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Deflected Jet Experiments in a Turbulent Combustor Flowfield

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NOMENCLATURE

A, B, C	calibration constants
A_c	cross-sectional area of crossflow
A_j	cross-sectional area of jet
D	test section diameter
d	inlet nozzle diameter
d_j	jet inlet diameter
E	hot-wire voltage
G	pitch factor
K	yaw factor
R	jet-to-crossflow velocity ratio
RAM	random access memory
Re	Reynolds number
$\overline{V} = (u,v,w)$	time-mean velocity in facility coordinates (x-, r- θ-directions)
x,r,θ	axial, radial, azimuthal coordinates
Y	vertical distance above jet
Z	effective cooling velocity acting on a wire
$\gamma_{z_i z_j}$	correlation coefficient (estimated) between cooling velocities
ϕ	swirl vane angle with respect to facility axis
θ	traverse azimuthal angle

Subscripts

i,j	summation indices
o	value at inlet to flowfield
rms	root-mean-squared

Superscripts

$(\bar{\ })$	time-mean average
$(\ )'$	fluctuating quantity
$(\tilde{\ })$	relative to probe coordinates

CHAPTER I

INTRODUCTION

1.1 Deflected Turbulent Jets

Almost all flow phenomena of practical engineering interest are turbulent and do not lend themselves easily to experimental, analytical or numerical investigation. Deflected turbulent jets are no exception, involving fully three-dimensional flow phenomena. Power plant chimney plumes, cooling holes ejecting air from turbine blades, and the airflow around V/STOL aircraft in transition flight are examples of deflected turbulent jets. The present study emphasizes lateral injected jets into tubular cross-flow which may also possess swirl - a situation occurring in gas turbine combustion chambers, as seen in Figure 1, and a more complicated example of fully 3-D flowfields. When the disturbing jet is introduced into the crossflow, vorticity is added to the flow. The circulation of this vorticity stirs the two fluids together as the flow progresses downstream. Gas-turbine combustor designers utilize this mixing phenomenon to promote rapid combustion and evenly mix the products of combustion with cooler injected air, accomplishing this in a compact space.[1]

1.2 Combustor Flowfield Phenomena

High-intensity combustion takes place in gas turbine combustion chambers[2]. Whereas most fuel burning takes place in the primary zone, the secondary zone is where combustion is almost completed, and the dilution zone is where further temperature reduction and uniformity is achieved. In both can and annular combustors, lateral jets of cooler air through round holes penetrate the flowfield. Some of these jets amalgamate with the swirl-induced central recirculation region of the primary zone and provide sufficient additional air for stoichiometric conditions. Other lateral jets provide additional air to help complete combustion in the secondary zone and to cool and evenly mix the products in the dilution zone in preparation for the introduction of the flow in the turbine. Similar problems arise in ramjet combustors. Clearly the turbulent reacting flowfield is fully three-dimensional; the combustion designer has a formidable problem in aerothermochemistry, and the research and development task is to provide a route which leads to the accomplishment of design objectives more quickly and less expensively than current practice permits. Recent conferences[2,3] and textbooks[4] extensively review progress and problems in this area.

1.3 Present Study Objectives

The focus of the present study is to characterize the time-mean and turbulent flowfield of a deflected confined turbulent jet, entering laterally into tubular cross-flow which may also possess swirl. Part of an ongoing research effort at Oklahoma State University, the ultimate aim is to provide a data base for turbulence model advances used by combustor designers. The specific objectives for this investigation included:

1. Flow visualization was used to highlight the important features and structures of the deflected jet. Neutrally-

buoyant helium-filled soap bubbles, smoke, and multi-sparks are to be used. Flow visualization was used to characterize one deflected jet without swirl (swirler removed) and with swirler angles of 45 and 70 degrees.

2. A computerized data acquisition and reduction technique was developed and implemented. Because of the large number of data point locations and random nature of the fluctuating velocities, a high-speed analog-to-digital data acquisition system with a computer-controlled probe drive was designed and constructed.

3. A six-orientation single hot-wire technique was used to map fully the time-mean and turbulent velocity flowfield. The data acquisition and probe drive system was used to manipulate the probe and hot-wire voltages. Jet to cross-flow velocity ratios of 2, 4, and 6 were used with no swirl in the cross-flow.

1.4 Outline of the Thesis

The first chapter of this six-chapter thesis is the introduction. Deflected turbulent jets and their importance in engineering practice are briefly described, emphasizing the significance of deflected jets in combustor design. Finally the objectives of this study are stated and justified.

Chapter II presents a historical perspective into research in deflected turbulent jets. The test section geometry and parameters investigated by other workers are outlined. Past work at Oklahoma State University into related combustor flowfield characterization is discussed.

A complete description of the experimental facility and measurement equipment is presented in Chapter III. The data acquisition and probe drive system, designed specifically for this investigation, is fully discussed.

The measurement techniques employed are discussed in Chapter IV. Flow visualization via bubble, smoke, and spark-gap techniques is described. The chosen single-wire multi-position technique is described in light of previous workers[9,11] sensitivity analyses.

Chapter V and VI are the concluding chapters of this effort. The former presents results of the flow visualization and measurement techniques. These results are discussed thoroughly; velocity plots are related to flow visualization photographs. Chapter VI emphasizes the main conclusions to be drawn from this investigation.

Tables III, IV and V present the time-mean velocities and turbulence quantities in tabular form. Figures 17-23 present flow visualization photographs; Figures 24-41 are two-dimensional plots of the time-mean and turbulent flowfield.

CHAPTER II

BACKGROUND

2.1 Review of Previous Studies in Deflected Turbulent Jets

A number of experimental investigations of the jet in a cross-flow have been reported in the literature. As early as 1948, Callaghan and Ruggeri[27] examined a heated 200°C air jet directed normal to the wind-tunnel flow. The heated jet exhausted into the confined tunnel through a sharp-edged orifice. Jet velocities from approximately two to seven times the cross-stream velocity were investigated for penetration depth and mixing. Thermocouple and pitot tube rakes were utilized well downstream of the jet inlet to record penetration depth and mixture temperatures. Ruggeri, Callaghan, and Bowden[28] extended this work in 1950 to include square and elliptical orifices.

In 1952, Ruggeri[29] extended his contribution to include various angles (30, 45, 60, and 90 degrees) of injection. The angles required that a tube be utilized to inject the jet, as opposed to a sharp-edged orifice. Ruggeri used Schlieren flow visualization to confirm his measurements and commented on the wall effects of the wind tunnel.

Jordinson,[30] 1958, was the first to determine experimentally the trajectory of the jet cross-section and defined the jet axis as the line connecting the points of maximum velocity. He also demonstrated that the cross-section of an initially cylindrical jet is distorted into a 'horseshoe' shape by the cross-stream shearing action.

Keffer and Baines[31], 1963, contributed some very carefully measured velocity data. More importantly, they studied the turbulent structure in the deflected jet and showed that similarity for a reasonably small range of velocity ratios (4, 6, and 8) could be shown. Their work was the first use of a jet-oriented coordinate system, relating the jet centerline to that of a free jet. Pratt and Baines[32] refined this work to account for scatter in the previous data, and also demonstrated that the profile of the jet is conserved as a mixture between circular cross-section of random eddies and a pair of line vortices with small turbulences. Pratt and Keffer[34] continued this investigation for various injection angles (60, 75, 90, 115, and 135 degrees) to the main flow. Finding differences between their jet trajectories and that of Keffer and Baines[31], they recognized the importance of the jet inlet velocity profile. In fact, their experiments used long tubular inlets whereas Keffer et al used a simple orifice inlet in the earlier study[31].

Some of the first work to examine multiple deflected jets is represented by Norgren and Humenik[33], 1968, intended to aid in the design of short-length combustors. As with the pioneering work of Callaghan[27], they restricted their investigation to penetration depth and degree of mixing for heated jets. It should be noted that this work was one of the first basic research studies into turbine inlet temperature profiles.

In 1973, Campbell and Schetz[35] developed one of the first analytical models of a deflected jet and also verified this integral method with experiments. Their model was successful in predicting flow velocities and trajectories in buoyant, heated jets.

Kamotoni and Greber[36] were probably the first to study multiple jet injection into a confined cross-flow. The single row of jets was directed toward the opposite wall of a rectangular cross-section wind tunnel. Most interesting of their conclusions was that the jets were only mildly affected by the opposite wall, unless the jet directly impinged upon that wall. Holdeman and Walker[37] extended this work and others to develop an empirical model predicting downstream temperature profiles.

Chassaing, et al,[38] in 1974, contributed works comparing several zones of similarity of the jet in cross-flow problem. Krausch and Fearn[40] contributed the first investigation into the properties of the vortex pair associated with the jet in cross-flow.

The most detailed work thus far for a single deflected jet has been that of Crabb, Durao and Whitelaw[41]. Utilizing laser-doppler anemometry in the region of the jet, their measurements extensively quantify the velocity field with its associated turbulence and vortex pairs. The only detraction is that the jet to cross-flow velocity ratios of their measurements are quite low -- 1.15 and 2.30. Most investigators[27-33] have been in the range of 4-10 times the cross-stream velocity as this approaches the dilution jet case more closely. The ratio of 1.15 would fall slightly above the region of film cooling. A tubular inlet was used to inject the jet perpendicularly into a large wind tunnel.

The work of Rathgeber and Becker[39] is representative of few investigations dealing with jet injection into a cylindrical cross-section flow. They investigated relatively small diameter jets as compared to the cross-flow diameter (cross-flow to jet diameter ratios between 17.2 and 50). These measurements quantify mixture and trajectory data, but do not deal with turbulence details.

Table I provides a ready comparison of the historical background of jets in crossflow. The table outlines parameters and techniques used by various investigators and the variables measured. Note, for example, the number of investigators using an orifice to inject the jet where the velocity profile would be hard to quantify.

Research motivation is provided from many sources. Claus[45] points out that almost all previous investigators except Crabb, et al[41] have failed to fully report turbulence field, inlet velocity profiles and vortex pair properties. His thesis is that all of these data are extremely important to combustor modelers in confirming analytical tools.

A recent (1979) review of the state-of-the-art in flowfields modeling is provided by Lilley.[54] Holdeman and Srinivasan[3] present comments on NASA-inspired modeling of dilution jets. References 49, 51, and 53 may give the reader some idea of the diversity of analytical flowfield modeling schemes now under development. Additionally, Schetz[26], 1980, contributes a review of the entire field of injection and mixing in turbulent flow.

2.2 Past Work at Oklahoma State University

Recently, as summarized by Lilley[6], experimental and theoretical research has been completed on 2-D axisymmetric geometries under low speed, nonreacting, turbulent swirling flow conditions, in the absence of any lateral jets. The flow enters the test section and proceeds into a larger chamber (the expansion D/d = 2) via a sudden or gradual expansion (side-wall angle ϕ = 90 and 45 degrees). A weak or strong nozzle may be positioned downstream to form a contraction exit to the test section. Inlet swirl vanes are adjustable to a a variety of vane angles with values of ϕ = 0, 38, 45, 60 and 70 degrees being emphasized. The objective was to determine the effect of these parameters on isothermal flowfield patterns, time-mean velocities and turbulence quantities, and to establish an improved simulation in the form of a computer prediction code equipped with a suitable turbulence model.

In conjunction with these research objectives, several experimental techniques have been developed including:

1. Flow visualization, achieved via still[43] (for example, see Ferrell, et. al.[43]) and movie photography of neutrally-buoyant helium-filled soap bubbles and smoke produced by an injector.
2. Time-mean velocities have been measured by Yoon[10] with a five-hole pitot probe at low swirl strengths.
3. Turbulence measurements have been completed on swirling (up to ϕ = 70 degrees) as well as nonswirling flows using a six-orientation single-wire hot-wire technique by Jackson[11], enabling all Reynolds stress components to be deduced.
4. An advanced computer code has been developed by Rhode[8] and improved by Abujelala[12] to predict corresponding confined swirling flows to those studied experimentally.

5. Rhode's[8] tentative predictions have now been supplemented by predictions made from realistic inlet conditions by Abujelala[12] for a complete range of swirl strengths with downstream nozzle effects.

CHAPTER III

EXPERIMENTAL FACILITY

In many experimental efforts, ready-made components are either not available or prohibitively expensive. The facility described herein is a result of many man-hours of student time dedicated to design and construction.

3.1 Wind Tunnel

The test facility, dominated by the wind tunnel, is shown schematically in Figure 2 of Appendix B. Air is induced to flow through a large foam inlet filter by an axial fan. The fan is connected by way of belts and pulleys to a seven-horsepower U.S. Motor varidrive. The varidrive permits the fan speed to be adjusted from 500 to 2850 RPM. The air is then forced into an expanding area section, where multiple 20-mesh screens and a section of straws are employed to straighten the flow and significantly lower the turbulence intensity.

Before introduction to the test section, the air flows through an axisymmetric nozzle with an area reduction ratio of 25. The nozzle was built with a matching cubic radial profile, according to the method described by Morel[7]. The objective of this nozzle design is to produce a low turbulence level uniform velocity profile before introduction to the test section, with minimum adverse pressure gradient in the boundary layer. The exit throat diameter of the wind tunnel is approximately 15 cm.

At the throat of the tunnel and before introduction to the test section, a variable-angle swirler may be fitted. The swirler consists of ten flat blades (with pitch-to-chord ratio 0.68) which may be individually adjusted to any angle from 0 to 70 degrees. Sander[13] provides detailed information and measurements related to the swirler performance and swirler exit velocity profiles on this facility.

3.2 Test Section and Dilution Jet

The test section consists of a clear acrylic tube approximately 90 cm in length attached to the wind tunnel throat. Standard commercial acrylic tube is used with 15.24 cm (6.0 in.) outside diameter, 0.318 cm (0.125 in.) wall thickness. The inside diameter is therefore 14.61 cm with a measured variation of ± 0.05 cm. To adapt the test section to the wind tunnel throat (inside diameter 15 cm), an adaptor section was machined to provide a smooth transition from wind tunnel throat to test section. Two test section tubes were constructed. Both test sections have the dilution jet inlet located at x/D = 1.00 where x is measured from the tube inlet. The first tube has a series of probe access holes located at x/D = 1.00, 1.25, and 1.50 and at all six azimuthal locations 270, 300, 330, 0, 30 and 60 degrees as shown in Figure 3. The second tube allows probe access to locations downstream of x/D = 1.50 (for example x/D = 1.75, 2.00, 2.50, 3.00) and at any azimuthal angle. This is accomplished via a tube rotation section, constructed from machined aluminum rings, acrylic, and ball bearings as seen in Figure 4.

Laboratory compressed air at 6 to 7 atmospheres gauge pressure is used to supply the dilution jet. For stability, the supply air lines are large and are routed through two line regulators with an intermediate tank (volume approximately 0.006 m^3) to dampen line oscillations. The second regulator was used to meter the flow rate. After the second regulator, the air was routed through a Fisher and Porter model 10A1735A rotometer for monitoring of the volume flow before introduction to the dilution jet. The dilution jet assembly, see Figure 5, consists of a stagnation chamber, flow straightening section, and the jet nozzle. The stagnation chamber was constructed from 15 cm inside diameter aluminum pipe and filled with plastic household scrub pads to evenly distribute the internal flow. A hemispherically-shaped screen and convergent transition smooth the flow into the flow straightening section. Here the air flows through four brass screens for turbulence reduction. The nozzle was designed according to the method suggested by Morel[7] and is constructed of fiberglass. The nozzle diameter is 0.10 of the test-section diameter for a cross-flow to jet area ratio (A_c/A_j) = 100. Construction of the nozzle, a multi-step process, consisted of: constructing a two-dimensional contour on a numerically-controlled milling machine from a computer-generated profile, using the contour and a hydraulic follower on a lathe to produce an axisymmetric male mold, and forming the fiberglass nozzle around the male mold, with aluminum flanges formed in.

Once assembled, the dilution jet was attached to the air line coming from the rotometer and the nozzle was pressed into a special acrylic adaptor which is permanently attached to the test section.

3.3 Hot-Wire Instrumentation

The sensing transducer used in this study is a normal hot-wire probe, DISA type 55P01. This probe has two prongs set 3 mm apart with a 5 μm diameter tungsten wire between them. The exposed, effective length of the wire is approximately 1 mm, since the ends have been gold plated to strengthen the wire and reduce end effects. The probe support was a standard DISA 55H21 straight mounting tube. The anemometer used was a DISA type 55M01, constant-temperature standard bridge. The hot-wire voltage was measured with the computer-controlled data acquisition system, discussed in Section 3.5.

3.4 Calibration Equipment

A small axisymmetric free jet was employed to calibrate the hot-wire. The calibration jet facility consists of a contoured nozzle similar in shape to the dilution jet and wind tunnel contraction. A settling chamber and turbulence management section consisting of packed straws is just upstream of the nozzle. The nozzle exit diameter is 34 mm. Using the standard laboratory air supply, the calibration jet is capable of producing Reynolds numbers up to 6×10^5 (based on throat diameter). The air supply is thermally stabilized by virtue of long indoor lines and is within $\pm$ 0.5°C of the facility temperature. The air is metered by means of a diaphragm valve and a Fisher and Porter model 10A1735A rotometer. The jet was calibrated using a pitot probe 1.0 nozzle diameters downstream of the exit plane. The temperature of the jet and the pressure before the rotameter were monitored during each calibration to account for minor variations from the initial calibration velocities.

The hot-wire was placed in the potential core of the jet during calibration. Utilizing a rotary table and two hot-wire support tubes (DISA 55H151, DISA 55H153), the hot-wire was calibrated in the u, v, and w directions as shown in Figure 6.

Jackson[11] discusses in detail the merits of the chosen calibration expression

$$E^2 = A + BZ^{1/2} + CZ$$

which is shown in Figure 7 for the three probe calibration directions. Figure 8 illustrates the pitch and yaw factors which will be discussed in Chapter IV.

3.5 Data Acquisition and Probe Drive System

The probe drive, shown schematically in Figures 9, 10, and 11, was specifically designed for these investigations. The probe is positioned in the flowfield by two stepper-motors, one motor for rotation and the other for translation. The probe is held within the square slider by a cylindrical holder with O-rings to grasp the internal walls at any desired location. Both stepper motors step 200 times per motor shaft revolution. The rotation motor is geared down 3:1 so that 600 motor steps correspond to one probe revolution. For example, a probe rotation of 30 degrees requires exactly 50 steps. The software does not allow the probe to rotate in either direction more than one revolution to prevent cable twisting and coiling.

The translation motor is geared down 3:1 to a lead screw, which has a linear gear ratio of 2.24 revolutions per cm (equivalent to 5.69 revs. per inch) translation. The effective step count for translation is therefore 1344 steps per cm (3414 steps per inch). With gear lash considered, the translation resolution is less than 0.03 mm and the rotation resolution is less than 0.5 degrees. The mass of the probe drive is approximately 3.9 kg (8.5 lbm) and is fastened to the test section with a large rubber binding strap. Reference 57 provides a detailed description of the probe drive and design philosophy.

An Apple II computer was used to sample the hot-wire voltage and control the probe-drive stepper motors. A Burr-Brown SDM853 12-bit A/D converter was utilized to convert the 0-10 volt hot-wire signals to 12-bit digital words. The Apple II controls, via assembly code, the sample times and accepts the data as two 8-bit words directly in RAM. Further machine codes are used to reassemble the samples, take an average and standard deviation and store the results. BASIC code, Table IV, is used to reassemble these 8-bit words into decimal equivalent of 12-bit resolution. The system resolution is 2.44 millivolts. The data acquisition sample rate was fixed at 1000 samples per second for 5 seconds. A higher sampling rate (up to 30 kHz) could be utilized with more memory available. Reference 56 provides a detailed explanation of the data acquisition system and the assembly codes used.

CHAPTER IV

MEASUREMENT TECHNIQUES AND ANALYSIS

4.1 Flow Visualization

Flow visualization is used for primary identification and characterization of the flowfield, with three techniques being used. Bubbles, because of their reflective qualities and neutral buoyancy in the airflow, provide an excellent medium to determine the paths of the flow trajectories. Smoke, because of its low comparative density and its tendency to mix well in the flow, makes an excellent medium to follow the flow and to accent the turbulent paths and recirculation zones in the flow. A more novel flow visualization technique employed in these investigations is the multi-spark method. With this technique, an ionized path is used to determine the relative velocity change from the position of the electrodes. The basic rig set up is the same for all three flow visualization techniques, however differences occur in the type and quantity of lighting units, the camera time settings and light exposure times.

4.1.1 Bubble Flow Visualization

The bubble generator and injection setup is shown in Figure 13. The bubble generator is manufactured by Sage Action, Inc. It generates about 100 bubbles per second. The helium regulator range is 0-207 kPa (0-30 psi) and flows at a maximum rate of 2.67×10^{-6} m^3/s. The maximum bubble solution flow rate is 2.50×10^{-8} m^3/s and the maximum air flow rate is 2.60×10^{-4} m^3/s. A helium tank and an air line both with associated pressure gauges are connected to the bubble generator. The SAI bubble flow solution (BFS) is inserted directly into a reservoir in the bubble generator itself. The soap solution is pumped out of the reservoir via helium. Three lines from the bubble generator are attached to the bubble injector head. The head itself typically consists of three concentric tubes. The center one for helium, the middle annulus is for soap and the outside annulus is for air. Each line may be regulated by valves on the top of the bubble generator. A hole in the sleeve directly below the nozzle is where the injector head was inserted to inject bubbles parallel to the flow.

The maximum bubble flow rate is 15.24 cm^3/s. The slowest nozzle velocity is about 4.2 m/s. From the equation $Q_T = Q_n + Q_b$ where: where Q_T = total volume flowrate, Q_n = volume flowrate of the nozzle, and Q_b = volume flowrate of the bubbles, it was found that Q_b/Q_n = 0.0042; approximately one half of one percent. Hence the bubble flowrate has insignificant effect on the nozzle flowrate. The injector heads are also streamlined to minimize turbulent effects.

Figure 13 shows the helium-filled soap bubble injection equipment. The lighting is approximately 3 m downstream of the test section. A light curtain dial provides light curtains from 0-1.5 cm wide through an adjustable slit and may be positioned to emit light angles from 0 to 360 degrees. The lighting is on throughout the photography session and the exposure time is determined by the camera settings.

The camera used was a Minolta SRI 200. The films used include Kodak Tri-X Pan 400 ASA black and white, Ilford 400 ASA black and white, and Kodak color 1000 ASA film, with all of these giving excellent results. The camera was positioned approximately 0.5 m laterally from the test section and supported by a tripod. A low F-stop of 2 was used for maximum light intake; the exposure time was set on B for a 5 second count. These settings were chosen after much testing to accentuate the bubble streaklines illustrating the flow trajectories.

4.1.2 Smoke Flow Visualization

The smoke generator and injection setup is shown in Figure 14. The generator itself consists of a heating coil wrapped in steel wool and surrounded by a metal box with a drip tray in the bottom of the box to catch excess oil which may be drained out through a drain plug. Attached to the metal box is a thermocouple which runs to a temperature indicator outside the generator. Internal temperatures may then be monitored. The actual temperature of the heating coil may be 150°C greater than the temperature gauge reading. Experiments have shown that a temperature gauge reading between 250 and 300°C produces the optimum amount of smoke for flow visualization. It was also found that the temperature gauge must not exceed 350°C or a meltdown of the smoke generator gaskets will occur. The temperature is adjusted through a rheostat which is generally turned up to 50% power and then reduced to 30% power for temperature stabilization. A valve above the generator may be opened to drip more oil onto the heating coil as needed for smoke generation. The air flow, which is metered by the rotameter, runs through the smoke generator and up through the nozzle forcing the smoke through the identical path. A few drops of oil produces a considerable amount of smoke and therefore has negligible effect on the previously monitored flowrate.

The lighting device used for flow visualization consists of two commercial flash units. One unit is a Vivitar 2800 and the other a Sunpack 422D. The flash times may be adjusted on the units and the F-stop varied according to the distance of the camera from the flashes. Experimental results have shown that F-stop = 4 and flash time = 1/2000 s with camera settings of F-stop equal 2 and exposure time from 0.125 to 0.5 s produce the best pictures highlighting the flowfield features. The flash units are in a black box with a slit parallel to the test section and placed directly beneath and touching the test section. The positioning was chosen to minimize glare and maximize lighting through a vertical slit of light accenting a vertical cross-section of the flowfield.

4.1.3 Spark-Gap Flow Visualization

The spark-gap equipment schematic and configuration is shown in Figures 16 and 17. The pulse generating circuit and pulse transformer is manufactured by Sugawara Laboratories, Inc., Tokyo. The equipment is capable of producing pulse trains of up to 200 pulses at frequencies from 1 kHz to 75 kHz. The output energy of the pulse is 0.05 to 0.5 Joules at voltages from 20 kV to 250 kV. As used in the present study, the electrodes are placed on opposite sides of the test section, typically one electrode above and one below the test section with a 15 cm spark gap. Approximately 40 sparks are used with 0.5 J/spark at a voltage of 100 kV. Each spark pulse duration is approximately

1 μs; time between pulses is approximately 1 ms.

When a high voltage source is sparked across an air gap, an ionized path is created. Subsequent sparks will follow the current position of this low-resistance ionized path. By judicious placement of the electrodes in the wall boundary layer, where there is essentially zero velocity (next to wall), several discharges can follow the original ionized path as it moves with the fluid. It is necessary to have a low-conductivity test section material (for example, acrylic) so as not to interface with spark paths.

The spark itself provides sufficient lighting for photographs. One camera (side view) is used for photographs with zero swirl. Two cameras (side and end view) are used simultaneously in the swirl crossflow cases to give added perspective to the three-dimensional features of the technique.

4.2 Quantitative Measurements

In a turbulent, three-dimensional flowfield the main flow direction may be unknown and conventional hot-wire or 2-D Laser-Doppler techniques fail to supply sufficient velocity vector information. To measure the three velocity components and their corresponding fluctuations, a three-wire hot-wire probe is often used. Few 3-D Laser-Doppler systems are in use and are not cost-effective.

As discussed by Jackson[11], the three-wire probe technique has several drawbacks. Three anemometers are required. A multiple-orientation probe drive may be needed to align the probe with the mean flow direction. Because of the physical separation of the wires, spatial resolution of the probe is poor.

Multi-orientation of a single hot-wire is a novel way to measure the three components of a velocity vector and their fluctuating components. King[58] modified a technique developed by Dvorak and Syred.[59] This method calls for a normal hot wire to be oriented through six different positions, each orientation separated by 30 deg from the adjacent one. Orientation 1 is normal to the facility centerline, orientation 2 is rotated 30 deg from this, etc. Mean and rms voltages are measured at each orientation. The data reduction is performed using some assumptions regarding the statistical nature of turbulence, making it possible to solve for three time-mean velocities, the three turbulent normal stresses, and the three turbulent shear stresses.

The six-orientation hot-wire technique requires a single, straight, hot wire to be calibrated for three different flow directions in order to determine the directional sensitivity of the probe. In the following relationships, tildes (~) signify components of the instantaneous velocity vector in coordinates on the probe. Each of the three calibration curves is obtained with zero velocity in the other two directions. The calibration curves of Figure 7 demonstrate that the hot wire is most efficiently cooled when the flow is in the direction of the $\tilde{u}$ component (which is normal to both the wire and the supports). The wire is most inefficiently cooled when the flow is in the direction of the $\tilde{w}$ component (which is parallel to the wire). Each of the calibration curves follows a second-order, least-square fit of the form

$$E_i^2 = A_i + B_i \tilde{u}_i^{1/2} + C_i \tilde{u}_i \quad (4.1)$$

which is an extension of the familiar King's law. In this equation, A_i, B_i, and C_i are calibration constants and $\tilde{u}_i$ can take on a value of $\tilde{u}$, $\tilde{v}$, and $\tilde{w}$ for the three calibration curves, respectively.

When the wire is placed in a three-dimensional flowfield, the effective cooling velocity experienced by the hot wire is

$$Z^2 = \tilde{v}^2 + G^2\tilde{u}^2 + K^2\tilde{w}^2 \tag{4.2}$$

where G and K are the pitch and yaw factors defined by Jorgensen[60] and deduced from the calibration curves. Those for this particular probe are given in Figure 8. Hence, equations for the effective cooling velocity can now be obtained for each of the six wire orientations. Simultaneously solving any three adjacent equations provides expressions for the instantaneous values of the three velocity components (u, v, and w in the facility x, r, and θ coordinates, respectively) in terms of the equivalent cooling velocities. It is then possible to obtain the three time-mean velocity components and the six different components of the Reynolds stress tensor in the manner described by Janjua[9] and Jackson.[11]

The uncertainty analysis included a determination of the sensitivity of the six-orientation hot-wire data reduction to various input parameters that have major contributions in the response equations. Table II summarizes the sensitivity analysis performed on the data reduction program at a representative position in the swirling flow with $\phi = 38$ deg. The table presents the percent change in the output quantities for a 1% change in each of the important input quantities individually, while the others are held at their standard values. For the data presented in Table II, only quantities calculated from the probe orientations 1, 5 and 6 are used, for simplicity. This combination was chosen because the mean effective cooling velocity exhibited a minimum in orientation 6, and it is expected[58] that in this case the combination 1, 5, and 6 will produce more accurate estimates of calculated turbulence quantities. The data of Table II demonstrate that the most serious inaccuracies in the measurement and data reduction technique are in estimates of turbulent shear stresses, the most inaccurate result being $\overline{u'w'}$.

Previously, in his measurements of strongly swirling vortex flows, King[58] compared his time-mean velocity and normal stress measurements with corresponding measurements obtained using a Laser Doppler Velocimeter (LDV). He found excellent agreement indicating the validity of the method. He was not able to compare shear stress measurements in his swirl flow, however, because he was unable to use his LDV for this purpose. In fact, despite the existence of advanced multicolor LDV systems, and their use for shear stress measurement, no one has yet reported their use in highly swirling flow situations: certainly not over a range of swirl strengths as reported in Reference 22.

In the nonswirling confined jet case, results for time-mean velocities u and v, normal stresses u'_{rms} and v'_{rms} and shear stress $\overline{u'v'}$ compare very favorably (see Reference 21, Figures 7 and 8) with those of Chaturvedi.[61] He used a crossed-wire probe for the shear stress measurements. So also did McKillop[14] for nonswirling confined flow in the same facility as Jackson and Lilley.[22] Results, with and without exit nozzles, are in good agreement for the above quantities, as can be seen in Reference 14, Figures 21 through 28.

In the swirling confined jet case,[11] comparison with Janjua and McLaughlin[63] for a moderate swirl strength in an identical facility was made. They made triple-wire hot-wire measurements in a flow with an inlet swirl vane angle $\phi = 38$ deg., using analog-to-digital signal conversion and computer data reduction. For this purpose, it was necessary to know in advance the local time-mean velocity vector direction; the data of Yoon and Lilley[18] (five-hole pitot probe) was used for this purpose. Their measurements[63] of time-mean velocity compare very well with those of Reference 18 and hence of References 21, 22, and 62. Measurements[63] of the three normal Reynolds stresses and the three shear Reynolds stresses are compared at x/D = 0.5, 1.0 and 1.5 with the six-orientation single-wire measurements of Reference 22. There is excellent agreement (see Reference 63, Figures 10 through 18), indicating again the validity of the present measurement technique. It appears to be an extremely viable, cost-effective technique for turbulent flows of unknown dominant direction. Probe interference appears not to be a major problem. Results are useful in recent prediction studies for confined swirling flows.[18,64,65]

For the study of the technique presented by Jackson and Lilley[55], Figure 5 through 9 of Reference 55 summarize measured values for the five representative situations in a turbulent flowfield. Each figure presents facility coordinate time-mean velocity, normal and shear stress values obtained with each of the five probe holder vs facility configuration possibilities of Cases 1 through 5. Case 1 is where the probe is in a nonswirling flowfield with the probe in facility coordinates. Cases 2 through 5 are where the probe is placed in different probe-to-facility orientations both in swirling and nonswirling situations. A remarkable observation is that, in general, the configuration is of little importance, results appearing quite constant across the five cases.

On the other hand, production run results[9,11,21,22,62] have used the Case 1 configuration exclusively from each of the six possible combinations of three adjacent wire orientations. This was because of a lack of local flow directional knowledge; if this knowledge is available it is expected[58] that the combination with minimum cooling velocity in the central of the three wire orientations used will produce more accurate estimates of deduced flow quantities. In any case, the appropriate choice of wire orientation for minimum cooling velocity is not known a priori. However, for the turbulence quantities more confidence may be placed in the average of all possible wire combinations. This smoothing has been used exclusively in recent studies.[9,11,21,22,62]

CHAPTER V

RESULTS AND DISCUSSION

5.1 Flow Visualization

Figure 17 shows very short time exposures of smoke tracing the extent of the deflected jet with jet-to-crossflow velocity ratio R of 2, 4, and 6 in parts a through c respectively. The exposure time is of the order of 1×10^{-4} s, and vertical slit lighting is obtained with two commercial flash units. The camera is positioned to the side to obtain a view of the vertical rx-plane in the flowfield. Notice that as the deflected jet velocity increases, so does the jet penetration across the otherwise almost-parallel crossflow. Clearly visible are the turbulent eddies - these are very structured near the injection location, and appear to extend further downstream in the jet direction at lower values of the injection velocity. Downstream of the deflected jet entry location, in the lower part of the main flow, a sequence of what appears to be eddies shed behind the lateral jet obstacle. A similar phenomenon was reported by Chassaing et al.[38]

Figure 18, 19 and 20 present long-time exposures of bubbles tracing the extent of the deflected jet with jet-to-crossflow velocity ratio R of 2, 4, and 6 in each figure respectively. Each figure presents swirl angles of 0, 45, and 70 degrees in parts a, b and c respectively. As with smoke tracing, the bubbles show the increase of penetration with increase in R. The bubbles, however, show the time-mean boundaries of the deflected jet. Clearly evident is the lack of penetration in the R = 2 case; the R = 4 case crosses the test-section centerline at approximately x/D = 1.4 where the jet enters at x/D = 1.00 and then continues down the test section almost centered in the tube. The case of R = 6 rapidly crosses the centerline (approximately x/D = 1.2, where the jet enters at x/D = 1.00), and continues downstream predominantly in the upper half of the test section.

The swirl flow bubble pictures, shown in parts (b) and (c) of Figures 18, 19, and 20, illustrate the helical path of the jet and the strength of the precessing vortex core (PVC). In the case of ϕ = 70 degrees swirl, sufficient negative axial velocity occurs in the PVC to carry the bubbles upstream to the swirler face, regardless of the R-value. For the cases of moderate swirl, ϕ = 45 degrees, there is a noticeable difference in the jet-to-crossflow interaction. The jet in the case of R = 2 appears to mix broadly with the centrally-located PVC, indicated by the wide jet outline and broad PVC. The cases of R = 4 and 6 exhibit less immediate mixing with the precessing vortex core, tending to disturb its presence as the laterally-injected jet penetrates across the central part of the main flow, where the PVC would otherwise be. The R = 6 case in particular seems to "wrap around" the central axis - a smearing of bubbles can be seen on the tube inside wall. For the case of strong swirl, θ = 70 degrees, there is very little difference in the flowfield between the different injection velocity cases. The cases of R = 4 and 6, however, can be seen to slightly deflect the swirl axis at approximately x/D = 2.00 (jet enters at x/D = 1.00). The case of R = 6 does seem to lower the upstream penetration of the PVC, as exhibited by a lack of bubbles.

Figures 21, 22, and 23 present spark-gap flow visualization pictures for the same cases of R = 2, 4, and 6, using the method described in Chapter IV. These particular photographs were taken with the electrodes positioned at x/D = 1.50 where the jet enters at x/D = 1.00.

In part (a) of these figures, the camera is positioned to the side of the facility and a vertical rx-plane is observed. In the swirl flow cases of parts (b) and (c), a second camera was simultaneously operated from a downstream location to illustrate the θ-plane behavior of the sparks. In these swirl cases, both photographs have been combined to form a common picture. The respective cases R = 2, 4, and 6 with no swirl exhibit the change in the flowfield from x/D = 1.50 and continuing downstream. The case of R = 2 shows how the flowfield is merely deflected upward by the entering jet. The lower part of the arcs apparently are deflected around the jet, away from the control plane, hence a true 3-D effect on the photograph. The case of R = 4 shows flowfield acceleration above and around the jet, which has its centerline nearly corresponding with the centerline of the tube. The 'fold-over' just above the jet centerline probably corresponds to the downflow around the jet as the jet displaces the crossflow in the upper half of the test section. The case of R = 6 shows less uniform behavior. The arcs do appear to define the upper bounds of the jet and the turbulent region behind the jet.

The swirl flows presented in Figures 21, 22, and 23 parts (b) and (c) are actually two photographs taken simultaneously by separate cameras; the two negatives are combined to print a common picture. Again, the electrodes were placed at x/D = 1.50, the lateral jet entering at x/D = 1.00. A wire was placed in the centerline of the tube to prevent the spark from arcing to the tube walls and to help define the tube centerline. The end views exhibit a great deal of reflection off of the inside acrylic tube walls.

With moderate swirl (ϕ = 45 degrees) the cases of R = 2 and 4 have little affect on the swirl pattern shown with this technique. The swirl pattern in the case of R = 6, however, is seen to be deflected by the jet. The swirl strength seems to be enhanced in the lower part of the test section by the additional momentum of the deflected jet. With strong swirl (ϕ = 70 degrees), the cases of R = 2 and 4 seem to slightly inhibit the swirl strength, whereas the R = 6 case appears to have little effect except to organize the swirl pattern.

5.2 Hot-Wire Measurements

The time-mean velocity and turbulence quantities for the three jet-to-crossflow velocity ratios R = 2, 4, and 6 are presented in Figures 24 through 41. The situation with jet-to-crossflow velocity ratio R = 2 is shown in Figure 24 through 29. Figure 24 has traverse angle θ = 270 degrees, Figure 25 has traverse angle θ = 300 degrees, etc. Figures 30 through 35 are for jet-to-crossflow velocity ratio R = 4; Figures 36-41 represent ratio R = 6. Each figure is composed of twelve plots, (a) through (l), of the data for one traverse angle θ at all seven axial locations (x/D = 1.00, 1.25, 1.50, 1.75, 2.00, 2.50, and 3.00).

Using Figure 30 as an example, it can be seen that the time-mean and turbulent flowfields for the case of jet-to-crossflow velocity ratio R = 4 and traverse angle θ = 270 degrees are presented. Recall that Figure 3 provides the geometrical relationship between the jet and the traverse angle θ. For θ = 270 degrees, as in Figure 30, the viewer is seeing an rx-plane of the flowfield which passes through the test section centerline and is normal to the lateral jet nozzle centerline. The top (bottom) of each plot corresponds to the first (last) measuring station, as shown in Figure 10. Tables III, IV, and V present the actual numbers used to produce the plots.

Subparts a, b, and c in each of the Figures 24 through 41 present the normalized time-mean velocity component magnitudes $\overline{u}/u_o$, $\overline{v}/u_o$, and $\overline{w}/u_o$ respectively. Subparts d, e, and f give the normalized fluctuating velocity components (u'_{rms}/u_o, v'_{rms}/u_o, and w'_{rms}/u_o) multiplied by 2. Subparts g, h, and i exhibit the three shear stresses ($\overline{u'v'}$, $\overline{u'w'}$, and $\overline{v'w'}$) normalized by u_o^2 and multiplied by 2 for plotting. Subparts j, k, and l provide the total velocity $\overline{V}$ = $\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}$, the axial turbulence intensity normalized by the local mean velocity $u'_{rms}/\overline{u}$ and the normalized turbulent kinetic energy $\frac{1}{2}(u'^2_{rms} + v'^2_{rms} + w'^2_{rms})/u_o^2$ respectively.

The plots were produced on a Tektronix 4006 terminal connected to an IBM 3081D using PLOT 10 as the graphics control language. The data are merely scaled and plotted point-to-point for each axial location. The x/D scales also provide as the magnitude scale for each normalized data point. For example, in Figure 24a, the values of $\overline{u}/u_o$ at x/D = 1.00 are scaled such that values of $\overline{u}/u_o$ = 1.00 are placed at x/D = 1.25. In this figure, the values of $\overline{u}/u_o$ are very nearly 1.0 across the traverse except near the centerline, where the flow decelerates just because of the jet, which is slightly below this traverse for R = 2.0. In Figure 24b, the values of $\overline{v}/u_o$ are much less than 1.0, approximately 0.15, and are plotted as such.

5.2.1 Jet-to-Crossflow Velocity Ratio R = 2.0

The velocity ratio R = 2 is represented in Figures 24 through 29. Figure 27 provides the best perspective to visualize the flowfield: the rx-plane shown (θ = 0 degrees) in it is the same as used for the flow visualization photographs, Figures 17, 18, and 21. Figure 27a shows how the jet, which enters from the bottom of the plot at x/D = 1.00, affects the axial velocity profiles. Figure 27b, the radial velocity plot, is interesting in that the six-position technique is capable of accurately measuring the jet velocity as it impinges on the probe parallel to the probe axis. Note that the techniques can only produce magnitudes; there are no negative $\overline{v}$ velocities for instance. In Figure 27a it can be seen that the R = 2 case has virtually no effect on the mean flowfield above the centerline; this is borne out by Figure 24a, the axial velocity flowfield in the horizontal rx-plane across the centerline (traverse angle θ = 270 degrees).

The normal stresses, see parts d, e, and f of Figure 27, are spread through the flowfield over a wider region than the mean velocity. These and the shear stresses in parts g, h, and i are very low in magnitude. Part 1 shows that the region of significant turbulent kinetic energy extends only a short distance. The total velocity magnitude, Figure 27j, is well mixed and evenly distributed across the test section by x/D = 3.0. These observations for the R = 2 situation are not appropriate at higher values of R.

The traverse angles θ = 330 degrees and θ = 30 degrees, show no particular surprises for the R = 2 case. Figure 26a, the axial velocity in the rx-plane 30 degrees from the vertical shows an interesting acceleration and then (at x/D = 2.0) deceleration in the mean flow affected by the lateral jet. Figure 28a shows an almost identical configuration, indicating good symmetry about the vertical plane.

5.2.2 Jet-to-Crossflow Velocity Ratio R = 4.0

The jet-to-crossflow velocity ratio R = 4, as can be seen in Figure 19, provides a flowfield which is more intricate than was the case when R = 2. The centerline of the jet crosses the centerline of the test section,[43] and smoke flow visualization photographs, given in Figure 17, show that the turbulent eddies are large compared to those of R = 2.0.

Focusing attention on Figure 33a, which shows profiles in the vertical plane through the centerlines of both jets, it can be seen that the jet has a marked effect on the mean flowfield below the jet centerline, causing axial flow deceleration. The axial velocity at x/D = 1.00 shows that the upstream flow has slowed to go around the lateral jet on either side; the velocities on either side are greater, as seen in Figure 35a (θ = 60 degrees) or Figure 31a (θ = 300 degrees).

Because the jet centerline crosses through the facility centerline, Figure 30 (θ = 270 degrees) provides insight into the structure of the jet. First, parts a, b, and c show good symmetry. The jet centerline was previously measured to cross the crossflow centerline at x/D = 1.35 by Ferrell, et al.[43] This is seen to affect the tangential and radial velocities first at x/D = 1.25. The axial velocity is not changed until x/D = 1.50 where it exhibits a flat acceleration and then, at x/D = 1.75, a deceleration in the mean velocity. This deceleration corresponds to an increase in the surrounding axial velocity outside of the jet. By x/D = 3.00, the axial velocity profile is relatively flat again. In reviewing the tangential velocity profiles in part c of the figure, the most surprising feature is the symmetry and uniformity of the curves. At x/D = 1.75, 2.00, 2.50, and 3.00 the "gull-wing" shape of the profiles is very likely caused by the data reduction results. That is, the profiles should actually look like "normal probability distribution curves" -- if negative values could be obtained. Physically this means that the tangential velocity along the central plane of the jet first rotates one direction, say clockwise, outside of the jet, and then the other direction, say counter-clockwise, inside the jet. The normal stresses, Figures 30 parts (d) and (e), exhibit the expected peaks at the crossover. Note the dual peak in the u-direction normal stress, Figure 30d, at x/D = 1.75.

There are some problems with the measurement technique and assumptions in signal interpretations in some regions of the flow. The normalized axial velocity in Figure 33a, shows a large value below the jet centerline, x/D = 1.25. The shear stress $\overline{u'w'}/u_0$ shows a very large and erroneous value at the same location, and is related to the erroneous value of the mean axial velocity. These erroneous values have been faithfully presented along with the rest of the data.

5.2.3 Jet-to-Crossflow Velocity Ratio R = 6.0

The jet-to-crossflow velocity ratio R = 6 case dramatically exhibits some of the behavior expected of these deflected jets. Examining Figure 36a, which gives data in the horizontal plane, it can be seen that the jet centerline crosses the facility centerline at approximately x/D = 1.15 to 1.25. The axial velocity has a marked depression inside the jet and a large acceleration around the jet sides, as if the crossflow were passing a solid body. Figure 36c is quite interesting in that it appears that all of the profiles could cross the zero line if the method would account for negative values.

As for the R = 2 and R = 4 cases, the plot that displays the data next in an interesting format is the traverse in the vertical plane, with $\theta = 0$ degrees, Figure 39. As with the previous two cases, the axial velocity profile can be used to locate the jet centerline. However, the total velocity profile, given in part (j) of the figure, is actually more accurate in locating the maximum velocity centerline. Providing testimony to the accuracy of the technique is Figure 39b, where the radial velocity $\overline{v}/u_0$ is seen to asymptotically approach the normalized lateral jet inlet velocity as the probe is lowered toward the jet exit throat. Unfortunately, the shear stress plots, given in parts (h) and (i) of the figure, show that the technique is very sensitive to erroneous readings and probably to dwell time. The sensitivity of this technique to input variables was discussed in Chapter IV and was the subject of analysis by Jackson.[11]

5.2.4 Assessment of the Measurement

The six-position hot-wire technique is remarkably reliable in measuring the the time-mean velocities for the flowfields in this investigation. As evidenced in Figure 24, 30, and 36 for $\theta = 270$ degrees, it can be seen that the technique is repeatable in terms of the flowfield symmetry. These figures display the lack of probe interference effects as well -- the same measurements are obtained on either side of the symmetry plane. Most surprising is the fact that the technique can resolve the component direction even when that direction is normal to the wire in all six orientations as also found in a directional sensitivity study.[55] The normal stresses are reasonably reliable in that there are few large discontinuities in the data. The shear stresses, however, exhibit less continuity, but the discontinuities do exist in regions of large shear such as behind the jet.

By using the maximum velocity magnitude to define the jet centerline, Figure 42 displays the comparative centerline locations for these experiments as compared to the infinite crossflow situation.[48] As expected, the jet penetration for the confined cylindrical situations is reduced from that of the infinite crossflow situation, although low values correspond to jet injection velocities for which the confining boundaries have little effect.

CHAPTER VI

CLOSURE

6.1 Conclusions

Experiments have been conducted to characterize the time-mean and turbulent flowfield of a deflected turbulent jet in a confining cylindrical crossflow. Jet-to-crossflow velocity ratios of 2, 4, and 6 were investigated, under crossflow inlet swirler vane angles of 0 (swirler removed), 45 and 70 degrees. Smoke, neutrally-buoyant helium-filled soap bubbles, and multi-spark flow visualization were employed to highlight interesting features of the deflected jet, as well as the trajectory and spread pattern of the jet. A six-position single hot-wire technique was used to measure the velocities and turbulent stresses in the nonswirling crossflow case, as a demonstration of improved data-acquisition capability. A computerized high-speed data acquisition and probe drive were designed and constructed to manipulate the hot-wire and reduce the varying voltages to the statistical mean and root-mean-square voltage. The voltages were then reduced to the time-mean velocity and turbulent Reynolds stresses with a Fortran computer code.

The high-speed data acquisition system enabled three entire flowfields to be characterized for time-mean velocities, normal and shear stresses, for three different lateral jet injection velocities into nonswirling crossflow. The multi-orientation technique worked well for time-mean velocities, normal stresses and most of the shear stresses. The extensive results are printed in tabular form and presented in rx-plane plots, in a manner useful to flowfield modelers. As expected, measurements confirmed that the deflected jet is symmetrical about the vertical plane passing through the crossflow axis. The jet penetration into the nonswirling crossflow was found to be reduced from that of comparable velocity ratio infinite crossflow cases. The flow visualization techniques enabled gross flowfield characterization to be obtained for a range of lateral jet-to-crossflow velocity ratios and a range of inlet swirl strengths in the main flow. The swirl in the confined crossflow was found to deflect the jet from its vertical course in a spiral fashion. However, the jet still gets absorbed finally into the precessing vortex core (PVC) of the crossflow. Evidence was also found that the jet can deflect the axis of the PVC and hinder the upstream propagation of it toward the swirler.

6.2 Recommendations for Further Work

The stage is now set for even more complete surveys of the time-mean and turbulence properties of deflected jets. Fundamental research should be continued first with the addition of a second jet directly opposing the original, and later with multi-jets at one axial station, to complement NASA-Lewis work[1,3] in rectangular ducts. For ease of representation, a fully three-dimensional plotting technique should be developed and implemented in addition to streamlining of the data reduction technique. Equally important to more complete flowfield investigation will be the capability to measure the turbulent dissipation rate. A computer with larger RAM (random-access memory) and faster clock speed would enable rapid signal analysis and interactive dwell time estimation to reduce further measurement time, as well as enable dissipation rate measurements.

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APPENDIX A

TABLES

TABLE I

PREVIOUS INVESTIGATIONS OF JETS IN CROSS-FLOW

REF.	JET DIAMETER (mm)	INCIDENT ANGLE	JET INLET STYLE	CROSS-FLOW VELOCITY (m/s)	VELOCITY RATIO	GEOMETRY	MEASURED	TECHNIQUE
27.	6.35,9.5 12.7,15.9	90	orifice	--	2-7	open	penetration parameters	T/C and pitot rakes
28.	--	90	square,elliptical orifice	46	2-8	open	penetration and mixing	T/C and pitot rakes
29.	6.35,9.5 12.7,15.9	90,60, 45,30	pipe	71.6,121.9	2.9-5.7	open	penetration and mixing	T/C and pitot rakes
30.	12.7,25.4	90	orifice	--	4,6,8	open	total press., flow direction	
31.	9.5	90	pipe	1.5	4,6,8	open	velocity, turbulence intensity, entrainment	oriented hot-wire
32.	6.35, 9.5, 12.7	90	orifice	0.914,3.66	5,15,25,35	open	profiles and penetration	photographs
33.	--	90	pipe	--	0.55-2.20	multiple jets	penetration and mixing	T/C and total press. probe
34.	6.35	45,60,90, 105,120,135	pipe	1.58	4,6,8	open	trajectories, velocities	hot-wire
35.	ANALYTICAL MODELING, NO EXPERIMENTS							
36.	6.35	90	pipe/nozzle	6-9	2.8-8.5	square holes confined	velocity and temp. profiles	T/C and hot-wire
37.	6.35-25.4	90	orifice	15	1.67-5.67	2-dimensional	penetration, mixing	T/C rakes
38.	40.0	90	pipe	3.4	2.37,3.95, 6.36	multiple jets	velocity,temp. similarity profiles	hot-wire
39.	3.23,4.57, 6.30,9.32	90	pipe	6,15	2.4-12.4	confined cylindrical channel	penetration, mixing	marker nephelometry
40.	101.6	45,60,75, 90,105	pipe	--	4,8	open	vortex strength	pitot probes
41.	25.4	90	pipe	12	1.15,2.30	open	detailed velocity and turbulence field	LDA, X-wire, helium trace
42.	ANALYTICAL MODELING, NO EXPERIMENTS							

TABLE II

EFFECT OF INPUT PARAMETERS ON TURBULENCE QUANTITIES IN THE SWIRLING FLOW WITH ϕ = 38 DEG. AT A REPRESENTATIVE FLOWFIELD POSITION (x/D = 1, r/D = 0.25)

PARAMETER	% CHANGE IN PARAMETER	% CHANGE IN TIME-MEAN AND TURBULENCE QUANTITIES								
		$\bar{u}$	$\bar{v}$	$\bar{w}$	u'_{rms}	v'_{rms}	w'_{rms}	$\overline{u'v'}$	$\overline{u'w'}$	$\overline{v'w'}$
$\bar{E}_1$	+1	+16.10	+0.66	+4.98	+15.75	-2.06	+2.75	+6.0	+51.43	+11.94
$\bar{E}_5$	+1	+2.19	-2.21	+11.49	-6.50	+2.42	+12.88	+4.0	+14.29	+7.46
$\bar{E}_6$	+1	-10.59	-0.36	-8.50	-1.88	+7.07	-9.54	-6.0	-54.29	-11.94
$E'_{1_{rms}}$	+1	+0.27	-0.06	+0.14	+1.63	+0.13	+0.39	+2.0	+2.86	+1.49
$E'_{5_{rms}}$	+1	+0.05	0.0	+0.14	0.0	-0.13	+1.57	0.0	0.0	+1.49
$E'_{6_{rms}}$	+1	-0.16	+0.18	-0.14	-0.63	+1.03	-1.08	-2.0	-5.71	0.0
G	+1	-1.02	0.0	-1.01	-1.0	0.0	-0.98	-2.0.	-2.86	-1.49
K	+1	+0.01	-0.04	+0.01	+0.01	0.0	+0.01	0.0	0.0	0.0
$\gamma_{Z_P Z_Q}$	+1	+0.05	0.0	+0.14	-0.13	-0.13	-1.77	0.0	-2.86	+1.49
$\gamma_{Z_Q Z_R}$	+1	+0.21	+0.01	+0.05	-1.63	+0.13	-0.79	0.0	-5.71	+1.49
$\gamma_{Z_P Z_R}$	+1	-0.16	+0.18	-0.08	+0.13	0.0	+0.69	-2.0	+2.86	0.0

TABLE III

TIME-MEAN AND TURBULENCE DATA FOR JET TO CROSSFLOW VELOCITY RATIO R = 2.0

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	1.01835	1.04725	1.05338	1.02959	1.03660	1.05456	1.05531
	300.0	1.00791	1.03057	1.03191	1.02064	1.01078	1.04641	1.03313
	330.0	1.01581	1.03115	1.03293	1.01527	0.99450	1.03969	1.04962
	0.0	0.95785	0.97475	0.97569	0.97773	0.94300	1.00705	1.00548
	30.0	1.05336	1.02950	1.02237	1.02833	1.07923	1.04070	1.06455
	60.0	1.03049	1.03481	1.02498	1.02637	1.04207	1.04506	1.04400
0.3652	270.0	1.02479	1.05412	1.05943	1.03439	1.04292	1.05771	1.06317
	300.0	1.01445	1.03219	1.04073	1.04371	1.02243	1.04945	1.03783
	330.0	1.02004	1.03254	1.03379	1.01880	0.99396	1.03582	1.04884
	0.0	0.96996	0.98380	0.98554	0.97015	0.94615	0.98788	0.99649
	30.0	1.06277	1.03191	1.03384	1.03261	1.08388	1.04105	1.05326
	60.0	1.03991	1.03701	1.03496	1.03081	1.04468	1.04283	1.05656
0.3130	270.0	1.02573	1.05429	1.05671	1.03736	1.04651	1.06553	1.06484
	300.0	1.01439	1.03853	1.03992	1.03269	1.02123	1.05136	1.03533
	330.0	1.02270	1.03733	1.04168	1.01496	0.98804	1.02308	1.03803
	0.0	0.91508	0.94316	0.95283	0.93872	0.91722	0.97812	0.98838
	30.0	1.06193	1.03632	1.02774	1.03054	1.08355	1.03279	1.03590
	60.0	1.03985	1.04804	1.03791	1.03481	1.05157	1.04915	1.05560
0.2609	270.0	1.02666	1.05866	1.06058	1.03924	1.04716	1.06902	1.06686
	300.0	1.01746	1.04428	1.03980	1.03661	1.02320	1.05278	1.03979
	330.0	1.01929	1.03218	1.03487	1.00972	0.97842	1.02539	1.03366
	0.0	0.92421	0.95460	0.95944	0.95446	0.93901	0.99830	1.00887
	30.0	1.05557	1.02727	1.01563	1.02251	1.07333	1.02516	1.04488
	60.0	1.04297	1.04603	1.04043	1.03768	1.05614	1.05612	1.05064
0.2087	270.0	1.02517	1.06034	1.06198	1.04029	1.04884	1.06785	1.06618
	300.0	1.01688	1.04624	1.04371	1.03774	1.02524	1.05199	1.04595
	330.0	1.01794	1.02352	1.03816	1.00745	0.98714	1.02881	1.03499
	0.0	0.96921	0.99160	0.98675	0.97613	0.95812	1.02205	1.02809
	30.0	1.05029	1.02530	1.02125	1.02621	1.08091	1.04564	1.05845
	60.0	1.04805	1.05179	1.04387	1.04006	1.05755	1.04834	1.05182

a) $\overline{u}/u_0$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	1.02258	1.06031	1.05664	1.04287	1.04838	1.06957	1.05980
	300.0	1.01223	1.04767	1.04850	1.03829	1.02833	1.05568	1.04893
	330.0	1.01068	1.02265	1.02962	1.00839	0.99092	1.04267	1.04654
	0.0	0.96885	0.99696	1.01183	1.01034	0.98095	1.03335	1.03805
	30.0	1.04351	1.02491	1.02215	1.03209	1.07907	1.04698	1.06181
	60.0	1.04587	1.05325	1.04195	1.03723	1.05554	1.05135	1.05775
0.1043	270.0	1.02702	1.05316	1.05600	1.04137	1.04726	1.06801	1.03642
	300.0	1.01307	1.04741	1.04464	1.03718	1.02879	1.06173	1.04556
	330.0	1.00962	1.02671	1.04532	1.01966	1.00198	1.04689	1.05823
	0.0	1.00671	1.03280	1.03574	1.02515	0.98987	1.02703	1.03644
	30.0	1.03738	1.02677	1.03612	1.03400	1.07670	1.04869	1.06387
	60.0	1.04003	1.04830	1.04032	1.04092	1.05288	1.05177	1.05295
0.0522	270.0	1.02092	1.06047	1.05869	1.04121	1.05139	1.05377	1.02351
	300.0	1.01596	1.04853	1.04478	1.03817	1.02980	1.06448	1.03170
	330.0	1.01278	1.03244	1.04255	1.02563	0.99837	1.05767	1.04421
	0.0	1.00879	1.03076	1.03314	1.00548	0.98030	1.05078	1.04123
	30.0	1.04565	1.02261	1.01472	1.02741	1.08043	1.05447	1.06130
	60.0	1.03928	1.04282	1.03786	1.03775	1.05579	1.05916	1.03225
0.0000	270.0	0.98257	1.05325	1.05042	1.04325	1.04618	1.05272	1.01777
	300.0	0.99335	1.04417	1.04617	1.04201	1.03354	1.05306	0.98763
	330.0	1.00224	1.02892	1.04240	1.02454	1.01590	1.03676	0.99324
	0.0	1.01477	1.04482	1.04121	1.03172	1.00779	1.03386	0.98944
	30.0	1.03849	1.02875	1.04444	1.04327	1.08990	1.05260	1.01086
	60.0	1.02422	1.04085	1.03564	1.03962	1.06012	1.05281	0.99563
-0.0522	270.0	1.02564	1.06074	1.05943	1.04654	1.04859	1.06665	1.03022
	300.0	1.01121	1.04475	1.05126	1.04588	1.03794	1.03425	0.95346
	330.0	1.01238	1.03211	1.04548	1.03440	1.03815	0.94985	0.93804
	0.0	1.01076	1.04238	1.04396	1.03930	1.03659	0.95771	0.92582
	30.0	1.04064	1.03460	1.04029	1.04326	1.11519	0.99172	0.94649
	60.0	1.03541	1.04313	1.03978	1.04231	1.06087	1.03698	0.96405
-0.1043	270.0	1.02541	1.05756	1.06028	1.04636	1.04086	1.06439	1.04839
	300.0	1.01315	1.04924	1.05080	1.05079	1.03719	1.01908	0.96236
	330.0	1.01275	1.03535	1.05035	1.08051	1.00132	0.89396	0.90216
	0.0	1.00326	1.04316	1.05764	1.09366	0.95211	0.87318	0.89397
	30.0	1.03234	1.03556	1.04632	1.07107	1.05783	0.90614	0.91737
	60.0	1.03596	1.05195	1.04150	1.04367	1.06314	1.01025	0.95101

a) $\overline{u}/u_0$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	1.02530	1.05597	1.05927	1.04805	1.04418	1.06203	1.05848
	300.0	1.01588	1.05042	1.05989	1.05058	1.03803	1.04071	0.99277
	330.0	1.00500	1.04121	1.07552	1.07441	0.90711	0.87108	0.90014
	0.0	0.99106	1.03802	1.23546	0.95765	0.80111	0.86597	0.91407
	30.0	1.01904	1.03379	1.09250	1.09096	0.95790	0.87385	0.90205
	60.0	1.03701	1.05486	1.04583	1.04553	1.05921	1.01756	0.96558
-0.2087	270.0	1.02177	1.05931	1.05394	1.04833	1.04110	1.05954	1.05691
	300.0	1.01237	1.05943	1.06246	1.04978	1.03233	1.04840	1.01531
	330.0	1.00365	1.05960	1.10417	1.00846	0.87915	0.89665	0.93520
	0.0	0.96565	1.17531	0.94768	0.75306	0.77391	0.89645	0.94731
	30.0	1.01169	1.04769	1.14250	1.05324	0.92746	0.87491	0.91177
	60.0	1.03556	1.05844	1.03205	1.04725	1.05649	1.02847	1.00565
-0.2609	270.0	1.02532	1.05667	1.05750	1.04622	1.03858	1.06067	1.04987
	300.0	1.01642	1.06229	1.06327	1.04490	1.02599	1.05253	1.02840
	330.0	1.00187	1.09539	1.09517	0.99143	0.93633	0.96244	0.98634
	0.0	0.91456	1.07155	0.63089	0.72143	0.80427	0.93237	0.96197
	30.0	1.00209	1.07206	1.10241	1.03365	0.94284	0.93121	0.95028
	60.0	1.04598	1.06235	1.05199	1.05001	1.05182	1.03624	1.04370
-0.3130	270.0	1.02831	1.05828	1.04966	1.04149	1.04173	1.05559	1.05839
	300.0	1.02130	1.06493	1.07706	1.03927	1.02667	1.05467	1.03437
	330.0	1.01048	1.13100	1.07884	1.02622	0.98922	1.01719	1.01987
	0.0	0.79275	0.40296	0.65873	0.80176	0.84547	0.95044	0.96378
	30.0	1.01636	1.11025	1.07765	1.05959	1.04087	1.01114	1.01368
	60.0	1.05008	1.06342	1.05371	1.04635	1.04792	1.03071	1.04542
-0.3652	270.0	1.02896	1.05844	1.05288	1.04767	1.04055	1.06268	1.05364
	300.0	1.02551	1.06494	1.06323	1.04379	1.02674	1.04790	1.03005
	330.0	1.03412	1.13890	1.07061	1.02609	0.99749	1.03101	1.04054
	0.0	0.60740	0.33583	0.75652	0.85848	0.85370	0.94063	0.94129
	30.0	1.04346	1.12238	1.07360	1.05763	1.06656	1.04704	1.05376
	60.0	1.04943	1.06379	1.04716	1.04126	1.04929	1.02976	1.05132
-0.4174	270.0	1.02903	1.05796	1.05050	1.04739	1.03932	1.05818	1.05095
	300.0	1.02618	1.06518	1.06121	1.04203	1.02130	1.05303	1.02246
	330.0	1.05550	1.12900	1.05742	1.02161	0.99775	1.03150	1.02889
	0.0	0.88011	0.61186	0.67982	0.86343	0.82903	0.89384	0.90224
	30.0	1.07466	1.12180	1.06524	1.04851	1.06789	1.05482	1.05435
	60.0	1.05174	1.06065	1.05055	1.04350	1.04902	1.03152	1.05352

a) $\overline{u} / u_0$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.11957	0.15299	0.12046	0.11969	0.13797	0.13157	0.16691
	300.0	0.13000	0.10558	0.12982	0.13943	0.13095	0.11092	0.11796
	330.0	0.13116	0.14272	0.12489	0.11945	0.11059	0.11581	0.13491
	0.0	0.10898	0.12183	0.10457	0.10510	0.09456	0.09716	0.10259
	30.0	0.15534	0.11737	0.14529	0.10218	0.14580	0.11526	0.12617
	60.0	0.12502	0.13651	0.12273	0.11098	0.14609	0.12040	0.16441
0.3652	270.0	0.12746	0.14472	0.12706	0.11523	0.15034	0.13856	0.14383
	300.0	0.12024	0.14059	0.13738	0.14177	0.13428	0.13432	0.11689
	330.0	0.14166	0.13468	0.12794	0.11200	0.14012	0.11549	0.12964
	0.0	0.10303	0.11013	0.08295	0.12458	0.12990	0.10569	0.11934
	30.0	0.12947	0.13864	0.13919	0.12425	0.13638	0.15130	0.12669
	60.0	0.12792	0.14948	0.08783	0.12489	0.12676	0.13728	0.12325
0.3130	270.0	0.12864	0.12289	0.13539	0.13260	0.14114	0.11254	0.14240
	300.0	0.12844	0.12573	0.13321	0.13000	0.11680	0.10739	0.12206
	330.0	0.10770	0.10966	0.10438	0.11875	0.12851	0.10943	0.11968
	0.0	0.12213	0.10908	0.13253	0.08895	0.12280	0.11464	0.11814
	30.0	0.14218	0.12514	0.09274	0.13917	0.11477	0.12062	0.12468
	60.0	0.12584	0.13955	0.13908	0.11744	0.12693	0.12088	0.13100
0.2609	270.0	0.12644	0.14694	0.13959	0.13497	0.10911	0.13144	0.11377
	300.0	0.12802	0.10901	0.14418	0.12516	0.14718	0.09811	0.11806
	330.0	0.15231	0.13432	0.12511	0.09868	0.15542	0.11079	0.12205
	0.0	0.13385	0.12264	0.12191	0.13864	0.12239	0.12127	0.12310
	30.0	0.13215	0.10259	0.12462	0.12252	0.15203	0.16020	0.12500
	60.0	0.14316	0.14285	0.14062	0.12684	0.12288	0.11085	0.15312
0.2087	270.0	0.11053	0.13121	0.12965	0.14265	0.14541	0.13686	0.13403
	300.0	0.12890	0.12908	0.14244	0.11862	0.14139	0.12135	0.12380
	330.0	0.13310	0.15264	0.12356	0.14482	0.15573	0.11226	0.12838
	0.0	0.12756	0.11483	0.12442	0.14107	0.15344	0.12672	0.12918
	30.0	0.12052	0.10246	0.13511	0.12925	0.12244	0.13480	0.12859
	60.0	0.09180	0.12562	0.13369	0.10669	0.12514	0.12140	0.15119

b) $\overline{v}/u_o$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.14482	0.13415	0.13112	0.12049	0.15185	0.13878	0.13309
	300.0	0.12156	0.12999	0.13842	0.12154	0.13193	0.12335	0.12385
	330.0	0.13540	0.13246	0.11612	0.12999	0.13592	0.10985	0.15163
	0.0	0.14984	0.15866	0.09696	0.11561	0.14627	0.12199	0.11061
	30.0	0.14581	0.11533	0.11853	0.11119	0.14691	0.12263	0.13163
	60.0	0.13103	0.12241	0.14289	0.12341	0.12207	0.12074	0.15939
0.1043	270.0	0.12828	0.15556	0.12871	0.13875	0.15487	0.13732	0.13772
	300.0	0.13940	0.14291	0.13414	0.13331	0.13034	0.10805	0.12549
	330.0	0.11276	0.14902	0.10725	0.13583	0.16997	0.11918	0.12657
	0.0	0.15995	0.13563	0.12742	0.12959	0.13677	0.13098	0.14800
	30.0	0.12408	0.11233	0.11155	0.12468	0.16557	0.12460	0.13070
	60.0	0.14232	0.13726	0.12859	0.10091	0.12182	0.12122	0.12048
0.0522	270.0	0.12553	0.13910	0.11712	0.12268	0.12225	0.15076	0.14565
	300.0	0.11154	0.12431	0.13560	0.12865	0.15287	0.12918	0.12560
	330.0	0.17661	0.13827	0.12479	0.12214	0.16564	0.12901	0.16154
	0.0	0.14860	0.14376	0.12556	0.12885	0.13926	0.14141	0.10986
	30.0	0.13574	0.11821	0.13065	0.12671	0.12393	0.14559	0.13976
	60.0	0.12737	0.14291	0.13581	0.11822	0.12176	0.12288	0.15262
0.0000	270.0	0.11109	0.14786	0.14428	0.14044	0.14485	0.16749	0.14476
	300.0	0.14583	0.12955	0.12100	0.11945	0.14357	0.12986	0.11205
	330.0	0.12249	0.13359	0.12693	0.14623	0.12584	0.13711	0.12656
	0.0	0.12836	0.15013	0.13448	0.13231	0.13981	0.16395	0.15708
	30.0	0.12830	0.13100	0.13356	0.13288	0.14509	0.12699	0.11854
	60.0	0.13388	0.13794	0.13851	0.10627	0.11412	0.11774	0.09119
-0.0522	270.0	0.12280	0.13593	0.13887	0.10285	0.12634	0.10055	0.15619
	300.0	0.13671	0.14195	0.10301	0.12055	0.12859	0.12697	0.12693
	330.0	0.16069	0.12622	0.14593	0.12269	0.16032	0.12521	0.12104
	0.0	0.14241	0.15286	0.13468	0.15391	0.15481	0.12321	0.13130
	30.0	0.13321	0.10172	0.14270	0.12081	0.15698	0.12783	0.12757
	60.0	0.12432	0.15076	0.11814	0.11383	0.10490	0.11169	0.09548
-0.1043	270.0	0.12656	0.12907	0.12425	0.12586	0.15111	0.13588	0.13527
	300.0	0.11662	0.13028	0.14219	0.10958	0.15835	0.11030	0.11392
	330.0	0.12940	0.11868	0.10241	0.12459	0.19284	0.11095	0.13153
	0.0	0.15044	0.15835	0.16055	0.17602	0.17738	0.14930	0.15389
	30.0	0.15064	0.12442	0.14558	0.15276	0.16154	0.08921	0.12731
	60.0	0.12953	0.13752	0.13104	0.09355	0.10987	0.15362	0.14419

b) $\overline{v}/u_0$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.10854	0.13445	0.11878	0.12488	0.13697	0.15044	0.12663
	300.0	0.11031	0.14038	0.11971	0.09961	0.11305	0.12444	0.10071
	330.0	0.13459	0.13679	0.13147	0.18026	0.22568	0.13100	0.13596
	0.0	0.13924	0.18229	0.26328	0.22640	0.22847	0.16822	0.15066
	30.0	0.14163	0.12434	0.18432	0.14078	0.15654	0.11281	0.12735
	60.0	0.12765	0.12691	0.12457	0.06809	0.11489	0.14471	0.10533
-0.2087	270.0	0.13944	0.12736	0.15970	0.11949	0.14197	0.13274	0.10713
	300.0	0.14153	0.12473	0.13016	0.12308	0.13537	0.11514	0.11719
	330.0	0.13247	0.12664	0.17814	0.18641	0.19852	0.13072	0.13568
	0.0	0.13741	0.58058	0.33653	0.20313	0.25887	0.16373	0.16829
	30.0	0.13854	0.10628	0.18209	0.12034	0.15831	0.09416	0.13053
	60.0	0.13656	0.14475	0.11542	0.11175	0.11390	0.11249	0.14358
-0.2609	270.0	0.11865	0.14146	0.10544	0.11838	0.15231	0.14432	0.14171
	300.0	0.12045	0.13124	0.10774	0.12718	0.13864	0.11886	0.13665
	330.0	0.12933	0.14269	0.19373	0.16197	0.15542	0.11477	0.12219
	0.0	0.16984	0.58677	0.33203	0.33839	0.29318	0.15008	0.15177
	30.0	0.14630	0.15494	0.20420	0.16679	0.20906	0.12666	0.13572
	60.0	0.10714	0.12963	0.13927	0.09959	0.11438	0.10897	0.10186
-0.3130	270.0	0.09860	0.11837	0.11704	0.14072	0.14433	0.14225	0.12308
	300.0	0.11717	0.13145	0.11830	0.15545	0.12263	0.10411	0.11477
	330.0	0.14801	0.17043	0.14358	0.11353	0.13020	0.10438	0.14004
	0.0	0.25198	0.36920	0.47284	0.27386	0.24725	0.14994	0.14354
	30.0	0.10414	0.16229	0.20274	0.15080	0.10487	0.12873	0.13640
	60.0	0.10215	0.14490	0.13759	0.12591	0.13580	0.10741	0.12435
-0.3652	270.0	0.12541	0.13213	0.11239	0.13024	0.13016	0.10527	0.12254
	300.0	0.12882	0.14478	0.11122	0.10145	0.10890	0.11591	0.15194
	330.0	0.13866	0.14200	0.10977	0.08228	0.13945	0.11408	0.12678
	0.0	0.33328	0.72672	0.33476	0.17803	0.18075	0.13343	0.14429
	30.0	0.11505	0.17849	0.12893	0.10996	0.10548	0.12786	0.12375
	60.0	0.11591	0.13425	0.15015	0.14269	0.11441	0.10786	0.12480
-0.4174	270.0	0.11262	0.11235	0.13225	0.12327	0.13609	0.12309	0.12079
	300.0	0.12680	0.13667	0.13083	0.12800	0.15114	0.11493	0.14445
	330.0	0.12599	0.14447	0.10565	0.09877	0.12325	0.08978	0.13495
	0.0	1.83657	0.46717	0.17630	0.17142	0.17919	0.12334	0.08876
	30.0	0.11764	0.14868	0.11966	0.12347	0.12103	0.12448	0.12174
	60.0	0.11188	0.15340	0.13643	0.14223	0.11381	0.10978	0.10778

b) $\overline{v}/u_0$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.06063	0.05122	0.05833	0.02918	0.06859	0.03866	0.02796
	300.0	0.04723	0.03850	0.02493	0.03342	0.05224	0.04866	0.02278
	330.0	0.01478	0.02990	0.01921	0.06279	0.03638	0.06214	0.02442
	0.0	0.05836	0.04809	0.05256	0.05861	0.04054	0.07762	0.01673
	30.0	0.08276	0.03887	0.02695	0.05007	0.02613	0.05682	0.01893
	60.0	0.07246	0.02492	0.02085	0.05388	0.02121	0.02790	0.04333
0.3652	270.0	0.06020	0.03799	0.05431	0.02412	0.05717	0.03288	0.01530
	300.0	0.04747	0.03287	0.02754	0.03643	0.04681	0.04564	0.01545
	330.0	0.02226	0.02892	0.01758	0.06030	0.03730	0.05751	0.01956
	0.0	0.04942	0.04234	0.04998	0.04533	0.03084	0.05375	0.03552
	30.0	0.06561	0.03724	0.02606	0.04425	0.02229	0.04379	0.01164
	60.0	0.06911	0.02884	0.02590	0.05849	0.02616	0.02893	0.02285
0.3130	270.0	0.05718	0.03230	0.04842	0.02662	0.05990	0.04879	0.02515
	300.0	0.05015	0.02768	0.02731	0.02611	0.04439	0.05164	0.01695
	330.0	0.02072	0.03143	0.01769	0.05224	0.04248	0.06073	0.02149
	0.0	0.03693	0.03829	0.04278	0.04674	0.02788	0.04668	0.03441
	30.0	0.06539	0.03654	0.02424	0.04403	0.02167	0.04877	0.02115
	60.0	0.05859	0.02981	0.03299	0.06516	0.02177	0.04041	0.02606
0.2609	270.0	0.05305	0.03473	0.04598	0.02884	0.05378	0.04194	0.01607
	300.0	0.04668	0.02293	0.02356	0.03015	0.04382	0.04789	0.01830
	330.0	0.02227	0.03108	0.02178	0.04916	0.05580	0.05574	0.02435
	0.0	0.05160	0.03448	0.04260	0.03578	0.02964	0.05692	0.02806
	30.0	0.06238	0.03165	0.03214	0.04897	0.02145	0.05674	0.02229
	60.0	0.05180	0.03187	0.04201	0.06109	0.03078	0.02991	0.02855
0.2087	270.0	0.05243	0.02626	0.03374	0.02814	0.04135	0.03035	0.01426
	300.0	0.04654	0.02639	0.02706	0.02740	0.04050	0.04075	0.01602
	330.0	0.01329	0.03169	0.02195	0.06462	0.03296	0.03925	0.02521
	0.0	0.02886	0.02644	0.02783	0.05182	0.03411	0.06347	0.03214
	30.0	0.07678	0.04939	0.02867	0.06038	0.02673	0.06468	0.02092
	60.0	0.04695	0.03346	0.04523	0.06979	0.03248	0.03130	0.02622

c) $\overline{w}/u_0$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.05716	0.01719	0.02003	0.02547	0.03143	0.01987	0.03217
	300.0	0.03328	0.02225	0.03671	0.02824	0.03400	0.02989	0.03130
	330.0	0.02063	0.03137	0.02134	0.04213	0.01821	0.03388	0.03904
	0.0	0.04287	0.04246	0.04779	0.05487	0.04382	0.05739	0.02559
	30.0	0.08203	0.06074	0.04137	0.06996	0.03287	0.07025	0.02565
	60.0	0.04083	0.04113	0.05883	0.08304	0.03682	0.04547	0.03290
0.1043	270.0	0.04070	0.01815	0.00915	0.04022	0.02421	0.02175	0.03669
	300.0	0.03042	0.02792	0.03860	0.02494	0.02409	0.01974	0.03036
	330.0	0.02413	0.02964	0.04415	0.03861	0.02043	0.03668	0.03524
	0.0	0.05350	0.04017	0.04872	0.04175	0.03681	0.05941	0.03066
	30.0	0.10514	0.07805	0.04167	0.08420	0.03663	0.07267	0.02046
	60.0	0.03178	0.05399	0.07084	0.09119	0.04037	0.03371	0.03046
0.0522	270.0	0.03365	0.01371	0.01018	0.05841	0.02133	0.89544	0.05194
	300.0	0.02120	0.03080	0.05278	0.03901	0.01976	0.01907	0.03443
	330.0	0.02162	0.02904	0.04227	0.03100	0.02193	0.03265	0.03773
	0.0	0.03806	0.03953	0.04080	0.03430	0.03283	0.06089	0.03621
	30.0	0.09809	0.06958	0.03094	0.07332	0.03393	0.07519	0.02768
	60.0	0.02696	0.06516	0.08076	0.10403	0.06637	0.04316	0.04933
0.0000	270.0	0.03325	0.01592	0.01377	0.05798	0.01756	0.02306	0.05072
	300.0	0.03078	0.02460	0.05960	0.04771	0.01429	0.02004	0.04820
	330.0	0.01962	0.02971	0.04265	0.03626	0.01668	0.02367	0.03991
	0.0	0.04039	0.03147	0.03919	0.05323	0.03154	0.06242	0.03367
	30.0	0.09617	0.07293	0.03751	0.08410	0.04884	0.08805	0.04270
	60.0	0.02701	0.07013	0.08896	0.11350	0.06844	0.03974	0.05227
-0.0522	270.0	0.03355	0.00821	0.01053	0.05714	0.01657	0.01626	0.04331
	300.0	0.02047	0.02996	0.06442	0.07223	0.01934	0.01466	0.05127
	330.0	0.01861	0.02972	0.05639	0.02619	0.03379	0.01745	0.04188
	0.0	0.04554	0.03846	0.03725	0.05011	0.03196	0.05442	0.02830
	30.0	0.10256	0.08589	0.05224	0.10997	0.07416	0.10145	0.05236
	60.0	0.02536	0.07902	0.09842	0.11540	0.08598	0.05708	0.08870
-0.1043	270.0	0.04346	0.01161	0.02161	0.03280	0.02330	0.02137	0.02297
	300.0	0.01826	0.02781	0.06387	0.07144	0.02136	0.01371	0.03519
	330.0	0.02706	0.05355	0.09194	0.05145	0.04079	0.03169	0.04912
	0.0	0.04087	0.02808	0.02996	0.05438	0.02630	0.05433	0.03777
	30.0	0.11579	0.11126	0.08945	0.14597	0.09537	0.11739	0.07260
	60.0	0.02146	0.07646	0.10531	0.11868	0.08039	0.03814	0.07823

c) $\overline{w} / u_0$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.04423	0.02145	0.02687	0.02754	0.03616	0.03630	0.01324
	300.0	0.02374	0.02817	0.04621	0.04288	0.01732	0.02838	0.03041
	330.0	0.04117	0.08540	0.13018	0.17257	0.05267	0.03081	0.04415
	0.0	0.03828	0.02027	0.03988	0.04858	0.03145	0.07294	0.02523
	30.0	0.13045	0.13852	0.15905	0.16228	0.10344	0.12490	0.08091
	60.0	0.01542	0.07700	0.09681	0.10728	0.05842	0.02923	0.05138
-0.2087	270.0	0.05866	0.03113	0.03713	0.02298	0.04699	0.04190	0.00765
	300.0	0.02483	0.02182	0.03520	0.02131	0.04487	0.05337	0.02027
	330.0	0.05763	0.11404	0.12724	0.05845	0.02396	0.03399	0.03658
	0.0	0.03434	0.09674	0.03811	0.05829	0.05216	0.09071	0.03010
	30.0	0.15148	0.17499	0.17494	0.14582	0.08231	0.10405	0.06096
	60.0	0.02169	0.06423	0.07551	0.08908	0.03121	0.02078	0.03377
-0.2609	270.0	0.06390	0.03575	0.04645	0.02892	0.05311	0.04667	0.01613
	300.0	0.02308	0.02636	0.02255	0.02419	0.06330	0.07002	0.03313
	330.0	0.07176	0.09194	0.05942	0.06536	0.05330	0.08781	0.02484
	0.0	0.02021	0.15329	0.02081	0.10838	0.07470	0.08575	0.02923
	30.0	0.17543	0.17051	0.13197	0.07869	0.01593	0.04581	0.01799
	60.0	0.02217	0.04549	0.05472	0.06756	0.01814	0.02204	0.03292
-0.3130	270.0	0.06204	0.04080	0.04994	0.02710	0.05437	0.04506	0.01751
	300.0	0.02872	0.03264	0.03215	0.03764	0.06790	0.07914	0.04176
	330.0	0.07514	0.03225	0.05504	0.12614	0.11896	0.12703	0.05257
	0.0	0.01851	0.32368	0.11078	0.07329	0.05852	0.05948	0.03187
	30.0	0.17618	0.10602	0.01296	0.01651	0.06791	0.01290	0.04306
	60.0	0.02748	0.03830	0.03566	0.05526	0.01955	0.03722	0.05185
-0.3652	270.0	0.06314	0.04949	0.05047	0.02105	0.06016	0.05019	0.02209
	300.0	0.03763	0.04016	0.02824	0.03862	0.07914	0.07730	0.03979
	330.0	0.06570	0.08902	0.10990	0.16773	0.13456	0.12553	0.05505
	0.0	0.08786	0.26544	0.12547	0.02231	0.04885	0.03789	0.03820
	30.0	0.15964	0.02691	0.09388	0.03821	0.08408	0.02401	0.05759
	60.0	0.03498	0.03082	0.02993	0.05253	0.02701	0.04083	0.04131
-0.4174	270.0	0.08280	0.05954	0.06442	0.03124	0.06562	0.05770	0.02794
	300.0	0.05484	0.04363	0.03086	0.05257	0.08828	0.08089	0.06480
	330.0	0.02276	0.13122	0.11568	0.15788	0.12172	0.10945	0.05615
	0.0	0.13741	0.21110	0.05822	0.04339	0.02493	0.03184	0.06314
	30.0	0.12564	0.04215	0.12341	0.03910	0.08009	0.01825	0.05550
	60.0	0.04816	0.02910	0.02308	0.04643	0.03211	0.04063	0.04664

c) $\overline{w} / u_0$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00661	0.01113	0.00694	0.00665	0.00678	0.00932	0.01057
	300.0	0.00773	0.00609	0.00652	0.00680	0.00570	0.00826	0.00768
	330.0	0.01286	0.00769	0.00694	0.00722	0.00729	0.00847	0.00947
	0.0	0.03709	0.03780	0.03416	0.02938	0.02747	0.02641	0.02995
	30.0	0.00712	0.00627	0.00816	0.00725	0.01078	0.00931	0.00945
	60.0	0.00853	0.00854	0.00664	0.00711	0.00740	0.00835	0.00834
0.3652	270.0	0.00741	0.01236	0.00671	0.00868	0.00865	0.00958	0.00977
	300.0	0.00775	0.00714	0.00813	0.00815	0.00709	0.00962	0.00986
	330.0	0.01364	0.00738	0.00817	0.00856	0.01110	0.01740	0.01364
	0.0	0.03965	0.03679	0.03230	0.03048	0.02786	0.03098	0.02885
	30.0	0.00700	0.00883	0.01089	0.00942	0.01081	0.01718	0.02234
	60.0	0.00901	0.00743	0.00672	0.00715	0.00834	0.00730	0.00935
0.3130	270.0	0.00777	0.00688	0.00703	0.00612	0.00820	0.01376	0.01454
	300.0	0.00750	0.00689	0.00685	0.00766	0.00852	0.00885	0.01030
	330.0	0.01552	0.00924	0.01281	0.01605	0.02267	0.02782	0.02482
	0.0	0.04439	0.04126	0.03956	0.03455	0.03041	0.02832	0.02583
	30.0	0.01027	0.01635	0.02504	0.01798	0.01992	0.02583	0.02907
	60.0	0.00759	0.00831	0.00791	0.00611	0.00929	0.00760	0.00932
0.2609	270.0	0.00811	0.00985	0.00834	0.00995	0.00935	0.02367	0.02707
	300.0	0.00788	0.00729	0.00644	0.00759	0.00681	0.00986	0.01199
	330.0	0.01745	0.01507	0.01901	0.02271	0.02559	0.02420	0.02464
	0.0	0.04520	0.04061	0.03967	0.03295	0.02865	0.02588	0.02441
	30.0	0.02024	0.02629	0.03253	0.02498	0.02324	0.02628	0.02432
	60.0	0.00770	0.00696	0.00738	0.00602	0.00723	0.00871	0.01169
0.2087	270.0	0.00699	0.00782	0.00771	0.00921	0.01174	0.04311	0.04567
	300.0	0.00647	0.00830	0.00731	0.00780	0.00855	0.01429	0.02138
	330.0	0.02117	0.01862	0.01879	0.02009	0.02035	0.02332	0.02415
	0.0	0.03679	0.03319	0.03057	0.02795	0.02414	0.02007	0.02093
	30.0	0.02117	0.02591	0.02664	0.02235	0.01723	0.01717	0.01714
	60.0	0.00756	0.00626	0.00761	0.00749	0.00787	0.01055	0.02094

d) $u'_{rms}/u_o \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00701	0.00810	0.00963	0.01147	0.01650	0.07336	0.06538
	300.0	0.00707	0.00702	0.00779	0.00818	0.01000	0.02755	0.03997
	330.0	0.02833	0.02494	0.02476	0.02383	0.02073	0.02009	0.02469
	0.0	0.03498	0.03056	0.02619	0.02261	0.01765	0.01787	0.02490
	30.0	0.02577	0.02576	0.02400	0.01976	0.01593	0.01594	0.02796
	60.0	0.00772	0.00802	0.00788	0.00792	0.01128	0.01982	0.03832
0.1043	270.0	0.00621	0.00824	0.01076	0.01681	0.02998	0.09577	0.08654
	300.0	0.00773	0.00774	0.00778	0.01062	0.01527	0.05165	0.06079
	330.0	0.02153	0.01558	0.01194	0.01142	0.01249	0.04004	0.04442
	0.0	0.01956	0.01710	0.01562	0.01179	0.01178	0.03040	0.04442
	30.0	0.02536	0.02077	0.01480	0.01302	0.01461	0.03213	0.05024
	60.0	0.00998	0.00869	0.00885	0.01005	0.01596	0.03891	0.06500
0.0522	270.0	0.00822	0.00664	0.01015	0.02446	0.04260	0.10575	0.09874
	300.0	0.00781	0.00804	0.00850	0.01739	0.02763	0.08237	0.08375
	330.0	0.00895	0.00833	0.00889	0.01125	0.02726	0.07758	0.06911
	0.0	0.01013	0.00971	0.01134	0.01240	0.01977	0.06042	0.07168
	30.0	0.01012	0.01049	0.01120	0.01156	0.02931	0.06084	0.07596
	60.0	0.00863	0.00743	0.00797	0.01096	0.03717	0.06325	0.08717
0.0000	270.0	0.00868	0.01021	0.01074	0.02627	0.04796	0.10720	0.09836
	300.0	0.00833	0.00759	0.00970	0.03306	0.05042	0.11068	0.10230
	330.0	0.00915	0.00869	0.01052	0.02085	0.06336	0.11373	0.09804
	0.0	0.00691	0.00836	0.00970	0.01976	0.05462	0.10009	0.09947
	30.0	0.00745	0.00765	0.01013	0.02007	0.07261	0.09805	0.10325
	60.0	0.00830	0.00812	0.00886	0.01484	0.06040	0.09357	0.10377
-0.0522	270.0	0.00683	0.00756	0.00879	0.02629	0.04104	0.09062	0.09242
	300.0	0.00688	0.00739	0.01202	0.05295	0.06646	0.11689	0.11446
	330.0	0.00953	0.00900	0.01806	0.06315	0.11665	0.14675	0.10871
	0.0	0.00904	0.00740	0.02321	0.05985	0.11152	0.13364	0.10865
	30.0	0.00784	0.00725	0.01896	0.05696	0.12622	0.12425	0.11201
	60.0	0.00752	0.00797	0.01163	0.02402	0.07996	0.10897	0.11743
-0.1043	270.0	0.00640	0.00876	0.00912	0.01810	0.02860	0.06808	0.07209
	300.0	0.00781	0.00830	0.01460	0.07246	0.07601	0.12487	0.10480
	330.0	0.00734	0.01012	0.04713	0.12434	0.15830	0.14179	0.10836
	0.0	0.00749	0.01271	0.09235	0.14175	0.16593	0.12985	0.10348
	30.0	0.00660	0.00919	0.06078	0.11273	0.17092	0.13719	0.10976
	60.0	0.00821	0.00766	0.01484	0.02813	0.08640	0.11571	0.10940

d) $u'_{rms}/u_0 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00640	0.00914	0.00851	0.01068	0.01499	0.03864	0.05192
	300.0	0.00679	0.00699	0.01267	0.06405	0.07233	0.10602	0.09486
	330.0	0.00746	0.01557	0.10324	0.16962	0.18356	0.13903	0.10644
	0.0	0.00814	0.04197	0.23656	0.20882	0.15327	0.11862	0.10291
	30.0	0.00717	0.01226	0.14271	0.15216	0.19415	0.13201	0.10896
	60.0	0.00776	0.00845	0.01461	0.02506	0.08011	0.10540	0.11239
-0.2087	270.0	0.00647	0.00652	0.00684	0.00889	0.01137	0.02024	0.02936
	300.0	0.00828	0.00755	0.01062	0.04368	0.04764	0.08162	0.07419
	330.0	0.00794	0.02595	0.14710	0.19709	0.18398	0.13604	0.10742
	0.0	0.00715	0.33773	0.31383	0.18314	0.13380	0.12049	0.10584
	30.0	0.00790	0.01984	0.21005	0.17303	0.19288	0.14275	0.11334
	60.0	0.00874	0.00693	0.01191	0.02042	0.05805	0.08655	0.09150
-0.2609	270.0	0.00587	0.00578	0.00780	0.00809	0.00871	0.01191	0.01705
	300.0	0.00775	0.00746	0.01004	0.02176	0.02763	0.04688	0.04690
	330.0	0.00672	0.03749	0.14162	0.18474	0.15338	0.11877	0.09916
	0.0	0.00821	0.46377	0.22555	0.15875	0.13548	0.12066	0.10062
	30.0	0.00773	0.02684	0.22173	0.15752	0.18733	0.13929	0.10805
	60.0	0.00735	0.00629	0.00957	0.01330	0.03488	0.05550	0.06471
-0.3130	270.0	0.00761	0.00844	0.00671	0.00827	0.00830	0.01093	0.00983
	300.0	0.00726	0.00729	0.00871	0.01364	0.01404	0.02819	0.02671
	330.0	0.00670	0.03112	0.08402	0.12823	0.09818	0.07064	0.05795
	0.0	0.01561	0.43832	0.21020	0.16106	0.13076	0.11635	0.09510
	30.0	0.00730	0.02527	0.17910	0.11040	0.12167	0.10029	0.08534
	60.0	0.00721	0.00611	0.00795	0.01011	0.01896	0.03134	0.04179
-0.3652	270.0	0.00700	0.00733	0.00858	0.00827	0.00710	0.00796	0.01037
	300.0	0.00790	0.00902	0.00925	0.00833	0.00929	0.01433	0.01399
	330.0	0.00747	0.01640	0.03098	0.05577	0.04273	0.03863	0.03297
	0.0	0.24396	0.46231	0.19528	0.16087	0.13288	0.11322	0.09571
	30.0	0.00756	0.01837	0.08691	0.05129	0.06357	0.05242	0.04308
	60.0	0.00688	0.00743	0.00753	0.00903	0.01157	0.01716	0.02268
-0.4174	270.0	0.00715	0.00816	0.00759	0.00845	0.00701	0.00827	0.00712
	300.0	0.00639	0.00749	0.00776	0.00876	0.00873	0.01027	0.01020
	330.0	0.00775	0.01235	0.01527	0.02210	0.02165	0.03760	0.04368
	0.0	0.26082	0.31560	0.20051	0.16550	0.12881	0.11970	0.09719
	30.0	0.00827	0.01297	0.02823	0.02248	0.02772	0.02512	0.02927
	60.0	0.00689	0.00719	0.00818	0.00802	0.00971	0.01159	0.01639

d) $u'_{rms}/u_0 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.01169	0.00888	0.01393	0.00790	0.01247	0.00194	0.00570
	300.0	0.00595	0.01395	0.00174	0.00430	0.00642	0.00939	0.01056
	330.0	0.01047	0.00921	0.00177	0.00490	0.01380	0.00712	0.00844
	0.0	0.02892	0.01543	0.02919	0.04014	0.03588	0.02568	0.02764
	30.0	0.00639	0.00691	0.00437	0.01408	0.01590	0.00913	0.00860
	60.0	0.00837	0.01423	0.00901	0.01205	0.00597	0.00203	0.00350
0.3652	270.0	0.00719	0.02594	0.00177	0.01345	0.00850	0.01038	0.00945
	300.0	0.01220	0.00646	0.01123	0.00701	0.00635	0.01377	0.01292
	330.0	0.01212	0.00818	0.00152	0.00746	0.00420	0.00880	0.01717
	0.0	0.04179	0.02625	0.05146	0.01790	0.01844	0.02237	0.00780
	30.0	0.00781	0.00664	0.00727	0.00319	0.00299	0.01247	0.01398
	60.0	0.01901	0.00481	0.01682	0.01086	0.00727	0.00523	0.01487
0.3130	270.0	0.00595	0.01279	0.00855	0.01019	0.00740	0.02477	0.01648
	300.0	0.00900	0.00794	0.00502	0.00550	0.02499	0.01374	0.00188
	330.0	0.02625	0.01343	0.02013	0.01816	0.01826	0.01402	0.01915
	0.0	0.02759	0.03098	0.02854	0.02799	0.02522	0.02279	0.02501
	30.0	0.01296	0.00321	0.03411	0.00806	0.02024	0.00714	0.02517
	60.0	0.00631	0.01274	0.00847	0.00573	0.00943	0.00205	0.01084
0.2609	270.0	0.00189	0.01213	0.00682	0.00891	0.01762	0.01016	0.03802
	300.0	0.00161	0.01376	0.00751	0.00190	0.00489	0.01353	0.01248
	330.0	0.01746	0.01605	0.00409	0.02279	0.01362	0.01145	0.01556
	0.0	0.02289	0.03314	0.02213	0.02104	0.02689	0.01142	0.01919
	30.0	0.01679	0.03450	0.01796	0.01840	0.01713	0.01808	0.00574
	60.0	0.00580	0.00558	0.00773	0.00667	0.00176	0.01411	0.00599
0.2087	270.0	0.00992	0.01139	0.00155	0.00520	0.00941	0.04699	0.02642
	300.0	0.00505	0.00893	0.00484	0.00561	0.00721	0.00435	0.00969
	330.0	0.02833	0.01169	0.00418	0.01040	0.01211	0.00945	0.01449
	0.0	0.03844	0.03690	0.02662	0.01823	0.01294	0.01484	0.01002
	30.0	0.02160	0.02135	0.01709	0.01234	0.02154	0.01485	0.00607
	60.0	0.01970	0.01042	0.01064	0.01177	0.01191	0.00346	0.01325

e) $v'_{rms}/u_o \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00417	0.01161	0.00799	0.01121	0.01912	0.03547	0.03499
	300.0	0.00909	0.00915	0.00568	0.01173	0.00918	0.01179	0.03901
	330.0	0.01756	0.02431	0.01825	0.01421	0.02195	0.01835	0.02006
	0.0	0.01828	0.02102	0.04164	0.02250	0.01728	0.00719	0.02737
	30.0	0.02077	0.02564	0.02396	0.02381	0.01429	0.01931	0.01359
	60.0	0.00478	0.01279	0.00655	0.00546	0.00364	0.01147	0.02423
0.1043	270.0	0.01012	0.00744	0.01672	0.01622	0.02689	0.04997	0.07867
	300.0	0.00472	0.00953	0.00634	0.00830	0.02224	0.04263	0.03731
	330.0	0.03361	0.01378	0.01933	0.00651	0.01640	0.02554	0.03632
	0.0	0.01309	0.01494	0.00639	0.01265	0.01139	0.02309	0.03404
	30.0	0.02646	0.02633	0.01554	0.01072	0.01088	0.03632	0.04943
	60.0	0.00503	0.00764	0.00904	0.01602	0.01279	0.02705	0.06114
0.0522	270.0	0.01243	0.00958	0.01703	0.01894	0.04349	0.08844	0.08484
	300.0	0.01643	0.01753	0.00643	0.01488	0.02571	0.05653	0.05866
	330.0	0.00489	0.00887	0.00209	0.01279	0.02497	0.04112	0.04871
	0.0	0.00893	0.00616	0.00248	0.00376	0.02552	0.04151	0.05735
	30.0	0.01423	0.01323	0.01199	0.00923	0.04064	0.06301	0.04001
	60.0	0.00624	0.00492	0.00600	0.01194	0.02639	0.04253	0.06790
0.0000	270.0	0.01622	0.00860	0.01046	0.02690	0.05378	0.08544	0.08487
	300.0	0.00521	0.00997	0.01284	0.03138	0.04572	0.04853	0.08445
	330.0	0.01121	0.01408	0.00343	0.01839	0.07970	0.05363	0.05126
	0.0	0.01134	0.00649	0.00692	0.01804	0.06998	0.05740	0.05613
	30.0	0.01119	0.00902	0.01275	0.02293	0.05080	0.07175	0.07397
	60.0	0.00525	0.00684	0.00607	0.02015	0.04809	0.05472	0.09122
-0.0522	270.0	0.00850	0.01133	0.00904	0.03599	0.05592	0.08196	0.07140
	300.0	0.00793	0.00575	0.01845	0.06865	0.08093	0.05355	0.06588
	330.0	0.01274	0.01160	0.01953	0.06822	0.09941	0.09607	0.07375
	0.0	0.01378	0.00539	0.01165	0.06431	0.10994	0.07424	0.07189
	30.0	0.00983	0.00983	0.01984	0.06169	0.07743	0.07684	0.06654
	60.0	0.00864	0.00572	0.01117	0.03240	0.09120	0.06795	0.07482
-0.1043	270.0	0.00566	0.01369	0.01198	0.01803	0.02978	0.05574	0.06287
	300.0	0.01376	0.00896	0.01433	0.06666	0.07828	0.07792	0.05929
	330.0	0.01294	0.01554	0.07463	0.09464	0.10080	0.08332	0.07622
	0.0	0.00178	0.01409	0.08369	0.11881	0.10559	0.07596	0.06922
	30.0	0.00398	0.01041	0.06725	0.08470	0.12585	0.10961	0.07416
	60.0	0.00760	0.00467	0.01806	0.04548	0.06672	0.08335	0.08749

e) $v'_{rms}/u_o \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00946	0.01556	0.01277	0.01346	0.02605	0.04019	0.02363
	300.0	0.01278	0.00933	0.01603	0.06389	0.06137	0.03991	0.05759
	330.0	0.00909	0.01606	0.08977	0.12698	0.12038	0.07947	0.07300
	0.0	0.01095	0.05137	0.17679	0.11750	0.10635	0.08358	0.07892
	30.0	0.00708	0.01126	0.10070	0.10035	0.10927	0.08580	0.10373
	60.0	0.00126	0.00768	0.01117	0.04709	0.06598	0.07718	0.07961
-0.2087	270.0	0.00389	0.00955	0.00751	0.00958	0.01226	0.01983	0.03358
	300.0	0.00783	0.01158	0.01090	0.05566	0.04721	0.08426	0.05625
	330.0	0.01534	0.02369	0.15713	0.11947	0.11099	0.08495	0.06371
	0.0	0.01399	0.37048	0.14195	0.13807	0.13615	0.09308	0.05018
	30.0	0.00831	0.02625	0.18666	0.17382	0.10459	0.08050	0.06138
	60.0	0.00844	0.01002	0.01990	0.01940	0.04526	0.03955	0.07232
-0.2609	270.0	0.00814	0.00576	0.01607	0.00737	0.00913	0.01070	0.01247
	300.0	0.01315	0.00696	0.01083	0.02494	0.02762	0.02767	0.03336
	330.0	0.00904	0.04108	0.14603	0.10181	0.07708	0.09069	0.03470
	0.0	0.01256	0.26520	0.17003	0.13408	0.13293	0.10050	0.06928
	30.0	0.00949	0.03611	0.14955	0.15146	0.10576	0.06789	0.08125
	60.0	0.01905	0.01010	0.00825	0.01950	0.02176	0.02751	0.06331
-0.3130	270.0	0.01608	0.00777	0.01048	0.00592	0.00673	0.01140	0.00285
	300.0	0.01052	0.00640	0.00933	0.00942	0.02084	0.01584	0.03006
	330.0	0.00525	0.02419	0.11320	0.12332	0.09054	0.07585	0.03534
	0.0	0.01566	0.14942	0.17667	0.15784	0.12184	0.06411	0.06819
	30.0	0.01169	0.03472	0.12579	0.08400	0.11140	0.06602	0.04621
	60.0	0.01270	0.00634	0.00390	0.00990	0.01527	0.01628	0.03179
-0.3652	270.0	0.00183	0.00661	0.01759	0.00620	0.01294	0.01864	0.01744
	300.0	0.00130	0.01423	0.01445	0.01089	0.01260	0.00842	0.00933
	330.0	0.01165	0.02024	0.04882	0.05904	0.03881	0.03261	0.03599
	0.0	0.17578	0.19050	0.16411	0.14494	0.11647	0.06153	0.06895
	30.0	0.01141	0.01067	0.09520	0.05900	0.05573	0.04783	0.04021
	60.0	0.00932	0.00635	0.00698	0.00457	0.00308	0.00756	0.02337
-0.4174	270.0	0.00922	0.01568	0.00693	0.00809	0.00903	0.00228	0.00525
	300.0	0.00178	0.00965	0.00471	0.00586	0.00500	0.00560	0.00663
	330.0	0.01449	0.00791	0.02397	0.02253	0.02699	0.03953	0.02044
	0.0	0.17459	0.16634	0.11934	0.08390	0.08720	0.04950	0.07226
	30.0	0.01710	0.01043	0.03549	0.02317	0.01377	0.00801	0.01181
	60.0	0.00879	0.00431	0.00842	0.00656	0.00235	0.00417	0.01622

