NASA Contractor Report 4188

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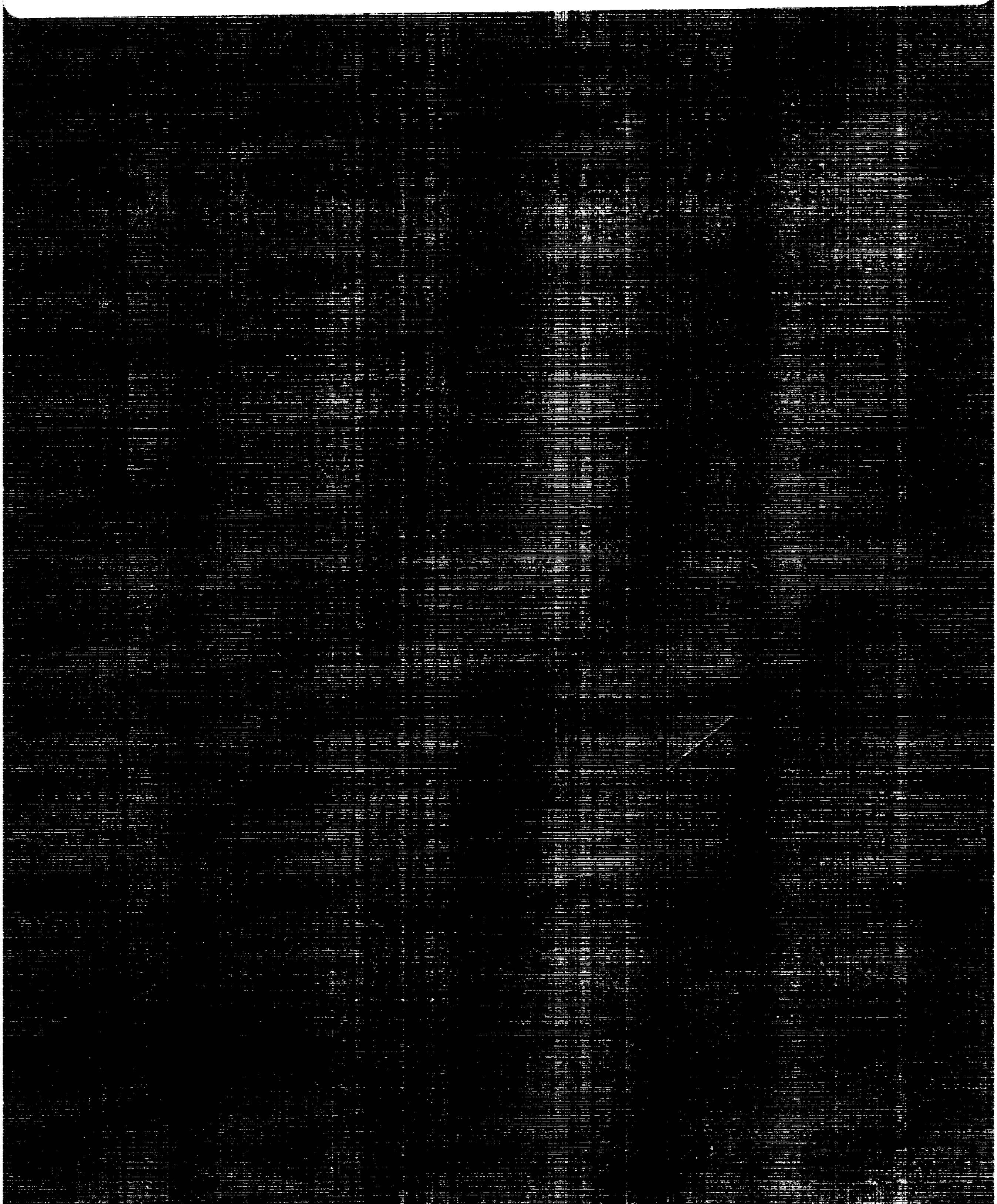

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Influence of Bulk Turbulence and Entrance Boundary Layer Thickness on the Curved Duct Flow Field

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FOREWORD

This investigation into the influence of entrance boundary layer characteristics on the curved duct flow field was performed under a NASA Lewis Research Grant, NAG3-617, as part of the NASA Turbine Engine HOST Program. Mr. H.J. Gladden was the NASA Project Manager and Dr. R.A. Crawford was the UTSI Principal Investigator. The UTSI project team included Dr. C. Peters, Technical Advisor, Mr. J. Hornkohl, LV System, Mr. A. Shohadaee and Mr. A. Hedayatpour, Graduate Research Assistants. The experimental investigation was conducted during the period, February 1985 through July 1986 in the UTSI/NASA HOST Curved Duct Facility with support from UTSI's Center for Laser Applications. The results of this investigation, obtained by three-dimensional laser velocimetry system, expand the curved duct data base to higher turbulence levels and thicker entrance boundary layers. The experimental results provide a challenging benchmark data base for computational fluid dynamics code development and validation.

SUMMARY

The objective of this investigation was the experimental evaluation of bulk turbulence and turbulent boundary layer thickness influence on flow field development in a square, 90^o curved duct. A three-dimensional laser velocimetry system was utilized to measure simultaneously the mean and fluctuating components of velocity at six cross-planes in the duct. The results from this investigation, with entrance boundary layer thickness of 20-percent, were compared with the thin boundary layer results documented in NASA CR-174811.

The results of this investigation confirmed the significant influence of the entrance flow conditions on the duct flow field development in the square, curved duct. The boundary layer thickness and the magnitude of turbulence in the duct entrance are both important effects which influence and enhance the turbulent transport of momentum. The relatively modest increase in entrance bulk turbulence from 3-percent to 6-percent produced nearly a 50-percent change in viscous region size and crossflow velocity development at the curved duct exit. The conclusion from this investigation is that both experimental and computational fluid dynamics results for duct flows with large curvature will be strongly influenced by the inflow boundary conditions.

The results of this investigation expand the curved duct data base to higher turbulence levels and thicker entrance boundary layers. The experimental results provide a challenging benchmark data base for computational fluid dynamics code development and validation.

1. INTRODUCTION

The advancement of turbine engine durability and efficiency depends upon design improvements in stage loading, operating temperatures and material properties. Improved fluid mechanics and heat transfer codes are the key to design advancement of blade loading and temperature distribution. The curved duct flowfield results from the combined effects of compressibility, viscosity and heat transfer, and it is one of the most difficult three-dimensional flows to model accurately. The benchmark experimental data base is a requirement for developing improved fluid dynamics codes and provides a calibration standard for development and validation of fluid mechanics codes.

1.1 BACKGROUND

Ducted three-dimensional flows are found in many engineering applications and present a difficult challenge to computational fluid mechanics codes. The three-dimensional development of viscous shear layers has a strong influence on the complete flow field. Some of the most complex flows are found in turbine engines and rocket motor turbomachinery and associated gas ducts. These propulsion-related duct flows also contain high turbulence levels and high wall heat transfer rates. Current CFD codes do not provide completely satisfactory solutions for this general class of duct flows. Turbulence modeling is one of the significant short-comings, which is the result of inadequate physical understanding and inadequate experimental definition.

There are different types of turbulent flow such as boundary layers, shear flows from jets or wakes, and confined flows with high bulk turbulence. Each type must be analyzed and treated as a different flow phenomena. The turbulent boundary layer grows into the laminar or low-turbulence free-stream, and the turbulence properties have been successfully related to mean flow velocity gradients. Turbulent shear layers in jet mixing or wake flows are similar to the boundary layer flows in that the turbulent mixing zone propagates into the undisturbed free-stream. Turbulent duct flows are characterized by high turbulence in the bulk flow which interacts with solid boundaries and pressure gradients.

Combustion processes and combustor dilution flows produce a high turbulence field which passes through internal ducts and blade cascades. In this case, the wall viscous forces may increase or decrease the bulk turbulence intensity. This is a turbulent flow field for which the classic turbulence models are inadequate. Since the curved duct flow downstream of the turbine engine combustor contains high levels of turbulence, improved understanding of this flow field is required to predict turbine cascade secondary flow development. Accurate predictions of secondary flows and turbulent intensity are required before heat transfer analysis techniques can be improved.

1.2 SUMMARY OF PREVIOUS WORK

There have been extensive analytic and experimental efforts directed at advancing the understanding of turbine vane cascade flows and heat transfer. Taylor, Whitelaw and Yianneskis (ref. 1) document one of the classic experimental investigations of the simulated cascade flow. Briley, Buggein and McDonald (ref. 2) applied Navier-Stokes equations to the curved duct flow field and duplicated Whitelaw's experimental results. Reference 3, by Yang, Weinberg, Shamroth and McDonald contains a state-of-art solution to the heat transfer calculations in the turbine cascade. However, the heat transfer and associated three-dimensional flow field in the blade passage is strongly influenced by the turbulence intensity in the flow which can not be determined analytically. Under the NASA HOST program sponsorship UTSI investigated the detailed steady and fluctuating flow field in a simulated turbine vane cascade, 90^o curved duct. (ref. 4) Both laminar and turbulent, thin inlet boundary layer flows were measured by three-dimensional laser velocimetry techniques in this investigation. The recognized importance of turbulence intensity and boundary layer thickness on the developing cascade flow field and heat transfer resulted in the current investigation.

1.3 OBJECTIVES AND APPROACH

The objective of this investigation was the experimental evaluation of the influence of inlet turbulence intensity and boundary layer thickness on secondary flow development in a turning duct. The existing 25.4 cm square turning duct (90^o) facility, developed under contract NAS3-23278, Gas Flow Environment Nonrotating 3-D Program, was utilized to investigate the influence of bulk turbulence levels on secondary flow development. The large scale duct flow facility allowed detailed mean velocity and turbulence quantities to be measured at several streamwise planes in the curved duct. Nonintrusive laser velocimetry was used to measure the mean and fluctuating components of velocity in all three orthogonal directions. To assure that turbulence measurements were unbiased by particle lag and other effects, comparison hot wire data was taken to validate the Laser Velocimetry system calibration.

The bulk turbulence was introduced into the turning duct entrance region downstream of the inlet bell by a square bar grid. Maximum expected turbulence intensity behind this grid has been shown to be about 10% with a nearly uniform turbulence field. Additional entrance length was added to the facility to provide sufficient mixing length downstream of the grid to provide a uniform turbulence field with a boundary layer thickness of 20 percent tunnel half width. One level of turbulence intensity was demonstrated and used in the velocity surveys of the turning duct flow field. Secondary flow development and the turbulent characteristics of the near wall flow were the primary experimental objectives. The laminar- core-flow velocity survey results from the previous contract (ref. 4) established the baseline flow for assessing the effects of the increased level of turbulence intensity. The turbulence and mean flow velocity results must be of sufficient quality to serve as benchmark data for CFD code development.

2. EXPERIMENTAL INVESTIGATION

This investigation of the influence of bulk turbulence and entrance boundary layer thickness on the simulated turbine vane flow field was conducted as an extensive experimental flow survey. Corresponding computational fluid dynamics calculations were not performed as part of this investigation, however, the experimental results are benchmark quality and should be used for code validation. The program contained the following tasks to modify, update and calibrate the UTSI turning duct facility and instrumentation before conduct of the experimental investigation:

- Increase duct entrance length to increase inlet boundary layer thickness.
- Improve and upgrade the three-dimensional laser velocimetry system capability. (Increased sample size for improved turbulence data.)

- Investigate turbulence generation devices.
- Validate duct flow quality after modification and installation of turbulence grids.
- Conduct an experimental survey of mean and fluctuating components of velocity at selected cross flow planes to assure flow symmetry.

2.1 CURVED DUCT FACILITY

The experimental facility was developed under NASA contract NAS3-23278 and is described in detail in Reference 4. The basic curved duct test section has a square cross-section 25.4 cm (10 in) on a side with a 90^o bend of 45.7 cm (18 in) inner radius and 71.1 cm (28 in) outer radius. The test section is fed by a 13 to 1 area ratio bell mouth contoured to provide uniform flow and is powered by an inducted-draft, variable speed fan downstream of the test section exit diffuser. A total of six duct-widths of straight entrance duct is available for flow conditioning ahead of the test section. Four of these entrance ducts were fabricated for this investigation to provide a thicker entrance boundary layer. Provisions were also made for installation of the turbulence generator grids in the lengthened entrance duct. Figure 1. shows the basic curved duct facility configuration. Laser velocimetry window access is provided every 15^o around the 90^o bend and one duct width upstream of the 0^o station and one duct width downstream of the 90^o station. The large size of this facility provides realistic Reynolds number and Dean's number simulation at low flow velocity (10 m/sec).

2.2 INSTRUMENTATION

The primary instrumentation was a three-component laser velocimeter which utilized two color beams and Bragg diffraction beam splitting and frequency shifting to separate the three simultaneous, orthogonal, velocity components. Forward scattering collection optics provided high signal to noise ratio and allowed large sample sizes for turbulence intensity resolution. The laser velocimeter signal processors determine the values of flow velocity from water droplet seed particles crossing the moving fringe probe volume. The data is processed on-line by a mini-computer to yield real time values of mean and fluctuating velocity components. References 4 and 5 contain a

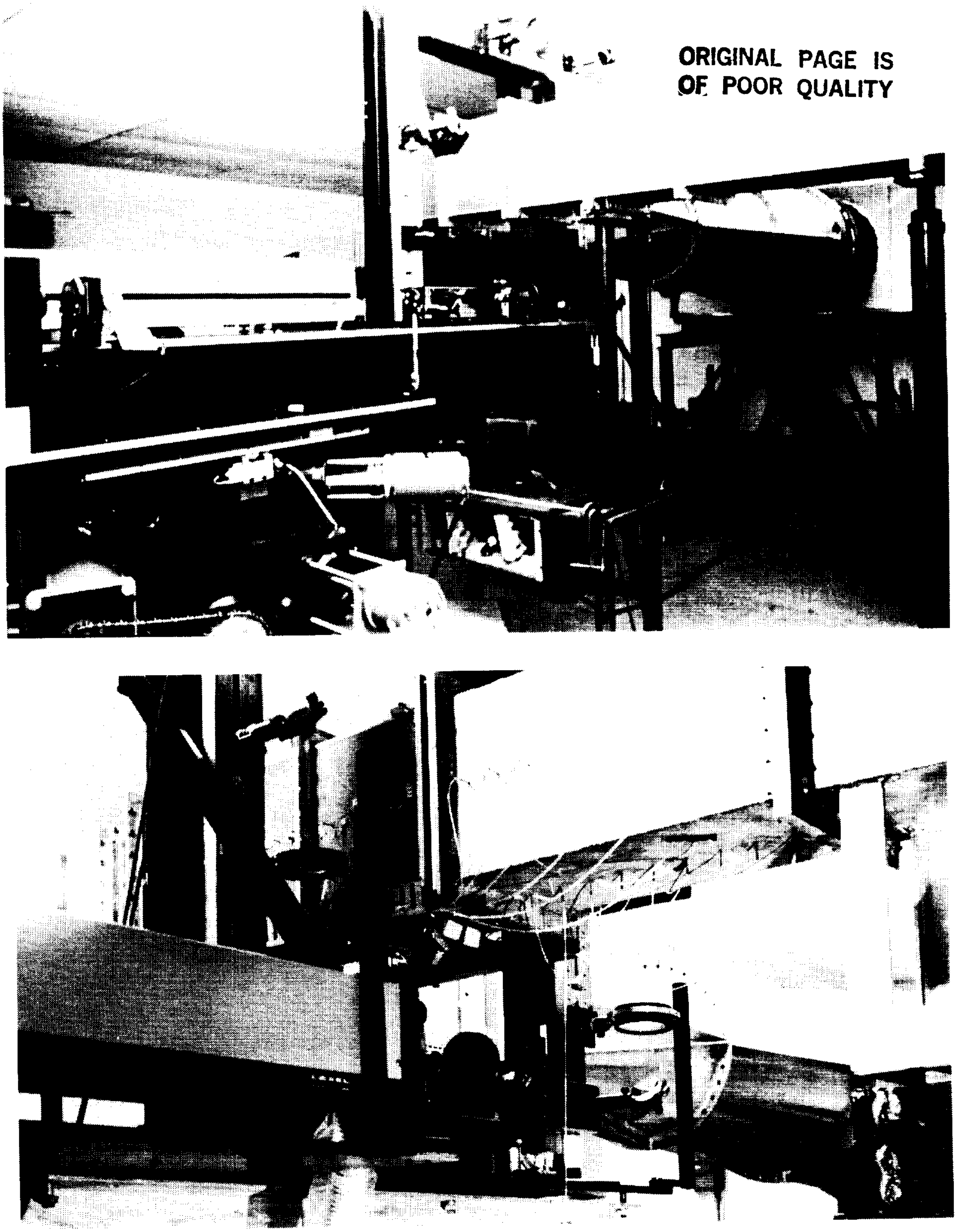


Figure 1. Curved Duct Flow Facility

complete description of the LV system design.

The following LV system improvements were made to increase reliability, data reduction capability and increase data storage. These improvements provided improved turbulence measurements by increasing data rates and increasing the sample size for each measurement point. Data quality was evaluated using hot-wire anemometer and pitot probe measurements for comparison with LV data. See Section 2.4 for calibration results.

2.3 TURBULENCE GENERATION

The generation of a "uniform" bulk turbulence level in the duct entrance region proved to be a challenging task. For this investigation the curved duct flow field was to be developed from a uniform entrance flow with a moderate boundary layer thickness of 20 percent and an isotropic bulk turbulence level of approximately 10 percent. A literature search on turbulence generation, modification or control in duct flows produced three References 6, 7, and 8. Reference 6, by Blair, Bailey and Schlinker from UTRC, contain the best data on the use of square bar grids for producing combustor exit turbulence simulations for turbomachinery airfoil boundary layer investigations. All three references were consistent in the conclusion that grids could be utilized to produce modest bulk turbulence levels (~10%), but the intensity would decay downstream of the grid in an exponential function.

Thus an experimental investigation was conducted to develop a suitable square bar grid for the curved duct facility. The criteria for an acceptable turbulence grid were established as follows:

1. Bulk turbulence level downstream of grid of ~10 percent, uniform over duct flow region.
2. Wall boundary layer profile typical of a flat plate turbulent profile.
3. Uniform mean flow velocity outside the boundary layer region.

Three sets of turbulence grids were designed and experimentally evaluated. Both eight and nine bar configurations were fabricated with bar widths of 5.08 mm, 6.35 mm and 7.62 mm which produced flow blockage factor of 32, 36 and 42 percent respectively.

Figure 2 shows the final configuration (9 bars, 7.62 mm width) a double plate design. One of the first observations is that the grid configuration must have half holes at the edge to provide a natural turbulent boundary layer profile development. This design also yielded a more uniform bulk flow velocity. The wider bars with 42% blockage produced the highest and most isotropic turbulence two duct widths downstream of the grid. Extensive LV and hotwire surveys were conducted to validate the characteristics of the flow field generated by the selected square bar grid. The two plate configuration (horizontal bars, vertical bars) produced a slightly higher turbulence than a grid of the same design cut from a single 6.35 mm thick plate. Also the two plate design produced a smaller pressure drop across the grid for a given bulk velocity. Results from the grid investigation show the expected exponential decay in turbulence intensity from 10% just behind the grid to 6% three duct widths downstream. For the data base generated in this investigation the turbulence grid was located three duct widths upstream of the entrance measurement station as shown in Figure 3.

2.4 CALIBRATION, DATA REDUCTION

Since the data base generated by this investigation will be used to benchmark computational fluid dynamics codes, extreme care was taken to insure the accuracy and consistency of the data. The three dimensional laser velocimeter provided the primary measurements of the mean and unsteady velocity components. Thus repeatable calibration of the LV system was very important as the data acquisition process extended over a six month period. Three techniques were used for LV system calibration; spinning target in probe volume, one-component hot wire anemometer, and pitot-static probe.

A direct and absolute end to end calibration of the LV system was routinely accomplished by a spinning disk with a small target wire on the edge. The target wire was rotated through each set of orthogonal fringes at a known velocity. Errors in measurement of target disk radius and rotational speed was determined to be less than 0.5 percent of the 10 m/s calibration velocity or 0.05 m/s. Thus a very accurate calibration of the three components of mean velocity was obtained. This calibration method does not address the unsteady velocity components.

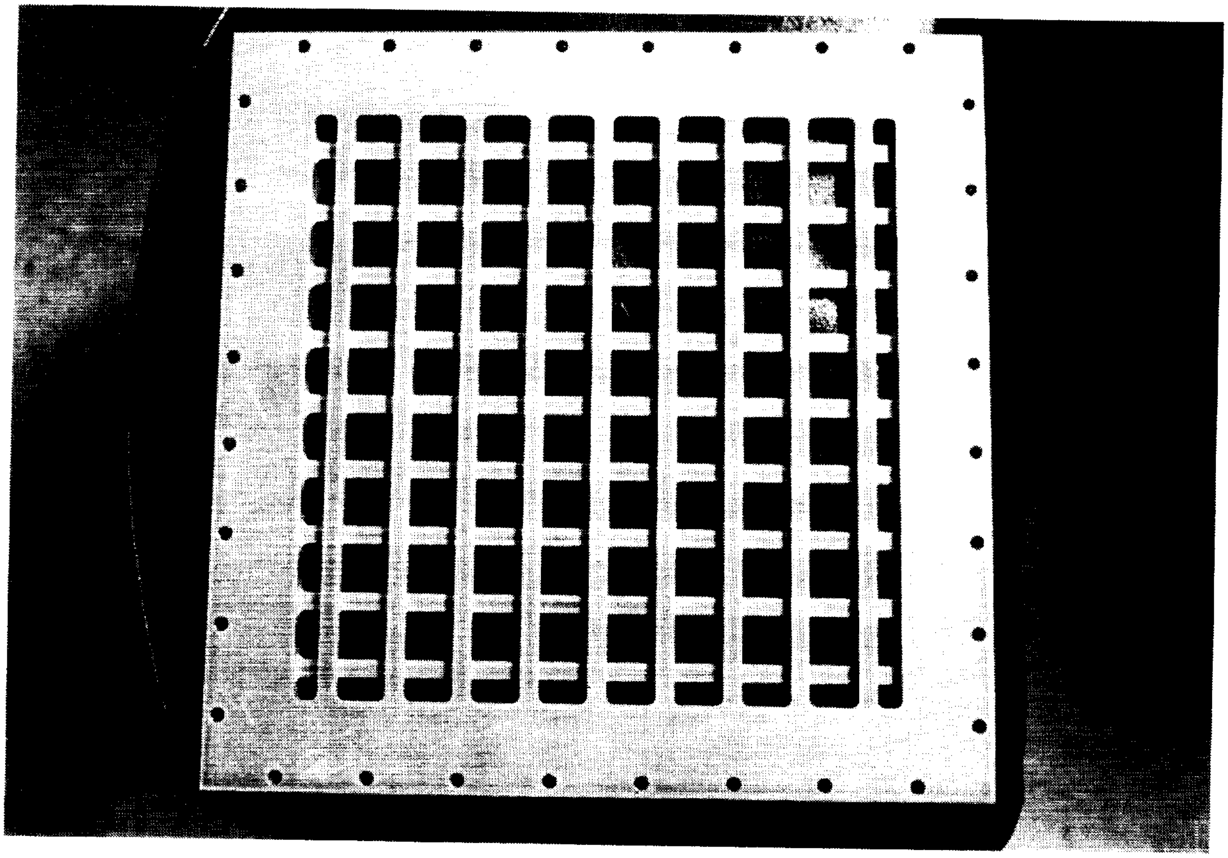


Figure 2. Turbulence Generation Grid

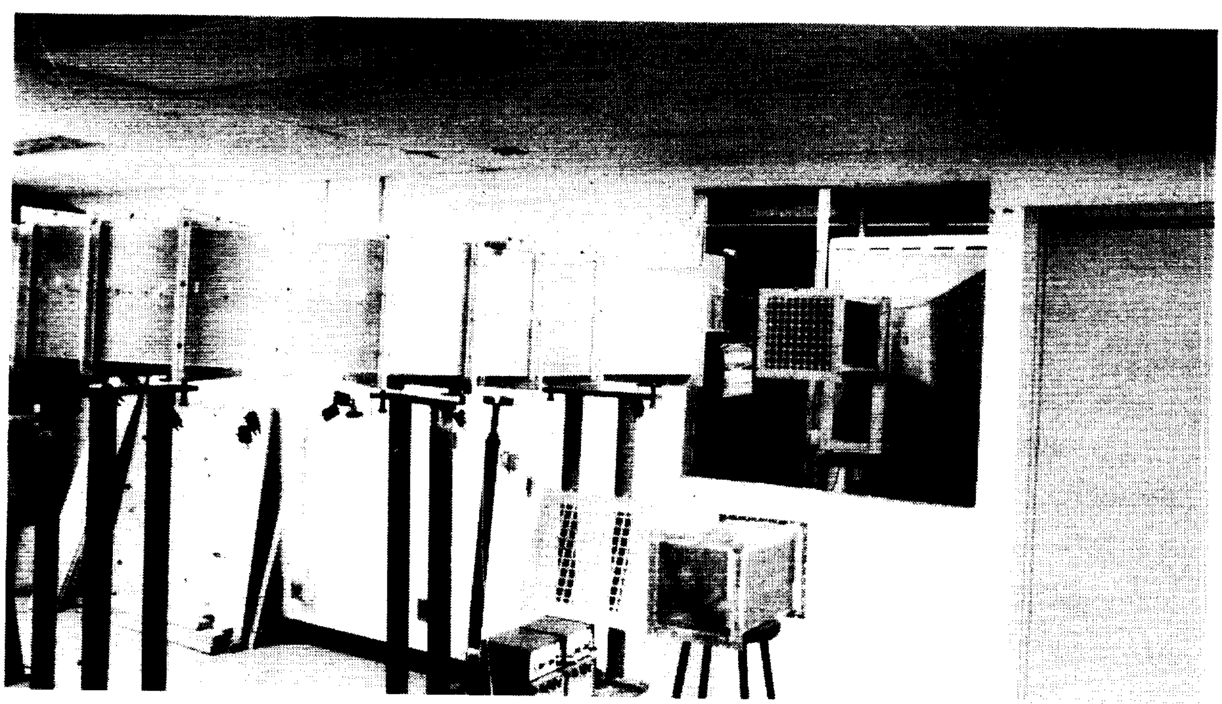


Figure 3. Turbulence Grid Installation

A single component hot wire anemometer was used to calibrate and validate the LV system for turbulence measurements. Since hot wire measurements are the accepted standard for unsteady velocity measurement, the turbulence level defined from hot wire was compared with the LV system value of turbulence intensity calculated from a given sample size. For LV data point sample sizes of 250 to 300 the unsteady velocity measurement agreed with the hot wire value. Note only the main flow component (U) was used for the hot wire comparison. As reported in Reference 4, the LV system measures a biased turbulence level in the wall boundary layer where the mean flow velocity gradient across the LV probe volume becomes measurable. In the wall boundary layer the LV measured turbulence intensity levels were 0.5 to 1.0 percent higher than hot wire (absolute turbulence level). This bias was not considered a serious problem because the turbulence level is rising rapidly in the boundary layer to values greater than 12 percent. Reference 9, contains a summary of boundary layer turbulence measurement techniques and concludes that LV measurements are comparable to hot wire measurements.

A pitot-static probe system was located one duct width downstream of the tunnel entrance bell, and pitot-static delta pressure was used for tunnel velocity control. A precision slant glass manometer was used to measure tunnel pitot-static differential pressure. The LV system could take flow surveys one duct width downstream of the pitot-static measuring location. Simultaneous measurements of mean velocity were in good agreement, however pitot-static velocity accuracy was limited to delta pressure reading precision which produced $\pm$ 1.5 percent uncertainty in tunnel velocity.

The following data acquisition and non-dimensionalization techniques were used to improve the accuracy and consistency of the data base. The LV system data was acquired at six stations (flow planes normal to tunnel axis) by vertical and horizontal scans. The computer controlled traverse system was capable of positioning the LV system probe volume coordinates to $\pm$ 0.1 mm. The duct centerline velocity was selected as the reference velocity for each measurement station. Thus each auto-scan file started and ended with a centerline data point which was used to correct for tunnel drift during the scan. Then each scan file velocity was non-dimensionalized with the average centerline U-velocity. This approach provided a non-dimensional data base for each measurement station (all six velocity components) which has been consistently non-dimensionalized by the centerline velocity. Thus all variations in tunnel velocity caused by lack of precision in measuring pitot-static differential pressure have been eliminated.

For station to station comparison of velocity profiles, an average centerline velocity was calculated for each measurement station from all the scan file centerline values. This approach provides a consistent data set of highest quality which can be used for code validation.

2.5 MEASUREMENTS PLAN, TEST MATRIX

The objective of this investigation was the experimental evaluation of bulk turbulence and entrance boundary layer thickness influence on the curved duct flow field. The data base on the thin boundary layer flow with a low turbulence core was available from the previous investigation (ref. 4). This investigation produced a complete curved duct data base on an entrance flow with a thick boundary layer and grid produced bulk turbulence. One flow station at 60^o was surveyed without the turbulence grid to assist in separating the influence of boundary layer thickness from the bulk turbulence on the three-dimensional flow development.

Following the turbulence grid development and instrumentation calibration the following test matrix was conducted. The curved duct facility was configured with the 42 percent blockage, turbulence grid located three tunnel widths upstream of the entrance measurement station. Test conditions were restricted to a bulk entrance velocity of 10 meters/second with ambient air corresponding to a Reynolds number based on duct width of approximately 165,000 and a Deans number of approximately 76,000. All data were taken at this one test condition where the wall boundary layers were turbulent both ahead and behind the turbulence grid. The entrance station wall turbulence levels were 10 to 15 percent with bulk turbulence levels outside the boundary layer of 6 to 7 percent behind the square bar grid. Without the turbulence grid the entrance bulk turbulence was 2-3 percent.

The curved duct flow field was surveyed at six measurement stations in planes normal to the tunnel flow axis. (Entrance, 1 width upstream; $0^o; 30^o; 60^o; 90^o$; exit, 1 width downstream.) Each spatial data point was acquired by the three-dimensional laser velocimeter. A minimum of 300 data samples was processed to yield mean velocity components U, V, W and fluctuating components u', v', w' calculated from the standard deviation on U, V, W. Data for each measurement station was acquired computer controlled precision mill-bed traverse, corrected to standard test conditions, and non-dimensionalized on duct bulk velocity (10 m/s). The 60^o station was surveyed with and without the turbulence grid installed to provide comparison data.

3. PRESENTATION AND ANALYSIS OF DATA

More than 2100 three-dimensional velocity data points were acquired at six flow measurement stations in the curved duct facility. Figure 4 shows the respective locations of the six measurement planes (orthogonal to flow axis) and the turbulence grid. All the data was taken at an inlet velocity of 10 meters/second (duct bulk flow velocity) with a Reynolds number based on duct width of 165,000. The data will be presented in four forms; U-velocity profiles in the y-direction at constant values of z, u'-profiles in the y-direction at constant values of z, V and W velocity plotted as crossflow velocity vectors, and complete data tables of U, V, W, u', v', w' for each flow measuring station. Station 8 data is a repeat survey of Station 4 ($\theta = 60^o$) without the turbulence grid installed.

3.1 U-VELOCITY PROFILES

The U-velocity is the main flow component in the curved duct, and the boundary layer developed from the U-velocity strongly influences the crossflow development. Appendix A presents the U-velocity profiles as a function of y for six z-locations (horizontal flow surveys at constant z). The seven figures in Appendix A show the development of the main flow velocity profiles and wall boundary layers. The Station 1 entrance, boundary layer thickness is approximately 20 percent of the duct half-width which provides a large region of low energy fluid along each wall. The resulting pressure gradient in the curved duct acts on this boundary layer fluid and establishes the strong V and W cross flow velocities. Although the plotted data in Appendix A represents

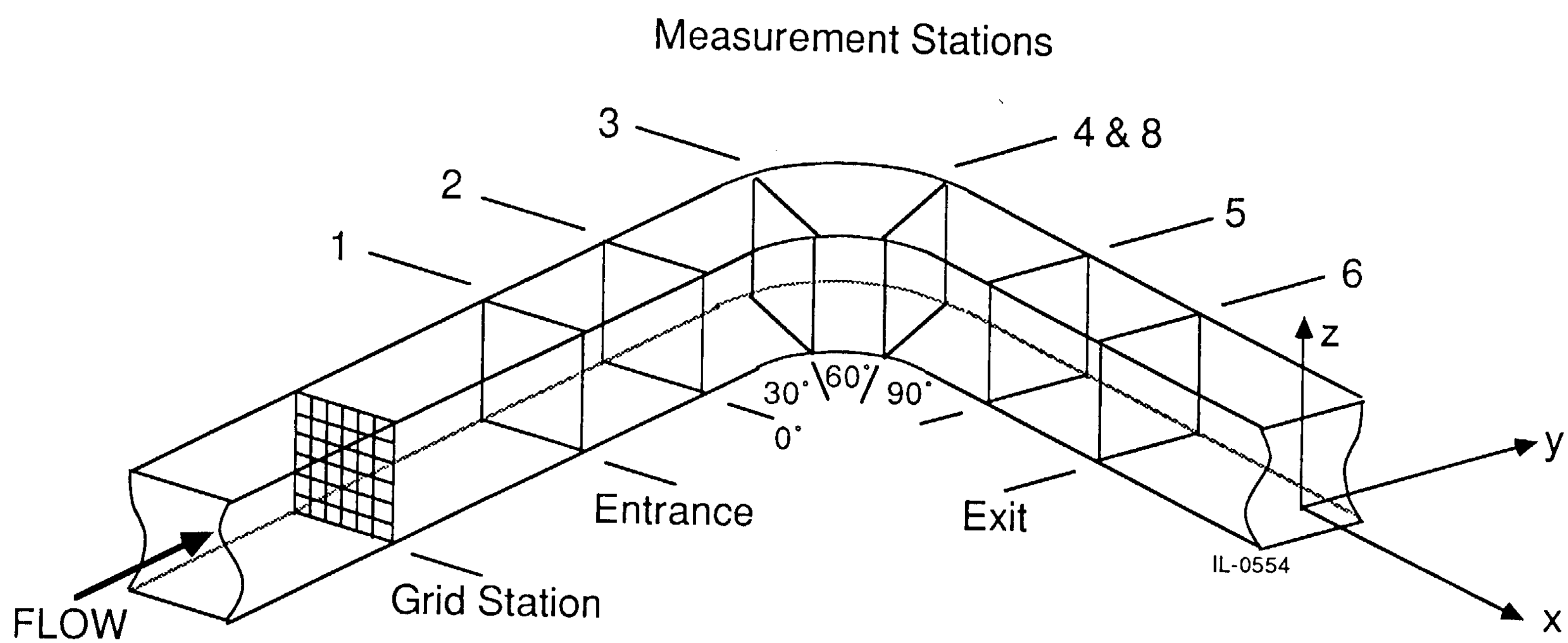


Figure 4. Curved Duct Coordinates, Measurement Stations

six z-values, the tabulated data in Appendix D contains a $y - z$ coordinate matrix of data points (26 by 12). Thus the flow field in the lower half of the duct is well defined with approximately one-half of the data points in the boundary layer. It was assumed that the flow field was symmetric in the upper and lower half-planes, and sufficient data points were taken at each station to validate this assumption. Comparisons of the entrance (Station 1) U-velocity profiles for the turbulent thin boundary layer from Reference 4, and the turbulent thick boundary layer are shown in Figure 5. Although not shown in the figure, the 5-10 percent thin turbulent boundary layer had a classic turbulent profile.

To assure the accuracy of the data base as benchmark quality data, the following continuity check was conducted on the U-velocity data. Recall that data from each data acquisition scan (y-direction) was non-dimensionalized on the centerline ($y = 0, z = 0$) U-velocity. This technique provided a consistent non-dimensionalized data file which eliminated duct flow variations, drift and uncertainty from scan to scan. All the centerline U-velocity readings were averaged for each measurement station and then non-dimensionalized by the bulk velocity of 10 meters/second.

$$\left[\sum_{n=1}^{m} U_{0,0}/m \times 10\right]_{\text{station}} = K_{\text{station}}$$

Each non-dimensional data set for the measurement station is multiplied by the corresponding K-value to produce a consistent data base for the complete duct flow field non-dimensionalized on 10 meters/sec. A mass flow integration at each station provided a check on the K-values and confirmed that the U-velocity field satisfies the continuity equation. Mass flow at each station was within $\pm$ 1.0 percent of the measured mass flow at the duct entrance.

3.2 U'-VELOCITY PROFILES

All three components of fluctuating velocity are included in the data base, however only the u'-component will be discussed in detail in this section. Two duct widths downstream of the turbulence generation grid the turbulence outside of the boundary layer is uniform and isotropic at 7-8 percent intensity. In the boundary layer the v' and

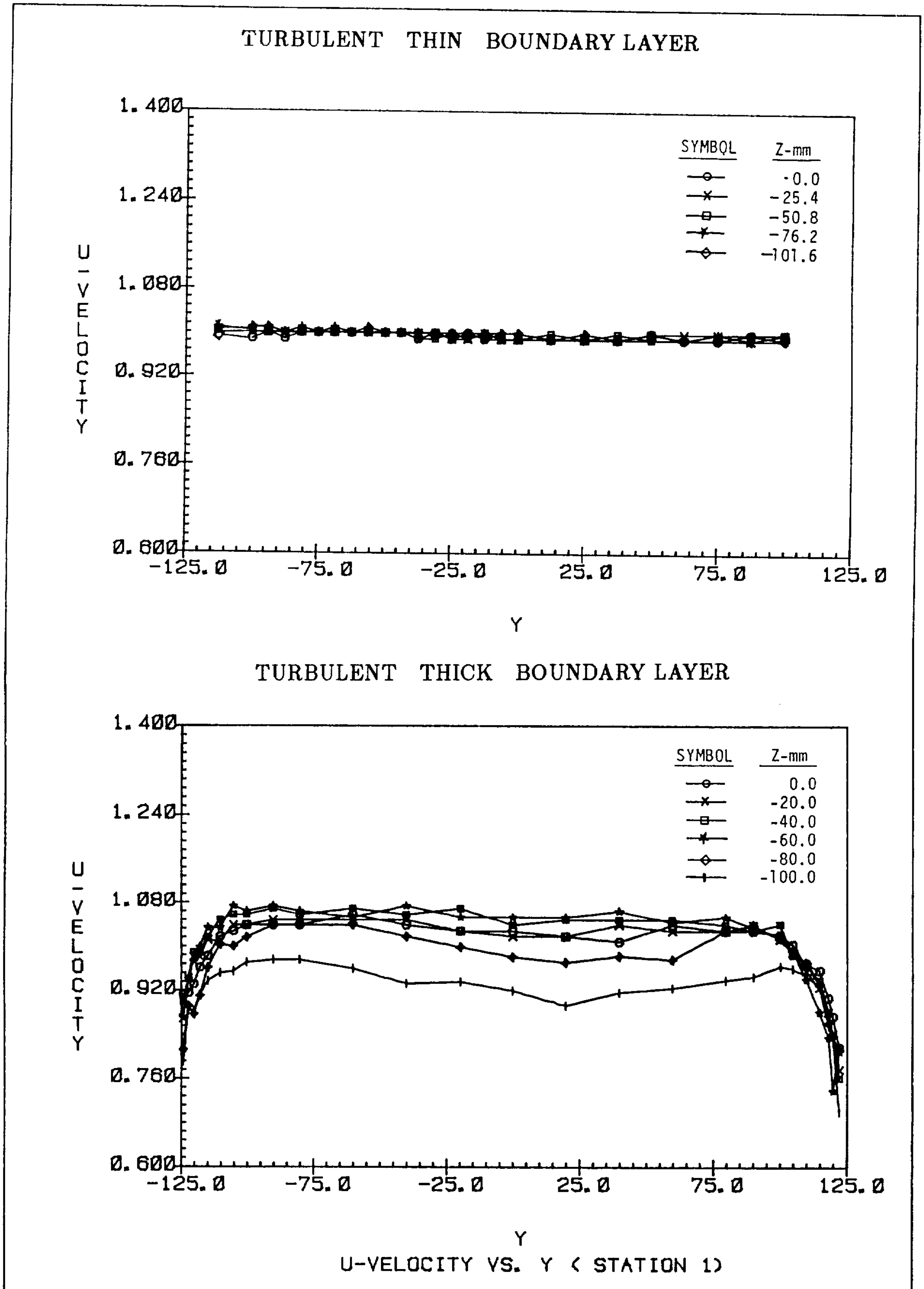


Figure 5. Entrance U-Velocity Comparison

w' intensity levels remain nearly constant while the u' value increases to 12-15 percent. This distribution of turbulence intensity was observed at all measurement stations.

Appendix B presents the u'-velocity profiles as a function of y for six z-locations. At Station 1, three duct widths downstream of the turbulence grid, the mean flow turbulence level is 6 percent as shown in Figure B-1. As the amount of higher turbulence boundary layer develops at Stations 2 through 6, the centerline bulk turbulence intensity drops from 5 percent at Station 2 to near 3 percent at Station 5. By Station 6 the boundary layer influence has extended to the centerline raising the turbulence level to 4-5 percent.

Comparisons of the entrance station turbulence levels from the thin turbulent boundary layer of Reference 4 and the thick turbulent boundary layer with grid generated bulk turbulence are shown in Figure 6. These two entrance station flow profiles are similar in U-velocity profile, but differ significantly in boundary layer thickness and turbulence level.

3.3 CROSSFLOW VELOCITY FIELD

One crossflow vector plot can quickly and completely describe the V and W-velocity distribution in the curved duct. Appendix C presents the lower half, crossflow velocity fields for all the measurement stations. An arbitrary velocity scale (see key) was selected for the plots to show both the relative magnitude and direction of the developing crossflow. In Figure C-1 the entrance flow contains almost no crossflow velocity, however at Station 2 a nearly uniform negative V-velocity of 10 percent U-velocity has been established (Figure C-1). At Station 3 a strong flow toward the suction (inner) wall has developed along the lower (and upper) wall. At this 30 degree position the circular flow pattern is established as shown in Figure C-3. By the 60 degree, Station 4, position the crossflow velocities approach 30 percent U-velocity near the suction and lower wall. Figure C-4 presents the crossflow velocity at Station 4 which is characterized by a well developed elongated vortex pattern and small crossflow velocity on the duct centerline. Figure C-5 shows a repeat survey of the Station 4 flowfield without the grid generated bulk turbulence. A significant increase in the crossflow

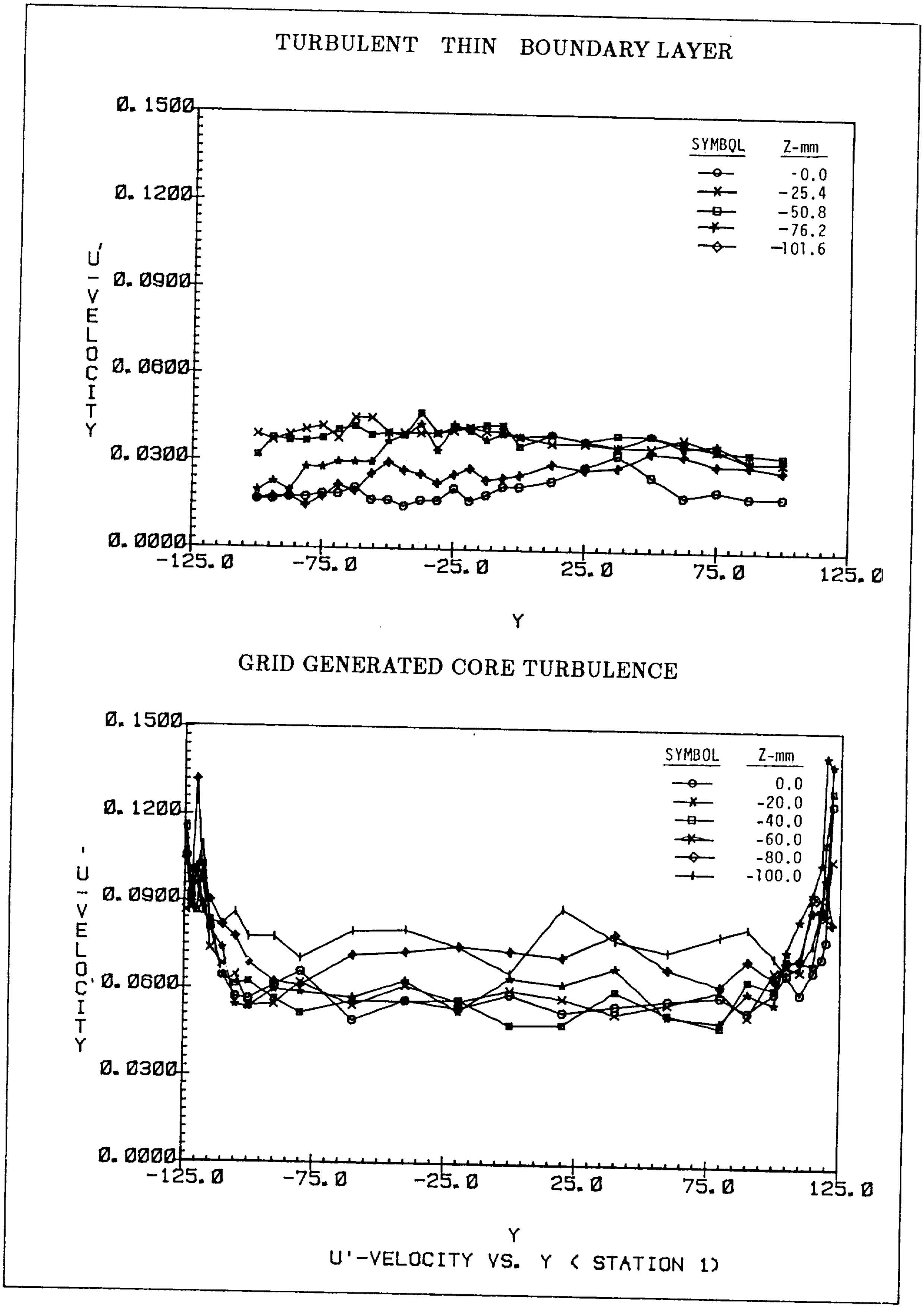


Figure 6. Entrance u'-Velocity Comparison

velocity was observed which resulted from the larger, low-energy boundary layer associated with the low turbulence core flow. The Station 5 ($\theta = 90^o$) crossflow field is dominated by a strong vortex located in the suction wall corner with some velocities 40 percent of U bulk. Figure C-6 and Figure C-7 present the Station 5 and Station 6 flow fields, and the exit station vortex has moved up the suction wall closer to the centerline.

