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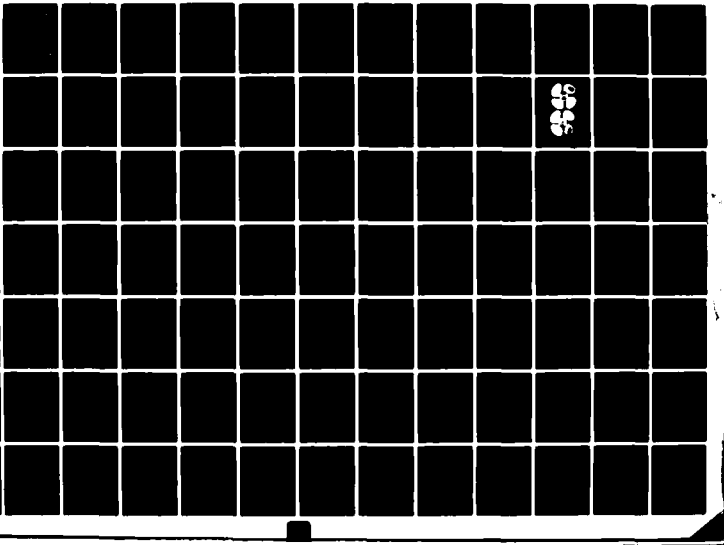

**DAVID W. TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER**

Bethesda, Md. 20084



# EXPERIMENTAL DETERMINATION OF TWO COMPONENTS OF FIELD POINT VELOCITIES AROUND A MODEL PROPELLER IN UNIFORM AND INCLINED FLOW

by

N. Santelli, J. Libby

M. Jeffers

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SHIP PERFORMANCE DEPARTMENT

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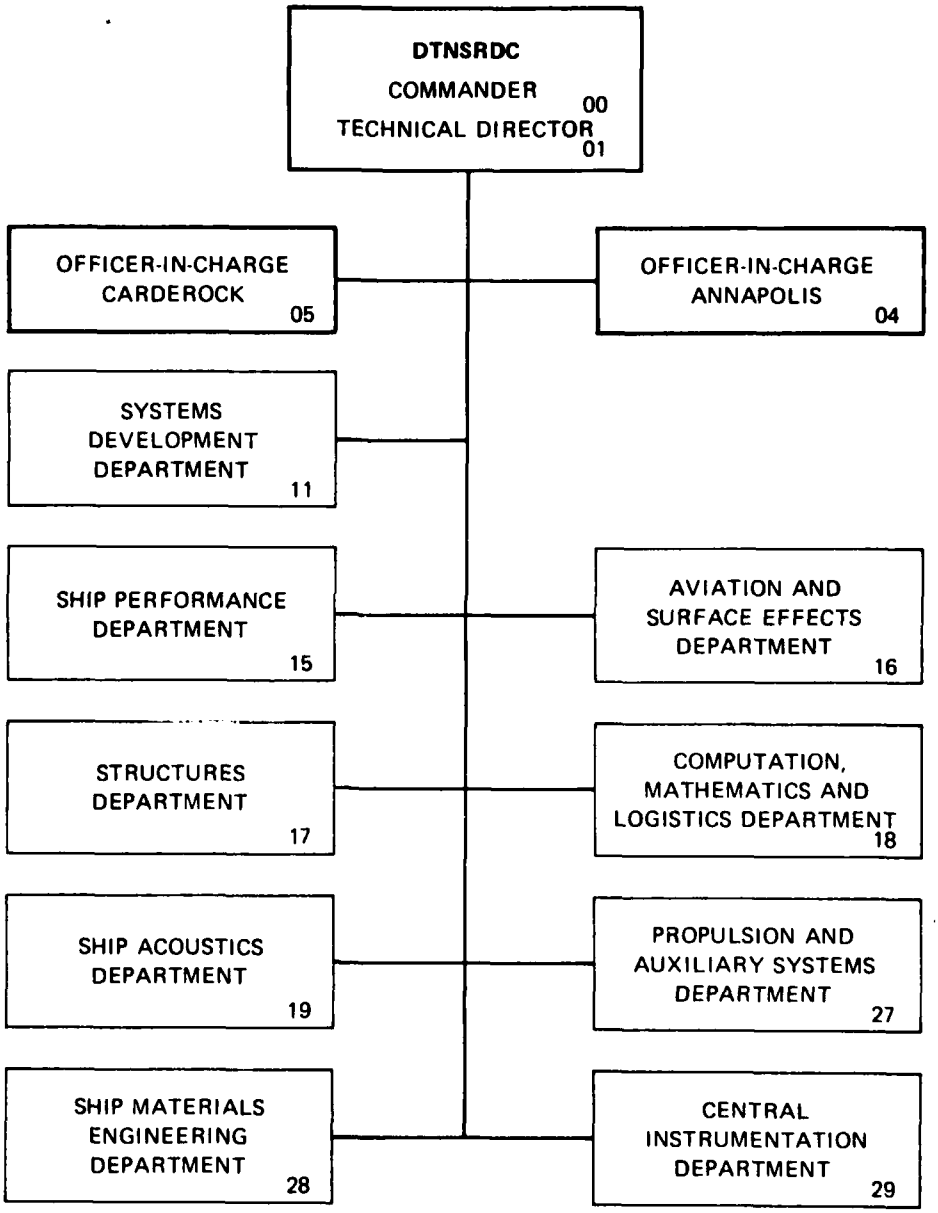

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Measurements of two component velocity profiles were taken around model propellers, utilizing a laser doppler anemometer. Measurements were made with the propeller shaft parallel to the flow and at 20 degrees to the incoming flow. Both time averaged and blade angular-position-dependent data are presented in a manner that will aid in the evaluation of the various predictive theories of field point velocities around propellers.

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## NOTATION

| | |
|---|---|
| c | Chord length at 0.7 radius |
| D | Propeller diameter |
| $D_n$ | Hub diameter |
| $E_t$ | Half-thickness ordinate of blade function |
| f | Meanline ordinate of blade function |
| $f_n$ | Camber of propeller blade section |
| J | Advance coefficient, |
| n | Propeller revolutions per unit time |
| R | Radius of propeller |
| Rn | Reynolds number |
| r | Radial coordinant from propeller axis |
| t | Maximum thickness of propeller blade section |
| V | Velocity |
| $V_o$ | Freestream velocity |
| X, Y | Coordinate axis |
| Z | Number of blades |
| $Z_R$ | Rake of propeller blade section measured from the propeller plane to the generator line, positive aft |

$\theta_s$ Skew angle measured from spindle axis to projection of blade section midchord into propeller plane, positive toward trailing edge

$\nu$ Kinematic viscosity of water

$\rho$ Mass density of water

## LIST OF ABBREVIATIONS

CP Controllable Pitch

DTNSRDC David W. Taylor Naval Ship Research and Developement Center

LDA Laser Doppler Anemometer

## ABSTRACT

Measurements of two component velocity profiles were taken around model propellers utilizing a laser doppler anemometer. Measurements were made with the propeller shaft parallel to the flow and at 20 degrees to the incoming flow. Both time average and blade angular-position dependent data are presented in a manner that will aid in the evaluation of the various predictive theories of field point velocities around propellers.



## ADMINISTRATIVE INFORMATION

The investigation described herein was funded by the Naval Sea Systems Command (NAVSEA 05R), Task Area SO379-SL001, Task 19977. The work was performed under David W. Taylor Naval Ship Research and Development Center Work Unit No. 1-1544-296.


## INTRODUCTION

A great deal of interest exists in the ability to accurately predict field point velocities around propellers in inclined flow. Several theories, including some rather sophisticated refinements of the basic lifting surface theory, exist. However, these theories consistently under-predict the unsteady and time average blade loads[1] in inclined flow. Until very recently, the ability to evaluate the various theories has been hindered by a lack of detailed experimental velocity field data. This is due to the severe limitations of conventional pressure and thermal measuring techniques. Laser Doppler Anemometry (LDA), while having some drawbacks, does overcome many of the limitations suffered

by conventional probes. A few investigators, notably Min,[1] have successfully used LDA to obtain field point velocities around propellers.

This report describes an experimental investigation of two components of field point velocities around two model propellers. The experiment was conducted in the DTNSRDC 24-inch variable pressure water tunnel utilizing LDA. (The DTNSRDC LDA and data collection system are described in some detail in Appendix A.)

The propellers are mirror-images of one another; DTNSRDC propeller model No. 4710 is right hand rotation and DTNSRDC model No. 4711 is left-hand rotation. Only one propeller was tested at a time, but for reasons explained later, the use of two propellers allowed a more complete mapping of the flow field. The longitudinal and vertical components of velocity vs. blade angular position and the respective RMS resultant velocity vs. blade angular position are presented in detail. Tabulated values of the velocity vs. blade angular position are included in Appendix B. A brief discussion of the models and facility is included.

No attempt is made here to exploit the LDA data presented. Correlations of the data with theoretical predictions will be done in a separate report.

## EXPERIMENTAL COMPONENTS

### THE LDA

The body of literature on LDA is extensive, with over one thousand papers and several books having been published on the subject in the last decade. For a general discussion of the LDA technique and its inherent

advantages and limitations, the reader is referred to Min[3], Yanta[5], and Durst[4].

The DTNSRDC LDA system was utilized to obtain field point velocities in the present investigation. Appendix A contains a detailed description of the DTNSRDC LDA system and the data collection system used in this investigation. This system has the capability of measuring the time dependent longitudinal and vertical velocity components as referenced to the tunnel test section (see Fig. 1a). A back scatter mode of operation was used to obtain time-average data, and a forward scatter mode was used to obtain time-dependent data (see Appendix A). Velocity profiles were taken upstream and downstream, above and below the propeller. Time dependent data could not be taken in the horizontal plane passing through the propeller shaft due to the blockage of the laser beams by the propeller shaft in the forward scatter mode.

Figure 1a is a schematic of the propeller in the inclined position. The coordinates of the data collection locations were referenced to the propeller center (X-Y axis). This data was later resolved along the shaft axis and perpendicular to the shaft axis (primed coordinates).

An LDA system was chosen for the velocity measurements because of its advantages over conventional thermal and pressure probes. Specifically, the LDA can be used to obtain time-dependent data while pressure probes, because of their very slow response to velocity fluctuations, cannot be used for such measurements. Unlike thermal probes the LDA can obtain data directly in front of the propeller

disk and does not require frequent recalibration. In addition, the LDA has better spatial resolution than two component thermal probes. Unfortunately, optical considerations, complexity, and high cost preclude the use of LDA in routine experimental investigations. A discussion of the accuracy of the DTNSRDC LDA system is included in Appendix A.

## EXPERIMENTAL FACILITY

The experiment was conducted in the DTNSRDC 24 inch variable pressure water tunnel.[5] This tunnel is a closed circuit tunnel equipped with a 60.96 cm (24 in) diameter open jet test section. The maximum water velocity through the test section is 18 m/sec (59 ft/sec), and the static pressure at the test section centerline can be varied from 5.85 to 99.58 kg/cm (2 to 34 psi). Tunnel velocity was determined by a pitot tube suspended from the top of the test section slightly in front of the test position of the propeller. Both upstream and downstream shafts are available. For the 0-degree angle of attack portion of this experiment the downstream shaft was used. A right angle drive unit, mounted in the top of the tunnel test section was used for the inclined portion of the experiment. (Fig. 1a)

The tunnel has a filtration system which normally filters out particles larger than 25 microns; however, just prior to this experiment 3 micron filters were installed.

Figure 1a shows the orientation of the right angle drive and propeller model in the water tunnel. The propeller shaft is inclined 20 degrees to the mean flow. The longitudinal and vertical velocity

components were measured relative to the tunnel axis.

## PROPELLER MODELS

DTNSRDC propellers No. 4710 and 4711 (Fig. 2) were selected for this investigation. These propellers are models of a four bladed controllable pitch propeller currently in use on the RV Athena (PG-84), and are 22.17 cm. (8.728 in.) in diameter. They are identical except that 4710 is right hand rotation and 4711 is left hand rotation. The models were manufactured of aluminum and are anodized black.

Table 1 gives the propeller characteristics. Figure 3 shows a schematic drawing of the propeller.

The use of two such propellers allowed a more complete mapping of the flow field while allowing the laser to remain on the same side of the water tunnel.

Prior to the experiment, thrust and torque measurements were made in the 24-inch tunnel and the results compared with open water data. These data are presented in Reference 1, which includes complete tunnel and open water data on these propeller models.

TABLE 1 - CHARACTERISTICS OF CP PROPELLERS ON R/V ATHENA (PG-84 CLASS); DTNSRDC MODEL PROPELLERS 4710 AND 4711

Diameter, D: 6.0 feet (1.829 m)*

Number of Blades, Z: 4

Hub-Diameter Ratio, $D_h/D$: 0.312

Expanded Area Ratio: 0.775

Blade Thickness Fraction: 0.048

Section Meanline: NACA 65

Section Thickness Distribution: NAVSEC Type I

| r/R | c/D | P/D | $\theta_s$ (deg) | $Z_R/D$ | t/D | $f_M/c$ |
|---|---|---|---|---|---|---|
| 0.312 | 0.2154 | 1.020 | -0.57 | 0.00 | 0.0336 | 0.0059 |
| 0.4 | 0.2986 | 1.061 | 2.32 | 0.00 | 0.0264 | 0.0149 |
| 0.5 | 0.3867 | 1.090 | 4.76 | 0.00 | 0.0194 | 0.0198 |
| 0.6 | 0.4650 | 1.107 | 6.59 | 0.00 | 0.0140 | 0.0203 |
| 0.7 | 0.5383 | 1.111 | 8.00 | 0.00 | 0.0100 | 0.0183 |
| 0.8 | 0.5717 | 1.103 | 9.11 | 0.00 | 0.0072 | 0.0153 |
| 0.9 | 0.5333 | 1.081 | 10.01 | 0.00 | 0.0056 | 0.0108 |
| 0.95 | 0.4667 | 1.065 | 10.40 | 0.00 | 0.0049 | 0.0079 |
| 1.0 | 0.00 | 1.047 | 10.75 | 0.00 | 0.00 | — |

*For model propeller, D = 0.7273 feet (0.2217 m)

TABLE 1 Cont.

| y | $f/f_m$* | $2E_t/t$** |
|---|---|---|
| 0.00 | 0.00 | 0.0654 |
| 0.0125 | 0.0494 | 0.2153 |
| 0.0250 | 0.0975 | 0.3010 |
| 0.05 | 0.19 | 0.4183 |
| 0.0750 | 0.2775 | 0.5053 |
| 0.10 | 0.36 | 0.5763 |
| 0.15 | 0.51 | 0.6890 |
| 0.20 | 0.64 | 0.7773 |
| 0.30 | 0.84 | 0.9030 |
| 0.40 | 0.96 | 0.9757 |
| 0.50 | 1.00 | 1.00 |
| 0.60 | 0.96 | 0.96 |
| 0.70 | 0.84 | 0.84 |
| 0.80 | 0.64 | 0.64 |
| 0.90 | 0.36 | 0.36 |
| 0.95 | 0.19 | 0.19 |
| 1.00 | 0.00 | 0.00 |

*NACA 65 meanline

**NAVSEC Type I Thickness Form

## DATA PRESENTATION

During the investigation the advance ratio (J) was maintained at 0.86 for all of the time-dependent measurements and the tests were run at atmospheric pressure. The inclination of the right angle drive was 20 degrees to the mean flow for the initial portion of the experiment and 0-degrees for the remainder.

Figures 4 through 16 show the variation of the nondimensional, time dependent, longitudinal (x) and vertical (y) velocities with blade angular position for the inclined flow portion of the investigation. The velocities are nondimensionalized by the free stream tunnel velocity. These are computer generated graphs, where 'a' graphs show longitudinal velocity components and 'b' graphs show vertical velocity components. One example of an RMS velocity curve is given by Figure 4c. Positive longitudinal velocity is in the direction of the onset mean flow and positive vertical velocity is upward (see Figure 1b). All velocities and probe locations are referenced to the right-hand propeller model. The computer code automatically adjusts the scale of each graph to fit the data, so that the scale may change from figure to figure. All angular positions are referenced to 0 degrees at the leading edge of the blade at 0.7 radius. The leading edge at other radii occurs at a different degree mark and thus accounts for the slight offset in the velocity graphs from one radius to the next. The trailing edge at 0.7 radius occurs at 74-degrees.

For convenience Figure 17 shows three typical velocity curves, each in the same profile, but at a different radius. In the upper right hand corner of each figure, the term 0-, 90-, and 180-degrees refers to the position in the flow field from which a particular data set was obtained (refer to Figure 1c). For convenience, Table 2 groups the data sets according to measurement location and gives the table number in Appendix B of the corresponding numerical data table. The tare velocities, the average velocity obtained at the same position and free stream velocity, but with a dummy hub in place of the model propeller, are listed at the bottom of each numerical data table. The tare RMS velocities are also given; however, due to the accuracy limitations discussed in Appendix A, RMS readings of 0.013 or less cannot be considered reliable. Note that for the 90-degree positions (Figures 16 and 17) only axial data were obtained.

Figures 18 through 28 show the previously presented data resolved along the propeller shaft axis and in a radial direction, orthogonal to the shaft axis, (refer to Figure 1b). Tables B14 through B24 give the corresponding numerical data sets. Note that most of the above time-dependent data were taken above and below the propeller centerline (0-and 180-degrees). Only very limited time-dependent data could be taken in the horizontal plane of the propeller, specifically, only the longitudinal component at the 0.7 and 0.8 radii (Figures 15 and 16 repectively). However, additional longitudinal time-average data were taken at these positions in the backscatter mode of operation (see Appendix A). These data are presented in Figures 29 and 30.

TABLE 2 - DATA GROUPINGS AT SHAFT INCLINATION OF 20-DEGREES

| Figure No. | Non-Dimensional Coordinates X | Y | Z | Position in Propeller Disk (Degrees) | Table No. of Corresponding Numerical Data |
|---|---|---|---|---|---|
| 4a & 4b | -.43 | .7 | .00 | 180 | B1 |
| 5a & 5b | -.43 | .7 | .00 | 0 | B2 |
| 6a & 6b | .21 | .7 | .00 | 180 | B3 |
| 7a & 7b | -.39 | .5 | .00 | 180 | B4 |
| 8a & 8b | -.39 | .8 | .00 | 180 | B5 |
| 9a & 9b | -.39 | .9 | .00 | 180 | B6 |
| 10a & 10b | -.39 | .5 | .00 | 0 | B7 |
| 11a & 11b | -.39 | .8 | .00 | 0 | B8 |
| 12a & 12b | .21 | .7 | .00 | 0 | B9 |
| 13a & 13b | .21 | .8 | .00 | 0 | B10 |
| 14a & 14b | .21 | .9 | .00 | 0 | B11 |
| 15 | -.39 | .7 | .00 | 90 | B12 |
| 16 | -.39 | .8 | .00 | 90 | B13 |
| 18a & 18b | -.43 | .7 | .00 | 180 | B14 |
| 19a & 19b | -.43 | .7 | .00 | 0 | B15 |
| 20a & 20b | .21 | .7 | .00 | 180 | B16 |
| 21a & 21b | -.39 | .5 | .00 | 180 | B17 |
| 22a & 22b | -.39 | .8 | .00 | 180 | B18 |
| 23a & 23b | -.39 | .9 | .00 | 180 | B19 |
| 24a & 24b | -.39 | .5 | .00 | 0 | B20 |
| 25a & 25b | -.39 | .8 | .00 | 0 | B21 |
| 26a & 26b | .21 | .7 | .00 | 0 | B22 |
| 27a & 27b | .21 | .8 | .00 | 0 | B23 |
| 28a & 28b | .21 | .9 | .00 | 0 | B24 |

Figures 31 through 46 are graphs of the nondimensional, time-dependent variation of velocity and RMS velocity with blade angular position for the 0-degree shaft inclination portion of the investigation. For this configuration the measured longitudinal (x) and vertical (y) velocity components are parallel to and radially outward from the propeller shaft. Table 3 groups these data sets into profiles and gives the table number of the corresponding numerical data table. NOTE: A temporary malfunction caused the shaft to go out of synchronization with the computer (see Appendix A). Therefore the leading edge on the model propeller at 0.7 radius is the 49th degree on the velocity graphs and the corresponding numerical data tables.

Since the flow field in the 0-degree shaft inclination portion of the investigation is periodic over each 90 degrees, for convenience most of the data were taken along the 180-degree plane. Several check runs in different planes were made. Figure 37 shows data for a typical check run taken at 0.7 R along the 0-degree plane. This corresponds to Figure 40 along the 180-degree plane. Figure 46 shows data taken farther downstream of the propeller (0.62 R) than the other profiles.

Near the end of the experiment, numerous attempts were made to obtain tangential velocity component data by taking vertical (y) data along the 270-degree line. For reasons mentioned above and in Appendix A, this was not possible. Some limited vertical velocity component data were taken as close to the 90-degree line as possible. These data are presented in Figures 47 through 50. For these runs the synchronization malfunction was corrected, ie the leading edge of the

TABLE 3 - DATA GROUPINGS AT SHAFT INCLINATION OF ZERO DEGREES

| Figure No. | Non-Dimensional Coordinates X | Y | Z | Position in Propeller Disk Degrees | Table No. of Corresponding Numerical Data |
|---|---|---|---|---|---|
| 31a & 31b | -.39 | .5 | .00 | 180 | B25 |
| 32a | -.39 | .7 | .00 | 180 | B26 |
| 33a & 33b | -.39 | .8 | .00 | 180 | B27 |
| 34a & 34b | -.39 | .9 | .00 | 180 | B28 |
| 35a & 35b | -.39 | 1.0 | .00 | 180 | B29 |
| 36a & 36b | -.399 | 1.1 | .00 | 180 | B30 |
| 37a & 37b | .21 | .7 | .00 | 0 | B31 |
| 38b | .21 | .4 | .00 | 180 | B32 |
| 39a & 39b | .21 | .5 | .00 | 180 | B33 |
| 40a & 40b | .21 | .7 | .00 | 180 | B34 |
| 41a & 41b | .21 | .8 | .00 | 180 | B35 |
| 42a & 42b | .21 | .9 | .00 | 180 | B36 |
| 43a & 43b | .21 | 1.1 | .00 | 180 | B37 |
| 44a & 44b | .21 | 1.0 | .00 | 180 | B38 |
| 45a & 45b | .21 | 1.22 | .00 | 180 | B39 |
| 46 | -.62 | .7 | .00 | 180 | B40 |
| 47 | .21 | -.33 | .6 | | B41 |
| 48 | .21 | -.33 | .7 | | B41 |
| 49 | -.39 | -.35 | .6 | | B42 |
| 50 | -.39 | -.35 | .7 | | B42 |

blade at the 0.7 radius is at the 0-degree position given in the graphs and the corresponding data tables.

## DISCUSSION OF DATA

The figures clearly show the generally anticipated variations of velocity with blade angular position. These variations are quite similar to those observed by Min.[2] The increase in velocity at the blade leading edge (0-degrees at 0.7 radius), the reaching of a velocity maximum, and the fall off in velocity towards the trailing edge (74-degrees at 0.7 radius), is obvious and requires no further comment. For various reasons, however, some of the data sets do warrant individual consideration.

Some graphs of the longitudinal velocity show a rise in velocity at the trailing edge, then a dip in velocity just before the leading edge. This is most noticeable in Figures 8a, 9a, 12a, 25a, 26a, 32a, and 39a. The existence of these small dips is not generally predicted by lifting line theory. These same dips were noted by Min for all three DTNSRDC propeller models used in his investigation of field point velocities. After lengthy analysis Min concluded that these dips are velocity defects due to the blade boundary layer and wake.

Figures 40b and 42b appear to have severe scatter, but as previously mentioned, the computer automatically adjusts the graph scale. The very small absolute values of the data for these runs caused the scale to be 'blown up', greatly exaggerating the actual scatter.

The data shown in figures 43 through 45 were taken beyond one propeller radius. This is outside the propeller slipstream and the longitudinal velocity has decreased. Velocity fluctuations induced by the tip vortices result in the relatively high scatter and RMS velocity levels for these runs.

## CONCLUDING REMARKS

The map of the flow field as a function of blade angular position, while not complete, gives several field point velocity profiles. In locations where data as a function of blade angular position could not be obtained, time-average data were taken. The quantity and quality of the velocity information obtained should provide a useful data base with which to compare and evaluate various hydrodynamic theories.

LDA has proven to be an excellent method for obtaining field point velocities, although some problems remain to be overcome. As the state of the art progresses, obtaining two component field point velocities will become simpler and less costly. Eventually, it will be possible, in some water tunnel facilities, to obtain three component velocity data. When these advances are combined with further automation of the data collection process, particularly computer control of the laser alignment, it should become possible to map the entire time dependent flow field in the same amount of time as is required for taking a conventional wake survey with pressure or thermal probes. Excluding initial equipment expeditures, the costs will compare favorably.



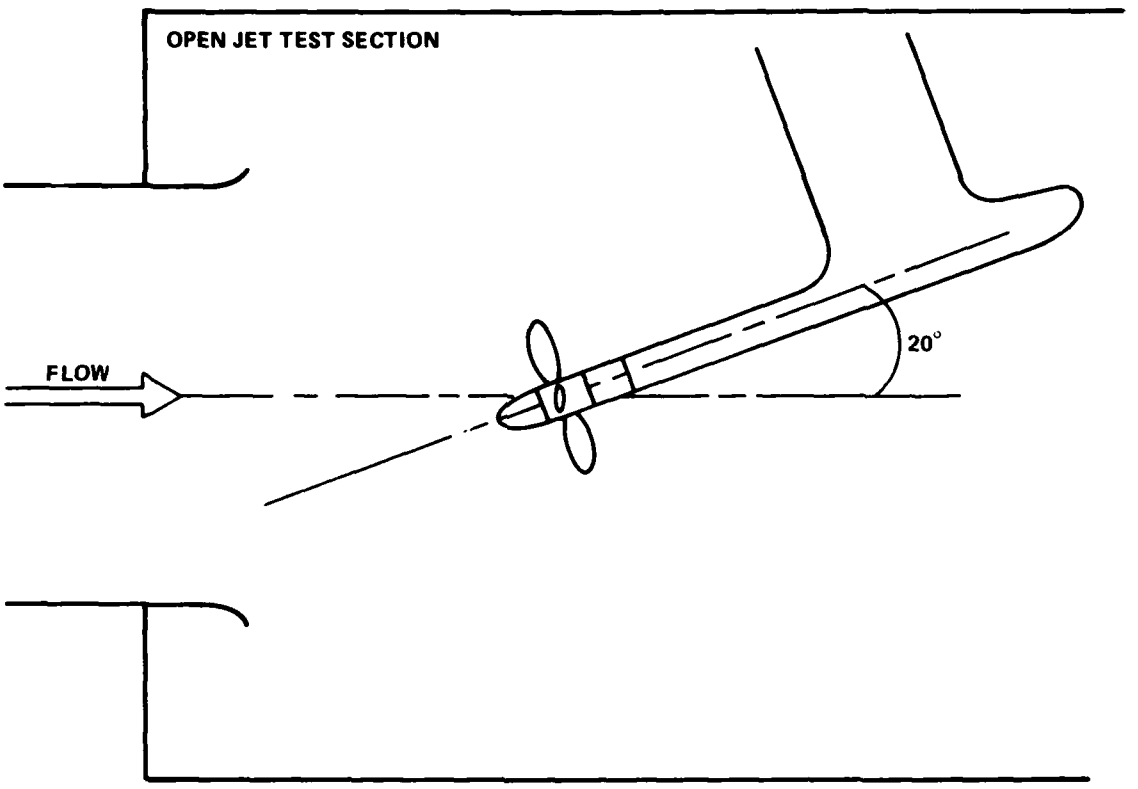



Figure 1a - Sketch of Right Angle Drive

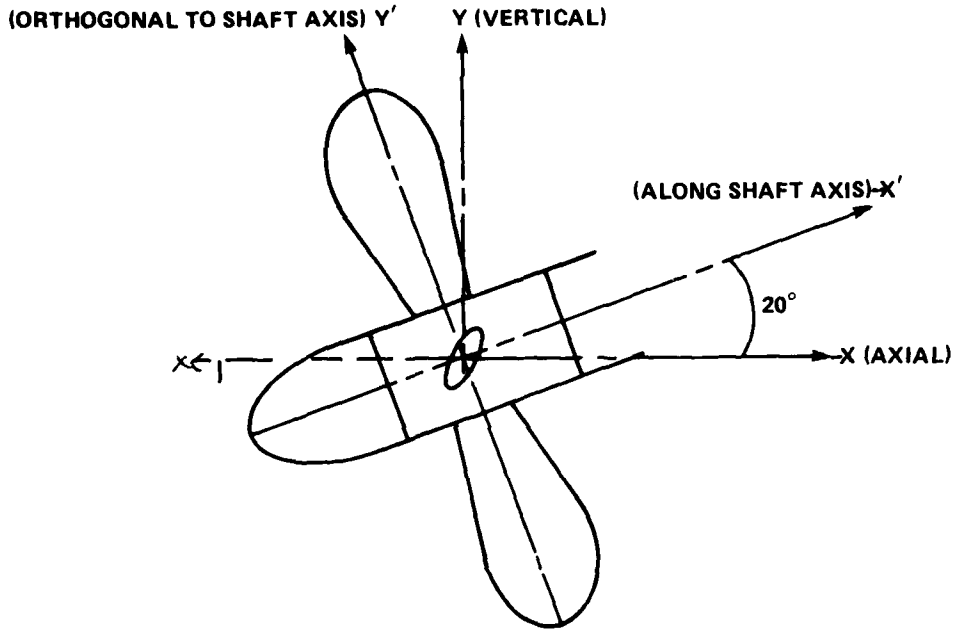



Figure 1b - Detail - Coordinate System

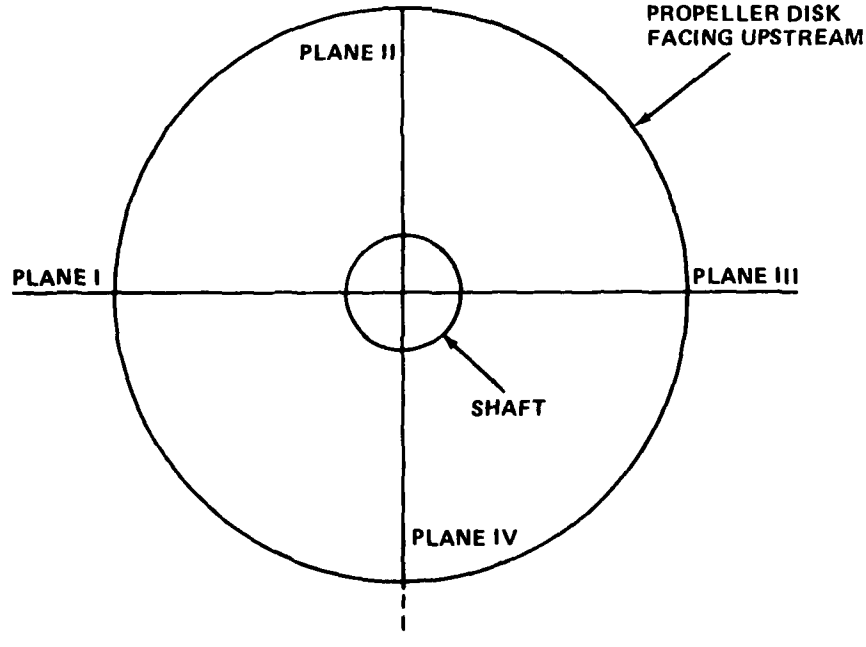
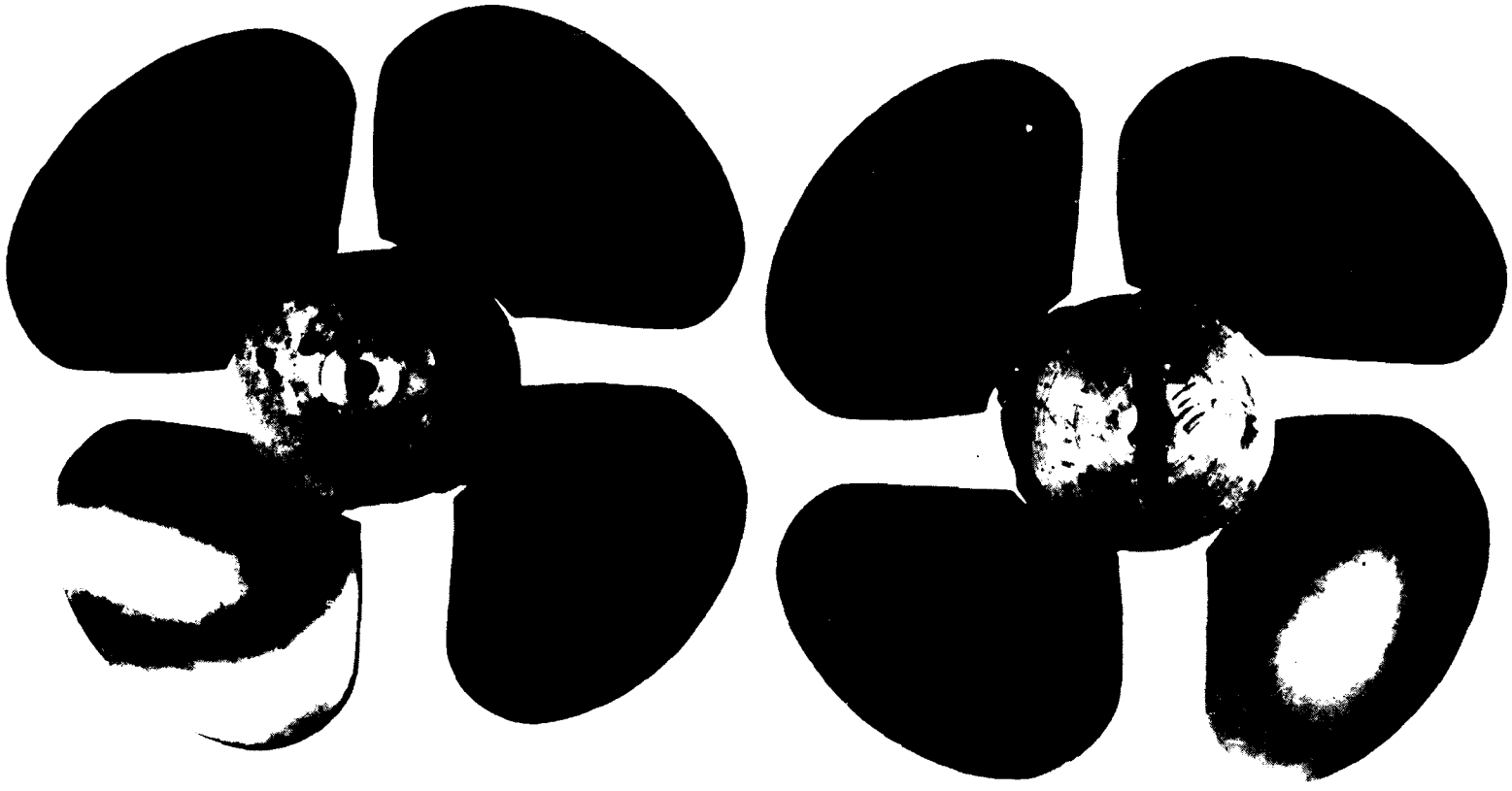



Figure 1c - Detail - Orientation of Data Reference Planes



4710 Suction Side

4711 Pressure Side

Figure 2 - Photograph of DTNSRDC Propellers 4710 and 4711

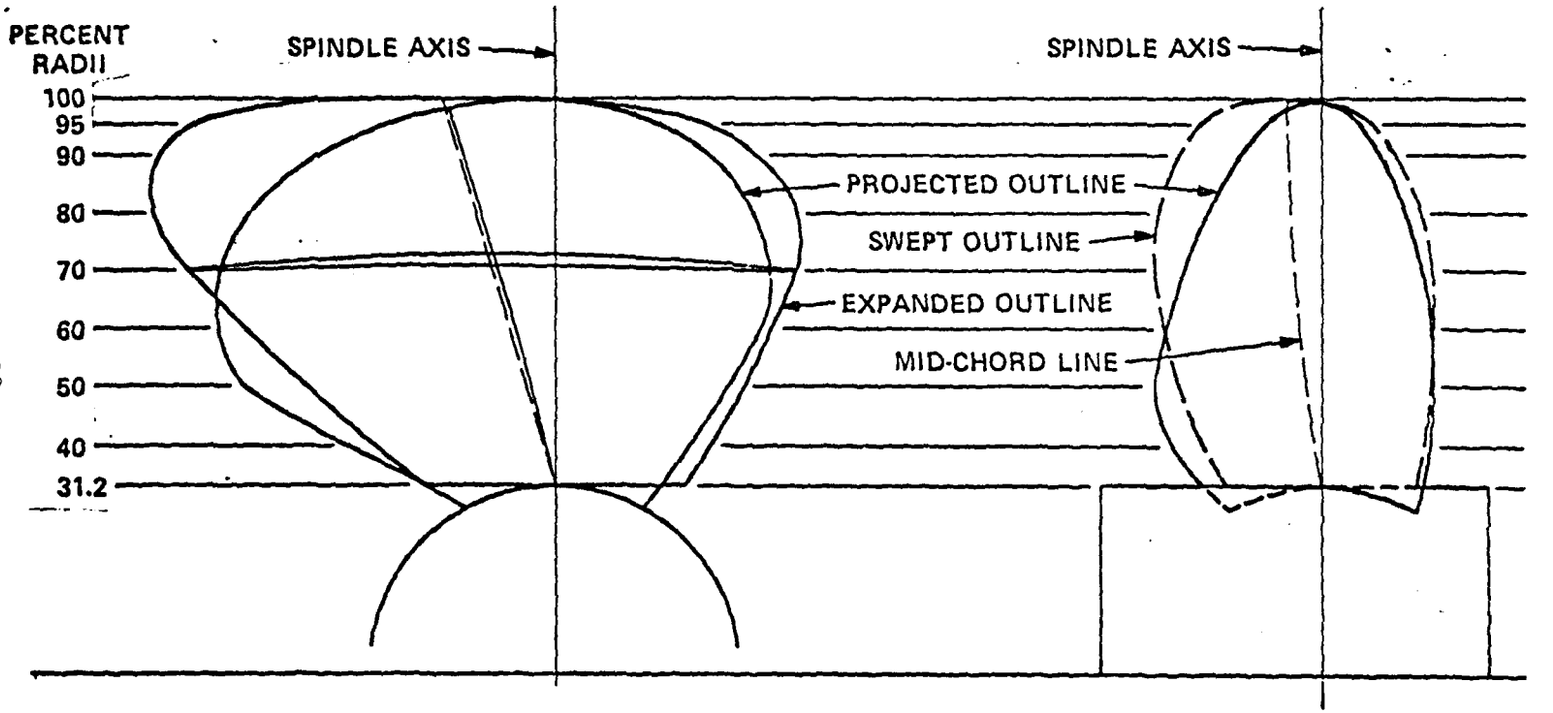
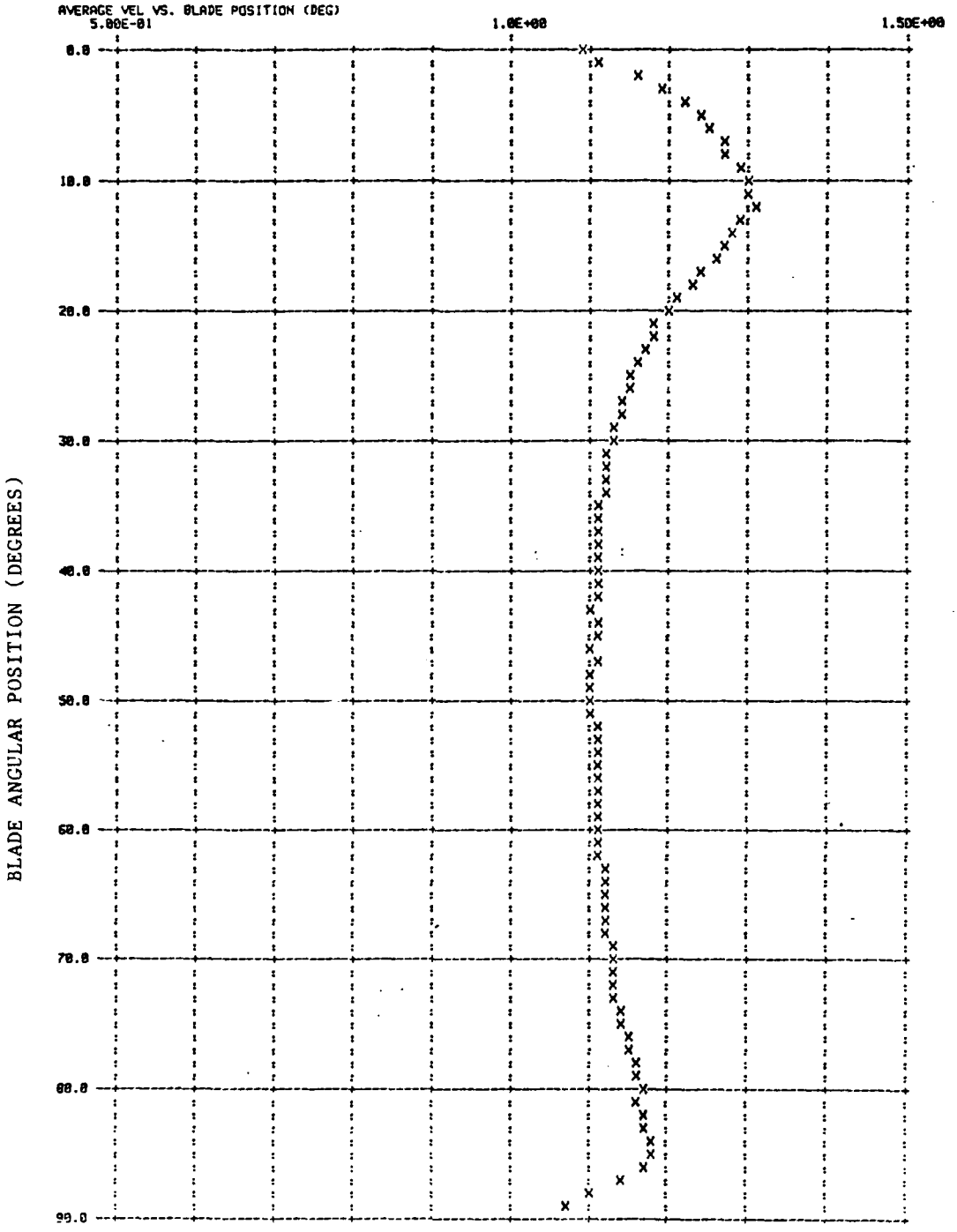
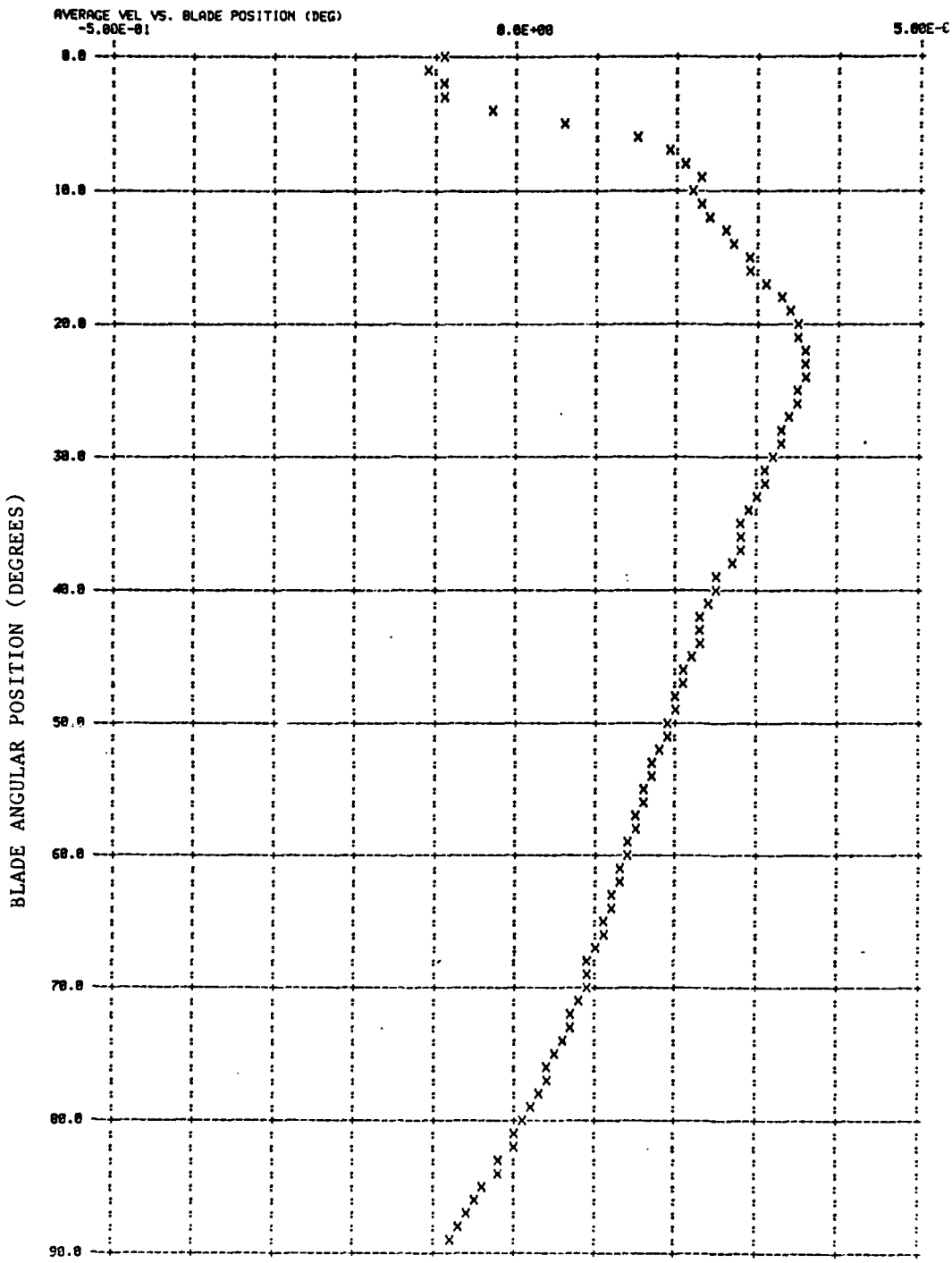



Figure 3 - Schematic Drawing of CP Propellers on R/V ATHENA (PG-84 Class); DTNSRDC Model Propellers 4710 and 4711




4a - Computer Generated Graph of Velocity vs. Blade Angular Position




4b - Computer Generated Graph of Velocity vs. Blade Angular Position

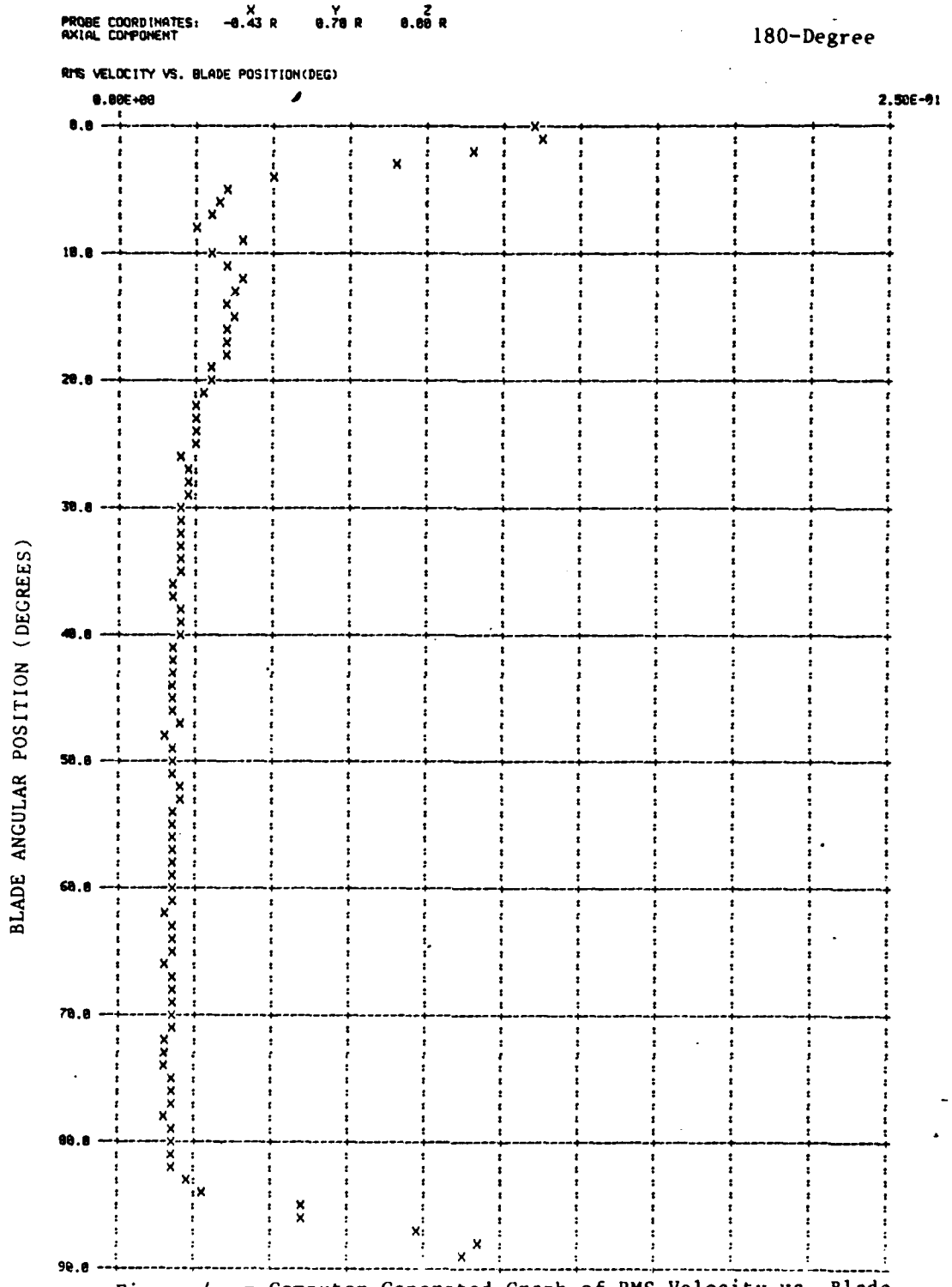
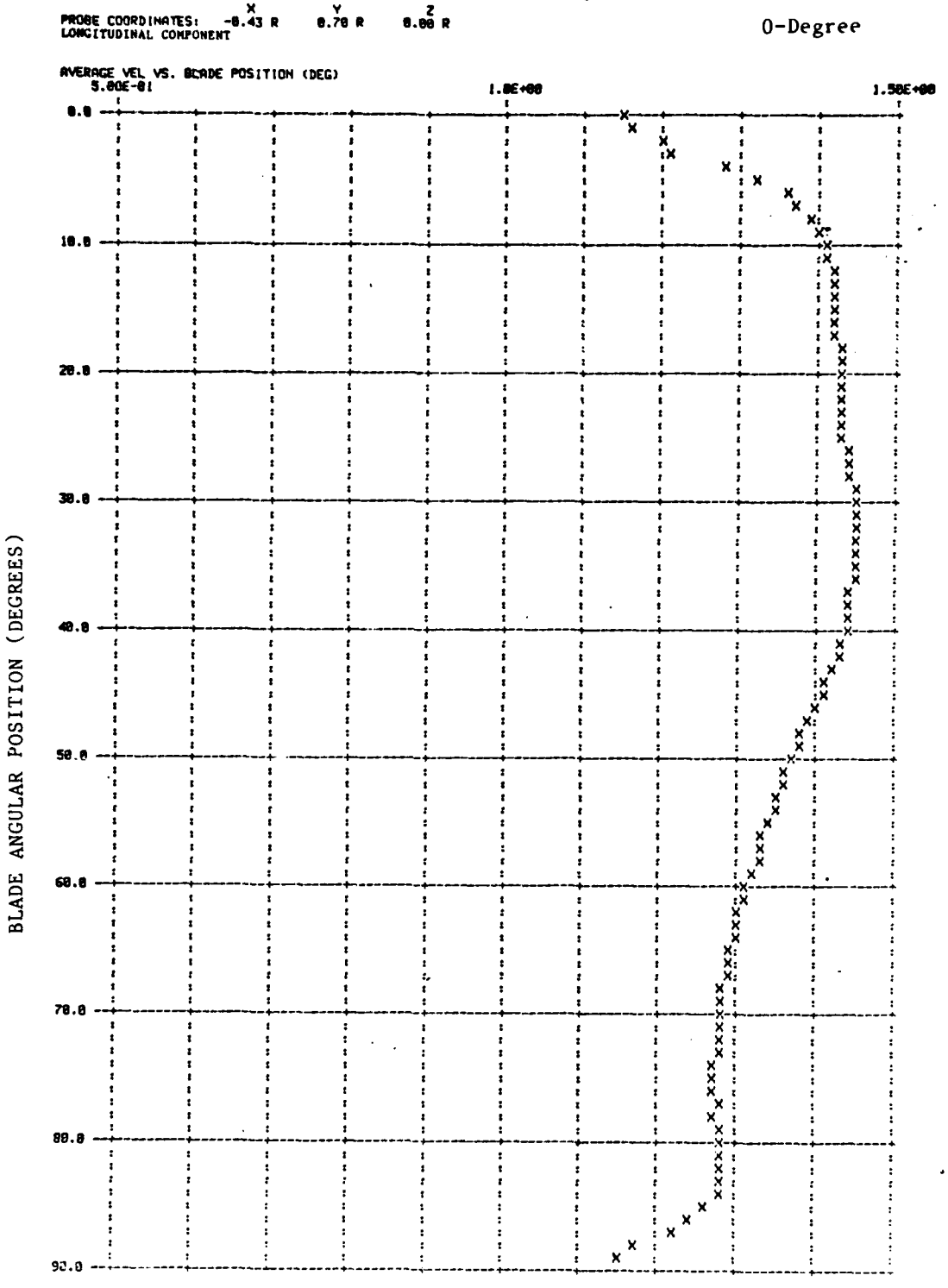
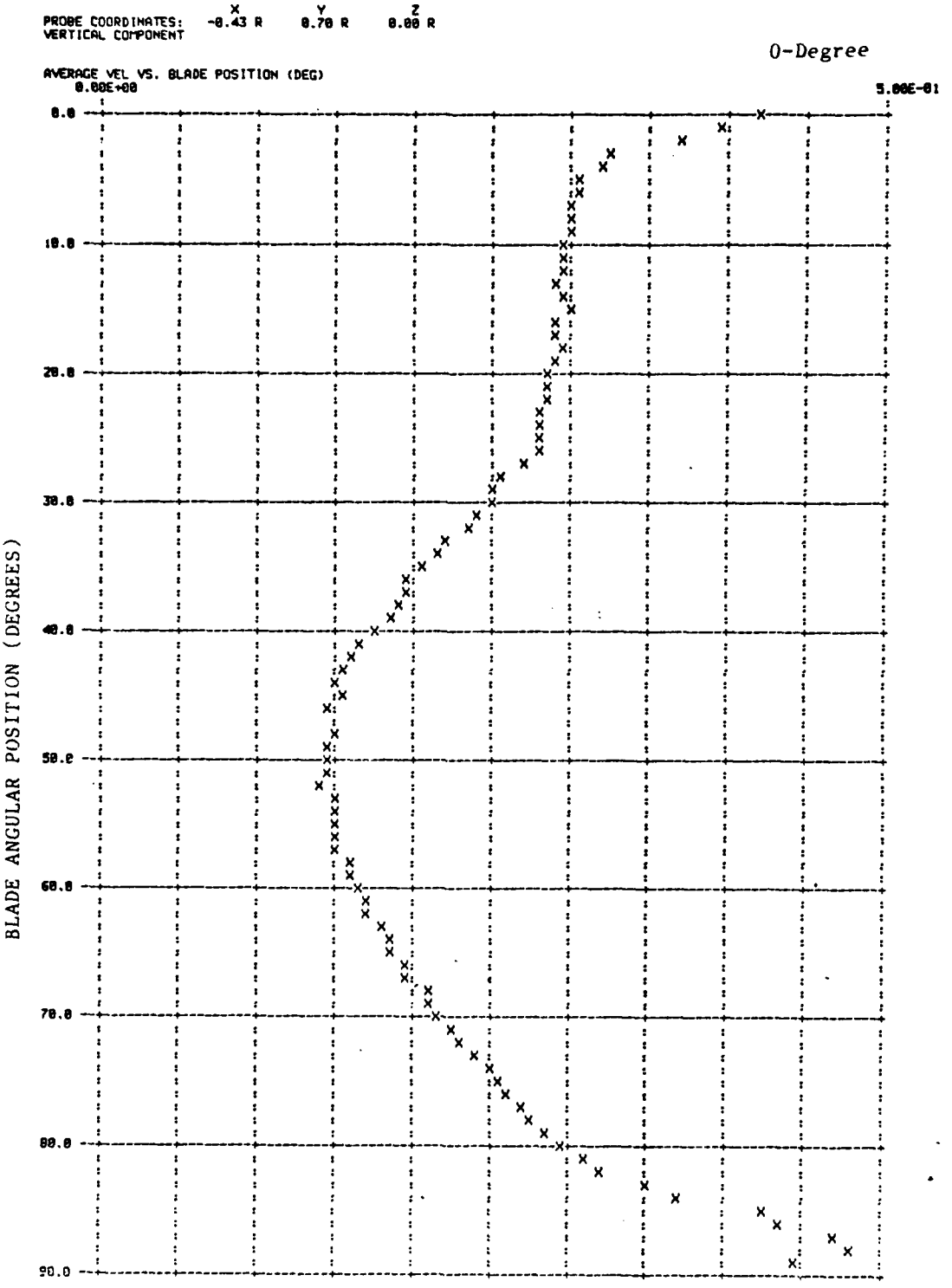


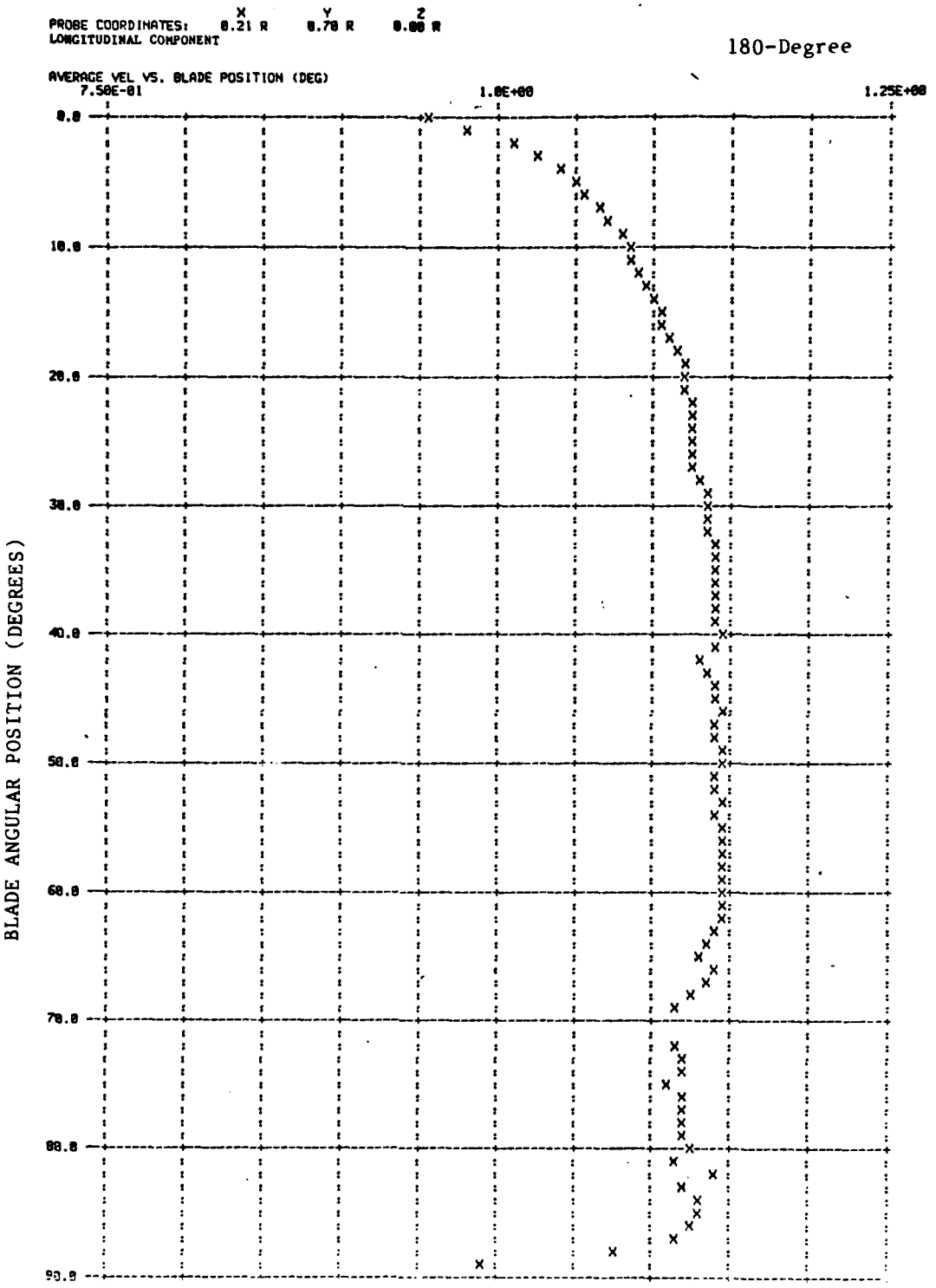

Figure 4c - Computer Generated Graph of RMS Velocity vs. Blade Angular Position at Shaft Inclination of 20 Degrees



