PNNL-13517

U.S. Army Corps of Engineers
Portland District

Water Velocity Measurement on an Extended-Length Submerged Bar Screen at John Day Dam

FINAL REPORT

April 2001

Contract DE-AC06-76RLO1830 Related Services
MPIR W66QKZ00482760
Pacific Northwest National Laboratory
P.O. Box 999
K6-85
Richland, Washington 99352

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Water Velocity Measurement on an Extended-Length Submerged Bar Screen at John Day Dam

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Executive Summary

This report describes a study of water velocity around extended-length submerged bar screen (ESBSs) at John Day Dam. The study was conducted for the U.S. Army Corps of Engineers by AScI Corporation and MEVATEC Corporation in March of 2000. This report was prepared by Pacific Northwest National Laboratory.

Testing and modifications to the perforated plates of the prototype ESBSs have been ongoing since the screens were installed at John Day Dam in 1996. After testing of the prototype ESBSs, the perforated plates that attach to the backs of the screens were found to have bolt failures and weld cracks. Several bolt and stiffener modifications were made, but cracking of the stiffener bars continued to be a problem. Following a series of vibration tests and modal analysis on many perforated plate configurations, smaller perforated plates were installed. Testing of the modified ESBSs showed no structural problems and minimal plate vibration. However, during testing of the modified ESBSs with the smaller plates, higher fish mortality was observed. Physical model testing of the new system at the Waterways Experiment Station (WES) showed significant changes to the flow from the original design. Less water was flowing through the perforated plates, more water was flowing up the screens at an increased velocity.

The objective of the research described in this report was to collect water velocity measurements near the surface of the bar screens on the ESBSs using an acoustic Doppler velocimeter and to compare those results with physical model data from WES.

Velocity measurements for comparison with physical model data were collected on March 24 and 25, 2000, using two acoustic Doppler velocimeters near the surface of the bar screens of a prototype ESBS at John Day Dam. Measurements were collected 6.75 in. above the surface of the bar screens along the bottom 36 ft of the ESBS. Most data were collected at 155 MW (21,000 cfs). A truncated data set of the bottom 6.4 ft of the screen at 138 MW (18,600 cfs) was also collected. Measurements were collected over the surface of the bar screens using a modified sweep bar to traverse the ADV's the length and width of the bar screens. This allowed us to collect velocity measurements near the surface of 66% of the bar screens on the ESBSs.

Results show that, at 155 MW velocities were highest at the bottom of the ESBS (7.7 ft/sec) and declined to the lowest velocities about one-fourth of the distance up the ESBS. Flow velocities increased again to 7.7 ft/sec about 4 ft below the top of the bar screen, which was as far up as we could collect data with our sampling method. Above this point, according to physical model data, velocities continued to increase to over 10 ft/sec. The region of low flow was an area of transition where flows switched to moving up instead of down the bar screens. The actual point of flow change was 6.4 ft above the bottom of the bar screens.

Velocity measurements collected on the ESBSs at John Day Dam were on average 0.8 ft/sec higher than physical model results. There is not enough information available to determine if the higher velocities at the ESBSs and if contact with the bar screens were the causes of increased fish injury and mortality rates. Another possible location of injury is in the gate well. Physical model data show flows in the gate well greater than 14 ft/sec. These high velocities and possible turbulence in the gate well may result in fish injury and mortality from shear forces and contact with the side walls of the gate well.

Acknowledgments

Many people made valuable contributions to this study. Rich Vaughn, Portland District USACE, designed and oversaw the construction of the modified sweep bar and positioning electronics and spent many long hours in the field making this project happen. Craig Smith, MEVATEC Corp., helped with construction of the modified sweep bar and helped with figures for the report. Kyle Bouchard, MEVATEC Corp., created tables and cleaned up figures for the report. Thanks also go to Derrek Faber, USGS-BRD Columbia River Research Laboratory, for helpful hints with Tecplot; Vadim Polonichko, Applications Engineer at SonTek, for providing assistance with programs to unwrap aliased data; Andy Goodwin, Civil & Environmental Engineering, Cornell University, for helped with MATLAB; and Tony Wahl, U.S. Bureau of Reclamation, for making changes to WinADV to suit our needs. A special thanks goes to the rigging crew and staff at John Day Dam for their invaluable support and assistance.

Contents

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1.0 Introduction

John Day Dam is a multipurpose U.S. Army Corps of Engineers project located on the Columbia River at river mile 216. In 1996 three prototype extended-length submerged bar screens (ESBSs) were delivered to John Day Dam for testing. The ESBSs are guidance structures installed in the turbine intakes to divert fish out of the turbine intakes into the gate well and through juvenile fish bypass channels. Submerged traveling screens (STS) are currently used at John Day Dam to route fish away from the turbine intakes. ESBSs were found to improve guidance efficiency and cause less descaling of fish than the STS at other dams (McComas et al. 1993) so ESBSs are being evaluated at John Day Dam.

Prototype testing and modifications to the ESBSs have been ongoing since installation in 1996. After testing, the prototype ESBSs were found to have bolt failures and weld cracks on the perforated plates, which attach to the downstream side of the screens. Several bolt and stiffener modifications were made, but cracking of the stiffener bars continued to be a problem. Following a series of vibration tests and modal analysis on many perforated plate configurations, smaller plates were installed. After testing of the smaller plates on the ESBSs, no structural problems were found and plate vibration was acceptably low (USACE 1999).

During testing of the modified ESBSs with the smaller plates, higher fish mortality was observed. Model testing of the new system at the Waterways Experiment Station (WES) showed significant changes to the flow from the original design (USACE 1999).

The objectives of this research project were 1) to collect water velocity data near the surface of the ESBSs at 138 MW (18,600 cfs) and 155 MW (21,000 cfs) load levels using an acoustic Doppler velocimeter (ADV) and 2) to compare the results with model data from WES.

2.0 Materials and Methods

2.1 Site Description

John Day Dam is a multipurpose U.S. Army Corps of Engineers project located on the Columbia River at river mile 216. The dam is composed of a powerhouse, spillway, and navigation lock, with fish facilities at either end of the dam. The powerhouse is 1,975 ft long and consists of 16 turbines with nameplate capacity of 135 MW each and overload capacity of 155.3 MW each.

2.2 ESBS Description

In 1996 three prototype ESBSs were delivered to John Day Dam for testing. The ESBSs are guidance structures installed to aid in guiding fish up and out of the turbine intakes and into the gate well and juvenile fish bypass channels. The ESBSs are lowered into the gate slots of the turbine intake and the inner frame is pivoted upstream to a 55-degree angle and held in place by a support frame (Figure 1).

The ESBS is approximately 53 ft long by 23 ft wide, spanning the width of the turbine intake (Figure 2). It weighs about 114,000 lbs. The ESBS consists of a main outer frame that provides the structural framework for all the subcomponents of the ESBS system and supports all forces imposed during turbine operation (USCE 1999). The inner frame assembly is 40 ft long by 20 ft wide. The upstream surface of the inner frame consists of 1/8-in. wedge wire bar screen with 1/8-in. spaces in between (Figure 3). This surface diverts the fish upward into the gate well while allowing water to pass through the turbine intake. The downstream surface of the inner frame is composed of perforated plates used to control water flow through the bar screen.

A sweep bar that spans the width of the bar screen is mounted on the upstream surface of the inner frame and moves vertically along the bar screens removing debris, which could clog the screen and injure the fish (Figure 4). The sweep bar consists of a bristle brush mounted on a steel tube. The brush assembly is mounted on two drive chains that pull the sweep bar up and down the vertical face of the screen. There are sprockets at the upper and lower ends of the screen to drive the chains that run vertically along the screen. The bottom sprockets act as idlers while the sprockets at the top of the screen are driven by a drive shaft. One end of the drive shaft connects to a speed reducer/motor assembly while the other end connects to a control box (USACE 1999).

The brush control system provides the operating limits of the sweep bar and controls the cycle time of the sweeping operation. A proximity switch mounted near the end of the drive shaft monitors magnets on a wheel mounted on the end of the drive shaft. The proximity switch counts the rotations of the wheel, monitors the location of the sweep bar, and controls the stopping position of the sweep bar at the top and bottom of the screen.

2.3 Collection Equipment

2.3.1 Modified Sweep Bar

A modified sweep bar was built for mounting of the acoustic Doppler velocimeters (ADVs) and to provide horizontal and vertical movement of the ADV across the bar screens. The modified sweep bar was mounted to the ESBS on the same drive chains as were used by the sweep bar and was moved vertically using the ESBS control system in manual mode. Instead of a steel tube, a piece of 12-in. by 3-in. channel was used for the main structure of the modified sweep bar (Figure 4). Two 10-ft pieces of 1.25-in. threaded shaft were mounted in blocks of ultra high molecular weight (UHMW) plastic in the channel as a screw to move the ADV along the channel. A Pacific Scientific stepper motor sealed in a waterproof housing was attached to one end of the shaft to turn the shafts (Figure 5). The housing was maintained at external pressure while underwater by an air line tapped into the housing, and fed by an air compressor. A Tecnadyne model 194 rotary position sensor was mounted to the other end of the shaft to monitor shaft rotation and determine the position of the ADV on the modified sweep bar (Figure 6).

A second Tecnadyne rotary position sensor was mounted to the end of the drive shaft at the top of the screen to determine the vertical position of the modified sweep bar (Figure 7). Calibrated output from both position sensors was monitored with Durant Eclipse series quadrature meters in a control panel located at deck level (Figure 8). A Pacific Control 5645 Indexer Drive used to operate the stepper motor was also installed in the control panel. From the control panel the horizontal position of the ADV on the bar screens was controlled and position was known to within several hundredths of an inch.

ADV cables were installed in cable carriers and attached within the channel to provide guidance and prevent damage to the cables as the ADV traversed the modified sweep bar (Figure 9). A 1/8-inch aluminum plate covered the cables and about 80% of the channel piece. Two UHMW plates were positioned at either end of the aluminum plate and attached to the threaded shaft with machined 1.25-inbrass nuts. The ADVs were clamped into aluminum blocks attached to the UHMW plates (Figure 3). The two ADVField™ processor underwater canisters containing the signal processing hardware for the ADVs were attached to plates on the lower edge of the modified sweep bar (Figure 3).

2.3.2 Acoustic Doppler Velocimeter

Water velocity measurements were collected using two Sontek 5 MHz ADVOcean Probe™ acoustic Doppler velocimeters and two Sontek ADVField™ processor underwater canisters. The ADV transmits with one acoustic transmitter and receives on three acoustic receivers. The transmitter is located in the center and the receivers are mounted on the end of the signal-conditioning module. The sampling volume of the probe is approximately 0.12 in. and is located about 7 in. from the acoustic transmitter (Figure 10). The ADV measures the water velocity using the Doppler effect. The transmitter emits a short pulse of known frequency into the water. A portion of the acoustic energy is reflected off particulate matter in the water back to the receivers at a different frequency. This frequency difference (Doppler shift) is proportional to the particle velocity, which is assumed to be moving at the same velocity as the water. The ADV probe was referenced with the x-axis perpendicular to the screen, the y-axis across the screen, and the z-axis longitudinal to the screen.

2.4 Unit Operation

Unit 7 was used for testing the ESBS. The ESBS with the modified sweep bar and ADVs was deployed in the C-slot. During testing, forebay elevation was 264.6 ft with a 102.9 ft head differential and the forebay water temperature was 45° F. Velocity measurements were collected while the unit operated at

155 MW (21,000 cfs). A second truncated data set was collected with unit operation at 138 MW (18,600 cfs). To account for equivalent head loss due to installation of the ESBS, heads of 100.6 ft and 100.0 ft were used for the 155-MW and 138-MW loads, respectively, to calculate discharge. The unit was held at fixed load and head differential varied little during the test.

2.5 Data Collection

Water velocity measurements were collected about 6.75 in. above the surface of the bar screens from the lower tip (0 ft) to approximately 36 ft up the bar screens. Measurements were collected at predetermined fixed locations on the screen for two-minute intervals. Data were also collected during the moves between fixed-point locations. Moves between locations usually lasted between 30 and 60 seconds. Data from each of the move measurements was divided into five equal samples and the data was averaged for each sample (Figure 11). Samples were collected at 25 Hz.

2.6 Data Analysis

Data were filtered to remove outlying and erroneous values. If the signal-to-noise ratio was less than 15 or the correlation between data within a data point was less than 70%, the values were omitted. (The ADV pings 250 times per second. We collected data at 25 Hz, 25 data points per second; therefore, 10 pings are averaged to provide a data point. Correlation is estimated between these 10 pings.) A spike filter was also used to remove spikes in the data, usually caused by large particles in the water, and where any value greater than 1 g was omitted. The 1-g filter was selected after comparing several different filter settings.

The spike filter used was developed for the WinADV™ analysis package where

given three adjacent velocity measurements at sample numbers n-1, n, and n+1:

$$(V_x, V_y, V_z)_{n-1} \quad (V_x, V_y, V_z)_n \quad (V_x, V_y, V_z)_{n+1} \qquad \text{[Eq. 2.1]}$$

For each component the two accelerations were computed: [Eq. 2.2]

$$A_{1x} = \frac{(X_{x,n} - V_{X,n-1})}{\Delta t}$$

$$A_{2x} = \frac{(X_{x,n+1} - V_{X,n})}{\Delta t}$$

The difference between the two values is the change in acceleration ΔA_x from sample n-1 to sample n+1. The iteration is then repeated for the y and z velocity components. The acceleration components are then combined to compute a scalar change in acceleration:

$$\Delta A = \sqrt{\Delta A_x^2 + \Delta A_y^2 + \Delta A_z^2} \qquad \text{[Eq. 2.3]}$$

Data sets were divided into two groups: the data that were collected at fixed locations and data that were averaged over the move between fixed locations. Data were averaged for the entire data set at the fixed locations and were averaged into five evenly spaced samples across the move between fixed locations.

2.6.1 Aliased Data

Data near the upper and lower tips of the screen were aliased where water velocities were higher than the upper limit recording levels of the ADV, causing a phase reversal in the data and erroneous values. This occurred when the measured phase difference between the two acoustic pulses transmitted and received by the ADV exceeded 180°. The data were corrected using the "unwrap" function in MATLAB™. This function unwraps radian phases (P) by changing absolute jumps greater than π to their 2π complement, unwrapping along the first non-singleton dimension of P.

2.6.2 Spherical Coordinates

A spherical coordinate system was used to define the direction of the bulk flow. To define the spherical coordinates we used a polar axis and a perpendicular equatorial plane. Originating at the intersection of the plane and the axis, the origin (O), a ray to point P is constructed with a length of rho (ρ), the magnitude velocity. The angle phi (ϕ) is the angle between the line OP and the positive polar axis and theta (θ) is the angle between the initial ray and the projection of OP to the equatorial plane (Figure 12), where

$$Rho = \sqrt{x^2 + y^2 + z^2}$$
$$Phi = \cos^{-1}\left(z/rho\right) \qquad \text{[Eq. 2.4]}$$
$$Theta = \tan^{-1}\left(y/x\right)$$

In reference to the bar screens, the x, y, and z coordinates are the same orientation as was used for the ADV, where positive x is flow perpendicular to the bar screens, positive y is horizontal flow parallel to the bar screens, and positive z is longitudinal flow up the bar screens. From an upstream perspective looking downstream, X-vector velocities are perpendicular to the screen with positive X into the screen, Y-vector velocities are across the short axis of the screen with positive Y toward the right, and Z-vector velocities are along the long axis of the screen with positive Z up the screen. Theta is positive when flow is moving toward the right, across the screen, and negative when flow is moving to the left. If theta is zero, flow is moving longitudinal to the screen. Phi is always positive. When phi is 90°, the flow is perpendicular to the screen. When phi is greater than 90°, the direction of flow is down the screen. When phi is less than 90°, the direction of flow is up the screen. If phi is 0° the bulk flow would be parallel to the screen and no flow would be through the screens.

2.6.3 RMS Turbulence

The root mean square (RMS) of the water velocity was calculated for each of the four fixed sample locations across the screen. The root mean square of the water velocity was also averaged for data points sampled across the spaces moved between each of the fixed sample locations.

$$RMS\left[V_i\right] = \sqrt{\frac{\sum V_i^2 - \left(\sum V_i\right)^2 / n}{n-1}}\ \mathbf{V_i} \quad \textbf{where i=x, y, or z.} \qquad \text{[Eq. 2.5]}$$

3.0 Results

Water velocity measurements were collected along the upstream face of the ESBS in the C-Slot of Unit 7 at John Day Dam on March 24 and 25, 2000. Velocity measurements at 155 MW (21,000 cfs) were collected from the lower tip of the bar screen (0.0), to about 36 ft from the bottom. Forebay elevation was 264.6 ft above mean sea level and the head differential was 102.9 ft. The water temperature was 45° F.

A second set of velocity measurements was recorded at 138 MW (18,600 cfs). However, measurements were only collected over the bottom 6.5 ft of the bar screen due to a mechanical failure resulting in termination of testing.

3.1 Measurements at 155 Megawatts

3.1.1 Flow Velocities

From an upstream perspective looking downstream, X-vector velocities are perpendicular to the screen with positive X into the screen, Y-vector velocities are across the short axis of the screen with positive Y toward the right, and Z-vector velocities are along the long axis of the screen with positive Z up the screen (Figure 12).

Velocities were highest near the lower and upper ends of the screen with velocities up to 7.75 ft/sec. The lowest velocities were about 2.2 ft/sec, approximately one-fourth of the distance up the screen. Velocities increased above this point reaching highs again at the top of the screen (Figure 13 and 14).

Flows were not directed up or down the screens over the entire length of the ESBS. At the transition zone between positive and negative flows in the Z-axis, where velocities were the lowest, the flow was across the screen toward the right side, and toward the left on the far left side of the screen (Figure 15 and 16). This was due to the reversal in flow direction. Streamlines on the left side of the screen were quicker to orient in the +Z direction as flow moved up the screen than on the right side. Downward flows did not orient in the -Z before the water passed under the lower end of the screen.

There was a significant difference in velocity between the left and right sides of the screens (ANOVA $P<0.05$) with flows being highest on the right side. The mean flow on the right side of the ESBSs was on average 0.2 ft/sec higher than on the left side of the bar screens.

The vector velocity into the bar screen (x-axis) declined steadily from the bottom to the top of the screen Near the top of the screen, 35.89 ft, almost no flow passed through the screen. This rapid change from about 2.5 ft/sec to less than 0.5 ft/sec in the x-axis occurred over a distance change of less than 1 ft on the screen (Figure 17).

There was larger variation in the Y-vector velocities across the screen (y-axis) than either the X- or Z-vector velocities (Figure 18). This variation was due to differences in flow direction and velocity of flow between the right and left sides of the ESBS. Also, if the ADVs were not lined up exactly with the screen offset, it would be most noticeable in this direction.

The vector velocities along the length of the screen (z-axis) increased over the entire length of the screen (Figure 19) with negative flow around the bottom of the screen and flows increasing in the positive direction up the screen. Values for all X, Y, and Z velocity vectors are provided in Appendix A. The magnitudes of velocities are provided in Appendix B with the spherical coordinate data.

3.1.2 Direction of Flow

Spherical coordinates were calculated from the velocity components to provide a three-dimensional analysis of the flow. Theta is positive when flow is moving toward the right across the screen and negative when flow is moving to the left. If theta is zero, flow is moving longitudinal to the screen. Phi is always positive. When phi is 90° the flow is perpendicular to the screen. When phi is greater than 90° the direction of flow is down the screen and when phi is less then 90° the direction of flow is up the screen.

Phi showed downward flows through the screen for the bottom 6.5 ft of the screen. Above this point, flows were oriented up and through the screen. At Z=35.89 ft, the screen flows were almost longitudinal to the screen with very little of the flow passing through (Figure 20). As indicated by the Y vectors of the flow, theta showed similar flow across the screen to the right with flows becoming a little less skewed toward the top of the screen (Figure 21).

3.1.3 Turbulence of Flow

The root mean square (RMS) turbulence of the velocity showed greatest turbulence near the lower end of the screen and in the area of transition between downward and upward flows (Figure 22). There was no significant difference in turbulence between the left and right sides of the screen (ANOVA $P>0.05$). Flow was more turbulent in the X and Y vectors (Figures 23 and 24) than in the Z vector (Figure 25). Magnitude and vector turbulence values are provided in Appendix C.

3.2 Measurements at 138 Megawatts

3.2.1 Velocity of Flow

Velocities were greater than 6.5 ft/sec at the lower end of the screen and declined to about 2.5 ft/sec where flows changed direction, 6.4 ft above the bottom of the screen (Figure 26). Flow at the bottom of the screen angled toward the right side of the screen and began to orient up the screen at 6.4 ft above the bottom of the screen, the point where data collection was terminated (Figure 27 and 28). Values for all X, Y, and Z velocities are provided in Appendix D and the magnitude velocities with the spherical coordinate data are provided in Appendix E.

3.2.2 Direction of Flow

The longitudinal component of the flow, phi, showed downward flows through the screen up to 6.4 ft above the bottom where flows started to move up the screen. At this location there was still downward movement of water on the left side of the screen but about one-third of the way across the screen flows were beginning to orient up the screen.

3.2.3 Turbulence of Flow

The RMS turbulence of the magnitude velocity showed greatest turbulence in the lower left corner and at two patches about 1.6 ft from the base of the screen. At the screen tip where flows were highest the turbulence was lowest, except at the lower left corner (Figure 29). Flow was more turbulent in the X and Y vectors (Figures 30 and 31) than in the Z vector (Figure 32). This was also true at 155 MW. Magnitude and vector turbulence values are provided in Appendix F.

3.3 Comparison with Physical Model Data

Velocity measurements collected on the 1:12 scale physical model at WES were measured, to scale, 4 in. and 8 in. from the physical model bar screens at a scale discharge of 20,800 cfs. ADV measurements collected in the field were 6.75 in. from the bar screens and discharge was 21,000 cfs. The flow velocities collected 6.75 in. from the bar screens in the field were significantly higher (ANOVA $P<0.05$) than the physical model data for both 4-in. and 8-in. distances (Figure 33). Field-measured velocities averaged 0.8 ft/sec higher than either of the physical model tests. Though field measurements were higher than both physical model outputs, the physical model and field values did follow a similar trend.

4.0 Discussion

ADVs were used to collect water velocity data near the bar screens on the ESBS at John Day Dam and successfully provided fine-scale three-dimensional velocity data profiles over a majority of the screen. From the setup used it was not possible to collect measurements closer than 2.67 ft from either edge of the bar screen or over the upper 4 ft of the bar screens. Measurements could be collected on over 66% of the bar screen surfaces on the ESBSs.

The high sampling rate and small sample volume of the ADV provided an excellent tool to collect velocity measurements close to the structure. The velocities of the flows were within the bounds of the ADV. The X and Y-axes of the probe measured flow without aliasing to over 8 ft/sec. The Z-axis measured flows to about 2.5 ft/sec before aliasing. Although the aliased data can be unwrapped, orienting the probe with the Z-axis oriented across the ESBS in the direction of low flows could alleviate this problem.

Velocity measurements collected along the bar screens of the ESBS at John Day Dam were higher (approximately 0.8 ft/sec) than measurements collected in the WES physical model. The conditions tested in the field were slightly different than the simulated conditions tested in the physical model but probably not enough to see a 0.8 ft/sec average difference. The discharge of our test (21,000 cfs) was 200 cfs higher than the physical model test (20,800 cfs). This difference probably was not great enough to explain the difference in the results. Differences in distance from the screen could account for differences in velocity, but our data were collected between the two distances sampled on the physical model and resulting flows were higher than both of the physical model tests. Our results suggest that the physical model estimates are lower than *in situ* measurements.

There is not enough information available to determine if the increased velocities encountered by fish at the bar screens and contact with the bar screens increased injury and mortality rates. The highest rates of impingement and contact with the bar screens occur in the middle section of the ESBS (Nestler and Davidson 1995). This is where flows were measured to be nearly perpendicular to the screen. Also, as a result of the bar screens efficiency to pass flow with negligible head loss, the bar screens may be hard to detect by fish, which may lead to strikes and impingement of juvenile salmonids (Nestler and Davidson 1995).

Another possible location of injury is in the gate well. Physical model data show that flows in the gate well can be greater than 14 ft/sec in some areas. These high velocities and possible turbulence in the gate well may result in fish contact with the concrete walls of the gate well causing fish injury and mortality.

5.0 References

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Nestler, J. and R. Davidson. 1995. *Imaging Smolt Behavior on an Extended-Length Submerged Bar screen and an Extended-Length Submerged Traveling Screen at the Dalles Dam in 1993.* Prepared for U.S. Army Corps of Engineers District, Portland, Oregon.

U.S. Army Corps of Engineers Walla Walla District. 1999. *Lower Snake and Columbia Rivers Extended Length Submerged Bar Screen (ESBS) System-Wide,* Letter Report, 90 Percent Draft Report.

Figures

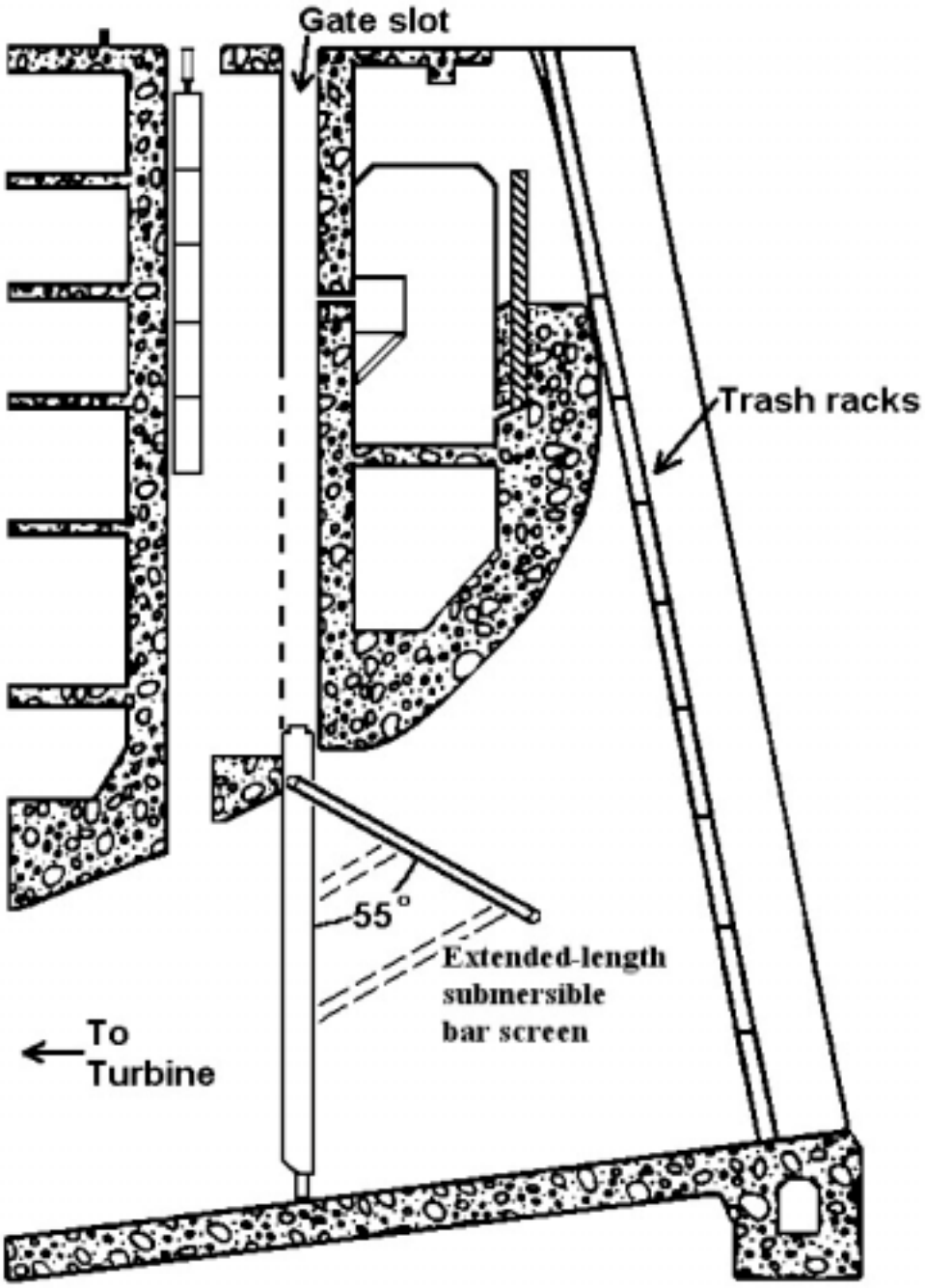

Figure 1. Side View of a Turbine Intake with an ESBS Deployed in the Gate Well Slot in the Extended Position

Figure 2. ESBS Being Moved by the Gantry Crane at John Day Dam. The modified sweep bar with the ADVs attached at the uppermost position at which measurements could by taken on the bar screens.

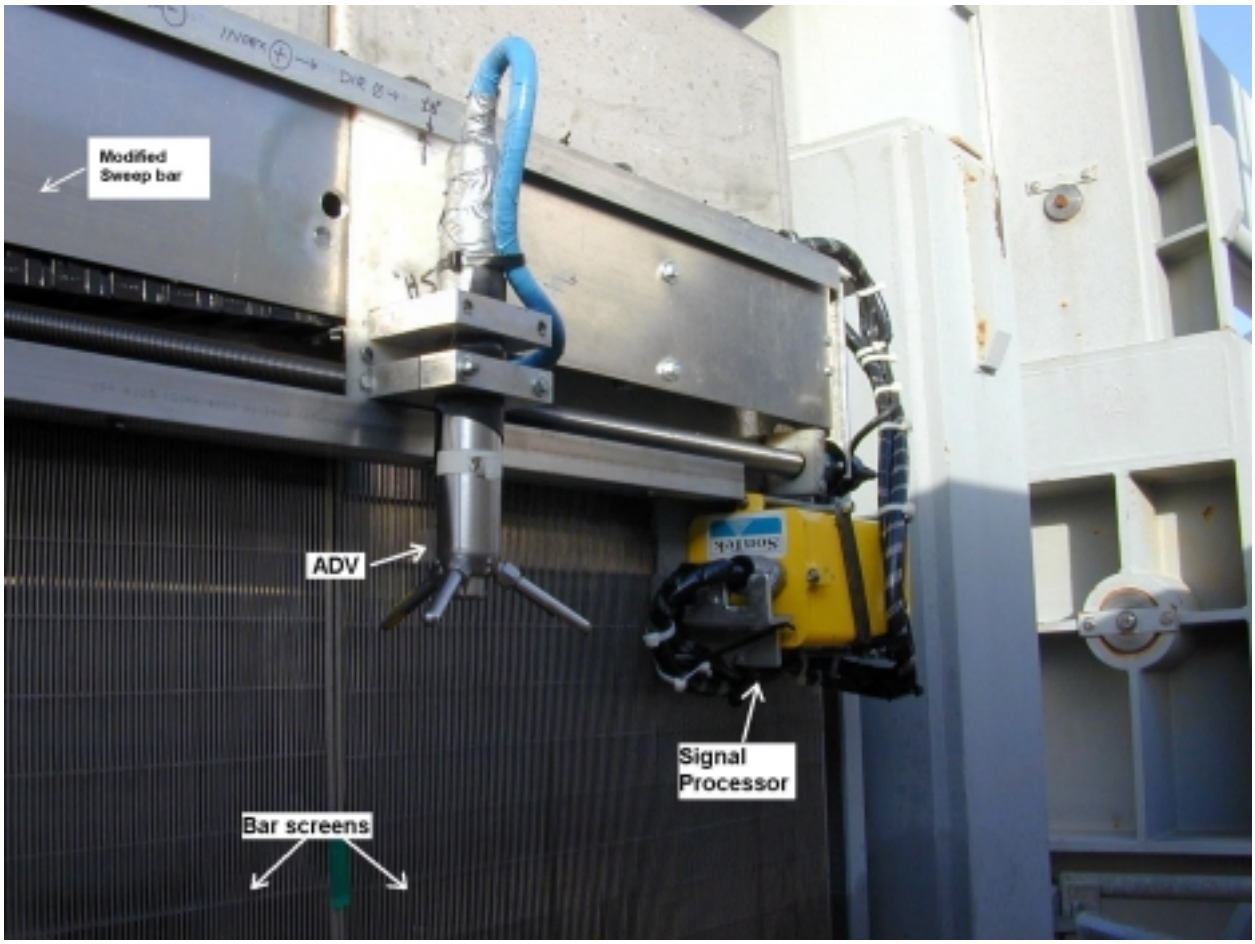

Figure 3. View of a Bar Screen, Used to Guide Fish, on the Upstream Face of the ESBS Showing Position of the Modified Sweep Bar and ADV Relative to the Bar Screens. Also in the figure are one of the two ADV's, 6.75 in. from the surface of the bar screen, and an underwater canister containing the signal processing hardware.

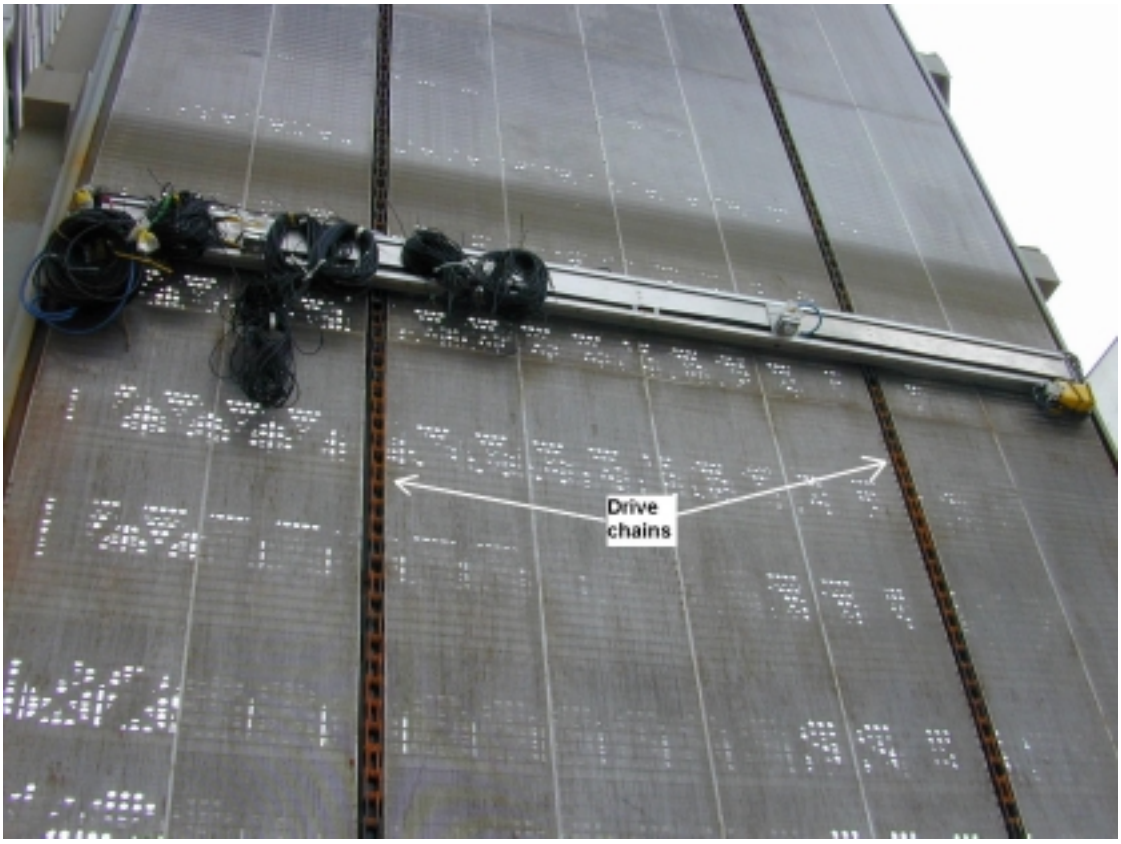

Figure 4. View of the Modified Sweep Bar, Attached to the Drive Chains, in Position across the Bar Screens on the ESBS. No brushes were attached to the modified sweep bar to reduce restriction of flow up the bar screens.

Figure 5. The Stepper Motor, Attached to the End of the Threaded Shaft, Was Housed in a Waterproof Canister. An air line was threaded into the end of the housing to keep the inside of the housing at equal pressure with the outside environment in order to reduce the chance of seal leakage.

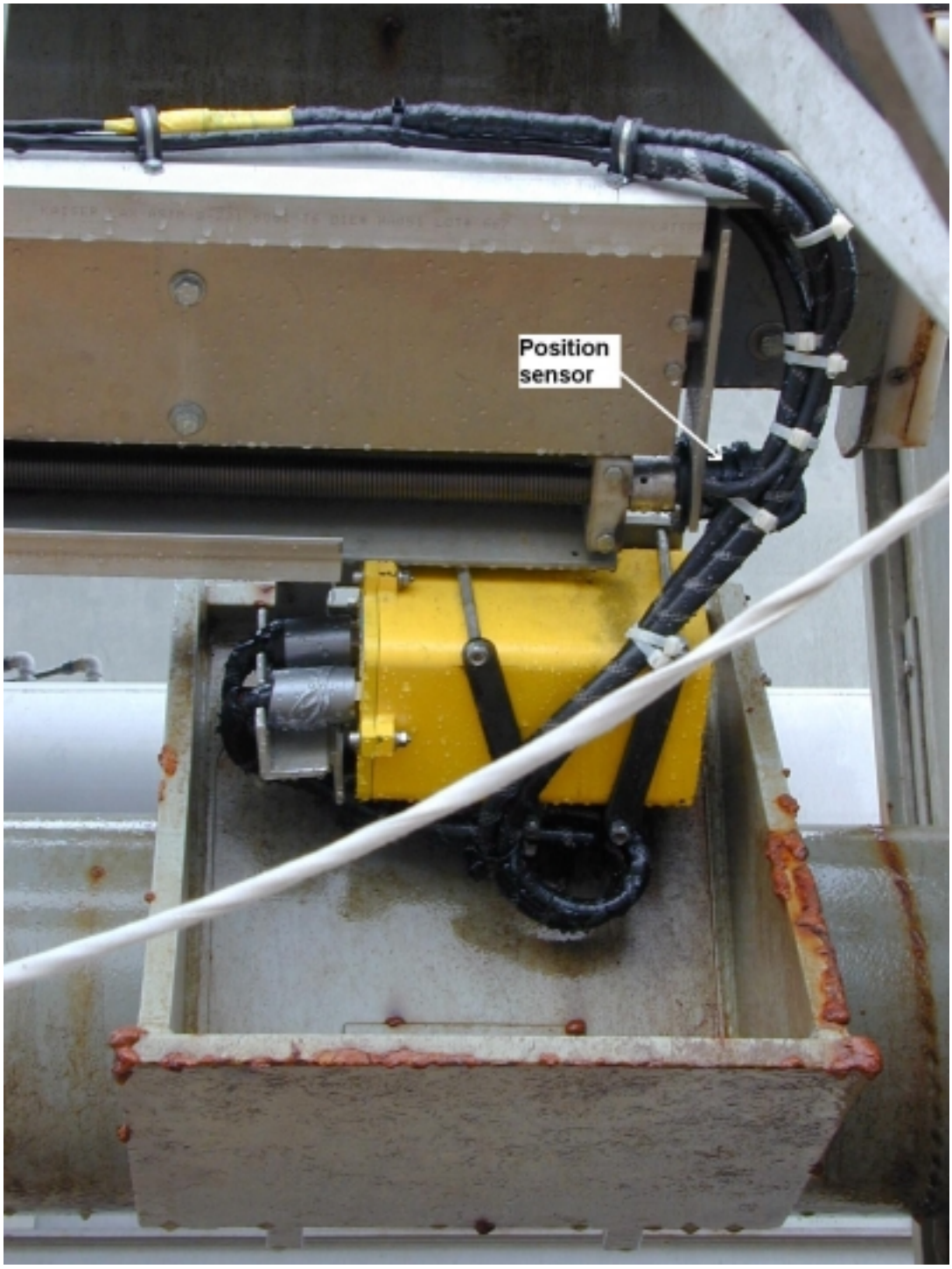

Figure 6. A Tecnadyne Position Sensor was Mounted on the Threaded Shaft at the Opposite End from the Stepper Motor to Provide Data on the Position of the ADVs on the Sweep Bar as the Location Flow Data Was Collected along the Horizontal (Y) Axis on the Bar Screens of the ESBS

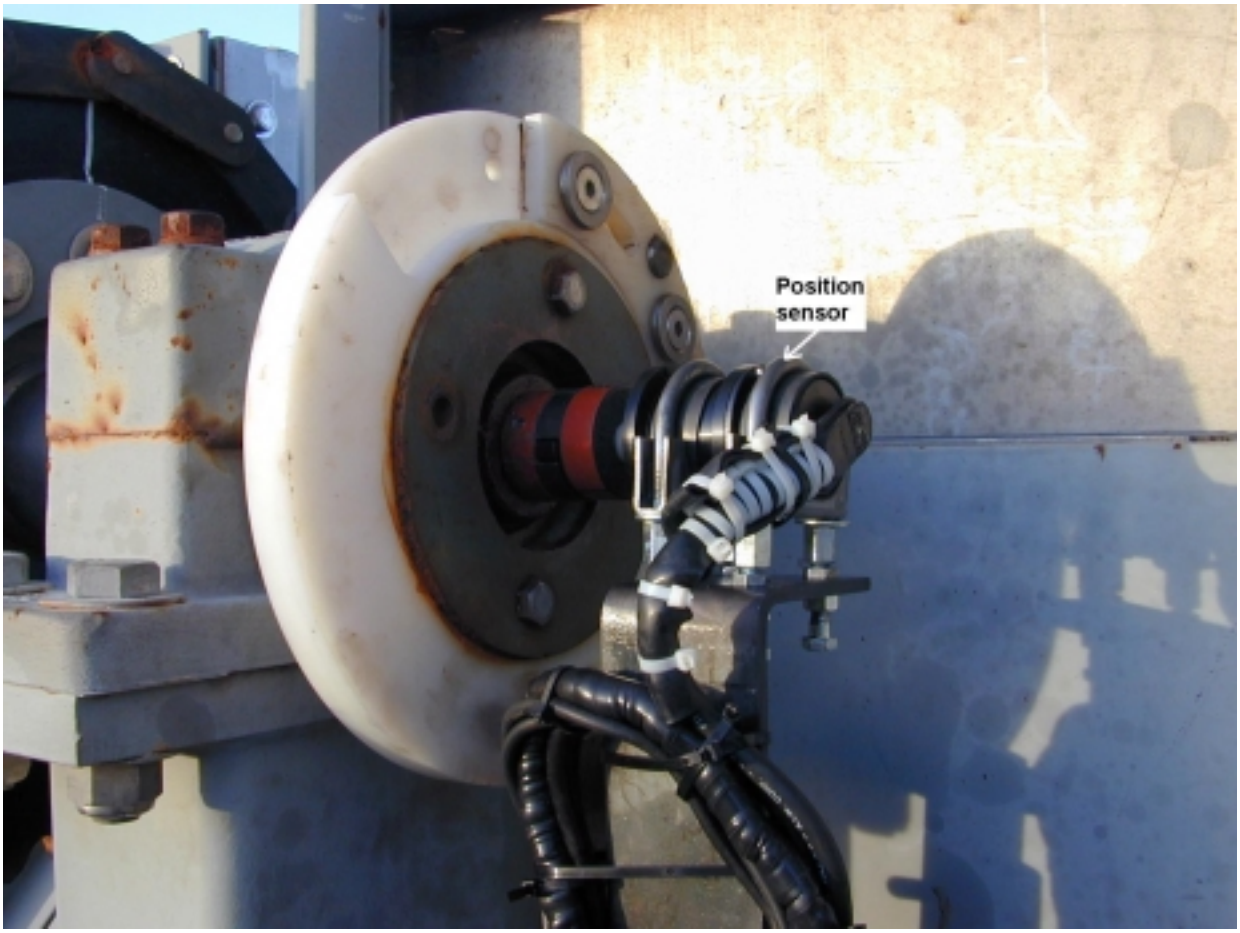

Figure 7. A Tecnadyne Position Sensor Was Mounted to the End of the Drive Shaft at the Top of the ESBS. The drive shaft is connected to the chains that move the sweep bar up and down the face of the ESBS. The position sensor provided vertical position data on the modified sweep bar.

