1.846E-07
	17.7	7.656E-06	-1.662E-07
PC = 64.50 PSI	21.6	5.881E-06	-1.220E-07
TC = 588 DEG K	23.9	5.260E-06	-6.660E-08
ARGON	24.7	5.975E-06	-3.179E-08
ALPHA = 0 DEG	25.4	7.909E-06	1.277E-07
A/A* = 26.3	26.2	8.569E-06	3.641E-07
RE = .1243 IN.	27.0	7.434E-06	1.023E-06
PC/Q INF = 216,500	27.7	6.639E-06	1.109E-06
LAMBDA INF = .1350 IN.	29.3	2.910E-06	2.893E-06
RESERVOIR DENSITY =	32.4	9.650E-07	4.863E-06
5.470E 19/CCM	34.7	3.615E-07	6.457E-06
	37.0	1.137E-07	7.376E-06
8.0 IN. RADIAL	38.5	9.114E-08	6.660E-06
	40.8	2.058E-07	3.928E-06
	43.1	1.645E-07	2.935E-06
	44.7	1.113E-07	2.527E-06
	52.4	5.328E-08	2.420E-06
	60.1	4.379E-08	2.384E-06
	67.8	4.252E-08	2.382E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 41	-10.0	4.962E-06	-2.288E-07
5/25/70	-2.9	5.407E-06	-2.288E-07
CASE 5	5.4	5.286E-06	-2.375E-07
	13.1	4.721E-06	-2.343E-07
P0 = 3.0 TORR	20.8	3.488E-06	-2.724E-07
T0 = 280 DEG K	24.7	3.116E-06	-2.271E-07
NITROGEN	28.5	2.654E-06	-1.654E-07
M INF = 7.80	29.3	2.505E-06	-1.395E-07
	30.8	2.913E-06	-1.643E-07
PC = 64.50 PSI	32.4	4.842E-06	-9.982E-08
TC = 588 DEG K	33.9	5.740E-06	2.899E-07
ARGON	34.7	5.429E-06	4.478E-07
ALPHA = 0 DEG	36.2	3.504E-06	1.239E-06
A/A* = 26.3	38.5	1.990E-06	2.355E-06
RE = .1243 IN.	41.6	9.281E-07	3.784E-06
PC/Q INF = 216,500	43.9	4.395E-07	4.583E-06
LAMBDA INF = .1350 IN.	45.5	3.427E-07	4.994E-06
RESERVOIR DENSITY =	47.8	2.133E-07	5.585E-06
5.470E 19/CCM	50.1	1.403E-07	5.642E-06
	51.6	1.730E-07	4.136E-06
12.0 IN. RADIAL	55.5	1.704E-07	2.247E-06
	59.3	1.094E-07	1.991E-06
	67.0	5.824E-08	2.004E-06

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 42	-9.2	1.135E-05	3.144E-08
5/26/70	-2.1	1.286E-05	2.550E-08
CASE 5	6.2	1.208E-05	1.718E-08
	13.9	9.364E-06	2.516E-08
P0 = 7.0 TORR	21.6	6.167E-06	6.673E-08
T0 = 280 DEG K	23.9	5.383E-06	1.091E-07
NITROGEN	25.4	5.010E-06	1.513E-07
M INF = 7.90	26.2	5.288E-06	1.817E-07
	27.0	7.307E-06	2.628E-07
PC =150.00 PSI	28.1	9.459E-06	7.327E-07
TC = 644 DEG K	29.3	6.333E-06	2.183E-06
ARGON	31.6	2.121E-06	5.257E-06
ALPHA = 0 DEG	34.7	4.702E-07	9.010E-06
A/A* = 26.3	37.0	1.968E-07	9.894E-06
RE = .1243 IN.	39.3	2.952E-07	6.135E-06
PC/Q INF =28000.	44.7	1.039E-07	2.459E-06
LAMBDA INF = .0591 IN.	52.4	7.584E-08	2.417E-06
RESERVOIR DENSITY =	60.1	6.394E-08	2.437E-06
1.160E 20/CCM			

8.0 IN. RADIAL

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 43	-9.2	9.022E-06	-1.464E-07
5/26/70	-2.1	1.011E-05	-1.499E-07
CASE 5	6.2	9.454E-06	-1.560E-07
	13.9	8.170E-06	-1.561E-07
P0 = 3.0 TORR	21.6	5.195E-06	-1.320E-07
T0 = 280 DEG K	24.7	4.250E-06	-1.023E-07
NITROGEN	27.0	5.457E-06	-2.195E-08
M INF = 7.80	28.5	8.168E-06	5.346E-07
	29.3	8.850E-06	7.137E-07
PC = 64.50 PSI	30.0	4.067E-06	1.901E-06
TC = 477 DEG K	31.2	2.956E-06	2.623E-06
ARGON	33.1	1.745E-06	3.430E-06
ALPHA = 0 DEG	37.0	3.279E-07	5.729E-06
A/A* = 26.3	37.8	1.990E-07	6.070E-06
RE = .1243 IN.	39.3	1.083E-07	5.860E-06
PC/Q INF = 216,500	40.8	1.649E-07	4.169E-06
LAMBDA INF = .1350 IN.	44.7	1.245E-07	2.047E-06
RESERVOIR DENSITY =	52.4	3.787E-08	1.785E-06
6.740E 19/CCM	60.1	5.320E-08	1.713E-06

8.0 IN. RADIAL

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 44	3.9	3.047E-04	5.068E-07
5/26/70	7.9	2.476E-04	2.576E-07
CASE 5	15.8	1.356E-04	2.268E-07
	23.7	7.413E-05	1.374E-07
P0 = 3.0 TORR	39.5	2.827E-05	-5.998E-08
T0 = 280 DEG K	55.2	1.433E-05	-1.292E-07
NITROGEN	71.0	8.288E-06	-1.626E-07
M INF = 7.80	86.8	4.946E-06	-1.880E-07
	102.6	3.232E-06	-1.966E-07
PC = 64.50 PSI	118.4	2.283E-06	-1.794E-07
TC = 477 DEG K	134.2	1.609E-06	-1.141E-07
ARGON	150.0	1.274E-06	-8.026E-08
ALPHA = 0 DEG			
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF = 216,500			
LAMBDA INF = .1350 IN.			
RESERVOIR DENSITY =			
6.740E 19/CCM			

CENTERLINE AXIAL

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 45	3.9	2.178E-04	1.013E-06
5/26/70	7.9	1.427E-04	5.853E-07
CASE 5	15.8	6.988E-05	2.866E-07
	23.7	3.721E-05	1.211E-07
PO = 3.0 TORR	39.5	1.487E-05	-3.045E-08
TO = 280 DEG K	55.2	7.895E-06	-7.461E-08
NITROGEN	71.0	4.670E-06	-9.614E-08
M INF = 7.80	86.8	2.949E-06	-1.075E-07
	102.6	1.957E-06	-1.185E-07
PC = 64.50 PSI	118.4	1.295E-06	-1.068E-07
TC = 280 DEG K	134.2	9.691E-07	-7.352E-08
ARGON	150.0	7.755E-07	-5.408E-08
ALPHA = 0 DEG			
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF = 216,500			
LAMBDA INF = .1350 IN.			
RESERVOIR DENSITY = 1.160E 20/CCM			
CENTERLINE AXIAL			

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 46	-9.2	4.809E-06	-8.827E-08
5/26/70	-2.1	5.699E-06	-8.980E-08
CASE 5	6.2	5.155E-06	-9.356E-08
	13.9	4.491E-06	-9.525E-08
PO = 3.0 TORR	21.6	3.384E-06	-9.302E-08
TO = 280 DEG K	25.4	2.811E-06	-8.956E-08
NITROGEN	29.3	2.436E-06	-7.795E-08
M INF = 7.80	30.8	2.347E-06	-6.449E-08
	32.4	3.755E-06	-4.360E-08
PC = 64.50 PSI	33.9	6.974E-06	1.178E-07
TC = 280 DEG K	35.4	5.393E-06	8.478E-07
ARGON	37.0	2.717E-06	1.683E-06
ALPHA = 0 DEG	39.3	1.112E-06	2.395E-06
A/A* = 26.3	42.4	2.731E-07	3.362E-06
RE = .1243 IN.	44.7	9.161E-08	3.558E-06
PC/Q INF = 216,500	47.0	4.776E-08	3.240E-06
LAMBDA INF = .1350 IN.	48.5	8.797E-08	2.321E-06
RESERVOIR DENSITY =	52.4	5.099E-08	1.149E-06
1.160E 20/CCM	60.1	2.935E-08	1.006E-06
8.0 IN. RADIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 47	7.9	2.757E-04	4.693E-07
5/26/70	23.7	9.821E-05	6.919E-08
CASE 5	39.5	4.017E-05	-2.271E-07
	55.2	2.038E-05	-3.099E-07
PO = 50 TORR	86.8	7.396E-06	-3.398E-07
TO = 0 DEG K			
[redacted]			
M INF = .00			
PC = 64.50 PSI			
TC = 588 DEG K			
ARGON			
ALPHA = 0 DEG			
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF = 0%			
LAMBDA INF = .0000 IN.			
RESERVOIR DENSITY = 5.470E 19/CCM			
CENTERLINE AXIAL			

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 48	-2.9	.000E 00	1.599E-03
5/27/70	5.4	.000E 00	1.643E-03
CASE 4	11.9	.000E 00	1.724E-03
	20.8	.000E 00	1.817E-03
PO = 140 TORR	28.5	.000E 00	1.817E-03
TO = 866 DEG K	36.2	.000E 00	1.802E-03
NITROGEN	43.9	.000E 00	1.774E-03
M INF = 6.95	51.6	.000E 00	1.75[illegible]E-03
	59.3	.000E 00	1.715E-03
PC = .00 PSI	67.0	.000E 00	1.715E-03
TC = 0 DEG K	74.7	.000E 00	1.755E-03
[redacted]	82.4	.000E 00	1.781E-03
ALPHA = 0 DEG	90.1	.000E 00	1.865E-03
A/A* = .0	97.8	.000E 00	1.916E-03
RE = .0000 IN.	105.5	.000E 00	1.992E-03
PC/Q INF = 0%	109.4	.000E 00	1.953E-03
LAMBDA INF = 1.3400 IN.			
RESERVOIR DENSITY = 1.110E 16/CCM			
8.0 IN. RADIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 49	-10.8	4.120E-06	1.513E-07
5/27/70	-3.6	4.665E-06	1.003E-07
CASE 4	.8	4.893E-06	6.441E-08
	4.6	4.456E-06	1.486E-07
PO = 210 TORR	8.5	4.486E-06	6.068E-08
TO = 866 DEG K	12.3	3.779E-06	1.396E-07
NITROGEN	20.0	2.672E-06	1.219E-07
M INF = 7.40	23.9	2.219E-06	7.842E-08
	25.4	2.034E-06	8.601E-08
PC = 49.60 PSI	27.7	2.381E-06	1.868E-07
TC = 588 DEG K	28.5	2.621E-06	2.727E-07
CARBON DIOXIDE	30.0	2.964E-06	6.401E-07
ALPHA = 0 DEG	31.6	2.362E-06	8.902E-07
A/A* = 26.3	33.5	1.709E-06	1.123E-06
RE = .1243 IN.	35.4	1.052E-06	1.341E-06
PC/Q INF = 198,000	39.3	4.570E-07	1.417E-06
LAMBDA INF = .8500 IN.	43.1	2.276E-07	1.375E-06
RESERVOIR DENSITY =	50.8	5.620E-08	1.056E-06
4.210E 19/CCM	58.6	1.614E-08	8.437E-07
	66.3	6.050E-09	7.634E-07
8.0 INS RADIAL	74.0	3.532E-09	7.535E-07
	81.7	1.946E-09	7.620E-07
	89.4	1.691E-09	7.845E-07
	97.1	3.033E-10	8.808E-07
	104.8	-7.757E-10	1.003E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 50	-11.6	1.922E-06	3.528E-08
5/27/70	-4.4	2.033E-06	4.804E-08
CASE 4	.0	2.045E-06	2.383E-08
	3.9	2.078E-06	5.154E-08
P0 = 240 TORR	7.7	1.961E-06	5.374E-08
T0 = 866 DEG K	11.6	1.894E-06	3.986E-08
NITROGEN	19.3	1.719E-06	2.915E-08
M INF = 7.40	27.0	1.411E-06	3.498E-08
	30.8	1.218E-06	5.366E-08
PC = 49.60 PSI	33.1	1.182E-06	5.719E-08
TC = 588 DEG K	34.7	1.287E-06	6.123E-08
CARBON DIOXIDE	36.2	1.597E-06	1.424E-07
ALPHA = 0 DEG	37.8	2.067E-06	2.962E-07
A/A* = 26.3	39.3	2.065E-06	4.996E-07
RE = .1243 IN.	40.8	1.658E-06	6.909E-07
PC/Q INF = 198,000	42.4	1.300E-06	8.294E-07
LAMBDA INF = .8500 IN.	44.7	8.708E-07	1.023E-06
RESERVOIR DENSITY =	47.0	5.897E-07	1.117E-06
4.210E 19/CCM	50.1	4.217E-07	1.214E-06
	57.8	1.325E-07	1.249E-06
12.0 IN. RADIAL	65.5	3.860E-08	1.035E-06
	73.2	8.661E-09	8.541E-07
	80.9	4.346E-09	8.132E-07
	88.6	3.824E-09	8.716E-07
	96.3	2.764E-09	9.938E-07
	104.0	1.492E-09	1.124E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 51	-4.6	1.774E-05	-6.257E-08
5/27/70	-2.9	1.872E-05	-4.219E-08
CASE 4	-.8	1.917E-05	-3.990E-08
	.8	1.925E-05	-5.522E-08
PO = 2.0 TORR	2.3	1.888E-05	-8.740E-08
TO = 866 DEG K	3.9	1.752E-05	5.555E-08
NITROGEN	5.4	1.577E-05	-5.966E-08
M INF = 7.40	7.7	1.272E-05	1.309E-08
	10.8	9.443E-06	2.129E-08
PC = 49.60 PSI	13.1	7.017E-06	3.074E-08
TC = 588 DEG K	14.6	5.882E-06	8.693E-08
CARBON DIOXIDE	16.2	4.838E-06	1.200E-07
ALPHA = 0 DEG	17.7	4.456E-06	2.972E-07
A/A* = 26.3	19.3	4.268E-06	9.022E-07
RE = .1243 IN.	20.0	3.551E-06	1.197E-06
PC/Q INF = 198,000	20.8	2.845E-06	1.320E-06
LAMBDA INF = .8500 IN.	24.7	8.539E-07	1.520E-06
RESERVOIR DENSITY =	28.5	2.817E-07	1.271E-06
4.210E 19/CCM	36.2	5.881E-08	9.576E-07
	43.9	2.191E-08	8.269E-07
4.0 IN. RADIAL	51.6	1.008E-08	7.602E-07
	59.3	5.213E-09	8.020E-07
	67.0	3.094E-09	9.944E-07
	74.7	7.116E-10	1.345E-06
	82.4	-2.214E-09	1.860E-06

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 52	3.9	8.074E-05	6.530E-07
5/27/70	7.9	7.321E-05	7.999E-07
CASE 4	15.8	5.035E-05	1.135E-07
	23.7	3.159E-05	1.540E-07
PO = 2.0 TORR	39.5	1.255E-05	6.280E-08
TO = 866 DEG K	55.2	6.686E-06	-2.871E-09
NITROGEN	71.0	3.835E-06	1.093E-07
M INF = 7.40	86.8	2.658E-06	3.498E-08
	102.6	1.865E-06	5.425E-08
PC = 49.60 PSI	118.4	1.396E-06	2.800E-08
TC = 588 DEG K	134.2	1.063E-06	1.738E-08
CARBON DIOXIDE	150.0	7.838E-07	3.491E-08
ALPHA = 0 DEG			
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF = 198,000			
LAMBDA INF = .8500 IN.			
RESERVOIR DENSITY =			
4.210E 19/CCM			
CENTERLINE AXIAL			

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 53	3.9	1.726E-04	1.808E-06
5/27/70	7.9	1.409E-04	8.300E-07
CASE 4	15.8	7.062E-05	3.686E-07
	23.7	3.605E-05	8.298E-07
PO = 2.0 TORR	39.5	1.383E-05	3.654E-07
TO = 866 DEG K	55.2	7.503E-06	2.602E-07
NITROGEN	71.0	4.589E-06	2.631E-07
M INF = 7.40	86.8	3.043E-06	2.877E-07
	102.6	2.178E-06	2.376E-07
PC = 7.69 PSI	118.4	1.719E-06	2.245E-07
TC = 588 DEG K	134.2	1.286E-06	2.862E-07
CARBON DIOXIDE	150.0	1.086E-06	3.477E-07
ALPHA = 0 DEG			
A/A* = 26.3			
RE = .1243 IN.			
PC/Q INF =30600:			
LAMBDA INF = .6370 IN.			
RESERVOIR DENSITY = 6.520E 18/CCM			
CENTERLINE AXIAL			

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 54	-9.2	1.352E-05	1.189E-06
5/27/70	-4.6	1.713E-05	3.494E-07
CASE 4	-1.5	1.849E-05	3.565E-07
	2.3	1.825E-05	4.104E-07
PO = 2.0 TORR	6.2	1.618E-05	5.078E-07
TO = 866 DEG K	7.7	1.464E-05	5.493E-07
NITROGEN	9.2	1.375E-05	8.812E-07
M INF = 7.40	10.0	1.366E-05	1.373E-06
	11.6	1.305E-05	2.779E-06
PC = 7.69 PSI	12.3	1.227E-05	3.384E-06
TC = 588 DEG K	13.1	1.073E-05	4.242E-06
CARBON DIOXIDE	13.9	9.374E-06	5.032E-06
ALPHA = 0 DEG	14.6	7.782E-06	5.609E-06
A/A* = 26.3	16.2	4.910E-06	6.562E-06
RE = .1243 IN.	17.7	3.271E-06	6.912E-06
PC/Q INF =30600:	21.6	1.362E-06	6.840E-06
LAMBDA INF = .6370 IN.	25.4	5.203E-07	6.354E-06
RESERVOIR DENSITY =	29.3	2.287E-07	5.635E-06
6.520E 18/CCM	37.0	5.300E-08	5.202E-06
	44.7	1.006E-08	4.881E-06
4.0 IN: RADIAL	52.4	-3.029E-09	4.866E-06
	60.1	-9.741E-09	5.074E-06
	67.8	-1.603E-08	5.897E-06
	75.5	-2.957E-08	8.318E-06
	83.2	-4.526E-08	1.119E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 55	-9.6	4.504E-06	7.167E-07
5/27/70	-5.8	4.074E-06	4.808E-07
CASE 4	-1.9	4.287E-06	3.280E-07
	.4	4.221E-06	2.649E-07
P0 = 2.0 TORR	3.5	4.234E-06	2.824E-07
T0 = 866 DEG K	5.8	4.365E-06	3.231E-07
NITROGEN	8.1	4.098E-06	4.934E-07
M INF = 7.40	10.4	4.414E-06	5.728E-07
	11.9	4.932E-06	9.101E-07
PC = 7.69 PSI	13.5	5.531E-06	1.314E-06
TC = 588 DEG K	14.3	5.498E-06	1.622E-06
CARBON DIOXIDE	16.6	5.490E-06	2.390E-06
ALPHA = 0 DEG	18.9	4.573E-06	3.942E-06
A/A* = 26.3	21.2	3.513E-06	4.697E-06
RE = .1243 IN.	25.0	1.852E-06	6.235E-06
PC/Q INF =30600%	28.9	1.042E-06	6.666E-06
LAMBDA INF = .6370 IN.	36.6	2.659E-07	6.474E-06
RESERVOIR DENSITY =	44.3	6.899E-08	5.598E-06
6.520E 18/CCM	52.0	1.930E-08	5.123E-06
	59.7	1.933E-09	4.996E-06
8.0 IN. RADIAL	67.4	-3.825E-09	4.944E-06
	75.1	-5.764E-09	5.047E-06
	82.8	-6.579E-09	5.234E-06
	90.5	-7.810E-09	5.660E-06
	98.2	-9.594E-09	6.358E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 56	-10.0	2.716E-06	4.858E-07
5/27/70	-4.6	2.515E-06	3.023E-07
CASE 4	-2.3	2.480E-06	2.726E-07
	.0	2.555E-06	2.062E-07
P0 = 2.0 TORR	3.1	2.505E-06	2.391E-07
T0 = 866 DEG K	5.4	2.414E-06	3.261E-07
NITROGEN	7.7	2.536E-06	3.394E-07
M INF = 7.40	9.2	2.614E-06	3.952E-07
	12.3	2.866E-06	5.609E-07
PC = 7.69 PSI	13.1	3.055E-06	5.814E-07
TC = 588 DEG K	16.2	3.685E-06	1.122E-06
CARBON DIOXIDE	17.7	4.137E-06	1.389E-06
ALPHA = 0 DEG	19.3	4.185E-06	2.001E-06
A/A* = 26.3	20.8	4.039E-06	2.446E-06
RE = .1243 IN.	21.6	4.016E-06	2.649E-06
PC/Q INF =30600.	23.9	3.377E-06	3.326E-06
LAMBDA INF = .6370 IN.	26.2	2.664E-06	4.218E-06
RESERVOIR DENSITY =	28.5	2.068E-06	4.738E-06
6.520E 18/CCM	32.4	1.337E-06	5.716E-06
	36.2	8.232E-07	5.796E-06
12.0 IN. RADIAL	40.1	4.952E-07	6.180E-06
	43.9	2.909E-07	6.583E-06
	47.8	1.651E-07	6.312E-06
	51.6	1.022E-07	5.606E-06
	59.3	2.857E-08	5.378E-06
	67.0	2.423E-09	5.110E-06
	74.7	-5.942E-09	5.075E-06
	82.4	-8.993E-09	5.503E-06
	90.1	-1.000E-08	6.015E-06
	97.8	-1.148E-08	6.808E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 57	3.9	9.387E-05	7.004E-06
5/28/70	7.9	8.504E-05	5.450E-06
CASE 4	15.8	5.326E-05	4.229E-06
	23.7	3.263E-05	2.914E-06
P0 = 7.0 TORR	39.5	1.312E-05	1.980E-06
T0 = 290 DEG K	55.2	6.879E-06	1.673E-06
NITROGEN	71.0	4.440E-06	1.194E-06
M INF = 7.90	86.8	3.002E-06	1.062E-06
	102.6	2.141E-06	9.179E-07
PC = 12.73 PSI	118.4	1.571E-06	8.270E-07
TC = 588 DEG K	134.2	1.217E-06	7.578E-07
CARBON DIOXIDE	150.0	9.890E-07	7.429E-07

ALPHA = 0 DEG
A/A* = 26.3
RE = .1243 IN.
PC/Q INF =194006
LAMBDA INF = .0591 IN.
RESERVOIR DENSITY =
1.080E 19/CCM

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TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 58	-9.2	1.073E-05	2.412E-06
5/28/70	-3.9	1.506E-05	2.066E-06
CASE 4	-1.5	1.598E-05	1.838E-06
	2.3	1.581E-05	2.010E-06
P0 = 740 TORR	4.6	1.470E-05	2.067E-06
T0 = 290 DEG K	6.2	1.343E-05	2.288E-06
NITROGEN	7.7	1.219E-05	2.197E-06
M INF = 7.90	9.2	1.097E-05	2.470E-06
	10.8	1.030E-05	2.797E-06
PC = 12.73 PSI	12.3	1.147E-05	3.914E-06
TC = 588 DEG K	13.9	1.259E-05	8.551E-06
CARBON DIOXIDE	14.6	1.122E-05	1.153E-05
ALPHA = 0 DEG	15.4	9.342E-06	1.464E-05
A/A* = 26.3	15.8	8.288E-06	1.608E-05
RE = .1243 IN.	16.2	7.236E-06	1.808E-05
PC/P INF =19400!	16.9	5.757E-06	2.240E-05
LAMBDA INF = .0591 IN.	18.5	3.238E-06	3.243E-05
RESERVOIR DENSITY =	20.0	1.173E-06	4.701E-05
1.080E 19/CCM	21.6	3.797E-07	5.970E-05
	23.1	1.407E-07	4.985E-05
4.0 IN! RADIAL	23.9	1.202E-07	3.406E-05
	24.7	1.084E-07	2.272E-05
	26.2	7.860E-08	1.928E-05
	29.3	5.380E-08	1.874E-05
	37.0	4.299E-08	1.786E-05
	44.7	3.209E-08	1.777E-05
	52.4	3.430E-08	1.785E-05
	60.1	3.352E-08	1.799E-05
	67.8	2.086E-08	1.875E-05
	75.5	1.167E-08	2.264E-05
	83.2	-1.807E-08	2.999E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 59	-9.2	4.374E-06	1.222E-06
5/28/70	-5.4	4.592E-06	1.157E-06
CASE 4	-1.5	4.730E-06	1.114E-06
	2.3	4.669E-06	1.203E-06
P0 = 7.0 TORR	6.2	4.546E-06	1.172E-06
T0 = 290 DEG K	10.0	4.365E-06	1.225E-06
NITROGEN	12.3	4.291E-06	1.334E-06
M INF = 7.90	13.9	4.412E-06	1.454E-06
	15.0	4.710E-06	1.581E-06
PC = 12.73 PSI	16.2	7.233E-06	1.649E-06
TC = 588 DEG K	17.7	9.066E-06	3.030E-06
CARBON DIOXIDE	19.3	1.003E-05	5.205E-06
ALPHA = 0 DEG	20.8	8.285E-06	8.108E-06
A/A* = 26.3	21.6	7.211E-06	9.605E-06
RE = .1243 IN.	23.1	5.358E-06	1.364E-05
PC/Q INF =19400.	24.7	3.642E-06	1.931E-05
LAMBDA INF = .0591 IN.	26.2	2.219E-06	2.590E-05
RESERVOIR DENSITY =	27.7	1.075E-06	3.396E-05
1.080E 19/CCM	29.3	4.181E-07	4.052E-05
	30.0	2.492E-07	4.312E-05
8.0 IN. RADIAL	31.6	1.249E-07	4.647E-05
	33.1	8.428E-08	4.588E-05
	33.9	6.707E-08	4.178E-05
	34.7	6.527E-08	3.179E-05
	37.0	4.007E-08	1.742E-05
	44.7	2.570E-08	1.671E-05
	52.4	2.125E-08	1.661E-05
	60.1	1.599E-08	1.654E-05
	67.8	1.365E-08	1.644E-05
	75.5	9.559E-09	1.696E-05
	83.2	7.979E-09	1.765E-05
	90.9	8.233E-09	1.830E-05
	98.6	-1.542E-09	1.918E-05

TABLE IX (Continued)

PAGE 60
5/28/70
CASE 4

P0 = 7[illegible]0 TORR
T0 = 290 DEG K
NITROGEN
M INF = 7.90

PC = 12.73 PSI
TC = 588 DEG K
CARBON DIOXIDE
ALPHA = 0 DEG
A/A* = 26.3
RE = .1243 IN.
PC/Q INF = 19400.
LAMBDA INF = .0591 IN.
RESERVOIR DENSITY =
1.080E 19/CCM

12.0 IN. RADIAL

NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
-14.3	2.340E-06	1.113E-06
-12.7	2.174E-06	1.029E-06
-11.2	2.155E-06	9.790E-07
-9.6	2.207E-06	9.461E-07
-6.5	2.166E-06	9.287E-07
-4.2	2.205E-06	9.314E-07
-1.9	2.242E-06	8.569E-07
.4	2.209E-06	8.824E-07
3.5	2.232E-06	8.802E-07
5.8	2.186E-06	8.860E-07
8.9	2.154E-06	9.211E-07
11.2	2.183E-06	9.211E-07
13.5	2.271E-06	1.004E-06
15.4	2.726E-06	1.135E-06
17.3	3.946E-06	1.373E-06
19.6	6.291E-06	2.266E-06
21.2	6.973E-06	3.234E-06
23.5	6.098E-06	5.367E-06
26.6	4.312E-06	9.259E-06
28.9	2.893E-06	1.326E-05
31.2	1.724E-06	1.947E-05
34.3	5.283E-07	2.710E-05
36.6	1.463E-07	3.370E-05
38.9	7.643E-08	3.765E-05
41.2	5.872E-08	3.972E-05
42.8	3.631E-08	3.700E-05
44.3	3.909E-08	2.506E-05
45.8	2.953E-08	1.719E-05
48.2	2.096E-08	1.579E-05
52.0	1.728E-08	1.575E-05
59.7	1.330E-08	1.508E-05
67.4	8.572E-09	1.521E-05
75.1	8.012E-09	1.511E-05
82.8	6.451E-09	1.552E-05
90.5	1.299E-09	1.620E-05
98.2	2.284E-09	1.637E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 61	3.9	1.081E-04	1.527E-06
5/28/70	7.9	9.351E 05	1.670E-06
CASE 4	15.8	5.880E-05	7.954E-07
	27.6	2.488E-05	5.349E-07
PO = 1.0 TORR	39.5	1.314E-05	3.470E-07
TO = 290 DEG K	51.3	7.570E-06	3.621E-07
NITROGEN	63.1	5.239E-06	1.464E-07
M INF = 7.45	75.0	3.717E-06	9.679E-08
	86.8	2.768E-06	1.168E-07
PC = 24.30 PSI	98.7	2.122E-06	9.807E-08
TC = 588 DEG K	110.5	1.698E-06	9.539E-08
CARBON DIOXIDE	122.3	1.325E-06	6.701E-08
ALPHA = 0 DEG	134.2	1.086E-06	7.243E-08
A/A* = 26.3	146.0	8.940E-07	4.458E-08
RE = .1243 IN.	157.9	7.524E-07	4.985E-08
PC/W INF = 147,000			
LAMBDA INF = .3470 IN.			
RESERVOIR DENSITY = 2.060E 19/CCM			

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	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 62	-9.2	1.094E-05	3.150E-07
5/28/70	-5.4	1.567E-05	3.179E-07
CASE 4	-1.5	1.768E-05	2.460E-07
	2.3	1.748E-05	3.065E-07
PO = 1.0 TORR	6.2	1.467E-05	2.601E-07
TO = 290 DEG K	10.0	1.061E-05	2.127E-07
NITROGEN	13.9	6.546E-06	3.319E-07
M INF = 7.45	16.2	4.909E-06	3.252E-07
	17.7	4.399E-06	3.820E-07
PC = 24.30 PSI	19.3	3.875E-06	5.917E-07
TC = 588 DEG K	21.6	2.982E-06	1.424E-06
CARBON DIOXIDE	22.3	2.558E-06	1.691E-06
ALPHA = 0 DEG	23.9	1.874E-06	2.221E-06
A/A* = 26.3	25.4	1.405E-06	2.697E-06
RE = .1243 IN.	27.7	8.196E-07	3.366E-06
PC/Q INF = 147,000	29.3	5.814E-07	3.660E-06
LAMBDA INF = .3470 IN.	33.1	2.295E-07	3.638E-06
RESERVOIR DENSITY =	40.8	7.665E-08	2.770E-06
2.060E 19/CCM	44.7	4.835E-08	2.121E-06
	52.4	1.831E-08	1.950E-06
4.0 IN. RADIAL	60.1	7.550E-09	1.885E-06
	67.8	3.795E-09	1.948E-06
	75.5	-5.567E-10	2.404E-06
	83.2	-5.015E-09	3.080E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 63	-10.0	4.489E-06	2.180E-07
5/28/70	-6.2	4.621E-06	1.793E-07
CASE 4	-2.3	4.965E-06	1.605E-07
	1.5	4.999E-06	1.749E-07
PO = 1.0 TORR	5.4	4.868E-06	1.349E-07
TO = 290 DEG K	9.2	4.583E-06	1.481E-07
NITROGEN	13.1	4.159E-06	1.433E-07
M INF = 7.45	16.9	3.520E-06	1.836E-07
	20.8	2.856E-06	1.770E-07
PC = 24.30 PSI	24.7	2.389E-06	2.075E-07
TC = 588 DEG K	27.0	2.131E-06	2.452E-07
CARBON DIOXIDE	28.5	2.182E-06	3.045E-07
ALPHA = 0 DEG	30.8	2.473E-06	5.932E-07
A/A* = 26.3	32.4	2.515E-06	9.329E-07
RE = .1243 IN.	33.9	2.228E-06	1.401E-06
PC/Q INF = 147,000	36.2	1.637E-06	2.082E-06
LAMBDA INF = .3470 IN.	38.5	1.166E-06	2.725E-06
RESERVOIR DENSITY =	40.1	8.856E-07	3.046E-06
2.060E 19/CCM	43.9	4.236E-07	4.035E-06
	47.8	1.849E-07	4.283E-06
8.0 IN. RADIAL	51.6	5.935E-08	3.681E-06
	55.5	2.080E-08	2.743E-06
	59.3	8.020E-09	2.326E-06
	67.0	1.241E-09	2.065E-06
	74.7	3.862E-10	1.996E-06
	82.4	5.678E-10	1.997E-06
	90.1	5.490E-10	2.106E-06
	97.8	-1.488E-09	2.546E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 64	-11.6	2.207E-06	1.020E-07
5/28/70	-7.7	2.302E-06	9.172E-08
CASE 4	-3.9	2.355E-06	9.383E-08
	.0	2.334E-06	7.987E-08
P0 = 110 TORR	3.9	2.242E-06	1.276E-07
T0 = 290 DEG K	7.7	2.218E-06	1.133E-07
NITROGEN	11.6	2.161E-06	9.215E-08
M INF = 7.45	15.4	2.041E-06	9.310E-08
	19.3	1.893E-06	8.691E-08
PC = 24.30 PSI	23.1	1.721E-06	9.761E-08
TC = 588 DEG K	27.0	1.470E-06	1.073E-07
CARBON DIOXIDE	30.8	1.342E-06	1.323E-07
ALPHA = 0 DEG	34.7	1.382E-06	1.773E-07
A/A* = 26.3	37.0	1.594E-06	3.184E-07
RE = .1243 IN.	38.5	1.809E-06	4.865E-07
PC/Q INF = 147,000	39.3	1.901E-06	5.953E-07
LAMBDA INF = .3470 IN.	40.8	1.849E-06	8.282E-07
RESERVOIR DENSITY =	42.4	1.746E-06	1.172E-06
2.060E 19/CCM	44.3	1.464E-06	1.532E-06
	46.2	1.216E-06	1.828E-06
12.0 IN. RADIAL	50.1	7.186E-07	2.690E-06
	53.9	4.137E-07	3.456E-06
	57.8	1.920E-07	4.013E-06
	61.6	6.938E-08	4.061E-06
	65.5	3.091E-08	3.407E-06
	69.3	1.823E-08	2.546E-06
	73.2	1.169E-08	2.144E-06
	77.0	8.529E-09	1.886E-06
	80.9	5.148E-09	1.871E-06
	88.6	8.126E-10	2.208E-06
	96.3	-4.487E-09	3.089E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 65	3.9	7.751E-05	1.246E-05
6/ 1/7C	7.9	6.981E-05	-3.038E-06
CASE 6	15.8	5.157E-05	2.780E-06
	23.7	3.418E-05	-1.516E-07
PO = 2.0 TORR	39.5	1.435E-05	2.662E-06
TO = 280 DEG K	55.2	7.769E-06	7.049E-07
ARGON	71.0	4.410E-06	1.287E-06
M INF =11.45	86.8	2.875E-06	8.943E-07
	102.6	2.098E-06	5.315E-07
PC = 64.50 PSI	118.4	1.540E-06	6.515E-07
TC = 588 DEG K	134.2	1.114E-06	3.110E-07
CARBON DIOXIDE	150.0	8.658E-07	4.567E-07
ALPHA = 0 DEG			
A/A* = 26.3			
RE = .1243 IN.			
PC/W INF = 203,000			
LAMBDA INF = .0650 IN.			
RESERVOIR DENSITY = 5.470E 19/CCM			
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	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 66	-9.2	1.117E-05	1.351E-06
6/ 1/7C	-5.4	1.578E-05	1.769E-06
CASE 6	-1.5	1.774E-05	1.242E-06
	2.3	1.768E-05	2.285E-06
PO = 2.C TORR	6.2	1.503E-05	2.271E-06
TO = 280 DEG K	10.0	1.093E-05	2.165E-06
ARGON	13.9	7.164E-06	1.935E-06
M INF =11.45	17.7	4.590E-06	1.931E-06
	21.6	3.118E-06	1.203E-06
PC = 64.50 PSI	23.1	3.353E-06	1.983E-06
TC = 588 DEG K	24.7	3.398E-06	2.520E-06
CARBON DIOXIDE	25.4	2.733E-06	2.855E-06
ALPHA = 0 DEG	26.2	2.214E-06	3.126E-06
A/A* = 26.3	27.7	1.465E-06	3.760E-06
RE = .1243 IN.	29.3	9.654E-07	4.608E-06
PC/W INF = 203,000	30.8	6.187E-07	5.340E-06
LAMBDA INF = .0650 IN.	33.1	2.693E-07	6.663E-06
RESERVOIR DENSITY =	35.4	7.721E-08	7.600E-06
5.470E 19/CCM	37.0	3.944E-08	6.025E-06
	38.5	2.114E-08	3.743E-06
4.0 IN. RADIAL	40.1	1.968E-08	2.724E-06
	40.8	1.845E-08	2.533E-06
	44.7	1.525E-08	2.238E-06
	52.4	1.137E-08	1.990E-06
	60.1	8.232E-09	1.875E-06
	67.8	6.005E-09	1.962E-06
	75.5	3.004E-09	2.354E-06
	83.2	-8.260E-10	3.069E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 67	-10.0	4.410E-06	2.128E-06
6/ 1/70	-6.2	4.812E-06	1.440E-06
CASE 6	-2.3	4.937E-06	2.006E-06
	1.5	5.053E-06	1.356E-06
P0 = 2.0 TORR	5.4	4.800E-06	2.044E-06
T0 = 280 DEG K	9.2	4.558E-06	1.571E-06
ARGON	13.1	4.098E-06	1.672E-06
M INF =11.45	16.9	3.551E-06	1.370E-06
	20.8	2.871E-06	1.408E-06
PC = 64.50 PSI	24.7	2.349E-06	1.239E-06
TC = 588 DEG K	28.5	2.010E-06	1.219E-06
CARBON DIOXIDE	32.4	1.756E-06	9.504E-07
ALPHA = 0 DEG	33.1	1.980E-06	9.963E-07
A/A* = 26.3	34.7	2.694E-06	2.568E-06
RE = .1243 IN.	36.2	3.392E-06	2.741E-06
PC/w INF = 203,000	37.0	2.639E-06	2.516E-06
LAMBDA INF = .0650 IN.	37.8	2.303E-06	2.562E-06
RESERVOIR DENSITY =	40.1	1.766E-06	2.793E-06
5.470E 19/CCM	42.4	1.164E-06	2.694E-06
	43.9	7.912E-07	4.378E-06
8.0 IN. RADIAL	45.5	5.433E-07	4.360E-06
	47.8	2.333E-07	6.057E-06
	50.1	6.086E-08	6.629E-06
	51.6	3.049E-08	6.826E-06
	53.2	1.639E-08	6.577E-06
	54.7	9.054E-09	5.750E-06
	55.5	8.887E-09	4.962E-06
	56.2	7.807E-09	3.732E-06
	57.8	7.328E-09	2.534E-06
	59.3	6.843E-09	2.120E-06
	67.0	4.090E-09	1.766E-06
	74.7	2.176E-09	1.706E-06
	82.4	1.320E-09	1.738E-06
	90.1	1.057E-09	1.730E-06
	97.8	5.497E-10	1.902E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 68	-11.6	2.091E-06	1.151E-06
6/ 1/70	-7.7	2.179E-06	1.289E-06
CASE 6	-3.9	2.261E-06	1.255E-06
	.0	2.206E-06	1.385E-06
P0 = 2.0 TORR	3.9	2.216E-06	1.115E-06
T0 = 280 DEG K	7.7	2.222E-06	1.162E-06
ARGON	11.6	2.043E-06	1.282E-06
M INF =11.45	15.4	1.989E-06	1.248E-06
	19.3	1.821E-06	9.366E-07
PC = 64.50 PSI	23.1	1.659E-06	9.131E-07
TC = 588 DEG K	27.0	1.504E-06	7.570E-07
CARBON DIOXIDE	30.8	1.303E-06	8.025E-07
ALPHA = 0 DEG	34.7	1.161E-06	9.048E-07
A/A* = 26.3	38.5	1.046E-06	9.263E-07
RE = .1243 IN.	40.1	1.158E-06	8.041E-07
PC/Q INF =203,000	41.6	1.716E-06	6.620E-07
LAMBDA INF = .0650 IN.	42.4	1.986E-06	1.467E-06
RESERVOIR DENSITY =	43.1	2.256E-06	1.334E-06
5.470E 19/CCM	43.9	2.331E-06	2.358E-06
	44.7	2.316E-06	2.113E-06
12.0 IN. RADIAL	45.5	2.114E-06	2.330E-06
	46.2	2.055E-06	2.033E-06
	47.0	1.768E-06	1.914E-06
	48.5	1.447E-06	1.583E-06
	50.1	1.098E-06	2.201E-06
	51.6	9.082E-07	2.174E-06
	53.9	6.649E-07	2.739E-06
	57.8	3.083E-07	3.854E-06
	61.6	8.806E-08	4.852E-06
	65.5	1.385E-08	5.282E-06
	67.0	7.271E-09	5.577E-06
	68.6	6.201E-09	5.307E-06
	69.3	5.737E-09	4.909E-06
	70.1	3.626E-09	4.350E-06
	71.6	3.334E-09	3.159E-06
	73.2	4.642E-09	2.171E-06
	77.0	4.535E-09	1.588E-06
	80.9	3.681E-09	1.514E-06
	88.6	3.829E-09	1.563E-06
	96.3	1.131E-09	4.007E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 69	8.3	7.182E-05	-5.630E-07
6/ 2/70	16.6	5.635E-05	-2.394E-07
CASE 7	33.2	2.934E-05	-3.707E-07
	49.8	1.640E-05	-2.817E-07
P0 = 310 TORR	83.1	6.244E-06	-3.904E-08
T0 = 280 DEG K	116.3	3.063E-06	1.036E-07
NITROGEN	149.5	1.908E-06	7.602E-08
M INF = 7.80	182.7	1.306E-06	3.716E-08
	215.9	9.155E-07	6.215E-08
PC = 64.50 PSI	249.2	6.927E-07	4.619E-08
TC = 588 DEG K	282.4	5.112E-07	5.057E-08
CARBON DIOXIDE	315.6	4.146E-07	3.920E-08
ALPHA = 0 DEG	332.2	3.752E-07	3.970E-08

A/A* = 9.0
RE = .0590 IN.
PC/W INF = 216,000
LAMBDA INF = .1350 IN.
RESERVOIR DENSITY = 5.470E 19/CCM

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TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 70	-19.5	6.183E-06	6.860E-08
6/ 2/70	-11.4	7.553E-06	-9.578E-09
CASE 7	-3.2	8.150E-06	4.425E-08
	4.9	7.921E-06	4.301E-08
PO = 360 TORR	13.0	7.150E-06	6.497E-08
TO = 280 DEG K	21.1	6.202E-06	4.953E-08
NITROGEN	29.2	4.992E-06	8.017E-08
M INF = 7.80	37.3	3.552E-06	1.081E-07
	45.4	2.433E-06	2.153E-07
PC = 64.50 PSI	48.7	2.211E-06	2.332E-07
TC = 588 DEG K	51.9	2.134E-06	3.188E-07
CARBON DIOXIDE	53.5	2.303E-06	3.898E-07
ALPHA = 0 DEG	55.2	2.652E-06	6.253E-07
A/A* = 9.0	56.8	3.086E-06	9.602E-07
RE = .0590 IN.	60.0	2.544E-06	1.921E-06
PC/U INF = 216,000	61.6	2.166E-06	2.478E-06
LAMBDA INF = .1350 IN.	63.3	1.793E-06	3.076E-06
RESERVOIR DENSITY =	66.5	1.211E-06	4.295E-06
5.470E 19/CCM	68.1	9.474E-07	5.029E-06
	69.7	7.657E-07	5.533E-06
4.0 IN. RADIAL	73.0	3.847E-07	6.524E-06
	74.6	2.546E-07	6.705E-06
	77.9	9.212E-08	6.191E-06
	79.5	5.022E-08	5.051E-06
	82.7	2.363E-08	3.438E-06
	86.0	1.466E-08	2.538E-06
	94.1	1.121E-08	2.008E-06
	110.3	9.334E-09	1.877E-06
	126.5	6.188E-09	1.989E-06
	142.7	1.490E-10	2.426E-06
	159.0	-5.750E-09	3.341E-06
	175.2	-1.281E-08	4.790E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 71	-21.1	2.162E-06	1.009E-07
6/ 2/70	-13.0	2.237E-06	9.874E-08
CASE 7	-4.9	2.306E-06	9.655E-08
	3.2	2.308E-06	8.736E-08
P0 = 3[illegible]0 TORR	11.4	2.247E-06	9.840E-08
T0 = 280 DEG K	19.5	2.186E-06	5.682E-08
NITROGEN	27.6	2.070E-06	7.404E-08
M INF = 7.80	35.7	1.902E-06	8.393E-08
	43.8	1.719E-06	8.831E-08
PC = 64.50 PSI	51.9	1.534E-06	7.265E-08
TC = 588 DEG K	60.0	1.337E-06	8.680E-08
CARBON DIOXIDE	68.1	1.150E-06	1.107E-07
ALPHA = 0 DEG	73.0	1.080E-06	1.349E-07
A/A* = 9.0	76.2	1.158E-06	1.646E-07
RE = .0590 IN.	79.5	1.690E-06	2.769E-07
PC/P INF = 216,000	82.7	2.386E-06	5.694E-07
LAMBDA INF = .1350 IN.	84.3	2.502E-06	8.229E-07
RESERVOIR DENSITY =	86.0	2.438E-06	1.082E-06
5.470E 19/CCM	89.2	2.050E-06	1.530E-06
	92.5	1.584E-06	2.188E-06
8.0 IN. RADIAL	100.6	7.235E-07	4.246E-06
	108.7	1.808E-07	6.054E-06
	110.3	1.436E-07	6.017E-06
	113.5	6.055E-08	6.386E-06
	116.8	1.955E-08	6.036E-06
	121.7	3.039E-09	3.870E-06
	124.9	2.111E-09	2.812E-06
	141.1	9.572E-10	2.039E-06
	157.3	2.860E-10	2.050E-06
	173.6	-7.297E-11	2.079E-06
	189.8	-1.461E-09	2.158E-06
	206.0	-1.914E-09	2.198E-06

TABLE IX (Continued)

PAGE 72
6/ 2/70
CASE 7

P0 = 310 TORR
T0 = 280 DEG K
NITROGEN
M INF = 7.80

PC = 64.50 PSI
TC = 588 DEG K
CARBON DIOXIDE
ALPHA = 0 DEG
A/A* = 9.0
RE = .0590 IN.
PC/Q INF = 216,000
LAMBDA INF = .1350 IN.
RESERVOIR DENSITY =
5.470E 19/CCM

12.0 IN. RADIAL

NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
-29.2	9.941E-07	5.585E-08
-21.1	1.028E-06	5.155E-08
-13.0	1.046E-06	5.201E-08
-4.9	1.062E-06	4.482E-08
3.2	1.062E-06	5.711E-08
11.4	1.049E-06	5.141E-08
19.5	1.022E-06	5.714E-08
27.6	9.960E-07	4.881E-08
35.7	9.577E-07	5.149E-08
43.8	9.201E-07	4.748E-08
51.9	8.606E-07	5.109E-08
60.0	8.140E-07	5.691E-08
68.1	7.582E-07	5.396E-08
76.2	7.247E-07	6.149E-08
84.3	6.621E-07	6.726E-08
90.8	6.255E-07	7.197E-08
92.5	6.595E-07	8.019E-08
94.1	6.645E-07	8.717E-08
97.3	8.147E-07	1.064E-07
100.6	1.339E-06	1.957E-07
103.8	1.639E-06	2.913E-07
107.1	1.794E-06	5.306E-07
108.7	1.779E-06	7.580E-07
111.9	1.533E-06	9.695E-07
115.2	1.292E-06	1.272E-06
116.8	1.194E-06	1.553E-06
124.9	6.956E-07	2.745E-06
133.0	2.948E-07	4.015E-06
141.1	7.470E-08	4.951E-06
146.0	2.159E-08	5.260E-06
149.2	5.879E-09	5.421E-06
152.5	4.586E-10	5.004E-06
155.7	-2.293E-09	3.805E-06
157.3	-1.427E-09	3.141E-06
165.5	-8.504E-10	1.873E-06
173.6	-8.091E-10	1.782E-06
189.8	-1.455E-09	1.824E-06
206.0	-1.583E-09	1.929E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 73	-19.9	3.398E-06	4.329E-06
6/ 2/70	-11.6	3.604E-06	4.463E-06
CASE 8	-3.3	3.584E-06	4.506E-06
	5.0	3.697E-06	4.542E-06
PB = 310 TORR	13.3	3.600E-06	4.423E-06
TB = 280 DEG K	21.6	3.373E-06	4.231E-06
NITROGEN	29.9	3.279E-06	3.974E-06
M INF = 7.80	38.2	2.879E-06	3.658E-06
	46.5	2.616E-06	3.287E-06
PC = 64.50 PSI	54.8	2.306E-06	.000E 00
TC = 588 DEG K	63.1	2.067E-06	2.532E-06
NITROGEN	71.4	2.000E-06	2.391E-06
ALPHA = 0 DEG	74.8	2.347E-06	.000E 00
A/A* = 9.0	78.1	3.683E-06	.000E 00
RE = .0590 IN.	79.7	4.180E-06	4.736E-06
PC/W INF = 216,000	81.4	4.463E-06	.000E 00
LAMBDA INF = .1350 IN.	84.7	4.196E-06	.000E 00
RESERVOIR DENSITY =	88.0	4.036E-06	4.351E-06
5.470E 19/CCM	96.3	4.184E-06	4.626E-06
	104.7	5.059E-06	5.853E-06
8.0 IN. RADIAL	109.6	5.583E-06	.000E 00
	113.0	5.856E-06	6.973E-06
	114.6	5.720E-06	6.818E-06
	117.9	4.924E-06	5.736E-06
	121.3	3.200E-06	3.825E-06
	129.6	1.906E-06	2.383E-06
	146.2	1.741E-06	2.176E-06
	162.8	1.849E-06	2.233E-06
	179.4	1.899E-06	2.303E-06
	196.0	2.000E-06	2.361E-06
	212.6	2.014E-06	2.331E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 74	-31.2	1.222E-05	5.100E-05
6/ 3/70	-27.3	1.173E-05	3.282E-05
CASE 9	-23.5	1.130E-05	2.120E-05
	-19.6	1.148E-05	1.468E-05
PE = 6.0 TORR	-15.8	1.264E-05	1.014E-05
TO = 280 DEG K	-11.9	1.642E-05	6.846E-06
NITROGEN	-8.1	2.509E-05	3.939E-06
M INF = 7.90	-4.2	3.599E-05	1.163E-06
	-1.9	3.663E-05	6.217E-07
PC = 5.00 PSI	-.4	3.775E-05	5.411E-07
TC = 588 DEG K	1.2	3.733E-05	6.316E-07
ARGON	2.7	3.725E-05	8.685E-07
ALPHA =80 DEG	4.2	3.529E-05	1.590E-06
A/A* = 26.3	7.3	2.673E-05	3.878E-06
RE = .1243 IN.	11.2	1.757E-05	7.089E-06
PC/Q INF = 8860.	15.0	1.273E-05	1.138E-05
LAMBDA INF = .0696 IN.	18.9	1.116E-05	1.697E-05
RESERVOIR DENSITY =	22.7	1.068E-05	2.609E-05
4.240E 18/CCM	26.6	9.841E-06	4.550E-05
	30.4	7.243E-06	7.804E-05
6.9 IN. RADIAL	34.3	2.793E-06	1.280E-04
	38.1	3.081E-07	1.874E-04
	42.0	2.358E-06	1.041E-04
	45.8	1.099E-06	5.559E-05
	49.7	6.517E-07	5.279E-05
	53.5	4.497E-07	5.182E-05
	57.4	3.223E-07	5.187E-05
	61.2	1.583E-07	5.498E-05
	65.1	1.066E-07	5.549E-05
	69.0	5.939E-08	5.569E-05
	72.8	1.049E-07	5.371E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 75	-11.2	4.049E-05	2.322E-05
6/ 3/70	-7.3	4.737E-05	1.504E-05
CASE 9	-3.5	6.001E-05	1.231E-05
	-1.9	6.172E-05	1.082E-05
P0 = 6.0 TORR	-1.2	6.460E-05	1.092E-05
T0 = 280 DEG K	-.4	6.462E-05	1.074E-05
NITROGEN	.4	6.392E-05	1.047E-05
M INF = 7.90	1.2	6.521E-05	1.129E-05
	1.9	6.301E-05	1.166E-05
PC = 5.00 PSI	2.7	6.188E-05	1.202E-05
TC = 588 DEG K	4.2	5.473E-05	1.318E-05
ARGON	5.8	5.269E-05	1.561E-05
ALPHA =80 DEG	8.1	4.311E-05	1.847E-05
A/A* = 26.3	11.9	3.599E-05	3.379E-05
RE = .1243 IN.	15.0	3.009E-05	5.679E-05
PC/Q INF = 8860.	17.3	2.411E-05	8.466E-05
LAMBDA INF = .0696 IN.	19.6	1.546E-05	1.272E-04
RESERVOIR DENSITY =	21.2	9.802E-06	1.551E-04
4.240E 18/CCM	22.7	5.819E-06	1.798E-04
	24.3	2.967E-06	1.925E-04
9.8 IN. RADIAL	25.8	3.483E-06	1.642E-04
	27.3	3.297E-06	1.042E-04
	31.2	1.589E-06	5.690E-05
	35.1	1.195E-06	5.353E-05
	38.9	7.037E-07	5.285E-05
	42.8	7.407E-07	5.201E-05
	46.6	5.106E-07	5.288E-05
	50.5	9.176E-07	5.229E-05
	54.3	5.910E-07	5.490E-05
	58.2	2.909E-07	5.704E-05
	62.0	-2.453E-08	6.170E-05
	65.9	-2.473E-07	7.027E-05
	69.7	-5.753E-07	8.201E-05
	73.6	-9.748E-07	9.617E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RO	FREE STREAM N/RO
PAGE 76	-112.1	-4.290E-07	7.623E-05
6/ 3/70	-108.9	8.744E-08	7.108E-05
CASE 9	-105.8	1.237E-07	6.922E-05
	-104.2	2.472E-07	6.868E-05
PO = 6.0 TORR	-102.6	5.213E-07	6.938E-05
TO = 280 DEG K	-101.8	6.722E-07	7.078E-05
NITROGEN	-101.0	1.098E-06	7.258E-05
M INF = 7.90	-100.2	1.614E-06	7.607E-05
	-99.4	1.774E-06	8.896E-05
PC = 5.00 PSI	-98.7	7.394E-07	1.148E-04
TC = 588 DEG K	-97.9	1.033E-06	1.662E-04
ARGON	-97.1	2.452E-06	2.262E-04
ALPHA =80 DEG	-96.3	1.527E-05	2.436E-04
A/A* = 26.3	-95.5	3.148E-05	2.267E-04
RE = .1243 IN.	-94.7	5.694E-05	2.053E-04
PC/Q INF = 8860.	-93.9	7.070E-05	1.706E-04
LAMBDA INF = .0696 IN.	-93.1	8.814E-05	1.227E-04
RESERVOIR DENSITY =	-92.3	9.405E-05	8.334E-05
4.240E 18/CCM	-91.6	9.680E-05	6.589E-05
	-90.8	9.733E-05	4.703E-05
CENTERLINE AXIAL	-89.2	9.928E-05	4.148E-05
	-86.8	9.661E-05	2.838E-05
	-83.7	8.110E-05	1.969E-05
	-81.3	7.347E-05	1.487E-05
	-78.9	6.625E-05	1.137E-05
	-75.0	5.567E-05	7.140E-06
	-71.0	4.611E-05	4.315E-06
	-63.1	3.824E-05	1.217E-06
	-55.2	3.734E-05	-9.701E-08
	-47.4	4.205E-05	-1.325E-06
	-39.5	5.356E-05	-1.387E-06
	-31.6	6.385E-05	-1.616E-06
	-23.7	6.097E-05	-1.709E-06
	-15.8	3.921E-05	-1.896E-06
	-7.9	2.970E-05	-5.139E-07

TABLE IX (Continued)

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CASE 9

P0 = 650 TORR
T0 = 280 DEG K
NITROGEN
M INF = 7.90

PC = 5.00 PSI
TC = 588 DEG K
ARGON
ALPHA =80 DEG
A/A* = 26.3
RE = .1243 IN.
PC/Q INF = 8860.
LAMBDA INF = .0696 IN.
RESERVOIR DENSITY =
4.240E 18/CCM

3.9 IN. RADIAL

NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
-19.3	3.834E-06	7.588E-06
-16.9	4.173E-06	6.313E-06
-14.6	4.689E-06	5.268E-06
-11.6	6.486E-06	3.973E-06
-10.0	8.410E-06	3.387E-06
-6.9	2.017E-05	1.344E-06
-3.9	4.510E-05	-1.895E-06
-2.3	5.697E-05	-1.533E-06
-1.5	5.996E-05	-1.610E-06
.0	6.421E-05	-1.705E-06
.8	6.267E-05	-1.715E-06
1.5	6.354E-05	-1.682E-06
2.3	6.122E-05	-1.689E-06
3.9	4.679E-05	-1.518E-06
5.4	3.381E-05	-6.699E-07
6.9	2.146E-05	9.771E-07
8.5	1.395E-05	2.074E-06
10.0	9.596E-06	2.903E-06
11.6	7.200E-06	3.504E-06
15.4	4.649E-06	4.857E-06
17.3	4.133E-06	5.467E-06
19.3	3.578E-06	6.419E-06
23.1	3.539E-06	8.115E-06
27.0	3.322E-06	1.088E-05
34.7	3.915E-06	1.950E-05
42.4	3.581E-06	4.048E-05
50.1	8.169E-07	8.805E-05
53.9	-3.280E-07	1.207E-04
56.2	-1.205E-06	1.446E-04
57.8	-1.097E-06	1.535E-04
59.3	-1.192E-06	1.417E-04
60.9	1.601E-06	9.061E-05
62.4	2.764E-06	5.501E-05
63.9	7.839E-07	4.843E-05
65.5	4.575E-07	4.817E-05
73.2	3.717E-07	4.695E-05
80.9	2.346E-07	4.934E-05
88.6	1.019E-07	5.143E-05
96.3	7.210E-08	5.310E-05
104.0	2.037E-08	5.438E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 78	-392.2	3.052E-08	2.472E-06
6/ 4/70	-362.0	4.817E-08	2.410E-06
CASE 10	-331.8	5.355E-08	2.432E-06
	-316.7	8.460E-09	2.612E-06
P0 = 3.0 TORR	-301.7	9.439E-08	2.780E-06
T0 = 866 DEG K	-286.6	2.959E-07	3.320E-06
NITROGEN	-277.5	5.081E-07	3.961E-06
M INF = 7.58	-271.5	7.691E-07	4.687E-06
	-265.5	1.235E-06	5.273E-06
PC = 30.00 PSI	-259.4	1.850E-06	5.691E-06
TC = 588 DEG K	-256.4	2.203E-06	5.819E-06
ARGON	-253.4	2.703E-06	5.775E-06
ALPHA =80 DEG	-247.4	3.840E-06	5.202E-06
A/A* = 17.6	-241.3	5.045E-06	4.225E-06
RE = .0325 IN.	-235.3	6.772E-06	3.103E-06
PC/Q INF =88600.	-229.3	7.659E-06	2.461E-06
LAMBDA INF = .6370 IN.	-226.2	7.473E-06	2.114E-06
RESERVOIR DENSITY =	-223.2	7.845E-06	1.827E-06
2.540E 19/CCM	-217.2	7.796E-06	1.075E-06
	-211.2	6.811E-06	5.799E-07
CENTERLINE AXIAL	-205.1	6.554E-06	3.728E-07
	-199.1	5.906E-06	2.239E-07
	-196.1	5.674E-06	1.546E-07
	-193.1	5.437E-06	1.180E-07
	-187.0	5.026E-06	2.051E-08
	-181.0	4.997E-06	-8.850E-08
	-165.9	5.198E-06	-2.548E-07
	-150.8	5.854E-06	-4.004E-07
	-120.7	8.878E-06	-5.852E-07
	-90.5	1.543E-05	-6.171E-07
	-60.3	3.386E-05	-5.921E-07
	-30.2	9.415E-05	-5.209E-07
	1.5	2.400E-04	2.653E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 79	-102.9	3.285E-07	1.076E-06
6/ 4/70	-73.5	3.727E-07	6.297E-07
CASE 10	-50.0	6.151E-07	3.884E-07
	-44.1	9.156E-07	3.126E-07
P0 = 310 TORR	-36.8	1.508E-06	1.853E-07
T0 = 866 DEG K	-29.4	3.111E-06	-3.603E-08
NITROGEN	-22.1	7.941E-06	-4.794E-07
M INF = 7.58	-14.7	1.467E-05	-5.479E-07
	-11.8	1.781E-05	-5.844E-07
PC = 30.00 PSI	-5.9	2.742E-05	-5.996E-07
TC = 588 DEG K	.0	2.890E-05	-6.215E-07
ARGON	2.9	2.878E-05	-6.222E-07
ALPHA =180 DEG	8.8	2.630E-05	-6.028E-07
A/A* = 17.6	14.7	1.772E-05	-5.475E-07
RE = .0325 IN.	20.6	9.425E-06	-5.038E-07
PC/P INF =88600%	26.5	4.639E-06	-2.189E-07
LAMBDA INF = .6370 IN.	32.4	2.399E-06	7.991E-08
RESERVOIR DENSITY =	38.2	1.187E-06	2.620E-07
2.540E 19/CCM	44.1	7.785E-07	3.528E-07
	73.5	3.849E-07	6.828E-07
2.0 IN. RADIAL	102.9	3.035E-07	1.060E-06
	132.4	2.496E-07	1.619E-06
	161.8	2.230E-07	2.291E-06
	191.2	1.589E-07	2.804E-06
	220.6	9.846E-08	2.943E-06
	250.0	9.840E-08	2.663E-06
	279.4	4.578E-08	2.492E-06
	308.8	7.565E-08	2.261E-06
	338.2	1.034E-07	2.415E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 80	-73.5	7.018E-07	8.390E-07
6/ 4/70	-58.8	1.165E-06	5.418E-07
CASE 10	-44.1	1.890E-06	2.620E-07
	-36.8	2.381E-06	1.291E-07
P0 = 350 TORR	-29.4	3.706E-06	-7.827E-08
T0 = 866 DEG K	-22.1	4.859E-06	-2.649E-07
NITROGEN	-14.7	7.230E-06	-5.869E-07
M INF = 7.58	-8.8	7.843E-06	-6.843E-07
	-2.9	7.970E-06	-5.741E-07
PC = 30.00 PSI	.0	7.930E-06	-5.766E-07
TC = 588 DEG K	2.9	7.688E-06	-6.859E-07
ARGON	8.8	7.671E-06	-6.625E-07
ALPHA =80 DEG	14.7	7.520E-06	-6.063E-07
A/A* = 17.6	22.1	5.728E-06	-3.590E-07
RE = .0325 IN.	29.4	4.171E-06	-1.233E-07
PC/Q INF =88600$	36.8	2.653E-06	1.142E-07
LAMBDA INF = .6370 IN.	44.1	1.672E-06	2.973E-07
RESERVOIR DENSITY =	58.8	8.701E-07	5.719E-07
2.540E 19/CCM	73.5	5.711E-07	8.526E-07
	102.9	4.252E-07	1.581E-06
3.9 IN. RADIAL	132.4	3.589E-07	2.466E-06
	161.8	2.314E-07	3.020E-06
	176.5	1.973E-07	3.092E-06
	191.2	1.367E-07	3.041E-06
	205.9	1.041E-07	2.818E-06
	220.6	7.376E-08	2.604E-06
	235.3	9.266E-08	2.344E-06
	250.0	5.766E-08	2.198E-06
	279.4	7.431E-08	2.084E-06
	308.8	6.358E-08	2.112E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 81	-331.8	2.099E-08	2.364E-06
6/ 4/70	-301.7	1.058E-08	2.225E-06
CASE 10	-271.5	2.691E-08	2.180E-06
	-241.3	8.641E-08	2.292E-06
P0 = 3.0 TORR	-211.2	1.213E-07	2.756E-06
T0 = 866 DEG K	-181.0	1.580E-07	3.241E-06
NITROGEN	-150.8	2.347E-07	3.319E-06
M INF = 7.58	-120.7	2.460E-07	3.029E-06
	-90.5	2.424E-07	2.479E-06
PC = 30.00 PSI	-60.3	2.559E-07	2.133E-06
TC = 588 DEG K	-30.2	2.856E-07	2.020E-06
ARGON	1.5	3.470E-07	1.692E-06

ALPHA =80 DEG
A/A* = 17.6
RE = .0325 IN.
PC/Q INF =88600.
LAMBDA INF = .6370 IN.
RESERVOIR DENSITY =
2.540E 19/CCM

5.0 IN. AXIAL

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 82	-150.8	2.416E-06	2.387E-05
6/ 4/70	-135.7	2.439E-06	2.409E-05
CASE 10	-120.7	2.387E-06	2.484E-05
	-105.6	3.039E-06	2.534E-05
PO = 350 TORR	-90.5	4.621E-06	2.885E-05
TO = 866 DEG K	-84.5	7.217E-06	2.988E-05
NITROGEN	-81.4	8.484E-06	3.066E-05
M INF = 7.58	-78.4	9.679E-06	3.197E-05
	-75.4	1.234E-05	3.260E-05
PC = 3.00 PSI	-72.4	1.581E-05	3.245E-05
TC = 588 DEG K	-69.4	1.999E-05	3.221E-05
ARGON	-66.4	2.490E-05	3.172E-05
ALPHA =80 DEG	-63.3	2.850E-05	3.103E-05
A/A* = 17.6	-60.3	3.356E-05	2.965E-05
RE = .0325 IN.	-57.3	3.821E-05	2.653E-05
PC/Q INF = 8860.	-54.3	4.428E-05	2.326E-05
LAMBDA INF = .6370 IN.	-51.3	4.910E-05	1.923E-05
RESERVOIR DENSITY =	-48.3	5.453E-05	1.583E-05
2.540E 18/CCM	-45.2	5.943E-05	1.141E-05
	-39.2	7.165E-05	5.474E-06
CENTERLINE AXIAL	-33.2	9.087E-05	2.731E-06
	-30.2	1.126E-04	1.409E-06
	-27.1	1.271E-04	6.577E-07
	-24.1	1.489E-04	2.539E-07
	-21.1	1.885E-04	1.259E-08
	-18.1	2.352E-04	-4.584E-08
	-15.1	2.885E-04	8.056E-07
	-12.1	3.678E-04	1.644E-06
	-9.0	4.867E-04	2.101E-06
	-6.0	4.873E-04	2.672E-06
	1.5	3.921E-04	3.176E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 83	-123.5	1.109E-06	2.500E-05
6/ 4/70	-88.2	1.676E-06	2.468E-05
CASE 10	-67.6	2.201E-06	2.500E-05
	-55.9	2.888E-06	2.449E-05
P0 = 3.0 TORR	-44.1	3.760E-06	2.252E-05
T0 = 866 DEG K	-32.4	5.310E-06	1.806E-05
NITROGEN	-26.5	6.634E-06	1.547E-05
M INF = 7.58	-23.5	7.472E-06	1.409E-05
	-20.6	9.014E-06	1.246E-05
PC = 3.00 PSI	-17.6	1.120E-05	1.095E-05
TC = 550 DEG K	-14.7	1.750E-05	8.642E-06
ARGON	-11.8	2.705E-05	6.496E-06
ALPHA =80 DEG	-8.8	4.861E-05	3.178E-06
A/A* = 17.6	-5.9	7.263E-05	9.881E-07
RE = .0325 IN.	-2.9	9.234E-05	7.094E-07
PC/Q INF = 8860.	.0	1.052E-04	8.035E-07
LAMBDA INF = .6370 IN.	2.9	9.468E-05	1.134E-06
RESERVOIR DENSITY =	5.9	7.441E-05	1.668E-06
2.720E 18/CCM	8.8	4.119E-05	4.754E-06
	11.8	2.778E-05	7.363E-06
1.0 IN. RADIAL	14.7	1.636E-05	1.039E-05
	17.6	1.279E-05	1.252E-05
	23.5	7.745E-06	1.600E-05
	29.4	5.420E-06	1.847E-05
	44.1	3.254E-06	2.366E-05
	58.8	2.392E-06	2.434E-05
	73.5	1.809E-06	2.330E-05
	88.2	1.275E-06	2.215E-05
	102.9	1.258E-06	2.138E-05
	132.4	1.090E-06	2.080E-05

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 84	-39.2	.000E 00	.000E 00
6/ 9/70	-30.2	1.209E-06	8.046E-06
CASE 11	-21.1	2.090E-06	9.549E-06
	-18.1	2.639E-06	9.976E-06
PO = 3.0 TORR	-15.1	3.312E-06	1.039E-05
TO = 866 DEG K	-12.1	4.536E-06	1.121E-05
NITROGEN	-9.0	5.611E-06	1.144E-05
M INF = 7.58	-6.0	7.140E-06	1.192E-05
	-3.0	9.545E-06	1.231E-05
PC = 10.00 PSI	-1.5	1.164E-05	1.225E-05
TC = 572 DEG K	.0	1.412E-05	1.214E-05
ARGON	3.0	1.483E-05	1.179E-05
ALPHA =90 DEG	6.0	1.813E-05	1.052E-05
A/A* = 17.6	9.0	2.112E-05	8.958E-06
RE = .0325 IN.	12.1	2.054E-05	7.478E-06
PC/P INF =29600.	15.1	1.858E-05	5.984E-06
LAMBDA INF = .6370 IN.	19.6	1.365E-05	4.571E-06
RESERVOIR DENSITY =	24.1	8.107E-06	3.560E-06
8.730E 18/CCM	30.2	5.205E-06	3.108E-06
	39.2	2.678E-06	2.517E-06
2.5 IN. RADIAL	54.3	1.341E-06	2.280E-06
	69.4	8.546E-07	2.202E-06
	84.5	6.748E-07	2.186E-06
	114.6	4.964E-07	2.197E-06
	144.8	4.015E-07	2.231E-06
	190.0	2.406E-07	2.337E-06
	310.7	1.896E-07	2.535E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 88	-66.4	.000E 00	.000E 00
6/ 9/70	-51.3	2.007E-07	6.669E-06
CASE 11	-36.2	2.198E-07	6.638E-06
	-21.1	2.058E-07	6.836E-06
P0 = 340 TORR	-9.0	2.843E-07	6.895E-06
T0 = 866 DEG K	.0	2.579E-07	7.142E-06
NITROGEN	15.1	2.815E-07	7.617E-06
M INF = 7.58	27.1	3.048E-07	8.083E-06
	39.2	6.170E-07	8.724E-06
PC = 10.00 PSI	51.3	1.045E-06	9.162E-06
TC = 588 DEG K	63.3	1.378E-06	9.210E-06
ARGON	75.4	1.584E-06	9.067E-06
ALPHA =90 DEG	87.5	1.678E-06	8.601E-06
A/A* = 17.6	99.5	1.631E-06	7.974E-06
RE = .0325 IN.	114.6	1.468E-06	7.026E-06
PC/Q INF =29600.	129.7	1.288E-06	6.142E-06
LAMBDA INF = .6370 IN.	144.8	1.152E-06	5.491E-06
RESERVOIR DENSITY =	159.9	9.682E-07	5.135E-06
8.480E 18/CCM	175.0	7.993E-07	4.636E-06
	190.0	7.089E-07	4.160E-06
5.0 IN. RADIAL	205.1	5.767E-07	3.949E-06
	235.3	4.798E-07	3.536E-06
	265.5	4.651E-07	3.141E-06
	295.6	3.641E-07	2.928E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 86	-92.0	.000E 00	.000E 00
6/ 9/70	-81.4	.000E 00	.000E 00
CASE 11	-72.4	.000E 00	.000E 00
	-66.4	2.030E-07	7.861E-07
P0 = 3.0 TORR	-60.3	3.823E-07	1.090E-06
T0 = 866 DEG K	-51.3	8.631E-07	1.219E-06
NITROGEN	-48.3	1.414E-06	1.366E-06
M INF = 7.58	-45.2	1.864E-06	1.368E-06
	-39.2	3.145E-06	1.195E-06
PC =150.00 PSI	-36.2	5.020E-06	1.067E-06
TC = 588 DEG K	-33.2	6.200E-06	7.997E-07
ARGON	-30.2	7.958E-06	5.305E-07
ALPHA =90 DEG	-27.1	7.830E-06	2.313E-07
A/A* = 17.6	-24.1	5.542E-06	3.632E-08
RE = .0325 IN.	-21.1	3.625E-06	-3.522E-08
PC/Q INF = 443,000	-18.1	3.333E-06	-5.771E-08
LAMBDA INF = .6370 IN.	-15.1	2.836E-06	-7.723E-08
RESERVOIR DENSITY =	-9.0	2.545E-06	-9.182E-08
1.270E 20/CCM	-3.0	2.405E-06	-9.903E-08
	9.0	2.118E-06	-1.070E-07
5.0 IN. RADIAL	24.1	1.714E-06	-1.094E-07
	39.2	1.215E-06	-9.794E-08
	54.3	7.247E-07	-4.509E-08
	69.4	4.185E-07	-1.295E-08
	84.5	2.366E-07	7.912E-09
	99.5	1.171E-07	2.175E-08
	114.6	6.179E-08	3.118E-08
	144.8	1.274E-08	4.475E-08
	175.0	2.367E-09	3.954E-08
	205.1	1.348E-09	3.147E-08
	250.4	1.294E-09	2.469E-08

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 87	-111.6	1.800E-08	4.925E-07
6/ 9/70	-81.4	3.596E-08	5.597E-07
CASE 11	-66.4	4.224E-08	6.145E-07
	-51.3	5.638E-08	7.537E-07
P0 = 3.0 TORR	-36.2	1.211E-07	1.009E-06
T0 = 866 DEG K	-28.7	1.596E-07	1.215E-06
NITROGEN	-21.1	2.668E-07	1.415E-06
M INF = 7.58	-15.1	3.573E-07	1.548E-06
	-9.0	5.725E-07	1.668E-06
PC =150.00 PSI	-3.0	8.599E-07	1.677E-06
TC = 588 DEG K	3.0	1.206E-06	1.575E-06
ARGON	9.0	1.713E-06	1.485E-06
ALPHA =90 DEG	12.1	2.034E-06	1.416E-06
A/A* = 17.6	15.1	2.374E-06	1.310E-06
RE = .0325 IN.	21.1	3.266E-06	1.027E-06
PC/Q INF = 443,000	27.1	4.017E-06	7.779E-07
LAMBDA INF = .6370 IN.	33.2	4.814E-06	4.731E-07
RESERVOIR DENSITY =	39.2	4.744E-06	2.436E-07
1.270E 20/CCM	45.2	4.233E-06	8.218E-08
	51.3	3.048E-06	-9.724E-09
10.0 IN. RADIAL	57.3	2.205E-06	-4.560E-08
	63.3	1.225E-06	-6.187E-08
	69.4	8.558E-07	-3.097E-08
	75.4	6.286E-07	-1.541E-08
	81.4	5.156E-07	-9.429E-09
	87.5	4.304E-07	-2.607E-09
	93.5	3.739E-07	5.980E-10
	99.5	3.316E-07	2.550E-09
	114.6	2.466E-07	5.748E-09
	129.7	1.967E-07	9.762E-09
	144.8	1.610E-07	1.215E-08
	175.0	1.101E-07	1.837E-08

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 88	-96.5	.000E 00	.000E 00
6/ 9/70	-81.4	.000E 00	.000E 00
CASE 11	-66.4	.000E 00	.000E 00
	-57.3	.000E 00	.000E 00
P0 = 3.0 TORR	-51.3	.000E 00	.000E 00
T0 = 866 DEG K	-45.2	.000E 00	.000E 00
NITROGEN	-42.2	.000E 00	.000E 00
M INF = 7.58	-39.2	.000E 00	.000E 00
	-36.2	.000E 00	.000E 00
PC =150.00 PSI	-33.2	9.648E-06	1.736E-07
TC = 588 DEG K	-30.2	8.535E-06	2.528E-08
ARGON	-27.1	8.871E-06	-2.334E-08
ALPHA =90 DEG	-24.1	9.630E-06	-3.956E-08
A/A* = 17.6	-21.1	9.906E-06	-5.116E-08
RE = .0325 IN.	-18.1	1.011E-05	-5.742E-08
PC/Q INF = 443,000	-12.1	1.052E-05	-7.004E-08
LAMBDA INF = .6370 IN.	-6.0	1.021E-05	-8.008E-08
RESERVOIR DENSITY =	-3.0	9.929E-06	-8.395E-08
1.270E 20/CCM	3.0	8.723E-06	-9.556E-08
	9.0	7.004E-06	-1.033E-07
2.5 IN. RADIAL	15.1	5.246E-06	-1.040E-07
	18.1	4.506E-06	-1.049E-07
	21.1	3.623E-06	-1.056E-07
	24.1	2.961E-06	-1.041E-07
	27.1	2.531E-06	-1.030E-07
	30.2	2.030E-06	-1.037E-07
	33.2	1.666E-06	-1.034E-07
	39.2	1.058E-06	-8.556E-08
	45.2	6.002E-07	-3.168E-08
	51.3	1.824E-07	1.776E-08
	69.4	4.790E-08	4.040E-08
	99.5	2.761E-10	6.182E-08
	129.7	-1.027E-09	7.254E-08
	159.9	-2.144E-09	8.197E-08
	190.0	-2.570E-09	8.661E-08
	220.2	-2.634E-09	8.874E-08
	250.4	-3.088E-09	9.358E-08
	280.5	-3.160E-09	9.578E-08
	310.7	-3.642E-09	1.008E-07
	340.9	-4.142E-09	1.060E-07

TABLE IX (Continued)

PAGE 89
6/ 9/70
CASE 11

P0 = 6.0 TORR
T0 = 300 DEG K
NITROGEN
M INF = 7.78

PC = 20.00 PSI
TC = 588 DEG K
ARGON
ALPHA =90 DEG
A/A* = 17.6
RE = .0325 IN.
PC/W INF =59200%
LAMBDA INF = .3460 IN.
RESERVOIR DENSITY =
1.700E 19/CCM

2.5 IN. RADIAL

NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
-51.3	.000E 00	.000E 00
-36.2	.000E 00	.000E 00
-27.1	5.430E-08	1.950E-05
-21.1	5.120E-07	3.135E-05
-15.1	6.551E-06	4.703E-05
-9.0	3.103E-05	3.967E-05
-6.0	5.224E-05	2.924E-05
-3.0	6.735E-05	1.453E-05
.0	5.372E-05	7.425E-06
3.0	2.744E-05	3.567E-06
6.0	1.710E-05	2.537E-06
9.0	1.190E-05	1.907E-06
15.1	7.088E-06	1.577E-06
21.1	3.850E-06	1.693E-06
27.1	2.387E-06	1.738E-06
33.2	1.487E-06	1.801E-06
39.2	1.099E-06	1.856E-06
45.2	8.362E-07	1.913E-06
51.3	6.948E-07	2.024E-06
57.3	6.239E-07	2.095E-06
69.4	4.773E-07	2.255E-06
84.5	3.894E-07	2.470E-06
99.5	3.689E-07	2.681E-06
129.7	3.337E-07	3.064E-06
159.9	3.152E-07	3.332E-06
190.0	2.254E-07	3.578E-06
220.2	2.168E-07	3.765E-06
250.4	2.073E-07	3.957E-06
280.5	2.062E-07	4.091E-06
310.7	2.018E-07	4.248E-06

TABLE IX (Continued)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 90	-51.3	-7.344E-08	1.559E-05
6/ 9/70	-36.2	8.288E-09	1.521E-05
CASE 11	-21.1	-3.930E-08	1.521E-05
	-6.0	-3.979E-08	1.540E-05
P0 = 6.0 TORR	9.0	5.746E-08	1.596E-05
T0 = 300 DEG K	21.1	-1.904E-07	2.263E-05
NITROGEN	27.1	-2.846E-07	3.302E-05
M INF = 7.78	33.2	1.692E-06	4.744E-05
	36.2	3.436E-06	4.735E-05
PC = 20.00 PSI	39.2	5.748E-06	4.528E-05
TC = 588 DEG K	42.2	9.631E-06	3.949E-05
ARGON	45.2	1.263E-05	3.550E-05
ALPHA =90 DEG	51.3	2.036E-05	2.134E-05
A/A* = 17.6	57.3	2.192E-05	1.404E-05
RE = .0325 IN.	63.3	1.671E-05	8.964E-06
PC/U INF =59200:	69.4	1.303E-05	6.948E-06
LAMBDA INF = .3460 IN.	75.4	9.603E-06	5.684E-06
RESERVOIR DENSITY =	81.4	7.281E-06	5.358E-06
1.700E 19/CCM	87.5	5.498E-06	5.069E-06
	99.5	3.814E-06	4.684E-06
5.0 IN: RADIAL	111.6	2.737E-06	4.429E-06
	123.7	2.133E-06	4.221E-06
	144.8	1.527E-06	4.034E-06
	175.0	1.083E-06	3.844E-06
	205.1	8.701E-07	3.726E-06
	235.3	6.935E-07	3.596E-06
	265.5	6.316E-07	3.560E-06
	295.6	5.226E-07	3.501E-06

TABLE IX (Concluded)

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 91	-111.6	-6.524E-08	1.824E-05
6/ 9/70	-96.5	6.772E-08	1.815E-05
CASE 11	-81.4	6.836E-08	1.832E-05
	-66.4	4.295E-08	1.800E-05
PO = 610 TORR	-51.3	-5.700E-08	1.818E-05
TO = 300 DEG K	-21.1	1.737E-08	1.799E-05
NITROGEN	69.4	-2.661E-08	1.707E-05
M INF = 7.78	159.9	-1.170E-07	1.625E-05
	190.0	-7.645E-08	1.622E-05
PC = 20.00 PSI	220.2	9.499E-08	1.529E-05
TC = 588 DEG K	250.4	1.403E-07	1.523E-05
ARGON	265.5	-7.952E-08	1.687E-05
ALPHA =90 DEG	280.5	-2.854E-07	2.583E-05
A/A* = 17.6	295.6	-8.983E-07	3.772E-05
RE = .0325 IN.	310.7	-6.338E-07	3.612E-05
PC/W INF =59200;	325.8	-1.567E-07	3.137E-05
LAMBDA INF = .3460 IN.	340.9	2.951E-07	2.593E-05
RESERVOIR DENSITY =	371.0	6.465E-07	1.961E-05
1.700E 19/CCM	401.2	8.998E-07	1.471E-05
	431.4	9.205E-07	1.133E-05
10.0 IN. RADIAL	444.9	9.404E-07	1.042E-05

	NORMALIZED DISTANCE	PLUME N/RD	FREE STREAM N/RD
PAGE 92	-21.1	-5.050E-08	1.611E-05
6/ 9/70	39.2	-8.525E-09	1.585E-05
CASE 11	69.4	-6.835E-08	1.594E-05
	99.5	-3.413E-08	1.601E-05
PO = 610 TORR	114.6	-1.480E-07	1.960E-05
TO = 300 DEG K	122.2	-4.338E-07	2.834E-05
NITROGEN	129.7	-6.924E-07	3.963E-05
M INF = 7.78	144.8	-2.863E-07	4.121E-05
	159.9	1.975E-06	3.000E-05
PC = 20.00 PSI	175.0	3.539E-06	2.096E-05
TC = 588 DEG K	190.0	3.890E-06	1.547E-05
ARGON	205.1	4.084E-06	1.171E-05
ALPHA =90 DEG	220.2	3.569E-06	9.267E-06
A/A* = 17.6	250.4	2.899E-06	6.591E-06
RE = .0325 IN.	280.5	2.072E-06	5.452E-06
PC/W INF =59200;	340.9	1.424E-06	4.184E-06
LAMBDA INF = .3460 IN.			
RESERVOIR DENSITY =			
1.700E 19/CCM			
7.5 IN. RADIAL			

APPENDIX III
PHOTOGRAPHIC PLUME BOUNDARIES

For the first 74 figures, the inside shock is identified by a circle and the outside shock by a square. This symbolism is reversed for figures 75 through 98.