3.4 FLOW FIELD COMPARISON, $\theta = 60^o$

The curved duct flow field is well developed and contains all flow characteristics at the 60^o (Station 4 and Station 8) measurement plane. Thus for simplicity the three inlet flow cases and data sets will be compared and evaluated at the 60^o station. The first data set (ref. 4) is characterized by a thin turbulent boundary layer in the entrance region (5-10 percent thick) and a low core flow turbulence of 3-percent. The second data set, from this investigation is characterized by a thick turbulent entrance boundary layer (20-percent thick) and core flow turbulence of 3-percent. These two data sets can be compared to evaluate the influence of boundary layer thickness on the curved duct flow field development. The third and primary data set from this investigation is characterized by a 20-percent thick turbulent boundary layer and 6-percent grid generated turbulence intensity in the entrance station. The second and third data sets provide a comparison of the influence of bulk turbulence intensity on the flow field development for the thick turbulent boundary layer entrance condition.

First it should be noted that all three sets of data have very similar flow characteristics, and the thick entrance boundary layer results agree with the general flow field described by Taylor, Whitelaw and Yianneskis (ref. 1) Figures 7, 8, and 9 present respectively the U-velocity profiles ($\theta = 60^o$) from the three flow cases, thin turbulent B.L., thick turbulent B.L., and thick turbulent B.L. with grid turbulence. The inner core flow, away from the wall shear layers, has a nearly identical linear slope in the y-direction for all three cases. The magnitude of the core U-velocity is 10-15 percent higher in the thick turbulent boundary layer (no grid) as compared to the thin turbulent boundary layer case. The bulk turbulence in Case 3 reduces the core U-velocity 5-10 percent as compared to Case 2, with the inner wall (suction wall) viscous layer being much larger in Case 2. These three U-velocity figures provide clear evidence of

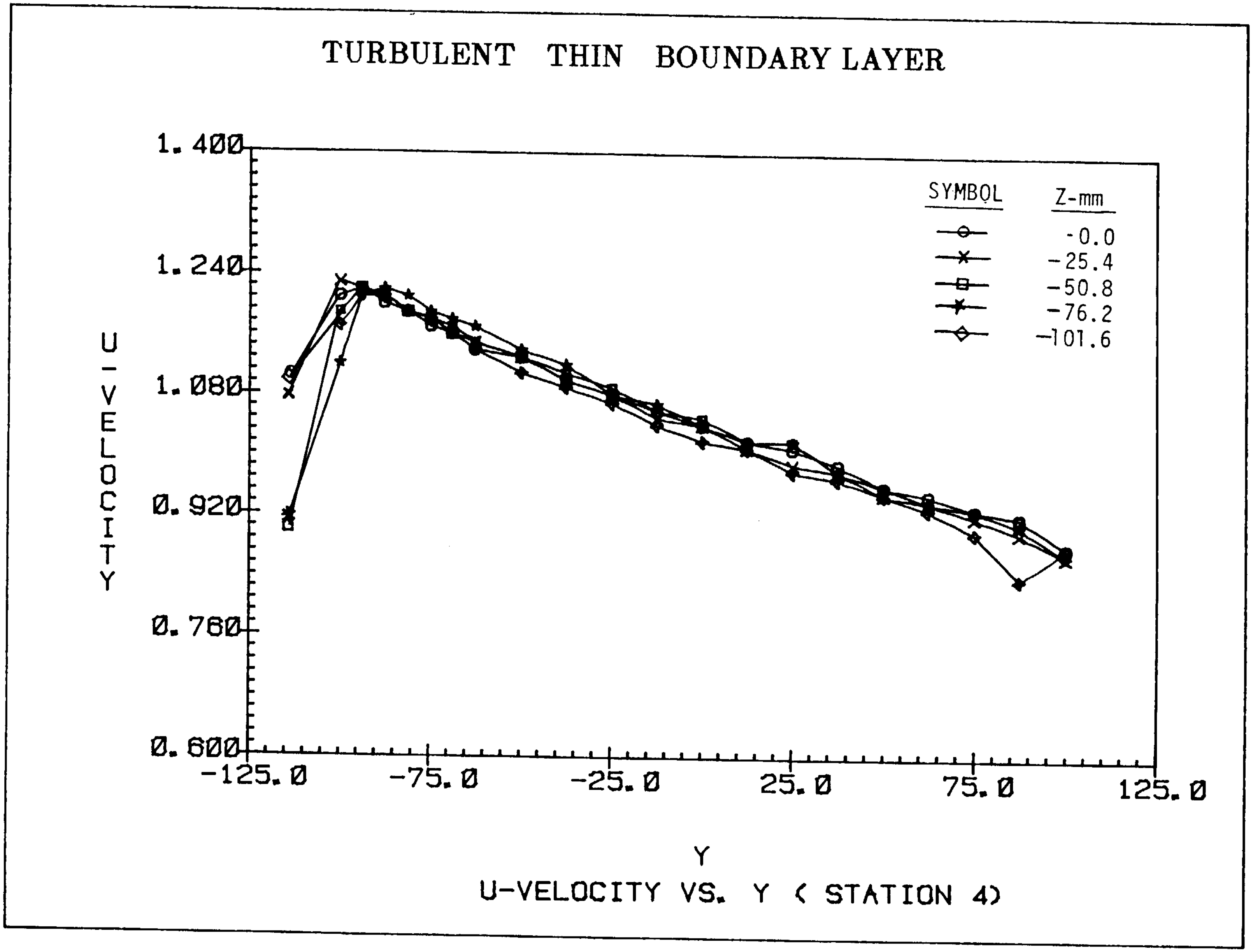


Figure 7. U-Velocity, Thin Boundary Layer

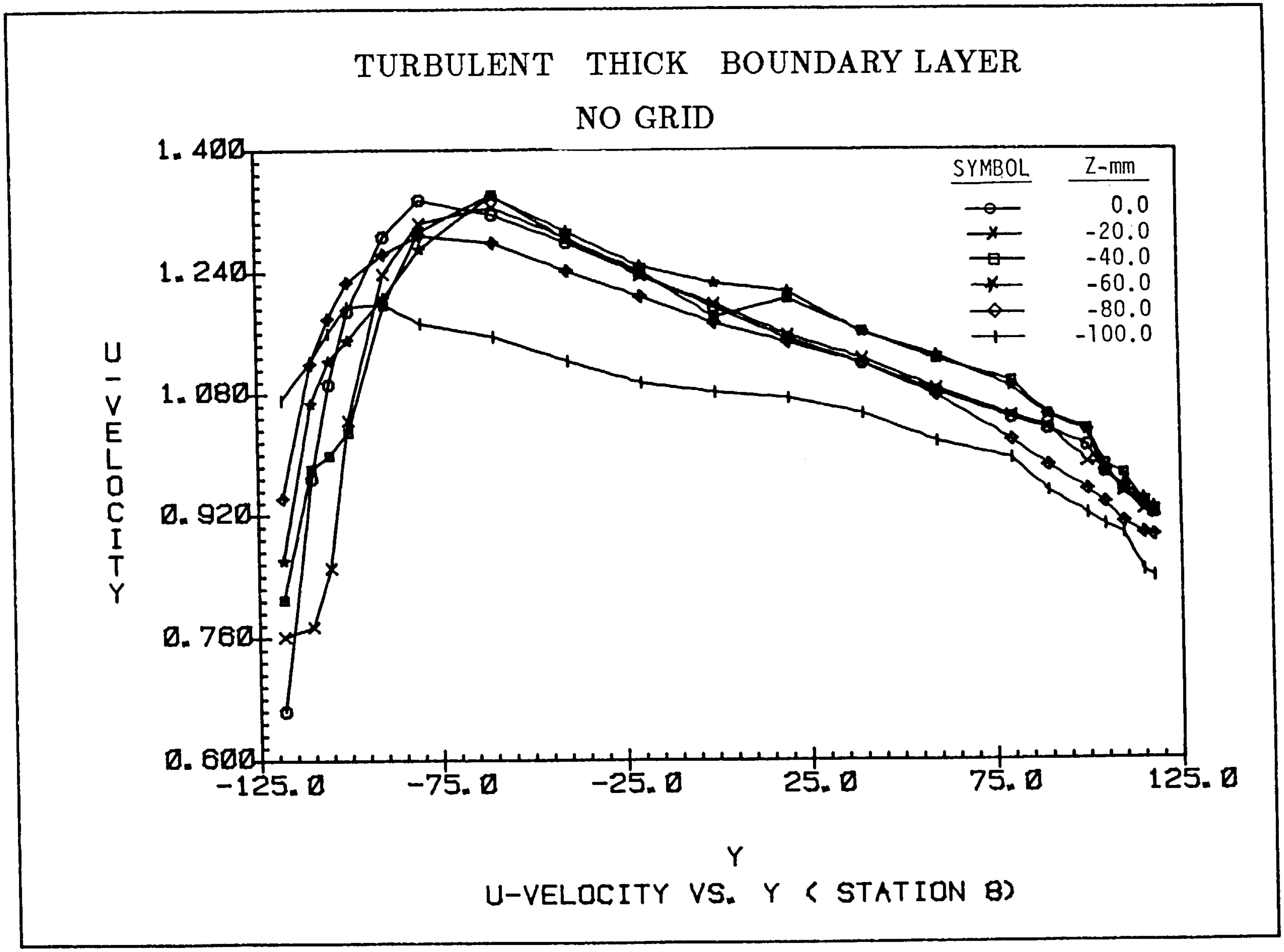


Figure 8. U-Velocity, Thick Boundary Layer, No Grid

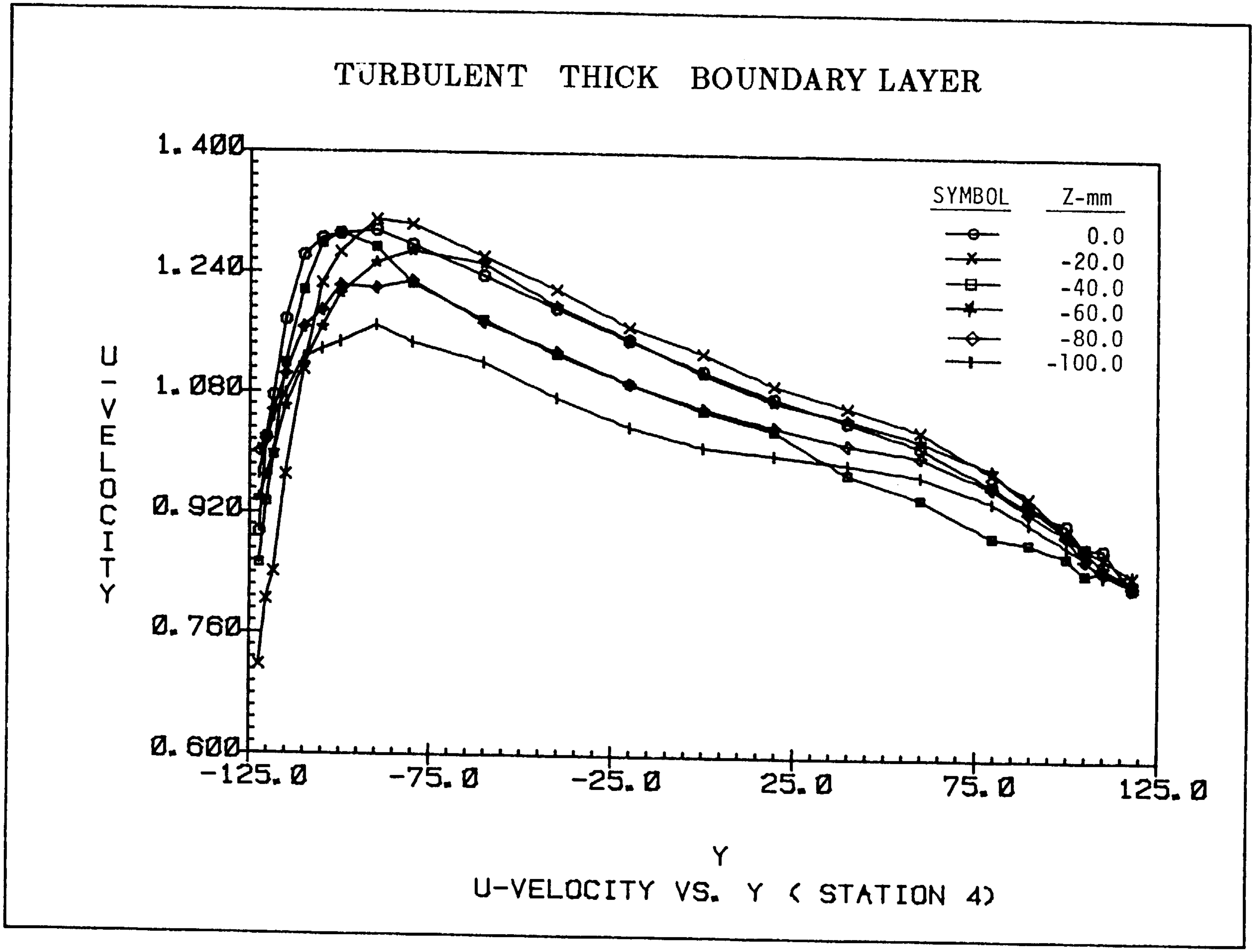


Figure 9. U-Velocity, Thick Boundary Layer, With Grid

the strong influence of boundary layer thickness and bulk turbulence on the curved duct flow field development.

Figures 10, 11 and 12 present the u'-velocity profiles ($\theta = 60^o$) for the three flow cases discussed above. The thin turbulent B.L. case maintained a very uniform turbulence level of 3-percent in the large region of core flow. The thick turbulent B.L. case (no grid) also maintained a core turbulence level of 3-percent, however the viscous layer has grown to 50-percent thickness on the inner wall (suction wall). The core turbulence levels for Case 3 were about 4-percent at Station 4 ($\theta = 60^o$), and the size of the inner wall shear layer was in between Case 1 and Case 2 (35-percent). It is obvious that boundary layer thickness and bulk turbulence have a strong influence on turbulent shear stress distribution in the curved duct flow.

Cross flow velocity fields for the thin turbulent entrance boundary layer and the thick turbulent boundary layer (with grid) are shown in Figure 13. Although this figure compares the combined influence of boundary layer thickness and bulk turbulence, the effect on the resulting crossflow field is obviously significant.

4. CONCLUSIONS AND RECOMMENDATIONS

The results of this investigation confirmed the significant influence of the entrance flow conditions on the flow field development in the square, curved duct. The boundary layer thickness and the magnitude of turbulence in the duct entrance are both important effects which influence and enhance the turbulent transport of momentum. The relatively modest increase in entrance bulk turbulence from 3-percent to 6-percent produced nearly 50 percent change in viscous region and crossflow velocity development at the curved duct exit. The conclusion from this investigation is that both experimental and computational fluid dynamics results for duct flows with large curvature will be strongly influenced by the inflow boundary conditions. Comparisons of results from different investigations must be evaluated with caution unless the inlet flow conditions are well documented and considered. A duct flow field should not be considered unique unless Reynolds number, Mach number and three-dimensional steady and fluctuating velocity components at the flow entrance are defined.

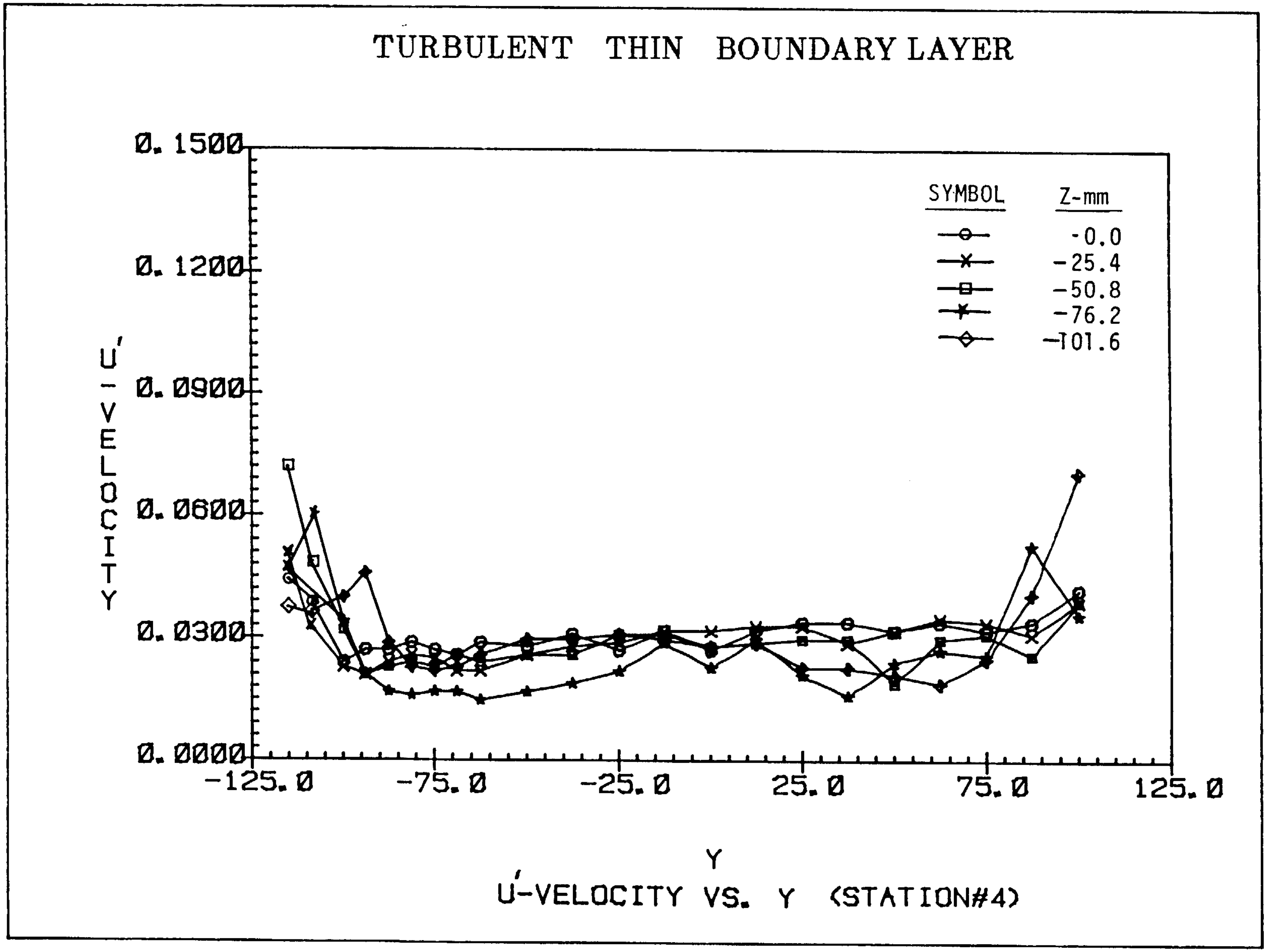


Figure 10. u'-Velocity, Thin Boundary Layer

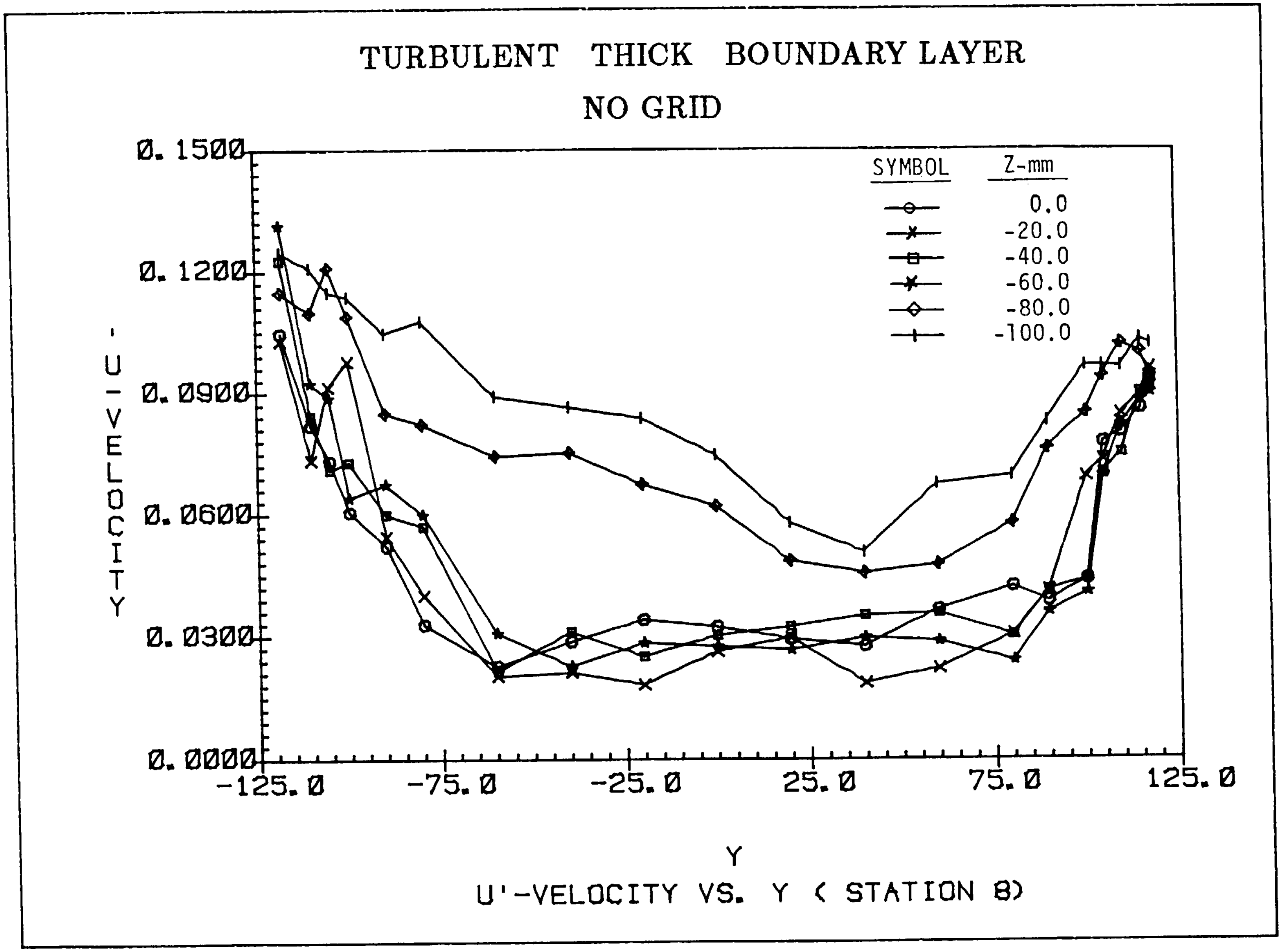


Figure 11. u'-Velocity, Thick Boundary Layer, No Grid

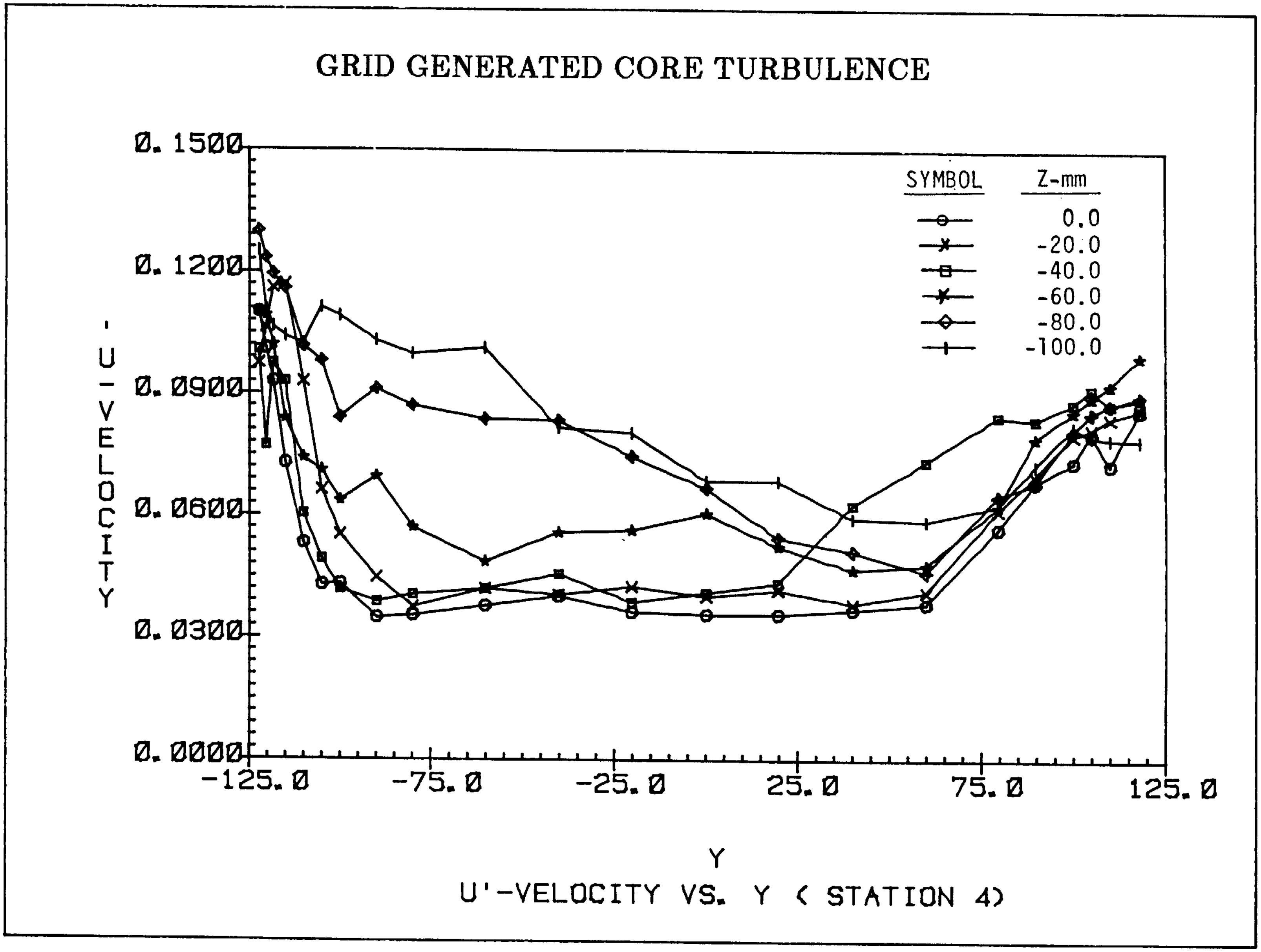
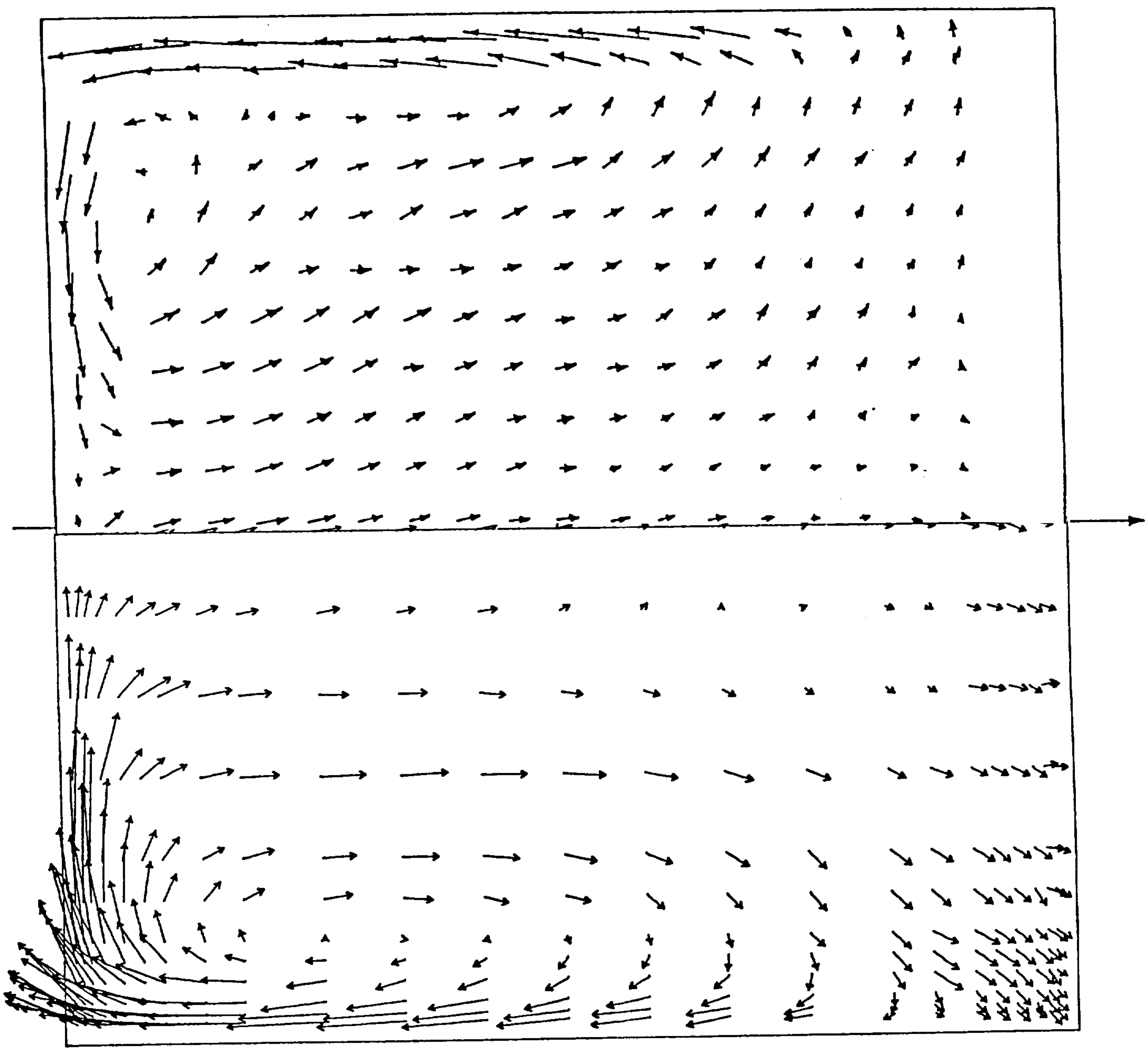


Figure 12. u'-Velocity, Thick Boundary Layer, With Grid

CROSS FLOW VELOCITY FIELD STATION 4

TURBULENT THIN BOUNDARY LAYER



TURBULENT THICK BOUNDARY LAYER

Figure 13. Crossflow Velocity Field Comparison

Recommendations for the experimental evaluation of curved duct flows are obvious; close attention to inflow velocity field fidelity is required for accurate simulation. This is particularly important when only one segment of a ducted flow field is being simulated. The implications for CFD code development and application are equally important. A good turbulent momentum transport model is essential. Inflow starting conditions must contain a good definition of the boundary layer including the turbulence intensity distribution. For example, combustor exit flows contain viscous and thermal boundary layers in addition to high levels of turbulence and produce a difficult inflow simulation for the turbine nozzle vanes. In addition to the requirements for close grid point spacing in the boundary layer, the stream-wise grid spacing should also be re-evaluated due to the rapid, strong crossflow development.

The results of this investigation expand the curved duct data base to higher turbulence levels and thicker entrance boundary layers. The experimental results provide a challenging benchmark data base for computational fluid dynamics code development and validation. The variation in inlet bulk turbulence intensity provides additional information to aid in turbulence model evaluation.

LIST OF SYMBOLS

D_e	Deans number - $(d/2r_c)^{\frac{1}{2}} R_{ed}$
d	Duct width
P	Pressure
R_{ed}	Reynolds number based on d
r_e	Mean radius of curvature
U	Mean velocity (x-direction)
u'	Unsteady x-velocity component
V	Mean velocity (y-direction)
v'	Unsteady y-velocity component
W	Mean velocity (z-direction)
w'	Unsteady z-velocity component
x	Axial coordinate (main flow direction)
y	Radial coordinate
z	Vertical coordinate
θ	Duct turning angle

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APPENDIX A U-VELOCITY PROFILES

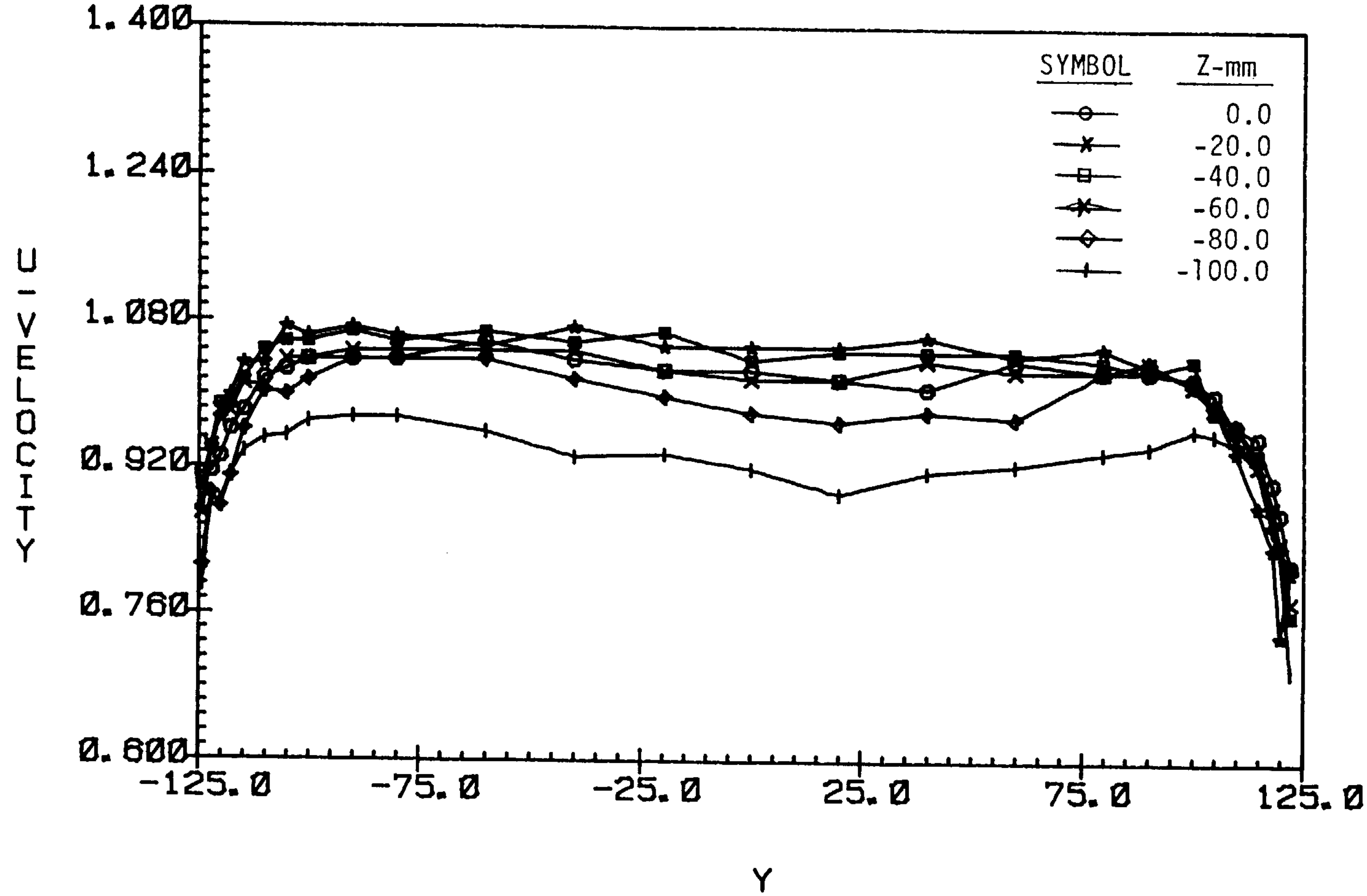


Figure A-1 U-VELOCITY VS. Y (STATION 1)

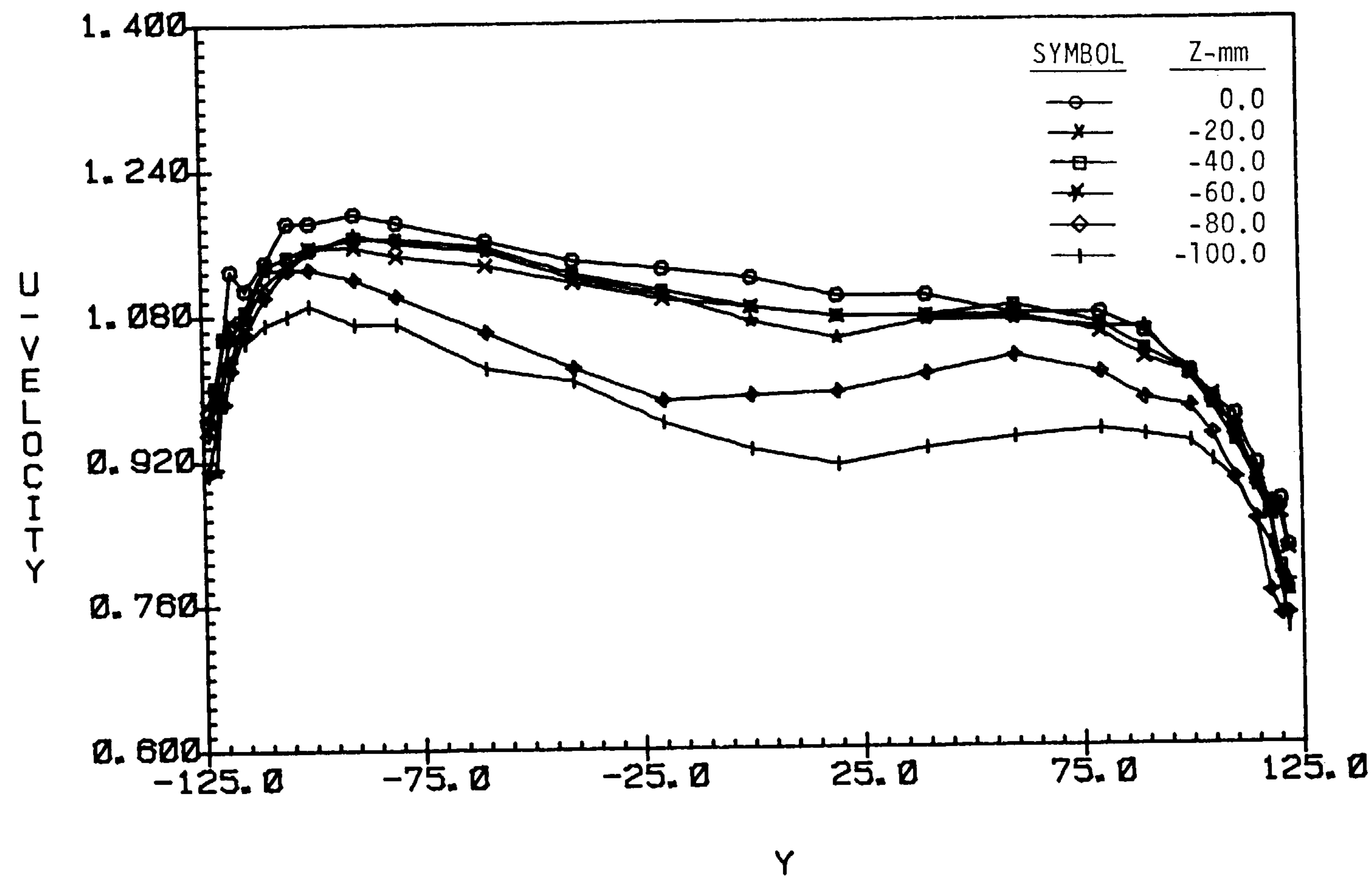


Figure A-2 U -VELOCITY VS. Y (STATION 2)

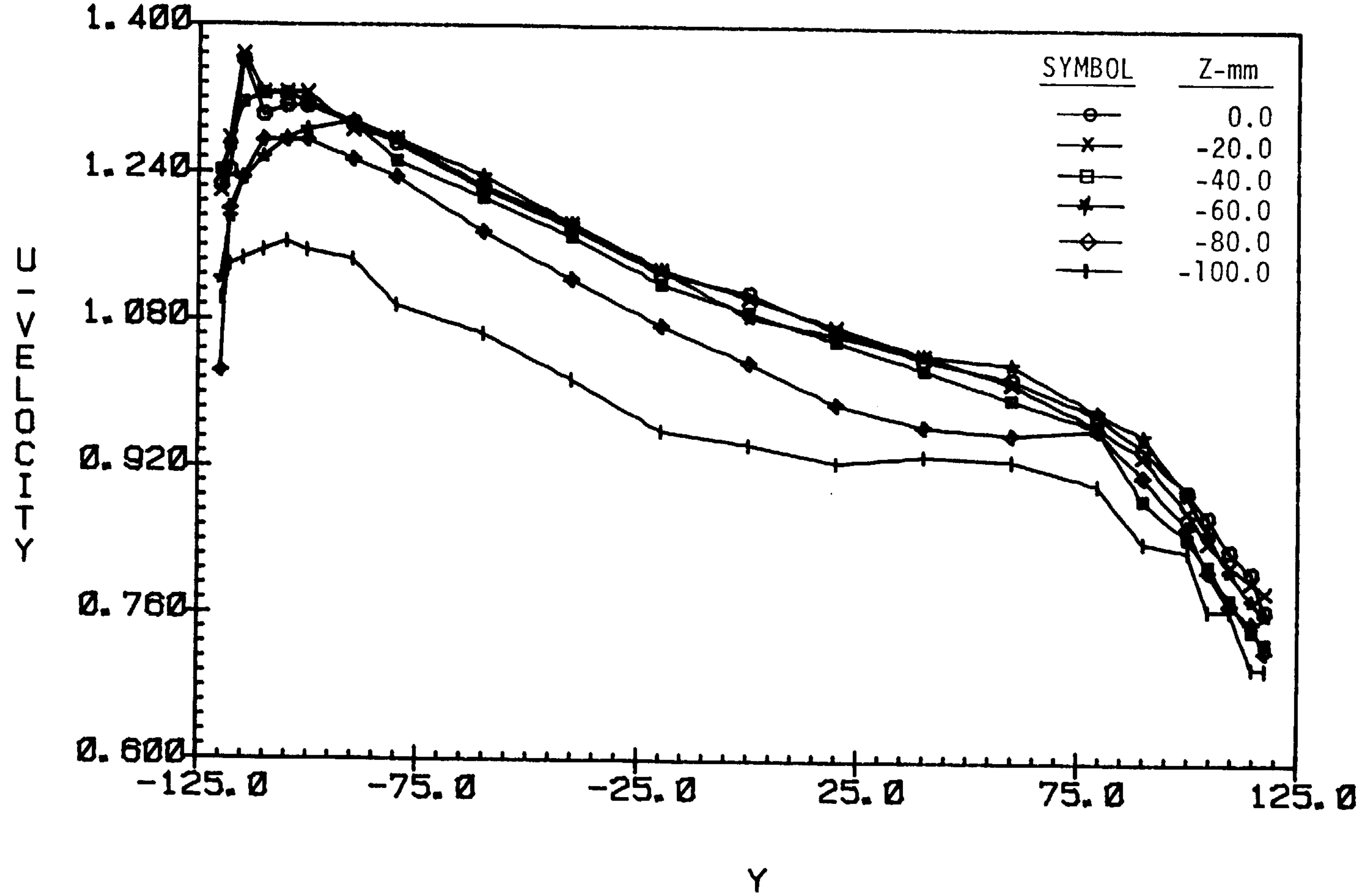


Figure A-3 U-VELOCITY VS. Y (STATION 3)

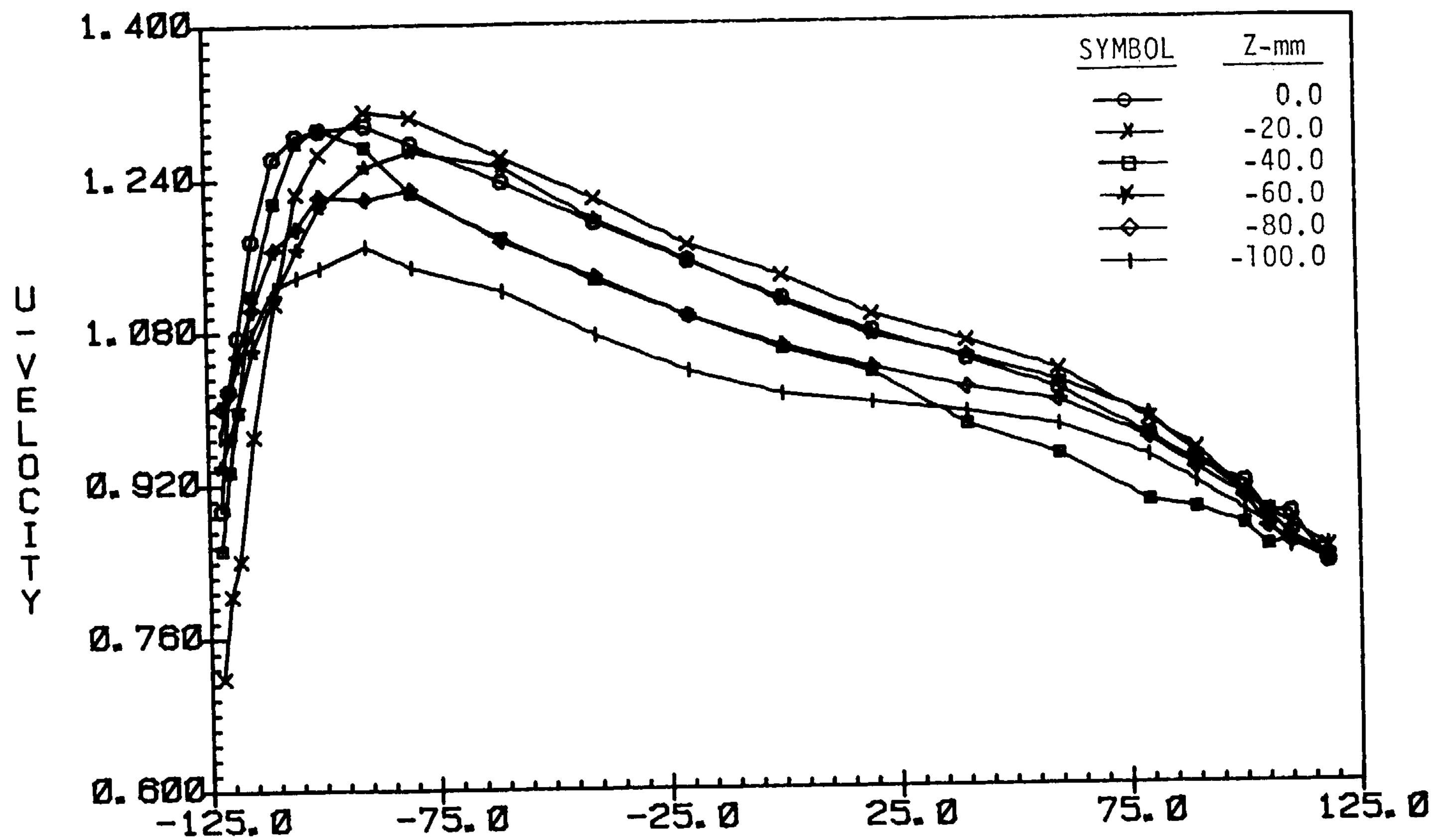


Figure A-4 U-VELOCITY VS. Y (STATION 4)