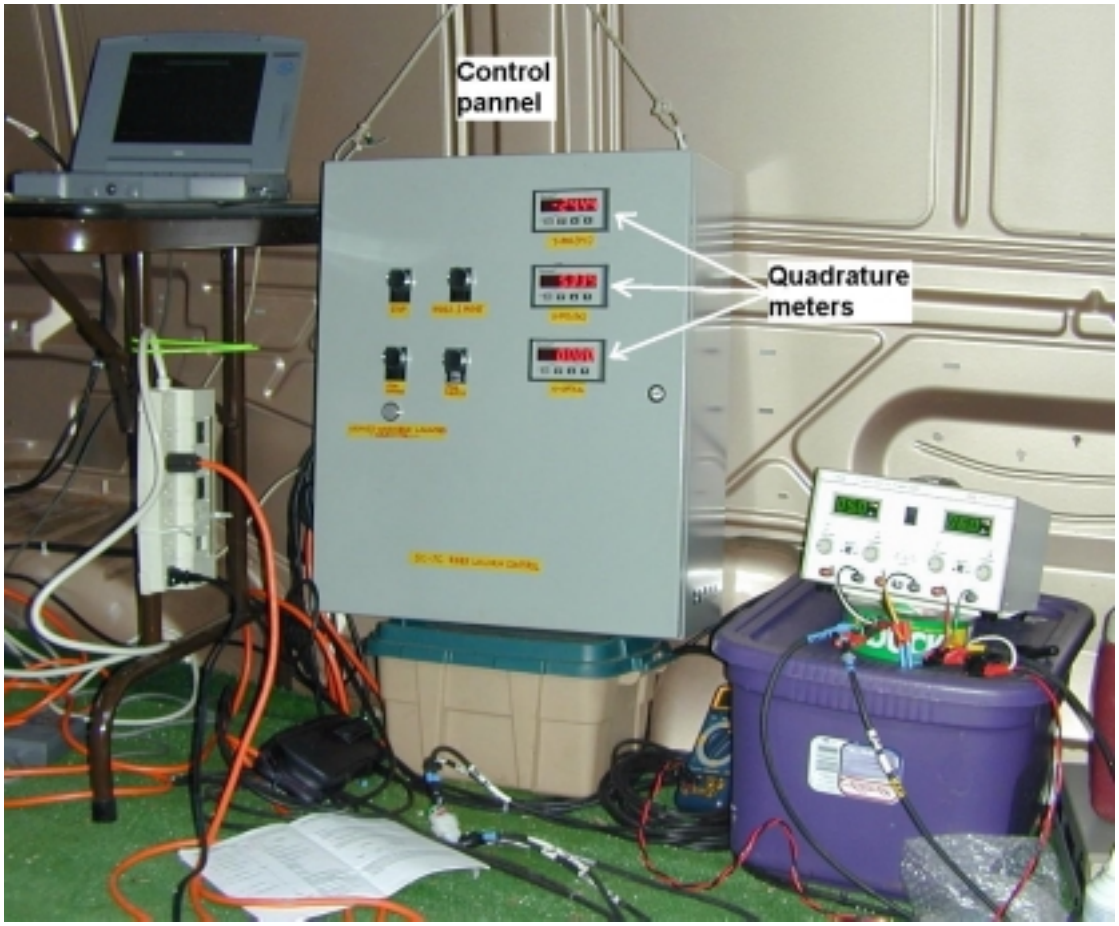

Figure 8. The Control Panel Used to Control and Monitor Movement of the ADVs across the Bar Screens. The quadrature meters displayed position of the modified sweep bar on the bar screens. These data were supplied by the two Tecnadyne position sensors.

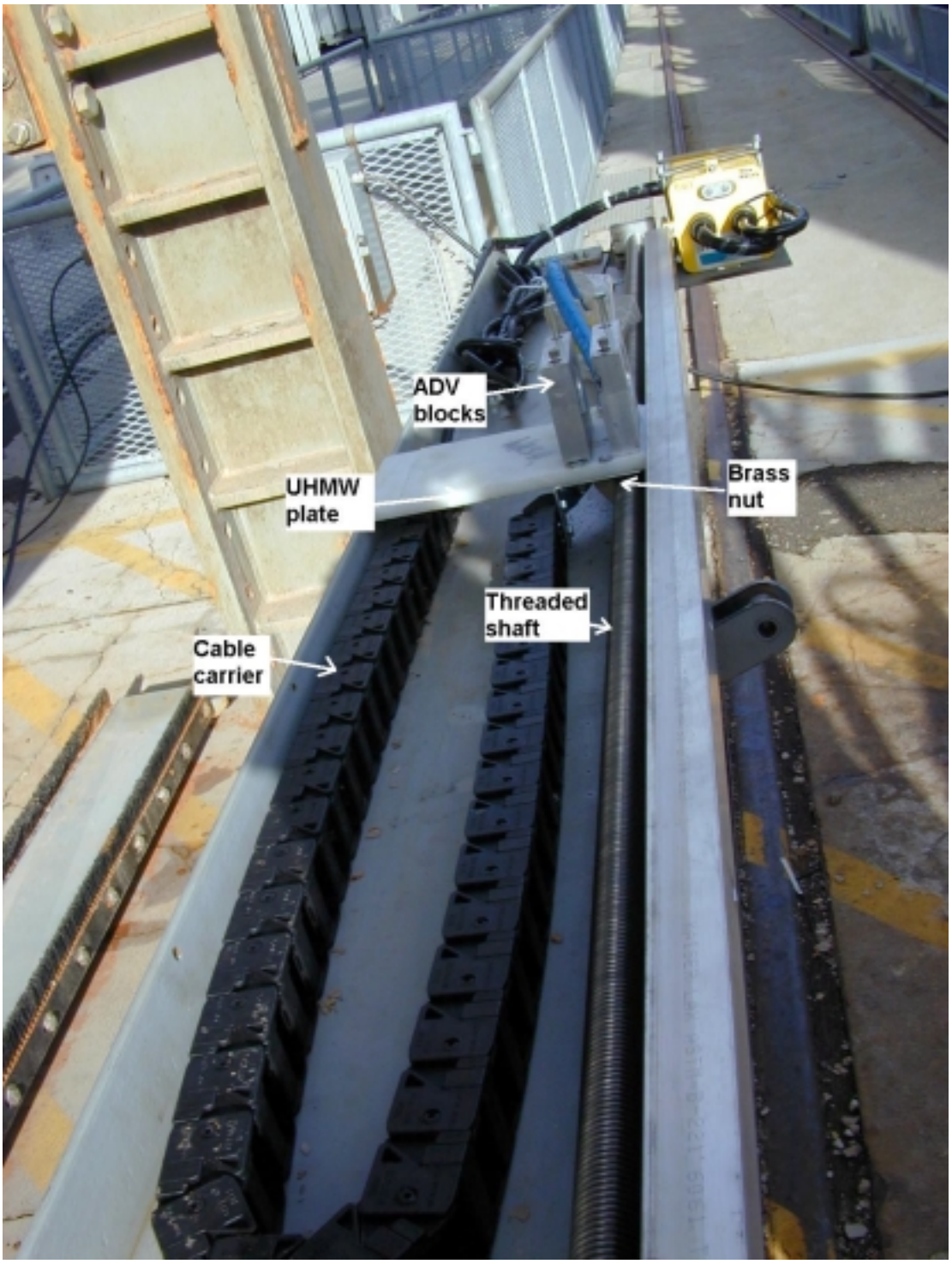

Figure 9. View of the Modified Sweep Bar during Construction showing a Cable Carrier. Also shown are the aluminum blocks that held the ADVs. These blocks were attached to a UHMW plastic plate that was connected to a brass nut that was threaded onto the shaft.

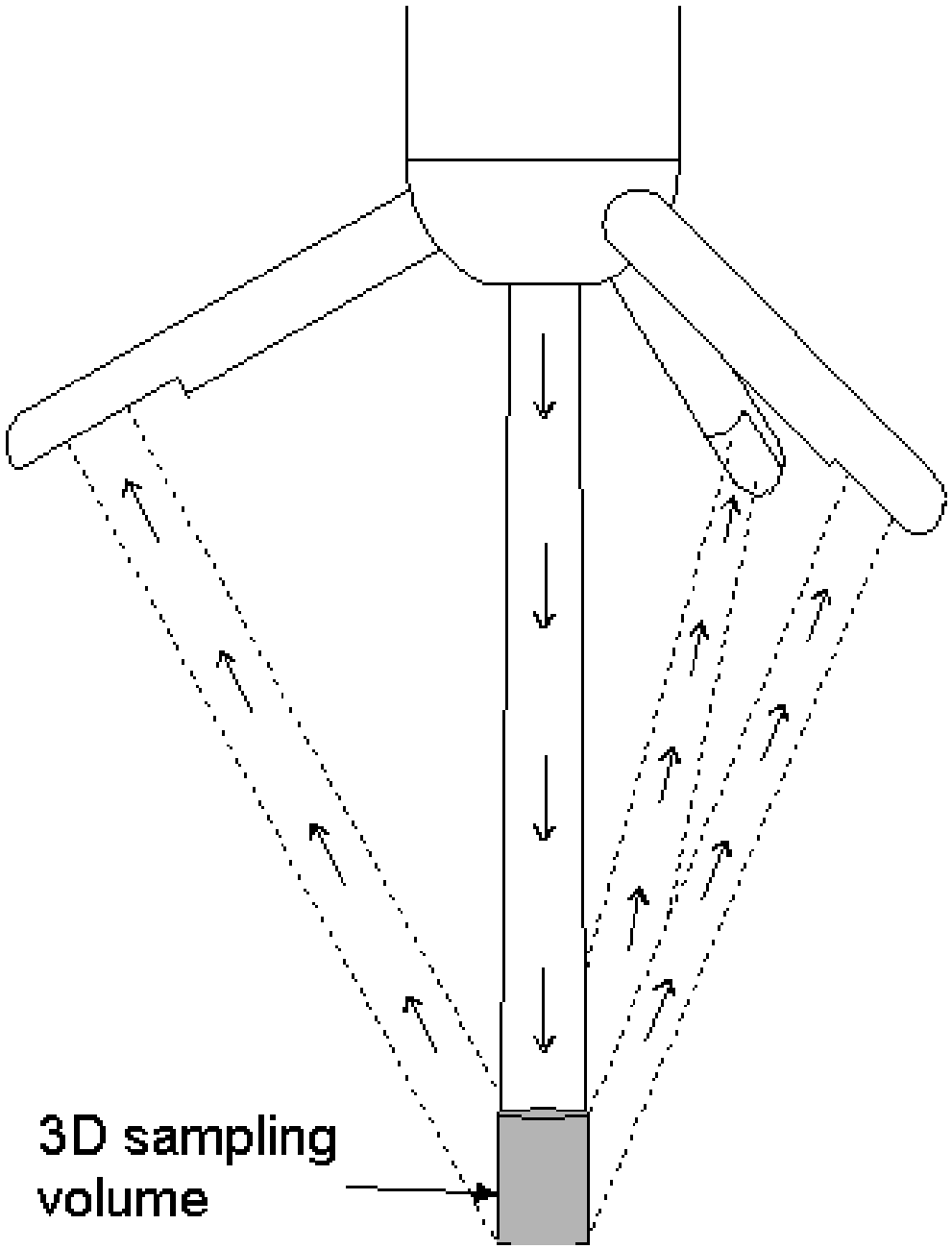

Figure 10. Diagram of the Head of an ADV Describing the Transmission and Receiving of Signals and Location of the Sample Volume Relative to the ADV

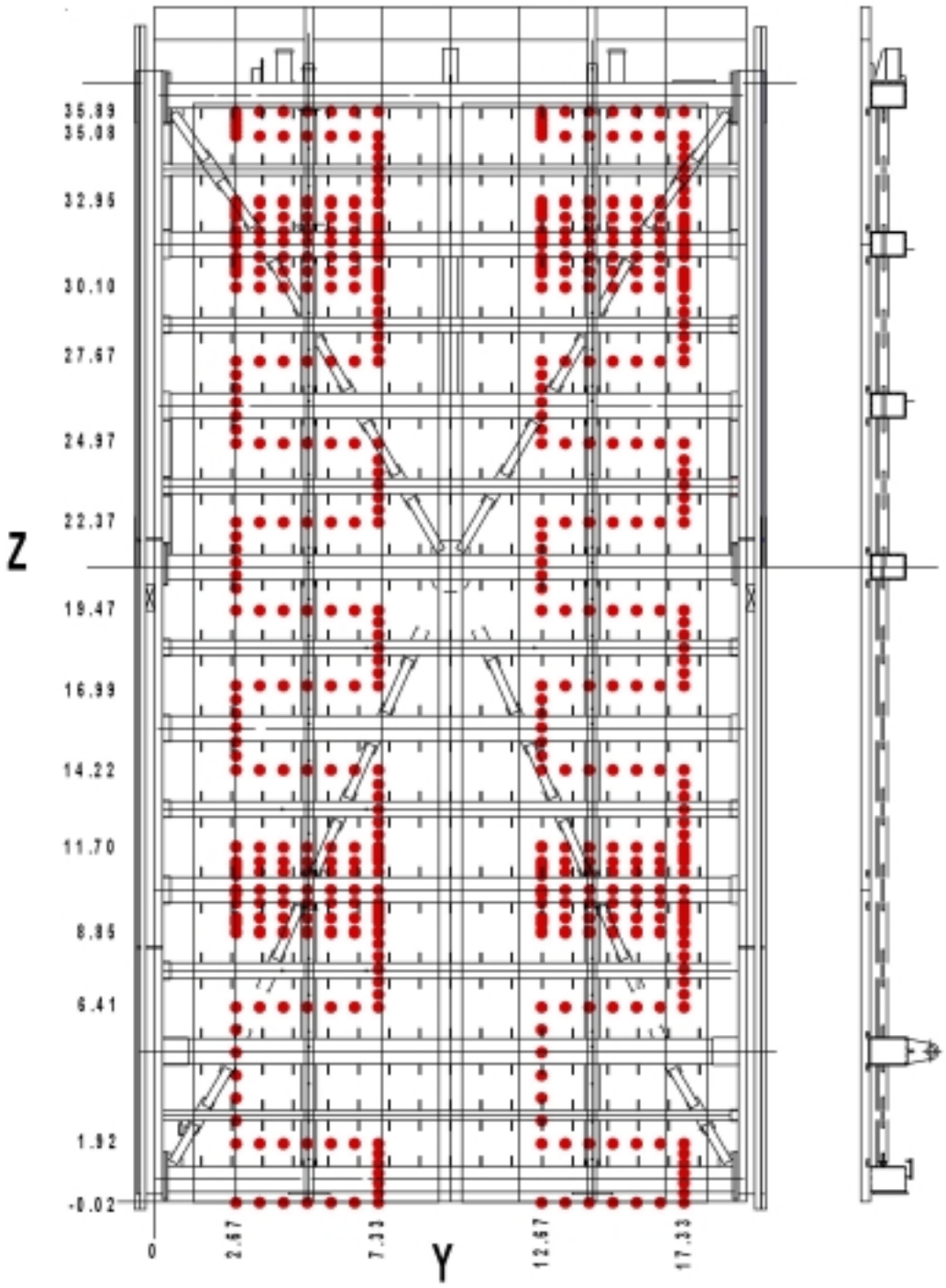

Figure 11. View of ESBS Showing Locations where Flow Data Were Collected with ADVs. Stationary samples were collected at 2.67, 7.33, 12.67, and 17.33 ft on the horizontal axis and at each of the corresponding vertical positions (ft) indicated on left side of diagram. Flow measurements were also collected during the move between stationary positions. These measurements were divided into five equal sizes and averaged, providing five estimates across the move.

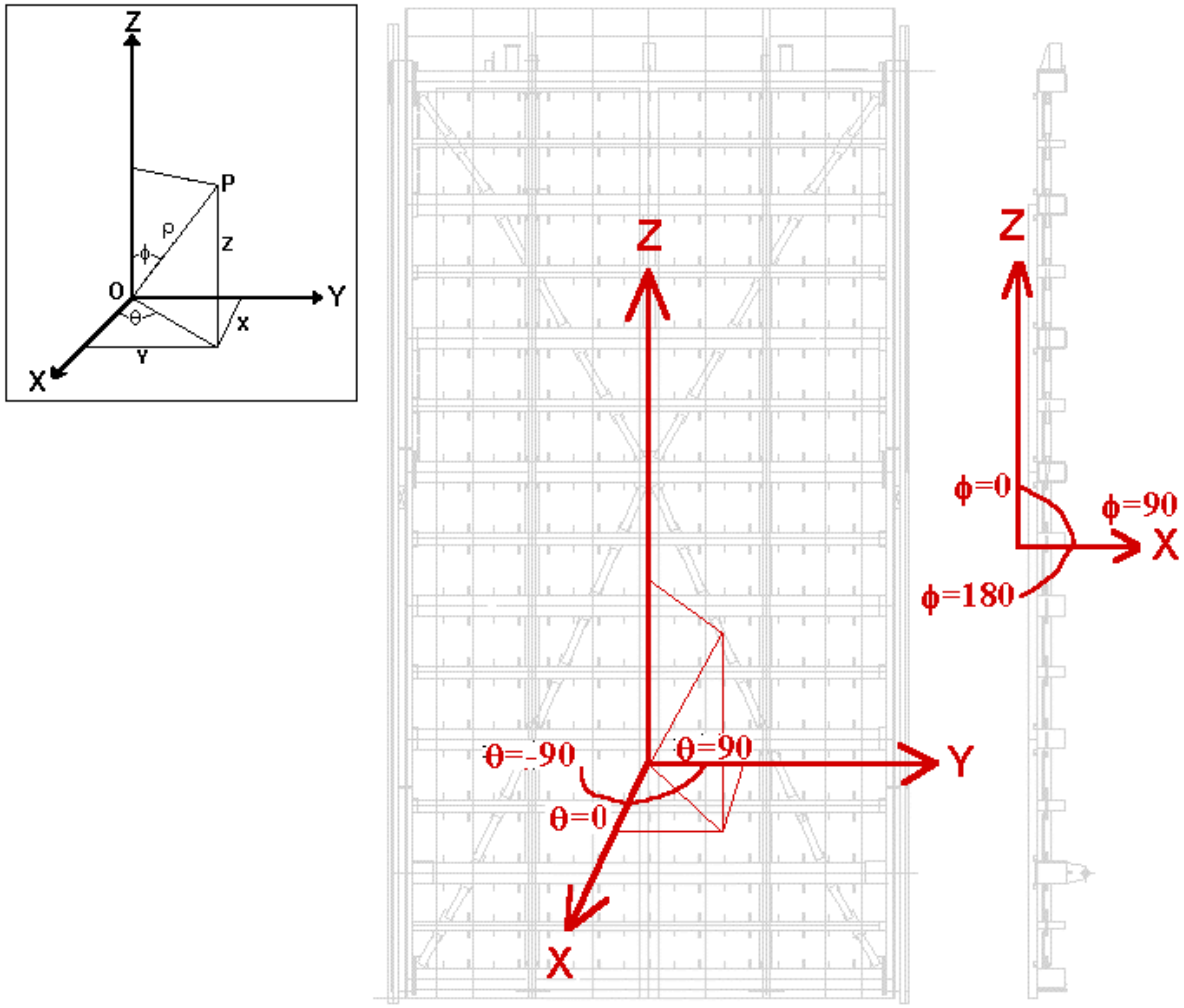

Figure 12. Relationship between Cartesian and Spherical Coordinate Systems. In the Cartesian system X-axis was perpendicular, Y-axis horizontal (across the ESBS), and Z-axis longitudinal (up the ESBS) to the bar screens. In the spherical coordinate system, rho (ρ) is the magnitude velocity and theta (θ) is the angle between the flow and the Y-axis. Phi (ϕ) is the angle of flow through the screens, where 0° is flow up the screens parallel to the face of the screens, 90° is perpendicular to the screens, and 180° is flow down the screens parallel to the face of the screens.

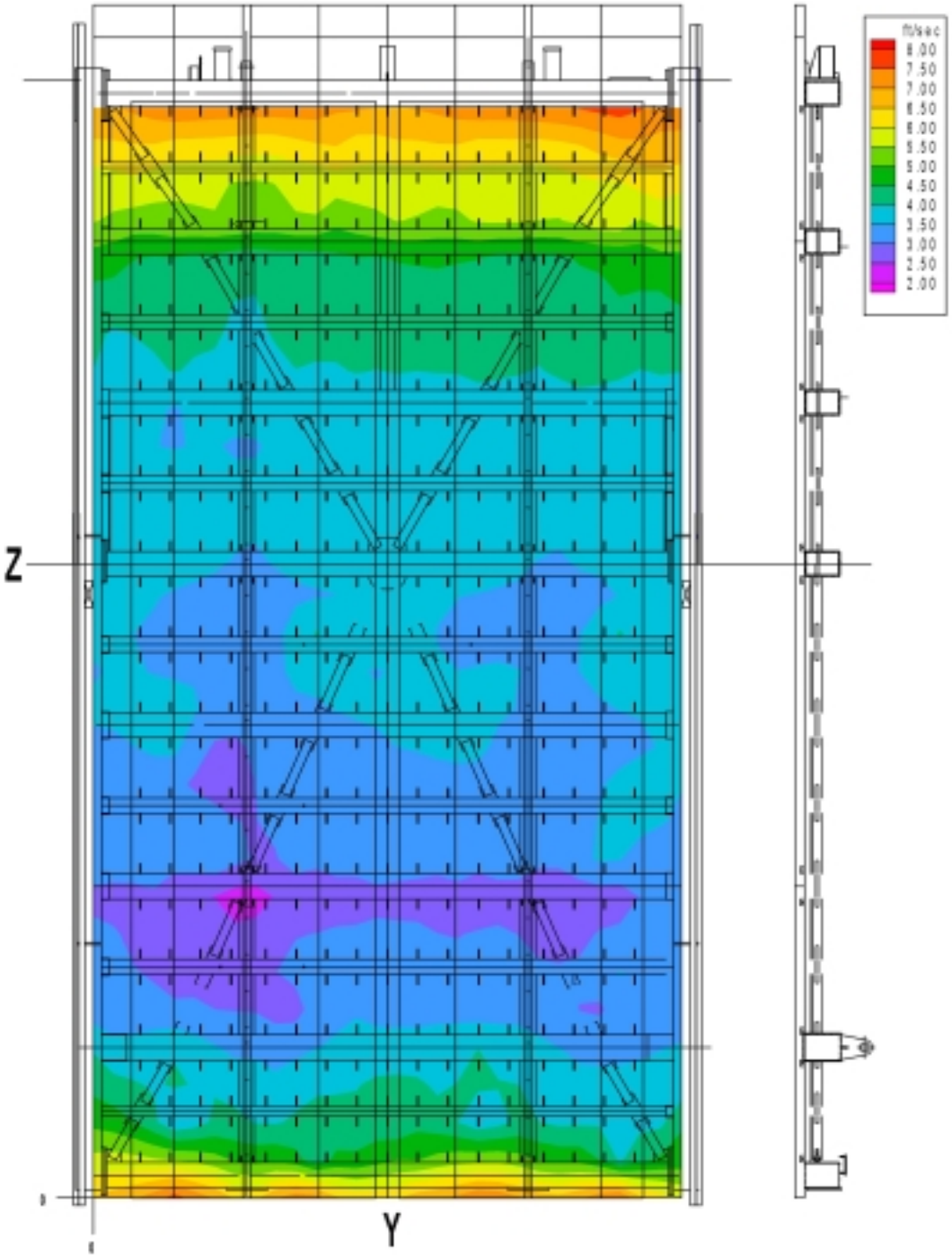

Figure 13. Contour Plot of Magnitude Velocity (ft/sec) 6.75 in. from the Surface of the Bar Screens on the ESBS at 155 MW-Turbine Load

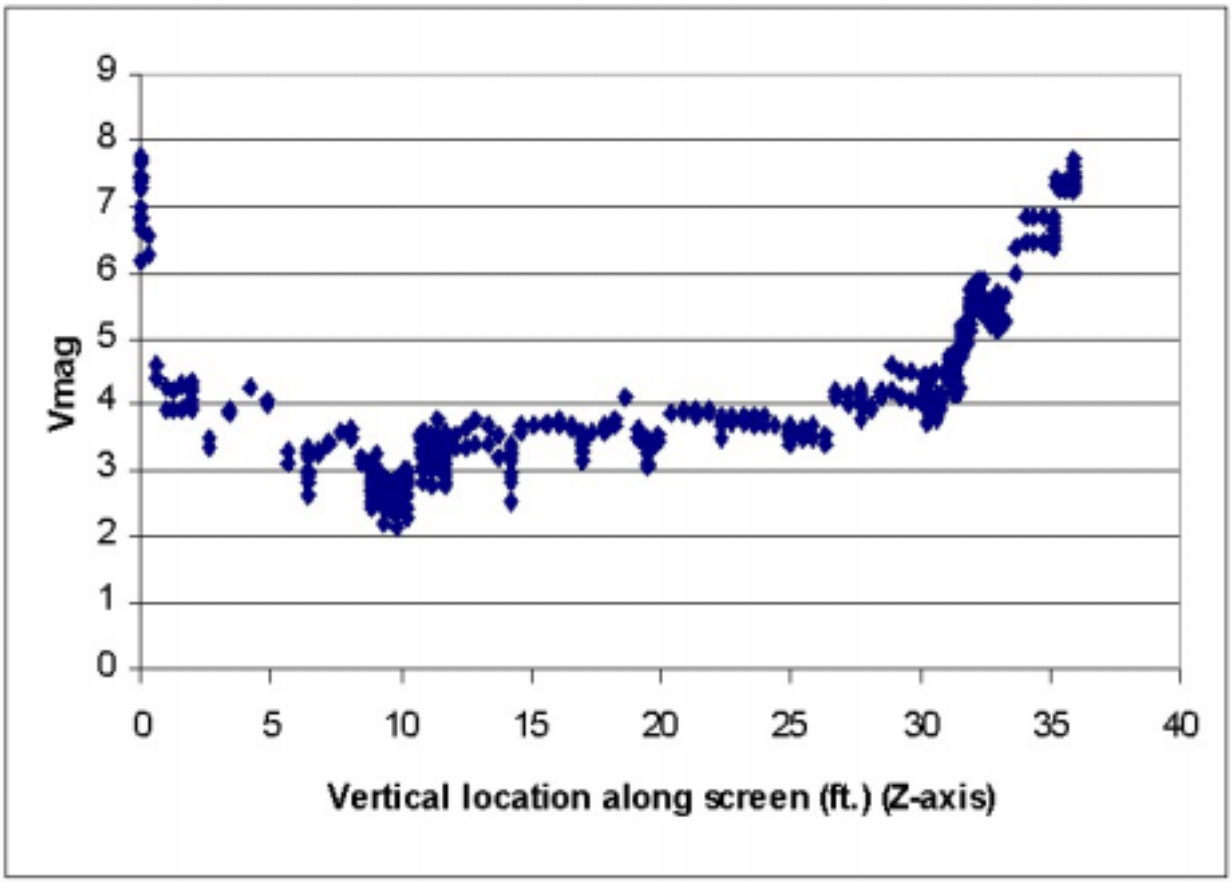

Figure 14. Magnitude Water Velocity (ft/sec) from the Lower End (0 ft) to 36 ft up the ESBS. Measurements were collected 6.75 in. from the surface of the bar screens at 155 MW.

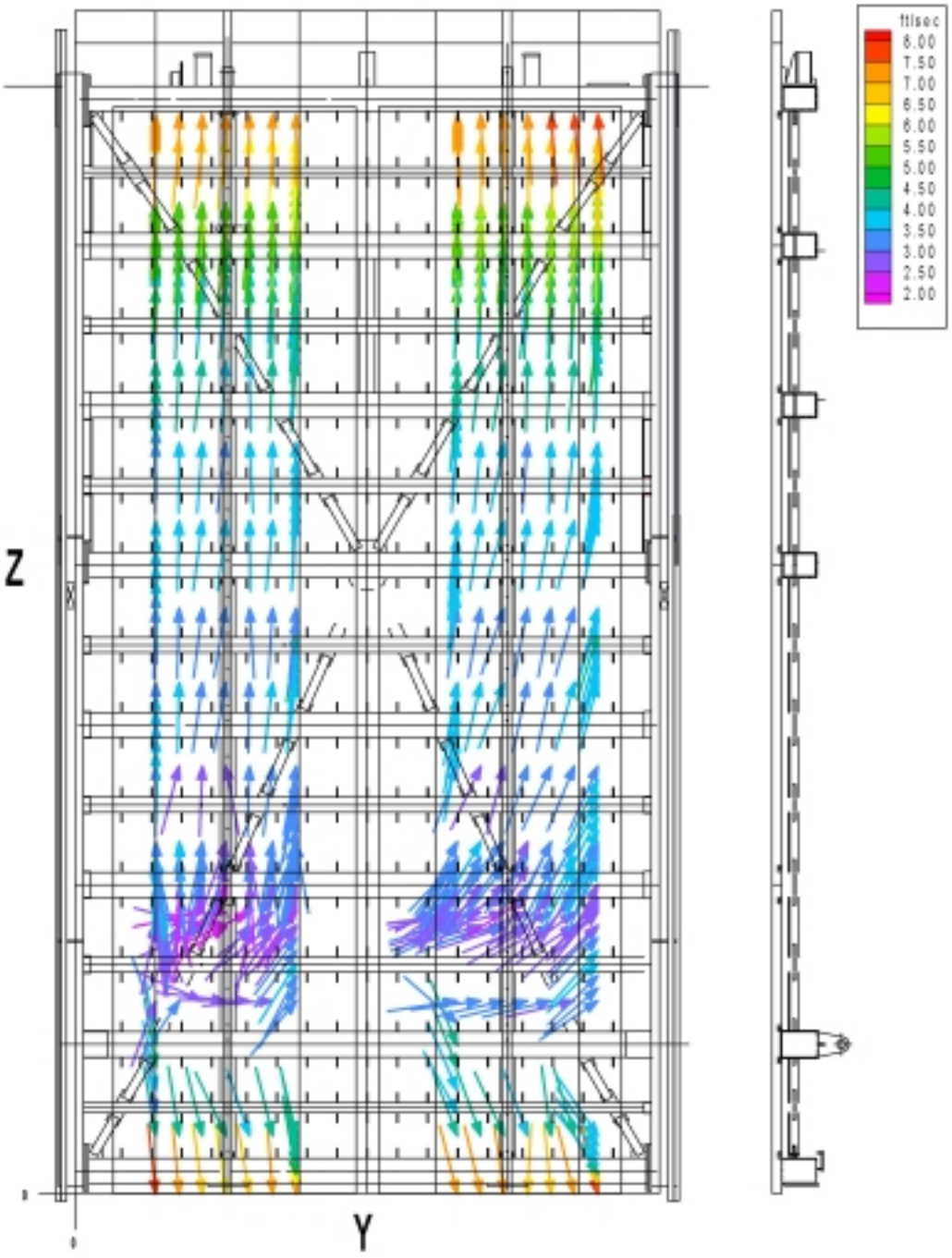

Figure 15. Vector Water Velocity (ft/sec) 6.75 in. from the Surface of the Bar Screens on the ESBS at 155-MW Turbine Load. Vector color is a function of magnitude water velocity (ft/sec) and vector direction is the direction of flow in the Y/Z plane relative to ADV orientation.

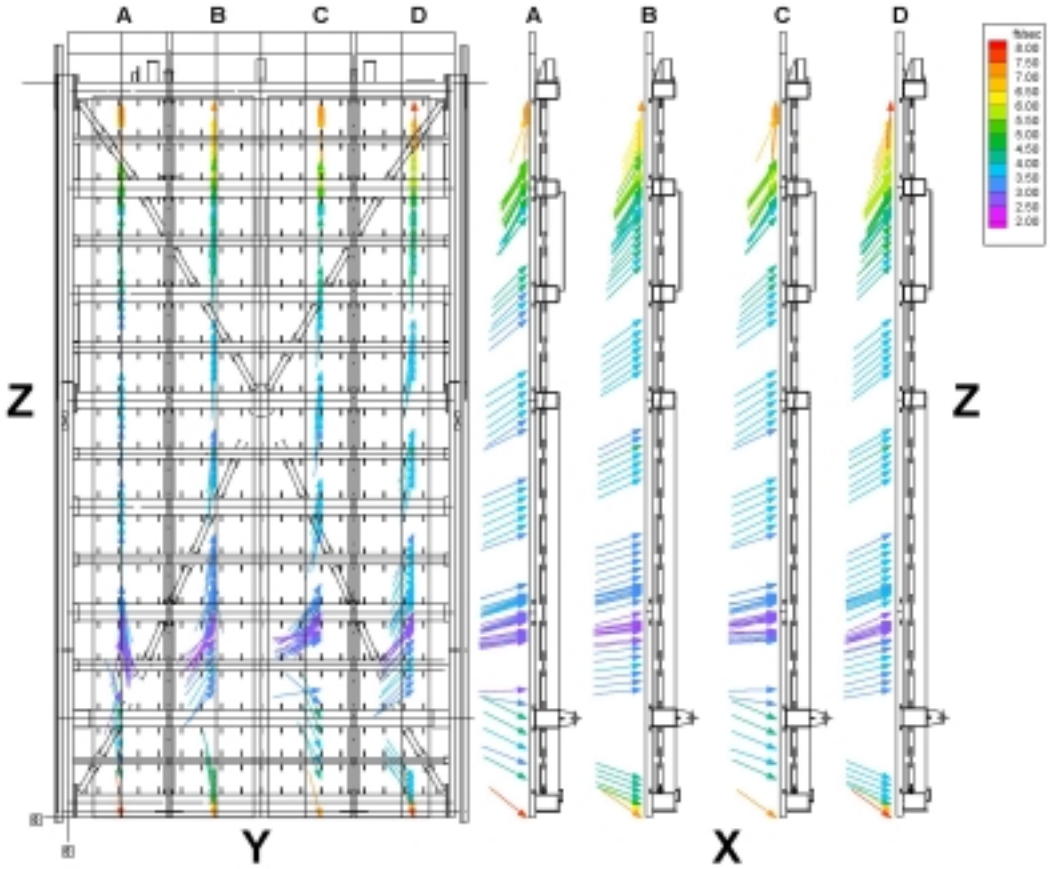

Figure 16. The Face View of the ESBS Shows Vector Water Velocities (ft/sec) in the Y/Z plane, 6.75 in. from the Surface of the Bar Screens, in Four Vertical Zones at 2.67 ft (A), 7.33 ft (B), 12.67 ft (C), and 17.33 ft (D) across the ESBS. The four side views of the ESBS show vector velocities in the X/Z plane relative to the orientation of the ADV at 155 MW turbine load. Each side view corresponds by letter with a zone of the face view. Vector color is a function of magnitude velocity (ft/sec) and vector direction represents the direction of bulk flow.

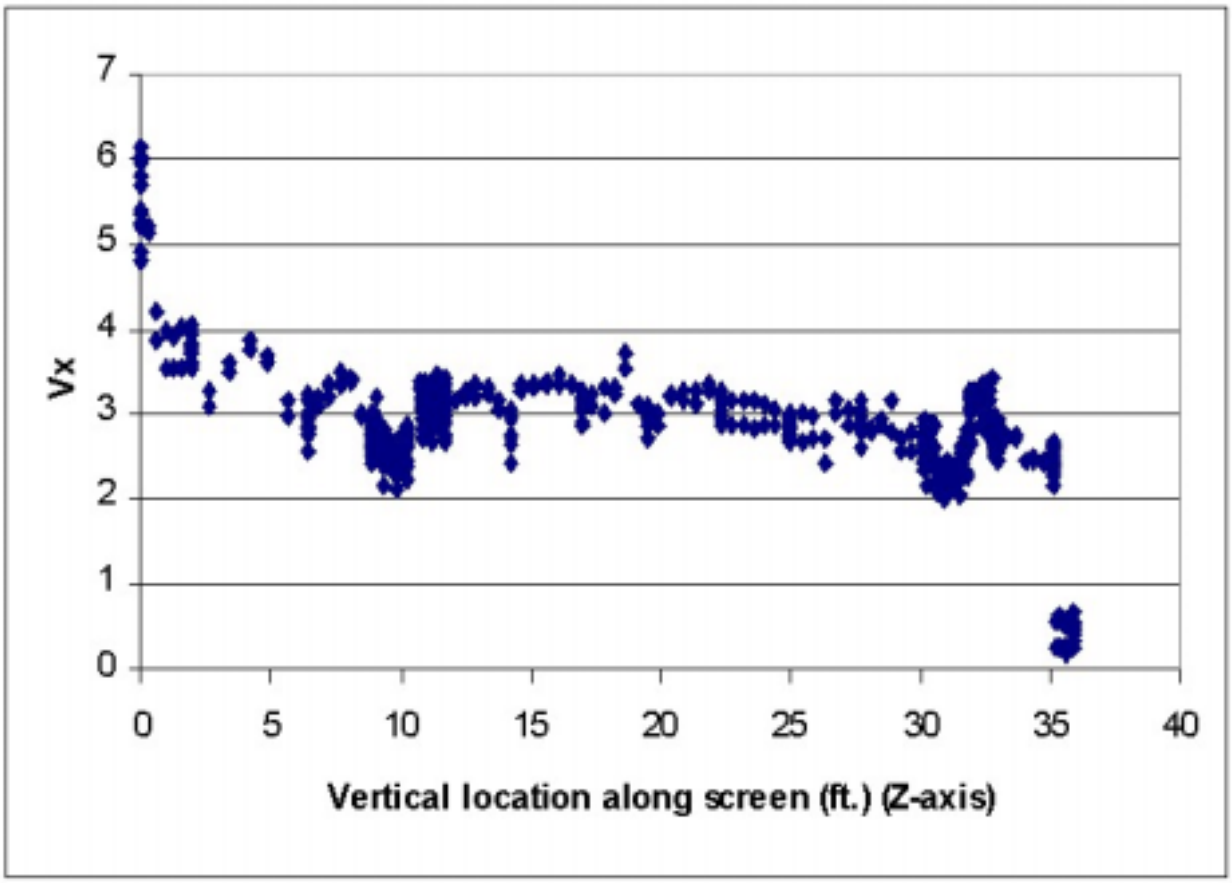

Figure 17. Vector Water Velocity (ft/sec) in the X-Axis (perpendicular to the bar screens) from the Lower End (0 ft) to 36 ft up the ESBS. Measurements were collected 6.75 in. from the surface of the bar screens at 155-MW turbine load.