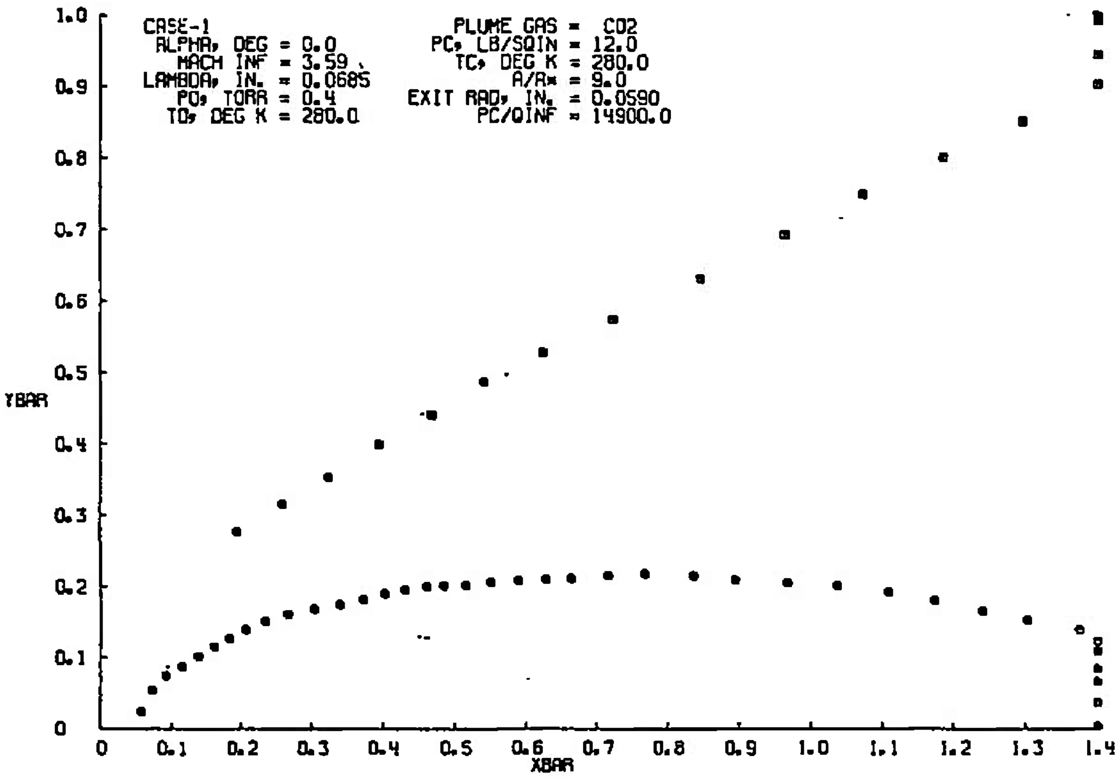


Fig. III-1

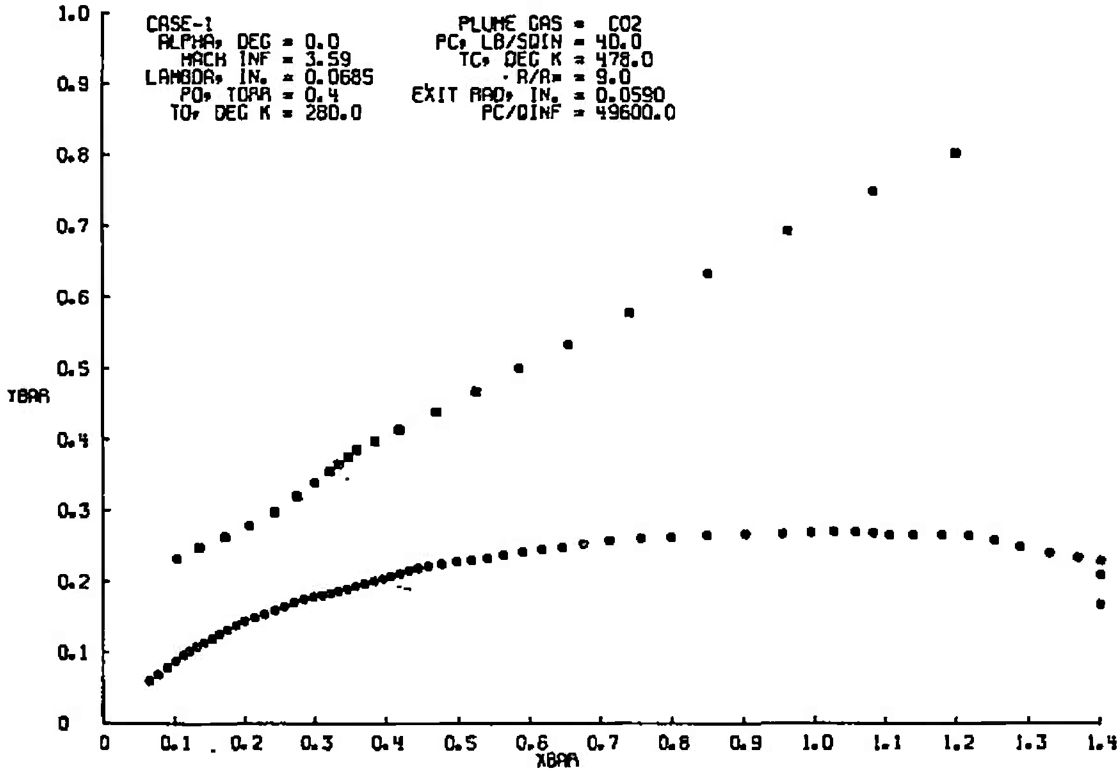


Fig. III-2

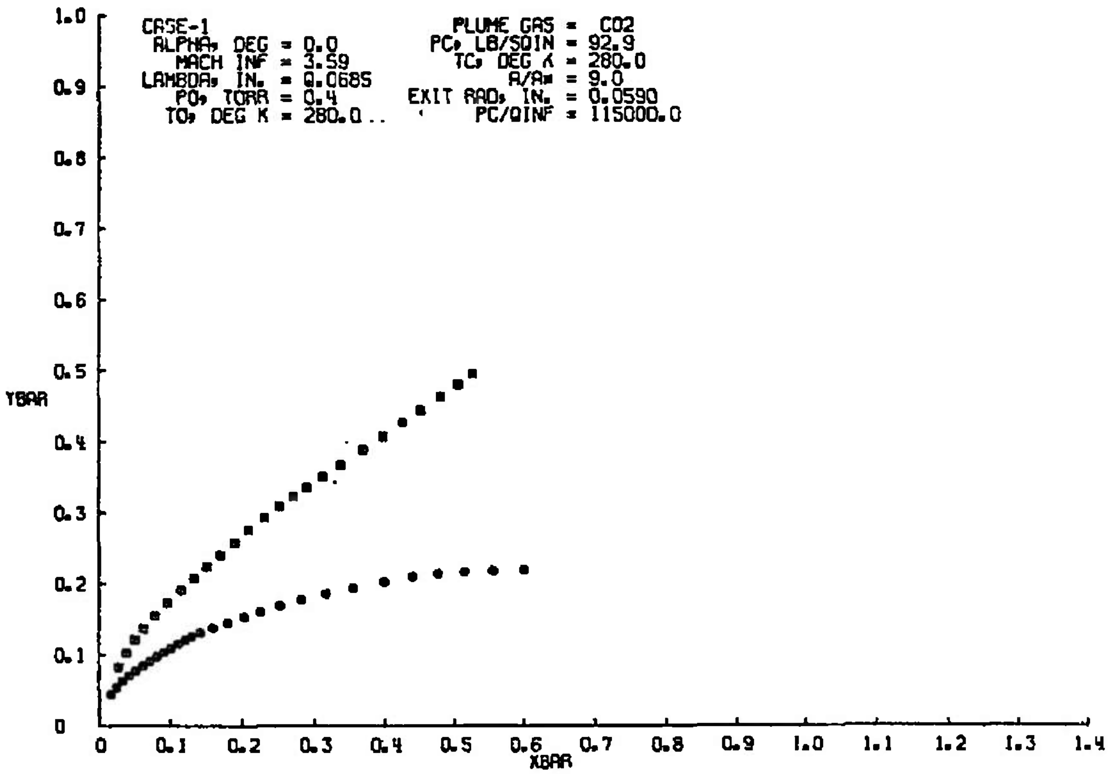


Fig. III-3

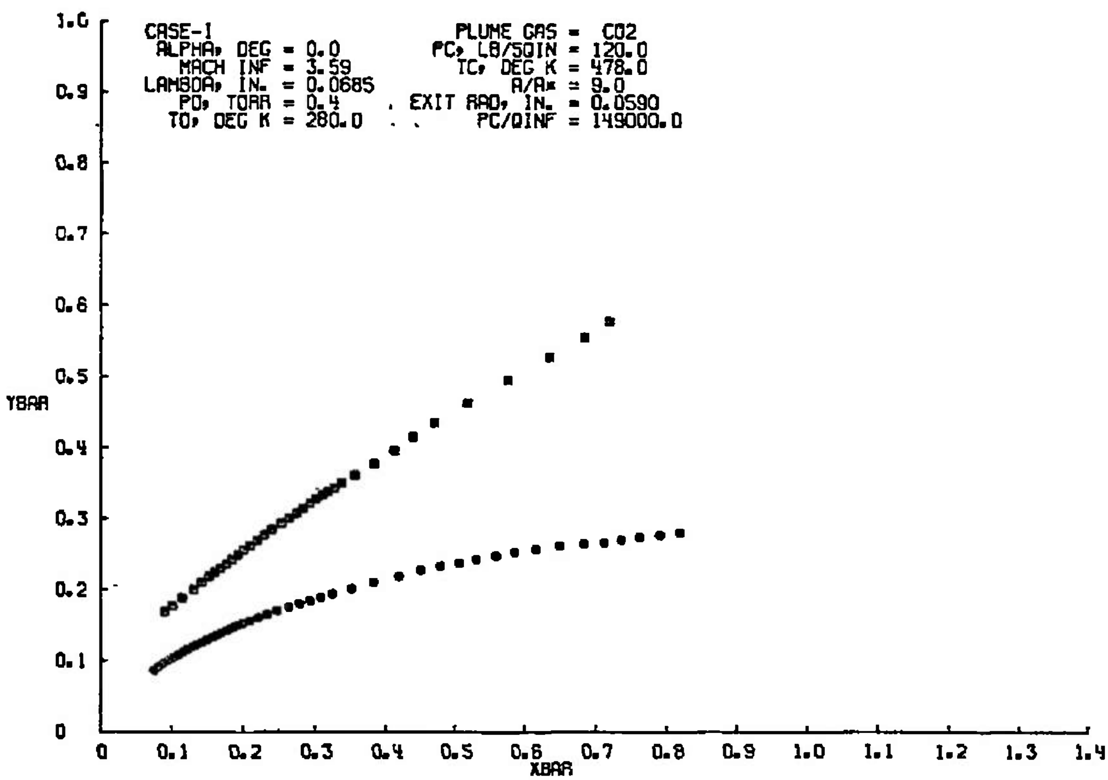


Fig. III-4

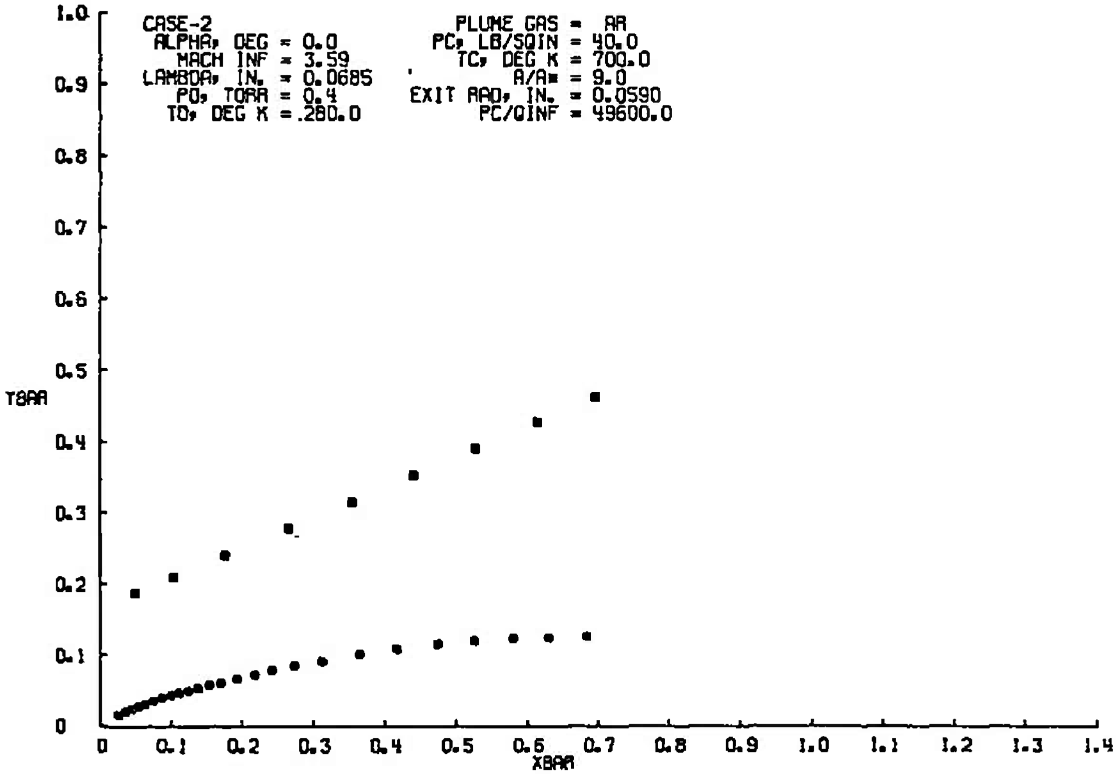


Fig. III-5

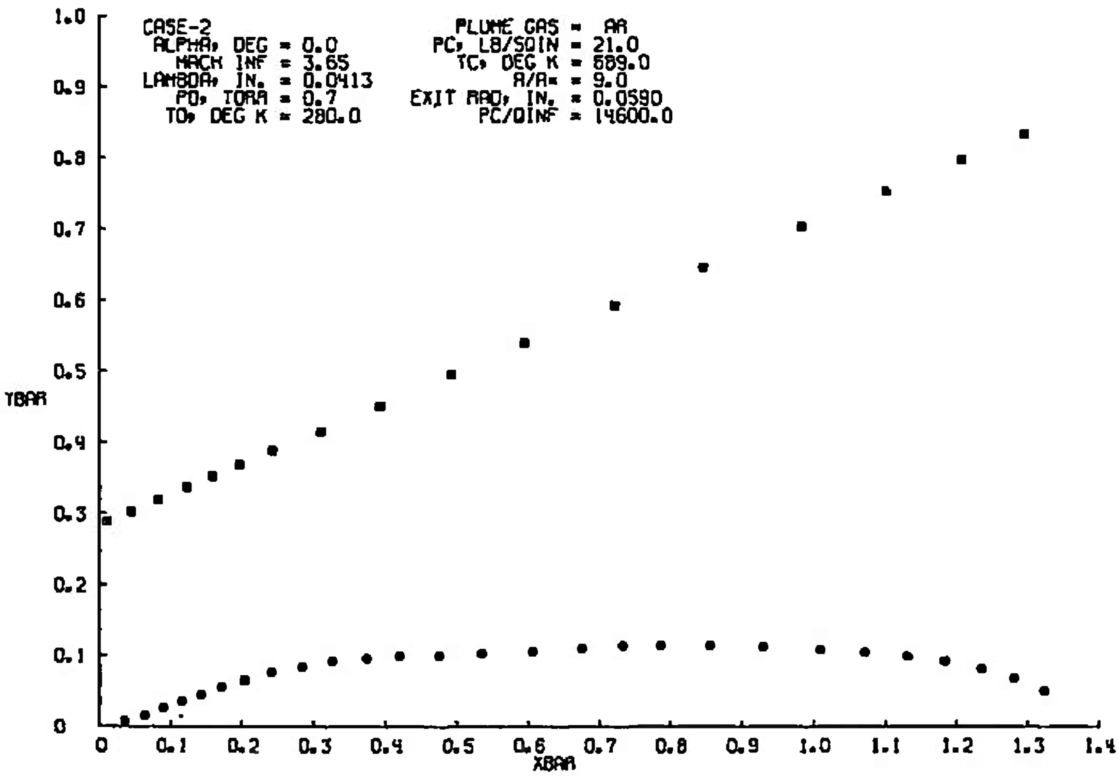


Fig. III-6

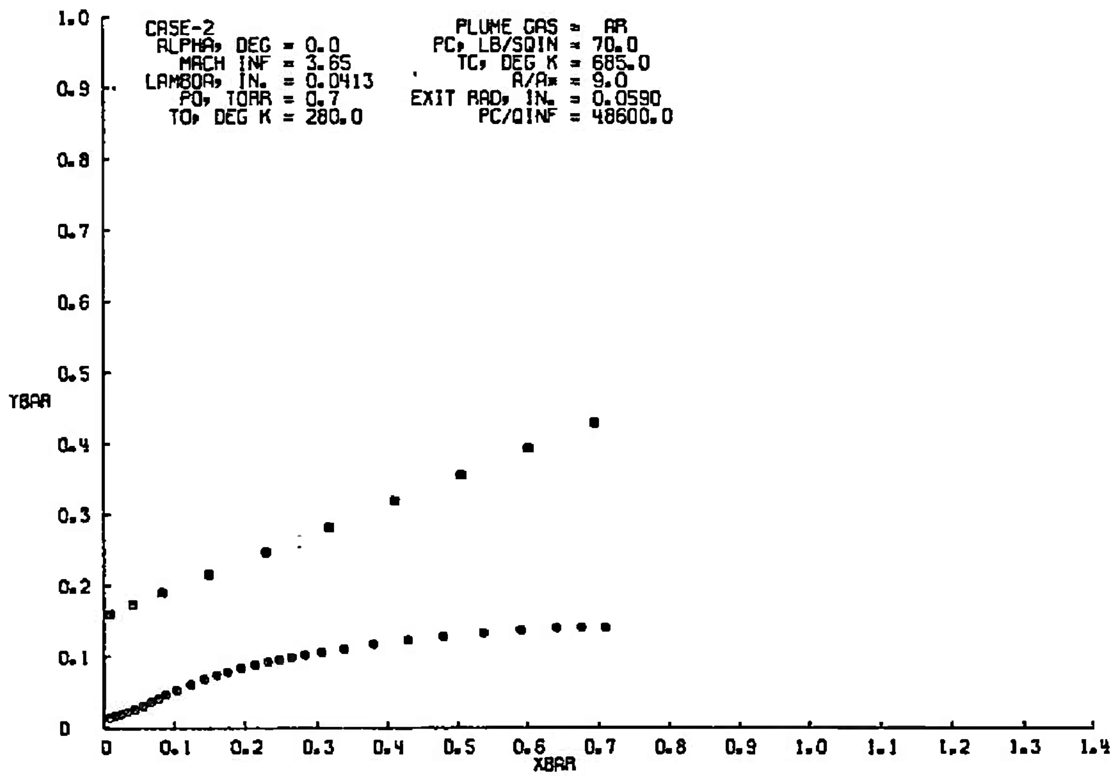


Fig. III-7

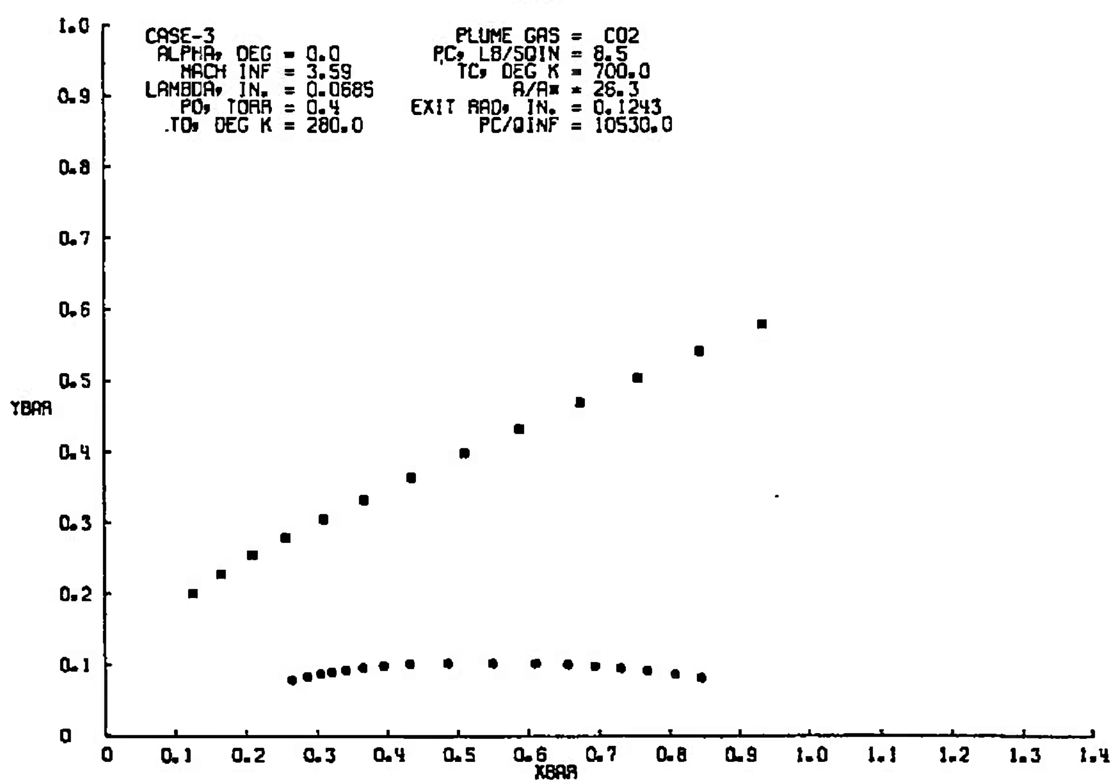


Fig. III-8

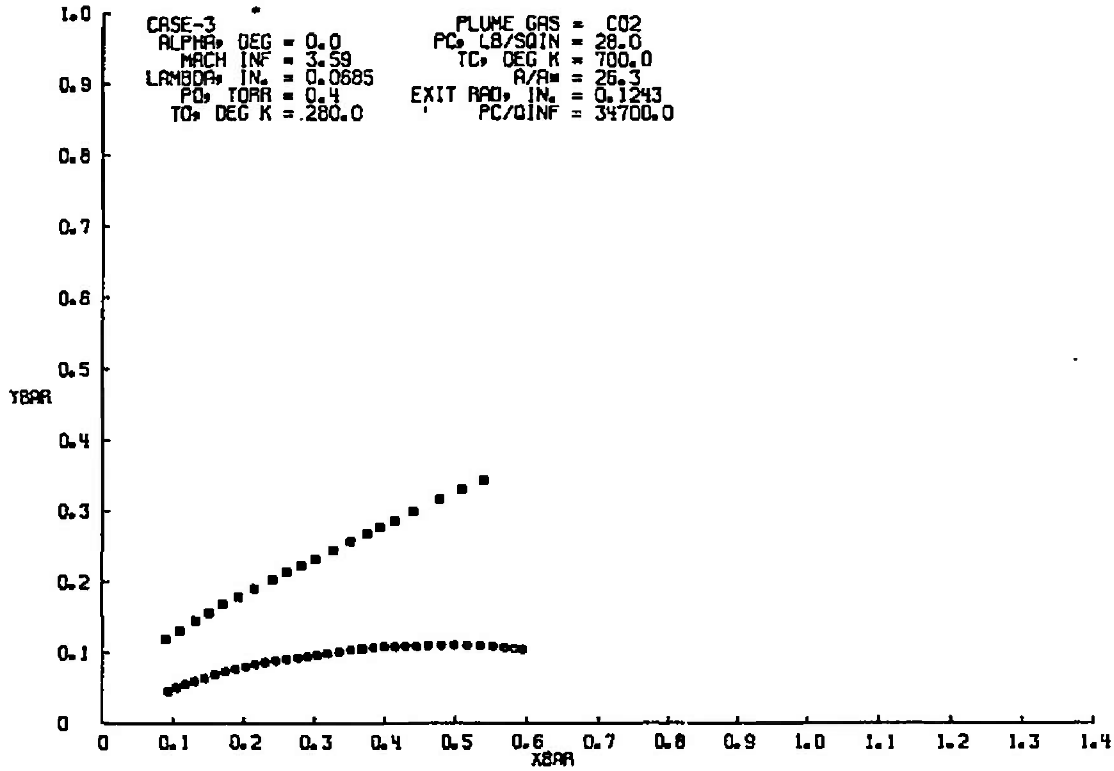


Fig. III-9

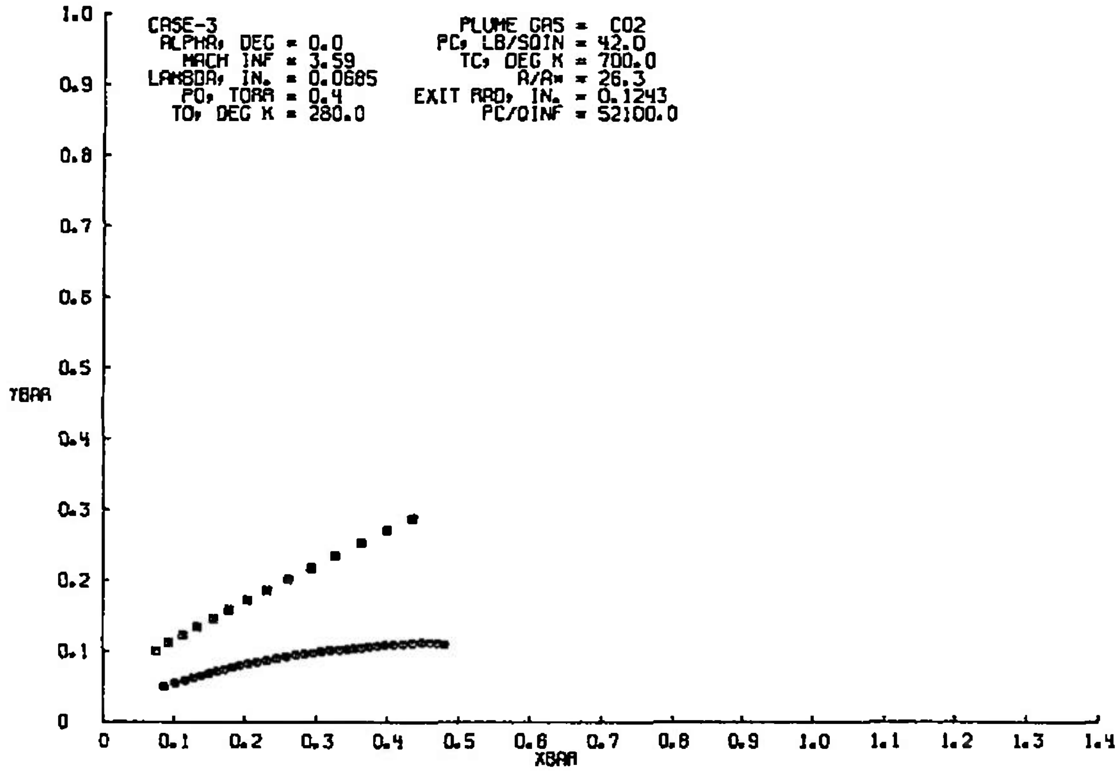


Fig. III-10

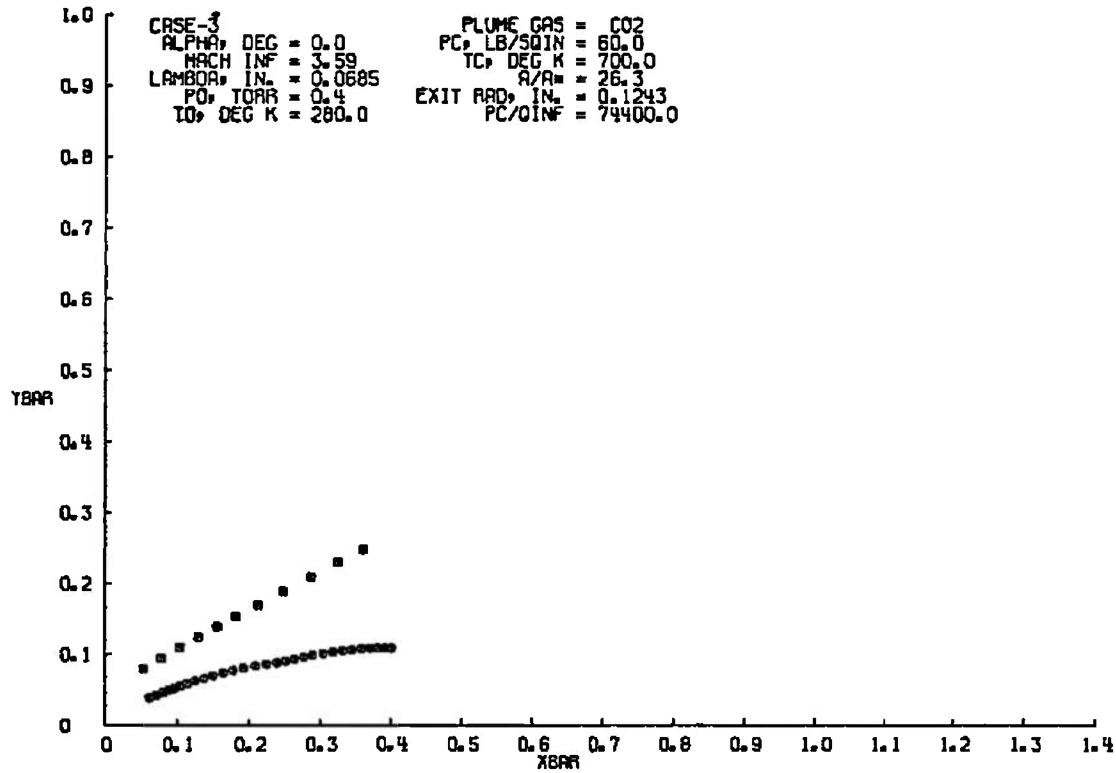


Fig. III-11

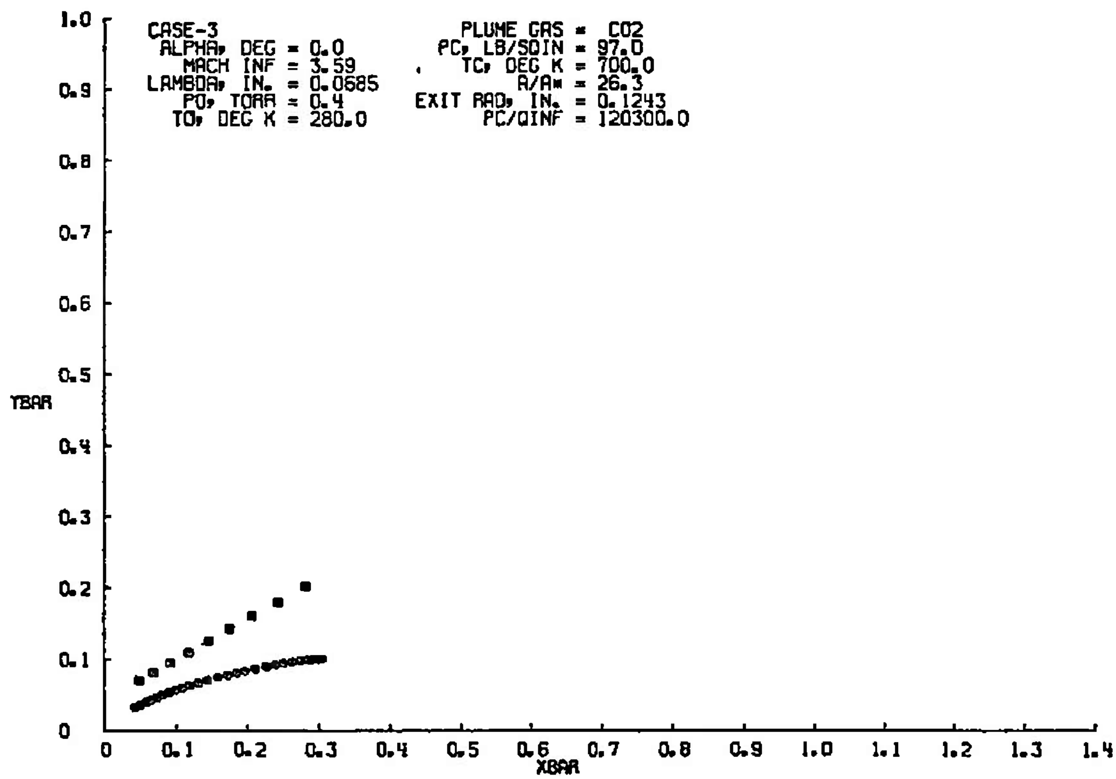


Fig. III-12

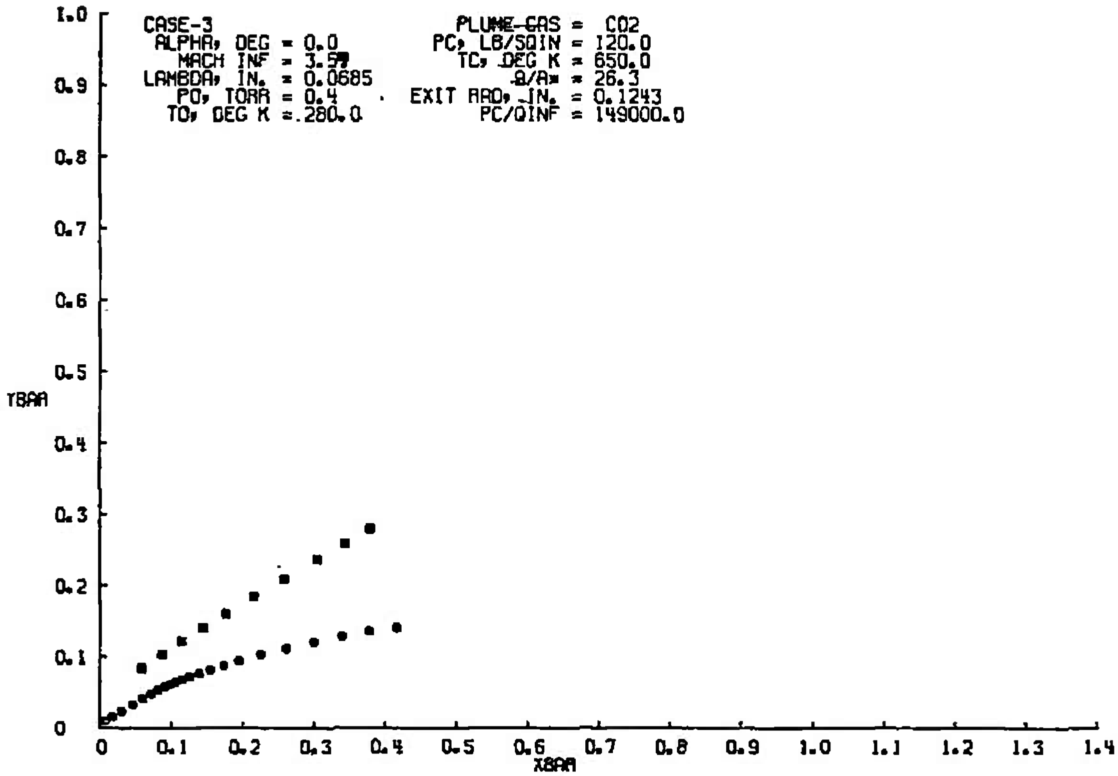


Fig. III-13

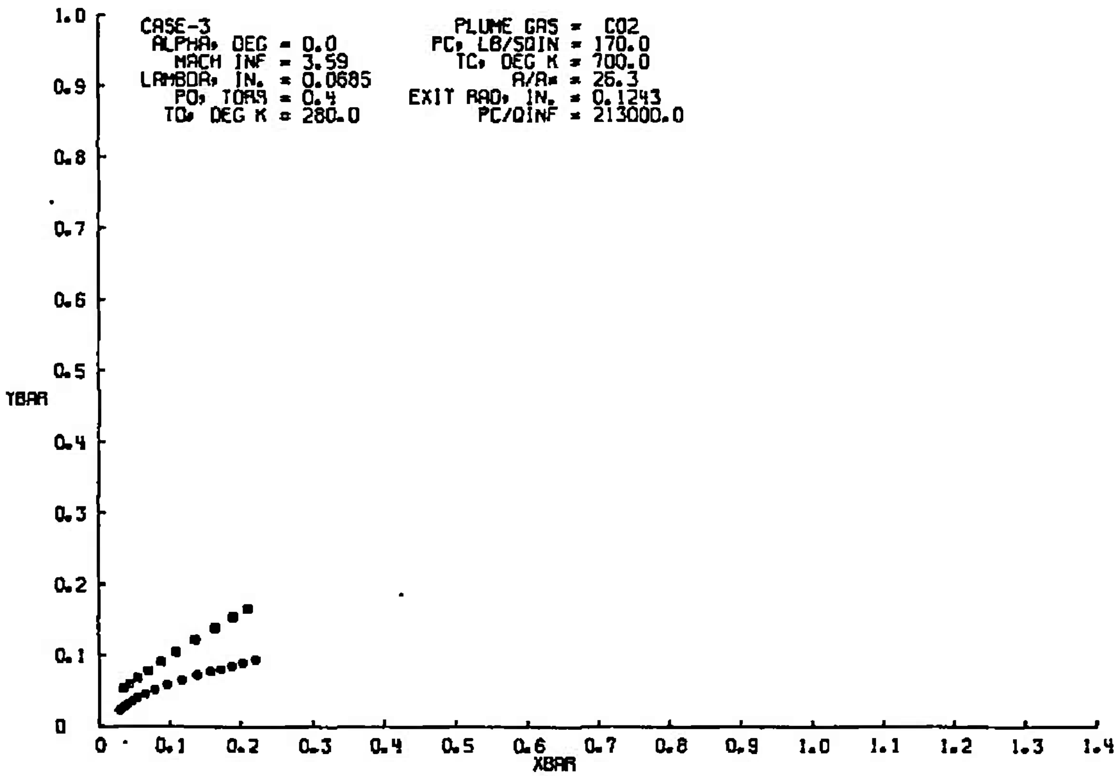


Fig. III-14

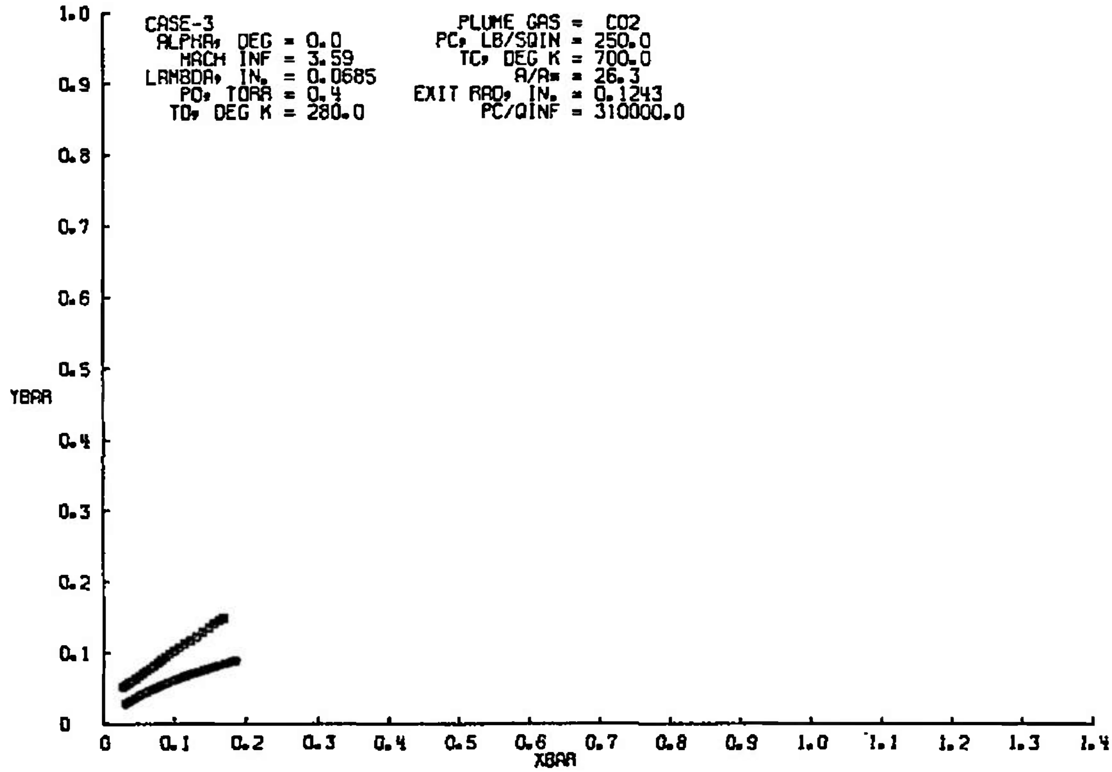


Fig. III-15

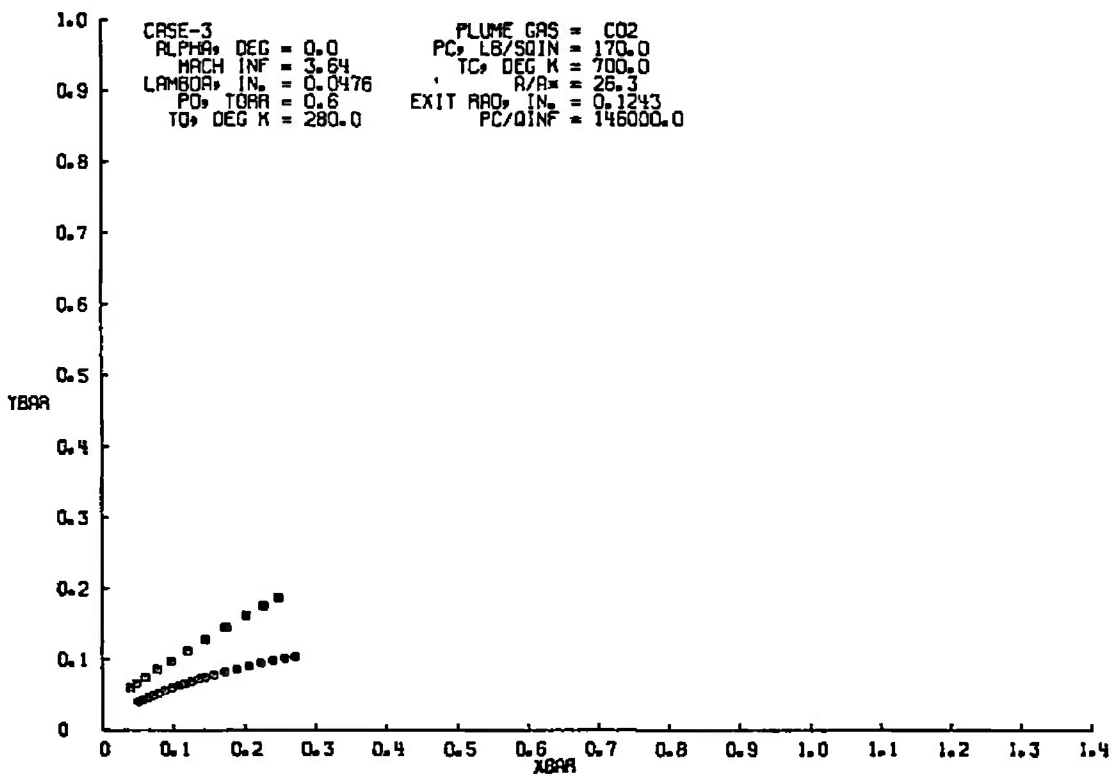


Fig. III-16

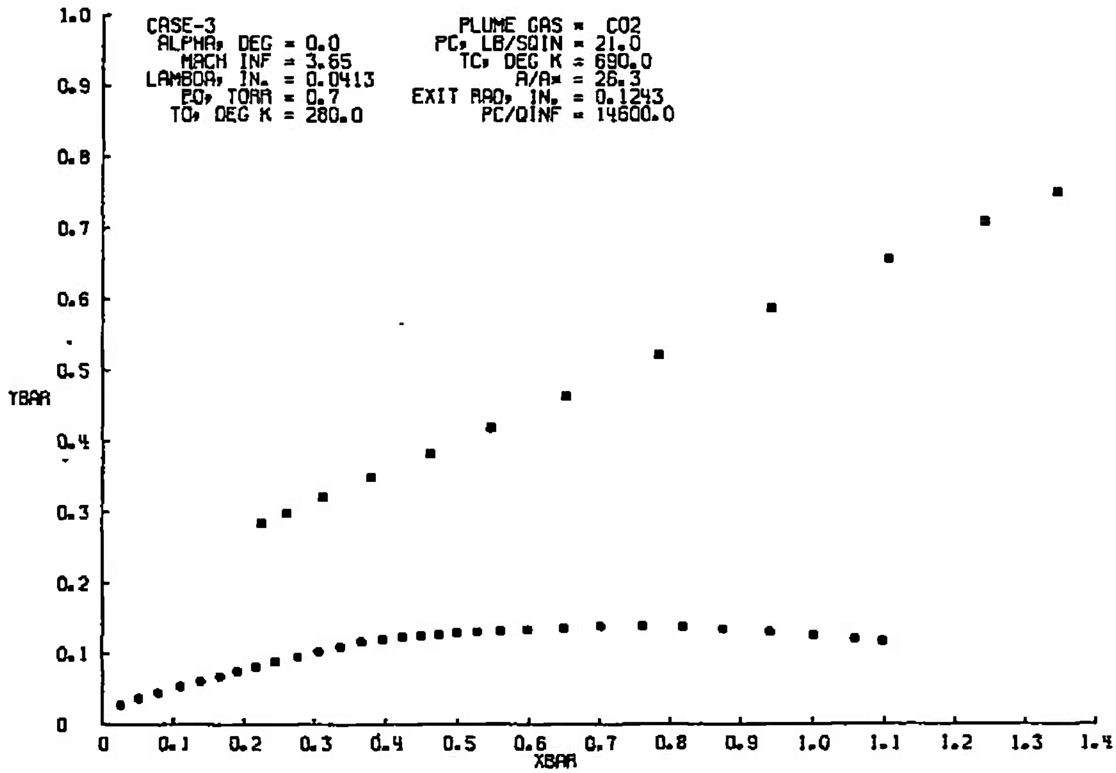


Fig. III-17

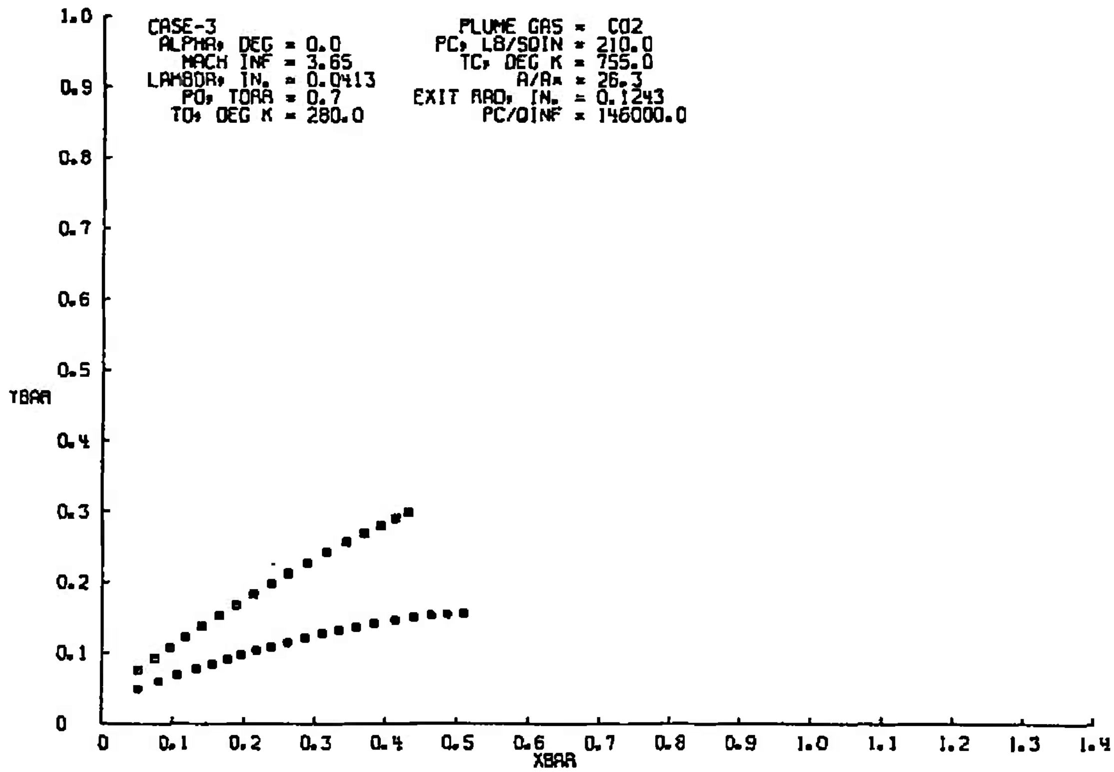


Fig. III-18

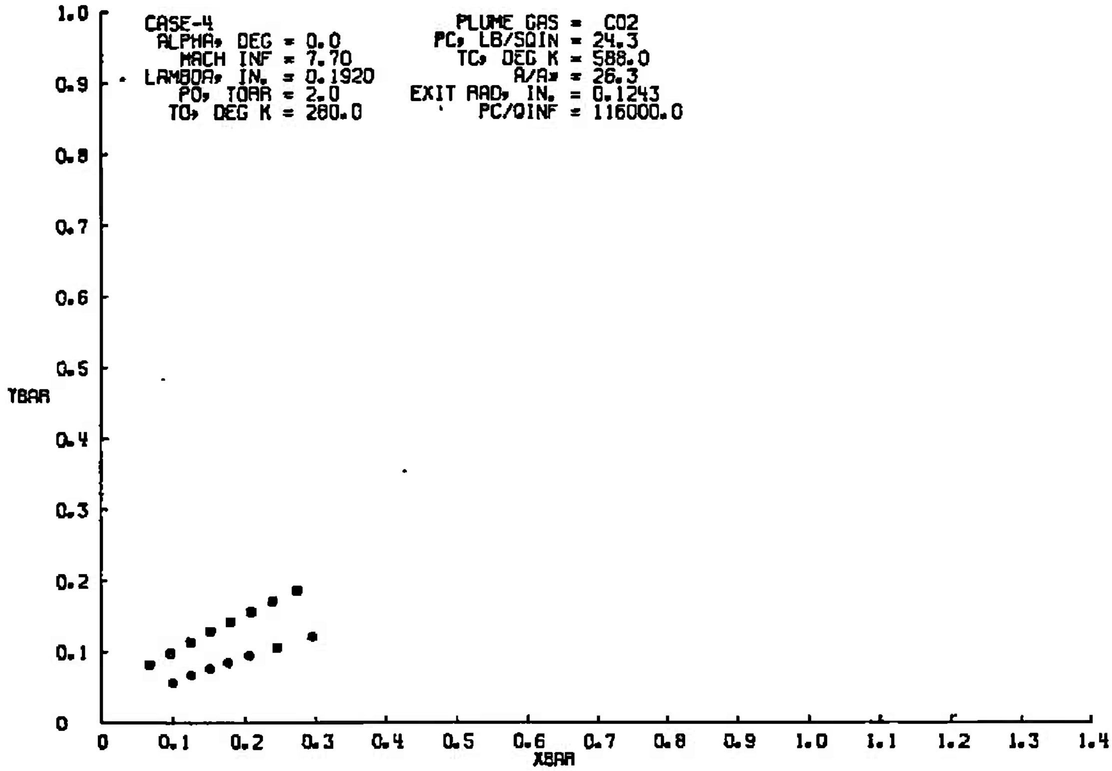


Fig. III-19

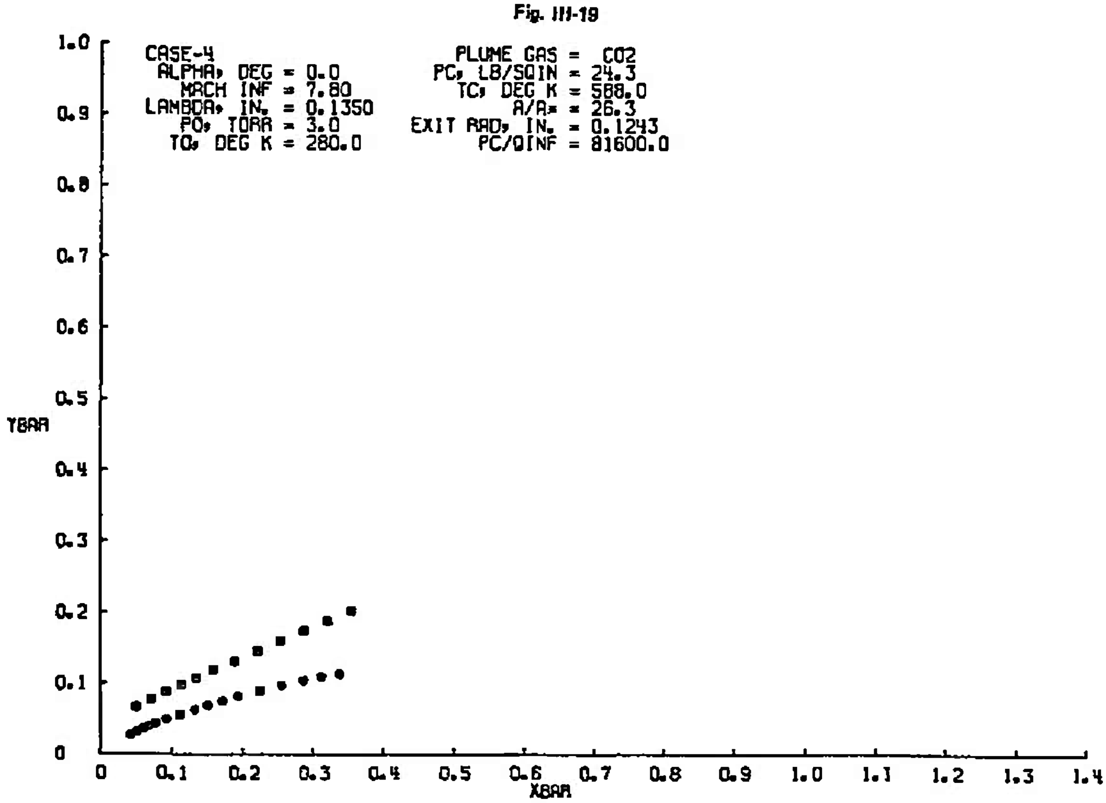


Fig. III-20

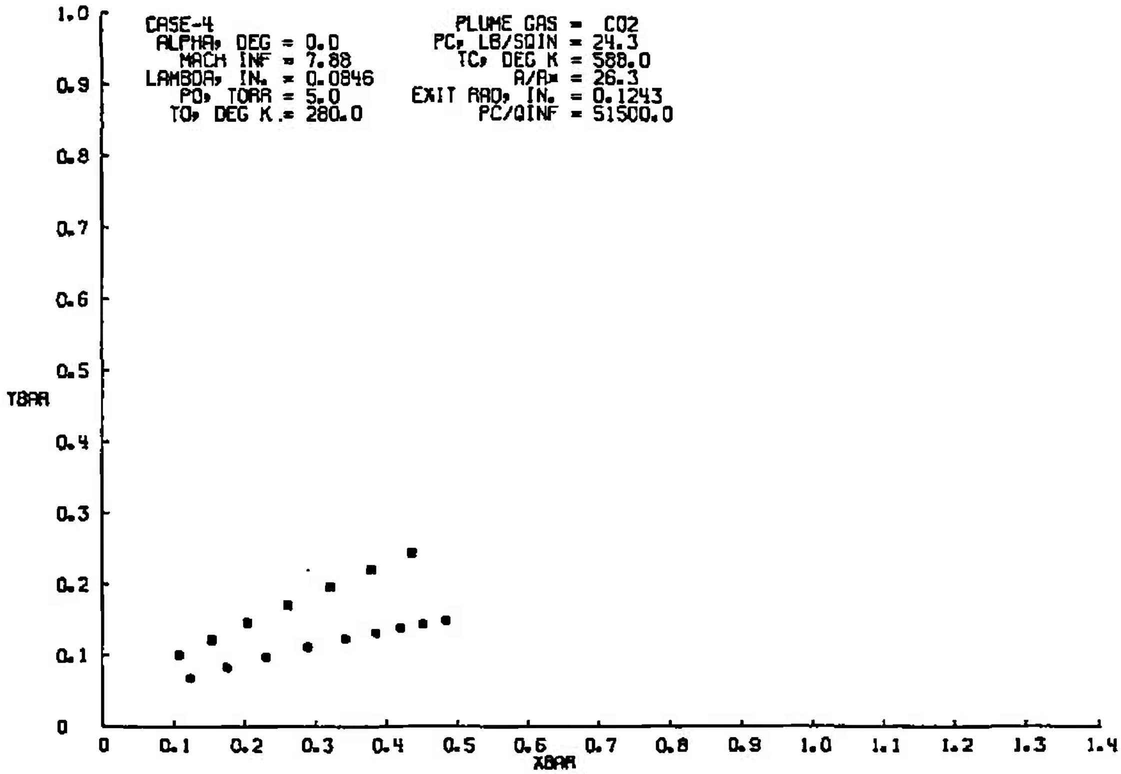


Fig. III-21

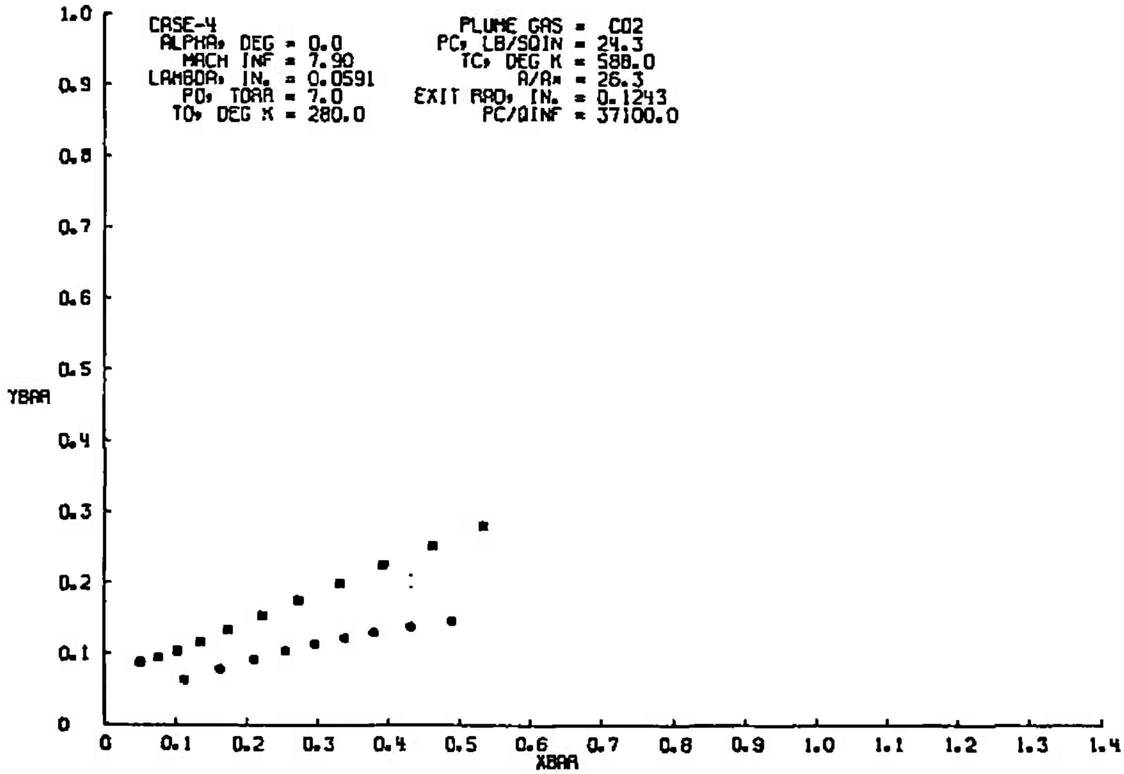


Fig. III-22

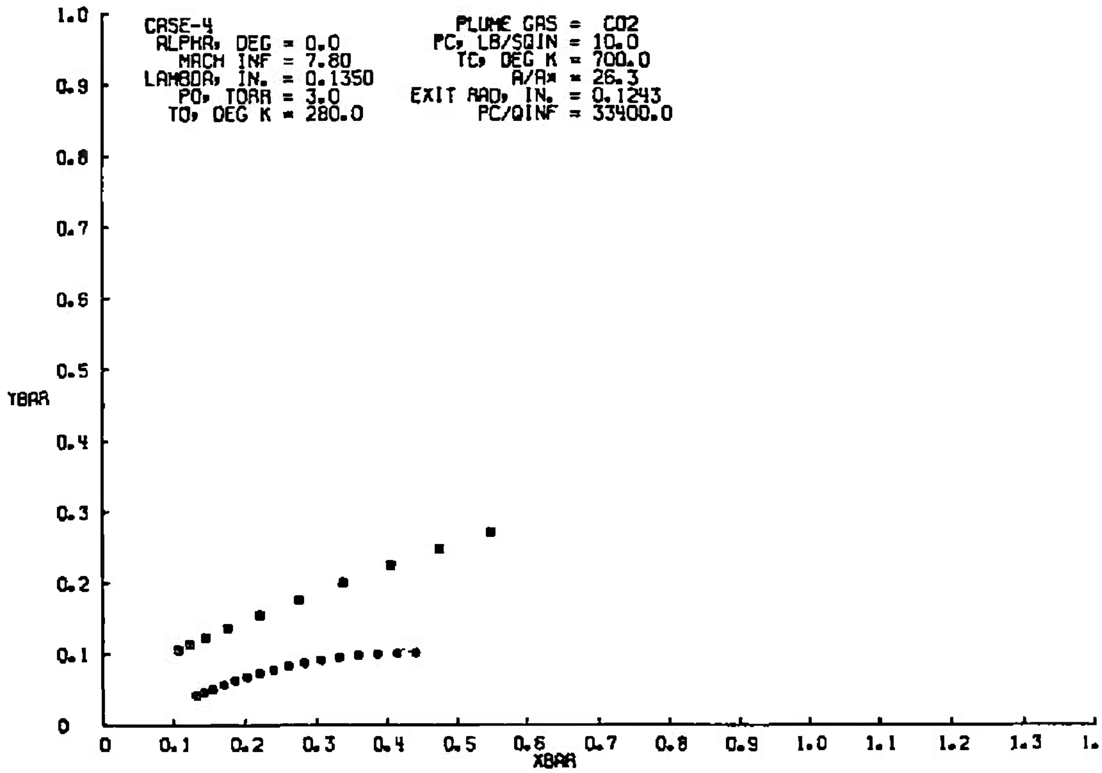


Fig. III-23

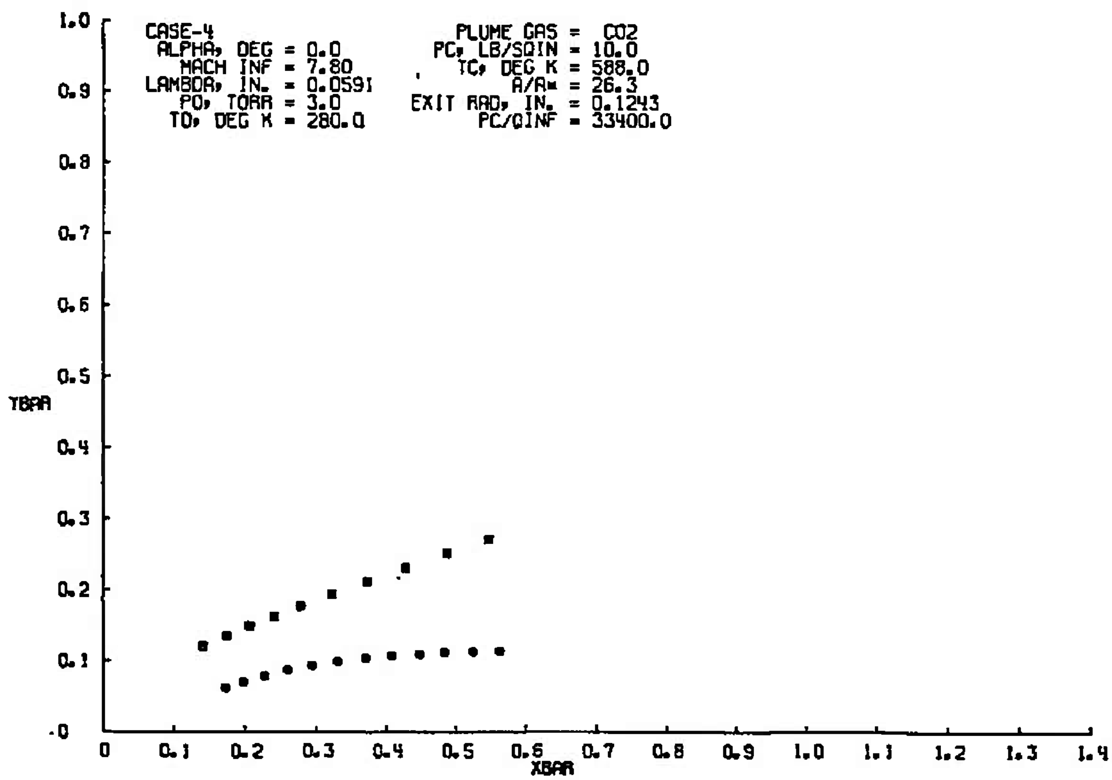


Fig. III-24

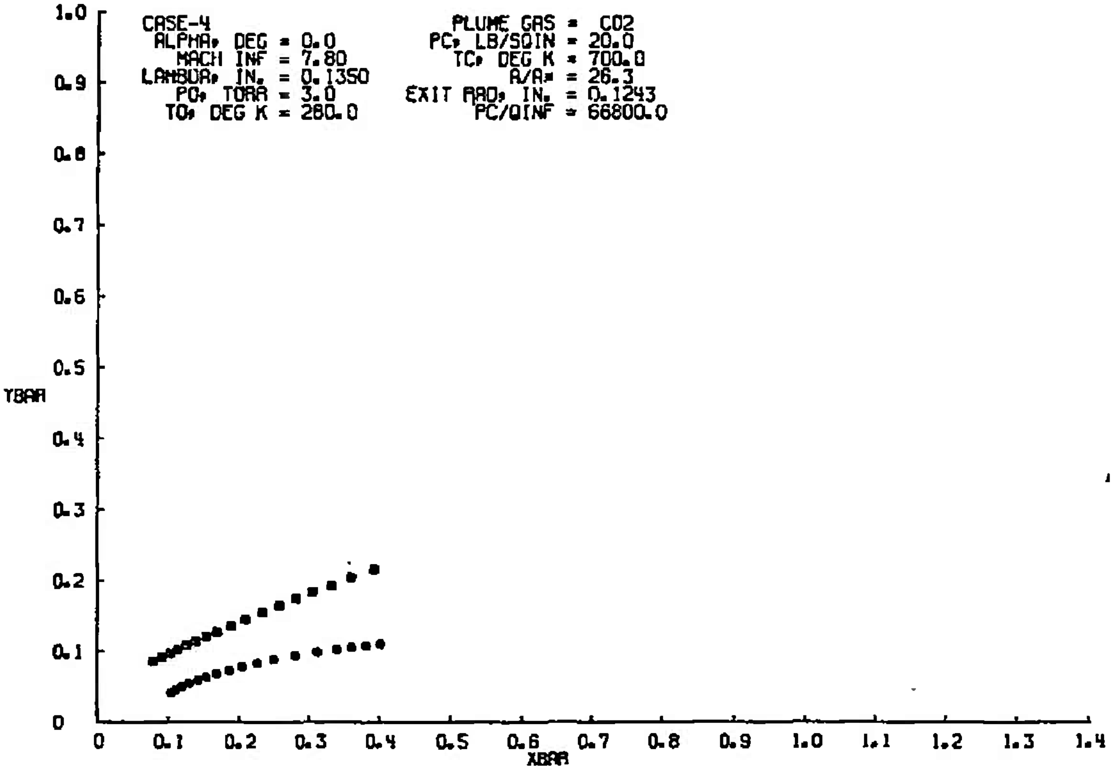


Fig. III-25

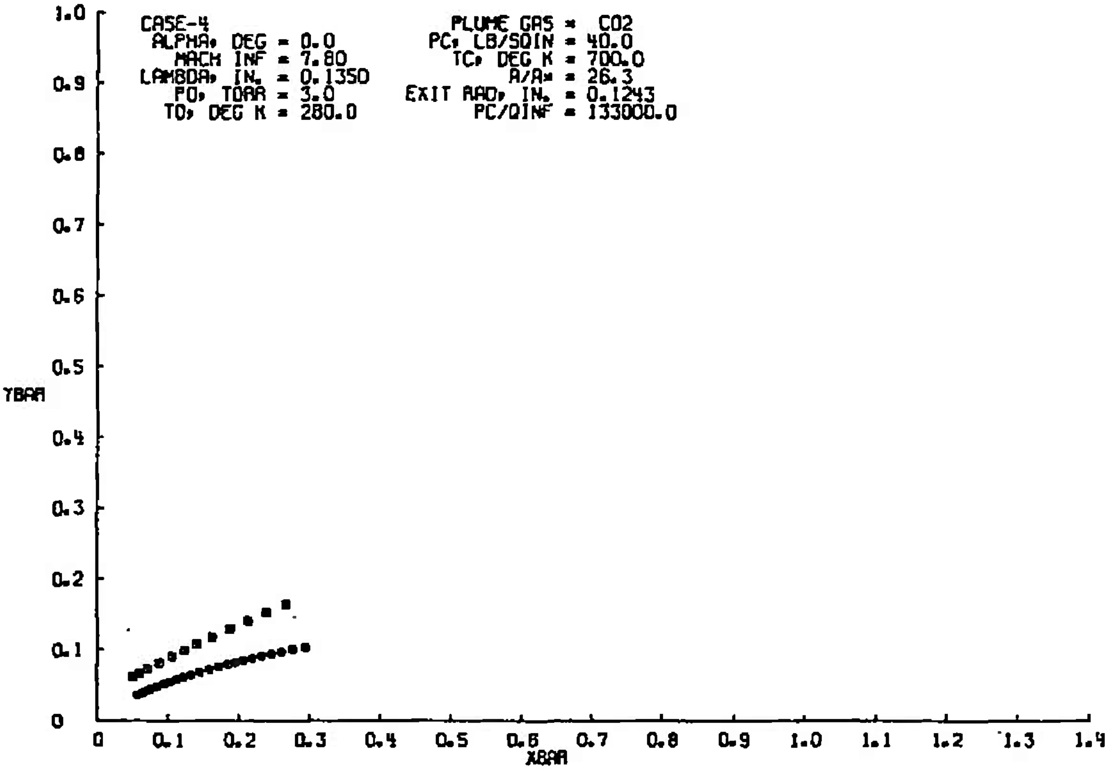


Fig. III-26

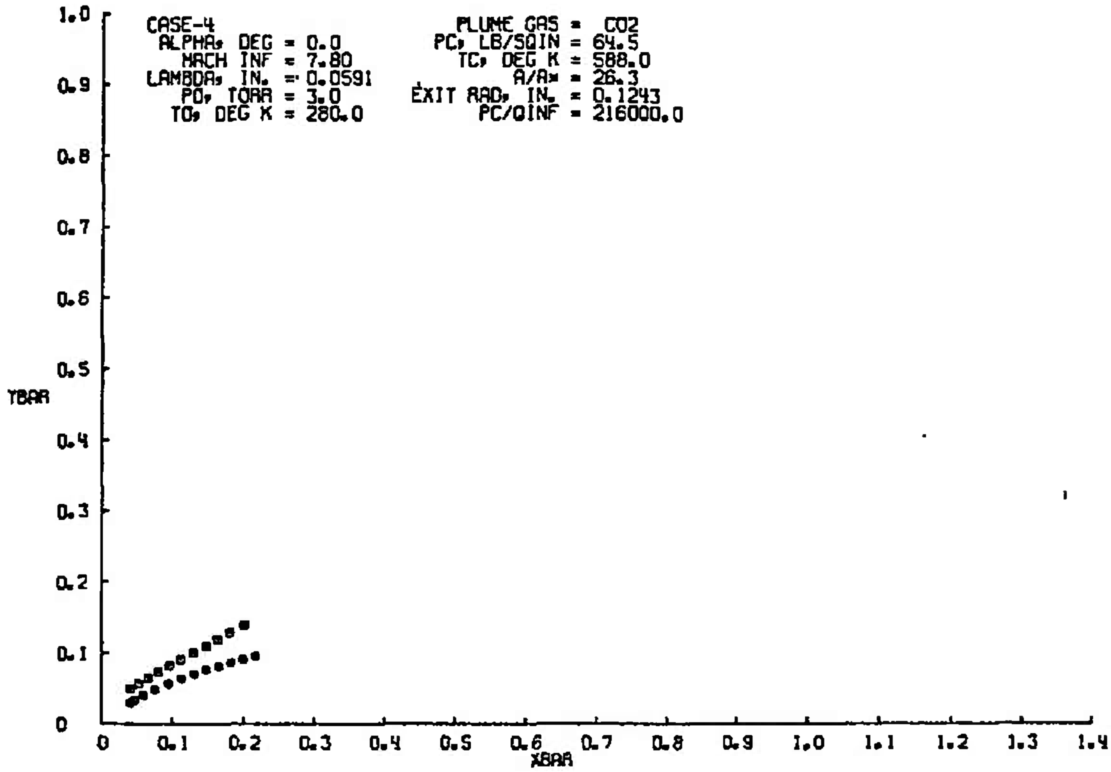


Fig. III-27

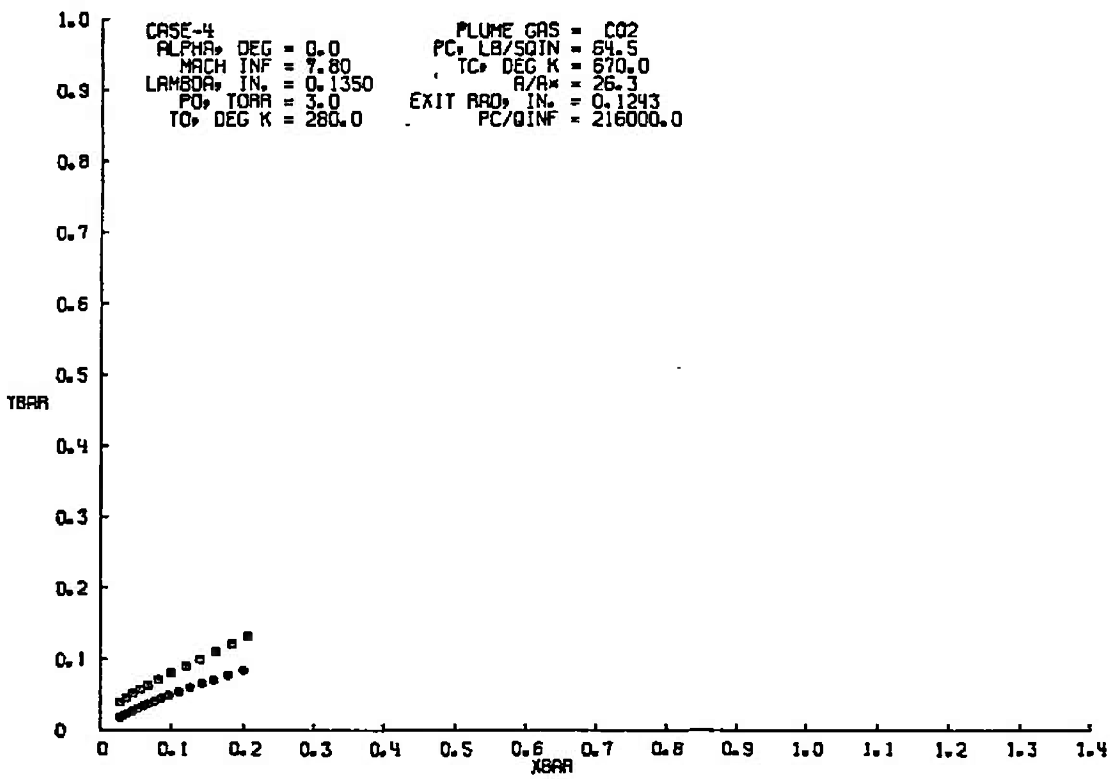


Fig. III-28

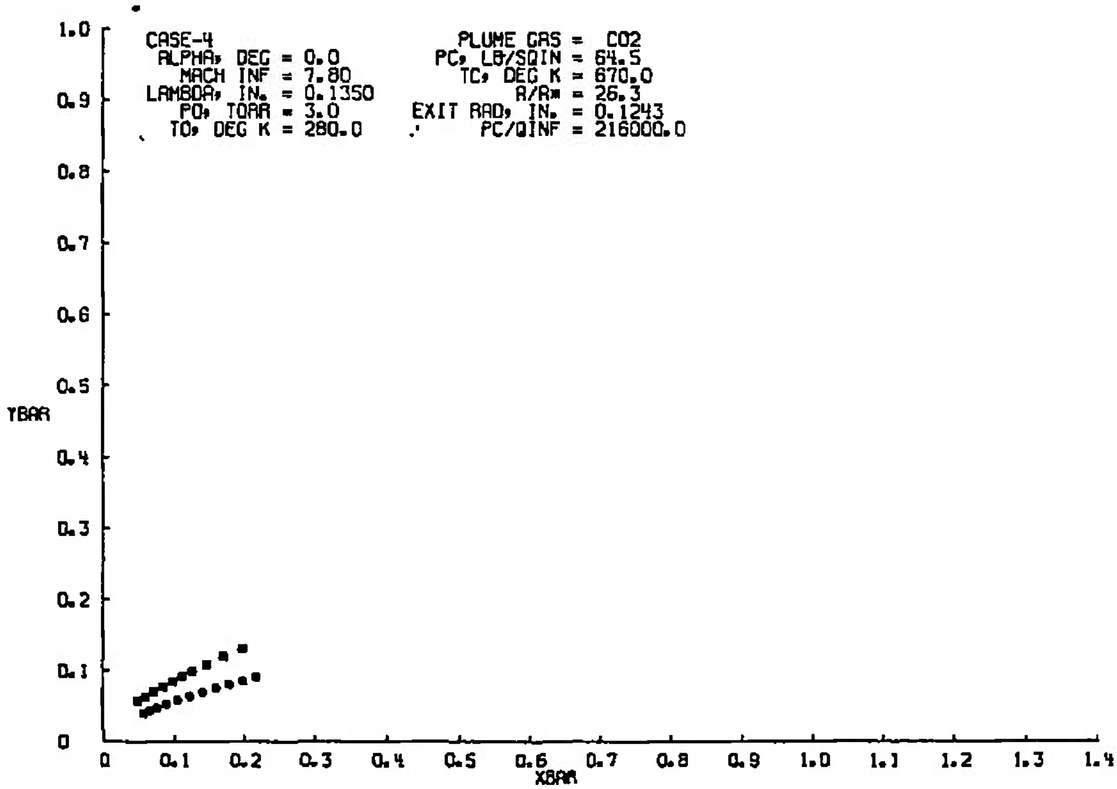


Fig. III-29

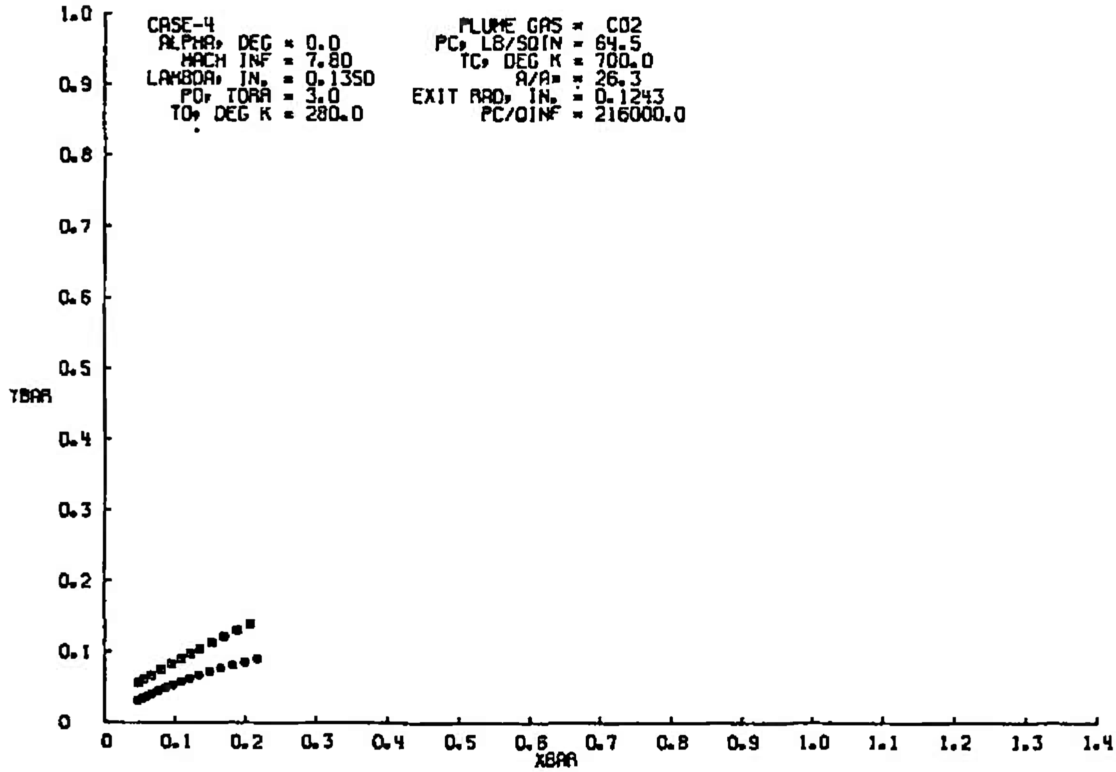


Fig. III-30

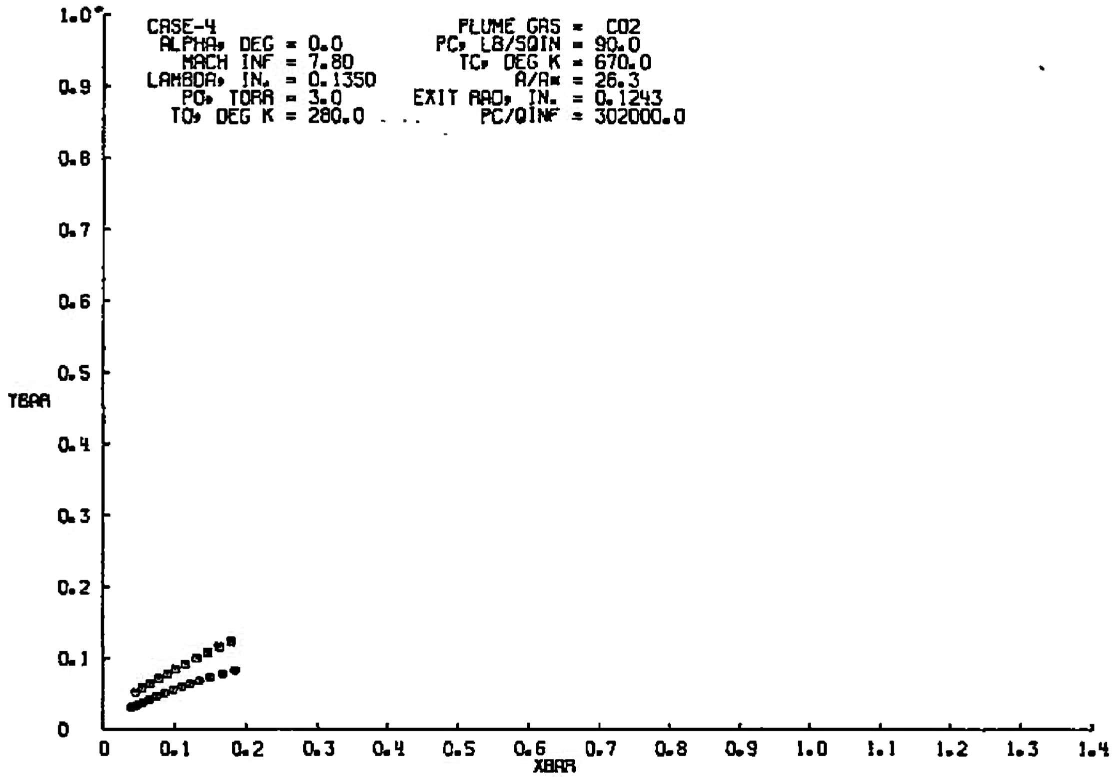


Fig. III-31

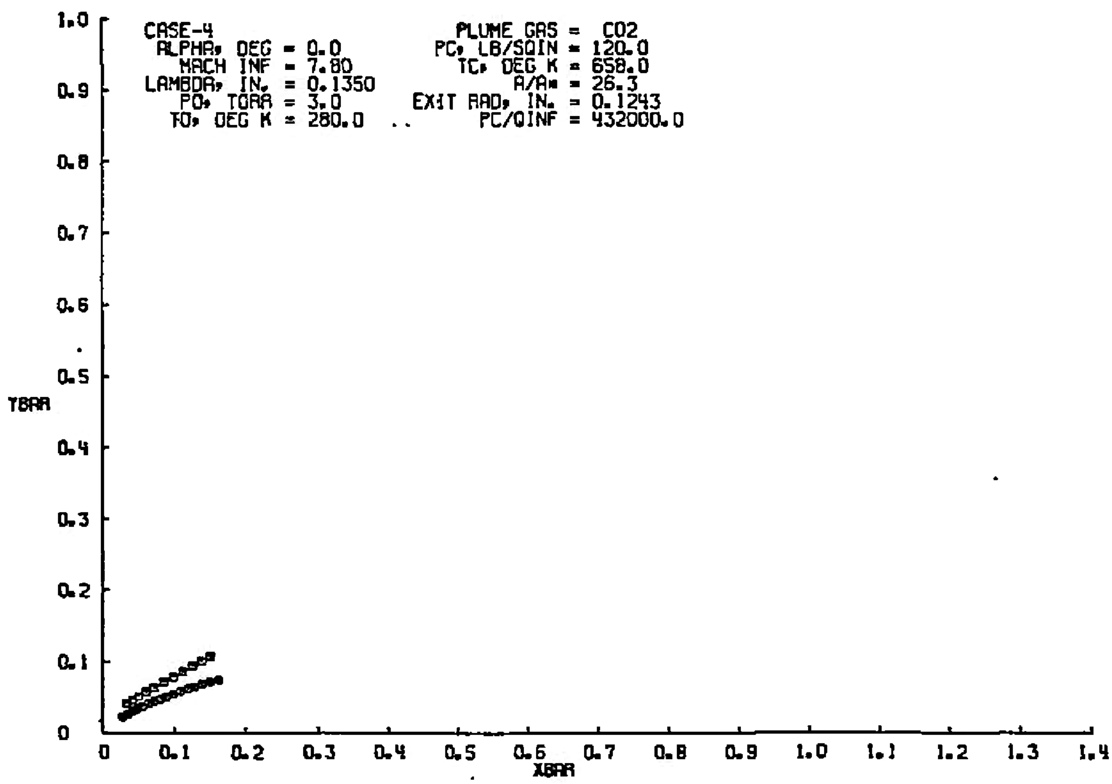


Fig. III-32

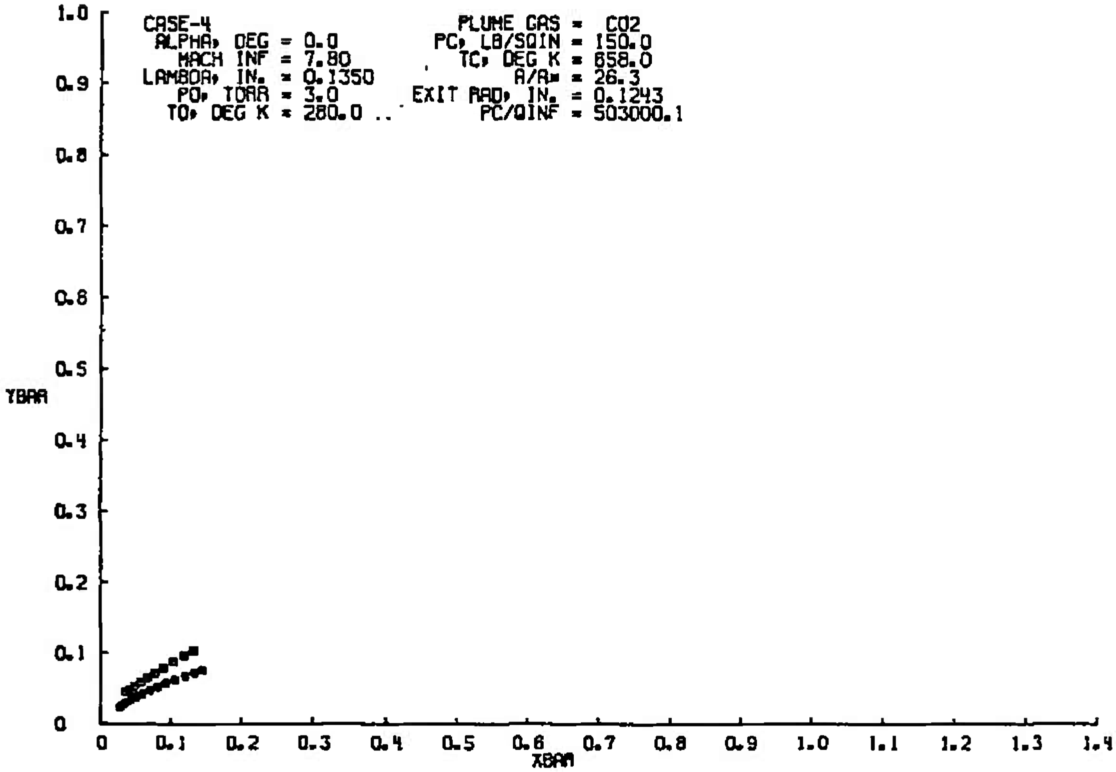


Fig. III-33

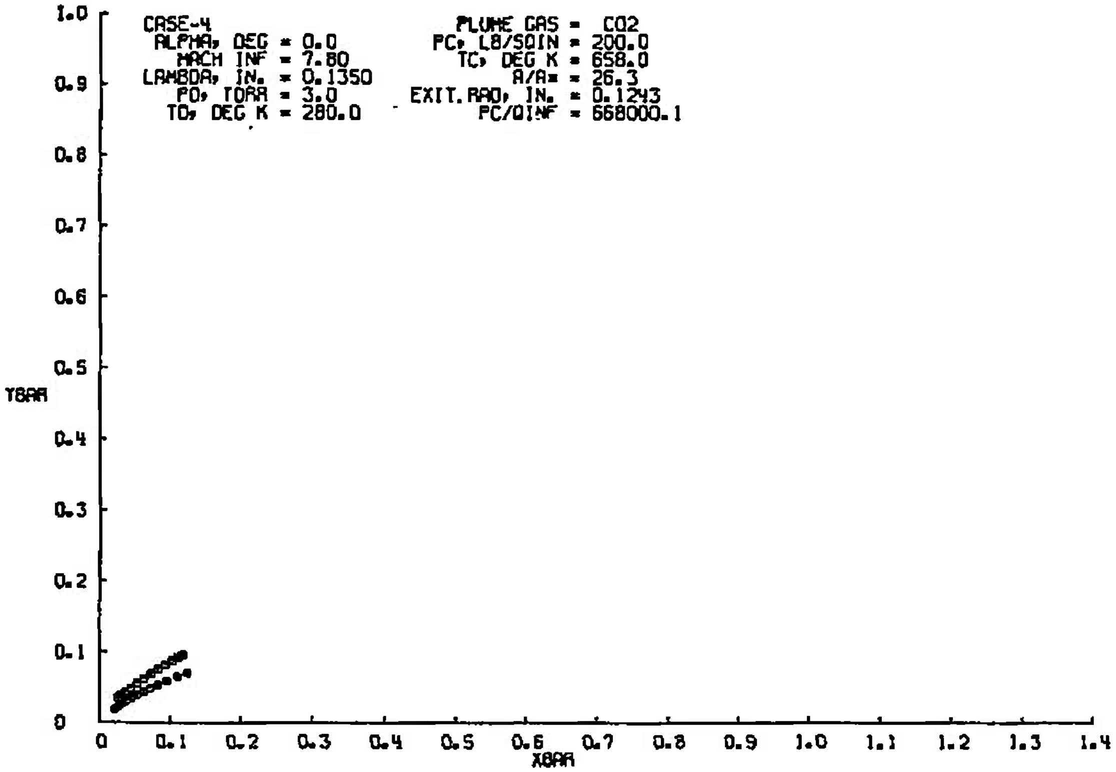


Fig. III-34

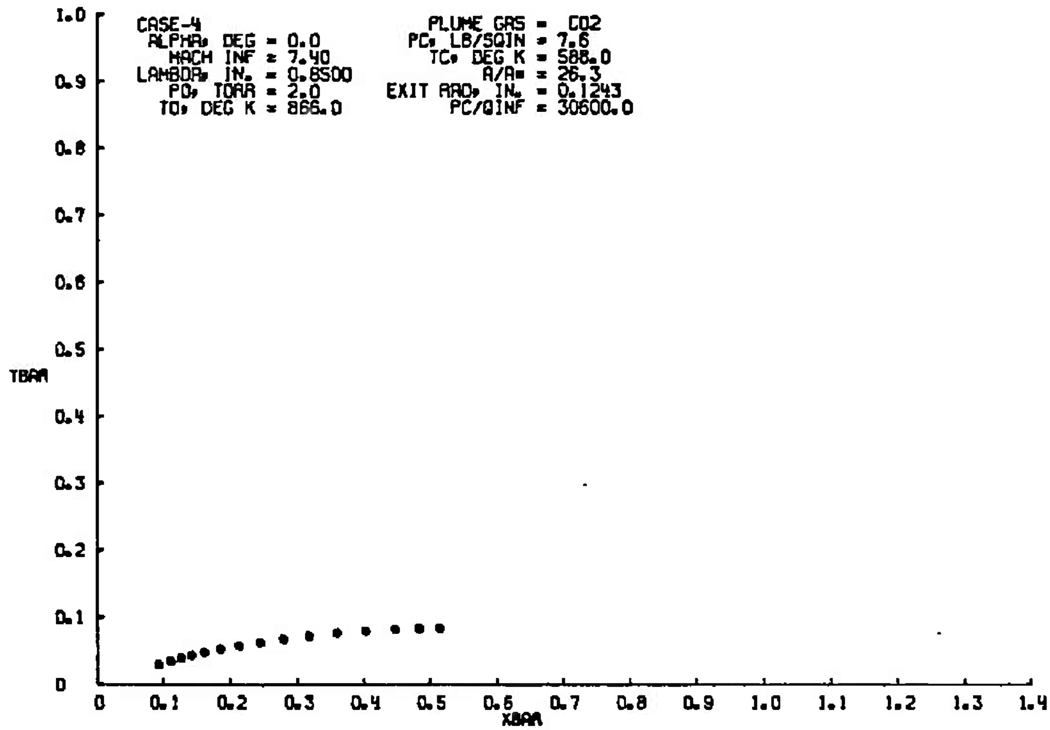


Fig. III-35

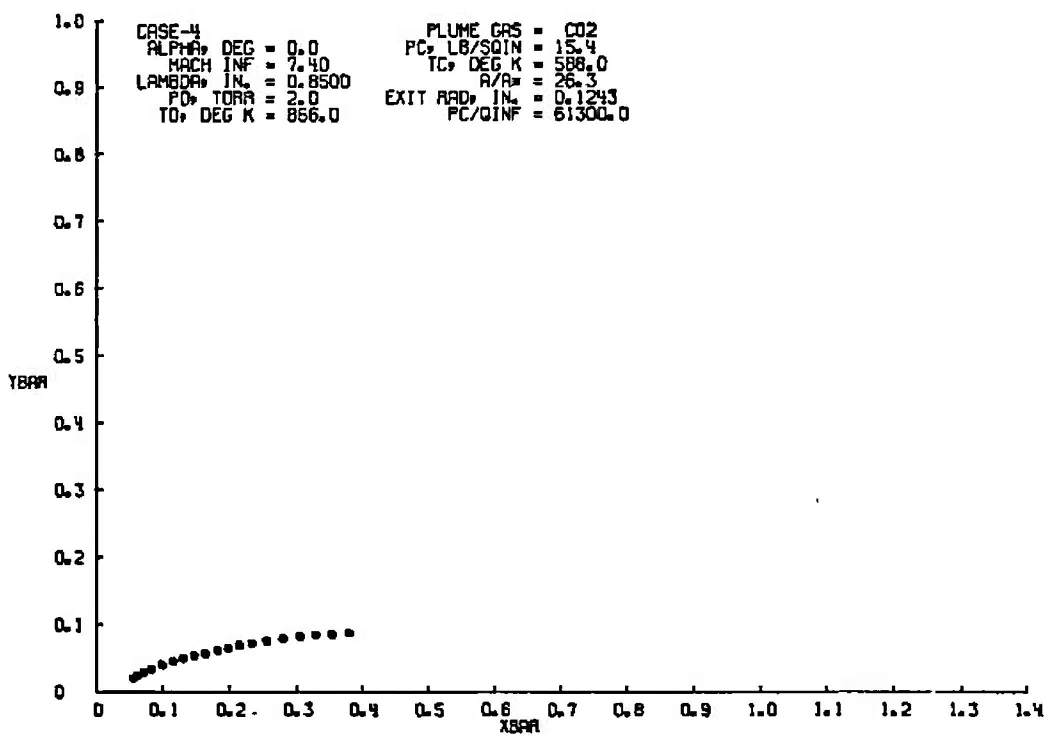


Fig. III-36

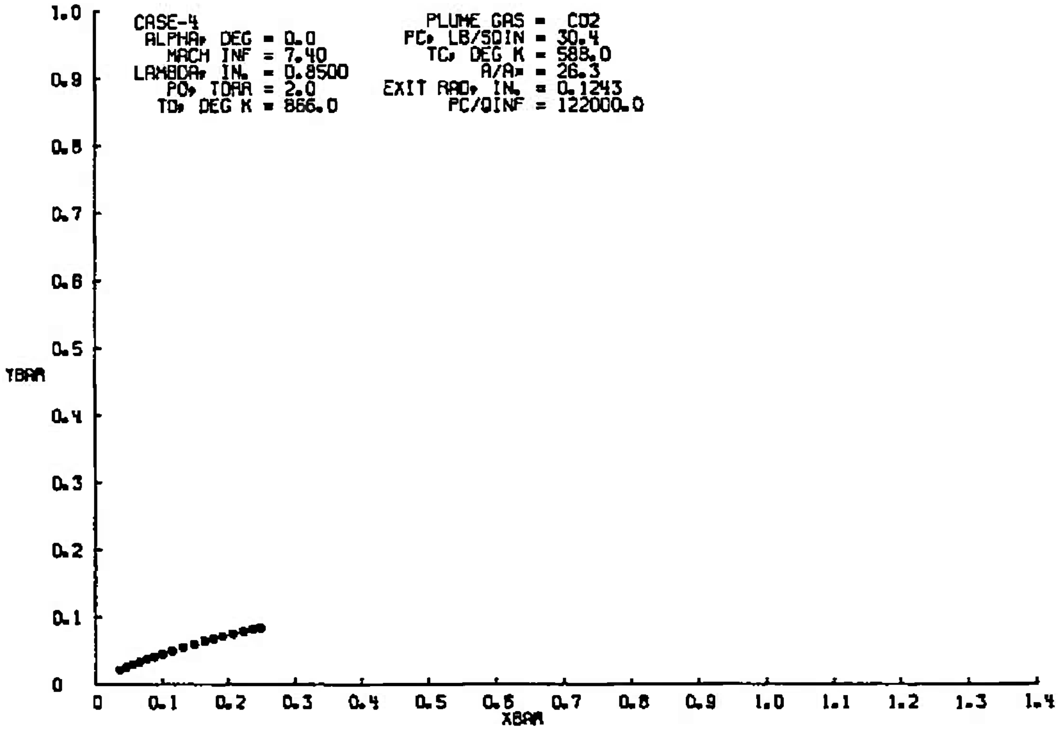


Fig. III-37

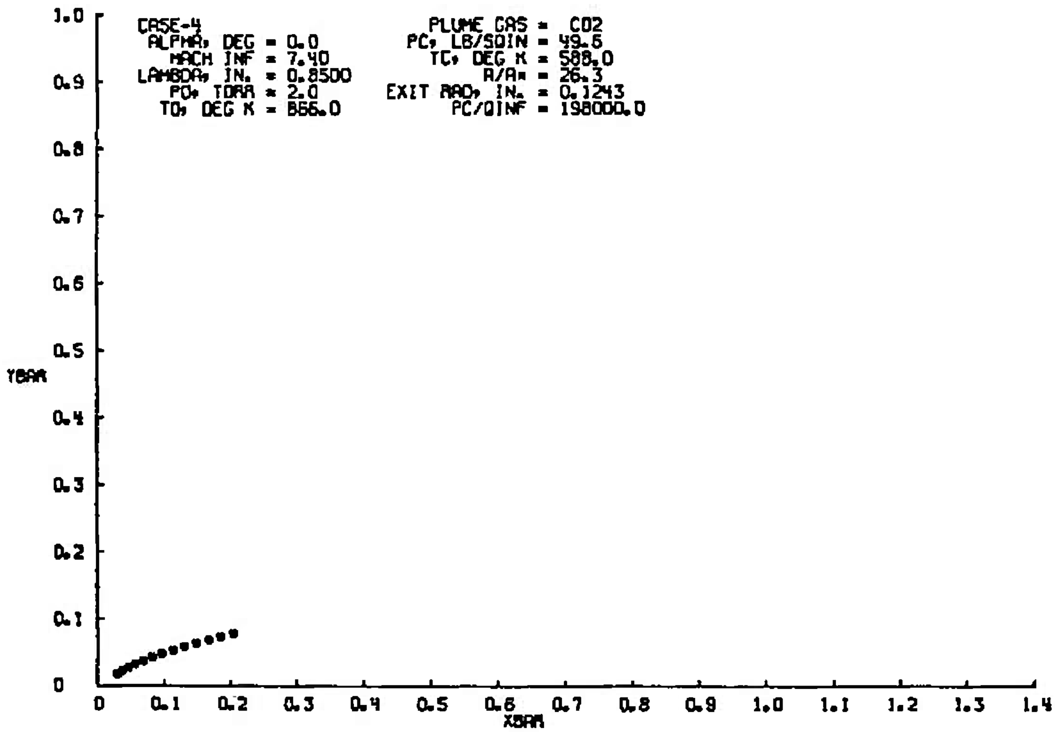


Fig. III-38

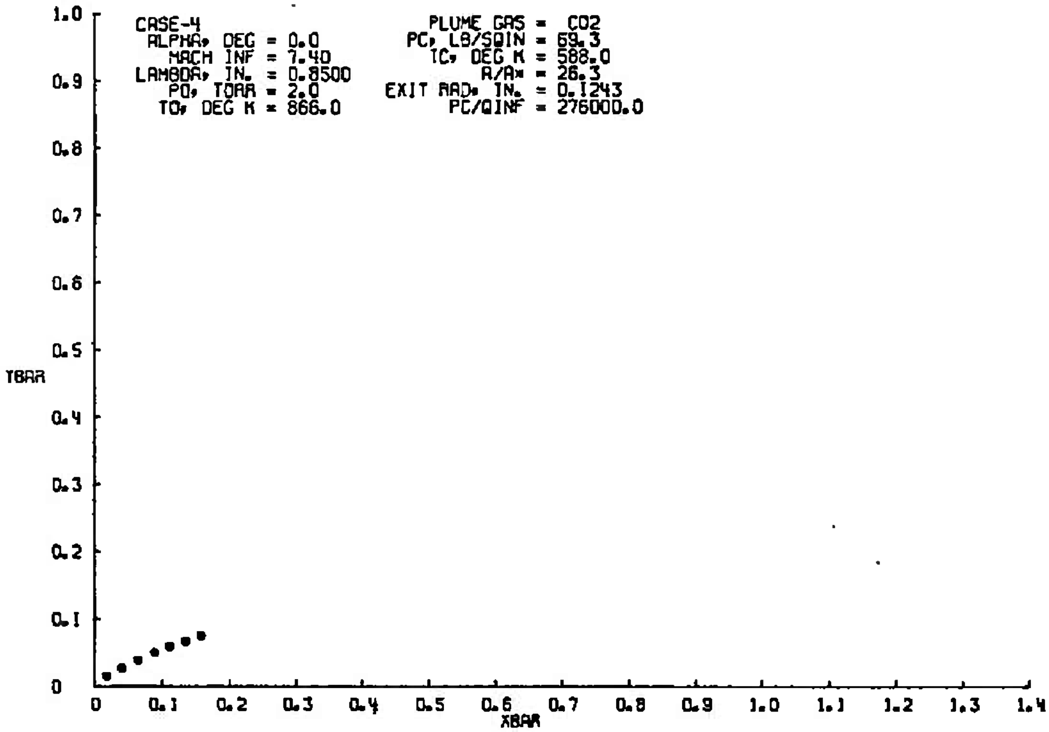


Fig. III-39

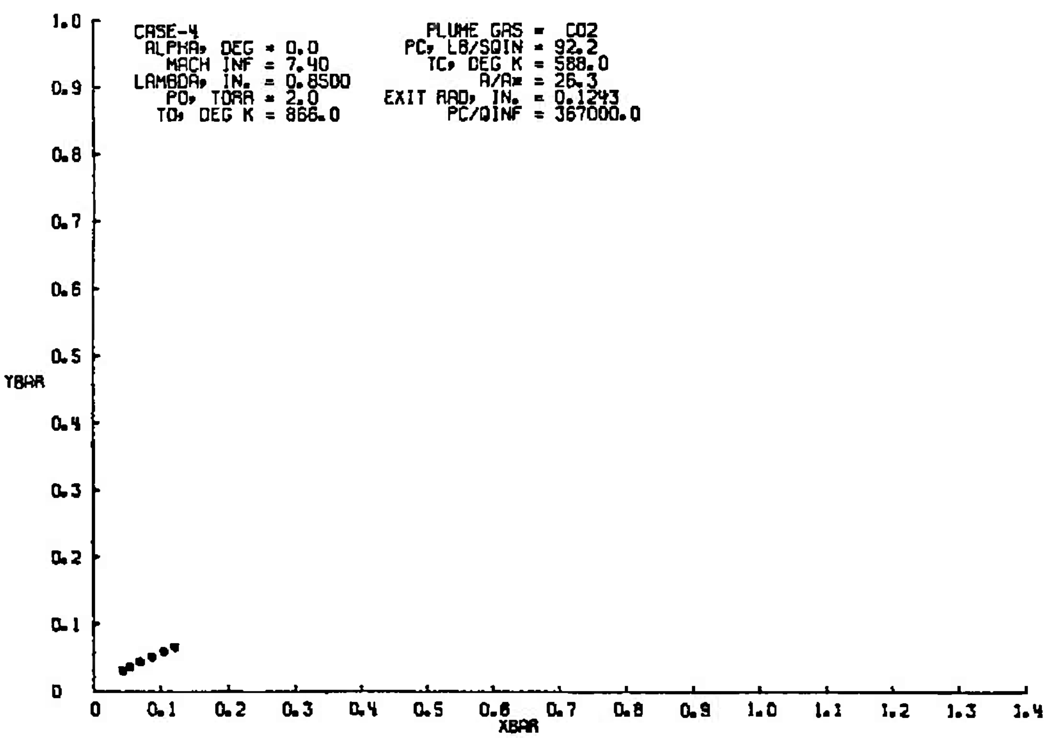


Fig. III-40

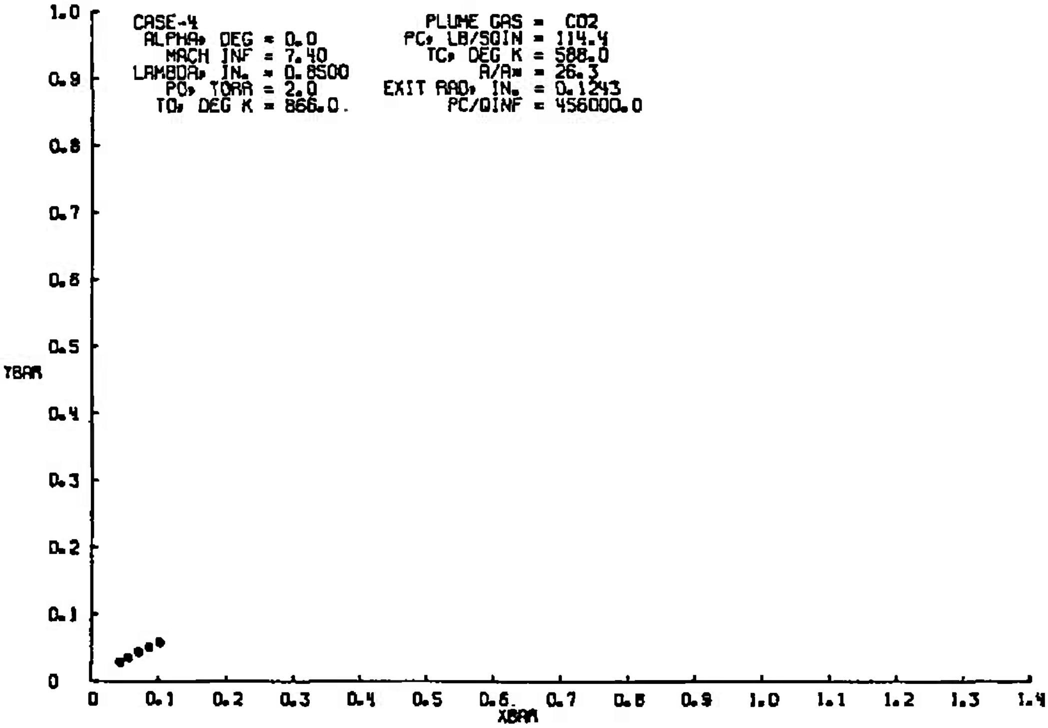


Fig. III-41

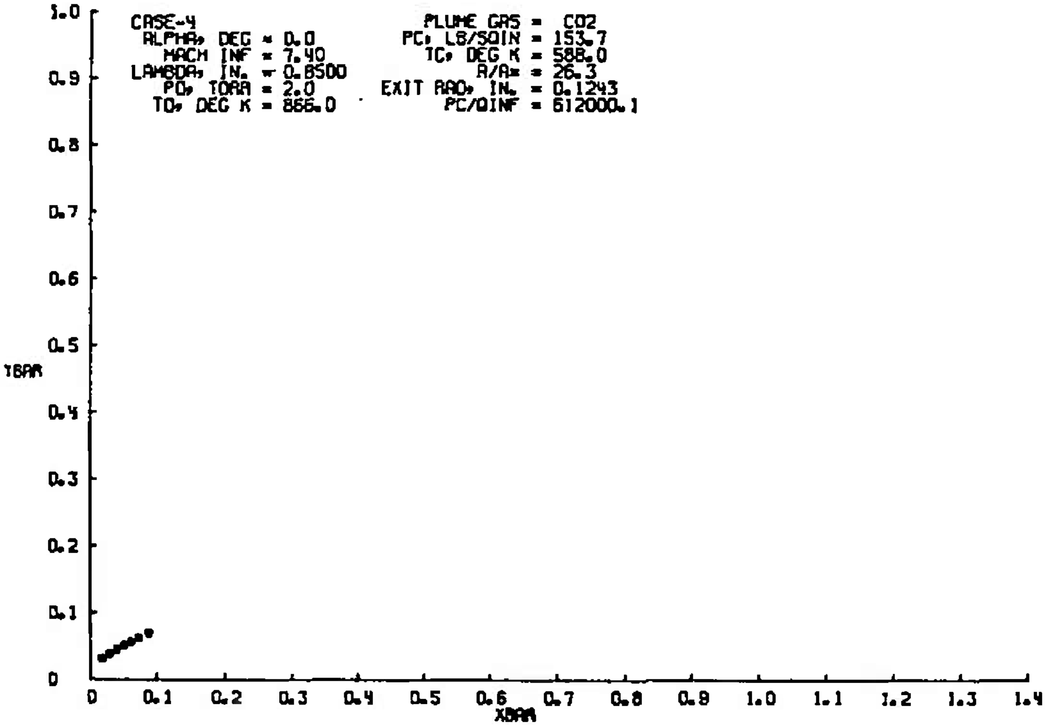


Fig. III-42

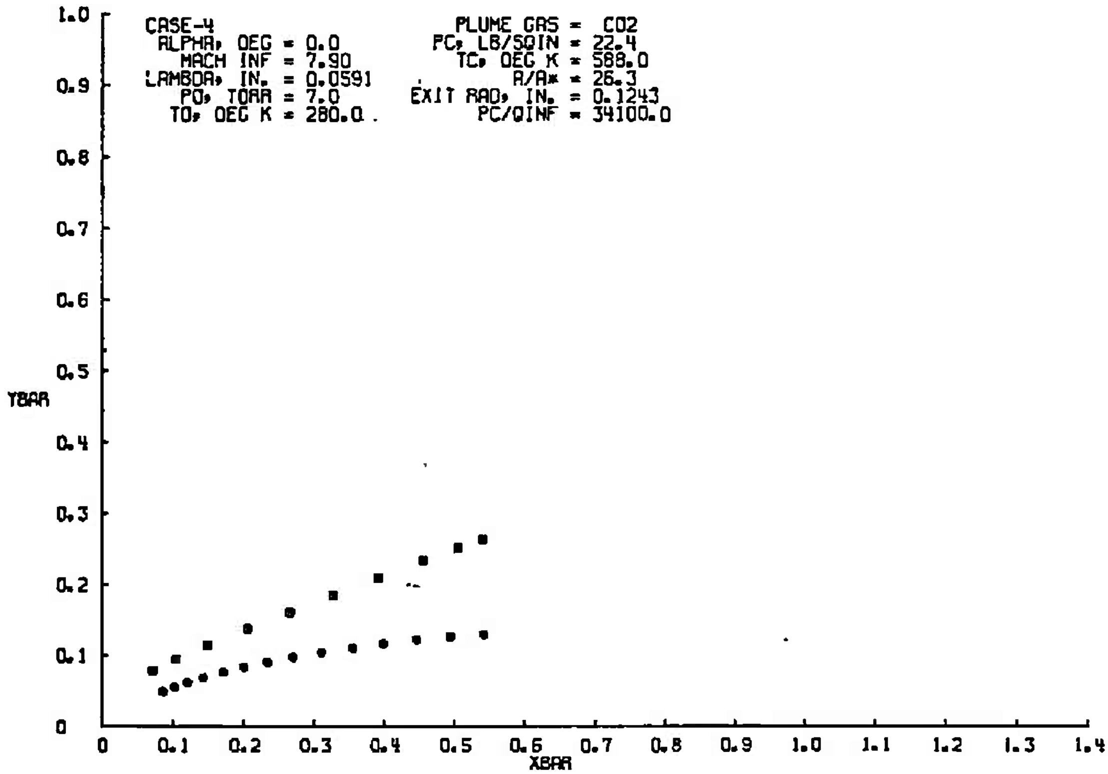
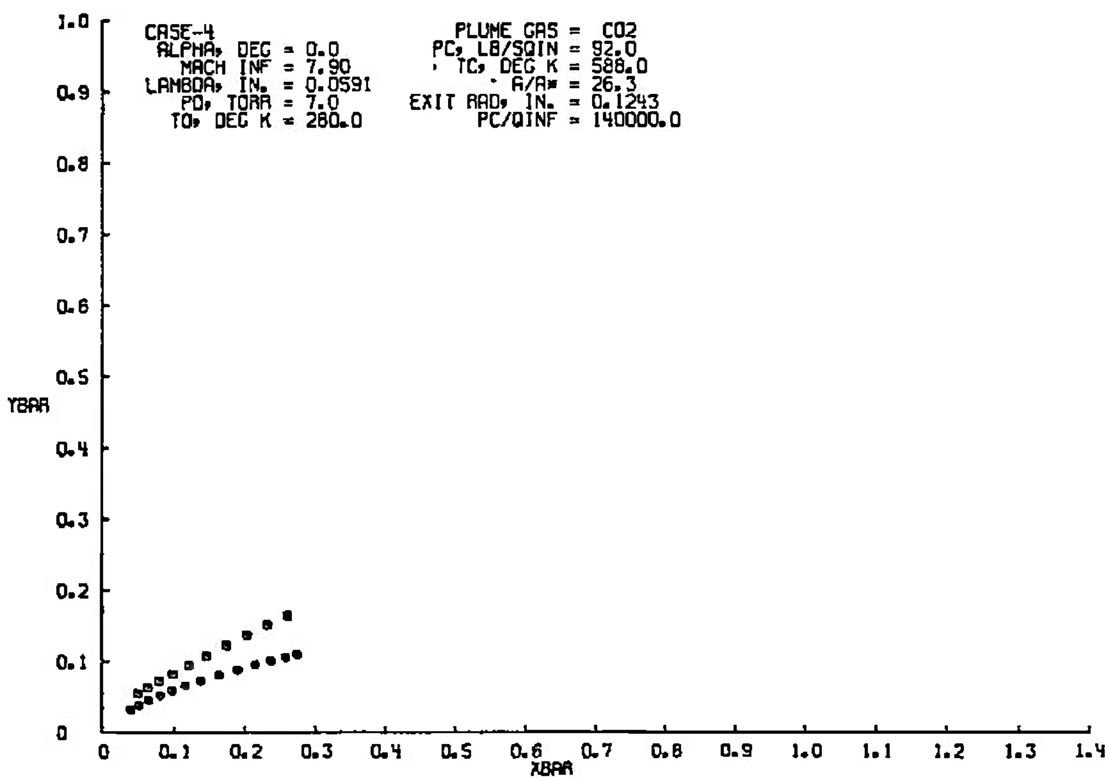

CASE-4
ALPHA, DEG = 0.0
MACH INF = 7.90
LAMBDA, IN. = 0.0591
PO, TORR = 7.0
TO, DEG K = 280.0
PLUME GAS = CO2
PC, LB/SQIN = 22.4
TC, DEG K = 588.0
A/A* = 26.3
EXIT RAD, IN. = 0.1243
PC/QINF = 34100.0
YBAR
XBAR

Fig. III-43


CASE-4
ALPHA, DEG = 0.0
MACH INF = 7.90
LAMBDA, IN. = 0.0591
PO, TORR = 7.0
TO, DEG K = 280.0
PLUME GAS = CO2
PC, LB/SQIN = 92.0
TC, DEG K = 588.0
A/A* = 26.3
EXIT RAD, IN. = 0.1243
PC/QINF = 140000.0
YBAR
XBAR