e) $v'_{rms}/u_o \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00436	[illegible]	0.00345	0.00369	0.00390	0.00303	0.00469
	300.0	0.00361	[illegible]	0.00216	0.00351	0.00282	0.00418	0.00431
	330.0	0.00639	[illegible]	0.00279	0.00334	0.00438	0.00465	0.00579
	0.0	0.02556	0.02280	0.02372	0.02172	0.02076	0.01698	0.01872
	30.0	0.00403	0.00308	0.00380	0.00440	0.00396	0.00520	0.00686
	60.0	0.00448	0.00526	0.00417	0.00388	0.00337	0.00370	0.00417
0.3652	270.0	0.00380	0.00297	0.00329	0.00417	0.00445	0.00480	0.00579
	300.0	0.00462	0.00402	0.00480	0.00411	0.00349	0.00319	0.00392
	330.0	0.00609	0.00435	0.00278	0.00447	0.00587	0.00801	0.01050
	0.0	0.02702	0.02219	0.02147	0.01880	0.01698	0.01728	0.01238
	30.0	0.00481	0.00425	0.00609	0.00433	0.00616	0.00997	0.01485
	60.0	0.00518	0.00330	0.00401	0.00399	0.00406	0.00382	0.00529
0.3130	270.0	0.00486	0.00320	0.00301	0.00419	0.00403	0.00612	0.00961
	300.0	0.00428	0.00355	0.00318	0.00339	0.00443	0.00371	0.00359
	330.0	0.00831	0.00540	0.00806	0.01123	0.01364	0.01186	0.01639
	0.0	0.02803	0.02308	0.02052	0.01878	0.01669	0.01563	0.01572
	30.0	0.00806	0.01084	0.01837	0.01339	0.01368	0.01337	0.01714
	60.0	0.00383	0.00492	0.00514	0.00328	0.00358	0.00242	0.00542
0.2609	270.0	0.00253	0.00340	0.00349	0.00494	0.00582	0.01369	0.01718
	300.0	0.00360	0.00414	0.00448	0.00256	0.00376	0.00525	0.00843
	330.0	0.01097	0.01088	0.01048	0.01396	0.01609	0.01107	0.01436
	0.0	0.02433	0.02261	0.01966	0.01887	0.01656	0.01127	0.01440
	30.0	0.01492	0.01855	0.01923	0.01628	0.01355	0.01393	0.01164
	60.0	0.00387	0.00332	0.00435	0.00383	0.00249	0.00371	0.00633
0.2087	270.0	0.00344	0.00305	0.00359	0.00510	0.00670	0.02986	0.03296
	300.0	0.00304	0.00383	0.00367	0.00374	0.00457	0.00621	0.01336
	330.0	0.01445	0.01241	0.00930	0.01230	0.01255	0.01196	0.01493
	0.0	0.02606	0.02314	0.01992	0.01775	0.01571	0.01294	0.01075
	30.0	0.01437	0.01648	0.01679	0.01337	0.00979	0.00899	0.00848
	60.0	0.00520	0.00377	0.00471	0.00421	0.00405	0.00452	0.01421

f) $w'_{rms}/u_0 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00351	0.00376	0.00507	0.00694	0.01227	0.04931	0.04787
	300.0	0.00406	0.00427	0.00426	0.00497	0.00583	0.01517	0.02435
	330.0	0.01924	0.01789	0.01607	0.01422	0.01379	0.01195	0.01580
	0.0	0.02305	0.02057	0.01845	0.01514	0.01245	0.00785	0.01359
	30.0	0.01734	0.01831	0.01546	0.01326	0.00766	0.00814	0.01088
	60.0	0.00402	0.00459	0.00483	0.00408	0.00484	0.01088	0.02671
0.1043	270.0	0.00437	0.00305	0.00591	0.01086	0.02063	0.06738	0.05841
	300.0	0.00435	0.00518	0.00404	0.00607	0.00812	0.03121	0.04243
	330.0	0.01417	0.01049	0.00668	0.00583	0.00764	0.01970	0.02840
	0.0	0.01444	0.01149	0.00985	0.00811	0.00687	0.01711	0.02499
	30.0	0.01565	0.01291	0.00776	0.00722	0.00723	0.01648	0.02839
	60.0	0.00568	0.00554	0.00557	0.00611	0.01012	0.02127	0.04611
0.0522	270.0	0.00458	0.00362	0.00641	0.01778	0.03027	0.07823	0.06608
	300.0	0.00491	0.00550	0.00444	0.01006	0.01841	0.05827	0.05814
	330.0	0.00443	0.00480	0.00396	0.00677	0.01723	0.04492	0.04462
	0.0	0.00599	0.00537	0.00402	0.00438	0.01067	0.03367	0.03956
	30.0	0.00625	0.00626	0.00645	0.00726	0.01934	0.03438	0.04591
	60.0	0.00470	0.00376	0.00447	0.00689	0.01732	0.03986	0.06261
0.0000	270.0	0.00581	0.00403	0.00706	0.02056	0.03509	0.07448	0.06599
	300.0	0.00405	0.00436	0.00610	0.02574	0.03510	0.06625	0.07397
	330.0	0.00439	0.00492	0.00481	0.01333	0.04201	0.06220	0.04545
	0.0	0.00411	0.00478	0.00508	0.01029	0.03386	0.05361	0.05529
	30.0	0.00464	0.00447	0.00593	0.01378	0.04395	0.06325	0.06954
	60.0	0.00399	0.00404	0.00512	0.00923	0.04092	0.05366	0.07523
-0.0522	270.0	0.00409	0.00439	0.00571	0.01914	0.03238	0.06329	0.06286
	300.0	0.00390	0.00391	0.00775	0.04504	0.05256	0.08412	0.07767
	330.0	0.00294	0.00438	0.01106	0.04387	0.07165	0.07946	0.07232
	0.0	0.00522	0.00391	0.01138	0.03850	0.07160	0.08051	0.06752
	30.0	0.00437	0.00408	0.01265	0.03774	0.07856	0.08265	0.07412
	60.0	0.00401	0.00435	0.00743	0.01625	0.05817	0.06621	0.07742
-0.1043	270.0	0.00321	0.00460	0.00522	0.01193	0.02142	0.04540	0.04663
	300.0	0.00429	0.00430	0.01010	0.05622	0.05821	0.08430	0.07701
	330.0	0.00343	0.00611	0.03159	0.08181	0.10707	0.08429	0.07346
	0.0	0.00231	0.00720	0.06175	0.08860	0.10328	0.07969	0.07025
	30.0	0.00343	0.00546	0.03915	0.06775	0.10936	0.07594	0.07419
	60.0	0.00396	0.00455	0.01035	0.02047	0.06300	0.07103	0.07888

f) $w'_{rms}/u_o \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00319	0.00431	0.00466	0.00808	0.01210	0.02490	0.03179
	300.0	0.00215	0.00467	0.00848	0.05152	0.05091	0.07638	0.07091
	330.0	0.00394	0.00990	0.07646	0.10974	0.10759	0.09080	0.07469
	0.0	0.00405	0.02358	0.15294	0.12511	0.08587	0.07634	0.07132
	30.0	0.00427	0.00703	0.08558	0.10170	0.10481	0.09240	0.07811
	60.0	0.00397	0.00408	0.00939	0.01727	0.05838	0.06705	0.07542
-0.2087	270.0	0.00345	0.00372	0.00361	0.00549	0.00704	0.01288	0.02031
	300.0	0.00429	0.00460	0.00790	0.03693	0.03816	0.05489	0.05306
	330.0	0.00341	0.01568	0.10934	0.13779	0.12864	0.09428	0.07388
	0.0	0.00458	0.20356	0.19601	0.12211	0.10012	0.08534	0.06971
	30.0	0.00460	0.01141	0.14107	0.12144	0.13417	0.09107	0.07434
	60.0	0.00452	0.00435	0.00928	0.01342	0.04190	0.05162	0.06877
-0.2609	270.0	0.00383	0.00364	0.00403	0.00405	0.00514	0.00646	0.00949
	300.0	0.00436	0.00401	0.00575	0.01722	0.01782	0.03476	0.03444
	330.0	0.00384	0.02437	0.12149	0.11980	0.11542	0.08521	0.06465
	0.0	0.00500	0.26665	0.16358	0.11538	0.10696	0.09011	0.07452
	30.0	0.00558	0.01857	0.15352	0.11576	0.12054	0.08600	0.07999
	60.0	0.00430	0.00442	0.00639	0.00893	0.02439	0.03736	0.04748
-0.3130	270.0	0.00360	0.00497	0.00401	0.00433	0.00414	0.00427	0.00513
	300.0	0.00408	0.00384	0.00526	0.00939	0.00919	0.01530	0.01795
	330.0	0.00389	0.02141	0.07282	0.09172	0.06927	0.04368	0.04120
	0.0	0.00895	0.46532	0.17742	0.13099	0.10716	0.08863	0.07359
	30.0	0.00421	0.01956	0.13716	0.07534	0.08565	0.06763	0.05789
	60.0	0.00470	0.00416	0.00543	0.00633	0.01200	0.01782	0.02732
-0.3652	270.0	0.00269	0.00350	0.00478	0.00494	0.00469	0.00385	0.00416
	300.0	0.00392	0.00558	0.00477	0.00525	0.00530	0.00623	0.00965
	330.0	0.00401	0.01116	0.02510	0.03775	0.02714	0.02259	0.02410
	0.0	0.16410	0.46158	0.16538	0.13242	0.10327	0.07961	0.07234
	30.0	0.00453	0.01317	0.06193	0.03827	0.04121	0.03275	0.03206
	60.0	0.00284	0.00385	0.00499	0.00467	0.00511	0.00816	0.01572
-0.4174	270.0	0.00360	0.00393	0.00376	0.00385	0.00414	0.00268	0.00378
	300.0	0.00256	0.00419	0.00376	0.00431	0.00412	0.00392	0.00596
	330.0	0.00385	0.00738	0.01004	0.01559	0.01426	0.02118	0.02386
	0.0	0.27018	0.24792	0.15692	0.12709	0.09684	0.07651	0.06619
	30.0	0.00413	0.00805	0.02157	0.01442	0.01653	0.01662	0.01591
	60.0	0.00321	0.00388	0.00489	0.00510	0.00357	0.00488	0.00908

f) $w'_{rms}/u_o \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00004	0.00002	0.00001	0.00003	0.00001	0.00001	0.00001
	300.0	0.00001	0.00008	0.00000	0.00000	0.00002	0.00000	0.00000
	330.0	0.00002	0.00002	0.00000	0.00001	0.00001	0.00002	0.00000
	0.0	0.00028	0.00022	0.00026	0.00030	0.00034	0.00030	0.00045
	30.0	0.00001	0.00001	0.00000	0.00002	0.00000	0.00001	0.00000
	60.0	0.00002	0.00000	0.00002	0.00001	0.00000	0.00000	0.00000
0.3652	270.0	0.00000	0.00000	0.00004	0.00001	0.00001	0.00000	0.00001
	300.0	0.00000	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
	330.0	0.00003	0.00000	0.00000	0.00001	0.00002	0.00006	0.00017
	0.0	0.00022	0.00018	0.00024	0.00017	0.00013	0.00011	0.00007
	30.0	0.00001	0.00000	0.00003	0.00001	0.00001	0.00002	0.00007
	60.0	0.00000	0.00000	0.00002	0.00001	0.00001	0.00002	0.00000
0.3130	270.0	0.00002	0.00001	0.00000	0.00004	0.00001	0.00001	0.00004
	300.0	0.00001	0.00001	0.00000	0.00000	0.00005	0.00001	0.00001
	330.0	0.00004	0.00007	0.00001	0.00005	0.00006	0.00014	0.00018
	0.0	0.00066	0.00028	0.00018	0.00018	0.00017	0.00012	0.00007
	30.0	0.00006	0.00001	0.00029	0.00004	0.00019	0.00005	0.00003
	60.0	0.00001	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001
0.2609	270.0	0.00000	0.00000	0.00001	0.00001	0.00001	0.00009	0.00021
	300.0	0.00001	0.00000	0.00005	0.00000	0.00000	0.00005	0.00002
	330.0	0.00006	0.00006	0.00002	0.00008	0.00009	0.00010	0.00004
	0.0	0.00046	0.00039	0.00022	0.00021	0.00017	0.00011	0.00008
	30.0	0.00039	0.00023	0.00043	0.00020	0.00003	0.00006	0.00003
	60.0	0.00014	0.00000	0.00002	0.00001	0.00000	0.00000	0.00002
0.2087	270.0	0.00004	0.00000	0.00000	0.00001	0.00003	0.00050	0.00044
	300.0	0.00000	0.00000	0.00001	0.00000	0.00000	0.00002	0.00009
	330.0	0.00008	0.00004	0.00002	0.00006	0.00007	0.00007	0.00005
	0.0	0.00058	0.00051	0.00036	0.00016	0.00014	0.00009	0.00008
	30.0	0.00025	0.00020	0.00020	0.00007	0.00002	0.00004	0.00004
	60.0	0.00009	0.00002	0.00002	0.00001	0.00001	0.00001	0.00009

g) $\overline{u'v'}/u_0^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00001	0.00001	0.00000	0.00001	0.00000	0.00001	0.00001
	300.0	0.00001	0.00002	0.00000	0.00000	0.00000	0.00001	0.00000
	330.0	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
	0.0	0.00014	0.00013	0.00011	0.00019	0.00019	0.00015	0.00027
	30.0	0.00001	0.00000	0.00001	0.00001	0.00000	0.00000	0.00000
	60.0	0.00002	0.00001	0.00001	0.00001	0.00000	0.00002	0.00001
0.3652	270.0	0.00001	0.00000	0.00001	0.00002	0.00000	0.00001	0.00000
	300.0	0.00001	0.00002	0.00001	0.00001	0.00001	0.00000	0.00001
	330.0	0.00001	0.00001	0.00001	0.00000	0.00001	0.00000	0.00000
	0.0	0.00020	0.00007	0.00006	0.00008	0.00006	0.00006	0.00000
	30.0	0.00001	0.00001	0.00002	0.00001	0.00002	0.00005	0.00008
	60.0	0.00002	0.00001	0.00000	0.00001	0.00001	0.00001	0.00001
0.3130	270.0	0.00001	0.00001	0.00000	0.00001	0.00001	0.00001	0.00003
	300.0	0.00001	0.00001	0.00000	0.00001	0.00003	0.00000	0.00001
	330.0	0.00000	0.00001	0.00003	0.00000	0.00000	0.00000	0.00005
	0.0	0.00004	0.00000	0.00001	0.00001	0.00002	0.00003	0.00003
	30.0	0.00003	0.00007	0.00017	0.00011	0.00009	0.00015	0.00005
	60.0	0.00001	0.00002	0.00001	0.00000	0.00001	0.00001	0.00001
0.2609	270.0	0.00001	0.00002	0.00000	0.00001	0.00005	0.00005	0.00006
	300.0	0.00001	0.00000	0.00002	0.00000	0.00000	0.00002	0.00000
	330.0	0.00001	0.00001	0.00012	0.00000	0.00000	0.00001	0.00000
	0.0	0.00005	0.00001	0.00002	0.00002	0.00001	0.00003	0.00004
	30.0	0.00013	0.00021	0.00020	0.00019	0.00011	0.00011	0.00007
	60.0	0.00000	0.00000	0.00001	0.00001	0.00000	0.00000	0.00001
0.2087	270.0	0.00001	0.00001	0.00001	0.00000	0.00001	0.00006	0.00000
	300.0	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000
	330.0	0.00002	0.00000	0.00007	0.00001	0.00000	0.00000	0.00009
	0.0	0.00000	0.00000	0.00007	0.00006	0.00000	0.00002	0.00002
	30.0	0.00014	0.00013	0.00019	0.00008	0.00004	0.00003	0.00003
	60.0	0.00002	0.00000	0.00002	0.00001	0.00000	0.00000	0.00008

h) $\overline{u'w'}/u_o^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00001	0.00001	0.00002	0.00000	0.00005	0.00038	0.00000
	300.0	0.00000	0.00000	0.00000	0.00000	0.00001	0.00014	0.00001
	330.0	0.00003	0.00007	0.00010	0.00000	0.00002	0.00005	0.00001
	0.0	0.00010	0.00008	0.00007	0.00002	0.00003	0.00001	0.00001
	30.0	0.00015	0.00016	0.00011	0.00013	0.00001	0.00001	0.00007
	60.0	0.00000	0.00001	0.00001	0.00000	0.00000	0.00000	0.00003
0.1043	270.0	0.00001	0.00000	0.00000	0.00001	0.00002	0.00000	0.00050
	300.0	0.00001	0.00002	0.00001	0.00001	0.00002	0.00002	0.00026
	330.0	0.00004	0.00003	0.00000	0.00000	0.00000	0.00007	0.00006
	0.0	0.00003	0.00002	0.00002	0.00001	0.00001	0.00004	0.00014
	30.0	0.00010	0.00006	0.00001	0.00003	0.00000	0.00002	0.00000
	60.0	0.00000	0.00001	0.00001	0.00001	0.00002	0.00005	0.00000
0.0522	270.0	0.00002	0.00000	0.00000	0.00002	0.00001	0.00158	0.00064
	300.0	0.00002	0.00003	0.00000	0.00002	0.00001	0.00040	0.00000
	330.0	0.00000	0.00000	0.00001	0.00000	0.00017	0.00025	0.00010
	0.0	0.00003	0.00000	0.00000	0.00001	0.00005	0.00018	0.00019
	30.0	0.00002	0.00001	0.00001	0.00002	0.00007	0.00030	0.00000
	60.0	0.00000	0.00001	0.00001	0.00002	0.00013	0.00040	0.00000
0.0000	270.0	0.00004	0.00001	0.00000	0.00012	0.00020	0.00009	0.00066
	300.0	0.00001	0.00000	0.00000	0.00009	0.00024	0.00000	0.00069
	330.0	0.00001	0.00001	0.00000	0.00000	0.00037	0.00067	0.00038
	0.0	0.00001	0.00001	0.00001	0.00003	0.00015	0.00033	0.00028
	30.0	0.00001	0.00001	0.00001	0.00005	0.00074	0.00097	0.00000
	60.0	0.00001	0.00001	0.00001	0.00003	0.00039	0.00055	0.00139
-0.0522	270.0	0.00000	0.00001	0.00001	0.00012	0.00016	0.00002	0.00055
	300.0	0.00001	0.00001	0.00001	0.00060	0.00078	0.00000	0.00078
	330.0	0.00000	0.00001	0.00002	0.00041	0.00088	0.00000	0.00048
	0.0	0.00005	0.00001	0.00002	0.00020	0.00043	0.00141	0.00022
	30.0	0.00001	0.00001	0.00006	0.00064	0.00097	0.00060	0.00060
	60.0	0.00001	0.00001	0.00001	0.00007	0.00075	0.00000	0.00000
-0.1043	270.0	0.00001	0.00001	0.00001	0.00007	0.00014	0.00000	0.00023
	300.0	0.00001	0.00000	0.00002	0.00122	0.00057	0.00200	0.00073
	330.0	0.00000	0.00000	0.00047	0.00380	0.00127	0.00168	0.00071
	0.0	0.00001	0.00002	0.00047	0.00160	0.00190	0.00087	0.00005
	30.0	0.00001	0.00002	0.00057	0.00240	0.00121	0.00062	0.00087
	60.0	0.00001	0.00000	0.00003	0.00021	0.00133	0.00092	0.00090

h) $\overline{u'w'}/u_0^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00001	0.00001	0.00000	0.00003	0.00007	0.00006	0.00012
	300.0	0.00000	0.00003	0.00002	0.00074	0.00062	0.00096	0.00194
	330.0	0.00000	0.00002	0.00329	0.00171	0.00136	0.00200	0.00146
	0.0	0.00001	0.00017	0.00154	0.00327	0.00175	0.00161	0.00059
	30.0	0.00001	0.00002	0.00457	0.00365	0.00114	0.00181	0.00126
	60.0	0.00001	0.00001	0.00003	0.00012	0.00056	0.00000	0.00000
-0.2087	270.0	0.00000	0.00001	0.00000	0.00000	0.00001	0.00001	0.00003
	300.0	0.00001	0.00001	0.00002	0.00000	0.00047	0.00051	0.00103
	330.0	0.00000	0.00003	0.00503	0.00196	0.00000	0.00202	0.00059
	0.0	0.00001	0.00958	0.00704	0.00175	0.00183	0.00226	0.00070
	30.0	0.00001	0.00007	0.00837	0.00345	0.00217	0.00176	0.00112
	60.0	0.00002	0.00000	0.00003	0.00005	0.00008	0.00005	0.00138
-0.2609	270.0	0.00001	0.00000	0.00001	0.00000	0.00001	0.00000	0.00001
	300.0	0.00001	0.00000	0.00000	0.00000	0.00012	0.00009	0.00027
	330.0	0.00000	0.00008	0.00553	0.00606	0.00455	0.00345	0.00310
	0.0	0.00001	0.04571	0.00541	0.00486	0.00210	0.00217	0.00036
	30.0	0.00002	0.00018	0.00638	0.00194	0.00C00	0.00121	0.00107
	60.0	0.00003	0.00005	0.00001	0.00003	0.00C05	0.00035	0.00057
-0.3130	270.0	0.00001	0.00002	0.00000	0.00001	0.00001	0.00000	0.00001
	300.0	0.00001	0.00001	0.00000	0.00000	0.00006	0.00006	0.00009
	330.0	0.00000	0.00008	0.00049	0.00438	0.00160	0.00082	0.00047
	0.0	0.00007	0.08137	0.00766	0.00548	0.00170	0.00055	0.00051
	30.0	0.00001	0.00019	0.00198	0.00083	0.00184	0.00107	0.00101
	60.0	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00009
-0.3652	270.0	0.00000	0.00001	0.00002	0.00001	0.00001	0.00001	0.00000
	300.0	0.00002	0.00003	0.00001	0.00000	0.00001	0.00001	0.00002
	330.0	0.00000	0.00003	0.00014	0.00060	0.00038	0.00018	0.00023
	0.0	0.01341	0.06097	0.00763	0.00823	0.00073	0.00024	0.00184
	30.0	0.00001	0.00004	0.00058	0.00015	0.00061	0.00021	0.00025
	60.0	0.00000	0.00000	0.00002	0.00001	0.00000	0.00000	0.00007
-0.4174	270.0	0.00001	0.00002	0.00002	0.00002	0.00001	0.00000	0.00000
	300.0	0.00000	0.00001	0.00000	0.00001	0.00000	0.00000	0.00002
	330.0	0.00000	0.00004	0.00002	0.00009	0.00011	0.00029	0.00025
	0.0	0.01071	0.02053	0.00570	0.00831	0.00000	0.00000	0.00138
	30.0	0.00001	0.00001	0.00016	0.00005	0.00009	0.00007	0.00012
	60.0	0.00000	0.00001	0.00001	0.00001	0.00000	0.00001	0.00004

h) $\overline{u'w'}/u_0^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00009	0.00002	0.00000	0.00019	0.00010	0.00000	0.00000
	300.0	0.00006	0.00032	0.00000	0.00007	0.00004	0.00013	0.00016
	330.0	0.00029	0.00014	0.00000	0.00003	0.00013	0.00003	0.00013
	0.0	0.00011	0.00020	0.00024	0.00018	0.00050	0.00047	0.00303
	30.0	0.00003	0.00000	0.00003	0.00006	0.00002	0.00012	0.00063
	60.0	0.00027	0.00024	0.00008	0.00006	0.00000	0.00000	0.00007
0.3652	270.0	0.00031	0.00001	0.00000	0.00043	0.00018	0.00022	0.00001
	300.0	0.00013	0.00015	0.00020	0.00012	0.00006	0.00001	0.00000
	330.0	0.00001	0.00007	0.00000	0.00005	0.00001	0.00002	0.00004
	0.0	0.00115	0.00077	0.00057	0.00029	0.00042	0.00069	0.00000
	30.0	0.00007	0.00000	0.00005	0.00001	0.00000	0.00017	0.00087
	60.0	0.00032	0.00004	0.00026	0.00003	0.00019	0.00011	0.00021
0.3130	270.0	0.00006	0.00000	0.00000	0.00014	0.00008	0.00003	0.00028
	300.0	0.00006	0.00010	0.00008	0.00010	0.00009	0.00001	0.00000
	330.0	0.00001	0.00029	0.00021	0.00010	0.00041	0.00004	0.00184
	0.0	0.00103	0.00224	0.00011	0.00231	0.00137	0.00093	0.00082
	30.0	0.00010	0.00001	0.00121	0.00009	0.00111	0.00005	0.00058
	60.0	0.00008	0.00024	0.00034	0.00005	0.00000	0.00000	0.00012
0.2609	270.0	0.00000	0.00001	0.00002	0.00014	0.00008	0.00039	0.00016
	300.0	0.00035	0.00017	0.00024	0.00000	0.00004	0.00025	0.00014
	330.0	0.00004	0.00031	0.00000	0.00054	0.00019	0.00004	0.00059
	0.0	0.00541	0.00202	0.00015	0.00071	0.00135	0.00010	0.00009
	30.0	0.00195	0.00077	0.00275	0.00049	0.00028	0.00017	0.00000
	60.0	0.00075	0.00011	0.00005	0.00004	0.00000	0.00002	0.00005
0.2087	270.0	0.00024	0.00002	0.00003	0.00004	0.00011	0.00198	0.00417
	300.0	0.00005	0.00011	0.00005	0.00003	0.00009	0.00002	0.00134
	330.0	0.00050	0.00047	0.00000	0.00019	0.00023	0.00000	0.00028
	0.0	0.00065	0.00068	0.00012	0.00022	0.00188	0.00011	0.00000
	30.0	0.00098	0.00053	0.00033	0.00018	0.00027	0.00007	0.00000
	60.0	0.00019	0.00007	0.00005	0.00005	0.00000	0.00000	0.00002

i) $\overline{v'w'}/u_0^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00004	0.00000	0.00000	0.00012	0.00028	0.00230	0.00353
	300.0	0.00005	0.00007	0.00031	0.00016	0.00021	0.00000	0.00119
	330.0	0.00031	0.00052	0.00007	0.00027	0.00043	0.00077	0.00029
	0.0	0.00145	0.00021	0.00008	0.00013	0.00005	0.00003	0.00120
	30.0	0.00050	0.00053	0.00041	0.00009	0.00004	0.00006	0.00000
	60.0	0.00003	0.00007	0.00003	0.00003	0.00000	0.00000	0.00178
0.1043	270.0	0.00006	0.00000	0.00001	0.00009	0.00000	0.00000	0.00226
	300.0	0.00009	0.00016	0.00000	0.00014	0.00015	0.00230	0.00867
	330.0	0.00062	0.00045	0.00012	0.00013	0.00025	0.00000	0.00313
	0.0	0.00006	0.00011	0.00002	0.00005	0.00012	0.00046	0.00085
	30.0	0.00088	0.00110	0.00028	0.00014	0.00000	0.00014	0.00009
	60.0	0.00006	0.00004	0.00003	0.00012	0.00010	0.00000	0.00143
0.0522	270.0	0.00005	0.00006	0.00000	0.00017	0.00000	0.09408	0.00244
	300.0	0.00023	0.00062	0.00000	0.00005	0.00021	0.00490	0.00986
	330.0	0.00003	0.00012	0.00000	0.00022	0.00045	0.01362	0.00188
	0.0	0.00006	0.00012	0.00000	0.00001	0.00083	0.00141	0.00119
	30.0	0.00007	0.00039	0.00017	0.00009	0.00023	0.00049	0.00927
	60.0	0.00011	0.00004	0.00003	0.00003	0.00000	0.00403	0.00028
0.0000	270.0	0.00010	0.00000	0.00017	0.00016	0.00155	0.00000	0.00227
	300.0	0.00011	0.00000	0.00001	0.00074	0.00399	0.00000	0.00469
	330.0	0.00016	0.00029	0.00001	0.00008	0.00319	0.00235	0.00196
	0.0	0.00006	0.00068	0.00000	0.00037	0.00203	0.00309	0.00358
	30.0	0.00013	0.00009	0.00005	0.00013	0.00756	0.00458	0.00658
	60.0	0.00011	0.00008	0.00002	0.00011	0.00207	0.00000	0.00487
-0.0522	270.0	0.00005	0.00009	0.00001	0.00113	0.00017	0.00000	0.00222
	300.0	0.00011	0.00012	0.00001	0.00163	0.00207	0.00000	0.00301
	330.0	0.00000	0.00000	0.00007	0.00165	0.00675	0.00000	0.00895
	0.0	0.00012	0.00009	0.00056	0.00148	0.00635	0.00825	0.00845
	30.0	0.00009	0.00021	0.00027	0.00079	0.01171	0.01072	0.00510
	60.0	0.00011	0.00007	0.00010	0.00009	0.00354	0.00000	0.00620
-0.1043	270.0	0.00005	0.00001	0.00001	0.00007	0.00029	0.00000	0.00168
	300.0	0.00022	0.00000	0.00015	0.00166	0.00073	0.00587	0.00370
	330.0	0.00007	0.00009	0.00135	0.00622	0.03380	0.01076	0.00282
	0.0	0.00000	0.00025	0.00750	0.00776	0.00769	0.00637	0.00435
	30.0	0.00005	0.00004	0.00179	0.00222	0.02280	0.00124	0.00950
	60.0	0.00010	0.00003	0.00004	0.00045	0.00576	0.00373	0.00316

i) $\overline{v'w'}/u_0^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00000	0.00000	0.00000	0.00006	0.00028	0.00029	0.00000
	300.0	0.00005	0.00020	0.00004	0.00211	0.00180	0.00991	0.00792
	330.0	0.00006	0.00011	0.01185	0.01322	0.00677	0.03300	0.00468
	0.0	0.00016	0.00317	0.01926	0.01173	0.00750	0.00500	0.00208
	30.0	0.00006	0.00010	0.00361	0.00475	0.00597	0.02405	0.00603
	60.0	0.00000	0.00009	0.00009	0.00049	0.00330	0.00000	0.00336
-0.2087	270.0	0.00003	0.00000	0.00010	0.00013	0.00013	0.00014	0.00085
	300.0	0.00025	0.00018	0.00003	0.00165	0.00118	0.00276	0.01132
	330.0	0.00001	0.00053	0.01187	0.00728	0.02101	0.01091	0.00710
	0.0	0.00007	0.02056	0.01706	0.00885	0.00350	0.00301	0.00437
	30.0	0.00011	0.00024	0.00558	0.01105	0.05330	0.00608	0.00348
	60.0	0.00014	0.00005	0.00018	0.00014	0.00248	0.00000	0.00242
-0.2609	270.0	0.00008	0.00000	0.00012	0.00015	0.00004	0.00002	0.00012
	300.0	0.00011	0.00015	0.00019	0.00000	0.00030	0.00193	0.00050
	330.0	0.00005	0.00049	0.00851	0.00001	0.01360	0.00389	0.00000
	0.0	0.00008	0.00584	0.00784	0.00637	0.00573	0.00188	0.00431
	30.0	0.00007	0.00030	0.01081	0.00486	0.00000	0.00394	0.00215
	60.0	0.00035	0.00017	0.00002	0.00006	0.00000	0.00387	0.00127
-0.3130	270.0	0.00000	0.00018	0.00021	0.00016	0.00008	0.00001	0.00263
	300.0	0.00006	0.00015	0.00016	0.00010	0.00020	0.00000	0.00032
	330.0	0.00027	0.00052	0.00193	0.00131	0.01268	0.00046	0.00088
	0.0	0.00005	0.06084	0.01035	0.00664	0.00485	0.00554	0.00000
	30.0	0.00016	0.00035	0.01038	0.00179	0.00328	0.00591	0.00201
	60.0	0.00009	0.00015	0.00003	0.00004	0.00000	0.00000	0.00000
-0.3652	270.0	0.00000	0.00000	0.00035	0.00042	0.00007	0.00000	0.00001
	300.0	0.00000	0.00050	0.00054	0.00001	0.00015	0.00002	0.00006
	330.0	0.00004	0.00005	0.00000	0.00000	0.00064	0.00043	0.00039
	0.0	0.00743	0.06522	0.01030	0.00997	0.00000	0.00000	0.00000
	30.0	0.00015	0.00012	0.00223	0.00163	0.00013	0.00065	0.00053
	60.0	0.00001	0.00013	0.00006	0.00005	0.00000	0.00000	0.00006
-0.4174	270.0	0.00020	0.00000	0.00000	0.00020	0.00008	0.00000	0.00008
	300.0	0.00000	0.00005	0.00008	0.00006	0.00006	0.00001	0.00004
	330.0	0.00009	0.00007	0.00012	0.00023	0.00038	0.00000	0.00071
	0.0	0.00971	0.00750	0.01031	0.02138	0.00000	0.00000	0.00310
	30.0	0.00006	0.00007	0.00130	0.00039	0.00002	0.00000	0.00011
	60.0	0.00010	0.00009	0.00014	0.00006	0.00000	0.00000	0.00069

i) $\overline{v'w'}/u_0^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	1.02714	1.05960	1.06185	1.03693	1.04799	1.06344	1.06879
	300.0	1.01735	1.03668	1.04034	1.03066	1.02056	1.05340	1.04009
	330.0	1.02435	1.04141	1.04063	1.02420	1.00129	1.04796	1.05854
	0.0	0.96579	0.98351	0.98268	0.98511	0.94860	1.01470	1.01084
	30.0	1.06796	1.03729	1.03299	1.03461	1.08935	1.04860	1.07217
	60.0	1.04057	1.04407	1.03251	1.03376	1.05247	1.05234	1.05775
0.3652	270.0	1.03444	1.06469	1.06840	1.04107	1.05525	1.06725	1.07296
	300.0	1.02265	1.04224	1.05012	1.05392	1.03227	1.05899	1.04451
	330.0	1.03007	1.04169	1.04182	1.02671	1.00448	1.04382	1.05700
	0.0	0.97667	0.99085	0.99029	0.97917	0.95552	0.99497	1.00424
	30.0	1.07263	1.04185	1.04349	1.04100	1.09265	1.05290	1.06092
	60.0	1.05002	1.04812	1.03900	1.03999	1.05267	1.05223	1.06397
0.3130	270.0	1.03535	1.06192	1.06645	1.04614	1.05768	1.07257	1.07461
	300.0	1.02372	1.04648	1.04877	1.04117	1.02884	1.05809	1.04264
	330.0	1.02856	1.04358	1.04705	1.02322	0.99727	1.03071	1.04513
	0.0	0.92393	0.95022	0.96295	0.94408	0.92582	0.98592	0.99601
	30.0	1.07340	1.04449	1.03220	1.04083	1.08983	1.04095	1.04359
	60.0	1.04907	1.05771	1.04771	1.04349	1.05943	1.05686	1.06402
0.2609	270.0	1.03578	1.06937	1.07071	1.04836	1.05420	1.07789	1.07303
	300.0	1.02654	1.05020	1.05001	1.04457	1.03466	1.05842	1.04663
	330.0	1.03085	1.04135	1.04263	1.01572	0.99226	1.03286	1.04112
	0.0	0.93528	0.96306	0.96809	0.96514	0.94742	1.00725	1.01674
	30.0	1.06564	1.03286	1.02375	1.03099	1.08426	1.03915	1.05257
	60.0	1.05402	1.05622	1.05073	1.04719	1.06371	1.06234	1.06212
0.2087	270.0	1.03244	1.06875	1.07040	1.05040	1.05968	1.07701	1.07467
	300.0	1.02607	1.05450	1.05373	1.04486	1.03574	1.05975	1.05337
	330.0	1.02669	1.03532	1.04572	1.01985	0.99989	1.03566	1.04323
	0.0	0.97799	0.99858	0.99495	0.98763	0.97093	1.03183	1.03667
	30.0	1.05997	1.03159	1.03055	1.03608	1.08815	1.05627	1.06644
	60.0	1.05311	1.05979	1.05337	1.04784	1.06542	1.05581	1.06295

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00000	0.00000	0.00000	0.00003	0.00017	0.00093	0.00110
	300.0	0.00000	0.00001	0.00003	0.00001	0.00001	0.00012	0.00059
	330.0	0.00011	0.00020	0.00004	0.00009	0.00006	0.00010	0.00012
	0.0	0.00030	0.00022	0.00024	0.00008	0.00008	0.00005	0.00016
	30.0	0.00014	0.00015	0.00009	0.00004	0.00002	0.00006	0.00017
	60.0	0.00001	0.00001	0.00000	0.00001	0.00001	0.00009	0.00037
0.1043	270.0	0.00003	0.00000	0.00004	0.00009	0.00025	0.00196	0.00193
	300.0	0.00000	0.00001	0.00001	0.00003	0.00002	0.00060	0.00170
	330.0	0.00006	0.00004	0.00003	0.00001	0.00003	0.00043	0.00039
	0.0	0.00012	0.00005	0.00005	0.00004	0.00003	0.00025	0.00064
	30.0	0.00009	0.00004	0.00003	0.00006	0.00003	0.00028	0.00060
	60.0	0.00001	0.00001	0.00001	0.00002	0.00008	0.00041	0.00100
0.0522	270.0	0.00000	0.00002	0.00000	0.00017	0.00057	0.00225	0.00265
	300.0	0.00003	0.00004	0.00001	0.00007	0.00032	0.00152	0.00248
	330.0	0.00001	0.00001	0.00001	0.00001	0.00038	0.00141	0.00092
	0.0	0.00001	0.00001	0.00001	0.00002	0.00024	0.00089	0.00105
	30.0	0.00004	0.00002	0.00001	0.00005	0.00030	0.00132	0.00139
	60.0	0.00002	0.00001	0.00002	0.00006	0.00041	0.00195	0.00283
0.0000	270.0	0.00006	0.00000	0.00001	0.00024	0.00090	0.00285	0.00263
	300.0	0.00000	0.00004	0.00006	0.00041	0.00095	0.00244	0.00369
	330.0	0.00001	0.00001	0.00001	0.00014	0.00218	0.00267	0.00223
	0.0	0.00003	0.00001	0.00003	0.00009	0.00131	0.00256	0.00183
	30.0	0.00003	0.00001	0.00002	0.00013	0.00136	0.00315	0.01110
	60.0	0.00000	0.00001	0.00002	0.00015	0.00124	0.00211	0.00422
-0.0522	270.0	0.00001	0.00001	0.00001	0.00023	0.00073	0.00154	0.00214
	300.0	0.00000	0.00002	0.00006	0.00190	0.00273	0.00827	0.00300
	330.0	0.00000	0.00001	0.00010	0.00157	0.00427	0.00381	0.00358
	0.0	0.00001	0.00001	0.00008	0.00144	0.00410	0.00299	0.00177
	30.0	0.00001	0.00003	0.00014	0.00117	0.00408	0.01906	0.00529
	60.0	0.00000	0.00001	0.00006	0.00025	0.00236	0.00322	0.00384
-0.1043	270.0	0.00001	0.00000	0.00001	0.00008	0.00025	0.00091	0.00124
	300.0	0.00000	0.00001	0.00005	0.00305	0.00228	0.00465	0.00507
	330.0	0.00000	0.00002	0.00096	0.00424	0.00996	0.00495	0.00299
	0.0	0.00001	0.00003	0.00275	0.00662	0.00654	0.01099	0.00237
	30.0	0.00001	0.00002	0.00178	0.00478	0.00881	0.00774	0.00373
	60.0	0.00000	0.00002	0.00009	0.00065	0.00243	0.00309	0.00481

g) $\overline{u'v'}/u_0^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00002	0.00001	0.00001	0.00004	0.00021	0.00031	0.00050
	300.0	0.00000	0.00005	0.00006	0.00206	0.00203	0.00395	0.00396
	330.0	0.00000	0.00007	0.00538	0.00872	0.00843	0.00611	0.00362
	0.0	0.00000	0.00056	0.01480	0.00833	0.00650	0.00373	0.00245
	30.0	0.00001	0.00007	0.00768	0.00835	0.01118	0.00973	0.00245
	60.0	0.00000	0.00001	0.00007	0.00067	0.00218	0.00236	0.00324
-0.2087	270.0	0.00000	0.00000	0.00001	0.00001	0.00003	0.00006	0.00025
	300.0	0.00000	0.00002	0.00002	0.00073	0.00346	0.00107	0.00253
	330.0	0.00000	0.00032	0.00776	0.01015	0.00714	0.00601	0.00259
	0.0	0.00003	0.02820	0.02104	0.00782	0.00517	0.00352	0.00299
	30.0	0.00001	0.00029	0.01320	0.01390	0.05174	0.00646	0.00340
	60.0	0.00000	0.00002	0.00016	0.00015	0.00115	0.00137	0.00276
-0.2609	270.0	0.00003	0.00003	0.00000	0.00000	0.00001	0.00002	0.00002
	300.0	0.00000	0.00000	0.00002	0.00010	0.00038	0.00061	0.00063
	330.0	0.00001	0.00056	0.00841	0.00780	0.00746	0.00489	0.00131
	0.0	0.00001	0.07942	0.01194	0.00639	0.00488	0.00395	0.00231
	30.0	0.00004	0.00048	0.01729	0.00980	0.00749	0.00494	0.00325
	60.0	0.00000	0.00005	0.00003	0.00006	0.00066	0.00146	0.00126
-0.3130	270.0	0.00001	0.00002	0.00001	0.00000	0.00001	0.00001	0.00006
	300.0	0.00000	0.00001	0.00000	0.00002	0.00011	0.00015	0.00028
	330.0	0.00001	0.00030	0.00214	0.00372	0.00330	0.00176	0.00084
	0.0	0.00006	0.06155	0.00740	0.00655	0.00446	0.00720	0.00327
	30.0	0.00001	0.00047	0.01295	0.00400	0.00453	0.00433	0.00136
	60.0	0.00002	0.00003	0.00001	0.00002	0.00005	0.00017	0.00041
-0.3652	270.0	0.00000	0.00000	0.00001	0.00006	0.00003	0.00001	0.00000
	300.0	0.00000	0.00006	0.00000	0.00003	0.00003	0.00005	0.00003
	330.0	0.00001	0.00015	0.00059	0.00169	0.00078	0.00050	0.00044
	0.0	0.01451	0.05954	0.00957	0.00555	0.00634	0.00328	0.00153
	30.0	0.00004	0.00009	0.00358	0.00118	0.00106	0.00050	0.00100
	60.0	0.00000	0.00000	0.00003	0.00001	0.00001	0.00004	0.00011
-0.4174	270.0	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000
	300.0	0.00000	0.00001	0.00000	0.00001	0.00001	0.00002	0.00003
	330.0	0.00000	0.00004	0.00009	0.00019	0.00016	0.00046	0.00022
	0.0	0.00000	0.01560	0.01181	0.03030	0.03112	0.00297	0.00228
	30.0	0.00001	0.00003	0.00115	0.00008	0.00032	0.00056	0.00010
	60.0	0.00001	0.00000	0.00001	0.00000	0.00001	0.00001	0.00003

g) $\overline{u'v'}/u_0^2 \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	1.03436	1.06890	1.06493	1.05012	1.05979	1.07872	1.06861
	300.0	1.02005	1.05594	1.05823	1.04576	1.03732	1.06328	1.05668
	330.0	1.01992	1.03167	1.03637	1.01761	1.00036	1.04899	1.05819
	0.0	0.98131	1.01040	1.01759	1.01841	0.99276	1.04211	1.04424
	30.0	1.05684	1.03316	1.02983	1.04042	1.08952	1.05647	1.07024
	60.0	1.05484	1.06114	1.05335	1.04789	1.06321	1.05924	1.07020
0.1043	270.0	1.03580	1.06474	1.06385	1.05134	1.05893	1.07702	1.04617
	300.0	1.02307	1.05748	1.05392	1.04601	1.03729	1.06740	1.05350
	330.0	1.01618	1.03789	1.05173	1.02939	1.01650	1.05429	1.06635
	0.0	1.02074	1.04244	1.04468	1.03415	0.99995	1.03705	1.04740
	30.0	1.05005	1.03584	1.04294	1.04489	1.08997	1.05856	1.07206
	60.0	1.05020	1.05863	1.05063	1.04977	1.06067	1.05927	1.06026
0.0522	270.0	1.02916	1.06964	1.06520	1.05004	1.05869	1.39103	1.03512
	300.0	1.02228	1.05632	1.05486	1.04684	1.04127	1.07246	1.03989
	330.0	1.02829	1.04206	1.05084	1.03334	1.01225	1.06601	1.05730
	0.0	1.02039	1.04149	1.04154	1.01428	0.99069	1.06200	1.04764
	30.0	1.05898	1.03177	1.02356	1.03779	1.08804	1.06713	1.07082
	60.0	1.04740	1.05458	1.04982	1.04963	1.06486	1.06714	1.04464
0.0000	270.0	0.98939	1.06370	1.06037	1.05426	1.05630	1.06621	1.02926
	300.0	1.00447	1.05246	1.05483	1.04992	1.04356	1.06122	0.99513
	330.0	1.00989	1.03798	1.05097	1.03556	1.02380	1.04605	1.00207
	0.0	1.02365	1.05602	1.05059	1.04153	1.01793	1.04864	1.00240
	30.0	1.05079	1.03962	1.05361	1.05505	1.10060	1.06388	1.01868
	60.0	1.03329	1.05229	1.04864	1.05118	1.06844	1.06012	1.00116
-0.0522	270.0	1.03351	1.06945	1.06854	1.05313	1.05630	1.07150	1.04289
	300.0	1.02061	1.05477	1.05826	1.05528	1.04605	1.04212	0.96324
	330.0	1.02522	1.04022	1.05712	1.04198	1.05100	0.95823	0.94674
	0.0	1.02176	1.05423	1.05327	1.05183	1.04857	0.96714	0.93551
	30.0	1.05413	1.04313	1.05133	1.05597	1.12862	1.00506	0.95648
	60.0	1.04315	1.05693	1.05109	1.05484	1.06950	1.04454	0.97282
-0.1043	270.0	1.03410	1.06547	1.06775	1.05441	1.05203	1.07324	1.05733
	300.0	1.02000	1.05766	1.06230	1.05890	1.04943	1.02512	0.96972
	330.0	1.02134	1.04350	1.05933	1.08888	1.02053	0.90138	0.91302
	0.0	1.01530	1.05548	1.07018	1.10907	0.96885	0.88752	0.90790
	30.0	1.04968	1.04892	1.06018	1.09171	1.07433	0.91806	0.92900
	60.0	1.04425	1.06365	1.05498	1.05455	1.07182	1.02257	0.96505

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	1.03198	1.06471	1.06625	1.05582	1.05375	1.07325	1.06611
	300.0	1.02213	1.06013	1.06763	1.05616	1.04431	1.04851	0.99833
	330.0	1.01481	1.05362	1.09132	1.10301	0.93624	0.88141	0.91142
	0.0	1.00152	1.05410	1.26383	0.98525	0.83365	0.88511	0.92675
	30.0	1.03796	1.05041	1.11930	1.11191	0.97610	0.88991	0.91458
	60.0	1.04495	1.06525	1.05766	1.05322	1.06702	1.02821	0.97267
-0.2087	270.0	1.03291	1.06739	1.06662	1.05537	1.05178	1.06864	1.06235
	300.0	1.02252	1.06697	1.07098	1.05719	1.04213	1.05605	1.02225
	330.0	1.01399	1.07322	1.12566	1.02721	0.90160	0.90677	0.94570
	0.0	0.97598	1.31445	1.00638	0.78215	0.81772	0.91578	0.96261
	30.0	1.03231	1.06751	1.17007	1.07007	0.94447	0.88609	0.92308
	60.0	1.04475	1.07022	1.06105	1.05695	1.06307	1.03481	1.01641
-0.2609	270.0	1.03414	1.06670	1.06376	1.05329	1.05103	1.07146	1.05951
	300.0	1.02379	1.07069	1.06895	1.05289	1.03725	1.06153	1.03797
	330.0	1.01273	1.10846	1.11376	1.00670	0.95064	0.97323	0.99419
	0.0	0.93042	1.23127	0.71323	0.80419	0.85929	0.94826	0.97431
	30.0	1.02779	1.09654	1.12890	1.04997	0.96587	0.94090	0.96009
	60.0	1.05169	1.07120	1.06258	1.05688	1.05818	1.04219	1.04918
-0.3130	270.0	1.03489	1.06566	1.05734	1.05130	1.05308	1.06608	1.06567
	300.0	1.02840	1.07351	1.08401	1.05151	1.03619	1.06275	1.04156
	330.0	1.02402	1.14422	1.08974	1.04016	1.00482	1.03039	1.03078
	0.0	0.83204	0.63518	0.81840	0.85041	0.88282	0.96403	0.97493
	30.0	1.03676	1.12705	1.09663	1.07039	1.04834	1.01938	1.02372
	60.0	1.05539	1.07393	1.06325	1.05535	1.05686	1.03696	1.05406
-0.3652	270.0	1.03850	1.06780	1.06006	1.05594	1.05038	1.06906	1.06097
	300.0	1.03425	1.07549	1.06940	1.04942	1.03553	1.05712	1.04196
	330.0	1.04544	1.15117	1.08182	1.04296	1.01614	1.04487	1.04968
	0.0	0.69838	0.84342	0.83674	0.87703	0.87399	0.95080	0.95305
	30.0	1.06185	1.13680	1.08538	1.06402	1.07506	1.05509	1.06256
	60.0	1.05639	1.07267	1.05829	1.05230	1.05585	1.03620	1.05951
-0.4174	270.0	1.03848	1.06557	1.06075	1.05508	1.05024	1.06688	1.05824
	300.0	1.03544	1.07480	1.06969	1.05118	1.03619	1.06237	1.03464
	330.0	1.06324	1.14574	1.06896	1.03844	1.01268	1.04117	1.03922
	0.0	2.04119	0.79824	0.70472	0.88135	0.84854	0.90287	0.90879
	30.0	1.08836	1.13239	1.07902	1.05648	1.07771	1.06230	1.06280
	60.0	1.05877	1.07208	1.05962	1.05417	1.05566	1.03814	1.06004

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_0$

TABLE III (Continued)

R/D	THETA	x/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00817	0.01018	0.00653	0.00821	0.00621	0.00848	0.00958
	300.0	0.00789	0.00837	0.00717	0.00755	0.00570	0.00888	0.00755
	330.0	0.01264	0.00712	0.00714	0.00685	0.00771	0.00775	0.00805
	0.0	0.03303	0.03033	0.02935	0.02695	0.02628	0.02487	0.03021
	30.0	0.00657	0.00645	0.00800	0.00691	0.00987	0.00754	0.00894
	60.0	0.01074	0.00604	0.00753	0.00625	0.00665	0.00624	0.00726
0.3652	270.0	0.00626	0.01174	0.00700	0.00627	0.00816	0.00826	0.00853
	300.0	0.00621	0.00819	0.00511	0.00714	0.00680	0.00886	0.00904
	330.0	0.01265	0.00733	0.00714	0.00836	0.01040	0.01570	0.01409
	0.0	0.03559	0.03299	0.03011	0.02867	0.02673	0.02937	0.02673
	30.0	0.00614	0.00793	0.00957	0.00869	0.01058	0.01482	0.02049
	60.0	0.00776	0.00519	0.00714	0.00693	0.00647	0.00819	0.00747
0.3130	270.0	0.00800	0.00609	0.00655	0.00740	0.00756	0.01245	0.01290
	300.0	0.00622	0.00777	0.00632	0.00673	0.00869	0.00800	0.01014
	330.0	0.01480	0.00949	0.01127	0.01392	0.02096	0.02511	0.02327
	0.0	0.04464	0.04003	0.03604	0.03372	0.03057	0.02693	0.02434
	30.0	0.01054	0.01398	0.02377	0.01452	0.01824	0.02311	0.02583
	60.0	0.00341	0.00588	0.00543	0.00606	0.00841	0.00603	0.00858
0.2609	270.0	0.00691	0.00916	0.00765	0.00785	0.00755	0.02079	0.02540
	300.0	0.00706	0.00736	0.00961	0.00954	0.00703	0.01085	0.01124
	330.0	0.01543	0.01231	0.01519	0.02019	0.02302	0.02181	0.02177
	0.0	0.04202	0.03997	0.03663	0.03233	0.02702	0.02325	0.02294
	30.0	0.02028	0.02358	0.03023	0.02393	0.02011	0.02318	0.02213
	60.0	0.00712	0.00674	0.00807	0.00566	0.00693	0.00797	0.01167
0.2087	270.0	0.00711	0.00721	0.00700	0.00830	0.01168	0.03763	0.04071
	300.0	0.00686	0.00802	0.00831	0.00631	0.00831	0.01194	0.02099
	330.0	0.01928	0.01399	0.01711	0.01838	0.01868	0.02117	0.02118
	0.0	0.03470	0.03174	0.03005	0.02528	0.02213	0.01833	0.01897
	30.0	0.02109	0.02353	0.02544	0.01988	0.01515	0.01529	0.01664
	60.0	0.00954	0.00676	0.00786	0.00695	0.00671	0.01098	0.01913

k) $u'_{rms}/\bar{u} \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00671	0.00[illegible]63	0.00677	0.01068	0.01882	0.06395	0.05908
	300.0	0.00705	0.00717	0.00809	0.00696	0.00960	0.02349	0.03807
	330.0	0.02416	0.02189	0.02308	0.02326	0.01931	0.02030	0.02423
	0.0	0.03161	0.02706	0.02447	0.01980	0.01588	0.01500	0.02359
	30.0	0.02392	0.02269	0.02265	0.01627	0.01425	0.01444	0.02412
	60.0	0.00716	0.00676	0.00655	0.00782	0.00997	0.01361	0.03270
0.1043	270.0	0.00757	0.00761	0.01047	0.01504	0.02620	0.08337	0.07746
	300.0	0.00792	0.00566	0.00722	0.01065	0.01407	0.04460	0.05679
	330.0	0.01938	0.01288	0.01129	0.01011	0.01260	0.03858	0.04007
	0.0	0.01775	0.01466	0.01300	0.01162	0.01099	0.02789	0.04493
	30.0	0.02376	0.01865	0.01388	0.01412	0.01314	0.02956	0.04601
	60.0	0.00888	0.00783	0.00784	0.00891	0.01580	0.03934	0.06060
0.0522	270.0	0.00733	0.00633	0.00917	0.01936	0.03793	0.09089	0.08855
	300.0	0.00684	0.00717	0.00787	0.01541	0.02458	0.06873	0.07630
	330.0	0.00811	0.00733	0.00717	0.01012	0.03103	0.06964	0.06440
	0.0	0.00922	0.00950	0.00930	0.01103	0.02326	0.05722	0.06979
	30.0	0.01131	0.00943	0.01031	0.01211	0.02635	0.05588	0.06833
	60.0	0.00864	0.00758	0.00826	0.01129	0.02555	0.06193	0.07988
0.0000	270.0	0.01051	0.00935	0.00956	0.02073	0.04548	0.09366	0.08823
	300.0	0.00764	0.00908	0.01091	0.02789	0.04672	0.09208	0.08436
	330.0	0.00872	0.00710	0.01000	0.01986	0.06893	0.10264	0.09275
	0.0	0.00687	0.00825	0.01001	0.01728	0.05442	0.09421	0.09969
	30.0	0.00864	0.00667	0.00984	0.01990	0.06521	0.08674	0.09445
	60.0	0.00749	0.00693	0.00912	0.01565	0.05397	0.08246	0.09635
-0.0522	270.0	0.00691	0.00655	0.00765	0.01942	0.03984	0.07889	0.08312
	300.0	0.00706	0.00781	0.01159	0.04092	0.07137	0.10788	0.10156
	330.0	0.00897	0.00733	0.01652	0.05592	0.11414	0.13173	0.10576
	0.0	0.00686	0.00760	0.02129	0.06252	0.11303	0.12773	0.10451
	30.0	0.00736	0.00795	0.01984	0.05120	0.11908	0.12495	0.10708
	60.0	0.00626	0.00760	0.01237	0.02285	0.07113	0.09900	0.10676
-0.1043	270.0	0.00712	0.00784	0.00830	0.01420	0.02826	0.05977	0.06499
	300.0	0.00684	0.00889	0.01231	0.05652	0.07669	0.11168	0.10121
	330.0	0.00704	0.01034	0.04315	0.11348	0.15728	0.13139	0.10741
	0.0	0.00662	0.01174	0.09266	0.14519	0.16407	0.12709	0.10021
	30.0	0.00690	0.00822	0.06195	0.11009	0.15853	0.13502	0.10432
	60.0	0.00733	0.00761	0.01439	0.03041	0.07667	0.10530	0.10468

k) $u'_{rms}/\bar{u} \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00647	0.00870	0.00808	0.01050	0.01746	0.03332	0.04685
	300.0	0.00599	0.01023	0.01146	0.05419	0.07107	0.09645	0.08730
	330.0	0.00680	0.01409	0.09590	0.16271	0.17309	0.13161	0.10404
	0.0	0.00718	0.03982	0.24016	0.21276	0.16229	0.11273	0.09899
	30.0	0.00749	0.01357	0.14261	0.15457	0.18114	0.12738	0.10100
	60.0	0.00710	0.00742	0.01374	0.02610	0.06776	0.09482	0.10048
-0.2087	270.0	0.00691	0.00589	0.00588	0.00874	0.01183	0.01761	0.02768
	300.0	0.00642	0.00787	0.00862	0.03171	0.05090	0.07082	0.07259
	330.0	0.00743	0.02429	0.13790	0.18003	0.17015	0.12591	0.09919
	0.0	0.00853	0.33879	0.30918	0.18591	0.13966	0.11031	0.09532
	30.0	0.00852	0.02235	0.21941	0.17915	0.18875	0.12686	0.10260
	60.0	0.00711	0.00612	0.01377	0.01899	0.05124	0.07874	0.08453
-0.2609	270.0	0.00691	0.00743	0.00720	0.00720	0.00754	0.01066	0.01517
	300.0	0.00793	0.00702	0.00971	0.01878	0.02854	0.04175	0.04551
	330.0	0.00614	0.03678	0.12800	0.16576	0.14730	0.10790	0.08286
	0.0	0.00745	0.50450	0.23720	0.16473	0.13719	0.10289	0.09067
	30.0	0.00956	0.03012	0.23228	0.15952	0.16734	0.12531	0.09868
	60.0	0.00648	0.00919	0.00921	0.01244	0.03085	0.05403	0.05876
-0.3130	270.0	0.00777	0.00742	0.00696	0.00655	0.00818	0.00998	0.00894
	300.0	0.00730	0.00855	0.00839	0.01072	0.01428	0.02235	0.02701
	330.0	0.00596	0.03171	0.07829	0.10915	0.09565	0.06275	0.05714
	0.0	0.01570	0.28154	0.21733	0.15733	0.12625	0.10060	0.08148
	30.0	0.00681	0.02918	0.18067	0.10622	0.11281	0.09267	0.07356
	60.0	0.00738	0.00813	0.00766	0.00983	0.01656	0.02918	0.03661
-0.3652	270.0	0.00648	0.00655	0.00697	0.00[illegible]39	0.00817	0.00675	0.00956
	300.0	0.00710	0.01143	0.00684	0.00892	0.00892	0.01235	0.01323
	330.0	0.00692	0.01749	0.02890	0.04754	0.04307	0.03483	0.03388
	0.0	0.28121	0.27134	0.18536	0.14407	0.12110	0.09773	0.08205
	30.0	0.00780	0.01875	0.09173	0.05193	0.05129	0.04591	0.04151
	60.0	0.00628	0.00745	0.00810	0.00807	0.01015	0.01641	0.02089
-0.4174	270.0	0.00583	0.00655	0.00567	0.00765	0.00709	0.00762	0.00676
	300.0	0.00667	0.00615	0.00728	0.00785	0.00787	0.00955	0.00954
	330.0	0.00722	0.01006	0.01447	0.01975	0.02043	0.03260	0.03903
	0.0	0.09676	0.28249	0.18802	0.15368	0.12495	0.10480	0.09040
	30.0	0.00771	0.01206	0.03530	0.02078	0.02749	0.02517	0.02451
	60.0	0.00717	0.00834	0.00898	0.00655	0.00928	0.01152	0.01295

k) $u'_{rms}/\overline{u} \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00010	0.00011	0.00013	0.00006	0.00011	0.00005	0.00008
	300.0	0.00005	0.00012	0.00003	0.00004	0.00004	0.00009	0.00009
	330.0	0.00016	0.00008	0.00003	0.00004	0.00013	0.00007	0.00010
	0.0	0.00143	0.00109	0.00129	0.00147	0.00124	0.00082	0.00101
	30.0	0.00005	0.00005	0.00005	0.00014	0.00019	0.00010	0.00011
	60.0	0.00008	0.00015	0.00007	0.00011	0.00005	0.00004	0.00005
0.3652	270.0	0.00006	0.00042	0.00003	0.00014	0.00008	0.00011	0.00011
	300.0	0.00012	0.00005	0.00011	0.00007	0.00005	0.00015	0.00014
	330.0	0.00019	0.00007	0.00004	0.00007	0.00009	0.00022	0.00030
	0.0	0.00202	0.00127	0.00208	0.00080	0.00070	0.00088	0.00052
	30.0	0.00007	0.00007	0.00010	0.00006	0.00008	0.00027	0.00046
	60.0	0.00023	0.00004	0.00017	0.00009	0.00007	0.00005	0.00017
0.3130	270.0	0.00006	0.00011	0.00007	0.00008	0.00007	0.00042	0.00029
	300.0	0.00008	0.00006	0.00004	0.00005	0.00036	0.00014	0.00006
	330.0	0.00050	0.00015	0.00032	0.00036	0.00052	0.00056	0.00063
	0.0	0.00176	0.00160	0.00140	0.00116	0.00092	0.00078	0.00077
	30.0	0.00017	0.00020	0.00106	0.00028	0.00050	0.00045	0.00089
	60.0	0.00006	0.00013	0.00008	0.00004	0.00009	0.00003	0.00012
0.2609	270.0	0.00004	0.00013	0.00006	0.00010	0.00022	0.00043	0.00124
	300.0	0.00004	0.00013	0.00006	0.00003	0.00004	0.00015	0.00019
	330.0	0.00036	0.00030	0.00024	0.00062	0.00055	0.00042	0.00053
	0.0	0.00158	0.00163	0.00122	0.00094	0.00091	0.00046	0.00059
	30.0	0.00046	0.00111	0.00088	0.00061	0.00051	0.00061	0.00038
	60.0	0.00005	0.00005	0.00007	0.00005	0.00003	0.00014	0.00011
0.2087	270.0	0.00008	0.00010	0.00004	0.00007	0.00014	0.00248	0.00193
	300.0	0.00004	0.00008	0.00005	0.00005	0.00007	0.00013	0.00036
	330.0	0.00073	0.00032	0.00023	0.00033	0.00036	0.00039	0.00051
	0.0	0.00176	0.00150	0.00102	0.00071	0.00050	0.00040	0.00033
	30.0	0.00056	0.00070	0.00064	0.00042	0.00043	0.00030	0.00020
	60.0	0.00024	0.00008	0.00010	0.00011	0.00011	0.00007	0.00041

1) $\frac{1}{2}({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

TABLE III (Continued)

R/D	THETA	x/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00007	0.00017	0.00013	0.00018	0.00052	0.00186	0.00213
	300.0	0.00011	0.00008	0.00024	0.00582	0.00580	0.00933	0.00867
	330.0	0.00008	0.00030	0.01228	0.02847	0.02988	0.01694	0.01112
	0.0	0.00010	0.00248	0.05530	0.03653	0.02109	0.01344	0.01095
	30.0	0.00006	0.00016	0.01892	0.02178	0.03031	0.01666	0.01437
	60.0	0.00004	0.00007	0.00021	0.00157	0.00709	0.01078	0.01233
-0.2087	270.0	0.00003	0.00007	0.00006	0.00010	0.00016	0.00048	0.00120
	300.0	0.00007	0.00011	0.00015	0.00319	0.00298	0.00839	0.00574
	330.0	0.00016	0.00074	0.02914	0.03605	0.03136	0.01731	0.01053
	0.0	0.00013	0.14638	0.07853	0.03376	0.02323	0.01523	0.00929
	30.0	0.00008	0.00061	0.04943	0.03745	0.03307	0.01758	0.01107
	60.0	0.00008	0.00008	0.00031	0.00049	0.00359	0.00586	0.00917
-0.2609	270.0	0.00006	0.00004	0.00017	0.00007	0.00009	0.00015	0.00027
	300.0	0.00013	0.00006	0.00013	0.00070	0.00092	0.00209	0.00225
	330.0	0.00007	0.00184	0.02807	0.02942	0.02139	0.01480	0.00761
	0.0	0.00013	0.17826	0.05327	0.02824	0.02373	0.01639	0.01024
	30.0	0.00009	0.00118	0.04755	0.03058	0.03040	0.01570	0.01234
	60.0	0.00022	0.00008	0.00010	0.00032	0.00114	0.00262	0.00522
-0.3130	270.0	0.00016	0.00008	0.00009	0.00006	0.00007	0.00013	0.00007
	300.0	0.00009	0.00005	0.00010	0.00018	0.00036	0.00064	0.00097
	330.0	0.00004	0.00101	0.01259	0.02003	0.01132	0.00633	0.00315
	0.0	0.00028	0.21548	0.05344	0.03401	0.02171	0.01275	0.00955
	30.0	0.00010	0.00111	0.03336	0.01246	0.01727	0.00950	0.00638
	60.0	0.00012	0.00005	0.00005	0.00012	0.00037	0.00078	0.00175
-0.3652	270.0	0.00003	0.00005	0.00020	0.00007	0.00012	0.00021	0.00021
	300.0	0.00004	0.00016	0.00016	0.00011	0.00014	0.00016	0.00019
	330.0	0.00010	0.00040	0.00199	0.00401	0.00203	0.00153	0.00148
	0.0	0.05867	0.23154	0.04621	0.03221	0.02094	0.01147	0.00957
	30.0	0.00010	0.00031	0.01023	0.00379	0.00442	0.00305	0.00225
	60.0	0.00007	0.00006	0.00007	0.00006	0.00008	0.00021	0.00065
-0.4174	270.0	0.00007	0.00016	0.00006	0.00008	0.00007	0.00004	0.00005
	300.0	0.00003	0.00008	0.00005	0.00006	0.00006	0.00008	0.00009
	330.0	0.00014	0.00013	0.00045	0.00062	0.00070	0.00171	0.00145
	0.0	0.08575	0.09437	0.03953	0.02529	0.01679	0.01132	0.00952
	30.0	0.00019	0.00017	0.00126	0.00063	0.00062	0.00049	0.00062
	60.0	0.00007	0.00004	0.00008	0.00007	0.00006	0.00009	0.00031

1) $\frac{1}{2}(u'^{2}_{rms} + v'^{2}_{rms} + w'^{2}_{rms}) \times 2$

TABLE III (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00004	0.00011	0.00009	0.00015	0.00039	0.00454	0.00389
	300.0	0.00007	0.00008	0.00006	0.00011	0.00011	0.00056	0.00186
	330.0	0.00074	0.00077	0.00060	0.00049	0.00055	0.00044	0.00063
	0.0	0.00104	0.00090	0.00138	0.00062	0.00038	0.00022	0.00078
	30.0	0.00070	0.00083	0.00069	0.00057	0.00026	0.00035	0.00054
	60.0	0.00005	0.00012	0.00006	0.00005	0.00008	0.00032	0.00138
0.1043	270.0	0.00008	0.00007	0.00022	0.00033	0.00102	0.00810	0.00854
	300.0	0.00005	0.00009	0.00006	0.00011	0.00040	0.00273	0.00344
	330.0	0.00090	0.00027	0.00028	0.00010	0.00024	0.00132	0.00205
	0.0	0.00038	0.00032	0.00019	0.00018	0.00016	0.00087	0.00188
	30.0	0.00079	0.00065	0.00026	0.00017	0.00019	0.00131	0.00289
	60.0	0.00008	0.00008	0.00010	0.00020	0.00026	0.00135	0.00504
0.0522	270.0	0.00012	0.00007	0.00022	0.00064	0.00231	0.01256	0.01066
	300.0	0.00018	0.00020	0.00007	0.00031	0.00088	0.00669	0.00692
	330.0	0.00006	0.00009	0.00005	0.00017	0.00083	0.00486	0.00457
	0.0	0.00011	0.00008	0.00008	0.00009	0.00058	0.00325	0.00500
	30.0	0.00017	0.00016	0.00016	0.00014	0.00144	0.00443	0.00474
	60.0	0.00007	0.00005	0.00006	0.00016	0.00119	0.00370	0.00806
0.0000	270.0	0.00019	0.00010	0.00014	0.00092	0.00321	0.01217	0.01062
	300.0	0.00006	0.00009	0.00015	0.00137	0.00293	0.00950	0.01154
	330.0	0.00011	0.00015	0.00007	0.00048	0.00607	0.00984	0.00715
	0.0	0.00010	0.00007	0.00008	0.00041	0.00451	0.00809	0.00805
	30.0	0.00010	0.00008	0.00015	0.00056	0.00489	0.00938	0.01048
	60.0	0.00006	0.00006	0.00007	0.00036	0.00382	0.00731	0.01238
-0.0522	270.0	0.00007	0.00010	0.00010	0.00118	0.00293	0.00947	0.00880
	300.0	0.00006	0.00005	0.00027	0.00477	0.00687	0.01180	0.01174
	330.0	0.00013	0.00012	0.00041	0.00528	0.01431	0.01854	0.01124
	0.0	0.00015	0.00005	0.00040	0.00460	0.01483	0.01493	0.01077
	30.0	0.00009	0.00008	0.00046	0.00424	0.01405	0.01409	0.01123
	60.0	0.00007	0.00006	0.00016	0.00095	0.00905	0.01044	0.01269
-0.1043	270.0	0.00004	0.00014	0.00013	0.00040	0.00108	0.00490	0.00566
	300.0	0.00013	0.00008	0.00026	0.00643	0.00765	0.01439	0.01021
	330.0	0.00012	0.00019	0.00439	0.01555	0.02334	0.01708	0.01147
	0.0	0.00003	0.00021	0.00967	0.02103	0.02467	0.01449	0.01022
	30.0	0.00004	0.00011	0.00487	0.01224	0.02851	0.01830	0.01153
	60.0	0.00007	0.00005	0.00033	0.00164	0.00794	0.01269	0.01292

1) $\frac{1}{2}({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

TABLE IV

TIME-MEAN AND TURBULENCE DATA FOR JET TO CROSSFLOW VELOCITY RATIO R = 4.0

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.95880	1.09178	1.09653	1.10054	1.10639	1.09856	1.08114
	300.0	0.94650	1.04387	1.04615	1.07648	1.09209	1.09478	1.07571
	330.0	0.92804	1.02926	1.01388	1.06209	1.08758	1.08793	1.08127
	0.0	0.93355	0.96755	0.95024	1.00361	1.03239	1.03997	1.05513
	30.0	0.92895	1.02435	1.00784	1.06199	1.08627	1.08420	1.08127
	60.0	1.02374	1.03716	1.04393	1.08871	1.09853	1.08830	1.08660
0.3652	270.0	0.96205	1.09620	1.10896	1.11685	1.11744	1.10798	1.09106
	300.0	0.95178	1.04757	1.05776	1.09050	1.09842	1.10887	1.09324
	330.0	0.82450	1.03146	1.02348	1.06074	1.07841	1.07883	1.09528
	0.0	0.76093	0.96307	0.95712	0.96828	1.04459	1.07779	1.10596
	30.0	0.82430	1.02727	1.01022	1.06644	1.08009	1.08223	1.09768
	60.0	1.01145	1.04133	1.05219	1.09999	1.11231	1.10478	1.10601
0.3130	270.0	0.96280	1.09728	1.12457	1.12205	1.11666	1.12870	1.08761
	300.0	0.94332	1.04579	1.06113	1.09636	1.11102	1.12528	1.09548
	330.0	0.83194	1.03528	1.01116	1.04578	1.08388	1.09559	1.09508
	0.0	0.72123	0.90876	0.91157	1.00347	1.15438	1.14190	1.13639
	30.0	0.82721	1.02334	0.99220	1.06467	1.09900	1.12595	1.11306
	60.0	0.92540	1.04173	1.05858	1.10404	1.11502	1.13232	1.10838
0.2609	270.0	0.95857	1.09435	1.12764	1.13448	1.12786	1.11206	1.05153
	300.0	0.94703	1.04251	1.06549	1.11097	1.14803	1.15071	1.05986
	330.0	0.82788	1.02593	1.00570	1.09370	1.18009	1.15160	1.08566
	0.0	0.71893	0.94130	0.94846	1.16792	1.34124	1.19367	1.09203
	30.0	0.82575	1.00749	0.99013	1.13577	1.24208	1.17559	1.07554
	60.0	0.89429	1.04070	1.06540	1.13335	1.15209	1.15283	1.07308
0.2087	270.0	0.94203	1.08296	1.15832	1.14902	1.09333	1.04484	1.00387
	300.0	0.94082	1.02642	1.07184	1.17760	1.17386	1.10272	0.98148
	330.0	0.79590	1.01813	1.02747	1.30950	1.28769	1.17061	1.00768
	0.0	0.72528	0.95388	0.98543	1.43573	1.41453	1.14830	1.00294
	30.0	0.82173	1.00592	1.01098	1.29829	1.31381	1.10451	0.99428
	60.0	0.75618	1.03071	1.06983	1.23849	1.18283	1.08079	0.97400

a) $\overline{u}/u_0$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.92504	1.06369	1.21634	1.07674	0.97895	0.94093	0.96059
	300.0	0.93150	1.01517	1.18859	1.26946	1.09987	0.98787	0.94162
	330.0	0.77615	0.99708	1.17021	1.45034	1.20435	1.06081	0.93691
	0.0	0.75420	0.97023	1.13479	1.52192	1.22371	0.98923	0.95362
	30.0	0.81244	0.98378	1.16036	1.44823	1.17514	0.98580	0.93379
	60.0	0.67853	1.01005	1.12965	1.25396	1.10603	0.95739	0.91032
0.1043	270.0	0.90866	1.00200	1.34977	0.90679	0.81560	0.87808	0.94793
	300.0	0.91641	0.97168	1.47808	1.12673	0.87292	0.89251	0.91726
	330.0	0.75971	0.98669	1.59395	1.23626	0.93616	0.94127	0.92566
	0.0	0.76662	0.96906	1.46117	1.30117	0.94333	0.92300	0.93235
	30.0	0.80933	0.97008	1.49201	1.19397	0.88437	0.87233	0.91247
	60.0	0.63309	0.97805	1.43182	1.04800	0.85962	0.87079	0.90639
0.0522	270.0	0.88882	0.99878	1.29186	0.70812	0.69948	0.89328	0.96608
	300.0	0.87974	0.98420	1.41187	0.82744	0.73624	0.86622	0.94391
	330.0	0.76320	0.95882	1.60020	0.86279	0.76313	0.87738	0.94567
	0.0	0.77997	0.94365	1.68497	0.85473	0.75779	0.87272	0.93414
	30.0	0.81037	0.96072	1.56692	0.86788	0.74034	0.86868	0.93050
	60.0	0.58911	0.97036	1.52543	0.77602	0.71464	0.84688	0.94699
0.0000	270.0	0.87428	1.01165	1.27701	0.66838	0.68027	0.90641	0.98903
	300.0	0.89450	1.12829	1.12909	0.67311	0.69492	0.91196	0.98065
	330.0	0.76148	1.06675	1.13842	0.64112	0.72946	0.88322	0.97309
	0.0	0.77571	1.40065	1.22996	0.63940	0.70525	0.89506	0.96023
	30.0	0.78459	1.28307	1.07337	0.64113	0.70235	0.88603	0.95078
	60.0	0.92316	1.10623	1.35341	0.62797	0.69314	0.86644	0.96178
-0.0522	270.0	0.88535	1.03112	1.28666	0.73914	0.70847	0.90457	0.98426
	300.0	0.89174	1.33072	0.85089	0.64072	0.69359	0.93024	0.99278
	330.0	0.74156	1.64732	0.67412	0.60656	0.70483	0.89779	0.99139
	0.0	0.74237	2.10185	0.66823	0.61012	0.74252	0.92769	0.97072
	30.0	0.76723	1.99336	0.66439	0.55789	0.72711	0.90385	0.94601
	60.0	0.91900	1.27355	1.03055	0.63007	0.68111	0.88325	0.95233
-0.1043	270.0	0.89611	1.04665	1.30112	0.93014	0.79717	0.89190	0.94528
	300.0	0.89428	1.07166	0.95218	0.65344	0.74958	0.90536	0.98992
	330.0	0.70918	1.75710	0.43182	0.61660	0.77271	0.93276	1.01561
	0.0	0.70211	1.31891	0.40430	0.66128	0.81333	0.93492	0.99604
	30.0	0.75205	1.72909	0.42920	0.57645	0.76880	0.92621	0.96290
	60.0	0.93415	1.20512	0.95327	0.69934	0.73911	0.85937	0.96515

a) $\overline{u}/u_0$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.91471	1.07268	1.20365	1.14138	0.94791	0.90841	0.95467
	300.0	0.91652	1.14583	1.06316	0.84221	0.84420	0.93249	0.99886
	330.0	0.68064	1.03522	0.41460	0.64828	0.84904	0.95755	1.00649
	0.0	0.63523	0.29344	0.41940	0.76541	0.86576	0.96442	1.00610
	30.0	0.74516	0.97501	0.37196	0.62077	0.76739	0.97142	0.97274
	60.0	0.95992	1.11774	1.01564	0.90068	0.83595	0.89377	0.94723
-0.2087	270.0	0.93215	1.08959	1.11711	1.12957	1.08788	1.00947	0.98626
	300.0	0.93834	1.17002	1.10511	1.00469	0.94671	0.98235	1.01728
	330.0	0.66466	0.94098	0.60439	0.82944	0.93364	1.00937	1.01215
	0.0	0.53054	0.95518	0.56907	0.79372	0.91201	0.98399	1.00834
	30.0	0.75990	0.79547	0.58835	0.67308	0.86232	0.99875	1.00180
	60.0	0.98364	1.15050	1.12833	1.03105	0.96146	0.95398	0.98010
-0.2609	270.0	0.94630	1.08985	1.11053	1.11742	1.11652	1.08115	1.03609
	300.0	0.96143	1.16223	1.10576	1.10532	1.08038	1.01735	1.05184
	330.0	0.65430	1.15432	0.85617	0.95206	1.04158	1.02902	1.05306
	0.0	0.52476	6.64599	0.60957	0.87034	0.90482	0.99657	1.01404
	30.0	0.77530	1.07363	0.87810	0.92623	0.98452	1.01346	1.01042
	60.0	1.00128	1.15500	1.10634	1.12133	1.06421	1.01985	1.00665
-0.3130	270.0	0.95785	1.09138	1.09921	1.11573	1.11260	1.11805	1.07508
	300.0	0.97426	1.15046	1.09867	1.10841	1.10127	1.08181	1.05067
	330.0	0.70620	1.24489	1.01644	1.04546	1.05676	1.06033	1.05547
	0.0	0.41069	0.57424	0.67729	0.88152	0.91841	0.99669	1.01420
	30.0	0.82636	1.23456	1.03518	1.06898	1.05930	1.05890	1.05771
	60.0	1.01632	1.15482	1.11008	1.12977	1.09825	1.07480	1.05125
-0.3652	270.0	0.96330	1.09036	1.09943	1.11187	1.11078	1.11357	1.09011
	300.0	0.98699	1.14467	1.09015	1.10755	1.11051	1.09263	1.07679
	330.0	0.79246	1.24334	1.06026	1.07454	1.06251	1.06044	1.03520
	0.0	1.24234	0.57723	0.69841	0.88767	0.96280	0.97798	1.00807
	30.0	0.88904	1.25361	1.07096	1.10041	1.08528	1.06981	1.07275
	60.0	1.03939	1.14511	1.10219	1.12582	1.11063	1.08956	1.07296
-0.4174	270.0	0.96365	1.08940	1.09507	1.11792	1.11246	1.10847	1.08870
	300.0	0.99101	1.13689	1.08930	1.10526	1.11052	1.10395	1.07689
	330.0	0.87658	1.22335	1.06150	1.07925	1.06538	1.05433	1.02603
	0.0	0.80599	0.35775	0.67389	0.86881	0.92540	0.97184	0.98182
	30.0	0.95818	1.23167	1.06352	1.10087	1.07191	1.07189	1.05205
	60.0	0.82505	1.14442	1.09986	1.12227	1.10501	1.09604	1.08082

a) $\overline{u} / u_0$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.22204	0.17147	0.18597	0.18982	0.13838	0.10652	0.16507
	300.0	0.19159	0.17451	0.13523	0.15953	0.15372	0.10808	0.14621
	330.0	0.27788	0.15160	0.10265	0.15441	0.13794	0.16116	0.14859
	0.0	0.25644	0.15162	0.15159	0.15722	0.12980	0.17425	0.19737
	30.0	0.27678	0.10903	0.14449	0.16903	0.15809	0.14870	0.15645
	60.0	0.14565	0.14944	0.12647	0.17890	0.14674	0.16990	0.13195
0.3652	270.0	0.20857	0.16591	0.16832	0.11766	0.09833	0.14080	0.16699
	300.0	0.18844	0.16428	0.12286	0.14876	0.15524	0.12234	0.16340
	330.0	0.18099	0.16267	0.09714	0.14266	0.10738	0.16478	0.16502
	0.0	0.19746	0.16810	0.15360	0.14817	0.17598	0.13049	0.19930
	30.0	0.19735	0.15453	0.14642	0.19269	0.12060	0.20514	0.16713
	60.0	0.15824	0.16229	0.12499	0.17006	0.13526	0.17079	0.14450
0.3130	270.0	0.21147	0.17082	0.14429	0.16168	0.14759	0.14720	0.16874
	300.0	0.17991	0.17945	0.12006	0.16382	0.14697	0.16686	0.14862
	330.0	0.18494	0.13373	0.12942	0.14183	0.20463	0.20221	0.23702
	0.0	0.27097	0.16305	0.14532	0.21204	0.26956	0.20027	0.19195
	30.0	0.19004	0.14444	0.14151	0.17819	0.18651	0.22047	0.20019
	60.0	0.19511	0.17793	0.13934	0.20148	0.15700	0.13773	0.17870
0.2609	270.0	0.20196	0.19725	0.15526	0.13571	0.14090	0.16161	0.23760
	300.0	0.18852	0.17379	0.14148	0.12098	0.19303	0.21576	0.17361
	330.0	0.19809	0.15973	0.13782	0.24051	0.27698	0.23654	0.15198
	0.0	0.18255	0.14511	0.17260	0.33693	0.39246	0.20744	0.19878
	30.0	0.18655	0.14854	0.13248	0.20694	0.24993	0.19354	0.17700
	60.0	0.17673	0.16470	0.13453	0.16478	0.15538	0.15518	0.18160
0.2087	270.0	0.20205	0.21242	0.22815	0.17986	0.22298	0.27326	0.19118
	300.0	0.19596	0.19664	0.20037	0.24719	0.25114	0.17783	0.24943
	330.0	0.25119	0.12107	0.19170	0.23740	0.35356	0.18830	0.19200
	0.0	0.21986	0.15658	0.15195	0.31319	0.39821	0.21647	0.21186
	30.0	0.17409	0.11608	0.19457	0.39211	0.35546	0.26899	0.24337
	60.0	0.13345	0.15074	0.14906	0.22710	0.26880	0.26259	0.20656

b) $\overline{v}/u_0$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.20962	0.27166	0.34279	0.33788	0.26300	0.20703	0.18775
	300.0	0.18181	0.17355	0.39159	0.33929	0.23451	0.22062	0.21064
	330.0	0.24546	0.16019	0.44592	0.42817	0.31662	0.27418	0.23804
	0.0	0.20905	0.16750	0.30038	0.49481	0.30574	0.24631	0.21351
	30.0	0.20222	0.12624	0.42394	0.42150	0.28870	0.16327	0.18959
	60.0	0.09210	0.19320	0.29156	0.32532	0.23210	0.27016	0.19905
0.1043	270.0	0.19695	0.36532	0.34176	0.26758	0.26888	0.19965	0.14707
	300.0	0.19067	0.21564	0.43595	0.33810	0.24997	0.24163	0.22725
	330.0	0.23301	0.20369	0.57236	0.45803	0.23112	0.25673	0.13904
	0.0	0.20990	0.15282	0.54977	0.38422	0.31453	0.24260	0.19012
	30.0	0.19224	0.14726	0.59608	0.33280	0.36341	0.23620	0.26449
	60.0	0.09616	0.21613	0.49339	0.28935	0.24893	0.23571	0.20939
0.0522	270.0	0.19898	0.47390	0.40391	0.29700	0.25102	0.15048	0.13949
	300.0	0.16250	0.32368	0.49219	0.30953	0.24445	0.24887	0.21388
	330.0	0.23773	0.27118	0.61476	0.30783	0.25909	0.20417	0.21819
	0.0	0.19172	0.20308	0.67071	0.37601	0.30029	0.26100	0.22298
	30.0	0.21160	0.26396	0.62150	0.29755	0.29433	0.27270	0.19767
	60.0	0.10837	0.29858	0.57384	0.29747	0.25060	0.21323	0.17216
0.0000	270.0	0.20468	0.59790	0.45448	0.26056	0.24138	0.12539	0.15407
	300.0	0.18222	0.49406	0.43613	0.29464	0.25887	0.20912	0.19351
	330.0	0.20890	0.59835	0.47135	0.35599	0.32836	0.26107	0.24838
	0.0	0.20564	0.97980	0.53911	0.30421	0.32656	0.30865	0.25340
	30.0	0.21443	0.72168	0.45892	0.31090	0.30014	0.25014	0.23808
	60.0	0.16390	0.49423	0.40867	0.28348	0.25286	0.17921	0.15304
-0.0522	270.0	0.19525	0.34601	0.43817	0.27872	0.23254	0.15337	0.12537
	300.0	0.18517	0.58019	0.40999	0.27278	0.25948	0.19429	0.20291
	330.0	0.21452	1.02465	0.35977	0.33687	0.40111	0.26116	0.24556
	0.0	0.23242	1.37209	0.38056	0.38907	0.44260	0.31021	0.33417
	30.0	0.26280	1.06573	0.36696	0.34111	0.28792	0.20987	0.28543
	60.0	0.15673	0.49896	0.46764	0.25756	0.25068	0.19384	0.15928
-0.1043	270.0	0.20423	0.23275	0.43560	0.24369	0.20937	0.16853	0.18453
	300.0	0.20759	0.78242	0.37718	0.29574	0.27754	0.30333	0.20530
	330.0	0.23956	1.06362	0.33408	0.32274	0.38540	0.25119	0.20238
	0.0	0.27707	0.77232	0.40828	0.48228	0.40586	0.33397	0.31786
	30.0	0.25888	1.02622	0.32777	0.30817	0.31096	0.26323	0.25345
	60.0	0.15254	0.59140	0.30590	0.32378	0.23523	0.19505	0.12781

b) $\bar{v}/u_o$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.20486	0.18394	0.27793	0.24690	0.29191	0.23297	0.19617
	300.0	0.19898	0.34201	0.27117	0.28809	0.25854	0.24202	0.23515
	330.0	0.22016	0.66590	0.35792	0.32537	0.39548	0.26971	0.28720
	0.0	0.29855	0.35691	0.51934	0.49186	0.38923	0.31529	0.24908
	30.0	0.19716	0.64628	0.34100	0.30966	0.28223	0.25938	0.25918
	60.0	0.15571	0.44610	0.33508	0.30769	0.27267	0.22483	0.19753
-0.2087	270.0	0.20245	0.14850	0.18373	0.24465	0.23942	0.17102	0.17459
	300.0	0.20049	0.23399	0.22795	0.21406	0.29086	0.17564	0.20132
	330.0	0.16512	0.54761	0.33249	0.23914	0.35004	0.25143	0.24935
	0.0	0.32684	0.41408	0.59896	0.48509	0.39403	0.28828	0.17337
	30.0	0.18150	0.50645	0.33811	0.40073	0.35079	0.24469	0.19888
	60.0	0.17795	0.23087	0.22167	0.22832	0.21109	0.24200	0.18101
-0.2609	270.0	0.21490	0.13126	0.11603	0.16538	0.15314	0.18117	0.17342
	300.0	0.20227	0.20301	0.14065	0.10149	0.17408	0.22012	0.13041
	330.0	0.24058	0.45103	0.20032	0.18632	0.22448	0.18263	0.16987
	0.0	0.31805	0.55649	0.59134	0.30046	0.30608	0.22935	0.19698
	30.0	0.22416	0.44047	0.27397	0.27197	0.21603	0.21813	0.21926
	60.0	0.15833	0.18332	0.14800	0.13127	0.18063	0.16928	0.18519
-0.3130	270.0	0.20923	0.13964	0.16761	0.15572	0.14346	0.09610	0.11741
	300.0	0.20844	0.18240	0.11190	0.13685	0.12482	0.11533	0.19985
	330.0	0.28601	0.29500	0.12846	0.09634	0.17639	0.16620	0.17811
	0.0	0.29056	0.80629	0.42232	0.28229	0.27013	0.18065	0.18294
	30.0	0.28542	0.32980	0.15895	0.17181	0.15750	0.15171	0.15112
	60.0	0.16479	0.14890	0.10625	0.13523	0.11986	0.12255	0.16752
-0.3652	270.0	0.21024	0.15671	0.11766	0.14965	0.15527	0.12816	0.18222
	300.0	0.20448	0.18334	0.12455	0.17508	0.13744	0.11266	0.12950
	330.0	0.31034	0.18313	0.08662	0.12900	0.20640	0.21441	0.21049
	0.0	0.97881	0.50834	0.34919	0.25582	0.23763	0.24203	0.18249
	30.0	0.33409	0.19404	0.11580	0.17317	0.13881	0.24044	0.14088
	60.0	0.13468	0.16584	0.12508	0.16460	0.15519	0.18145	0.13865
-0.4174	270.0	0.21716	0.16389	0.14178	0.15071	0.15165	0.10931	0.13209
	300.0	0.20413	0.18184	0.11611	0.15708	0.14019	0.10129	0.17133
	330.0	0.24695	0.12056	0.09371	0.15839	0.17907	0.12715	0.15878
	0.0	2.56654	0.45946	0.27976	0.23334	0.23124	0.16425	0.15434
	30.0	0.27194	0.21408	0.13927	0.16675	0.20313	0.14057	0.15416
	60.0	0.28294	0.14888	0.09014	0.18141	0.17683	0.15478	0.13658

b) $\overline{v} / u_0$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.01376	0.07672	0.06135	0.12995	0.12381	0.14902	0.16057
	300.0	0.01745	0.01517	0.09517	0.12907	0.10919	0.12606	0.16867
	330.0	0.07477	0.04199	0.10313	0.10221	0.09216	0.05920	0.10365
	0.0	0.04520	0.05031	0.01120	0.06541	0.02706	0.01744	0.01810
	30.0	0.07002	0.02298	0.01974	0.02428	0.06224	0.07072	0.05580
	60.0	0.07758	0.02902	0.07123	0.03961	0.08880	0.08672	0.06277
0.3652	270.0	0.01103	0.06566	0.07846	0.14883	0.12735	0.15813	0.16411
	300.0	0.00925	0.01557	0.10078	0.14141	0.12447	0.13333	0.15024
	330.0	0.45642	0.05122	0.11744	0.11910	0.11236	0.06247	0.09964
	0.0	0.42664	0.03450	0.02218	0.04477	0.03374	0.01833	0.02129
	30.0	0.41959	0.02946	0.02489	0.033[illegible]6	0.07707	0.06734	0.05156
	60.0	0.10961	0.02734	0.08167	0.05712	0.10439	0.08826	0.06764
0.3130	270.0	0.00843	0.06348	0.09086	0.17645	0.14675	0.16506	0.16837
	300.0	0.01656	0.01776	0.12924	0.15366	0.13034	0.12760	0.15993
	330.0	0.44361	0.04956	0.12840	0.13366	0.09845	0.04987	0.09039
	0.0	0.42079	0.02391	0.01921	0.04401	0.05101	0.02296	0.01657
	30.0	0.42343	0.03601	0.03232	0.03726	0.06711	0.05062	0.04502
	60.0	0.13422	0.03267	0.08577	0.07169	0.11930	0.08574	0.06306
0.2609	270.0	0.01306	0.04628	0.10769	0.18920	0.15622	0.15056	0.16305
	300.0	0.00585	0.01759	0.14743	0.16634	0.11471	0.10606	0.13357
	330.0	0.44190	0.04336	0.12573	0.12237	0.06217	0.03728	0.07023
	0.0	0.43852	0.02692	0.02009	0.04895	0.03862	0.01516	0.02045
	30.0	0.42135	0.02839	0.03265	0.03483	0.03205	0.03107	0.03721
	60.0	0.12002	0.02741	0.08798	0.07448	0.10302	0.06226	0.05931
0.2087	270.0	0.02256	0.03958	0.08723	0.11671	0.07201	0.12952	0.09078
	300.0	0.01329	0.02707	0.14274	0.10856	0.04898	0.08648	0.08234
	330.0	0.43271	0.02902	0.12376	0.07639	0.05276	0.02159	0.06097
	0.0	0.44618	0.01725	0.02186	0.08341	0.03105	0.02268	0.01225
	30.0	0.41966	0.02655	0.02144	0.09092	0.06014	0.02894	0.03046
	60.0	0.12416	0.01808	0.09944	0.04964	0.04606	0.03192	0.02886

c) $\overline{w}/u_0$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.04005	0.02177	0.15643	0.03797	0.03667	0.05374	0.03524
	300.0	0.02636	0.05319	0.05052	0.02439	0.02789	0.04182	0.04436
	330.0	0.42638	0.02617	0.05817	0.05139	0.07129	0.02452	0.02027
	0.0	0.45297	0.03424	0.01320	0.12574	0.03663	0.02138	0.02054
	30.0	0.40896	0.02095	0.06175	0.21645	0.07116	0.01829	0.02608
	60.0	0.09476	0.02380	0.02348	0.16282	0.04789	0.04454	0.06240
0.1043	270.0	0.06376	0.14396	0.39642	0.14215	0.12335	0.08505	0.07434
	300.0	0.04713	0.11691	0.28876	0.11715	0.10694	0.04004	0.04186
	330.0	0.45483	0.03102	0.15204	0.06335	0.08270	0.04620	0.00766
	0.0	0.46105	0.02461	0.02918	0.06607	0.03876	0.02488	0.01570
	30.0	0.40116	0.03132	0.25280	0.19417	0.09220	0.04940	0.06877
	60.0	0.09371	0.06567	0.28353	0.23281	0.10198	0.09061	0.14159
0.0522	270.0	0.08320	0.37358	0.49215	0.22629	0.22876	0.18823	0.14136
	300.0	0.05492	0.30341	0.38920	0.19524	0.21043	0.13639	0.11396
	330.0	0.47237	0.05382	0.15041	0.07156	0.09436	0.06472	0.03967
	0.0	0.46209	0.01660	0.04361	0.06663	0.05497	0.01599	0.01482
	30.0	0.38065	0.10528	0.28180	0.14862	0.10068	0.10430	0.11743
	60.0	0.07848	0.20452	0.37985	0.24424	0.17991	0.17983	0.22571
0.0000	270.0	0.08410	0.47062	0.52852	0.25998	0.27413	0.26142	0.18382
	300.0	0.06870	0.63047	0.33920	0.20404	0.25294	0.20354	0.12925
	330.0	0.45414	0.22252	0.13988	0.12673	0.15290	0.09856	0.05166
	0.0	0.45009	0.47367	0.03170	0.04576	0.02506	0.04262	0.05176
	30.0	0.37138	0.37926	0.23207	0.16919	0.15921	0.17451	0.14213
	60.0	0.15403	0.54196	0.36460	0.28108	0.25235	0.27014	0.25555
-0.0522	270.0	0.07978	0.26821	0.48093	0.21925	0.21827	0.25029	0.17398
	300.0	0.07872	0.76806	0.27554	0.23450	0.25578	0.21311	0.12793
	330.0	0.45952	0.49283	0.10815	0.17530	0.15783	0.14538	0.04487
	0.0	0.44373	0.06412	0.04167	0.05995	0.04560	0.04008	0.05214
	30.0	0.33955	0.63238	0.18072	0.24280	0.21060	0.17632	0.14098
	60.0	0.13950	0.63690	0.29840	0.26051	0.25277	0.27719	0.23668
-0.1043	270.0	0.06913	0.07180	0.36412	0.13313	0.10715	0.13929	0.09398
	300.0	0.07721	0.60051	0.20026	0.14417	0.12489	0.15194	0.04396
	330.0	0.47436	0.43666	0.16595	0.16412	0.05879	0.11647	0.02767
	0.0	0.42633	0.04532	0.05468	0.06508	0.05577	0.04207	0.06842
	30.0	0.30143	0.46067	0.22920	0.24007	0.19564	0.11961	0.10489
	60.0	0.16938	0.47358	0.19232	0.17575	0.17092	0.19913	0.14426

c) $\overline{w}/u_0$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.04900	0.02143	0.05128	0.01994	0.03299	0.0337[illegible]	0.01532
	300.0	0.07185	0.19444	0.03757	0.08901	0.08200	0.04933	0.05245
	330.0	0.50035	0.25507	0.10245	0.08061	0.07895	0.06680	0.13532
	0.0	0.40587	0.17325	0.07698	0.11466	0.08891	0.03578	0.02997
	30.0	0.27711	0.29769	0.16361	0.08933	0.11268	0.08128	0.07892
	60.0	0.16091	0.14454	0.11165	0.05058	0.04686	0.08330	0.06097
-0.2087	270.0	0.03396	0.04026	0.09695	0.13732	0.10472	0.05710	0.07911
	300.0	0.05548	0.03384	0.15373	0.16202	0.19539	0.05766	0.10484
	330.0	0.54108	0.16625	0.08040	0.15977	0.10348	0.03367	0.09463
	0.0	0.37443	0.82194	0.14061	0.04521	0.05727	0.02755	0.01878
	30.0	0.22482	0.17416	0.06644	0.09940	0.07512	0.01962	0.01351
	60.0	0.15530	0.03574	0.06624	0.07691	0.11069	0.02983	0.04858
-0.2609	270.0	0.02555	0.04911	0.08375	0.19076	0.16166	0.14787	0.13046
	300.0	0.03287	0.02868	0.24709	0.25391	0.19278	0.15798	0.15286
	330.0	0.57771	0.10418	0.30315	0.26385	0.15981	0.06358	0.08225
	0.0	0.38867	0.69601	0.06536	0.02111	0.02479	0.01214	0.01862
	30.0	0.18442	0.06965	0.21465	0.17707	0.12480	0.08425	0.05336
	60.0	0.12914	0.05579	0.19549	0.13471	0.16735	0.09208	0.06679
-0.3130	270.0	0.02045	0.06897	0.07989	0.16695	0.16015	0.16860	0.17572
	300.0	0.01926	0.04713	0.23053	0.24224	0.19580	0.19650	0.18218
	330.0	0.60646	0.29983	0.39996	0.27352	0.15100	0.08553	0.06512
	0.0	0.39818	0.45179	0.05832	0.02708	0.03030	0.02477	0.02023
	30.0	0.18102	0.26631	0.29653	0.18214	0.15505	0.11881	0.07476
	60.0	0.12017	0.08228	0.19700	0.12983	0.16055	0.12597	0.07151
-0.3652	270.0	0.01299	0.06630	0.06935	0.15141	0.14507	0.16701	0.18807
	300.0	0.01218	0.05360	0.21847	0.21780	0.15967	0.18732	0.17691
	330.0	0.60258	0.39267	0.34822	0.23680	0.14[illegible]	0.10099	0.06217
	0.0	0.79742	0.37588	0.06601	0.03542	0.040[illegible]	0.03569	0.02640
	30.0	0.25261	0.37084	0.24795	0.14451	0.15232	0.10895	0.06849
	60.0	0.09707	0.08008	0.17588	0.09994	0.14239	0.12439	0.08367
-0.4174	270.0	0.01448	0.06337	0.06654	0.14492	0.13684	0.16752	0.19101
	300.0	0.02052	0.05247	0.20519	0.20195	0.15410	0.17956	0.17837
	330.0	0.57131	0.32807	0.30288	0.23988	0.12698	0.08820	0.04291
	0.0	1.24634	0.21504	0.09436	0.04415	0.05916	0.04690	0.02545
	30.0	0.35825	0.33500	0.20427	0.11505	0.12164	0.10145	0.05800
	60.0	0.21923	0.06982	0.15885	0.08249	0.11647	0.10653	0.07107

c) $\overline{w}/u_0$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.01012	0.00914	0.01109	0.01656	0.02094	0.03177	0.04375
	300.0	0.00879	0.01316	0.01096	0.01709	0.01785	0.03289	0.04633
	330.0	0.00767	0.00936	0.01255	0.02163	0.03154	0.04715	0.07789
	0.0	0.02313	0.03501	0.03467	0.04517	0.05862	0.07156	0.09825
	30.0	0.00816	0.01071	0.01121	0.02385	0.03602	0.05737	0.09277
	60.0	0.01367	0.01352	0.00984	0.01922	0.01931	0.03629	0.06141
0.3652	270.0	0.00748	0.00989	0.01440	0.02193	0.02753	0.05155	0.05683
	300.0	0.00652	0.00887	0.01169	0.02180	0.02607	0.05743	0.07266
	330.0	0.00686	0.00989	0.01491	0.03780	0.06550	0.07062	0.10997
	0.0	0.03297	0.03829	0.03934	0.06489	0.10222	0.10266	0.12306
	30.0	0.00987	0.01220	0.02211	0.04070	0.06010	0.09796	0.11850
	60.0	0.00766	0.00863	0.01065	0.02259	0.02943	0.06327	0.08579
0.3130	270.0	0.00856	0.01002	0.01861	0.03850	0.05378	0.09175	0.10121
	300.0	0.00901	0.00890	0.01563	0.03034	0.04715	0.09910	0.11502
	330.0	0.00944	0.01394	0.03004	0.05999	0.11283	0.11396	0.13373
	0.0	0.04175	0.04286	0.04497	0.10919	0.18799	0.14926	0.14183
	30.0	0.01095	0.01967	0.03610	0.07964	0.10722	0.14876	0.14001
	60.0	0.01373	0.01029	0.01484	0.03630	0.05329	0.10479	0.12637
0.2609	270.0	0.00744	0.01285	0.03888	0.08713	0.10961	0.14263	0.14575
	300.0	0.00840	0.01176	0.03116	0.06998	0.12217	0.14739	0.15156
	330.0	0.01370	0.02120	0.04518	0.12925	0.17795	0.14304	0.15567
	0.0	0.03701	0.04099	0.05254	0.21811	0.23926	0.17397	0.16447
	30.0	0.01116	0.02778	0.04906	0.14660	0.20868	0.18238	0.16282
	60.0	0.02709	0.01087	0.02054	0.10508	0.12697	0.14865	0.15532
0.2087	270.0	0.00865	0.02416	0.13330	0.18152	0.19372	0.19455	0.17275
	300.0	0.00937	0.02120	0.08886	0.17681	0.18262	0.18426	0.17246
	330.0	0.02872	0.02384	0.11642	0.26228	0.23075	0.17673	0.16466
	0.0	0.03592	0.03528	0.10905	0.29270	0.25809	0.19731	0.16756
	30.0	0.01112	0.02881	0.10151	0.26442	0.24550	0.21532	0.17396
	60.0	0.08481	0.01647	0.06392	0.20969	0.19278	0.19583	0.16551