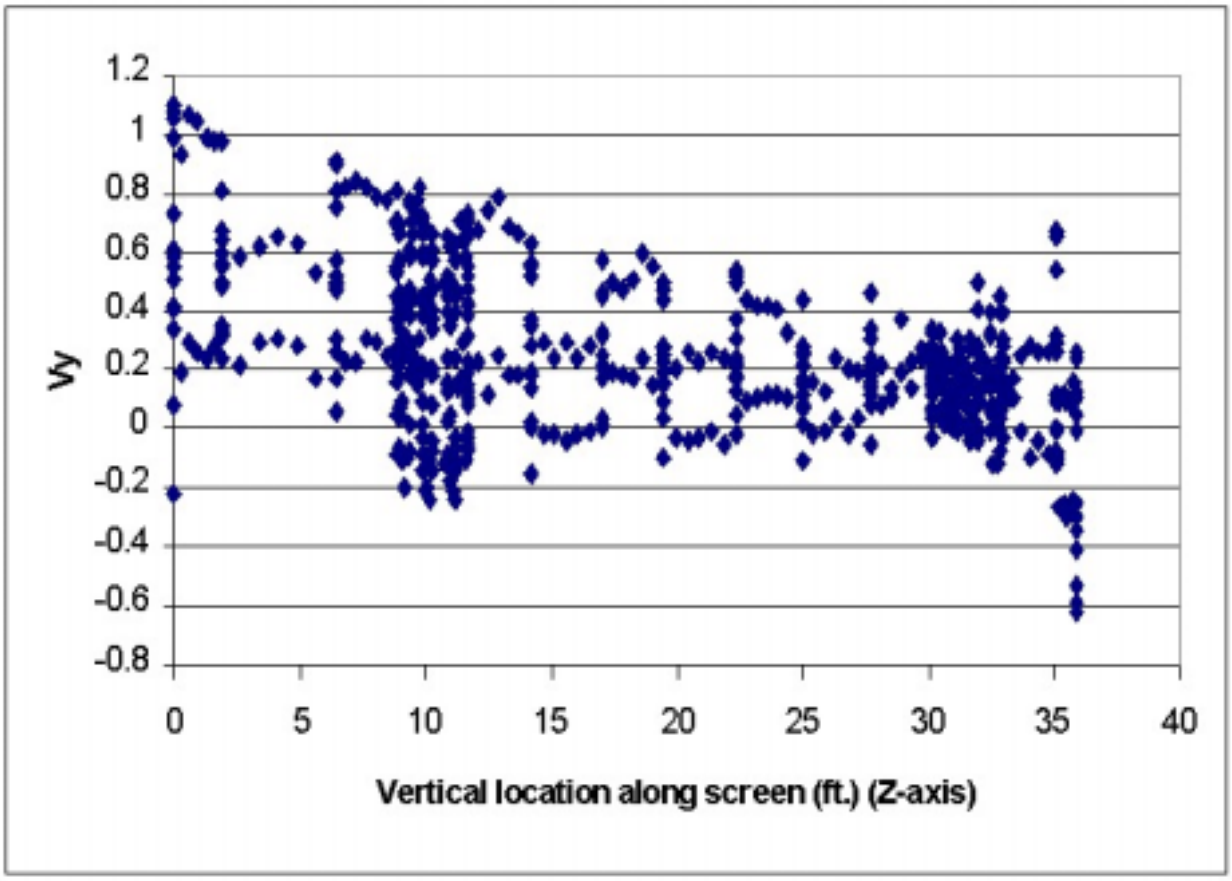

Figure 18. Vector Water Velocity (ft/sec) in the Y-Axis (horizontal to the bar screens) from the Lower end (0 ft) to 36 ft up the ESBS. Measurements were collected 6.75 in. from the surface of the bar screens at 155-MW turbine load.

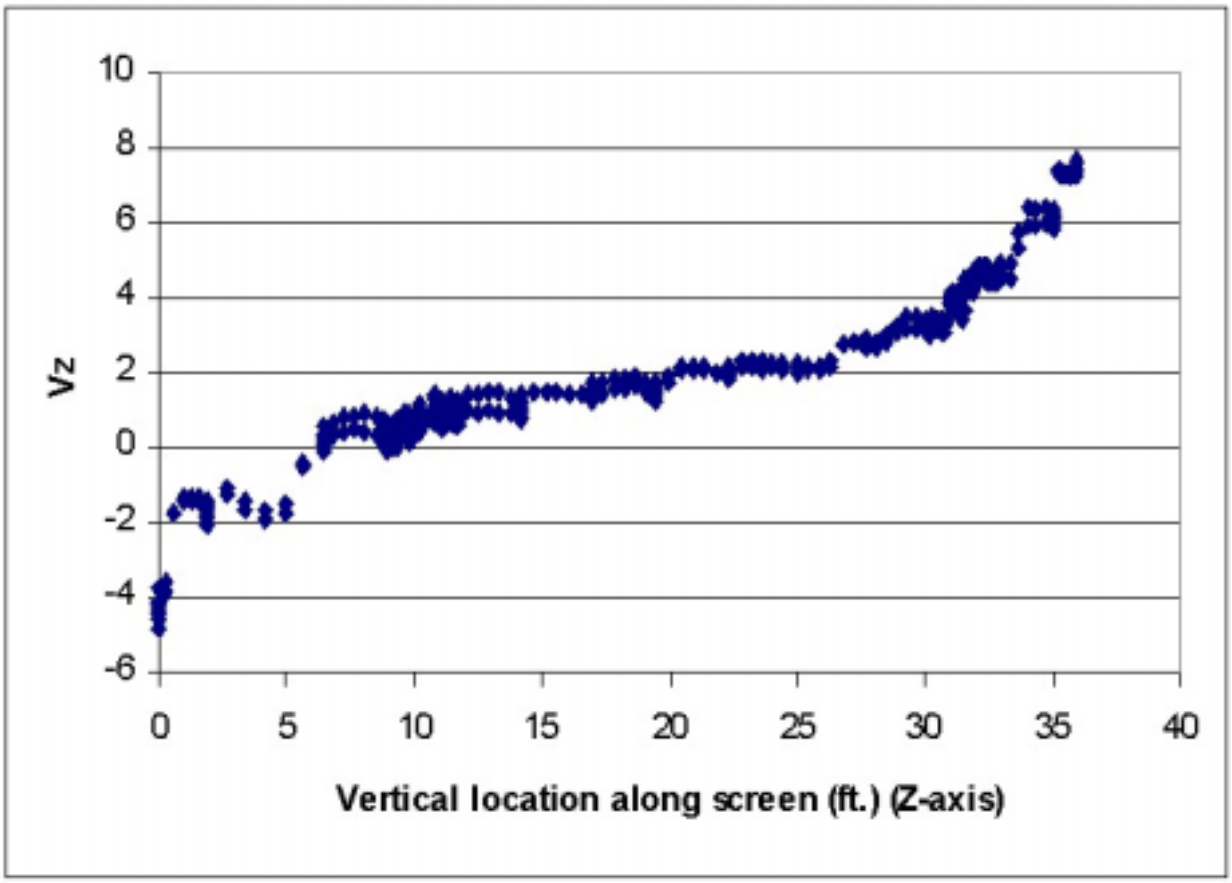

Figure 19. Vector Water Velocity (ft/sec) in the Z-Axis (longitudinal to the bar screens) from the Lower End (0 ft) to 36 ft up the ESBS. Measurements were collected 6.75 in. from the surface of the bar screens at 155-MW turbine load.

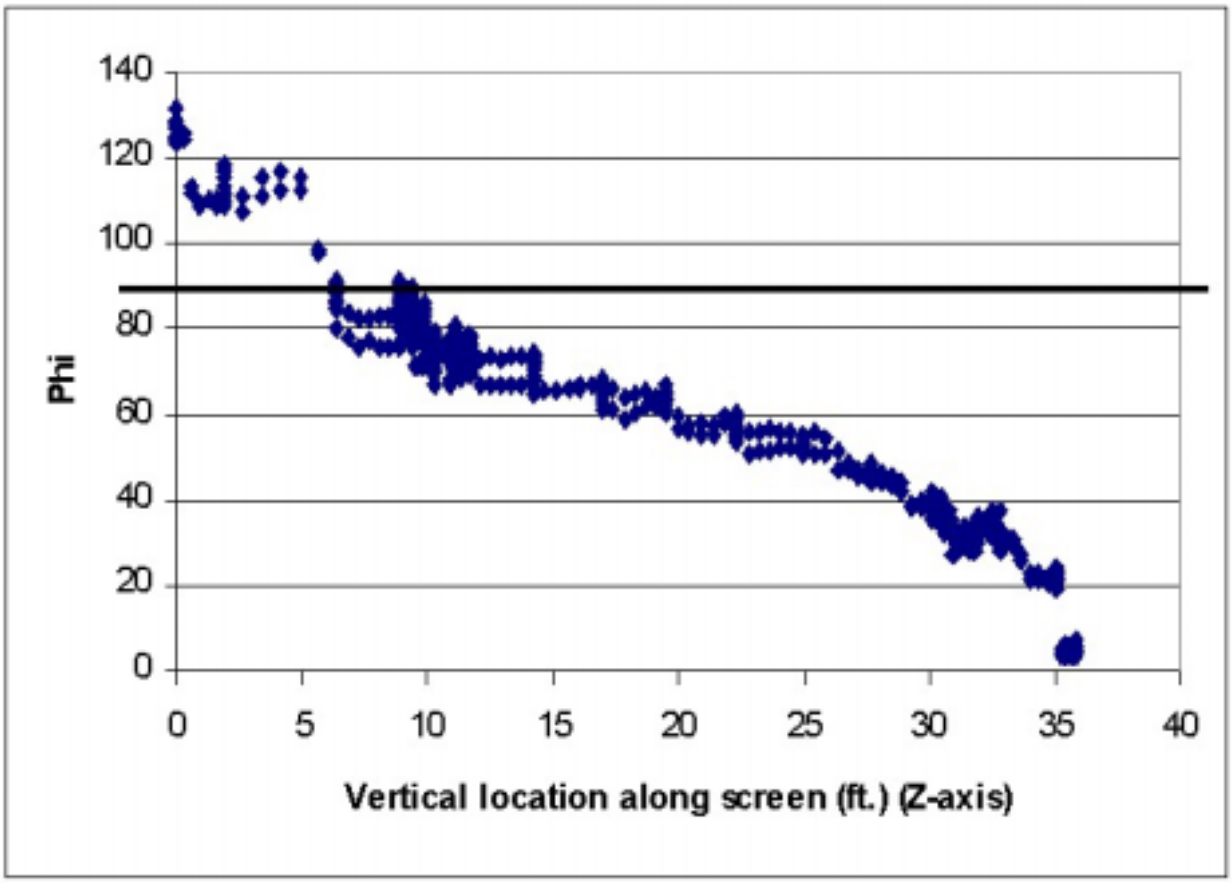

Figure 20. Angular Direction of Flow Phi (ϕ) in the Perpendicular Plane (X-axis) to the Bar Screens at 155-MW Turbine Load. The line at 90° indicates the division between flow up the screens toward the gate well (<90°) and down the screen (>90°). If the angular direction of flow is 90° then flow is perpendicular to the bar screens.

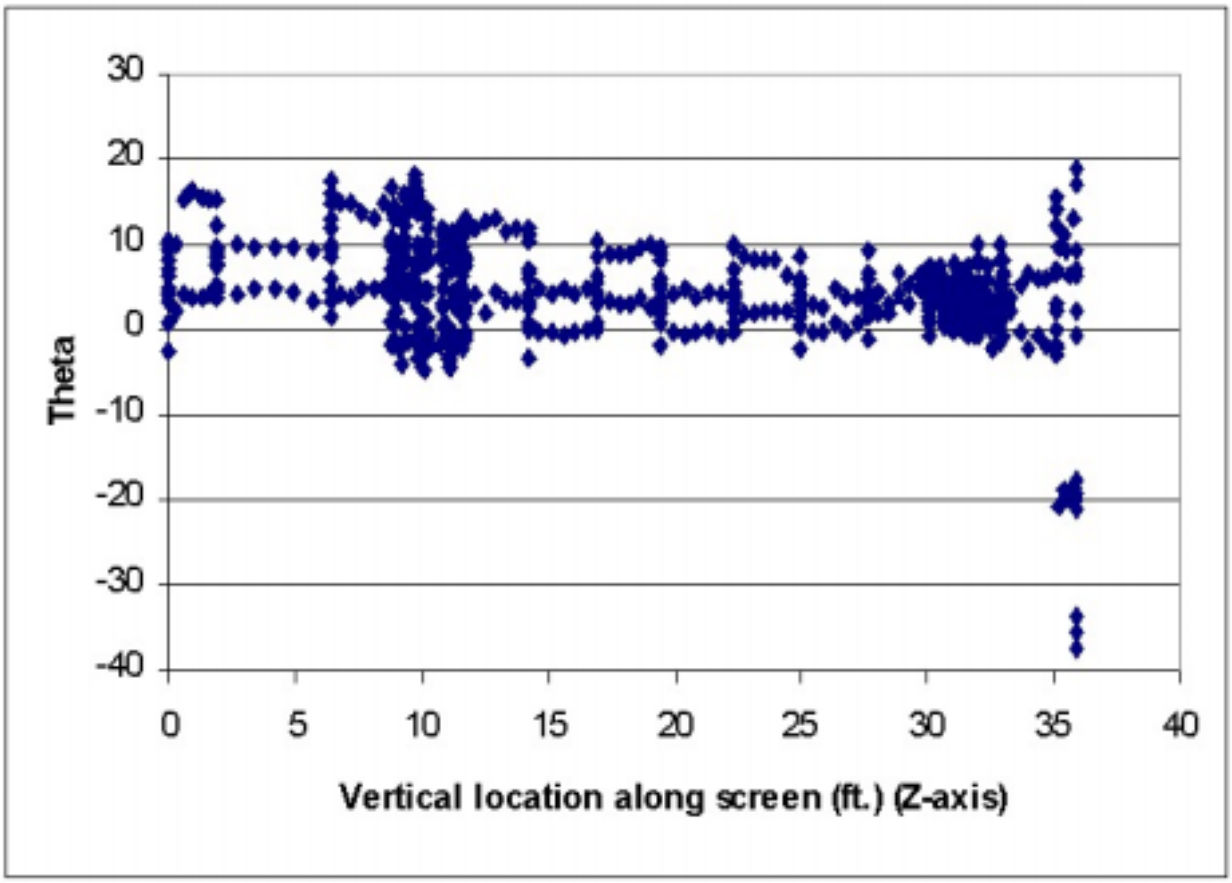

Figure 21. Angular Direction of Flow Theta (θ) in the Horizontal Plane (Y-axis) to the Bar Screens at 155-MW turbine load. When Theta is greater than 0° the flow is moving toward the right side of the ESBS across the bar screen and to the left when the Theta is less than 0°. When Theta equals 0° flow is up the bar screens with no horizontal movement.

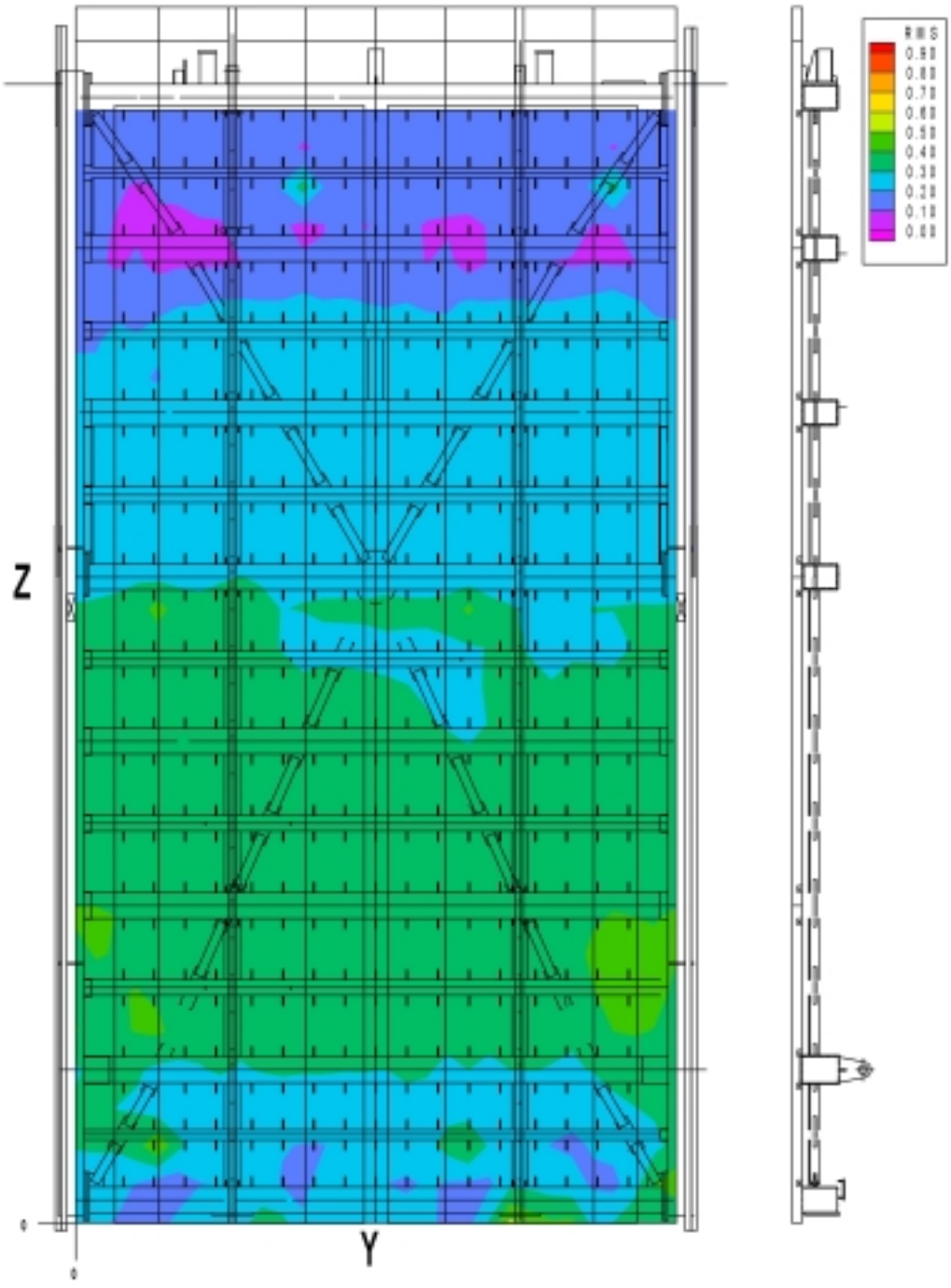

Figure 22. Contour Plot of Magnitude Flow RMS Turbulence 6.75 in. from the Surface of the Bar Screens on the ESBS at 155-MW Turbine Load

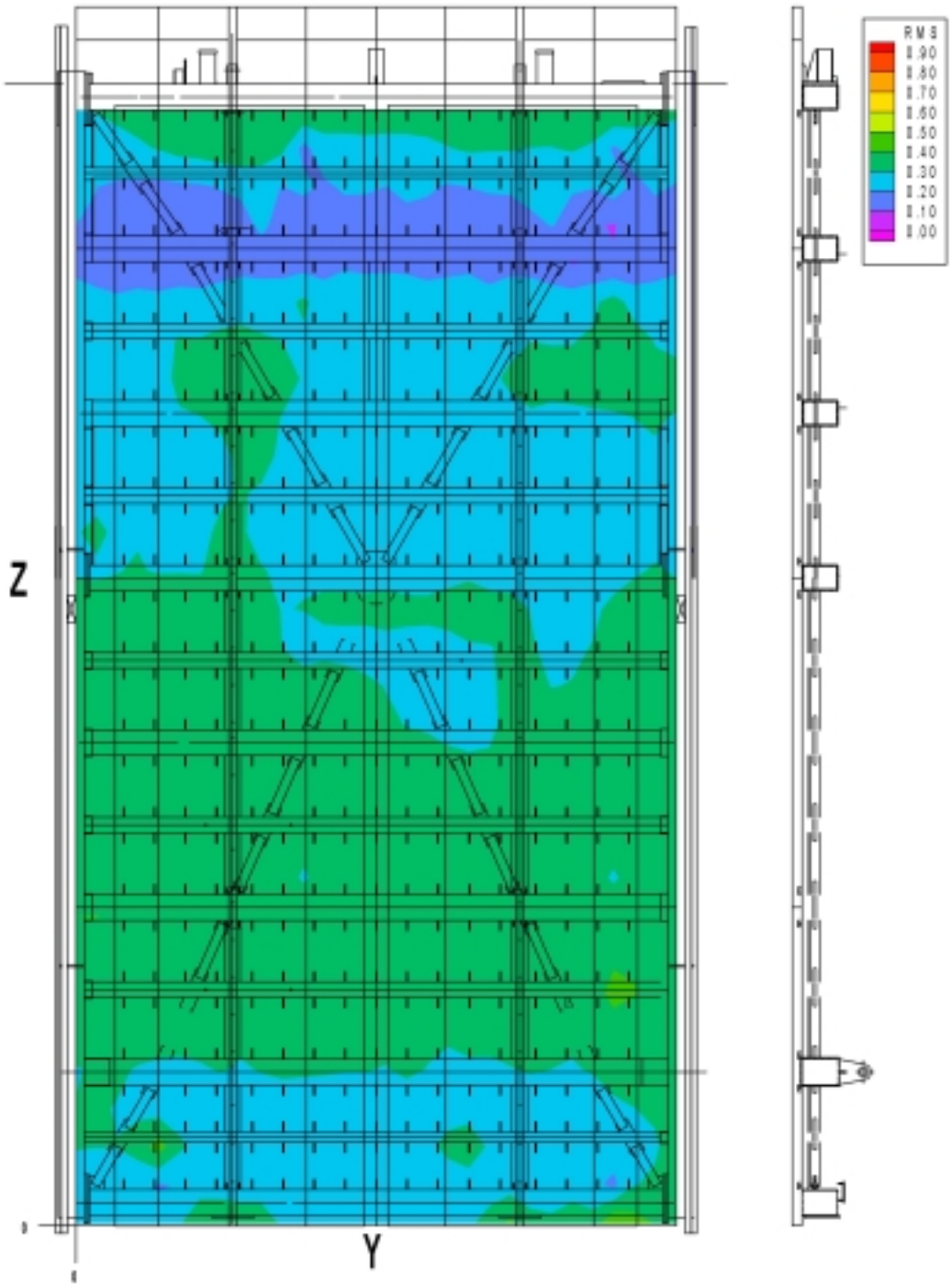

Figure 23. Contour Plot of RMS Turbulence into the Screen (x-axis) 6.75 in. from the Surface of the Bar Screens on the ESBS at 155-MW Turbine Load

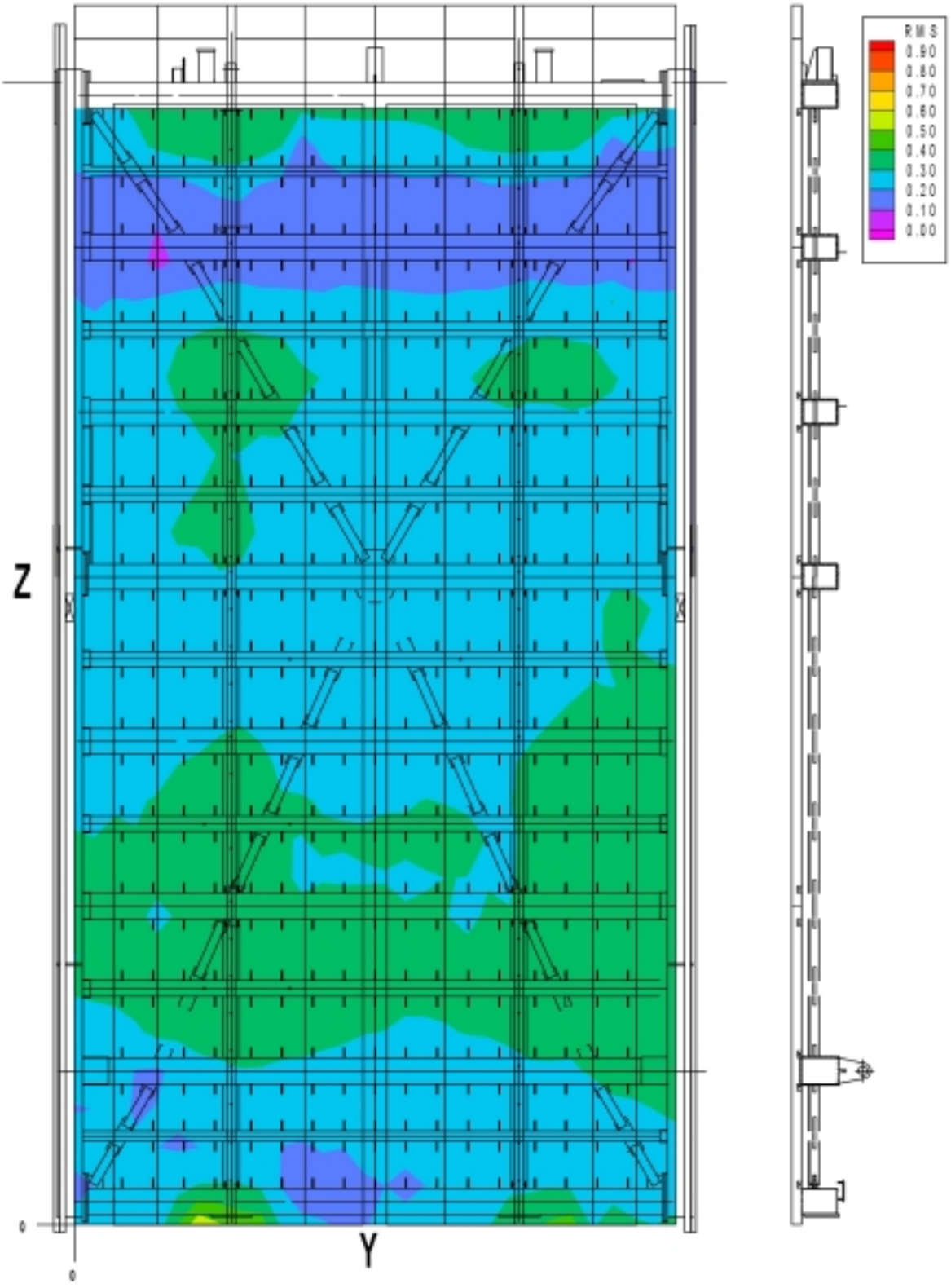

Figure 24. Contour Plot of RMS Turbulence across the Screen (y-axis) 6.75 in. from the Surface of the Bar Screens on the ESBS at 155-MW Turbine Load

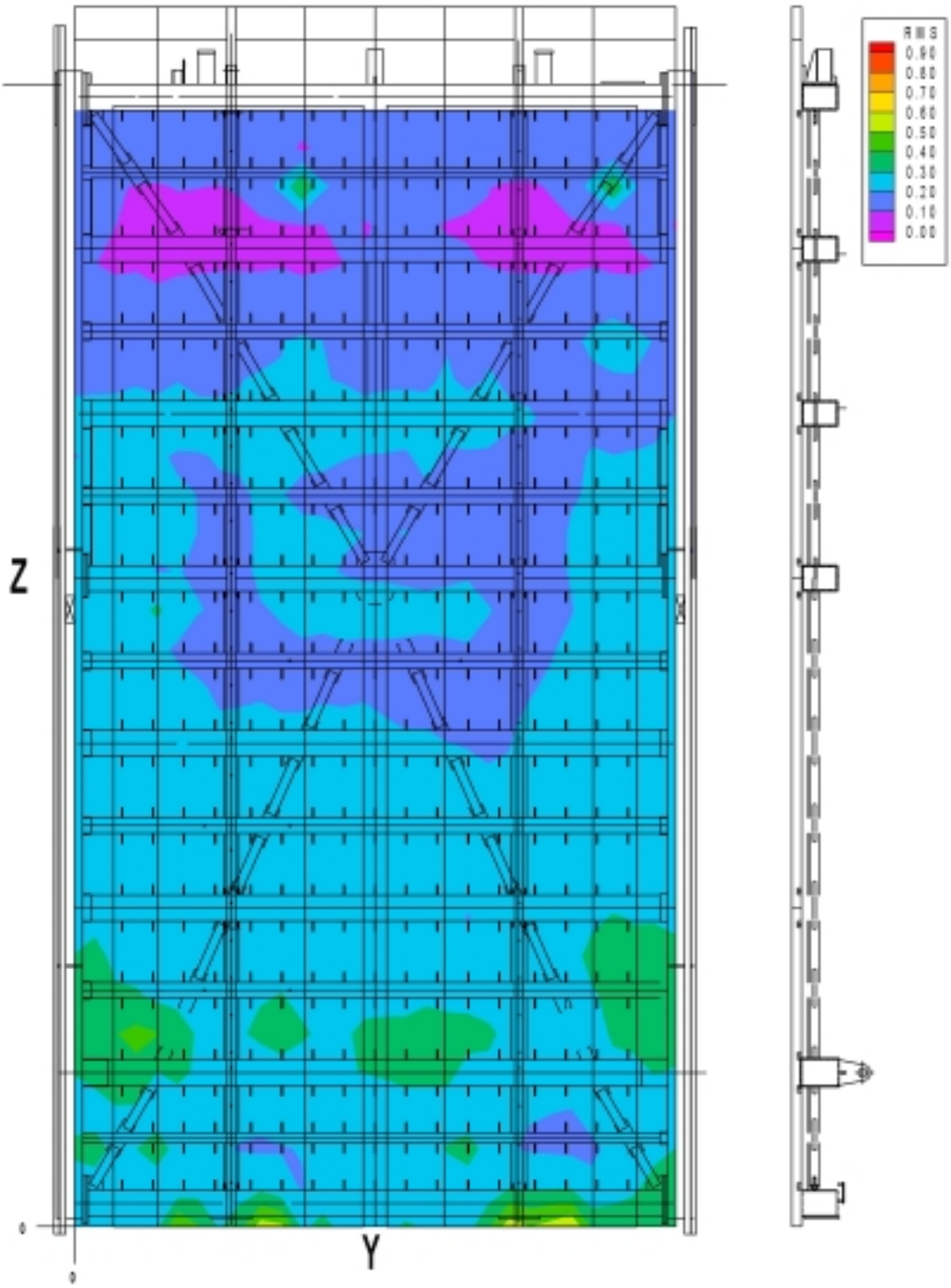

Figure 25. Contour Plot of RMS Turbulence Longitudinal to the Screen (z-axis) 6.75 in. from the Surface of the Bar Screens on the ESBS at 155-MW Turbine Load

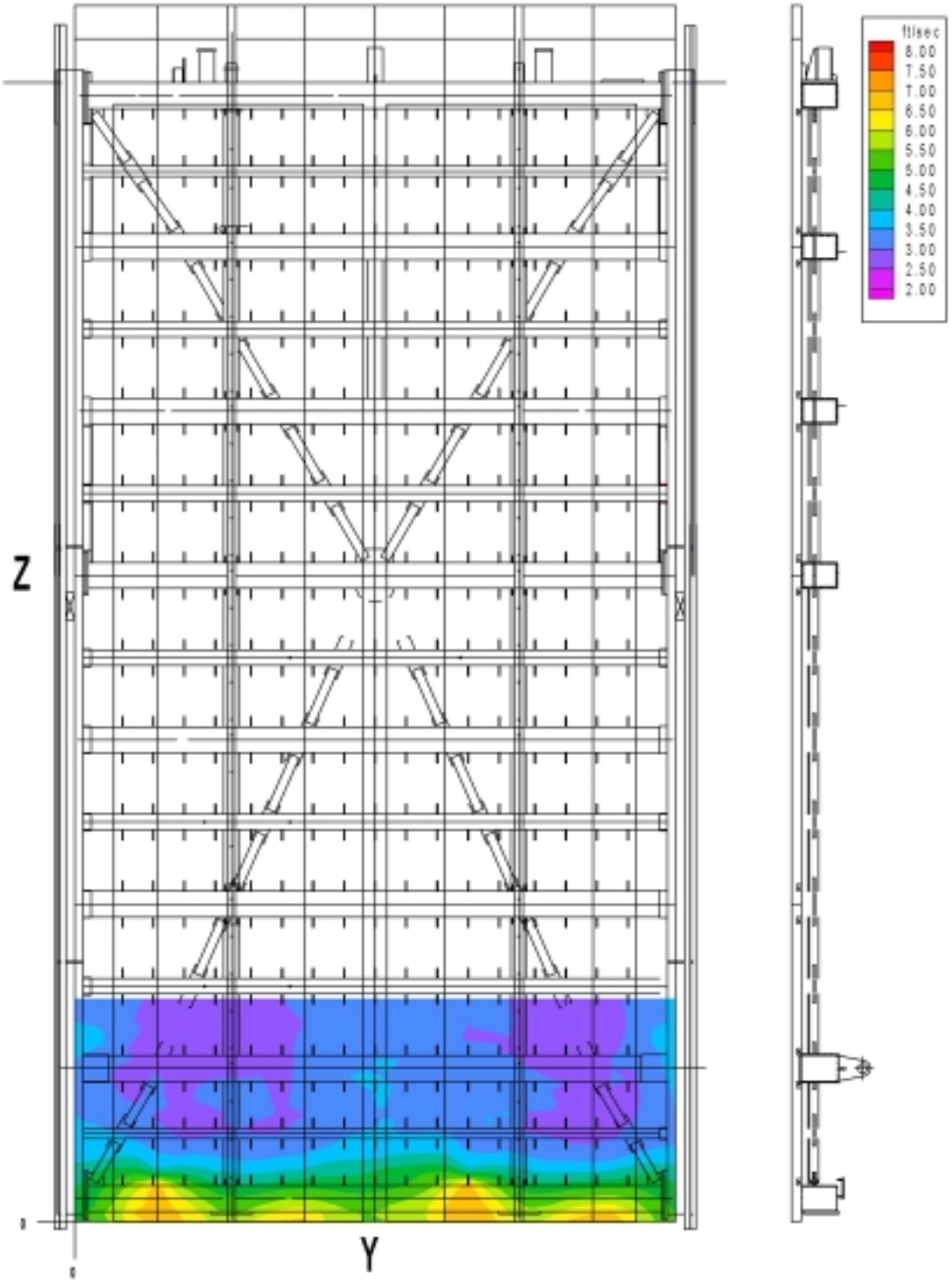

Figure 26. Contour Plot of Magnitude Velocity (ft/sec) 6.75 in. from the Surface of the Bar Screens on the ESBS at 138-MW Turbine Load

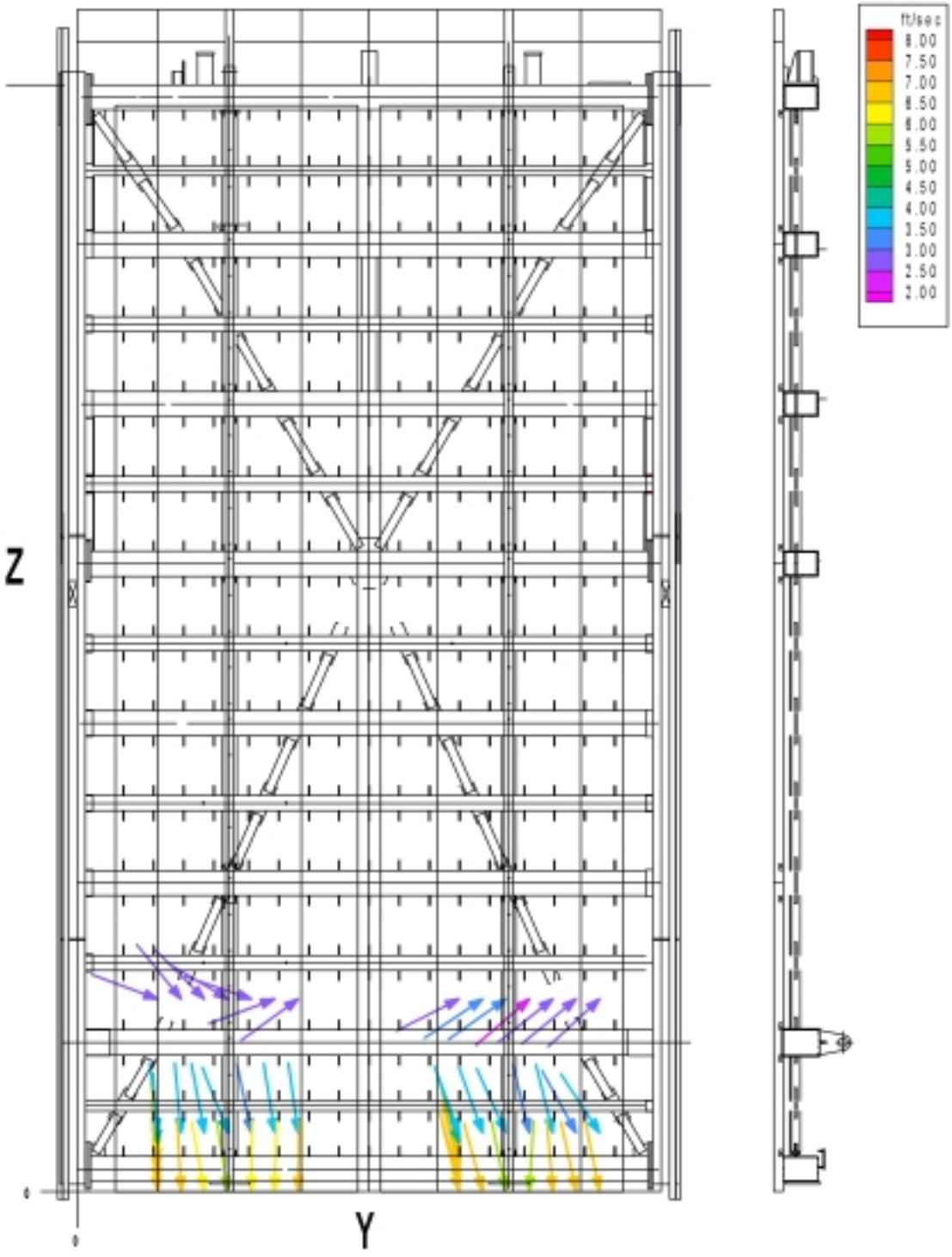

Figure 27. Vector Water Velocity (ft/sec) 6.75 in. from the Surface of the Bar Screens on the ESBS at 138-MW Turbine Load. Vector color is a function of magnitude water velocity (ft/sec) and vector direction is the direction of flow in the Y/Z plane relative to ADV orientation.