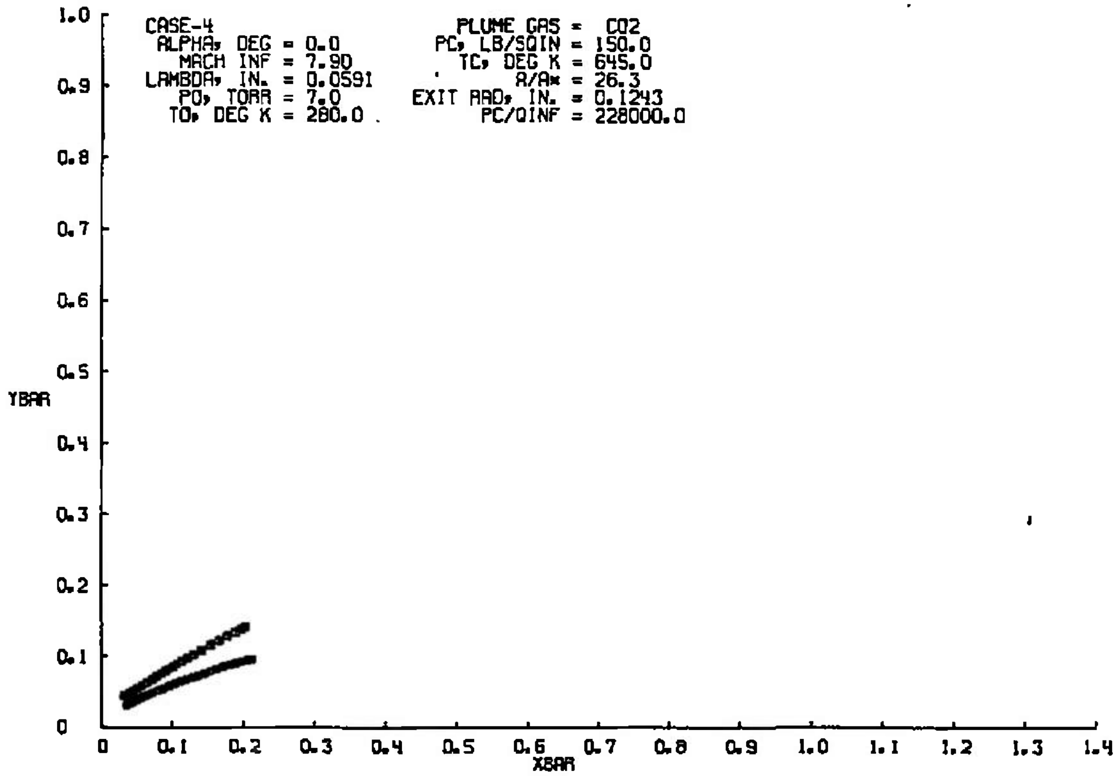


Fig. III-45

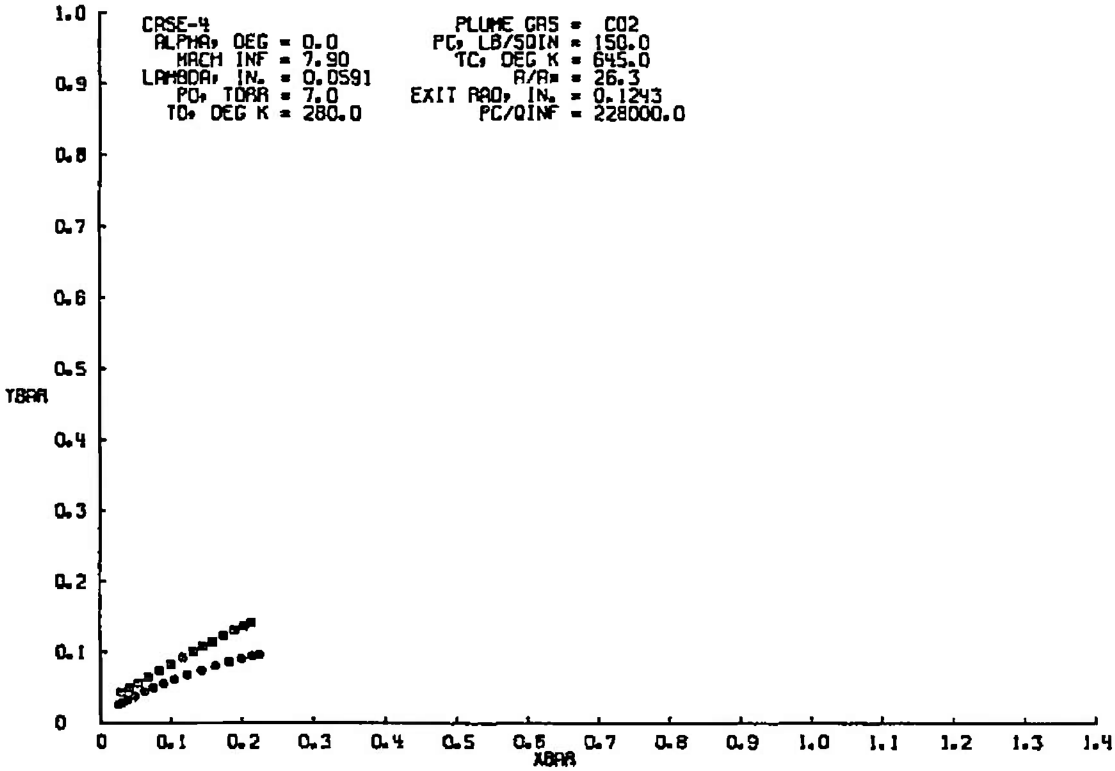


Fig. III-46

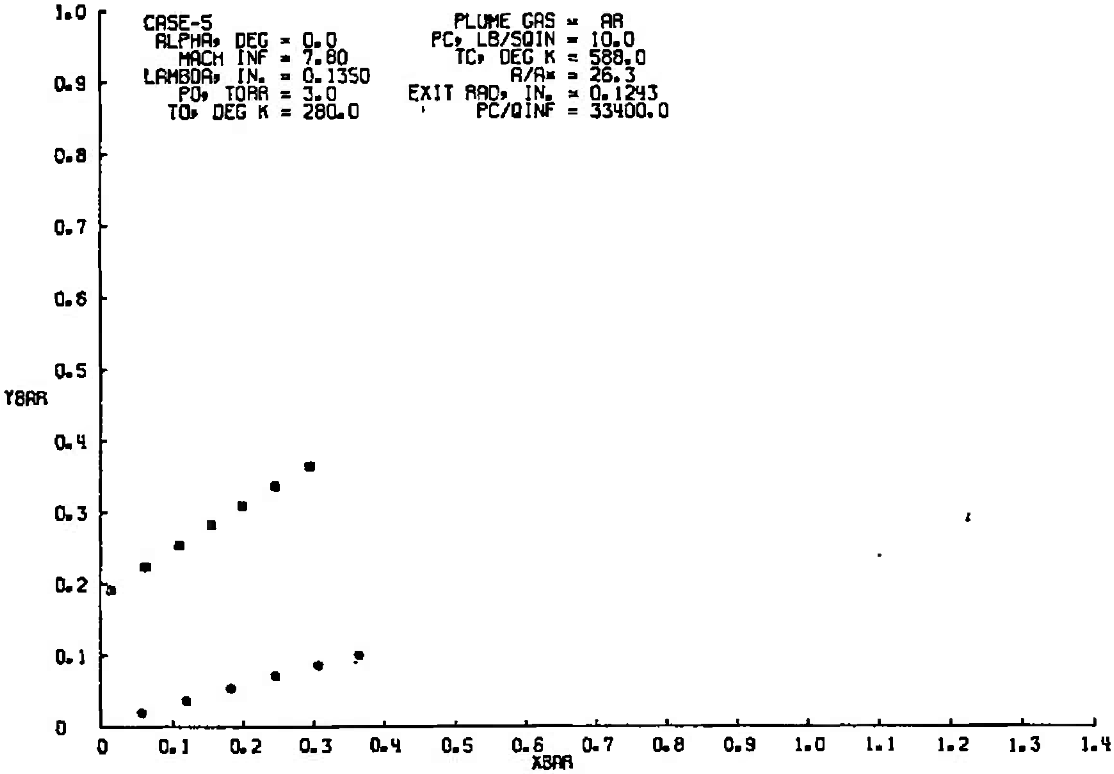


Fig. III-47

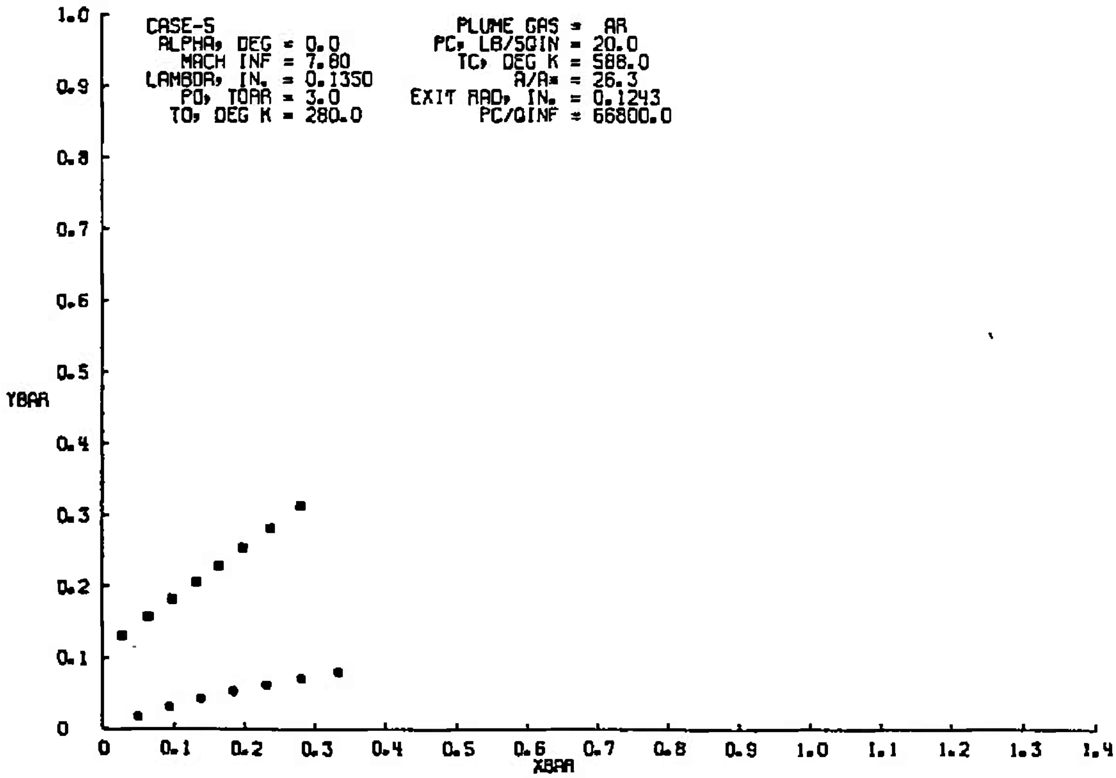


Fig. III-48

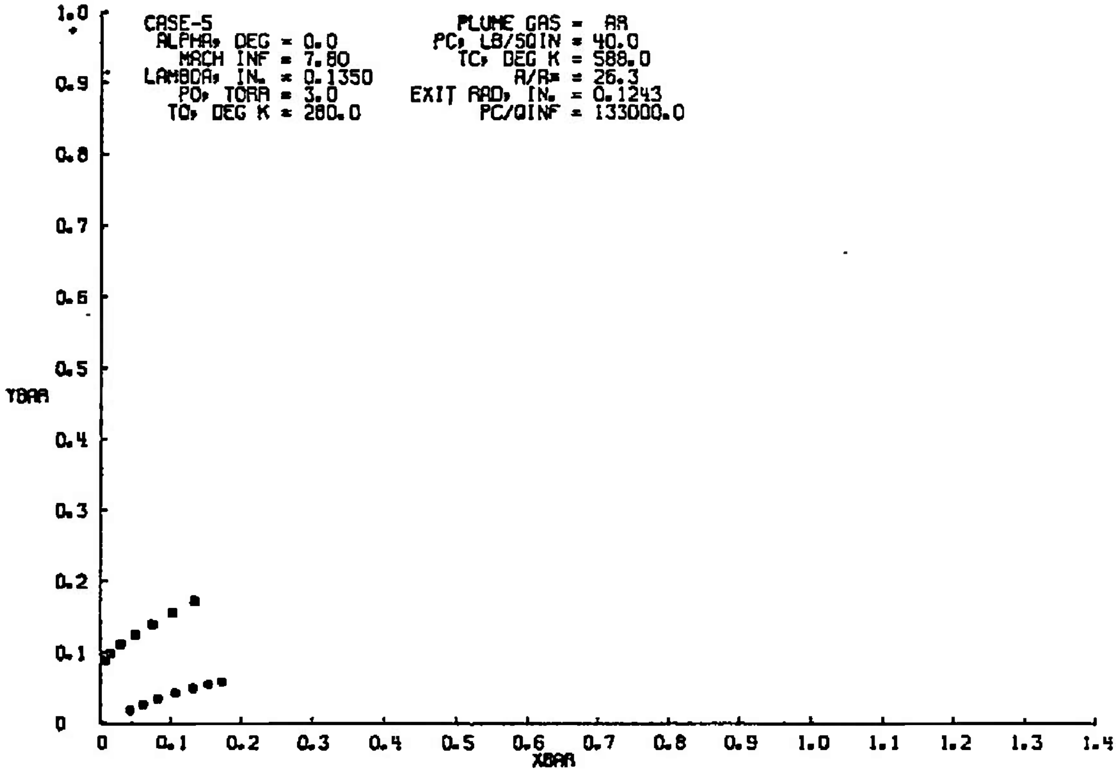


Fig. III-49

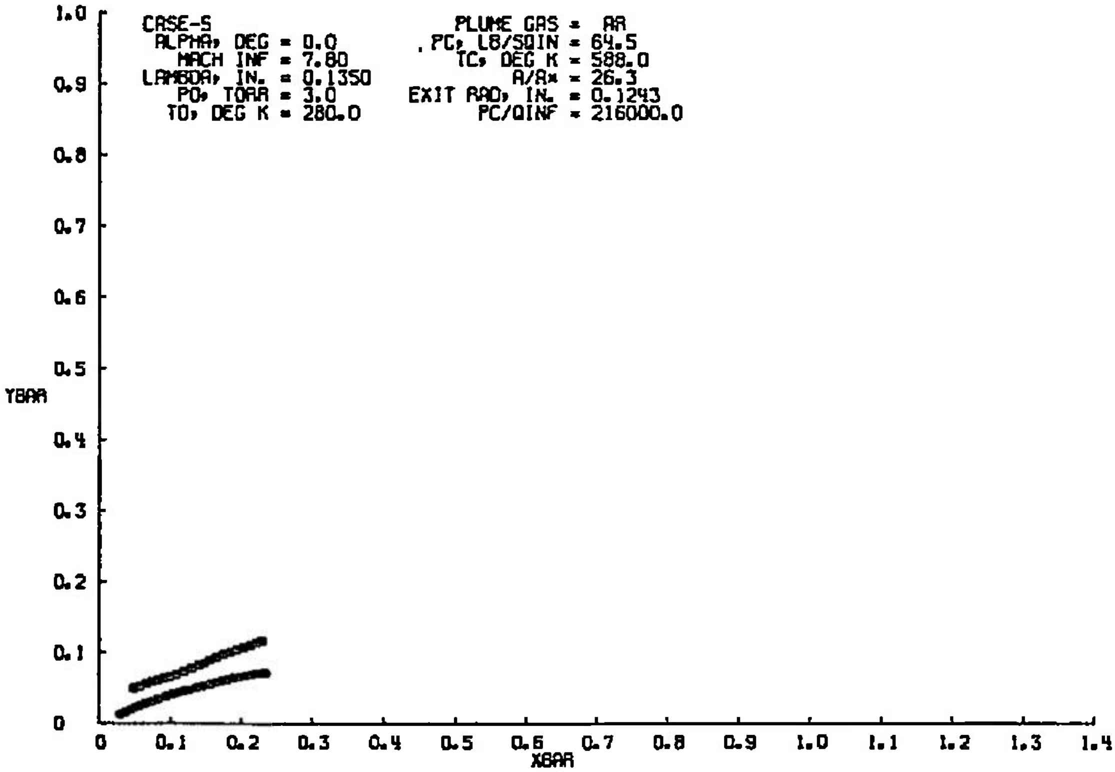


Fig. III-50

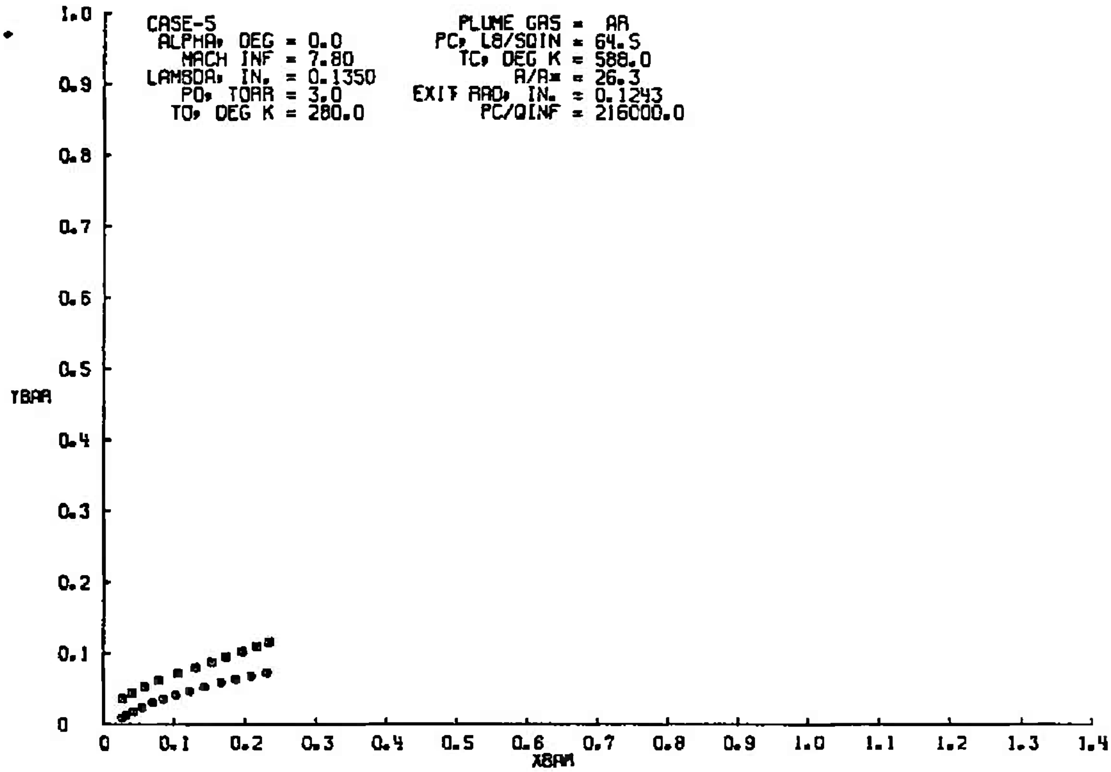


Fig. III-51

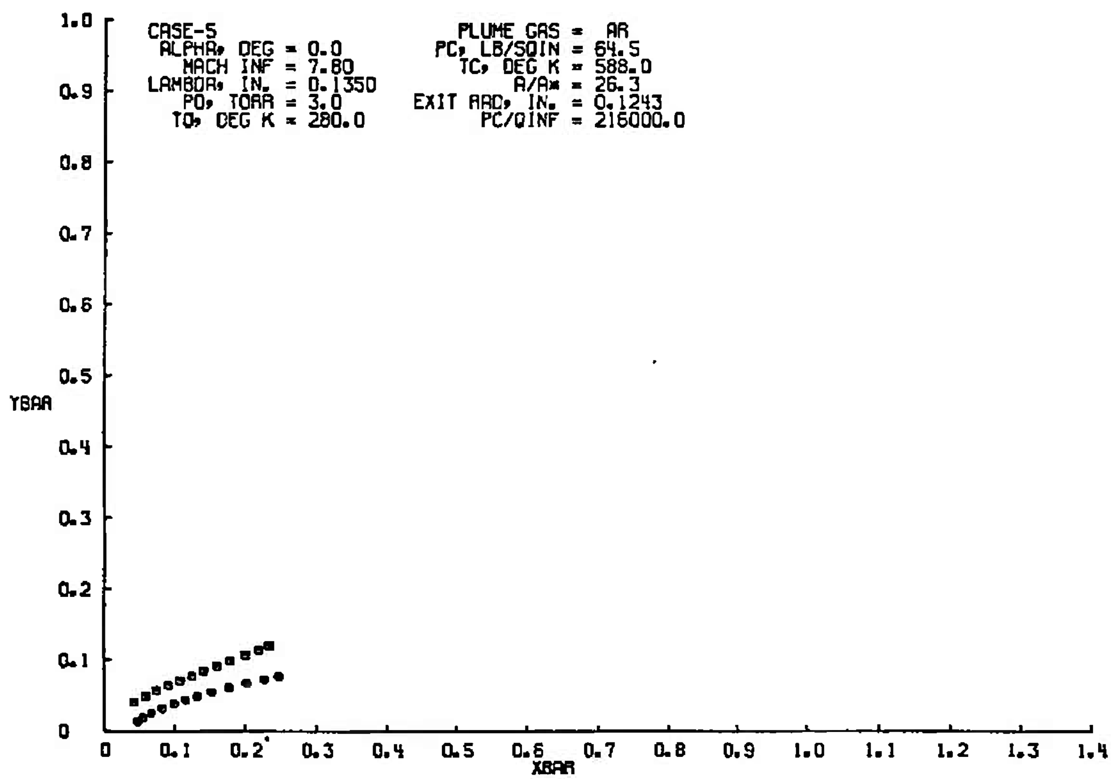


Fig. III-52

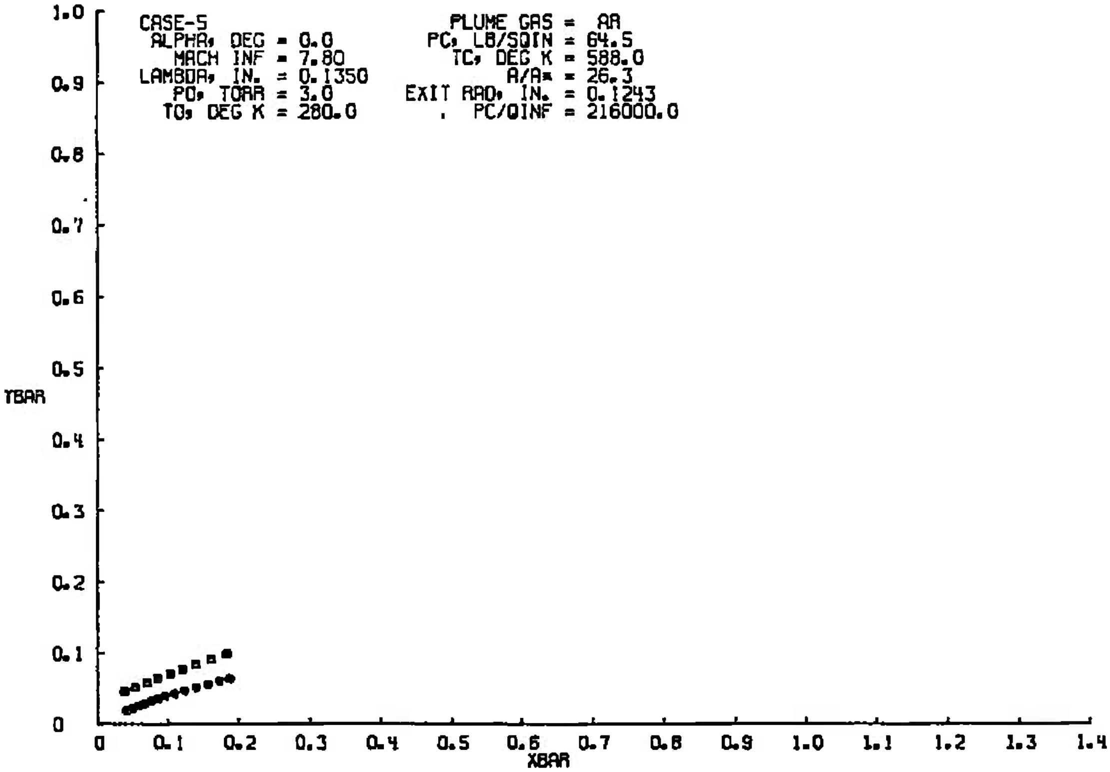


Fig. III-53

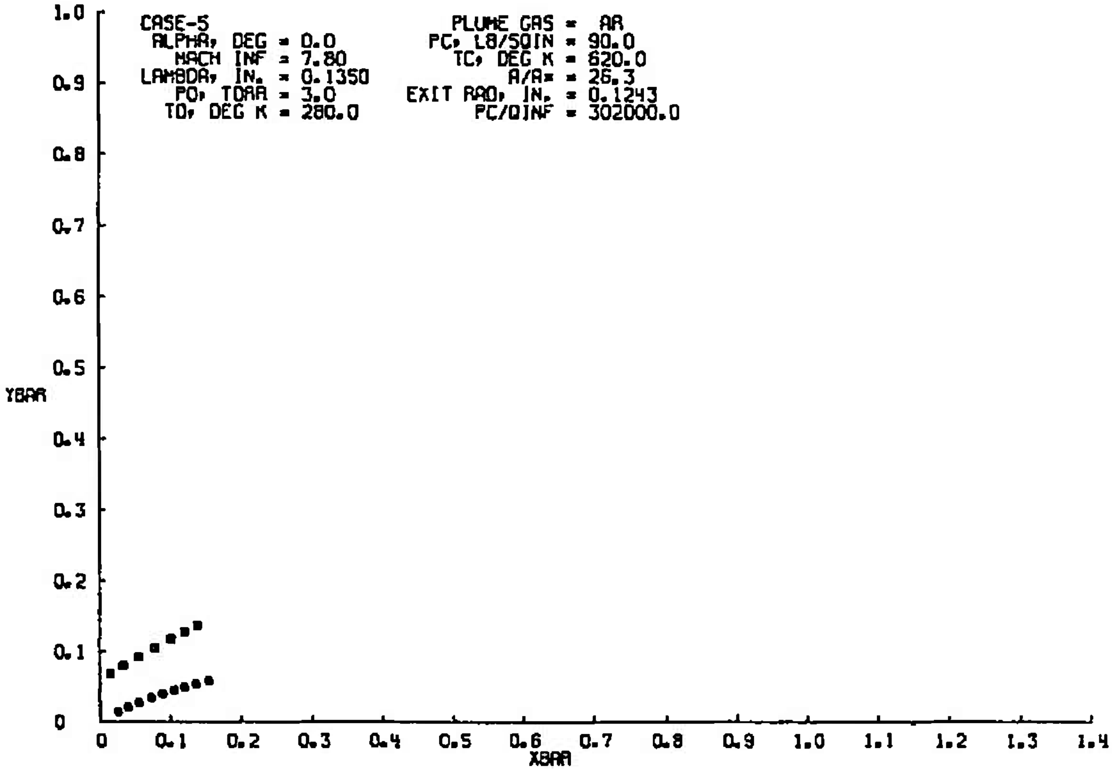


Fig. III-54

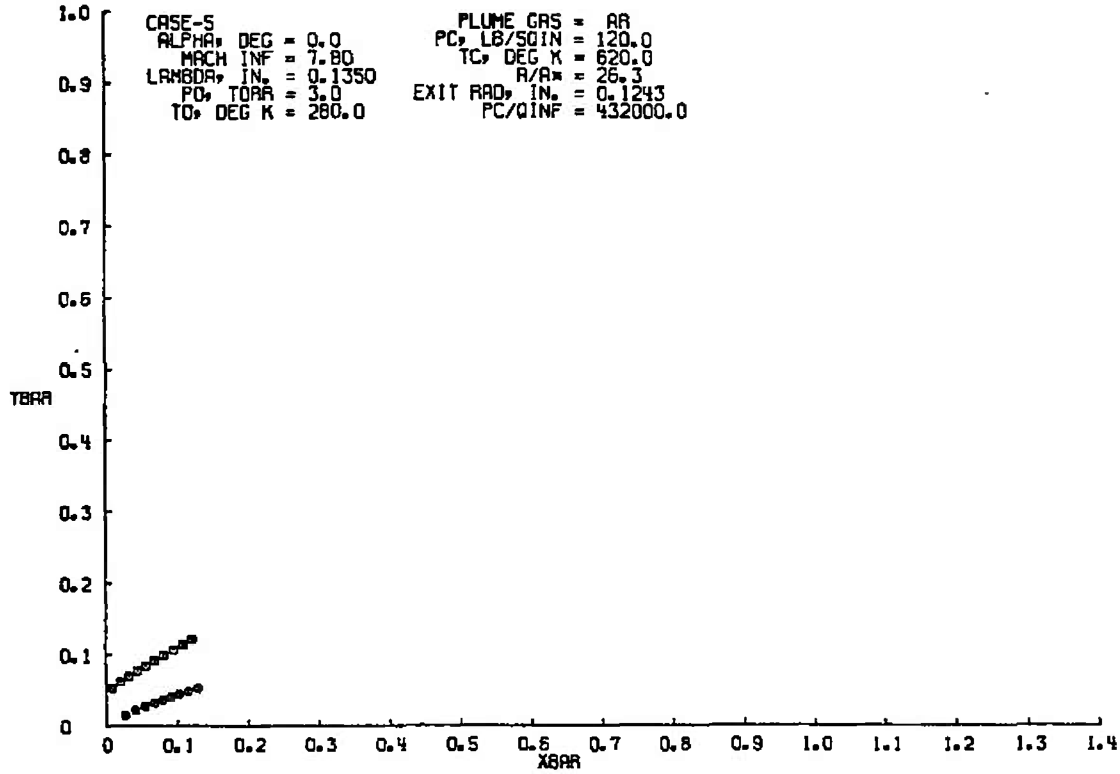


Fig. III-55

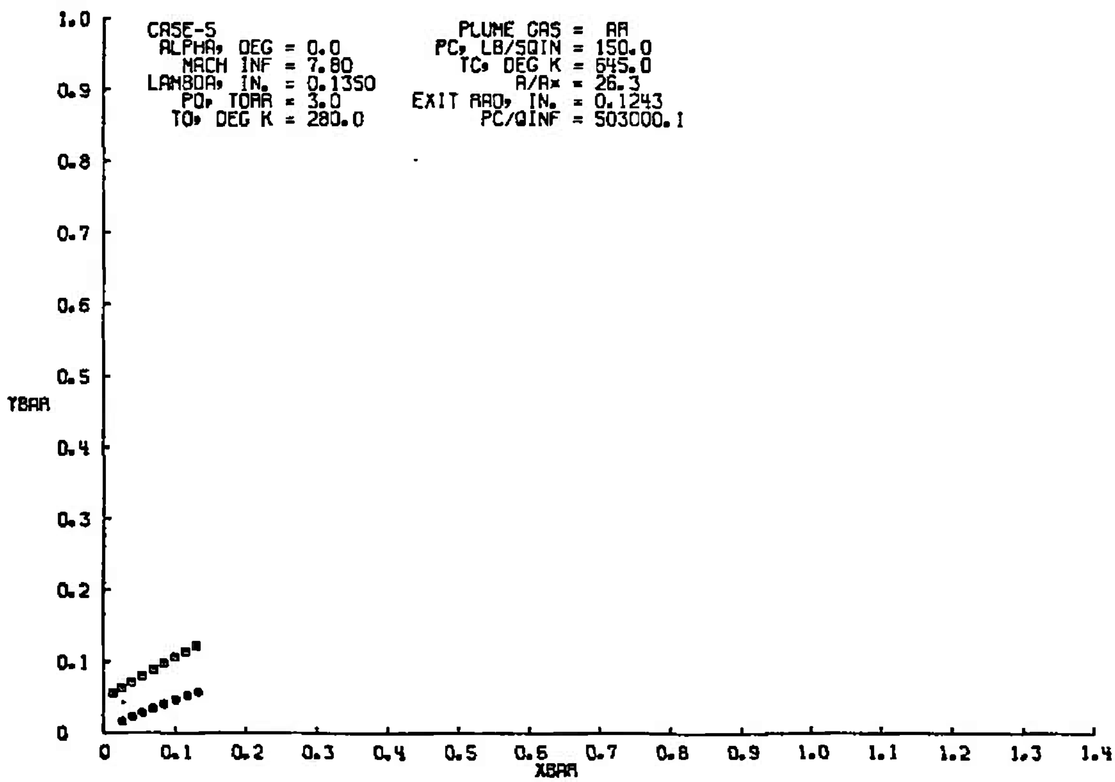


Fig. III-56

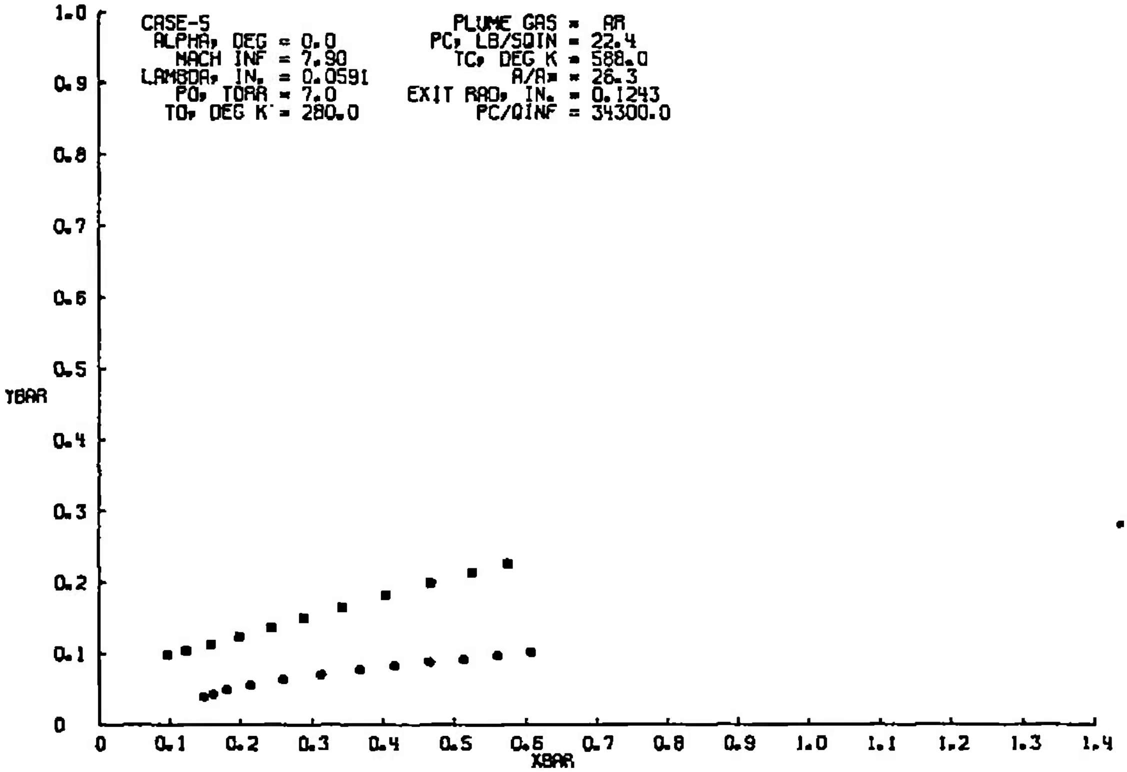


Fig. III-57

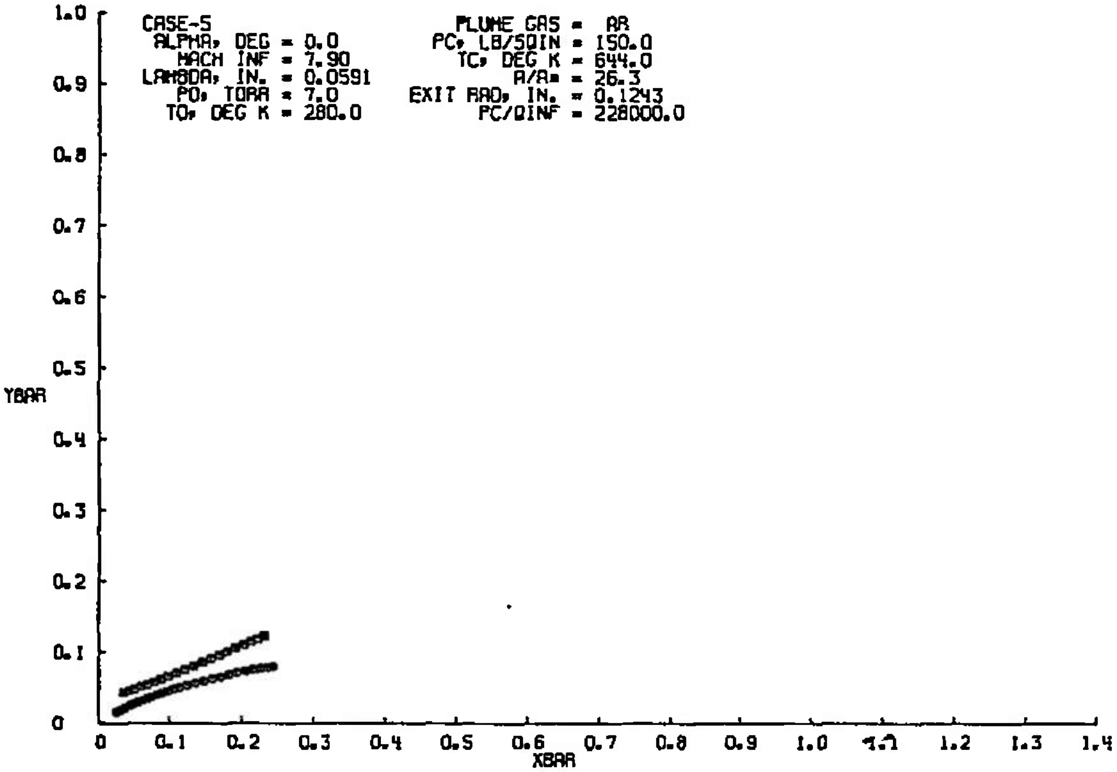


Fig. III-58

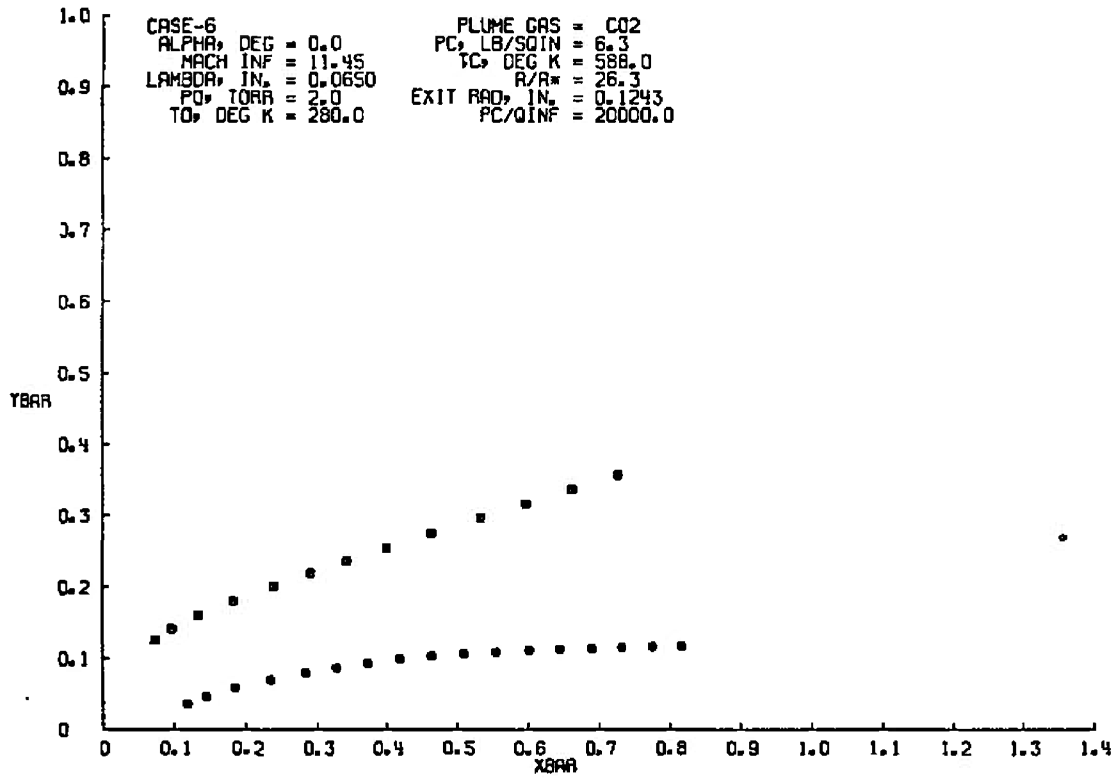


Fig. III-59

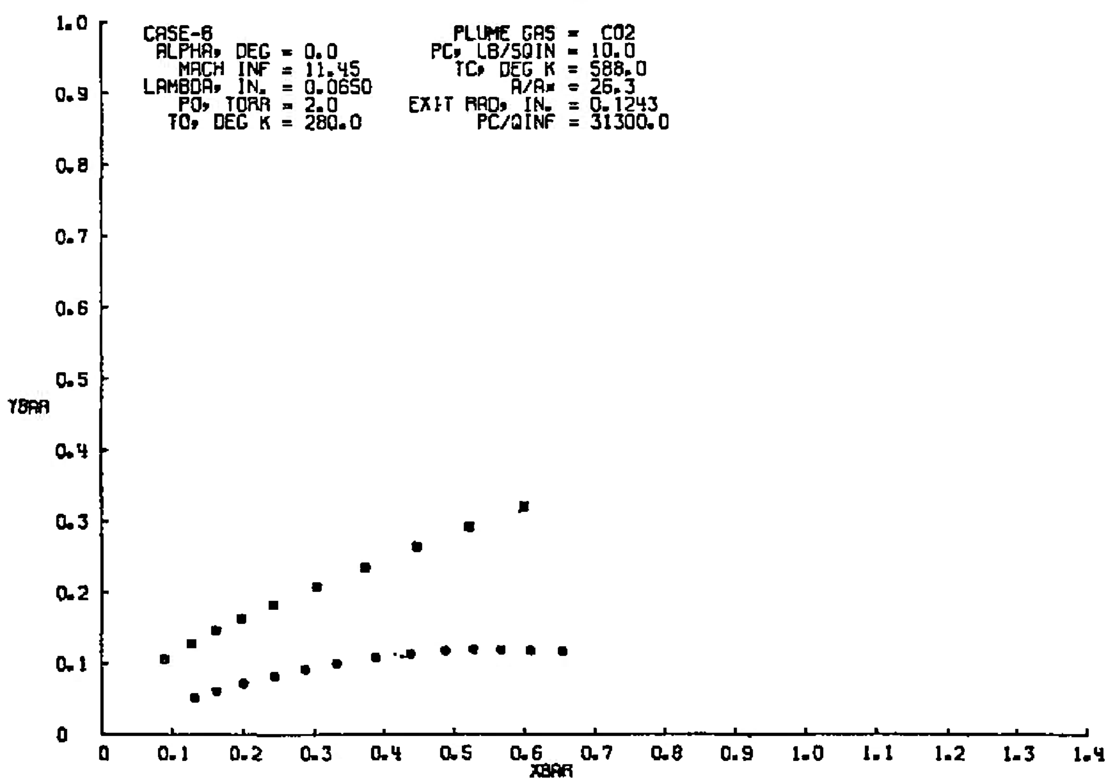


Fig. III-60

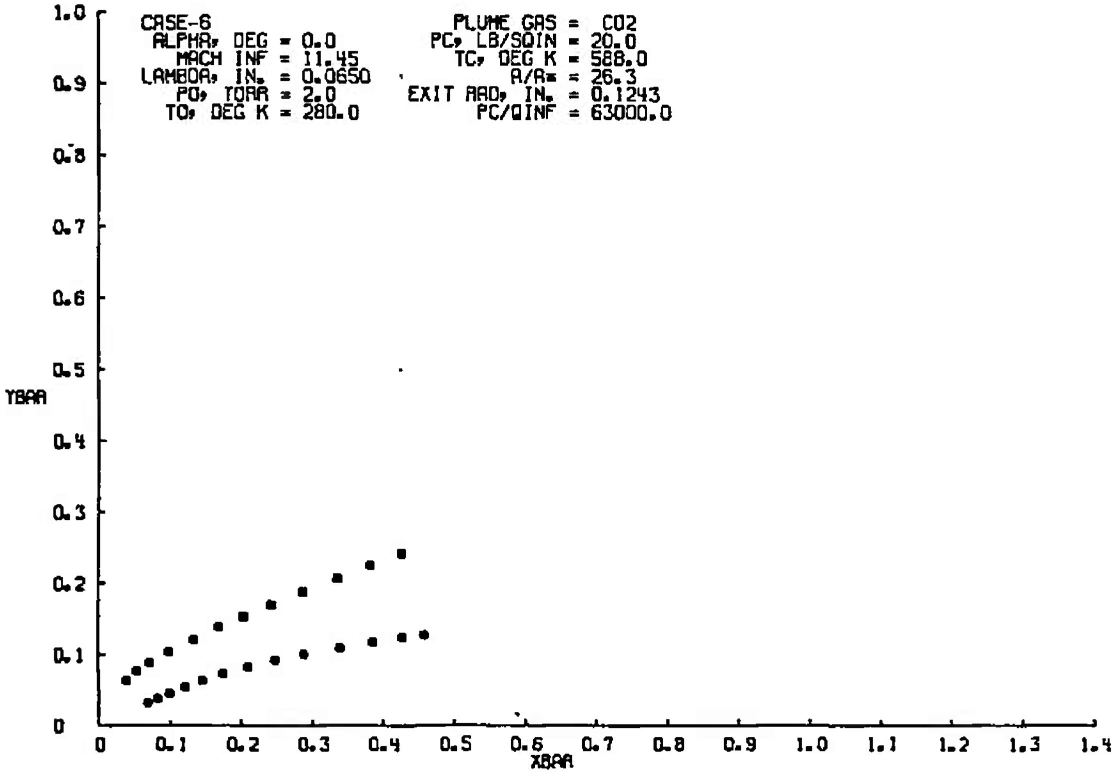


Fig. III-61

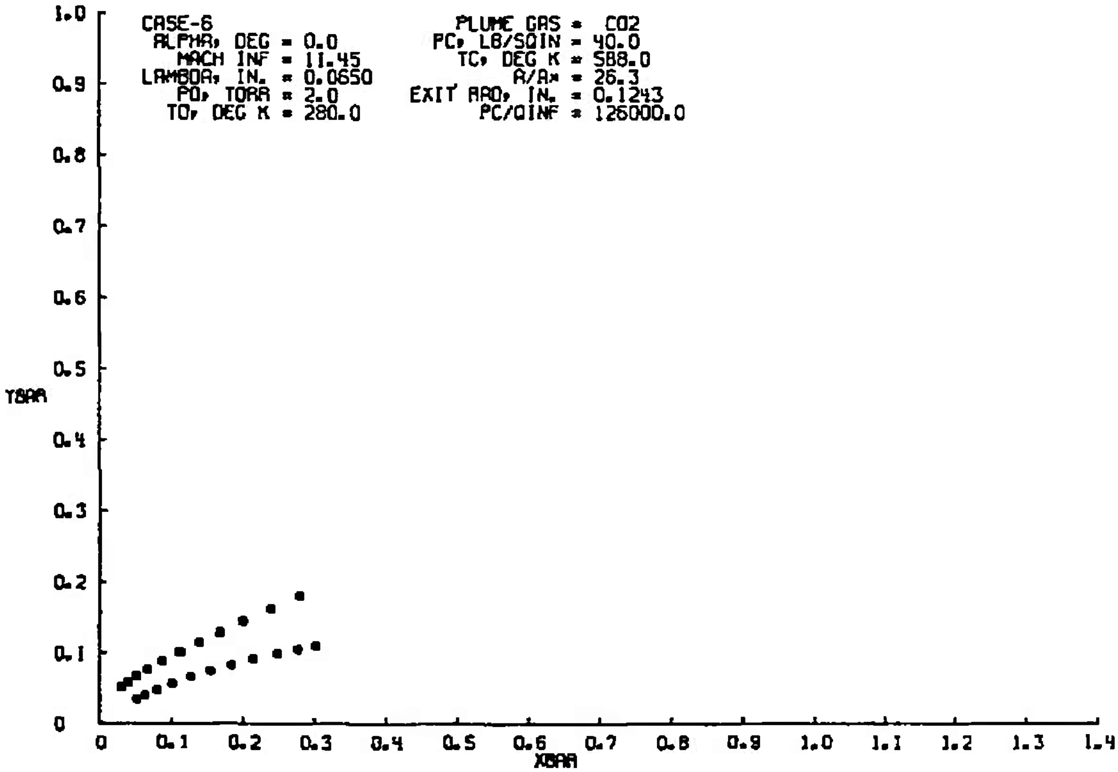


Fig. III-62

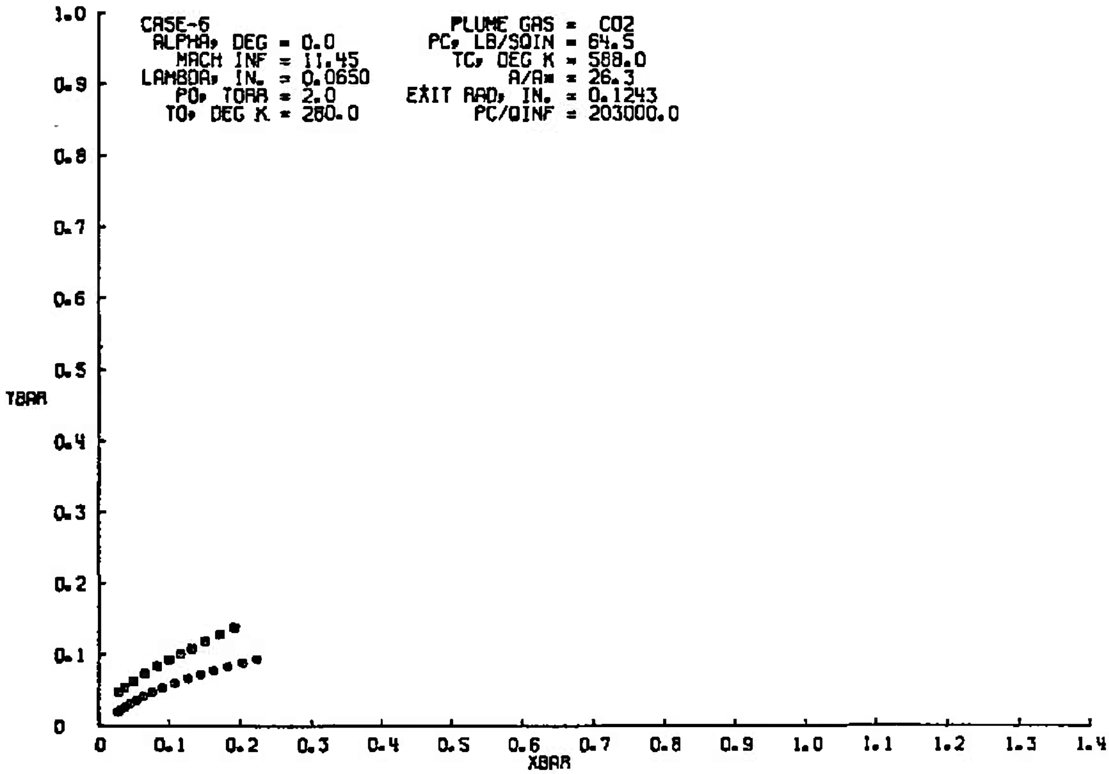


Fig. III-63

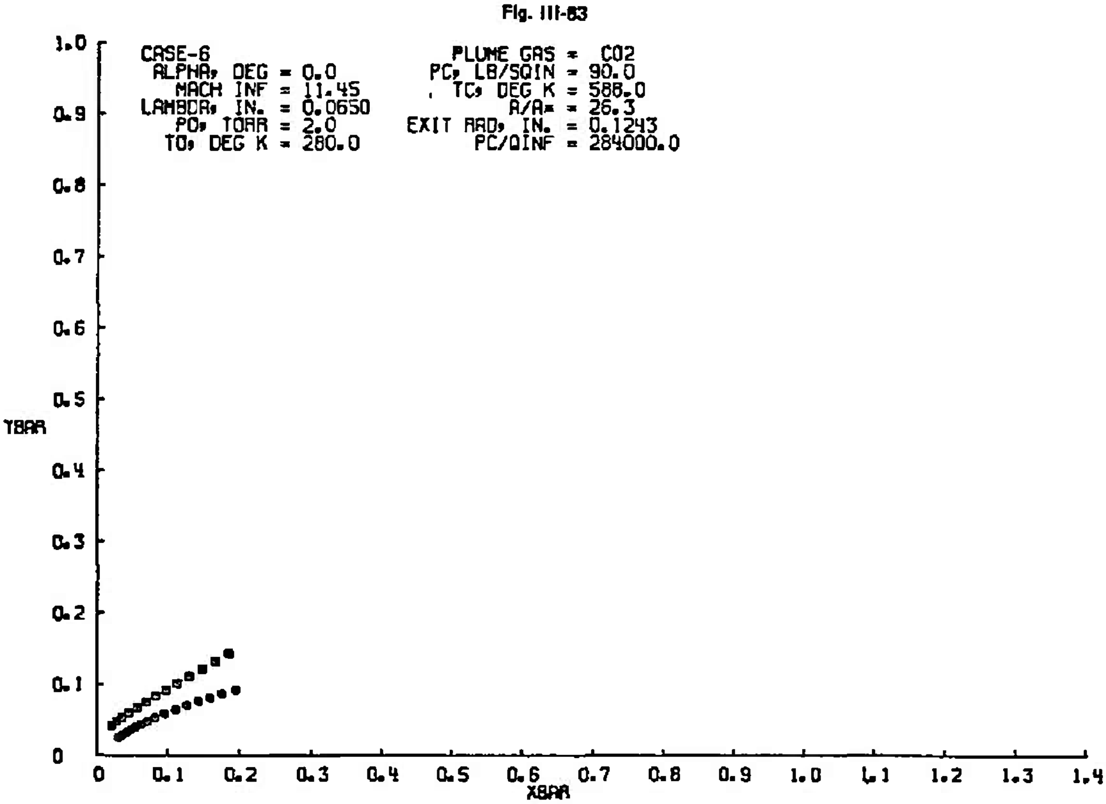


Fig. III-64

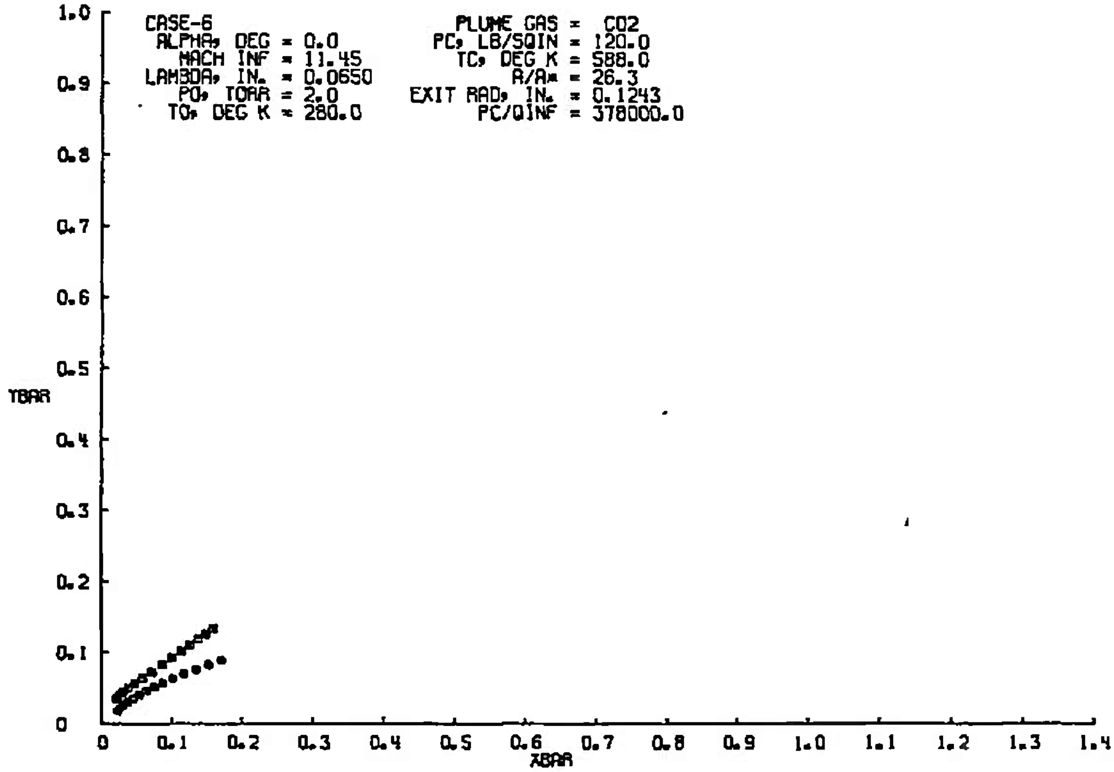


Fig. III-65

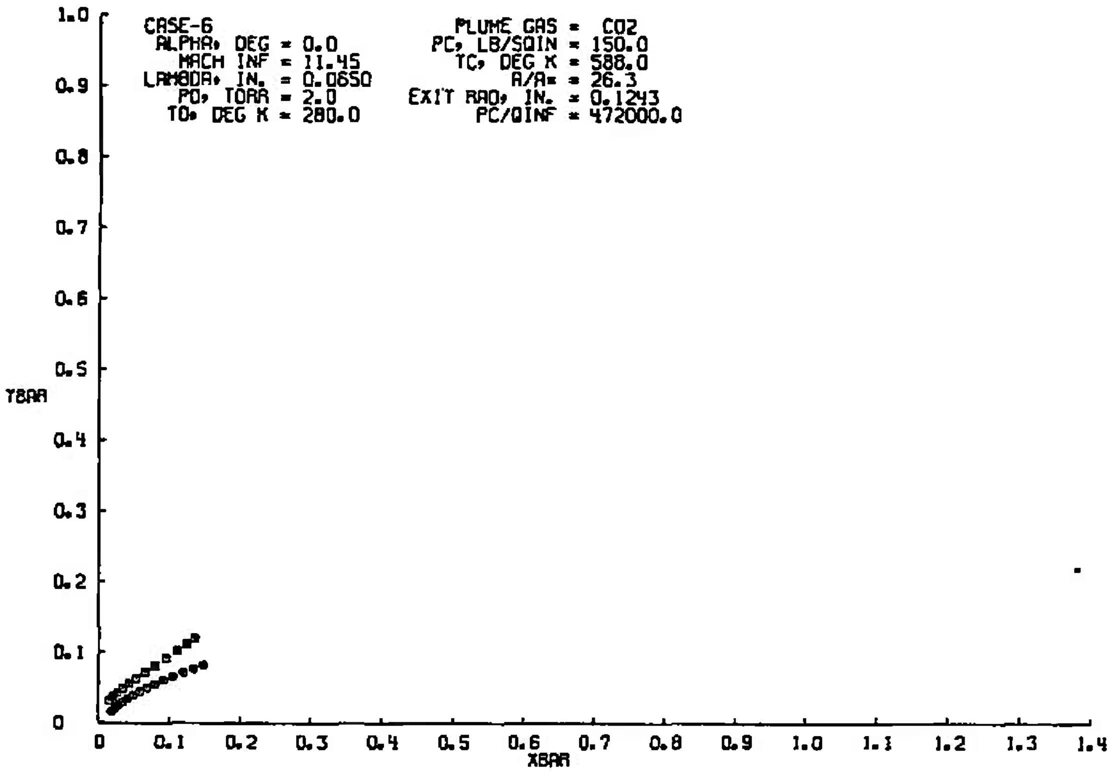


Fig. III-66

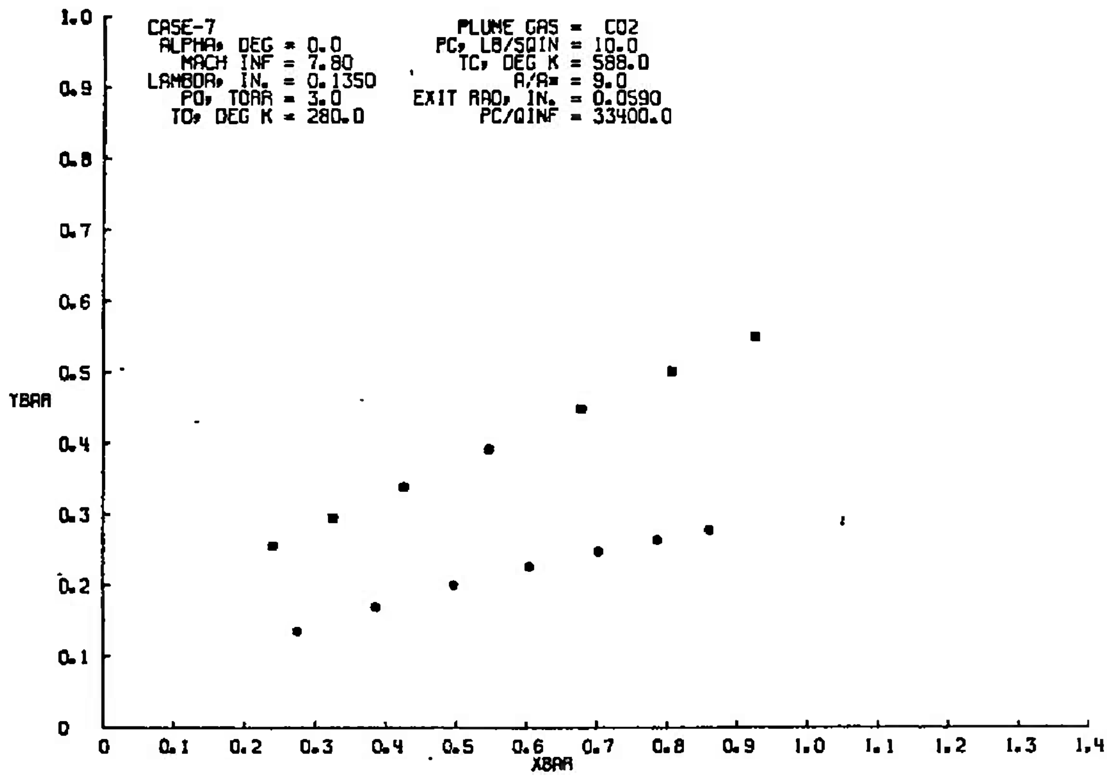


Fig. III-67

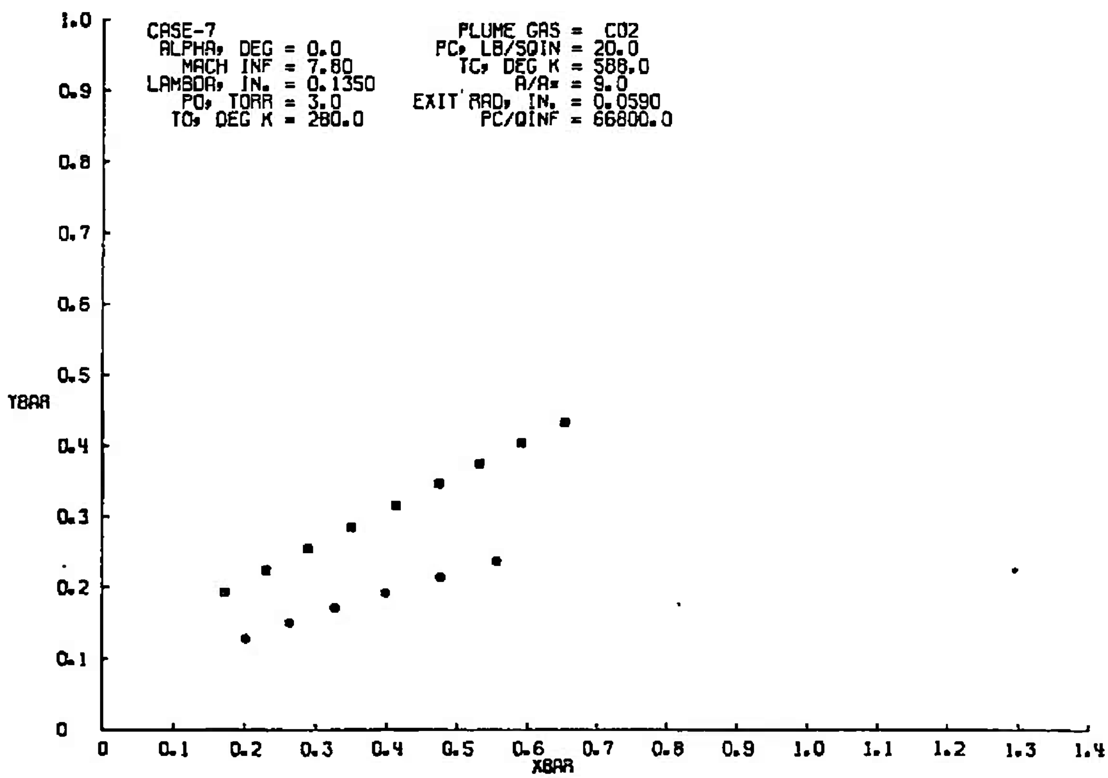


Fig. III-68

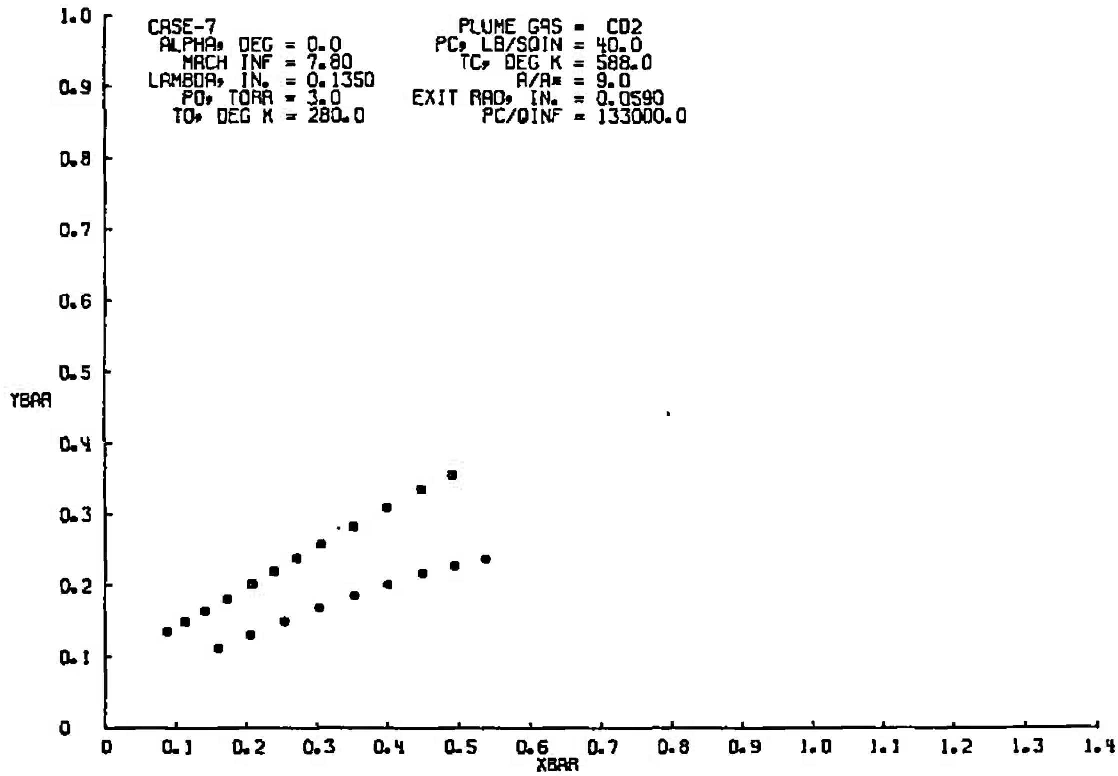


Fig. III-69

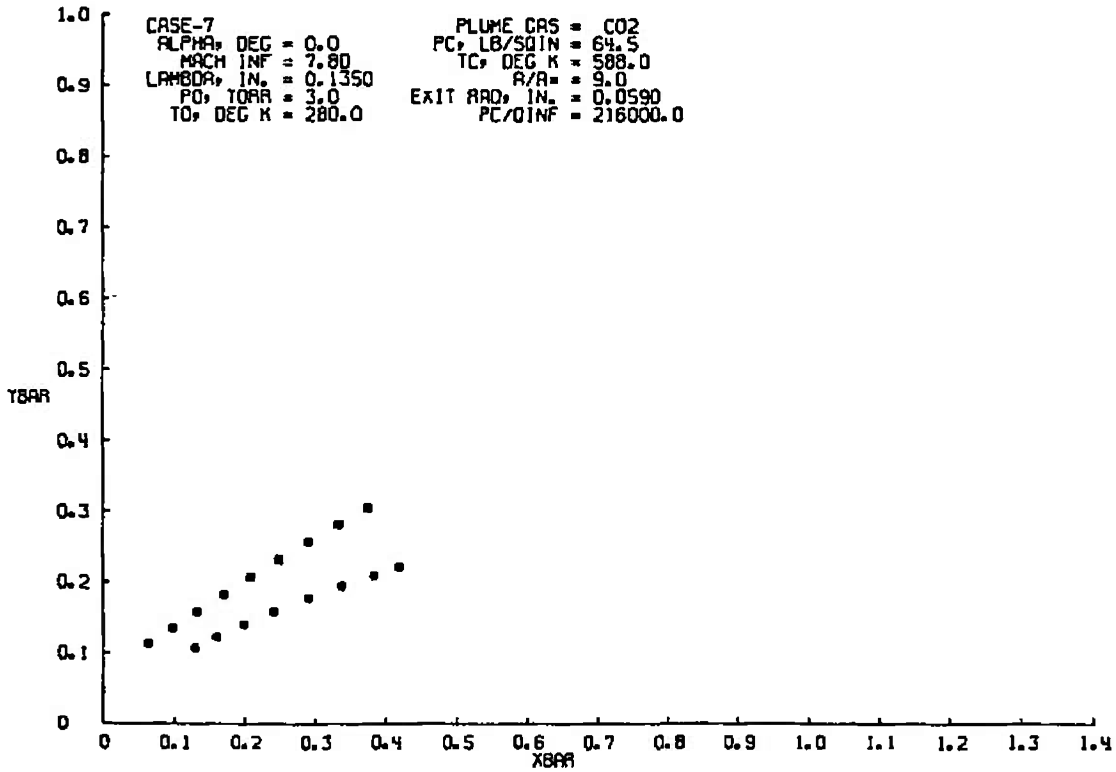


Fig. III-70

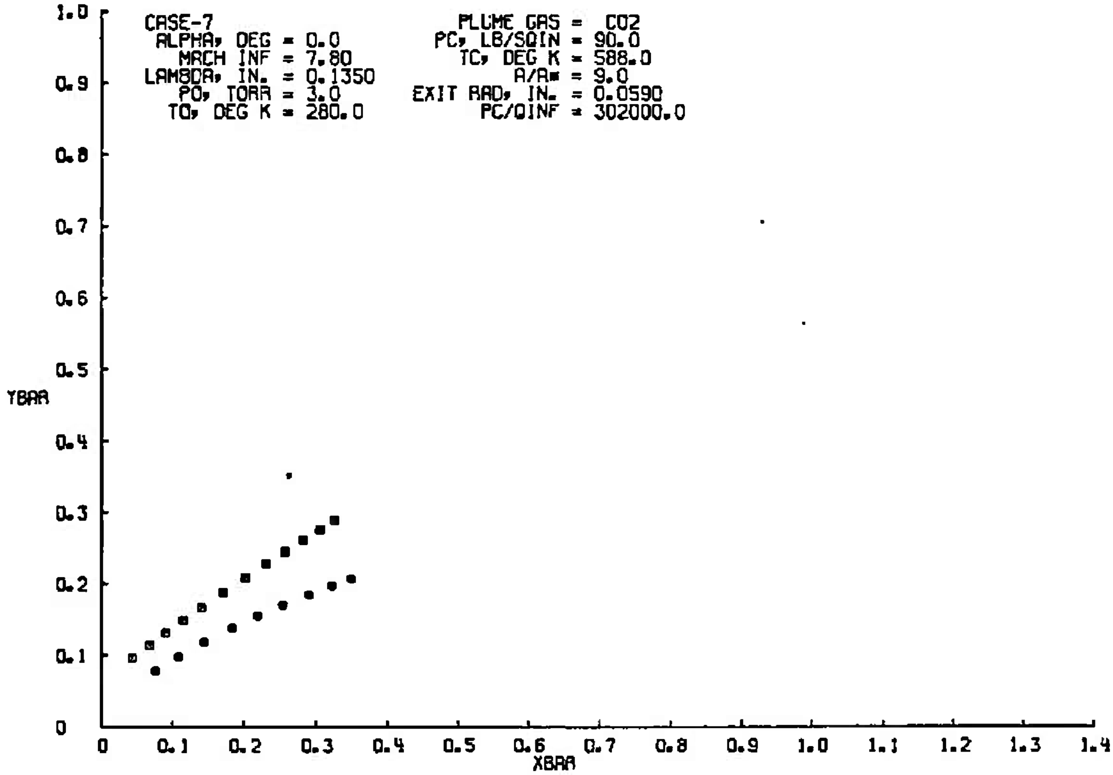


Fig. III-71

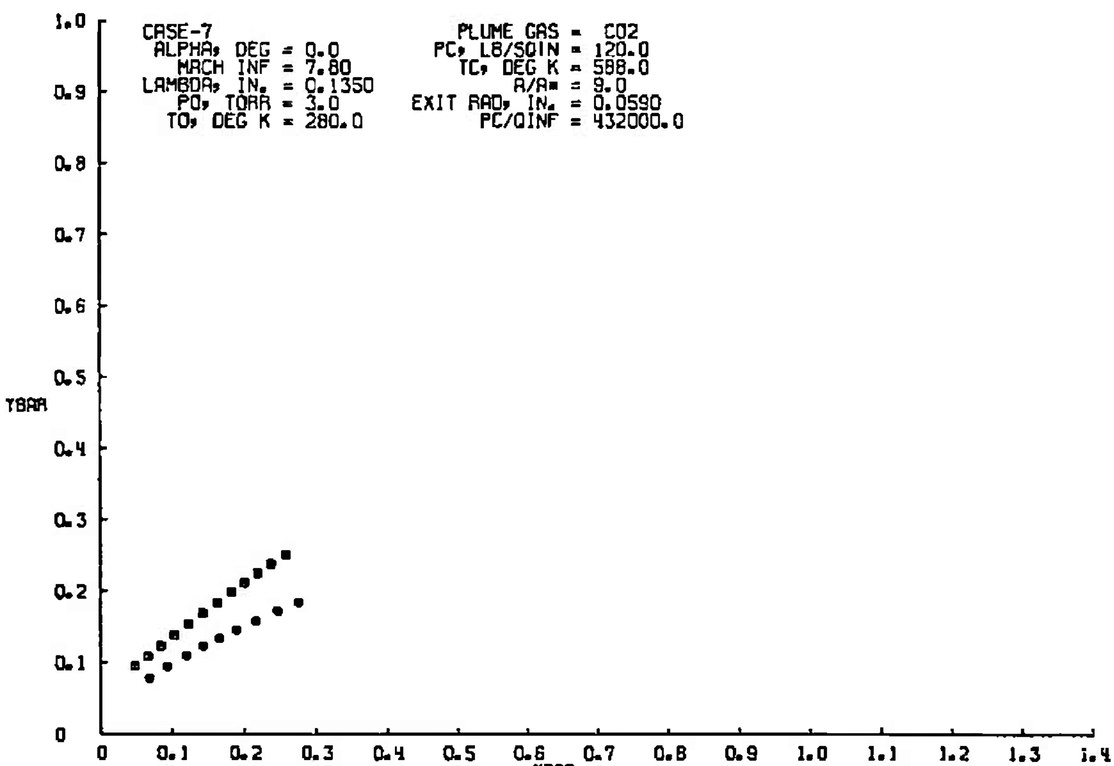


Fig. III-72

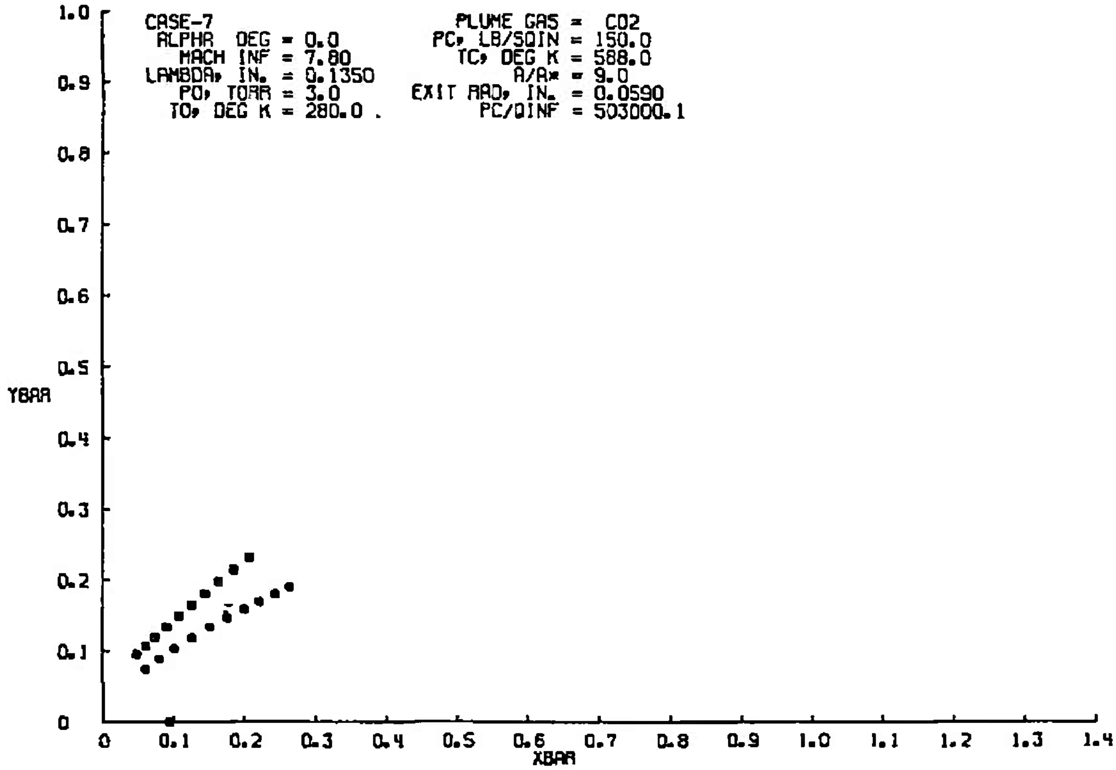


Fig. III-73

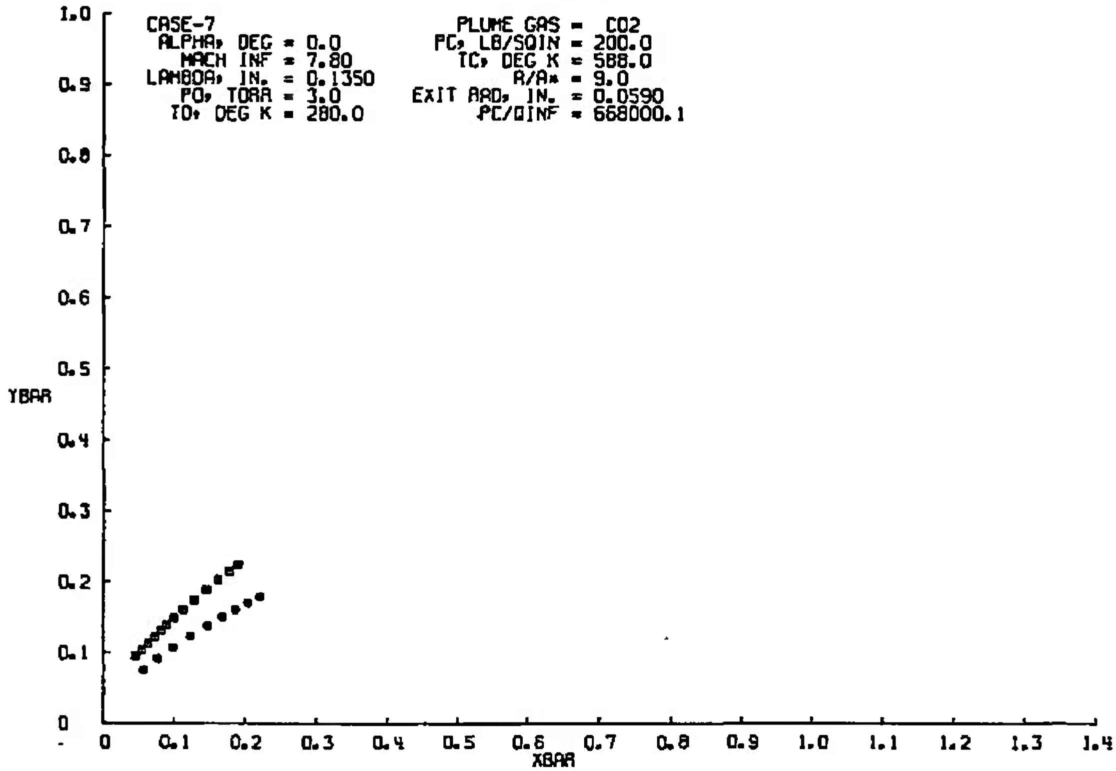


Fig. III-74

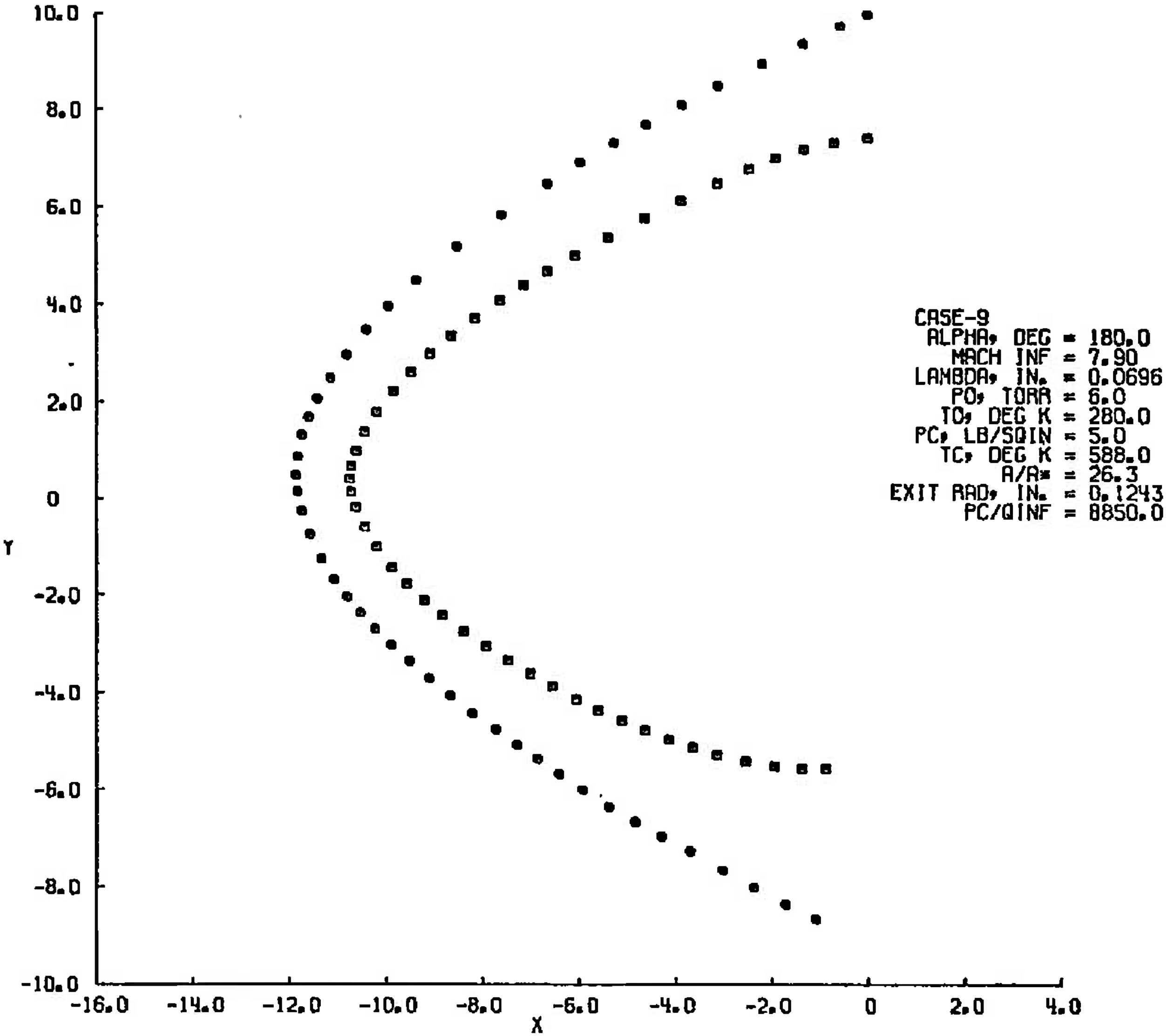

10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
Y
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0
X
CASE-9
ALPHA, DEG = 180.0
MACH INF = 7.90
LAMBDA, IN. = 0.0696
PO, TORR = 6.0
TO, DEG K = 280.0
PC, LB/SQIN = 5.0
TC, DEG K = 588.0
A/A* = 26.3
EXIT RAD, IN. = 0.1243
PC/QINF = 8850.0

Fig. III-75

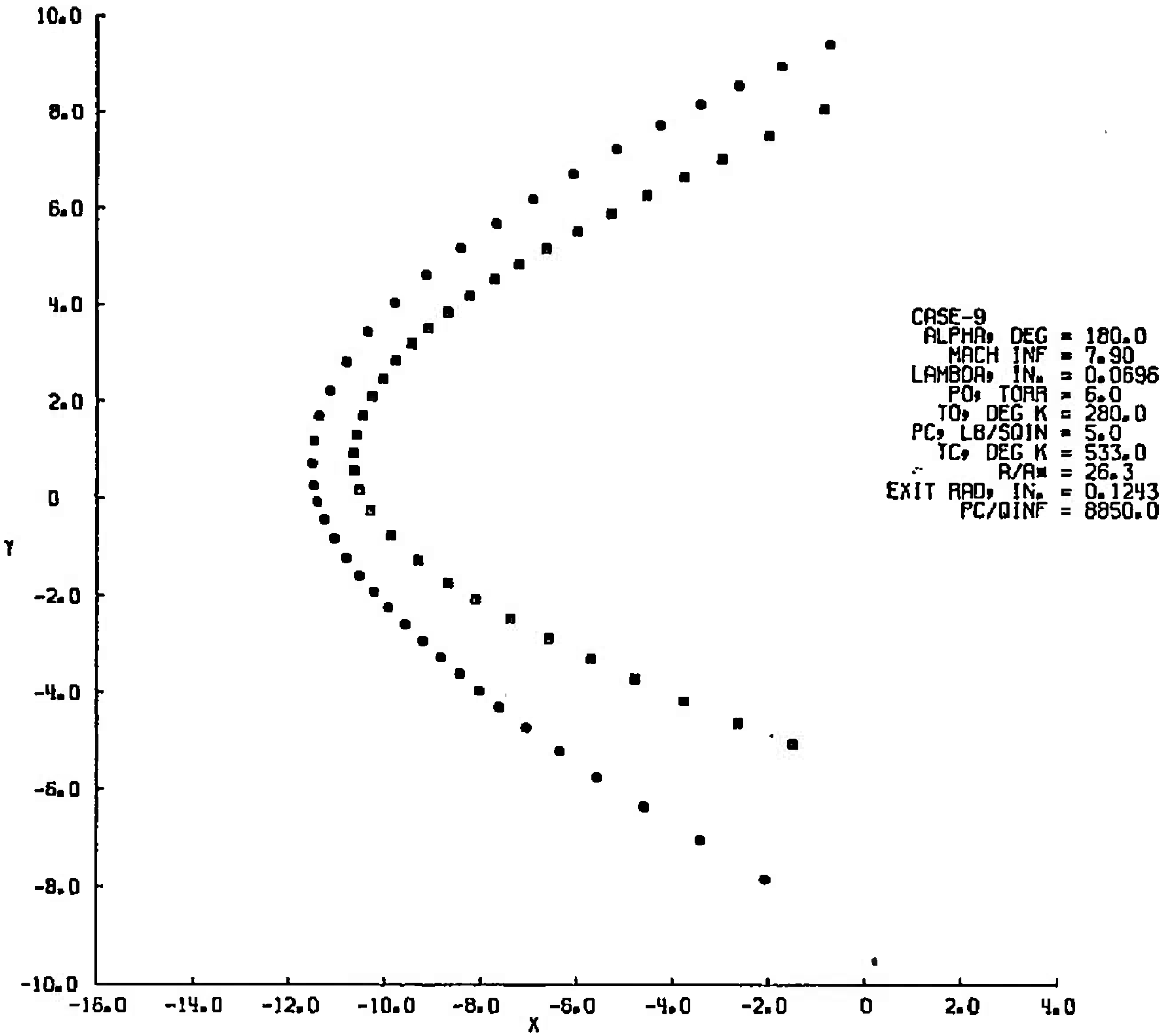

10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
Y
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0
X
CASE-9
ALPHA, DEG = 180.0
MACH INF = 7.90
LAMBDA, IN. = 0.0696
PO, TORR = 6.0
TO, DEG K = 280.0
PC, LB/SQIN = 5.0
TC, DEG K = 533.0
A/A* = 26.3
EXIT RAD, IN. = 0.1243
PC/QINF = 8850.0

Fig. III-76

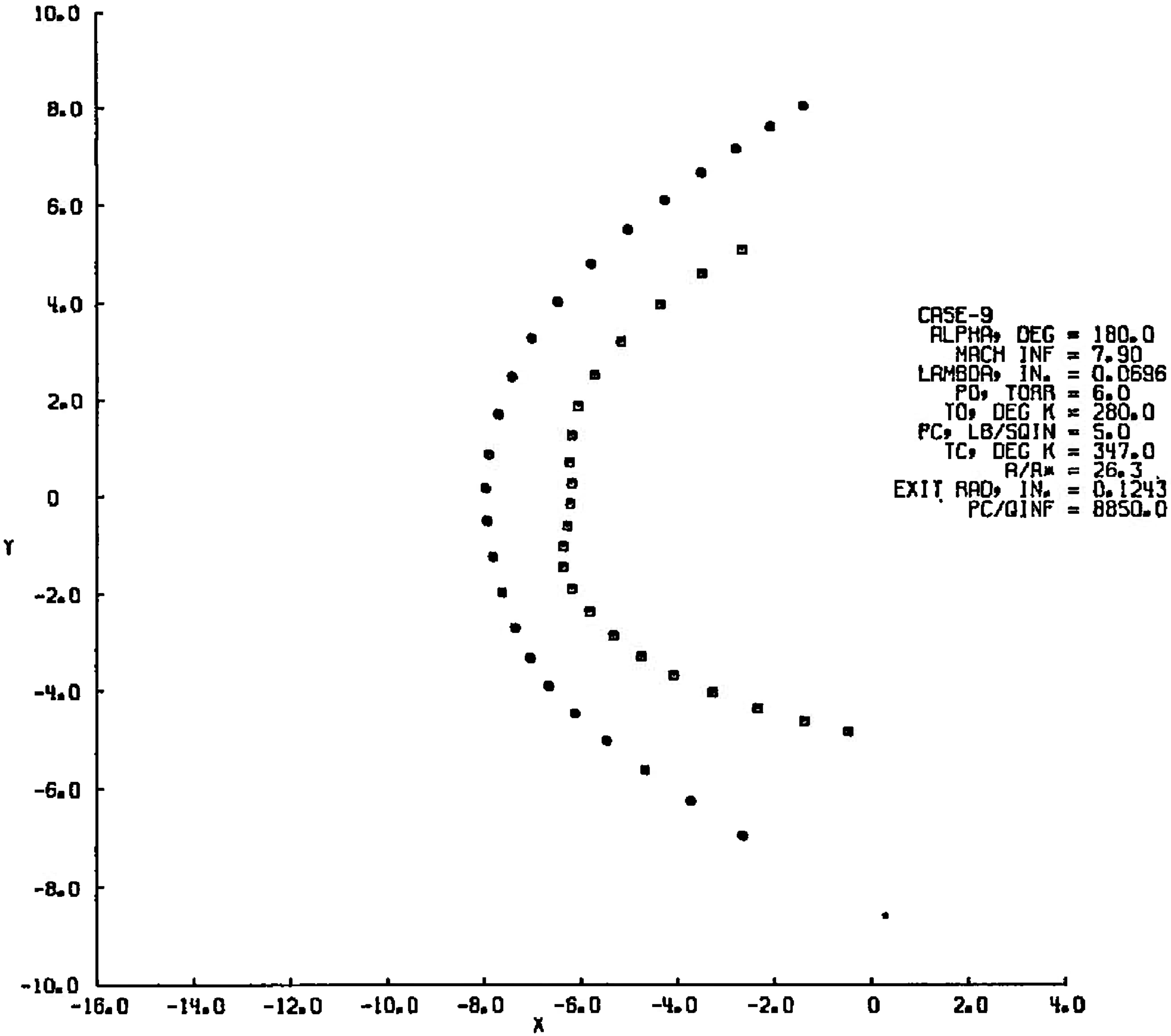
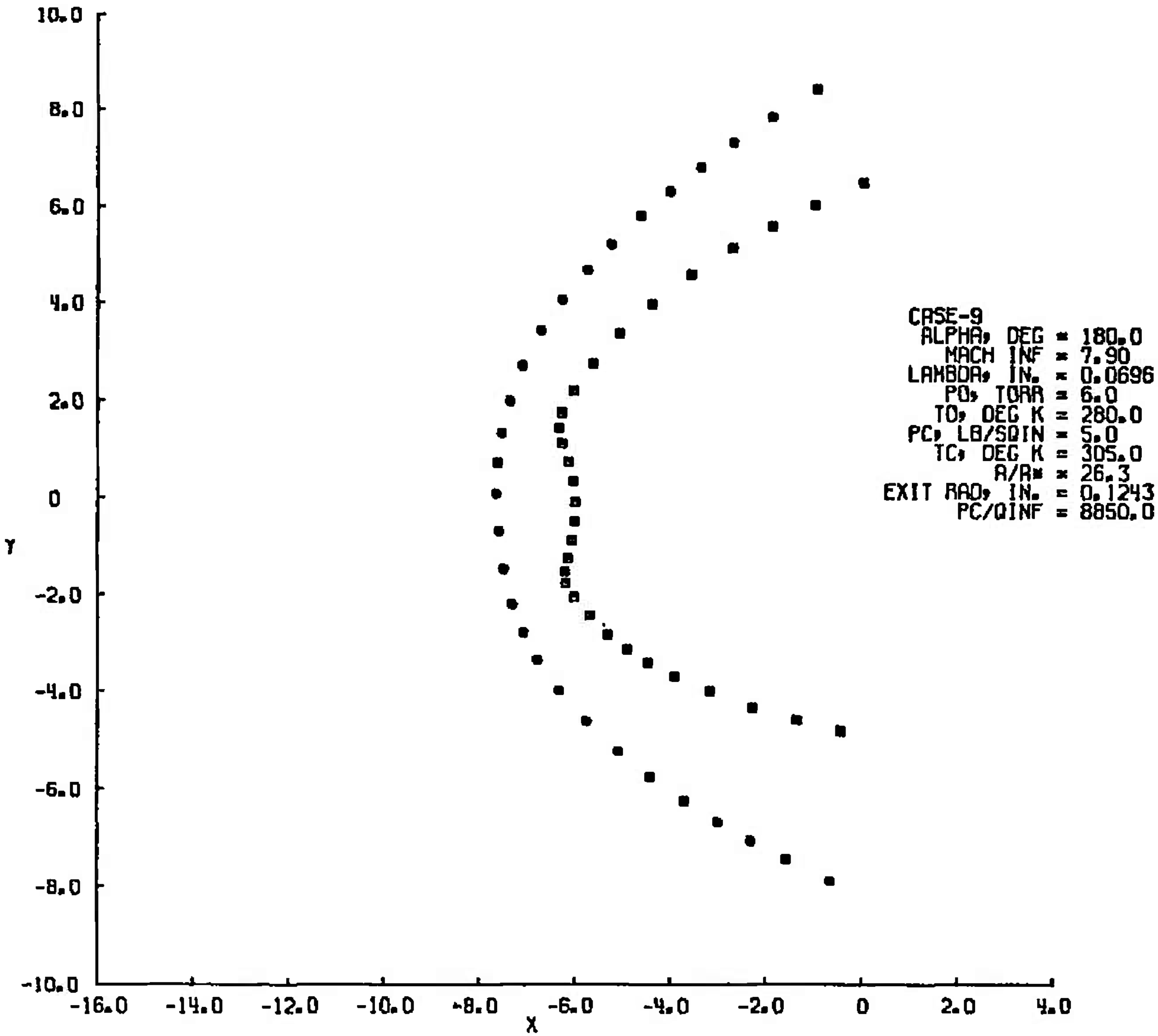

CASE-9
ALPHA, DEG = 180.0
MACH INF = 7.90
LAMBDA, IN. = 0.0696
PO, TORR = 6.0
TO, DEG K = 280.0
PC, LB/SQIN = 5.0
TC, DEG K = 347.0
A/A* = 26.3
EXIT RAD, IN. = 0.1243
PC/QINF = 8850.0
Y
X
10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0

Fig. III-77


CASE-9
ALPHA, DEG = 180.0
MACH INF = 7.90
LAMBDA, IN. = 0.0696
PO, TORR = 6.0
TO, DEG K = 280.0
PC, LB/SQIN = 5.0
TC, DEG K = 305.0
A/A* = 26.3
EXIT RAD, IN. = 0.1243
PC/QINF = 8850.0
Y
X
10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
-16.0
-14.0
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-8.0
-6.0
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0
2.0
4.0

Fig. III-78

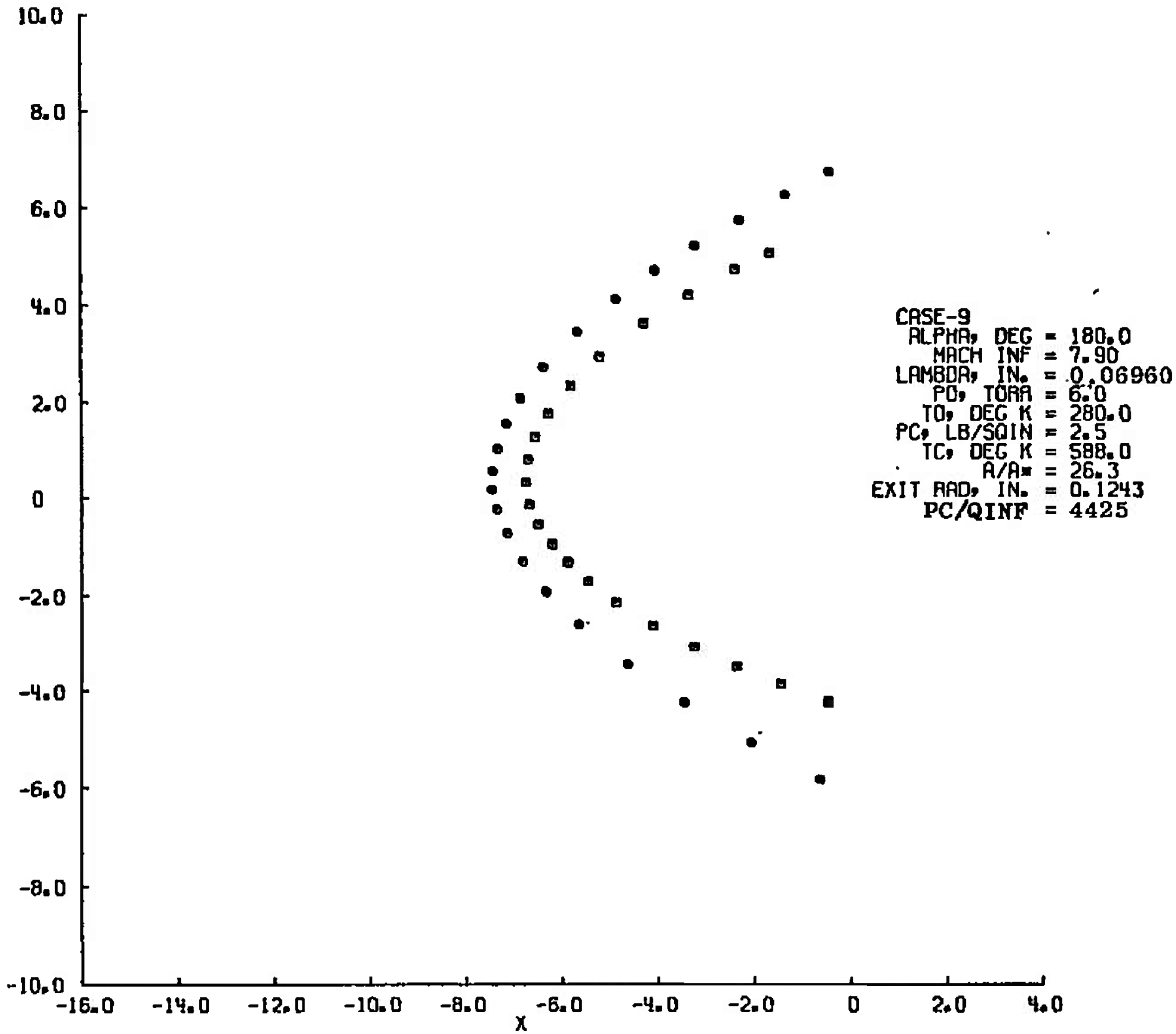
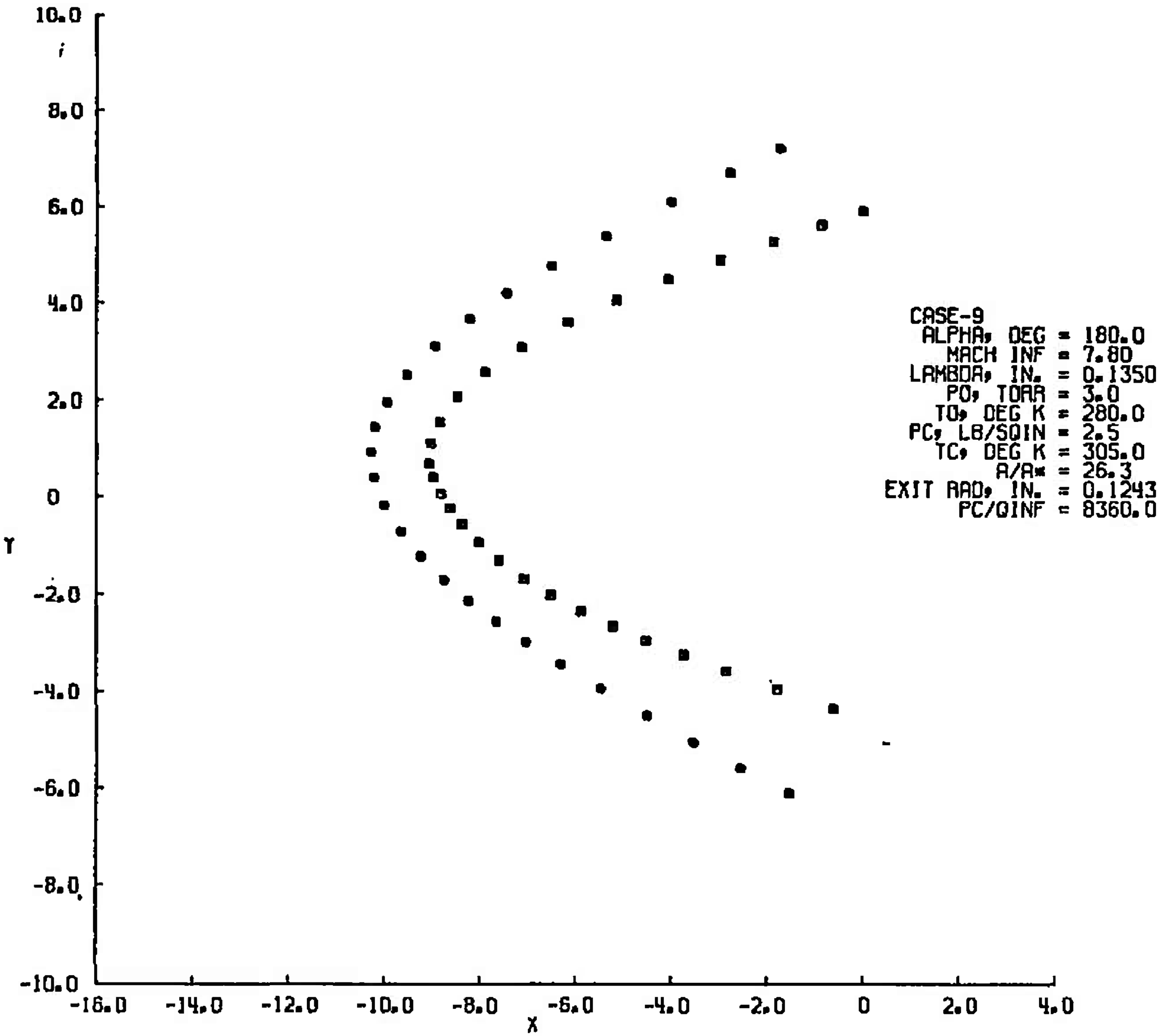

10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
Y
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0
X
CASE-9
ALPHA, DEG = 180.0
MACH INF = 7.90
LAMBDA, IN. = 0.06960
PO, TORR = 6.0
TO, DEG K = 280.0
PC, LB/SQIN = 2.5
TC, DEG K = 588.0
A/A* = 26.3
EXIT RAD, IN. = 0.1243
PC/QINF = 4425

Fig. III-79


CASE-9
ALPHA, DEG = 180.0
MACH INF = 7.80
LAMBDA, IN. = 0.1350
PO, TORR = 3.0
TO, DEG K = 280.0
PC, LB/SQIN = 2.5
TC, DEG K = 305.0
A/A* = 26.3
EXIT RAD, IN. = 0.1243
PC/QINF = 8360.0
Y
X
10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
-16.0
-14.0
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-8.0
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0
2.0
4.0

Fig. III-80

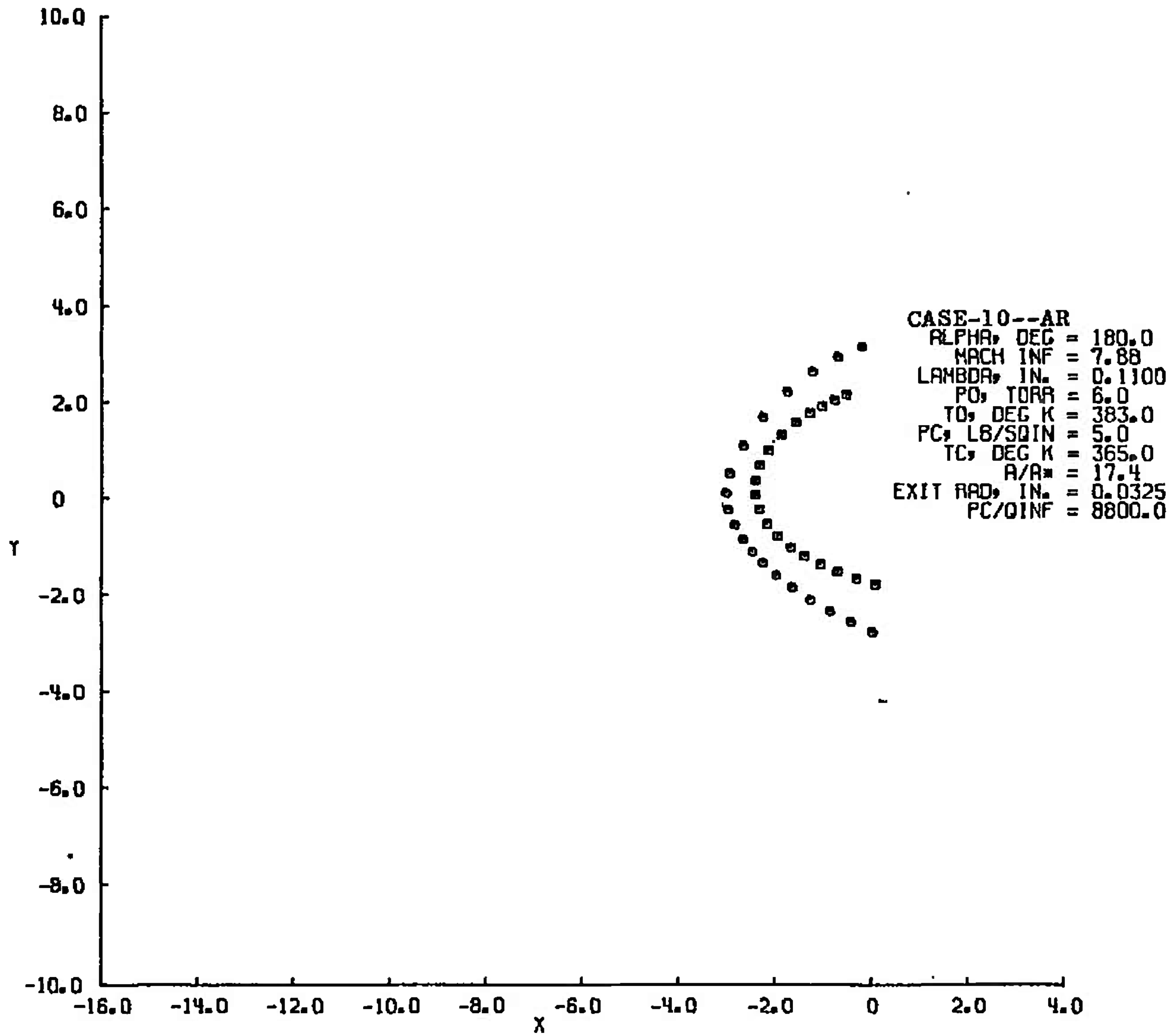

10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
Y
-16.0 -14.0 -12.0 -10.0 -8.0 -6.0 -4.0 -2.0 0 2.0 4.0
X
CASE-10--AR
ALPHA, DEG = 180.0
MACH INF = 7.88
LAMBDA, IN. = 0.1100
PO, TORR = 6.0
TO, DEG K = 383.0
PC, LB/SQIN = 5.0
TC, DEG K = 365.0
A/A* = 17.4
EXIT RAD, IN. = 0.0325
PC/QINF = 8800.0

Fig. III-81

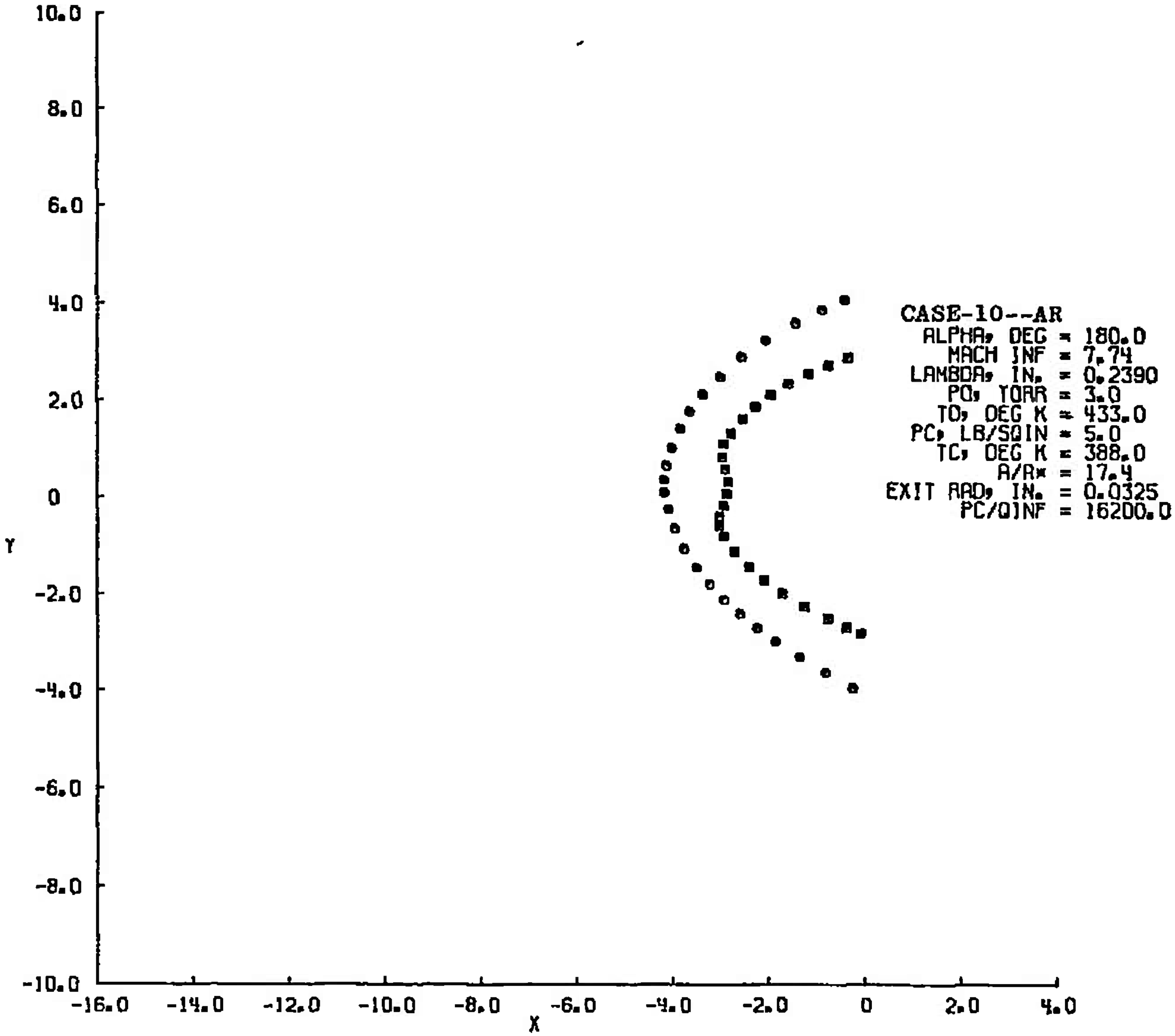

CASE-10--AR
ALPHA, DEG = 180.0
MACH INF = 7.74
LAMBDA, IN. = 0.2390
PO, TORR = 3.0
TO, DEG K = 433.0
PC, LB/SQIN = 5.0
TC, DEG K = 388.0
A/A* = 17.4
EXIT RAD, IN. = 0.0325
PC/QINF = 16200.0
Y
X
10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0

Fig. III-82

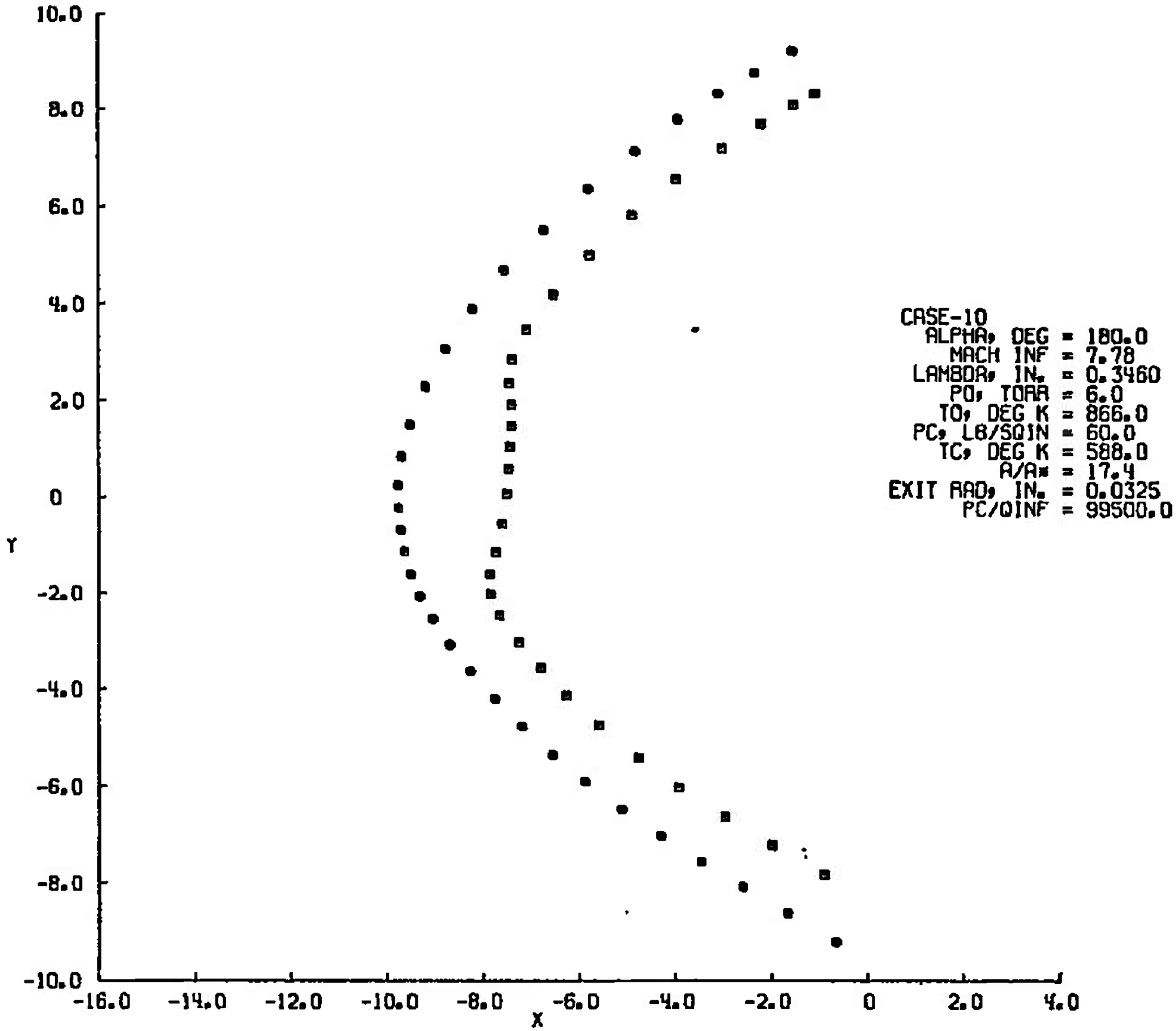

CASE-10
ALPHA, DEG = 180.0
MACH INF = 7.78
LAMBDA, IN. = 0.3460
PO, TORR = 6.0
TO, DEG K = 866.0
PC, LB/SQIN = 60.0
TC, DEG K = 588.0
A/A* = 17.4
EXIT RAD, IN. = 0.0325
PC/QINF = 99500.0
Y
X
10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0

Fig. III-83

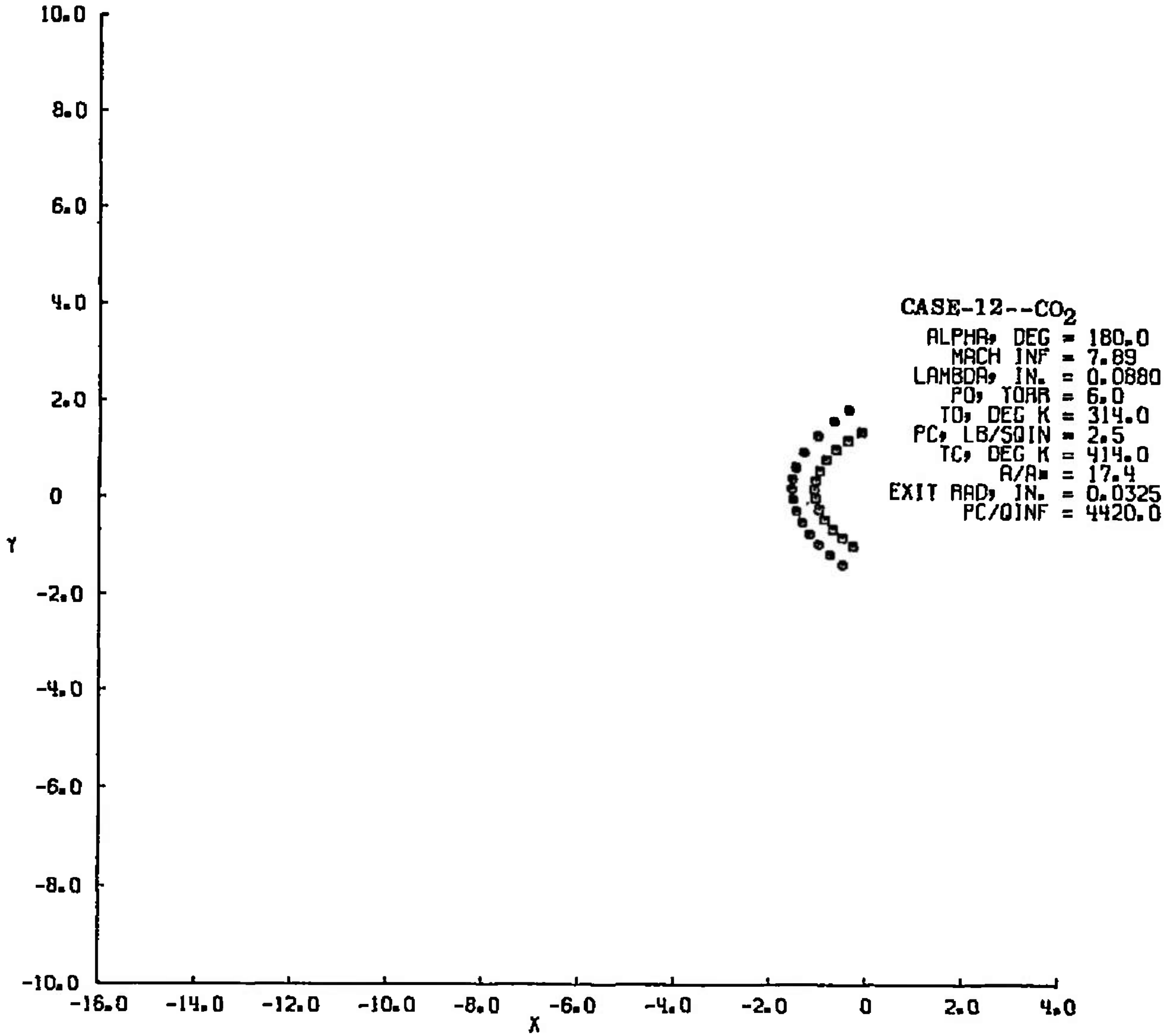

CASE-12--CO2
ALPHA, DEG = 180.0
MACH INF = 7.89
LAMBDA, IN. = 0.0880
PO, TORR = 6.0
TO, DEG K = 314.0
PC, LB/SQIN = 2.5
TC, DEG K = 414.0
A/A* = 17.4
EXIT RAD, IN. = 0.0325
PC/QINF = 4420.0
Y
X
10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0

Fig. III-84

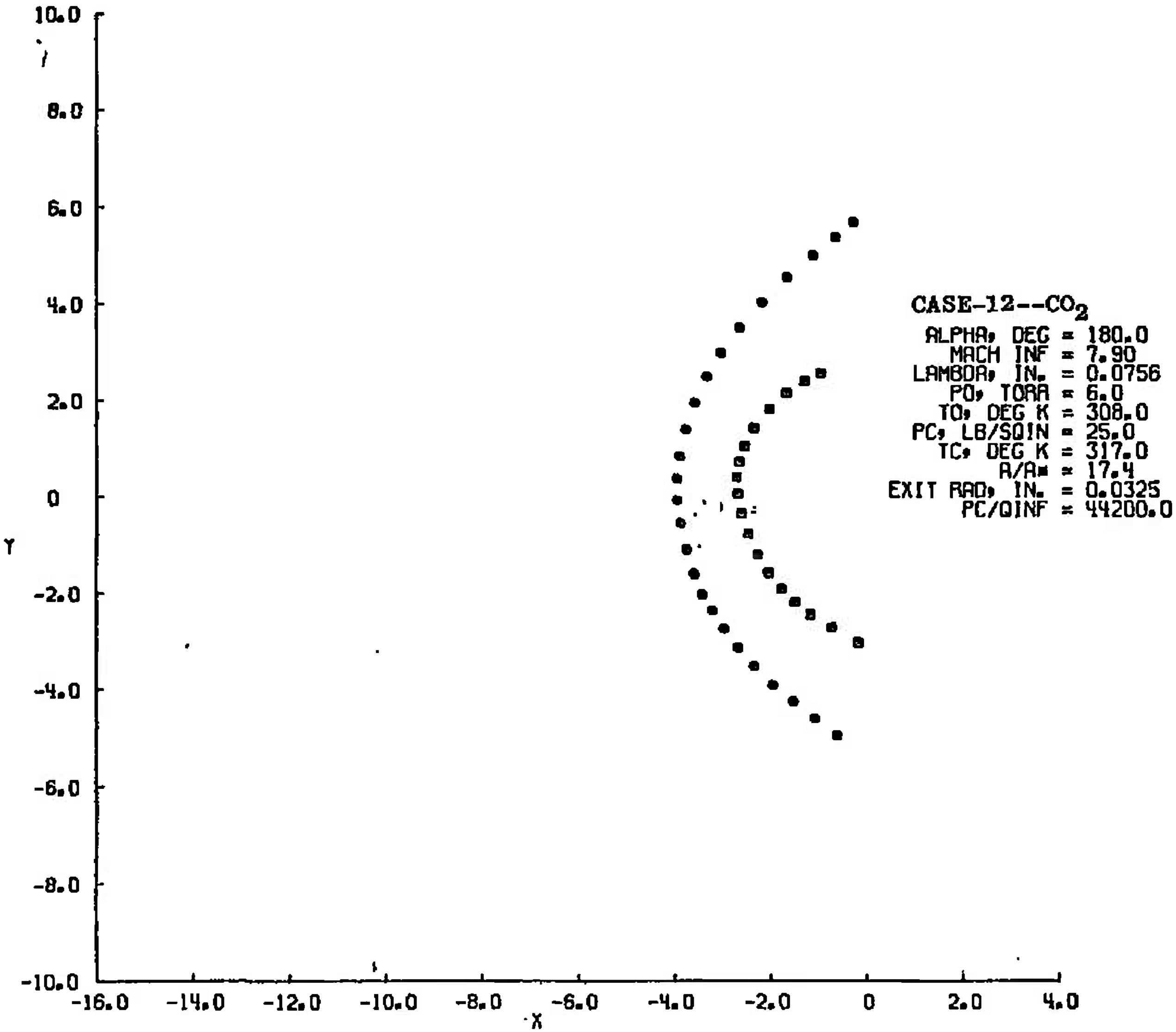

10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
Y
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0
X
CASE-12--CO2
ALPHA, DEG = 180.0
MACH INF = 7.90
LAMBDA, IN. = 0.0756
PO, TORR = 6.0
TO, DEG K = 308.0
PC, LB/SQIN = 25.0
TC, DEG K = 317.0
A/A* = 17.4
EXIT RAD, IN. = 0.0325
PC/QINF = 44200.0

Fig. III-85

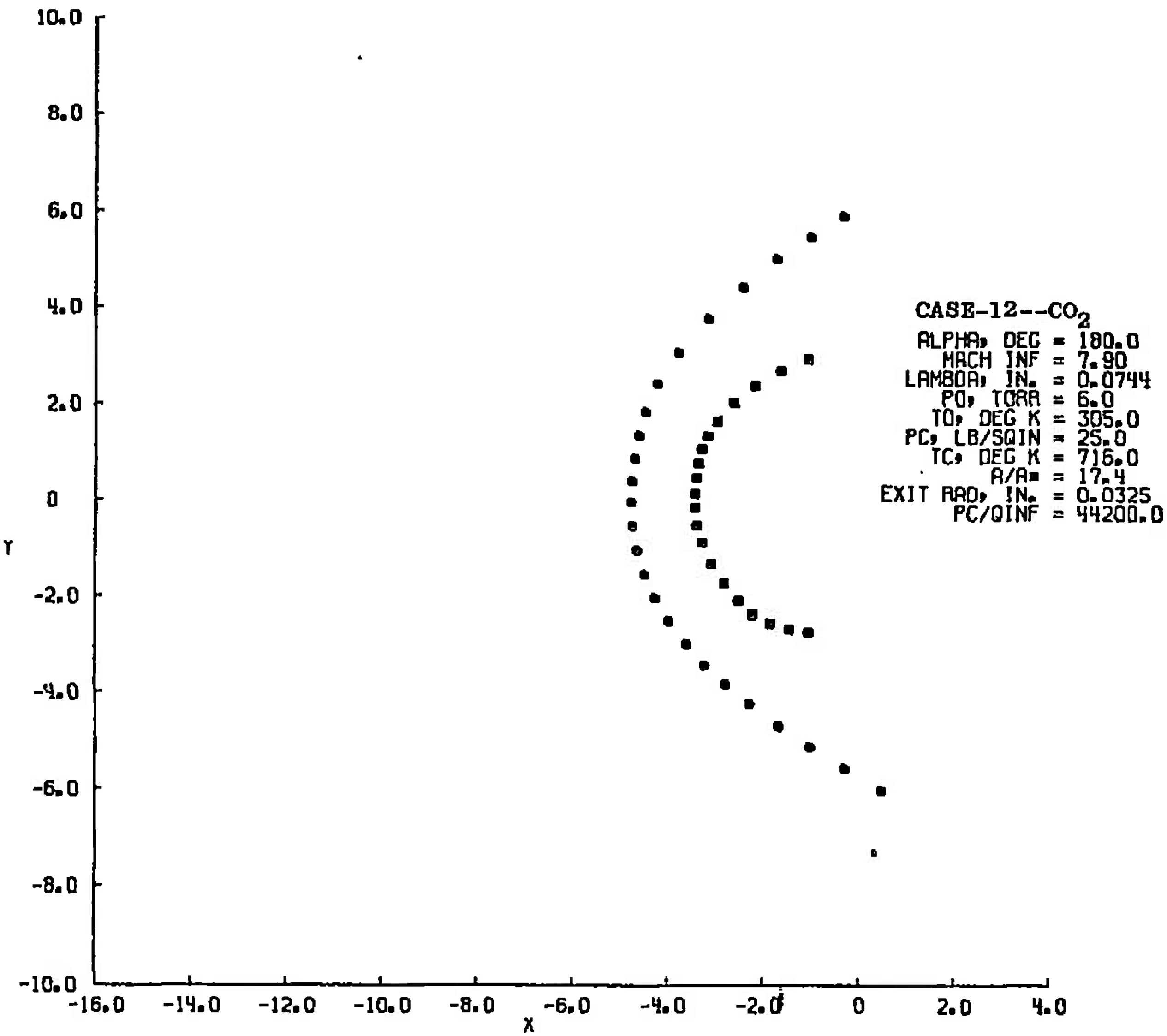

CASE-12--CO_2
ALPHA, DEG = 180.0
MACH INF = 7.90
LAMBDA, IN. = 0.0744
PO, TORR = 6.0
TO, DEG K = 305.0
PC, LB/SQIN = 25.0
TC, DEG K = 716.0
A/A* = 17.4
EXIT RAD, IN. = 0.0325
PC/QINF = 44200.0
Y
10.0
8.0
6.0
4.0
2.0
0
-2.0
-4.0
-6.0
-8.0
-10.0
X
-16.0
-14.0
-12.0
-10.0
-8.0
-6.0
-4.0
-2.0
0
2.0
4.0

Fig. III-86

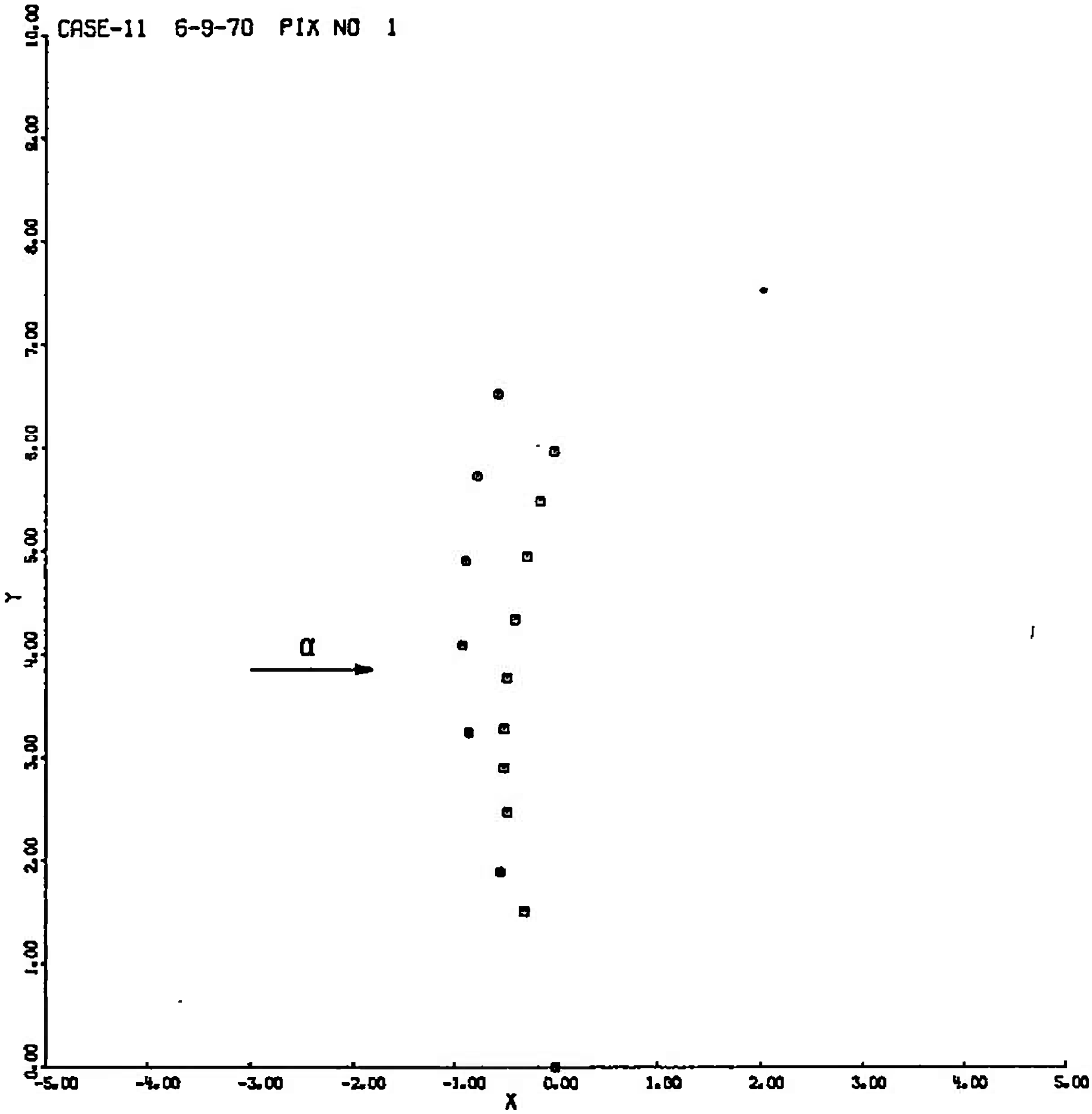

CASE-11 6-9-70 PIX NO 1
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Y
α
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
X

Fig. III-87

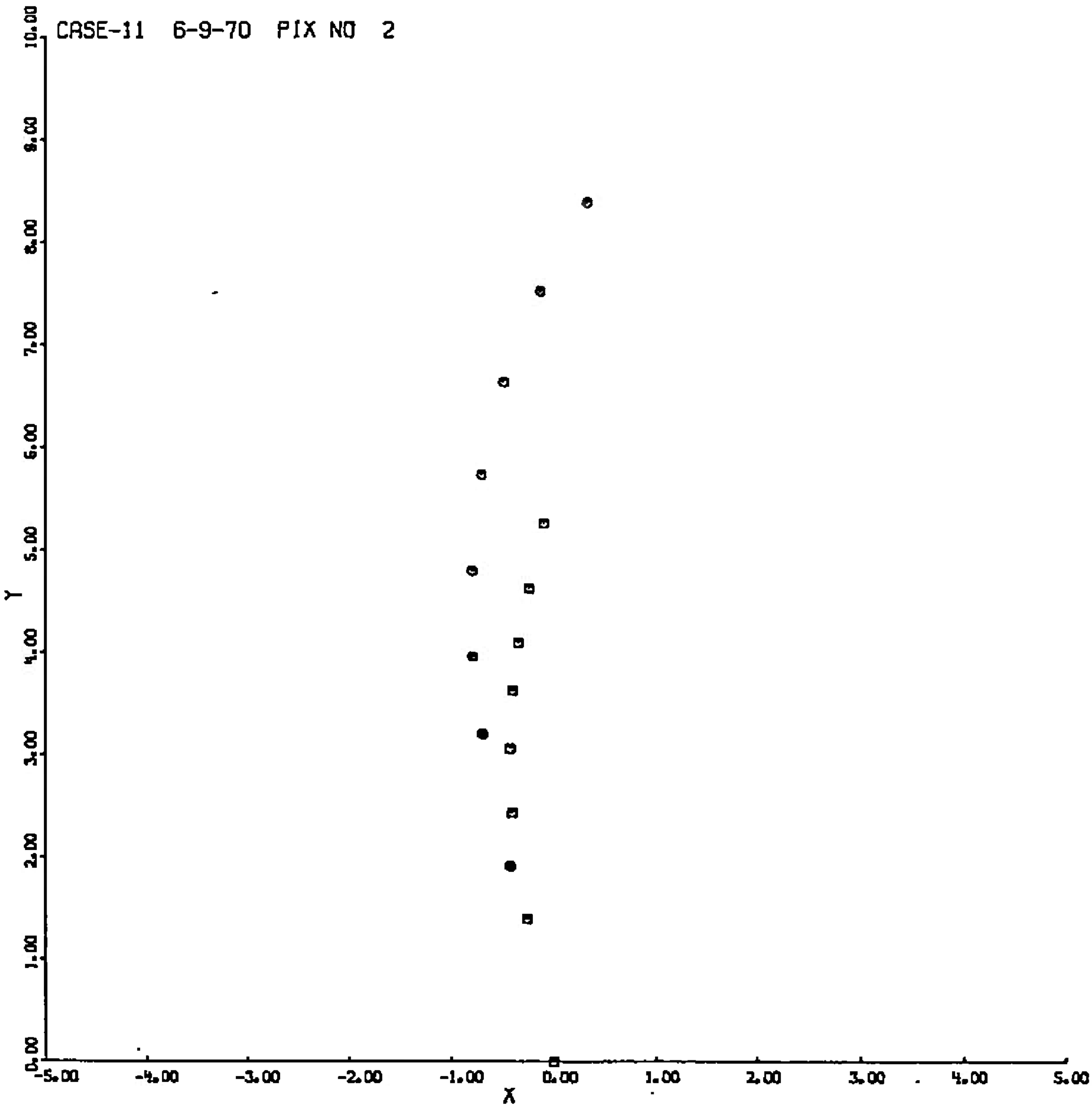

CASE-11 6-9-70 PIX NO 2
Y
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
X

Fig. III-88

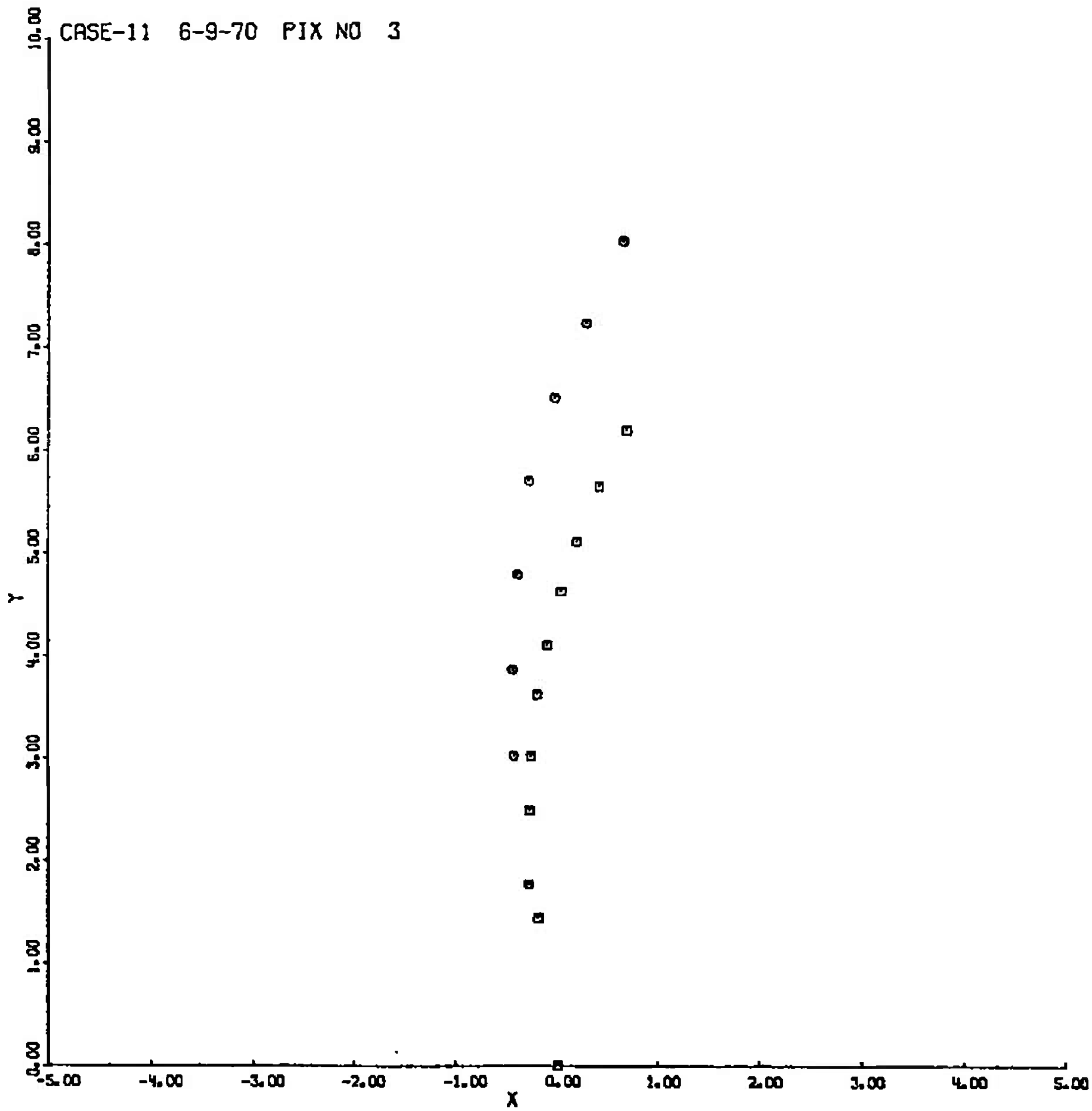

CASE-11 6-9-70 PIX NO 3
Y
X
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00

Fig. III-89

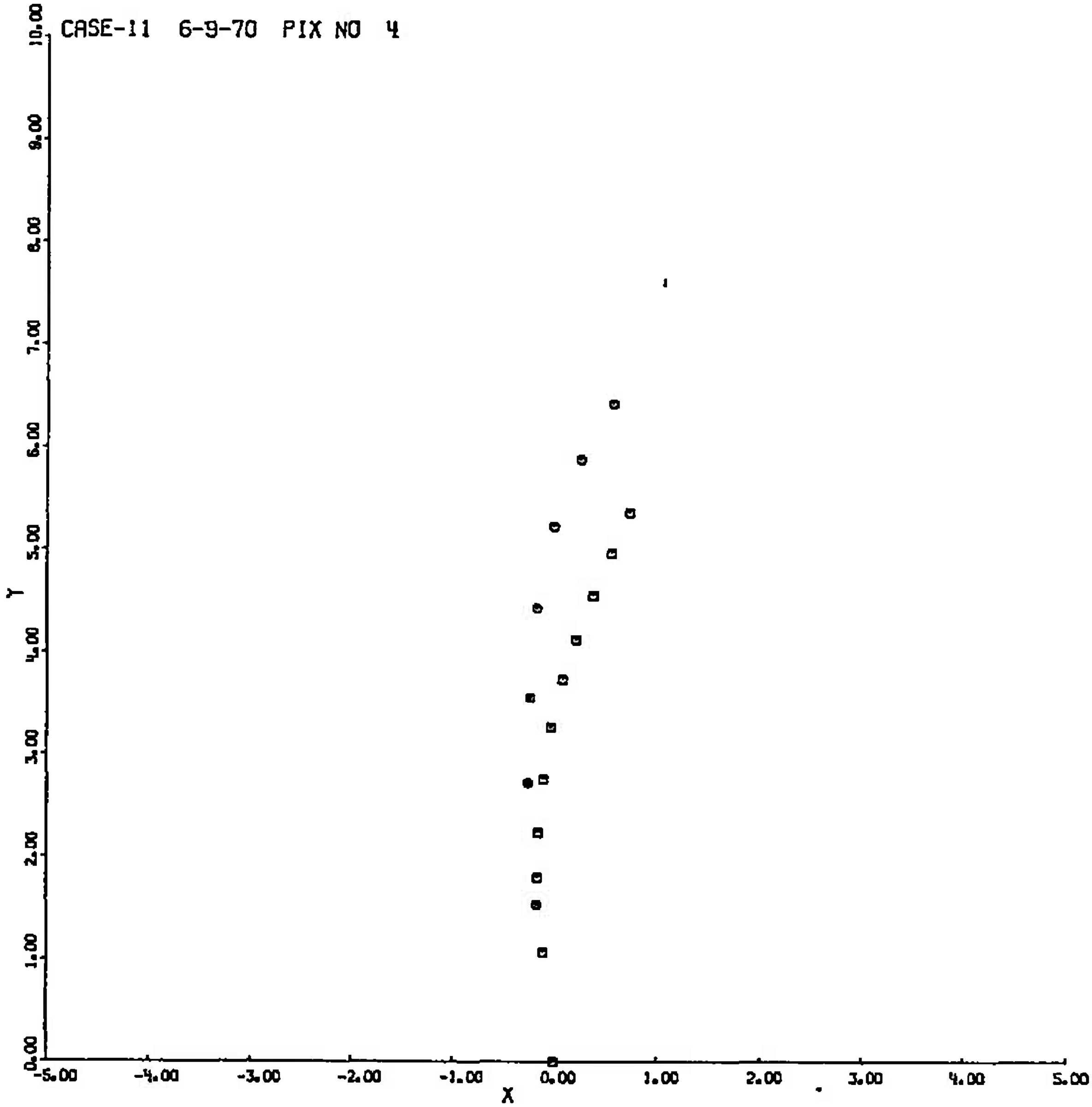

CASE-11 6-9-70 PIX NO 4
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Y
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
X

Fig. III-90

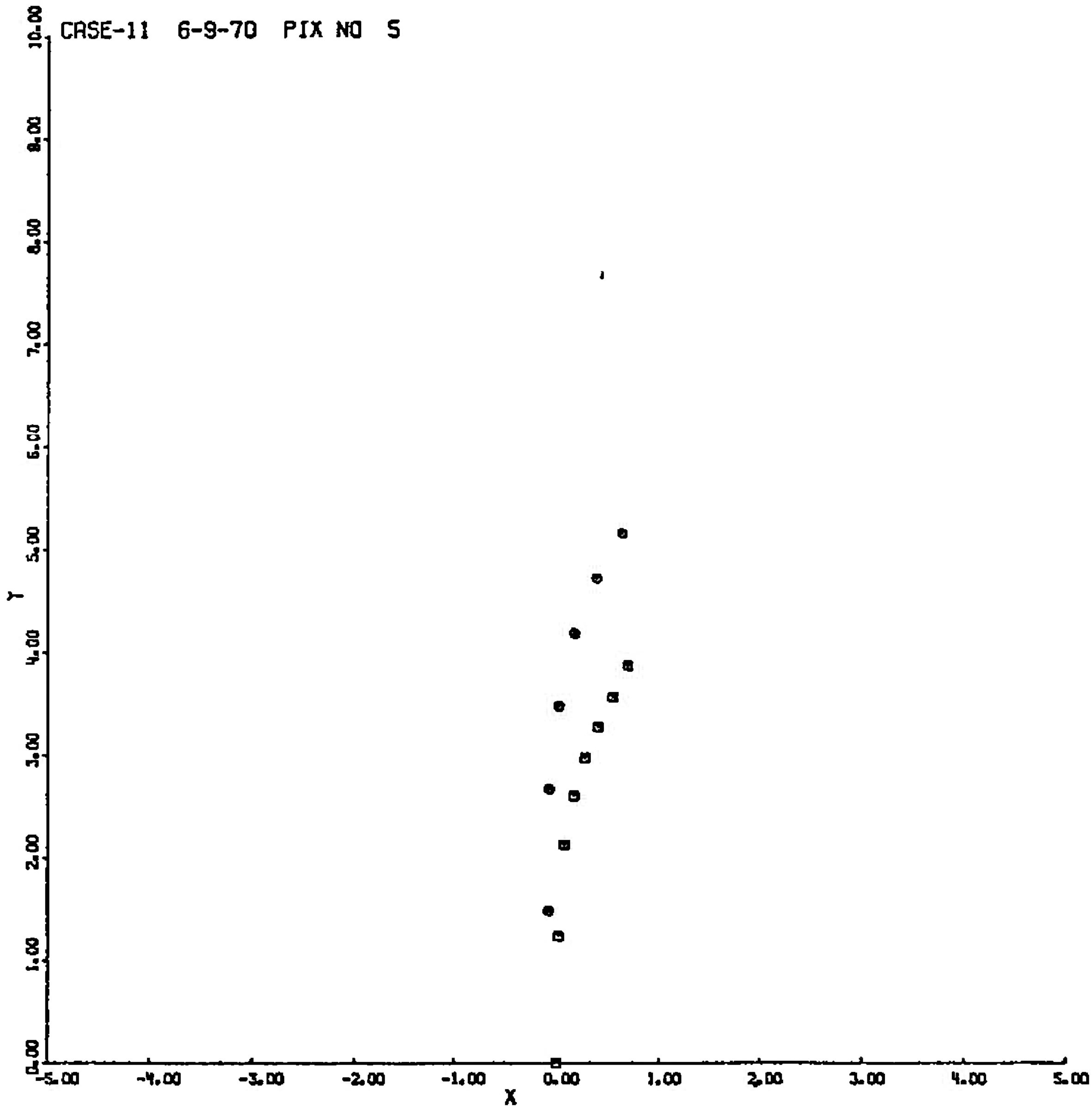

CASE-11 6-9-70 PIX NO 5
10.00
9.00
8.00
7.00
6.00
5.00
Y
4.00
3.00
2.00
1.00
0.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
X

Fig. III-91

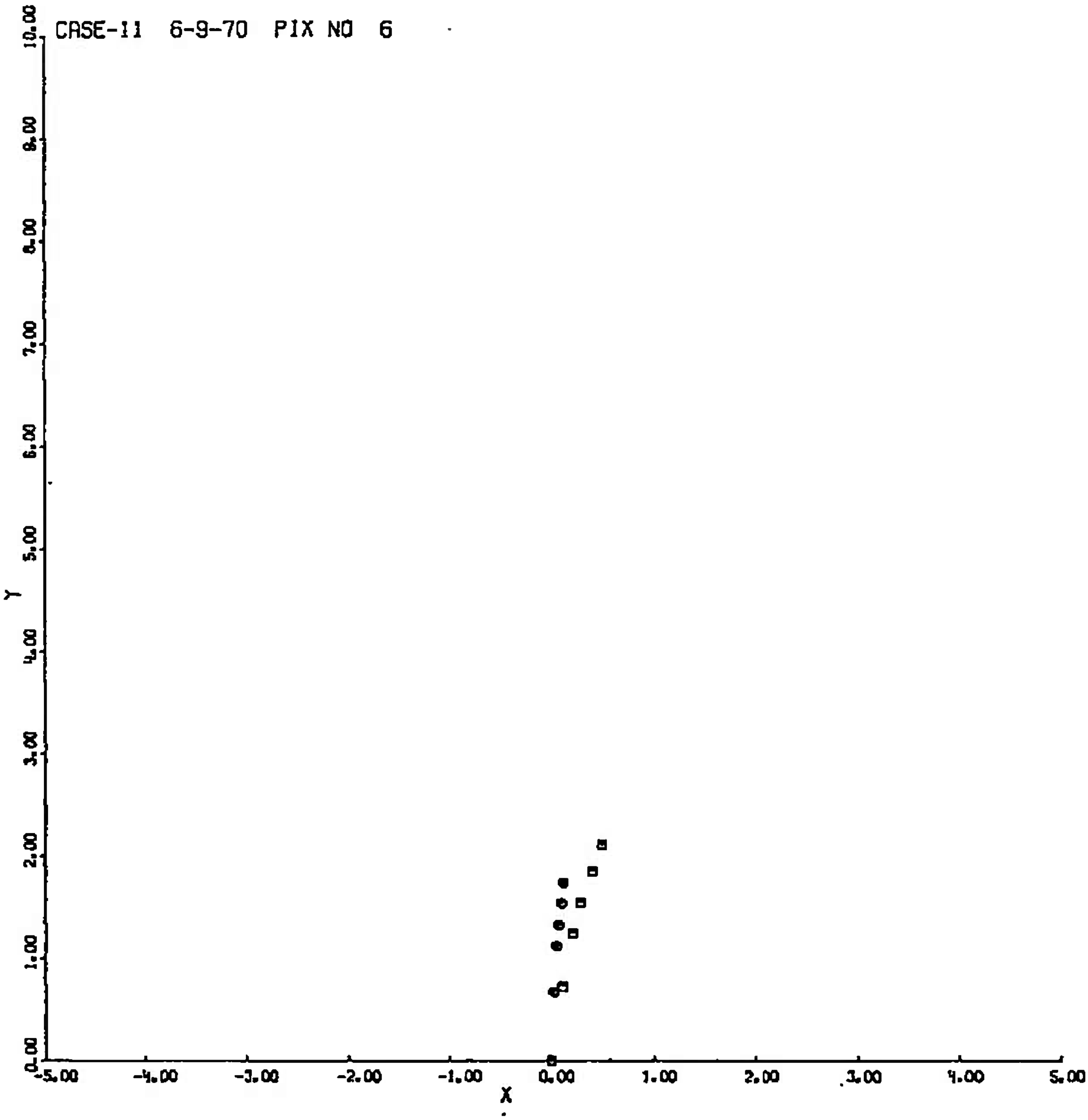

CASE-11 6-9-70 PIX NO 6
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Y
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
X

Fig. III-92

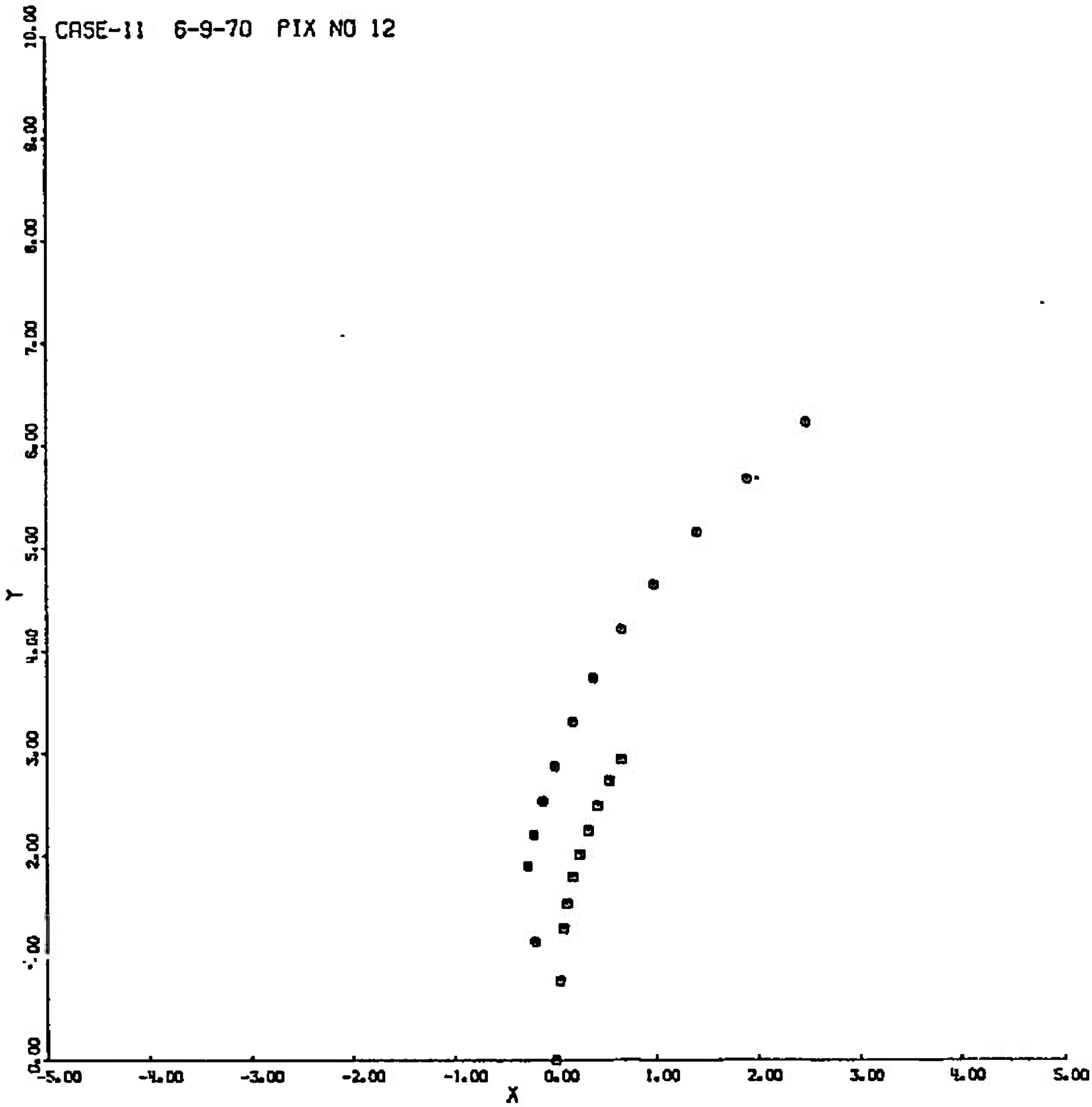

CASE-11 6-9-70 PIX NO 12
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Y
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
X

Fig. III-93

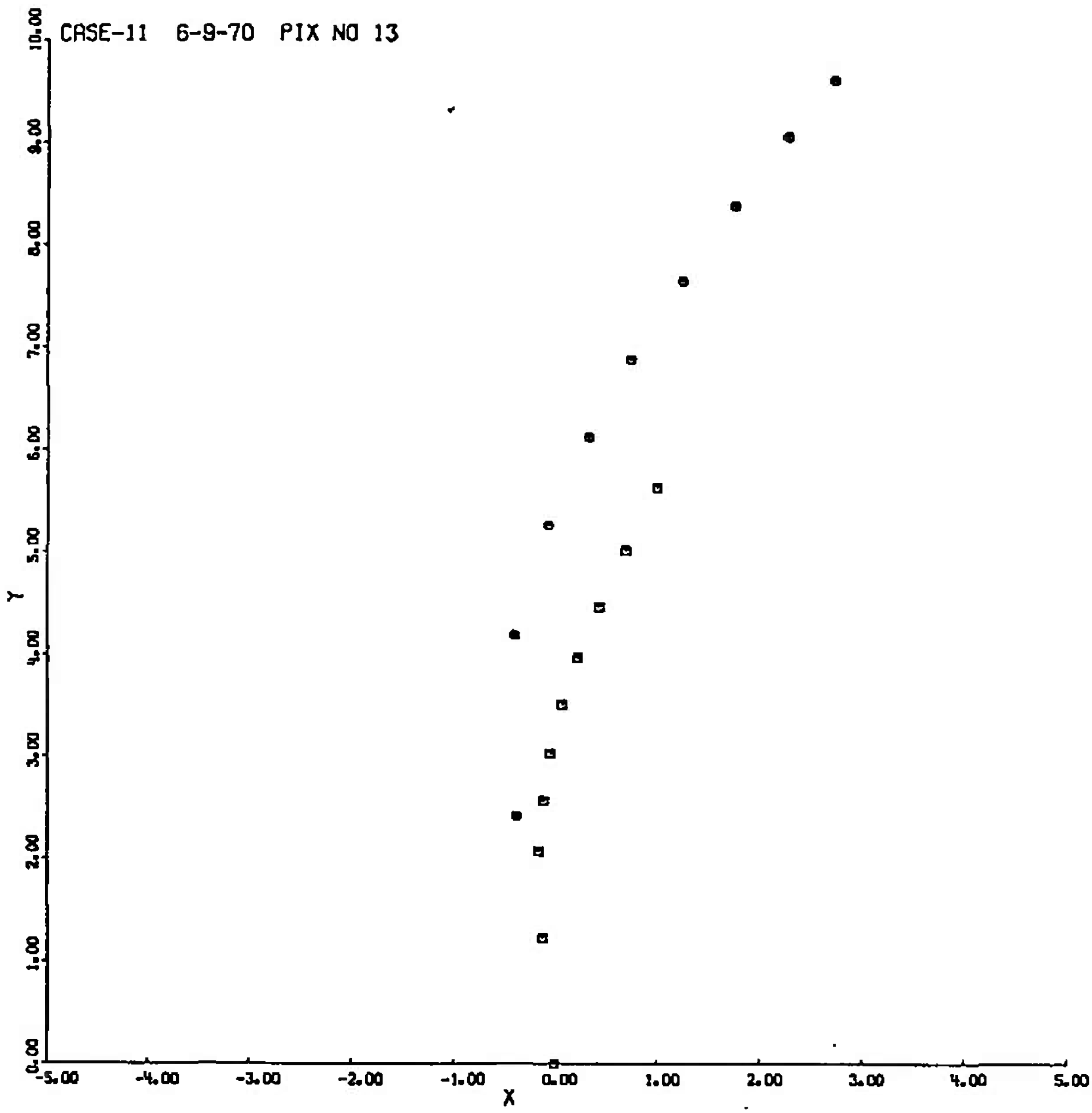

CASE-11 6-9-70 PIX NO 13
Y
X
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00

Fig. III-94

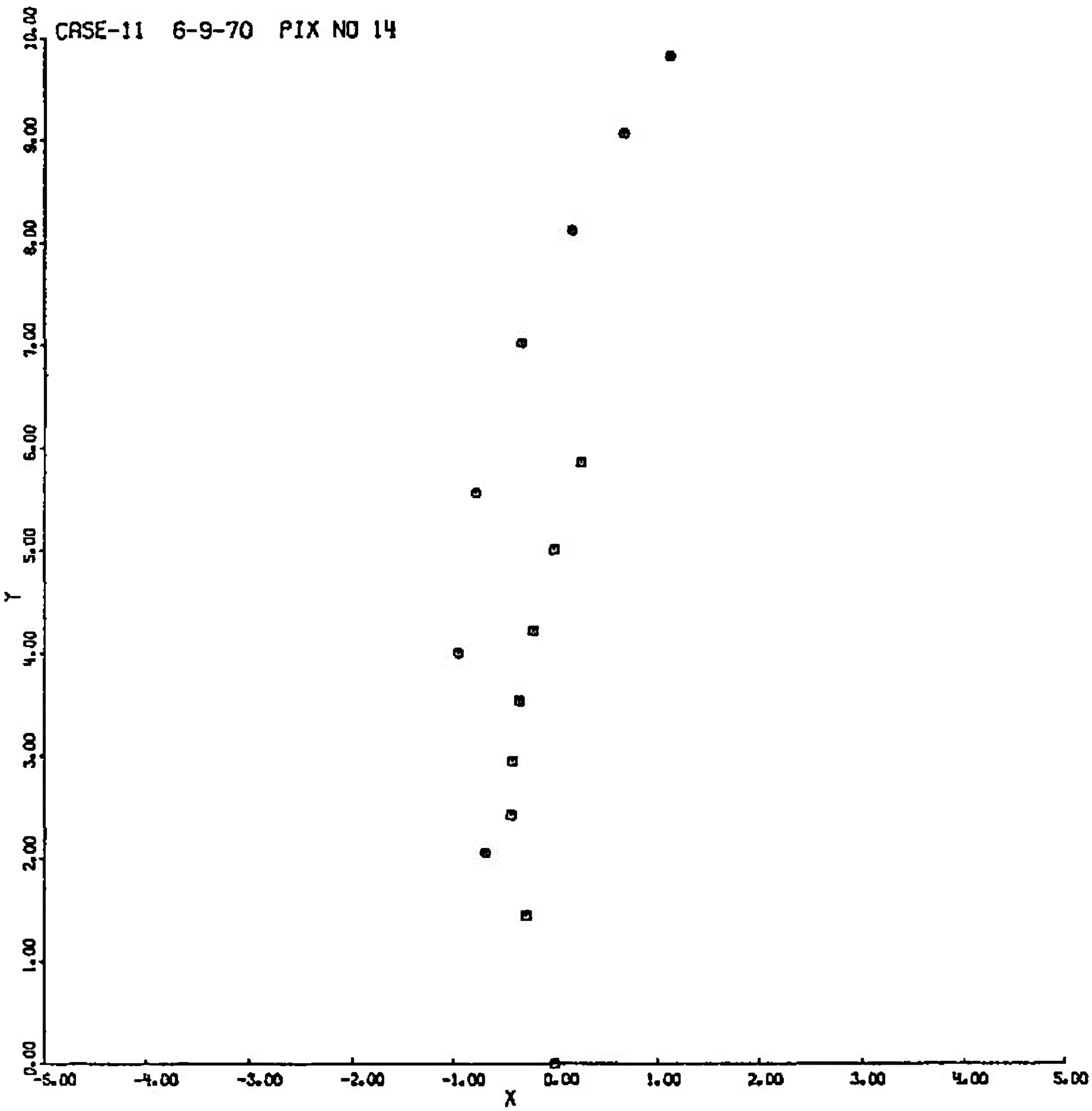

CASE-11 6-9-70 PIX NO 14
Y
X
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00

Fig. III-95

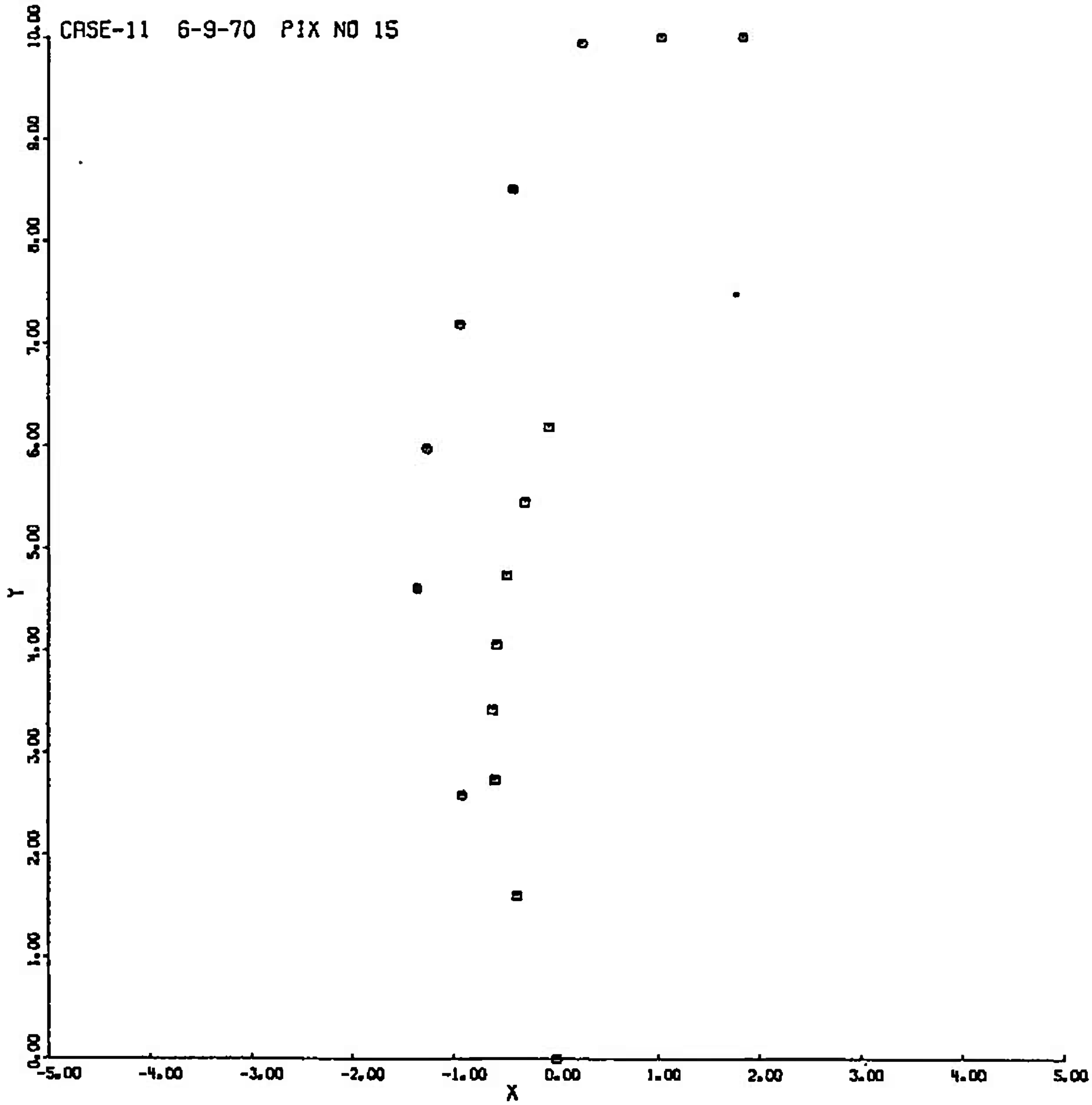

CASE-11 6-9-70 PIX NO 15
Y
X
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00

Fig. III-96

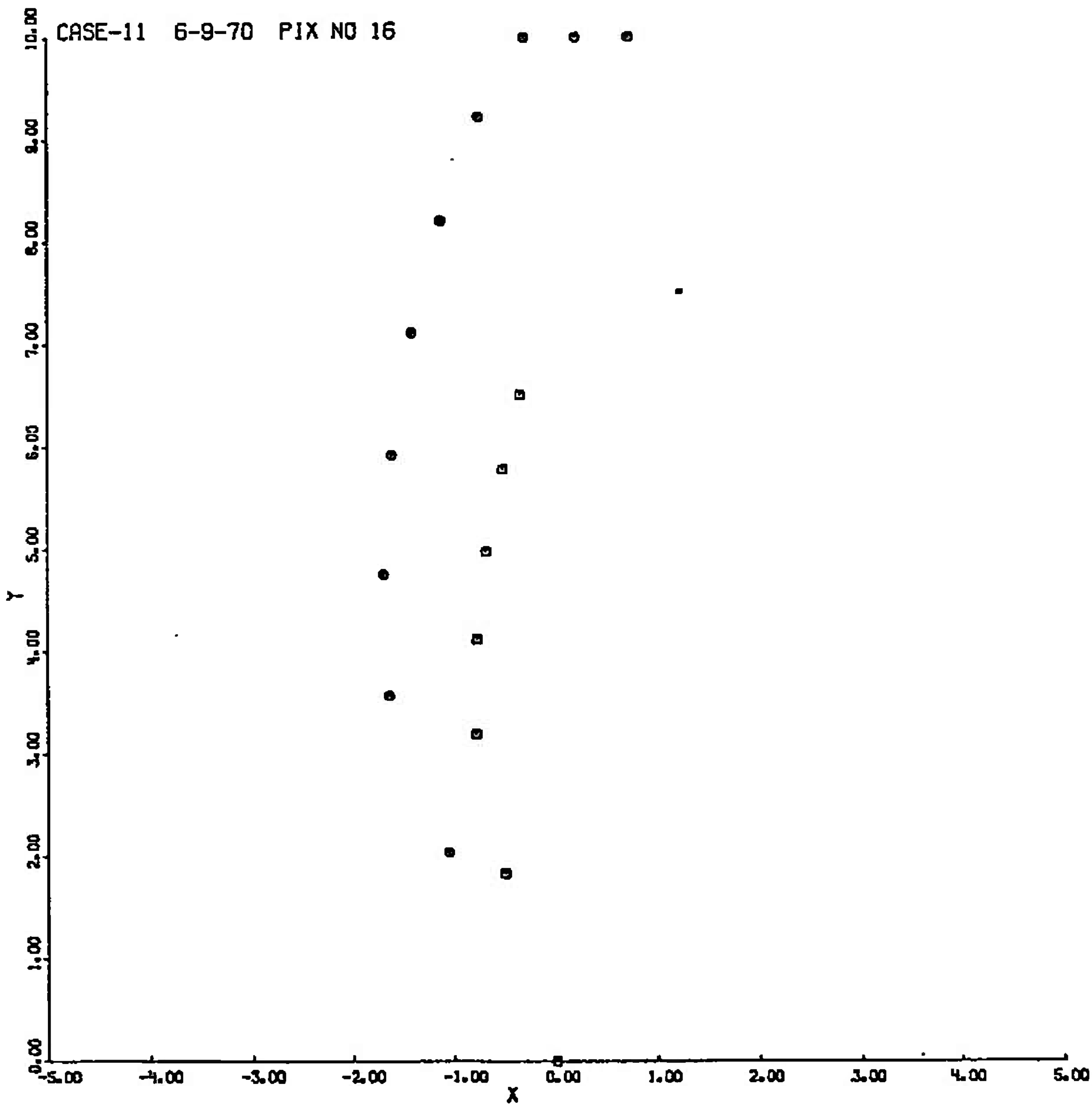
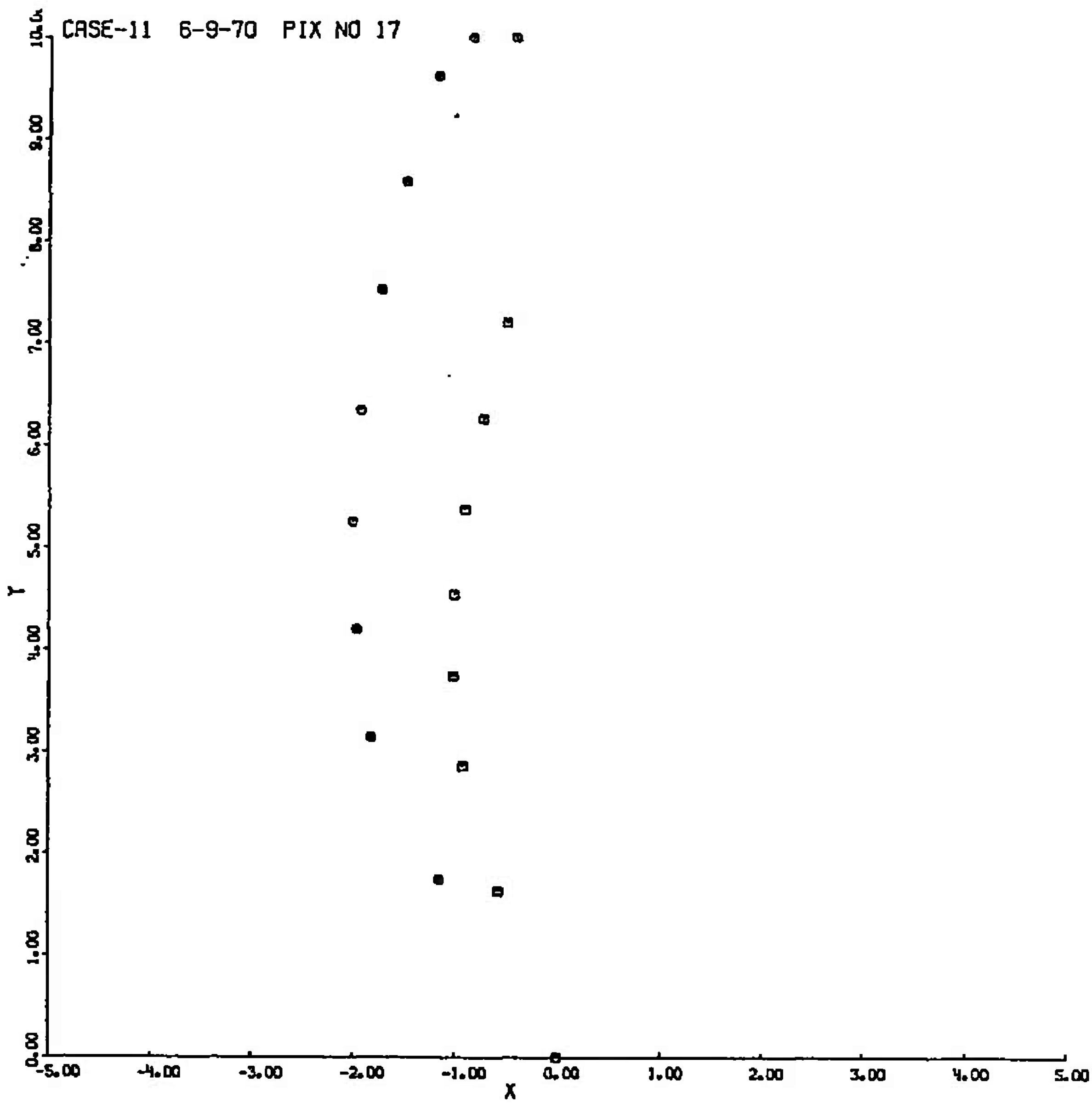

CASE-11 6-9-70 PIX NO 16
Y
X
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00

Fig. III-97



CASE-11 6-9-70 PIX NO 17
Y
X
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00

Fig. III-98

APPENDIX IV
PITOT SURVEYS

CASE
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 0.0
MAX P, TORR = 0.15110

PLUME GAS =
TC, DEG K =
A/A* = 26.3
PC/QINF = 0.0
RE, INCH = 0.124
X, INCH = 2.3

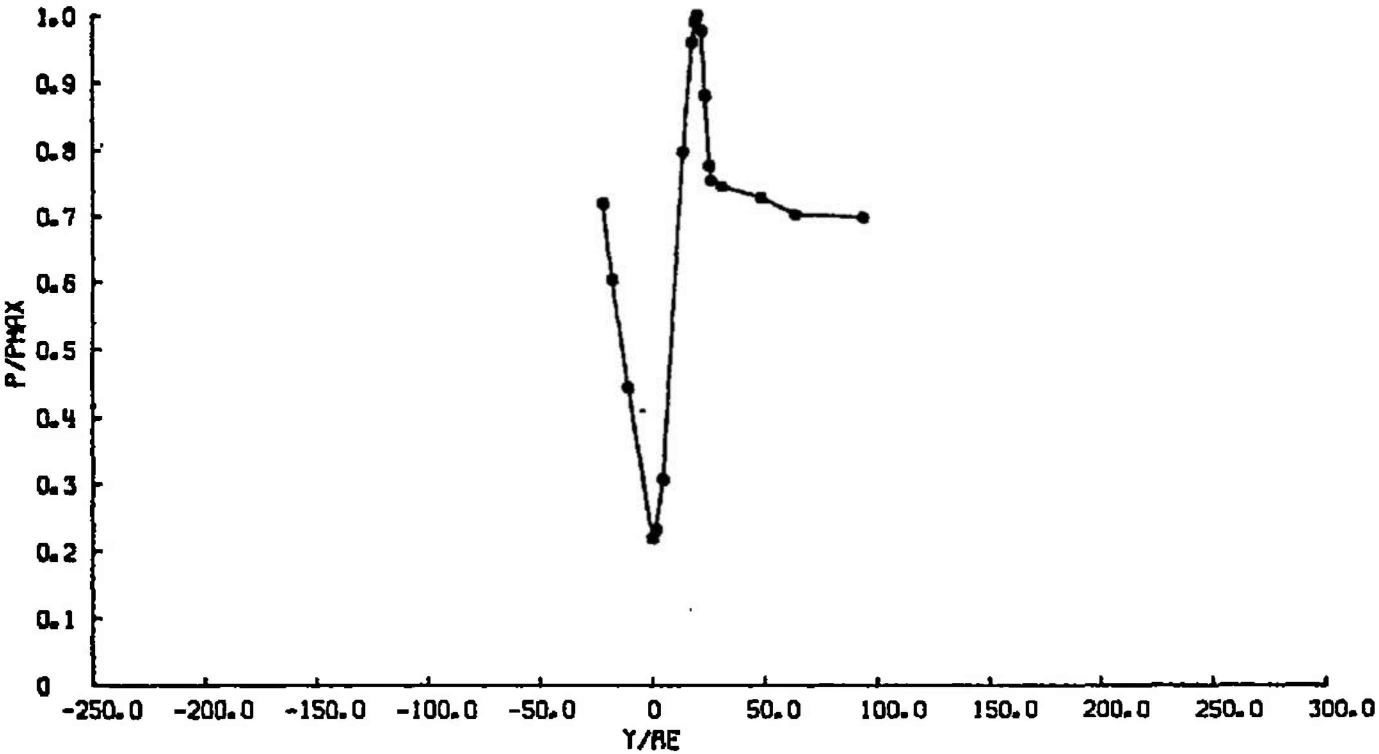


Fig. IV-1

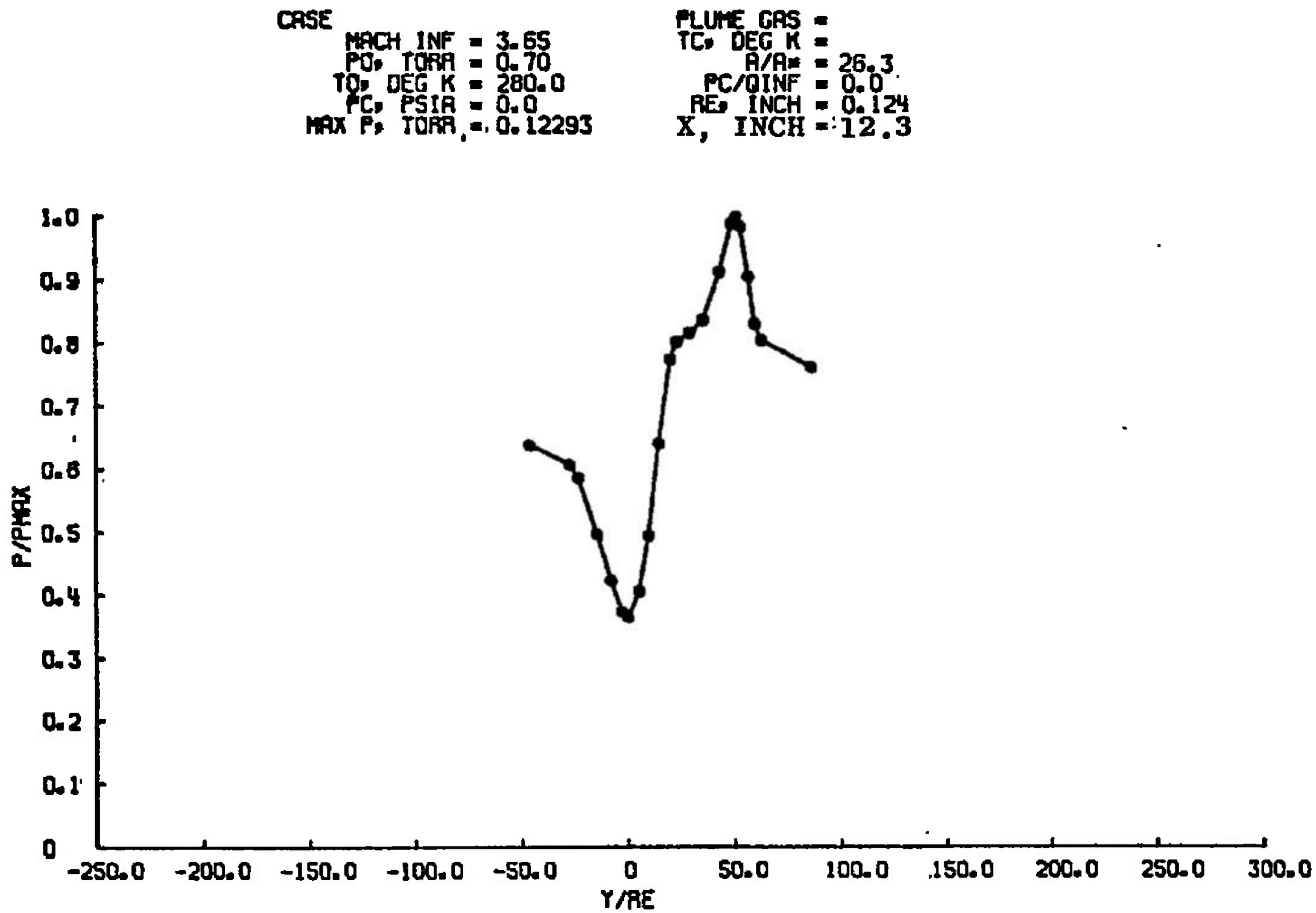

CASE
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 0.0
MAX P, TORR = 0.12293
PLUME GAS =
TC, DEG K =
A/A* = 26.3
PC/QINF = 0.0
RE, INCH = 0.124
X, INCH = 12.3
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-2