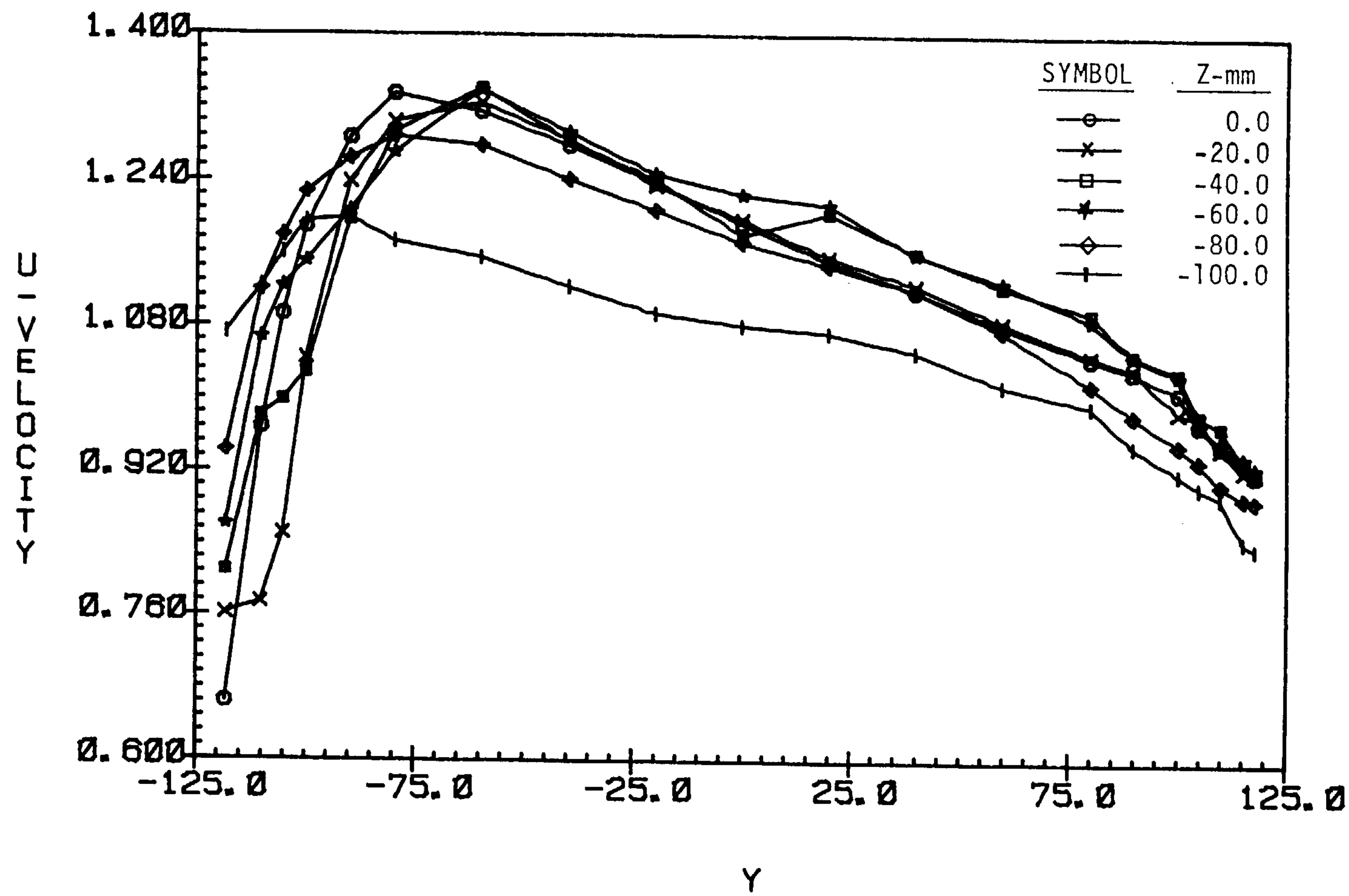


Figure A-5 U-VELOCITY VS. Y (STATION 8)

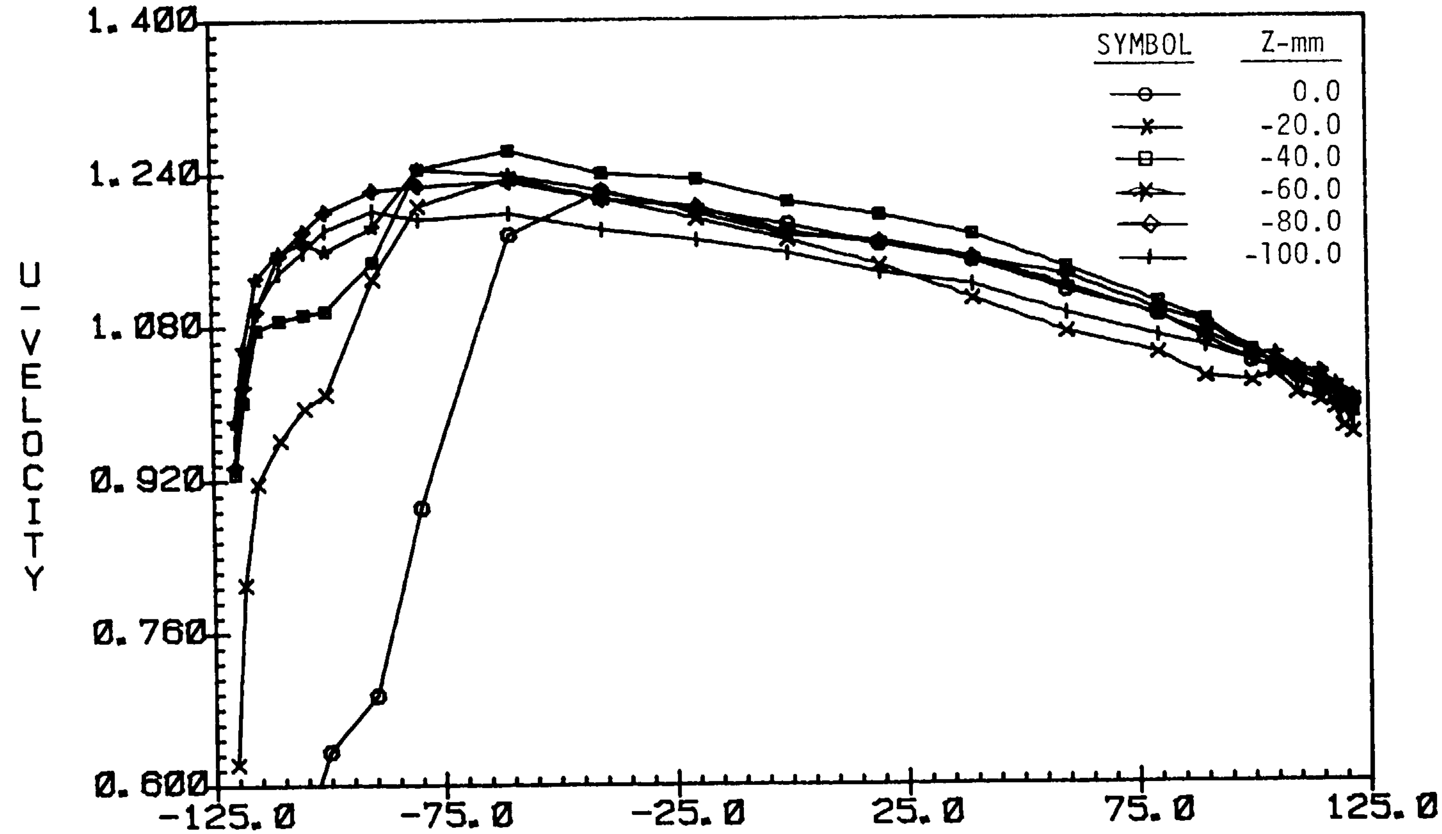
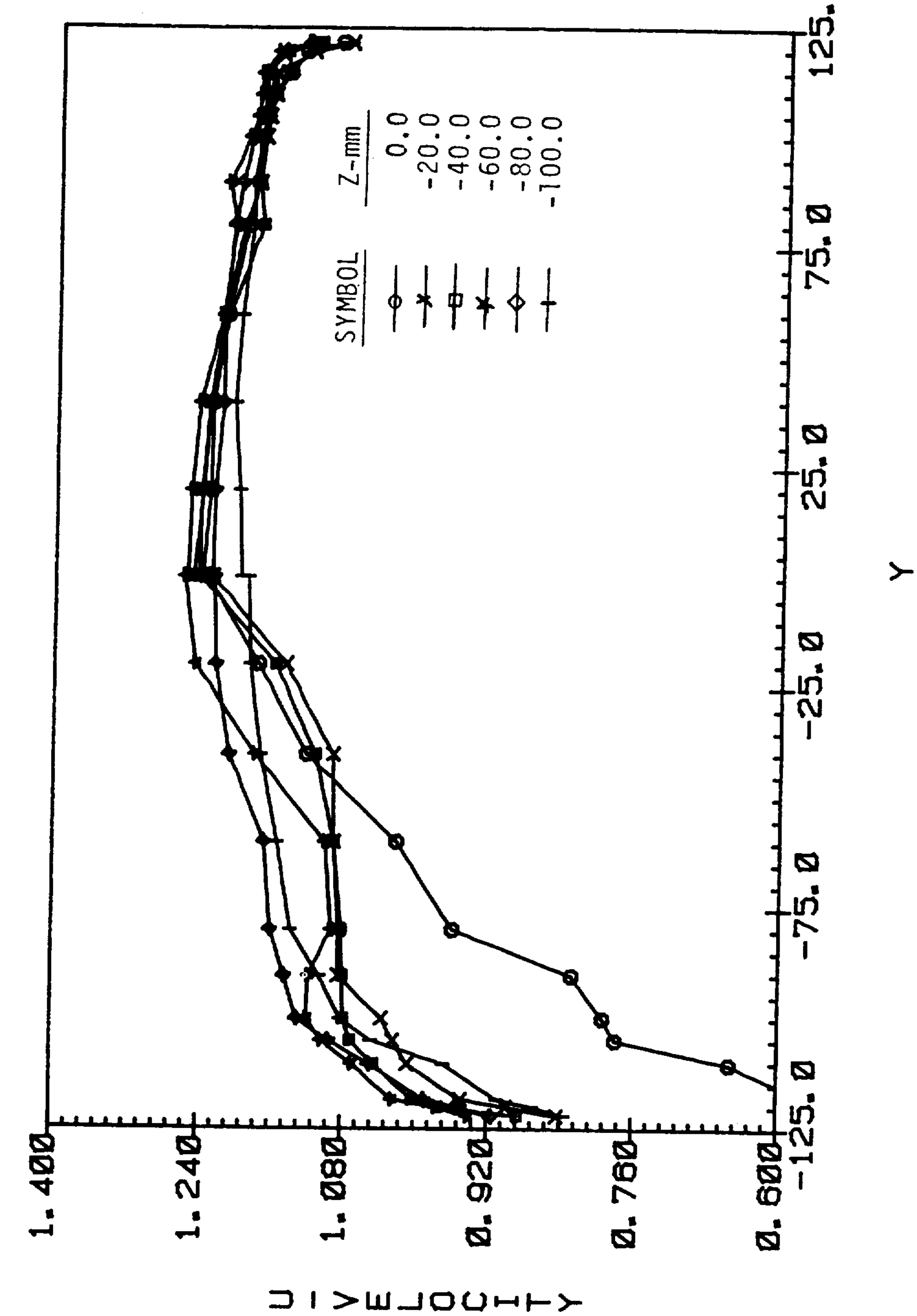


Figure A-6 U-VELOCITY VS. Y (STATION 5)



U-VELOCITY VS Y (STATION 6)

Figure A-7

APPENDIX B u'-VELOCITY PROFILES

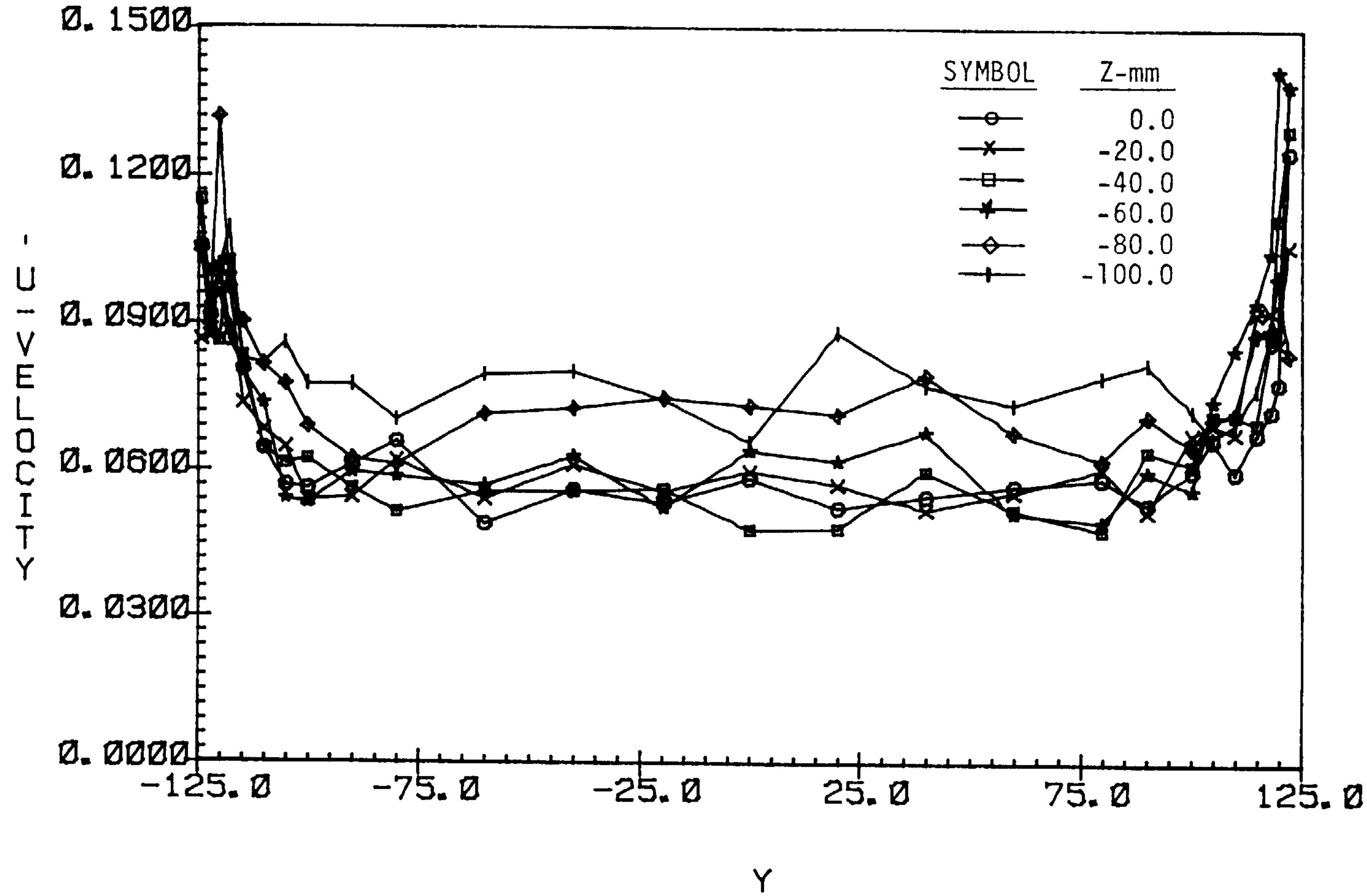


Figure B-1 U'-VELOCITY VS. Y (STATION 1)

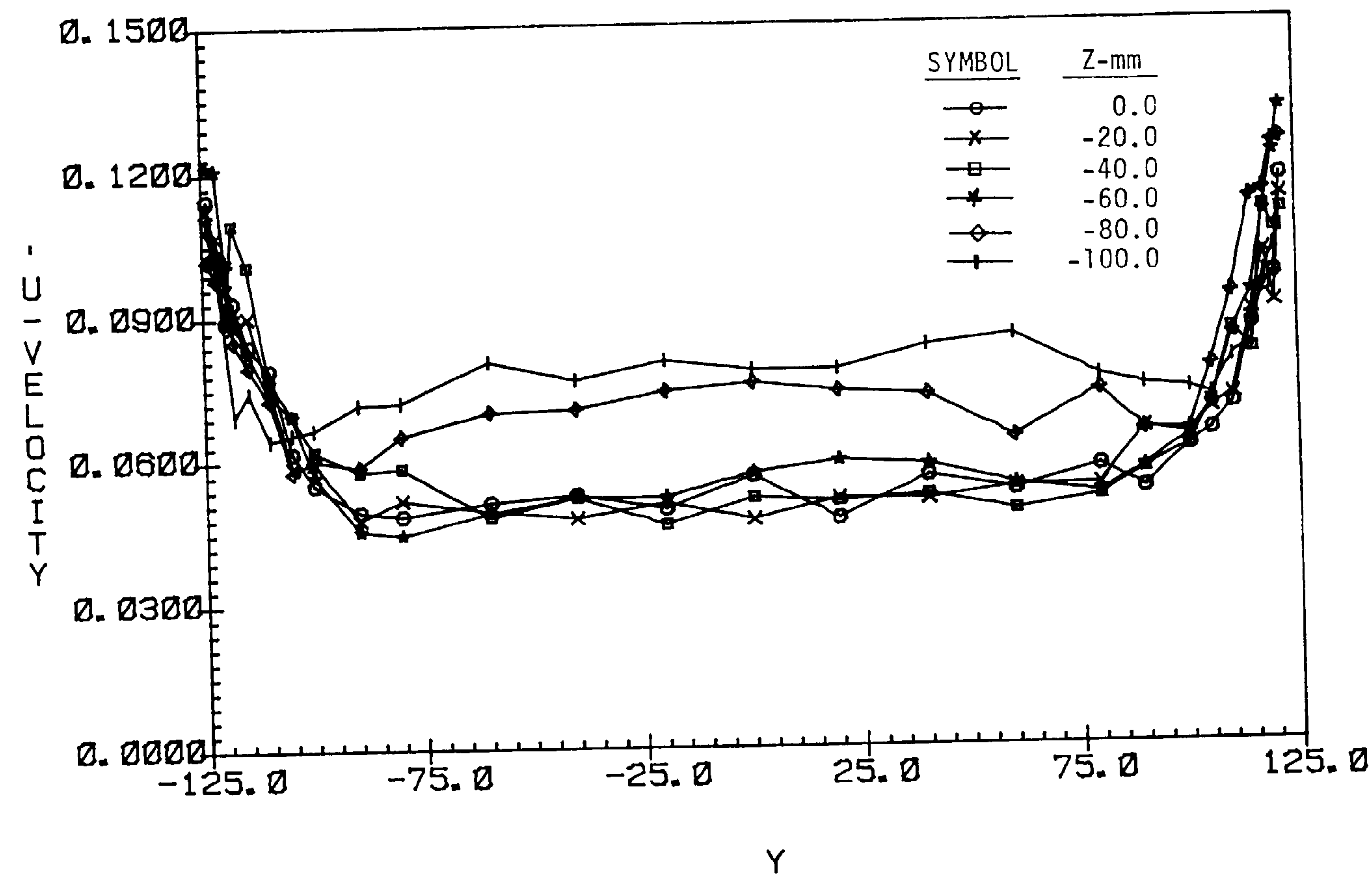


Figure B-2 U'-VELOCITY VS. Y (STATION 2)

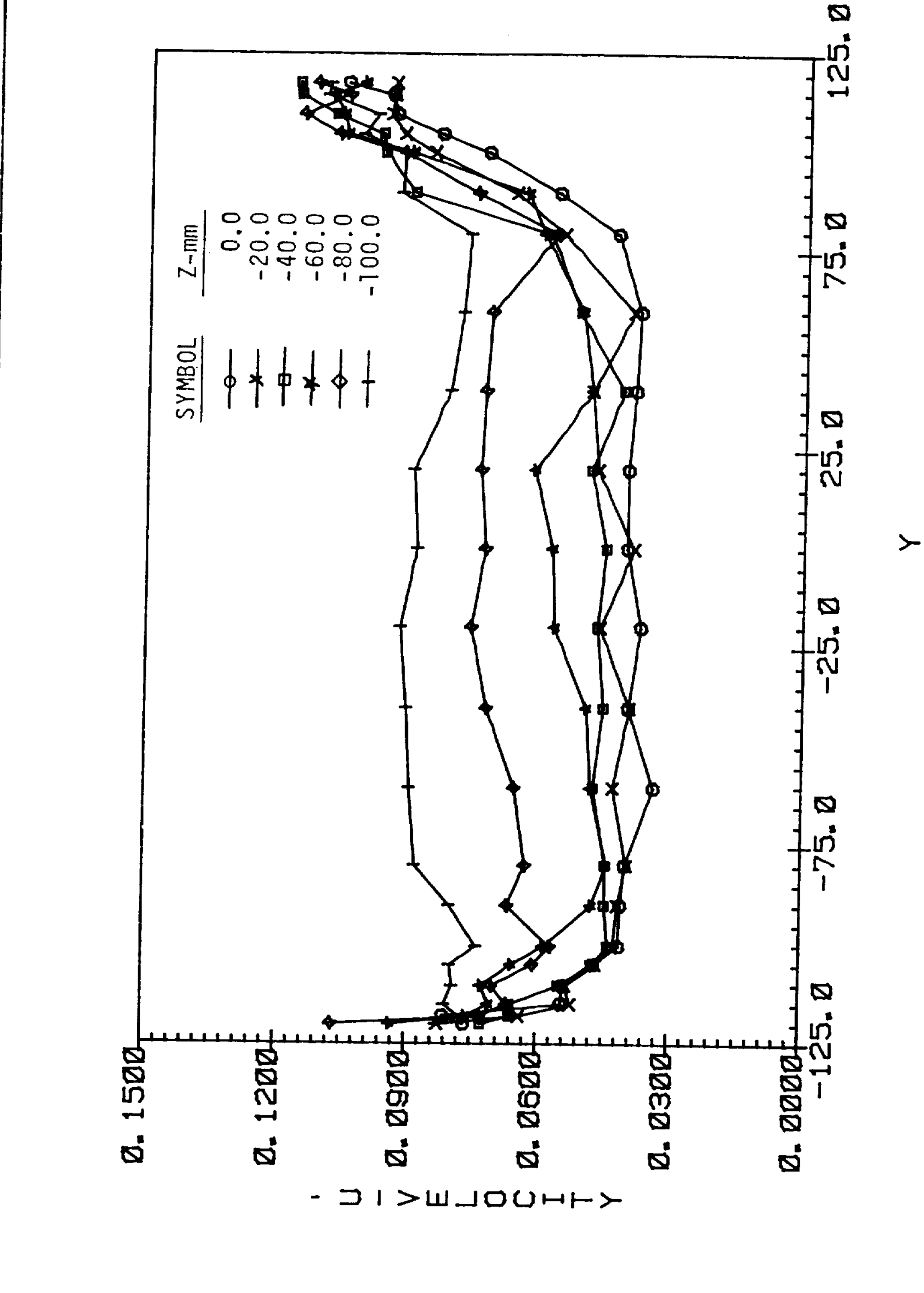


Figure B-3 U'-VELOCITY VS. Y (STATION 3)

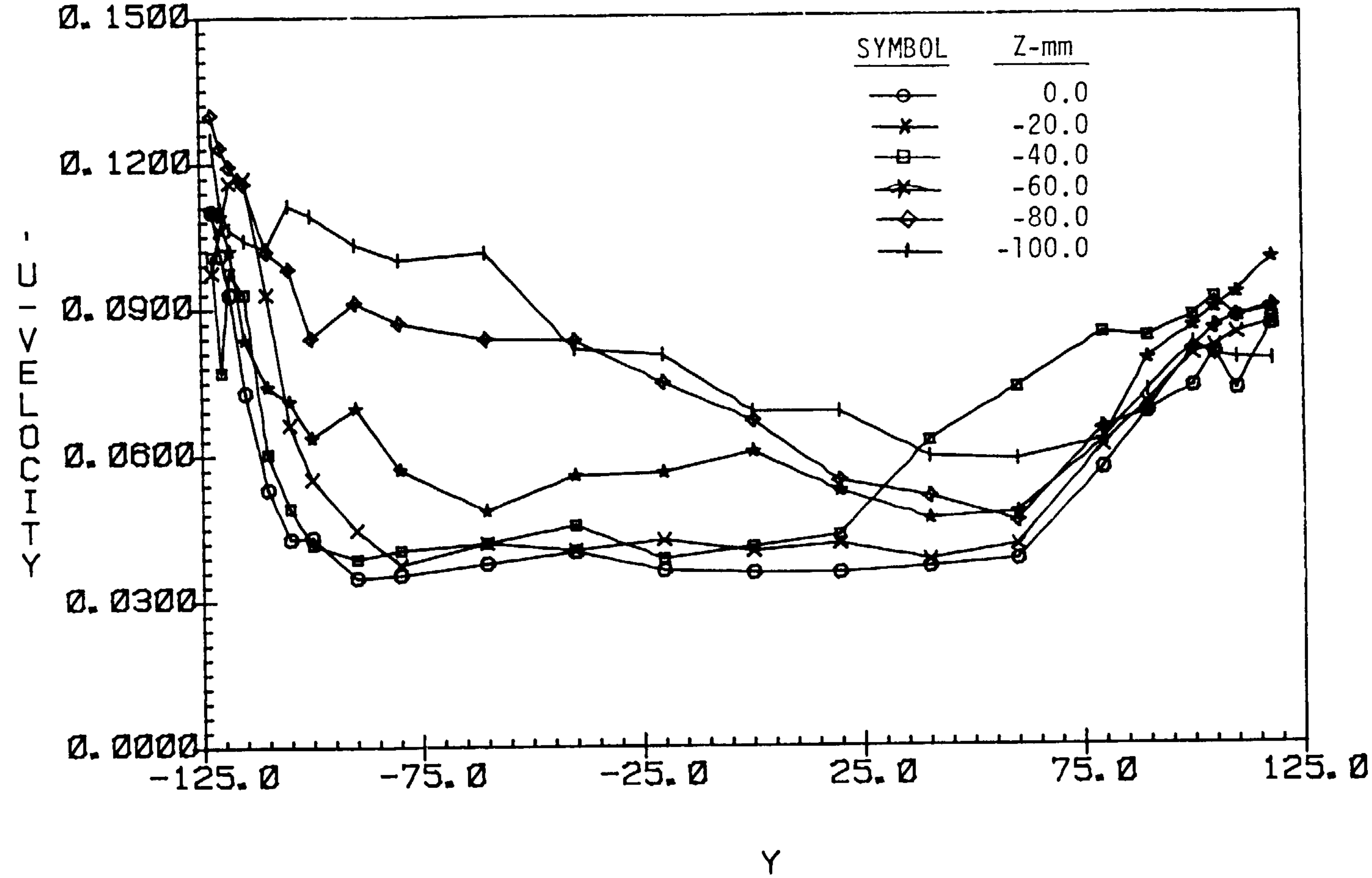


Figure B-4 U'-VELOCITY VS. Y (STATION 4)

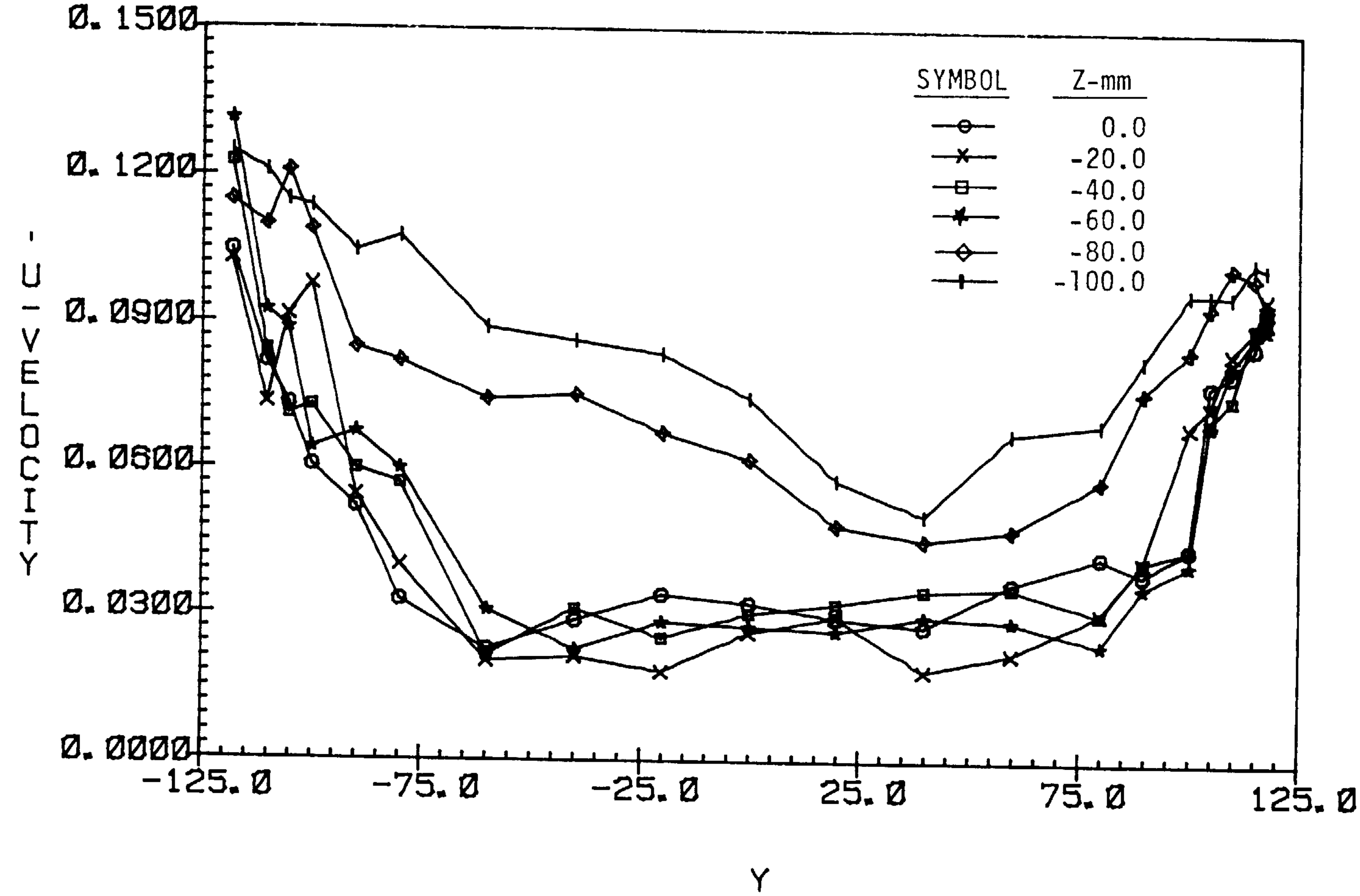


Figure B-5 U'-VELOCITY VS. Y (STATION 8)

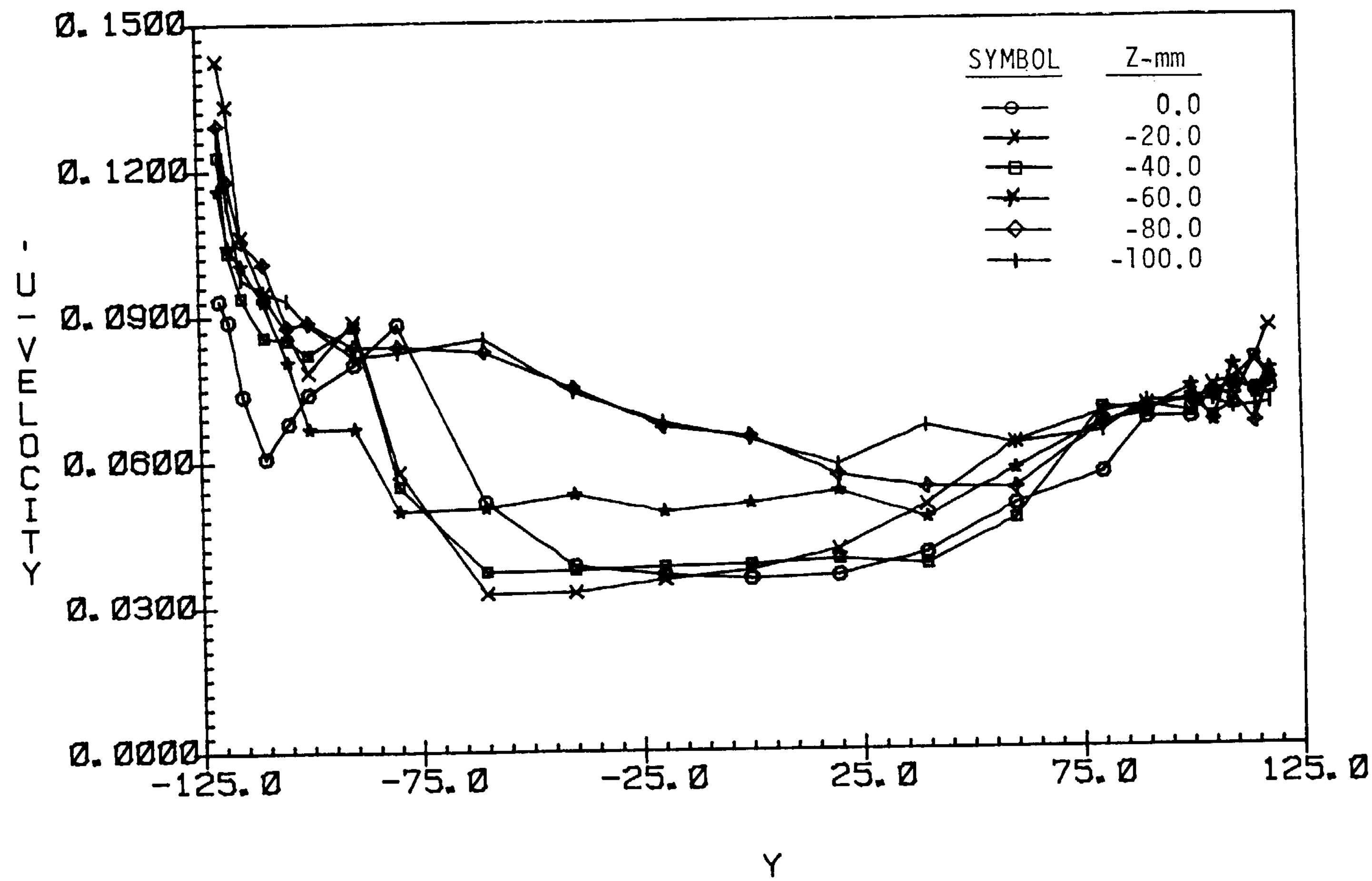


Figure B-6 U'-VELOCITY VS. Y (STATION 5)

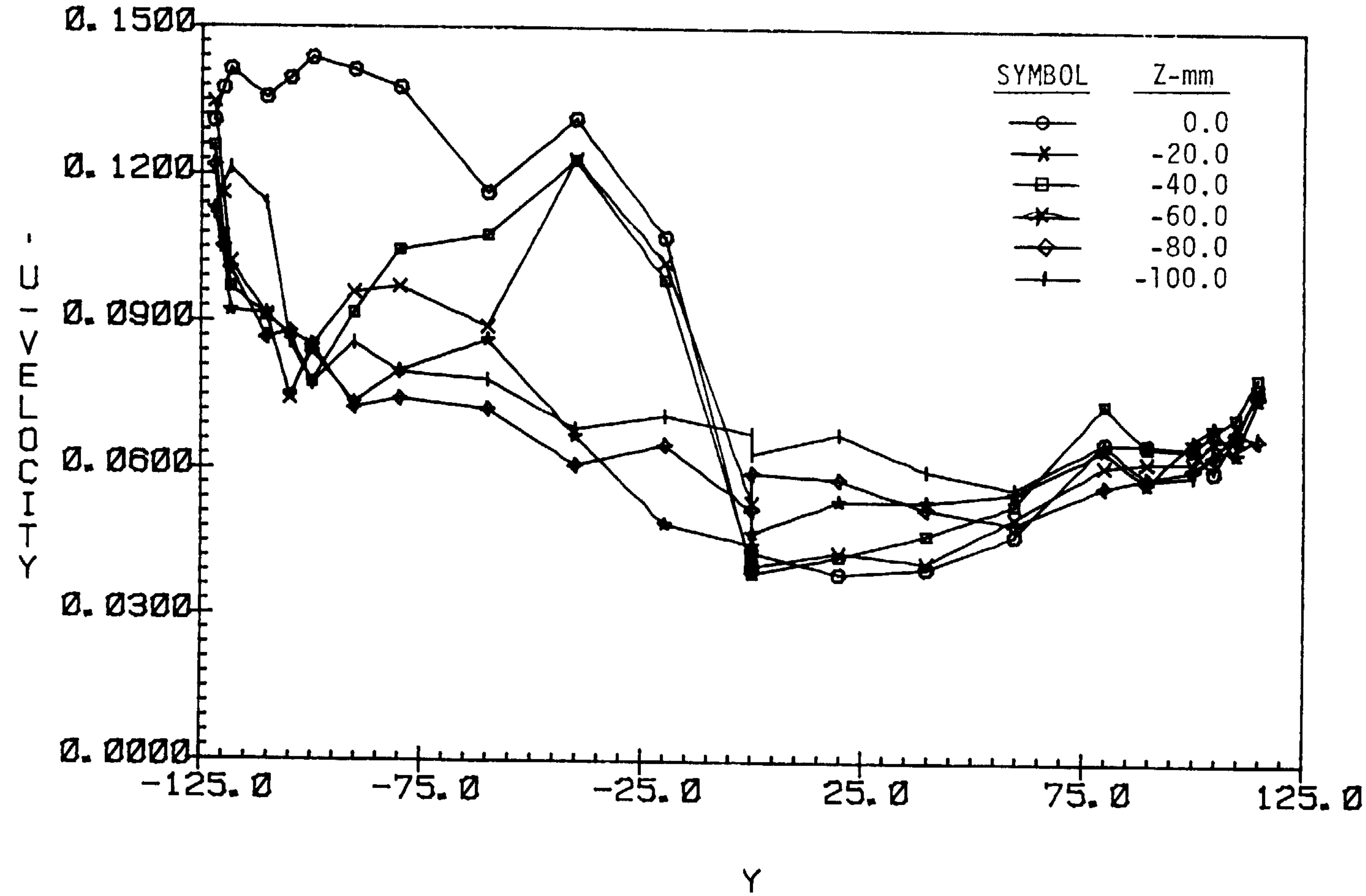


Figure B-7 U'-VELOCITY VS. Y (STATION 6)