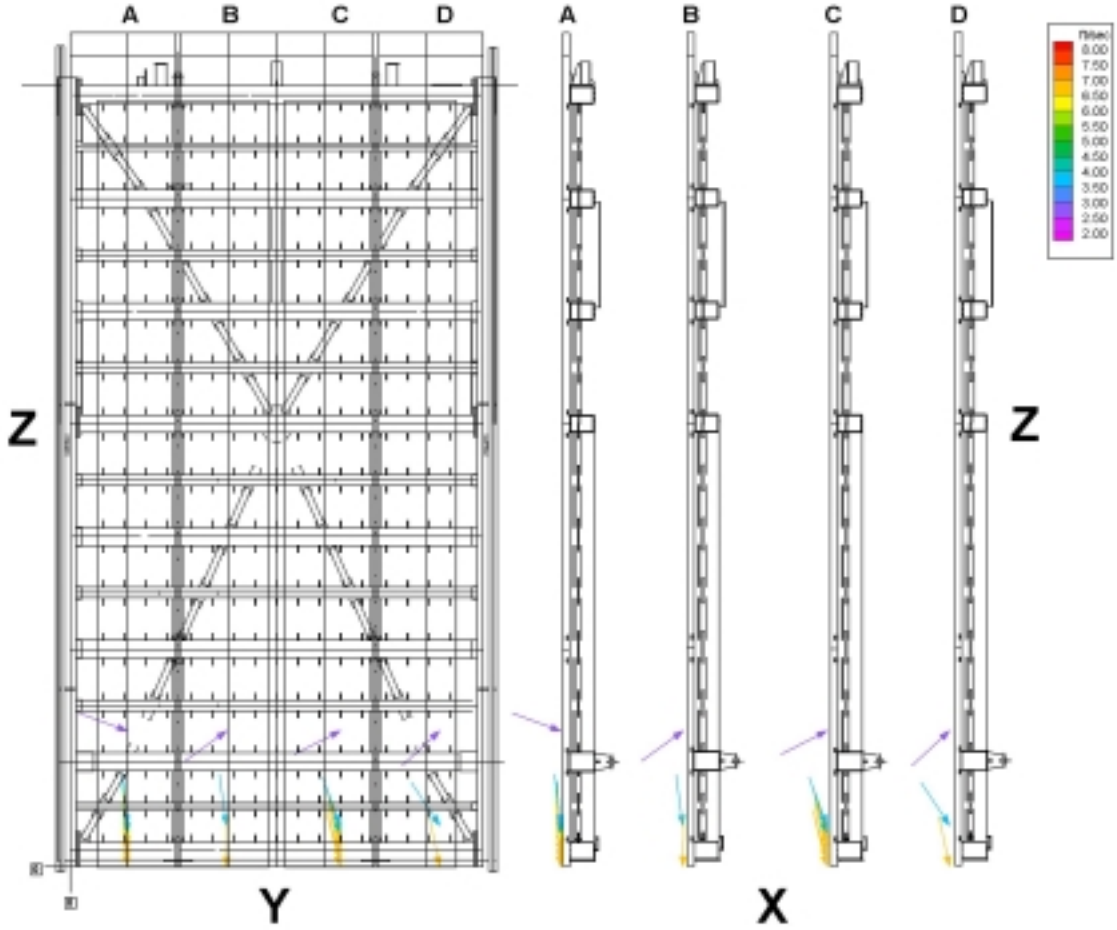

Figure 28. The Face View of the ESBS Shows Vector Water Velocities (ft/sec) in the Y/Z Plane, 6.75 in. from the Surface of the Bar Screens, in Four Vertical Zones at 2.67 ft (A), 7.33 ft (B), 12.67 ft (C), and 17.33 ft (D) across the ESBS. The four side views of the ESBS show vector velocities in the X/Z plane relative to the orientation of the ADV at 138 MW turbine load. Each side view corresponds by letter with a zone of the face view. Vector color is a function of magnitude velocity (ft/sec) and vector direction represents the direction of bulk flow.

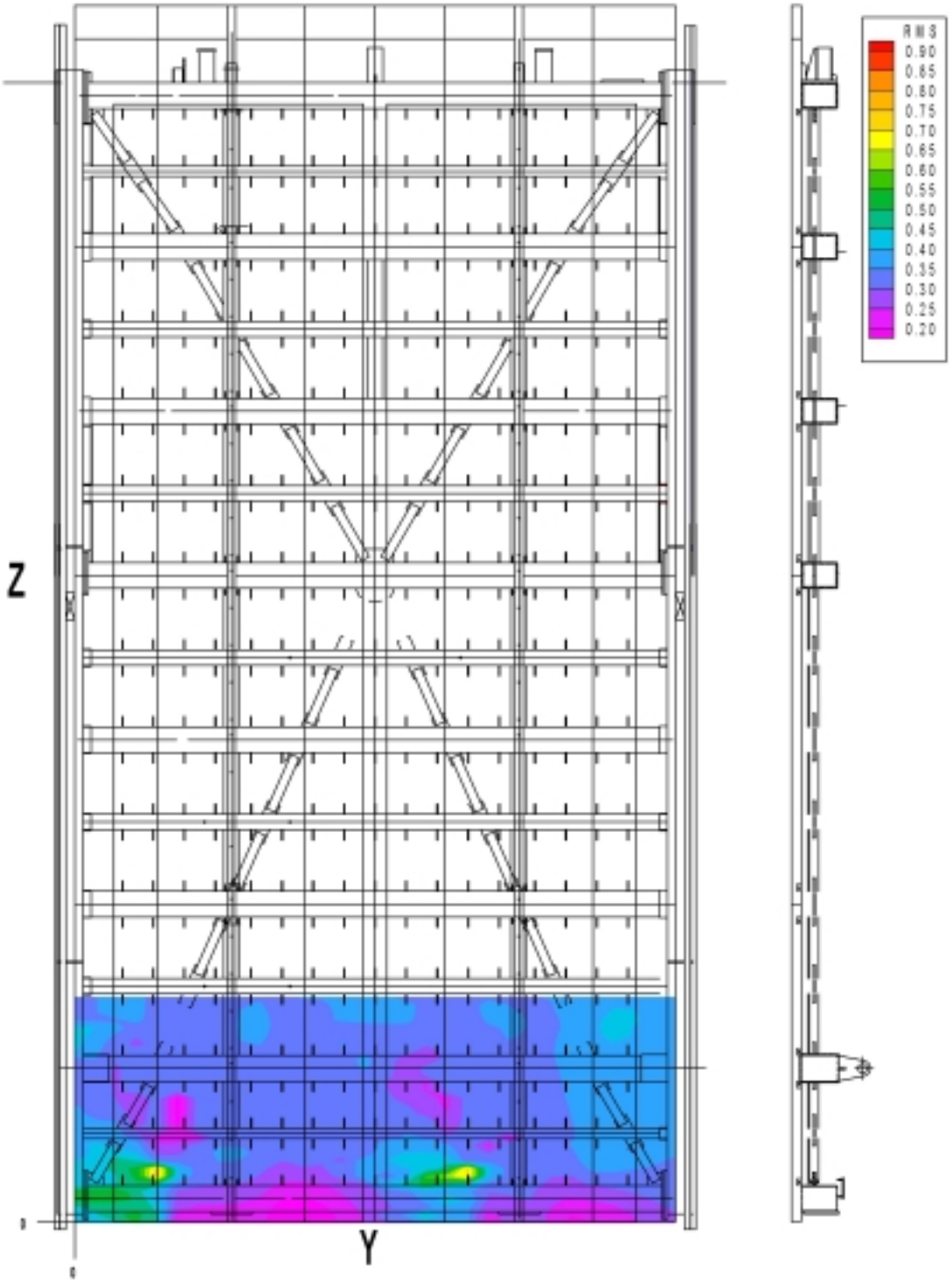

Figure 29. Contour Plot of Magnitude Flow RMS Turbulence 6.75 in. from the Surface of the Bar Screens on the ESBS at 138-MW Turbine Load

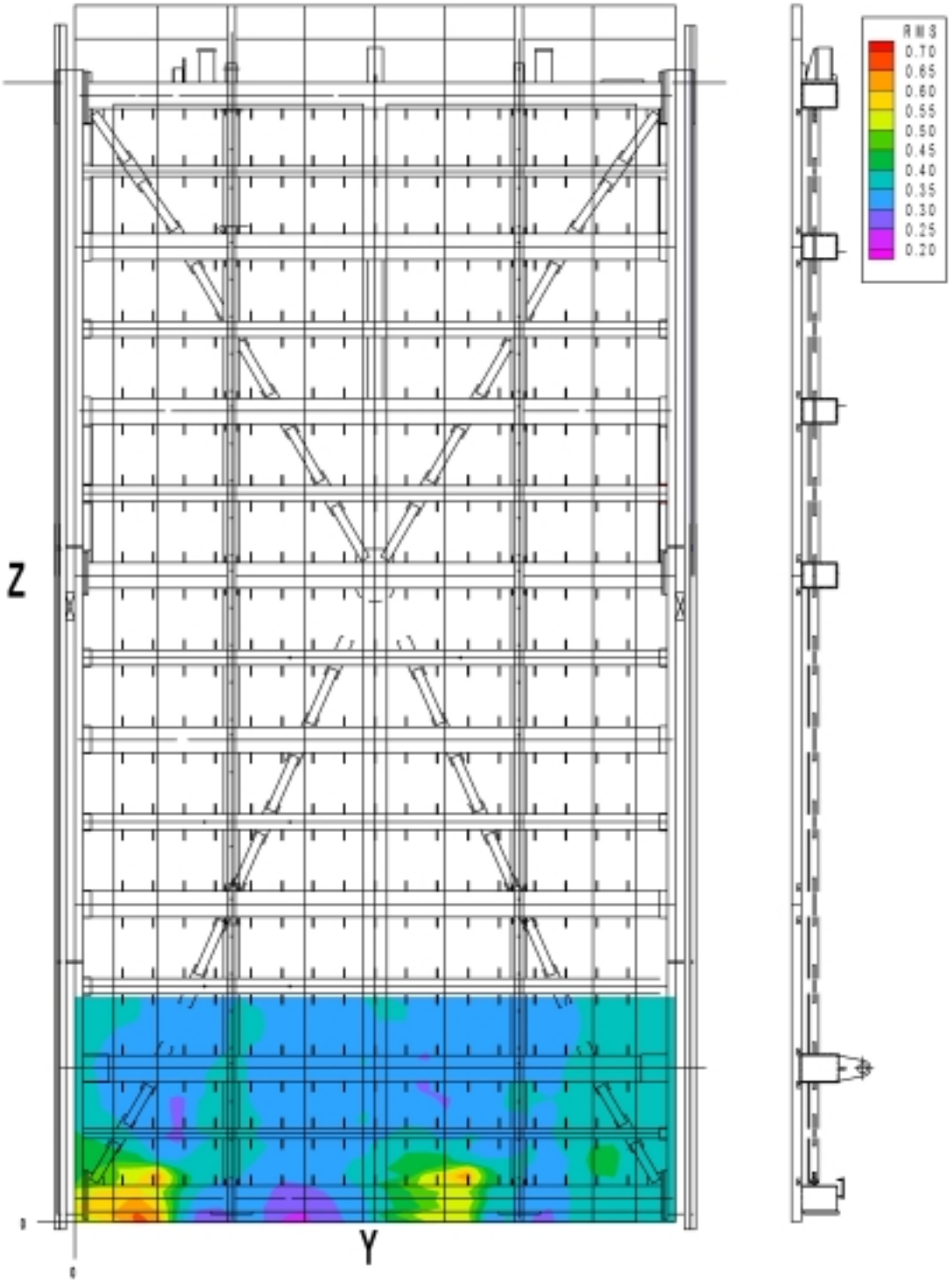

Figure 30. Contour Plot of RMS Turbulence into the Screen (x-axis) 6.75 in. from the Surface of the Bar Screens on the ESBS at 138-MW Turbine Load

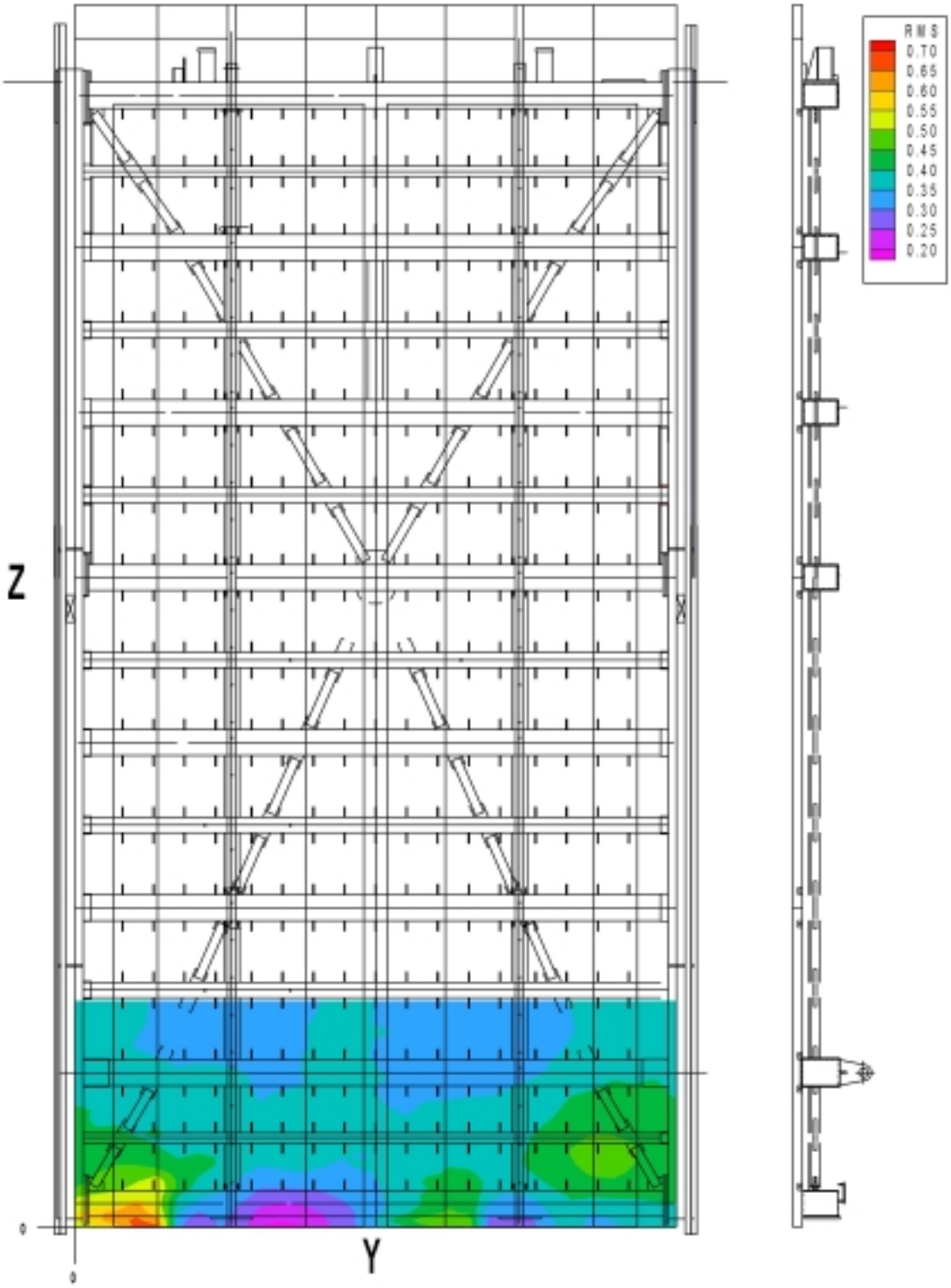

Figure 31. Contour Plot of RMS Turbulence across the Screen (y-axis) 6.75 in. from the Surface of the Bar Screens on the ESBS at 138-MW Turbine Load

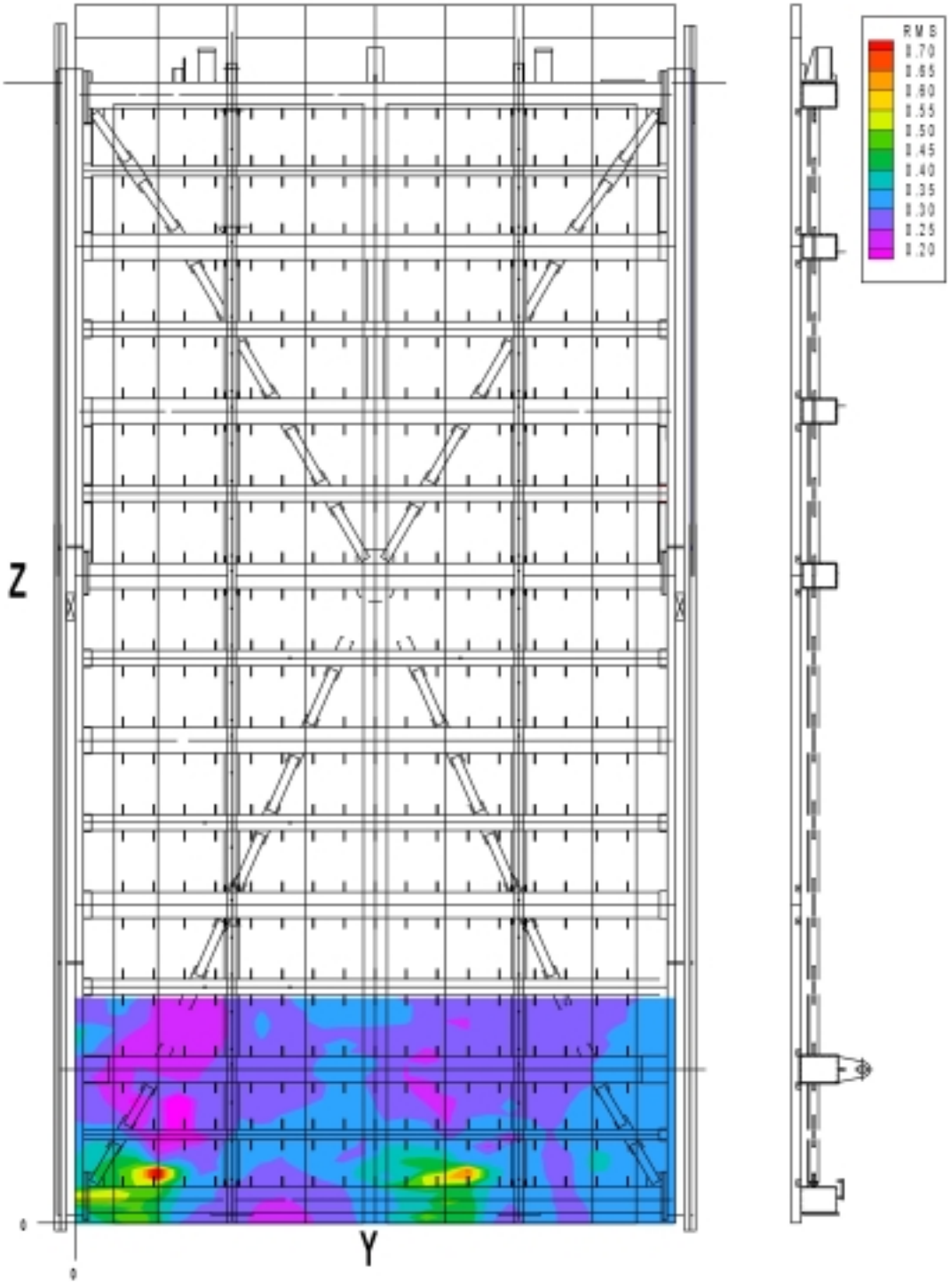

Figure 32. Contour Plot of RMS Turbulence Longitudinal to the Screen (z-axis) 6.75 in. from the Surface of the Bar Screens on the ESBS at 138-MW Turbine Load

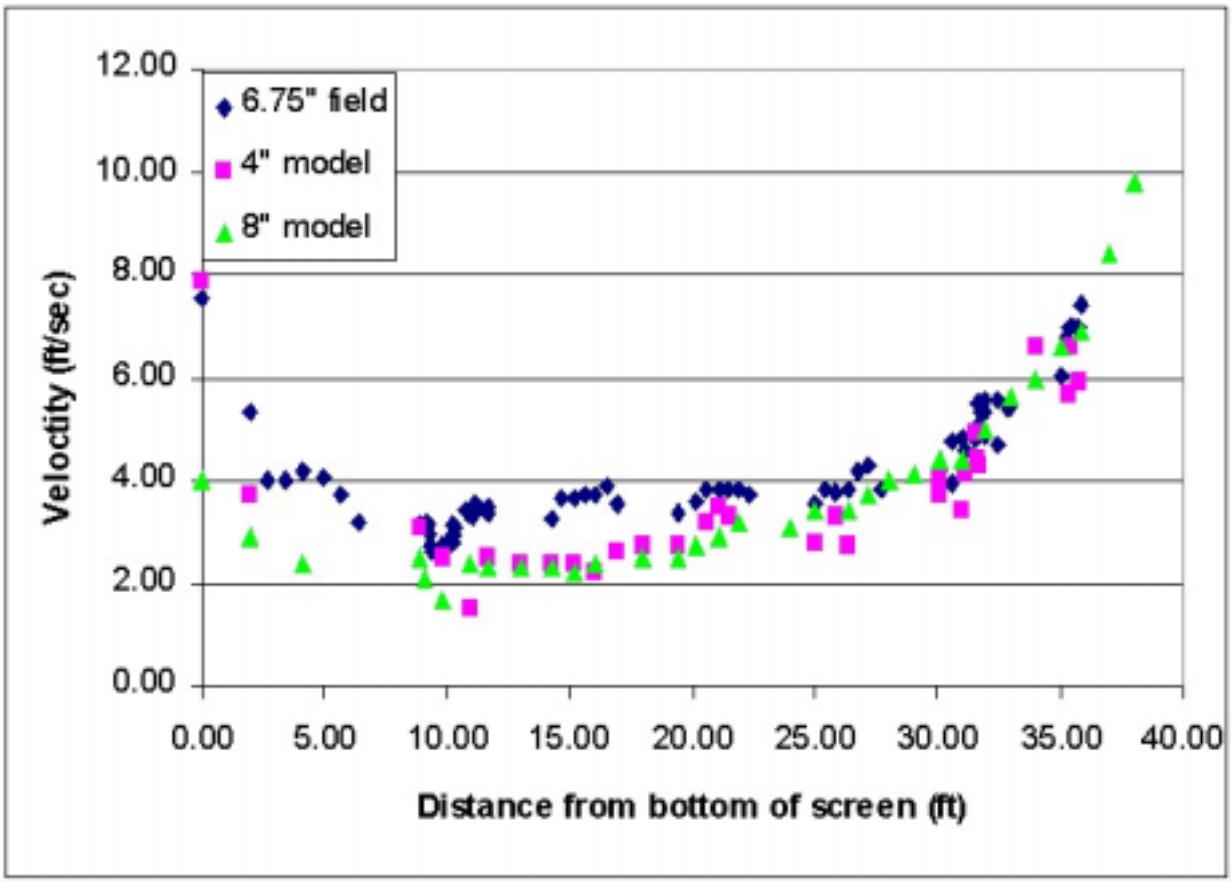

Figure 33. Comparison of Velocity Measurements between Data Collected in the Field 6.75 in. from the Bar Screens at 21,000 cfs and Physical Model Data Collected at scale 4 in. and 8 in. from the Screen at 20,800 cfs Longitudinally (z-axis) on the ESBS.

Appendix A

X, Y, and Z Vector Velocities at 155 MW Turbine Load

Appendix A

X, Y, and Z Vector Velocities at 155 MW Turbine Load

The table in this appendix lists X, Y, and Z vector velocities (ft/sec) for flow data collected at locations along the bar screen surface of the ESBS at 155 MW turbine load. Mean, minimum, and maximum vector velocities along with the standard error are provided for each sample location.

Location (ft.)		X Vector (ft./sec)				Y Vector (ft./sec)				Z Vector (ft./sec)			
Vertical	Horizontal	Mean	Min	Max	Stderr	Mean	Min	Max	Stderr	Mean	Min	Max	Stderr
-0.02	2.67	6.00	5.13	6.54	0.02012	0.51	-0.36	1.35	0.02135	-4.87	-5.58	-4.29	0.02383
-0.02	3.45	5.71	4.94	6.44	0.02654	0.41	-0.41	1.54	0.03703	-4.45	-5.67	-3.66	0.04763
-0.02	4.22	5.35	4.30	6.14	0.03623	0.55	-0.45	2.05	0.05466	-4.18	-5.13	-3.40	0.03047
-0.02	5.00	4.82	4.09	5.77	0.02948	0.59	-0.41	1.83	0.03644	-3.76	-4.43	-2.93	0.02180
-0.02	5.78	5.22	4.18	6.34	0.03398	0.73	-0.18	1.78	0.04329	-4.25	-5.21	-2.91	0.04688
-0.02	6.55	5.80	5.08	6.55	0.02383	0.34	-0.34	1.32	0.02638	-4.58	-5.62	-3.59	0.04654
-0.02	7.33	5.95	5.32	6.79	0.01573	0.08	-0.54	0.61	0.01360	-4.15	-4.82	-3.45	0.01410
-0.02	12.67	6.02	5.12	6.83	0.02331	1.10	0.39	1.57	0.01969	-4.27	-4.85	-3.59	0.02240
-0.02	13.45	5.99	4.89	7.12	0.03365	0.98	0.12	1.97	0.02602	-4.12	-5.17	-3.09	0.03615
-0.02	14.22	5.41	4.49	6.66	0.03781	0.61	-0.63	1.67	0.03727	-4.37	-5.60	-3.28	0.05273
-0.02	15.00	4.93	4.26	5.60	0.02334	-0.22	-1.10	0.61	0.02945	-4.43	-5.52	-3.66	0.03691
-0.02	15.78	5.25	4.48	6.22	0.03559	0.42	-0.89	1.35	0.04424	-4.19	-5.41	-2.93	0.05900
-0.02	16.55	5.98	5.25	6.90	0.02582	1.05	0.29	1.74	0.02414	-4.19	-5.16	-3.49	0.03134
-0.02	17.33	6.16	5.28	7.92	0.02383	1.08	-0.01	2.58	0.02200	-4.39	-5.34	-3.54	0.02222
0.30	7.33	5.15	4.39	5.84	0.09680	0.19	-0.16	0.51	0.04605	-3.58	-4.57	-2.19	0.17154
0.30	17.33	5.21	3.88	6.45	0.17892	0.93	0.44	1.49	0.06861	-3.82	-4.67	-2.36	0.14849
0.63	7.33	4.22	3.82	4.66	0.06580	0.30	0.05	0.67	0.04174	-1.72	-2.27	-1.16	0.09042
0.63	17.33	3.88	2.94	4.48	0.10278	1.07	0.68	1.47	0.05734	-1.77	-2.65	-1.03	0.11173
0.95	7.33	4.00	3.74	4.45	0.03598	0.27	0.04	0.55	0.03244	-1.38	-1.77	-1.09	0.04350
0.95	17.33	3.54	3.14	3.88	0.05132	1.05	0.64	1.58	0.05761	-1.31	-1.54	-1.02	0.04036
1.27	7.33	3.92	3.53	4.26	0.05324	0.24	0.01	0.54	0.03977	-1.45	-1.73	-1.07	0.04745
1.27	17.33	3.54	3.25	3.90	0.04034	0.98	0.44	1.47	0.06316	-1.35	-1.84	-1.07	0.05737
1.60	7.33	4.03	3.74	4.31	0.04054	0.29	-0.05	0.55	0.04433	-1.42	-1.75	-1.10	0.03361
1.60	17.33	3.54	3.25	4.06	0.05275	0.97	0.48	1.39	0.05408	-1.37	-1.98	-1.00	0.05247
1.92	2.67	3.77	3.22	4.12	0.00963	0.34	-0.23	0.96	0.01198	-1.98	-2.41	-1.48	0.00971
1.92	3.45	3.78	3.19	4.21	0.02863	0.32	-0.10	0.71	0.02441	-2.05	-2.30	-1.67	0.02143
1.92	4.22	3.74	3.28	4.22	0.03013	0.48	-0.08	0.93	0.02883	-2.03	-2.39	-1.72	0.02638
1.92	5.00	3.75	3.27	4.17	0.03035	0.81	0.17	1.16	0.02774	-1.67	-2.33	-1.31	0.02694
1.92	5.78	3.61	3.28	4.18	0.02689	0.50	-0.09	1.05	0.03951	-1.48	-1.83	-1.15	0.02351
1.92	6.55	3.94	3.54	4.48	0.02929	0.35	0.03	0.67	0.02148	-1.39	-1.79	-1.04	0.02409
1.92	7.33	4.06	3.58	4.56	0.00938	0.33	-0.15	0.86	0.00941	-1.41	-1.89	-0.90	0.00932
1.92	12.67	3.85	3.31	4.38	0.01147	0.64	0.02	1.09	0.01140	-1.70	-2.29	-1.19	0.01180
1.92	13.45	3.98	3.57	4.48	0.02695	0.59	0.19	1.14	0.02886	-1.62	-2.32	-1.24	0.02593
1.92	14.22	3.93	3.54	4.47	0.02659	0.67	0.34	1.17	0.02748	-1.46	-1.88	-1.09	0.02452
1.92	15.00	3.59	3.08	4.12	0.02980	0.55	-0.12	1.10	0.03796	-1.48	-1.91	-1.06	0.02320
1.92	15.78	3.61	3.22	3.97	0.02402	0.24	-0.16	0.72	0.02602	-1.72	-2.09	-1.30	0.02504
1.92	16.55	3.54	2.90	4.00	0.02994	0.56	0.04	1.08	0.03322	-1.86	-2.26	-1.51	0.02223
1.92	17.33	3.57	2.89	4.24	0.01306	0.98	0.38	1.45	0.01315	-1.43	-1.93	-0.91	0.01145
2.67	2.67	3.10	2.24	4.20	0.03594	0.21	-0.20	0.88	0.01405	-1.24	-2.22	-0.61	0.03044
2.67	12.67	3.28	2.31	4.17	0.03010	0.58	0.05	1.05	0.01439	-1.07	-1.95	-0.25	0.02824
3.42	2.67	3.49	2.69	4.20	0.02023	0.30	-0.20	0.81	0.01471	-1.67	-2.45	-0.93	0.01775
3.42	12.67	3.60	2.93	4.30	0.01964	0.62	-0.16	1.14	0.01672	-1.45	-2.06	-0.86	0.01698

4.17	2.67	3.76	2.95	4.38	0.01635	0.31	-0.20	0.91	0.01452	-1.94	-2.40	-1.42	0.01427
4.17	12.67	3.85	3.32	4.41	0.01520	0.66	0.14	1.14	0.01467	-1.65	-2.19	-0.97	0.01499
4.92	2.67	3.60	2.96	4.20	0.01793	0.28	-0.22	0.78	0.01389	-1.76	-2.35	-1.19	0.01891
4.92	12.67	3.68	2.98	4.42	0.02110	0.63	0.01	1.15	0.01535	-1.54	-2.17	-1.00	0.01641
5.67	2.67	2.99	2.24	3.88	0.02473	0.17	-0.25	0.69	0.01335	-0.49	-1.99	0.48	0.05430
5.67	12.67	3.16	2.23	3.80	0.02226	0.53	0.01	1.13	0.01311	-0.46	-2.02	0.36	0.04424
6.41	2.67	2.95	1.63	4.33	0.00474	0.06	-1.02	1.42	0.00419	0.16	-0.63	1.15	0.00333
6.41	3.45	2.97	1.92	4.11	0.01646	0.06	-0.82	1.20	0.01633	0.09	-0.66	0.76	0.01348
6.41	4.22	2.87	1.96	3.83	0.01537	0.17	-0.79	1.18	0.01649	-0.07	-0.68	0.77	0.01223
6.41	5.00	2.88	1.61	3.81	0.01455	0.30	-0.62	1.70	0.01535	-0.04	-0.66	1.00	0.01332
6.41	5.78	2.85	1.88	3.88	0.01486	0.49	-0.48	1.40	0.01497	-0.01	-0.71	1.02	0.01320
6.41	6.55	2.56	1.55	3.63	0.01654	0.47	-0.39	1.59	0.01525	0.03	-0.69	0.99	0.01568
6.41	7.33	3.24	1.89	4.46	0.00426	0.26	-0.71	1.26	0.00397	0.32	-0.58	1.32	0.00358
6.41	12.67	3.17	2.02	4.36	0.00338	0.49	-0.68	1.69	0.00378	0.07	-0.66	1.11	0.00284
6.41	13.45	3.16	2.07	4.25	0.01456	0.51	-0.40	1.58	0.01466	0.07	-0.72	0.89	0.01236
6.41	14.22	3.25	2.50	4.48	0.01423	0.76	-0.08	1.76	0.01447	0.17	-0.48	1.00	0.01117
6.41	15.00	3.18	2.33	4.24	0.01463	0.91	-0.01	1.75	0.01422	0.22	-0.56	0.90	0.01081
6.41	15.78	2.84	1.82	3.82	0.01414	0.89	-0.03	1.79	0.01421	0.21	-0.35	0.78	0.00955
6.41	16.55	2.76	1.75	3.74	0.01275	0.57	-0.27	1.52	0.01344	0.14	-0.52	0.91	0.01014
6.41	17.33	3.01	1.83	4.40	0.00436	0.81	-0.46	1.99	0.00412	0.54	-0.47	1.60	0.00377
6.83	7.33	3.21	2.15	4.24	0.01433	0.23	-0.74	1.17	0.01299	0.36	-0.42	1.33	0.01264
6.83	17.33	3.08	1.98	4.48	0.01515	0.82	-0.31	1.99	0.01362	0.71	-0.32	1.83	0.01302
7.25	7.33	3.35	2.13	4.48	0.01638	0.23	-0.59	1.31	0.01343	0.44	-0.57	1.70	0.01259
7.25	17.33	3.22	2.02	4.44	0.01620	0.84	-0.20	1.90	0.01467	0.83	-0.21	1.65	0.01241
7.66	7.33	3.51	2.63	4.92	0.01595	0.30	-0.60	1.43	0.01409	0.49	-0.49	1.19	0.01173
7.66	17.33	3.36	2.15	4.69	0.01673	0.82	-0.41	1.86	0.01430	0.80	0.02	1.67	0.01305
8.08	7.33	3.43	2.42	4.51	0.01420	0.29	-0.74	1.27	0.01403	0.40	-0.59	1.34	0.01316
8.08	17.33	3.40	2.09	4.60	0.01498	0.78	-0.58	1.81	0.01420	0.89	0.16	1.90	0.01265
8.50	7.33	3.03	2.20	4.07	0.01392	0.25	-0.71	1.49	0.01304	0.35	-0.42	1.11	0.01031
8.50	17.33	2.97	1.87	4.28	0.01675	0.78	-0.30	2.06	0.01415	0.81	-0.26	1.75	0.01384
8.85	2.67	2.80	1.72	3.81	0.00628	-0.09	-0.90	0.92	0.00560	0.49	-0.41	1.21	0.00463
8.85	3.45	2.72	1.68	3.68	0.01390	0.05	-0.98	1.29	0.01502	0.24	-0.34	0.94	0.01032
8.85	4.22	2.67	1.65	3.65	0.01341	0.27	-0.78	1.19	0.01301	0.12	-0.57	0.99	0.01059
8.85	5.00	2.41	1.30	3.29	0.01512	0.16	-0.94	1.23	0.01510	0.09	-0.59	0.80	0.01133
8.85	5.78	2.85	1.89	3.93	0.01439	0.05	-0.70	0.81	0.01399	0.25	-0.63	1.11	0.01298
8.85	6.55	2.87	2.06	3.88	0.01318	0.21	-0.60	1.15	0.01315	0.34	-0.57	1.24	0.01173
8.85	7.33	2.89	1.90	3.97	0.01344	0.23	-0.62	1.08	0.01169	0.34	-0.30	1.11	0.01027
8.85	12.67	2.98	1.82	4.18	0.00540	0.37	-0.56	1.29	0.00522	0.13	-0.51	0.94	0.00384
8.85	13.45	3.02	2.12	4.14	0.01346	0.55	-0.29	1.76	0.01365	0.22	-0.69	1.00	0.00954
8.85	14.22	2.75	1.67	3.81	0.01513	0.81	-0.17	1.88	0.01330	0.26	-0.47	0.98	0.00870
8.85	15.00	2.61	1.48	3.56	0.01390	0.45	-0.54	1.27	0.01249	0.27	-0.45	0.98	0.01003
8.85	15.78	2.74	1.93	3.91	0.01310	0.52	-0.35	1.52	0.01398	0.42	-0.35	1.14	0.01038
8.85	16.55	2.77	1.31	4.06	0.01527	0.70	-0.56	1.81	0.01411	0.70	-0.21	1.54	0.01314
8.85	17.33	2.80	1.83	3.96	0.01341	0.70	-0.33	1.60	0.01288	0.73	-0.05	1.54	0.01089
8.92	2.67	2.65	1.54	3.98	0.00418	0.05	-1.11	1.15	0.00386	0.25	-0.54	1.20	0.00300
8.92	3.45	2.64	1.51	3.88	0.01126	0.07	-0.82	1.17	0.01109	0.16	-0.60	0.89	0.00872
8.92	4.22	2.60	1.71	3.64	0.01190	0.23	-1.09	1.41	0.01201	-0.06	-0.82	0.83	0.00888
8.92	5.00	2.43	1.52	3.51	0.01163	0.34	-0.57	1.33	0.01073	-0.03	-0.68	0.84	0.00849
8.92	5.78	2.51	1.42	3.62	0.01264	0.04	-1.17	0.98	0.01170	0.05	-0.80	0.70	0.00941
8.92	6.55	2.78	1.82	3.87	0.01068	0.19	-0.86	1.14	0.01103	0.15	-0.60	1.28	0.00955
8.92	7.33	2.85	1.63	4.07	0.00395	0.27	-0.90	1.23	0.00380	0.28	-0.53	1.20	0.00302
8.92	12.67	2.90	1.84	4.05	0.00341	0.40	-0.69	1.49	0.00367	0.12	-0.59	1.00	0.00251
8.92	13.45	2.86	1.95	3.84	0.01005	0.40	-0.75	1.47	0.01146	0.12	-0.56	0.99	0.00758
8.92	14.22	2.96	1.76	3.86	0.01116	0.69	-0.30	1.81	0.01191	0.19	-0.39	0.91	0.00778
8.92	15.00	2.50	1.50	3.65	0.01074	0.58	-0.57	1.70	0.01193	0.24	-0.73	1.01	0.00781
8.92	15.78	2.56	1.46	3.76	0.01143	0.46	-0.38	1.56	0.01134	0.23	-0.47	1.02	0.00766
8.92	16.55	2.68	1.49	3.85	0.01274	0.67	-0.36	1.98	0.01180	0.44	-0.46	1.46	0.01026
8.92	17.33	2.67	1.59	4.08	0.00446	0.70	-0.76	1.99	0.00393	0.67	-0.34	1.66	0.00354
8.94	2.67	2.84	2.15	3.60	0.02401	-0.07	-0.91	0.94	0.02744	0.51	-0.09	1.02	0.01972