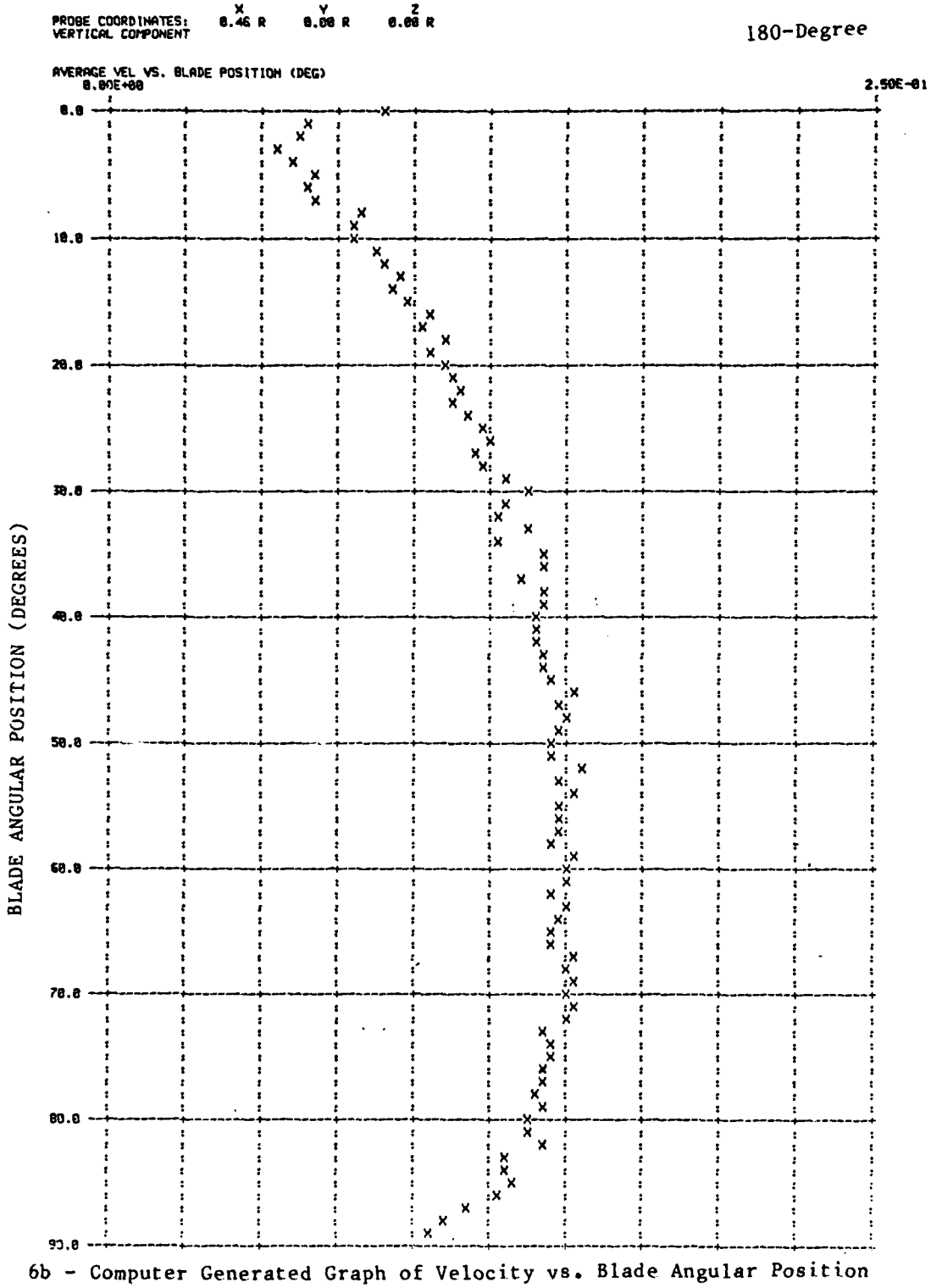

5a - Computer Generated Graph of Velocity vs. Blade Angular Position



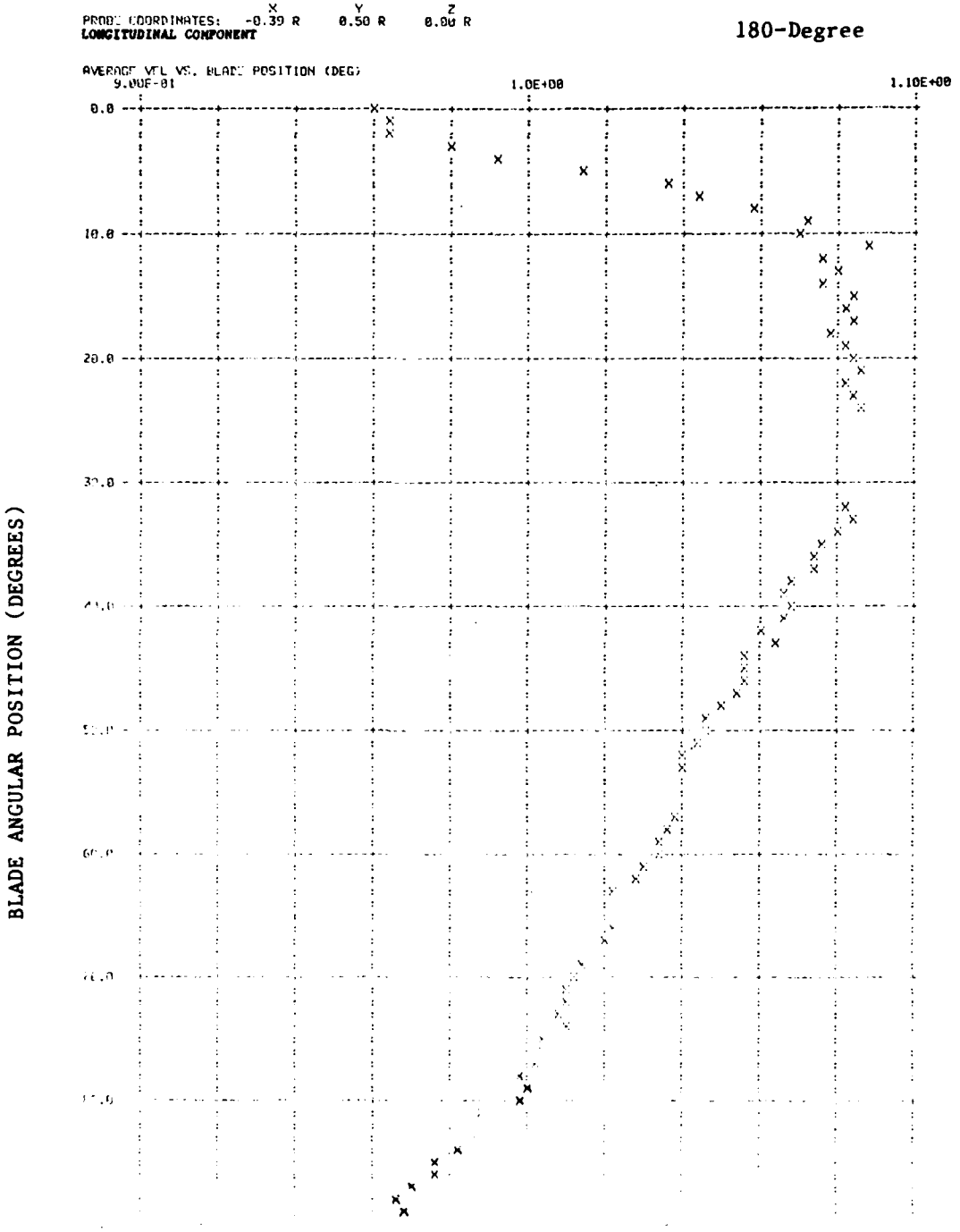

5b - Computer Generated Graph of Velocity vs. Blade Angular Position



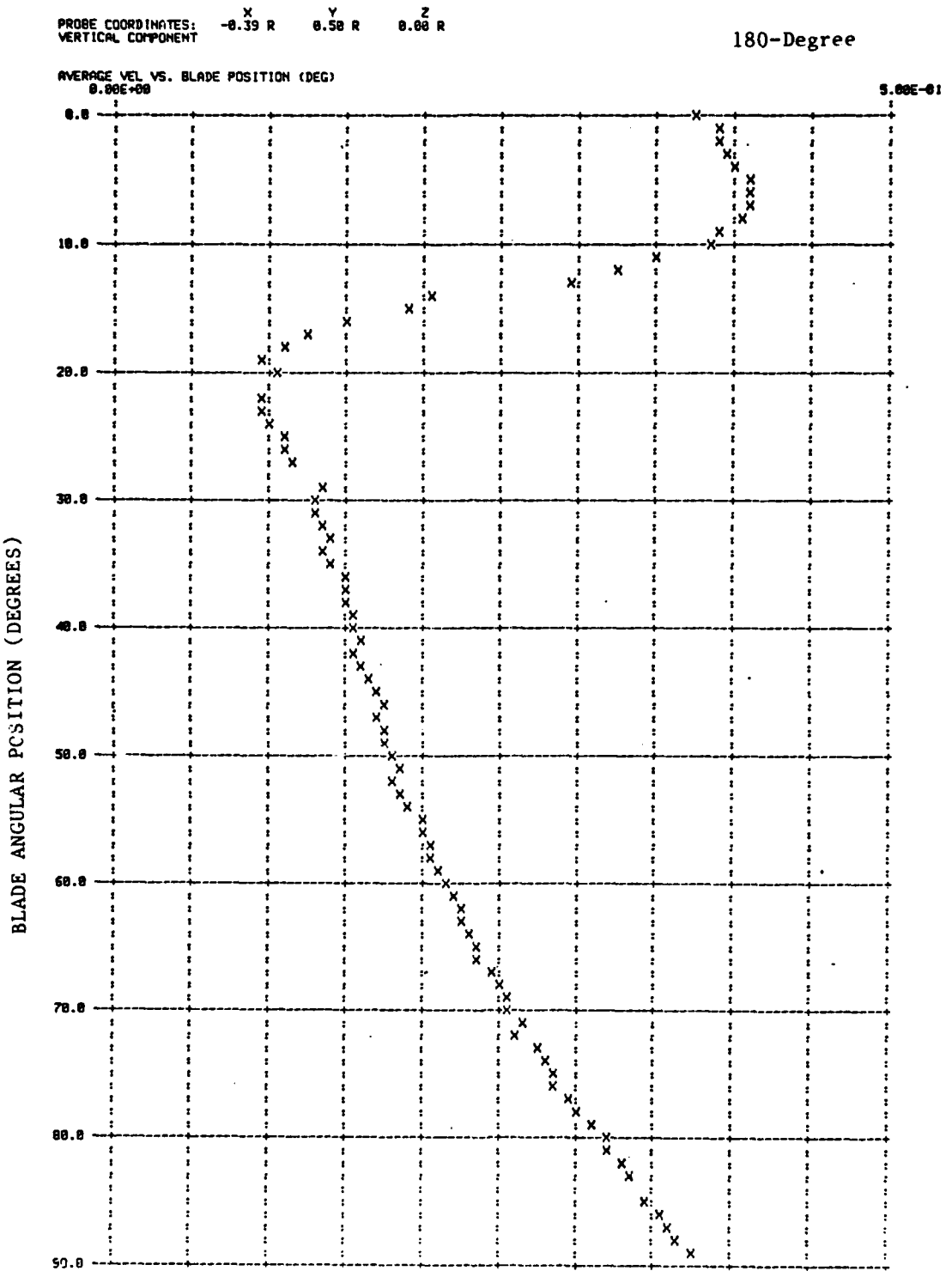

6a - Computer Generated Graph of Velocity vs. Blade Angular Position



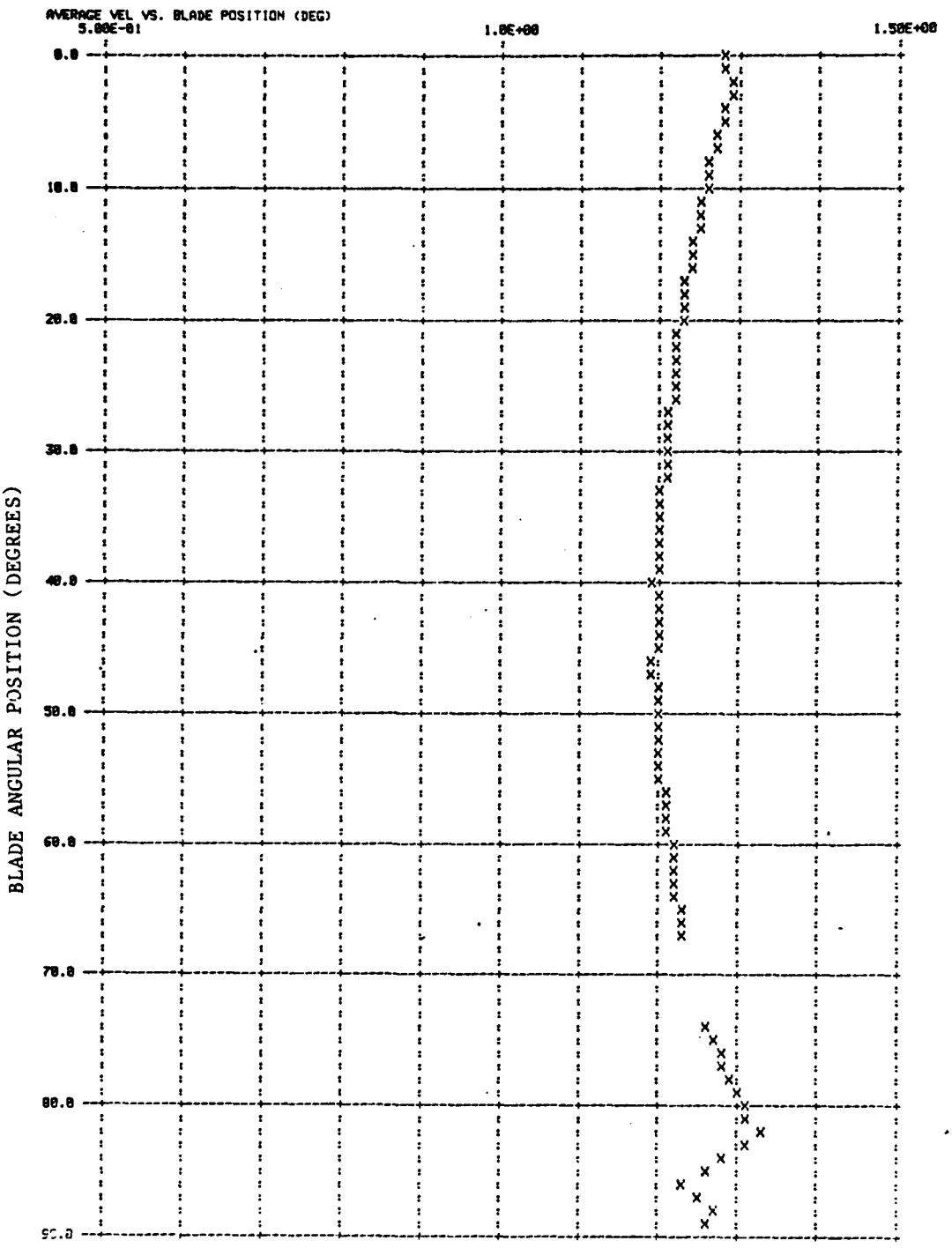

6b - Computer Generated Graph of Velocity vs. Blade Angular Position



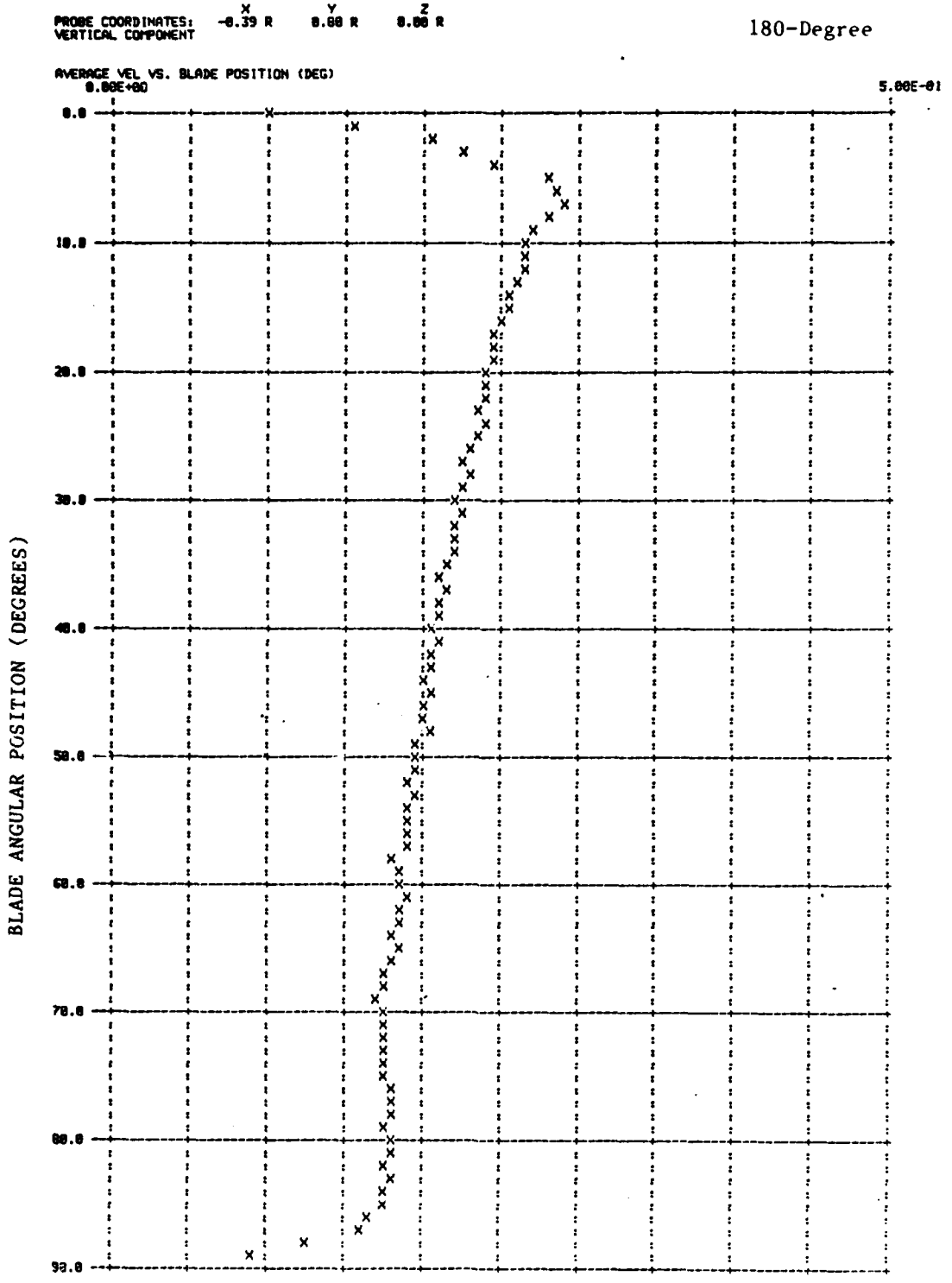

7a - Computer Generated Graph of Velocity vs. Blade Angular Position



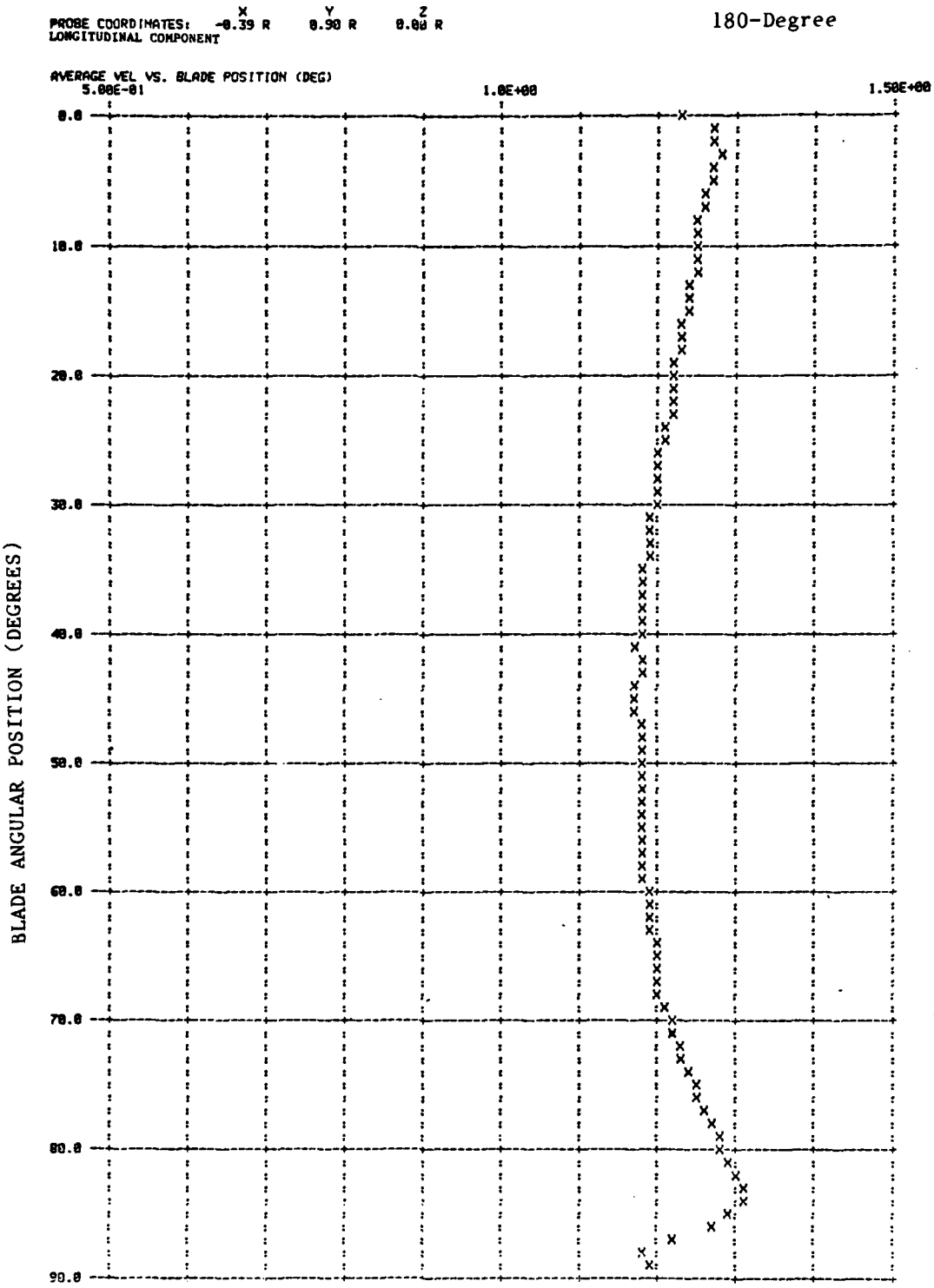

7b - Computer Generated Graph of Velocity vs. Blade Angular Position



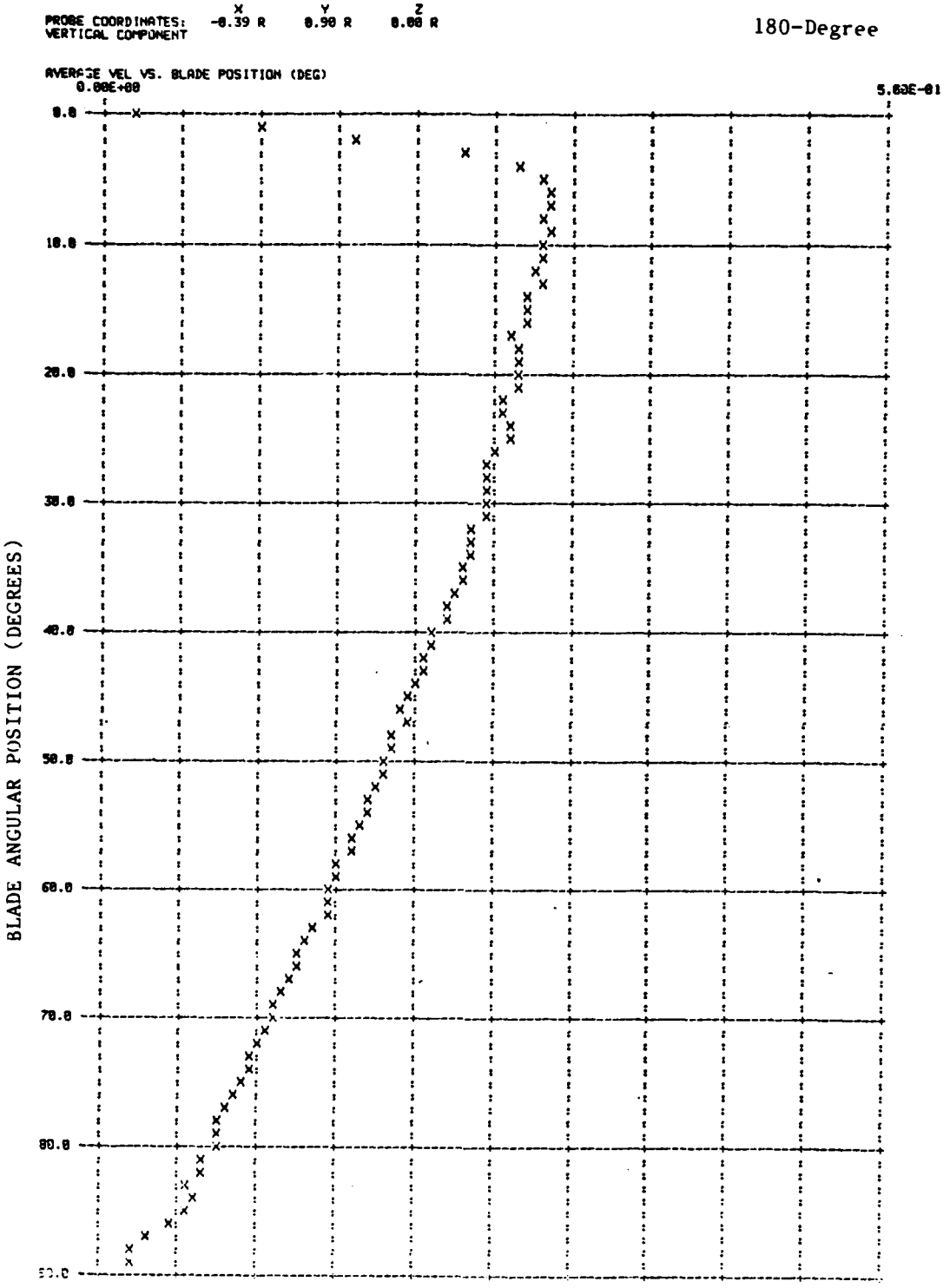

8a - Computer Generated Graph of Velocity vs. Blade Angular Position



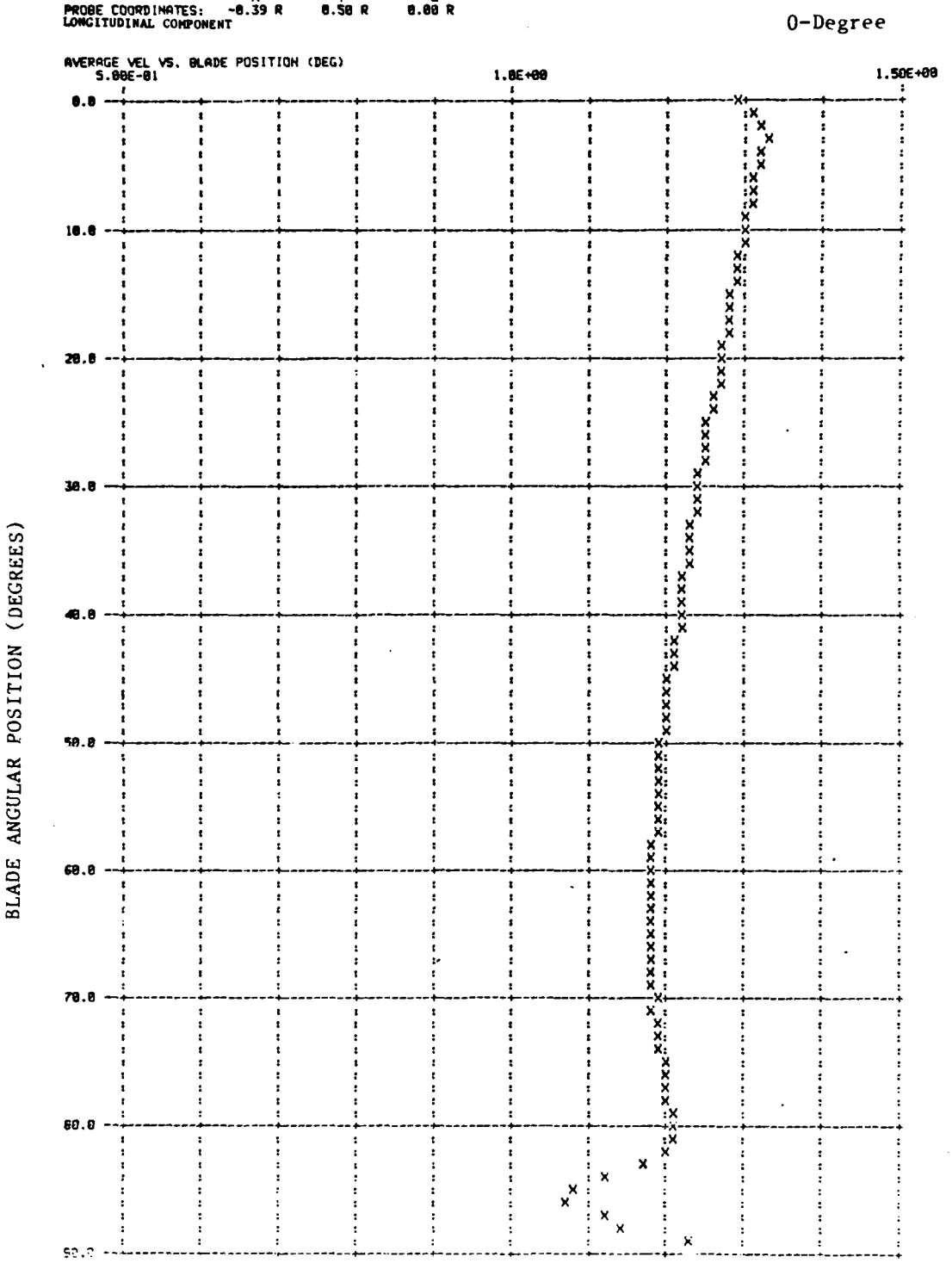

8b - Computer Generated Graph of Velocity vs. Blade Angular Position



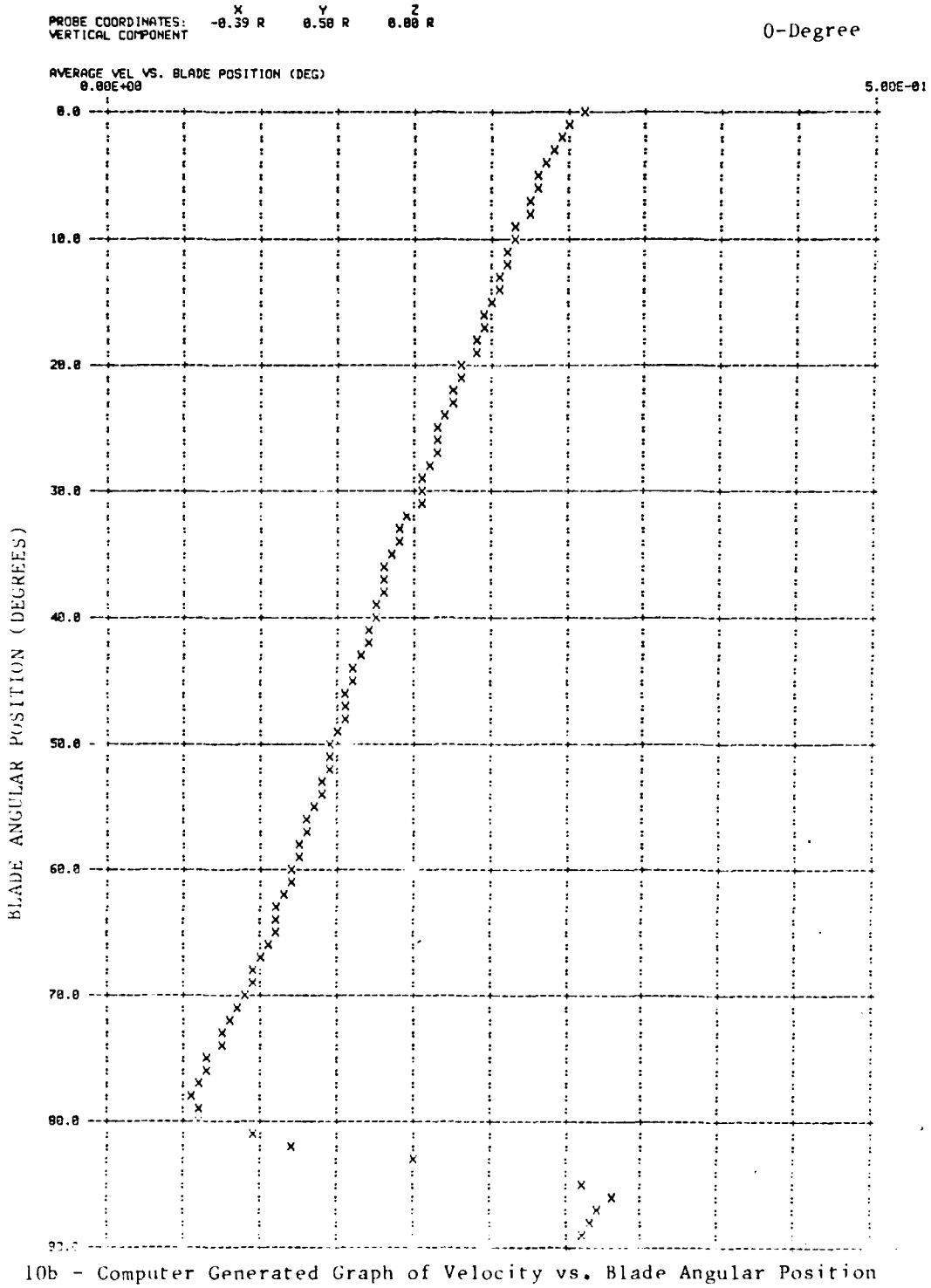

9a - Computer Generated Graph of Velocity vs. Blade Angular Position



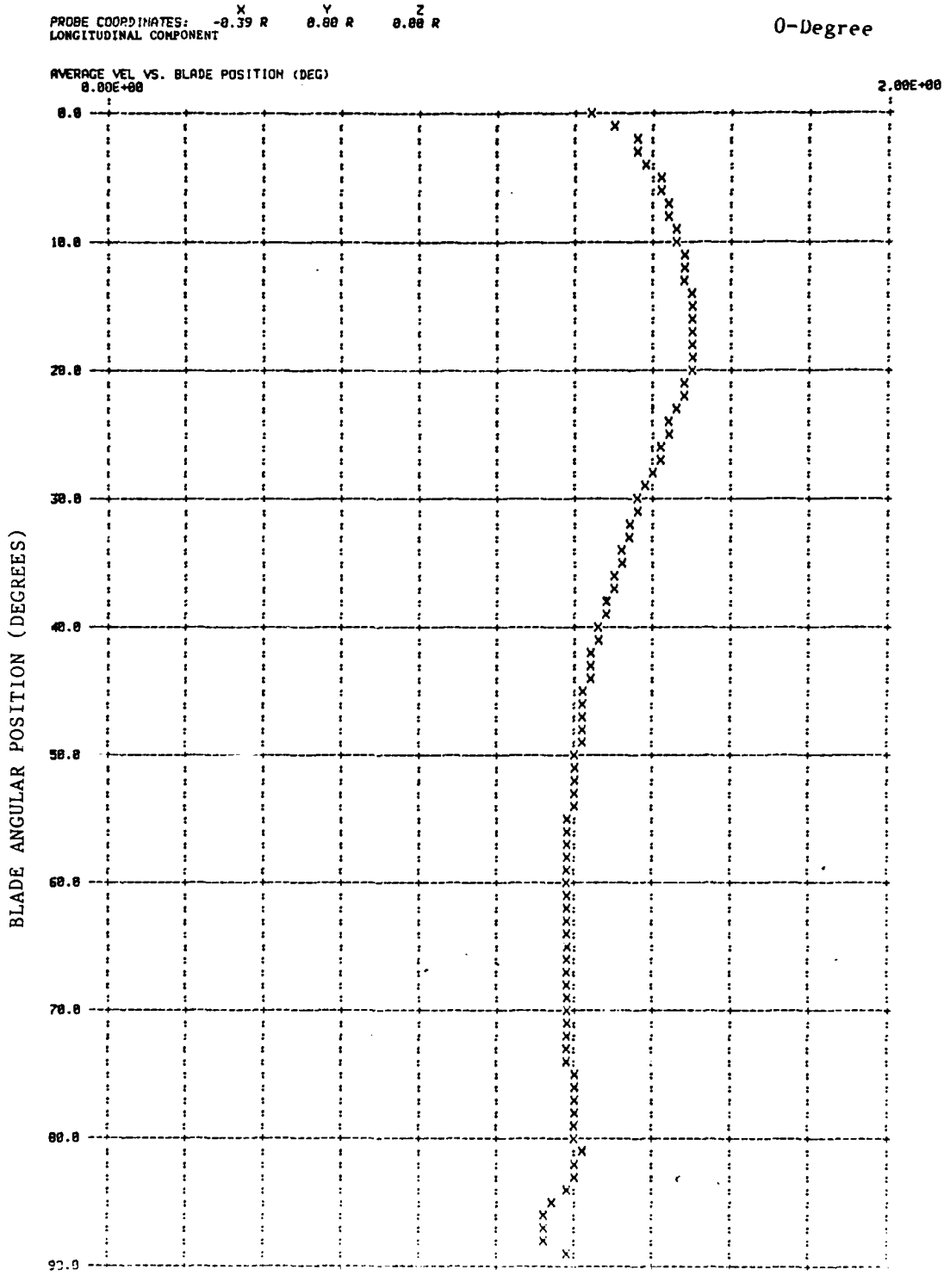

9b - Computer Generated Graph of Velocity vs. Blade Angular Position



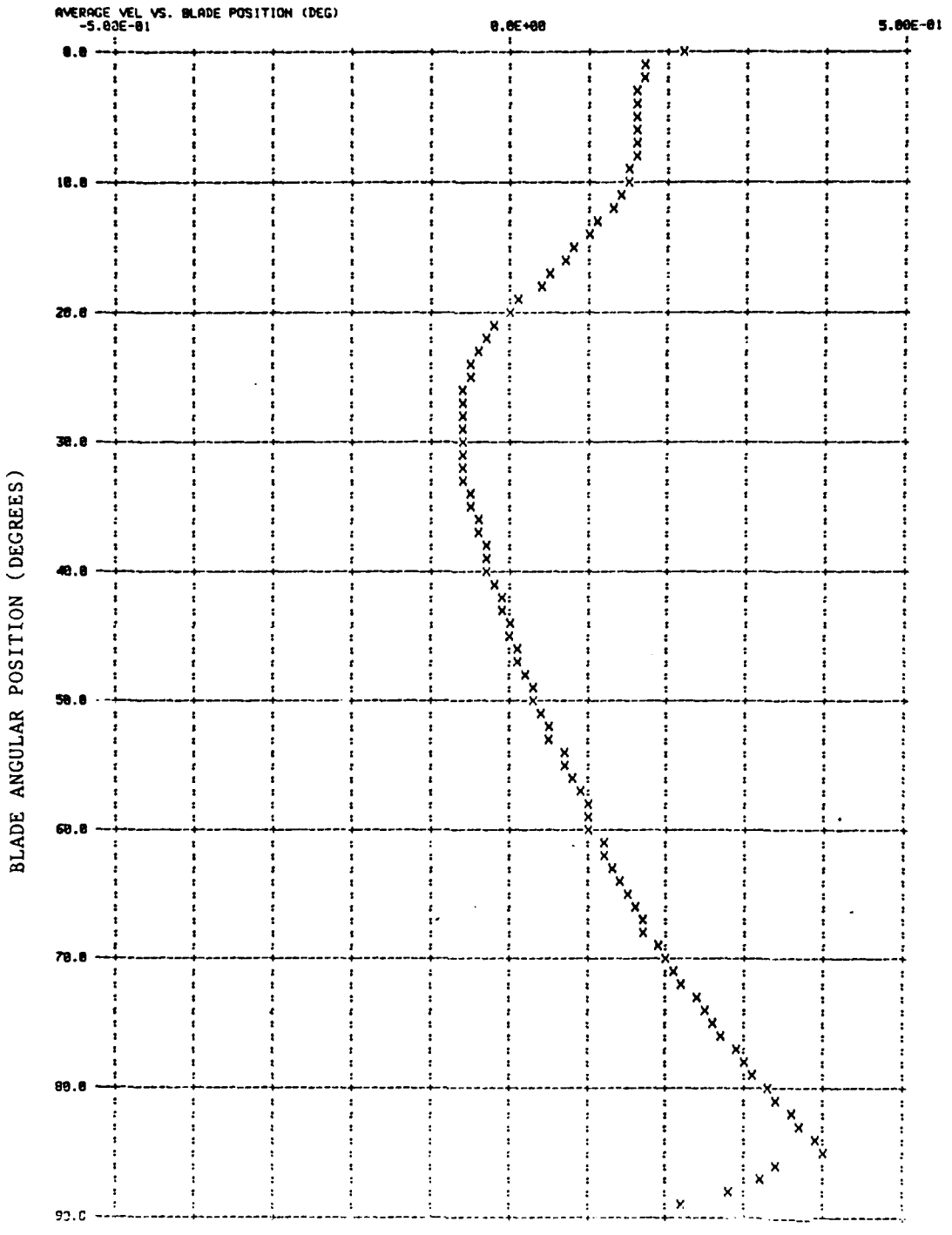

10a - Computer Generated Graph of Velocity vs. Blade Angular Position



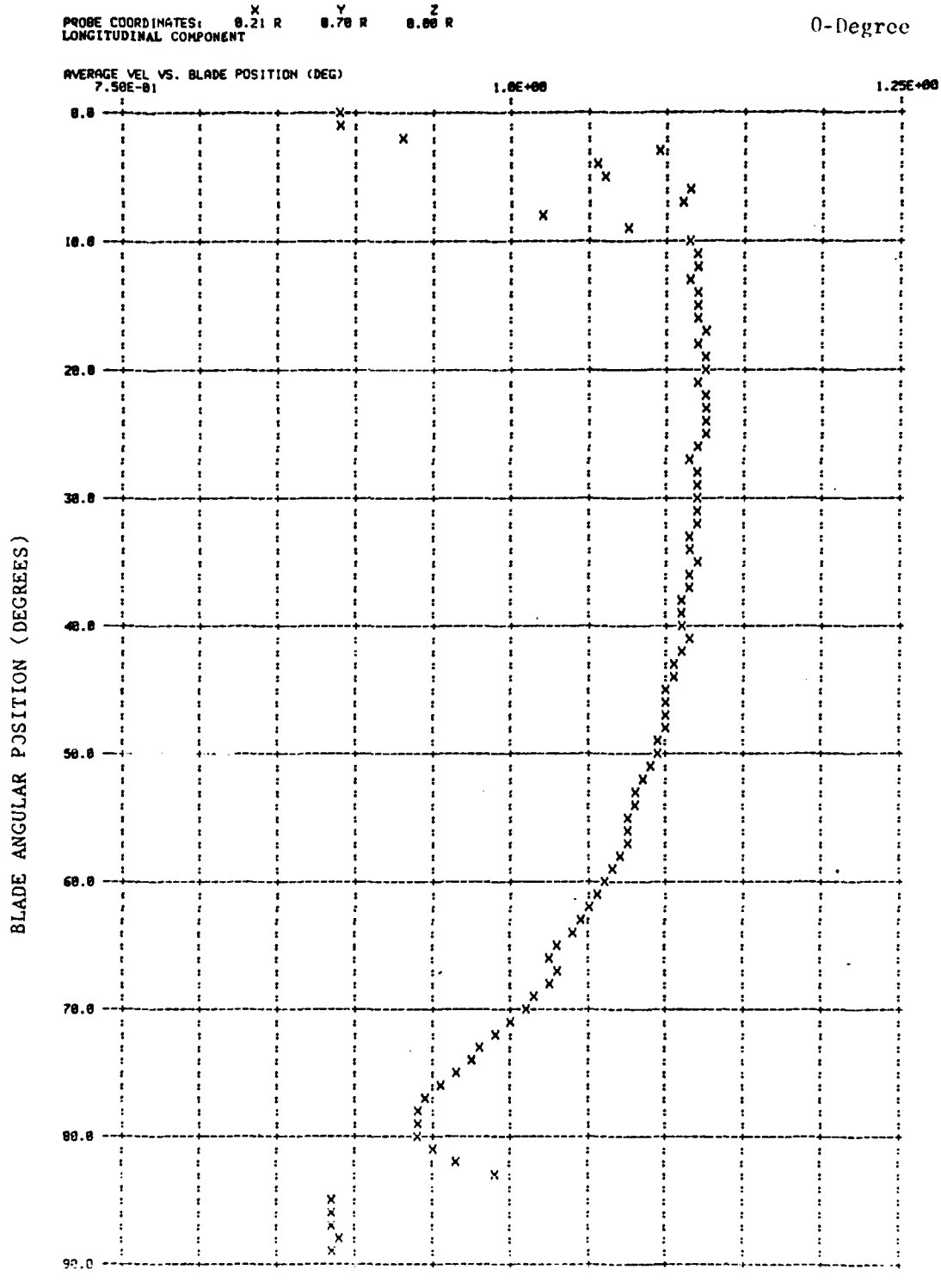

10b - Computer Generated Graph of Velocity vs. Blade Angular Position



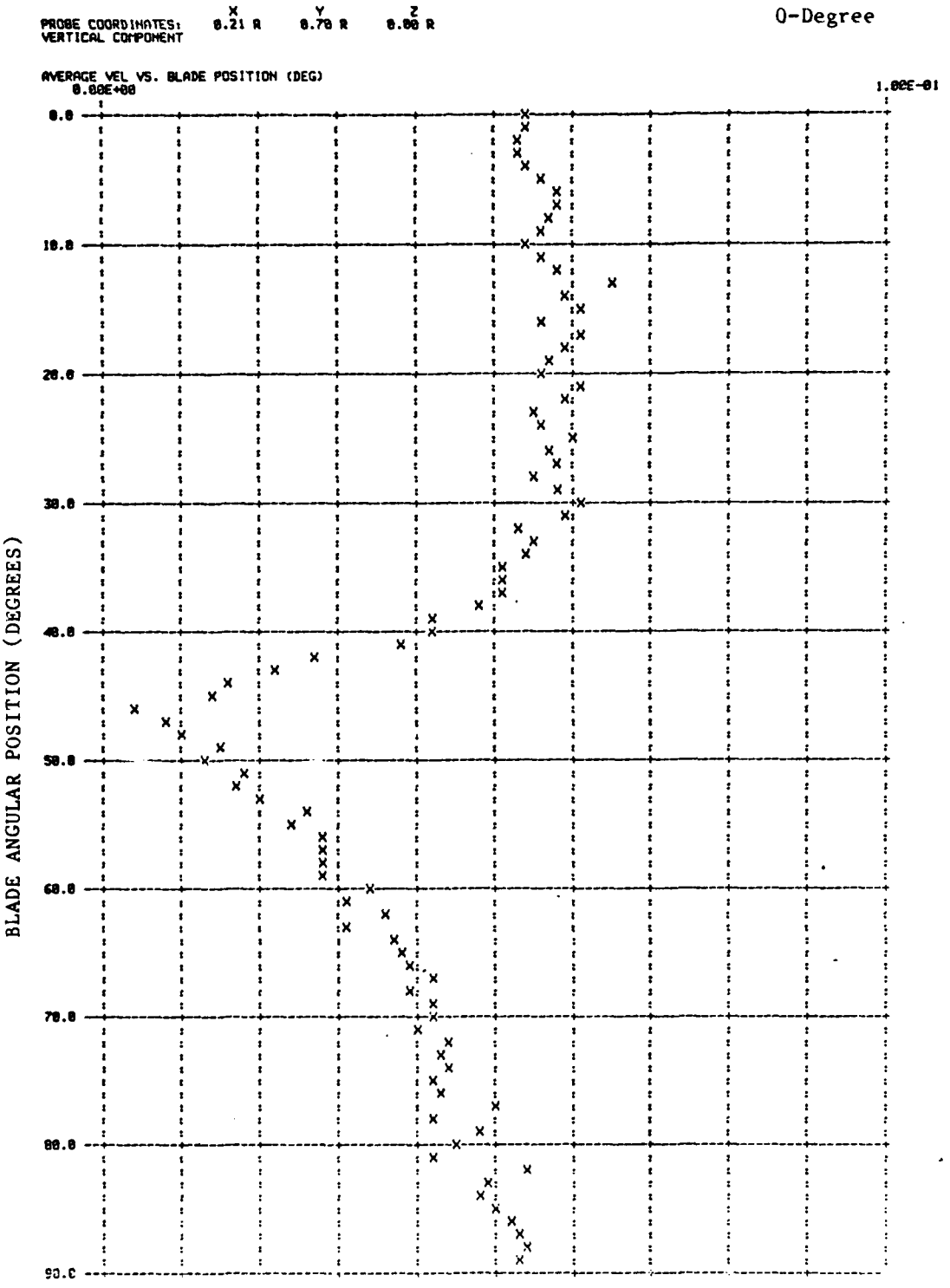

IIa - Computer Generated Graph of Velocity vs. Blade Angular Position



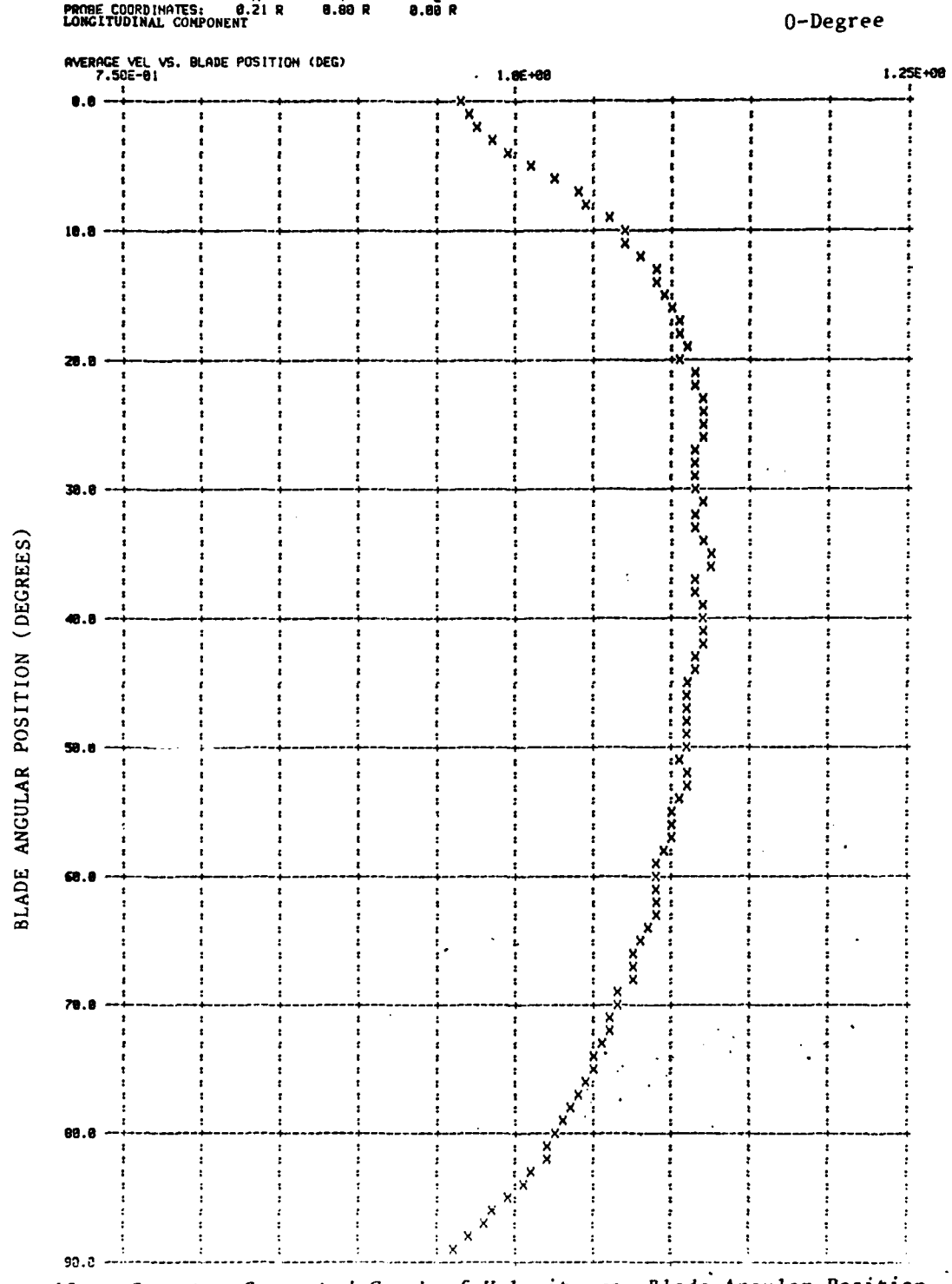

11b - Computer Generated Graph of Velocity vs. Blade Angular Position



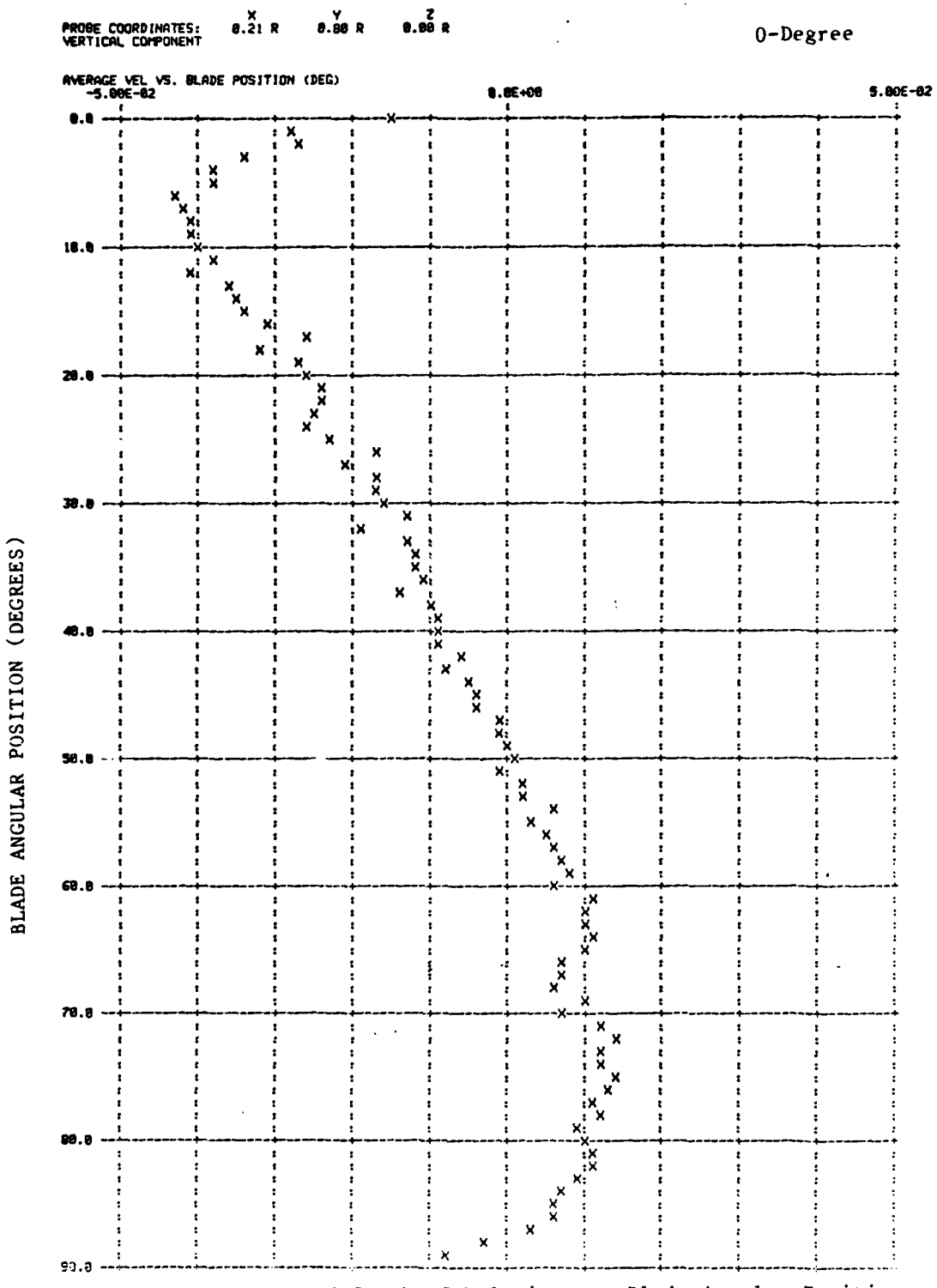

12a - Computer Generated Graph of Velocity vs. Blade Angular Position



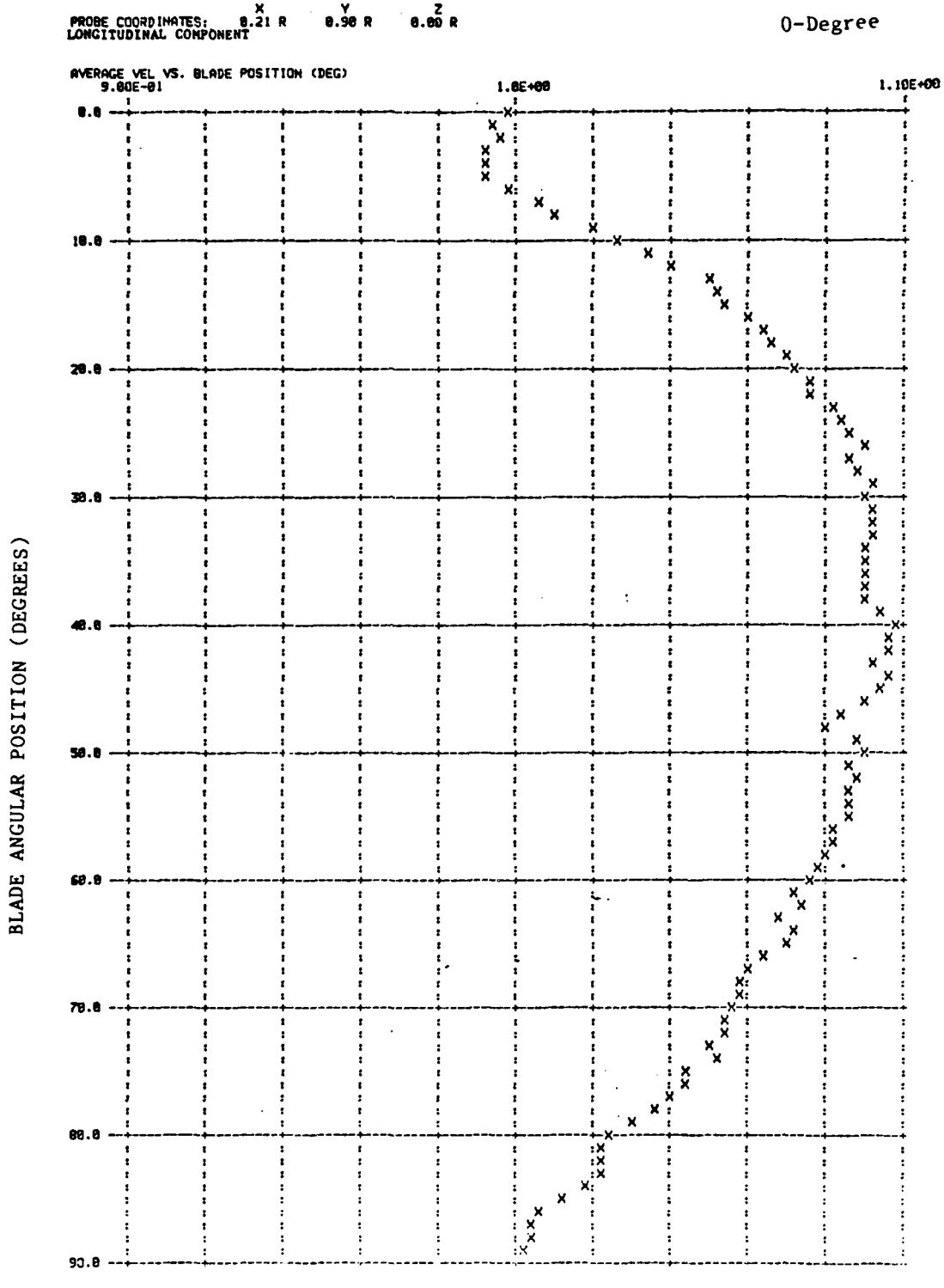

12b - Computer Generated Graph of Velocity vs. Blade Angular Position



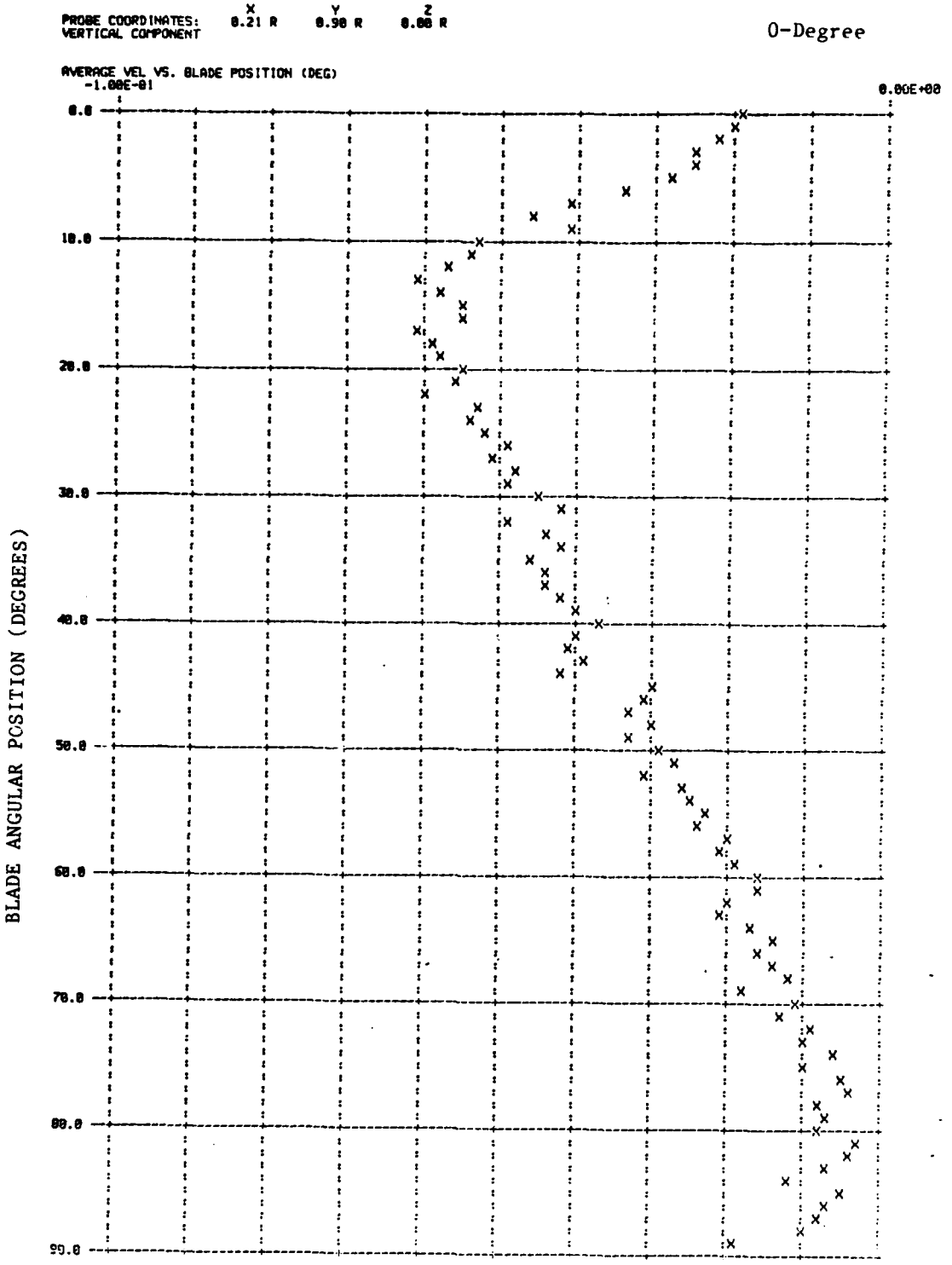

13a - Computer Generated Graph of Velocity vs. Blade Angular Position



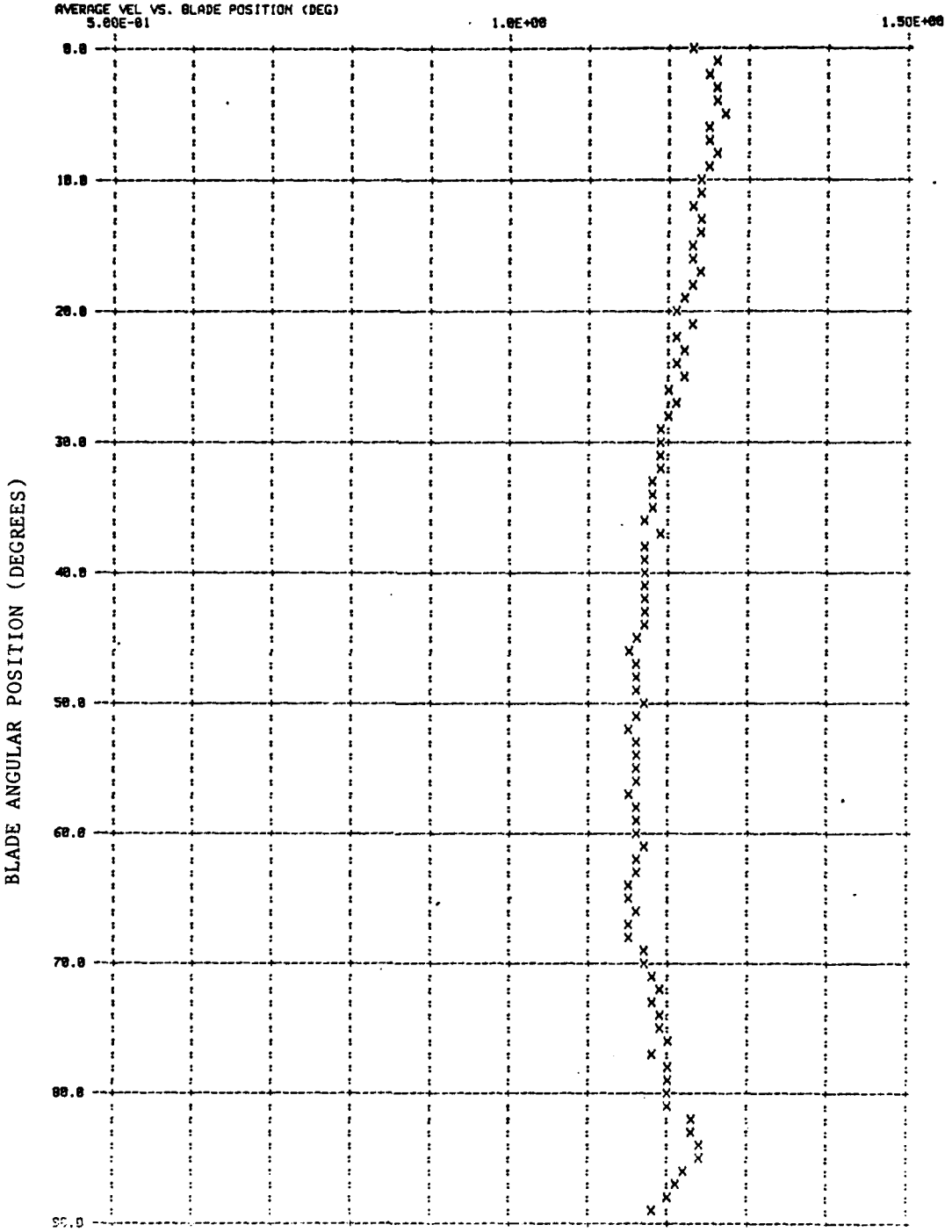

13b - Computer Generated Graph of Velocity vs. Blade Angular Position



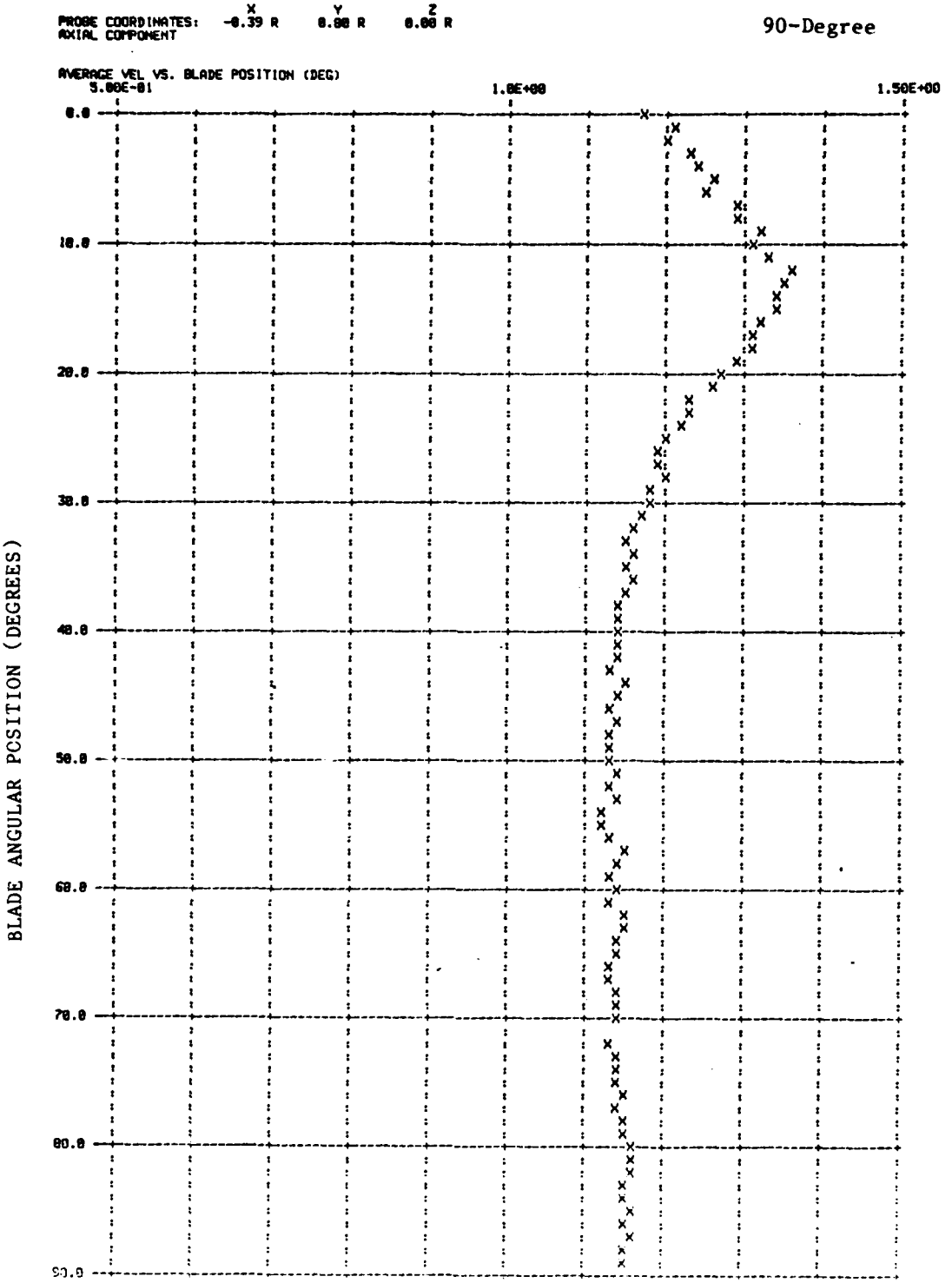

14a - Computer Generated Graph of Velocity vs. Blade Angular Position




14b - Computer Generated Graph of Velocity vs. Blade Angular Position




15 - Computer Generated Graph of Velocity vs. Blade Angular Position




16 - Computer Generated Graph of Velocity vs. Blade Angular Position

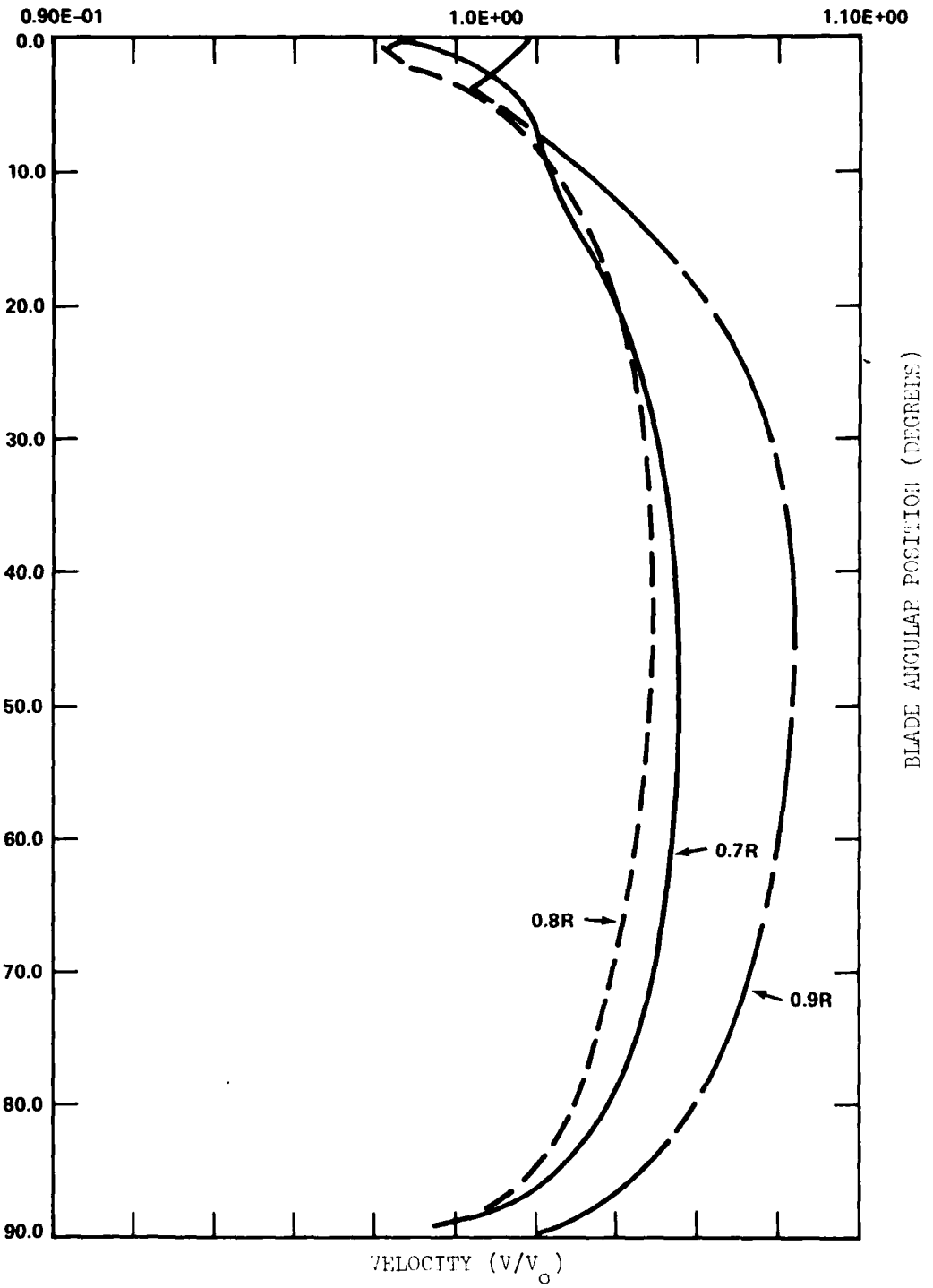



Figure 17 - Three Typical Velocity vs. Blade Angular Position Curves at 0.7, 0.8, and 0.9 radii