APPENDIX C CROSSFLOW VELOCITY FIELD

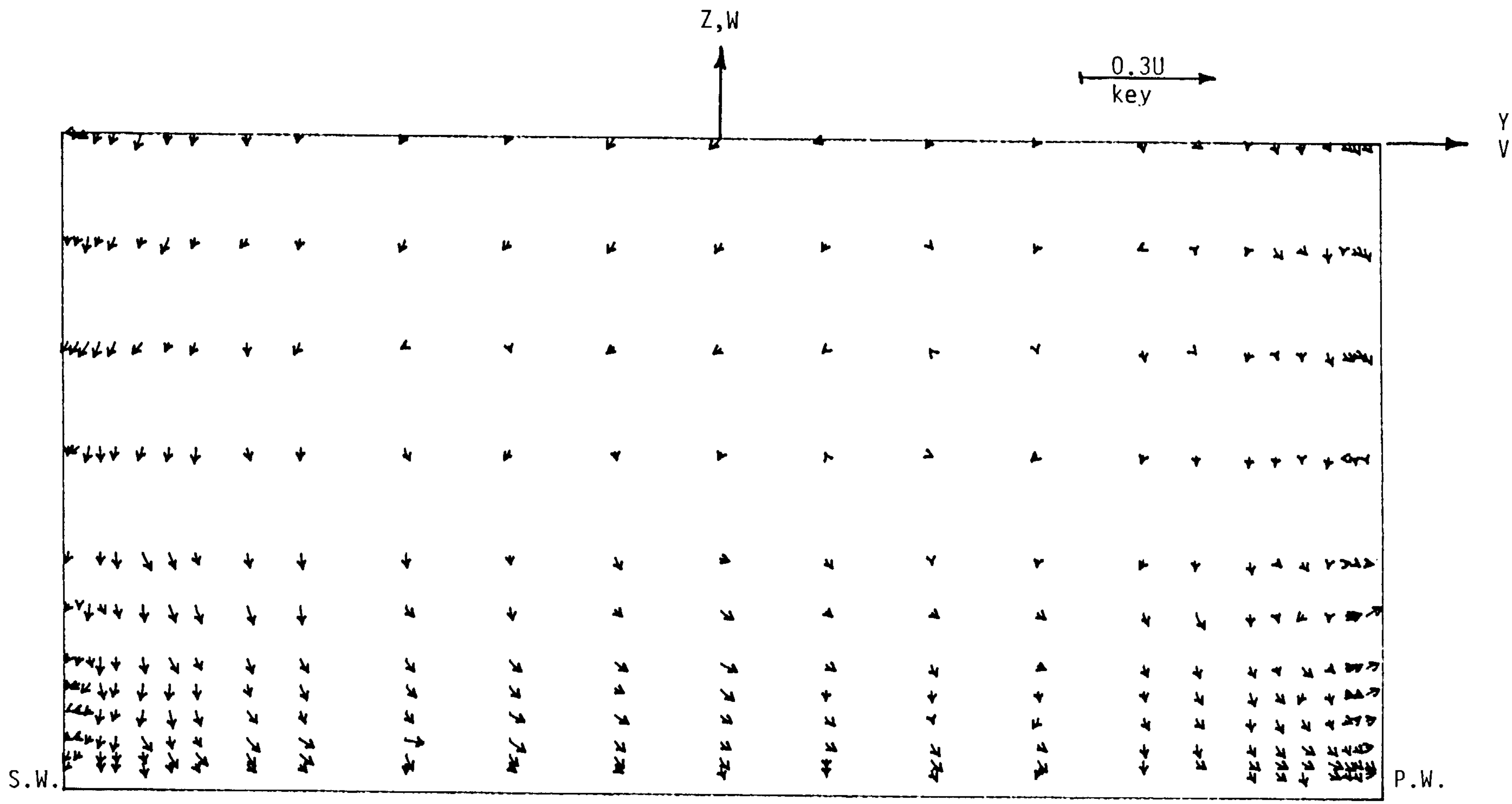


Figure C-1 **CROSS FLOW VELOCITY FIELD STATION 1**

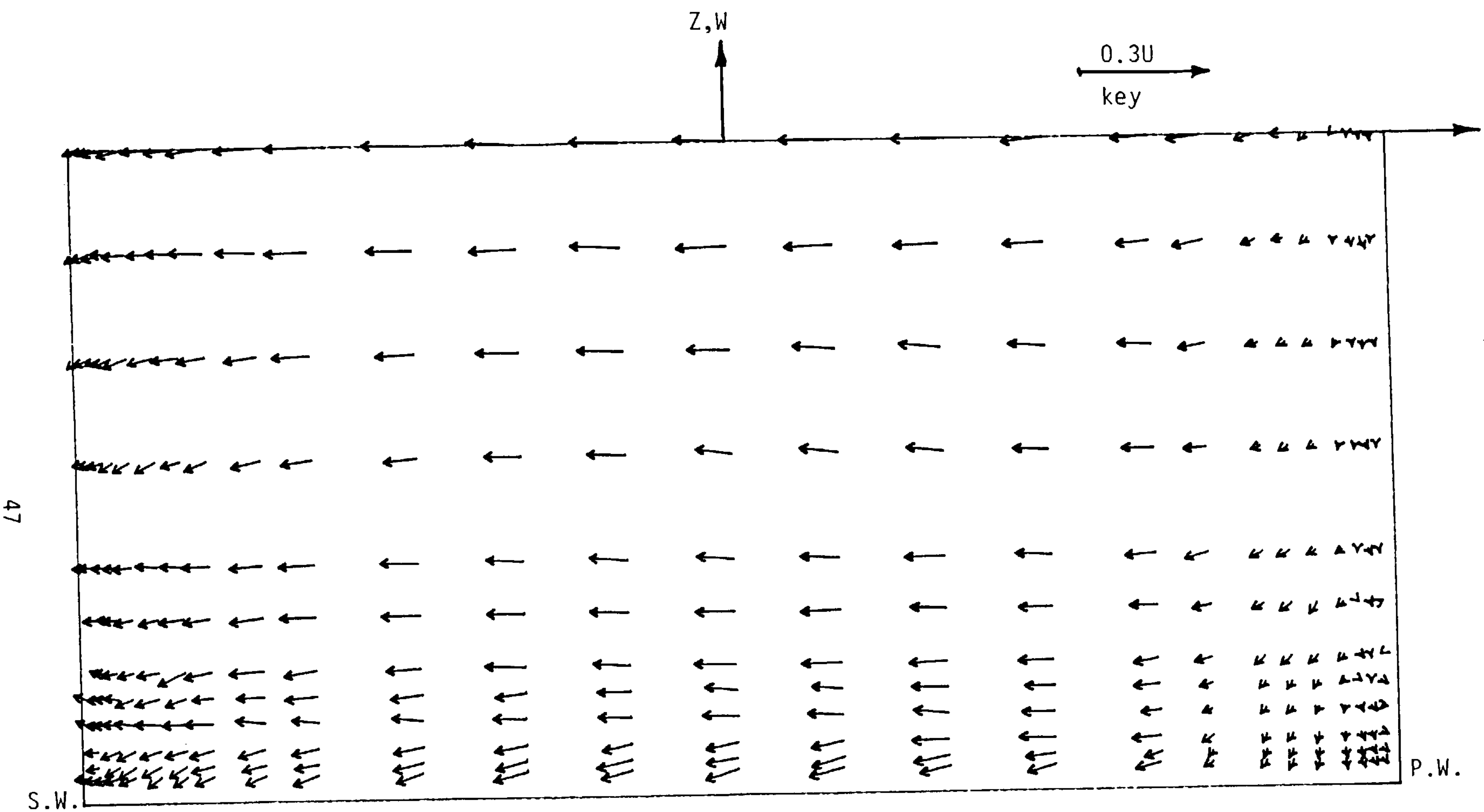


Figure C-2 CROSS FLOW VELOCITY FIELD STATION 2 $\Theta = 0°$

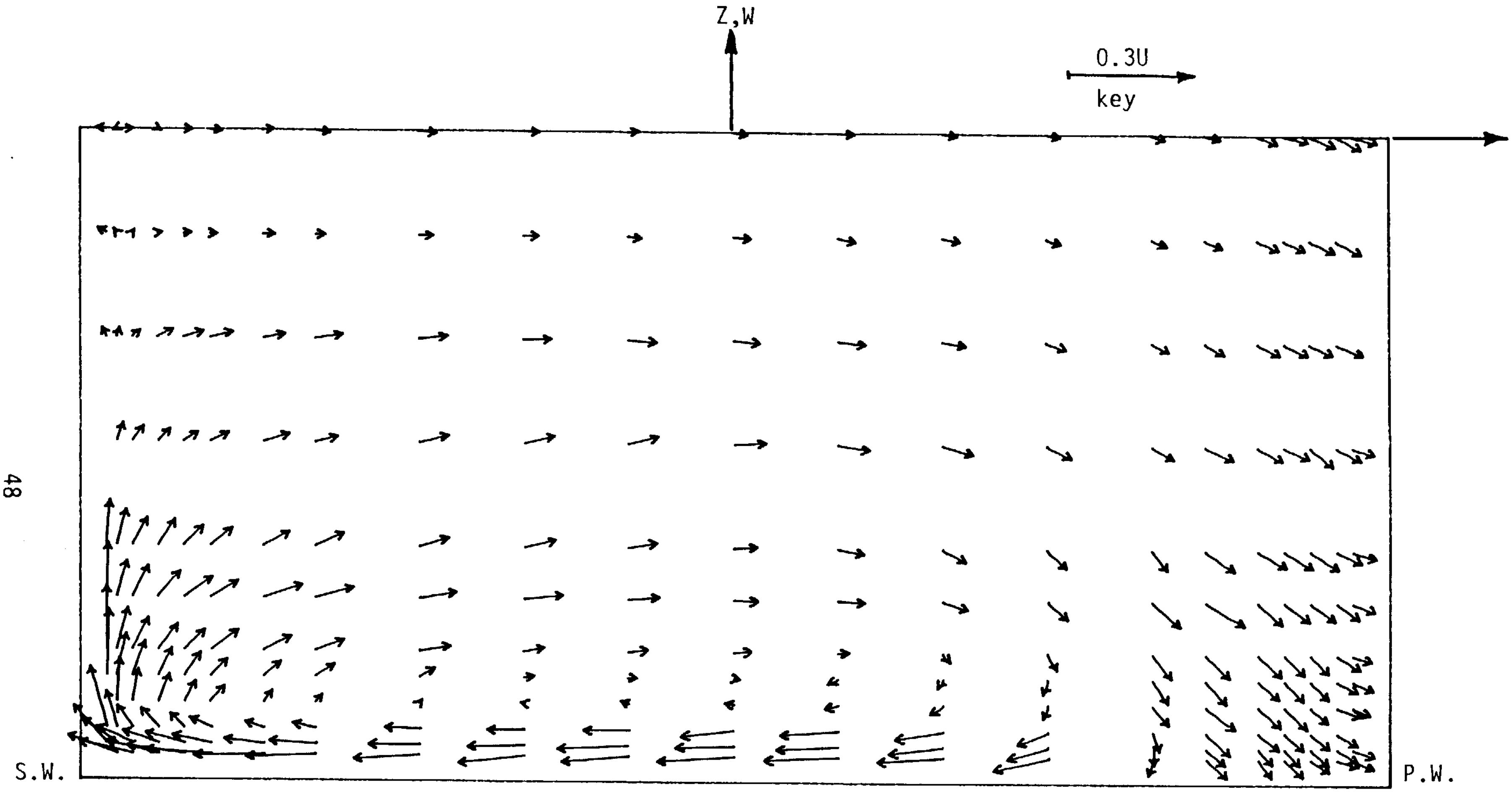


Figure C-3 CROSS FLOW VELOCITY FIELD STATION 3 $\Theta = 30°$

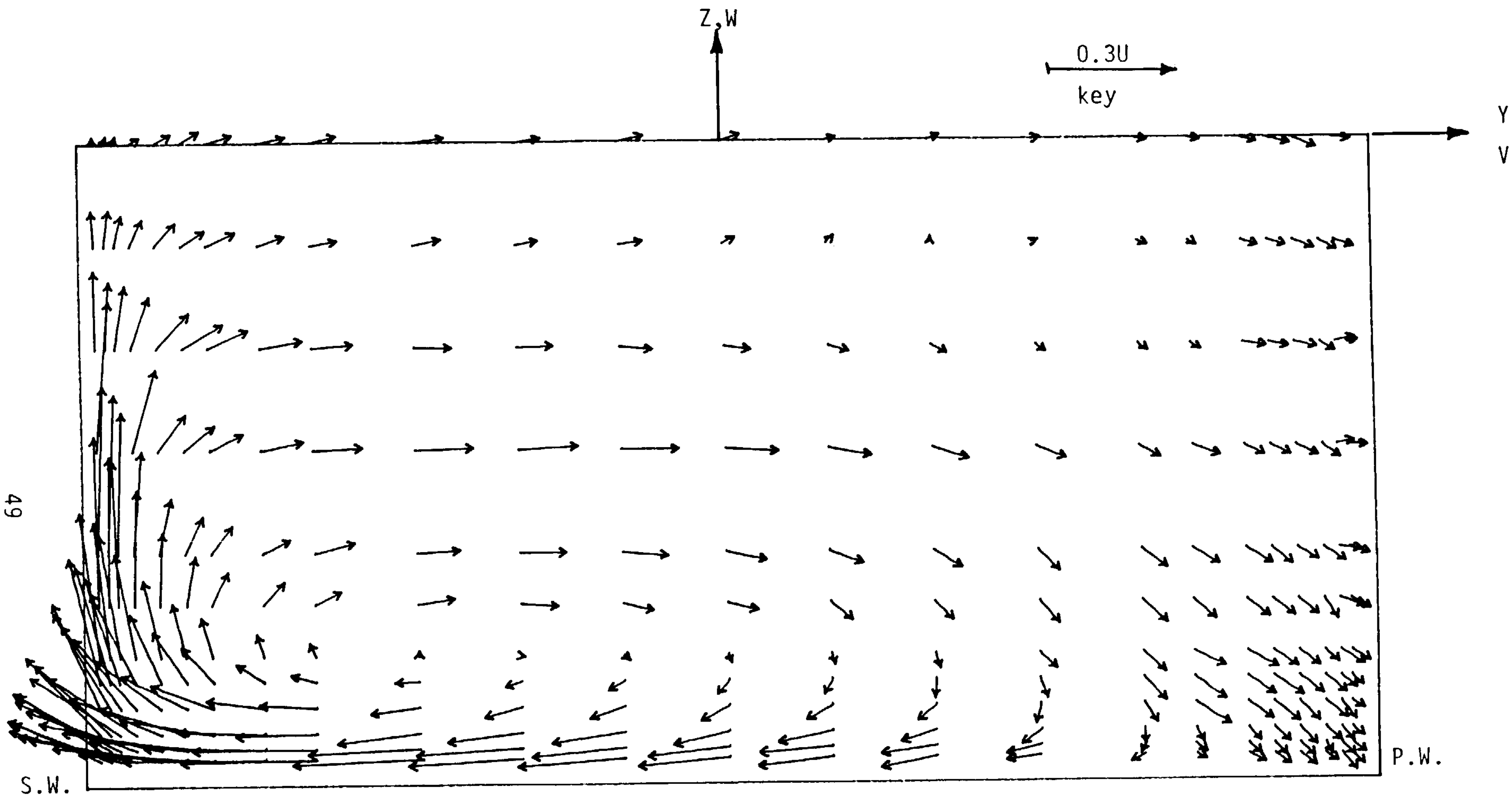


Figure C-4 **CROSS FLOW VELOCITY FIELD STATION 4** $\theta = 60°$

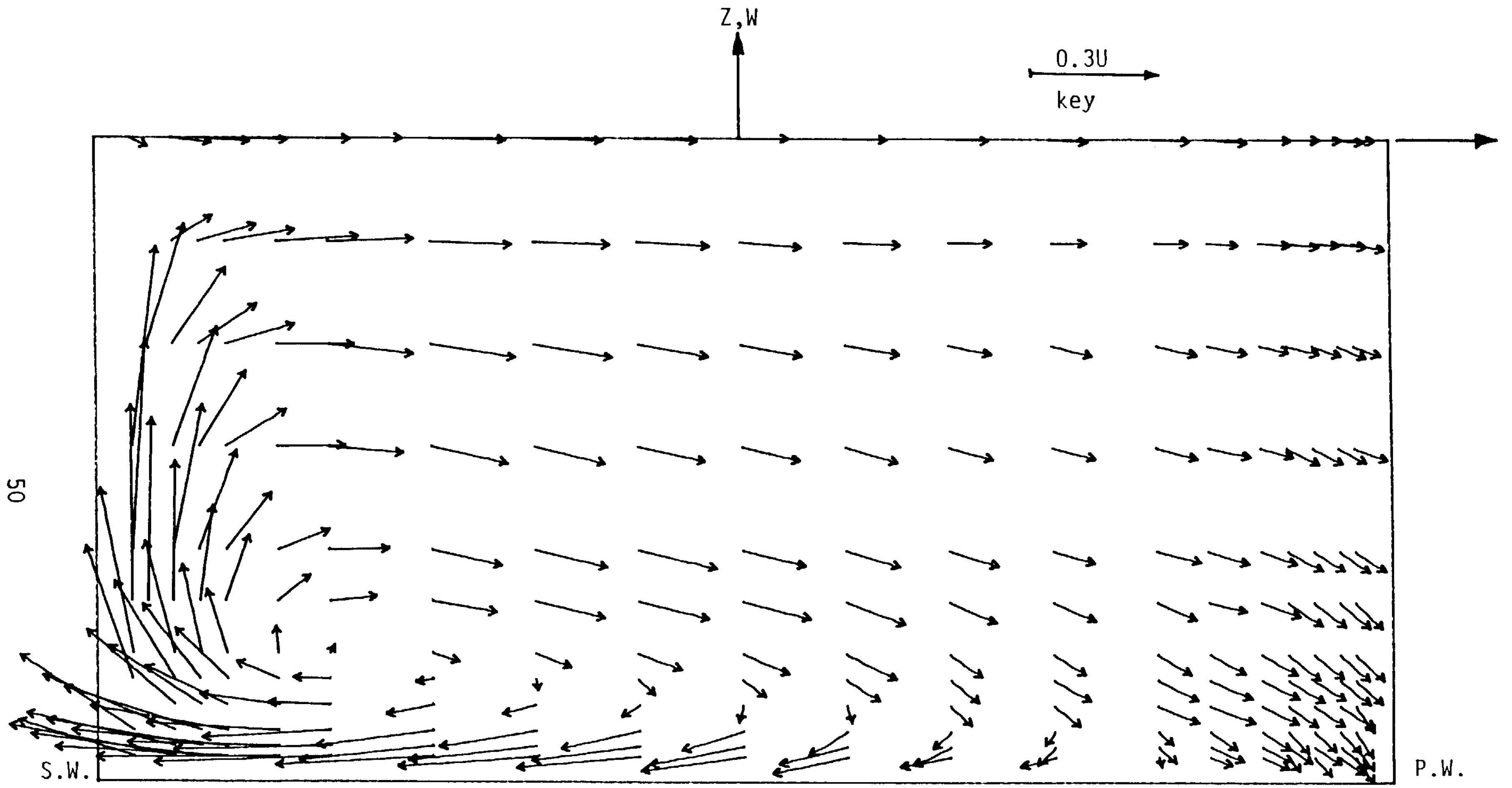


Figure C-5 CROSS FLOW VELOCITY FIELD STATION 8 $\theta = 60°$

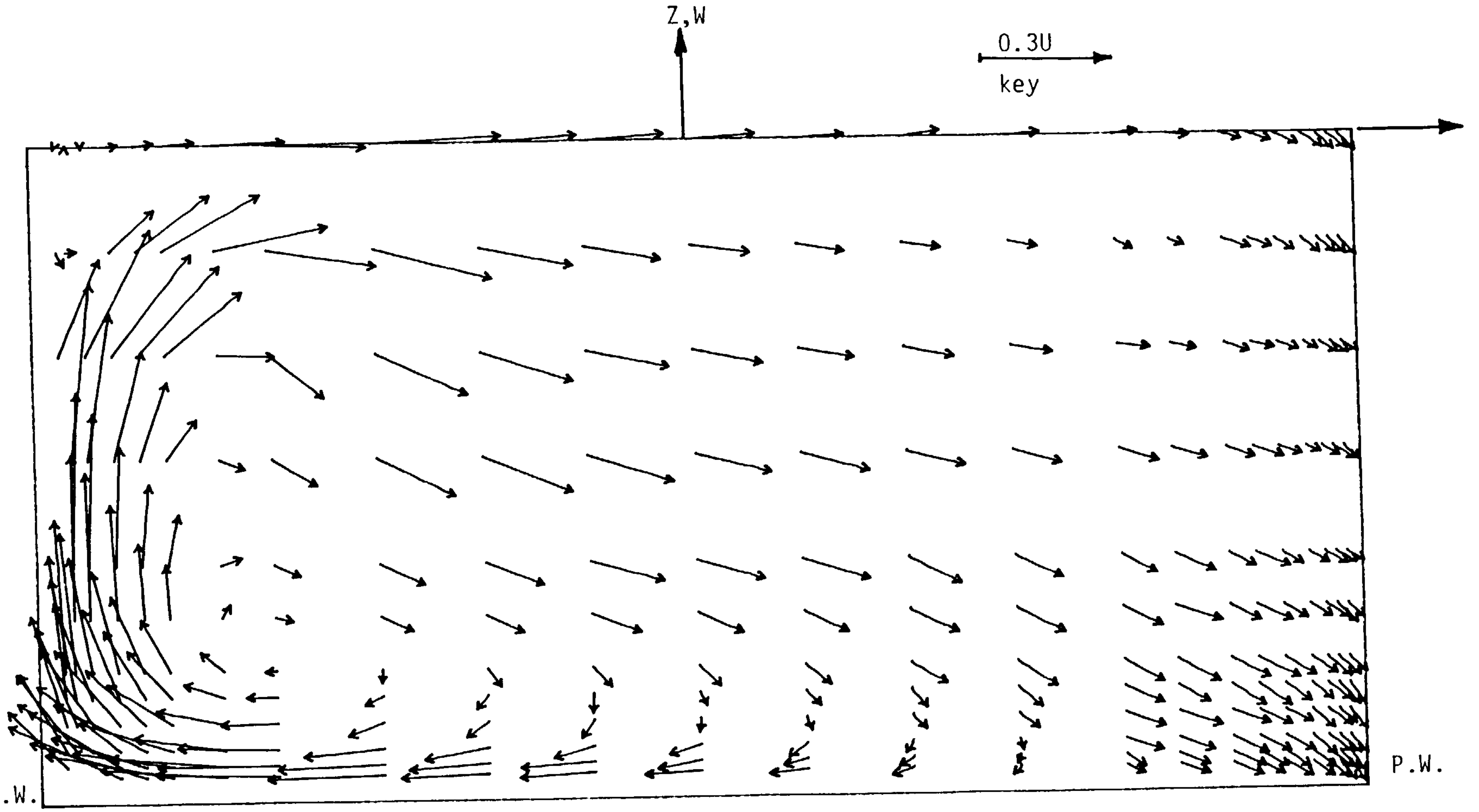


Figure C-6 **CROSS FLOW VELOCITY FIELD STATION 5** $\Theta = 90°$

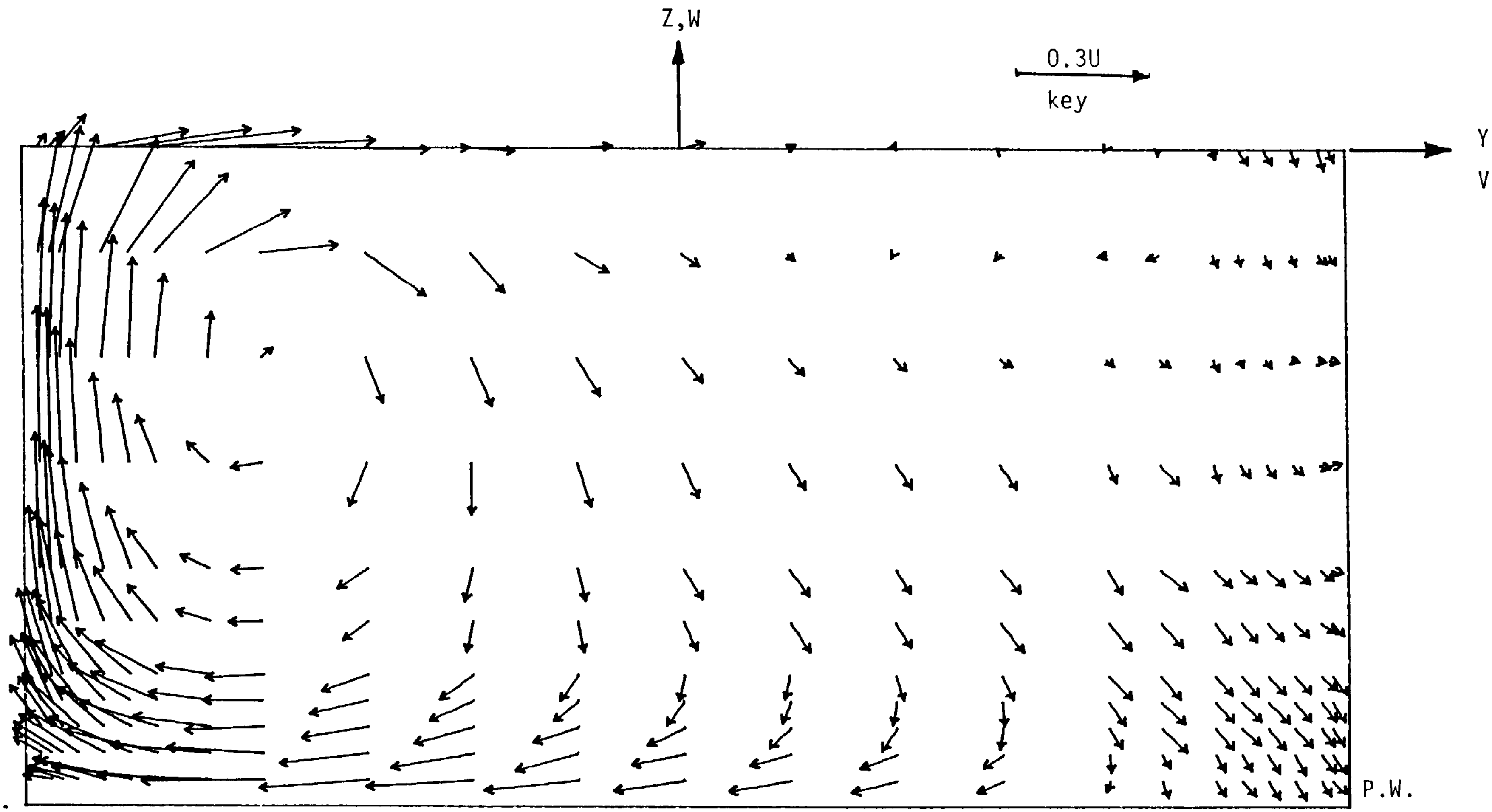


Figure C-7 **CROSS FLOW VELOCITY FIELD STATION 6**

APPENDIX D TABULATED DATA

Velocities Non-Dimensionalized by 10 m/c^{5}

Reynolds Number = 165,000

Deans Number = 76,000

Table D-1 Station 1, Non-Dimensional Data

Table D-2 Station 2, Non-Dimensional Data

Table D-3 Station 3, Non-Dimensional Data

Table D-4 Station 4, Non-Dimensional Data

Table D-5 Station 8, Non-Dimensional Data

Table D-6 Station 5, Non-Dimensional Data

Table D-7 Station 6, Non-Dimensional Data

Table D-1 Station 1, Non-Dimensional Data

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.07	-124.03	0.02	0.9127	0.1053	-0.0029	0.0440	-0.0006	0.0483
0.01	-122.03	0.03	0.9159	0.0914	-0.0093	0.0463	-0.0141	0.0542
0.01	-120.05	0.03	0.9318	0.0964	-0.0191	0.0495	-0.0109	0.0453
0.02	-117.91	0.01	0.9622	0.0865	-0.0103	0.0542	-0.0217	0.0498
0.00	-114.98	0.00	0.9835	0.0806	-0.0085	0.0497	-0.0239	0.0548
-0.04	-110.07	0.03	1.0187	0.0644	-0.0104	0.0517	-0.0365	0.0421
-0.04	-105.07	0.03	1.0287	0.0568	-0.0013	0.0442	-0.0223	0.0450
-0.04	-100.02	0.03	1.0388	0.0562	-0.0027	0.0558	-0.0242	0.0421
-0.04	-90.03	0.03	1.0388	0.0611	0.0021	0.0520	-0.0244	0.0437
-0.04	-80.05	0.03	1.0388	0.0658	-0.0037	0.0593	-0.0172	0.0501
-0.04	-60.04	0.03	1.0590	0.0489	-0.0088	0.0558	-0.0167	0.0460
-0.04	-40.06	0.03	1.0388	0.0559	-0.0061	0.0660	-0.0152	0.0417
-0.04	-19.96	0.03	1.0287	0.0532	-0.0151	0.0535	-0.0252	0.0480
-0.04	-0.07	0.03	1.0287	0.0584	-0.0221	0.0606	-0.0229	0.0429
-0.04	19.98	0.02	1.0187	0.0522	-0.0246	0.0445	-0.0051	0.0458
-0.04	39.94	0.02	1.0085	0.0546	-0.0091	0.0509	-0.0161	0.0457
-0.04	59.97	0.02	1.0388	0.0568	-0.0061	0.0547	-0.0101	0.0488
-0.04	79.92	0.01	1.0287	0.0584	0.0038	0.0489	-0.0206	0.0538
-0.05	90.02	0.01	1.0287	0.0532	0.0147	0.0607	-0.0119	0.0436
-0.02	100.06	0.01	1.0211	0.0602	-0.0033	0.0569	-0.0124	0.0523
-0.01	104.98	0.00	1.0035	0.0665	0.0084	0.0558	-0.0218	0.0528
-0.03	109.98	0.02	0.9696	0.0598	0.0040	0.0562	-0.0231	0.0537
-0.04	114.99	0.01	0.9573	0.0677	0.0084	0.0540	-0.0159	0.0573
-0.08	118.09	-0.01	0.9081	0.0724	0.0177	0.0485	-0.0152	0.0528
-0.05	119.94	0.01	0.8750	0.0780	0.0141	0.0481	-0.0227	0.0587
-0.09	122.03	-0.01	0.8181	0.1251	0.0150	0.0498	-0.0159	0.0581

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.07	-124.03	-20.03	0.9147	0.0876	-0.0004	0.0499	-0.0166	0.0608
0.01	-122.03	-20.02	0.9489	0.0775	-0.0057	0.0516	-0.0164	0.0483
0.01	-120.05	-19.99	0.9669	0.0978	-0.0062	0.0559	-0.0333	0.0569
0.02	-117.91	-19.98	0.9661	0.1023	-0.0085	0.0532	-0.0186	0.0532
-0.02	-114.98	-19.99	1.0164	0.0724	-0.0137	0.0538	-0.0268	0.0470
-0.05	-110.00	-20.01	1.0490	0.0656	-0.0054	0.0557	-0.0196	0.0474
-0.05	-105.05	-20.01	1.0490	0.0587	-0.0145	0.0500	-0.0328	0.0466
-0.05	-99.95	-20.01	1.0592	0.0539	-0.0066	0.0500	-0.0200	0.0404
-0.05	-90.04	-20.01	1.0592	0.0564	-0.0129	0.0533	-0.0190	0.0541
-0.05	-79.92	-20.01	1.0592	0.0510	-0.0020	0.0547	-0.0206	0.0454
-0.05	-59.93	-20.01	1.0490	0.0474	-0.0125	0.0492	-0.0249	0.0518
-0.05	-40.06	-20.01	1.0287	0.0524	-0.0122	0.0513	-0.0165	0.0439
-0.05	-20.05	-20.01	1.0388	0.0442	-0.0142	0.0529	-0.0226	0.0511
-0.05	0.09	-20.01	1.0287	0.0502	-0.0123	0.0506	-0.0202	0.0530
-0.06	20.00	-20.01	1.0287	0.0478	-0.0078	0.0513	-0.0133	0.0489
-0.06	40.02	-20.01	1.0134	0.0467	0.0044	0.0531	-0.0045	0.0439
-0.06	60.09	-20.02	1.0185	0.0492	-0.0049	0.0546	-0.0118	0.0491
-0.06	79.99	-20.03	1.0287	0.0561	-0.0081	0.0598	-0.0034	0.0530
-0.06	89.92	-20.03	1.0287	0.0494	0.0036	0.0525	-0.0121	0.0455
0.00	100.03	-20.02	1.0236	0.0560	-0.0051	0.0590	-0.0147	0.0483
-0.01	104.98	-20.01	0.9833	0.0665	0.0164	0.0519	-0.0231	0.0532
-0.03	109.98	-19.99	0.9615	0.0735	0.0111	0.0564	-0.0114	0.0500
-0.04	114.99	-19.99	0.9364	0.0640	0.0033	0.0544	-0.0297	0.0610
-0.09	118.09	-20.00	0.8755	0.0956	-0.0014	0.0511	-0.0117	0.0529
-0.05	119.94	-20.01	0.8427	0.0942	0.0170	0.0522	-0.0122	0.0571
-0.10	122.03	-20.02	0.7620	0.1270	0.0104	0.0433	-0.0254	0.0576

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-40.03	0.8703	0.0864	-0.0146	0.0409	-0.0216	0.0541
0.01	-122.03	-40.03	0.9429	0.0871	-0.0195	0.0537	-0.0257	0.0584
0.01	-120.05	-40.01	0.9819	0.1009	-0.0221	0.0465	-0.0320	0.0574
0.02	-117.91	-39.98	0.9821	0.0986	-0.0133	0.0564	-0.0331	0.0520
-0.03	-115.02	-40.03	1.0113	0.0738	-0.0155	0.0453	-0.0303	0.0488
-0.08	-110.01	-40.03	1.0085	0.0682	-0.0197	0.0535	-0.0246	0.0480
-0.08	-105.05	-40.03	1.0388	0.0646	-0.0060	0.0575	-0.0186	0.0532
-0.08	-99.93	-40.03	1.0388	0.0539	-0.0108	0.0535	-0.0238	0.0527
-0.09	-89.95	-40.03	1.0488	0.0544	0.0013	0.0484	-0.0251	0.0419
-0.09	-80.06	-40.03	1.0488	0.0618	-0.0102	0.0548	-0.0221	0.0509
-0.09	-59.95	-40.03	1.0488	0.0543	-0.0079	0.0582	-0.0045	0.0445
-0.09	-40.04	-40.03	1.0488	0.0611	0.0034	0.0581	-0.0113	0.0436
-0.09	-20.08	-40.03	1.0287	0.0558	-0.0157	0.0561	-0.0121	0.0450
-0.09	-0.03	-40.03	1.0187	0.0600	-0.0155	0.0568	-0.0103	0.0435
-0.09	19.98	-40.03	1.0187	0.0571	-0.0059	0.0509	-0.0050	0.0382
-0.09	40.01	-40.03	1.0388	0.0519	-0.0019	0.0584	0.0019	0.0423
-0.10	60.09	-39.97	1.0287	0.0556	0.0010	0.0560	-0.0030	0.0445
-0.10	80.07	-39.97	1.0287	0.0605	0.0053	0.0541	-0.0208	0.0451
-0.10	89.96	-39.97	1.0388	0.0518	0.0022	0.0533	-0.0020	0.0479
0.00	100.03	-40.02	1.0135	0.0676	-0.0056	0.0580	-0.0190	0.0469
-0.02	104.98	-39.99	0.9903	0.0698	0.0051	0.0578	-0.0140	0.0528
-0.03	109.98	-40.02	0.9575	0.0679	0.0021	0.0613	-0.0158	0.0541
-0.05	114.99	-39.97	0.9264	0.0926	0.0121	0.0534	-0.0265	0.0593
-0.09	118.09	-40.03	0.8824	0.0930	0.0183	0.0576	-0.0158	0.0654
-0.06	119.94	-40.00	0.8447	0.0866	0.0188	0.0449	-0.0088	0.0534
-0.10	122.03	-39.99	0.7787	0.1064	0.0129	0.0456	-0.0231	0.0601

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-59.97	0.8999	0.1152	-0.0030	0.0571	-0.0186	0.0629
0.01	-122.03	-59.99	0.9418	0.0928	-0.0244	0.0486	-0.0132	0.0555
0.01	-120.05	-60.03	0.9888	0.0863	-0.0087	0.0550	-0.0325	0.0558
0.01	-117.91	-59.99	0.9900	0.1023	0.0010	0.0579	-0.0325	0.0590
0.00	-115.05	-60.00	1.0164	0.0832	-0.0043	0.0522	-0.0272	0.0511
-0.01	-110.00	-60.00	1.0488	0.0645	-0.0089	0.0488	-0.0272	0.0485
-0.01	-105.02	-60.00	1.0590	0.0614	-0.0045	0.0507	-0.0295	0.0455
-0.01	-99.91	-60.00	1.0590	0.0622	-0.0021	0.0482	-0.0329	0.0498
-0.01	-89.96	-60.00	1.0690	0.0561	0.0070	0.0554	-0.0259	0.0463
-0.01	-79.91	-60.00	1.0590	0.0515	-0.0012	0.0558	-0.0242	0.0433
-0.01	-60.09	-60.00	1.0690	0.0556	0.0112	0.0532	-0.0222	0.0467
-0.01	-40.04	-60.00	1.0590	0.0558	-0.0134	0.0540	-0.0183	0.0504
-0.01	-20.01	-60.00	1.0690	0.0562	0.0043	0.0490	-0.0169	0.0479
-0.01	0.04	-60.01	1.0388	0.0478	-0.0058	0.0575	-0.0132	0.0412
-0.01	19.92	-60.01	1.0488	0.0481	-0.0010	0.0522	0.0026	0.0437
-0.01	39.92	-60.01	1.0488	0.0600	0.0034	0.0492	-0.0013	0.0449
-0.01	59.92	-60.02	1.0488	0.0521	-0.0098	0.0543	-0.0086	0.0451
-0.01	80.06	-60.02	1.0388	0.0479	-0.0043	0.0599	-0.0128	0.0459
0.00	90.09	-60.03	1.0287	0.0640	-0.0001	0.0593	-0.0192	0.0520
0.00	100.02	-60.03	1.0413	0.0614	-0.0022	0.0596	-0.0224	0.0512
-0.02	104.98	-60.01	0.9854	0.0717	-0.0024	0.0599	-0.0187	0.0549
-0.03	109.98	-60.00	0.9715	0.0717	0.0000	0.0624	-0.0113	0.0499
-0.05	114.99	-60.02	0.9394	0.0700	-0.0039	0.0658	-0.0215	0.0701
-0.09	118.09	-60.00	0.8824	0.0875	-0.0061	0.0508	-0.0009	0.0619
-0.06	119.94	-59.98	0.8407	0.1117	0.0024	0.0445	-0.0142	0.0611
-0.10	122.03	-60.02	0.7630	0.1299	0.0037	0.0537	-0.0098	0.0582

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-80.02	0.8713	0.1053	-0.0059	0.0559	-0.0231	0.0660
0.01	-120.05	-79.99	0.9408	0.0999	-0.0038	0.0551	0.1059	0.3456
0.01	-117.91	-80.02	0.9731	0.1014	-0.0001	0.0504	-0.0268	0.0532
0.01	-115.00	-80.02	0.9992	0.0889	0.0033	0.0630	-0.0334	0.0598
0.00	-110.01	-80.03	1.0338	0.0800	0.0182	0.0656	-0.0377	0.0479
0.00	-104.97	-80.03	1.0338	0.0736	0.0121	0.0640	-0.0340	0.0547
0.00	-99.98	-80.03	1.0743	0.0541	0.0079	0.0544	-0.0240	0.0518
0.00	-90.00	-80.03	1.0641	0.0533	0.0060	0.0620	-0.0289	0.0397
0.00	-79.91	-80.03	1.0743	0.0596	0.0042	0.0552	-0.0306	0.0489
0.00	-60.03	-80.03	1.0641	0.0585	0.0047	0.0635	-0.0250	0.0519
0.00	-40.05	-80.03	1.0540	0.0568	0.0028	0.0581	-0.0173	0.0480
0.00	-19.94	-79.99	1.0743	0.0627	0.0115	0.0621	-0.0273	0.0435
0.00	-0.09	-79.99	1.0540	0.0522	0.0183	0.0556	-0.0055	0.0507
0.00	19.97	-79.99	1.0540	0.0642	0.0143	0.0622	-0.0183	0.0425
0.00	40.04	-80.00	1.0540	0.0619	0.0016	0.0703	-0.0066	0.0461
0.00	60.00	-80.01	1.0641	0.0679	-0.0020	0.0644	-0.0115	0.0412
0.00	80.02	-80.01	1.0439	0.0515	-0.0086	0.0563	-0.0148	0.0473
0.00	89.91	-80.02	1.0540	0.0496	-0.0012	0.0608	-0.0181	0.0452
0.00	99.97	-80.02	1.0338	0.0600	0.0063	0.0593	-0.0256	0.0482
-0.02	104.98	-79.98	1.0187	0.0562	0.0093	0.0661	-0.0086	0.0518
-0.03	109.98	-80.01	0.9936	0.0747	0.0123	0.0625	-0.0171	0.0547
-0.05	114.99	-80.01	0.9423	0.0852	-0.0017	0.0553	-0.0091	0.0548
-0.09	118.09	-79.97	0.8824	0.0946	0.0083	0.0527	0.0017	0.0545
-0.06	119.94	-79.99	0.8358	0.1048	0.0088	0.0493	-0.0059	0.0595
-0.10	122.03	-80.00	0.7404	0.1417	0.0127	0.0672	-0.0011	0.0581

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-89.97	0.8466	0.1014	-0.0086	0.0507	-0.0140	0.0572
0.01	-122.03	-89.98	0.8879	0.1048	-0.0008	0.0690	-0.0070	0.0550
0.01	-120.05	-90.03	0.9389	0.0857	-0.0041	0.0665	-0.0333	0.0583
0.01	-117.91	-89.98	0.9592	0.0901	0.0097	0.0565	-0.0191	0.0554
0.01	-114.98	-90.00	0.9939	0.0915	0.0081	0.0580	-0.0275	0.0585
0.01	-109.97	-89.97	1.0085	0.0826	0.0042	0.0711	-0.0351	0.0533
0.01	-105.01	-89.97	1.0287	0.0724	0.0134	0.0547	-0.0360	0.0577
0.01	-99.94	-89.97	1.0388	0.0641	0.0119	0.0683	-0.0381	0.0490
0.01	-89.96	-89.97	1.0690	0.0606	0.0134	0.0548	-0.0405	0.0448
0.01	-80.00	-89.97	1.0791	0.0499	0.0040	0.0561	-0.0384	0.0461
0.01	-60.03	-89.97	1.0690	0.0561	0.0170	0.0630	-0.0196	0.0467
0.01	-40.01	-89.97	1.0590	0.0582	0.0056	0.0716	-0.0242	0.0519
0.01	-20.07	-89.97	1.0388	0.0697	0.0148	0.0712	-0.0139	0.0442
0.01	-0.06	-89.97	1.0287	0.0705	0.0270	0.0797	-0.0185	0.0476
0.01	19.99	-89.97	1.0075	0.0789	0.0113	0.0755	-0.0104	0.0501
0.01	40.09	-89.97	1.0287	0.0686	0.0119	0.0615	-0.0098	0.0506
0.01	60.03	-89.97	1.0187	0.0673	0.0145	0.0740	-0.0116	0.0494
0.01	80.02	-89.98	1.0388	0.0645	0.0114	0.0600	-0.0238	0.0489
0.01	90.05	-89.98	1.0287	0.0639	0.0185	0.0523	-0.0323	0.0432
0.00	100.00	-90.00	1.0363	0.0657	0.0010	0.0638	-0.0243	0.0509
-0.02	104.98	-90.01	1.0005	0.0730	0.0038	0.0688	-0.0149	0.0511
-0.04	109.98	-89.97	0.9845	0.0805	-0.0117	0.0557	-0.0114	0.0534
-0.05	114.99	-89.97	0.9304	0.0937	-0.0011	0.0621	-0.0130	0.0572
-0.09	118.09	-89.99	0.8982	0.0885	0.0195	0.0540	-0.0034	0.0540
-0.06	119.94	-90.03	0.8133	0.1166	0.0106	0.0552	0.0037	0.0588
-0.10	122.03	-90.02	0.7541	0.1201	0.0317	0.0683	0.0181	0.0518

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-100.03	0.8142	0.1044	-0.0057	0.0478	-0.0089	0.0634
0.01	-122.03	-100.00	0.8919	0.0895	-0.0051	0.0525	-0.0162	0.0581
0.01	-120.05	-99.98	0.8780	0.1318	0.0071	0.0631	-0.0214	0.0595
0.01	-117.91	-100.03	0.9115	0.0969	-0.0031	0.0570	-0.0363	0.0618
0.01	-115.04	-100.01	0.9623	0.0901	-0.0002	0.0564	-0.0263	0.0627
0.01	-110.06	-99.99	1.0042	0.0814	0.0071	0.0571	-0.0343	0.0562
0.01	-104.95	-99.99	1.0012	0.0774	0.0174	0.0609	-0.0311	0.0541
0.01	-99.96	-99.99	1.0165	0.0688	0.0127	0.0634	-0.0250	0.0512
0.01	-90.05	-99.99	1.0388	0.0624	0.0120	0.0687	-0.0327	0.0455
0.01	-79.95	-99.99	1.0388	0.0610	0.0156	0.0701	-0.0288	0.0499
0.01	-60.01	-99.99	1.0388	0.0715	0.0188	0.0731	-0.0245	0.0507
0.01	-40.02	-99.99	1.0185	0.0727	0.0245	0.0712	-0.0218	0.0514
0.01	-20.01	-99.99	0.9991	0.0748	0.0261	0.0734	-0.0191	0.0474
0.01	0.03	-99.99	0.9819	0.0733	0.0346	0.0797	-0.0184	0.0436
0.01	20.05	-99.99	0.9716	0.0714	0.0173	0.0731	-0.0129	0.0500
0.01	39.95	-100.00	0.9828	0.0796	0.0112	0.0748	-0.0250	0.0501
0.01	60.00	-100.00	0.9767	0.0680	0.0155	0.0751	-0.0081	0.0450
0.01	79.95	-100.00	1.0287	0.0622	0.0102	0.0637	-0.0232	0.0483
0.01	89.95	-100.00	1.0388	0.0712	0.0084	0.0621	-0.0253	0.0507
0.00	100.05	-100.01	1.0149	0.0649	0.0114	0.0649	-0.0221	0.0437
-0.02	104.98	-99.97	0.9924	0.0711	0.0060	0.0586	-0.0166	0.0509
-0.04	109.98	-99.99	0.9726	0.0718	0.0200	0.0616	-0.0214	0.0492
-0.05	114.99	-100.00	0.9314	0.0883	0.0093	0.0521	-0.0087	0.0518
-0.09	118.09	-100.00	0.8636	0.0894	0.0185	0.0512	0.0017	0.0537
-0.06	119.94	-99.97	0.8388	0.1000	0.0115	0.0549	0.0065	0.0635
-0.10	122.03	-99.98	0.8133	0.0840	0.0253	0.0452	0.0103	0.0680

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-104.98	0.7945	0.1290	-0.0063	0.0529	-0.0114	0.0593
0.01	-122.03	-104.99	0.8819	0.0884	-0.0191	0.0615	-0.0106	0.0612
0.01	-120.05	-104.97	0.8889	0.1009	-0.0179	0.0586	-0.0200	0.0594
0.01	-117.91	-105.02	0.9293	0.0993	0.0067	0.0614	-0.0342	0.0638
0.02	-115.01	-105.03	0.9430	0.0883	-0.0078	0.0591	-0.0278	0.0617
0.02	-109.99	-105.02	0.9819	0.0863	-0.0063	0.0588	-0.0353	0.0458
0.02	-105.01	-105.02	1.0087	0.0735	-0.0031	0.0606	-0.0344	0.0427
0.02	-100.04	-105.02	1.0188	0.0667	0.0050	0.0633	-0.0308	0.0514
0.02	-90.07	-105.02	1.0387	0.0748	0.0059	0.0604	-0.0247	0.0463
0.02	-80.04	-105.02	1.0188	0.0733	0.0163	0.0617	-0.0308	0.0490
0.02	-59.91	-105.02	1.0288	0.0709	0.0210	0.0718	-0.0215	0.0518
0.02	-39.99	-105.02	0.9978	0.0716	0.0212	0.0727	-0.0209	0.0508
0.02	-19.98	-105.02	0.9558	0.0783	0.0171	0.0802	-0.0099	0.0517
0.01	-0.01	-105.02	0.9639	0.0713	0.0280	0.0775	-0.0243	0.0461
0.01	20.00	-105.02	0.9549	0.0747	-0.0013	0.0709	-0.0227	0.0520
0.01	39.97	-105.02	0.9688	0.0793	0.0028	0.0747	-0.0240	0.0464
0.02	59.95	-105.03	0.9618	0.0785	0.0043	0.0598	-0.0208	0.0479
0.02	79.98	-105.03	0.9918	0.0737	0.0031	0.0697	-0.0179	0.0478
0.02	89.98	-105.03	0.9918	0.0697	0.0136	0.0617	-0.0238	0.0431
0.00	100.04	-105.00	1.0075	0.0613	0.0115	0.0678	-0.0288	0.0446
-0.02	104.98	-105.02	0.9903	0.0759	0.0171	0.0684	-0.0201	0.0465
-0.04	109.98	-105.01	0.9775	0.0740	-0.0088	0.0653	-0.0221	0.0526
-0.05	114.99	-105.02	0.9125	0.0772	0.0051	0.0590	-0.0214	0.0592
-0.09	118.09	-105.03	0.8686	0.0748	0.0161	0.0596	-0.0030	0.0541
-0.06	119.94	-104.97	0.8211	0.0890	0.0140	0.0548	-0.0059	0.0533
-0.10	122.03	-104.98	0.7306	0.1044	0.0267	0.0487	0.0112	0.0648

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-110.03	0.7915	0.1112	-0.0034	0.0459	-0.0022	0.0563
0.01	-122.03	-110.00	0.8859	0.0936	-0.0108	0.0570	-0.0031	0.0586
0.01	-120.05	-109.99	0.8829	0.0999	-0.0099	0.0560	-0.0103	0.0568
0.01	-117.91	-110.02	0.9125	0.1094	-0.0066	0.0542	-0.0303	0.0583
0.02	-115.05	-109.98	0.9379	0.0825	-0.0068	0.0612	-0.0231	0.0489
0.02	-109.97	-109.98	0.9534	0.0818	-0.0072	0.0616	-0.0347	0.0535
0.02	-105.07	-109.98	0.9555	0.0858	0.0084	0.0678	-0.0370	0.0448
0.02	-99.99	-109.98	0.9726	0.0775	0.0113	0.0671	-0.0324	0.0534
0.02	-90.03	-109.98	0.9766	0.0776	0.0218	0.0629	-0.0252	0.0491
0.02	-79.95	-109.98	0.9775	0.0704	0.0112	0.0650	-0.0240	0.0506
0.02	-60.07	-109.98	0.9615	0.0797	0.0150	0.0745	-0.0214	0.0545
0.02	-39.99	-109.98	0.9334	0.0803	0.0325	0.0661	-0.0169	0.0453
0.02	-20.06	-109.98	0.9364	0.0747	0.0284	0.0687	-0.0189	0.0485
0.02	0.00	-109.98	0.9203	0.0657	0.0234	0.0769	-0.0146	0.0461
0.02	19.91	-109.98	0.8942	0.0884	0.0182	0.0788	-0.0185	0.0501
0.02	39.99	-109.98	0.9183	0.0776	0.0033	0.0760	-0.0114	0.0564
0.02	60.05	-109.98	0.9263	0.0736	-0.0122	0.0804	-0.0217	0.0409
0.02	79.94	-109.98	0.9394	0.0793	0.0114	0.0672	-0.0228	0.0539
0.02	90.00	-109.99	0.9464	0.0821	0.0149	0.0685	-0.0186	0.0488
0.00	100.02	-110.00	0.9662	0.0725	0.0040	0.0589	-0.0249	0.0407
-0.02	104.98	-110.00	0.9612	0.0669	0.0150	0.0606	-0.0287	0.0385
-0.04	109.98	-109.99	0.9494	0.0699	0.0152	0.0696	-0.0232	0.0470
-0.05	114.99	-109.98	0.9264	0.0768	0.0071	0.0533	-0.0183	0.0479
-0.09	118.09	-110.01	0.8577	0.0887	0.0116	0.0586	-0.0058	0.0447
-0.06	119.94	-110.03	0.8329	0.0884	0.0079	0.0498	0.0076	0.0518
-0.11	122.03	-110.01	0.7010	0.1388	0.0177	0.0443	0.0058	0.0627