8.94	12.67	3.01	2.22	4.12	0.02454	0.43	-0.46	1.12	0.02044	0.21	-0.23	0.78	0.01407
9.02	2.67	2.72	2.16	3.27	0.03769	0.09	-0.55	0.95	0.04428	0.49	0.06	1.04	0.03440
9.02	12.67	2.99	2.33	3.89	0.03888	0.31	-0.48	0.82	0.03709	0.09	-0.49	0.58	0.02405
9.10	2.67	2.96	2.00	4.06	0.03366	-0.11	-0.91	0.56	0.02815	0.58	0.02	1.28	0.02273
9.10	12.67	3.19	2.52	3.86	0.01924	0.45	-0.48	1.08	0.02164	0.22	-0.44	0.85	0.02073
9.19	2.67	2.66	2.10	3.29	0.03323	-0.20	-0.84	0.67	0.03831	0.47	0.04	1.20	0.02954
9.19	12.67	2.79	2.01	3.25	0.03221	0.39	-0.56	0.98	0.04427	0.04	-0.39	0.50	0.02641
9.27	2.67	2.57	1.75	3.74	0.02568	-0.10	-0.90	0.77	0.02435	0.39	-0.48	1.31	0.02394
9.27	12.67	2.74	1.73	3.59	0.02563	0.31	-0.52	1.09	0.02200	0.04	-0.53	0.54	0.01388
9.35	2.67	2.52	1.47	3.62	0.00638	-0.08	-0.85	0.87	0.00550	0.41	-0.39	1.20	0.00463
9.35	3.45	2.43	1.56	3.23	0.01250	0.02	-0.88	0.86	0.01246	0.24	-0.49	0.93	0.01067
9.35	4.22	2.38	1.35	3.25	0.01498	0.18	-0.75	1.82	0.01614	0.04	-0.60	0.80	0.01100
9.35	5.00	2.16	1.21	3.01	0.01374	0.29	-0.61	1.15	0.01379	0.01	-0.53	0.77	0.00973
9.35	5.78	2.40	1.09	3.59	0.01633	0.02	-0.89	1.19	0.01459	0.01	-0.66	0.92	0.01051
9.35	6.55	2.69	1.66	3.68	0.01405	0.24	-0.82	1.02	0.01321	0.19	-0.68	1.16	0.01230
9.35	7.33	2.68	1.58	3.95	0.01151	0.28	-0.66	1.26	0.01054	0.24	-0.52	1.00	0.00844
9.35	12.67	2.78	1.70	4.15	0.00555	0.43	-0.54	1.31	0.00550	0.10	-0.52	0.85	0.00377
9.35	13.45	2.76	1.94	3.71	0.01240	0.47	-0.43	1.35	0.01256	0.14	-0.47	0.98	0.00904
9.35	14.22	2.84	1.93	3.83	0.01347	0.61	-0.56	1.44	0.01380	0.16	-0.43	0.78	0.00877
9.35	15.00	2.41	1.50	3.24	0.01314	0.58	-0.39	1.89	0.01454	0.23	-0.29	0.88	0.00860
9.35	15.78	2.46	1.58	3.49	0.01274	0.47	-0.74	1.40	0.01366	0.24	-0.42	1.02	0.00925
9.35	16.55	2.71	1.28	3.75	0.01469	0.76	-0.16	1.92	0.01416	0.56	-0.31	1.37	0.01342
9.35	17.33	2.70	1.46	4.08	0.01197	0.78	-0.37	1.69	0.01145	0.74	-0.08	1.63	0.01001
9.38	2.67	2.50	1.47	3.47	0.01681	-0.07	-0.93	1.01	0.01527	0.44	-0.22	1.20	0.01069
9.38	12.67	2.65	1.82	3.67	0.01260	0.38	-0.76	1.25	0.01314	0.25	-0.27	0.99	0.00839
9.44	7.33	2.74	1.82	3.63	0.02386	0.19	-0.68	1.11	0.02586	0.30	-0.22	1.04	0.01678
9.44	17.33	2.54	1.49	3.35	0.02807	0.66	0.01	1.52	0.02546	0.59	0.02	1.20	0.01995
9.52	7.33	2.44	1.67	3.27	0.04391	0.20	-0.62	0.85	0.03706	0.30	0.08	0.68	0.01511
9.52	17.33	2.51	1.66	3.32	0.04333	0.71	-0.05	1.48	0.04178	0.87	0.37	1.64	0.02903
9.60	7.33	2.59	1.86	3.45	0.02309	0.24	-0.50	1.01	0.02418	0.48	-0.09	1.17	0.02256
9.60	17.33	2.56	1.44	3.40	0.02629	0.72	-0.08	1.49	0.02313	0.91	0.26	1.76	0.02167
9.69	7.33	2.35	1.60	3.02	0.03918	0.15	-0.62	0.93	0.04207	0.32	0.01	0.84	0.02350
9.69	17.33	2.46	1.48	3.43	0.05408	0.77	-0.01	1.33	0.03800	0.82	0.36	1.45	0.02556
9.77	7.33	2.54	1.55	3.60	0.02548	0.30	-0.43	1.14	0.02466	0.42	-0.24	0.99	0.01947
9.77	17.33	2.53	1.59	3.71	0.02931	0.82	0.03	1.56	0.02220	0.92	0.29	1.72	0.02150
9.84	2.67	2.46	1.30	3.62	0.01602	-0.03	-1.02	0.90	0.01467	0.45	-0.24	1.07	0.00934
9.84	12.67	2.68	1.73	3.78	0.01311	0.39	-0.69	1.22	0.01331	0.29	-0.30	0.86	0.00767
9.85	2.67	2.41	1.55	3.51	0.00763	-0.14	-0.92	0.78	0.00651	0.62	-0.07	1.25	0.00471
9.85	3.45	2.38	1.37	3.49	0.01540	-0.08	-1.00	0.81	0.01430	0.49	-0.20	1.29	0.01150
9.85	4.22	2.29	1.38	3.43	0.01536	0.10	-1.00	1.18	0.01472	0.28	-0.32	0.89	0.00930
9.85	5.00	2.12	0.87	3.04	0.01619	0.21	-0.82	1.01	0.01469	0.19	-0.34	0.91	0.00950
9.85	5.78	2.46	1.46	3.43	0.01439	0.01	-1.04	1.06	0.01665	0.18	-0.43	0.81	0.01009
9.85	6.55	2.52	1.55	3.56	0.01542	0.21	-0.58	1.20	0.01343	0.35	-0.42	1.32	0.01227
9.85	7.33	2.50	1.58	3.69	0.01123	0.19	-0.68	1.17	0.01147	0.42	-0.11	1.22	0.00729
9.85	12.67	2.59	1.56	3.56	0.00569	0.44	-0.45	1.27	0.00551	0.25	-0.25	1.02	0.00357
9.85	13.45	2.55	1.65	3.53	0.01394	0.45	-0.60	1.38	0.01358	0.29	-0.25	1.03	0.00922
9.85	14.22	2.50	1.53	3.59	0.01362	0.70	-0.25	1.38	0.01272	0.29	-0.38	0.91	0.00960
9.85	15.00	2.28	1.44	3.22	0.01346	0.59	-0.39	1.69	0.01455	0.37	-0.30	1.06	0.00943
9.85	15.78	2.41	1.49	3.52	0.01438	0.60	-0.46	1.72	0.01561	0.52	0.00	1.28	0.00996
9.85	16.55	2.45	1.59	3.63	0.01600	0.72	-0.19	1.67	0.01456	0.77	-0.08	1.47	0.01252
9.85	17.33	2.44	1.19	3.85	0.01247	0.66	-0.34	1.67	0.01147	0.81	-0.03	1.67	0.01021
9.93	2.67	2.47	1.64	3.63	0.02930	-0.14	-0.76	0.55	0.02227	0.57	-0.07	1.21	0.01982
9.93	12.67	2.47	1.77	3.31	0.02052	0.41	-0.58	1.27	0.02131	0.23	-0.14	0.94	0.01248
10.00	2.67	2.58	1.81	3.18	0.04253	-0.20	-0.84	0.26	0.02862	0.80	0.22	1.60	0.03437
10.00	12.67	2.77	2.07	3.75	0.03861	0.44	-0.14	1.31	0.03154	0.70	0.16	1.38	0.03698
10.07	2.67	2.76	1.61	3.95	0.03281	-0.20	-1.07	0.42	0.02439	0.93	0.34	1.59	0.02078
10.07	12.67	2.72	2.00	3.63	0.02224	0.44	-0.49	1.18	0.02316	0.58	0.18	1.22	0.01690
10.13	2.67	2.79	2.22	3.70	0.04538	-0.24	-1.12	0.58	0.05702	1.00	0.52	1.53	0.03051
10.13	12.67	2.69	2.08	3.53	0.03971	0.37	-0.36	1.02	0.03578	0.58	0.21	0.94	0.02119

10.2	2.67	2.82	2.05	3.71	0.02553	-0.10	-0.86	0.75	0.02677	1.00	0.33	1.59	0.01999
10.2	12.67	2.68	1.85	3.53	0.02578	0.51	-0.46	1.41	0.02574	0.72	0.28	1.29	0.01665
10.27	2.67	2.76	1.68	3.91	0.00631	-0.14	-1.12	1.02	0.00554	0.96	0.22	1.77	0.00414
10.27	3.45	2.68	1.72	3.73	0.01447	-0.08	-0.99	0.78	0.01297	0.86	0.21	1.50	0.00989
10.27	4.22	2.66	1.64	3.85	0.01639	0.19	-0.90	1.40	0.01512	0.58	-0.14	1.53	0.01108
10.27	5.00	2.23	1.33	3.32	0.01307	0.19	-0.86	1.19	0.01183	0.44	-0.12	1.08	0.00824
10.27	5.78	2.37	1.58	3.45	0.01435	-0.04	-0.93	0.86	0.01350	0.50	-0.06	1.27	0.00891
10.27	6.55	2.72	1.79	3.82	0.01340	0.08	-0.74	0.99	0.01289	0.62	-0.12	1.48	0.01083
10.27	7.33	2.77	1.75	3.86	0.01251	0.21	-0.61	1.29	0.01166	0.74	0.11	1.46	0.00871
10.27	12.67	2.80	1.90	3.86	0.00497	0.48	-0.53	1.38	0.00491	0.65	0.06	1.33	0.00339
10.27	13.45	2.81	1.87	3.75	0.01241	0.49	-0.46	1.39	0.01188	0.67	0.00	1.38	0.00830
10.27	14.22	2.62	1.65	3.67	0.01496	0.66	-0.12	1.63	0.01263	0.64	-0.05	1.35	0.00998
10.27	15.00	2.48	1.39	3.45	0.01237	0.34	-0.67	1.20	0.01152	0.69	0.07	1.42	0.00834
10.27	15.78	2.70	1.70	3.62	0.01427	0.38	-0.64	1.56	0.01369	0.82	0.09	1.55	0.00959
10.27	16.55	2.72	1.49	3.87	0.01417	0.57	-0.28	1.64	0.01302	1.02	0.45	1.94	0.01028
10.27	17.33	2.66	1.62	3.69	0.01228	0.61	-0.33	1.45	0.01112	1.17	0.28	2.02	0.00985
10.29	2.67	2.78	1.38	4.23	0.02250	-0.04	-0.91	1.02	0.01384	0.75	-0.14	1.54	0.01364
10.29	12.67	2.88	1.74	3.97	0.01765	0.40	-0.58	1.30	0.01306	0.56	-0.24	1.44	0.01268
10.75	2.67	3.39	2.28	4.46	0.01823	-0.12	-1.02	0.78	0.01582	1.00	0.11	1.51	0.01104
10.75	12.67	3.33	2.30	4.45	0.01364	0.50	-0.55	1.25	0.01420	0.78	0.03	1.48	0.01071
10.86	2.67	3.16	2.04	4.37	0.00872	-0.09	-1.09	0.91	0.00783	1.04	0.29	1.63	0.00573
10.86	3.45	3.13	2.15	4.26	0.01485	-0.08	-0.99	0.88	0.01452	1.00	0.32	1.88	0.01179
10.86	4.22	3.07	2.27	4.11	0.01523	0.13	-0.87	1.18	0.01321	0.80	0.13	1.62	0.01064
10.86	5.00	2.73	1.79	4.24	0.01621	0.23	-0.55	1.29	0.01382	0.63	0.01	1.26	0.01007
10.86	5.78	2.95	2.14	4.19	0.01453	0.02	-0.81	0.90	0.01381	0.74	0.04	1.55	0.01233
10.86	6.55	3.09	2.29	4.05	0.01350	0.16	-0.70	1.05	0.01334	0.76	0.02	1.59	0.01099
10.86	7.33	3.11	1.98	4.34	0.01432	0.15	-0.68	1.09	0.01167	0.82	0.13	1.68	0.01100
10.86	12.67	3.12	2.15	4.25	0.00729	0.46	-0.40	1.46	0.00700	0.77	0.16	1.40	0.00529
10.86	13.45	3.10	2.09	4.08	0.01398	0.47	-0.35	1.32	0.01223	0.79	0.17	1.39	0.00927
10.86	14.22	3.11	2.05	4.13	0.01358	0.65	-0.33	1.49	0.01229	0.83	0.10	1.52	0.01049
10.86	15.00	2.81	1.80	3.85	0.01693	0.48	-0.34	1.32	0.01439	0.82	0.23	1.54	0.01027
10.86	15.78	3.22	2.17	4.23	0.01438	0.51	-0.39	1.59	0.01301	1.02	0.43	1.65	0.00939
10.86	16.55	3.26	2.37	4.29	0.01417	0.66	-0.45	1.57	0.01438	1.31	0.45	2.25	0.01100
10.86	17.33	3.20	2.03	4.30	0.01344	0.66	-0.63	1.61	0.01375	1.40	0.71	2.48	0.01103
10.92	2.67	3.36	2.72	3.81	0.04263	-0.09	-0.71	0.44	0.03845	1.09	0.68	1.76	0.03523
10.92	12.67	3.30	2.48	4.26	0.07760	0.39	-0.52	1.17	0.06146	0.73	0.25	1.18	0.03828
10.97	2.67	3.39	2.56	4.16	0.06651	0.05	-0.73	0.93	0.05958	1.13	0.42	1.47	0.04615
10.97	12.67	3.16	2.57	3.59	0.04332	0.35	-0.16	0.71	0.04643	0.84	0.44	1.21	0.03484
11.03	2.67	3.10	2.49	3.79	0.06201	-0.18	-0.64	0.51	0.04467	1.11	0.58	1.70	0.05829
11.03	12.67	3.19	2.50	3.91	0.05102	0.62	0.01	1.32	0.05110	0.84	0.36	1.16	0.03290
11.09	2.67	3.27	2.67	4.12	0.05124	-0.21	-0.89	0.47	0.05253	1.25	0.56	1.81	0.04908
11.09	12.67	3.16	2.54	3.70	0.04651	0.48	-0.40	1.14	0.05518	0.51	0.20	0.98	0.02539
11.14	2.67	2.95	2.41	3.43	0.05662	-0.24	-0.93	0.50	0.07012	1.05	0.52	1.58	0.05488
11.14	12.67	3.10	2.59	3.46	0.04036	0.47	-0.07	0.96	0.04866	0.62	0.25	1.14	0.03805
11.20	2.67	3.16	2.09	4.40	0.00555	-0.14	-1.02	0.79	0.00493	0.99	0.19	1.64	0.00395
11.20	3.45	3.13	2.06	4.16	0.01393	-0.03	-0.92	1.02	0.01293	0.99	0.19	1.70	0.01090
11.20	4.22	3.20	2.31	4.18	0.01440	-0.03	-0.94	0.80	0.01392	0.94	0.29	1.58	0.01053
11.20	5.00	2.98	2.00	4.07	0.01448	0.15	-0.74	1.00	0.01242	0.60	0.05	1.18	0.00872
11.20	5.78	2.69	1.88	3.86	0.01592	-0.11	-0.92	0.67	0.01208	0.54	0.00	1.45	0.01095
11.20	6.55	3.11	2.08	4.08	0.01281	-0.06	-0.93	1.02	0.01315	0.74	0.09	1.54	0.01003
11.20	7.33	3.00	2.16	3.96	0.01195	0.15	-0.56	0.92	0.01015	0.72	0.14	1.55	0.00826
11.20	12.67	3.23	2.22	4.49	0.00515	0.46	-0.66	1.37	0.00450	0.75	0.13	1.48	0.00324
11.20	13.45	3.25	2.11	4.21	0.01276	0.45	-0.38	1.37	0.01113	0.76	0.12	1.45	0.00908
11.20	14.22	3.18	2.37	4.18	0.01340	0.47	-0.40	1.35	0.01260	0.70	0.01	1.47	0.00870
11.20	15.00	2.82	1.90	3.99	0.01388	0.58	-0.63	1.38	0.01240	0.76	0.25	1.32	0.00777
11.20	15.78	3.04	1.91	4.08	0.01459	0.24	-0.68	1.29	0.01394	0.84	0.20	1.69	0.00954
11.20	16.55	3.28	2.13	4.20	0.01336	0.57	-0.44	1.32	0.01135	1.12	0.34	1.75	0.00976
11.20	17.33	3.22	2.33	4.29	0.01187	0.63	-0.30	1.49	0.01110	1.20	0.50	1.98	0.00944
11.21	2.67	3.36	2.03	4.52	0.01718	-0.11	-1.01	0.81	0.01403	1.01	0.25	1.54	0.01070

11.21	12.67	3.27	2.29	4.26	0.01497	0.40	-0.41	1.25	0.01400	0.76	0.08	1.54	0.01093
11.28	7.33	2.99	2.53	3.52	0.04016	0.14	-0.35	0.85	0.05456	0.75	0.41	1.13	0.03255
11.28	17.33	3.06	2.52	3.53	0.03429	0.47	0.05	1.05	0.03441	1.20	0.80	1.59	0.02942
11.37	7.33	3.24	2.61	3.92	0.06822	0.17	-0.46	1.01	0.06258	0.80	0.51	1.20	0.03835
11.37	17.33	3.45	2.84	3.89	0.04659	0.71	0.21	1.18	0.04191	1.30	0.83	1.83	0.03672
11.45	7.33	3.04	2.52	3.63	0.03727	0.17	-0.54	0.89	0.05857	0.79	0.34	1.10	0.03174
11.45	17.33	3.27	2.76	3.77	0.04284	0.64	-0.14	1.21	0.04742	1.20	0.84	1.77	0.03933
11.53	7.33	3.09	2.43	3.70	0.05015	0.29	-0.32	0.70	0.03403	0.66	0.24	1.36	0.05285
11.53	17.33	3.09	2.51	3.70	0.04597	0.65	0.16	1.12	0.03858	1.09	0.36	1.53	0.03963
11.62	7.33	2.92	2.48	3.55	0.05034	-0.11	-0.56	0.69	0.04799	0.60	0.23	1.36	0.05311
11.62	17.33	3.05	2.35	3.49	0.04972	0.59	-0.30	1.07	0.05054	0.98	0.35	1.47	0.05504
11.67	2.67	3.24	2.12	4.32	0.00409	-0.07	-0.97	0.91	0.00359	0.96	0.23	1.66	0.00274
11.67	3.45	3.28	2.28	4.26	0.01212	-0.05	-0.98	1.09	0.01034	0.85	0.09	1.43	0.00849
11.67	4.22	3.18	2.08	4.43	0.01426	0.13	-0.96	1.08	0.01123	0.65	0.01	1.35	0.00858
11.67	5.00	2.68	1.79	4.41	0.01289	0.08	-1.02	1.33	0.01148	0.55	0.02	1.44	0.00832
11.67	5.78	2.99	1.97	4.19	0.01200	-0.02	-1.04	1.03	0.01107	0.66	0.04	1.62	0.00846
11.67	6.55	3.14	2.15	4.41	0.01350	0.15	-0.89	1.18	0.01217	0.81	0.06	1.67	0.00968
11.67	7.33	3.16	2.07	4.23	0.00408	0.23	-0.64	1.26	0.00360	0.85	0.12	1.73	0.00298
11.67	12.67	3.21	2.21	4.52	0.00377	0.43	-0.57	1.48	0.00352	0.80	0.15	1.63	0.00259
11.67	13.45	3.23	2.08	4.28	0.01155	0.55	-0.66	1.41	0.01032	0.88	0.26	1.65	0.00763
11.67	14.22	3.06	1.94	4.16	0.01275	0.67	-0.25	1.48	0.01003	0.89	0.26	1.64	0.00769
11.67	15.00	2.97	1.90	3.98	0.01198	0.32	-0.58	1.29	0.01055	0.86	0.16	1.42	0.00700
11.67	15.78	3.26	2.20	4.32	0.01173	0.52	-0.40	1.50	0.01073	0.96	0.32	1.90	0.00817
11.67	16.55	3.24	2.09	4.23	0.01169	0.73	-0.15	1.46	0.01046	1.18	0.41	1.92	0.00942
11.67	17.33	3.22	1.93	4.26	0.00403	0.71	-0.65	1.59	0.00370	1.24	0.41	2.10	0.00300
11.70	2.67	3.19	2.20	4.27	0.00845	-0.07	-0.83	0.82	0.00728	1.04	0.28	1.72	0.00586
11.70	3.45	3.35	2.26	4.50	0.01783	-0.05	-0.98	0.89	0.01395	0.96	0.12	1.65	0.01327
11.70	4.22	3.24	2.21	4.47	0.01766	0.09	-0.73	0.92	0.01378	0.77	0.18	1.55	0.01204
11.70	5.00	2.73	1.85	3.98	0.01759	0.19	-0.85	1.07	0.01446	0.57	-0.07	1.31	0.00986
11.70	5.78	2.90	1.85	3.90	0.01631	-0.01	-0.92	0.92	0.01438	0.60	0.07	1.24	0.01070
11.70	6.55	3.08	2.13	3.99	0.01433	0.13	-0.75	1.00	0.01360	0.76	0.17	1.55	0.01061
11.70	7.33	2.97	2.01	4.05	0.01154	0.11	-0.90	1.07	0.01030	0.74	0.05	1.61	0.00893
11.70	12.67	3.22	2.23	4.30	0.00760	0.42	-0.87	1.38	0.00714	0.81	0.24	1.52	0.00522
11.70	13.45	3.42	2.54	4.69	0.01580	0.52	-0.25	1.59	0.01294	0.89	0.18	1.61	0.01162
11.70	14.22	3.09	2.07	4.04	0.01572	0.72	-0.22	1.57	0.01281	0.80	0.28	1.38	0.00986
11.70	15.00	2.75	1.77	3.63	0.01489	0.38	-0.49	1.25	0.01323	0.83	0.32	1.37	0.00929
11.70	15.78	3.18	2.35	4.18	0.01425	0.48	-0.40	1.69	0.01446	0.99	0.42	1.70	0.01132
11.70	16.55	3.12	1.93	4.10	0.01441	0.67	-0.35	1.58	0.01488	1.20	0.55	1.84	0.01056
11.70	17.33	3.12	2.12	4.18	0.01074	0.65	-0.30	1.51	0.00966	1.18	0.27	1.89	0.00755
12.09	7.33	3.16	2.33	4.46	0.01989	0.23	-0.51	1.08	0.01713	0.98	0.34	1.68	0.01629
12.09	17.33	3.15	2.17	4.47	0.02151	0.68	-0.54	1.58	0.01851	1.38	0.65	2.09	0.01401
12.50	7.33	3.19	2.35	3.95	0.01810	0.11	-0.61	0.94	0.01713	0.95	0.35	1.60	0.01507
12.50	17.33	3.26	2.42	4.14	0.01865	0.74	-0.30	1.52	0.01759	1.41	0.66	2.17	0.01493
12.92	7.33	3.21	2.44	4.03	0.01851	0.25	-0.45	1.00	0.01700	0.97	0.31	1.70	0.01425
12.92	17.33	3.37	2.36	4.19	0.01941	0.78	-0.09	1.56	0.02003	1.48	0.83	2.17	0.01416
13.34	7.33	3.23	2.50	4.27	0.02035	0.18	-0.55	0.91	0.01876	0.95	0.46	1.55	0.01509
13.34	17.33	3.31	2.48	3.97	0.01821	0.68	-0.10	1.59	0.02249	1.46	0.78	2.14	0.01676
13.75	7.33	3.07	2.07	4.04	0.02121	0.18	-0.55	0.99	0.01680	0.93	0.30	1.53	0.01417
13.75	17.33	3.17	2.31	4.21	0.01862	0.66	-0.36	1.39	0.01661	1.36	0.69	1.99	0.01169
14.22	2.67	2.97	1.87	4.16	0.00408	0.00	-0.86	1.08	0.00340	1.05	0.23	1.77	0.00279
14.22	3.45	2.71	1.98	3.80	0.01528	0.20	-0.77	1.19	0.01452	0.75	0.23	1.62	0.01097
14.22	4.22	2.40	1.50	3.51	0.01554	0.03	-0.98	0.90	0.01413	0.75	0.34	1.54	0.00994
14.22	5.00	2.76	1.87	3.96	0.01570	-0.16	-0.97	0.78	0.01402	0.83	0.20	1.39	0.00939
14.22	5.78	3.06	1.98	4.19	0.01655	0.03	-0.88	0.78	0.01472	0.90	0.26	1.51	0.00954
14.22	6.55	3.05	1.92	4.07	0.01502	0.13	-0.83	0.89	0.01292	1.00	0.29	1.67	0.00994
14.22	7.33	3.04	1.90	4.09	0.00383	0.18	-0.78	1.37	0.00338	1.01	0.25	1.70	0.00262
14.22	12.67	3.02	1.86	4.04	0.00330	0.35	-0.83	1.22	0.00320	0.98	0.19	1.71	0.00234
14.22	13.45	2.65	1.83	3.45	0.01264	0.52	-0.24	1.48	0.01245	1.10	0.58	1.68	0.00836
14.22	14.22	2.73	1.79	3.75	0.01449	0.28	-0.60	1.15	0.01320	1.10	0.62	1.77	0.00854

14.22	15.00	2.94	2.05	3.93	0.01525	0.37	-0.51	1.43	0.01349	1.13	0.45	1.91	0.01184
14.22	15.78	3.06	2.18	4.06	0.01415	0.57	-0.34	1.49	0.01419	1.27	0.51	2.08	0.01166
14.22	16.55	2.96	1.89	3.84	0.01480	0.56	-0.43	1.51	0.01527	1.35	0.52	2.10	0.01067
14.22	17.33	2.97	1.94	4.08	0.00366	0.63	-0.59	1.55	0.00364	1.42	0.41	2.19	0.00262
14.68	2.67	3.27	2.03	4.27	0.01549	-0.01	-1.02	0.89	0.01206	1.47	0.88	2.10	0.00965
14.68	12.67	3.35	2.32	4.35	0.01254	0.29	-0.41	1.13	0.01121	1.53	0.82	2.16	0.00905
15.15	2.67	3.33	2.50	4.34	0.01357	-0.02	-0.96	0.89	0.01238	1.51	0.90	2.15	0.00937
15.15	12.67	3.35	2.54	4.26	0.01265	0.24	-0.63	1.03	0.01161	1.50	0.96	2.09	0.00788
15.61	2.67	3.36	2.41	4.29	0.01513	-0.03	-1.04	0.82	0.01362	1.50	0.93	2.07	0.00942
15.61	12.67	3.38	2.48	4.31	0.01295	0.29	-0.47	1.21	0.01257	1.52	1.06	2.17	0.00892
16.07	2.67	3.35	2.35	4.32	0.01348	-0.02	-0.90	0.88	0.01236	1.45	0.87	2.13	0.01015
16.07	12.67	3.45	2.70	4.33	0.01133	0.24	-0.47	0.96	0.01024	1.46	0.94	2.16	0.00780
16.54	2.67	3.36	2.41	4.34	0.01436	0.00	-0.76	0.89	0.01163	1.44	0.86	2.02	0.00859
16.54	12.67	3.34	2.44	4.11	0.01200	0.28	-0.47	1.04	0.01102	1.43	0.96	2.00	0.00780
16.99	2.67	3.19	2.12	4.28	0.00375	0.00	-0.96	0.93	0.00315	1.35	0.71	2.02	0.00247
16.99	3.45	3.21	2.29	4.51	0.01110	0.03	-0.70	1.04	0.00970	1.39	0.65	2.00	0.00739
16.99	4.22	3.18	2.25	4.15	0.01029	0.18	-0.68	0.92	0.00928	1.26	0.73	2.02	0.00674
16.99	5.00	2.88	2.03	3.96	0.01154	0.21	-0.69	1.14	0.01043	1.25	0.70	2.09	0.00662
16.99	5.78	3.09	2.02	4.20	0.01257	0.02	-0.92	1.01	0.00952	1.36	0.72	2.19	0.00685
16.99	6.55	3.26	2.29	4.32	0.01151	0.17	-0.69	1.10	0.00969	1.40	0.89	2.04	0.00653
16.99	7.33	3.27	2.35	4.31	0.00358	0.20	-0.57	1.29	0.00294	1.47	0.85	2.24	0.00233
16.99	12.67	3.20	2.33	4.15	0.00301	0.25	-0.98	1.21	0.00285	1.39	0.82	2.08	0.00211
16.99	13.45	3.29	2.52	4.40	0.00919	0.33	-0.68	1.53	0.00889	1.43	0.94	2.02	0.00609
16.99	14.22	3.13	2.06	4.23	0.01101	0.57	-0.28	1.50	0.00941	1.48	0.94	1.99	0.00636
16.99	15.00	2.90	2.03	3.84	0.01019	0.32	-0.58	1.26	0.00981	1.52	1.00	2.28	0.00687
16.99	15.78	3.11	2.23	4.09	0.00945	0.31	-0.71	1.19	0.00919	1.52	0.97	2.26	0.00716
16.99	16.55	3.08	2.13	4.11	0.01085	0.45	-0.42	1.46	0.01047	1.62	1.00	2.39	0.00855
16.99	17.33	3.06	2.08	4.17	0.00357	0.46	-0.50	1.46	0.00363	1.73	0.93	2.41	0.00287
17.41	7.33	3.25	2.30	4.12	0.02312	0.19	-0.58	1.30	0.01935	1.42	0.91	1.94	0.01169
17.41	17.33	3.08	2.37	4.02	0.02065	0.49	-0.20	1.13	0.01972	1.73	0.94	2.34	0.01892
17.83	7.33	3.30	2.62	4.12	0.01888	0.18	-0.45	0.85	0.01780	1.62	1.18	2.11	0.01240
17.83	17.33	3.03	2.22	4.07	0.01958	0.47	-0.39	1.22	0.01855	1.83	1.37	2.47	0.01489
18.24	7.33	3.31	2.41	4.16	0.02243	0.17	-0.59	0.87	0.01830	1.57	1.11	2.02	0.01326
18.24	17.33	3.24	2.38	4.13	0.02108	0.51	-0.24	1.23	0.02008	1.87	1.19	2.47	0.01860
18.66	7.33	3.72	3.05	4.39	0.01798	0.23	-0.53	1.12	0.02042	1.68	1.02	2.17	0.01401
18.66	17.33	3.54	2.66	4.28	0.02082	0.59	-0.21	1.29	0.02076	1.93	1.19	2.55	0.01700
19.08	7.33	3.12	2.36	4.12	0.02477	0.15	-0.53	0.68	0.01758	1.50	1.06	1.93	0.01336
19.08	17.33	3.14	2.23	4.10	0.02661	0.55	-0.34	1.27	0.01989	1.71	1.14	2.25	0.01604
19.47	2.67	2.95	1.97	4.13	0.00384	0.04	-0.77	1.09	0.00318	1.43	0.74	2.14	0.00252
19.47	3.45	2.96	1.93	3.98	0.01111	0.04	-0.76	1.03	0.00949	1.39	0.87	1.97	0.00698
19.47	4.22	2.98	2.10	3.97	0.01013	0.16	-0.81	1.03	0.00847	1.27	0.70	1.96	0.00631
19.47	5.00	2.73	1.82	3.83	0.01186	0.23	-0.85	1.21	0.00967	1.35	0.71	1.97	0.00654
19.47	5.78	2.88	1.85	4.03	0.01209	-0.10	-0.82	0.62	0.00872	1.43	0.73	2.10	0.00684
19.47	6.55	3.08	2.02	3.97	0.01001	0.09	-0.84	0.80	0.00884	1.46	0.67	2.00	0.00676
19.47	7.33	3.07	1.94	4.17	0.00345	0.15	-0.73	1.07	0.00295	1.49	0.84	2.12	0.00228
19.47	12.67	2.98	2.08	4.14	0.00303	0.19	-0.66	1.10	0.00282	1.37	0.73	2.05	0.00191
19.47	13.45	3.00	2.16	4.02	0.01009	0.25	-0.50	1.04	0.00867	1.36	0.86	1.89	0.00520
19.47	14.22	2.98	1.91	4.10	0.01012	0.49	-0.43	1.36	0.00897	1.43	0.95	2.21	0.00565
19.47	15.00	2.72	1.94	3.59	0.00929	0.28	-0.70	1.10	0.00969	1.49	0.97	2.29	0.00584
19.47	15.78	3.00	2.10	4.00	0.00939	0.27	-0.54	1.20	0.00902	1.47	0.97	2.10	0.00589
19.47	16.55	3.00	2.25	3.85	0.00923	0.44	-0.42	1.43	0.00907	1.57	0.89	2.34	0.00772
19.47	17.33	3.00	2.01	4.00	0.00364	0.48	-0.48	1.46	0.00352	1.72	1.08	2.40	0.00266
19.95	2.67	2.88	1.71	4.03	0.01383	-0.03	-0.98	0.89	0.00999	1.89	0.77	2.82	0.01151
19.95	12.67	3.00	1.70	4.08	0.01237	0.21	-0.72	1.09	0.00857	1.79	0.68	2.50	0.01006
20.42	2.67	3.19	2.29	4.05	0.00939	-0.04	-1.02	0.99	0.00991	2.18	1.55	2.73	0.00677
20.42	12.67	3.26	2.36	4.11	0.00876	0.27	-0.61	1.09	0.00904	2.08	1.55	2.68	0.00564
20.90	2.67	3.17	2.31	4.01	0.00979	-0.03	-0.97	0.86	0.01029	2.20	1.58	2.91	0.00692
20.90	12.67	3.28	2.51	4.13	0.00873	0.23	-0.60	1.08	0.00930	2.07	1.50	2.63	0.00571
21.38	2.67	3.14	2.29	4.22	0.01034	0.00	-0.80	0.86	0.00969	2.15	1.61	2.87	0.00675

21.38	12.67	3.28	2.46	4.21	0.00866	0.27	-0.65	1.01	0.00922	2.08	1.51	2.69	0.00534
21.85	2.67	3.29	2.27	4.31	0.01071	-0.05	-0.86	0.84	0.00958	2.03	1.30	2.62	0.00769
21.85	12.67	3.36	2.53	4.29	0.00978	0.24	-0.64	1.07	0.00977	1.97	1.17	2.52	0.00604
22.37	2.67	3.14	2.23	4.13	0.00342	-0.02	-0.86	0.99	0.00344	1.91	1.27	2.53	0.00243
22.37	3.45	3.18	2.11	4.06	0.00963	0.04	-0.76	0.96	0.01023	1.88	1.22	2.45	0.00758
22.37	4.22	3.24	2.42	4.12	0.00966	0.24	-0.78	1.12	0.01024	1.82	1.23	2.30	0.00618
22.37	5.00	2.92	2.03	4.10	0.01089	0.22	-0.82	1.28	0.01175	1.89	1.18	2.52	0.00626
22.37	5.78	3.17	2.36	4.14	0.00999	-0.02	-0.81	0.92	0.01039	1.89	1.28	2.37	0.00698
22.37	6.55	3.26	2.39	4.07	0.00989	0.18	-0.84	1.01	0.00976	1.94	1.16	2.63	0.00761
22.37	7.33	3.23	2.31	4.09	0.00325	0.13	-0.71	1.29	0.00311	1.95	1.30	2.64	0.00243
22.37	12.67	3.21	2.38	4.10	0.00291	0.22	-0.78	1.09	0.00305	1.92	1.25	2.44	0.00193
22.37	13.45	3.26	2.51	4.01	0.00791	0.31	-0.63	1.12	0.00931	1.93	1.48	2.63	0.00538
22.37	14.22	3.05	2.02	3.92	0.00872	0.54	-0.26	1.36	0.00859	1.97	1.15	2.41	0.00531
22.37	15.00	2.86	2.07	4.02	0.00916	0.19	-0.55	1.06	0.00879	2.01	1.52	2.53	0.00551
22.37	15.78	3.07	2.21	3.91	0.00811	0.37	-0.66	1.33	0.00928	2.00	1.48	2.78	0.00622
22.37	16.55	2.96	2.19	3.96	0.00865	0.52	-0.47	1.49	0.00945	2.12	1.43	2.84	0.00748
22.37	17.33	2.92	1.99	3.92	0.00291	0.49	-0.42	1.40	0.00303	2.17	1.47	2.97	0.00244
22.78	7.33	3.17	2.40	4.03	0.00716	0.10	-0.81	1.05	0.00738	2.15	1.40	2.80	0.00533
22.78	17.33	2.87	2.10	3.89	0.00691	0.43	-0.50	1.37	0.00719	2.34	1.56	3.15	0.00573
23.19	7.33	3.16	2.33	4.16	0.00752	0.11	-0.76	1.18	0.00758	2.13	1.49	2.73	0.00519
23.19	17.33	2.88	1.98	3.90	0.00678	0.42	-0.43	1.40	0.00698	2.30	1.66	3.16	0.00533
23.60	7.33	3.17	2.28	4.04	0.00753	0.11	-0.68	1.02	0.00726	2.11	1.51	2.83	0.00518
23.60	17.33	2.84	1.84	3.65	0.00646	0.41	-0.41	1.34	0.00735	2.30	1.65	2.99	0.00525
24.01	7.33	3.14	2.33	4.18	0.00712	0.12	-0.76	1.04	0.00755	2.13	1.58	2.78	0.00532
24.01	17.33	2.88	2.03	3.73	0.00711	0.41	-0.37	1.28	0.00734	2.27	1.71	3.21	0.00544
24.42	7.33	3.06	1.92	4.19	0.00895	0.11	-0.81	1.14	0.00760	2.05	1.33	2.61	0.00587
24.42	17.33	2.87	1.93	4.03	0.00863	0.33	-0.64	1.36	0.00780	2.23	1.57	2.95	0.00573
24.97	2.67	2.67	1.69	3.75	0.00306	0.01	-0.87	0.86	0.00314	2.19	1.49	2.86	0.00231
24.97	3.45	2.76	1.78	3.59	0.00995	0.02	-0.83	1.01	0.00976	2.13	1.54	2.65	0.00660
24.97	4.22	2.85	2.09	4.11	0.00923	0.15	-0.86	0.93	0.00993	2.03	1.46	2.74	0.00689
24.97	5.00	2.67	1.78	3.68	0.01064	0.26	-0.75	1.22	0.01098	2.08	1.56	2.83	0.00719
24.97	5.78	2.84	1.69	3.95	0.01174	-0.10	-0.86	0.93	0.01011	2.06	1.32	2.70	0.00731
24.97	6.55	2.97	1.97	3.72	0.00949	0.08	-0.83	1.22	0.00979	2.09	1.37	2.65	0.00762
24.97	7.33	2.90	1.95	3.92	0.00333	0.12	-0.67	1.25	0.00338	2.08	1.39	2.74	0.00254
24.97	12.67	2.96	2.18	3.90	0.00275	0.17	-0.79	1.00	0.00300	2.12	1.42	2.78	0.00196
24.97	13.45	3.00	2.07	4.00	0.00867	0.21	-0.76	1.09	0.00982	2.14	1.48	2.68	0.00620
24.97	14.22	2.92	2.21	3.73	0.00771	0.44	-0.50	1.27	0.00850	2.21	1.55	2.80	0.00534
24.97	15.00	2.72	1.96	3.69	0.00880	0.17	-0.59	0.99	0.00879	2.17	1.35	2.73	0.00641
24.97	15.78	2.99	2.17	3.81	0.00848	0.08	-0.83	0.84	0.00844	2.13	1.40	2.63	0.00622
24.97	16.55	2.82	2.04	3.82	0.00879	0.26	-0.54	1.27	0.00855	2.15	1.45	2.82	0.00627
24.97	17.33	2.72	1.71	3.70	0.00325	0.28	-0.59	1.27	0.00337	2.21	1.57	2.90	0.00229
25.42	2.67	2.69	1.89	3.29	0.02010	-0.02	-0.66	0.90	0.02039	2.17	1.45	2.71	0.01520
25.42	12.67	3.01	2.38	3.71	0.01771	0.16	-0.54	0.80	0.01830	2.04	1.33	2.66	0.01363
25.87	2.67	2.71	2.14	3.37	0.02554	-0.01	-0.72	0.58	0.02747	2.20	1.82	2.64	0.01794
25.87	12.67	2.96	2.36	3.60	0.02459	0.13	-0.47	0.74	0.02525	2.12	1.73	2.46	0.01627
26.32	2.67	2.44	1.88	3.46	0.02286	0.03	-0.69	0.84	0.02312	2.31	1.53	3.19	0.02969
26.32	12.67	2.73	2.06	3.63	0.02500	0.24	-0.52	0.96	0.02305	2.20	1.38	3.15	0.03182
26.77	2.67	3.00	2.19	3.73	0.02924	-0.01	-0.61	0.62	0.02096	2.76	2.21	3.17	0.01850
26.77	12.67	3.16	2.42	3.86	0.02362	0.20	-0.55	0.94	0.02112	2.77	2.13	3.27	0.01836
27.22	2.67	2.85	2.32	3.58	0.02549	0.04	-0.54	0.70	0.02707	2.81	2.35	3.17	0.01533
27.22	12.67	3.06	2.17	3.62	0.02671	0.20	-0.46	0.80	0.02947	2.81	2.45	3.20	0.01574
27.67	2.67	2.82	1.74	4.02	0.00344	0.09	-0.71	1.05	0.00338	2.83	2.22	3.40	0.00223
27.67	3.45	2.96	1.54	4.21	0.01125	0.13	-1.22	1.42	0.01155	2.76	2.11	3.37	0.00622
27.67	4.22	2.96	1.56	4.18	0.01115	0.31	-1.10	1.39	0.01166	2.67	2.20	3.20	0.00577
27.67	5.00	2.60	1.54	3.90	0.01137	0.19	-1.08	1.31	0.01258	2.68	2.02	3.38	0.00623
27.67	5.78	2.85	1.58	3.99	0.01115	-0.05	-1.09	1.49	0.01121	2.75	2.21	3.35	0.00648
27.67	6.55	2.90	1.87	4.04	0.01068	0.11	-1.17	1.31	0.01131	2.78	1.96	3.32	0.00654
27.67	7.33	2.88	1.91	3.75	0.00345	0.18	-0.84	1.26	0.00363	2.78	2.06	3.38	0.00238
27.67	12.67	2.99	2.11	3.99	0.00307	0.22	-0.71	1.11	0.00320	2.84	2.11	3.35	0.00218