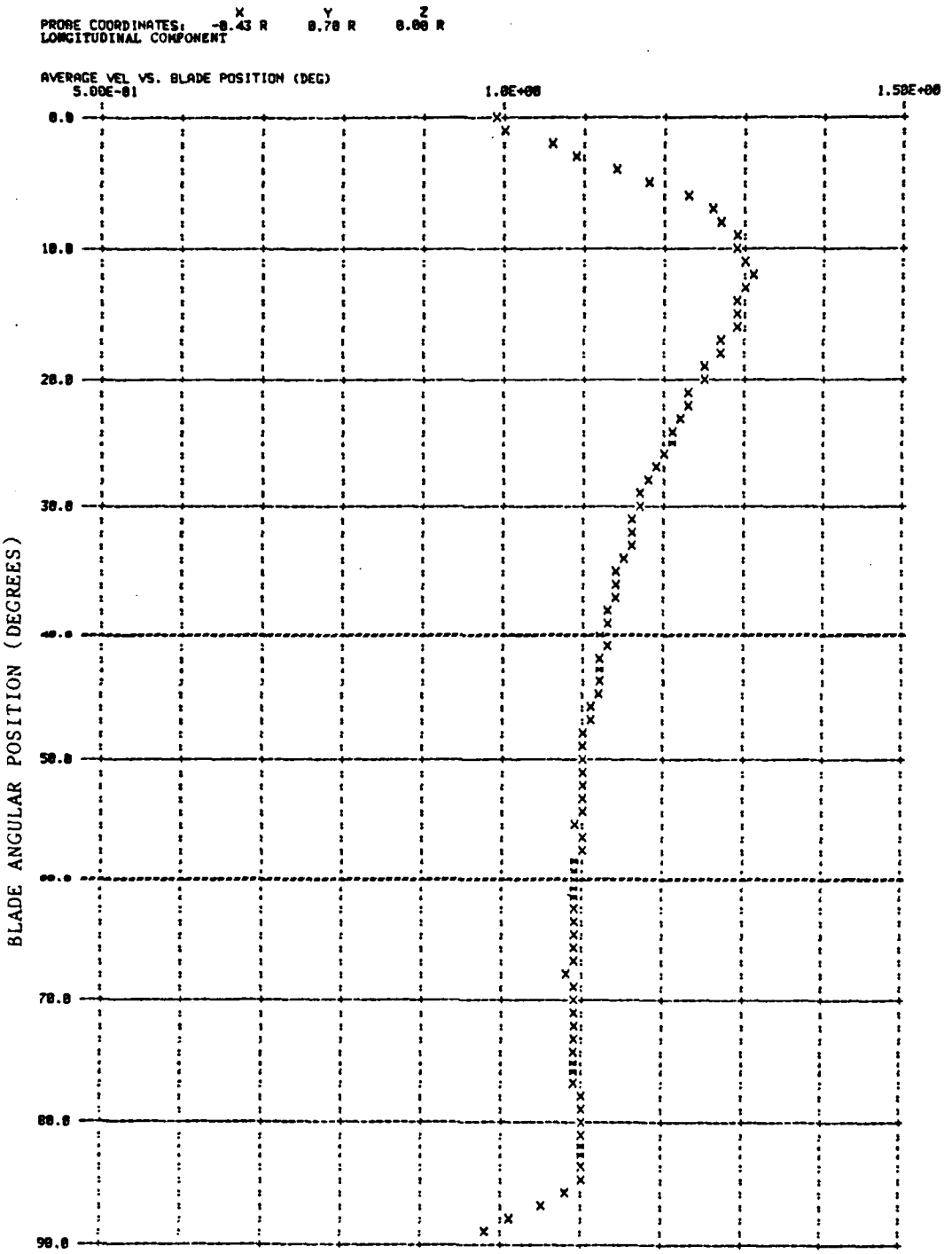



Figure 18a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

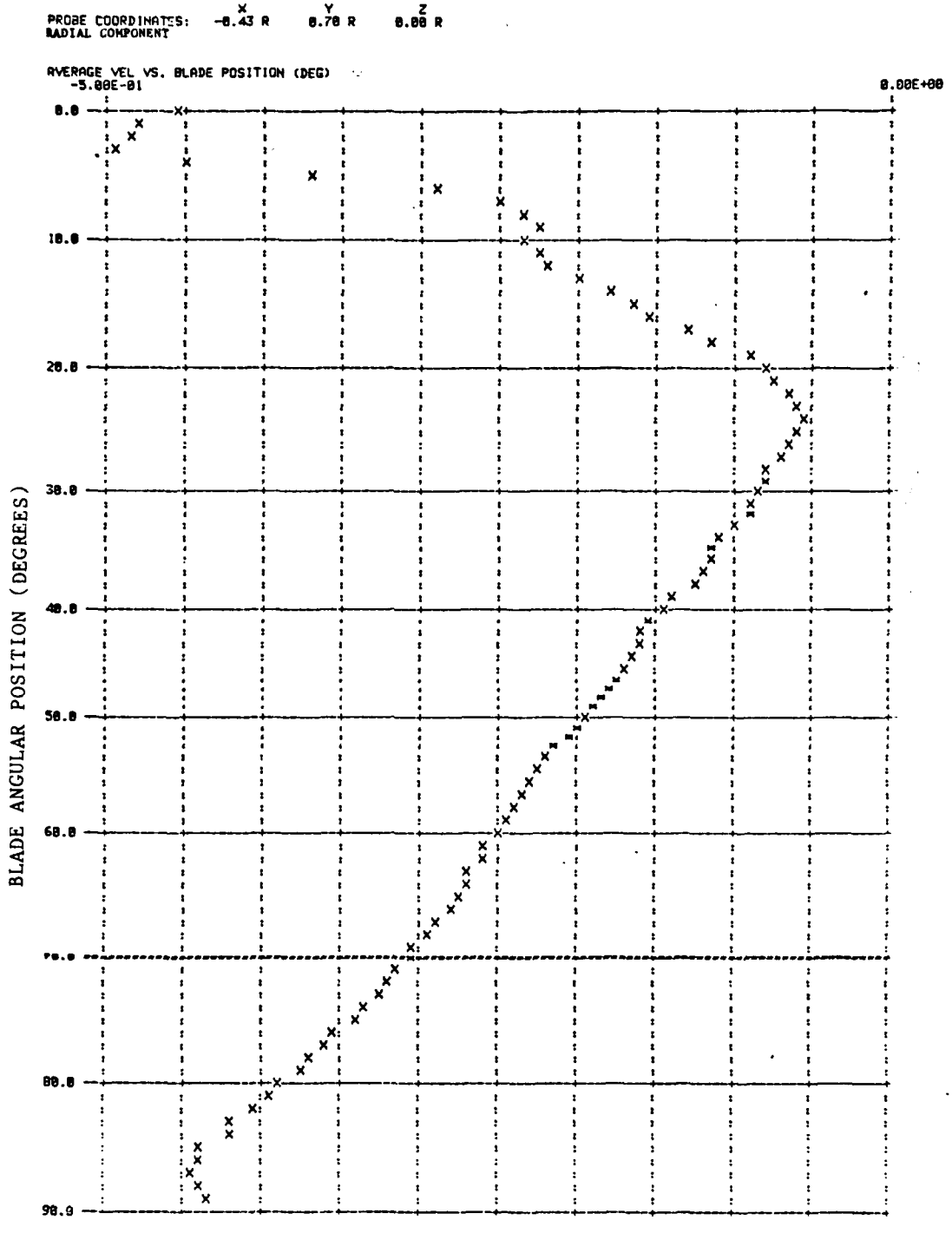



Figure 18b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

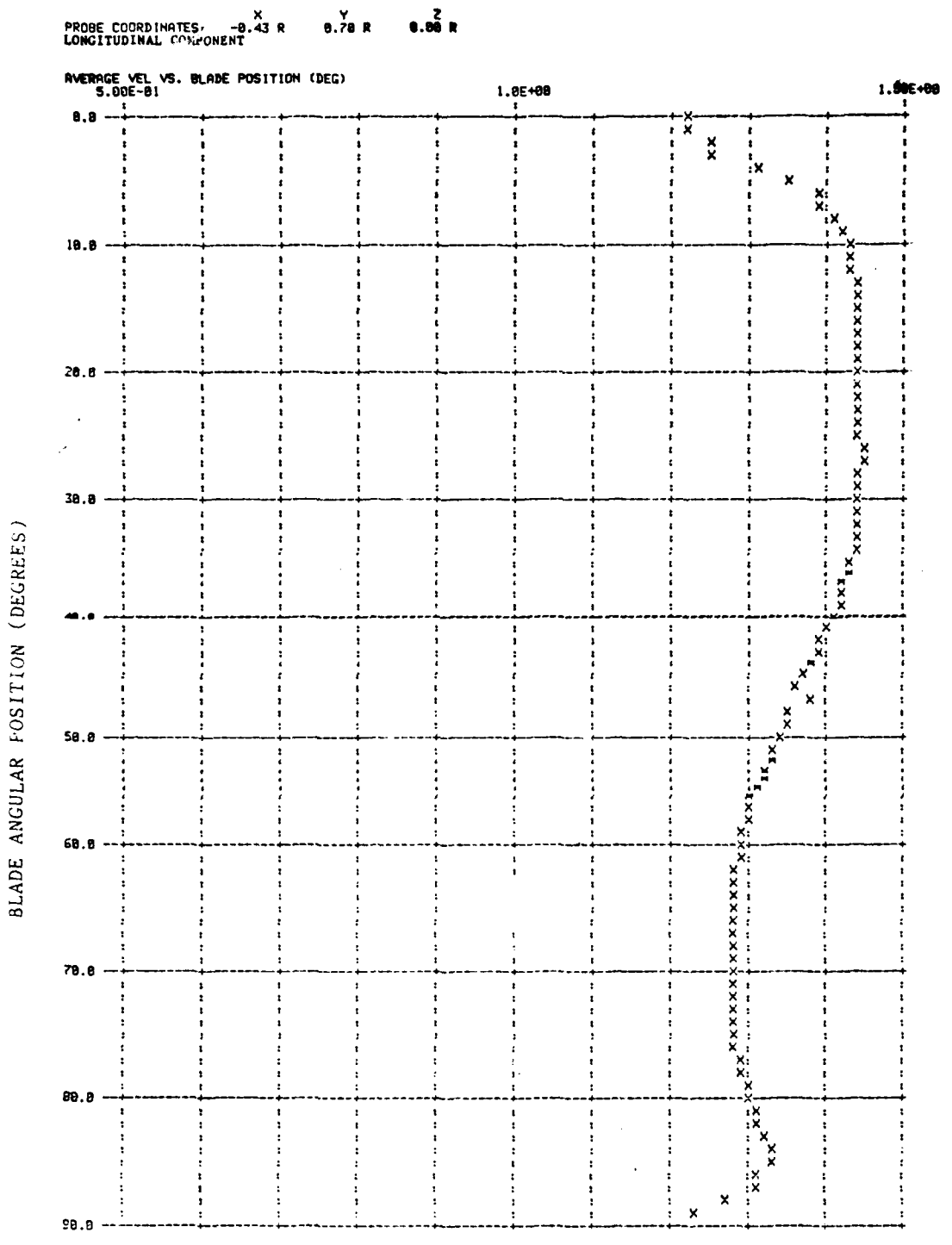



Figure 19a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

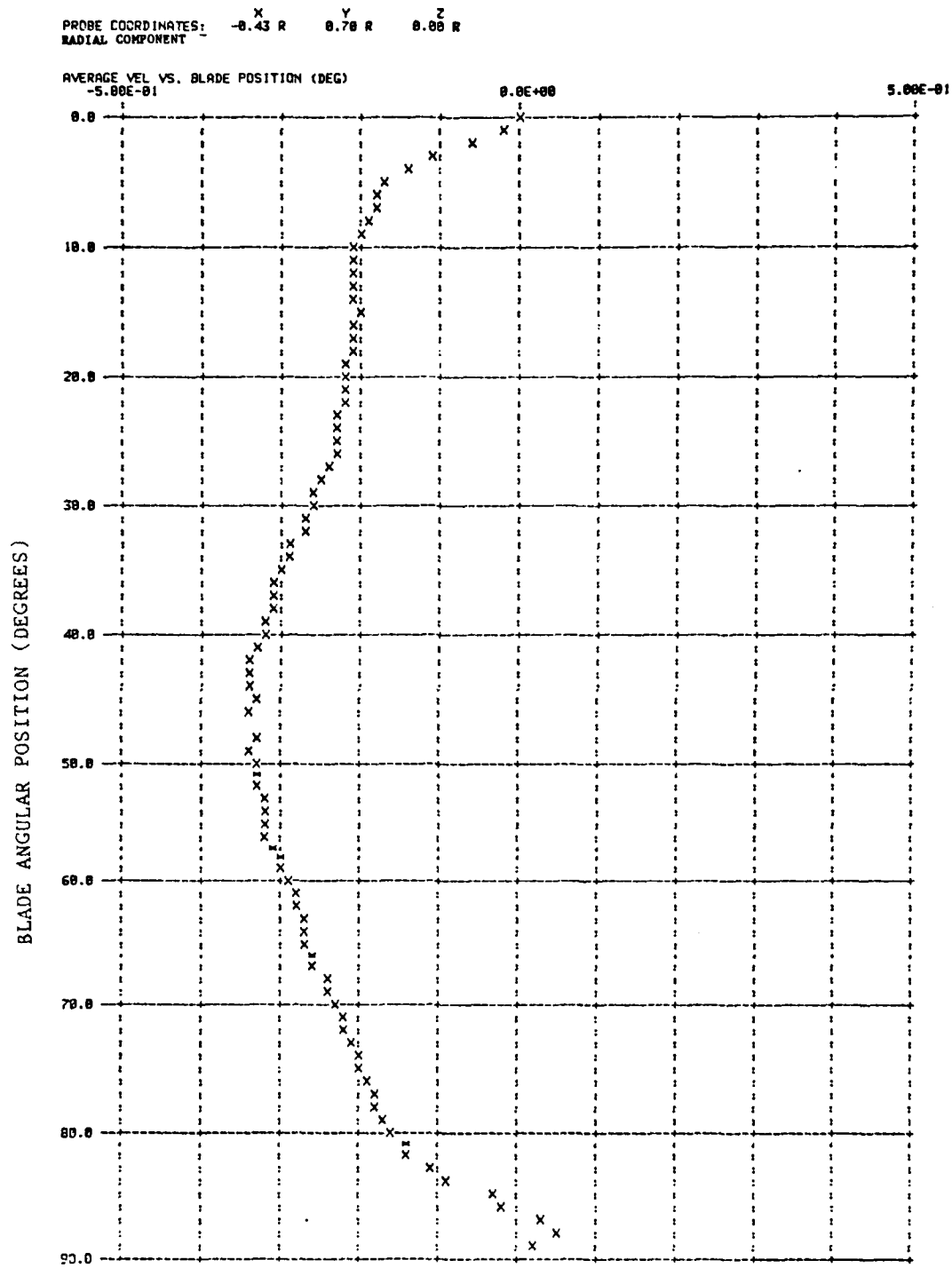



Figure 19b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

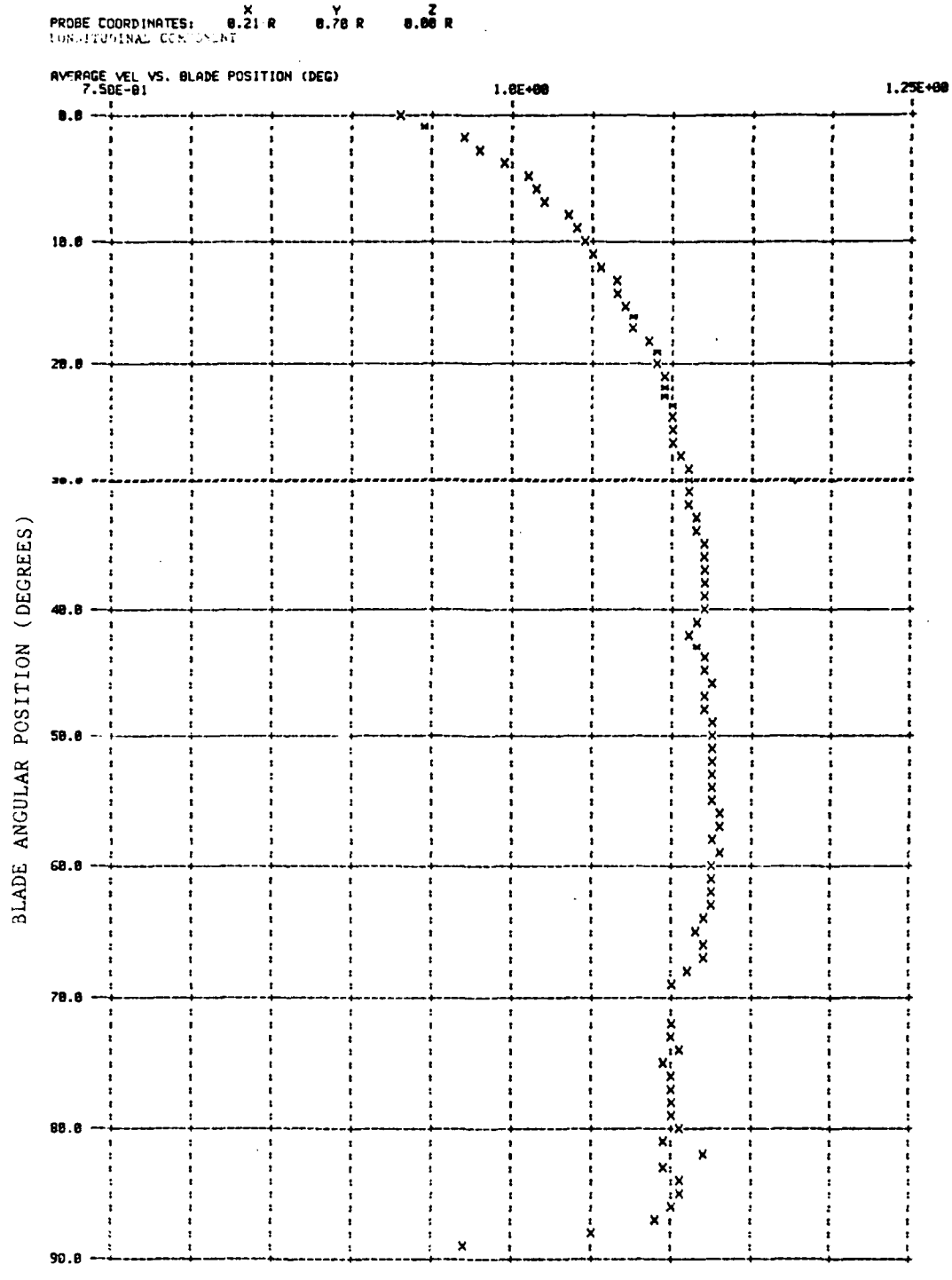



Figure 20a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

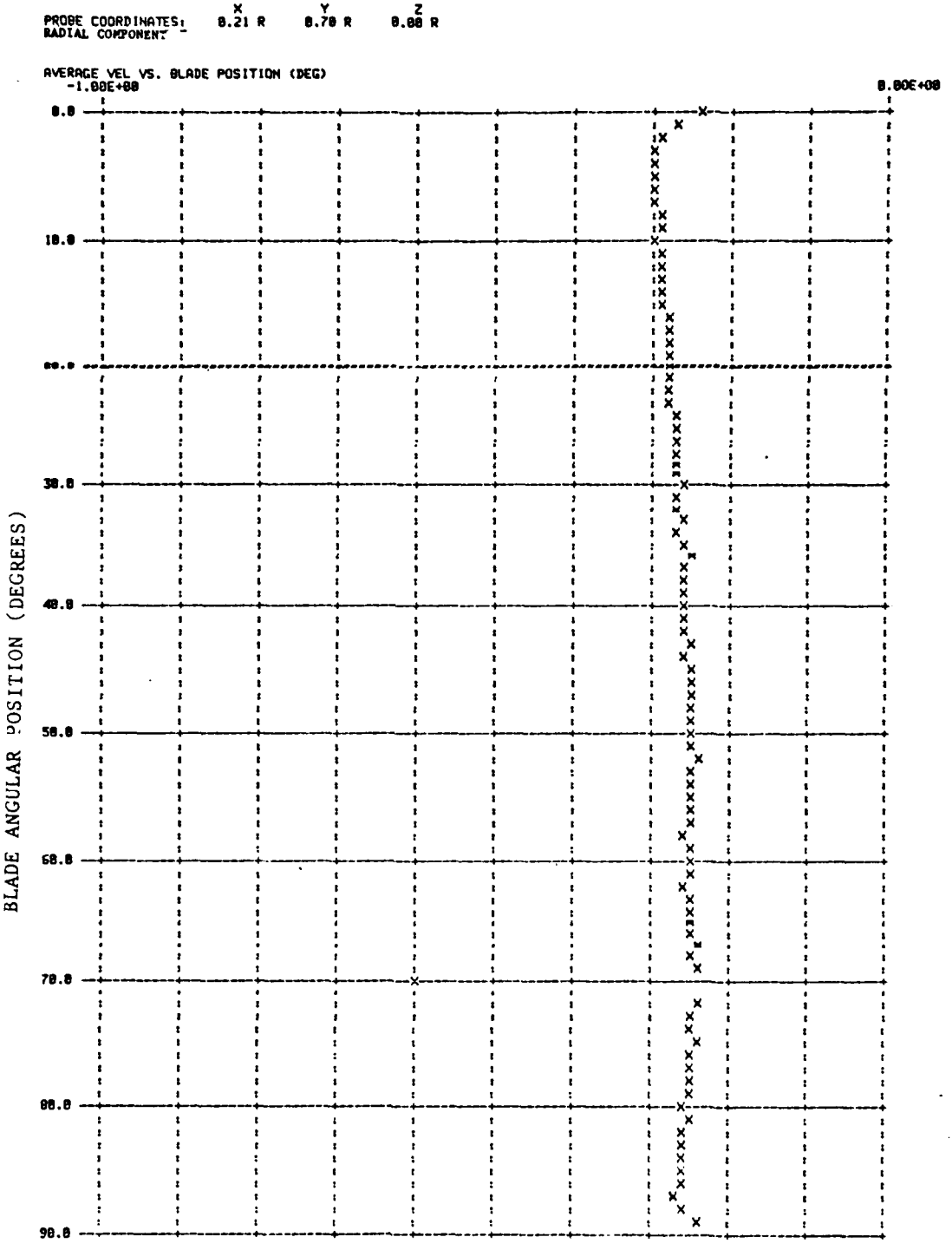



Figure 20b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

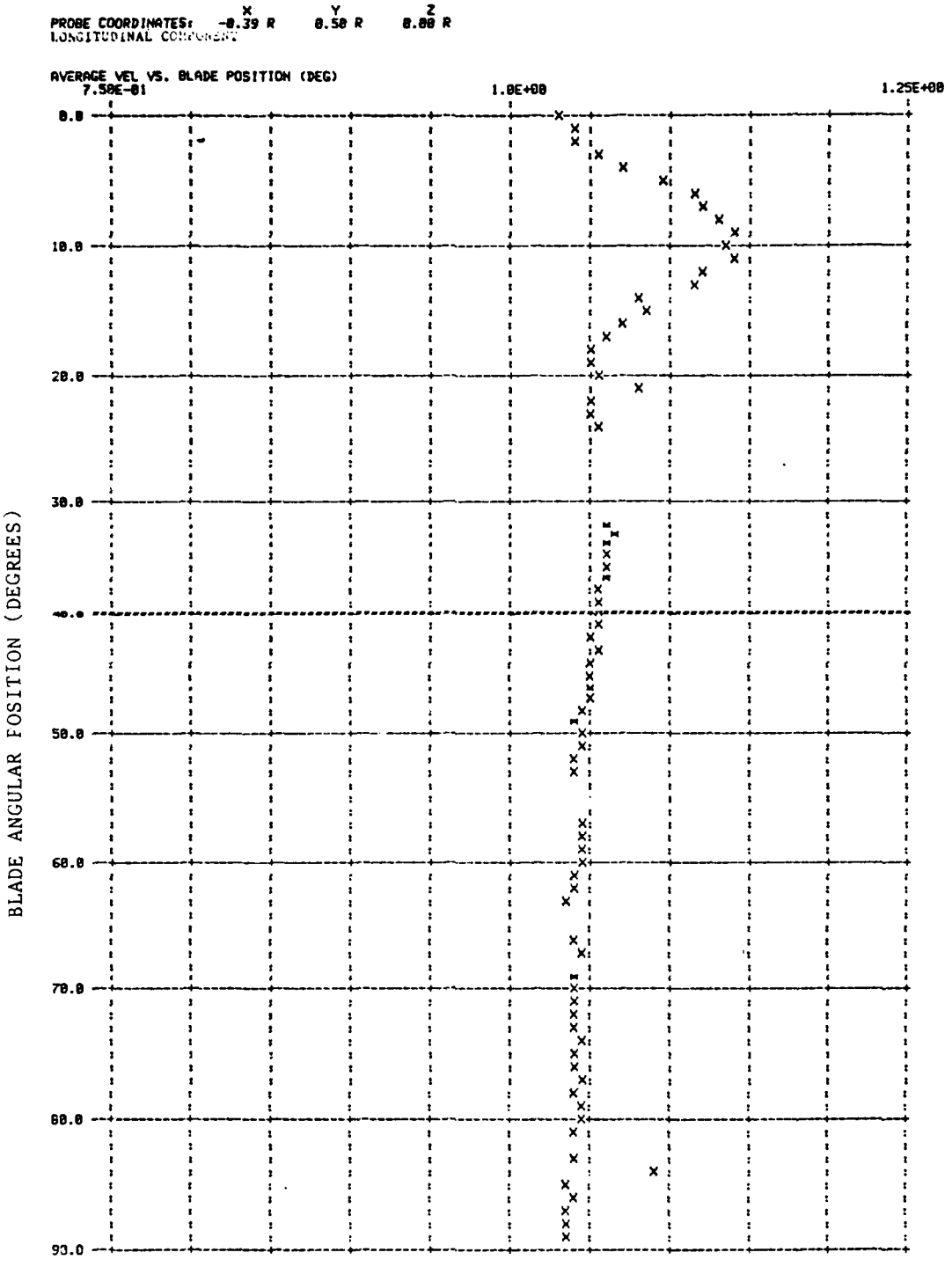



Figure 21a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

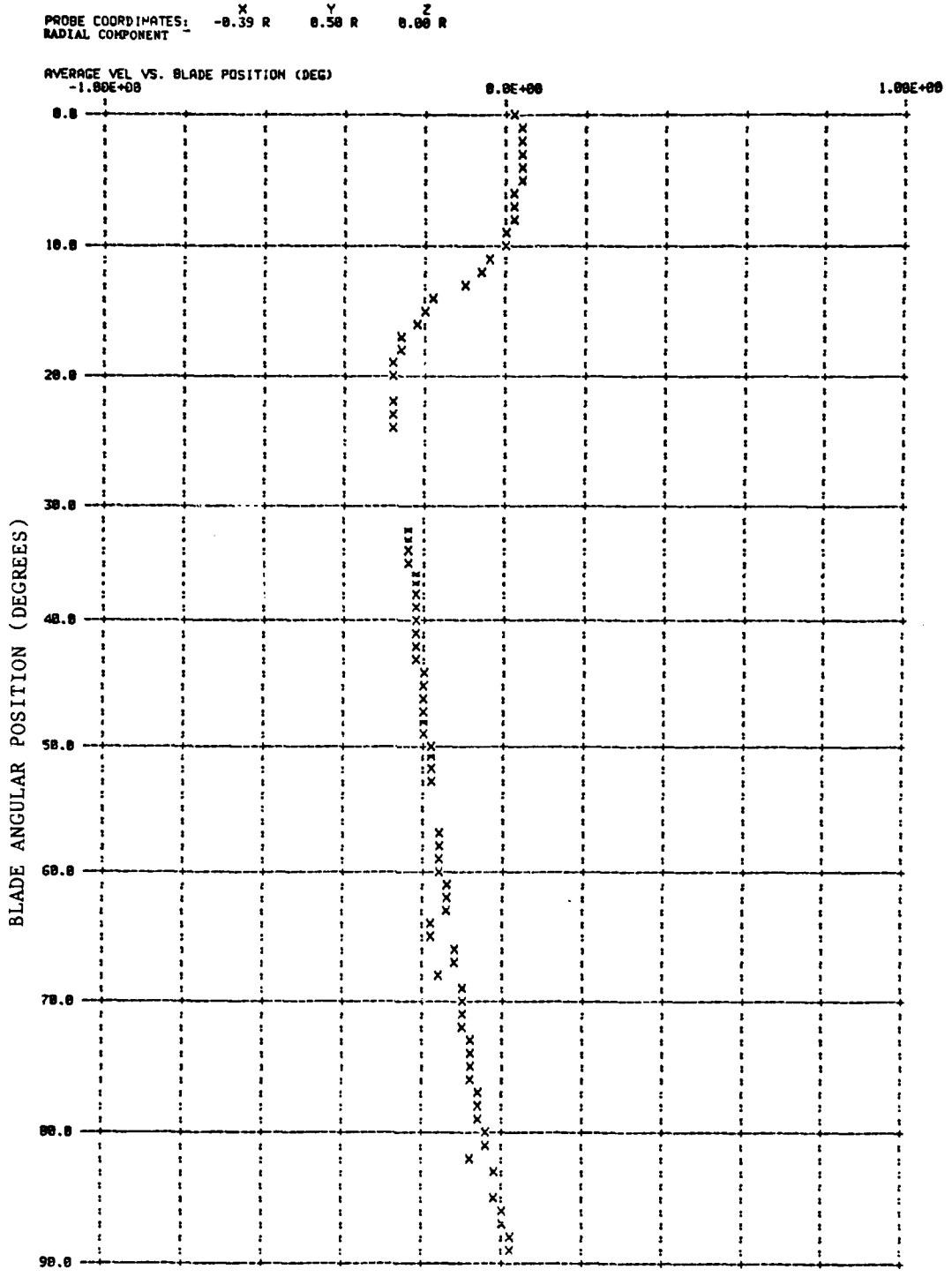



Figure 21b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

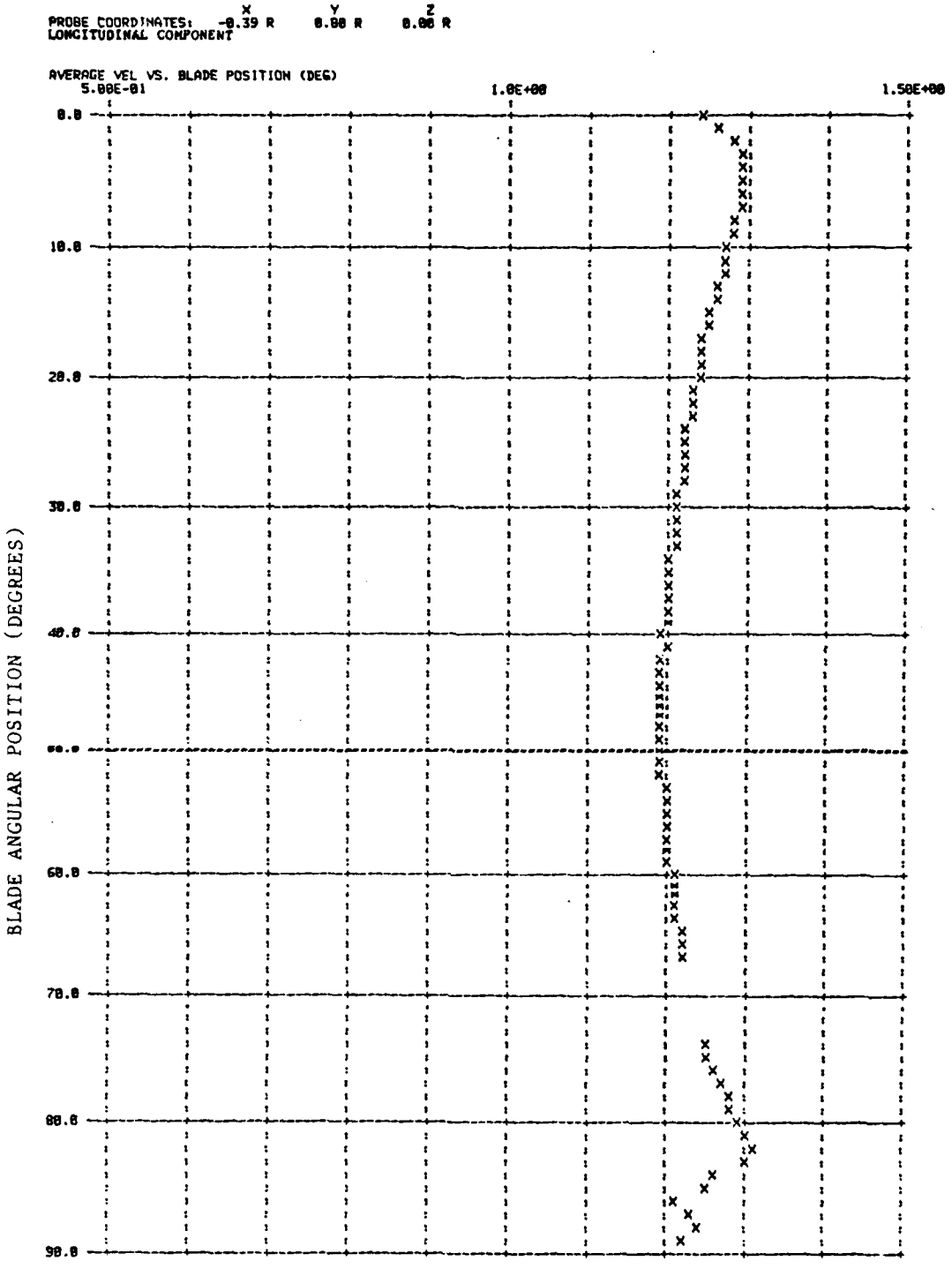



Figure 22a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

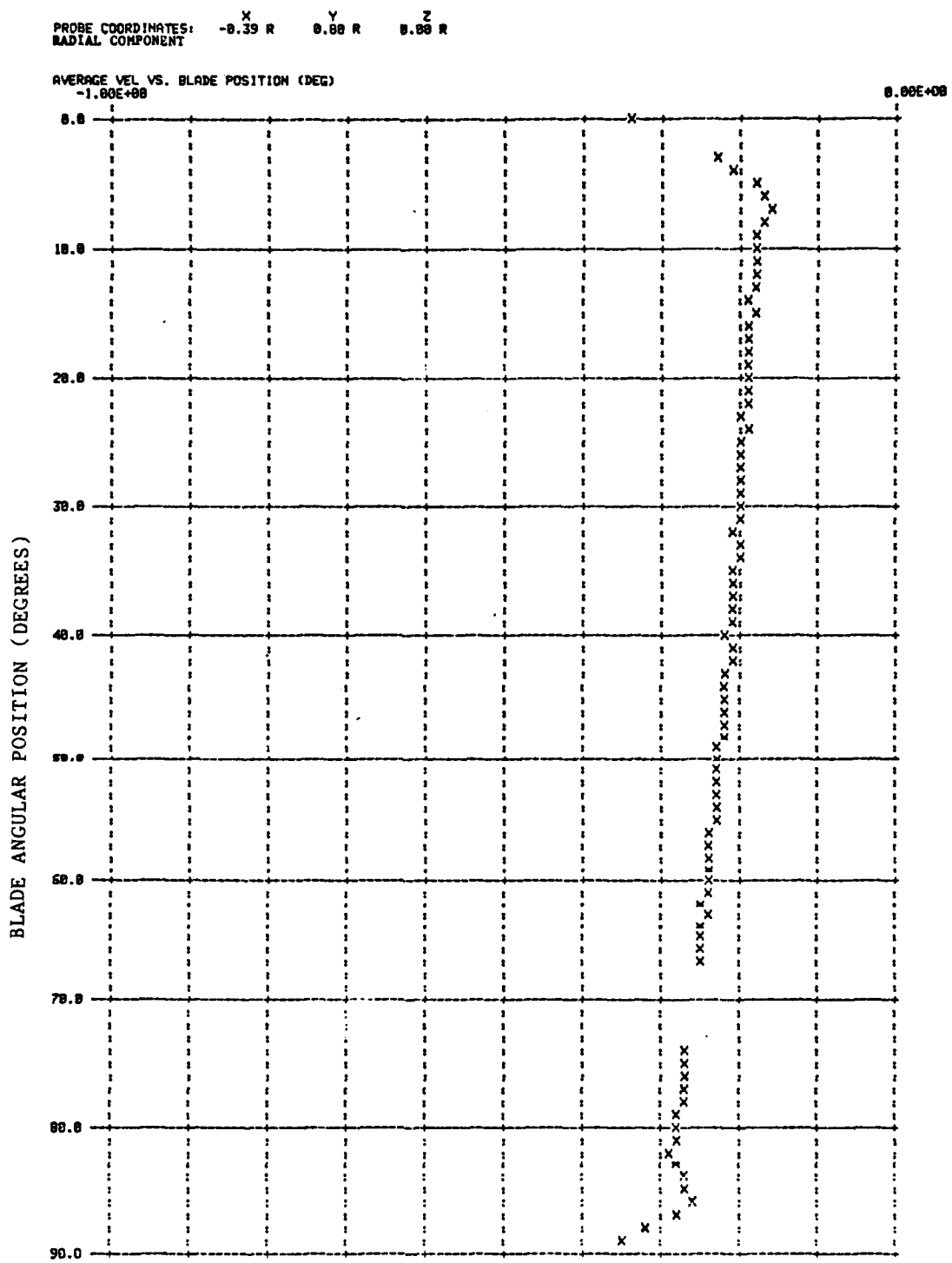



Figure 22b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

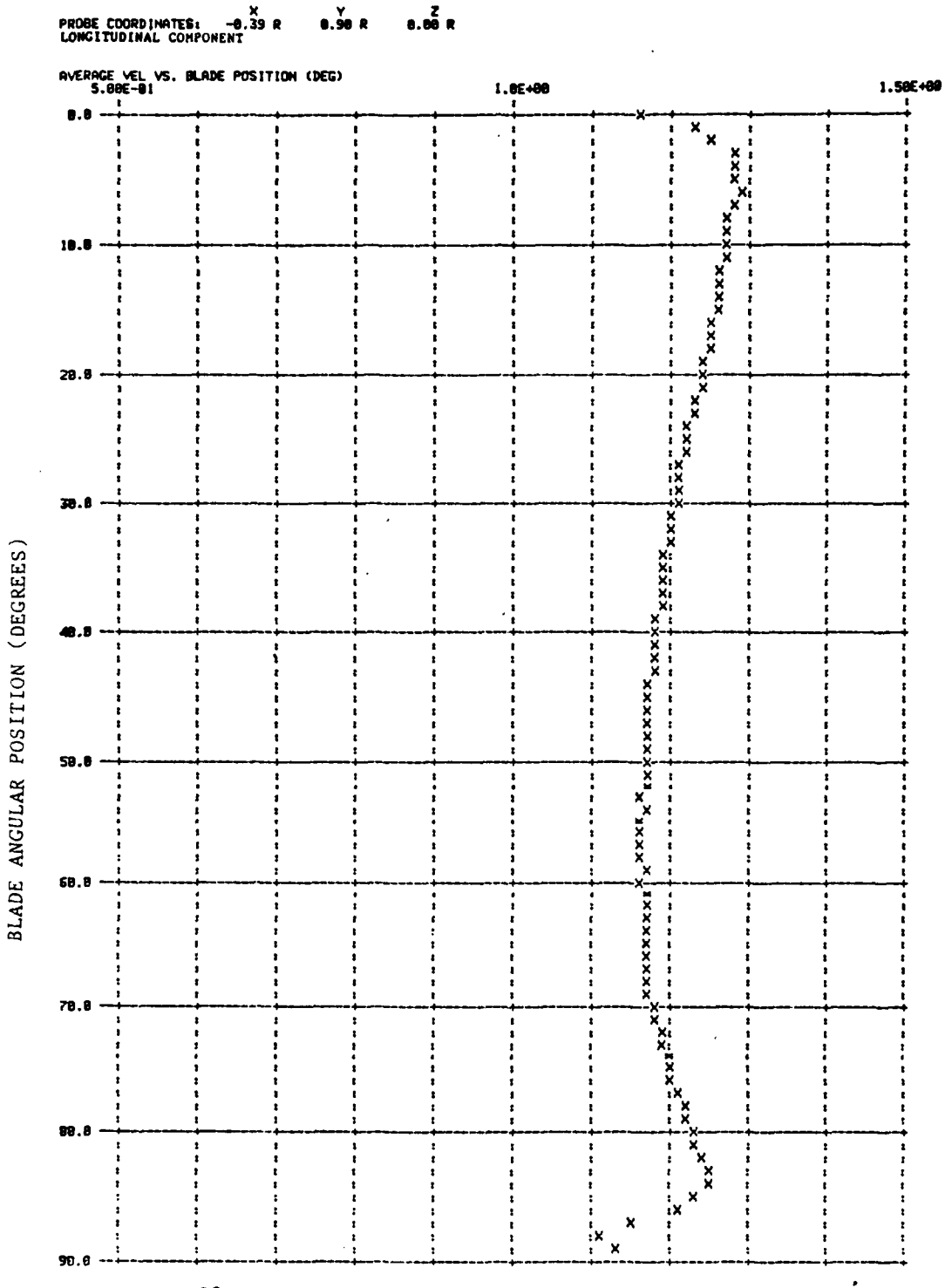



Figure 23a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

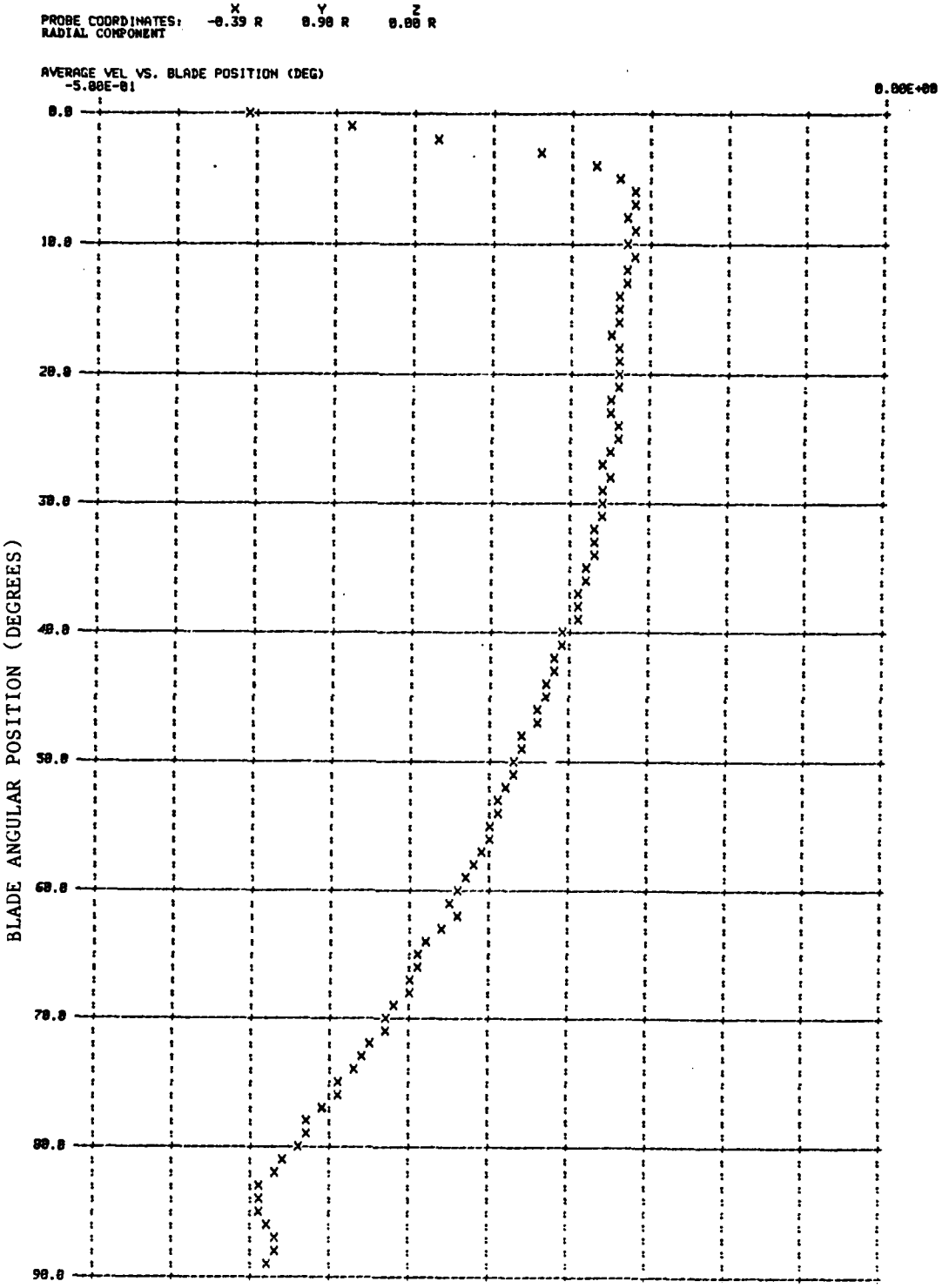



Figure 23b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

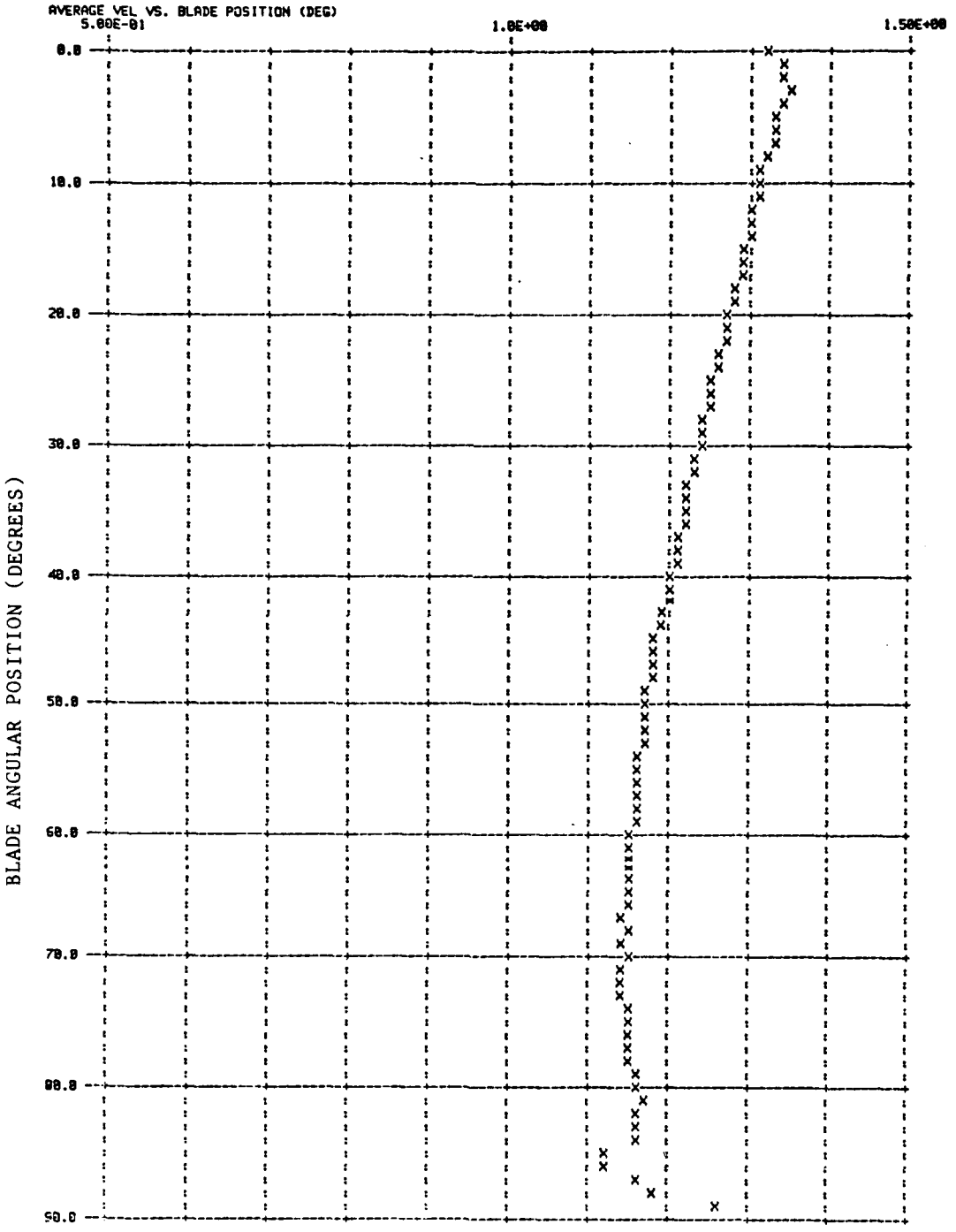



Figure 24a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

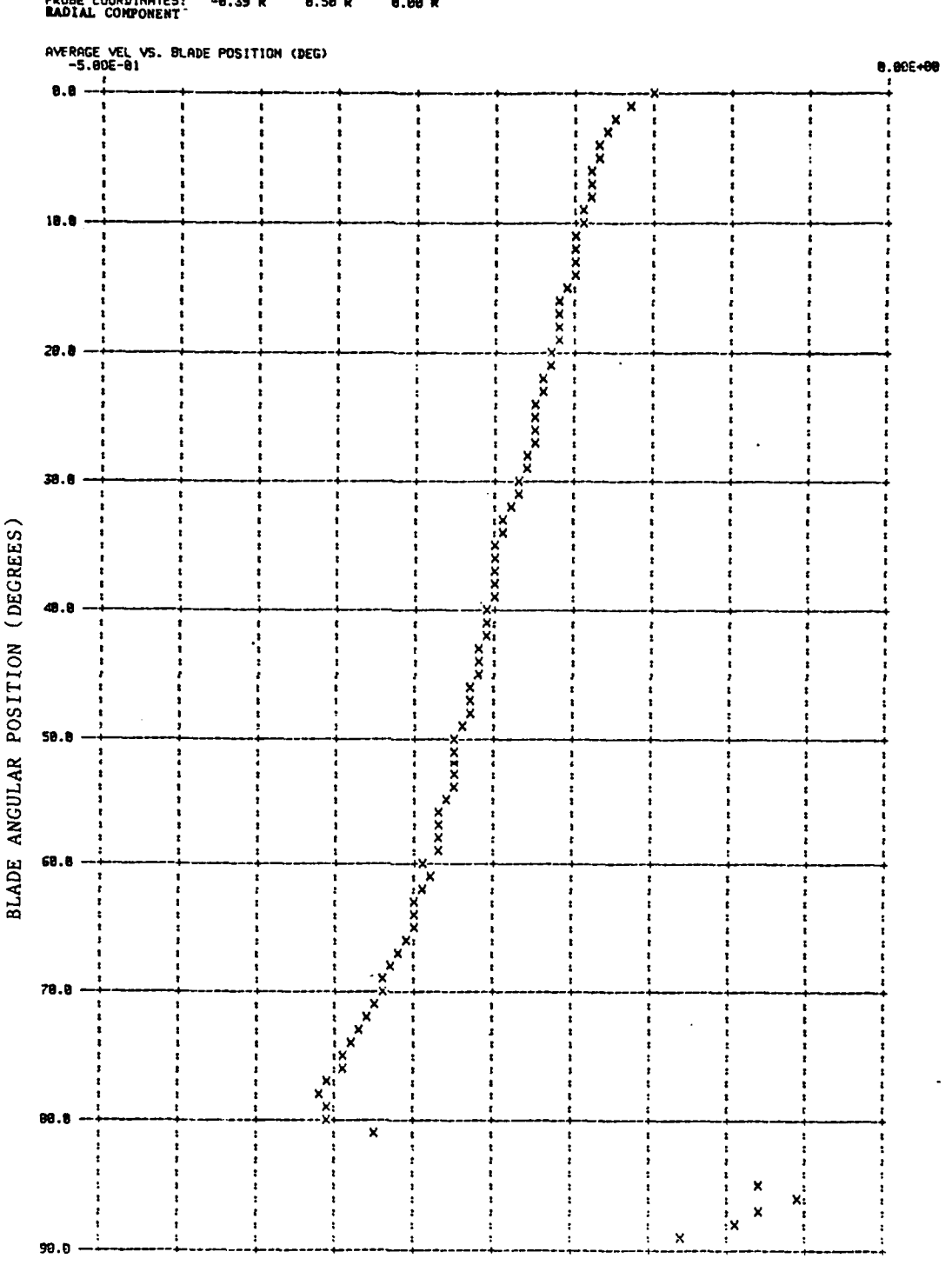



Figure 24b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

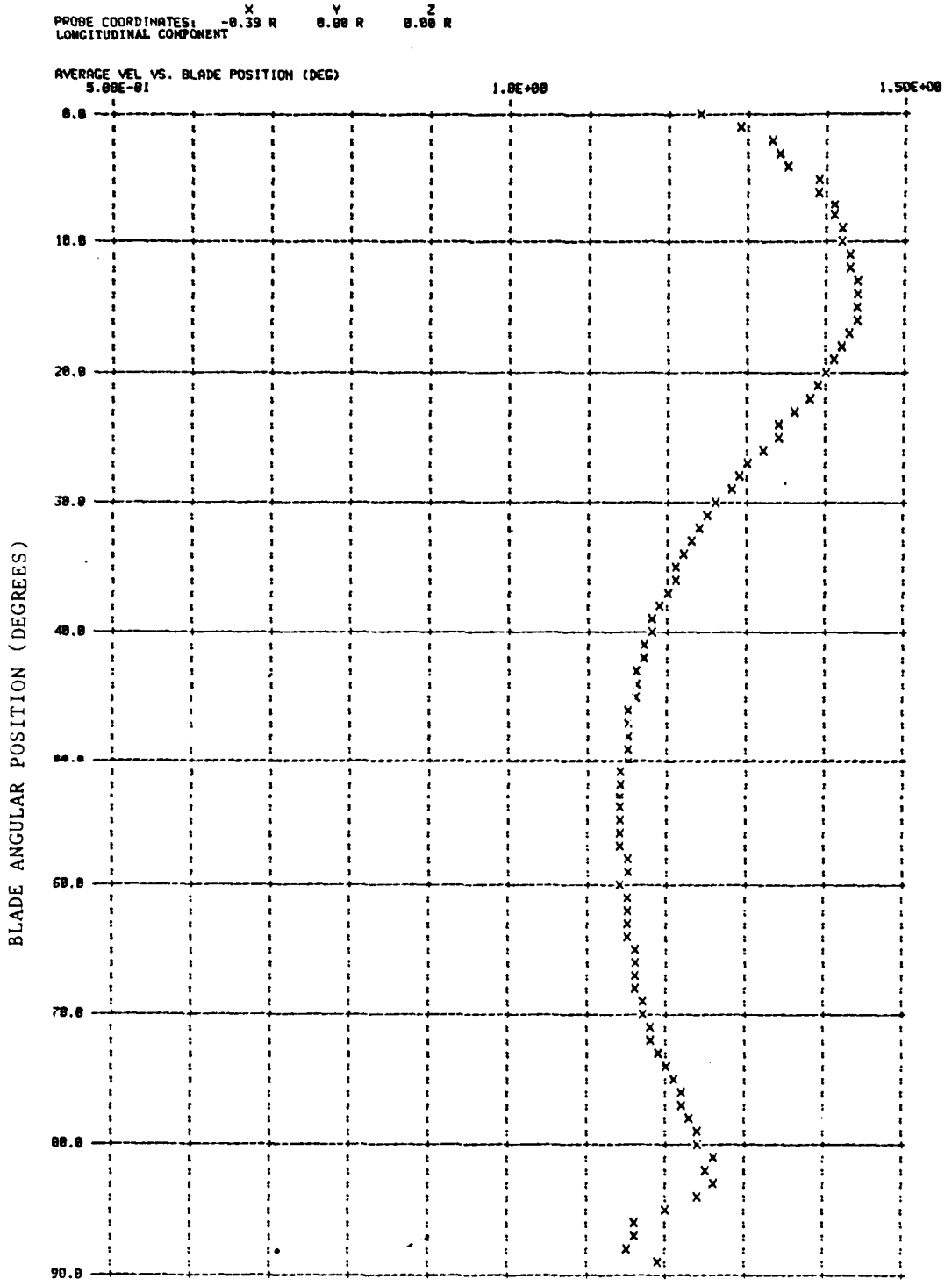



Figure 25a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

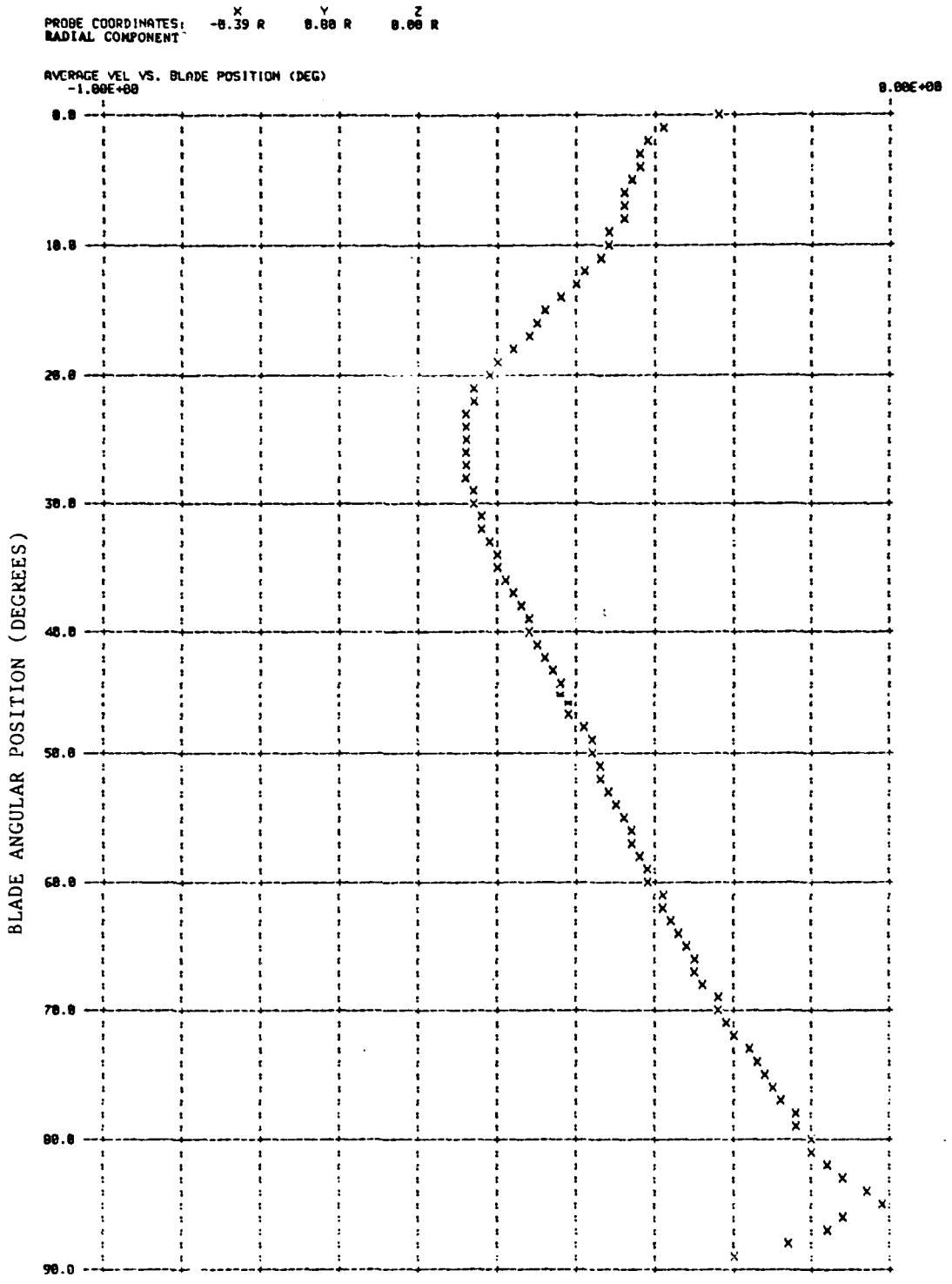



Figure 25b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

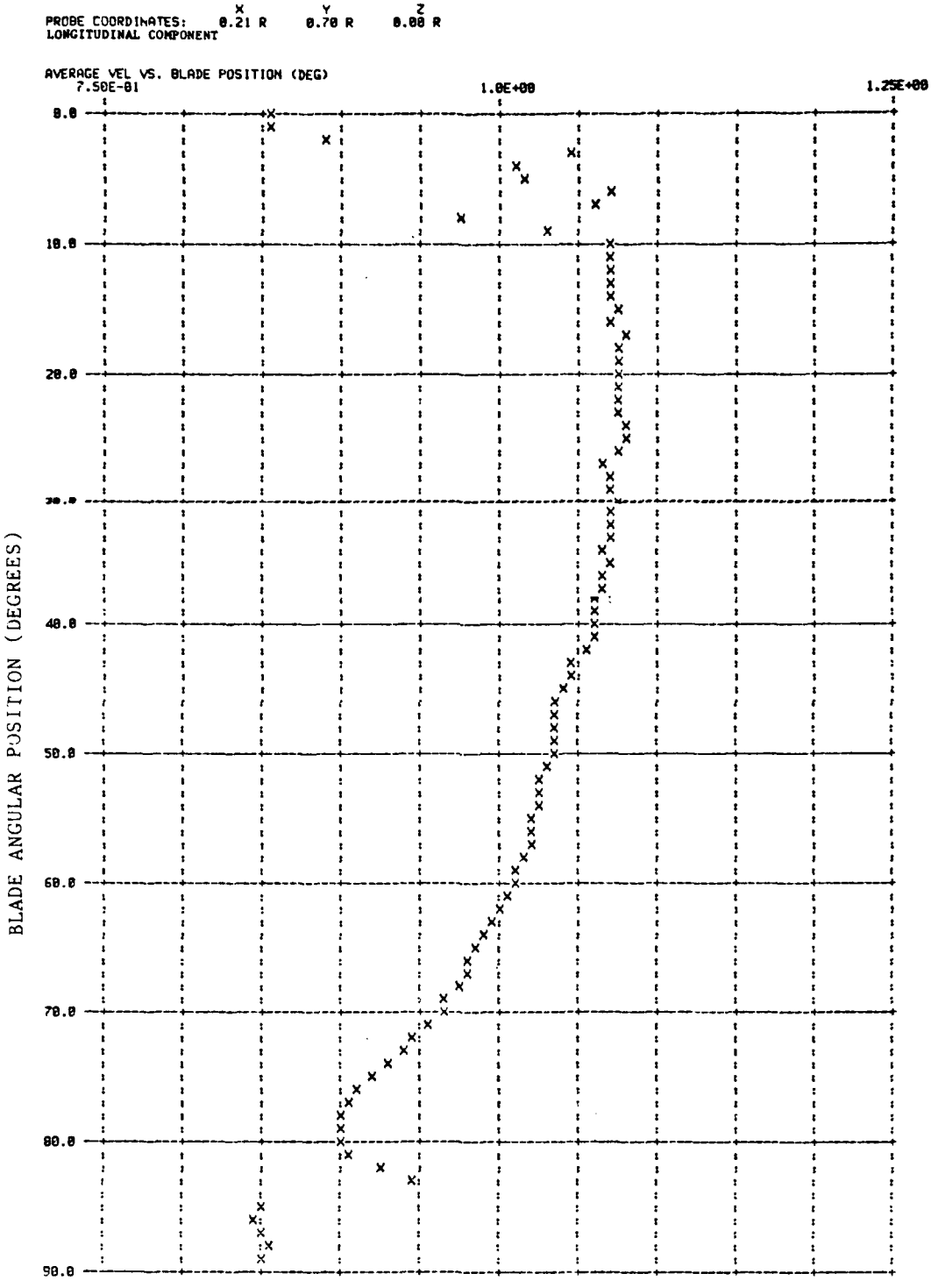



Figure 26a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

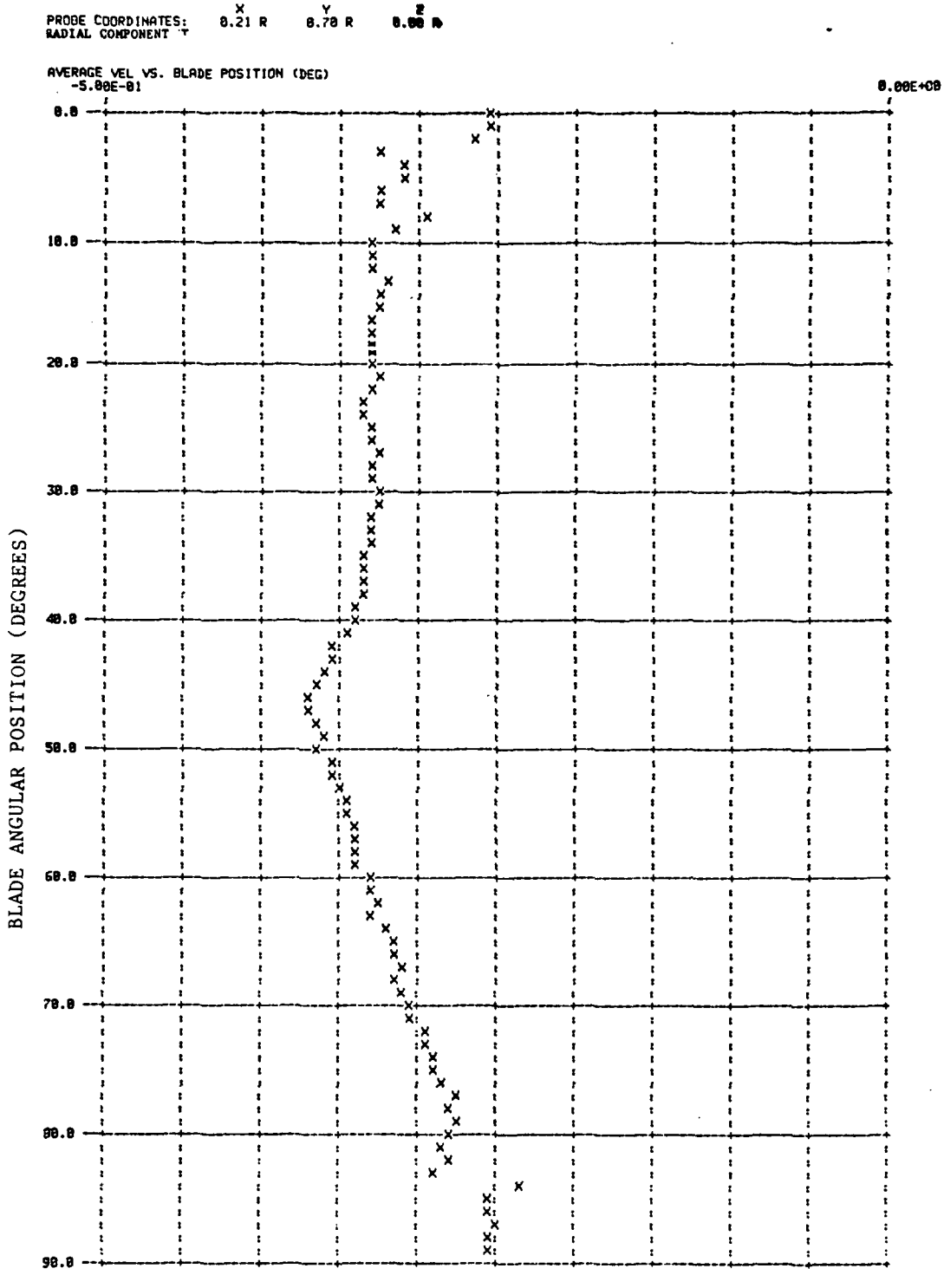



Figure 26b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

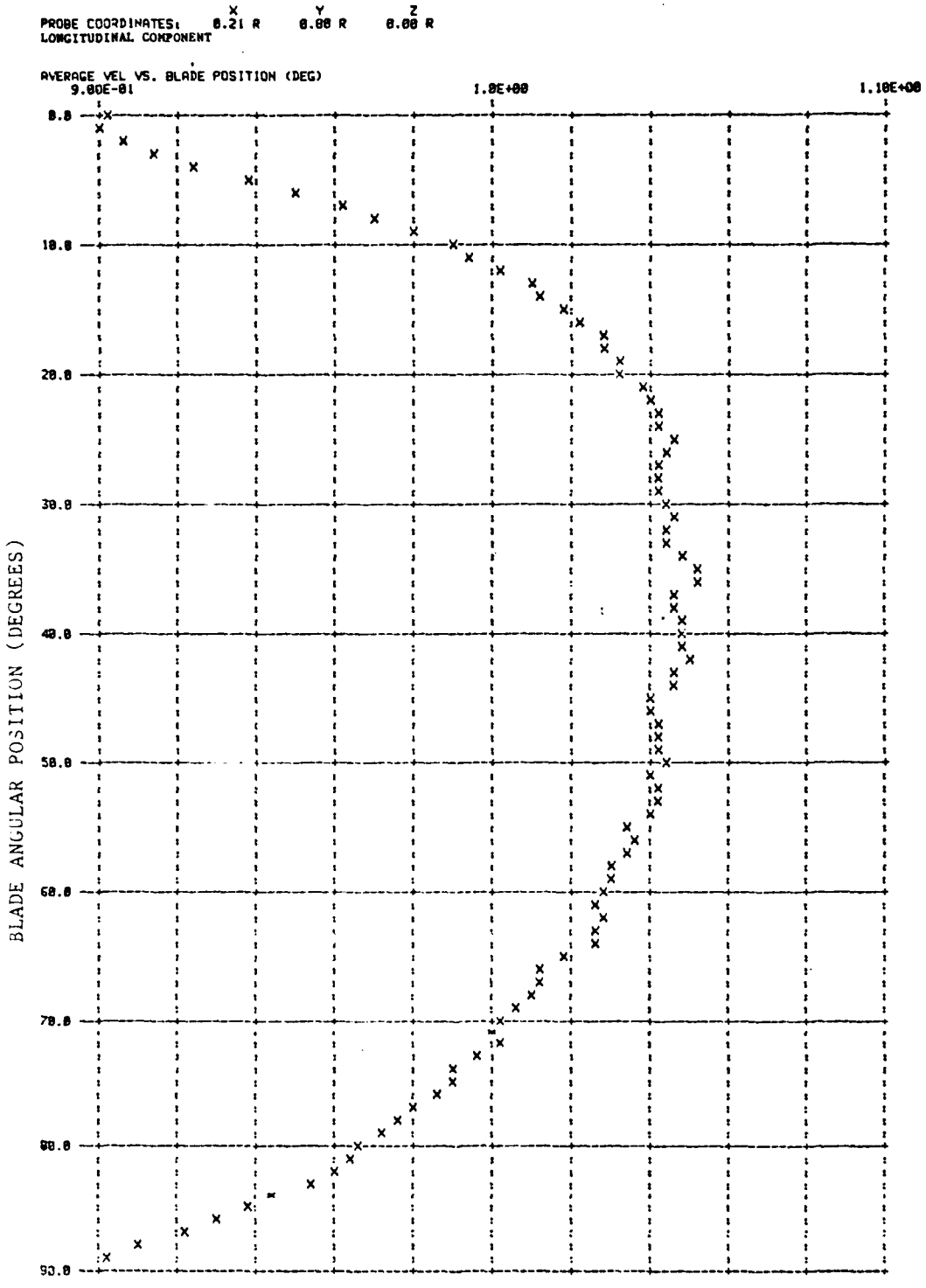



Figure 27a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

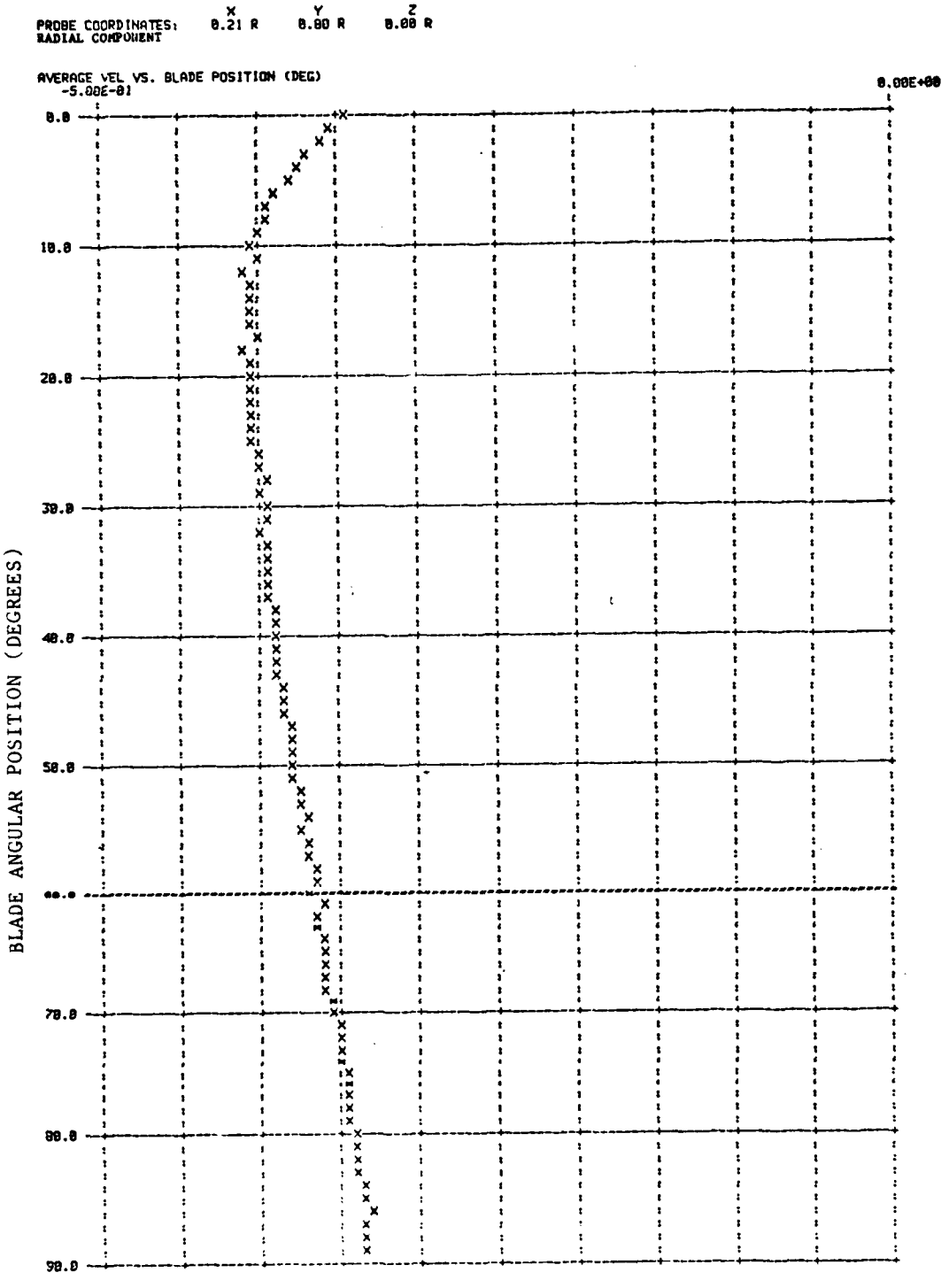



Figure 27b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

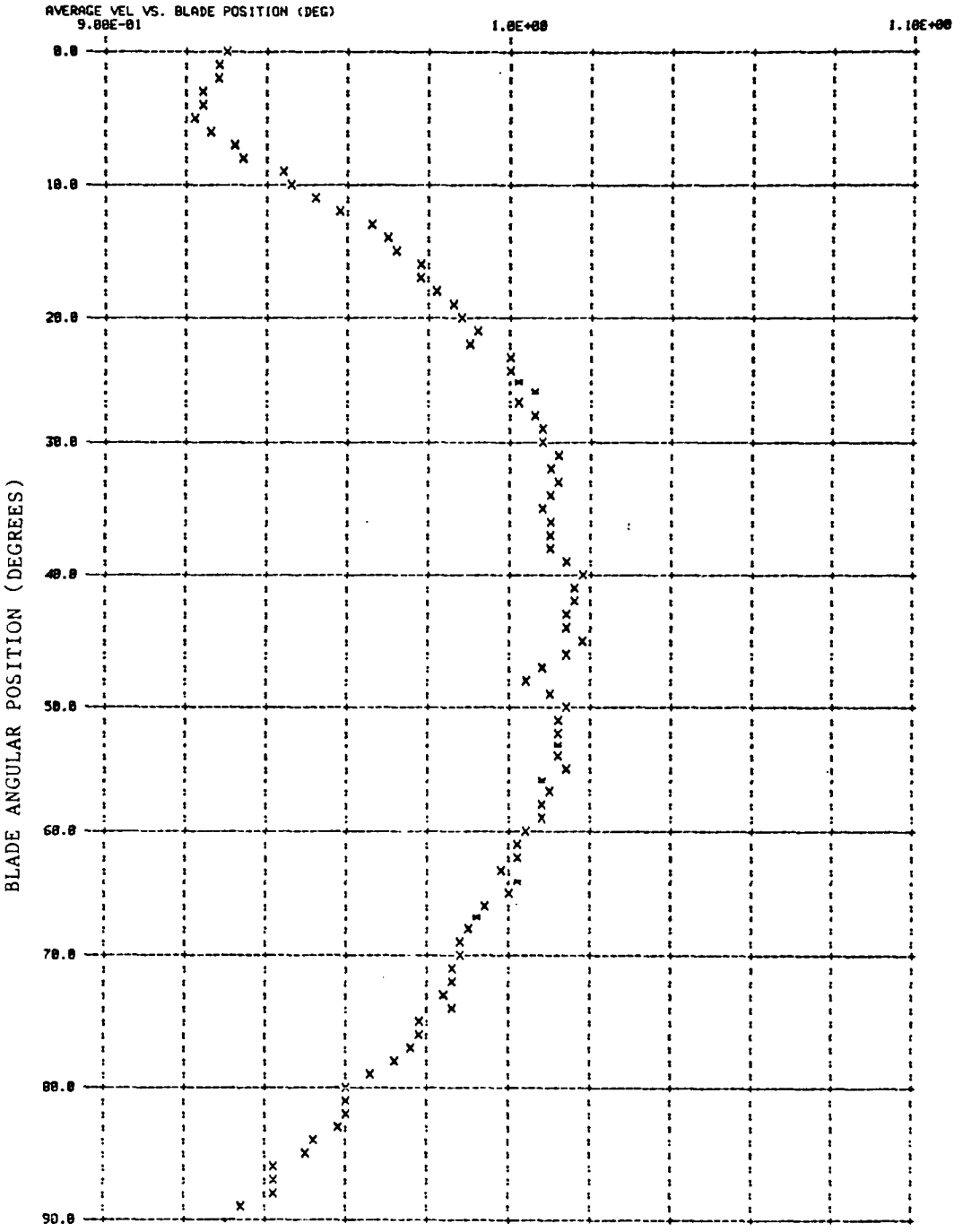



Figure 28a - Computer Generated Graph of Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

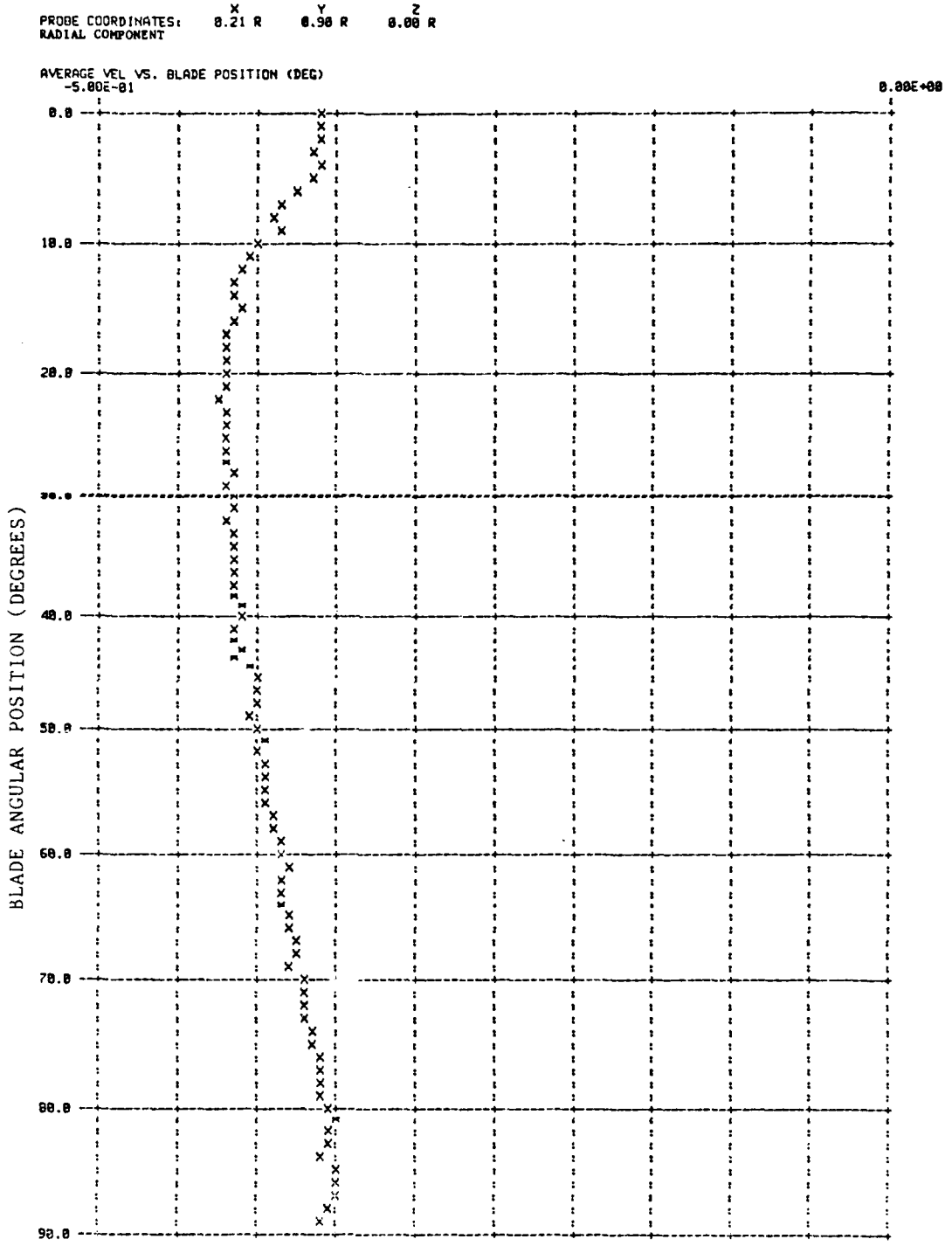



Figure 28b - Computer Generated Graph of RMS Velocity vs. Blade Angular Position Resolved Along Shaft Coordinate System

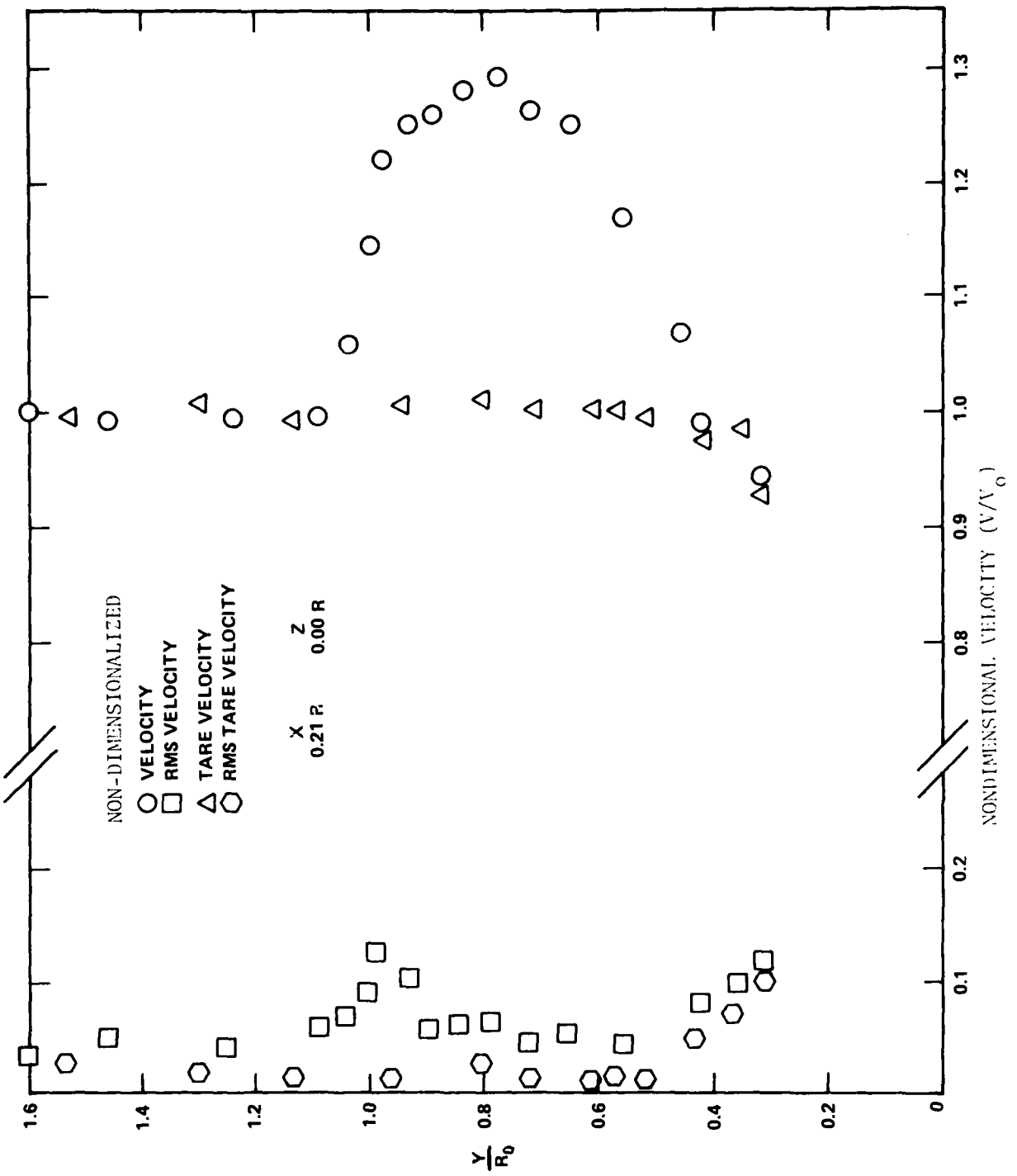



Figure 29 - Time Averaged Longitudinal Velocity and Rms Velocity Data at Shaft Inclination of 20 Degrees

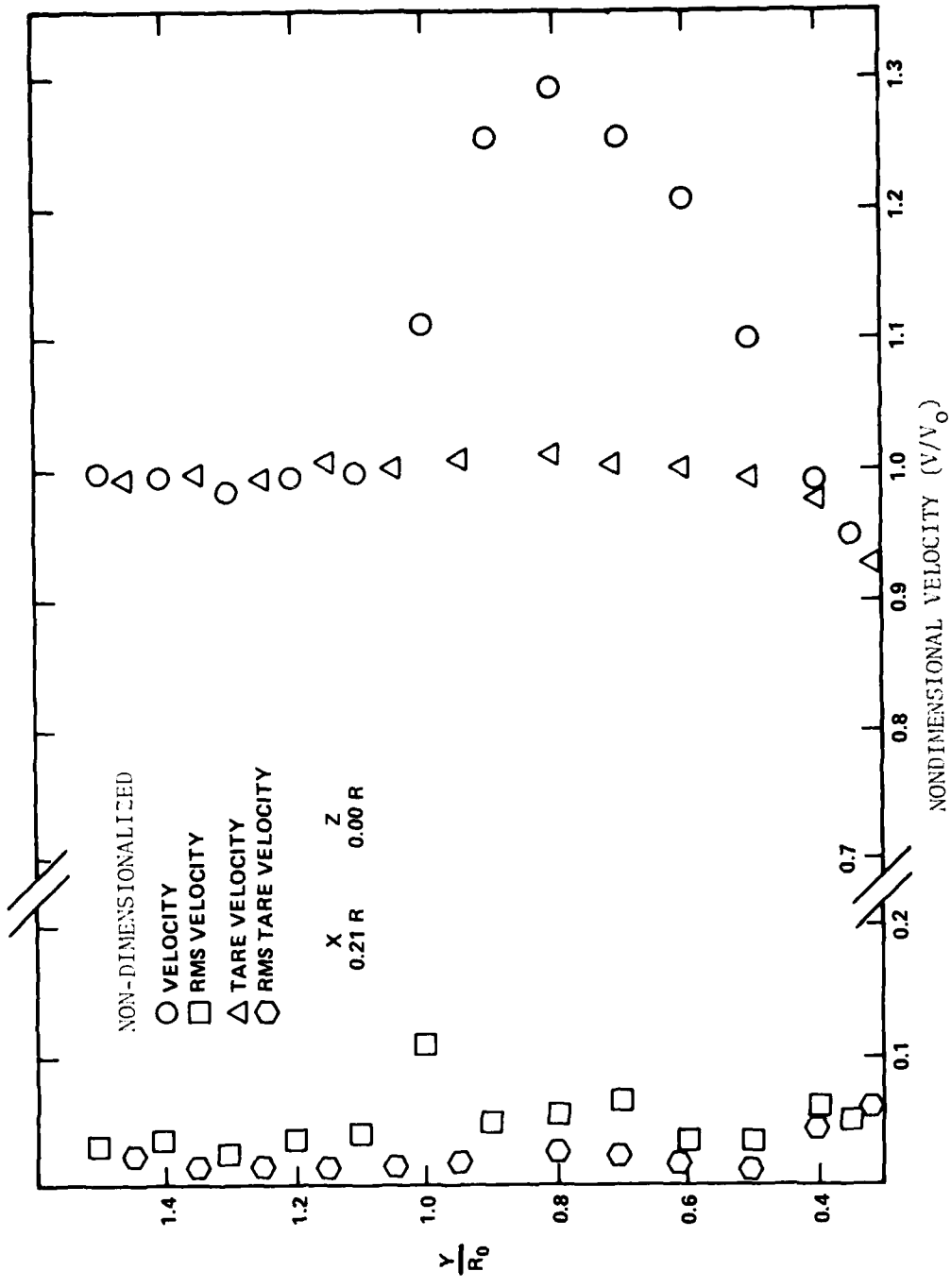



Figure 30 - Time Averaged Longitudinal Velocity and Rms Velocity Data at Shaft Inclination of 20 Degrees