d) $u'_{rms}/u_o \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.03027	0.06609	0.27773	0.28318	0.24172	0.20057	[illegible]
	300.0	0.01070	0.03490	0.24063	0.27936	0.25548	0.21009	0.16768
	330.0	0.02949	0.03308	0.25058	0.30553	0.27226	0.21269	0.16613
	0.0	0.03487	0.03504	0.22711	0.30808	0.29533	0.21649	0.15864
	30.0	0.01565	0.03735	0.24174	0.32092	0.27909	0.20777	0.16378
	60.0	0.03167	0.03401	0.19385	0.27788	0.24754	0.20536	0.17102
0.1043	270.0	0.01079	0.17019	0.38684	0.32054	0.23772	0.19725	0.16343
	300.0	0.00909	0.10043	0.36610	0.35414	0.25036	0.19211	0.16558
	330.0	0.02797	0.04560	0.36688	0.35823	0.27496	0.20113	0.14545
	0.0	0.03070	0.05817	0.35721	0.37914	0.27494	0.18857	0.15171
	30.0	0.01746	0.06763	0.35627	0.35427	0.26027	0.18753	0.15456
	60.0	0.02009	0.08501	0.34391	0.34721	0.24854	0.18458	0.16005
0.0522	270.0	0.01183	0.26927	0.47244	0.27942	0.21342	0.18330	0.16072
	300.0	0.01266	0.23391	0.47103	0.29226	0.20959	0.18836	0.16035
	330.0	0.01203	0.13234	0.41496	0.31929	0.22360	0.17559	0.14885
	0.0	0.01815	0.12587	0.36917	0.32380	0.21786	0.17645	0.14803
	30.0	0.01090	0.18005	0.40399	0.31204	0.21152	0.17650	0.15325
	60.0	0.01088	0.18851	0.40684	0.30018	0.20519	0.18228	0.15381
0.0000	270.0	0.01272	0.35543	0.49415	0.25950	0.20280	0.18258	0.14597
	300.0	0.01034	0.35151	0.46334	0.25368	0.20165	0.18110	0.15230
	330.0	0.00908	0.27985	0.45581	0.24983	0.20440	0.17106	0.14717
	0.0	0.01006	0.55254	0.45452	0.24036	0.20795	0.17450	0.14727
	30.0	0.00944	0.41113	0.45550	0.25072	0.20456	0.17575	0.14852
	60.0	0.01523	0.32735	0.48927	0.24281	0.20719	0.16906	0.14612
-0.0522	270.0	0.01331	0.23039	0.47188	0.27647	0.21293	0.18251	0.15355
	300.0	0.01074	0.44283	0.41126	0.23538	0.21655	0.18136	0.15821
	330.0	0.01219	0.52763	0.33864	0.23572	0.21408	0.17421	0.15008
	0.0	0.00915	0.53540	0.34275	0.24430	0.21211	0.17329	0.14844
	30.0	0.01259	0.54604	0.35012	0.23153	0.21675	0.17858	0.14887
	60.0	0.01470	0.40511	0.45608	0.24121	0.21552	0.17869	0.14905
-0.1043	270.0	0.01067	0.11839	0.35076	0.31372	0.23678	0.19674	0.15955
	300.0	0.01055	0.49427	0.39417	0.25339	0.23567	0.19319	0.16440
	330.0	0.01299	0.66389	0.26385	0.25403	0.21187	0.17618	0.14362
	0.0	0.01367	0.65880	0.29713	0.25336	0.21662	0.17403	0.14685
	30.0	0.01535	0.68651	0.25808	0.24327	0.22582	0.17931	0.15019
	60.0	0.01460	0.33565	0.40757	0.25639	0.22759	0.19046	0.15882

d) $u'_{rms}/u_0 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00876	0.04017	0.23748	0.25862	0.26466	0.19976	0.16920
	300.0	0.01071	0.24344	0.33503	0.31176	0.25489	0.19923	0.16613
	330.0	0.01627	0.64442	0.26081	0.25994	0.23751	0.17146	0.13792
	0.0	0.02254	0.44922	0.35815	0.26604	0.21326	0.17580	0.13815
	30.0	0.01673	0.65222	0.28263	0.26731	0.23414	0.19556	0.15591
	60.0	0.01197	0.23186	0.34705	0.28469	0.25582	0.19549	0.17184
-0.2087	270.0	0.00926	0.01920	0.08180	0.16863	0.19371	0.20168	0.16295
	300.0	0.00819	0.10287	0.19621	0.25983	0.25695	0.20734	0.14407
	330.0	0.01712	0.55700	0.32304	0.28004	0.20617	0.15261	0.13400
	0.0	0.04983	0.50847	0.38285	0.25174	0.21071	0.16263	0.12899
	30.0	0.01769	0.54559	0.32018	0.34397	0.25134	0.18002	0.15008
	60.0	0.01322	0.08986	0.23494	0.23645	0.24391	0.20580	0.16215
-0.2609	270.0	0.00742	0.01244	0.02963	0.06486	0.10673	0.16871	0.13814
	300.0	0.00787	0.03021	0.08104	0.13086	0.16418	0.18294	0.12811
	330.0	0.01649	0.44939	0.33429	0.21763	0.14068	0.15787	0.11017
	0.0	0.08601	0.79604	0.31494	0.24893	0.21415	0.15387	0.12767
	30.0	0.01917	0.46852	0.31501	0.29089	0.21158	0.15936	0.13901
	60.0	0.00947	0.02936	0.10882	0.11975	0.16211	0.19170	0.14925
-0.3130	270.0	0.00744	0.00983	0.01660	0.02944	0.05131	0.11701	0.10203
	300.0	0.00767	0.02007	0.03126	0.05886	0.08620	0.10505	0.08907
	330.0	0.01313	0.24631	0.15927	0.09512	0.12264	0.10028	0.10087
	0.0	0.13772	0.55353	0.27344	0.22769	0.19991	0.15414	0.12486
	30.0	0.01662	0.25334	0.15462	0.13624	0.11398	0.10894	0.09593
	60.0	0.00965	0.01733	0.03733	0.05270	0.07923	0.10942	0.10207
-0.3652	270.0	0.00734	0.00951	0.01177	0.01845	0.02871	0.06880	0.06782
	300.0	0.00777	0.01548	0.01847	0.03304	0.03231	0.06354	0.04554
	330.0	0.01283	0.05075	0.05351	0.07070	0.07189	0.09197	0.10220
	0.0	0.45788	0.37619	0.25815	0.22266	0.19815	0.14221	0.11727
	30.0	0.01620	0.05391	0.05335	0.05463	0.06755	0.07633	0.07845
	60.0	0.00935	0.01295	0.02408	0.03232	0.03602	0.06238	0.05733
-0.4174	270.0	0.00777	0.01100	0.01139	0.01619	0.01969	0.03597	0.04655
	300.0	0.00731	0.01402	0.01479	0.02718	0.02830	0.03725	0.03794
	330.0	0.01322	0.02513	0.03686	0.05035	0.10596	0.10224	0.10627
	0.0	0.73912	0.43197	0.24737	0.21238	0.16938	0.14199	0.11480
	30.0	0.01478	0.03496	0.04234	0.04047	0.06441	0.08096	0.08835
	60.0	0.00910	0.01333	0.01450	0.02604	0.02526	0.03769	0.03866

d) $u'_{rms}/u_0 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.015[illegible]3	0.00992	0.00814	0.01539	0.01512	0.04029	0.05042
	300.0	0.01190	0.02159	0.00610	0.02281	0.01567	0.03841	0.06631
	330.0	0.00576	0.00466	0.01880	0.02322	0.03139	0.05842	0.04017
	0.0	0.02321	0.03037	0.02320	0.03380	0.06483	0.05589	0.07122
	30.0	0.00679	0.02576	0.01045	0.01674	0.02600	0.06707	0.08065
	60.0	0.01731	0.01887	0.00566	0.01338	0.01563	0.03457	0.05812
0.3652	270.0	0.01219	0.00685	0.01780	0.02605	0.03397	0.05140	0.06715
	300.0	0.00634	0.00903	0.01756	0.02814	0.03240	0.05653	0.08426
	330.0	0.00766	0.00456	0.02672	0.02564	0.07192	0.07516	0.06786
	0.0	0.02660	0.02218	0.02485	0.06176	0.10037	0.09366	0.08299
	30.0	0.00887	0.00955	0.02182	0.03525	0.06843	0.08601	0.09627
	60.0	0.01070	0.00573	0.01298	0.02194	0.03095	0.05700	0.07466
0.3130	270.0	0.01142	0.01073	0.02818	0.04666	0.04862	0.06920	0.09260
	300.0	0.01632	0.00601	0.02206	0.04057	0.04694	0.07421	0.11873
	330.0	0.01402	0.01129	0.03854	0.07875	0.11127	0.09962	0.09662
	0.0	0.01249	0.02532	0.03593	0.12973	0.16580	0.09310	0.07009
	30.0	0.01392	0.02208	0.02982	0.07326	0.10680	0.11273	0.10423
	60.0	0.01633	0.00900	0.01657	0.04499	0.08066	0.08520	0.08916
0.2609	270.0	0.00644	0.00810	0.05434	0.09686	0.09187	0.13042	0.11685
	300.0	0.01128	0.00942	0.03880	0.11223	0.10632	0.09590	0.10712
	330.0	0.02087	0.02050	0.04419	0.17360	0.19846	0.12930	0.09347
	0.0	0.03152	0.01712	0.05038	0.19306	0.18806	0.13883	0.08091
	30.0	0.01449	0.02677	0.04798	0.15176	0.15101	0.13633	0.09867
	60.0	0.02767	0.01137	0.03713	0.13613	0.11190	0.10916	0.07676
0.2087	270.0	0.00996	0.02673	0.12438	0.17304	0.12202	0.11545	0.12286
	300.0	0.01221	0.01830	0.13516	0.16690	0.14971	0.11871	0.10601
	330.0	0.02392	0.02573	0.11749	0.23127	0.17789	0.14057	0.11728
	0.0	0.01759	0.02935	0.12687	0.27948	0.18112	0.11680	0.11379
	30.0	0.01828	0.03385	0.10753	0.20372	0.21038	0.13564	0.10941
	60.0	0.23861	0.01837	0.07994	0.16195	0.14665	0.11518	0.09361

e) $v'_{rms}/u_o \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.03752	0.07562	0.20582	0.15301	0.15106	0.15518	0.13901
	300.0	0.01499	0.04595	0.22807	0.18146	0.14941	0.10916	0.10057
	330.0	0.01693	0.01544	0.28720	0.24471	0.16449	0.12851	0.11107
	0.0	0.01861	0.03433	0.24117	0.26611	0.17613	0.14177	0.12251
	30.0	0.03544	0.03086	0.24629	0.19011	0.16701	0.13445	0.13265
	60.0	0.01343	0.02751	0.17787	0.21708	0.16406	0.10555	0.09597
0.1043	270.0	0.01093	0.19715	0.35742	0.18198	0.18039	0.16487	0.12562
	300.0	0.01059	0.13358	0.34156	0.17394	0.15719	0.12200	0.12225
	330.0	0.01921	0.03990	0.38013	0.21774	0.15524	0.12856	0.15194
	0.0	0.02419	0.06055	0.36116	0.21992	0.14114	0.13132	0.11626
	30.0	0.03072	0.08209	0.35715	0.21096	0.13374	0.12257	0.12266
	60.0	0.00499	0.08101	0.25081	0.19512	0.11771	0.14009	0.12392
0.0522	270.0	0.01177	0.30148	0.26353	0.16350	0.15038	0.18091	0.18361
	300.0	0.01828	0.26580	0.28950	0.13747	0.13742	0.13863	0.15297
	330.0	0.01224	0.10962	0.33181	0.16130	0.16432	0.14729	0.13955
	0.0	0.03607	0.16325	0.34671	0.14528	0.14610	0.15242	0.14732
	30.0	0.01467	0.17592	0.32899	0.18114	0.14952	0.13778	0.14335
	60.0	0.00896	0.17671	0.25101	0.16447	0.16384	0.15782	0.13249
0.0000	270.0	0.01048	0.37439	0.24665	0.13389	0.10741	0.17111	0.13563
	300.0	0.01133	0.37452	0.20847	0.14978	0.14523	0.17081	0.14628
	330.0	0.00740	0.36153	0.27004	0.17083	0.15822	0.13505	0.14476
	0.0	0.01595	0.48572	0.24290	0.17747	0.17855	0.13015	0.15264
	30.0	0.00985	0.41968	0.25755	0.15372	0.16752	0.16103	0.13743
	60.0	0.00514	0.36449	0.27376	0.15218	0.14733	0.15997	0.16006
-0.0522	270.0	0.01948	0.23160	0.24486	0.17451	0.11443	0.18252	0.18017
	300.0	0.01158	0.42423	0.21655	0.14075	0.15018	0.18780	0.14566
	330.0	0.01073	0.57234	0.21114	0.19585	0.17569	0.15182	0.15047
	0.0	0.00336	0.62220	0.18987	0.20299	0.18517	0.18097	0.13713
	30.0	0.00805	0.61061	0.17471	0.15433	0.18266	0.19232	0.12161
	60.0	0.01223	0.40584	0.22164	0.14364	0.16727	0.16053	0.16483
-0.1043	270.0	0.00902	0.11778	0.27533	0.19803	0.15256	0.15134	0.15239
	300.0	0.00893	0.43525	0.18810	0.18323	0.15240	0.14530	0.12545
	330.0	0.00704	0.46782	0.20304	0.19760	0.20273	0.19799	0.15536
	0.0	0.00603	0.35890	0.21560	0.22215	0.21561	0.15482	0.14078
	30.0	0.01102	0.48282	0.18623	0.20426	0.20482	0.16801	0.14747
	60.0	0.00658	0.33400	0.24009	0.17980	0.21280	0.18135	0.20464

e) $v'_{rms}/u_0 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00775	0.03961	0.19595	0.17038	0.14672	0.14985	0.12787
	300.0	0.01102	0.26130	0.23845	0.11717	0.15375	0.17709	0.10878
	330.0	0.01244	0.33063	0.19520	0.21108	0.15207	0.21286	0.09551
	0.0	0.01095	0.17960	0.24351	0.19903	0.20997	0.15835	0.11333
	30.0	0.01973	0.34516	0.18547	0.20480	0.18798	0.11966	0.09906
	60.0	0.00684	0.21715	0.21230	0.15976	0.15764	0.13129	0.14363
-0.2087	270.0	0.01341	0.01647	0.10696	0.14687	0.12150	0.13462	0.09631
	300.0	0.00704	0.12089	0.17525	0.14987	0.09383	0.14957	0.13584
	330.0	0.02442	0.28368	0.20167	0.20366	0.14175	0.09447	0.10649
	0.0	0.02012	0.20809	0.20338	0.18478	0.16569	0.15706	0.12701
	30.0	0.02250	0.25421	0.17106	0.16724	0.15795	0.12871	0.13148
	60.0	0.00480	0.10711	0.15476	0.12168	0.12554	0.12268	0.10903
-0.2609	270.0	0.00658	0.01533	0.05574	0.08718	0.10004	0.11946	0.15943
	300.0	0.00711	0.03648	0.08484	0.10087	0.07395	0.09392	0.11770
	330.0	0.01775	0.24528	0.16029	0.15799	0.07709	0.11862	0.10922
	0.0	0.03620	0.16862	0.19308	0.21019	0.15107	0.11511	0.08372
	30.0	0.01793	0.24458	0.12765	0.14350	0.13235	0.12867	0.09908
	60.0	0.00626	0.04715	0.10512	0.13740	0.09581	0.08407	0.09804
-0.3130	270.0	0.00686	0.01394	0.01980	0.03867	0.04205	0.08468	0.12468
	300.0	0.00647	0.02778	0.05023	0.07645	0.06034	0.07302	0.10871
	330.0	0.01766	0.20822	0.12743	0.09882	0.08912	0.07744	0.09787
	0.0	0.09002	0.21278	0.21105	0.16395	0.15371	0.13981	0.08948
	30.0	0.01875	0.23438	0.13800	0.11593	0.12085	0.11458	0.06859
	60.0	0.00496	0.03522	0.06106	0.06519	0.08051	0.11054	0.07506
-0.3652	270.0	0.00684	0.00621	0.02505	0.02933	0.02265	0.07348	0.08516
	300.0	0.00618	0.01796	0.02845	0.04586	0.05460	0.05572	0.08710
	330.0	0.01837	0.06672	0.08570	0.08464	0.05848	0.08427	0.07294
	0.0	0.37002	0.23947	0.17813	0.16817	0.11008	0.10859	0.10024
	30.0	0.02088	0.07253	0.08284	0.05992	0.08522	0.07602	0.06739
	60.0	0.01346	0.01938	0.03402	0.02567	0.05052	0.07569	0.04939
-0.4174	270.0	0.00710	0.01134	0.01631	0.02024	0.01779	0.03968	0.06418
	300.0	0.00589	0.01364	0.02177	0.03327	0.02171	0.04895	0.04773
	330.0	0.01041	0.05567	0.05282	0.06964	0.06546	0.11724	0.08273
	0.0	0.99866	0.26324	0.14783	0.16594	0.12842	0.10831	0.08669
	30.0	0.02773	0.04950	0.05946	0.05321	0.05034	0.06888	0.07497
	60.0	0.00403	0.01845	0.02364	0.01948	0.02448	0.04336	0.05127

e) $v'_{rms}/u_o \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00544	0.00602	0.00743	0.00961	0.01163	0.02123	0.01907
	300.0	0.00526	0.00716	0.00499	0.00940	0.01097	0.02129	0.02321
	330.0	0.00467	0.00468	0.00673	0.01038	0.02038	0.02316	0.04760
	0.0	0.01410	0.02384	0.02224	0.02283	0.04035	0.03762	0.04961
	30.0	0.00559	0.00541	0.00722	0.01284	0.02155	0.03354	0.04633
	60.0	0.01141	0.00600	0.00525	0.01053	0.00979	0.01991	0.03573
0.3652	270.0	0.00506	0.00553	0.00844	0.01271	0.01543	0.03351	0.03253
	300.0	0.00382	0.00675	0.00817	0.01239	0.01467	0.03446	0.03783
	330.0	0.00532	0.00505	0.00931	0.01469	0.03473	0.03691	0.05639
	0.0	0.02595	0.02335	0.02052	0.03663	0.06705	0.06584	0.08165
	30.0	0.00805	0.00667	0.01498	0.01990	0.03433	0.05458	0.06140
	60.0	0.00486	0.00406	0.00728	0.01474	0.01909	0.03268	0.05622
0.3130	270.0	0.00616	0.00677	0.01318	0.02120	0.03416	0.05533	0.05202
	300.0	0.00510	0.00541	0.01063	0.01826	0.03870	0.05581	0.07628
	330.0	0.00732	0.00804	0.01846	0.04205	0.06326	0.06466	0.07239
	0.0	0.03160	0.02245	0.02140	0.06901	0.12497	0.07974	0.09163
	30.0	0.00835	0.01256	0.02069	0.04521	0.07128	0.08055	0.07517
	60.0	0.01350	0.00509	0.01002	0.02350	0.03998	0.06889	0.07925
0.2609	270.0	0.00460	0.00821	0.02975	0.06232	0.07291	0.09182	0.08484
	300.0	0.00480	0.00708	0.01833	0.04875	0.07612	0.09564	0.09139
	330.0	0.01359	0.01394	0.02387	0.08303	0.09055	0.09051	0.08641
	0.0	0.03086	0.01864	0.02946	0.13575	0.16126	0.10199	0.08659
	30.0	0.00812	0.01792	0.03111	0.09673	0.14003	0.09443	0.09964
	60.0	0.03624	0.00692	0.01540	0.06455	0.06742	0.09893	0.08890
0.2087	270.0	0.00537	0.01962	0.09633	0.13140	0.12922	0.13048	0.10742
	300.0	0.00689	0.01057	0.06840	0.11278	0.13314	0.12138	0.10763
	330.0	0.02346	0.01261	0.07738	0.17907	0.14405	0.11206	0.10926
	0.0	0.02969	0.02115	0.07314	0.19699	0.15740	0.12518	0.10450
	30.0	0.00777	0.01638	0.06952	0.19113	0.12713	0.10842	0.09313
	60.0	0.07093	0.00942	0.04501	0.13817	0.13439	0.12166	0.11062

f) $w'_{rms}/u_0 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.02580	0.04711	0.20074	0.19747	0.16082	0.14574	0.12193
	300.0	0.00852	0.02260	0.16743	0.18877	0.16269	0.14139	0.11094
	330.0	0.02576	0.01986	0.18521	0.18838	0.16763	0.11137	0.10392
	0.0	0.02799	0.01896	0.16749	0.19612	0.18125	0.13085	0.10357
	30.0	0.01278	0.02122	0.17663	0.19767	0.17040	0.13642	0.09505
	60.0	0.03053	0.01804	0.13319	0.19295	0.16377	0.14088	0.10356
0.1043	270.0	0.00678	0.14591	0.29180	0.18923	0.16374	0.14293	0.11579
	300.0	0.00638	0.06844	0.29807	0.20764	0.16732	0.13732	0.11223
	330.0	0.02926	0.02694	0.28553	0.23403	0.17165	0.12877	0.11007
	0.0	0.02835	0.03259	0.28214	0.23552	0.17315	0.12336	0.10305
	30.0	0.01559	0.03782	0.28769	0.21209	0.17133	0.12565	0.10816
	60.0	0.00853	0.05069	0.24864	0.20312	0.15652	0.13049	0.10290
0.0522	270.0	0.00754	0.26097	0.33303	0.18569	0.16157	0.12953	0.10238
	300.0	0.00818	0.20678	0.31387	0.19077	0.15917	0.12791	0.11114
	330.0	0.00996	0.08333	0.28475	0.21749	0.15359	0.12436	0.10096
	0.0	0.01770	0.09338	0.26543	0.21731	0.14769	0.12430	0.10940
	30.0	0.00965	0.13807	0.28195	0.19865	0.15984	0.12388	0.10811
	60.0	0.01083	0.15297	0.29421	0.19947	0.14104	0.12672	0.09622
0.0000	270.0	0.00802	0.28043	0.31521	0.17279	0.16438	0.13870	0.10109
	300.0	0.00664	0.41628	0.29053	0.18376	0.16933	0.13532	0.10851
	330.0	0.00697	0.25318	0.30336	0.17698	0.15215	0.12311	0.10846
	0.0	0.00725	0.25158	0.29124	0.18026	0.16454	0.12314	0.11037
	30.0	0.00655	0.37228	0.30974	0.18935	0.15805	0.13398	0.10852
	60.0	0.00675	0.35867	0.31830	0.18287	0.16371	0.13980	0.10431
-0.0522	270.0	0.00877	0.20253	0.29852	0.18654	0.14613	0.13668	0.11839
	300.0	0.00655	0.50072	0.26930	0.17150	0.17004	0.13103	0.11780
	330.0	0.00896	0.51143	0.24057	0.17406	0.16207	0.12697	0.12035
	0.0	0.00657	0.44527	0.23345	0.21369	0.17523	0.14118	0.10926
	30.0	0.00880	0.50014	0.24886	0.19495	0.17640	0.14008	0.09612
	60.0	0.00842	0.42068	0.30855	0.18322	0.16962	0.14895	0.10833
-0.1043	270.0	0.00680	0.09203	0.26768	0.18074	0.16210	0.13508	0.12458
	300.0	0.00667	0.36760	0.24283	0.19370	0.16382	0.14229	0.12395
	330.0	0.00854	0.52206	0.21972	0.20994	0.17128	0.14507	0.12433
	0.0	0.00962	0.41721	0.26184	0.23219	0.18243	0.13429	0.11688
	30.0	0.01099	0.51089	0.22340	0.22265	0.18318	0.14662	0.11918
	60.0	0.00656	0.35797	0.26659	0.15922	0.16601	0.13451	0.11878

f) $w'_{rms}/u_o \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00574	0.03159	0.17360	0.18298	0.14572	0.14069	0.12781
	300.0	0.00703	0.21189	0.23325	0.20883	0.17200	0.14724	0.12692
	330.0	0.01252	0.43380	0.22338	0.21286	0.18828	0.14305	0.10964
	0.0	0.01480	0.37603	0.36634	0.23843	0.18889	0.14947	0.11933
	30.0	0.01223	0.46497	0.26269	0.21008	0.15704	0.14242	0.11449
	60.0	0.00551	0.18261	0.22026	0.19414	0.16998	0.14725	0.12808
-0.2087	270.0	0.00625	0.01414	0.06179	0.10552	0.13109	0.13736	0.11106
	300.0	0.00553	0.07538	0.14157	0.18820	0.17259	0.14559	0.11030
	330.0	0.01267	0.34338	0.22865	0.20646	0.14806	0.12522	0.09650
	0.0	0.02798	0.56616	0.40046	0.20746	0.17022	0.13828	0.10985
	30.0	0.01435	0.40506	0.22543	0.22070	0.16864	0.14327	0.11102
	60.0	0.00590	0.07578	0.17086	0.16675	0.16580	0.15086	0.11133
-0.2609	270.0	0.00498	0.00861	0.02262	0.04491	0.07216	0.10139	0.09231
	300.0	0.00514	0.02467	0.05861	0.10139	0.11165	0.11421	0.09337
	330.0	0.01234	0.28047	0.24877	0.14140	0.10568	0.11180	0.07976
	0.0	0.06316	0.78007	0.31360	0.20427	0.16436	0.13071	0.10976
	30.0	0.01489	0.30087	0.18681	0.15360	0.15312	0.10180	0.08648
	60.0	0.00546	0.02522	0.07655	0.08148	0.10761	0.12457	0.08437
-0.3130	270.0	0.00498	0.00703	0.01175	0.01720	0.02665	0.07248	0.06907
	300.0	0.00536	0.01405	0.02010	0.03627	0.05276	0.06384	0.05598
	330.0	0.01032	0.17774	0.11795	0.08926	0.05689	0.07[illegible]4	0.07131
	0.0	0.16544	0.52029	0.24274	0.18373	0.15351	0.11316	0.09980
	30.0	0.01417	0.18484	0.10865	0.06599	0.08079	0.07955	0.06239
	60.0	0.00443	0.01330	0.02511	0.03442	0.04469	0.07682	0.06459
-0.3652	270.0	0.00443	0.00593	0.00856	0.01280	0.01480	0.04124	0.04260
	300.0	0.00503	0.00959	0.01095	0.01674	0.02744	0.03780	0.02700
	330.0	0.01049	0.03341	0.03819	0.05394	0.05119	0.06639	0.05951
	0.0	0.41597	0.33113	0.19607	0.13840	0.14755	0.11382	0.09348
	30.0	0.01421	0.03983	0.03923	0.03687	0.04962	0.04824	0.05321
	60.0	0.00523	0.00898	0.01367	0.01695	0.02678	0.03786	0.02860
-0.4174	270.0	0.00477	0.00730	0.00757	0.00940	0.01149	0.01944	0.02824
	300.0	0.00459	0.00740	0.00901	0.01296	0.01743	0.02722	0.01909
	330.0	0.00887	0.01584	0.02718	0.03424	0.08318	0.08513	0.06418
	0.0	1.06565	0.40070	0.18246	0.15209	0.12253	0.10876	0.08222
	30.0	0.01603	0.01985	0.02958	0.02591	0.05111	0.05691	0.06548
	60.0	0.00709	0.00889	0.00864	0.01218	0.01746	0.02308	0.02678

f) $w'_{rms}/u_0 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00004	0.00004	0.00002	0.00008	0.00008	0.00077	0.00076
	300.0	0.00002	0.00001	0.00003	0.00010	0.00011	0.00077	0.00101
	330.0	0.00001	0.00001	0.00003	0.00012	0.00032	0.00058	0.00165
	0.0	0.00001	0.00024	0.00013	0.00027	0.00302	0.00107	0.00221
	30.0	0.00001	0.00004	0.00006	0.00005	0.00024	0.00082	0.00215
	60.0	0.00018	0.00001	0.00002	0.00006	0.00013	0.00038	0.00100
0.3652	270.0	0.00004	0.00002	0.00005	0.00013	0.00020	0.00107	0.00149
	300.0	0.00000	0.00001	0.00005	0.00018	0.00041	0.00149	0.00188
	330.0	0.00002	0.00001	0.00010	0.00046	0.00217	0.00155	0.00356
	0.0	0.00036	0.00015	0.00014	0.00087	0.00238	0.00536	0.00496
	30.0	0.00002	0.00001	0.00007	0.00030	0.00177	0.00330	0.00342
	60.0	0.00006	0.00001	0.00007	0.00011	0.00034	0.00109	0.00154
0.3130	270.0	0.00000	0.00003	0.00012	0.00063	0.00122	0.04598	0.00309
	300.0	0.00004	0.00004	0.00012	0.00051	0.00326	0.00296	0.00429
	330.0	0.00004	0.00002	0.00031	0.00191	0.00542	0.00407	0.00486
	0.0	0.00015	0.00020	0.00030	0.00540	0.01486	0.00640	0.00528
	30.0	0.00004	0.00005	0.00043	0.04141	0.03316	0.00604	0.00468
	60.0	0.00002	0.00001	0.00007	0.00052	0.00242	0.00651	0.00398
0.2609	270.0	0.00000	0.00003	0.00100	0.00317	0.05296	0.00565	0.00468
	300.0	0.00002	0.00001	0.00061	0.00444	0.00696	0.00604	0.00560
	330.0	0.00019	0.00015	0.00085	0.01352	0.01116	0.00540	0.00501
	0.0	0.00025	0.00028	0.00116	0.01885	0.01828	0.04858	0.00616
	30.0	0.00006	0.00009	0.00063	0.01296	0.01182	0.00811	0.00623
	60.0	0.00045	0.00001	0.00049	0.00461	0.00647	0.00846	0.00852
0.2087	270.0	0.00002	0.00022	0.00646	0.01254	0.01124	0.00942	0.00669
	300.0	0.00005	0.00004	0.00673	0.01224	0.01436	0.01097	0.00667
	330.0	0.00006	0.00009	0.00652	0.01909	0.02873	0.00807	1.20270
	0.0	0.00036	0.00041	0.00571	0.02738	0.01816	0.01503	0.00895
	30.0	0.00007	0.00010	0.00494	0.02142	0.02085	0.01020	0.00675
	60.0	0.01649	0.00004	0.00195	0.01368	0.01268	0.01026	0.04583

g) $\overline{u'v'}/u_0^2 \times 2$

TABLE IV (Continued)

R/D	THETA	x/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00011	0.00197	0.02944	0.08000	0.01855	0.01270	0.00593
	300.0	0.00001	0.00038	0.02003	0.01868	0.09881	0.01098	0.00586
	330.0	0.00020	0.00105	0.02641	0.03079	0.01582	0.00977	0.00658
	0.0	0.00026	0.00027	0.01712	0.02551	0.01761	0.01114	0.00537
	30.0	0.00064	0.00018	0.02073	0.03047	0.01738	0.01303	0.00702
	60.0	0.00017	0.00023	0.01835	0.02545	0.01996	0.00930	0.00655
0.1043	270.0	0.00001	0.01022	0.03527	0.02240	0.01123	0.01107	0.02846
	300.0	0.00004	0.00960	0.03513	0.02709	0.01394	0.00780	0.00740
	330.0	0.00019	0.00050	0.06277	0.03381	0.02079	0.00960	0.00260
	0.0	0.00024	0.00090	0.04961	0.03444	0.01573	0.00854	0.00577
	30.0	0.00005	0.00104	0.03731	0.02949	0.01825	0.00941	0.00624
	60.0	0.00000	0.00188	0.03737	0.02854	0.01463	0.01020	0.00763
0.0522	270.0	0.00003	0.23906	0.04736	0.01896	0.01060	0.00838	0.00815
	300.0	0.00004	0.02099	0.04692	0.02412	0.01041	0.00986	0.00740
	330.0	0.00003	0.00574	0.04552	0.02277	0.01147	0.00751	0.00629
	0.0	0.00007	0.00783	0.03966	0.02533	0.01283	0.01079	0.00658
	30.0	0.00005	0.00958	0.04224	0.02247	0.01171	0.00969	0.00825
	60.0	0.00005	0.01373	0.04200	0.03993	0.01338	0.00857	0.00783
0.0000	270.0	0.00003	0.03976	0.06030	0.01878	0.00948	0.00966	0.00737
	300.0	0.00002	0.05137	0.05505	0.01723	0.01031	0.01100	0.00686
	330.0	0.00001	0.01931	0.04476	0.01423	0.01058	0.00925	0.00559
	0.0	0.00002	0.01915	0.04193	0.01148	0.00984	0.00582	0.00661
	30.0	0.00006	0.03324	0.03524	0.01578	0.01008	0.00852	0.00585
	60.0	0.00004	0.02962	0.07061	0.01573	0.00974	0.32950	0.00792
-0.0522	270.0	0.00010	0.02577	0.05248	0.02273	0.01225	0.01112	0.00653
	300.0	0.00003	0.07692	0.04488	0.01527	0.01010	0.00927	0.00657
	330.0	0.00001	0.03600	0.02695	0.01108	0.01225	0.01072	0.00582
	0.0	0.00001	0.06780	0.02617	0.01131	0.01164	0.00859	0.00590
	30.0	0.00001	0.09703	0.02757	0.01267	0.01207	0.00998	0.00765
	60.0	0.00005	0.07450	0.06000	0.01711	0.01408	0.00952	0.00779
-0.1043	270.0	0.00002	0.00831	0.03213	0.02291	0.01404	0.01007	0.00809
	300.0	0.00002	0.04980	0.03870	0.01683	0.01507	0.01113	0.00747
	330.0	0.00002	0.08388	0.01208	0.01645	0.01126	0.00621	0.00538
	0.0	0.00002	0.08866	0.00822	0.01440	0.01320	0.00710	0.00677
	30.0	0.00002	0.08515	0.00982	0.01449	0.01306	0.01309	0.00580
	60.0	0.00004	0.03664	0.05592	0.02632	0.01229	0.01142	0.00907

g) $\overline{u'v'}/u_o^2 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00002	0.00077	0.01439	0.02002	0.01520	0.01113	0.00663
	300.0	0.00003	0.01634	0.04111	0.02055	0.01735	0.01081	0.00708
	330.0	0.00054	0.07722	0.00940	0.01836	0.01167	0.00930	0.00933
	0.0	0.00004	0.03594	0.03026	0.02935	0.01784	0.00979	0.00551
	30.0	0.00013	0.07922	0.01208	0.02393	0.01271	0.01104	0.00528
	60.0	0.00004	0.01709	0.03482	0.03471	0.01954	0.01240	0.00901
-0.2087	270.0	0.00001	0.00011	0.00380	0.00763	0.00865	0.01227	0.00794
	300.0	0.00001	0.00585	0.01117	0.02068	0.02713	0.01684	0.00590
	330.0	0.00014	0.06977	0.02243	0.02339	0.02166	0.00810	0.00854
	0.0	0.00014	0.63335	0.01772	0.01753	0.01189	0.01052	0.00553
	30.0	0.00009	0.06515	0.84187	0.01978	0.02680	0.00677	0.00930
	60.0	0.00003	0.00326	0.01936	0.01725	0.01405	0.01219	0.00725
-0.2609	270.0	0.00001	0.00003	0.00032	0.00179	0.00517	0.00776	0.00612
	300.0	0.00001	0.00025	0.00274	0.01344	0.00189	0.00540	0.00356
	330.0	0.00015	0.04826	0.03014	0.01556	0.00269	0.00464	0.00587
	0.0	0.00082	3.06528	0.02254	0.01264	0.00836	0.00617	0.00554
	30.0	0.00021	0.05952	0.02500	0.00921	0.00962	0.00501	0.00422
	60.0	0.00003	0.00043	0.00529	0.00678	0.00564	0.00404	0.00366
-0.3130	270.0	0.00001	0.00006	0.00007	0.00035	0.00095	0.00558	0.00366
	300.0	0.00000	0.00009	0.00054	0.00155	0.00098	0.00343	0.00349
	330.0	0.00011	0.01653	0.01453	0.00872	0.00456	0.00311	0.00337
	0.0	0.00904	0.09266	0.01630	0.01664	0.00873	0.00493	0.00386
	30.0	0.00015	0.01781	0.00666	0.00383	0.00415	0.00418	0.00208
	60.0	0.00002	0.00023	0.00083	0.00100	0.00178	0.00259	0.00129
-0.3652	270.0	0.00001	0.00003	0.00004	0.00012	0.00021	0.00220	0.00206
	300.0	0.00000	0.00013	0.00020	0.00057	0.00121	0.00122	0.00150
	330.0	0.00371	0.00186	0.00166	0.00201	0.00197	0.00279	0.00254
	0.0	0.04922	0.27704	0.01725	0.01570	0.01112	0.00750	0.00325
	30.0	0.00022	0.00816	0.00176	0.00126	0.00259	0.00262	0.00151
	60.0	0.00002	0.00007	0.00034	0.00013	0.00051	0.00138	0.00105
-0.4174	270.0	0.00001	0.00001	0.00004	0.00011	0.00021	0.00064	0.00106
	300.0	0.00000	0.00002	0.00008	0.00018	0.00020	0.00121	0.00078
	330.0	0.00009	0.00078	0.00068	0.00123	0.00150	0.00314	0.00245
	0.0	0.26648	0.03321	0.01915	0.01259	0.00694	0.00351	0.00394
	30.0	0.00020	0.00088	0.00100	0.00088	0.00099	0.00090	0.00417
	60.0	0.00003	0.00039	0.00017	0.00007	0.00023	0.00063	0.00109

g) $\overline{u'v'}/u_0^2 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00000	0.00001	0.00001	0.00004	0.00004	0.00033	0.00014
	300.0	0.00002	0.00009	0.00000	0.00001	0.00002	0.00013	0.00029
	330.0	0.00001	0.00001	0.00001	0.00000	0.00004	0.00005	0.00064
	0.0	0.00047	0.00014	0.00004	0.00016	0.00077	0.00008	0.00017
	30.0	0.00002	0.00002	0.00005	0.00000	0.00009	0.00006	0.00006
	60.0	0.00011	0.00001	0.00000	0.00001	0.00002	0.00010	0.00049
0.3652	270.0	0.00000	0.00001	0.00000	0.00008	0.00011	0.00067	0.00025
	300.0	0.00000	0.00001	0.00001	0.00002	0.00012	0.00035	0.00040
	330.0	0.00002	0.00000	0.00000	0.00000	0.00000	0.00009	0.00047
	0.0	0.00039	0.00009	0.00004	0.00046	0.00000	0.00101	0.00141
	30.0	0.00003	0.00000	0.00002	0.00000	0.00014	0.00007	0.00043
	60.0	0.00002	0.00000	0.00002	0.00004	0.00003	0.00010	0.00054
0.3130	270.0	0.00003	0.00001	0.00006	0.00015	0.00050	0.00219	0.00102
	300.0	0.00001	0.00001	0.00002	0.00015	0.00054	0.00050	0.00224
	330.0	0.00004	0.00001	0.00005	0.00020	0.00000	0.00032	0.00086
	0.0	0.00065	0.00004	0.00006	0.00049	0.00422	0.00023	0.00075
	30.0	0.00005	0.00001	0.00000	0.00052	0.00042	0.00060	0.00067
	60.0	0.00018	0.00000	0.00003	0.00011	0.00043	0.00079	0.00111
0.2609	270.0	0.00000	0.00001	0.00022	0.00135	0.00205	0.00304	0.00269
	300.0	0.00001	0.00002	0.00003	0.00072	0.00321	0.00212	0.00222
	330.0	0.00016	0.00014	0.00004	0.00244	0.00138	0.00099	0.00106
	0.0	0.00040	0.00000	0.00008	0.00175	0.00206	0.00049	0.00078
	30.0	0.00004	0.00000	0.00000	0.00224	0.00445	0.00025	0.00133
	60.0	0.00037	0.00001	0.00004	0.00082	0.00021	0.00189	0.00194
0.2087	270.0	0.00001	0.00014	0.00097	0.00318	0.00486	0.00755	0.00569
	300.0	0.00001	0.00005	0.00144	0.00010	0.00622	0.00482	0.00218
	330.0	0.00073	0.00004	0.00227	0.00146	0.00423	0.00089	0.00299
	0.0	0.00043	0.00000	0.00062	0.00463	0.00058	0.00115	0.00081
	30.0	0.00003	0.00000	0.00129	0.00656	0.00482	0.00070	0.00053
	60.0	0.00000	0.00000	0.00046	0.00933	0.00220	0.00196	0.00155

h) $\overline{u'w'}/u_0^2 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00154	0.00032	0.01337	0.01610	0.00951	0.00539	0.00335
	300.0	0.00003	0.00020	0.00292	0.00714	0.00374	0.00476	0.00279
	330.0	0.00040	0.00018	0.01041	0.00605	0.00104	0.00000	0.00086
	0.0	0.00034	0.00004	0.00725	0.00702	0.00123	0.00051	0.00094
	30.0	0.00018	0.00015	0.00734	0.01136	0.00688	0.00050	0.00064
	60.0	0.00113	0.00013	0.00057	0.00943	0.01157	0.00311	0.00375
0.1043	270.0	0.00001	0.01166	0.04016	0.00875	0.00518	0.00653	0.00395
	300.0	0.00001	0.00198	0.02409	0.00384	0.00298	0.00280	0.00351
	330.0	0.00032	0.00023	0.01651	0.01408	0.00416	0.00115	0.00420
	0.0	0.00024	0.00029	0.01348	0.01080	0.00149	0.00044	0.00000
	30.0	0.00013	0.00044	0.01517	0.01099	0.00601	0.00241	0.00286
	60.0	0.00015	0.00072	0.02437	0.01350	0.00494	0.00449	0.00474
0.0522	270.0	0.00001	0.03108	0.05094	0.01028	0.00968	0.00593	0.00440
	300.0	0.00000	0.01872	0.03047	0.00680	0.00686	0.00565	0.00407
	330.0	0.00008	0.00221	0.01225	0.00489	0.00453	0.00390	0.00159
	0.0	0.00014	0.00060	0.00112	0.01153	0.00471	0.00062	0.00116
	30.0	0.00005	0.00424	0.01371	0.00821	0.00755	0.00567	0.00341
	60.0	0.00011	0.00957	0.02700	0.01161	0.00871	0.00562	0.00489
0.0000	270.0	0.00002	0.05885	0.04857	0.00880	0.00868	0.00827	0.00360
	300.0	0.00000	0.05203	0.01769	0.00869	0.00723	0.00537	0.00441
	330.0	0.00003	0.02344	0.01456	0.00863	0.00584	0.00392	0.00235
	0.0	0.00005	0.04593	0.00399	0.00797	0.00666	0.02297	0.00363
	30.0	0.00004	0.05906	0.02799	0.00973	0.00753	0.00629	0.00416
	60.0	0.00004	0.04575	0.03942	0.00985	0.00889	0.00629	0.00453
-0.0522	270.0	0.00003	0.01110	0.04314	0.00992	0.00828	0.00766	0.00706
	300.0	0.00000	0.06331	0.02125	0.01085	0.01046	0.00489	0.00461
	330.0	0.00005	0.07772	0.01990	0.01423	0.01296	0.00493	0.00251
	0.0	0.00003	0.03854	0.01274	0.00587	0.00510	0.00523	0.00363
	30.0	0.00009	0.07531	0.02385	0.01150	0.00881	0.00731	0.00364
	60.0	0.00005	0.05085	0.02912	0.01191	0.01108	0.00849	0.00450
-0.1043	270.0	0.00001	0.00185	0.02909	0.00654	0.00443	0.00914	0.00299
	300.0	0.00001	0.09243	0.02051	0.00692	0.01106	0.00618	0.00399
	330.0	0.00007	0.06488	0.01286	0.01503	0.01294	0.00495	0.00198
	0.0	0.00010	0.03497	0.01279	0.01670	0.07818	0.00243	0.00362
	30.0	0.00014	0.07749	0.02091	0.01262	0.00987	0.00442	0.00216
	60.0	0.00004	0.03915	0.02469	0.00831	0.01180	0.00634	0.00426

h) $\overline{u'w'}/u_o^2 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00001	0.00024	0.00516	0.00315	0.00773	0.00101	0.00347
	300.0	0.00001	0.01253	0.00358	0.02150	0.01416	0.00294	0.00436
	330.0	0.00011	0.07263	0.01666	0.01089	0.00130	0.00254	0.00256
	0.0	0.00034	0.13115	0.03563	0.01409	0.00624	0.00099	0.00121
	30.0	0.00010	0.06362	0.02201	0.00996	0.00940	0.00153	0.00130
	60.0	0.00003	0.00821	0.00946	0.00507	0.00079	0.00346	0.00309
-0.2087	270.0	0.00003	0.00003	0.00085	0.00377	0.00665	0.00809	0.00322
	300.0	0.00000	0.00110	0.00397	0.02070	0.01153	0.01452	0.00256
	330.0	0.00007	0.04530	0.03114	0.02122	0.00981	0.00430	0.00100
	0.0	0.00174	0.62725	0.18670	0.00607	0.00441	0.00125	0.00059
	30.0	0.00009	0.05206	0.02492	0.05046	0.01052	0.00443	0.00486
	60.0	0.00002	0.00157	0.00456	0.00896	0.00795	0.01259	0.00483
-0.2609	270.0	0.00001	0.00002	0.00026	0.00064	0.00251	0.00628	0.00194
	300.0	0.00003	0.00017	0.00129	0.00649	0.00917	0.00565	0.00498
	330.0	0.00008	0.02711	0.03160	0.00765	0.00622	0.00598	0.00056
	0.0	0.01878	5.81794	0.03119	0.01149	0.00070	0.00555	0.00115
	30.0	0.00011	0.01085	0.02031	0.00839	0.00760	0.00323	0.00265
	60.0	0.00002	0.00031	0.00214	0.00244	0.00549	0.00618	0.00178
-0.3130	270.0	0.00002	0.00001	0.00004	0.00014	0.00023	0.00366	0.00170
	300.0	0.00000	0.00008	0.00018	0.00055	0.00128	0.00167	0.00196
	330.0	0.00006	0.02040	0.00959	0.00329	0.00232	0.00258	0.00083
	0.0	0.00722	0.45808	0.02932	0.00272	0.00000	0.00283	0.00385
	30.0	0.00007	0.01274	0.00652	0.00202	0.00392	0.00324	0.00152
	60.0	0.00002	0.00007	0.00016	0.00036	0.00063	0.00355	0.00260
-0.3652	270.0	0.00001	0.00001	0.00002	0.00004	0.00007	0.00109	0.00240
	300.0	0.00001	0.00002	0.00008	0.00017	0.00052	0.00080	0.00024
	330.0	0.00005	0.00056	0.00112	0.00192	0.00159	0.00116	0.00055
	0.0	0.10105	0.80397	0.02219	0.00161	0.00777	0.00362	0.00091
	30.0	0.00012	0.00076	0.00082	0.00050	0.00121	0.00030	0.00082
	60.0	0.00002	0.00002	0.00013	0.00009	0.00031	0.00041	0.00019
-0.4174	270.0	0.00001	0.00002	0.00001	0.00005	0.00010	0.00013	0.00027
	300.0	0.00000	0.00001	0.00003	0.00010	0.00017	0.00048	0.00011
	330.0	0.00004	0.00022	0.00042	0.00047	0.00811	0.00371	0.00000
	0.0	0.37997	0.06846	0.01088	0.00000	0.00171	0.00329	0.00224
	30.0	0.00013	0.00018	0.00073	0.00022	0.00216	0.00306	0.00285
	60.0	0.00005	0.00002	0.00005	0.00003	0.00015	0.00029	0.00025

h) $\overline{u'w'}/u_0^2 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00001	0.00014	0.00000	0.00006	0.00035	0.00156	0.00016
	300.0	0.00003	0.00000	0.00000	0.00001	0.00004	0.00035	0.00030
	330.0	0.00000	0.00004	0.00042	0.00002	0.00017	0.00034	0.00234
	0.0	0.00163	0.00046	0.00019	0.00047	0.00679	0.00019	0.00000
	30.0	0.00005	0.00012	0.00030	0.00000	0.00454	0.00064	0.00176
	60.0	0.00086	0.00007	0.00001	0.00004	0.00007	0.00021	0.00066
0.3652	270.0	0.00001	0.00009	0.00005	0.00078	0.00119	0.00062	0.00081
	300.0	0.00002	0.00005	0.00006	0.00004	0.00014	0.00073	0.00044
	330.0	0.00001	0.00003	0.00014	0.00006	0.00271	0.00097	0.00196
	0.0	0.00019	0.00020	0.00006	0.00090	0.00316	0.01033	0.00536
	30.0	0.00004	0.00001	0.00075	0.00000	0.00106	0.00200	0.00283
	60.0	0.00010	0.00001	0.00006	0.00009	0.00042	0.00042	0.00379
0.3130	270.0	0.00000	0.00003	0.00028	0.00034	0.00057	0.00076	0.00336
	300.0	0.00000	0.00022	0.00014	0.00013	0.00103	0.00182	0.00576
	330.0	0.00004	0.00015	0.00064	0.00709	0.00273	0.00282	0.00189
	0.0	0.00010	0.00018	0.00043	0.00456	0.00831	0.02922	0.03720
	30.0	0.00005	0.00003	0.00009	0.06172	0.03378	0.00469	0.00243
	60.0	0.00020	0.00001	0.00012	0.00036	0.00131	0.01219	0.00696
0.2609	270.0	0.00002	0.00003	0.00013	0.00737	0.00418	0.00451	0.00192
	300.0	0.00004	0.00007	0.00028	0.00083	0.00349	0.00446	0.00996
	330.0	0.00094	0.00015	0.00124	0.00512	0.00000	0.00495	0.01181
	0.0	0.00033	0.00000	0.00303	0.03499	0.00875	0.00427	0.00018
	30.0	0.00009	0.00006	0.00145	0.01685	0.02612	0.00056	0.00291
	60.0	0.00195	0.00000	0.00008	0.00359	0.00552	0.01018	0.02510
0.2087	270.0	0.00003	0.00020	0.00699	0.01032	0.01098	0.00730	0.00679
	300.0	0.00002	0.00005	0.00260	0.02296	0.01149	0.01226	0.01452
	330.0	0.00009	0.00006	0.01217	0.02280	0.02875	0.01146	0.01428
	0.0	0.00018	0.00000	0.00574	0.02915	0.01826	0.03301	0.00305
	30.0	0.00012	0.00000	0.00000	0.02022	0.00039	0.00497	0.00028
	60.0	0.01779	0.00000	0.00150	0.01568	0.00974	0.01350	0.09246

i) $\overline{v'w'}/u_o^2 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00267	0.00061	0.01852	0.01903	0.05329	0.01269	0.01268
	300.0	0.00012	0.00081	0.01513	0.00016	0.11825	0.03040	0.00881
	330.0	0.00025	0.00618	0.03460	0.00093	0.02647	0.00000	0.00209
	0.0	0.00013	0.00017	0.00000	0.01808	0.04568	0.00857	0.00365
	30.0	0.00028	0.00108	0.01813	0.02278	0.01704	0.02242	0.00107
	60.0	0.00021	0.00022	0.01078	0.01172	0.03945	0.00886	0.00801
0.1043	270.0	0.00004	0.01315	0.02167	0.02663	0.02965	0.01041	0.07276
	300.0	0.00005	0.00364	0.02096	0.01849	0.02566	0.00620	0.00660
	330.0	0.00022	0.00127	0.04092	0.01952	0.03566	0.00817	0.00000
	0.0	0.00031	0.00210	0.05162	0.03311	0.02212	0.00712	0.00872
	30.0	0.00010	0.00132	0.03020	0.02243	0.00845	0.01198	0.00508
	60.0	0.00004	0.00567	0.05033	0.00320	0.01329	0.00639	0.00539
0.0522	270.0	0.00006	0.04235	5.18001	0.00498	0.01143	0.00807	0.01150
	300.0	0.00021	0.02465	0.01718	0.00100	0.00652	0.00359	0.00800
	330.0	0.00002	0.00415	0.02719	0.02510	0.01719	0.01055	0.00413
	0.0	0.00019	0.00869	0.03832	0.02763	0.00730	0.00019	0.00606
	30.0	0.00006	0.01039	0.01760	0.02491	0.01522	0.00963	0.00885
	60.0	0.00018	0.01166	0.02126	0.00554	0.00814	0.00481	0.00106
0.0000	270.0	0.00007	0.07781	0.02563	0.00695	0.02024	0.00540	0.02333
	300.0	0.00012	0.09955	0.15897	0.00635	0.01085	0.01671	0.00243
	330.0	0.00004	0.05083	0.04666	0.00885	0.00923	0.01350	0.00655
	0.0	0.00009	0.25467	0.01693	0.00000	0.00900	0.00639	0.00662
	30.0	0.00001	0.05708	0.01568	0.00242	0.00729	0.00792	0.00685
	60.0	0.00003	0.07570	0.02601	0.01158	0.01631	0.13199	0.00112
-0.0522	270.0	0.00018	0.02743	0.01827	0.84964	0.01218	0.00435	0.01636
	300.0	0.00013	0.11617	0.01268	0.01942	0.01286	0.00815	0.00060
	330.0	0.00006	0.16178	0.01218	0.01904	0.01198	0.01171	0.00409
	0.0	0.00001	0.05160	0.02100	0.01222	0.02446	0.01105	0.00486
	30.0	0.00002	0.16468	0.01379	0.01253	0.01240	0.00645	0.01003
	60.0	0.00005	0.09564	0.04634	0.01165	0.00932	0.00874	0.00652
-0.1043	270.0	0.00008	0.00321	0.01852	0.01820	0.02174	0.00971	0.00499
	300.0	0.00019	0.15584	0.01170	0.00935	0.01801	0.00948	0.00633
	330.0	0.00001	0.07553	0.01283	0.02046	0.00791	0.00570	0.00000
	0.0	0.00001	0.03628	0.01131	0.00987	0.00072	0.00000	0.00034
	30.0	0.00003	0.09624	0.00485	0.01605	0.01143	0.01227	0.00504
	60.0	0.00003	0.07411	0.02561	0.01217	0.00722	0.00458	0.01059

i) $\overline{v'w'}/u_0^2 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00003	0.00085	0.01941	0.02389	0.01234	0.00584	0.00585
	300.0	0.00016	0.01335	0.29860	0.00541	0.01083	0.01655	0.00406
	330.0	0.00049	0.02921	0.00072	0.00259	0.01512	0.01327	0.00423
	0.0	0.00003	0.03120	0.02373	0.02003	0.00704	0.00000	0.00717
	30.0	0.00004	0.03260	0.01333	0.01519	0.00000	0.01794	0.00880
	60.0	0.00002	0.02066	0.01708	0.00000	0.04941	0.04113	0.01162
-0.2087	270.0	0.00012	0.00005	0.00216	0.00260	0.00275	0.01337	0.01062
	300.0	0.00001	0.00351	0.00940	0.05557	0.01814	0.01366	0.00647
	330.0	0.00007	0.03277	0.01452	0.02147	0.02897	0.00655	0.00786
	0.0	0.00013	0.66470	0.00109	0.00000	0.00214	0.01277	0.00839
	30.0	0.00017	0.04150	0.00630	0.03010	0.03483	0.00718	0.00000
	60.0	0.00001	0.00307	0.01965	0.01637	0.01944	0.00214	0.00903
-0.2609	270.0	0.00002	0.00005	0.00070	0.00012	0.00269	0.00730	0.03407
	300.0	0.00003	0.00030	0.00386	0.00806	0.00368	0.00365	0.00817
	330.0	0.00010	0.16691	0.02706	0.01781	0.00275	0.00402	0.00566
	0.0	0.00102	0.44147	0.01620	0.00736	0.00000	0.01468	0.05215
	30.0	0.00008	0.07306	0.02444	0.01128	0.01220	0.00781	0.00489
	60.0	0.00002	0.00019	0.00063	0.00764	0.00563	0.01431	0.00355
-0.3130	270.0	0.00000	0.00002	0.00010	0.00022	0.00044	0.00705	0.00505
	300.0	0.00003	0.00018	0.00021	0.00233	0.00135	0.00216	0.00247
	330.0	0.00007	0.00236	0.01175	0.01207	0.00716	0.00526	0.00346
	0.0	0.00865	0.00987	0.00671	0.01284	0.00000	0.01262	0.00020
	30.0	0.00010	0.01477	0.00545	0.00654	0.00186	0.00362	0.00195
	60.0	0.00003	0.00015	0.00026	0.00147	0.00000	0.00691	0.00000
-0.3652	270.0	0.00000	0.00004	0.00006	0.00018	0.00028	0.00233	0.00445
	300.0	0.00000	0.00000	0.00016	0.00037	0.00101	0.00162	0.00113
	330.0	0.00004	0.00047	0.00185	0.00109	0.00060	0.00275	0.00187
	0.0	0.07427	0.00944	0.00000	0.00156	0.01353	0.01272	0.00120
	30.0	0.00018	0.00732	0.00091	0.00193	0.00157	0.00218	0.00254
	60.0	0.00031	0.00018	0.00040	0.00044	0.00145	0.00313	0.00150
-0.4174	270.0	0.00000	0.00010	0.00001	0.00009	0.00029	0.00041	0.00088
	300.0	0.00002	0.00001	0.00017	0.00028	0.00057	0.00064	0.00039
	330.0	0.00005	0.00020	0.00043	0.00087	0.00067	0.00153	0.00124
	0.0	0.34732	0.16979	0.02380	0.01668	0.00000	0.00353	0.00038
	30.0	0.00024	0.00037	0.00099	0.00104	0.00000	0.00000	0.01232
	60.0	0.00004	0.00053	0.00051	0.00011	0.00088	0.00028	0.00032

i) $\overline{v'w'}/u_0^2 \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.98427	1.10782	1.11388	1.12432	1.12186	1.11373	1.10539
	300.0	0.96585	1.05847	1.05914	1.09586	1.10825	1.10730	1.09863
	330.0	0.97163	1.04121	1.02427	1.07811	1.10016	1.10139	1.09634
	0.0	0.96919	0.980[illegible]	0.96232	1.01795	1.04087	1.05461	1.07358
	30.0	0.97183	1.03039	1.01834	1.07563	1.09948	1.09663	1.09395
	60.0	1.03695	1.04827	1.05397	1.10402	1.11184	1.10489	1.09638
0.3652	270.0	0.98446	1.11063	1.12440	1.13285	1.12896	1.12803	1.11590
	300.0	0.97030	1.06049	1.06963	1.10965	1.11630	1.12354	1.11555
	330.0	0.95962	1.04546	1.03477	1.07690	1.08955	1.09313	1.11211
	0.0	0.89444	0.97824	0.96962	0.98057	1.05985	1.08582	1.12397
	30.0	0.94577	1.03925	1.02108	1.08424	1.08953	1.10356	1.11153
	60.0	1.02960	1.05425	1.06273	1.11452	1.12536	1.12138	1.11746
0.3130	270.0	0.98579	1.11231	1.13742	1.14729	1.13589	1.15016	1.11343
	300.0	0.96047	1.06122	1.07569	1.11913	1.12825	1.14472	1.11702
	330.0	0.96079	1.04506	1.02746	1.06378	1.10741	1.11521	1.12408
	0.0	0.87787	0.92358	0.92328	1.02657	1.18653	1.15956	1.15261
	30.0	0.94852	1.03411	1.00276	1.08012	1.11673	1.14845	1.13181
	60.0	0.95522	1.05732	1.07115	1.12456	1.13232	1.14388	1.12446
0.2609	270.0	0.97970	1.11295	1.14336	1.15813	1.14731	1.13378	1.09030
	300.0	0.96563	1.05704	1.08490	1.12985	1.16978	1.17556	1.08226
	330.0	0.95911	1.03920	1.02286	1.12650	1.21375	1.17623	1.09849
	0.0	0.86168	0.95280	0.96425	1.21653	1.39801	1.21166	1.11016
	30.0	0.94562	1.01878	0.99949	1.15499	1.26738	1.19182	1.09064
	60.0	0.91945	1.05401	1.07746	1.14769	1.16708	1.16489	1.08995
0.2087	270.0	0.96372	1.10431	1.18379	1.16885	1.11816	1.08772	1.02594
	300.0	0.96110	1.04544	1.09971	1.20815	1.20142	1.12031	1.01602
	330.0	0.94010	1.02571	1.05250	1.33304	1.33639	1.18585	1.02762
	0.0	0.87946	0.96680	0.99732	1.47186	1.46984	1.16875	1.02515
	30.0	0.93897	1.01294	1.02976	1.35925	1.36237	1.13716	1.02408
	60.0	0.77784	1.04183	1.08473	1.26012	1.21386	1.11269	0.99608

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.94934	1.09805	1.27336	1.12915	1.01433	0.96493	0.97940
	300.0	0.94944	1.03127	1.25245	1.31424	1.12494	1.01307	0.96591
	330.0	0.91894	1.01020	1.25364	1.51309	1.24731	1.09594	0.96689
	0.0	0.90427	0.98518	1.17395	1.60527	1.26186	1.01966	0.97745
	30.0	0.93177	0.99207	1.23692	1.52377	1.21217	0.99940	0.95320
	60.0	0.69128	1.02864	1.16690	1.30566	1.13113	0.99577	0.93391
0.1043	270.0	0.93194	1.07619	1.44770	0.95607	0.86759	0.90450	0.96215
	300.0	0.93722	1.00216	1.56785	1.18218	0.91428	0.92551	0.94592
	330.0	0.91560	1.00797	1.70041	1.31990	0.96781	0.97675	0.93608
	0.0	0.91887	0.98134	1.56145	1.35832	0.99514	0.95467	0.95167
	30.0	0.92353	0.98169	1.62644	1.25460	0.96056	0.90509	0.95252
	60.0	0.64717	1.00380	1.54076	1.11186	0.90073	0.90667	0.94098
0.0522	270.0	0.91461	1.16692	1.44023	0.80053	0.77757	0.92522	0.98[illegible]
	300.0	0.89632	1.07957	1.54502	0.90476	0.80379	0.91152	0.97452
	330.0	0.92851	0.99788	1.72081	0.91885	0.81142	0.90314	0.97132
	0.0	0.92663	0.96540	1.81408	0.93616	0.81697	0.91105	0.96050
	30.0	0.91998	1.00187	1.70907	0.92943	0.80304	0.91643	0.95848
	60.0	0.60411	1.03565	1.67347	0.86623	0.77838	0.89163	0.98862
0.0000	270.0	0.90185	1.26586	1.45487	0.76303	0.77213	0.95165	1.01770
	300.0	0.91545	1.38370	1.25702	0.76258	0.78352	0.95751	1.00788
	330.0	0.91090	1.24318	1.24006	0.74419	0.81444	0.92626	1.00562
	0.0	0.92011	1.77375	1.34330	0.70956	0.77759	0.94774	0.99445
	30.0	0.89414	1.52017	1.19020	0.73235	0.78021	0.93706	0.99039
	60.0	0.95016	1.32730	1.46002	0.74412	0.77978	0.92510	1.00685
-0.0522	270.0	0.91013	1.12021	1.41180	0.81981	0.77695	0.95101	1.00735
	300.0	0.91416	1.64236	0.98388	0.73479	0.78347	0.97392	1.02135
	330.0	0.89838	2.00161	0.77173	0.71563	0.82619	0.94624	1.02233
	0.0	0.90381	2.51088	0.77013	0.72610	0.86563	0.97900	1.02795
	30.0	0.87920	2.34716	0.78021	0.69753	0.80990	0.94450	0.99814
	60.0	0.94265	1.50882	1.17037	0.72883	0.76853	0.94580	0.99414
-0.1043	270.0	0.92168	1.07462	1.41959	0.97071	0.83114	0.91831	0.96770
	300.0	0.92130	1.45645	1.04356	0.73159	0.80901	0.96684	1.01194
	330.0	0.88620	2.09935	0.57063	0.71505	0.86549	0.97299	1.03595
	0.0	0.86688	1.52907	0.57718	0.82105	0.91068	0.99367	1.04776
	30.0	0.85056	2.06279	0.58687	0.69635	0.85207	0.97029	1.00121
	60.0	0.96156	1.42350	1.01945	0.79044	0.79425	0.90345	0.98421

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.93865	1.08855	1.23639	1.16795	0.99239	0.93841	0.97474
	300.0	0.94062	1.21149	1.09784	0.89456	0.88670	0.96465	1.02750
	330.0	0.87298	1.25705	0.55722	0.72982	0.93995	0.99705	1.05538
	0.0	0.81079	0.49346	0.67196	0.91702	0.95339	1.01528	1.03691
	30.0	0.81910	1.20704	0.53047	0.69945	0.82537	1.00873	1.00976
	60.0	0.98569	1.21212	1.07530	0.95313	0.88054	0.92537	0.96953
-0.2087	270.0	0.95449	1.10040	1.13626	1.16389	1.11882	1.02544	1.00471
	300.0	0.96112	1.19367	1.13880	1.03994	1.00947	0.99959	1.04229
	330.0	0.87281	1.10134	0.69448	0.87789	1.00246	1.04076	1.04670
	0.0	0.72698	1.32643	0.83807	0.93132	0.99514	1.02572	1.02331
	30.0	0.81298	0.95896	0.68183	0.78962	0.93397	1.02847	1.02144
	60.0	1.01160	1.17398	1.15180	1.05882	0.99056	0.98465	0.99786
-0.2609	270.0	0.97073	1.09882	1.11971	1.14559	1.13851	1.10615	1.05857
	300.0	0.98303	1.18017	1.14173	1.13864	1.11117	1.05281	1.07086
	330.0	0.90539	1.24368	0.93008	1.00536	1.07741	1.04703	1.06984
	0.0	0.72636	6.70547	0.85178	0.92099	0.95551	1.02269	1.03316
	30.0	0.82786	1.16256	0.94456	0.98144	1.01564	1.04009	1.03531
	60.0	1.02191	1.17079	1.13319	1.13700	1.09233	1.03790	1.02572
-0.3130	270.0	0.98065	1.10244	1.11478	1.13885	1.13318	1.13477	1.09565
	300.0	0.99649	1.16578	1.12816	1.14279	1.12548	1.10554	1.08491
	330.0	0.97381	1.31403	1.09983	1.08493	1.08197	1.07668	1.07237
	0.0	0.64159	1.08810	0.80030	0.92601	0.95779	1.01323	1.03077
	30.0	0.89281	1.30531	1.08848	1.09791	1.08211	1.07629	1.07106
	60.0	1.03658	1.16728	1.13242	1.14522	1.11638	1.08907	1.06691
-0.3652	270.0	0.98606	1.10356	1.10788	1.13207	1.13092	1.13329	1.12112
	300.0	1.00802	1.16050	1.11878	1.14226	1.13032	1.11428	1.09888
	330.0	1.04279	1.31667	1.11933	1.10786	1.09169	1.08660	1.05821
	0.0	1.77126	0.85609	0.78362	0.92448	0.99250	1.00811	1.02479
	30.0	0.98276	1.32163	1.10537	1.12329	1.10467	1.10190	1.08413
	60.0	1.05256	1.15982	1.12312	1.14217	1.13042	1.11155	1.08511
-0.4174	270.0	0.98792	1.10348	1.10621	1.13730	1.13106	1.12637	1.11319
	300.0	1.01202	1.15253	1.11452	1.13448	1.12989	1.12303	1.10493
	330.0	1.07507	1.27230	1.10783	1.11687	1.08776	1.06563	1.03913
	0.0	2.96481	0.62075	0.73573	0.90068	0.95569	0.98674	0.99420
	30.0	1.05849	1.29424	1.09188	1.11936	1.09775	1.08582	1.06486
	60.0	0.89935	1.15617	1.11492	1.13983	1.12511	1.11203	1.09173

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.01069	0.01091	0.00969	0.01502	0.01905	0.03611	0.04238
	300.0	0.00823	0.00837	0.00831	0.01571	0.01689	0.03131	0.04381
	330.0	0.00701	0.00901	0.01072	0.02003	0.03175	0.04486	0.07281
	0.0	0.00701	0.03148	0.03082	0.04063	0.06659	0.06626	0.09156
	30.0	0.00701	0.01045	0.01243	0.02115	0.03112	0.05242	0.08661
	60.0	0.01239	0.01251	0.00860	0.01718	0.01856	0.03373	0.05585
0.3652	270.0	0.00813	0.01092	0.01295	0.01998	0.02895	0.04853	0.05329
	300.0	0.00630	0.00773	0.01075	0.02034	0.02684	0.05739	0.06844
	330.0	0.00678	0.00879	0.01575	0.03367	0.06229	0.06718	0.10402
	0.0	0.03359	0.03453	0.03549	0.05928	0.10202	0.10294	0.12114
	30.0	0.00912	0.01113	0.01891	0.03729	0.05455	0.09216	0.11117
	60.0	0.00583	0.00792	0.01151	0.01979	0.02744	0.05874	0.08201
0.3130	270.0	0.00715	0.01006	0.01649	0.03567	0.05320	0.08140	0.09577
	300.0	0.00897	0.00837	0.01409	0.02859	0.05333	0.09332	0.10579
	330.0	0.00773	0.01472	0.02731	0.05530	0.10898	0.10730	0.12534
	0.0	0.03382	0.03938	0.04166	0.09932	0.20062	0.14960	0.13616
	30.0	0.00987	0.01741	0.03665	0.07796	0.10202	0.13997	0.13086
	60.0	0.00664	0.00947	0.01246	0.03308	0.06182	0.10349	0.11652
0.2609	270.0	0.00713	0.01117	0.03790	0.08111	0.10817	0.13586	0.13452
	300.0	0.00864	0.01057	0.02964	0.07197	0.13081	0.14029	0.14399
	330.0	0.00902	0.02263	0.04406	0.12310	0.17577	0.13643	0.15180
	0.0	0.03767	0.03982	0.05136	0.21601	0.24154	0.16908	0.15351
	30.0	0.01060	0.02458	0.04703	0.16505	0.19910	0.17156	0.15357
	60.0	0.00633	0.00946	0.02296	0.09219	0.12286	0.15199	0.15430
0.2087	270.0	0.00880	0.01860	0.13390	0.17405	0.18216	0.18133	0.16324
	300.0	0.00977	0.01964	0.11254	0.16929	0.19654	0.18376	0.16571
	330.0	0.01499	0.02302	0.11096	0.25762	0.24085	0.16641	0.15699
	0.0	0.03681	0.03358	0.11335	0.29714	0.24997	0.19912	0.15927
	30.0	0.01203	0.02607	0.09716	0.26427	0.23562	0.20251	0.16269
	60.0	0.00851	0.01488	0.05974	0.21451	0.19602	0.18615	0.16429

k) $u'_{rms}/\overline{u} \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00714	0.07127	0.27169	0.27130	0.24094	0.20394	0.16156
	300.0	0.00971	0.03277	0.25796	0.26309	0.24189	0.20605	0.15869
	330.0	0.02913	0.03624	0.27289	0.29567	0.26911	0.19955	0.16131
	0.0	0.03624	0.03291	0.23936	0.30250	0.29634	0.20921	0.15155
	30.0	0.01231	0.03496	0.26961	0.31863	0.27953	0.20407	0.15762
	60.0	0.01747	0.03182	0.19005	0.29620	0.26608	0.20304	0.16286
0.1043	270.0	0.01071	0.19432	0.39362	0.30773	0.23219	0.18815	0.15572
	300.0	0.00939	0.11488	0.36166	0.33665	0.24445	0.18693	0.15657
	330.0	0.02805	0.04732	0.39162	0.33842	0.27011	0.19408	0.14673
	0.0	0.03214	0.05876	0.38960	0.37425	0.26965	0.18936	0.14882
	30.0	0.01914	0.06746	0.38369	0.36333	0.26645	0.18068	0.14744
	60.0	0.01020	0.08557	0.35048	0.35322	0.25404	0.18549	0.14842
0.0522	270.0	0.01202	0.26788	0.48254	0.28235	0.21161	0.17556	0.14932
	300.0	0.01245	0.25776	0.48512	0.31567	0.20930	0.17989	0.15121
	330.0	0.01242	0.13648	0.43583	0.31210	0.22629	0.16855	0.14459
	0.0	0.01806	0.13685	0.39807	0.31620	0.21382	0.18123	0.14784
	30.0	0.01211	0.18660	0.43030	0.31552	0.20667	0.17680	0.15107
	60.0	0.01345	0.19506	0.42512	0.30220	0.22623	0.17732	0.14661
0.0000	270.0	0.01228	0.34117	0.50993	0.26854	0.19909	0.16966	0.13916
	300.0	0.01016	0.36552	0.47411	0.26811	0.20037	0.17857	0.13876
	330.0	0.00837	0.31687	0.45343	0.25349	0.21233	0.16884	0.14066
	0.0	0.01056	0.41029	0.45656	0.24568	0.20797	0.17196	0.13957
	30.0	0.00914	0.42832	0.44651	0.25829	0.20790	0.17158	0.14166
	60.0	0.01131	0.33314	0.49352	0.25520	0.21279	0.16535	0.13878
-0.0522	270.0	0.01461	0.24223	0.48146	0.28355	0.21266	0.17388	0.14263
	300.0	0.01089	0.43643	0.41527	0.24653	0.21439	0.17416	0.14223
	330.0	0.01210	0.54605	0.34361	0.24641	0.22032	0.17593	0.14383
	0.0	0.00857	0.59324	0.34182	0.25127	0.21649	0.17177	0.13497
	30.0	0.00976	0.57253	0.35087	0.23583	0.21833	0.17075	0.14090
	60.0	0.01185	0.41171	0.45484	0.25821	0.21108	0.17124	0.14200
-0.1043	270.0	0.01059	0.12010	0.35852	0.30524	0.23513	0.17748	0.15497
	300.0	0.00979	0.41943	0.40658	0.25142	0.23099	0.18111	0.14153
	330.0	0.01103	0.66489	0.26415	0.25116	0.21357	0.17154	0.13192
	0.0	0.00937	0.66341	0.27740	0.25021	0.21852	0.16171	0.12530
	30.0	0.01182	0.69706	0.26665	0.24142	0.22111	0.17223	0.14138
	60.0	0.01170	0.35252	0.41206	0.28734	0.22382	0.18150	0.15196

k) $u'_{rms}/\bar{u} \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00862	0.04280	0.23650	0.24280	0.24463	0.19553	0.15962
	300.0	0.00998	0.23917	0.32265	0.28897	0.24415	0.18876	0.13184
	330.0	0.01497	0.64668	0.25997	0.25919	0.20553	0.16272	0.12420
	0.0	0.01332	0.30354	0.31255	0.24302	0.20060	0.15805	0.12541
	30.0	0.01526	0.63277	0.26306	0.27272	0.23160	0.16981	0.14142
	60.0	0.00973	0.23618	0.34407	0.29941	0.23843	0.18522	0.15057
-0.2087	270.0	0.00794	0.01768	0.08342	0.15288	0.17847	0.19668	0.15708
	300.0	0.00819	0.10779	0.18770	0.23694	0.22519	0.19036	0.13423
	330.0	0.01800	0.56655	0.31596	0.26060	0.20342	0.14471	0.12525
	0.0	0.02075	0.34815	0.29282	0.24079	0.20031	0.14865	0.12058
	30.0	0.01692	0.52514	0.32294	0.28890	0.23615	0.14400	0.13495
	60.0	0.00911	0.08441	0.22783	0.21035	0.21593	0.18976	0.15932
-0.2609	270.0	0.00707	0.01086	0.02700	0.06035	0.10379	0.16521	0.13160
	300.0	0.00734	0.02803	0.07853	0.11022	0.12148	0.16766	0.08995
	330.0	0.02018	0.45489	0.31012	0.20587	0.10990	0.12543	0.10236
	0.0	0.03811	0.36790	0.25875	0.22941	0.18894	0.14240	0.11666
	30.0	0.01965	0.47021	0.30740	0.25511	0.16352	0.14452	0.12448
	60.0	0.00758	0.02582	0.09763	0.11271	0.14700	0.17426	0.13634
-0.3130	270.0	0.00692	0.00998	0.01466	0.02753	0.04704	0.11027	0.09528
	300.0	0.00701	0.01776	0.02931	0.05540	0.06950	0.09991	0.08247
	330.0	0.01715	0.21098	0.14813	0.08081	0.11663	0.08423	0.09119
	0.0	0.09160	0.31246	0.24810	0.21307	0.17985	0.13655	0.10485
	30.0	0.01718	0.24375	0.15980	0.12535	0.09710	0.09226	0.08016
	60.0	0.00744	0.01617	0.03773	0.04850	0.08273	0.08957	0.08233
-0.3652	270.0	0.00675	0.01021	0.01060	0.01694	0.02656	0.06226	0.05979
	300.0	0.00727	0.01515	0.01773	0.03174	0.04051	0.05253	0.04385
	330.0	0.01600	0.05551	0.05083	0.05997	0.06529	0.08161	0.09462
	0.0	0.24215	0.28928	0.23356	0.19978	0.15847	0.12378	0.09766
	30.0	0.01828	0.05756	0.05348	0.05116	0.05432	0.06904	0.06936
	60.0	0.00667	0.01189	0.02236	0.02882	0.03275	0.05529	0.05902
-0.4174	270.0	0.00736	0.00796	0.01080	0.01468	0.02378	0.03340	0.04476
	300.0	0.00709	0.01322	0.01479	0.02528	0.02531	0.03387	0.03662
	330.0	0.01498	0.02629	0.03257	0.04665	0.06511	0.07942	0.10070
	0.0	0.68506	0.29353	0.22702	0.20156	0.15496	0.11849	0.10062
	30.0	0.01511	0.03491	0.03737	0.03892	0.04063	0.05103	0.07799
	60.0	0.00926	0.01305	0.01566	0.02348	0.02701	0.03481	0.04116

k) $u'_{rms}/\overline{u} \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00018	0.00011	0.00012	0.00030	0.00040	0.00154	0.00241
	300.0	0.00012	0.00035	0.00009	0.00045	0.00034	0.00151	0.00367
	330.0	0.00006	0.00007	0.00028	0.00056	0.00120	0.00309	0.00497
	0.0	0.00064	0.00136	0.00112	0.00185	0.00463	0.00483	0.00859
	30.0	0.00007	0.00040	0.00014	0.00051	0.00122	0.00446	0.00863
	60.0	0.00031	0.00029	0.00008	0.00033	0.00036	0.00145	0.00421
0.3652	270.0	0.00012	0.00009	0.00030	0.00066	0.00107	0.00321	0.00440
	300.0	0.00005	0.00010	0.00026	0.00071	0.00097	0.00384	0.00690
	330.0	0.00007	0.00007	0.00051	0.00115	0.00533	0.00600	0.00994
	0.0	0.00123	0.00125	0.00129	0.00468	0.01251	0.01182	0.01435
	30.0	0.00012	0.00014	0.00059	0.00165	0.00474	0.00999	0.01354
	60.0	0.00010	0.00006	0.00017	0.00060	0.00109	0.00416	0.00805
0.3130	270.0	0.00012	0.00013	0.00066	0.00205	0.00321	0.00813	0.01076
	300.0	0.00019	0.00007	0.00042	0.00145	0.00296	0.00922	0.01657
	330.0	0.00017	0.00019	0.00136	0.00578	0.01456	0.01355	0.01623
	0.0	0.00145	0.00149	0.00189	0.01676	0.03922	0.01865	0.01671
	30.0	0.00019	0.00052	0.00131	0.00688	0.01399	0.02066	0.01806
	60.0	0.00032	0.00011	0.00030	0.00195	0.00547	0.01149	0.01510
0.2609	270.0	0.00006	0.00015	0.00267	0.01043	0.01289	0.02289	0.02105
	300.0	0.00011	0.00014	0.00141	0.00994	0.01601	0.02003	0.02140
	330.0	0.00040	0.00053	0.00228	0.02687	0.03963	0.02269	0.02022
	0.0	0.00166	0.00116	0.00308	0.05164	0.05931	0.02997	0.02055
	30.0	0.00020	0.00090	0.00284	0.02695	0.04298	0.03038	0.02309
	60.0	0.00141	0.00015	0.00102	0.01687	0.01659	0.02190	0.01896
0.2087	270.0	0.00010	0.00084	0.02126	0.04008	0.03456	0.03410	0.02824
	300.0	0.00014	0.00045	0.01542	0.03592	0.03675	0.03139	0.02628
	330.0	0.00097	0.00069	0.01667	0.07717	0.05282	0.03177	0.02640
	0.0	0.00124	0.00128	0.01667	0.10130	0.06210	0.03412	0.02597
	30.0	0.00026	0.00112	0.01335	0.07398	0.06035	0.03826	0.02545
	60.0	0.03458	0.00035	0.00625	0.04464	0.03837	0.03321	0.02420

1) $\frac{1}{2} ({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00150	0.00615	0.07990	0.07130	0.05356	0.04278	0.03192
	300.0	0.00021	0.00192	0.06898	0.07330	0.05703	0.03802	0.02527
	330.0	0.00091	0.00086	0.08979	0.09436	0.06464	0.03708	0.02537
	0.0	0.00117	0.00138	0.06890	0.10209	0.07555	0.04205	0.02545
	30.0	0.00083	0.00140	0.07515	0.08910	0.06741	0.03993	0.02673
	60.0	0.00106	0.00112	0.04348	0.08079	0.05751	0.03658	0.02459
0.1043	270.0	0.00014	0.04456	0.18127	0.08583	0.05793	0.04326	0.02795
	300.0	0.00012	0.01631	0.16977	0.09939	0.05769	0.03532	0.02748
	330.0	0.00100	0.00220	0.18031	0.11526	0.06458	0.03678	0.02818
	0.0	0.00117	0.00406	0.16882	0.12379	0.06275	0.03401	0.02358
	30.0	0.00075	0.00637	0.16862	0.10750	0.05749	0.03299	0.02532
	60.0	0.00025	0.00818	0.12150	0.09994	0.05006	0.03536	0.02578
0.0522	270.0	0.00017	0.11575	0.20178	0.06964	0.04713	0.04155	0.03501
	300.0	0.00028	0.08406	0.20210	0.07035	0.04407	0.03553	0.03073
	330.0	0.00020	0.01824	0.18169	0.08763	0.05029	0.03400	0.02591
	0.0	0.00097	0.02561	0.16347	0.08659	0.04531	0.03491	0.02779
	30.0	0.00021	0.04121	0.17547	0.08482	0.04632	0.03274	0.02786
	60.0	0.00016	0.04508	0.15754	0.07848	0.04442	0.03710	0.02523
0.0000	270.0	0.00017	0.17257	0.20219	0.05756	0.03984	0.04093	0.02496
	300.0	0.00014	0.21856	0.17127	0.06028	0.04521	0.04014	0.02818
	330.0	0.00009	0.13656	0.18635	0.06146	0.04498	0.03133	0.02719
	0.0	0.00020	0.30226	0.17521	0.06088	0.05110	0.03128	0.02858
	30.0	0.00011	0.24188	0.18488	0.06117	0.04744	0.03738	0.02636
	60.0	0.00015	0.18433	0.20782	0.05778	0.04572	0.03686	0.02892
-0.0522	270.0	0.00032	0.07387	0.18587	0.07084	0.03989	0.04265	0.03503
	300.0	0.00015	0.31339	0.14427	0.05231	0.04918	0.04266	0.03006
	330.0	0.00017	0.43377	0.10856	0.06211	0.05148	0.03476	0.02982
	0.0	0.00007	0.43602	0.10401	0.07327	0.05499	0.04136	0.02639
	30.0	0.00015	0.46057	0.10752	0.05772	0.05573	0.04425	0.02310
	60.0	0.00022	0.25290	0.17617	0.05619	0.05160	0.03994	0.03056
-0.1043	270.0	0.00012	0.01818	0.13525	0.08515	0.05281	0.03993	0.03210
	300.0	0.00012	0.28444	0.12486	0.06765	0.05280	0.03934	0.02907
	330.0	0.00015	0.46608	0.07956	0.07382	0.05766	0.04564	0.03011
	0.0	0.00016	0.36844	0.10167	0.08373	0.06335	0.03614	0.02752
	30.0	0.00024	0.48271	0.07560	0.07524	0.06325	0.04094	0.02925
	60.0	0.00015	0.17618	0.14741	0.06171	0.06232	0.04363	0.04060

1) $\frac{1}{2}({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

TABLE IV (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00008	0.00209	0.06247	0.06470	0.05640	0.04108	0.03066
	300.0	0.00014	0.08622	0.11176	0.07727	0.05909	0.04636	0.02777
	330.0	0.00029	0.35639	0.07801	0.07872	0.05749	0.04758	0.02008
	0.0	0.00042	0.18773	0.16089	0.08362	0.06262	0.03916	0.02308
	30.0	0.00041	0.38036	0.09164	0.07876	0.05741	0.03642	0.02361
	60.0	0.00011	0.06713	0.10701	0.07213	0.05959	0.03857	0.03328
-0.2087	270.0	0.00015	0.00042	0.01097	0.03057	0.03473	0.03883	0.02408
	300.0	0.00007	0.01544	0.04463	0.06270	0.05231	0.04728	0.02569
	330.0	0.00053	0.25431	0.09865	0.08127	0.04226	0.02395	0.01930
	0.0	0.00184	0.31119	0.17415	0.07028	0.05041	0.03512	0.02242
	30.0	0.00051	0.26318	0.09130	0.09749	0.05828	0.03475	0.02607
	60.0	0.00012	0.01264	0.05417	0.04926	0.05137	0.04008	0.02529
-0.2609	270.0	0.00006	0.00023	0.00225	0.00691	0.01330	0.02651	0.02651
	300.0	0.00007	0.00143	0.00860	0.01679	0.02245	0.02767	0.01949
	330.0	0.00037	0.17039	0.09967	0.04616	0.01845	0.02575	0.01521
	0.0	0.00635	0.63531	0.11741	0.07394	0.04785	0.02701	0.01768
	30.0	0.00046	0.18493	0.07521	0.06440	0.04286	0.02616	0.01831
	60.0	0.00008	0.00186	0.01438	0.01993	0.02352	0.02967	0.01950
-0.3130	270.0	0.00006	0.00017	0.00040	0.00133	0.00256	0.01306	0.01536
	300.0	0.00006	0.00069	0.00195	0.00531	0.00693	0.01022	0.01144
	330.0	0.00030	0.06781	0.02776	0.01339	0.01311	0.01102	0.01242
	0.0	0.02722	0.31119	0.08912	0.05624	0.04358	0.02805	0.01678
	30.0	0.00041	0.07664	0.02738	0.01818	0.01706	0.01566	0.00890
	60.0	0.00007	0.00086	0.00288	0.00411	0.00738	0.01505	0.01011
-0.3652	270.0	0.00006	0.00008	0.00042	0.00068	0.00078	0.00592	0.00683
	300.0	0.00006	0.00033	0.00064	0.00174	0.00239	0.00429	0.00519
	330.0	0.00031	0.00407	0.00583	0.00754	0.00560	0.00998	0.00965
	0.0	0.25980	0.15425	0.06841	0.04851	0.03657	0.02249	0.01627
	30.0	0.00045	0.00488	0.00562	0.00397	0.00714	0.00697	0.00676
	60.0	0.00015	0.00031	0.00096	0.00100	0.00228	0.00553	0.00327
-0.4174	270.0	0.00007	0.00015	0.00023	0.00038	0.00042	0.00162	0.00354
	300.0	0.00005	0.00022	0.00039	0.00101	0.00079	0.00226	0.00204
	330.0	0.00018	0.00199	0.00244	0.00428	0.01122	0.01572	0.01113
	0.0	1.33961	0.20823	0.05817	0.04789	0.03010	0.02186	0.01373
	30.0	0.00062	0.00203	0.00310	0.00257	0.00465	0.00727	0.00886
	60.0	0.00007	0.00030	0.00042	0.00060	0.00077	0.00192	0.00242

1) $\frac{1}{2}\left(u'^{2}_{rms} + v'^{2}_{rms} + w'^{2}_{rms}\right) \times 2$

TABLE V

TIME-MEAN AND TURBULENCE DATA FOR JET TO CROSSFLOW
VELOCITY RATIO R = 6.0

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	1.04664	1.11296	1.13554	1.10881	1.07091	1.08644	1.05945
	300.0	0.97692	1.02491	1.08868	1.11689	1.10692	1.06657	1.06323
	330.0	0.93888	0.90553	0.96542	1.21795	1.19700	1.09482	1.10015
	0.0	0.83648	0.77437	0.86312	1.41921	1.26182	1.16059	1.14108
	30.0	0.96966	0.89547	0.93431	1.23195	1.30338	1.12927	1.09145
	60.0	0.98146	1.02469	1.07205	1.13291	1.16368	1.09305	1.08690
0.3652	270.0	1.04642	1.13925	1.16266	1.13080	1.09986	1.10733	1.07759
	300.0	0.97670	1.03079	1.14247	1.19850	1.14312	1.03180	0.99243
	330.0	0.93488	0.89498	1.09403	1.29508	1.07375	0.96149	1.00155
	0.0	0.84682	0.76370	1.12393	1.35754	1.02090	1.00284	1.05197
	30.0	0.97217	0.88707	1.05869	1.33416	1.19956	1.01670	1.02895
	60.0	0.98860	1.02157	1.11363	1.21291	1.19999	1.06368	1.04667
0.3130	270.0	1.04142	1.15413	1.20803	1.16152	1.11412	1.11579	1.08888
	300.0	0.96417	1.03864	1.29584	1.25847	1.10657	0.98438	0.97678
	330.0	0.92845	0.88209	1.35099	1.18496	0.91911	0.93030	0.97408
	0.0	0.78594	0.71686	1.45993	1.09696	0.83187	0.93696	1.00693
	30.0	0.96524	0.84152	1.32806	1.22629	1.03953	0.97533	1.01109
	60.0	0.98204	1.02583	1.21539	1.25934	1.18191	1.03008	1.04208
0.2609	270.0	1.01544	1.19659	1.29787	1.18763	1.12389	1.11329	1.09907
	300.0	0.95157	1.04356	1.40255	1.20342	1.08442	0.97702	0.99029
	330.0	0.91080	0.90062	1.47777	0.97425	0.84670	0.94036	0.98586
	0.0	0.76749	0.81426	1.54166	0.83599	0.76481	0.94375	0.99096
	30.0	0.93440	0.88693	1.50510	0.96413	0.92787	0.99713	1.03310
	60.0	0.96452	1.04215	1.35716	1.21924	1.14062	1.03479	1.06237
0.2087	270.0	0.97748	1.37420	1.38109	1.17160	1.08637	1.09911	1.09455
	300.0	0.91615	1.17037	1.26906	1.14533	1.03842	1.01472	1.01217
	330.0	0.87703	1.10349	1.19346	0.86708	0.85978	0.97089	1.01358
	0.0	0.80441	1.19209	1.19544	0.73652	0.79668	0.96112	1.00195
	30.0	0.90749	1.22622	1.30914	0.85938	0.89946	1.02274	1.06674
	60.0	0.94547	1.16667	1.43287	1.09455	1.04742	1.03780	1.08029

a) $\overline{u}/u_0$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.90295	1.67558	1.28813	1.10914	1.04554	1.10268	1.08775
	300.0	0.86666	1.56325	1.05752	1.09365	1.01536	1.03647	1.03453
	330.0	0.85129	1.55511	0.81502	0.87381	0.88273	1.00578	1.01785
	0.0	0.77454	1.55977	0.75202	0.70013	0.78453	0.97822	1.00483
	30.0	0.87709	1.63286	0.91311	0.83809	0.96534	1.01324	1.05880
	60.0	0.90131	1.48007	1.20119	0.97357	1.02127	1.04212	1.09593
0.1043	270.0	0.81789	1.31452	1.00613	0.98352	1.01221	1.08317	1.07566
	300.0	0.80575	1.54320	0.85855	1.00503	0.98956	1.03711	1.03983
	330.0	0.79907	1.64519	0.64555	0.85065	0.87847	1.00641	1.02907
	0.0	0.77765	1.72044	0.64487	0.68902	0.76295	0.95082	1.02753
	30.0	0.82294	1.62721	0.78655	0.76779	0.94653	1.00580	1.03853
	60.0	0.84007	1.63684	0.97213	0.88078	0.98208	1.01951	1.06331
0.0522	270.0	0.74355	0.69739	0.66302	0.84243	0.95338	1.03911	1.04957
	300.0	0.74085	0.95720	0.61546	0.86856	0.92938	1.01929	1.01564
	330.0	0.76062	1.01264	0.54326	0.80062	0.83373	0.98160	1.01286
	0.0	0.74065	1.25840	0.56564	0.69328	0.78607	0.97621	1.02059
	30.0	0.79609	1.01685	0.60592	0.71356	0.90364	0.98405	1.03513
	60.0	0.77458	1.11665	0.63698	0.76861	0.89457	0.96644	1.03848
0.0000	270.0	0.67635	0.47048	0.54413	0.76029	0.90145	1.02686	1.02467
	300.0	0.64551	0.42017	0.47390	0.77990	0.88714	0.99741	1.00096
	330.0	0.66867	0.58665	0.47325	0.76776	0.81993	0.97334	1.00797
	0.0	0.65859	0.57314	0.50864	0.69566	0.79556	0.96825	1.01656
	30.0	0.68789	0.40518	0.43186	0.71784	0.89861	0.97135	1.04002
	60.0	0.68990	0.47045	0.45637	0.72830	0.89817	0.94616	1.03060
-0.0522	270.0	0.77959	0.79909	0.73954	0.84339	0.96740	1.06105	1.04623
	300.0	0.73009	0.36442	0.69862	0.86539	0.92603	1.03310	1.01389
	330.0	0.68036	0.28091	0.55908	0.81678	0.84954	0.97692	1.00681
	0.0	0.70551	2.16715	0.37038	0.79155	0.82298	0.98444	1.01468
	30.0	0.68407	0.38753	0.52086	0.81081	0.95505	1.00202	1.03830
	60.0	0.73050	0.41333	0.67003	0.86792	0.95270	0.99202	1.06010
-0.1043	270.0	0.88192	1.50625	0.97360	1.00166	1.03896	1.08989	1.08937
	300.0	0.85790	1.01549	1.04452	0.98594	0.98749	1.05106	1.04146
	330.0	0.68081	0.40641	0.75519	0.89156	0.89234	0.99167	1.02124
	0.0	0.82880	2.06300	0.48990	0.80832	0.82994	0.95703	1.00141
	30.0	0.67203	0.55122	0.75885	0.92197	1.01324	1.00831	1.05080
	60.0	0.83301	1.01640	0.99397	0.98117	1.02145	1.03187	1.08337

a) $\overline{u} / u_0$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.93738	1.61304	1.29346	1.12174	1.08673	1.11093	1.10185
	300.0	1.00281	1.62607	1.20364	1.06322	1.02362	1.06845	1.06886
	330.0	0.76434	1.05516	0.94042	1.31589	0.92844	1.00961	1.03102
	0.0	1.12022	0.26178	0.59903	0.83251	0.85180	0.95483	0.99683
	30.0	0.69076	1.25594	0.91650	1.00109	1.03303	1.04295	1.05806
	60.0	0.97350	1.69012	1.18656	1.07148	1.07532	1.05658	1.10225
-0.2087	270.0	0.99799	1.27971	1.37869	1.17020	1.11205	1.11700	1.09393
	300.0	1.09828	1.49333	1.22918	1.08770	1.03979	1.07345	1.07183
	330.0	0.98450	1.53970	1.00077	0.99842	0.96075	1.02025	1.03562
	0.0	2.15777	0.33199	0.71480	0.85323	0.83079	0.96034	0.98635
	30.0	0.84640	1.40993	0.99305	1.02814	1.05336	1.05617	1.07397
	60.0	1.08631	1.51400	1.22039	1.10455	1.09215	1.05667	1.11022
-0.2609	270.0	1.02813	1.16195	1.26035	1.17317	1.11675	1.11781	1.10068
	300.0	1.14358	1.36274	1.20085	1.09089	1.04716	1.07373	1.06662
	330.0	1.26907	1.32523	1.03995	1.02209	0.97499	1.03408	1.05149
	0.0	2.10287	0.19353	0.74263	0.83318	0.82644	0.94787	0.97436
	30.0	1.14274	1.30026	1.03800	1.04628	1.06616	1.07017	1.07271
	60.0	1.13194	1.37899	1.17823	1.09850	1.10596	1.06462	1.10365
-0.3130	270.0	1.04847	1.13221	1.17379	1.15909	1.09683	1.12427	1.09179
	300.0	1.15956	1.28442	1.18046	1.09030	1.04845	1.06692	1.05963
	330.0	1.40240	1.24465	1.05486	1.02879	0.97852	1.03033	1.04271
	0.0	1.35248	0.29967	0.70503	0.81881	0.79964	0.93111	0.96010
	30.0	1.36550	1.23985	1.06280	1.05431	1.08333	1.06818	1.05866
	60.0	1.15639	1.29130	1.17008	1.11615	1.09800	1.06433	1.07509
-0.3652	270.0	1.05658	1.11921	1.14228	1.12696	1.08825	1.10253	1.06951
	300.0	1.16012	1.24345	1.16698	1.09615	1.05790	1.05695	1.00197
	330.0	1.40955	1.22501	1.07763	1.03364	0.98754	1.02872	1.02822
	0.0	0.62421	0.32745	0.63474	0.80262	0.77430	0.92161	0.95126
	30.0	1.42288	1.23820	1.07407	1.06843	1.07838	1.05413	1.02246
	60.0	1.16631	1.24295	1.15032	1.11094	1.08588	1.05919	1.00371
-0.4174	270.0	1.05674	1.10798	1.13064	1.11914	1.08152	1.06831	1.06271
	300.0	1.16136	1.21418	1.16096	1.09535	1.04630	0.92600	0.85621
	330.0	1.37829	1.23571	1.08860	1.02637	0.97471	0.98413	0.98637
	0.0	0.29371	0.14522	0.55565	0.78100	0.77259	0.88429	0.92635
	30.0	1.40814	1.22765	1.09108	1.07291	1.04559	0.95480	0.93765
	60.0	1.16842	1.21725	1.14639	1.11391	1.09118	0.95954	0.89607

a) $\overline{u}/u_0$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.13408	0.13581	0.11424	0.12786	0.16451	0.10543	0.08206
	300.0	0.08159	0.11007	0.13530	0.18025	0.21762	0.22841	0.18198
	330.0	0.12189	0.12898	0.16291	0.37675	0.31873	0.23260	0.15885
	0.0	0.08659	0.12624	0.27708	0.40781	0.38594	0.23782	0.21106
	30.0	0.15620	0.13315	0.19716	0.38166	0.27456	0.27233	0.15356
	60.0	0.11825	0.11421	0.14460	0.11336	0.18048	0.12719	0.12772
0.3652	270.0	0.13879	0.09695	0.11127	0.14775	0.15761	0.14352	0.16933
	300.0	0.10544	0.14126	0.14947	0.23420	0.18442	0.19361	0.17505
	330.0	0.12160	0.15789	0.32725	0.41280	0.33546	0.24372	0.19344
	0.0	0.10049	0.12966	0.43855	0.48388	0.38249	0.29116	0.23094
	30.0	0.15035	0.11165	0.36948	0.44616	0.31459	0.24327	0.22753
	60.0	0.10501	0.14308	0.08149	0.24185	0.19410	0.16596	0.14063
0.3130	270.0	0.10263	0.12617	0.15371	0.16914	0.22534	0.15872	0.17593
	300.0	0.13116	0.14452	0.31221	0.30894	0.28879	0.22454	0.20240
	330.0	0.11210	0.17199	0.53534	0.35803	0.37886	0.31714	0.24072
	0.0	0.10834	0.20096	0.72220	0.43559	0.38152	0.32532	0.17799
	30.0	0.13468	0.16354	0.57899	0.35681	0.26552	0.23707	0.27389
	60.0	0.09923	0.17003	0.20177	0.28305	0.23577	0.19428	0.18922
0.2609	270.0	0.16895	0.18683	0.31563	0.22213	0.23457	0.16597	0.18432
	300.0	0.10496	0.23724	0.49728	0.36371	0.32151	0.26902	0.15537
	330.0	0.10123	0.26795	0.65544	0.40807	0.44251	0.31374	0.25504
	0.0	0.09620	0.42259	0.81588	0.47423	0.48970	0.31075	0.27368
	30.0	0.13904	0.29382	0.72386	0.45062	0.38741	0.27178	0.26843
	60.0	0.11173	0.27607	0.48715	0.29987	0.20857	0.23005	0.20475
0.2087	270.0	0.16568	0.58371	0.41115	0.31279	0.29851	0.20177	0.19366
	300.0	0.13876	0.54993	0.64733	0.28292	0.33555	0.20207	0.20531
	330.0	0.12428	0.68517	0.54823	0.47891	0.43915	0.34497	0.30432
	0.0	0.15690	0.81081	0.65926	0.56657	0.55861	0.33982	0.30829
	30.0	0.13595	0.66164	0.66746	0.53474	0.43153	0.29319	0.25860
	60.0	0.11418	0.58296	0.55538	0.38214	0.29971	0.22668	0.23586

b) $\overline{v}/u_o$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.20145	0.72401	0.51782	0.19982	0.32773	0.16602	0.21737
	300.0	0.16844	0.92719	0.47021	0.40002	0.33166	0.24778	0.21784
	330.0	0.10044	1.15132	0.59299	0.63369	0.53611	0.31442	0.31810
	0.0	0.10925	1.41446	0.63060	0.70294	0.65602	0.34055	0.33503
	30.0	0.13294	1.16509	0.67116	0.61942	0.42442	0.30186	0.27721
	60.0	0.10875	1.00560	0.48400	0.39020	0.20211	0.19258	0.20853
0.1043	270.0	0.17491	0.72170	0.43165	0.32969	0.27829	0.16120	0.18764
	300.0	0.15472	1.03947	0.56579	0.41383	0.28172	0.19739	0.14900
	330.0	0.13293	1.39105	0.67295	0.65769	0.55721	0.34817	0.26921
	0.0	0.15042	1.55945	0.68135	0.81671	0.69853	0.43829	0.25179
	30.0	0.16166	1.29066	0.74473	0.70712	0.48793	0.33287	0.26207
	60.0	0.10126	1.00215	0.50010	0.39669	0.23068	0.23469	0.22822
0.0522	270.0	0.12413	0.59921	0.41955	0.31582	0.27451	0.22602	0.20857
	300.0	0.11720	0.75486	0.57702	0.40397	0.34408	0.22274	0.23627
	330.0	0.13131	1.16726	0.75108	0.67947	0.53812	0.35649	0.29025
	0.0	0.15228	1.07209	0.87420	0.82929	0.64518	0.30475	0.26012
	30.0	0.14933	0.93694	0.85855	0.72991	0.46484	0.30010	0.27250
	60.0	0.14182	0.87567	0.55508	0.45341	0.26823	0.27551	0.17839
0.0000	270.0	0.08490	0.57408	0.31036	0.31175	0.33384	0.18764	0.23519
	300.0	0.09827	0.61651	0.61755	0.49214	0.40676	0.21649	0.23473
	330.0	0.11698	0.58400	0.83542	0.65095	0.55390	0.31742	0.26678
	0.0	0.14424	0.69492	0.96076	0.75661	0.56168	0.34344	0.26248
	30.0	0.14345	0.69082	0.90650	0.69018	0.49056	0.24485	0.25482
	60.0	0.09758	0.66931	0.57424	0.50959	0.28471	0.29275	0.21191
-0.0522	270.0	0.08921	0.70422	0.38494	0.29450	0.29108	0.22898	0.18610
	300.0	0.10693	0.62758	0.65825	0.51046	0.42508	0.24927	0.21506
	330.0	0.13392	0.72150	0.86284	0.54757	0.44133	0.29713	0.23760
	0.0	0.25245	0.41145	0.92261	0.58199	0.43851	0.22644	0.19731
	30.0	0.16242	0.75063	0.93070	0.61103	0.35848	0.26601	0.21802
	60.0	0.09035	0.56540	0.60203	0.52473	0.36099	0.28404	0.21880
-0.1043	270.0	0.07300	0.81409	0.44290	0.36766	0.30016	0.19310	0.14633
	300.0	0.10856	0.69186	0.57116	0.48897	0.36067	0.23016	0.22341
	330.0	0.18611	0.75706	0.80776	0.49577	0.33774	0.20810	0.17369
	0.0	0.48812	0.72889	0.78598	0.43999	0.37455	0.27873	0.21183
	30.0	0.20413	0.81547	0.87722	0.47963	0.29657	0.22283	0.22687
	60.0	0.09826	0.65162	0.56902	0.50107	0.33222	0.26158	0.23593