ORIGINAL PAGE IS
OF POOR QUALITY

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-115.00	0.8014	0.0961	-0.0097	0.0526	-0.0082	0.0573
0.01	-122.03	-115.03	0.8499	0.0874	-0.0110	0.0557	-0.0039	0.0554
0.01	-120.05	-115.01	0.8769	0.1048	-0.0094	0.0620	-0.0146	0.0542
0.01	-117.91	-115.02	0.8936	0.0944	-0.0065	0.0530	-0.0233	0.0498
0.03	-114.98	-114.98	0.9285	0.0821	-0.0079	0.0575	-0.0317	0.0520
0.03	-110.08	-114.97	0.9414	0.0823	0.0189	0.0621	-0.0308	0.0550
0.03	-105.04	-114.97	0.9354	0.0828	0.0069	0.0696	-0.0245	0.0483
0.03	-100.02	-114.97	0.9434	0.0789	0.0108	0.0656	-0.0195	0.0512
0.03	-90.09	-114.97	0.9605	0.0713	0.0280	0.0614	-0.0306	0.0454
0.03	-80.08	-114.97	0.9564	0.0795	0.0318	0.0699	-0.0182	0.0548
0.03	-60.09	-114.97	0.9073	0.0973	0.0413	0.0827	-0.0084	0.0445
0.03	-39.93	-114.97	0.9354	0.0802	0.0333	0.0859	-0.0239	0.0450
0.03	-20.02	-114.97	0.9033	0.0898	0.0213	0.0665	-0.0208	0.0430
0.03	-0.05	-114.97	0.8963	0.0776	0.0191	0.0749	-0.0160	0.0411
0.02	19.98	-114.98	0.8802	0.0847	0.0200	0.0868	-0.0153	0.0469
0.02	39.93	-114.98	0.8993	0.0819	0.0173	0.0741	-0.0241	0.0465
0.02	60.03	-114.98	0.9043	0.0795	0.0162	0.0807	-0.0129	0.0429
0.03	80.00	-114.98	0.9183	0.0804	0.0033	0.0652	-0.0258	0.0447
0.03	89.94	-114.98	0.9404	0.0811	0.0087	0.0688	-0.0254	0.0466
0.01	100.02	-114.99	0.9466	0.0709	0.0109	0.0643	-0.0203	0.0470
-0.03	104.99	-115.02	0.9258	0.0821	0.0193	0.0644	-0.0216	0.0443
-0.04	109.98	-114.97	0.9354	0.0872	0.0261	0.0605	-0.0163	0.0416
-0.05	114.99	-115.00	0.8886	0.0715	0.0169	0.0605	-0.0190	0.0504
-0.09	118.09	-115.02	0.8369	0.0789	0.0089	0.0566	-0.0158	0.0497
-0.06	119.94	-115.03	0.8290	0.0827	0.0136	0.0527	-0.0112	0.0450
-0.11	122.03	-115.03	0.7030	0.1162	0.0110	0.0465	0.0021	0.0532

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-117.97	0.8093	0.0954	-0.0136	0.0453	-0.0215	0.0469
0.01	-122.03	-118.00	0.8660	0.0725	-0.0120	0.0515	-0.0156	0.0417
0.01	-120.05	-117.97	0.8739	0.0886	-0.0137	0.0551	0.1189	0.3386
0.01	-117.91	-118.03	0.8628	0.0896	-0.0018	0.0625	-0.0241	0.0535
-0.02	-115.04	-117.98	0.8827	0.0790	0.0024	0.0601	-0.0227	0.0485
-0.06	-110.04	-117.97	0.8880	0.0839	0.0053	0.0627	-0.0220	0.0481
-0.06	-105.08	-117.97	0.9107	0.0792	0.0180	0.0666	-0.0315	0.0546
-0.06	-99.92	-117.97	0.9254	0.0896	0.0247	0.0559	-0.0258	0.0419
-0.06	-90.09	-117.97	0.9274	0.0879	0.0176	0.0655	-0.0273	0.0467
-0.07	-79.95	-117.97	0.9107	0.0871	0.0271	0.0612	-0.0219	0.0460
-0.07	-59.94	-117.97	0.9156	0.0908	0.0135	0.0621	-0.0310	0.0454
-0.07	-40.05	-117.97	0.8851	0.0818	0.0175	0.0654	-0.0211	0.0317
-0.07	-20.04	-117.97	0.8703	0.0849	0.0194	0.0698	-0.0234	0.0514
-0.07	-0.09	-117.97	0.8585	0.0836	0.0173	0.0589	-0.0242	0.0472
-0.07	20.00	-117.97	0.8398	0.0958	-0.0008	0.0722	-0.0191	0.0465
-0.07	40.03	-117.97	0.8575	0.0838	0.0225	0.0691	-0.0246	0.0338
-0.07	59.98	-117.98	0.8605	0.0848	0.0196	0.0697	-0.0246	0.0452
-0.07	79.92	-117.98	0.8841	0.0855	0.0012	0.0603	-0.0273	0.0468
-0.07	90.05	-117.98	0.9097	0.0839	0.0187	0.0654	-0.0154	0.0429
-0.04	100.04	-117.99	0.9005	0.0893	0.0193	0.0623	-0.0171	0.0483
-0.03	104.99	-118.03	0.8966	0.0754	0.0236	0.0696	-0.0126	0.0410
-0.04	109.98	-117.97	0.9114	0.0811	0.0253	0.0603	-0.0132	0.0470
-0.05	114.99	-118.01	0.8866	0.0723	0.0301	0.0615	-0.0121	0.0482
-0.09	118.09	-117.98	0.8190	0.0935	0.0200	0.0541	-0.0171	0.0489
-0.06	119.94	-117.97	0.7888	0.0949	0.0146	0.0525	-0.0123	0.0554
-0.11	122.03	-118.01	0.7226	0.1112	0.0165	0.0465	-0.0143	0.0465

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-124.03	-120.00	0.7867	0.0806	-0.0120	0.0454	-0.0178	0.0408
0.01	-117.91	-119.97	0.8479	0.0869	0.0008	0.0624	-0.0183	0.0482
-0.02	-115.03	-119.99	0.8616	0.0876	-0.0020	0.0503	-0.0198	0.0480
-0.05	-110.03	-120.00	0.9035	0.0789	0.0063	0.0401	-0.0299	0.0474
-0.06	-104.99	-120.01	0.8916	0.0658	0.0030	0.0508	-0.0192	0.0377
-0.06	-100.07	-120.01	0.8926	0.0828	0.0086	0.0517	-0.0162	0.0451
-0.06	-90.01	-120.01	0.8847	0.0961	0.0170	0.0595	-0.0160	0.0437
-0.06	-80.00	-120.01	0.8847	0.0865	0.0127	0.0635	-0.0143	0.0485
-0.06	-59.94	-120.01	0.8618	0.0825	-0.0008	0.0128	-0.0169	0.0412
-0.06	-39.99	-120.01	0.8638	0.0840	0.0102	0.0624	-0.0096	0.0479
-0.06	-19.92	-120.01	0.8369	0.0887	0.0137	0.0606	-0.0091	0.0451
-0.06	-0.03	-120.02	0.8350	0.1014	0.0078	0.0602	-0.0225	0.0478
-0.06	19.97	-120.02	0.8350	0.0870	0.0008	0.0527	-0.0127	0.0435
-0.06	40.06	-120.03	0.8429	0.0864	0.0099	0.0646	-0.0214	0.0432
-0.06	60.02	-120.03	0.8320	0.0827	-0.0053	0.0367	-0.0142	0.0427
-0.01	100.03	-119.98	0.8777	0.0942	0.0106	0.0708	-0.0200	0.0477
-0.03	104.99	-119.98	0.8875	0.0973	0.0206	0.0640	-0.0178	0.0430
-0.04	109.98	-119.98	0.8912	0.0914	0.0075	0.0645	-0.0285	0.0552
-0.05	114.99	-119.97	0.8459	0.0779	0.0237	0.0686	-0.0133	0.0498
-0.09	118.09	-119.98	0.8240	0.0764	0.0105	0.0553	-0.0132	0.0435
-0.06	119.94	-120.02	0.7574	0.0939	0.0113	0.0493	-0.0162	0.0530
-0.11	122.03	-120.02	0.7010	0.0980	0.0160	0.0501	0.0017	0.0407

Table D-2 Station 2, Non-Dimensional Data

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-123.92	0.00	0.9659	0.1146	-0.0239	0.0597	-0.0087	0.0426
-0.03	-122.00	-0.02	1.0021	0.1032	-0.0268	0.0515	-0.0052	0.0490
-0.01	-119.96	0.00	1.0571	0.0894	-0.0384	0.0515	-0.0076	0.0517
0.00	-118.06	0.01	1.1302	0.0933	-0.0507	0.0489	-0.0083	0.0549
0.00	-114.91	0.01	1.1092	0.0845	-0.0561	0.0461	-0.0133	0.0533
0.00	-110.05	0.01	1.1407	0.0793	-0.0585	0.0450	-0.0049	0.0483
0.00	-105.01	0.01	1.1825	0.0620	-0.0661	0.0414	-0.0079	0.0446
0.00	-100.04	0.01	1.1825	0.0554	-0.0754	0.0390	-0.0106	0.0408
0.00	-89.97	0.01	1.1929	0.0497	-0.0867	0.0412	-0.0054	0.0396
-0.01	-80.03	0.01	1.1825	0.0486	-0.0894	0.0373	-0.0014	0.0382
-0.01	-59.93	0.01	1.1616	0.0514	-0.1078	0.0421	0.0018	0.0356
0.00	-40.04	0.01	1.1407	0.0530	-0.1088	0.0402	0.0049	0.0392
-0.01	-19.93	0.01	1.1302	0.0501	-0.1110	0.0407	0.0042	0.0403
-0.01	0.01	0.01	1.1197	0.0567	-0.1141	0.0396	0.0057	0.0428
-0.01	19.97	0.00	1.0988	0.0475	-0.1141	0.0370	0.0021	0.0448
-0.01	40.03	0.00	1.0988	0.0562	-0.0984	0.0359	0.0001	0.0460
-0.01	60.08	0.00	1.0778	0.0533	-0.0893	0.0402	-0.0089	0.0411
-0.01	79.92	-0.01	1.0778	0.0579	-0.0783	0.0376	-0.0054	0.0454
-0.01	89.95	-0.01	1.0570	0.0532	-0.0726	0.0449	-0.0101	0.0421
-0.04	100.00	-0.03	1.0125	0.0619	-0.0398	0.0435	-0.0120	0.0442
-0.06	105.09	0.02	0.9828	0.0649	-0.0199	0.0462	-0.0011	0.0501
-0.07	110.09	-0.01	0.9640	0.0703	-0.0136	0.0448	-0.0176	0.0528
-0.07	114.96	-0.02	0.9103	0.0867	-0.0038	0.0443	-0.0035	0.0556
-0.07	117.97	-0.02	0.8662	0.0944	-0.0001	0.0425	-0.0093	0.0582
-0.07	120.01	-0.02	0.8702	0.0973	0.0042	0.0439	-0.0147	0.0492
-0.09	121.94	-0.02	0.8189	0.1177	0.0040	0.0356	-0.0191	0.0544

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-123.92	-20.01	0.9768	0.1156	-0.0264	0.0490	-0.0161	0.0462
-0.04	-122.00	-19.97	1.0021	0.1022	-0.0339	0.0535	-0.0115	0.0573
-0.03	-120.01	-20.00	1.0283	0.0914	-0.0329	0.0492	-0.0117	0.0533
-0.02	-118.06	-20.00	1.0411	0.0960	-0.0382	0.0456	0.0031	0.0467
-0.02	-114.97	-20.00	1.0916	0.0008	-0.0491	0.0425	-0.0041	0.0493
-0.02	-109.99	-20.00	1.1220	0.0693	-0.0530	0.0409	-0.0022	0.0420
-0.02	-104.95	-20.00	1.1422	0.0584	-0.0682	0.0388	0.0010	0.0377
-0.02	-99.95	-20.00	1.1523	0.0542	-0.0755	0.0340	0.0027	0.0382
-0.02	-89.98	-20.00	1.1523	0.0463	-0.0888	0.0383	0.0015	0.0380
-0.02	-80.06	-20.00	1.1422	0.0477	-0.0940	0.0363	-0.0025	0.0382
-0.02	-60.02	-20.00	1.1220	0.0477	-0.1021	0.0372	0.0004	0.0392
-0.02	-39.96	-20.00	1.1017	0.0518	-0.1082	0.0373	-0.0034	0.0395
-0.02	-20.08	-20.00	1.0815	0.0472	-0.1132	0.0367	0.0052	0.0403
-0.02	-0.09	-20.00	1.0715	0.0514	-0.1142	0.0347	-0.0039	0.0373
-0.02	19.99	-20.01	1.0512	0.0528	-0.1082	0.0385	-0.0034	0.0377
-0.02	40.00	-20.01	1.0411	0.0526	-0.0995	0.0379	-0.0038	0.0410
-0.02	59.93	-20.02	1.0411	0.0566	-0.0899	0.0354	-0.0029	0.0424
-0.02	79.95	-20.02	1.0310	0.0555	-0.0734	0.0382	-0.0080	0.0396
-0.02	90.08	-20.02	1.0208	0.0582	-0.0674	0.0384	-0.0156	0.0441
-0.04	100.01	-20.02	0.9968	0.0593	-0.0302	0.0401	-0.0127	0.0481
-0.04	105.09	-20.01	0.9642	0.0684	-0.0218	0.0421	-0.0027	0.0496
-0.05	110.05	-20.03	0.9432	0.0747	-0.0154	0.0423	-0.0123	0.0486
-0.07	114.96	-19.99	0.9203	0.0854	-0.0016	0.0428	-0.0141	0.0474
-0.07	117.97	-20.02	0.8582	0.0945	0.0064	0.0417	-0.0213	0.0491
-0.07	120.01	-19.97	0.8602	0.1017	0.0115	0.0448	-0.0271	0.0531
-0.09	121.94	-20.00	0.7878	0.1157	-0.0005	0.0394	-0.0131	0.0509

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-123.92	-40.02	0.9829	0.1126	-0.0263	0.0545	-0.0204	0.0574
-0.04	-122.00	-40.01	1.0021	0.1072	-0.0335	0.0526	-0.0148	0.0515
-0.03	-119.95	-39.99	1.0569	0.0960	-0.0328	0.0514	-0.0138	0.0530
-0.03	-117.97	-39.98	1.0765	0.0883	-0.0398	0.0497	-0.0169	0.0481
-0.03	-115.04	-39.98	1.0765	0.0905	-0.0516	0.0440	-0.0213	0.0467
-0.03	-110.00	-39.98	1.1161	0.0760	-0.0552	0.0371	-0.0125	0.0466
-0.03	-105.04	-39.98	1.1358	0.0589	-0.0609	0.0393	-0.0075	0.0383
-0.03	-100.04	-39.98	1.1556	0.0599	-0.0610	0.0432	-0.0121	0.0388
-0.03	-90.09	-39.98	1.1556	0.0482	-0.0748	0.0428	-0.0111	0.0393
-0.03	-80.03	-39.98	1.1458	0.0521	-0.0848	0.0395	-0.0045	0.0396
-0.03	-60.03	-39.98	1.1358	0.0496	-0.0870	0.0449	-0.0041	0.0399
-0.03	-40.02	-39.98	1.1161	0.0481	-0.0972	0.0397	0.0014	0.0434
-0.03	-20.02	-39.98	1.0963	0.0510	-0.1047	0.0423	0.0038	0.0374
-0.03	-0.07	-39.98	1.0865	0.0474	-0.0941	0.0385	0.0021	0.0383
-0.03	19.93	-39.98	1.0765	0.0518	-0.0951	0.0414	0.0075	0.0428
-0.04	39.98	-39.99	1.0765	0.0513	-0.0924	0.0396	0.0085	0.0438
-0.04	59.91	-39.99	1.0765	0.0539	-0.0827	0.0387	0.0058	0.0411
-0.04	80.05	-40.00	1.0569	0.0540	-0.0757	0.0379	0.0035	0.0434
-0.04	89.98	-40.00	1.0272	0.0655	-0.0585	0.0426	-0.0106	0.0415
-0.05	100.00	-40.01	1.0098	0.0640	-0.0254	0.0411	-0.0086	0.0466
-0.06	105.09	-40.00	0.9867	0.0693	-0.0154	0.0429	-0.0088	0.0486
-0.07	110.09	-39.99	0.9472	0.0722	-0.0161	0.0416	-0.0121	0.0526
-0.07	114.96	-39.97	0.8972	0.0899	-0.0063	0.0426	-0.0138	0.0491
-0.07	117.97	-39.98	0.8542	0.1021	0.0025	0.0408	-0.0134	0.0573
-0.07	120.01	-40.01	0.8553	0.0914	0.0005	0.0412	-0.0186	0.0477
-0.09	121.94	-40.03	0.8149	0.1137	0.0043	0.0383	-0.0132	0.0538

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-123.92	-60.02	0.9639	0.1097	-0.0210	0.0483	-0.0063	0.0440
-0.04	-122.00	-59.98	0.9922	0.1022	-0.0275	0.0488	-0.0109	0.0480
-0.04	-119.94	-60.00	1.0568	0.0892	-0.0350	0.0463	-0.0097	0.0549
-0.04	-118.06	-59.98	1.0569	0.1097	-0.0308	0.0503	-0.0189	0.0488
-0.04	-115.06	-59.98	1.0865	0.1008	-0.0357	0.0465	-0.0208	0.0491
-0.04	-110.06	-59.98	1.1358	0.0775	-0.0440	0.0438	-0.0229	0.0457
-0.04	-105.08	-59.98	1.1458	0.0696	-0.0446	0.0425	-0.0115	0.0478
-0.04	-100.09	-59.98	1.1556	0.0622	-0.0495	0.0425	-0.0209	0.0428
-0.04	-89.92	-59.98	1.1654	0.0579	-0.0649	0.0385	-0.0149	0.0427
-0.04	-80.03	-59.98	1.1654	0.0587	-0.0685	0.0426	-0.0108	0.0428
-0.04	-60.06	-59.98	1.1556	0.0483	-0.0745	0.0420	-0.0080	0.0404
-0.04	-40.07	-59.98	1.1260	0.0523	-0.0837	0.0429	0.0022	0.0393
-0.04	-20.01	-59.99	1.1062	0.0467	-0.0883	0.0421	0.0032	0.0411
-0.04	0.07	-59.99	1.0865	0.0521	-0.0818	0.0393	0.0120	0.0415
-0.04	20.08	-59.99	1.0765	0.0512	-0.0851	0.0412	0.0111	0.0435
-0.04	40.09	-59.99	1.0765	0.0525	-0.0819	0.0400	0.0097	0.0397
0.02	59.94	-60.00	1.0865	0.0491	-0.0783	0.0422	0.0029	0.0435
-0.01	79.98	-60.00	1.0667	0.0518	-0.0701	0.0387	0.0009	0.0380
-0.01	89.91	-60.01	1.0371	0.0570	-0.0518	0.0463	-0.0028	0.0434
-0.06	100.06	-60.03	1.0121	0.0619	-0.0199	0.0434	-0.0077	0.0393
-0.07	105.09	-59.99	0.9759	0.0707	-0.0177	0.0416	-0.0131	0.0536
-0.07	110.09	-59.99	0.9353	0.0858	-0.0124	0.0427	-0.0079	0.0539
-0.07	114.96	-59.97	0.8913	0.0814	-0.0028	0.0447	-0.0107	0.0534
-0.07	117.97	-59.99	0.8572	0.1112	-0.0026	0.0419	-0.0103	0.0601
-0.07	120.01	-60.00	0.7964	0.1066	0.0057	0.0416	-0.0101	0.0632
-0.09	121.94	-60.02	0.7696	0.1106	0.0003	0.0397	-0.0061	0.0482

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-123.92	-80.03	0.9091	0.1216	-0.0253	0.0523	0.0012	0.0540
-0.04	-122.00	-80.03	0.9118	0.1210	-0.0357	0.0482	0.0019	0.0485
-0.01	-119.99	-79.98	1.0246	0.1020	-0.0296	0.0527	-0.0011	0.0606
0.00	-118.07	-79.99	1.0319	0.0908	-0.0270	0.0542	-0.0015	0.0632
0.00	-115.02	-79.99	1.0815	0.0828	-0.0413	0.0535	-0.0039	0.0642
0.00	-109.93	-79.99	1.1312	0.0741	-0.0492	0.0465	0.0031	0.0530
0.00	-105.03	-79.99	1.1312	0.0698	-0.0521	0.0437	0.0009	0.0478
0.00	-100.07	-79.99	1.1510	0.0570	-0.0607	0.0412	-0.0021	0.0536
0.00	-89.98	-79.99	1.1709	0.0457	-0.0735	0.0403	-0.0058	0.0400
0.00	-79.97	-79.99	1.1609	0.0449	-0.0808	0.0437	-0.0039	0.0417
0.00	-60.09	-79.99	1.1510	0.0494	-0.0867	0.0412	0.0022	0.0392
0.00	-39.98	-79.99	1.1212	0.0523	-0.0860	0.0448	0.0049	0.0399
0.00	-20.06	-79.99	1.1013	0.0522	-0.0873	0.0441	0.0067	0.0449
0.00	0.00	-79.99	1.0716	0.0572	-0.0835	0.0473	0.0065	0.0445
0.00	19.99	-79.99	1.0518	0.0594	-0.0884	0.0446	0.0038	0.0450
0.00	39.95	-79.99	1.0716	0.0587	-0.0889	0.0462	-0.0021	0.0436
0.00	60.09	-79.99	1.0716	0.0544	-0.0796	0.0417	0.0028	0.0457
0.00	79.99	-80.00	1.0617	0.0522	-0.0699	0.0404	-0.0063	0.0440
0.00	89.91	-80.00	1.0617	0.0574	-0.0535	0.0489	-0.0142	0.0449
-0.03	100.04	-79.99	1.0071	0.0642	-0.0291	0.0447	-0.0149	0.0453
-0.04	105.05	-80.00	0.9750	0.0700	-0.0284	0.0437	-0.0141	0.0513
-0.04	110.06	-80.00	0.9504	0.0848	-0.0187	0.0444	-0.0118	0.0527
-0.04	114.96	-80.01	0.8846	0.0937	-0.0130	0.0471	-0.0090	0.0605
-0.07	117.97	-80.00	0.8542	0.1102	0.0000	0.0478	-0.0053	0.0575
-0.07	120.01	-79.99	0.7865	0.1226	0.0080	0.0454	-0.0127	0.0579
-0.09	121.95	-80.02	0.7777	0.1318	0.0022	0.0404	-0.0067	0.0554

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-122.00	-90.01	0.9644	0.1171	-0.0277	0.0513	-0.0025	0.0608
-0.01	-119.94	-90.00	0.9945	0.1023	-0.0215	0.0559	0.0014	0.0585
0.01	-117.94	-90.02	1.0114	0.1032	-0.0320	0.0540	-0.0016	0.0654
0.01	-115.07	-90.02	1.0415	0.0951	-0.0398	0.0520	-0.0096	0.0605
0.01	-110.06	-90.02	1.0715	0.0945	-0.0436	0.0507	-0.0115	0.0488
0.01	-105.04	-90.02	1.1015	0.0699	-0.0574	0.0462	-0.0076	0.0529
0.01	-100.08	-90.02	1.1316	0.0725	-0.0605	0.0424	-0.0089	0.0503
0.01	-90.06	-90.02	1.1516	0.0570	-0.0747	0.0436	-0.0094	0.0420
0.01	-80.06	-90.02	1.1516	0.0578	-0.0791	0.0451	-0.0015	0.0412
0.01	-59.99	-90.02	1.1316	0.0541	-0.0875	0.0475	-0.0004	0.0463
0.01	-40.05	-90.02	1.1015	0.0641	-0.0865	0.0504	0.0028	0.0465
0.01	-20.08	-90.02	1.0615	0.0662	-0.0894	0.0542	0.0044	0.0453
0.01	-0.09	-90.02	1.0415	0.0704	-0.0898	0.0557	-0.0001	0.0417
0.01	20.04	-90.03	1.0114	0.0626	-0.0902	0.0586	-0.0028	0.0472
0.01	40.07	-90.03	1.0214	0.0762	-0.0809	0.0535	0.0045	0.0453
0.01	60.02	-90.03	1.0314	0.0647	-0.0748	0.0476	-0.0002	0.0467
0.01	80.01	-89.98	1.0314	0.0611	-0.0611	0.0464	0.0005	0.0426
0.01	90.08	-89.98	1.0415	0.0588	-0.0415	0.0489	-0.0092	0.0452
-0.03	100.01	-90.00	1.0068	0.0612	-0.0256	0.0417	-0.0131	0.0466
-0.03	105.08	-89.98	0.9976	0.0674	-0.0260	0.0400	-0.0182	0.0487
-0.03	110.06	-89.99	0.9587	0.0819	-0.0182	0.0423	-0.0257	0.0520
-0.03	114.98	-90.01	0.8988	0.0970	-0.0125	0.0454	-0.0109	0.0545
-0.07	117.97	-90.00	0.8502	0.1042	0.0006	0.0443	-0.0006	0.0530
-0.07	120.01	-90.02	0.7884	0.1097	0.0049	0.0448	-0.0084	0.0566
-0.09	121.95	-90.03	0.7465	0.1177	0.0038	0.0415	0.0022	0.0463

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-122.00	-99.98	0.9515	0.1022	-0.0163	0.0523	0.0080	0.0544
0.00	-120.01	-99.99	0.9850	0.0983	-0.0273	0.0581	0.0001	0.0558
0.02	-118.06	-99.98	0.9843	0.1012	-0.0353	0.0586	-0.0052	0.0636
0.02	-115.06	-99.98	1.0220	0.0854	-0.0345	0.0532	-0.0088	0.0559
0.02	-110.02	-99.98	1.0617	0.0800	-0.0503	0.0528	-0.0071	0.0548
0.02	-105.02	-99.98	1.1013	0.0731	-0.0616	0.0477	-0.0291	0.0505
0.02	-99.95	-99.98	1.1312	0.0580	-0.0619	0.0462	-0.0133	0.0460
0.02	-90.03	-99.98	1.1312	0.0605	-0.0784	0.0479	-0.0050	0.0476
0.02	-80.00	-99.98	1.1212	0.0591	-0.0735	0.0477	-0.0127	0.0467
0.02	-60.09	-99.98	1.1013	0.0653	-0.0794	0.0509	-0.0031	0.0475
0.02	-40.02	-99.99	1.0617	0.0701	-0.0926	0.0561	0.0027	0.0462
0.02	-19.95	-99.99	1.0220	0.0707	-0.0857	0.0570	0.0055	0.0496
0.02	-0.09	-99.99	0.9853	0.0743	-0.0943	0.0573	0.0018	0.0502
0.02	19.97	-100.00	0.9893	0.0758	-0.0903	0.0538	-0.0019	0.0503
0.02	39.91	-100.00	0.9922	0.0739	-0.0853	0.0545	-0.0037	0.0488
0.02	60.04	-100.01	1.0121	0.0730	-0.0787	0.0502	-0.0018	0.0455
0.02	79.92	-100.01	1.0319	0.0639	-0.0549	0.0461	-0.0106	0.0422
0.02	90.06	-100.01	1.0121	0.0738	-0.0394	0.0389	-0.0106	0.0482
-0.02	100.00	-100.01	0.9828	0.0652	-0.0220	0.0417	-0.0198	0.0456
-0.03	105.03	-100.02	0.9741	0.0650	-0.0247	0.0425	-0.0224	0.0486
-0.03	110.04	-100.00	0.9429	0.0785	-0.0211	0.0440	-0.0197	0.0529
-0.03	115.01	-100.01	0.8931	0.0934	-0.0124	0.0449	-0.0149	0.0539
-0.07	117.97	-100.01	0.8482	0.1131	0.0067	0.0447	-0.0083	0.0556
-0.07	120.01	-99.97	0.7695	0.1146	0.0023	0.0466	-0.0075	0.0600
-0.09	121.95	-99.98	0.7434	0.1247	-0.0013	0.0392	-0.0010	0.0472

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-123.92	-104.99	0.9399	0.1097	-0.0291	0.0424	0.0118	0.0490
-0.04	-122.00	-104.98	0.9605	0.1003	-0.0223	0.0509	-0.0002	0.0585
-0.01	-120.02	-105.01	1.0219	0.0908	-0.0289	0.0555	0.0037	0.0535
0.01	-117.95	-105.01	1.0463	0.0781	-0.0337	0.0523	0.0042	0.0492
0.01	-115.09	-105.01	1.0563	0.0852	-0.0412	0.0555	-0.0172	0.0545
0.01	-110.09	-105.01	1.0967	0.0708	-0.0545	0.0556	-0.0142	0.0538
0.01	-104.97	-105.01	1.0967	0.0687	-0.0468	0.0497	-0.0176	0.0529
0.01	-99.92	-105.01	1.1067	0.0622	-0.0464	0.0493	-0.0032	0.0432
0.01	-90.03	-105.01	1.1168	0.0591	-0.0640	0.0522	-0.0015	0.0483
0.01	-80.03	-105.01	1.0967	0.0673	-0.0722	0.0515	-0.0076	0.0491
0.01	-59.92	-105.01	1.0764	0.0725	-0.0728	0.0586	-0.0096	0.0469
0.01	-40.06	-105.01	1.0463	0.0700	-0.0696	0.0646	-0.0099	0.0451
0.01	-20.01	-105.02	0.9920	0.0798	-0.0773	0.0592	-0.0002	0.0527
0.01	-0.06	-105.02	0.9669	0.0717	-0.0715	0.0638	0.0083	0.0480
0.01	19.95	-105.02	0.9618	0.0774	-0.0692	0.0615	0.0054	0.0493
0.01	40.06	-105.03	0.9819	0.0798	-0.0830	0.0634	0.0014	0.0455
0.01	60.09	-105.03	0.9578	0.0738	-0.0671	0.0578	-0.0005	0.0483
0.01	79.95	-104.99	0.9789	0.0714	-0.0575	0.0572	-0.0053	0.0429
0.01	89.97	-104.99	0.9889	0.0682	-0.0289	0.0452	-0.0092	0.0473
-0.03	100.01	-105.00	0.9616	0.0693	-0.0125	0.0482	-0.0159	0.0432
-0.03	105.01	-105.01	0.9434	0.0675	-0.0118	0.0488	-0.0188	0.0481
-0.03	110.00	-105.00	0.9090	0.0735	-0.0104	0.0443	-0.0182	0.0530
-0.03	115.00	-105.01	0.8546	0.0946	-0.0086	0.0470	-0.0083	0.0567
-0.07	117.97	-105.03	0.8582	0.0845	0.0019	0.0453	-0.0012	0.0540
-0.07	120.01	-105.02	0.7756	0.1156	0.0000	0.0450	-0.0055	0.0555
-0.09	121.95	-105.01	0.7223	0.1137	0.0103	0.0427	-0.0090	0.0414

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-123.92	-110.03	0.9071	0.1087	-0.0261	0.0515	0.0128	0.0528
-0.04	-122.00	-109.98	0.9505	0.1012	-0.0258	0.0549	0.0009	0.0520
-0.01	-120.02	-109.99	1.0171	0.0841	-0.0337	0.0533	0.0021	0.0483
0.00	-117.96	-109.98	1.0613	0.0695	-0.0374	0.0507	0.0040	0.0552
0.00	-114.94	-109.98	1.0512	0.0744	-0.0463	0.0533	0.0045	0.0529
0.00	-109.99	-109.98	1.0715	0.0647	-0.0579	0.0519	0.0011	0.0464
0.00	-105.03	-109.98	1.0815	0.0650	-0.0548	0.0485	-0.0019	0.0465
0.00	-100.01	-109.98	1.0916	0.0668	-0.0632	0.0490	0.0000	0.0457
0.00	-89.99	-109.98	1.0715	0.0710	-0.0673	0.0507	0.0069	0.0446
0.00	-79.92	-109.98	1.0715	0.0721	-0.0598	0.0597	0.0059	0.0472
0.00	-60.00	-109.98	1.0208	0.0805	-0.0701	0.0625	0.0071	0.0514
0.00	-40.08	-109.98	1.0067	0.0766	-0.0759	0.0647	0.0018	0.0487
0.00	-19.93	-109.98	0.9603	0.0804	-0.0753	0.0589	0.0018	0.0472
0.00	0.08	-109.99	0.9299	0.0786	-0.0799	0.0599	0.0025	0.0509
0.00	20.06	-109.99	0.9127	0.0784	-0.0817	0.0573	0.0035	0.0550
0.00	39.95	-109.99	0.9309	0.0832	-0.0779	0.0642	0.0069	0.0478
0.00	59.96	-110.00	0.9410	0.0853	-0.0729	0.0650	-0.0006	0.0518
0.00	80.08	-110.00	0.9491	0.0767	-0.0440	0.0544	-0.0062	0.0441
0.00	89.91	-110.01	0.9431	0.0744	-0.0238	0.0455	-0.0090	0.0460
-0.03	100.01	-110.02	0.9347	0.0738	-0.0121	0.0461	-0.0138	0.0434
-0.03	105.04	-109.99	0.9145	0.0722	-0.0135	0.0467	-0.0158	0.0434
-0.04	110.03	-110.00	0.8920	0.0798	-0.0070	0.0460	-0.0165	0.0482
-0.04	114.95	-110.02	0.8470	0.0832	-0.0038	0.0494	-0.0145	0.0518
-0.07	117.97	-110.02	0.8212	0.0974	0.0056	0.0449	-0.0122	0.0489
-0.07	120.01	-110.03	0.7785	0.1026	0.0099	0.0439	-0.0115	0.0491
-0.09	121.95	-109.98	0.7284	0.1066	0.0083	0.0420	-0.0014	0.0406

ORIGINAL PAGE IS
OF POOR QUALITY

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-122.00	-115.00	0.9297	0.0873	-0.0315	0.0512	-0.0027	0.0407
0.00	-117.98	-115.00	0.9809	0.0886	-0.0426	0.0547	-0.0143	0.0505
0.00	-115.02	-115.00	0.9929	0.0908	-0.0419	0.0582	-0.0196	0.0429
0.00	-109.98	-115.00	1.0362	0.0698	-0.0487	0.0540	-0.0158	0.0499
0.00	-104.96	-115.00	1.0362	0.0730	-0.0503	0.0543	-0.0138	0.0463
0.00	-100.00	-115.00	1.0362	0.0771	-0.0541	0.0494	-0.0158	0.0433
0.00	-90.08	-115.00	1.0463	0.0788	-0.0614	0.0587	-0.0162	0.0474
0.00	-80.05	-115.00	1.0362	0.0824	-0.0591	0.0718	-0.0127	0.0502
0.00	-59.92	-115.00	1.0060	0.0812	-0.0693	0.0635	-0.0137	0.0462
0.00	-39.97	-115.00	0.9840	0.0877	-0.0746	0.0699	-0.0136	0.0509
0.00	-19.93	-115.00	0.9658	0.0806	-0.0686	0.0655	-0.0158	0.0475
0.00	0.04	-115.00	0.9316	0.0930	-0.0734	0.0664	-0.0158	0.0445
0.00	20.01	-115.00	0.9045	0.0927	-0.0731	0.0652	-0.0149	0.0479
-0.01	39.92	-115.00	0.8833	0.0916	-0.0827	0.0642	-0.0026	0.0476
-0.01	59.98	-115.01	0.8692	0.0812	-0.0807	0.0565	0.0028	0.0479
-0.01	80.00	-115.02	0.8863	0.0929	-0.0638	0.0659	-0.0061	0.0508
-0.01	89.93	-115.02	0.9145	0.0864	-0.0262	0.0486	-0.0172	0.0483
-0.04	100.03	-115.03	0.9072	0.0816	-0.0101	0.0481	-0.0202	0.0452
-0.04	105.05	-115.01	0.8981	0.0813	-0.0141	0.0455	-0.0187	0.0446
-0.04	110.02	-115.01	0.8847	0.0810	-0.0055	0.0454	-0.0244	0.0470
-0.04	114.99	-115.01	0.8573	0.0821	-0.0023	0.0481	-0.0191	0.0495
-0.07	117.97	-114.99	0.8132	0.0924	0.0066	0.0450	-0.0185	0.0445
-0.07	120.01	-115.03	0.7716	0.1066	0.0053	0.0460	-0.0163	0.0574
-0.09	121.95	-114.98	0.6882	0.1127	0.0105	0.0417	-0.0061	0.0450

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-122.00	-118.00	0.9327	0.0806	-0.0287	0.0510	-0.0055	0.0336
-0.01	-117.92	-118.02	0.9515	0.0881	-0.0350	0.0523	-0.0178	0.0413
-0.01	-114.91	-118.02	0.9698	0.0977	-0.0394	0.0632	-0.0237	0.0411
-0.01	-110.05	-118.02	1.0003	0.0797	-0.0443	0.0560	-0.0210	0.0448
-0.01	-105.09	-118.02	1.0135	0.0837	-0.0406	0.0618	-0.0241	0.0439
-0.01	-99.93	-118.02	1.0074	0.0903	-0.0507	0.0664	-0.0133	0.0450
-0.01	-90.05	-118.02	1.0043	0.0924	-0.0535	0.0650	-0.0116	0.0507
-0.01	-79.97	-118.02	0.9973	0.0903	-0.0541	0.0665	-0.0096	0.0476
-0.01	-59.97	-118.02	0.9790	0.0979	-0.0695	0.0674	-0.0161	0.0461
-0.01	-40.08	-118.02	0.9587	0.0904	-0.0724	0.0656	-0.0175	0.0453
-0.01	-19.98	-118.02	0.9363	0.0947	-0.0807	0.0715	-0.0185	0.0466
-0.01	-0.08	-118.02	0.9191	0.0911	-0.0721	0.0704	-0.0112	0.0506
-0.01	20.08	-118.02	0.8784	0.0981	-0.0734	0.0688	-0.0226	0.0480
-0.01	39.93	-118.02	0.8632	0.0998	-0.0791	0.0661	-0.0168	0.0468
-0.01	59.92	-118.03	0.8409	0.0993	-0.0674	0.0667	-0.0069	0.0518
-0.01	80.09	-118.03	0.8409	0.1016	-0.0392	0.0620	-0.0125	0.0452
-0.02	89.91	-118.03	0.8530	0.0997	-0.0111	0.0497	-0.0122	0.0454
-0.04	100.03	-118.03	0.8678	0.0986	-0.0073	0.0456	-0.0193	0.0423
-0.05	105.01	-118.01	0.8717	0.0857	-0.0098	0.0489	-0.0202	0.0442
-0.05	110.01	-118.02	0.8482	0.0873	-0.0038	0.0483	-0.0227	0.0436
-0.05	114.98	-118.03	0.8290	0.0874	0.0032	0.0465	-0.0219	0.0478
-0.07	117.97	-118.02	0.7721	0.0914	0.0053	0.0448	-0.0210	0.0412
-0.07	120.01	-118.02	0.7555	0.1017	0.0070	0.0451	-0.0121	0.0541
-0.09	121.95	-117.97	0.6882	0.1017	0.0096	0.0412	-0.0091	0.0432

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-123.92	-120.00	0.8642	0.0866	-0.0320	0.0480	-0.0027	0.0386
-0.04	-122.00	-120.03	0.8801	0.0841	-0.0316	0.0530	-0.0081	0.0419
-0.03	-119.99	-120.03	0.9068	0.0836	-0.0345	0.0555	-0.0117	0.0410
-0.02	-117.98	-120.02	0.9031	0.0849	-0.0359	0.0606	-0.0115	0.0435
-0.02	-115.07	-120.02	0.9231	0.0868	-0.0375	0.0623	-0.0145	0.0401
-0.02	-109.97	-120.02	0.9679	0.0885	-0.0314	0.0589	-0.0215	0.0474
-0.02	-104.95	-120.02	0.9759	0.0879	-0.0324	0.0664	-0.0201	0.0447
-0.02	-100.06	-120.02	0.9808	0.0884	-0.0419	0.0569	-0.0180	0.0505
-0.02	-90.03	-120.02	0.9759	0.0951	-0.0469	0.0675	-0.0190	0.0442
-0.02	-79.99	-120.02	0.9480	0.0910	-0.0584	0.0706	-0.0231	0.0417
-0.02	-60.09	-120.02	0.9231	0.0967	-0.0606	0.0707	-0.0210	0.0473
-0.02	-40.07	-120.02	0.9260	0.0973	-0.0779	0.0651	-0.0197	0.0427
-0.02	-20.04	-120.02	0.8822	0.0948	-0.0700	0.0690	-0.0190	0.0420
-0.02	0.07	-120.03	0.8642	0.1017	-0.0756	0.0623	-0.0231	0.0475
-0.02	20.05	-120.03	0.8333	0.0996	-0.0795	0.0706	-0.0210	0.0476
-0.02	40.09	-119.99	0.8343	0.1076	-0.0677	0.0729	-0.0170	0.0438
-0.02	60.04	-119.99	0.8373	0.1026	-0.0646	0.0667	-0.0186	0.0430
-0.02	79.92	-119.99	0.8333	0.1137	-0.0568	0.0605	-0.0146	0.0442
-0.02	89.92	-119.99	0.8323	0.1026	-0.0223	0.0491	-0.0127	0.0477
-0.04	99.99	-119.98	0.8279	0.0992	-0.0135	0.0452	-0.0197	0.0394
-0.05	105.04	-120.00	0.8235	0.0959	-0.0110	0.0430	-0.0238	0.0409
-0.05	110.07	-119.99	0.8250	0.0919	-0.0087	0.0449	-0.0254	0.0440
-0.05	115.01	-119.99	0.7928	0.0941	0.0029	0.0460	-0.0237	0.0445
-0.07	117.97	-120.02	0.7451	0.0901	0.0077	0.0449	-0.0211	0.0453
-0.07	120.01	-120.00	0.7127	0.1047	0.0099	0.0459	-0.0159	0.0453
-0.09	121.95	-120.02	0.6871	0.0913	0.0083	0.0412	-0.0117	0.0317

ORIGINAL PAGE IS
OF POOR QUALITY

Table D-3 Station 3, Non-Dimensional Data

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.03	-119.94	0.01	1.2264	0.0767	-0.0226	0.0427	0.0014	0.0465
-0.05	-117.93	0.01	1.2428	0.0815	-0.0064	0.0367	-0.0032	0.0433
-0.04	-115.00	0.02	1.3619	0.0545	0.0021	0.0392	0.0001	0.0345
-0.02	-110.09	0.02	1.3032	0.0542	0.0071	0.0416	-0.0038	0.0343
-0.02	-104.94	0.02	1.3133	0.0473	0.0173	0.0505	-0.0006	0.0347
-0.03	-100.04	0.02	1.3133	0.0415	0.0273	0.0467	-0.0043	0.0327
-0.02	-90.00	0.02	1.2931	0.0413	0.0250	0.0505	0.0009	0.0342
-0.03	-79.96	0.02	1.2730	0.0403	0.0353	0.0501	-0.0051	0.0310
-0.03	-60.09	0.02	1.2224	0.0339	0.0406	0.0561	-0.0062	0.0341
-0.03	-40.05	0.02	1.1820	0.0399	0.0363	0.0517	-0.0018	0.0302
-0.03	-19.95	0.02	1.1315	0.0372	0.0230	0.0469	0.0008	0.0328
-0.03	0.03	0.02	1.1113	0.0407	0.0313	0.0446	-0.0057	0.0317
-0.03	20.01	0.02	1.0708	0.0407	0.0376	0.0438	-0.0024	0.0330
-0.03	40.08	0.02	1.0406	0.0390	0.0328	0.0471	-0.0064	0.0330
-0.03	60.94	0.01	1.0204	0.0381	0.0301	0.0422	-0.0054	0.0368
-0.03	79.95	0.01	0.9809	0.0437	0.0313	0.0479	-0.0122	0.0397
-0.03	90.04	0.01	0.9446	0.0570	0.0362	0.0550	-0.0093	0.0409
-0.03	100.00	0.01	0.8978	0.0732	0.0477	0.0535	-0.0191	0.0543
-0.03	104.94	-0.01	0.8704	0.0842	0.0578	0.0588	-0.0122	0.0571
-0.04	109.94	-0.01	0.8338	0.0946	0.0588	0.0590	-0.0237	0.0595
-0.04	114.99	-0.01	0.8103	0.0956	0.0562	0.0606	-0.0298	0.0603
-0.04	117.98	0.00	0.7687	0.1057	0.0572	0.0698	-0.0146	0.0448

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-119.94	-20.01	1.2323	0.0785	-0.0186	0.0427	0.0121	0.0432
-0.05	-117.97	-19.99	1.2932	0.0683	-0.0057	0.0368	0.0065	0.0385
-0.04	-115.01	-20.01	1.3781	0.0536	0.0044	0.0397	0.0051	0.0364
-0.03	-110.02	-19.99	1.3336	0.0509	0.0078	0.0465	0.0011	0.0351
-0.03	-105.06	-19.99	1.3234	0.0462	0.0161	0.0483	0.0018	0.0338
-0.03	-100.04	-19.99	1.3234	0.0419	0.0137	0.0406	0.0003	0.0332
-0.03	-89.93	-19.99	1.3032	0.0403	0.0260	0.0479	0.0007	0.0340
-0.03	-79.91	-19.99	1.2730	0.0405	0.0211	0.0495	-0.0001	0.0353
-0.03	-60.01	-19.99	1.2325	0.0356	0.0319	0.0478	-0.0009	0.0362
-0.04	-39.94	-19.99	1.1921	0.0402	0.0324	0.0470	0.0001	0.0333
-0.04	-19.97	-19.99	1.1416	0.0406	0.0296	0.0497	-0.0046	0.0343
-0.03	-0.02	-20.00	1.1113	0.0439	0.0403	0.0496	-0.0036	0.0361
-0.03	19.98	-20.00	1.0810	0.0440	0.0402	0.0515	-0.0096	0.0353
-0.03	39.93	-20.00	1.0507	0.0459	0.0411	0.0502	-0.0084	0.0343
-0.03	59.96	-20.01	1.0305	0.0399	0.0320	0.0453	-0.0120	0.0339
-0.04	79.98	-20.02	0.9911	0.0461	0.0331	0.0512	-0.0150	0.0428
-0.04	90.02	-20.02	0.9557	0.0498	0.0392	0.0537	-0.0190	0.0483
-0.03	100.02	-20.02	0.8988	0.0766	0.0488	0.0589	-0.0222	0.0547
-0.04	104.97	-20.02	0.8596	0.0942	0.0492	0.0632	-0.0229	0.0626
-0.04	109.98	-20.01	0.8310	0.0921	0.0563	0.0582	-0.0269	0.0623
-0.05	115.03	-20.03	0.7900	0.1009	0.0565	0.0600	-0.0294	0.0553