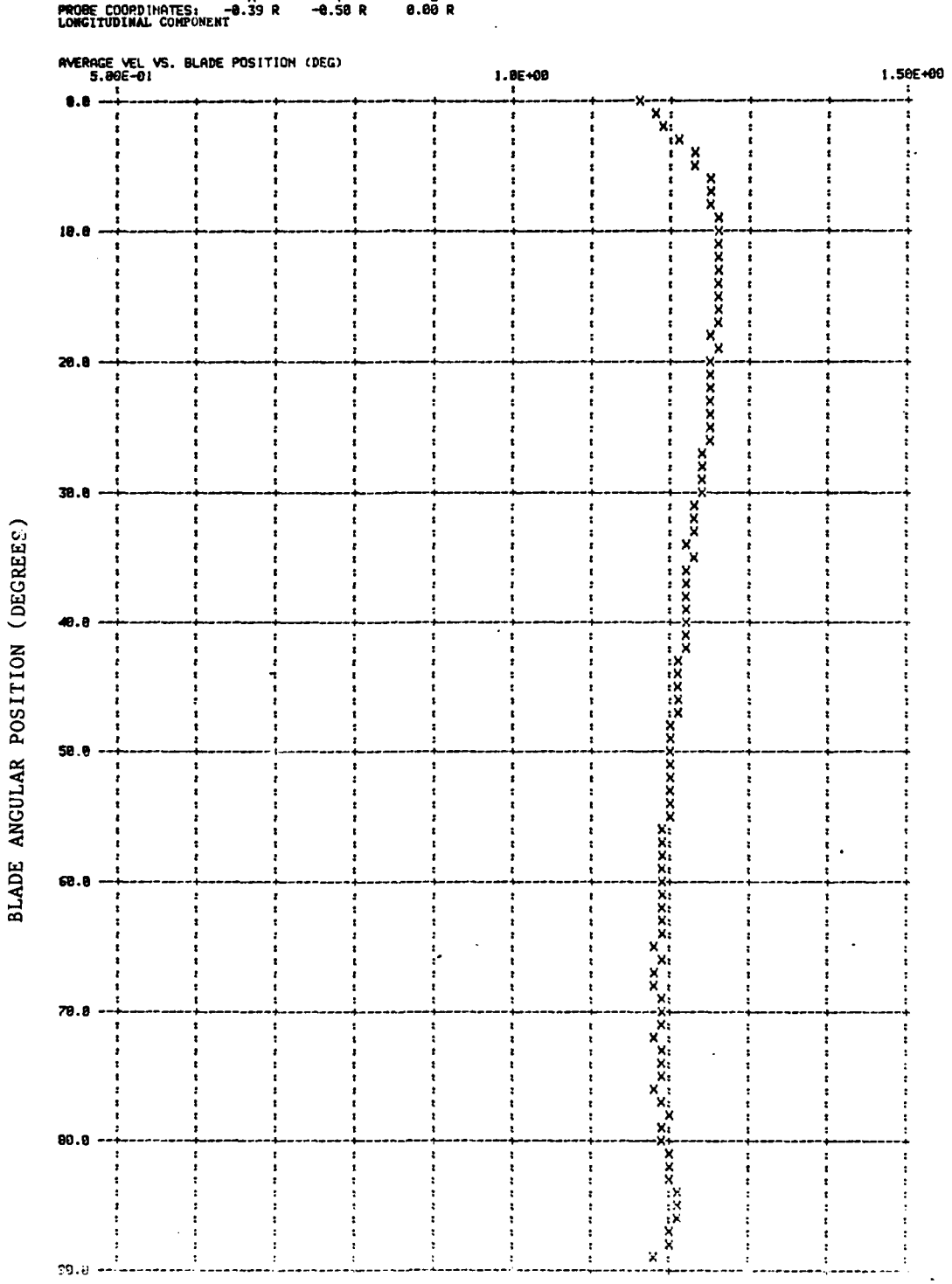



Figure 31a- Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

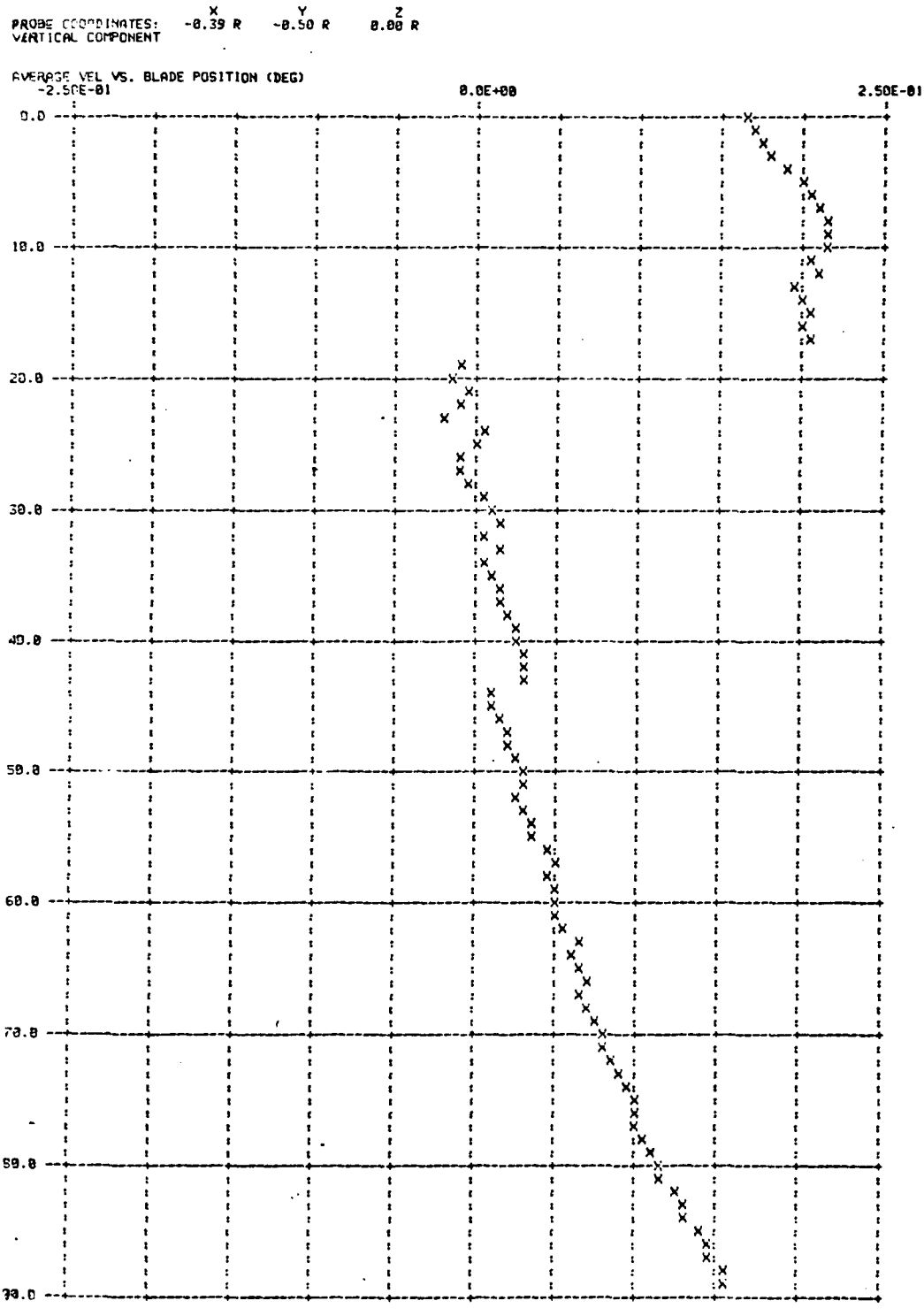



Figure 31b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

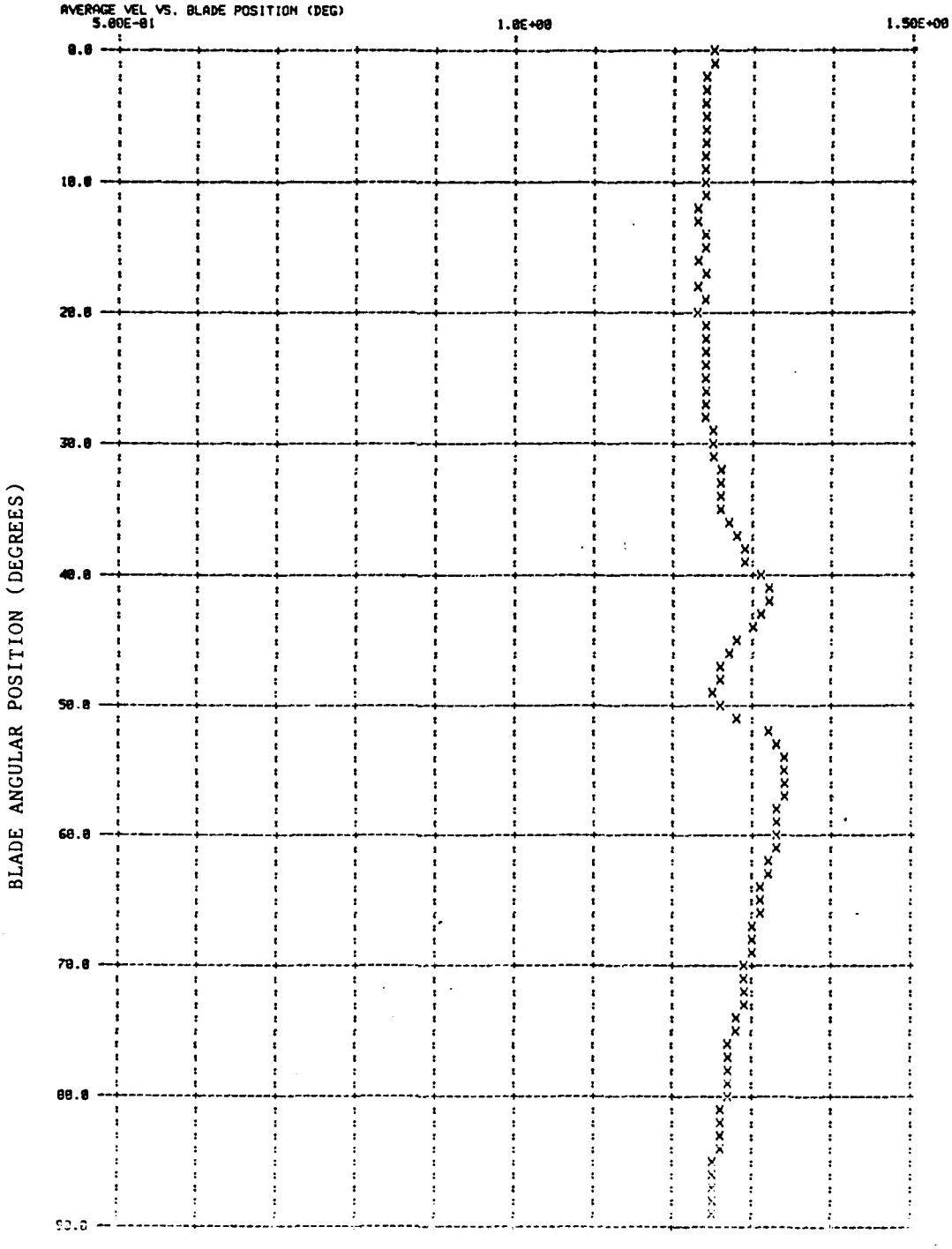



Figure 32a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

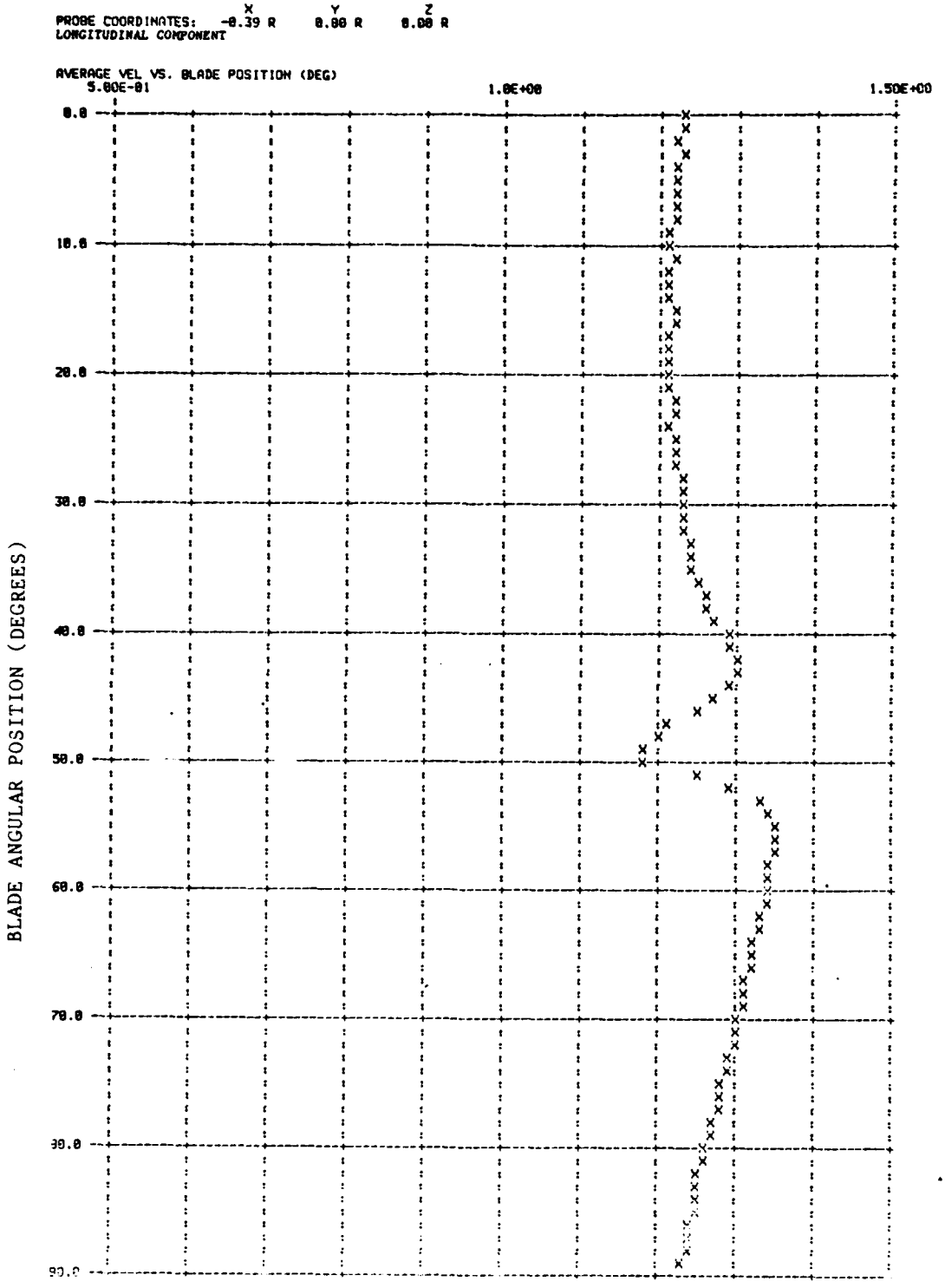



Figure 33a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

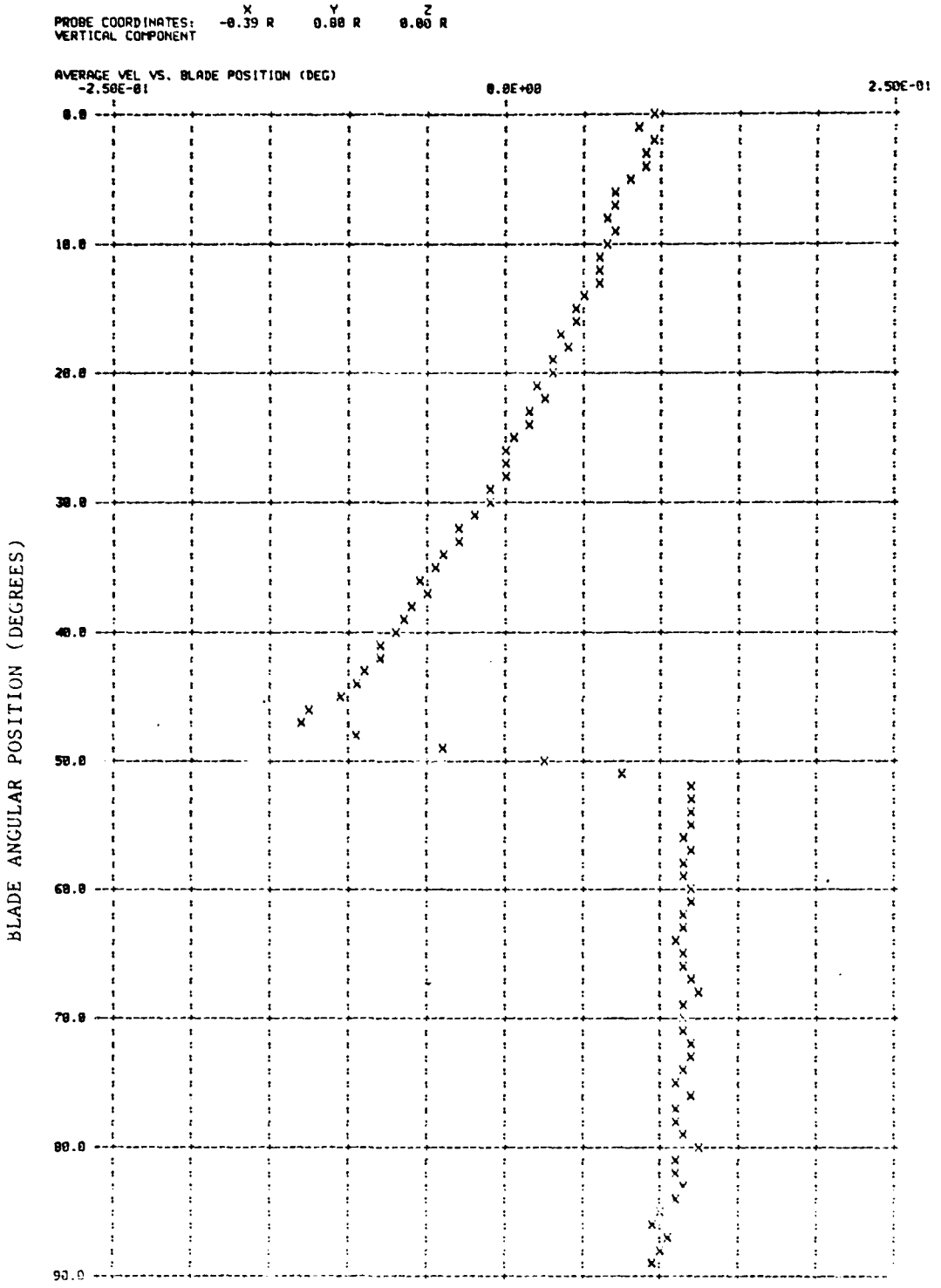



Figure 33b Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

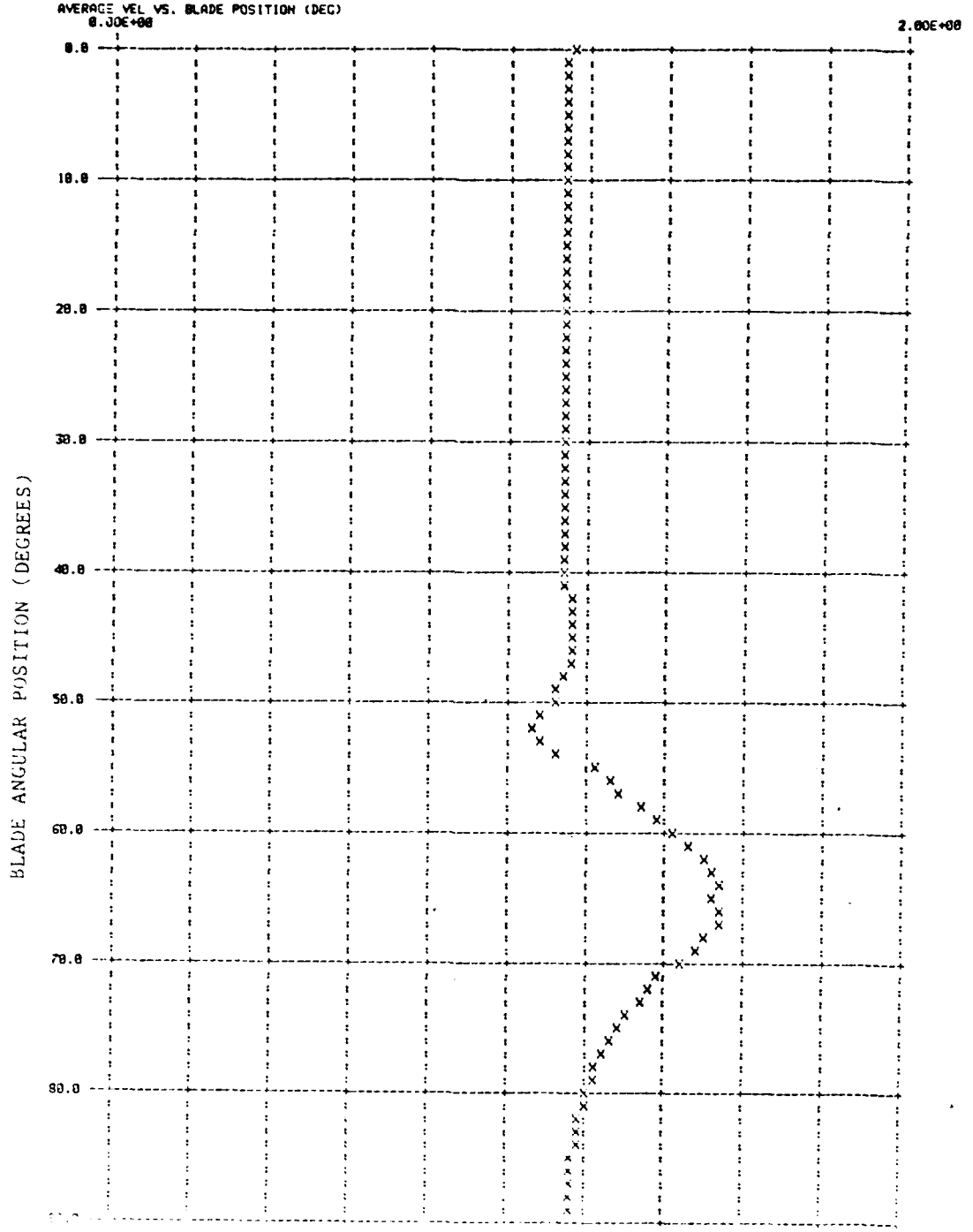



Figure 34a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

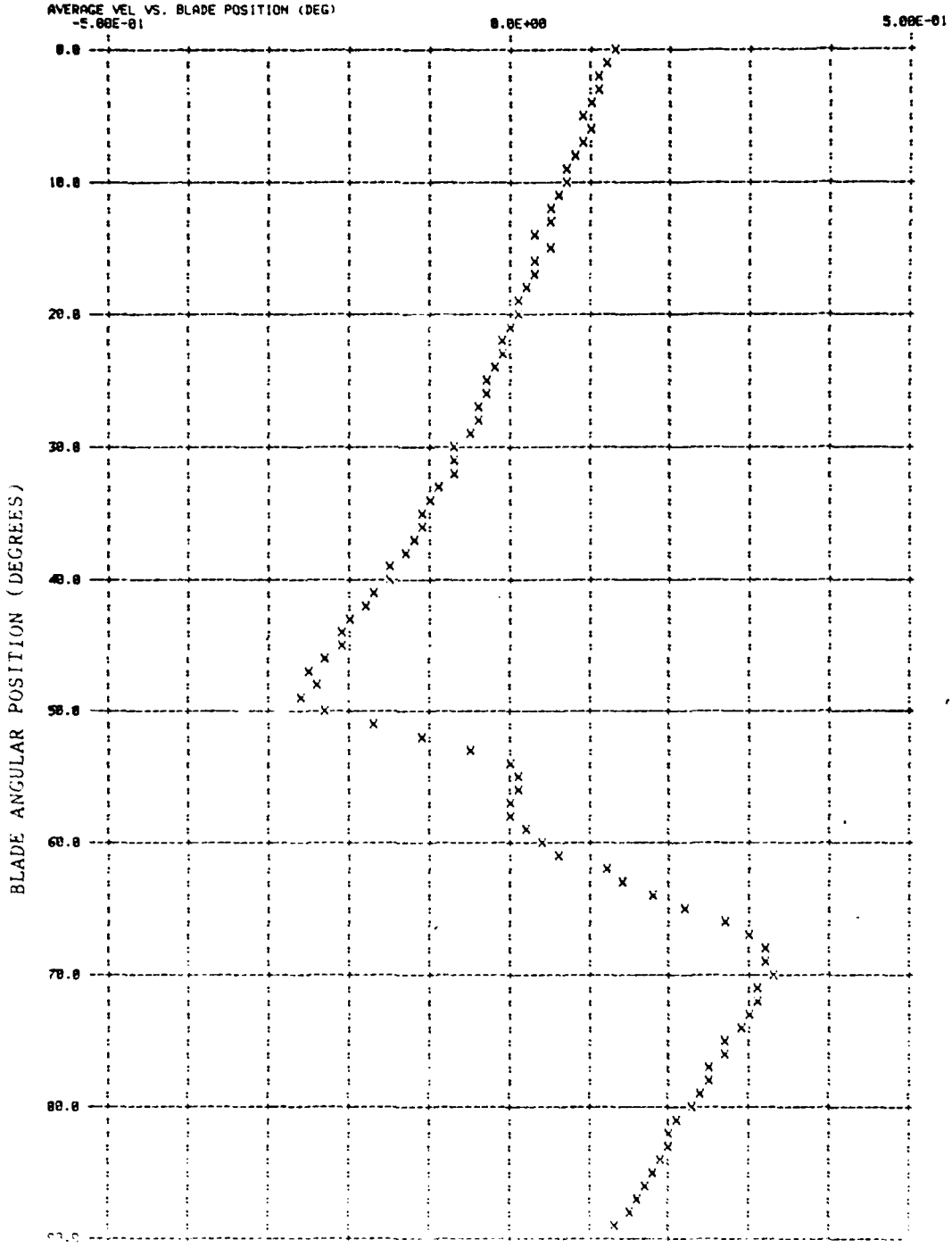



Figure 34b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

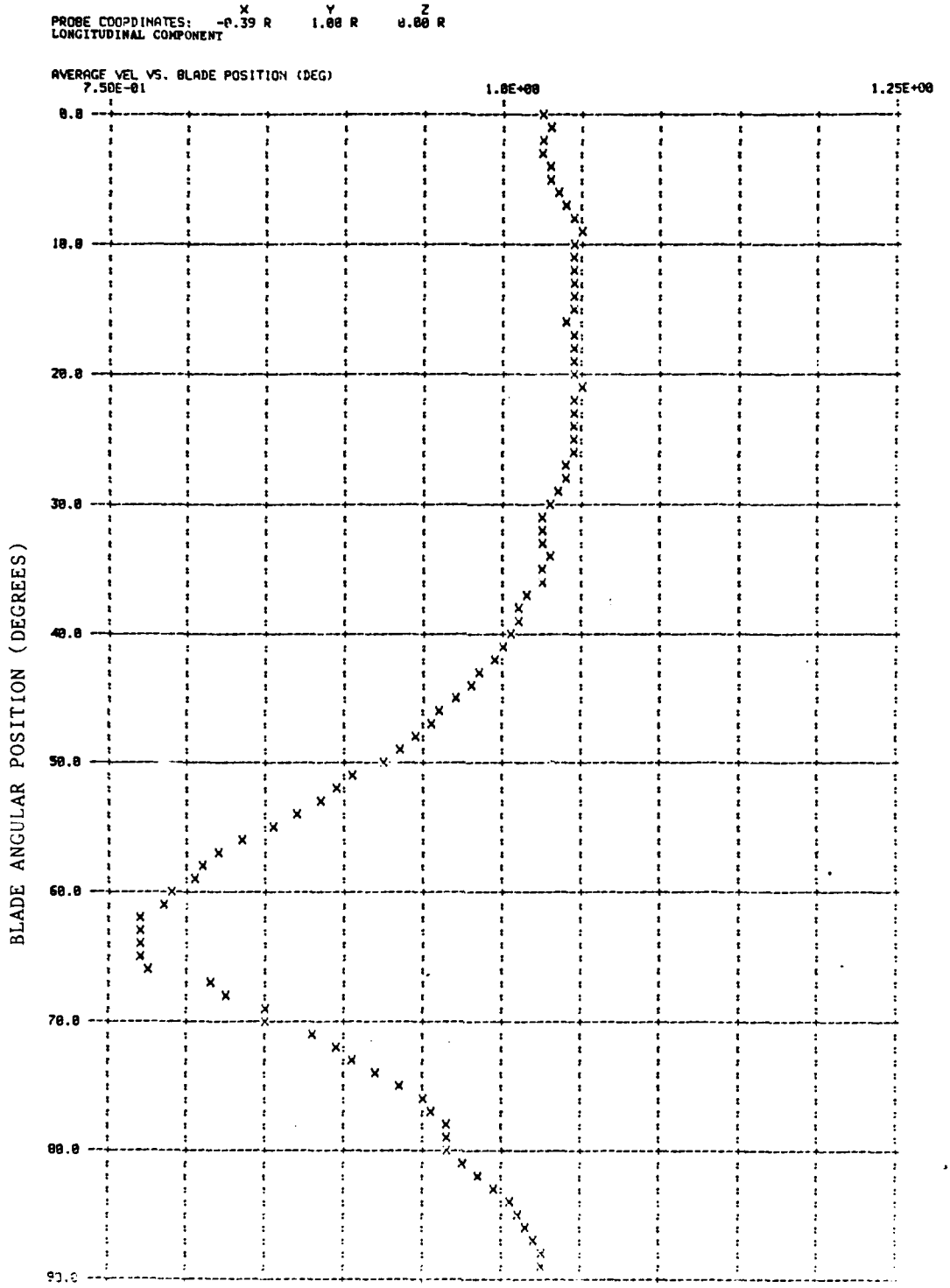



Figure 35a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

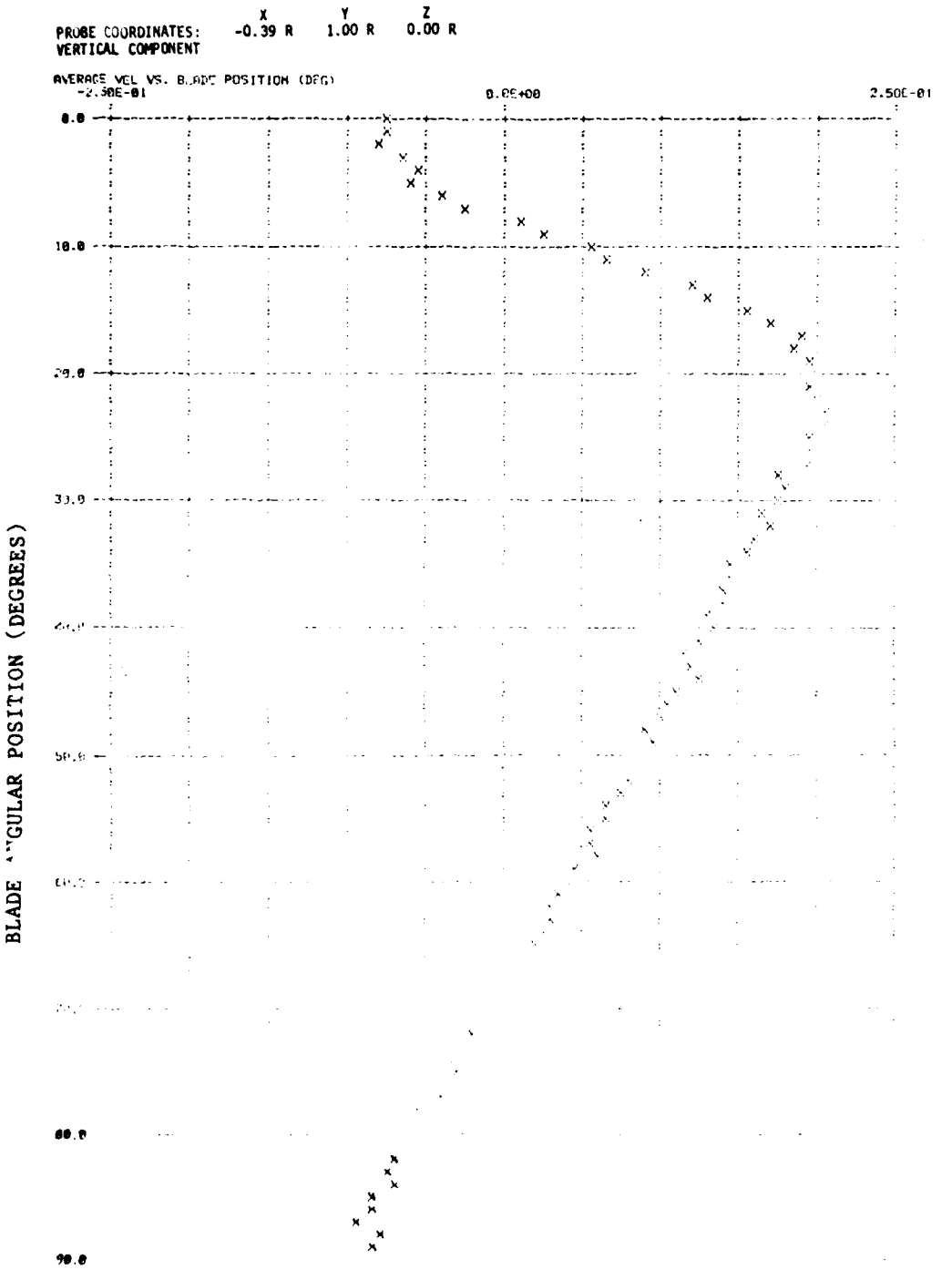



Figure 35b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

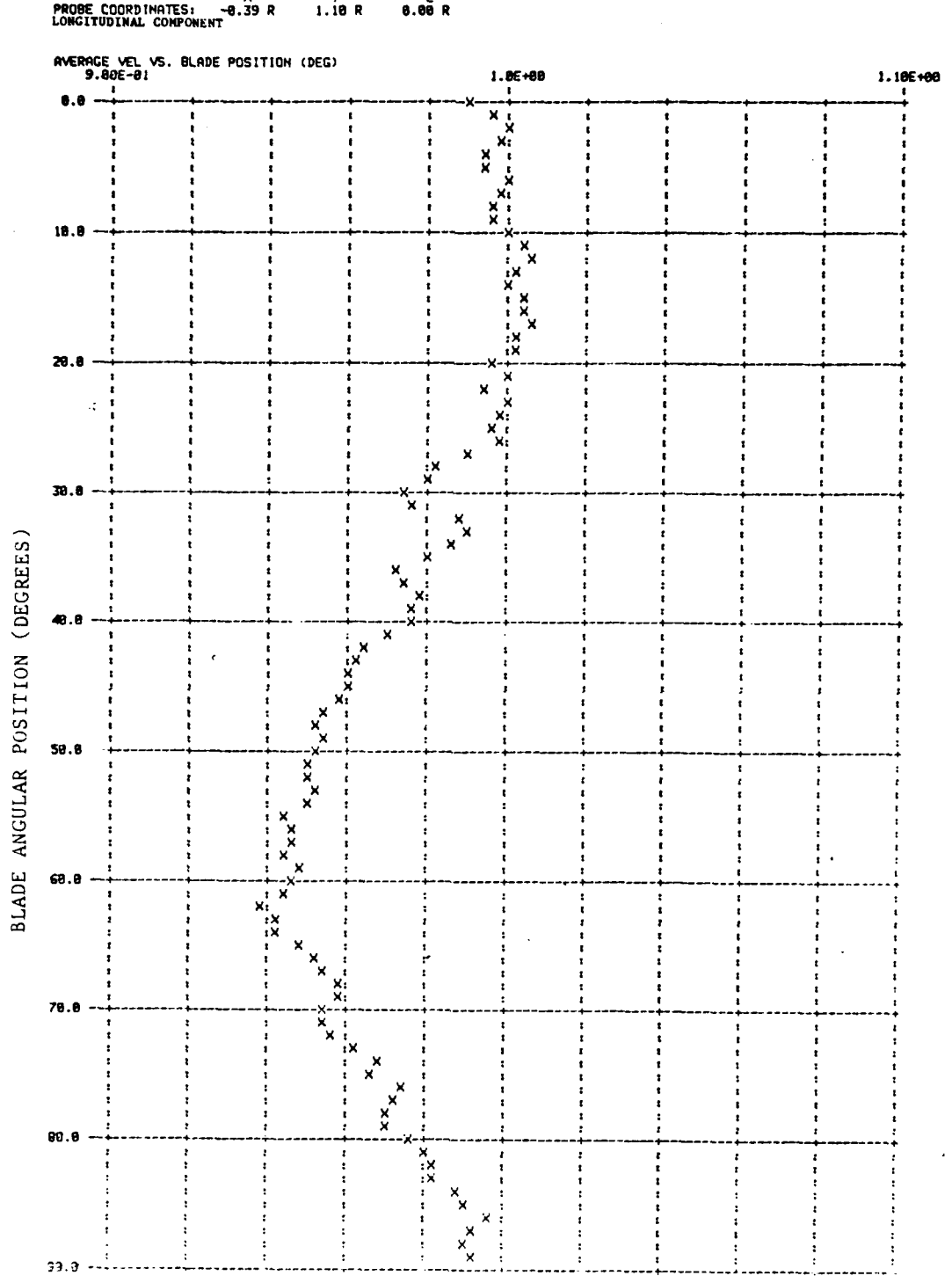



Figure 36a - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

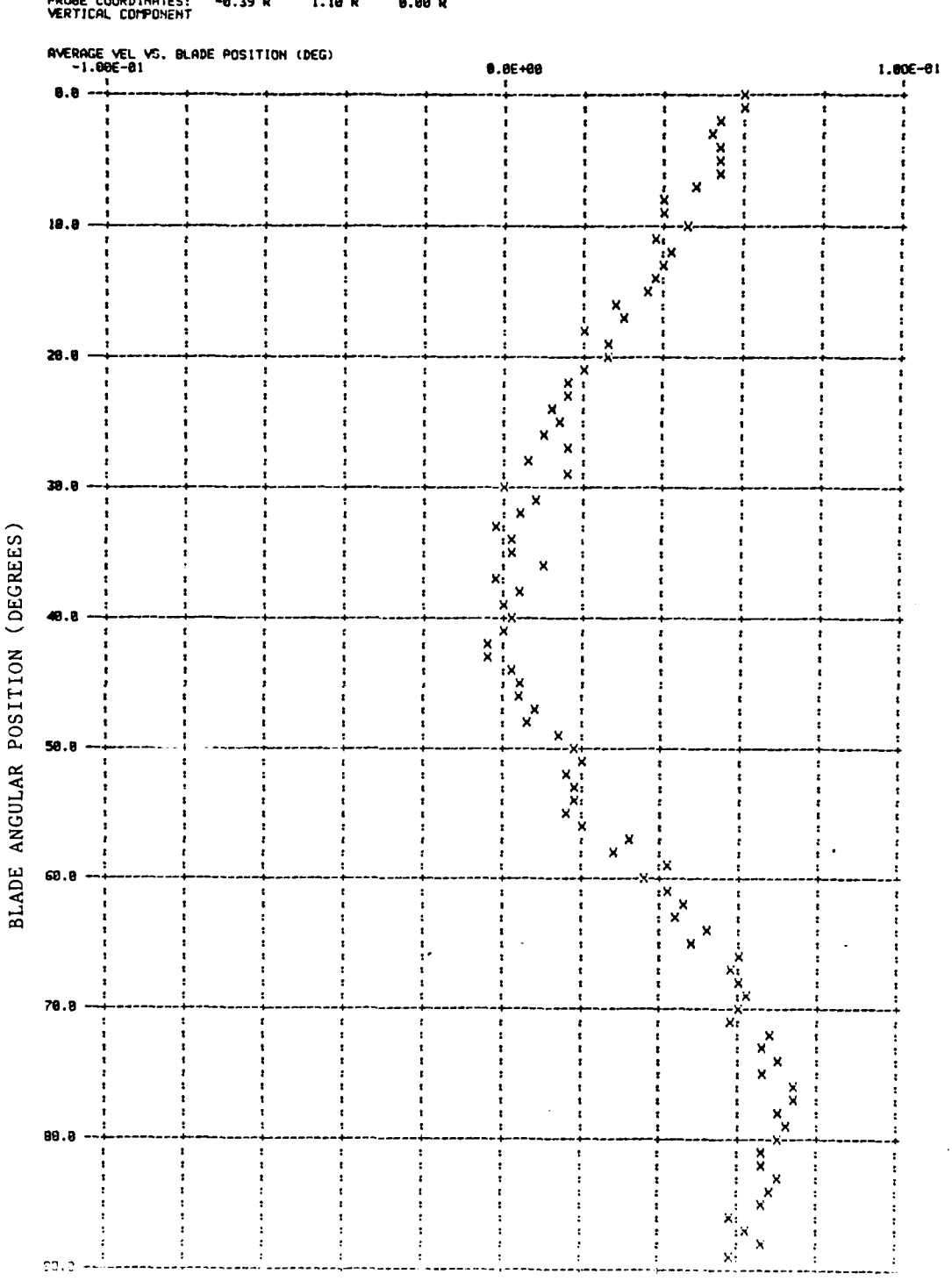



Figure 36b - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

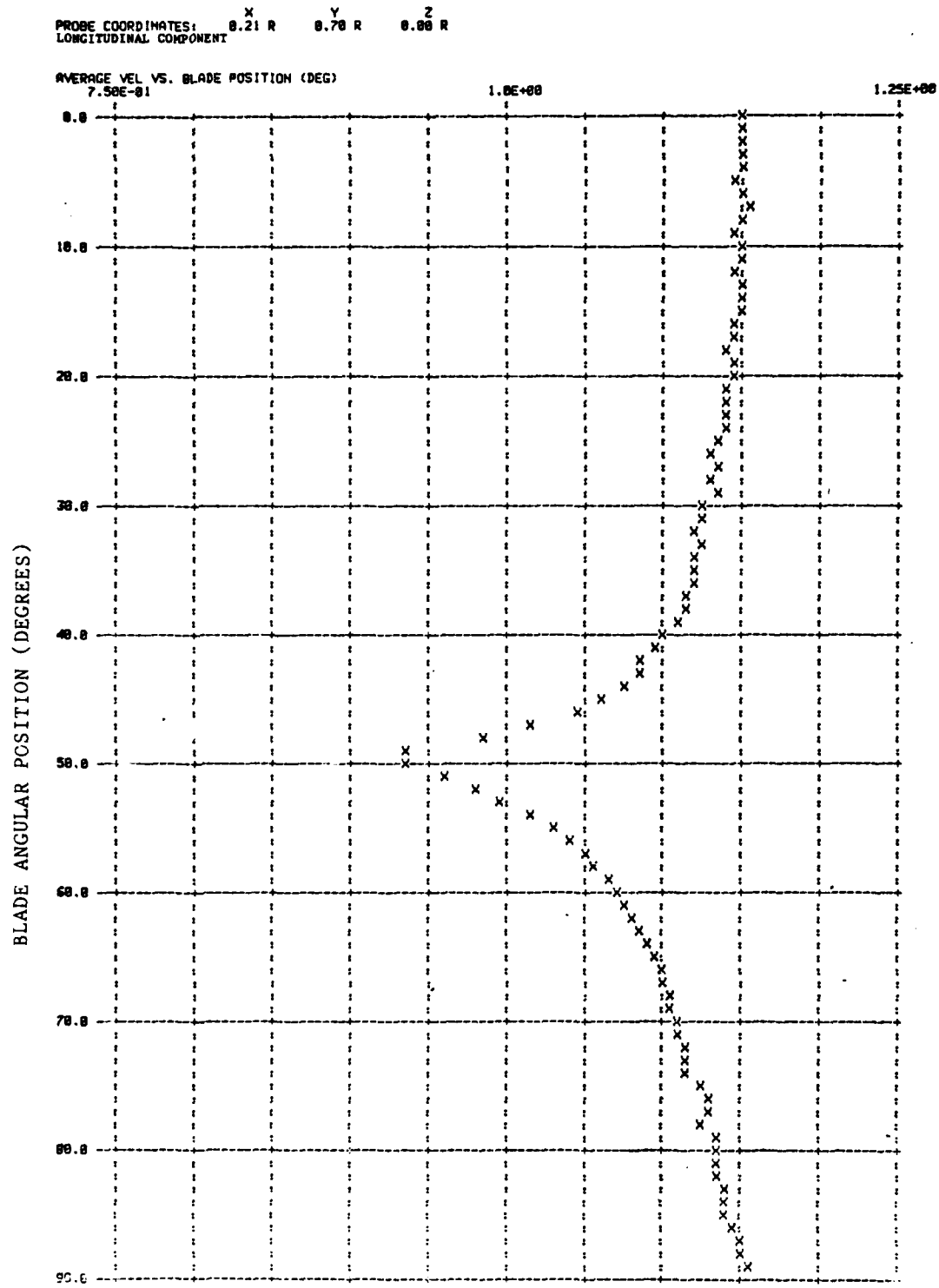



Figure 37a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

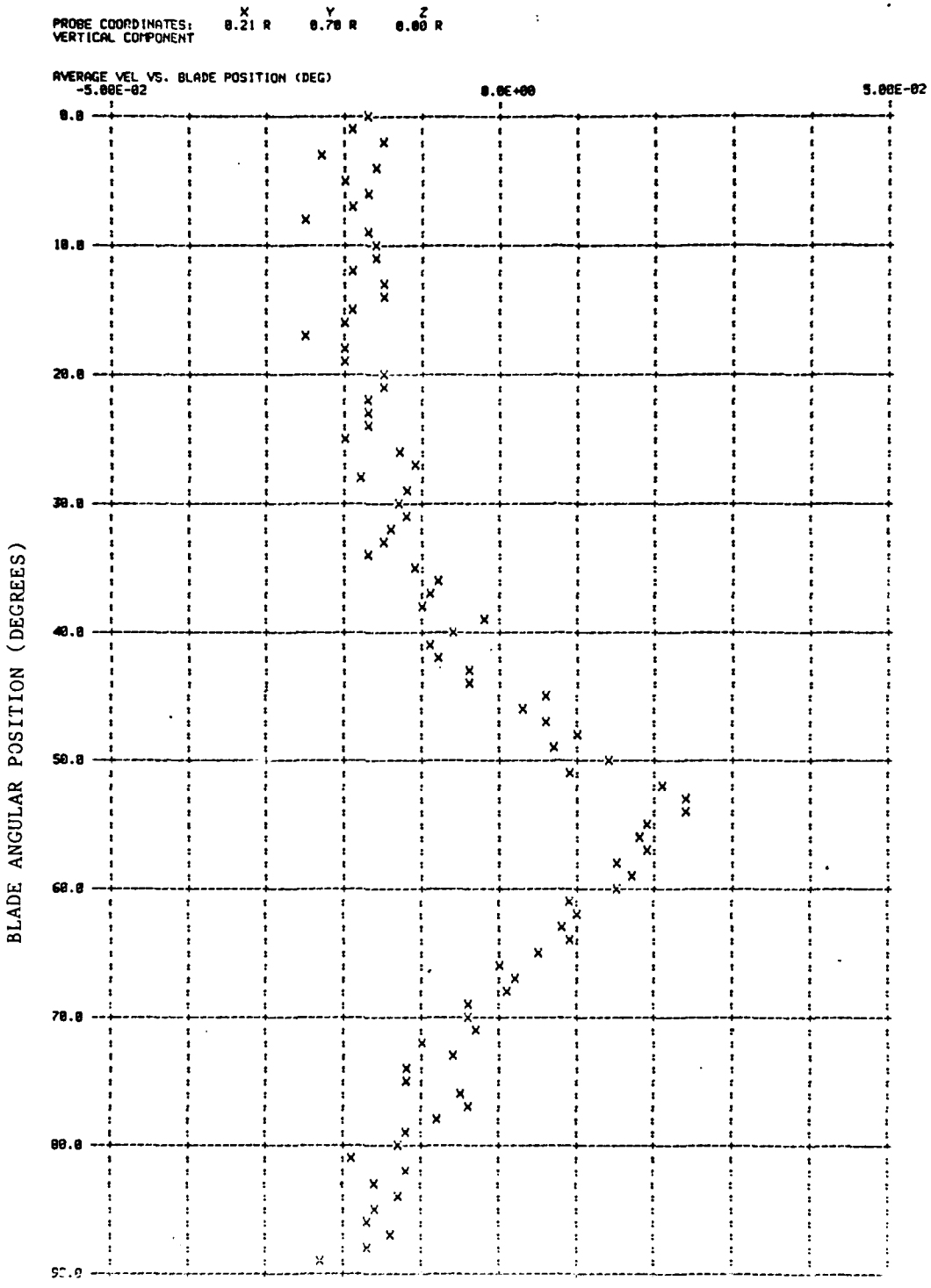



Figure 37b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

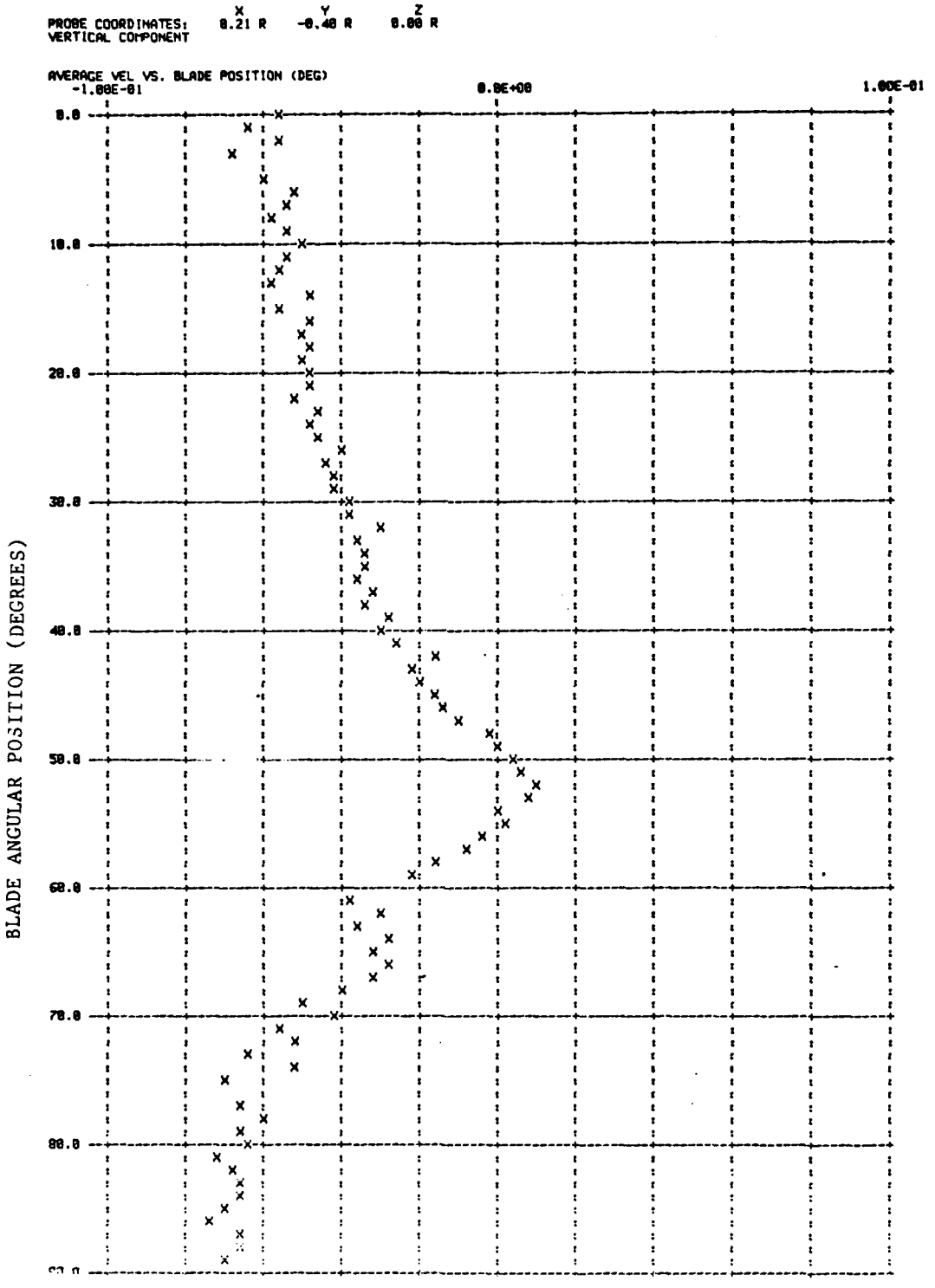



Figure 38b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

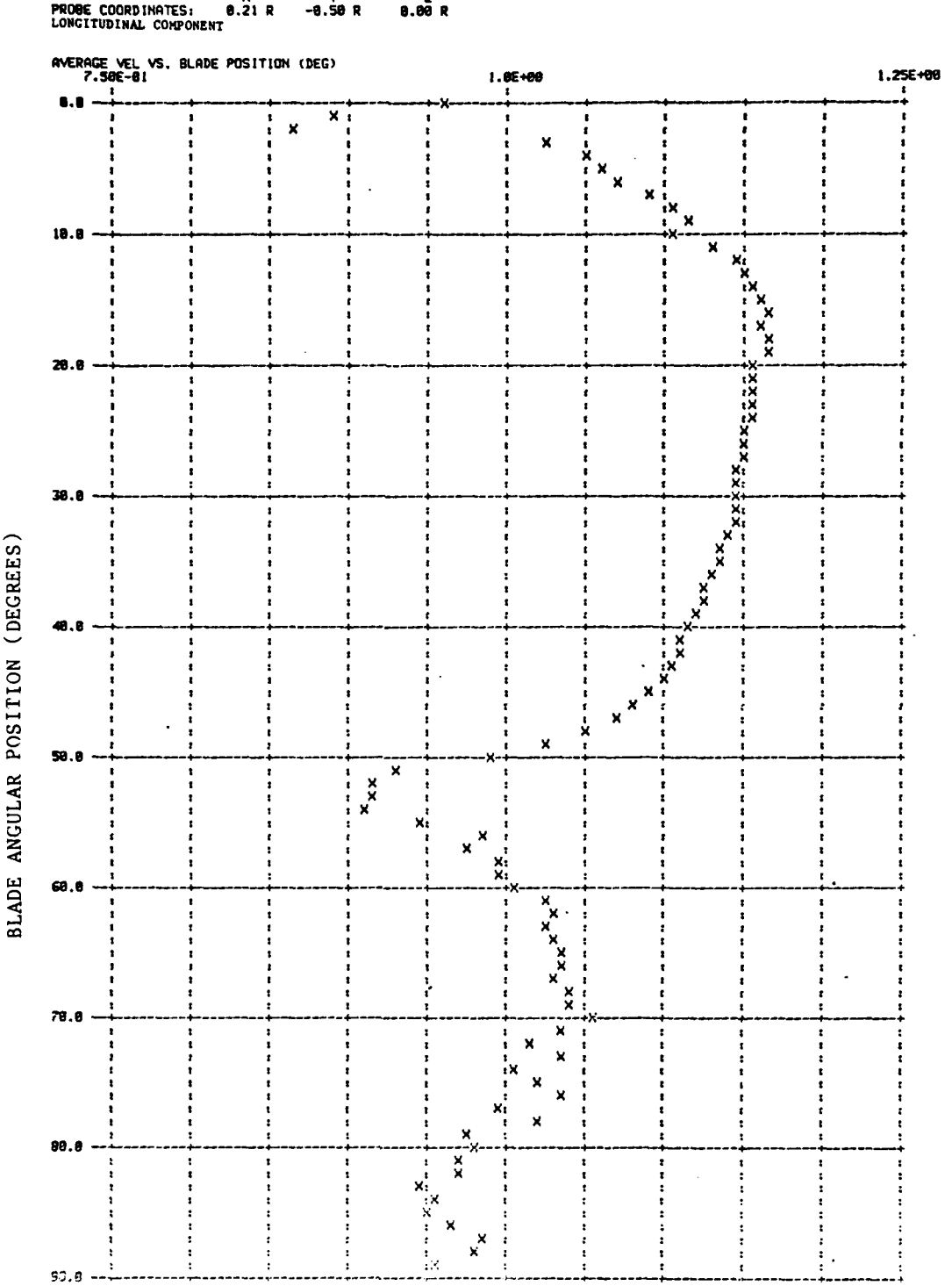



Figure 39a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

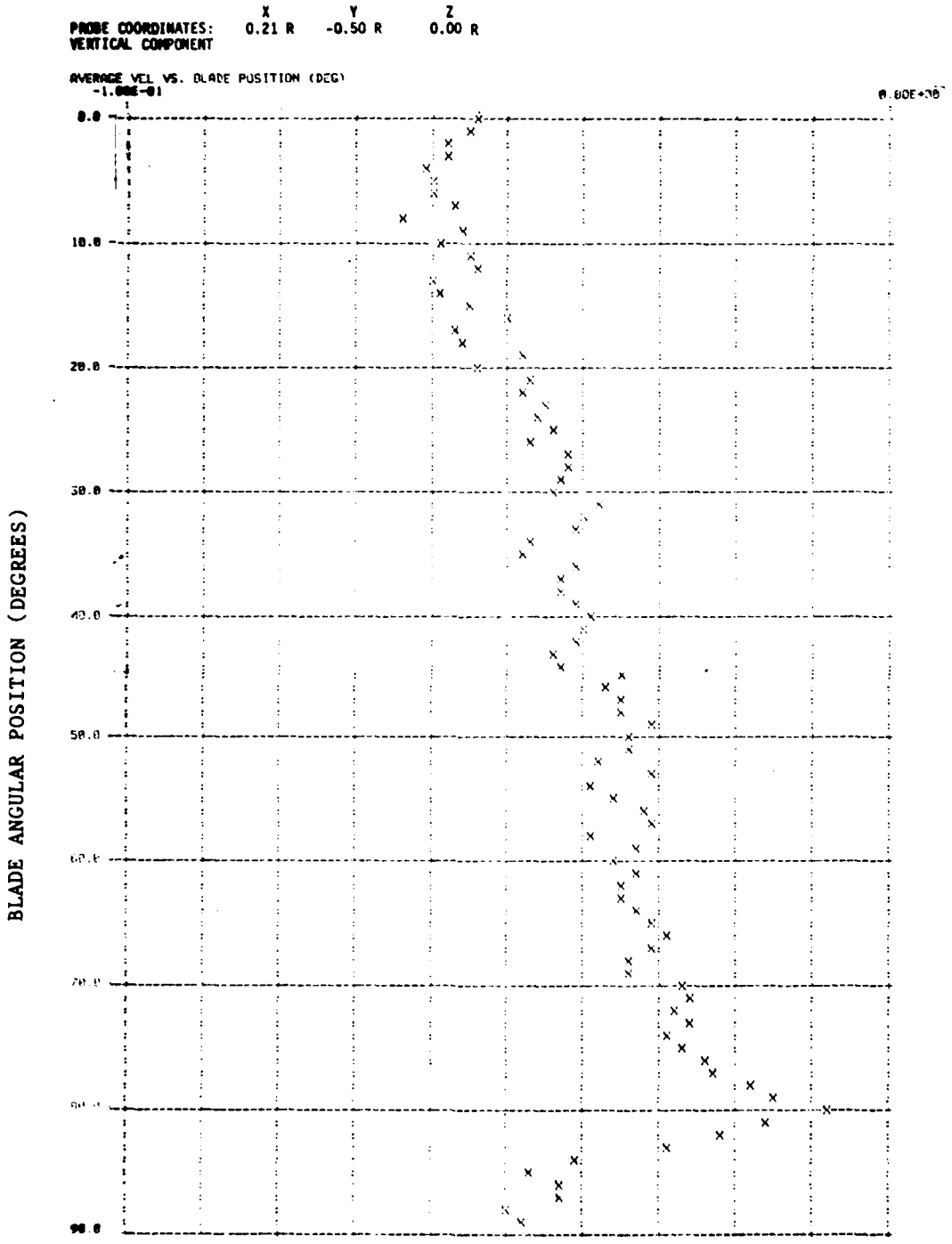



Figure 39b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

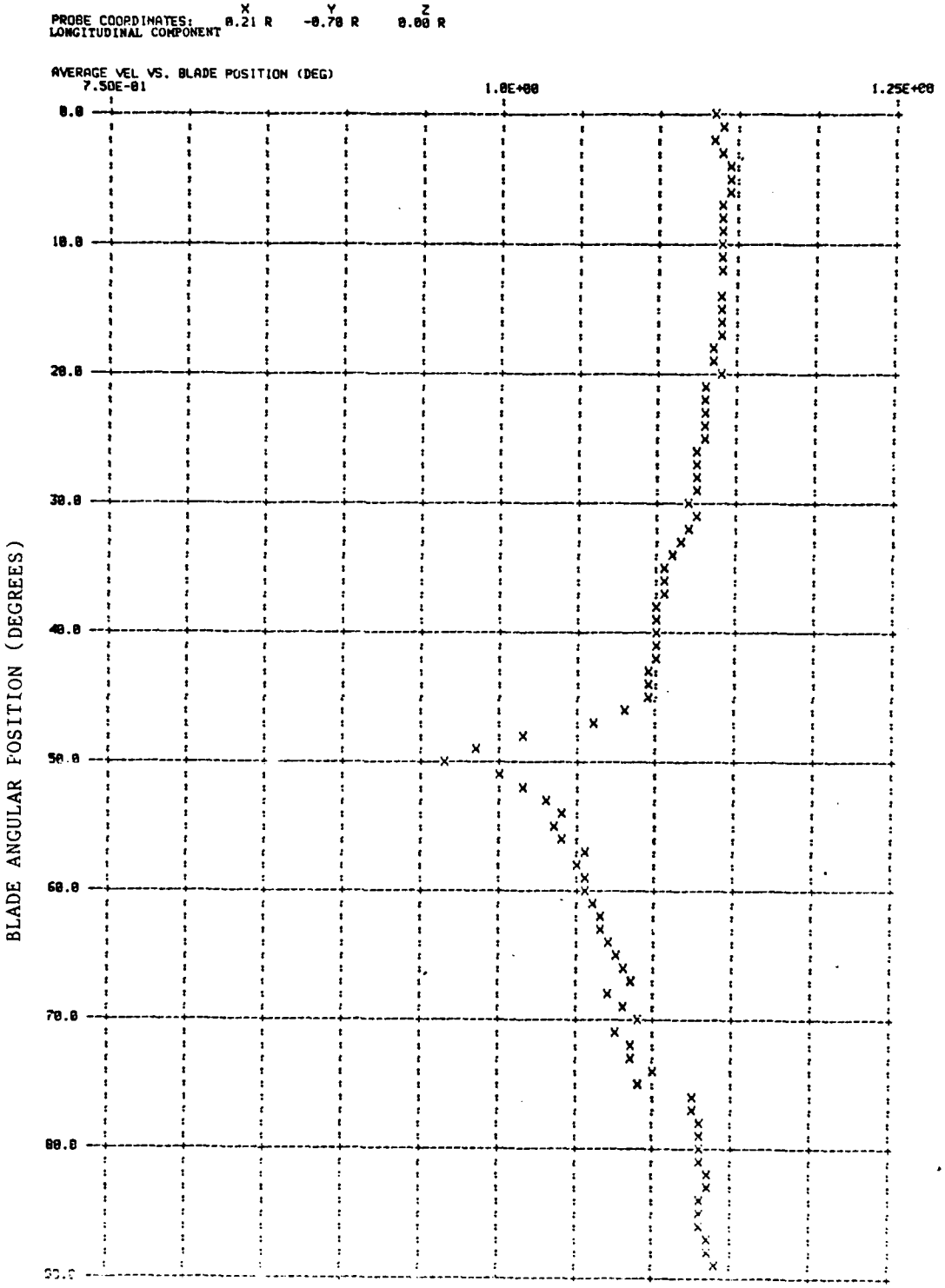



Figure 40a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

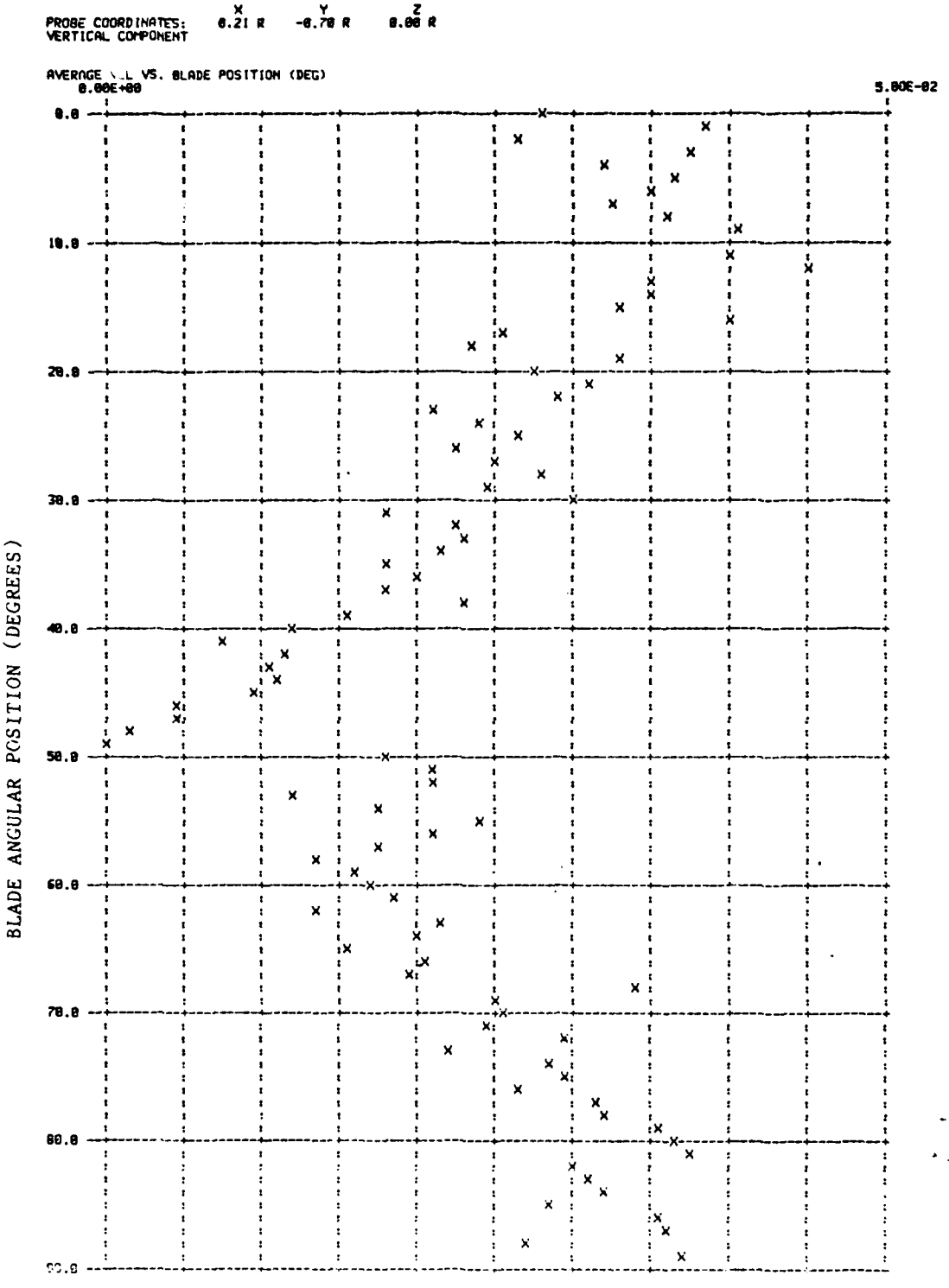



Figure 40b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

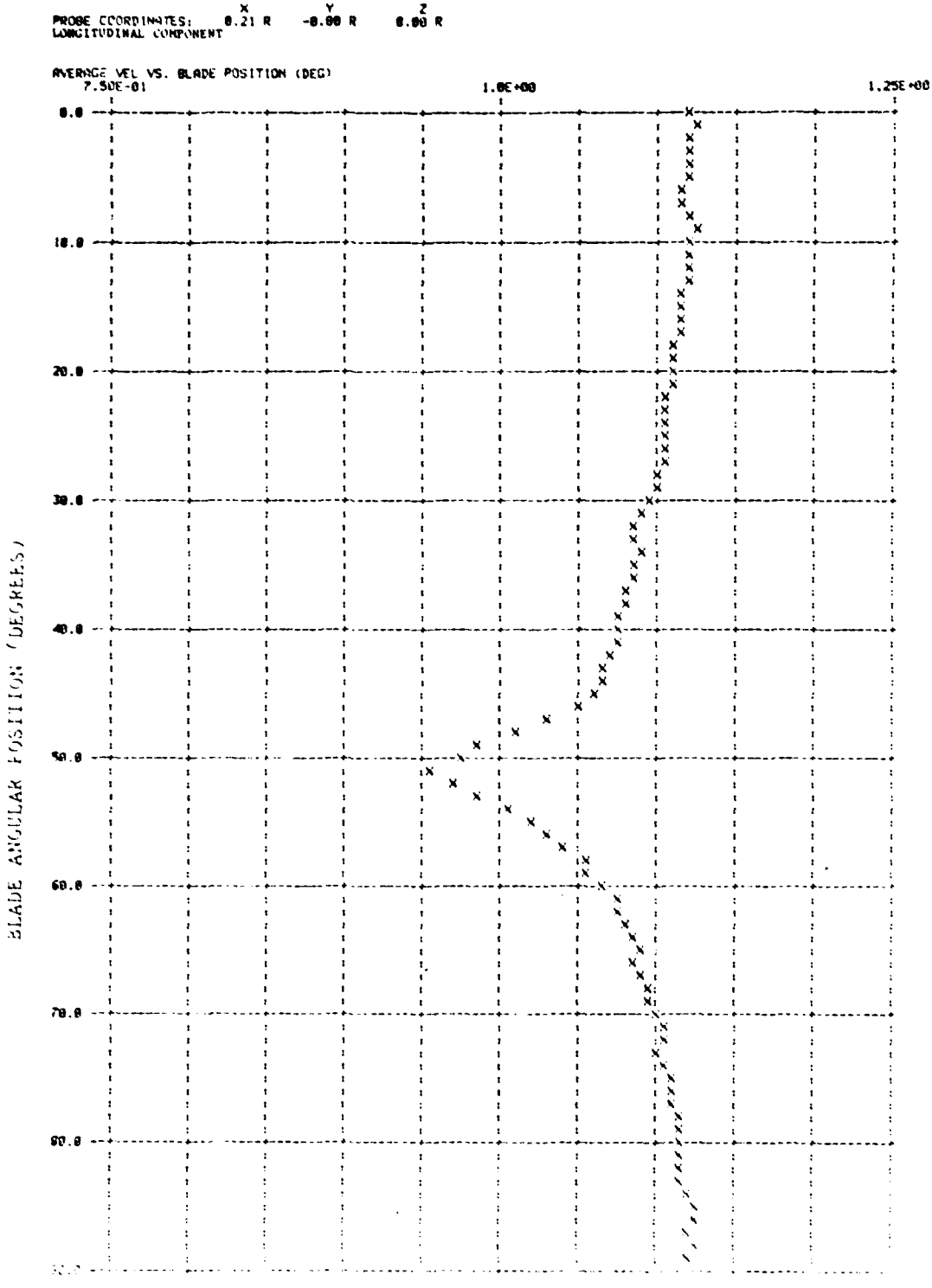



Figure 41a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

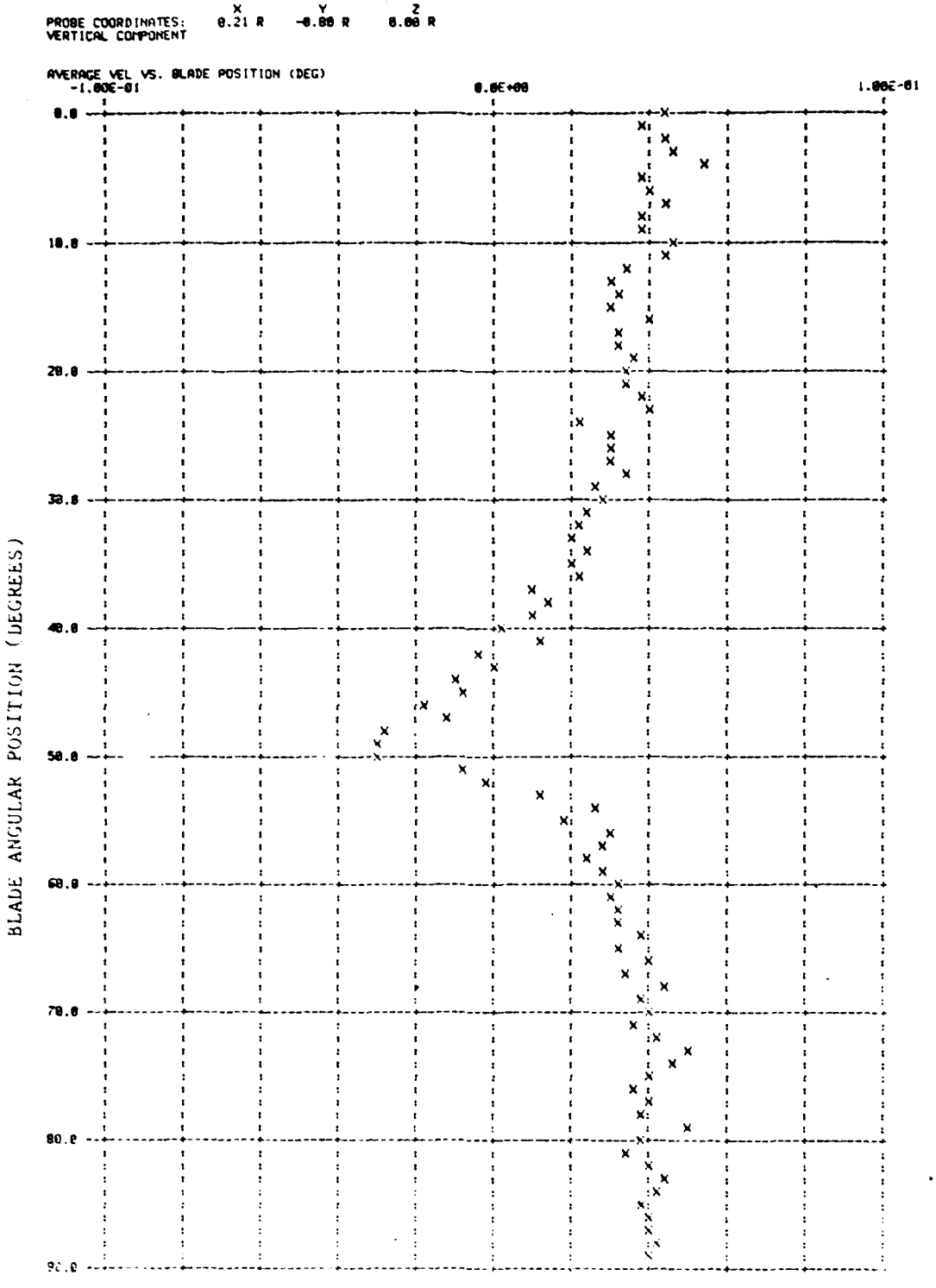



Figure 41b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

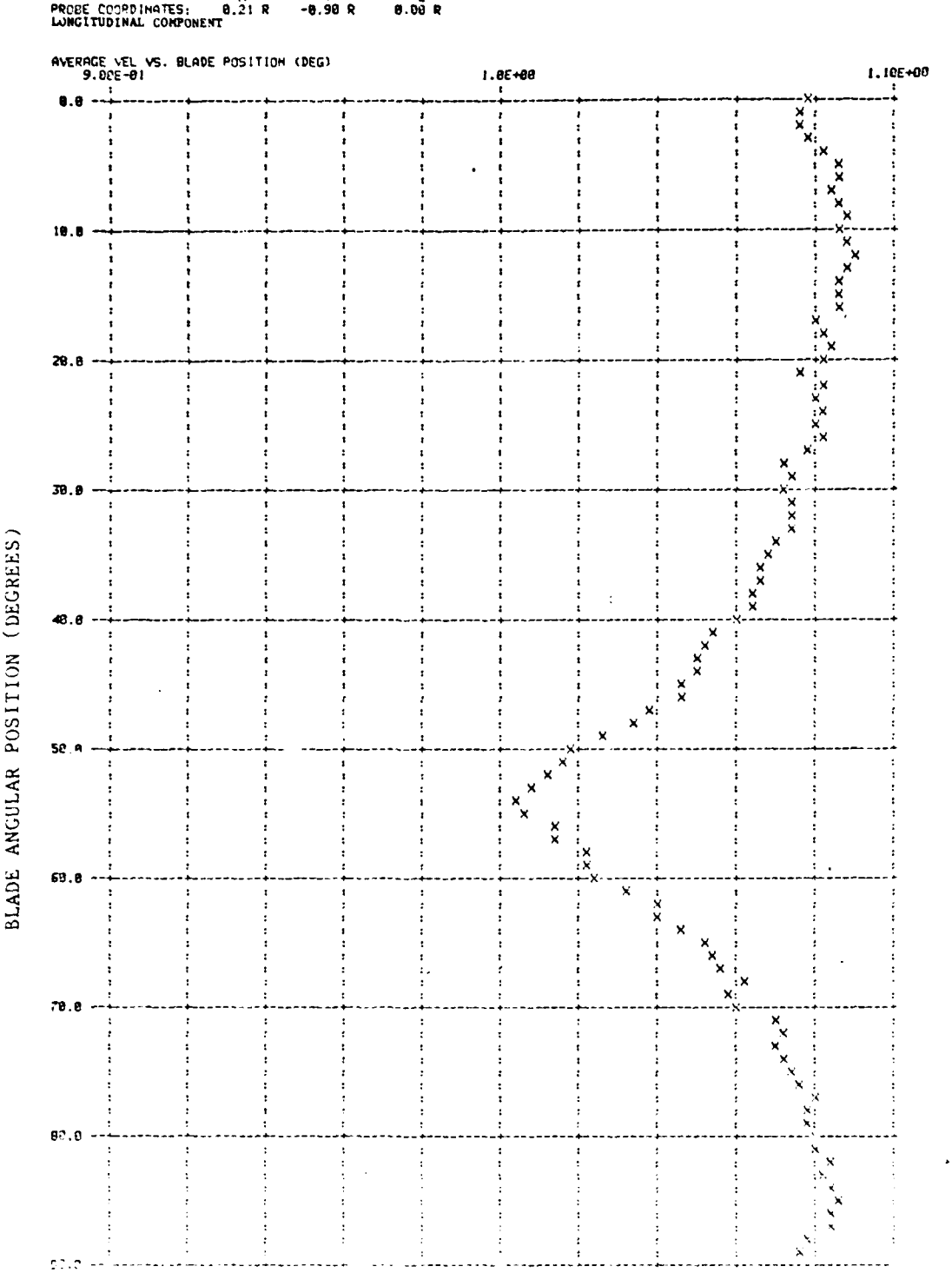



Figure 42a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

AD-A088 937 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
EXPERIMENTAL DETERMINATION OF TWO COMPONENTS OF FIELD POINT VEL--ETC(U)
FEB 80 N SANTELLI, J LIBBY, M JEFFERS

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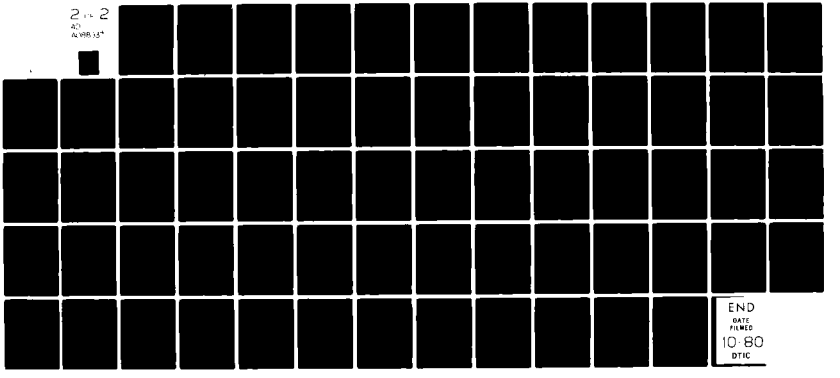

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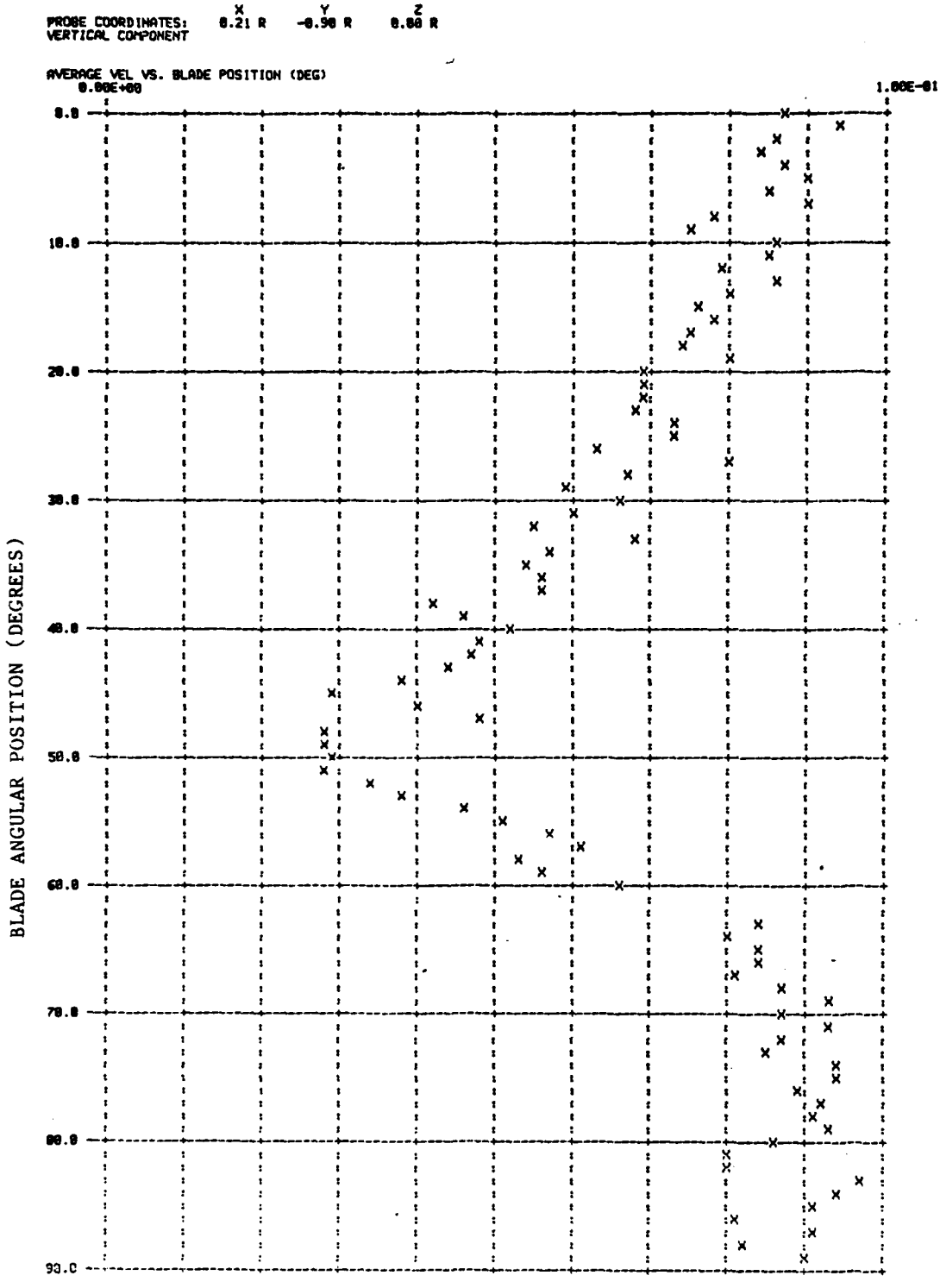


Figure 42b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

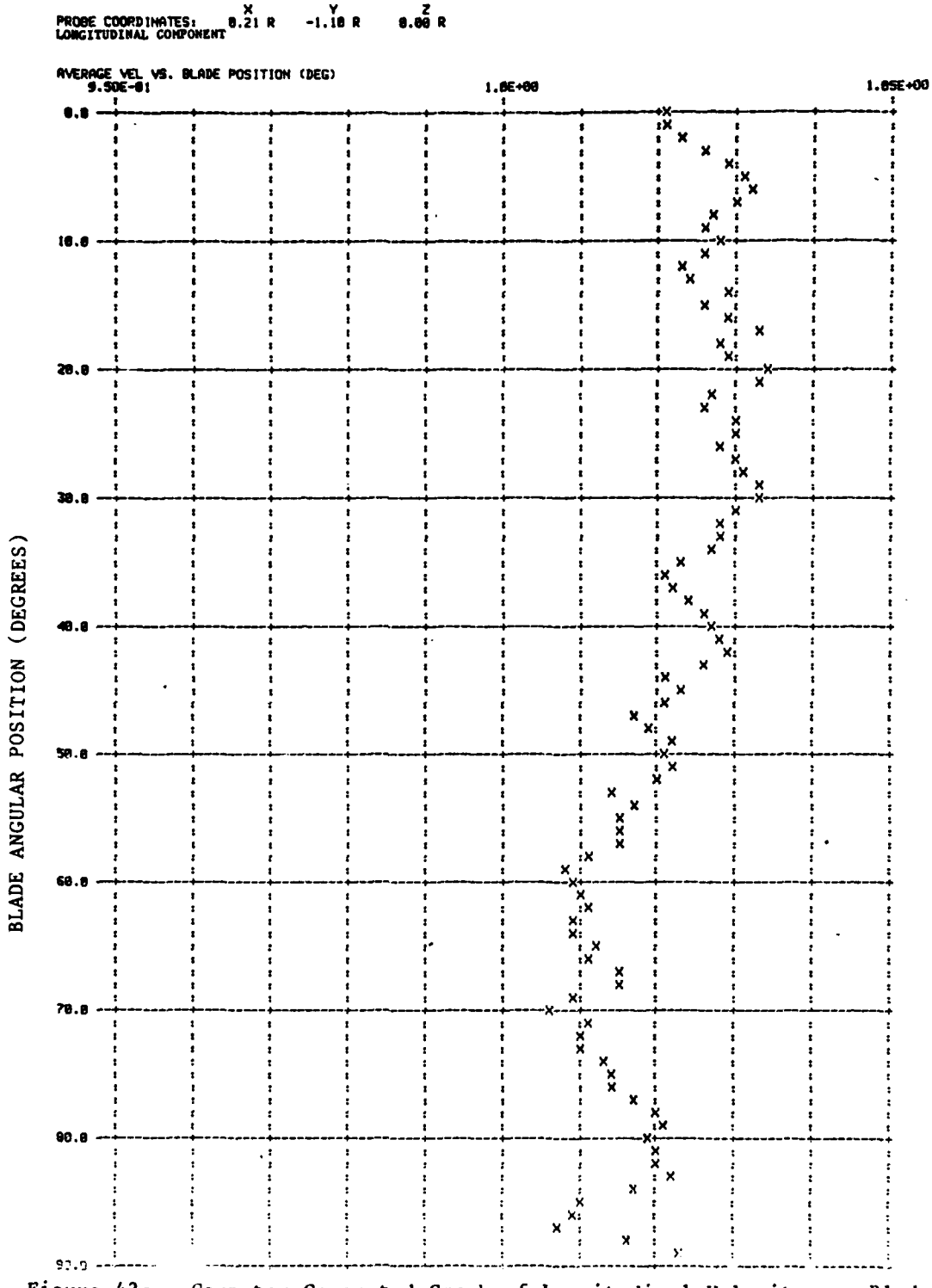


Figure 43a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

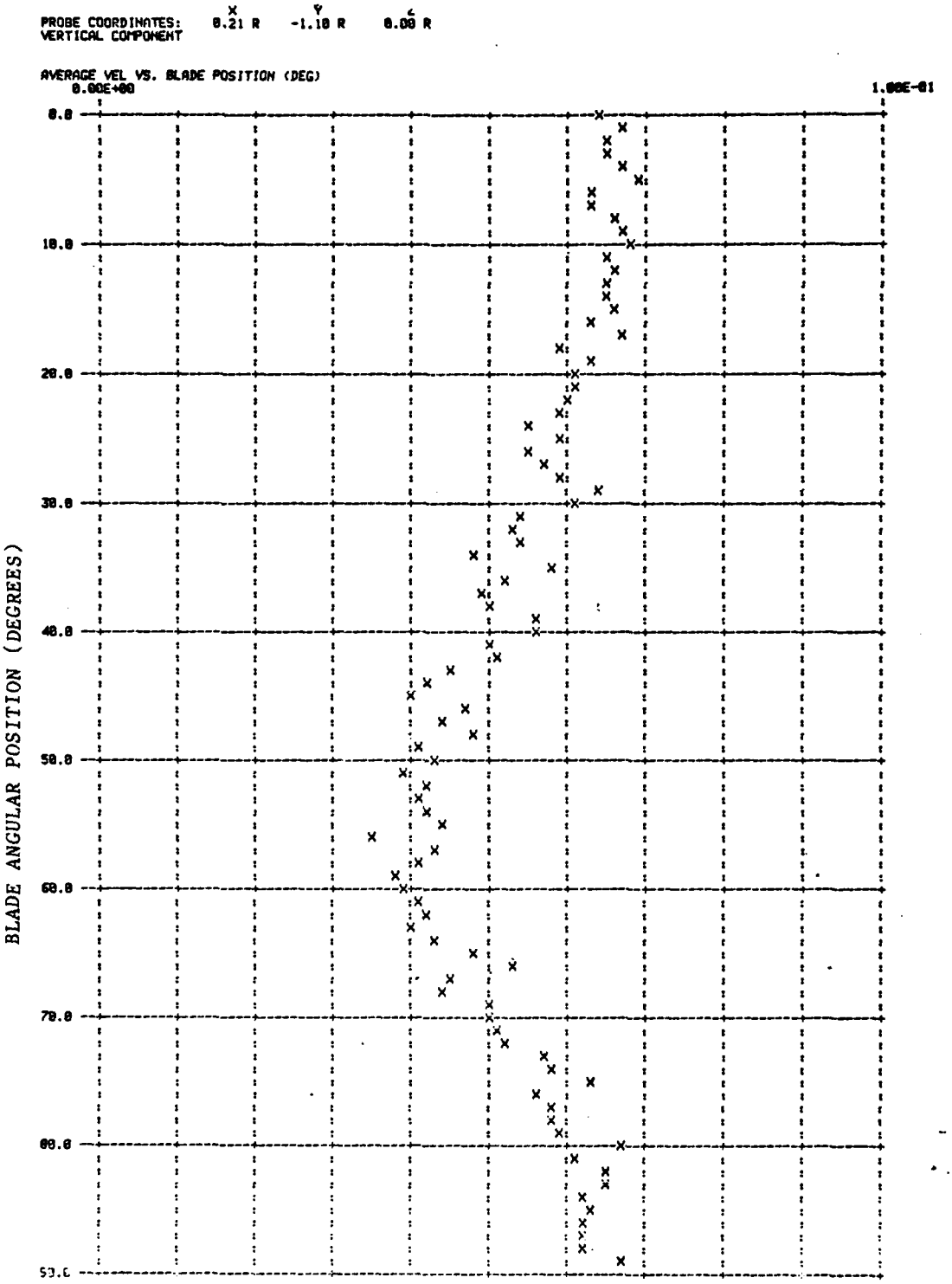


Figure 43b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

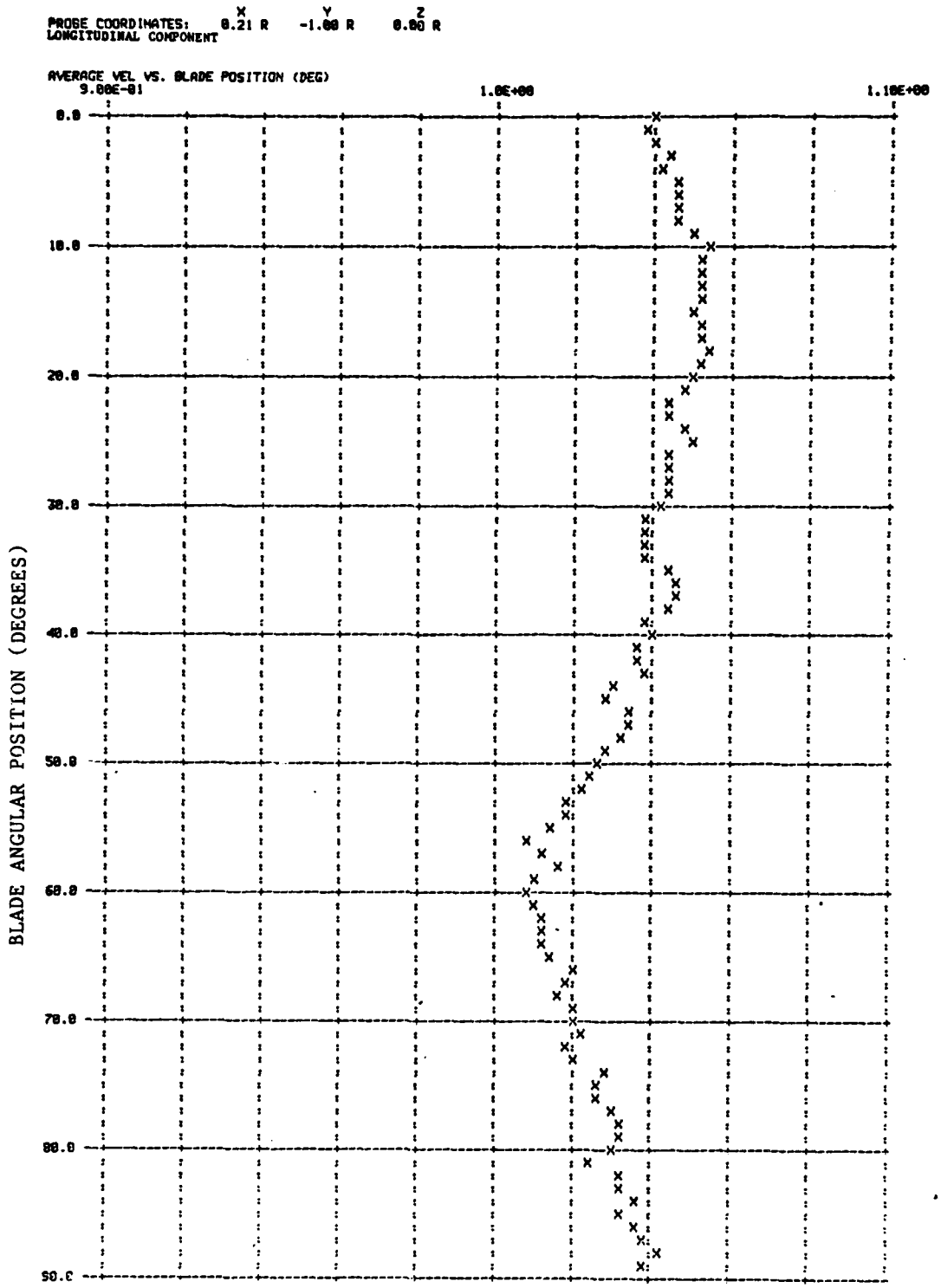


Figure 44a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

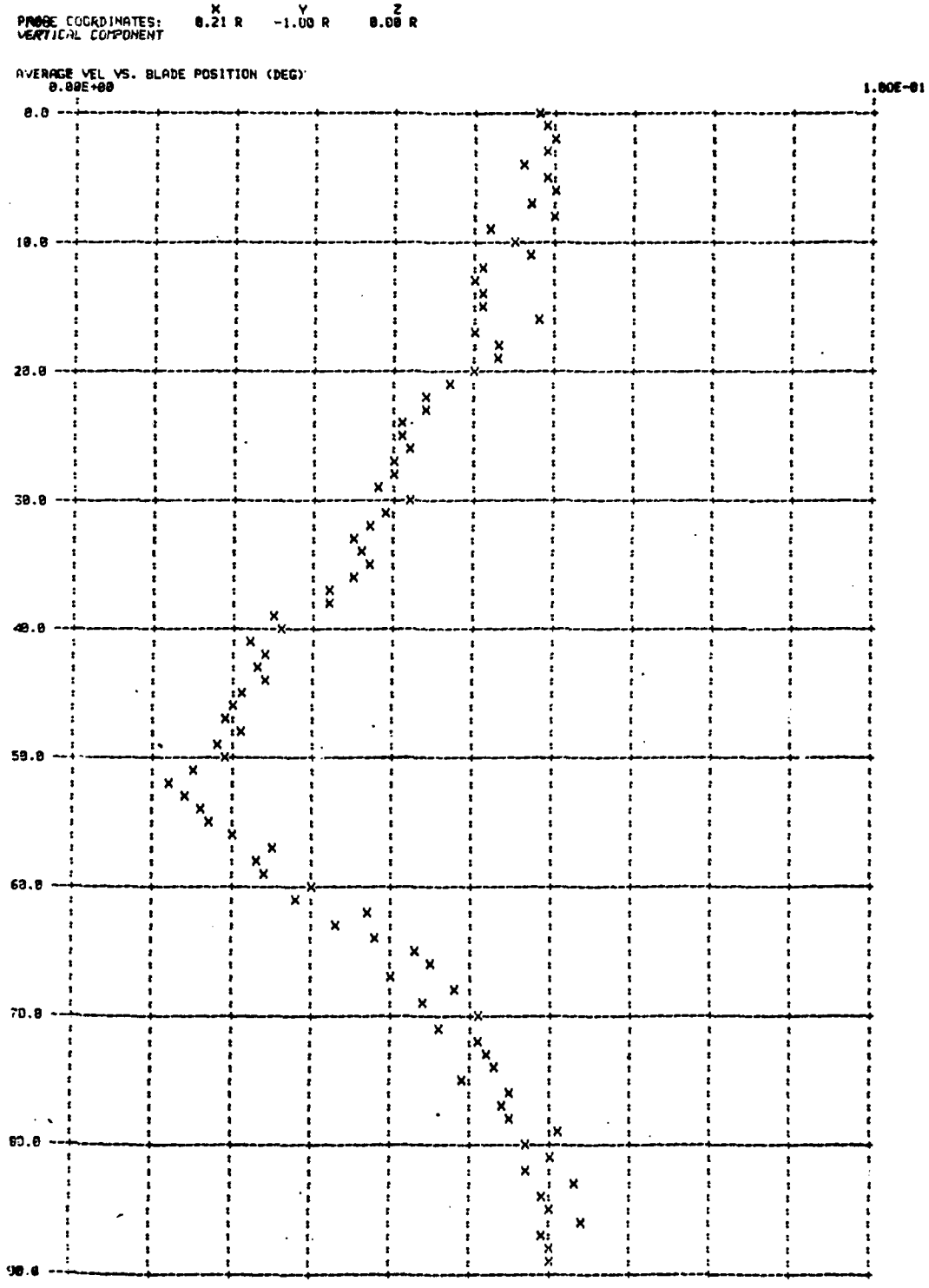


Figure 44b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

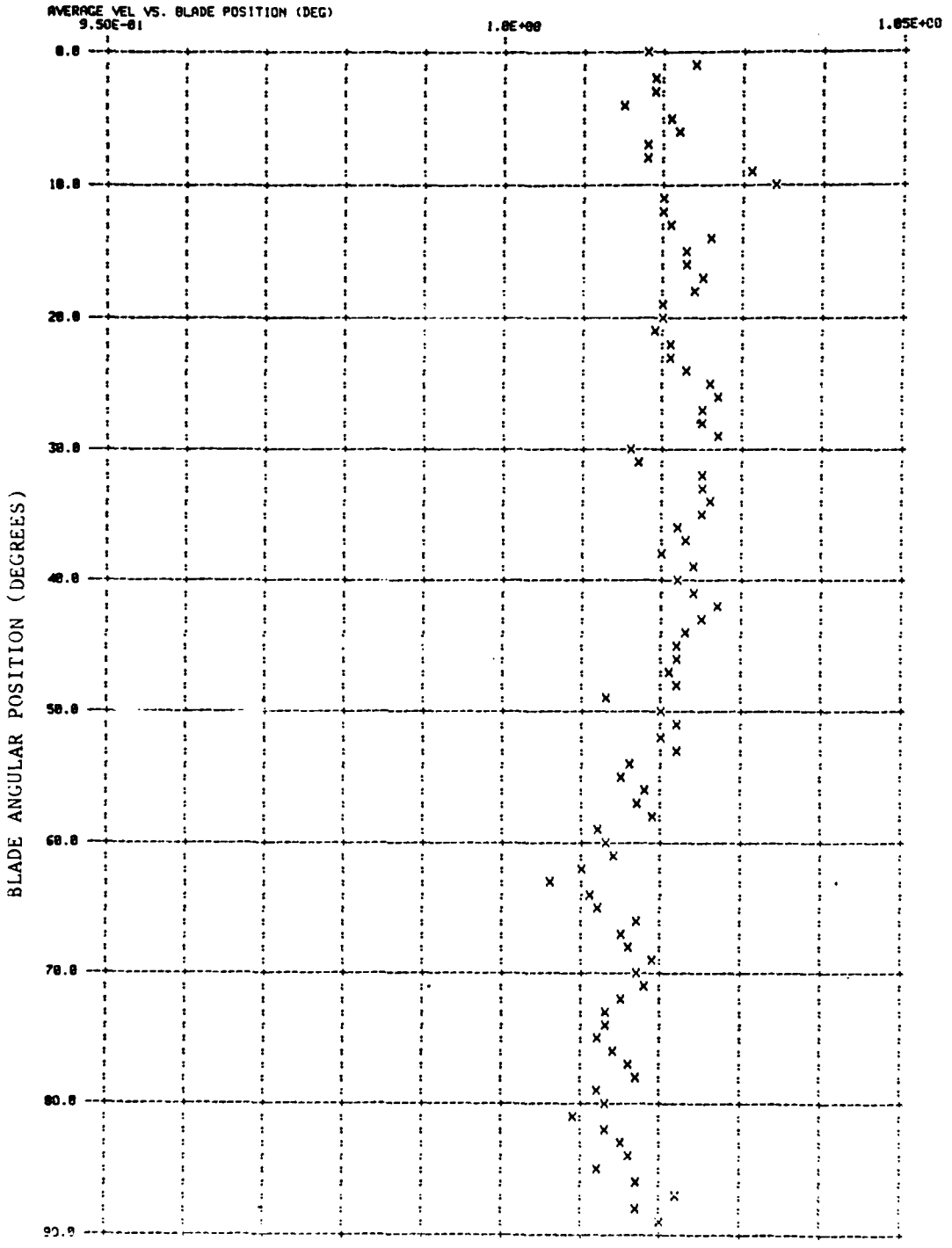


Figure 45a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

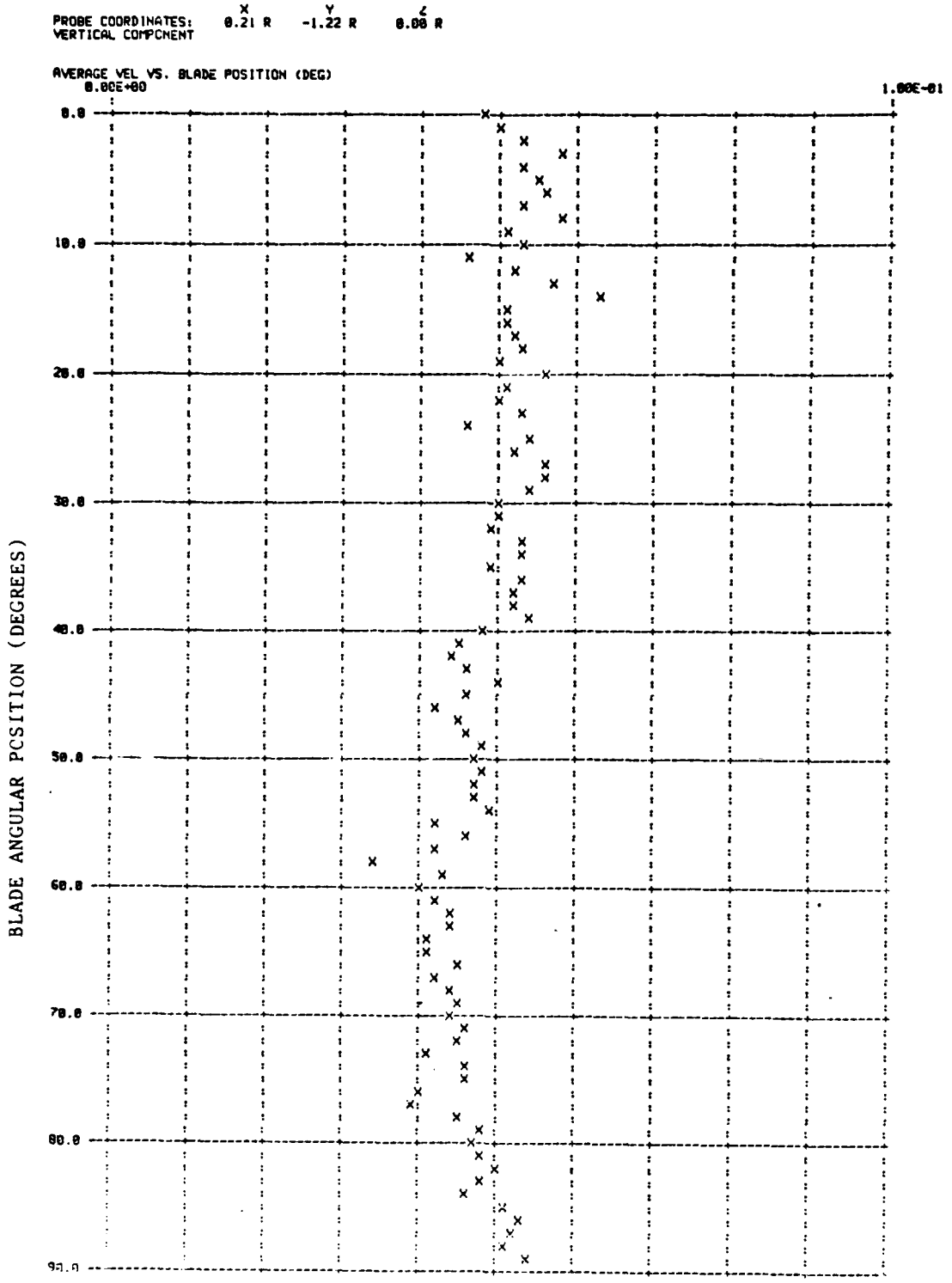


Figure 45b - Computer Generated Graph of Vertical Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

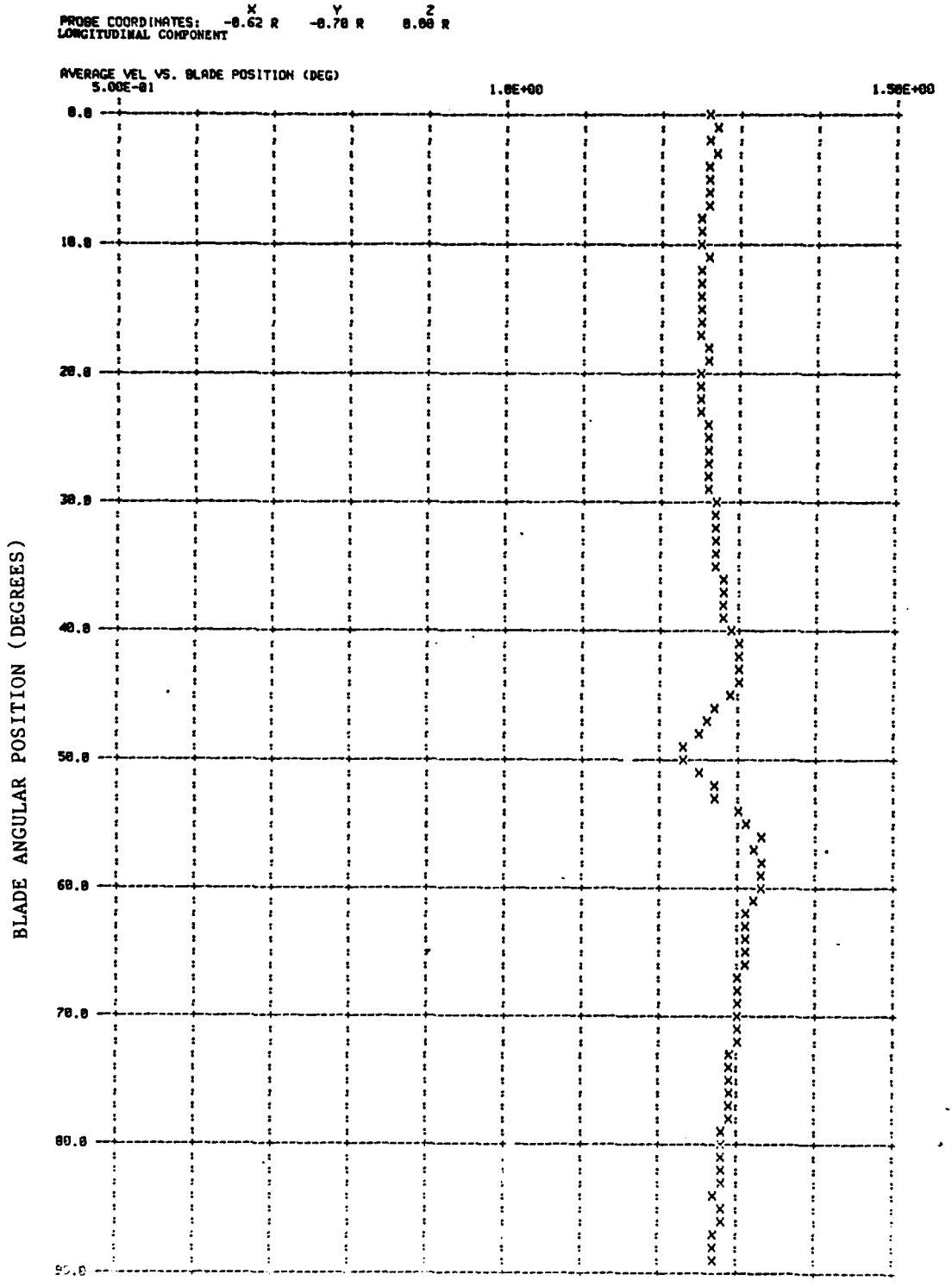


Figure 46a - Computer Generated Graph of Longitudinal Velocity vs. Blade Angular Position at Shaft Inclination of Zero Degrees