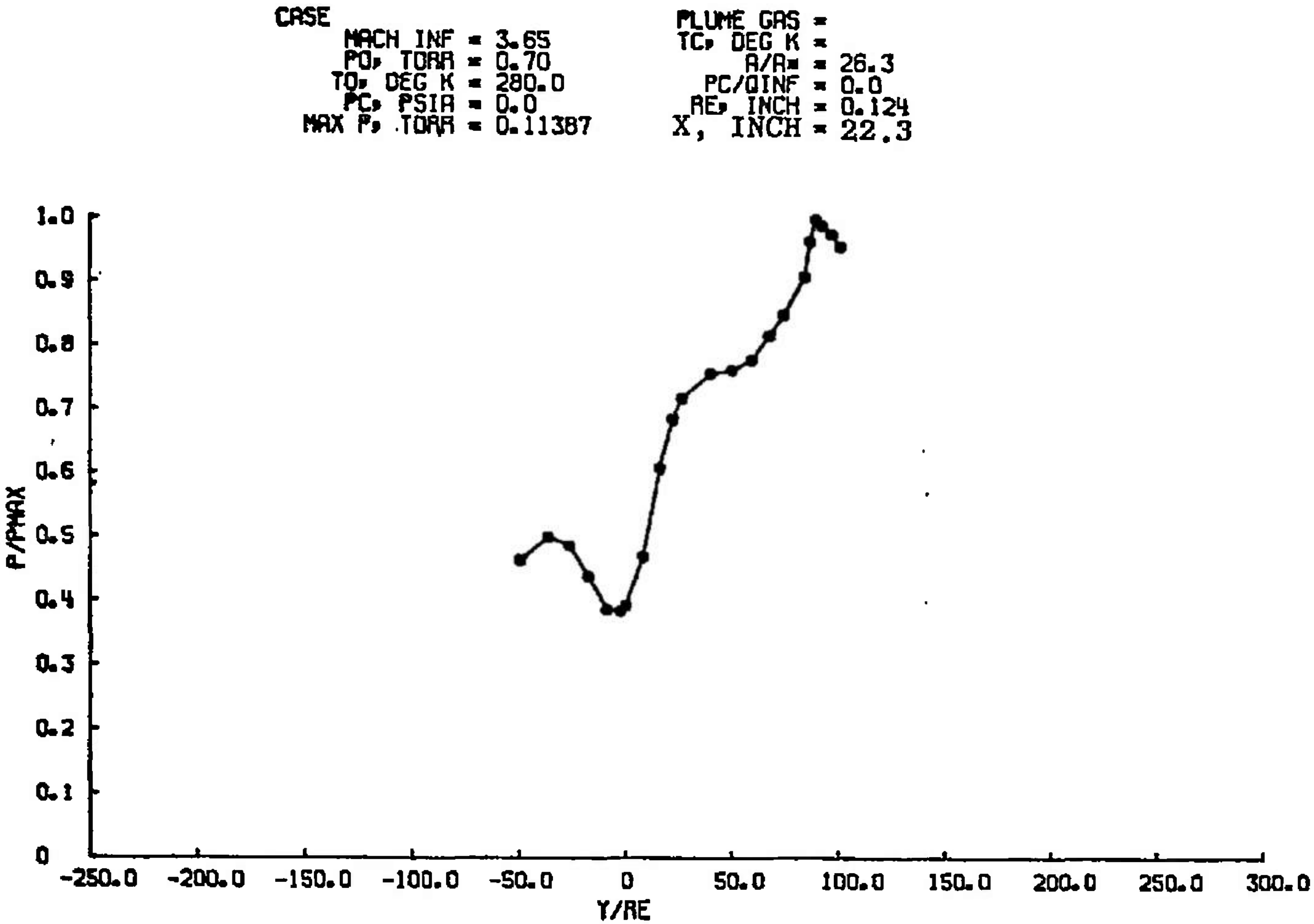

CASE
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 0.0
MAX P, TORR = 0.11387
PLUME GAS =
TC, DEG K =
A/A* = 26.3
PC/QINF = 0.0
RE, INCH = 0.124
X, INCH = 22.3
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-3

CASE
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 0.0
MAX P, TORR = 0.03940

PLUME GAS =
TC, DEG K =
A/A* = 26.3
PC/QINF = 0.0
RE, INCH = 0.124
X, INCH = 4.0

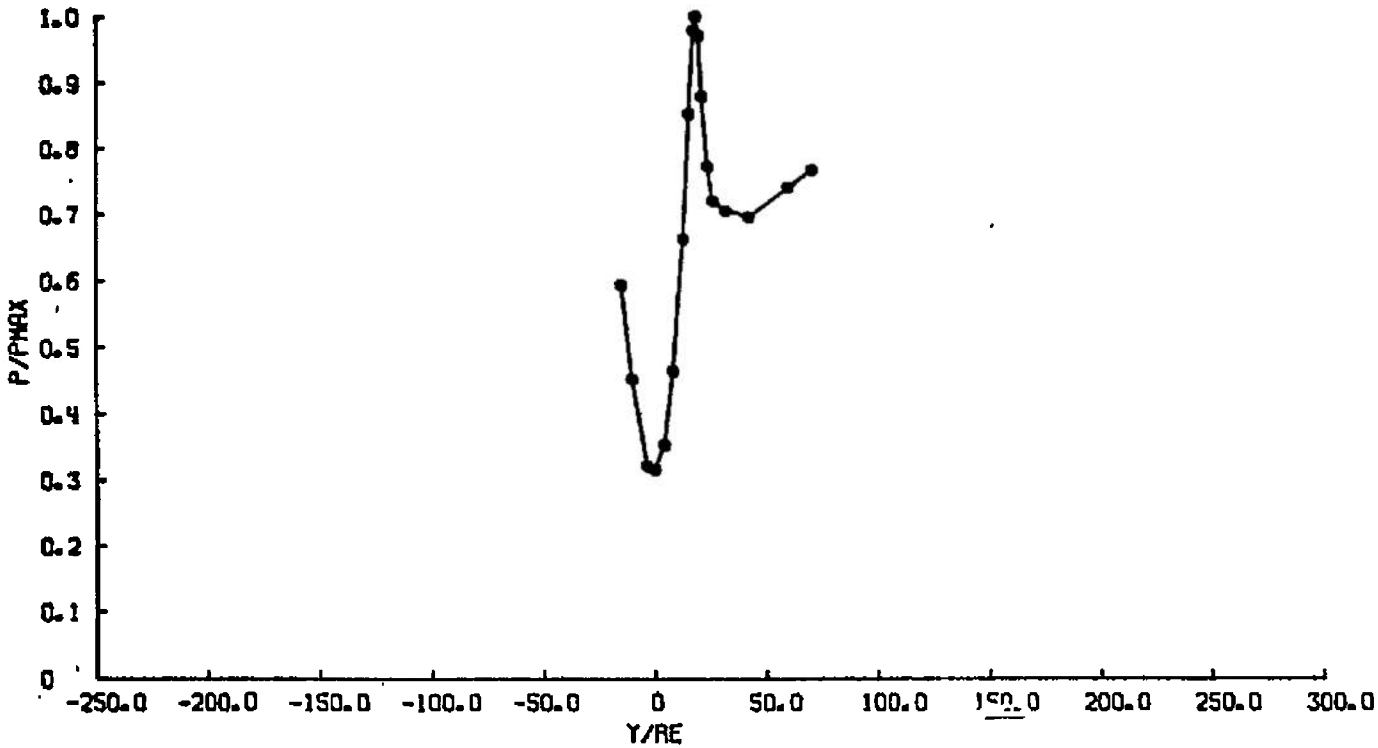


Fig. IV-4

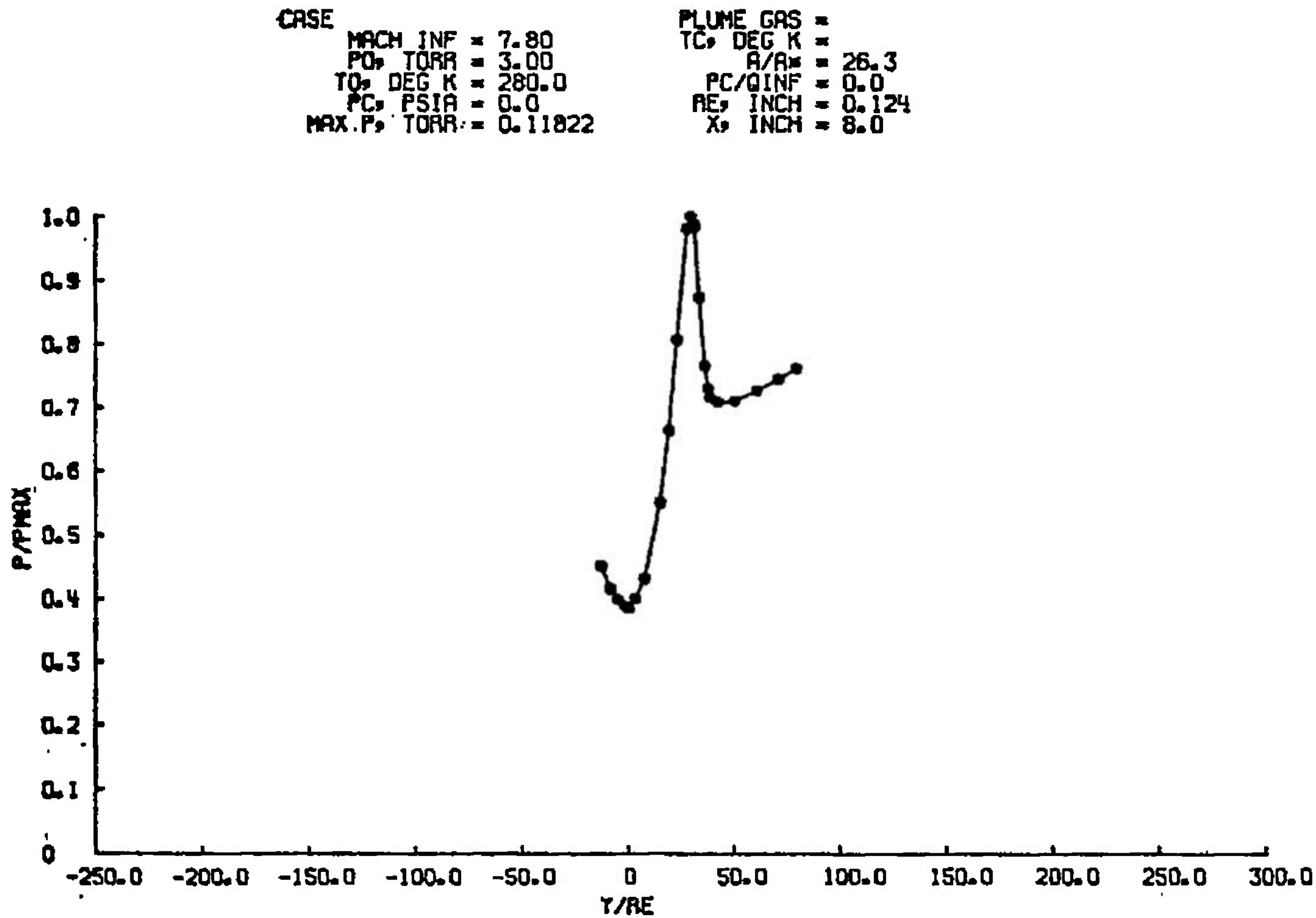

CASE
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 0.0
MAX.P, TORR = 0.11822
PLUME GAS =
TC, DEG K =
A/A* = 26.3
PC/QINF = 0.0
RE, INCH = 0.124
X, INCH = 8.0
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-5

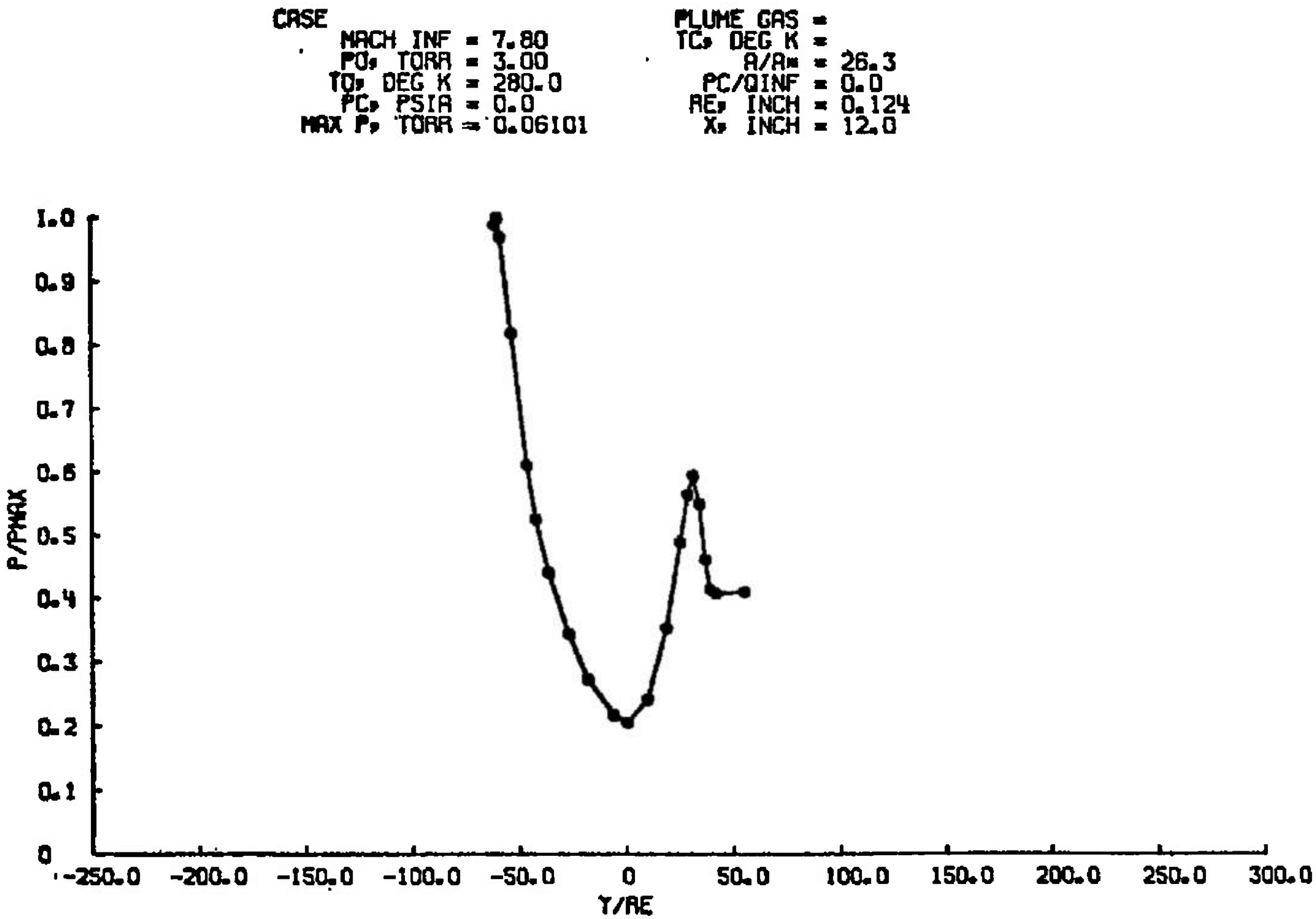

CASE
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 0.0
MAX P, TORR = 0.06101
PLUME GAS =
TC, DEG K =
A/A* = 26.3
PC/QINF = 0.0
RE, INCH = 0.124
X, INCH = 12.0
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-6

CASE
MACH INF = 7.90
PO, TORR = 7.00
TO, DEG K = 280.0
PC, PSIA = 0.0
MAX P, TORR = 0.15357

PLUME GAS =
TC, DEG K =
A/A* = 26.3
PC/QINF = 0.0
RE, INCH = 0.124
X, INCH = 8.0

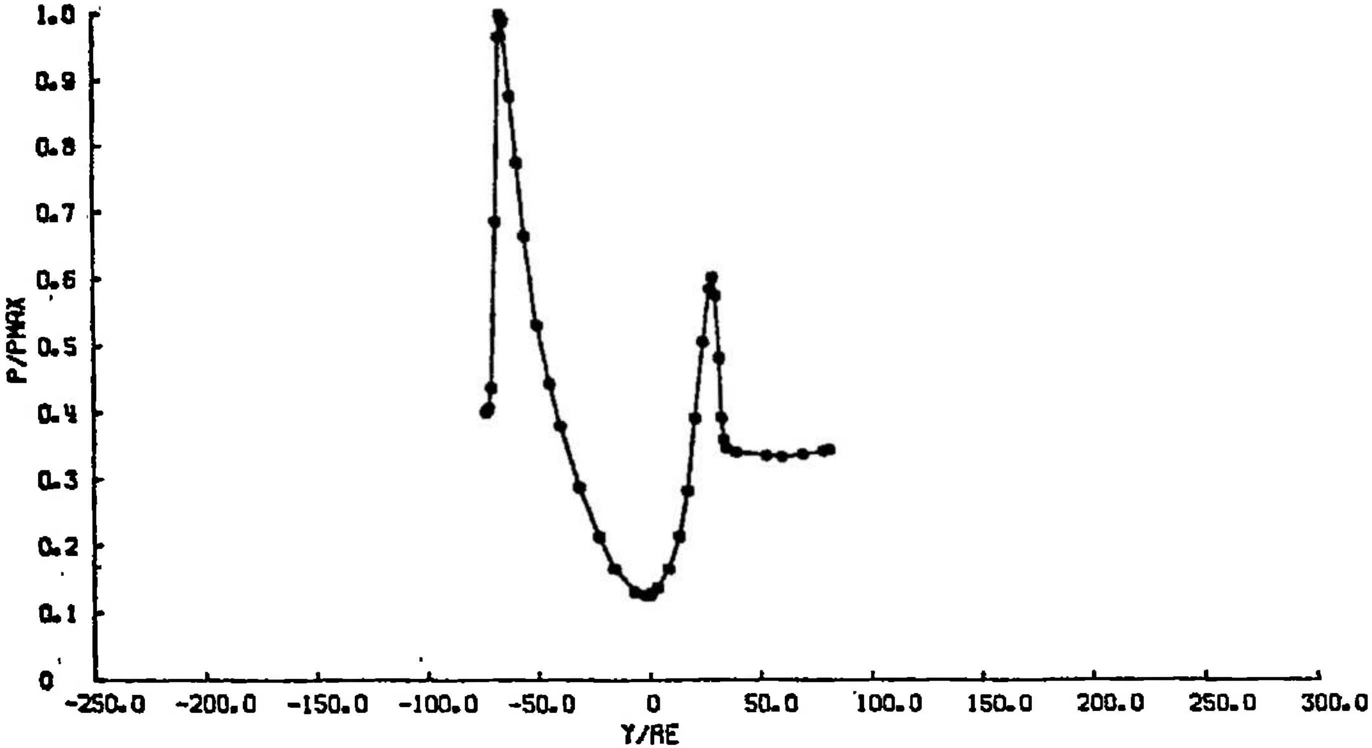


Fig. IV-7

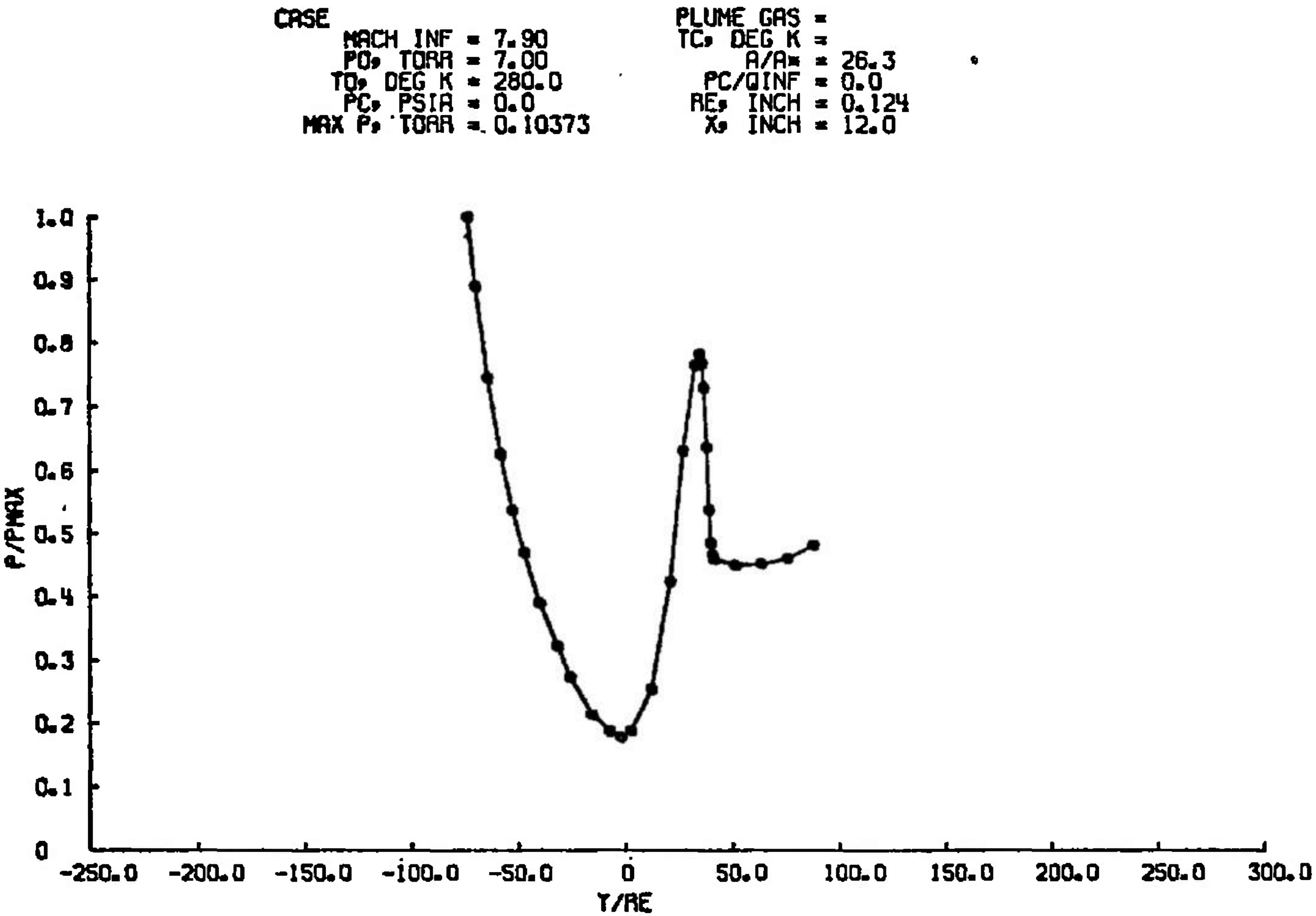

CASE
MACH INF = 7.90
PO, TORR = 7.00
TO, DEG K = 280.0
PC, PSIA = 0.0
MAX P, TORR = 0.10373
PLUME GAS =
TC, DEG K =
A/A* = 26.3
PC/QINF = 0.0
RE, INCH = 0.124
X, INCH = 12.0
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-8

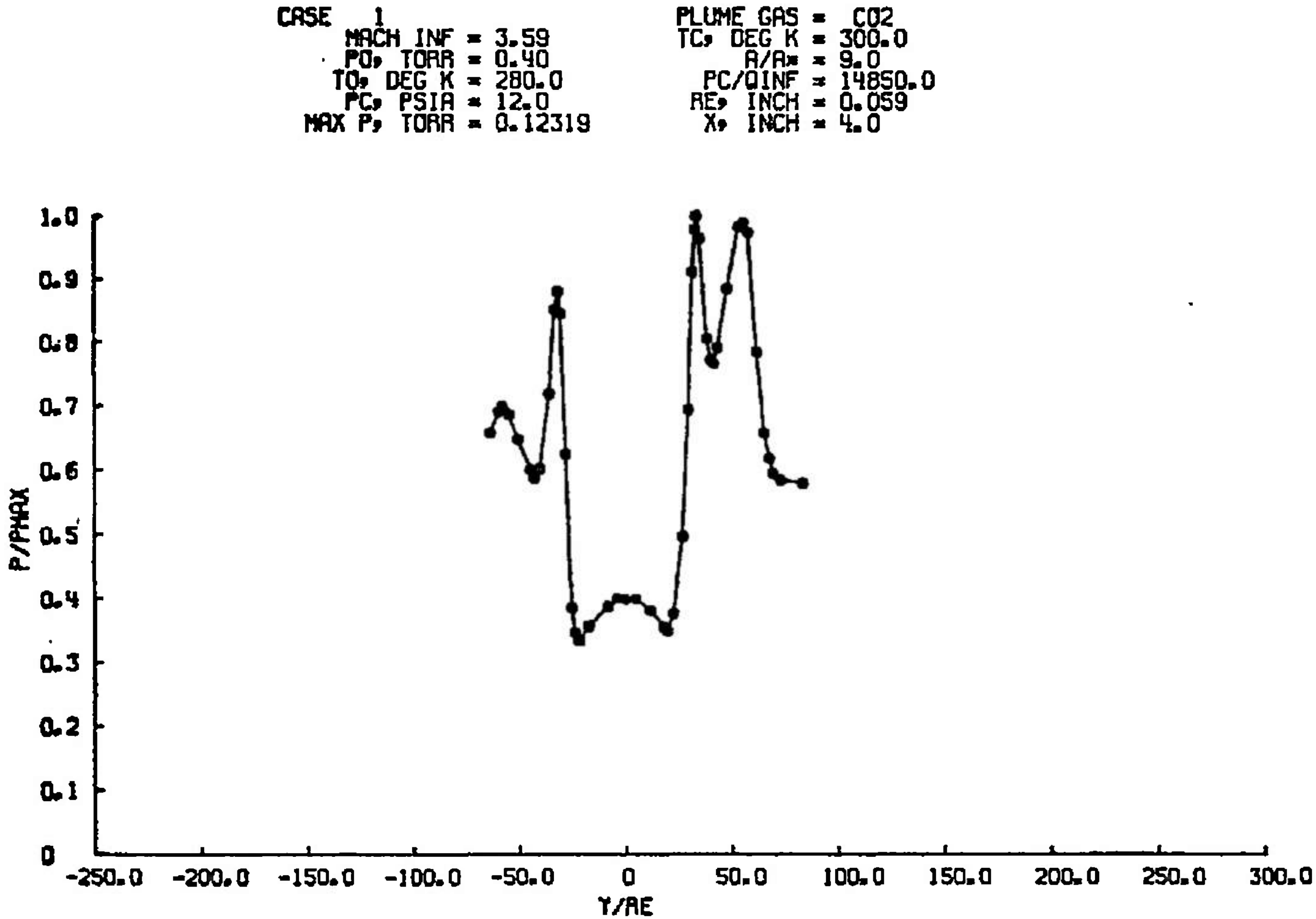

CASE 1
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 12.0
MAX P, TORR = 0.12319
PLUME GAS = CO2
TC, DEG K = 300.0
A/A* = 9.0
PC/QINF = 14850.0
RE, INCH = 0.059
X, INCH = 4.0
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-9

CASE 1
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 12.0
MAX P, TORR = 0.10962

PLUME GAS = CO2
TC, DEG K = 300.0
A/A* = 9.0
PC/QINF = 14850.0
RE, INCH = 0.059
X, INCH = 6.0

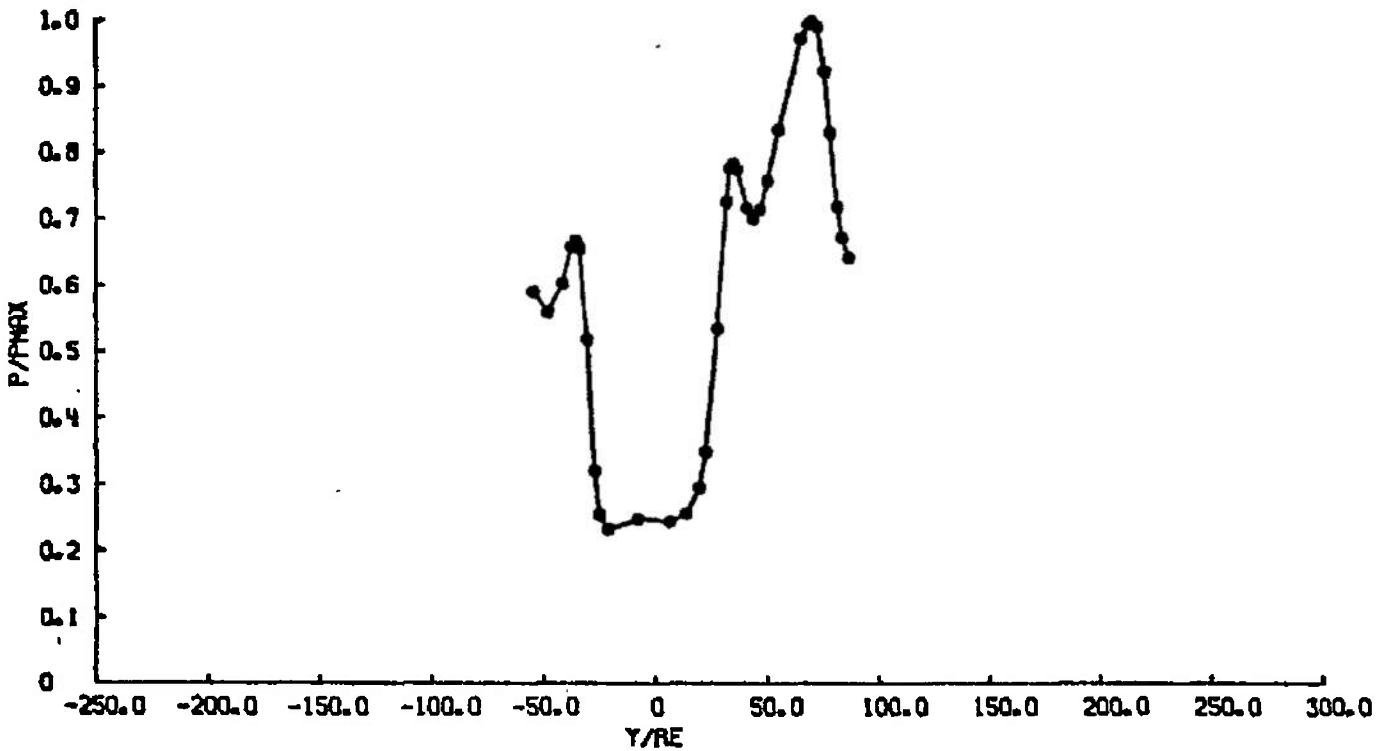


Fig. IV-10

CASE	1	PLUME GAS =	CO2
MACH INF =	3.59	TC, DEG K =	300.0
PO, TORR =	0.40	A/A* =	9.0
TO, DEG K =	280.0	PC/QINF =	14850.0
PC, PSIA =	12.0	RE, INCH =	0.059
MAX P, TORR =	0.09346	X, INCH =	10.0

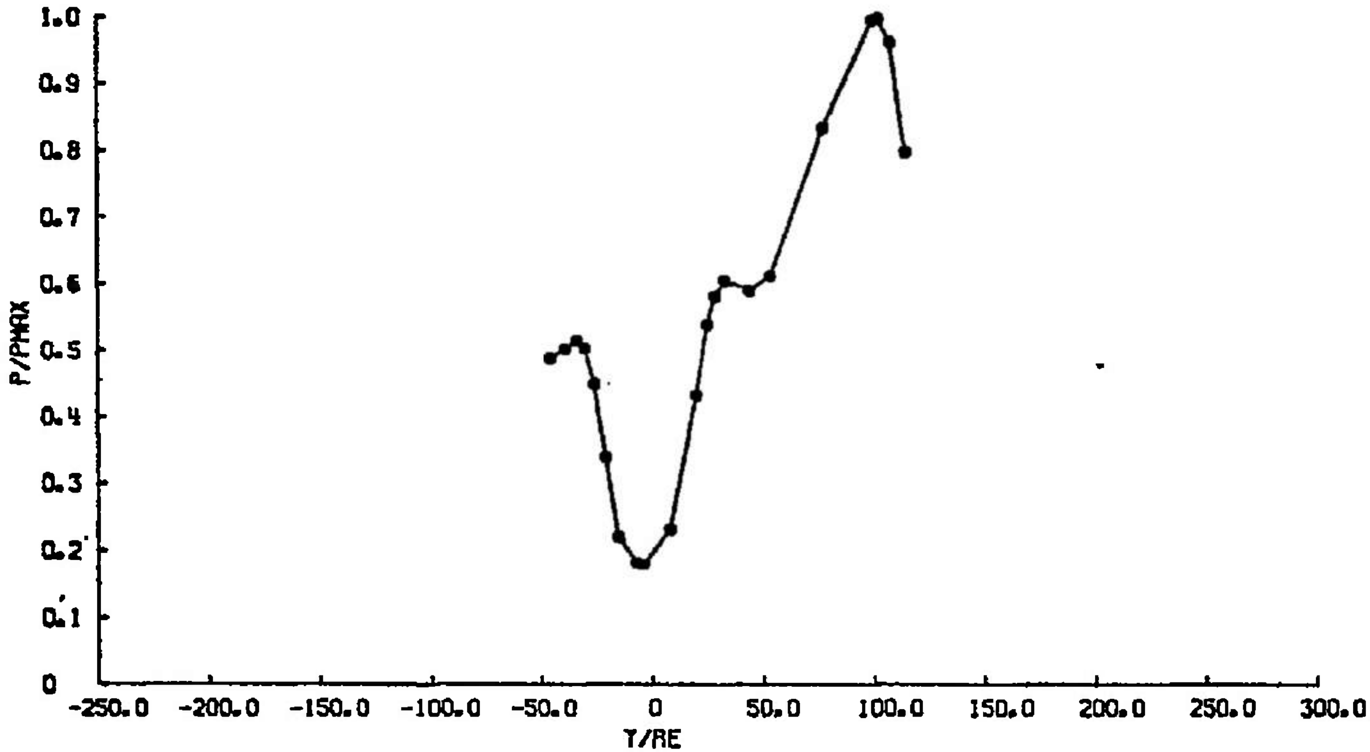


Fig. IV-11

CASE 1
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 120.0
MAX P, TORR = 0.19488

PLUME GAS = CO2
TC, DEG K = 300.0
A/A* = 9.0
PC/QINF = 148500.0
RE, INCH = 0.059
X, INCH = 8.0

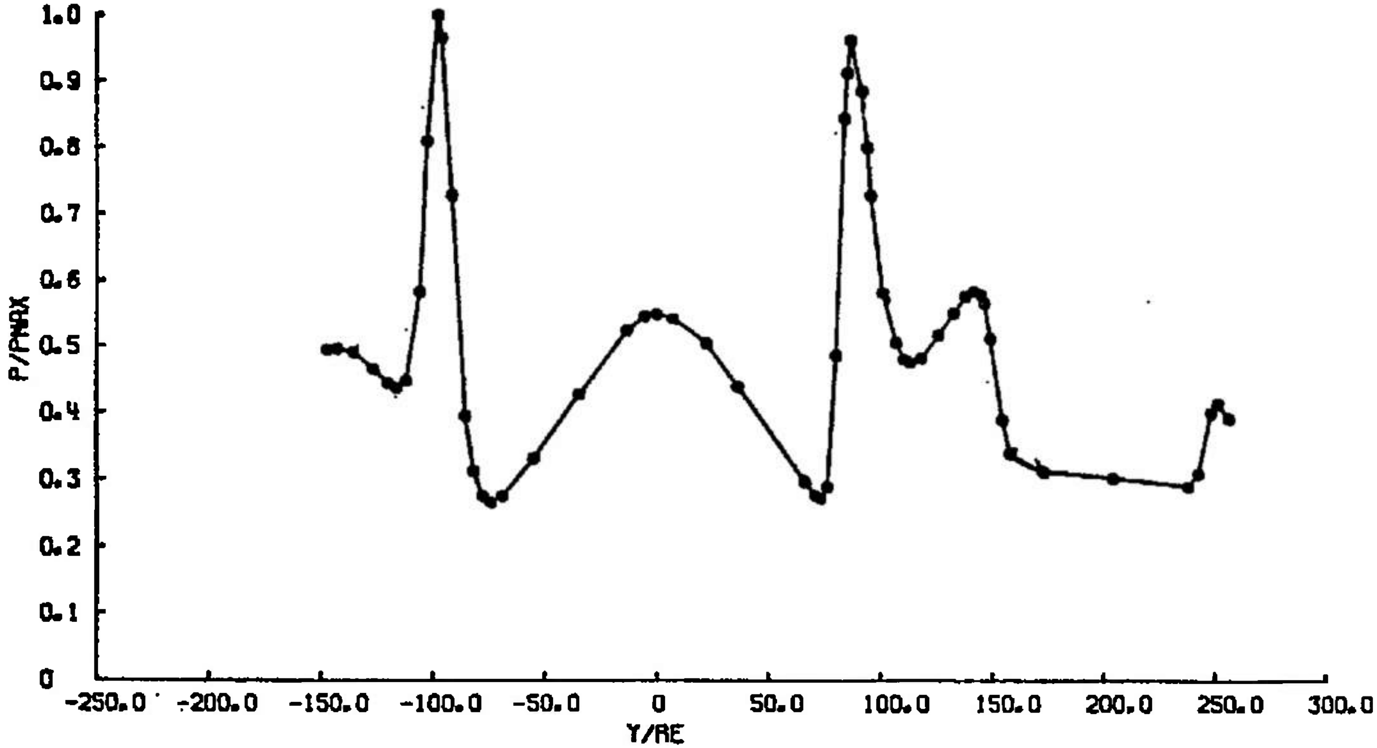
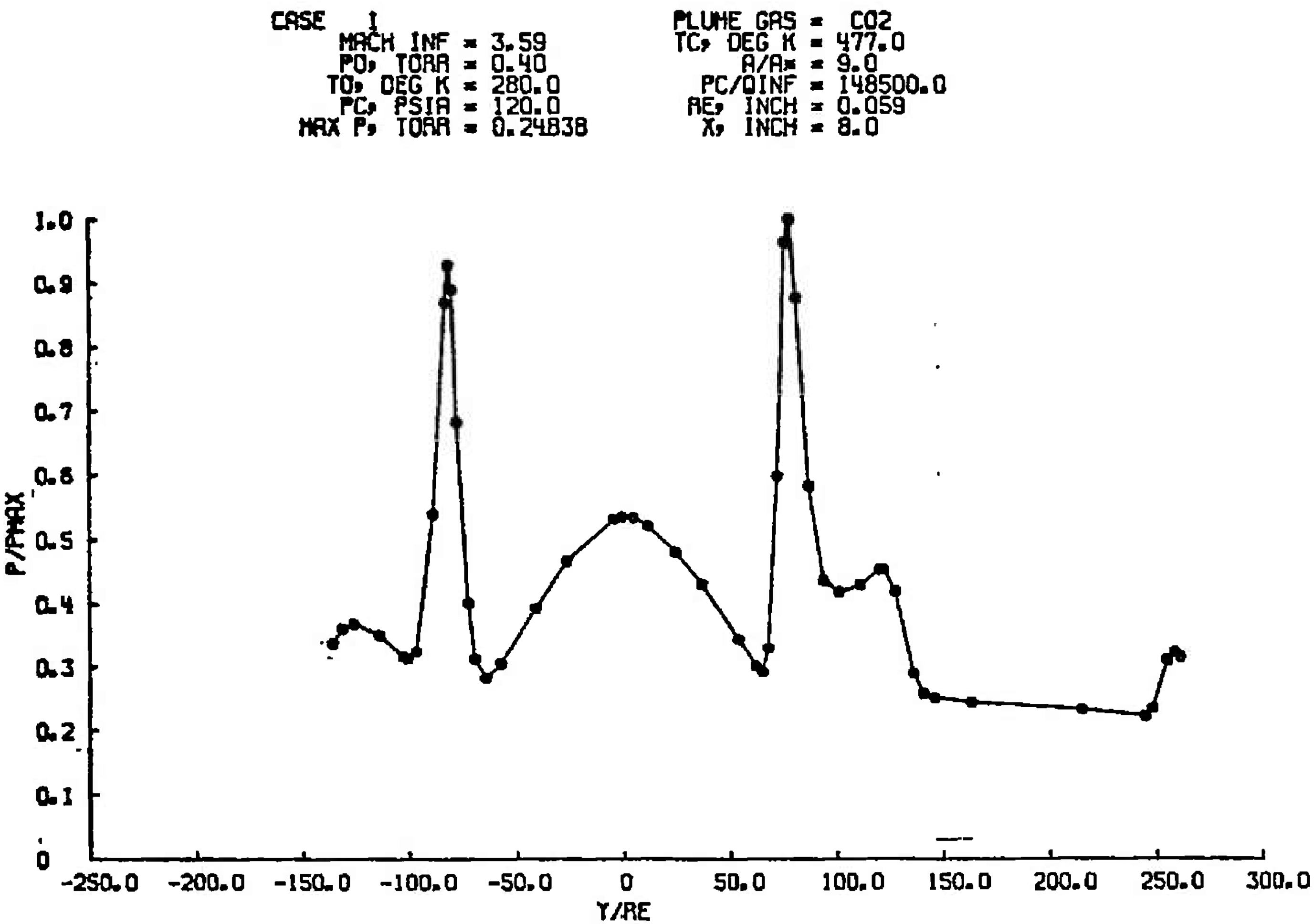


Fig. IV-12



CASE I
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 120.0
MAX P, TORR = 0.24838
PLUME GAS = CO2
TC, DEG K = 477.0
A/A* = 9.0
PC/QINF = 148500.0
RE, INCH = 0.059
X, INCH = 8.0
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-13

CASE 1
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 120.0
MAX P, TORR = 0.25922

PLUME GAS = CO2
TC, DEG K = 650.0
A/A* = 9.0
PC/QINF = 148500.0
RE, INCH = 0.059
X, INCH = 8.0

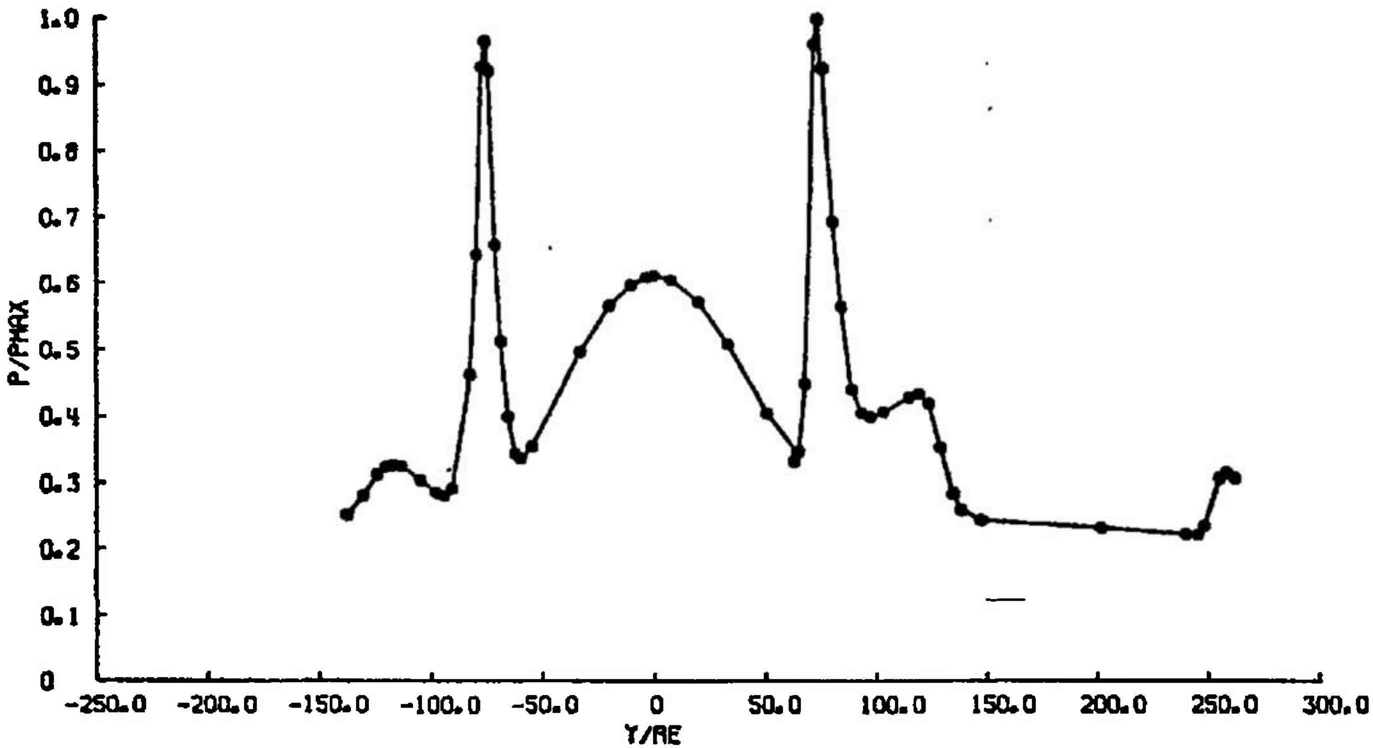


Fig. IV-14

CASE 2
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 40.0
MAX P, TORR = 0.12722

PLUME GAS = AR
TC, DEG K = 700.0
A/A* = 9.0
PC/QINF = 49500.0
RE, INCH = 0.059
X, INCH = 15.7

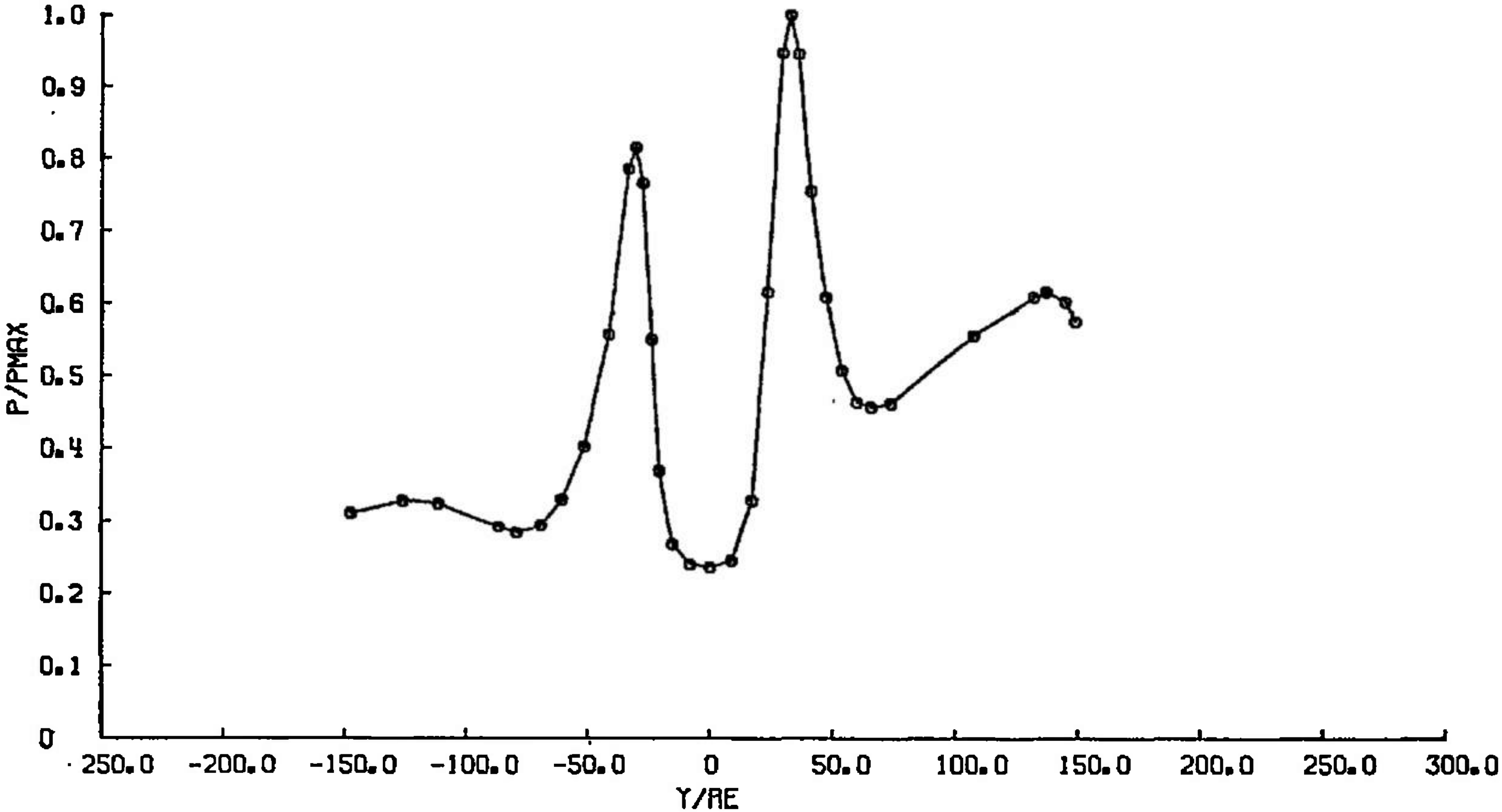


Fig. IV-15

CASE 2
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 40.0
MAX P, TORR = 0.43175

PLUME GAS = AR
TC, DEG K = 700.0
A/A* = 9.0
PC/QINF = 49500.0
RE, INCH = 0.059
X, INCH = 4.0

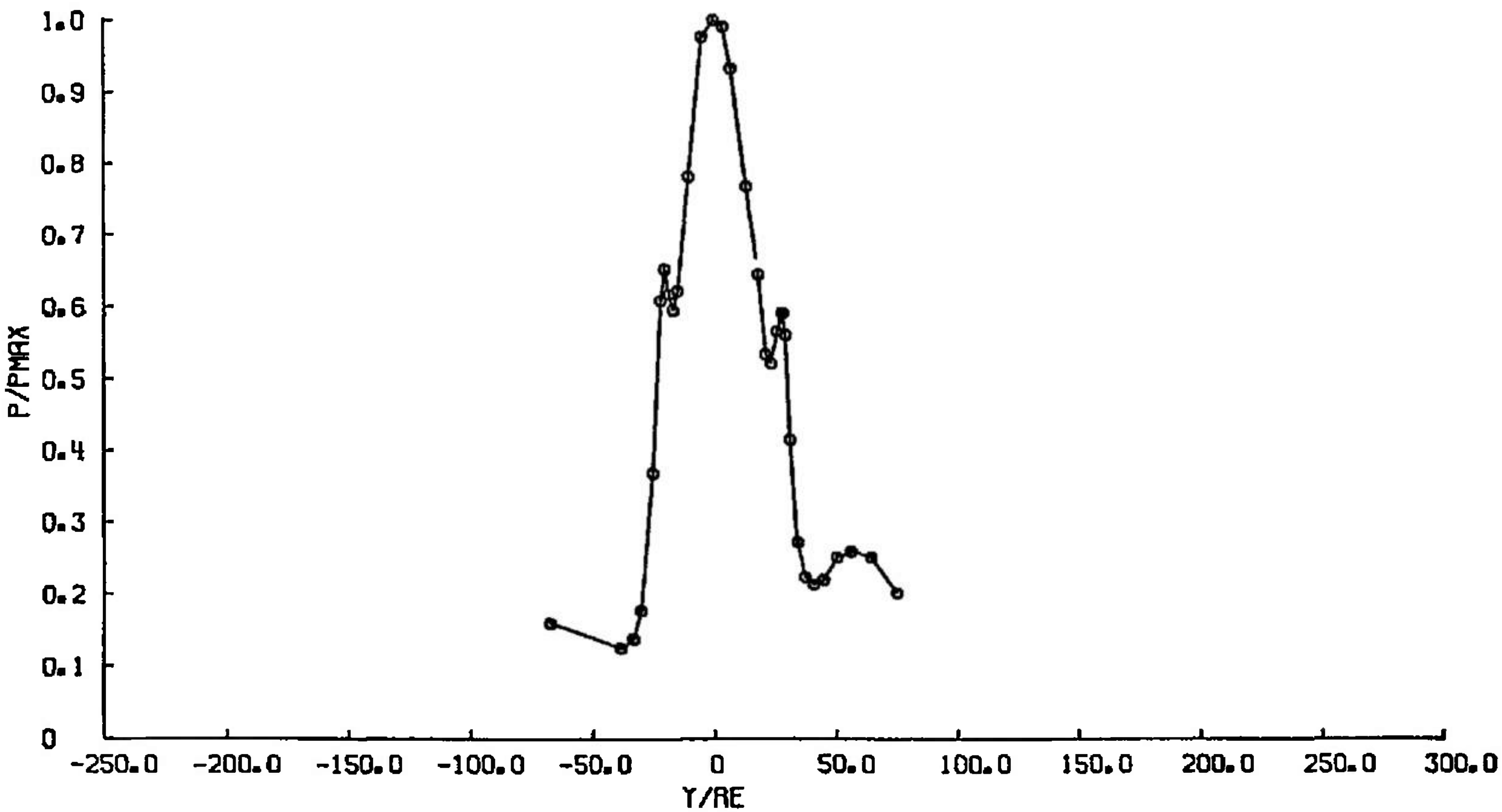


Fig. IV-16

CASE 3
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 12.0
MAX P, TORR = 0.10367

PLUME GAS = CO2
TC, DEG K = 560
A/A* = 26.3
PC/QINF = 14850.0
RE, INCH = 0.124
X, INCH = 12.1

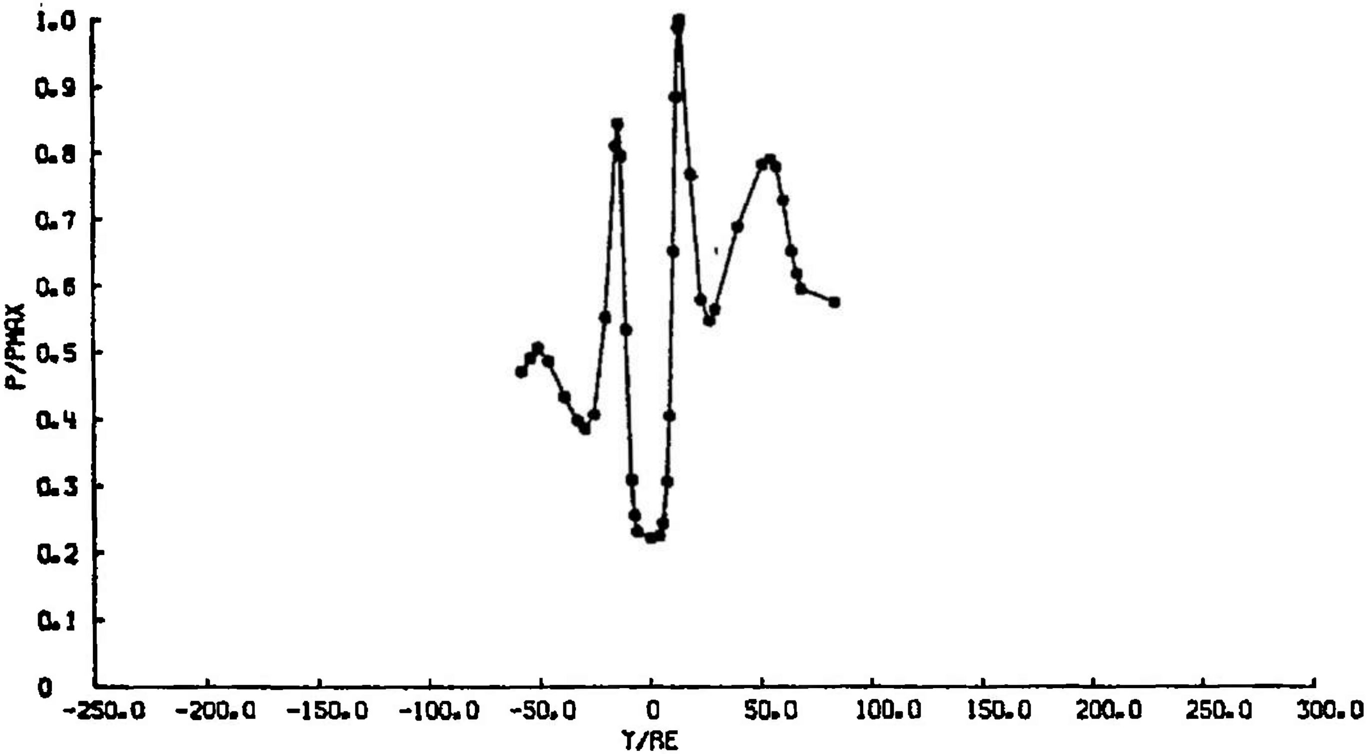


Fig. IV-17

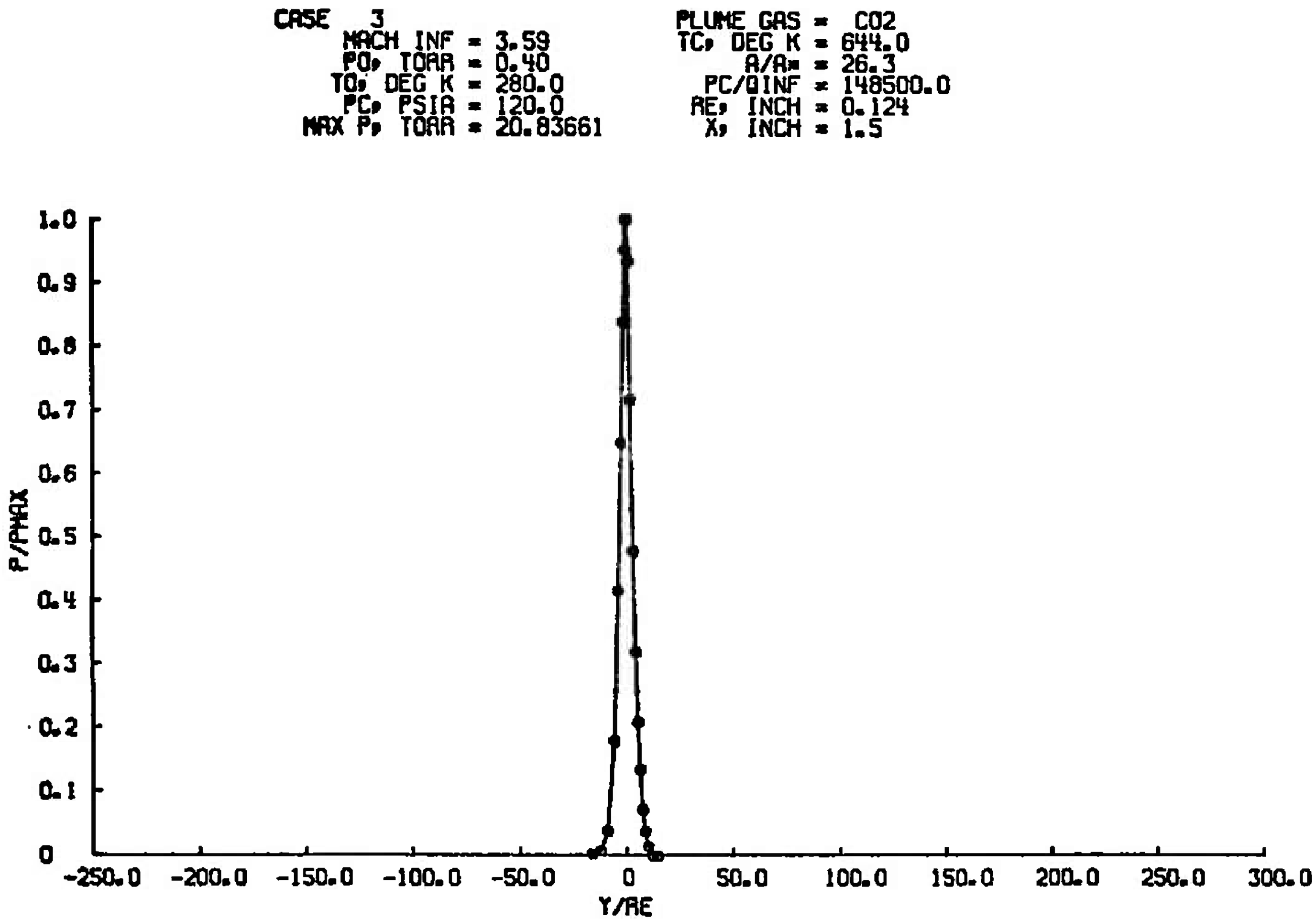

CASE 3
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 120.0
MAX P, TORR = 20.83661
PLUME GAS = CO2
TC, DEG K = 644.0
A/A* = 26.3
PC/QINF = 148500.0
RE, INCH = 0.124
X, INCH = 1.5
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-18

CASE 3
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 120.0
MAX P, TORR = 2.45619

PLUME GAS = CO2
TC, DEG K = 644.0
A/A* = 26.3
PC/QINF = 148500.0
RE, INCH = 0.124
X, INCH = 4.0

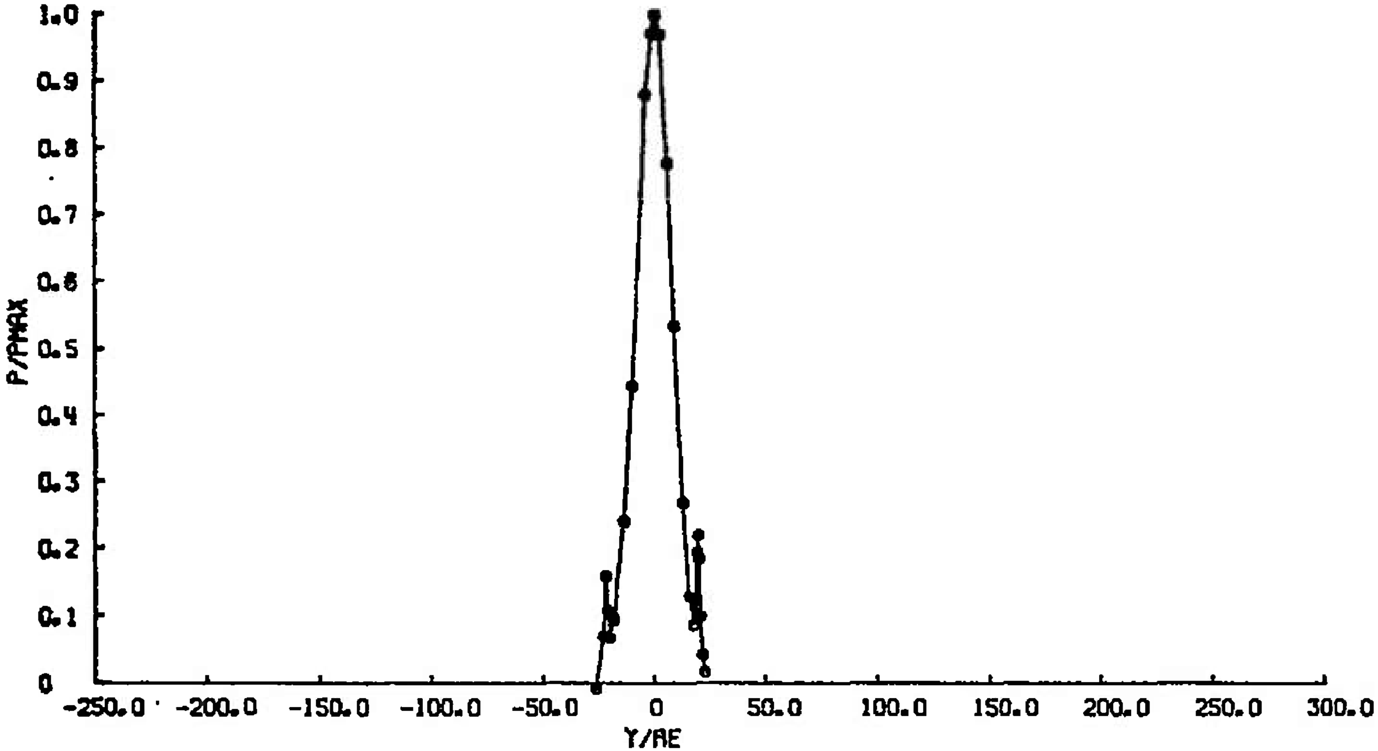
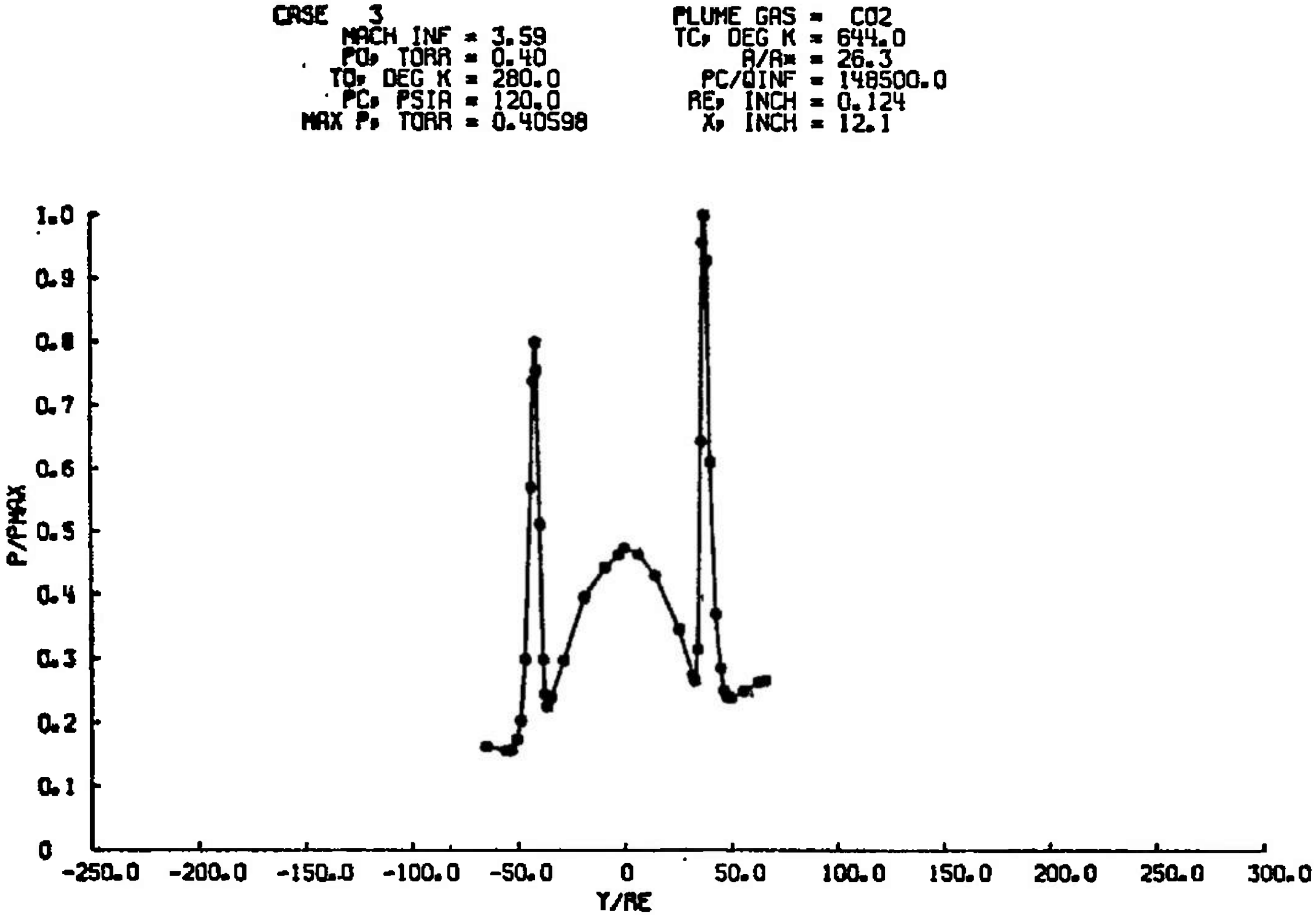


Fig. IV-19



CASE 3
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 120.0
MAX P, TORR = 0.40598
PLUME GAS = CO2
TC, DEG K = 644.0
A/A* = 26.3
PC/QINF = 148500.0
RE, INCH = 0.124
X, INCH = 12.1
P/PMAX
Y/RE
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0

Fig. IV-20

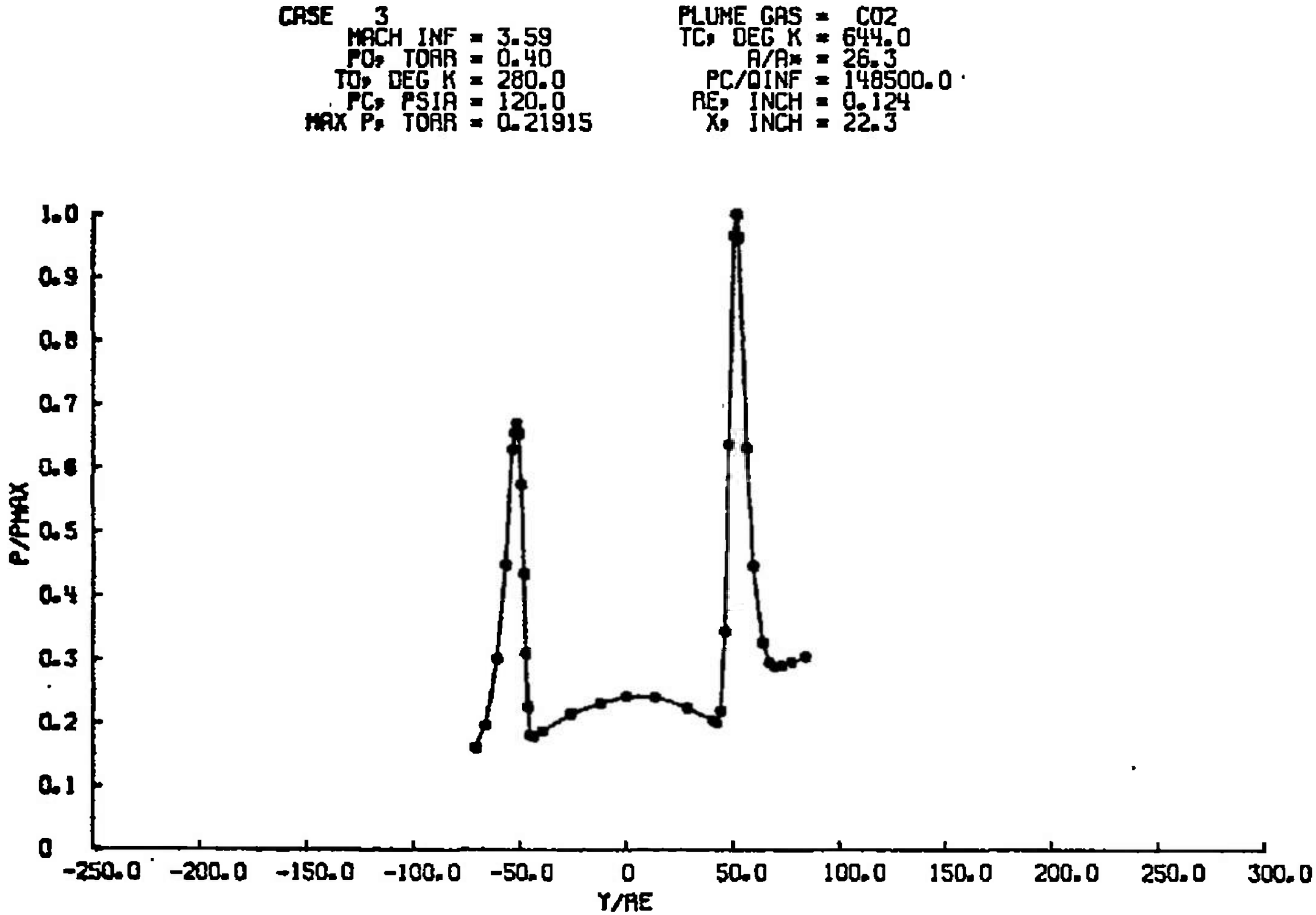

CASE 3
MACH INF = 3.59
PO, TORR = 0.40
TO, DEG K = 280.0
PC, PSIA = 120.0
MAX P, TORR = 0.21915
PLUME GAS = CO2
TC, DEG K = 644.0
A/A* = 26.3
PC/QINF = 148500.0
RE, INCH = 0.124
X, INCH = 22.3
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-21

CASE 3
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 21.0
MAX P, TORR = 3.90536

PLUME GAS = CO2
TC, DEG K = 686.0
A/A* = 26.3
PC/QINF = 14600.0
RE, INCH = 0.124
X, INCH = 1.5

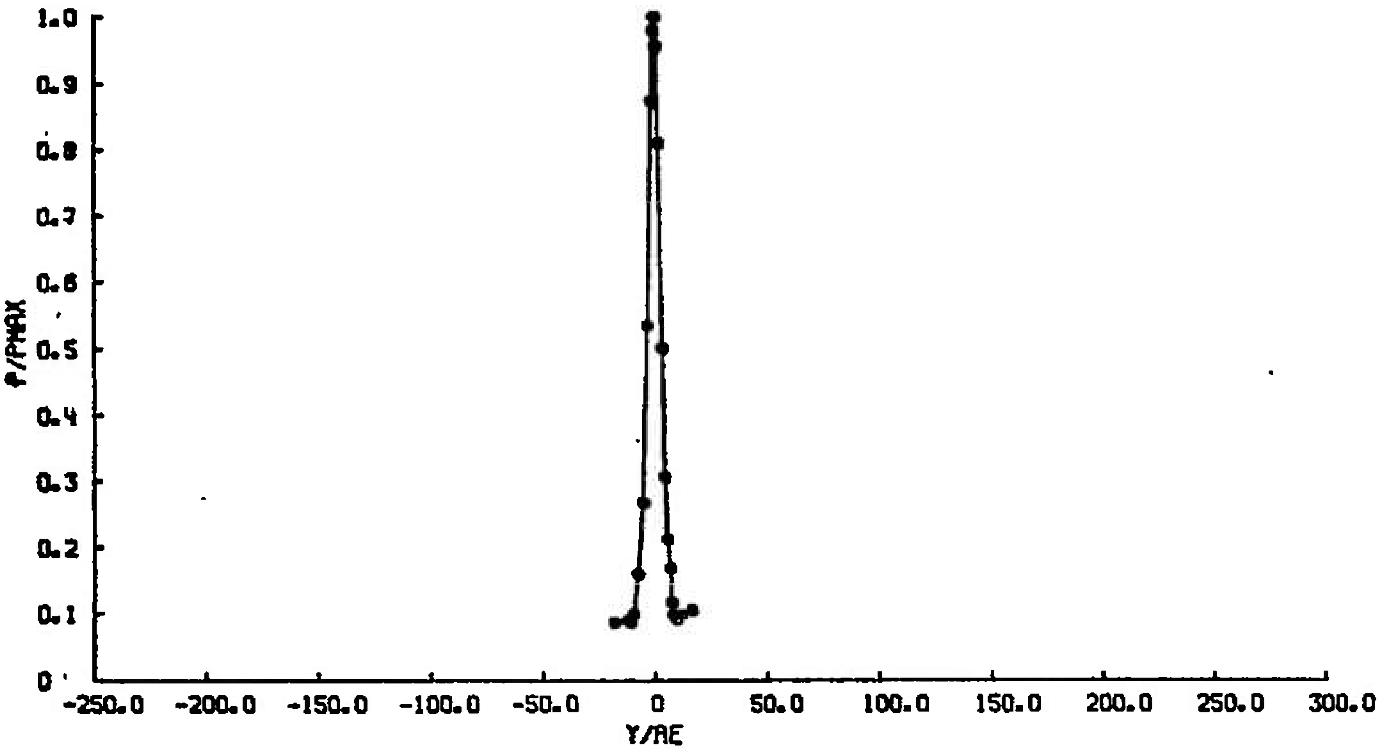


Fig. IV-22

CASE 3
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 21.0
MAX P, TORR = 1.62101

PLUME GAS = CO2
TC, DEG K = 686.0
A/A* = 26.3
PC/QINF = 14600.0
RE, INCH = 0.124
X, INCH = 4.0

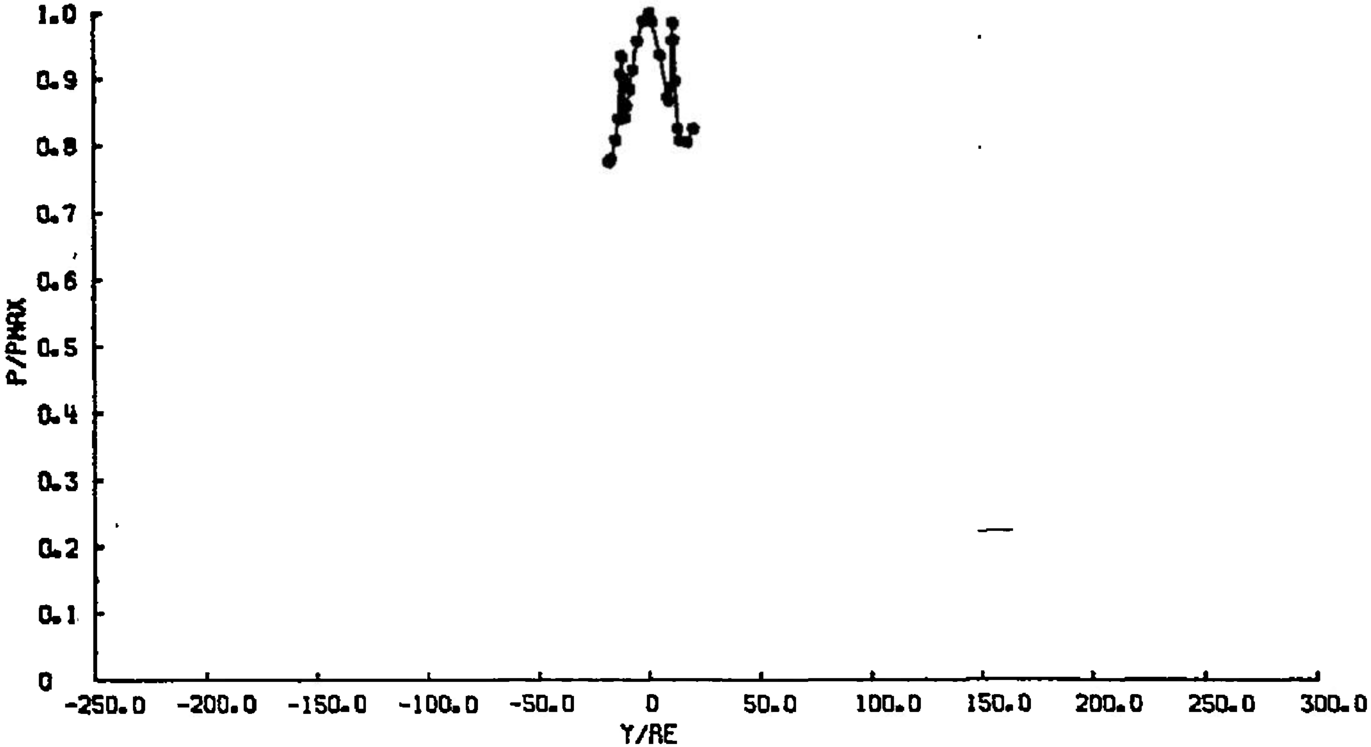


Fig. IV-23

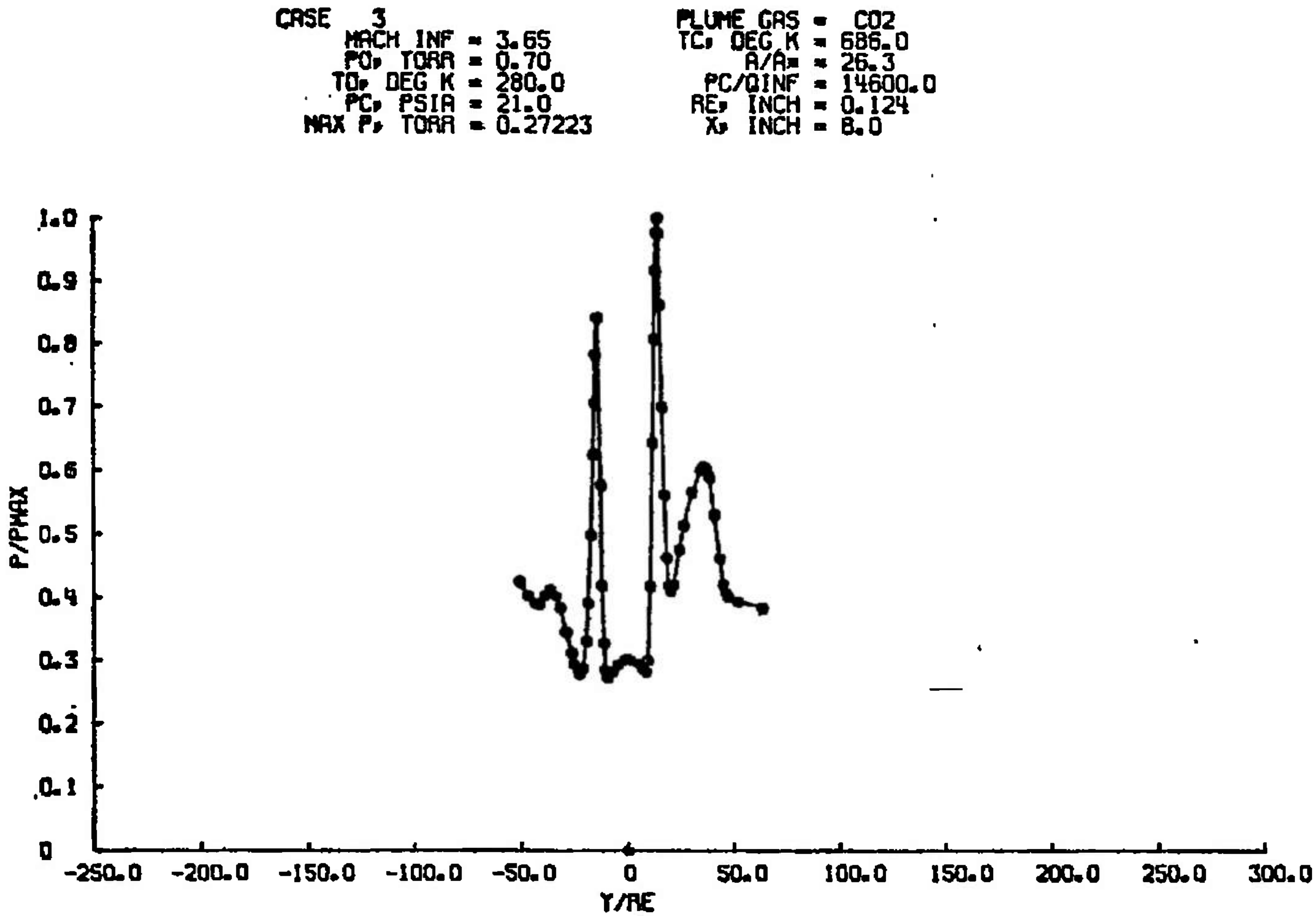

CASE 3
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 21.0
MAX P, TORR = 0.27223
PLUME GAS = CO2
TC, DEG K = 686.0
A/A* = 26.3
PC/QINF = 14600.0
RE, INCH = 0.124
X, INCH = 8.0
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-24

CASE 3
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 21.0
MAX P, TORR = 0.20141

PLUME GAS = CO2
TC, DEG K = 686.0
A/A* = 26.3
PC/QINF = 14600.0
RE, INCH = 0.124
X, INCH = 12.1

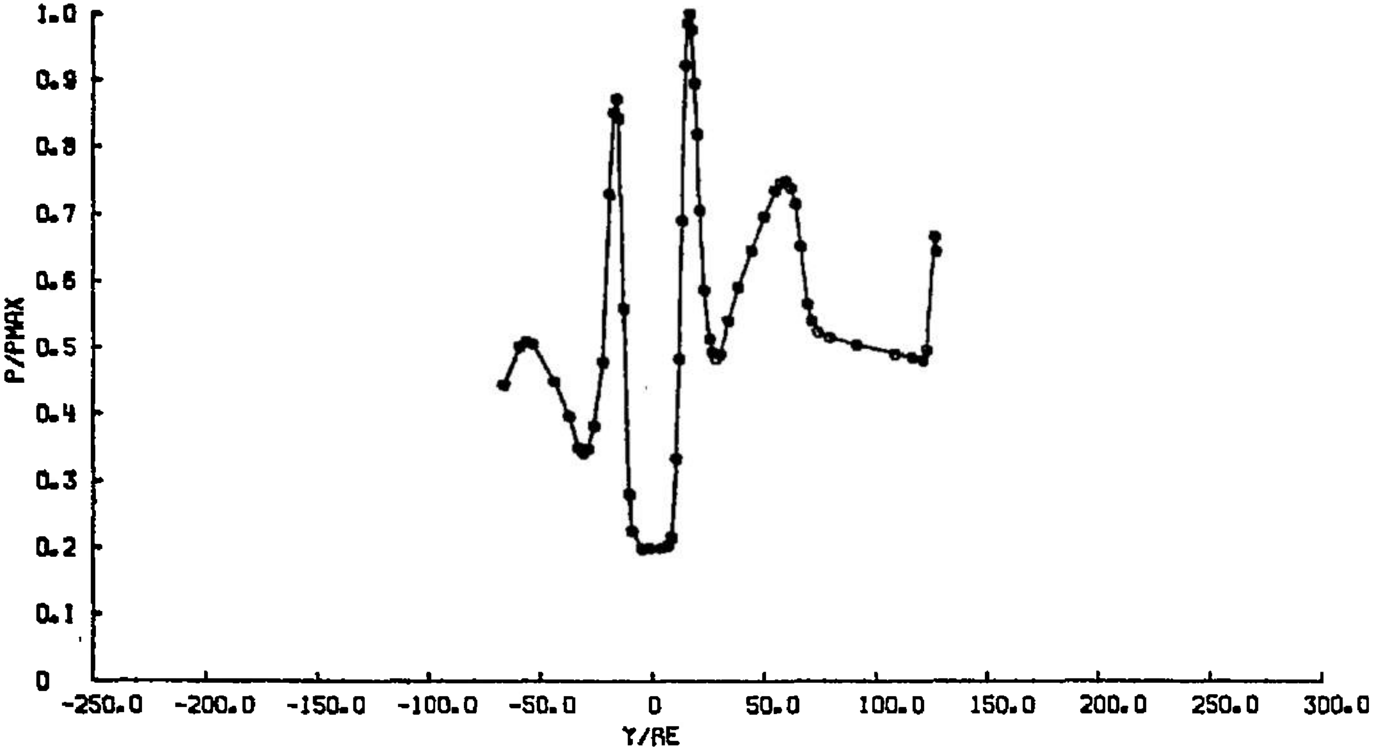


Fig. IV-25

CASE 3
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 210.0
MAX P, TORR = 8.98437

PLUME GAS = CO2
TC, DEG K = 755.0
A/A* = 26.3
PC/QINF = 146000.0
RE, INCH = 0.124
X, INCH = 4.0

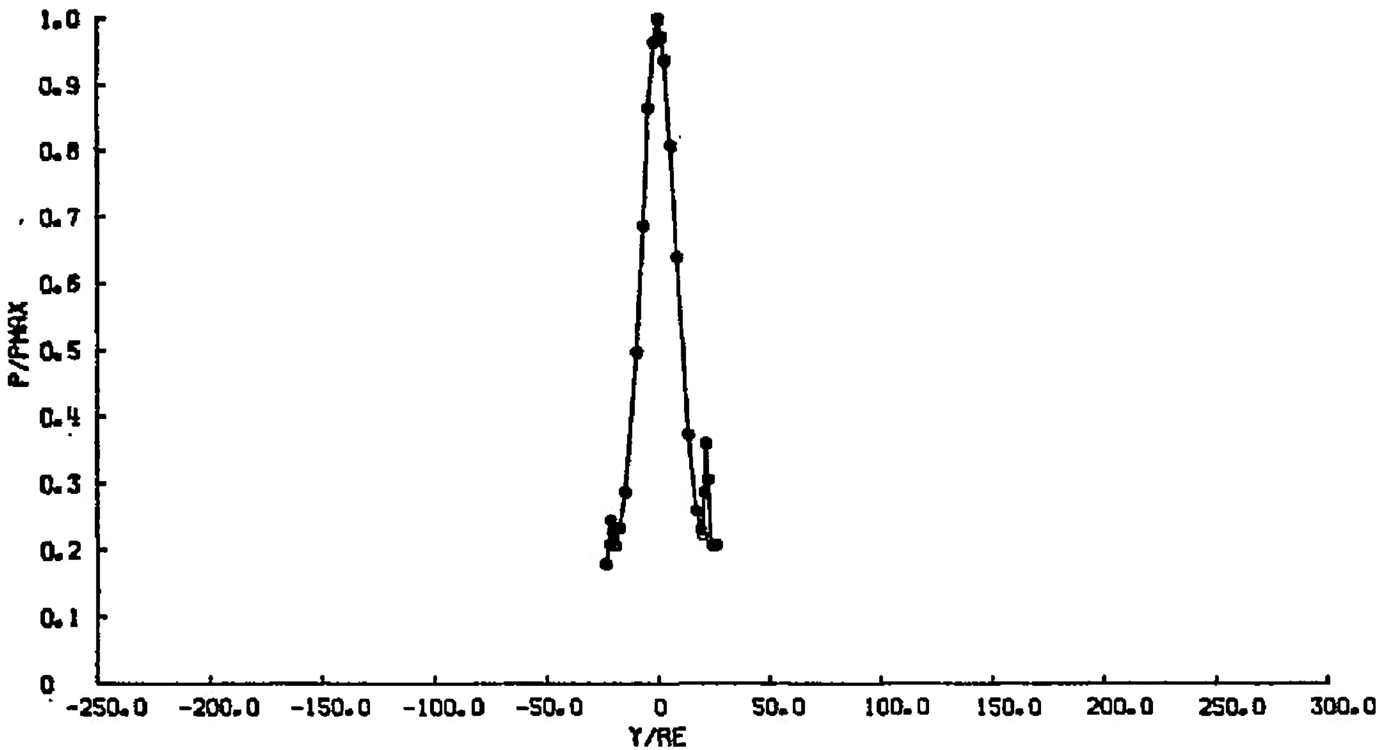


Fig. IV-26

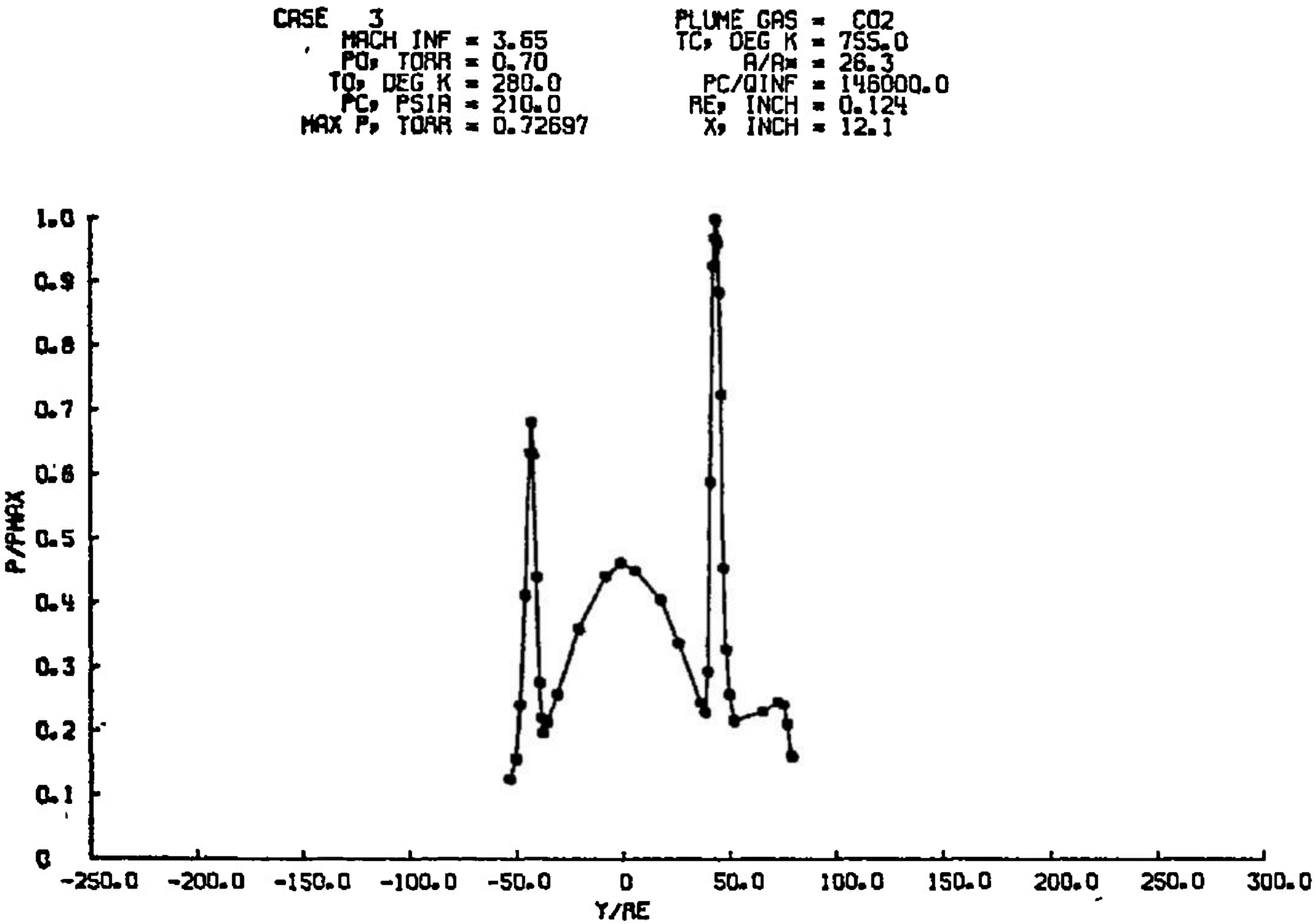

CASE 3
MACH INF = 3.65
PO, TORR = 0.70
TO, DEG K = 280.0
PC, PSIA = 210.0
MAX P, TORR = 0.72697
PLUME GAS = CO2
TC, DEG K = 755.0
A/A* = 26.3
PC/QINF = 146000.0
RE, INCH = 0.124
X, INCH = 12.1
P/PMAX
Y/RE
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0

Fig. IV-27

CASE 4
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.21858

PLUME GAS = CO2
TC, DEG K = 588.0
A/A* = 26.3
PC/QINF = 216000.0
RE, INCH = 0.124
X, INCH = 8.0

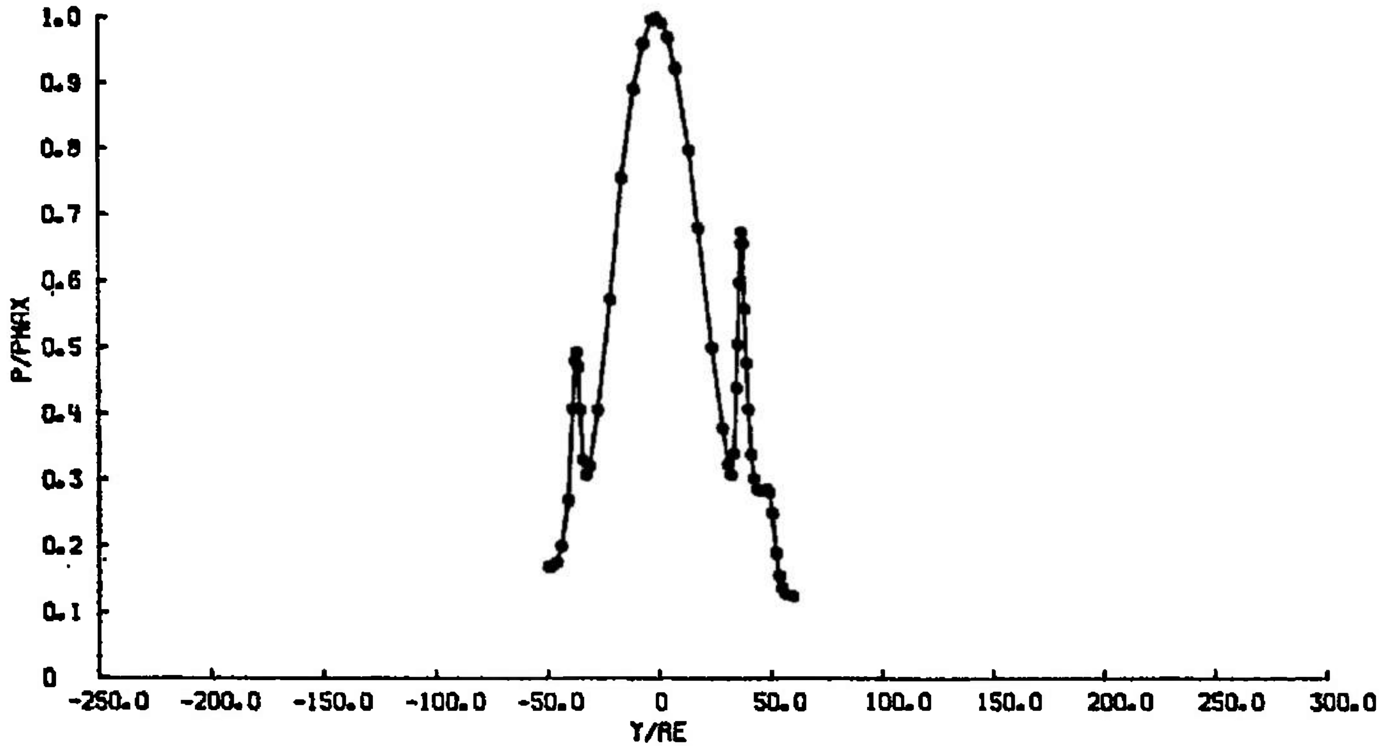


Fig. IV-28

CASE 4

MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.11623

PLUME GAS = CO2
TC, DEG K = 588.0
A/A* = 26.3
PC/QINF = 216000.0
RE, INCH = 0.124
X, INCH = 12.0

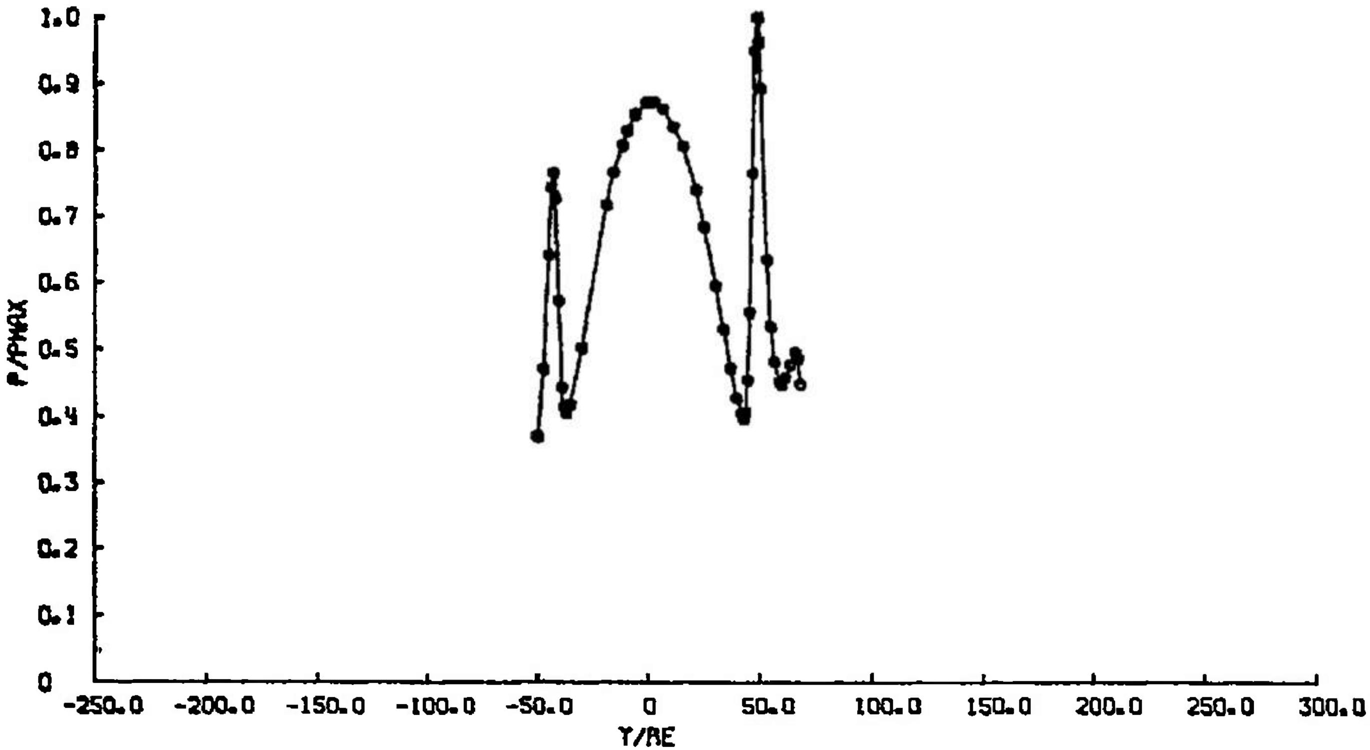


Fig. IV-29

CASE 4
MACH INF = 7.90
PO, TORR = 7.00
TO, DEG K = 280.0
PC, PSIA = 150.0
MAX P, TORR = 0.53978

PLUME GAS = CO2
TC, DEG K = 644.0
A/A* = 26.3
PC/QINF = 228000.0
RE, INCH = 0.124
X, INCH = 8.0

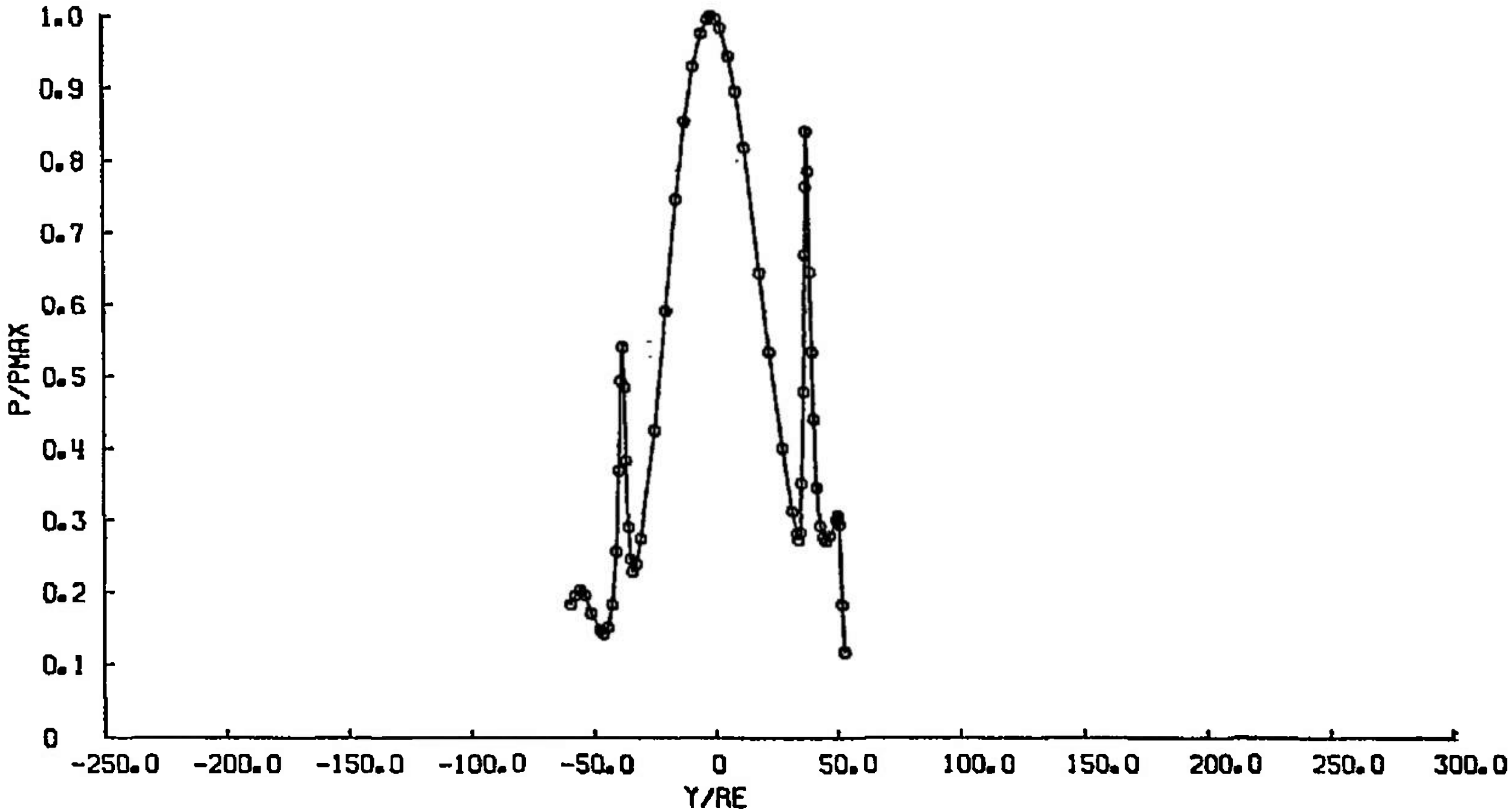


Fig. IV-30

CASE 5
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.37396

PLUME GAS = AR
TC, DEG K = 588.0
A/A* = 26.3
PC/QINF = 216000.0
RE, INCH = 0.124
X, INCH = 8.0

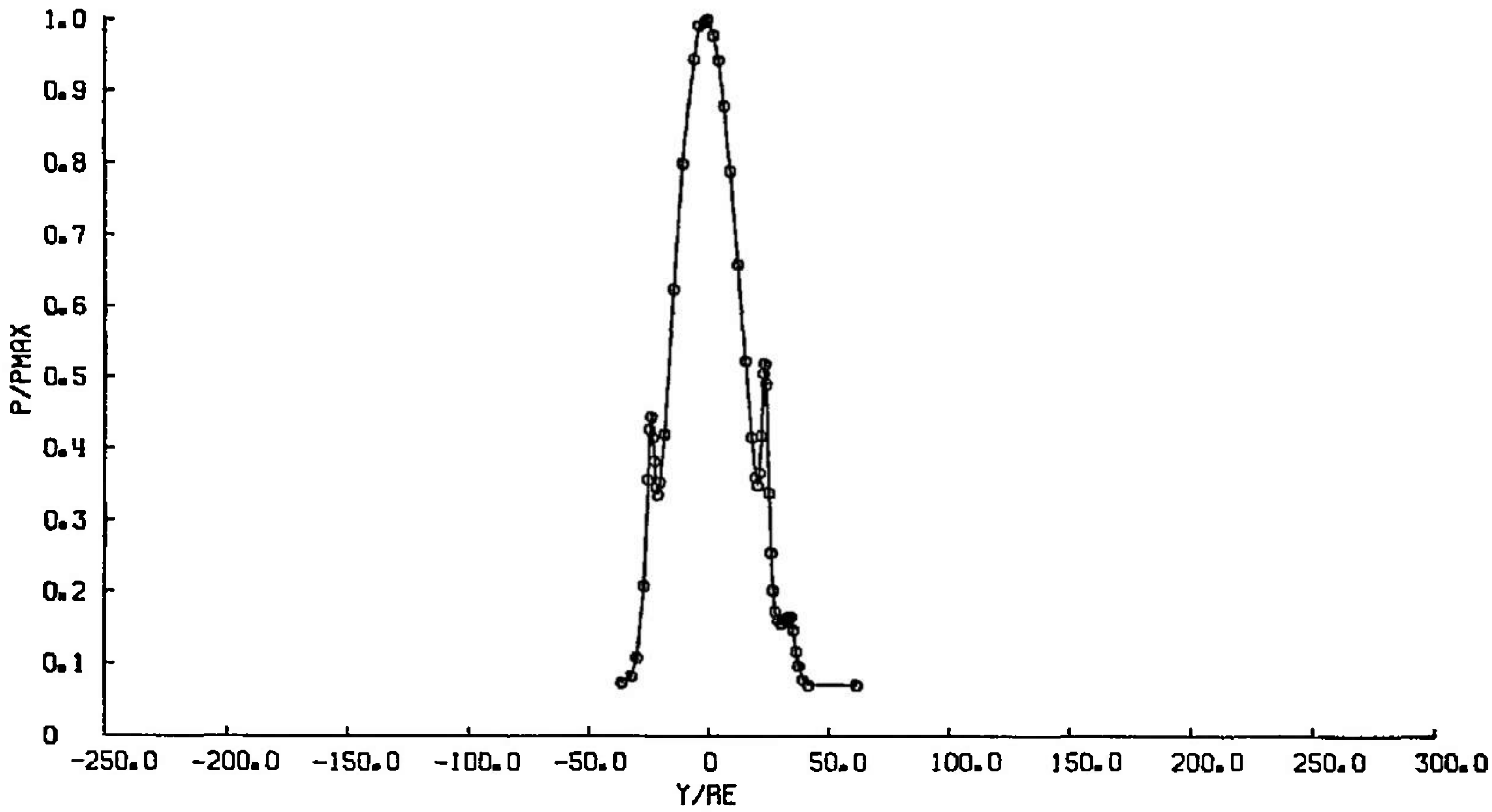


Fig. IV-31

CASE S
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.14400

PLUME GAS = AR
TC, DEG K = 588.0
A/A* = 26.3
PC/QINF = 216000.0
RE, INCH = 0.124
X, INCH = 12.0

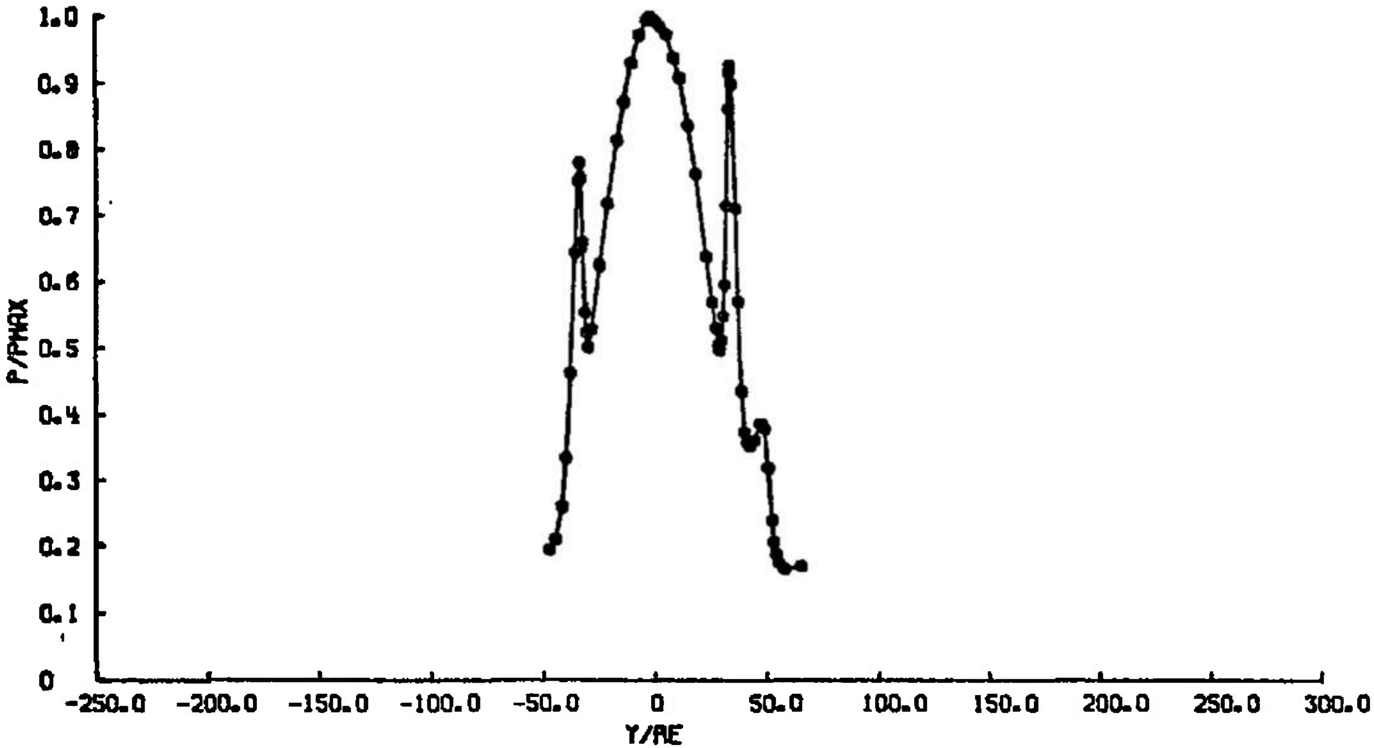


Fig. IV-32

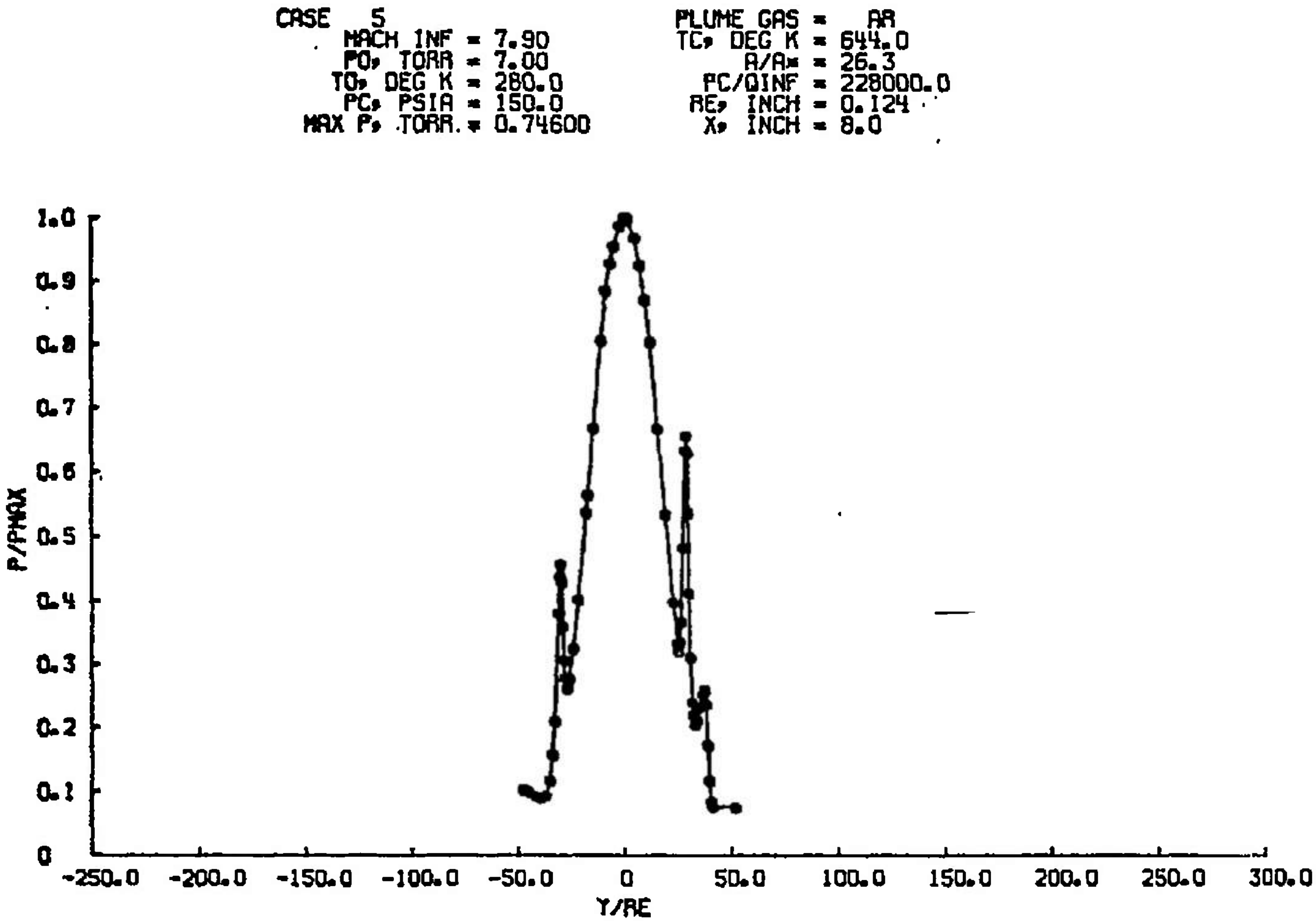

CASE 5
MACH INF = 7.90
PO, TORR = 7.00
TO, DEG K = 280.0
PC, PSIA = 150.0
MAX P, TORR. = 0.74600
PLUME GAS = AR
TC, DEG K = 644.0
A/A* = 26.3
PC/QINF = 228000.0
RE, INCH = 0.124
X, INCH = 8.0
P/PMAX
Y/RE
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0

Fig. IV-33

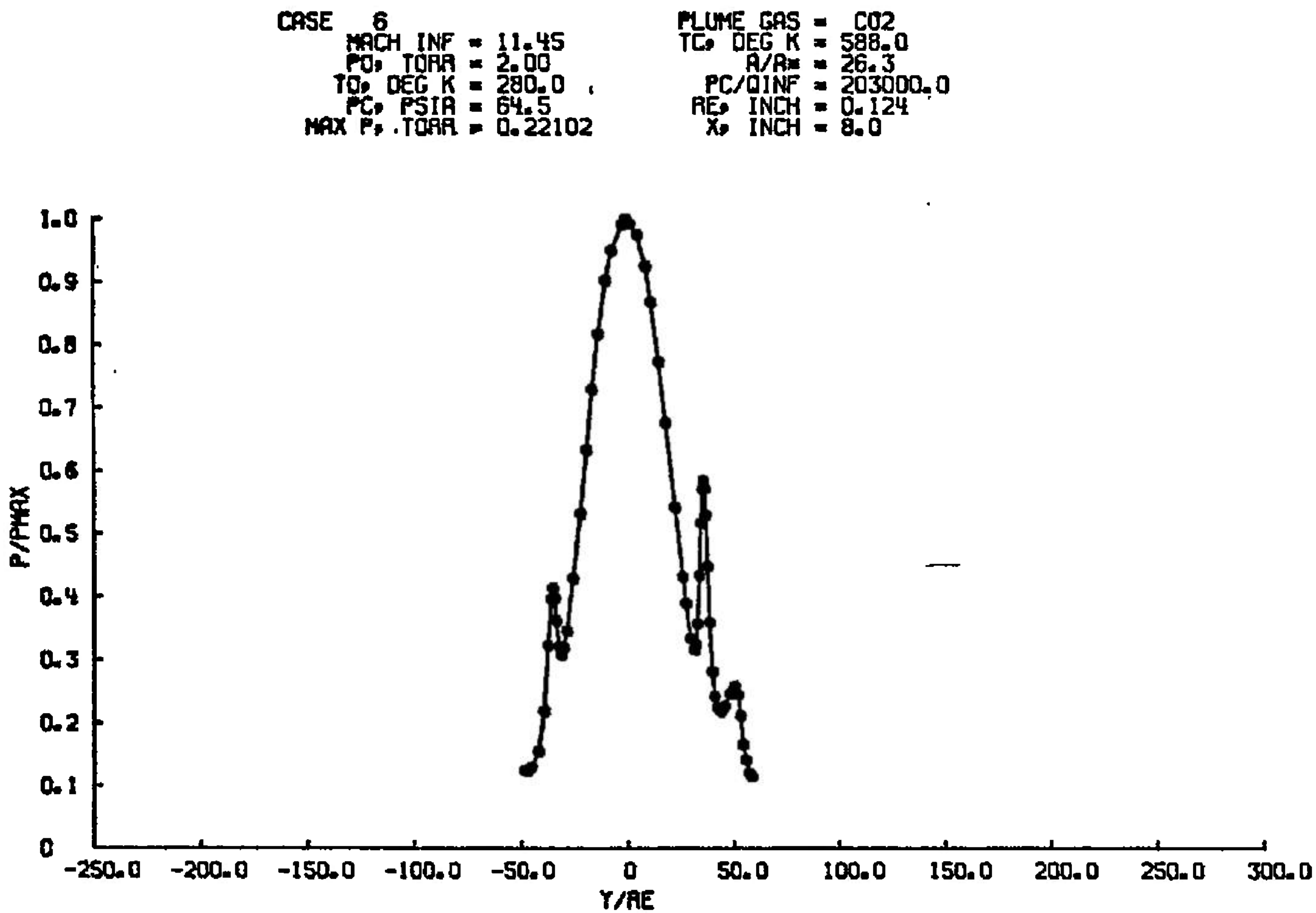

CASE 6
MACH INF = 11.45
PO, TORR = 2.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.22102
PLUME GAS = CO2
TC, DEG K = 588.0
A/A* = 26.3
PC/QINF = 203000.0
RE, INCH = 0.124
X, INCH = 8.0
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-250.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-34

CASE 6
MACH INF = 11.45
PO, TORR = 2.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.14500

PLUME GAS = CO2
TC, DEG K = 588.0
A/A* = 26.3
PC/QINF = [illegible]
RE, INCH = 0.124
X, INCH = 12.0

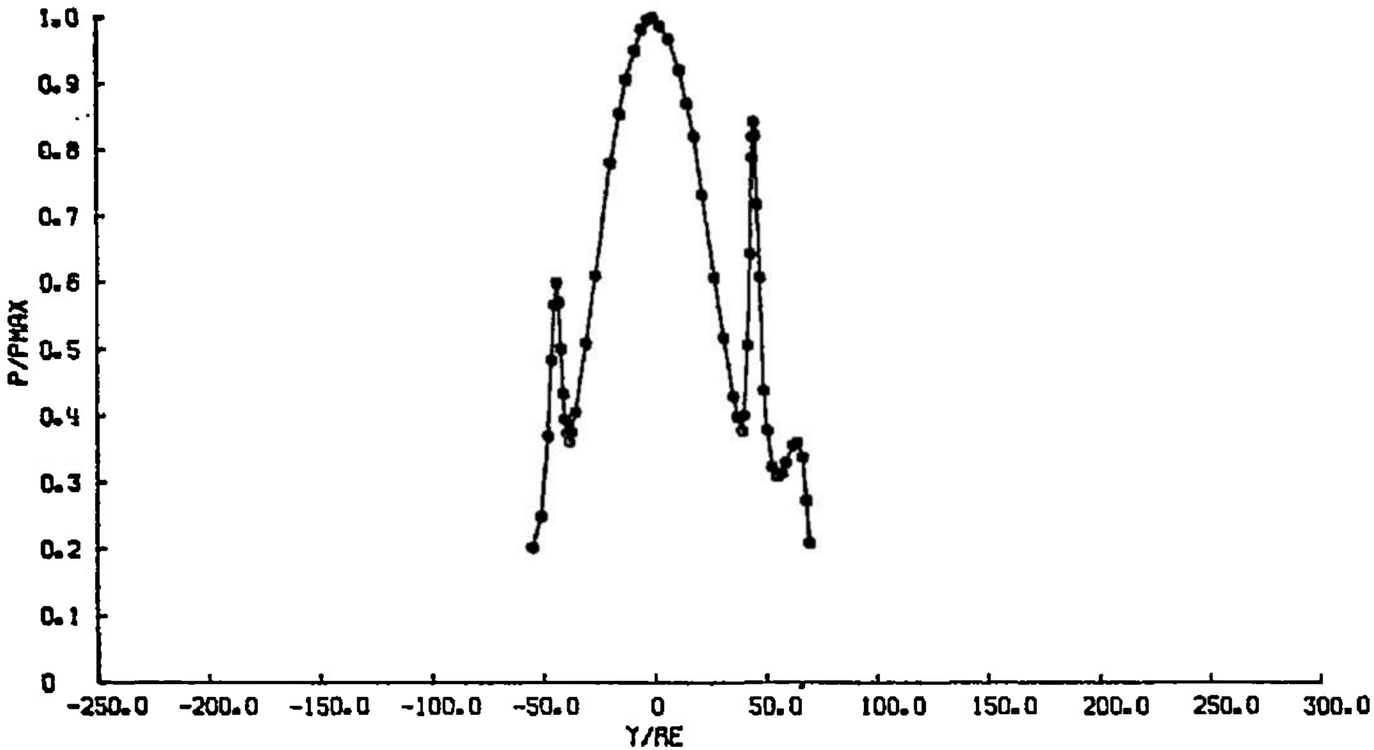


Fig. IV-35

CASE 7
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.11760

PLUME GAS = CO2
TC, DEG K = 588.0
A/A* = 9.0
PC/QINF = 216000.0
RE, INCH = 0.059
X, INCH = 8.0

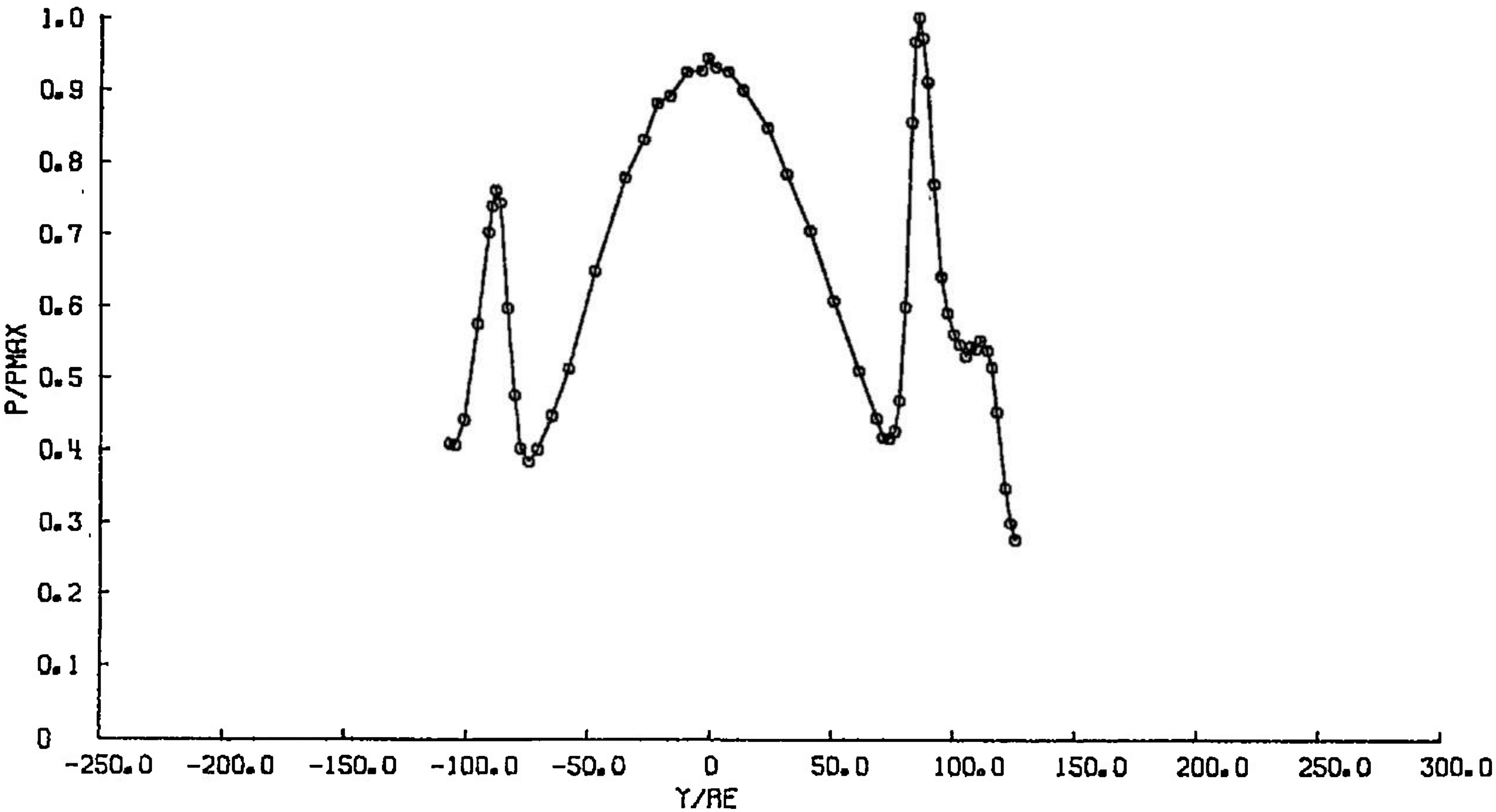
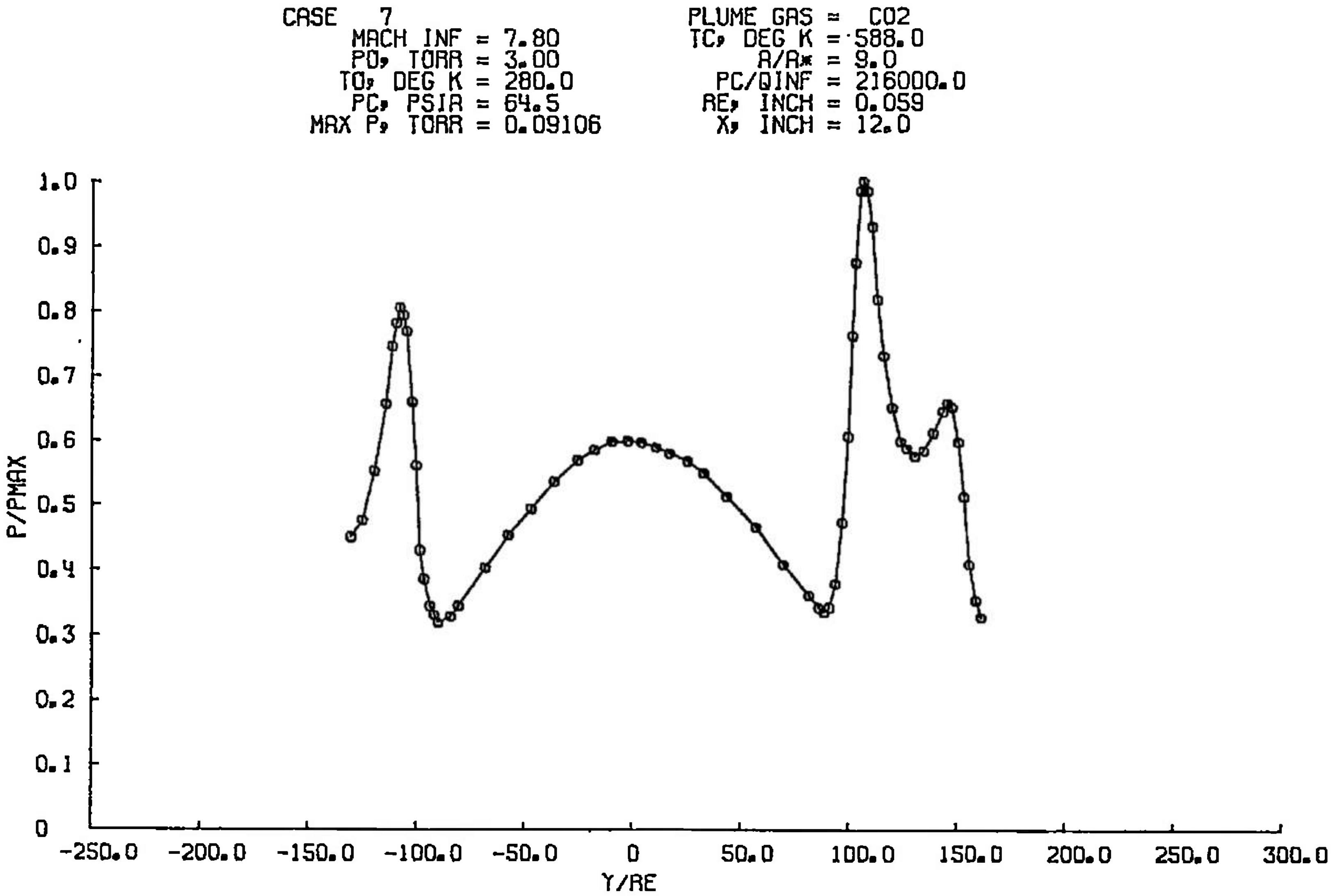