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-119.99	-40.00	1.2197	0.0827	-0.0093	0.0381	0.0207	0.0446
-0.05	-117.92	-40.02	1.2773	0.0642	0.0057	0.0387	0.0214	0.0411
-0.05	-114.98	-40.02	1.3690	0.0522	0.0171	0.0408	0.0156	0.0367
-0.04	-110.09	-40.03	1.3276	0.0535	0.0340	0.0402	0.0199	0.0376
-0.04	-105.08	-40.03	1.3276	0.0466	0.0441	0.0501	0.0149	0.0346
-0.04	-100.00	-40.03	1.3276	0.0428	0.0480	0.0482	0.0141	0.0342
-0.04	-90.03	-40.03	1.2873	0.0419	0.0495	0.0489	0.0101	0.0346
-0.04	-79.95	-40.03	1.2772	0.0399	0.0608	0.0519	0.0091	0.0336
-0.04	-60.00	-40.03	1.2270	0.0433	0.0630	0.0527	0.0072	0.0351
-0.04	-40.09	-40.03	1.1868	0.0397	0.0638	0.0502	0.0023	0.0347
-0.04	-19.94	-40.03	1.1364	0.0465	0.0621	0.0482	-0.0044	0.0359
-0.04	-0.01	-40.03	1.1063	0.0391	0.0590	0.0473	-0.0044	0.0369
-0.04	19.96	-40.03	1.0761	0.0476	0.0623	0.0508	-0.0072	0.0336
-0.04	40.04	-40.03	1.0460	0.0490	0.0518	0.0441	-0.0082	0.0328
-0.04	59.92	-40.03	1.0157	0.0396	0.0439	0.0509	-0.0156	0.0363
-0.04	80.02	-40.03	0.9695	0.0560	0.0381	0.0517	-0.0207	0.0416
-0.04	90.04	-40.03	0.9373	0.0672	0.0426	0.0571	-0.0251	0.0471
-0.04	100.01	-40.02	0.8777	0.0858	0.0511	0.0592	-0.0254	0.0575
-0.04	104.98	-40.01	0.8433	0.0929	0.0553	0.0610	-0.0253	0.0592

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.06	-117.94	-60.03	1.2430	0.0727	0.0137	0.0400	0.0414	0.0505
-0.05	-114.99	-60.03	1.2690	0.0660	0.0236	0.0391	0.0343	0.0455
-0.05	-109.95	-60.03	1.3152	0.0660	0.0250	0.0419	0.0282	0.0409
-0.05	-105.09	-60.03	1.3254	0.0551	0.0312	0.0426	0.0204	0.0403
-0.05	-100.04	-60.03	1.3254	0.0476	0.0396	0.0432	0.0203	0.0378
-0.05	-90.03	-60.03	1.3152	0.0438	0.0580	0.0548	0.0184	0.0351
-0.05	-79.94	-60.03	1.2948	0.0449	0.0492	0.0483	0.0130	0.0372
-0.05	-59.94	-60.03	1.2540	0.0448	0.0645	0.0540	0.0179	0.0377
-0.06	-39.91	-60.03	1.2132	0.0477	0.0676	0.0523	0.0176	0.0378
-0.06	-19.95	-60.03	1.1724	0.0456	0.0670	0.0517	0.0168	0.0387
-0.05	0.09	-60.03	1.1215	0.0471	0.0715	0.0517	0.0044	0.0377
-0.06	19.95	-60.03	1.0910	0.0455	0.0712	0.0560	-0.0118	0.0371
-0.06	40.03	-60.03	1.0603	0.0492	0.0695	0.0566	-0.0203	0.0341
-0.05	59.93	-60.03	1.0297	0.0418	0.0545	0.0563	-0.0270	0.0363
-0.06	80.04	-60.00	0.9971	0.0521	0.0479	0.0591	-0.0302	0.0402
-0.06	89.93	-60.00	0.9665	0.0589	0.0650	0.0588	-0.0299	0.0443
-0.04	99.97	-60.01	0.8885	0.0901	0.0565	0.0628	-0.0326	0.0606
-0.05	104.98	-60.00	0.8468	0.0969	0.0565	0.0691	-0.0263	0.0638
-0.05	109.97	-59.99	0.8186	0.0976	0.0515	0.0672	-0.0425	0.0664
-0.05	115.00	-59.98	0.7821	0.1086	0.0542	0.0650	-0.0299	0.0527
-0.05	117.98	-60.01	0.7458	0.1166	0.0492	0.0619	-0.0143	0.0397

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.05	-119.97	-79.99	1.1232	0.0936	0.0076	0.0455	0.1006	0.0564
-0.06	-117.93	-80.00	1.1909	0.0765	0.0204	0.0417	0.0810	0.0543
-0.06	-114.95	-79.98	1.2331	0.0709	0.0336	0.0410	0.0611	0.0488
-0.06	-109.98	-79.97	1.2571	0.0728	0.0378	0.0487	0.0570	0.0470
-0.06	-105.08	-79.97	1.2772	0.0658	0.0417	0.0481	0.0435	0.0436
-0.06	-99.99	-79.97	1.2873	0.0585	0.0471	0.0465	0.0389	0.0436
-0.06	-90.08	-79.97	1.2973	0.0477	0.0600	0.0583	0.0317	0.0365
-0.06	-80.01	-79.97	1.2772	0.0445	0.0637	0.0630	0.0297	0.0367
-0.06	-60.06	-79.97	1.2370	0.0485	0.0657	0.0575	0.0197	0.0438
-0.06	-39.91	-79.97	1.1868	0.0495	0.0709	0.0633	0.0158	0.0405
-0.06	-20.00	-79.97	1.1364	0.0571	0.0630	0.0635	0.0118	0.0439
-0.06	0.01	-79.97	1.0862	0.0577	0.0533	0.0616	0.0043	0.0435
-0.06	20.07	-79.97	1.0661	0.0619	0.0569	0.0582	-0.0109	0.0387
-0.06	40.05	-79.98	1.0460	0.0490	0.0512	0.0583	-0.0282	0.0372
-0.06	59.97	-79.98	1.0358	0.0513	0.0431	0.0491	-0.0423	0.0341
-0.06	79.94	-79.98	0.9846	0.0603	0.0336	0.0562	-0.0458	0.0439
-0.06	90.00	-79.99	0.9594	0.0645	0.0651	0.0630	-0.0465	0.0502
-0.04	100.01	-79.99	0.8955	0.0909	0.0639	0.0631	-0.0373	0.0594
-0.05	104.97	-80.01	0.8535	0.1058	0.0647	0.0728	-0.0385	0.0573
-0.06	109.93	-80.01	0.8116	0.1065	0.0627	0.0695	-0.0420	0.0669
-0.06	114.94	-80.00	0.7804	0.1089	0.0551	0.0664	-0.0259	0.0477
-0.05	117.98	-80.03	0.7641	0.1018	0.0518	0.0601	-0.0153	0.0396

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-119.92	-90.00	1.0532	0.1091	0.0027	0.0489	0.1241	0.0626
-0.06	-118.00	-90.02	1.1974	0.0736	0.0221	0.0420	0.0832	0.0518
-0.06	-114.97	-90.00	1.2318	0.0727	0.0362	0.0406	0.0713	0.0486
-0.06	-110.08	-90.01	1.2714	0.0762	0.0496	0.0480	0.0578	0.0455
-0.06	-105.00	-90.01	1.2916	0.0640	0.0613	0.0562	0.0460	0.0435
-0.06	-100.05	-90.01	1.2916	0.0612	0.0602	0.0498	0.0372	0.0376
-0.06	-90.01	-90.01	1.2816	0.0575	0.0883	0.0622	0.0299	0.0393
-0.06	-80.05	-90.01	1.2614	0.0553	0.0862	0.0625	0.0248	0.0377
-0.06	-60.05	-90.01	1.2114	0.0628	0.0836	0.0683	0.0158	0.0391
-0.06	-39.97	-90.01	1.1714	0.0593	0.0879	0.0705	0.0099	0.0383
-0.06	-19.99	-90.01	1.1213	0.0642	0.0692	0.0675	0.0059	0.0386
-0.06	-0.06	-90.01	1.0813	0.0661	0.0548	0.0683	-0.0023	0.0432
-0.06	20.02	-90.01	1.0412	0.0741	0.0598	0.0666	-0.0038	0.0420
-0.06	40.05	-90.01	1.0212	0.0638	0.0562	0.0583	-0.0183	0.0376
-0.06	60.09	-90.01	1.0112	0.0619	0.0436	0.0586	-0.0393	0.0390
-0.06	80.01	-90.01	0.9872	0.0579	0.0618	0.0580	-0.0540	0.0390
-0.06	90.09	-90.01	0.9682	0.0611	0.0863	0.0573	-0.0515	0.0402
-0.04	99.97	-90.02	0.8665	0.0965	0.0555	0.0668	-0.0486	0.0656
-0.05	104.94	-90.00	0.8261	0.1136	0.0568	0.0705	-0.0408	0.0678
-0.05	109.97	-90.00	0.7866	0.1113	0.0544	0.0687	-0.0393	0.0718
-0.05	114.94	-90.00	0.7537	0.1096	0.0500	0.0671	-0.0347	0.0541
-0.05	117.98	-89.98	0.7366	0.1245	0.0495	0.0680	-0.0182	0.0412

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-119.92	-100.03	1.0246	0.1070	-0.0012	0.0549	0.1445	0.0662
-0.07	-117.98	-100.01	1.2001	0.0731	0.0251	0.0437	0.0943	0.0515
-0.07	-114.95	-100.02	1.2344	0.0667	0.0359	0.0466	0.0713	0.0448
-0.07	-109.98	-100.01	1.2758	0.0702	0.0437	0.0547	0.0559	0.0398
-0.07	-105.02	-100.01	1.2758	0.0611	0.0451	0.0501	0.0448	0.0377
-0.07	-99.91	-100.01	1.2758	0.0571	0.0598	0.0625	0.0448	0.0413
-0.07	-89.93	-100.01	1.2558	0.0672	0.0611	0.0662	0.0326	0.0397
-0.07	-79.93	-100.01	1.2359	0.0632	0.0637	0.0671	0.0236	0.0419
-0.07	-60.06	-100.01	1.1761	0.0657	0.0701	0.0737	0.0123	0.0398
-0.07	-40.09	-100.01	1.1263	0.0725	0.0468	0.0765	0.0087	0.0467
-0.07	-20.04	-100.01	1.0764	0.0760	0.0443	0.0760	0.0059	0.0432
-0.07	0.05	-100.01	1.0365	0.0731	0.0392	0.0689	0.0034	0.0428
-0.07	19.98	-100.01	0.9907	0.0741	0.0240	0.0700	0.0018	0.0469
-0.07	39.96	-100.01	0.9668	0.0733	0.0152	0.0681	-0.0177	0.0440
-0.07	60.06	-100.02	0.9598	0.0721	0.0192	0.0681	-0.0350	0.0403
-0.07	80.01	-100.02	0.9648	0.0575	0.0416	0.0589	-0.0536	0.0385
-0.07	90.05	-100.02	0.9149	0.0758	0.0537	0.0673	-0.0522	0.0489
-0.05	100.00	-100.00	0.8596	0.0927	0.0532	0.0641	-0.0487	0.0605
-0.05	104.97	-100.02	0.8116	0.1074	0.0455	0.0650	-0.0445	0.0650
-0.06	109.94	-100.00	0.7758	0.1155	0.0408	0.0683	-0.0417	0.0714
-0.06	114.94	-100.02	0.7557	0.1054	0.0512	0.0656	-0.0314	0.0535
-0.05	117.98	-99.97	0.7237	0.1126	0.0413	0.0550	-0.0128	0.0389

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-119.92	-105.03	1.0256	0.1070	0.0052	0.0510	0.1498	0.0621
-0.07	-118.00	-104.99	1.1551	0.0745	0.0210	0.0472	0.0963	0.0500
-0.07	-114.98	-105.00	1.1868	0.0660	0.0272	0.0480	0.0782	0.0440
-0.07	-110.05	-104.97	1.2204	0.0709	0.0304	0.0468	0.0610	0.0408
-0.07	-104.93	-104.97	1.2204	0.0721	0.0341	0.0547	0.0515	0.0442
-0.07	-100.05	-104.97	1.2303	0.0663	0.0361	0.0610	0.0379	0.0422
-0.07	-90.05	-104.97	1.2204	0.0618	0.0391	0.0707	0.0329	0.0411
-0.07	-79.99	-104.97	1.2006	0.0669	0.0437	0.0743	0.0272	0.0387
-0.07	-60.00	-104.97	1.1609	0.0681	0.0331	0.0822	0.0208	0.0399
-0.07	-40.07	-104.97	1.0914	0.0772	0.0230	0.0782	0.0029	0.0436
-0.07	-20.08	-104.97	1.0517	0.0716	0.0187	0.0817	-0.0003	0.0428
-0.07	0.04	-104.97	1.0121	0.0779	0.0101	0.0739	-0.0020	0.0447
-0.07	19.92	-104.98	0.9744	0.0782	-0.0209	0.0772	-0.0116	0.0388
-0.07	40.00	-104.98	0.9416	0.0735	-0.0112	0.0736	-0.0184	0.0390
-0.07	60.01	-104.98	0.9347	0.0713	-0.0123	0.0665	-0.0321	0.0412
-0.07	80.06	-104.98	0.9386	0.0629	0.0332	0.0571	-0.0506	0.0387
-0.07	90.00	-104.99	0.8940	0.0786	0.0462	0.0678	-0.0525	0.0571
-0.05	99.96	-104.99	0.8400	0.0981	0.0469	0.0601	-0.0421	0.0659
-0.05	104.94	-105.01	0.8025	0.1081	0.0438	0.0655	-0.0442	0.0670
-0.06	109.95	-105.00	0.7535	0.1112	0.0391	0.0694	-0.0416	0.0707
-0.06	114.95	-105.00	0.7485	0.1116	0.0465	0.0679	-0.0239	0.0467
-0.05	117.98	-105.02	0.7163	0.1136	0.0456	0.0601	-0.0204	0.0433

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.04	-117.94	-110.01	1.1026	0.0828	0.0056	0.0506	0.1004	0.0510
-0.04	-115.04	-109.98	1.1400	0.0774	0.0143	0.0578	0.0733	0.0464
0.00	-109.94	-109.98	1.1462	0.0811	0.0244	0.0598	0.0613	0.0460
0.00	-105.01	-109.98	1.1562	0.0792	0.0248	0.0635	0.0468	0.0376
0.00	-100.08	-109.98	1.1661	0.0799	0.0304	0.0675	0.0352	0.0423
0.00	-89.93	-109.98	1.1562	0.0739	0.0177	0.0812	0.0263	0.0412
0.00	-79.97	-109.98	1.1462	0.0801	0.0146	0.0848	0.0162	0.0425
0.00	-60.08	-109.98	1.0963	0.0882	0.0044	0.0836	0.0056	0.0430
0.00	-40.02	-109.98	1.0664	0.0898	-0.0077	0.0797	0.0017	0.0435
0.00	-19.99	-109.98	1.0166	0.0906	-0.0179	0.0873	0.0072	0.0369
0.00	-0.07	-109.98	0.9608	0.0922	-0.0198	0.0797	0.0034	0.0413
0.00	20.00	-109.98	0.9458	0.0886	-0.0299	0.0789	-0.0086	0.0390
0.00	40.00	-109.98	0.9279	0.0896	-0.0287	0.0790	-0.0198	0.0342
0.00	60.07	-109.99	0.9359	0.0815	-0.0118	0.0743	-0.0290	0.0343
0.00	80.00	-109.99	0.9299	0.0788	0.0353	0.0710	-0.0411	0.0366
0.00	90.07	-109.99	0.9040	0.0772	0.0639	0.0640	-0.0508	0.0448
-0.01	99.97	-110.01	0.8429	0.0932	0.0504	0.0637	-0.0440	0.0560
-0.02	104.98	-110.00	0.8335	0.0925	0.0502	0.0656	-0.0480	0.0551
-0.03	109.93	-110.00	0.7686	0.1021	0.0391	0.0662	-0.0345	0.0590
-0.05	114.96	-110.01	0.7691	0.0987	0.0535	0.0598	-0.0188	0.0395
-0.05	117.98	-110.03	0.7070	0.1107	0.0367	0.0616	-0.0161	0.0378

ORIGINAL PAGE IS
OF POOR QUALITY

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.04	-119.92	-115.01	0.9915	0.0977	-0.0389	0.0726	0.1387	0.0575
-0.07	-117.92	-115.03	1.0930	0.0928	-0.0256	0.0622	0.0835	0.0602
-0.04	-115.02	-114.99	1.1404	0.0861	-0.0363	0.0698	0.0486	0.0437
0.00	-110.05	-114.99	1.1455	0.0966	-0.0409	0.0757	0.0426	0.0429
0.00	-105.09	-114.99	1.1455	0.0900	-0.0330	0.0819	0.0319	0.0403
0.00	-99.92	-114.99	1.1455	0.0933	-0.0489	0.0876	0.0229	0.0417
0.00	-90.03	-114.99	1.1260	0.0847	-0.0429	0.0989	0.0153	0.0422
0.00	-80.04	-114.99	1.0966	0.0911	-0.0521	0.1018	0.0128	0.0418
0.00	-59.91	-114.99	1.0476	0.0967	-0.0823	0.0913	0.0040	0.0409
0.00	-40.05	-114.99	1.0085	0.0940	-0.0852	0.0972	-0.0009	0.0372
0.00	-19.92	-114.99	0.9419	0.0881	-0.1038	0.1058	-0.0008	0.0376
0.00	-0.09	-114.99	0.9067	0.0860	-0.1185	0.0989	-0.0130	0.0360
0.00	20.02	-115.00	0.8910	0.0969	-0.1331	0.0828	-0.0091	0.0397
0.00	40.01	-115.00	0.8959	0.0979	-0.1087	0.0841	-0.0173	0.0399
0.00	59.95	-115.00	0.8929	0.0893	-0.0689	0.0827	-0.0273	0.0398
0.00	79.96	-115.01	0.9018	0.0787	0.0162	0.0741	-0.0415	0.0429
0.00	90.04	-115.01	0.8783	0.0766	0.0541	0.0605	-0.0496	0.0461
-0.01	100.02	-115.00	0.8219	0.0902	0.0458	0.0645	-0.0381	0.0543
-0.02	104.99	-115.00	0.7957	0.1018	0.0425	0.0696	-0.0376	0.0603
-0.03	109.95	-115.01	0.7617	0.1026	0.0423	0.0698	-0.0335	0.0575
-0.03	114.97	-115.00	0.7416	0.1007	0.0449	0.0608	-0.0261	0.0392

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.02	-119.94	-118.00	1.0209	0.1053	-0.0761	0.0797	0.0847	0.0430
-0.04	-117.92	-118.00	1.0884	0.0991	-0.0794	0.0796	0.0532	0.0435
-0.04	-114.95	-117.99	1.0974	0.1013	-0.0830	0.0856	0.0380	0.0409
-0.01	-109.94	-117.97	1.0965	0.0988	-0.0827	0.0923	0.0277	0.0352
-0.01	-105.06	-117.97	1.0965	0.0956	-0.0901	0.0982	0.0236	0.0350
-0.01	-99.97	-117.97	1.0965	0.1018	-0.0876	0.0988	0.0186	0.0351
-0.01	-90.06	-117.97	1.0668	0.0971	-0.0899	0.1146	0.0106	0.0348
-0.01	-79.91	-117.97	1.0471	0.0920	-0.1087	0.1107	0.0073	0.0346
-0.01	-59.96	-117.97	0.9977	0.1037	-0.1186	0.1067	0.0001	0.0362
-0.01	-40.01	-117.97	0.9483	0.0988	-0.1314	0.1027	-0.0039	0.0346
-0.01	-20.08	-117.97	0.9019	0.0886	-0.1620	0.1037	-0.0069	0.0370
-0.01	0.00	-117.97	0.8821	0.1018	-0.1324	0.0998	-0.0036	0.0338
-0.01	19.92	-117.97	0.8476	0.0880	-0.1412	0.0840	-0.0073	0.0476
-0.01	39.92	-117.97	0.8416	0.0986	-0.1225	0.0823	-0.0148	0.0423
-0.01	59.99	-117.98	0.8832	0.0872	-0.0913	0.0725	-0.0256	0.0413
-0.01	80.09	-117.98	0.8761	0.0813	0.0012	0.0697	-0.0382	0.0425
-0.01	90.00	-117.99	0.8495	0.0847	0.0429	0.0573	-0.0379	0.0401
-0.02	100.04	-118.01	0.8025	0.0937	0.0316	0.0607	-0.0358	0.0544
-0.03	104.97	-118.00	0.7791	0.0941	0.0346	0.0642	-0.0362	0.0556
-0.03	109.93	-117.99	0.7422	0.0972	0.0399	0.0686	-0.0371	0.0541
-0.03	114.98	-118.00	0.7282	0.0973	0.0446	0.0635	-0.0280	0.0381
-0.05	117.98	-117.98	0.6703	0.1097	0.0478	0.0618	-0.0166	0.0373

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.04	-117.95	-119.99	1.0228	0.0971	-0.1135	0.0834	0.0411	0.0369
-0.04	-115.03	-120.01	1.0348	0.0981	-0.1212	0.0882	0.0275	0.0441
-0.01	-109.99	-120.00	1.0129	0.0994	-0.1200	0.0965	0.0286	0.0338
-0.01	-105.04	-120.00	1.0228	0.1004	-0.1318	0.1022	0.0191	0.0323
-0.01	-100.01	-120.00	1.0425	0.1101	-0.1495	0.1014	0.0089	0.0479
-0.01	-89.96	-120.00	1.0129	0.1042	-0.1594	0.1052	-0.0029	0.0430
-0.01	-80.00	-120.00	0.9775	0.1032	-0.1612	0.1091	-0.0048	0.0425
-0.01	-60.08	-120.00	0.9402	0.1004	-0.1515	0.1042	-0.0092	0.0355
-0.01	-39.95	-120.00	0.9057	0.1141	-0.1525	0.1062	-0.0171	0.0391
-0.01	-20.00	-120.00	0.8704	0.1014	-0.1535	0.1062	-0.0139	0.0403
-0.01	0.06	-120.00	0.8310	0.1052	-0.1750	0.1014	-0.0117	0.0435
-0.01	19.94	-120.00	0.8231	0.0947	-0.1691	0.0994	-0.0084	0.0331
-0.01	39.98	-120.00	0.8389	0.0890	-0.1505	0.0886	-0.0103	0.0273
-0.01	60.09	-120.01	0.8349	0.0902	-0.1239	0.0828	-0.0272	0.0423
-0.01	80.05	-120.01	0.8320	0.0789	-0.0123	0.0739	-0.0376	0.0429
-0.01	90.08	-120.01	0.8193	0.0885	0.0466	0.0627	-0.0423	0.0498
-0.02	99.98	-120.01	0.7884	0.0916	0.0305	0.0597	-0.0412	0.0543
-0.03	104.97	-120.02	0.7609	0.0923	0.0423	0.0618	-0.0398	0.0550
-0.03	109.94	-120.01	0.7215	0.0985	0.0423	0.0737	-0.0282	0.0593
-0.05	114.96	-119.97	0.7059	0.0919	0.0482	0.0617	-0.0151	0.0274
-0.05	117.98	-120.03	0.6826	0.1027	0.0463	0.0626	-0.0209	0.0345

Table D-4 Station 4, Non-Dimensional Data

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	0.00	0.8959	0.1101	0.0010	0.0584	0.0165	0.0654
-0.16	-120.01	-0.01	1.0196	0.1012	0.0068	0.0556	0.0190	0.0612
-0.31	-118.05	0.03	1.0764	0.0932	0.0067	0.0516	0.0183	0.0508
-0.15	-114.97	-0.01	1.1760	0.0731	0.0261	0.0410	0.0151	0.0451
0.00	-109.94	-0.01	1.2632	0.0534	0.0393	0.0365	0.0218	0.0365
0.00	-105.00	-0.01	1.2853	0.0429	0.0450	0.0384	0.0282	0.0373
0.00	-99.93	-0.01	1.2922	0.0432	0.0603	0.0410	0.0183	0.0356
0.00	-89.93	-0.01	1.2973	0.0349	0.0646	0.0494	0.0144	0.0372
0.00	-79.95	-0.01	1.2782	0.0356	0.0633	0.0525	0.0155	0.0374
0.00	-60.03	-0.01	1.2381	0.0380	0.0762	0.0541	0.0112	0.0396
0.00	-40.04	-0.01	1.1951	0.0402	0.0606	0.0632	0.0096	0.0372
0.00	-20.01	-0.01	1.1520	0.0365	0.0606	0.0588	0.0140	0.0377
0.00	0.00	-0.01	1.1129	0.0357	0.0436	0.0576	0.0150	0.0381
0.00	19.91	-0.01	1.0769	0.0360	0.0280	0.0584	0.0080	0.0367
0.00	40.06	-0.01	1.0468	0.0370	0.0254	0.0533	0.0110	0.0386
0.00	60.07	-0.01	1.0148	0.0384	0.0152	0.0628	0.0031	0.0399
0.00	79.97	-0.02	0.9663	0.0570	0.0270	0.0641	-0.0059	0.0586
0.00	89.96	-0.02	0.9354	0.0684	0.0297	0.0778	-0.0048	0.0507
-0.16	100.00	-0.03	0.9142	0.0736	0.0393	0.0762	-0.0111	0.0586
-0.17	105.01	-0.02	0.8843	0.0805	0.0580	0.0700	-0.0147	0.0625
-0.19	110.04	-0.03	0.8825	0.0730	0.0581	0.0673	-0.0241	0.0629
-0.38	118.01	-0.03	0.8311	0.0862	0.0403	0.0559	-0.0056	0.0704

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-20.01	0.8400	0.1021	-0.0049	0.0662	0.0852	0.0749
-0.16	-119.97	-20.02	0.9497	0.1054	0.0108	0.0518	0.0871	0.0707
-0.16	-118.03	-20.01	1.0263	0.0967	0.0169	0.0472	0.0738	0.0667
-0.15	-114.99	-20.03	1.1285	0.0811	0.0297	0.0420	0.0637	0.0553
0.00	-110.09	-20.03	1.2207	0.0598	0.0487	0.0361	0.0549	0.0435
0.00	-105.01	-20.03	1.2704	0.0493	0.0543	0.0351	0.0368	0.0402
0.00	-100.08	-20.03	1.2834	0.0465	0.0660	0.0375	0.0321	0.0349
0.00	-90.09	-20.03	1.2974	0.0399	0.0617	0.0441	0.0228	0.0365
0.00	-79.94	-20.03	1.2794	0.0383	0.0615	0.0542	0.0125	0.0329
0.00	-60.05	-20.03	1.2386	0.0368	0.0650	0.0508	0.0129	0.0380
0.00	-40.05	-20.03	1.1937	0.0339	0.0520	0.0534	0.0097	0.0354
0.00	-19.91	-20.03	1.1568	0.0361	0.0541	0.0524	0.0075	0.0399
0.00	0.03	-20.00	1.1090	0.0393	0.0280	0.0515	0.0144	0.0357
0.00	20.07	-20.00	1.0722	0.0375	0.0167	0.0455	0.0162	0.0344
0.00	40.06	-20.00	1.0512	0.0404	0.0018	0.0474	0.0123	0.0327
0.00	59.92	-20.01	1.0074	0.0469	0.0099	0.0560	0.0046	0.0456
0.00	79.95	-20.01	0.9505	0.0727	0.0233	0.0692	-0.0099	0.0541
0.00	89.91	-20.02	0.9298	0.0715	0.0166	0.0800	-0.0101	0.0626
-0.17	100.03	-20.01	0.8894	0.0758	0.0365	0.0788	-0.0138	0.0602
-0.18	104.98	-20.03	0.8707	0.0815	0.0443	0.0697	-0.0122	0.0638
-0.19	110.01	-20.01	0.8632	0.0824	0.0498	0.0679	-0.0210	0.0711
0.00	114.98	-20.02	0.8422	0.0808	0.0422	0.0644	-0.0236	0.0730
-0.38	118.01	-20.00	0.8392	0.0894	0.0442	0.0623	-0.0188	0.0689

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-39.98	0.7193	0.0977	-0.0009	0.0485	0.1835	0.0801
-0.31	-120.02	-39.99	0.8052	0.1062	0.0103	0.0561	0.1577	0.0885
-0.31	-118.05	-40.03	0.8422	0.1161	0.0227	0.0520	0.1479	0.0741
-0.15	-114.93	-40.00	0.9717	0.1171	0.0415	0.0462	0.1219	0.0673
0.00	-109.97	-40.00	1.1109	0.0932	0.0746	0.0445	0.0825	0.0548
0.00	-104.96	-40.00	1.2264	0.0664	0.0935	0.0408	0.0563	0.0461
0.00	-100.09	-40.00	1.2685	0.0552	0.0936	0.0414	0.0426	0.0445
0.00	-89.99	-40.00	1.3107	0.0448	0.0983	0.0469	0.0177	0.0374
0.00	-79.95	-40.00	1.3047	0.0377	0.0956	0.0512	0.0067	0.0373
0.00	-60.00	-40.00	1.2624	0.0422	0.0856	0.0552	-0.0018	0.0364
0.00	-40.06	-40.00	1.2193	0.0405	0.0836	0.0604	0.0021	0.0411
0.00	-20.00	-40.00	1.1702	0.0428	0.0737	0.0662	-0.0080	0.0393
0.00	0.05	-40.00	1.1370	0.0402	0.0591	0.0595	-0.0099	0.0384
0.00	20.08	-40.01	1.0959	0.0417	0.0480	0.0648	-0.0149	0.0413
0.00	39.95	-40.02	1.0668	0.0385	0.0368	0.0589	-0.0213	0.0362
0.00	60.08	-40.02	1.0367	0.0416	0.0243	0.0635	-0.0189	0.0437
0.00	79.92	-40.03	0.9810	0.0617	0.0221	0.0734	-0.0181	0.0525
0.00	89.97	-40.03	0.9510	0.0703	0.0226	0.0914	-0.0172	0.0581
-0.17	100.02	-39.99	0.9044	0.0801	0.0533	0.0760	-0.0101	0.0623
-0.18	104.97	-40.01	0.8846	0.0816	0.0469	0.0711	-0.0114	0.0673
-0.19	110.07	-40.01	0.8719	0.0845	0.0512	0.0685	-0.0124	0.0709
0.00	114.98	-40.00	0.8473	0.0864	0.0346	0.0666	-0.0228	0.0732
-0.38	118.01	-40.01	0.8441	0.0861	0.0430	0.0615	0.0095	0.0739
0.01	119.93	-40.01	0.8226	0.0831	0.0255	0.0530	0.0045	0.0738

ORIGINAL PAGE IS
OF POOR QUALITY

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-60.02	0.8534	0.1011	0.0321	0.0540	0.3534	0.0875
-0.16	-114.99	-60.01	0.9351	0.0772	0.0562	0.0534	0.1923	0.0950
0.00	-110.00	-60.02	0.9977	0.0976	0.0640	0.0519	0.0841	0.0696
0.00	-105.05	-60.02	1.1190	0.0930	0.0712	0.0493	0.0590	0.0556
0.00	-100.06	-60.02	1.2175	0.0605	0.0776	0.0409	0.0391	0.0479
0.00	-89.95	-60.02	1.2788	0.0493	0.0971	0.0457	0.0217	0.0457
0.00	-80.04	-60.02	1.2939	0.0418	0.1154	0.0538	0.0066	0.0399
0.00	-60.09	-60.02	1.2738	0.0389	0.1339	0.0601	0.0046	0.0382
0.00	-40.05	-60.02	1.2266	0.0407	0.1395	0.0671	0.0071	0.0403
0.00	-20.06	-60.03	1.1783	0.0420	0.1311	0.0683	-0.0002	0.0428
0.00	0.05	-60.03	1.1331	0.0457	0.1214	0.0647	-0.0073	0.0426
0.00	19.93	-60.03	1.0949	0.0388	0.0988	0.0719	-0.0187	0.0390
0.00	39.94	-59.99	1.0596	0.0412	0.0823	0.0615	-0.0282	0.0360
0.00	60.04	-60.00	1.0345	0.0437	0.0675	0.0612	-0.0290	0.0375
0.00	79.92	-60.00	0.9780	0.0628	0.0473	0.0758	-0.0277	0.0498
0.00	90.09	-60.00	0.9467	0.0737	0.0622	0.0803	-0.0250	0.0570
-0.17	100.01	-60.00	0.8966	0.0847	0.0455	0.0730	-0.0248	0.0623
-0.18	104.97	-59.99	0.8892	0.0837	0.0472	0.0727	-0.0242	0.0654
-0.19	110.03	-60.01	0.8706	0.0880	0.0510	0.0713	-0.0268	0.0767
0.00	115.09	-60.01	0.8493	0.0918	0.0395	0.0726	-0.0325	0.0344
-0.38	118.01	-60.03	0.8530	0.0878	0.0364	0.0665	0.0078	0.0696
0.01	119.93	-60.02	0.8327	0.0892	0.0438	0.0571	-0.0032	0.0719

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-79.98	0.9398	0.1101	0.0159	0.0590	0.3924	0.0721
-0.31	-120.02	-79.99	0.9695	0.1092	0.0170	0.0647	0.3737	0.0712
-0.31	-118.05	-80.00	1.0013	0.1021	0.0095	0.0665	0.3323	0.0842
-0.15	-114.99	-80.00	1.0621	0.0838	0.0196	0.0599	0.2409	0.0834
0.01	-110.02	-80.00	1.1175	0.0741	0.0276	0.0547	0.1285	0.0675
0.01	-105.05	-80.00	1.1677	0.0712	0.0418	0.0489	0.0856	0.0609
0.01	-100.06	-80.00	1.2118	0.0636	0.0503	0.0491	0.0640	0.0548
0.01	-89.95	-80.00	1.2540	0.0697	0.0636	0.0510	0.0327	0.0455
0.01	-79.91	-80.00	1.2701	0.0571	0.0931	0.0567	0.0252	0.0502
0.01	-59.94	-80.00	1.2540	0.0486	0.0978	0.0616	0.0059	0.0449
0.01	-40.04	-80.00	1.1968	0.0560	0.1068	0.0794	0.0002	0.0431
0.01	-20.05	-80.00	1.1536	0.0567	0.1038	0.0849	-0.0085	0.0473
0.01	-0.08	-80.00	1.1095	0.0606	0.0916	0.0753	-0.0208	0.0477
0.01	19.91	-80.00	1.0723	0.0526	0.0763	0.0731	-0.0291	0.0436
0.01	39.94	-80.00	1.0502	0.0470	0.0638	0.0712	-0.0418	0.0455
0.00	60.00	-80.00	1.0231	0.0482	0.0495	0.0668	-0.0498	0.0422
0.00	79.98	-80.00	0.9860	0.0625	0.0591	0.0747	-0.0447	0.0553
0.00	89.91	-80.00	0.9435	0.0792	0.0596	0.0753	-0.0384	0.0589
-0.17	100.04	-79.99	0.9009	0.0861	0.0592	0.0732	-0.0381	0.0626
-0.19	104.97	-80.02	0.8820	0.0895	0.0480	0.0786	-0.0382	0.0684
-0.19	110.07	-80.01	0.8590	0.0926	0.0457	0.0748	-0.0291	0.0700
0.00	115.06	-80.01	0.8372	0.0998	0.0476	0.0741	-0.0336	0.0684
-0.39	118.01	-79.97	0.8623	0.0897	0.0486	0.0682	-0.0076	0.0643
0.00	119.93	-79.98	0.8325	0.0944	0.0438	0.0598	-0.0171	0.0774

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-89.99	0.9546	0.1191	-0.0080	0.0647	0.3946	0.0669
-0.31	-120.02	-89.99	0.9978	0.1151	0.0041	0.0750	0.3490	0.0690
-0.31	-118.05	-90.02	1.0324	0.1232	-0.0141	0.0707	0.3400	0.0694
-0.31	-114.95	-90.01	1.0830	0.1019	0.0060	0.0683	0.2705	0.0829
0.01	-109.98	-89.99	1.1481	0.1034	0.0068	0.0584	0.1712	0.0711
0.01	-104.92	-89.99	1.1952	0.0777	0.0214	0.0643	0.1135	0.0576
0.01	-99.96	-89.99	1.2213	0.0760	0.0373	0.0570	0.0771	0.0522
0.01	-90.00	-89.99	1.2454	0.0740	0.0495	0.0618	0.0524	0.0536
0.01	-79.98	-89.99	1.2515	0.0678	0.0595	0.0755	0.0300	0.0521
0.01	-60.04	-89.99	1.2173	0.0716	0.0848	0.0783	0.0121	0.0524
0.01	-39.97	-89.99	1.1762	0.0681	0.0855	0.0874	-0.0058	0.0476
0.01	-20.07	-89.99	1.1321	0.0665	0.0692	0.0903	-0.0172	0.0459
0.01	0.04	-89.99	1.0809	0.0633	0.0690	0.0971	-0.0171	0.0474
0.01	19.93	-89.99	1.0498	0.0564	0.0495	0.0844	-0.0413	0.0442
0.00	39.98	-89.99	1.0307	0.0515	0.0408	0.0729	-0.0435	0.0446
0.01	60.08	-89.99	1.0196	0.0504	0.0460	0.0675	-0.0523	0.0436
0.01	80.04	-89.99	0.9832	0.0571	0.0564	0.0727	-0.0524	0.0536
0.00	89.92	-90.00	0.9183	0.0881	0.0503	0.0767	-0.0447	0.0624
-0.18	99.98	-90.00	0.8822	0.0915	0.0519	0.0797	-0.0417	0.0683
-0.19	105.00	-90.00	0.8749	0.0915	0.0503	0.0742	-0.0388	0.0707
-0.19	110.04	-90.01	0.8665	0.0899	0.0440	0.0761	-0.0382	0.0693
0.00	115.03	-90.00	0.8348	0.1024	0.0298	0.0638	-0.0482	0.0846
-0.39	118.01	-89.99	0.8592	0.0935	0.0542	0.0675	-0.0199	0.0656
0.00	119.93	-90.00	0.8362	0.0874	0.0448	0.0571	-0.0260	0.0713

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-100.00	1.0028	0.1301	-0.0433	0.0843	0.3378	0.0634
-0.17	-119.97	-100.03	1.0191	0.1234	-0.0354	0.0784	0.3163	0.0599
-0.17	-117.98	-100.00	1.0570	0.1194	-0.0473	0.0858	0.2855	0.0593
-0.17	-114.93	-100.03	1.1042	0.1158	-0.0473	0.0854	0.2417	0.0622
-0.02	-109.96	-100.03	1.1674	0.1017	-0.0409	0.0800	0.1803	0.0472
-0.02	-105.08	-100.03	1.1893	0.0983	-0.0328	0.0897	0.1262	0.0500
-0.02	-99.97	-100.03	1.2231	0.0840	-0.0268	0.0739	0.0931	0.0486
-0.02	-90.01	-100.03	1.2202	0.0912	-0.0170	0.0872	0.0528	0.0468
-0.02	-80.02	-100.03	1.2292	0.0871	-0.0146	0.0954	0.0325	0.0452
-0.02	-59.99	-100.03	1.1753	0.0838	0.0006	0.0875	0.0134	0.0461
-0.02	-39.93	-100.03	1.1364	0.0836	0.0050	0.0984	-0.0008	0.0472
-0.02	-20.06	-100.03	1.0956	0.0748	0.0125	0.0887	-0.0105	0.0478
-0.02	-0.05	-100.03	1.0636	0.0670	0.0072	0.0890	-0.0207	0.0427
-0.02	19.99	-100.03	1.0388	0.0547	0.0069	0.0729	-0.0256	0.0430
-0.02	39.95	-100.03	1.0168	0.0514	0.0097	0.0703	-0.0370	0.0389
-0.02	59.94	-100.03	1.0018	0.0464	0.0398	0.0640	-0.0386	0.0427
-0.02	80.05	-100.01	0.9616	0.0653	0.0500	0.0680	-0.0478	0.0519
-0.02	89.92	-100.01	0.9296	0.0684	0.0693	0.0734	-0.0362	0.0483
-0.19	100.01	-100.01	0.9006	0.0810	0.0687	0.0697	-0.0417	0.0542
-0.20	105.02	-100.01	0.8674	0.0856	0.0553	0.0711	-0.0397	0.0660
-0.20	110.00	-100.01	0.8517	0.0877	0.0464	0.0721	-0.0372	0.0620
-0.03	115.07	-100.01	0.8329	0.0899	0.0292	0.0681	-0.0295	0.0669
-0.39	118.01	-100.00	0.8336	0.0836	0.0516	0.0668	-0.0354	0.0681
0.00	119.93	-100.03	0.8146	0.0942	0.0423	0.0561	-0.0272	0.0632

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-104.98	0.9898	0.1291	-0.0699	0.0899	0.2924	0.0605
-0.31	-120.02	-104.98	1.0233	0.1242	-0.0783	0.0937	0.2715	0.0652
-0.31	-118.05	-105.01	1.0584	0.1271	-0.0813	0.0949	0.2480	0.0559
-0.16	-114.93	-105.00	1.0914	0.1138	-0.1062	0.0949	0.2121	0.0562
0.00	-110.03	-104.99	1.1531	0.1167	-0.0737	0.0924	0.1606	0.0595
0.00	-104.93	-104.99	1.1522	0.1086	-0.0822	0.1086	0.1198	0.0530
0.00	-99.92	-104.99	1.1874	0.0981	-0.0736	0.0959	0.0836	0.0558
0.00	-90.01	-104.99	1.1965	0.0918	-0.0648	0.1086	0.0427	0.0483
0.00	-79.93	-104.99	1.1884	0.0935	-0.0589	0.1147	0.0172	0.0530
0.00	-60.01	-104.99	1.1551	0.0930	-0.0557	0.1137	-0.0024	0.0529
0.00	-40.03	-104.99	1.1180	0.0848	-0.0388	0.1147	-0.0129	0.0510
0.00	-19.93	-104.99	1.0667	0.0840	-0.0383	0.1056	-0.0217	0.0484
0.00	0.03	-104.99	1.0445	0.0741	-0.0268	0.1026	-0.0345	0.0429
0.00	19.96	-105.00	1.0253	0.0628	-0.0184	0.0911	-0.0362	0.0435
0.00	40.02	-105.00	1.0038	0.0603	-0.0047	0.0847	-0.0467	0.0447
0.00	60.02	-105.00	0.9950	0.0505	0.0160	0.0745	-0.0485	0.0442
0.00	80.02	-105.00	0.9622	0.0644	0.0498	0.0749	-0.0558	0.0511
0.00	89.92	-105.00	0.9320	0.0710	0.0681	0.0788	-0.0545	0.0620
-0.18	99.98	-105.01	0.8983	0.0788	0.0614	0.0790	-0.0458	0.0651
-0.19	105.00	-105.00	0.8886	0.0817	0.0680	0.0758	-0.0468	0.0623
-0.19	110.01	-105.01	0.8693	0.0845	0.0536	0.0703	-0.0422	0.0649
0.00	114.98	-105.01	0.8740	0.0813	0.0480	0.0726	-0.0417	0.0562
-0.39	118.01	-104.97	0.8249	0.0871	0.0339	0.0600	-0.0329	0.0778
-0.01	119.93	-104.99	0.7871	0.1006	0.0258	0.0559	-0.0263	0.0735

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-109.99	0.9727	0.1251	-0.1082	0.1021	0.2480	0.0598
-0.16	-120.06	-110.02	1.0153	0.1108	-0.1297	0.0992	0.2248	0.0594
-0.16	-118.02	-110.01	1.0479	0.1067	-0.1362	0.0960	0.1971	0.0502
-0.16	-114.97	-110.03	1.0787	0.1043	-0.1457	0.1022	0.1667	0.0496
0.00	-110.09	-110.02	1.1265	0.1024	-0.1538	0.1063	0.1166	0.0550
0.00	-105.01	-110.02	1.1386	0.1113	-0.1561	0.1254	0.0795	0.0560
0.00	-100.07	-110.02	1.1485	0.1093	-0.1448	0.1224	0.0560	0.0542
0.00	-89.96	-110.02	1.1696	0.1034	-0.1376	0.1244	0.0197	0.0485
0.00	-80.04	-110.02	1.1475	0.0999	-0.1328	0.1133	0.0077	0.0529
0.00	-59.97	-110.02	1.1224	0.1014	-0.1151	0.1133	-0.0142	0.0541
0.00	-39.99	-110.02	1.0753	0.0816	-0.0885	0.1174	-0.0232	0.0498
0.00	-20.03	-110.02	1.0382	0.0806	-0.0812	0.1093	-0.0271	0.0463
0.00	0.04	-110.02	1.0121	0.0688	-0.0661	0.0971	-0.0354	0.0445
0.00	20.06	-110.02	1.0023	0.0688	-0.0613	0.0884	-0.0335	0.0444
0.00	39.99	-110.02	0.9914	0.0596	-0.0426	0.0836	-0.0380	0.0428
0.00	60.00	-110.02	0.9767	0.0588	-0.0115	0.0710	-0.0473	0.0466
0.00	80.00	-110.03	0.9435	0.0627	0.0305	0.0736	-0.0467	0.0498
0.00	90.02	-110.03	0.9163	0.0726	0.0765	0.0762	-0.0530	0.0530
-0.18	99.98	-110.03	0.8852	0.0823	0.0564	0.0725	-0.0417	0.0592
-0.19	105.01	-110.01	0.8704	0.0798	0.0577	0.0683	-0.0467	0.0614
-0.19	110.00	-110.00	0.8478	0.0792	0.0447	0.0724	-0.0466	0.0633
0.00	114.96	-109.98	0.8484	0.0791	0.0487	0.0673	-0.0416	0.0617
-0.39	118.01	-109.98	0.8078	0.0935	0.0318	0.0586	-0.0460	0.0669
-0.01	119.93	-110.02	0.7629	0.0980	0.0264	0.0561	-0.0193	0.0672