b) $\overline{v}/u_0$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.15927	0.71015	0.39697	0.27240	0.33356	0.16898	0.16756
	300.0	0.15490	0.86854	0.52052	0.38904	0.32366	0.18870	0.17998
	330.0	0.28973	0.87649	0.52983	0.38189	0.29490	0.20805	0.20197
	0.0	0.99560	1.21636	0.59194	0.31815	0.28680	0.23506	0.17511
	30.0	0.29213	0.98919	0.62951	0.31852	0.23857	0.19967	0.20469
	60.0	0.16573	0.61361	0.52729	0.40253	0.27730	0.23953	0.19740
-0.2087	270.0	0.12250	0.48924	0.36080	0.34920	0.30227	0.19967	0.18171
	300.0	0.14984	0.50678	0.40687	0.29907	0.25144	0.16891	0.19283
	330.0	0.36062	0.93824	0.34744	0.19867	0.19741	0.16788	0.15500
	0.0	2.30211	0.96823	0.37925	0.27150	0.27351	0.17513	0.20066
	30.0	0.37581	0.80513	0.44176	0.25582	0.17280	0.19950	0.15352
	60.0	0.20376	0.49152	0.40397	0.33025	0.20034	0.18871	0.14554
-0.2609	270.0	0.11676	0.18577	0.21251	0.25657	0.28821	0.18820	0.14396
	300.0	0.15072	0.15670	0.28990	0.22875	0.21184	0.10240	0.19935
	330.0	0.33130	0.44108	0.21371	0.16658	0.20131	0.15347	0.17406
	0.0	4.48464	0.68707	0.30478	0.21434	0.19722	0.18782	0.17818
	30.0	0.42934	0.43109	0.22197	0.14571	0.15831	0.16419	0.16026
	60.0	0.18132	0.12325	0.30641	0.25155	0.12774	0.15778	0.17167
-0.3130	270.0	0.10767	0.13973	0.13700	0.16480	0.24873	0.10672	0.15968
	300.0	0.12279	0.12306	0.15397	0.14748	0.17859	0.14324	0.13606
	330.0	0.27532	0.30808	0.13445	0.15686	0.16560	0.16054	0.14634
	0.0	5.19647	0.43793	0.31623	0.19227	0.22472	0.14922	0.14954
	30.0	0.39538	0.24412	0.14916	0.15285	0.11126	0.15267	0.12308
	60.0	0.16082	0.12677	0.18509	0.18256	0.14449	0.13227	0.16210
-0.3652	270.0	0.10394	0.11616	0.06280	0.13135	0.20422	0.10838	0.08602
	300.0	0.12185	0.10196	0.12518	0.10266	0.12654	0.14739	0.14066
	330.0	0.22349	0.23634	0.10270	0.13320	0.15038	0.13747	0.12179
	0.0	5.63583	0.35327	0.26975	0.20717	0.22223	0.17597	0.13065
	30.0	0.27253	0.10783	0.14320	0.14532	0.11669	0.14179	0.12080
	60.0	0.14643	0.15333	0.15789	0.15968	0.14215	0.14519	0.16264
-0.4174	270.0	0.11794	0.12921	0.07845	0.09649	0.13400	0.12564	0.04040
	300.0	0.12543	0.13162	0.13225	0.11349	0.12334	0.08056	0.14201
	330.0	0.17683	0.12015	0.08760	0.13184	0.11200	0.12990	0.12291
	0.0	5.81571	0.33470	0.29364	0.18235	0.18669	0.15241	0.14157
	30.0	0.27981	0.12897	0.11801	0.12807	0.12716	0.12787	0.12772
	60.0	0.14782	0.14980	0.14537	0.12136	0.13903	0.05901	0.10408

b) $\overline{v}/u_o$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.17215	0.25409	0.32707	0.27674	0.31782	0.28320	0.25085
	300.0	0.13680	0.19538	0.30801	0.38090	0.39538	0.35766	0.27965
	330.0	0.06177	0.14169	0.22843	0.28352	0.25824	0.26039	0.16499
	0.0	0.05166	0.04836	0.08038	0.06341	0.05045	0.04843	0.03047
	30.0	0.03779	0.08640	0.22048	0.17616	0.20282	0.16983	0.16460
	60.0	0.12975	0.15246	0.25067	0.30900	0.30798	0.32069	0.28552
0.3652	270.0	0.17638	0.28237	0.37486	0.30355	0.32140	0.26897	0.16640
	300.0	0.14643	0.21992	0.33080	0.32371	0.33385	0.28330	0.20530
	330.0	0.07517	0.16422	0.19709	0.21688	0.20510	0.22503	0.13560
	0.0	0.05301	0.05309	0.07819	0.07543	0.05589	0.06743	0.01561
	30.0	0.03068	0.11375	0.19458	0.05547	0.12263	0.13171	0.11402
	60.0	0.13251	0.17134	0.30592	0.26334	0.25762	0.24423	0.19671
0.3130	270.0	0.17840	0.33288	0.42881	0.31794	0.29449	0.21499	0.08599
	300.0	0.15048	0.25035	0.27135	0.25137	0.26616	0.19575	0.10973
	330.0	0.08494	0.18146	0.06129	0.15894	0.17288	0.15355	0.08240
	0.0	0.03343	0.03385	0.10538	0.06654	0.05316	0.06156	0.01238
	30.0	0.02582	0.14013	0.09390	0.05100	0.10316	0.04850	0.05537
	60.0	0.13311	0.20018	0.29487	0.16189	0.18523	0.15290	0.07446
0.2609	270.0	0.17860	0.37933	0.37416	0.25600	0.22670	0.12794	0.01968
	300.0	0.14983	0.27287	0.09277	0.15681	0.15531	0.07467	0.04079
	330.0	0.08623	0.17820	0.09220	0.13408	0.10426	0.07121	0.02507
	0.0	0.03623	0.04548	0.10443	0.05794	0.04618	0.08900	0.02319
	30.0	0.01618	0.12164	0.04591	0.02913	0.03747	0.09626	0.04744
	60.0	0.12833	0.22287	0.10334	0.05220	0.07725	0.03200	0.06118
0.2087	270.0	0.15201	0.12118	0.12850	0.11644	0.08919	0.03472	0.08693
	300.0	0.14211	0.09697	0.08455	0.01828	0.05828	0.07603	0.12277
	330.0	0.06674	0.11458	0.10997	0.04961	0.06798	0.03783	0.07909
	0.0	0.03181	0.12311	0.08110	0.04683	0.04710	0.08198	0.01589
	30.0	0.02511	0.11207	0.07347	0.08039	0.10431	0.22174	0.12096
	60.0	0.11762	0.07538	0.14101	0.07893	0.10263	0.13075	0.18532

c) $\overline{w}/u_o$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.10954	0.73044	0.18345	0.10391	0.11104	0.09835	0.17485
	300.0	0.12586	0.58708	0.23167	0.22929	0.21839	0.20128	0.20264
	330.0	0.05770	0.32396	0.09519	0.14365	0.20390	0.11246	0.12102
	0.0	0.03429	0.15586	0.08363	0.09238	0.05566	0.10151	0.03195
	30.0	0.02448	0.49617	0.07937	0.28303	0.27689	0.28897	0.17541
	60.0	0.09485	0.63011	0.21930	0.32011	0.30388	0.26586	0.25880
0.1043	270.0	0.03933	0.87545	0.52304	0.40665	0.31369	0.20641	0.23069
	300.0	0.07747	0.77669	0.54248	0.50689	0.39928	0.26292	0.24004
	330.0	0.02739	0.48837	0.23051	0.29960	0.29150	0.13808	0.15313
	0.0	0.04819	0.20962	0.15267	0.04683	0.05608	0.09695	0.01341
	30.0	0.06972	0.61522	0.33274	0.45725	0.38853	0.32351	0.19218
	60.0	0.06950	1.02676	0.53328	0.59937	0.48809	0.33289	0.28451
0.0522	270.0	0.02757	0.70049	0.93430	0.67116	0.45354	0.25661	0.26106
	300.0	0.02327	0.88935	0.85084	0.66980	0.45836	0.26984	0.24019
	330.0	0.02723	0.30827	0.47590	0.40685	0.29977	0.13973	0.15573
	0.0	0.02943	0.16034	0.15853	0.08124	0.02103	0.08809	0.02401
	30.0	0.06197	0.35223	0.55975	0.48490	0.36608	0.29592	0.17858
	60.0	0.02162	0.82802	0.87289	0.75963	0.52736	0.33497	0.27436
0.0000	270.0	0.04627	0.65890	0.96994	0.70501	0.46818	0.27795	0.27387
	300.0	0.06175	0.57812	0.91497	0.60700	0.40328	0.21543	0.20735
	330.0	0.06076	0.54119	0.59147	0.34085	0.20444	0.09504	0.12085
	0.0	0.00979	0.31070	0.27716	0.03186	0.05999	0.05679	0.01710
	30.0	0.08115	0.44357	0.65590	0.41608	0.27236	0.22202	0.14608
	60.0	0.04459	0.61475	0.97846	0.68898	0.46791	0.29163	0.23351
-0.0522	270.0	0.01111	0.72380	0.85283	0.68840	0.44332	0.25791	0.26492
	300.0	0.08844	0.62142	0.81052	0.45932	0.26736	0.14117	0.17077
	330.0	0.14499	0.71143	0.44818	0.20044	0.11926	0.06992	0.08558
	0.0	0.02086	1.86321	0.27853	0.03401	0.05311	0.05601	0.04090
	30.0	0.13338	0.74251	0.46365	0.22230	0.15074	0.15502	0.10491
	60.0	0.08089	0.78890	0.86761	0.52026	0.31275	0.21635	0.18921
-0.1043	270.0	0.07308	0.93588	0.43345	0.42298	0.28790	0.18821	0.23089
	300.0	0.06646	0.68653	0.39635	0.22547	0.09988	0.06970	0.11340
	330.0	0.23572	0.78208	0.14330	0.03361	0.01758	0.03278	0.04875
	0.0	0.08718	13.93985	0.13564	0.01788	0.03521	0.06473	0.03346
	30.0	0.17923	0.48728	0.09602	0.06049	0.03680	0.09769	0.05993
	60.0	0.07235	0.78193	0.46949	0.23543	0.14290	0.12705	0.12006

c) $\overline{w}/u_0$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.13236	0.52179	0.09407	0.11193	0.07255	0.07765	0.17478
	300.0	0.02761	0.70559	0.03249	0.03771	0.03744	0.02057	0.05382
	330.0	0.32274	0.19034	0.17131	0.70406	0.05060	0.05131	0.03228
	0.0	0.12767	0.63519	0.06990	0.01171	0.04220	0.04434	0.03696
	30.0	0.26166	0.25201	0.18225	0.03668	0.03257	0.05191	0.03328
	60.0	0.03410	0.85307	0.07960	0.01156	0.03669	0.04384	0.06169
-0.2087	270.0	0.15747	0.22308	0.15128	0.13858	0.10342	0.05833	0.08046
	300.0	0.08635	0.24919	0.31894	0.14717	0.14568	0.07976	0.03692
	330.0	0.35097	0.27107	0.24192	0.13044	0.07928	0.07444	0.03572
	0.0	0.53035	0.52848	0.12098	0.02459	0.03700	0.04734	0.03086
	30.0	0.34745	0.23361	0.25321	0.06736	0.06234	0.02842	0.03686
	60.0	0.04210	0.13978	0.26746	0.11806	0.10604	0.05792	0.03519
-0.2609	270.0	0.17162	0.35495	0.37865	0.26446	0.23442	0.13735	0.03362
	300.0	0.13759	0.46521	0.35281	0.20112	0.18331	0.11311	0.05678
	330.0	0.21734	0.73659	0.22883	0.14669	0.08996	0.09245	0.05607
	0.0	0.54095	0.38660	0.11663	0.02019	0.03642	0.04817	0.03921
	30.0	0.30552	0.62615	0.21053	0.06737	0.06294	0.01185	0.03840
	60.0	0.10769	0.39814	0.32663	0.15054	0.13876	0.08835	0.09036
-0.3130	270.0	0.17372	0.30996	0.41343	0.30942	0.28881	0.20711	0.09697
	300.0	0.16852	0.37268	0.29648	0.20282	0.19598	0.13127	0.08297
	330.0	0.04768	0.55065	0.19985	0.15886	0.09662	0.10566	0.05083
	0.0	1.64521	0.36653	0.09615	0.01623	0.05462	0.04263	0.0308[illegible]
	30.0	0.14258	0.41639	0.19497	0.06686	0.05963	0.03192	0.04981
	60.0	0.13354	0.29952	0.27478	0.14048	0.13968	0.12144	0.09310
-0.3652	270.0	0.18011	0.26333	0.35924	0.29604	0.31184	0.23358	0.16470
	300.0	0.17685	0.29556	0.25259	0.20537	0.20642	0.14237	0.09666
	330.0	0.08340	0.39524	0.18544	0.15836	0.10582	0.10996	0.05397
	0.0	0.43371	0.29967	0.07114	0.02091	0.02534	0.03814	0.03556
	30.0	0.05807	0.29529	0.17511	0.06627	0.07442	0.02399	0.07064
	60.0	0.14770	0.22505	0.21578	0.12487	0.11556	0.13460	0.11691
-0.4174	270.0	0.18132	0.24168	0.31007	0.26763	0.29746	0.25659	0.26320
	300.0	0.17836	0.26385	0.22246	0.20571	0.22212	0.14042	0.11201
	330.0	0.11572	0.33774	0.20181	0.14642	0.09418	0.10961	0.04953
	0.0	0.34784	0.33264	1.32875	0.01585	0.03665	0.03666	0.03356
	30.0	0.01535	0.23261	0.19357	0.07075	0.07013	0.01937	0.06694
	60.0	0.15050	0.17680	0.18562	0.11376	0.12711	0.14969	0.14701

c) $\overline{w}/u_0$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00983	0.01454	0.02268	0.03783	0.05123	0.11073	0.14059
	300.0	0.01242	0.01915	0.07219	0.16415	0.18932	0.21609	0.19657
	330.0	0.01783	0.03481	0.15669	0.29687	0.28584	0.26295	0.23080
	0.0	0.03993	0.06101	0.21856	0.35856	0.32561	0.27824	0.23250
	30.0	0.01574	0.03851	0.18139	0.30664	0.30769	0.26107	0.21972
	60.0	0.01393	0.02148	0.03844	0.14393	0.17540	0.21038	0.19667
0.3652	270.0	0.00930	0.01828	0.04511	0.05934	0.08266	0.10657	0.14328
	300.0	0.01191	0.02719	0.12784	0.21877	0.22942	0.23478	0.20469
	330.0	0.01529	0.05183	0.28292	0.34068	0.30318	0.23821	0.19981
	0.0	0.04204	0.08590	0.36613	0.39274	0.31799	0.24795	0.20629
	30.0	0.01344	0.05984	0.27996	0.35462	0.33228	0.25442	0.21482
	60.0	0.01269	0.03176	0.09754	0.21553	0.21669	0.22949	0.20857
0.3130	270.0	0.01276	0.04001	0.12678	0.11597	0.12063	0.12783	0.14750
	300.0	0.01414	0.04482	0.27284	0.29591	0.26180	0.24989	0.20446
	330.0	0.01820	0.10461	0.39401	0.37066	0.28242	0.22681	0.20208
	0.0	0.04756	0.14644	0.43486	0.39734	0.26404	0.21732	0.19202
	30.0	0.02083	0.11590	0.39493	0.39012	0.32325	0.24656	0.21074
	60.0	0.01403	0.05469	0.21852	0.28208	0.27337	0.23821	0.20979
0.2609	270.0	0.01548	0.12931	0.23593	0.20218	0.16025	0.14343	0.15402
	300.0	0.01702	0.12070	0.37020	0.34753	0.28581	0.24549	0.20310
	330.0	0.02979	0.21407	0.44404	0.34785	0.26969	0.23520	0.20313
	0.0	0.04989	0.26255	0.46610	0.31746	0.23932	0.21431	0.18524
	30.0	0.03542	0.23359	0.43837	0.36286	0.28708	0.24137	0.20255
	60.0	0.01583	0.14455	0.34743	0.36148	0.30632	0.23943	0.20095
0.2087	270.0	0.02356	0.40805	0.38845	0.28031	0.22952	0.16848	0.15209
	300.0	0.02381	0.35809	0.50077	0.38394	0.28797	0.23228	0.18967
	330.0	0.03540	0.44476	0.50589	0.32064	0.26065	0.22872	0.19822
	0.0	0.04383	0.53992	0.50331	0.28348	0.23615	0.21242	0.17991
	30.0	0.04021	0.49404	0.49247	0.31274	0.27981	0.22465	0.19354
	60.0	0.02020	0.35361	0.45405	0.36840	0.30078	0.22360	0.18225

d) $u'_{rms}/u_o \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.03794	0.65441	0.46737	0.31022	0.22065	0.17331	0.14481
	300.0	0.03452	0.60134	0.49279	0.34456	0.25724	0.20635	0.17060
	330.0	0.04148	0.64801	0.39936	0.31082	0.24002	0.21218	0.18650
	0.0	0.04804	0.69370	0.38588	0.30118	0.24244	0.21108	0.18381
	30.0	0.04263	0.65721	0.42187	0.30111	0.26014	0.21271	0.18415
	60.0	0.02973	0.60064	0.47935	0.32864	0.27080	0.20244	0.16854
0.1043	270.0	0.06327	0.79310	0.40388	0.26597	0.22885	0.19069	0.16419
	300.0	0.05774	0.79342	0.39952	0.28695	0.22717	0.20367	0.16199
	330.0	0.05063	0.81977	0.39765	0.28318	0.23094	0.21721	0.18138
	0.0	0.05390	0.80549	0.39655	0.31956	0.25159	0.22192	0.18228
	30.0	0.04862	0.81697	0.40168	0.27454	0.25376	0.20376	0.17503
	60.0	0.04510	0.78409	0.39568	0.27593	0.24892	0.18617	0.16600
0.0522	270.0	0.09334	0.59304	0.31364	0.26961	0.22943	0.20382	0.17024
	300.0	0.09153	0.85815	0.30634	0.26693	0.23447	0.20150	0.16162
	330.0	0.07660	0.84870	0.39540	0.28580	0.23006	0.21781	0.18492
	0.0	0.08032	0.81527	0.48769	0.34336	0.25394	0.21632	0.18161
	30.0	0.05846	0.77891	0.37032	0.28446	0.25254	0.20482	0.17305
	60.0	0.06884	0.74028	0.31186	0.24418	0.25166	0.19231	0.16885
0.0000	270.0	0.10265	0.50774	0.28961	0.24755	0.24021	0.20476	0.16382
	300.0	0.11959	0.54994	0.28117	0.25432	0.23406	0.19846	0.16947
	330.0	0.11294	0.64181	0.35634	0.28089	0.24054	0.22331	0.18322
	0.0	0.12834	0.70124	0.54469	0.34596	0.25086	0.21742	0.19514
	30.0	0.08298	0.58576	0.33846	0.27999	0.26465	0.20382	0.17535
	60.0	0.09594	0.55835	0.26502	0.25318	0.23939	0.18917	0.16481
-0.0522	270.0	0.07737	0.66690	0.33139	0.26972	0.23572	0.19659	0.16910
	300.0	0.12519	0.48061	0.32556	0.27979	0.22183	0.19908	0.17478
	330.0	0.17324	0.56386	0.37962	0.29345	0.23330	0.22019	0.17531
	0.0	0.28185	0.00000	0.57825	0.28411	0.23113	0.20747	0.18563
	30.0	0.12298	0.50864	0.41745	0.30510	0.25176	0.20802	0.18094
	60.0	0.12973	0.47982	0.30417	0.27296	0.25267	0.18347	0.16509
-0.1043	270.0	0.04411	0.79436	0.40412	0.27118	0.21189	0.18185	0.16157
	300.0	0.08954	0.71074	0.34604	0.22285	0.19182	0.18104	0.15804
	330.0	0.20666	0.73606	0.36447	0.27143	0.22930	0.21116	0.17985
	0.0	0.55146	1.58793	0.44112	0.27569	0.23477	0.22072	0.18594
	30.0	0.14722	0.71115	0.30541	0.25565	0.23291	0.20168	0.16941
	60.0	0.09352	0.66458	0.33146	0.21026	0.21173	0.17282	0.14423

d) $u'_{rms}/u_o \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.02855	0.61080	0.45268	0.29185	0.18912	0.16139	0.15074
	300.0	0.04623	0.71598	0.30937	0.17192	0.15088	0.15391	0.14424
	330.0	0.19223	0.73822	0.26031	0.26567	0.19797	0.20831	0.17776
	0.0	0.69647	0.69690	0.34508	0.26378	0.21654	0.21211	0.18025
	30.0	0.16054	0.64905	0.21503	0.21811	0.20844	0.19104	0.16677
	60.0	0.05136	0.71069	0.31549	0.16019	0.14916	0.14201	0.13715
-0.2087	270.0	0.01996	0.30365	0.36471	0.26256	0.16931	0.14569	0.14971
	300.0	0.02647	0.43104	0.20155	0.11172	0.09581	0.13581	0.11339
	330.0	0.14947	0.59900	0.16455	0.20522	0.19229	0.18716	0.16312
	0.0	1.06403	0.44436	0.31633	0.24863	0.21551	0.20752	0.17501
	30.0	0.15910	0.52551	0.15022	0.16741	0.19052	0.16197	0.15986
	60.0	0.02913	0.42392	0.21474	0.10626	0.10268	0.11285	0.11293
-0.2609	270.0	0.01531	0.08655	0.22274	0.16908	0.14482	0.11924	0.14243
	300.0	0.01773	0.10616	0.08923	0.07392	0.06428	0.10102	0.10715
	330.0	0.06594	0.28417	0.11404	0.16232	0.15240	0.16495	0.15036
	0.0	1.66913	0.42188	0.30248	0.25523	0.21337	0.19537	0.17115
	30.0	0.08395	0.20182	0.09667	0.12613	0.15203	0.13112	0.14789
	60.0	0.01696	0.11060	0.09155	0.06813	0.06481	0.08508	0.08892
-0.3130	270.0	0.01224	0.02668	0.10039	0.12073	0.09713	0.10600	0.15345
	300.0	0.01179	0.03013	0.04549	0.04900	0.04852	0.06702	0.09770
	330.0	0.02886	0.09264	0.09283	0.13593	0.14009	0.15673	0.13897
	0.0	1.67773	0.45129	0.29517	0.24934	0.20618	0.19189	0.16167
	30.0	0.03044	0.07737	0.08213	0.10032	0.12954	0.13426	0.13180
	60.0	0.01289	0.03418	0.04454	0.04556	0.05097	0.06269	0.09914
-0.3652	270.0	0.00989	0.01663	0.03668	0.06161	0.06561	0.08177	0.13909
	300.0	0.01034	0.02183	0.03029	0.04146	0.03755	0.08439	0.14642
	330.0	0.01971	0.06064	0.08450	0.12440	0.13814	0.14380	0.13593
	0.0	0.83067	0.31412	0.28360	0.23029	0.19360	0.16330	0.14679
	30.0	0.02132	0.05543	0.07579	0.09499	0.12400	0.13279	0.13911
	60.0	0.01230	0.02267	0.02972	0.03729	0.04504	0.05389	0.13592
-0.4174	270.0	0.01189	0.01322	0.01914	0.03767	0.05499	0.10077	0.14607
	300.0	0.00998	0.01652	0.02419	0.04333	0.04685	0.19909	0.16465
	330.0	0.02001	0.04733	0.08332	0.14753	0.13610	0.16161	0.14497
	0.0	0.29682	0.28791	0.26240	0.21728	0.18148	0.17096	0.15087
	30.0	0.02164	0.04485	0.09759	0.11577	0.14190	0.16269	0.14776
	60.0	0.01167	0.01611	0.02423	0.03003	0.04111	0.17034	0.15019

d) $u'_{rms}/u_0 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00860	0.02604	0.08139	0.04592	0.07630	0.11137	0.11450
	300.0	0.02692	0.03395	0.08197	0.10956	0.13075	0.11346	0.12538
	330.0	0.01510	0.02553	0.15028	0.22347	0.18416	0.12376	0.18895
	0.0	0.03682	0.03322	0.16628	0.28906	0.17384	0.14293	0.11351
	30.0	0.00824	0.02367	0.16216	0.23205	0.20011	0.13841	0.13244
	60.0	0.01561	0.03238	0.03757	0.14321	0.15157	0.16833	0.14587
0.3652	270.0	0.01508	0.03862	0.09117	0.07871	0.10793	0.11736	0.10743
	300.0	0.01628	0.02720	0.15690	0.12961	0.15106	0.14349	0.12005
	330.0	0.01374	0.03655	0.26625	0.27033	0.18518	0.13540	0.13371
	0.0	0.02878	0.05701	0.33471	0.28452	0.19298	0.13659	0.13484
	30.0	0.00801	0.04359	0.27512	0.26183	0.21541	0.17194	0.14145
	60.0	0.00846	0.03084	0.10737	0.16348	0.19422	0.15454	0.17259
0.3130	270.0	0.02505	0.06085	0.12617	0.13457	0.12165	0.15371	0.13436
	300.0	0.01118	0.05508	0.27841	0.15821	0.16445	0.10565	0.11831
	330.0	0.01350	0.08189	0.36092	0.23594	0.20043	0.15563	0.13154
	0.0	0.03564	0.11302	0.42521	0.23294	0.20337	0.15301	0.12906
	30.0	0.01611	0.08565	0.38718	0.25080	0.19809	0.18920	0.13434
	60.0	0.01585	0.07018	0.20942	0.19633	0.18297	0.21261	0.13530
0.2609	270.0	0.01135	0.15736	0.20763	0.15130	0.18112	0.18984	0.10934
	300.0	0.02401	0.15128	0.28134	0.16201	0.15194	0.13803	0.14169
	330.0	0.03204	0.23313	0.35669	0.23326	0.21508	0.17433	0.13311
	0.0	0.04568	0.29756	0.38427	0.22528	0.22665	0.18374	0.13027
	30.0	0.02917	0.25086	0.37555	0.22607	0.20637	0.19070	0.15121
	60.0	0.01409	0.16301	0.27467	0.19880	0.17255	0.14287	0.11464
0.2087	270.0	0.02690	0.38119	0.22817	0.13966	0.14384	0.13464	0.12363
	300.0	0.01663	0.37995	0.25888	0.22337	0.15135	0.15549	0.14827
	330.0	0.03356	0.46004	0.29084	0.24447	0.23543	0.15923	0.12156
	0.0	0.02956	0.52482	0.28689	0.27373	0.24990	0.19486	0.12864
	30.0	0.01265	0.49339	0.31968	0.27193	0.21003	0.18423	0.14220
	60.0	0.01810	0.40072	0.26692	0.19549	0.15470	0.12179	0.12653

e) $v'_{rms}/u_0 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.03180	0.44929	0.22312	0.21723	0.15832	0.19155	0.14179
	300.0	0.01884	0.53653	0.24622	0.19183	0.16258	0.14160	0.14385
	330.0	0.03318	0.67425	0.27079	0.27869	0.23077	0.18954	0.12528
	0.0	0.04953	0.70607	0.27149	0.29250	0.24963	0.19715	0.12782
	30.0	0.03247	0.67624	0.30683	0.27419	0.23539	0.17326	0.13421
	60.0	0.02330	0.53305	0.26711	0.19788	0.21477	0.14292	0.10567
0.1043	270.0	0.05483	0.39812	0.21137	0.22355	0.17571	0.16338	0.12224
	300.0	0.03115	0.47443	0.28787	0.20994	0.20117	0.13926	0.13167
	330.0	0.02138	0.60510	0.30787	0.28076	0.21276	0.15544	0.14283
	0.0	0.03519	0.64715	0.32226	0.29212	0.22025	0.16026	0.17492
	30.0	0.02139	0.54755	0.32934	0.27669	0.21636	0.14315	0.14385
	60.0	0.03023	0.47420	0.29795	0.23021	0.16220	0.12363	0.10424
0.0522	270.0	0.06311	0.39813	0.24283	0.17990	0.17589	0.14816	0.10224
	300.0	0.06565	0.41565	0.28902	0.22784	0.19816	0.14870	0.12371
	330.0	0.04561	0.50929	0.29225	0.25583	0.21398	0.14314	0.12418
	0.0	0.04616	0.41622	0.32649	0.22228	0.19847	0.20333	0.18023
	30.0	0.04225	0.35424	0.31604	0.24979	0.22421	0.19544	0.13532
	60.0	0.04387	0.39266	0.28309	0.22188	0.20660	0.15277	0.12848
0.0000	270.0	0.07698	0.40215	0.22677	0.19894	0.18864	0.16262	0.10204
	300.0	0.08582	0.37946	0.28853	0.24135	0.20637	0.16840	0.11790
	330.0	0.05695	0.30894	0.31914	0.24864	0.21767	0.15466	0.13553
	0.0	0.11738	0.32341	0.28248	0.20284	0.19905	0.16265	0.14941
	30.0	0.06369	0.33393	0.31424	0.25591	0.21392	0.19190	0.12041
	60.0	0.04625	0.34120	0.27493	0.23914	0.20125	0.14187	0.13243
-0.0522	270.0	0.04527	0.34560	0.20022	0.15813	0.19330	0.12467	0.09136
	300.0	0.11605	0.35751	0.26832	0.21673	0.19889	0.15272	0.11465
	330.0	0.11718	0.30395	0.29201	0.23749	0.20521	0.15031	0.15097
	0.0	0.23785	0.00000	0.22465	0.20535	0.21437	0.18174	0.15675
	30.0	0.12273	0.30767	0.24227	0.22229	0.21515	0.14453	0.14608
	60.0	0.09542	0.30490	0.28600	0.21371	0.17561	0.13776	0.11432
-0.1043	270.0	0.05784	0.42582	0.22926	0.17072	0.18628	0.13445	0.09799
	300.0	0.10292	0.40159	0.30556	0.18700	0.18093	0.12259	0.11923
	330.0	0.13392	0.34925	0.24116	0.20743	0.18442	0.16267	0.14382
	0.0	0.40191	0.00000	0.24524	0.22686	0.19043	0.15409	0.14798
	30.0	0.19231	0.42866	0.20403	0.13432	0.19475	0.15282	0.13747
	60.0	0.10422	0.37375	0.28049	0.19024	0.13659	0.11367	0.11100

e) $v'_{rms}/u_0 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.03647	0.49206	0.19118	0.19183	0.18389	0.12445	0.11018
	300.0	0.04980	0.40197	0.26867	0.16895	0.14400	0.11111	0.10743
	330.0	0.15639	0.43951	0.20508	0.21639	0.16211	0.13046	0.10299
	0.0	0.62646	0.28145	0.23229	0.22108	0.17087	0.13257	0.13845
	30.0	0.26036	0.49990	0.17853	0.16023	0.14709	0.15831	0.12068
	60.0	0.04470	0.38721	0.25869	0.16846	0.10831	0.10587	0.09420
-0.2087	270.0	0.03337	0.30619	0.22339	0.13916	0.17669	0.10600	0.09622
	300.0	0.03557	0.27675	0.18826	0.13445	0.11605	0.09170	0.09862
	330.0	0.17248	0.42385	0.16458	0.16356	0.11629	0.12092	0.12489
	0.0	1.10977	0.24802	0.19935	0.18534	0.16010	0.13209	0.09552
	30.0	0.29783	0.38392	0.13908	0.10940	0.12983	0.14060	0.11116
	60.0	0.02580	0.32962	0.19858	0.11110	0.09943	0.07914	0.09436
-0.2609	270.0	0.02238	0.13755	0.20959	0.18197	0.13596	0.08246	0.11285
	300.0	0.03085	0.10830	0.09230	0.08348	0.07821	0.07640	0.07572
	330.0	0.15526	0.23129	0.10486	0.12865	0.12649	0.09085	0.09915
	0.0	1.04459	0.26464	0.21267	0.18963	0.15709	0.14918	0.11865
	30.0	0.21977	0.14666	0.10768	0.10804	0.08278	0.07878	0.07847
	60.0	0.02806	0.14822	0.09521	0.07233	0.08346	0.05483	0.07046
-0.3130	270.0	0.01936	0.06587	0.10953	0.09767	0.11130	0.08234	0.08533
	300.0	0.01577	0.05295	0.05799	0.07123	0.05967	0.04831	0.06951
	330.0	0.03492	0.08683	0.09408	0.10487	0.13102	0.08695	0.10396
	0.0	0.34521	0.25923	0.18139	0.16894	0.14918	0.10366	0.11928
	30.0	0.07304	0.08897	0.08683	0.08036	0.09099	0.10415	0.09321
	60.0	0.02262	0.05560	0.06883	0.05646	0.03767	0.04942	0.05502
-0.3652	270.0	0.01329	0.05200	0.07052	0.09217	0.11485	0.08105	0.15509
	300.0	0.01582	0.05022	0.04969	0.05171	0.04685	0.05057	0.08371
	330.0	0.01802	0.05147	0.07562	0.13428	0.11553	0.11435	0.09290
	0.0	0.12009	0.26426	0.20325	0.13586	0.14663	0.09863	0.11996
	30.0	0.01807	0.07868	0.06501	0.06739	0.07304	0.07262	0.07161
	60.0	0.01810	0.03363	0.04737	0.04340	0.02346	0.03715	0.05355
-0.4174	270.0	0.01261	0.03124	0.06817	0.04947	0.07440	0.09775	0.12463
	300.0	0.01224	0.02772	0.03732	0.04337	0.06569	0.06735	0.09754
	330.0	0.01441	0.07732	0.08749	0.10967	0.10387	0.12935	0.05738
	0.0	0.02596	0.17137	0.18546	0.15670	0.14084	0.12998	0.07404
	30.0	0.01136	0.07067	0.06975	0.05014	0.09914	0.09204	0.09432
	60.0	0.01071	0.02681	0.03646	0.04551	0.02312	0.09388	0.10068

e) $v'_{rms}/u_0 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00527	0.01011	0.02153	0.02546	0.04204	0.07097	0.09560
	300.0	0.00590	0.01218	0.04242	0.10707	0.14107	0.14102	0.11820
	330.0	0.00877	0.02017	0.09818	0.19488	0.18921	0.15399	0.13470
	0.0	0.02522	0.03451	0.16028	0.25089	0.21162	0.17696	0.13751
	30.0	0.00827	0.02227	0.11798	0.20038	0.19871	0.17253	0.14230
	60.0	0.00750	0.01421	0.03183	0.09808	0.11817	0.13668	0.13068
0.3652	270.0	0.00647	0.01480	0.03543	0.04027	0.05965	0.07545	0.09724
	300.0	0.00642	0.01671	0.09241	0.15017	0.16164	0.15242	0.10902
	330.0	0.00776	0.02538	0.19083	0.22520	0.19786	0.15437	0.12897
	0.0	0.02451	0.04291	0.27637	0.26139	0.21000	0.16144	0.13979
	30.0	0.00866	0.03226	0.20373	0.24082	0.21719	0.16985	0.14432
	60.0	0.00479	0.01652	0.06798	0.14156	0.14202	0.14319	0.13668
0.3130	270.0	0.00780	0.03091	0.09580	0.08370	0.08349	0.09357	0.10978
	300.0	0.00662	0.03628	0.17096	0.18913	0.16556	0.14972	0.12854
	330.0	0.00849	0.06096	0.29824	0.24243	0.18921	0.12551	0.13247
	0.0	0.02911	0.09828	0.33911	0.26674	0.19304	0.15024	0.12917
	30.0	0.01401	0.07315	0.30211	0.25422	0.21291	0.17169	0.13771
	60.0	0.00693	0.03801	0.14995	0.18050	0.17514	0.16099	0.14930
0.2609	270.0	0.00832	0.09790	0.16349	0.12769	0.12102	0.11967	0.11256
	300.0	0.01030	0.09061	0.26279	0.21541	0.17907	0.14818	0.13462
	330.0	0.01919	0.15631	0.31853	0.23568	0.19321	0.16231	0.13487
	0.0	0.03012	0.20522	0.34986	0.23579	0.19548	0.15768	0.12616
	30.0	0.02390	0.18244	0.33750	0.23696	0.20332	0.17623	0.12987
	60.0	0.00822	0.09709	0.24703	0.23662	0.20294	0.15859	0.14861
0.2087	270.0	0.01443	0.31375	0.26665	0.18660	0.16761	0.13744	0.11362
	300.0	0.01289	0.32441	0.31787	0.25308	0.19697	0.16040	0.13053
	330.0	0.02332	0.44200	0.34908	0.24920	0.19975	0.16126	0.13474
	0.0	0.02887	0.51944	0.35022	0.25025	0.21146	0.16363	0.13336
	30.0	0.02263	0.41196	0.34589	0.26225	0.22679	0.16753	0.13600
	60.0	0.01080	0.30469	0.30959	0.24484	0.16831	0.14919	0.10771

f) $w'_{rms}/u_o \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.02338	0.57371	0.28491	0.21500	0.16720	0.13294	0.10301
	300.0	0.01864	0.63000	0.36970	0.22793	0.18640	0.13718	0.11243
	330.0	0.02340	0.61553	0.32401	0.24871	0.20076	0.15755	0.12868
	0.0	0.02906	0.69971	0.32167	0.31007	0.21962	0.16655	0.13665
	30.0	0.02728	0.58902	0.33724	0.27705	0.21205	0.15827	0.12441
	60.0	0.01647	0.65261	0.34270	0.24465	0.20253	0.13639	0.10260
0.1043	270.0	0.04113	0.63604	0.33905	0.21823	0.16514	0.12741	0.10358
	300.0	0.03105	0.67621	0.38479	0.24651	0.18542	0.12881	0.10350
	330.0	0.02165	0.69146	0.37911	0.25450	0.18968	0.16081	0.12714
	0.0	0.03043	0.65739	0.42830	0.33550	0.24302	0.17785	0.14702
	30.0	0.02504	0.67699	0.37386	0.27085	0.20254	0.15482	0.12294
	60.0	0.02417	0.66857	0.35410	0.26073	0.19821	0.12764	0.08907
0.0522	270.0	0.05261	0.53848	0.35052	0.22812	0.17567	0.12261	0.10985
	300.0	0.06199	0.52433	0.34896	0.22343	0.17181	0.13089	0.10450
	330.0	0.04055	0.56219	0.40522	0.24436	0.19469	0.15976	0.13301
	0.0	0.04339	0.65863	0.49282	0.36737	0.23658	0.18395	0.14827
	30.0	0.03800	0.64343	0.38580	0.26542	0.20428	0.15725	0.13345
	60.0	0.03235	0.60903	0.35336	0.22478	0.18962	0.12502	0.11192
0.0000	270.0	0.05046	0.45983	0.35514	0.22086	0.18144	0.13674	0.10548
	300.0	0.07600	0.59145	0.31528	0.20087	0.17150	0.13899	0.10681
	330.0	0.07054	0.56267	0.36146	0.25029	0.19805	0.16720	0.13346
	0.0	0.08847	0.57406	0.49003	0.33052	0.22156	0.18386	0.15320
	30.0	0.06007	0.63148	0.34660	0.26214	0.21237	0.16038	0.13541
	60.0	0.05084	0.47215	0.30201	0.21698	0.18052	0.12396	0.10244
-0.0522	270.0	0.04901	0.58627	0.36275	0.22707	0.16813	0.12751	0.11219
	300.0	0.07870	0.48020	0.30618	0.20945	0.15999	0.13458	0.11294
	330.0	0.10150	0.68012	0.39117	0.24887	0.19737	0.16379	0.13072
	0.0	0.20299	0.88847	0.45639	0.27357	0.19731	0.17000	0.14384
	30.0	0.09697	0.62141	0.38492	0.25582	0.20587	0.15906	0.13136
	60.0	0.05554	0.47459	0.29712	0.22281	0.17424	0.12176	0.08831
-0.1043	270.0	0.02940	0.65923	0.33336	0.21204	0.15719	0.11309	0.10419
	300.0	0.06006	0.58516	0.28063	0.17106	0.14914	0.11852	0.10233
	330.0	0.13216	0.64943	0.31081	0.20227	0.17756	0.15356	0.12950
	0.0	0.43470	1.08735	0.37275	0.22626	0.19044	0.16864	0.13927
	30.0	0.14342	0.69503	0.29680	0.20600	0.17257	0.15248	0.12993
	60.0	0.06121	0.57386	0.29333	0.18339	0.14591	0.11544	0.09916

f) $w'_{rms}/u_o \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.01988	0.55122	0.28605	0.19998	0.15380	0.11517	0.10063
	300.0	0.03346	0.57312	0.23992	0.13962	0.11025	0.10803	0.09981
	330.0	0.12523	0.65708	0.20415	0.14108	0.15112	0.14581	0.11644
	0.0	0.54499	0.63456	0.31702	0.21652	0.17137	0.15223	0.13222
	30.0	0.17592	0.46351	0.19084	0.15630	0.14824	0.14421	0.12122
	60.0	0.03574	0.58259	0.25181	0.12903	0.10727	0.10157	0.09209
-0.2087	270.0	0.01188	0.24571	0.25633	0.17346	0.13581	0.10099	0.09766
	300.0	0.01674	0.27337	0.14873	0.08503	0.07066	0.07740	0.07768
	330.0	0.10774	0.40853	0.13104	0.14076	0.12657	0.12212	0.11167
	0.0	0.87380	0.51412	0.25655	0.18232	0.17184	0.14784	0.12433
	30.0	0.16587	0.43324	0.12134	0.11951	0.13012	0.10039	0.11636
	60.0	0.01973	0.31674	0.15471	0.08019	0.07162	0.07277	0.07692
-0.2609	270.0	0.00875	0.06759	0.14334	0.11736	0.10424	0.08544	0.10391
	300.0	0.01098	0.07237	0.06478	0.05237	0.04196	0.05444	0.06957
	330.0	0.05190	0.21263	0.09133	0.11077	0.11937	0.10487	0.08533
	0.0	1.50241	0.44636	0.23954	0.17928	0.16199	0.14058	0.12264
	30.0	0.08104	0.15849	0.07965	0.09649	0.09759	0.09831	0.08596
	60.0	0.01113	0.08197	0.07383	0.05399	0.04829	0.05170	0.06343
-0.3130	270.0	0.00762	0.02293	0.07491	0.07514	0.07262	0.07076	0.09902
	300.0	0.00646	0.02311	0.03746	0.03609	0.03423	0.03346	0.05699
	330.0	0.02349	0.09291	0.06410	0.08753	0.10145	0.09822	0.09300
	0.0	1.49942	0.44737	0.22395	0.17647	0.14320	0.13802	0.10811
	30.0	0.02494	0.07680	0.05740	0.06528	0.09508	0.08736	0.08997
	60.0	0.00840	0.02420	0.04025	0.03640	0.02478	0.03582	0.05669
-0.3652	270.0	0.00638	0.01195	0.03456	0.03930	0.05771	0.05462	0.09775
	300.0	0.00679	0.01758	0.02334	0.02607	0.02712	0.03974	0.08862
	330.0	0.01432	0.04805	0.05121	0.08715	0.09637	0.09050	0.09483
	0.0	0.83686	0.29967	0.23153	0.17444	0.14142	0.12944	0.10535
	30.0	0.01524	0.04301	0.05437	0.06425	0.06557	0.08278	0.07980
	60.0	0.00751	0.01724	0.02322	0.02687	0.02731	0.03056	0.07173
-0.4174	270.0	0.00594	0.00860	0.02094	0.03448	0.04957	0.05982	0.09977
	300.0	0.00542	0.01228	0.01732	0.03109	0.03030	0.10355	0.09944
	330.0	0.01292	0.03737	0.05137	0.09657	0.09124	0.09048	0.09383
	0.0	0.27703	0.31553	0.21734	0.16576	0.13258	0.11739	0.09449
	30.0	0.01492	0.03169	0.05916	0.06374	0.09222	0.08596	0.07699
	60.0	0.00589	0.01186	0.01894	0.01898	0.02628	0.09309	0.08253

f) $w'_{rms}/u_o \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00003	0.00016	0.00089	0.00155	0.00256	0.00576	0.00735
	300.0	0.00006	0.00027	0.00441	0.01135	0.01064	0.01194	0.00916
	330.0	0.00004	0.00040	0.00977	0.02711	0.01818	0.01657	0.01276
	0.0	0.00039	0.00072	0.01463	0.03156	0.02282	0.01633	0.00950
	30.0	0.00005	0.00035	0.01343	0.03299	0.02111	0.01890	0.01231
	60.0	0.00003	0.00025	0.00412	0.00962	0.01100	0.01132	0.01153
0.3652	270.0	0.00006	0.00049	0.00149	0.00321	0.00259	0.00607	0.00662
	300.0	0.00007	0.00040	0.00675	0.01860	0.01327	0.01209	0.01088
	330.0	0.00003	0.00094	0.02623	0.03627	0.01820	0.01327	0.01187
	0.0	0.00033	0.00201	0.03826	0.04188	0.03309	0.01420	0.02475
	30.0	0.00004	0.00114	0.02861	0.03258	0.03668	0.01752	0.01017
	60.0	0.00003	0.00041	0.01583	0.01832	0.01387	0.01325	0.01116
0.3130	270.0	0.00005	0.00170	0.00542	0.00817	0.00573	0.00798	0.00618
	300.0	0.00007	0.00196	0.02470	0.02384	0.01982	0.01494	0.01072
	330.0	0.00010	0.00453	0.04431	0.02839	0.02056	0.01629	0.01091
	0.0	0.00034	0.00574	0.04716	0.03740	0.01837	0.01390	0.00695
	30.0	0.00011	0.00492	0.04060	0.03776	0.02482	0.01522	0.01197
	60.0	0.00006	0.00194	0.01983	0.02075	0.01750	0.03895	0.12659
0.2609	270.0	0.00007	0.00684	0.02099	0.01417	0.01004	0.00594	0.00805
	300.0	0.00006	0.00689	0.04361	0.02792	0.02877	0.01594	0.00950
	330.0	0.00023	0.01382	0.05126	0.02822	0.02025	0.01629	0.00890
	0.0	0.00055	0.01424	0.05416	0.02036	0.01271	0.01454	0.01025
	30.0	0.00048	0.02109	0.04491	0.02820	0.02209	0.01688	0.01068
	60.0	0.00007	0.00989	0.04008	0.03122	0.02387	0.01277	0.00859
0.2087	270.0	0.00016	0.05408	0.03645	0.01883	0.01282	0.00777	0.00531
	300.0	0.00010	0.05088	0.10547	0.04060	0.01922	0.01589	0.00897
	330.0	0.00041	0.05503	0.06836	0.02071	0.01634	0.01459	0.00901
	0.0	0.00032	0.04610	0.04938	0.01081	0.01325	0.01642	0.00762
	30.0	0.00038	0.09015	0.05134	0.02299	0.01677	0.01270	0.00901
	60.0	0.00014	0.04536	0.04728	0.03681	0.02239	0.02567	0.00940

g) $\overline{u'v'}/u_0^2 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00038	0.07684	0.43076	0.02867	0.01173	0.01023	0.00662
	300.0	0.00027	0.08769	0.06080	0.03300	0.02027	0.01188	0.00788
	330.0	0.00034	0.06241	0.03338	0.02025	0.01353	0.01067	0.00920
	0.0	0.00047	0.06489	0.02476	0.01061	0.01715	0.01111	0.00924
	30.0	0.00033	0.03600	0.03049	0.01250	0.01510	0.01207	0.00890
	60.0	0.00014	0.08676	0.04711	0.03185	0.02093	0.01251	0.00903
0.1043	270.0	0.00140	0.09913	0.03913	0.02048	0.01724	0.00967	0.00748
	300.0	0.00068	0.12528	0.04129	0.02205	0.01400	0.01241	0.00712
	330.0	0.00046	0.05623	0.02194	0.00467	0.01382	0.01349	0.00799
	0.0	0.00056	0.06653	0.04245	0.01147	0.02197	0.01533	0.00729
	30.0	0.00033	0.09212	0.00966	0.01990	0.01733	0.01235	0.00754
	60.0	0.00026	0.19665	0.04139	0.02626	0.01961	0.01138	0.00911
0.0522	270.0	0.00444	0.10760	0.04195	0.02487	0.01680	0.01516	0.00810
	300.0	0.00214	0.15587	0.03353	0.01594	0.01953	0.01371	0.00842
	330.0	0.00095	0.06230	0.01744	0.01241	0.01231	0.01225	0.00733
	0.0	0.00153	0.06465	0.05281	0.01849	0.01641	0.01290	0.00601
	30.0	0.00087	0.08676	0.01529	0.01275	0.01885	0.01041	0.00790
	60.0	0.00059	0.15504	0.03550	0.03903	0.02614	0.01396	0.00748
0.0000	270.0	0.00235	0.09067	0.04664	0.01964	0.01861	0.01347	0.00745
	300.0	0.00435	0.06958	0.02665	0.02403	0.01799	0.01237	0.00808
	330.0	0.02442	0.29182	0.01894	0.01455	0.01363	0.01260	0.00927
	0.0	0.00909	0.04459	0.00179	0.01736	0.01537	0.01682	0.00806
	30.0	0.00230	0.09983	0.03385	0.01491	0.01940	0.00937	0.00950
	60.0	0.00273	0.10071	0.03503	0.02445	0.01895	0.01097	0.00733
-0.0522	270.0	0.00084	0.12078	0.03298	0.01731	0.01924	0.01117	0.00880
	300.0	0.00543	0.08057	0.03557	0.01729	0.01461	0.01221	0.00805
	330.0	0.01097	0.07947	0.03876	0.01709	0.01170	0.01169	0.00907
	0.0	0.02297	2.56592	0.01681	0.01823	0.01517	0.01513	0.00940
	30.0	0.00540	0.03987	0.02370	0.01756	0.02041	0.01500	0.01041
	60.0	0.00439	0.06822	0.02691	0.01989	0.01858	0.01095	0.00824
-0.1043	270.0	0.00093	0.14001	0.04714	0.02105	0.01441	0.00773	0.00827
	300.0	0.00419	0.08960	0.02903	0.01043	0.01236	0.01099	0.00647
	330.0	0.01401	0.06915	0.01343	0.01569	0.01586	0.01329	0.00792
	0.0	0.05950	1.70671	0.11022	0.01338	0.01118	0.01020	0.00672
	30.0	0.01280	0.06693	0.00838	0.02543	0.01244	0.01460	0.01235
	60.0	0.00528	0.15091	0.02355	0.01166	0.01092	0.00876	0.00864

g) $\overline{u'v'}/u_0^2 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00021	0.07063	0.03978	0.02412	0.00737	0.00696	0.00602
	300.0	0.00073	0.08855	0.02243	0.00761	0.00591	0.00926	0.00627
	330.0	0.01929	0.10364	0.01552	0.03693	0.01441	0.01097	0.00837
	0.0	0.07724	0.01514	0.02179	0.01824	0.07842	0.01741	0.00936
	30.0	0.02805	0.07546	0.01002	0.01356	0.01636	0.01802	0.00813
	60.0	0.00096	0.12553	0.02350	0.00663	0.00930	0.00680	0.00504
-0.2087	270.0	0.00026	0.03307	0.02976	0.01532	0.00912	0.00690	0.00517
	300.0	0.00041	0.04519	0.01105	0.00455	0.00340	0.00486	0.00521
	330.0	0.01275	0.07636	0.00846	0.00988	0.00695	0.00961	0.00793
	0.0	0.11306	0.02806	0.01853	0.01640	0.03358	0.00955	0.00697
	30.0	0.03755	0.05394	0.00608	0.00734	0.04790	0.00835	0.00661
	60.0	0.00036	0.04768	0.01314	0.00369	0.00339	0.00343	0.00291
-0.2609	270.0	0.00016	0.00485	0.02282	0.01225	0.00642	0.00436	0.00454
	300.0	0.00028	0.00601	0.00357	0.00246	0.00171	0.00205	0.00311
	330.0	0.00360	0.02590	0.00566	0.00786	0.00692	0.00903	0.00651
	0.0	0.06117	0.02577	0.02175	0.01851	0.01176	0.01392	0.00701
	30.0	0.22805	0.01129	0.00511	0.00434	0.00516	0.04052	0.00491
	60.0	0.00022	0.00633	0.00406	0.00245	0.00290	0.00207	0.00144
-0.3130	270.0	0.00009	0.00077	0.03389	0.00592	0.00399	0.00399	0.00637
	300.0	0.00010	0.00127	0.00141	0.00145	0.00127	0.00160	0.00345
	330.0	0.00057	0.00219	0.00400	0.00601	0.00662	0.00545	0.00676
	0.0	0.32633	0.03584	0.14583	0.01629	0.00955	0.01039	0.00715
	30.0	0.00122	0.00326	0.00400	0.00448	0.02246	0.00523	0.00333
	60.0	0.00014	0.00083	0.00089	0.00138	0.00100	0.00326	0.00205
-0.3652	270.0	0.00033	0.00025	0.00185	0.00505	0.00265	0.00383	0.00516
	300.0	0.00004	0.00040	0.00083	0.00094	0.00086	0.00176	0.00293
	330.0	0.00016	0.00122	0.00256	0.00626	0.00698	0.00615	0.00449
	0.0	0.11534	0.00563	0.02213	0.01535	0.00826	0.73681	0.00770
	30.0	0.00010	0.00256	0.00502	0.00470	0.00273	0.00350	0.00352
	60.0	0.00007	0.00030	0.00060	0.00073	0.00060	0.00154	0.00238
-0.4174	270.0	0.00005	0.00022	0.00089	0.00120	0.00264	0.00345	0.00932
	300.0	0.00006	0.00026	0.00067	0.00114	0.00152	0.00323	0.00512
	330.0	0.00009	0.00155	0.00331	0.00455	0.00689	0.00420	0.00527
	0.0	0.00223	0.02160	0.01572	0.01417	0.00765	0.00765	0.00504
	30.0	0.00003	0.00121	0.00272	0.00161	0.00330	0.00379	0.00359
	60.0	0.00006	0.00018	0.00043	0.00074	0.00055	0.00713	0.00564

g) $\overline{u'v'}/u_0^2 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00001	0.00004	0.00015	0.00038	0.00078	0.00460	0.00314
	300.0	0.00003	0.00001	0.00136	0.00698	0.00645	0.00953	0.00688
	330.0	0.00005	0.00008	0.00339	0.00857	0.01065	0.00830	0.00412
	0.0	0.00009	0.00023	0.00403	0.01046	0.00259	0.00529	0.00111
	30.0	0.00002	0.00007	0.00781	0.01186	0.00705	0.00666	0.00408
	60.0	0.00002	0.00003	0.00038	0.00400	0.00546	0.00951	0.00683
0.3652	270.0	0.00000	0.00007	0.00061	0.00079	0.00144	0.00186	0.00337
	300.0	0.00001	0.00010	0.00298	0.00774	0.01040	0.00787	0.00565
	330.0	0.00005	0.00016	0.01002	0.01872	0.01469	0.00615	0.00348
	0.0	0.00012	0.00053	0.01072	0.01063	0.00417	0.00626	0.00580
	30.0	0.00002	0.00014	0.00510	0.00165	0.00680	0.00764	0.00248
	60.0	0.00002	0.00006	0.00237	0.00922	0.00592	0.00889	0.00549
0.3130	270.0	0.00002	0.00045	0.00346	0.00316	0.00299	0.00350	0.00122
	300.0	0.00001	0.00057	0.00777	0.00785	0.00872	0.00607	0.00488
	330.0	0.00001	0.00228	0.01722	0.01326	0.00974	0.00720	0.00155
	0.0	0.00001	0.00152	0.02446	0.01586	0.00329	0.00487	0.00128
	30.0	0.00007	0.00107	0.00000	0.00739	0.00526	0.00162	0.00158
	60.0	0.00003	0.00048	0.00697	0.00493	0.00857	0.00592	0.00234
0.2609	270.0	0.00002	0.00397	0.00830	0.00608	0.00608	0.00290	0.00188
	300.0	0.00003	0.00310	0.00114	0.00619	0.00730	0.00367	0.00656
	330.0	0.00003	0.00732	0.01572	0.00953	0.01172	0.00196	0.00000
	0.0	0.00011	0.00222	0.01433	0.00993	0.00480	0.00499	0.00103
	30.0	0.00025	0.00836	0.00936	0.05414	0.00174	0.00966	0.00326
	60.0	0.00002	0.00502	0.00166	0.00150	0.00714	0.00000	0.00621
0.2087	270.0	0.00007	0.04272	0.00660	0.01009	0.01300	0.00465	0.00389
	300.0	0.00005	0.00793	0.01774	0.01312	0.00303	0.00594	0.00690
	330.0	0.00001	0.05083	0.02948	0.01379	0.01044	0.00618	0.00512
	0.0	0.00000	0.03333	0.01991	0.01047	0.00746	0.00721	0.00000
	30.0	0.00022	0.04421	0.02242	0.01624	0.01202	0.01037	0.00420
	60.0	0.00004	0.00239	0.01887	0.01869	0.00938	0.00778	0.00606

h) $\overline{u'w'}/u_o^2 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00019	0.10162	0.02296	0.00786	0.00334	0.00241	0.00243
	300.0	0.00013	0.11189	0.04818	0.01818	0.00897	0.00675	0.00334
	330.0	0.00003	0.09686	0.01888	0.01972	0.01486	0.00638	0.00398
	0.0	0.00001	0.05402	0.01994	0.01604	0.00770	0.00527	0.00106
	30.0	0.00017	0.10441	0.02303	0.02312	0.01514	0.00853	0.00555
	60.0	0.00008	0.11683	0.04227	0.02283	0.01293	0.00768	0.00367
0.1043	270.0	0.00044	0.17821	0.03575	0.01963	0.00813	0.00257	0.00332
	300.0	0.00018	0.13217	0.04969	0.01963	0.01029	0.00623	0.00319
	330.0	0.00001	0.22708	0.03482	0.01897	0.01026	0.00523	0.00412
	0.0	0.00015	0.12656	0.06720	0.01671	0.00905	0.00500	0.00562
	30.0	0.00013	0.21620	0.05576	0.02055	0.01497	0.00807	0.00439
	60.0	0.00010	0.19819	0.03973	0.02884	0.01664	0.00666	0.00399
0.0522	270.0	0.00077	0.07578	0.03937	0.01993	0.01068	0.01036	0.00356
	300.0	0.00034	0.15399	0.02623	0.01872	0.00934	0.00640	0.00291
	330.0	0.00046	0.36155	0.02820	0.01279	0.00592	0.00488	0.00435
	0.0	0.00015	0.09101	0.06417	0.03909	0.00716	0.00485	0.00094
	30.0	0.00016	0 15809	0.06140	0.01824	0.01028	0.00628	0.00298
	60.0	0.00000	0.20386	0.02770	0.01582	0.01715	0.00610	0.00382
0.0000	270.0	0.00039	0.03914	0.04454	0.01622	0.01219	0.00525	0.00528
	300.0	0.00102	0.03029	0.05061	0.01149	0.01146	0.00638	0.00378
	330.0	0.00140	0.29897	0.04616	0.00797	0.00686	0.00405	0.00203
	0.0	0.00233	0.14904	0.11673	0.00522	0.00503	0.00310	0.00124
	30.0	0.00069	0.12294	0.03909	0.01738	0.00933	0.00458	0.00194
	60.0	0.00040	0.06385	0.02057	0.01149	0.01175	0.00526	0.00291
-0.0522	270.0	0.00017	0.09202	0.04592	0.02138	0.01278	0.00874	0.00513
	300.0	0.00027	0.04012	0.03180	0.01226	0.00771	0.00316	0.00262
	330.0	0.00539	0.14399	0.05916	0.00343	0.00262	0.00000	0.00130
	0.0	0.00339	29.14301	0.06875	0.01629	0.00667	0.00256	0.00272
	30.0	0.00223	0.18118	0.03929	0.01250	0.00680	0.00328	0.00174
	60.0	0.00049	0.06685	0.02950	0.00768	0.01352	0.00440	0.00400
-0.1043	270.0	0.00014	0.14429	0.03692	0.01761	0.00619	0.00403	0.00335
	300.0	0.00015	0.13187	0.02102	0.00875	0.00565	0.00185	0.00120
	330.0	0.00779	0.25445	0.01717	0.00000	0.01233	0.00584	0.00000
	0.0	0.05514	7.78048	0.02510	0.00046	0.00411	0.00342	0.00482
	30.0	0.00431	0.11419	0.01639	0.00360	0.00415	0.00293	0.00191
	60.0	0.00123	0.12172	0.01516	0.00799	0.00580	0.00285	0.00181

h) $\overline{u'w'}/u_0^2 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00004	0.08276	0.01586	0.00728	0.00220	0.00337	0.00355
	300.0	0.00020	0.14903	0.00982	0.00367	0.00172	0.00238	0.00160
	330.0	0.00669	0.08520	0.01622	0.03827	0.00736	0.01053	0.00000
	0.0	0.13877	0.10855	0.02123	0.00424	0.00986	0.00055	0.00088
	30.0	0.00750	0.07062	0.00817	0.00621	0.00657	0.00261	0.00028
	60.0	0.00017	0.12868	0.00456	0.00947	0.00202	0.00451	0.00159
-0.2087	270.0	0.00004	0.00893	0.01010	0.00879	0.00318	0.00229	0.00301
	300.0	0.00008	0.03202	0.00702	0.00224	0.00160	0.00451	0.00364
	330.0	0.00351	0.08005	0.00533	0.00614	0.00615	0.00476	0.00254
	0.0	0.43308	0.05800	0.02364	0.00976	0.00874	0.00055	0.00227
	30.0	0.00711	0.03804	0.00339	0.00297	0.01077	0.00004	0.00736
	60.0	0.00004	0.03158	0.01069	0.00155	0.00141	0.00163	0.00149
-0.2609	270.0	0.00003	0.00143	0.00768	0.00852	0.00343	0.00170	0.00000
	300.0	0.00010	0.00376	0.00172	0.00109	0.00064	0.00192	0.00108
	330.0	0.00020	0.02153	0.00386	0.00346	0.00693	0.00331	0.00380
	0.0	0.37105	0.09265	0.03148	0.79838	0.01022	0.00275	0.00000
	30.0	0.00295	0.00940	0.00241	0.00172	0.00205	0.00003	0.00275
	60.0	0.00004	0.00259	0.00205	0.00099	0.00135	0.00089	0.00080
-0.3130	270.0	0.00001	0.00018	0.00237	0.00322	0.00143	0.00220	0.00252
	300.0	0.00002	0.00032	0.00082	0.00051	0.00048	0.00059	0.00148
	330.0	0.00016	0.00344	0.00148	0.00286	0.00566	0.00434	0.00422
	0.0	0.94799	0.05406	0.02059	0.03067	0.00302	0.00305	0.00051
	30.0	0.00059	0.00237	0.00132	0.00182	0.00313	0.00333	0.00314
	60.0	0.00004	0.00040	0.00084	0.00072	0.00059	0.00055	0.00087
-0.3652	270.0	0.00001	0.00005	0.00047	0.00125	0.00172	0.00136	0.00304
	300.0	0.00001	0.00018	0.00037	0.00039	0.00030	0.00108	0.00299
	330.0	0.00010	0.00132	0.00138	0.00393	0.00576	0.00447	0.00300
	0.0	0.77658	0.04275	0.02020	0.00236	0.00299	0.00173	0.00234
	30.0	0.00001	0.00101	0.00132	0.00234	0.00295	0.00356	0.00189
	60.0	0.00002	0.00018	0.00032	0.00040	0.00040	0.00024	0.00180
-0.4174	270.0	0.00001	0.00003	0.00013	0.00043	0.00100	0.00161	0.00474
	300.0	0.00002	0.00010	0.00018	0.00047	0.00044	0.00966	0.00341
	330.0	0.00010	0.00065	0.00112	0.00540	0.00633	0.00357	0.00320
	0.0	0.03598	0.04070	0.01968	0.01553	0.00258	0.00024	0.00211
	30.0	0.00000	0.00047	0.00131	0.00329	0.00398	0.00158	0.00122
	60.0	0.00002	0.00008	0.00026	0.00021	0.00031	0.00432	0.00381

h) $\overline{u'w'}/u_0^2 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00007	0.00007	0.00060	0.00051	0.00106	0.00198	0.00447
	300.0	0.00000	0.00009	0.00136	0.00707	0.01397	0.00749	0.00343
	330.0	0.00001	0.00025	0.00406	0.00969	0.01418	0.01434	0.02290
	0.0	0.00013	0.00172	0.02139	0.01818	0.09768	0.01700	0.01581
	30.0	0.00023	0.00041	0.00268	0.02220	0.01859	0.00853	0.00898
	60.0	0.00084	0.00030	0.00000	0.00608	0.00414	0.01136	0.00809
0.3652	270.0	0.00002	0.00015	0.00134	0.00112	0.00156	0.00147	0.00180
	300.0	0.00056	0.00014	0.00344	0.00416	0.01082	0.00371	0.00467
	330.0	0.00000	0.00026	0.01205	0.03113	0.01091	0.00215	0.00546
	0.0	0.00081	0.00673	0.02662	0.02269	0.02117	0.00846	0.00000
	30.0	0.00012	0.00334	0.02753	0.02163	0.07083	0.01068	0.02461
	60.0	0.00000	0.00060	0.00440	0.01183	0.00450	0.00815	0.01121
0.3130	270.0	0.00054	0.00083	0.00490	0.00128	0.00187	0.00374	0.00219
	300.0	0.00011	0.00082	0.01887	0.02718	0.00195	0.01001	0.00586
	330.0	0.00003	0.00141	0.03979	0.03065	0.01957	0.01649	0.00624
	0.0	0.00145	0.00764	0.04491	0.02251	0.01416	0.01552	0.02677
	30.0	0.00026	0.00168	0.03583	0.04946	0.04175	0.01545	0.01055
	60.0	0.00047	0.00093	0.00749	0.01477	0.01187	0.06374	0.61764
0.2609	270.0	0.00010	0.00338	5.66956	0.00550	0.01201	0.00423	0.00741
	300.0	0.00027	0.00490	0.03542	0.01884	0.01027	0.01501	0.00857
	330.0	0.00125	0.01147	0.02368	0.01665	0.01775	0.02120	0.00996
	0.0	0.00161	0.00641	0.03292	0.01689	0.01066	0.01436	0.00509
	30.0	0.00208	0.01573	0.02986	0.02498	0.02102	0.01505	0.00689
	60.0	0.00029	0.00813	0.03571	0.03997	0.03230	0.02408	0.01599
0.2087	270.0	0.00021	0.02188	0.43148	0.00727	0.00253	0.00669	0.00417
	300.0	0.00038	0.03717	0.00943	0.01326	0.01334	0.01715	0.00636
	330.0	0.00065	0.05214	0.02610	0.02321	0.01716	0.00972	0.00845
	0.0	0.00071	0.04052	0.02216	0.01630	0.01377	0.00898	0.00114
	30.0	0.00253	0.07996	0.02884	0.02729	0.01342	0.01121	0.00796
	60.0	0.00027	0.02964	0.04911	0.01756	0.01333	0.01103	0.00337

i) $\overline{v'w'}/u_0^2 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00034	0.14938	0.04383	0.02857	0.01127	0.00266	0.00000
	300.0	0.00029	0.13010	0.03209	0.01557	0.01453	0.00049	0.00159
	330.0	0.00166	0.10331	0.01194	0.01964	0.01170	0.01735	0.00630
	0.0	0.00200	0.12176	0.01884	0.02776	0.01955	0.01276	0.00000
	30.0	0.00162	0.16931	0.02835	0.01838	0.01682	0.00778	0.00484
	60.0	0.00062	0.13103	0.03289	0.01984	0.01441	0.00321	0.00753
0.1043	270.0	0.00167	0.15550	0.03630	0.01644	0.00933	0.00408	0.00678
	300.0	0.00106	0.13237	0.05333	0.02786	0.01851	0.00081	0.00254
	330.0	0.00000	0.13286	0.02294	0.01479	0.00781	0.02912	0.01106
	0.0	0.00445	0.02348	0.02947	0.03981	0.03212	0.01844	0.00086
	30.0	0.00072	0.11705	0.02897	0.01519	0.00743	0.00132	0.00613
	60.0	0.00174	0.12177	0.03835	0.02383	0.01916	0.00616	0.00098
0.0522	270.0	0.02742	0.03447	0.03618	0.01813	0.01177	0.00151	0.00314
	300.0	0.01323	0.34409	0.03247	0.01031	0.01114	0.04401	0.00332
	330.0	0.00811	0.07129	0.03033	0.02588	0.00470	0.00637	0.00508
	0.0	0.00378	0.04128	0.04983	0.02944	0.02176	0.01196	0.00304
	30.0	0.00110	0.03678	0.01288	0.00000	0.00833	0.00000	0.00257
	60.0	0.00000	0.05507	0.03023	0.01498	0.01753	0.00233	0.00310
0.0000	270.0	0.00194	0.05340	0.04830	0.01143	0.01651	0.00705	0.00185
	300.0	0.00442	0.10469	0.02286	0.00712	0.00446	0.00517	0.00231
	330.0	0.02052	0.17877	0.00892	0.01320	0.00669	0.01036	0.00663
	0.0	0.00328	0.09332	0.03659	0.01222	0.01227	0.01987	0.00019
	30.0	0.00155	0.03059	0.01458	0.00663	0.00966	0.01004	0.00862
	60.0	0.00116	0.06212	0.02315	0.01265	0.01198	0.00136	0.00199
-0.0522	270.0	0.00236	0.04917	0.05688	0.01633	0.01231	0.10008	0.00724
	300.0	0.00317	0.04071	0.01988	0.00316	0.00943	0.00649	0.00699
	330.0	0.00776	0.18830	0.01918	0.01110	0.02074	0.00000	0.01330
	0.0	0.01352	6.28808	0.21572	0.01015	0.01066	0.01168	0.00000
	30.0	0.00377	0.04090	0.00865	0.02565	0.02490	0.00937	0.00763
	60.0	0.00311	0.05095	0.01558	0.01463	0.00258	0.00509	0.00372
-0.1043	270.0	0.00081	0.40514	0.03894	0.02941	0.00616	0.00701	0.01204
	300.0	0.00346	0.09532	0.02543	0.01537	0.01014	0.01036	0.01366
	330.0	0.00511	0.40993	0.01908	0.00000	0.01845	0.00302	0.00000
	0.0	0.05027	92.15421	0.01401	0.00076	0.00502	0.00000	0.00045
	30.0	0.00713	0.12001	0.02315	0.01267	0.00000	0.01040	0.00913
	60.0	0.00347	0.08321	0.02824	0.00729	0.01362	0.00493	0.00401

i) $\overline{v'w'}/u_0^2 \times 2$

TABLE V (Continued)

R/D	THETA	x/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00026	0.14285	0.04919	0.01854	0.00914	0.00982	0.00536
	300.0	0.00077	0.09564	0.01351	0.00700	0.00555	0.03083	0.00717
	330.0	0.00911	0.11340	0.01708	0.02745	0.01451	0.00757	0.02145
	0.0	0.03724	0.00000	0.03121	0.00097	0.00114	0.01730	0.00000
	30.0	0.00922	0.06908	0.02100	0.00664	0.02963	0.07068	0.00667
	60.0	0.00064	0.14195	0.01841	0.00863	0.00786	0.01213	0.00650
-0.2087	270.0	0.00023	0.02868	0.01615	0.01042	0.00576	0.00362	0.00491
	300.0	0.00020	0.04335	0.01003	0.00271	0.00187	0.00314	0.00328
	330.0	0.0085[illegible]	0.15509	0.00752	0.01225	0.01148	0.01236	0.00616
	0.0	0.18169	0.00518	0.02106	0.06185	0.00069	0.00204	0.00878
	30.0	0.00871	0.08019	0.00365	0.00677	0.00564	0.00000	0.00680
	60.0	0.00032	0.02033	0.00887	0.00274	0.00475	0.00589	0.00424
-0.2609	270.0	0.00014	0.00174	0.00045	0.00068	0.00483	0.00390	0.00184
	300.0	0.00009	0.00450	0.00662	0.00089	0.00108	0.00071	0.00535
	330.0	0.00348	0.06337	0.00288	0.00991	0.00327	0.00649	0.00338
	0.0	0.25816	0.00060	0.02513	0.00000	0.00499	0.08578	0.00114
	30.0	0.04034	0.01267	0.00713	0.00700	0.01844	0.00000	0.00000
	60.0	0.00017	0.00614	0.00188	0.00132	0.00112	0.00157	0.00000
-0.3130	270.0	0.00017	0.00029	0.00513	0.00147	0.00286	0.00768	0.01071
	300.0	0.00004	0.00066	0.00116	0.00061	0.00066	0.00060	0.00381
	330.0	0.00050	0.01142	0.00278	0.00174	0.00456	0.00660	0.00529
	0.0	0.77368	0.01162	0.03634	0.03451	0.00332	0.02097	0.00119
	30.0	0.00000	0.00525	0.00231	0.00478	0.00182	0.00443	0.00678
	60.0	0.00008	0.00032	0.14218	0.00071	0.00033	0.00955	0.00204
-0.3652	270.0	0.00006	0.00004	0.00139	0.00149	0.00218	0.00242	0.00427
	300.0	0.00006	0.00012	0.00032	0.00026	0.00109	0.00030	0.00395
	330.0	0.00010	0.00131	0.00210	0.00656	0.00724	0.00357	0.00417
	0.0	0.02770	0.00893	0.01522	0.02525	0.00000	4.47887	0.00000
	30.0	0.00000	0.00119	0.00267	0.00621	0.00334	0.00598	0.00861
	60.0	0.00009	0.00022	0.00016	0.00021	0.00030	0.00319	0.00345
-0.4174	270.0	0.00018	0.00000	0.00152	0.00019	0.00202	0.00493	0.00353
	300.0	0.00010	0.00006	0.00015	0.00066	0.00183	0.00000	0.00259
	330.0	0.00022	0.00095	0.00212	0.00479	0.01149	0.00734	0.01011
	0.0	0.00228	0.01261	0.36397	0.01580	0.00286	0.00000	0.01372
	30.0	0.00029	0.00063	0.01388	0.00045	0.00000	0.00032	0.00431
	60.0	0.00008	0.00045	0.00046	0.00072	0.00141	0.02215	0.00448

i) $\overline{v'w'}/u_0^2 \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	1.06914	1.14964	1.18721	1.14995	1.12912	1.12768	1.09183
	300.0	0.98982	1.04916	1.13947	1.19374	1.19539	1.14789	1.11435
	330.0	0.94877	0.92558	1.00536	1.30603	1.26534	1.14915	1.12374
	0.0	0.84254	0.78608	0.91006	1.47800	1.32049	1.18569	1.16083
	30.0	0.98289	0.90943	0.98001	1.30169	1.34734	1.17399	1.11442
	60.0	0.99704	1.04225	1.11042	1.17975	1.21720	1.14620	1.13101
0.3652	270.0	1.07022	1.17772	1.22665	1.18012	1.15665	1.14853	1.10343
	300.0	0.99323	1.06341	1.19875	1.26334	1.20507	1.08736	1.02845
	330.0	0.94575	0.92352	1.15881	1.37647	1.14348	1.01710	1.02903
	0.0	0.85441	0.77645	1.20899	1.44317	1.09163	1.04643	1.07713
	30.0	0.98421	0.90128	1.13807	1.40788	1.24617	1.05366	1.05996
	60.0	1.00295	1.04567	1.15776	1.26451	1.24259	1.10390	1.07424
0.3130	270.0	1.06156	1.20778	1.29106	1.21607	1.17421	1.14734	1.10635
	300.0	0.98462	1.07812	1.36026	1.31999	1.17420	1.02846	1.00355
	330.0	0.93904	0.91684	1.45448	1.24803	1.00905	0.99479	1.00676
	0.0	0.79408	0.74526	1.63220	1.18215	0.91673	0.99374	1.02261
	30.0	0.97493	0.86864	1.45182	1.27816	1.07785	1.00490	1.04899
	60.0	0.99598	1.05892	1.26682	1.30087	1.21935	1.05933	1.06173
0.2609	270.0	1.04478	1.26910	1.38711	1.23505	1.17027	1.13284	1.11459
	300.0	0.96899	1.10443	1.49099	1.26692	1.14169	1.01613	1.00323
	330.0	0.92046	0.95638	1.61923	1.06473	0.96103	0.99387	1.01862
	0.0	0.77434	0.91852	1.74736	0.96288	0.90933	0.99757	1.02832
	30.0	0.94483	0.94222	1.67075	1.06464	1.00620	1.03798	1.06846
	60.0	0.97941	1.10089	1.44564	1.25666	1.16210	1.06054	1.08365
0.2087	270.0	1.00301	1.49794	1.44671	1.21821	1.13016	1.11801	1.11494
	300.0	0.53743	1.29676	1.42713	1.17990	1.09284	1.03743	1.04005
	330.0	0.88830	1.30395	1.31795	0.99179	0.96783	1.03105	1.06123
	0.0	0.82019	1.44694	1.36758	0.93041	0.97415	1.02272	1.04843
	30.0	0.91796	1.39783	1.47131	1.01535	1.00306	1.08680	1.10428
	60.0	0.95958	1.30639	1.54319	1.16202	1.09428	1.07028	1.12116

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.93161	1.96604	1.40038	1.13178	1.10131	1.11944	1.12295
	300.0	0.89180	1.91000	1.18030	1.18687	1.09026	1.08452	1.07646
	330.0	0.85913	1.96185	1.01240	1.08892	1.05271	1.05976	1.07324
	0.0	0.78296	2.11137	0.98498	0.99641	1.02418	1.04076	1.05969
	30.0	0.88745	2.06636	1.13601	1.07990	1.09027	1.09603	1.10845
	60.0	0.91279	1.89707	1.31347	1.09661	1.08452	1.09260	1.14522
0.1043	270.0	0.83731	1.73644	1.21334	1.11417	1.09563	1.11438	1.11601
	300.0	0.82412	2.01624	1.16254	1.19928	1.10364	1.08797	1.07753
	330.0	0.81051	2.20911	0.96059	1.11621	1.08035	1.07385	1.07467
	0.0	0.79353	2.33147	0.95048	1.06956	1.03594	1.05145	1.05801
	30.0	0.84156	2.16613	1.13314	1.13956	1.13356	1.10774	1.08819
	60.0	0.84900	2.17664	1.21636	1.13683	1.12068	1.09786	1.12412
0.0522	270.0	0.75434	1.15589	1.22005	1.12245	1.09087	1.09393	1.10148
	300.0	0.75042	1.50897	1.19819	1.16885	1.09189	1.07767	1.07006
	330.0	0.77235	1.57574	1.04198	1.12614	1.03660	1.05363	1.06507
	0.0	0.75672	1.66092	1.05324	1.08395	1.01715	1.02646	1.05349
	30.0	0.81234	1.42685	1.19062	1.13007	1.08012	1.07051	1.08519
	60.0	0.78775	1.64296	1.21482	1.17191	1.07253	1.05930	1.08882
0.0000	270.0	0.68323	0.99251	1.15464	1.08271	1.06923	1.08023	1.08640
	300.0	0.65586	0.94385	1.20130	1.10404	1.05599	1.04312	1.04881
	330.0	0.68154	0.98899	1.12771	1.06272	1.01039	1.02819	1.04966
	0.0	0.67427	0.95286	1.12187	1.02831	0.97570	1.02892	1.05004
	30.0	0.70736	0.91551	1.19935	1.07924	1.05940	1.02604	1.08070
	60.0	0.69819	1.02334	1.22287	1.12463	1.05200	1.03246	1.07776
-0.0522	270.0	0.78476	1.28777	1.19265	1.12780	1.10323	1.11569	1.09518
	300.0	0.74316	0.95542	1.25631	1.10474	1.05343	1.07208	1.05042
	330.0	0.70841	1.05148	1.12157	1.00356	0.96473	1.02350	1.03800
	0.0	0.74961	2.88745	1.03246	0.98307	0.93403	1.01170	1.03449
	30.0	0.71563	1.12470	1.16296	1.03932	1.03119	1.04825	1.06612
	60.0	0.74050	1.05493	1.25065	1.13987	1.06572	1.05432	1.09886
-0.1043	270.0	0.88795	1.95126	1.15410	1.14778	1.11912	1.12275	1.12314
	300.0	0.86729	1.40756	1.25473	1.12339	1.05603	1.07822	1.07117
	330.0	0.74411	1.16188	1.11504	1.02068	0.95428	1.01380	1.03705
	0.0	0.96580	14.11052	0.93604	0.92048	0.91122	0.99889	1.02411
	30.0	0.72486	1.09831	1.16387	1.04102	1.05639	1.03725	1.07668
	60.0	0.84190	1.43843	1.23781	1.12658	1.08358	1.07206	1.11524

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.95998	1.83806	1.35627	1.15975	1.14099	1.12639	1.12814
	300.0	1.01508	1.97391	1.31177	1.13279	1.07422	1.08518	1.08524
	330.0	0.87882	1.38486	1.09291	1.54049	0.97546	1.03210	1.05111
	0.0	1.50413	1.39697	0.84505	0.89131	0.89978	0.98434	1.01277
	30.0	0.79433	1.61845	1.12671	1.05118	1.06072	1.06316	1.07819
	60.0	0.98809	1.99016	1.30088	1.14465	1.11110	1.08428	1.12148
-0.2087	270.0	1.01774	1.38808	1.43313	1.22903	1.15703	1.13620	1.11183
	300.0	1.11181	1.59654	1.33347	1.13763	1.07963	1.08958	1.08966
	330.0	1.10565	1.82331	1.08664	1.02632	0.98402	1.03664	1.04776
	0.0	3.19952	1.15195	0.81817	0.89572	0.87544	0.97733	1.00703
	30.0	0.98911	1.64034	1.11598	1.06163	1.06926	1.07522	1.08551
	60.0	1.10606	1.59791	1.31304	1.15889	1.11542	1.07495	1.12027
-0.2609	270.0	1.04887	1.22908	1.33305	1.22967	1.17692	1.14183	1.11056
	300.0	1.16165	1.44846	1.28474	1.13262	1.08398	1.08452	1.08657
	330.0	1.32949	1.57903	1.08606	1.04591	0.99961	1.04949	1.06727
	0.0	4.98264	0.81177	0.81117	0.86055	0.85043	0.96750	0.99129
	30.0	1.25838	1.50618	1.08214	1.05852	1.07968	1.08276	1.08529
	60.0	1.15142	1.44060	1.26048	1.13694	1.12193	1.07987	1.12057
-0.3130	270.0	1.06820	1.18216	1.25199	1.21095	1.16117	1.14816	1.10766
	300.0	1.17816	1.34304	1.22682	1.11877	1.08146	1.08447	1.07155
	330.0	1.42997	1.39545	1.08201	1.05273	0.99713	1.04810	1.05415
	0.0	5.61598	0.64493	0.77866	0.84124	0.83241	0.94395	0.97217
	30.0	1.42872	1.33049	1.09078	1.06743	1.09066	1.07951	1.06695
	60.0	1.17513	1.33163	1.21608	1.13967	1.11624	1.07937	1.09122
-0.3652	270.0	1.07685	1.15562	1.19908	1.17257	1.15032	1.13220	1.08553
	300.0	1.17983	1.28215	1.20055	1.11994	1.08525	1.07663	1.01640
	330.0	1.42959	1.30871	1.09828	1.05415	1.00451	1.04367	1.03681
	0.0	5.68685	0.56730	0.69334	0.82919	0.80596	0.93903	0.96085
	30.0	1.44991	1.27748	1.09763	1.08030	1.08722	1.06389	1.03199
	60.0	1.18471	1.27243	1.18098	1.12928	1.10122	1.07753	1.02350
-0.4174	270.0	1.07865	1.14137	1.17501	1.15473	1.12966	1.10585	1.09556
	300.0	1.18165	1.24947	1.18946	1.12026	1.07670	0.94004	0.87510
	330.0	1.39440	1.28666	1.11061	1.04511	0.98563	0.99870	0.99523
	0.0	5.83350	0.49372	1.46988	0.80216	0.79567	0.89808	0.93771
	30.0	1.43575	1.25613	1.11438	1.08284	1.05563	0.96352	0.94867
	60.0	1.18731	1.23911	1.17038	1.12626	1.10732	0.97294	0.91399

j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_0$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00966	0.01455	0.02302	0.03589	0.04726	0.09894	0.13607
	300.0	0.01052	0.01891	0.07970	0.16553	0.19895	0.21721	0.19506
	330.0	0.01636	0.03388	0.16129	0.30955	0.29161	0.25429	0.22028
	0.0	0.03780	0.05369	0.22376	0.36561	0.32652	0.27410	0.22133
	30.0	0.01626	0.03604	0.17294	0.31947	0.30270	0.25765	0.21420
	60.0	0.01271	0.02147	0.04799	0.14280	0.17360	0.20655	0.19738
0.3652	270.0	0.01035	0.01748	0.04772	0.06481	0.08674	0.09793	0.13322
	300.0	0.01309	0.02571	0.13189	0.22098	0.23294	0.23344	0.19692
	330.0	0.01279	0.05338	0.30165	0.35838	0.30659	0.23600	0.20644
	0.0	0.03932	0.07990	0.39629	0.40787	0.32184	0.24527	0.19662
	30.0	0.01347	0.05886	0.31020	0.36485	0.32500	0.24596	0.20912
	60.0	0.01322	0.03506	0.09865	0.21221	0.21997	0.22471	0.20926
0.3130	270.0	0.01117	0.03634	0.12480	0.12847	0.11875	0.11897	0.13359
	300.0	0.01326	0.04568	0.27471	0.29692	0.26868	0.24059	0.19696
	330.0	0.01605	0.10449	0.42045	0.37483	0.29342	0.23991	0.20488
	0.0	0.04509	0.14599	0.48050	0.39652	0.27679	0.22422	0.18675
	30.0	0.02080	0.11871	0.43424	0.39720	0.31909	0.24418	0.21673
	60.0	0.01510	0.06227	0.23760	0.29064	0.26996	0.22885	0.20137
0.2609	270.0	0.01570	0.13405	0.25216	0.20119	0.16513	0.13414	0.14555
	300.0	0.01651	0.13904	0.38799	0.34412	0.30573	0.23842	0.19537
	330.0	0.02398	0.23377	0.47009	0.36083	0.28757	0.23877	0.19811
	0.0	0.04876	0.30481	0.49986	0.32683	0.25626	0.21556	0.18119
	30.0	0.03404	0.25881	0.46110	0.36633	0.29326	0.23512	0.19750
	60.0	0.01535	0.16627	0.37689	0.36247	0.29863	0.22784	0.18891
0.2087	270.0	0.02459	0.41846	0.38726	0.26536	0.19763	0.15416	0.13236
	300.0	0.02274	0.37572	0.49087	0.37246	0.28253	0.22028	0.17777
	330.0	0.03336	0.47179	0.50605	0.33110	0.27771	0.23039	0.19229
	0.0	0.04161	0.58008	0.50306	0.30009	0.25856	0.21760	0.17715
	30.0	0.03755	0.53160	0.50264	0.33081	0.27518	0.21675	0.19114
	60.0	0.02082	0.39128	0.45869	0.38998	0.29584	0.21220	0.17465

k) $u'_{rms}/\bar{u} \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.03677	0.64979	0.44954	0.31704	0.20797	0.16924	0.14162
	300.0	0.03144	0.60624	0.47433	0.34486	0.25759	0.19148	0.17002
	330.0	0.03660	0.68984	0.40577	0.32651	0.25995	0.20736	0.18434
	0.0	0.04513	0.69042	0.38762	0.29291	0.24766	0.20775	0.16984
	30.0	0.03983	0.68263	0.42437	0.31910	0.26606	0.20620	0.17772
	60.0	0.02666	0.60063	0.4757	0.33724	0.26233	0.19961	0.16625
0.1043	270.0	0.06363	0.78191	0.41451	0.29367	0.23710	0.18857	0.16089
	300.0	0.05544	0.76506	0.39099	0.29891	0.23137	0.19476	0.16449
	330.0	0.04659	0.78902	0.36552	0.29956	0.24819	0.20981	0.17451
	0.0	0.05078	0.80559	0.35966	0.28166	0.23775	0.19617	0.17346
	30.0	0.04476	0.81766	0.39378	0.29187	0.26293	0.20025	0.16849
	60.0	0.04205	0.80143	0.40617	0.29818	0.25127	0.18839	0.16968
0.0522	270.0	0.08865	0.60970	0.33881	0.28871	0.23843	0.19320	0.17143
	300.0	0.08299	0.72649	0.33024	0.30097	0.25214	0.19743	0.16662
	330.0	0.06915	0.76446	0.33570	0.29292	0.23904	0.19578	0.17085
	0.0	0.07586	0.74838	0.35674	0.27788	0.23285	0.19899	0.17297
	30.0	0.05077	0.68192	0.34007	0.29450	0.25034	0.20108	0.16920
	60.0	0.06291	0.72384	0.32754	0.28015	0.24626	0.19821	0.16873
0.0000	270.0	0.09644	0.54533	0.29788	0.26520	0.24440	0.20288	0.15865
	300.0	0.11779	0.51703	0.34061	0.28397	0.24639	0.19484	0.16234
	330.0	0.10737	0.47952	0.35039	0.28922	0.24117	0.20118	0.16658
	0.0	0.12556	0.49252	0.33186	0.28178	0.23891	0.20192	0.16931
	30.0	0.06548	0.44012	0.33887	0.29098	0.26321	0.19948	0.17086
	60.0	0.09244	0.52254	0.31493	0.28954	0.24992	0.19643	0.16774
-0.0522	270.0	0.07235	0.65518	0.35613	0.29288	0.24492	0.18851	0.16368
	300.0	0.12468	0.50047	0.38012	0.29543	0.24016	0.19844	0.16557
	330.0	0.17526	0.41725	0.36883	0.29096	0.23842	0.18808	0.17041
	0.0	0.30380	0.47503	0.30862	0.26906	0.22762	0.19609	0.16339
	30.0	0.10574	0.43081	0.33910	0.29528	0.24532	0.20013	0.16702
	60.0	0.12358	0.47203	0.35163	0.29317	0.23679	0.19185	0.16199
-0.1043	270.0	0.04378	0.76873	0.41574	0.28881	0.21601	0.17286	0.15744
	300.0	0.09091	0.71563	0.37678	0.22822	0.18909	0.17300	0.15607
	330.0	0.22263	0.50014	0.32821	0.27067	0.22758	0.19644	0.17069
	0.0	0.57249	0.43934	0.29408	0.27549	0.23104	0.19311	0.16909
	30.0	0.15085	0.54218	0.26380	0.25799	0.22636	0.18638	0.16424
	60.0	0.09701	0.69370	0.35532	0.20909	0.19369	0.16649	0.14745

k) $u'_{rms}/\bar{u} \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.02831	0.60068	0.44463	0.29643	0.18722	0.14738	0.13124
	300.0	0.04518	0.73548	0.31725	0.17494	0.15347	0.13980	0.13385
	330.0	0.22636	0.69192	0.25588	0.31477	0.19986	0.17951	0.16109
	0.0	0.76159	0.33899	0.30142	0.25780	0.21101	0.19362	0.15747
	30.0	0.17125	0.65927	0.21193	0.21476	0.20094	0.16950	0.14586
	60.0	0.05088	0.68908	0.31655	0.15778	0.14699	0.13644	0.12147
-0.2087	270.0	0.02112	0.31398	0.36027	0.26017	0.16517	0.14009	0.13505
	300.0	0.02611	0.42490	0.21047	0.11777	0.10023	0.10717	0.11567
	330.0	0.17425	0.62172	0.16384	0.20905	0.17779	0.16038	0.15206
	0.0	1.10029	0.30425	0.30052	0.24232	0.21020	0.19135	0.16459
	30.0	0.13333	0.50605	0.15539	0.16601	0.16705	0.14859	0.12833
	60.0	0.02814	0.41677	0.21402	0.11101	0.09842	0.11182	0.09986
-0.2609	270.0	0.01533	0.09446	0.24804	0.19094	0.14611	0.10878	0.12683
	300.0	0.01614	0.10203	0.09484	0.07657	0.06636	0.07811	0.09561
	330.0	0.08489	0.29935	0.10461	0.15336	0.13600	0.14514	0.13836
	0.0	0.91567	0.30054	0.28452	0.25022	0.20638	0.17707	0.15485
	30.0	0.06176	0.20686	0.09560	0.12094	0.13151	0.12660	0.12509
	60.0	0.01898	0.10773	0.09375	0.06851	0.06741	0.08210	0.08048
-0.3130	270.0	0.01323	0.02871	0.09972	0.11668	0.10215	0.09796	0.13295
	300.0	0.01222	0.02997	0.04311	0.05104	0.04835	0.06828	0.09662
	330.0	0.03057	0.08520	0.08169	0.12659	0.13390	0.13004	0.13291
	0.0	0.41072	0.29805	0.28410	0.24019	0.19890	0.15734	0.14985
	30.0	0.03108	0.07372	0.07905	0.10450	0.11927	0.12020	0.11853
	60.0	0.01562	0.02714	0.04085	0.04345	0.04493	0.05801	0.08991
-0.3652	270.0	0.01126	0.01711	0.03579	0.05379	0.06584	0.08063	0.13165
	300.0	0.01029	0.01818	0.02825	0.03632	0.03626	0.06755	0.13082
	330.0	0.01906	0.05708	0.07720	0.13120	0.13839	0.12855	0.12431
	0.0	0.10883	0.27973	0.26954	0.22205	0.18515	0.14835	0.13948
	30.0	0.01955	0.05119	0.08242	0.09707	0.10441	0.11459	0.12370
	60.0	0.01332	0.01890	0.02570	0.03364	0.03707	0.05495	0.12792
-0.4174	270.0	0.01107	0.01355	0.02038	0.03582	0.04275	0.09769	0.13834
	300.0	0.01077	0.01645	0.02354	0.03731	0.05130	0.18081	0.15627
	330.0	0.01845	0.04492	0.08304	0.13157	0.14064	0.14318	0.13763
	0.0	0.02762	0.22712	0.24644	0.20730	0.17241	0.15172	0.13449
	30.0	0.01807	0.04493	0.09256	0.10416	0.12915	0.14591	0.13471
	60.0	0.01242	0.01692	0.02278	0.02893	0.03593	0.16461	0.14482

k) $u'_{rms}/\overline{u} \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.4174	270.0	0.00010	0.00050	0.00380	0.00209	0.00511	0.01485	0.02101
	300.0	0.00046	0.00083	0.00687	0.02521	0.03642	0.03973	0.03417
	330.0	0.00031	0.00114	0.02839	0.08802	0.07571	0.05409	0.05356
	0.0	0.00179	0.00301	0.05055	0.13753	0.09052	0.06458	0.04292
	30.0	0.00019	0.00127	0.03656	0.09402	0.08710	0.05854	0.04303
	60.0	0.00025	0.00086	0.00195	0.02542	0.03385	0.04564	0.03852
0.3652	270.0	0.00018	0.00102	0.00580	0.00567	0.01102	0.01541	0.02076
	300.0	0.00022	0.00088	0.02475	0.04360	0.05079	0.04947	0.03410
	330.0	0.00024	0.00233	0.09368	0.11993	0.08268	0.04945	0.03722
	0.0	0.00160	0.00623	0.16123	0.15176	0.09123	0.05310	0.04014
	30.0	0.00016	0.00326	0.09779	0.12615	0.10199	0.06157	0.04349
	60.0	0.00013	0.00112	0.01283	0.04661	0.05242	0.04853	0.04599
0.3130	270.0	0.00043	0.00313	0.02058	0.01928	0.01816	0.02436	0.02593
	300.0	0.00018	0.00318	0.09059	0.07418	0.06150	0.04801	0.03616
	330.0	0.00029	0.01068	0.18723	0.12591	0.07787	0.04571	0.03784
	0.0	0.00219	0.02194	0.24245	0.14164	0.07417	0.04660	0.03511
	30.0	0.00045	0.01306	0.19858	0.13986	0.09453	0.06303	0.04071
	60.0	0.00025	0.00468	0.05705	0.07535	0.06944	0.06393	0.04230
0.2609	270.0	0.00022	0.02553	0.06275	0.04004	0.03656	0.03547	0.02417
	300.0	0.00049	0.02283	0.14263	0.09671	0.06842	0.05064	0.03972
	330.0	0.00114	0.06230	0.21293	0.11548	0.07816	0.05603	0.03859
	0.0	0.00274	0.09980	0.24366	0.10356	0.07355	0.05228	0.03360
	30.0	0.00134	0.07539	0.22355	0.11946	0.08317	0.06284	0.04038
	60.0	0.00026	0.02845	0.12859	0.11309	0.08239	0.05144	0.03780
0.2087	270.0	0.00074	0.20513	0.13703	0.06645	0.05073	0.03270	0.02566
	300.0	0.00050	0.18892	0.20941	0.13068	0.07231	0.05193	0.03750
	330.0	0.00146	0.30241	0.23118	0.11234	0.08163	0.05184	0.03611
	0.0	0.00181	0.41839	0.22914	0.10896	0.08147	0.05493	0.03335
	30.0	0.00114	0.32861	0.23218	0.12026	0.08692	0.05624	0.03809
	60.0	0.00043	0.18923	0.18663	0.11694	0.07137	0.04354	0.03041

1) $\frac{1}{2}(u'^2_{rms} + v'^2_{rms} + w'^2_{rms}) \times 2$

TABLE V (Continued)

R/D	THETA	x/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
0.1565	270.0	0.00150	0.47963	0.17479	0.09483	0.05085	0.04220	0.02584
	300.0	0.00095	0.52319	0.22007	0.10374	0.06368	0.04073	0.03122
	330.0	0.00168	0.62670	0.16890	0.11807	0.07559	0.05288	0.03352
	0.0	0.00280	0.73467	0.16304	0.13621	0.08466	0.05558	0.03440
	30.0	0.00181	0.61808	0.19293	0.12130	0.08402	0.05016	0.03370
	60.0	0.00085	0.53540	0.20928	0.10351	0.08024	0.04000	0.02505
0.1043	270.0	0.00435	0.59603	0.16137	0.08417	0.05526	0.03964	0.02631
	300.0	0.00263	0.65593	0.19527	0.09359	0.06323	0.03873	0.02715
	330.0	0.00174	0.75814	0.19831	0.11189	0.06729	0.04860	0.03473
	0.0	0.00253	0.74989	0.22227	0.15001	0.08543	0.05328	0.04272
	30.0	0.00172	0.71278	0.20479	0.11264	0.07611	0.04299	0.03322
	60.0	0.00177	0.64332	0.18536	0.09856	0.06378	0.03312	0.02318
0.0522	270.0	0.00773	0.40008	0.14010	0.07855	0.05793	0.03926	0.02575
	300.0	0.00827	0.59205	0.14958	0.08654	0.06188	0.03992	0.02617
	330.0	0.00480	0.64786	0.20298	0.10342	0.06831	0.04673	0.03366
	0.0	0.00523	0.63585	0.29366	0.15113	0.07992	0.06099	0.04372
	30.0	0.00332	0.57309	0.19293	0.10688	0.07789	0.05244	0.03303
	60.0	0.00386	0.53656	0.15113	0.07969	0.07099	0.03798	0.02877
0.0000	270.0	0.00950	0.31549	0.13071	0.07482	0.06310	0.04353	0.02419
	300.0	0.01372	0.39812	0.13085	0.08164	0.06339	0.04353	0.02701
	330.0	0.01049	0.41198	0.17974	0.10168	0.07223	0.05087	0.03487
	0.0	0.01904	0.46294	0.30830	0.13504	0.07582	0.05377	0.04194
	30.0	0.00728	0.42669	0.16672	0.10630	0.08045	0.05205	0.03179
	60.0	0.00696	0.32555	0.11851	0.08419	0.06520	0.03564	0.02760
-0.0522	270.0	0.00522	0.45396	0.14075	0.07629	0.06060	0.03522	0.02476
	300.0	0.01767	0.29470	0.13587	0.08456	0.05718	0.04053	0.02822
	330.0	0.02702	0.43645	0.19120	0.10223	0.06775	0.04895	0.03531
	0.0	0.08861	0.39469	0.29657	0.09886	0.06915	0.05249	0.03986
	30.0	0.01979	0.36976	0.19056	0.10397	0.07603	0.04473	0.03567
	60.0	0.01451	0.27421	0.13130	0.08491	0.06252	0.03373	0.02406
-0.1043	270.0	0.00308	0.62346	0.16350	0.07382	0.05215	0.03197	0.02328
	300.0	0.01111	0.50442	0.14593	0.05695	0.04589	0.03092	0.02483
	330.0	0.03906	0.54276	0.14380	0.07881	0.05906	0.04732	0.03490
	0.0	0.32730	1.85193	0.19684	0.08933	0.06382	0.05045	0.03793
	30.0	0.03961	0.58628	0.11150	0.07278	0.06098	0.04364	0.03224
	60.0	0.01168	0.45534	0.13729	0.05702	0.04239	0.02806	0.02148

1) $\frac{1}{2} ({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

TABLE V (Continued)

R/D	THETA	X/D 1.00	1.25	1.50	1.75	2.00	2.50	3.00
-0.1565	270.0	0.00127	0.45952	0.16165	0.08098	0.04662	0.02740	0.02249
	300.0	0.00287	0.50133	0.11273	0.03880	0.02783	0.02385	0.02115
	330.0	0.03855	0.58494	0.07575	0.06866	0.04416	0.04084	0.02788
	0.0	0.58727	0.48377	0.13677	0.08267	0.05273	0.04287	0.03457
	30.0	0.06225	0.44301	0.05727	0.04884	0.04353	0.04118	0.02853
	60.0	0.00296	0.49721	0.11493	0.03538	0.02274	0.02085	0.01808
-0.2087	270.0	0.00083	0.12317	0.12431	0.05919	0.03917	0.02133	0.02060
	300.0	0.00112	0.16856	0.04909	0.01889	0.01382	0.01642	0.01431
	330.0	0.03185	0.35267	0.03567	0.04428	0.03326	0.03228	0.02734
	0.0	1.56363	0.26164	0.10281	0.06481	0.05080	0.04119	0.02760
	30.0	0.07076	0.30562	0.02832	0.02714	0.03504	0.02804	0.02572
	60.0	0.00095	0.19434	0.05474	0.01503	0.01278	0.01215	0.01379
-0.2609	270.0	0.00041	0.01549	0.05705	0.03774	0.02516	0.01416	0.02191
	300.0	0.00069	0.01412	0.01034	0.00759	0.00600	0.00950	0.01103
	330.0	0.01557	0.08973	0.01617	0.02758	0.02674	0.02323	0.01986
	0.0	3.06719	0.22363	0.09705	0.06662	0.04822	0.04009	0.02920
	30.0	0.03096	0.04368	0.01364	0.01845	0.01974	0.01653	0.01771
	60.0	0.00060	0.02046	0.01145	0.00639	0.00675	0.00646	0.00845
-0.3130	270.0	0.00029	0.00279	0.01384	0.01488	0.01355	0.01151	0.02032
	300.0	0.00021	0.00212	0.00342	0.00439	0.00354	0.00397	0.00881
	330.0	0.00130	0.01238	0.01079	0.01857	0.02354	0.02089	0.01938
	0.0	2.59110	0.23550	0.08509	0.06093	0.04264	0.03331	0.02603
	30.0	0.00344	0.00990	0.00879	0.01039	0.01705	0.01825	0.01708
	60.0	0.00037	0.00242	0.00417	0.00329	0.00232	0.00383	0.00804
-0.3652	270.0	0.00016	0.00156	0.00376	0.00692	0.01041	0.00812	0.02648
	300.0	0.00020	0.00165	0.00197	0.00254	0.00217	0.00563	0.01815
	330.0	0.00046	0.00432	0.00774	0.02055	0.02086	0.02097	0.01805
	0.0	0.70238	0.12915	0.08767	0.05096	0.03949	0.02658	0.02352
	30.0	0.00051	0.00556	0.00646	0.00885	0.01250	0.01488	0.01542
	60.0	0.00027	0.00097	0.00183	0.00200	0.00166	0.00261	0.01324
-0.4174	270.0	0.00017	0.00061	0.00273	0.00253	0.00551	0.01164	0.02341
	300.0	0.00014	0.00060	0.00114	0.00236	0.00371	0.02745	0.02326
	330.0	0.00039	0.00481	0.00862	0.02156	0.01935	0.02552	0.01656
	0.0	0.08276	0.10591	0.07524	0.04962	0.03517	0.02995	0.01859
	30.0	0.00041	0.00400	0.00894	0.00999	0.01923	0.02117	0.01833
	60.0	0.00014	0.00056	0.00114	0.00167	0.00146	0.02325	0.01975

1) $\frac{1}{2}({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

TABLE VI.