Fig. IV-36



CASE 7
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.09106
PLUME GAS = CO2
TC, DEG K = 588.0
A/A* = 9.0
PC/QINF = 216000.0
RE, INCH = 0.059
X, INCH = 12.0
P/PMAX
Y/RE

Fig. IV-37

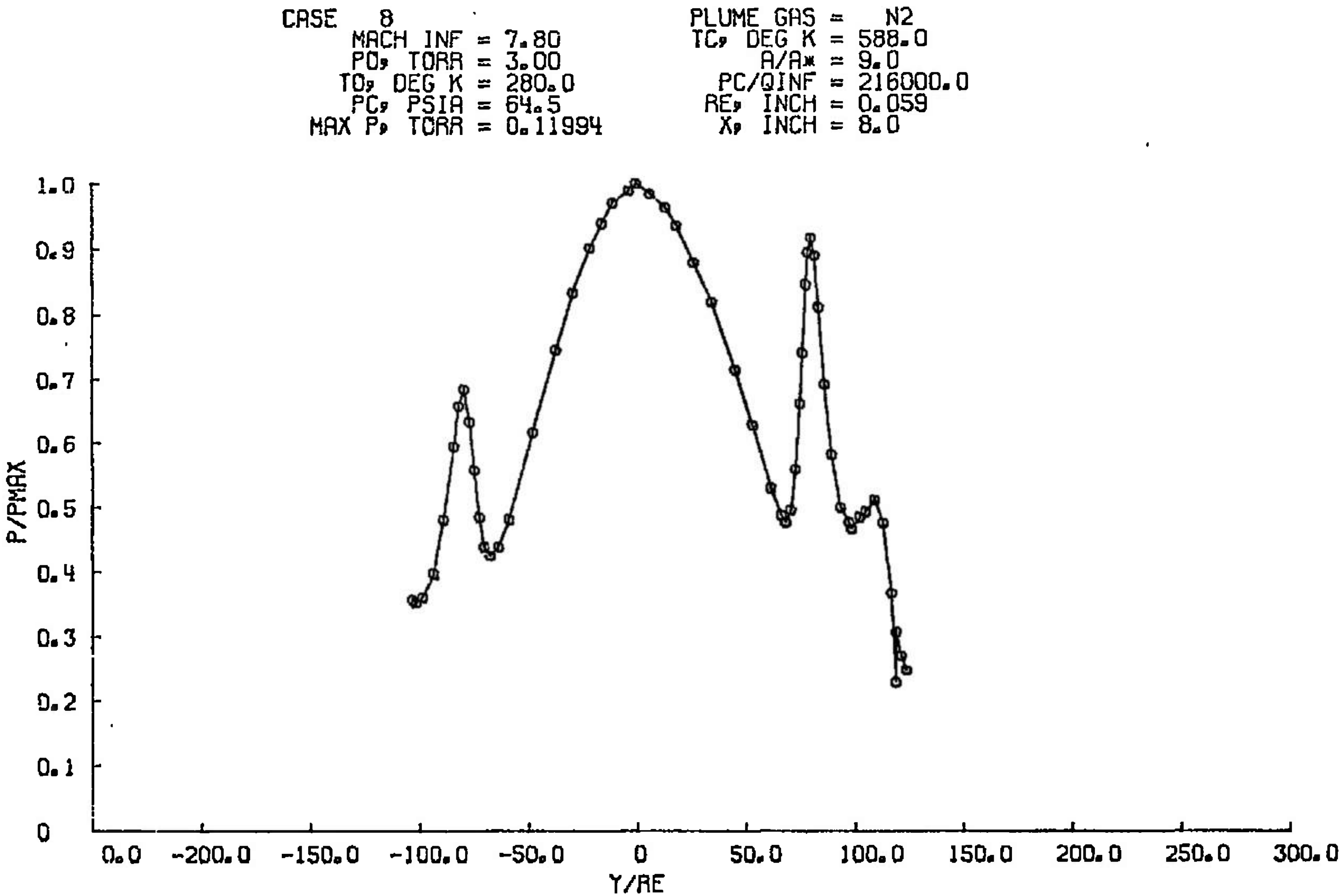

CASE 8
MACH INF = 7.80
PO, TORR = 3.00
TO, DEG K = 280.0
PC, PSIA = 64.5
MAX P, TORR = 0.11994
PLUME GAS = N2
TC, DEG K = 588.0
A/A* = 9.0
PC/QINF = 216000.0
RE, INCH = 0.059
X, INCH = 8.0
P/PMAX
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.0
-200.0
-150.0
-100.0
-50.0
0
50.0
100.0
150.0
200.0
250.0
300.0
Y/RE

Fig. IV-38

Case 1

p_o = 0.4 torr	p_c = 12 psia CO_2
T_o = 280°K	T_c = 300°K
M_∞ = 3.59	p_c/q_∞ = 1.485 x 10^4
RE = 0.059 in.	A/A* = 9.0

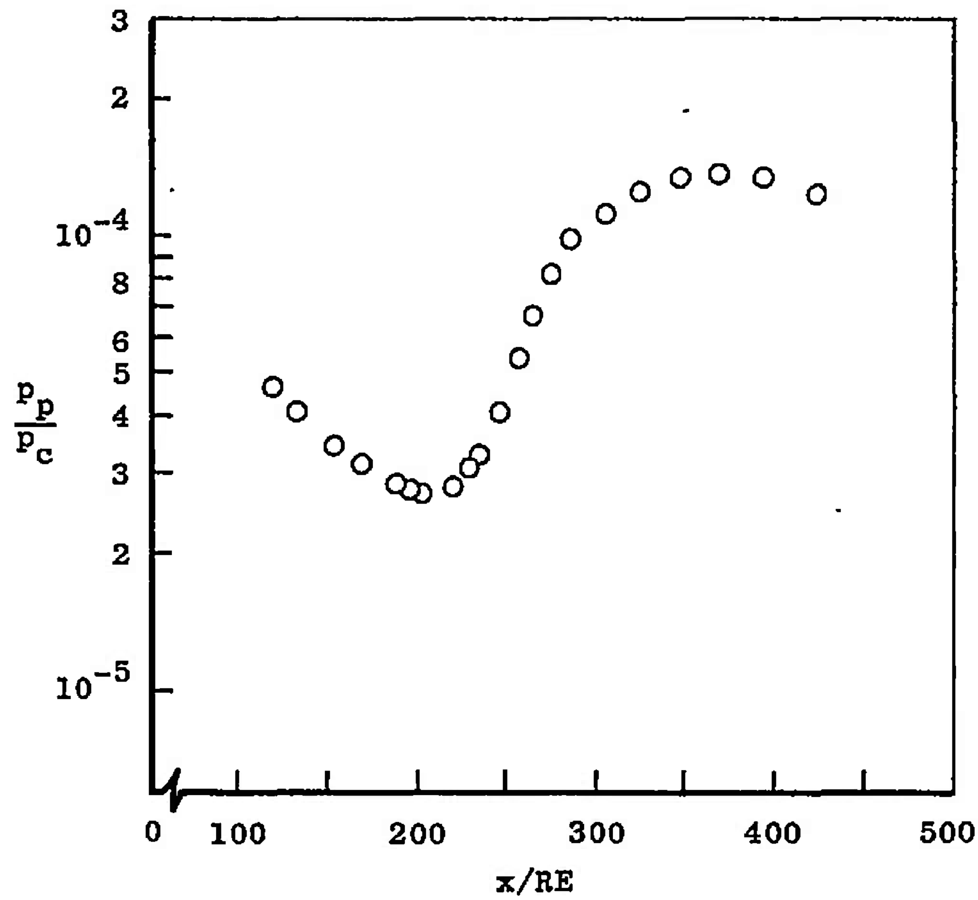


Fig. IV-39

Case 3

p_o = 0.40 torr
T_o = 280°K
M_∞ = 3.59
RE = 0.1243 in.

p_c = 12 psi CO_2
T_c = 560°K
p_c/q_∞ = 1.485 x 10^4
A/A* = 26.3

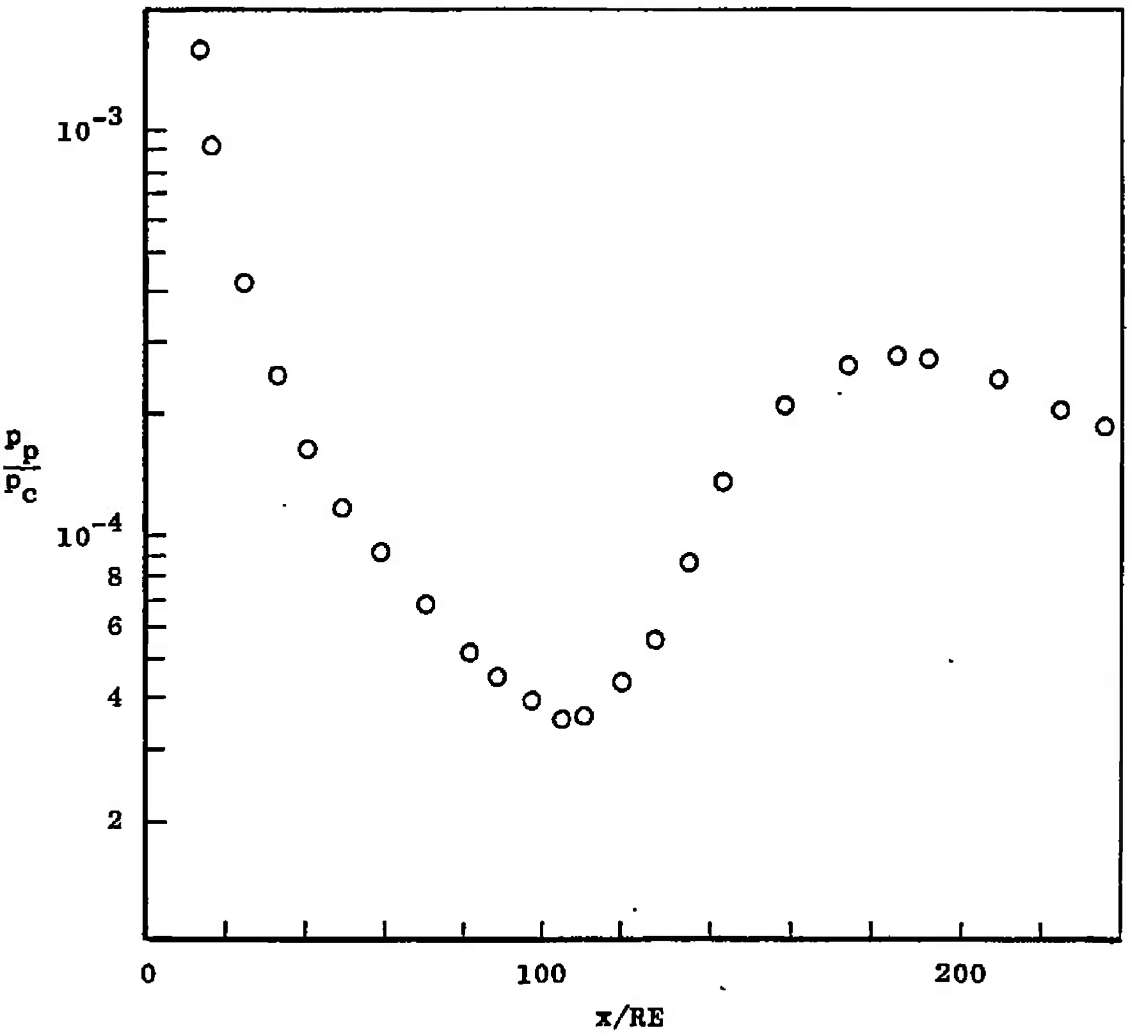


Fig. IV-40

Case 2

p_o = 0.4 torr p_c = 40 psi Argon
T_o = 280°K T_c = 700°K
M_∞ = 3.59 p_c/q_∞ = 4.95 x 10^4
RE = 0.059 in.   A/A* = 9.0

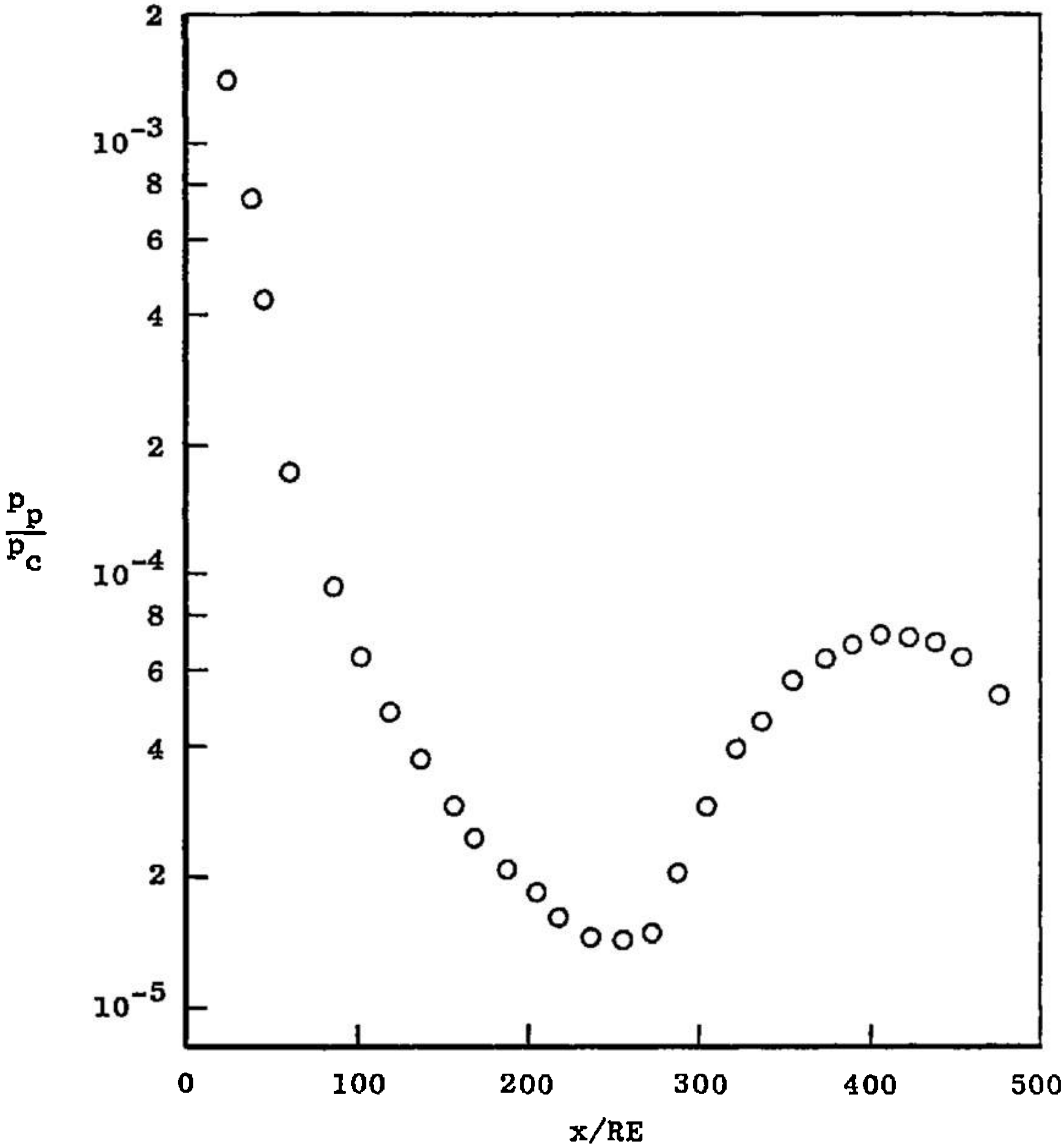


Fig. IV-41

Case 3

p_o = 0.70 torr	p_c = 21 psia CO_2
T_o = 280°K	T_c = 660°K
M_∞ = 3.65	p_c/q_∞ = 1.46 x 10^4
RE = 0.1243 in.	A/A* = 26.3

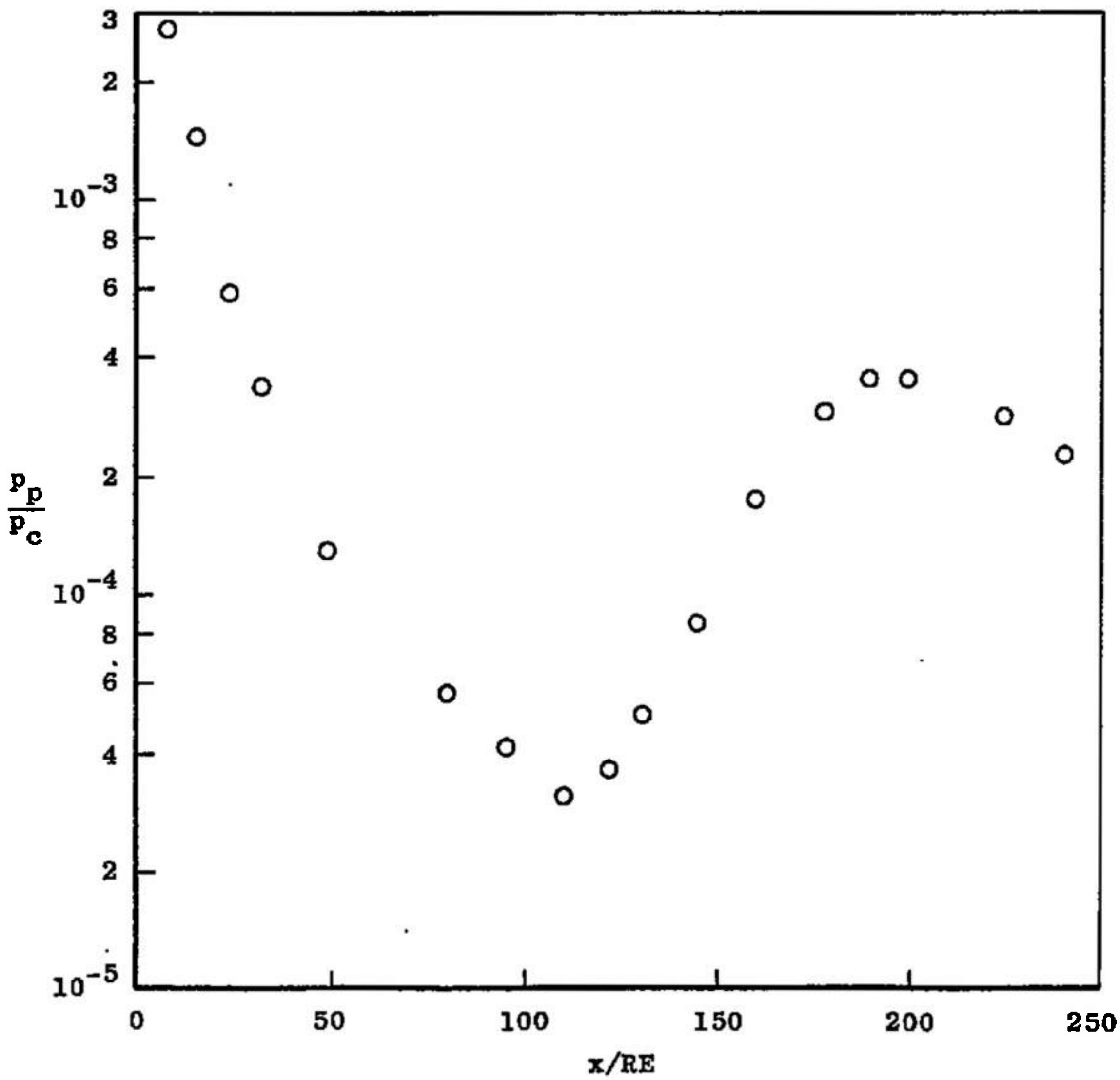


Fig. IV-42

Case 3

p_o = 0.40 torr
T_o = 280°K
M_∞ = 3.59
RE = 0.1243 in.
p_c = 120 psi CO_2
T_c = 644°K
p_c/q_∞ = 1.485 x 10^5
A/A* = 26.3

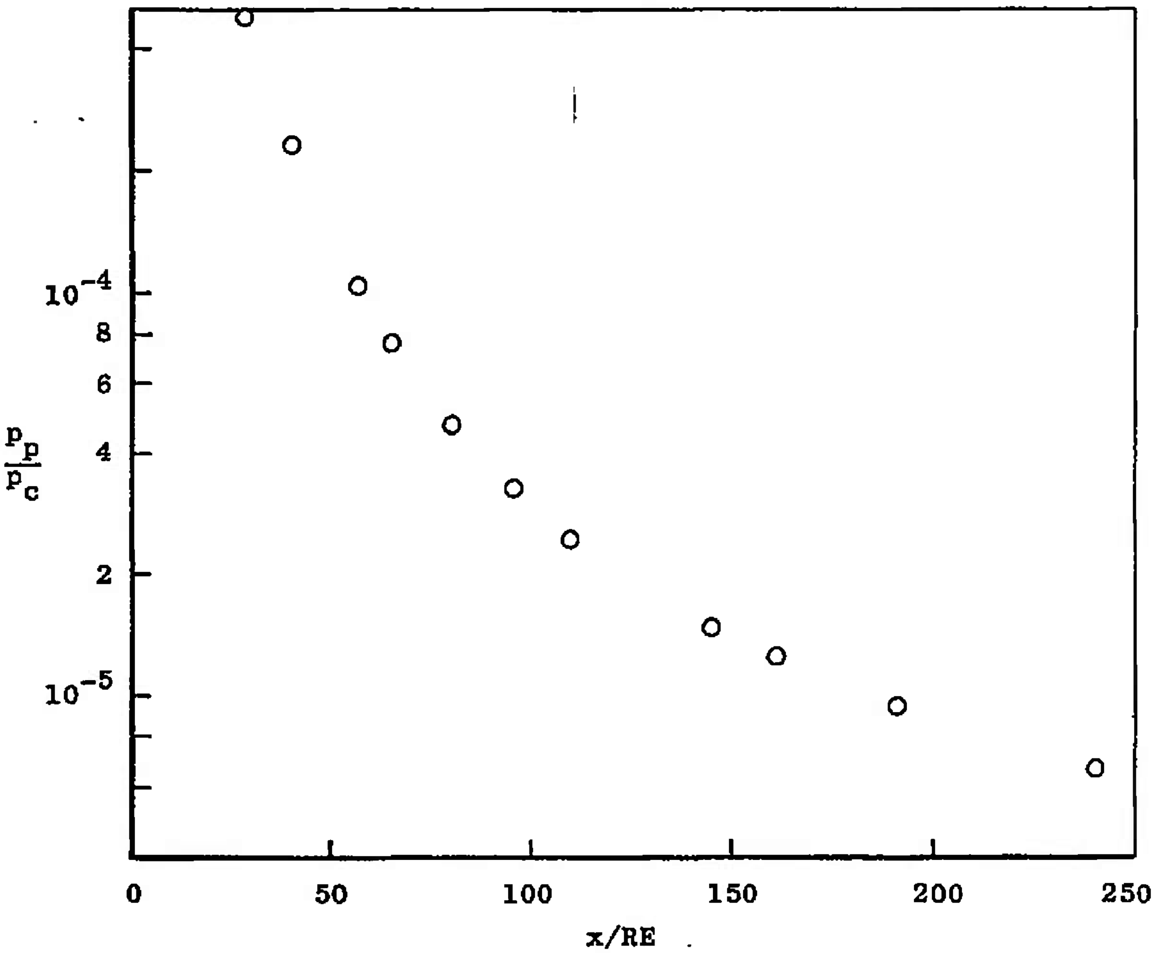


Fig. IV-43

Case 3

p_o = 0.70 torr p_c = 210 psi CO_2

T_o = 280°K T_c = 755°K

M_∞ = 3.65 $p_c/q_\infty = 1.46 \times 10^5$

RE = 0.1243 in. A/A* = 26.3

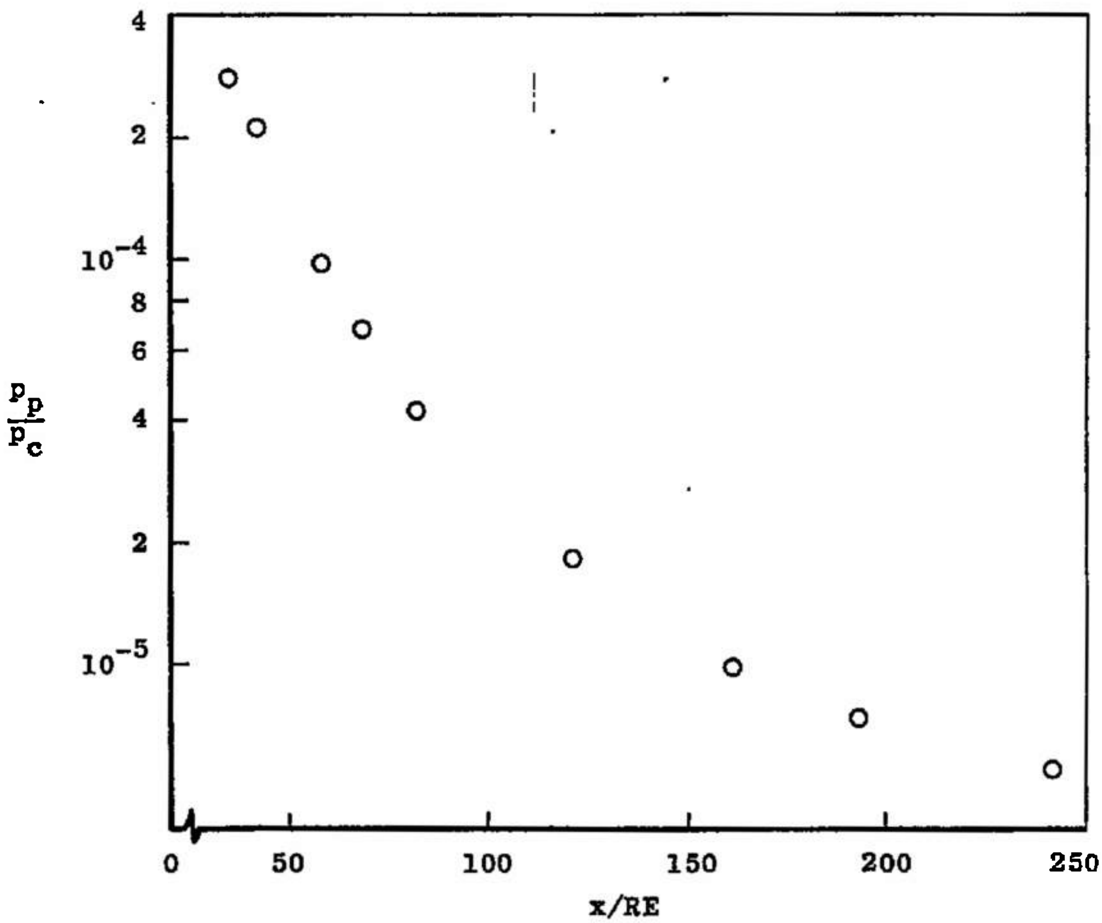


Fig. IV-44

Case 5

p_o = 3.0 torr p_c = 64.5 psi Argon

T_o = 280°K T_c = 588°K

M_∞ = 7.8 p_c/q_∞ = 2.16 x 10^5

RE = 0.1243 in. A/A* = 26.3

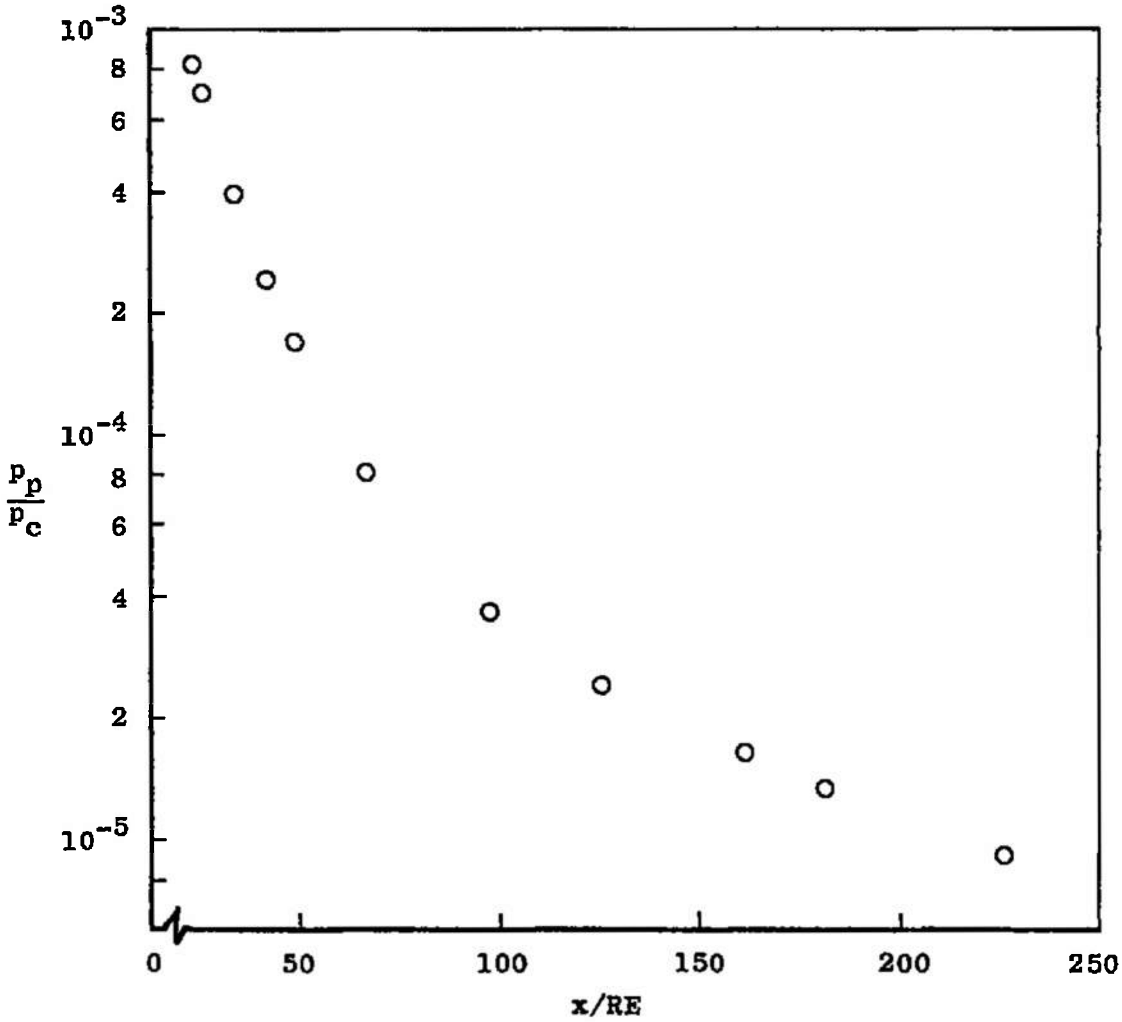


Fig. IV-45

APPENDIX V
DENSITY SCANS

PAGE 1
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CASE 3

P_∞ = .4 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 3.59

P_c = 12.00 PSI
T_c = 560° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_t/q_∞ = 14900
λ_∞ = .0685 IN.
RESERVOIR DENSITY = 1.068 X 10^[illegible] CM^-3

CENTERLINE AXIAL

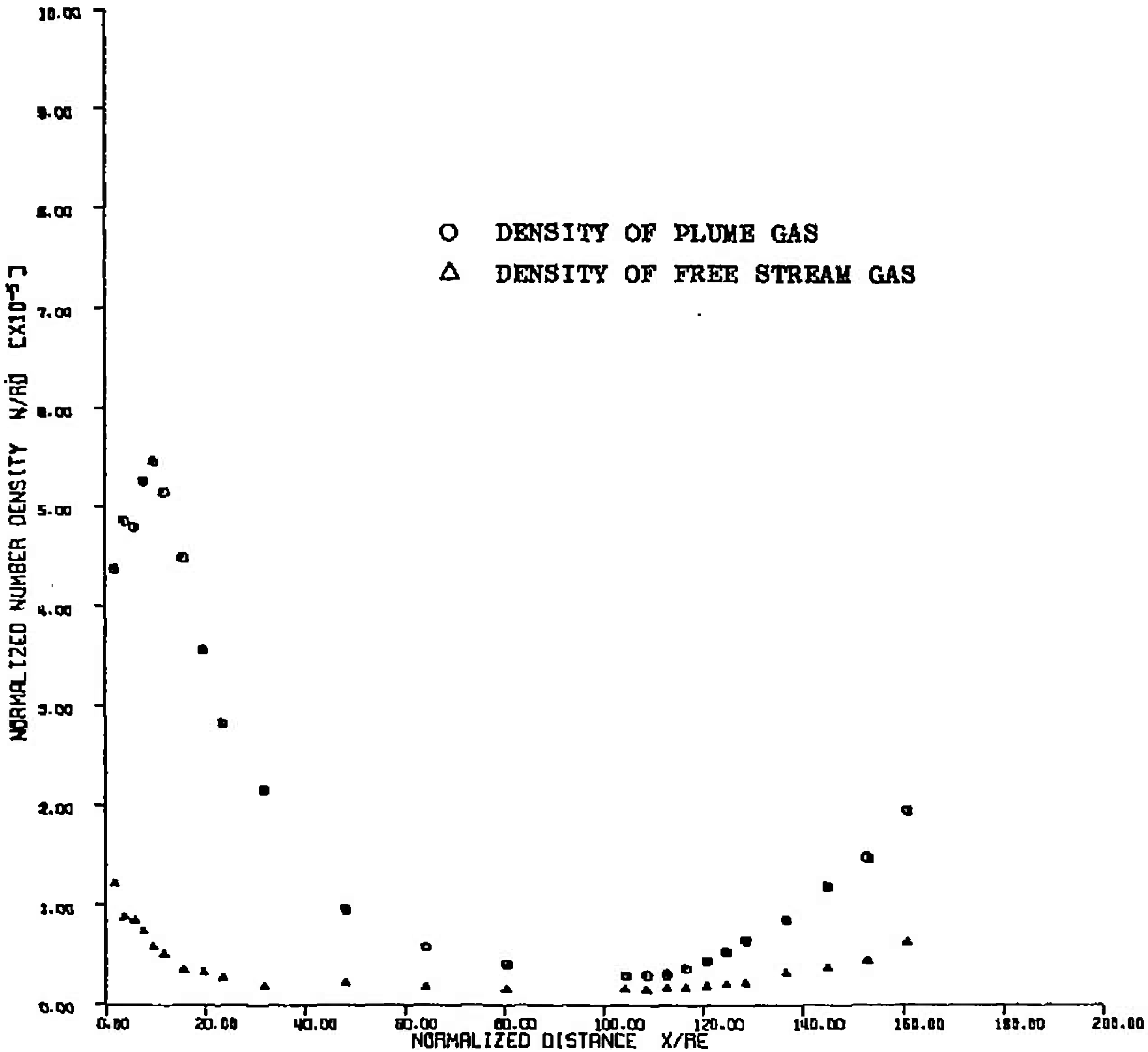

Fig. V-1

PAGE 2
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CASE 3

P_∞ =.4 TORR
T_∞ =280° K
NITROGEN
M_∞ = 3.59

P_c = 12.00 PSI
T_c =560° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 14900
λ_∞ = .0665 IN.
RESERVOIR DENSITY =
1.068 X 10^{19} CM^{-3}

2.5 IN. RADIAL

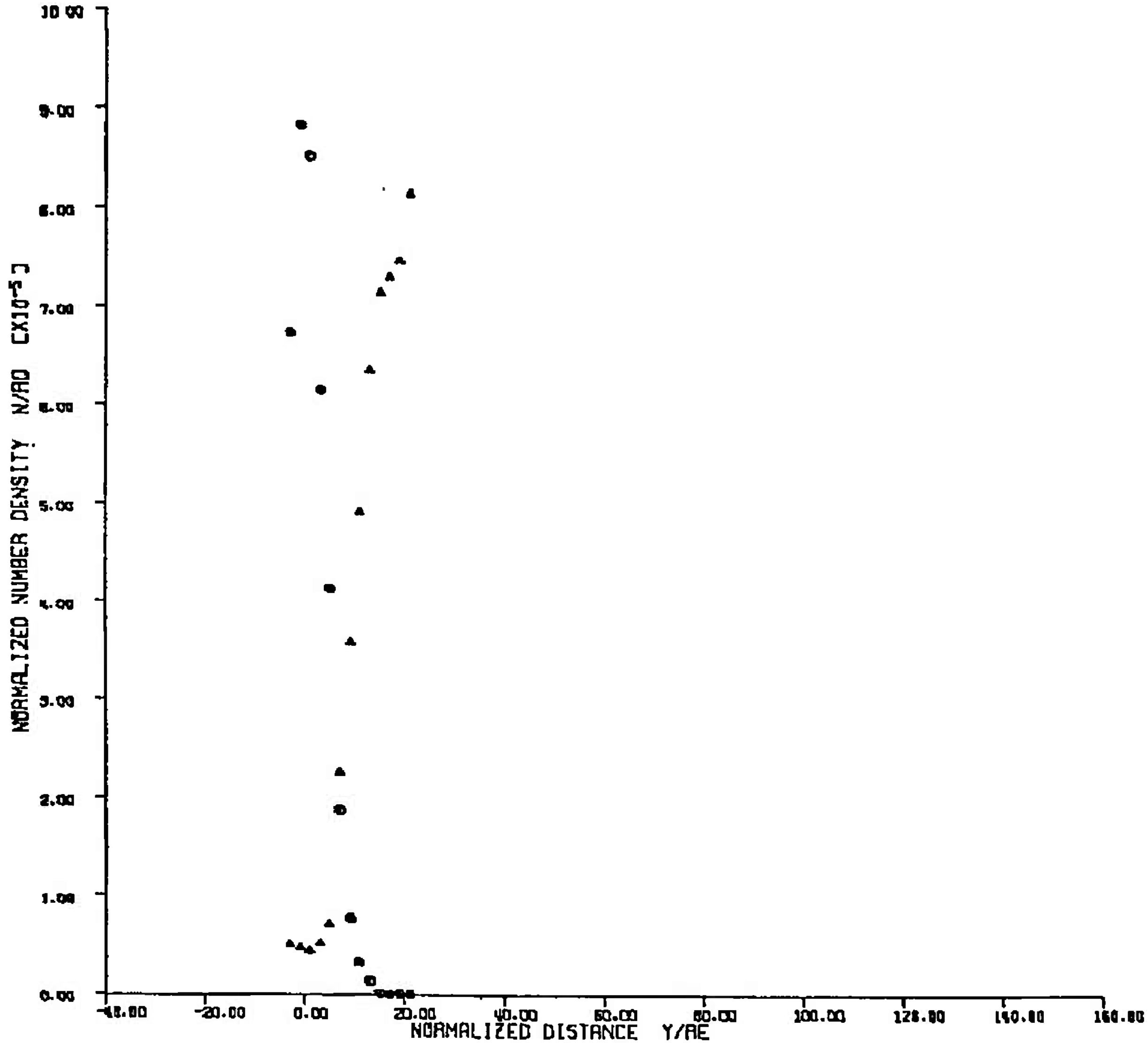

Fig. V-2

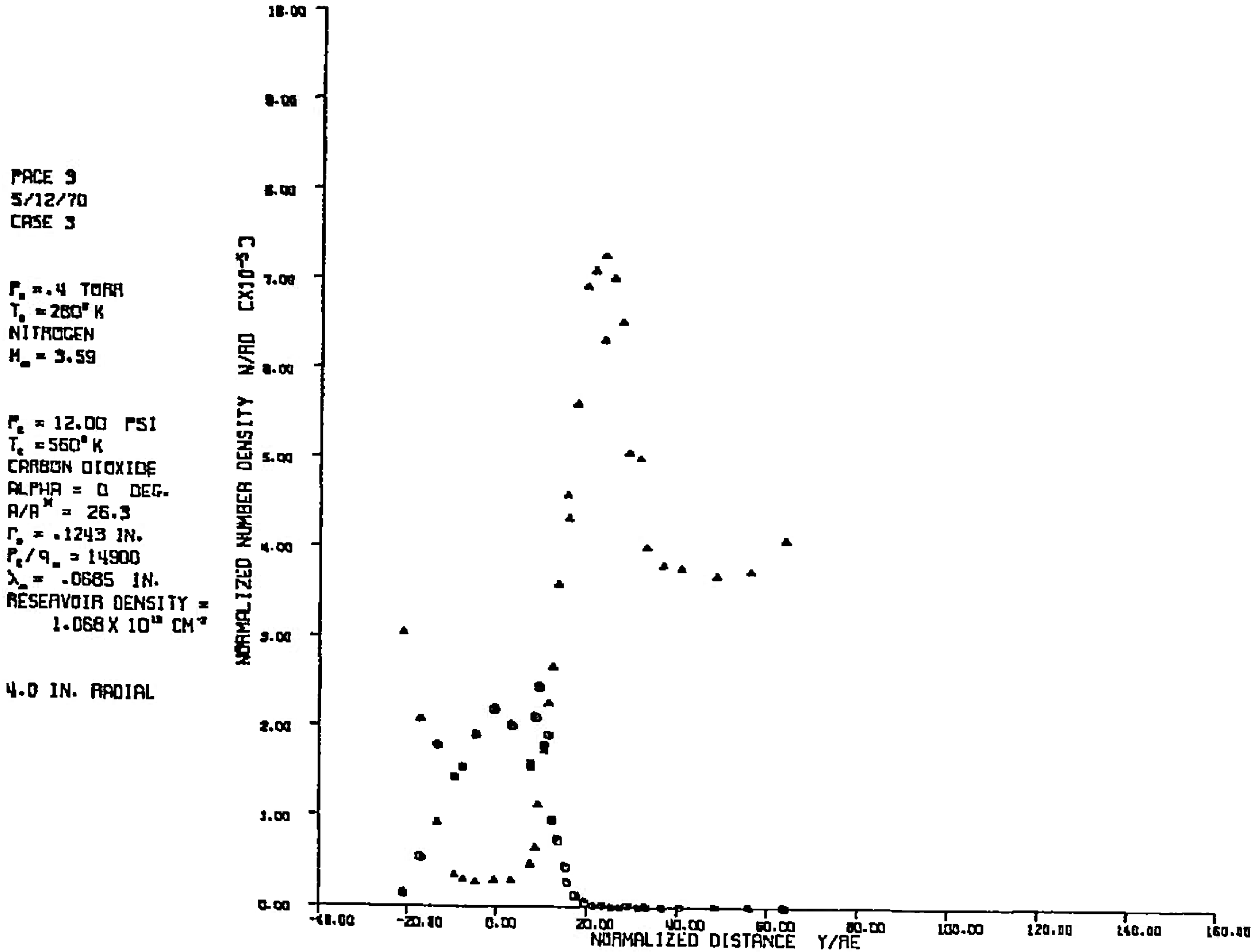
PAGE 9
5/12/70
CASE 3
P = .4 TORR
T = 280° K
NITROGEN
M = 3.59
P = 12.00 PSI
T = 560° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A* = 26.3
r = .1243 IN.
P/q = 14900
λ = .0685 IN.
RESERVOIR DENSITY =
1.068 X 10 CM
4.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO (X10^-3)
NORMALIZED DISTANCE Y/RE
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00

Fig. V-3

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CASE 3

P_o = .4 TORR
T_o = 280° K
NITROGEN
M_∞ = 3.59

P_c = 12.00 PSI
T_c = 560° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 14900
λ_∞ = .0685 IN.
RESERVOIR DENSITY =
1.068 X 10^{18} CM^{-3}

12-1 IN. RADIAL

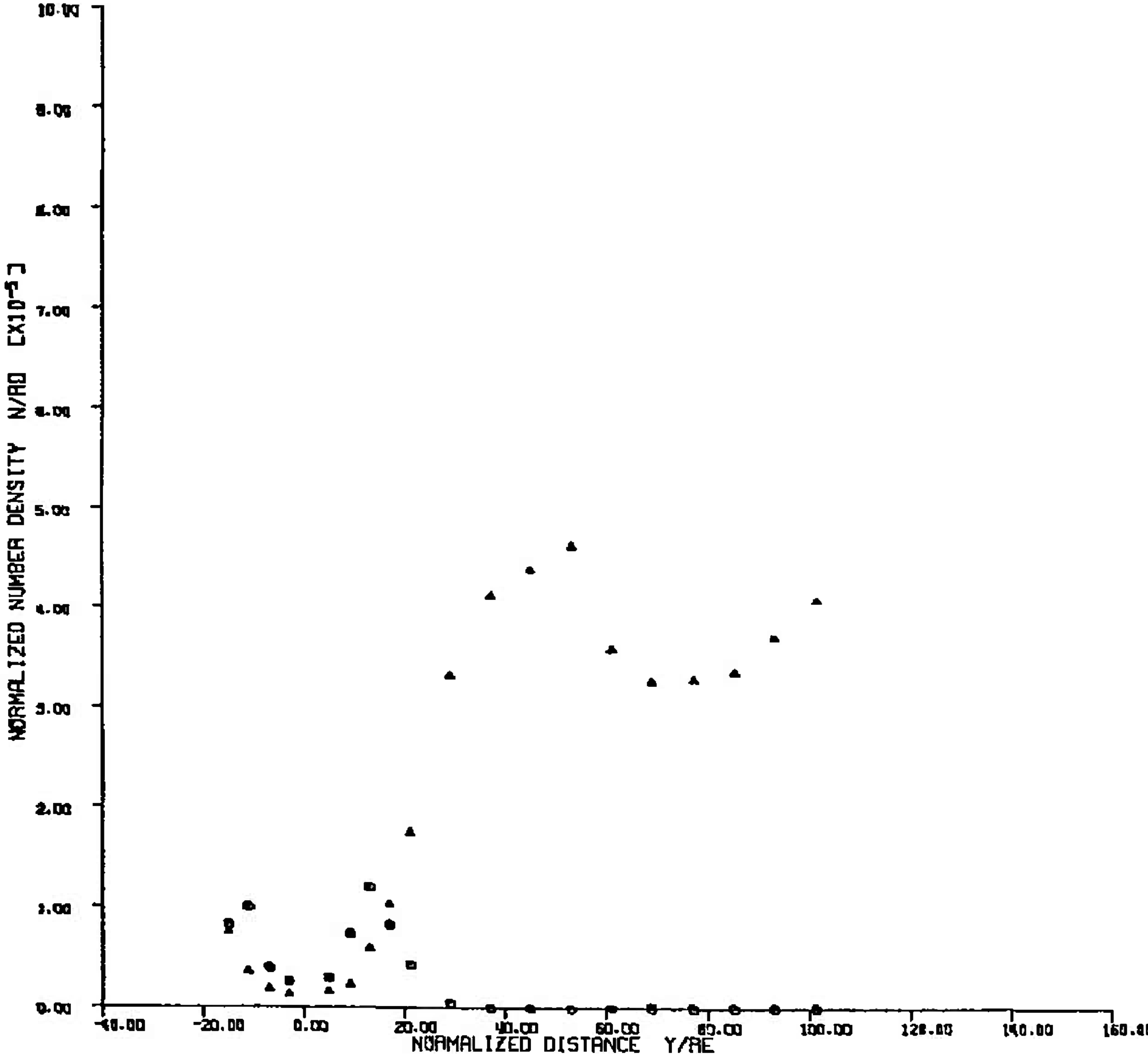
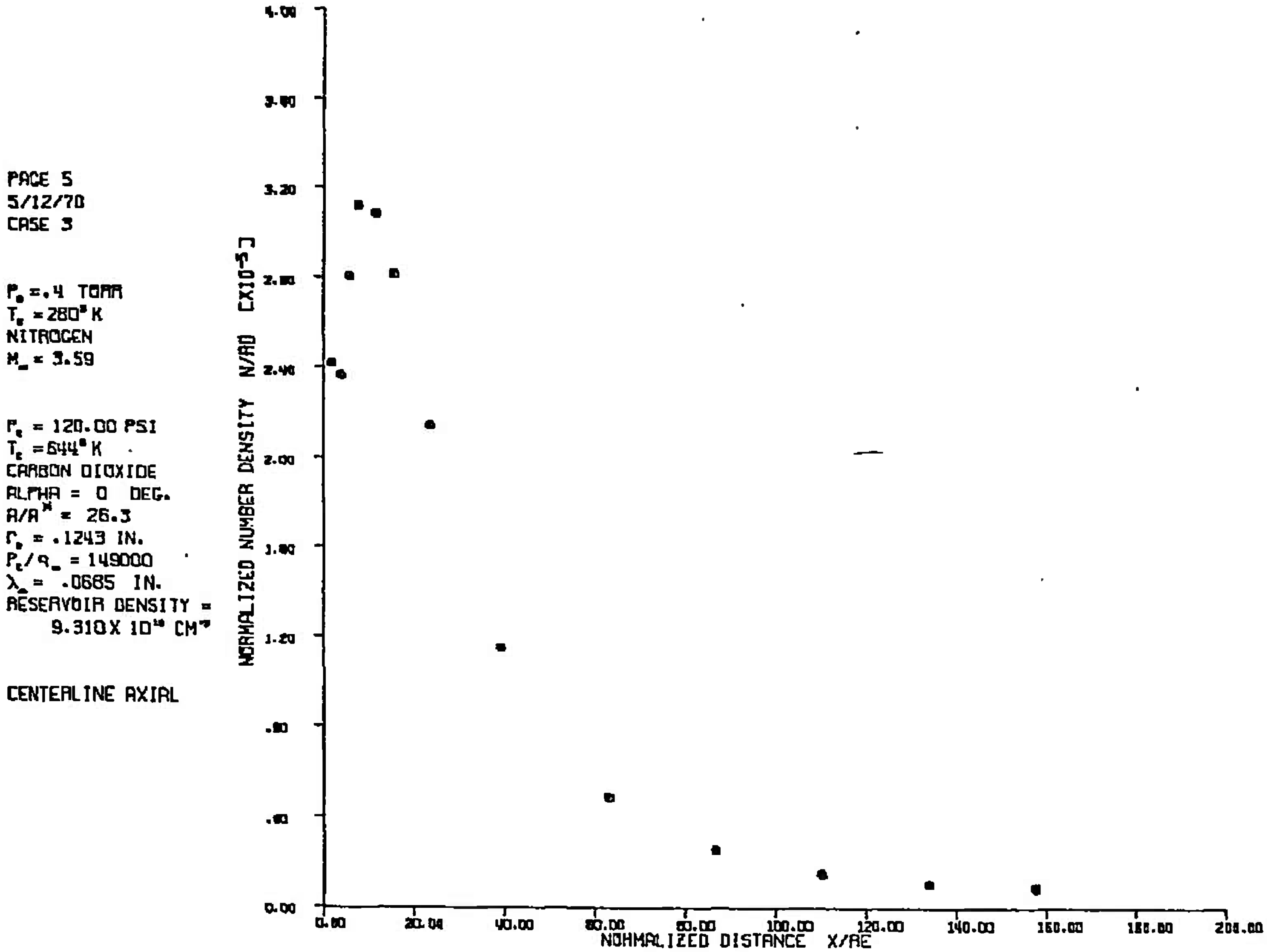


Fig. V-4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CASE 3
P_a = .4 TORR
T_a = 280° K
NITROGEN
M_∞ = 3.59
P_c = 120.00 PSI
T_c = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 149000
λ_∞ = .0685 IN.
RESERVOIR DENSITY = 9.310 X 10^{18} CM^{-3}
CENTERLINE AXIAL
NORMALIZED NUMBER DENSITY N/NO [X10^-5]
NORMALIZED DISTANCE X/RE

Fig. V-5

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CASE 3

P_∞ = .4 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 3.59

P_c = 120.00 PSI
T_c = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 149000
λ_∞ = .0685 IN.
RESERVOIR DENSITY =
9.310 X 10^{18} CM^{-3}

4.0 IN. RADIAL

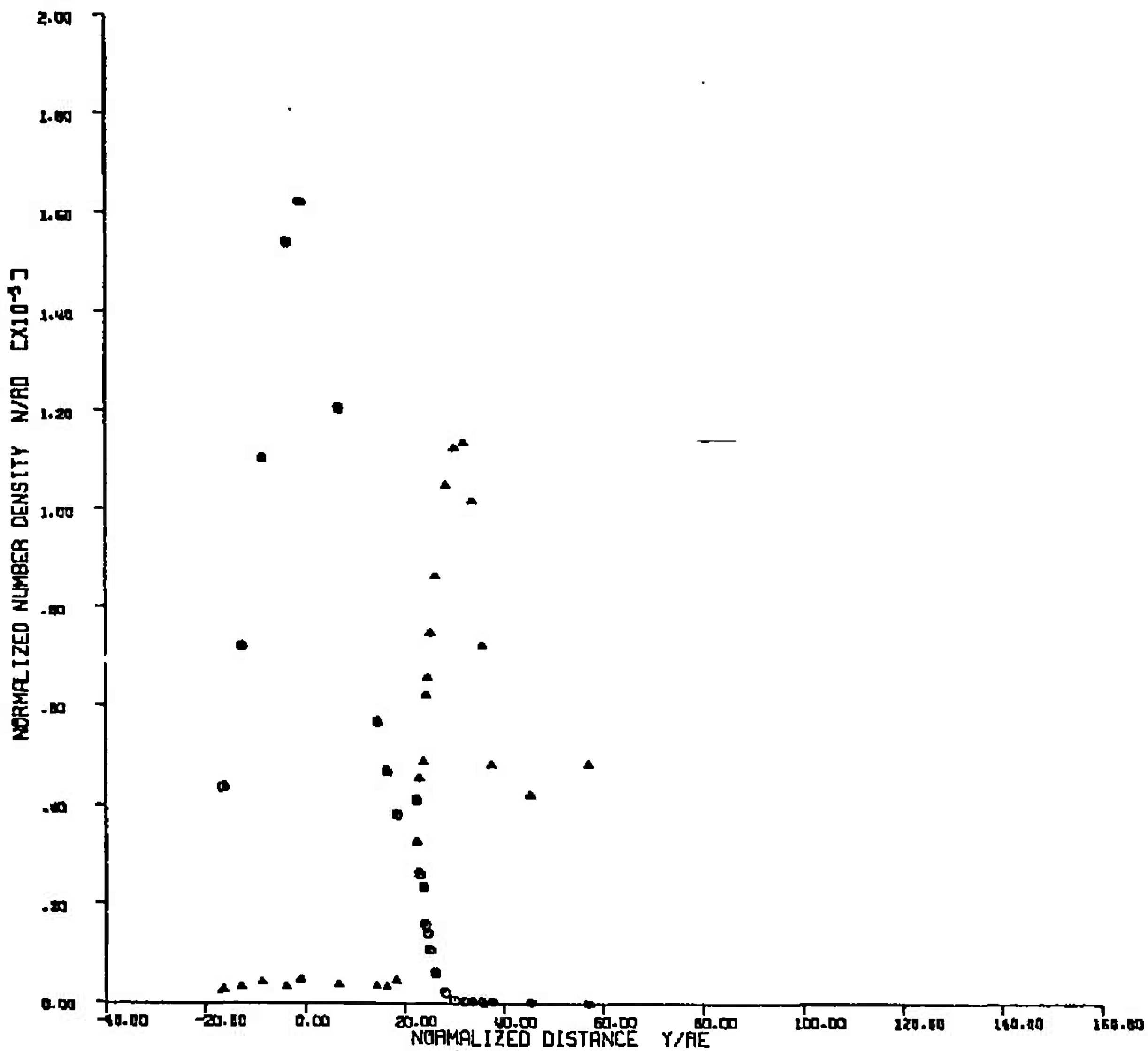

Fig. V-6

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CASE 3

P_∞ = .4 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 3.59

P_c = 120.00 PSI
T_c = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 149000
λ_∞ = .0685 IN.
RESERVOIR DENSITY = 9.310 X 10^{19} CM^{-3}

8.0 IN. RADIAL

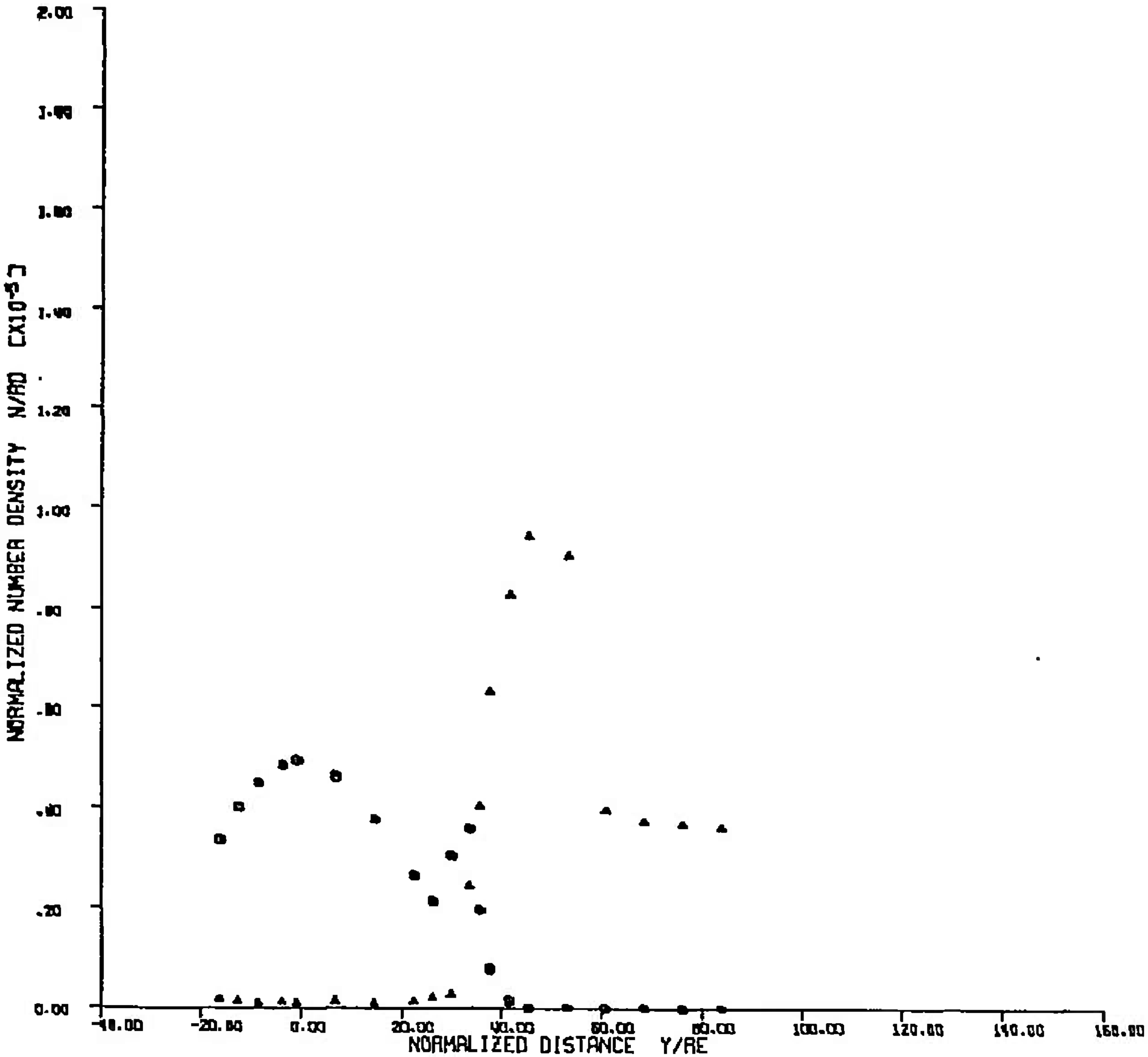

Fig. V-7

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CASE 3

P_∞ = .4 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 3.59

P_t = 120.00 PSI
T_t = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_t/q_∞ = 149000
X_m = -.0685 IN.
RESERVOIR DENSITY =
9.310 X 10^{18} CM^{-3}

12.1 IN. RADIAL

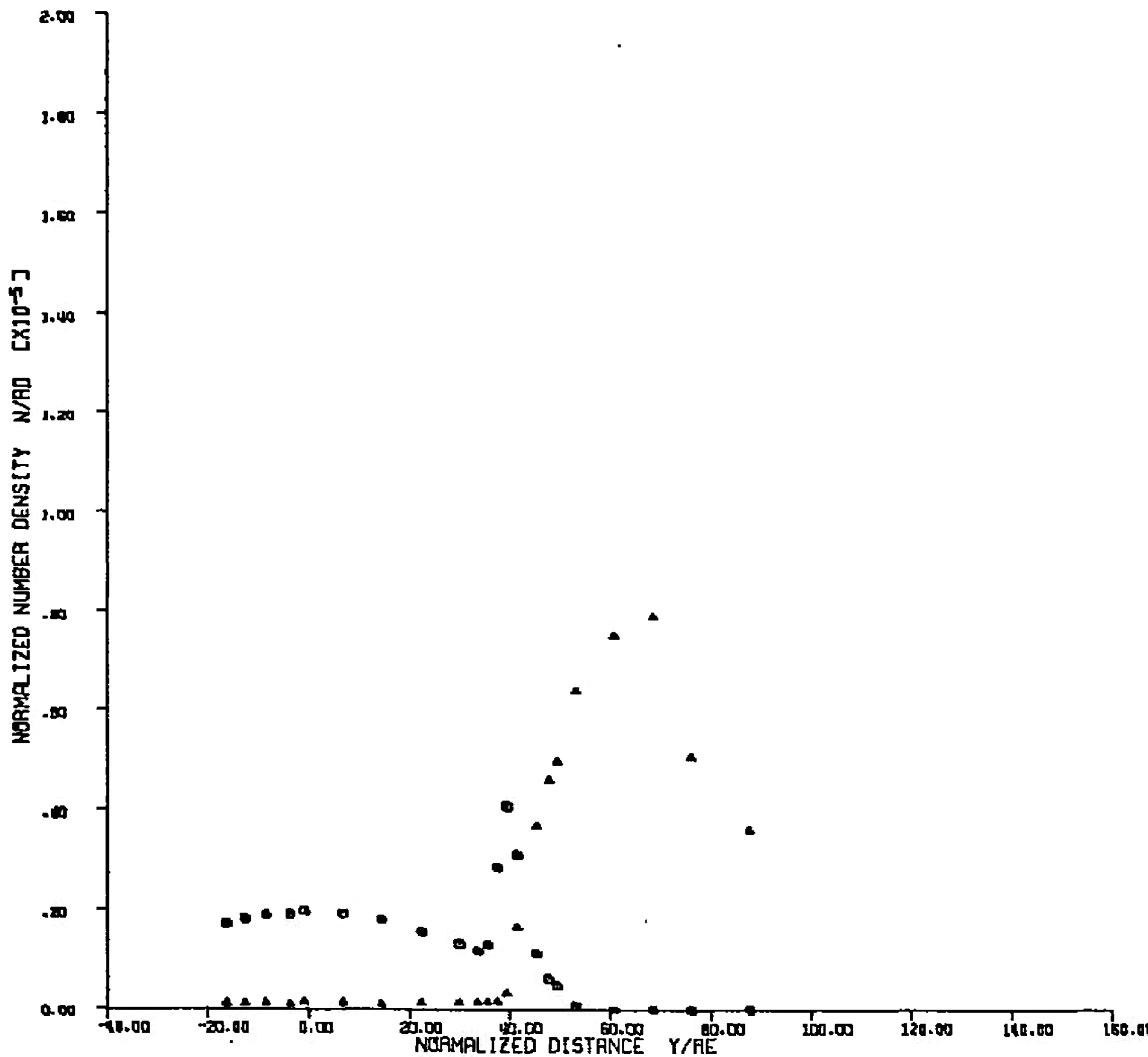

Fig. V-8

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CASE 3

P_s = .7 TORR
T_s = 280° K
NITROGEN
M_∞ = 3.65

P_t = 21.00 PSI
T_t = 686° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_t/q_∞ = 14600
λ_∞ = .0413 IN.
RESERVOIR DENSITY = 1.530 X 10^{19} CM^{-3}

CENTERLINE AXIAL

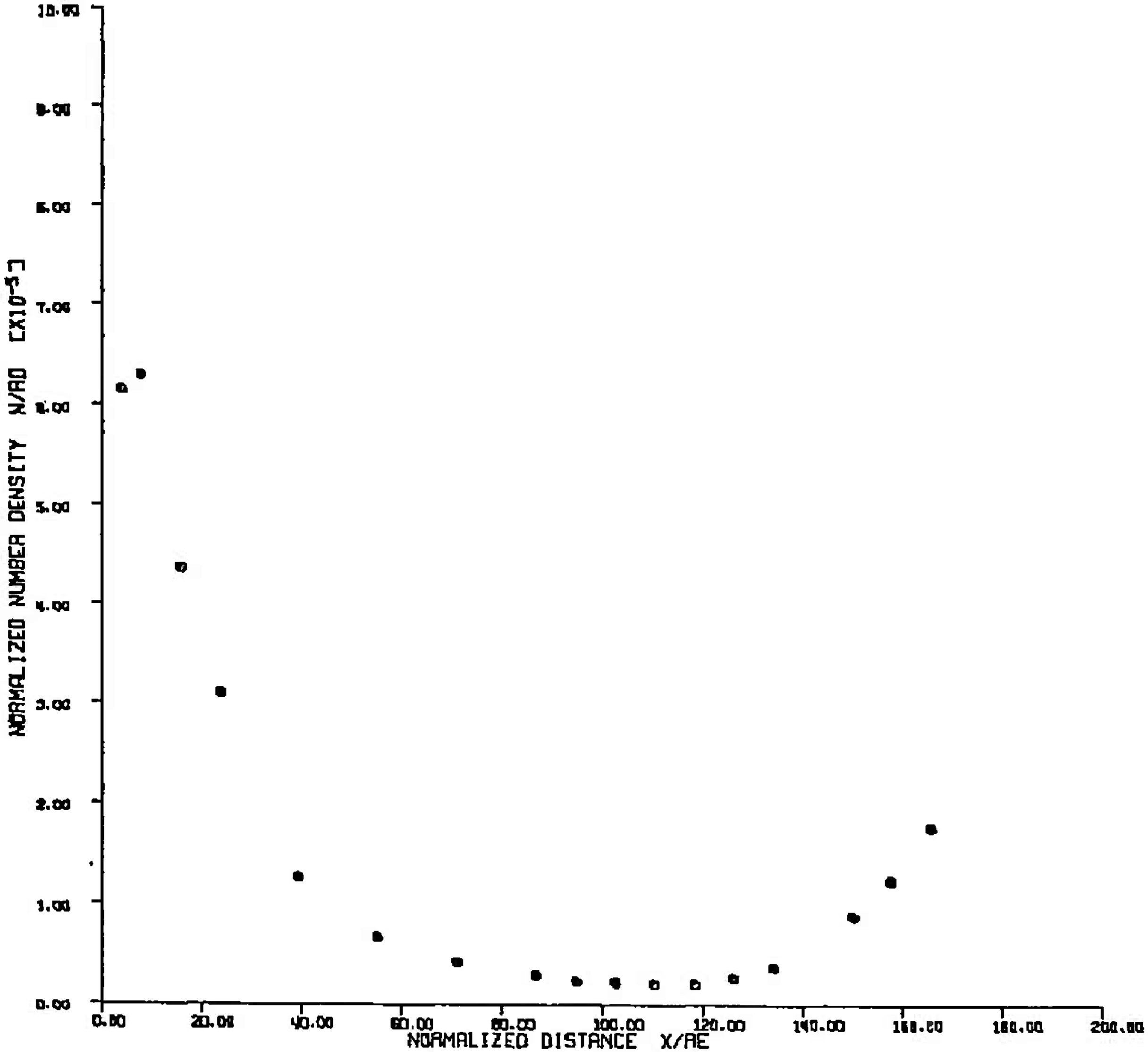

Fig. V-9

PACE 10
5/12/70
CASE 3

P_a =.7 TORR
T_a =280° K
NITROGEN
M_∞ = 3.65

P_c = 21.00 PSI
T_c =686° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_p = .1243 IN.
P_c/q_∞ = 14600
λ_∞ = .0413 IN.
RESERVOIR DENSITY =
1.530 X 10^{19} CM^{-3}

4.0 IN. RADIAL

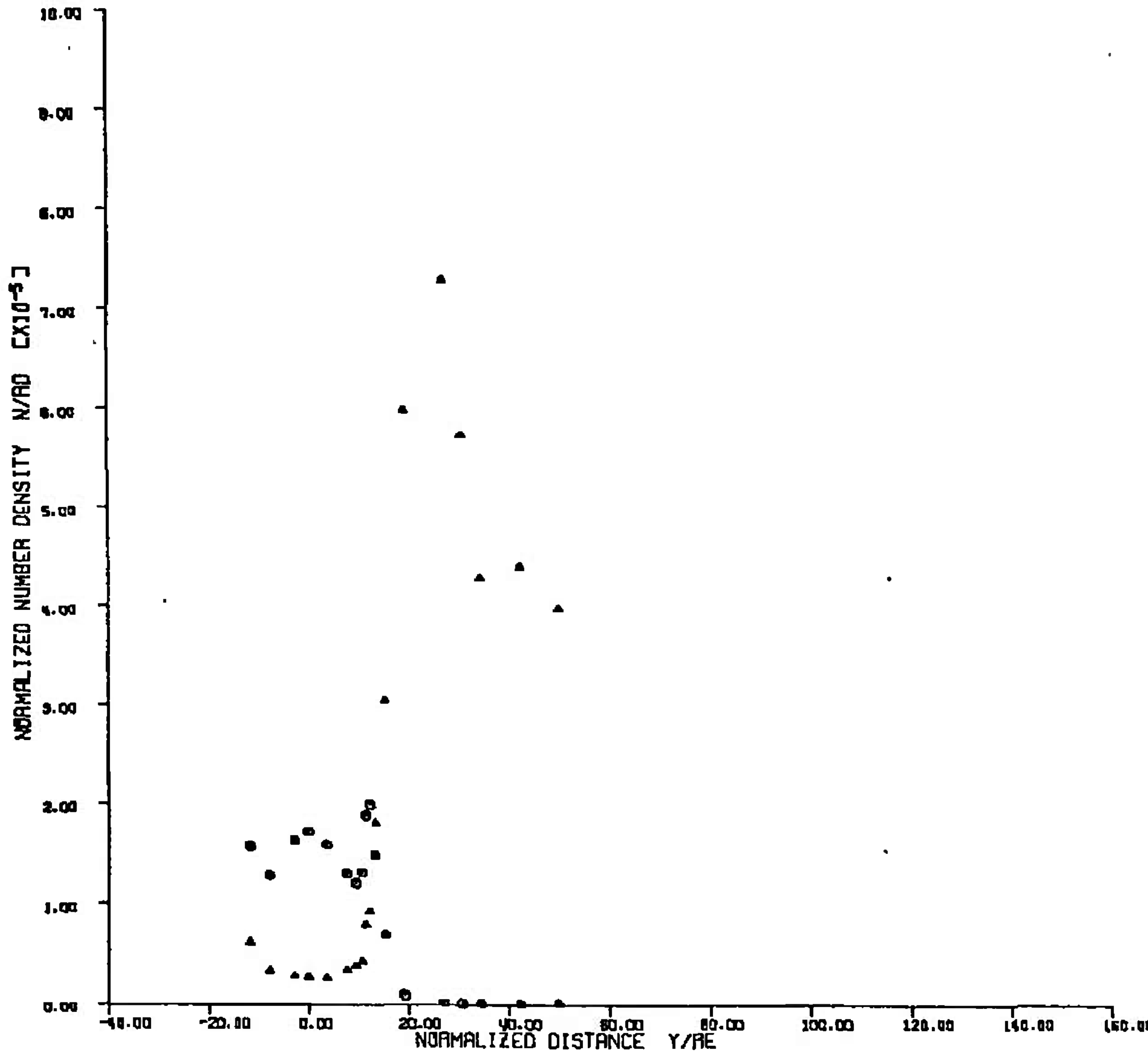

Fig. V-10

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CASE 3

P_∞ = .7 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 3.45

P_E = 21.00 PSI
T_E = 686° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_E/q_∞ = 14600
λ_∞ = .0413 IN.
RESERVOIR DENSITY =
1.530 X 10^{19} CM^{-3}

6.0 IN. RADIAL

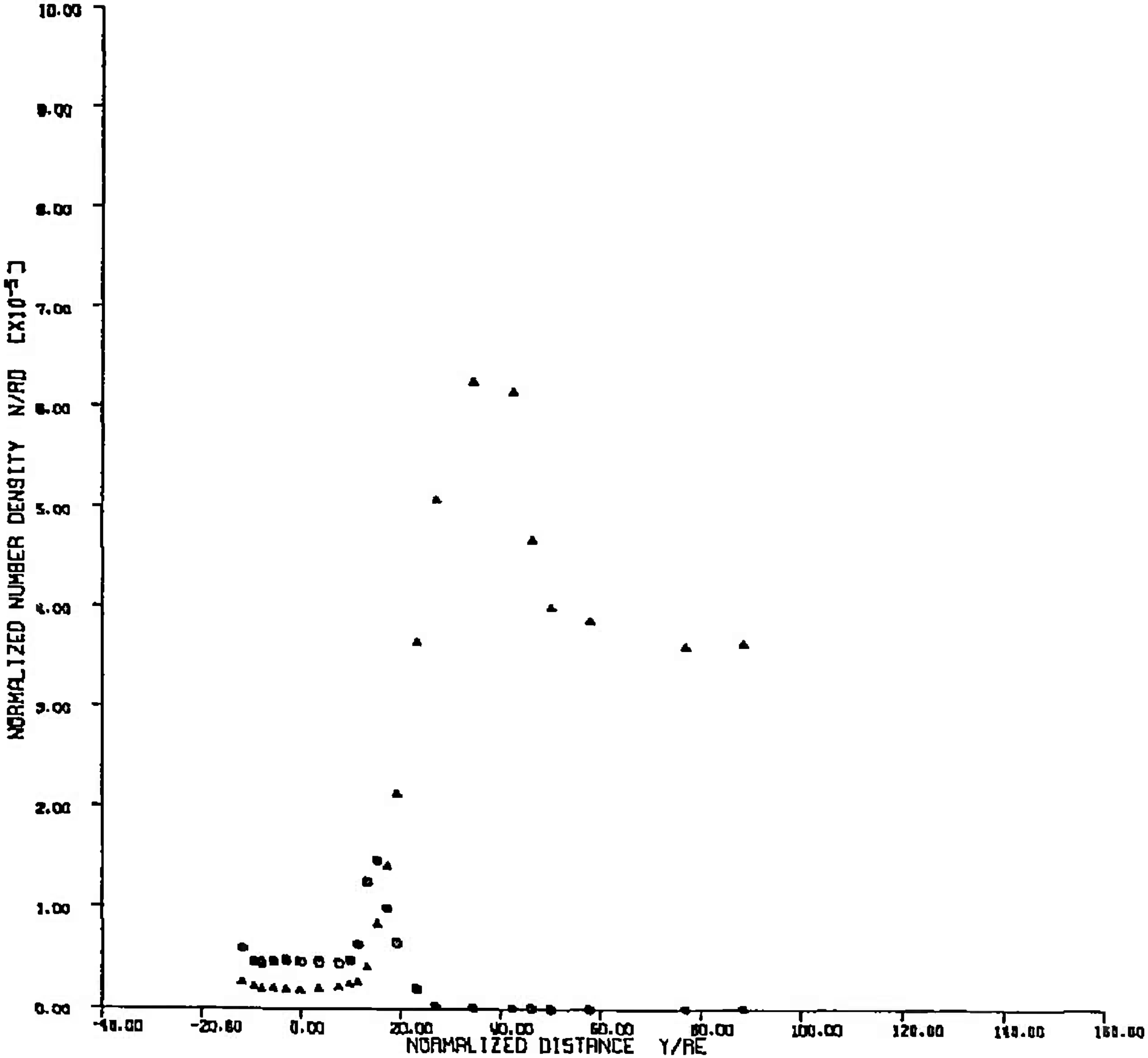

Fig. V-11

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CASE 3

P_∞ = .7 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 3.[illegible]5

P_c = 21.00 PSI
T_c = 666° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 14600
λ_∞ = .0413 IN.
RESERVOIR DENSITY = 1.530 X $10^{[illegible]}$ CM^{-3}

12.1 IN. RADIAL

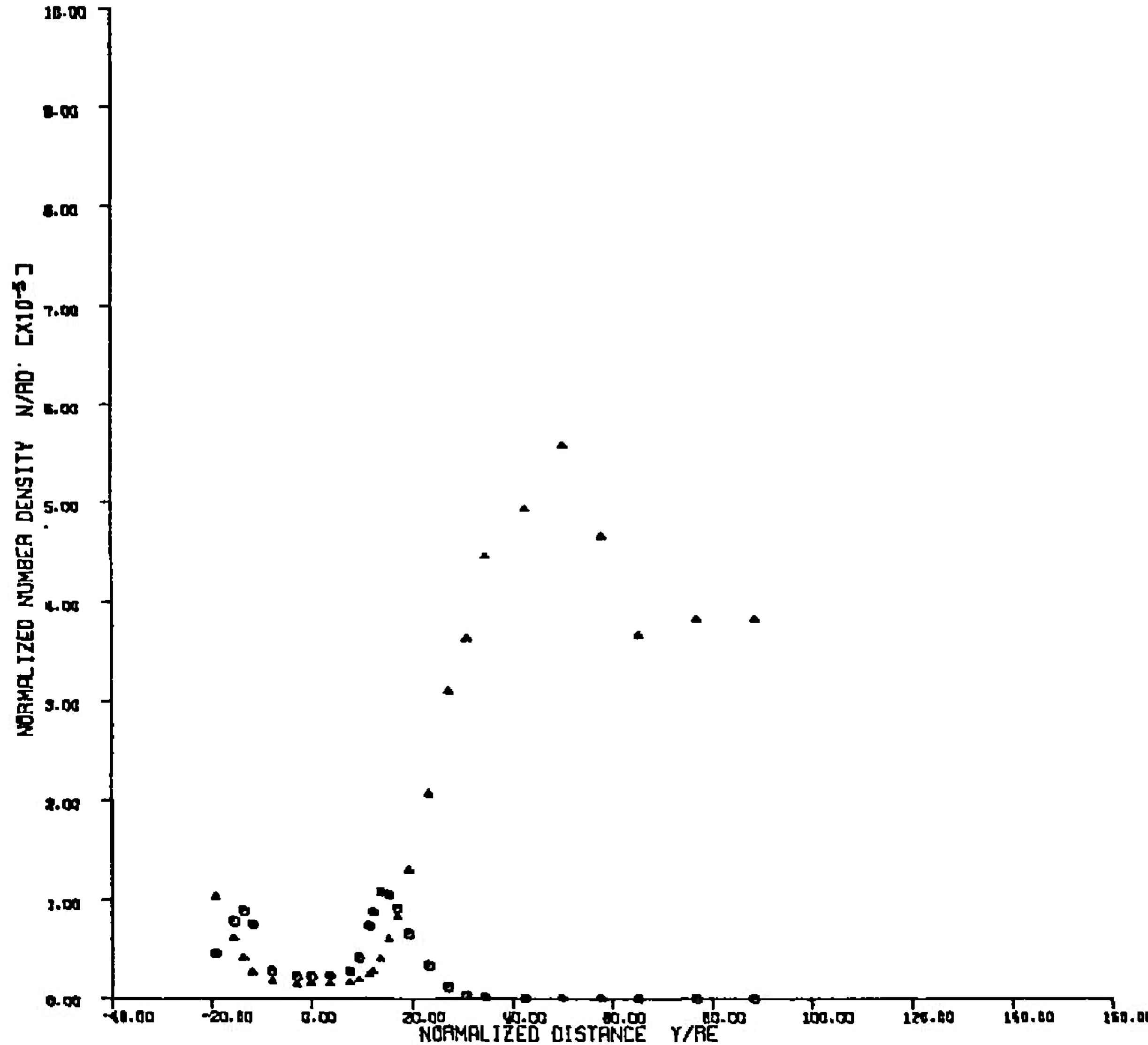

Fig. V-12

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CASE 3

P_a = .6 TORR
T_a = 280° K
NITROGEN
M_∞ = 3.64

P_c = 170.00 PSI
T_c = 700° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/P_∞ = 146000
λ_∞ = .0476 IN.
RESERVOIR DENSITY =
1.210 X 10^{19} CM^{-3}

CENTERLINE AXIAL

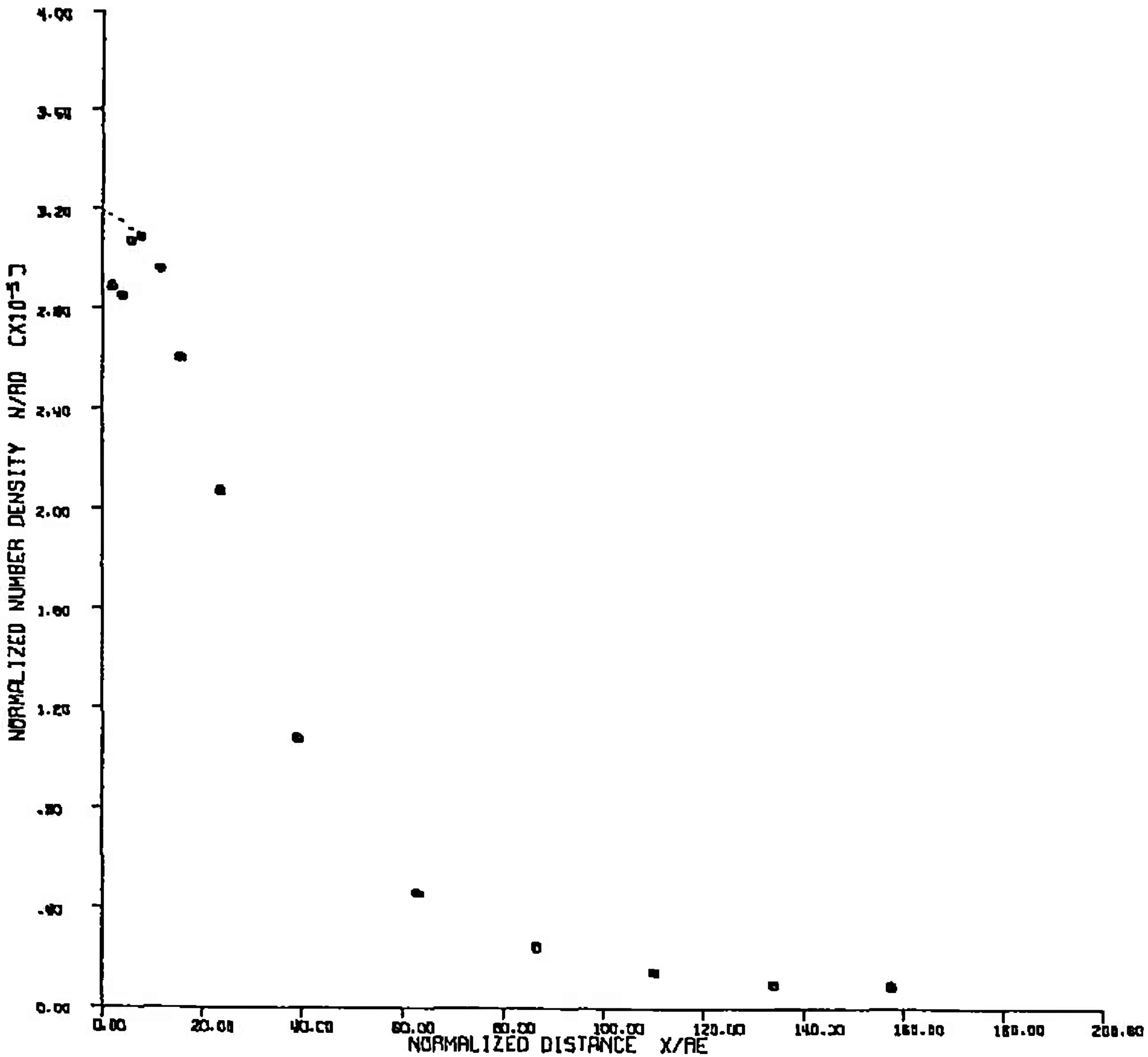

Fig. V-13

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CASE 3

P_∞ = .6 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 3.64

P_c = 170.00 PSI
T_c = 700° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 146000
λ_∞ = .0476 IN.
RESERVOIR DENSITY =
1.210 X 10[illegible] CM[illegible]

4.0 IN. RADIAL

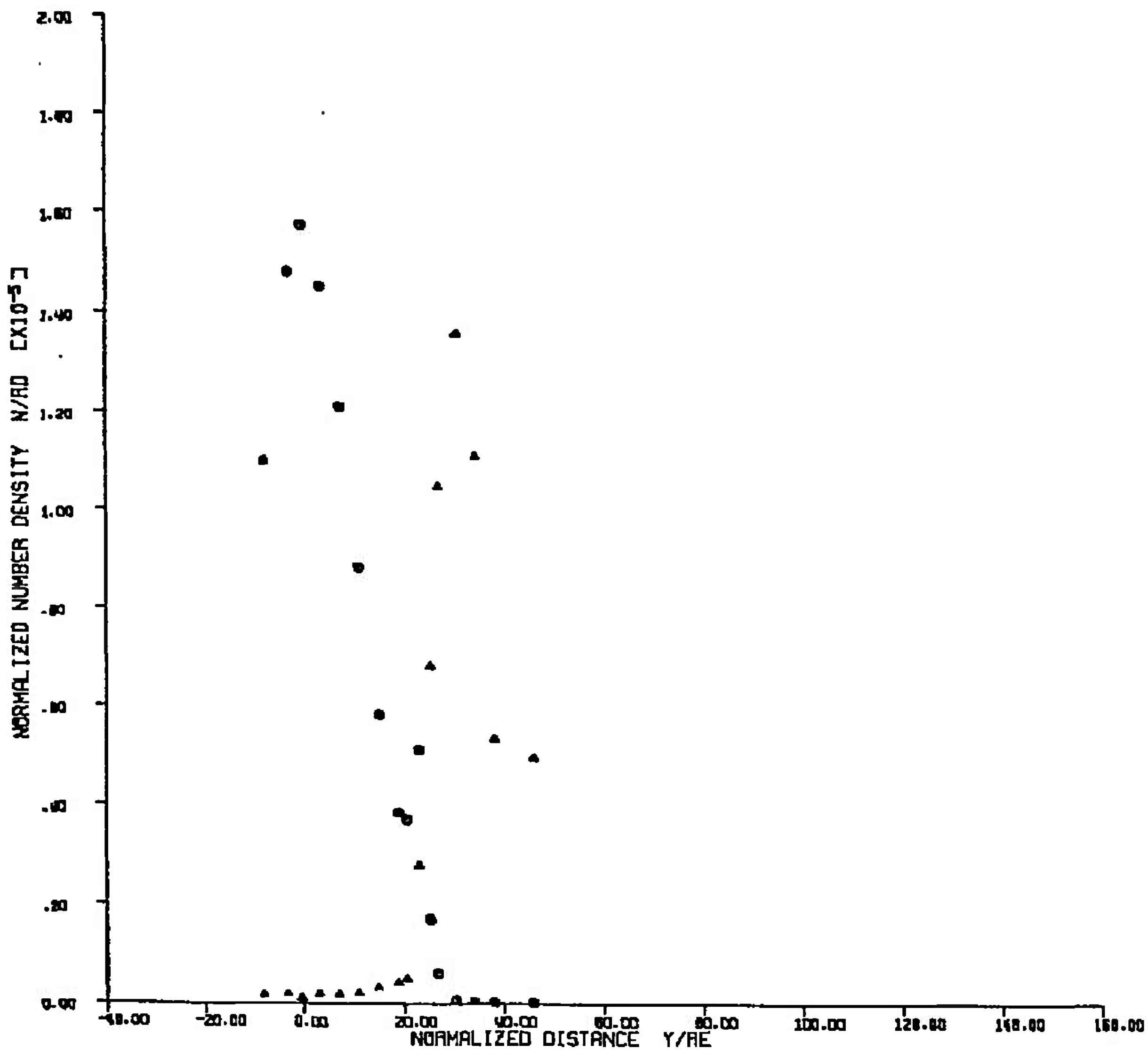
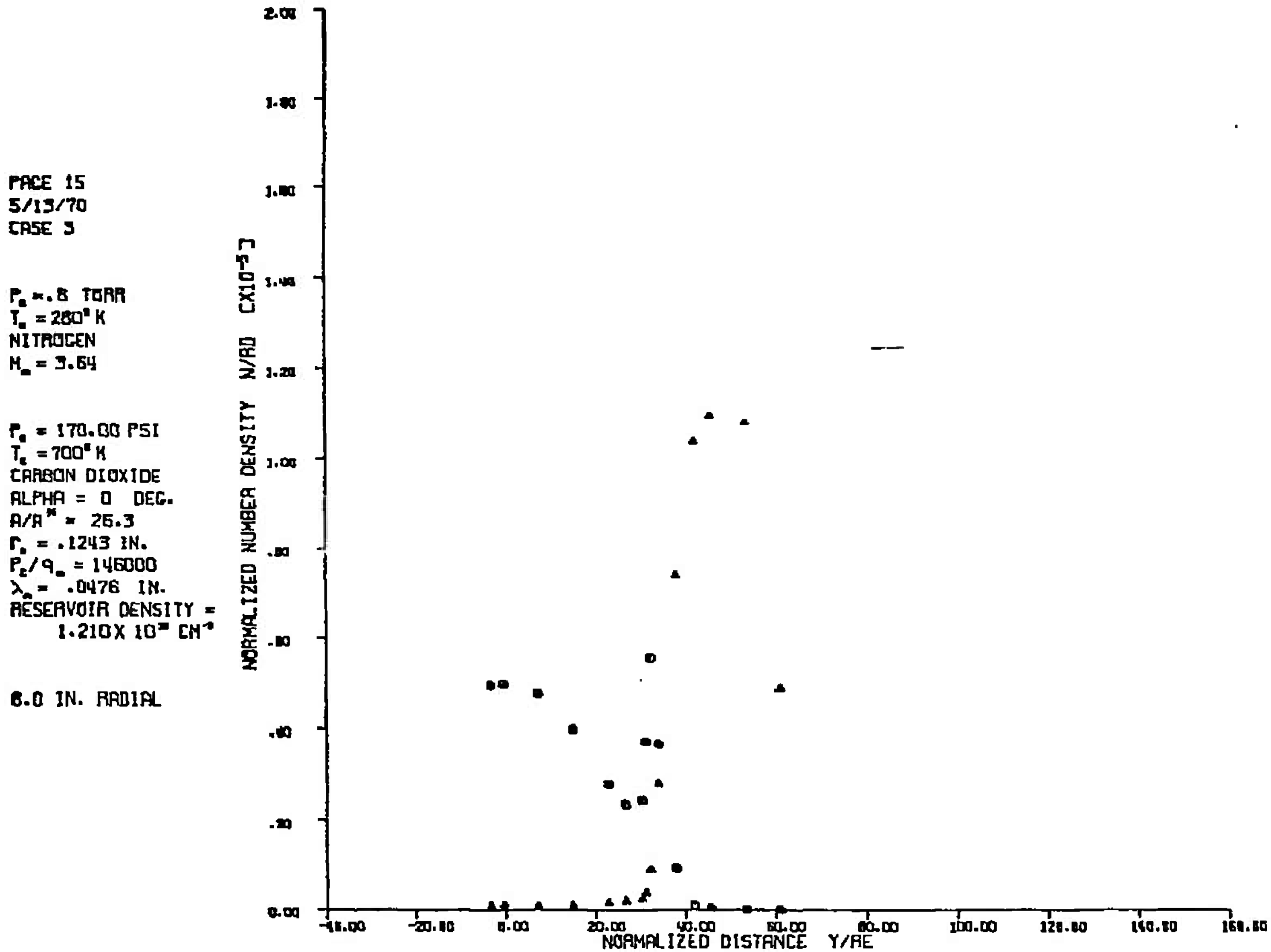


Fig. V-14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CASE 3
NITROGEN
M = 3.64
CARBON DIOXIDE
ALPHA = 0 DEG.
8.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO
NORMALIZED DISTANCE Y/RE
0.00
.20
.40
.60
.80
1.00
1.20
1.40
1.60
1.80
2.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00

Fig. V-15

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CASE 3

P_∞ = .6 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 3.64

P_c = 170.00 PSI
T_c = 700° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 146000
λ_∞ = .0476 IN.
RESERVOIR DENSITY =
1.210 X 10^{20} CM^{-3}

12.1 IN. RADIAL

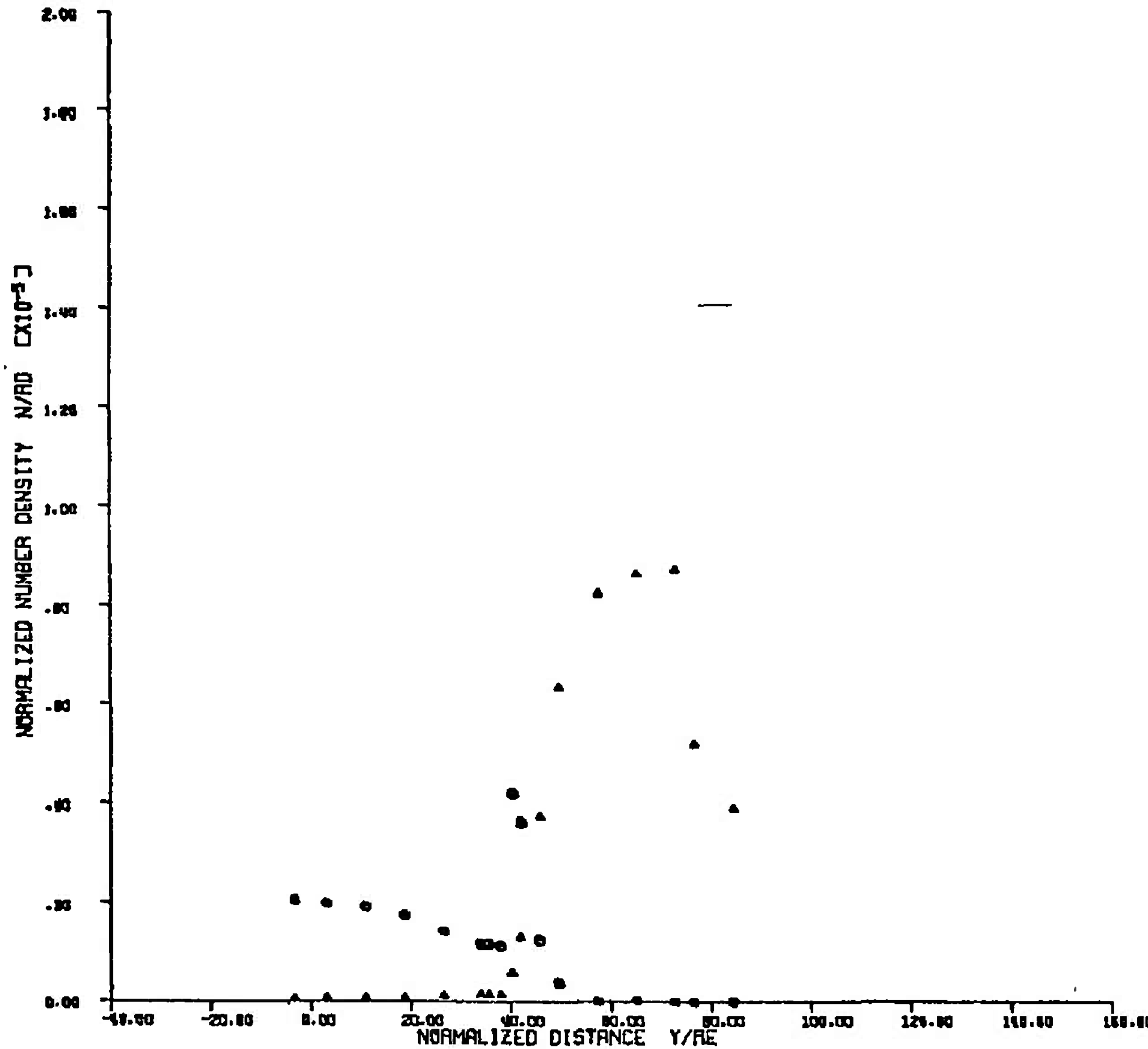

Fig. V-16

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CASE 4

P_o = 3.0 TORR
T_o = 280° K
NITROGEN
M_∞ = 7.80

P_c = 0.00 PSI

ALPHA = 0 DEG.
A/A^* = 0.0
r_o = ~~0.0000~~IN = .1213
P_c/q_∞ = 0
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
1.040 X 10^{17} CM^{-3}

6.0 IN. RADIAL

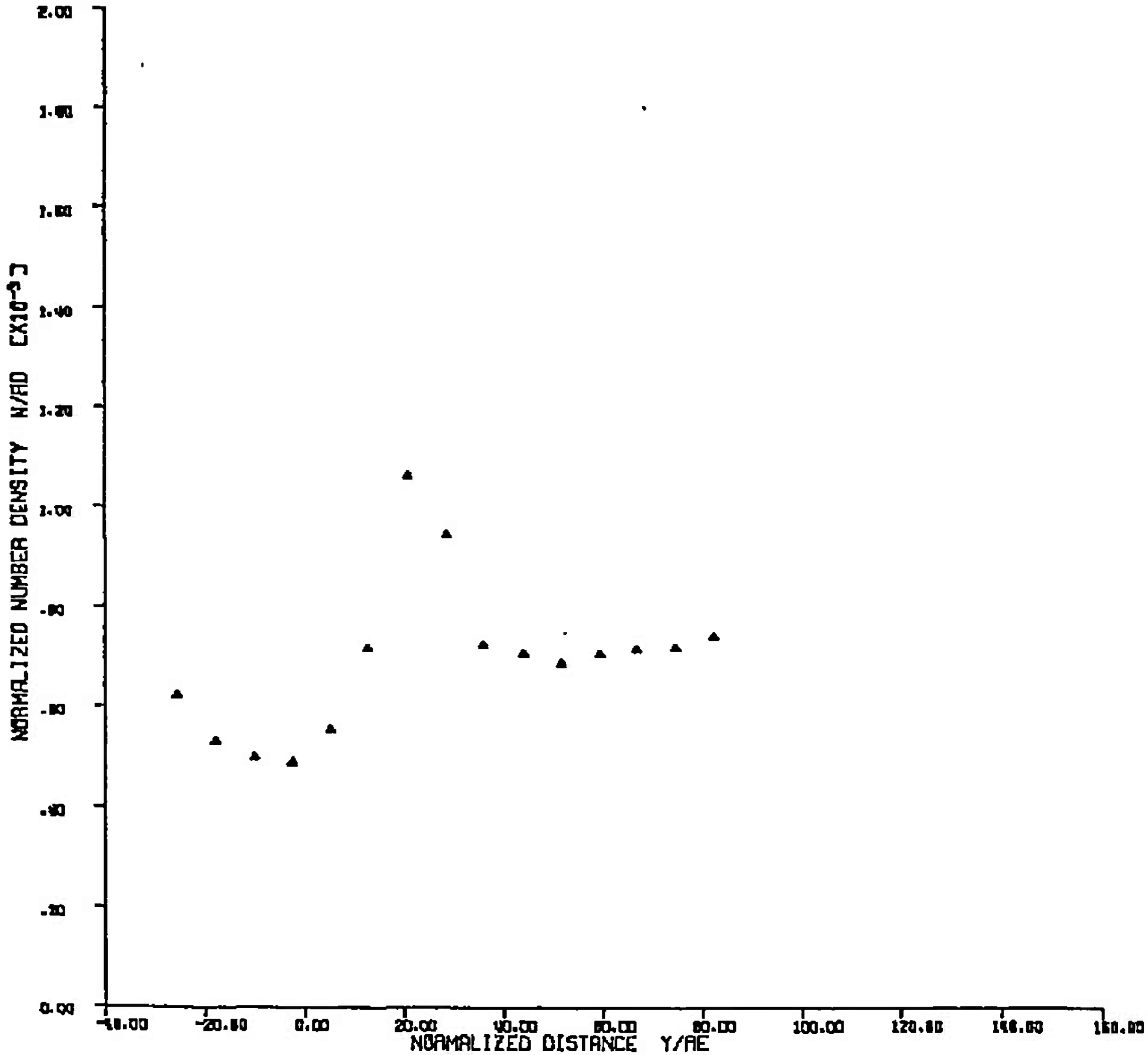

Fig. V-17

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CASE 4

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_c = 10.00 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
8.480 X 10[illegible] CM^{-3}

CENTERLINE AXIAL

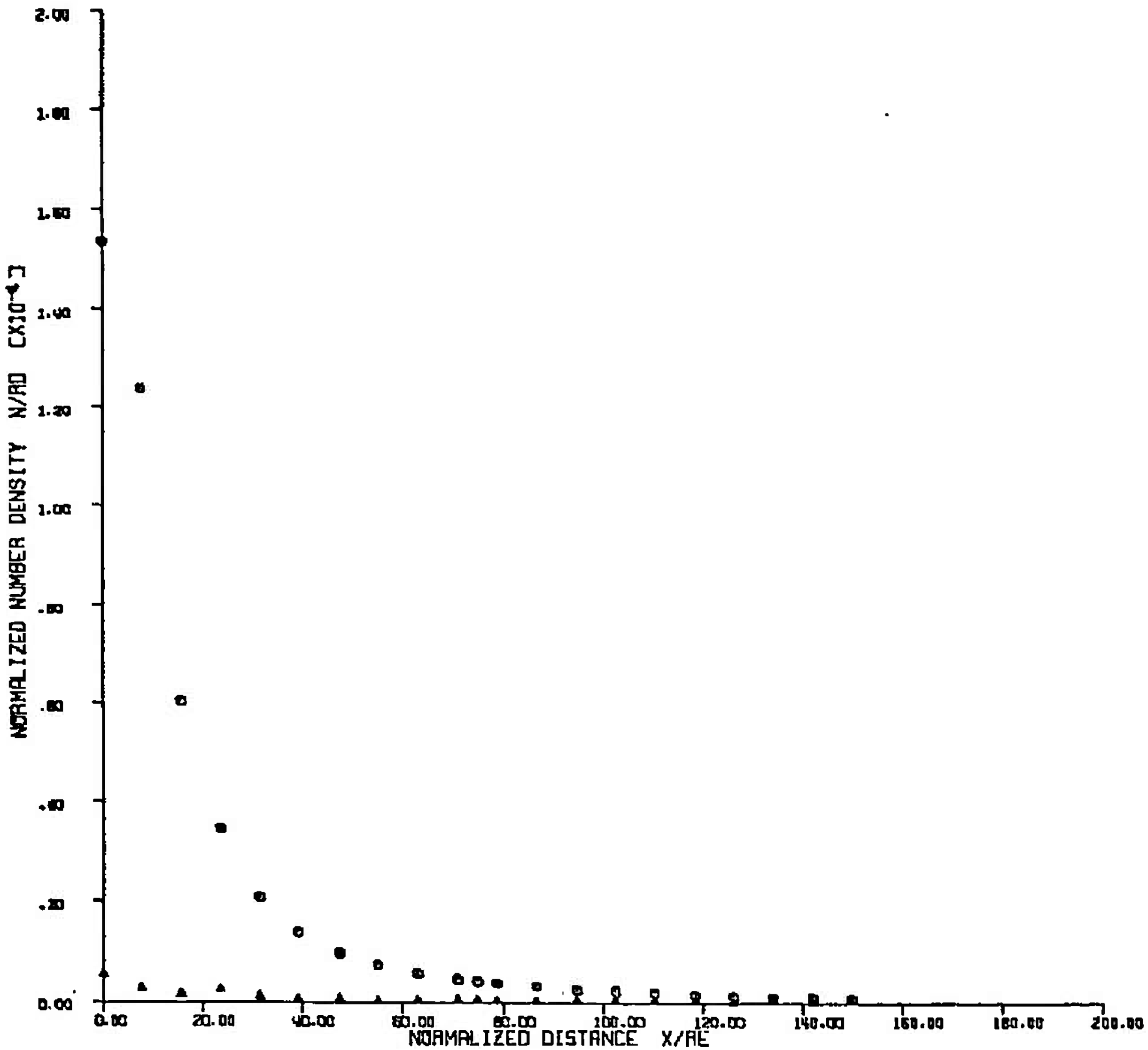

Fig. V-18

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CASE 4

P_0 = 3.0 TORR
T_0 = 280° K
NITROGEN
M_∞ = 7.80

P_c = 10.00 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
8.460 X 10[illegible] CM[illegible]

CENTERLINE AXIAL

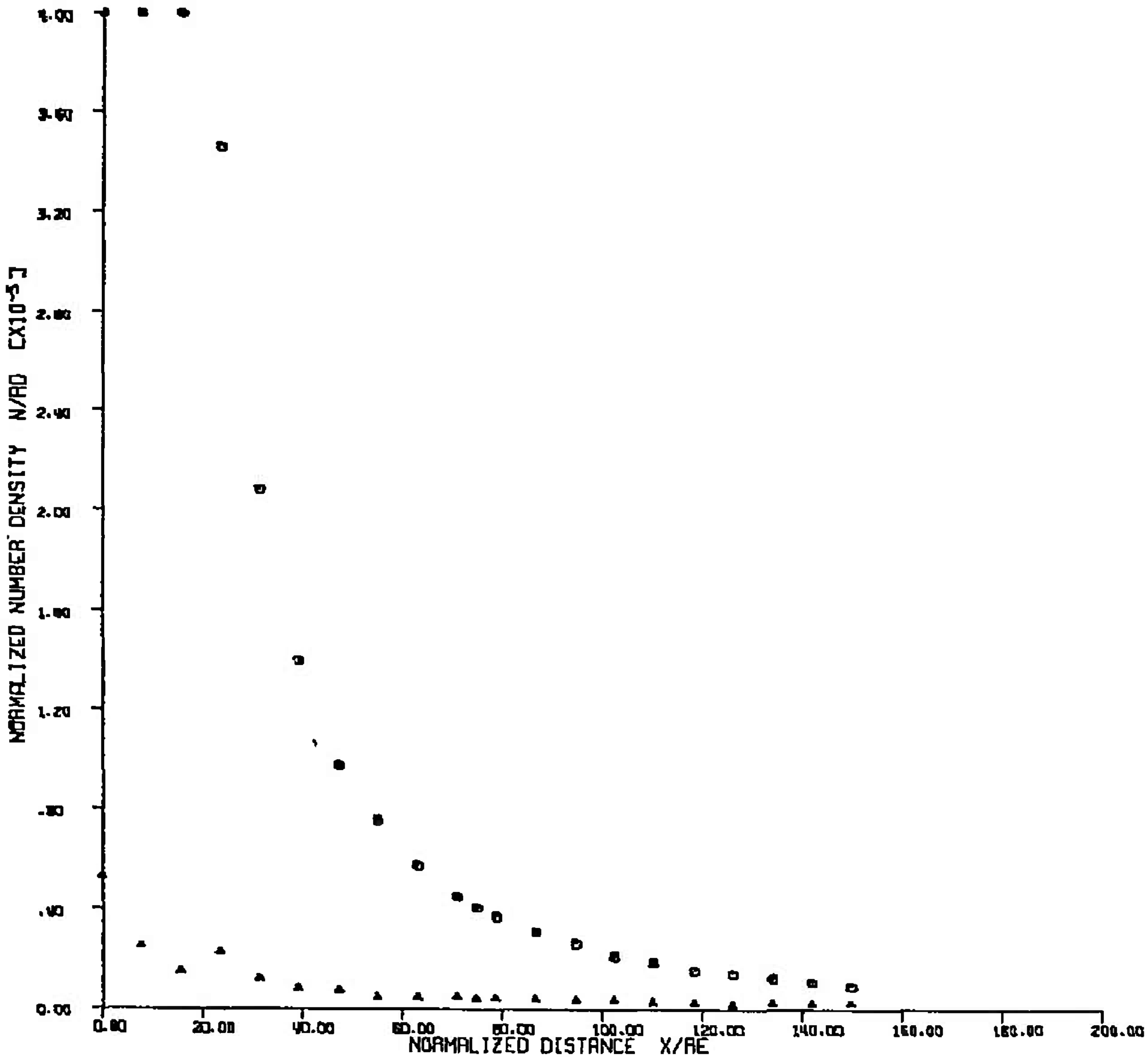


Fig. V-19

PACE 19
5/20/70
CASE 4

P_o = 3.0 TORR
T_o = 280° K
NITROGEN
M_∞ = 7.80

P_c = 10.00 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEC.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
8.480 X 10^{19} CM^{-3}

4.0 IN. RADIAL

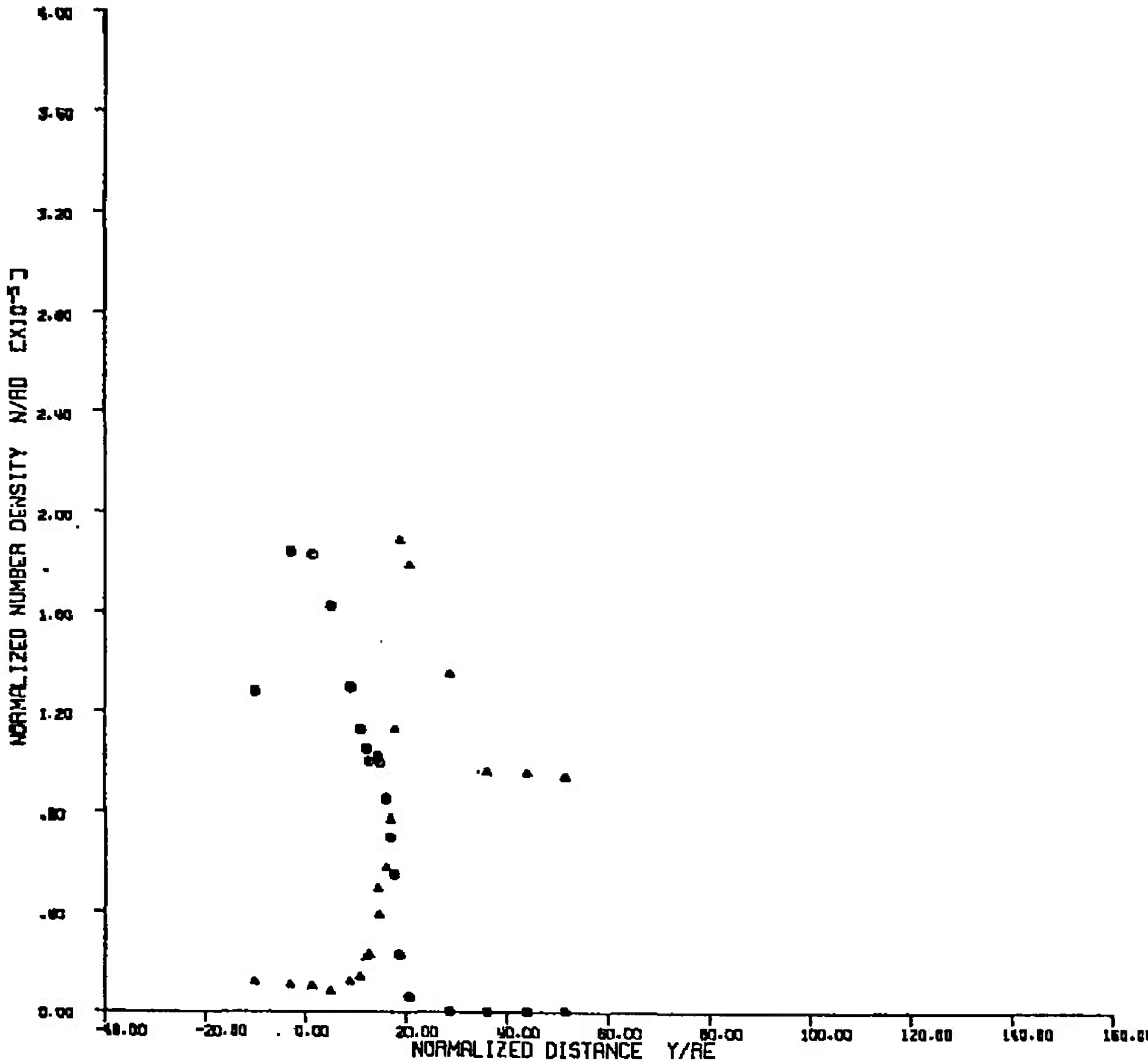
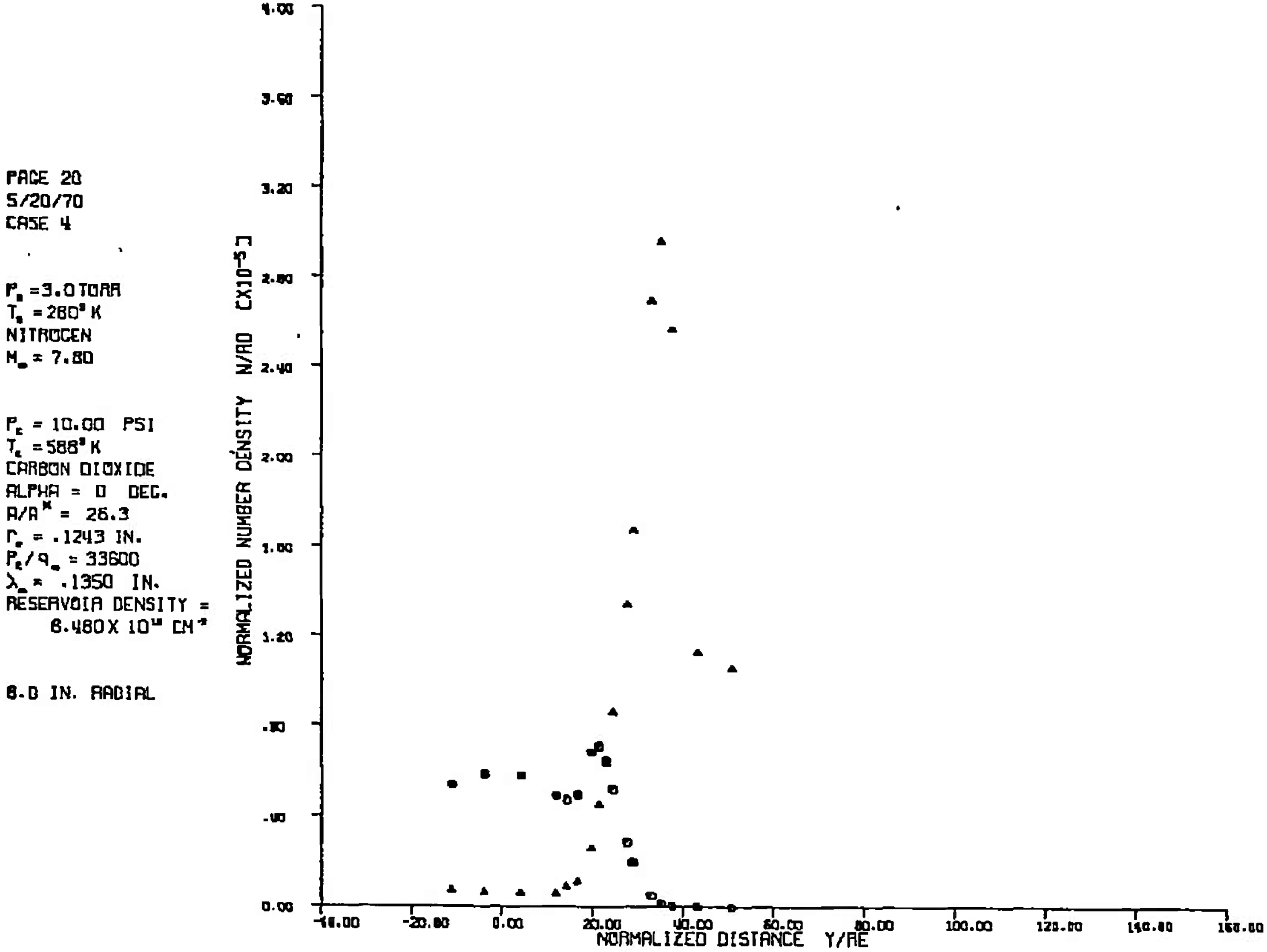


Fig. V-20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5/20/70
CASE 4
P_∞ =3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80
P_c = 10.00 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
6.480 X 10^{19} CM^{-3}
8.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO [X10^-3]
4.00
3.60
3.20
2.80
2.40
2.00
1.60
1.20
.80
.40
0.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
NORMALIZED DISTANCE Y/RE

Fig. V-21

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CASE 4

P_0 = 3.0 TORR
T_0 = 280° K
NITROGEN
M_∞ = 7.80

P_c = 10.00 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY = 8.480 X 10^{18} CM^{-3}

12.0 IN. RADIAL

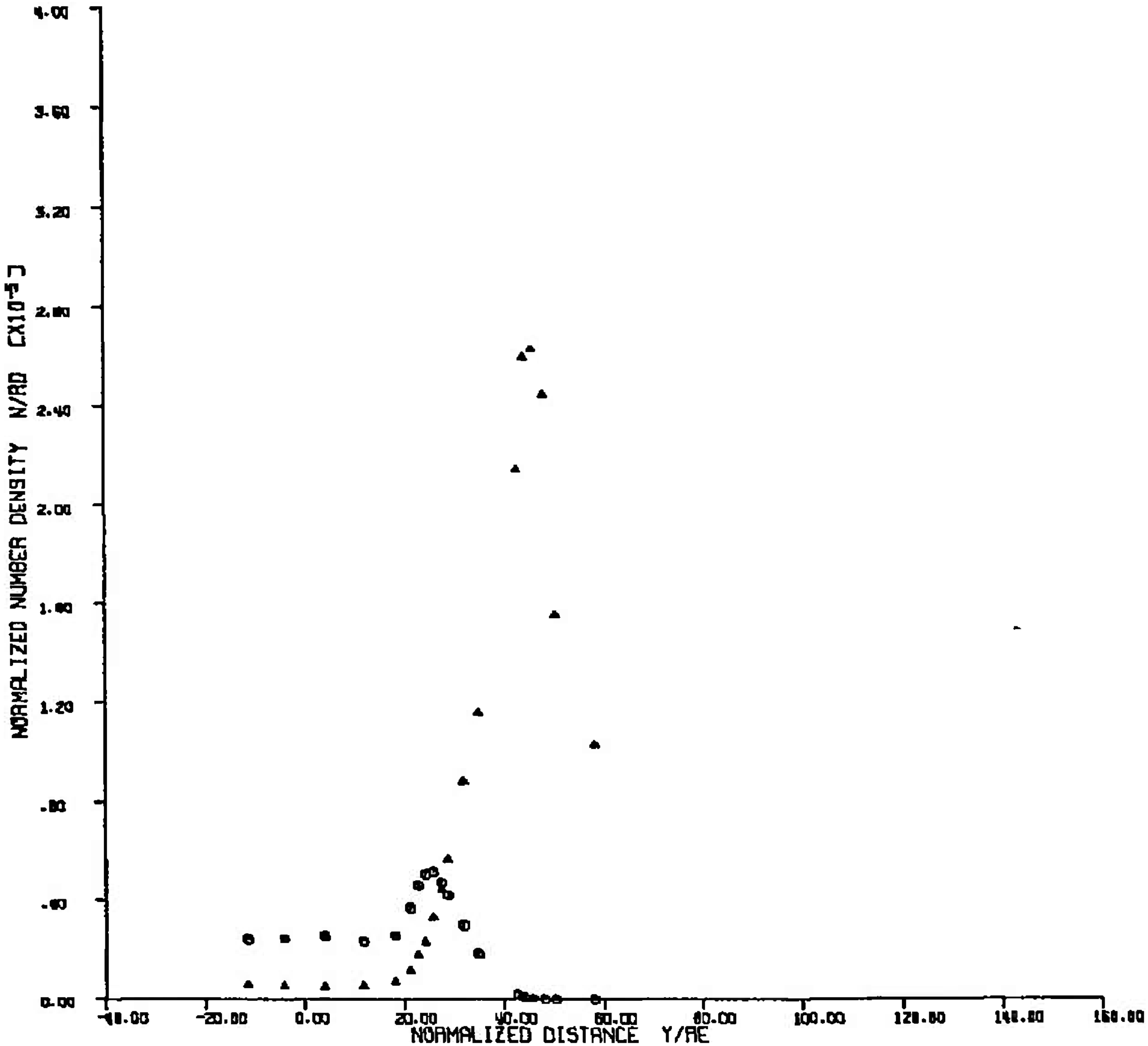

Fig. V-22

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CASE 4

P_{∞} = 3.0 TORR
T_{∞} = 280° K
NITROGEN
M_{∞} = 7.80

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_* = .1243 IN.
P_c/q_{∞} = 216000
λ_{∞} = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10[illegible] CM[illegible]