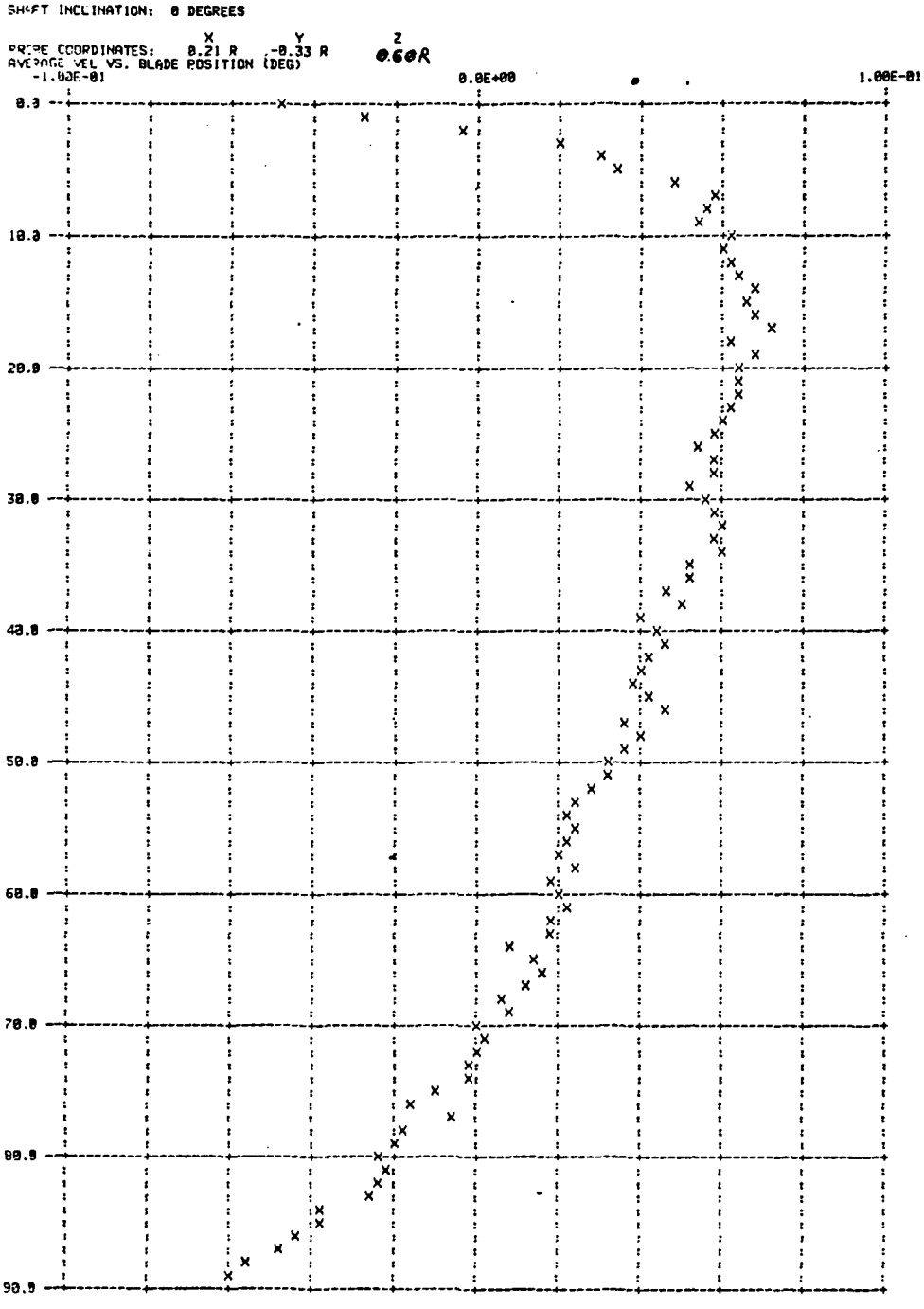


Figure 47 - Computer Generated Graph of Tangential Velocity Component vs. Blade Angular Postion

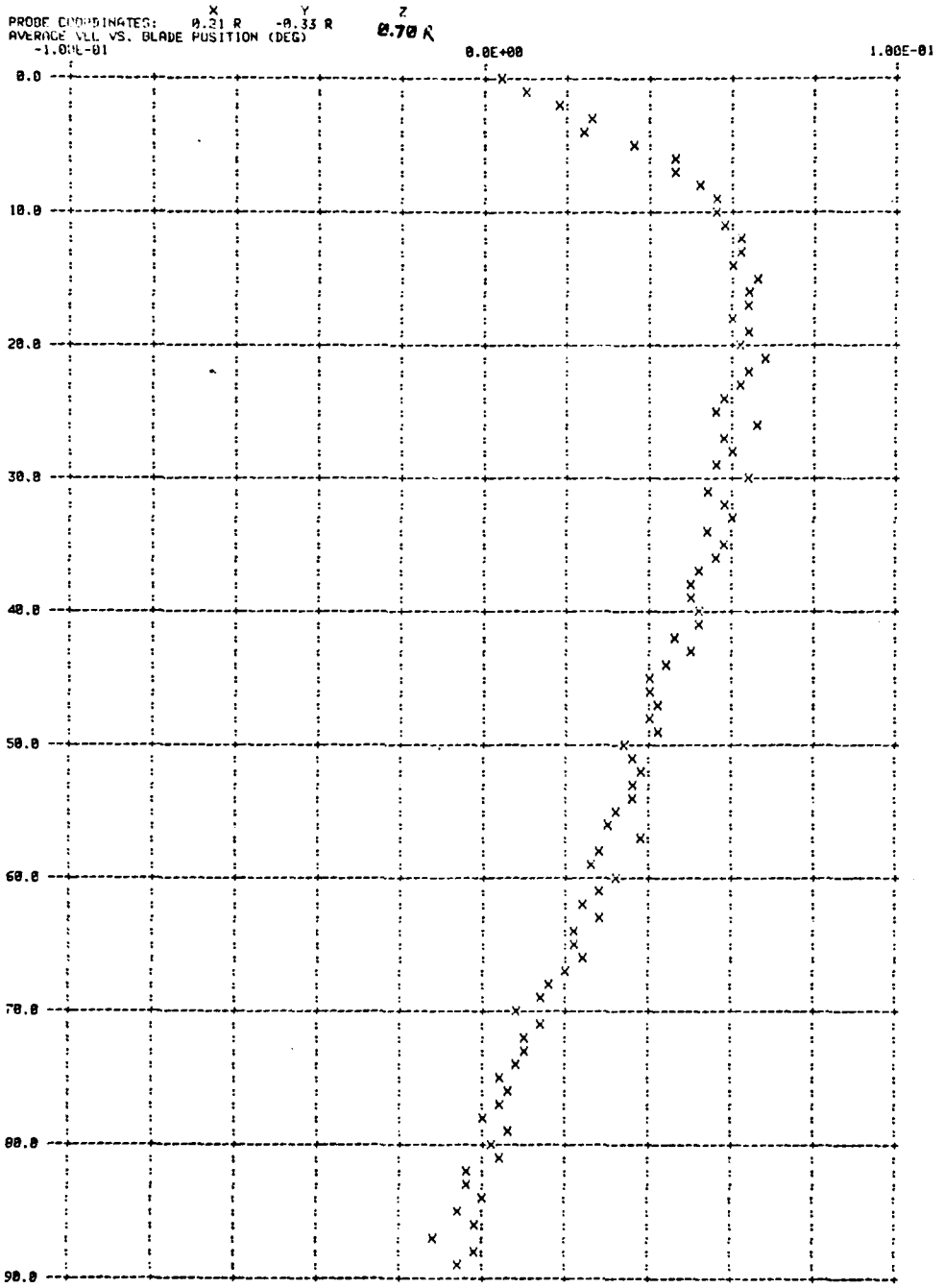


Figure 48 - Computer Generated Graph of Tangential Velocity Component vs. Blade Angular Position

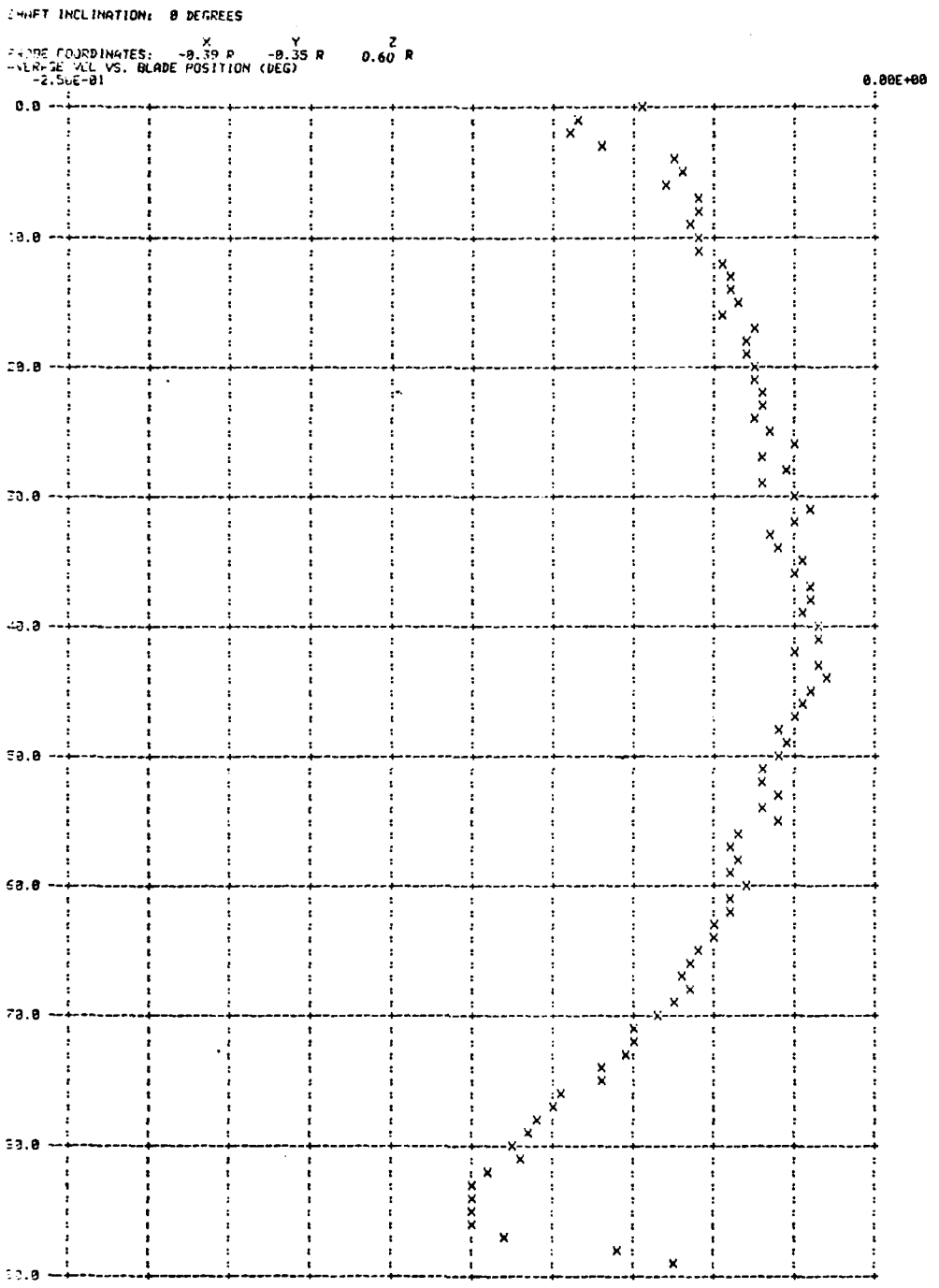


Figure 49 - Computer Generated Graph of Tangential Velocity Component vs. Blade Angular Position

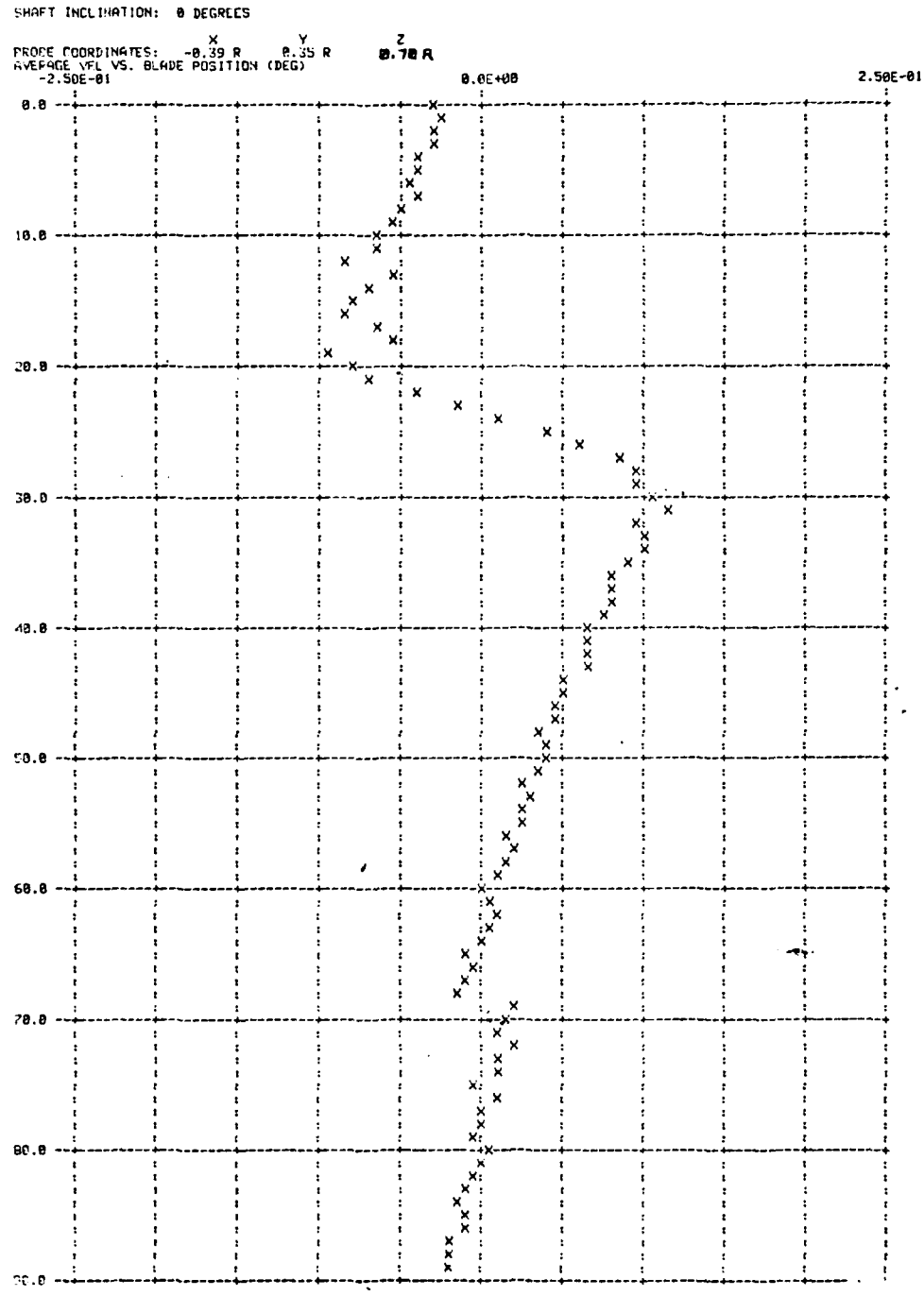


Figure 50 - Computer Generated Graph of Tangential Velocity Component vs. Blade Angular Position

## APPENDIX A

### THE DTNSRDC LDA SYSTEM

For this experiment, a dual beam fringe mode of laser operation was utilized. A Coherent Radiation, Inc. CR-3 argon-ion laser with etalon was adjusted to give an output wavelength of 514.5 nm (green). Before the experiment the laser output was checked with a Spectra-Physics model 110 A scanning optical spectrometer and Coherent Radiation model 410 power meter. As is the case with many argon lasers, the 514.5 nm line was found to be the most stable and most powerful line available from this laser.

The laser beam was directed via mirrors through a TSI, Inc. model 901 polorization rotator, and a model 910 beam splitter. When measuring the longitudinal velocity in the water tunnel, the split beams went directly to a TSI model 991 zoom lens system. When measuring the vertical component, a TSI model 980 frequency shifter was also utilized. The optical arrangement is shown in Figure A1.

Initially the configuration of the water tunnel permitted only backscatter measurements to be taken. Both direct backscatter and slightly off-axis backscatter were tried. The off-axis configuration was found to give a higher signal-to-noise ratio. A TSI collecting lens focused the backscattered radiation onto a TSI model 965 photo-multiplyer (P-M tube).

The signal from the P-M tube was band pass filtered through an Ortec model 402H active filter and fed into a frequency tracker. Both the Disa, Inc. model 55L20 tracker and the TSI model 1090 tracker were

used. The analog output from the tracker was brought into an Interdata Inc. model 7-32 mini-computer via an Analogic model AN 5800 analog to digital converter.

In this configuration, the data rates were too low to obtain time dependent data. A computer code was used to analyze the data and obtain the mean and RMS velocities. After minor tunnel modifications, which allowed forward scatter, only time-dependent measurements were made.

The forward scattered laser signals were picked up by the P-M tube, which mounted on a small, in-house manufactured optical bench. The signal from the P-M tube was band-pass filtered through a TSI 1094-1 filter module and fed into a TSI model 1090 Frequency Tracker. The analog output of the tracker was again brought into the minicomputer, where another computer code analyzed the data. 200 individual data points were taken for each degree of blade position. Thus each graph represents 18,000 data points. Data rates from the frequency tracker were often quite high (about 10,000 points per second), but the computer code allowed a maximum of 2 data points per degree per revolution into memory. This was done so that the data would be "spread out" over many successive propeller revolutions. At the conclusion of a run, the velocities vs. blade angular position were tabulated and graphed by the computer.

Longitudinal and vertical velocity profiles were taken in the vertical and horizontal planes at four different locations along the propeller axis. Vertical and longitudinal horizontal movement was provided by a traverse system manufactured in-house. This system moved the entire optics table, including the laser, as a unit. On-axis horizontal

movement was provided by the zoom lens system. This lens maintains constant beam crossing angle, f number, number of fringes, and measuring volume size. Thus no change in the calibration factors in the computer code is required as the focal length changes. Also, no refocusing of the receiving optics is required while in the direct back scatter mode. However, when using off-axis back scatter, realignment and refocusing is necessary for each change in the measuring volume location in the on-axis direction. When in the forward scatter mode, realignment of the receiving optics was required for each measuring volume position change.

A Quality, Inc. model 500 optical measuring system was used to keep track of the measuring volume relative to the propeller center, The manufacturer gives this instrument an accuracy of ±0.005 in. During the experimental set up this accuracy was independently confirmed.

The accuracy of the data obtained from a given LDA system is dependent on many factors. These include particle concentration in the fluid, variations in fluid velocity across the measuring volume, multiple particle signals, shot noise (from the P-M tube), brownian motion, extraneous reflected light, frequency shifter noise, accuracy of laser wavelength, accuracy of beam crossing angle, optical noise, signal processor noise and accuracy of the data collection system.* For measurements in turbulent flow, all of the above limitations are interrelated and precise quantitative error analysis is, in practical terms,

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* Maya, W.T., "Ocean Laser Velocimeter System: Signal Processing Accuracy by Simulation," Proceedings of The Third International Workshop on Laser Velocimetry, Hemisphere Publishing Corporation, Purdue University (July 1978).

impossible. However, if precautions are taken in the experimental setup to exclude extraneous light sources, for mean velocity measurements the major sources of error are reduced to the following:

1. Accuracy of laser wavelength
2. Accuracy of beam crossing angle
3. Accuracy of frequency shifting system
4. Precision of laser signal processor

As previously mentioned number 1 was measured prior to the investigation. The manufacturer specifications were used to determine the other error ranges. They are 0.01%, 0.1%, 0.02%, and 0.4% for items 1, 2, 3, and 4 respectively.* Therefore the accuracy of mean velocity measurements can be expected to be within 1%.

The RMS velocities are calculated by the mini-computer from the variation of the mean data points (200) for each degree. Since these are relatively small numbers, an additional error results from round-off errors in the calculations. Study of RMS results based upon precisely known simulated laser processor signals fed into the computer indicate an error range of 10% for non-dimensional RMS velocities higher than 0.013. RMS velocities of 0.013 or below cannot be considered reliable, since actual RMS values lower than 0.013 will be calculated as 0.013 by the computer.

While preparing for the experiment, it was suspected that obtaining optimum scattering particles would be a major problem. This was in fact the case for the back-scatter portion of the investigation.

* Laser Anemometer Systems Catalog, TSI, Inc. (1978).

Analysis of water samples from DTNSRDC water tunnels showed the typical exponential size distribution, ie. large numbers of particles significantly smaller than the fringe spacing (5.2 microns). This seriously degraded the signal-to-noise (S-N) ratio in the backscatter mode. Filtering down to 3 microns and adding artifical seed in the optimum size range (10 to 20 microns) helped considerably. However, the particles below 3 microns still kept the signal-to-noise ratio less than optimum. Fortunately, the large power reserve of our laser in the forward scatter mode, allowed a sufficiently large signal-to-noise ratio and thus data rate, to permit time dependent measurements.

As more efficient filters come onto the market (0.5 micron filters should be commercially available for the DTNSRDC water tunnels within a year) still better signal-to-noise ratios will be attainable.

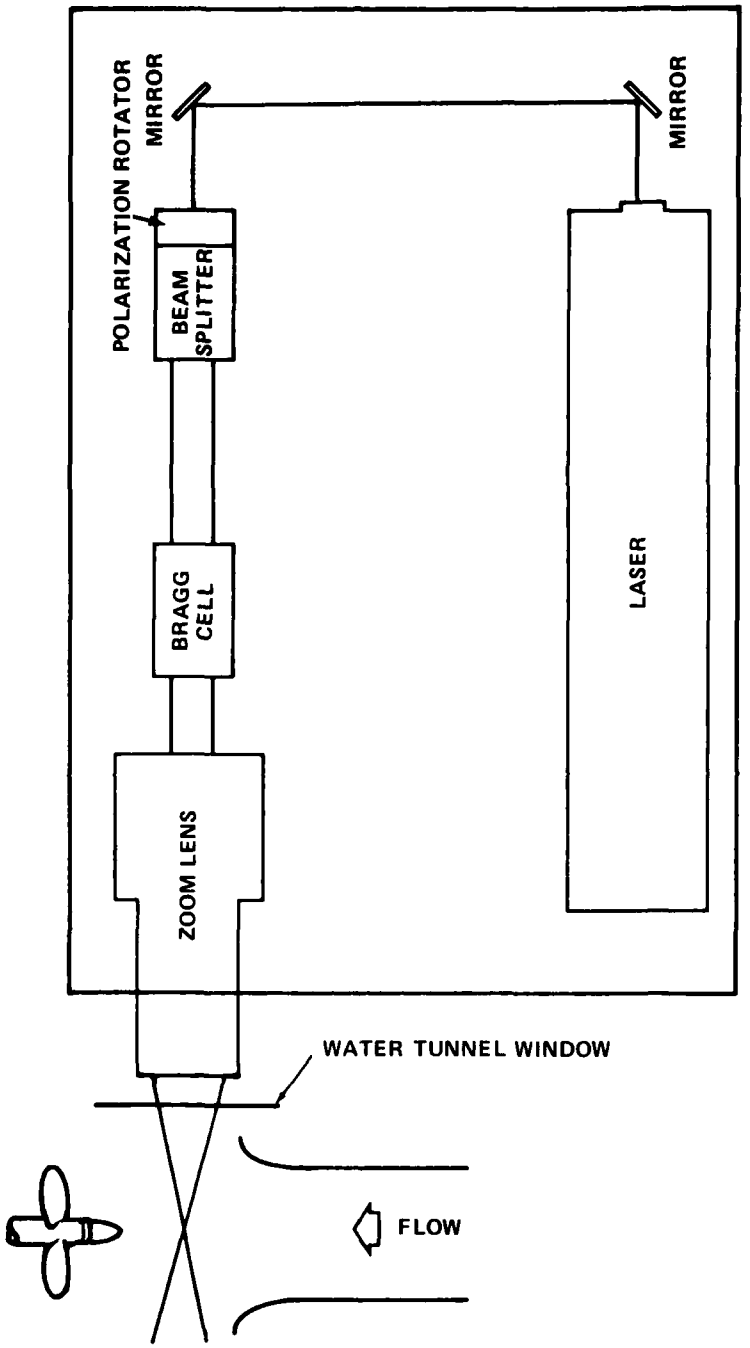


Figure A1 - Sketch of Optical Arrangement

# APPENDIX B

## TABLES OF NUMERICAL DATA

PROBE COORDINATES: X -0.43 R Y 0.70 R Z 0.00 R

LONGITUDINAL COMPONENT

VERTICAL COMPONENT

180-Degree

| DEGREE | AVG VEL | RMS | DEGREE | AVG VEL | RMS |
|---|---|---|---|---|---|
| 0 | 1.089 | 0.136 | 0 | -0.090 | 0.072 |
| 1 | 1.107 | 0.139 | 1 | -0.107 | 0.091 |
| 2 | 1.104 | 0.114 | 2 | -0.094 | 0.107 |
| 3 | 1.195 | 0.090 | 3 | -0.091 | 0.115 |
| 4 | 1.220 | 0.050 | 4 | -0.034 | 0.116 |
| 5 | 1.230 | 0.035 | 5 | 0.057 | 0.100 |
| 6 | 1.250 | 0.032 | 6 | 0.140 | 0.104 |
| 7 | 1.266 | 0.029 | 7 | 0.194 | 0.070 |
| 8 | 1.272 | 0.025 | 8 | 0.210 | 0.042 |
| 9 | 1.289 | 0.040 | 9 | 0.231 | 0.034 |
| 10 | 1.297 | 0.031 | 10 | 0.223 | 0.032 |
| 11 | 1.299 | 0.035 | 11 | 0.232 | 0.029 |
| 12 | 1.300 | 0.039 | 12 | 0.244 | 0.034 |
| 13 | 1.293 | 0.039 | 13 | 0.256 | 0.031 |
| 14 | 1.270 | 0.035 | 14 | 0.274 | 0.040 |
| 15 | 1.271 | 0.036 | 15 | 0.288 | 0.046 |
| 16 | 1.260 | 0.034 | 16 | 0.294 | 0.044 |
| 17 | 1.242 | 0.035 | 17 | 0.315 | 0.045 |
| 18 | 1.233 | 0.036 | 18 | 0.327 | 0.053 |
| 19 | 1.200 | 0.029 | 19 | 0.344 | 0.047 |
| 20 | 1.200 | 0.030 | 20 | 0.354 | 0.047 |
| 21 | 1.185 | 0.027 | 21 | 0.351 | 0.046 |
| 22 | 1.179 | 0.025 | 22 | 0.362 | 0.045 |
| 23 | 1.169 | 0.025 | 23 | 0.360 | 0.050 |
| 24 | 1.157 | 0.025 | 24 | 0.364 | 0.047 |
| 25 | 1.154 | 0.025 | 25 | 0.355 | 0.044 |
| 26 | 1.147 | 0.021 | 26 | 0.347 | 0.045 |
| 27 | 1.143 | 0.022 | 27 | 0.343 | 0.042 |
| 28 | 1.137 | 0.021 | 28 | 0.331 | 0.042 |
| 29 | 1.132 | 0.021 | 29 | 0.326 | 0.043 |
| 30 | 1.120 | 0.021 | 30 | 0.319 | 0.040 |
| 31 | 1.119 | 0.020 | 31 | 0.310 | 0.040 |
| 32 | 1.122 | 0.019 | 32 | 0.315 | 0.041 |
| 33 | 1.120 | 0.019 | 33 | 0.303 | 0.041 |
| 34 | 1.110 | 0.019 | 34 | 0.291 | 0.035 |
| 35 | 1.113 | 0.020 | 35 | 0.284 | 0.037 |
| 36 | 1.115 | 0.018 | 36 | 0.282 | 0.035 |
| 37 | 1.113 | 0.018 | 37 | 0.276 | 0.035 |
| 38 | 1.106 | 0.020 | 38 | 0.270 | 0.034 |
| 39 | 1.105 | 0.020 | 39 | 0.253 | 0.029 |
| 40 | 1.106 | 0.019 | 40 | 0.246 | 0.033 |
| 41 | 1.110 | 0.017 | 41 | 0.241 | 0.030 |
| 42 | 1.107 | 0.018 | 42 | 0.234 | 0.040 |
| 43 | 1.105 | 0.016 | 43 | 0.233 | 0.030 |
| 44 | 1.100 | 0.017 | 44 | 0.230 | 0.026 |
| 45 | 1.106 | 0.018 | 45 | 0.223 | 0.026 |
| 46 | 1.104 | 0.017 | 46 | 0.215 | 0.030 |
| 47 | 1.106 | 0.019 | 47 | 0.210 | 0.028 |
| 48 | 1.102 | 0.016 | 48 | 0.202 | 0.027 |
| 49 | 1.101 | 0.018 | 49 | 0.199 | 0.025 |
| 50 | 1.102 | 0.017 | 50 | 0.191 | 0.020 |
| 51 | 1.103 | 0.019 | 51 | 0.188 | 0.025 |
| 52 | 1.100 | 0.020 | 52 | 0.184 | 0.026 |
| 53 | 1.109 | 0.019 | 53 | 0.173 | 0.025 |
| 54 | 1.100 | 0.019 | 54 | 0.169 | 0.025 |
| 55 | 1.106 | 0.016 | 55 | 0.161 | 0.027 |
| 56 | 1.111 | 0.019 | 56 | 0.162 | 0.024 |
| 57 | 1.114 | 0.017 | 57 | 0.153 | 0.026 |
| 58 | 1.109 | 0.018 | 58 | 0.148 | 0.026 |
| 59 | 1.100 | 0.018 | 59 | 0.142 | 0.026 |
| 60 | 1.107 | 0.018 | 60 | 0.138 | 0.024 |
| 61 | 1.111 | 0.017 | 61 | 0.130 | 0.023 |
| 62 | 1.114 | 0.016 | 62 | 0.128 | 0.024 |
| 63 | 1.116 | 0.018 | 63 | 0.121 | 0.024 |
| 64 | 1.115 | 0.017 | 64 | 0.116 | 0.023 |
| 65 | 1.117 | 0.017 | 65 | 0.115 | 0.027 |
| 66 | 1.119 | 0.016 | 66 | 0.108 | 0.025 |
| 67 | 1.120 | 0.017 | 67 | 0.101 | 0.023 |
| 68 | 1.119 | 0.016 | 68 | 0.094 | 0.026 |
| 69 | 1.126 | 0.018 | 69 | 0.088 | 0.026 |
| 70 | 1.129 | 0.017 | 70 | 0.085 | 0.029 |
| 71 | 1.132 | 0.017 | 71 | 0.079 | 0.027 |
| 72 | 1.134 | 0.016 | 72 | 0.074 | 0.027 |
| 73 | 1.135 | 0.016 | 73 | 0.066 | 0.029 |
| 74 | 1.137 | 0.016 | 74 | 0.059 | 0.026 |
| 75 | 1.139 | 0.017 | 75 | 0.053 | 0.029 |
| 76 | 1.140 | 0.017 | 76 | 0.043 | 0.030 |
| 77 | 1.149 | 0.017 | 77 | 0.037 | 0.032 |
| 78 | 1.156 | 0.016 | 78 | 0.026 | 0.034 |
| 79 | 1.159 | 0.017 | 79 | 0.021 | 0.034 |
| 80 | 1.166 | 0.017 | 80 | 0.010 | 0.036 |
| 81 | 1.165 | 0.016 | 81 | 0.003 | 0.037 |
| 82 | 1.167 | 0.015 | 82 | -0.004 | 0.038 |
| 83 | 1.175 | 0.023 | 83 | -0.010 | 0.037 |
| 84 | 1.177 | 0.026 | 84 | -0.021 | 0.039 |
| 85 | 1.183 | 0.060 | 85 | -0.036 | 0.038 |
| 86 | 1.183 | 0.059 | 86 | -0.045 | 0.039 |
| 87 | 1.187 | 0.058 | 87 | -0.052 | 0.043 |
| 88 | 1.194 | 0.117 | 88 | -0.067 | 0.048 |
| 89 | 1.067 | 0.115 | 89 | -0.077 | 0.057 |
| AVG | 1.155 | 0.030 | AVG | 0.105 | 0.049 |
| TARE | 0.988 | 0.016 | TARE | 0.062 | 0.033 |

Table B1 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X -0.43 R Y 0.70 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.140 | 0.125 |
| 1 | 1.155 | 0.146 |
| 2 | 1.197 | 0.174 |
| 3 | 1.211 | 0.193 |
| 4 | 1.276 | 0.196 |
| 5 | 1.324 | 0.172 |
| 6 | 1.364 | 0.146 |
| 7 | 1.387 | 0.134 |
| 8 | 1.389 | 0.104 |
| 9 | 1.399 | 0.083 |
| 10 | 1.412 | 0.059 |
| 11 | 1.413 | 0.046 |
| 12 | 1.417 | 0.033 |
| 13 | 1.421 | 0.031 |
| 14 | 1.420 | 0.027 |
| 15 | 1.421 | 0.020 |
| 16 | 1.422 | 0.019 |
| 17 | 1.423 | 0.022 |
| 18 | 1.426 | 0.021 |
| 19 | 1.429 | 0.021 |
| 20 | 1.430 | 0.021 |
| 21 | 1.432 | 0.023 |
| 22 | 1.432 | 0.027 |
| 23 | 1.434 | 0.025 |
| 24 | 1.434 | 0.027 |
| 25 | 1.434 | 0.029 |
| 26 | 1.439 | 0.031 |
| 27 | 1.443 | 0.034 |
| 28 | 1.443 | 0.036 |
| 29 | 1.445 | 0.035 |
| 30 | 1.445 | 0.037 |
| 31 | 1.450 | 0.036 |
| 32 | 1.450 | 0.039 |
| 33 | 1.448 | 0.038 |
| 34 | 1.449 | 0.037 |
| 35 | 1.447 | 0.036 |
| 36 | 1.447 | 0.037 |
| 37 | 1.441 | 0.034 |
| 38 | 1.439 | 0.035 |
| 39 | 1.439 | 0.035 |
| 40 | 1.435 | 0.034 |
| 41 | 1.432 | 0.034 |
| 42 | 1.426 | 0.030 |
| 43 | 1.421 | 0.028 |
| 44 | 1.412 | 0.026 |
| 45 | 1.406 | 0.024 |
| 46 | 1.399 | 0.026 |
| 47 | 1.394 | 0.022 |
| 48 | 1.384 | 0.021 |
| 49 | 1.380 | 0.021 |
| 50 | 1.373 | 0.020 |
| 51 | 1.362 | 0.019 |
| 52 | 1.358 | 0.019 |
| 53 | 1.354 | 0.019 |
| 54 | 1.347 | 0.020 |
| 55 | 1.339 | 0.017 |
| 56 | 1.333 | 0.017 |
| 57 | 1.333 | 0.017 |
| 58 | 1.328 | 0.017 |
| 59 | 1.317 | 0.016 |
| 60 | 1.313 | 0.019 |
| 61 | 1.306 | 0.017 |
| 62 | 1.301 | 0.019 |
| 63 | 1.300 | 0.018 |
| 64 | 1.295 | 0.018 |
| 65 | 1.294 | 0.020 |
| 66 | 1.290 | 0.019 |
| 67 | 1.287 | 0.020 |
| 68 | 1.284 | 0.021 |
| 69 | 1.281 | 0.023 |
| 70 | 1.279 | 0.022 |
| 71 | 1.276 | 0.024 |
| 72 | 1.277 | 0.023 |
| 73 | 1.276 | 0.024 |
| 74 | 1.274 | 0.026 |
| 75 | 1.274 | 0.026 |
| 76 | 1.272 | 0.025 |
| 77 | 1.276 | 0.028 |
| 78 | 1.274 | 0.030 |
| 79 | 1.277 | 0.031 |
| 80 | 1.277 | 0.033 |
| 81 | 1.278 | 0.035 |
| 82 | 1.282 | 0.040 |
| 83 | 1.281 | 0.045 |
| 84 | 1.281 | 0.055 |
| 85 | 1.263 | 0.061 |
| 86 | 1.241 | 0.066 |
| 87 | 1.219 | 0.079 |
| 88 | 1.174 | 0.106 |
| 89 | 1.151 | 0.111 |
| AVG | 1.339 | 0.044 |
| TARE | 0.950 | 0.035 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.419 | 0.104 |
| 1 | 0.397 | 0.106 |
| 2 | 0.368 | 0.098 |
| 3 | 0.327 | 0.077 |
| 4 | 0.319 | 0.056 |
| 5 | 0.306 | 0.061 |
| 6 | 0.306 | 0.059 |
| 7 | 0.301 | 0.056 |
| 8 | 0.298 | 0.035 |
| 9 | 0.300 | 0.051 |
| 10 | 0.293 | 0.047 |
| 11 | 0.295 | 0.044 |
| 12 | 0.295 | 0.049 |
| 13 | 0.291 | 0.050 |
| 14 | 0.296 | 0.043 |
| 15 | 0.301 | 0.051 |
| 16 | 0.292 | 0.048 |
| 17 | 0.292 | 0.050 |
| 18 | 0.293 | 0.048 |
| 19 | 0.288 | 0.049 |
| 20 | 0.283 | 0.048 |
| 21 | 0.284 | 0.044 |
| 22 | 0.286 | 0.046 |
| 23 | 0.281 | 0.048 |
| 24 | 0.282 | 0.042 |
| 25 | 0.280 | 0.041 |
| 26 | 0.280 | 0.039 |
| 27 | 0.272 | 0.041 |
| 28 | 0.257 | 0.033 |
| 29 | 0.251 | 0.035 |
| 30 | 0.249 | 0.031 |
| 31 | 0.240 | 0.027 |
| 32 | 0.236 | 0.031 |
| 33 | 0.220 | 0.026 |
| 34 | 0.215 | 0.042 |
| 35 | 0.203 | 0.028 |
| 36 | 0.193 | 0.028 |
| 37 | 0.197 | 0.041 |
| 38 | 0.192 | 0.027 |
| 39 | 0.184 | 0.028 |
| 40 | 0.177 | 0.029 |
| 41 | 0.166 | 0.029 |
| 42 | 0.159 | 0.031 |
| 43 | 0.156 | 0.031 |
| 44 | 0.150 | 0.032 |
| 45 | 0.156 | 0.047 |
| 46 | 0.145 | 0.027 |
| 47 | ——— | ——— |
| 48 | 0.149 | 0.032 |
| 49 | 0.144 | 0.030 |
| 50 | 0.144 | 0.029 |
| 51 | 0.143 | 0.031 |
| 52 | 0.142 | 0.029 |
| 53 | 0.150 | 0.029 |
| 54 | 0.148 | 0.030 |
| 55 | 0.148 | 0.032 |
| 56 | 0.148 | 0.030 |
| 57 | 0.152 | 0.028 |
| 58 | 0.162 | 0.031 |
| 59 | 0.162 | 0.029 |
| 60 | 0.165 | 0.030 |
| 61 | 0.172 | 0.027 |
| 62 | 0.171 | 0.029 |
| 63 | 0.181 | 0.029 |
| 64 | 0.183 | 0.028 |
| 65 | 0.187 | 0.030 |
| 66 | 0.194 | 0.029 |
| 67 | 0.197 | 0.028 |
| 68 | 0.210 | 0.030 |
| 69 | 0.212 | 0.027 |
| 70 | 0.217 | 0.026 |
| 71 | 0.227 | 0.026 |
| 72 | 0.230 | 0.028 |
| 73 | 0.238 | 0.031 |
| 74 | 0.249 | 0.029 |
| 75 | 0.255 | 0.030 |
| 76 | 0.261 | 0.032 |
| 77 | 0.270 | 0.027 |
| 78 | 0.276 | 0.030 |
| 79 | 0.285 | 0.032 |
| 80 | 0.295 | 0.041 |
| 81 | 0.312 | 0.054 |
| 82 | 0.321 | 0.066 |
| 83 | 0.349 | 0.078 |
| 84 | 0.372 | 0.102 |
| 85 | 0.423 | 0.109 |
| 86 | 0.434 | 0.114 |
| 87 | 0.472 | 0.099 |
| 88 | 0.478 | 0.109 |
| 89 | 0.445 | 0.102 |
| AVG | 0.251 | 0.044 |
| TARE | 0.070 | 0.049 |

0-Degree

Table B2 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X 0.21 R Y 0.70 R Z 0.00 R

180-Degree

| LONGITUDINAL COMPONENT | | | VERTICAL COMPONENT | | |
|---|---|---|---|---|---|
| DEGREE | AVG VEL | RMS | DEGREE | AVG VEL | RMS |
| 0 | 0.955 | 0.064 | 0 | 0.091 | 0.058 |
| 1 | 0.982 | 0.029 | 1 | 0.066 | 0.051 |
| 2 | 1.010 | 0.015 | 2 | 0.061 | 0.056 |
| 3 | 1.025 | 0.012 | 3 | 0.055 | 0.055 |
| 4 | 1.040 | 0.010 | 4 | 0.059 | 0.043 |
| 5 | 1.049 | 0.009 | 5 | 0.066 | 0.039 |
| 6 | 1.055 | 0.009 | 6 | 0.064 | 0.040 |
| 7 | 1.063 | 0.009 | 7 | 0.067 | 0.037 |
| 8 | 1.069 | 0.010 | 8 | 0.083 | 0.045 |
| 9 | 1.079 | 0.010 | 9 | 0.079 | 0.038 |
| 10 | 1.085 | 0.011 | 10 | 0.080 | 0.036 |
| 11 | 1.087 | 0.010 | 11 | 0.087 | 0.042 |
| 12 | 1.092 | 0.011 | 12 | 0.090 | 0.042 |
| 13 | 1.096 | 0.010 | 13 | 0.095 | 0.043 |
| 14 | 1.099 | 0.011 | 14 | 0.093 | 0.037 |
| 15 | 1.105 | 0.012 | 15 | 0.097 | 0.039 |
| 16 | 1.104 | 0.010 | 16 | 0.105 | 0.039 |
| 17 | 1.108 | 0.012 | 17 | 0.104 | 0.040 |
| 18 | 1.113 | 0.011 | 18 | 0.111 | 0.042 |
| 19 | 1.119 | 0.013 | 19 | 0.105 | 0.034 |
| 20 | 1.120 | 0.013 | 20 | 0.109 | 0.042 |
| 21 | 1.122 | 0.011 | 21 | 0.113 | 0.043 |
| 22 | 1.123 | 0.011 | 22 | 0.114 | 0.039 |
| 23 | 1.125 | 0.011 | 23 | 0.112 | 0.041 |
| 24 | 1.126 | 0.011 | 24 | 0.118 | 0.046 |
| 25 | 1.127 | 0.012 | 25 | 0.123 | 0.042 |
| 26 | 1.126 | 0.011 | 26 | 0.125 | 0.044 |
| 27 | 1.126 | 0.012 | 27 | 0.120 | 0.038 |
| 28 | 1.129 | 0.012 | 28 | 0.122 | 0.039 |
| 29 | 1.135 | 0.012 | 29 | 0.129 | 0.037 |
| 30 | 1.133 | 0.012 | 30 | 0.130 | 0.043 |
| 31 | 1.136 | 0.011 | 31 | 0.130 | 0.038 |
| 32 | 1.137 | 0.012 | 32 | 0.129 | 0.034 |
| 33 | 1.139 | 0.012 | 33 | 0.137 | 0.041 |
| 34 | 1.141 | 0.012 | 34 | 0.128 | 0.036 |
| 35 | 1.138 | 0.012 | 35 | 0.141 | 0.045 |
| 36 | 1.139 | 0.012 | 36 | 0.144 | 0.037 |
| 37 | 1.141 | 0.012 | 37 | 0.135 | 0.036 |
| 38 | 1.141 | 0.014 | 38 | 0.142 | 0.038 |
| 39 | 1.140 | 0.013 | 39 | 0.142 | 0.035 |
| 40 | 1.143 | 0.014 | 40 | 0.139 | 0.036 |
| 41 | 1.138 | 0.015 | 41 | 0.141 | 0.039 |
| 42 | 1.131 | 0.012 | 42 | 0.139 | 0.037 |
| 43 | 1.134 | 0.011 | 43 | 0.143 | 0.040 |
| 44 | 1.141 | 0.012 | 44 | 0.144 | 0.043 |
| 45 | 1.140 | 0.013 | 45 | 0.146 | 0.041 |
| 46 | 1.143 | 0.013 | 46 | 0.153 | 0.038 |
| 47 | 1.139 | 0.013 | 47 | 0.148 | 0.042 |
| 48 | 1.139 | 0.014 | 48 | 0.150 | 0.041 |
| 49 | 1.143 | 0.014 | 49 | 0.147 | 0.039 |
| 50 | 1.144 | 0.013 | 50 | 0.146 | 0.039 |
| 51 | 1.142 | 0.013 | 51 | 0.146 | 0.043 |
| 52 | 1.148 | 0.013 | 52 | 0.156 | 0.047 |
| 53 | 1.143 | 0.017 | 53 | 0.146 | 0.039 |
| 54 | 1.142 | 0.014 | 54 | 0.151 | 0.040 |
| 55 | 1.143 | 0.013 | 55 | 0.140 | 0.036 |
| 56 | 1.147 | 0.013 | 56 | 0.149 | 0.042 |
| 57 | 1.147 | 0.013 | 57 | 0.140 | 0.041 |
| 58 | 1.147 | 0.014 | 58 | 0.145 | 0.035 |
| 59 | 1.144 | 0.013 | 59 | 0.152 | 0.040 |
| 60 | 1.145 | 0.012 | 60 | 0.150 | 0.038 |
| 61 | 1.144 | 0.013 | 61 | 0.150 | 0.035 |
| 62 | 1.145 | 0.012 | 62 | 0.145 | 0.039 |
| 63 | 1.140 | 0.015 | 63 | 0.151 | 0.038 |
| 64 | 1.136 | 0.012 | 64 | 0.149 | 0.037 |
| 65 | 1.132 | 0.013 | 65 | 0.146 | 0.040 |
| 66 | 1.140 | 0.015 | 66 | 0.145 | 0.039 |
| 67 | 1.134 | 0.015 | 67 | 0.153 | 0.041 |
| 68 | 1.127 | 0.017 | 68 | 0.149 | 0.041 |
| 69 | 1.116 | 0.019 | 69 | 0.153 | 0.048 |
| 70 | ----- | ----- | 70 | 0.149 | 0.040 |
| 71 | ----- | ----- | 71 | 0.154 | 0.044 |
| 72 | 1.117 | 0.043 | 72 | 0.150 | 0.045 |
| 73 | 1.119 | 0.032 | 73 | 0.145 | 0.039 |
| 74 | 1.121 | 0.033 | 74 | 0.145 | 0.041 |
| 75 | 1.112 | 0.041 | 75 | 0.140 | 0.042 |
| 76 | 1.119 | 0.036 | 76 | 0.142 | 0.042 |
| 77 | 1.119 | 0.030 | 77 | 0.143 | 0.038 |
| 78 | 1.122 | 0.034 | 78 | 0.140 | 0.038 |
| 79 | 1.119 | 0.040 | 79 | 0.142 | 0.040 |
| 80 | 1.125 | 0.037 | 80 | 0.138 | 0.041 |
| 81 | 1.113 | 0.048 | 81 | 0.138 | 0.045 |
| 82 | 1.139 | 0.015 | 82 | 0.142 | 0.041 |
| 83 | 1.118 | 0.041 | 83 | 0.139 | 0.041 |
| 84 | 1.129 | 0.021 | 84 | 0.129 | 0.048 |
| 85 | 1.126 | 0.010 | 85 | 0.131 | 0.047 |
| 86 | 1.123 | 0.018 | 86 | 0.129 | 0.048 |
| 87 | 1.115 | 0.034 | 87 | 0.117 | 0.044 |
| 88 | 1.079 | 0.068 | 88 | 0.110 | 0.049 |
| 89 | 0.992 | 0.091 | 89 | 0.105 | 0.060 |
| AVG | 1.116 | 0.015 | AVG | 0.126 | 0.041 |
| TARE | 1.002 | 0.022 | TARE | 0.048 | 0.038 |

Table B3 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X -0.39 R Y 0.50 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.959 | 0.036 |
| 1 | 0.965 | 0.038 |
| 2 | 0.963 | 0.046 |
| 3 | 0.981 | 0.066 |
| 4 | 0.992 | 0.070 |
| 5 | 1.015 | 0.075 |
| 6 | 1.035 | 0.083 |
| 7 | 1.044 | 0.087 |
| 8 | 1.057 | 0.072 |
| 9 | 1.071 | 0.072 |
| 10 | 1.070 | 0.073 |
| 11 | 1.087 | 0.081 |
| 12 | 1.076 | 0.058 |
| 13 | 1.080 | 0.056 |
| 14 | 1.076 | 0.051 |
| 15 | 1.085 | 0.052 |
| 16 | 1.083 | 0.050 |
| 17 | 1.085 | 0.046 |
| 18 | 1.079 | 0.037 |
| 19 | 1.082 | 0.037 |
| 20 | 1.084 | 0.040 |
| 21 | 1.085 | 0.036 |
| 22 | 1.083 | 0.031 |
| 23 | 1.083 | 0.033 |
| 24 | 1.086 | 0.026 |
| 25 | ----- | ----- |
| 26 | ----- | ----- |
| 27 | ----- | ----- |
| 28 | ----- | ----- |
| 29 | ----- | ----- |
| 30 | ----- | ----- |
| 31 | ----- | ----- |
| 32 | 1.081 | 0.026 |
| 33 | 1.085 | 0.026 |
| 34 | 1.079 | 0.025 |
| 35 | 1.075 | 0.025 |
| 36 | 1.075 | 0.025 |
| 37 | 1.074 | 0.024 |
| 38 | 1.069 | 0.024 |
| 39 | 1.066 | 0.022 |
| 40 | 1.067 | 0.020 |
| 41 | 1.066 | 0.020 |
| 42 | 1.059 | 0.023 |
| 43 | 1.063 | 0.021 |
| 44 | 1.056 | 0.019 |
| 45 | 1.056 | 0.023 |
| 46 | 1.055 | 0.022 |
| 47 | 1.054 | 0.022 |
| 48 | 1.050 | 0.023 |
| 49 | 1.045 | 0.023 |
| 50 | 1.047 | 0.019 |
| 51 | 1.044 | 0.020 |
| 52 | 1.040 | 0.020 |
| 53 | 1.039 | 0.021 |
| 54 | ----- | ----- |
| 55 | ----- | ----- |
| 56 | ----- | ----- |
| 57 | 1.038 | 0.020 |
| 58 | 1.037 | 0.021 |
| 59 | 1.034 | 0.022 |
| 60 | 1.034 | 0.020 |
| 61 | 1.030 | 0.021 |
| 62 | 1.027 | 0.023 |
| 63 | 1.022 | 0.021 |
| 64 | ----- | ----- |
| 65 | ----- | ----- |
| 66 | 1.022 | 0.020 |
| 67 | 1.021 | 0.021 |
| 68 | ----- | ----- |
| 69 | 1.014 | 0.020 |
| 70 | 1.012 | 0.020 |
| 71 | 1.010 | 0.024 |
| 72 | 1.011 | 0.023 |
| 73 | 1.008 | 0.021 |
| 74 | 1.010 | 0.019 |
| 75 | 1.005 | 0.022 |
| 76 | 1.004 | 0.022 |
| 77 | 1.003 | 0.023 |
| 78 | 0.998 | 0.024 |
| 79 | 0.999 | 0.024 |
| 80 | 0.997 | 0.022 |
| 81 | 0.989 | 0.024 |
| 82 | ----- | ----- |
| 83 | 0.986 | 0.025 |
| 84 | 0.982 | 0.021 |
| 85 | 0.976 | 0.021 |
| 86 | 0.975 | 0.019 |
| 87 | 0.971 | 0.020 |
| 88 | 0.968 | 0.021 |
| 89 | 0.967 | 0.025 |
| AVG | 1.037 | 0.033 |
| TARE | 1.004 | 0.019 |

VERTICAL COMPONENT

180-Degree

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.376 | 0.030 |
| 1 | 0.389 | 0.032 |
| 2 | 0.390 | 0.030 |
| 3 | 0.395 | 0.033 |
| 4 | 0.400 | 0.034 |
| 5 | 0.412 | 0.034 |
| 6 | 0.409 | 0.041 |
| 7 | 0.411 | 0.041 |
| 8 | 0.404 | 0.050 |
| 9 | 0.391 | 0.088 |
| 10 | 0.385 | 0.091 |
| 11 | 0.352 | 0.119 |
| 12 | 0.323 | 0.141 |
| 13 | 0.297 | 0.151 |
| 14 | 0.203 | 0.147 |
| 15 | 0.192 | 0.168 |
| 16 | 0.150 | 0.142 |
| 17 | 0.123 | 0.134 |
| 18 | 0.108 | 0.115 |
| 19 | 0.096 | 0.113 |
| 20 | 0.104 | 0.114 |
| 21 | ----- | ----- |
| 22 | 0.097 | 0.080 |
| 23 | 0.097 | 0.049 |
| 24 | 0.099 | 0.061 |
| 25 | 0.108 | 0.059 |
| 26 | 0.112 | 0.062 |
| 27 | 0.115 | 0.054 |
| 28 | ----- | ----- |
| 29 | 0.136 | 0.064 |
| 30 | 0.130 | 0.033 |
| 31 | 0.130 | 0.040 |
| 32 | 0.135 | 0.044 |
| 33 | 0.138 | 0.046 |
| 34 | 0.134 | 0.034 |
| 35 | 0.142 | 0.047 |
| 36 | 0.151 | 0.039 |
| 37 | 0.158 | 0.049 |
| 38 | 0.159 | 0.035 |
| 39 | 0.155 | 0.048 |
| 40 | 0.154 | 0.029 |
| 41 | 0.158 | 0.033 |
| 42 | 0.155 | 0.032 |
| 43 | 0.162 | 0.034 |
| 44 | 0.163 | 0.035 |
| 45 | 0.171 | 0.051 |
| 46 | 0.173 | 0.057 |
| 47 | 0.171 | 0.032 |
| 48 | 0.175 | 0.035 |
| 49 | 0.173 | 0.030 |
| 50 | 0.180 | 0.032 |
| 51 | 0.184 | 0.029 |
| 52 | 0.181 | 0.032 |
| 53 | 0.187 | 0.033 |
| 54 | 0.192 | 0.042 |
| 55 | 0.198 | 0.045 |
| 56 | 0.200 | 0.050 |
| 57 | 0.205 | 0.030 |
| 58 | 0.207 | 0.030 |
| 59 | 0.210 | 0.048 |
| 60 | 0.216 | 0.028 |
| 61 | 0.218 | 0.030 |
| 62 | 0.223 | 0.029 |
| 63 | 0.224 | 0.023 |
| 64 | 0.232 | 0.030 |
| 65 | 0.233 | 0.032 |
| 66 | 0.235 | 0.029 |
| 67 | 0.247 | 0.028 |
| 68 | 0.249 | 0.032 |
| 69 | 0.255 | 0.027 |
| 70 | 0.256 | 0.029 |
| 71 | 0.264 | 0.030 |
| 72 | 0.262 | 0.029 |
| 73 | 0.276 | 0.030 |
| 74 | 0.280 | 0.034 |
| 75 | 0.287 | 0.028 |
| 76 | 0.287 | 0.030 |
| 77 | 0.295 | 0.030 |
| 78 | 0.302 | 0.029 |
| 79 | 0.308 | 0.027 |
| 80 | 0.319 | 0.032 |
| 81 | 0.322 | 0.029 |
| 82 | 0.329 | 0.031 |
| 83 | 0.336 | 0.031 |
| 84 | ----- | ----- |
| 85 | 0.343 | 0.029 |
| 86 | 0.355 | 0.030 |
| 87 | 0.358 | 0.029 |
| 88 | 0.366 | 0.032 |
| 89 | 0.374 | 0.031 |
| AVG | 0.234 | 0.069 |
| TARE | 0.111 | 0.029 |

Table B4 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X -8.39 R Y 0.00 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.278 | 0.115 |
| 1 | 1.282 | 0.096 |
| 2 | 1.286 | 0.066 |
| 3 | 1.288 | 0.052 |
| 4 | 1.281 | 0.051 |
| 5 | 1.277 | 0.049 |
| 6 | 1.273 | 0.046 |
| 7 | 1.269 | 0.045 |
| 8 | 1.264 | 0.043 |
| 9 | 1.261 | 0.041 |
| 10 | 1.255 | 0.038 |
| 11 | 1.252 | 0.038 |
| 12 | 1.250 | 0.037 |
| 13 | 1.246 | 0.037 |
| 14 | 1.244 | 0.035 |
| 15 | 1.240 | 0.036 |
| 16 | 1.237 | 0.035 |
| 17 | 1.233 | 0.034 |
| 18 | 1.232 | 0.033 |
| 19 | 1.228 | 0.033 |
| 20 | 1.228 | 0.031 |
| 21 | 1.222 | 0.030 |
| 22 | 1.224 | 0.032 |
| 23 | 1.222 | 0.030 |
| 24 | 1.217 | 0.029 |
| 25 | 1.218 | 0.026 |
| 26 | 1.216 | 0.028 |
| 27 | 1.212 | 0.025 |
| 28 | 1.211 | 0.026 |
| 29 | 1.207 | 0.023 |
| 30 | 1.207 | 0.026 |
| 31 | 1.208 | 0.023 |
| 32 | 1.206 | 0.024 |
| 33 | 1.204 | 0.022 |
| 34 | 1.201 | 0.022 |
| 35 | 1.202 | 0.023 |
| 36 | 1.200 | 0.020 |
| 37 | 1.199 | 0.020 |
| 38 | 1.197 | 0.019 |
| 39 | 1.198 | 0.021 |
| 40 | 1.194 | 0.020 |
| 41 | 1.198 | 0.019 |
| 42 | 1.195 | 0.019 |
| 43 | 1.195 | 0.019 |
| 44 | 1.196 | 0.018 |
| 45 | 1.196 | 0.018 |
| 46 | 1.190 | 0.015 |
| 47 | 1.194 | 0.017 |
| 48 | 1.195 | 0.014 |
| 49 | 1.197 | 0.015 |
| 50 | 1.199 | 0.015 |
| 51 | 1.199 | 0.015 |
| 52 | 1.202 | 0.016 |
| 53 | 1.203 | 0.016 |
| 54 | 1.205 | 0.015 |
| 55 | 1.204 | 0.014 |
| 56 | 1.207 | 0.016 |
| 57 | 1.209 | 0.015 |
| 58 | 1.212 | 0.016 |
| 59 | 1.213 | 0.017 |
| 60 | 1.218 | 0.015 |
| 61 | 1.220 | 0.017 |
| 62 | 1.221 | 0.016 |
| 63 | 1.222 | 0.016 |
| 64 | 1.222 | 0.019 |
| 65 | 1.227 | 0.020 |
| 66 | 1.228 | 0.020 |
| 67 | 1.230 | 0.022 |
| 68 | ----- | ----- |
| 69 | ----- | ----- |
| 70 | ----- | ----- |
| 71 | ----- | ----- |
| 72 | ----- | ----- |
| 73 | ----- | ----- |
| 74 | 1.262 | 0.039 |
| 75 | 1.270 | 0.045 |
| 76 | 1.278 | 0.046 |
| 77 | 1.282 | 0.052 |
| 78 | 1.296 | 0.054 |
| 79 | 1.302 | 0.055 |
| 80 | 1.309 | 0.060 |
| 81 | 1.315 | 0.067 |
| 82 | 1.320 | 0.073 |
| 83 | 1.315 | 0.090 |
| 84 | 1.282 | 0.092 |
| 85 | 1.262 | 0.122 |
| 86 | 1.231 | 0.124 |
| 87 | 1.254 | 0.123 |
| 88 | 1.272 | 0.111 |
| 89 | 1.263 | 0.108 |
| AVG | 1.234 | 0.030 |
| TARE | 0.985 | 0.015 |

VERTICAL COMPONENT

180-Degree

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.101 | 0.127 |
| 1 | 0.154 | 0.137 |
| 2 | 0.203 | 0.147 |
| 3 | 0.225 | 0.129 |
| 4 | 0.247 | 0.114 |
| 5 | 0.278 | 0.059 |
| 6 | 0.287 | 0.043 |
| 7 | 0.288 | 0.034 |
| 8 | 0.278 | 0.029 |
| 9 | 0.269 | 0.030 |
| 10 | 0.263 | 0.029 |
| 11 | 0.264 | 0.030 |
| 12 | 0.266 | 0.030 |
| 13 | 0.261 | 0.030 |
| 14 | 0.254 | 0.031 |
| 15 | 0.255 | 0.027 |
| 16 | 0.248 | 0.030 |
| 17 | 0.246 | 0.030 |
| 18 | 0.245 | 0.029 |
| 19 | 0.243 | 0.028 |
| 20 | 0.242 | 0.028 |
| 21 | 0.241 | 0.026 |
| 22 | 0.239 | 0.029 |
| 23 | 0.237 | 0.030 |
| 24 | 0.238 | 0.029 |
| 25 | 0.233 | 0.029 |
| 26 | 0.229 | 0.025 |
| 27 | 0.227 | 0.027 |
| 28 | 0.229 | 0.028 |
| 29 | 0.223 | 0.025 |
| 30 | 0.222 | 0.027 |
| 31 | 0.227 | 0.029 |
| 32 | 0.220 | 0.030 |
| 33 | 0.220 | 0.030 |
| 34 | 0.221 | 0.028 |
| 35 | 0.214 | 0.029 |
| 36 | 0.211 | 0.027 |
| 37 | 0.213 | 0.029 |
| 38 | 0.211 | 0.025 |
| 39 | 0.209 | 0.027 |
| 40 | 0.204 | 0.025 |
| 41 | 0.209 | 0.027 |
| 42 | 0.207 | 0.029 |
| 43 | 0.206 | 0.030 |
| 44 | 0.200 | 0.029 |
| 45 | 0.204 | 0.027 |
| 46 | 0.199 | 0.024 |
| 47 | 0.201 | 0.030 |
| 48 | 0.205 | 0.029 |
| 49 | 0.195 | 0.027 |
| 50 | 0.196 | 0.027 |
| 51 | 0.193 | 0.032 |
| 52 | 0.188 | 0.028 |
| 53 | 0.193 | 0.028 |
| 54 | 0.190 | 0.028 |
| 55 | 0.191 | 0.026 |
| 56 | 0.188 | 0.026 |
| 57 | 0.188 | 0.026 |
| 58 | 0.182 | 0.027 |
| 59 | 0.185 | 0.023 |
| 60 | 0.184 | 0.030 |
| 61 | 0.189 | 0.028 |
| 62 | 0.185 | 0.026 |
| 63 | 0.186 | 0.027 |
| 64 | 0.179 | 0.028 |
| 65 | 0.183 | 0.027 |
| 66 | 0.182 | 0.027 |
| 67 | 0.177 | 0.027 |
| 68 | 0.175 | 0.026 |
| 69 | 0.171 | 0.026 |
| 70 | 0.177 | 0.026 |
| 71 | 0.173 | 0.029 |
| 72 | 0.175 | 0.028 |
| 73 | 0.175 | 0.025 |
| 74 | 0.175 | 0.024 |
| 75 | 0.175 | 0.026 |
| 76 | 0.178 | 0.027 |
| 77 | 0.178 | 0.025 |
| 78 | 0.179 | 0.028 |
| 79 | 0.175 | 0.030 |
| 80 | 0.176 | 0.029 |
| 81 | 0.176 | 0.027 |
| 82 | 0.174 | 0.031 |
| 83 | 0.179 | 0.035 |
| 84 | 0.175 | 0.033 |
| 85 | 0.175 | 0.039 |
| 86 | 0.167 | 0.051 |
| 87 | 0.169 | 0.077 |
| 88 | 0.125 | 0.101 |
| 89 | 0.096 | 0.128 |
| AVG | 0.205 | 0.037 |
| TARE | 0.062 | 0.033 |

Table B5 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X -0.39 R Y 0.90 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.232 | 0.101 |
| 1 | 1.269 | 0.090 |
| 2 | 1.274 | 0.064 |
| 3 | 1.275 | 0.040 |
| 4 | 1.267 | 0.043 |
| 5 | 1.265 | 0.026 |
| 6 | 1.263 | 0.032 |
| 7 | 1.257 | 0.032 |
| 8 | 1.254 | 0.034 |
| 9 | 1.251 | 0.033 |
| 10 | 1.248 | 0.035 |
| 11 | 1.246 | 0.035 |
| 12 | 1.246 | 0.038 |
| 13 | 1.240 | 0.034 |
| 14 | 1.241 | 0.035 |
| 15 | 1.237 | 0.034 |
| 16 | 1.233 | 0.035 |
| 17 | 1.231 | 0.035 |
| 18 | 1.228 | 0.034 |
| 19 | 1.224 | 0.032 |
| 20 | 1.223 | 0.032 |
| 21 | 1.219 | 0.029 |
| 22 | 1.216 | 0.030 |
| 23 | 1.216 | 0.030 |
| 24 | 1.209 | 0.030 |
| 25 | 1.209 | 0.030 |
| 26 | 1.204 | 0.028 |
| 27 | 1.200 | 0.029 |
| 28 | 1.197 | 0.026 |
| 29 | 1.197 | 0.027 |
| 30 | 1.196 | 0.025 |
| 31 | 1.193 | 0.025 |
| 32 | 1.191 | 0.023 |
| 33 | 1.189 | 0.023 |
| 34 | 1.186 | 0.025 |
| 35 | 1.185 | 0.021 |
| 36 | 1.182 | 0.022 |
| 37 | 1.182 | 0.020 |
| 38 | 1.181 | 0.021 |
| 39 | 1.178 | 0.020 |
| 40 | 1.176 | 0.020 |
| 41 | 1.175 | 0.019 |
| 42 | 1.176 | 0.019 |
| 43 | 1.177 | 0.019 |
| 44 | 1.173 | 0.018 |
| 45 | 1.174 | 0.015 |
| 46 | 1.175 | 0.015 |
| 47 | 1.178 | 0.017 |
| 48 | 1.178 | 0.016 |
| 49 | 1.179 | 0.014 |
| 50 | 1.177 | 0.013 |
| 51 | 1.177 | 0.014 |
| 52 | 1.178 | 0.015 |
| 53 | 1.178 | 0.013 |
| 54 | 1.181 | 0.013 |
| 55 | 1.180 | 0.014 |
| 56 | 1.177 | 0.015 |
| 57 | 1.179 | 0.014 |
| 58 | 1.182 | 0.015 |
| 59 | 1.185 | 0.015 |
| 60 | 1.186 | 0.015 |
| 61 | 1.189 | 0.016 |
| 62 | 1.191 | 0.017 |
| 63 | 1.193 | 0.016 |
| 64 | 1.195 | 0.018 |
| 65 | 1.200 | 0.017 |
| 66 | 1.202 | 0.019 |
| 67 | 1.204 | 0.020 |
| 68 | 1.205 | 0.023 |
| 69 | 1.209 | 0.021 |
| 70 | 1.217 | 0.025 |
| 71 | 1.221 | 0.025 |
| 72 | 1.226 | 0.025 |
| 73 | 1.233 | 0.027 |
| 74 | 1.238 | 0.026 |
| 75 | 1.245 | 0.029 |
| 76 | 1.250 | 0.031 |
| 77 | 1.259 | 0.031 |
| 78 | 1.269 | 0.033 |
| 79 | 1.276 | 0.035 |
| 80 | 1.283 | 0.036 |
| 81 | 1.280 | 0.037 |
| 82 | 1.298 | 0.049 |
| 83 | 1.309 | 0.048 |
| 84 | 1.313 | 0.053 |
| 85 | 1.294 | 0.075 |
| 86 | 1.268 | 0.102 |
| 87 | 1.216 | 0.132 |
| 88 | 1.178 | 0.126 |
| 89 | 1.191 | 0.150 |
| AVG | 1.217 | 0.032 |
| TARE | 0.986 | 0.018 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.019 | 0.145 |
| 1 | 0.098 | 0.139 |
| 2 | 0.168 | 0.148 |
| 3 | 0.232 | 0.122 |
| 4 | 0.264 | 0.102 |
| 5 | 0.280 | 0.091 |
| 6 | 0.287 | 0.078 |
| 7 | 0.286 | 0.076 |
| 8 | 0.280 | 0.073 |
| 9 | 0.283 | 0.062 |
| 10 | 0.278 | 0.059 |
| 11 | 0.281 | 0.055 |
| 12 | 0.276 | 0.043 |
| 13 | 0.278 | 0.048 |
| 14 | 0.271 | 0.048 |
| 15 | 0.270 | 0.042 |
| 16 | 0.269 | 0.039 |
| 17 | 0.262 | 0.045 |
| 18 | 0.267 | 0.038 |
| 19 | 0.266 | 0.040 |
| 20 | 0.266 | 0.036 |
| 21 | 0.265 | 0.034 |
| 22 | 0.257 | 0.056 |
| 23 | 0.257 | 0.034 |
| 24 | 0.259 | 0.035 |
| 25 | 0.258 | 0.033 |
| 26 | 0.250 | 0.035 |
| 27 | 0.247 | 0.033 |
| 28 | 0.247 | 0.037 |
| 29 | 0.244 | 0.035 |
| 30 | 0.245 | 0.037 |
| 31 | 0.243 | 0.032 |
| 32 | 0.237 | 0.034 |
| 33 | 0.236 | 0.036 |
| 34 | 0.235 | 0.033 |
| 35 | 0.228 | 0.032 |
| 36 | 0.228 | 0.036 |
| 37 | 0.225 | 0.033 |
| 38 | 0.222 | 0.035 |
| 39 | 0.222 | 0.034 |
| 40 | 0.211 | 0.033 |
| 41 | 0.210 | 0.034 |
| 42 | 0.204 | 0.033 |
| 43 | 0.206 | 0.033 |
| 44 | 0.199 | 0.033 |
| 45 | 0.196 | 0.035 |
| 46 | 0.192 | 0.033 |
| 47 | 0.193 | 0.035 |
| 48 | 0.187 | 0.034 |
| 49 | 0.186 | 0.033 |
| 50 | 0.178 | 0.033 |
| 51 | 0.178 | 0.035 |
| 52 | 0.173 | 0.030 |
| 53 | 0.169 | 0.033 |
| 54 | 0.168 | 0.031 |
| 55 | 0.164 | 0.032 |
| 56 | 0.161 | 0.033 |
| 57 | 0.159 | 0.033 |
| 58 | 0.151 | 0.033 |
| 59 | 0.151 | 0.032 |
| 60 | 0.146 | 0.032 |
| 61 | 0.143 | 0.031 |
| 62 | 0.144 | 0.032 |
| 63 | 0.137 | 0.030 |
| 64 | 0.129 | 0.031 |
| 65 | 0.124 | 0.032 |
| 66 | 0.123 | 0.030 |
| 67 | 0.121 | 0.030 |
| 68 | 0.117 | 0.025 |
| 69 | 0.111 | 0.032 |
| 70 | 0.110 | 0.033 |
| 71 | 0.106 | 0.032 |
| 72 | 0.101 | 0.033 |
| 73 | 0.096 | 0.030 |
| 74 | 0.096 | 0.035 |
| 75 | 0.088 | 0.036 |
| 76 | 0.086 | 0.039 |
| 77 | 0.081 | 0.041 |
| 78 | 0.076 | 0.043 |
| 79 | 0.075 | 0.042 |
| 80 | 0.073 | 0.045 |
| 81 | 0.063 | 0.050 |
| 82 | 0.065 | 0.052 |
| 83 | 0.055 | 0.057 |
| 84 | 0.058 | 0.057 |
| 85 | 0.053 | 0.065 |
| 86 | 0.045 | 0.077 |
| 87 | 0.032 | 0.102 |
| 88 | 0.021 | 0.137 |
| 89 | 0.019 | 0.145 |
| AVG | 0.179 | 0.040 |
| TARE | 0.060 | 0.031 |

180-Degree

Table B6 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X -8.39 R Y 0.50 R Z 0.00 R

LONGITUDINAL COMPONENT

VERTICAL COMPONENT

0-Degree

| DEGREE | AVG VEL | RMS | DEGREE | AVG VEL | RMS |
|---|---|---|---|---|---|
| 0 | 1.208 | 0.111 | 0 | 0.309 | 0.026 |
| 1 | 1.312 | 0.056 | 1 | 0.301 | 0.029 |
| 2 | 1.323 | 0.037 | 2 | 0.296 | 0.028 |
| 3 | 1.326 | 0.025 | 3 | 0.290 | 0.029 |
| 4 | 1.320 | 0.020 | 4 | 0.285 | 0.026 |
| 5 | 1.315 | 0.020 | 5 | 0.282 | 0.026 |
| 6 | 1.314 | 0.016 | 6 | 0.278 | 0.027 |
| 7 | 1.311 | 0.015 | 7 | 0.277 | 0.025 |
| 8 | 1.306 | 0.018 | 8 | 0.274 | 0.026 |
| 9 | 1.302 | 0.015 | 9 | 0.267 | 0.026 |
| 10 | 1.298 | 0.015 | 10 | 0.263 | 0.025 |
| 11 | 1.296 | 0.015 | 11 | 0.260 | 0.024 |
| 12 | 1.291 | 0.016 | 12 | 0.258 | 0.026 |
| 13 | 1.290 | 0.016 | 13 | 0.255 | 0.025 |
| 14 | 1.289 | 0.017 | 14 | 0.254 | 0.027 |
| 15 | 1.284 | 0.015 | 15 | 0.249 | 0.024 |
| 16 | 1.281 | 0.014 | 16 | 0.244 | 0.024 |
| 17 | 1.281 | 0.016 | 17 | 0.244 | 0.023 |
| 18 | 1.276 | 0.016 | 18 | 0.239 | 0.024 |
| 19 | 1.272 | 0.018 | 19 | 0.238 | 0.025 |
| 20 | 1.271 | 0.016 | 20 | 0.232 | 0.024 |
| 21 | 1.267 | 0.015 | 21 | 0.230 | 0.025 |
| 22 | 1.265 | 0.017 | 22 | 0.227 | 0.025 |
| 23 | 1.263 | 0.018 | 23 | 0.223 | 0.023 |
| 24 | 1.257 | 0.019 | 24 | 0.220 | 0.025 |
| 25 | 1.255 | 0.017 | 25 | 0.217 | 0.026 |
| 26 | 1.250 | 0.017 | 26 | 0.213 | 0.025 |
| 27 | 1.249 | 0.016 | 27 | 0.213 | 0.025 |
| 28 | 1.247 | 0.017 | 28 | 0.208 | 0.024 |
| 29 | 1.242 | 0.017 | 29 | 0.206 | 0.025 |
| 30 | 1.241 | 0.019 | 30 | 0.204 | 0.025 |
| 31 | 1.240 | 0.018 | 31 | 0.203 | 0.023 |
| 32 | 1.235 | 0.018 | 32 | 0.195 | 0.025 |
| 33 | 1.232 | 0.017 | 33 | 0.198 | 0.023 |
| 34 | 1.230 | 0.018 | 34 | 0.189 | 0.023 |
| 35 | 1.230 | 0.018 | 35 | 0.184 | 0.023 |
| 36 | 1.228 | 0.018 | 36 | 0.182 | 0.024 |
| 37 | 1.224 | 0.017 | 37 | 0.181 | 0.022 |
| 38 | 1.223 | 0.019 | 38 | 0.178 | 0.022 |
| 39 | 1.220 | 0.018 | 39 | 0.177 | 0.023 |
| 40 | 1.217 | 0.019 | 40 | 0.174 | 0.024 |
| 41 | 1.215 | 0.018 | 41 | 0.171 | 0.023 |
| 42 | 1.211 | 0.019 | 42 | 0.168 | 0.021 |
| 43 | 1.208 | 0.020 | 43 | 0.165 | 0.022 |
| 44 | 1.205 | 0.018 | 44 | 0.160 | 0.024 |
| 45 | 1.201 | 0.018 | 45 | 0.158 | 0.022 |
| 46 | 1.200 | 0.018 | 46 | 0.155 | 0.025 |
| 47 | 1.200 | 0.016 | 47 | 0.155 | 0.023 |
| 48 | 1.195 | 0.016 | 48 | 0.153 | 0.023 |
| 49 | 1.196 | 0.016 | 49 | 0.148 | 0.022 |
| 50 | 1.194 | 0.015 | 50 | 0.144 | 0.022 |
| 51 | 1.192 | 0.015 | 51 | 0.143 | 0.021 |
| 52 | 1.193 | 0.019 | 52 | 0.143 | 0.023 |
| 53 | 1.190 | 0.018 | 53 | 0.140 | 0.022 |
| 54 | 1.189 | 0.016 | 54 | 0.138 | 0.021 |
| 55 | 1.187 | 0.015 | 55 | 0.136 | 0.021 |
| 56 | 1.188 | 0.017 | 56 | 0.131 | 0.023 |
| 57 | 1.187 | 0.018 | 57 | 0.129 | 0.020 |
| 58 | 1.184 | 0.016 | 58 | 0.127 | 0.023 |
| 59 | 1.185 | 0.016 | 59 | 0.125 | 0.019 |
| 60 | 1.183 | 0.016 | 60 | 0.118 | 0.024 |
| 61 | 1.181 | 0.016 | 61 | 0.120 | 0.022 |
| 62 | 1.182 | 0.018 | 62 | 0.116 | 0.024 |
| 63 | 1.181 | 0.017 | 63 | 0.112 | 0.021 |
| 64 | 1.180 | 0.017 | 64 | 0.110 | 0.022 |
| 65 | 1.180 | 0.018 | 65 | 0.108 | 0.023 |
| 66 | 1.183 | 0.018 | 66 | 0.104 | 0.024 |
| 67 | 1.182 | 0.019 | 67 | 0.099 | 0.023 |
| 68 | 1.185 | 0.019 | 68 | 0.096 | 0.025 |
| 69 | 1.184 | 0.017 | 69 | 0.093 | 0.023 |
| 70 | 1.180 | 0.019 | 70 | 0.090 | 0.025 |
| 71 | 1.185 | 0.016 | 71 | 0.085 | 0.024 |
| 72 | 1.188 | 0.018 | 72 | 0.081 | 0.025 |
| 73 | 1.188 | 0.018 | 73 | 0.077 | 0.024 |
| 74 | 1.193 | 0.020 | 74 | 0.073 | 0.023 |
| 75 | 1.198 | 0.018 | 75 | 0.067 | 0.020 |
| 76 | 1.196 | 0.019 | 76 | 0.067 | 0.027 |
| 77 | 1.204 | 0.021 | 77 | 0.062 | 0.034 |
| 78 | 1.205 | 0.021 | 78 | 0.053 | 0.037 |
| 79 | 1.209 | 0.020 | 79 | 0.062 | 0.055 |
| 80 | 1.210 | 0.025 | 80 | 0.061 | 0.066 |
| 81 | 1.207 | 0.038 | 81 | 0.093 | 0.105 |
| 82 | 1.195 | 0.057 | 82 | 0.122 | 0.124 |
| 83 | 1.167 | 0.076 | 83 | 0.159 | 0.133 |
| 84 | 1.123 | 0.103 | 84 | ----- | ----- |
| 85 | 1.082 | 0.120 | 85 | 0.310 | 0.087 |
| 86 | 1.073 | 0.136 | 86 | 0.331 | 0.064 |
| 87 | 1.117 | 0.104 | 87 | 0.320 | 0.064 |
| 88 | 1.188 | 0.172 | 88 | 0.314 | 0.049 |
| 89 | 1.227 | 0.154 | 89 | 0.311 | 0.035 |
| AVG | 1.223 | 0.029 | AVG | 2.183 | 0.038 |
| TARE | 0.91 | 0.015 | TARE | 0.095 | 0.044 |

Table B7 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

0-Degree

| PROBE COORDINATES: | X | Y | Z |
|---|---|---|---|
| | -.39 R | 0.80 R | 0.00 |

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.341 | 0.241 |
| 1 | 1.307 | 0.230 |
| 2 | 1.355 | 0.192 |
| 3 | 1.368 | 0.196 |
| 4 | 1.374 | 0.186 |
| 5 | 1.417 | 0.122 |
| 6 | 1.420 | 0.102 |
| 7 | 1.430 | 0.091 |
| 8 | 1.442 | 0.076 |
| 9 | 1.455 | 0.070 |
| 10 | 1.457 | 0.073 |
| 11 | 1.474 | 0.066 |
| 12 | 1.479 | 0.067 |
| 13 | 1.489 | 0.068 |
| 14 | 1.498 | 0.061 |
| 15 | 1.501 | 0.061 |
| 16 | 1.506 | 0.062 |
| 17 | 1.500 | 0.062 |
| 18 | 1.499 | 0.062 |
| 19 | 1.500 | 0.062 |
| 20 | 1.491 | 0.060 |
| 21 | 1.483 | 0.061 |
| 22 | 1.474 | 0.059 |
| 23 | 1.465 | 0.059 |
| 24 | 1.449 | 0.060 |
| 25 | 1.444 | 0.060 |
| 26 | 1.427 | 0.060 |
| 27 | 1.411 | 0.057 |
| 28 | 1.392 | 0.056 |
| 29 | 1.383 | 0.057 |
| 30 | 1.368 | 0.051 |
| 31 | 1.353 | 0.052 |
| 32 | 1.341 | 0.050 |
| 33 | 1.334 | 0.048 |
| 34 | 1.317 | 0.047 |
| 35 | 1.311 | 0.046 |
| 36 | 1.300 | 0.044 |
| 37 | 1.290 | 0.041 |
| 38 | 1.278 | 0.038 |
| 39 | 1.271 | 0.037 |
| 40 | 1.262 | 0.034 |
| 41 | 1.255 | 0.033 |
| 42 | 1.249 | 0.032 |
| 43 | 1.240 | 0.031 |
| 44 | 1.233 | 0.028 |
| 45 | 1.229 | 0.027 |
| 46 | 1.221 | 0.026 |
| 47 | 1.221 | 0.024 |
| 48 | 1.213 | 0.022 |
| 49 | 1.211 | 0.020 |
| 50 | 1.206 | 0.019 |
| 51 | 1.203 | 0.010 |
| 52 | 1.201 | 0.019 |
| 53 | 1.196 | 0.017 |
| 54 | 1.193 | 0.010 |
| 55 | 1.189 | 0.017 |
| 56 | 1.188 | 0.015 |
| 57 | 1.186 | 0.015 |
| 58 | 1.185 | 0.014 |
| 59 | 1.184 | 0.016 |
| 60 | 1.180 | 0.015 |
| 61 | 1.181 | 0.015 |
| 62 | 1.181 | 0.016 |
| 63 | 1.180 | 0.015 |
| 64 | 1.178 | 0.017 |
| 65 | 1.175 | 0.017 |
| 66 | 1.172 | 0.020 |
| 67 | 1.173 | 0.022 |
| 68 | 1.174 | 0.02[illegible] |
| 69 | 1.175 | 0.023 |
| 70 | 1.173 | 0.127 |
| 71 | 1.176 | 0.030 |
| 72 | 1.180 | 0.031 |
| 73 | 1.183 | 0.033 |
| 74 | 1.186 | 0.037 |
| 75 | 1.190 | 0.037 |
| 76 | 1.195 | 0.039 |
| 77 | 1.198 | 0.043 |
| 78 | 1.199 | 0.043 |
| 79 | 1.207 | 0.045 |
| 80 | 1.204 | 0.048 |
| 81 | 1.213 | 0.055 |
| 82 | 1.204 | 0.058 |
| 83 | 1.206 | 0.069 |
| 84 | 1.174 | 0.081 |
| 85 | 1.133 | 0.095 |
| 86 | 1.112 | 0.115 |
| 87 | 1.116 | 0.132 |
| 88 | 1.126 | 0.176 |
| 89 | 1.187 | 0.212 |
| AVG | 1.[illegible] | 0.05[illegible] |
| TARE | 0.950 | 0.035 |