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-115.03	0.9627	0.1141	-0.1708	0.1151	0.1832	0.0599
-0.31	-120.02	-114.99	0.9807	0.1182	-0.1748	0.1062	0.1672	0.0661
-0.31	-118.05	-115.02	1.0014	0.1072	-0.2089	0.1021	0.1362	0.0449
-0.31	-114.95	-115.03	1.0300	0.1129	-0.2048	0.1070	0.1371	0.0550
0.00	-110.02	-115.01	1.0950	0.1107	-0.2151	0.1205	0.0874	0.0492
0.00	-105.02	-115.01	1.0940	0.1067	-0.2071	0.1096	0.0641	0.0595
0.00	-99.94	-115.01	1.1058	0.1156	-0.2207	0.1205	0.0375	0.0581
0.00	-90.07	-115.01	1.0862	0.1077	-0.2037	0.1273	0.0075	0.0507
0.00	-80.04	-115.01	1.0872	0.0915	-0.1891	0.1224	-0.0045	0.0525
0.00	-59.97	-115.01	1.0529	0.0894	-0.1932	0.1195	-0.0216	0.0547
0.00	-40.05	-115.01	1.0382	0.0829	-0.1758	0.1156	-0.0209	0.0501
0.00	-20.00	-115.01	1.0127	0.0762	-0.1724	0.0999	-0.0243	0.0450
0.00	-0.04	-115.01	0.9932	0.0652	-0.1295	0.0965	-0.0298	0.0437
0.00	20.04	-115.01	0.9970	0.0680	-0.1281	0.0813	-0.0260	0.0438
0.00	39.91	-115.02	0.9748	0.0641	-0.0823	0.0746	-0.0251	0.0474
0.00	60.09	-115.02	0.9596	0.0609	-0.0456	0.0698	-0.0338	0.0474
0.00	79.95	-115.02	0.9100	0.0771	0.0031	0.0717	-0.0363	0.0558
0.00	89.96	-115.02	0.8844	0.0815	0.0168	0.0703	-0.0337	0.0596
-0.18	99.99	-115.01	0.8608	0.0864	0.0288	0.0713	-0.0324	0.0589
-0.19	104.98	-115.03	0.8454	0.0793	0.0367	0.0705	-0.0342	0.0568
-0.19	110.01	-115.03	0.8278	0.0837	0.0378	0.0689	-0.0412	0.0641
-0.01	115.03	-115.03	0.8027	0.0870	0.0329	0.0644	-0.0335	0.0550
-0.39	118.01	-115.00	0.7798	0.0923	0.0263	0.0628	-0.0340	0.0605
-0.01	119.93	-115.00	0.7560	0.0995	0.0259	0.0577	-0.0227	0.0624

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-118.03	0.9254	0.1151	-0.1902	0.1061	0.1343	0.0515
-0.16	-120.00	-117.98	0.9287	0.1206	-0.2267	0.1046	0.1373	0.0544
-0.16	-118.05	-118.01	0.9755	0.1151	-0.2439	0.1066	0.1179	0.0481
-0.16	-115.00	-117.99	0.9958	0.1091	-0.2573	0.1076	0.0966	0.0483
-0.01	-110.03	-117.98	1.0322	0.1150	-0.2867	0.1120	0.0666	0.0489
-0.01	-104.98	-117.98	1.0513	0.1100	-0.2952	0.1140	0.0454	0.0477
-0.01	-99.97	-117.98	1.0584	0.1029	-0.2914	0.1211	0.0270	0.0506
-0.01	-90.06	-117.98	1.0564	0.0942	-0.2850	0.1291	0.0071	0.0448
-0.01	-80.09	-117.98	1.0412	0.0977	-0.2912	0.1342	-0.0007	0.0494
-0.01	-59.94	-117.98	1.0231	0.0875	-0.2634	0.1191	-0.0119	0.0480
-0.01	-40.03	-117.99	0.9971	0.0796	-0.2489	0.1170	-0.0155	0.0455
-0.01	-20.06	-117.99	0.9973	0.0726	-0.2190	0.1049	-0.0206	0.0454
-0.01	0.01	-117.99	0.9869	0.0715	-0.1898	0.0982	-0.0203	0.0405
-0.01	19.99	-117.99	0.9780	0.0656	-0.1711	0.0796	-0.0140	0.0433
-0.01	39.98	-117.99	0.9665	0.0687	-0.1291	0.0736	-0.0178	0.0414
-0.01	60.04	-118.00	0.9430	0.0782	-0.0806	0.0725	-0.0211	0.0446
-0.01	80.04	-118.00	0.8871	0.0791	-0.0103	0.0790	-0.0216	0.0475
-0.01	89.91	-118.00	0.8360	0.0920	0.0242	0.0716	-0.0204	0.0540
-0.19	100.00	-118.01	0.8263	0.0843	0.0281	0.0756	-0.0255	0.0557
-0.20	105.04	-118.00	0.8081	0.0867	0.0274	0.0698	-0.0300	0.0544
-0.20	109.99	-118.01	0.7857	0.0900	0.0329	0.0698	-0.0320	0.0571
-0.02	114.94	-118.01	0.7448	0.0909	0.0141	0.0722	-0.0268	0.0576
-0.39	118.01	-118.01	0.7558	0.0974	0.0274	0.0620	-0.0309	0.0581
-0.01	119.93	-118.02	0.7353	0.0996	0.0288	0.0587	-0.0245	0.0572

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.32	-122.05	-120.01	0.8881	0.1182	-0.2017	0.1171	0.0932	0.0395
-0.32	-120.02	-120.00	0.9098	0.1222	-0.2399	0.1171	0.0981	0.0507
-0.31	-118.05	-119.98	0.9477	0.1232	-0.2602	0.1042	0.0752	0.0440
-0.31	-114.95	-119.98	0.8039	0.3746	-0.2755	0.1079	0.0622	0.0405
-0.01	-110.08	-120.00	0.9981	0.1030	-0.3100	0.1140	0.0545	0.0371
-0.01	-105.04	-120.00	1.0135	0.1061	-0.3166	0.1170	0.0344	0.0474
-0.01	-99.97	-120.00	1.0234	0.1081	-0.3174	0.1170	0.0185	0.0408
-0.01	-90.04	-120.00	1.0115	0.1030	-0.3338	0.1170	0.0017	0.0430
-0.01	-80.09	-120.00	1.0265	0.1010	-0.3179	0.1120	-0.0039	0.0455
-0.01	-60.06	-120.00	1.0024	0.0899	-0.2972	0.1101	-0.0108	0.0464
-0.01	-39.98	-120.00	0.9847	0.0889	-0.2676	0.1081	-0.0158	0.0452
-0.01	-20.01	-120.00	0.9659	0.0876	-0.2524	0.0964	-0.0186	0.0414
-0.01	-0.01	-120.00	0.9721	0.0708	-0.2125	0.0903	-0.0193	0.0456
-0.01	20.05	-120.00	0.9658	0.0858	-0.1759	0.0728	-0.0207	0.0417
-0.01	39.96	-120.00	0.9592	0.0766	-0.1290	0.0710	-0.0255	0.0444
-0.01	59.91	-120.01	0.9224	0.0841	-0.0803	0.0749	-0.0104	0.0430
-0.01	79.99	-120.01	0.8803	0.0859	-0.0319	0.0806	-0.0167	0.0444
-0.01	90.00	-120.01	0.8444	0.0824	0.0211	0.0674	-0.0139	0.0427
-0.19	100.06	-120.00	0.8181	0.0847	0.0366	0.0702	-0.0199	0.0489
-0.19	105.02	-120.00	0.8072	0.0799	0.0360	0.0664	-0.0261	0.0494
-0.19	109.99	-120.01	0.7855	0.0840	0.0356	0.0703	-0.0297	0.0516
-0.01	114.92	-120.02	0.7751	0.0838	0.0261	0.0682	-0.0204	0.0484
-0.39	118.01	-120.03	0.7490	0.0926	0.0318	0.0627	-0.0409	0.0485
-0.01	119.93	-119.97	0.7237	0.0904	0.0250	0.0535	-0.0277	0.0553

Table D-5 Station 8, Non-Dimensional Data

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.06	-118.09	0.03	0.6645	0.1049	0.0411	0.0564	-0.0215	0.0650
-0.06	-110.08	0.03	0.9695	0.0821	0.0924	0.0538	-0.0109	0.0543
-0.06	-105.07	0.03	1.0941	0.0734	0.1212	0.0458	-0.0085	0.0468
-0.06	-99.94	0.03	1.1900	0.0608	0.1470	0.0510	-0.0050	0.0378
-0.06	-89.93	0.03	1.2869	0.0522	0.1735	0.0459	-0.0023	0.0345
-0.06	-79.93	0.03	1.3348	0.0332	0.1755	0.0428	0.0000	0.0237
-0.06	-59.97	0.03	1.3159	0.0228	0.1755	0.0470	-0.0035	0.0207
-0.06	-39.99	0.03	1.2799	0.0290	0.1621	0.0514	-0.0055	0.0194
-0.06	-20.08	0.03	1.2389	0.0342	0.1424	0.0500	-0.0052	0.0183
-0.06	-0.01	0.03	1.1939	0.0324	0.1134	0.0452	0.0004	0.0189
-0.06	19.98	0.03	1.1531	0.0295	0.1012	0.0482	-0.0017	0.0213
-0.06	39.93	0.03	1.1210	0.0278	0.0988	0.0502	-0.0030	0.0224
-0.06	59.92	0.03	1.0830	0.0366	0.0868	0.0643	-0.0062	0.0259
-0.06	80.03	0.03	1.0471	0.0423	0.0809	0.0644	-0.0049	0.0240
-0.06	89.94	0.03	1.0332	0.0388	0.0954	0.0628	-0.0085	0.0213
-0.08	100.03	0.01	1.0096	0.0441	0.0752	0.0633	-0.0016	0.0248
-0.08	104.96	0.01	0.9752	0.0779	0.0817	0.0694	-0.0004	0.0462
-0.08	109.97	0.03	0.9523	0.0803	0.0712	0.0707	-0.0009	0.0522
-0.09	115.01	0.03	0.9339	0.0861	0.0628	0.0655	-0.0067	0.0539
-0.11	117.95	0.00	0.9203	0.0929	0.0518	0.0614	-0.0024	0.0542

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.06	-109.95	-19.98	0.9104	0.0926	0.0921	0.0446	0.0593	0.0725
-0.06	-105.04	-19.98	1.0504	0.0825	0.1338	0.0504	0.0384	0.0554
-0.06	-99.95	-19.98	1.1686	0.0564	0.1620	0.0436	0.0285	0.0398
-0.06	-90.06	-19.98	1.2899	0.0537	0.1927	0.0386	0.0137	0.0281
-0.06	-80.07	-19.98	1.3406	0.0278	0.2009	0.0351	0.0064	0.0182
-0.06	-60.07	-19.98	1.3188	0.0206	0.1879	0.0444	-0.0067	0.0119
-0.06	-39.97	-19.98	1.2720	0.0271	0.1760	0.0440	-0.0066	0.0152
-0.06	-20.02	-19.98	1.2382	0.0264	0.1652	0.0495	-0.0100	0.0187
-0.06	-0.08	-19.98	1.2015	0.0235	0.1403	0.0434	-0.0114	0.0158
-0.06	19.99	-19.98	1.1587	0.0295	0.1303	0.0456	-0.0068	0.0187
-0.06	40.09	-19.98	1.1239	0.0253	0.1018	0.0493	-0.0007	0.0191
-0.06	60.08	-19.98	1.0852	0.0305	0.0794	0.0472	0.0000	0.0222
-0.06	79.96	-19.98	1.0484	0.0344	0.0748	0.0490	-0.0007	0.0296
-0.06	89.96	-19.98	1.0266	0.0397	0.0719	0.0640	-0.0047	0.0279
-0.08	99.99	-19.98	0.9919	0.0555	0.0713	0.0608	-0.0044	0.0343
-0.08	104.97	-19.99	0.9729	0.0839	0.0770	0.0714	-0.0079	0.0447
-0.08	109.93	-19.98	0.9415	0.0878	0.0659	0.0699	-0.0046	0.0490
-0.09	115.06	-20.00	0.9252	0.0872	0.0653	0.0684	-0.0073	0.0561
-0.12	117.95	-19.99	0.9164	0.0966	0.0725	0.0637	-0.0151	0.0480

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.09	-115.03	-39.97	0.7630	0.1029	0.0878	0.0502	0.2796	0.1093
-0.07	-110.06	-39.98	0.7755	0.0736	0.1223	0.0604	0.1774	0.0846
-0.07	-104.99	-39.98	0.8521	0.0916	0.1334	0.0526	0.0936	0.0722
-0.07	-99.91	-39.98	1.0450	0.0980	0.1602	0.0454	0.0458	0.0574
-0.07	-89.94	-39.98	1.2394	0.0546	0.1802	0.0439	-0.0007	0.0355
-0.07	-79.91	-39.98	1.3051	0.0403	0.1968	0.0423	-0.0228	0.0271
-0.07	-59.94	-39.98	1.3250	0.0204	0.1941	0.0442	-0.0309	0.0207
-0.07	-40.07	-39.98	1.2861	0.0215	0.1804	0.0475	-0.0311	0.0215
-0.07	-19.91	-39.98	1.2353	0.0185	0.1593	0.0525	-0.0281	0.0209
-0.07	-0.09	-39.98	1.1985	0.0264	0.1393	0.0487	-0.0267	0.0180
-0.07	20.05	-39.98	1.1576	0.0297	0.1242	0.0469	-0.0236	0.0201
-0.07	39.99	-39.98	1.1278	0.0187	0.0999	0.0496	-0.0204	0.0182
-0.07	59.98	-39.98	1.0869	0.0223	0.0924	0.0398	-0.0241	0.0219
-0.07	80.09	-39.99	1.0501	0.0306	0.0928	0.0510	-0.0222	0.0253
-0.07	90.07	-39.99	1.0360	0.0416	0.0881	0.0480	-0.0193	0.0303
-0.08	99.98	-40.01	0.9899	0.0695	0.0646	0.0667	-0.0144	0.0387
-0.09	105.02	-39.99	0.9836	0.0737	0.0755	0.0626	-0.0195	0.0425
-0.09	110.01	-39.99	0.9489	0.0847	0.0657	0.0689	-0.0230	0.0509
-0.09	115.02	-40.01	0.9263	0.0896	0.0639	0.0701	-0.0285	0.0564
-0.12	117.95	-39.99	0.9231	0.0960	0.0613	0.0700	-0.0225	0.0634

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.07	-118.01	-60.00	0.8098	0.1229	0.0584	0.0532	0.4675	0.0796
-0.07	-109.93	-60.00	0.9823	0.0845	0.1000	0.0603	0.2786	0.0830
-0.07	-105.07	-60.00	0.9991	0.0713	0.1071	0.0552	0.1764	0.0384
-0.07	-99.97	-60.00	1.0291	0.0731	0.1411	0.0550	0.0866	0.0663
-0.07	-89.99	-60.00	1.1969	0.0602	0.1578	0.0486	0.0028	0.0453
-0.07	-80.03	-60.00	1.2929	0.0572	0.1733	0.0489	-0.0152	0.0313
-0.07	-60.03	-60.00	1.3408	0.0217	0.1752	0.0452	-0.0386	0.0231
-0.07	-39.94	-60.00	1.2839	0.0313	0.1613	0.0447	-0.0387	0.0230
-0.07	-20.03	-60.00	1.2419	0.0253	0.1530	0.0518	-0.0339	0.0231
-0.07	0.07	-60.00	1.2050	0.0324	0.1324	0.0519	-0.0327	0.0203
-0.07	20.01	-60.00	1.1630	0.0351	0.1207	0.0458	-0.0348	0.0223
-0.07	39.93	-60.00	1.1250	0.0357	0.1026	0.0507	-0.0279	0.0234
-0.07	59.95	-60.00	1.0961	0.0303	0.0987	0.0502	-0.0259	0.0272
-0.07	80.05	-60.00	1.0521	0.0414	0.0928	0.0617	-0.0258	0.0308
-0.07	90.06	-60.00	1.0321	0.0442	0.0948	0.0619	-0.0204	0.0336
-0.08	99.97	-60.00	0.9865	0.0704	0.0734	0.0610	-0.0205	0.0408
-0.09	104.96	-59.99	0.9740	0.0752	0.0733	0.0648	-0.0370	0.0457
-0.09	109.96	-59.99	0.9372	0.0900	0.0688	0.0689	-0.0366	0.0557
-0.09	115.06	-60.01	0.9245	0.0914	0.0616	0.0679	-0.0333	0.0540
-0.12	117.95	-60.02	0.9366	0.0947	0.0748	0.0716	-0.0287	0.0653

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.07	-117.95	-80.01	0.8610	0.1315	0.0321	0.0661	0.4853	0.0591
-0.07	-110.07	-80.01	1.0685	0.0924	0.0686	0.0574	0.3367	0.0719
-0.07	-105.08	-80.01	1.1234	0.0890	0.0851	0.0586	0.2303	0.0770
-0.07	-100.04	-80.01	1.1509	0.0644	0.1056	0.0522	0.1320	0.0705
-0.07	-89.91	-80.01	1.2079	0.0675	0.1187	0.0462	0.0463	0.0500
-0.07	-79.96	-80.01	1.2706	0.0602	0.1379	0.0498	0.0034	0.0451
-0.07	-60.07	-80.01	1.3393	0.0311	0.1599	0.0459	-0.0361	0.0314
-0.07	-40.04	-80.01	1.2942	0.0228	0.1659	0.0524	-0.0400	0.0272
-0.07	-20.00	-80.01	1.2480	0.0288	0.1784	0.0601	-0.0424	0.0254
-0.07	0.03	-80.01	1.2147	0.0269	0.1436	0.0547	-0.0361	0.0240
-0.07	19.96	-80.01	1.1607	0.0300	0.1251	0.0556	-0.0372	0.0257
-0.07	40.06	-80.01	1.1303	0.0290	0.1122	0.0504	-0.0360	0.0248
-0.07	60.03	-80.01	1.0881	0.0240	0.0936	0.0547	-0.0283	0.0259
-0.07	80.03	-80.01	1.0498	0.0362	0.0992	0.0550	-0.0255	0.0283
-0.07	89.92	-80.01	1.0292	0.0408	0.0912	0.0576	-0.0306	0.0348
-0.08	100.03	-80.00	0.9753	0.0697	0.0784	0.0666	-0.0303	0.0405
-0.09	104.94	-80.01	0.9582	0.0820	0.0797	0.0659	-0.0448	0.0549
-0.09	109.97	-80.01	0.9399	0.0881	0.0705	0.0687	-0.0450	0.0615
-0.09	115.05	-80.01	0.9290	0.0899	0.0671	0.0662	-0.0490	0.0618
-0.12	117.95	-80.03	0.9139	0.0965	0.0687	0.0717	-0.0465	0.0669

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.07	-118.08	-89.97	0.9038	0.1339	-0.0023	0.0781	0.4554	0.0589
-0.08	-115.04	-89.98	1.0374	0.1118	0.0095	0.0746	0.4246	0.0632
-0.07	-110.08	-89.97	1.1032	0.0944	0.0048	0.0701	0.3241	0.0584
-0.07	-105.06	-89.97	1.1637	0.0825	0.0303	0.0649	0.2217	0.0613
-0.07	-100.09	-89.97	1.1915	0.0712	0.0538	0.0650	0.1536	0.0570
-0.07	-89.99	-89.97	1.2292	0.0647	0.0742	0.0595	0.0605	0.0462
-0.07	-79.91	-89.97	1.2709	0.0560	0.1083	0.0602	0.0115	0.0440
-0.07	-59.93	-89.97	1.3037	0.0439	0.1452	0.0574	-0.0254	0.0366
-0.07	-40.04	-89.97	1.2769	0.0323	0.1590	0.0532	-0.0385	0.0363
-0.07	-20.05	-89.97	1.2312	0.0390	0.1599	0.0536	-0.0405	0.0351
-0.07	0.07	-89.97	1.1816	0.0348	0.1543	0.0526	-0.0391	0.0345
-0.07	19.94	-89.97	1.1330	0.0297	0.1366	0.0592	-0.0511	0.0294
-0.07	40.04	-89.97	1.1092	0.0277	0.1062	0.0550	-0.0474	0.0295
-0.07	60.04	-89.97	1.0725	0.0300	0.0947	0.0471	-0.0426	0.0297
-0.07	79.99	-89.98	1.0239	0.0382	0.0880	0.0507	-0.0394	0.0370
-0.07	90.05	-89.98	0.9980	0.0682	0.0839	0.0679	-0.0207	0.0423
-0.08	100.03	-89.99	0.9555	0.0840	0.0854	0.0682	-0.0329	0.0556
-0.09	104.98	-89.99	0.9470	0.0886	0.0779	0.0703	-0.0526	0.0588
-0.09	109.93	-90.00	0.9291	0.0897	0.0726	0.0702	-0.0539	0.0703
-0.09	115.03	-90.00	0.9025	0.0956	0.0664	0.0726	-0.0574	0.0705
-0.12	117.95	-90.03	0.8886	0.1024	0.0607	0.0770	-0.0585	0.0703

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.07	-117.97	-99.98	0.9425	0.1150	-0.0748	0.1040	0.3797	0.0586
-0.07	-110.04	-99.98	1.1215	0.1099	-0.0676	0.0980	0.2584	0.0555
-0.07	-104.91	-99.98	1.1794	0.1210	-0.0423	0.0832	0.2036	0.0538
-0.07	-100.02	-99.99	1.2285	0.1090	-0.0451	0.0995	0.1454	0.0571
-0.07	-90.01	-99.99	1.2654	0.0851	-0.0064	0.0834	0.0621	0.0507
-0.07	-79.92	-99.99	1.2894	0.0823	0.0108	0.0860	0.0183	0.0459
-0.07	-60.01	-99.99	1.2794	0.0746	0.0585	0.0815	-0.0188	0.0442
-0.07	-40.04	-99.99	1.2425	0.0755	0.0812	0.0743	-0.0314	0.0502
-0.07	-20.09	-99.99	1.2085	0.0676	0.0964	0.0808	-0.0367	0.0432
-0.07	-0.02	-99.99	1.1734	0.0622	0.1048	0.0790	-0.0478	0.0444
-0.07	20.06	-99.99	1.1475	0.0488	0.1132	0.0788	-0.0589	0.0392
-0.07	39.95	-99.99	1.1206	0.0458	0.0745	0.0626	-0.0520	0.0433
-0.07	59.95	-100.00	1.0775	0.0478	0.0719	0.0645	-0.0474	0.0379
-0.07	80.05	-100.00	1.0185	0.0579	0.0740	0.0667	-0.0462	0.0448
-0.07	90.08	-100.01	0.9841	0.0764	0.0791	0.0572	-0.0450	0.0576
-0.08	99.97	-99.99	0.9523	0.0852	0.0784	0.0723	-0.0465	0.0561
-0.09	104.96	-100.01	0.9350	0.0941	0.0715	0.0737	-0.0584	0.0695
-0.09	109.93	-100.00	0.9092	0.1020	0.0664	0.0724	-0.0549	0.0747
-0.09	115.02	-100.01	0.8951	0.1000	0.0645	0.0711	-0.0595	0.0782
-0.12	117.95	-100.00	0.8923	0.0939	0.0639	0.0743	-0.0591	0.0731

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.07	-118.06	-105.02	0.9352	0.1135	-0.1084	0.1135	0.3086	0.0534
-0.07	-110.06	-105.02	1.1213	0.1155	-0.1388	0.1126	0.2258	0.0547
-0.07	-105.08	-105.03	1.1532	0.1135	-0.1324	0.1195	0.1731	0.0549
-0.07	-99.91	-105.03	1.1990	0.1075	-0.1189	0.1085	0.1168	0.0552
-0.07	-90.07	-105.03	1.2498	0.0938	-0.0969	0.1055	0.0414	0.0506
-0.07	-80.04	-105.03	1.2656	0.0873	-0.0842	0.1096	0.0041	0.0493
-0.07	-60.06	-105.03	1.2487	0.0956	-0.0381	0.1006	-0.0079	0.0477
-0.07	-39.98	-105.03	1.2059	0.0854	0.0036	0.1025	-0.0263	0.0498
-0.07	-20.09	-105.03	1.1652	0.0742	0.0369	0.0876	-0.0347	0.0471
-0.07	-0.09	-105.03	1.1592	0.0686	0.0517	0.0880	-0.0394	0.0498
-0.07	20.06	-105.03	1.1183	0.0707	0.0741	0.0857	-0.0486	0.0474
-0.07	40.09	-105.03	1.0993	0.0561	0.0652	0.0791	-0.0516	0.0402
-0.07	60.06	-105.00	1.0715	0.0483	0.0814	0.0662	-0.0488	0.0420
-0.07	80.00	-105.00	1.0218	0.0574	0.0908	0.0755	-0.0475	0.0358
-0.07	89.99	-105.00	1.0028	0.0697	0.0950	0.0633	-0.0435	0.0415
-0.08	100.04	-105.01	0.9661	0.0822	0.0821	0.0687	-0.0429	0.0498
-0.09	105.01	-105.01	0.9316	0.0983	0.0803	0.0725	-0.0508	0.0619
-0.09	110.00	-105.00	0.9068	0.0968	0.0701	0.0745	-0.0454	0.0661
-0.09	115.06	-105.01	0.8919	0.0985	0.0661	0.0701	-0.0556	0.0639
-0.12	117.95	-105.00	0.8732	0.0928	0.0602	0.0712	0.1105	0.3734

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.07	-109.97	-109.97	1.0725	0.1249	-0.2023	0.1229	0.1723	0.0482
-0.07	-105.06	-109.97	1.1236	0.1210	-0.2111	0.1249	0.1360	0.0554
-0.07	-100.08	-109.97	1.1615	0.1150	-0.1860	0.1259	0.0897	0.0572
-0.07	-89.91	-109.97	1.1965	0.1139	-0.1834	0.1249	0.0233	0.0544
-0.07	-80.02	-109.97	1.1985	0.1049	-0.1444	0.1300	0.0049	0.0556
-0.07	-60.07	-109.97	1.1734	0.1079	-0.1078	0.1270	-0.0235	0.0548
-0.07	-40.08	-109.97	1.1555	0.0892	-0.0787	0.1289	-0.0213	0.0532
-0.07	-20.06	-109.97	1.1245	0.0866	-0.0403	0.1150	-0.0265	0.0486
-0.07	-0.09	-109.97	1.0945	0.0837	-0.0103	0.1199	-0.0399	0.0474
-0.07	20.01	-109.97	1.0826	0.0749	0.0120	0.1049	-0.0394	0.0493
-0.07	39.97	-109.97	1.0745	0.0580	0.0482	0.0787	-0.0451	0.0429
-0.07	60.07	-109.97	1.0535	0.0508	0.0582	0.0718	-0.0472	0.0394
-0.07	79.91	-109.97	1.0166	0.0676	0.0921	0.0657	-0.0405	0.0466
-0.07	89.94	-109.97	0.9943	0.0697	0.1012	0.0689	-0.0403	0.0470
-0.08	100.00	-109.99	0.9513	0.0830	0.0802	0.0653	-0.0411	0.0497
-0.09	105.01	-109.99	0.9203	0.0968	0.0652	0.0756	-0.0462	0.0586
-0.09	109.95	-110.00	0.9067	0.0968	0.0690	0.0693	-0.0453	0.0601
-0.09	115.06	-109.98	0.8945	0.0965	0.0741	0.0689	-0.0484	0.0606
-0.12	117.95	-109.99	0.8477	0.1034	0.0408	0.0680	-0.0599	0.0687

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.08	-117.95	-114.99	0.8762	0.1312	-0.2620	0.1061	0.1745	0.0458
-0.08	-110.02	-114.99	1.0323	0.0993	-0.3050	0.1151	0.1278	0.0451
-0.08	-105.00	-114.99	1.0803	0.0989	-0.3157	0.1291	0.0989	0.0639
-0.08	-99.97	-114.99	1.0943	0.1132	-0.3153	0.1392	0.0570	0.0566
-0.08	-89.96	-114.99	1.1094	0.1041	-0.3059	0.1442	0.0176	0.0582
-0.08	-79.98	-114.99	1.1124	0.0972	-0.2978	0.1372	-0.0175	0.0607
-0.08	-59.94	-114.99	1.0924	0.0963	-0.2726	0.1372	-0.0349	0.0586
-0.09	-39.94	-114.99	1.0643	0.0936	-0.2278	0.1321	-0.0378	0.0562
-0.09	-20.02	-114.99	1.0573	0.0884	-0.1825	0.1201	-0.0418	0.0552
-0.09	0.02	-114.99	1.0473	0.0772	-0.1435	0.1102	-0.0448	0.0505
-0.09	19.98	-114.99	1.0503	0.0705	-0.0884	0.0948	-0.0555	0.0458
-0.09	39.98	-114.99	1.0473	0.0627	-0.0403	0.0808	-0.0402	0.0458
-0.09	59.97	-114.99	0.9744	0.1141	-0.0225	0.0860	-0.0313	0.0495
-0.09	79.99	-114.99	0.9127	0.1102	0.0314	0.0840	-0.0308	0.0507
-0.09	89.99	-114.99	0.8870	0.1081	0.0595	0.0691	-0.0408	0.0536
-0.09	99.97	-114.98	0.8847	0.0986	0.0614	0.0791	-0.0421	0.0577
-0.10	105.03	-115.00	0.8600	0.1014	0.0443	0.0784	-0.0479	0.0633
-0.10	109.94	-115.00	0.8572	0.1019	0.0501	0.0745	-0.0453	0.0618
-0.10	115.02	-114.99	0.8374	0.1027	0.0439	0.0729	-0.0482	0.0636
-0.12	117.95	-115.00	0.8296	0.1034	0.0372	0.0591	-0.0577	0.0727

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.09	-110.08	-118.00	1.0028	0.0861	-0.3430	0.1135	0.0752	0.0468
-0.09	-104.92	-118.00	1.0267	0.0894	-0.3568	0.1205	0.0601	0.0542
-0.09	-100.04	-118.00	1.0426	0.0896	-0.3573	0.1235	0.0355	0.0504
-0.09	-90.07	-118.00	1.0676	0.1016	-0.3502	0.1275	0.0078	0.0529
-0.09	-79.92	-118.00	1.0625	0.0984	-0.3629	0.1275	-0.0094	0.0519
-0.09	-59.95	-118.00	1.0466	0.0956	-0.3113	0.1384	-0.0337	0.0542
-0.09	-40.07	-118.00	1.0128	0.0882	-0.2964	0.1355	-0.0329	0.0571
-0.09	-20.03	-118.00	1.0177	0.0860	-0.2500	0.1245	-0.0335	0.0540
-0.09	-0.05	-118.00	1.0028	0.0873	-0.2170	0.1175	-0.0420	0.0568
-0.09	19.98	-118.01	0.9911	0.0741	-0.1566	0.1075	-0.0412	0.0458
-0.09	39.97	-118.01	0.9923	0.0755	-0.0863	0.0944	-0.0427	0.0454
-0.09	59.93	-118.01	0.9774	0.0843	-0.0376	0.0772	-0.0427	0.0441
-0.09	80.05	-118.01	0.9441	0.0932	0.0382	0.0639	-0.0363	0.0490
-0.09	90.09	-118.01	0.9253	0.0872	0.0741	0.0620	-0.0339	0.0428
-0.09	100.00	-118.01	0.8777	0.1043	0.0658	0.0821	-0.0328	0.0483
-0.10	104.94	-118.01	0.8630	0.0968	0.0528	0.0745	-0.0379	0.0526
-0.10	109.99	-118.00	0.8581	0.0965	0.0599	0.0716	-0.0399	0.0554
-0.10	115.08	-117.99	0.8313	0.1087	0.0559	0.0697	-0.0469	0.0608
-0.12	117.95	-118.03	0.8067	0.0993	0.0390	0.0687	-0.0525	0.0711

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.09	-118.01	-119.99	0.7416	0.1269	-0.2685	0.1367	0.0819	0.0362
-0.09	-109.94	-119.99	0.9579	0.1129	-0.3855	0.1129	0.0705	0.0470
-0.09	-105.07	-119.99	0.9726	0.1071	-0.3934	0.1159	0.0502	0.0495
-0.09	-100.08	-119.99	1.0087	0.1041	-0.3972	0.1278	0.0205	0.0488
-0.09	-90.05	-119.99	1.0236	0.1001	-0.4208	0.1298	-0.0041	0.0448
-0.09	-79.97	-119.99	1.0345	0.0942	-0.4086	0.1338	-0.0158	0.0486
-0.09	-59.94	-119.99	1.0217	0.1001	-0.3684	0.1259	-0.0204	0.0520
-0.09	-39.93	-119.99	1.0047	0.0988	-0.3240	0.1248	-0.0251	0.0476
-0.09	-20.04	-119.99	1.0038	0.0924	-0.2872	0.1139	-0.0264	0.0456
-0.09	0.09	-119.99	0.9872	0.0842	-0.2381	0.1099	-0.0331	0.0482
-0.09	20.08	-119.99	0.9968	0.0882	-0.1741	0.1071	-0.0398	0.0477
-0.09	40.03	-119.99	0.9521	0.1110	-0.1165	0.1031	-0.0219	0.0432
-0.09	60.09	-119.99	0.9064	0.1169	-0.0795	0.1129	-0.0229	0.0436
-0.09	80.06	-119.99	0.8663	0.1090	0.0052	0.0900	-0.0223	0.0406
-0.09	89.93	-119.99	0.8287	0.1169	0.0498	0.0758	-0.0193	0.0404
-0.09	100.03	-120.00	0.8646	0.1016	0.0579	0.0790	-0.0255	0.0433
-0.10	105.01	-120.00	0.8154	0.1084	0.0234	0.0778	-0.0325	0.0525
-0.10	110.00	-120.00	0.7986	0.1029	0.0373	0.0790	-0.0431	0.0558
-0.10	115.01	-120.00	0.8131	0.1003	0.0525	0.0749	-0.0394	0.0544
-0.12	117.95	-119.97	0.8032	0.1024	0.0399	0.0670	-0.0578	0.0686

Table D-6 Station 5, Non-Dimensional Data

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.02	-120.02	0.00	0.3190	0.0935	-0.0015	0.0414	-0.0036	0.0605
-0.06	-118.01	0.00	0.3724	0.0892	0.0001	0.0359	0 0026	0.0540
-0.04	-115.05	0.01	0.4600	0.0739	0.0001	0.0336	-0.0045	0.0523
-0.01	-110.02	0.00	0.5299	0.0610	0.0229	0.0355	0.0035	0.0565
-0.01	-104.96	0.00	0.5648	0.0682	0.0438	0.0331	0.0058	0.0675
-0.01	-100.01	0.00	0.6059	0.0741	0.0792	0.0443	0.0080	0.0802
-0.01	-89.94	0.00	0.6646	0.0803	0.1647	0.0541	0.0079	0.0846
-0.01	-79.98	0.00	0.7923	0.1064	0.2276	0.0630	-0.0068	0.0678
-0.01	-60.03	-0.01	1.1761	0.0518	0.2964	0.0562	0.0143	0.0347
-0.01	-40.06	-0.01	1.2218	0.0384	0.2299	0.0554	0.0139	0.0333
-0.01	-19.98	-0.01	1.2029	0.0364	0.1852	0.0568	0.0133	0.0363
-0.01	-0.08	-0.01	1.1871	0.0355	0.1520	0.0600	0.0120	0.0345
-0.01	19.95	-0.01	1.1661	0.0362	0.1123	0.0574	0.0080	0.0401
-0.01	39.98	-0.01	1.1473	0.0407	0.0887	0.0623	0.0139	0.0400
-0.01	60.03	-0.01	1.1155	0.0506	0.0721	0.0623	0.0071	0.0467
0.00	80.00	-0.01	1.0896	0.0569	0.0556	0.0721	0.0073	0.0566
0.00	90.01	-0.01	1.0648	0.0680	0.0501	0.0737	-0.0052	0.0644
-0.01	100.04	0.00	1.0401	0.0679	0.0485	0.0778	-0.0155	0.0696
-0.02	105.01	0.00	1.0321	0.0729	0.0568	0.0725	-0.0186	0.0715
-0.02	109.97	-0.01	1.0249	0.0744	0.0568	0.0706	-0.0272	0.0725
-0.03	114.95	-0.01	1.0123	0.0732	0.0532	0.0639	-0.0356	0.0745
-0.05	118.03	-0.01	1.0051	0.0738	0.0400	0.0597	-0.0411	0.0755
-0.06	119.92	0.01	1.0022	0.0785	0.0463	0.0512	-0.0384	0.0732
-0.06	121.98	-0.01	0.9963	0.0722	0.0418	0.0518	-0.0443	0.0821

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.01	-120.06	-20.01	0.2853	0.1123	0.0176	0.0474	-0.0309	0.0735
-0.03	-118.09	-20.00	0.3459	0.1074	0.0212	0.0449	0.0012	0.0875
0.00	-109.98	-19.99	0.5056	0.1202	0.1023	0.0823	0.0930	0.1181
0.00	-104.94	-19.99	0.5955	0.1311	0.1706	0.1091	0.1264	0.1261
0.00	-100.06	-19.99	0.6778	0.1411	0.2250	0.0991	0.1248	0.1152
0.00	-90.09	-19.99	0.7575	0.1111	0.2579	0.1011	0.0517	0.0973
0.00	-80.08	-19.99	0.7558	0.1072	0.2464	0.0785	-0.0404	0.0787
0.00	-60.01	-19.99	1.1976	0.0624	0.2689	0.0543	-0.0707	0.0366
0.00	-39.92	-19.99	1.2366	0.0358	0.2131	0.0498	-0.0432	0.0375
0.00	-19.94	-19.99	1.2185	0.0372	0.1709	0.0574	-0.0320	0.0374
0.00	0.00	-19.99	1.1945	0.0374	0.1336	0.0618	-0.0192	0.0400
0.00	20.02	-19.99	1.1665	0.0413	0.1065	0.0572	-0.0191	0.0341
0.00	39.92	-20.00	1.1505	0.0395	0.0854	0.0605	-0.0132	0.0400
0.00	59.98	-20.00	1.1194	0.0529	0.0635	0.0623	-0.0125	0.0454
0.00	79.99	-20.00	1.0874	0.0629	0.0400	0.0804	-0.0216	0.0610
0.00	89.93	-20.00	1.0603	0.0655	0.0347	0.0890	-0.0143	0.0578
-0.01	100.02	-20.00	1.0408	0.0693	0.0643	0.0778	-0.0219	0.0651
-0.02	104.99	-19.99	1.0303	0.0727	0.0533	0.0739	-0.0215	0.0713
-0.02	110.00	-20.00	1.0231	0.0738	0.0426	0.0655	-0.0289	0.0771
-0.03	114.96	-20.00	1.0164	0.0696	0.0414	0.0632	-0.0350	0.0830
-0.05	118.03	-19.99	1.0085	0.0759	0.0395	0.0578	-0.0358	0.0821
-0.06	119.93	-20.00	0.9984	0.0804	0.0398	0.0579	-0.0389	0.0815
-0.06	121.98	-19.98	0.9871	0.0869	0.0388	0.0525	-0.0425	0.0921

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.02	-119.99	-39.99	0.6240	0.1427	0.0959	0.0750	0.2239	0.1387
-0.04	-115.07	-39.99	0.8121	0.1335	0.1553	0.0789	0.2891	0.1040
-0.01	-110.02	-39.97	0.9180	0.1068	0.1863	0.0835	0.2313	0.0916
-0.01	-105.06	-40.02	0.9717	0.0950	0.1900	0.0913	0.2044	0.0811
-0.01	-99.93	-40.02	0.9666	0.0867	0.1779	0.0953	0.1447	0.0827
-0.01	-89.94	-40.02	0.8959	0.0788	0.1280	0.0969	-0.0042	0.0757
-0.01	-80.09	-40.02	0.8497	0.0888	0.1215	0.0796	-0.1010	0.0700
-0.01	-60.01	-40.02	1.2071	0.0579	0.2074	0.0524	-0.0980	0.0428
-0.01	-40.07	-40.02	1.2353	0.0329	0.2085	0.0512	-0.0685	0.0360
-0.01	-20.06	-40.02	1.2152	0.0331	0.1872	0.0586	-0.0387	0.0363
-0.01	0.01	-40.02	1.1930	0.0356	0.1569	0.0657	-0.0331	0.0376
-0.01	19.95	-40.02	1.1709	0.0372	0.1247	0.0610	-0.0217	0.0413
-0.01	39.91	-40.02	1.1426	0.0416	0.1104	0.0674	-0.0232	0.0422
-0.01	60.03	-40.02	1.1083	0.0504	0.0923	0.0669	-0.0174	0.0547
-0.01	80.00	-40.02	1.0721	0.0631	0.0730	0.0919	-0.0085	0.0566
0.00	89.96	-40.02	1.0500	0.0691	0.0565	0.0867	-0.0127	0.0599
-0.01	99.97	-40.01	1.0250	0.0707	0.0568	0.0733	-0.0207	0.0666
-0.02	105.00	-40.01	1.0194	0.0687	0.0518	0.0774	-0.0138	0.0701
-0.02	109.97	-40.01	1.0273	0.0744	0.0466	0.0771	-0.0178	0.0799
-0.03	114.96	-40.01	1.0077	0.0753	0.0298	0.0663	-0.0177	0.0872
-0.05	118.03	-40.00	0.9987	0.0794	0.0393	0.0601	-0.0270	0.0852
-0.06	119.93	-39.98	0.9904	0.0865	0.0393	0.0598	-0.0281	0.0763
-0.06	121.98	-40.01	0.9720	0.0846	0.0378	0.0531	-0.0239	0.0817

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.01	-118.00	-60.02	0.9268	0.1230	0.0494	0.0506	0.4083	0.0782
-0.07	-115.03	-60.01	1.0029	0.1033	0.0558	0.0753	0.3375	0.1066
0.00	-109.97	-60.02	1.0774	0.0939	0.0697	0.0796	0.2520	0.0965
0.00	-105.07	-60.02	1.0864	0.0861	0.0649	0.0793	0.1781	0.1003
0.00	-99.98	-60.02	1.0935	0.0853	0.0690	0.0841	0.0925	0.0821
0.00	-90.00	-60.02	1.0262	0.0822	0.0565	0.0803	-0.0227	0.0719
0.00	-79.99	-60.02	1.0734	0.0879	0.1008	0.0682	-0.0612	0.0576
0.00	-60.08	-60.02	1.2463	0.0550	0.1761	0.0486	-0.0883	0.0518
0.00	-40.01	-60.02	1.2644	0.0372	0.2032	0.0605	-0.0821	0.0405
0.00	-20.09	-60.02	1.2403	0.0376	0.1914	0.0559	-0.0625	0.0448
0.00	0.09	-60.03	1.2111	0.0385	0.1716	0.0606	-0.0430	0.0455
0.00	20.05	-60.03	1.1960	0.0395	0.1527	0.0603	-0.0428	0.0436
0.00	39.94	-60.03	1.1759	0.0382	0.1301	0.0663	-0.0328	0.0450
0.00	59.94	-60.03	1.1407	0.0474	0.1079	0.0623	-0.0316	0.0512
0.00	80.06	-60.03	1.1036	0.0701	0.0858	0.0834	-0.0292	0.0595
0.00	89.92	-60.03	1.0844	0.0696	0.0760	0.0861	-0.0243	0.0692
-0.01	99.97	-60.03	1.0518	0.0714	0.0623	0.0750	-0.0245	0.0669
-0.02	105.02	-60.03	1.0363	0.0679	0.0674	0.0858	-0.0233	0.0653
-0.02	109.92	-60.01	1.0285	0.0702	0.0492	0.0801	-0.0193	0.0784
-0.03	115.04	-60.00	1.0199	0.0799	0.0305	0.0708	-0.0150	0.0818
-0.05	118.03	-60.02	1.0106	0.0755	0.0368	0.0648	-0.0250	0.0850
-0.06	119.93	-59.98	0.9933	0.0769	0.0500	0.0579	-0.0326	0.0966
-0.06	121.98	-60.02	0.9870	0.0866	0.0328	0.0524	-0.0342	0.0878

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.01	-118.08	-79.99	0.9809	0.1162	0.0146	0.0675	0.3969	0.0660
-0.07	-115.08	-80.00	1.0580	0.1045	0.0135	0.0718	0.3488	0.0813
0.00	-110.01	-79.97	1.1300	0.1005	0.0138	0.0718	0.2707	0.0777
0.00	-105.02	-79.97	1.1572	0.0930	0.0198	0.0693	0.1844	0.0379
0.00	-100.06	-79.97	1.1683	0.0809	0.0256	0.0752	0.1152	0.0861
0.00	-90.08	-79.97	1.1592	0.0671	0.0460	0.0635	0.0170	0.0655
0.00	-79.95	-79.97	1.1854	0.0669	0.0574	0.0580	-0.0273	0.0518
0.00	-60.05	-79.97	1.2460	0.0500	0.1017	0.0520	-0.0497	0.0492
0.00	-39.91	-79.97	1.2389	0.0504	0.1323	0.0679	-0.0529	0.0538
0.00	-20.05	-79.97	1.2238	0.0531	0.1657	0.0651	-0.0464	0.0544
0.00	-0.06	-79.97	1.1996	0.0497	0.1522	0.0742	-0.0454	0.0540
0.00	19.92	-79.97	1.1683	0.0536	0.1504	0.0753	-0.0500	0.0525
0.00	39.98	-79.97	1.1511	0.0478	0.1152	0.0737	-0.0613	0.0487
0.00	59.98	-79.97	1.1209	0.0578	0.1033	0.0767	-0.0529	0.0566
-0.01	80.00	-79.97	1.0886	0.0672	0.0762	0.0898	-0.0453	0.0599
0.00	89.94	-79.98	1.0694	0.0688	0.0871	0.0800	-0.0431	0.0637
-0.01	99.98	-79.98	1.0483	0.0743	0.0578	0.0837	-0.0329	0.0696
-0.02	105.04	-80.01	1.0472	0.0672	0.0743	0.0814	-0.0337	0.0733
-0.02	109.94	-80.00	1.0330	0.0784	0.0451	0.0803	-0.0294	0.0810
-0.03	115.01	-80.00	1.0283	0.0724	0.0428	0.0766	-0.0285	0.0833
-0.05	118.03	-80.03	1.0156	0.0774	0.0488	0.0685	-0.0299	0.0719
-0.06	119.93	-80.01	0.9966	0.0829	0.0459	0.0621	-0.0278	0.0813
-0.06	121.98	-79.97	1.0027	0.0855	0.0384	0.0535	-0.0241	0.0828