CENTERLINE AXIAL

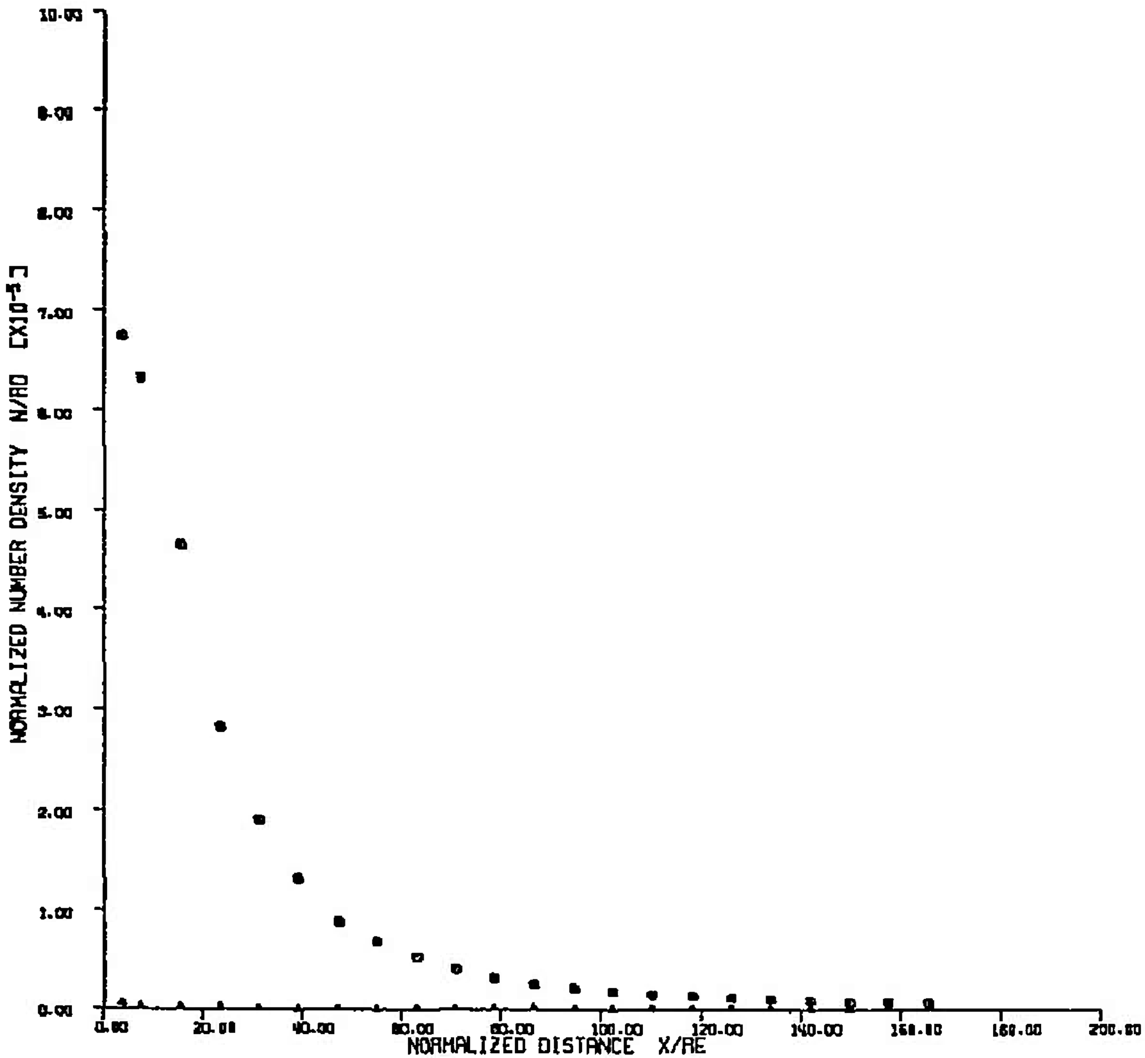

Fig. V-23

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CASE 4

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10^{19} CM^{-3}

CENTERLINE AXIAL

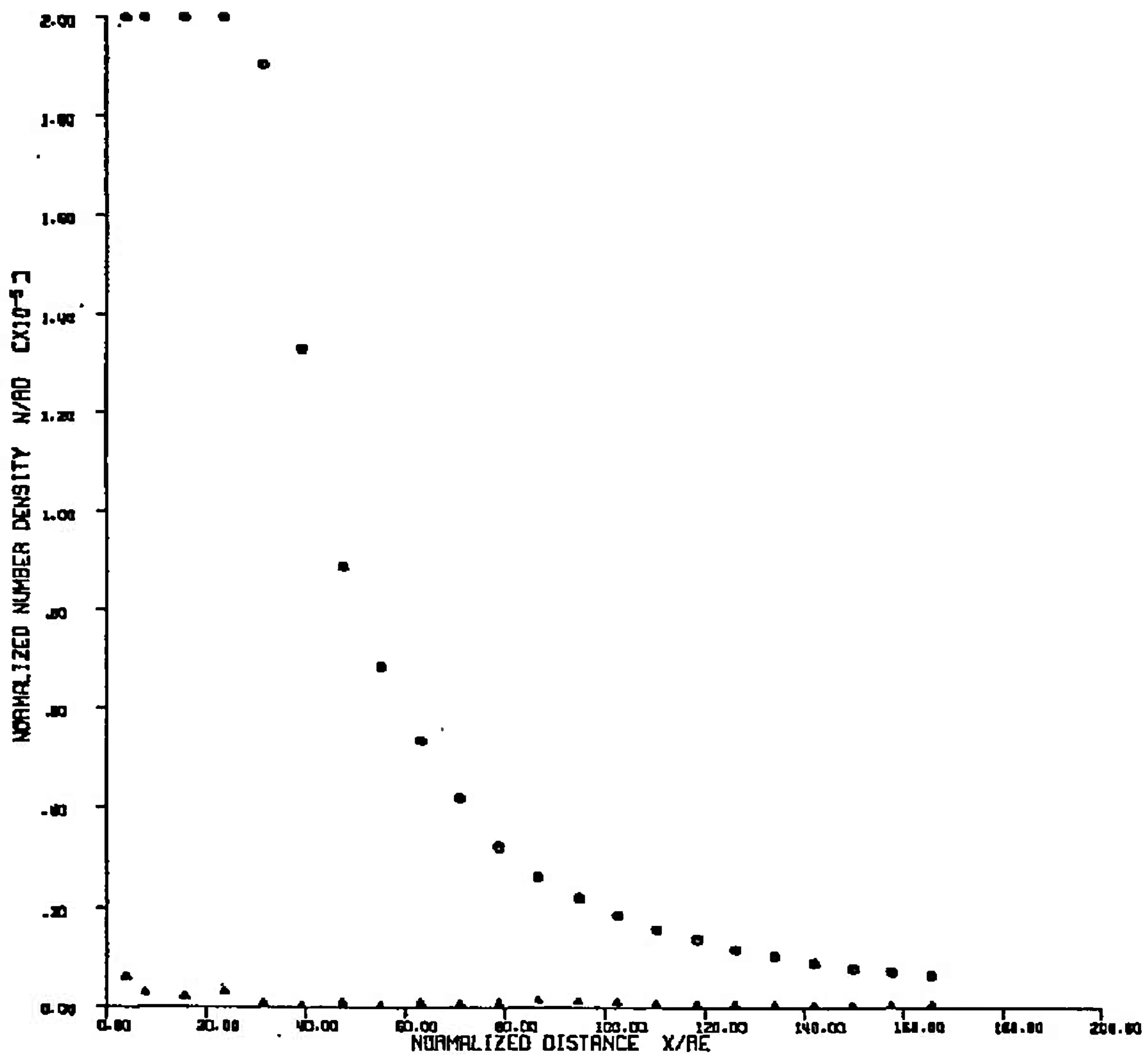

Fig. V-24

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CASE 4

P_0 = 3.0 TORR
T_0 = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10^{18} CM^{-3}

4.0 IN. RADIAL

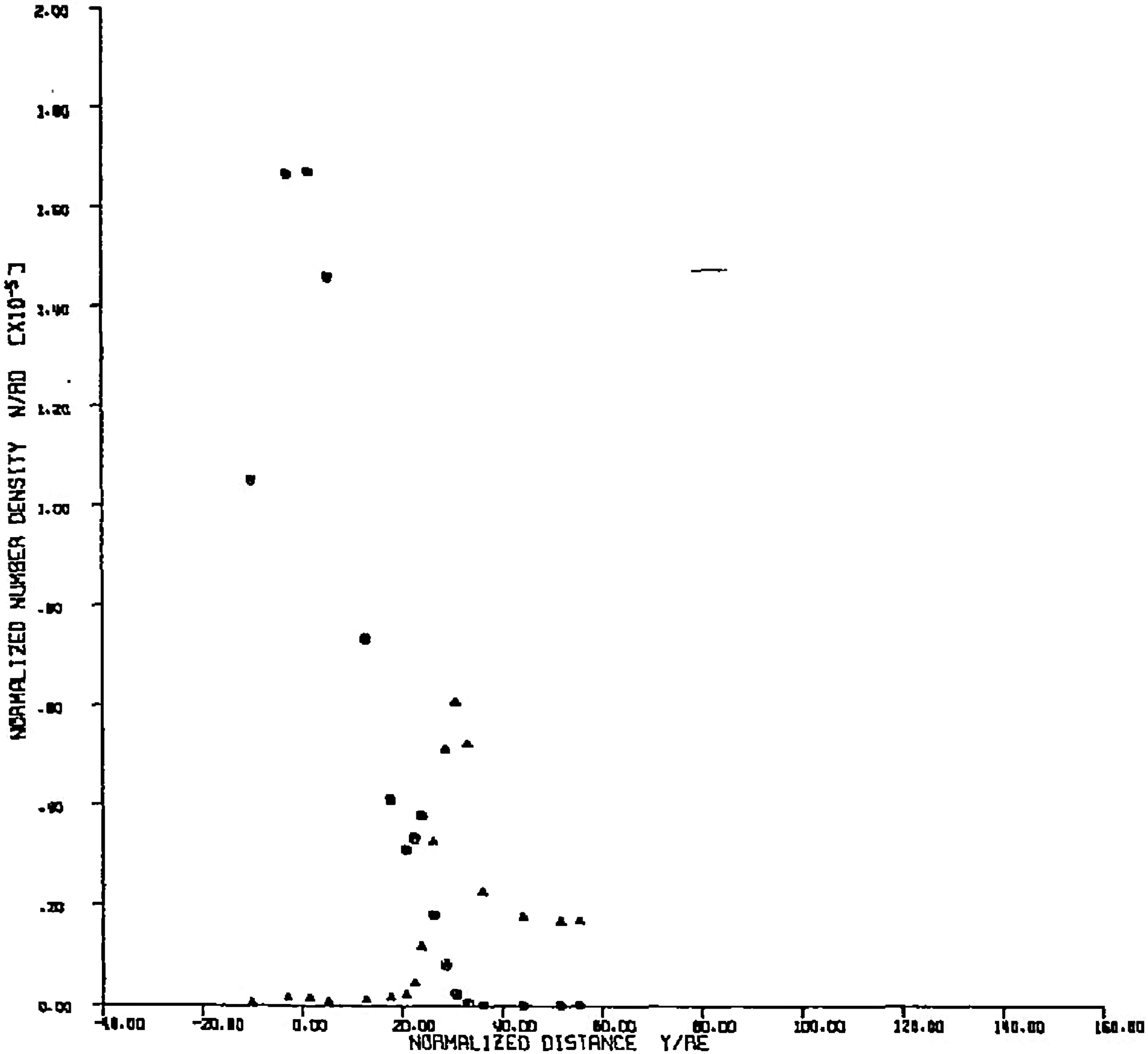

Fig. V-25

PACE 2N
5/20/70
CASE 4

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10^{18} CM^{-3}

8.0 IN. RADIAL

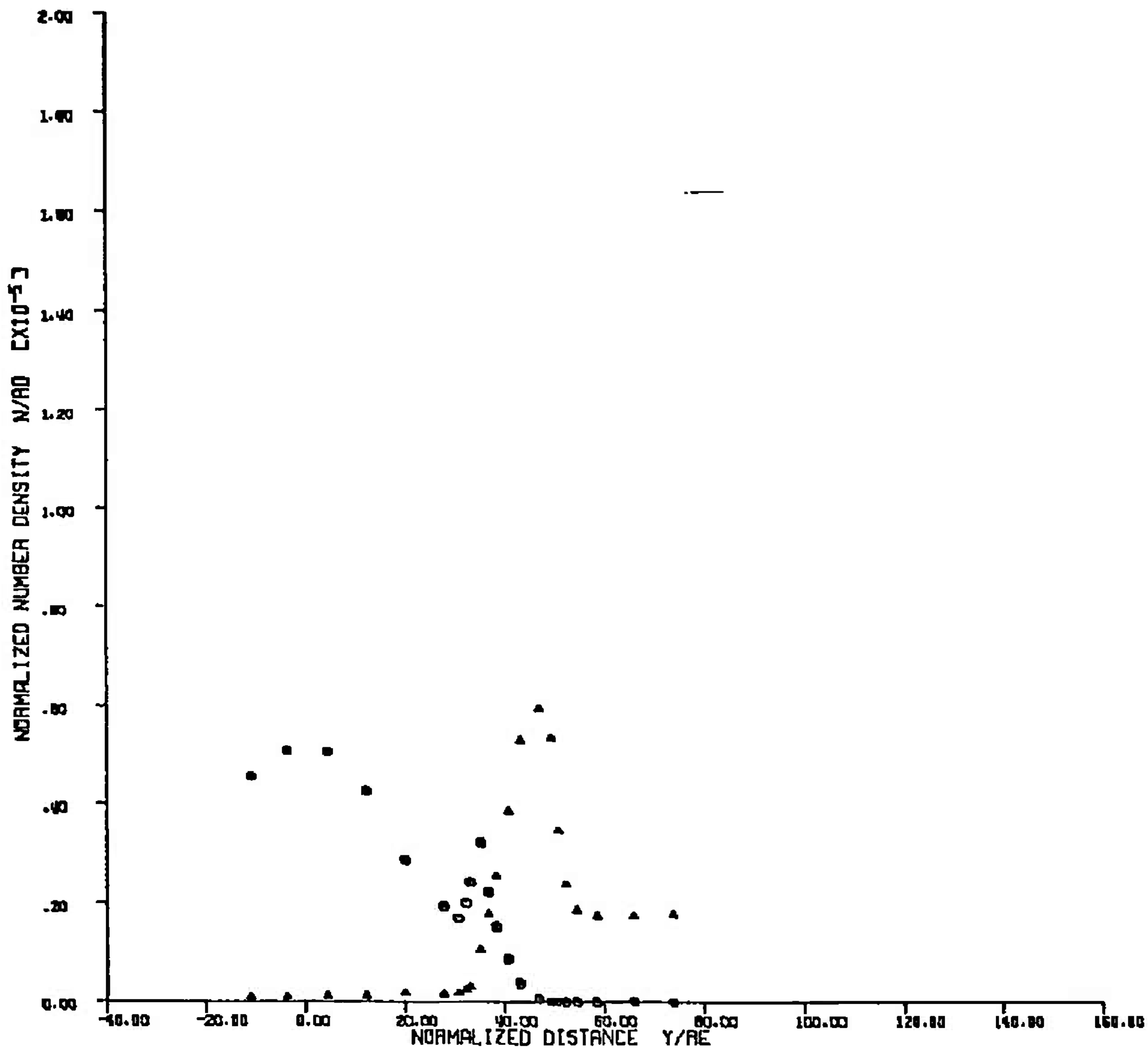

Fig. V-26

PACE 24.
5/20/70
CASE 4

P_0 =3.0 TORR
T_0 =280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c =588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10^{19} CM^{-3}

8.0 IN. RADIAL

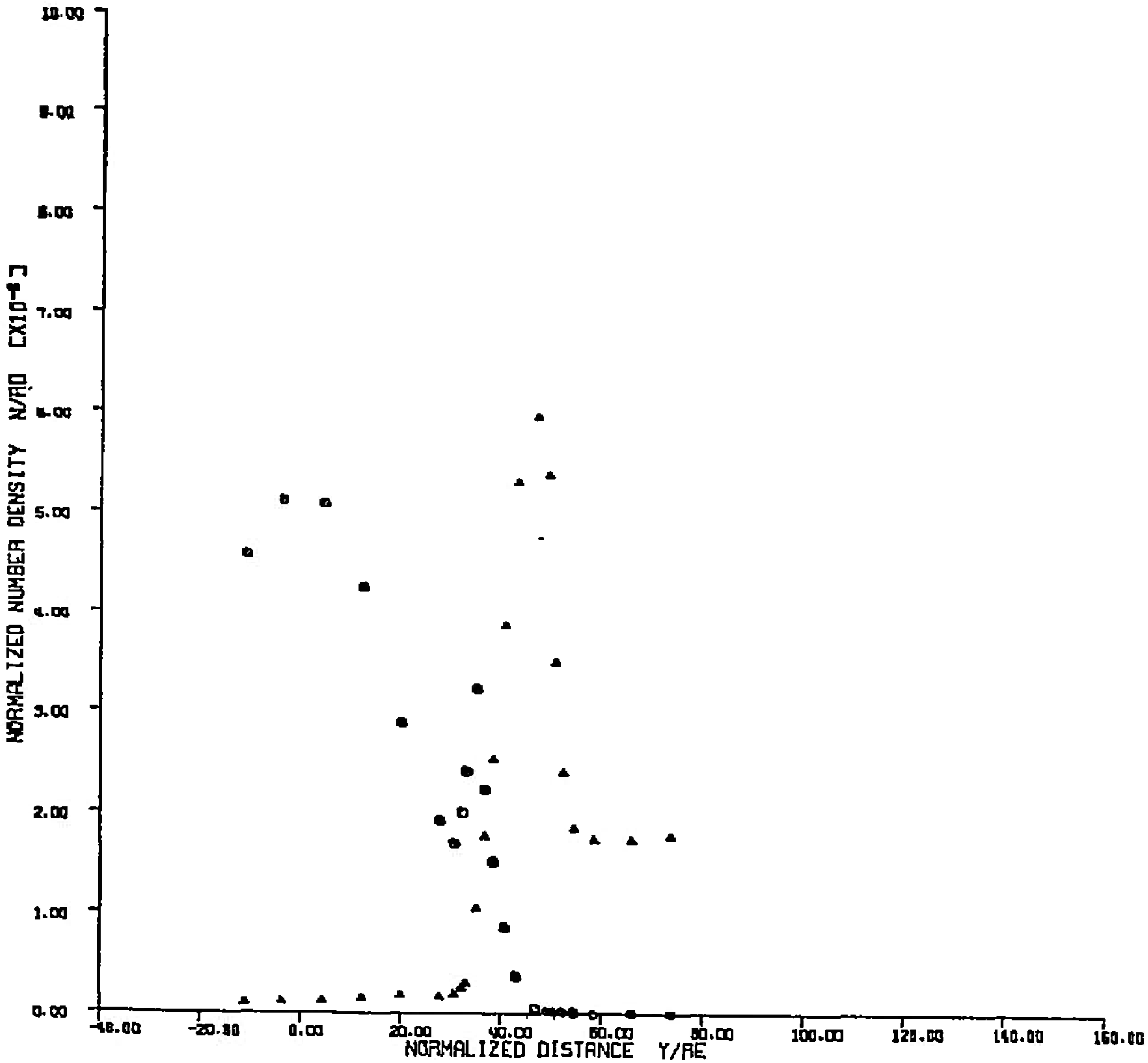

Fig. V-27

PACE 25
5/20/70
CASE 4

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.60

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_* = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10^{18} CM^{-3}

12.0 IN. RADIAL

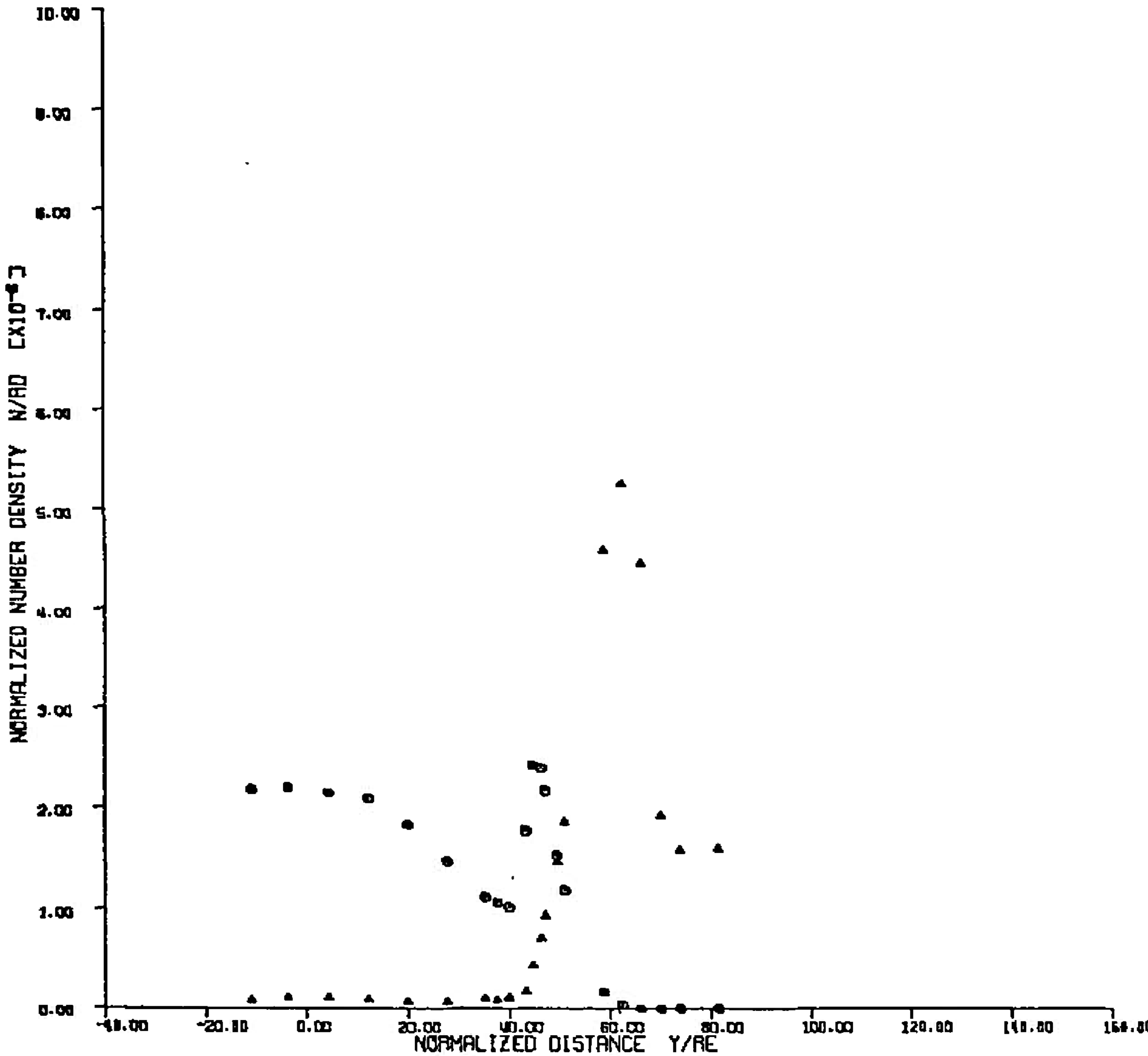

Fig. V-28

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CASE 4

P_s = 7.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.90

P_c = 22.40 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 34300
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.900 X 10^{18} CM^{-3}

CENTERLINE AXIAL

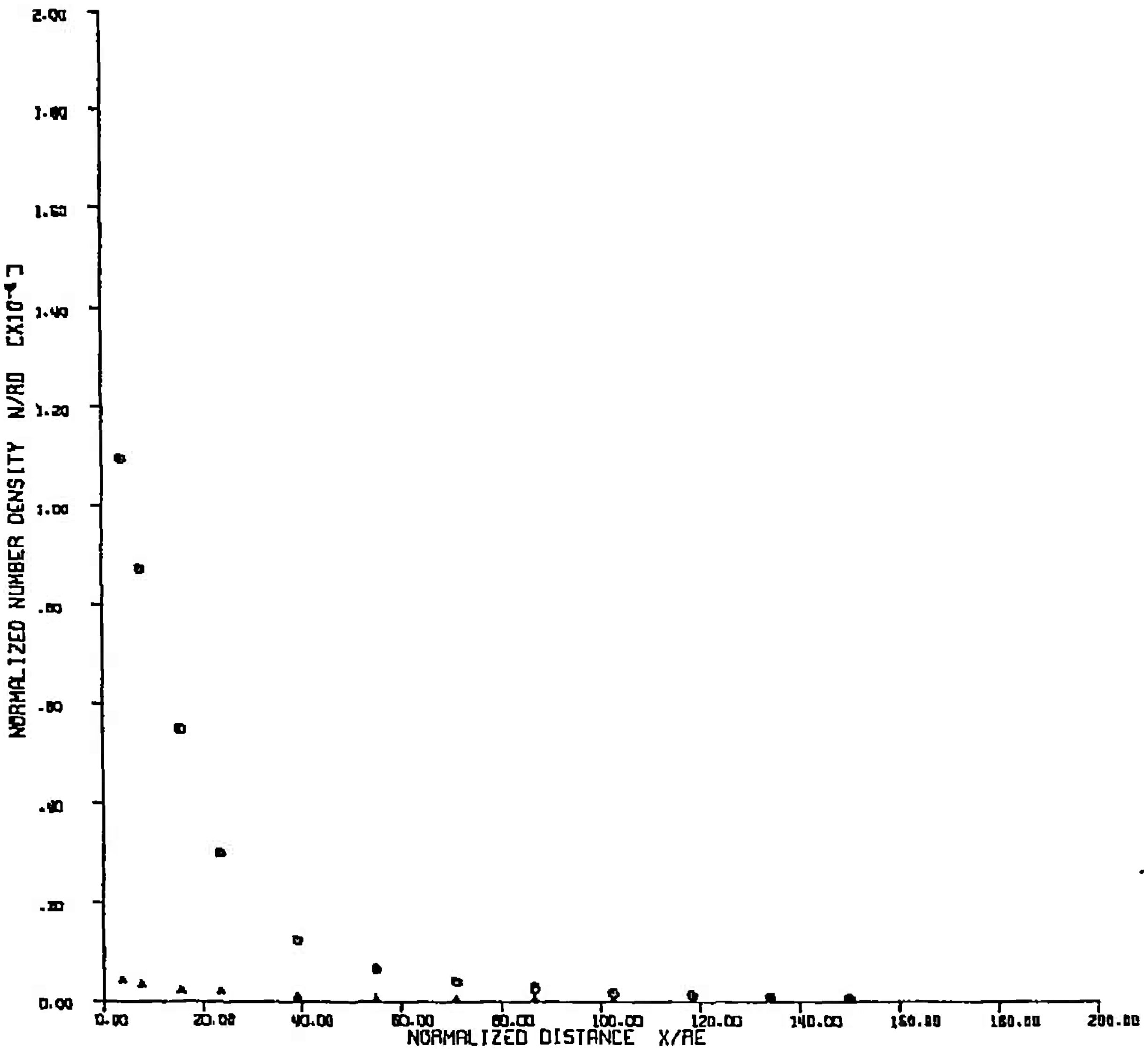

Fig. V-29

PACE 26
5/20/70
CASE 4

P_s = 7.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.90

P_c = 22.40 PSI
T_c = 586° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 34300
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.900 X 10^{19} CM^{-3}

CENTERLINE AXIAL

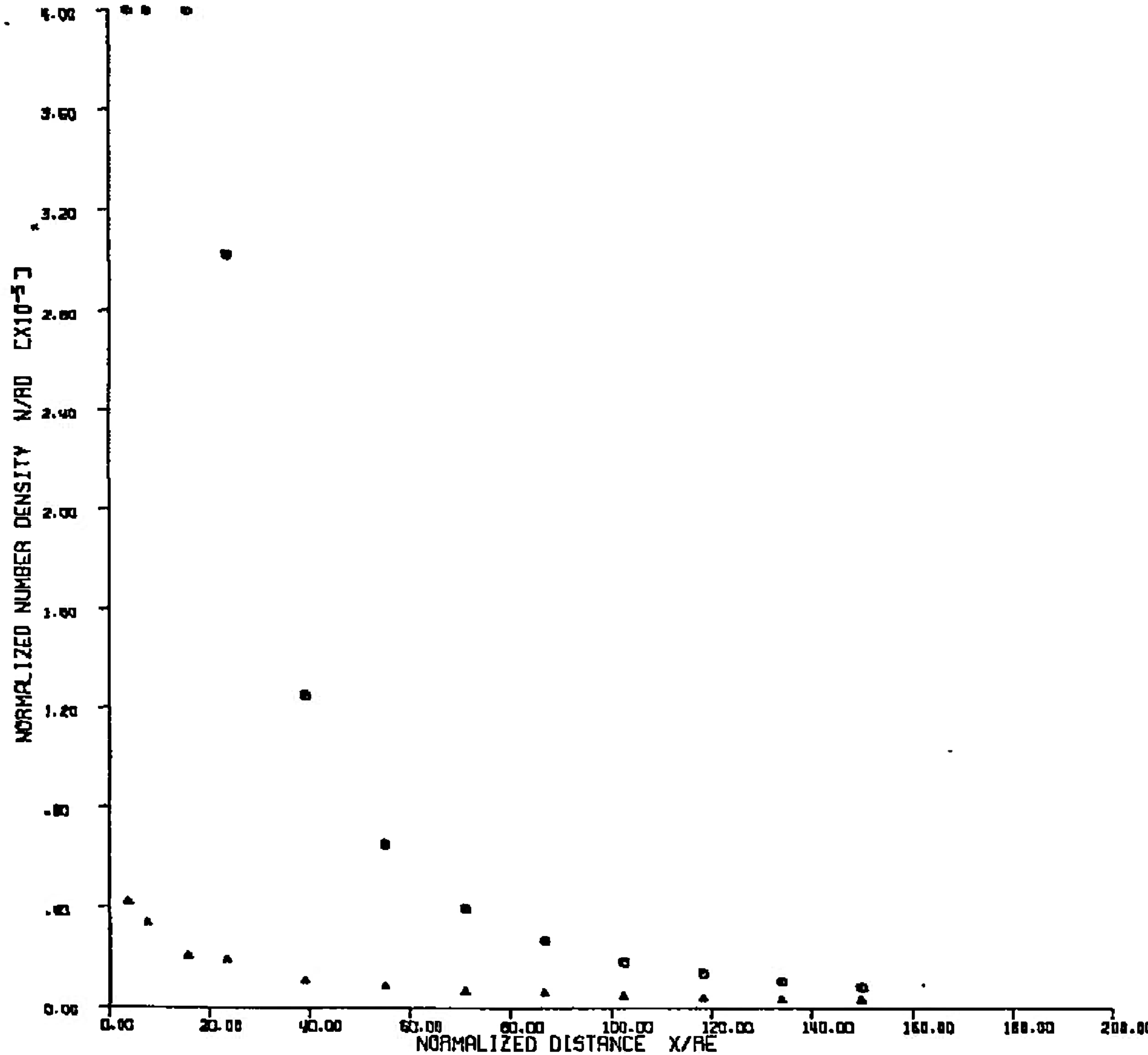

Fig. V-30

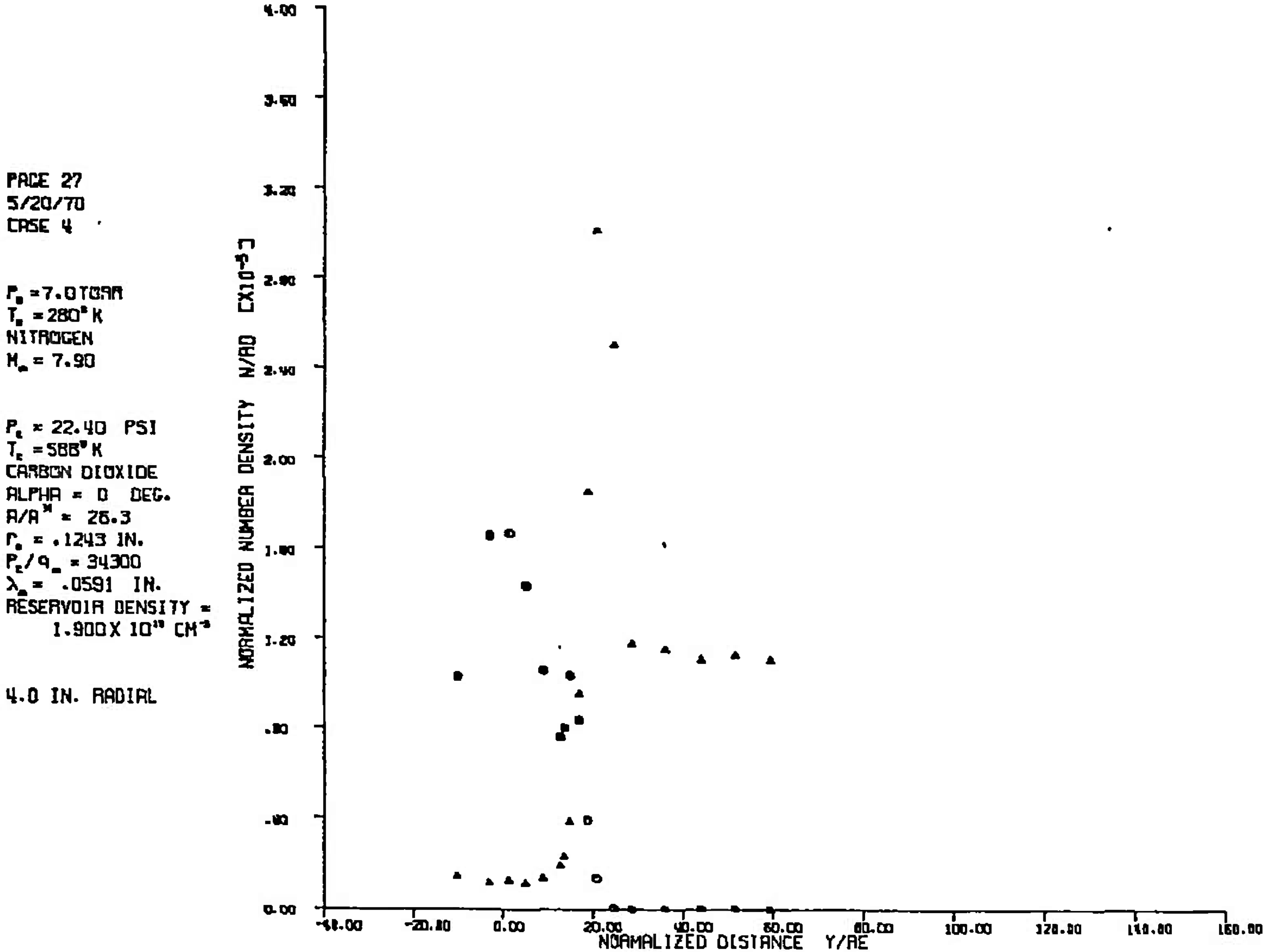
PAGE 27
5/20/70
CASE 4
P∞ = 7.0 TORR
T∞ = 280° K
NITROGEN
M∞ = 7.90
Pc = 22.40 PSI
Tc = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A* = 26.3
re = .1243 IN.
Pc/q∞ = 34300
λ∞ = .0591 IN.
RESERVOIR DENSITY =
1.900 X 10^19 CM^-3
4.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO [X10^-3]
NORMALIZED DISTANCE Y/RE
0.00
.40
.80
1.20
1.60
2.00
2.40
2.80
3.20
3.60
4.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00

Fig. V-31

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CASE 4

P_o = 7.0 TORR
T_o = 280° K
NITROGEN
M_∞ = 7.90

P_c = 22.40 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEC.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 34300
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.900 X 10^{19} CM^{-3}

8.0 IN. RADIAL

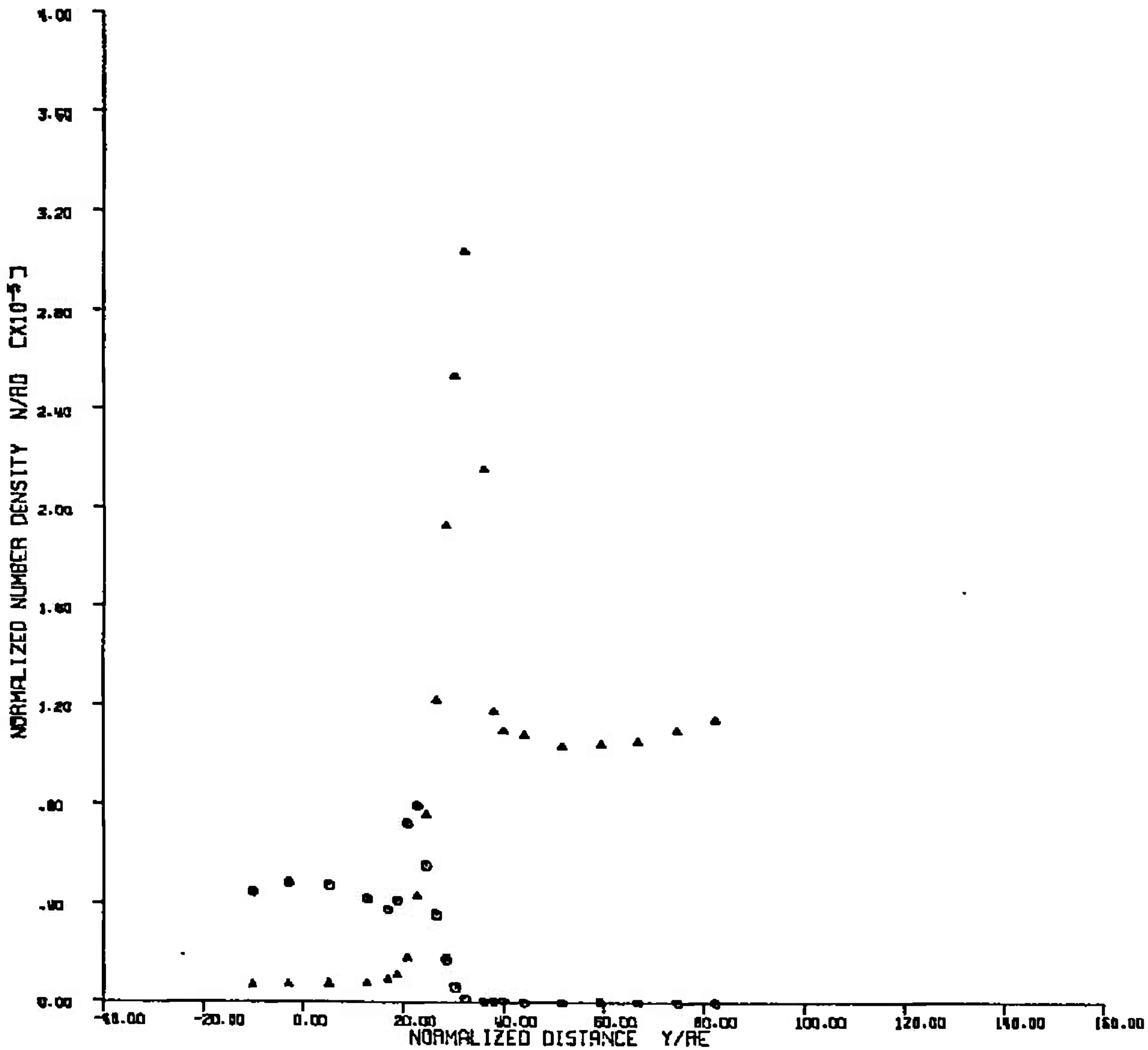

Fig. V-32

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CASE 4

P_s = 7.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.90

P_e = 22.40 PSI
T_e = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
R/R^* = 26.3
r_e = .1243 IN.
P_e/q_∞ = 34300
λ_∞ = .0591 IN.
RESERVOIR DENSITY = 1.900 X 10^{19} CM^{-3}

12.0 IN. RADIAL

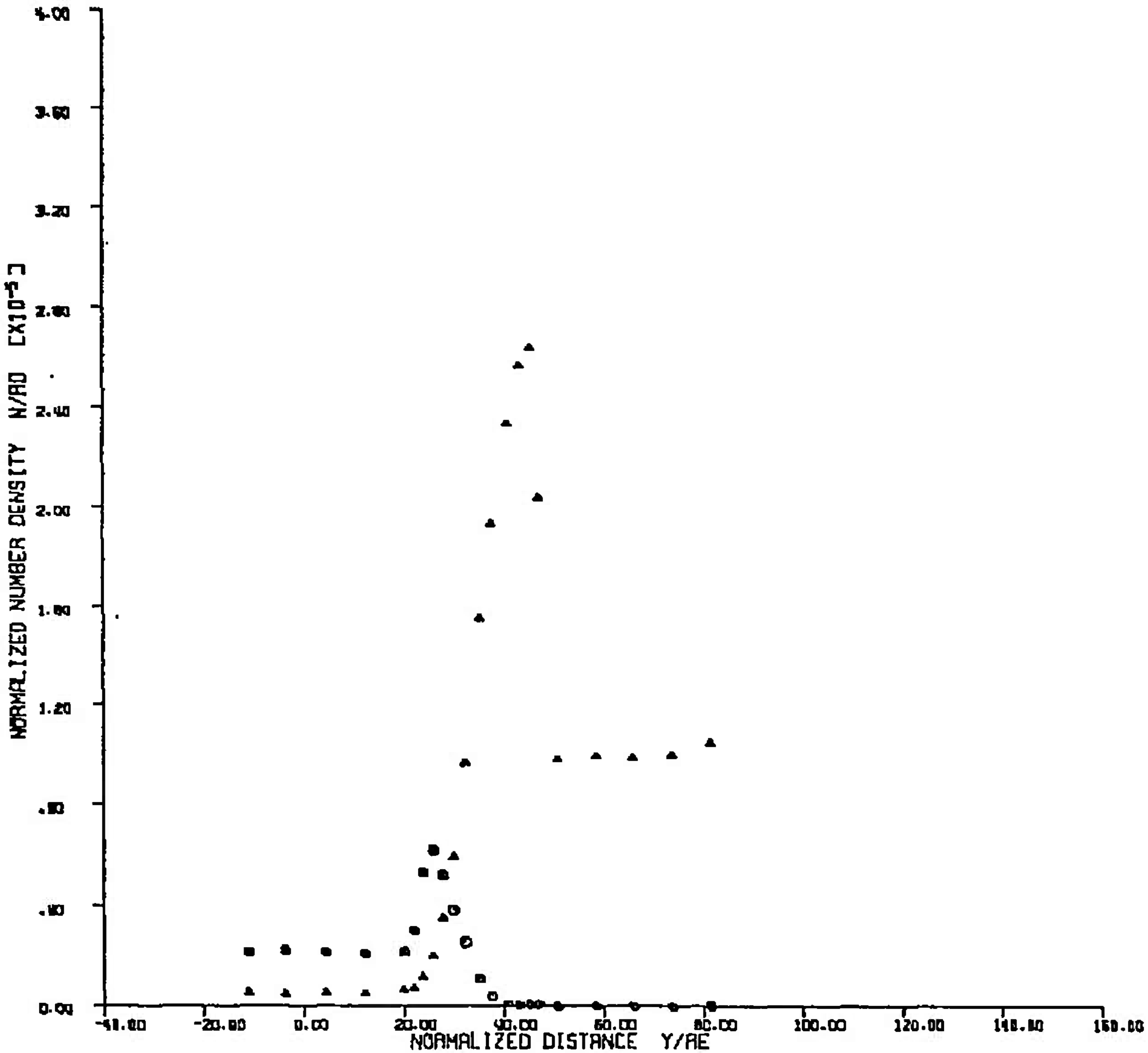

Fig. V-33

PACE 90
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CASE 4

P_∞ = 7.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.90

P_c = 150.00 PSI
T_c = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 228000
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.160 X 10[illegible] CM[illegible]

CENTERLINE AXIAL

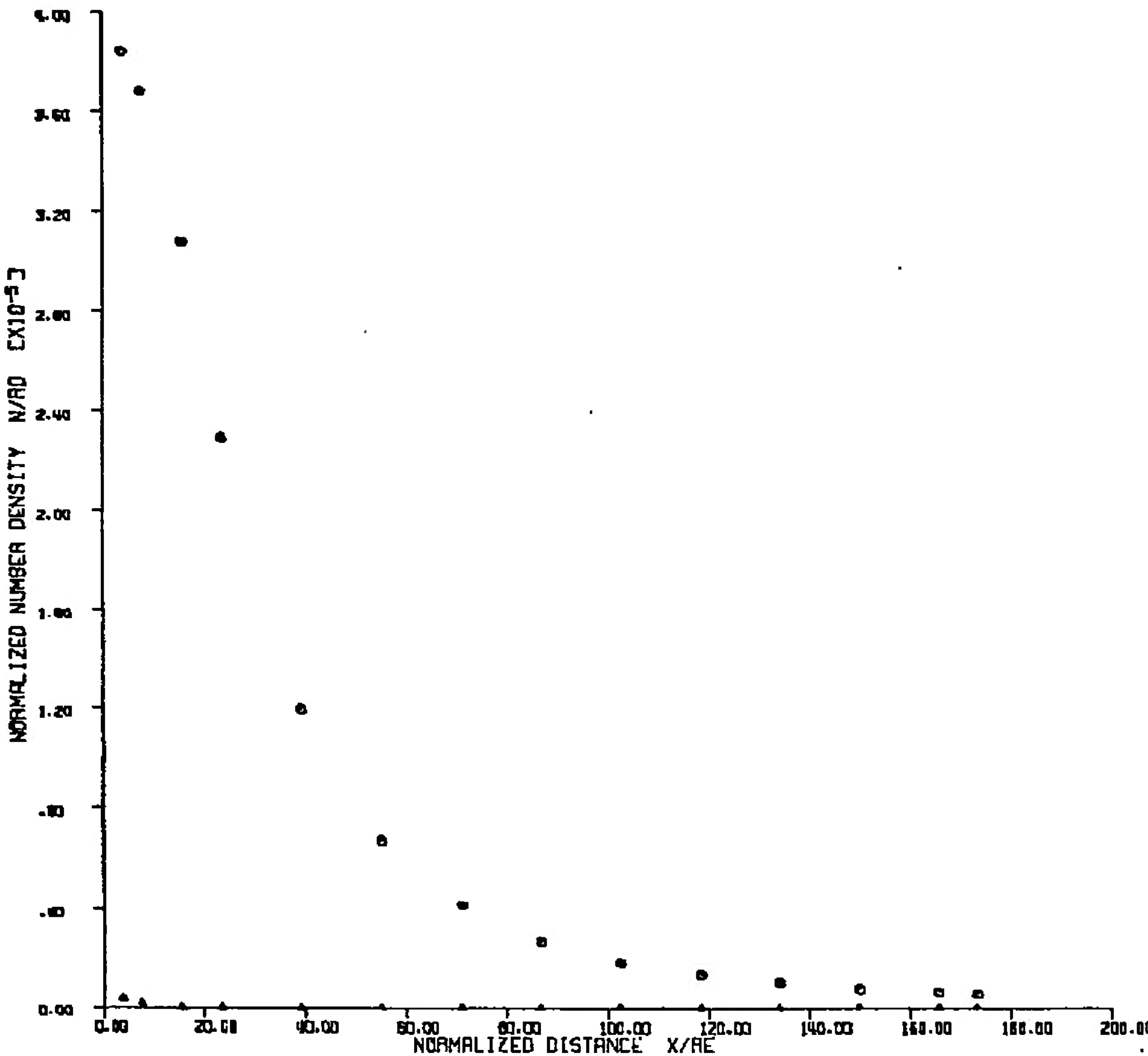

Fig. V-34

PACE 31
5/21/70
CASE 4

P_∞ = 7.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.90

P_c = 150.00 PSI
T_c = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 228000
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.160 X 10^{20} CM^{-3}

4.0 IN. RADIAL

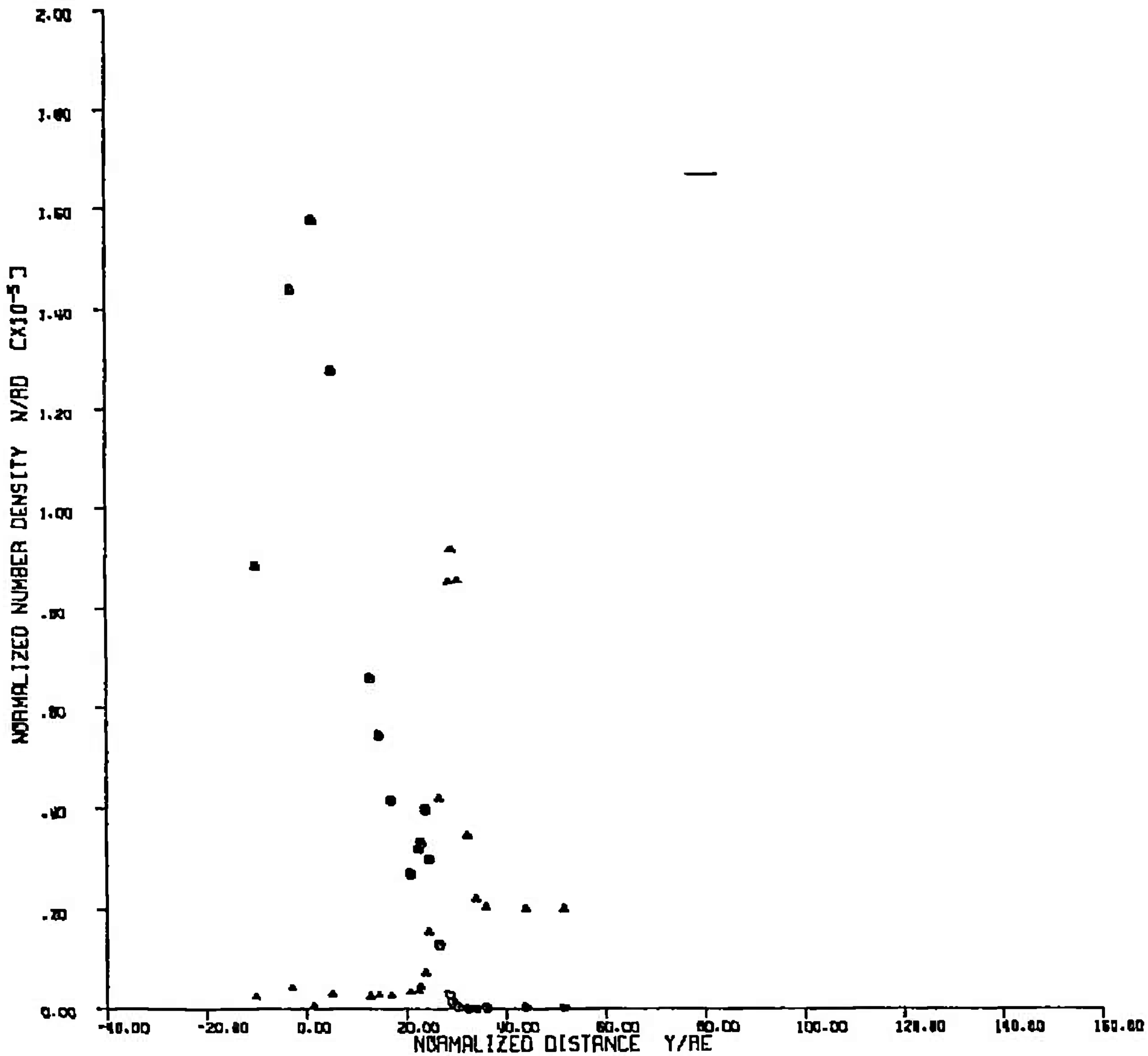

Fig. V-35

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CASE 4

P_∞ =7.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.90

P_c = 150.00 PSI
T_c = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 228000
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.160 X 10^{20} CM^{-3}

6.0 IN. RADIAL

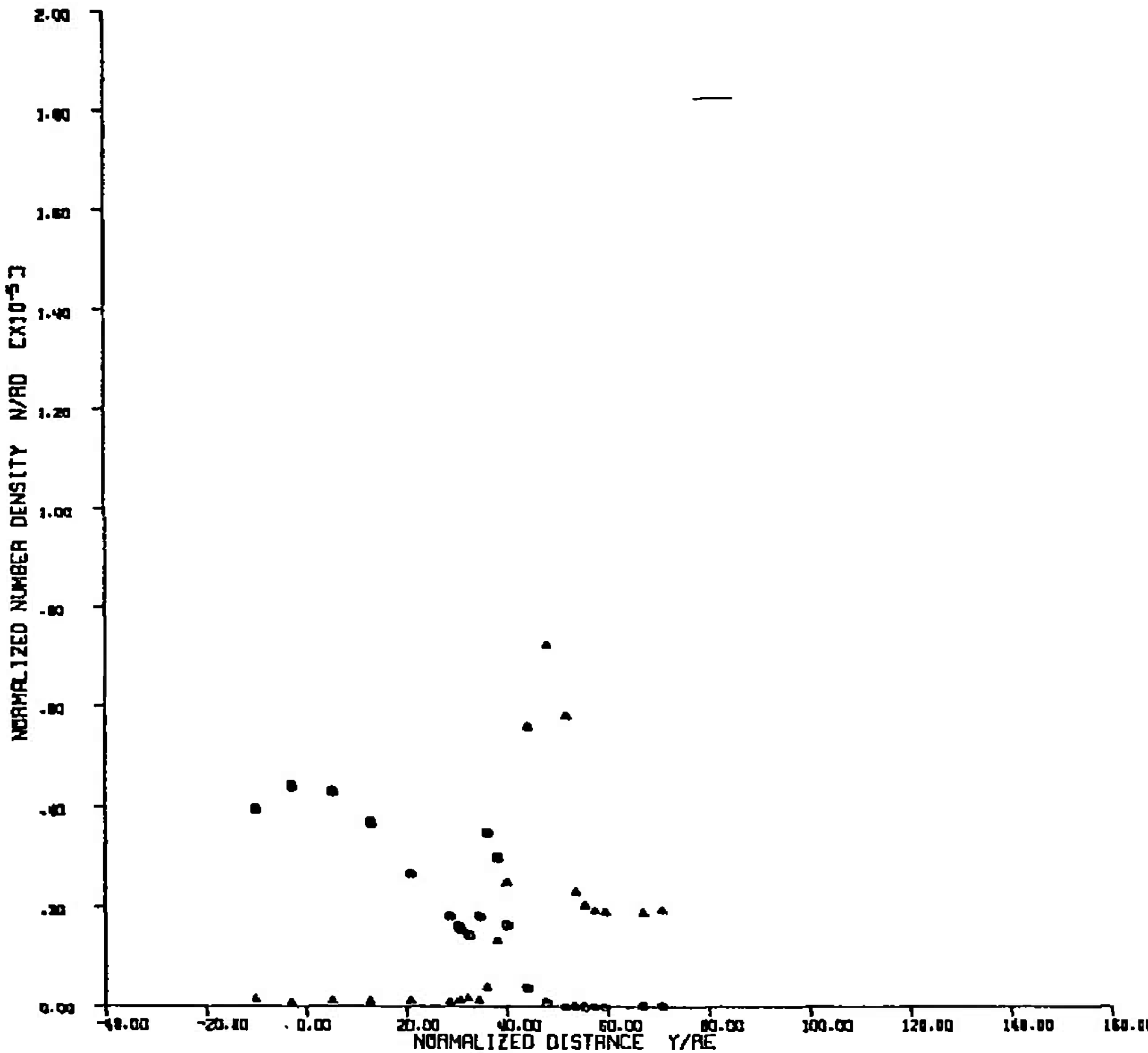

Fig. V-36

PACE 32
5/21/70
CASE 4

P_∞ =7.0TORR
T_∞ =280° K
NITROGEN
M_∞ = 7.90

P_c = 150.00 PSI
T_c =644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 228000
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.160 X 10^{20} CM^{-3}

8.0 IN. RADIAL

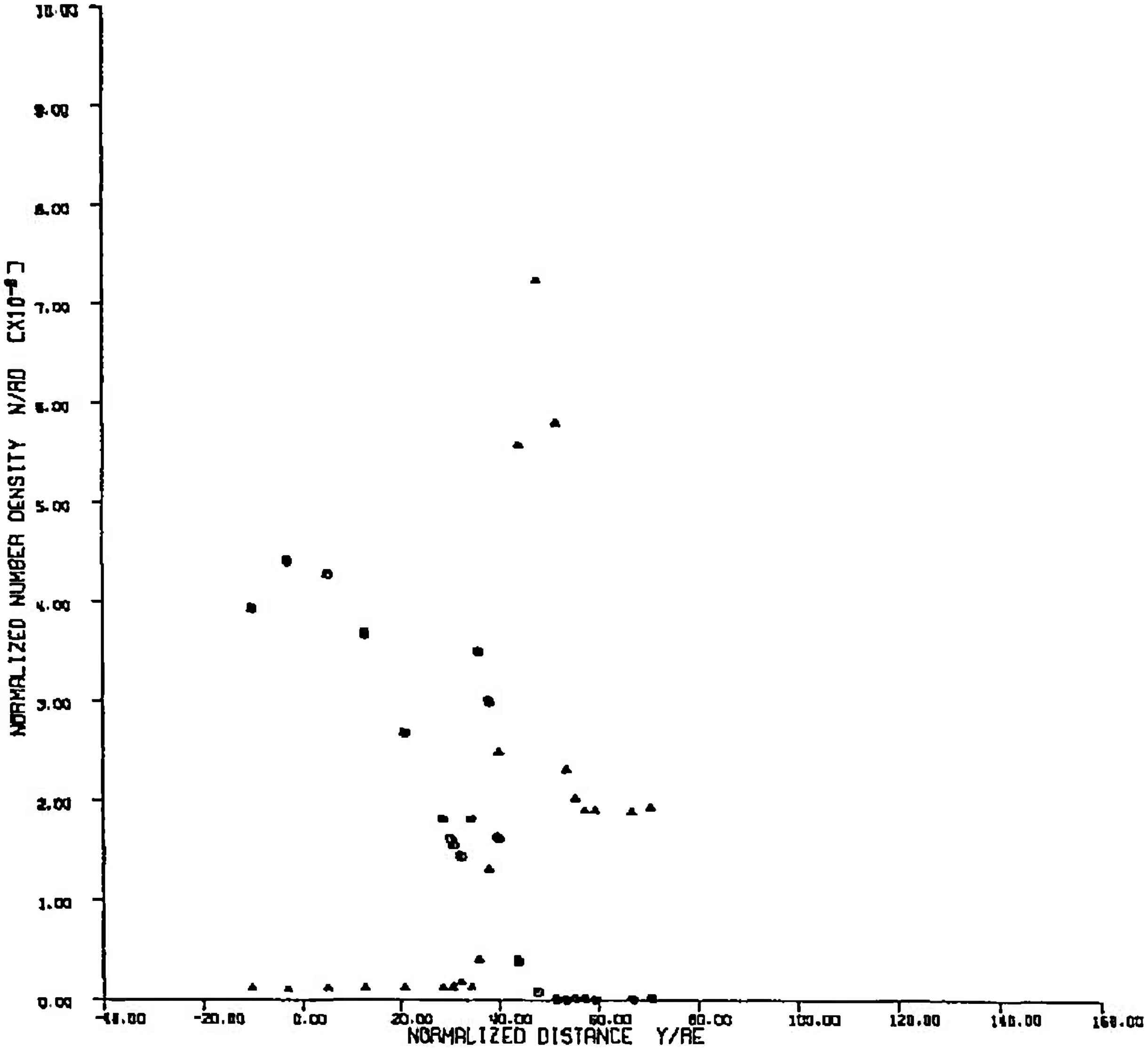

Fig. V-37

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5/21/70
CASE 4

P_∞ = 7.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.90

P_c = 150.00 PSI
T_c = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 228000
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.160 X 10²⁰ CM⁻³

12.0 IN. RADIAL

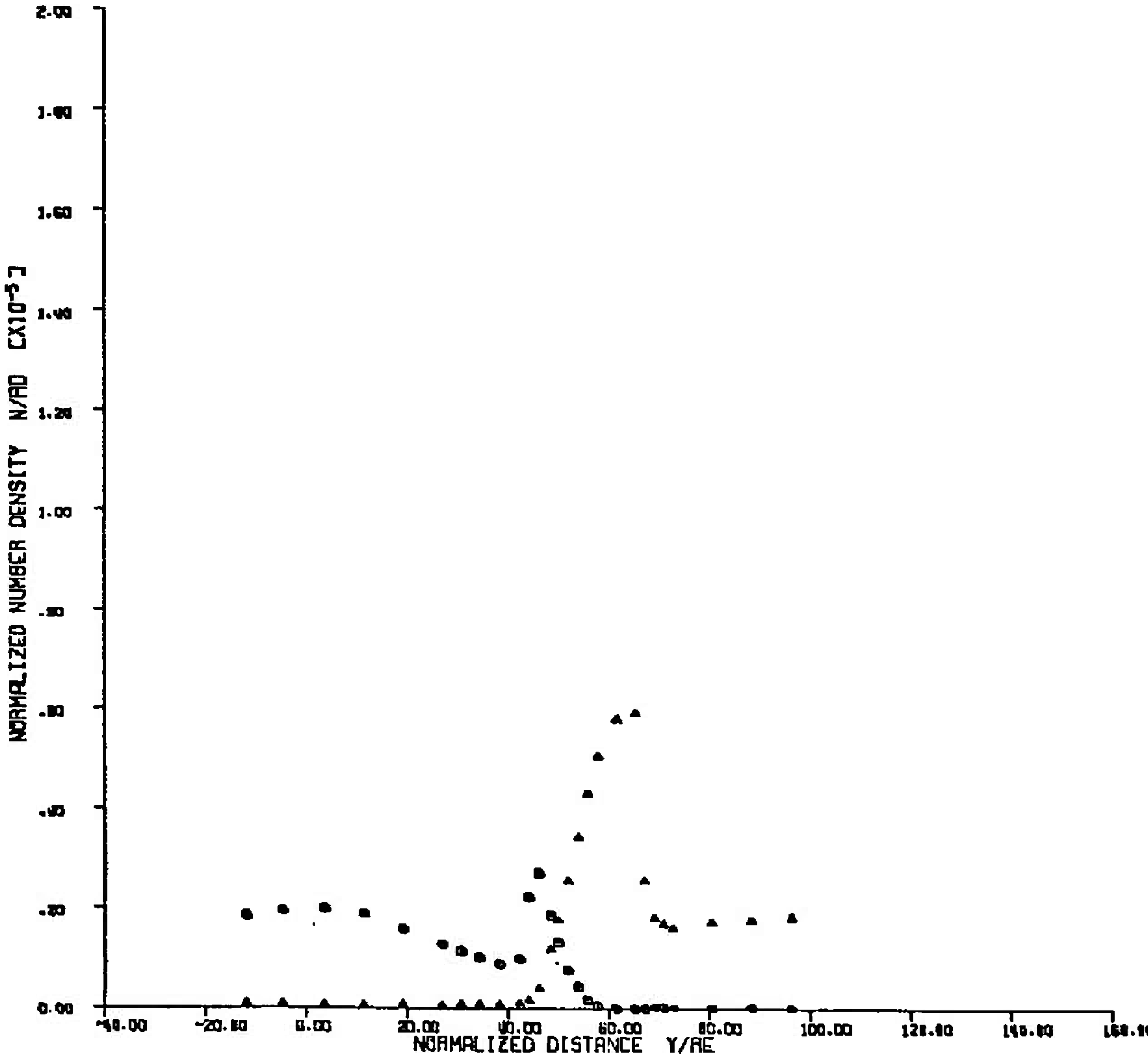

Fig. V-38

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CASE 4

P_∞ = 7.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.90

P_c = 150.00 PSI
T_c = 644° K
CARBON DIOXIDE
ALPHA = 0 DEG.
R/R^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 228000
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.160 X 10[illegible] CM[illegible]

12.0 IN. RADIAL

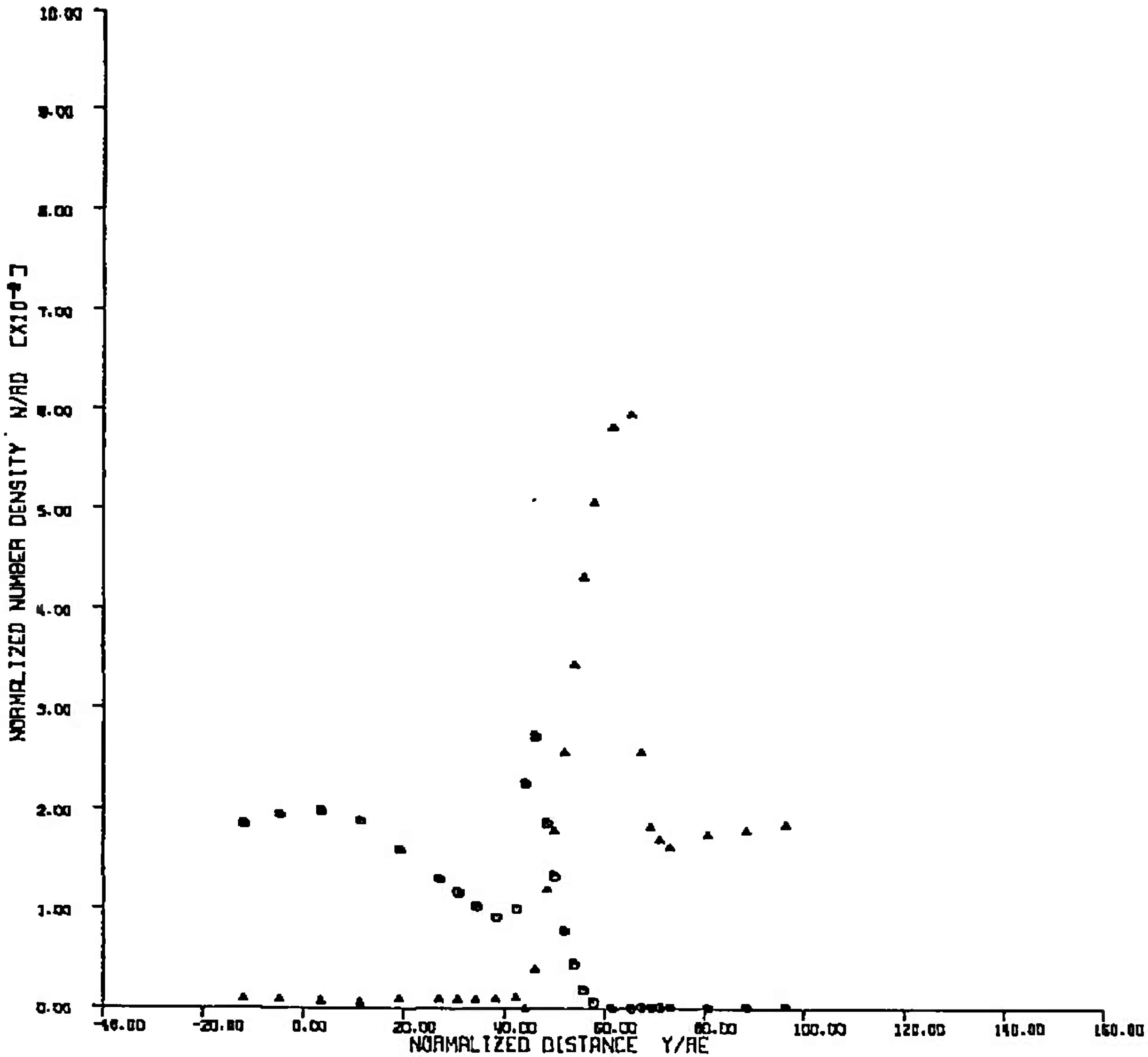

Fig. V-39

PACE 48
5/27/70
CASE 4

P_o = 1.0 TORR
T_o = 666° K
NITROGEN
M_∞ = 6.95

P_c = 0.00 PSI

ALPHA = 0 DEG.
A/A^* = 0.0
r_e = ~~0.0000~~ IN. .1243
P_c/q_∞ = 0
λ_∞ = 1.3400 IN.
RESERVOIR DENSITY =
1.110 X 10^{16} CM^{-3}

8.0 IN. RADIAL

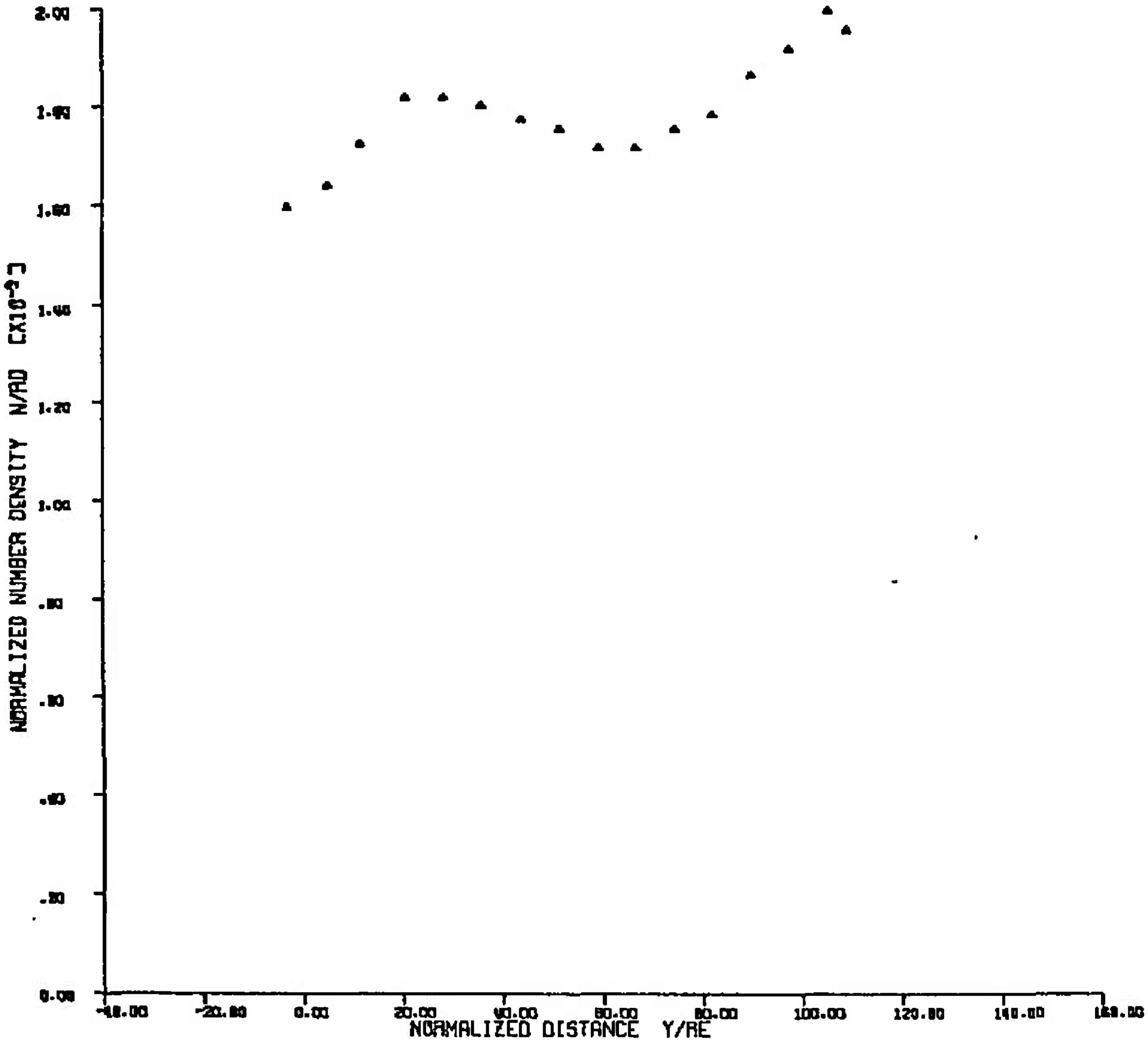

Fig. V-40

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CASE 4

P_o = 2.0 TORR
T_o = 866° K
NITROGEN
M_∞ = 7.40

P_c = 49.60 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 198000
λ_∞ = .8500 IN.
RESERVOIR DENSITY =
4.210 X 10^{18} CM^{-3}

8.0 IN. RADIAL

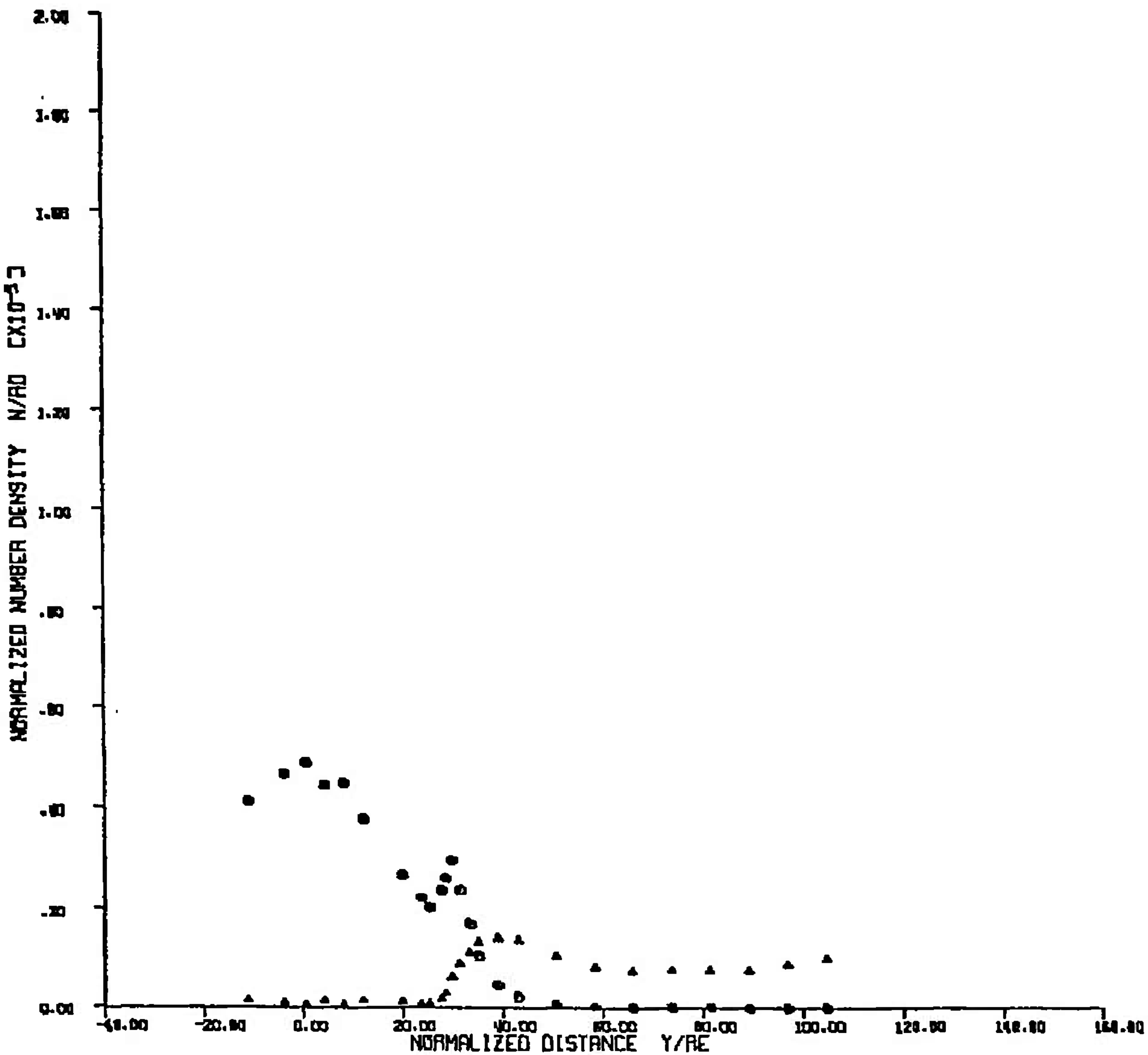

Fig. V-41

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CASE 4

P_o =2.0TORR
T_o =866° K
NITROGEN
M_∞ = 7.40

P_c = 49.60 PSI
T_c =588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 198000
λ_∞ = .8500 IN.
RESERVOIR DENSITY =
4.210X 10^{19} CM^{-3}

8.0 IN. RADIAL

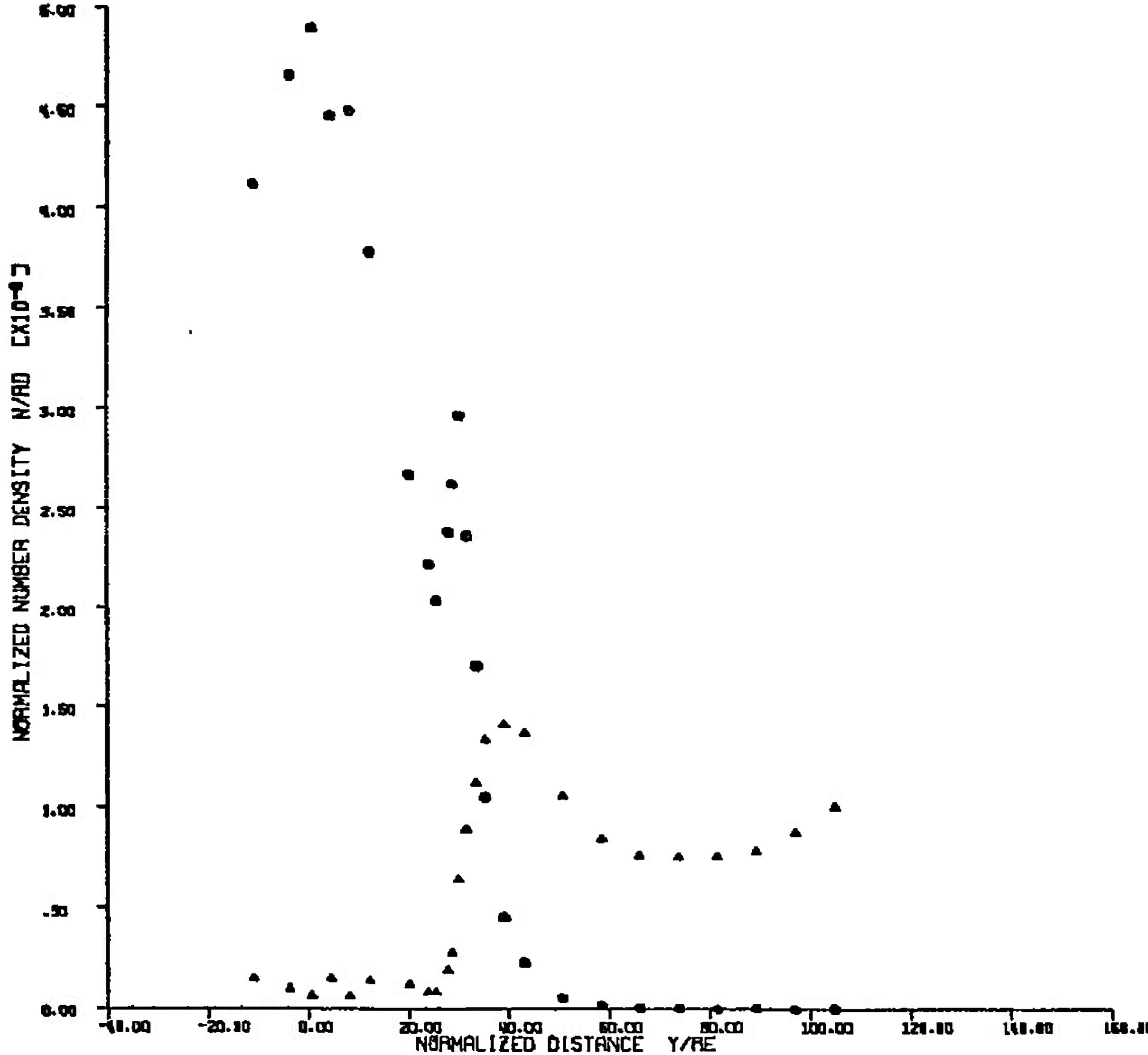

Fig. V-42

PACE 50
5/27/70
CASE 4

P_0 = 2.0 TORR
T_0 = 866° K
NITROGEN
M_∞ = 7.40

P_c = 49.60 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 198000
λ_∞ = .6500 IN.
RESERVOIR DENSITY = 4.210 X 10^{19} CM^{-3}

12.0 IN. RADIAL

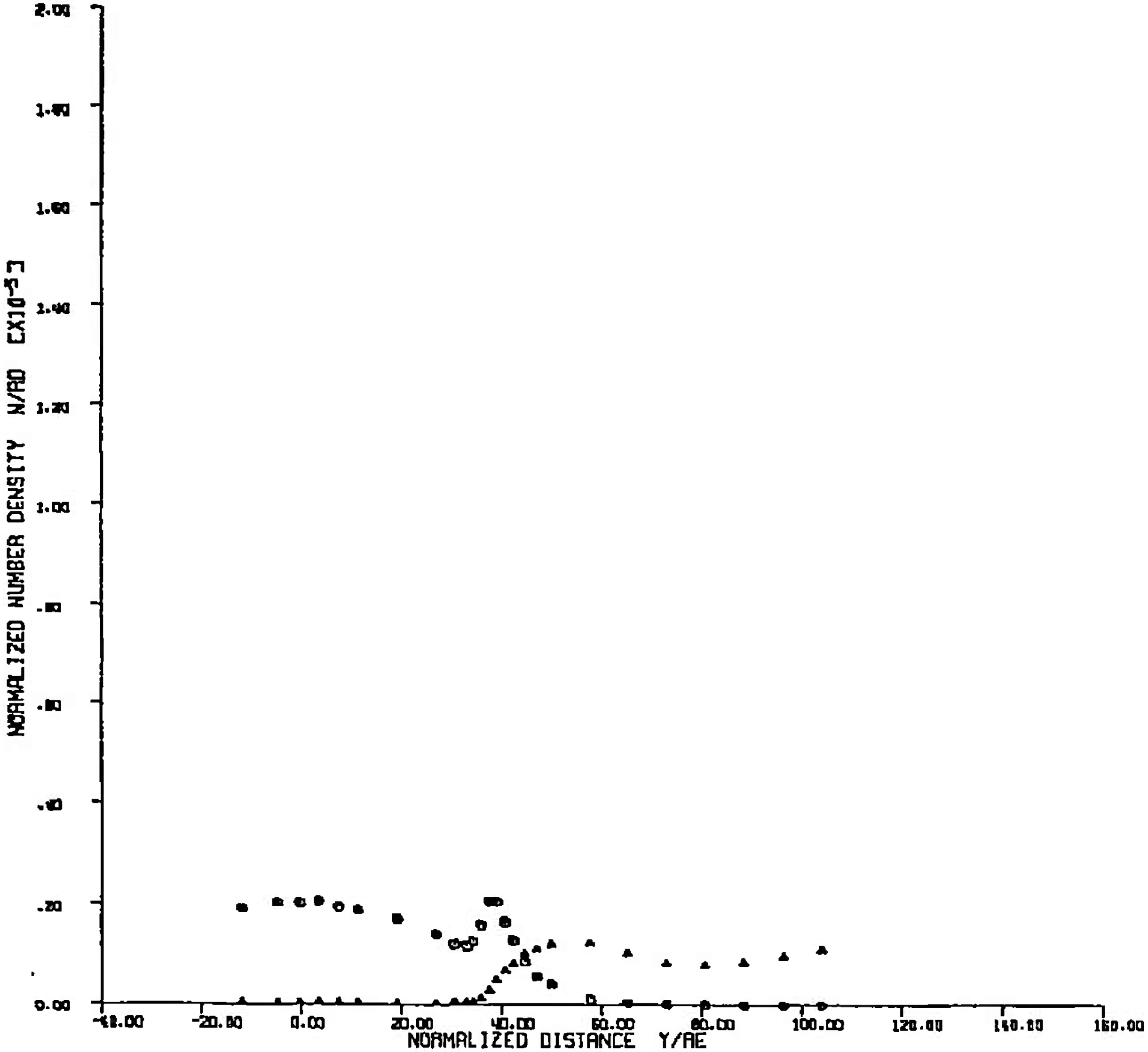

Fig. V-43

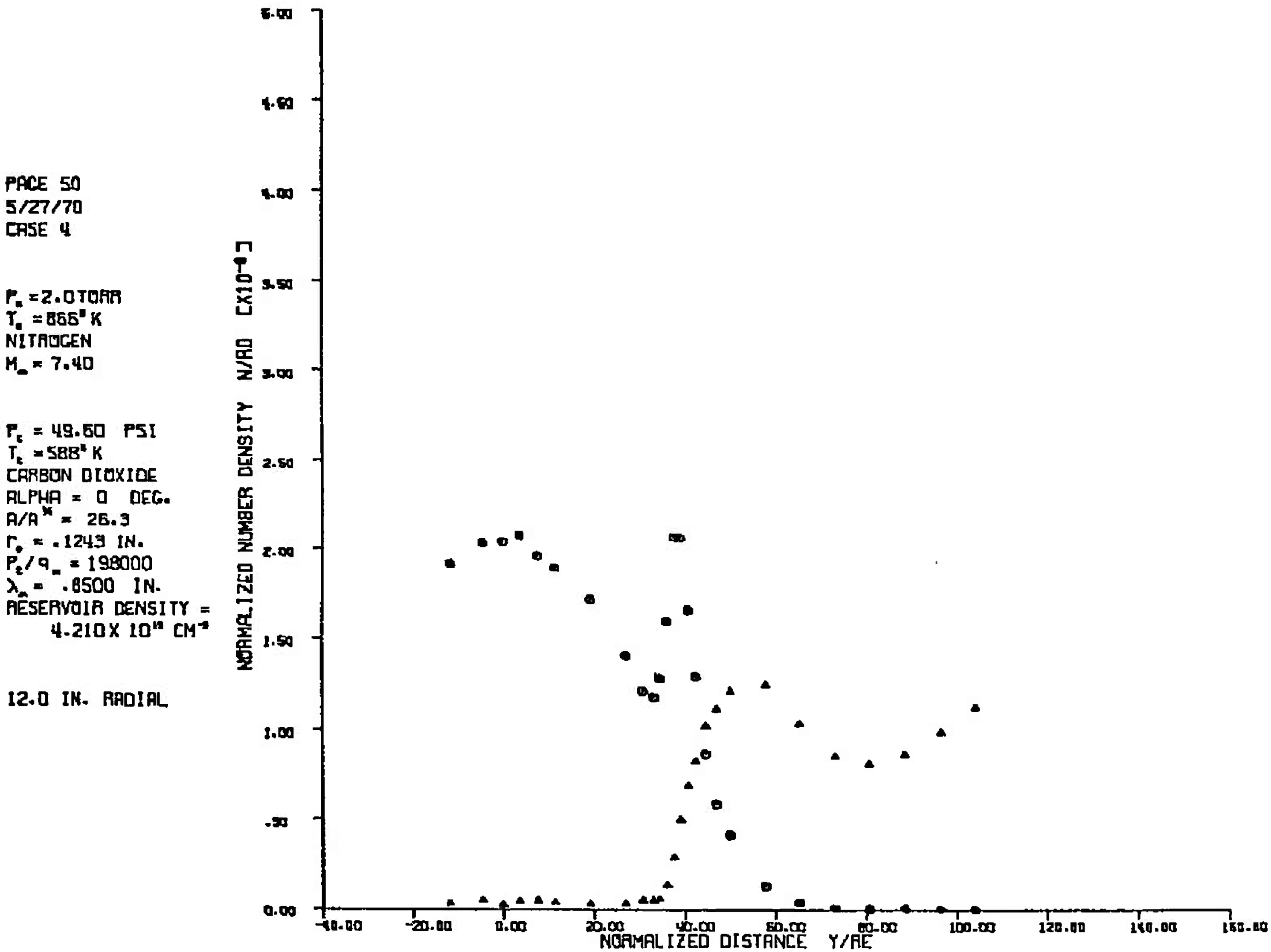
PACE 50
5/27/70
CASE 4
P_∞ =2.0TORR
T_∞ =866° K
NITROGEN
M_∞ = 7.40
P_t = 49.60 PSI
T_t =588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_t/q_∞ = 198000
λ_∞ = .8500 IN.
RESERVOIR DENSITY =
4.210X 10[18] CM[-3]
12.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO [X10-1]
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
.50
0.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
NORMALIZED DISTANCE Y/RE

Fig. V-44

PACE 51
5/27/70
CASE 4

P_o = 2.0 TORR
T_o = 886° K
NITROGEN
M_∞ = 7.40

P_c = 49,60 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 198000
λ_∞ = .8500 IN.
RESERVOIR DENSITY =
4.210 X 10^{18} CM^{-3}

4.0 IN. RADIAL

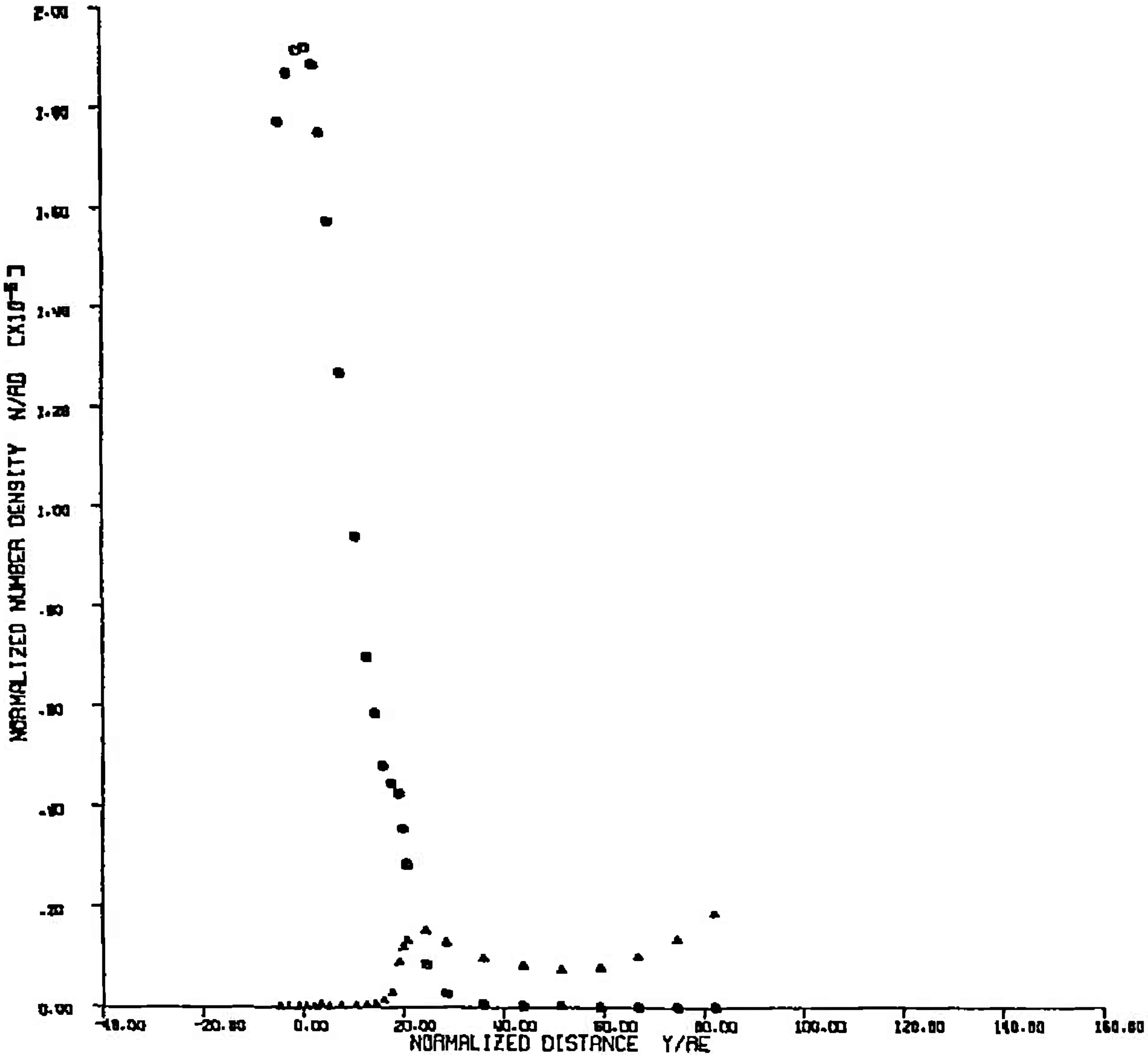

Fig. V-45

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CASE 4

P_o = 2.0 TORR
T_o = 866° K
NITROGEN
M_∞ = 7.40

P_c = 49.80 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 198000
λ_∞ = .8500 IN.
RESERVOIA DENSITY = 4.210×10^{16} CM^{-3}

CENTERLINE AXIAL

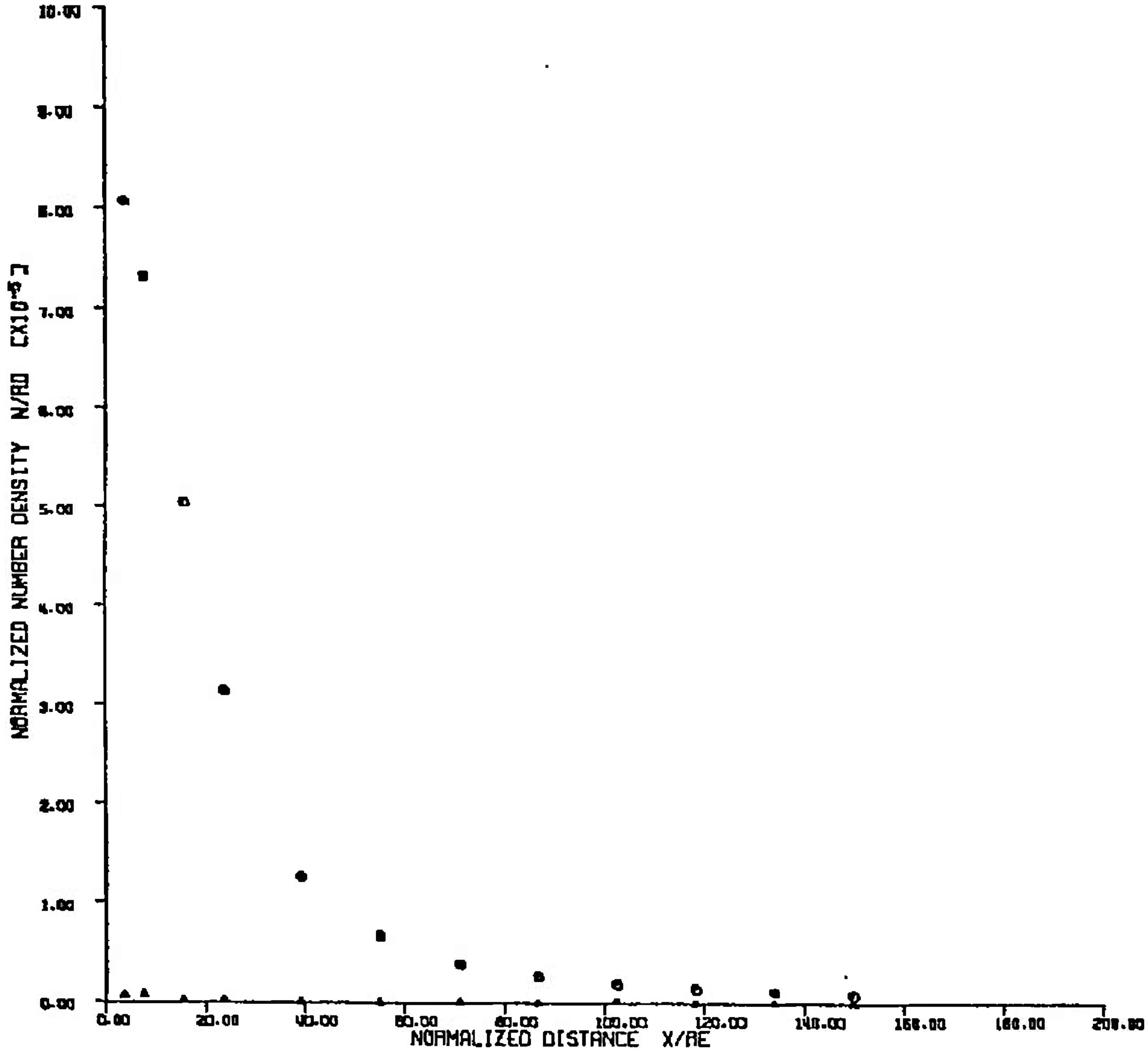

Fig. V-46

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CASE 4

P_o = 2.0 TORR
T_o = 866° K
NITROGEN
M_∞ = 7.40

P_c = 49.60 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 198000
λ_∞ = .6500 IN.
RESERVOIR DENSITY =
4.210 X 10^{19} CM^{-3}

CENTERLINE AXIAL

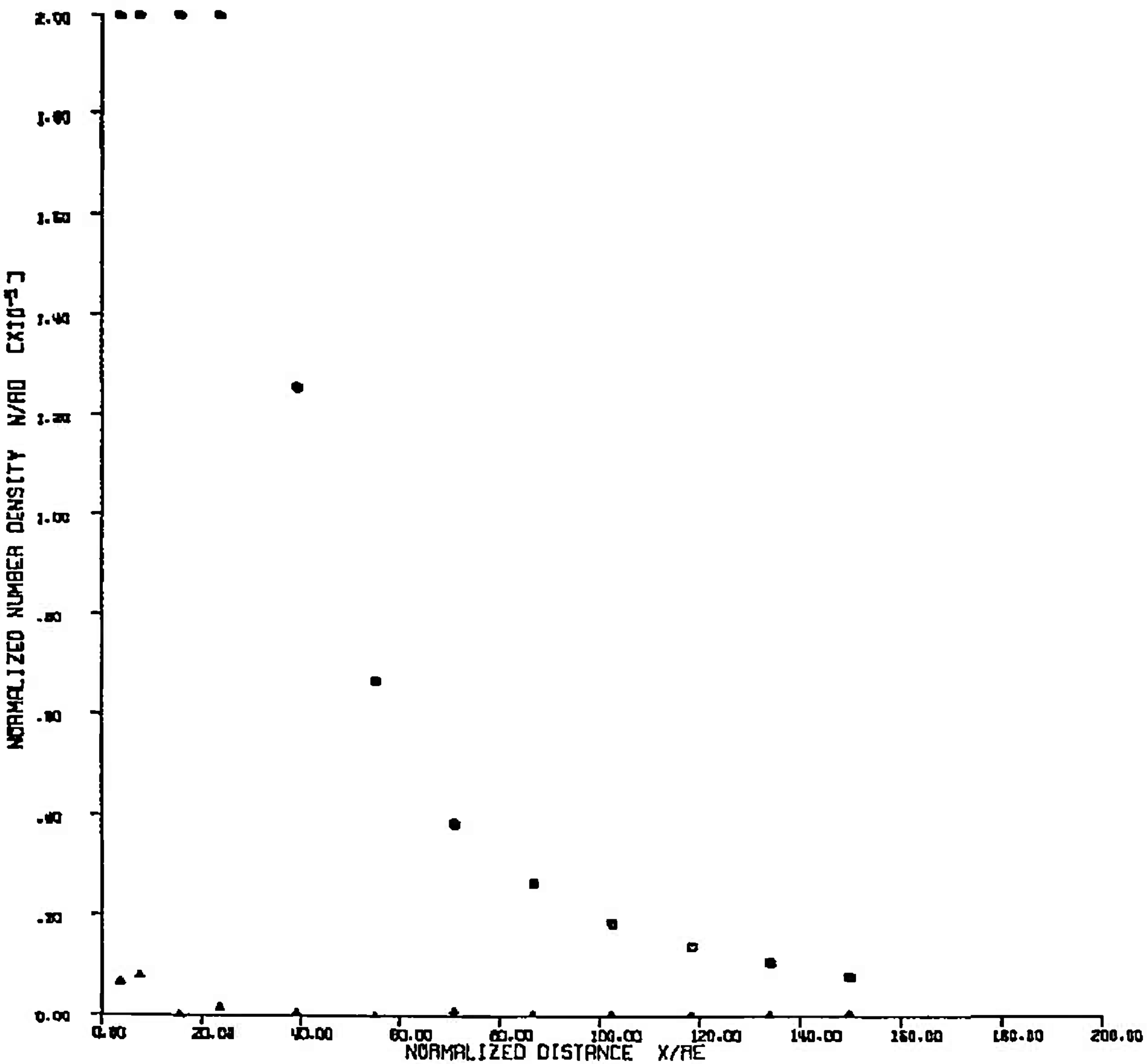

Fig. V-47

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CASE 4

P_0 = 2.0 TORR
T_0 = 866° K
NITROGEN
M_∞ = 7.40

P_c = 7.69 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 30600
λ_∞ = .6370 IN.
RESERVOIR DENSITY = 6.520 X 10^{18} CM^{-3}

CENTERLINE AXIAL

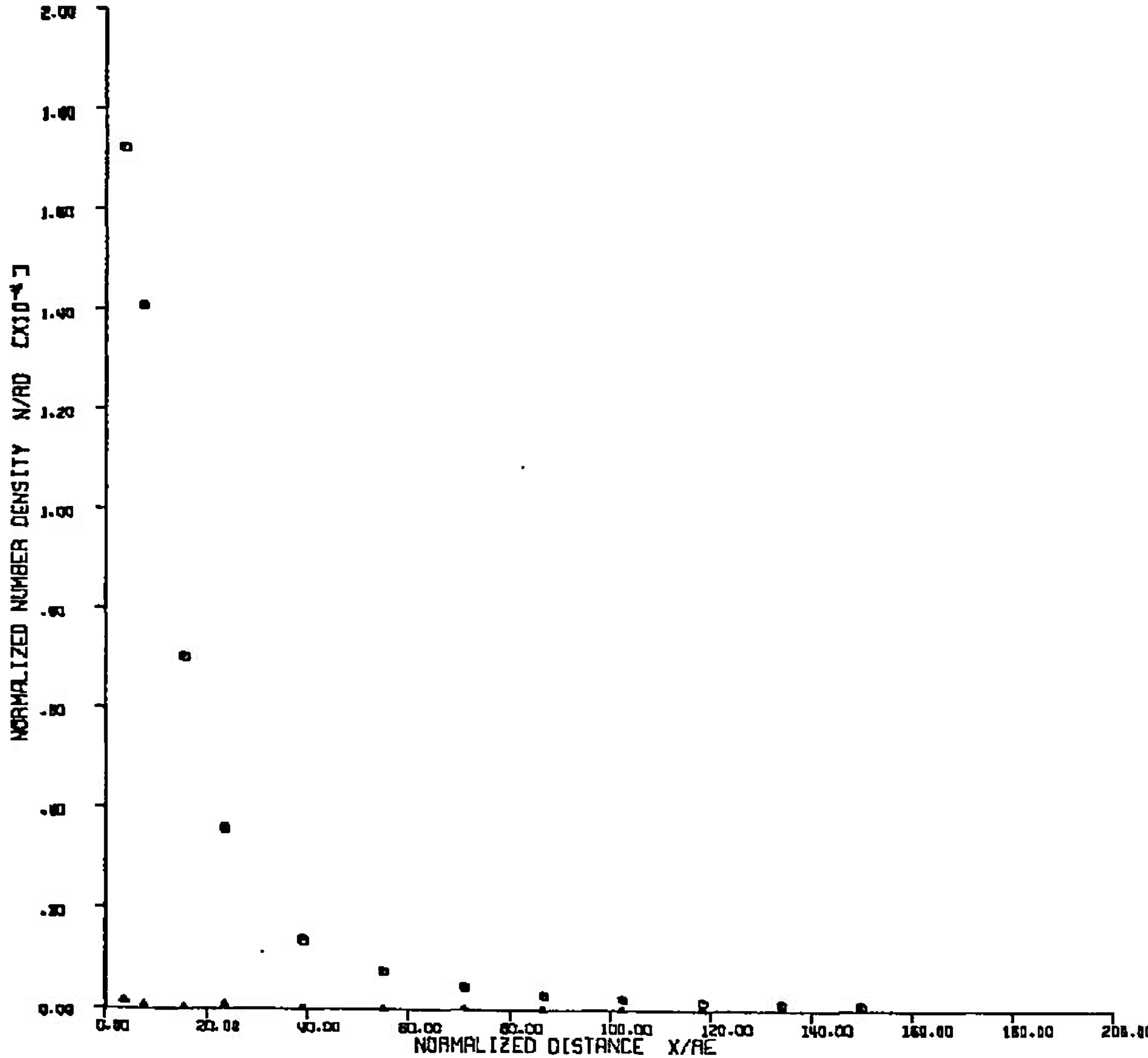

Fig. V-48

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5/27/70
CASE 4

P_0 = 2.0 TORR
T_0 = 866° K
NITROGEN
M_∞ = 7.40

P_c = 7.69 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 30600
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
6.520 X 10^{18} CM^{-3}

CENTERLINE AXIAL

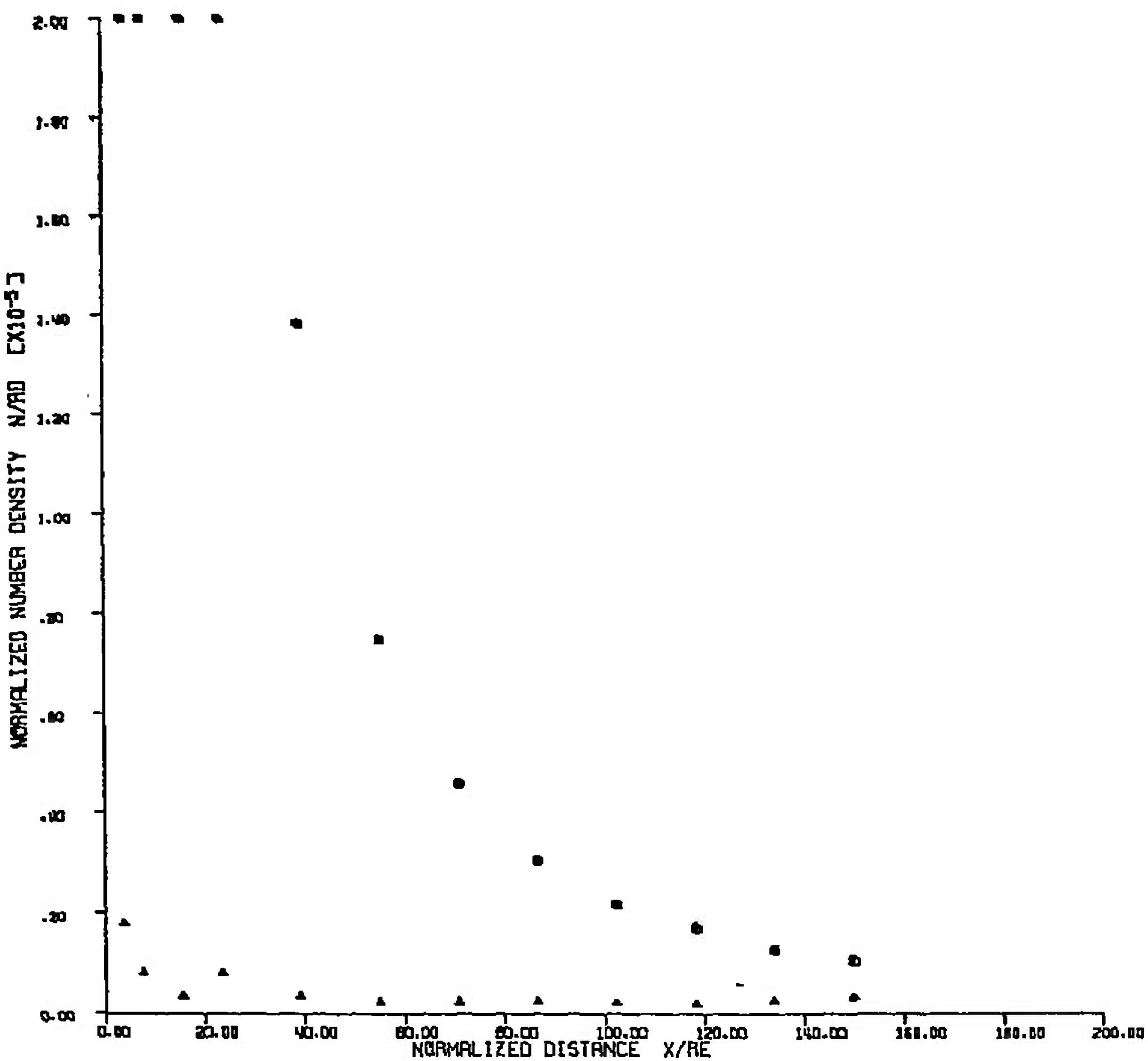

Fig. V-49

PAGE 54
5/27/70
CASE 4

P_o = 2.0 TORR
T_o = 666° K
NITROGEN
M_∞ = 7.40

P_c = 7.69 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 30600
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
6.520 X 10^{19} CM^{-3}

4.0 IN. RADIAL

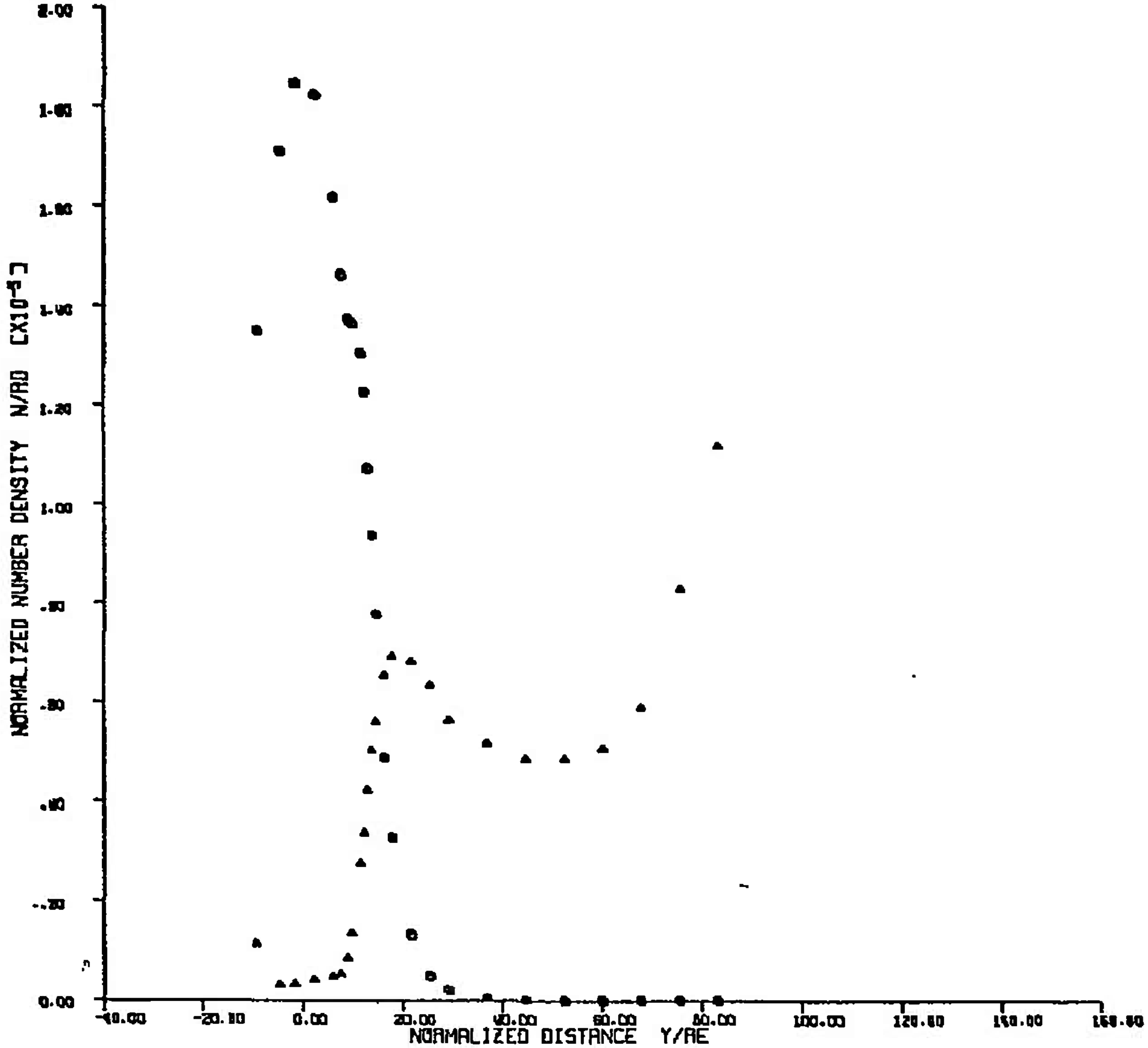

Fig. V-50

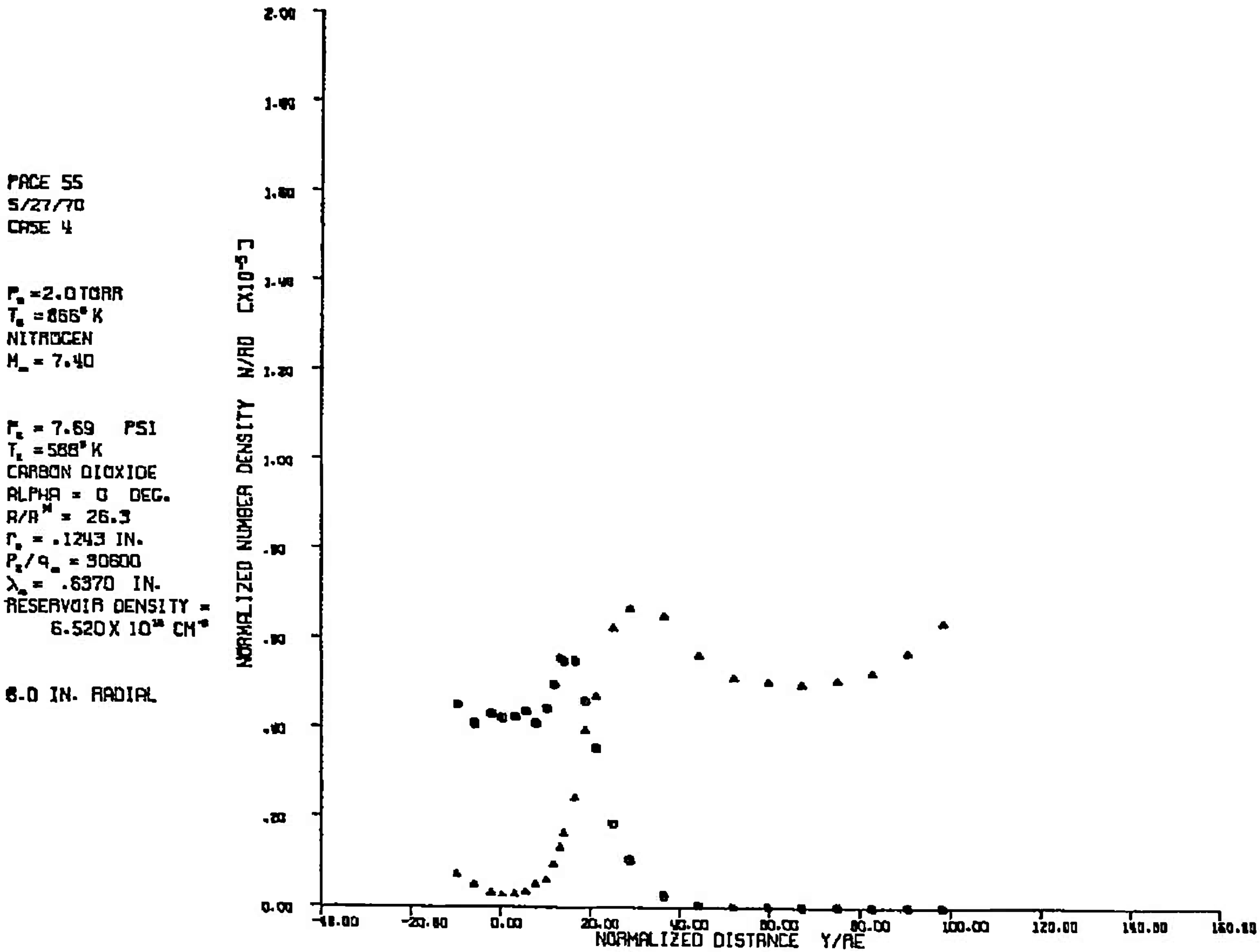
PACE 55
5/27/70
CASE 4
P∞ = 2.0 TORR
T∞ = 866° K
NITROGEN
M∞ = 7.40
Pj = 7.69 PSI
Tj = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
R/R* = 26.3
re = .1243 IN.
Pj/q∞ = 30600
λ∞ = .6370 IN.
RESERVOIR DENSITY =
6.520 X 10^18 CM^-3
6.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/RO [X10^-3]
2.00
1.00
0.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
NORMALIZED DISTANCE Y/RE

Fig. V-51

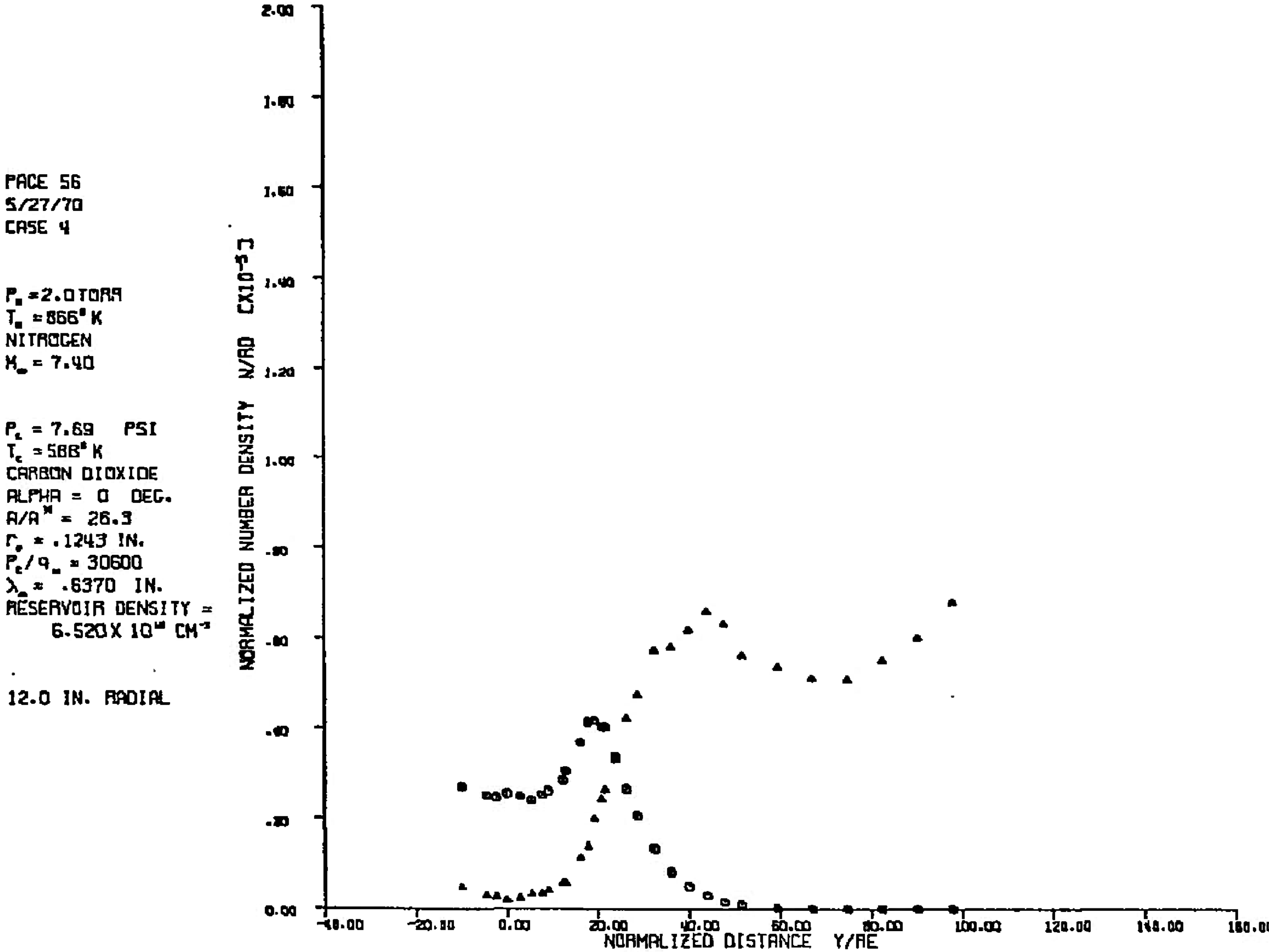
PACE 56
5/27/70
CASE 4
P∞ = 2.0 TORR
T∞ = 866° K
NITROGEN
M∞ = 7.40
Pc = 7.69 PSI
Tc = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A* = 26.3
re = .1243 IN.
Pc/q∞ = 30600
λ∞ = .6370 IN.
RESERVOIR DENSITY =
6.520 X 10^18 CM^-3
12.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/RO [X10^-3]
NORMALIZED DISTANCE Y/RE

Fig. V-52

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CASE 4

P_o = 7.0 TORR
T_o = 290° K
NITROGEN
M_∞ = 7.90

P_c = 12.79 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 19400
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.080 X 10[illegible] CM[illegible]

CENTERLINE AXIAL

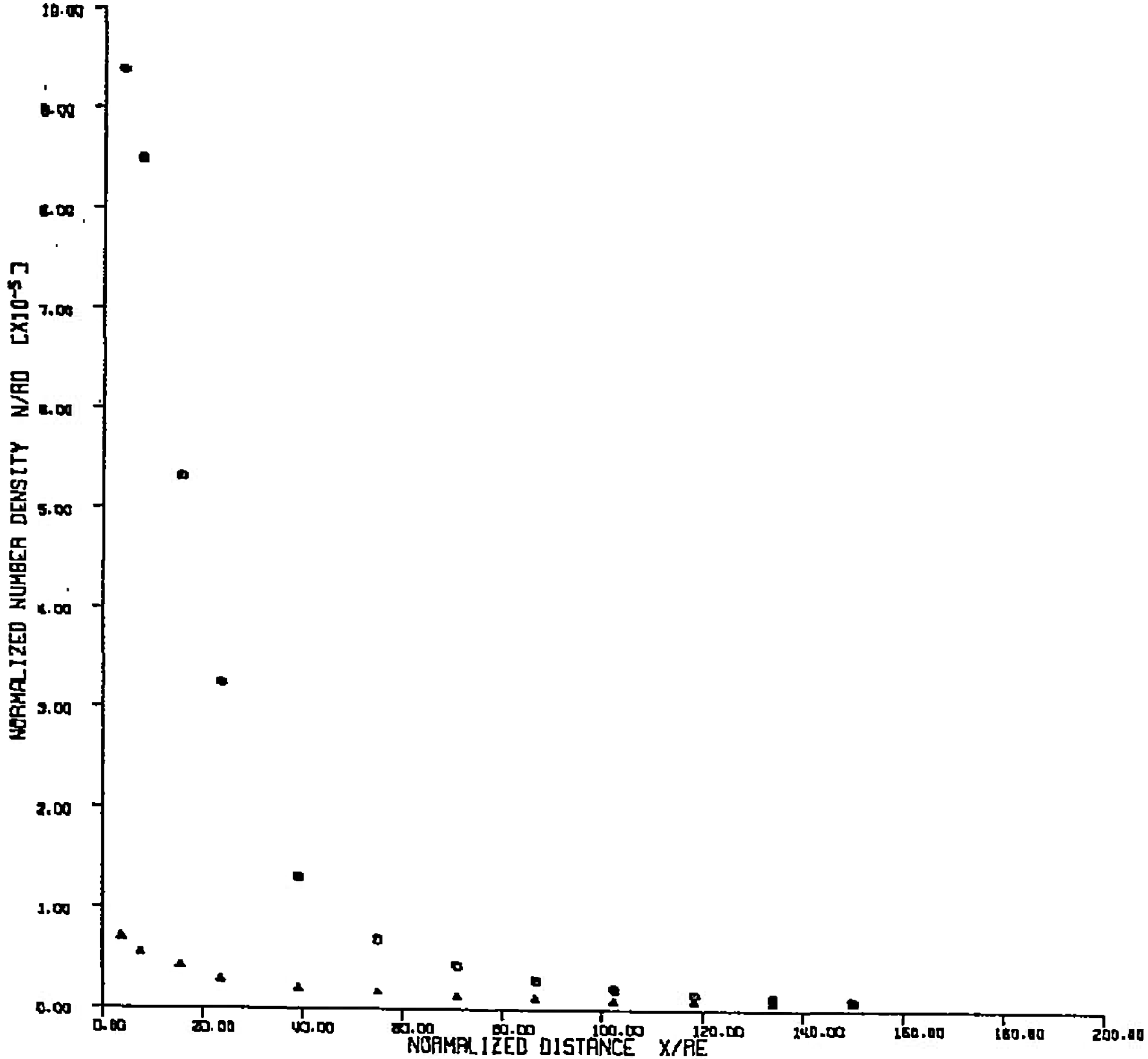

Fig. V-53

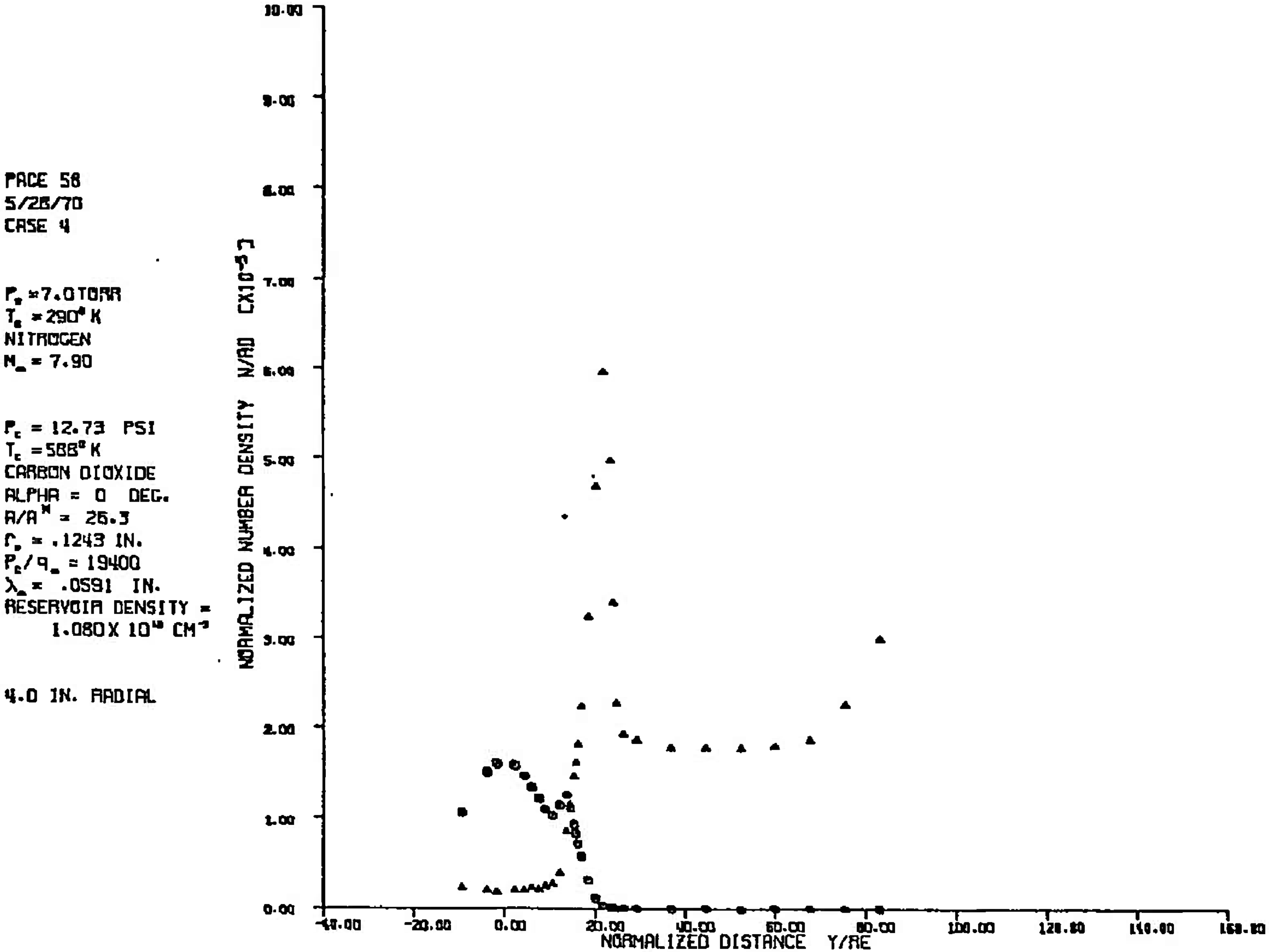
PACE 58
5/28/70
CASE 4
P_o =7.0TORR
T_o =290° K
NITROGEN
M_∞ = 7.90
P_c = 12.73 PSI
T_c =588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 19400
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.080 X 10^19 CM^-3
4.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO CX10^-3]
NORMALIZED DISTANCE Y/RE
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00

Fig. V-54

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CASE 4

P_∞ = 7.0 TORR
T_∞ = 290° K
NITROGEN
M_∞ = 7.90

P_0 = 12.73 PSI
T_0 = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_0/q_∞ = 19400
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.080 X 10^{19} CM^{-3}

8.0 IN. RADIAL

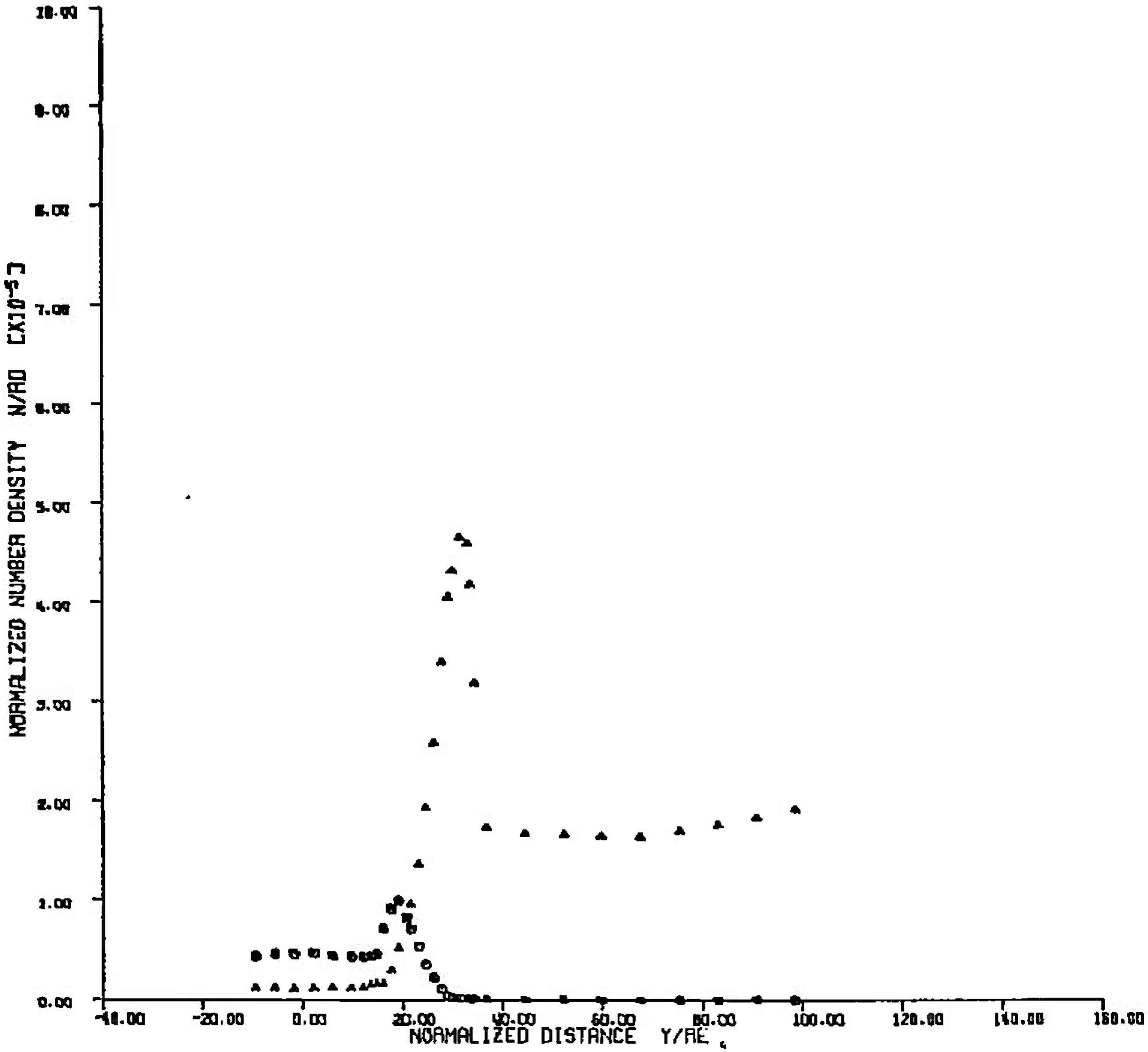

Fig. V-55

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CASE 4

P_c = 7.0 TORR
T_c = 290° K
NITROGEN
M_∞ = 7.90

P_c = 12.73 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_* = .1243 IN.
P_c/q_∞ = 19400
λ_∞ = .0591 IN.
RESERVOIR DENSITY = 1.080 X 10^{19} CM^{-3}