COMPUTER CODE LISTING FOR DATA ACQUISITION AND PROBE CONTROL ON APPLE II

```
10  REM      *** PRODATA ***
12  REM     BY G.B. FERRELL
14  REM        AUGUST 27, 1984
16  REM
18  DIM VO(17,6,2)
20  GOSUB 1000: REM  LOAD CODES
22  GOSUB 1500: REM  CONFIGURE EPSON
23  GOSUB 1700: REM  OPENING QUIZ
25  HOME : PRINT : PRINT "****** WARNING ***
     ***": PRINT
30  PRINT : PRINT "BEFORE STARTING, FOLLOW T
     HIS CHECKLIST"
35  PRINT "TO PREVENT PROBE DESTRUCTION!"
40  PRINT : PRINT "1.  CENTER MARK ON DOG-LE
     G FOLLOWER"
45  PRINT "      AT 0.0 ON -3.0 TO +3.0 SCALE
     ": PRINT
50  PRINT "2.  HOT-WIRE IN CENTER OF FLOWFIE
     LD "
55  PRINT "      AND PERPENDICULAR TO TUBE AX
     IS"
57  PRINT
60  PRINT "3.  BOTH STEPPER MOTOR CONTROLLER
     S"
65  PRINT "      TURNED ON (GREEN LIGHTS)"
66  PRINT
67  PRINT "4.  DATA DISK IN DRIVE": PRINT
70  PRINT "5.  PRINTER ON, WITH ENOUGH PAPER
     ": PRINT
72  PRINT "6.  H.W.A. TURNED TO 'OPERATE'"
75  PRINT : PRINT
80  PRINT "ARE YOU READY NOW? (Y/N)"
90  INPUT AS$
95  IF AS$ < > "Y" THEN  END
97  HOME : PRINT "ENTER TRAVERSE ANGLE IN DE
     GREES"
98  PRINT "    (E.G. 270,300,330,000,030, OR
     060)"
99  INPUT TA$: PRINT
100  INPUT "ENTER TIME (9.20,14.30, ETC.)";T
     $
101  INPUT "ENTER FREESTREAM E0 (VOLTS)";E0
102  PRINT
103 N$ = "J" + J$ + "X" + X$ + "T" + TA$ + "
     D" + DA$
104  PRINT "A DATA FILE HAS BEEN CREATED": PRINT
     "UNDER THE NAME--": PRINT
105  PRINT "    ";N$: PRINT
```

TABLE VI (Continued)

```
106  PRINT "FOR THIS TRAVERSE.": PRINT
107  PRINT "O.K. TO PROCEED?"
108  INPUT AS$: IF AS$ <  > "Y" THEN  END
110  HOME
120  PR# 5: PRINT  CHR$ (12)
122  PRINT  TAB( 35);"HOT-WIRE DATA": PRINT

124  PRINT  TAB( 35);NA$
130  PRINT  TAB( 35);DA$
135  PRINT  TAB( 35);"TIME  ";T$: PRINT
140  PRINT  TAB( 35);"BAROMETRIC PRESSURE ";
     PA;" MM HG"
141  PRINT  TAB( 35);"FREESTREAM E0 ";E0;" V
     OLTS": PRINT
142  PRINT  TAB( 35);"DATA FILE--";N$: PRINT

150  PR# 0
160  CALL 30634: REM  MOVE UP 2.4
170  FOR J = 1 TO 17
175 RJ = J
180 R = (9.0 - RJ) * 0.300
190 R =  INT (R * 1000.0) / 1000.0
200  FOR IS = 1 TO 6
210  GOSUB 2000: REM  CALL DATA ROUTINE
212 MN =  INT (MN * 10000) / 10000
214 SD =  INT (SD * 10000) / 10000.0
220  IF IS = 1 THEN  GOTO 262
230 VO(J,IS,1) = MN
235 VO(J,IS,2) = SD
237  PR# 5
240  PRINT  TAB( 25);IS;" E = ";MN;"    STDD
     EV = ";SD
245  PR# 0
260  GOTO 280
262  PRINT : PRINT
264 VO(J,IS,1) = MN
266 VO(J,IS,2) = SD
268  PR# 5
269  IF J = 6 OR J = 12 THEN  PRINT  CHR$ (1
     2)
270  PRINT : PRINT  TAB( 22);"RADIAL POSITIO
     N =";R
272  PRINT  TAB( 25);IS;" E = ";MN;"    STDD
     EV = ";SD
273  PR# 0
280  IF IS = 6 THEN  GOTO 320
290  CALL 30208: REM  CW 30 DEG.
300  NEXT IS
320  CALL 30256: REM  CCW 150 DEG.
330  IF J <  > 17 THEN  GOTO 400
335  GOSUB 4000: REM  RECORD TO DISK
340  GOSUB 3000
350  IF TH$ = "Y" THEN  GOTO 23
360  PR# 0: PRINT "ALL TRAVERSES COMPLETE"
370  GOTO 500
400  CALL 30518: REM  DOWN 0.3 INCH
410  NEXT J
500  END
```

TABLE VI (Continued)

```
1000  PRINT  CHR$ (4)"BLOAD PROGRAM2 1000 SA
    M 5 SEC"
1010  PRINT  CHR$ (4)"BLOAD SQUARE SUM"
1020  PRINT  CHR$ (4)"BLOAD SUMMATION"
1030  PRINT  CHR$ (4)"BLOAD UP 2.40 INCH"
1040  PRINT  CHR$ (4)"BLOAD DOWN 6.30 INCH"
1050  PRINT  CHR$ (4)"BLOAD CW 30 DEGREES"
1060  PRINT  CHR$ (4)"BLOAD CCW 150 DEGREES"

1070  RETURN
1500  REM  CONFIGURE PRINTER
1510  PR# 5: PRINT  CHR$ (9)"80N"
1520  PRINT  CHR$ (27)"M"
1530  PRINT  CHR$ (27)"A" CHR$ (7)
1550  PR# 0: TEXT
1560  RETURN
1700  REM  OPENING QUIZ
1710  HOME
1720  PRINT "ENTER DATE"
1730  PRINT "  (E.G. 010184 FOR JAN 1., 1984
    )"
1740  INPUT DA$: PRINT
1780  PRINT "ENTER NAME (E.G.  G.B. FERRELL)
    "
1790  INPUT NA$: PRINT
1800  PRINT "ENTER ATMOS. PRESS. (MM HG)"
1810  INPUT PA: PRINT
1820  PRINT "WHAT IS JET/CROSS VELOCITY RATI
    O?"
1825  PRINT "  (E.G.  2.4.6. ETC)"
1830  INPUT J$: PRINT
1840  PRINT "WHAT IS DOWNSTREAM LOCATION, X/
    D?"
1845  PRINT "  (E.G.  1.00.1.25, ETC)"
1850  INPUT X$: PRINT
1860  RETURN
2000  REM :DELAY
2002  FOR K = 1 TO 5
2004 Z =  EXP (20)
2006  NEXT K
2008  CALL 16433: REM  TAKE DATA
2010  CALL 29731: REM  SUMMATION
2020 A =  PEEK (28928)
2030 B =  PEEK (28929) * 256
2040 C =  PEEK (28930) * 65536
2050 D =  PEEK (28931) * 16777216
2060 E = A + B + C + D
2070 M1 = E / 4095 * 10.0755
2075 MN = M1 / 5000
2100  CALL 29296: REM  SQUARE SUM
2110 A =  PEEK (28933)
2120 B =  PEEK (28934) * 256
2130 C =  PEEK (28935) * 65536
2140 D =  PEEK (28936) * 16777216
2150 E =  PEEK (28937) * 4294967296
2160 G1 = A + B + C + D + E
2170 G2 = G1 / 16769025 * 101.5157003
2135 G = G2
```

TABLE VI (Continued)

```
2180 SD =  SQR ((G - 5000 * MN ^ 2) / 4999)
2190  RETURN
3000  CALL 30634: REM  UP 2.40 INCH
3010  PR# 0: PRINT
3020  PRINT "TRAVERSE COMPLETE"
3030  PRINT "DO YOU WANT NEW TUBE ANGLE?"
3040  PRINT "(ENTER Y/N)"
3050  INPUT TH$
3060  RETURN
4000  REM  MAKE SEQUENTIAL FILES
4002  FOR I = 1 TO 5
4003 G$ = "": REM  CTRL-G
4004  PRINT G$: NEXT I
4006  INPUT "STORE DATA?";DK$
4008  IF DK$ <  > "Y" THEN Z = Z
4010 D$ =  CHR$ (4): REM  CTRL-D
4150 JF = 0
4200  PRINT D$;"OPEN";N$
4205  ONERR  GOTO 4610
4210  PRINT D$;"DELETE";N$
4215  ONERR  GOTO 4610
4500  PRINT D$;"OPEN";N$
4502  ONERR  GOTO 4610
4505  PRINT D$;"WRITE";N$
4508  ONERR  GOTO 4610
4510  FOR J = 1 TO 17
4520  FOR IS = 1 TO 6
4530  FOR I = 1 TO 2
4540  PRINT VO(J,IS,I)
4550  NEXT I
4560  NEXT IS
4570  NEXT J
4600  PRINT D$;"CLOSE";N$
4602 JF = JF + 1
4604  IF JF > 1.5 THEN  GOTO 4800
4605  HOME
4610  FLASH : PRINT "INSERT BACKUP DATA DISK
     ": NORMAL : PRINT
4612  IF JF = 0 THEN  FLASH
4614  IF JF = 0 THEN  PRINT " I/O ERROR!"
4616  IF JF = 0 THEN  NORMAL
4620  INPUT "READY? (Y/N)";DL$
4630  IF DL$ <  > "Y" THEN Z = Z
4640  GOTO 4200
4800  RETURN
```

TABLE VII

COMPUTER CODE LISTING FOR REDUCTION OF HOT-WIRE VOLTAGES

```
C      ************************************************************
C      *                                                          *
C      *                                                          *
C      *       COMPUTER PROGRAM TO CALCULATE TURBULENCE           *
C      *       QUANTITIES USING THE EXPERIMENTAL DATA             *
C      *       OBTAINED BY SIX ORIENTATION HOT-WIRE TECHNIQUE.    *
C      *                                                          *
C      *                                                          *
C      *             VERSION OF OCT, 1984                         *
C      *                                                          *
C      *                                                          *
C      *                                                          *
C      *                     PREPARED BY:                         *
C      *                   SALIM I. JANJUA                        *
C      *                       MODIFIED BY:                       *
C      *                   GARY B. FERRELL                        *
C      *     SCHOOL OF MECHANICAL AND AEROSPACE ENGINEERING       *
C      *             OKLAHOMA STATE UNIVERSITY                    *
C      *                STILLWATER OK. 74078                      *
C      *                                                          *
C      *                                                          *
C      ************************************************************
C
C
C
C
      DIMENSI  .M(12),ER(12),AMECV(12),VAR(12)
      DIMENSIC  /DUMO(6),UPDUMO(6),VMDUMO(6),VPDUMO(6)
      DIMENSION WMDUMO(6),WPDUMO(6),UVDUMO(6),UWDUMO(6),
     *VWDUMO(6)
      DIMENSION UMA(30),VMA(30),WMA(30),UPA(30),VPA(30),
     *WPA(30),UVSA(30),UWSA(30),VWSA(30),RADL(30),KE(30),AKE(30)
      REAL KE
      COMMON UBAR,VBAR,WBAR,UPRMS,VPRMS,WPRMS,
     *UVSS,UWSS,VWSS
      DATA DIA,EITA/5.75,0.8/
      DO 87 IFILE=11,16
      IOUT=IFILE+42
      REWIND IFILE
      JMAX=17
      IS=0
      READ(IFILE,*) XDDIA,THETA,EMO
      READ(IFILE,*) A1,B1,C1
      READ(IFILE,*) A2,B2,C2
      READ(IFILE,*) A3,B3,C3
      WRITE(10,1412)
 1412 FORMAT(1H1)
      WRITE(10,1311) XDDIA,THETA
 1311 FORMAT(///,4X,'AXIAL POSITION, X/DIA = ',F7.4,/,
     * 4X,'THETA = ',F6.1,//)
      WRITE(10,1111)
 1111 FORMAT(/,4X,'THE CALIBRATION CONSTANTS ARE:')
      WRITE(10,*) A1,B1,C1
      WRITE(10,*) A2,B2,C2
      WRITE(10,*) A3,B3,C3
      X=XDDIA*DIA
      DO 77 JCOUNT=1,JMAX
      JCD2=JCOUNT/2
      READ(IFILE,*)((EM(I),ER(I)),I=1,6)
```

TABLE VII (Continued)

```
      R=REAL(8-JCOUNT)*0.300
      RDDIA=R/DIA
      IF((JCD2*2).EQ.JCOUNT) WRITE(10,1412)
      WRITE(10,1312) RDDIA
 1312 FORMAT(///,4X,'RADIAL POSITION, R/DIA = ',F7.4,//)
      WRITE(10,1112)
 1112 FORMAT(/,7X,'MEAN AND R.M.S. VOLTAGES:',/)
      WRITE(10,1100) (EM(I), I=1,6)
      WRITE(10,1200) (ER(I), I=1,6)
      WRITE(10,112)
 1100 FORMAT(6F9.4)
 1200 FORMAT(6F9.4)
      IS=IS+1
      RADL(IS)=RDDIA
      UMO1=(-B1+SQRT(B1**2-4.0*C1*(A1-EMO**2)))/(2.0*C1)
      UM1=(-B1+SQRT(B1**2-4.0*C1*(A1-EM(1)**2)))/(2.0*C1)
      UMO=UMO1*UMO1
      UM=UM1*UM1
      DEU=B1/(4.0*EM(1)*UM1)+C1/(2.0*EM(1))
      UDEU=UM*DEU
      UPDUM=ER(1)/UDEU
      UMDUMO=UM/UMO
      UPDUMM=UPDUM*UMDUMO
      DO 30 I=1,6
      EM2=EM(I)*EM(I)
      ER2=ER(I)*ER(I)
      D=SQRT(B2**2-(4*C2*(A2-EM2)))
      PHE=((-B2+D)/(2*C2))**2
      DPHE=(2*EM(I)/C2)*(1-(B2/D))
      D2PHE=(1/EM(I))*DPHE+(8*B2*EM2)/D**3
C------------------------------------------------------------
C-------------LOCAL MEAN EFFECTIVE COOLING VELOCITY IS CALCULATED
C------------------------------------------------------------
      AMECV(I)=PHE+0.5*D2PHE*ER2
C-------------------------------------------------------------
C--------------VARIANCE,VAR IS CALCULATED-------------
C-------------------------------------------------------------
      VAR(I)=((DPHE**2)*(ER2))-((0.5*D2PHE*ER2)**2)
      AMECV(I+6)=AMECV(I)
      VAR(I+6)=VAR(I)
      WRITE(10,110) AMECV(I),VAR(I)
 110  FORMAT(7X,'AMECV=',F7.4,5X,'VAR=',F7.4)
 30   CONTINUE
C-------------------------------------------------------------
C--------------MAIN CALLS THE SUBROUTINE CPYF TO CALCULATE
C--------------THE PITCH AND YAW FACTORS.------------------
C--------------------------------------------------------------
      CALL CPYF(A1,B1,C1,A2,B2,C2,A3,B3,C3,PF,YF)
C------------------------------------------------------------
C-----------PITCH FACTOR AND YAW FACTOR---------------------
C-------------------------------------------------------------
      WRITE(10,543) PF,YF
 543  FORMAT(/,7X,'PITCH FACTOR=',F7.4,3X,'YAW FACTOR=',F7.4)
      AL=PF*PF-YF*YF
      O=PF*PF+YF*YF
      WRITE(10,444) UMDUMO,UPDUMM
 444  FORMAT(/,7X,'AXIAL MEAN VEL/INLET MAX VEL=',F8.4,4X,
     *'AXIAL TURB INTEN=',F8.4)
      WRITE(10,515) UMO
  515 FORMAT(/,12X,'MAX INLET VELOCITY=',F9.4)
      DO 222 I11=1,6
      II=I11-1
      N=6
      CALL STQTZ(UDUMO,WMDUMO,VMDUMO,UPDUMO,WPDUMO,VPDUMO,
     *UVDUMO,UWDUMO,VWDUMO,N,I11)
C--------------------------------------------------------------
```

```
C-----------------MAIN CALLS THE  SUBROUTINE FMCV TO FIND THE
C-----------------THE MINIMUM COOLING VELOCITY AND THE TWO
C-----------------ADJACENT ONES
C-----------------------------------------------------------
      CALL FMCV(AMECV,N,IP,IQ,IR,II)
      ZP=AMECV(IP)
      ZQ=AMECV(IQ)
      ZR=AMECV(IR)
      IF(IQ.GT.6) IQ=IQ-6
      IF(IR.GT.6) IR=IR-6
C------------------------------------------------------------
C-----------------MAIN CALLS THE SUBROUTINE,SEABC TO SET UP
C-----------------THE EQUATIONS FOR AO,BO,AND CO------------
C-----------------------------------------------------------
      CALL SEABC(ZP,ZQ,ZR,IP,AO,BO,CO)
      F=SQRT((AO**2)+(BO**2)/3)
      IF(CO.LT.F*O/AL) GO TO 222
C------------------------------------------------------------
C--------------VELOCITY FUNCTIONS F1,F2,AND F3 ARE CALCULATED-----
C----------------------------------------------------------------
      F1=SQRT((1/AL)*(AO+F))
      IF((1/AL)*(-AO+F).LT.O) GO TO 222
      F2=SQRT((1/AL)*(-AO+F))
      F3=SQRT(CO-(O/AL)*F)
      IF(F2.EQ.O) GO TO 222
C------------------------------------------------------------
C---------------MAIN CALLS THE SUBROUTINE CDABC TO CALCULATE
C---------------THE FIRST AND SECOND DIFFERENTIALS OF AO,BO,
C---------------AND CO------------------------------------------
C------------------------------------------------------------
      CALL CDABC(DAP,DBP,DCP,D2AP,D2BP,D2CP,DAQ,DBQ,DCQ,D2AQ,D2BQ,
     *D2CQ,DAR,DBR,DCR,D2AR,D2BR,D2CR,ZP,ZQ,ZR,IP)
C-------------------MAIN CALCULATES THE FIRST AND SECOND
C-------------------DIFFERENTIALS OF THE VELOCITY FUNCTIONS
C-------------------F1,F2,AND F3 WITH RESPECT TO THE
C-------------------SELECTED SET OF THE THREE COOLING VELO
C-------------------CITIES.--------------------------------
C------------------------------------------------------------
      X1=F1*F1
      X2=X1*F1
      X3=BO/(3*AL*AL)
      X4=X1/AL
      X5=(2*X2)-(2*F1*AO/AL)
      X6=-(6*X1-2*AO/AL)
      Y1=F2*F2
      Y2=Y1*F2
      Y3=2.0*Y2+2.0*F2*AO/AL
      Y4=Y1/AL
      Y5=-(6*Y1+(2.0*AO/AL))
      Z1=F3*F3
      Z2=Z1*F3
      Z3=2.0*Z2-2.0*CO*F3
      Z4=-(6.0*Z1-2.0*CO)
      DF1P=(X3*DBP+X4*DAP)/X5
      DF2P=(X3*DBP-Y4*DAP)/Y3
      DF3P=(DCP*(Z1-CO)+((O*O)/(AL*AL))*(AO*DAP+(BO*DBP)/3))/Z3
      DF1Q=(X3*DBQ+X4*DAQ)/X5
      DF2Q=(X3*DBQ-Y4*DAQ)/Y3
      DF3Q=(DCQ*(Z1-CO)+((O*O)/(AL*AL))*(AO*DAQ+(BO*DBQ)/3))/Z3
      DF1R=(X3*DBR+X4*DAR)/X5
      DF2R=(X3*DBR-Y4*DAR)/Y3
      DF3R=(DCR*(Z1-CO)+((O*O)/(AL*AL))*(AO*DAR+(BO*DBR)/3))/Z3
      D2F1P=((X6*DF1P*DF1P)+(2.0*F1/AL)*(DAP*DF1P+DAP*DF1P)+(D2AP
     **X1/AL)+(1/(3*AL*AL))*(DBP*DBP+BO*D2BP))/X5
      D2F2P=((Y5*DF2P*DF2P)-(2.0*F2/AL)*(DF2P*DAP+DAP*DF2P)-(Y1*D2
     *AP/AL)+(DBP*DBP+BO*D2BP)/(3.0*AL*AL))/Y3
```

TABLE VII (Continued)

```
      D2F3P=((Z4*DF3P*DF3P)+2*F3*(DF3P*DCP+DCP*DF3P)-(DCP*DCP)+(Z1
     *-CO)*D2CP+((O*O)/(AL*AL))*((AO*D2AP+DAP*DAP)+(DBP*DBP
     *+BO*D2BP)/3))/Z3
      D2F1Q=((X6*DF1Q*DF1Q)+(2.O*F1/AL)*(DAQ*DF1Q+DAQ*DF1Q)+(D2AQ
     **X1/AL)+(1/(3.O*AL*AL))*(DBQ*DBQ+BO*D2BQ))/X5
      D2F2Q=((Y5*DF2Q*DF2Q)-(2.O*F2/AL)*(DF2Q*DAQ+DAQ*DF2Q)-(Y1*D
     *2AQ/AL)+(DBQ*DBQ+BO*D2BQ)/(3.O*AL*AL))/Y3
      D2F3Q=((Z4*DF3Q*DF3Q)+2.O*F3*(DF3Q*DCQ+DCQ*DF3Q)-(DCQ*DCQ)
     *+(Z1-CO)*D2CQ+((O*O)/(AL*AL))*((AO*D2AQ+DAQ*DAQ)+(
     *DBQ*DBQ+BO*D2BQ)/3))/Z3
      D2F1R=((X6*DF1R*DF1R)+(2.O*F1/AL)*(DAR*DF1R+DAR*DF1R)+(D2AR
     **X1/AL)+(1/(3.O*AL*AL))*(DBR*DBR+BO*D2BR))/X5
      D2F2R=((Y5*DF2R*DF2R)-(2.O*F2/AL)*(DF2R*DAR+DAR*DF2R)-(Y1*D
     *2AR/AL)+(DBR*DBR+BO*D2BR)/(3.O*AL*AL))/Y3
      D2F3R=((Z4*DF3R*DF3R)+2.O*F3*(DF3R*DCR+DCR*DF3R)-(DCR*DCR)
     *+(Z1-CO)*D2CR+((O*O)/(AL*AL))*((AO*D2AR+DAR*DAR)+(
     *DBR*DBR+BO*D2BR)/3))/Z3
      D2F1PQ=((X6*DF1P*DF1Q)+(2.O*F1/AL)*(DAP*DF1Q+DAQ*DF1P)+(X1
     **D2APQ/AL)+(1/(3.O*AL*AL))*(DBP*DBQ+BO*D2BPQ))/X5
      D2F1QR=((X6*DF1Q*DF1R)+(2.O*F1/AL)*(DAQ*DF1R+DAR*DF1Q)+(X1
     **D2AQR/AL)+(1/(3.O*AL*AL))*(DBQ*DBR+BO*D2BQR))/X5
      D2F1PR=((X6*DF1P*DF1R)+(2.O*F1/AL)*(DAP*DF1R+DAR*DF1P)+(X1
     **D2APR/AL)+(1/(3.O*AL*AL))*(DBP*DBR+BO*D2BPR))/X5
      D2F2PQ=((Y5*DF2P*DF2Q)-(2.O*F2/AL)*(DF2P*DAQ+DAP*DF2Q)-(Y1
     **D2APQ/AL)+(1/(3.O*AL*AL))*(DBP*DBQ+BO*D2BPQ))/Y3
      D2F2QR=((Y5*DF2Q*DF2R)-(2.O*F2/AL)*(DF2Q*DAR+DAQ*DF2R)-(Y1
     **D2AQR/AL)+(1/(3.O*AL*AL))*(DBQ*DBR+BO*D2BQR))/Y3
      D2F2PR=((Y5*DF2P*DF2R)-(2.O*F2/AL)*(DF2P*DAR+DAP*DF2R)-(Y1
     **D2APR/AL)+(1/(3.O*AL*AL))*(DBP*DBR+BO*D2BPR))/Y3
      D2F3PQ=((Z4*DF3P*DF3Q)+2.O*F3*(DF3P*DCQ+DCP*DF3Q)-(DCP*DCQ)
     *+(Z1-CO)*D2CPQ+((O*O)/(AL*AL))*((AO*D2APQ+DAP*DAQ)+(
     *DBP*DBQ+BO*D2BPQ)/3))/Z3
      D2F3QR=((Z4*DF3Q*DF3R)+2.O*F3*(DF3Q*DCR+DCQ*DF3R)-(DCQ*DCR)
     *+(Z1-CO)*D2CQR+((O*O)/(AL*AL))*((AO*D2AQR+DAQ*DAR)+(
     *DBQ*DBR+BO*D2BQR)/3))/Z3
      D2F3PR=((Z4*DF3P*DF3R)+2.O*F3*(DF3P*DCR+DCP*DF3R)-(DCP*DCR)
     *+(Z1-CO)*D2CPR+((O*O)/(AL*AL))*((AO*D2APR+DAP*DAR)+(
     *DBP*DBR+BO*D2BPR)/3))/Z3
C-----------------------------------------------------------
C---------------------MAIN CALLS THE SUBROUTINE COVAR TO
C-------------------------CALCULATE THE COVARIANCE BETWEEN THE
C-------------------------SELECTED COOLING VELOCITIES.-------
C-------------------------------------------------------
      AKPQ=O.9*SQRT(VAR(IP)*VAR(IP+1))
      AKQR=O.9*SQRT(VAR(IP+1)*VAR(IP+2))
      AKPR=O.81*EITA*SQRT(VAR(IP)*VAR(IP+2))
      AKQP=AKPQ
      AKRQ=AKQR
      AKRP=AKPR
C-----------------------------------------------------------
C--------------------MAIN CALCULATES THE AXIAL,RADIAL,AND
C--------------------TANGENTIAL MEAN VELOCITIES.-----------
C--------------------------------------------------------------
      UMEAN=F1+O.5*(D2F1P*VAR(IP)+D2F1Q*VAR(IP+1)+D2F1R*VAR(IP+2))
     *+D2F1PQ*AKPQ+D2F1QR*AKQR+D2F1PR*AKPR
      WMEAN=F2+O.5*(D2F2P*VAR(IP)+D2F2Q*VAR(IP+1)+D2F2R*VAR(IP+2))
     *+D2F2PQ*AKPQ+D2F2QR*AKQR+D2F2PR*AKPR
      VMEAN=F3+O.5*(D2F3P*VAR(IP)+D2F3Q*VAR(IP+1)+D2F3R*VAR(IP+2))
     *+D2F3PQ*AKPQ+D2F3QR*AKQR+D2F3PR*AKPR
      UP1=DF1P*DF1P*VAR(IP)+DF1Q*DF1Q*VAR(IP+1)+DF1R*DF1R*VAR(IP
     *+2)
      UP2=DF1P*DF1Q*AKPQ+DF1P*DF1R*AKPR+DF1Q*DF1P*AKQP+DF1Q*DF1R*A
     *KQR+DF1R*DF1P*AKRP+DF1R*DF1Q*AKRQ
      UP3=O.5*(D2F1P*VAR(IP)+D2F1Q*VAR(IP+1)+D2F1R*VAR(IP+2))
      UP4=D2F1PQ*AKPQ+D2F1QR*AKQR+D2F1PR*AKPR
      UP5=UP3+UP4
```

```
      UPRMS2=UP1+UP2-UP5**2
      WP1=DF2P*DF2P*VAR(IP)+DF2Q*DF2Q*VAR(IP+1)+DF2R*DF2R*VAR(IP
     *+2)
      WP2=DF2P*DF2Q*AKPQ+DF2P*DF2R*AKPR+DF2Q*DF2P*AKQP+DF2Q*DF2R*A
     *KQR+DF2R*DF2P*AKRP+DF2R*DF2Q*AKRQ
      WP3=0.5*(D2F2P*VAR(IP)+D2F2Q*VAR(IP+1)+D2F2R*VAR(IP+2))
      WP4=D2F2PQ*AKPQ+D2F2QR*AKQR+D2F2PR*AKPR
      WP5=WP3+WP4
      WPRMS2=WP1+WP2-WP5**2
      VP1=DF3P*DF3P*VAR(IP)+DF3Q*DF3Q*VAR(IP+1)+DF3R*DF3R*VAR(IP
     *+2)
      VP2=DF3P*DF3Q*AKPQ+DF3P*DF3R*AKPR+DF3Q*DF3P*AKQP+DF3Q*DF3R*A
     *KQR+DF3R*DF3P*AKRP+DF3R*DF3Q*AKRQ
      VP3=0.5*(D2F3P*VAR(IP)+D2F3Q*VAR(IP+1)+D2F3R*VAR(IP+2))
      VP4=D2F3PQ*AKPQ+D2F3QR*AKQR+D2F3PR*AKPR
      VP5=VP3+VP4
      VPRMS2=VP1+VP2-VP5**2
      UV1=DF1P*DF3P*VAR(IP)+DF1Q*DF3Q*VAR(IP+1)+DF1R*DF3R*VAR(IP
     *+2)
      UV2=DF1P*DF3Q*AKPQ+DF1P*DF3R*AKPR+DF1Q*DF3P*AKQP+DF1Q*DF3R*A
     *KQR+DF1R*DF3P*AKRP+DF1R*DF3Q*AKRQ
      UV3=0.5*(D2F1P*VAR(IP)+D2F1Q*VAR(IP+1)+D2F1R*VAR(IP+2))
      UV4=D2F1PQ*AKPQ+D2F1QR*AKQR+D2F1PR*AKPR
      UV5=0.5*(D2F3P*VAR(IP)+D2F3Q*VAR(IP+1)+D2F3R*VAR(IP+1))
      UV6=D2F3PQ*AKPQ+D2F3QR*AKQR+D2F3PR*AKPR
      UVPB=UV1+UV2-((UV3+UV4)*(UV5+UV6))
      VW1=DF3P*DF2P*VAR(IP)+DF3Q*DF2Q*VAR(IP+1)+DF3R*DF2R*VAR(IP
     *+2)
      VW2=DF3P*DF2Q*AKPQ+DF3P*DF2R*AKPR+DF3Q*DF2P*AKQP+DF3Q*DF2R*A
     *KQR+DF3R*DF2P*AKRP+DF3R*DF2Q*AKRQ
      VW3=0.5*(D2F3P*VAR(IP)+D2F3Q*VAR(IP+1)+D2F3R*VAR(IP+2))
      VW4=D2F3PQ*AKPQ+D2F3QR*AKQR+D2F3PR*AKPR
      VW5=0.5*(D2F2P*VAR(IP)+D2F2Q*VAR(IP+1)+D2F2R*VAR(IP+1))
      VW6=D2F2PQ*AKPQ+D2F2QR*AKQR+D2F2PR*AKPR
      VWPB=VW1+VW2-((VW3+VW4)*(VW5+VW6))
      UW1=DF1P*DF2P*VAR(IP)+DF1Q*DF2Q*VAR(IP+1)+DF1R*DF2R*VAR(IP
     *+2)
      UW2=DF1P*DF2Q*AKPQ+DF1P*DF2R*AKPR+DF1Q*DF2P*AKQP+DF1Q*DF2R*A
     *KQR+DF1R*DF2P*AKRP+DF1R*DF2Q*AKRQ
      UW3=0.5*(D2F1P*VAR(IP)+D2F1Q*VAR(IP+1)+D2F1R*VAR(IP+2))
      UW4=D2F1PQ*AKPQ+D2F1QR*AKQR+D2F1PR*AKPR
      UW5=0.5*(D2F2P*VAR(IP)+D2F2Q*VAR(IP+1)+D2F2R*VAR(IP+1))
      UW6=D2F2PQ*AKPQ+D2F2QR*AKQR+D2F2PR*AKPR
      UWPB=UW1+UW2-((UW3+UW4)*(UW5+UW6))
      UDUMO(I11)=UMEAN/UMO
      WMDUMO(I11)=WMEAN/UMO
      VMDUMO(I11)=VMEAN/UMO
      IF(UPRMS2.GT.0.0) UPDUMO(I11)=SQRT(UPRMS2)/UMO
      IF(WPRMS2.GT.0.0) WPDUMO(I11)=SQRT(WPRMS2)/UMO
      IF(VPRMS2.GT.0.0) VPDUMO(I11)=SQRT(VPRMS2)/UMO
      UVDUMO(I11)=UVPB/UMO**2
      VWDUMO(I11)=VWPB/UMO**2
      UWDUMO(I11)=UWPB/UMO**2
C--------------------------------------------
C------MAIN CALLS THE SUBROUTINE AVRG TO COMPUTE AN
C------ENSEMBLE AVERAGE OF THE TIME-MEAN AND
C------TURBULENCE QUANTITIES-----------------
C--------------------------------------------
  222 CONTINUE
      CALL AVRG(UDUMO,VMDUMO,WMDUMO,UPDUMO,VPDUMO,WPDUMO,
     *UVDUMO,UWDUMO,VWDUMO,N)
      UMA(IS)=UBAR
      VMA(IS)=VBAR
      WMA(IS)=WBAR
      UPA(IS)=UPRMS
      VPA(IS)=VPRMS
```

```
      WPA(IS)=WPRMS
      UVSA(IS)=UVSS
      UWSA(IS)=UWSS
      VWSA(IS)=VWSS
      AK=((UPRMS**2)+(VPRMS**2)+(WPRMS**2))/2
      KE(IS)=AK
      AKE(IS)=UPDUMM
  112 FORMAT('        ')
      WRITE(10,112)
      WRITE(10,1000) UBAR,VBAR,WBAR
      WRITE(10,2000) UPRMS,VPRMS,WPRMS,AK
      WRITE(10,3000) UVSS,UWSS,VWSS
 1000 FORMAT(/,'    UBAR=',F7.4,7X,' VBAR=',F7.4,7X,'WBAR=',F7.4)
 2000 FORMAT(/,'    UPRMS=',F7.4,7X,' VPRMS=',F7.4,7X,
     *'WPRMS=',F7.4,7X,'K=',F7.4)
 3000 FORMAT(/,'    UVSS=',F7.4,7X,' UWSS=',F7.4,7X,'VWSS=',F7.4)
   77 CONTINUE
 999  CONTINUE
C         *******
C            *****
              DO 127 I = 1 , JMAX
              WRITE(IOUT,129) RADL(I),UMA(I),VMA(I),WMA(I),UPA(I),
     1        VPA(I),WPA(I),UVSA(I),UWSA(I),VWSA(I),KE(I),AKE(I)
  127         CONTINUE
  129          FORMAT(4F9.5,/,4F9.5,/,4F9.5)
   87 CONTINUE
      STOP
      END
C
C
C
C
C
C*****************************************************************
C-----------THIS SUBROUTINE SETS TURBULENT QUANTITIES TO
C-----------ZERO AT THE BEGINING OF EACH ITERATION
C*****************************************************************
      SUBROUTINE STQTZ(UDUMO,WMDUMO,VMDUMO,UPDUMO,WPDUMO,
     *VPDUMO,UVDUMO,UWDUMO,VWDUMO,N,I)
      DIMENSION UDUMO(6),WMDUMO(6),VMDUMO(6),UPDUMO(6),WPDUMO(6)
      DIMENSION VPDUMO(6),UVDUMO(6),UWDUMO(6),VWDUMO(6)
      UDUMO(I)=0.0
      WMDUMO(I)=0.0
      VMDUMO(I)=0.0
      UPDUMO(I)=0.0
      WPDUMO(I)=0.0
      VPDUMO(I)=0.0
      UVDUMO(I)=0.0
      UWDUMO(I)=0.0
      VWDUMO(I)=0.0
      RETURN
      END
C
C
C
C**********************************************************
C
C     THIS SUBROUTINE FINDS THE MINIMUM MEAN EFFECTIVE
C     COOLING VELOCITY AND THE TWO ADJACENT TO IT.
C
C**********************************************************
C
C
C
C
      SUBROUTINE FMCV(CV,N,IX,IY,IZ,II)
```

```
      DIMENSION CV(50)
      IF(CV(2).LT.CV(1)) GO TO 20
      IF(CV(3).LT.CV(1)) GO TO 30
      IF(CV(4).LT.CV(1)) GO TO 40
      IF(CV(5).LT.CV(1)) GO TO 50
      IF(CV(6).LT.CV(1)) GO TO 60
      IX=6
      IY=1
      IZ=2
      GO TO 100
   20 IF(CV(3).LT.CV(2)) GO TO 30
      IF(CV(4).LT.CV(2)) GO TO 40
      IF(CV(5).LT.CV(2)) GO TO 50
      IF(CV(6).LT.CV(2)) GO TO 60
      IX=1
      IY=2
      IZ=3
      GO TO 100
   30 IF(CV(4).LT.CV(3)) GO TO 40
      IF(CV(5).LT.CV(3)) GO TO 50
      IF(CV(6).LT.CV(3)) GO TO 60
      IX=2
      IY=3
      IZ=4
      GO TO 100
   40 IF(CV(5).LT.CV(4)) GO TO 50
      IF(CV(6).LT.CV(4)) GO TO 60
      IX=3
      IY=4
      IZ=5
      GO TO 100
   50 IF(CV(6).LT.CV(5)) GO TO 60
      IX=4
      IY=5
      IZ=6
      GO TO 100
   60 IX=5
      IY=6
      IZ=1
  100 IX=IX+II
      IF(IX.GT.6) IX=IX-6
      IF(IY.GT.6) IY=IY-6
      IF(IZ.GT.6) IZ=IZ-6
      IY=IX+1
      IZ=IX+2
      RETURN
      END
C
C*****************************************************
C
C     THIS SUBROUTINE CALCULATES THE PITCH AND YAW
C     FACTORS USING THE THREE-DIRECTIONAL CALIBRATION
C     CONSTANTS.
C
C*****************************************************
C
      SUBROUTINE CPYF(A1,B1,C1,A2,B2,C2,A3,B3,C3,PF,YF)
      E=3.0
   10 W1=B3**2-4.0*C3*(A3-E**2)
      IF(W1.LT.0.0) GO TO 20
      E=E+0.05
      GO TO 10
   20 E=E-0.05
      W1=(-B3+SQRT(B3**2-4.0*C3*(A3-E**2)))/(2.0*C3)
      W=W1*W1
      V1=(-B2+SQRT(B2**2-4.0*C2*(A2-E**2)))/(2.0*C2)
```

```
      V=V1*V1
      U1=(-B1+SQRT(B1**2-4.0*C1*(A1-E**2)))/(2.0*C1)
      U=U1*U1
      PF=V/U
      YF=V/W
      RETURN
      END
C
C**************************************************
C
C      THIS SUBROUTINE SETS EQUATIONS FOR AO,BO,AND CO
C      DEPENDING UPON THE SET OF THE THREE COOLING
C      VELOCITIES CHOSEN.
C
C**************************************************
C
      SUBROUTINE SEABC(A1,A2,A3,K,X,Y,Z)
      IF(K.EQ.1) GO TO 15
      IF(K.EQ.2) GO TO 25
      IF(K.EQ.3) GO TO 35
      IF(K.EQ.4) GO TO 45
      IF(K.EQ.5) GO TO 55
      IF(K.EQ.6) GO TO 65
   15 X=A2**2-A3**2
      Y=-2.0*A1**2+3.0*A2**2-A3**2
      Z=A1**2-A2**2+A3**2
      GO TO 105
   25 X=A1**2-A2**2
      Y=-(A1**2)+3.0*A2**2-2.0*A3**2
      Z=A1**2-A2**2+A3**2
      GO TO 105
   35 X=A1**2-2.0*A2**2+A3**2
      Y=A1**2-A3**2
      Z=A1**2-A2**2+A3**2
      GO TO 105
   45 X=-(A2**2)+A3**2
      Y=-2.0*A1**2+3.0*A2**2-A3**2
      Z=A1**2-A2**2+A3**2
      GO TO 105
   55 X=-(A1**2)+A2**2
      Y=-(A1**2)+3.0*A2**2-2.0*A3**2
      Z=A1**2-A2**2+A3**2
      GO TO 105
   65 X=-(A1**2)+2.0*A2**2-A3**2
      Y=-(A1**2)+A3**2
      Z=A1**2-A2**2+A3**2
  105 RETURN
      END
C
C******************************************************
C
C     THIS SUBROUTINE CALCULATES THE FIRST AND SECOND
C     DIFFERENTIALS OF THE FUNCTIONS AO,BO,AND CO WITH
C     RESPECT TO THE THREE CHOSEN MEAN EFFECTIVE COOLING
C     VELOCITIES.
C
C******************************************************
C
      SUBROUTINE CDABC(A1,B1,C1,A21,B21,C21,A2,B2,C2,A22,B22,C22,
     *A3,B3,C3,A23,B23,C23,X,Y,Z,K)
      IF(K.EQ.1) GO TO 16
      IF(K.EQ.2) GO TO 26
      IF(K.EQ.3) GO TO 36
      IF(K.EQ.4) GO TO 46
      IF(K.EQ.5) GO TO 56
      IF(K.EQ.6) GO TO 66
```

TABLE VII (Continued)

```
16  A1=0.0
    B1=-4*X
    C1=2*X
    A21=0.0
    B21=-4.0
    C21=2.0
    A2=2.0*Y
    B2=6.0*Y
    C2=-2.0*Y
    A22=2.0
    B22=6.0
    C22=-2.0
    A3=-2.0*Z
    B3=-2.0*Z
    C3=2.0*Z
    A23=-2.0
    B23=-2.0
    C23=2.0
    GO TO 106
26  A1=2.0*X
    B1=-2.0*X
    C1=2.0*X
    A21=2.0
    B21=-2.0
    C21=2.0
    A2=-2.0*Y
    B2=6.0*Y
    C2=-2.0*Y
    A22=-2.0
    B22=6.0
    C22=-2.0
    A3=0.0
    B3=-4.0*Z
    C3=2.0*Z
    A23=0
    B23=-4.0
    C23=2.0
    GO TO 106
36  A1=2.0*X
    B1=2.0*X
    C1=2.0*X
    A21=2.0
    B21=2.0
    C21=2.0
    A2=-4.0*Y
    B2=0.0
    C2=-2.0*Y
    A22=-4.0
    B22=0.0
    C22=-2.0
    A3=2.0*Z
    B3=-2.0*Z
    C3=2.0*Z
    A23=2.0
    B23=-2.0
    C23=2.0
    GO TO 106
46  A1=0.0
    B1=-4.0*X
    C1=2.0*X
    A21=0.0
    B21=-4.0
    C21=2.0
    A2=-2.0*Y
    B2=6.0*Y
    C2=-2.0*Y
```

TABLE VII (Continued)

```
      A22=-2.0
      B22=6.0
      C22=-2.0
      A3=2.0*Z
      B3=-2.0*Z
      C3=2.0*Z
      A23=2.0
      B23=-2.0
      C23=2.0
      GO TO 106
   56 A1=-2.0*X
      B1=-2.0*X
      C1=2.0*X
      A21=-2.0
      B21=-2.0
      C21=2.0
      A2=2.0*Y
      B2=6.0*Y
      C2=-2.0*Y
      A22=2.0
      B22=6.0
      C22=-2.0
      A3=0.0
      B3=-4.0*Z
      C3=2.0*Z
      A23=0.0
      B23=-4.0
      C23=2.0
      GO TO 106
   66 A1=-2.0*X
      B1=-2.0*X
      C1=2.0*X
      A21=-2.0
      B21=-2.0
      C21=2.0
      A2=4.0*Y
      B2=0.0
      C2=-2.0*Y
      A22=4.0
      B22=0.0
      C22=-2.0
      A3=-2.0*Z
      B3=2.0*Z
      C3=2.0*Z
      A23=-2.0
      B23=2.0
      C23=2.0
  106 RETURN
      END
C
C
C
C
C*****************************************************************
C
C     THIS SUBROUTINE CALCULATES THE COVARIANCES BETWEEN THE
C     VELOCITY FLUCTUATIONS USING A METHOD SUGGESTED BY KING.
C
C*****************************************************************
C
C
C
C
C
      SUBROUTINE COVAR(CV,V,N,IP,ZP,ZQ,ZR,AKPQ,AKPR,AKQP,AKQR,AKRP
     *,AKRQ,FITA)
```

TABLE VII (Continued)

```
      DIMENSION CV(50),V(50)
      EITA=0.8
      DO 15 I=1,6
      CV(I+6)=CV(I)
      V(I+6)=V(I)
   15 CONTINUE
      IF(V(IP).LE.0.002) GO TO 108
      ZETA1=SQRT(ZP**2-2.0*ZQ**2+2.0*ZR**2)
      ZETA3=SQRT(2.0*ZP**2-2.0*ZQ**2+ZR**2)
      PI1=CV(IP+3)-ZETA1-0.5*((1/CV(IP+3)-ZP**2/CV(IP+3)**3)*V(IP)
     *-(4.0*ZQ**2/CV(IP+3)**3+2.0/CV(IP+3))*V(IP+1)+(-4.0*ZR**2
     */CV(IP+3)**3+2.0/CV(IP+3))*V(IP+2))
      PI3=CV(IP+5)-ZETA3-0.5*((2.0/CV(IP+5)-4.0*ZP**2/CV(IP+5)**3
     *)*V(IP)+(-2.0/CV(IP+5)-4.0*ZQ**2/CV(IP+5)**3)*V(IP+1)+(1/CV(
     *IP+5)-ZR**2/CV(IP+5)**3)*V(IP+2))
      A1=-2.0*ZP**2*EITA/V(IP+1)
      B1=6.0*ZP*ZQ-(ZP*EITA/(ZQ*V(IP+1)))*(PI1*CV(IP+3)**3-PI3*CV
     *(IP+5)**3)
      C1=PI1*CV(IP+3)**3-2.0*PI3*CV(IP+5)**3
      IF(B1**2-4.0*A1*C1.LT.0) GO TO 57
      AKPQ1=(-B1+SQRT(B1**2-4.0*A1*C1))/(2.0*A1)
      AKPQ2=(-B1-SQRT(B1**2-4.0*A1*C1))/(2.0*A1)
      RPQ1=AKPQ1/SQRT(V(IP)*V(IP+1))
      RPQ2=AKPQ2/SQRT(V(IP)*V(IP+1))
      IF(ABS(RPQ1).GT.1) GO TO 17
      GO TO 27
   17 IF(ABS(RPQ2).GT.1) GO TO 37
      AKPQ=AKPQ2
   27 AKPQ=AKPQ1
      GO TO 47
   37 AKPQ=0.9*SQRT(V(IP)*V(IP+1))
   47 AKQR=(2.0*CV(IP)*CV(IP+1)*KPQ+PI1*CV(IP+3)**3-PI3*CV(IP+5)
     ***3)/(2.0*CV(IP+1)*CV(IP+2))
      RQR=AKQR*SQRT(V(IP+1)*V(IP+2))
      IF(ABS(RQR).GT.1) AKQR=0.9*SQRT(V(IP+1)*V(IP+2))
      AKPR=EITA*AKPQ*AKQR/V(IP+1)
      GO TO 107
   57 AKPQ=0.9*SQRT(V(IP)*V(IP+1))
      AKQR=0.9*SQRT(V(IP+1)*V(IP+2))
      AKPR=EITA*AKPQ*AKQR/V(IP+1)
      GO TO 107
  108 AKPQ=0.0
      AKQR=0.0
      AKPR=0.0
  107 AKQP=AKPQ
      AKRQ=AKQR
      AKRP=AKPR
      RETURN
      END
C-------------------------------------------------------------------
C-----THIS SUBROUTINE CALCULATES THE ENSEMBLED AVERAGE
C-----OF THE TIME-MEAN AND TURBULENCE QUANTITIES-------
C-------------------------------------------------------------------
      SUBROUTINE AVRG(U,V,W,UPR,VPR,WPR,UV,UW,VW,N)
      DIMENSION U(6),V(6),W(6),UPR(6),VPR(6),WPR(6),UV(6),UW(6),
     *VW(6),IN(9)
      COMMON UBAR,VBAR,WBAR,UPRMS,VPRMS,WPRMS,UVSS,UWSS,VWSS
      UBAR=0
      VBAR=0
      WBAR=0
      UPRMS=0
      VPRMS=0
      WPRMS=0
      UVSS=0
      UWSS=0
      VWSS=0
```

TABLE VII (Continued)

```
      DO 10 I=1,9
      IN(I)=0
 10   CONTINUE
      DO 20 J=1,6
      IF(U(J).LE.O) GO TO 30
      UBAR=UBAR+U(J)
      IN(1)=IN(1)+1
 30   IF(V(J).LE.O) GO TO 40
      VBAR=VBAR+V(J)
      IN(2)=IN(2)+1
 40   IF(W(J).LE.O) GO TO 50
      WBAR=WBAR+W(J)
      IN(3)=IN(3)+1
 50   IF(UPR(J).LE.O) GO TO 60
      UPRMS=UPRMS+UPR(J)
      IN(4)=IN(4)+1
 60   IF(VPR(J).LE.O) GO TO 70
      VPRMS=VPRMS+VPR(J)
      IN(5)=IN(5)+1
 70   IF(WPR(J).LE.O) GO TO 80
      WPRMS=WPRMS+WPR(J)
      IN(6)=IN(6)+1
 80   IF(UV(J).LE.O) GO TO 90
      UVSS=UVSS+UV(J)
      IN(7)=IN(7)+1
 90   IF(UW(J).LE.O) GO TO 100
      UWSS=UWSS+UW(J)
      IN(8)=IN(8)+1
 100  IF(VW(J).LE.O) GO TO 20
      VWSS=VWSS+VW(J)
      IN(9)=IN(9)+1
 20   CONTINUE
      DO 25 I=1,9
   25 IF(IN(I).EQ.O) IN(I)=10000
      UBAR=UBAR/IN(1)
      VBAR=VBAR/IN(2)
      WBAR=WBAR/IN(3)
      UPRMS=UPRMS/IN(4)
      VPRMS=VPRMS/IN(5)
       WPRMS=WPRMS/IN(6)
      UVSS=UVSS/IN(7)
      UWSS=UWSS/IN(8)
      VWSS=VWSS/IN(9)
      RETURN
      END
```

APPENDIX B

FIGURES

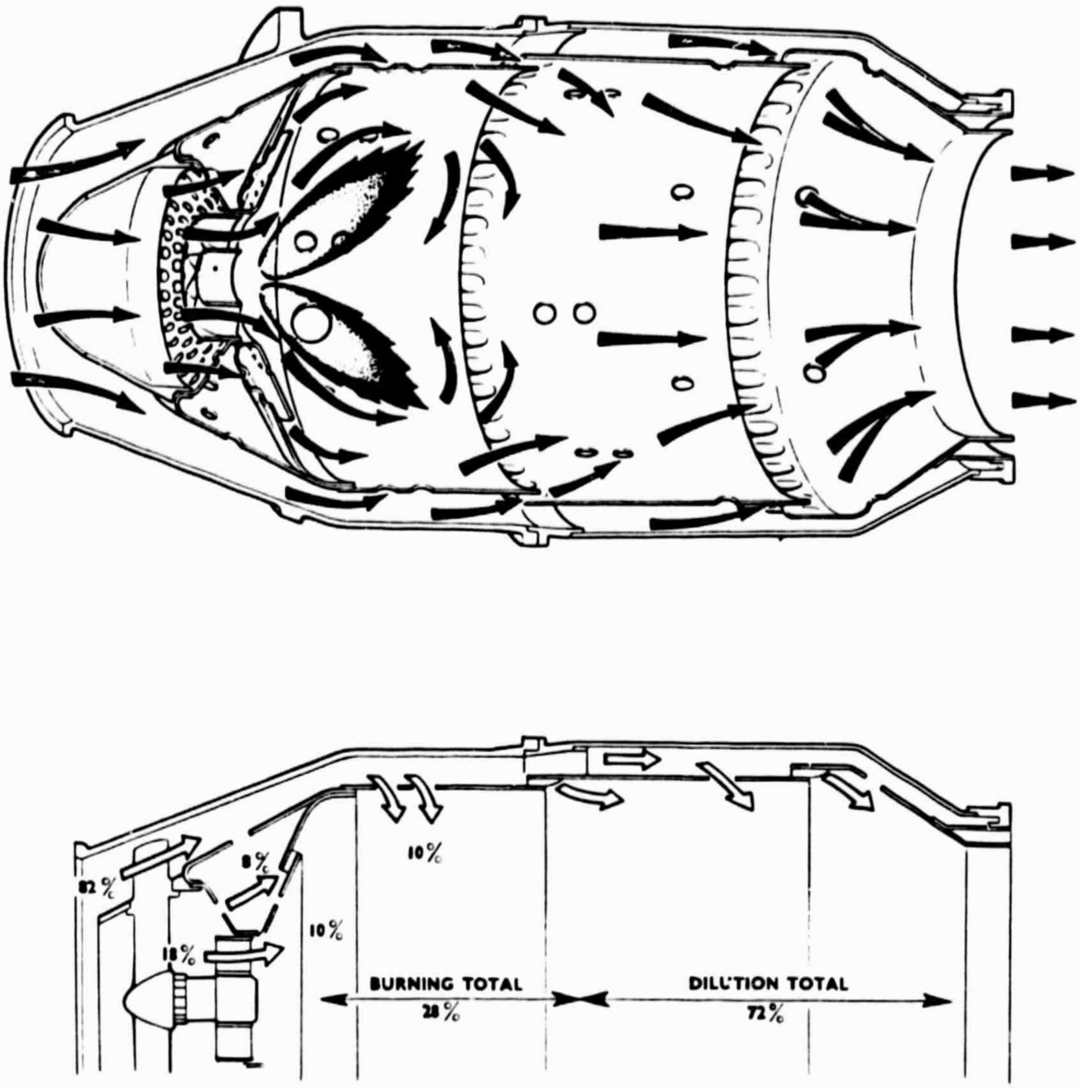


Figure 1. Typical Axisymmetric Gas Turbine Combustor.

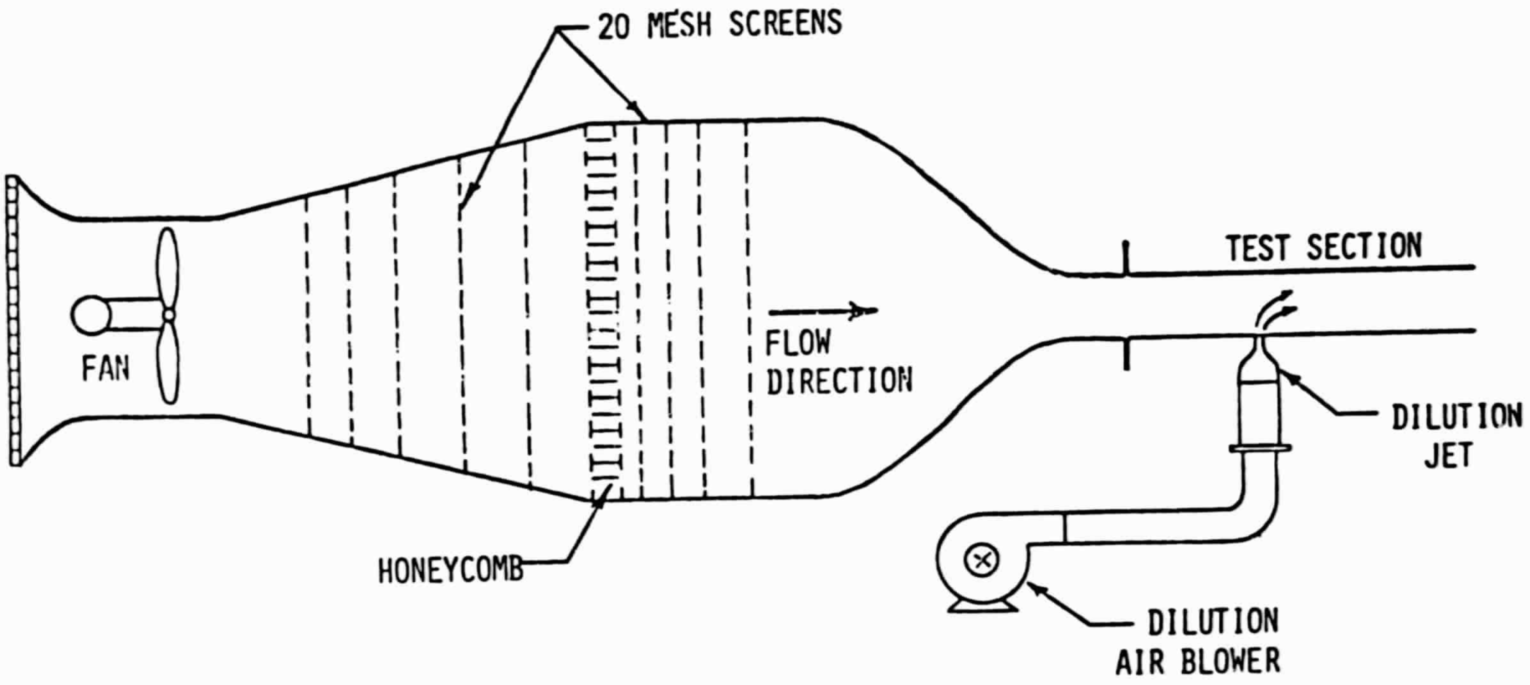
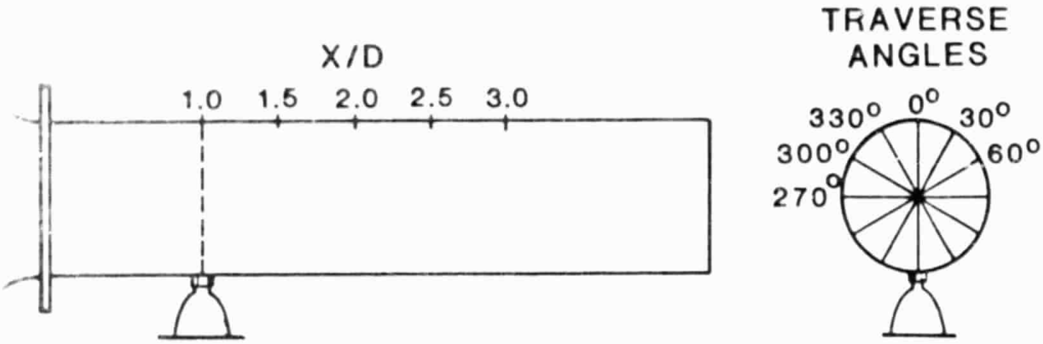


Figure 2. Schematic of Experimental Facility.



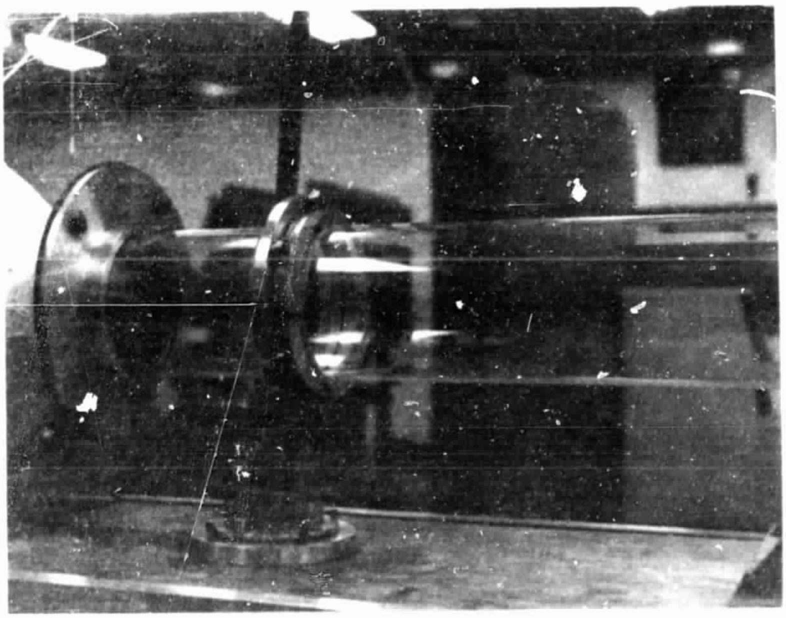
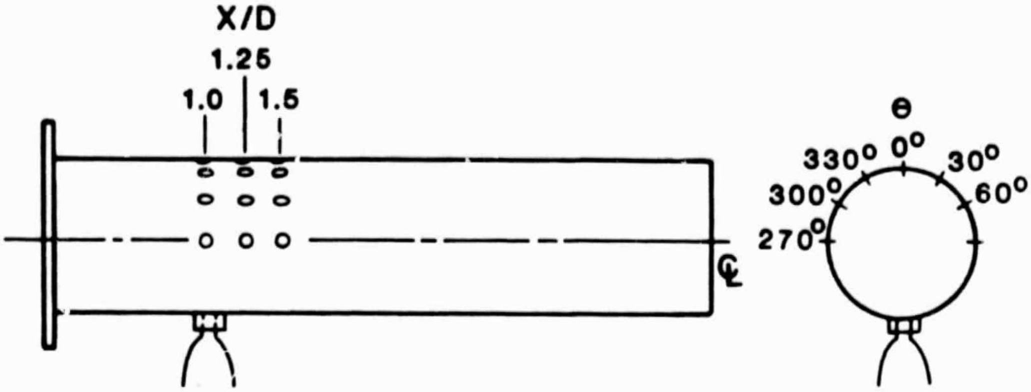
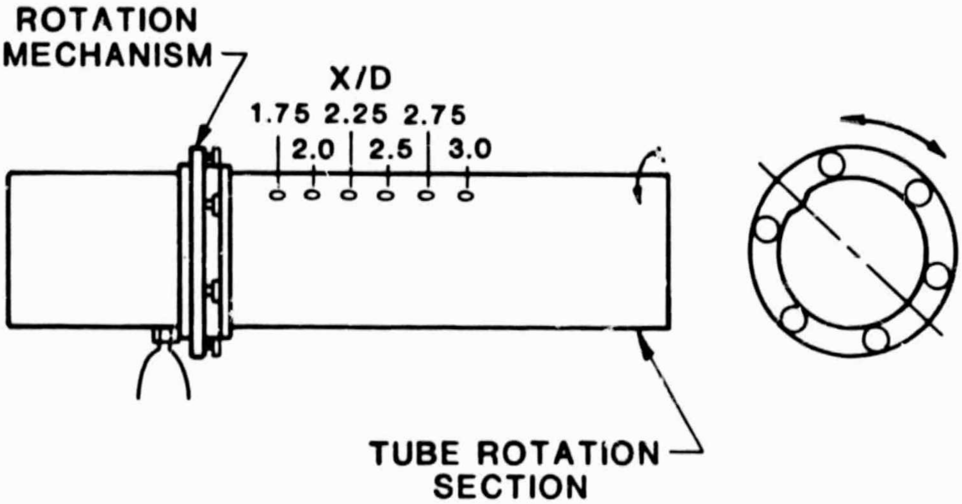


Figure 3. Test Section Geometry.



A. FIXED TUBE



B. ROTATION TUBE

Figure 4. Test Sections.

Figure 5. Dilution Jet.

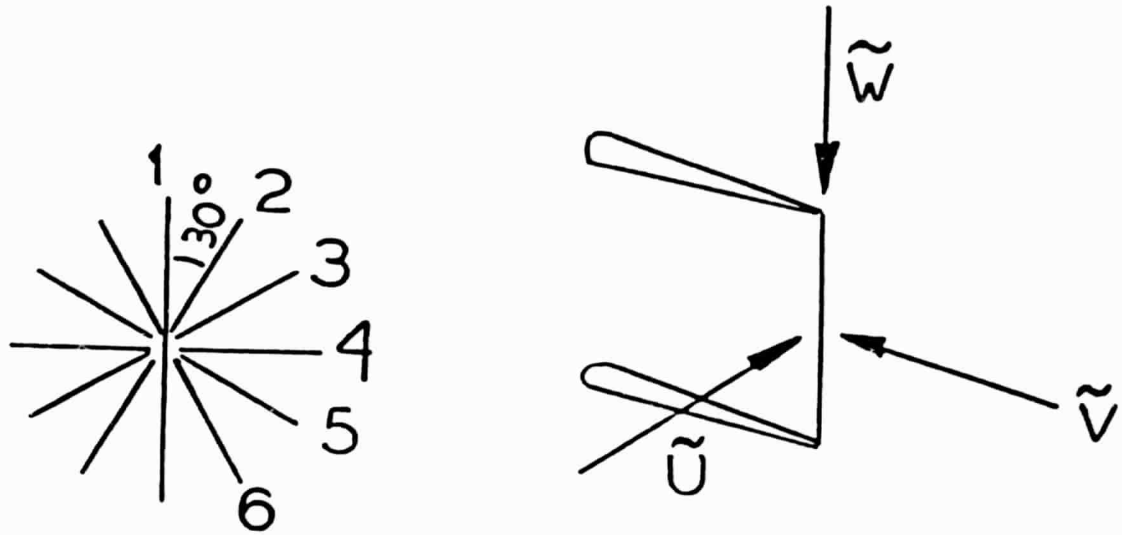


Figure 6. The Six Positions and Probe Coordinates.

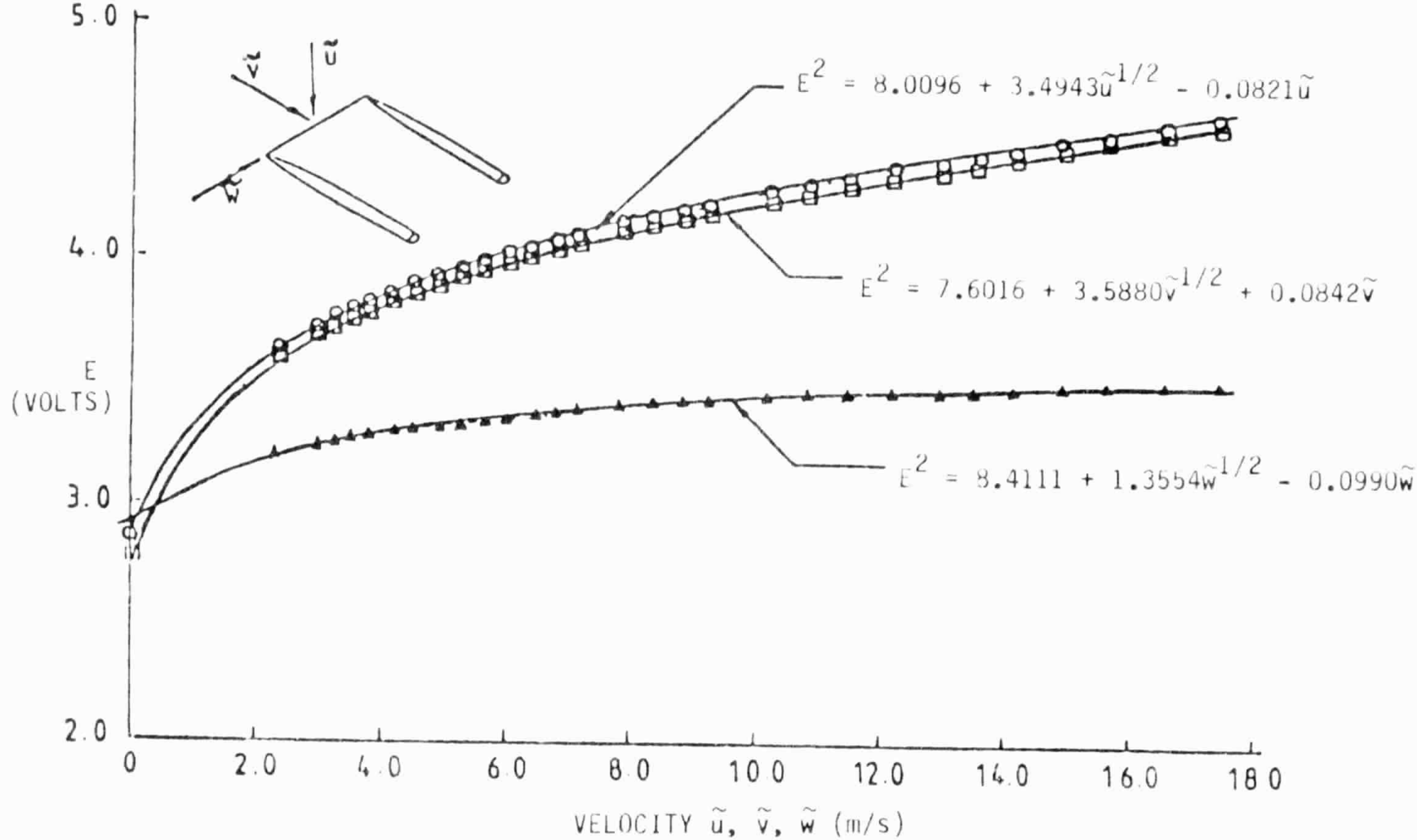


Figure 7. The Three-Dimensional Hot-Wire Calibration.

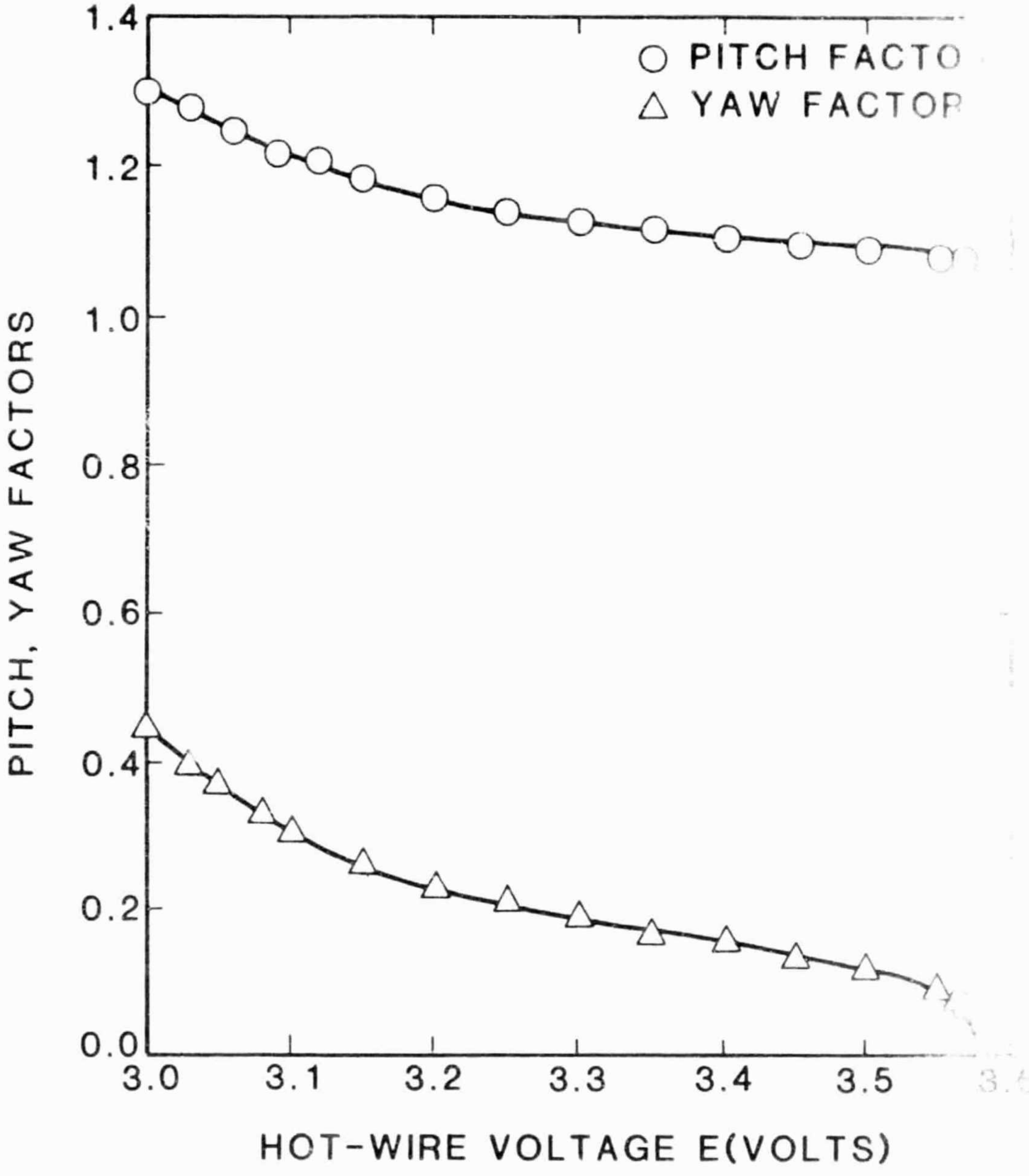


Figure 8. Pitch and Yaw Factors as a Function of Hot-Wire M... Effective Voltage.

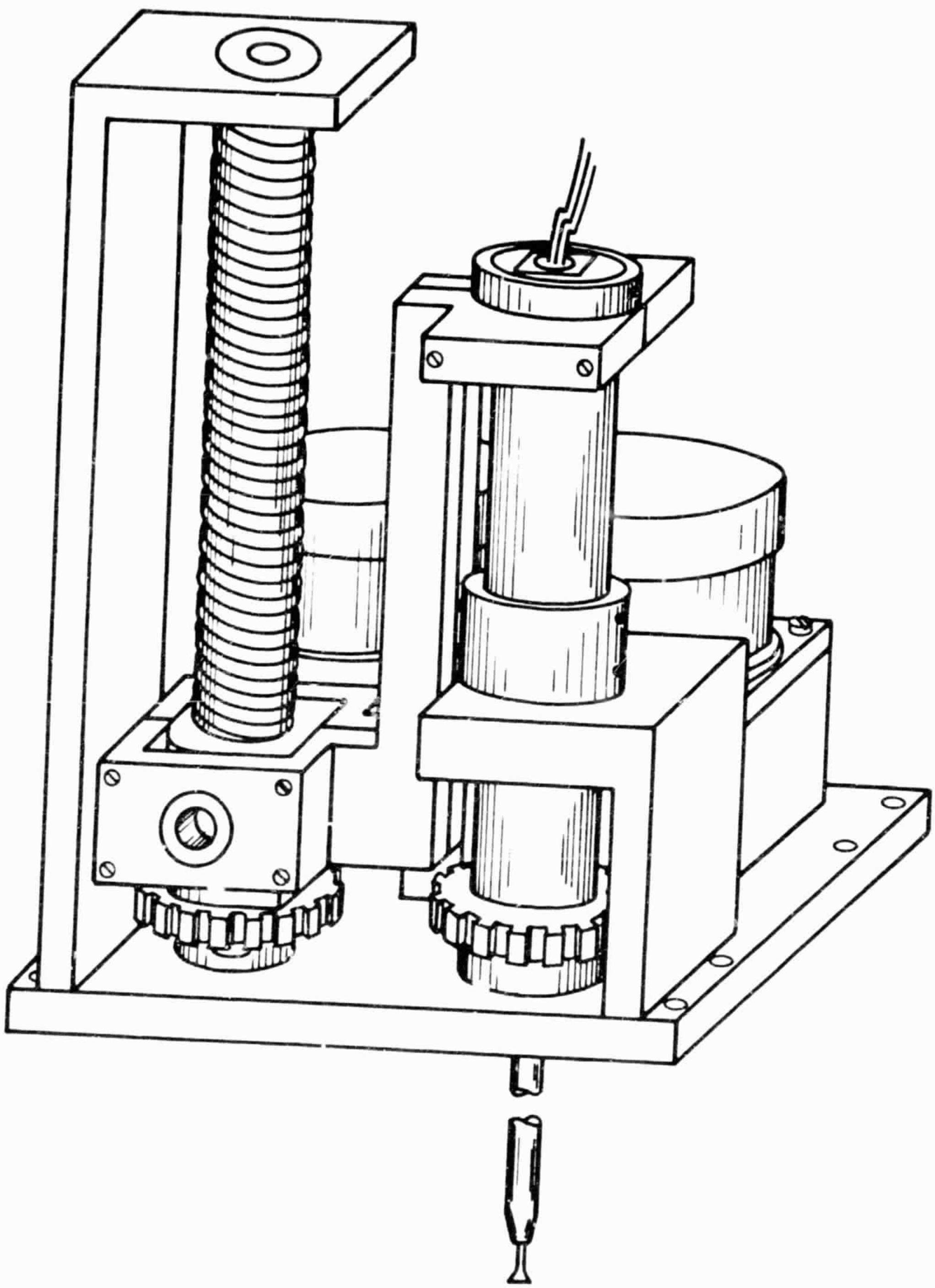


Figure 9. Schematic of Probe Drive.

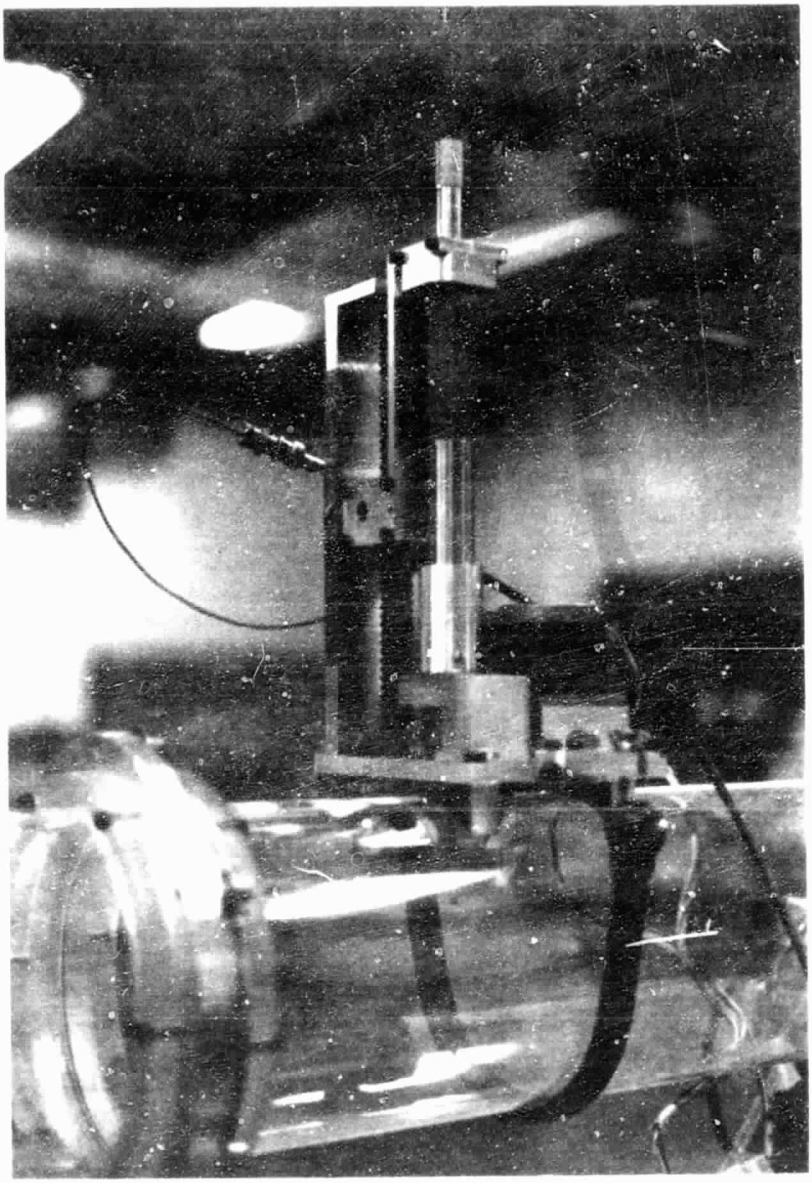


Figure 10. Probe Drive Mounted on Test Section.

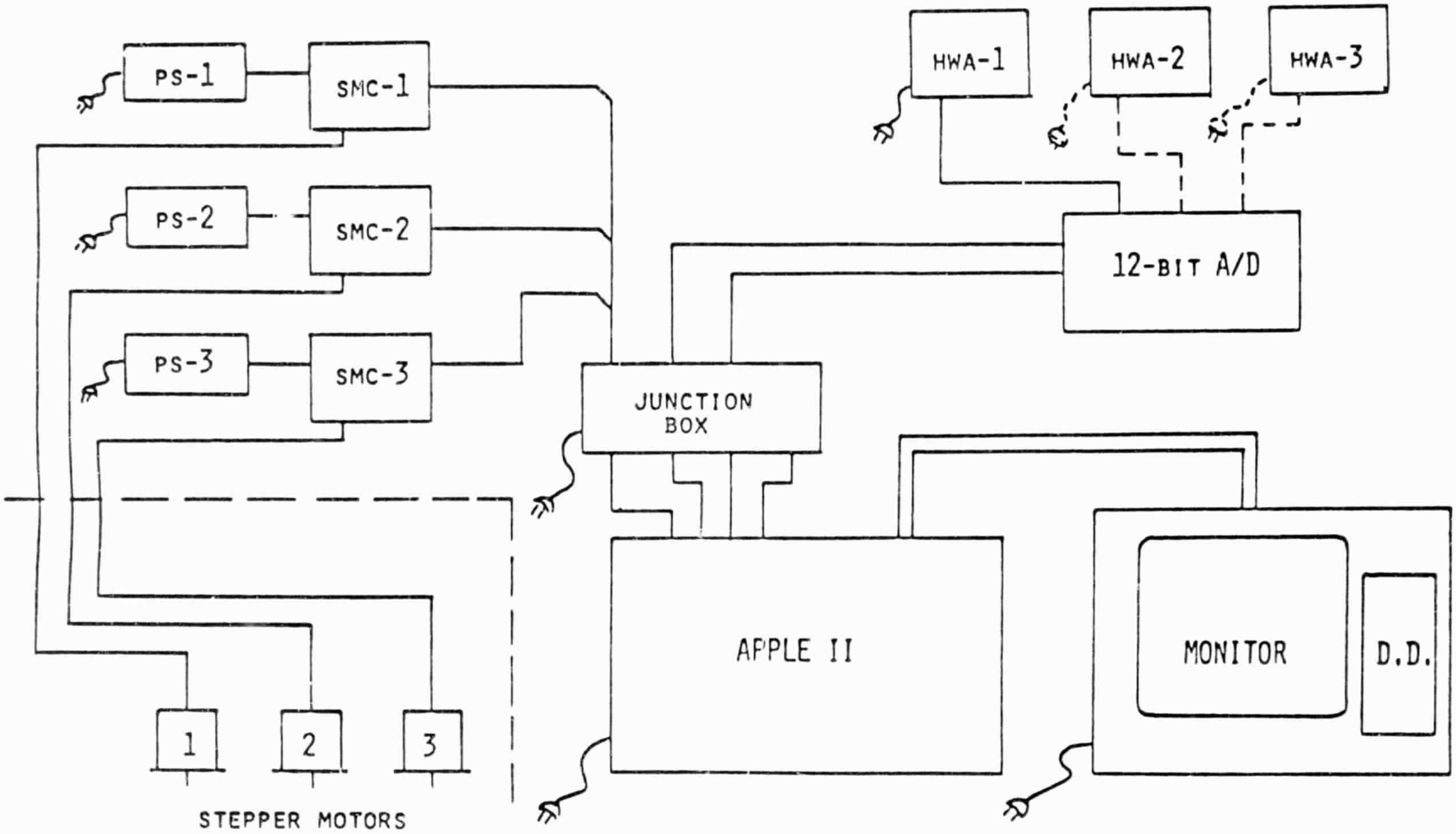


Figure 11. Schematic of Data Acquisition and Probe Drive System.

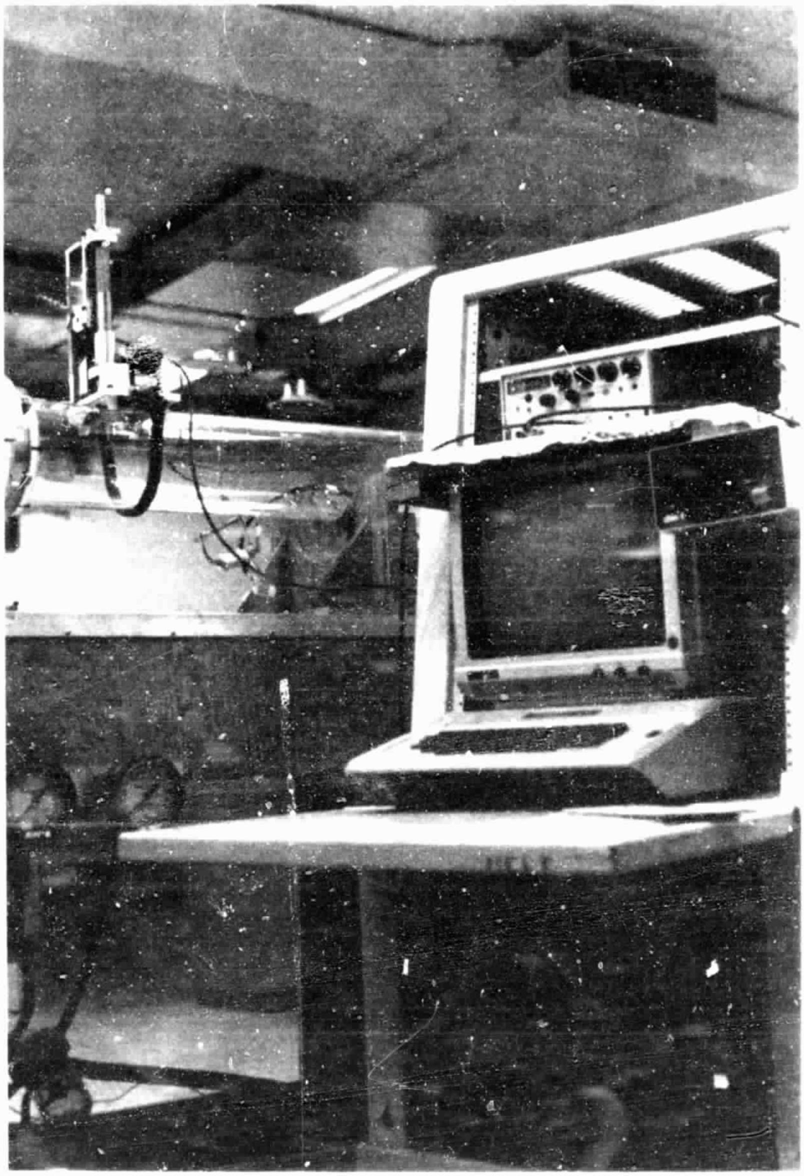


Figure 12. Data Acquisition and Probe Drive System.

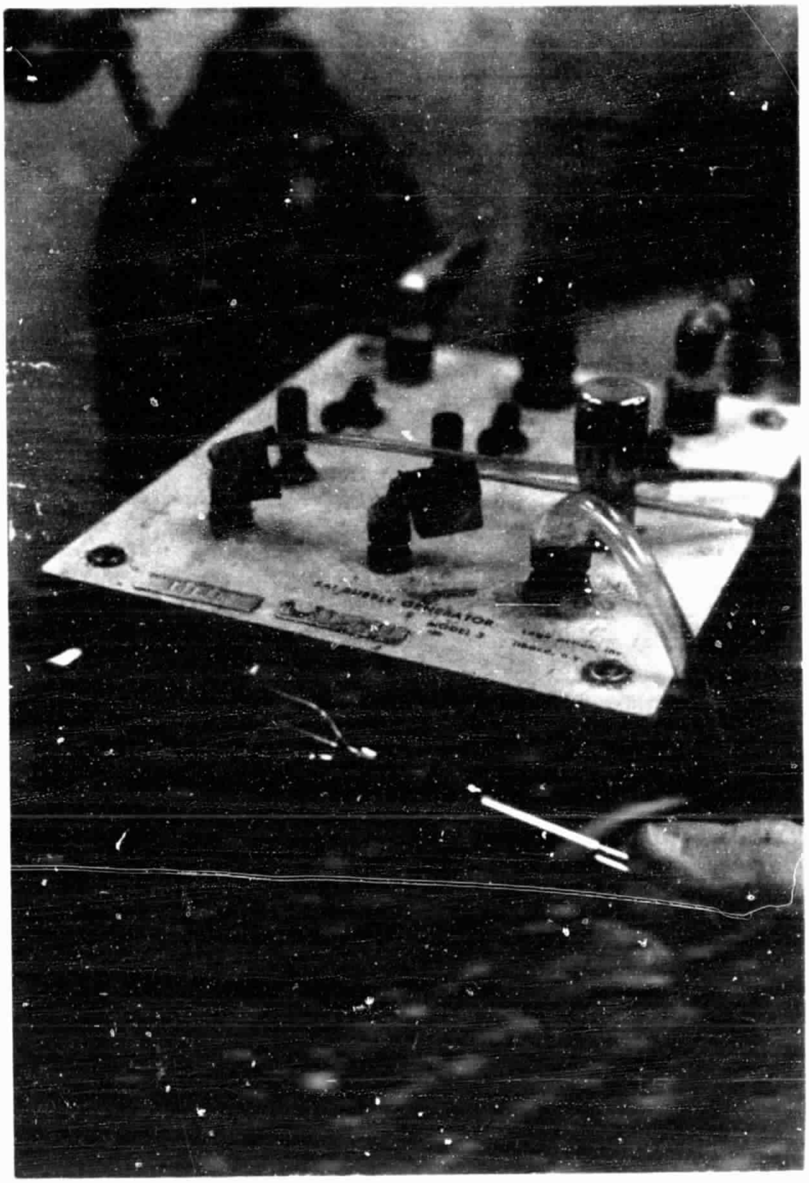


Figure 13. Bubble Generator and Injection Setup.

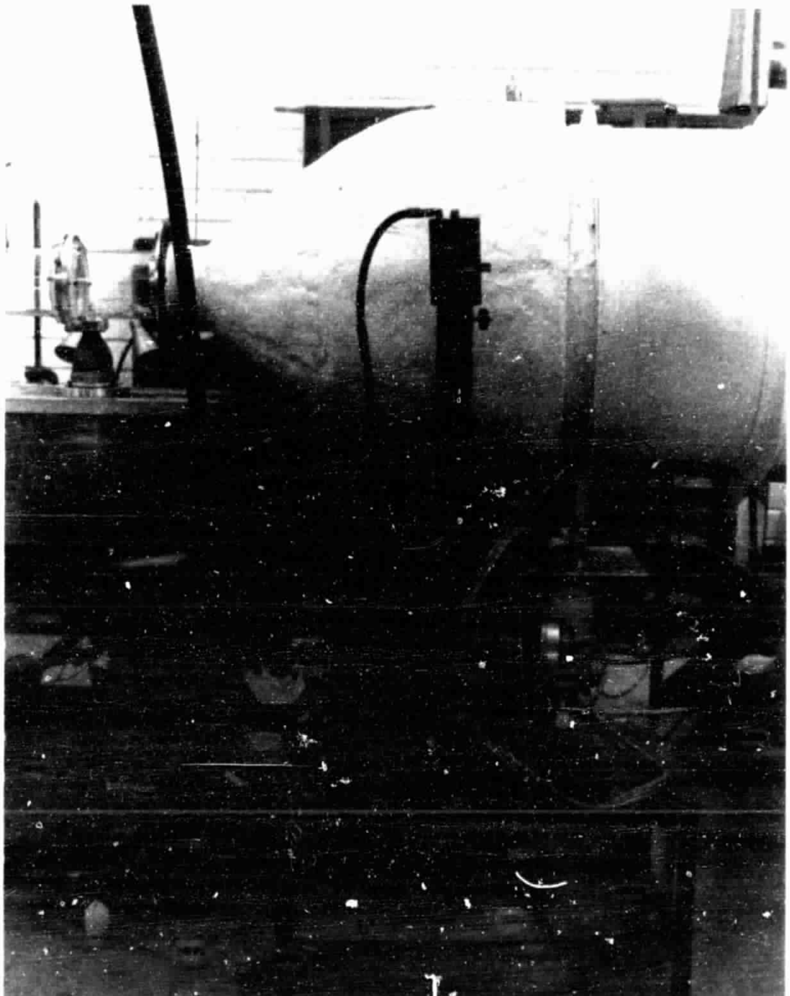


Figure 14. Smoke Generator and Injection Setup.

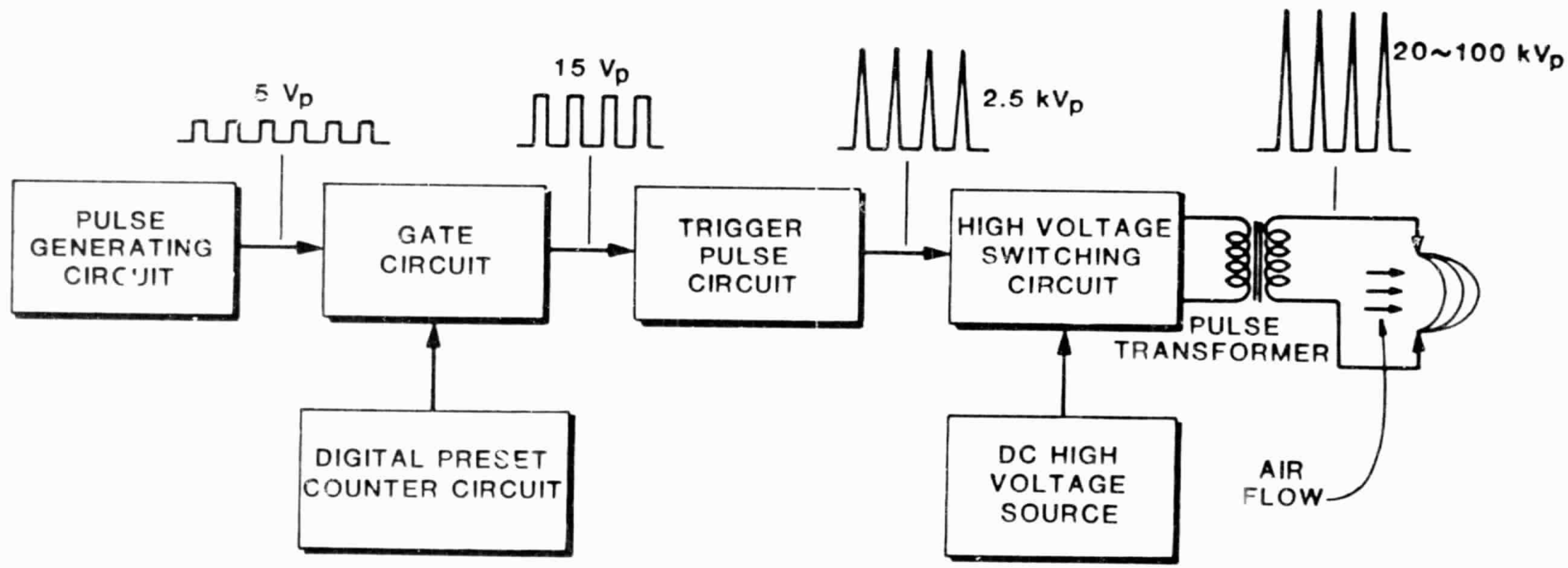


Figure 15. Spark-Gap Equipment Schematic.

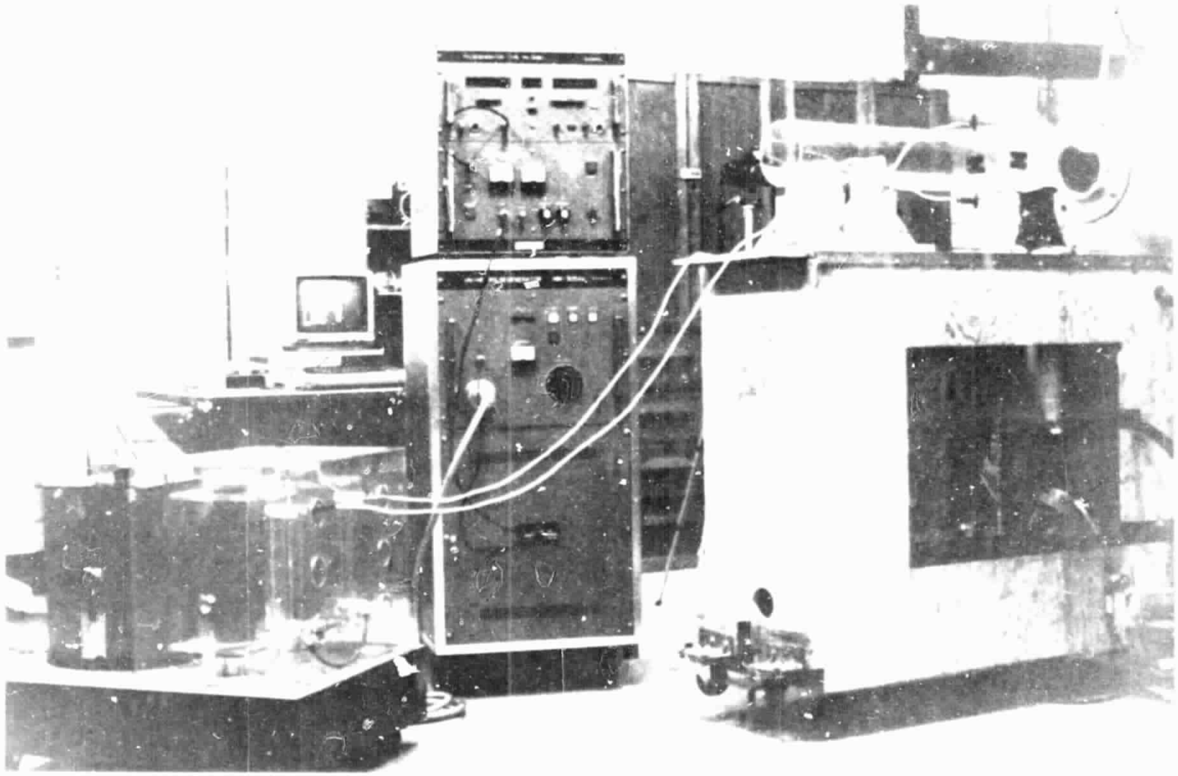
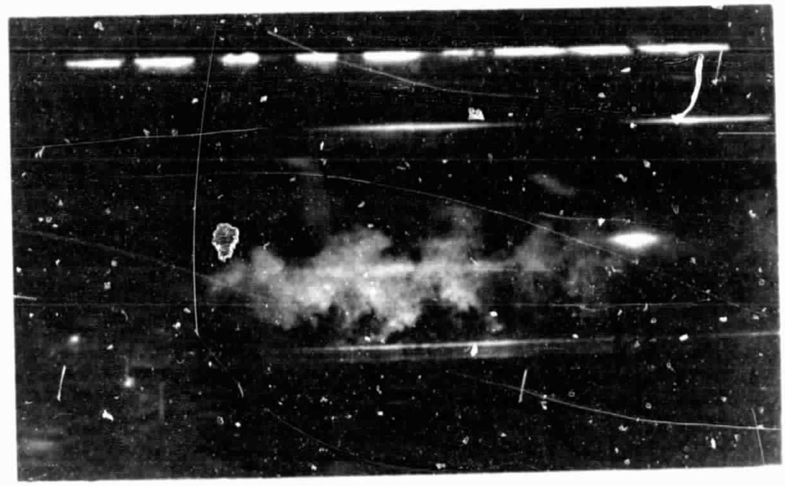


Figure 16. Spark-Gap Equipment (Photo).

a) R = 2.0



b) R = 4.0

c) R = 6.0

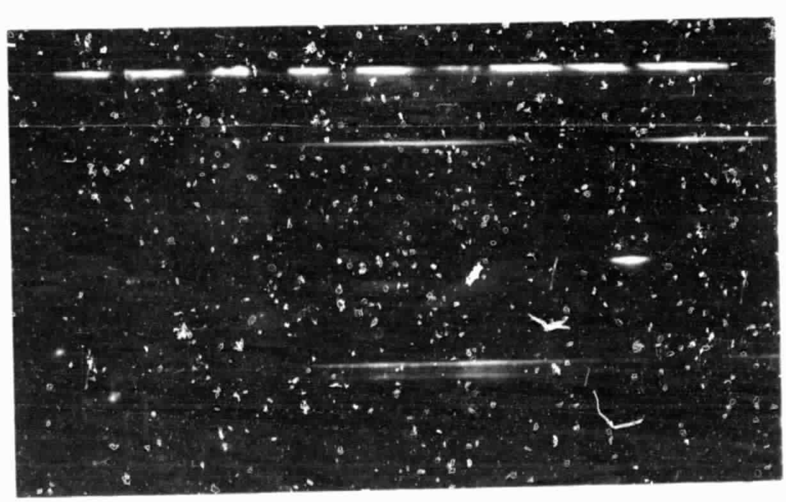
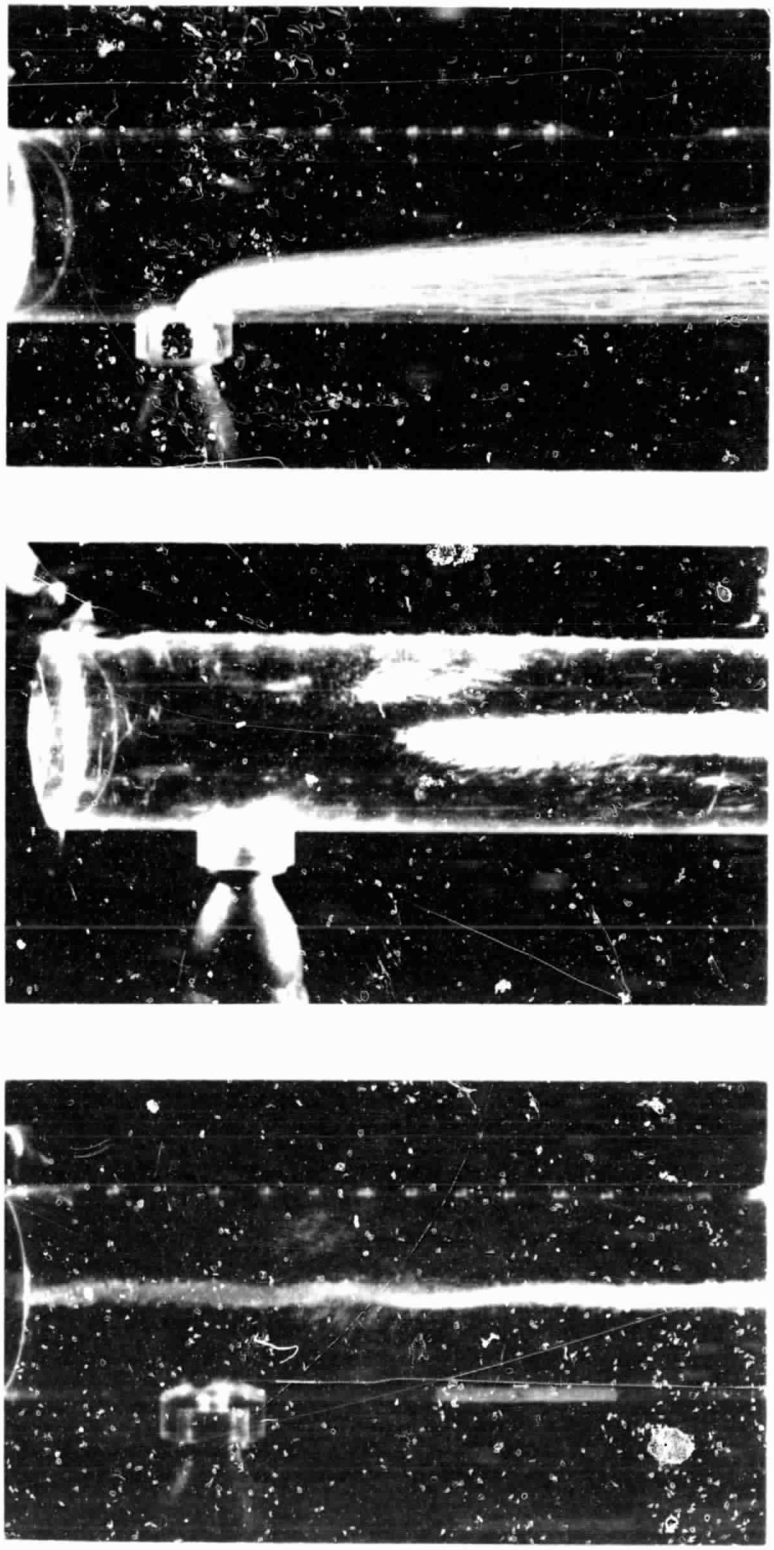


Figure 17. Smoke Flow Visualization for Jet-to-Crossflow Velocity Ratio R = 2.0, 4.0, 6.0.



a) ϕ = 0

b) ϕ = 45

c) ϕ = 70

Figure 18. Bubble Flow Visualization for Jet-to-Crossflow Velocity Ratio R = 2.0, Swirl Vane ϕ = 0, 45, 70.

a) ϕ = 0

b) ϕ = 45

c) ϕ = 70

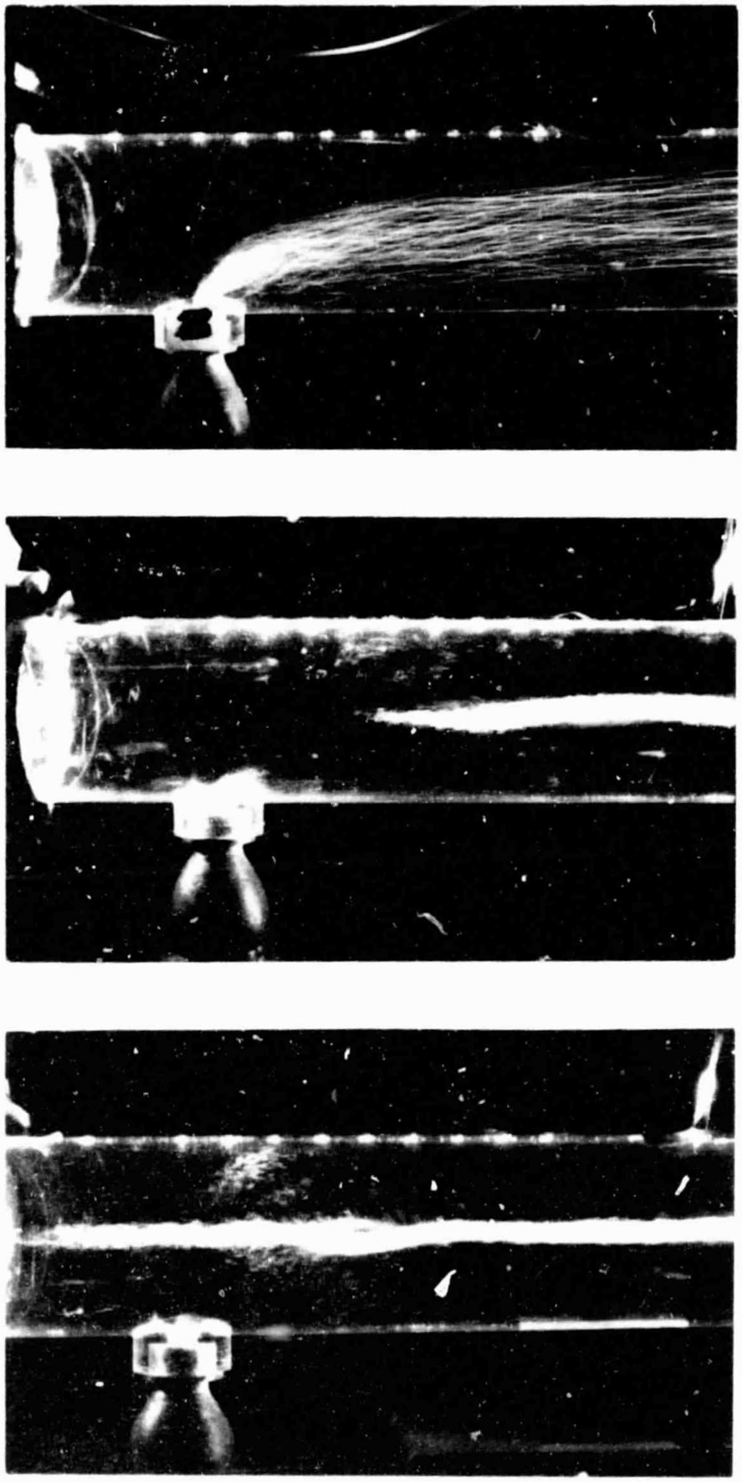


Figure 19. Bubble Flow Visualization for Jet-to-Crossflow Velocity Ratio R = 4.0, Swirl Vane Angle ϕ = 0, 45, 70.