VERTICAL COMPONENT

| DEGREES | AVG VEL | RMS |
|---|---|---|
| 0 | 0.215 | 0.107 |
| 1 | 0.172 | 0.047 |
| 2 | 0.160 | 0.051 |
| 3 | 0.159 | 0.056 |
| 4 | 0.161 | 0.051 |
| 5 | 0.160 | 0.042 |
| 6 | 0.156 | 0.039 |
| 7 | 0.163 | 0.037 |
| 8 | 0.161 | 0.034 |
| 9 | 0.149 | 0.033 |
| 10 | 0.149 | 0.035 |
| 11 | 0.137 | 0.035 |
| 12 | 1.127 | 0.036 |
| 13 | 0.111 | 0.033 |
| 14 | 0.099 | 0.035 |
| 15 | 0.080 | 0.033 |
| 16 | 0.068 | 0.035 |
| 17 | 0.053 | 0.036 |
| 18 | 0.035 | 0.048 |
| 19 | 0.014 | 0.033 |
| 20 | 0.007 | 0.033 |
| 21 | -0.019 | 0.032 |
| 22 | -0.025 | 0.031 |
| 23 | -0.040 | 0.031 |
| 24 | -0.051 | 0.029 |
| 25 | -0.051 | 0.032 |
| 26 | -0.057 | 0.033 |
| 27 | -0.064 | 0.027 |
| 28 | -0.063 | 0.030 |
| 29 | -0.061 | 0.036 |
| 30 | -0.063 | 0.030 |
| 31 | -0.063 | 0.029 |
| 32 | -0.061 | 0.033 |
| 33 | -0.055 | 0.032 |
| 34 | -0.055 | 0.033 |
| 35 | -0.051 | 0.032 |
| 36 | -0.044 | 0.034 |
| 37 | -0.041 | 0.031 |
| 38 | -0.033 | 0.036 |
| 39 | -0.029 | 0.033 |
| 40 | -0.027 | 0.037 |
| 41 | -0.017 | 0.033 |
| 42 | -0.009 | 0.033 |
| 43 | -0.010 | 0.036 |
| 44 | 0.007 | 0.035 |
| 45 | 0.003 | 0.039 |
| 46 | 0.008 | 0.036 |
| 47 | 0.013 | 0.030 |
| 48 | 0.022 | 0.037 |
| 49 | 0.032 | 0.037 |
| 50 | 0.035 | 0.035 |
| 51 | 0.041 | 0.037 |
| 52 | 0.045 | 0.037 |
| 53 | 0.055 | 0.035 |
| 54 | 0.066 | 0.035 |
| 55 | 0.060 | 0.034 |
| 56 | 0.079 | 0.033 |
| 57 | 0.085 | 0.031 |
| 58 | 0.096 | 0.036 |
| 59 | 0.096 | 0.033 |
| 60 | 0.103 | 0.033 |
| 61 | 0.110 | 0.031 |
| 62 | 0.123 | 0.034 |
| 63 | 0.135 | 0.031 |
| 64 | 0.139 | 0.032 |
| 65 | 0.150 | 0.032 |
| 66 | 0.162 | 0.032 |
| 67 | 0.166 | 0.032 |
| 68 | 0.175 | 0.031 |
| 69 | 0.189 | 0.032 |
| 70 | 0.197 | 0.031 |
| 71 | 0.[illegible]00 | 0.031 |
| 72 | 0.219 | 0.032 |
| 73 | 0.235 | 0.036 |
| 74 | 0.2[illegible]8 | 0.036 |
| 75 | 0.260 | 0.040 |
| 76 | 0.275 | 0.039 |
| 77 | 0.28[illegible] | 0.043 |
| 78 | 0.3[illegible] | 0.040 |
| 79 | 0.3[illegible] | 0.046 |
| 80 | 0.32[illegible] | 0.050 |
| 81 | 0.340 | 0.053 |
| 82 | 0.358 | 0.060 |
| 83 | 0.3[illegible]2 | 0.110 |
| 84 | 0.3[illegible] | 0.130 |
| 85 | 0.[illegible]03 | 0.131 |
| 86 | 0.345 | 0.142 |
| 87 | 0.[illegible]71 | 0.140 |
| 88 | 0.2[illegible] | 0.136 |
| 89 | 0.222 | 0.115 |
| AVG | 0.10[illegible] | 0.0[illegible] |
| TARE | 0.070 | 0.049 |

Table B8 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X 0.21 R Y 0.70 R Z 0.00 R

0-Degree

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.898 | 0.032 |
| 1 | 0.889 | 0.034 |
| 2 | 0.929 | 0.079 |
| 3 | 1.094 | 0.048 |
| 4 | 1.055 | 0.066 |
| 5 | 1.068 | 0.047 |
| 6 | 1.116 | 0.022 |
| 7 | 1.108 | 0.022 |
| 8 | 1.118 | 0.065 |
| 9 | 1.074 | 0.078 |
| 10 | 1.117 | 0.020 |
| 11 | 1.118 | 0.023 |
| 12 | 1.119 | 0.026 |
| 13 | 1.115 | 0.023 |
| 14 | 1.119 | 0.023 |
| 15 | 1.121 | 0.021 |
| 16 | 1.120 | 0.021 |
| 17 | 1.125 | 0.022 |
| 18 | 1.121 | 0.021 |
| 19 | 1.124 | 0.023 |
| 20 | 1.123 | 0.020 |
| 21 | 1.120 | 0.022 |
| 22 | 1.123 | 0.022 |
| 23 | 1.124 | 0.021 |
| 24 | 1.127 | 0.019 |
| 25 | 1.125 | 0.020 |
| 26 | 1.121 | 0.022 |
| 27 | 1.114 | 0.019 |
| 28 | 1.119 | 0.020 |
| 29 | 1.120 | 0.022 |
| 30 | 1.121 | 0.020 |
| 31 | 1.120 | 0.021 |
| 32 | 1.118 | 0.019 |
| 33 | 1.117 | 0.019 |
| 34 | 1.114 | 0.019 |
| 35 | 1.118 | 0.019 |
| 36 | 1.117 | 0.022 |
| 37 | 1.114 | 0.021 |
| 38 | 1.112 | 0.019 |
| 39 | 1.111 | 0.020 |
| 40 | 1.112 | 0.020 |
| 41 | 1.113 | 0.019 |
| 42 | 1.110 | 0.021 |
| 43 | 1.103 | 0.019 |
| 44 | 1.104 | 0.020 |
| 45 | 1.100 | 0.018 |
| 46 | 1.101 | 0.019 |
| 47 | 1.099 | 0.020 |
| 48 | 1.098 | 0.019 |
| 49 | 1.097 | 0.018 |
| 50 | 1.096 | 0.018 |
| 51 | 1.090 | 0.019 |
| 52 | 1.085 | 0.017 |
| 53 | 1.082 | 0.018 |
| 54 | 1.081 | 0.019 |
| 55 | 1.076 | 0.018 |
| 56 | 1.076 | 0.016 |
| 57 | 1.073 | 0.017 |
| 58 | 1.070 | 0.018 |
| 59 | 1.065 | 0.016 |
| 60 | 1.061 | 0.018 |
| 61 | 1.056 | 0.018 |
| 62 | 1.050 | 0.020 |
| 63 | 1.047 | 0.018 |
| 64 | 1.038 | 0.018 |
| 65 | 1.032 | 0.018 |
| 66 | 1.027 | 0.017 |
| 67 | 1.018 | 0.016 |
| 68 | 1.023 | 0.017 |
| 69 | 1.014 | 0.019 |
| 70 | 1.009 | 0.018 |
| 71 | 1.001 | 0.021 |
| 72 | 0.988 | 0.020 |
| 73 | 0.982 | 0.019 |
| 74 | 0.974 | 0.019 |
| 75 | 0.964 | 0.021 |
| 76 | 0.953 | 0.021 |
| 77 | 0.947 | 0.021 |
| 78 | 0.942 | 0.023 |
| 79 | 0.939 | 0.029 |
| 80 | 0.940 | 0.028 |
| 81 | 0.950 | 0.035 |
| 82 | 0.965 | 0.039 |
| 83 | 0.988 | 0.042 |
| 84 | ----- | ----- |
| 85 | 0.884 | 0.030 |
| 86 | 0.863 | 0.033 |
| 87 | 0.884 | 0.032 |
| 88 | 0.888 | 0.032 |
| 89 | 0.884 | 0.032 |
| AVG | 1.056 | 0.034 |
| TARE | 0.952 | 0.022 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.054 | 0.036 |
| 1 | 0.054 | 0.031 |
| 2 | 0.053 | 0.032 |
| 3 | 0.053 | 0.031 |
| 4 | 0.054 | 0.029 |
| 5 | 0.056 | 0.035 |
| 6 | 0.058 | 0.032 |
| 7 | 0.058 | 0.029 |
| 8 | 0.057 | 0.030 |
| 9 | 0.056 | 0.029 |
| 10 | 0.054 | 0.030 |
| 11 | 0.056 | 0.029 |
| 12 | 0.058 | 0.032 |
| 13 | 0.065 | 0.033 |
| 14 | 0.059 | 0.027 |
| 15 | 0.061 | 0.031 |
| 16 | 0.056 | 0.032 |
| 17 | 0.061 | 0.029 |
| 18 | 0.059 | 0.029 |
| 19 | 0.057 | 0.028 |
| 20 | 0.056 | 0.030 |
| 21 | 0.061 | 0.032 |
| 22 | 0.059 | 0.032 |
| 23 | 0.055 | 0.030 |
| 24 | 0.056 | 0.030 |
| 25 | 0.060 | 0.030 |
| 26 | 0.057 | 0.034 |
| 27 | 0.058 | 0.032 |
| 28 | 0.055 | 0.029 |
| 29 | 0.058 | 0.029 |
| 30 | 0.061 | 0.030 |
| 31 | 0.059 | 0.032 |
| 32 | 0.053 | 0.032 |
| 33 | 0.055 | 0.032 |
| 34 | 0.054 | 0.033 |
| 35 | 0.051 | 0.030 |
| 36 | 0.051 | 0.032 |
| 37 | 0.051 | 0.036 |
| 38 | 0.048 | 0.035 |
| 39 | 0.042 | 0.036 |
| 40 | 0.042 | 0.034 |
| 41 | 0.038 | 0.038 |
| 42 | 0.027 | 0.037 |
| 43 | 0.022 | 0.039 |
| 44 | 0.016 | 0.041 |
| 45 | 0.014 | 0.043 |
| 46 | 0.004 | 0.040 |
| 47 | 0.008 | 0.041 |
| 48 | 0.010 | 0.043 |
| 49 | 0.015 | 0.041 |
| 50 | 0.013 | 0.039 |
| 51 | 0.018 | 0.032 |
| 52 | 0.017 | 0.034 |
| 53 | 0.020 | 0.036 |
| 54 | 0.026 | 0.034 |
| 55 | 0.024 | 0.037 |
| 56 | 0.028 | 0.032 |
| 57 | 0.028 | 0.032 |
| 58 | 0.028 | 0.033 |
| 59 | 0.028 | 0.028 |
| 60 | 0.034 | 0.033 |
| 61 | 0.031 | 0.030 |
| 62 | 0.036 | 0.033 |
| 63 | 0.031 | 0.030 |
| 64 | 0.037 | 0.034 |
| 65 | 0.038 | 0.033 |
| 66 | 0.039 | 0.031 |
| 67 | 0.042 | 0.028 |
| 68 | 0.039 | 0.030 |
| 69 | 0.042 | 0.030 |
| 70 | 0.042 | 0.034 |
| 71 | 0.040 | 0.032 |
| 72 | 0.044 | 0.034 |
| 73 | 0.043 | 0.031 |
| 74 | 0.044 | 0.035 |
| 75 | 0.042 | 0.029 |
| 76 | 0.043 | 0.029 |
| 77 | 0.050 | 0.033 |
| 78 | 0.042 | 0.029 |
| 79 | 0.048 | 0.031 |
| 80 | 0.025 | 0.029 |
| 81 | 0.042 | 0.033 |
| 82 | 0.054 | 0.035 |
| 83 | 0.049 | 0.035 |
| 84 | 0.048 | 0.028 |
| 85 | 0.052 | 0.029 |
| 86 | 0.052 | 0.033 |
| 87 | 0.053 | 0.029 |
| 88 | 0.054 | 0.032 |
| 89 | 0.053 | 0.031 |
| AVG | 0.044 | 0.033 |
| TARE | 0.080 | 0.041 |

Table B9 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X 0.21 R Y 0.80 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.965 | 0.016 |
| 1 | 0.968 | 0.019 |
| 2 | 0.974 | 0.022 |
| 3 | 0.985 | 0.024 |
| 4 | 0.996 | 0.026 |
| 5 | 1.012 | 0.024 |
| 6 | 1.026 | 0.024 |
| 7 | 1.039 | 0.022 |
| 8 | 1.047 | 0.022 |
| 9 | 1.059 | 0.020 |
| 10 | 1.068 | 0.020 |
| 11 | 1.072 | 0.020 |
| 12 | 1.082 | 0.018 |
| 13 | 1.088 | 0.020 |
| 14 | 1.090 | 0.018 |
| 15 | 1.095 | 0.019 |
| 16 | 1.099 | 0.018 |
| 17 | 1.104 | 0.018 |
| 18 | 1.106 | 0.019 |
| 19 | 1.109 | 0.019 |
| 20 | 1.107 | 0.019 |
| 21 | 1.114 | 0.019 |
| 22 | 1.115 | 0.019 |
| 23 | 1.118 | 0.017 |
| 24 | 1.119 | 0.019 |
| 25 | 1.122 | 0.016 |
| 26 | 1.118 | 0.019 |
| 27 | 1.117 | 0.015 |
| 28 | 1.115 | 0.019 |
| 29 | 1.116 | 0.018 |
| 30 | 1.117 | 0.016 |
| 31 | 1.118 | 0.018 |
| 32 | 1.117 | 0.016 |
| 33 | 1.116 | 0.017 |
| 34 | 1.119 | 0.015 |
| 35 | 1.123 | 0.017 |
| 36 | 1.123 | 0.017 |
| 37 | 1.117 | 0.017 |
| 38 | 1.117 | 0.016 |
| 39 | 1.118 | 0.017 |
| 40 | 1.119 | 0.014 |
| 41 | 1.119 | 0.016 |
| 42 | 1.119 | 0.015 |
| 43 | 1.117 | 0.016 |
| 44 | 1.114 | 0.017 |
| 45 | 1.108 | 0.015 |
| 46 | 1.109 | 0.017 |
| 47 | 1.109 | 0.015 |
| 48 | 1.109 | 0.015 |
| 49 | 1.108 | 0.017 |
| 50 | 1.112 | 0.017 |
| 51 | 1.107 | 0.015 |
| 52 | 1.108 | 0.016 |
| 53 | 1.108 | 0.016 |
| 54 | 1.104 | 0.015 |
| 55 | 1.100 | 0.016 |
| 56 | 1.100 | 0.016 |
| 57 | 1.090 | 0.015 |
| 58 | 1.093 | 0.018 |
| 59 | 1.092 | 0.016 |
| 60 | 1.092 | 0.015 |
| 61 | 1.089 | 0.015 |
| 62 | 1.090 | 0.014 |
| 63 | 1.089 | 0.016 |
| 64 | 1.087 | 0.017 |
| 65 | 1.088 | 0.015 |
| 66 | 1.085 | 0.014 |
| 67 | 1.085 | 0.016 |
| 68 | 1.083 | 0.015 |
| 69 | 1.082 | 0.015 |
| 70 | 1.083 | 0.016 |
| 71 | 1.081 | 0.014 |
| 72 | 1.081 | 0.015 |
| 73 | 1.086 | 0.014 |
| 74 | 1.049 | 0.014 |
| 75 | 1.040 | 0.014 |
| 76 | 1.065 | 0.014 |
| 77 | 1.038 | 0.014 |
| 78 | 1.038 | 0.015 |
| 79 | 1.031 | 0.016 |
| 80 | 1.024 | 0.014 |
| 81 | 1.022 | 0.013 |
| 82 | 1.018 | 0.017 |
| 83 | 1.011 | 0.015 |
| 84 | 1.003 | 0.016 |
| 85 | 0.993 | 0.014 |
| 86 | 0.987 | 0.014 |
| 87 | 0.980 | 0.013 |
| 88 | 0.979 | 0.015 |
| 89 | 0.962 | 0.015 |
| AVG | 1.075 | 0.017 |
| TARE | 0.968 | 0.026 |

VERTICAL COMPONENT

0-Degree

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | -0.015 | 0.030 |
| 1 | -0.020 | 0.025 |
| 2 | -0.027 | 0.032 |
| 3 | -0.034 | 0.028 |
| 4 | -0.038 | 0.028 |
| 5 | -0.038 | 0.030 |
| 6 | -0.043 | 0.029 |
| 7 | -0.042 | 0.028 |
| 8 | -0.041 | 0.028 |
| 9 | -0.041 | 0.027 |
| 10 | -0.040 | 0.028 |
| 11 | -0.038 | 0.026 |
| 12 | -0.041 | 0.023 |
| 13 | -0.036 | 0.029 |
| 14 | -0.035 | 0.027 |
| 15 | -0.034 | 0.025 |
| 16 | -0.031 | 0.027 |
| 17 | -0.026 | 0.029 |
| 18 | -0.032 | 0.026 |
| 19 | -0.027 | 0.032 |
| 20 | -0.026 | 0.029 |
| 21 | -0.024 | 0.027 |
| 22 | -0.024 | 0.029 |
| 23 | -0.025 | 0.026 |
| 24 | -0.026 | 0.526 |
| 25 | -0.023 | 0.024 |
| 26 | -0.017 | 0.027 |
| 27 | -0.021 | 0.023 |
| 28 | -0.017 | 0.029 |
| 29 | -0.017 | 0.027 |
| 30 | -0.016 | 0.026 |
| 31 | -0.013 | 0.027 |
| 32 | -0.019 | 0.024 |
| 33 | -0.013 | 0.029 |
| 34 | -0.012 | 0.028 |
| 35 | -0.012 | 0.026 |
| 36 | -0.011 | 0.029 |
| 37 | -0.014 | 0.027 |
| 38 | -0.010 | 0.026 |
| 39 | -0.009 | 0.028 |
| 40 | -0.009 | 0.026 |
| 41 | -0.009 | 0.026 |
| 42 | -0.006 | 0.028 |
| 43 | -0.008 | 0.024 |
| 44 | -0.005 | 0.025 |
| 45 | -0.004 | 0.025 |
| 46 | -0.004 | 0.030 |
| 47 | -0.001 | 0.030 |
| 48 | -0.001 | 0.026 |
| 49 | 0.000 | 0.029 |
| 50 | 0.001 | 0.027 |
| 51 | -0.001 | 0.026 |
| 52 | 0.002 | 0.025 |
| 53 | 0.002 | 0.023 |
| 54 | 0.006 | 0.029 |
| 55 | 0.003 | 0.023 |
| 56 | 0.005 | 0.027 |
| 57 | 0.006 | 0.023 |
| 58 | 0.007 | 0.025 |
| 59 | 0.008 | 0.026 |
| 60 | 0.006 | 0.029 |
| 61 | 0.011 | 0.027 |
| 62 | 0.010 | 0.027 |
| 63 | 0.010 | 0.027 |
| 64 | 0.011 | 0.027 |
| 65 | 0.010 | 0.027 |
| 66 | 0.007 | 0.026 |
| 67 | 0.007 | 0.027 |
| 68 | 0.006 | 0.025 |
| 69 | 0.010 | 0.025 |
| 70 | 0.007 | 0.026 |
| 71 | 0.013 | 0.025 |
| 72 | 0.014 | 0.027 |
| 73 | 0.012 | 0.025 |
| 74 | 0.012 | 0.025 |
| 75 | 0.014 | 0.026 |
| 76 | 0.013 | 0.025 |
| 77 | 0.011 | 0.027 |
| 78 | 0.012 | 0.025 |
| 79 | 0.009 | 0.027 |
| 80 | 0.010 | 0.025 |
| 81 | 0.011 | 0.027 |
| 82 | 0.011 | 0.027 |
| 83 | 0.009 | 0.025 |
| 84 | 0.007 | 0.025 |
| 85 | -0.001 | 0.026 |
| 86 | 0.005 | 0.025 |
| 87 | 0.003 | 0.024 |
| 88 | -0.005 | 0.025 |
| 89 | -0.006 | 0.025 |
| AVG | -0.006 | 0.027 |
| TARE | 0.068 | 0.048 |

Table B10 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X 0.21 R Y 0.90 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.997 | 0.015 |
| 1 | 0.995 | 0.019 |
| 2 | 0.996 | 0.019 |
| 3 | 0.992 | 0.021 |
| 4 | 0.991 | 0.022 |
| 5 | 0.991 | 0.020 |
| 6 | 0.999 | 0.019 |
| 7 | 1.007 | 0.021 |
| 8 | 1.011 | 0.024 |
| 9 | 1.020 | 0.024 |
| 10 | 1.027 | 0.024 |
| 11 | 1.033 | 0.021 |
| 12 | 1.040 | 0.020 |
| 13 | 1.049 | 0.020 |
| 14 | 1.053 | 0.019 |
| 15 | 1.054 | 0.023 |
| 16 | 1.060 | 0.021 |
| 17 | 1.063 | 0.021 |
| 18 | 1.066 | 0.021 |
| 19 | 1.069 | 0.017 |
| 20 | 1.072 | 0.020 |
| 21 | 1.076 | 0.020 |
| 22 | 1.075 | 0.018 |
| 23 | 1.083 | 0.022 |
| 24 | 1.083 | 0.020 |
| 25 | 1.085 | 0.021 |
| 26 | 1.089 | 0.019 |
| 27 | 1.085 | 0.021 |
| 28 | 1.088 | 0.019 |
| 29 | 1.091 | 0.020 |
| 30 | 1.090 | 0.019 |
| 31 | 1.093 | 0.019 |
| 32 | 1.092 | 0.019 |
| 33 | 1.093 | 0.020 |
| 34 | 1.090 | 0.019 |
| 35 | 1.090 | 0.019 |
| 36 | 1.091 | 0.017 |
| 37 | 1.090 | 0.019 |
| 38 | 1.091 | 0.019 |
| 39 | 1.094 | 0.020 |
| 40 | 1.090 | 0.020 |
| 41 | 1.096 | 0.021 |
| 42 | 1.096 | 0.020 |
| 43 | 1.092 | 0.020 |
| 44 | 1.095 | 0.018 |
| 45 | 1.093 | 0.018 |
| 46 | 1.090 | 0.020 |
| 47 | 1.084 | 0.018 |
| 48 | 1.080 | 0.020 |
| 49 | 1.080 | 0.018 |
| 50 | 1.090 | 0.019 |
| 51 | 1.086 | 0.018 |
| 52 | 1.088 | 0.019 |
| 53 | 1.087 | 0.017 |
| 54 | 1.087 | 0.018 |
| 55 | 1.087 | 0.020 |
| 56 | 1.083 | 0.017 |
| 57 | 1.081 | 0.019 |
| 58 | 1.081 | 0.020 |
| 59 | 1.079 | 0.019 |
| 60 | 1.075 | 0.018 |
| 61 | 1.072 | 0.017 |
| 62 | 1.073 | 0.018 |
| 63 | 1.069 | 0.017 |
| 64 | 1.072 | 0.018 |
| 65 | 1.069 | 0.019 |
| 66 | 1.065 | 0.017 |
| 67 | 1.068 | 0.019 |
| 68 | 1.060 | 0.019 |
| 69 | 1.059 | 0.017 |
| 70 | 1.056 | 0.017 |
| 71 | 1.054 | 0.020 |
| 72 | 1.053 | 0.017 |
| 73 | 1.050 | 0.019 |
| 74 | 1.052 | 0.018 |
| 75 | 1.044 | 0.019 |
| 76 | 1.044 | 0.017 |
| 77 | 1.041 | 0.019 |
| 78 | 1.036 | 0.017 |
| 79 | 1.030 | 0.015 |
| 80 | 1.024 | 0.018 |
| 81 | 1.022 | 0.017 |
| 82 | 1.023 | 0.019 |
| 83 | 1.022 | 0.017 |
| 84 | 1.017 | 0.019 |
| 85 | 1.012 | 0.017 |
| 86 | 1.006 | 0.017 |
| 87 | 1.005 | 0.018 |
| 88 | 1.005 | 0.018 |
| 89 | 1.001 | 0.019 |
| AVG | 1.059 | 0.019 |
| TARE | 0.978 | 0.021 |

VERTICAL COMPONENT

0-Degree

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | -0.019 | 0.033 |
| 1 | -0.020 | 0.035 |
| 2 | -0.022 | 0.035 |
| 3 | -0.025 | 0.039 |
| 4 | -0.025 | 0.037 |
| 5 | -0.028 | 0.043 |
| 6 | -0.034 | 0.036 |
| 7 | -0.041 | 0.041 |
| 8 | -0.046 | 0.038 |
| 9 | -0.041 | 0.039 |
| 10 | -0.053 | 0.036 |
| 11 | -0.054 | 0.037 |
| 12 | -0.057 | 0.036 |
| 13 | -0.061 | 0.038 |
| 14 | -0.058 | 0.038 |
| 15 | -0.055 | 0.036 |
| 16 | -0.055 | 0.034 |
| 17 | -0.061 | 0.033 |
| 18 | -0.059 | 0.032 |
| 19 | -0.058 | 0.035 |
| 20 | -0.055 | 0.033 |
| 21 | -0.056 | 0.034 |
| 22 | -0.060 | 0.034 |
| 23 | -0.053 | 0.035 |
| 24 | -0.054 | 0.031 |
| 25 | -0.052 | 0.035 |
| 26 | -0.049 | 0.038 |
| 27 | -0.051 | 0.033 |
| 28 | -0.048 | 0.036 |
| 29 | -0.049 | 0.031 |
| 30 | -0.045 | 0.039 |
| 31 | -0.042 | 0.036 |
| 32 | -0.049 | 0.028 |
| 33 | -0.044 | 0.031 |
| 34 | -0.042 | 0.035 |
| 35 | -0.046 | 0.033 |
| 36 | -0.044 | 0.034 |
| 37 | -0.044 | 0.033 |
| 38 | -0.042 | 0.033 |
| 39 | -0.040 | 0.036 |
| 40 | -0.037 | 0.038 |
| 41 | -0.040 | 0.033 |
| 42 | -0.041 | 0.029 |
| 43 | -0.039 | 0.029 |
| 44 | -0.042 | 0.030 |
| 45 | -0.038 | 0.034 |
| 46 | -0.031 | 0.031 |
| 47 | -0.033 | 0.033 |
| 48 | -0.030 | 0.034 |
| 49 | -0.033 | 0.032 |
| 50 | -0.029 | 0.033 |
| 51 | -0.027 | 0.032 |
| 52 | -0.031 | 0.033 |
| 53 | -0.026 | 0.033 |
| 54 | -0.025 | 0.032 |
| 55 | -0.023 | 0.033 |
| 56 | -0.024 | 0.032 |
| 57 | -0.020 | 0.032 |
| 58 | -0.021 | 0.030 |
| 59 | -0.019 | 0.029 |
| 60 | -0.016 | 0.033 |
| 61 | -0.016 | 0.030 |
| 62 | -0.020 | 0.030 |
| 63 | -0.021 | 0.028 |
| 64 | -0.017 | 0.029 |
| 65 | -0.014 | 0.033 |
| 66 | -0.016 | 0.033 |
| 67 | -0.014 | 0.036 |
| 68 | -0.012 | 0.035 |
| 69 | -0.018 | 0.028 |
| 70 | -0.011 | 0.034 |
| 71 | -0.013 | 0.032 |
| 72 | -0.009 | 0.031 |
| 73 | -0.010 | 0.033 |
| 74 | -0.005 | 0.037 |
| 75 | -0.010 | 0.028 |
| 76 | -0.005 | 0.031 |
| 77 | -0.004 | 0.036 |
| 78 | -0.000 | 0.032 |
| 79 | -0.007 | 0.034 |
| 80 | -0.008 | 0.033 |
| 81 | -0.003 | 0.033 |
| 82 | -0.004 | 0.030 |
| 83 | -0.007 | 0.031 |
| 84 | -0.002 | 0.029 |
| 85 | -0.005 | 0.034 |
| 86 | -0.002 | 0.036 |
| 87 | -0.009 | 0.032 |
| 88 | -0.010 | 0.031 |
| 89 | -0.010 | 0.031 |
| AVG | -0.031 | 0.033 |
| TARE | 0.057 | 0.039 |

Table B11 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X −0.39 R Y 0.78 R Z 0.00 R

LONGITUDINAL COMPONENT

90-Degree

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.226 | 0.120 |
| 1 | 1.256 | 0.110 |
| 2 | 1.252 | 0.107 |
| 3 | 1.256 | 0.109 |
| 4 | 1.257 | 0.092 |
| 5 | 1.267 | 0.007 |
| 6 | 1.249 | 0.000 |
| 7 | 1.250 | 0.095 |
| 8 | 1.260 | 0.057 |
| 9 | 1.240 | 0.059 |
| 10 | 1.244 | 0.057 |
| 11 | 1.242 | 0.054 |
| 12 | 1.232 | 0.059 |
| 13 | 1.240 | 0.050 |
| 14 | 1.239 | 0.052 |
| 15 | 1.227 | 0.059 |
| 16 | 1.233 | 0.054 |
| 17 | 1.237 | 0.055 |
| 18 | 1.231 | 0.061 |
| 19 | 1.218 | 0.059 |
| 20 | 1.213 | 0.000 |
| 21 | 1.226 | 0.057 |
| 22 | 1.214 | 0.046 |
| 23 | 1.219 | 0.043 |
| 24 | 1.206 | 0.036 |
| 25 | 1.216 | 0.041 |
| 26 | 1.204 | 0.034 |
| 27 | 1.212 | 0.057 |
| 28 | 1.205 | 0.049 |
| 29 | 1.194 | 0.038 |
| 30 | 1.193 | 0.045 |
| 31 | 1.192 | 0.050 |
| 32 | 1.189 | 0.040 |
| 33 | 1.183 | 0.033 |
| 34 | 1.181 | 0.033 |
| 35 | 1.179 | 0.034 |
| 36 | 1.175 | 0.043 |
| 37 | 1.175 | 0.037 |
| 38 | 1.172 | 0.028 |
| 39 | 1.171 | 0.037 |
| 40 | 1.168 | 0.037 |
| 41 | 1.166 | 0.035 |
| 42 | 1.173 | 0.039 |
| 43 | 1.171 | 0.049 |
| 44 | 1.167 | 0.038 |
| 45 | 1.164 | 0.034 |
| 46 | 1.154 | 0.034 |
| 47 | 1.163 | 0.029 |
| 48 | 1.160 | 0.042 |
| 49 | 1.159 | 0.033 |
| 50 | 1.167 | 0.039 |
| 51 | 1.157 | 0.031 |
| 52 | 1.153 | 0.044 |
| 53 | 1.150 | 0.053 |
| 54 | 1.160 | 0.040 |
| 55 | 1.150 | 0.020 |
| 56 | 1.159 | 0.022 |
| 57 | 1.159 | 0.049 |
| 58 | 1.157 | 0.043 |
| 59 | 1.164 | 0.045 |
| 60 | 1.157 | 0.050 |
| 61 | 1.170 | 0.051 |
| 62 | 1.158 | 0.052 |
| 63 | 1.161 | 0.062 |
| 64 | 1.154 | 0.070 |
| 65 | 1.155 | 0.065 |
| 66 | 1.175 | 0.062 |
| 67 | 1.154 | 0.053 |
| 68 | 1.163 | 0.060 |
| 69 | 1.168 | 0.034 |
| 70 | 1.173 | 0.036 |
| 71 | 1.177 | 0.043 |
| 72 | 1.186 | 0.040 |
| 73 | 1.183 | 0.044 |
| 74 | 1.190 | 0.041 |
| 75 | 1.190 | 0.044 |
| 76 | 1.195 | 0.043 |
| 77 | 1.184 | 0.053 |
| 78 | 1.199 | 0.055 |
| 79 | 1.204 | 0.062 |
| 80 | 1.202 | 0.075 |
| 81 | 1.205 | 0.102 |
| 82 | 1.225 | 0.096 |
| 83 | 1.233 | 0.068 |
| 84 | 1.243 | 0.006 |
| 85 | 1.278 | 0.075 |
| 86 | 1.223 | 0.054 |
| 87 | 1.212 | 0.088 |
| 88 | 1.203 | 0.109 |
| 89 | 1.182 | 0.102 |
| AVG | 1.196 | 0.058 |
| TARE | 0.999 | 0.027 |

Table B12 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X -0.39 R Y 0.00 R Z 0.00 R

LONGITUDINAL COMPONENT

90-Degree

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.172 | 0.089 |
| 1 | 1.206 | 0.104 |
| 2 | 1.202 | 0.102 |
| 3 | 1.234 | 0.097 |
| 4 | 1.240 | 0.111 |
| 5 | 1.260 | 0.071 |
| 6 | 1.247 | 0.087 |
| 7 | 1.289 | 0.073 |
| 8 | 1.286 | 0.056 |
| 9 | 1.319 | 0.066 |
| 10 | 1.310 | 0.059 |
| 11 | 1.333 | 0.062 |
| 12 | 1.360 | 0.082 |
| 13 | 1.353 | 0.061 |
| 14 | 1.337 | 0.071 |
| 15 | 1.335 | 0.057 |
| 16 | 1.317 | 0.049 |
| 17 | 1.307 | 0.055 |
| 18 | 1.306 | 0.064 |
| 19 | 1.286 | 0.051 |
| 20 | 1.266 | 0.050 |
| 21 | 1.264 | 0.038 |
| 22 | 1.234 | 0.051 |
| 23 | 1.233 | 0.041 |
| 24 | 1.219 | 0.039 |
| 25 | 1.203 | 0.037 |
| 26 | 1.191 | 0.035 |
| 27 | 1.195 | 0.042 |
| 28 | 1.196 | 0.047 |
| 29 | 1.184 | 0.044 |
| 30 | 1.176 | 0.029 |
| 31 | 1.170 | 0.036 |
| 32 | 1.162 | 0.038 |
| 33 | 1.149 | 0.034 |
| 34 | 1.157 | 0.033 |
| 35 | 1.146 | 0.030 |
| 36 | 1.157 | 0.028 |
| 37 | 1.146 | 0.022 |
| 38 | 1.143 | 0.031 |
| 39 | 1.144 | 0.029 |
| 40 | 1.143 | 0.036 |
| 41 | 1.136 | 0.032 |
| 42 | 1.140 | 0.036 |
| 43 | 1.133 | 0.043 |
| 44 | 1.149 | 0.055 |
| 45 | 1.136 | 0.037 |
| 46 | 1.129 | 0.030 |
| 47 | 1.140 | 0.041 |
| 48 | 1.128 | 0.029 |
| 49 | 1.133 | 0.034 |
| 50 | 1.130 | 0.042 |
| 51 | 1.136 | 0.042 |
| 52 | 1.127 | 0.031 |
| 53 | 1.141 | 0.028 |
| 54 | 1.123 | 0.026 |
| 55 | 1.120 | 0.031 |
| 56 | 1.131 | 0.027 |
| 57 | 1.149 | 0.073 |
| 58 | 1.138 | 0.030 |
| 59 | 1.129 | 0.033 |
| 60 | 1.142 | 0.046 |
| 61 | 1.133 | 0.049 |
| 62 | 1.152 | 0.055 |
| 63 | 1.147 | 0.055 |
| 64 | 1.140 | 0.045 |
| 65 | 1.135 | 0.020 |
| 66 | 1.130 | 0.046 |
| 67 | 1.126 | 0.020 |
| 68 | 1.144 | 0.046 |
| 69 | 1.143 | 0.039 |
| 70 | 1.142 | 0.039 |
| 71 | ----- | ----- |
| 72 | 1.129 | 0.035 |
| 73 | 1.144 | 0.023 |
| 74 | 1.141 | 0.037 |
| 75 | 1.140 | 0.025 |
| 76 | 1.149 | 0.036 |
| 77 | 1.141 | 0.037 |
| 78 | 1.154 | 0.036 |
| 79 | 1.151 | 0.033 |
| 80 | 1.157 | 0.034 |
| 81 | 1.160 | 0.035 |
| 82 | 1.162 | 0.027 |
| 83 | 1.152 | 0.030 |
| 84 | 1.154 | 0.032 |
| 85 | 1.161 | 0.043 |
| 86 | 1.157 | 0.035 |
| 87 | 1.164 | 0.049 |
| 88 | 1.153 | 0.056 |
| 89 | 1.154 | 0.036 |
| AVG | 1.184 | 0.046 |
| TARE | 0.998 | 0.025 |

Table B13 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of 20 Degrees

PROBE COORDINATES: X -0.43 R Y 0.70 R Z 0.00 R

180-Degree

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL. |
|---|---|
| 0 | 0.993 |
| 1 | 1.004 |
| 2 | 1.061 |
| 3 | 1.092 |
| 4 | 1.135 |
| 5 | 1.102 |
| 6 | 1.225 |
| 7 | 1.256 |
| 8 | 1.267 |
| 9 | 1.290 |
| 10 | 1.295 |
| 11 | 1.300 |
| 12 | 1.313 |
| 13 | 1.302 |
| 14 | 1.295 |
| 15 | 1.293 |
| 16 | 1.285 |
| 17 | 1.274 |
| 18 | 1.271 |
| 19 | 1.253 |
| 20 | 1.248 |
| 21 | 1.233 |
| 22 | 1.232 |
| 23 | 1.222 |
| 24 | 1.212 |
| 25 | 1.206 |
| 26 | 1.197 |
| 27 | 1.191 |
| 28 | 1.181 |
| 29 | 1.175 |
| 30 | 1.169 |
| 31 | 1.158 |
| 32 | 1.162 |
| 33 | 1.156 |
| 34 | 1.150 |
| 35 | 1.143 |
| 36 | 1.144 |
| 37 | 1.140 |
| 38 | 1.131 |
| 39 | 1.125 |
| 40 | 1.123 |
| 41 | 1.126 |
| 42 | 1.120 |
| 43 | 1.110 |
| 44 | 1.120 |
| 45 | 1.116 |
| 46 | 1.111 |
| 47 | 1.111 |
| 48 | 1.105 |
| 49 | 1.102 |
| 50 | 1.101 |
| 51 | 1.101 |
| 52 | 1.104 |
| 53 | 1.101 |
| 54 | 1.099 |
| 55 | 1.095 |
| 56 | 1.099 |
| 57 | 1.099 |
| 58 | 1.093 |
| 59 | 1.090 |
| 60 | 1.000 |
| 61 | 1.090 |
| 62 | 1.091 |
| 63 | 1.091 |
| 64 | 1.000 |
| 65 | 1.009 |
| 66 | 1.000 |
| 67 | 1.007 |
| 68 | 1.004 |
| 69 | 1.000 |
| 70 | 1.090 |
| 71 | 1.091 |
| 72 | 1.091 |
| 73 | 1.009 |
| 74 | 1.009 |
| 75 | 1.000 |
| 76 | 1.095 |
| 77 | 1.092 |
| 78 | 1.095 |
| 79 | 1.096 |
| 80 | 1.090 |
| 81 | 1.095 |
| 82 | 1.095 |
| 83 | 1.096 |
| 84 | 1.099 |
| 85 | 1.099 |
| 86 | 1.002 |
| 87 | 1.049 |
| 88 | 1.014 |
| 89 | 0.977 |
| AVG | 1.140 |

RADIAL COMPONENT

| DEGREE | AVG VEL. |
|---|---|
| 0 | -0.457 |
| 1 | -0.479 |
| 2 | -0.497 |
| 3 | -0.494 |
| 4 | -0.449 |
| 5 | -0.370 |
| 6 | -0.208 |
| 7 | -0.251 |
| 8 | -0.237 |
| 9 | -0.224 |
| 10 | -0.234 |
| 11 | -0.227 |
| 12 | -0.218 |
| 13 | -0.201 |
| 14 | -0.188 |
| 15 | -0.164 |
| 16 | -0.155 |
| 17 | -0.129 |
| 18 | -0.114 |
| 19 | -0.090 |
| 20 | -0.078 |
| 21 | -0.075 |
| 22 | -0.063 |
| 23 | -0.062 |
| 24 | -0.053 |
| 25 | -0.062 |
| 26 | -0.067 |
| 27 | -0.069 |
| 28 | -0.070 |
| 29 | -0.081 |
| 30 | -0.006 |
| 31 | -0.091 |
| 32 | -0.088 |
| 33 | -0.098 |
| 34 | -0.109 |
| 35 | -0.113 |
| 36 | -0.116 |
| 37 | -0.121 |
| 38 | -0.125 |
| 39 | -0.140 |
| 40 | -0.147 |
| 41 | -0.153 |
| 42 | -0.158 |
| 43 | -0.159 |
| 44 | -0.163 |
| 45 | -0.168 |
| 46 | -0.176 |
| 47 | -0.181 |
| 48 | -0.187 |
| 49 | -0.189 |
| 50 | -0.197 |
| 51 | -0.200 |
| 52 | -0.206 |
| 53 | -0.217 |
| 54 | -0.220 |
| 55 | -0.227 |
| 56 | -0.228 |
| 57 | -0.237 |
| 58 | -0.240 |
| 59 | -0.245 |
| 60 | -0.249 |
| 61 | -0.250 |
| 62 | -0.260 |
| 63 | -0.268 |
| 64 | -0.272 |
| 65 | -0.274 |
| 66 | -0.282 |
| 67 | -0.288 |
| 68 | -0.295 |
| 69 | -0.303 |
| 70 | -0.306 |
| 71 | -0.313 |
| 72 | -0.319 |
| 73 | -0.326 |
| 74 | -0.334 |
| 75 | -0.340 |
| 76 | -0.353 |
| 77 | -0.350 |
| 78 | -0.371 |
| 79 | -0.377 |
| 80 | -0.391 |
| 81 | -0.396 |
| 82 | -0.403 |
| 83 | -0.410 |
| 84 | -0.422 |
| 85 | -0.430 |
| 86 | -0.442 |
| 87 | -0.444 |
| 88 | -0.441 |
| 89 | -0.437 |
| AVG | -0.239 |

Table B14 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

PROBE COORDINATES: X -0.43 R Y 0.70 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 1.222 |
| 1 | 1.222 |
| 2 | 1.251 |
| 3 | 1.250 |
| 4 | 1.300 |
| 5 | 1.340 |
| 6 | 1.386 |
| 7 | 1.388 |
| 8 | 1.407 |
| 9 | 1.417 |
| 10 | 1.427 |
| 11 | 1.429 |
| 12 | 1.433 |
| 13 | 1.435 |
| 14 | 1.436 |
| 15 | 1.439 |
| 16 | 1.436 |
| 17 | 1.437 |
| 18 | 1.440 |
| 19 | 1.441 |
| 20 | 1.441 |
| 21 | 1.443 |
| 22 | 1.444 |
| 23 | 1.443 |
| 24 | 1.444 |
| 25 | 1.443 |
| 26 | 1.447 |
| 27 | 1.449 |
| 28 | 1.444 |
| 29 | 1.444 |
| 30 | 1.443 |
| 31 | 1.444 |
| 32 | 1.443 |
| 33 | 1.436 |
| 34 | 1.435 |
| 35 | 1.429 |
| 36 | 1.426 |
| 37 | 1.422 |
| 38 | 1.418 |
| 39 | 1.415 |
| 40 | 1.409 |
| 41 | 1.402 |
| 42 | 1.394 |
| 43 | 1.388 |
| 44 | 1.378 |
| 45 | 1.375 |
| 46 | 1.365 |
| 47 | 1.376 |
| 48 | 1.351 |
| 49 | 1.346 |
| 50 | 1.339 |
| 51 | 1.329 |
| 52 | 1.327 |
| 53 | 1.323 |
| 54 | 1.317 |
| 55 | 1.309 |
| 56 | 1.303 |
| 57 | 1.304 |
| 58 | 1.303 |
| 59 | 1.293 |
| 60 | 1.290 |
| 61 | 1.286 |
| 62 | 1.281 |
| 63 | 1.283 |
| 64 | 1.288 |
| 65 | 1.288 |
| 66 | 1.279 |
| 67 | 1.276 |
| 68 | 1.278 |
| 69 | 1.276 |
| 70 | 1.276 |
| 71 | 1.277 |
| 72 | 1.278 |
| 73 | 1.281 |
| 74 | 1.282 |
| 75 | 1.284 |
| 76 | 1.285 |
| 77 | 1.291 |
| 78 | 1.292 |
| 79 | 1.297 |
| 80 | 1.301 |
| 81 | 1.307 |
| 82 | 1.315 |
| 83 | 1.323 |
| 84 | 1.331 |
| 85 | 1.332 |
| 86 | 1.314 |
| 87 | 1.307 |
| 88 | 1.267 |
| 89 | 1.234 |
| AVG | 1.355 |

RADIAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 0.001 |
| 1 | -0.022 |
| 2 | -0.063 |
| 3 | -0.107 |
| 4 | -0.137 |
| 5 | -0.166 |
| 6 | -0.179 |
| 7 | -0.185 |
| 8 | -0.195 |
| 9 | -0.197 |
| 10 | -0.208 |
| 11 | -0.207 |
| 12 | -0.208 |
| 13 | -0.213 |
| 14 | -0.208 |
| 15 | -0.203 |
| 16 | -0.212 |
| 17 | -0.213 |
| 18 | -0.213 |
| 19 | -0.218 |
| 20 | -0.223 |
| 21 | -0.222 |
| 22 | -0.221 |
| 23 | -0.227 |
| 24 | -0.225 |
| 25 | -0.228 |
| 26 | -0.229 |
| 27 | -0.238 |
| 28 | -0.252 |
| 29 | -0.258 |
| 30 | -0.261 |
| 31 | -0.270 |
| 32 | -0.275 |
| 33 | -0.289 |
| 34 | -0.293 |
| 35 | -0.304 |
| 36 | -0.313 |
| 37 | -0.308 |
| 38 | -0.312 |
| 39 | -0.320 |
| 40 | -0.324 |
| 41 | -0.334 |
| 42 | -0.338 |
| 43 | -0.340 |
| 44 | -0.342 |
| 45 | -0.335 |
| 46 | -0.342 |
| 47 | ------ |
| 48 | -0.333 |
| 49 | -0.337 |
| 50 | -0.334 |
| 51 | -0.332 |
| 52 | -0.331 |
| 53 | -0.322 |
| 54 | -0.322 |
| 55 | -0.319 |
| 56 | -0.317 |
| 57 | -0.313 |
| 58 | -0.302 |
| 59 | -0.298 |
| 60 | -0.294 |
| 61 | -0.285 |
| 62 | -0.285 |
| 63 | -0.275 |
| 64 | -0.271 |
| 65 | -0.267 |
| 66 | -0.259 |
| 67 | -0.255 |
| 68 | -0.242 |
| 69 | -0.239 |
| 70 | -0.234 |
| 71 | -0.223 |
| 72 | -0.220 |
| 73 | -0.213 |
| 74 | -0.203 |
| 75 | -0.196 |
| 76 | -0.190 |
| 77 | -0.183 |
| 78 | -0.176 |
| 79 | -0.169 |
| 80 | -0.160 |
| 81 | -0.144 |
| 82 | -0.137 |
| 83 | -0.110 |
| 84 | -0.089 |
| 85 | -0.034 |
| 86 | -0.017 |
| 87 | 0.026 |
| 88 | 0.048 |
| 89 | 0.025 |
| AVG | -0.226 |

0-Degree

Table B15 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

PROBE COORDINATES: X 0.21 R Y 0.70 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 0.929 |
| 1 | 0.945 |
| 2 | 0.970 |
| 3 | 0.982 |
| 4 | 0.997 |
| 5 | 1.008 |
| 6 | 1.013 |
| 7 | 1.022 |
| 8 | 1.033 |
| 9 | 1.041 |
| 10 | 1.047 |
| 11 | 1.051 |
| 12 | 1.057 |
| 13 | 1.063 |
| 14 | 1.064 |
| 15 | 1.071 |
| 16 | 1.074 |
| 17 | 1.077 |
| 18 | 1.083 |
| 19 | 1.090 |
| 20 | 1.090 |
| 21 | 1.093 |
| 22 | 1.094 |
| 23 | 1.096 |
| 24 | 1.098 |
| 25 | 1.101 |
| 26 | 1.101 |
| 27 | 1.100 |
| 28 | 1.103 |
| 29 | 1.111 |
| 30 | 1.112 |
| 31 | 1.112 |
| 32 | 1.112 |
| 33 | 1.117 |
| 34 | 1.116 |
| 35 | 1.118 |
| 36 | 1.119 |
| 37 | 1.119 |
| 38 | 1.120 |
| 39 | 1.120 |
| 40 | 1.122 |
| 41 | 1.117 |
| 42 | 1.118 |
| 43 | 1.114 |
| 44 | 1.122 |
| 45 | 1.121 |
| 46 | 1.126 |
| 47 | 1.121 |
| 48 | 1.122 |
| 49 | 1.124 |
| 50 | 1.125 |
| 51 | 1.123 |
| 52 | 1.125 |
| 53 | 1.125 |
| 54 | 1.125 |
| 55 | 1.125 |
| 56 | 1.120 |
| 57 | 1.129 |
| 58 | 1.127 |
| 59 | 1.120 |
| 60 | 1.127 |
| 61 | 1.127 |
| 62 | 1.125 |
| 63 | 1.123 |
| 64 | 1.118 |
| 65 | 1.114 |
| 66 | 1.120 |
| 67 | 1.118 |
| 68 | 1.110 |
| 69 | 1.101 |
| 70 | ----- |
| 71 | ----- |
| 72 | 1.101 |
| 73 | 1.101 |
| 74 | 1.103 |
| 75 | 1.095 |
| 76 | 1.100 |
| 77 | 1.101 |
| 78 | 1.102 |
| 79 | 1.100 |
| 80 | 1.104 |
| 81 | 1.093 |
| 82 | 1.110 |
| 83 | 1.095 |
| 84 | 1.105 |
| 85 | 1.105 |
| 86 | 1.099 |
| 87 | 1.080 |
| 88 | 1.040 |
| 89 | 0.960 |
| AVG | 1.091 |

RADIAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | -0.241 |
| 1 | -0.274 |
| 2 | -0.288 |
| 3 | -0.299 |
| 4 | -0.308 |
| 5 | -0.296 |
| 6 | -0.300 |
| 7 | -0.301 |
| 8 | -0.208 |
| 9 | -0.295 |
| 10 | -0.296 |
| 11 | -0.291 |
| 12 | -0.209 |
| 13 | -0.286 |
| 14 | -0.208 |
| 15 | -0.287 |
| 16 | -0.279 |
| 17 | -0.202 |
| 18 | -0.277 |
| 19 | -0.284 |
| 20 | -0.281 |
| 21 | -0.277 |
| 22 | -0.277 |
| 23 | -0.280 |
| 24 | -0.274 |
| 25 | -0.270 |
| 26 | -0.268 |
| 27 | -0.272 |
| 28 | -0.272 |
| 29 | -0.267 |
| 30 | -0.258 |
| 31 | -0.267 |
| 32 | -0.268 |
| 33 | -0.261 |
| 34 | -0.270 |
| 35 | -0.256 |
| 36 | -0.254 |
| 37 | -0.264 |
| 38 | -0.257 |
| 39 | -0.257 |
| 40 | -0.261 |
| 41 | -0.257 |
| 42 | -0.256 |
| 43 | -0.253 |
| 44 | -0.255 |
| 45 | -0.253 |
| 46 | -0.247 |
| 47 | -0.251 |
| 48 | -0.249 |
| 49 | -0.253 |
| 50 | -0.254 |
| 51 | -0.254 |
| 52 | -0.244 |
| 53 | -0.254 |
| 54 | -0.248 |
| 55 | -0.252 |
| 56 | -0.252 |
| 57 | -0.253 |
| 58 | -0.256 |
| 59 | -0.248 |
| 60 | -0.250 |
| 61 | -0.250 |
| 62 | -0.256 |
| 63 | -0.240 |
| 64 | -0.249 |
| 65 | -0.250 |
| 66 | -0.253 |
| 67 | -0.244 |
| 68 | -0.245 |
| 69 | -0.238 |
| 70 | ----- |
| 71 | ----- |
| 72 | -0.241 |
| 73 | -0.240 |
| 74 | -0.240 |
| 75 | -0.244 |
| 76 | -0.240 |
| 77 | -0.249 |
| 78 | -0.250 |
| 79 | -0.250 |
| 80 | -0.255 |
| 81 | -0.251 |
| 82 | -0.250 |
| 83 | -0.260 |
| 84 | -0.265 |
| 85 | -0.260 |
| 86 | -0.265 |
| 87 | -0.272 |
| 88 | -0.285 |
| 89 | -0.240 |
| AVG | -0.260 |

180-Degree

Table B16 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

PROBE COORDINATES: X -0.39 R Y 0.58 R Z 0.88 R

180-Degree

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 1.030 |
| 1 | 1.040 |
| 2 | 1.038 |
| 3 | 1.057 |
| 4 | 1.069 |
| 5 | 1.094 |
| 6 | 1.113 |
| 7 | 1.122 |
| 8 | 1.132 |
| 9 | 1.140 |
| 10 | 1.137 |
| 11 | 1.142 |
| 12 | 1.122 |
| 13 | 1.117 |
| 14 | 1.080 |
| 15 | 1.085 |
| 16 | 1.069 |
| 17 | 1.062 |
| 18 | 1.051 |
| 19 | 1.049 |
| 20 | 1.054 |
| 21 | 1.081 |
| 22 | 1.051 |
| 23 | 1.051 |
| 24 | 1.054 |
| 25 | ----- |
| 26 | ----- |
| 27 | ----- |
| 28 | ----- |
| 29 | ----- |
| 30 | ----- |
| 31 | ----- |
| 32 | 1.062 |
| 33 | 1.067 |
| 34 | 1.060 |
| 35 | 1.059 |
| 36 | 1.051 |
| 37 | 1.060 |
| 38 | 1.056 |
| 39 | 1.055 |
| 40 | 1.056 |
| 41 | 1.056 |
| 42 | 1.048 |
| 43 | 1.055 |
| 44 | 1.048 |
| 45 | 1.051 |
| 46 | 1.051 |
| 47 | 1.049 |
| 48 | 1.046 |
| 49 | 1.041 |
| 50 | 1.045 |
| 51 | 1.044 |
| 52 | 1.039 |
| 53 | 1.040 |
| 54 | ----- |
| 55 | ----- |
| 56 | ----- |
| 57 | 1.046 |
| 58 | 1.045 |
| 59 | 1.043 |
| 60 | 1.045 |
| 61 | 1.042 |
| 62 | 1.042 |
| 63 | 1.037 |
| 64 | ----- |
| 65 | ----- |
| 66 | 1.041 |
| 67 | 1.044 |
| 68 | ----- |
| 69 | 1.040 |
| 70 | 1.038 |
| 71 | 1.039 |
| 72 | 1.039 |
| 73 | 1.042 |
| 74 | 1.044 |
| 75 | 1.042 |
| 76 | 1.041 |
| 77 | 1.043 |
| 78 | 1.041 |
| 79 | 1.044 |
| 80 | 1.046 |
| 81 | 1.039 |
| 82 | ----- |
| 83 | 1.041 |
| 84 | 1.038 |
| 85 | 1.034 |
| 86 | 1.039 |
| 87 | 1.035 |
| 88 | 1.033 |
| 89 | 1.037 |
| AVG | 1.059 |

RADIAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 0.026 |
| 1 | 0.036 |
| 2 | 0.037 |
| 3 | 0.036 |
| 4 | 0.037 |
| 5 | 0.040 |
| 6 | 0.030 |
| 7 | 0.029 |
| 8 | 0.019 |
| 9 | 0.001 |
| 10 | -0.004 |
| 11 | -0.041 |
| 12 | -0.065 |
| 13 | -0.090 |
| 14 | -0.177 |
| 15 | -0.191 |
| 16 | -0.229 |
| 17 | -0.255 |
| 18 | -0.267 |
| 19 | -0.200 |
| 20 | -0.273 |
| 21 | ----- |
| 22 | -0.279 |
| 23 | -0.279 |
| 24 | -0.278 |
| 25 | ----- |
| 26 | ----- |
| 27 | ----- |
| 28 | ----- |
| 29 | ----- |
| 30 | ----- |
| 31 | ----- |
| 32 | -0.243 |
| 33 | -0.241 |
| 34 | -0.244 |
| 35 | -0.234 |
| 36 | -0.226 |
| 37 | -0.227 |
| 38 | -0.225 |
| 39 | -0.219 |
| 40 | -0.220 |
| 41 | -0.216 |
| 42 | -0.216 |
| 43 | -0.211 |
| 44 | -0.208 |
| 45 | -0.200 |
| 46 | -0.198 |
| 47 | -0.200 |
| 48 | -0.195 |
| 49 | -0.195 |
| 50 | -0.189 |
| 51 | -0.184 |
| 52 | -0.186 |
| 53 | -0.188 |
| 54 | ----- |
| 55 | ----- |
| 56 | -0.345 |
| 57 | -0.162 |
| 58 | -0.160 |
| 59 | -0.156 |
| 60 | -0.151 |
| 61 | -0.147 |
| 62 | -0.141 |
| 63 | -0.139 |
| 64 | -0.170 |
| 65 | -0.171 |
| 66 | -0.129 |
| 67 | -0.117 |
| 68 | -0.161 |
| 69 | -0.107 |
| 70 | -0.106 |
| 71 | -0.047 |
| 72 | -0.049 |
| 73 | -0.035 |
| 74 | -0.043 |
| 75 | -0.074 |
| 76 | -0.074 |
| 77 | -0.065 |
| 78 | -0.057 |
| 79 | -0.053 |
| 80 | -0.041 |
| 81 | -0.035 |
| 82 | -0.078 |
| 83 | -0.022 |
| 84 | ----- |
| 85 | -0.012 |
| 86 | -0.000 |
| 87 | 0.005 |
| 88 | 0.013 |
| 89 | 0.021 |
| AVG | -0.170 |

Table B17 - Computer Output of Inclined Velocity Data Resolved Along Shaft Coordinate System

PROBE COORDINATES: X -0.39 R Y 0.00 R Z 0.00 R

180-Degree

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 1.235 |
| 1 | 1.257 |
| 2 | 1.270 |
| 3 | 1.280 |
| 4 | 1.289 |
| 5 | 1.295 |
| 6 | 1.294 |
| 7 | 1.291 |
| 8 | 1.283 |
| 9 | 1.277 |
| 10 | 1.270 |
| 11 | 1.267 |
| 12 | 1.265 |
| 13 | 1.260 |
| 14 | 1.256 |
| 15 | 1.252 |
| 16 | 1.247 |
| 17 | 1.243 |
| 18 | 1.241 |
| 19 | 1.237 |
| 20 | 1.237 |
| 21 | 1.231 |
| 22 | 1.232 |
| 23 | 1.229 |
| 24 | 1.225 |
| 25 | 1.224 |
| 26 | 1.221 |
| 27 | 1.216 |
| 28 | 1.216 |
| 29 | 1.211 |
| 30 | 1.211 |
| 31 | 1.213 |
| 32 | 1.208 |
| 33 | 1.207 |
| 34 | 1.204 |
| 35 | 1.203 |
| 36 | 1.200 |
| 37 | 1.200 |
| 38 | 1.197 |
| 39 | 1.198 |
| 40 | 1.192 |
| 41 | 1.197 |
| 42 | 1.194 |
| 43 | 1.194 |
| 44 | 1.192 |
| 45 | 1.194 |
| 46 | 1.186 |
| 47 | 1.191 |
| 48 | 1.193 |
| 49 | 1.192 |
| 50 | 1.194 |
| 51 | 1.193 |
| 52 | 1.194 |
| 53 | 1.196 |
| 54 | 1.197 |
| 55 | 1.197 |
| 56 | 1.198 |
| 57 | 1.201 |
| 58 | 1.201 |
| 59 | 1.203 |
| 60 | 1.208 |
| 61 | 1.211 |
| 62 | 1.210 |
| 63 | 1.212 |
| 64 | 1.210 |
| 65 | 1.216 |
| 66 | 1.216 |
| 67 | 1.217 |
| 68 | ----- |
| 69 | ----- |
| 70 | ----- |
| 71 | ----- |
| 72 | ----- |
| 73 | ----- |
| 74 | 1.246 |
| 75 | 1.253 |
| 76 | 1.262 |
| 77 | 1.266 |
| 78 | 1.275 |
| 79 | 1.283 |
| 80 | 1.291 |
| 81 | 1.296 |
| 82 | 1.306 |
| 83 | 1.297 |
| 84 | 1.265 |
| 85 | 1.246 |
| 86 | 1.214 |
| 87 | 1.233 |
| 88 | 1.229 |
| 89 | 1.218 |
| AVG | 1.251 |

RADIAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | -0.343 |
| 1 | ----- |
| 2 | ----- |
| 3 | -0.230 |
| 4 | -0.206 |
| 5 | -0.175 |
| 6 | -0.166 |
| 7 | -0.164 |
| 8 | -0.171 |
| 9 | -0.170 |
| 10 | -0.102 |
| 11 | -0.100 |
| 12 | -0.177 |
| 13 | -0.181 |
| 14 | -0.187 |
| 15 | -0.185 |
| 16 | -0.189 |
| 17 | -0.191 |
| 18 | -0.191 |
| 19 | -0.191 |
| 20 | -0.193 |
| 21 | -0.192 |
| 22 | -0.194 |
| 23 | -0.195 |
| 24 | -0.193 |
| 25 | -0.197 |
| 26 | -0.200 |
| 27 | -0.201 |
| 28 | -0.198 |
| 29 | -0.203 |
| 30 | -0.204 |
| 31 | -0.200 |
| 32 | -0.205 |
| 33 | -0.205 |
| 34 | -0.203 |
| 35 | -0.210 |
| 36 | -0.212 |
| 37 | -0.210 |
| 38 | -0.211 |
| 39 | -0.213 |
| 40 | -0.217 |
| 41 | -0.213 |
| 42 | -0.215 |
| 43 | -0.215 |
| 44 | -0.221 |
| 45 | -0.217 |
| 46 | -0.219 |
| 47 | -0.220 |
| 48 | -0.216 |
| 49 | -0.226 |
| 50 | -0.226 |
| 51 | -0.229 |
| 52 | -0.235 |
| 53 | -0.238 |
| 54 | -0.233 |
| 55 | -0.232 |
| 56 | -0.236 |
| 57 | -0.236 |
| 58 | -0.243 |
| 59 | -0.241 |
| 60 | -0.244 |
| 61 | -0.248 |
| 62 | -0.246 |
| 63 | -0.243 |
| 64 | -0.250 |
| 65 | -0.248 |
| 66 | -0.249 |
| 67 | -0.254 |
| 68 | ----- |
| 69 | ----- |
| 70 | ----- |
| 71 | ----- |
| 72 | ----- |
| 73 | ----- |
| 74 | -0.268 |
| 75 | -0.269 |
| 76 | -0.270 |
| 77 | -0.272 |
| 78 | -0.274 |
| 79 | -0.281 |
| 80 | -0.288 |
| 81 | -0.292 |
| 82 | -0.300 |
| 83 | -0.282 |
| 84 | -0.273 |
| 85 | -0.267 |
| 86 | -0.264 |
| 87 | -0.279 |
| 88 | -0.317 |
| 89 | -0.348 |
| AVG | -0.251 |

Table B18 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

PROBE COORDINATES: X -0.39 R Y 0.98 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 1.164 |
| 1 | 1.226 |
| 2 | 1.252 |
| 3 | 1.270 |
| 4 | 1.281 |
| 5 | 1.285 |
| 6 | 1.285 |
| 7 | 1.279 |
| 8 | 1.274 |
| 9 | 1.272 |
| 10 | 1.268 |
| 11 | 1.267 |
| 12 | 1.265 |
| 13 | 1.260 |
| 14 | 1.259 |
| 15 | 1.255 |
| 16 | 1.251 |
| 17 | 1.246 |
| 18 | 1.246 |
| 19 | 1.241 |
| 20 | 1.240 |
| 21 | 1.236 |
| 22 | 1.230 |
| 23 | 1.230 |
| 24 | 1.225 |
| 25 | 1.224 |
| 26 | 1.217 |
| 27 | 1.212 |
| 28 | 1.209 |
| 29 | 1.208 |
| 30 | 1.207 |
| 31 | 1.204 |
| 32 | 1.201 |
| 33 | 1.198 |
| 34 | 1.195 |
| 35 | 1.191 |
| 36 | 1.188 |
| 37 | 1.188 |
| 38 | 1.186 |
| 39 | 1.183 |
| 40 | 1.177 |
| 41 | 1.175 |
| 42 | 1.175 |
| 43 | 1.177 |
| 44 | 1.171 |
| 45 | 1.170 |
| 46 | 1.170 |
| 47 | 1.172 |
| 48 | 1.171 |
| 49 | 1.171 |
| 50 | 1.167 |
| 51 | 1.167 |
| 52 | 1.166 |
| 53 | 1.165 |
| 54 | 1.167 |
| 55 | 1.165 |
| 56 | 1.161 |
| 57 | 1.163 |
| 58 | 1.162 |
| 59 | 1.165 |
| 60 | 1.164 |
| 61 | 1.166 |
| 62 | 1.168 |
| 63 | 1.168 |
| 64 | 1.167 |
| 65 | 1.170 |
| 66 | 1.171 |
| 67 | 1.173 |
| 68 | 1.172 |
| 69 | 1.174 |
| 70 | 1.181 |
| 71 | 1.183 |
| 72 | 1.187 |
| 73 | 1.191 |
| 74 | 1.196 |
| 75 | 1.201 |
| 76 | 1.204 |
| 77 | 1.211 |
| 78 | 1.218 |
| 79 | 1.224 |
| 80 | 1.230 |
| 81 | 1.232 |
| 82 | 1.241 |
| 83 | 1.249 |
| 84 | 1.253 |
| 85 | 1.234 |
| 86 | 1.207 |
| 87 | 1.153 |
| 88 | 1.114 |
| 89 | 1.126 |
| AVG | 1.205 |

RADIAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | -0.403 |
| 1 | -0.342 |
| 2 | -0.285 |
| 3 | -0.218 |
| 4 | -0.185 |
| 5 | -0.169 |
| 6 | -0.162 |
| 7 | -0.161 |
| 8 | -0.165 |
| 9 | -0.162 |
| 10 | -0.166 |
| 11 | -0.162 |
| 12 | -0.167 |
| 13 | -0.163 |
| 14 | -0.170 |
| 15 | -0.169 |
| 16 | -0.169 |
| 17 | -0.175 |
| 18 | -0.169 |
| 19 | -0.168 |
| 20 | -0.168 |
| 21 | -0.168 |
| 22 | -0.174 |
| 23 | -0.175 |
| 24 | -0.178 |
| 25 | -0.171 |
| 26 | -0.177 |
| 27 | -0.178 |
| 28 | -0.177 |
| 29 | -0.180 |
| 30 | -0.179 |
| 31 | -0.179 |
| 32 | -0.184 |
| 33 | -0.185 |
| 34 | -0.184 |
| 35 | -0.191 |
| 36 | -0.198 |
| 37 | -0.193 |
| 38 | -0.196 |
| 39 | -0.194 |
| 40 | -0.204 |
| 41 | -0.205 |
| 42 | -0.211 |
| 43 | -0.209 |
| 44 | -0.214 |
| 45 | -0.217 |
| 46 | -0.221 |
| 47 | -0.222 |
| 48 | -0.228 |
| 49 | -0.228 |
| 50 | -0.235 |
| 51 | -0.236 |
| 52 | -0.241 |
| 53 | -0.244 |
| 54 | -0.246 |
| 55 | -0.250 |
| 56 | -0.251 |
| 57 | -0.254 |
| 58 | -0.262 |
| 59 | -0.264 |
| 60 | -0.269 |
| 61 | -0.273 |
| 62 | -0.272 |
| 63 | -0.280 |
| 64 | -0.298 |
| 65 | -0.294 |
| 66 | -0.295 |
| 67 | -0.290 |
| 68 | -0.302 |
| 69 | -0.309 |
| 70 | -0.313 |
| 71 | -0.317 |
| 72 | -0.324 |
| 73 | -0.331 |
| 74 | -0.334 |
| 75 | -0.343 |
| 76 | -0.347 |
| 77 | -0.355 |
| 78 | -0.364 |
| 79 | -0.366 |
| 80 | -0.370 |
| 81 | -0.381 |
| 82 | -0.385 |
| 83 | -0.396 |
| 84 | -0.394 |
| 85 | -0.333 |
| 86 | -0.391 |
| 87 | -0.396 |
| 88 | -0.395 |
| 89 | -0.390 |
| AVG | -0.248 |

180-Degree

Table B19 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

PROBE COORDINATES: X -0.39 R Y 0.50 R Z 0.00 R

0-Degree

| LONGITUDINAL COMPONENT | | RADIAL COMPONENT | |
|---|---|---|---|
| DEGREE | AVG VEL | DEGREE | AVG VEL |
| 0 | 1.316 | 0 | -0.151 |
| 1 | 1.336 | 1 | -0.166 |
| 2 | 1.344 | 2 | -0.175 |
| 3 | 1.345 | 3 | -0.181 |
| 4 | 1.338 | 4 | -0.184 |
| 5 | 1.332 | 5 | -0.184 |
| 6 | 1.330 | 6 | -0.189 |
| 7 | 1.326 | 7 | -0.190 |
| 8 | 1.321 | 8 | -0.190 |
| 9 | 1.315 | 9 | -0.195 |
| 10 | 1.310 | 10 | -0.197 |
| 11 | 1.307 | 11 | -0.199 |
| 12 | 1.301 | 12 | -0.199 |
| 13 | 1.299 | 13 | -0.201 |
| 14 | 1.298 | 14 | -0.202 |
| 15 | 1.291 | 15 | -0.206 |
| 16 | 1.287 | 16 | -0.209 |
| 17 | 1.288 | 17 | -0.209 |
| 18 | 1.280 | 18 | -0.212 |
| 19 | 1.277 | 19 | -0.211 |
| 20 | 1.274 | 20 | -0.216 |
| 21 | 1.269 | 21 | -0.217 |
| 22 | 1.267 | 22 | -0.219 |
| 23 | 1.263 | 23 | -0.222 |
| 24 | 1.256 | 24 | -0.223 |
| 25 | 1.253 | 25 | -0.225 |
| 26 | 1.247 | 26 | -0.227 |
| 27 | 1.246 | 27 | -0.227 |
| 28 | 1.243 | 28 | -0.231 |
| 29 | 1.237 | 29 | -0.231 |
| 30 | 1.235 | 30 | -0.233 |
| 31 | 1.235 | 31 | -0.233 |
| 32 | 1.227 | 32 | -0.239 |
| 33 | 1.223 | 33 | -0.243 |
| 34 | 1.221 | 34 | -0.243 |
| 35 | 1.219 | 35 | -0.248 |
| 36 | 1.216 | 36 | -0.249 |
| 37 | 1.212 | 37 | -0.249 |
| 38 | 1.210 | 38 | -0.251 |
| 39 | 1.207 | 39 | -0.251 |
| 40 | 1.204 | 40 | -0.253 |
| 41 | 1.200 | 41 | -0.255 |
| 42 | 1.195 | 42 | -0.256 |
| 43 | 1.192 | 43 | -0.259 |
| 44 | 1.187 | 44 | -0.262 |
| 45 | 1.183 | 45 | -0.262 |
| 46 | 1.181 | 46 | -0.265 |
| 47 | 1.181 | 47 | -0.264 |
| 48 | 1.176 | 48 | -0.265 |
| 49 | 1.175 | 49 | -0.270 |
| 50 | 1.171 | 50 | -0.273 |
| 51 | 1.169 | 51 | -0.273 |
| 52 | 1.170 | 52 | -0.273 |
| 53 | 1.166 | 53 | -0.275 |
| 54 | 1.164 | 54 | -0.277 |
| 55 | 1.162 | 55 | -0.278 |
| 56 | 1.161 | 56 | -0.283 |
| 57 | 1.159 | 57 | -0.284 |
| 58 | 1.156 | 58 | -0.285 |
| 59 | 1.156 | 59 | -0.287 |
| 60 | 1.152 | 60 | -0.294 |
| 61 | 1.151 | 61 | -0.291 |
| 62 | 1.150 | 62 | -0.295 |
| 63 | 1.140 | 63 | -0.299 |
| 64 | 1.145 | 64 | -0.301 |
| 65 | 1.146 | 65 | -0.302 |
| 66 | 1.147 | 66 | -0.307 |
| 67 | 1.145 | 67 | -0.312 |
| 68 | 1.146 | 68 | -0.315 |
| 69 | 1.145 | 69 | -0.318 |
| 70 | 1.147 | 70 | -0.322 |
| 71 | 1.142 | 71 | -0.326 |
| 72 | 1.144 | 72 | -0.330 |
| 73 | 1.143 | 73 | -0.334 |
| 74 | 1.146 | 74 | -0.340 |
| 75 | 1.149 | 75 | -0.347 |
| 76 | 1.147 | 76 | -0.346 |
| 77 | 1.152 | 77 | -0.353 |
| 78 | 1.150 | 78 | -0.362 |
| 79 | 1.156 | 79 | -0.355 |
| 80 | 1.158 | 80 | -0.357 |
| 81 | 1.166 | 81 | -0.326 |
| 82 | 1.165 | 82 | ------ |
| 83 | 1.164 | 83 | ------ |
| 84 | 1.164 | 84 | ------ |
| 85 | 1.123 | 85 | -0.070 |
| 86 | 1.121 | 86 | -0.056 |
| 87 | 1.152 | 87 | -0.081 |
| 88 | 1.176 | 88 | -0.094 |
| 89 | 1.259 | 89 | -0.128 |
| AVG | 1.212 | AVG | -0.247 |

Table B20 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

0-Degree

PROBE COORDINATES: X -0.35 R Y 0.00 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 1.240 |
| 1 | 1.286 |
| 2 | 1.331 |
| 3 | 1.359 |
| 4 | 1.346 |
| 5 | 1.306 |
| 6 | 1.307 |
| 7 | 1.407 |
| 8 | 1.410 |
| 9 | 1.418 |
| 10 | 1.420 |
| 11 | 1.432 |
| 12 | 1.433 |
| 13 | 1.437 |
| 14 | 1.441 |
| 15 | 1.438 |
| 16 | 1.439 |
| 17 | 1.428 |
| 18 | 1.421 |
| 19 | 1.415 |
| 20 | 1.402 |
| 21 | 1.387 |
| 22 | 1.376 |
| 23 | 1.363 |
| 24 | 1.344 |
| 25 | 1.339 |
| 26 | 1.322 |
| 27 | 1.304 |
| 28 | 1.286 |
| 29 | 1.279 |
| 30 | 1.264 |
| 31 | 1.250 |
| 32 | 1.239 |
| 33 | 1.234 |
| 34 | 1.219 |
| 35 | 1.214 |
| 36 | 1.206 |
| 37 | 1.199 |
| 38 | 1.190 |
| 39 | 1.184 |
| 40 | 1.177 |
| 41 | 1.174 |
| 42 | 1.171 |
| 43 | 1.162 |
| 44 | 1.159 |
| 45 | 1.156 |
| 46 | 1.150 |
| 47 | 1.152 |
| 48 | 1.147 |
| 49 | 1.149 |
| 50 | 1.145 |
| 51 | 1.145 |
| 52 | 1.144 |
| 53 | 1.143 |
| 54 | 1.144 |
| 55 | 1.140 |
| 56 | 1.143 |
| 57 | 1.143 |
| 58 | 1.147 |
| 59 | 1.146 |
| 60 | 1.144 |
| 61 | 1.150 |
| 62 | 1.152 |
| 63 | 1.155 |
| 64 | 1.154 |
| 65 | 1.156 |
| 66 | 1.157 |
| 67 | 1.159 |
| 68 | 1.163 |
| 69 | 1.169 |
| 70 | 1.169 |
| 71 | 1.176 |
| 72 | 1.184 |
| 73 | 1.192 |
| 74 | 1.199 |
| 75 | 1.200 |
| 76 | 1.217 |
| 77 | 1.224 |
| 78 | 1.231 |
| 79 | 1.240 |
| 80 | 1.243 |
| 81 | 1.256 |
| 82 | 1.253 |
| 83 | 1.260 |
| 84 | 1.237 |
| 85 | 1.202 |
| 86 | 1.163 |
| 87 | 1.159 |
| 88 | 1.153 |
| 89 | 1.191 |
| AVG | 1.247 |

RADIAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | -0.222 |
| 1 | -0.205 |
| 2 | -0.305 |
| 3 | -0.319 |
| 4 | -0.319 |
| 5 | -0.335 |
| 6 | -0.339 |
| 7 | -0.339 |
| 8 | -0.341 |
| 9 | -0.358 |
| 10 | -0.358 |
| 11 | -0.375 |
| 12 | -0.386 |
| 13 | -0.405 |
| 14 | -0.420 |
| 15 | -0.439 |
| 16 | -0.452 |
| 17 | -0.464 |
| 18 | -0.480 |
| 19 | -0.500 |
| 20 | -0.509 |
| 21 | -0.525 |
| 22 | -0.528 |
| 23 | -0.539 |
| 24 | -0.544 |
| 25 | -0.542 |
| 26 | -0.542 |
| 27 | -0.542 |
| 28 | -0.535 |
| 29 | -0.531 |
| 30 | -0.527 |
| 31 | -0.522 |
| 32 | -0.516 |
| 33 | -0.508 |
| 34 | -0.502 |
| 35 | -0.496 |
| 36 | -0.496 |
| 37 | -0.479 |
| 38 | -0.468 |
| 39 | -0.462 |
| 40 | -0.457 |
| 41 | -0.446 |
| 42 | -0.436 |
| 43 | -0.434 |
| 44 | -0.420 |
| 45 | -0.417 |
| 46 | -0.412 |
| 47 | -0.406 |
| 48 | -0.394 |
| 49 | -0.384 |
| 50 | -0.380 |
| 51 | -0.373 |
| 52 | -0.368 |
| 53 | -0.358 |
| 54 | -0.346 |
| 55 | -0.343 |
| 56 | -0.332 |
| 57 | -0.325 |
| 58 | -0.315 |
| 59 | -0.315 |
| 60 | -0.306 |
| 61 | -0.293 |
| 62 | -0.288 |
| 63 | -0.277 |
| 64 | -0.272 |
| 65 | -0.268 |
| 66 | -0.249 |
| 67 | -0.246 |
| 68 | -0.237 |
| 69 | -0.224 |
| 70 | -0.216 |
| 71 | -0.207 |
| 72 | -0.198 |
| 73 | -0.103 |
| 74 | -0.173 |
| 75 | -0.163 |
| 76 | -0.151 |
| 77 | -0.141 |
| 78 | -0.125 |
| 79 | -0.125 |
| 80 | -0.104 |
| 81 | -0.096 |
| 82 | -0.077 |
| 83 | -0.063 |
| 84 | -0.034 |
| 85 | -0.048 |
| 86 | -0.093 |
| 87 | -0.098 |
| 88 | -0.120 |
| 89 | -0.197 |
| AVG | -0.348 |

Table B21 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

PROBE COORDINATES: X 0.21 R Y 0.70 R Z 0.00 R

0-Degree

| LONGITUDINAL COMPONENT | | RADIAL COMPONENT | |
|---|---|---|---|
| DEGREE | AVG VEL | DEGREE | AVG VEL |
| 0 | 0.855 | 0 | -0.254 |
| 1 | 0.854 | 1 | -0.253 |
| 2 | 0.991 | 2 | -0.267 |
| 3 | 1.046 | 3 | -0.325 |
| 4 | 1.010 | 4 | -0.310 |
| 5 | 1.015 | 5 | -0.309 |
| 6 | 1.060 | 6 | -0.327 |
| 7 | 1.061 | 7 | -0.324 |
| 8 | 0.976 | 8 | -0.295 |
| 9 | 1.028 | 9 | -0.315 |
| 10 | 1.060 | 10 | -0.331 |
| 11 | 1.070 | 11 | -0.330 |
| 12 | 1.071 | 12 | -0.320 |
| 13 | 1.070 | 13 | -0.321 |
| 14 | 1.072 | 14 | -0.327 |
| 15 | 1.074 | 15 | -0.326 |
| 16 | 1.072 | 16 | -0.330 |
| 17 | 1.070 | 17 | -0.320 |
| 18 | 1.074 | 18 | -0.320 |
| 19 | 1.075 | 19 | -0.330 |
| 20 | 1.075 | 20 | -0.331 |
| 21 | 1.074 | 21 | -0.326 |
| 22 | 1.076 | 22 | -0.329 |
| 23 | 1.075 | 23 | -0.333 |
| 24 | 1.070 | 24 | -0.333 |
| 25 | 1.070 | 25 | -0.320 |
| 26 | 1.073 | 26 | -0.330 |
| 27 | 1.066 | 27 | -0.327 |
| 28 | 1.070 | 28 | -0.331 |
| 29 | 1.072 | 29 | -0.329 |
| 30 | 1.074 | 30 | -0.326 |
| 31 | 1.072 | 31 | -0.327 |
| 32 | 1.068 | 32 | -0.332 |
| 33 | 1.069 | 33 | -0.331 |
| 34 | 1.066 | 34 | -0.331 |
| 35 | 1.069 | 35 | -0.334 |
| 36 | 1.067 | 36 | -0.334 |
| 37 | 1.064 | 37 | -0.333 |
| 38 | 1.062 | 38 | -0.335 |
| 39 | 1.059 | 39 | -0.340 |
| 40 | 1.059 | 40 | -0.341 |
| 41 | 1.059 | 41 | -0.345 |
| 42 | 1.053 | 42 | -0.354 |
| 43 | 1.044 | 43 | -0.356 |
| 44 | 1.043 | 44 | -0.362 |
| 45 | 1.039 | 45 | -0.363 |
| 46 | 1.036 | 46 | -0.372 |
| 47 | 1.035 | 47 | -0.368 |
| 48 | 1.035 | 48 | -0.366 |
| 49 | 1.036 | 49 | -0.361 |
| 50 | 1.034 | 50 | -0.363 |
| 51 | 1.030 | 51 | -0.355 |
| 52 | 1.026 | 52 | -0.355 |
| 53 | 1.024 | 53 | -0.352 |
| 54 | 1.024 | 54 | -0.345 |
| 55 | 1.019 | 55 | -0.345 |
| 56 | 1.021 | 56 | -0.341 |
| 57 | 1.010 | 57 | -0.341 |
| 58 | 1.015 | 58 | -0.339 |
| 59 | 1.011 | 59 | -0.330 |
| 60 | 1.009 | 60 | -0.331 |
| 61 | 1.003 | 61 | -0.332 |
| 62 | 0.999 | 62 | -0.325 |
| 63 | 0.996 | 63 | -0.329 |
| 64 | 0.988 | 64 | -0.320 |
| 65 | 0.983 | 65 | -0.317 |
| 66 | 0.979 | 66 | -0.315 |
| 67 | 0.980 | 67 | -0.312 |
| 68 | 0.975 | 68 | -0.313 |
| 69 | 0.967 | 69 | -0.308 |
| 70 | 0.963 | 70 | -0.306 |
| 71 | 0.954 | 71 | -0.305 |
| 72 | 0.944 | 72 | -0.297 |
| 73 | 0.930 | 73 | -0.296 |
| 74 | 0.930 | 74 | -0.292 |
| 75 | 0.921 | 75 | -0.290 |
| 76 | 0.911 | 76 | -0.285 |
| 77 | 0.907 | 77 | -0.277 |
| 78 | 0.899 | 78 | -0.282 |
| 79 | 0.909 | 79 | -0.276 |
| 80 | 0.899 | 80 | -0.279 |
| 81 | 0.907 | 81 | -0.286 |
| 82 | 0.905 | 82 | -0.279 |
| 83 | 0.945 | 83 | -0.292 |
| 84 | ----- | 84 | -0.284 |
| 85 | 0.048 | 85 | -0.255 |
| 86 | 0.047 | 86 | -0.253 |
| 87 | 0.049 | 87 | -0.262 |
| 88 | 0.053 | 88 | -0.253 |
| 89 | 0.049 | 89 | -0.253 |
| AVG | 1.007 | AVG | -0.319 |