12.0 IN. RADIAL

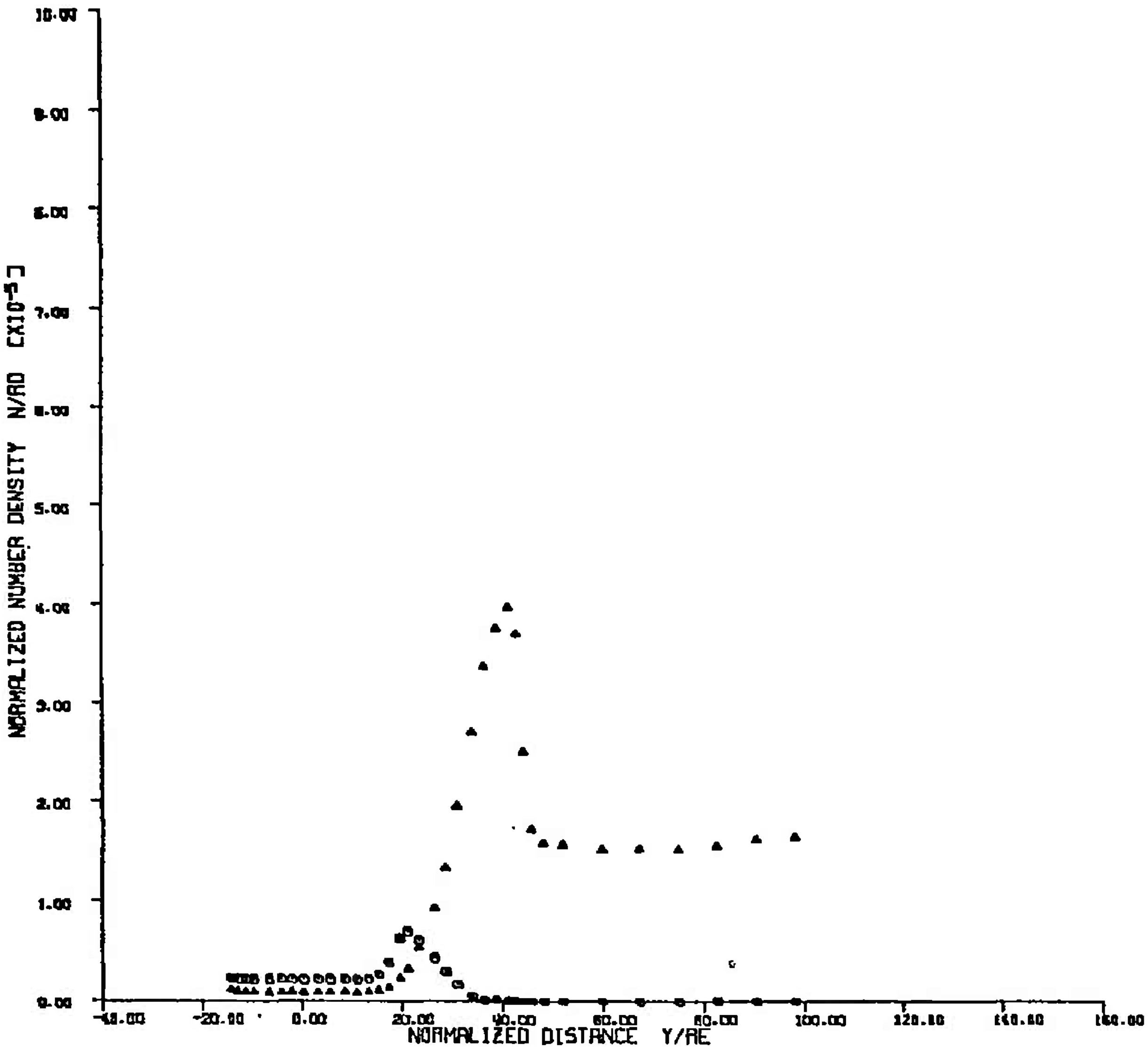

Fig. V-56

PACE 61
5/28/70
CASE 4

P_0 = 1.0 TORR
T_0 = 290° K
NITROGEN
M_∞ = 7.45

P_c = 24.30 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_p = .1243 IN.
P_c/q_∞ = 147000
λ_∞ = .3470 IN.
RESERVOIR DENSITY =
2.060 X 10^{18} CM^{-3}

CENTERLINE AXIAL

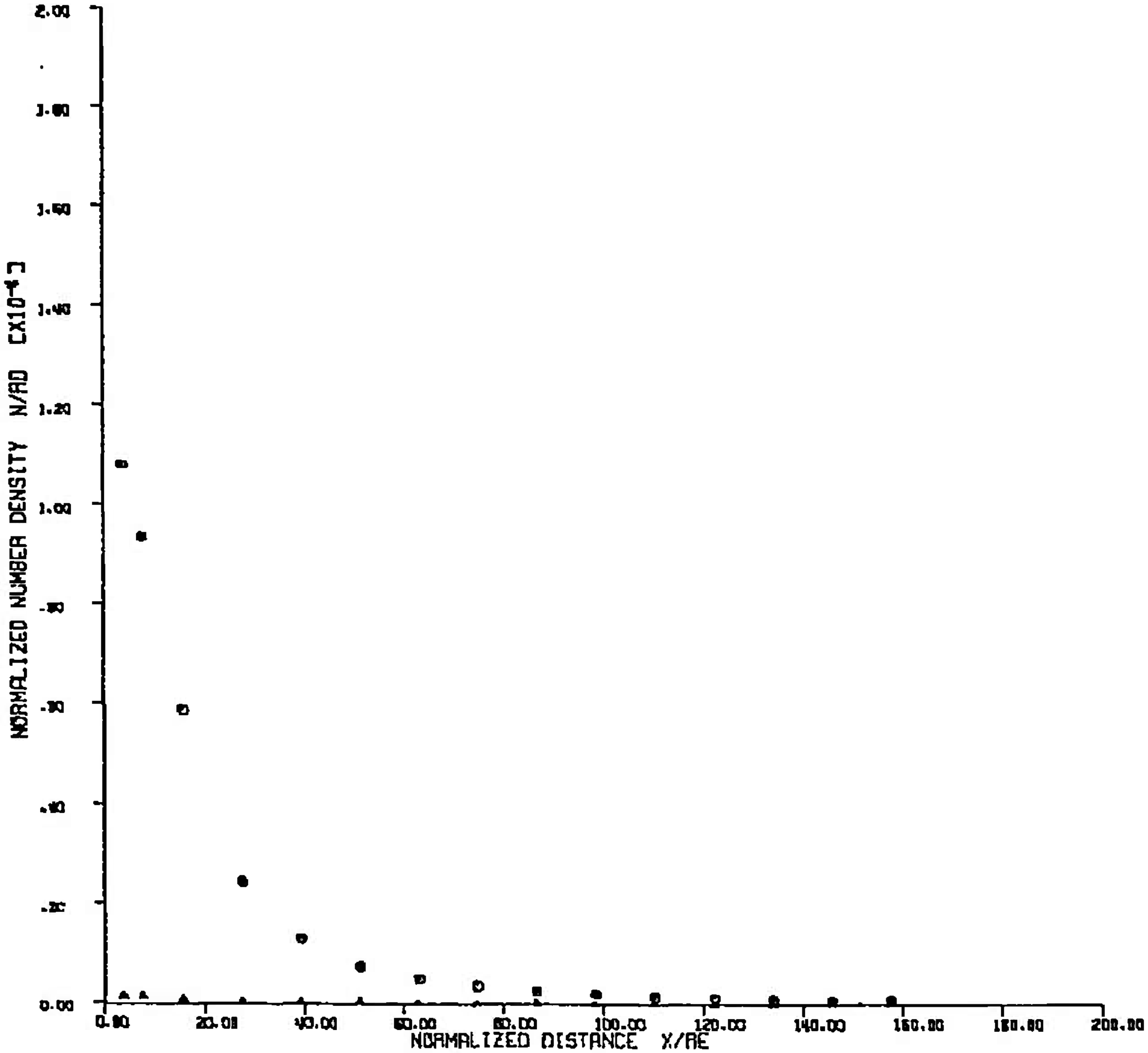

Fig. V-57

PACE 61
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CASE 4

P_∞ = 1.0 TORR
T_∞ = 290° K
NITROGEN
M_∞ = 7.45

P_c = 24.30 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 147000
λ_∞ = .3470 IN.
RESERVOIR DENSITY =
2.060 X 10^{19} CM^{-3}

CENTERLINE AXIAL

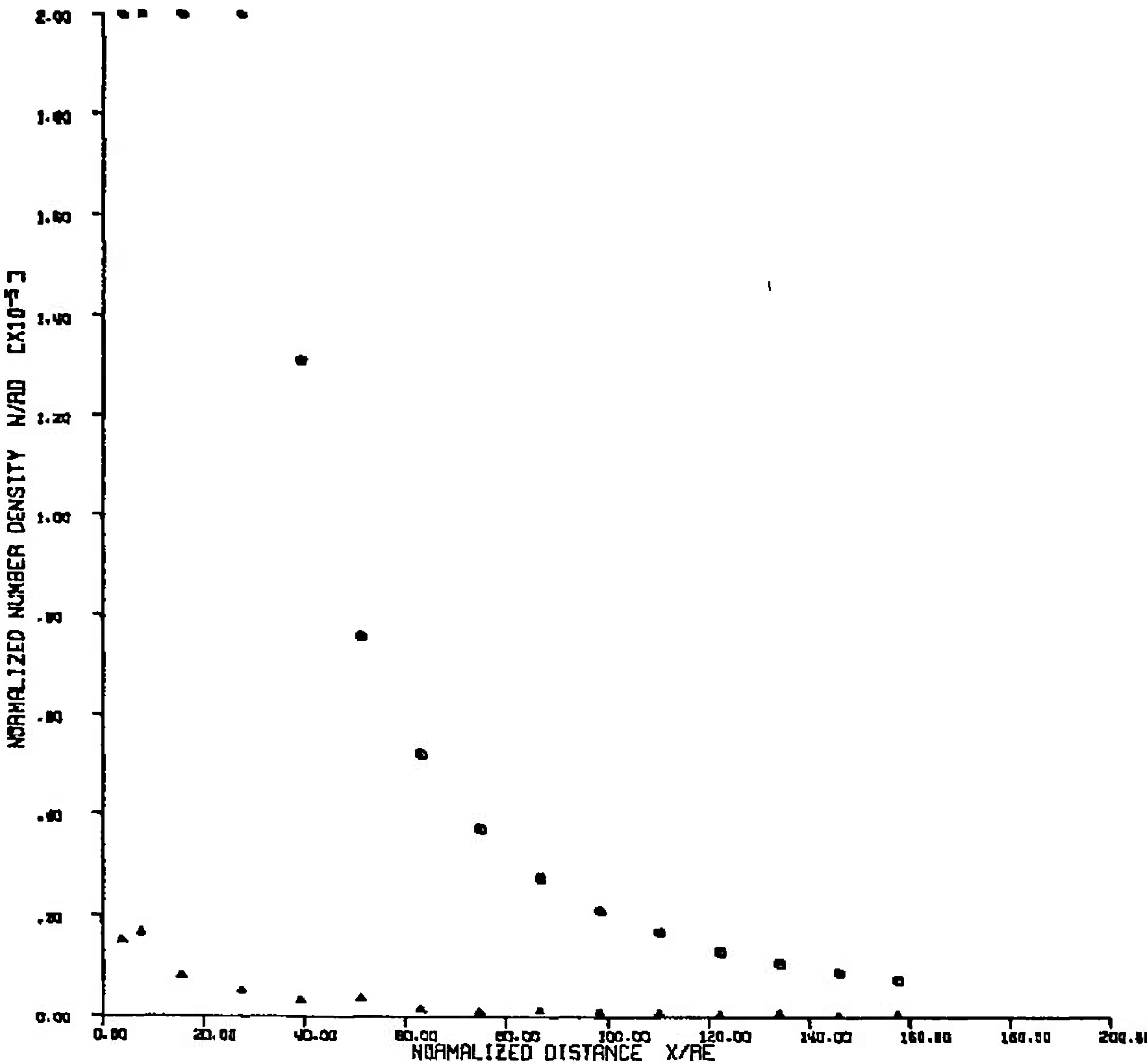

Fig. V-58

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CASE 4

P_s =1.0TORR
T_s =290° K
NITROGEN
M_∞ = 7.45

P_c = 24.30 PSI
T_c =588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 147000
λ_∞ = .3470 IN.
RESERVOIR DENSITY =
2.060 X 10^{18} CM^{-3}

4.0 IN. RADIAL

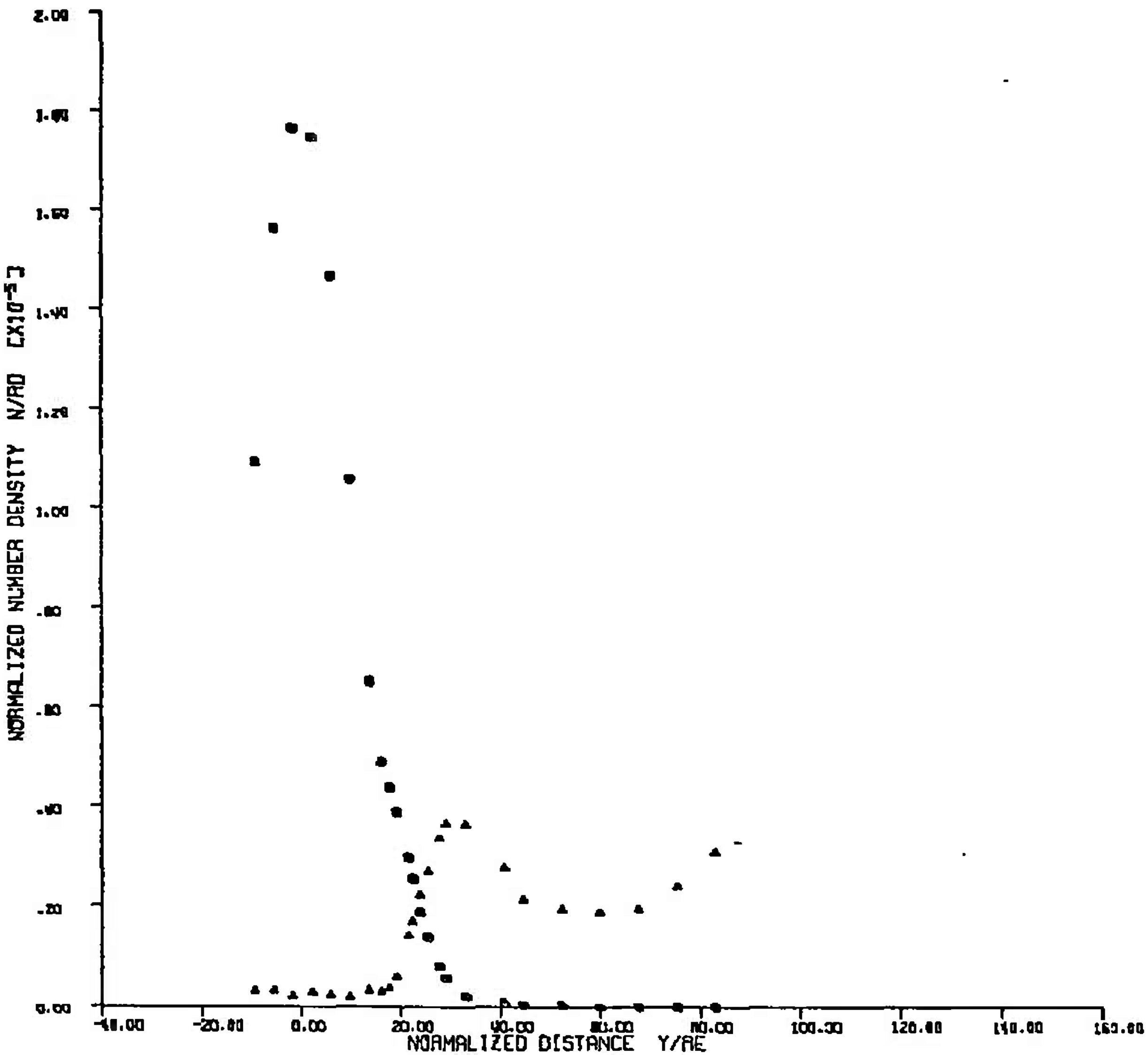
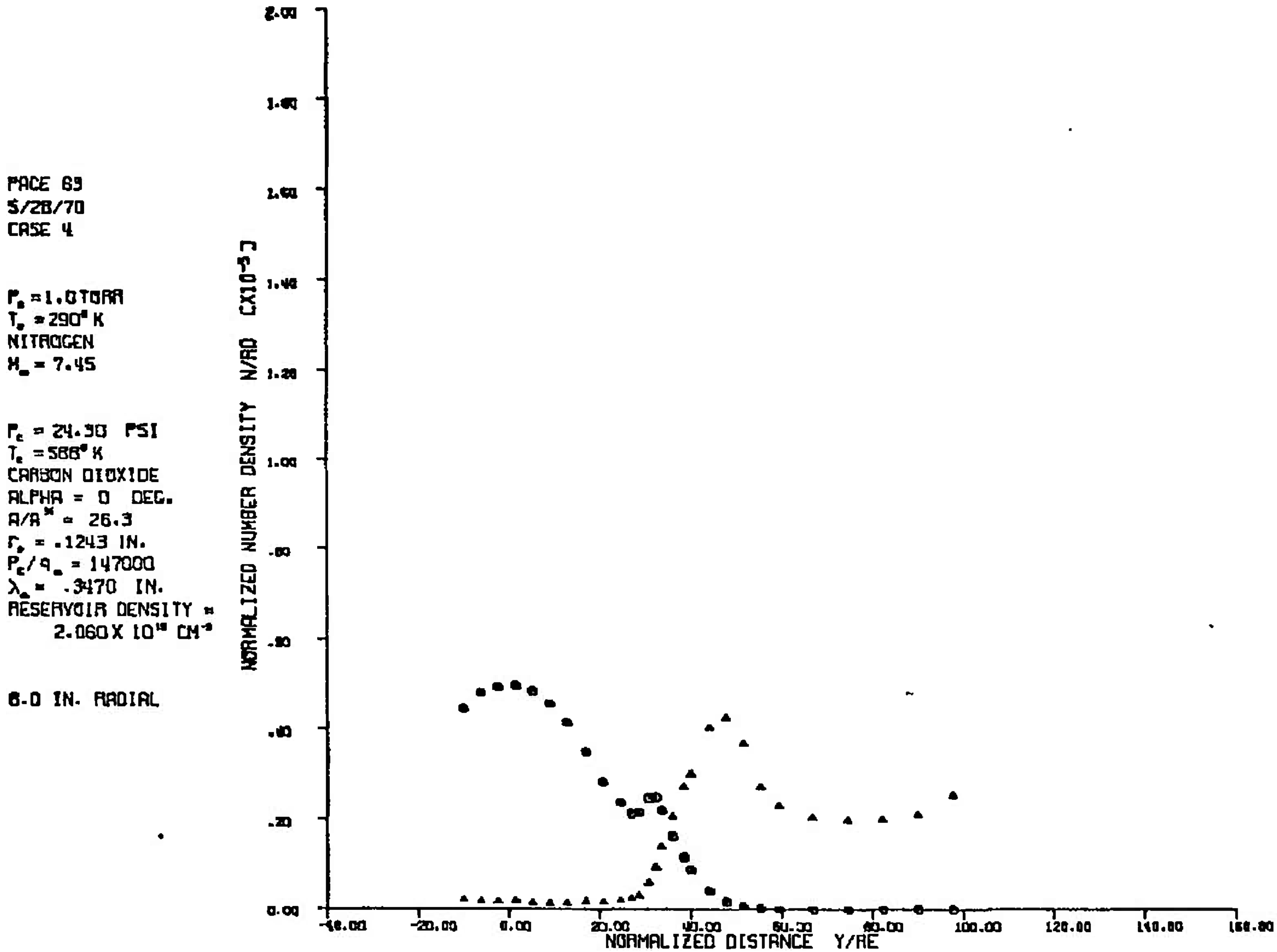


Fig. V-59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CASE 4
P∞ = 1.0 TORR
T∞ = 290° K
NITROGEN
M∞ = 7.45
Pc = 24.90 PSI
Tc = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A* = 26.3
re = .1243 IN.
Pc/q∞ = 147000
λ∞ = .3470 IN.
RESERVOIR DENSITY =
2.060 X 10^19 CM^-3
6.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO (X10^-3)
NORMALIZED DISTANCE Y/RE
2.00
1.80
1.60
1.40
1.20
1.00
.80
.60
.40
.20
0.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00

Fig. V-60

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CASE 4

P_o = 1.0 TORR
T_o = 290° K
NITROGEN
M_∞ = 7.45

P_c = 24.30 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 147000
λ_∞ = .3470 IN.
RESERVOIR DENSITY = 2.060 X 10^{19} CM^{-3}

8.0 IN. RADIAL

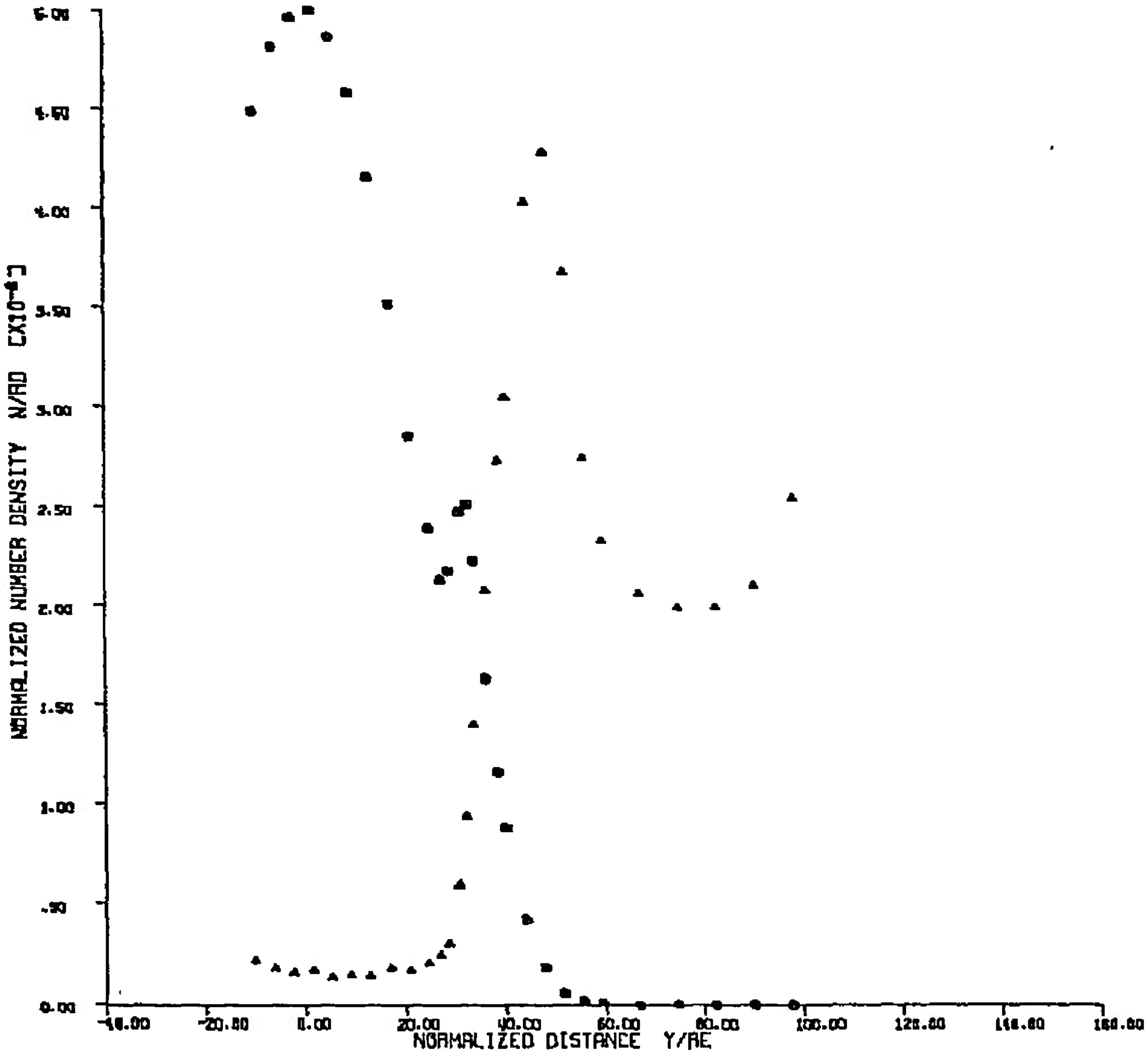

Fig. V-61

PACE 64
5/28/70
CASE 4

P_o = 1.0 TORR
T_o = 290° K
NITROGEN
M_∞ = 7.45

P_c = 24.30 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/P_∞ = 147000
λ_∞ = .3470 IN.
RESERVOIR DENSITY =
2.060 X 10^{19} CM^{-3}

12.0 IN. RADIAL

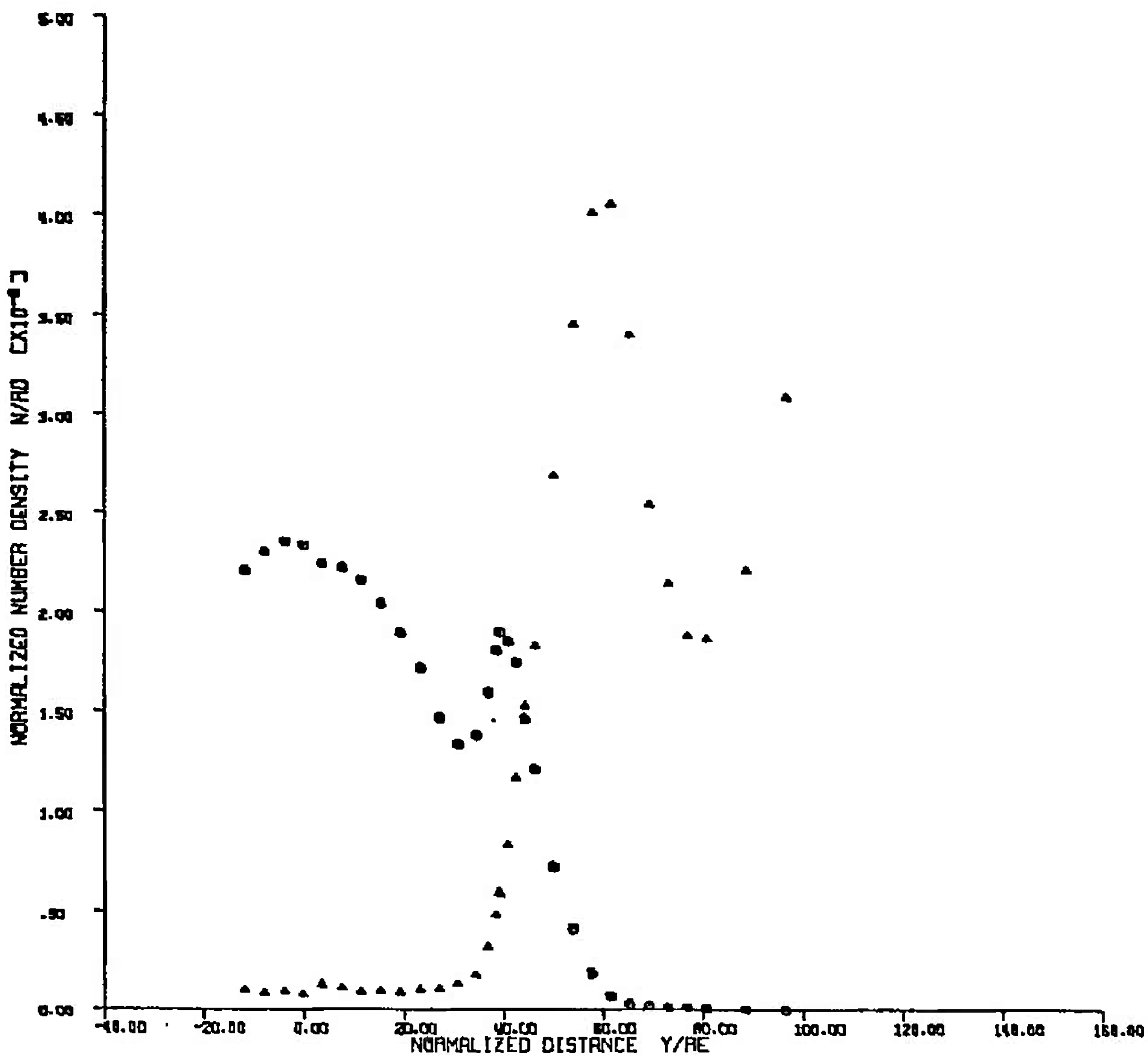

Fig. V-62

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CASE 4

P_{a} = 1.0TORR
T_{a} = 290° K
NITROGEN
M_{∞} = 7.45

P_{c} = 24.30 PSI
T_{c} = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^{*} = 26.3
r_{e} = .1243 IN.
P_{c}/q_{∞} = 147000
λ_{∞} = .3470 IN.
RESERVOIR DENSITY =
2.060 X 10^{19} CM^{-3}

12.0 IN. RADIAL

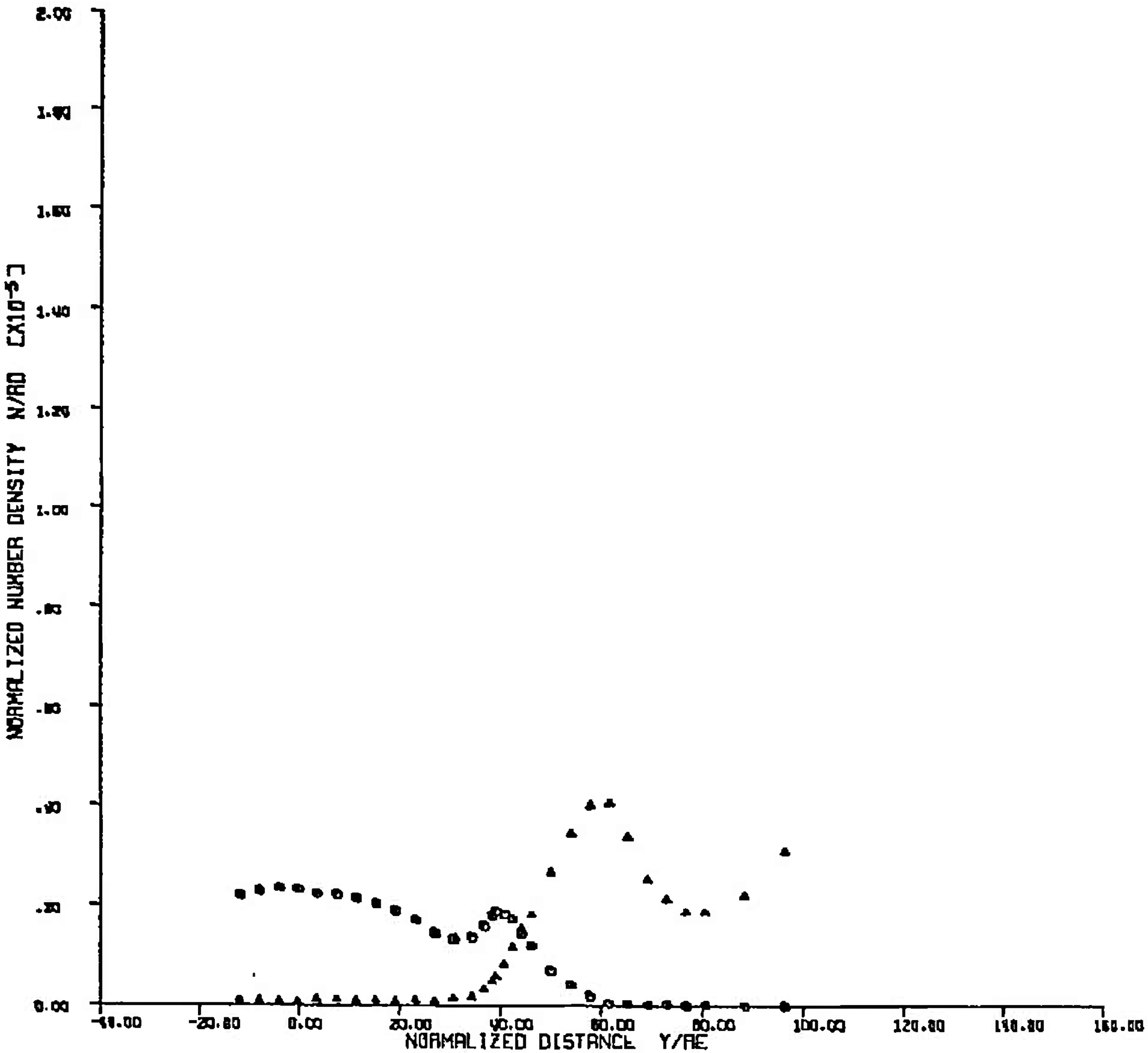

Fig. V-63

PACE 94
5/25/70
CASE 5

P_s = 3.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.60

P_c = 10.00 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
8.480 X 10^{18} CM^{-3}

CENTERLINE AXIAL

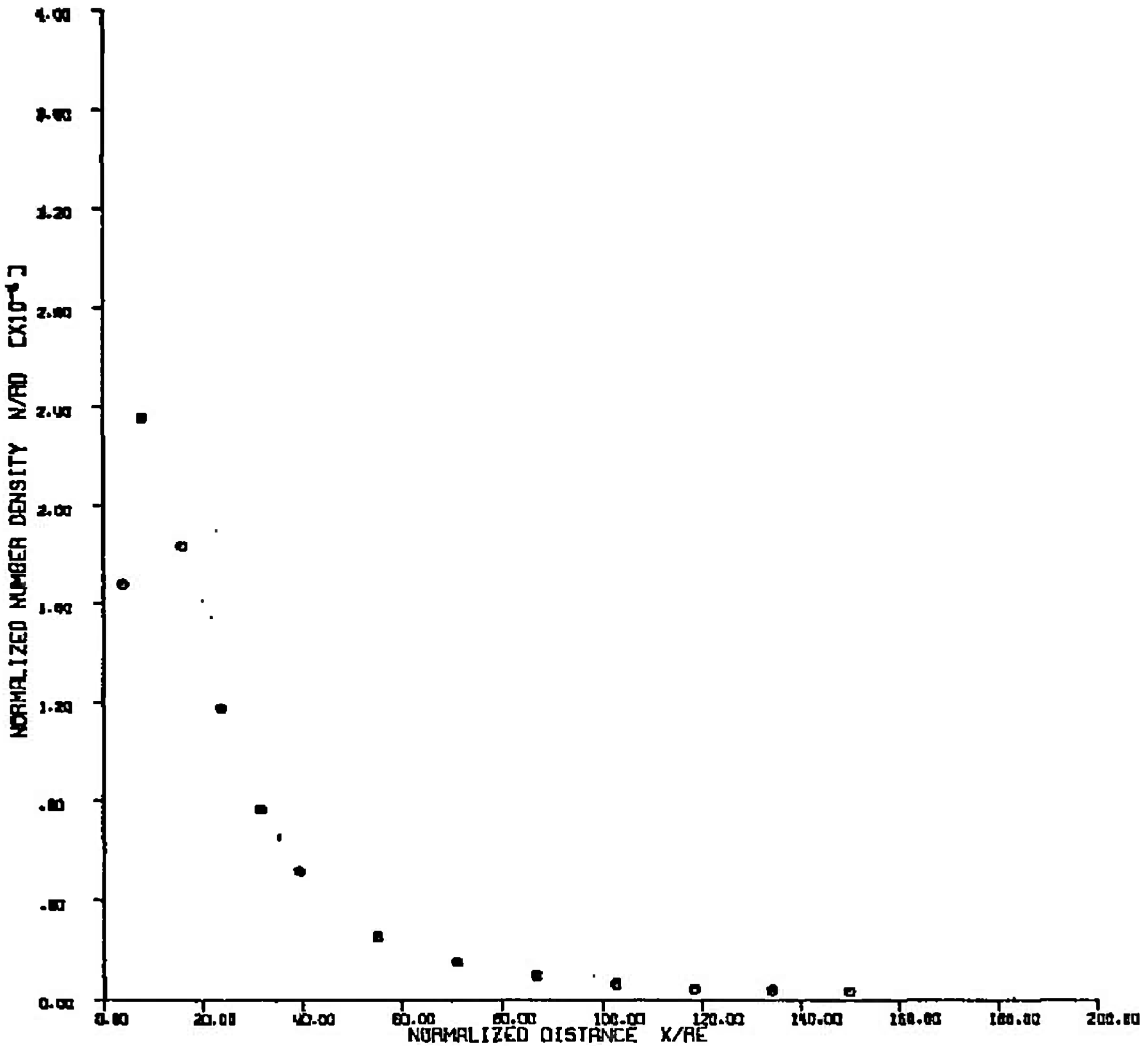

Fig. V-64

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CASE 5

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_c = 10.00 PSI
T_c = 586° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
8.480 X 10^{18} CM^{-3}

CENTERLINE AXIAL

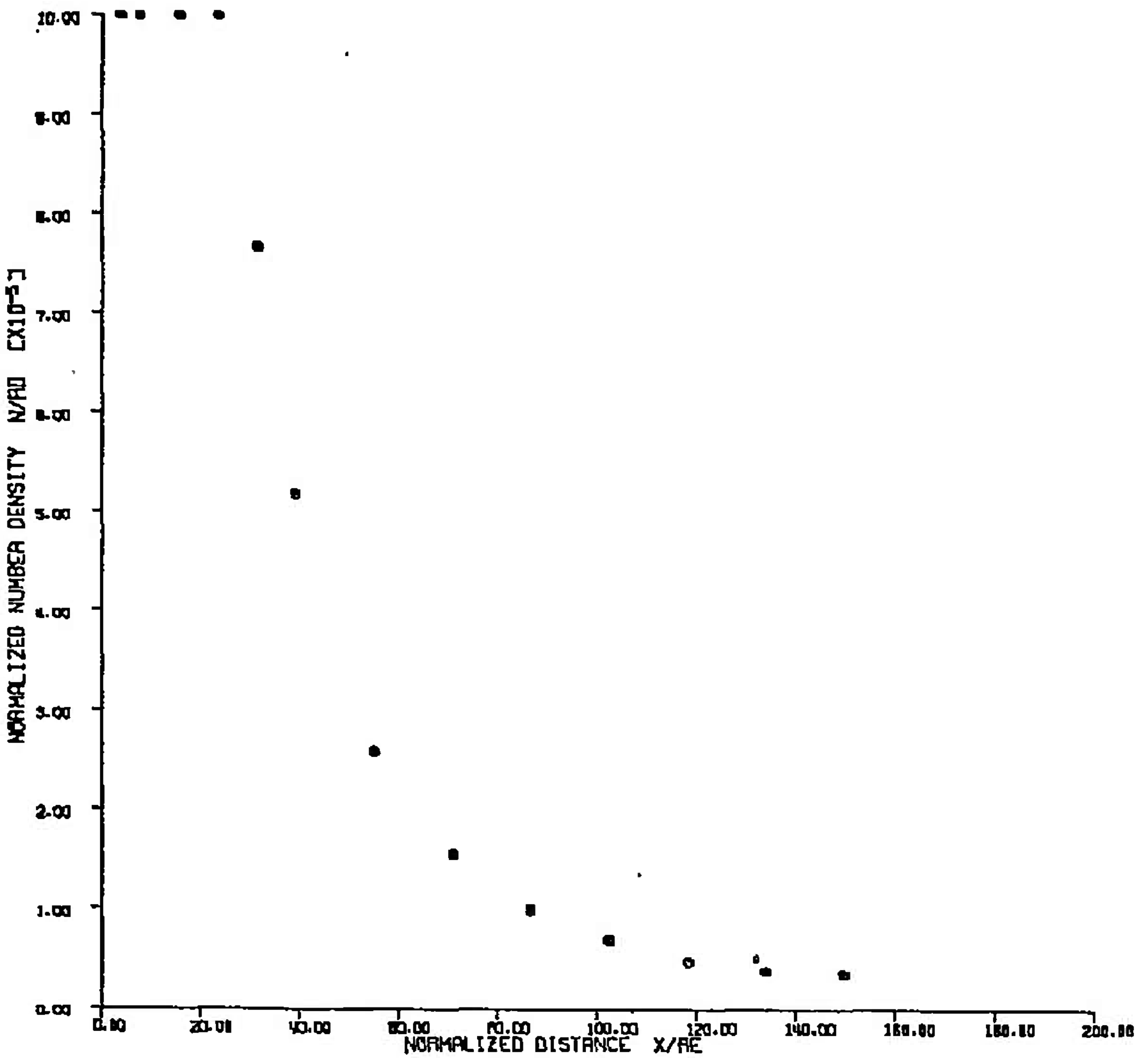

Fig. V-65

PACE 95
5/25/70
CASE 5

P_0 = 5.0 TORR
T_0 = 280° K
NITROGEN
M_∞ = 7.80

P_c = 10.00 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
8.480 X 10^{18} CM^{-3}

4.0 IN. RADIAL

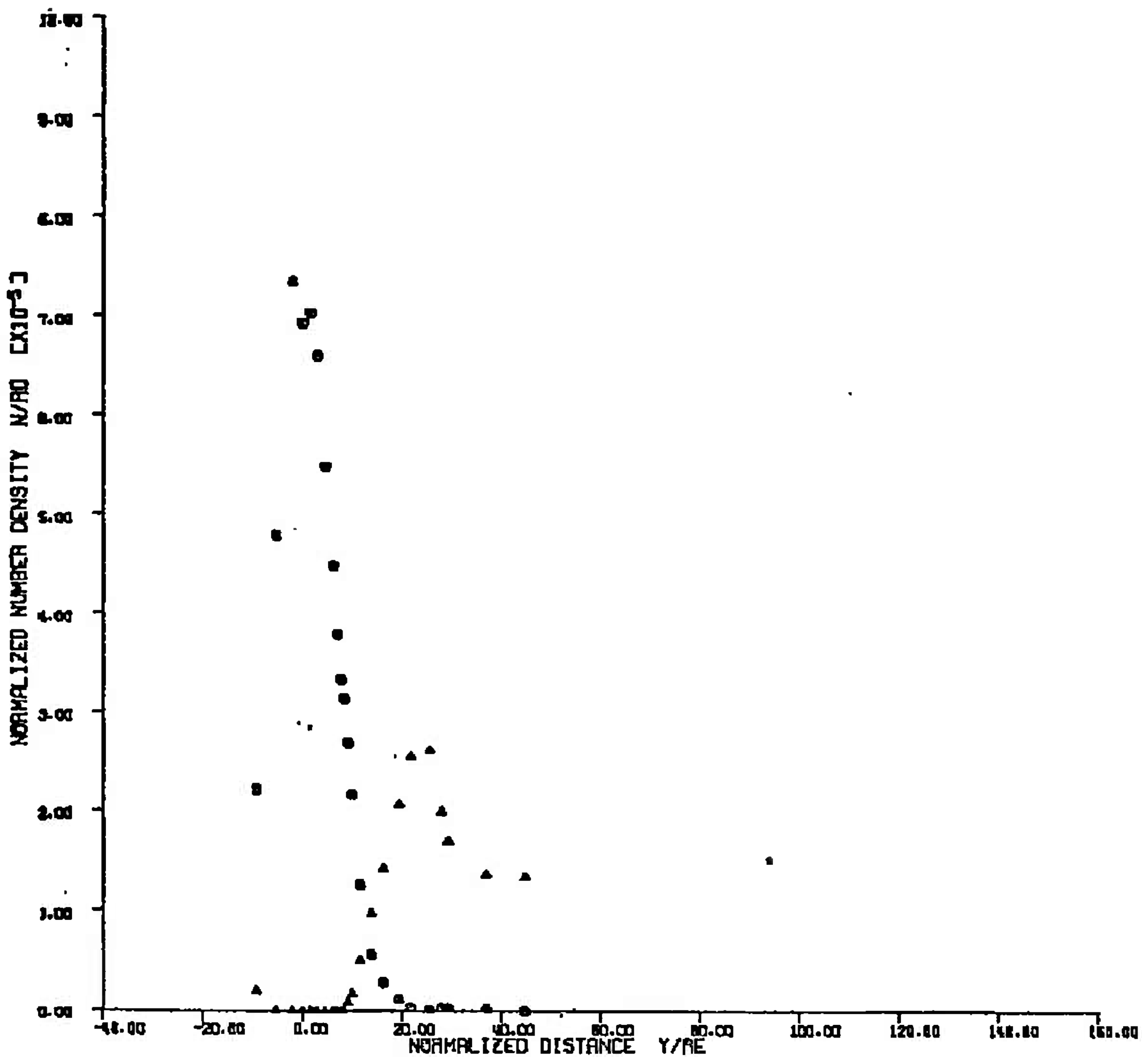

Fig. V-66

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CASE 5

P_c = 3.0 TORR
T_c = 280° K
NITROGEN
M_∞ = 7.80

P_c = 10.00 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
8.480 X 10^{18} CM^{-3}

6.0 IN. RADIAL

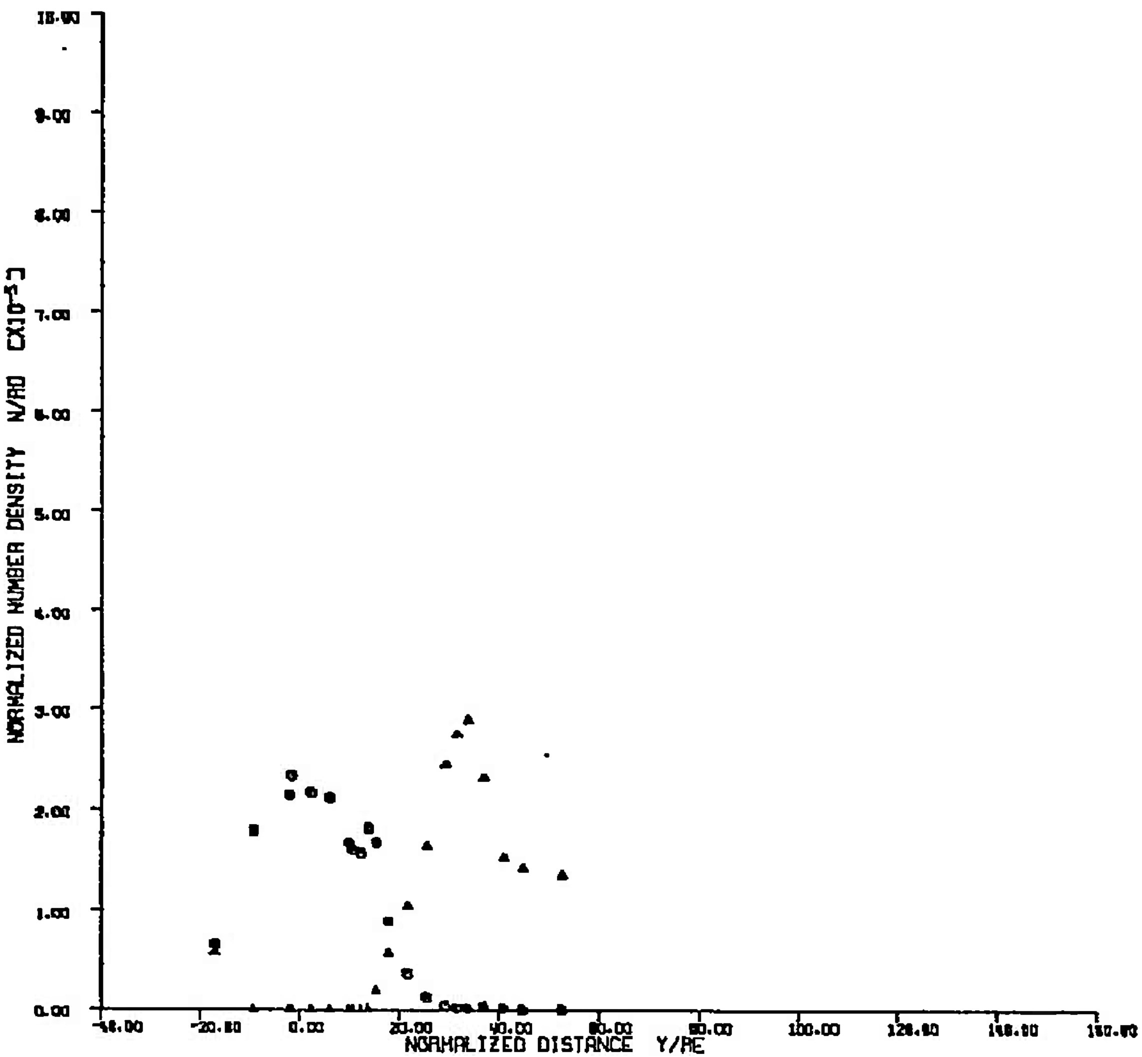

Fig. V-67

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CASE 5

P_o = 3.0 TORR
T_o = 280° K
NITROGEN
M_∞ = 7.60

P_c = 10.00 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
6.480 X 10^{18} CM^{-3}

6.0 IN. RADIAL

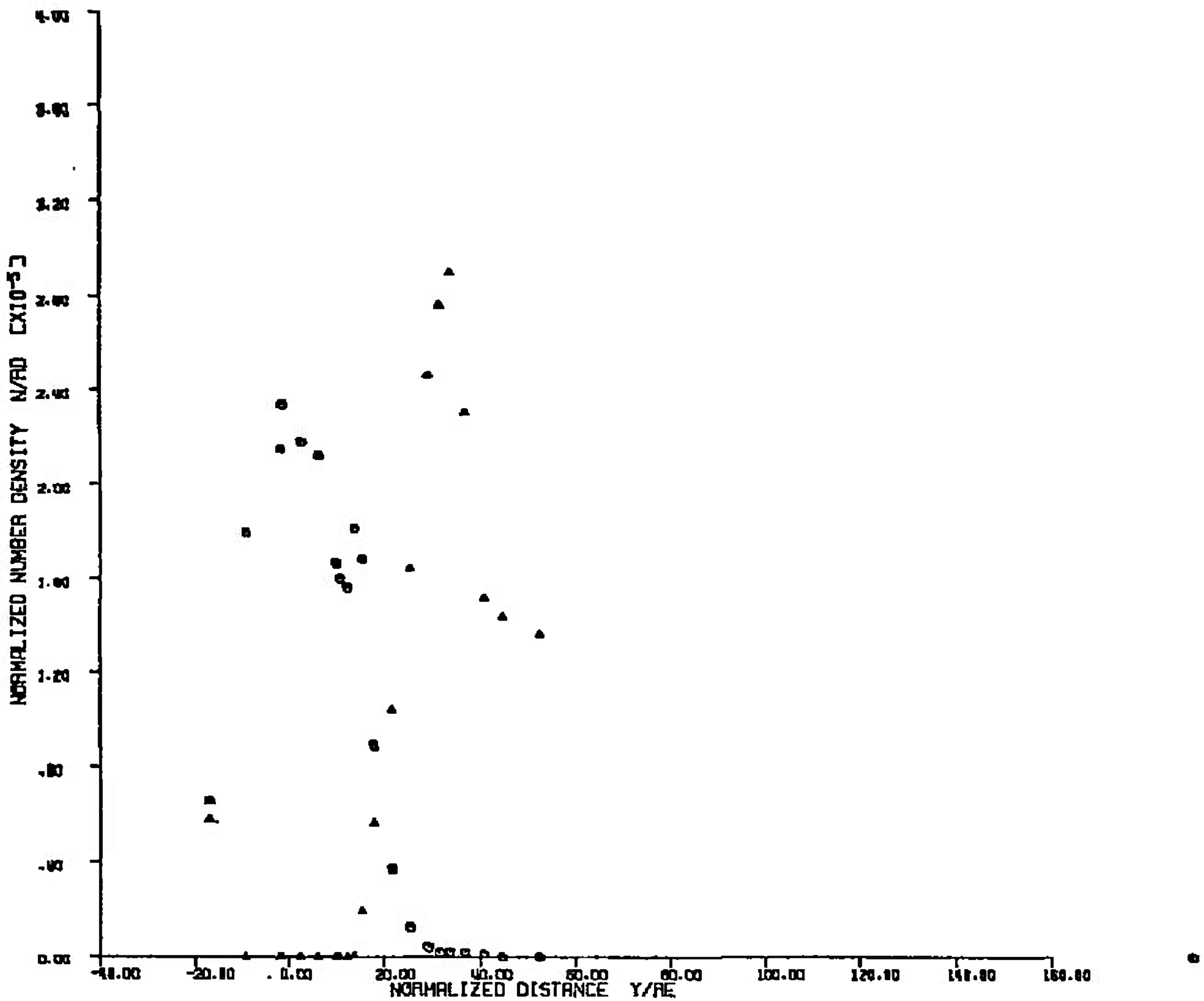

Fig. V-68

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CASE 5

P_0 = 3.0 TORR
T_0 = 280° K
NITROGEN
M_∞ = 7.80

P_c = 10.00 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 33600
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
8.480 X 10^{18} CM^{-3}

12.0 IN. RADIAL

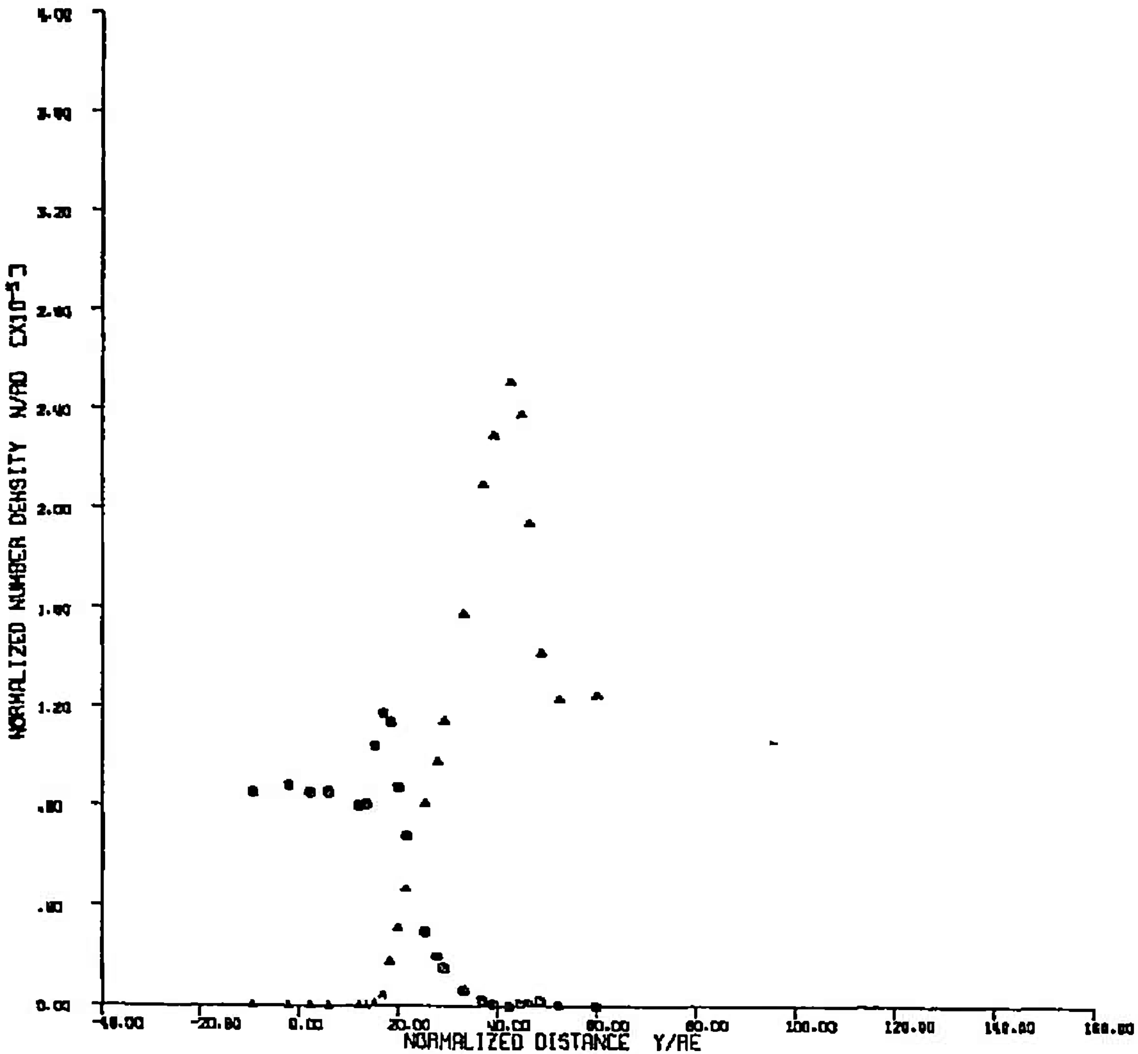

Fig. V-69

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CASE 5

P_S = 3.0 TORR
T_S = 280° K
NITROGEN
M_∞ = 7.80

P_E = 64.50 PSI
T_E = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_* = .1243 IN.
P_E/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470×10^{18} CM^{-3}

CENTERLINE AXIAL

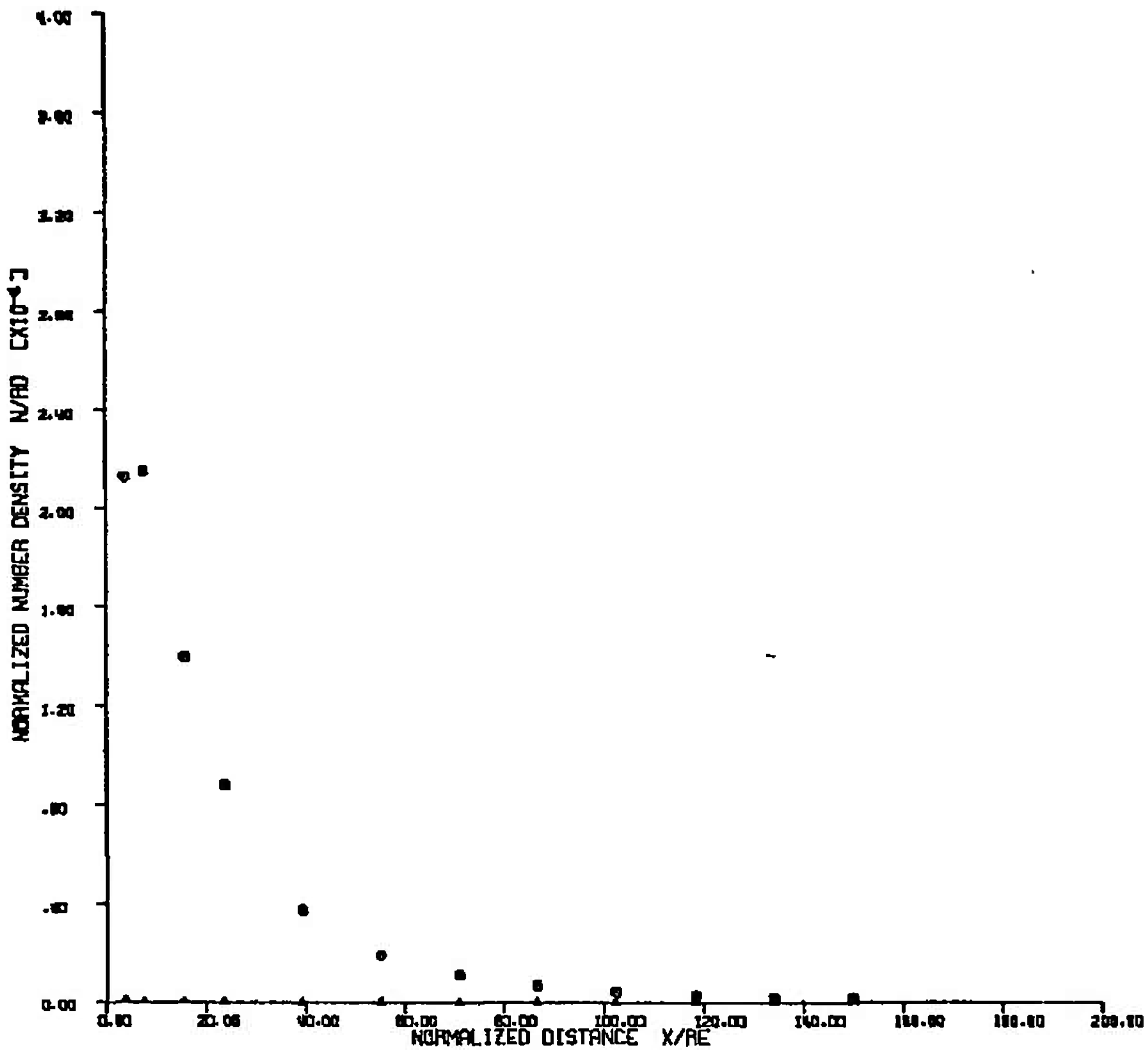

Fig. V-70

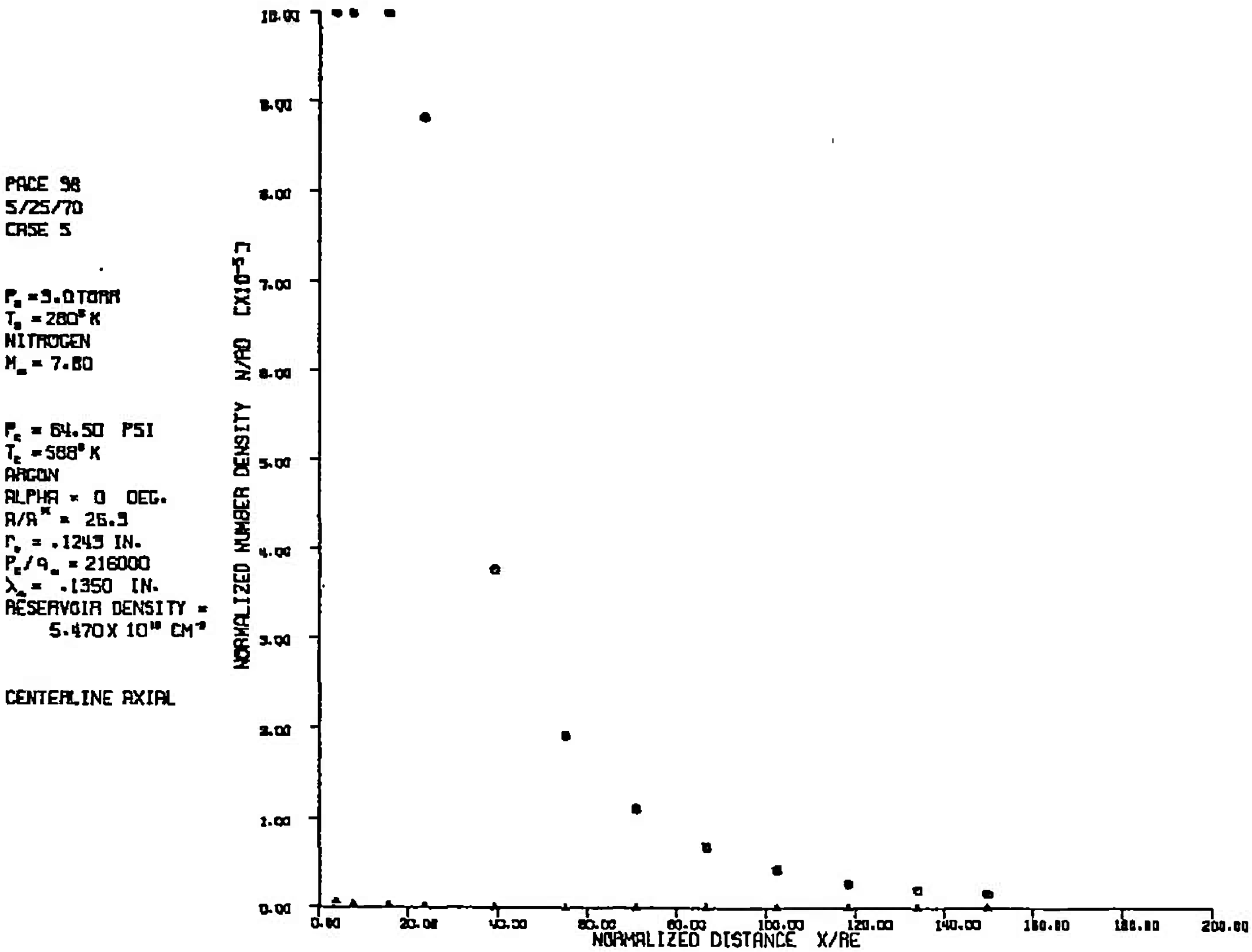
PACE 98
5/25/70
CASE 5
P = 3.0 TORR
T = 280° K
NITROGEN
M = 7.80
P = 64.50 PSI
T = 588° K
ARGON
ALPHA = 0 DEG.
A/A* = 26.3
r = .1243 IN.
P/q = 216000
λ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10 CM
CENTERLINE AXIAL
NORMALIZED NUMBER DENSITY N/NO (X10^-3)
NORMALIZED DISTANCE X/RE
0.00
1.00
2.00
3.00
4.00
5.00
7.00
10.00
20.00
40.00
80.00
100.00
120.00
140.00
200.00

Fig. V-71

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CASE 5

P_s = 3.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.60

P_c = 64.50 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10[illegible] CM[illegible]

4.0 IN. RADIAL

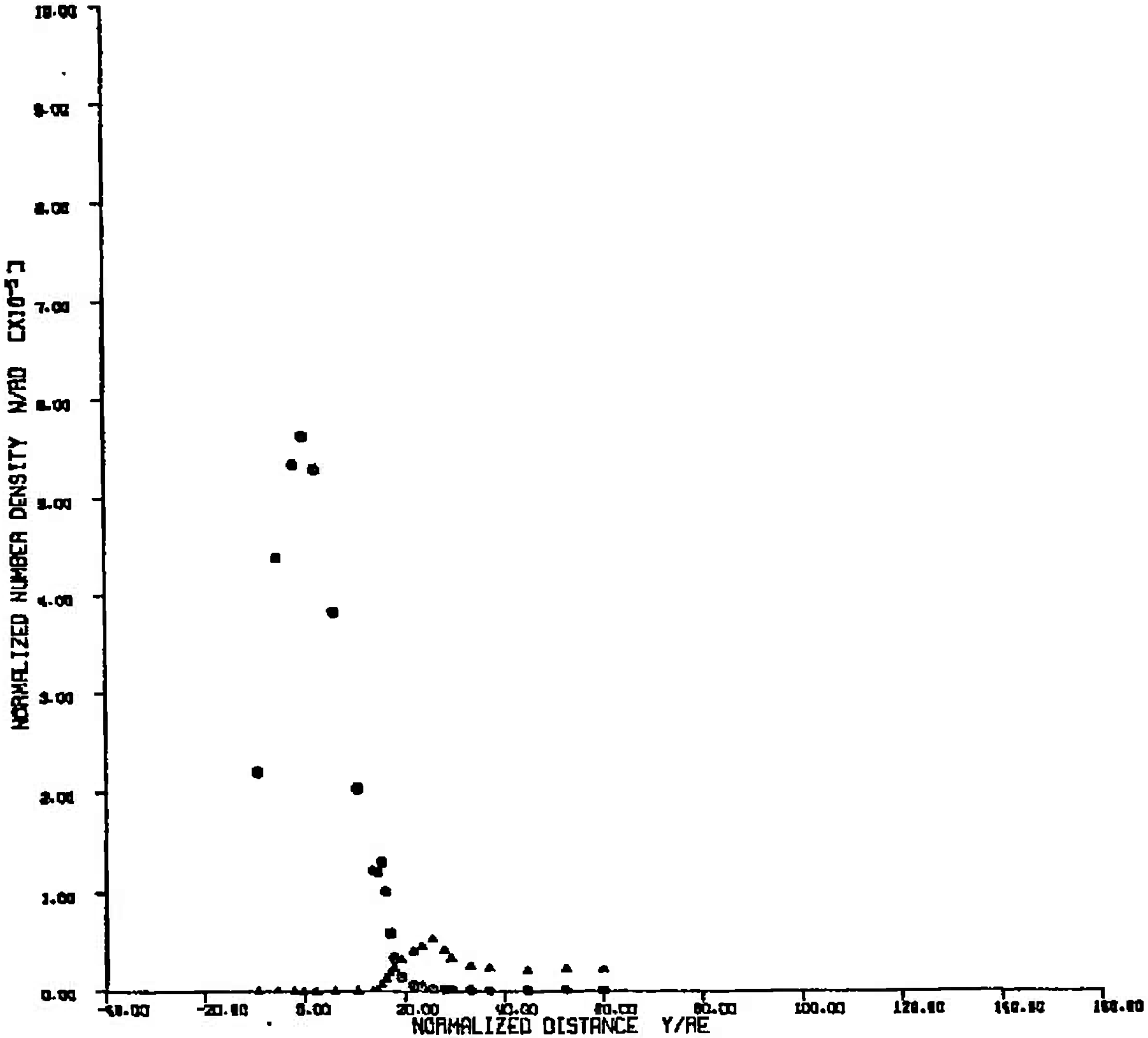

Fig. V-72

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CASE 5

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY = 5.470 X 10[illegible] CM[illegible]

8.0 IN. RADIAL

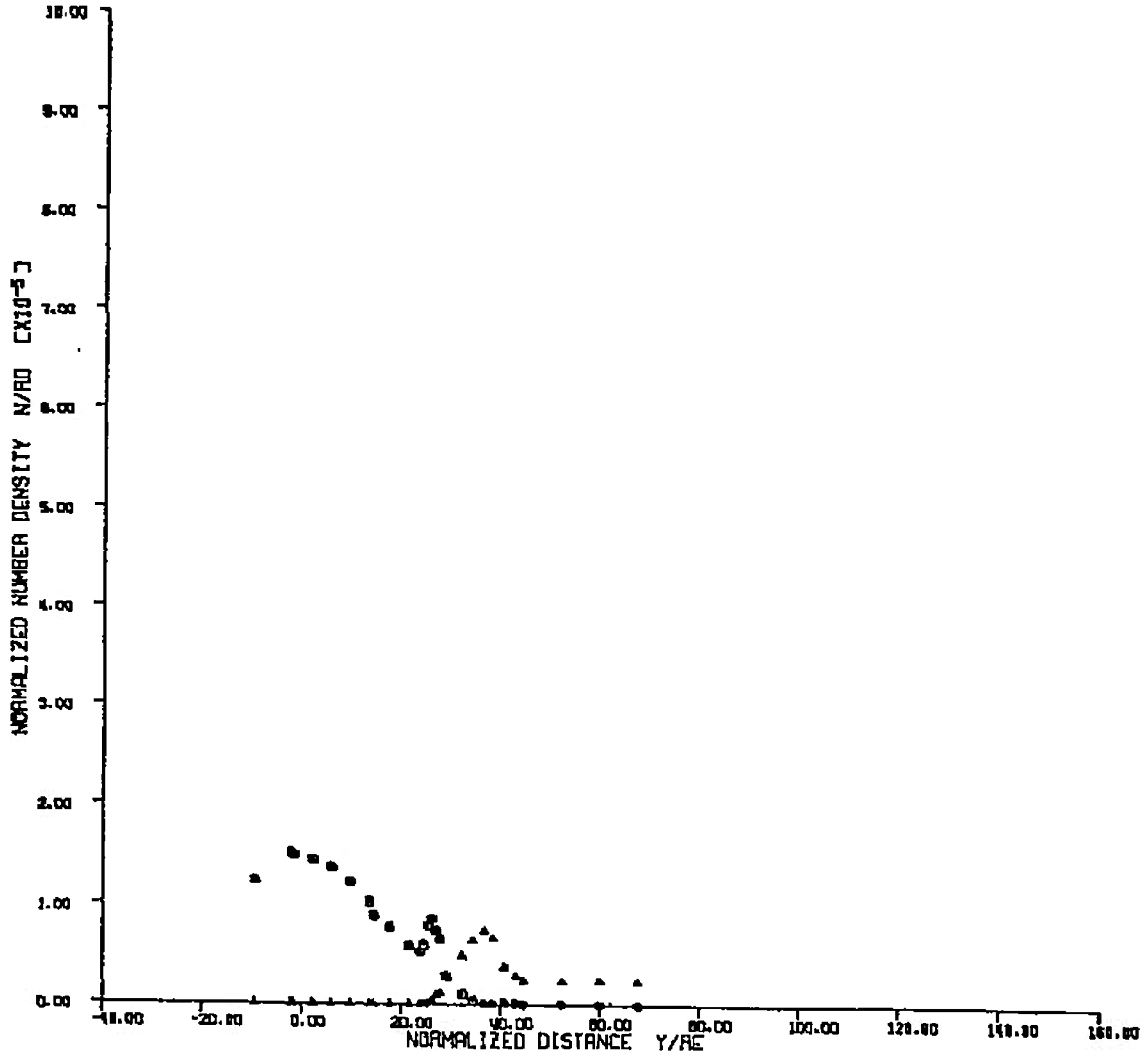

Fig. V-73

PACE 40
5/25/70
CASE 5

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY = 5.470 X 10^{18} CM^{-3}

8.0 IN. RADIAL

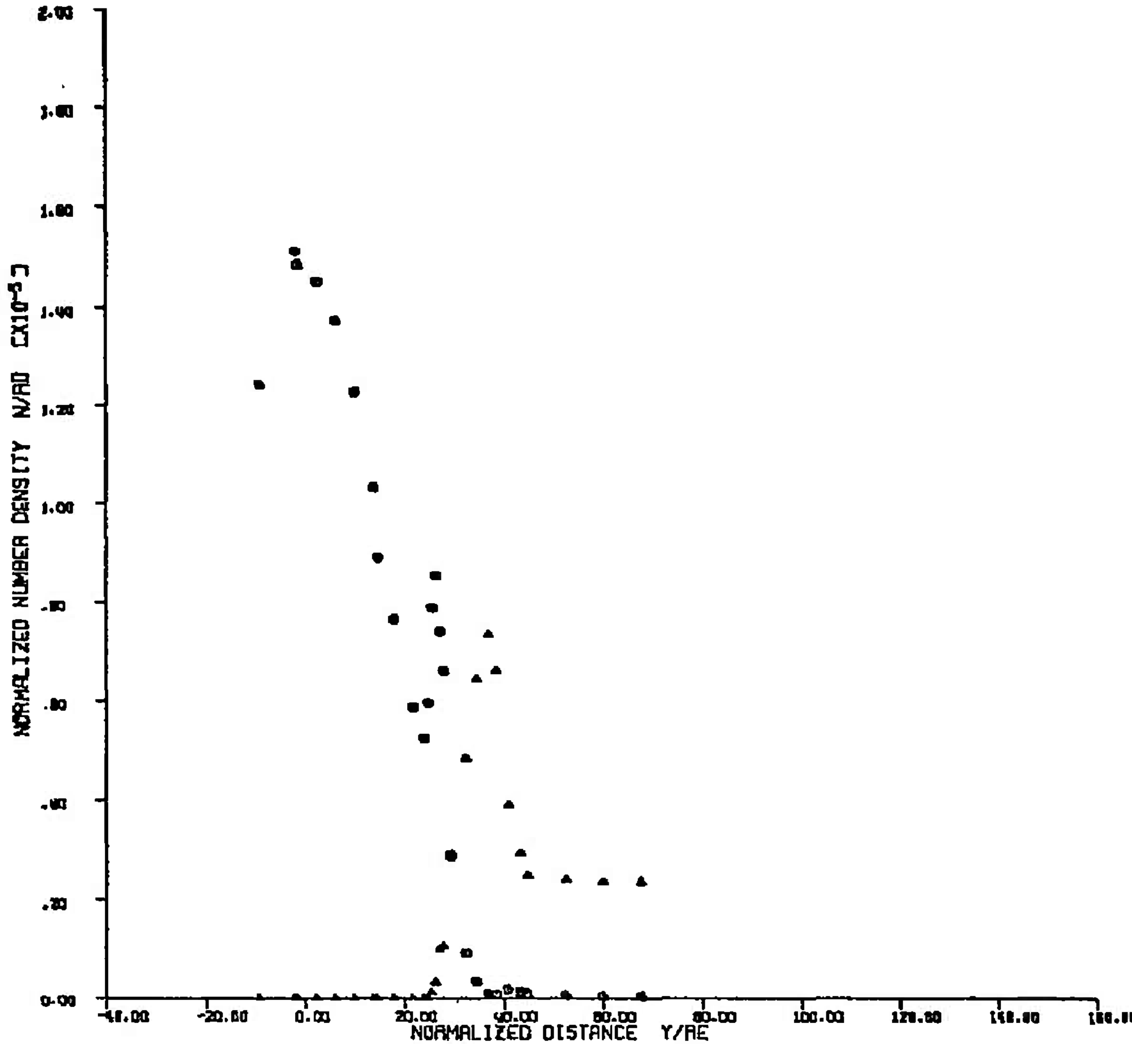

Fig. V-74

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CASE 5

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10^{19} CM^{-3}

12.0 IN. RADIAL

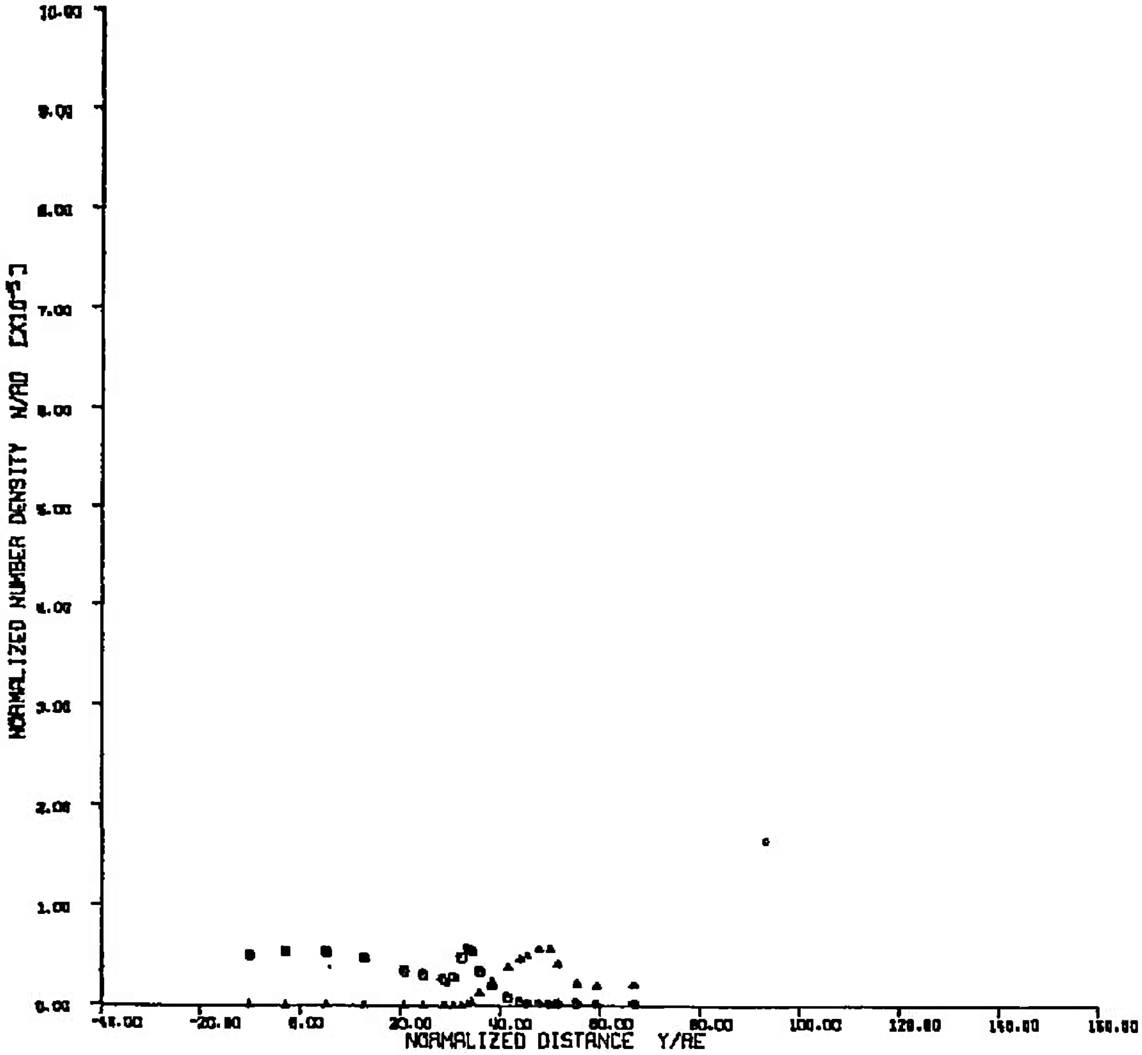

Fig. V-75

PACE 41
5/25/70
CASE 5

P_s = 3.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10^{19} CM^{-3}

12.0 IN. RADIAL

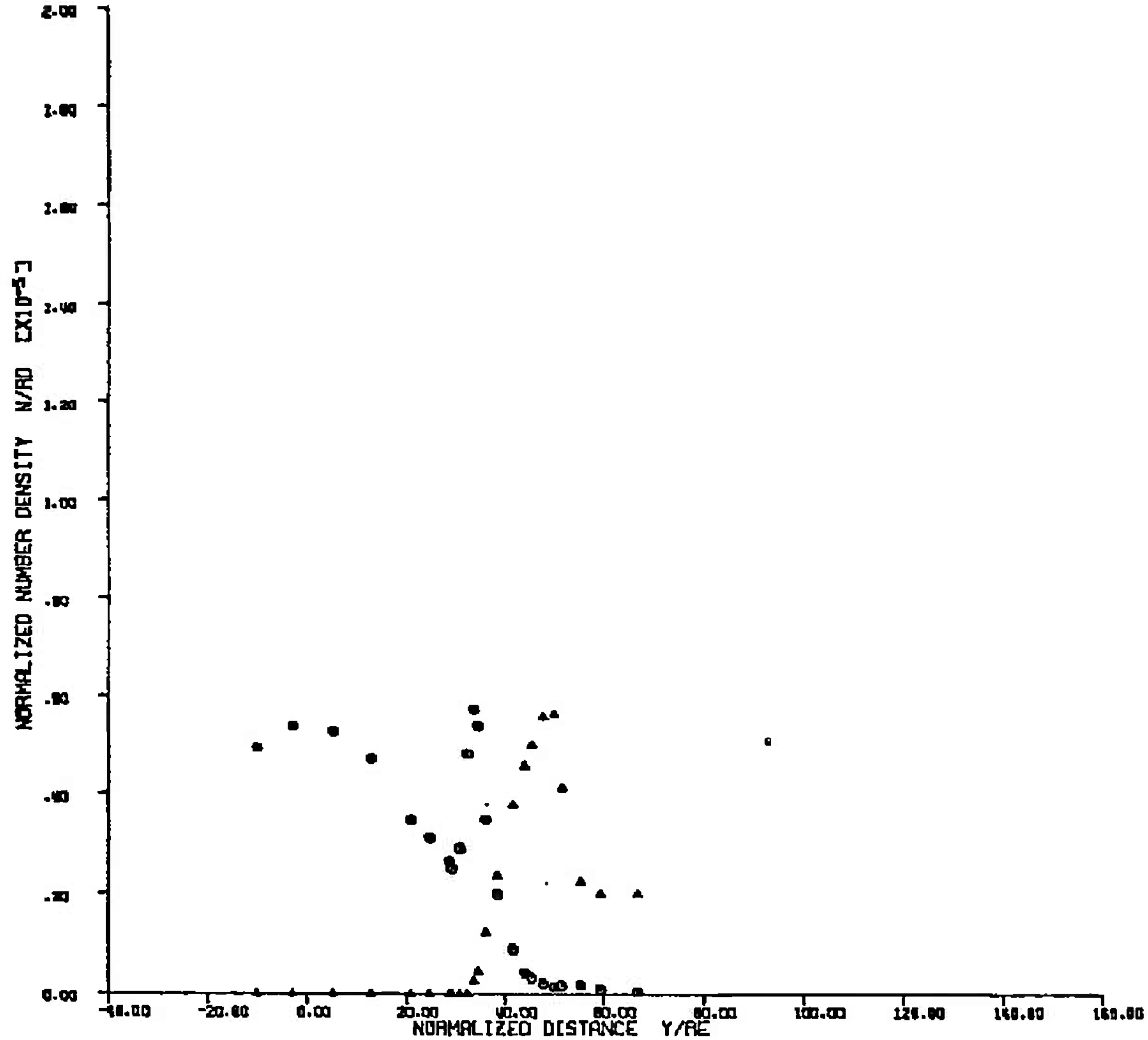

Fig. V-76

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CASE 5

P_∞ = 7.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.90

P_o = 150.00 PSI
T_o = 644° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_o = .1243 IN.
P_o/q_∞ = 228000
λ_∞ = .0591 IN.
RESERVOIR DENSITY =
1.160 X 10^{20} CM^{-3}

8.0 IN. RADIAL

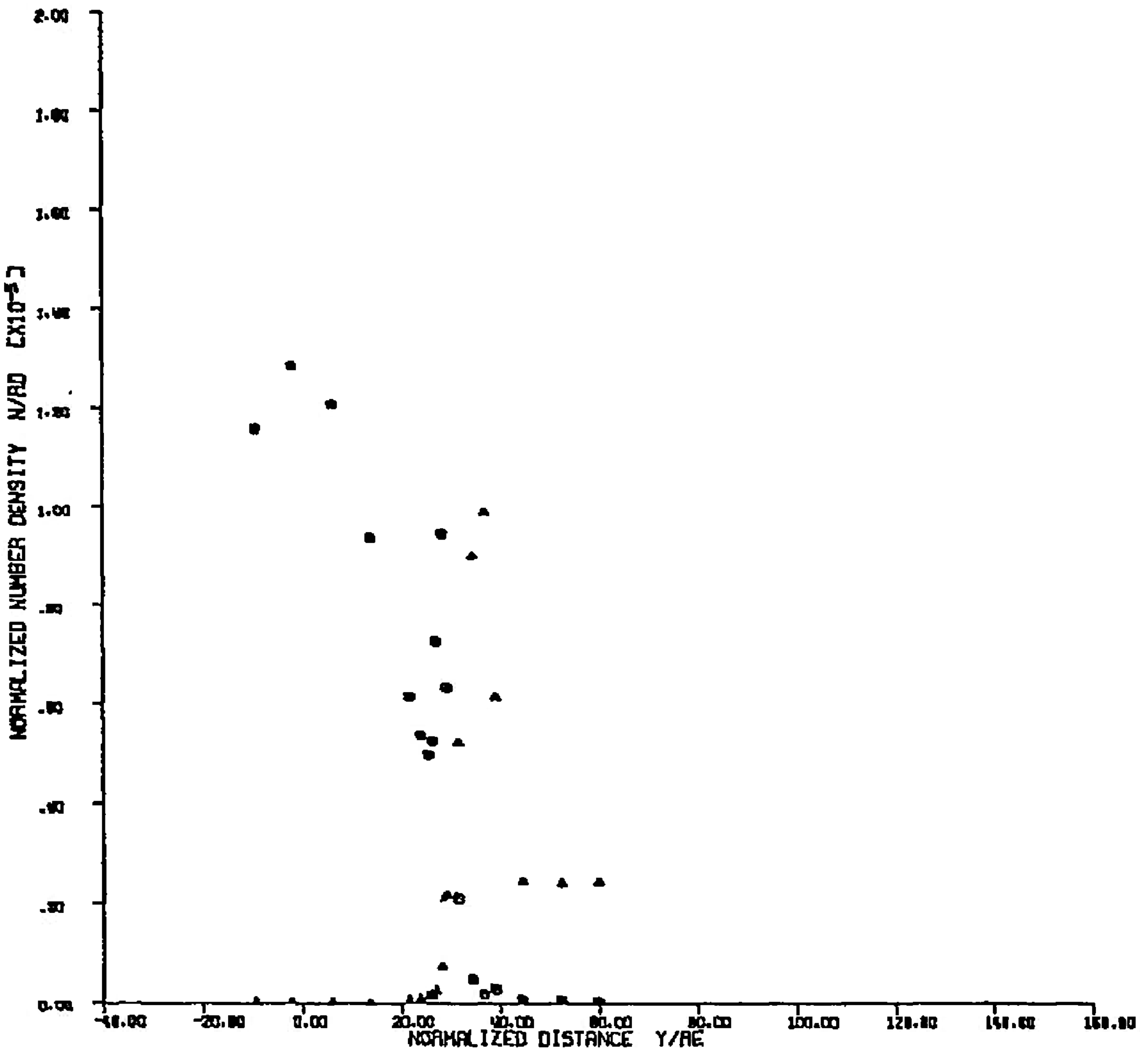
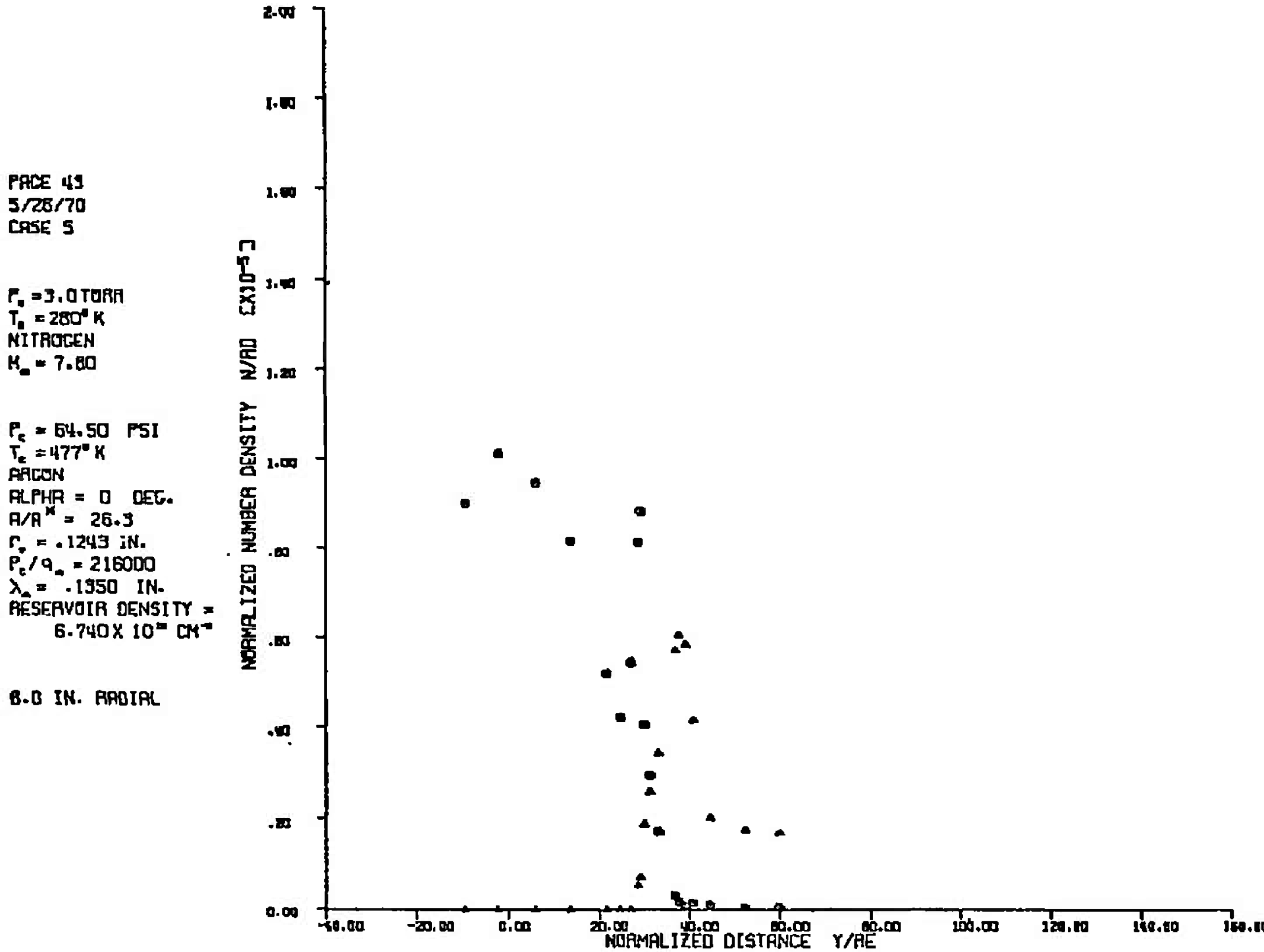


Fig. V-77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CASE 5
P =3.0 TORR
T =280° K
NITROGEN
M = 7.80
Pc = 64.50 PSI
Tc =477° K
ARGON
ALPHA = 0 DEG.
A/A* = 26.3
r = .1243 IN.
Pc/q = 216000
λ = .1350 IN.
RESERVOIR DENSITY =
6.740 X 10 CM
6.0 IN. RADIAL
2.00
1.80
1.60
1.40
1.20
1.00
.80
.60
.40
.20
0.00
NORMALIZED NUMBER DENSITY N/NO (X10)
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
NORMALIZED DISTANCE Y/RE

Fig. V-78

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CASE 5

P_∞ =3.0TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_e = 64.50 PSI
T_e = 477° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_e/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
6.740 X 10^{18} CM^{-3}

CENTERLINE AXIAL

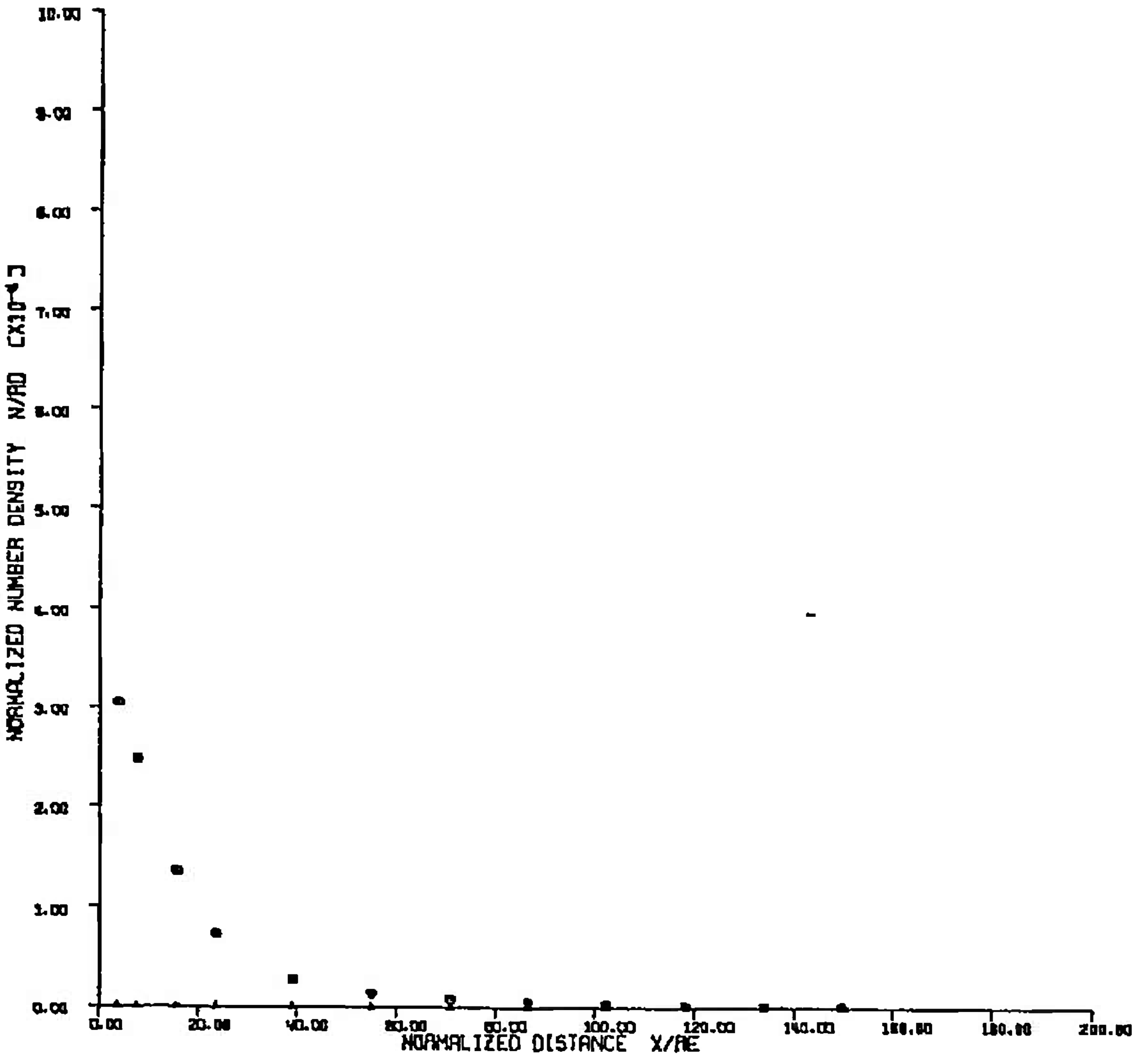

Fig. V-79

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CASE 5

P_s = 3.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 280° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
1.160 X 10[illegible] CM[illegible]

CENTERLINE AXIAL

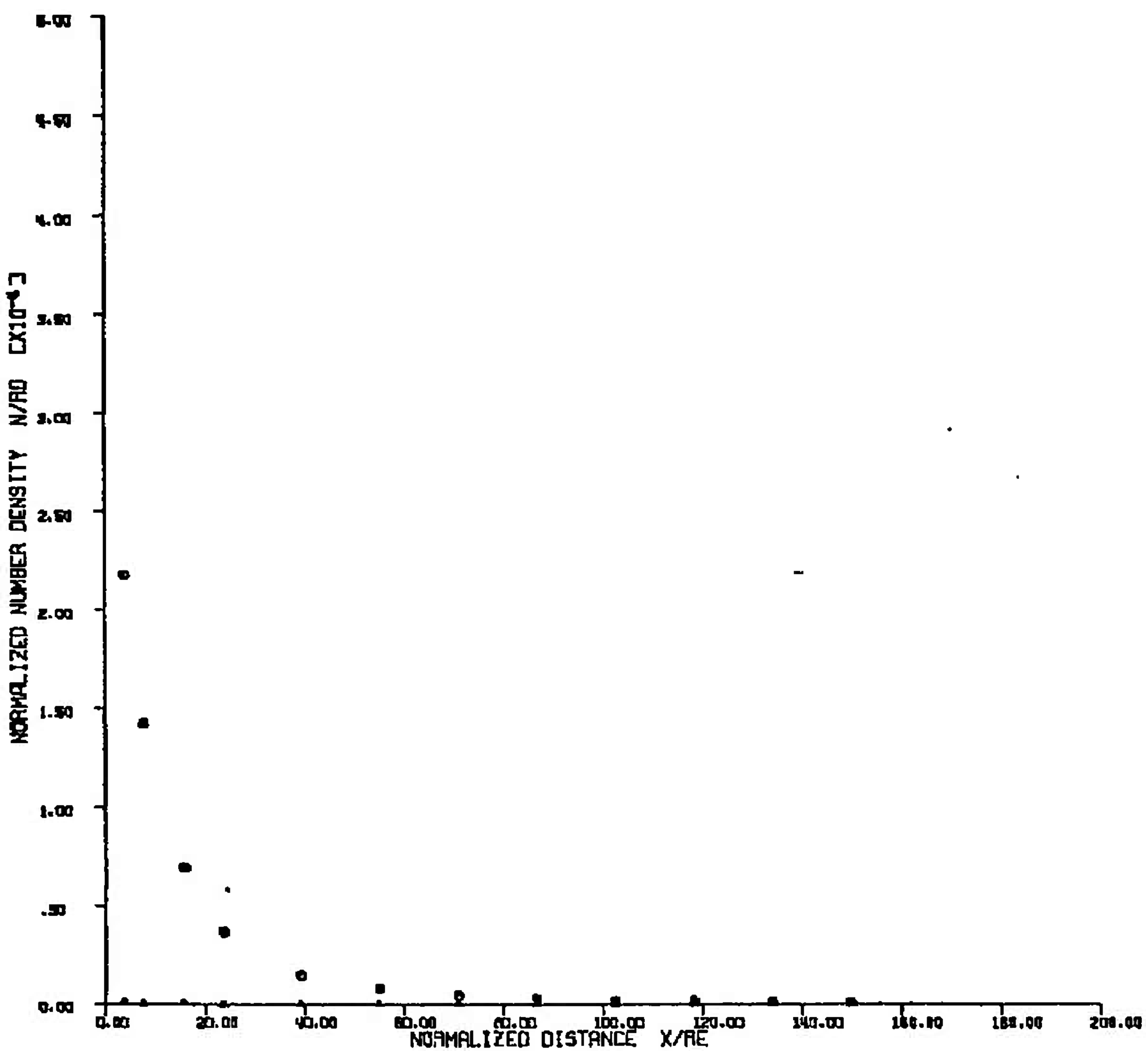

Fig. V-80

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CASE 5

P_0 = 3.0 TORR
T_0 = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 280° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
1.160 X 10[illegible] CM[illegible]

8.0 IN. RADIAL

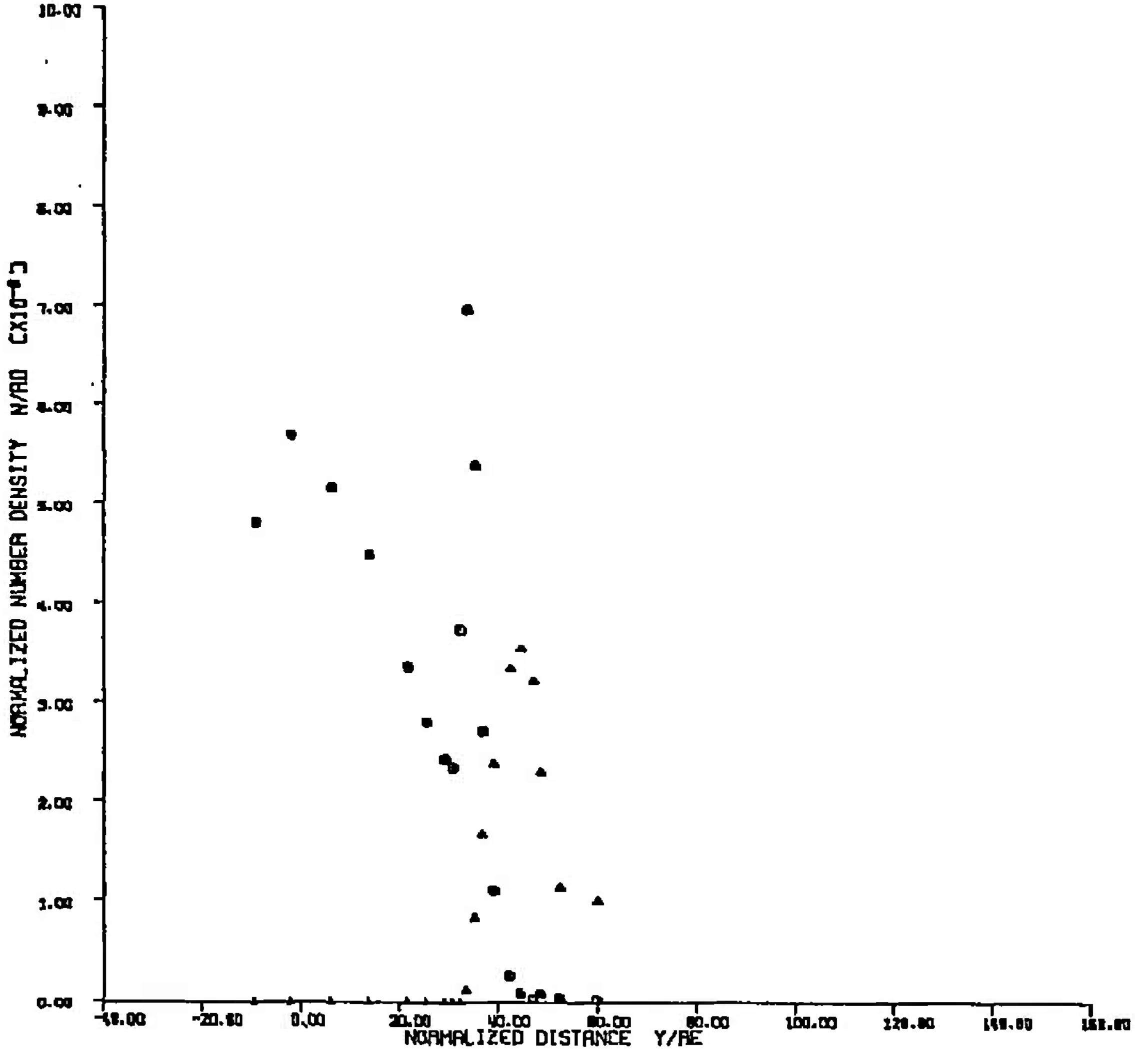

Fig. V-81

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CASE 5

P_∞ = 0.0 TORR

M_∞ = 0.00

P_c = 84.50 PSI
T_c = 588° K
ARGON
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 0
λ_∞ = 0.0000 IN.
RESERVOIR DENSITY =
5.470 X 10^{19} CM^{-3}

CENTERLINE AXIAL

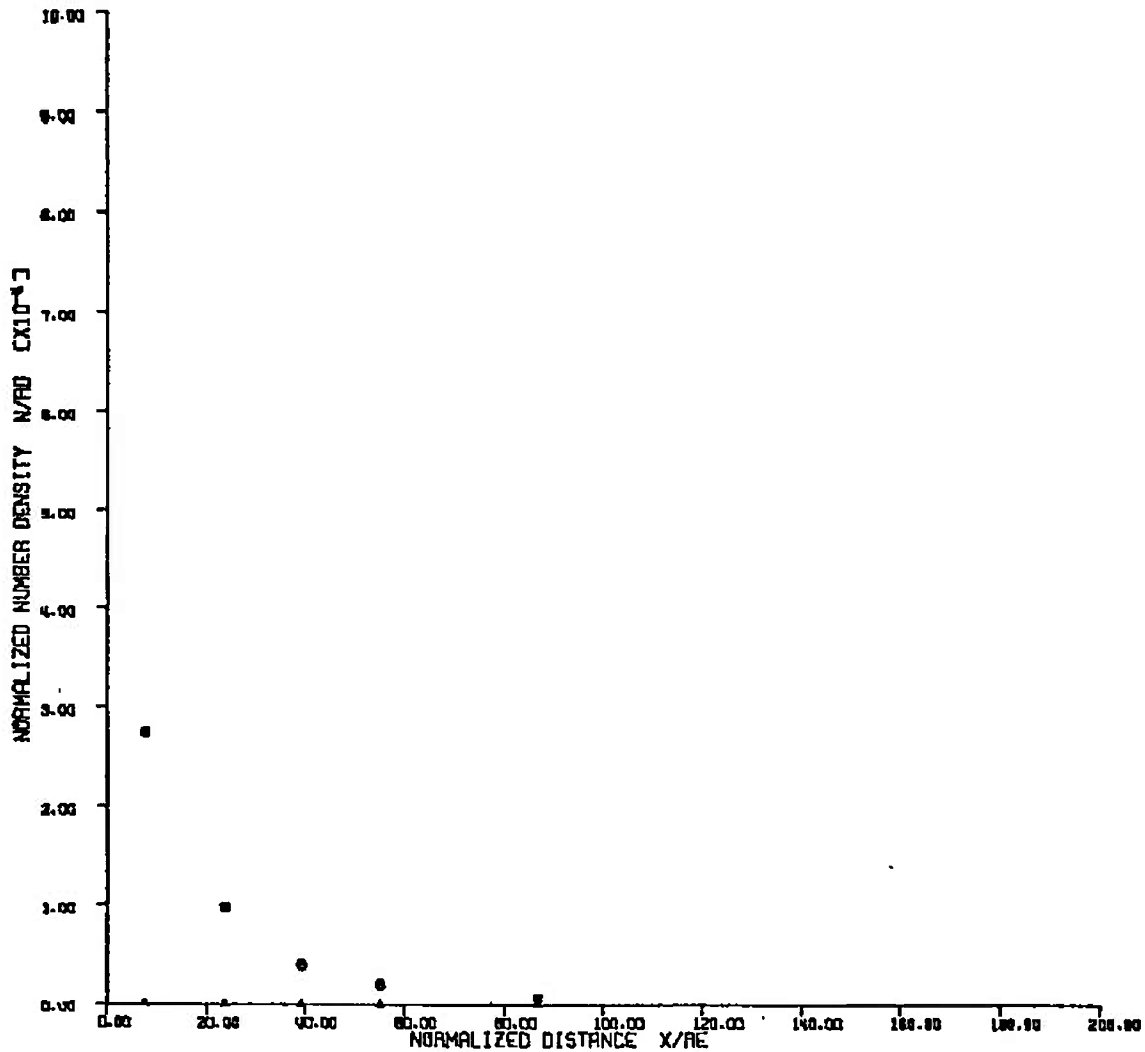

Fig. V-82

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CASE 6

P_1 = 2.0 TORR
T_1 = 280° K
ARGON
M_∞ = 11.45

P_0 = 64.50 PSI
T_0 = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_0/q_∞ = 203000
λ_∞ = .0650 IN.
RESERVOIR DENSITY =
5.470 X 10^{18} CM^{-3}

CENTERLINE AXIAL

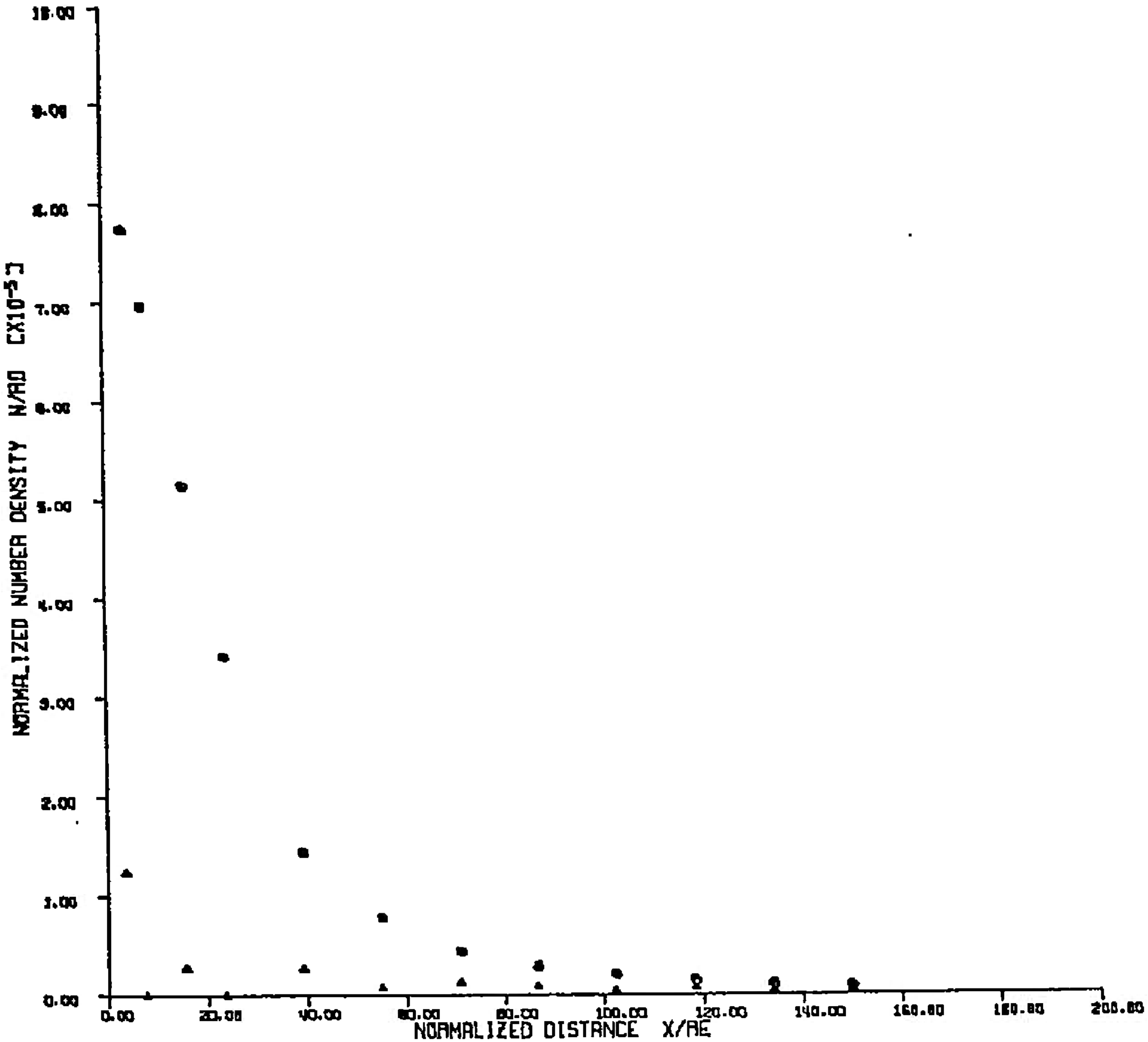

Fig. V-83

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CASE 6

P_c = 2.0 TORR
T_c = 280° K
ARGON
M_∞ = 11.45

P_R = 64.50 PSI
T_R = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_R/q_∞ = 203000
λ_∞ = .0650 IN.
RESERVOIR DENSITY =
5.470 X 10^{18} CM^{-3}

CENTERLINE AXIAL

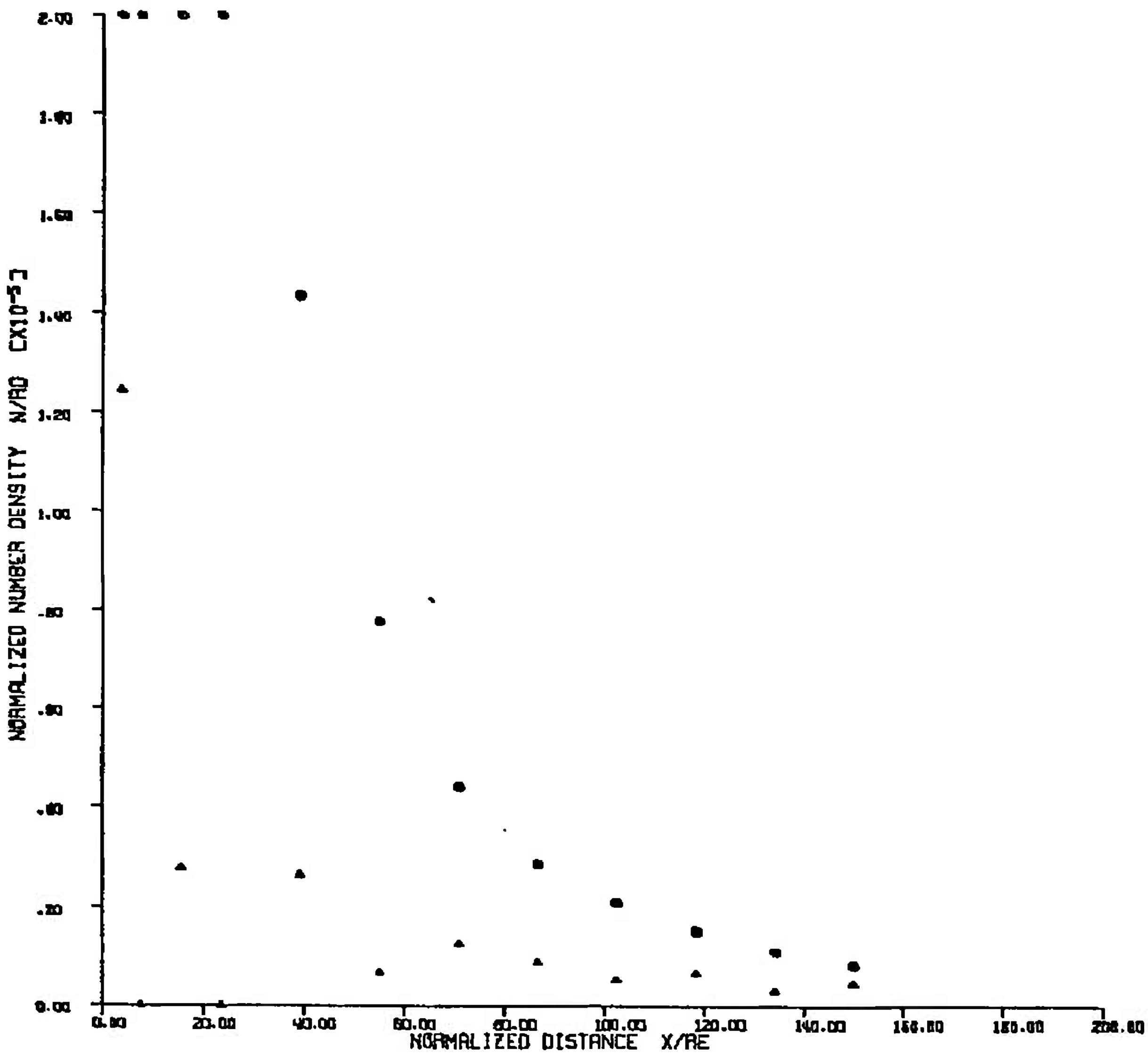

Fig. V-84

PACE 66
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CASE 6

P_∞ = 2.0 TORR
T_∞ = 280° K
ARGON
M_∞ = 11.45

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEC.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 203000
λ_∞ = .0650 IN.
RESERVOIR DENSITY =
5.470 X 10^{19} CM^{-3}

4.0 IN. RADIAL

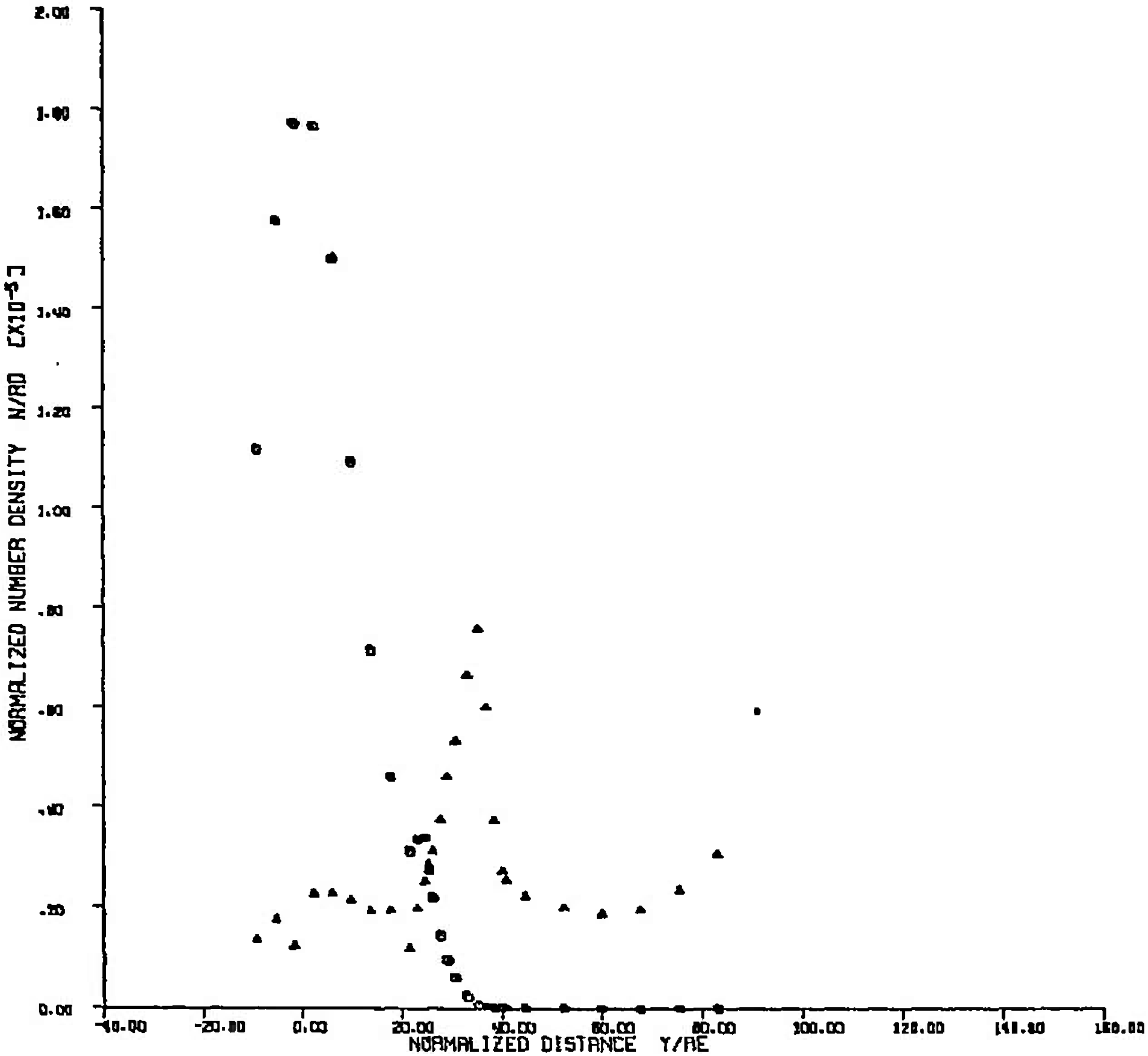

Fig. V-85

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CASE 6

P_s = 2.0 TORR
T_s = 280° K
ARGON
M_∞ = 11.45

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_* = .1243 IN.
P_c/q_∞ = 203000
λ_∞ = .0650 IN.
RESERVOIR DENSITY =
5.470 X 10^{18} CM^{-3}

8.0 IN. RADIAL

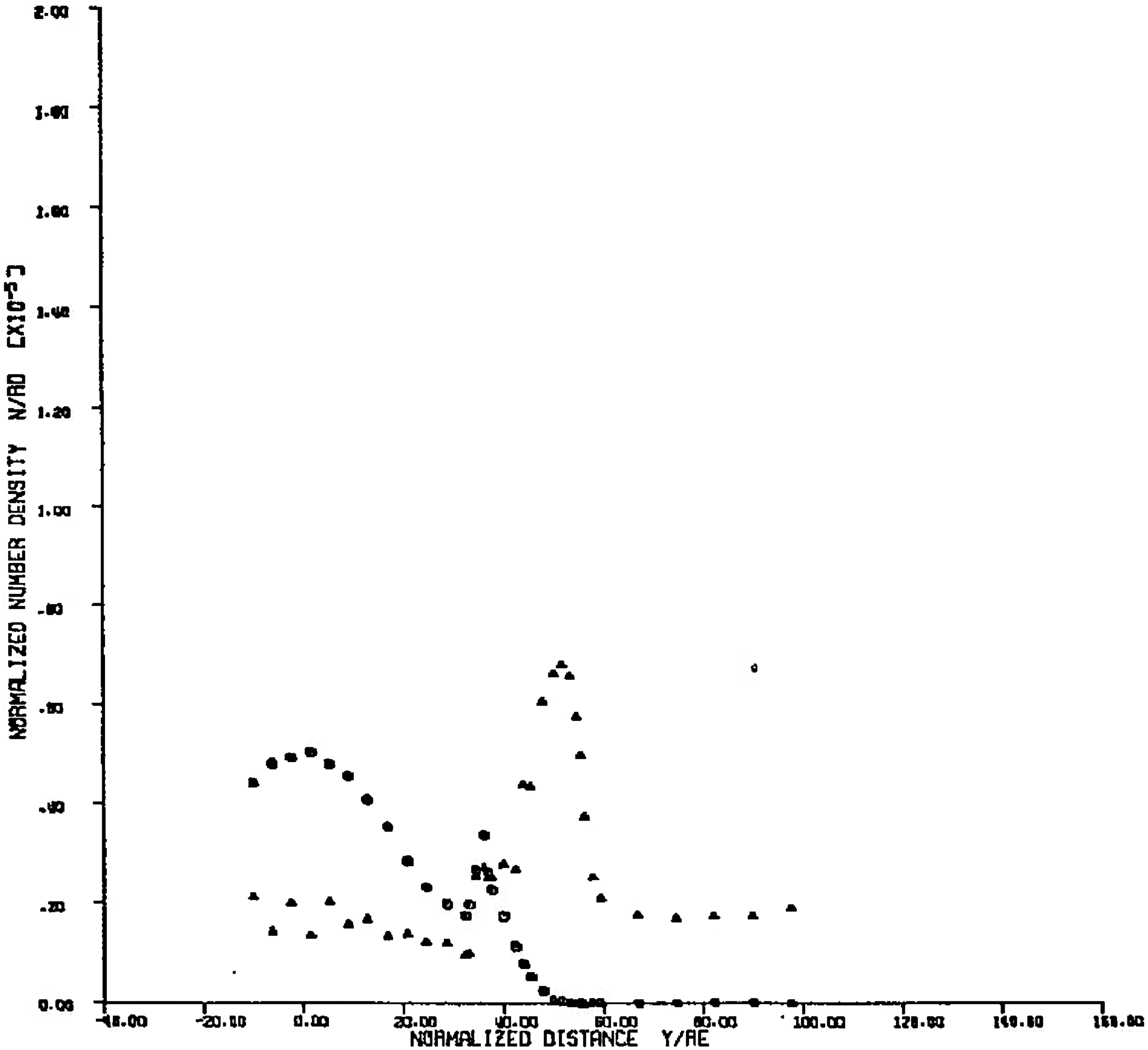

Fig. V-86

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CASE 6

P_∞ = 2.0 TORR
T_∞ = 280° K
ARGON
M_∞ = 11.45

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.5
r_e = .1243 IN.
P_c/q_∞ = 203000
λ_∞ = .0650 IN.
RESERVOIR DENSITY = 5.470 X 10^{18} CM^{-3}

6.0 IN. RADIAL

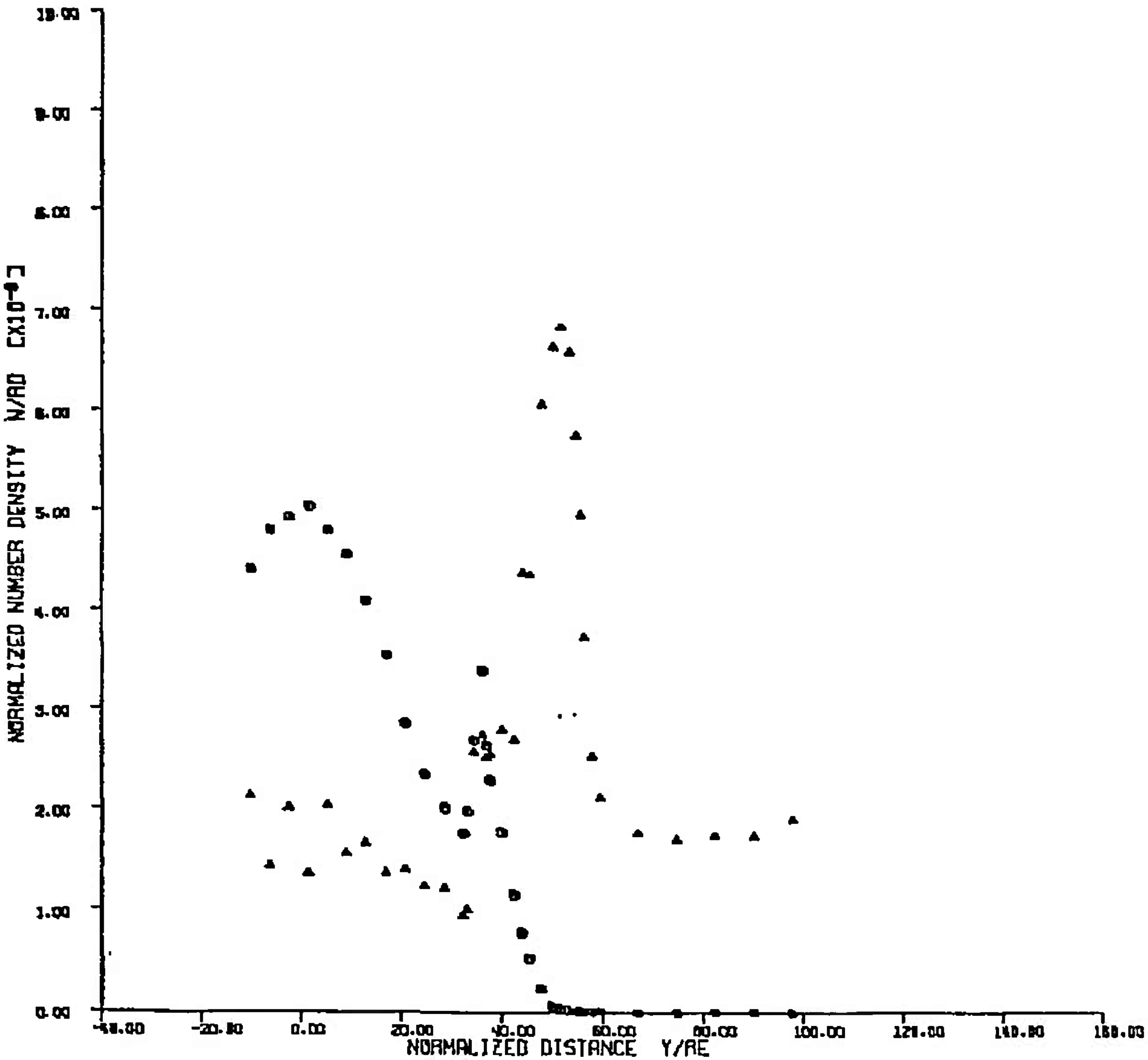

Fig. V-87

PAGE 68
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CASE 6

P_∞ =2.0TORR
T_∞ =280° K
ARGON
M_∞ = 11.45

P_c = 64.50 PSI
T_c =588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_p = .1243 IN.
P_c/q_∞ = 203000
λ_∞ = .0650 IN.
RESERVOIR DENSITY =
5.470 X 10^{18} CM^{-3}

12.0 IN. RADIAL

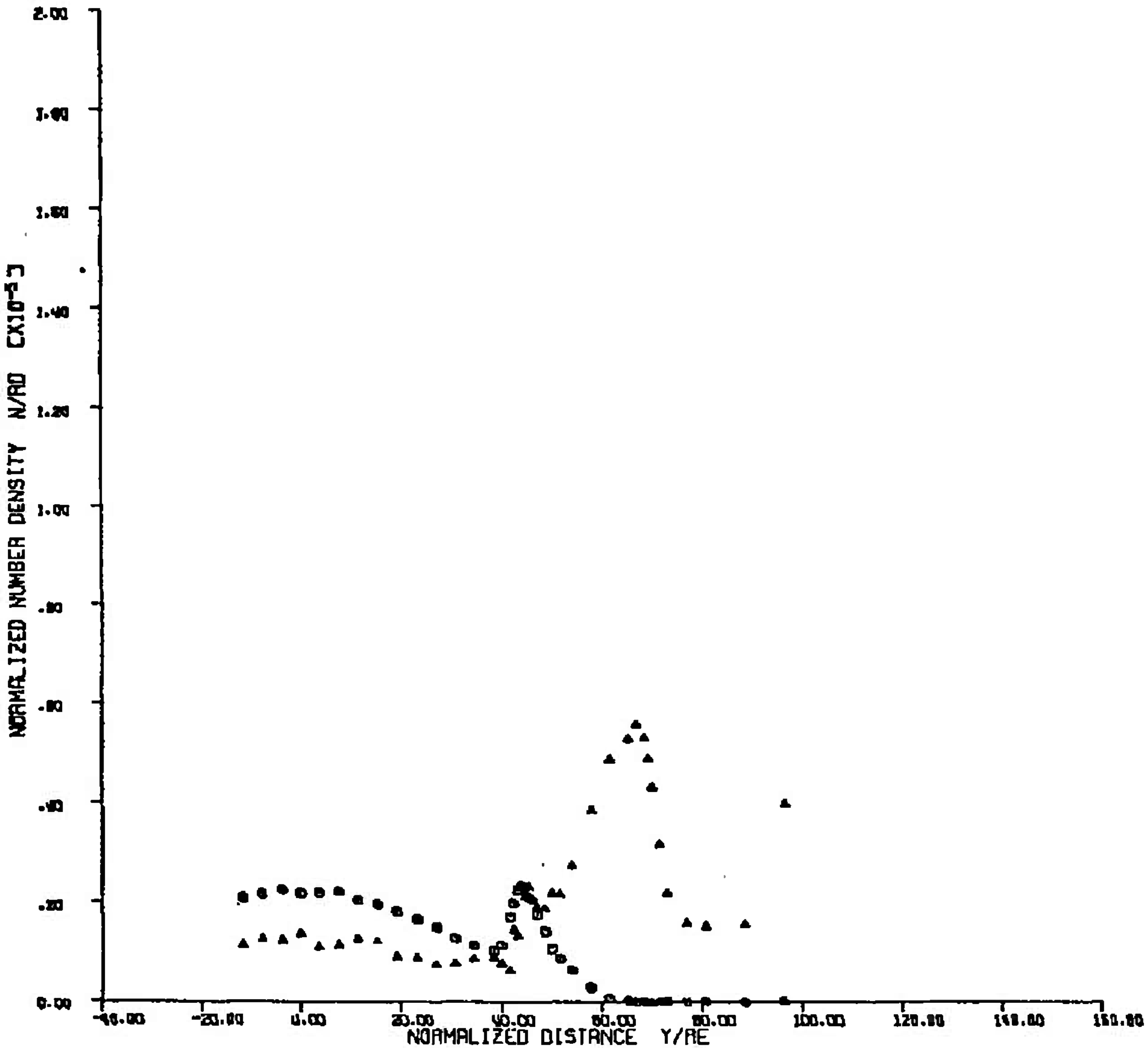

Fig. V-88

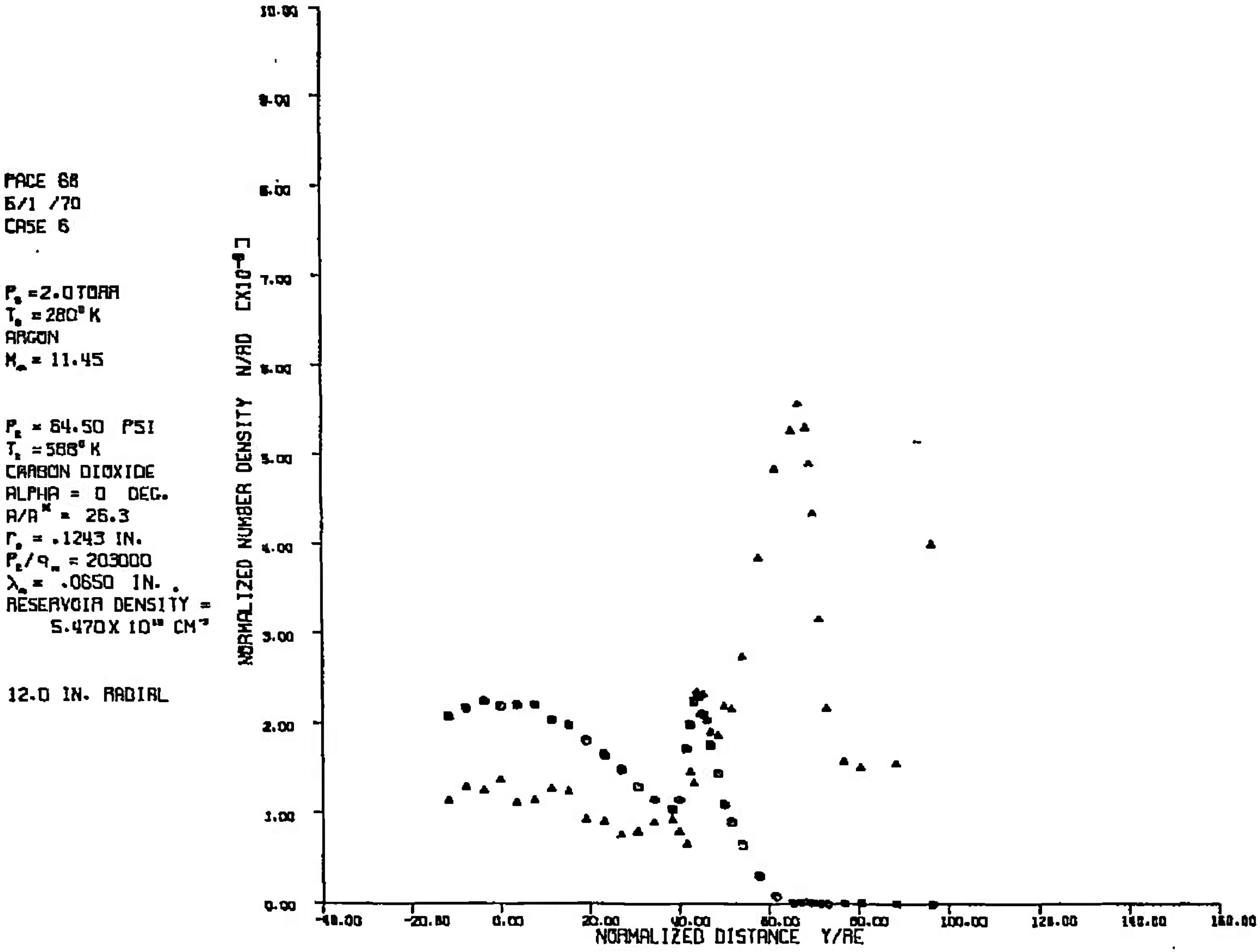
PACE 68
6/1 /70
CASE 6
P_0 =2.0 TORR
T_0 = 280° K
ARGON
M_∞ = 11.45
P_1 = 64.50 PSI
T_1 = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_t/q_∞ = 203000
λ_∞ = .0650 IN.
RESERVOIR DENSITY =
5.470 X 10^{18} CM^{-3}
12.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/AD $[X10^{-3}]$
NORMALIZED DISTANCE Y/RE
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00

Fig. V-89

PACE 69
6/2 /70
CASE 7

P_o =5.0TORR
T_o =280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c =588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 9.0
r_e = .0590 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470X 10^{18} CM^{-3}

CENTERLINE AXIAL

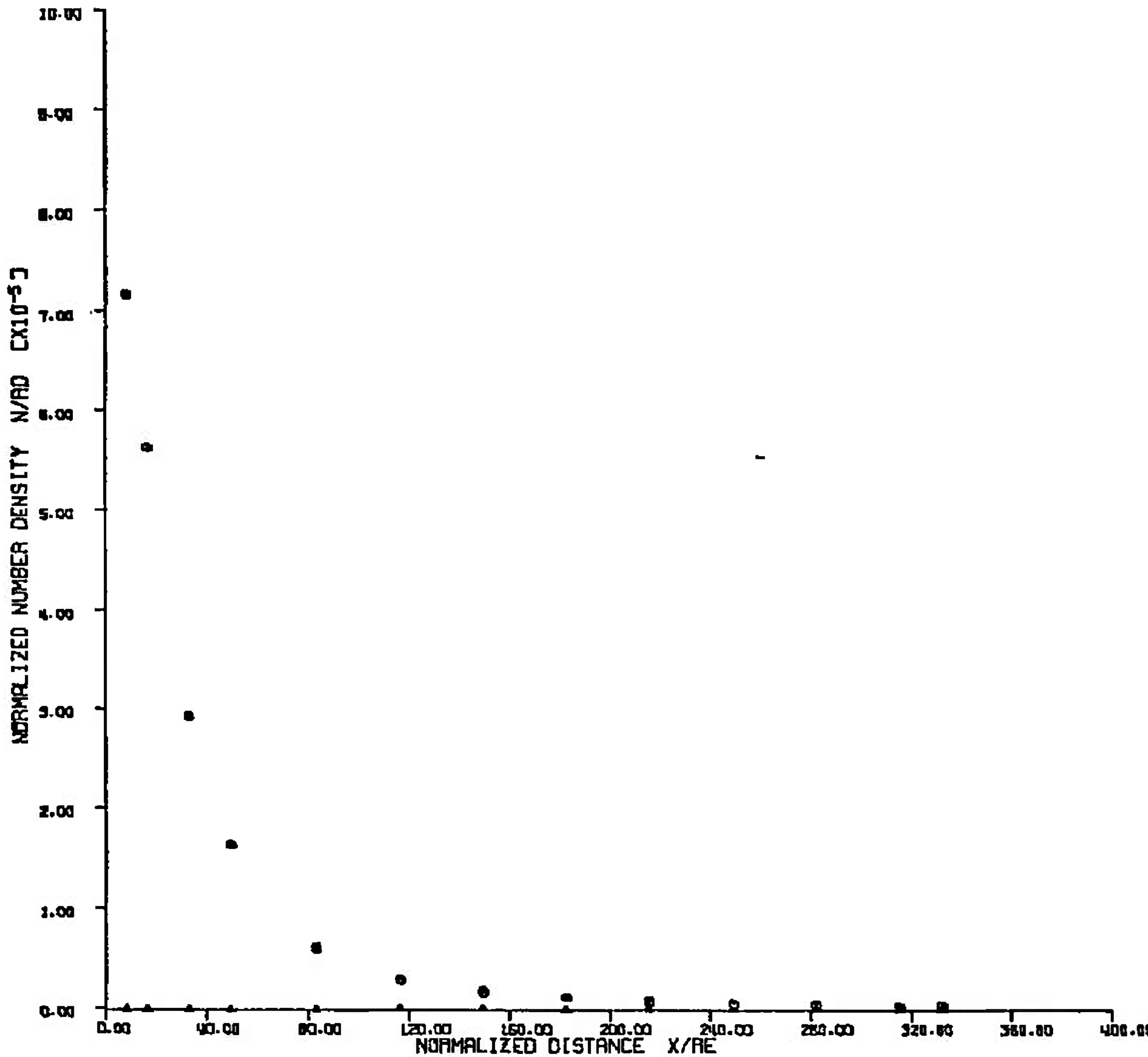

Fig. V-90

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CASE 7

P_∞ = 3.0 TORR
T_∞ = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 9.0
r_e = .0590 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10^?? CM^?