C-3

a) $\phi = 0$

b) $\phi = 45$

c) $\phi = 70$

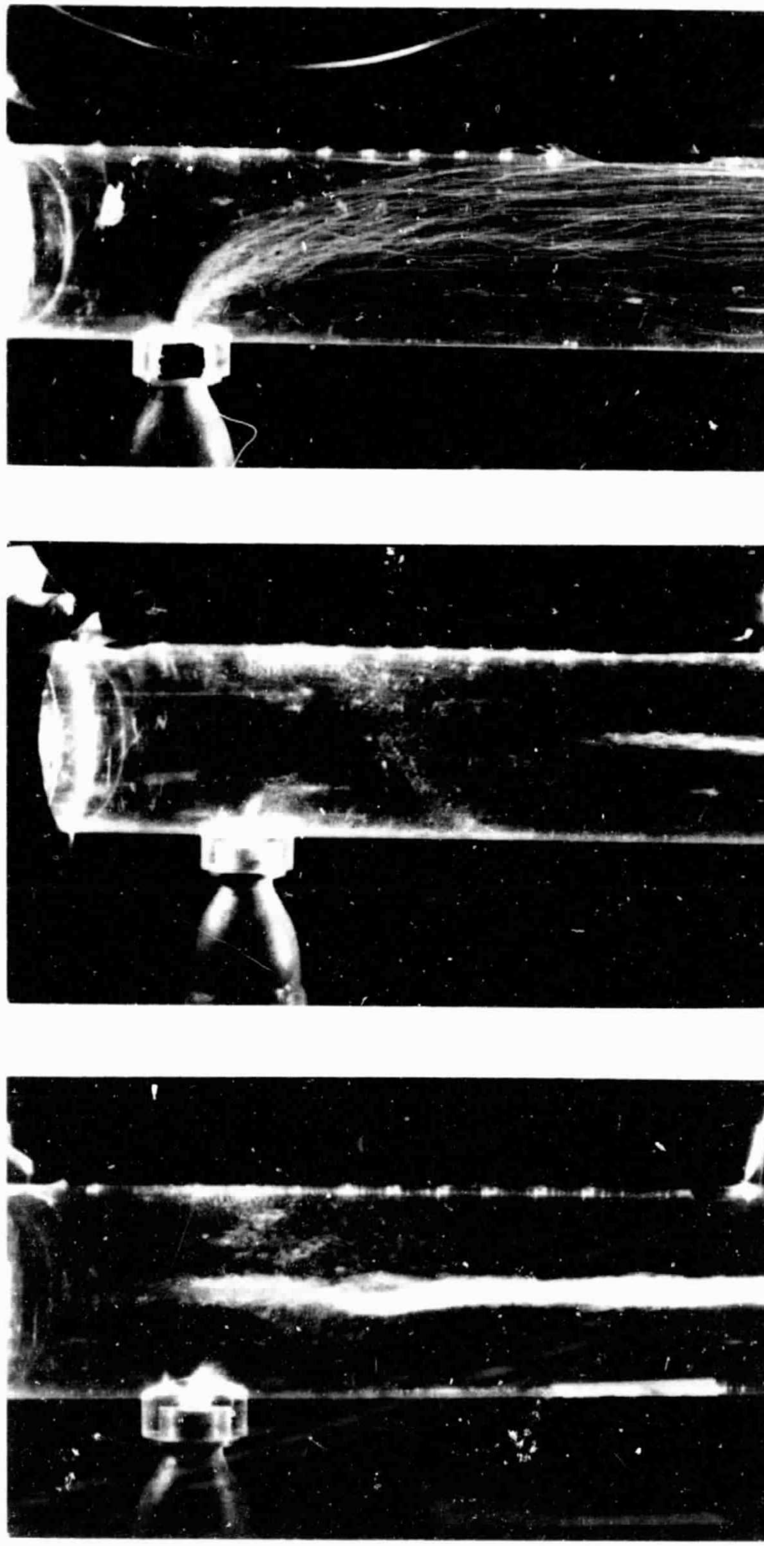


Figure 20. Bubble Flow Visualization for Jet-to-Crossflow Velocity Ratio R = 6.0, Swirl Vane Angle ϕ = 0, 45, 70.

a) φ = 0

b) φ = 45

c) φ = 70

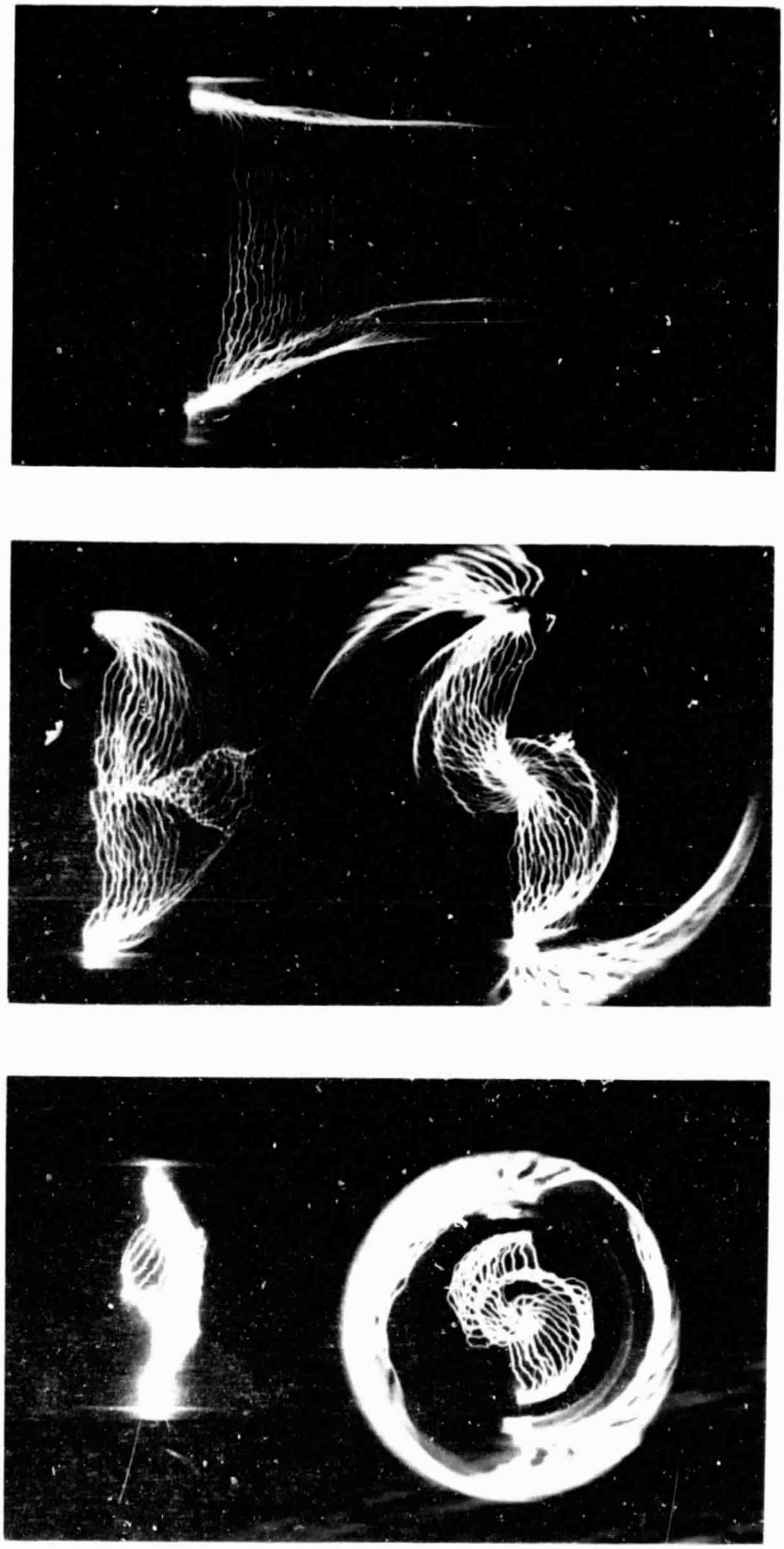


Figure 21. Spark-Gap Flow Visualization for Jet-to-Crossflow Velocity Ratio = 2.0, Swirl Vane Angle φ = 0, 45, 70.

a) ϕ = 0

b) ϕ = 45

c) ϕ = 70

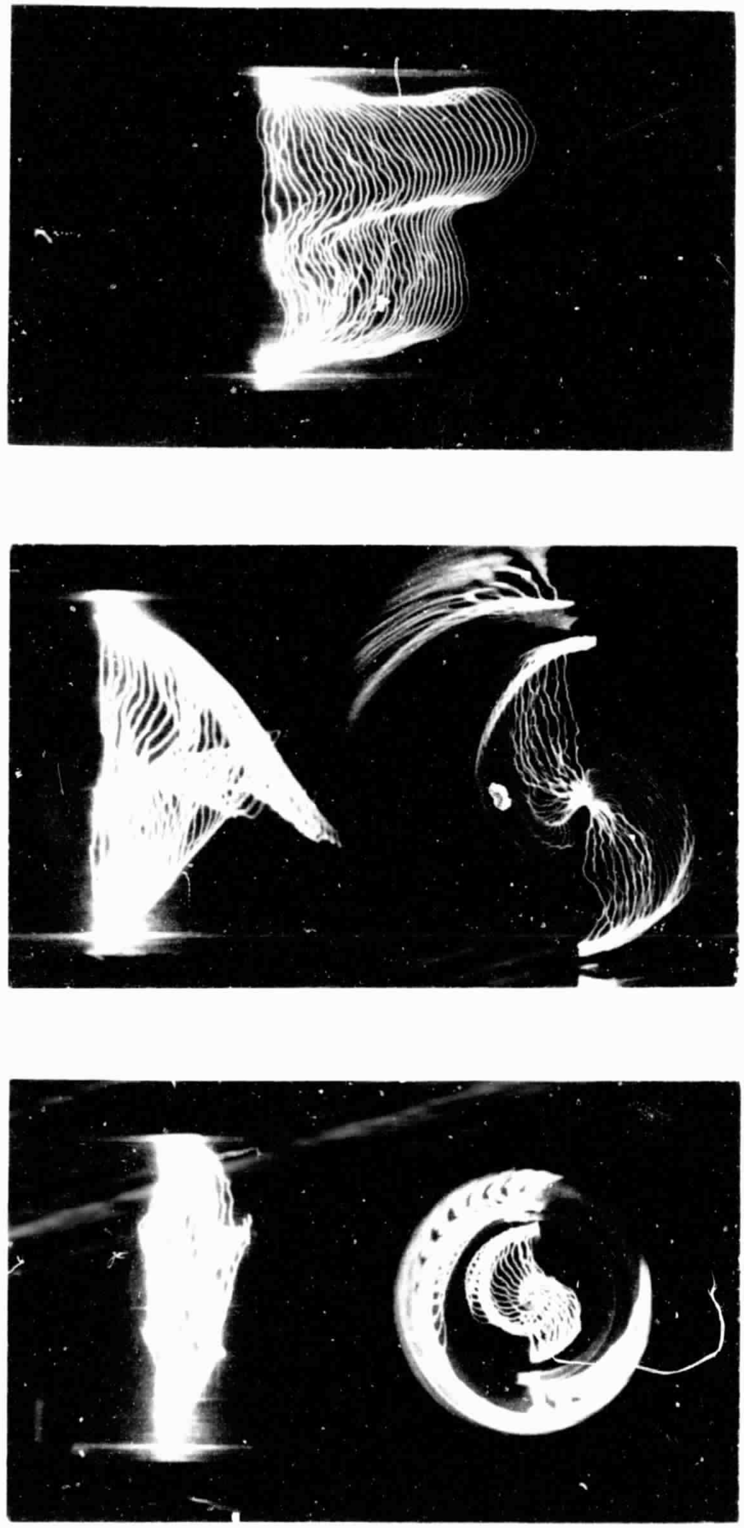
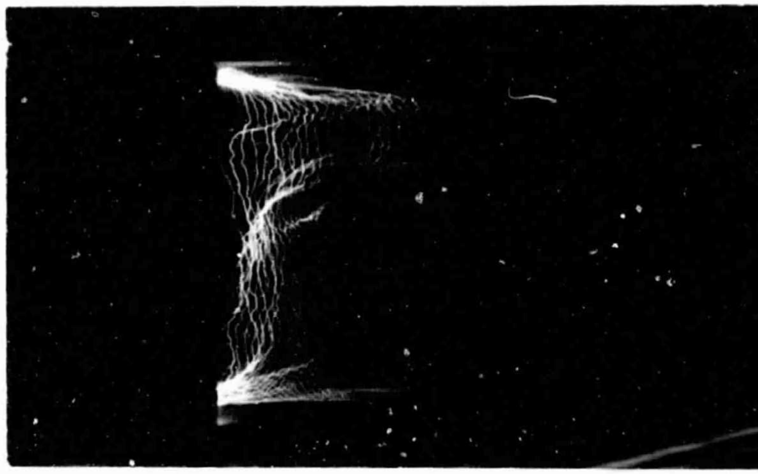
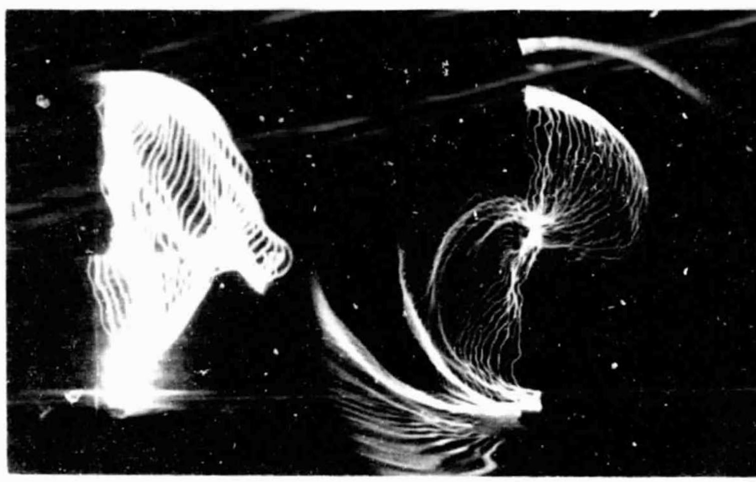


Figure 22. Spark-Gap Flow Visualization for Jet-to-Crossflow Velocity Ratio = 4.0, Swirl Vane Angle ϕ = 0, 45, 70.

a) ϕ = 0



b) ϕ = 45



c) ϕ = 70

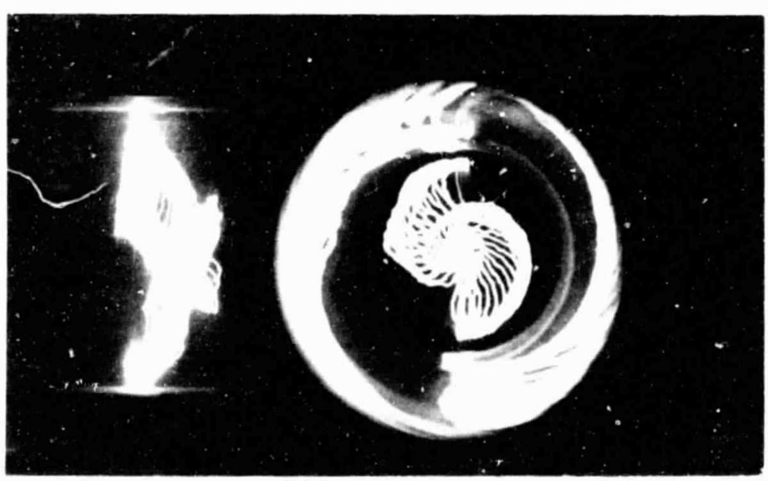


Figure 23. Spark-Gap Flow Visualization for Jet-to-Crossflow Velocity Ratio = 6.0, Swirl Vane Angle ϕ = 0, 45, 70.

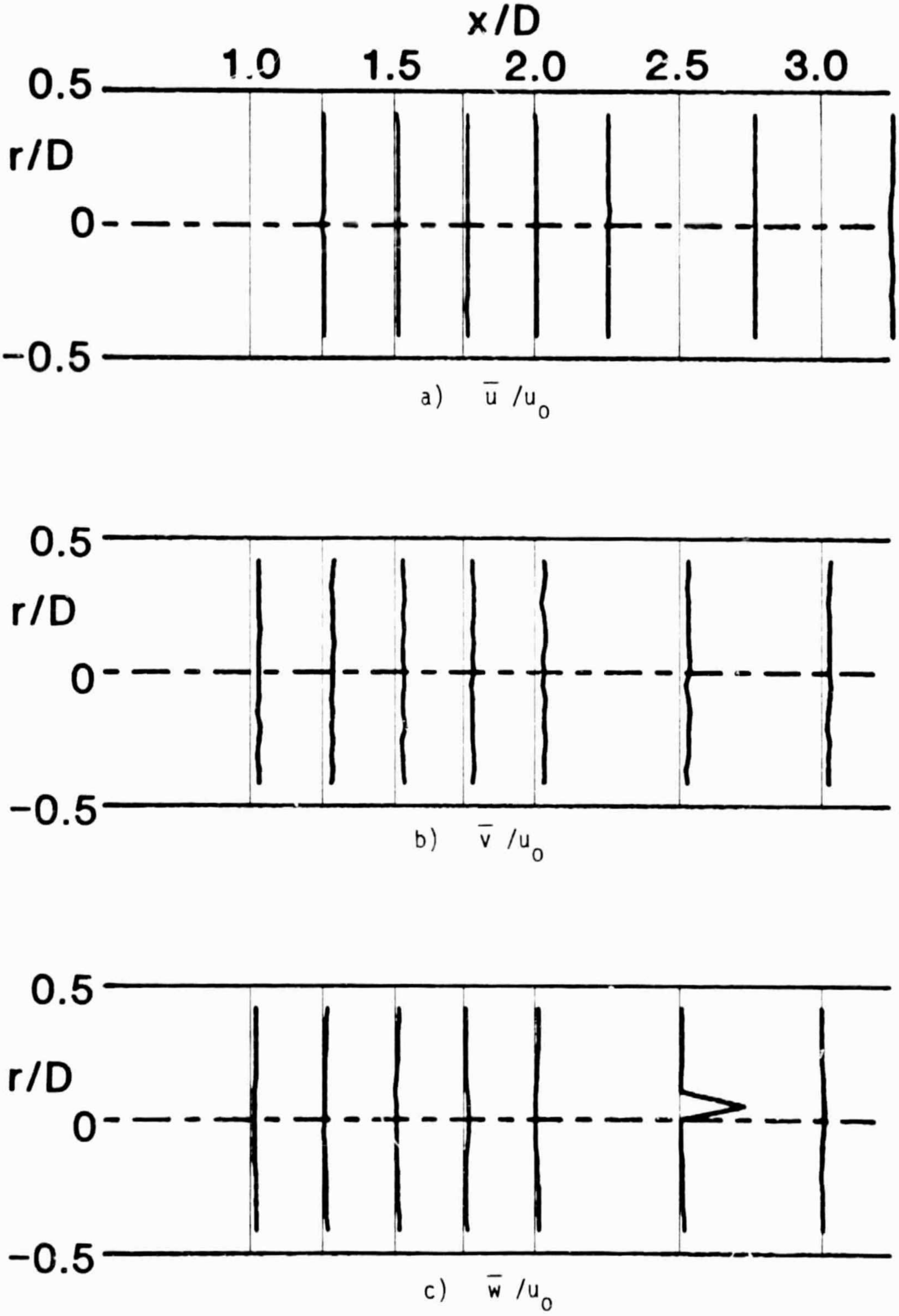
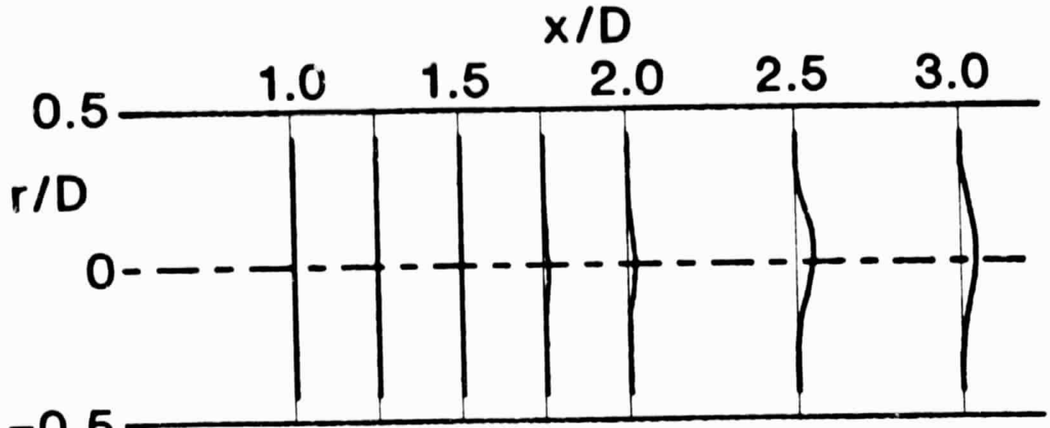
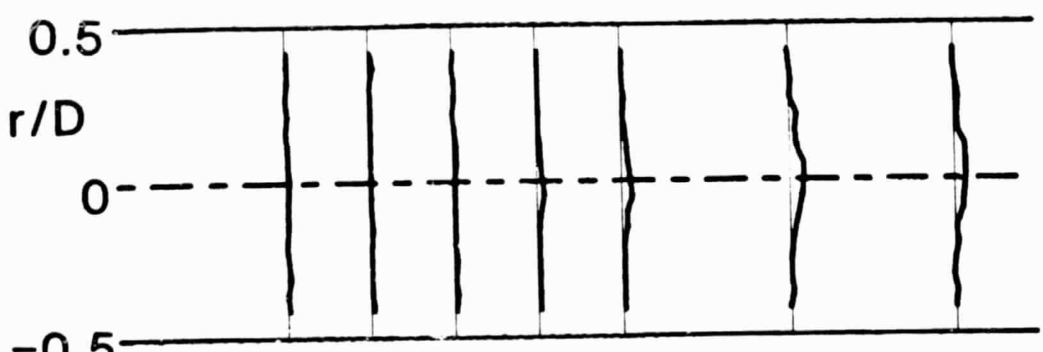


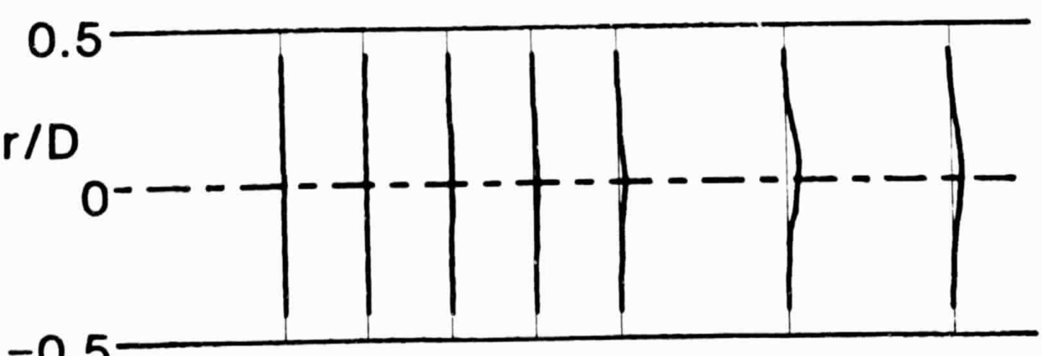
Figure 24. Time-Mean and Turbulent Flowfield, R = 2.0, Traverse Angle θ = 270 Degrees.



d) $u'_{rms}/u_o \times 2$

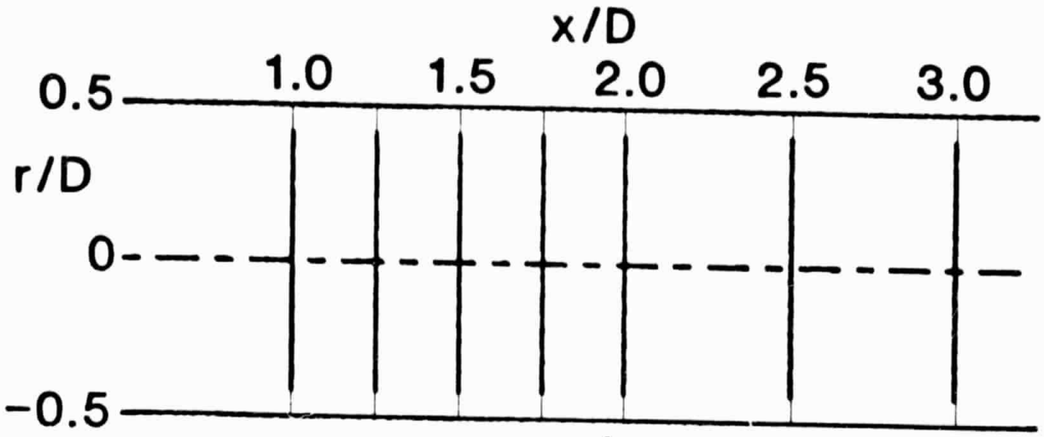


e) $v'_{rms}/u_o \times 2$

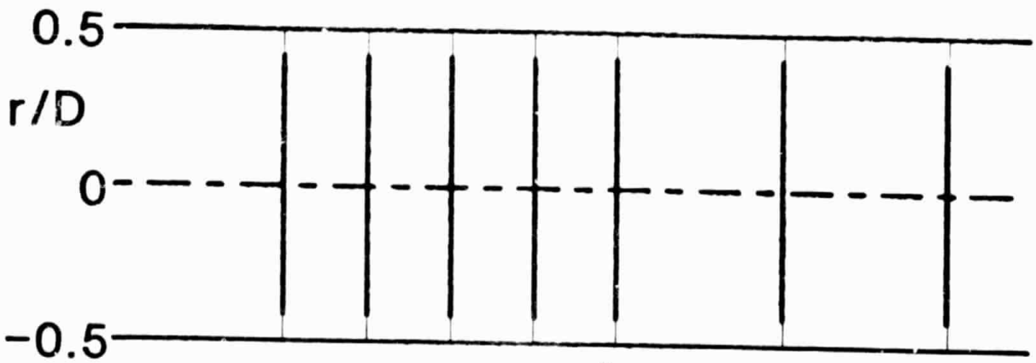


f) $w'_{rms}/u_o \times 2$

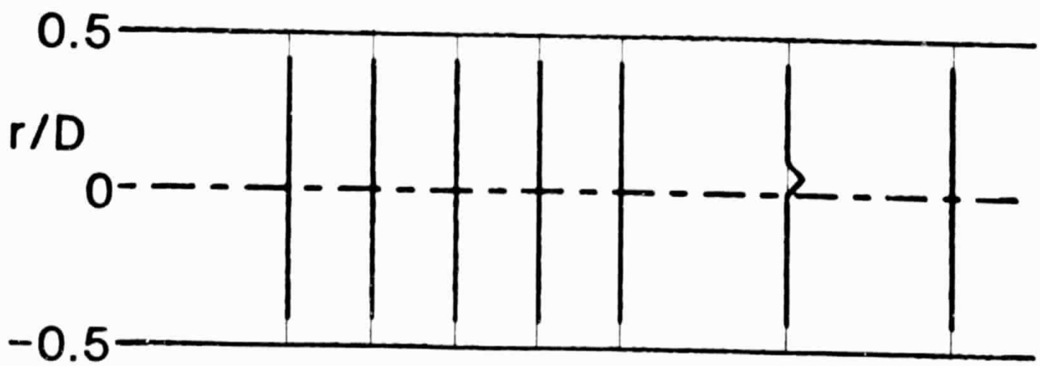
Figure 24. (Continued)



g) $\overline{u'v'}/u_0^2 \times 2$

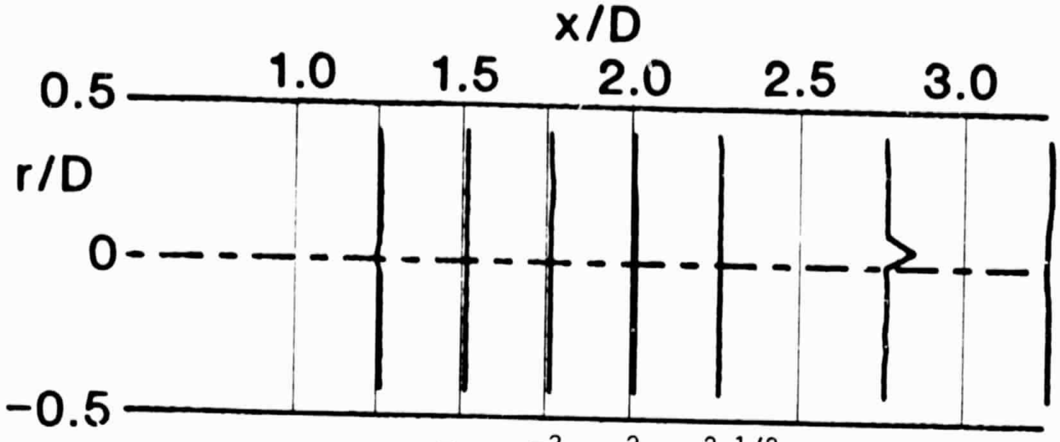


h) $\overline{u'w'}/u_0^2 \times 2$

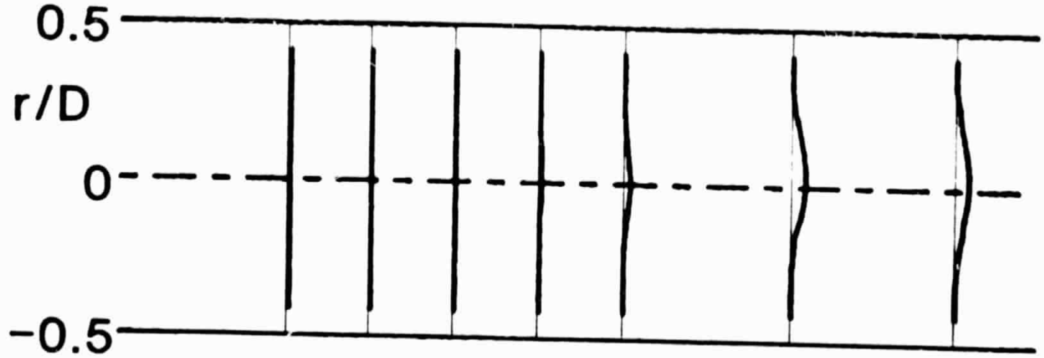


i) $\overline{v'w'}/u_0^2 \times 2$

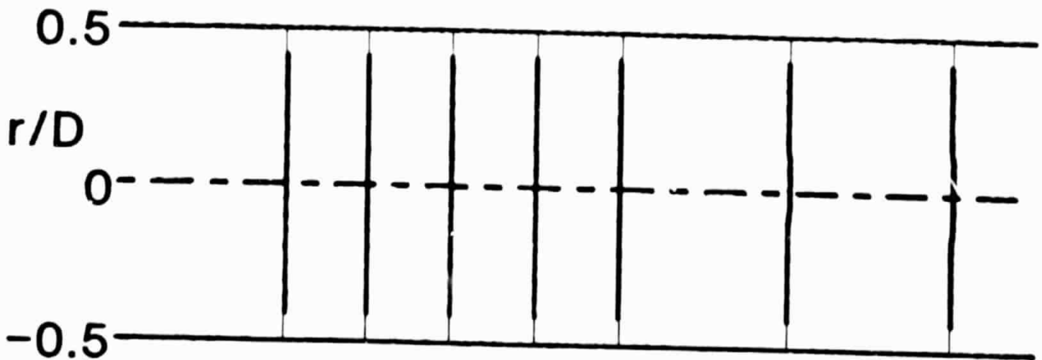
Figure 24. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}\,({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

Figure 24. (Continued)

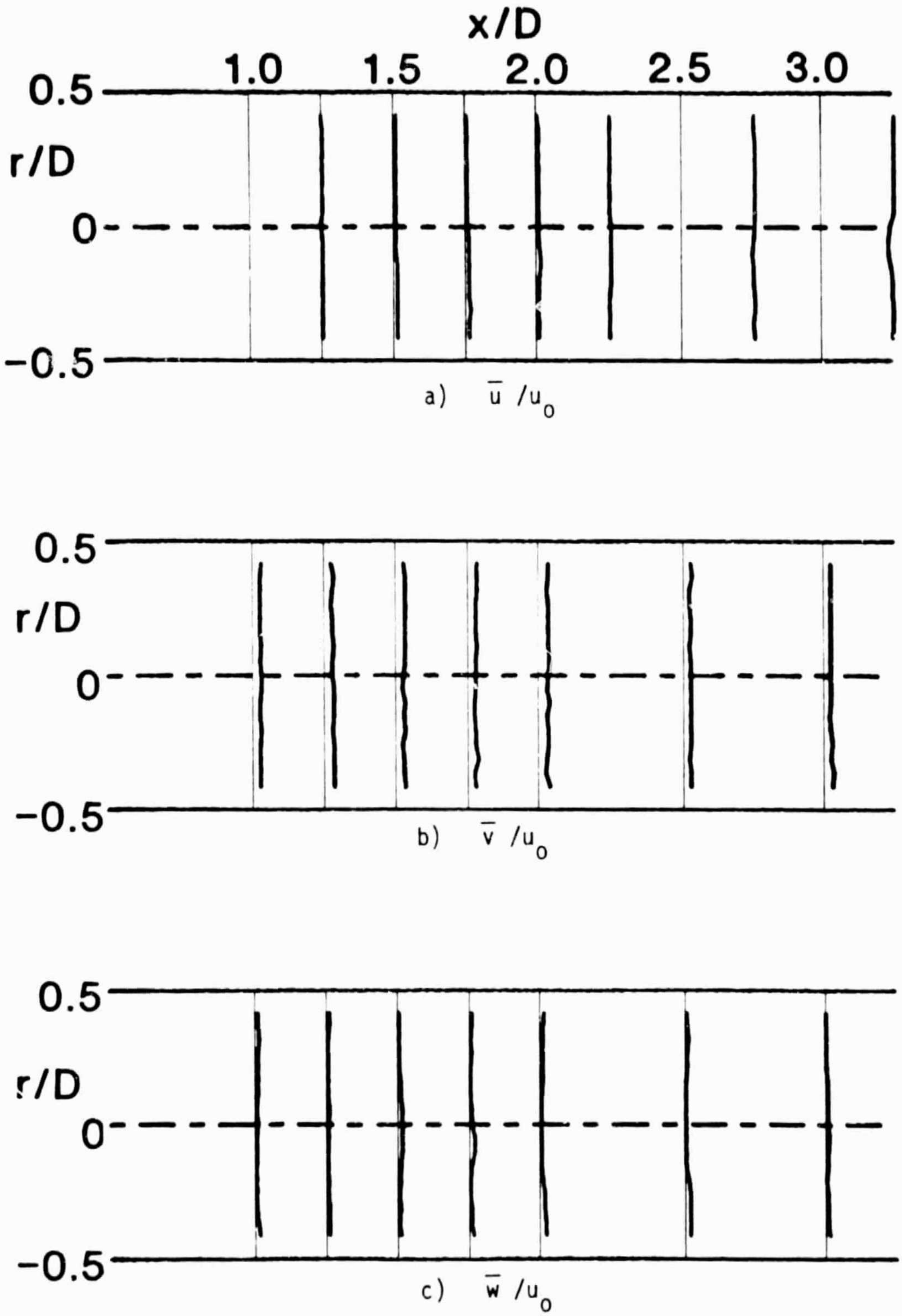
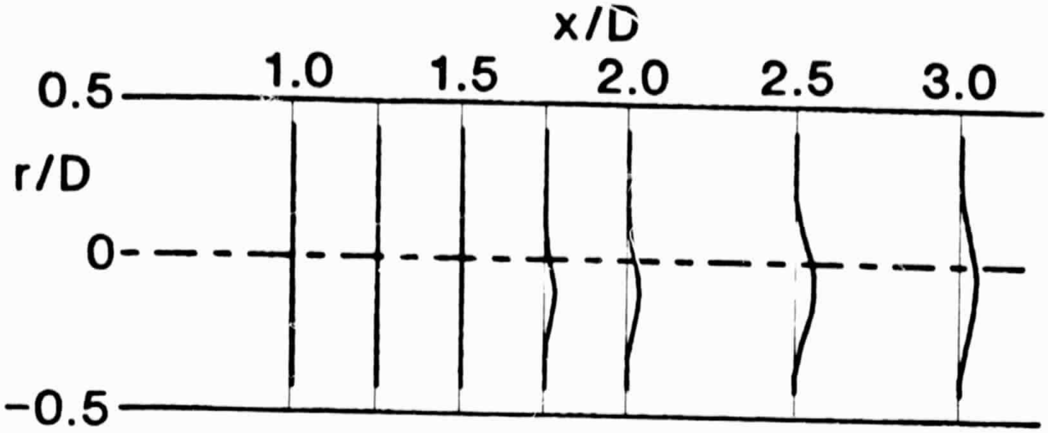
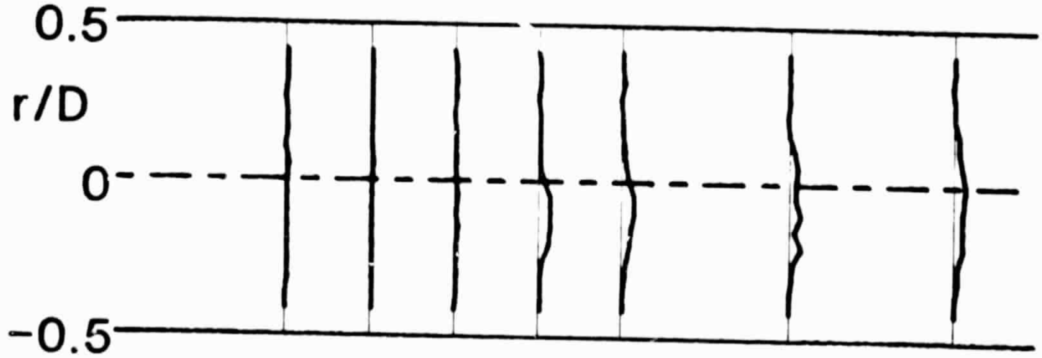


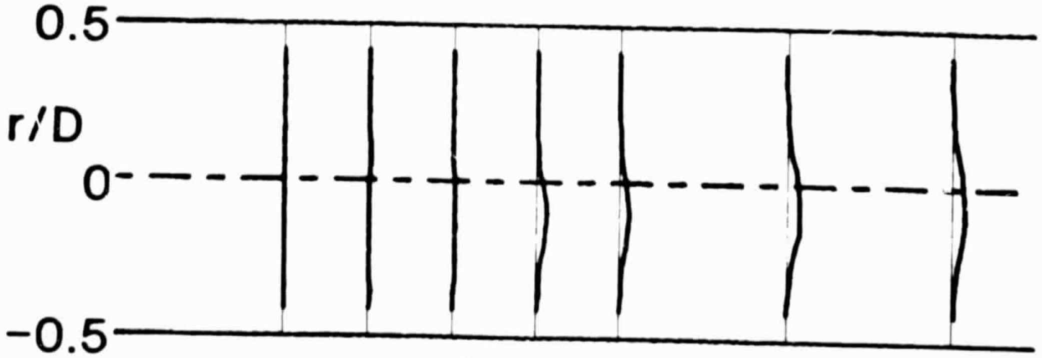
Figure 25. Time-Mean and Turbulent Flowfield, R = 2.0, Traverse Angle θ = 300 Degrees.



d) $u'_{rms}/u_o \times 2$

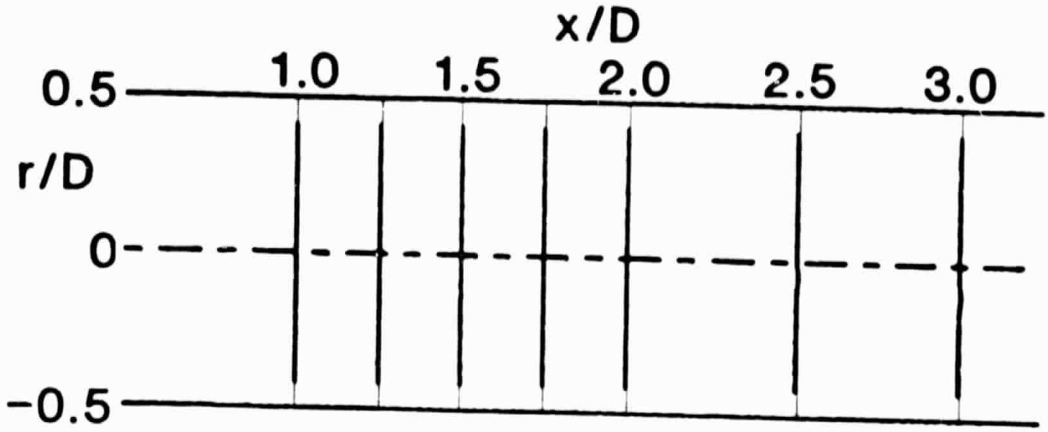


e) $v'_{rms}/u_o \times 2$

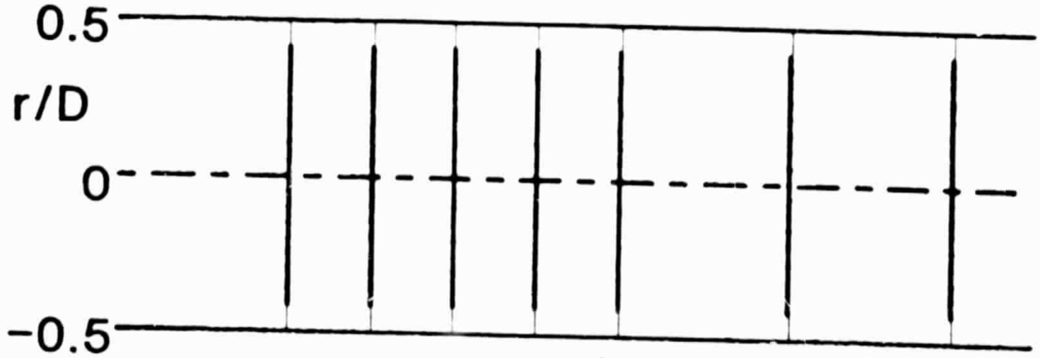


f) $w'_{rms}/u_o \times 2$

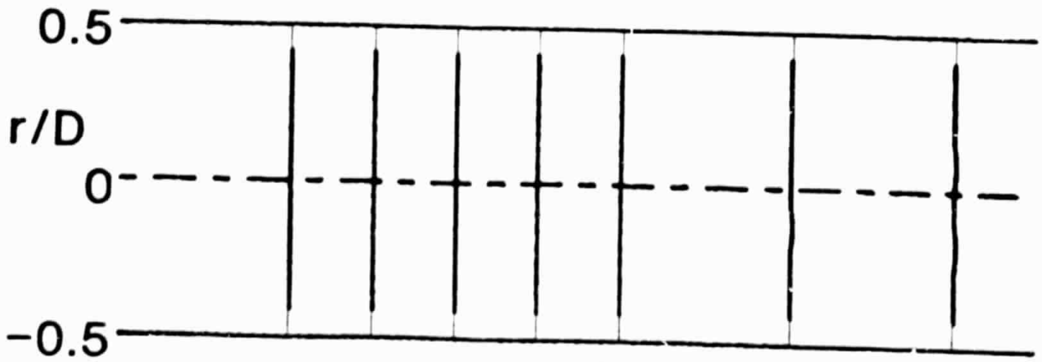
Figure 25. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

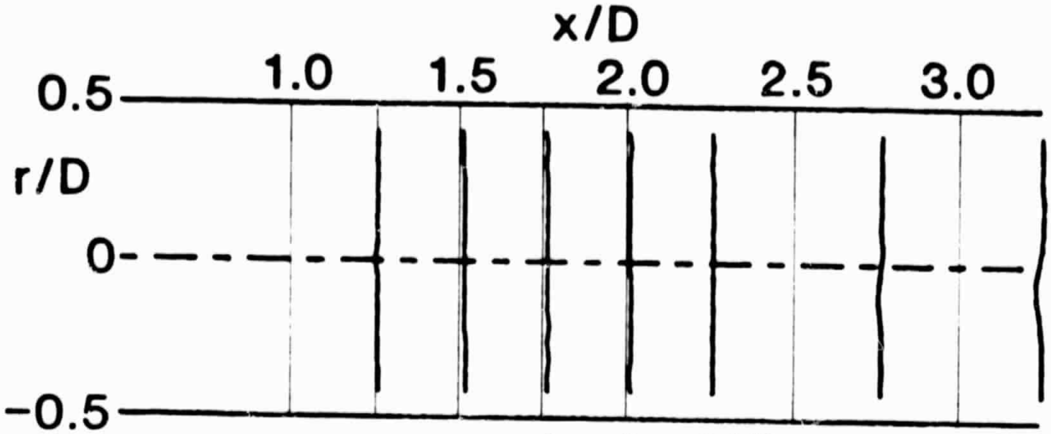


h) $\overline{u'w'}/u_o^2 \times 2$

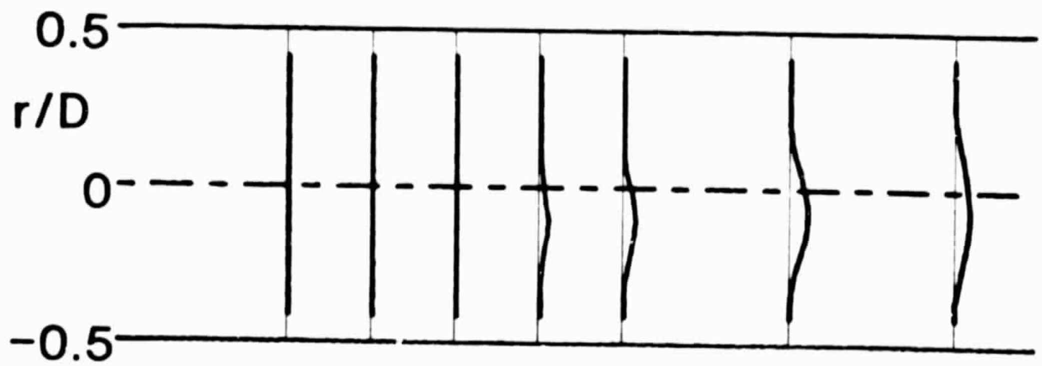


i) $\overline{v'w'}/u_o^2 \times 2$

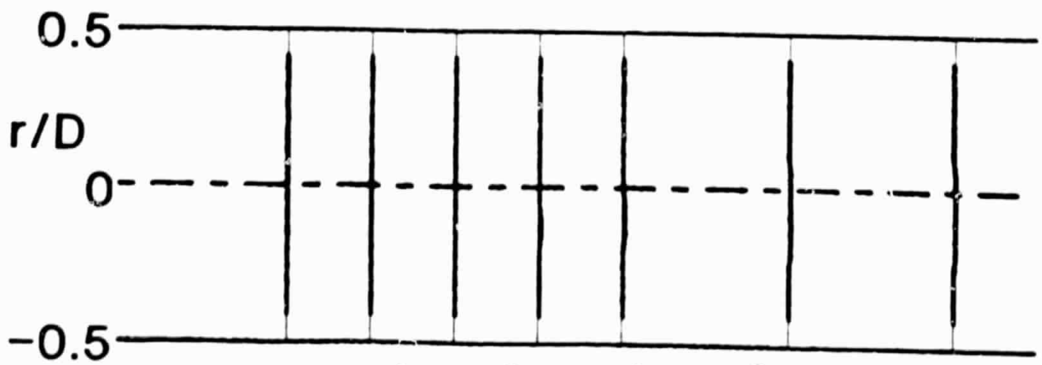
Figure 25. (Continued)



j) $\overline{V} = (\bar{u}^2 + \bar{v}^2 + \bar{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\bar{u} \times 2$



l) $\frac{1}{2}\,(u'^{\,2}_{rms} + v'^{\,2}_{rms} + w'^{\,2}_{rms}) \times 2$

Figure 25. (Continued)

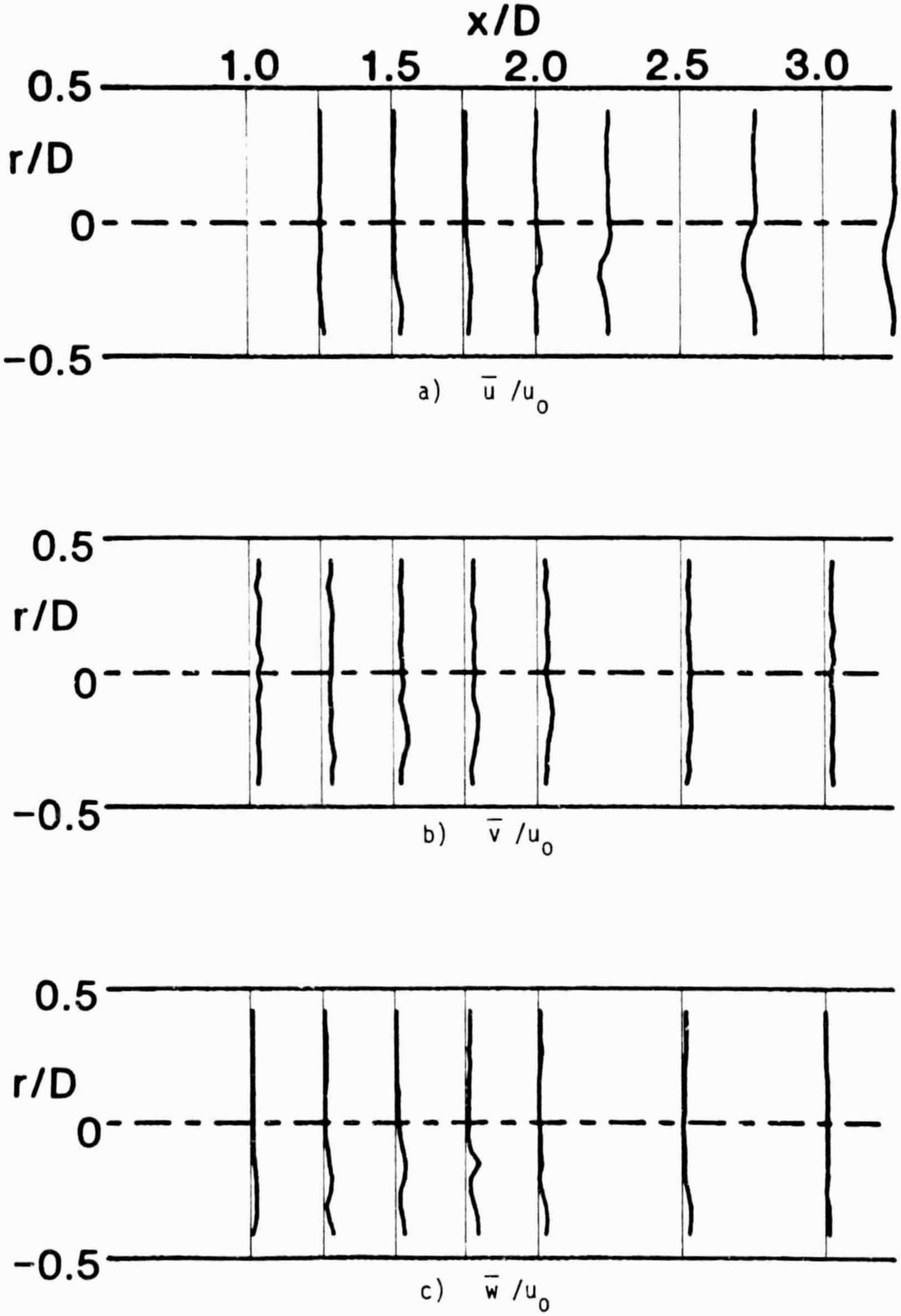
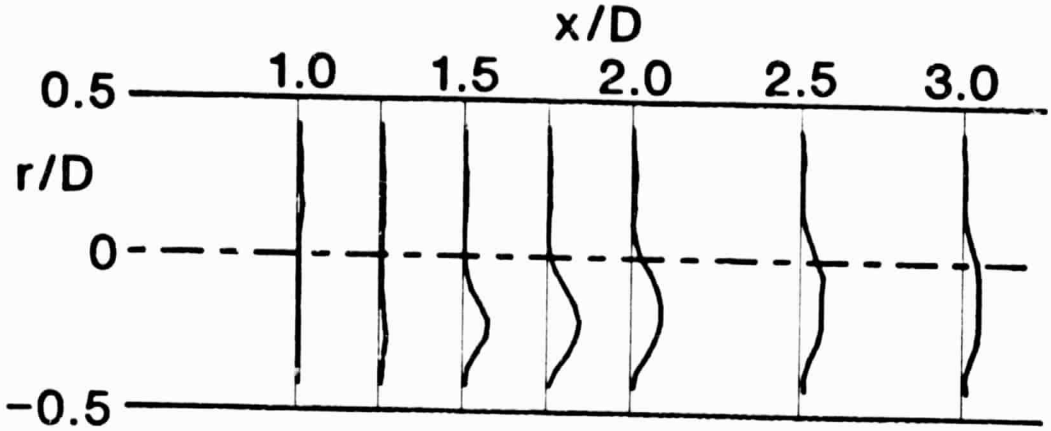
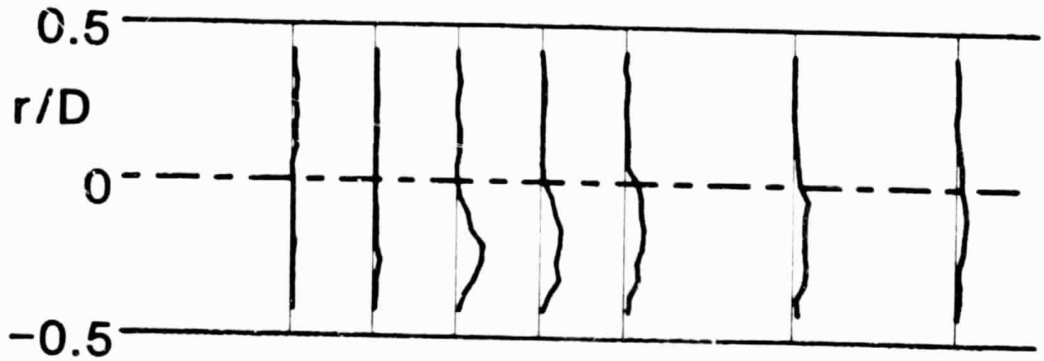


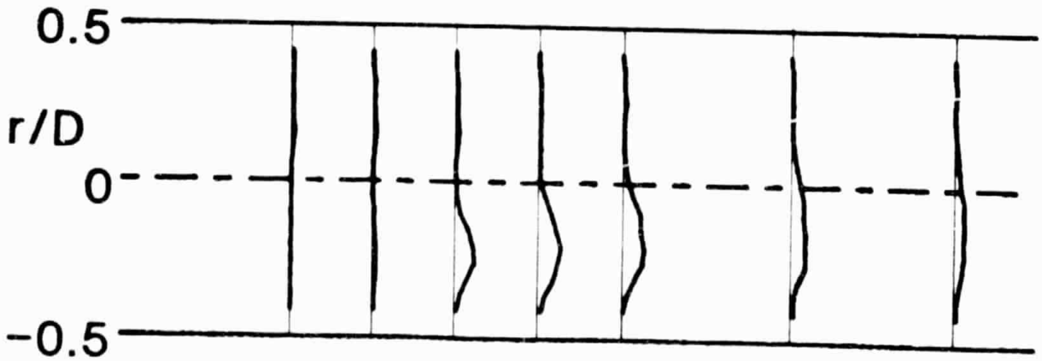
Figure 26. Time-Mean and Turbulent Flowfield, R = 2.0, Traverse Angle θ = 330 Degrees.



d) $u'_{rms}/u_o \times 2$

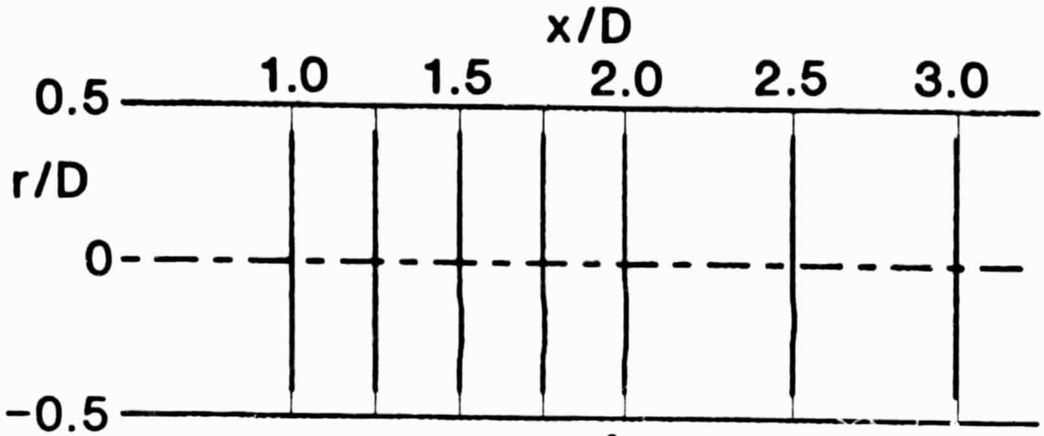


e) $v'_{rms}/u_o \times 2$

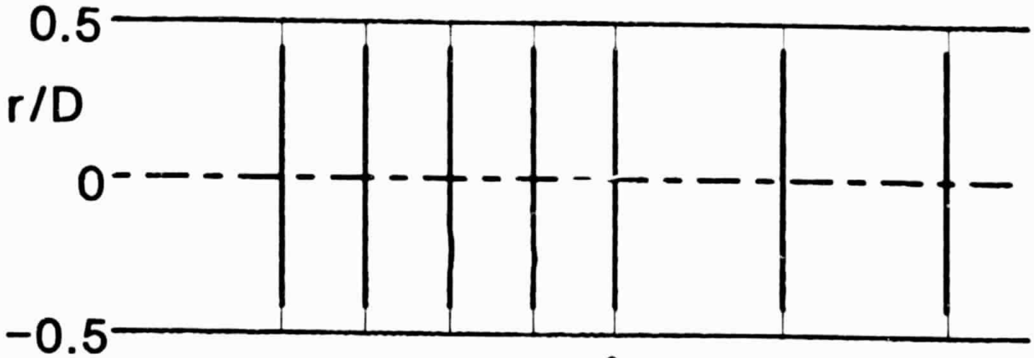


f) $w'_{rms}/u_o \times 2$

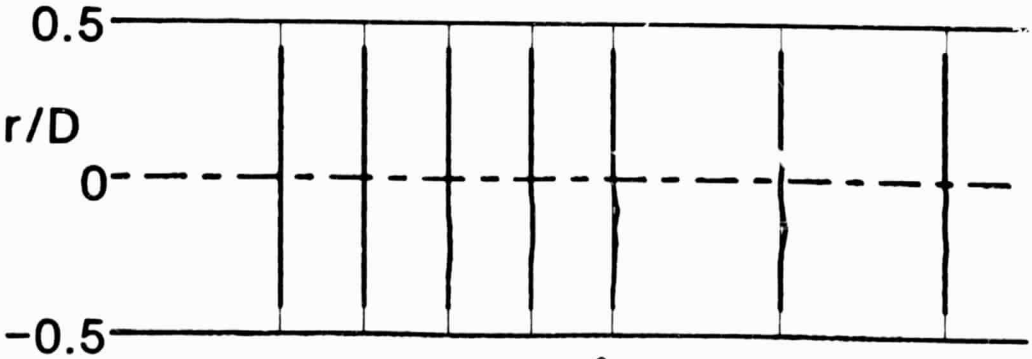
Figure 26. (Continued)



g) $\overline{u'v'}/u_0^2 \times 2$

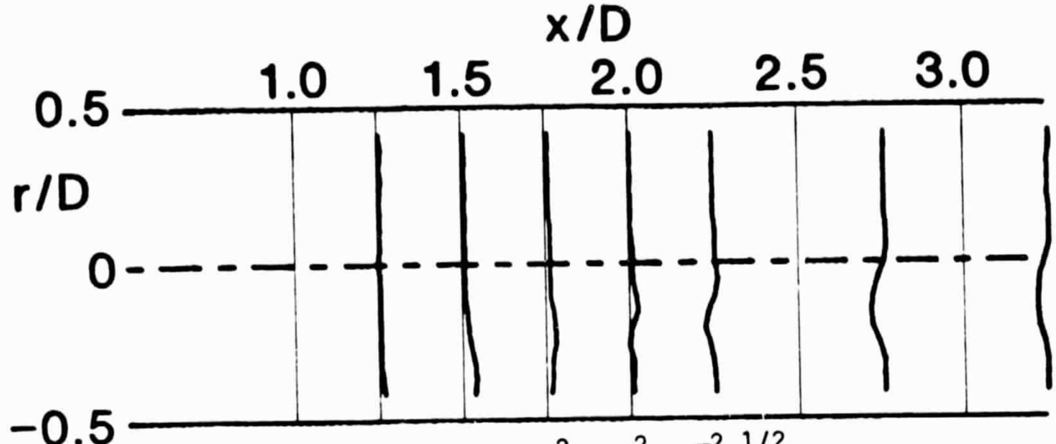


h) $\overline{u'w'}/u_0^2 \times 2$

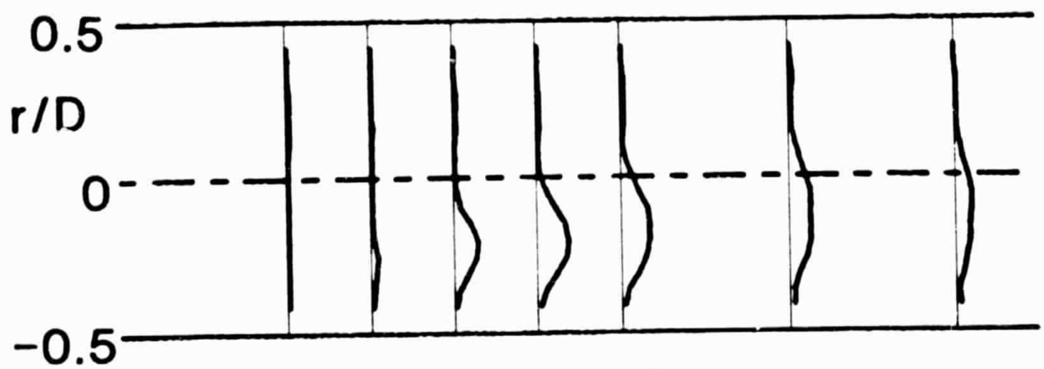


i) $\overline{v'w'}/u_0^2 \times 2$

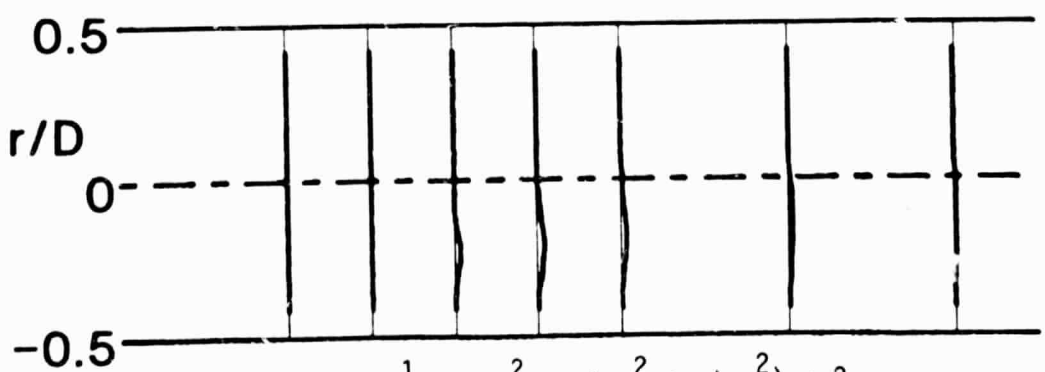
Figure 26. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}(u'^2_{rms} + v'^2_{rms} + w'^2_{rms}) \times 2$

Figure 26. (Continued)

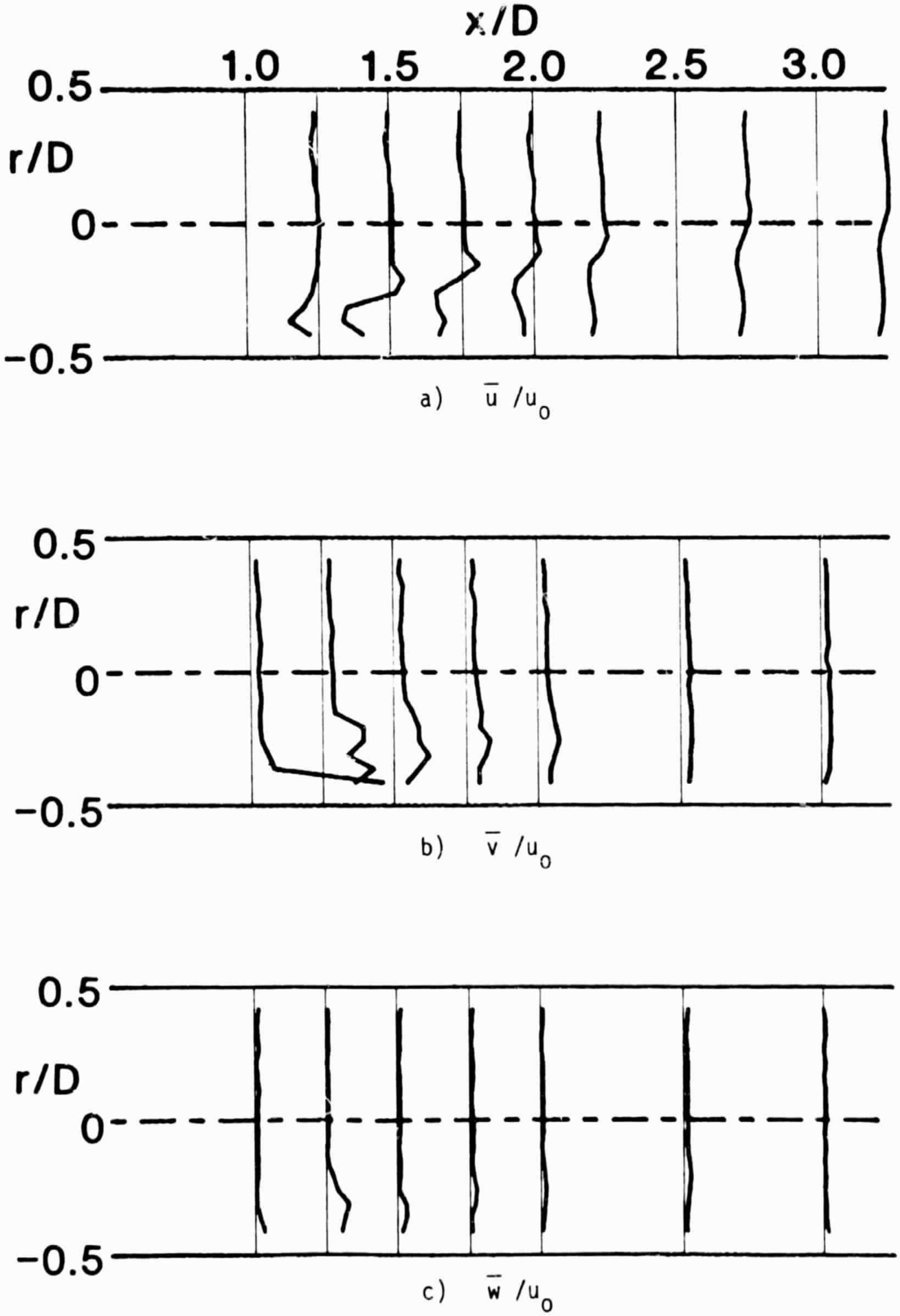
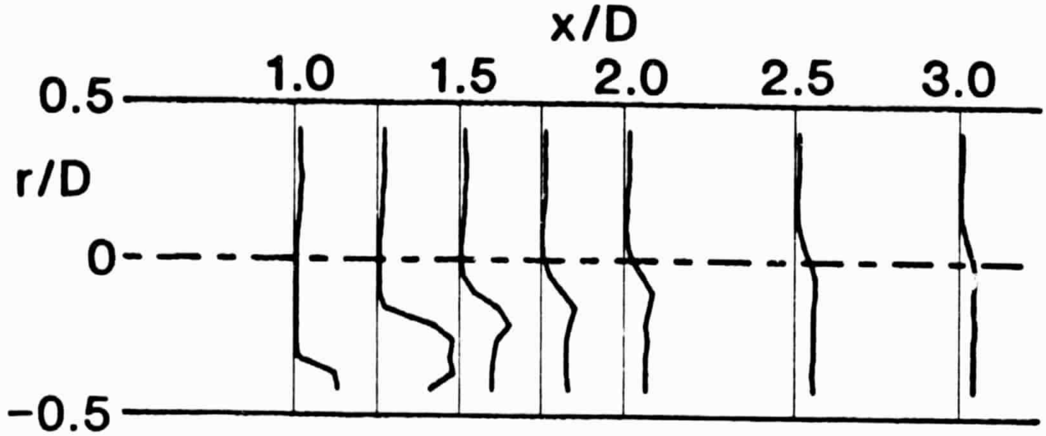
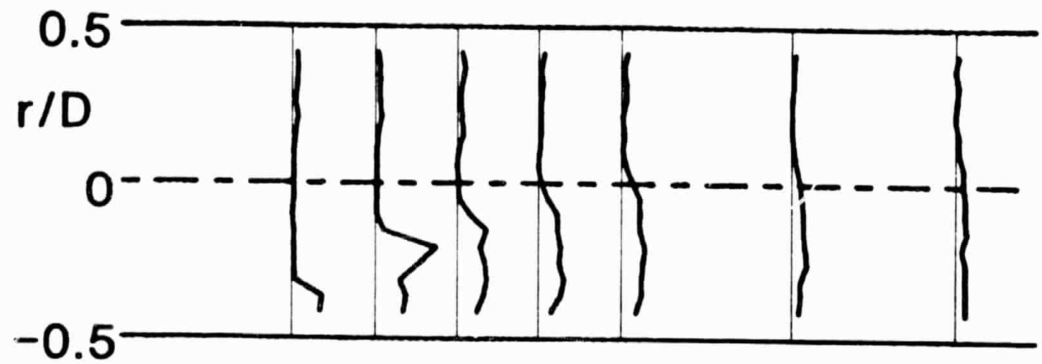


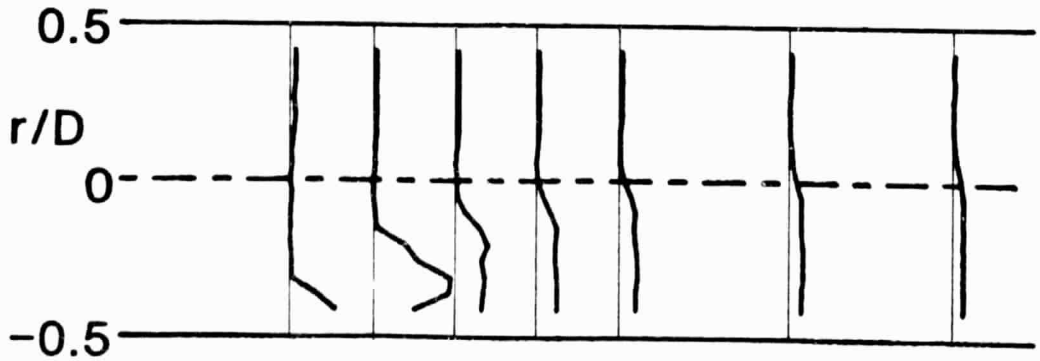
Figure 27. Time-Mean and Turbulent Flowfield, R = 2.0, Traverse Angle θ = 0 Degrees.



d) $u'_{rms}/u_o \times 2$

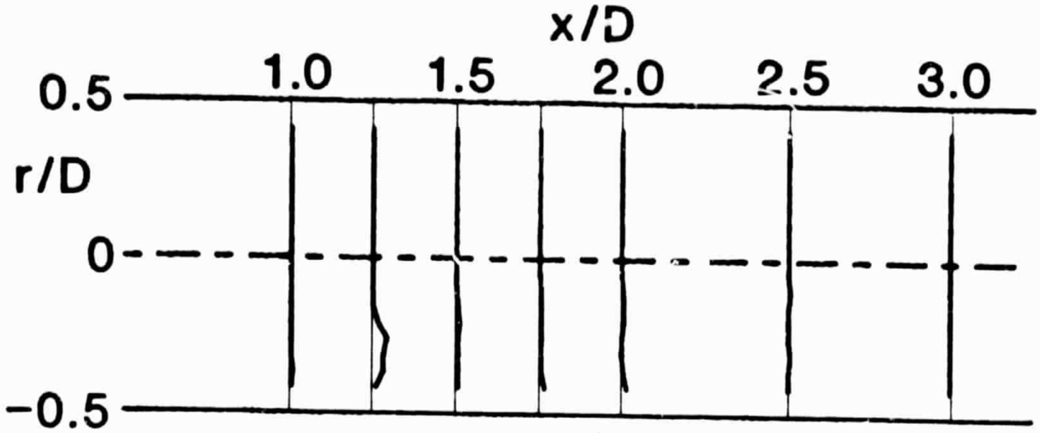


e) $v'_{rms}/u_o \times 2$

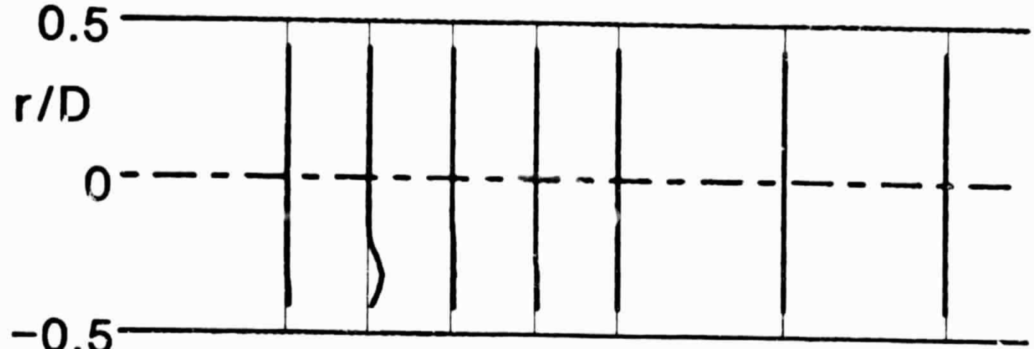


f) $w'_{rms}/u_o \times 2$

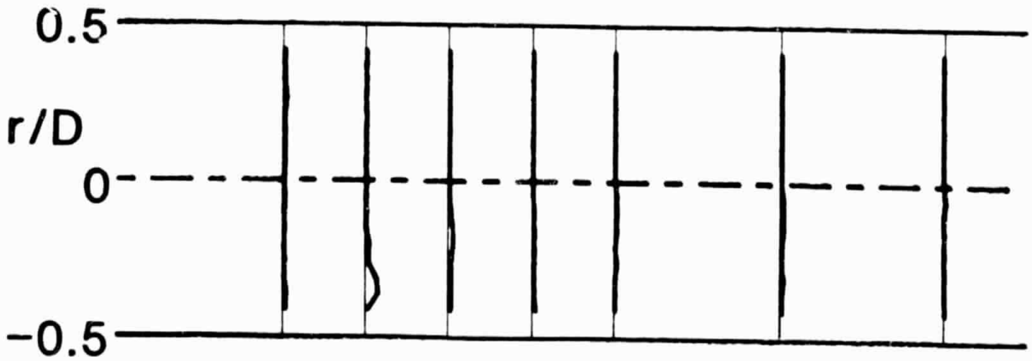
Figure 27. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

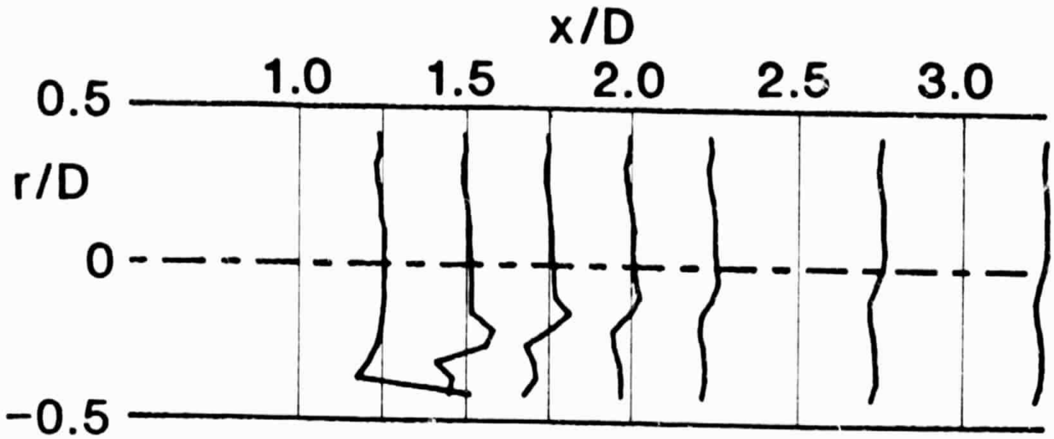


h) $\overline{u'w'}/u_o^2 \times 2$

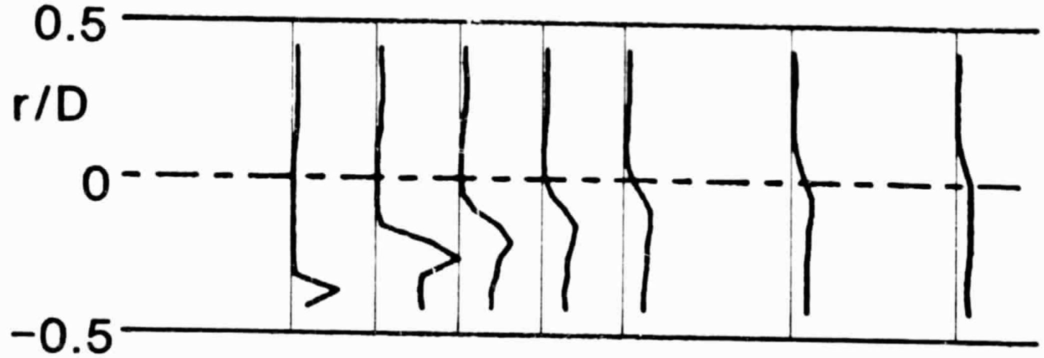


i) $\overline{v'w'}/u_o^2 \times 2$

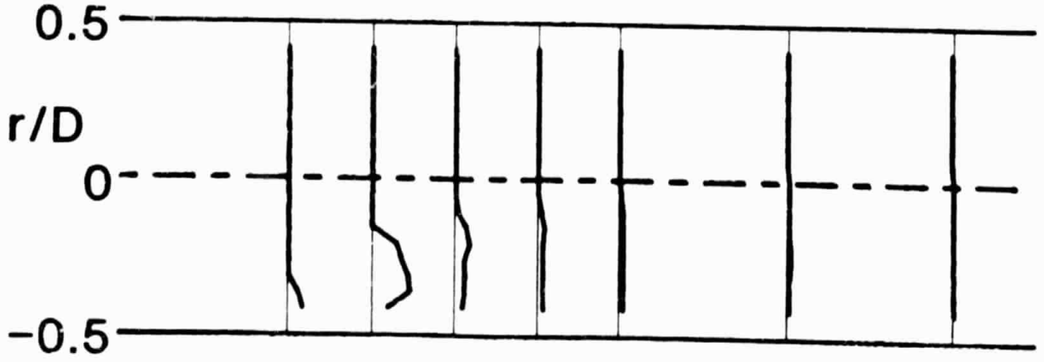
Figure 27. (Continued)



j) $\overline{V} = (\bar{u}^2 + \bar{v}^2 + \bar{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\bar{u} \times 2$



l) $\frac{1}{2}(u'^{\,2}_{rms} + v'^{\,2}_{rms} + w'^{\,2}_{rms}) \times 2$

Figure 27. (Continued)

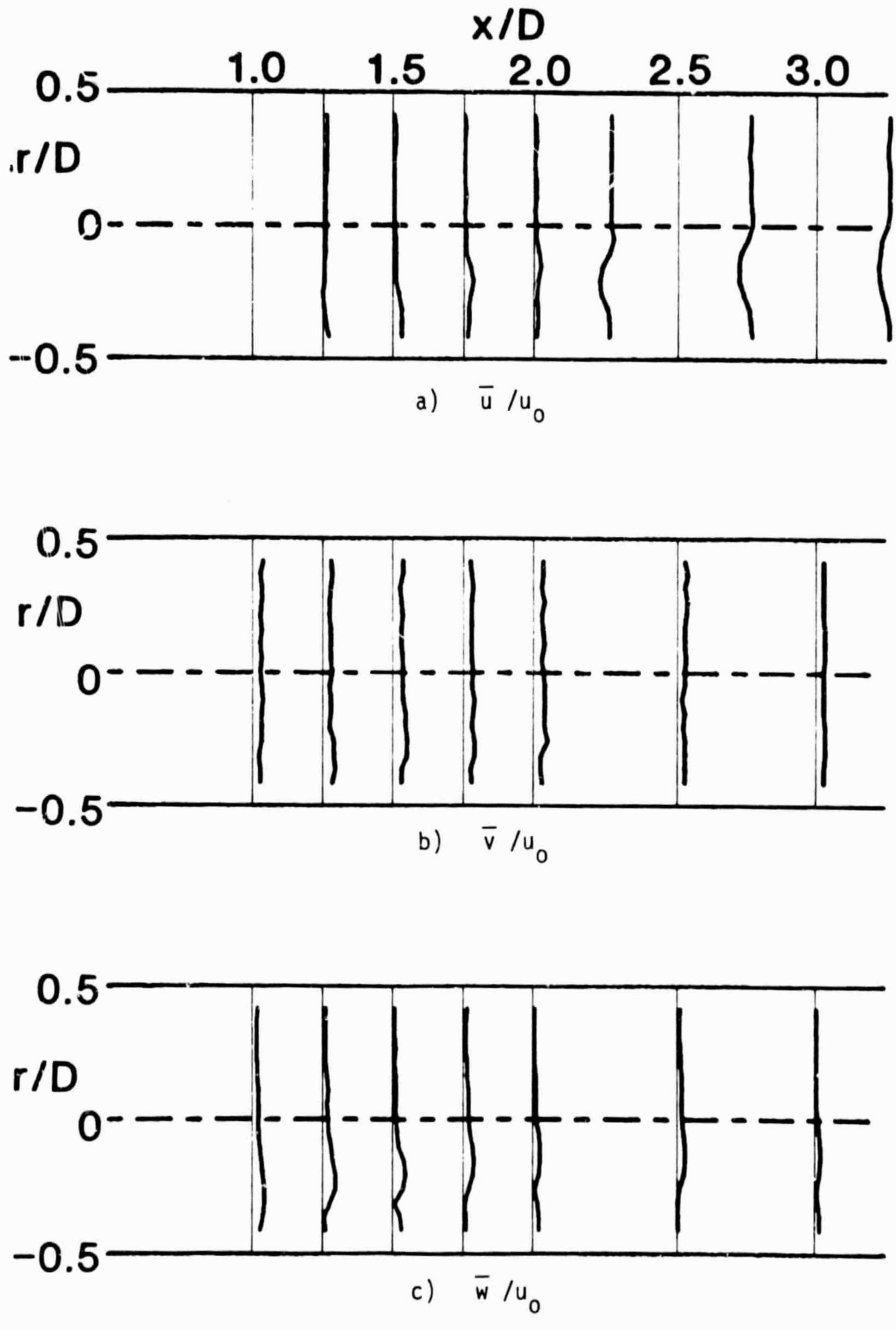
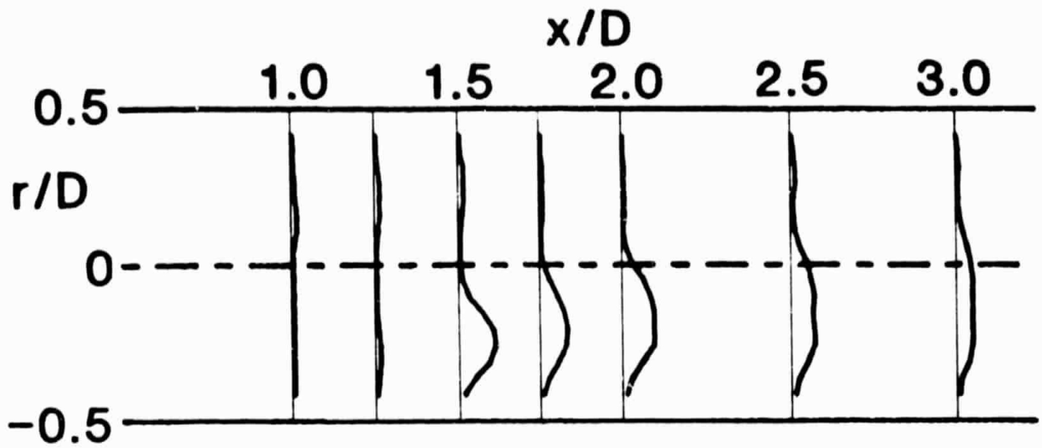
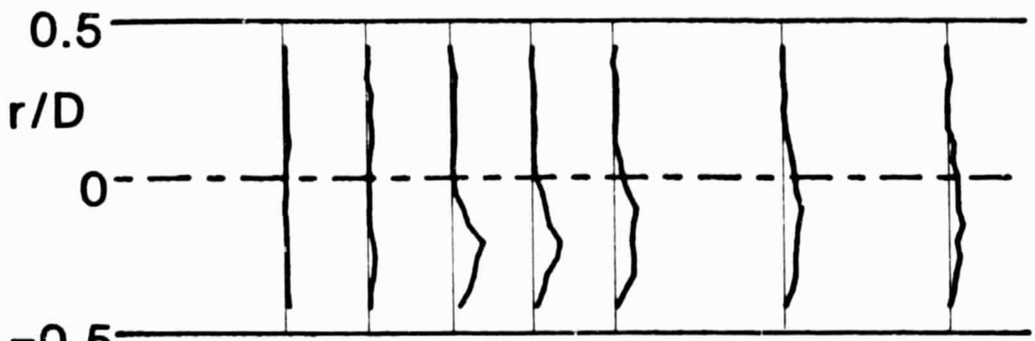


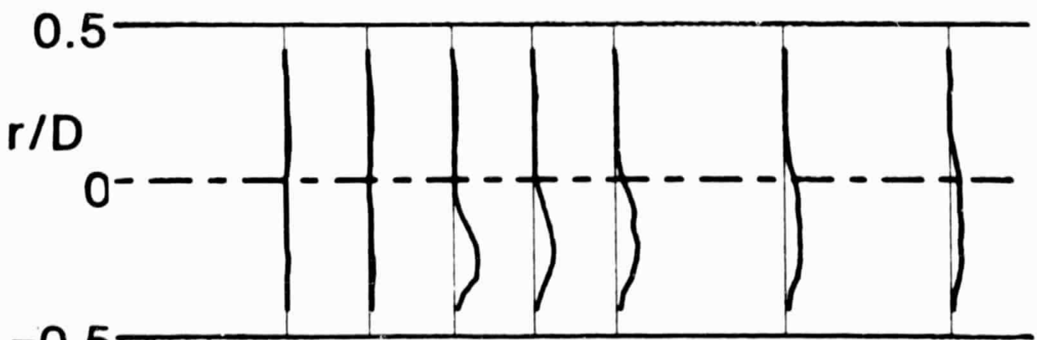
Figure 28. Time-Mean and Turbulent Flowfield, R = 2.0, Traverse Angle θ = 30 Degrees.



d) $u'_{rms}/u_o \times 2$

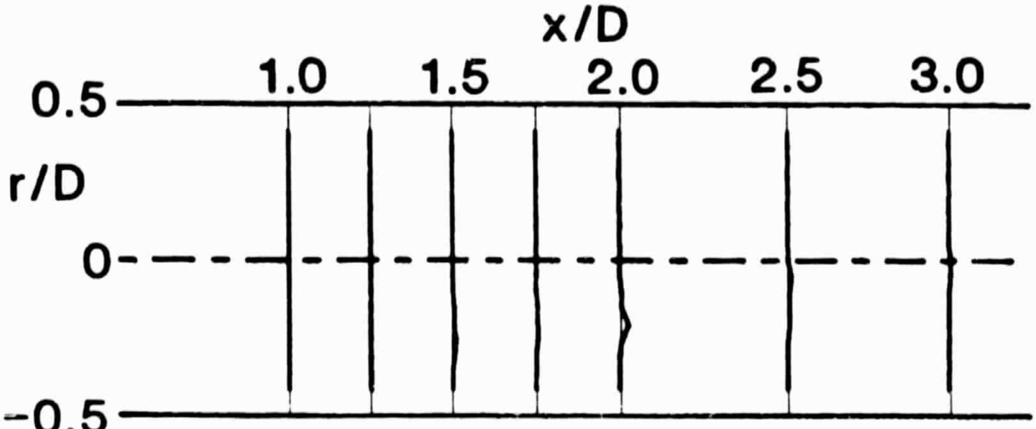


e) $v'_{rms}/u_o \times 2$

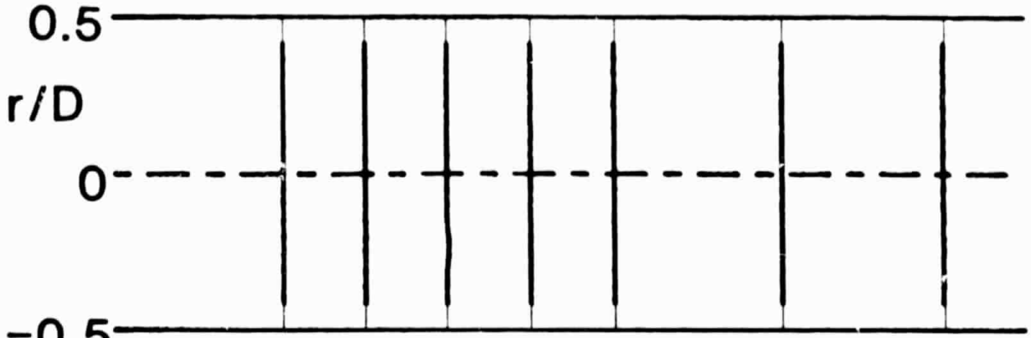


f) $w'_{rms}/u_o \times 2$

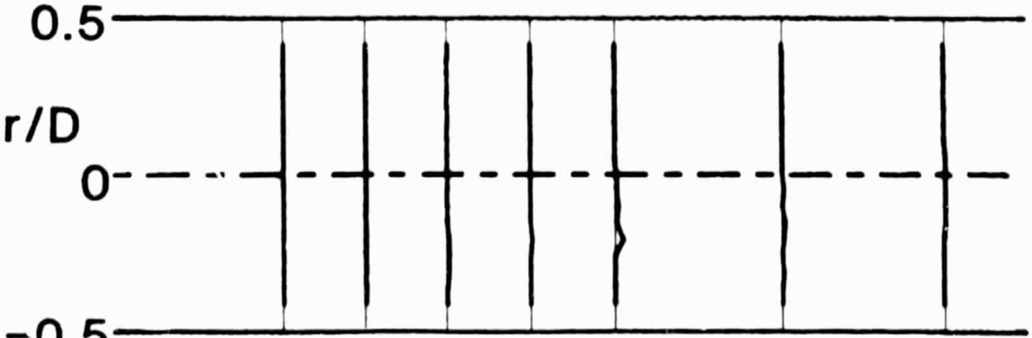
Figure 28. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

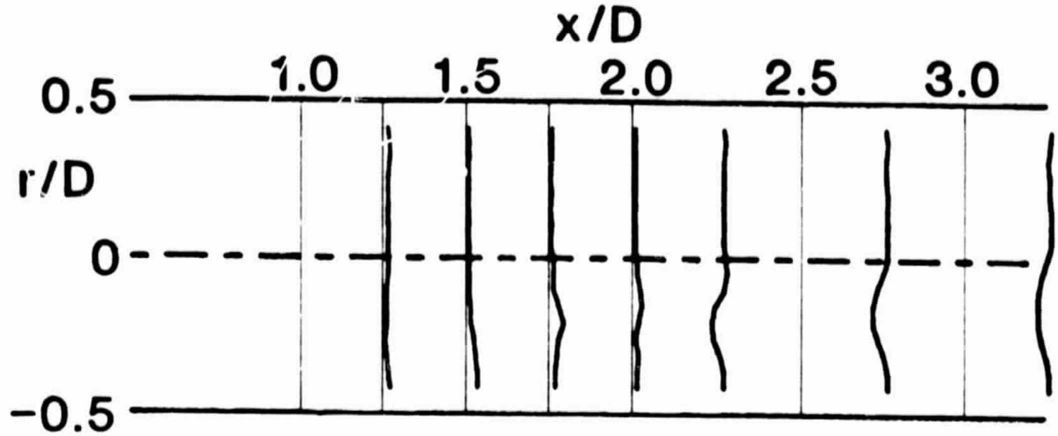


h) $\overline{u'w'}/u_o^2 \times 2$

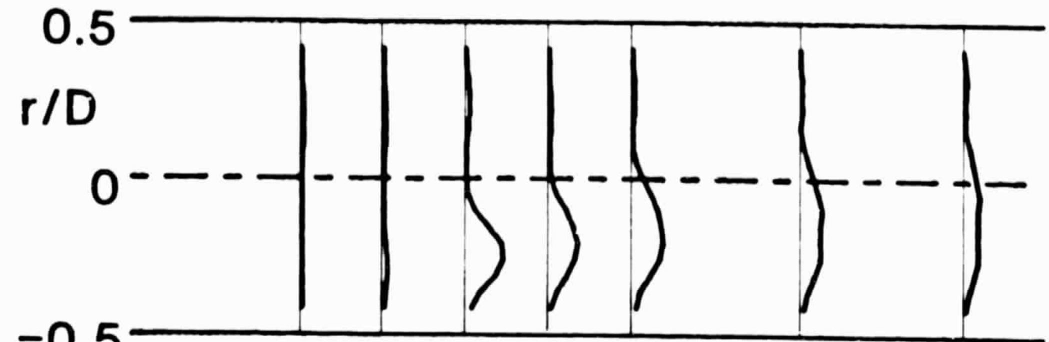


i) $\overline{v'w'}/u_o^2 \times 2$

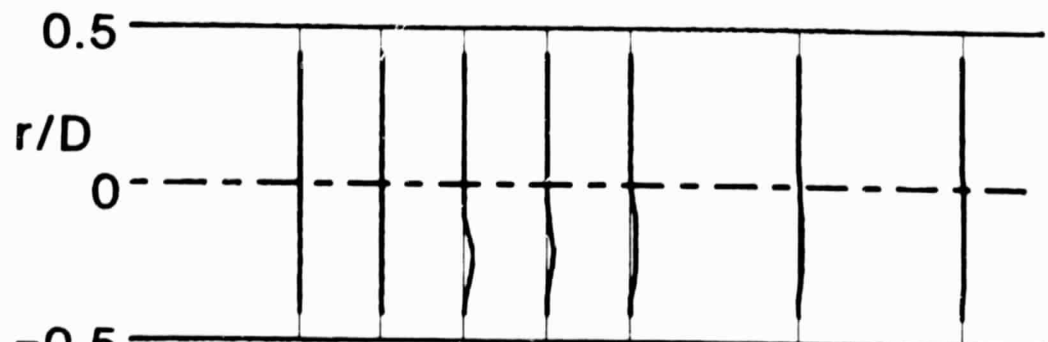
Figure 28. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}(u'^{2}_{rms} + v'^{2}_{rms} + w'^{2}_{rms}) \times 2$

Figure 28. (Continued)

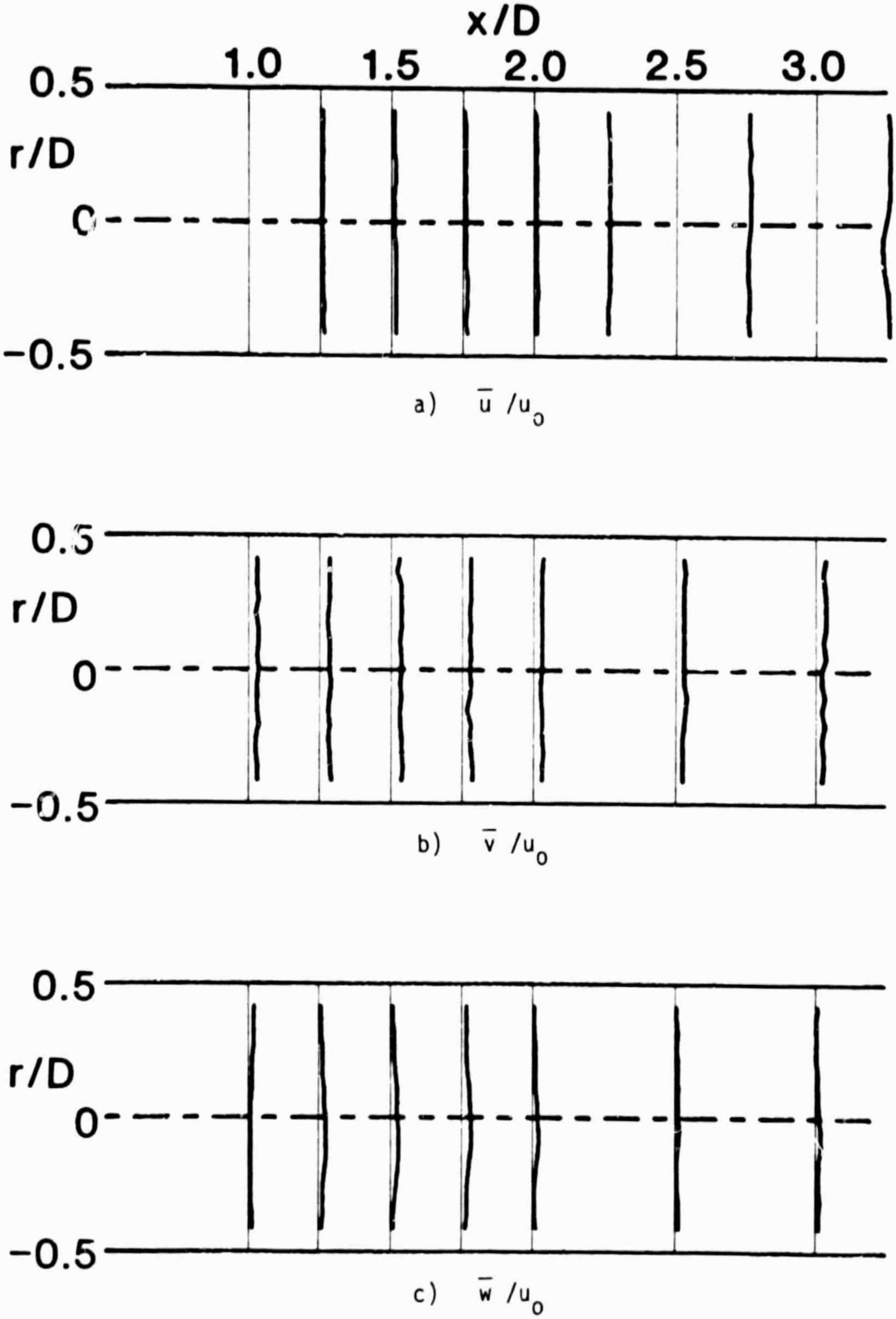


Figure 29. Time-Mean and Turbulent Flowfield, R = 2.0, Traverse Angle θ = 60 Degrees.