Table B22 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

PROBE COORDINATES: X 0.21 R Y 0.00 R Z 0.00 R ... 0-Degree

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | 0.902 |
| 1 | 0.900 |
| 2 | 0.906 |
| 3 | 0.913 |
| 4 | 0.923 |
| 5 | 0.930 |
| 6 | 0.950 |
| 7 | 0.962 |
| 8 | 0.970 |
| 9 | 0.981 |
| 10 | 0.990 |
| 11 | 0.995 |
| 12 | 1.003 |
| 13 | 1.011 |
| 14 | 1.013 |
| 15 | 1.017 |
| 16 | 1.022 |
| 17 | 1.029 |
| 18 | 1.028 |
| 19 | 1.033 |
| 20 | 1.031 |
| 21 | 1.038 |
| 22 | 1.040 |
| 23 | 1.042 |
| 24 | 1.042 |
| 25 | 1.046 |
| 26 | 1.044 |
| 27 | 1.042 |
| 28 | 1.042 |
| 29 | 1.043 |
| 30 | 1.044 |
| 31 | 1.046 |
| 32 | 1.044 |
| 33 | 1.045 |
| 34 | 1.047 |
| 35 | 1.051 |
| 36 | 1.051 |
| 37 | 1.045 |
| 38 | 1.047 |
| 39 | 1.047 |
| 40 | 1.049 |
| 41 | 1.049 |
| 42 | 1.050 |
| 43 | 1.047 |
| 44 | 1.045 |
| 45 | 1.040 |
| 46 | 1.040 |
| 47 | 1.042 |
| 48 | 1.042 |
| 49 | 1.041 |
| 50 | 1.045 |
| 51 | 1.040 |
| 52 | 1.042 |
| 53 | 1.042 |
| 54 | 1.040 |
| 55 | 1.035 |
| 56 | 1.035 |
| 57 | 1.034 |
| 58 | 1.029 |
| 59 | 1.029 |
| 60 | 1.028 |
| 61 | 1.027 |
| 62 | 1.027 |
| 63 | 1.026 |
| 64 | 1.025 |
| 65 | 1.019 |
| 66 | 1.013 |
| 67 | 1.012 |
| 68 | 1.010 |
| 69 | 1.006 |
| 70 | 1.002 |
| 71 | 1.001 |
| 72 | 1.001 |
| 73 | 0.997 |
| 74 | 0.998 |
| 75 | 0.998 |
| 76 | 0.987 |
| 77 | 0.980 |
| 78 | 0.977 |
| 79 | 0.972 |
| 80 | 0.966 |
| 81 | 0.964 |
| 82 | 0.960 |
| 83 | 0.953 |
| 84 | 0.945 |
| 85 | 0.938 |
| 86 | 0.930 |
| 87 | 0.922 |
| 88 | 0.910 |
| 89 | 0.901 |
| AVG | 1.007 |

RADIAL COMPONENT

| DEGREE | AVG VEL |
|---|---|
| 0 | -0.344 |
| 1 | -0.357 |
| 2 | -0.359 |
| 3 | -0.369 |
| 4 | -0.377 |
| 5 | -0.381 |
| 6 | -0.392 |
| 7 | -0.395 |
| 8 | -0.396 |
| 9 | -0.401 |
| 10 | -0.403 |
| 11 | -0.402 |
| 12 | -0.409 |
| 13 | -0.406 |
| 14 | -0.406 |
| 15 | -0.407 |
| 16 | -0.405 |
| 17 | -0.402 |
| 18 | -0.408 |
| 19 | -0.404 |
| 20 | -0.403 |
| 21 | -0.404 |
| 22 | -0.404 |
| 23 | -0.405 |
| 24 | -0.407 |
| 25 | -0.406 |
| 26 | -0.398 |
| 27 | -0.401 |
| 28 | -0.397 |
| 29 | -0.398 |
| 30 | -0.397 |
| 31 | -0.395 |
| 32 | -0.400 |
| 33 | -0.394 |
| 34 | -0.394 |
| 35 | -0.395 |
| 36 | -0.394 |
| 37 | -0.395 |
| 38 | -0.391 |
| 39 | -0.391 |
| 40 | -0.391 |
| 41 | -0.391 |
| 42 | -0.389 |
| 43 | -0.389 |
| 44 | -0.386 |
| 45 | -0.383 |
| 46 | -0.383 |
| 47 | -0.380 |
| 48 | -0.381 |
| 49 | -0.379 |
| 50 | -0.380 |
| 51 | -0.379 |
| 52 | -0.377 |
| 53 | -0.377 |
| 54 | -0.372 |
| 55 | -0.373 |
| 56 | -0.371 |
| 57 | -0.370 |
| 58 | -0.367 |
| 59 | -0.366 |
| 60 | -0.368 |
| 61 | -0.362 |
| 62 | -0.363 |
| 63 | -0.363 |
| 64 | -0.362 |
| 65 | -0.360 |
| 66 | -0.361 |
| 67 | -0.361 |
| 68 | -0.361 |
| 69 | -0.355 |
| 70 | -0.357 |
| 71 | -0.352 |
| 72 | -0.350 |
| 73 | -0.350 |
| 74 | -0.343 |
| 75 | -0.345 |
| 76 | -0.345 |
| 77 | -0.345 |
| 78 | -0.343 |
| 79 | -0.344 |
| 80 | -0.341 |
| 81 | -0.339 |
| 82 | -0.338 |
| 83 | -0.338 |
| 84 | -0.337 |
| 85 | -0.335 |
| 86 | -0.332 |
| 87 | -0.333 |
| 88 | -0.335 |
| 89 | -0.337 |
| AVG | -0.376 |

Table B23 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

PROBE COORDINATES: X 0.21 R Y 0.98 R Z 0.00 R

0-Degree

| LONGITUDINAL COMPONENT | | RADIAL COMPONENT | |
|---|---|---|---|
| DEGREE | AVG VEL | DEGREE | AVG VEL |
| 0 | 0.931 | 0 | -0.359 |
| 1 | 0.928 | 1 | -0.359 |
| 2 | 0.928 | 2 | -0.362 |
| 3 | 0.924 | 3 | -0.363 |
| 4 | 0.923 | 4 | -0.362 |
| 5 | 0.922 | 5 | -0.365 |
| 6 | 0.927 | 6 | -0.374 |
| 7 | 0.932 | 7 | -0.383 |
| 8 | 0.934 | 8 | -0.389 |
| 9 | 0.944 | 9 | -0.397 |
| 10 | 0.947 | 10 | -0.401 |
| 11 | 0.952 | 11 | -0.404 |
| 12 | 0.958 | 12 | -0.409 |
| 13 | 0.965 | 13 | -0.416 |
| 14 | 0.969 | 14 | -0.415 |
| 15 | 0.971 | 15 | -0.412 |
| 16 | 0.977 | 16 | -0.414 |
| 17 | 0.978 | 17 | -0.421 |
| 18 | 0.981 | 18 | -0.420 |
| 19 | 0.985 | 19 | -0.420 |
| 20 | 0.989 | 20 | -0.418 |
| 21 | 0.992 | 21 | -0.420 |
| 22 | 0.990 | 22 | -0.424 |
| 23 | 1.000 | 23 | -0.420 |
| 24 | 0.999 | 24 | -0.421 |
| 25 | 1.002 | 25 | -0.420 |
| 26 | 1.007 | 26 | -0.419 |
| 27 | 1.002 | 27 | -0.419 |
| 28 | 1.006 | 28 | -0.417 |
| 29 | 1.009 | 29 | -0.420 |
| 30 | 1.008 | 30 | -0.415 |
| 31 | 1.012 | 31 | -0.413 |
| 32 | 1.010 | 32 | -0.420 |
| 33 | 1.012 | 33 | -0.415 |
| 34 | 1.010 | 34 | -0.413 |
| 35 | 1.008 | 35 | -0.416 |
| 36 | 1.010 | 36 | -0.414 |
| 37 | 1.010 | 37 | -0.414 |
| 38 | 1.010 | 38 | -0.413 |
| 39 | 1.014 | 39 | -0.412 |
| 40 | 1.019 | 40 | -0.410 |
| 41 | 1.017 | 41 | -0.413 |
| 42 | 1.016 | 42 | -0.413 |
| 43 | 1.013 | 43 | -0.411 |
| 44 | 1.015 | 44 | -0.414 |
| 45 | 1.017 | 45 | -0.403 |
| 46 | 1.013 | 46 | -0.402 |
| 47 | 1.008 | 47 | -0.402 |
| 48 | 1.004 | 48 | -0.398 |
| 49 | 1.011 | 49 | -0.404 |
| 50 | 1.015 | 50 | -0.400 |
| 51 | 1.011 | 51 | -0.397 |
| 52 | 1.012 | 52 | -0.401 |
| 53 | 1.012 | 53 | -0.397 |
| 54 | 1.013 | 54 | -0.395 |
| 55 | 1.013 | 55 | -0.394 |
| 56 | 1.009 | 56 | -0.393 |
| 57 | 1.009 | 57 | -0.389 |
| 58 | 1.008 | 58 | -0.389 |
| 59 | 1.007 | 59 | -0.387 |
| 60 | 1.005 | 60 | -0.383 |
| 61 | 1.002 | 61 | -0.382 |
| 62 | 1.001 | 62 | -0.386 |
| 63 | 0.997 | 63 | -0.385 |
| 64 | 1.002 | 64 | -0.383 |
| 65 | 1.000 | 65 | -0.379 |
| 66 | 0.995 | 66 | -0.379 |
| 67 | 0.991 | 67 | -0.376 |
| 68 | 0.990 | 68 | -0.373 |
| 69 | 0.989 | 69 | -0.379 |
| 70 | 0.988 | 70 | -0.371 |
| 71 | 0.986 | 71 | -0.372 |
| 72 | 0.987 | 72 | -0.369 |
| 73 | 0.983 | 73 | -0.369 |
| 74 | 0.986 | 74 | -0.366 |
| 75 | 0.978 | 75 | -0.366 |
| 76 | 0.979 | 76 | -0.362 |
| 77 | 0.977 | 77 | -0.360 |
| 78 | 0.971 | 78 | -0.361 |
| 79 | 0.966 | 79 | -0.359 |
| 80 | 0.959 | 80 | -0.357 |
| 81 | 0.960 | 81 | -0.352 |
| 82 | 0.959 | 82 | -0.354 |
| 83 | 0.959 | 83 | -0.337 |
| 84 | 0.952 | 84 | -0.359 |
| 85 | 0.950 | 85 | -0.350 |
| 86 | 0.943 | 86 | -0.351 |
| 87 | 0.942 | 87 | -0.351 |
| 88 | 0.941 | 88 | -0.353 |
| 89 | 0.934 | 89 | -0.360 |
| AVG | 0.934 | AVG | -0.391 |

Table B24 - Computer Output of Inclined Velocity Data
Resolved Along Shaft Coordinate System

| PROBE COORDINATES: | X | Y | Z |
|---|---|---|---|
| | -0.39 R | -0.50 R | 0.00 P |

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.162 | 0.034 |
| 1 | 1.170 | 0.079 |
| 2 | 1.193 | 0.082 |
| 3 | 1.214 | 0.071 |
| 4 | 1.232 | 0.076 |
| 5 | 1.235 | 0.073 |
| 6 | 1.251 | 0.063 |
| 7 | 1.252 | 0.064 |
| 8 | 1.249 | 0.055 |
| 9 | 1.257 | 0.057 |
| 10 | 1.261 | 0.052 |
| 11 | 1.261 | 0.048 |
| 12 | 1.258 | 0.048 |
| 13 | 1.261 | 0.029 |
| 14 | 1.260 | 0.030 |
| 15 | 1.257 | 0.030 |
| 16 | 1.264 | 0.038 |
| 17 | 1.250 | 0.030 |
| 18 | 1.254 | 0.032 |
| 19 | 1.256 | 0.029 |
| 20 | 1.255 | 0.029 |
| 21 | 1.255 | 0.032 |
| 22 | 1.249 | 0.038 |
| 23 | 1.249 | 0.027 |
| 24 | 1.249 | 0.029 |
| 25 | 1.246 | 0.033 |
| 26 | 1.245 | 0.029 |
| 27 | 1.240 | 0.038 |
| 28 | 1.242 | 0.029 |
| 29 | 1.241 | 0.031 |
| 30 | 1.236 | 0.027 |
| 31 | 1.229 | 0.029 |
| 32 | 1.229 | 0.031 |
| 33 | 1.232 | 0.030 |
| 34 | 1.221 | 0.030 |
| 35 | 1.225 | 0.031 |
| 36 | 1.221 | 0.026 |
| 37 | 1.221 | 0.027 |
| 38 | 1.223 | 0.028 |
| 39 | 1.220 | 0.028 |
| 40 | 1.222 | 0.031 |
| 41 | 1.218 | 0.028 |
| 42 | 1.216 | 0.027 |
| 43 | 1.214 | 0.030 |
| 44 | 1.212 | 0.025 |
| 45 | 1.214 | 0.030 |
| 46 | 1.212 | 0.030 |
| 47 | 1.208 | 0.029 |
| 48 | 1.204 | 0.030 |
| 49 | 1.204 | 0.029 |
| 50 | 1.202 | 0.032 |
| 51 | 1.201 | 0.030 |
| 52 | 1.202 | 0.029 |
| 53 | 1.198 | 0.028 |
| 54 | 1.197 | 0.030 |
| 55 | 1.196 | 0.032 |
| 56 | 1.195 | 0.027 |
| 57 | 1.193 | 0.028 |
| 58 | 1.188 | 0.025 |
| 59 | 1.192 | 0.030 |
| 60 | 1.188 | 0.026 |
| 61 | 1.187 | 0.032 |
| 62 | 1.189 | 0.030 |
| 63 | 1.190 | 0.030 |
| 64 | 1.185 | 0.033 |
| 65 | 1.183 | 0.029 |
| 66 | 1.186 | 0.030 |
| 67 | 1.183 | 0.030 |
| 68 | 1.185 | 0.030 |
| 69 | 1.189 | 0.033 |
| 70 | 1.186 | 0.030 |
| 71 | 1.186 | 0.030 |
| 72 | 1.183 | 0.032 |
| 73 | 1.185 | 0.031 |
| 74 | 1.186 | 0.031 |
| 75 | 1.187 | 0.027 |
| 76 | 1.184 | 0.031 |
| 77 | 1.186 | 0.033 |
| 78 | 1.196 | 0.033 |
| 79 | 1.193 | 0.033 |
| 80 | 1.190 | 0.034 |
| 81 | 1.203 | 0.033 |
| 82 | 1.199 | 0.036 |
| 83 | 1.205 | 0.042 |
| 84 | 1.206 | 0.039 |
| 85 | 1.213 | 0.045 |
| 86 | 1.205 | 0.047 |
| 87 | 1.204 | 0.050 |
| 88 | 1.197 | 0.046 |
| 89 | 1.183 | 0.075 |
| AVG | 1.215 | 0.037 |
| TARE | 1.004 | 0.016 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.164 | 0.027 |
| 1 | 0.171 | 0.028 |
| 2 | 0.175 | 0.027 |
| 3 | 0.179 | 0.031 |
| 4 | 0.192 | 0.028 |
| 5 | 0.200 | 0.032 |
| 6 | 0.203 | 0.028 |
| 7 | 0.209 | 0.036 |
| 8 | 0.214 | 0.049 |
| 9 | 0.216 | 0.048 |
| 10 | 0.214 | 0.062 |
| 11 | 0.204 | 0.084 |
| 12 | 0.210 | 0.084 |
| 13 | 0.194 | 0.099 |
| 14 | 0.202 | 0.087 |
| 15 | 0.203 | 0.081 |
| 16 | 0.201 | 0.088 |
| 17 | 0.204 | 0.083 |
| 18 | ---- | ---- |
| 19 | -0.010 | 0.089 |
| 20 | -0.013 | 0.070 |
| 21 | -0.007 | 0.077 |
| 22 | -0.012 | 0.066 |
| 23 | -0.020 | 0.045 |
| 24 | 0.004 | 0.072 |
| 25 | -0.002 | 0.054 |
| 26 | -0.008 | 0.054 |
| 27 | -0.012 | 0.027 |
| 28 | -0.003 | 0.045 |
| 29 | 0.007 | 0.059 |
| 30 | 0.010 | 0.052 |
| 31 | 0.013 | 0.044 |
| 32 | 0.003 | 0.026 |
| 33 | 0.014 | 0.045 |
| 34 | 0.006 | 0.029 |
| 35 | 0.012 | 0.037 |
| 36 | 0.016 | 0.028 |
| 37 | 0.017 | 0.032 |
| 38 | 0.019 | 0.027 |
| 39 | 0.024 | 0.033 |
| 40 | 0.026 | 0.025 |
| 41 | 0.029 | 0.027 |
| 42 | 0.030 | 0.033 |
| 43 | 0.031 | 0.027 |
| 44 | 0.011 | 0.034 |
| 45 | 0.011 | 0.027 |
| 46 | 0.013 | 0.027 |
| 47 | 0.028 | 0.036 |
| 48 | 0.020 | 0.039 |
| 49 | 0.023 | 0.035 |
| 50 | 0.032 | 0.034 |
| 51 | 0.029 | 0.025 |
| 52 | 0.026 | 0.027 |
| 53 | 0.031 | 0.034 |
| 54 | 0.033 | 0.027 |
| 55 | 0.037 | 0.026 |
| 56 | 0.044 | 0.027 |
| 57 | 0.048 | 0.042 |
| 58 | 0.044 | 0.028 |
| 59 | 0.043 | 0.026 |
| 60 | 0.049 | 0.030 |
| 61 | 0.052 | 0.025 |
| 62 | 0.055 | 0.032 |
| 63 | 0.063 | 0.035 |
| 64 | 0.061 | 0.027 |
| 65 | 0.065 | 0.029 |
| 66 | 0.068 | 0.035 |
| 67 | 0.068 | 0.024 |
| 68 | 0.072 | 0.032 |
| 69 | 0.076 | 0.024 |
| 70 | 0.079 | 0.031 |
| 71 | 0.080 | 0.025 |
| 72 | 0.087 | 0.031 |
| 73 | 0.088 | 0.025 |
| 74 | 0.093 | 0.028 |
| 75 | 0.100 | 0.029 |
| 76 | 0.099 | 0.025 |
| 77 | 0.100 | 0.027 |
| 78 | 0.106 | 0.025 |
| 79 | 0.110 | 0.023 |
| 80 | 0.117 | 0.027 |
| 81 | 0.116 | 0.026 |
| 82 | 0.124 | 0.026 |
| 83 | 0.120 | 0.025 |
| 84 | 0.132 | 0.026 |
| 85 | 0.139 | 0.024 |
| 86 | 0.143 | 0.030 |
| 87 | 0.146 | 0.027 |
| 88 | 0.154 | 0.030 |
| 89 | 0.157 | 0.026 |
| AVG | 0.080 | 0.030 |
| TARE | 0.034 | 0.013 |

Table B25 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X -0.39 R Y 0.78 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.249 | 0.028 |
| 1 | 1.249 | 0.031 |
| 2 | 1.244 | 0.027 |
| 3 | 1.241 | 0.031 |
| 4 | 1.241 | 0.030 |
| 5 | 1.238 | 0.029 |
| 6 | 1.241 | 0.031 |
| 7 | 1.238 | 0.029 |
| 8 | 1.243 | 0.032 |
| 9 | 1.240 | 0.028 |
| 10 | 1.238 | 0.026 |
| 11 | 1.240 | 0.032 |
| 12 | 1.235 | 0.031 |
| 13 | 1.234 | 0.027 |
| 14 | 1.237 | 0.029 |
| 15 | 1.237 | 0.029 |
| 16 | 1.234 | 0.031 |
| 17 | 1.237 | 0.029 |
| 18 | 1.233 | 0.026 |
| 19 | 1.239 | 0.030 |
| 20 | 1.234 | 0.033 |
| 21 | 1.242 | 0.029 |
| 22 | 1.237 | 0.027 |
| 23 | 1.241 | 0.031 |
| 24 | 1.240 | 0.028 |
| 25 | 1.240 | 0.027 |
| 26 | 1.241 | 0.030 |
| 27 | 1.244 | 0.030 |
| 28 | 1.241 | 0.026 |
| 29 | 1.247 | 0.031 |
| 30 | 1.248 | 0.032 |
| 31 | 1.252 | 0.033 |
| 32 | 1.257 | 0.032 |
| 33 | 1.261 | 0.034 |
| 34 | 1.263 | 0.033 |
| 35 | 1.265 | 0.034 |
| 36 | 1.273 | 0.029 |
| 37 | 1.278 | 0.042 |
| 38 | 1.290 | 0.045 |
| 39 | 1.292 | 0.052 |
| 40 | 1.312 | 0.059 |
| 41 | 1.315 | 0.075 |
| 42 | 1.322 | 0.074 |
| 43 | 1.312 | 0.074 |
| 44 | 1.301 | 0.084 |
| 45 | 1.277 | 0.092 |
| 46 | 1.271 | 0.100 |
| 47 | 1.261 | 0.117 |
| 48 | 1.256 | 0.124 |
| 49 | 1.252 | 0.126 |
| 50 | 1.260 | 0.120 |
| 51 | 1.276 | 0.137 |
| 52 | 1.315 | 0.099 |
| 53 | 1.328 | 0.085 |
| 54 | 1.337 | 0.073 |
| 55 | 1.341 | 0.058 |
| 56 | 1.340 | 0.043 |
| 57 | 1.339 | 0.035 |
| 58 | 1.334 | 0.033 |
| [illegible] | 1.333 | 0.031 |
| [illegible] | 1.328 | 0.031 |
| [illegible] | 1.326 | 0.033 |
| [illegible] | 1.324 | 0.033 |
| [illegible] | 1.316 | 0.034 |
| [illegible] | 1.312 | 0.035 |
| [illegible] | 1.308 | 0.032 |
| [illegible] | 1.308 | 0.032 |
| [illegible] | 1.304 | 0.030 |
| [illegible] | 1.300 | 0.031 |
| [illegible] | 1.296 | 0.028 |
| [illegible] | 1.291 | 0.029 |
| [illegible] | 1.293 | 0.031 |
| [illegible] | 1.287 | 0.032 |
| [illegible] | 1.288 | 0.029 |
| [illegible] | 1.288 | 0.027 |
| [illegible] | 1.280 | 0.030 |
| [illegible] | 1.274 | 0.030 |
| [illegible] | 1.275 | 0.028 |
| [illegible] | 1.271 | 0.030 |
| [illegible] | 1.269 | 0.028 |
| [illegible] | 1.265 | 0.030 |
| [illegible] | 1.264 | 0.028 |
| [illegible] | 1.264 | 0.033 |
| [illegible] | 1.262 | 0.030 |
| [illegible] | 1.259 | 0.031 |
| [illegible] | 1.252 | 0.031 |
| [illegible] | 1.250 | 0.028 |
| [illegible] | 1.253 | 0.030 |
| [illegible] | 1.249 | 0.029 |
| [illegible] | 1.249 | 0.031 |
| [illegible] | 1.272 | 0.042 |
| TARE | 1.001 | 0.013 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.083 | 0.054 |
| 1 | 0.084 | 0.044 |
| 2 | 0.082 | 0.052 |
| 3 | 0.076 | 0.042 |
| 4 | 0.078 | 0.043 |
| 5 | 0.087 | 0.051 |
| 6 | 0.082 | 0.044 |
| 7 | 0.075 | 0.045 |
| 8 | 0.077 | 0.053 |
| 9 | 0.078 | 0.045 |
| 10 | 0.076 | 0.043 |
| 11 | 0.075 | 0.046 |
| 12 | 0.077 | 0.054 |
| 13 | 0.078 | 0.054 |
| 14 | 0.064 | 0.051 |
| 15 | 0.074 | 0.058 |
| 16 | 0.075 | 0.042 |
| 17 | 0.078 | 0.047 |
| 18 | 0.073 | 0.052 |
| 19 | 0.078 | 0.055 |
| 20 | 0.065 | 0.043 |
| 21 | 0.067 | 0.046 |
| 22 | 0.059 | 0.042 |
| 23 | 0.064 | 0.047 |
| 24 | 0.062 | 0.048 |
| 25 | 0.065 | 0.052 |
| 26 | 0.062 | 0.049 |
| 27 | 0.061 | 0.049 |
| 28 | 0.063 | 0.043 |
| 29 | 0.061 | 0.048 |
| 30 | 0.051 | 0.045 |
| 31 | 0.057 | 0.051 |
| 32 | 0.061 | 0.050 |
| 33 | ----- | ----- |
| 34 | 0.039 | 0.045 |
| 35 | 0.049 | 0.045 |
| 36 | 0.049 | 0.043 |
| 37 | 0.048 | 0.042 |
| 38 | 0.049 | 0.052 |
| 39 | 0.049 | 0.047 |
| 40 | 0.059 | 0.054 |
| 41 | 0.055 | 0.047 |
| 42 | 0.058 | 0.053 |
| 43 | 0.057 | 0.056 |
| 44 | 0.066 | 0.038 |
| 45 | 0.052 | 0.059 |
| 46 | 0.045 | 0.122 |
| 47 | 0.025 | 0.187 |
| 48 | 0.033 | 0.183 |
| 49 | 0.053 | 0.091 |
| 50 | 0.032 | 0.079 |
| 51 | 0.059 | 0.058 |
| 52 | 0.069 | 0.052 |
| 53 | 0.066 | 0.045 |
| 54 | 0.069 | 0.044 |
| 55 | 0.076 | 0.046 |
| 56 | 0.073 | 0.047 |
| 57 | 0.067 | 0.041 |
| 58 | 0.073 | 0.039 |
| [illegible] | 0.081 | 0.045 |
| [illegible] | 0.072 | 0.038 |
| [illegible] | 0.076 | 0.041 |
| [illegible] | 0.080 | 0.047 |
| [illegible] | 0.075 | 0.042 |
| [illegible] | 0.080 | 0.043 |
| [illegible] | 0.077 | 0.045 |
| [illegible] | 0.079 | 0.038 |
| [illegible] | 0.077 | 0.042 |
| [illegible] | 0.085 | 0.053 |
| [illegible] | 0.076 | 0.047 |
| [illegible] | 0.079 | 0.041 |
| [illegible] | 0.077 | 0.046 |
| [illegible] | 0.084 | 0.052 |
| [illegible] | 0.076 | 0.044 |
| [illegible] | 0.085 | 0.042 |
| [illegible] | 0.084 | 0.052 |
| [illegible] | 0.085 | 0.043 |
| [illegible] | 0.079 | 0.043 |
| [illegible] | 0.089 | 0.047 |
| [illegible] | 0.087 | 0.047 |
| [illegible] | 0.077 | 0.044 |
| [illegible] | 0.084 | 0.045 |
| [illegible] | 0.082 | 0.042 |
| [illegible] | 0.085 | 0.044 |
| [illegible] | 0.089 | 0.043 |
| [illegible] | 0.089 | 0.050 |
| [illegible] | 0.090 | 0.054 |
| [illegible] | 0.087 | 0.042 |
| [illegible] | 0.084 | 0.041 |
| [illegible] | 0.079 | 0.049 |
| [illegible] | 0.078 | 0.051 |
| TARE | 0.026 | 0.013 |

Table B26 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

| PROBE COORDINATES: | X | Y | Z |
|---|---|---|---|
| | -0.39 R | 0.00 R | 0.00 R |

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.232 | 0.037 |
| 1 | 1.230 | 0.037 |
| 2 | 1.225 | 0.029 |
| 3 | 1.225 | 0.027 |
| 4 | 1.222 | 0.031 |
| 5 | 1.219 | 0.033 |
| 6 | 1.223 | 0.025 |
| 7 | 1.218 | 0.029 |
| 8 | 1.217 | 0.027 |
| 9 | 1.213 | 0.029 |
| 10 | 1.212 | 0.029 |
| 11 | 1.216 | 0.033 |
| 12 | 1.209 | 0.029 |
| 13 | 1.212 | 0.027 |
| 14 | 1.214 | 0.027 |
| 15 | 1.216 | 0.030 |
| 16 | 1.215 | 0.031 |
| 17 | 1.211 | 0.023 |
| 18 | 1.215 | 0.028 |
| 19 | 1.214 | 0.030 |
| 20 | 1.213 | 0.026 |
| 21 | 1.214 | 0.031 |
| 22 | 1.217 | 0.027 |
| 23 | 1.215 | 0.029 |
| 24 | 1.213 | 0.028 |
| 25 | 1.218 | 0.029 |
| 26 | 1.223 | 0.029 |
| 27 | 1.224 | 0.029 |
| 28 | 1.228 | 0.032 |
| 29 | 1.227 | 0.029 |
| 30 | 1.229 | 0.033 |
| 31 | 1.231 | 0.033 |
| 32 | 1.233 | 0.035 |
| 33 | 1.239 | 0.034 |
| 34 | 1.241 | 0.034 |
| 35 | 1.243 | 0.032 |
| 36 | 1.255 | 0.037 |
| 37 | 1.262 | 0.040 |
| 38 | 1.264 | 0.035 |
| 39 | 1.274 | 0.041 |
| 40 | 1.286 | 0.043 |
| 41 | 1.294 | 0.052 |
| 42 | 1.303 | 0.057 |
| 43 | 1.298 | 0.052 |
| 44 | 1.295 | 0.074 |
| 45 | 1.267 | 0.096 |
| 46 | 1.253 | 0.091 |
| 47 | 1.210 | 0.117 |
| 48 | 1.203 | 0.119 |
| 49 | 1.183 | 0.129 |
| 50 | 1.184 | 0.164 |
| 51 | 1.251 | 0.143 |
| 52 | 1.294 | 0.129 |
| 53 | 1.332 | 0.092 |
| 54 | 1.339 | 0.077 |
| 55 | 1.353 | 0.056 |
| 56 | 1.351 | 0.045 |
| 57 | 1.346 | 0.037 |
| 58 | 1.344 | 0.038 |
| 59 | 1.341 | 0.036 |
| 60 | 1.339 | 0.035 |
| 61 | 1.336 | 0.035 |
| 62 | 1.329 | 0.037 |
| 63 | 1.326 | 0.035 |
| 64 | 1.325 | 0.035 |
| 65 | 1.322 | 0.036 |
| 66 | 1.319 | 0.032 |
| 67 | 1.314 | 0.031 |
| 68 | 1.315 | 0.034 |
| 69 | 1.312 | 0.037 |
| 70 | 1.304 | 0.036 |
| 71 | 1.299 | 0.034 |
| 72 | 1.298 | 0.035 |
| 73 | 1.293 | 0.034 |
| 74 | 1.289 | 0.035 |
| 75 | 1.284 | 0.038 |
| 76 | 1.282 | 0.033 |
| 77 | 1.277 | 0.034 |
| 78 | 1.274 | 0.028 |
| 79 | 1.270 | 0.032 |
| 80 | 1.262 | 0.030 |
| 81 | 1.259 | 0.034 |
| 82 | 1.255 | 0.030 |
| 83 | 1.253 | 0.038 |
| 84 | 1.248 | 0.038 |
| 85 | 1.246 | 0.038 |
| 86 | 1.244 | 0.029 |
| 87 | 1.239 | 0.028 |
| 88 | 1.234 | 0.030 |
| 89 | 1.225 | 0.032 |
| AVG | 1.259 | 0.043 |
| TARE | 1.000 | 0.016 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.096 | 0.047 |
| 1 | 0.096 | 0.041 |
| 2 | 0.094 | 0.043 |
| 3 | 0.088 | 0.043 |
| 4 | 0.090 | 0.047 |
| 5 | 0.080 | 0.043 |
| 6 | 0.070 | 0.041 |
| 7 | 0.069 | 0.043 |
| 8 | 0.065 | 0.045 |
| 9 | 0.071 | 0.048 |
| 10 | 0.065 | 0.041 |
| 11 | 0.060 | 0.043 |
| 12 | 0.059 | 0.052 |
| 13 | 0.058 | 0.043 |
| 14 | 0.051 | 0.040 |
| 15 | 0.047 | 0.047 |
| 16 | 0.043 | 0.045 |
| 17 | 0.037 | 0.037 |
| 18 | 0.038 | 0.060 |
| 19 | 0.032 | 0.039 |
| 20 | 0.032 | 0.043 |
| 21 | 0.021 | 0.039 |
| 22 | 0.025 | 0.049 |
| 23 | 0.016 | 0.046 |
| 24 | 0.015 | 0.044 |
| 25 | 0.006 | 0.042 |
| 26 | 0.001 | 0.049 |
| 27 | 0.001 | 0.051 |
| 28 | -0.001 | 0.048 |
| 29 | -0.008 | 0.056 |
| 30 | -0.010 | 0.050 |
| 31 | -0.021 | 0.047 |
| 32 | -0.030 | 0.044 |
| 33 | -0.032 | 0.046 |
| 34 | -0.038 | 0.047 |
| 35 | -0.047 | 0.041 |
| 36 | -0.053 | 0.046 |
| 37 | -0.050 | 0.052 |
| 38 | -0.059 | 0.043 |
| 39 | -0.067 | 0.046 |
| 40 | -0.072 | 0.050 |
| 41 | -0.080 | 0.053 |
| 42 | -0.090 | 0.051 |
| 43 | -0.089 | 0.065 |
| 44 | -0.094 | 0.083 |
| 45 | -0.104 | 0.107 |
| 46 | -0.126 | 0.125 |
| 47 | -0.129 | 0.129 |
| 48 | -0.094 | 0.138 |
| 49 | -0.042 | 0.135 |
| 50 | 0.026 | 0.125 |
| 51 | 0.077 | 0.101 |
| 52 | 0.119 | 0.068 |
| 53 | 0.122 | 0.045 |
| 54 | 0.121 | 0.044 |
| 55 | 0.120 | 0.044 |
| 56 | 0.116 | 0.039 |
| 57 | 0.121 | 0.046 |
| 58 | 0.115 | 0.042 |
| 59 | 0.113 | 0.039 |
| 60 | 0.118 | 0.056 |
| 61 | 0.119 | 0.040 |
| 62 | 0.115 | 0.036 |
| 63 | 0.113 | 0.040 |
| 64 | 0.112 | 0.040 |
| 65 | 0.113 | 0.042 |
| 66 | 0.116 | 0.044 |
| 67 | 0.119 | 0.050 |
| 68 | 0.120 | 0.052 |
| 69 | 0.116 | 0.041 |
| 70 | 0.115 | 0.035 |
| 71 | 0.114 | 0.038 |
| 72 | 0.122 | 0.043 |
| 73 | 0.119 | 0.043 |
| 74 | 0.114 | 0.039 |
| 75 | 0.120 | 0.035 |
| 76 | 0.119 | 0.043 |
| 77 | 0.119 | 0.042 |
| 78 | 0.112 | 0.042 |
| 79 | 0.116 | 0.040 |
| 80 | 0.125 | 0.046 |
| 81 | 0.108 | 0.040 |
| 82 | 0.118 | 0.042 |
| 83 | 0.115 | 0.044 |
| 84 | 0.110 | 0.043 |
| 85 | 0.099 | 0.039 |
| 86 | 0.096 | 0.043 |
| 87 | 0.104 | 0.039 |
| 88 | 0.098 | 0.045 |
| 89 | 0.095 | 0.044 |
| AVG | 0.050 | 0.051 |
| TARE | 0.024 | 0.013 |

Table B27 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X -0.39 R Y -0.90 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.155 | 0.025 |
| 1 | 1.149 | 0.025 |
| 2 | 1.149 | 0.026 |
| 3 | 1.142 | 0.028 |
| 4 | 1.140 | 0.025 |
| 5 | 1.136 | 0.027 |
| 6 | 1.135 | 0.025 |
| 7 | 1.138 | 0.025 |
| 8 | 1.141 | 0.028 |
| 9 | 1.141 | 0.029 |
| 10 | 1.143 | 0.025 |
| 11 | 1.138 | 0.025 |
| 12 | 1.141 | 0.025 |
| 13 | 1.139 | 0.028 |
| 14 | 1.135 | 0.025 |
| 15 | 1.137 | 0.025 |
| 16 | 1.137 | 0.025 |
| 17 | 1.137 | 0.027 |
| 18 | 1.138 | 0.025 |
| 19 | 1.138 | 0.027 |
| 20 | 1.135 | 0.026 |
| 21 | 1.134 | 0.028 |
| 22 | 1.135 | 0.028 |
| 23 | 1.131 | 0.027 |
| 24 | 1.131 | 0.023 |
| 25 | 1.132 | 0.024 |
| 26 | 1.133 | 0.027 |
| 27 | 1.138 | 0.027 |
| 28 | 1.138 | 0.026 |
| 29 | 1.135 | 0.031 |
| 30 | 1.135 | 0.023 |
| 31 | 1.134 | 0.025 |
| 32 | 1.138 | 0.026 |
| 33 | 1.139 | 0.028 |
| 34 | 1.141 | 0.031 |
| 35 | 1.149 | 0.026 |
| 36 | 1.149 | 0.029 |
| 37 | 1.150 | 0.025 |
| 38 | 1.146 | 0.026 |
| 39 | 1.145 | 0.028 |
| 40 | 1.148 | 0.027 |
| 41 | 1.154 | 0.029 |
| 42 | 1.153 | 0.031 |
| 43 | 1.155 | 0.033 |
| 44 | 1.159 | 0.031 |
| 45 | 1.156 | 0.036 |
| 46 | 1.156 | 0.035 |
| 47 | 1.153 | 0.035 |
| 48 | 1.142 | 0.051 |
| 49 | 1.123 | 0.067 |
| 50 | 1.114 | 0.076 |
| 51 | 1.079 | 0.094 |
| 52 | 1.057 | 0.130 |
| 53 | 1.083 | 0.146 |
| 54 | 1.122 | 0.161 |
| 55 | 1.217 | 0.152 |
| 56 | 1.251 | 0.143 |
| 57 | 1.287 | 0.136 |
| 58 | 1.344 | 0.098 |
| 59 | 1.381 | 0.119 |
| 60 | 1.421 | 0.108 |
| 61 | 1.463 | 0.100 |
| 62 | 1.498 | 0.111 |
| 63 | 1.522 | 0.090 |
| 64 | 1.539 | 0.089 |
| 65 | 1.525 | 0.085 |
| 66 | 1.534 | 0.080 |
| 67 | 1.530 | 0.086 |
| 68 | 1.507 | 0.090 |
| 69 | 1.475 | 0.089 |
| 70 | 1.433 | 0.075 |
| 71 | 1.388 | 0.078 |
| 72 | 1.363 | 0.076 |
| 73 | 1.333 | 0.065 |
| 74 | 1.302 | 0.058 |
| 75 | 1.281 | 0.045 |
| 76 | 1.256 | 0.045 |
| 77 | 1.234 | 0.040 |
| 78 | 1.219 | 0.040 |
| 79 | 1.219 | 0.035 |
| 80 | 1.205 | 0.031 |
| 81 | 1.195 | 0.031 |
| 82 | 1.185 | 0.029 |
| 83 | 1.178 | 0.030 |
| 84 | 1.171 | 0.027 |
| 85 | 1.169 | 0.026 |
| 86 | 1.166 | 0.027 |
| 87 | 1.160 | 0.027 |
| 88 | 1.160 | 0.025 |
| 89 | 1.156 | 0.029 |
| AVG | 1.209 | 0.039 |
| TARE | 0.999 | 0.016 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.128 | 0.039 |
| 1 | 0.118 | 0.039 |
| 2 | 0.114 | 0.039 |
| 3 | 0.111 | 0.043 |
| 4 | 0.103 | 0.035 |
| 5 | 0.091 | 0.036 |
| 6 | 0.097 | 0.040 |
| 7 | 0.085 | 0.042 |
| 8 | 0.075 | 0.041 |
| 9 | 0.073 | 0.039 |
| 10 | 0.073 | 0.045 |
| 11 | 0.058 | 0.037 |
| 12 | 0.049 | 0.037 |
| 13 | 0.051 | 0.042 |
| 14 | 0.055 | 0.038 |
| 15 | 0.045 | 0.043 |
| 16 | 0.033 | 0.047 |
| 17 | 0.028 | 0.038 |
| 18 | 0.022 | 0.035 |
| 19 | 0.013 | 0.036 |
| 20 | 0.007 | 0.043 |
| 21 | -0.001 | 0.040 |
| 22 | -0.007 | 0.043 |
| 23 | -0.008 | 0.038 |
| 24 | -0.024 | 0.036 |
| 25 | -0.026 | 0.040 |
| 26 | -0.020 | 0.038 |
| 27 | -0.038 | 0.043 |
| 28 | -0.044 | 0.040 |
| 29 | -0.052 | 0.043 |
| 30 | -0.067 | 0.039 |
| 31 | -0.073 | 0.038 |
| 32 | -0.073 | 0.038 |
| 33 | -0.088 | 0.042 |
| 34 | -0.103 | 0.041 |
| 35 | -0.105 | 0.047 |
| 36 | -0.111 | 0.043 |
| 37 | -0.119 | 0.044 |
| 38 | -0.131 | 0.037 |
| 39 | -0.147 | 0.044 |
| 40 | -0.153 | 0.044 |
| 41 | -0.166 | 0.043 |
| 42 | -0.180 | 0.045 |
| 43 | -0.196 | 0.043 |
| 44 | -0.206 | 0.051 |
| 45 | -0.213 | 0.052 |
| 46 | -0.225 | 0.058 |
| 47 | -0.247 | 0.034 |
| 48 | -0.245 | 0.109 |
| 49 | -0.256 | 0.131 |
| 50 | -0.228 | 0.132 |
| 51 | -0.172 | 0.122 |
| 52 | -0.106 | 0.147 |
| 53 | -0.053 | 0.127 |
| 54 | -0.009 | 0.084 |
| 55 | 0.012 | 0.087 |
| 56 | 0.011 | 0.062 |
| 57 | -0.002 | 0.049 |
| 58 | 0.005 | 0.063 |
| 59 | 0.018 | 0.059 |
| 60 | 0.043 | 0.074 |
| 61 | 0.056 | 0.071 |
| 62 | 0.117 | 0.095 |
| 63 | 0.137 | 0.091 |
| 64 | 0.181 | 0.097 |
| 65 | 0.225 | 0.102 |
| 66 | 0.271 | 0.093 |
| 67 | 0.300 | 0.081 |
| 68 | 0.321 | 0.088 |
| 69 | 0.323 | 0.079 |
| 70 | 0.326 | 0.073 |
| 71 | 0.312 | 0.060 |
| 72 | 0.309 | 0.063 |
| 73 | 0.301 | 0.053 |
| 74 | 0.287 | 0.049 |
| 75 | 0.271 | 0.047 |
| 76 | 0.267 | 0.046 |
| 77 | 0.252 | 0.043 |
| 78 | 0.251 | 0.040 |
| 79 | 0.243 | 0.047 |
| 80 | 0.230 | 0.040 |
| 81 | 0.214 | 0.042 |
| 82 | 0.197 | 0.043 |
| 83 | 0.195 | 0.045 |
| 84 | 0.189 | 0.045 |
| 85 | 0.182 | 0.041 |
| 86 | 0.171 | 0.040 |
| 87 | 0.169 | 0.041 |
| 88 | 0.146 | 0.046 |
| 89 | 0.120 | 0.052 |
| AVG | 0.046 | 0.056 |
| TARE | ----- | ----- |

Table B28 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X -0.39 R Y 1.00 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.024 | 0.024 |
| 1 | 1.028 | 0.025 |
| 2 | 1.023 | 0.020 |
| 3 | 1.024 | 0.022 |
| 4 | 1.029 | 0.021 |
| 5 | 1.030 | 0.020 |
| 6 | 1.037 | 0.022 |
| 7 | 1.039 | 0.020 |
| 8 | 1.044 | 0.020 |
| 9 | 1.040 | 0.025 |
| 10 | 1.043 | 0.019 |
| 11 | 1.044 | 0.023 |
| 12 | 1.043 | 0.021 |
| 13 | 1.046 | 0.022 |
| 14 | 1.047 | 0.021 |
| 15 | 1.043 | 0.021 |
| 16 | 1.039 | 0.020 |
| 17 | 1.047 | 0.021 |
| 18 | 1.045 | 0.022 |
| 19 | 1.045 | 0.020 |
| 20 | 1.044 | 0.019 |
| 21 | 1.049 | 0.020 |
| 22 | 1.047 | 0.019 |
| 23 | 1.046 | 0.020 |
| 24 | 1.046 | 0.022 |
| 25 | 1.045 | 0.020 |
| 26 | 1.044 | 0.019 |
| 27 | 1.040 | 0.017 |
| 28 | 1.042 | 0.019 |
| 29 | 1.034 | 0.021 |
| 30 | 1.028 | 0.021 |
| 31 | 1.024 | 0.020 |
| 32 | 1.023 | 0.020 |
| 33 | 1.026 | 0.018 |
| 34 | 1.028 | 0.019 |
| 35 | 1.024 | 0.020 |
| 36 | 1.024 | 0.019 |
| 37 | 1.016 | 0.021 |
| 38 | 1.010 | 0.021 |
| 39 | 1.010 | 0.021 |
| 40 | 1.004 | 0.022 |
| 41 | 0.999 | 0.020 |
| 42 | 0.994 | 0.022 |
| 43 | 0.983 | 0.022 |
| 44 | 0.979 | 0.025 |
| 45 | 0.968 | 0.024 |
| 46 | 0.959 | 0.025 |
| 47 | 0.956 | 0.025 |
| 48 | 0.945 | 0.027 |
| 49 | 0.937 | 0.030 |
| 50 | 0.933 | 0.031 |
| 51 | 0.907 | 0.034 |
| 52 | 0.895 | 0.040 |
| 53 | 0.885 | 0.036 |
| 54 | 0.871 | 0.041 |
| 55 | 0.857 | 0.047 |
| 56 | 0.836 | 0.049 |
| 57 | 0.821 | 0.040 |
| 58 | 0.811 | 0.051 |
| 59 | 0.803 | 0.048 |
| 60 | 0.791 | 0.055 |
| 61 | 0.784 | 0.051 |
| 62 | 0.769 | 0.067 |
| 63 | 0.769 | 0.053 |
| 64 | 0.778 | 0.059 |
| 65 | 0.771 | 0.061 |
| 66 | 0.777 | 0.053 |
| 67 | 0.814 | 0.056 |
| 68 | 0.837 | 0.058 |
| 69 | 0.849 | 0.058 |
| 70 | 0.858 | 0.058 |
| 71 | 0.879 | 0.045 |
| 72 | 0.896 | 0.043 |
| 73 | 0.907 | 0.041 |
| 74 | 0.922 | 0.037 |
| 75 | 0.935 | 0.032 |
| 76 | 0.949 | 0.030 |
| 77 | 0.953 | 0.030 |
| 78 | 0.966 | 0.031 |
| 79 | 0.967 | 0.027 |
| 80 | 0.963 | 0.027 |
| 81 | 0.977 | 0.028 |
| 82 | 0.984 | 0.024 |
| 83 | 0.995 | 0.027 |
| 84 | 1.006 | 0.026 |
| 85 | 1.011 | 0.023 |
| 86 | 1.014 | 0.023 |
| 87 | 1.019 | 0.025 |
| 88 | 1.024 | 0.022 |
| 89 | 1.027 | 0.022 |
| AVG | 0.966 | 0.030 |
| TARE | ----- | ----- |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | -0.077 | 0.046 |
| 1 | -0.077 | 0.047 |
| 2 | -0.082 | 0.041 |
| 3 | -0.067 | 0.053 |
| 4 | -0.056 | 0.043 |
| 5 | -0.059 | 0.046 |
| 6 | -0.039 | 0.048 |
| 7 | -0.027 | 0.052 |
| 8 | 0.008 | 0.048 |
| 9 | 0.027 | 0.050 |
| 10 | 0.054 | 0.057 |
| 11 | 0.067 | 0.060 |
| 12 | 0.092 | 0.050 |
| 13 | 0.122 | 0.055 |
| 14 | 0.132 | 0.062 |
| 15 | 0.154 | 0.049 |
| 16 | 0.170 | 0.049 |
| 17 | 0.188 | 0.047 |
| 18 | 0.184 | 0.049 |
| 19 | 0.195 | 0.050 |
| 20 | 0.198 | 0.044 |
| 21 | 0.200 | 0.049 |
| 23 | 0.202 | 0.050 |
| 24 | 0.205 | 0.043 |
| 25 | 0.197 | 0.048 |
| 26 | 0.193 | 0.047 |
| 27 | 0.195 | 0.051 |
| 28 | 0.177 | 0.047 |
| 29 | 0.179 | 0.042 |
| 30 | 0.173 | 0.041 |
| 31 | 0.166 | 0.045 |
| 32 | 0.170 | 0.048 |
| 33 | 0.159 | 0.046 |
| 34 | 0.155 | 0.045 |
| 35 | 0.145 | 0.049 |
| 36 | 0.146 | 0.047 |
| 37 | 0.141 | 0.046 |
| 38 | 0.138 | 0.040 |
| 39 | 0.132 | 0.044 |
| 40 | 0.137 | 0.060 |
| 41 | 0.127 | 0.052 |
| 42 | 0.116 | 0.055 |
| 43 | 0.122 | 0.063 |
| 44 | 0.123 | 0.054 |
| 45 | 0.111 | 0.055 |
| 46 | 0.107 | 0.054 |
| 47 | 0.100 | 0.054 |
| 48 | 0.092 | 0.058 |
| 49 | 0.097 | 0.056 |
| 50 | 0.089 | 0.062 |
| 51 | 0.081 | 0.060 |
| 52 | 0.080 | 0.069 |
| 53 | 0.073 | 0.051 |
| 54 | 0.063 | 0.055 |
| 55 | 0.066 | 0.055 |
| 56 | 0.055 | 0.053 |
| 57 | 0.054 | 0.049 |
| 58 | 0.061 | 0.042 |
| 59 | 0.043 | 0.057 |
| 60 | 0.042 | 0.052 |
| 61 | 0.034 | 0.065 |
| 62 | 0.032 | 0.052 |
| 63 | 0.028 | 0.051 |
| 64 | 0.022 | 0.064 |
| 66 | 0.012 | 0.058 |
| 67 | 0.012 | 0.051 |
| 68 | 0.002 | 0.053 |
| 69 | -0.004 | 0.048 |
| 70 | -0.006 | 0.056 |
| 71 | -0.007 | 0.059 |
| 72 | -0.018 | 0.054 |
| 73 | -0.022 | 0.054 |
| 74 | -0.033 | 0.051 |
| 75 | -0.029 | 0.059 |
| 76 | ----- | ----- |
| 77 | -0.041 | 0.051 |
| 78 | -0.053 | 0.051 |
| 79 | -0.052 | 0.047 |
| 80 | -0.058 | 0.050 |
| 81 | -0.065 | 0.049 |
| 82 | -0.072 | 0.043 |
| 83 | -0.076 | 0.039 |
| 84 | -0.072 | 0.049 |
| 85 | -0.094 | 0.041 |
| 86 | -0.085 | 0.065 |
| 87 | -0.093 | 0.040 |
| 88 | -0.080 | 0.047 |
| 89 | -0.083 | 0.043 |
| AVG | 0.040 | 0.051 |
| TARE | ----- | ----- |

Table B29 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X -0.39 R Y 1.18 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.998 | 0.021 |
| 1 | 0.995 | 0.021 |
| 2 | 1.000 | 0.022 |
| 3 | 0.997 | 0.023 |
| 4 | 0.994 | 0.020 |
| 5 | 0.995 | 0.020 |
| 6 | 1.001 | 0.022 |
| 7 | 0.990 | 0.022 |
| 8 | 0.995 | 0.022 |
| 9 | 0.996 | 0.020 |
| 10 | 0.999 | 0.021 |
| 11 | 1.003 | 0.019 |
| 12 | 1.006 | 0.021 |
| 13 | 1.003 | 0.021 |
| 14 | 1.000 | 0.021 |
| 15 | 1.004 | 0.019 |
| 16 | 1.003 | 0.023 |
| 17 | 1.007 | 0.019 |
| 18 | 1.002 | 0.019 |
| 19 | 1.001 | 0.022 |
| 20 | 0.996 | 0.018 |
| 21 | 1.000 | 0.021 |
| 22 | 0.994 | 0.021 |
| 23 | 1.000 | 0.019 |
| 24 | 0.999 | 0.022 |
| 25 | 0.995 | 0.022 |
| 26 | 0.998 | 0.022 |
| 27 | 0.991 | 0.023 |
| 28 | 0.982 | 0.022 |
| 29 | 0.980 | 0.024 |
| 30 | 0.974 | 0.021 |
| 31 | 0.976 | 0.022 |
| 32 | 0.988 | 0.023 |
| 33 | 0.991 | 0.023 |
| 34 | 0.986 | 0.020 |
| 35 | 0.979 | 0.020 |
| 36 | 0.973 | 0.022 |
| 37 | 0.974 | 0.020 |
| 38 | 0.977 | 0.022 |
| 39 | 0.975 | 0.020 |
| 40 | 0.976 | 0.022 |
| 41 | 0.971 | 0.022 |
| 42 | 0.964 | 0.022 |
| 43 | 0.963 | 0.022 |
| 44 | 0.960 | 0.021 |
| 45 | 0.959 | 0.021 |
| 46 | 0.953 | 0.022 |
| 47 | 0.954 | 0.024 |
| 48 | 0.952 | 0.024 |
| 49 | 0.953 | 0.027 |
| 50 | 0.953 | 0.024 |
| 51 | 0.950 | 0.021 |
| 52 | 0.949 | 0.027 |
| 53 | 0.953 | 0.026 |
| 54 | 0.949 | 0.026 |
| 55 | 0.945 | 0.024 |
| 56 | 0.947 | 0.027 |
| 57 | 0.946 | 0.024 |
| 58 | 0.944 | 0.026 |
| 59 | 0.948 | 0.021 |
| 60 | 0.945 | 0.027 |
| 61 | 0.943 | 0.030 |
| 62 | 0.937 | 0.028 |
| 63 | 0.942 | 0.024 |
| 64 | 0.941 | 0.025 |
| 65 | 0.940 | 0.025 |
| 66 | 0.950 | 0.027 |
| 67 | 0.954 | 0.026 |
| 68 | 0.959 | 0.023 |
| 69 | 0.958 | 0.026 |
| 70 | 0.953 | 0.026 |
| 71 | 0.953 | 0.026 |
| 72 | 0.956 | 0.025 |
| 73 | 0.961 | 0.025 |
| 74 | 0.960 | 0.026 |
| 75 | 0.966 | 0.024 |
| 76 | 0.974 | 0.025 |
| 77 | 0.972 | 0.024 |
| 78 | 0.978 | 0.027 |
| 79 | 0.971 | 0.023 |
| 80 | 0.977 | 0.023 |
| 81 | 0.979 | 0.026 |
| 82 | 0.982 | 0.024 |
| 83 | 0.982 | 0.022 |
| 84 | 0.989 | 0.022 |
| 85 | 0.991 | 0.020 |
| 86 | 0.995 | 0.021 |
| 87 | 0.992 | 0.024 |
| 88 | 0.991 | 0.022 |
| 89 | 0.991 | 0.022 |
| AVG | 0.976 | 0.023 |
| TARE | 0.997 | 0.015 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.059 | 0.042 |
| 1 | 0.059 | 0.044 |
| 2 | 0.054 | 0.041 |
| 3 | 0.052 | 0.039 |
| 4 | 0.053 | 0.044 |
| 5 | 0.054 | 0.038 |
| 6 | 0.054 | 0.043 |
| 7 | 0.049 | 0.046 |
| 8 | 0.048 | 0.039 |
| 9 | 0.048 | 0.039 |
| 10 | 0.045 | 0.050 |
| 11 | 0.038 | 0.042 |
| 12 | 0.042 | 0.046 |
| 13 | 0.039 | 0.050 |
| 14 | 0.037 | 0.047 |
| 15 | 0.036 | 0.043 |
| 16 | 0.029 | 0.045 |
| 17 | 0.030 | 0.049 |
| 18 | 0.020 | 0.039 |
| 19 | 0.026 | 0.038 |
| 20 | 0.027 | 0.050 |
| 21 | 0.021 | 0.039 |
| 22 | 0.016 | 0.042 |
| 23 | 0.017 | 0.041 |
| 24 | 0.012 | 0.045 |
| 25 | 0.013 | 0.041 |
| 26 | 0.009 | 0.041 |
| 27 | 0.017 | 0.041 |
| 28 | 0.007 | 0.037 |
| 29 | 0.015 | 0.043 |
| 30 | -0.009 | 0.040 |
| 31 | 0.009 | 0.042 |
| 32 | 0.003 | 0.048 |
| 33 | -0.001 | 0.048 |
| 34 | 0.001 | 0.039 |
| 35 | 0.002 | 0.037 |
| 36 | 0.009 | 0.047 |
| 37 | -0.001 | 0.043 |
| 38 | 0.004 | 0.044 |
| 39 | 0.001 | 0.044 |
| 40 | 0.001 | 0.040 |
| 41 | -0.001 | 0.047 |
| 42 | -0.003 | 0.039 |
| 43 | -0.004 | 0.041 |
| 44 | 0.002 | 0.039 |
| 45 | 0.005 | 0.046 |
| 46 | 0.003 | 0.042 |
| 47 | 0.009 | 0.042 |
| 48 | 0.006 | 0.039 |
| 49 | 0.014 | 0.038 |
| 50 | 0.018 | 0.051 |
| 51 | 0.019 | 0.036 |
| 52 | 0.016 | 0.044 |
| 53 | 0.018 | 0.040 |
| 54 | 0.017 | 0.037 |
| 55 | 0.016 | 0.032 |
| 56 | 0.021 | 0.039 |
| 57 | 0.032 | 0.047 |
| 58 | 0.028 | 0.034 |
| 59 | 0.042 | 0.042 |
| 60 | 0.036 | 0.039 |
| 61 | 0.041 | 0.041 |
| 62 | 0.045 | 0.041 |
| 63 | 0.045 | 0.039 |
| 64 | 0.055 | 0.046 |
| 65 | 0.040 | 0.042 |
| 66 | 0.060 | 0.044 |
| 67 | 0.058 | 0.034 |
| 68 | 0.060 | 0.040 |
| 69 | 0.063 | 0.040 |
| 70 | 0.061 | 0.041 |
| 71 | 0.058 | 0.042 |
| 72 | 0.069 | 0.039 |
| 73 | 0.067 | 0.044 |
| 74 | 0.070 | 0.043 |
| 75 | 0.066 | 0.041 |
| 76 | 0.074 | 0.041 |
| 77 | 0.075 | 0.041 |
| 78 | 0.069 | 0.038 |
| 79 | 0.073 | 0.037 |
| 80 | 0.070 | 0.042 |
| 81 | 0.067 | 0.038 |
| 82 | 0.066 | 0.042 |
| 83 | 0.071 | 0.044 |
| 84 | 0.060 | 0.037 |
| 85 | 0.067 | 0.040 |
| 86 | 0.058 | 0.038 |
| 87 | 0.061 | 0.043 |
| 88 | 0.066 | 0.040 |
| 89 | 0.058 | 0.035 |
| AVG | 0.035 | 0.042 |
| TARE | 0.013 | 0.013 |

Table B30 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X 0.21 R Y 0.70 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.150 | 0.020 |
| 1 | 1.148 | 0.021 |
| 2 | 1.149 | 0.021 |
| 3 | 1.151 | 0.018 |
| 4 | 1.151 | 0.021 |
| 5 | 1.147 | 0.023 |
| 6 | 1.148 | 0.021 |
| 7 | 1.154 | 0.019 |
| 8 | 1.152 | 0.019 |
| 9 | 1.147 | 0.018 |
| 10 | 1.148 | 0.020 |
| 11 | 1.150 | 0.020 |
| 12 | 1.145 | 0.017 |
| 13 | 1.148 | 0.019 |
| 14 | 1.148 | 0.020 |
| 15 | 1.149 | 0.019 |
| 16 | 1.146 | 0.020 |
| 17 | 1.147 | 0.020 |
| 18 | 1.142 | 0.017 |
| 19 | 1.143 | 0.018 |
| 20 | 1.143 | 0.022 |
| 21 | 1.140 | 0.020 |
| 22 | 1.140 | 0.021 |
| 23 | 1.139 | 0.020 |
| 24 | 1.138 | 0.021 |
| 25 | 1.135 | 0.019 |
| 26 | 1.128 | 0.021 |
| 27 | 1.135 | 0.021 |
| 28 | 1.129 | 0.022 |
| 29 | 1.133 | 0.023 |
| 30 | 1.125 | 0.025 |
| 31 | 1.124 | 0.022 |
| 32 | 1.120 | 0.025 |
| 33 | 1.124 | 0.024 |
| 34 | 1.119 | 0.023 |
| 35 | 1.121 | 0.027 |
| 36 | 1.121 | 0.026 |
| 37 | 1.115 | 0.026 |
| 38 | 1.114 | 0.024 |
| 39 | 1.108 | 0.023 |
| 40 | 1.100 | 0.027 |
| 41 | 1.093 | 0.026 |
| 42 | 1.084 | 0.030 |
| 43 | 1.085 | 0.027 |
| 44 | 1.076 | 0.032 |
| 45 | 1.058 | 0.031 |
| 46 | 1.044 | 0.048 |
| 47 | 1.017 | 0.052 |
| 48 | 0.983 | 0.061 |
| 49 | 0.937 | 0.057 |
| 50 | 0.934 | 0.042 |
| 51 | 0.960 | 0.036 |
| 52 | 0.970 | 0.033 |
| 53 | 0.995 | 0.031 |
| 54 | 1.016 | 0.028 |
| 55 | 1.031 | 0.025 |
| 56 | 1.039 | 0.024 |
| 57 | 1.051 | 0.020 |
| 58 | 1.056 | 0.021 |
| 59 | 1.064 | 0.020 |
| 60 | 1.069 | 0.017 |
| 61 | 1.074 | 0.018 |
| 62 | 1.080 | 0.017 |
| 63 | 1.083 | 0.019 |
| 64 | 1.090 | 0.019 |
| 65 | 1.095 | 0.018 |
| 66 | 1.099 | 0.020 |
| 67 | 1.100 | 0.018 |
| 68 | 1.105 | 0.019 |
| 69 | 1.106 | 0.018 |
| 70 | 1.110 | 0.019 |
| 71 | 1.112 | 0.021 |
| 72 | 1.113 | 0.018 |
| 73 | 1.116 | 0.020 |
| 74 | 1.117 | 0.017 |
| 75 | 1.123 | 0.019 |
| 76 | 1.129 | 0.018 |
| 77 | 1.130 | 0.018 |
| 78 | 1.126 | 0.020 |
| 79 | 1.133 | 0.019 |
| 80 | 1.135 | 0.018 |
| 81 | 1.136 | 0.018 |
| 82 | 1.137 | 0.021 |
| 83 | 1.141 | 0.018 |
| 84 | 1.139 | 0.017 |
| 85 | 1.140 | 0.019 |
| 86 | 1.143 | 0.022 |
| 87 | 1.149 | 0.018 |
| 88 | 1.149 | 0.020 |
| 89 | 1.153 | 0.021 |
| AVG | 1.107 | 0.023 |
| TARE | 1.000 | 0.013 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | -0.017 | 0.032 |
| 1 | -0.019 | 0.033 |
| 2 | -0.015 | 0.034 |
| 3 | -0.023 | 0.037 |
| 4 | -0.016 | 0.034 |
| 5 | -0.020 | 0.036 |
| 6 | -0.017 | 0.039 |
| 7 | -0.019 | 0.039 |
| 8 | -0.025 | 0.032 |
| 9 | -0.017 | 0.038 |
| 10 | -0.016 | 0.038 |
| 11 | -0.016 | 0.034 |
| 12 | -0.019 | 0.032 |
| 13 | -0.015 | 0.035 |
| 14 | -0.015 | 0.045 |
| 15 | -0.019 | 0.036 |
| 16 | -0.020 | 0.035 |
| 17 | -0.025 | 0.033 |
| 18 | -0.020 | 0.038 |
| 19 | -0.020 | 0.039 |
| 20 | -0.015 | 0.035 |
| 21 | -0.015 | 0.034 |
| 22 | -0.017 | 0.031 |
| 23 | -0.017 | 0.031 |
| 24 | -0.017 | 0.033 |
| 25 | -0.020 | 0.031 |
| 26 | -0.013 | 0.042 |
| 27 | -0.011 | 0.028 |
| 28 | -0.018 | 0.038 |
| 29 | -0.012 | 0.038 |
| 30 | -0.013 | 0.036 |
| 31 | -0.012 | 0.031 |
| 32 | -0.014 | 0.031 |
| 33 | -0.015 | 0.033 |
| 34 | -0.017 | 0.037 |
| 35 | -0.011 | 0.047 |
| 36 | -0.008 | 0.036 |
| 37 | -0.009 | 0.033 |
| 38 | -0.010 | 0.034 |
| 39 | -0.002 | 0.025 |
| 40 | -0.006 | 0.037 |
| 41 | -0.009 | 0.026 |
| 42 | -0.006 | 0.028 |
| 43 | -0.004 | 0.034 |
| 44 | -0.004 | 0.032 |
| 45 | 0.006 | 0.041 |
| 46 | 0.003 | 0.029 |
| 47 | 0.006 | 0.029 |
| 48 | 0.010 | 0.029 |
| 49 | 0.007 | 0.019 |
| 50 | 0.014 | 0.029 |
| 51 | 0.009 | 0.022 |
| 52 | 0.021 | 0.034 |
| 53 | 0.024 | 0.040 |
| 54 | 0.024 | 0.040 |
| 55 | 0.019 | 0.027 |
| 56 | 0.018 | 0.029 |
| 57 | 0.019 | 0.029 |
| 58 | 0.015 | 0.033 |
| 59 | 0.017 | 0.047 |
| 60 | 0.015 | 0.047 |
| 61 | 0.009 | 0.035 |
| 62 | 0.010 | 0.037 |
| 63 | 0.000 | 0.034 |
| 64 | 0.005 | 0.033 |
| 65 | 0.005 | 0.041 |
| 66 | -0.000 | 0.042 |
| 67 | 0.002 | 0.035 |
| 68 | 0.001 | 0.038 |
| 69 | -0.004 | 0.027 |
| 70 | -0.004 | 0.030 |
| 71 | -0.003 | 0.023 |
| 72 | -0.010 | 0.031 |
| 73 | -0.006 | 0.041 |
| 74 | -0.012 | 0.039 |
| 75 | -0.012 | 0.035 |
| 76 | -0.005 | 0.037 |
| 77 | -0.004 | 0.033 |
| 78 | -0.008 | 0.027 |
| 79 | -0.012 | 0.034 |
| 80 | -0.013 | 0.032 |
| 81 | -0.019 | 0.032 |
| 82 | -0.012 | 0.037 |
| 83 | -0.016 | 0.035 |
| 84 | -0.013 | 0.036 |
| 85 | -0.016 | 0.035 |
| 86 | -0.017 | 0.033 |
| 87 | -0.014 | 0.030 |
| 88 | -0.017 | 0.037 |
| 89 | -0.023 | 0.032 |
| AVG | -0.007 | 0.034 |
| TARE | ----- | ----- |

Table B31 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

| PROBE COORDINATES: VERTICAL COMPONENT | X 0.21 R | Y -0.40 R | Z 0.00 R |
|---|---|---|---|
| DEGREE | AVG VEL | RMS | |
| 0 | -0.057 | 0.056 | |
| 1 | -0.055 | 0.046 | |
| 2 | -0.056 | 0.050 | |
| 3 | -0.060 | 0.043 | |
| 4 | ----- | ----- | |
| 5 | -0.060 | 0.047 | |
| 6 | -0.052 | 0.051 | |
| 7 | -0.054 | 0.049 | |
| 8 | -0.058 | 0.043 | |
| 9 | -0.055 | 0.043 | |
| 10 | -0.050 | 0.051 | |
| 11 | -0.054 | 0.044 | |
| 12 | -0.055 | 0.047 | |
| 13 | -0.050 | 0.039 | |
| 14 | -0.048 | 0.037 | |
| 15 | -0.056 | 0.042 | |
| 16 | -0.047 | 0.055 | |
| 17 | -0.050 | 0.034 | |
| 18 | -0.049 | 0.045 | |
| 19 | -0.051 | 0.049 | |
| 20 | -0.047 | 0.047 | |
| 21 | -0.047 | 0.035 | |
| 22 | -0.052 | 0.034 | |
| 23 | -0.047 | 0.035 | |
| 24 | -0.049 | 0.037 | |
| 25 | -0.045 | 0.034 | |
| 26 | -0.040 | 0.041 | |
| 27 | -0.044 | 0.030 | |
| 28 | -0.042 | 0.026 | |
| 29 | -0.043 | 0.034 | |
| 30 | -0.038 | 0.038 | |
| 31 | -0.039 | 0.043 | |
| 32 | -0.031 | 0.039 | |
| 33 | -0.036 | 0.039 | |
| 34 | -0.035 | 0.031 | |
| 35 | -0.034 | 0.029 | |
| 36 | -0.035 | 0.030 | |
| 37 | -0.031 | 0.039 | |
| 38 | -0.035 | 0.029 | |
| 39 | -0.030 | 0.041 | |
| 40 | -0.030 | 0.039 | |
| 41 | -0.025 | 0.040 | |
| 42 | -0.017 | 0.048 | |
| 43 | -0.022 | 0.050 | |
| 44 | -0.020 | 0.043 | |
| 45 | -0.016 | 0.030 | |
| 46 | -0.013 | 0.035 | |
| 47 | -0.028 | 0.040 | |
| 48 | -0.0[illegible] | 0.040 | |
| 49 | -0.0[illegible] | 0.045 | |
| 50 | 0.0[illegible] | 0.[illegible] | |
| 51 | 0.0[illegible] | 0.[illegible] | |
| 52 | 0.01[illegible] | 0.0[illegible] | |
| 53 | 0.0[illegible] | 0.041 | |
| 54 | 0.024 | 0.[illegible] | |
| 55 | 0.0[illegible] | 0.[illegible] | |
| 56 | -0.0[illegible] | 0.[illegible] | |
| 57 | -0.0[illegible] | 0.[illegible] | |
| 58 | -0.0[illegible] | 0.[illegible] | |
| 59 | -0.0[illegible] | 0.[illegible] | |
| 60 | -0.0[illegible] | 0.[illegible] | |
| 61 | -0.0[illegible] | 0.[illegible] | |
| 62 | -0.0[illegible] | 0.[illegible] | |
| 63 | -0.0[illegible] | 0.[illegible] | |
| 64 | -0.0[illegible] | 0.[illegible] | |
| 65 | -0.0[illegible] | 0.[illegible] | |
| 66 | -0.0[illegible] | 0.[illegible] | |
| 67 | -0.0[illegible] | 0.[illegible] | |
| 68 | -0.0[illegible] | 0.[illegible] | |
| 69 | -0.0[illegible] | 0.[illegible] | |
| 70 | -0.0[illegible] | 0.[illegible] | |
| 71 | -0.0[illegible] | 0.[illegible] | |
| 72 | -0.0[illegible] | 0.[illegible] | |
| 73 | -0.0[illegible] | 0.[illegible] | |
| 74 | -0.0[illegible] | 0.[illegible] | |
| 75 | -0.0[illegible] | 0.[illegible] | |
| 76 | -0.0[illegible] | 0.[illegible] | |
| 77 | -0.0[illegible] | 0.[illegible] | |
| 78 | -0.0[illegible] | 0.[illegible] | |
| 79 | -0.0[illegible] | 0.[illegible] | |
| 80 | -0.0[illegible] | 0.[illegible] | |
| 81 | -0.0[illegible] | 0.[illegible] | |
| 82 | -0.0[illegible] | 0.[illegible] | |
| 83 | -0.0[illegible] | 0.[illegible] | |
| 84 | -0.0[illegible] | 0.[illegible] | |
| 85 | -0.0[illegible] | 0.[illegible] | |
| 86 | -0.0[illegible] | 0.[illegible] | |
| 87 | -0.0[illegible] | 0.[illegible] | |
| 88 | -0.0[illegible] | 0.[illegible] | |
| 89 | -0.0[illegible] | 0.[illegible] | |
| 90 | -0.0[illegible] | 0.[illegible] | |
| 91 | -0.0[illegible] | 0.[illegible] | |
| 92 | -0.0[illegible] | 0.[illegible] | |
| 93 | -0.0[illegible] | 0.[illegible] | |
| 94 | -0.0[illegible] | 0.[illegible] | |
| 95 | -0.0[illegible] | 0.[illegible] | |
| 96 | -0.0[illegible] | 0.[illegible] | |
| 97 | -0.0[illegible] | 0.[illegible] | |
| 98 | -0.0[illegible] | 0.[illegible] | |
| 99 | -0.0[illegible] | 0.[illegible] | |
| 100 | -0.0[illegible] | 0.[illegible] | |
| 101 | -0.0[illegible] | 0.[illegible] | |
| 102 | -0.0[illegible] | 0.[illegible] | |
| 103 | -0.0[illegible] | 0.[illegible] | |
| 104 | -0.0[illegible] | 0.[illegible] | |
| 105 | -0.0[illegible] | 0.[illegible] | |
| 106 | -0.0[illegible] | 0.[illegible] | |
| 107 | -0.0[illegible] | 0.[illegible] | |
| 108 | -0.0[illegible] | 0.[illegible] | |
| 109 | -0.0[illegible] | 0.[illegible] | |
| 110 | -0.0[illegible] | 0.[illegible] | |
| 111 | -0.0[illegible] | 0.[illegible] | |
| 112 | -0.0[illegible] | 0.[illegible] | |
| 113 | -0.0[illegible] | 0.[illegible] | |
| 114 | -0.0[illegible] | 0.[illegible] | |
| 115 | -0.0[illegible] | 0.[illegible] | |
| 116 | -0.0[illegible] | 0.[illegible] | |
| 117 | -0.0[illegible] | 0.[illegible] | |
| 118 | -0.0[illegible] | 0.[illegible] | |
| 119 | -0.0[illegible] | 0.[illegible] | |
| 120 | -0.0[illegible] | 0.[illegible] | |
| 121 | -0.0[illegible] | 0.[illegible] | |
| 122 | -0.0[illegible] | 0.[illegible] | |
| 123 | -0.0[illegible] | 0.[illegible] | |
| 124 | -0.0[illegible] | 0.[illegible] | |
| 125 | -0.0[illegible] | 0.[illegible] | |
| 126 | -0.0[illegible] | 0.[illegible] | |
| 127 | -0.0[illegible] | 0.[illegible] | |
| 128 | -0.0[illegible] | 0.[illegible] | |
| 129 | -0.0[illegible] | 0.[illegible] | |
| 130 | -0.0[illegible] | 0.[illegible] | |
| 131 | -0.0[illegible] | 0.[illegible] | |
| 132 | -0.0[illegible] | 0.[illegible] | |
| 133 | -0.0[illegible] | 0.[illegible] | |
| 134 | -0.0[illegible] | 0.[illegible] | |
| 135 | -0.0[illegible] | 0.[illegible] | |
| 136 | -0.0[illegible] | 0.[illegible] | |
| 137 | -0.0[illegible] | 0.[illegible] | |
| 138 | -0.0[illegible] | 0.[illegible] | |
| 139 | -0.0[illegible] | 0.[illegible] | |
| 140 | -0.0[illegible] | 0.[illegible] | |
| 141 | -0.0[illegible] | 0.[illegible] | |
| 142 | -0.0[illegible] | 0.[illegible] | |
| 143 | -0.0[illegible] | 0.[illegible] | |
| 144 | -0.0[illegible] | 0.[illegible] | |
| 145 | -0.0[illegible] | 0.[illegible] | |
| 146 | -0.0[illegible] | 0.[illegible] | |
| 147 | -0.0[illegible] | 0.[illegible] | |
| 148 | -0.0[illegible] | 0.[illegible] | |
| 149 | -0.0[illegible] | 0.[illegible] | |
| 150 | -0.0[illegible] | 0.[illegible] | |
| 151 | -0.0[illegible] | 0.[illegible] | |
| 152 | -0.0[illegible] | 0.[illegible] | |
| 153 | -0.0[illegible] | 0.[illegible] | |
| 154 | -0.0[illegible] | 0.[illegible] | |
| 155 | -0.0[illegible] | 0.[illegible] | |
| 156 | -0.0[illegible] | 0.[illegible] | |
| 157 | -0.0[illegible] | 0.[illegible] | |
| 158 | -0.0[illegible] | 0.[illegible] | |
| 159 | -0.0[illegible] | 0.[illegible] | |
| 160 | -0.0[illegible] | 0.[illegible] | |
| 161 | -0.0[illegible] | 0.[illegible] | |
| 162 | -0.0[illegible] | 0.[illegible] | |
| 163 | -0.0[illegible] | 0.[illegible] | |
| 164 | -0.0[illegible] | 0.[illegible] | |
| 165 | -0.0[illegible] | 0.[illegible] | |
| 166 | -0.0[illegible] | 0.[illegible] | |
| 167 | -0.0[illegible] | 0.[illegible] | |
| 168 | -0.0[illegible] | 0.[illegible] | |
| 169 | -0.0[illegible] | 0.[illegible] | |
| 170 | -0.0[illegible] | 0.[illegible] | |
| 171 | -0.0[illegible] | 0.[illegible] | |
| 172 | -0.0[illegible] | 0.[illegible] | |
| 173 | -0.0[illegible] | 0.[illegible] | |
| 174 | -0.0[illegible] | 0.[illegible] | |
| 175 | -0.0[illegible] | 0.[illegible] | |
| 176 | -0.0[illegible] | 0.[illegible] | |
| 177 | -0.0[illegible] | 0.[illegible] | |
| 178 | -0.0[illegible] | 0.[illegible] | |
| 179 | -0.0[illegible] | 0.[illegible] | |
| 180 | -0.0[illegible] | 0.[illegible] | |
| 181 | -0.0[illegible] | 0.[illegible] | |
| 182 | -0.0[illegible] | 0.[illegible] | |
| 183 | -0.0[illegible] | 0.[illegible] | |
| 184 | -0.0[illegible] | 0.[illegible] | |
| 185 | -0.0[illegible] | 0.[illegible] | |
| 186 | -0.0[illegible] | 0.[illegible] | |
| 187 | -0.0[illegible] | 0.[illegible] | |
| 188 | -0.0[illegible] | 0.[illegible] | |
| 189 | -0.0[illegible] | 0.[illegible] | |
| 190 | -0.0[illegible] | 0.[illegible] | |
| 191 | -0.0[illegible] | 0.[illegible] | |
| 192 | -0.0[illegible] | 0.[illegible] | |
| 193 | -0.0[illegible] | 0.[illegible] | |
| 194 | -0.0[illegible] | 0.[illegible] | |
| 195 | -0.0[illegible] | 0.[illegible] | |
| 196 | -0.0[illegible] | 0.[illegible] | |
| 197 | -0.0[illegible] | 0.[illegible] | |
| 198 | -0.0[illegible] | 0.[illegible] | |
| 199 | -0.0[illegible] | 0.[illegible] | |
| 200 | -0.0[illegible] | 0.[illegible] | |
| 201 | -0.0[illegible] | 0.[illegible] | |
| 202 | -0.0[illegible] | 0.[illegible] | |
| 203 | -0.0[illegible] | 0.[illegible] | |
| 204 | -0.0[illegible] | 0.[illegible] | |
| 205 | -0.0[illegible] | 0.[illegible] | |
| 206 | -0.0[illegible] | 0.[illegible] | |
| 207 | -0.0[illegible] | 0.[illegible] | |
| 208 | -0.0[illegible] | 0.[illegible] | |
| 209 | -0.0[illegible] | 0.[illegible] | |
| 210 | -0.0[illegible] | 0.[illegible] | |
| 211 | -0.0[illegible] | 0.[illegible] | |
| 212 | -0.0[illegible] | 0.[illegible] | |
| 213 | -0.0[illegible] | 0.[illegible] | |
| 214 | -0.0[illegible] | 0.[illegible] | |
| 215 | -0.0[illegible] | 0.[illegible] | |
| 216 | -0.0[illegible] | 0.[illegible] | |
| 217 | -0.0[illegible] | 0.[illegible] | |
| 218 | -0.0[illegible] | 0.[illegible] | |
| 219 | -0.0[illegible] | 0.[illegible] | |
| 220 | -0.0[illegible] | 0.[illegible] | |
| 221 | -0.0[illegible] | 0.[illegible] | |
| 222 | -0.0[illegible] | 0.[illegible] | |
| 223 | -0.0[illegible] | 0.[illegible] | |
| 224 | -0.0[illegible] | 0.[illegible] | |
| 225 | -0.0[illegible] | 0.[illegible] | |
| 226 | -0.0[illegible] | 0.[illegible] | |
| 227 | -0.0[illegible] | 0.[illegible] | |
| 228 | -0.0[illegible] | 0.[illegible] | |
| 229 | -0.0[illegible] | 0.[illegible] | |
| 230 | -0.0[illegible] | 0.[illegible] | |
| 231 | -0.0[illegible] | 0.[illegible] | |
| 232 | -0.0[illegible] | 0.[illegible] | |
| 233 | -0.0[illegible] | 0.[illegible] | |
| 234 | -0.0[illegible] | 0.[illegible] | |
| 235 | -0.0[illegible] | 0.[illegible] | |
| 236 | -0.0[illegible] | 0.[illegible] | |
| 237 | -0.0[illegible] | 0.[illegible] | |
| 238 | -0.0[illegible] | 0.[illegible] | |
| 239 | -0.0[illegible] | 0.[illegible] | |
| 240 | -0.0[illegible] | 0.[illegible] | |
| 241 | -0.0[illegible] | 0.[illegible] | |
| 242 | -0.0[illegible] | 0.[illegible] | |
| 243 | -0.0[illegible] | 0.[illegible] | |
| 244 | -0.0[illegible] | 0.[illegible] | |
| 245 | -0.0[illegible] | 0.[illegible] | |
| 246 | -0.0[illegible] | 0.[illegible] | |
| 247 | -0.0[illegible] | 0.[illegible] | |
| 248 | -0.0[illegible] | 0.[illegible] | |
| 249 | -0.0[illegible] | 0.[illegible] | |
| 250 | -0.0[illegible] | 0.[illegible] | |
| 251 | -0.0[illegible] | 0.[illegible] | |
| 252 | -0.0[illegible] | 0.[illegible] | |
| 253 | -0.0[illegible] | 0.[illegible] | |
| 254 | -0.0[illegible] | 0.[illegible] | |
| 255 | -0.0[illegible] | 0.[illegible] | |
| 256 | -0.0[illegible] | 0.[illegible] | |
| 257 | -0.0[illegible] | 0.[illegible] | |
| 258 | -0.0[illegible] | 0.[illegible] | |
| 259 | -0.0[illegible] | 0.[illegible] | |
| 260 | -0.0[illegible] | 0.[illegible] | |
| 261 | -0.0[illegible] | 0.[illegible] | |
| 262 | -0.0[illegible] | 0.[illegible] | |
| 263 | -0.0[illegible] | 0.[illegible] | |
| 264 | -0.0[illegible] | 0.[illegible] | |
| 265 | -0.0[illegible] | 0.[illegible] | |
| 266 | -0.0[illegible] | 0.[illegible] | |
| 267 | -0.0[illegible] | 0.[illegible] | |
| 268 | -0.0[illegible] | 0.[illegible] | |
| 269 | -0.0[illegible] | 0.[illegible] | |
| 270 | -0.0[illegible] | 0.[illegible] | |
| 271 | -0.0[illegible] | 0.[illegible] | |
| 272 | -0.0[illegible] | 0.[illegible] | |
| 273 | -0.0[illegible] | 0.[illegible] | |
| 274 | -0.0[illegible] | 0.[illegible] | |
| 275 | -0.0[illegible] | 0.[illegible] | |
| 276 | -0.0[illegible] | 0.[illegible] | |
| 277 | -0.0[illegible] | 0.[illegible] | |
| 278 | -0.0[illegible] | 0.[illegible] | |
| 279 | -0.0[illegible] | 0.[illegible] | |
| 280 | -0.0[illegible] | 0.[illegible] | |
| 281 | -0.0[illegible] | 0.[illegible] | |
| 282 | -0.0[illegible] | 0.[illegible] | |
| 283 | -0.0[illegible] | 0.[illegible] | |
| 284 | -0.0[illegible] | 0.[illegible] | |
| 285 | -0.0[illegible] | 0.[illegible] | |
| 286 | -0.0[illegible] | 0.[illegible] | |
| 287 | -0.0[illegible] | 0.[illegible] | |
| 288 | -0.0[illegible] | 0.[illegible] | |
| 289 | -0.0[illegible] | 0.[illegible] | |
| 290 | -0.0[illegible] | 0.[illegible] | |
| 291 | -0.0[illegible] | 0.[illegible] | |
| 292 | -0.0[illegible] | 0.[illegible] | |
| 293 | -0.0[illegible] | 0.[illegible] | |
| 294 | -0.0[illegible] | 0.[illegible] | |
| 295 | -0.0[illegible] | 0.[illegible] | |
| 296 | -0.0[illegible] | 0.[illegible] | |
| 297 | -0.0[illegible] | 0.[illegible] | |
| 298 | -0.0[illegible] | 0.[illegible] | |
| 299 | -0.0[illegible] | 0.[illegible] | |
| 300 | -0.0[illegible] | 0.[illegible] | |
| 301 | -0.0[illegible] | 0.[illegible] | |
| 302 | -0.0[illegible] | 0.[illegible] | |
| 303 | -0.0[illegible] | 0.[illegible] | |
| 304 | -0.0[illegible] | 0.[illegible] | |
| 305 | -0.0[illegible] | 0.[illegible] | |
| 306 | -0.0[illegible] | 0.[illegible] | |
| 307 | -0.0[illegible] | 0.[illegible] | |
| 308 | -0.0[illegible] | 0.[illegible] | |
| 309 | -0.0[illegible] | 0.[illegible] | |
| 310 | -0.0[illegible] | 0.[illegible] | |
| 311 | -0.0[illegible] | 0.[illegible] | |
| 312 | -0.0[illegible] | 0.[illegible] | |
| 313 | -0.0[illegible] | 0.[illegible] | |
| 314 | -0.0[illegible] | 0.[illegible] | |
| 315 | -0.0[illegible] | 0.[illegible] | |
| 316 | -0.0[illegible] | 0.[illegible] | |
| 317 | -0.0[illegible] | 0.[illegible] | |
| 318 | -0.0[illegible] | 0.[illegible] | |
| 319 | -0.0[illegible] | 0.[illegible] | |
| 320 | -0.0[illegible] | 0.[illegible] | |
| 321 | -0.0[illegible] | 0.[illegible] | |
| 322 | -0.0[illegible] | 0.[illegible] | |
| 323 | -0.0[illegible] | 0.[illegible] | |
| 324 | -0.0[illegible] | 0.[illegible] | |
| 325 | -0.0[illegible] | 0.[illegible] | |
| 326 | -0.0[illegible] | 0.[illegible] | |
| 327 | -0.0[illegible] | 0.[illegible] | |
| 328 | -0.0[illegible] | 0.[illegible] | |
| 329 | -0.0[illegible] | 0.[illegible] | |
| 330 | -0.0[illegible] | 0.[illegible] | |
| 331 | -0.0[illegible] | 0.[illegible] | |
| 332 | -0.0[illegible] | 0.[illegible] | |
| 333 | -0.0[illegible] | 0.[illegible] | |
| 334 | -0.0[illegible] | 0.[illegible] | |
| 335 | -0.0[illegible] | 0.[illegible] | |
| 336 | -0.0[illegible] | 0.[illegible] | |
| 337 | -0.0[illegible] | 0.[illegible] | |
| 338 | -0.0[illegible] | 0.[illegible] | |
| 339 | -0.0[illegible] | 0.[illegible] | |
| 340 | -0.0[illegible] | 0.[illegible] | |
| 341 | -0.0[illegible] | 0.[illegible] | |
| 342 | -0.0[illegible] | 0.[illegible] | |
| 343 | -0.0[illegible] | 0.[illegible] | |
| 344 | -0.0[illegible] | 0.[illegible] | |
| 345 | -0.0[illegible] | 0.[illegible] | |
| 346 | -0.0[illegible] | 0.[illegible] | |
| 347 | -0.0[illegible] | 0.[illegible] | |
| 348 | -0.0[illegible] | 0.[illegible] | |
| 349 | -0.0[illegible] | 0.[illegible] | |
| 350 | -0.0[illegible] | 0.[illegible] | |
| 351 | -0.0[illegible] | 0.[illegible] | |
| 352 | -0.0[illegible] | 0.[illegible] | |
| 353 | -0.0[illegible] | 0.[illegible] | |
| 354 | -0.0[illegible] | 0.[illegible] | |
| 355 | -0.0[illegible] | 0.[illegible] | |
| 356 | -0.0[illegible] | 0.[illegible] | |
| 357 | -0.0[illegible] | 0.[illegible] | |
| 358 | -0.0[illegible] | 0.[illegible] | |
| 359 | -0.0[illegible] | 0.[illegible] | |
| TARE | ----- | ----- | |