CENTERLINE AXIAL

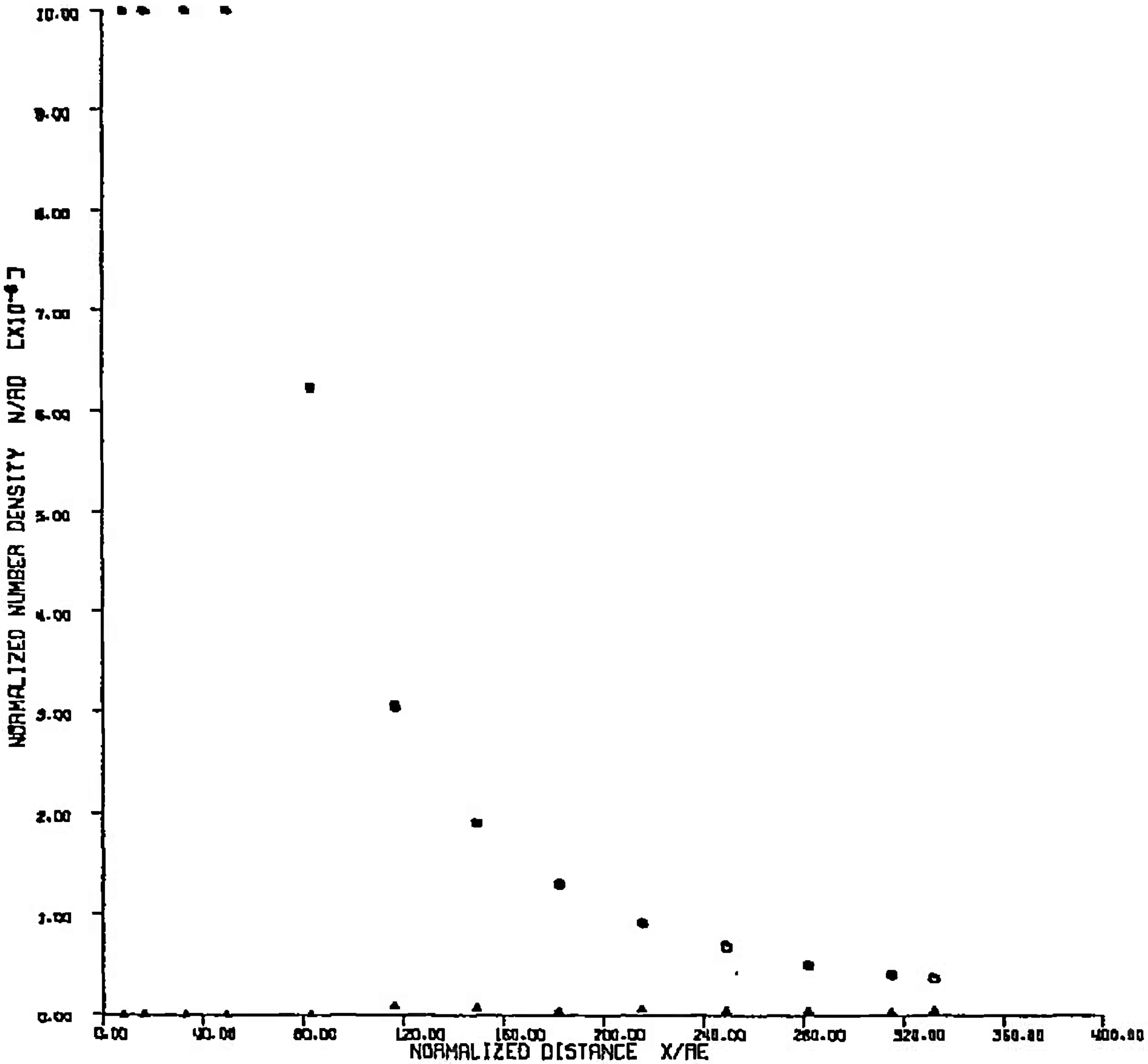


Fig. V-91

PACE 70
6/2 /70
CASE 7

P_o =3.0 TORR
T_o = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 9.0
r_e = .0590 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY = 5.470 X 10^{18} CM^{-3}

4.0 IN. RADIAL

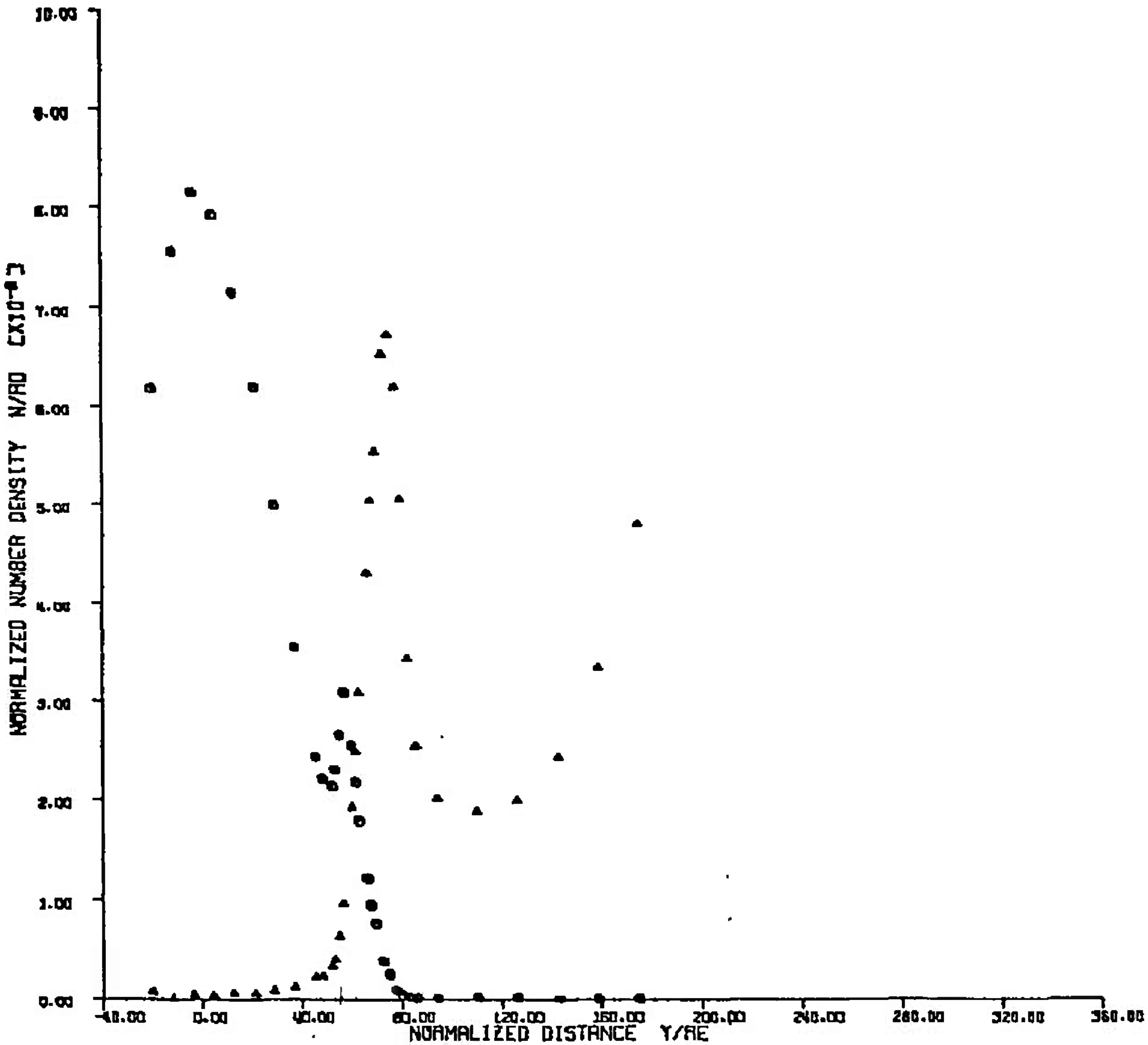


Fig. V-92

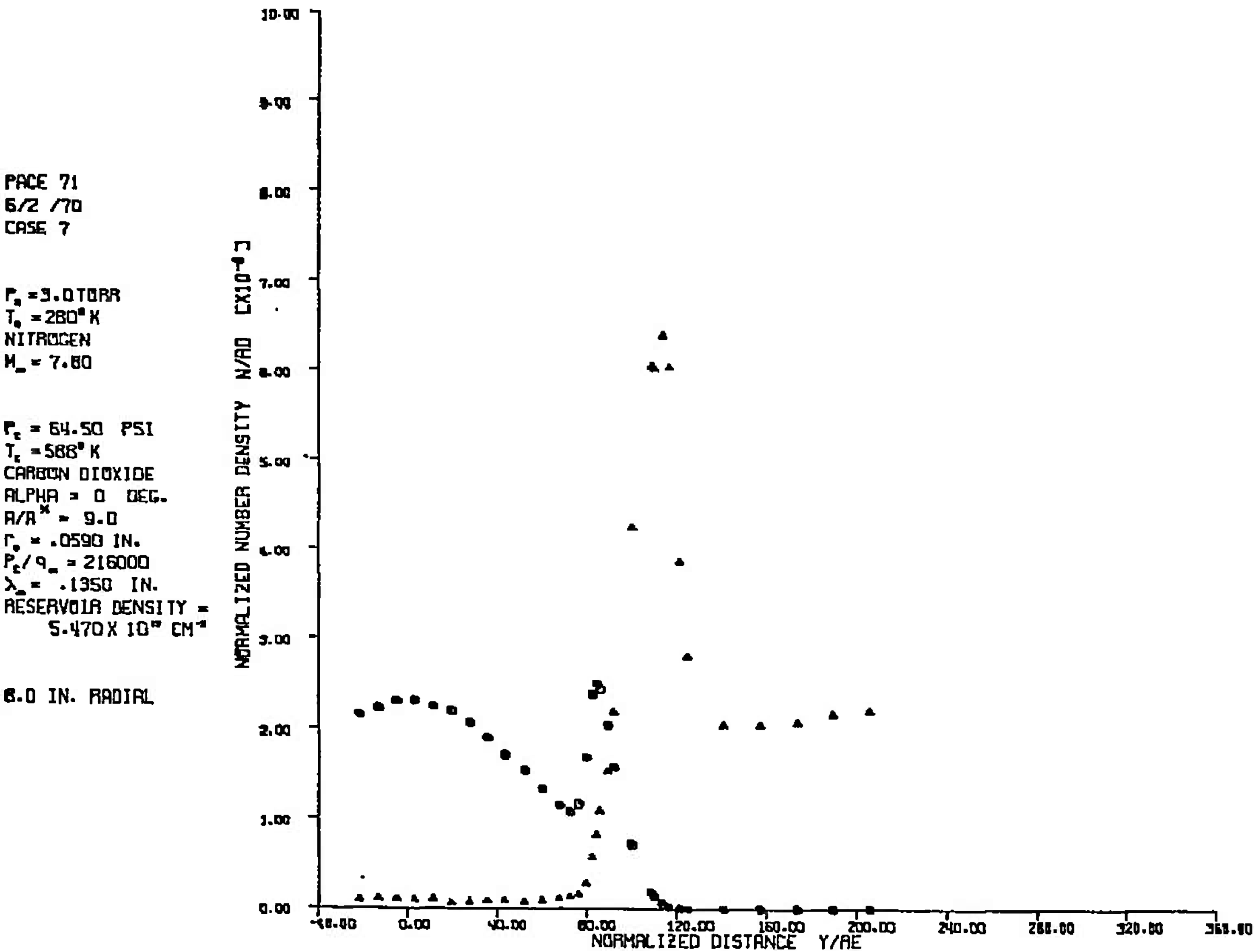

PACE 71
6/2 /70
CASE 7
P = 3.0 TORR
T = 280° K
NITROGEN
M = 7.80
P = 64.50 PSI
T = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A* = 9.0
r = .0590 IN.
P/q = 216000
λ = .1350 IN.
RESERVOIR DENSITY =
5.470 X 10 CM
6.0 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO CX10
NORMALIZED DISTANCE Y/AE
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
-40.00
0.00
40.00
80.00
120.00
160.00
200.00
240.00
280.00
320.00
360.00

Fig. V-93

PACE 72
6/2 /70
CASE 7

P_o = 3.0 TORR
T_o = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
CARBON DIOXIDE
ALPHA = 0 DEG.
A/A^* = 9.0
r_e = .0590 IN.
P_c/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY = 5.470 X 10^{18} CM^{-3}

12.0 IN. RADIAL

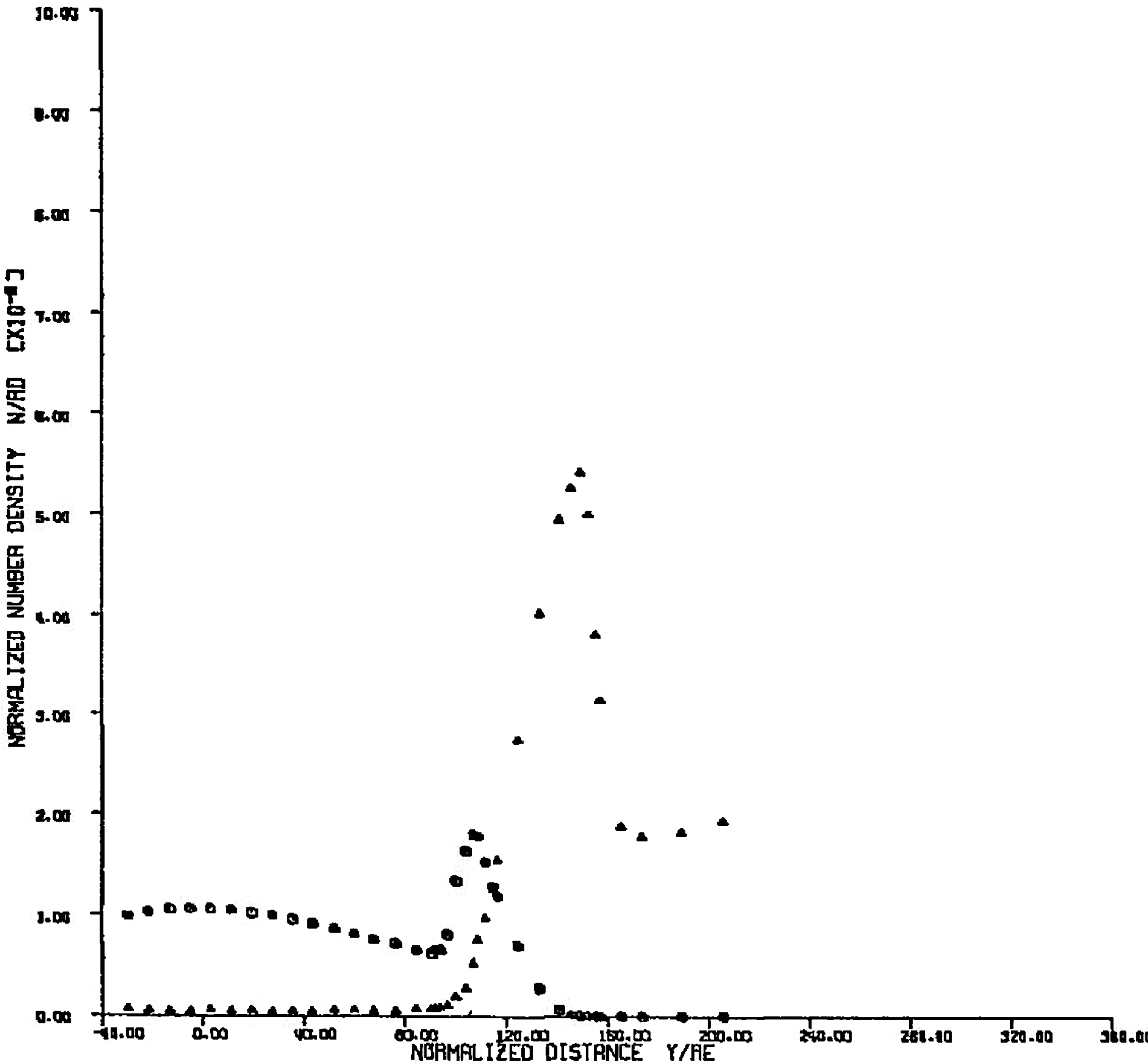


Fig. V-94

PACE 79
6/2 /70
CASE 8

P_s = 3.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.80

P_c = 64.50 PSI
T_c = 588° K
NITROGEN
ALPHA = 0 DEG.
A/A^* = 9.0
r_b = .0590 IN.
P_t/q_∞ = 216000
λ_∞ = .1350 IN.
RESERVOIR DENSITY = 5.470 X 10^{18} CM^{-3}

8.0 IN. RADIAL

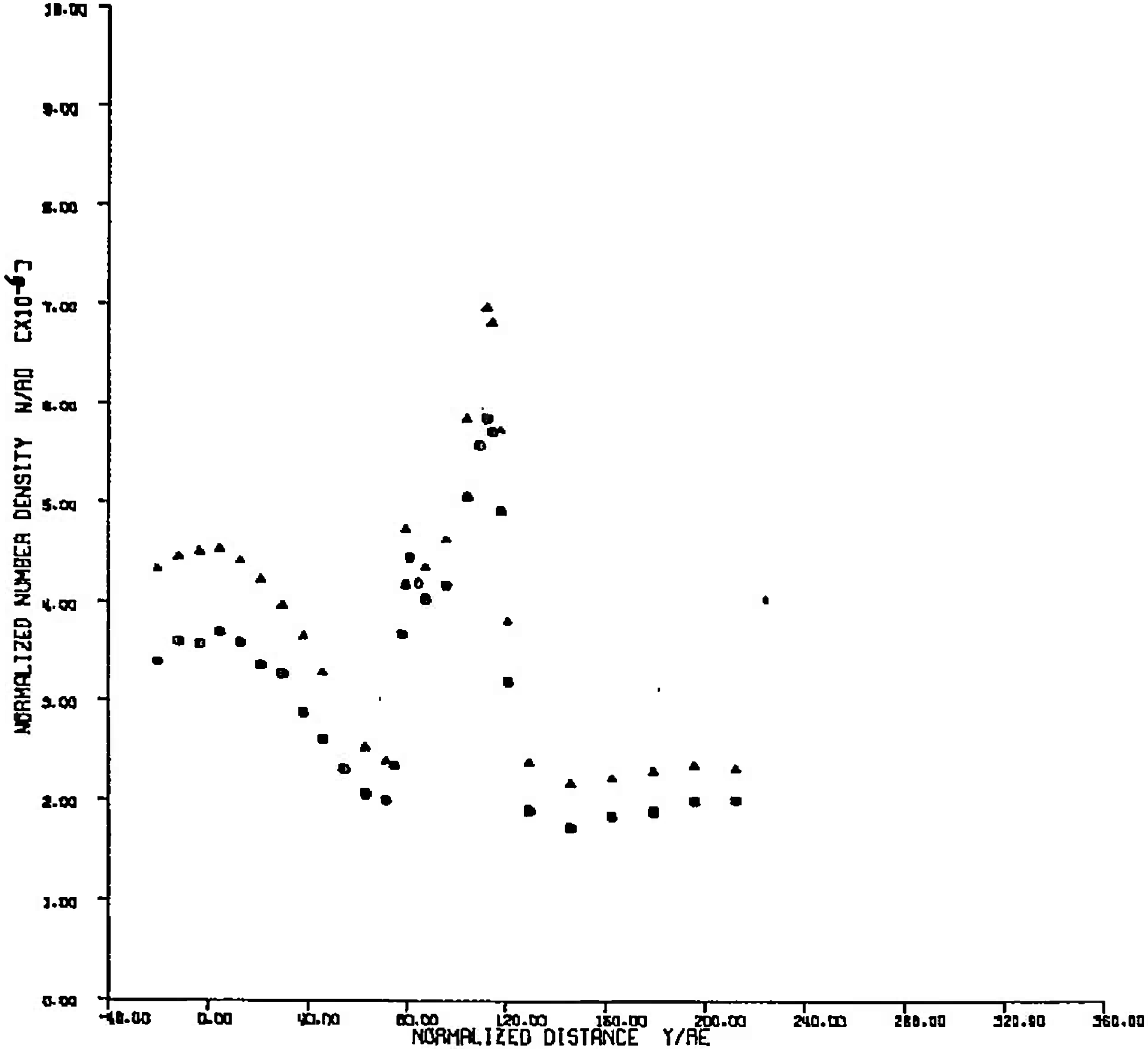


Fig. V-95

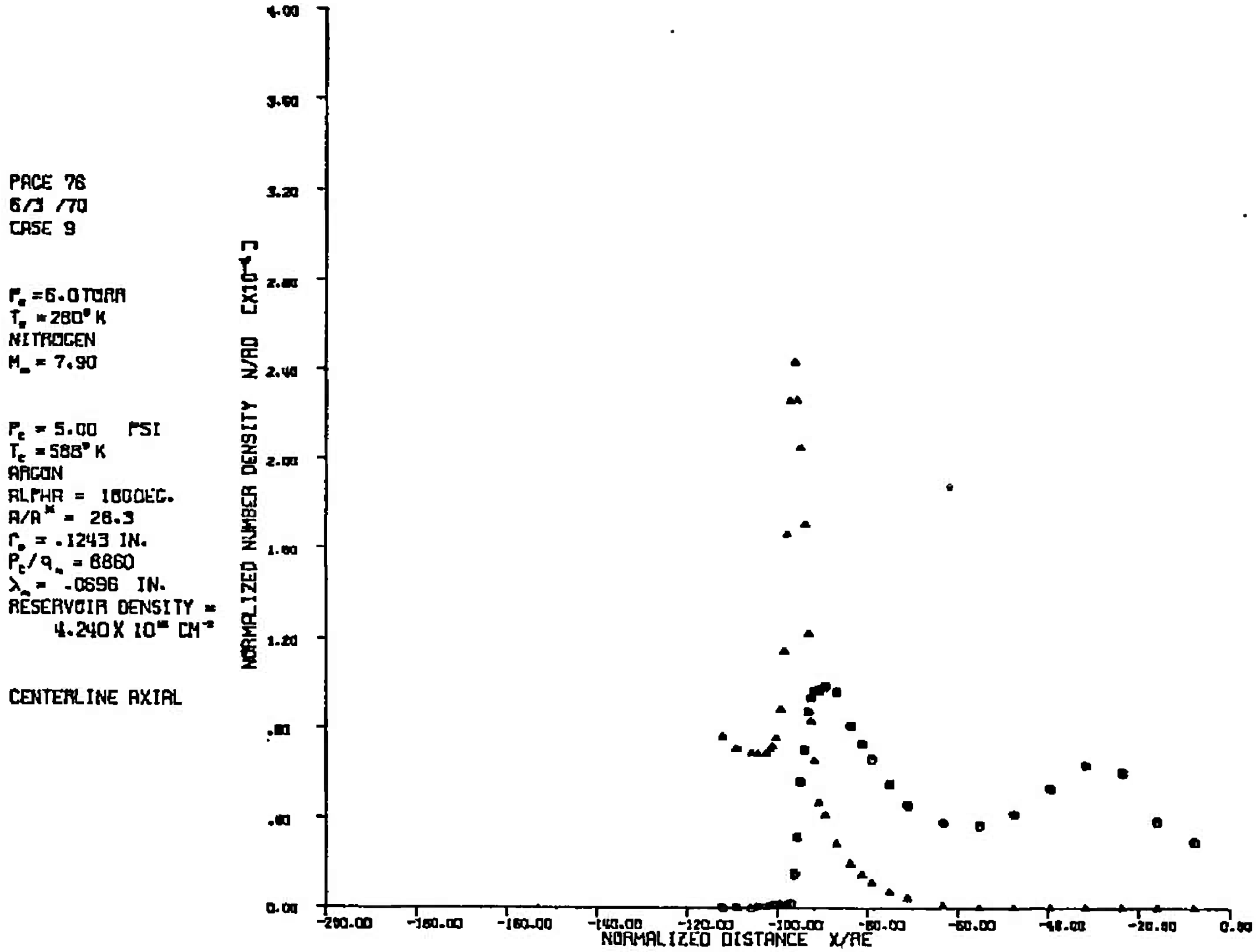
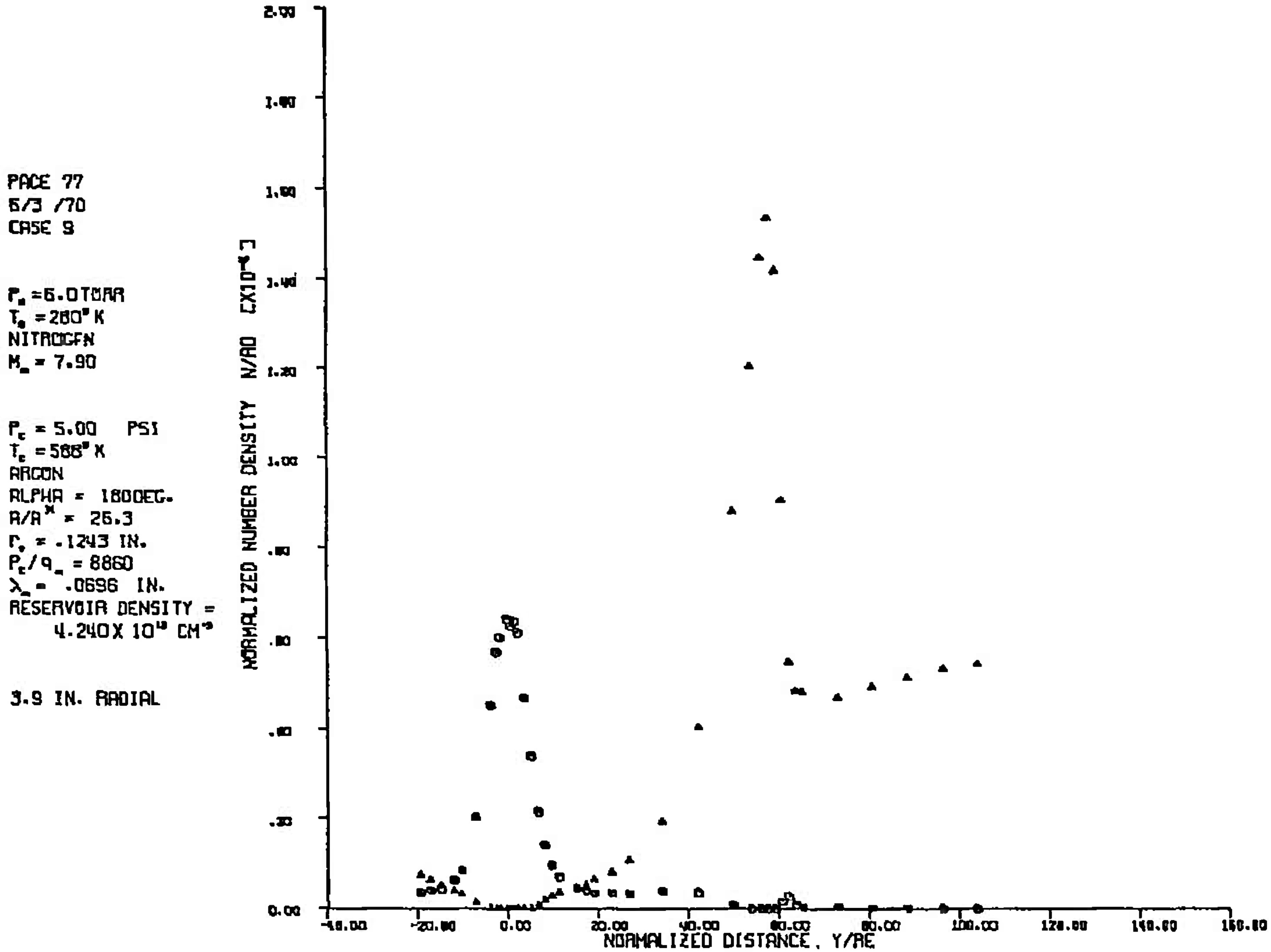

PACE 76
6/3 /70
CASE 9
P∞ = 6.0 TORR
T∞ = 280° K
NITROGEN
M∞ = 7.90
Pc = 5.00 PSI
Tc = 588° K
ARGON
ALPHA = 180DEG.
A/A* = 26.3
r∞ = .1243 IN.
Pc/q∞ = 6860
λ∞ = .0696 IN.
RESERVOIR DENSITY =
4.240 X 10 CM
CENTERLINE AXIAL
NORMALIZED NUMBER DENSITY N/NO CX10-4]
NORMALIZED DISTANCE X/RE
4.00
3.60
3.20
2.80
2.40
2.00
1.60
1.20
.80
.40
0.00
-200.00
-180.00
-160.00
-140.00
-120.00
-100.00
-80.00
-60.00
-40.00
-20.00
0.00

Fig. V-96



PACE 77
6/3 /70
CASE 9
=6.0TORR
=280° K
NITROGEN
= 7.90
= 5.00 PSI
=588° K
ARCON
ALPHA = 180DEG.
26.3
-.1243 IN.
= 8860
.0696 IN.
RESERVOIR DENSITY =
4.240 X 10
3.9 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO
NORMALIZED DISTANCE, Y/RE

Fig. V-97

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CASE 9

P_s = 6.0 TORR
T_s = 280° K
NITROGEN
M_∞ = 7.90

P_c = 5.00 PSI
T_c = 588° K
ARGON
ALPHA = 180 DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 8860
λ_∞ = .0696 IN.
RESERVOIR DENSITY =
4.240 X 10^{18} CM^{-3}

6.9 IN. RADIAL

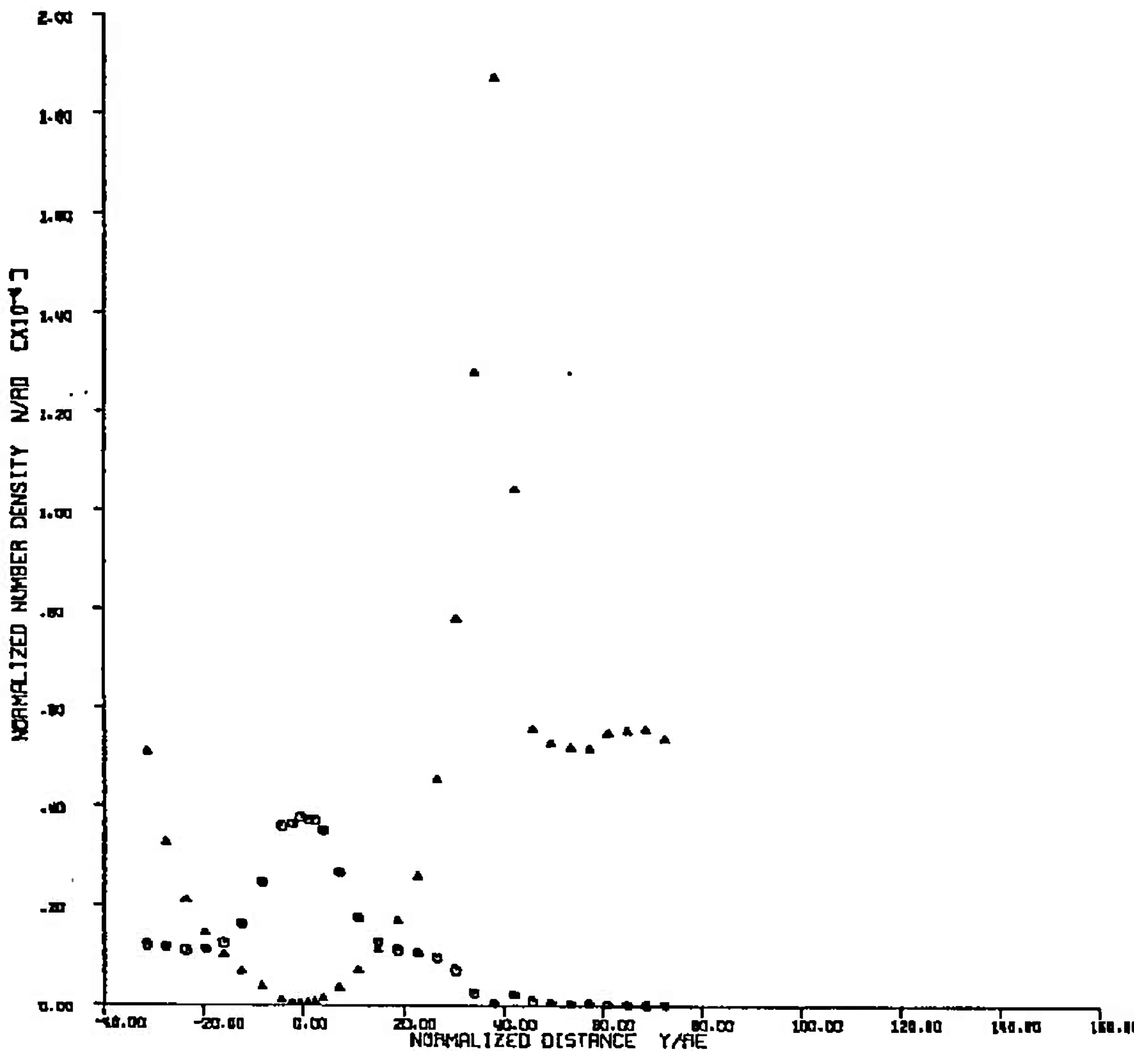
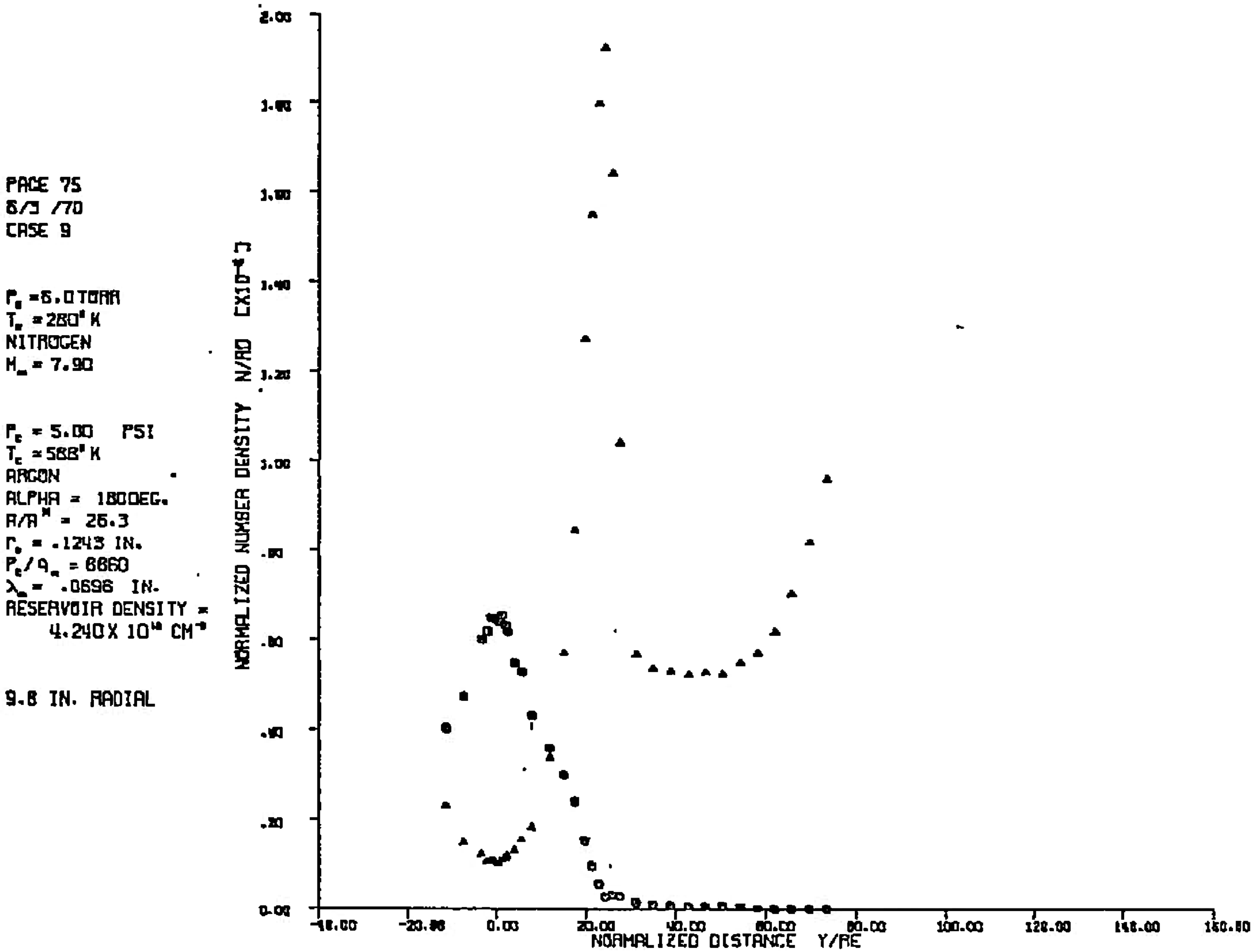


Fig. V-98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6/3 /70
CASE 9
P_o = 6.0 TORR
T_o = 280° K
NITROGEN
M_∞ = 7.90
P_c = 5.00 PSI
T_c = 568° K
ARGON
ALPHA = 180DEG.
A/A^* = 26.3
r_e = .1243 IN.
P_c/q_∞ = 6660
λ_∞ = .0696 IN.
RESERVOIR DENSITY =
4.240 X 10^{18} CM^{-3}
9.8 IN. RADIAL
NORMALIZED NUMBER DENSITY N/NO (X10^-4)
NORMALIZED DISTANCE Y/RE
0.00
1.00
100.00

Fig. V-99

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CASE 10

P_s = 3.0 TORR
T_s = 866° K
NITROGEN
M_∞ = 7.58

P_c = 30.00 PSI
T_c = 588° K
ARGON
ALPHA = 180 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 88600
λ_∞ = .6370 IN.
RESERVOIR DENSITY = 2.540 X 10^{19} CM^{-3}

CENTERLINE AXIAL

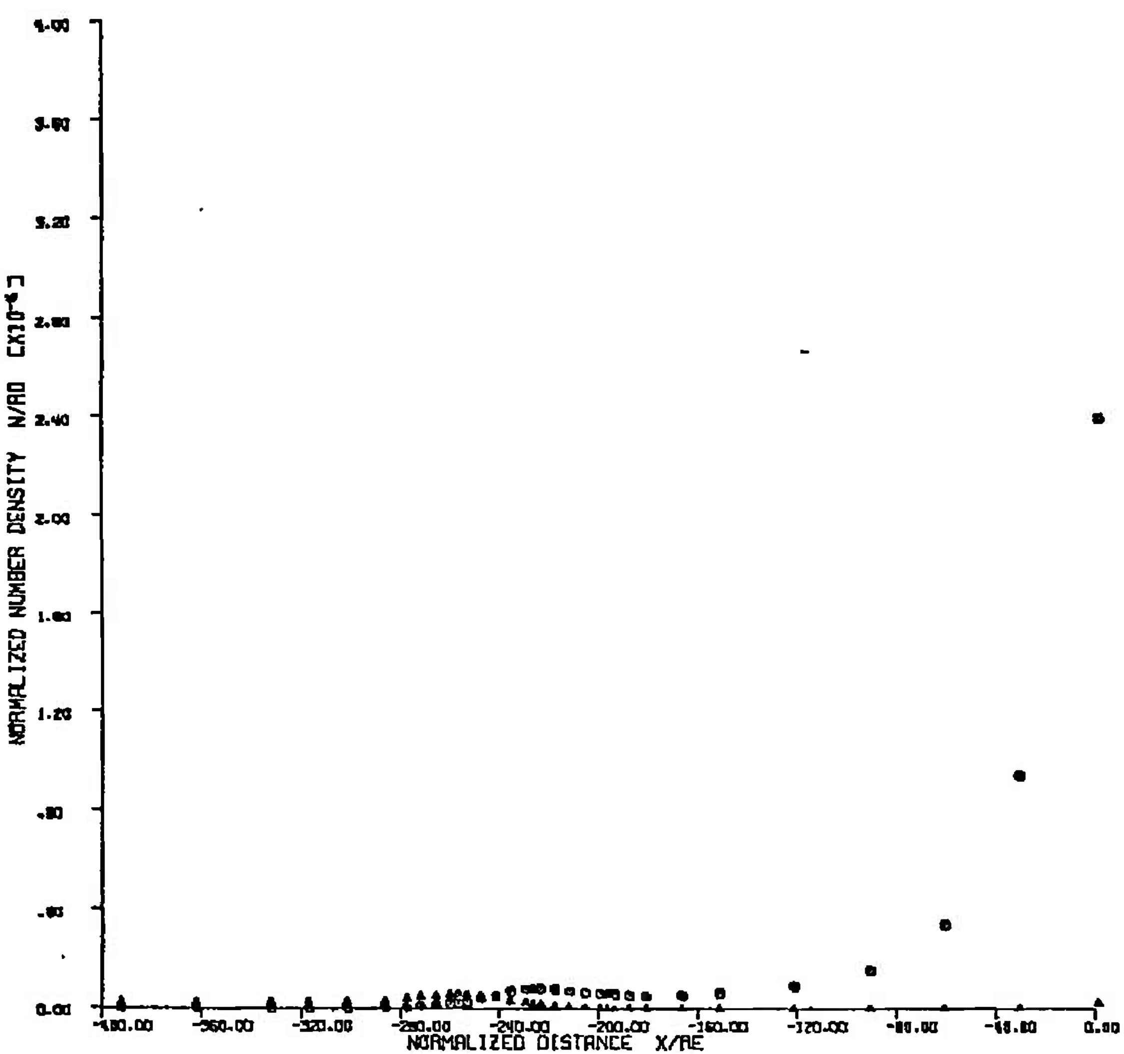

Fig. V-100

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CASE 10

P_{*} =3.0 TORR
T_{*} = 866° K
NITROGEN
M_{∞} = 7.58

P_{c} = 30.00 PSI
T_{c} = 588° K
ARGON
ALPHA = 180 DEG.
A/A^{*} = 17.6
r_{e} = .0325 IN.
P_{t}/q_{∞} = 88600
λ_{∞} = .6370 IN.
RESERVOIR DENSITY =
2.540 X 10^{18} CM^{-3}

CENTERLINE AXIAL

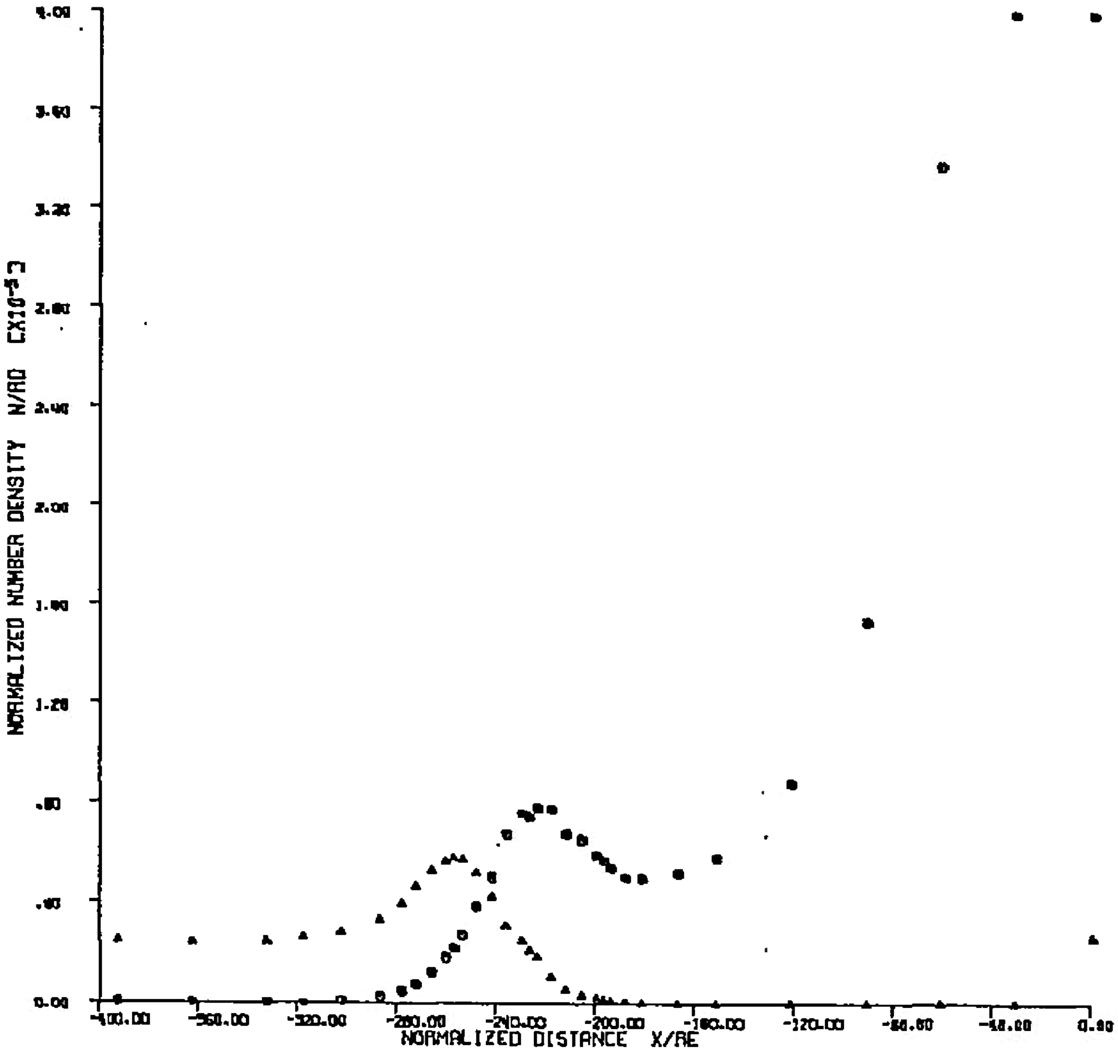

Fig. V-101

PACE 79
6/4 /70
CASE 10

P_∞ =3.0TORR
T_∞ =866° K
NITROGEN
M_∞ = 7.58

P_c = 30.00 PSI
T_c =588° K
ARGON
ALPHA = 180DEG.
A/A^* = 17.6
r_p = .0925 IN.
P_c/q_∞ = 88600
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
2.540X 10^{19} CM^{-3}

2.0 IN. RADIAL

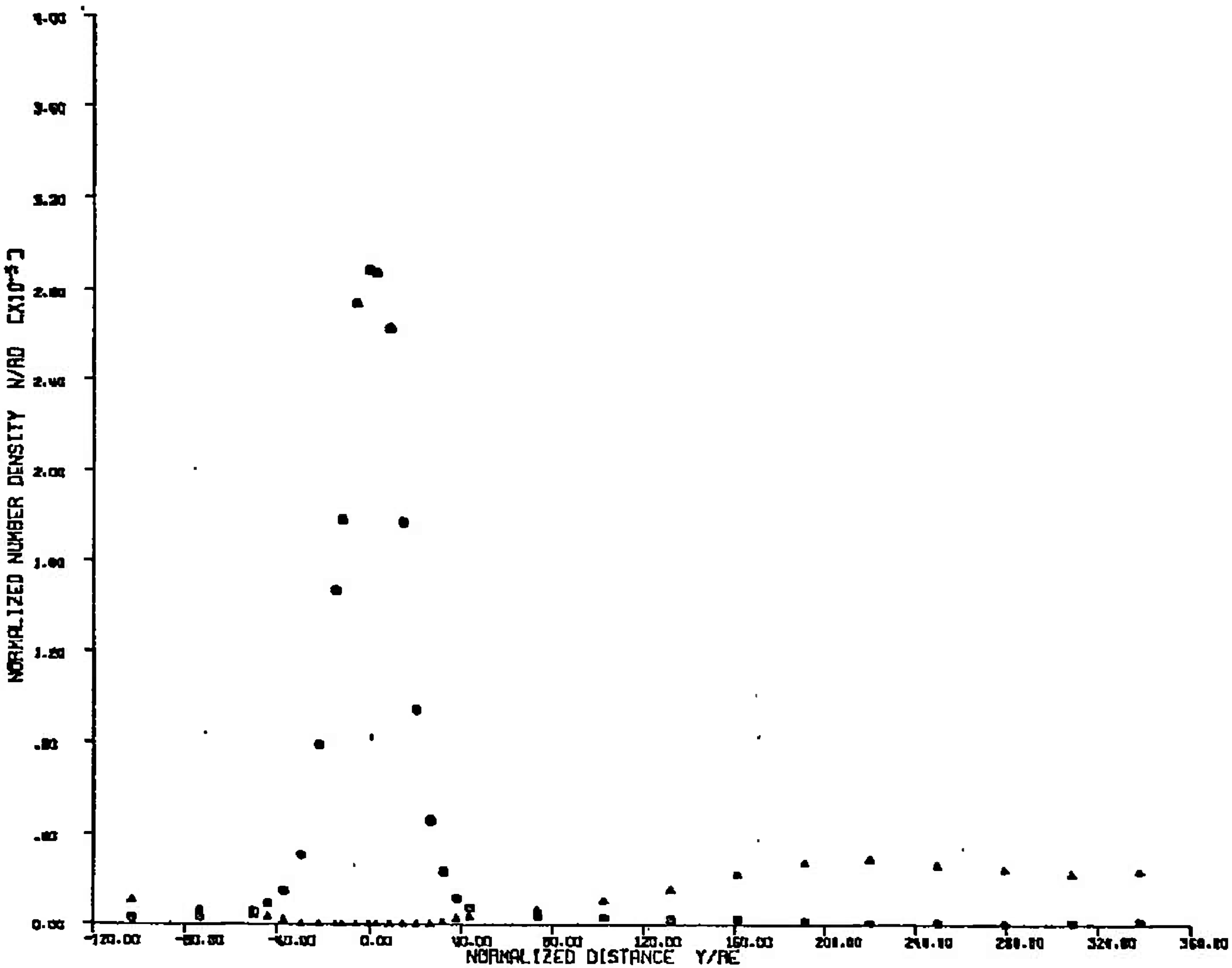

Fig. V-102

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CASE 10

P_0 = 3.0 TORR
T_0 = 666° K
NITROGEN
M_∞ = 7.58

P_s = 30.00 PSI
T_s = 588° K
ARGON
ALPHA = 180DEG.
R/R^* = 17.6
r_s = .0325 IN.
P_s/q_∞ = 88600
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
2.540 X 10^{18} CM^{-3}

3.9 IN. RADIAL

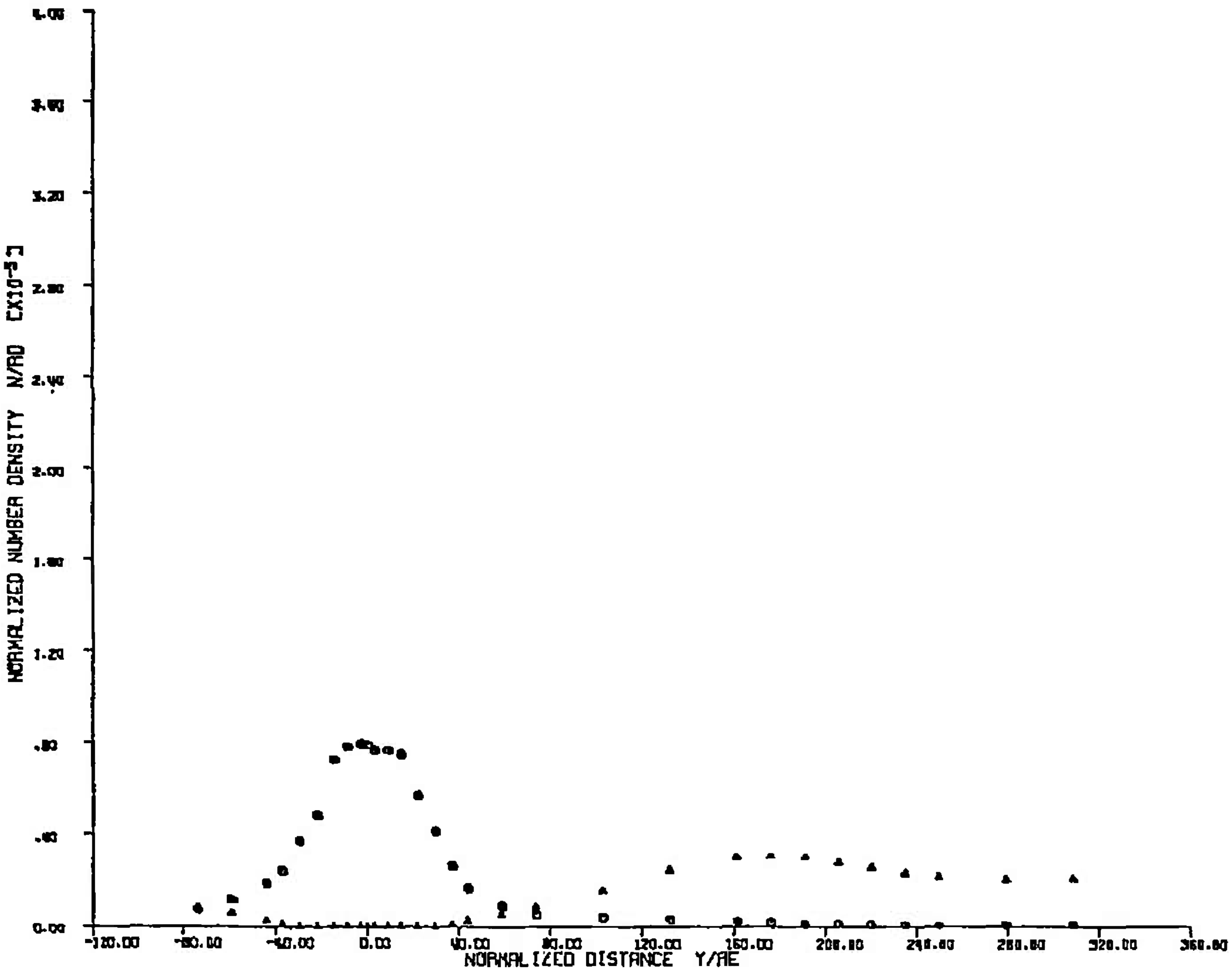

Fig. V-103

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CASE 10

P_0 =3.0TORR
T_0 =866° K
NITROGEN
M_∞ = 7.58

P_c = 30.00 PSI
T_c =588° K
ARGON
ALPHA = 180DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 86600
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
2.540X 10¹⁹ CM⁻³

5.0 IN. AXIAL

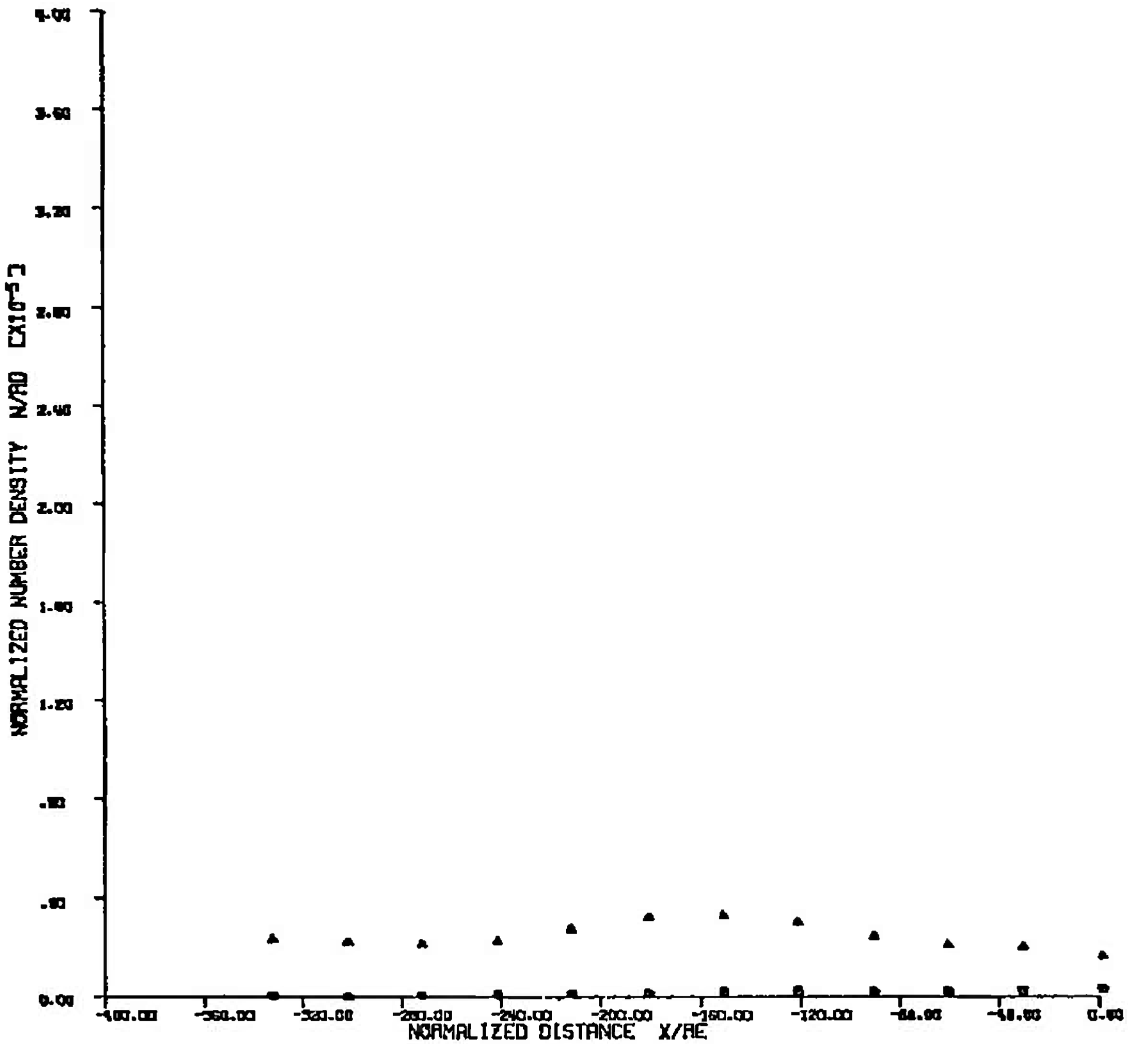

Fig. V-104

PACE 82
6/4 /70
CASE 10

P_s = 3.0 TORR
T_s = 866° K
NITROGEN
M_∞ = 7.58

P_c = 3.00 PSI
T_c = 588° K
ARGON
ALPHA = 180 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 8860
λ_∞ = .6370 IN.
RESERVOIR DENSITY = 2.540 X 10^{18} CM^{-3}

CENTERLINE AXIAL

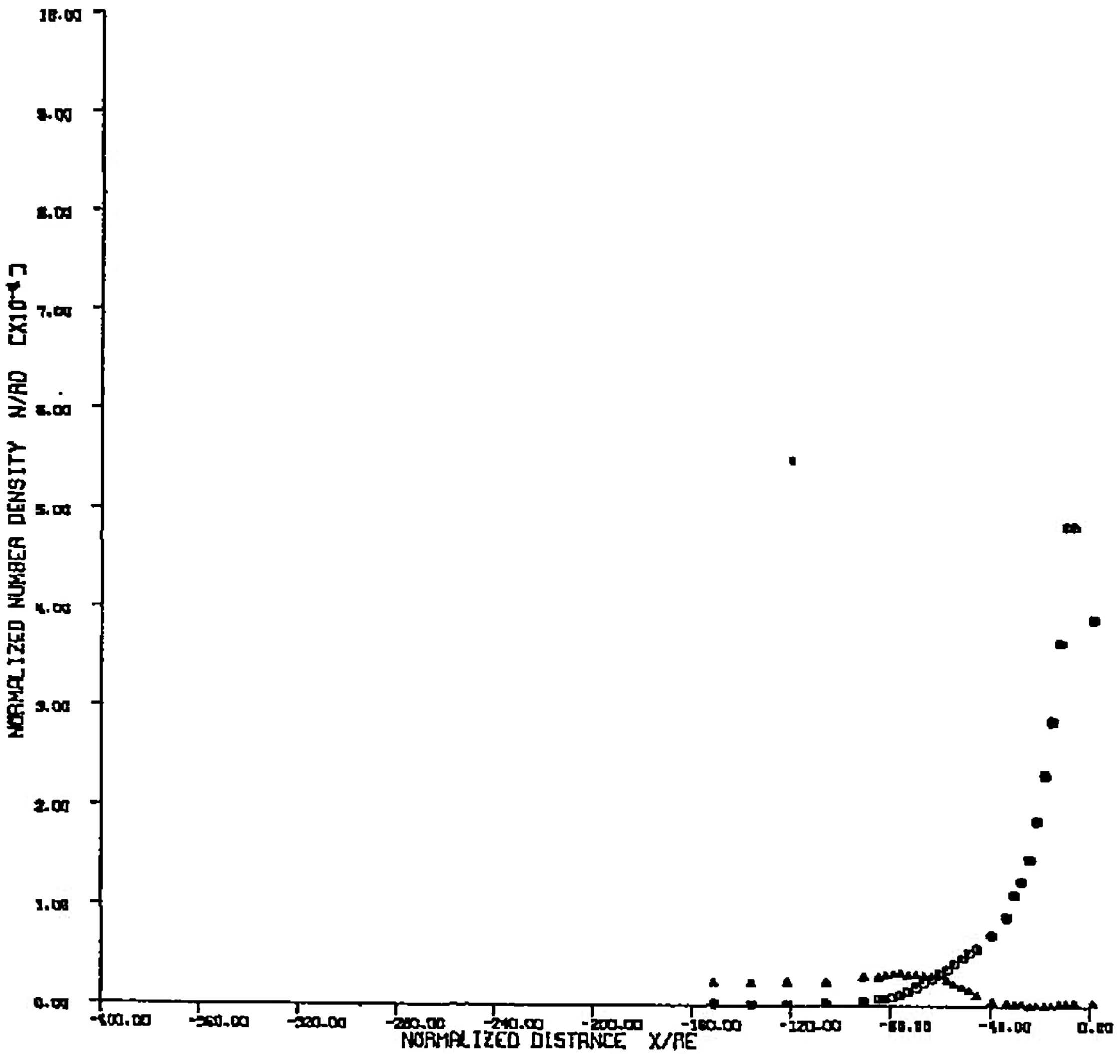

Fig. V-105

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CASE 10

P_o =3.0 TORR
T_o =866° K
NITROGEN
M_∞ = 7.58

P_c = 5.00 PSI
T_c =588° K
ARGON
ALPHA = 180DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 8860
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
2.540 X 10^{18} CM^{-3}

CENTERLINE AXIAL

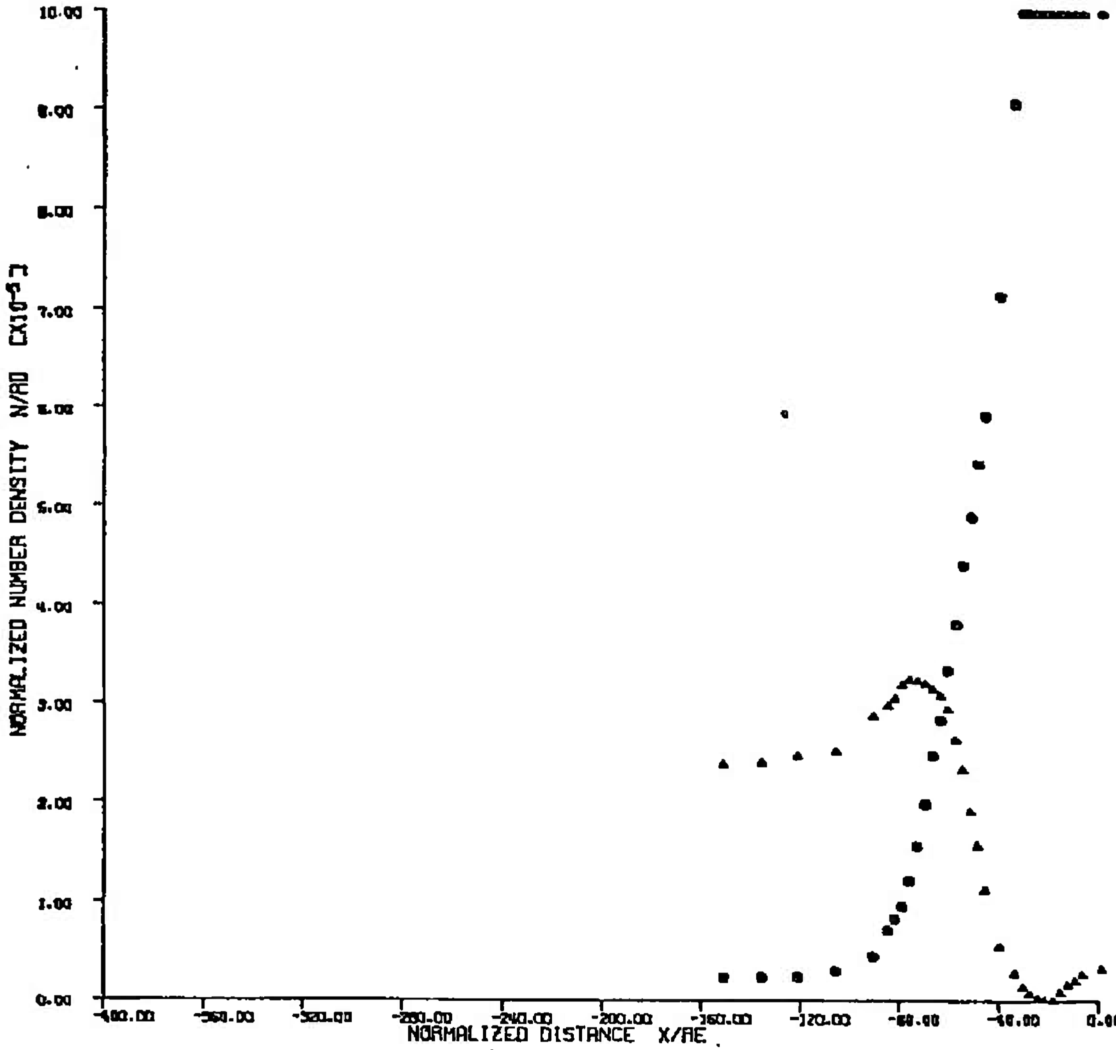

Fig. V-106

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CASE 10

P_o = 3.0 TORR
T_o = 866°K
NITROGEN
M_∞ = 7.58

P_c = 3.00 PSI
T_c = 550°K
ARGON
ALPHA = 180DEG.
A/A^* = 17.8
r_e = .0325 IN.
P_c/q_∞ = 8860
λ_∞ = .6970 IN.
RESERVOIR DENSITY =
2.720 X 10[illegible] CM[illegible]

1.0 IN. RADIAL

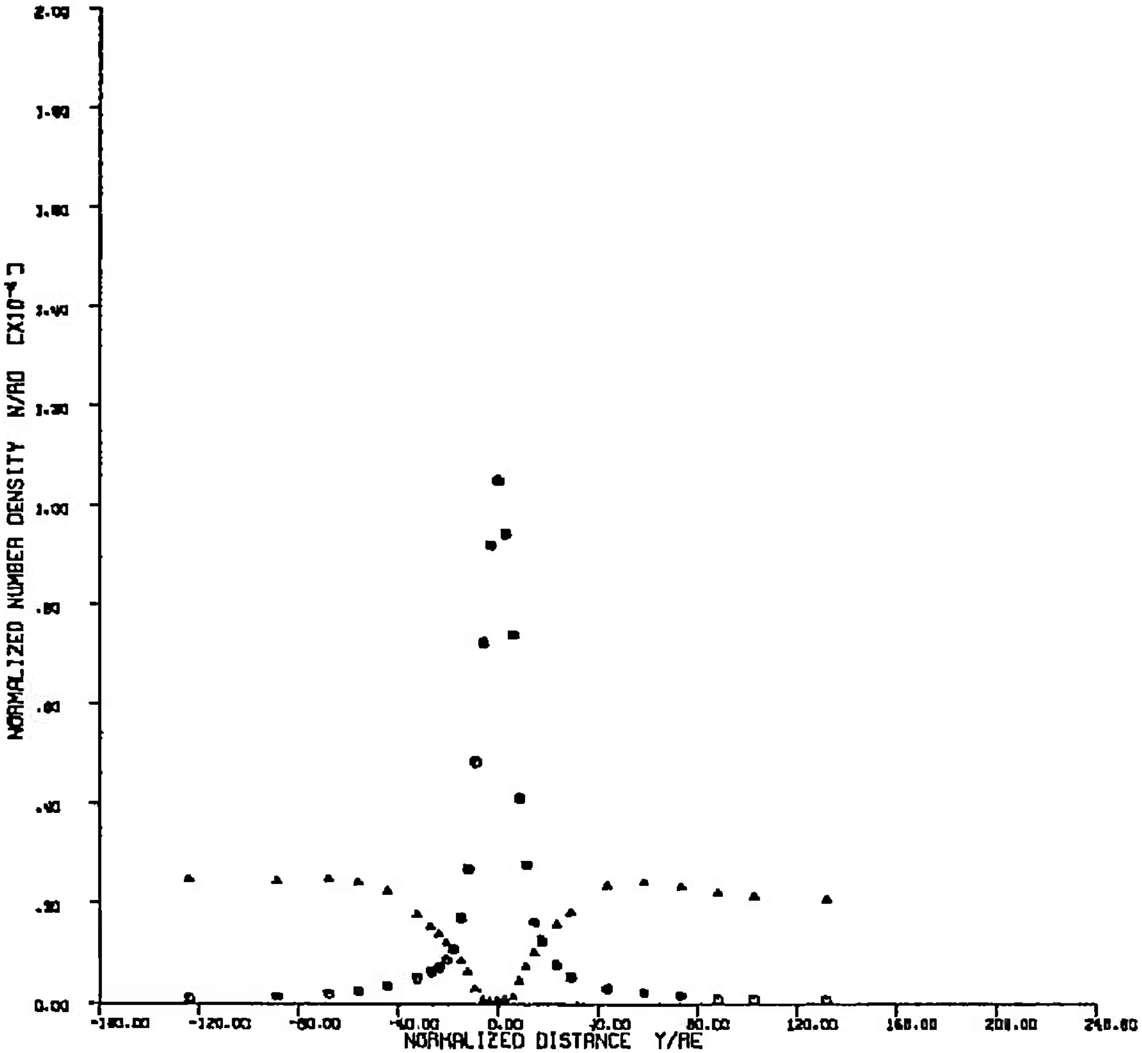

Fig. V-107

PACE 84
6/9 /70
CASE 11

P_o = 3.0 TORR
T_o = 666° K
NITROGEN
M_∞ = 7.58

P_o = 10.00 PSI
T_o = 572° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_o/q_∞ = 29600
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
8.730 X 10^{18} CM^{-3}

2.5 IN. RADIAL

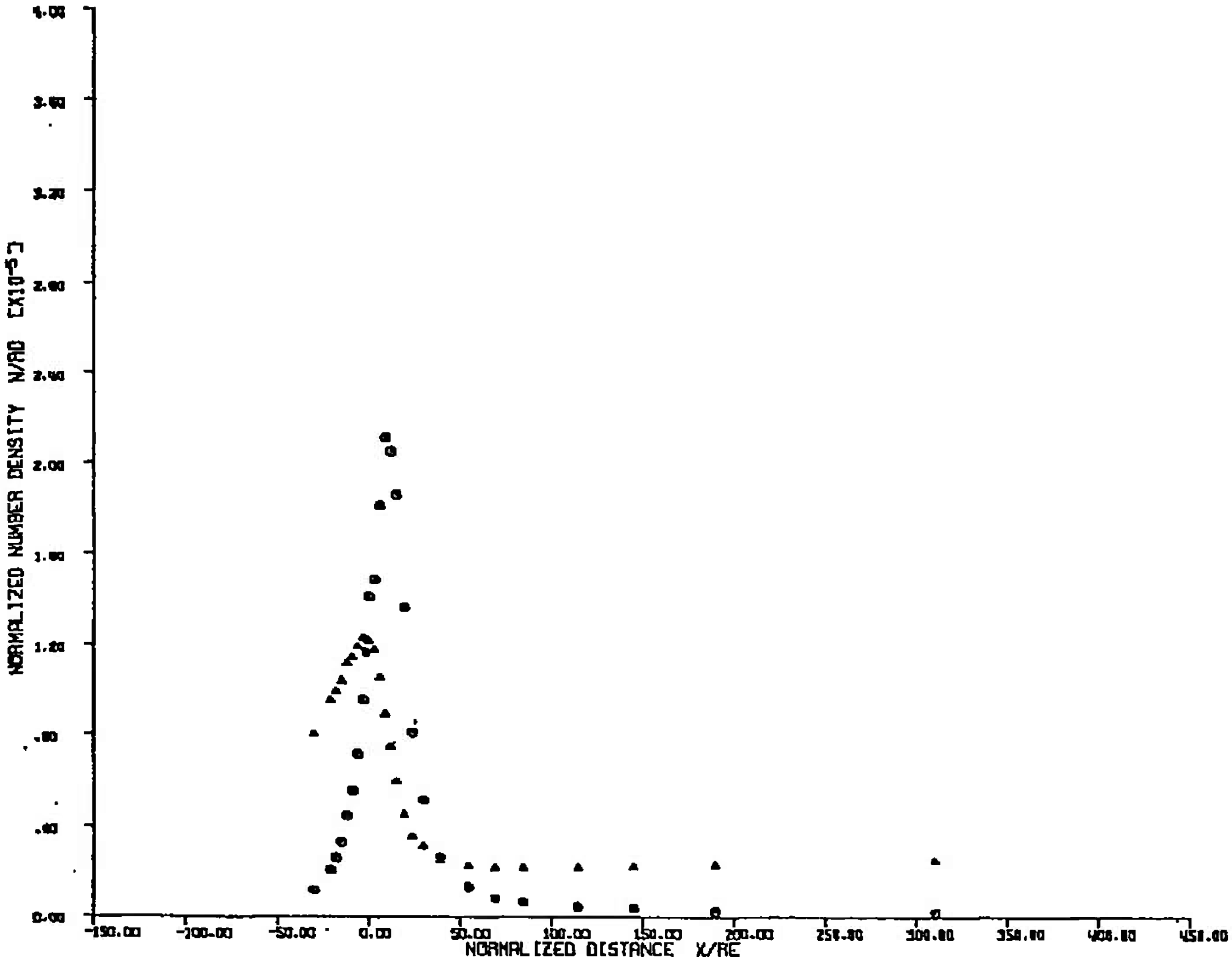

Fig. V-108

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CASE 11

P_∞ = 3.0 TORR
T_∞ = 866° K
NITROGEN
M_∞ = 7.58

P_c = 10.00 PSI
T_c = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 29600
λ_∞ = .6370 IN.
RESERVOIR DENSITY = 8.480 X 10^{18} CM^{-3}

5.0 IN. RADIAL

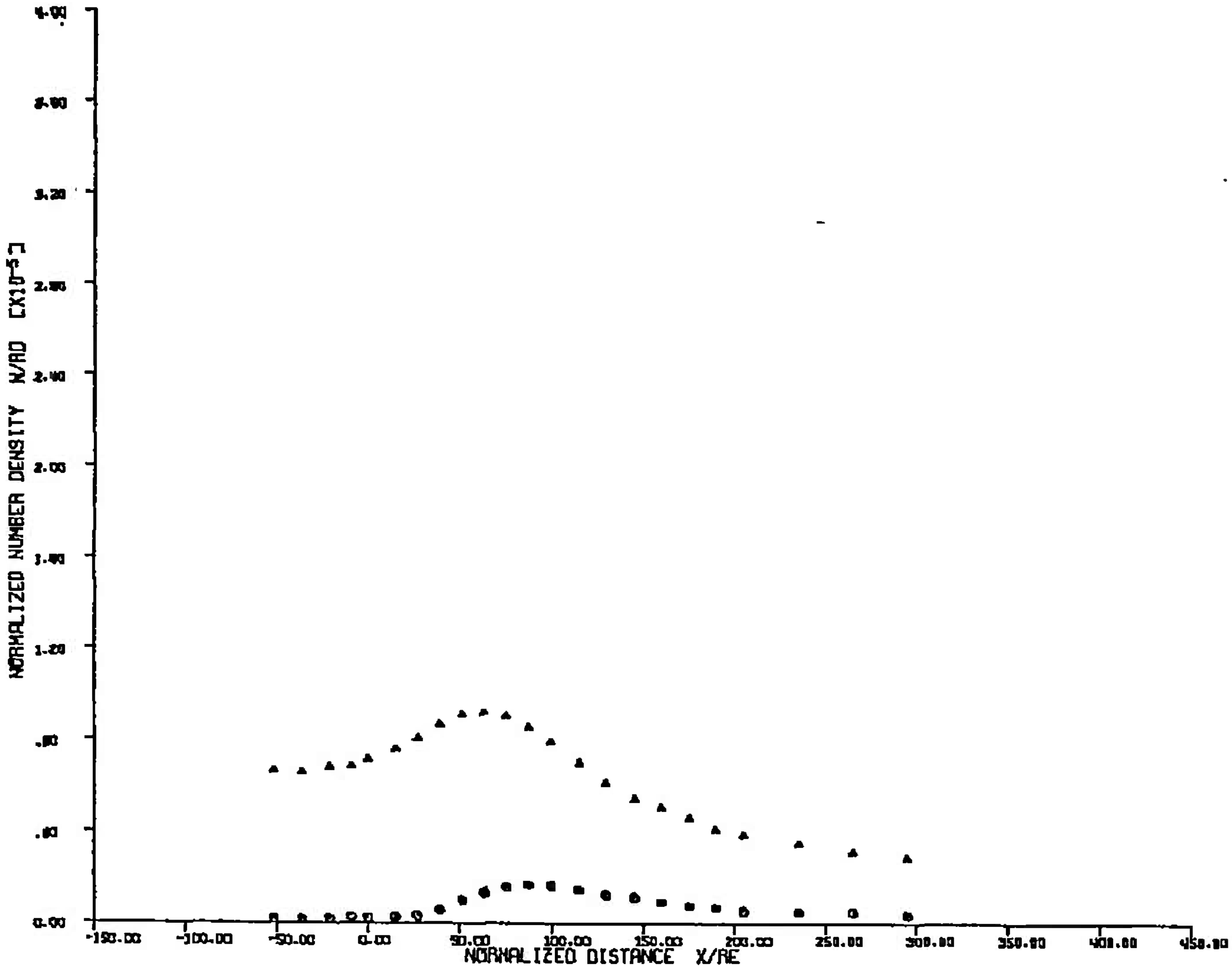

Fig. V-109

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CASE 11

P_0 =3.0 TORR
T_0 = 866° K
NITROGEN
M_∞ = 7.58

P_c = 150.00 PSI
T_c = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 443000
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
1.270 X 10[illegible] CM^{-3}

2.5 IN. RADIAL

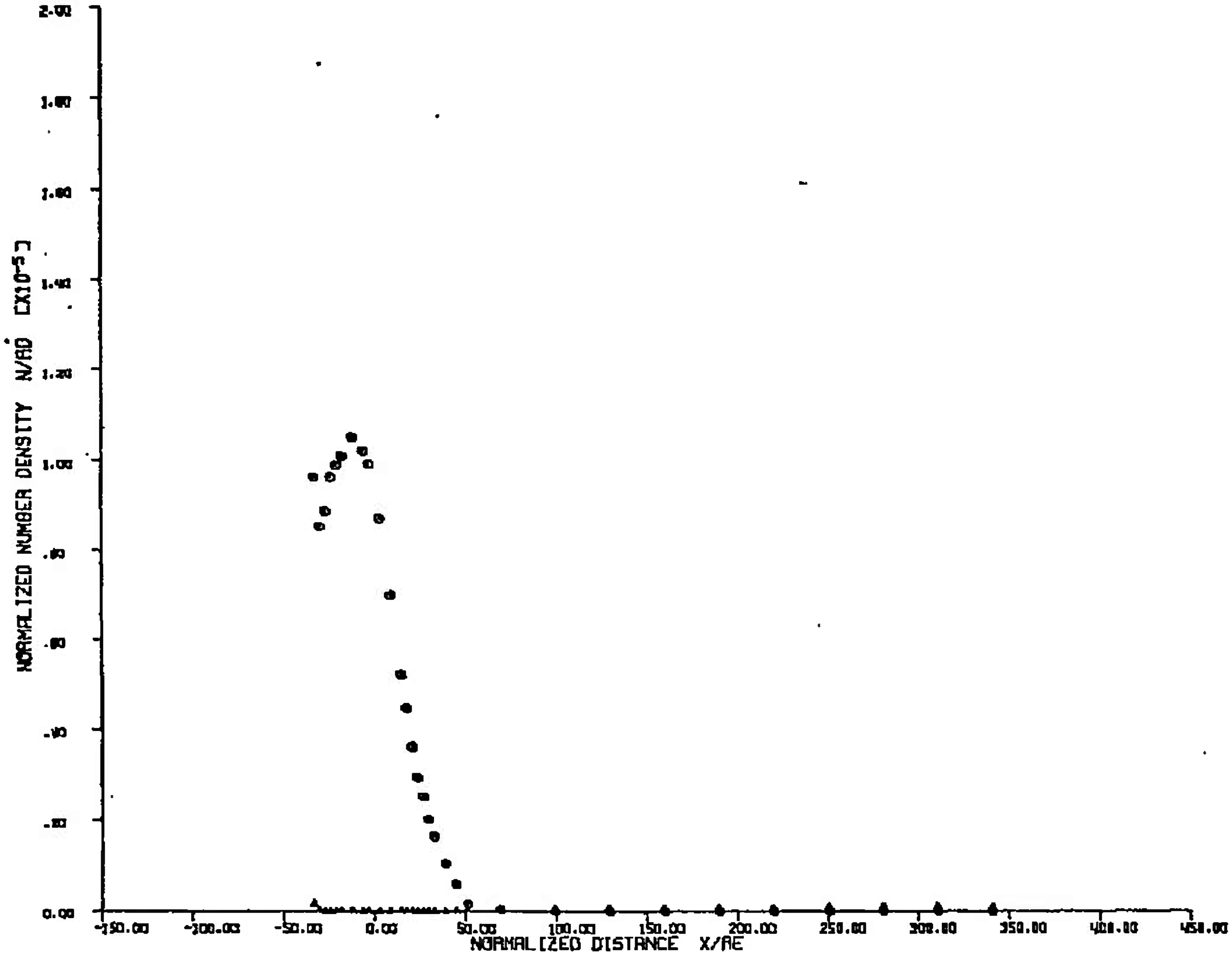

Fig. V-110

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CASE 11

P_s = 3.0 TORR
T_s = 666°K
NITROGEN
M_∞ = 7.58

P_c = 150.00 PSI
T_c = 588°K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 443000
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
1.270 X 10^{20} CM^{-3}

5.0 IN. RADIAL

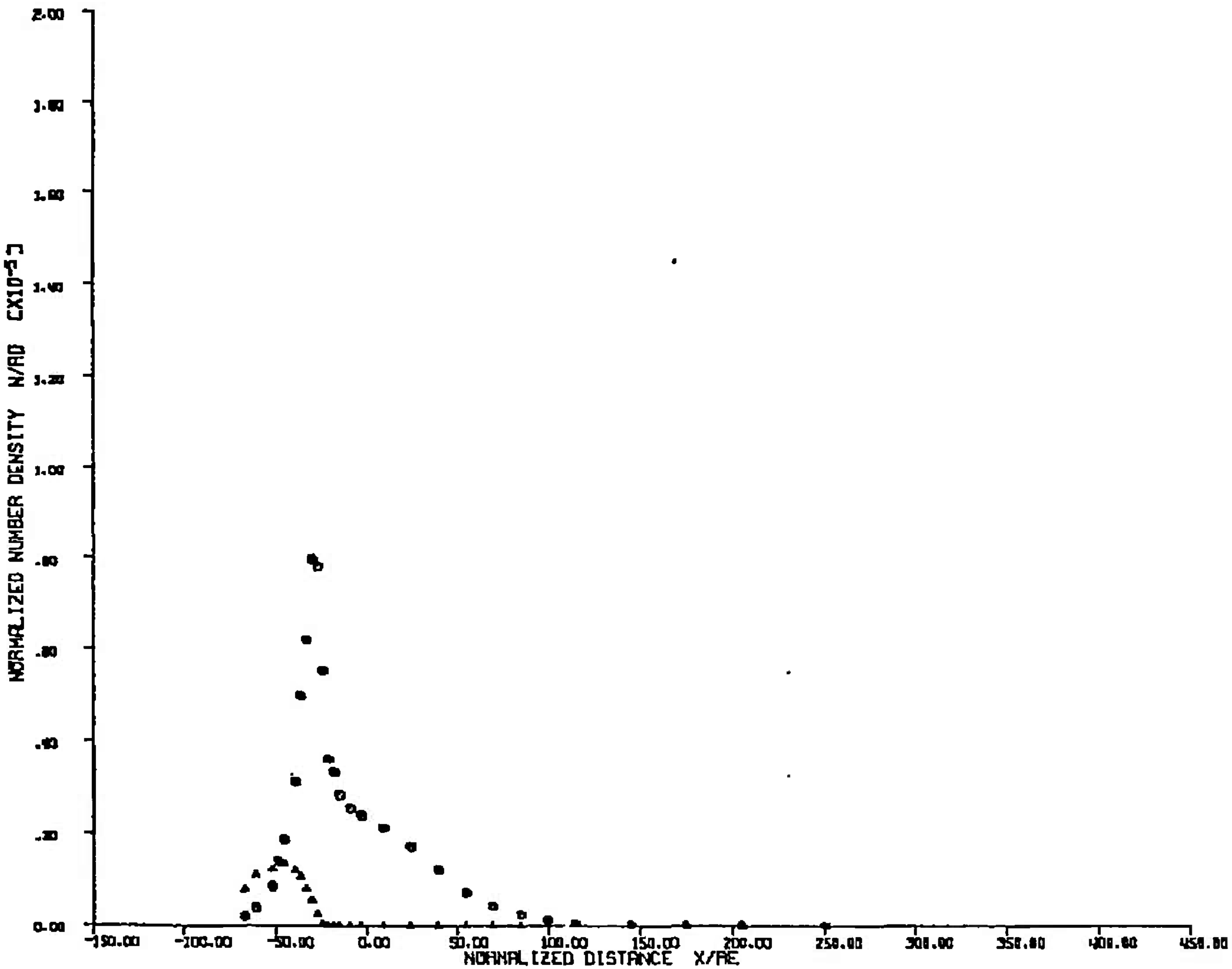

Fig. V-111

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CASE 11

P_∞ = 3.0 TORR
T_∞ = 666° K
NITROGEN
M_∞ = 7.58

P_c = 150.00 PSI
T_c = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 443000
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
1.270 X 10[illegible] CM[illegible]

5.0 IN. RADIAL

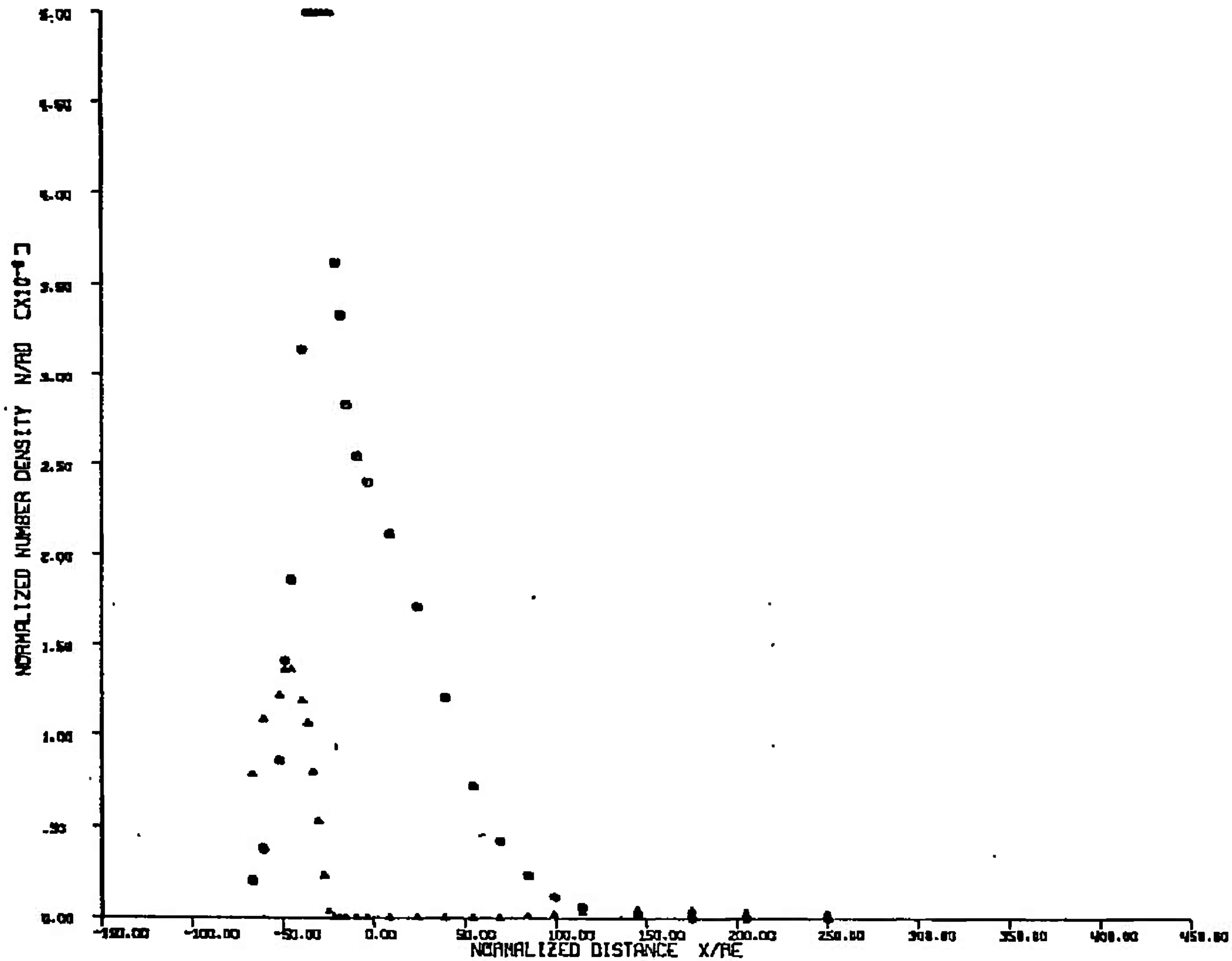

Fig. V-112

PACE 87
6/9 /70
CASE 11

P_a = 3.0 TORR
T_a = 855° K
NITROGEN
M_∞ = 7.58

P_c = 150.00 PSI
T_c = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 443000
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
1.270 X 10^{19} CM^{-3}

10.0 IN. RADIAL

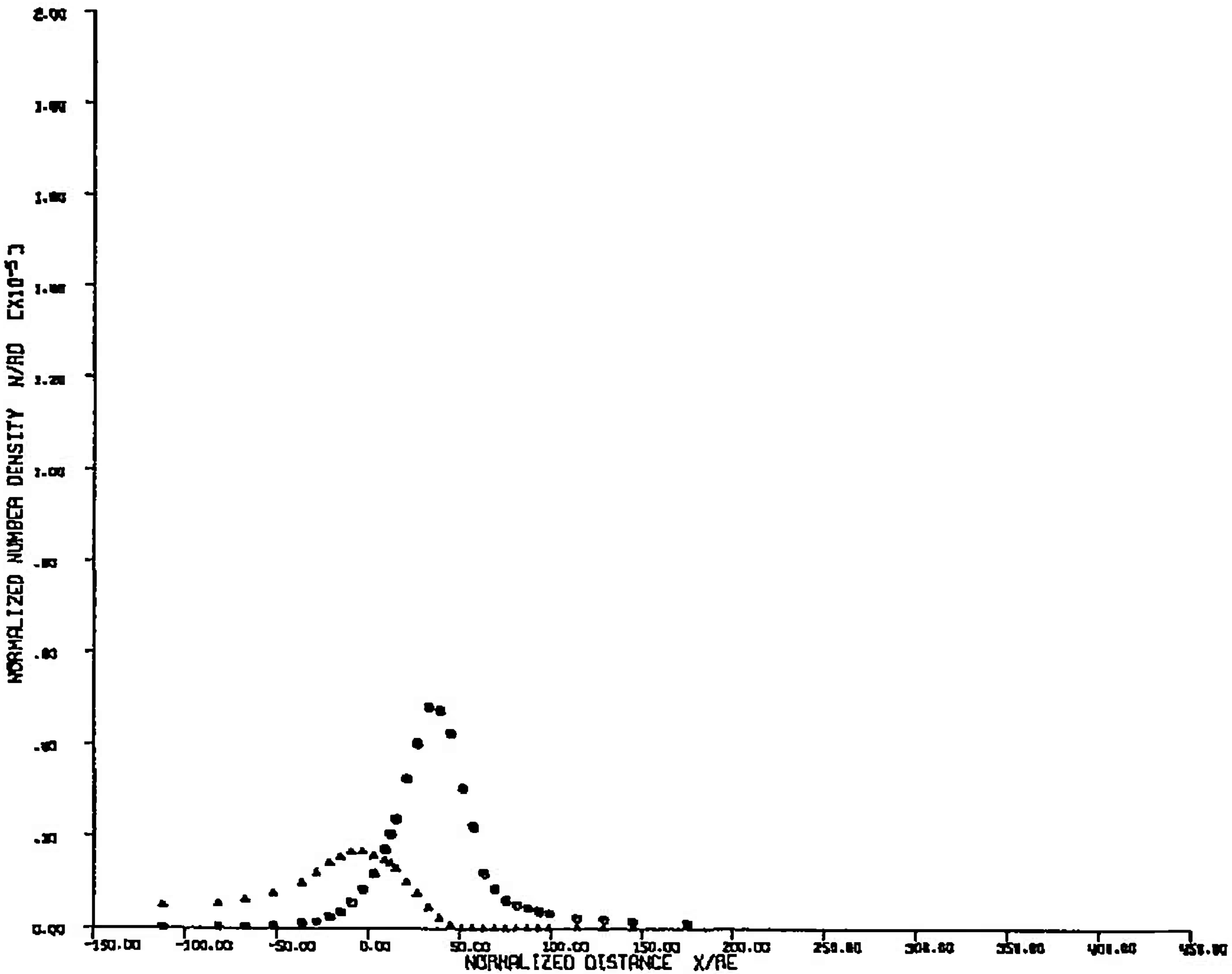

Fig. V-113

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CASE 11

P_∞ = 3.0 TORR
T_∞ = 666° K
NITROGEN
M_∞ = 7.58

P_c = 150.00 PSI
T_c = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 443000
λ_∞ = .6370 IN.
RESERVOIR DENSITY =
1.270 X 10^[illegible] CM^[illegible]

10.0 IN. RADIAL

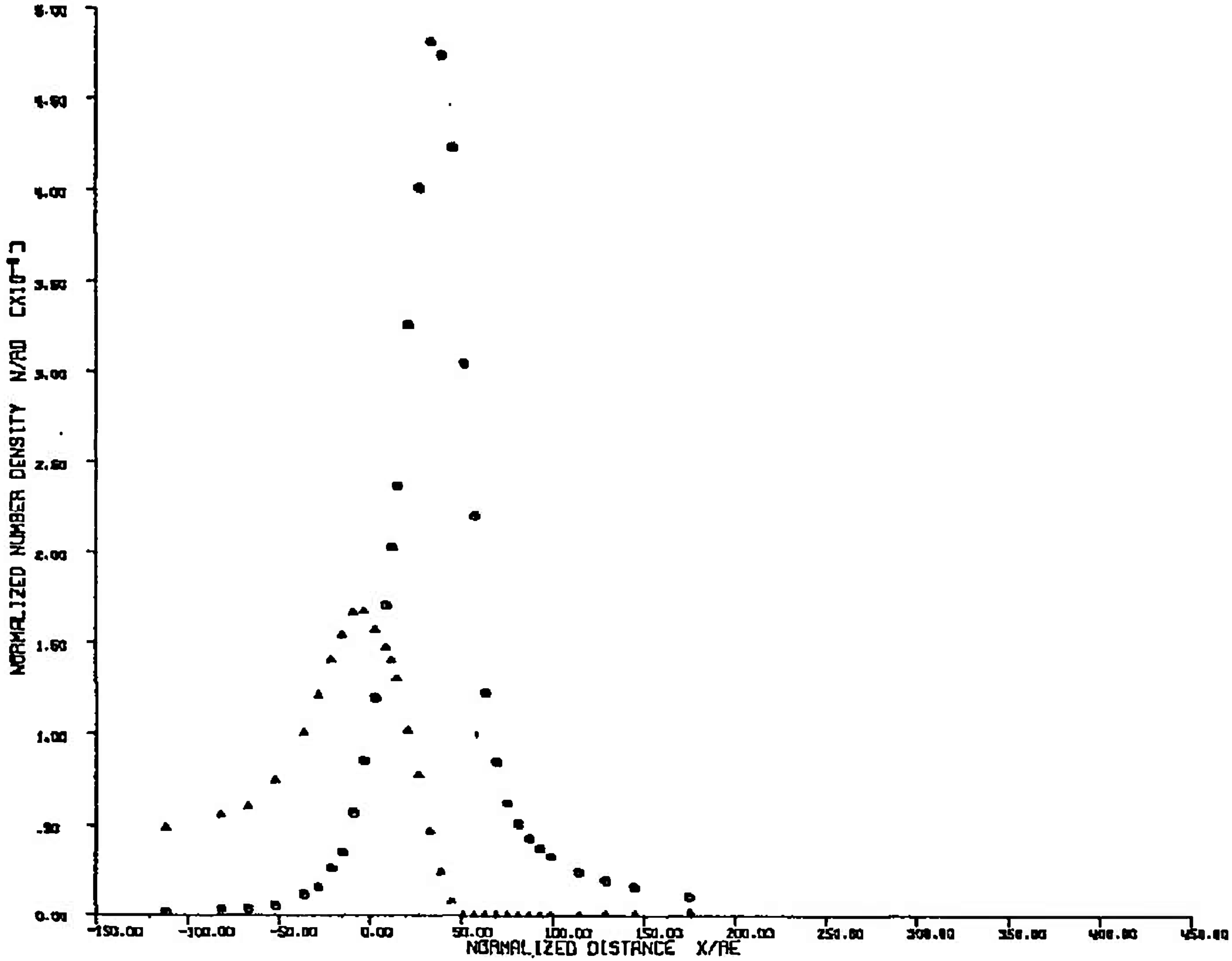

Fig. V-114

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CASE 11

P_c = 6.0 TORR
T_c = 300° K
NITROGEN
M_∞ = 7.78

P_E = 20.00 PSI
T_E = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_E/q_∞ = 59200
λ_∞ = .3460 IN.
RESERVOIR DENSITY =
1.700 X 10^{19} CM^{-3}

2.5 IN. RADIAL

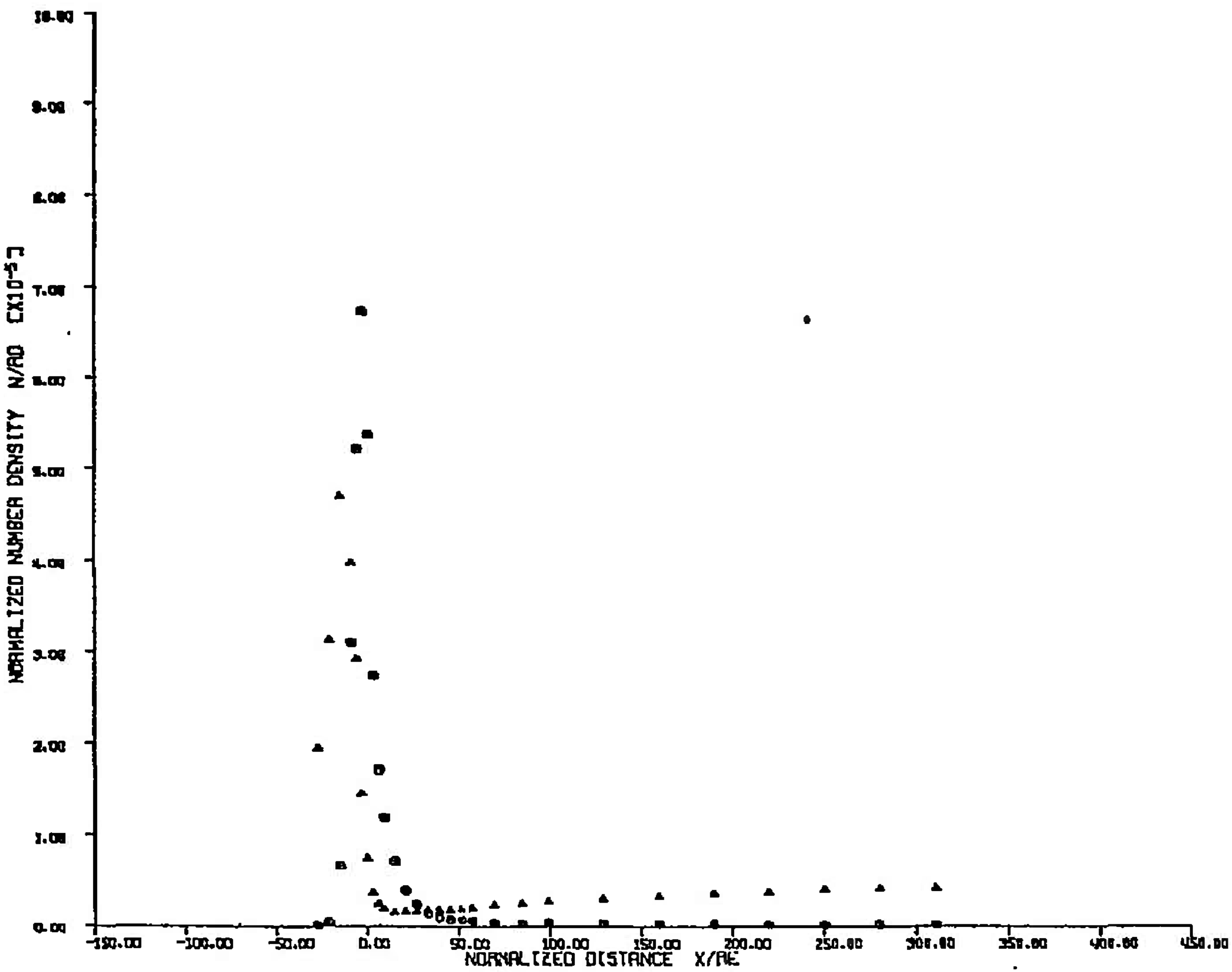

Fig. V-115

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CASE 11

P_0 = 6.0 TORR
T_0 = 300° K
NITROGEN
M_∞ = 7.78

P_c = 20.00 PSI
T_c = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 59200
λ_∞ = .3460 IN.
RESERVOIR DENSITY =
1.700 X 10^{18} CM^{-3}

5.0 IN. RADIAL

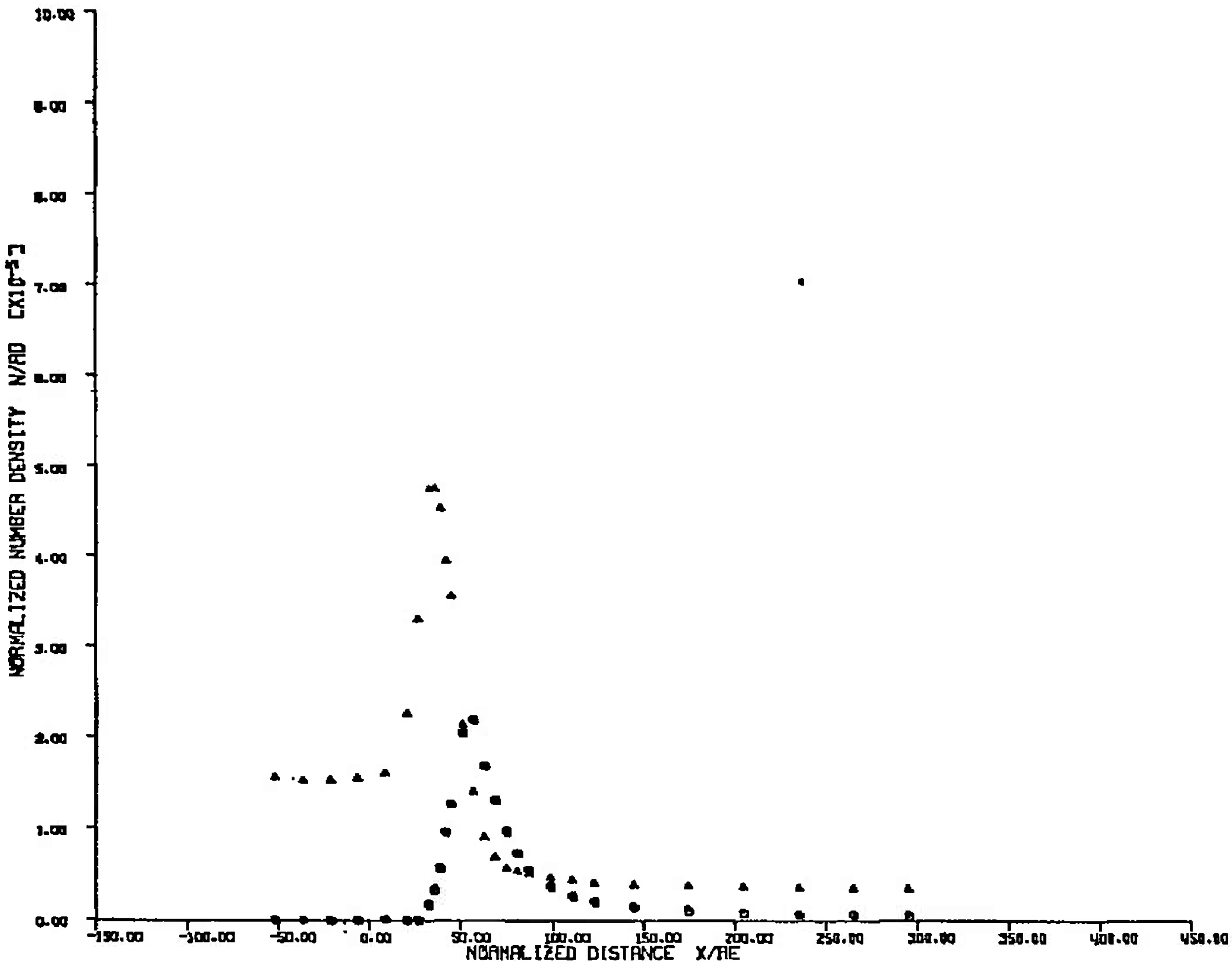

Fig. V-116

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CASE 11

P_c = 6.0 TORR
T_c = 300° K
NITROGEN
M_∞ = 7.78

P_o = 20.00 PSI
T_o = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_o/q_∞ = 59200
λ_∞ = .3460 IN.
RESERVOIR DENSITY =
1.700 X 10^{19} CM^{-3}

7.5 IN. RADIAL

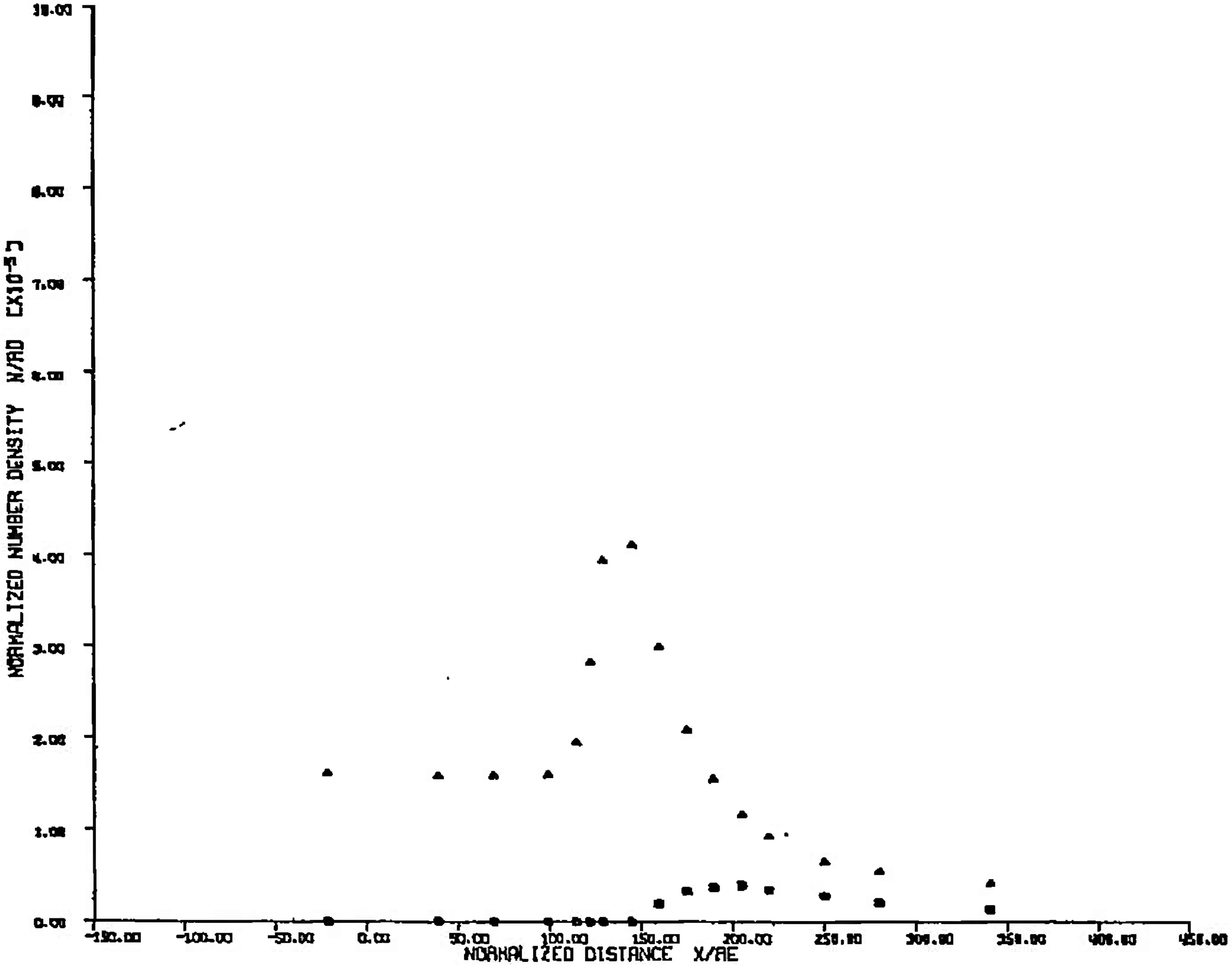

Fig. V-117

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CASE 11

P_∞ = 6.0 TORR
T_∞ = 300° K
NITROGEN
M_∞ = 7.78

P_c = 20.00 PSI
T_c = 588° K
ARGON
ALPHA = 90 DEG.
A/A^* = 17.6
r_e = .0325 IN.
P_c/q_∞ = 59200
λ_∞ = .3460 IN.
RESERVOIR DENSITY = 1.700 X 10^{19} CM^{-3}

10.0 IN. RADIAL

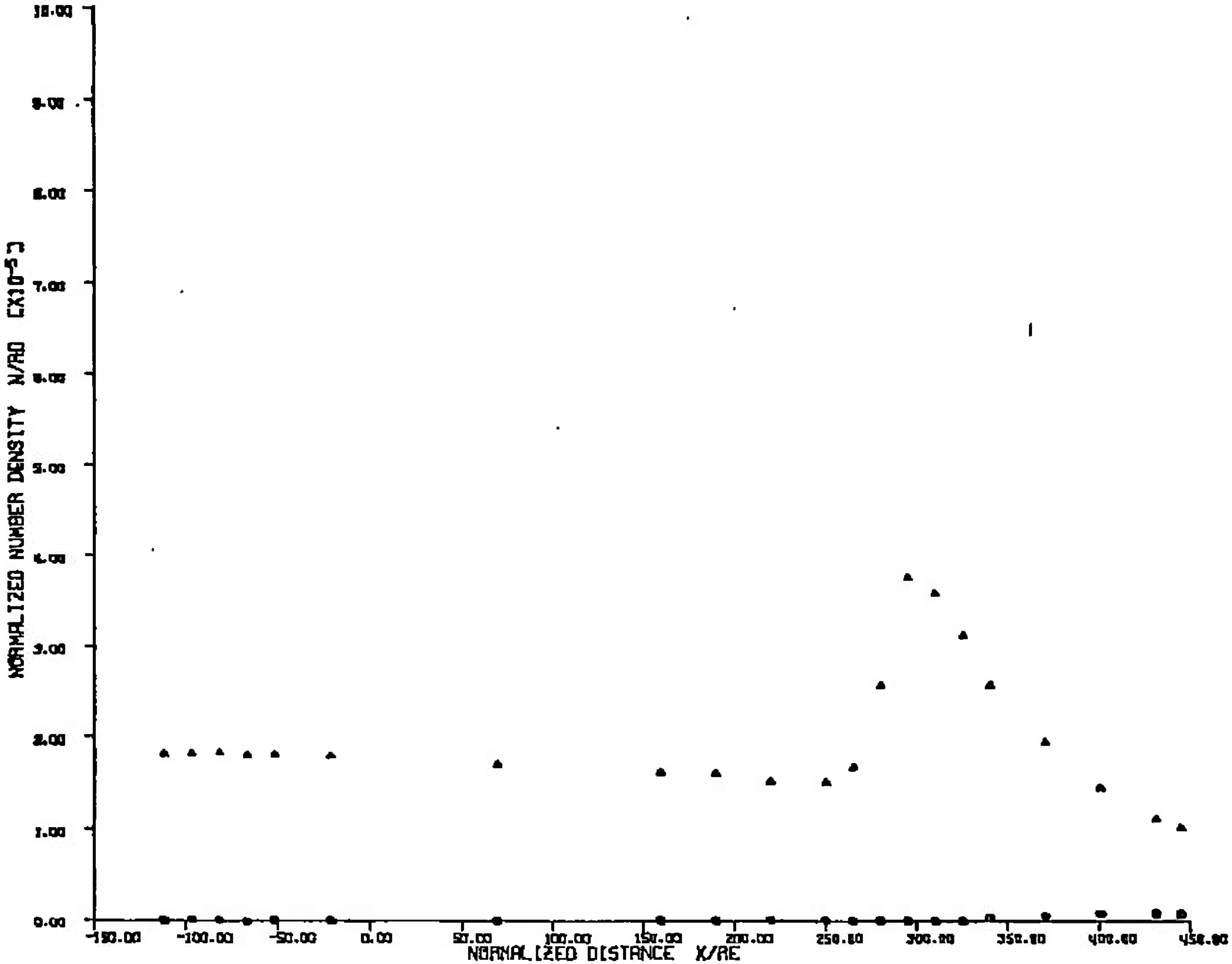

Fig. V-118

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13. ABSTRACT

Interactions of model rocket plumes and the free stream at varying simulated altitudes have been investigated in an altitude simulation chamber. Free-stream variables were Mach number, gas, total temperature, and total pressure. Model rocket parameter variables were exhaust gas, area ratio, chamber total pressure and total temperature, and the orientation of the model relative to the free stream. In addition to pitot probe measurements, plume photographs and density measurements were obtained using the electron beam technique.

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