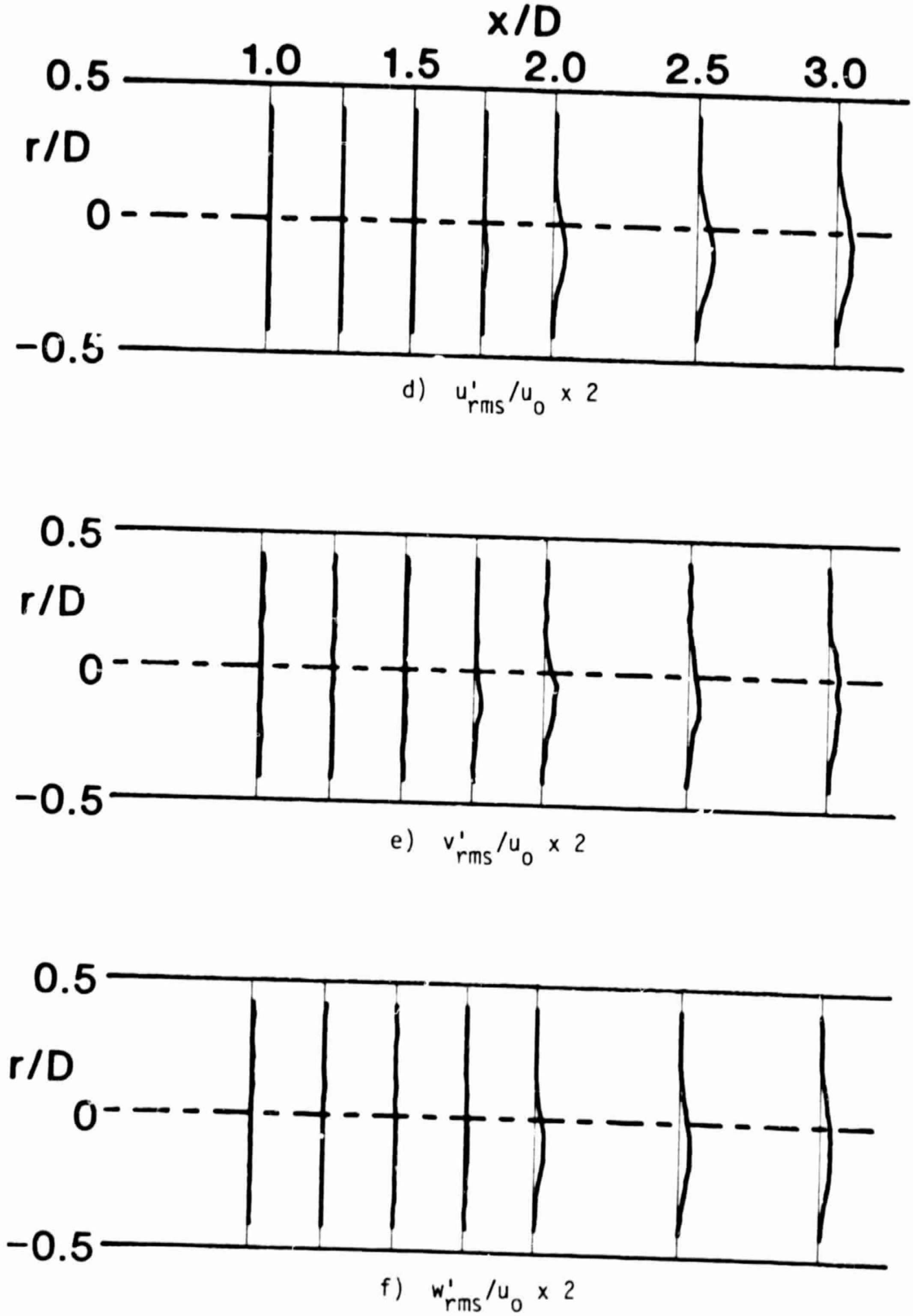
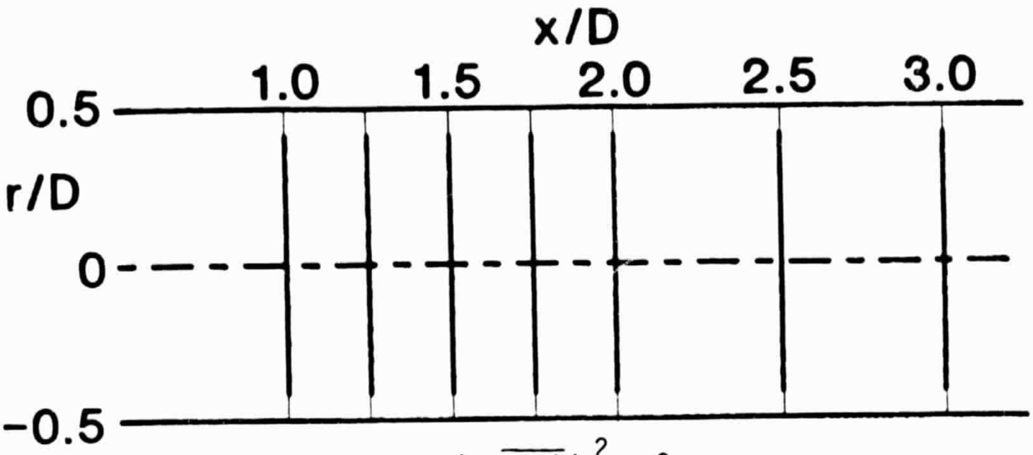
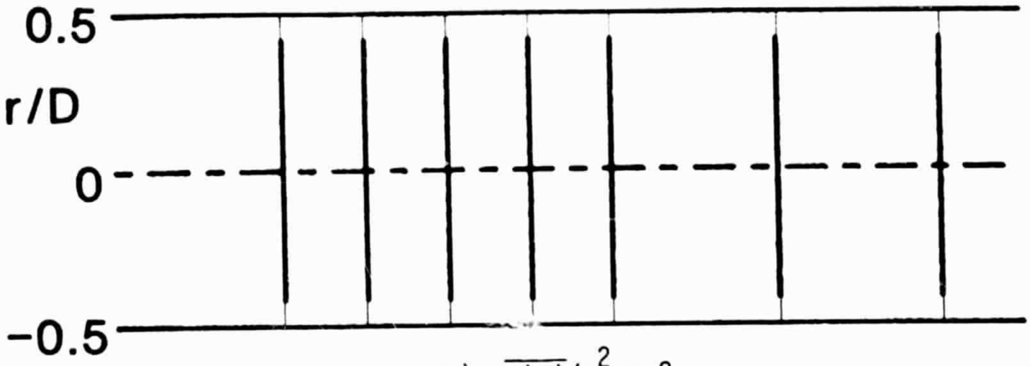


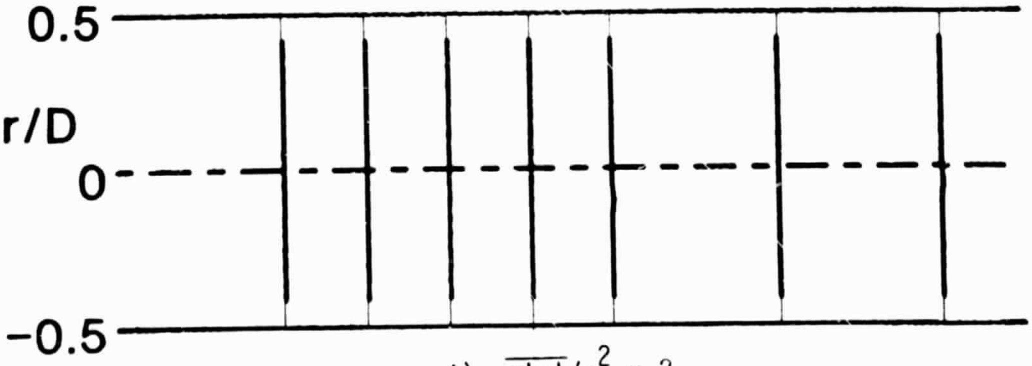
Figure 29. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

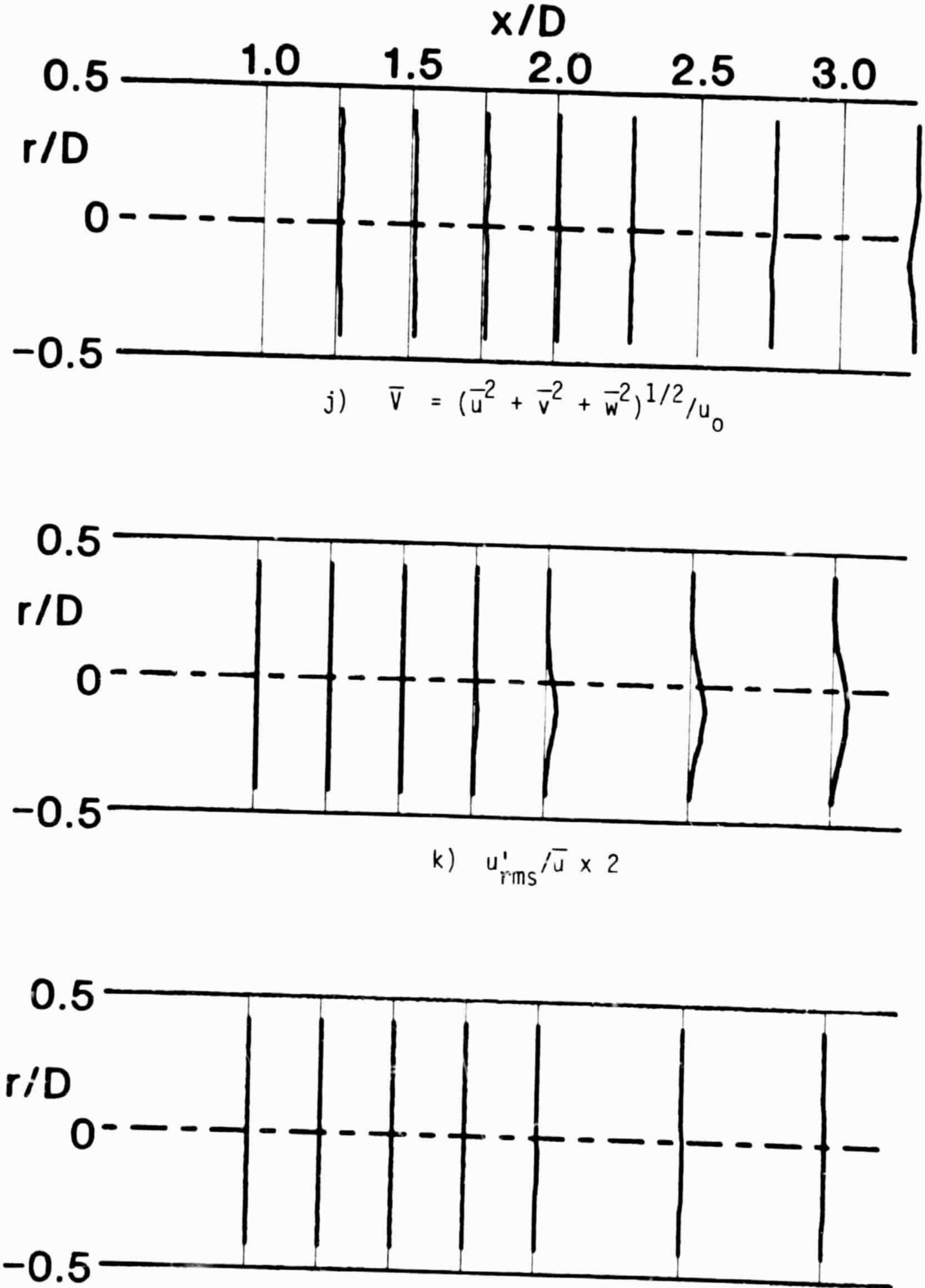


h) $\overline{u'w'}/u_o^2 \times 2$



i) $\overline{v'w'}/u_o^2 \times 2$

Figure 29. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

k) $u'_{rms}/\overline{u} \times 2$

l) $\frac{1}{2}(u'^2_{rms} + v'^2_{rms} + w'^2_{rms}) \times 2$

Figure 29. (Continued)

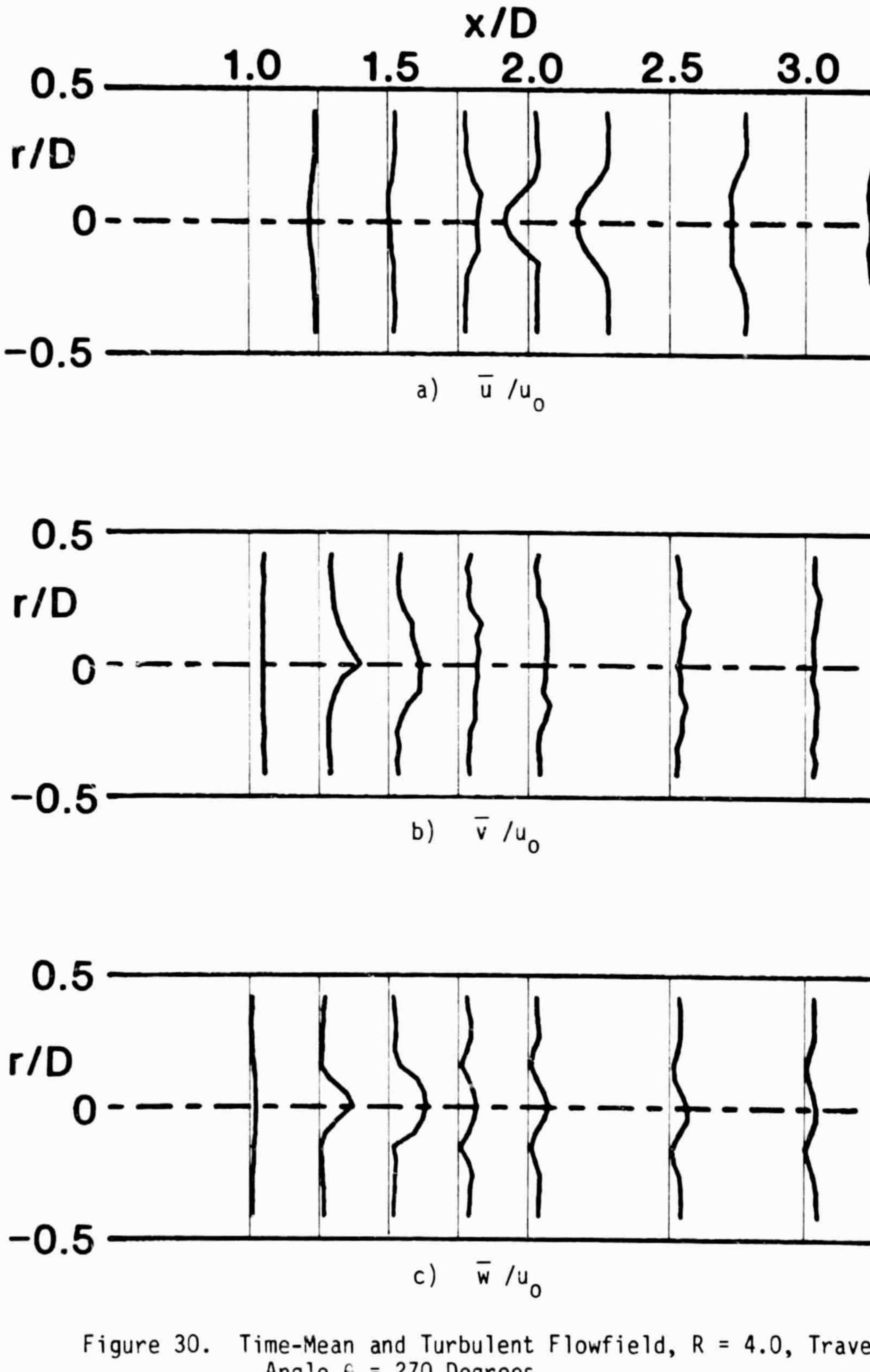
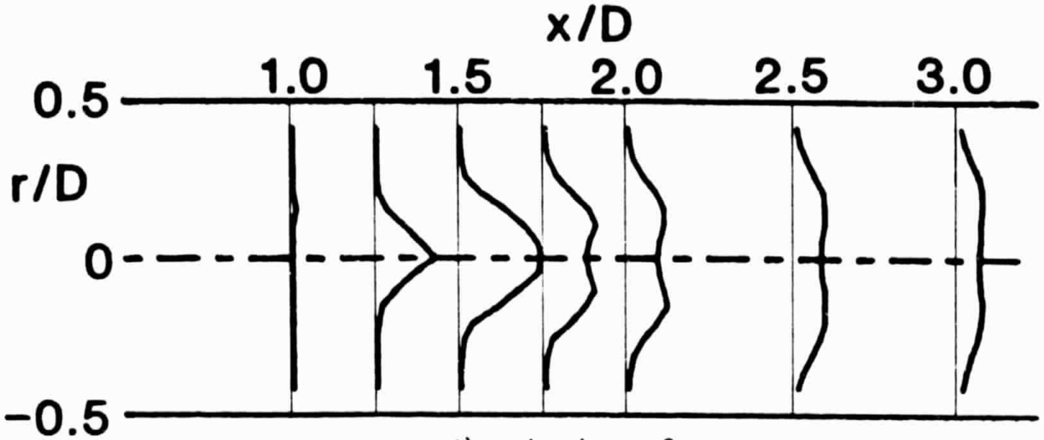
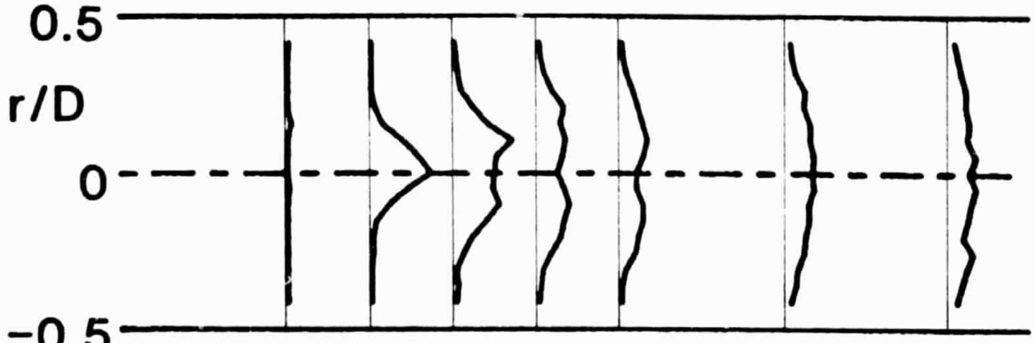


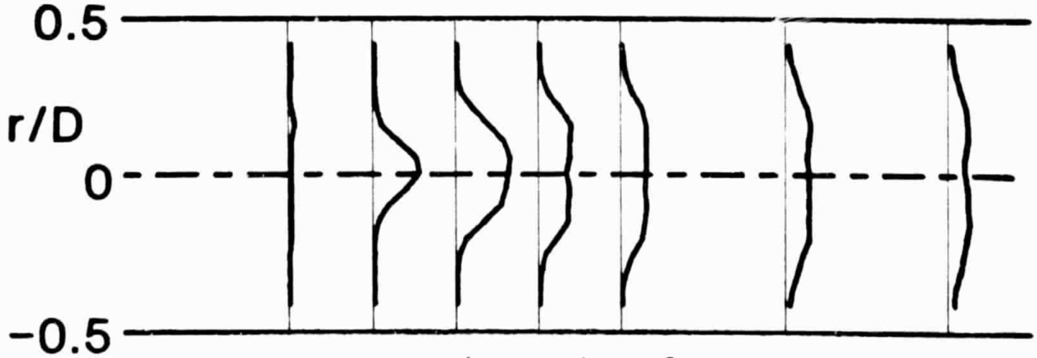
Figure 30. Time-Mean and Turbulent Flowfield, R = 4.0, Traverse Angle θ = 270 Degrees.



d) $u'_{rms}/u_o \times 2$

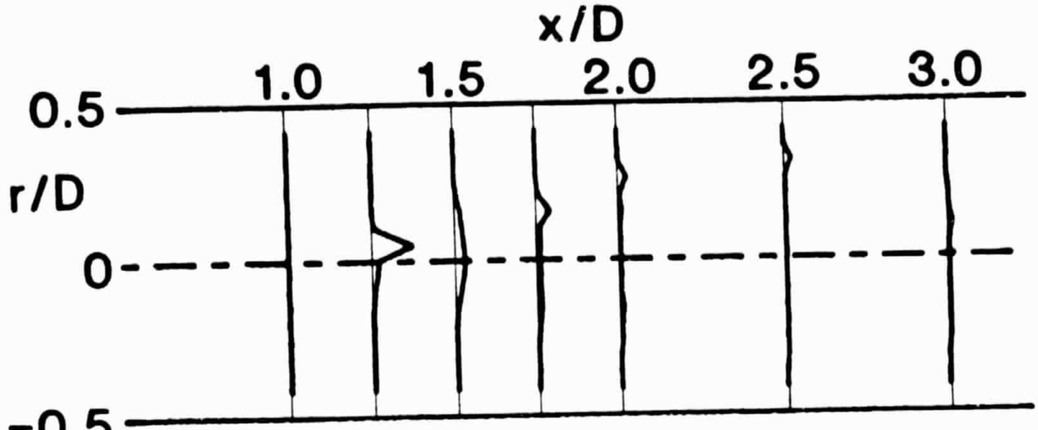


e) $v'_{rms}/u_o \times 2$

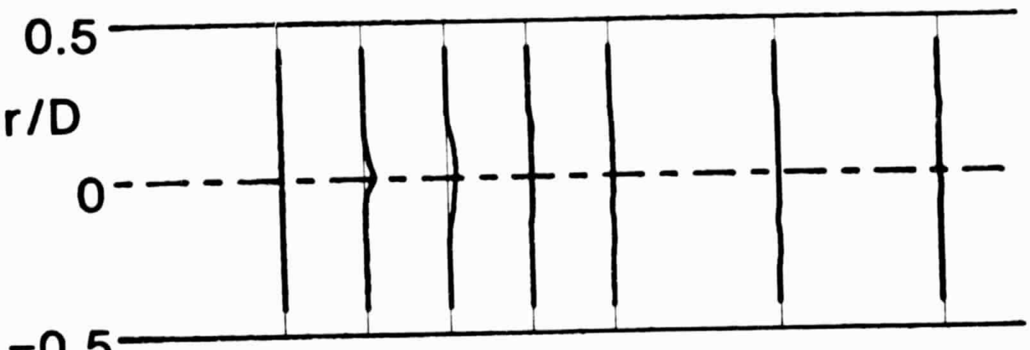


f) $w'_{rms}/u_o \times 2$

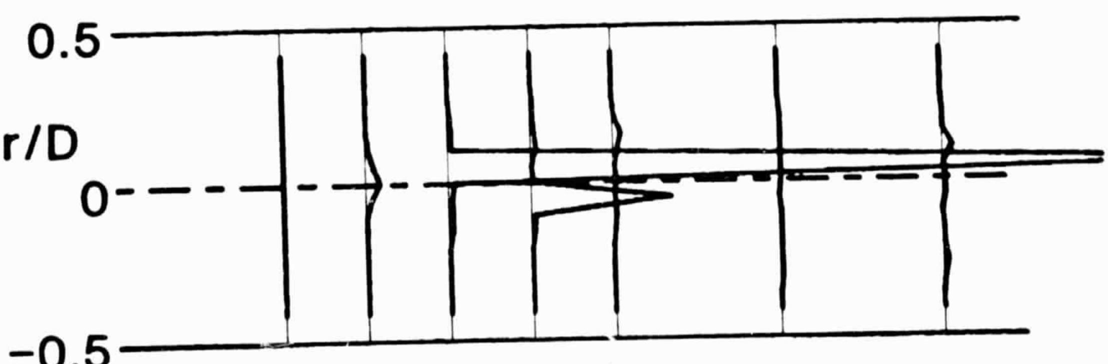
Figure 30. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

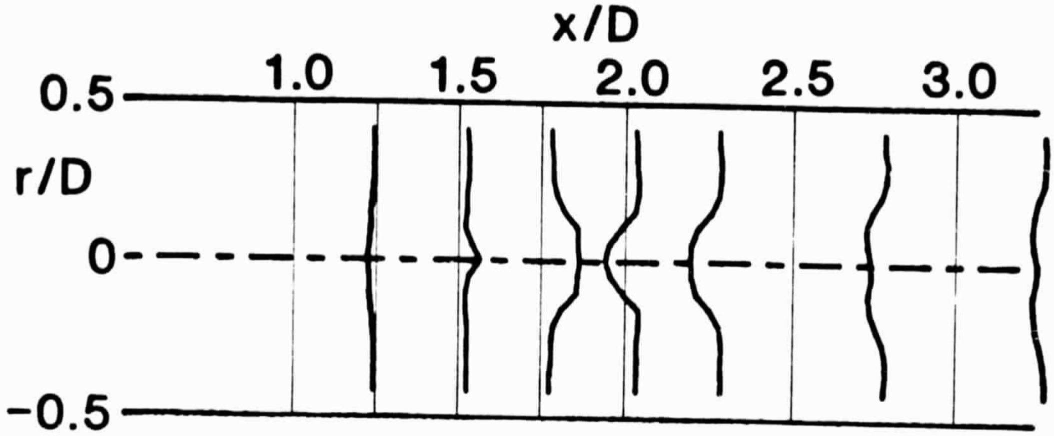


h) $\overline{u'w'}/u_o^2 \times 2$

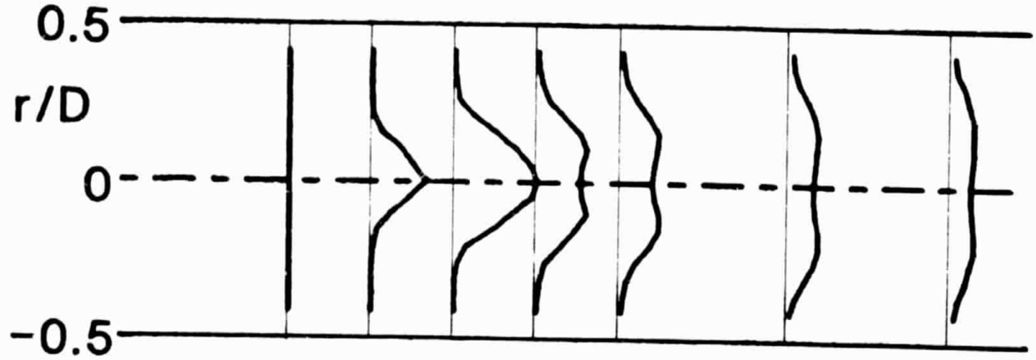


i) $\overline{v'w'}/u_o^2 \times 2$

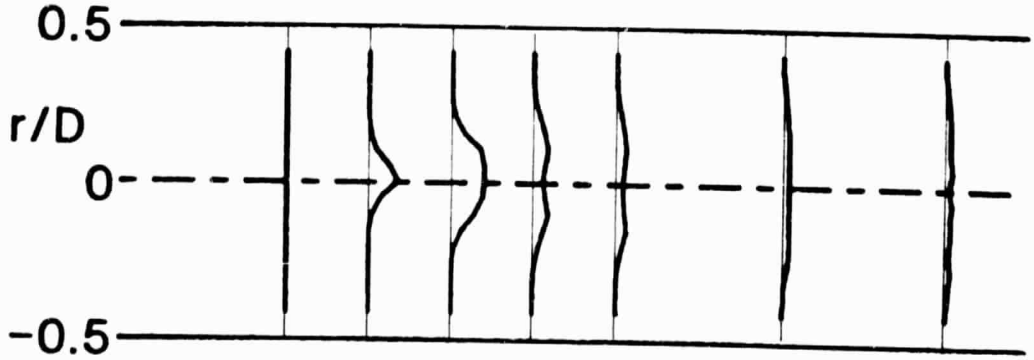
Figure 30. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

Figure 30. (Continued)

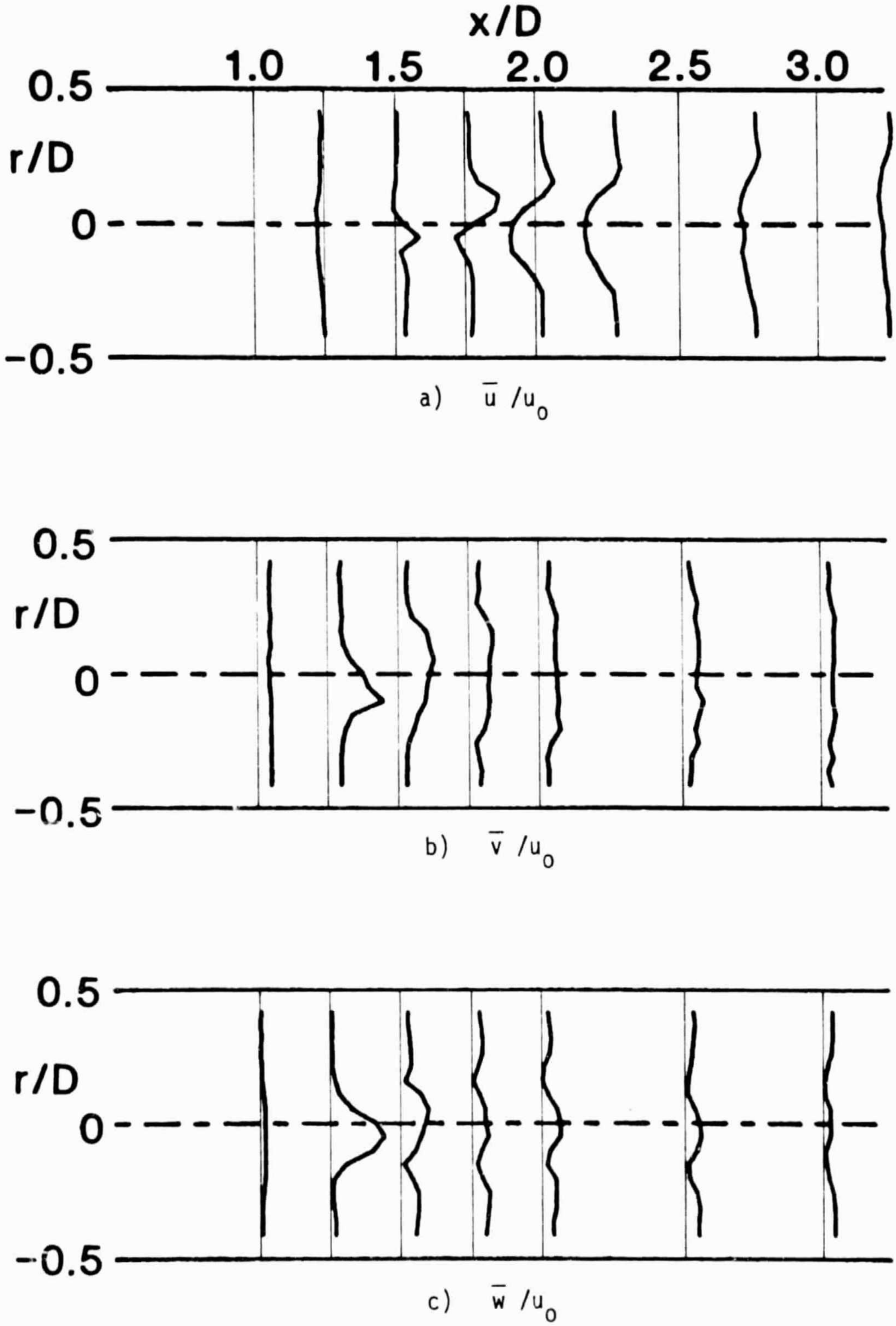
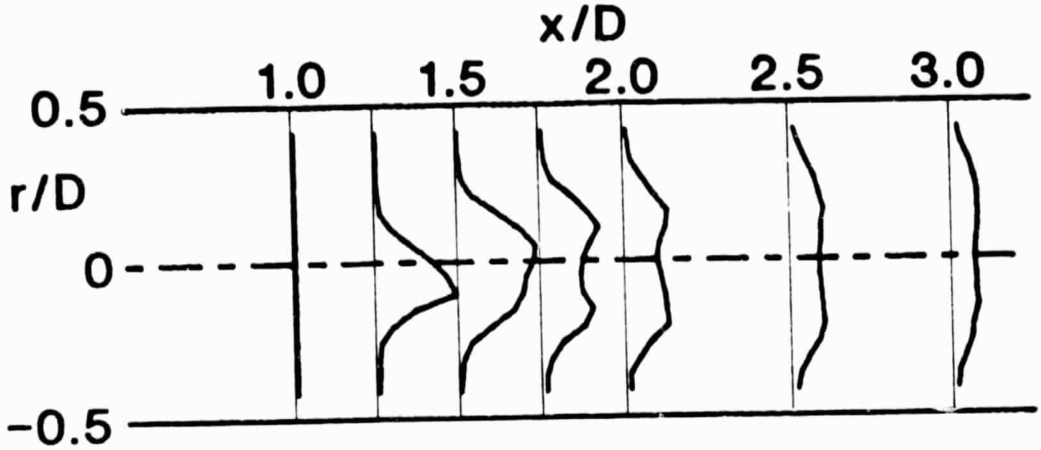
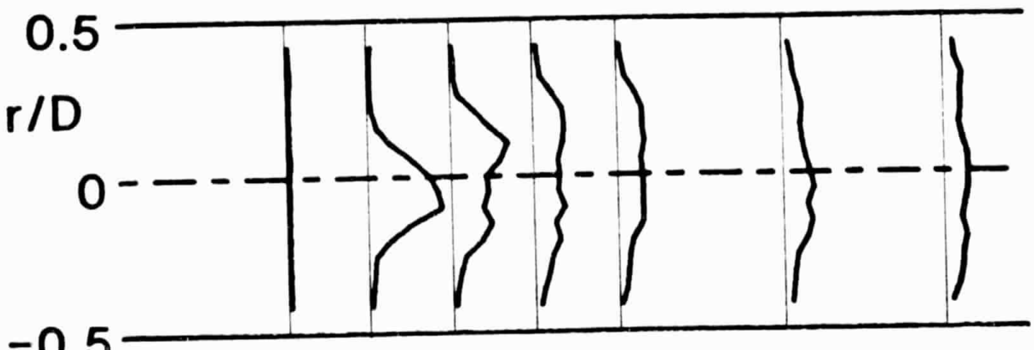


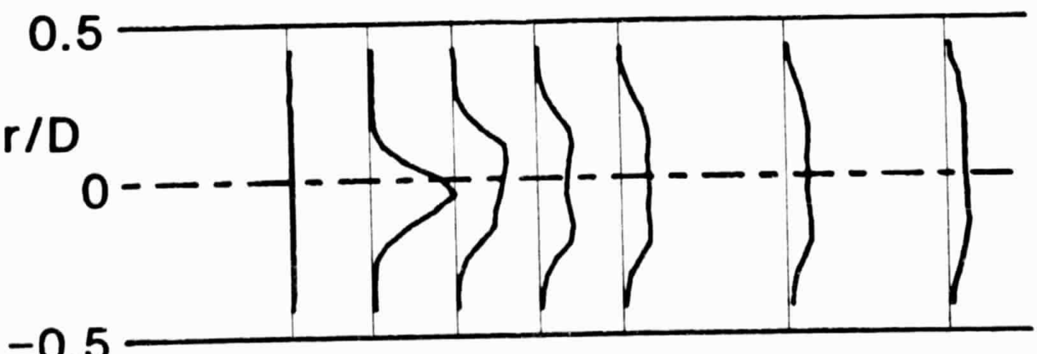
Figure 31. Time-Mean and Turbulent Flowfield, R = 4.0, Traverse Angle θ = 300 Degrees.



d) $u'_{rms}/u_o \times 2$

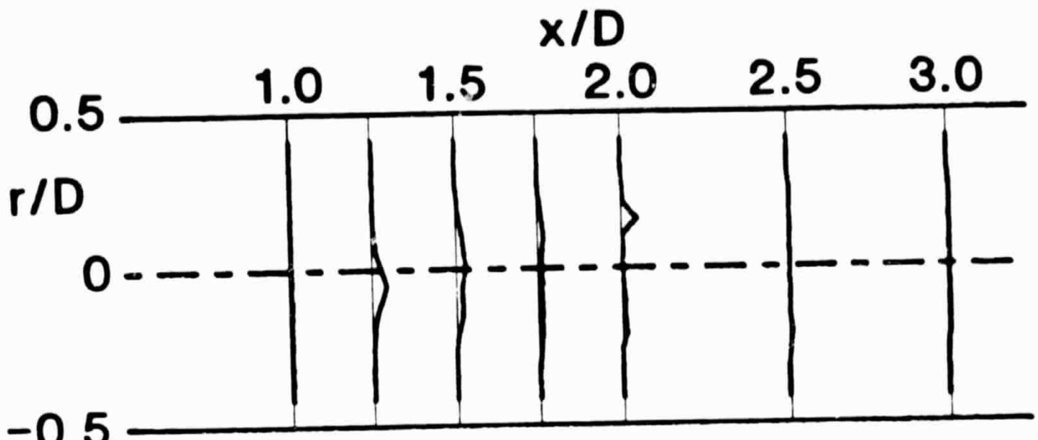


e) $v'_{rms}/u_o \times 2$

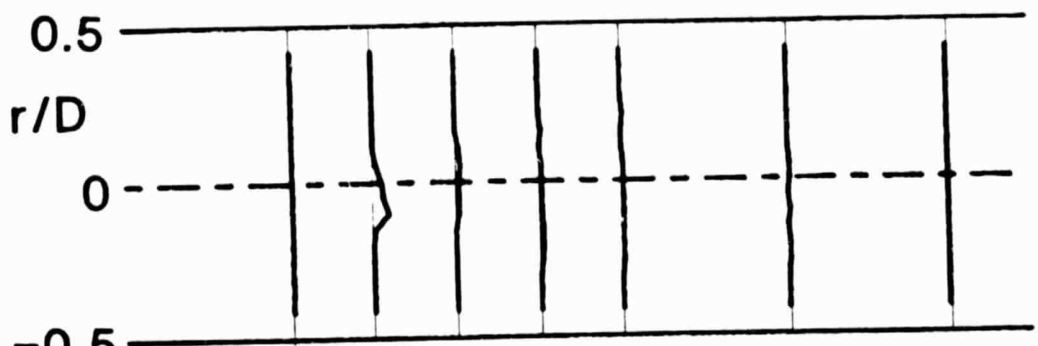


f) $w'_{rms}/u_o \times 2$

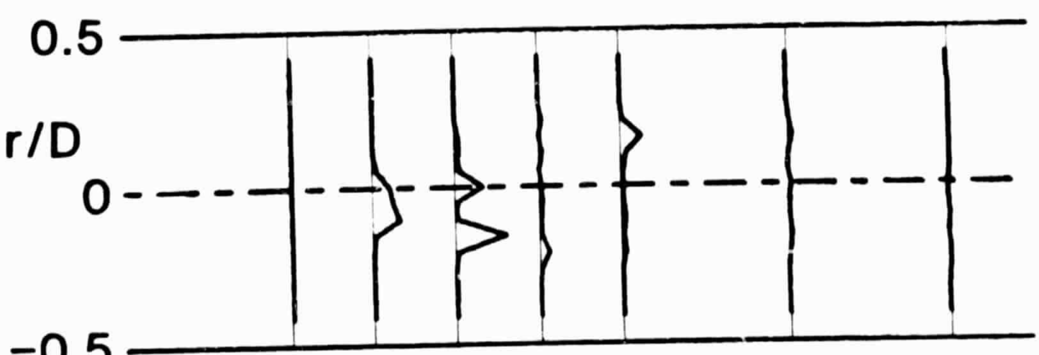
Figure 31. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

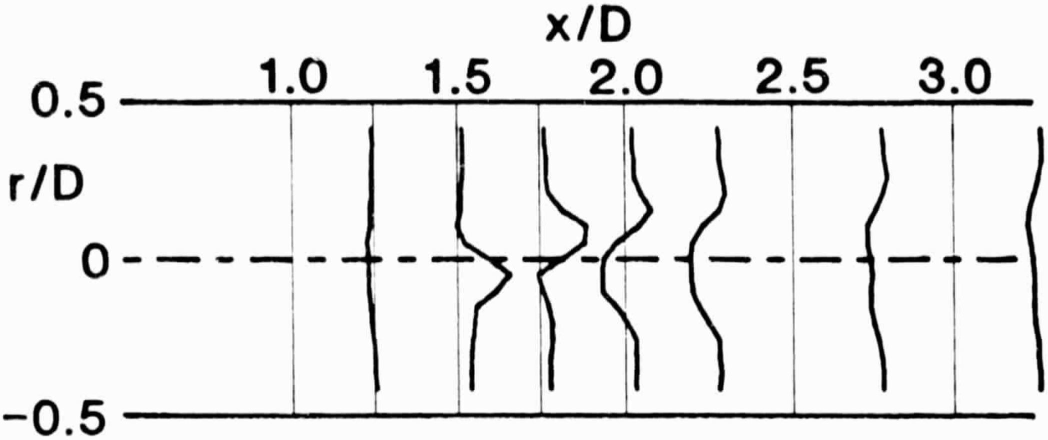


h) $\overline{u'w'}/u_o^2 \times 2$

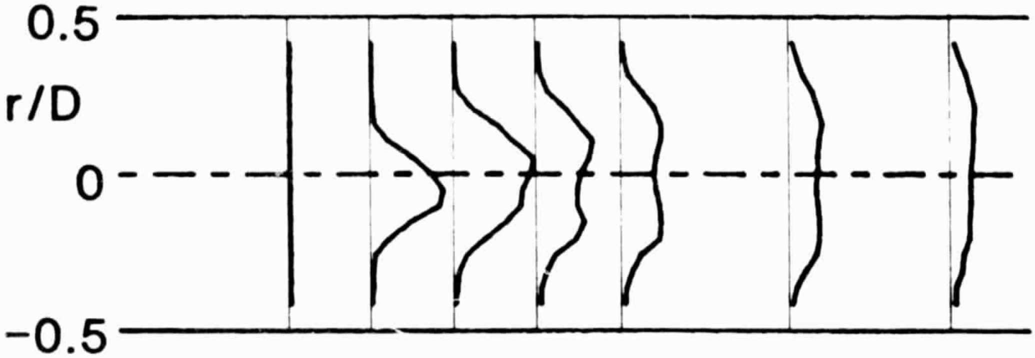


i) $\overline{v'w'}/u_o^2 \times 2$

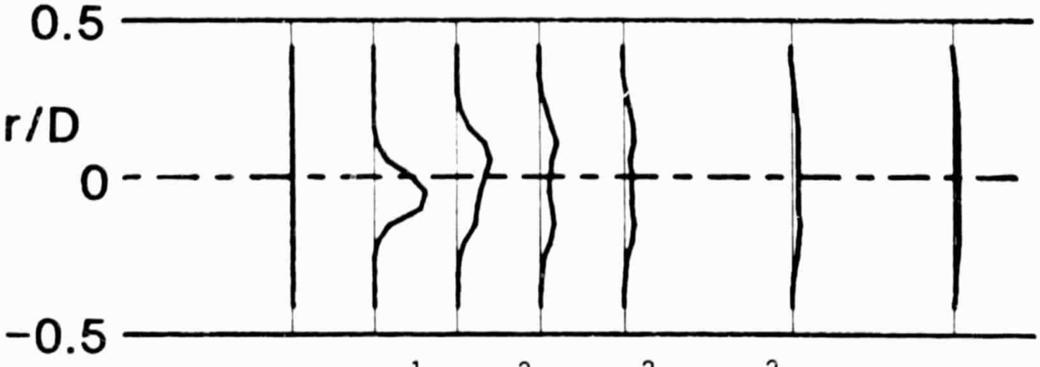
Figure 31. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}(u'^{\,2}_{rms} + v'^{\,2}_{rms} + w'^{\,2}_{rms}) \times 2$

Figure 31. (Continued)

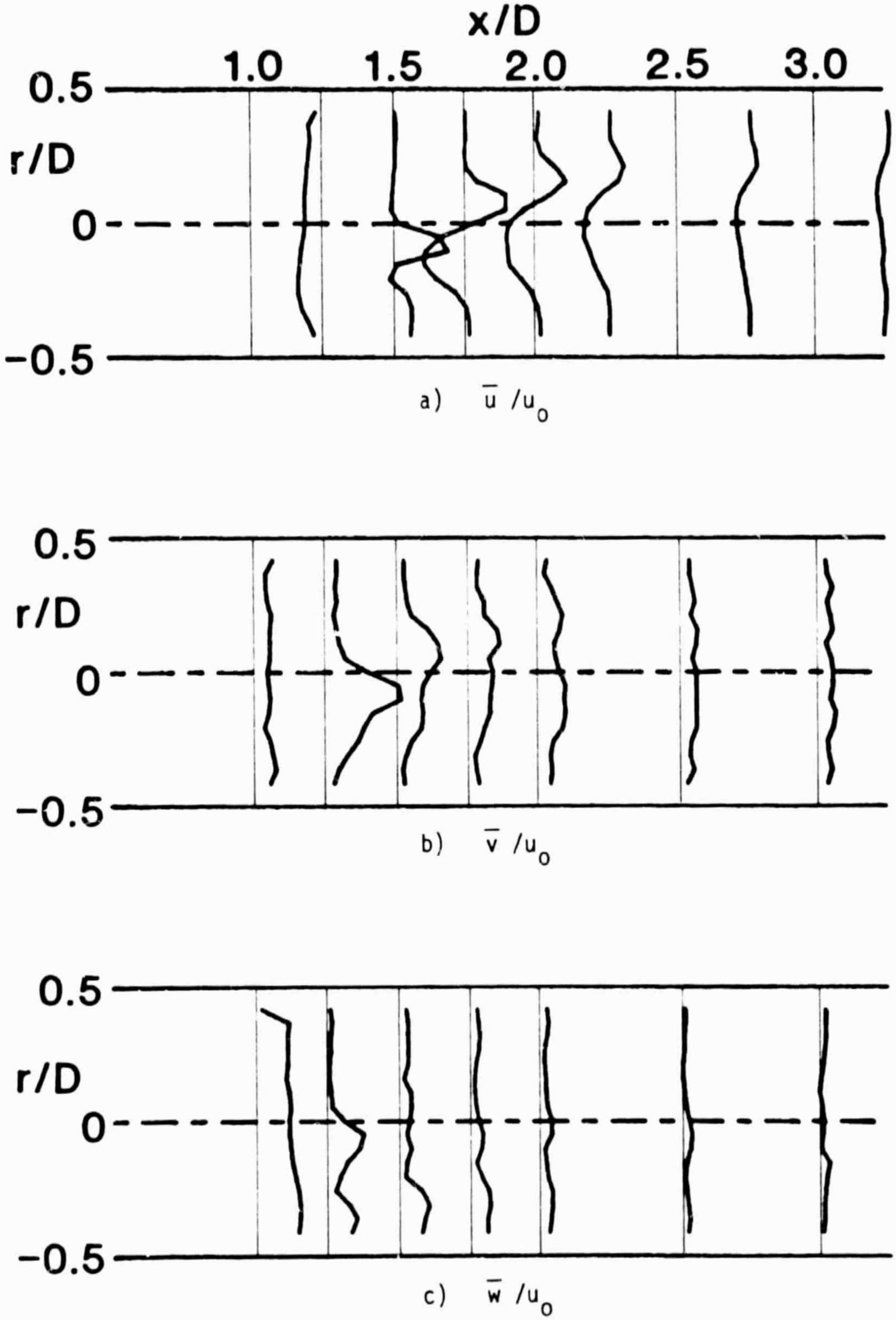
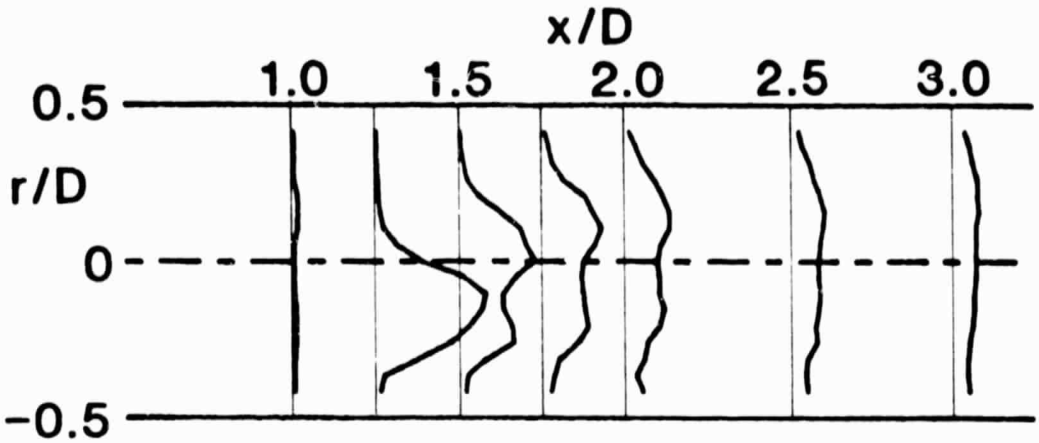
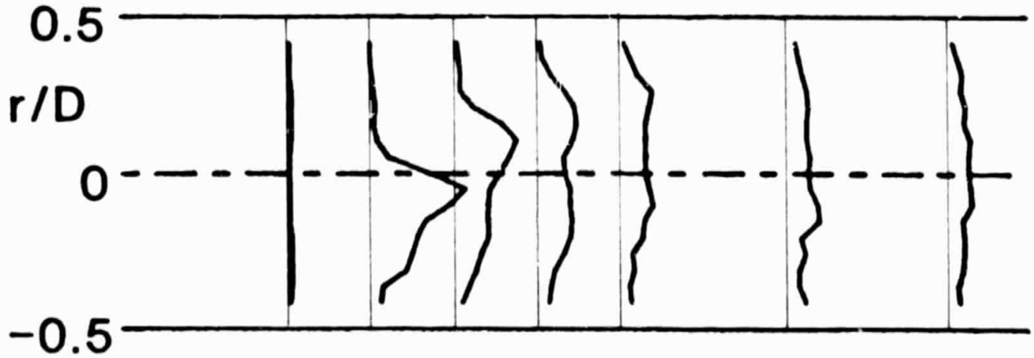


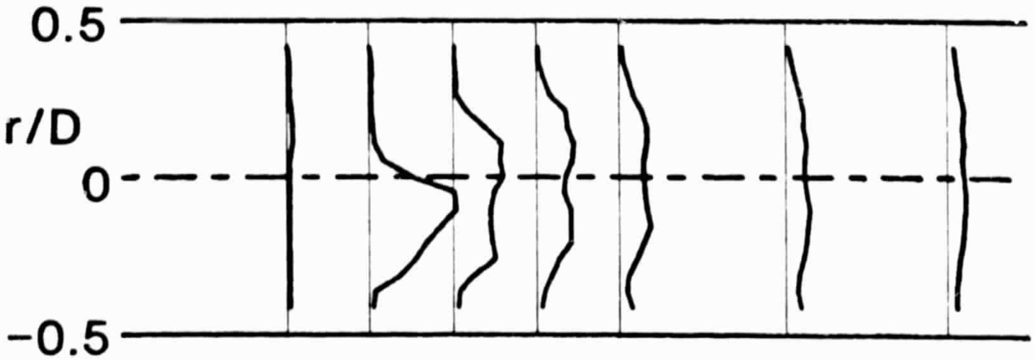
Figure 32. Time-Mean and Turbulent Flowfield, R = 4.0, Traverse Angle θ = 330 Degrees.



d) $u'_{rms}/u_o \times 2$

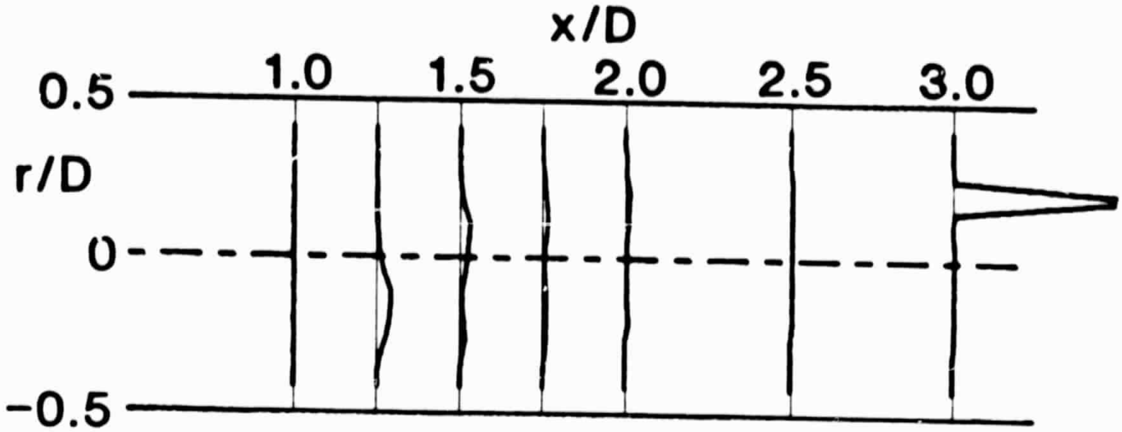


e) $v'_{rms}/u_o \times 2$

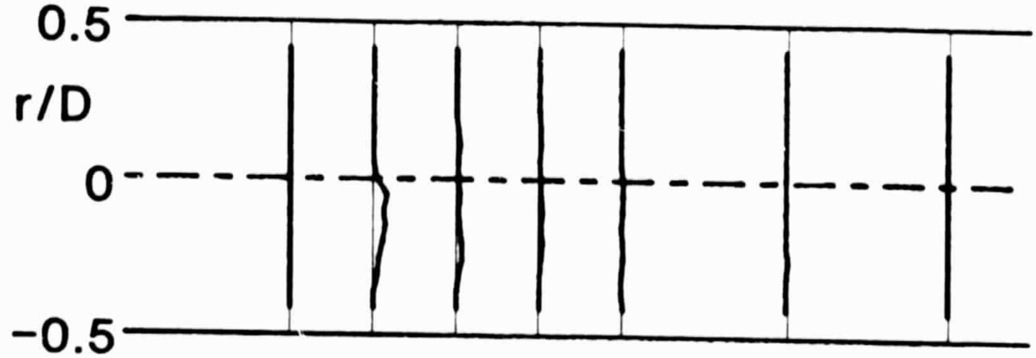


f) $w'_{rms}/u_o \times 2$

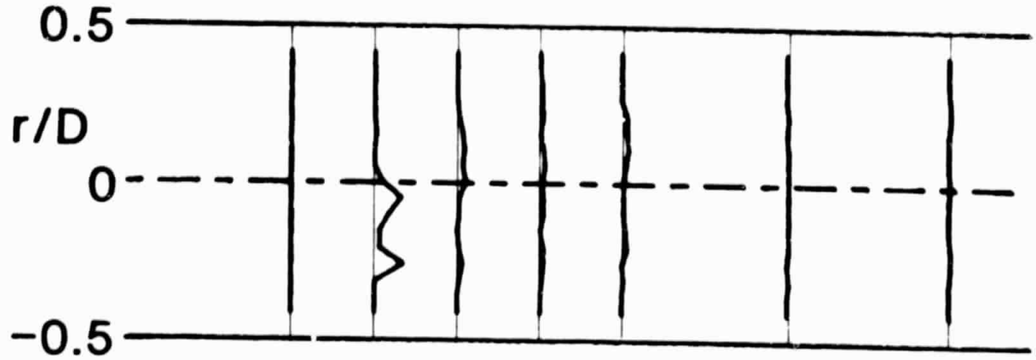
Figure 32. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

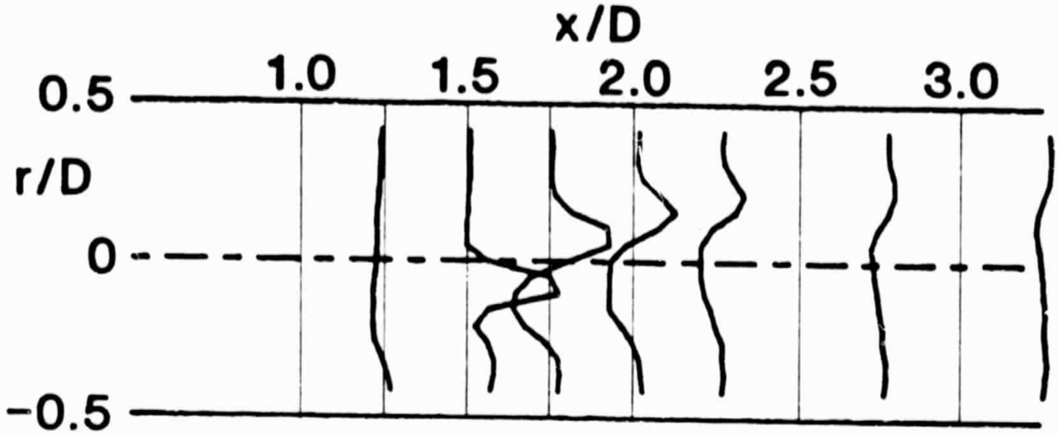


h) $\overline{u'w'}/u_o^2 \times 2$

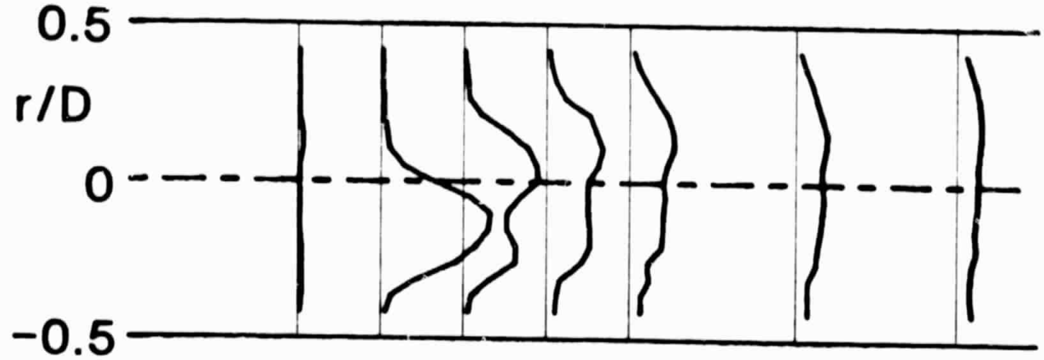


i) $\overline{v'w'}/u_o^2 \times 2$

Figure 32. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$

l) $\frac{1}{2}\,({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

Figure 32. (Continued)

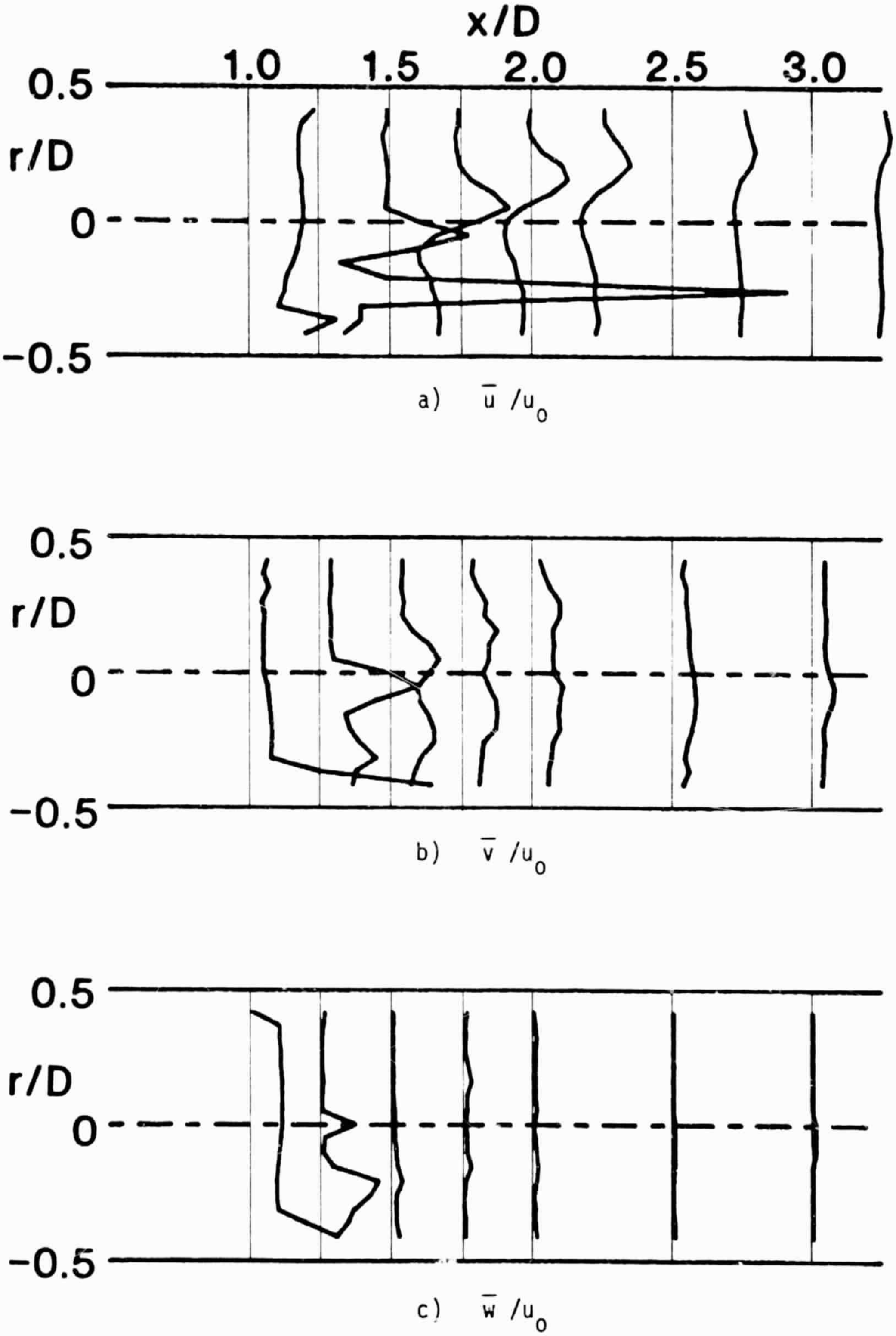
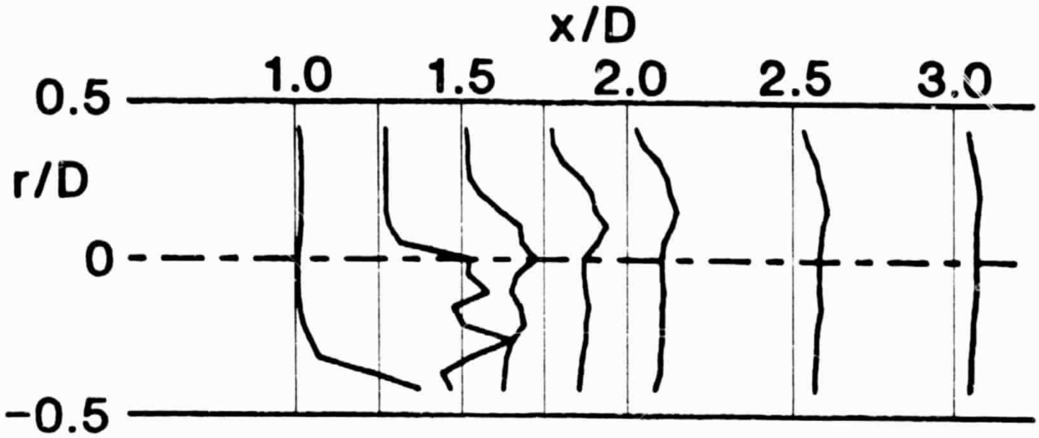
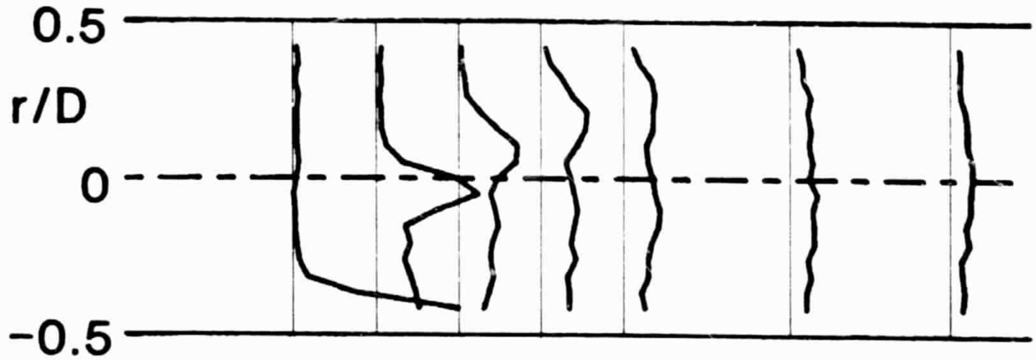


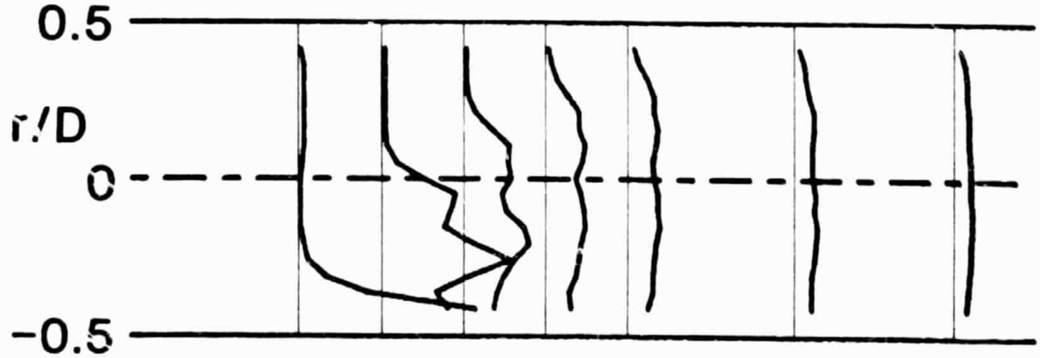
Figure 33. Time-Mean and Turbulent Flowfield, R = 4.0, Traverse Angle θ = 0 Degrees.



d) $u'_{rms}/u_o \times 2$

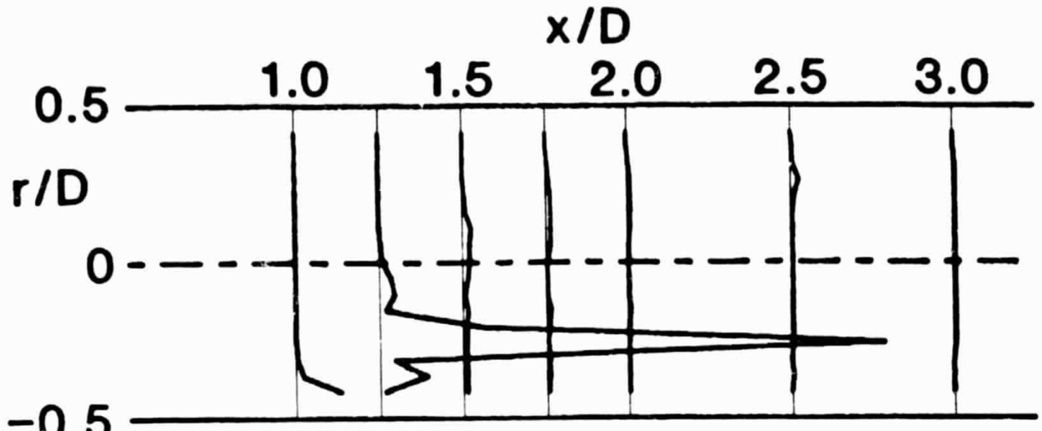


e) $v'_{rms}/u_o \times 2$

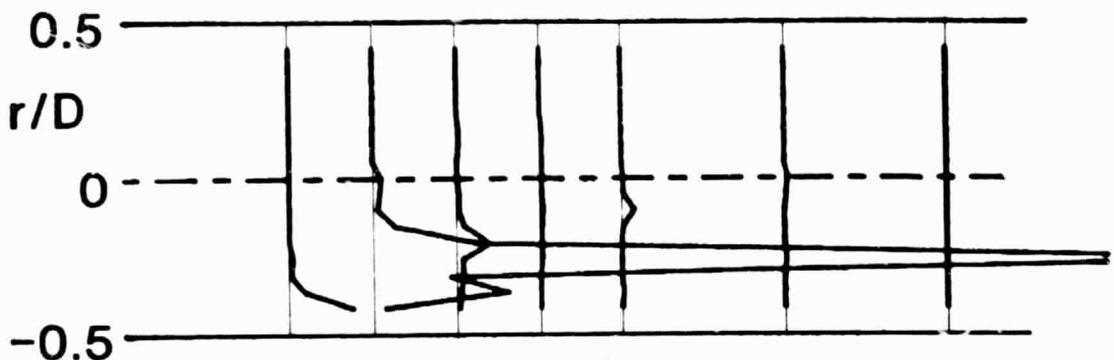


f) $w'_{rms}/u_o \times 2$

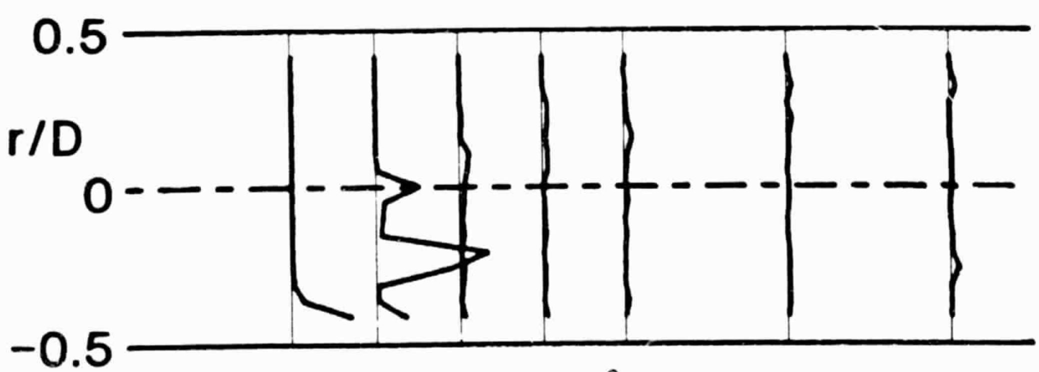
Figure 33. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

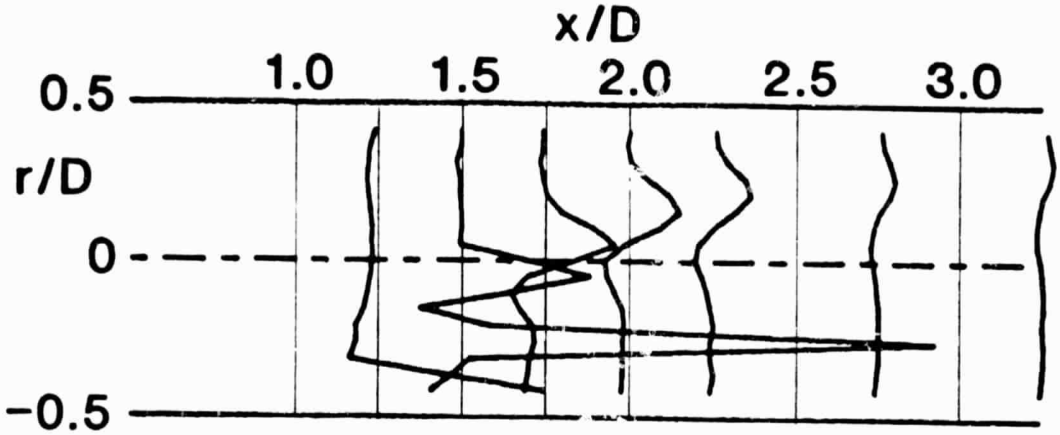


h) $\overline{u'w'}/u_o^2 \times 2$

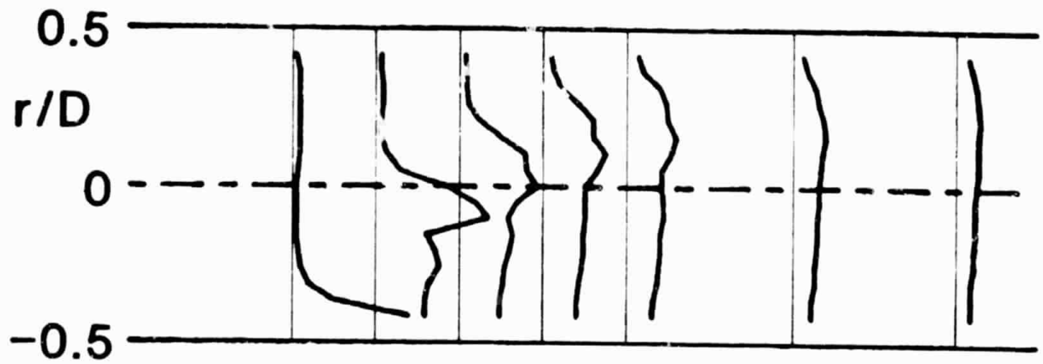


i) $\overline{v'w'}/u_o^2 \times 2$

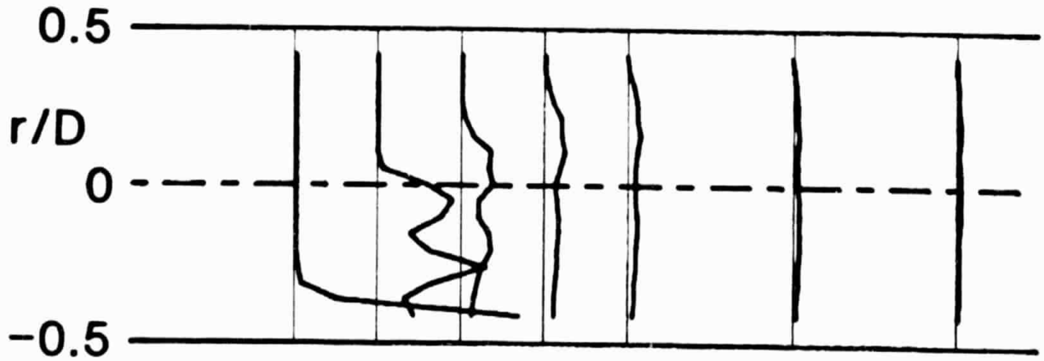
Figure 33. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}(u'^2_{rms} + v'^2_{rms} + w'^2_{rms}) \times 2$

Figure 33. (Continued)

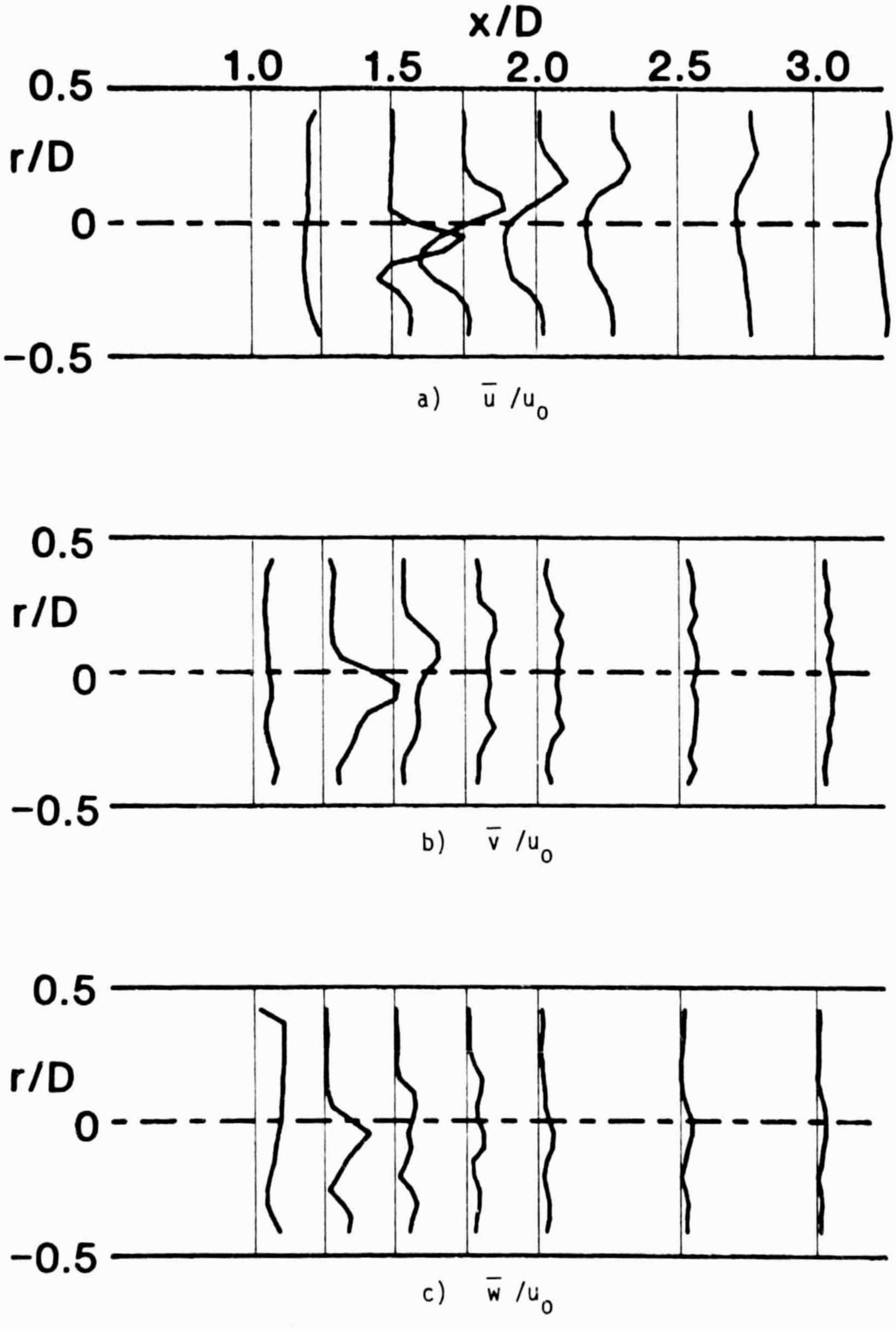
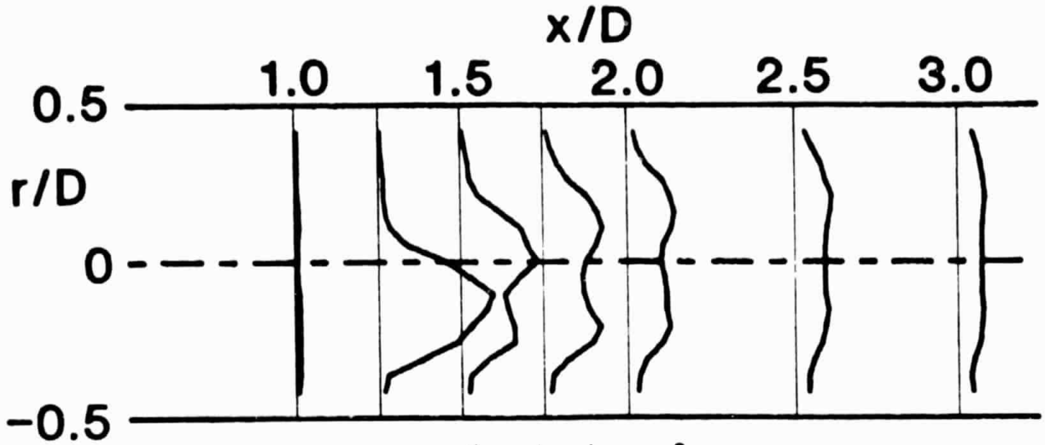
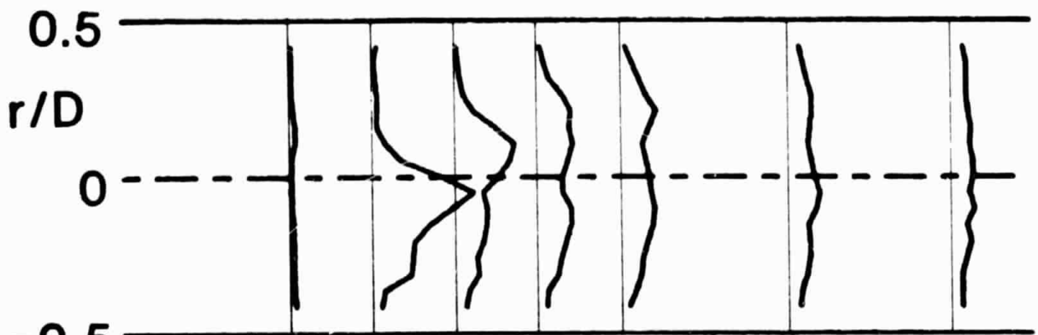


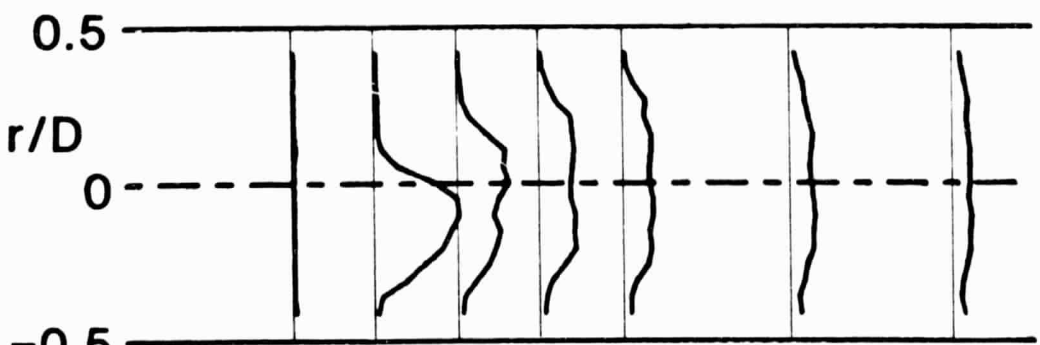
Figure 34. Time-Mean and Turbulent Flowfield, R = 4.0, Traverse Angle θ = 30 Degrees.



d) $u'_{rms}/u_o \times 2$

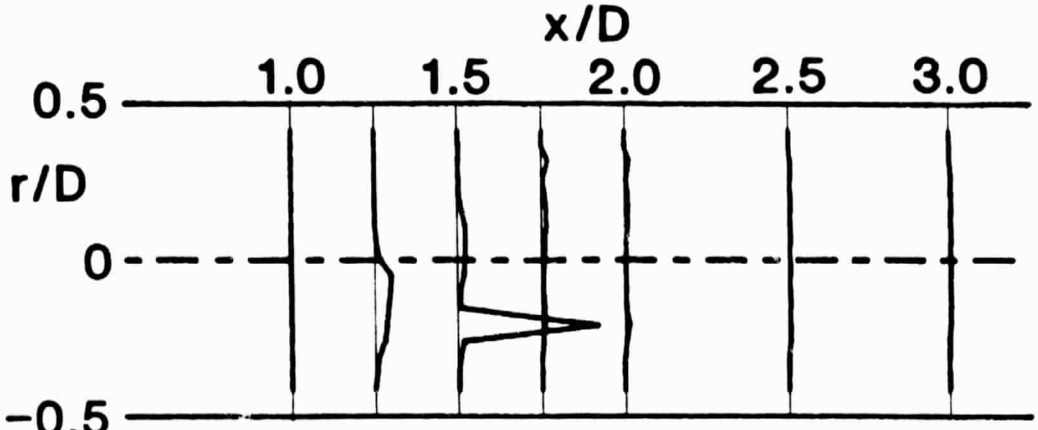


e) $v'_{rms}/u_o \times 2$

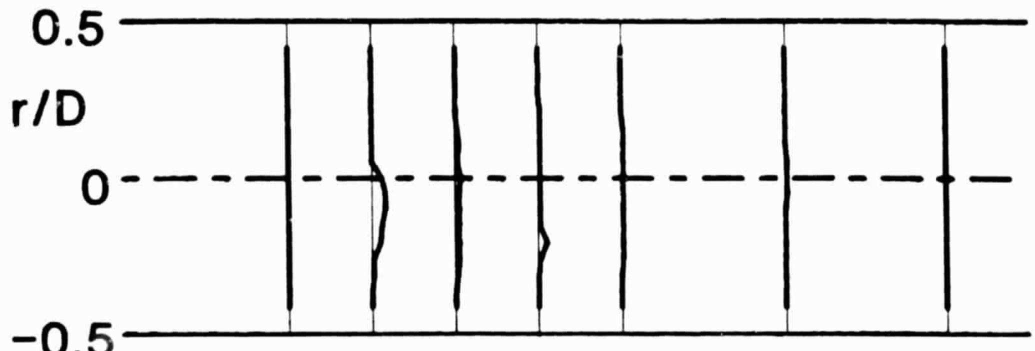


f) $w'_{rms}/u_o \times 2$

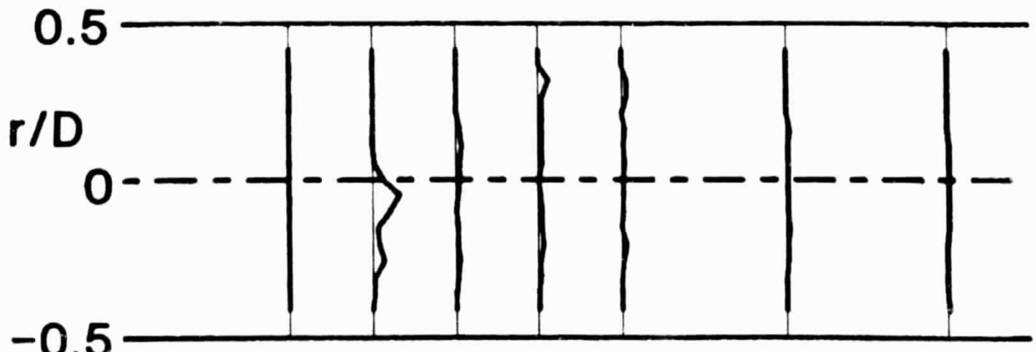
Figure 34. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

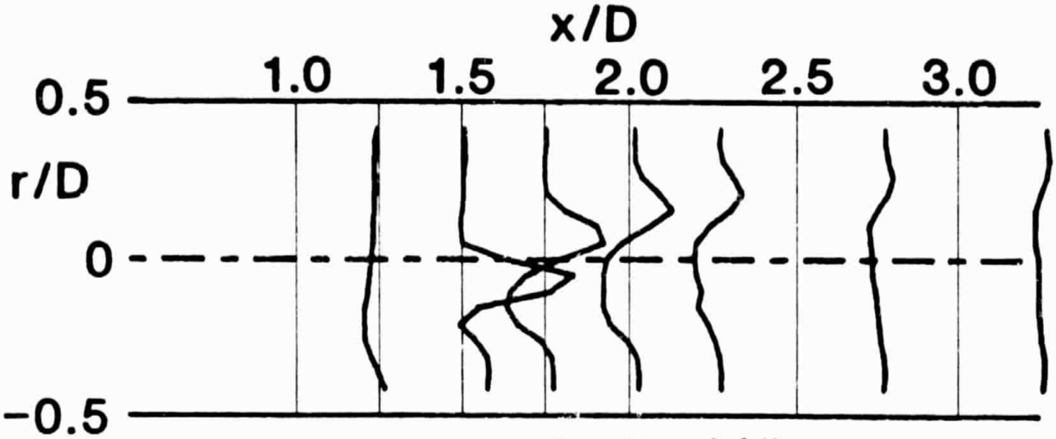


h) $\overline{u'w'}/u_o^2 \times 2$

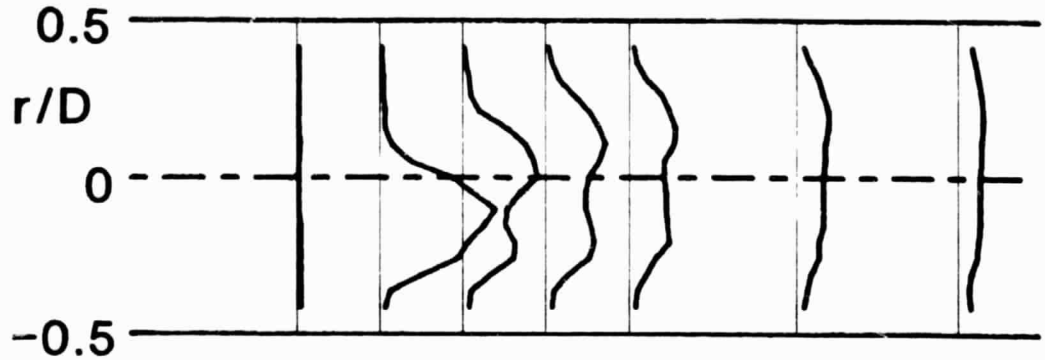


i) $\overline{v'w'}/u_o^2 \times 2$

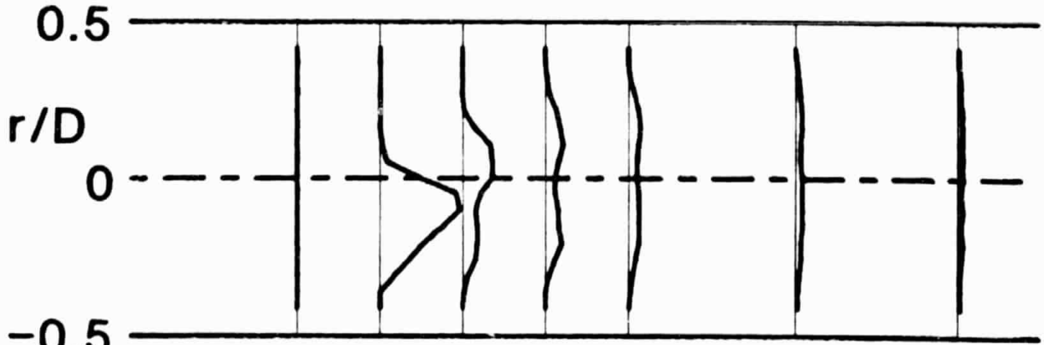
Figure 34. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}\,({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

Figure 34. (Continued)

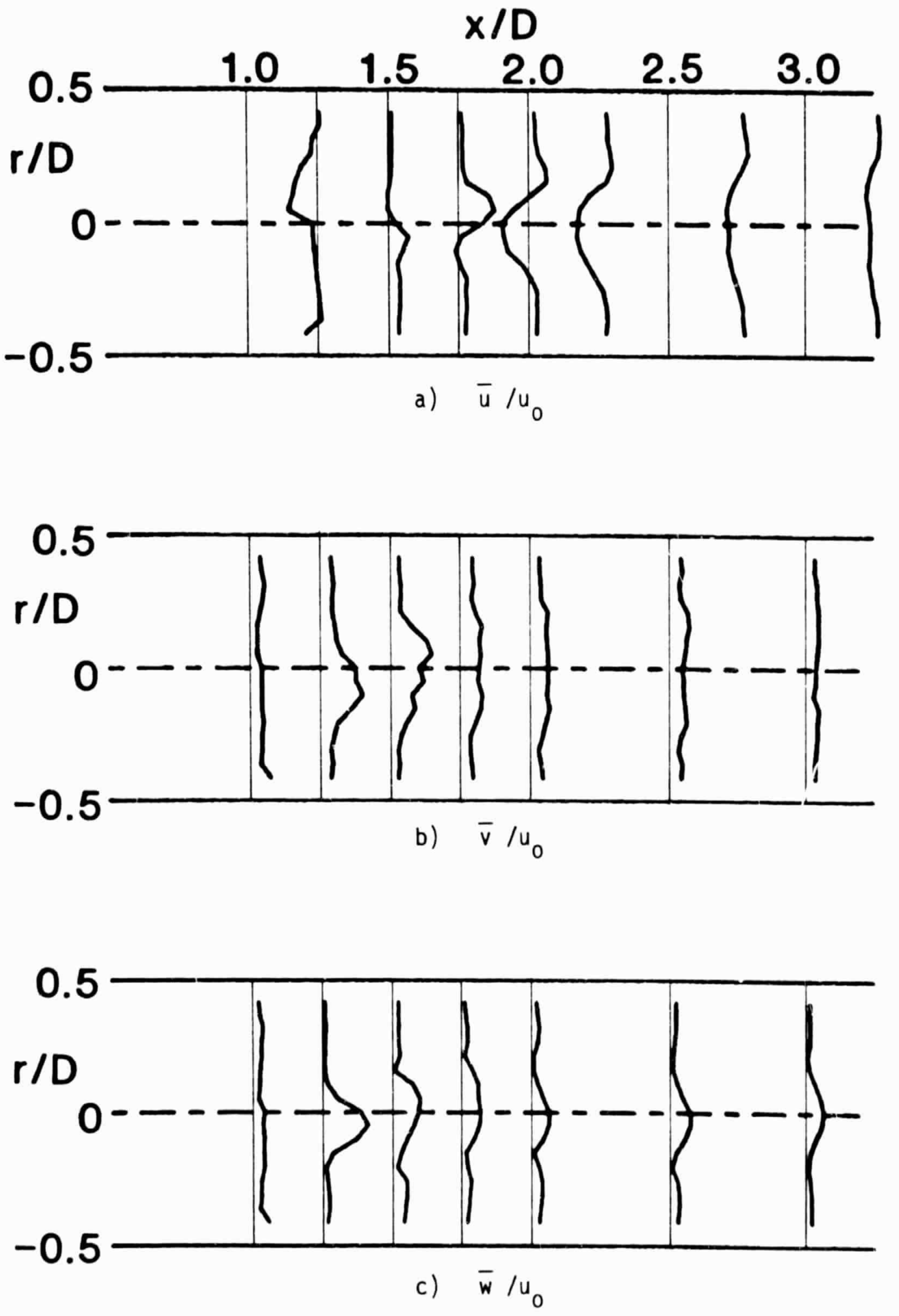
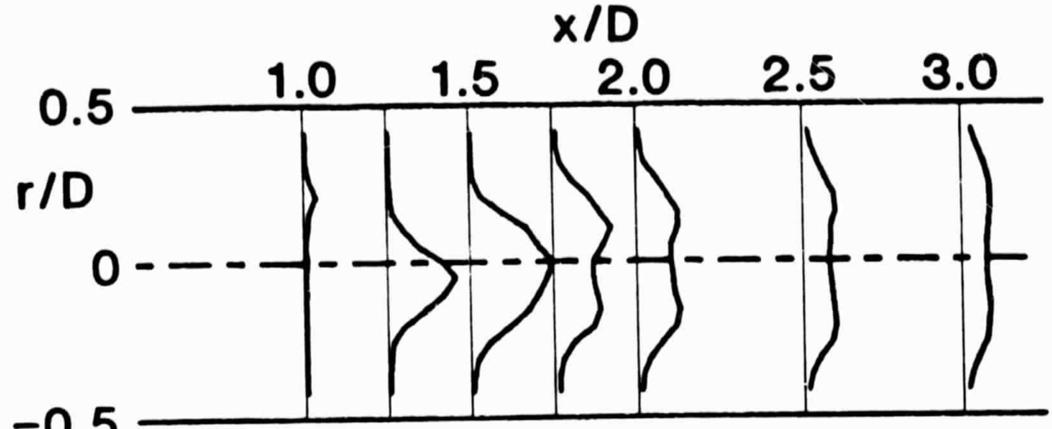
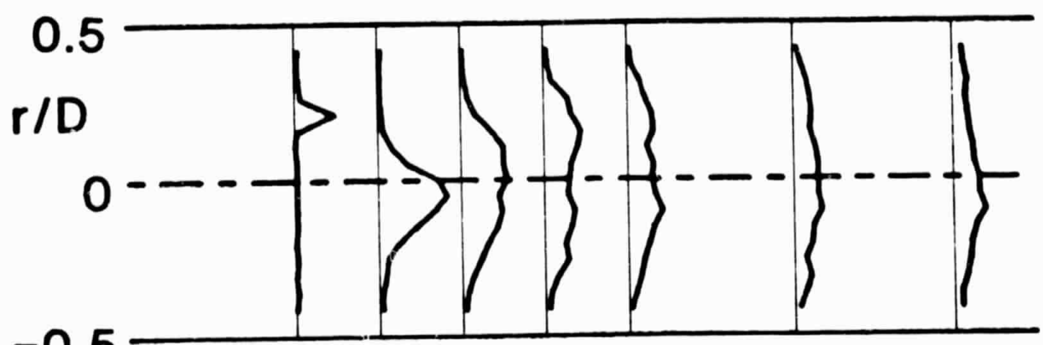


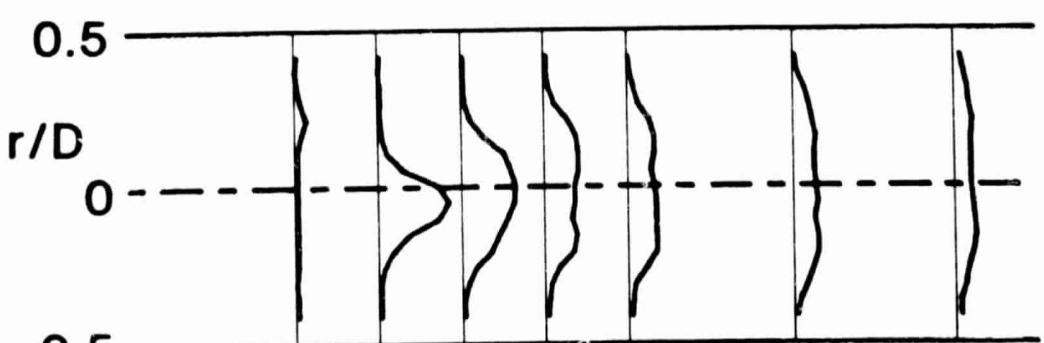
Figure 35. Time-Mean and Turbulent Flowfield, R = 4.0, Traverse Angle θ = 60 Degrees.



d) $u'_{rms}/u_o \times 2$

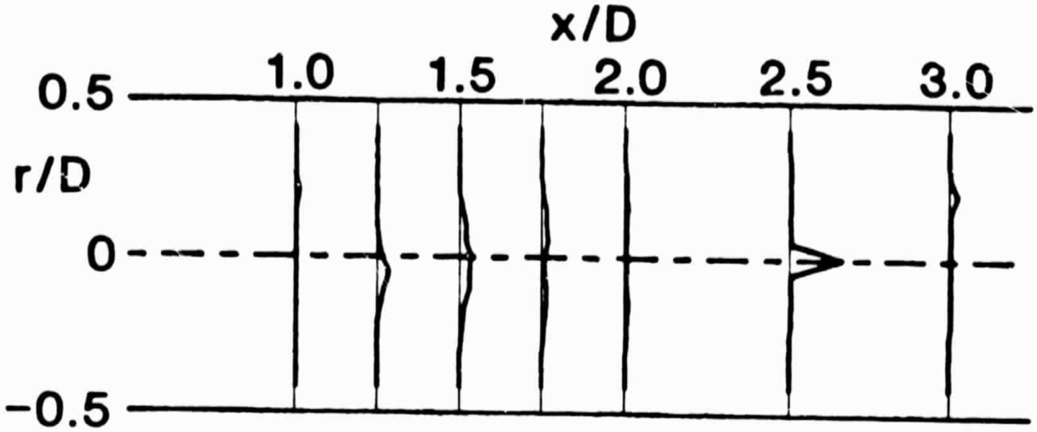


e) $v'_{rms}/u_o \times 2$

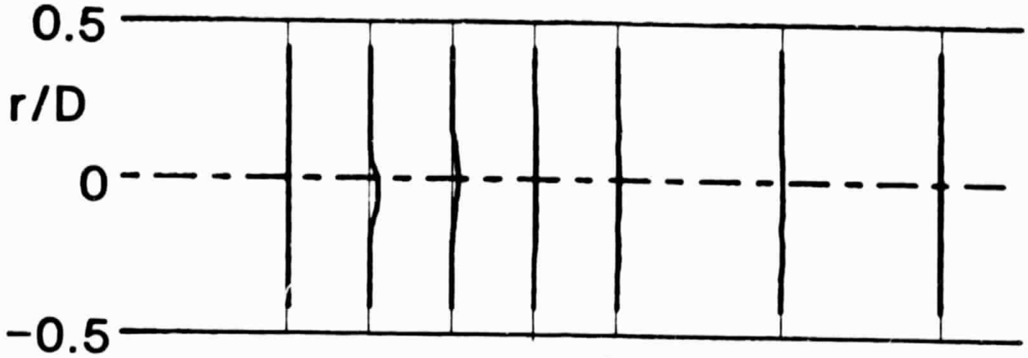


f) $w'_{rms}/u_o \times 2$

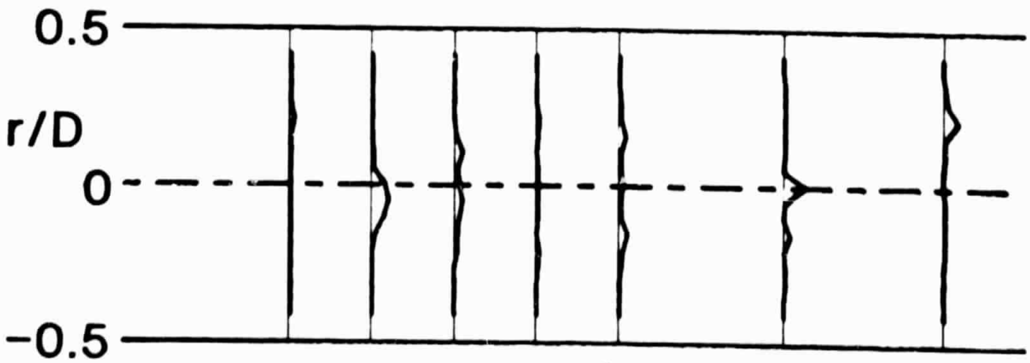
Figure 35. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

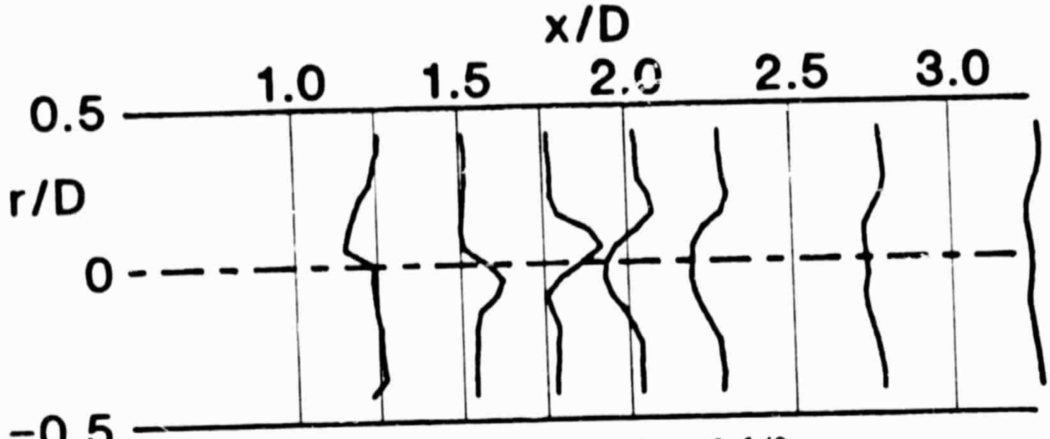


h) $\overline{u'w'}/u_o^2 \times 2$

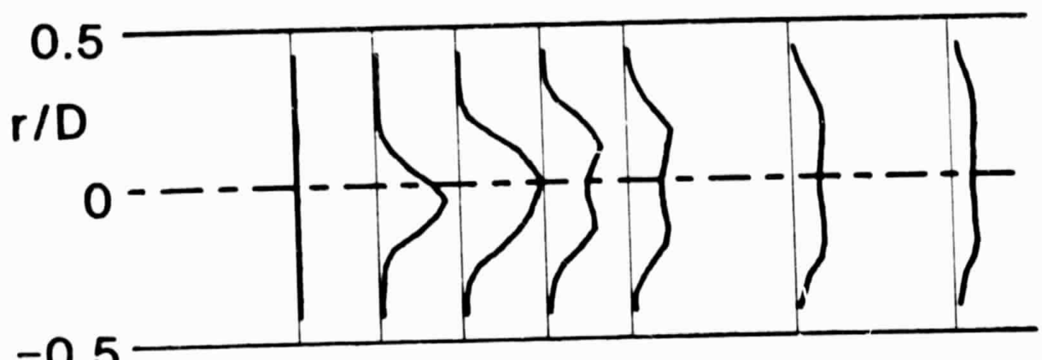


i) $\overline{v'w'}/u_o^2 \times 2$

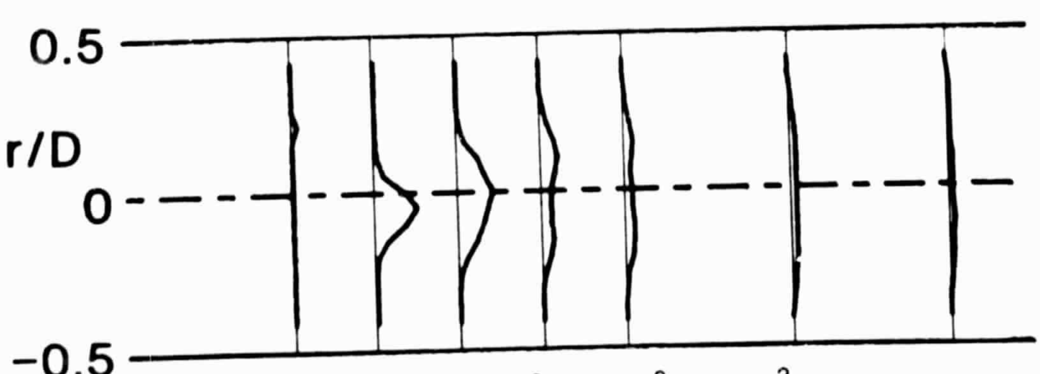
Figure 35. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