27.67	13.45	2.99	2.11	3.90	0.00907	0.34	-0.63	1.48	0.01033	2.87	2.19	3.46	0.00644
27.67	14.22	2.78	2.01	3.89	0.01044	0.46	-0.67	1.41	0.01051	2.86	2.25	3.41	0.00582
27.67	15.00	2.82	2.00	3.85	0.01081	0.08	-0.73	1.25	0.01007	2.82	2.23	3.36	0.00621
27.67	15.78	3.18	2.23	3.96	0.00992	0.18	-0.75	1.46	0.01089	2.81	2.27	3.41	0.00578
27.67	16.55	3.06	2.05	3.99	0.01095	0.24	-0.71	1.43	0.01075	2.87	2.34	3.48	0.00619
27.67	17.33	2.90	1.92	4.06	0.00356	0.16	-0.87	1.28	0.00333	2.90	2.23	3.58	0.00207
28.07	7.33	2.83	2.15	3.36	0.03099	0.22	-0.40	0.89	0.03364	2.68	2.22	3.19	0.02429
28.07	17.33	2.78	1.92	3.65	0.04021	0.09	-0.69	0.84	0.03083	2.82	2.43	3.21	0.02113
28.47	7.33	2.92	2.07	3.49	0.03159	0.10	-0.52	0.71	0.03018	2.87	2.27	3.29	0.02309
28.47	17.33	2.89	2.26	3.74	0.03143	0.14	-0.43	0.90	0.02809	3.04	2.34	3.53	0.02631
28.88	7.33	2.81	1.97	3.35	0.03233	0.19	-0.53	0.83	0.03454	3.12	2.71	3.73	0.02463
28.88	17.33	3.17	2.35	3.85	0.03371	0.37	-0.40	1.07	0.03086	3.26	2.87	4.01	0.02536
29.28	7.33	2.57	1.91	3.36	0.03376	0.23	-0.54	0.88	0.02977	3.15	2.79	3.58	0.01805
29.28	17.33	2.73	1.98	3.26	0.03173	0.14	-0.70	1.00	0.03442	3.52	3.15	3.96	0.02199
29.68	7.33	2.56	1.95	3.41	0.03856	0.28	-0.32	0.77	0.02652	3.13	2.73	3.41	0.01535
29.68	17.33	2.79	1.88	3.70	0.03925	0.23	-0.87	1.02	0.03470	3.52	3.04	3.88	0.01771
30.10	2.67	2.55	2.00	3.41	0.00642	0.17	-0.47	0.75	0.00581	3.24	2.79	3.94	0.00425
30.10	3.45	2.56	1.77	3.23	0.00927	0.18	-0.48	0.87	0.00835	3.22	2.80	3.69	0.00609
30.10	4.22	2.64	1.86	3.19	0.00908	0.27	-0.37	0.89	0.00898	3.10	2.64	3.61	0.00577
30.10	5.00	2.41	1.78	3.09	0.01029	0.27	-0.40	0.84	0.00891	3.11	2.70	3.63	0.00632
30.10	5.78	2.53	1.88	3.22	0.01021	-0.03	-0.50	0.59	0.00848	3.14	2.70	3.63	0.00615
30.10	6.55	2.60	1.97	3.20	0.00919	0.16	-0.45	0.79	0.00873	3.12	2.69	3.57	0.00567
30.10	7.33	2.56	2.02	3.29	0.00678	0.20	-0.37	0.87	0.00628	3.12	2.60	3.67	0.00437
30.10	12.67	2.64	1.89	3.43	0.00634	0.14	-0.58	0.84	0.00587	3.21	2.65	3.76	0.00439
30.10	13.45	2.66	2.06	3.33	0.00902	0.16	-0.40	0.87	0.00837	3.22	2.81	3.63	0.00570
30.10	14.22	2.59	1.84	3.32	0.00983	0.33	-0.51	0.93	0.00929	3.29	2.70	3.99	0.00642
30.10	15.00	2.35	1.66	3.04	0.00959	0.15	-0.66	1.00	0.01081	3.30	2.94	3.81	0.00558
30.10	15.78	2.75	1.78	3.38	0.00906	0.14	-0.65	0.77	0.00927	3.27	2.86	3.71	0.00561
30.10	16.55	2.77	1.92	3.42	0.00937	0.21	-0.47	1.04	0.00921	3.39	2.90	4.06	0.00633
30.10	17.33	2.74	1.86	3.52	0.00718	0.20	-0.54	1.09	0.00672	3.45	2.99	4.00	0.00478
30.11	2.67	2.44	1.40	3.55	0.00736	0.06	-0.55	0.74	0.00645	3.32	2.87	3.86	0.00404
30.11	3.45	2.52	1.40	3.75	0.01257	0.18	-0.66	0.97	0.01093	3.29	2.86	3.81	0.00676
30.11	4.22	2.61	1.38	3.35	0.01041	0.26	-0.64	0.99	0.00986	3.16	2.57	3.67	0.00583
30.11	5.00	2.64	1.37	3.81	0.01199	0.26	-0.56	0.98	0.01126	3.19	2.72	3.64	0.00660
30.11	5.78	2.44	1.46	3.79	0.01240	0.14	-0.64	0.87	0.01218	3.17	2.53	3.65	0.00647
30.11	6.55	2.63	1.47	3.86	0.01253	0.03	-0.63	0.93	0.01089	3.18	2.61	3.65	0.00628
30.11	7.33	2.59	2.17	3.00	0.01911	0.22	-0.05	0.50	0.01399	3.15	2.93	3.37	0.01226
30.11	12.67	2.74	2.01	3.48	0.00680	0.11	-0.50	0.75	0.00605	3.18	2.57	3.79	0.00451
30.11	13.45	2.77	1.79	3.72	0.01154	0.11	-0.49	0.95	0.01067	3.24	2.53	3.74	0.00690
30.11	14.22	2.69	1.65	3.87	0.01089	0.28	-0.46	1.00	0.01091	3.25	2.71	3.82	0.00700
30.11	15.00	2.62	1.73	3.69	0.01172	0.34	-0.44	0.98	0.01081	3.31	2.67	3.86	0.00694
30.11	15.78	2.57	1.61	3.84	0.01336	0.07	-0.50	0.89	0.01091	3.31	2.77	3.76	0.00632
30.11	16.55	2.94	1.92	3.77	0.01187	0.14	-0.49	0.99	0.01090	3.31	2.85	3.98	0.00653
30.11	17.33	2.88	2.57	3.18	0.01439	0.22	-0.02	0.51	0.01221	3.42	3.25	3.62	0.01125
30.20	7.33	2.16	1.92	2.41	0.07169	0.23	0.10	0.42	0.04788	3.01	2.88	3.09	0.02925
30.20	17.33	2.40	2.32	2.58	0.06157	0.13	0.04	0.27	0.05087	3.36	3.28	3.49	0.04493
30.29	7.33	2.38	2.19	2.62	0.05704	0.19	0.06	0.40	0.05331	3.14	3.04	3.26	0.03185
30.29	17.33	2.56	2.46	2.66	0.02785	0.19	0.04	0.35	0.04588	3.51	3.38	3.62	0.03632
30.38	7.33	2.58	2.34	2.78	0.05438	0.23	0.07	0.32	0.03786	3.13	3.00	3.17	0.02169
30.38	17.33	2.77	2.59	3.01	0.05518	0.22	0.12	0.32	0.03161	3.38	3.26	3.52	0.03569
30.46	7.33	2.49	2.39	2.63	0.03133	0.33	0.20	0.46	0.03905	3.13	3.01	3.33	0.03831
30.46	17.33	2.90	2.77	3.00	0.03181	0.18	0.04	0.40	0.05002	3.38	3.25	3.52	0.03389
30.55	7.33	2.62	2.45	2.74	0.03879	0.27	0.13	0.39	0.03554	3.16	3.01	3.31	0.03967
30.55	17.33	2.86	2.60	3.03	0.06439	0.26	0.18	0.32	0.02325	3.45	3.33	3.53	0.03455
30.64	2.67	2.16	1.92	2.37	0.01032	0.09	-0.19	0.32	0.00970	3.30	3.15	3.42	0.00562
30.64	3.45	2.24	1.97	2.56	0.02237	0.15	-0.01	0.39	0.01480	3.20	3.05	3.33	0.01244
30.64	4.22	2.29	2.09	2.51	0.01590	0.19	-0.01	0.47	0.01807	3.15	2.93	3.32	0.01243
30.64	5.00	2.12	1.78	2.42	0.02676	0.22	-0.20	0.47	0.02409	3.14	2.99	3.28	0.01326
30.64	5.78	2.22	1.80	2.55	0.02721	0.06	-0.22	0.40	0.02494	3.14	2.95	3.34	0.01406

30.64	6.55	2.24	2.05	2.52	0.02078	0.20	0.07	0.39	0.01424	3.11	2.90	3.40	0.01666
30.64	7.33	2.21	1.90	2.52	0.01803	0.24	0.02	0.41	0.01367	3.05	2.89	3.29	0.01326
30.64	12.67	2.40	2.11	2.64	0.01017	0.02	-0.18	0.24	0.01011	3.17	3.03	3.38	0.00773
30.64	13.45	2.37	2.14	2.68	0.02160	0.05	-0.12	0.21	0.01544	3.16	3.00	3.33	0.01420
30.64	14.22	2.36	2.05	2.59	0.02222	0.22	-0.01	0.47	0.02240	3.23	3.06	3.43	0.01409
30.64	15.00	2.08	1.82	2.23	0.01804	0.13	-0.23	0.49	0.02937	3.29	3.09	3.48	0.01491
30.64	15.78	2.40	2.12	2.59	0.01735	0.13	-0.13	0.40	0.01996	3.27	3.11	3.51	0.01587
30.64	16.55	2.41	2.14	2.63	0.02027	0.17	0.01	0.44	0.01580	3.41	3.06	3.62	0.01853
30.64	17.33	2.44	2.01	2.74	0.02026	0.14	0.00	0.41	0.01443	3.40	3.05	3.55	0.01322
30.69	2.67	2.22	2.06	2.43	0.04984	0.04	-0.02	0.12	0.01820	3.29	3.16	3.41	0.03305
30.69	12.67	2.36	2.18	2.53	0.04854	0.04	-0.07	0.24	0.03988	3.14	3.07	3.29	0.02850
30.78	2.67	2.19	1.98	2.31	0.03919	0.13	-0.06	0.28	0.04057	3.26	3.14	3.41	0.03119
30.78	12.67	2.40	2.22	2.53	0.04593	0.05	-0.05	0.25	0.04240	3.10	2.97	3.25	0.03171
30.86	2.67	2.12	2.02	2.20	0.03167	0.13	0.01	0.28	0.04036	3.49	3.27	3.70	0.06425
30.86	12.67	2.40	2.17	2.62	0.05609	0.02	-0.12	0.18	0.04847	3.37	3.10	3.80	0.09275
30.94	2.67	2.03	1.93	2.13	0.03058	0.00	-0.09	0.14	0.03533	3.99	3.92	4.04	0.01705
30.94	12.67	2.35	2.22	2.48	0.03907	0.06	0.00	0.14	0.02195	3.82	3.71	3.92	0.03205
31.03	2.67	2.05	1.88	2.19	0.04149	0.12	0.05	0.21	0.02478	4.00	3.98	4.07	0.01198
31.03	12.67	2.46	2.20	2.75	0.07237	0.03	-0.18	0.17	0.04261	3.82	3.73	4.01	0.04171
31.11	2.67	2.11	1.84	2.43	0.01423	0.00	-0.38	0.35	0.01479	4.00	3.82	4.21	0.01047
31.11	3.45	2.16	1.79	2.58	0.01187	0.23	-0.15	0.54	0.01154	4.00	3.79	4.19	0.00680
31.11	4.22	2.28	1.98	2.60	0.01052	0.31	0.05	0.57	0.01119	3.92	3.73	4.15	0.00839
31.11	5.00	2.13	1.67	2.44	0.01499	0.14	-0.32	0.57	0.01588	3.81	3.59	4.07	0.00842
31.11	5.78	2.31	1.89	2.67	0.01460	0.14	-0.13	0.40	0.01193	3.82	3.53	4.00	0.00758
31.11	6.55	2.28	1.91	2.69	0.01476	0.17	-0.10	0.54	0.01126	3.82	3.62	4.05	0.00859
31.11	7.33	2.24	1.83	2.58	0.01692	0.21	-0.11	0.51	0.01201	3.85	3.68	4.17	0.00812
31.11	12.67	2.36	1.99	2.70	0.01710	0.04	-0.18	0.30	0.01251	3.80	3.65	4.04	0.01057
31.11	13.45	2.40	2.09	2.67	0.01301	0.08	-0.18	0.35	0.01074	3.85	3.55	4.14	0.00900
31.11	14.22	2.27	1.78	2.70	0.01827	0.24	-0.02	0.63	0.01277	3.94	3.71	4.17	0.00758
31.11	15.00	2.23	1.82	2.73	0.01541	0.00	-0.27	0.31	0.01128	3.97	3.79	4.15	0.00748
31.11	15.78	2.39	2.12	2.74	0.00867	0.13	-0.20	0.37	0.01005	4.07	3.88	4.34	0.00727
31.11	16.55	2.34	2.09	2.58	0.00918	0.12	-0.11	0.41	0.00994	4.07	3.83	4.41	0.00841
31.11	17.33	2.33	2.10	2.55	0.01041	0.09	-0.19	0.50	0.01105	4.14	3.98	4.32	0.00785
31.19	7.33	2.19	1.89	2.34	0.06531	0.27	0.08	0.67	0.09275	3.81	3.66	3.99	0.05444
31.19	17.33	2.40	2.33	2.54	0.03198	0.02	-0.06	0.15	0.03154	4.06	4.02	4.12	0.01823
31.28	7.33	2.25	2.09	2.40	0.04138	0.21	0.12	0.31	0.02828	3.78	3.69	3.83	0.01940
31.28	17.33	2.36	2.17	2.50	0.04426	0.13	0.04	0.23	0.02547	4.14	4.02	4.28	0.03774
31.36	7.33	2.16	1.88	2.40	0.09115	0.13	0.02	0.22	0.03460	3.58	3.44	3.73	0.06209
31.36	17.33	2.32	2.16	2.49	0.05283	0.15	0.00	0.22	0.03921	3.91	3.67	4.07	0.06839
31.44	7.33	2.31	2.06	2.56	0.06982	0.21	0.10	0.28	0.03556	3.45	3.26	3.60	0.05794
31.44	17.33	2.27	2.22	2.35	0.02072	0.10	0.00	0.25	0.04023	3.76	3.57	3.93	0.05092
31.53	7.33	2.06	1.77	2.28	0.09539	0.15	-0.09	0.26	0.06498	3.70	3.50	3.90	0.06758
31.53	17.33	2.26	2.07	2.41	0.06314	0.15	-0.04	0.29	0.05978	4.11	3.86	4.29	0.07680
31.61	2.67	2.35	2.14	2.63	0.01133	-0.04	-0.32	0.23	0.01237	4.39	4.19	4.61	0.00872
31.61	3.45	2.43	2.15	2.71	0.01610	0.18	-0.11	0.43	0.01445	4.34	4.17	4.48	0.00917
31.61	4.22	2.49	2.29	2.74	0.01352	0.27	-0.02	0.52	0.01324	4.24	4.11	4.44	0.00925
31.61	5.00	2.26	1.92	2.65	0.01897	0.16	-0.20	0.59	0.02544	4.13	3.93	4.36	0.01141
31.61	5.78	2.54	2.08	2.90	0.02079	-0.02	-0.35	0.29	0.01887	4.17	4.00	4.47	0.01174
31.61	6.55	2.49	2.02	2.72	0.01904	0.13	-0.17	0.53	0.01712	4.25	4.08	4.49	0.01256
31.61	7.33	2.45	2.18	2.80	0.01102	0.17	-0.14	0.47	0.01002	4.23	4.00	4.45	0.00673
31.61	12.67	2.64	2.27	2.96	0.01484	0.06	-0.15	0.43	0.01201	4.27	4.06	4.50	0.00960
31.61	13.45	2.58	2.31	2.92	0.02177	0.14	-0.22	0.56	0.02145	4.28	4.08	4.48	0.01192
31.61	14.22	2.36	1.96	2.64	0.01867	0.31	-0.02	0.67	0.01863	4.28	4.07	4.48	0.01175
31.61	15.00	2.34	1.96	2.83	0.02229	0.01	-0.40	0.29	0.01649	4.31	4.15	4.48	0.00970
31.61	15.78	2.59	2.36	2.81	0.01404	0.14	-0.09	0.41	0.01490	4.42	4.25	4.63	0.01143
31.61	16.55	2.58	2.36	2.95	0.01645	0.17	-0.06	0.41	0.01485	4.51	4.34	4.74	0.01062
31.61	17.33	2.55	2.28	3.00	0.00947	0.14	-0.14	0.43	0.00829	4.51	4.19	4.69	0.00679
31.67	2.67	2.35	2.13	2.55	0.03766	0.01	-0.23	0.23	0.03754	4.43	4.30	4.54	0.02248
31.67	12.67	2.71	2.48	2.85	0.03765	-0.01	-0.35	0.16	0.04496	4.29	4.10	4.49	0.03052

31.72	2.67	2.31	2.16	2.47	0.03205	0.06	-0.11	0.19	0.02977	4.40	4.28	4.54	0.02711
31.72	12.67	2.66	2.47	2.97	0.04684	0.03	-0.10	0.28	0.04015	4.25	4.13	4.42	0.03125
31.78	2.67	2.56	2.27	2.76	0.06053	-0.01	-0.13	0.15	0.02879	4.51	4.41	4.69	0.02507
31.78	12.67	2.85	2.57	3.05	0.04874	0.01	-0.19	0.14	0.03227	4.31	4.14	4.47	0.03170
31.84	2.67	2.29	2.03	2.48	0.04658	-0.03	-0.12	0.10	0.02088	4.36	4.24	4.45	0.02153
31.84	12.67	2.67	2.43	2.92	0.04222	0.03	-0.25	0.18	0.04343	4.20	4.00	4.57	0.04892
31.89	2.67	2.86	2.66	3.14	0.04635	-0.02	-0.14	0.13	0.02864	4.68	4.54	4.83	0.02772
31.89	12.67	3.29	3.12	3.54	0.04334	0.09	-0.12	0.29	0.04018	4.53	4.42	4.64	0.02320
31.95	2.67	2.85	2.64	3.17	0.01080	0.00	-0.24	0.31	0.01017	4.64	4.47	4.88	0.00770
31.95	3.45	3.01	2.65	3.36	0.01584	0.29	-0.18	0.54	0.01752	4.58	4.39	4.76	0.00917
31.95	4.22	3.07	2.79	3.51	0.01185	0.41	0.11	0.69	0.01212	4.47	4.25	4.62	0.00872
31.95	5.00	2.80	2.41	3.18	0.01474	0.50	0.29	0.73	0.01108	4.37	4.23	4.53	0.00753
31.95	5.78	2.69	2.29	3.12	0.01858	0.26	-0.20	0.67	0.02694	4.35	4.14	4.54	0.00824
31.95	6.55	3.06	2.69	3.39	0.01545	0.11	-0.16	0.53	0.01483	4.46	4.15	4.73	0.01080
31.95	7.33	3.07	2.73	3.40	0.01646	0.22	-0.05	0.48	0.01339	4.46	4.22	4.74	0.00997
31.95	12.67	3.26	2.98	3.55	0.01208	0.09	-0.25	0.39	0.01221	4.51	4.32	4.70	0.00861
31.95	13.45	3.20	2.86	3.55	0.01504	0.14	-0.15	0.55	0.01488	4.56	4.29	4.80	0.01052
31.95	14.22	2.81	2.46	3.27	0.01807	0.40	0.01	0.71	0.01428	4.54	4.35	4.74	0.00859
31.95	15.00	2.64	2.30	2.92	0.01378	0.01	-0.39	0.56	0.01831	4.52	4.29	4.75	0.00903
31.95	15.78	2.87	2.46	3.32	0.02543	-0.04	-0.32	0.33	0.01555	4.58	4.40	4.81	0.01033
31.95	16.55	3.25	2.96	3.56	0.01303	0.12	-0.23	0.48	0.01296	4.76	4.54	4.98	0.01027
31.95	17.33	3.16	2.88	3.53	0.01562	0.13	-0.18	0.39	0.01204	4.78	4.60	5.09	0.01035
32.02	7.33	3.06	2.74	3.32	0.05290	0.25	0.07	0.38	0.02751	4.50	4.37	4.71	0.03059
32.02	17.33	3.15	2.87	3.30	0.04239	0.10	-0.06	0.32	0.02910	4.77	4.64	4.86	0.01535
32.10	7.33	3.11	2.89	3.43	0.04200	0.23	-0.09	0.41	0.04335	4.52	4.38	4.65	0.02753
32.10	17.33	3.26	3.04	3.54	0.03602	0.15	0.04	0.26	0.01798	4.85	4.74	5.00	0.02409
32.18	7.33	3.11	2.90	3.38	0.04390	0.23	-0.08	0.43	0.04508	4.49	4.40	4.55	0.01498
32.18	17.33	3.29	3.05	3.58	0.04343	0.22	-0.07	0.51	0.04660	4.86	4.75	4.97	0.02049
32.25	7.33	3.19	2.94	3.40	0.03924	0.22	0.00	0.41	0.03135	4.47	4.22	4.57	0.02780
32.25	17.33	3.33	3.22	3.49	0.02643	0.23	0.03	0.40	0.03582	4.80	4.57	4.92	0.02566
32.33	7.33	3.16	3.00	3.36	0.03129	0.17	0.00	0.34	0.03794	4.52	4.33	4.72	0.02901
32.33	17.33	3.26	3.11	3.37	0.02890	0.17	0.06	0.36	0.03220	4.83	4.72	4.90	0.01904
32.41	2.67	2.82	2.41	3.15	0.01512	0.06	-0.16	0.31	0.01154	4.54	4.32	4.70	0.00890
32.41	3.45	3.00	2.68	3.27	0.01025	0.21	-0.02	0.47	0.00923	4.48	4.31	4.68	0.00645
32.41	4.22	3.09	2.72	3.50	0.01228	0.20	-0.11	0.51	0.01130	4.55	4.35	4.84	0.00800
32.41	5.00	3.15	2.82	3.48	0.01107	0.32	-0.06	0.73	0.01322	4.57	4.34	4.80	0.00744
32.41	5.78	3.01	2.47	3.52	0.02297	0.39	-0.34	0.72	0.01605	4.51	4.25	4.78	0.00740
32.41	6.55	3.15	2.69	3.57	0.01667	0.06	-0.36	0.38	0.01385	4.53	4.31	4.75	0.00744
32.41	7.33	3.14	2.84	3.45	0.01761	0.17	-0.06	0.55	0.01536	4.53	4.27	4.73	0.01064
32.41	12.67	3.30	2.93	3.61	0.01481	0.07	-0.20	0.29	0.01238	4.43	4.14	4.66	0.01092
32.41	13.45	3.23	2.90	3.51	0.01140	0.15	-0.10	0.51	0.01169	4.50	4.28	4.73	0.00849
32.41	14.22	3.31	2.96	3.68	0.01141	0.16	-0.22	0.53	0.01245	4.58	4.33	4.87	0.00853
32.41	15.00	3.16	2.57	3.60	0.02209	0.32	-0.15	0.64	0.01452	4.67	4.46	4.91	0.00765
32.41	15.78	2.91	2.47	3.36	0.01612	0.20	-0.26	0.78	0.02348	4.70	4.50	4.93	0.00724
32.41	16.55	3.36	3.07	3.66	0.01020	0.14	-0.23	0.48	0.01309	4.82	4.60	5.08	0.00790
32.41	17.33	3.31	3.02	3.59	0.01647	0.15	-0.09	0.40	0.01308	4.86	4.64	5.05	0.01193
32.48	2.67	2.87	2.79	2.91	0.04002	-0.01	-0.06	0.02	0.02708	4.53	4.47	4.61	0.04140
32.48	12.67	3.28	3.06	3.45	0.11476	0.13	0.00	0.27	0.07708	4.40	4.31	4.54	0.07005
32.56	2.67	2.85	2.82	2.88	0.03215	0.09	0.05	0.12	0.03575	4.49	4.44	4.54	0.04890
32.56	12.67	3.35	3.27	3.43	0.07870	-0.12	-0.14	-0.10	0.01965	4.39	4.38	4.40	0.01310
32.64	2.67	2.73	2.62	2.82	0.05896	0.04	0.00	0.06	0.01627	4.53	4.44	4.60	0.04824
32.64	12.67	3.17	3.04	3.27	0.06605	0.06	-0.01	0.11	0.03714	4.40	4.27	4.58	0.09209
32.71	2.67	2.84	2.75	2.93	0.08955	0.16	0.12	0.21	0.04595	4.39	4.33	4.46	0.06165
32.71	12.67	3.29	3.29	3.30	0.00525	-0.11	-0.14	-0.09	0.02760	4.39	4.37	4.41	0.01905
32.79	2.67	2.88	2.83	2.94	0.05675	0.04	-0.02	0.10	0.05970	4.47	4.42	4.51	0.04040
32.79	12.67	3.44	3.43	3.44	0.00690	0.18	0.17	0.20	0.01510	4.42	4.35	4.48	0.06960
32.87	2.67	2.56	2.31	2.88	0.01040	0.08	-0.20	0.37	0.00974	4.62	4.41	4.85	0.00727
32.87	3.45	2.63	2.34	2.89	0.01465	0.24	-0.07	0.59	0.02051	4.59	4.38	4.81	0.01166
32.87	4.22	2.80	2.58	3.06	0.01552	0.39	0.14	0.66	0.01408	4.50	4.37	4.70	0.00842

32.87	5.00	2.59	2.12	2.95	0.02436	0.45	0.13	0.74	0.01918	4.46	4.34	4.66	0.00936
32.87	5.78	2.60	2.22	3.16	0.02379	0.08	-0.20	0.32	0.01459	4.44	4.25	4.57	0.00885
32.87	6.55	2.80	2.47	3.09	0.01830	0.14	-0.13	0.50	0.01602	4.44	4.23	4.61	0.01044
32.87	7.33	2.74	2.46	3.06	0.01559	0.20	-0.04	0.45	0.01392	4.44	4.23	4.67	0.01090
32.87	12.67	2.98	2.51	3.32	0.01352	0.00	-0.33	0.32	0.01138	4.54	4.32	4.72	0.00731
32.87	13.45	2.98	2.63	3.21	0.01587	0.04	-0.28	0.45	0.01879	4.58	4.39	4.78	0.01249
32.87	14.22	2.78	2.42	3.22	0.02395	0.23	-0.09	0.57	0.01900	4.63	4.44	4.82	0.01032
32.87	15.00	2.48	2.07	2.98	0.02477	-0.01	-0.33	0.49	0.02374	4.69	4.50	4.87	0.01035
32.87	15.78	2.88	2.52	3.18	0.01864	-0.07	-0.37	0.18	0.01753	4.71	4.57	4.84	0.00823
32.87	16.55	2.92	2.64	3.19	0.01515	0.06	-0.16	0.37	0.01693	4.79	4.59	5.02	0.01073
32.87	17.33	2.85	2.56	3.14	0.01341	0.07	-0.19	0.28	0.01228	4.82	4.68	4.99	0.00779
32.95	2.67	2.56	2.28	2.83	0.01115	0.31	-0.03	0.64	0.00997	4.66	4.50	4.84	0.00622
32.95	3.45	2.68	2.42	2.94	0.01485	0.23	-0.05	0.42	0.01306	4.60	4.36	4.80	0.01116
32.95	4.22	2.74	2.35	2.99	0.01585	0.40	-0.03	0.71	0.01833	4.51	4.38	4.69	0.00893
32.95	5.00	2.44	2.13	2.88	0.02122	0.23	-0.32	0.66	0.02836	4.50	4.32	4.69	0.00975
32.95	5.78	2.67	2.28	2.99	0.01622	0.08	-0.20	0.35	0.01592	4.50	4.32	4.68	0.00896
32.95	6.55	2.71	2.25	2.98	0.01766	0.16	-0.09	0.49	0.01726	4.52	4.27	4.71	0.01111
32.95	7.33	2.72	2.30	3.06	0.01232	0.17	-0.22	0.62	0.01024	4.51	4.23	4.77	0.00660
32.95	12.67	2.92	2.51	3.32	0.01340	0.10	-0.12	0.41	0.00952	4.61	4.38	4.80	0.00777
32.95	13.45	2.92	2.62	3.28	0.01936	0.10	-0.21	0.50	0.01847	4.66	4.42	4.86	0.01203
32.95	14.22	2.57	2.16	3.03	0.02360	0.29	-0.13	0.59	0.01909	4.74	4.59	4.88	0.00762
32.95	15.00	2.59	2.00	3.05	0.02792	-0.03	-0.29	0.26	0.01470	4.79	4.66	4.98	0.00925
32.95	15.78	2.88	2.59	3.27	0.01616	0.12	-0.18	0.48	0.01588	4.82	4.55	5.00	0.01014
32.95	16.55	2.84	2.49	3.26	0.01764	0.14	-0.14	0.47	0.01541	4.95	4.74	5.19	0.01077
32.95	17.33	2.83	2.51	3.18	0.01005	0.11	-0.23	0.37	0.00837	4.95	4.74	5.16	0.00633
33.31	7.33	2.71	2.45	2.88	0.03164	0.17	-0.10	0.40	0.02966	4.51	4.38	4.69	0.02031
33.31	17.33	2.75	2.47	2.98	0.03197	0.10	-0.24	0.30	0.03072	4.94	4.77	5.03	0.01507
33.66	7.33	2.72	2.30	3.27	0.06401	0.25	-0.06	0.69	0.04279	5.29	4.30	5.97	0.14429
33.66	17.33	2.74	2.24	3.29	0.07330	-0.01	-0.24	0.25	0.03754	5.72	4.76	6.51	0.14420
34.02	7.33	2.47	2.12	2.68	0.04053	0.28	0.07	0.51	0.02896	5.96	5.80	6.20	0.02109
34.02	17.33	2.47	2.21	2.67	0.03175	-0.09	-0.32	0.12	0.02728	6.38	6.24	6.53	0.01724
34.37	7.33	2.48	2.19	2.66	0.03261	0.26	0.04	0.54	0.03255	5.94	5.85	6.05	0.01396
34.37	17.33	2.47	2.10	2.70	0.03422	-0.04	-0.49	0.21	0.03794	6.36	6.12	6.52	0.02247
34.73	7.33	2.44	2.15	2.76	0.03332	0.26	0.03	0.48	0.02670	5.96	5.75	6.08	0.01675
34.73	17.33	2.42	2.14	2.72	0.03788	-0.08	-0.33	0.18	0.02627	6.39	6.16	6.56	0.02372
35.08	2.67	2.27	1.23	3.68	0.00640	0.12	-0.93	0.98	0.00657	6.15	5.52	6.79	0.00315
35.08	3.45	2.43	0.96	4.04	0.01208	0.54	-0.76	2.00	0.01226	6.05	5.42	6.61	0.00539
35.08	4.22	2.59	1.10	4.04	0.01163	0.65	-0.82	1.93	0.01152	5.96	5.43	6.48	0.00524
35.08	5.00	2.43	0.98	4.09	0.01315	0.68	-0.78	1.98	0.01265	5.90	5.23	6.49	0.00548
35.08	5.78	2.34	1.12	4.04	0.01336	0.26	-0.80	1.62	0.01178	5.90	5.24	6.49	0.00583
35.08	6.55	2.57	1.01	4.07	0.01283	0.32	-0.83	1.82	0.01251	5.87	5.37	6.55	0.00543
35.08	7.33	2.45	0.79	4.68	0.00682	0.30	-0.74	1.98	0.00696	5.92	5.17	6.58	0.00321
35.08	12.67	2.68	1.40	3.85	0.00611	-0.08	-1.00	1.00	0.00590	5.94	5.19	6.60	0.00317
35.08	13.45	2.65	1.72	3.47	0.01015	0.00	-0.97	0.99	0.01057	5.98	5.37	6.52	0.00543
35.08	14.22	2.40	1.52	3.47	0.01050	0.09	-0.99	0.98	0.01112	6.07	5.36	6.55	0.00529
35.08	15.00	2.15	1.50	3.11	0.00981	-0.08	-0.96	0.99	0.01098	6.15	5.55	6.67	0.00479
35.08	15.78	2.44	1.52	3.42	0.01067	-0.11	-1.00	0.86	0.01089	6.18	5.61	6.85	0.00505
35.08	16.55	2.49	1.52	3.48	0.01128	0.01	-0.96	0.97	0.01130	6.26	5.61	6.69	0.00553
35.08	17.33	2.42	1.38	3.50	0.00597	-0.09	-1.23	0.98	0.00596	6.37	5.49	6.97	0.00313
35.21	2.67	0.25	-0.74	1.24	0.01457	0.10	-0.87	0.99	0.01386	7.40	6.97	7.90	0.00714
35.21	12.67	0.55	-0.24	1.22	0.01424	-0.26	-0.98	0.45	0.01476	7.31	6.88	7.78	0.00767
35.35	2.67	0.27	-0.69	1.25	0.01569	0.11	-0.87	0.93	0.01336	7.33	6.83	7.75	0.00678
35.35	12.67	0.64	-0.24	1.25	0.01440	-0.25	-1.00	0.49	0.01435	7.24	6.66	7.67	0.00734
35.49	2.67	0.25	-0.76	1.12	0.01593	0.10	-0.80	0.98	0.01373	7.37	6.90	7.80	0.00685
35.49	12.67	0.53	-0.25	1.23	0.01492	-0.30	-0.98	0.50	0.01456	7.25	6.77	7.61	0.00758
35.62	2.67	0.20	-0.80	1.22	0.01450	0.09	-0.81	0.96	0.01393	7.33	6.93	7.69	0.00660
35.62	12.67	0.59	-0.24	1.23	0.01405	-0.28	-0.99	0.50	0.01486	7.22	6.80	7.80	0.00731
35.76	2.67	0.31	-0.70	1.20	0.01488	0.16	-0.67	0.94	0.01386	7.36	6.91	7.77	0.00638
35.76	12.67	0.65	-0.14	1.25	0.01404	-0.24	-1.00	0.50	0.01492	7.24	6.85	7.73	0.00693

35.89	2.67	0.26	-0.96	1.45	0.00565	0.12	-0.99	1.25	0.00521	7.38	6.89	7.87	0.00229
35.89	3.45	0.35	-0.79	1.61	0.01140	0.13	-1.01	1.28	0.01189	7.31	6.90	7.83	0.00457
35.89	4.22	0.48	-0.77	1.61	0.01069	0.26	-0.86	1.35	0.01152	7.28	6.82	7.69	0.00462
35.89	5.00	0.42	-0.55	1.51	0.01096	0.24	-1.03	1.28	0.01061	7.29	6.81	7.86	0.00449
35.89	5.78	0.33	-0.77	1.54	0.01205	0.11	-1.00	1.25	0.01092	7.26	6.74	7.81	0.00498
35.89	6.55	0.35	-0.80	1.53	0.01193	0.05	-1.04	1.33	0.01122	7.24	6.78	7.69	0.00503
35.89	7.33	0.27	-0.97	1.77	0.00703	-0.01	-0.99	0.99	0.00578	7.23	6.71	7.77	0.00297
35.89	12.67	0.57	-0.49	1.70	0.00573	-0.25	-1.30	0.74	0.00540	7.28	6.73	7.87	0.00250
35.89	13.45	0.52	-0.88	1.54	0.01096	-0.30	-1.41	0.73	0.01123	7.27	6.76	7.78	0.00450
35.89	14.22	0.33	-0.69	1.53	0.01060	-0.35	-1.43	0.74	0.01076	7.33	6.74	7.78	0.00470
35.89	15.00	0.27	-0.79	1.35	0.01060	-0.41	-1.48	0.67	0.00987	7.42	6.76	7.92	0.00466
35.89	15.78	0.47	-0.42	1.73	0.01086	-0.53	-1.50	0.49	0.00987	7.45	6.89	7.95	0.00473
35.89	16.55	0.67	-0.38	1.97	0.01115	-0.59	-1.54	0.62	0.01106	7.55	6.96	8.11	0.00525
35.89	17.33	0.68	-0.45	1.98	0.00703	-0.62	-1.49	0.49	0.00628	7.64	7.01	8.30	0.00304

Appendix B

Spherical Coordinates for Velocity Data at 155 MW Turbine Load

Appendix B

Spherical Coordinates for Velocity Data at 155 MW Turbine Load

The table in this appendix lists spherical coordinates for velocity data collected at locations along the bar screen surface of the ESBS, where Rho is the magnitude flow velocity (ft/sec) and phi and theta are angles of the flow off the positive polar axis and equatorial planes, respectively, at 155 MW turbine load.