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.02	-118.07	-89.99	1.0044	0.1332	-0.0009	0.0713	0.3751	0.0663
0.00	-115.08	-90.00	1.0673	0.1161	-0.0065	0.0846	0.3343	0.0650
-0.01	-109.97	-89.99	1.1188	0.0960	-0.0133	0.0796	0.2612	0.0763
-0.01	-104.92	-89.99	1.1673	0.0899	-0.0111	0.0846	0.1731	0.0775
-0.01	-100.07	-89.99	1.1865	0.0902	-0.0073	0.0757	0.1228	0.0784
-0.01	-90.08	-89.99	1.1996	0.0703	0.0177	0.0661	0.0292	0.0696
-0.01	-80.03	-89.99	1.2158	0.0656	0.0404	0.0729	-0.0086	0.0644
-0.01	-60.07	-89.99	1.2359	0.0680	0.0716	0.0738	-0.0348	0.0568
-0.01	-40.01	-89.99	1.2208	0.0628	0.0838	0.0841	-0.0398	0.0650
-0.01	-20.03	-89.99	1.2026	0.0654	0.1110	0.0834	-0.0434	0.0557
-0.01	0.00	-89.99	1.1804	0.0547	0.0998	0.0773	-0.0466	0.0551
-0.01	20.01	-89.99	1.1562	0.0511	0.0975	0.0780	-0.0482	0.0492
-0.01	39.99	-89.99	1.1461	0.0516	0.1053	0.0734	-0.0530	0.0524
-0.01	59.98	-89.99	1.1310	0.0497	0.1047	0.0671	-0.0570	0.0484
-0.01	79.96	-89.99	1.1017	0.0615	0.0860	0.0750	-0.0442	0.0538
-0.01	89.92	-90.00	1.0805	0.0690	0.0994	0.0667	-0.0349	0.0736
-0.02	100.06	-89.99	1.0518	0.0688	0.0645	0.0810	-0.0366	0.0645
-0.02	105.00	-89.99	1.0502	0.0693	0.0773	0.0789	-0.0380	0.0684
-0.02	109.97	-90.01	1.0355	0.0752	0.0525	0.0781	-0.0314	0.0772
-0.03	114.98	-90.00	1.0309	0.0723	0.0473	0.0740	-0.0298	0.0800
-0.05	118.03	-90.01	1.0115	0.0717	0.0492	0.0671	-0.0331	0.0817
-0.06	119.93	-90.01	1.0022	0.0821	0.0459	0.0612	-0.0448	0.0825
-0.06	121.98	-90.03	0.9841	0.0891	0.0357	0.0543	-0.0335	0.0818

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.03	-120.06	-99.99	0.9353	0.1295	-0.0188	0.0767	0.3481	0.0797
-0.02	-118.06	-100.01	1.0182	0.1182	-0.0308	0.0817	0.3192	0.0622
-0.06	-115.06	-100.01	1.0967	0.1057	-0.0478	0.0902	0.2630	0.0731
-0.01	-110.07	-100.03	1.1544	0.1011	-0.0581	0.0883	0.2306	0.0643
-0.01	-105.09	-100.03	1.1805	0.0879	-0.0761	0.0952	0.1722	0.0686
-0.01	-100.09	-100.03	1.2005	0.0890	-0.0666	0.1011	0.1177	0.0724
-0.01	-90.01	-100.03	1.2226	0.0837	-0.0518	0.0944	0.0436	0.0676
-0.01	-79.95	-100.03	1.2285	0.0838	-0.0260	0.0968	-0.0006	0.0671
-0.01	-59.99	-100.03	1.2335	0.0827	-0.0018	0.1011	-0.0304	0.0621
-0.01	-39.97	-100.03	1.2135	0.0750	0.0291	0.0949	-0.0412	0.0605
-0.01	-19.99	-100.03	1.2055	0.0669	0.0420	0.0917	-0.0450	0.0567
-0.01	-0.05	-100.03	1.1785	0.0650	0.0478	0.0867	-0.0461	0.0525
-0.01	20.04	-100.03	1.1655	0.0569	0.0550	0.0796	-0.0466	0.0511
-0.01	40.00	-100.03	1.1494	0.0543	0.0765	0.0655	-0.0488	0.0493
-0.01	60.00	-100.03	1.1324	0.0538	0.0853	0.0691	-0.0586	0.0466
-0.01	80.06	-100.03	1.0944	0.0666	0.0855	0.0730	-0.0528	0.0586
-0.01	89.97	-100.03	1.0804	0.0696	0.0917	0.0675	-0.0541	0.0562
-0.01	100.00	-100.01	1.0468	0.0717	0.0840	0.0767	-0.0476	0.0622
-0.02	105.00	-100.02	1.0387	0.0728	0.0922	0.0766	-0.0481	0.0621
-0.02	109.94	-100.00	1.0306	0.0723	0.0680	0.0749	-0.0433	0.0729
-0.03	115.02	-100.00	1.0279	0.0668	0.0565	0.0679	-0.0402	0.0666
-0.05	118.03	-100.00	1.0106	0.0756	0.0523	0.0642	-0.0474	0.0791
-0.06	119.93	-100.03	0.9982	0.0785	0.0497	0.0655	-0.0447	0.0807
-0.06	121.98	-100.01	0.9975	0.0782	0.0395	0.0524	-0.0379	0.0724

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.01	-120.07	-104.98	0.9098	0.1345	-0.0327	0.0846	0.3270	0.0734
-0.01	-118.08	-104.99	1.0255	0.1205	-0.0523	0.0906	0.2728	0.0601
-0.14	-115.09	-105.02	1.0971	0.0908	-0.0830	0.0918	0.2190	0.0724
0.00	-109.99	-104.97	1.1242	0.1036	-0.0810	0.0968	0.2046	0.0644
0.00	-105.00	-104.97	1.1591	0.0915	-0.0930	0.1097	0.1536	0.0651
0.00	-100.07	-104.97	1.1821	0.0993	-0.1011	0.1097	0.1087	0.0688
0.00	-89.99	-104.97	1.2139	0.0930	-0.0912	0.1116	0.0313	0.0748
0.00	-80.05	-104.97	1.2139	0.0880	-0.0680	0.1116	0.0001	0.0687
0.00	-59.94	-104.97	1.2040	0.0831	-0.0422	0.1136	-0.0216	0.0707
0.00	-40.04	-104.97	1.1920	0.0738	-0.0255	0.1106	-0.0328	0.0649
0.00	-19.99	-104.97	1.1711	0.0759	-0.0029	0.0997	-0.0457	0.0590
0.00	0.02	-104.97	1.1591	0.0653	0.0145	0.0846	-0.0323	0.0567
0.00	20.07	-104.97	1.1451	0.0655	0.0306	0.0850	-0.0366	0.0519
0.00	39.92	-104.97	1.1272	0.0598	0.0323	0.0684	-0.0438	0.0484
0.00	59.93	-104.97	1.1113	0.0618	0.0522	0.0636	-0.0450	0.0548
0.00	80.00	-104.97	1.0724	0.0681	0.0842	0.0734	-0.0413	0.0590
0.00	89.93	-104.97	1.0525	0.0727	0.0675	0.0835	-0.0424	0.0611
-0.01	100.04	-105.01	1.0414	0.0706	0.0728	0.0837	-0.0511	0.0626
-0.02	105.05	-105.01	1.0304	0.0724	0.0702	0.0756	-0.0516	0.0717
-0.02	109.93	-105.00	1.0227	0.0730	0.0562	0.0801	-0.0427	0.0749
-0.03	114.97	-104.98	1.0221	0.0691	0.0447	0.0690	-0.0393	0.0729
-0.05	118.03	-105.01	1.0095	0.0784	0.0506	0.0610	-0.0416	0.0688
-0.06	119.93	-105.03	1.0043	0.0724	0.0474	0.0644	-0.0522	0.0741
-0.06	121.98	-104.99	0.9938	0.0849	0.0360	0.0511	-0.0532	0.0779

X (mm)	Y (mm)	Z (mm)	U	U′	V	V′	W	W′
-0.01	-120.07	-110.01	0.9608	0.1266	-0.0753	0.0926	0.2498	0.0651
-0.01	-118.09	-110.00	1.0304	0.1135	-0.0883	0.0921	0.2243	0.0578
-0.05	-115.04	-110.02	1.1004	0.0980	-0.1167	0.0947	0.1743	0.0744
0.00	-109.97	-110.01	1.1367	0.0953	-0.1447	0.1066	0.1728	0.0691
0.00	-105.08	-110.01	1.1588	0.0933	-0.1332	0.1046	0.1270	0.0579
0.00	-99.96	-110.01	1.1810	0.0887	-0.1477	0.1147	0.0931	0.0668
0.00	-90.01	-110.01	1.2021	0.0817	-0.1551	0.1066	0.0314	0.0682
0.00	-79.98	-110.01	1.1920	0.0827	-0.1299	0.1156	-0.0011	0.0691
0.00	-59.96	-110.01	1.1991	0.0854	-0.0803	0.1086	-0.0306	0.0732
0.00	-39.98	-110.01	1.1819	0.0741	-0.0512	0.1036	-0.0350	0.0657
0.00	-20.01	-110.01	1.1699	0.0678	-0.0273	0.0930	-0.0412	0.0629
0.00	0.00	-110.02	1.1557	0.0644	-0.0029	0.0903	-0.0324	0.0541
0.00	20.07	-110.02	1.1356	0.0588	0.0106	0.0922	-0.0324	0.0529
0.00	39.96	-110.02	1.1226	0.0668	0.0307	0.0754	-0.0308	0.0485
0.00	60.04	-110.03	1.0914	0.0629	0.0425	0.0753	-0.0337	0.0523
0.01	80.03	-110.01	1.0683	0.0654	0.0866	0.0676	-0.0345	0.0587
0.01	90.08	-110.01	1.0573	0.0712	0.0934	0.0671	-0.0335	0.0568
-0.01	100.00	-109.99	1.0402	0.0712	0.0825	0.0759	-0.0319	0.0601
-0.01	104.98	-110.01	1.0322	0.0712	0.0712	0.0777	-0.0353	0.0579
-0.01	109.93	-110.01	1.0184	0.0698	0.0586	0.0730	-0.0292	0.0644
-0.02	114.97	-110.02	1.0098	0.0701	0.0490	0.0620	-0.0456	0.0651
-0.05	118.03	-109.99	1.0043	0.0705	0.0518	0.0685	-0.0398	0.0621
-0.06	119.93	-110.01	0.9934	0.0706	0.0386	0.0606	-0.0361	0.0551
-0.06	121.98	-110.03	0.9739	0.0884	0.0384	0.0517	-0.0488	0.0737

ORIGINAL PAGE IS
OF POOR QUALITY

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.01	-120.00	-114.99	0.9052	0.1464	-0.1050	0.1089	0.1808	0.0592
0.00	-118.09	-114.98	0.9800	0.1278	-0.1360	0.1014	0.1782	0.0659
-0.06	-115.09	-115.02	1.0515	0.1033	-0.1691	0.1112	0.1129	0.0959
0.03	-110.03	-114.98	1.0743	0.1002	-0.1845	0.1000	0.1520	0.0629
0.03	-105.04	-114.98	1.1213	0.0944	-0.2069	0.1122	0.1108	0.0656
0.03	-99.99	-114.98	1.1324	0.0942	-0.2145	0.1142	0.0665	0.0651
0.03	-90.03	-114.98	1.1615	0.0900	-0.2077	0.1172	0.0320	0.0663
0.03	-80.06	-114.98	1.1654	0.0906	-0.2277	0.1133	0.0076	0.0665
0.03	-60.00	-114.98	1.1585	0.0835	-0.1826	0.1162	-0.0173	0.0585
0.03	-40.07	-114.98	1.1554	0.0774	-0.1469	0.1092	-0.0256	0.0604
0.03	-19.98	-114.98	1.1415	0.0865	-0.0922	0.0930	-0.0261	0.0547
0.03	-0.07	-114.98	1.1294	0.0800	-0.0705	0.0861	-0.0224	0.0550
0.03	19.96	-114.98	1.1234	0.0742	-0.0412	0.0809	-0.0313	0.0500
0.04	39.92	-114.98	1.1083	0.0692	-0.0163	0.0788	-0.0274	0.0479
0.04	60.01	-114.99	1.0802	0.0699	0.0048	0.0786	-0.0238	0.0470
0.04	80.07	-114.99	1.0602	0.0741	0.0791	0.0786	-0.0282	0.0548
0.05	89.93	-114.99	1.0391	0.0655	0.0763	0.0862	-0.0308	0.0535
0.01	100.04	-115.00	1.0337	0.0704	0.0769	0.0728	-0.0398	0.0546
0.01	104.98	-114.99	1.0218	0.0704	0.0685	0.0812	-0.0356	0.0550
0.01	109.93	-115.00	1.0040	0.0740	0.0618	0.0691	-0.0361	0.0555
0.00	114.97	-115.00	0.9987	0.0774	0.0512	0.0663	-0.0456	0.0589
-0.05	118.03	-115.03	0.9819	0.0775	0.0501	0.0606	-0.0393	0.0540
-0.06	119.93	-115.03	0.9734	0.0744	0.0469	0.0673	-0.0430	0.0581
-0.06	121.98	-115.03	0.9568	0.0840	0.0380	0.0513	-0.0429	0.0569

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
0.00	-120.03	-118.01	0.8331	0.1548	-0.1329	0.1156	0.1312	0.0478
0.11	-110.02	-117.98	1.0207	0.1129	-0.2056	0.1040	0.1309	0.0613
0.03	-105.02	-117.98	1.0663	0.1019	-0.2162	0.0974	0.0711	0.0557
0.03	-99.91	-117.98	1.1049	0.0973	-0.2284	0.1099	0.0349	0.0473
0.03	-90.07	-117.98	1.1267	0.0942	-0.2633	0.1059	0.0227	0.0625
0.03	-80.03	-117.98	1.1415	0.0885	-0.2758	0.0981	0.0006	0.0566
0.03	-60.00	-117.98	1.1306	0.0853	-0.2426	0.1129	-0.0098	0.0572
0.03	-39.94	-117.98	1.1316	0.0868	-0.1842	0.1030	-0.0136	0.0531
0.03	-20.00	-117.98	1.1237	0.0778	-0.1685	0.0900	-0.0116	0.0537
0.03	-0.05	-117.98	1.1148	0.0723	-0.0969	0.0869	-0.0183	0.0443
0.03	19.96	-117.98	1.1058	0.0748	-0.0547	0.0958	-0.0158	0.0499
0.03	40.01	-117.98	1.0980	0.0778	-0.0323	0.0911	-0.0214	0.0467
0.04	60.05	-117.98	1.0623	0.0854	-0.0088	0.0815	-0.0182	0.0530
0.04	79.94	-117.98	1.0316	0.0802	0.0424	0.0809	-0.0292	0.0480
0.04	89.92	-117.98	1.0218	0.0784	0.0648	0.0626	-0.0273	0.0506
0.00	100.00	-118.01	1.0155	0.0714	0.0718	0.0752	-0.0324	0.0524
0.00	105.01	-117.99	1.0046	0.0749	0.0604	0.0732	-0.0362	0.0536
0.00	109.98	-117.98	0.9966	0.0735	0.0506	0.0736	-0.0366	0.0552
-0.01	114.95	-118.00	0.9916	0.0713	0.0488	0.0607	-0.0396	0.0509
-0.05	118.03	-118.03	0.9753	0.0744	0.0491	0.0679	-0.0384	0.0576
-0.06	119.93	-118.03	0.9545	0.0825	0.0391	0.0567	-0.0436	0.0554
-0.06	121.98	-117.99	0.9403	0.0834	0.0324	0.0504	-0.0509	0.0599

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
0.03	-110.07	-120.01	0.9884	0.1087	-0.2532	0.1199	0.1222	0.0619
0.03	-105.03	-120.01	1.0589	0.1056	-0.2638	0.1139	0.0837	0.0630
0.03	-100.06	-120.01	1.0854	0.0941	-0.2902	0.1027	0.0557	0.0632
0.03	-89.99	-120.01	1.0995	0.0928	-0.2877	0.0998	0.0206	0.0626
0.03	-80.04	-120.01	1.1291	0.0913	-0.2802	0.1027	0.0080	0.0634
0.03	-59.95	-120.01	1.1229	0.0862	-0.2677	0.1011	-0.0069	0.0557
0.03	-40.08	-120.01	1.1128	0.0871	-0.2019	0.1036	-0.0067	0.0490
0.03	-19.93	-120.01	1.1158	0.0809	-0.1717	0.0935	-0.0095	0.0466
0.03	-0.04	-120.01	1.1097	0.0807	-0.1266	0.0840	-0.0071	0.0503
0.03	19.95	-120.01	1.0894	0.0888	-0.0848	0.0902	-0.0098	0.0525
0.03	39.91	-120.01	1.0681	0.0854	-0.0479	0.0860	-0.0173	0.0488
0.03	60.01	-120.01	1.0549	0.0835	-0.0162	0.0855	-0.0212	0.0418
0.03	79.94	-120.02	1.0294	0.0760	0.0397	0.0837	-0.0212	0.0553
0.03	90.00	-120.02	1.0156	0.0754	0.0640	0.0682	-0.0235	0.0518
0.00	99.99	-120.03	1.0013	0.0732	0.0640	0.0740	-0.0304	0.0471
0.00	105.01	-120.00	0.9894	0.0722	0.0524	0.0741	-0.0285	0.0547
0.00	109.96	-120.03	0.9835	0.0753	0.0569	0.0744	-0.0341	0.0526
-0.01	115.01	-120.01	0.9698	0.0760	0.0443	0.0650	-0.0361	0.0508
-0.05	118.03	-120.01	0.9555	0.0707	0.0412	0.0700	-0.0401	0.0576
-0.06	119.93	-120.02	0.9448	0.0757	0.0342	0.0586	-0.0445	0.0534
-0.05	121.98	-119.97	0.9472	0.0900	0.0324	0.0468	-0.0493	0.0601

Table D-7 Station 6, Non-Dimensional Data

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.13	-121.99	0.00	0.4788	0.1309	0.0184	0.0671	0.0287	0.1249
-0.03	-119.92	0.00	0.5211	0.1375	0.0362	0.0872	0.0342	0.1721
-0.03	-118.03	0.00	0.5629	0.1416	0.0632	0.0896	0.0708	0.1780
0.00	-110.08	0.01	0.6536	0.1507	0.2008	0.1135	0.0373	0.2130
0.00	-104.96	0.01	0.6792	0.1547	0.2813	0.1196	0.0420	0.2039
0.00	-100.00	0.01	0.6941	0.1688	0.3345	0.1245	0.0389	0.1999
0.00	-90.08	0.01	0.6894	0.1416	0.3850	0.1306	0.0160	0.1808
0.00	-80.00	0.01	0.6603	0.1377	0.3871	0.1527	-0.0047	0.1568
0.00	-59.98	0.01	0.5837	0.1166	0.2384	0.1547	-0.0010	0.1105
0.00	-40.07	0.01	0.6416	0.1316	0.1023	0.1015	-0.0077	0.0796
0.00	-20.00	0.01	1.1766	0.1075	0.0817	0.0743	0.0060	0.0522
0.00	0.01	0.01	1.2408	0.0432	0.0516	0.0512	0.0125	0.0346
0.00	19.92	0.01	1.2327	0.0389	0.0184	0.0502	0.0086	0.0383
0.00	39.99	0.01	1.2318	0.0399	0.0057	0.0540	0.0150	0.0435
-0.01	59.94	0.01	1.2167	0.0469	-0.0031	0.0707	0.0025	0.0486
-0.01	80.01	0.01	1.1936	0.0660	-0.0020	0.0740	-0.0042	0.0583
-0.01	89.92	0.01	1.1845	0.0657	-0.0014	0.0752	-0.0144	0.0620
-0.04	100.02	0.02	1.1810	0.0652	0.0077	0.0696	-0.0224	0.0645
-0.04	104.96	0.00	1.1775	0.0604	0.0231	0.0686	-0.0331	0.0656
-0.04	109.92	-0.01	1.1713	0.0681	0.0179	0.0567	-0.0337	0.0685
-0.05	114.97	-0.01	1.1514	0.0767	0.0140	0.0517	-0.0360	0.0771
-0.11	119.95	0.01	1.1334	0.0855	0.0135	0.0465	-0.0466	0.0812
-0.12	121.99	-0.03	1.0936	0.1034	0.0112	0.0430	-0.0270	0.0871

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.13	-121.99	-19.99	0.7238	0.1538	0.0492	0.0573	0.2672	0.1219
-0.04	-119.92	-20.02	0.8038	0.1302	0.0744	0.0781	0.2848	0.1115
-0.04	-117.97	-20.01	0.8505	0.1137	0.0881	0.0737	0.2665	0.1092
-0.01	-110.01	-20.01	0.9720	0.0903	0.1300	0.0877	0.2561	0.0827
-0.01	-104.99	-20.01	0.9727	0.0970	0.1529	0.0863	0.2091	0.0907
-0.01	-99.91	-20.01	0.9745	0.1047	0.1679	0.1026	0.1789	0.0899
-0.01	-89.94	-20.01	0.9292	0.1178	0.1872	0.1067	0.0970	0.1001
-0.01	-80.01	-20.01	0.8478	0.1331	0.1770	0.1270	0.0186	0.1219
-0.01	-59.93	-20.01	0.6608	0.1341	0.1356	0.1423	-0.0982	0.1098
-0.01	-39.93	-20.01	0.6911	0.1402	0.0739	0.1118	-0.0898	0.0899
-0.01	-19.95	-20.01	1.1967	0.0884	0.0698	0.0767	-0.0425	0.0476
-0.01	-0.08	-20.01	1.2495	0.0404	0.0378	0.0486	-0.0274	0.0387
-0.01	19.93	-20.01	1.2454	0.0384	0.0138	0.0533	-0.0141	0.0382
-0.01	39.94	-20.01	1.2342	0.0438	-0.0042	0.0660	-0.0073	0.0430
-0.01	60.08	-20.02	1.2068	0.0501	-0.0097	0.0703	-0.0115	0.0492
-0.01	80.00	-20.02	1.1885	0.0686	-0.0170	0.0740	-0.0037	0.0598
-0.01	89.91	-20.02	1.1824	0.0620	-0.0274	0.0946	-0.0107	0.0598
-0.04	100.03	-20.00	1.1824	0.0683	0.0107	0.0701	-0.0267	0.0664
-0.05	104.92	-20.00	1.1694	0.0654	0.0053	0.0667	-0.0251	0.0668
-0.05	109.97	-20.02	1.1687	0.0713	0.0120	0.0585	-0.0282	0.0747
-0.06	115.03	-20.02	1.1586	0.0734	0.0083	0.0515	-0.0239	0.0795
-0.11	119.95	-20.02	1.1233	0.0858	0.0177	0.0485	-0.0208	0.0837
-0.14	121.99	-20.02	1.0856	0.1074	0.0131	0.0420	-0.0201	0.0883

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.14	-121.99	-39.98	0.8433	0.1348	0.0151	0.0665	0.3604	0.0799
-0.04	-119.95	-40.00	0.9001	0.1163	0.0144	0.0670	0.3483	0.0839
-0.04	-118.03	-40.00	0.9500	0.1020	0.0169	0.0645	0.3267	0.0899
-0.04	-114.97	-40.00	1.0090	0.0912	0.0191	0.0657	0.3083	0.0823
-0.02	-110.01	-39.97	1.0244	0.0747	0.0289	0.0768	0.2766	0.0807
-0.02	-104.92	-39.97	1.0183	0.0850	0.0112	0.0752	0.2266	0.0780
-0.02	-99.96	-39.97	0.9748	0.0961	0.0220	0.0770	0.1885	0.0726
-0.02	-90.02	-39.97	0.8987	0.0974	0.0087	0.0889	0.1037	0.0740
-0.02	-79.94	-39.97	0.8518	0.0893	0.0247	0.0893	0.0228	0.0857
-0.02	-60.08	-39.97	0.7262	0.1233	0.0380	0.1052	-0.1042	0.0939
-0.02	-40.06	-39.97	0.8864	0.1724	0.0466	0.0966	-0.1116	0.0955
-0.02	-20.07	-39.97	1.2298	0.0536	0.0507	0.0548	-0.0862	0.0515
-0.02	-0.06	-39.97	1.2438	0.0402	0.0437	0.0546	-0.0551	0.0406
-0.02	19.93	-39.97	1.2418	0.0435	0.0350	0.0478	-0.0371	0.0404
-0.02	39.95	-39.97	1.2337	0.0412	0.0274	0.0562	-0.0267	0.0430
-0.02	59.94	-39.98	1.2207	0.0506	0.0274	0.0645	-0.0176	0.0458
-0.02	80.04	-39.98	1.1988	0.0613	0.0148	0.0706	-0.0144	0.0532
-0.02	89.96	-39.98	1.1836	0.0624	0.0222	0.0738	-0.0180	0.0567
-0.04	99.99	-40.01	1.1771	0.0623	0.0109	0.0682	-0.0256	0.0633
-0.05	104.94	-39.98	1.1731	0.0668	0.0090	0.0660	-0.0179	0.0661
-0.05	109.93	-40.00	1.1674	0.0675	0.0118	0.0609	-0.0185	0.0703
-0.06	114.99	-39.99	1.1679	0.0773	0.0140	0.0549	-0.0048	0.0767
-0.12	119.95	-40.03	1.1253	0.0896	0.0138	0.0456	-0.0035	0.0809
-0.14	121.99	-40.03	1.0835	0.1064	0.0186	0.0408	-0.0047	0.0862

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.14	-121.99	-59.97	0.8877	0.1259	-0.0046	0.0650	0.3535	0.0670
-0.03	-119.95	-60.01	0.9730	0.1077	-0.0055	0.0592	0.3492	0.0682
-0.03	-118.03	-60.02	1.0026	0.0969	-0.0096	0.0716	0.3075	0.0789
-0.03	-114.94	-60.02	1.0463	0.0913	-0.0135	0.0646	0.2802	0.0760
0.00	-109.98	-60.02	1.0706	0.0674	-0.0216	0.0704	0.2001	0.0866
0.00	-105.03	-60.02	1.0494	0.0778	-0.0299	0.0657	0.1513	0.0785
0.00	-99.96	-60.02	1.0233	0.0919	-0.0423	0.0795	0.1051	0.0731
0.00	-90.02	-60.02	0.9504	0.1047	-0.0486	0.0914	0.0453	0.0680
0.00	-80.02	-60.02	0.9144	0.1078	-0.0697	0.0866	-0.0109	0.0753
0.00	-60.05	-60.02	0.9426	0.1430	-0.0392	0.0940	-0.0981	0.0972
0.00	-40.08	-60.02	1.1582	0.0989	-0.0004	0.0721	-0.1160	0.0780
0.00	-20.02	-60.02	1.2418	0.0409	0.0295	0.0512	-0.0976	0.0453
0.00	-0.09	-60.02	1.2509	0.0387	0.0346	0.0577	-0.0767	0.0401
0.00	20.02	-60.02	1.2408	0.0423	0.0350	0.0620	-0.0552	0.0450
0.00	40.08	-60.02	1.2337	0.0470	0.0361	0.0566	-0.0515	0.0439
0.00	59.91	-60.02	1.2146	0.0533	0.0370	0.0602	-0.0536	0.0492
0.00	80.08	-60.02	1.1784	0.0739	0.0203	0.0770	-0.0398	0.0614
0.00	90.07	-60.02	1.1824	0.0651	0.0397	0.0700	-0.0438	0.0610
-0.04	99.97	-60.03	1.1803	0.0648	0.0117	0.0665	-0.0370	0.0624
-0.04	104.96	-60.03	1.1749	0.0684	0.0211	0.0693	-0.0270	0.0667
-0.04	109.96	-60.03	1.1673	0.0716	0.0193	0.0677	-0.0273	0.0687
-0.05	114.95	-60.00	1.1522	0.0797	0.0208	0.0560	-0.0202	0.0756
-0.12	119.95	-59.99	1.1542	0.0835	0.0221	0.0470	-0.0076	0.0805
-0.15	121.99	-60.02	1.1174	0.0987	0.0234	0.0435	0.0051	0.0837

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.14	-121.99	-80.02	0.9416	0.1129	-0.0112	0.0646	0.3059	0.0613
-0.04	-120.00	-79.99	0.9774	0.1049	-0.0156	0.0687	0.2863	0.0616
-0.04	-117.98	-80.01	1.0241	0.0921	-0.0308	0.0676	0.2686	0.0678
-0.04	-115.00	-79.99	1.0694	0.0918	-0.0353	0.0706	0.2519	0.0641
-0.01	-109.98	-79.99	1.1039	0.0749	-0.0484	0.0748	0.1911	0.0661
-0.01	-104.91	-79.99	1.1190	0.0841	-0.0502	0.0691	0.1376	0.0578
-0.01	-100.07	-79.99	1.1170	0.0738	-0.0626	0.0707	0.0881	0.0626
-0.01	-90.03	-79.99	1.0937	0.0801	-0.0634	0.0683	0.0300	0.0636
-0.01	-79.95	-79.99	1.1008	0.0866	-0.0700	0.0713	-0.0047	0.0584
-0.01	-60.05	-79.99	1.1807	0.0670	-0.0661	0.0583	-0.0447	0.0532
-0.01	-40.01	-79.99	1.2464	0.0489	-0.0184	0.0500	-0.0728	0.0495
-0.01	-20.03	-79.99	1.2605	0.0447	0.0181	0.0553	-0.0708	0.0468
-0.01	0.03	-79.99	1.2564	0.0473	0.0408	0.0515	-0.0666	0.0485
-0.01	20.07	-80.00	1.2535	0.0538	0.0424	0.0615	-0.0587	0.0450
-0.01	40.08	-80.00	1.2454	0.0537	0.0322	0.0587	-0.0532	0.0500
-0.01	60.07	-80.00	1.2211	0.0556	0.0401	0.0685	-0.0511	0.0505
-0.01	79.97	-80.00	1.2089	0.0647	0.0319	0.0755	-0.0527	0.0535
-0.01	89.97	-80.00	1.2171	0.0578	0.0580	0.0557	-0.0443	0.0469
-0.04	100.03	-80.00	1.1937	0.0666	0.0367	0.0683	-0.0373	0.0574
-0.04	104.96	-80.01	1.1857	0.0697	0.0333	0.0630	-0.0304	0.0641
-0.05	109.95	-80.01	1.1831	0.0640	0.0383	0.0599	-0.0358	0.0686
-0.05	114.96	-80.00	1.1815	0.0754	0.0334	0.0573	-0.0291	0.0708
-0.12	119.95	-80.03	1.1632	0.0827	0.0263	0.0470	-0.0227	0.0681
-0.15	121.99	-79.99	1.1304	0.0976	0.0236	0.0398	-0.0052	0.0783

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.14	-121.99	-89.97	0.9394	0.1129	-0.0275	0.0748	0.2575	0.0593
-0.04	-119.97	-90.02	0.9914	0.1015	-0.0347	0.0740	0.2451	0.0599
-0.04	-118.01	-90.00	1.0195	0.0926	-0.0476	0.0750	0.2286	0.0583
-0.04	-114.93	-90.02	1.0699	0.0892	-0.0468	0.0726	0.2050	0.0523
-0.01	-109.97	-90.02	1.0959	0.0733	-0.0634	0.0780	0.1591	0.0523
-0.01	-104.91	-90.02	1.1250	0.0763	-0.0811	0.0742	0.1199	0.0559
-0.01	-99.96	-90.02	1.1370	0.0776	-0.0652	0.0680	0.0816	0.0582
-0.01	-89.92	-90.02	1.1431	0.0672	-0.0764	0.0719	0.0242	0.0532
-0.01	-80.08	-90.02	1.1551	0.0767	-0.0765	0.0593	-0.0007	0.0549
-0.01	-60.06	-90.02	1.1971	0.0592	-0.0553	0.0568	-0.0416	0.0496
-0.01	-39.95	-90.02	1.2243	0.0461	-0.0160	0.0481	-0.0675	0.0516
-0.01	-20.00	-90.02	1.2474	0.0520	0.0139	0.0536	-0.0671	0.0516
-0.01	0.06	-90.02	1.2433	0.0527	0.0283	0.0549	-0.0611	0.0537
-0.01	20.09	-90.02	1.2403	0.0505	0.0442	0.0569	-0.0645	0.0500
-0.01	40.01	-90.02	1.2293	0.0512	0.0344	0.0594	-0.0546	0.0500
-0.01	59.92	-90.02	1.2212	0.0526	0.0489	0.0595	-0.0656	0.0528
-0.01	80.08	-90.03	1.2153	0.0532	0.0497	0.0639	-0.0600	0.0526
-0.01	89.99	-90.03	1.2012	0.0589	0.0468	0.0583	-0.0520	0.0594
-0.05	99.96	-90.03	1.1853	0.0643	0.0353	0.0651	-0.0470	0.0602
-0.05	104.96	-90.03	1.1838	0.0608	0.0349	0.0659	-0.0408	0.0669
-0.06	109.95	-90.03	1.1802	0.0628	0.0350	0.0607	-0.0378	0.0656
-0.06	114.94	-90.01	1.1831	0.0697	0.0318	0.0565	-0.0308	0.0688
-0.13	119.95	-90.03	1.1612	0.0786	0.0308	0.0471	-0.0203	0.0661
-0.15	121.99	-90.02	1.1642	0.0832	0.0243	0.0432	-0.0280	0.0712

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.14	-121.99	-99.98	0.9157	0.1219	-0.0506	0.0863	0.1903	0.0655
-0.04	-119.93	-100.03	0.9546	0.1055	-0.0590	0.0845	0.1930	0.0601
-0.04	-117.98	-100.03	0.9893	0.1011	-0.0643	0.0838	0.1878	0.0589
-0.04	-114.97	-100.00	1.0508	0.0868	-0.0915	0.0820	0.1712	0.0520
-0.02	-110.07	-100.03	1.0957	0.0879	-0.1057	0.0802	0.1275	0.0533
-0.02	-104.96	-100.03	1.1298	0.0853	-0.1225	0.0800	0.1021	0.0607
-0.02	-100.04	-100.03	1.1449	0.0729	-0.1359	0.0830	0.0744	0.0605
-0.02	-90.04	-100.03	1.1609	0.0745	-0.1216	0.0773	0.0191	0.0551
-0.02	-79.92	-100.03	1.1680	0.0723	-0.1307	0.0771	-0.0076	0.0574
-0.02	-59.97	-100.03	1.2082	0.0611	-0.1053	0.0742	-0.0372	0.0533
-0.02	-40.07	-100.03	1.2242	0.0654	-0.0734	0.0650	-0.0556	0.0557
-0.02	-20.02	-100.00	1.2283	0.0521	-0.0409	0.0712	-0.0578	0.0531
-0.02	0.01	-100.00	1.2293	0.0594	-0.0141	0.0728	-0.0585	0.0541
-0.02	19.91	-100.00	1.2273	0.0583	-0.0112	0.0719	-0.0542	0.0482
-0.02	40.03	-100.00	1.2202	0.0522	0.0170	0.0670	-0.0571	0.0526
-0.02	60.07	-100.00	1.2192	0.0494	0.0231	0.0692	-0.0549	0.0533
-0.02	80.01	-100.00	1.2102	0.0572	0.0506	0.0634	-0.0530	0.0492
-0.02	89.92	-100.00	1.2031	0.0588	0.0418	0.0552	-0.0520	0.0520
-0.05	99.96	-100.00	1.1908	0.0609	0.0371	0.0589	-0.0430	0.0577
-0.05	104.94	-100.01	1.1823	0.0638	0.0381	0.0600	-0.0440	0.0579
-0.06	109.93	-100.01	1.1767	0.0686	0.0375	0.0556	-0.0419	0.0602
-0.06	114.97	-100.01	1.1780	0.0672	0.0347	0.0513	-0.0400	0.0620
-0.13	119.95	-100.03	1.1552	0.0843	0.0319	0.0465	-0.0311	0.0670
-0.15	121.99	-99.98	1.1283	0.0981	0.0309	0.0411	-0.0416	0.0636

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.14	-121.99	-105.01	0.8817	0.1129	-0.0671	0.0930	0.1436	0.0566
-0.04	-119.93	-104.98	0.9175	0.1108	-0.0687	0.0957	0.1504	0.0617
-0.04	-117.99	-104.99	0.9818	0.1089	-0.0862	0.0927	0.1473	0.0554
-0.04	-114.95	-104.97	1.0265	0.0923	-0.1047	0.0824	0.1367	0.0516
-0.03	-110.04	-104.97	1.0873	0.0838	-0.1178	0.0789	0.1271	0.0546
-0.03	-105.09	-104.97	1.1183	0.0800	-0.1392	0.0773	0.0825	0.0611
-0.03	-100.01	-104.97	1.1522	0.0760	-0.1483	0.0794	0.0638	0.0623
-0.03	-90.05	-104.97	1.1522	0.0734	-0.1384	0.0786	0.0182	0.0707
-0.03	-80.09	-104.97	1.1793	0.0650	-0.1342	0.0732	-0.0006	0.0614
-0.03	-60.08	-104.97	1.1933	0.0727	-0.1313	0.0770	-0.0309	0.0665
-0.03	-40.01	-104.97	1.2162	0.0647	-0.0990	0.0762	-0.0458	0.0618
-0.03	-20.00	-104.97	1.2153	0.0649	-0.0562	0.0677	-0.0456	0.0499
-0.03	-0.08	-104.97	1.2203	0.0595	-0.0409	0.0768	-0.0543	0.0540
-0.02	19.96	-104.97	1.2093	0.0580	-0.0191	0.0763	-0.0482	0.0486
-0.02	40.02	-104.97	1.2162	0.0496	-0.0100	0.0693	-0.0520	0.0502
-0.02	60.04	-104.97	1.2162	0.0530	0.0041	0.0628	-0.0551	0.0489
-0.02	79.98	-104.97	1.2033	0.0540	0.0361	0.0644	-0.0533	0.0525
-0.02	89.91	-104.97	1.2012	0.0623	0.0526	0.0515	-0.0482	0.0518
-0.05	100.00	-104.99	1.1904	0.0596	0.0400	0.0598	-0.0458	0.0548
-0.05	104.95	-104.99	1.1799	0.0608	0.0430	0.0580	-0.0434	0.0584
-0.06	109.97	-105.01	1.1748	0.0604	0.0471	0.0557	-0.0468	0.0576
-0.06	114.95	-105.00	1.1837	0.0659	0.0352	0.0544	-0.0430	0.0525
-0.13	119.95	-105.00	1.1453	0.0801	0.0298	0.0439	-0.0424	0.0607
-0.15	121.99	-104.99	1.1283	0.0888	0.0270	0.0450	-0.0443	0.0592

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.14	-121.99	-110.03	0.8366	0.1119	-0.0704	0.0966	0.0939	0.0630
-0.04	-119.95	-110.00	0.8706	0.1176	-0.0764	0.0951	0.1126	0.0642
-0.04	-118.00	-110.00	0.9099	0.1212	-0.0887	0.1017	0.1202	0.0631
-0.06	-114.92	-109.99	0.9681	0.1142	-0.1248	0.0886	0.1147	0.0592
-0.03	-110.08	-109.97	1.0483	0.0858	-0.1380	0.0845	0.1184	0.0558
-0.03	-104.97	-109.97	1.0825	0.0774	-0.1633	0.0860	0.0887	0.0548
-0.03	-99.93	-109.97	1.1066	0.0861	-0.1740	0.0884	0.0544	0.0548
-0.03	-89.96	-109.97	1.1377	0.0800	-0.1745	0.0927	0.0222	0.0608
-0.03	-80.06	-109.97	1.1539	0.0783	-0.1758	0.0871	-0.0087	0.0556
-0.03	-59.97	-109.97	1.1740	0.0686	-0.1529	0.0847	-0.0253	0.0507
-0.03	-40.00	-109.97	1.1871	0.0713	-0.1356	0.0830	-0.0380	0.0517
-0.03	-19.97	-109.97	1.1891	0.0676	-0.1036	0.0793	-0.0345	0.0564
-0.03	0.02	-109.97	1.1981	0.0634	-0.0841	0.0827	-0.0409	0.0518
-0.03	19.98	-109.97	1.2001	0.0676	-0.0491	0.0774	-0.0450	0.0499
-0.03	40.01	-109.97	1.2072	0.0602	-0.0347	0.0744	-0.0502	0.0497
-0.03	59.98	-109.97	1.2011	0.0566	-0.0064	0.0686	-0.0478	0.0491
-0.03	80.06	-109.97	1.1901	0.0661	0.0275	0.0650	-0.0447	0.0511
-0.03	89.97	-109.97	1.1891	0.0585	0.0553	0.0554	-0.0523	0.0490
-0.05	99.99	-109.99	1.1812	0.0596	0.0399	0.0609	-0.0467	0.0539
-0.05	104.94	-109.97	1.1752	0.0647	0.0425	0.0533	-0.0383	0.0549
-0.06	109.95	-109.98	1.1722	0.0649	0.0373	0.0566	-0.0479	0.0562
-0.06	114.96	-110.00	1.1696	0.0675	0.0383	0.0545	-0.0419	0.0528
-0.13	119.95	-110.01	1.1243	0.0863	0.0262	0.0451	-0.0392	0.0631
-0.15	121.99	-109.98	1.0856	0.1034	0.0257	0.0439	-0.0388	0.0630

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.14	-121.99	-115.00	0.7647	0.1119	-0.0624	0.0986	0.0345	0.0530
-0.04	-119.97	-114.99	0.7833	0.1256	-0.0886	0.1071	0.0542	0.0614
-0.06	-117.97	-115.00	0.8370	0.1217	-0.1114	0.1069	0.0686	0.0538
-0.06	-114.92	-115.00	0.8678	0.1281	-0.1348	0.0984	0.0664	0.0673
-0.03	-109.93	-114.98	0.9660	0.1037	-0.1767	0.0855	0.0933	0.0589
-0.03	-104.97	-114.98	1.0132	0.0938	-0.1847	0.0898	0.0801	0.0624
-0.03	-99.95	-114.98	1.0575	0.0872	-0.2102	0.0924	0.0504	0.0628
-0.03	-90.03	-114.98	1.0948	0.0798	-0.2256	0.0831	0.0189	0.0553
-0.03	-80.01	-114.98	1.1109	0.0604	-0.2180	0.0807	0.0124	0.0600
-0.03	-60.09	-114.98	1.1401	0.0872	-0.2014	0.0898	-0.0231	0.0513
-0.03	-40.00	-114.98	1.1582	0.0801	-0.1878	0.0835	-0.0325	0.0523
-0.03	-20.08	-114.98	1.1653	0.0805	-0.1438	0.0786	-0.0370	0.0428
-0.03	-0.01	-114.99	1.1704	0.0711	-0.1206	0.0820	-0.0253	0.0447
-0.03	20.03	-114.99	1.1804	0.0737	-0.0924	0.0791	-0.0256	0.0437
-0.03	39.95	-114.99	1.1804	0.0752	-0.0824	0.0850	-0.0316	0.0464
-0.03	60.02	-115.00	1.1694	0.0712	-0.0460	0.0765	-0.0291	0.0487
-0.03	80.04	-115.00	1.1653	0.0748	0.0042	0.0683	-0.0396	0.0520
-0.03	90.04	-115.00	1.1482	0.0646	0.0167	0.0667	-0.0301	0.0497
-0.05	100.01	-115.01	1.1588	0.0686	0.0198	0.0649	-0.0367	0.0547
-0.06	104.97	-115.01	1.1534	0.0651	0.0206	0.0505	-0.0358	0.0518
-0.07	109.92	-115.01	1.1527	0.0725	0.0256	0.0578	-0.0404	0.0563
-0.07	115.00	-115.01	1.1513	0.0718	0.0221	0.0508	-0.0445	0.0489
-0.13	119.95	-115.02	1.1243	0.0826	0.0283	0.0451	-0.0388	0.0505
-0.15	121.99	-115.03	1.0825	0.1024	0.0280	0.0438	-0.0412	0.0525

X (mm)	Y (mm)	Z (mm)	U	U'	V	V'	W	W'
-0.05	-119.94	-120.00	0.6766	0.1054	-0.0660	0.0964	0.0085	0.0531
-0.05	-118.01	-120.00	0.6881	0.1199	-0.0824	0.1081	0.0268	0.0547
-0.05	-114.99	-120.01	0.7501	0.1193	-0.1111	0.1078	0.0304	0.0469
-0.04	-110.01	-119.99	0.8148	0.1213	-0.1622	0.0922	0.0474	0.0578
-0.04	-104.93	-119.99	0.8873	0.1142	-0.2082	0.0912	0.0432	0.0603
-0.04	-99.92	-119.99	0.9493	0.1083	-0.2407	0.0847	0.0284	0.0600
-0.04	-89.96	-119.99	0.9978	0.1023	-0.2549	0.0881	0.0087	0.0578
-0.04	-79.98	-119.99	1.0266	0.0887	-0.2766	0.0795	-0.0042	0.0553
-0.04	-60.06	-119.99	1.0684	0.0943	-0.2494	0.0876	-0.0190	0.0507
-0.04	-40.08	-119.99	1.0803	0.0936	-0.2448	0.0863	-0.0158	0.0573
-0.04	-20.00	-119.99	1.0962	0.0910	-0.2147	0.0827	-0.0228	0.0518
-0.04	-0.07	-119.99	1.1011	0.0909	-0.1604	0.0802	-0.0247	0.0474
-0.04	20.02	-119.99	1.1071	0.0847	-0.1413	0.0737	-0.0252	0.0530
-0.04	40.01	-119.99	1.1261	0.0842	-0.1024	0.0770	-0.0273	0.0469
-0.04	59.98	-120.00	1.1340	0.0774	-0.0593	0.0758	-0.0268	0.0418
-0.04	79.99	-120.00	1.1449	0.0795	-0.0067	0.0625	-0.0244	0.0370
-0.04	90.05	-120.00	1.1291	0.0737	0.0134	0.0614	-0.0377	0.0451
-0.05	100.01	-120.01	1.1298	0.0696	0.0207	0.0653	-0.0345	0.0461
-0.06	104.93	-120.00	1.1348	0.0704	0.0306	0.0564	-0.0340	0.0432
-0.07	109.93	-120.01	1.1297	0.0734	0.0259	0.0584	-0.0406	0.0458
-0.08	115.00	-120.01	1.1218	0.0734	0.0251	0.0525	-0.0430	0.0471
-0.13	119.95	-119.99	1.0746	0.0850	0.0190	0.0450	-0.0336	0.0481
-0.15	121.99	-119.98	1.0229	0.0995	0.0295	0.0413	-0.0288	0.0515

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16. Abstract
This experimental investigation examined the influence of bulk turbulence and boundary layer thickness on the secondary flow development in a square, 90° turning duct. A three-dimensional laser velocimetry system was utilized to measure the mean and fluctuating components of velocity at six cross-planes in the duct. The results from this investigation, with entrance boundary layer thickness of 20 percent, were compared with the thin boundary layer results documented in NASA CR-174811. The axial velocity profiles, cross-flow velocities and turbulence intensities were compared and evaluated with regard to the influence of bulk turbulence intensity and boundary layer thickness, and the influence was significant. The results of this investigation expand the 90° curved duct experimental data base to higher turbulence levels and thicker entrance boundary layers. The experimental results provide a challenging benchmark data base for computational fluid dynamics code development and validation. The variation of inlet bulk turbulence intensity provides additional information to aid in turbulence model evaluation.

17. Key Words (Suggested by Author(s))
Turning duct flow
3-D boundary layer effects
LV mean velocity and turbulence

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