Figure 35. (Continued)

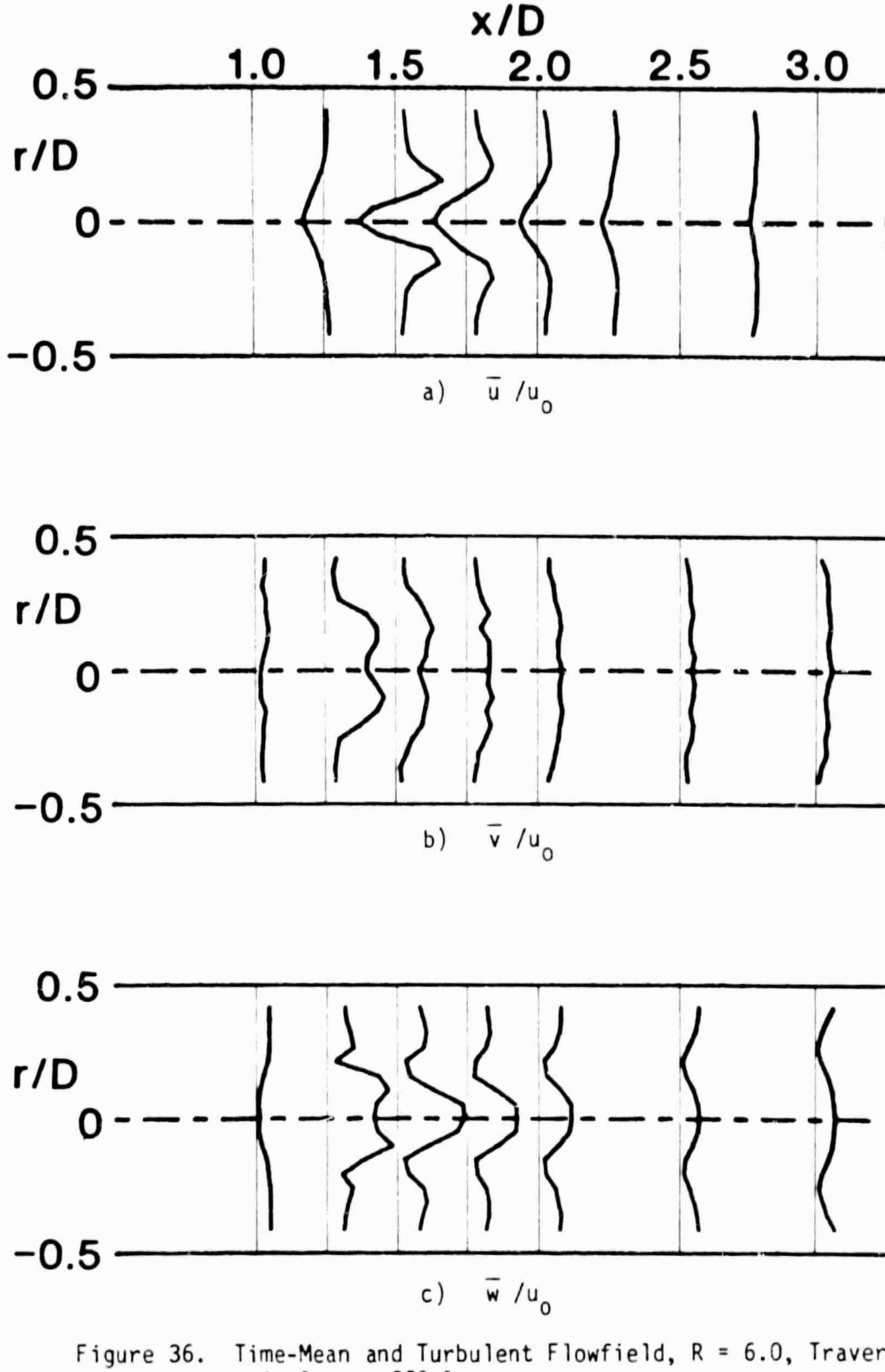
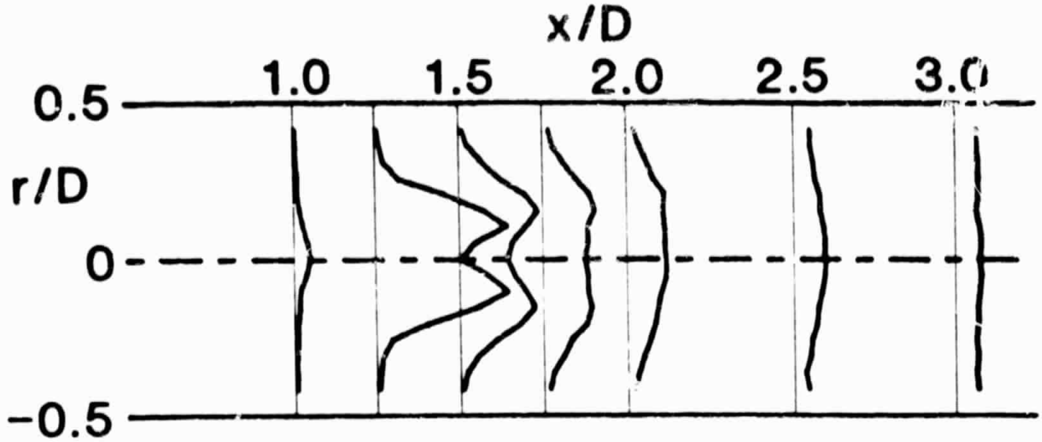
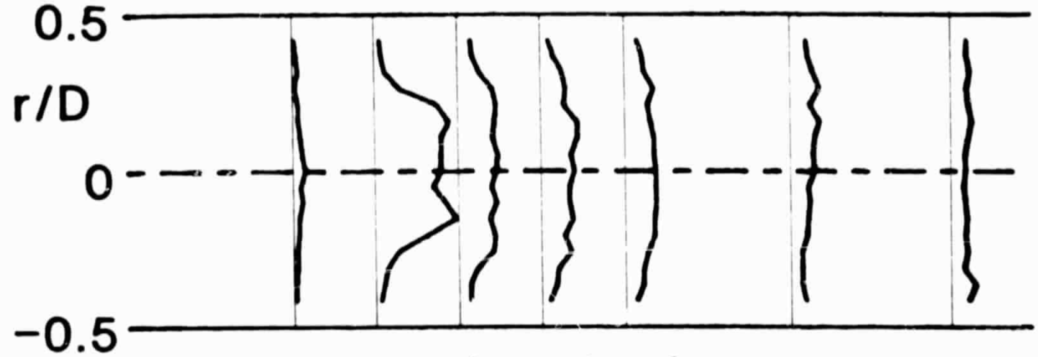


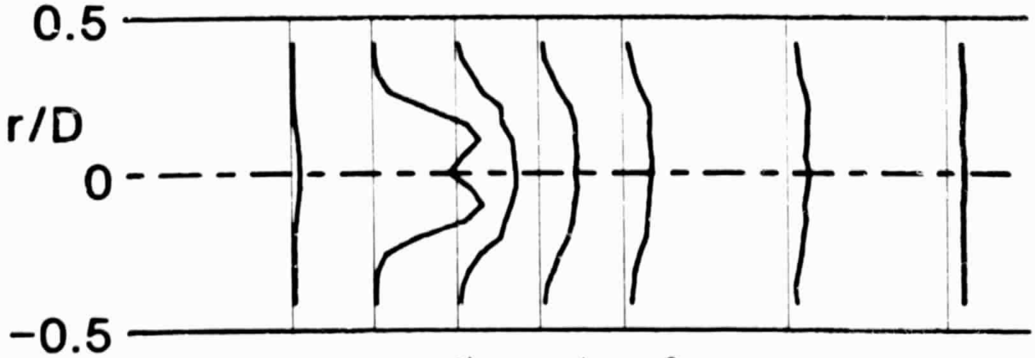
Figure 36. Time-Mean and Turbulent Flowfield, R = 6.0, Traverse Angle θ = 270 Degrees.



d) $u'_{rms}/u_o \times 2$

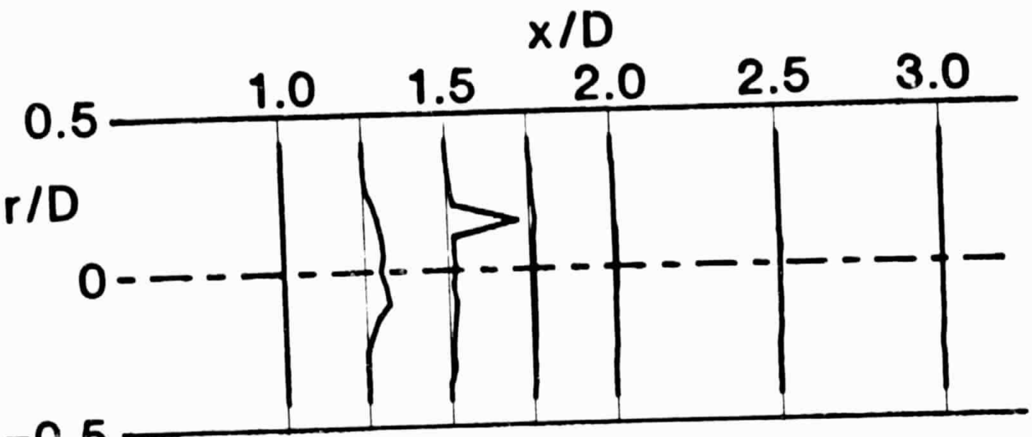


e) $v'_{rms}/u_o \times 2$

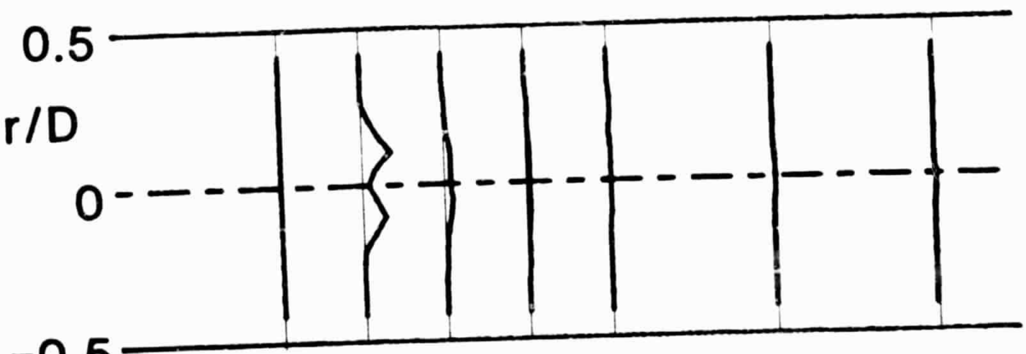


f) $w'_{rms}/u_o \times 2$

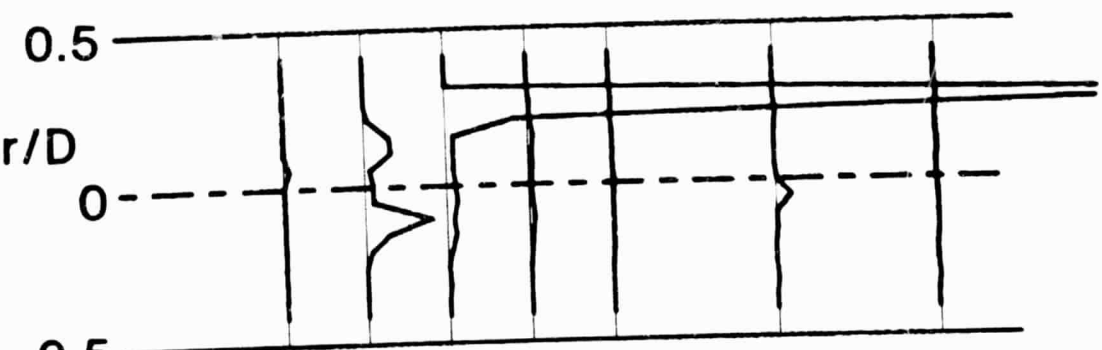
Figure 36. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

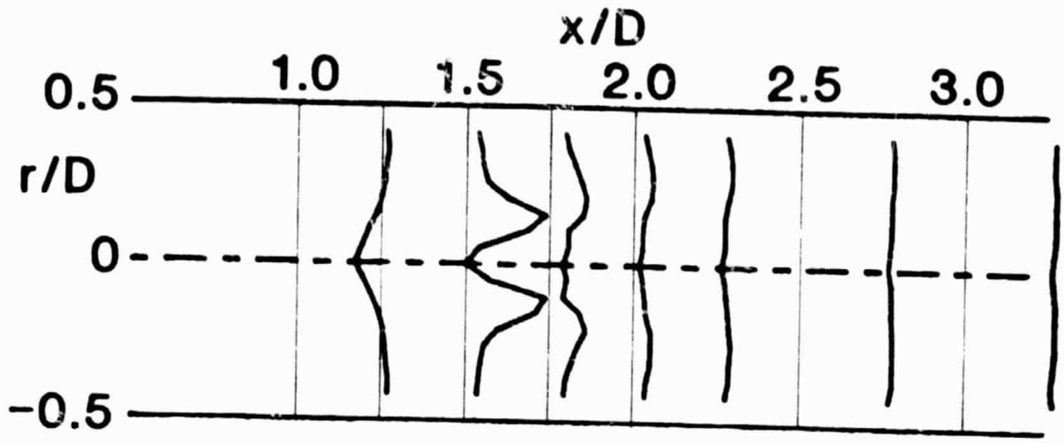


h) $\overline{u'w'}/u_o^2 \times 2$

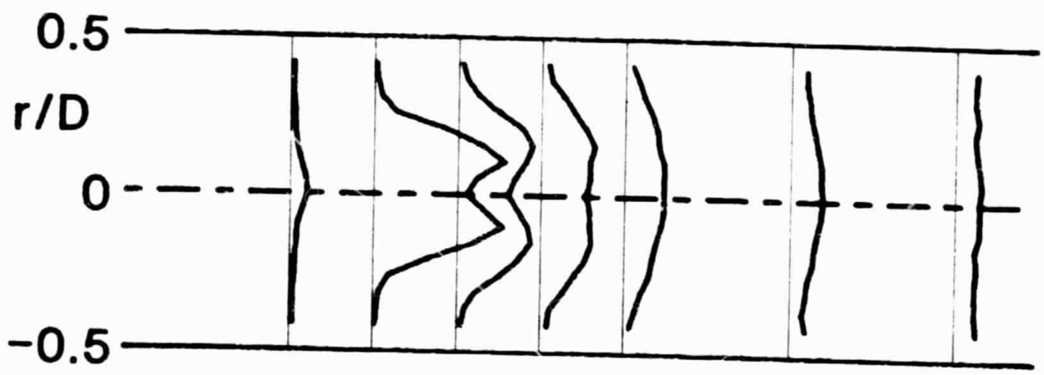


i) $\overline{v'w'}/u_o^2 \times 2$

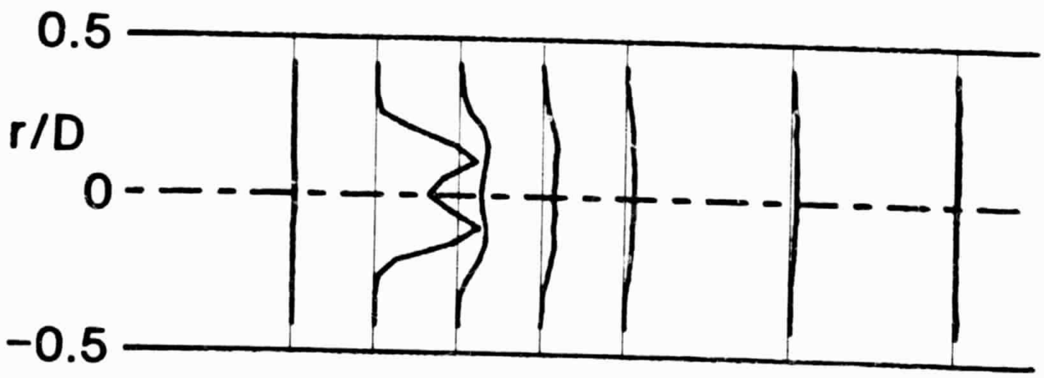
Figure 36. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

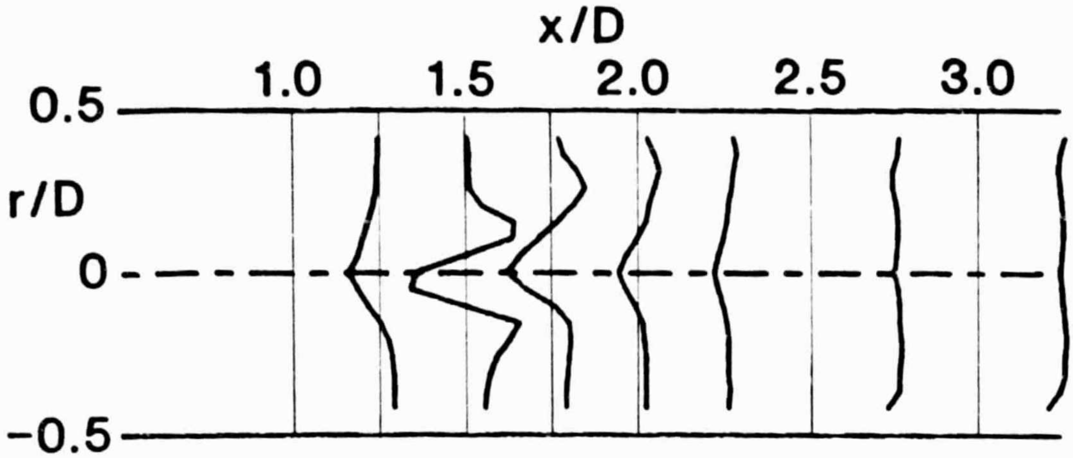


k) $u'_{rms}/\overline{u} \times 2$

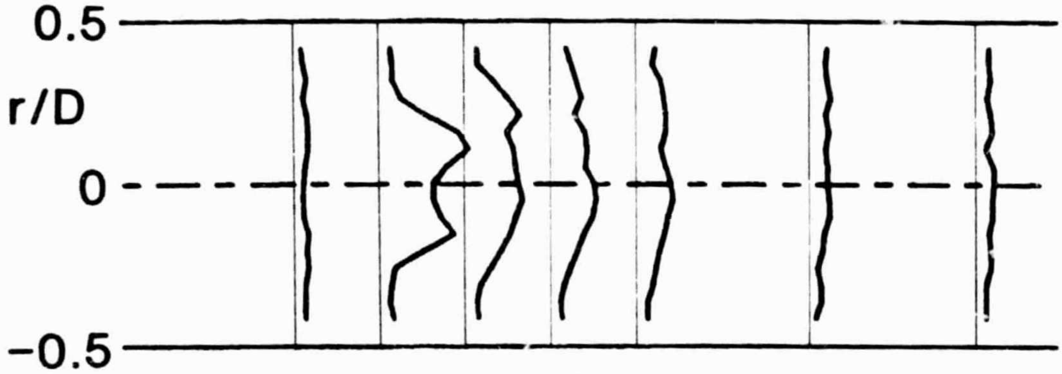


l) $\frac{1}{2}\,({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

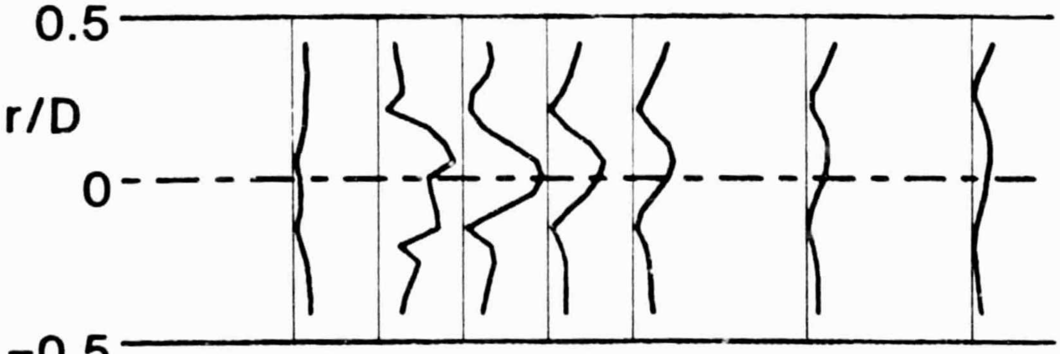
Figure 36. (Continued)



a) $\bar{u}/u_o$

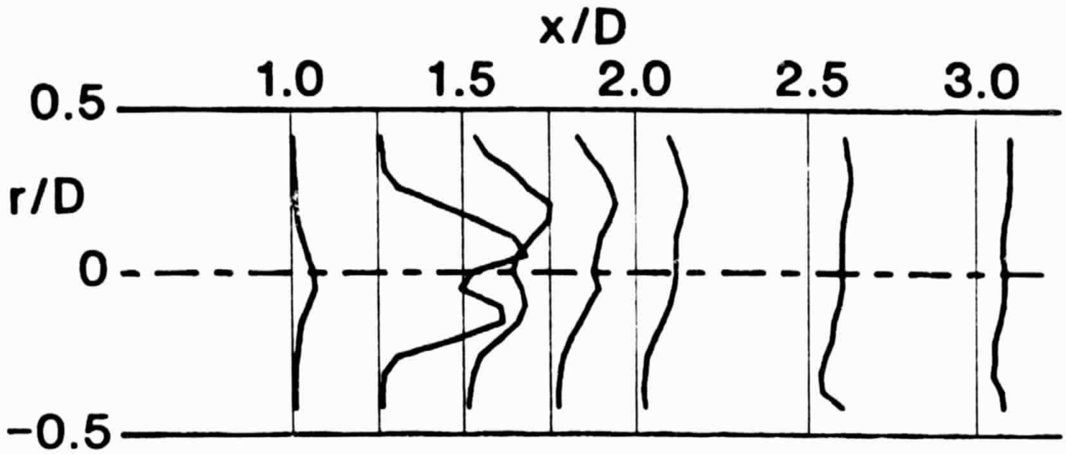


b) $\bar{v}/u_o$

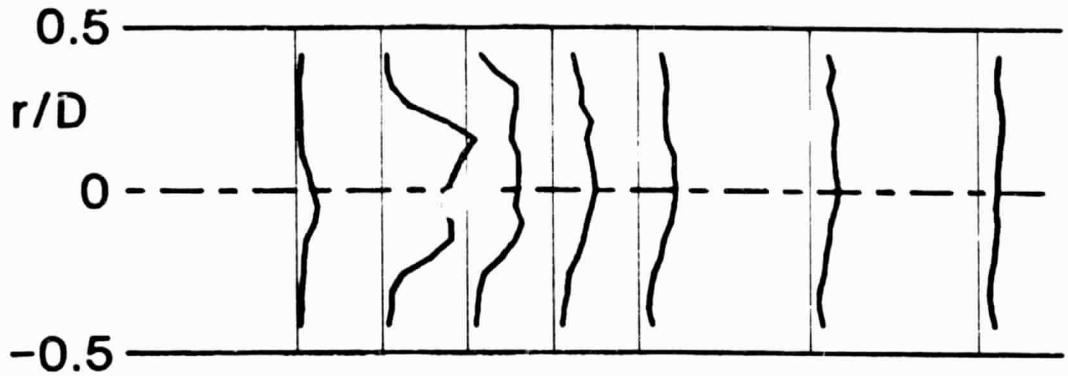


c) $\bar{w}/u_o$

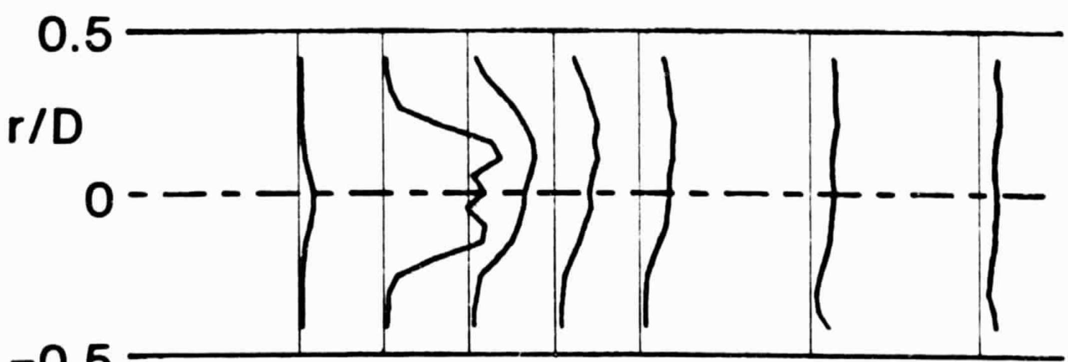
Figure 37. Time-Mean and Turbulent Flowfield, R = 6.0, Traverse Angle θ = 300 Degrees.



d) $u'_{rms}/u_o \times 2$

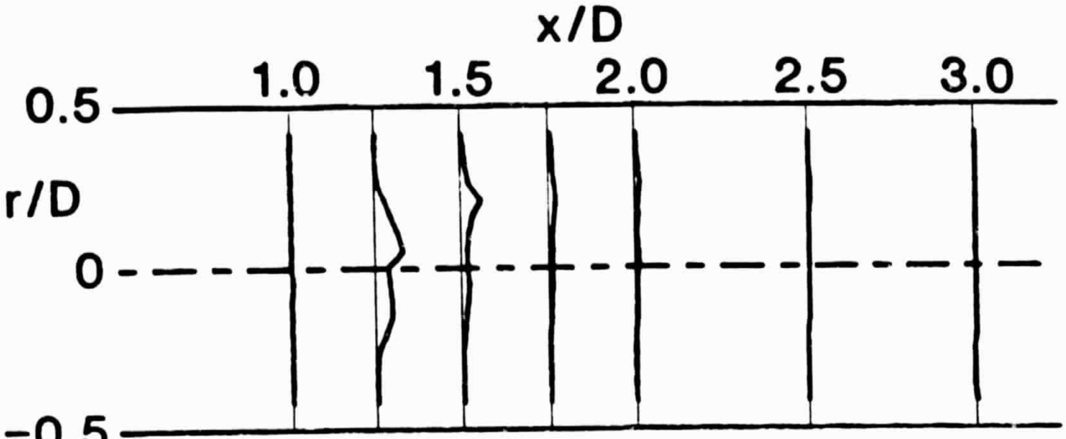


e) $v'_{rms}/u_o \times 2$

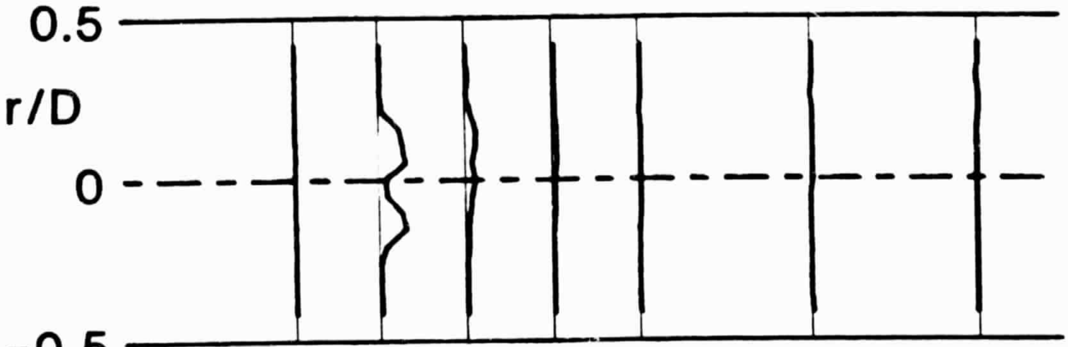


f) $w'_{rms}/u_o \times 2$

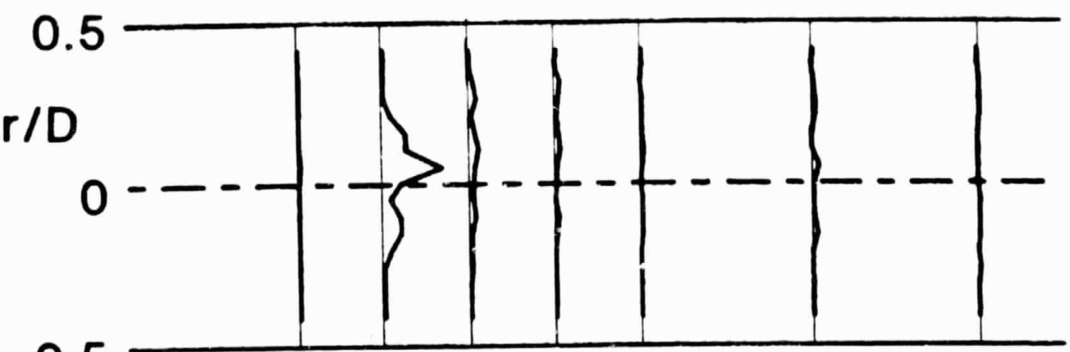
Figure 37. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

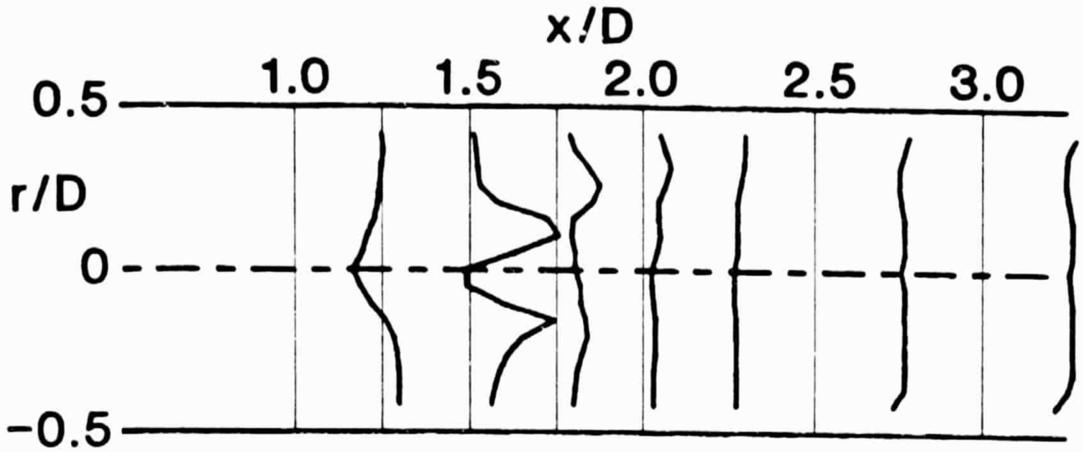


h) $\overline{u'w'}/u_o^2 \times 2$

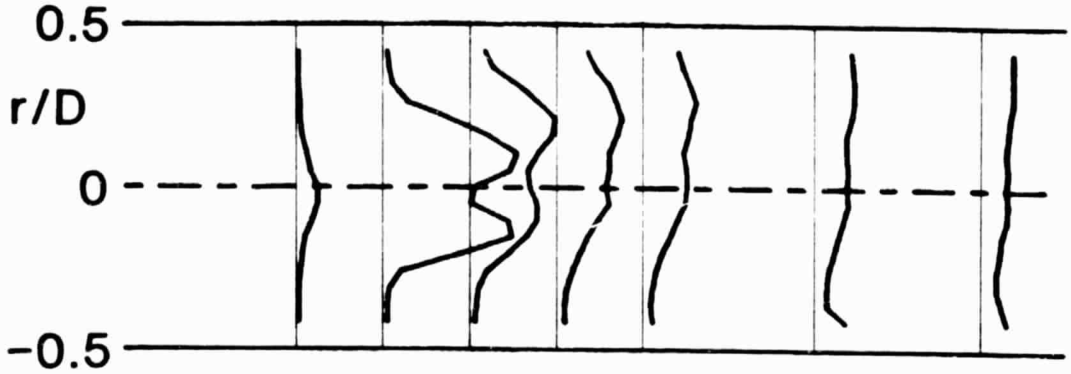


i) $\overline{v'w'}/u_o^2 \times 2$

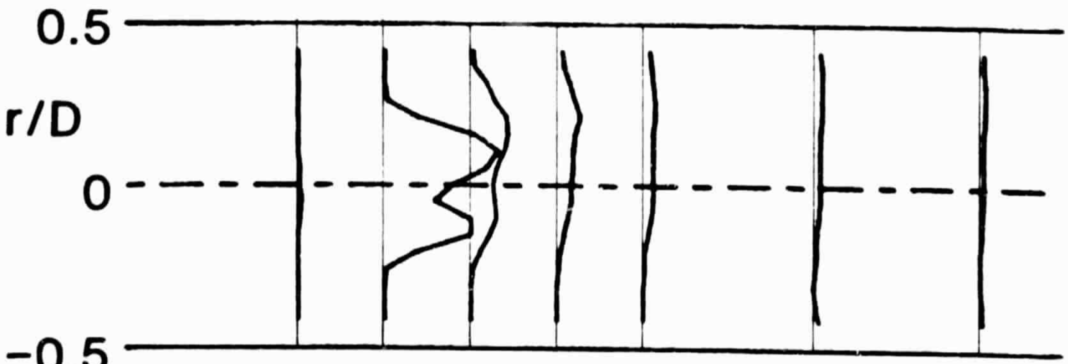
Figure 37. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}\,({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

Figure 37. (Continued)

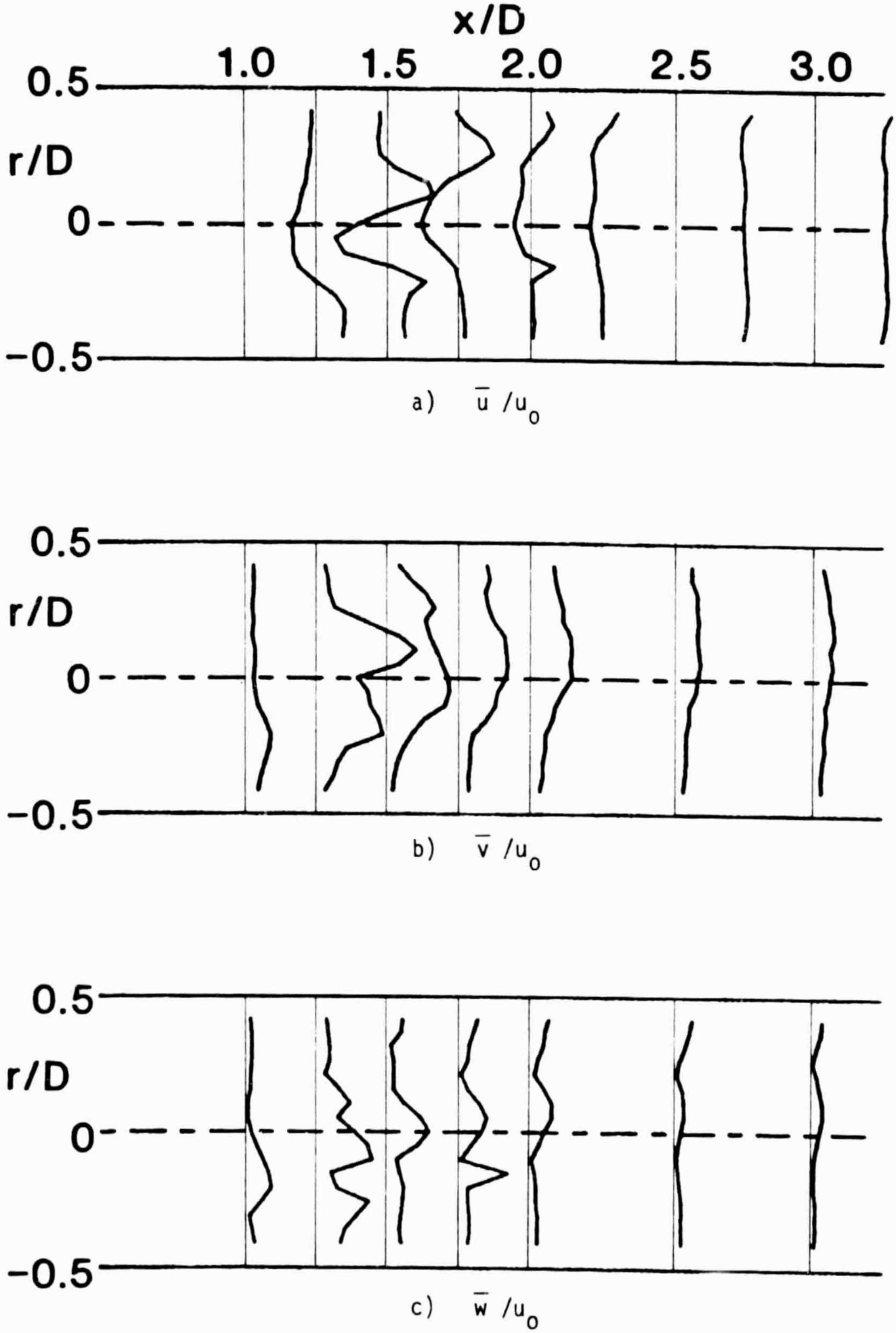
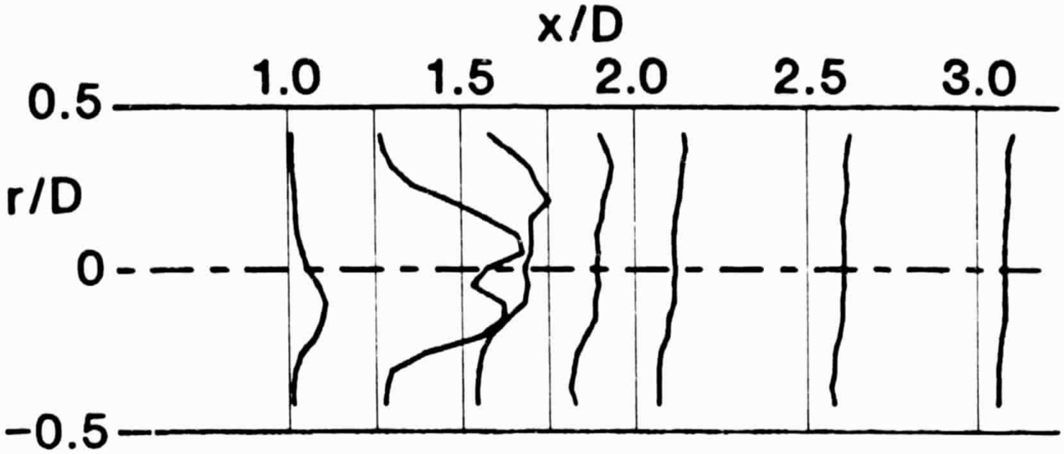
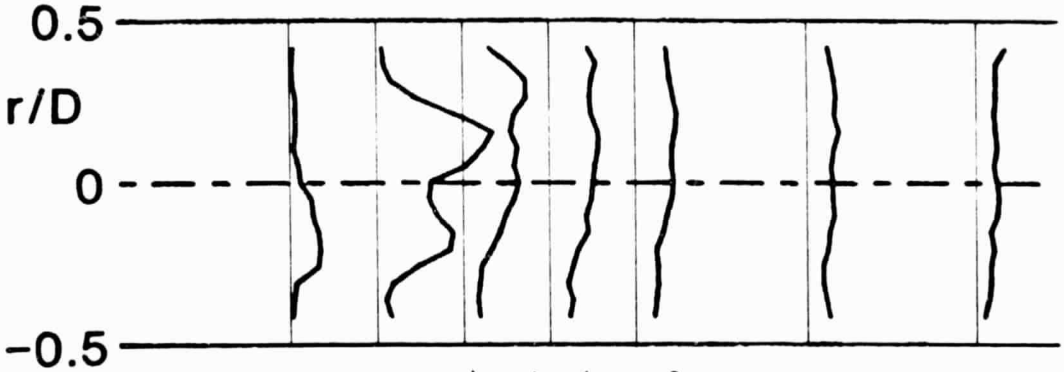


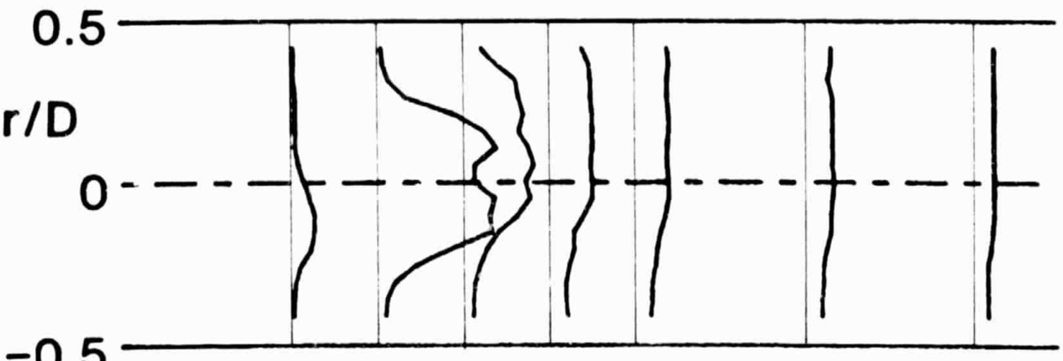
Figure 38. Time-Mean and Turbulent Flowfield, R = 6.0, Traverse Angle θ = 330 Degrees.



d) $u'_{rms}/u_o \times 2$

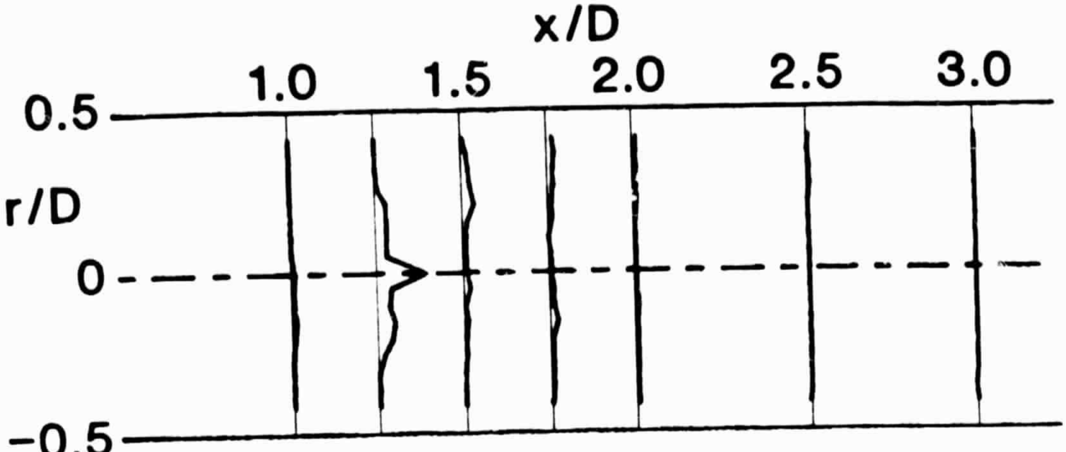


e) $v'_{rms}/u_o \times 2$

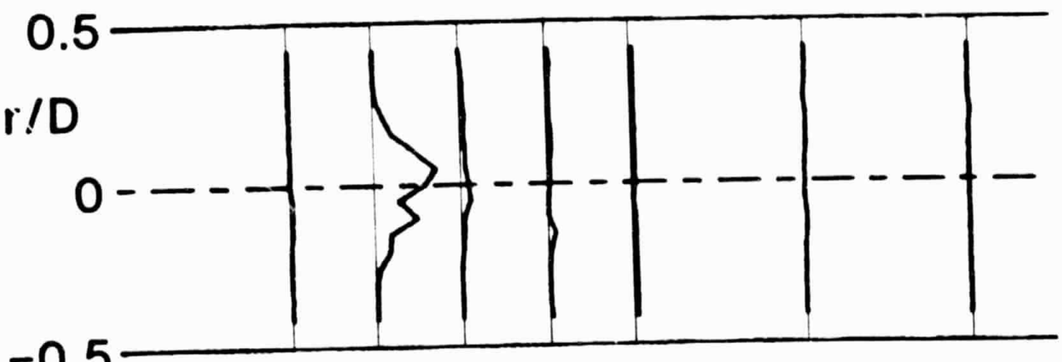


f) $w'_{rms}/u_o \times 2$

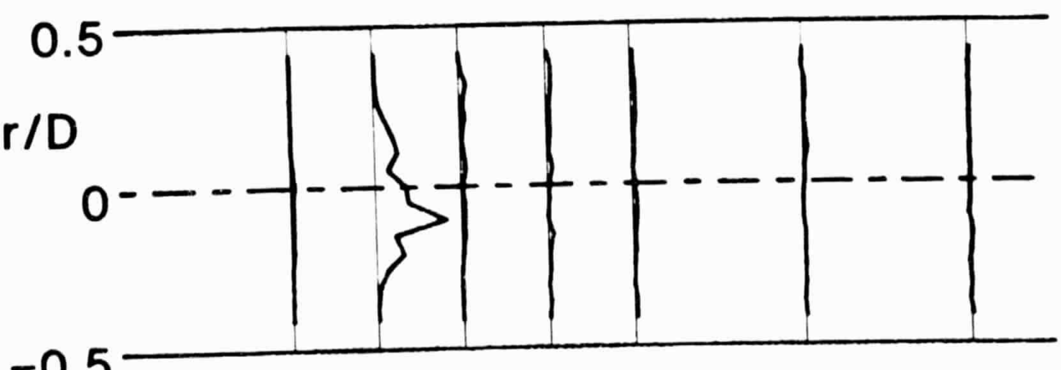
Figure 38. (Continued)



g) $\overline{u'v'}/u_0^2 \times 2$

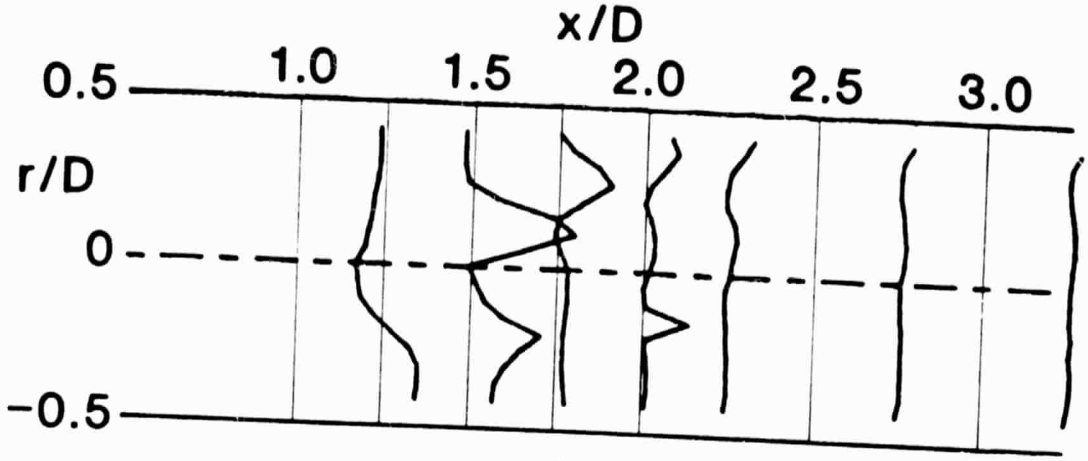


h) $\overline{u'w'}/u_0^2 \times 2$



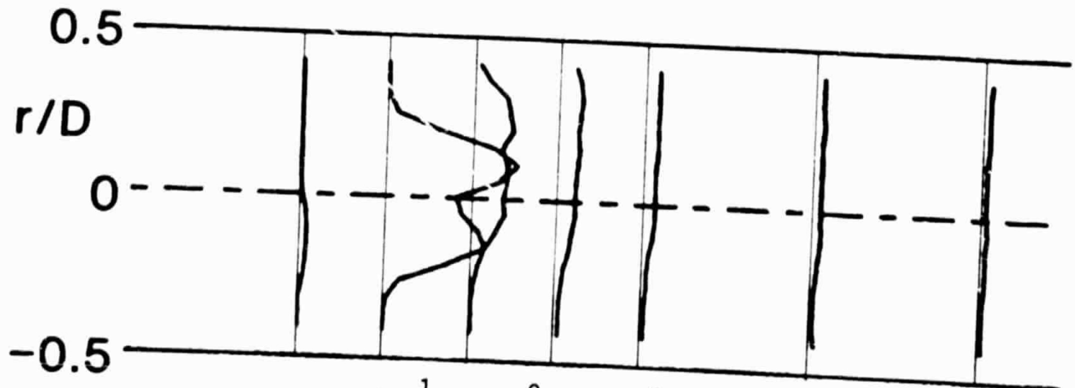
i) $\overline{v'w'}/u_0^2 \times 2$

Figure 38. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}(u'^{2}_{rms} + v'^{2}_{rms} + w'^{2}_{rms}) \times 2$

Figure 38. (Continued)

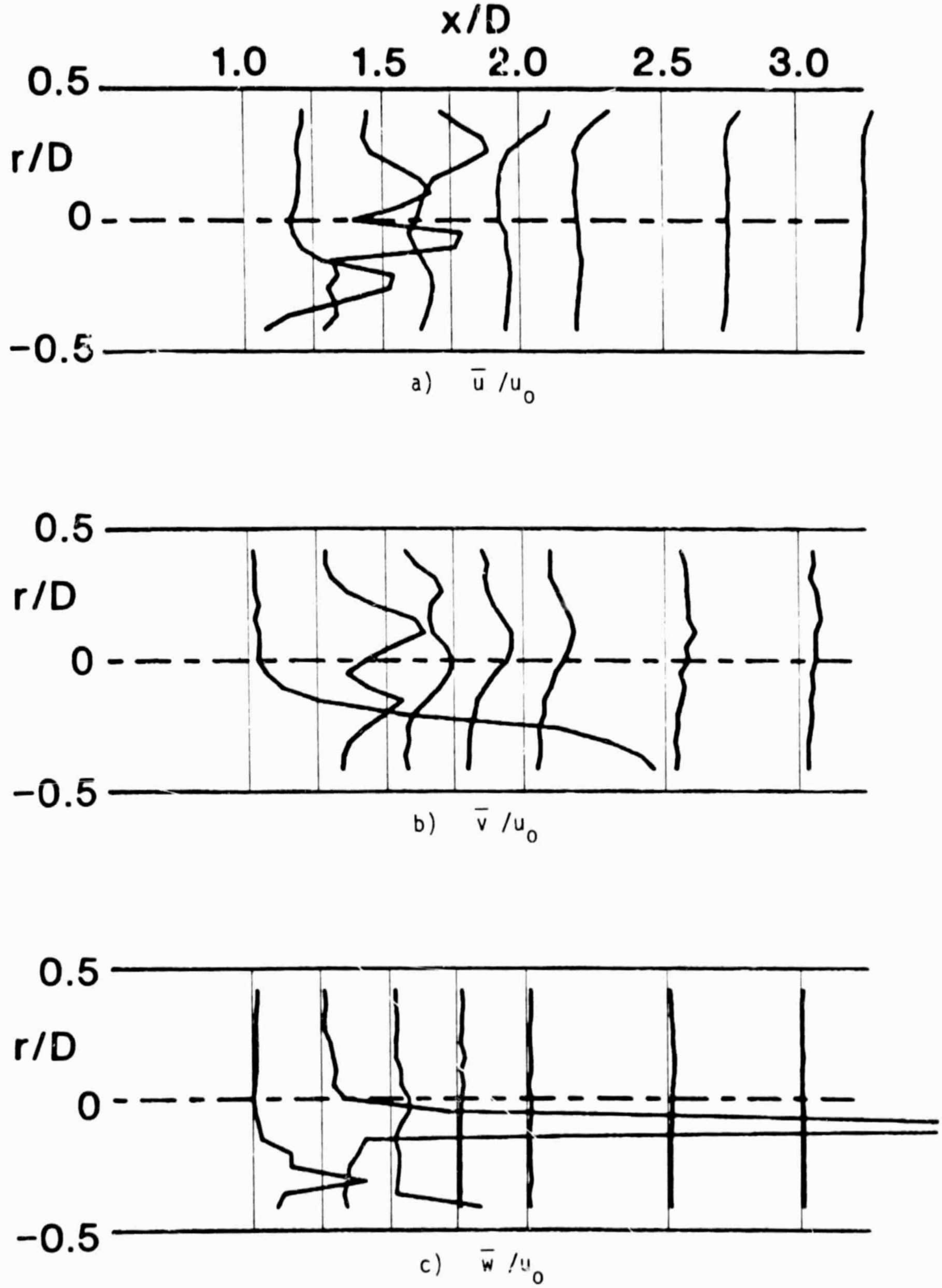
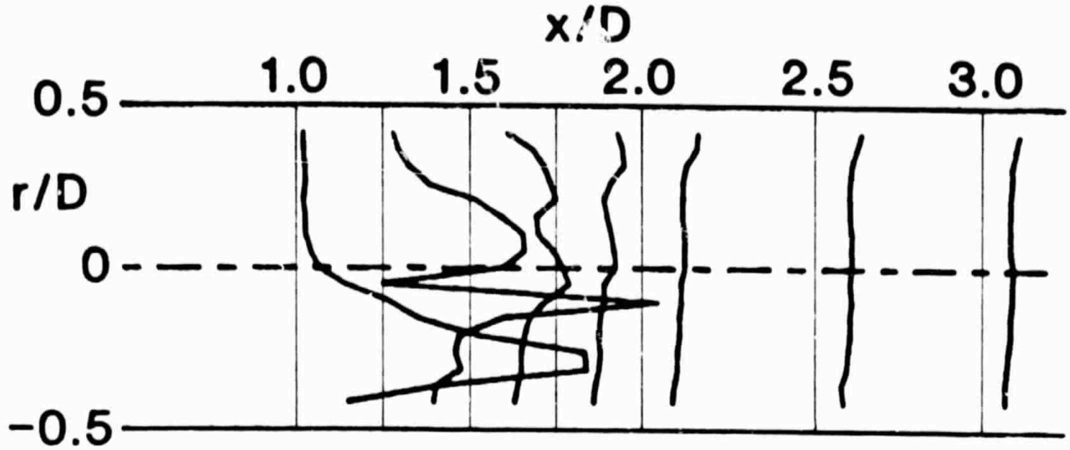
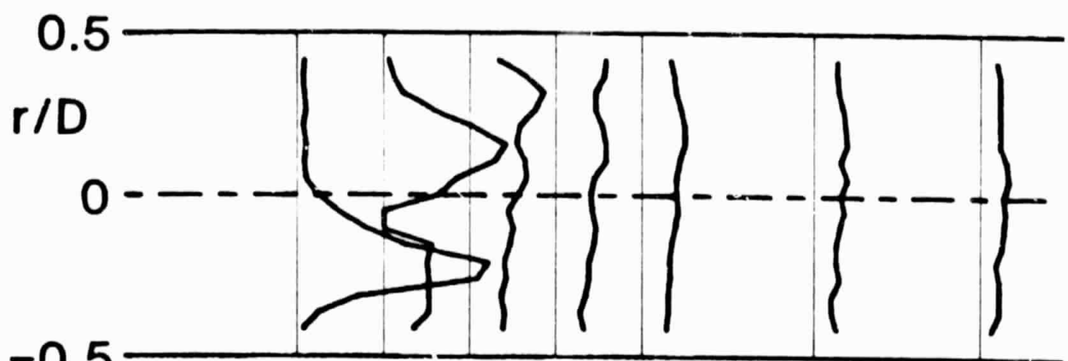


Figure 39. Time-Mean and Turbulent Flowfield, R = 6.0, Traverse Angle θ = 0 Degrees.



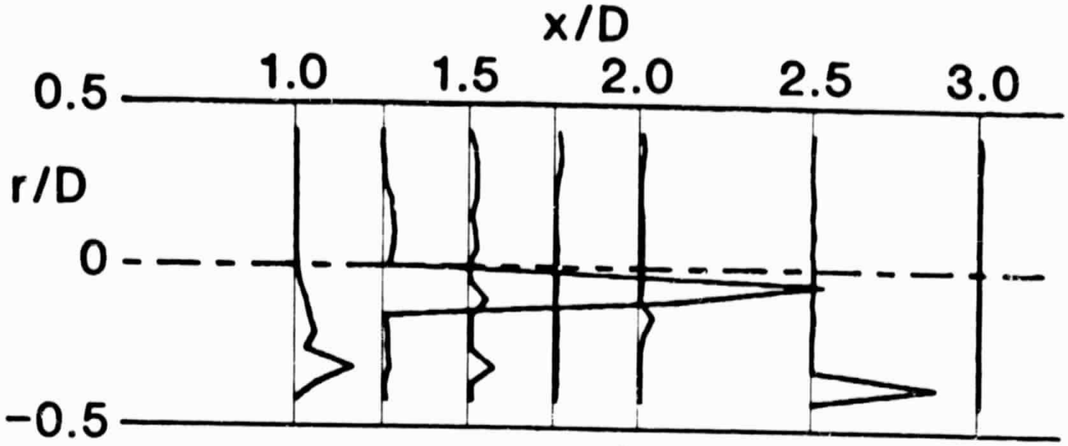
d) $u'_{rms}/u_o \times 2$



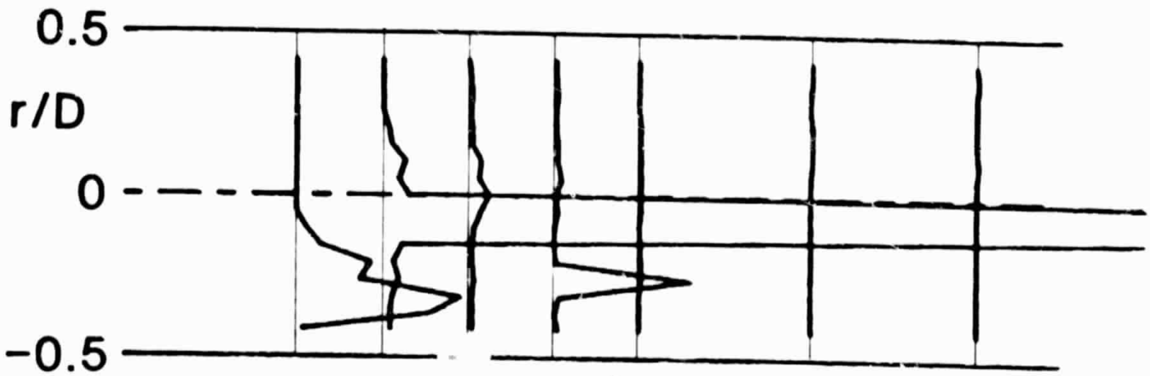
e) $v'_{rms}/u_o \times 2$

f) $w'_{rms}/u_o \times 2$

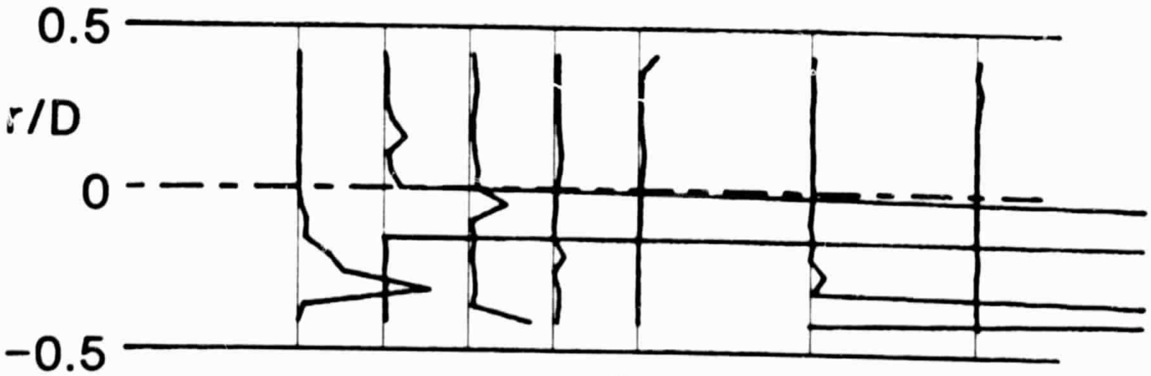
Figure 39. (Continued)



g) $\overline{u'v'}/u_0^2 \times 2$

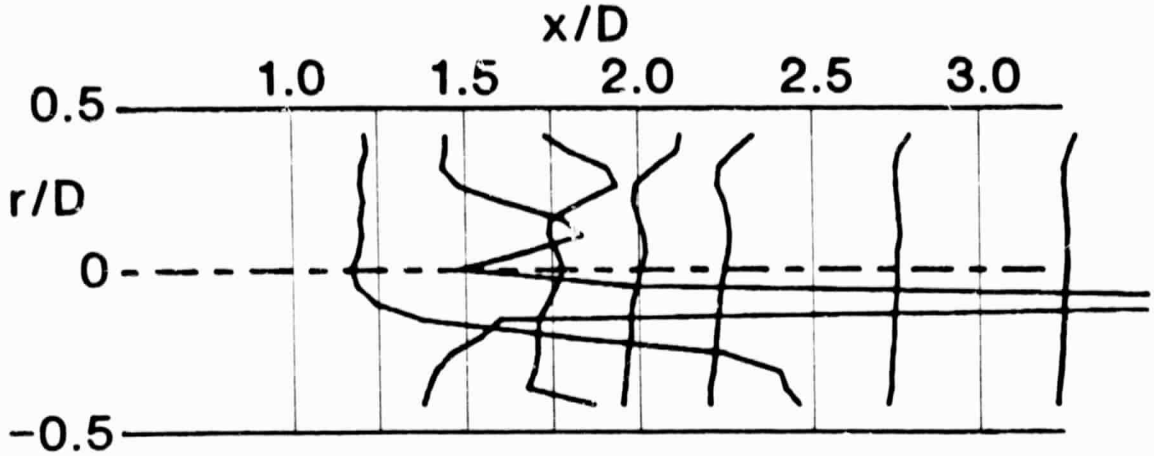


h) $\overline{u'w'}/u_0^2 \times 2$

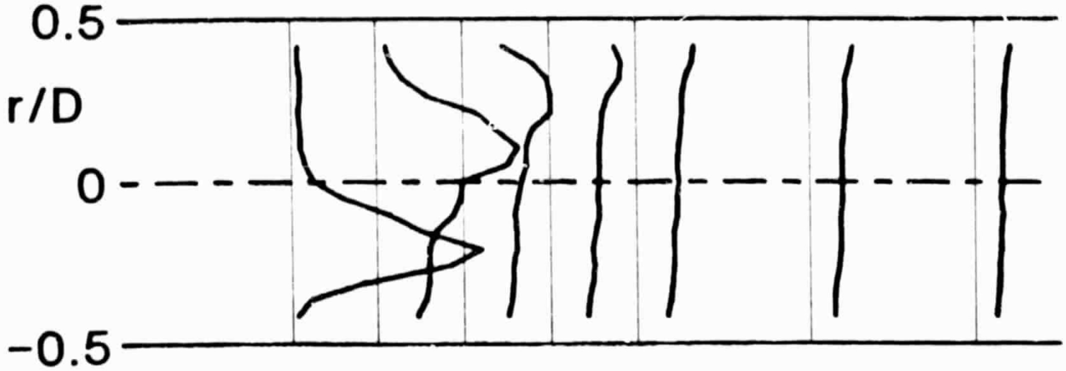


i) $\overline{v'w'}/u_0^2 \times 2$

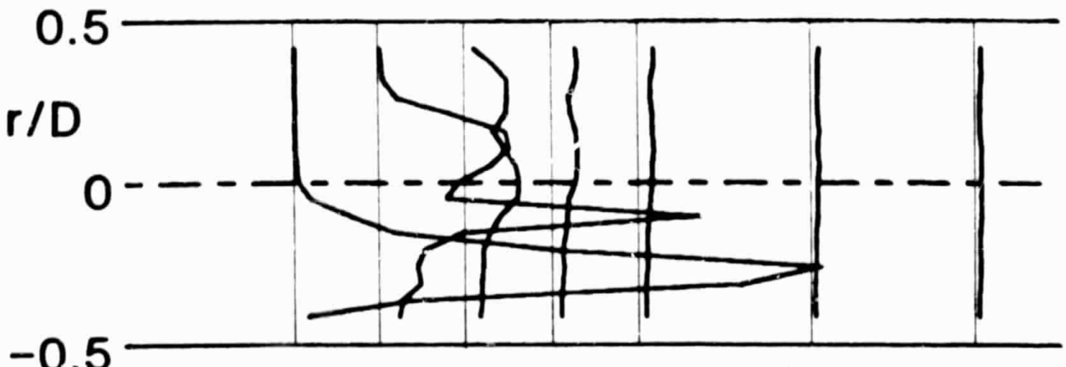
Figure 39. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$

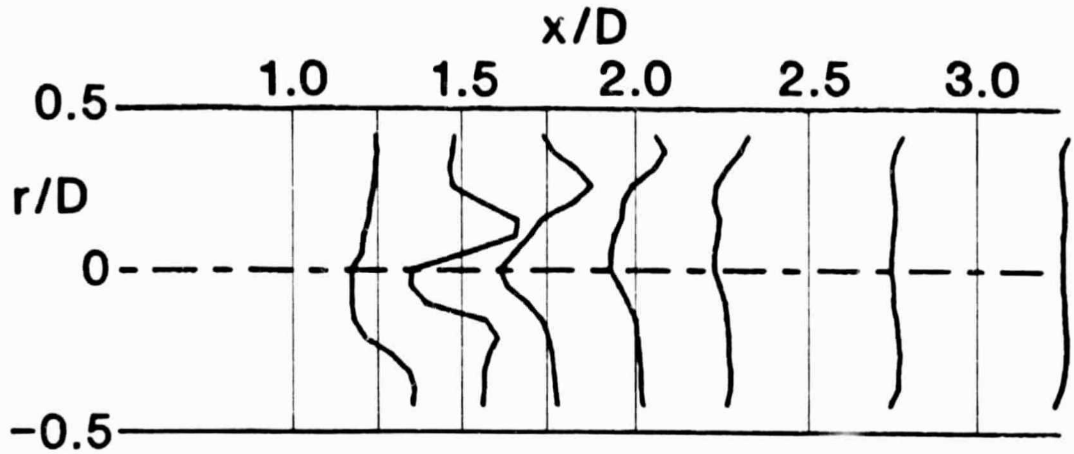


k) $u'_{rms}/\overline{u} \times 2$

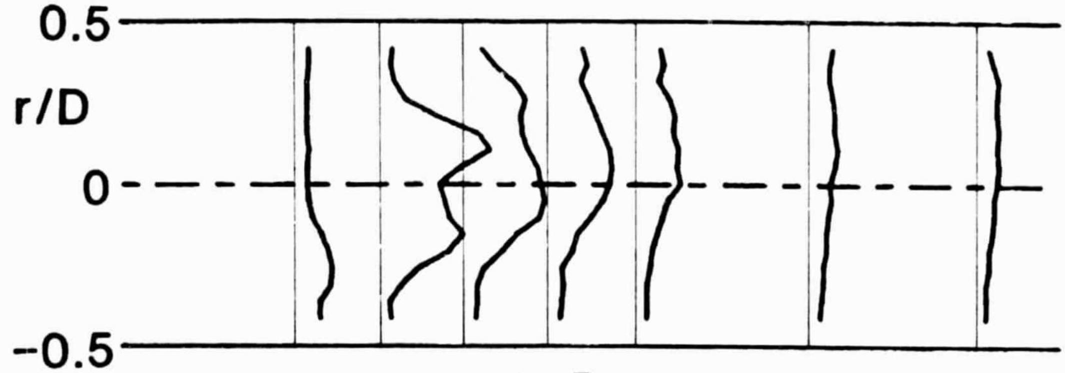


l) $\frac{1}{2}(u'^{2}_{rms} + v'^{2}_{rms} + w'^{2}_{rms}) \times 2$

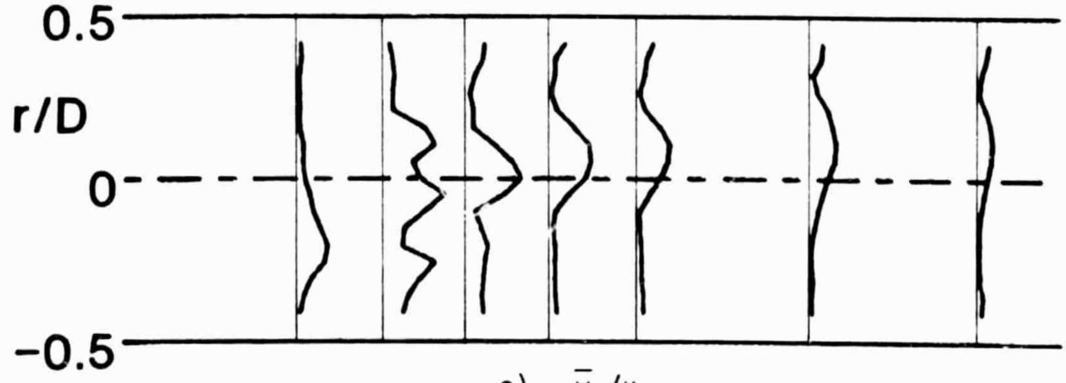
Figure 39. (Continued)



a) $\bar{u}/u_o$

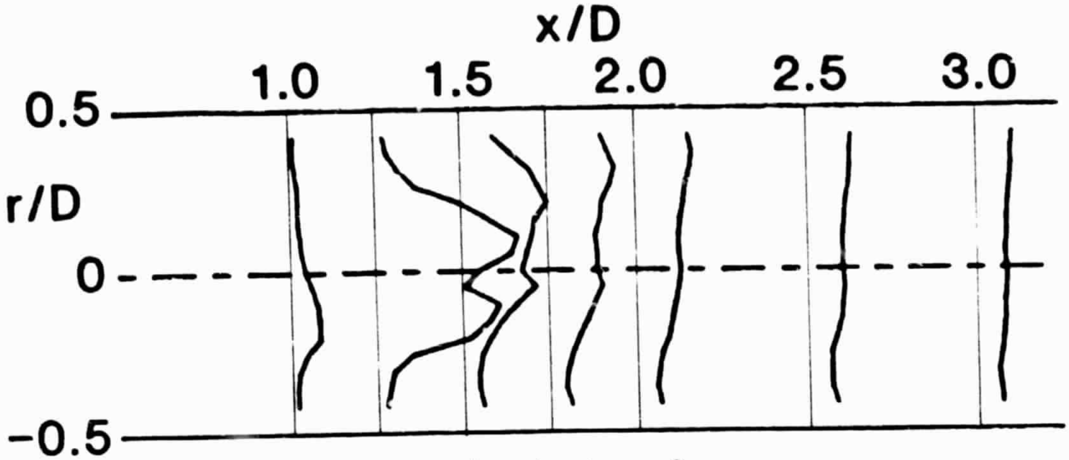


b) $\bar{v}/u_o$

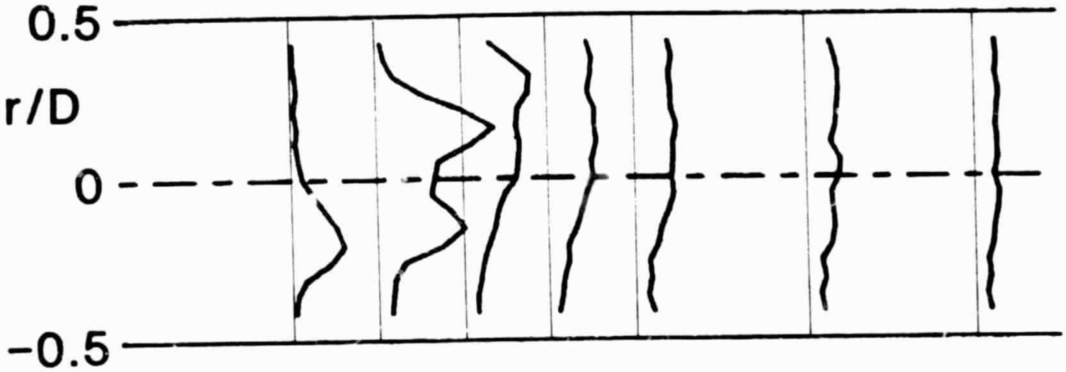


c) $\bar{w}/u_o$

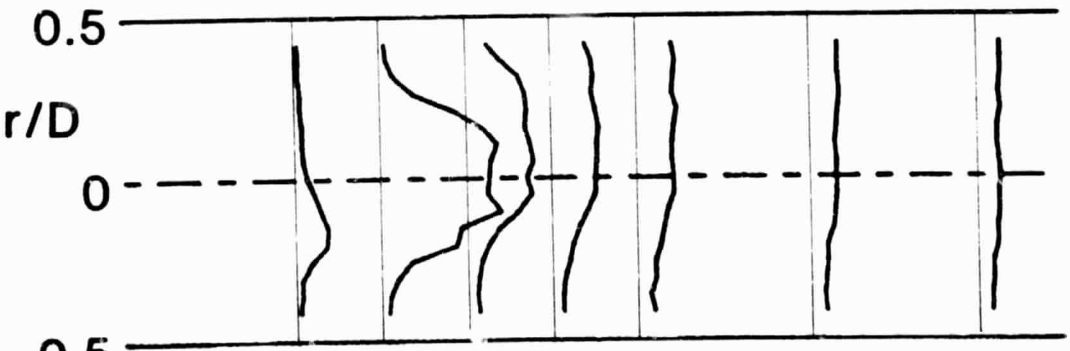
Figure 40. Time-Mean and Turbulent Flowfield, R = 6.0, Traverse Angle θ = 30 Degrees.



d) $u'_{rms}/u_o \times 2$

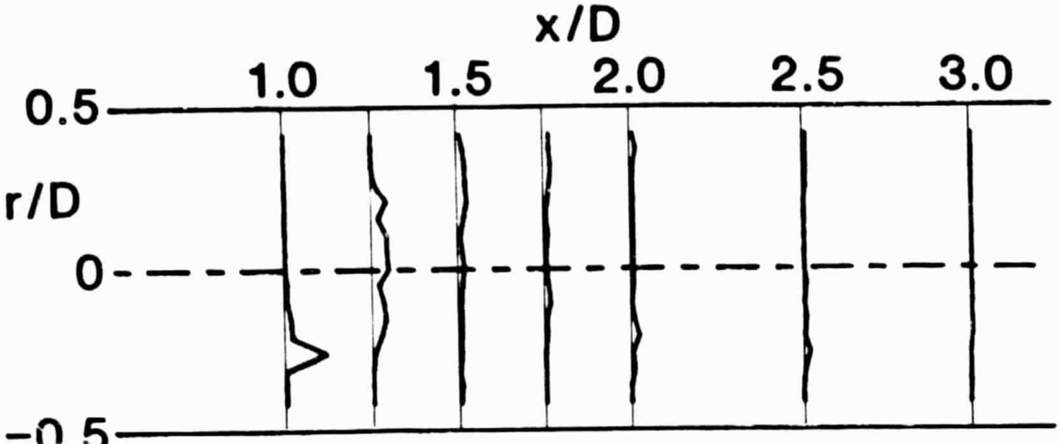


e) $v'_{rms}/u_o \times 2$

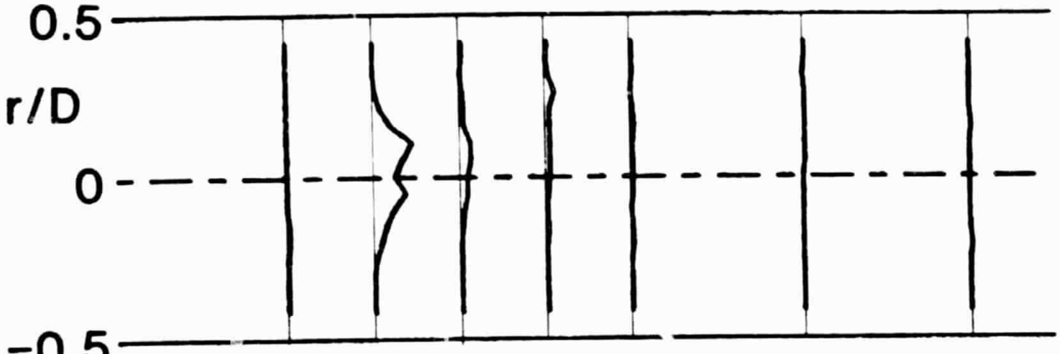


f) $w'_{rms}/u_o \times 2$

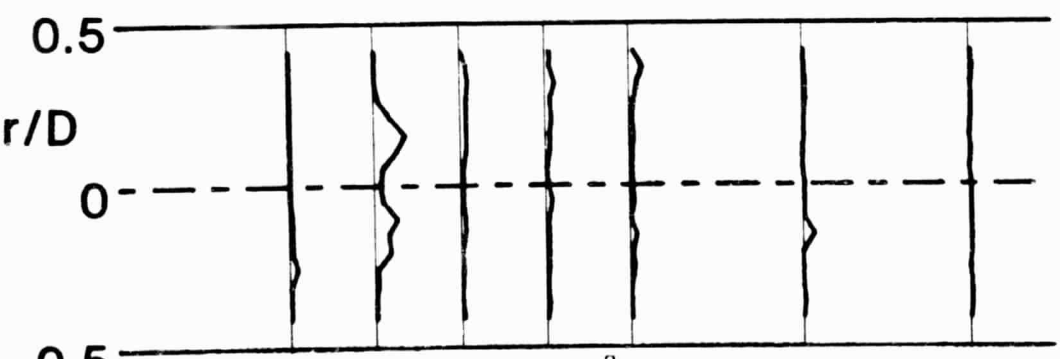
Figure 40. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

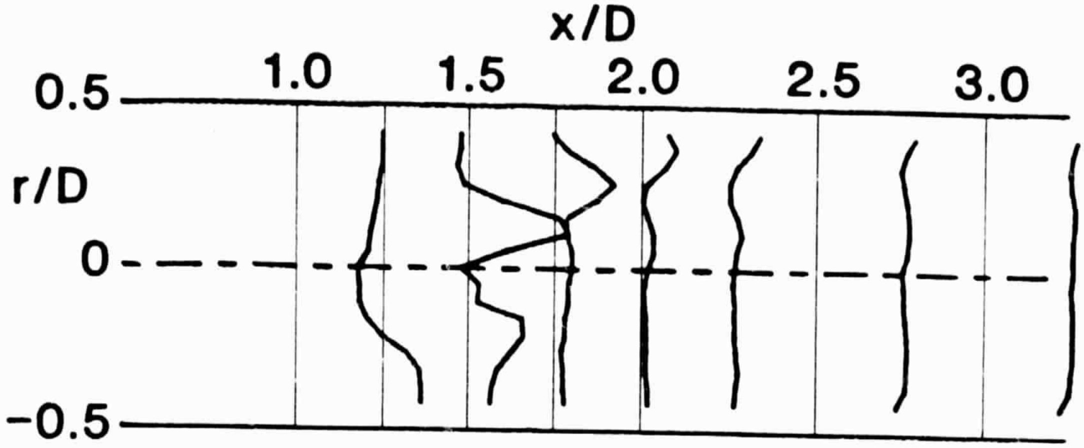


h) $\overline{u'w'}/u_o^2 \times 2$

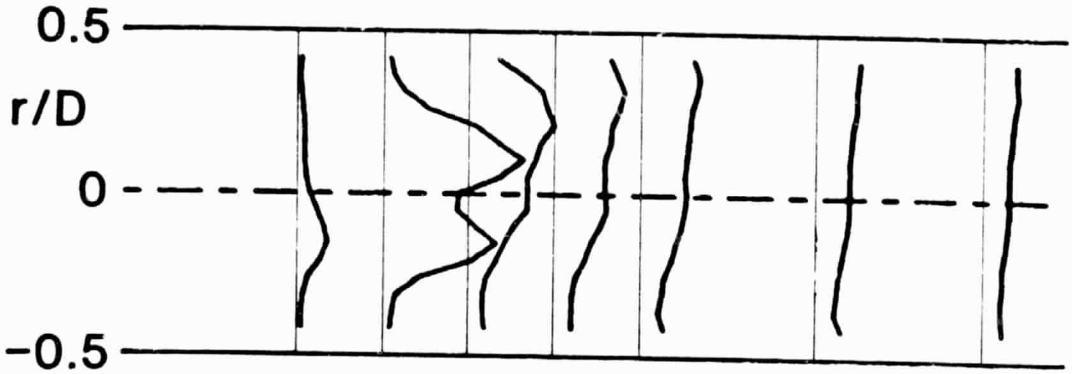


i) $\overline{v'w'}/u_o^2 \times 2$

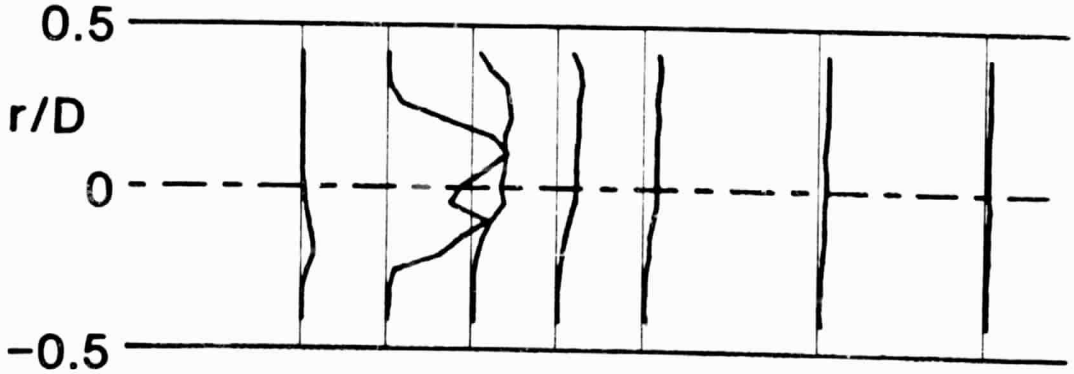
Figure 40. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}(u'^{\,2}_{rms} + v'^{\,2}_{rms} + w'^{\,2}_{rms}) \times 2$

Figure 40 . (Continued)

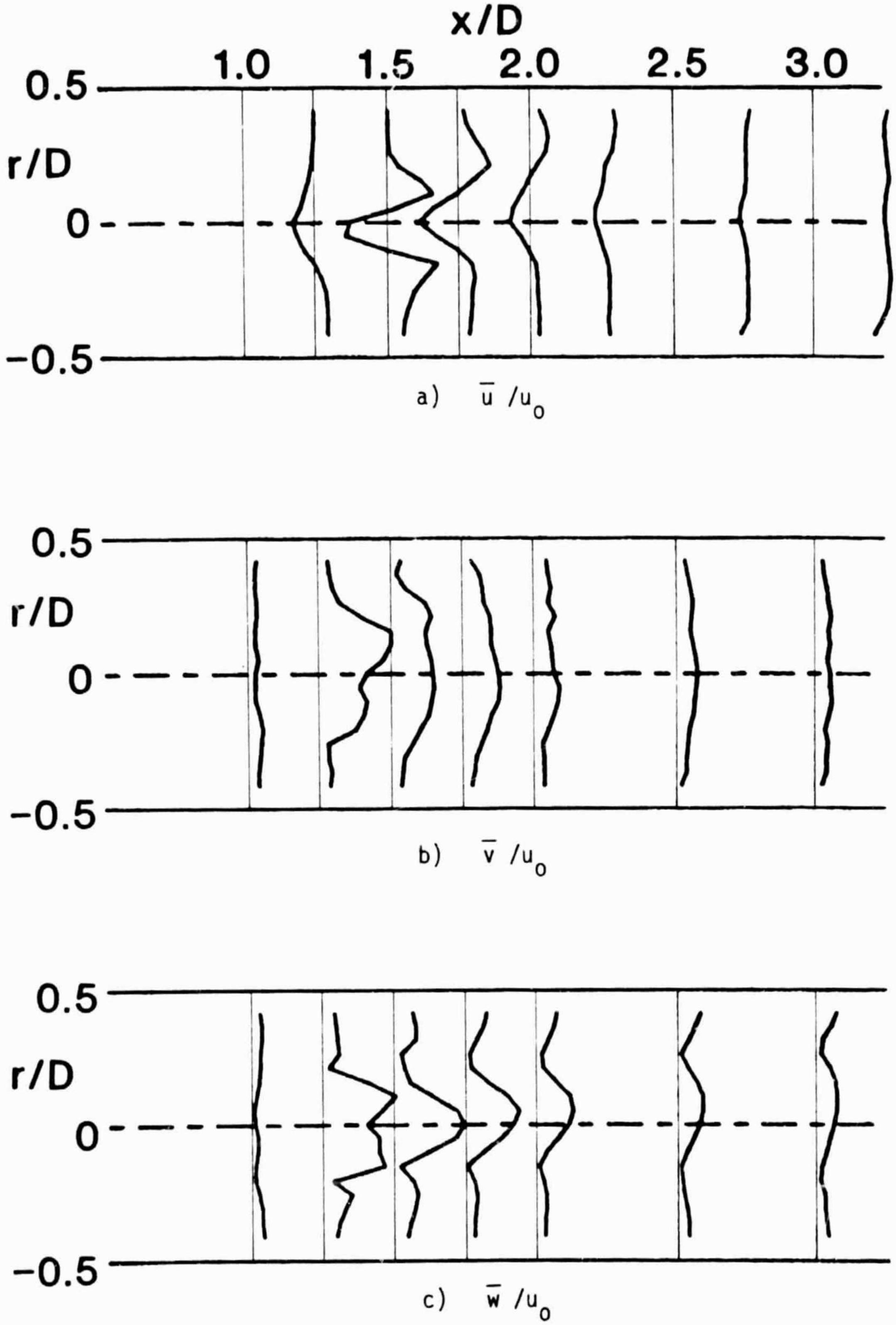
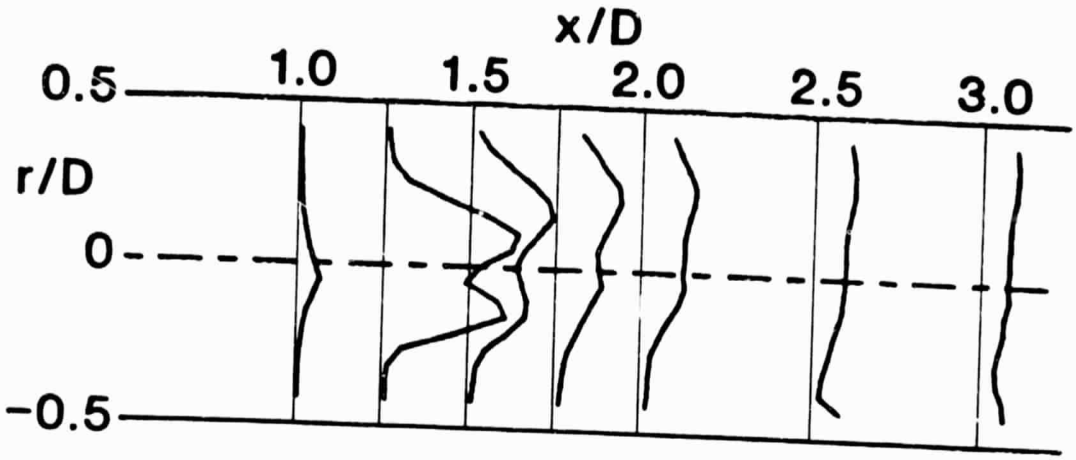
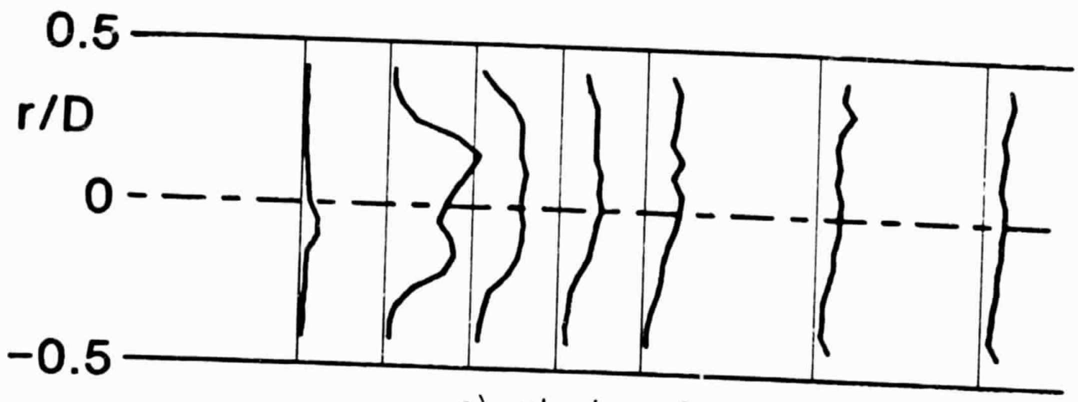


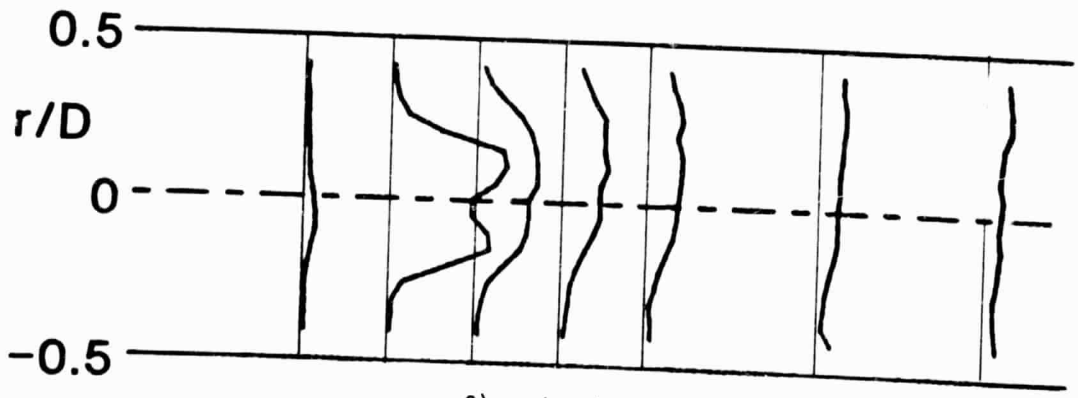
Figure 41. Time-Mean and Turbulent Flowfield, R = 6.0, Traverse Angle θ = 60 Degrees.



d) $u'_{rms}/u_o \times 2$

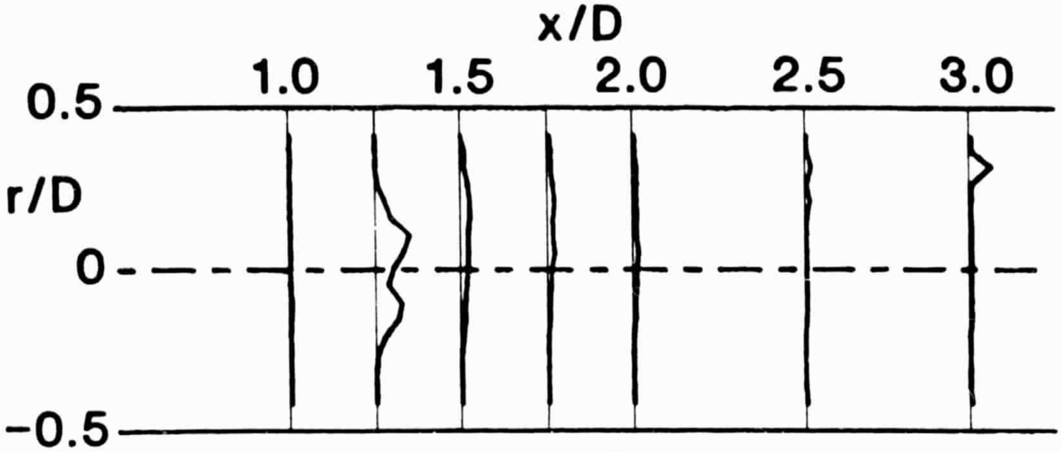


e) $v'_{rms}/u_o \times 2$

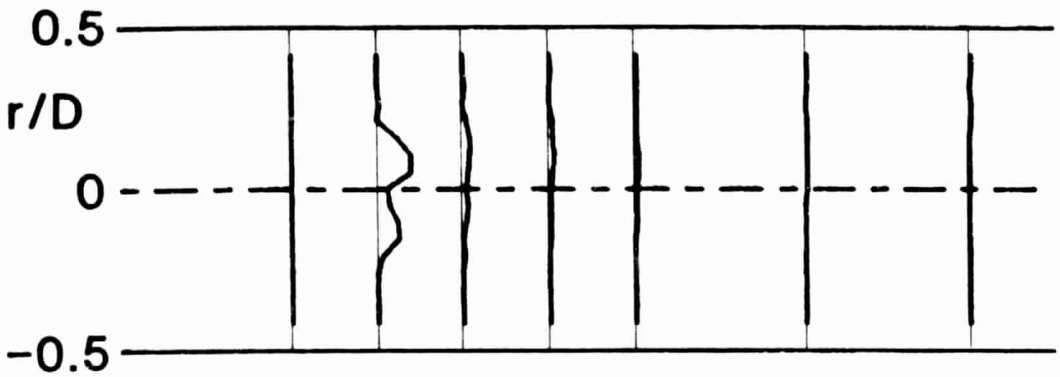


f) $w'_{rms}/u_o \times 2$

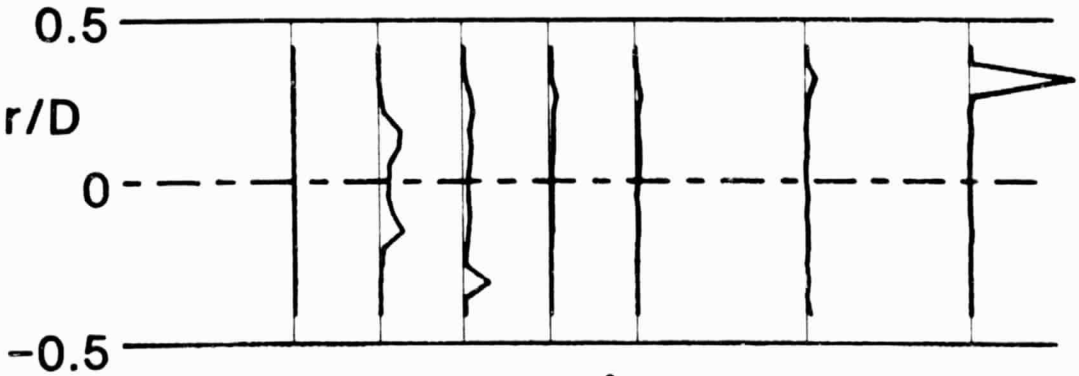
Figure 41. (Continued)



g) $\overline{u'v'}/u_o^2 \times 2$

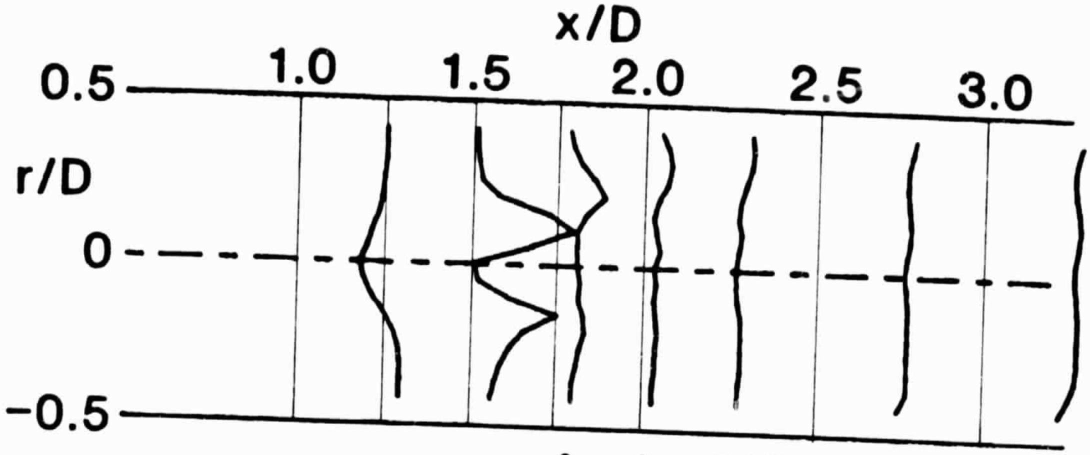


h) $\overline{u'w'}/u_o^2 \times 2$

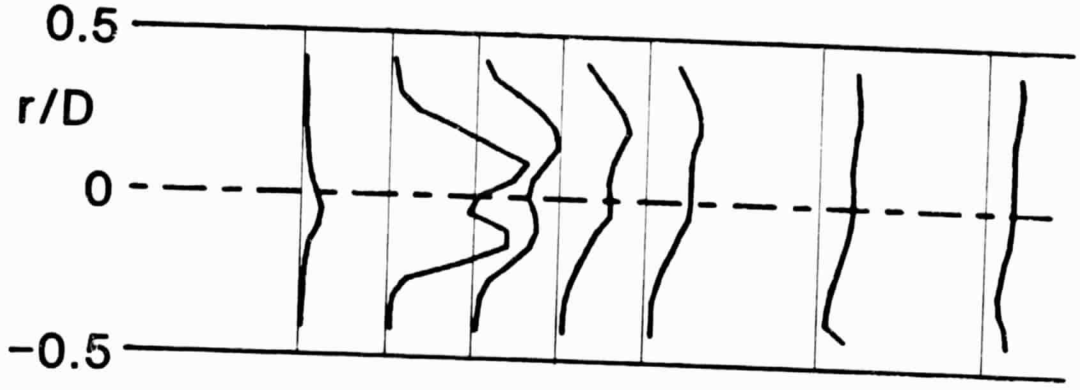


i) $\overline{v'w'}/u_o^2 \times 2$

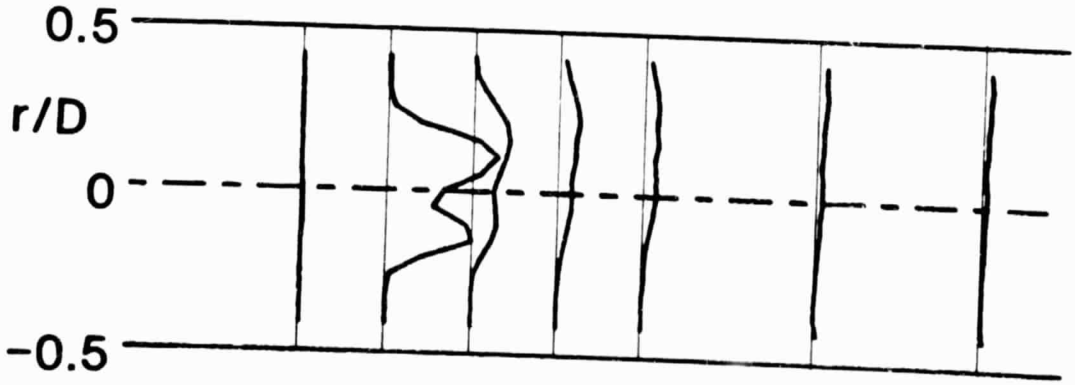
Figure 41. (Continued)



j) $\overline{V} = (\overline{u}^2 + \overline{v}^2 + \overline{w}^2)^{1/2}/u_o$



k) $u'_{rms}/\overline{u} \times 2$



l) $\frac{1}{2}({u'_{rms}}^2 + {v'_{rms}}^2 + {w'_{rms}}^2) \times 2$

Figure 41 . (Continued)

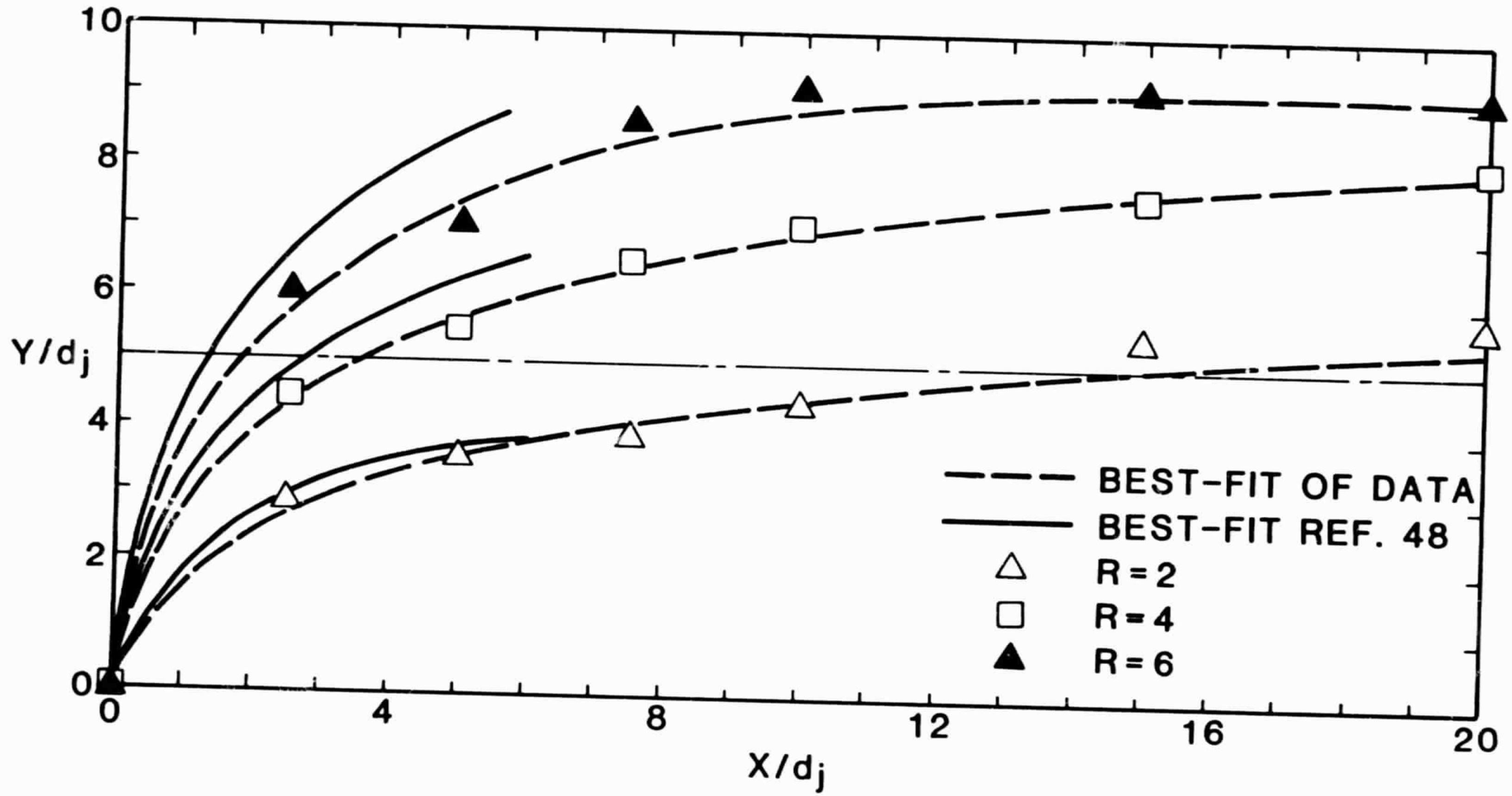


Figure 42. Jet Centerline Locations for Different Jet-to-Crossflow Velocity Ratios R = 2.0, 4.0, 6.0.