Location (ft.)		Rho (magnitude velocity)				Phi				Theta			
Vertical	Horizontal	Mean	Min	Max	Stderr	Mean	Min	Max	Stderr	Mean	Min	Max	Stderr
-0.02	2.67	7.75	7.02	8.11	0.01440	128.90	124.43	136.40	0.20179	4.83	-3.27	13.20	0.20734
-0.02	3.45	7.29	6.76	7.90	0.02112	127.69	120.28	137.68	0.38429	4.22	-3.92	16.61	0.38886
-0.02	4.22	6.86	6.15	7.35	0.02169	127.67	120.12	135.64	0.31089	6.27	-4.66	22.47	0.62335
-0.02	5.00	6.16	5.65	6.64	0.01724	127.67	116.98	136.15	0.28878	7.07	-5.11	20.63	0.43945
-0.02	5.78	6.81	6.14	7.63	0.03068	128.65	115.32	136.63	0.39147	8.20	-1.86	20.00	0.49831
-0.02	6.55	7.42	6.71	8.16	0.02858	128.06	118.70	136.10	0.33621	3.41	-3.33	12.85	0.26722
-0.02	7.33	7.27	6.77	7.67	0.00942	124.90	117.57	130.71	0.14833	0.79	-5.56	5.94	0.13165
-0.02	12.67	7.47	6.97	7.95	0.01493	124.88	117.30	131.49	0.22248	10.32	3.82	14.14	0.17951
-0.02	13.45	7.35	6.61	8.09	0.02931	124.13	115.81	133.33	0.31284	9.31	1.17	17.63	0.23882
-0.02	14.22	7.01	5.97	8.00	0.05207	128.53	119.38	138.54	0.33678	6.22	-7.65	17.63	0.36917
-0.02	15.00	6.65	5.93	7.51	0.03106	131.76	123.85	141.45	0.26588	-2.57	-12.40	6.94	0.33562
-0.02	15.78	6.78	5.87	7.84	0.04326	128.28	115.17	138.67	0.46132	4.31	-9.59	13.13	0.46067
-0.02	16.55	7.39	6.83	7.96	0.02081	124.56	117.45	133.54	0.27556	9.93	2.86	15.68	0.21730
-0.02	17.33	7.66	7.00	8.78	0.01454	125.07	114.06	133.60	0.22399	9.90	-0.06	22.55	0.18983
0.30	7.33	6.29	4.99	7.07	0.15916	124.44	114.71	132.31	1.09286	2.21	-1.87	6.67	0.53545
0.30	17.33	6.55	4.73	7.52	0.20308	125.78	116.61	133.45	1.04685	10.06	5.76	14.16	0.61654
0.63	7.33	4.58	4.05	5.04	0.08205	112.01	105.69	117.74	0.95216	4.01	0.78	9.08	0.55330
0.63	17.33	4.43	3.76	4.98	0.09240	113.77	103.97	131.33	1.66595	15.35	11.68	21.33	0.65683
0.95	7.33	4.24	4.10	4.68	0.03388	109.01	105.24	115.28	0.62123	3.79	0.60	7.57	0.45368
0.95	17.33	3.93	3.61	4.23	0.05130	109.56	104.65	114.46	0.69521	16.39	10.89	23.53	0.80189
1.27	7.33	4.20	3.93	4.53	0.04573	110.36	105.23	115.89	0.75831	3.55	0.10	7.74	0.56802
1.27	17.33	3.93	3.61	4.32	0.04045	110.18	105.02	118.08	0.94229	15.43	7.40	22.84	0.86747
1.60	7.33	4.29	4.05	4.59	0.03503	109.38	104.43	114.62	0.53605	4.09	-0.72	7.67	0.61852
1.60	17.33	3.93	3.64	4.41	0.04882	110.46	103.18	120.75	0.90039	15.29	8.19	19.30	0.74121
1.92	2.67	4.28	3.90	4.68	0.00815	117.55	109.75	124.59	0.14589	5.13	-3.25	14.72	0.18171
1.92	3.45	4.32	3.91	4.69	0.02226	118.41	112.83	124.79	0.36586	4.91	-1.42	10.76	0.37790
1.92	4.22	4.29	4.00	4.79	0.02444	118.28	112.69	125.26	0.43314	7.37	-1.23	13.09	0.42396
1.92	5.00	4.20	3.79	4.61	0.02900	113.59	108.81	125.09	0.41730	12.12	2.79	17.26	0.39000
1.92	5.78	3.94	3.53	4.47	0.02533	112.03	107.02	118.38	0.37390	7.86	-1.33	16.22	0.61767
1.92	6.55	4.20	3.86	4.67	0.02688	109.45	103.73	115.53	0.37029	5.00	0.41	10.07	0.30454
1.92	7.33	4.32	3.95	4.76	0.00809	109.16	102.24	116.46	0.13941	4.62	-2.15	12.26	0.13171
1.92	12.67	4.27	3.83	4.71	0.00941	113.53	105.36	121.82	0.18503	9.45	0.33	16.01	0.16251
1.92	13.45	4.35	4.02	4.82	0.02305	111.96	106.03	121.97	0.40920	8.41	2.55	16.14	0.38317
1.92	14.22	4.25	3.90	4.67	0.02379	110.09	105.69	115.48	0.36134	9.73	5.24	16.49	0.39935
1.92	15.00	3.94	3.38	4.48	0.02584	112.24	104.57	118.46	0.40510	8.73	-1.89	16.77	0.59129
1.92	15.78	4.01	3.69	4.32	0.02149	115.41	108.90	121.58	0.38664	3.78	-2.64	11.54	0.41361
1.92	16.55	4.05	3.65	4.46	0.02284	117.48	111.41	126.55	0.41147	9.07	0.55	16.88	0.53654
1.92	17.33	3.99	3.42	4.57	0.01192	111.26	102.45	123.14	0.20281	15.27	5.40	23.27	0.18139
2.67	2.67	3.36	2.51	4.54	0.04293	111.36	101.43	126.76	0.32664	3.94	-4.27	14.21	0.26055
2.67	12.67	3.52	2.64	4.51	0.03490	107.50	94.07	119.21	0.36072	10.06	0.97	17.89	0.24158
3.42	2.67	3.89	3.33	4.64	0.02068	115.52	104.49	129.11	0.24875	4.93	-3.23	14.24	0.25230
3.42	12.67	3.95	3.35	4.72	0.02045	111.54	103.08	120.79	0.24511	9.70	-2.54	19.22	0.25073
4.17	2.67	4.25	3.77	4.71	0.01241	117.17	108.99	128.44	0.23564	4.73	-2.68	16.06	0.22871
4.17	12.67	4.25	3.79	4.73	0.01328	112.89	103.60	122.13	0.23312	9.62	2.11	16.91	0.20554
4.92	2.67	4.03	3.36	4.55	0.01937	115.97	109.00	124.55	0.24347	4.53	-3.48	13.25	0.22628

4.92	12.67	4.05	3.41	4.79	0.02151	112.42	104.01	120.15	0.23708	9.69	0.15	16.00	0.22264
5.67	2.67	3.12	2.24	4.21	0.03133	98.49	81.52	122.31	0.91454	3.28	-4.32	13.41	0.24734
5.67	12.67	3.30	2.35	4.09	0.02523	97.87	83.93	124.73	0.73394	9.44	0.26	18.12	0.22529
6.41	2.67	2.99	1.80	4.44	0.00475	87.24	69.43	105.00	0.06364	1.34	-22.47	32.69	0.08315
6.41	3.45	3.01	2.04	4.18	0.01636	88.35	75.76	103.54	0.25756	1.43	-16.13	25.01	0.32030
6.41	4.22	2.91	2.00	3.83	0.01518	91.63	73.88	105.25	0.24938	3.42	-14.18	25.77	0.32704
6.41	5.00	2.93	1.65	3.88	0.01474	90.90	73.39	103.73	0.26034	5.88	-14.19	28.06	0.30158
6.41	5.78	2.93	1.90	4.02	0.01502	90.31	72.85	103.61	0.25621	9.79	-9.38	26.43	0.29651
6.41	6.55	2.64	1.58	3.74	0.01728	89.42	67.11	113.46	0.34878	10.13	-8.91	29.61	0.31328
6.41	7.33	3.30	1.96	4.51	0.00438	84.63	68.64	101.68	0.06089	4.58	-13.69	21.57	0.06960
6.41	12.67	3.24	2.11	4.47	0.00345	88.75	71.45	103.55	0.05052	8.67	-15.61	28.33	0.06670
6.41	13.45	3.23	2.20	4.35	0.01481	88.97	76.17	105.16	0.21782	9.19	-8.97	26.57	0.26217
6.41	14.22	3.37	2.57	4.62	0.01453	87.10	73.90	99.80	0.18943	13.06	-1.48	30.07	0.24502
6.41	15.00	3.34	2.61	4.49	0.01431	86.22	73.50	99.67	0.18461	16.03	-0.18	33.81	0.25430
6.41	15.78	3.01	2.01	3.95	0.01425	85.90	74.28	96.80	0.18417	17.46	-0.54	35.39	0.27400
6.41	16.55	2.84	1.82	3.76	0.01294	87.30	74.59	103.20	0.20570	11.69	-6.08	30.65	0.27008
6.41	17.33	3.20	1.89	4.71	0.00477	80.36	63.48	99.42	0.06280	14.87	-10.06	34.71	0.07218
6.83	7.33	3.27	2.19	4.35	0.01481	83.75	66.99	98.86	0.21478	3.99	-15.19	20.39	0.22957
6.83	17.33	3.30	2.07	4.77	0.01631	77.81	64.05	96.62	0.20707	14.82	-6.74	33.32	0.24357
7.25	7.33	3.42	2.18	4.81	0.01706	82.62	67.77	99.73	0.19313	3.83	-10.06	22.20	0.23056
7.25	17.33	3.46	2.24	4.78	0.01725	76.13	62.22	94.87	0.19045	14.65	-3.73	30.59	0.24864
7.66	7.33	3.58	2.67	5.09	0.01645	82.27	71.66	99.36	0.17844	4.86	-11.26	23.58	0.23120
7.66	17.33	3.59	2.27	5.06	0.01808	77.21	62.30	89.73	0.18938	13.73	-7.21	31.57	0.23139
8.08	7.33	3.50	2.46	4.56	0.01467	83.60	70.99	102.56	0.21136	4.81	-12.93	22.82	0.23151
8.08	17.33	3.64	2.48	4.88	0.01588	75.81	61.75	87.29	0.18696	12.89	-10.86	32.59	0.23322
8.50	7.33	3.09	2.22	4.15	0.01421	83.60	68.41	97.94	0.18538	4.69	-17.47	26.33	0.24705
8.50	17.33	3.21	1.96	4.79	0.01849	75.59	60.98	95.54	0.22168	14.64	-8.00	37.56	0.25660
8.85	2.67	2.87	1.77	3.92	0.00653	80.36	68.00	99.46	0.08648	-1.67	-19.68	18.74	0.11422
8.85	3.45	2.76	1.68	3.77	0.01411	85.12	70.87	97.28	0.20778	1.17	-19.25	26.67	0.31581
8.85	4.22	2.71	1.67	3.77	0.01344	87.41	73.41	101.65	0.22016	5.76	-18.65	24.77	0.28120
8.85	5.00	2.46	1.40	3.34	0.01502	87.87	71.17	103.74	0.27162	3.78	-23.77	31.89	0.36204
8.85	5.78	2.89	1.95	4.05	0.01452	85.12	67.23	103.06	0.25779	0.87	-14.80	16.88	0.28345
8.85	6.55	2.93	2.09	3.94	0.01368	83.53	65.56	101.32	0.22062	4.08	-13.12	21.48	0.26206
8.85	7.33	2.94	2.02	4.02	0.01379	83.49	66.51	95.90	0.19299	4.56	-14.17	21.45	0.23335
8.85	12.67	3.03	1.82	4.18	0.00544	87.51	73.50	102.19	0.07326	7.09	-11.53	27.35	0.09940
8.85	13.45	3.10	2.21	4.36	0.01390	85.93	74.80	104.76	0.17151	10.30	-5.61	29.73	0.25023
8.85	14.22	2.91	1.90	3.93	0.01433	84.78	72.18	101.10	0.17323	16.65	-3.73	41.84	0.28588
8.85	15.00	2.69	1.52	3.64	0.01399	84.22	67.93	99.40	0.21436	9.71	-12.64	31.42	0.27565
8.85	15.78	2.85	1.94	4.15	0.01371	81.67	65.41	96.84	0.19404	10.82	-7.50	31.03	0.28431
8.85	16.55	2.98	1.44	4.27	0.01680	76.52	61.23	94.70	0.22925	14.04	-14.18	33.59	0.27482
8.85	17.33	3.00	1.98	4.32	0.01483	76.09	62.96	91.04	0.18521	13.96	-8.10	34.28	0.24652
8.92	2.67	2.70	1.56	4.11	0.00424	84.96	65.50	103.33	0.06127	1.25	-22.29	25.79	0.08455
8.92	3.45	2.68	1.51	3.89	0.01136	86.69	72.98	103.56	0.18419	1.69	-17.38	24.09	0.24030
8.92	4.22	2.65	1.73	3.71	0.01202	91.33	73.32	111.38	0.19435	4.96	-20.68	27.40	0.26067
8.92	5.00	2.49	1.60	3.53	0.01135	90.71	70.19	106.32	0.19969	8.01	-16.78	29.92	0.25791
8.92	5.78	2.54	1.48	3.70	0.01266	88.90	72.10	106.60	0.21796	0.88	-21.01	23.56	0.26365
8.92	6.55	2.83	1.88	3.89	0.01072	87.11	69.05	105.30	0.19414	3.80	-18.04	24.65	0.22837
8.92	7.33	2.91	1.67	4.12	0.00403	84.58	66.71	103.06	0.05797	5.39	-18.82	25.20	0.07589
8.92	12.67	2.96	1.98	4.07	0.00343	87.73	71.87	102.60	0.04910	7.78	-14.55	28.05	0.07166
8.92	13.45	2.93	1.99	3.85	0.01011	87.65	71.86	101.59	0.14955	7.97	-14.32	28.17	0.22562
8.92	14.22	3.07	2.01	4.02	0.01108	86.48	71.72	98.76	0.14614	13.22	-6.58	33.03	0.22753
8.92	15.00	2.62	1.60	3.70	0.01090	84.69	63.59	111.05	0.17521	12.95	-12.55	37.34	0.26059
8.92	15.78	2.64	1.53	3.83	0.01171	84.96	69.40	101.21	0.16461	10.08	-9.78	32.03	0.24578
8.92	16.55	2.83	1.76	4.16	0.01367	81.34	64.95	100.20	0.19175	13.89	-9.33	43.97	0.23856
8.92	17.33	2.88	1.61	4.36	0.00485	76.64	59.59	98.23	0.06453	14.56	-17.57	37.45	0.07877
8.94	2.67	2.92	2.16	3.69	0.02563	80.11	69.77	92.04	0.35317	-1.26	-18.41	17.82	0.54449
8.94	12.67	3.06	2.27	4.15	0.02480	86.10	76.70	95.09	0.25197	8.04	-10.16	20.26	0.39089
9.02	2.67	2.80	2.18	3.42	0.03916	79.99	69.50	88.81	0.64089	2.22	-12.23	19.42	0.95085
9.02	12.67	3.03	2.36	3.94	0.03820	88.46	79.68	101.34	0.48248	5.86	-11.45	17.34	0.72238

9.10	2.67	3.05	2.02	4.16	0.03467	79.02	65.87	89.60	0.39420	-2.09	-17.10	12.94	0.55270
9.10	12.67	3.25	2.53	3.93	0.01959	86.20	75.76	97.69	0.36222	8.06	-7.78	18.84	0.38073
9.19	2.67	2.74	2.16	3.51	0.03524	80.20	65.82	89.16	0.57834	-4.11	-19.29	13.93	0.80665
9.19	12.67	2.84	2.04	3.34	0.03262	89.32	79.69	97.87	0.53588	7.90	-12.23	18.28	0.89504
9.27	2.67	2.63	1.83	3.95	0.02688	81.67	64.90	101.78	0.50235	-1.86	-17.20	20.38	0.54593
9.27	12.67	2.78	1.82	3.59	0.02544	89.34	80.13	104.46	0.30266	6.43	-12.57	24.75	0.46633
9.35	2.67	2.58	1.50	3.74	0.00660	81.09	65.44	101.91	0.09612	-1.65	-29.04	18.58	0.12692
9.35	3.45	2.48	1.58	3.33	0.01262	84.61	65.87	104.79	0.24855	0.45	-21.79	20.58	0.29280
9.35	4.22	2.43	1.35	3.25	0.01490	89.25	73.89	106.13	0.26263	4.44	-20.98	53.04	0.38848
9.35	5.00	2.21	1.22	3.02	0.01342	89.76	71.82	103.18	0.25274	7.82	-16.58	33.66	0.37863
9.35	5.78	2.44	1.18	3.60	0.01601	89.91	69.76	107.79	0.25384	0.39	-26.18	33.83	0.36439
9.35	6.55	2.74	1.69	3.74	0.01405	86.15	69.63	112.27	0.25837	5.04	-15.34	22.68	0.28641
9.35	7.33	2.73	1.60	4.00	0.01174	85.17	69.80	101.13	0.17393	5.90	-15.49	25.62	0.22425
9.35	12.67	2.84	1.72	4.21	0.00567	88.01	72.13	102.69	0.07623	8.57	-11.90	30.41	0.11093
9.35	13.45	2.83	1.95	3.84	0.01265	87.13	72.54	98.77	0.18044	9.54	-9.93	25.76	0.25508
9.35	14.22	2.94	2.08	3.88	0.01297	86.91	75.98	98.31	0.17069	12.18	-9.37	32.52	0.28306
9.35	15.00	2.52	1.54	3.43	0.01351	84.81	71.92	97.94	0.19655	13.46	-9.71	42.53	0.33060
9.35	15.78	2.55	1.61	3.51	0.01277	84.60	68.50	101.53	0.21055	10.82	-15.64	37.44	0.31519
9.35	16.55	2.90	1.61	4.00	0.01588	79.00	63.87	98.82	0.24558	15.57	-3.31	42.62	0.28751
9.35	17.33	2.94	1.65	4.23	0.01302	75.64	59.69	92.17	0.17604	16.02	-7.74	36.16	0.23043
9.38	2.67	2.57	1.48	3.63	0.01725	80.28	65.06	94.43	0.22071	-1.52	-20.99	27.97	0.35623
9.38	12.67	2.72	1.90	3.74	0.01297	84.72	70.51	96.32	0.17156	8.13	-20.64	27.14	0.27805
9.44	7.33	2.79	1.88	3.67	0.02408	83.92	69.39	95.62	0.34601	3.95	-14.16	23.40	0.53605
9.44	17.33	2.72	1.91	3.57	0.02953	77.53	62.92	89.55	0.40958	14.56	0.15	36.53	0.53551
9.52	7.33	2.49	1.71	3.28	0.04352	82.94	77.10	88.38	0.34194	4.92	-13.23	21.47	0.88274
9.52	17.33	2.79	1.95	3.52	0.04064	71.71	58.78	82.05	0.60254	16.00	-1.24	33.12	0.97676
9.60	7.33	2.68	1.87	3.53	0.02519	80.00	64.86	92.14	0.43754	5.17	-12.68	21.26	0.52562
9.60	17.33	2.84	1.89	3.67	0.02774	71.18	56.43	83.71	0.41890	15.70	-2.30	30.30	0.49210
9.69	7.33	2.41	1.62	3.10	0.03968	82.25	71.84	89.68	0.54075	3.82	-14.07	25.13	1.01124
9.69	17.33	2.73	2.05	3.71	0.05401	72.34	61.96	82.78	0.52134	17.57	-0.28	37.26	0.91096
9.77	7.33	2.62	1.57	3.67	0.02595	80.85	67.14	96.01	0.41971	6.71	-8.64	27.25	0.55459
9.77	17.33	2.83	1.74	3.98	0.03158	71.15	58.48	83.34	0.37237	18.05	0.78	39.21	0.47502
9.84	2.67	2.53	1.32	3.66	0.01605	79.57	63.30	95.39	0.20850	-0.73	-28.31	19.46	0.34758
9.84	12.67	2.74	1.76	3.79	0.01322	83.96	71.54	96.46	0.16048	8.20	-13.28	29.31	0.28066
9.85	2.67	2.52	1.65	3.63	0.00779	75.76	59.83	91.36	0.10020	-3.35	-23.18	22.07	0.15831
9.85	3.45	2.46	1.53	3.52	0.01573	78.55	62.45	94.59	0.25949	-1.84	-23.66	22.87	0.34968
9.85	4.22	2.34	1.48	3.51	0.01537	83.15	67.94	97.47	0.22785	2.59	-23.20	27.45	0.36714
9.85	5.00	2.18	0.90	3.07	0.01625	85.02	68.23	100.69	0.24943	5.34	-29.55	29.02	0.40516
9.85	5.78	2.50	1.49	3.55	0.01456	85.92	73.01	103.15	0.23377	0.23	-22.42	21.04	0.38149
9.85	6.55	2.58	1.65	3.64	0.01548	82.14	60.98	99.25	0.27547	4.83	-11.57	32.70	0.30561
9.85	7.33	2.57	1.64	3.73	0.01146	80.60	61.00	92.75	0.15628	4.36	-17.95	30.00	0.26300
9.85	12.67	2.66	1.70	3.61	0.00579	84.70	71.23	96.64	0.07657	9.65	-10.13	28.62	0.11923
9.85	13.45	2.63	1.82	3.58	0.01371	83.72	71.81	96.21	0.20024	10.05	-12.81	36.19	0.30673
9.85	14.22	2.64	1.67	3.71	0.01344	83.81	69.01	100.96	0.20553	15.64	-6.54	36.24	0.29047
9.85	15.00	2.41	1.60	3.57	0.01407	81.07	64.81	96.71	0.21970	14.34	-11.56	39.27	0.34684
9.85	15.78	2.58	1.72	3.64	0.01502	78.32	63.03	89.93	0.20649	13.85	-11.22	38.78	0.35918
9.85	16.55	2.69	1.67	3.88	0.01682	73.44	56.20	91.47	0.25076	16.37	-5.73	40.75	0.32455
9.85	17.33	2.69	1.37	4.05	0.01356	72.46	53.70	90.84	0.19974	15.09	-8.53	39.41	0.25125
9.93	2.67	2.56	1.74	3.67	0.02999	77.31	62.79	91.88	0.41053	-3.14	-21.16	16.96	0.54535
9.93	12.67	2.54	1.83	3.39	0.02094	84.70	68.58	93.45	0.28173	9.41	-14.12	27.94	0.48121
10.00	2.67	2.73	2.03	3.29	0.04193	72.93	57.96	84.98	0.74146	-4.45	-20.03	6.35	0.64732
10.00	12.67	2.92	2.19	3.83	0.04303	76.45	65.55	86.77	0.61705	9.09	-3.07	27.61	0.64350
10.07	2.67	2.95	1.83	4.09	0.03393	71.66	63.25	83.97	0.35496	-4.26	-22.37	10.14	0.52648
10.07	12.67	2.85	2.17	3.79	0.02307	78.23	64.97	86.16	0.31095	9.26	-10.35	25.64	0.48862
10.13	2.67	3.01	2.39	4.01	0.04778	70.59	62.59	78.69	0.54953	-4.79	-24.45	11.18	1.13787
10.13	12.67	2.80	2.19	3.57	0.04006	77.99	70.92	86.04	0.43030	7.79	-8.28	23.29	0.76011
10.20	2.67	3.02	2.19	4.02	0.02651	70.59	60.50	82.15	0.36069	-2.10	-22.12	14.78	0.54177
10.20	12.67	2.85	1.93	3.79	0.02839	75.34	64.59	84.06	0.29039	10.50	-11.17	26.50	0.51479
10.27	2.67	2.96	1.85	4.08	0.00647	70.89	53.93	86.04	0.07526	-2.76	-24.29	26.80	0.11730

10.27	3.45	2.84	1.88	3.88	0.01496	72.31	58.56	85.26	0.18895	-1.52	-20.72	16.82	0.27627
10.27	4.22	2.76	1.74	4.07	0.01689	77.81	61.58	93.02	0.21084	3.99	-23.99	29.99	0.33086
10.27	5.00	2.31	1.40	3.35	0.01297	78.83	55.15	93.16	0.21053	4.80	-20.29	34.63	0.30554
10.27	5.78	2.45	1.66	3.55	0.01453	78.24	61.79	91.53	0.20573	-0.80	-19.05	23.39	0.32388
10.27	6.55	2.82	1.88	3.89	0.01397	77.27	57.12	92.61	0.20457	1.57	-17.65	20.89	0.27367
10.27	7.33	2.90	1.96	3.99	0.01300	75.24	61.80	87.91	0.15956	4.18	-15.52	24.63	0.24223
10.27	12.67	2.94	2.02	4.06	0.00518	77.11	65.71	88.88	0.06284	9.59	-12.38	29.72	0.09768
10.27	13.45	2.95	2.03	3.91	0.01267	76.97	63.32	89.93	0.15355	9.79	-10.34	28.48	0.24100
10.27	14.22	2.80	1.91	3.81	0.01505	76.71	61.74	91.01	0.19743	14.20	-2.45	36.30	0.27499
10.27	15.00	2.62	1.48	3.61	0.01263	74.63	57.01	88.64	0.17789	7.82	-12.70	28.13	0.26011
10.27	15.78	2.87	1.92	3.83	0.01432	73.20	55.30	88.27	0.20071	7.95	-14.99	27.72	0.28168
10.27	16.55	2.99	1.84	4.21	0.01480	69.90	55.83	81.35	0.19236	11.83	-7.09	31.01	0.25934
10.27	17.33	2.99	1.76	4.19	0.01295	66.92	48.24	83.83	0.17668	12.81	-8.27	34.13	0.23356
10.29	2.67	2.91	1.56	4.37	0.02371	75.27	62.68	93.42	0.23150	-0.76	-18.56	28.97	0.29604
10.29	12.67	2.99	1.97	4.13	0.01842	79.44	66.66	95.21	0.21605	8.06	-10.45	27.23	0.26508
10.75	2.67	3.56	2.45	4.68	0.01811	73.58	62.45	88.42	0.17993	-2.01	-17.82	12.44	0.27295
10.75	12.67	3.48	2.35	4.69	0.01410	76.97	67.49	89.57	0.17069	8.47	-11.23	20.68	0.24041
10.86	2.67	3.35	2.11	4.51	0.00902	71.91	58.21	83.93	0.08961	-1.65	-23.95	16.60	0.14498
10.86	3.45	3.31	2.34	4.37	0.01509	72.41	58.99	84.27	0.19690	-1.45	-18.44	16.53	0.27079
10.86	4.22	3.20	2.36	4.24	0.01523	75.39	62.31	87.61	0.19069	2.46	-17.67	23.19	0.24911
10.86	5.00	2.83	1.95	4.29	0.01599	76.99	63.84	89.84	0.20793	4.94	-14.00	27.82	0.29386
10.86	5.78	3.06	2.24	4.46	0.01517	76.17	62.16	89.06	0.21596	0.35	-16.59	16.35	0.27171
10.86	6.55	3.21	2.36	4.11	0.01399	76.38	63.78	89.58	0.18374	2.95	-13.14	22.13	0.25038
10.86	7.33	3.24	2.10	4.50	0.01493	75.37	61.82	87.67	0.17875	2.80	-13.92	19.42	0.21640
10.86	12.67	3.27	2.23	4.33	0.00744	76.28	64.88	87.12	0.09214	8.27	-8.29	24.05	0.12551
10.86	13.45	3.26	2.20	4.23	0.01428	75.98	67.16	86.93	0.15813	8.67	-6.28	23.18	0.22221
10.86	14.22	3.31	2.17	4.37	0.01413	75.53	65.93	88.25	0.16480	11.92	-7.04	28.33	0.22701
10.86	15.00	3.00	1.97	4.13	0.01711	74.09	62.54	85.17	0.17228	9.86	-8.70	33.18	0.30820
10.86	15.78	3.43	2.28	4.53	0.01503	72.60	60.10	83.26	0.15016	9.01	-6.42	24.15	0.22094
10.86	16.55	3.60	2.56	4.66	0.01482	68.63	51.76	82.16	0.17235	11.23	-8.11	25.00	0.23865
10.86	17.33	3.58	2.41	4.88	0.01450	66.93	49.98	77.30	0.16489	11.49	-12.75	26.46	0.23491
10.92	2.67	3.55	2.89	4.06	0.04491	72.16	63.13	77.83	0.50828	-1.59	-13.00	7.18	0.66515
10.92	12.67	3.43	2.54	4.37	0.08018	77.78	71.75	85.37	0.56103	6.40	-11.51	19.02	1.10320
10.97	2.67	3.60	2.60	4.41	0.06848	71.73	64.99	80.63	0.68464	0.81	-12.22	18.25	1.06914
10.97	12.67	3.31	2.68	3.76	0.04539	75.28	68.76	81.61	0.52841	6.36	-2.86	14.13	0.86540
11.03	2.67	3.32	2.59	3.97	0.06544	70.41	62.45	80.75	0.92208	-3.33	-12.74	9.51	0.84299
11.03	12.67	3.38	2.65	4.02	0.04711	75.51	67.72	84.02	0.57005	11.10	0.20	25.90	0.96132
11.09	2.67	3.53	2.80	4.45	0.05718	69.25	61.03	80.97	0.69136	-3.64	-15.28	7.07	0.90571
11.09	12.67	3.26	2.63	3.79	0.04670	80.89	73.05	86.57	0.46393	8.50	-6.82	22.48	0.99268
11.14	2.67	3.17	2.54	3.68	0.06850	70.90	62.96	78.64	0.78166	-4.28	-15.92	8.54	1.30397
11.14	12.67	3.22	2.67	3.60	0.04112	78.85	68.98	85.59	0.65845	8.65	-1.22	18.81	0.89355
11.20	2.67	3.34	2.20	4.44	0.00567	72.64	60.03	86.78	0.06506	-2.57	-21.67	16.68	0.09006
11.20	3.45	3.31	2.21	4.31	0.01455	72.63	60.50	85.67	0.17388	-0.52	-17.94	18.93	0.24124
11.20	4.22	3.35	2.45	4.26	0.01448	73.72	62.84	84.27	0.17817	-0.44	-17.75	14.92	0.25269
11.20	5.00	3.07	2.10	4.14	0.01448	78.71	65.93	89.15	0.15412	3.18	-12.91	22.82	0.24708
11.20	5.78	2.77	1.94	4.00	0.01645	78.75	63.89	89.91	0.20587	-2.32	-21.69	15.00	0.26420
11.20	6.55	3.22	2.10	4.29	0.01311	76.78	61.32	87.99	0.17160	-1.12	-19.70	17.88	0.24231
11.20	7.33	3.11	2.19	4.00	0.01202	76.47	64.70	87.18	0.15097	2.84	-11.75	17.71	0.19450
11.20	12.67	3.37	2.31	4.62	0.00525	77.12	65.41	87.69	0.05279	8.18	-13.69	25.68	0.07985
11.20	13.45	3.39	2.24	4.36	0.01321	77.13	66.83	87.86	0.14220	7.97	-6.79	23.69	0.19599
11.20	14.22	3.31	2.50	4.31	0.01358	77.73	67.48	89.85	0.14503	8.53	-6.54	23.17	0.22446
11.20	15.00	3.00	2.11	4.27	0.01377	75.11	61.47	85.61	0.15689	11.50	-14.74	32.31	0.25028
11.20	15.78	3.19	2.11	4.21	0.01518	74.63	62.04	86.63	0.16477	4.38	-16.93	25.54	0.25762
11.20	16.55	3.54	2.42	4.51	0.01403	71.49	61.30	83.60	0.14736	9.86	-7.78	21.97	0.19323
11.20	17.33	3.51	2.55	4.70	0.01267	70.08	57.29	80.71	0.14058	11.04	-6.87	26.03	0.19210
11.21	2.67	3.53	2.17	4.77	0.01728	73.26	63.27	85.50	0.17179	-2.00	-16.07	11.06	0.24033
11.21	12.67	3.41	2.37	4.38	0.01527	77.05	66.69	88.63	0.17370	6.92	-7.31	22.73	0.24655
11.28	7.33	3.11	2.65	3.62	0.03808	76.03	67.99	82.81	0.65044	2.61	-6.42	17.01	1.03725
11.28	17.33	3.33	2.68	3.78	0.03724	68.86	62.43	74.61	0.47508	8.58	0.94	18.05	0.60385

11.37	7.33	3.36	2.67	4.03	0.07151	76.18	68.85	80.62	0.57240	2.88	-9.19	17.21	1.09148
11.37	17.33	3.77	3.17	4.37	0.04765	69.71	60.46	77.66	0.53625	11.61	3.75	20.50	0.69196
11.45	7.33	3.18	2.69	3.68	0.03468	75.58	69.32	83.49	0.60160	3.25	-10.58	16.51	1.11368
11.45	17.33	3.55	2.93	4.15	0.04564	70.30	59.93	75.31	0.60307	11.02	-2.10	20.72	0.78545
11.53	7.33	3.19	2.48	3.94	0.05648	78.28	64.97	85.66	0.83348	5.34	-5.60	12.42	0.59776
11.53	17.33	3.35	2.70	4.06	0.05256	71.13	65.94	83.10	0.54501	11.80	3.23	20.96	0.68796
11.62	7.33	3.00	2.52	3.62	0.05133	78.58	67.05	85.45	0.98692	-2.09	-10.33	13.66	0.96505
11.62	17.33	3.28	2.62	3.78	0.05860	72.75	64.15	83.29	0.82377	10.82	-6.53	19.01	0.94697
11.67	2.67	3.40	2.31	4.43	0.00415	73.61	60.78	85.58	0.04451	-1.31	-18.27	17.60	0.06459
11.67	3.45	3.41	2.38	4.40	0.01220	75.62	64.21	88.08	0.14183	-0.84	-18.72	19.97	0.18412
11.67	4.22	3.27	2.23	4.57	0.01457	78.52	63.80	89.79	0.13708	2.49	-17.16	25.18	0.20874
11.67	5.00	2.77	1.83	4.48	0.01312	78.45	64.14	89.61	0.16323	1.65	-20.82	25.60	0.24828
11.67	5.78	3.09	2.04	4.32	0.01241	77.79	63.90	89.25	0.14676	-0.59	-19.89	17.48	0.21126
11.67	6.55	3.27	2.22	4.62	0.01394	75.60	63.03	88.92	0.16100	2.65	-18.77	19.71	0.22144
11.67	7.33	3.30	2.26	4.52	0.00426	75.02	61.65	87.25	0.04773	4.10	-14.58	23.37	0.06521
11.67	12.67	3.36	2.26	4.71	0.00387	76.28	62.66	87.55	0.04224	7.64	-10.83	25.38	0.06205
11.67	13.45	3.42	2.20	4.57	0.01204	75.07	64.07	84.72	0.11631	9.70	-10.17	25.12	0.18076
11.67	14.22	3.28	2.13	4.41	0.01285	74.12	61.92	85.07	0.12795	12.36	-4.36	27.39	0.18793
11.67	15.00	3.13	2.04	4.12	0.01197	74.03	61.32	86.37	0.12730	6.20	-9.83	26.88	0.20527
11.67	15.78	3.46	2.35	4.68	0.01224	73.83	57.99	84.41	0.12881	8.93	-6.72	27.50	0.18306
11.67	16.55	3.55	2.21	4.55	0.01241	70.50	58.20	83.11	0.14326	12.54	-2.66	27.48	0.17618
11.67	17.33	3.54	2.16	4.68	0.00426	69.39	55.87	82.92	0.04549	12.34	-12.52	31.75	0.06345
11.70	2.67	3.38	2.32	4.51	0.00879	72.15	61.60	83.78	0.09158	-1.16	-15.00	16.34	0.13182
11.70	3.45	3.51	2.28	4.72	0.01867	74.09	64.89	87.86	0.19575	-0.89	-17.85	16.35	0.24540
11.70	4.22	3.36	2.29	4.54	0.01801	76.66	64.10	87.01	0.19557	1.67	-12.70	16.28	0.24476
11.70	5.00	2.82	1.93	4.06	0.01770	78.38	62.75	91.25	0.19410	4.16	-17.20	26.96	0.30729
11.70	5.78	2.99	1.93	3.99	0.01640	78.29	64.80	88.50	0.20586	-0.28	-20.18	17.09	0.28245
11.70	6.55	3.19	2.27	4.19	0.01508	76.29	65.80	87.05	0.17005	2.42	-16.19	19.28	0.25394
11.70	7.33	3.09	2.01	4.14	0.01206	76.15	64.33	88.88	0.15374	2.01	-19.06	21.06	0.20009
11.70	12.67	3.37	2.37	4.53	0.00791	76.06	65.01	85.53	0.08240	7.39	-16.16	24.18	0.12443
11.70	13.45	3.59	2.64	4.93	0.01638	75.62	62.61	87.29	0.17710	8.63	-5.31	25.69	0.21396
11.70	14.22	3.29	2.26	4.20	0.01575	75.85	64.31	85.03	0.16957	13.12	-3.74	29.09	0.23357
11.70	15.00	2.92	1.96	3.76	0.01480	73.48	59.63	83.51	0.17787	8.02	-10.44	27.19	0.28005
11.70	15.78	3.38	2.45	4.50	0.01554	73.08	63.23	82.94	0.16976	8.48	-6.73	24.66	0.25026
11.70	16.55	3.43	2.31	4.38	0.01562	69.43	56.41	79.01	0.16225	12.06	-6.04	27.28	0.25760
11.70	17.33	3.42	2.19	4.52	0.01148	69.77	56.03	84.22	0.11481	11.64	-5.87	27.26	0.17044
12.09	7.33	3.34	2.38	4.74	0.02228	73.05	64.45	83.97	0.22708	4.13	-9.11	20.23	0.30528
12.09	17.33	3.53	2.52	4.83	0.02273	66.95	54.26	77.27	0.21148	11.97	-12.34	27.94	0.32175
12.50	7.33	3.35	2.52	4.25	0.01871	73.57	64.07	83.88	0.24777	1.93	-11.25	18.83	0.30686
12.50	17.33	3.65	2.66	4.72	0.02119	67.23	57.78	78.50	0.18925	12.71	-5.62	28.19	0.29259
12.92	7.33	3.38	2.57	4.20	0.01890	73.31	61.60	84.74	0.23752	4.35	-7.78	19.11	0.30093
12.92	17.33	3.78	2.82	4.64	0.02087	66.89	56.30	76.12	0.19520	13.03	-1.32	26.21	0.32349
13.34	7.33	3.39	2.61	4.40	0.02106	73.80	63.20	82.34	0.23523	3.22	-10.55	16.19	0.33621
13.34	17.33	3.71	2.85	4.51	0.02116	66.74	57.95	75.40	0.21436	11.59	-1.62	26.44	0.37038
13.75	7.33	3.23	2.16	4.30	0.02220	73.37	58.42	84.98	0.22751	3.30	-11.58	21.97	0.31603
13.75	17.33	3.53	2.60	4.54	0.01950	67.31	58.53	79.41	0.17848	11.68	-6.57	26.80	0.28790
14.22	2.67	3.17	2.02	4.39	0.00425	70.65	56.53	84.76	0.04559	0.00	-19.74	19.41	0.06647
14.22	3.45	2.84	2.08	3.89	0.01583	74.67	60.23	85.28	0.20779	4.13	-13.82	24.02	0.30368
14.22	4.22	2.54	1.60	3.68	0.01574	72.80	57.63	82.98	0.21941	0.72	-20.23	22.34	0.33585
14.22	5.00	2.91	1.91	4.10	0.01600	73.41	61.90	85.56	0.17155	-3.38	-21.56	18.24	0.29682
14.22	5.78	3.21	2.17	4.35	0.01676	73.67	63.38	85.01	0.16510	0.46	-16.11	15.60	0.27649
14.22	6.55	3.23	2.06	4.19	0.01529	71.98	61.02	84.41	0.16737	2.49	-18.36	16.76	0.24630
14.22	7.33	3.23	2.09	4.31	0.00398	71.84	61.03	85.52	0.04253	3.42	-14.77	31.64	0.06430
14.22	12.67	3.21	2.11	4.30	0.00347	72.20	61.76	86.24	0.03855	6.55	-13.05	25.84	0.05946
14.22	13.45	2.93	2.01	3.71	0.01309	67.95	56.73	78.24	0.14385	11.10	-4.69	31.92	0.26664
14.22	14.22	2.98	2.11	4.09	0.01507	68.20	52.49	77.36	0.15027	5.83	-10.29	29.69	0.27106
14.22	15.00	3.19	2.23	4.43	0.01720	69.28	54.54	80.21	0.17249	7.04	-9.80	26.42	0.25326
14.22	15.78	3.38	2.39	4.46	0.01577	67.93	58.09	80.07	0.16814	10.40	-6.80	27.31	0.25848
14.22	16.55	3.32	2.01	4.24	0.01639	66.04	54.96	77.33	0.15272	10.54	-8.14	30.55	0.28350

14.22	17.33	3.37	2.26	4.39	0.00390	65.03	52.99	80.85	0.03883	11.95	-10.39	33.17	0.06861
14.68	2.67	3.61	2.45	4.62	0.01527	65.81	50.54	77.25	0.16033	-0.25	-18.37	18.51	0.21399
14.68	12.67	3.71	2.80	4.73	0.01289	65.65	54.95	75.89	0.13389	4.99	-7.33	19.36	0.19113
15.15	2.67	3.67	2.81	4.72	0.01368	65.56	53.93	75.57	0.14396	-0.38	-16.07	14.72	0.21282
15.15	12.67	3.70	2.91	4.63	0.01266	65.90	55.75	74.32	0.12353	4.08	-11.31	16.89	0.19769
15.61	2.67	3.70	2.70	4.60	0.01463	65.97	54.98	74.74	0.15642	-0.65	-18.04	14.45	0.23569
15.61	12.67	3.74	2.88	4.68	0.01305	65.96	55.44	74.43	0.13620	4.92	-8.05	18.75	0.21120
16.07	2.67	3.67	2.72	4.59	0.01335	66.64	52.63	77.39	0.16108	-0.35	-15.62	14.25	0.21443
16.07	12.67	3.76	3.01	4.70	0.01180	67.17	58.78	75.03	0.10850	3.90	-7.99	16.03	0.17008
16.54	2.67	3.67	2.72	4.66	0.01444	66.76	56.70	76.74	0.13135	0.00	-12.80	16.45	0.20113
16.54	12.67	3.66	2.91	4.48	0.01212	66.88	55.88	74.97	0.11779	4.83	-9.60	19.16	0.19111
16.99	2.67	3.48	2.46	4.52	0.00381	67.00	54.95	78.21	0.03931	0.02	-17.72	16.05	0.05693
16.99	3.45	3.52	2.70	4.84	0.01113	66.65	52.48	78.93	0.11989	0.59	-14.29	16.88	0.17471
16.99	4.22	3.44	2.50	4.43	0.01072	68.40	58.76	77.21	0.10201	3.18	-11.41	17.94	0.16586
16.99	5.00	3.17	2.35	4.28	0.01164	66.55	52.44	77.22	0.12025	4.21	-12.91	21.97	0.20436
16.99	5.78	3.40	2.34	4.54	0.01290	66.33	52.90	75.12	0.10704	0.22	-16.84	16.71	0.17514
16.99	6.55	3.57	2.55	4.57	0.01168	66.72	56.09	75.39	0.10052	2.92	-12.95	20.21	0.17057
16.99	7.33	3.61	2.66	4.56	0.00365	65.90	53.12	75.77	0.03516	3.52	-10.18	21.18	0.05175
16.99	12.67	3.51	2.65	4.44	0.00312	66.56	53.17	76.32	0.03204	4.37	-18.19	23.67	0.05090
16.99	13.45	3.61	2.79	4.75	0.00975	66.70	55.76	76.22	0.08532	5.58	-12.44	28.93	0.15256
16.99	14.22	3.52	2.50	4.63	0.01066	65.07	53.77	73.80	0.10814	10.41	-5.82	26.02	0.17501
16.99	15.00	3.31	2.38	4.21	0.01020	62.57	50.50	71.31	0.11645	6.25	-11.58	30.50	0.19576
16.99	15.78	3.50	2.67	4.36	0.00979	64.08	50.59	73.12	0.10997	5.73	-11.96	23.70	0.16801
16.99	16.55	3.53	2.57	4.61	0.01093	62.65	50.51	71.19	0.13718	8.35	-6.49	27.14	0.19265
16.99	17.33	3.57	2.54	4.58	0.00363	60.97	46.66	71.86	0.04590	8.54	-9.24	28.50	0.06666
17.41	7.33	3.57	2.65	4.33	0.02202	66.35	56.74	76.30	0.21245	3.31	-11.21	21.61	0.35648
17.41	17.33	3.59	2.77	4.62	0.02256	61.08	49.48	73.34	0.27123	9.04	-4.04	22.32	0.35979
17.83	7.33	3.70	3.04	4.40	0.01851	63.89	53.75	69.87	0.20278	3.04	-8.50	14.47	0.30943
17.83	17.33	3.60	2.79	4.39	0.01767	59.25	47.26	68.43	0.26189	8.95	-8.40	24.78	0.36141
18.24	7.33	3.68	2.85	4.46	0.02215	64.60	51.93	72.58	0.21597	2.95	-11.28	13.20	0.31698
18.24	17.33	3.80	3.22	4.65	0.01891	60.28	46.33	71.99	0.31465	9.01	-3.80	20.72	0.35376
18.66	7.33	4.11	3.59	4.71	0.01635	65.75	56.15	75.16	0.22580	3.57	-9.85	16.36	0.31147
18.66	17.33	4.10	3.38	4.78	0.01782	61.78	51.22	71.46	0.28120	9.48	-3.50	20.23	0.33427
19.08	7.33	3.48	2.70	4.42	0.02384	64.31	54.07	74.04	0.24573	2.68	-11.81	11.96	0.32687
19.08	17.33	3.63	2.70	4.62	0.02718	61.75	52.07	71.51	0.25015	9.94	-6.34	24.12	0.35016
19.47	2.67	3.30	2.29	4.44	0.00389	64.18	48.09	77.19	0.04224	0.88	-16.24	20.65	0.06233
19.47	3.45	3.29	2.22	4.31	0.01130	64.87	53.13	73.00	0.11615	0.87	-14.66	21.15	0.18480
19.47	4.22	3.25	2.36	4.22	0.01036	66.98	56.40	76.65	0.10530	3.06	-12.70	19.32	0.16157
19.47	5.00	3.07	2.12	4.22	0.01173	63.81	47.84	74.78	0.12969	4.80	-15.79	21.85	0.20084
19.47	5.78	3.23	2.15	4.33	0.01195	63.67	51.58	73.48	0.12499	-1.95	-17.85	12.96	0.17656
19.47	6.55	3.43	2.54	4.32	0.01014	64.66	50.89	77.99	0.10870	1.72	-15.04	16.90	0.16666
19.47	7.33	3.43	2.51	4.43	0.00354	64.22	49.95	74.52	0.03578	2.71	-15.18	20.94	0.05511
19.47	12.67	3.31	2.32	4.38	0.00308	65.39	54.15	74.94	0.03168	3.64	-13.35	20.03	0.05401
19.47	13.45	3.32	2.51	4.32	0.01012	65.67	56.21	74.96	0.08923	4.66	-9.46	20.52	0.16494
19.47	14.22	3.36	2.34	4.41	0.00990	64.66	52.24	74.03	0.10034	9.46	-7.84	26.65	0.17293
19.47	15.00	3.13	2.36	3.91	0.00894	61.47	50.19	70.93	0.11569	5.95	-16.08	24.15	0.20382
19.47	15.78	3.37	2.55	4.28	0.00952	63.94	53.29	72.90	0.10157	5.15	-9.97	20.48	0.16764
19.47	16.55	3.43	2.57	4.39	0.00985	62.71	48.44	72.95	0.11832	8.21	-8.96	25.33	0.16811
19.47	17.33	3.51	2.63	4.47	0.00355	60.47	44.38	71.46	0.04675	9.01	-10.45	27.29	0.06568
19.95	2.67	3.46	2.23	4.64	0.01551	56.91	41.94	74.01	0.15455	-0.54	-21.96	19.07	0.20162
19.95	12.67	3.52	2.05	4.54	0.01394	59.43	45.61	75.05	0.12980	3.99	-14.39	26.35	0.16436
20.42	2.67	3.88	3.16	4.70	0.00810	55.71	43.60	66.42	0.12264	-0.79	-16.07	14.80	0.17796
20.42	12.67	3.89	3.11	4.62	0.00714	57.54	47.16	67.75	0.11149	4.69	-10.84	18.89	0.15890
20.90	2.67	3.88	3.08	4.52	0.00820	55.20	43.10	65.70	0.13019	-0.47	-16.58	16.76	0.18482
20.90	12.67	3.90	3.17	4.64	0.00696	57.88	47.90	67.15	0.11499	3.89	-10.44	19.21	0.16163
21.38	2.67	3.83	3.07	4.74	0.00872	55.54	42.96	66.48	0.13128	-0.05	-13.92	17.44	0.17674
21.38	12.67	3.91	3.19	4.67	0.00723	57.68	46.32	67.00	0.10532	4.61	-11.59	18.93	0.16094
21.85	2.67	3.89	2.85	4.78	0.00896	58.31	45.67	69.21	0.14315	-0.91	-15.37	16.44	0.16780
21.85	12.67	3.92	3.05	4.74	0.00850	59.70	48.78	72.80	0.11503	4.02	-12.91	18.05	0.16545