Table B32 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

| | X | Y | Z |
|---|---|---|---|
| PROBE COORDINATES: | 0.21 R | -0.50 R | 0.00 R |

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.999 | 0.070 |
| 1 | 0.999 | 0.054 |
| 2 | 0.997 | 0.045 |
| 3 | 1.003 | 0.039 |
| 4 | 1.043 | 0.053 |
| 5 | 1.061 | 0.040 |
| 6 | 1.069 | 0.034 |
| 7 | 1.088 | 0.034 |
| 8 | 1.107 | 0.037 |
| 9 | 1.116 | 0.037 |
| 10 | 1.107 | 0.037 |
| 11 | 1.131 | 0.033 |
| 12 | 1.145 | 0.024 |
| 13 | 1.152 | 0.026 |
| 14 | 1.156 | 0.029 |
| 15 | 1.161 | 0.022 |
| 16 | 1.167 | 0.025 |
| 17 | 1.162 | 0.024 |
| 18 | 1.164 | 0.022 |
| 19 | 1.163 | 0.024 |
| 20 | 1.157 | 0.019 |
| 21 | 1.157 | 0.021 |
| 22 | 1.157 | 0.022 |
| 23 | 1.157 | 0.025 |
| 24 | 1.153 | 0.021 |
| 25 | 1.152 | 0.023 |
| 26 | 1.150 | 0.022 |
| 27 | 1.151 | 0.022 |
| 28 | 1.146 | 0.021 |
| 29 | 1.147 | 0.025 |
| 30 | 1.143 | 0.020 |
| 31 | 1.144 | 0.021 |
| 32 | 1.145 | 0.022 |
| 33 | 1.140 | 0.024 |
| 34 | 1.137 | 0.022 |
| 35 | 1.134 | 0.020 |
| 36 | 1.131 | 0.021 |
| 37 | 1.125 | 0.021 |
| 38 | 1.126 | 0.024 |
| 39 | 1.122 | 0.024 |
| 40 | 1.115 | 0.023 |
| 41 | 1.109 | 0.024 |
| 42 | 1.108 | 0.026 |
| 43 | 1.106 | 0.024 |
| 44 | 1.101 | 0.027 |
| 45 | 1.091 | 0.033 |
| 46 | 1.080 | 0.028 |
| 47 | 1.068 | 0.038 |
| 48 | 1.049 | 0.047 |
| 49 | 1.026 | 0.054 |
| 50 | 0.991 | 0.089 |
| 51 | 0.952 | 0.109 |
| 52 | 0.913 | 0.143 |
| 53 | 0.914 | 0.111 |
| 54 | 0.912 | 0.079 |
| 55 | 0.947 | 0.066 |
| 56 | 0.987 | 0.071 |
| 57 | 0.977 | 0.049 |
| 58 | 0.997 | 0.044 |
| 59 | 0.997 | 0.032 |
| 60 | 1.007 | 0.033 |
| 61 | 1.026 | 0.050 |
| 62 | 1.029 | 0.049 |
| 63 | 1.025 | 0.045 |
| 64 | 1.030 | 0.044 |
| 65 | 1.036 | 0.046 |
| 66 | 1.036 | 0.054 |
| 67 | 1.029 | 0.055 |
| 68 | 1.039 | 0.063 |
| 69 | 1.041 | 0.062 |
| 70 | 1.055 | 0.068 |
| 71 | 1.056 | 0.072 |
| 72 | 1.015 | 0.071 |
| 73 | 1.034 | 0.071 |
| 74 | 1.006 | 0.074 |
| 75 | 1.020 | 0.066 |
| 76 | 1.036 | 0.072 |
| 77 | 0.996 | 0.058 |
| 78 | 1.019 | 0.067 |
| 79 | 0.973 | 0.035 |
| 80 | 0.980 | 0.034 |
| 81 | 0.970 | 0.032 |
| 82 | 0.968 | 0.028 |
| 83 | 0.946 | 0.024 |
| 84 | 0.957 | 0.043 |
| 85 | 0.952 | 0.036 |
| 86 | 0.966 | 0.041 |
| 87 | 0.908 | 0.045 |
| 88 | 0.980 | 0.055 |
| 89 | 0.950 | 0.055 |
| AVG | 1.057 | 0.040 |
| TARE | 1.036 | 0.018 |

VERTICAL COMPONENT

| DEGREES | AVG VEL | RMS |
|---|---|---|
| 0 | -0.056 | 0.034 |
| 1 | -0.055 | 0.031 |
| 2 | -0.058 | 0.030 |
| 3 | -0.058 | 0.034 |
| 4 | -0.061 | 0.029 |
| 5 | -0.060 | 0.033 |
| 6 | -0.060 | 0.028 |
| 7 | -0.057 | 0.027 |
| 8 | -0.064 | 0.025 |
| 9 | -0.056 | 0.034 |
| 10 | -0.059 | 0.030 |
| 11 | -0.055 | 0.031 |
| 12 | -0.056 | 0.030 |
| 13 | -0.060 | 0.033 |
| 14 | -0.059 | 0.026 |
| 15 | -0.055 | 0.031 |
| 16 | -0.050 | 0.030 |
| 17 | -0.057 | 0.028 |
| 18 | -0.056 | 0.032 |
| 19 | -0.048 | 0.033 |
| 20 | -0.054 | 0.026 |
| 21 | -0.047 | 0.029 |
| 22 | -0.048 | 0.031 |
| 23 | -0.045 | 0.031 |
| 24 | -0.046 | 0.034 |
| 25 | -0.044 | 0.034 |
| 26 | -0.047 | 0.032 |
| 27 | -0.042 | 0.032 |
| 28 | -0.042 | 0.033 |
| 29 | -0.043 | 0.028 |
| 30 | -0.044 | 0.031 |
| 31 | -0.038 | 0.036 |
| 32 | -0.040 | 0.036 |
| 33 | -0.041 | 0.029 |
| 34 | -0.047 | 0.031 |
| 35 | -0.048 | 0.033 |
| 36 | -0.041 | 0.027 |
| 37 | -0.043 | 0.031 |
| 38 | -0.043 | 0.030 |
| 39 | -0.041 | 0.028 |
| 40 | -0.039 | 0.031 |
| 41 | -0.040 | 0.031 |
| 42 | -0.041 | 0.032 |
| 43 | -0.044 | 0.030 |
| 44 | -0.043 | 0.025 |
| 45 | -0.035 | 0.031 |
| 46 | -0.037 | 0.026 |
| 47 | -0.035 | 0.032 |
| 48 | -0.035 | 0.029 |
| 49 | -0.032 | 0.035 |
| 50 | -0.036 | 0.029 |
| 51 | -0.034 | 0.033 |
| 52 | -0.038 | 0.027 |
| 53 | -0.033 | 0.030 |
| 54 | -0.039 | 0.028 |
| 55 | -0.036 | 0.031 |
| 56 | -0.032 | 0.030 |
| 57 | -0.031 | 0.033 |
| 58 | -0.039 | 0.032 |
| 59 | -0.033 | 0.025 |
| 60 | -0.036 | 0.027 |
| 61 | -0.033 | 0.025 |
| 62 | -0.035 | 0.027 |
| 63 | -0.035 | 0.027 |
| 64 | -0.033 | 0.029 |
| 65 | -0.031 | 0.033 |
| 66 | -0.029 | 0.032 |
| 67 | -0.031 | 0.032 |
| 68 | -0.034 | 0.028 |
| 69 | -0.034 | 0.027 |
| 70 | -0.021 | 0.029 |
| 71 | -0.026 | 0.030 |
| 72 | -0.025 | 0.029 |
| 73 | -0.026 | 0.030 |
| 74 | -0.029 | 0.031 |
| 75 | -0.027 | 0.034 |
| 76 | -0.024 | 0.036 |
| 77 | -0.023 | 0.031 |
| 78 | -0.018 | 0.036 |
| 79 | -0.015 | 0.038 |
| 80 | -0.008 | 0.037 |
| 81 | -0.016 | 0.035 |
| 82 | -0.022 | 0.032 |
| 83 | -0.029 | 0.034 |
| 84 | -0.041 | 0.038 |
| 85 | -0.042 | 0.032 |
| 86 | -0.043 | 0.034 |
| 87 | -0.043 | 0.037 |
| 88 | -0.050 | 0.034 |
| 89 | -0.048 | 0.039 |
| AVG | -0.041 | 0.031 |
| TARE | -.009 | 0.013 |

Table B33 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X 0.21 R Y -8.70 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.136 | 0.023 |
| 1 | 1.139 | 0.021 |
| 2 | 1.137 | 0.024 |
| 3 | 1.142 | 0.023 |
| 4 | 1.143 | 0.024 |
| 5 | 1.145 | 0.023 |
| 6 | 1.145 | 0.025 |
| 7 | 1.142 | 0.022 |
| 8 | 1.148 | 0.024 |
| 9 | 1.148 | 0.019 |
| 10 | 1.138 | 0.025 |
| 11 | 1.139 | 0.023 |
| 12 | 1.142 | 0.026 |
| 13 | ----- | ----- |
| 14 | 1.142 | 0.020 |
| 15 | 1.140 | 0.021 |
| 16 | 1.138 | 0.021 |
| 17 | 1.139 | 0.021 |
| 18 | 1.136 | 0.023 |
| 19 | 1.137 | 0.020 |
| 20 | 1.141 | 0.023 |
| 21 | 1.132 | 0.020 |
| 22 | 1.132 | 0.021 |
| 23 | 1.129 | 0.023 |
| 24 | 1.132 | 0.022 |
| 25 | 1.131 | 0.019 |
| 26 | 1.125 | 0.020 |
| 27 | 1.123 | 0.019 |
| 28 | 1.124 | 0.021 |
| 29 | 1.124 | 0.018 |
| 30 | 1.121 | 0.019 |
| 31 | 1.125 | 0.020 |
| 32 | 1.118 | 0.019 |
| 33 | 1.114 | 0.020 |
| 34 | 1.110 | 0.020 |
| 35 | 1.105 | 0.019 |
| 36 | 1.103 | 0.019 |
| 37 | 1.107 | 0.022 |
| 38 | 1.100 | 0.018 |
| 39 | 1.098 | 0.021 |
| 40 | 1.102 | 0.024 |
| 41 | 1.098 | 0.020 |
| 42 | 1.098 | 0.023 |
| 43 | 1.095 | 0.026 |
| 44 | 1.095 | 0.027 |
| 45 | 1.094 | 0.028 |
| 46 | 1.078 | 0.040 |
| 47 | 1.059 | 0.052 |
| 48 | 1.016 | 0.055 |
| 49 | 0.987 | 0.058 |
| 50 | 0.985 | 0.057 |
| 51 | 0.999 | 0.079 |
| 52 | 1.013 | 0.067 |
| 53 | 1.032 | 0.049 |
| 54 | 1.038 | 0.038 |
| 55 | 1.037 | 0.031 |
| 56 | 1.042 | 0.033 |
| 57 | 1.054 | 0.031 |
| 58 | 1.059 | 0.025 |
| 59 | 1.055 | 0.026 |
| 60 | 1.055 | 0.030 |
| 61 | 1.061 | 0.031 |
| 62 | 1.064 | 0.033 |
| 63 | 1.064 | 0.025 |
| 64 | 1.069 | 0.040 |
| 65 | 1.075 | 0.041 |
| 66 | 1.082 | 0.036 |
| 67 | 1.088 | 0.032 |
| 68 | 1.091 | 0.057 |
| 69 | 1.082 | 0.056 |
| 70 | 1.080 | 0.048 |
| 71 | 1.076 | 0.067 |
| 72 | 1.084 | 0.061 |
| 73 | 1.087 | 0.046 |
| 74 | 1.098 | 0.060 |
| 75 | 1.089 | 0.050 |
| 76 | 1.123 | 0.027 |
| 77 | 1.127 | 0.022 |
| 78 | 1.130 | 0.024 |
| 79 | 1.131 | 0.023 |
| 80 | 1.132 | 0.022 |
| 81 | 1.131 | 0.022 |
| 82 | 1.137 | 0.022 |
| 83 | 1.134 | 0.020 |
| 84 | 1.132 | 0.023 |
| 85 | 1.132 | 0.020 |
| 86 | 1.132 | 0.023 |
| 87 | 1.136 | 0.024 |
| 88 | 1.136 | 0.027 |
| 89 | 1.139 | 0.021 |
| AVG | 1.103 | 0.031 |
| TARE | 1.014 | 0.018 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.029 | 0.052 |
| 1 | 0.034 | 0.041 |
| 2 | 0.036 | 0.047 |
| 3 | 0.037 | 0.036 |
| 4 | 0.032 | 0.032 |
| 5 | 0.036 | 0.039 |
| 6 | 0.035 | 0.050 |
| 7 | 0.033 | 0.047 |
| 8 | 0.036 | 0.043 |
| 9 | 0.041 | 0.059 |
| 10 | ----- | ----- |
| 11 | 0.040 | 0.060 |
| 12 | 0.045 | 0.070 |
| 13 | 0.038 | 0.044 |
| 14 | 0.035 | 0.045 |
| 15 | 0.033 | 0.050 |
| 16 | 0.040 | 0.048 |
| 17 | 0.036 | 0.044 |
| 18 | 0.034 | 0.038 |
| 19 | 0.033 | 0.045 |
| 20 | 0.027 | 0.038 |
| 21 | 0.031 | 0.054 |
| 22 | 0.029 | 0.040 |
| 23 | 0.021 | 0.029 |
| 24 | 0.024 | 0.045 |
| 25 | 0.026 | 0.038 |
| 26 | 0.033 | 0.047 |
| 27 | 0.025 | 0.045 |
| 28 | 0.038 | 0.052 |
| 29 | 0.034 | 0.046 |
| 30 | 0.030 | 0.043 |
| 31 | 0.018 | 0.043 |
| 32 | 0.023 | 0.045 |
| 33 | 0.023 | 0.059 |
| 34 | 0.022 | 0.055 |
| 35 | 0.018 | 0.048 |
| 36 | 0.020 | 0.057 |
| 37 | 0.019 | 0.040 |
| 38 | 0.023 | 0.035 |
| 39 | 0.015 | 0.037 |
| 40 | 0.012 | 0.024 |
| 41 | 0.007 | 0.025 |
| 42 | 0.012 | 0.039 |
| 43 | 0.010 | 0.031 |
| 44 | 0.011 | 0.040 |
| 45 | 0.010 | 0.054 |
| 46 | 0.005 | 0.034 |
| 47 | 0.005 | 0.072 |
| 48 | 0.002 | 0.070 |
| 49 | -0.000 | 0.056 |
| 50 | 0.018 | 0.050 |
| 51 | 0.021 | 0.029 |
| 52 | 0.021 | 0.030 |
| 53 | 0.012 | 0.033 |
| 54 | 0.018 | 0.032 |
| 55 | 0.024 | 0.024 |
| 56 | 0.021 | 0.022 |
| 57 | 0.017 | 0.021 |
| 58 | 0.013 | 0.042 |
| 59 | 0.019 | 0.048 |
| 60 | 0.017 | 0.035 |
| 61 | 0.010 | 0.041 |
| 62 | 0.013 | 0.040 |
| 63 | 0.021 | 0.032 |
| 64 | 0.020 | 0.052 |
| 65 | 0.016 | 0.045 |
| 66 | 0.020 | 0.032 |
| 67 | 0.029 | 0.041 |
| 68 | 0.034 | 0.034 |
| 69 | 0.025 | 0.044 |
| 70 | 0.026 | 0.032 |
| 71 | 0.024 | 0.044 |
| 72 | 0.029 | 0.035 |
| 73 | 0.032 | 0.046 |
| 74 | 0.029 | 0.045 |
| 75 | 0.030 | 0.047 |
| 76 | 0.026 | 0.043 |
| 77 | 0.031 | 0.045 |
| 78 | 0.032 | 0.046 |
| 79 | 0.036 | 0.047 |
| 80 | 0.036 | 0.053 |
| 81 | 0.037 | 0.049 |
| 82 | 0.030 | 0.040 |
| 83 | 0.031 | 0.031 |
| 84 | 0.032 | 0.042 |
| 85 | 0.029 | 0.035 |
| 86 | 0.035 | 0.050 |
| 87 | 0.036 | 0.046 |
| 88 | 0.027 | 0.039 |
| 89 | 0.037 | 0.043 |
| AVG | 0.025 | 0.040 |
| TARE | -.004 | 0.013 |

Table B34 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X 0.21 R Y -0.80 R Z 0.80 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.122 | 0.020 |
| 1 | 1.125 | 0.021 |
| 2 | 1.119 | 0.018 |
| 3 | 1.120 | 0.020 |
| 4 | 1.121 | 0.016 |
| 5 | 1.122 | 0.021 |
| 6 | 1.116 | 0.018 |
| 7 | 1.117 | 0.020 |
| 8 | 1.120 | 0.019 |
| 9 | 1.124 | 0.018 |
| 10 | 1.121 | 0.018 |
| 11 | 1.120 | 0.018 |
| 12 | 1.121 | 0.021 |
| 13 | 1.121 | 0.016 |
| 14 | 1.114 | 0.019 |
| 15 | 1.116 | 0.022 |
| 16 | 1.116 | 0.019 |
| 17 | 1.115 | 0.020 |
| 18 | 1.111 | 0.021 |
| 19 | 1.112 | 0.018 |
| 20 | 1.112 | 0.020 |
| 21 | 1.111 | 0.018 |
| 22 | 1.106 | 0.021 |
| 23 | 1.106 | 0.020 |
| 24 | 1.106 | 0.019 |
| 25 | 1.104 | 0.020 |
| 26 | 1.104 | 0.019 |
| 27 | 1.103 | 0.021 |
| 28 | 1.098 | 0.019 |
| 29 | 1.098 | 0.017 |
| 30 | 1.094 | 0.020 |
| 31 | 1.090 | 0.018 |
| 32 | 1.087 | 0.020 |
| 33 | 1.087 | 0.017 |
| 34 | 1.089 | 0.018 |
| 35 | 1.084 | 0.021 |
| 36 | 1.085 | 0.021 |
| 37 | 1.078 | 0.015 |
| 38 | 1.078 | 0.019 |
| 39 | 1.076 | 0.019 |
| 40 | 1.077 | 0.019 |
| 41 | 1.073 | 0.022 |
| 42 | 1.071 | 0.020 |
| 43 | 1.067 | 0.021 |
| 44 | 1.063 | 0.020 |
| 45 | 1.062 | 0.024 |
| 46 | 1.049 | 0.026 |
| 47 | 1.050 | 0.026 |
| 48 | 1.011 | 0.028 |
| 49 | 0.994 | 0.029 |
| 50 | 0.973 | 0.035 |
| 51 | 0.956 | 0.034 |
| 52 | 0.970 | 0.037 |
| 53 | 0.906 | 0.035 |
| 54 | 1.004 | 0.026 |
| 55 | 1.021 | 0.020 |
| 56 | 1.032 | 0.024 |
| 57 | 1.039 | 0.022 |
| 58 | 1.034 | 0.024 |
| 59 | 1.036 | 0.026 |
| 60 | 1.033 | 0.026 |
| 61 | 1.073 | 0.019 |
| 62 | 1.074 | 0.022 |
| 63 | 1.080 | 0.025 |
| 64 | 1.084 | 0.022 |
| 65 | 1.088 | 0.019 |
| 66 | 1.087 | 0.021 |
| 67 | 1.091 | 0.020 |
| 68 | 1.093 | 0.019 |
| 69 | 1.095 | 0.022 |
| 70 | 1.102 | 0.021 |
| 71 | 1.105 | 0.024 |
| 72 | 1.102 | 0.019 |
| 73 | 1.099 | 0.018 |
| 74 | 1.105 | 0.022 |
| 75 | 1.108 | 0.023 |
| 76 | 1.111 | 0.022 |
| 77 | 1.112 | 0.022 |
| 78 | 1.115 | 0.021 |
| 79 | 1.116 | 0.021 |
| 80 | 1.115 | 0.021 |
| 81 | 1.115 | 0.021 |
| 82 | 1.117 | 0.021 |
| 83 | 1.116 | 0.021 |
| 84 | 1.122 | 0.019 |
| 85 | 1.123 | 0.021 |
| 86 | 1.124 | 0.020 |
| 87 | 1.121 | 0.019 |
| 88 | 1.124 | 0.022 |
| 89 | 1.121 | 0.020 |
| AVG | 1.088 | 0.021 |
| TARE | 1.007 | 0.015 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.043 | 0.043 |
| 1 | 0.039 | 0.039 |
| 2 | 0.043 | 0.043 |
| 3 | 0.046 | 0.043 |
| 4 | 0.053 | 0.056 |
| 5 | 0.038 | 0.039 |
| 6 | 0.041 | 0.054 |
| 7 | 0.045 | 0.056 |
| 8 | 0.039 | 0.039 |
| 9 | 0.039 | 0.043 |
| 10 | 0.046 | 0.045 |
| 11 | 0.044 | 0.061 |
| 12 | 0.034 | 0.047 |
| 13 | 0.031 | 0.049 |
| 14 | 0.033 | 0.038 |
| 15 | 0.038 | 0.039 |
| 16 | 0.040 | 0.050 |
| 17 | 0.032 | 0.044 |
| 18 | 0.031 | 0.037 |
| 19 | 0.036 | 0.050 |
| 20 | 0.035 | 0.043 |
| 21 | 0.034 | 0.053 |
| 22 | 0.038 | 0.040 |
| 23 | 0.039 | 0.054 |
| 24 | 0.022 | 0.036 |
| 25 | 0.029 | 0.045 |
| 26 | 0.029 | 0.043 |
| 27 | 0.030 | 0.051 |
| 28 | 0.034 | 0.052 |
| 29 | 0.026 | 0.041 |
| 30 | 0.027 | 0.045 |
| 31 | 0.024 | 0.049 |
| 32 | 0.023 | 0.041 |
| 33 | 0.019 | 0.041 |
| 34 | 0.025 | 0.054 |
| 35 | 0.020 | 0.047 |
| 36 | 0.023 | 0.044 |
| 37 | 0.009 | 0.041 |
| 38 | 0.015 | 0.049 |
| 39 | 0.010 | 0.047 |
| 40 | 0.002 | 0.041 |
| 41 | 0.011 | 0.047 |
| 42 | -0.003 | 0.044 |
| 43 | -0.000 | 0.049 |
| 44 | -0.011 | 0.047 |
| 45 | -0.007 | 0.054 |
| 46 | -0.018 | 0.059 |
| 47 | -0.013 | 0.055 |
| 48 | -0.026 | 0.053 |
| 49 | -0.031 | 0.041 |
| 50 | -0.030 | 0.045 |
| 51 | -0.009 | 0.050 |
| 52 | -0.003 | 0.039 |
| 53 | 0.011 | 0.043 |
| 54 | 0.027 | 0.047 |
| 55 | 0.017 | 0.046 |
| 56 | 0.008 | 0.038 |
| 57 | 0.027 | 0.043 |
| 58 | 0.035 | 0.041 |
| 59 | 0.029 | 0.040 |
| 60 | 0.031 | 0.045 |
| 61 | 0.030 | 0.040 |
| 62 | 0.031 | 0.043 |
| 63 | 0.037 | 0.042 |
| 64 | 0.037 | 0.046 |
| 65 | 0.035 | 0.041 |
| 66 | 0.043 | 0.039 |
| 67 | 0.034 | 0.044 |
| 68 | 0.043 | 0.043 |
| 69 | 0.037 | 0.044 |
| 70 | 0.040 | 0.045 |
| 71 | 0.037 | 0.043 |
| 72 | 0.042 | 0.040 |
| 73 | 0.050 | 0.046 |
| 74 | 0.045 | 0.043 |
| 75 | 0.041 | 0.043 |
| 76 | 0.037 | 0.038 |
| 77 | 0.041 | 0.036 |
| 78 | 0.039 | 0.040 |
| 79 | 0.039 | 0.045 |
| 80 | 0.038 | 0.038 |
| 81 | 0.034 | 0.035 |
| 82 | 0.044 | 0.044 |
| 83 | 0.043 | 0.036 |
| 84 | 0.041 | 0.034 |
| 85 | 0.039 | 0.044 |
| 86 | 0.040 | 0.039 |
| 87 | 0.042 | 0.046 |
| 88 | 0.043 | 0.039 |
| 89 | 0.041 | 0.040 |
| AVG | 0.028 | 0.045 |
| TARE | -.007 | 0.015 |

Table B35 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X 0.21 R Y -0.90 R Z 0.03 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.076 | 0.019 |
| 1 | 1.077 | 0.019 |
| 2 | 1.075 | 0.020 |
| 3 | 1.078 | 0.017 |
| 4 | 1.083 | 0.019 |
| 5 | 1.085 | 0.018 |
| 6 | 1.086 | 0.019 |
| 7 | 1.085 | 0.020 |
| 8 | 1.087 | 0.019 |
| 9 | 1.088 | 0.019 |
| 10 | 1.086 | 0.018 |
| 11 | 1.088 | 0.021 |
| 12 | 1.090 | 0.018 |
| 13 | 1.088 | 0.019 |
| 14 | 1.085 | 0.017 |
| 15 | 1.086 | 0.019 |
| 16 | 1.085 | 0.021 |
| 17 | 1.081 | 0.020 |
| 18 | 1.082 | 0.015 |
| 19 | 1.084 | 0.018 |
| 20 | 1.092 | 0.017 |
| 21 | 1.076 | 0.019 |
| 22 | 1.091 | 0.019 |
| 23 | 1.080 | 0.018 |
| 24 | 1.092 | 0.019 |
| 25 | 1.081 | 0.018 |
| 26 | 1.082 | 0.018 |
| 27 | 1.077 | 0.019 |
| 28 | 1.071 | 0.018 |
| 29 | 1.073 | 0.019 |
| 30 | 1.071 | 0.019 |
| 31 | 1.074 | 0.016 |
| 32 | 1.073 | 0.020 |
| 33 | 1.073 | 0.017 |
| 34 | 1.071 | 0.018 |
| 35 | 1.068 | 0.019 |
| 36 | 1.066 | 0.019 |
| 37 | 1.065 | 0.020 |
| 38 | 1.063 | 0.018 |
| 39 | 1.065 | 0.018 |
| 40 | 1.059 | 0.016 |
| 41 | 1.053 | 0.017 |
| 42 | 1.052 | 0.019 |
| 43 | 1.051 | 0.017 |
| 44 | 1.049 | 0.017 |
| 45 | 1.045 | 0.016 |
| 46 | 1.046 | 0.018 |
| 47 | 1.038 | 0.019 |
| 48 | 1.033 | 0.016 |
| 49 | 1.026 | 0.017 |
| 50 | 1.018 | 0.018 |
| 51 | 1.015 | 0.016 |
| 52 | 1.013 | 0.020 |
| 53 | 1.008 | 0.019 |
| 54 | 1.004 | 0.022 |
| 55 | 1.006 | 0.024 |
| 56 | 1.014 | 0.020 |
| 57 | 1.013 | 0.020 |
| 58 | 1.023 | 0.020 |
| 59 | 1.032 | 0.022 |
| 60 | 1.024 | 0.022 |
| 61 | 1.031 | 0.017 |
| 62 | 1.041 | 0.020 |
| 63 | 1.041 | 0.019 |
| 64 | 1.046 | 0.019 |
| 65 | 1.051 | 0.020 |
| 66 | 1.054 | 0.019 |
| 67 | 1.057 | 0.020 |
| 68 | 1.061 | 0.019 |
| 69 | 1.058 | 0.019 |
| 70 | 1.059 | 0.020 |
| 71 | 1.070 | 0.016 |
| 72 | 1.071 | 0.021 |
| 73 | 1.070 | 0.019 |
| 74 | 1.072 | 0.020 |
| 75 | 1.074 | 0.019 |
| 76 | 1.077 | 0.017 |
| 77 | 1.078 | 0.018 |
| 78 | 1.077 | 0.020 |
| 79 | 1.077 | 0.020 |
| 80 | 1.080 | 0.015 |
| 81 | 1.091 | 0.021 |
| 82 | 1.084 | 0.019 |
| 83 | 1.082 | 0.017 |
| 84 | 1.085 | 0.019 |
| 85 | 1.096 | 0.017 |
| 86 | 1.083 | 0.022 |
| 87 | 1.083 | 0.018 |
| 88 | 1.079 | 0.016 |
| 89 | 1.076 | 0.020 |
| AVG | 1.064 | 0.019 |
| TARE | 1.001 | 0.015 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.087 | 0.056 |
| 1 | 0.094 | 0.050 |
| 2 | 0.086 | 0.056 |
| 3 | 0.094 | 0.051 |
| 4 | 0.087 | 0.057 |
| 5 | 0.090 | 0.060 |
| 6 | 0.085 | 0.061 |
| 7 | 0.093 | 0.060 |
| 8 | 0.078 | 0.053 |
| 9 | 0.075 | 0.056 |
| 10 | 0.086 | 0.055 |
| 11 | 0.095 | 0.055 |
| 12 | 0.079 | 0.062 |
| 13 | 0.086 | 0.053 |
| 14 | 0.080 | 0.058 |
| 15 | 0.076 | 0.057 |
| 16 | 0.078 | 0.058 |
| 17 | 0.075 | 0.054 |
| 18 | 0.074 | 0.071 |
| 19 | 0.080 | 0.052 |
| 20 | 0.069 | 0.052 |
| 21 | 0.069 | 0.057 |
| 22 | 0.069 | 0.052 |
| 23 | 0.068 | 0.053 |
| 24 | 0.073 | 0.055 |
| 25 | 0.073 | 0.060 |
| 26 | 0.063 | 0.061 |
| 27 | 0.080 | 0.057 |
| 28 | 0.067 | 0.061 |
| 29 | 0.059 | 0.043 |
| 30 | 0.066 | 0.055 |
| 31 | 0.060 | 0.056 |
| 32 | 0.055 | 0.053 |
| 33 | 0.058 | 0.058 |
| 34 | 0.057 | 0.054 |
| 35 | 0.054 | 0.053 |
| 36 | 0.056 | 0.061 |
| 37 | 0.056 | 0.048 |
| 38 | 0.042 | 0.049 |
| 39 | 0.046 | 0.055 |
| 40 | 0.052 | 0.070 |
| 41 | 0.048 | 0.056 |
| 42 | 0.047 | 0.053 |
| 43 | 0.044 | 0.057 |
| 44 | 0.038 | 0.056 |
| 45 | 0.029 | 0.046 |
| 46 | 0.040 | 0.062 |
| 47 | 0.043 | 0.073 |
| 48 | 0.028 | 0.058 |
| 49 | 0.038 | 0.056 |
| 50 | 0.029 | 0.058 |
| 51 | 0.029 | 0.057 |
| 52 | 0.034 | 0.060 |
| 53 | 0.038 | 0.065 |
| 54 | 0.046 | 0.064 |
| 55 | 0.051 | 0.063 |
| 56 | 0.037 | 0.069 |
| 57 | 0.051 | 0.060 |
| 58 | 0.053 | 0.054 |
| 59 | 0.056 | 0.044 |
| 60 | 0.066 | 0.059 |
| 61 | ----- | ----- |
| 62 | ----- | ----- |
| 63 | 0.084 | 0.055 |
| 64 | 0.090 | 0.061 |
| 65 | 0.094 | 0.050 |
| 66 | 0.094 | 0.070 |
| 67 | 0.091 | 0.053 |
| 68 | 0.097 | 0.074 |
| 69 | 0.093 | 0.063 |
| 70 | 0.087 | 0.056 |
| 71 | 0.095 | 0.065 |
| 72 | 0.097 | 0.056 |
| 73 | 0.085 | 0.059 |
| 74 | 0.094 | 0.066 |
| 75 | 0.094 | 0.072 |
| 76 | 0.089 | 0.057 |
| 77 | 0.092 | 0.064 |
| 78 | 0.091 | 0.066 |
| 79 | 0.093 | 0.060 |
| 80 | 0.096 | 0.065 |
| 81 | 0.088 | 0.056 |
| 82 | 0.088 | 0.048 |
| 83 | 0.097 | 0.058 |
| 84 | 0.094 | 0.062 |
| 85 | 0.091 | 0.053 |
| 86 | 0.081 | 0.040 |
| 87 | 0.091 | 0.065 |
| 88 | 0.092 | 0.050 |
| 89 | 0.090 | 0.065 |
| AVG | 0.070 | 0.059 |
| TARE | -.011 | 0.017 |

Table B36 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X 0.21 R Y -1.10 R Z 0.00 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.021 | 0.015 |
| 1 | 1.021 | 0.013 |
| 2 | 1.023 | 0.016 |
| 3 | 1.026 | 0.014 |
| 4 | 1.029 | 0.014 |
| 5 | 1.031 | 0.016 |
| 6 | 1.032 | 0.017 |
| 7 | 1.030 | 0.013 |
| 8 | 1.027 | 0.016 |
| 9 | 1.026 | 0.014 |
| 10 | 1.028 | 0.013 |
| 11 | 1.026 | 0.016 |
| 12 | 1.023 | 0.014 |
| 13 | 1.024 | 0.017 |
| 14 | 1.028 | 0.015 |
| 15 | 1.026 | 0.015 |
| 16 | 1.029 | 0.014 |
| 17 | 1.033 | 0.017 |
| 18 | 1.028 | 0.015 |
| 19 | 1.029 | 0.017 |
| 20 | 1.034 | 0.017 |
| 21 | 1.033 | 0.015 |
| 22 | 1.027 | 0.014 |
| 23 | 1.026 | 0.014 |
| 24 | 1.030 | 0.016 |
| 25 | 1.030 | 0.015 |
| 26 | 1.028 | 0.017 |
| 27 | 1.030 | 0.016 |
| 28 | 1.031 | 0.013 |
| 29 | 1.033 | 0.016 |
| 30 | 1.033 | 0.013 |
| 31 | 1.030 | 0.014 |
| 32 | 1.028 | 0.016 |
| 33 | 1.028 | 0.016 |
| 34 | 1.027 | 0.017 |
| 35 | 1.023 | 0.015 |
| 36 | 1.021 | 0.015 |
| 37 | 1.022 | 0.015 |
| 38 | 1.024 | 0.013 |
| 39 | 1.026 | 0.016 |
| 40 | 1.027 | 0.016 |
| 41 | 1.028 | 0.013 |
| 42 | 1.029 | 0.015 |
| 43 | 1.026 | 0.017 |
| 44 | 1.021 | 0.016 |
| 45 | 1.023 | 0.014 |
| 46 | 1.021 | 0.014 |
| 47 | 1.017 | 0.017 |
| 48 | 1.019 | 0.016 |
| 49 | 1.022 | 0.016 |
| 50 | 1.021 | 0.015 |
| 51 | 1.022 | 0.014 |
| 52 | 1.020 | 0.017 |
| 53 | 1.014 | 0.014 |
| 54 | 1.017 | 0.016 |
| 55 | 1.015 | 0.015 |
| 56 | 1.015 | 0.016 |
| 57 | 1.015 | 0.015 |
| 58 | 1.011 | 0.017 |
| 59 | 1.008 | 0.016 |
| 60 | 1.009 | 0.016 |
| 61 | 1.010 | 0.017 |
| 62 | 1.011 | 0.017 |
| 63 | 1.009 | 0.016 |
| 64 | 1.009 | 0.015 |
| 65 | 1.012 | 0.013 |
| 66 | 1.011 | 0.015 |
| 67 | 1.015 | 0.013 |
| 68 | 1.015 | 0.017 |
| 69 | 1.009 | 0.015 |
| 70 | 1.006 | 0.015 |
| 71 | 1.011 | 0.015 |
| 72 | 1.010 | 0.015 |
| 73 | 1.010 | 0.016 |
| 74 | 1.012 | 0.014 |
| 75 | 1.014 | 0.014 |
| 76 | 1.014 | 0.017 |
| 77 | 1.017 | 0.016 |
| 78 | 1.020 | 0.015 |
| 79 | 1.021 | 0.017 |
| 80 | 1.019 | 0.015 |
| 81 | 1.020 | 0.014 |
| 82 | 1.020 | 0.017 |
| 83 | 1.022 | 0.015 |
| 84 | 1.017 | 0.018 |
| 85 | 1.018 | 0.017 |
| 86 | 1.020 | 0.013 |
| 87 | 1.017 | 0.015 |
| 88 | 1.016 | 0.014 |
| 89 | 1.023 | 0.015 |
| AVG | 1.021 | 0.015 |
| TARE | 1.000 | 0.013 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.064 | 0.030 |
| 1 | 0.067 | 0.031 |
| 2 | 0.065 | 0.035 |
| 3 | 0.065 | 0.033 |
| 4 | 0.067 | 0.037 |
| 5 | 0.069 | 0.036 |
| 6 | 0.063 | 0.034 |
| 7 | 0.063 | 0.035 |
| 8 | 0.066 | 0.035 |
| 9 | 0.067 | 0.039 |
| 10 | 0.068 | 0.036 |
| 11 | 0.065 | 0.035 |
| 12 | 0.066 | 0.034 |
| 13 | 0.065 | 0.033 |
| 14 | 0.065 | 0.033 |
| 15 | 0.066 | 0.039 |
| 16 | 0.063 | 0.032 |
| 17 | 0.067 | 0.035 |
| 18 | 0.059 | 0.034 |
| 19 | 0.063 | 0.029 |
| 20 | 0.061 | 0.034 |
| 21 | 0.061 | 0.031 |
| 22 | 0.060 | 0.034 |
| 23 | 0.059 | 0.036 |
| 24 | 0.055 | 0.030 |
| 25 | 0.059 | 0.034 |
| 26 | 0.055 | 0.032 |
| 27 | 0.057 | 0.031 |
| 28 | 0.059 | 0.034 |
| 29 | 0.064 | 0.042 |
| 30 | 0.061 | 0.039 |
| 31 | 0.054 | 0.026 |
| 32 | 0.053 | 0.029 |
| 33 | 0.054 | 0.029 |
| 34 | 0.049 | 0.031 |
| 35 | 0.050 | 0.040 |
| 36 | 0.052 | 0.033 |
| 37 | 0.049 | 0.037 |
| 38 | 0.050 | 0.035 |
| 39 | 0.056 | 0.036 |
| 40 | 0.056 | 0.039 |
| 41 | 0.050 | 0.034 |
| 42 | 0.051 | 0.034 |
| 43 | 0.045 | 0.033 |
| 44 | 0.043 | 0.035 |
| 45 | 0.048 | 0.035 |
| 46 | 0.047 | 0.035 |
| 47 | 0.044 | 0.035 |
| 48 | 0.040 | 0.030 |
| 49 | 0.041 | 0.034 |
| 50 | 0.043 | 0.034 |
| 51 | 0.039 | 0.030 |
| 52 | 0.042 | 0.033 |
| 53 | 0.041 | 0.038 |
| 54 | 0.042 | 0.036 |
| 55 | 0.044 | 0.033 |
| 56 | 0.035 | 0.030 |
| 57 | 0.043 | 0.035 |
| 58 | 0.041 | 0.034 |
| 59 | 0.038 | 0.031 |
| 60 | 0.039 | 0.035 |
| 61 | 0.041 | 0.032 |
| 62 | 0.042 | 0.038 |
| 63 | 0.040 | 0.033 |
| 64 | 0.043 | 0.031 |
| 65 | 0.044 | 0.036 |
| 66 | 0.043 | 0.033 |
| 67 | 0.045 | 0.036 |
| 68 | 0.044 | 0.030 |
| 69 | 0.050 | 0.032 |
| 70 | 0.050 | 0.034 |
| 71 | 0.051 | 0.035 |
| 72 | 0.052 | 0.032 |
| 73 | 0.057 | 0.029 |
| 74 | 0.058 | 0.035 |
| 75 | 0.063 | 0.034 |
| 76 | 0.056 | 0.032 |
| 77 | 0.056 | 0.033 |
| 78 | 0.058 | 0.037 |
| 79 | 0.059 | 0.029 |
| 80 | 0.067 | 0.035 |
| 81 | 0.061 | 0.031 |
| 82 | 0.065 | 0.031 |
| 83 | 0.065 | 0.037 |
| 84 | 0.062 | 0.033 |
| 85 | 0.068 | 0.031 |
| 86 | 0.062 | 0.037 |
| 87 | 0.062 | 0.032 |
| 88 | 0.062 | 0.030 |
| 89 | 0.067 | 0.031 |
| AVG | 0.055 | 0.034 |
| TARE | ----- | ----- |

Table B37 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

| PROBE COORDINATES: | X | Y | Z |
|---|---|---|---|
| | 0.21 R | -1.00 R | 0.00 R |

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.041 | 0.017 |
| 1 | 1.039 | 0.017 |
| 2 | 1.040 | 0.016 |
| 3 | 1.043 | 0.016 |
| 4 | 1.047 | 0.020 |
| 5 | 1.047 | 0.019 |
| 6 | 1.045 | 0.018 |
| 7 | 1.045 | 0.018 |
| 8 | 1.047 | 0.020 |
| 9 | 1.049 | 0.017 |
| 10 | 1.053 | 0.017 |
| 11 | 1.052 | 0.019 |
| 12 | 1.052 | 0.018 |
| 13 | 1.053 | 0.018 |
| 14 | 1.052 | 0.017 |
| 15 | 1.050 | 0.017 |
| 16 | 1.052 | 0.020 |
| 17 | 1.052 | 0.018 |
| 18 | 1.054 | 0.020 |
| 19 | 1.052 | 0.018 |
| 20 | 1.050 | 0.016 |
| 21 | 1.048 | 0.017 |
| 22 | 1.045 | 0.017 |
| 23 | 1.045 | 0.017 |
| 24 | 1.043 | 0.020 |
| 25 | 1.039 | 0.017 |
| 26 | 1.044 | 0.016 |
| 27 | 1.045 | 0.016 |
| 28 | 1.044 | 0.016 |
| 29 | 1.045 | 0.016 |
| 30 | 1.042 | 0.019 |
| 31 | 1.038 | 0.016 |
| 32 | 1.038 | 0.016 |
| 33 | 1.037 | 0.018 |
| 34 | 1.039 | 0.019 |
| 35 | 1.043 | 0.018 |
| 36 | 1.046 | 0.017 |
| 37 | 1.046 | 0.016 |
| 38 | 1.043 | 0.019 |
| 39 | 1.038 | 0.015 |
| 40 | 1.040 | 0.018 |
| 41 | 1.036 | 0.020 |
| 42 | 1.035 | 0.019 |
| 43 | 1.038 | 0.017 |
| 44 | 1.039 | 0.016 |
| 45 | 1.038 | 0.018 |
| 46 | 1.034 | 0.017 |
| 47 | 1.034 | 0.018 |
| 48 | 1.032 | 0.018 |
| 49 | 1.028 | 0.019 |
| 50 | 1.025 | 0.016 |
| 51 | 1.025 | 0.018 |
| 52 | 1.021 | 0.020 |
| 53 | 1.019 | 0.017 |
| 54 | 1.019 | 0.017 |
| 55 | 1.014 | 0.017 |
| 56 | 1.009 | 0.018 |
| 57 | 1.013 | 0.018 |
| 59 | 1.016 | 0.020 |
| 59 | 1.009 | 0.017 |
| 60 | 1.009 | 0.017 |
| 61 | 1.010 | 0.016 |
| 62 | 1.012 | 0.018 |
| 63 | 1.013 | 0.020 |
| 64 | 1.012 | 0.021 |
| 65 | 1.014 | 0.022 |
| 66 | 1.019 | 0.017 |
| 67 | 1.018 | 0.019 |
| 68 | 1.015 | 0.019 |
| 69 | 1.009 | 0.018 |
| 70 | 1.013 | 0.019 |
| 71 | 1.022 | 0.017 |
| 72 | 1.017 | 0.018 |
| 73 | 1.021 | 0.018 |
| 74 | 1.023 | 0.022 |
| 75 | 1.026 | 0.016 |
| 76 | 1.026 | 0.016 |
| 77 | 1.030 | 0.015 |
| 78 | 1.032 | 0.019 |
| 79 | 1.032 | 0.017 |
| 80 | 1.031 | 0.022 |
| 81 | 1.026 | 0.016 |
| 82 | 1.031 | 0.017 |
| 83 | 1.032 | 0.018 |
| 84 | 1.035 | 0.016 |
| 85 | 1.033 | 0.016 |
| 86 | 1.030 | 0.019 |
| 87 | 1.030 | 0.017 |
| 88 | 1.041 | 0.019 |
| 89 | 1.031 | 0.020 |
| AVG | 1.034 | 0.018 |
| TARE | 0.999 | 0.012 |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.050 | 0.034 |
| 1 | 0.059 | 0.026 |
| 2 | 0.060 | 0.032 |
| 3 | 0.059 | 0.028 |
| 4 | 0.056 | 0.034 |
| 5 | 0.053 | 0.025 |
| 6 | 0.060 | 0.035 |
| 7 | 0.057 | 0.030 |
| 8 | 0.060 | 0.030 |
| 9 | 0.052 | 0.027 |
| 10 | 0.055 | 0.026 |
| 11 | 0.057 | 0.026 |
| 12 | 0.051 | 0.027 |
| 13 | 0.050 | 0.028 |
| 14 | 0.051 | 0.029 |
| 15 | 0.051 | 0.029 |
| 16 | 0.050 | 0.028 |
| 17 | 0.050 | 0.028 |
| 18 | 0.053 | 0.028 |
| 19 | 0.053 | 0.027 |
| 20 | 0.050 | 0.027 |
| 21 | 0.047 | 0.026 |
| 22 | 0.044 | 0.026 |
| 23 | 0.044 | 0.025 |
| 24 | 0.041 | 0.024 |
| 25 | 0.041 | 0.025 |
| 26 | 0.043 | 0.026 |
| 27 | 0.040 | 0.025 |
| 28 | 0.040 | 0.025 |
| 29 | 0.039 | 0.025 |
| 30 | 0.042 | 0.026 |
| 31 | 0.039 | 0.025 |
| 32 | 0.037 | 0.025 |
| 33 | 0.035 | 0.025 |
| 34 | 0.036 | 0.025 |
| 35 | 0.037 | 0.025 |
| 36 | 0.035 | 0.025 |
| 37 | 0.033 | 0.025 |
| 38 | 0.033 | 0.025 |
| 39 | 0.035 | 0.025 |
| 40 | 0.036 | 0.025 |
| 41 | 0.033 | 0.024 |
| 42 | 0.034 | 0.024 |
| 43 | 0.033 | 0.024 |
| 44 | 0.034 | 0.024 |
| 45 | 0.031 | 0.024 |
| 46 | 0.030 | 0.024 |
| 47 | 0.029 | 0.024 |
| 48 | 0.031 | 0.024 |
| 49 | 0.030 | 0.024 |
| 50 | 0.029 | 0.024 |
| 51 | 0.025 | 0.024 |
| 52 | 0.022 | 0.024 |
| 53 | 0.024 | 0.024 |
| 54 | 0.026 | 0.024 |
| 55 | 0.027 | 0.024 |
| 56 | 0.029 | 0.024 |
| 57 | 0.025 | 0.024 |
| 58 | 0.023 | 0.024 |
| 59 | 0.024 | 0.024 |
| 60 | 0.030 | 0.024 |
| 61 | 0.029 | 0.024 |
| 62 | 0.032 | 0.024 |
| 63 | 0.033 | 0.024 |
| 64 | 0.032 | 0.024 |
| 65 | 0.033 | 0.024 |
| 66 | 0.044 | 0.024 |
| 67 | 0.041 | 0.024 |
| 68 | 0.042 | 0.024 |
| 69 | 0.044 | 0.024 |
| 70 | 0.045 | 0.024 |
| 71 | 0.046 | 0.024 |
| 72 | 0.052 | 0.024 |
| 73 | 0.052 | 0.024 |
| 74 | 0.054 | 0.024 |
| 75 | 0.049 | 0.024 |
| 76 | 0.052 | 0.024 |
| 77 | 0.051 | 0.024 |
| 78 | 0.054 | 0.024 |
| 79 | 0.052 | 0.024 |
| 80 | 0.053 | 0.024 |
| 81 | 0.052 | 0.024 |
| 82 | 0.052 | 0.024 |
| 83 | 0.053 | 0.024 |
| 84 | 0.053 | 0.024 |
| 85 | 0.054 | 0.024 |
| 86 | 0.054 | 0.024 |
| 87 | 0.054 | 0.024 |
| 88 | 0.052 | 0.024 |
| 89 | 0.054 | 0.024 |
| AVG | 0.042 | 0.024 |
| TARE | ----- | ----- |

Table B38 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

PROBE COORDINATES: X 0.21 R Y -1.22 R Z 0.03 R

LONGITUDINAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.018 | 0.020 |
| 1 | 1.024 | 0.025 |
| 2 | 1.019 | 0.020 |
| 3 | 1.019 | 0.023 |
| 4 | 1.015 | 0.019 |
| 5 | 1.021 | 0.023 |
| 6 | 1.022 | 0.020 |
| 7 | 1.018 | 0.020 |
| 8 | 1.018 | 0.026 |
| 9 | 1.031 | 0.030 |
| 10 | 1.034 | 0.034 |
| 11 | 1.020 | 0.021 |
| 12 | 1.020 | 0.026 |
| 13 | 1.021 | 0.023 |
| 14 | 1.026 | 0.022 |
| 15 | 1.023 | 0.021 |
| 16 | 1.023 | 0.022 |
| 17 | 1.025 | 0.022 |
| 18 | 1.024 | 0.023 |
| 19 | 1.020 | 0.024 |
| 20 | 1.020 | 0.019 |
| 21 | 1.019 | 0.027 |
| 22 | 1.021 | 0.026 |
| 23 | 1.021 | 0.021 |
| 24 | 1.023 | 0.022 |
| 25 | 1.026 | 0.020 |
| 26 | 1.027 | 0.020 |
| 27 | 1.025 | 0.021 |
| 28 | 1.025 | 0.022 |
| 29 | 1.027 | 0.024 |
| 30 | 1.016 | 0.020 |
| 31 | 1.017 | 0.020 |
| 32 | 1.025 | 0.019 |
| 33 | 1.025 | 0.021 |
| 34 | 1.026 | 0.022 |
| 35 | 1.025 | 0.021 |
| 36 | 1.022 | 0.020 |
| 37 | 1.023 | 0.023 |
| 38 | 1.020 | 0.020 |
| 39 | 1.024 | 0.021 |
| 40 | 1.022 | 0.022 |
| 41 | 1.024 | 0.020 |
| 42 | 1.027 | 0.019 |
| 43 | 1.025 | 0.023 |
| 44 | 1.023 | 0.018 |
| 45 | 1.022 | 0.023 |
| 46 | 1.022 | 0.022 |
| 47 | 1.021 | 0.019 |
| 48 | 1.022 | 0.023 |
| 49 | 1.013 | 0.020 |
| 50 | 1.020 | 0.019 |
| 51 | 1.022 | 0.023 |
| 52 | 1.020 | 0.018 |
| 53 | 1.022 | 0.021 |
| 54 | 1.016 | 0.025 |
| 55 | 1.015 | 0.021 |
| 56 | 1.018 | 0.019 |
| 57 | 1.017 | 0.020 |
| 58 | 1.019 | 0.026 |
| 59 | 1.012 | 0.022 |
| 60 | 1.013 | 0.024 |
| 61 | 1.014 | 0.023 |
| 62 | 1.010 | 0.024 |
| 63 | 1.026 | 0.019 |
| 64 | 1.011 | 0.020 |
| 65 | 1.012 | 0.020 |
| 66 | 1.017 | 0.024 |
| 67 | 1.015 | 0.022 |
| 68 | 1.016 | 0.024 |
| 69 | 1.019 | 0.022 |
| 70 | 1.017 | 0.021 |
| 71 | 1.018 | 0.022 |
| 72 | 1.015 | 0.020 |
| 73 | 1.013 | 0.019 |
| 74 | 1.013 | 0.025 |
| 75 | 1.012 | 0.025 |
| 76 | 1.014 | 0.017 |
| 77 | 1.016 | 0.022 |
| 78 | 1.017 | 0.021 |
| 79 | 1.012 | 0.024 |
| 80 | 1.013 | 0.023 |
| 81 | 1.009 | 0.024 |
| 82 | 1.012 | 0.021 |
| 83 | 1.015 | 0.021 |
| 84 | 1.010 | 0.022 |
| 85 | 1.012 | 0.022 |
| 86 | 1.017 | 0.022 |
| 87 | 1.022 | 0.021 |
| 88 | 1.017 | 0.027 |
| 89 | 1.020 | 0.022 |
| AVG | 1.019 | 0.022 |
| TARE | ----- | ----- |

VERTICAL COMPONENT

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 0.048 | 0.030 |
| 1 | 0.050 | 0.035 |
| 2 | 0.053 | 0.033 |
| 3 | 0.058 | 0.038 |
| 4 | 0.053 | 0.032 |
| 5 | 0.055 | 0.035 |
| 6 | 0.056 | 0.034 |
| 7 | 0.053 | 0.035 |
| 8 | 0.058 | 0.037 |
| 9 | 0.051 | 0.034 |
| 10 | 0.053 | 0.036 |
| 11 | 0.046 | 0.031 |
| 12 | 0.052 | 0.032 |
| 13 | 0.057 | 0.032 |
| 14 | 0.063 | 0.033 |
| 15 | 0.051 | 0.031 |
| 16 | 0.051 | 0.029 |
| 17 | 0.052 | 0.035 |
| 18 | 0.053 | 0.029 |
| 19 | 0.050 | 0.035 |
| 20 | 0.056 | 0.034 |
| 21 | 0.051 | 0.032 |
| 22 | 0.050 | 0.033 |
| 23 | 0.053 | 0.035 |
| 24 | 0.046 | 0.033 |
| 25 | 0.054 | 0.036 |
| 26 | 0.052 | 0.029 |
| 27 | 0.056 | 0.036 |
| 28 | 0.056 | 0.034 |
| 29 | 0.054 | 0.032 |
| 30 | 0.050 | 0.033 |
| 31 | 0.050 | 0.035 |
| 32 | 0.049 | 0.032 |
| 33 | 0.053 | 0.039 |
| 34 | 0.053 | 0.036 |
| 35 | 0.049 | 0.036 |
| 36 | 0.053 | 0.030 |
| 37 | 0.052 | 0.035 |
| 38 | 0.052 | 0.035 |
| 39 | 0.054 | 0.038 |
| 40 | 0.049 | 0.033 |
| 41 | 0.045 | 0.031 |
| 42 | 0.044 | 0.033 |
| 43 | 0.046 | 0.033 |
| 44 | 0.050 | 0.038 |
| 45 | 0.046 | 0.035 |
| 46 | 0.042 | 0.031 |
| 47 | 0.045 | 0.035 |
| 48 | 0.046 | 0.043 |
| 49 | 0.048 | 0.037 |
| 50 | 0.047 | 0.039 |
| 51 | 0.048 | 0.035 |
| 52 | 0.047 | 0.035 |
| 53 | 0.047 | 0.037 |
| 54 | 0.049 | 0.041 |
| 55 | 0.042 | 0.036 |
| 56 | 0.046 | 0.037 |
| 57 | 0.042 | 0.038 |
| 58 | 0.044 | 0.036 |
| 59 | 0.043 | 0.034 |
| 60 | 0.040 | 0.039 |
| 61 | 0.042 | 0.035 |
| 62 | 0.044 | 0.038 |
| 63 | 0.044 | 0.036 |
| 64 | 0.041 | 0.032 |
| 65 | 0.041 | 0.033 |
| 66 | 0.045 | 0.033 |
| 67 | 0.042 | 0.034 |
| 68 | 0.044 | 0.033 |
| 69 | 0.045 | 0.029 |
| 70 | 0.044 | 0.037 |
| 71 | 0.040 | 0.033 |
| 72 | 0.043 | 0.036 |
| 73 | 0.041 | 0.032 |
| 74 | 0.046 | 0.034 |
| 75 | 0.046 | 0.031 |
| 76 | 0.040 | 0.032 |
| 77 | 0.039 | 0.026 |
| 78 | 0.045 | 0.033 |
| 79 | 0.046 | 0.033 |
| 80 | 0.047 | 0.029 |
| 81 | 0.048 | 0.033 |
| 82 | 0.050 | 0.032 |
| 83 | 0.048 | 0.031 |
| 84 | 0.046 | 0.033 |
| 85 | 0.051 | 0.035 |
| 86 | 0.053 | 0.032 |
| 87 | 0.052 | 0.033 |
| 88 | 0.051 | 0.033 |
| 89 | 0.054 | 0.038 |
| AVG | 0.049 | 0.034 |
| TARE | ----- | ----- |

Table B39 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

| PROBE COORDINATES: | X<br>-0.62 R | Y<br>-0.70 R | Z<br>0.00 R |
|---|---|---|---|
| LONGITUDINAL COMPONENT | | | |

| DEGREE | AVG VEL | RMS |
|---|---|---|
| 0 | 1.265 | 0.025 |
| 1 | 1.266 | 0.025 |
| 2 | 1.264 | 0.024 |
| 3 | 1.265 | 0.026 |
| 4 | 1.263 | 0.025 |
| 5 | 1.260 | 0.026 |
| 6 | 1.259 | 0.026 |
| 7 | 1.258 | 0.028 |
| 8 | 1.255 | 0.024 |
| 9 | 1.255 | 0.027 |
| 10 | 1.255 | 0.025 |
| 11 | 1.257 | 0.026 |
| 12 | 1.253 | 0.025 |
| 13 | 1.252 | 0.024 |
| 14 | 1.251 | 0.024 |
| 15 | 1.253 | 0.030 |
| 16 | 1.250 | 0.023 |
| 17 | 1.254 | 0.026 |
| 18 | 1.255 | 0.028 |
| 19 | 1.255 | 0.025 |
| 20 | 1.253 | 0.029 |
| 21 | 1.250 | 0.027 |
| 22 | 1.251 | 0.030 |
| 23 | 1.253 | 0.026 |
| 24 | 1.256 | 0.027 |
| 25 | 1.256 | 0.027 |
| 26 | 1.257 | 0.023 |
| 27 | 1.256 | 0.028 |
| 28 | 1.260 | 0.027 |
| 29 | 1.262 | 0.029 |
| 30 | 1.266 | 0.029 |
| 31 | 1.267 | 0.030 |
| 32 | 1.267 | 0.027 |
| 33 | 1.270 | 0.029 |
| 34 | 1.274 | 0.032 |
| 35 | 1.274 | 0.030 |
| 36 | 1.276 | 0.029 |
| 37 | 1.279 | 0.029 |
| 38 | 1.284 | 0.032 |
| 39 | 1.284 | 0.032 |
| 40 | 1.289 | 0.035 |
| 41 | 1.295 | 0.039 |
| 42 | 1.299 | 0.039 |
| 43 | 1.296 | 0.037 |
| 44 | 1.295 | 0.035 |
| 45 | 1.291 | 0.057 |
| 46 | 1.268 | 0.067 |
| 47 | 1.256 | 0.092 |
| 48 | 1.251 | 0.099 |
| 49 | 1.233 | 0.101 |
| 50 | 1.234 | 0.106 |
| 51 | 1.253 | 0.112 |
| 52 | 1.278 | 0.110 |
| 53 | 1.269 | 0.120 |
| 54 | 1.305 | 0.099 |
| 55 | 1.315 | 0.088 |
| 56 | 1.334 | 0.072 |
| 57 | 1.323 | 0.068 |
| 58 | 1.329 | 0.035 |
| 59 | 1.326 | 0.030 |
| 60 | 1.328 | 0.044 |
| 61 | 1.321 | 0.041 |
| 62 | 1.314 | 0.033 |
| 63 | 1.315 | 0.034 |
| 64 | 1.315 | 0.031 |
| 65 | 1.313 | 0.038 |
| 66 | 1.307 | 0.025 |
| 67 | 1.303 | 0.028 |
| 68 | 1.305 | 0.023 |
| 69 | 1.301 | 0.030 |
| 70 | 1.303 | 0.028 |
| 71 | 1.302 | 0.025 |
| 72 | 1.299 | 0.027 |
| 73 | 1.295 | 0.028 |
| 74 | 1.292 | 0.026 |
| 75 | 1.292 | 0.024 |
| 76 | 1.290 | 0.025 |
| 77 | 1.287 | 0.020 |
| 78 | 1.287 | 0.028 |
| 79 | 1.283 | 0.026 |
| 80 | 1.283 | 0.027 |
| 81 | 1.280 | 0.027 |
| 82 | 1.279 | 0.022 |
| 83 | 1.278 | 0.026 |
| 84 | 1.275 | 0.030 |
| 85 | 1.275 | 0.024 |
| 86 | 1.278 | 0.034 |
| 87 | 1.273 | 0.026 |
| 88 | 1.270 | 0.030 |
| 89 | 1.269 | 0.020 |
| AVG | 1.277 | 0.036 |
| TARE | ----- | ----- |

Table B40 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position at Shaft Inclination of Zero Degrees

| SHAFT INCLINATION: 0 DEGREES | | | | SHAFT INCLINATION: 0 DEGREES | | | |
|---|---|---|---|---|---|---|---|
| PROBE COORDINATES: DEGREE | X 0.21 R AVG VEL | Y -0.33 R RMS | Z 2.60 R | PROBE COORDINATES: DEGREE | X 0.21 R AVG VEL | Y -0.33 R RMS | Z 0.58 R |
| 0 | -0.048 | 0.029 | | 0 | 0.003 | 0.027 | |
| 1 | -0.028 | 0.034 | | 1 | 0.010 | 0.032 | |
| 2 | -0.004 | 0.032 | | 2 | 0.010 | 0.043 | |
| 3 | 0.021 | 0.031 | | 3 | 0.026 | 0.029 | |
| 4 | 0.029 | 0.025 | | 4 | 0.024 | 0.032 | |
| 5 | 0.034 | 0.034 | | 5 | 0.035 | 0.027 | |
| 6 | 0.047 | 0.025 | | 6 | 0.046 | 0.024 | |
| 7 | 0.059 | 0.029 | | 7 | 0.045 | 0.030 | |
| 8 | 0.056 | 0.024 | | 8 | 0.052 | 0.047 | |
| 9 | 0.055 | 0.029 | | 9 | 0.056 | 0.035 | |
| 10 | 0.062 | 0.027 | | 10 | 0.056 | 0.036 | |
| 11 | 0.059 | 0.026 | | 11 | 0.057 | 0.049 | |
| 12 | 0.063 | 0.026 | | 12 | 0.063 | 0.038 | |
| 13 | 0.063 | 0.025 | | 13 | 0.062 | 0.051 | |
| 14 | 0.068 | 0.029 | | 14 | 0.061 | 0.047 | |
| 15 | 0.067 | 0.023 | | 15 | 0.067 | 0.030 | |
| 16 | 0.067 | 0.028 | | 16 | 0.064 | 0.031 | |
| 17 | 0.072 | 0.028 | | 17 | 0.063 | 0.034 | |
| 18 | 0.063 | 0.030 | | 18 | 0.060 | 0.036 | |
| 19 | 0.068 | 0.029 | | 19 | 0.063 | 0.031 | |
| 20 | 0.064 | 0.025 | | 20 | 0.063 | 0.033 | |
| 21 | 0.064 | 0.031 | | 21 | 0.067 | 0.030 | |
| 22 | 0.065 | 0.026 | | 22 | 0.064 | 0.027 | |
| 23 | 0.062 | 0.027 | | 23 | 0.062 | 0.027 | |
| 24 | 0.060 | 0.027 | | 24 | 0.059 | 0.030 | |
| 25 | 0.058 | 0.027 | | 25 | 0.056 | 0.034 | |
| 26 | 0.054 | 0.026 | | 26 | 0.066 | 0.033 | |
| 27 | 0.058 | 0.025 | | 27 | 0.050 | 0.027 | |
| 28 | 0.057 | 0.027 | | 28 | 0.061 | 0.027 | |
| 29 | 0.052 | 0.025 | | 29 | 0.057 | 0.030 | |
| 30 | 0.055 | 0.026 | | 30 | 0.062 | 0.033 | |
| 31 | 0.057 | 0.030 | | 31 | 0.054 | 0.049 | |
| 32 | 0.060 | 0.030 | | 32 | 0.059 | 0.026 | |
| 33 | 0.057 | 0.030 | | 33 | 0.060 | 0.030 | |
| 34 | 0.059 | 0.027 | | 34 | 0.053 | 0.030 | |
| 35 | 0.052 | 0.028 | | 35 | 0.058 | 0.030 | |
| 36 | 0.052 | 0.029 | | 36 | 0.057 | 0.030 | |
| 37 | 0.045 | 0.028 | | 37 | 0.051 | 0.025 | |
| 38 | 0.050 | 0.029 | | 38 | 0.050 | 0.027 | |
| 39 | 0.041 | 0.027 | | 39 | 0.050 | 0.028 | |
| 40 | 0.043 | 0.024 | | 40 | 0.052 | 0.029 | |
| 41 | 0.047 | 0.024 | | 41 | 0.052 | 0.031 | |
| 42 | 0.043 | 0.030 | | 42 | 0.047 | 0.030 | |
| 43 | 0.040 | 0.025 | | 43 | 0.050 | 0.029 | |
| 44 | 0.039 | 0.027 | | 44 | 0.044 | 0.030 | |
| 45 | 0.042 | 0.024 | | 45 | 0.040 | 0.030 | |
| 46 | 0.045 | 0.029 | | 46 | 0.040 | 0.030 | |
| 47 | 0.037 | 0.026 | | 47 | 0.041 | 0.027 | |
| 48 | 0.040 | 0.023 | | 48 | 0.040 | 0.029 | |
| 49 | 0.037 | 0.029 | | 49 | 0.041 | 0.024 | |
| 50 | 0.032 | 0.028 | | 50 | 0.034 | 0.028 | |
| 51 | 0.032 | 0.027 | | 51 | 0.035 | 0.026 | |
| 52 | 0.028 | 0.030 | | 52 | 0.029 | 0.030 | |
| 53 | 0.024 | 0.026 | | 53 | 0.027 | 0.028 | |
| 54 | 0.021 | 0.028 | | 54 | 0.026 | 0.028 | |
| 55 | 0.023 | 0.026 | | 55 | 0.033 | 0.033 | |
| 56 | 0.022 | 0.027 | | 56 | 0.030 | 0.028 | |
| 57 | 0.019 | 0.025 | | 57 | 0.030 | 0.032 | |
| 58 | 0.023 | 0.022 | | 58 | 0.028 | 0.025 | |
| 59 | 0.018 | 0.026 | | 59 | 0.026 | 0.032 | |
| 60 | 0.021 | 0.031 | | 60 | 0.031 | 0.031 | |
| 61 | 0.022 | 0.029 | | 61 | 0.027 | 0.029 | |
| 62 | 0.018 | 0.028 | | 62 | 0.025 | 0.028 | |
| 63 | 0.018 | 0.029 | | 63 | 0.028 | 0.026 | |
| 64 | 0.007 | 0.028 | | 64 | 0.022 | 0.026 | |
| 65 | 0.013 | 0.027 | | 65 | 0.023 | 0.031 | |
| 66 | 0.015 | 0.028 | | 66 | 0.024 | 0.029 | |
| 67 | 0.012 | 0.034 | | 67 | 0.020 | 0.030 | |
| 68 | 0.007 | 0.027 | | 68 | 0.016 | 0.030 | |
| 69 | 0.007 | 0.029 | | 69 | 0.015 | 0.031 | |
| 70 | 0.001 | 0.029 | | 70 | 0.008 | 0.030 | |
| 71 | 0.002 | 0.027 | | 71 | 0.015 | 0.026 | |
| 72 | -0.000 | 0.032 | | 72 | 0.009 | 0.027 | |
| 73 | -0.002 | 0.029 | | 73 | 0.010 | 0.026 | |
| 74 | -0.003 | 0.031 | | 74 | 0.007 | 0.030 | |
| 75 | -0.010 | 0.024 | | 75 | 0.004 | 0.028 | |
| 76 | -0.015 | 0.025 | | 76 | 0.005 | 0.026 | |
| 77 | -0.007 | 0.026 | | 77 | 0.004 | 0.028 | |
| 78 | -0.018 | 0.031 | | 78 | 0.001 | 0.032 | |
| 79 | -0.020 | 0.029 | | 79 | 0.006 | 0.031 | |
| 80 | -0.024 | 0.028 | | 80 | 0.003 | 0.030 | |
| 81 | -0.021 | 0.028 | | 81 | 0.005 | 0.029 | |
| 82 | -0.025 | 0.028 | | 82 | -0.004 | 0.029 | |
| 83 | -0.026 | 0.029 | | 83 | -0.004 | 0.028 | |
| 84 | -0.029 | 0.026 | | 84 | 0.000 | 0.027 | |
| 85 | -0.037 | 0.028 | | 85 | -0.006 | 0.029 | |
| 86 | -0.044 | 0.029 | | 86 | -0.002 | 0.028 | |
| 87 | -0.047 | 0.031 | | 87 | -0.011 | 0.027 | |
| 88 | -0.056 | 0.031 | | 88 | -0.003 | 0.030 | |
| 89 | -0.060 | 0.031 | | 89 | -0.006 | 0.028 | |
| AVG | 0.026 | 0.028 | | AVG | 0.035 | 0.029 | |

Table B41 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position

SHAFT INCLINATION: 0 DEGREES

| PROBE COORDINATES: DEGREE | X -0.30 R AVG VEL | Y -0.25 R RMS | Z 0.50 R |
|---|---|---|---|
| 0 | -0.073 | 0.076 | |
| 1 | -0.092 | 0.076 | |
| 2 | -0.094 | 0.075 | |
| 3 | -0.086 | 0.052 | |
| 4 | -0.063 | 0.042 | |
| 5 | -0.060 | 0.030 | |
| 6 | -0.065 | 0.034 | |
| 7 | -0.056 | 0.039 | |
| 8 | -0.056 | 0.031 | |
| 9 | -0.057 | 0.032 | |
| 10 | -0.055 | 0.070 | |
| 11 | -0.055 | 0.059 | |
| 12 | -0.048 | 0.052 | |
| 13 | -0.044 | 0.036 | |
| 14 | -0.045 | 0.036 | |
| 15 | -0.043 | 0.030 | |
| 16 | -0.046 | 0.035 | |
| 17 | -0.037 | 0.032 | |
| 18 | -0.040 | 0.033 | |
| 19 | -0.040 | 0.032 | |
| 20 | -0.038 | 0.030 | |
| 21 | -0.037 | 0.035 | |
| 22 | -0.035 | 0.034 | |
| 23 | -0.026 | 0.035 | |
| 24 | -0.037 | 0.034 | |
| 25 | -0.033 | 0.032 | |
| 26 | -0.026 | 0.031 | |
| 27 | -0.045 | 0.034 | |
| 28 | -0.038 | 0.032 | |
| 29 | -0.035 | 0.032 | |
| 30 | -0.035 | 0.031 | |
| 31 | -0.040 | 0.035 | |
| 32 | -0.036 | 0.033 | |
| 33 | -0.033 | 0.031 | |
| 34 | -0.029 | 0.030 | |
| 35 | -0.024 | 0.035 | |
| 36 | -0.035 | 0.033 | |
| 37 | -0.021 | 0.027 | |
| 38 | -0.030 | 0.035 | |
| 39 | -0.022 | 0.026 | |
| 40 | -0.018 | 0.035 | |
| 41 | -0.018 | 0.035 | |
| 42 | -0.026 | 0.023 | |
| 43 | -0.017 | 0.040 | |
| 44 | -0.016 | 0.034 | |
| 45 | -0.021 | 0.037 | |
| 46 | -0.023 | 0.036 | |
| 47 | -0.026 | 0.034 | |
| 48 | -0.031 | 0.035 | |
| 49 | -0.029 | 0.026 | |
| 50 | -0.032 | 0.035 | |
| 51 | -0.024 | 0.034 | |
| 52 | -0.035 | 0.037 | |
| 53 | -0.021 | 0.038 | |
| 54 | -0.026 | 0.037 | |
| 55 | -0.038 | 0.033 | |
| 56 | -0.042 | 0.038 | |
| 57 | -0.045 | 0.035 | |
| 58 | -0.043 | 0.032 | |
| 59 | -0.046 | 0.043 | |
| 60 | -0.041 | 0.038 | |
| 61 | -0.045 | 0.038 | |
| 62 | -0.046 | 0.039 | |
| 63 | -0.049 | 0.032 | |
| 64 | -0.0[illegible] | 0.031 | |
| 65 | -0.0[illegible] | 0.039 | |
| 66 | -0.058 | 0.032 | |
| 67 | -0.060 | 0.036 | |
| 68 | -0.058 | 0.038 | |
| 69 | -0.062 | 0.038 | |
| 70 | -0.066 | 0.039 | |
| 71 | -0.076 | 0.038 | |
| 72 | -0.076 | 0.041 | |
| 73 | -0.077 | 0.033 | |
| 74 | -0.085 | 0.036 | |
| 75 | -0.086 | 0.036 | |
| 76 | -0.097 | 0.037 | |
| 77 | -0.099 | 0.044 | |
| 78 | -0.105 | 0.038 | |
| 79 | -0.107 | 0.038 | |
| 80 | -0.112 | 0.039 | |
| 81 | -0.111 | 0.040 | |
| 82 | -0.121 | 0.041 | |
| 83 | -0.124 | 0.036 | |
| 84 | -0.124 | 0.039 | |
| 85 | -0.125 | 0.043 | |
| 86 | -0.125 | 0.059 | |
| 87 | -0.115 | 0.088 | |
| 88 | -0.081 | 0.078 | |
| 89 | -0.064 | 0.054 | |
| AVG | -0.054 | 0.038 | |

SHAFT INCLINATION: 0 DEGREES

| PROBE COORDINATES: DEGREE | X -0.30 R AVG VEL | Y 0.25 R RMS | Z 0.50 R |
|---|---|---|---|
| 0 | -0.031 | 0.035 | |
| 1 | -0.024 | 0.050 | |
| 2 | -0.030 | 0.039 | |
| 3 | -0.021 | 0.042 | |
| 4 | -0.029 | 0.040 | |
| 5 | -0.041 | 0.039 | |
| 6 | -0.046 | 0.037 | |
| 7 | -0.041 | 0.039 | |
| 8 | -0.052 | 0.039 | |
| 9 | -0.057 | 0.037 | |
| 10 | -0.165 | 0.039 | |
| 11 | -0.163 | 0.045 | |
| 12 | -0.193 | 0.055 | |
| 13 | -0.153 | 0.048 | |
| 14 | -0.098 | 0.076 | |
| 15 | -0.078 | 0.086 | |
| 16 | -0.087 | 0.110 | |
| 17 | -0.147 | 0.115 | |
| 18 | -0.053 | 0.112 | |
| 19 | -0.096 | 0.123 | |
| 20 | -0.090 | 0.101 | |
| 21 | -0.071 | 0.084 | |
| 22 | -0.039 | 0.077 | |
| 23 | -0.014 | 0.078 | |
| 24 | 0.010 | 0.072 | |
| 25 | 0.041 | 0.072 | |
| 26 | 0.029 | 0.076 | |
| 27 | 0.054 | 0.061 | |
| 28 | 0.094 | 0.055 | |
| 29 | 0.097 | 0.053 | |
| 30 | 0.104 | 0.045 | |
| 31 | 0.114 | 0.051 | |
| 32 | 0.094 | 0.046 | |
| 33 | 0.101 | 0.037 | |
| 34 | 0.088 | 0.039 | |
| 35 | 0.099 | 0.043 | |
| 36 | 0.091 | 0.039 | |
| 37 | 0.092 | 0.042 | |
| 38 | 0.080 | 0.041 | |
| 39 | 0.075 | 0.034 | |
| 40 | 0.065 | 0.038 | |
| 41 | 0.056 | 0.035 | |
| 42 | 0.063 | 0.037 | |
| 43 | 0.063 | 0.034 | |
| 44 | 0.049 | 0.033 | |
| 45 | 0.052 | 0.048 | |
| 46 | 0.046 | 0.037 | |
| 47 | 0.043 | 0.039 | |
| 48 | 0.035 | 0.033 | |
| 49 | 0.042 | 0.032 | |
| 50 | 0.042 | 0.048 | |
| 51 | 0.033 | 0.039 | |
| 52 | 0.037 | 0.023 | |
| 53 | 0.030 | 0.034 | |
| 54 | 0.027 | 0.034 | |
| 55 | 0.027 | 0.035 | |
| 56 | 0.016 | 0.033 | |
| 57 | 0.018 | 0.037 | |
| 58 | 0.015 | 0.032 | |
| 59 | 0.010 | 0.035 | |
| 60 | 0.002 | 0.033 | |
| 61 | 0.002 | 0.034 | |
| 62 | 0.009 | 0.036 | |
| 63 | 0.003 | 0.032 | |
| 64 | 0.002 | 0.030 | |
| 65 | -0.009 | 0.033 | |
| 66 | -0.003 | 0.027 | |
| 67 | -0.010 | 0.029 | |
| 68 | -0.014 | 0.040 | |
| 69 | 0.022 | 0.033 | |
| 70 | 0.017 | 0.023 | |
| 71 | 0.011 | 0.033 | |
| 72 | 0.018 | 0.038 | |
| 73 | 0.011 | 0.033 | |
| 74 | 0.011 | 0.040 | |
| 75 | -0.003 | 0.034 | |
| 76 | 0.010 | 0.033 | |
| 77 | -0.001 | 0.031 | |
| 78 | -0.008 | 0.031 | |
| 79 | -0.003 | 0.033 | |
| 80 | 0.004 | 0.032 | |
| 81 | 0.001 | 0.042 | |
| 82 | -0.006 | 0.034 | |
| 83 | -0.009 | 0.036 | |
| 84 | -0.013 | 0.033 | |
| 85 | -0.011 | 0.036 | |
| 86 | -0.012 | 0.037 | |
| 87 | -0.018 | 0.038 | |
| 88 | -0.019 | 0.036 | |
| 89 | -0.019 | 0.043 | |
| AVG | 0.008 | 0.046 | |

Table B42 - Computer Output of Velocity and RMS Velocity Data vs. Blade Angular Position

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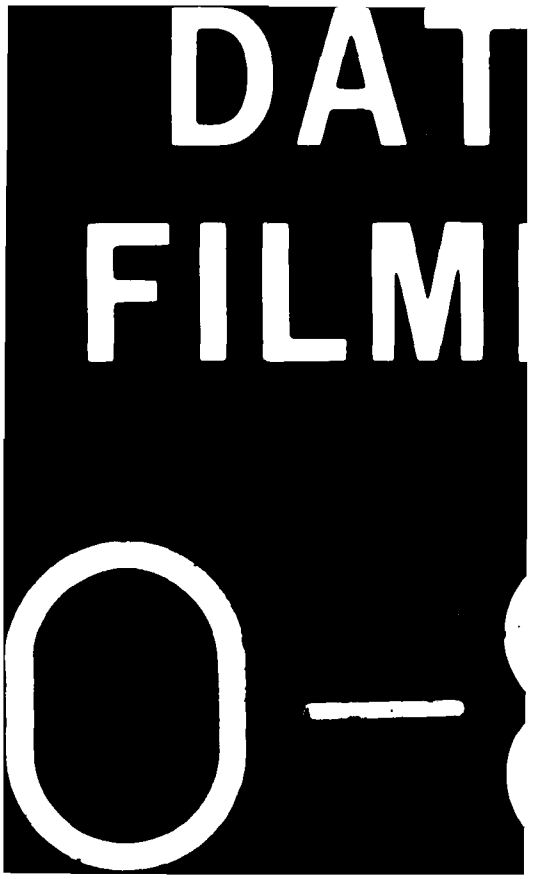
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