22.37	2.67	3.69	2.83	4.68	0.00301	58.65	43.48	70.05	0.04560	-0.42	-17.64	18.20	0.06312
22.37	3.45	3.71	2.81	4.42	0.00834	59.46	44.76	70.99	0.14017	0.75	-14.87	17.03	0.18333
22.37	4.22	3.74	2.98	4.54	0.00864	60.71	50.56	70.50	0.11370	4.28	-14.01	21.79	0.18298
22.37	5.00	3.52	2.71	4.59	0.00919	57.17	43.26	69.60	0.14570	4.19	-15.83	21.62	0.22265
22.37	5.78	3.72	2.86	4.57	0.00905	59.22	48.16	69.02	0.12561	-0.43	-16.38	15.46	0.18775
22.37	6.55	3.82	2.92	4.57	0.00872	59.24	47.23	69.66	0.13469	3.09	-14.38	17.30	0.17093
22.37	7.33	3.79	2.74	4.58	0.00279	59.00	45.68	69.07	0.04458	2.32	-14.17	20.83	0.05519
22.37	12.67	3.76	2.93	4.49	0.00252	59.14	46.94	72.00	0.03720	3.97	-12.56	21.19	0.05422
22.37	13.45	3.82	3.09	4.58	0.00684	59.47	50.17	68.55	0.10063	5.37	-11.49	19.28	0.16213
22.37	14.22	3.69	2.94	4.63	0.00750	57.49	46.92	68.78	0.10786	10.07	-5.16	27.49	0.15963
22.37	15.00	3.52	2.75	4.57	0.00758	55.00	43.03	66.07	0.12337	3.78	-11.61	20.47	0.17411
22.37	15.78	3.70	3.04	4.61	0.00712	57.10	46.07	66.49	0.11358	6.94	-12.01	25.53	0.17214
22.37	16.55	3.71	2.96	4.74	0.00753	54.87	42.44	66.30	0.13376	9.95	-8.48	26.11	0.17956
22.37	17.33	3.69	2.83	4.64	0.00257	53.86	39.43	66.50	0.04408	9.51	-8.86	27.88	0.05817
22.78	7.33	3.85	3.00	4.49	0.00570	55.92	44.77	67.80	0.10211	1.79	-14.23	17.49	0.13362
22.78	17.33	3.75	3.10	4.63	0.00594	51.16	37.10	67.87	0.10258	8.62	-10.30	28.46	0.14296
23.19	7.33	3.83	2.95	4.68	0.00615	56.08	44.32	69.09	0.10115	2.01	-14.60	23.50	0.13739
23.19	17.33	3.73	2.93	4.53	0.00591	51.78	35.72	62.71	0.09706	8.21	-7.66	25.47	0.13672
23.60	7.33	3.82	3.10	4.57	0.00621	56.39	40.21	66.76	0.10069	2.04	-12.88	18.93	0.13159
23.60	17.33	3.69	2.86	4.43	0.00575	51.41	39.52	62.60	0.09430	8.27	-8.36	27.10	0.14643
24.01	7.33	3.82	3.05	4.65	0.00595	55.95	42.65	65.82	0.09877	2.13	-14.08	19.54	0.13830
24.01	17.33	3.71	3.04	4.53	0.00620	52.06	37.56	62.95	0.10090	8.06	-7.69	26.96	0.14334
24.42	7.33	3.71	2.80	4.64	0.00787	56.18	39.20	68.09	0.11223	2.04	-14.34	19.52	0.14322
24.42	17.33	3.68	2.90	4.63	0.00720	52.32	35.94	65.96	0.11694	6.46	-14.20	24.60	0.15345
24.97	2.67	3.47	2.60	4.28	0.00262	50.74	37.08	64.87	0.04614	0.23	-21.42	19.34	0.06756
24.97	3.45	3.50	2.78	4.30	0.00805	52.37	35.23	64.29	0.14554	0.37	-18.33	19.46	0.20027
24.97	4.22	3.52	2.84	4.48	0.00765	54.70	40.06	66.73	0.13970	3.04	-16.53	18.69	0.19837
24.97	5.00	3.42	2.63	4.27	0.00877	52.18	37.19	65.01	0.15992	5.37	-19.49	25.24	0.23308
24.97	5.78	3.53	2.59	4.47	0.00926	54.08	37.32	65.34	0.16635	-2.14	-19.66	21.77	0.20649
24.97	6.55	3.65	2.92	4.36	0.00770	54.95	40.49	67.67	0.14756	1.60	-15.80	20.56	0.19122
24.97	7.33	3.60	2.67	4.29	0.00271	54.38	40.35	66.93	0.05084	2.30	-14.49	20.84	0.06655
24.97	12.67	3.66	2.82	4.52	0.00241	54.43	42.84	67.74	0.03741	3.28	-14.08	18.35	0.05770
24.97	13.45	3.71	2.91	4.42	0.00717	54.63	41.63	67.02	0.12170	4.05	-15.09	20.95	0.18692
24.97	14.22	3.70	3.12	4.39	0.00634	53.18	41.86	63.28	0.10518	8.68	-9.51	28.40	0.16707
24.97	15.00	3.50	2.82	4.31	0.00743	51.47	38.80	66.49	0.13088	3.47	-13.24	22.18	0.18555
24.97	15.78	3.69	2.64	4.41	0.00703	54.64	44.30	68.27	0.12204	1.42	-15.88	16.01	0.16010
24.97	16.55	3.58	2.88	4.31	0.00685	52.89	39.87	68.03	0.13104	5.35	-11.16	26.24	0.17592
24.97	17.33	3.53	2.81	4.34	0.00255	51.16	35.28	63.81	0.04875	5.87	-12.17	30.56	0.07155
25.42	2.67	3.48	2.80	3.97	0.01638	51.18	41.25	63.84	0.31697	-0.39	-14.95	18.45	0.43561
25.42	12.67	3.66	3.03	4.16	0.01461	55.91	46.14	67.57	0.26462	3.08	-11.50	15.09	0.34750
25.87	2.67	3.51	2.94	3.94	0.01900	50.99	40.65	61.19	0.40155	-0.28	-14.29	14.64	0.58764
25.87	12.67	3.66	3.11	4.18	0.01951	54.40	46.84	63.58	0.34923	2.45	-9.25	12.87	0.47968
26.32	2.67	3.39	2.69	4.16	0.02589	46.80	34.77	63.15	0.45180	0.71	-17.71	21.38	0.54622
26.32	12.67	3.55	2.94	4.40	0.02183	51.53	36.51	67.56	0.54748	4.98	-11.16	19.73	0.48158
26.77	2.67	4.09	3.44	4.68	0.02146	47.38	35.60	57.34	0.38118	-0.30	-12.13	11.83	0.40959
26.77	12.67	4.22	3.58	4.99	0.01992	48.90	37.82	59.23	0.30779	3.62	-9.04	14.77	0.37601
27.22	2.67	4.02	3.52	4.45	0.01882	45.47	37.96	54.19	0.32822	0.78	-10.56	13.23	0.54140
27.22	12.67	4.18	3.45	4.64	0.01995	47.52	38.98	55.65	0.33214	3.61	-8.71	14.08	0.54821
27.67	2.67	4.01	3.28	4.80	0.00254	44.96	28.06	57.56	0.04625	1.77	-14.87	22.08	0.06836
27.67	3.45	4.07	3.09	5.07	0.00828	47.06	29.93	62.49	0.13944	2.57	-26.69	31.38	0.22222
27.67	4.22	4.02	3.03	4.82	0.00815	48.21	30.95	60.54	0.13520	6.06	-17.43	28.62	0.22575
27.67	5.00	3.77	2.96	4.77	0.00829	44.29	29.49	62.31	0.15050	4.17	-22.74	34.61	0.27858
27.67	5.78	3.99	3.18	5.04	0.00834	46.10	30.23	59.09	0.14028	-1.07	-29.16	35.58	0.22779
27.67	6.55	4.05	3.09	5.16	0.00817	46.28	32.79	59.90	0.13498	2.25	-21.94	29.77	0.22235
27.67	7.33	4.03	3.29	4.72	0.00265	46.06	34.28	57.82	0.04620	3.59	-18.17	24.50	0.07219
27.67	12.67	4.15	3.31	4.97	0.00254	46.70	35.17	59.59	0.03879	4.19	-14.61	24.36	0.06052
27.67	13.45	4.18	3.30	4.82	0.00736	46.51	35.56	59.17	0.11601	6.49	-10.40	30.06	0.19399
27.67	14.22	4.04	3.37	4.85	0.00806	44.66	34.04	56.16	0.13148	9.28	-10.45	28.61	0.20479
27.67	15.00	4.01	3.26	4.67	0.00790	45.09	33.38	58.53	0.13778	1.52	-18.34	26.43	0.20541

27.67	15.78	4.27	3.40	5.03	0.00755	48.64	38.05	59.93	0.11771	3.19	-16.42	29.52	0.19439
27.67	16.55	4.22	3.43	5.05	0.00795	46.98	33.23	57.90	0.13471	4.45	-14.32	24.72	0.19771
27.67	17.33	4.12	3.34	4.97	0.00257	45.03	32.04	57.47	0.04501	3.18	-15.71	23.52	0.06586
28.07	7.33	3.93	3.51	4.44	0.02755	46.77	37.96	54.65	0.40772	4.41	-8.75	18.63	0.69147
28.07	17.33	3.98	3.32	4.56	0.02894	44.56	35.19	53.74	0.50467	1.77	-13.28	20.50	0.62941
28.47	7.33	4.11	3.47	4.74	0.02946	45.61	35.46	52.11	0.36924	1.87	-11.05	12.09	0.58497
28.47	17.33	4.21	3.57	4.69	0.02796	43.62	36.70	53.04	0.40453	2.85	-9.05	17.66	0.56265
28.88	7.33	4.22	3.70	4.78	0.02608	42.20	31.06	49.63	0.42503	3.92	-12.84	17.63	0.70926
28.88	17.33	4.59	3.85	5.21	0.02757	44.45	34.46	52.65	0.38740	6.73	-6.50	19.04	0.57612
29.28	7.33	4.09	3.65	4.78	0.02419	39.37	30.39	49.41	0.40282	5.29	-11.40	22.05	0.67110
29.28	17.33	4.48	3.90	5.07	0.02461	37.96	30.02	45.81	0.37516	3.02	-14.05	22.37	0.73648
29.68	7.33	4.07	3.48	4.63	0.02659	39.44	31.12	48.62	0.43637	6.24	-7.16	20.12	0.61487
29.68	17.33	4.52	3.96	5.18	0.02788	38.52	27.46	46.03	0.41995	4.68	-21.45	18.48	0.71588
30.10	2.67	4.13	3.48	4.76	0.00528	38.28	29.97	49.13	0.07778	3.74	-10.39	16.41	0.13040
30.10	3.45	4.13	3.54	4.71	0.00735	38.64	29.63	47.79	0.11549	3.98	-11.44	21.52	0.18673
30.10	4.22	4.10	3.54	4.62	0.00721	40.61	30.61	48.63	0.11437	5.77	-8.49	20.31	0.19043
30.10	5.00	3.95	3.41	4.49	0.00764	38.02	29.68	47.16	0.13726	6.32	-10.17	19.93	0.20941
30.10	5.78	4.04	3.55	4.68	0.00769	38.90	29.63	48.12	0.12892	-0.76	-13.29	12.58	0.19325
30.10	6.55	4.07	3.55	4.65	0.00709	39.89	31.15	47.70	0.11396	3.56	-9.09	17.65	0.19336
30.10	7.33	4.05	3.50	4.75	0.00537	39.42	30.24	47.82	0.08495	4.49	-9.32	19.49	0.14088
30.10	12.67	4.17	3.47	4.85	0.00532	39.50	30.85	49.51	0.07651	3.01	-14.82	17.49	0.12815
30.10	13.45	4.19	3.56	4.86	0.00733	39.69	31.27	46.27	0.10633	3.39	-9.07	17.45	0.17970
30.10	14.22	4.21	3.65	4.96	0.00789	38.49	30.23	48.49	0.11750	7.22	-11.22	19.55	0.20510
30.10	15.00	4.07	3.62	4.60	0.00694	35.59	25.79	43.12	0.12300	3.62	-17.20	22.08	0.26156
30.10	15.78	4.28	3.50	4.84	0.00777	40.16	31.17	46.26	0.09946	2.69	-13.99	17.54	0.19155
30.10	16.55	4.39	3.84	4.95	0.00777	39.41	28.27	46.15	0.10739	4.31	-10.69	22.19	0.19075
30.10	17.33	4.42	3.83	5.07	0.00590	38.55	28.89	47.10	0.08181	4.15	-11.61	20.75	0.14055
30.11	2.67	4.14	3.40	5.03	0.00541	36.40	21.13	47.05	0.08845	1.45	-16.98	21.15	0.15402
30.11	3.45	4.16	3.33	5.11	0.00961	37.57	23.45	47.44	0.14365	4.13	-21.12	22.08	0.25411
30.11	4.22	4.12	3.30	4.80	0.00757	39.73	26.73	49.50	0.12939	5.71	-14.81	23.27	0.21474
30.11	5.00	4.17	3.17	5.10	0.00869	39.79	26.48	52.74	0.14510	5.68	-13.10	34.97	0.24780
30.11	5.78	4.03	3.38	4.96	0.00861	37.68	24.33	52.35	0.15764	3.20	-17.08	25.68	0.28431
30.11	6.55	4.14	3.29	4.99	0.00890	39.69	24.41	54.17	0.14779	0.74	-15.88	22.32	0.24295
30.11	7.33	4.09	3.69	4.42	0.01686	39.56	35.44	43.37	0.20948	4.79	-1.13	10.44	0.31651
30.11	12.67	4.21	3.48	4.97	0.00558	40.75	30.39	50.81	0.08102	2.31	-11.93	16.48	0.12787
30.11	13.45	4.28	3.47	5.14	0.00885	40.68	27.02	49.80	0.13555	2.28	-13.09	21.36	0.22184
30.11	14.22	4.24	3.54	5.24	0.00864	39.81	25.07	50.08	0.12878	6.04	-11.43	27.87	0.23689
30.11	15.00	4.25	3.48	5.16	0.00897	38.63	28.23	52.15	0.13532	7.57	-9.31	24.32	0.24095
30.11	15.78	4.21	3.50	5.10	0.00930	37.83	24.15	48.84	0.15447	1.49	-12.70	22.26	0.25222
30.11	16.55	4.45	3.47	5.29	0.00999	41.68	30.30	48.92	0.11882	2.67	-10.16	20.60	0.21222
30.11	17.33	4.48	4.19	4.78	0.01355	40.24	37.86	43.69	0.15799	4.30	-0.52	10.18	0.24054
30.20	7.33	3.71	3.48	3.88	0.05585	35.77	34.13	38.34	0.74030	6.22	2.26	12.42	1.43387
30.20	17.33	4.14	4.04	4.21	0.03916	35.55	33.78	37.86	0.87606	3.07	0.83	6.68	1.26390
30.29	7.33	3.95	3.82	4.12	0.04921	37.23	35.01	39.50	0.62844	4.51	1.52	9.62	1.27114
30.29	17.33	4.35	4.22	4.47	0.04044	36.23	35.07	37.26	0.30900	4.12	0.83	7.70	1.00183
30.38	7.33	4.06	3.95	4.15	0.02531	39.61	36.60	42.94	0.73450	5.02	1.43	7.39	0.86805
30.38	17.33	4.38	4.19	4.64	0.05939	39.43	37.51	40.66	0.39852	4.42	2.47	6.36	0.60855
30.46	7.33	4.01	3.91	4.18	0.03683	38.86	37.15	40.72	0.45872	7.55	4.69	10.20	0.89949
30.46	17.33	4.46	4.28	4.60	0.03957	40.76	39.55	42.07	0.32330	3.53	0.81	7.79	0.97422
30.55	7.33	4.11	3.90	4.22	0.04446	39.78	38.23	41.49	0.43709	5.80	2.96	9.03	0.81617
30.55	17.33	4.49	4.24	4.60	0.05268	39.77	38.13	42.32	0.64656	5.27	3.61	6.48	0.47239
30.64	2.67	3.94	3.72	4.10	0.00802	33.27	29.90	35.80	0.12357	2.35	-4.98	8.10	0.25930
30.64	3.45	3.91	3.70	4.16	0.01690	34.98	31.19	38.16	0.28542	3.91	-0.26	9.52	0.36693
30.64	4.22	3.90	3.69	4.08	0.01410	36.12	33.21	38.61	0.20789	4.89	-0.14	12.35	0.45479
30.64	5.00	3.81	3.62	3.97	0.01563	34.21	29.33	38.49	0.39011	5.90	-4.93	12.80	0.63850
30.64	5.78	3.85	3.59	4.16	0.01888	35.30	28.56	39.54	0.35522	1.49	-6.83	9.97	0.65891
30.64	6.55	3.84	3.59	4.14	0.01756	35.85	32.62	39.75	0.30121	5.06	1.89	9.77	0.35414
30.64	7.33	3.78	3.59	4.01	0.01509	36.05	31.11	39.65	0.24652	6.11	0.48	11.36	0.36205
30.64	12.67	3.98	3.72	4.21	0.00917	37.09	33.71	40.01	0.12854	0.49	-4.42	5.84	0.23957

30.64	13.45	3.95	3.77	4.20	0.01945	36.87	33.74	39.88	0.24541	1.20	-3.00	5.60	0.37589
30.64	14.22	4.00	3.84	4.24	0.01781	36.28	31.87	40.25	0.27099	5.27	-0.33	11.44	0.55413
30.64	15.00	3.90	3.67	4.11	0.01629	32.39	28.66	34.83	0.24173	3.72	-6.15	13.50	0.81666
30.64	15.78	4.06	3.78	4.31	0.01758	36.36	33.84	38.95	0.22653	3.08	-3.62	9.34	0.47092
30.64	16.55	4.18	3.86	4.46	0.01980	35.31	31.68	38.97	0.26279	4.13	0.32	10.27	0.37506
30.64	17.33	4.19	3.65	4.41	0.01977	35.71	32.63	38.99	0.19047	3.40	-0.10	10.16	0.34241
30.69	2.67	3.97	3.78	4.10	0.04102	34.01	32.63	36.48	0.63217	1.03	-0.44	2.79	0.43971
30.69	12.67	3.93	3.77	4.10	0.04463	36.95	35.51	39.19	0.47938	1.10	-1.51	6.28	1.01510
30.78	2.67	3.93	3.72	4.05	0.04061	33.90	32.29	35.00	0.44801	3.28	-1.47	6.96	1.02819
30.78	12.67	3.93	3.83	4.12	0.03623	37.71	35.33	40.03	0.63292	1.15	-1.17	5.85	0.98953
30.86	2.67	4.09	3.91	4.28	0.05244	31.36	28.70	33.44	0.67750	3.48	0.26	7.97	1.10222
30.86	12.67	4.15	3.93	4.55	0.07597	35.53	31.85	40.23	1.06985	0.45	-3.18	4.12	1.15833
30.94	2.67	4.47	4.41	4.55	0.02024	26.96	26.00	28.31	0.36403	0.15	-2.44	3.88	1.00707
30.94	12.67	4.49	4.32	4.61	0.03895	31.58	30.18	33.32	0.41533	1.48	-0.05	3.35	0.51890
31.03	2.67	4.50	4.40	4.56	0.02289	27.15	25.35	28.83	0.46608	3.49	1.27	5.89	0.69389
31.03	12.67	4.55	4.48	4.64	0.02325	32.83	29.18	36.41	1.00423	0.51	-4.60	3.91	1.02099
31.11	2.67	4.53	4.37	4.71	0.01142	27.83	25.07	31.34	0.16958	-0.01	-10.92	9.94	0.40592
31.11	3.45	4.55	4.31	4.79	0.00796	28.49	24.25	33.97	0.13899	6.09	-3.63	14.23	0.30636
31.11	4.22	4.55	4.32	4.81	0.00852	30.42	26.47	33.67	0.13250	7.78	1.11	13.34	0.27547
31.11	5.00	4.37	4.15	4.61	0.00927	29.34	22.97	33.62	0.18751	3.74	-8.18	14.56	0.43113
31.11	5.78	4.47	4.09	4.75	0.00918	31.25	26.12	35.35	0.17399	3.47	-3.04	10.63	0.29771
31.11	6.55	4.45	4.16	4.78	0.01074	30.97	25.79	35.26	0.17211	4.36	-2.34	13.87	0.27797
31.11	7.33	4.46	4.13	4.76	0.01161	30.29	25.71	33.96	0.18689	5.34	-2.66	13.71	0.31659
31.11	12.67	4.48	4.20	4.67	0.01231	31.85	28.40	35.28	0.20328	0.97	-5.07	7.32	0.30470
31.11	13.45	4.54	4.33	4.86	0.00970	32.02	28.17	35.76	0.15734	1.87	-4.13	8.08	0.25787
31.11	14.22	4.56	4.33	4.82	0.00989	30.04	23.83	35.36	0.21499	6.07	-0.46	14.96	0.32360
31.11	15.00	4.55	4.31	4.83	0.01030	29.34	24.48	35.85	0.17230	0.07	-7.02	7.00	0.29130
31.11	15.78	4.72	4.49	4.96	0.00797	30.48	27.19	34.17	0.09926	3.15	-5.08	8.27	0.23850
31.11	16.55	4.70	4.48	4.96	0.00863	29.95	26.93	32.63	0.11063	2.98	-2.68	9.56	0.24057
31.11	17.33	4.75	4.54	4.97	0.00863	29.42	26.36	31.82	0.11973	2.22	-4.65	11.66	0.26652
31.19	7.33	4.41	4.28	4.63	0.05569	30.18	26.01	32.20	0.88051	6.94	1.96	17.01	2.32319
31.19	17.33	4.72	4.65	4.77	0.02271	30.53	29.87	32.18	0.35098	0.50	-1.35	3.70	0.75088
31.28	7.33	4.40	4.31	4.49	0.02916	30.90	29.03	32.32	0.45986	5.34	2.93	7.64	0.70862
31.28	17.33	4.77	4.72	4.87	0.02455	29.73	27.41	32.00	0.64699	3.17	1.00	5.26	0.56999
31.36	7.33	4.19	4.01	4.36	0.06857	31.09	27.79	34.89	1.16325	3.54	0.44	6.77	1.05742
31.36	17.33	4.54	4.26	4.73	0.08093	30.73	29.49	31.86	0.38459	3.72	-0.07	5.00	0.95341
31.44	7.33	4.16	4.00	4.27	0.04112	33.97	30.20	38.32	1.11842	5.23	2.47	7.63	0.88104
31.44	17.33	4.40	4.20	4.57	0.05062	31.14	30.17	31.98	0.28178	2.44	-0.08	6.23	1.01498
31.53	7.33	4.24	4.06	4.38	0.05462	29.27	25.84	33.20	1.40091	4.27	-2.31	7.44	1.75992
31.53	17.33	4.69	4.43	4.81	0.06719	28.88	25.87	30.49	0.86664	3.82	-0.85	7.52	1.56292
31.61	2.67	4.98	4.74	5.24	0.01048	28.19	25.82	31.22	0.11262	-0.87	-8.37	5.55	0.30010
31.61	3.45	4.98	4.77	5.18	0.01146	29.28	26.78	31.90	0.16817	4.17	-2.65	9.91	0.33903
31.61	4.22	4.93	4.79	5.08	0.00964	30.66	28.21	33.39	0.15335	6.18	-0.35	11.65	0.30115
31.61	5.00	4.72	4.50	4.94	0.01242	28.88	24.92	33.25	0.22964	3.86	-5.60	13.64	0.62753
31.61	5.78	4.89	4.71	5.14	0.01227	31.39	25.66	35.26	0.23939	-0.42	-8.02	6.87	0.43004
31.61	6.55	4.93	4.69	5.12	0.01353	30.47	25.52	33.58	0.21423	3.07	-3.96	12.37	0.39426
31.61	7.33	4.89	4.70	5.21	0.00762	30.22	26.99	33.84	0.12125	4.08	-3.28	10.65	0.23566
31.61	12.67	5.03	4.76	5.25	0.01029	31.73	27.97	35.45	0.16317	1.36	-3.31	8.98	0.26240
31.61	13.45	5.00	4.80	5.23	0.01229	31.17	27.51	35.11	0.24145	3.12	-4.36	12.96	0.48643
31.61	14.22	4.90	4.74	5.16	0.01409	29.09	24.64	31.78	0.19861	7.40	-0.57	16.11	0.44811
31.61	15.00	4.91	4.66	5.17	0.01573	28.52	24.46	33.21	0.21617	0.32	-9.61	7.13	0.40254
31.61	15.78	5.13	4.92	5.43	0.01382	30.45	28.47	32.94	0.13502	3.05	-2.16	8.43	0.32061
31.61	16.55	5.20	4.97	5.51	0.01453	29.79	27.61	32.78	0.14614	3.71	-1.40	9.23	0.32794
31.61	17.33	5.19	4.80	5.45	0.00732	29.55	26.73	33.64	0.10129	3.11	-3.05	8.52	0.18270
31.67	2.67	5.02	4.86	5.21	0.03241	28.01	25.79	29.32	0.33968	0.36	-5.30	5.56	0.90789
31.67	12.67	5.07	4.85	5.31	0.03817	32.26	29.82	33.75	0.33921	-0.11	-7.13	3.49	0.95025
31.72	2.67	4.98	4.83	5.09	0.02954	27.75	25.73	29.28	0.34604	1.34	-2.79	4.32	0.72541
31.72	12.67	5.01	4.91	5.21	0.03714	32.09	29.67	34.82	0.47429	0.67	-2.13	6.49	0.88657
31.78	2.67	5.19	4.97	5.44	0.04830	29.60	27.06	31.31	0.49089	-0.21	-2.81	3.67	0.65579

31.78	12.67	5.16	4.96	5.40	0.04159	33.46	29.89	35.26	0.44867	0.33	-3.65	3.04	0.65144
31.84	2.67	4.92	4.70	5.04	0.03751	27.70	25.54	29.58	0.41265	-0.72	-3.01	2.44	0.51194
31.84	12.67	4.98	4.83	5.27	0.04232	32.50	30.01	34.97	0.55041	0.58	-5.82	4.04	0.97241
31.89	2.67	5.49	5.34	5.70	0.03399	31.43	29.45	33.48	0.44003	-0.41	-2.95	2.54	0.56396
31.89	12.67	5.60	5.51	5.74	0.02253	36.05	34.32	38.73	0.44535	1.64	-1.99	5.07	0.69429
31.95	2.67	5.45	5.24	5.70	0.00915	31.62	29.34	34.78	0.10069	0.01	-4.74	5.88	0.20489
31.95	3.45	5.49	5.26	5.67	0.00966	33.46	29.41	37.48	0.16495	5.40	-3.63	10.92	0.33301
31.95	4.22	5.44	5.20	5.67	0.00922	34.76	32.64	38.43	0.11779	7.64	2.05	12.86	0.22882
31.95	5.00	5.22	5.04	5.52	0.01052	33.07	29.03	35.70	0.13643	10.17	5.47	15.45	0.23071
31.95	5.78	5.13	4.89	5.38	0.01129	31.97	27.13	37.00	0.19214	5.56	-4.25	13.65	0.56460
31.95	6.55	5.41	5.01	5.78	0.01336	34.55	31.07	38.03	0.14241	2.10	-2.81	9.21	0.27352
31.95	7.33	5.42	5.23	5.62	0.01074	34.65	31.01	37.78	0.16712	4.13	-1.00	9.19	0.25270
31.95	12.67	5.57	5.36	5.80	0.00918	35.88	32.86	38.90	0.11877	1.57	-4.37	7.11	0.21632
31.95	13.45	5.57	5.37	5.81	0.01118	35.08	30.80	38.31	0.14756	2.52	-2.86	10.25	0.27135
31.95	14.22	5.36	5.17	5.61	0.01155	32.02	28.49	36.18	0.17487	8.20	0.12	14.33	0.28659
31.95	15.00	5.24	4.98	5.49	0.01006	30.32	27.22	34.01	0.14273	0.18	-8.05	13.00	0.39833
31.95	15.78	5.41	5.09	5.79	0.01940	32.08	28.19	35.64	0.20484	-0.84	-6.95	5.73	0.30985
31.95	16.55	5.76	5.49	6.03	0.01099	34.33	31.90	37.24	0.12508	2.17	-4.09	8.40	0.22565
31.95	17.33	5.73	5.49	5.99	0.01205	33.53	30.82	36.36	0.14449	2.32	-3.32	6.90	0.21318
32.02	7.33	5.45	5.21	5.63	0.03811	34.28	30.52	36.40	0.49599	4.72	1.26	7.45	0.53304
32.02	17.33	5.72	5.50	5.88	0.03340	33.45	31.26	34.56	0.31450	1.72	-1.22	5.62	0.51037
32.10	7.33	5.49	5.26	5.65	0.03946	34.66	33.40	37.53	0.32284	4.27	-1.49	7.60	0.78455
32.10	17.33	5.85	5.63	6.08	0.03533	33.96	32.56	35.74	0.25015	2.62	0.73	4.26	0.30198
32.18	7.33	5.47	5.36	5.59	0.02473	34.80	32.94	37.36	0.38846	4.26	-1.57	8.41	0.86480
32.18	17.33	5.88	5.71	6.04	0.03248	34.12	32.23	36.46	0.36408	3.71	-1.18	8.63	0.78630
32.25	7.33	5.50	5.36	5.61	0.02171	35.64	32.89	38.07	0.44449	3.87	-0.03	7.34	0.57097
32.25	17.33	5.85	5.63	6.01	0.03208	34.84	33.49	35.72	0.19415	3.86	0.49	6.98	0.60044
32.33	7.33	5.52	5.37	5.67	0.02568	35.03	32.88	36.34	0.35123	3.06	-0.03	6.10	0.68930
32.33	17.33	5.83	5.68	5.95	0.02345	34.10	32.63	35.33	0.26028	3.05	1.04	6.06	0.54668
32.41	2.67	5.34	5.10	5.57	0.01109	31.86	27.83	34.79	0.14543	1.19	-3.29	6.21	0.23582
32.41	3.45	5.40	5.24	5.67	0.00717	33.90	30.33	37.01	0.10338	3.98	-0.36	9.08	0.17639
32.41	4.22	5.50	5.21	5.81	0.01005	34.27	31.54	39.03	0.11055	3.79	-1.92	9.44	0.20873
32.41	5.00	5.56	5.33	5.78	0.00808	34.76	31.50	37.65	0.11282	5.81	-1.19	13.42	0.23469
32.41	5.78	5.44	5.09	5.80	0.01516	33.88	28.85	38.55	0.20822	7.33	-7.18	12.85	0.28880
32.41	6.55	5.52	5.22	5.80	0.01025	34.77	30.12	38.20	0.15730	1.06	-7.18	7.14	0.25323
32.41	7.33	5.51	5.29	5.71	0.01217	34.78	32.22	38.04	0.17076	3.06	-1.03	10.14	0.28355
32.41	12.67	5.52	5.30	5.76	0.01040	36.66	33.11	41.09	0.15759	1.21	-3.76	4.99	0.21570
32.41	13.45	5.55	5.27	5.81	0.00924	35.69	32.66	38.61	0.11180	2.75	-1.90	8.85	0.20629
32.41	14.22	5.65	5.46	5.87	0.00892	35.86	32.04	39.24	0.11203	2.84	-3.65	9.23	0.21679
32.41	15.00	5.65	5.33	6.00	0.01276	34.21	28.86	38.73	0.19086	5.97	-2.56	12.97	0.28252
32.41	15.78	5.54	5.21	5.90	0.01150	31.87	27.91	35.02	0.13853	4.00	-4.72	14.75	0.45913
32.41	16.55	5.88	5.62	6.11	0.00887	34.95	31.75	37.70	0.09280	2.32	-4.25	7.40	0.22058
32.41	17.33	5.88	5.64	6.13	0.01308	34.27	32.11	36.45	0.15366	2.53	-1.64	6.70	0.22402
32.48	2.67	5.36	5.33	5.39	0.01707	32.32	31.16	33.05	0.58756	-0.16	-1.23	0.46	0.53725
32.48	12.67	5.50	5.45	5.56	0.03409	36.73	34.05	38.38	1.35463	2.38	0.03	4.62	1.32582
32.56	2.67	5.32	5.26	5.38	0.05908	32.39	32.37	32.41	0.01995	1.73	1.03	2.43	0.69877
32.56	12.67	5.52	5.46	5.58	0.05855	37.33	36.76	37.90	0.57233	-2.11	-2.39	-1.82	0.28643
32.64	2.67	5.29	5.22	5.40	0.05575	31.03	29.90	31.65	0.56537	0.73	0.07	1.14	0.33169
32.64	12.67	5.43	5.38	5.50	0.03702	35.78	33.62	37.43	1.12671	1.14	-0.20	2.02	0.68161
32.71	2.67	5.24	5.23	5.24	0.00176	32.91	31.70	34.12	1.21180	3.23	2.40	4.05	0.82262
32.71	12.67	5.49	5.47	5.51	0.01781	36.89	36.80	36.97	0.08349	-1.98	-2.46	-1.49	0.48275
32.79	2.67	5.32	5.31	5.32	0.00362	32.86	32.12	33.60	0.74199	0.86	-0.35	2.06	1.20263
32.79	12.67	5.60	5.54	5.66	0.05864	37.94	37.55	38.33	0.38875	3.00	2.75	3.26	0.25707
32.87	2.67	5.29	5.09	5.54	0.00797	29.03	26.68	33.03	0.10787	1.74	-4.48	8.32	0.21489
32.87	3.45	5.30	5.04	5.51	0.01173	29.99	27.55	33.03	0.16359	5.19	-1.54	12.67	0.43701
32.87	4.22	5.31	5.11	5.47	0.01004	32.17	30.16	35.08	0.15703	8.03	2.86	13.27	0.28299
32.87	5.00	5.18	4.88	5.41	0.01453	30.52	25.14	34.34	0.25280	9.89	3.12	17.18	0.39421
32.87	5.78	5.15	4.95	5.46	0.01286	30.43	26.35	35.39	0.24329	1.68	-4.28	7.14	0.32268
32.87	6.55	5.26	5.08	5.52	0.01131	32.30	29.25	36.14	0.19209	2.84	-2.76	10.80	0.33289

32.87	7.33	5.22	5.02	5.48	0.01235	31.80	28.96	34.54	0.15957	4.18	-0.87	9.01	0.28840
32.87	12.67	5.43	5.21	5.68	0.00856	33.26	28.44	37.18	0.13434	-0.05	-5.82	6.56	0.22175
32.87	13.45	5.46	5.27	5.70	0.01270	33.10	28.88	35.26	0.16482	0.83	-5.34	8.20	0.36166
32.87	14.22	5.41	5.24	5.61	0.01325	31.07	27.27	35.47	0.23491	4.87	-1.72	11.67	0.39243
32.87	15.00	5.31	5.08	5.62	0.01467	27.88	23.49	32.09	0.23994	-0.06	-7.52	12.31	0.55829
32.87	15.78	5.53	5.30	5.67	0.00989	31.52	28.04	34.12	0.18241	-1.46	-7.62	3.50	0.35535
32.87	16.55	5.61	5.42	5.81	0.01112	31.40	28.55	34.20	0.15312	1.21	-3.14	7.38	0.32962
32.87	17.33	5.60	5.44	5.78	0.00956	30.66	27.69	33.40	0.12497	1.34	-3.74	5.87	0.24640
32.95	2.67	5.32	5.14	5.56	0.00757	28.97	26.11	31.83	0.10983	6.82	-0.64	13.56	0.22314
32.95	3.45	5.33	5.11	5.61	0.01142	30.36	27.04	33.21	0.15661	5.01	-1.01	9.14	0.27799
32.95	4.22	5.30	5.11	5.52	0.01006	31.53	28.01	33.99	0.15945	8.25	-0.60	15.30	0.38525
32.95	5.00	5.14	4.92	5.34	0.01349	28.66	25.19	33.44	0.22030	5.28	-8.41	14.90	0.65213
32.95	5.78	5.23	5.00	5.40	0.01086	30.73	26.72	34.53	0.16585	1.65	-4.23	7.56	0.33888
32.95	6.55	5.28	4.95	5.47	0.01299	31.07	26.45	34.12	0.17987	3.30	-1.79	9.87	0.36013
32.95	7.33	5.27	4.97	5.53	0.00812	31.14	26.77	34.74	0.12309	3.61	-5.15	13.59	0.21813
32.95	12.67	5.46	5.16	5.77	0.00931	32.41	28.38	35.94	0.12936	2.00	-2.27	8.17	0.18891
32.95	13.45	5.50	5.24	5.75	0.01247	32.08	29.06	34.93	0.19637	2.04	-4.01	9.54	0.36696
32.95	14.22	5.41	5.25	5.63	0.01095	28.57	24.30	33.37	0.23645	6.38	-2.85	12.99	0.42131
32.95	15.00	5.45	5.23	5.70	0.01434	28.40	22.49	32.59	0.27024	-0.62	-6.28	5.71	0.32791
32.95	15.78	5.62	5.37	5.94	0.01197	30.95	28.14	34.68	0.15570	2.42	-3.73	8.85	0.30604
32.95	16.55	5.71	5.50	6.03	0.01471	29.90	26.88	32.83	0.14873	2.75	-2.89	9.70	0.30454
32.95	17.33	5.71	5.46	6.00	0.00740	29.78	26.84	33.43	0.09406	2.11	-4.83	7.94	0.16814
33.31	7.33	5.27	5.06	5.43	0.02591	31.09	27.96	32.62	0.29615	3.69	-2.12	8.49	0.62492
33.31	17.33	5.66	5.37	5.84	0.02534	29.14	27.03	31.13	0.25189	2.09	-5.04	6.42	0.63970
33.66	7.33	5.97	5.04	6.48	0.11607	27.60	22.04	35.54	1.02274	5.32	-1.15	16.82	0.98064
33.66	17.33	6.36	5.58	6.93	0.11457	25.93	19.56	32.10	1.02956	-0.19	-5.29	5.12	0.78752
34.02	7.33	6.46	6.28	6.65	0.02039	22.63	19.42	24.96	0.37858	6.51	1.56	10.81	0.60476
34.02	17.33	6.84	6.70	6.99	0.01816	21.23	18.86	22.92	0.26416	-2.17	-7.05	2.69	0.61440
34.37	7.33	6.44	6.27	6.60	0.01707	22.84	20.64	24.50	0.26951	6.02	1.02	13.87	0.77721
34.37	17.33	6.83	6.62	6.99	0.01950	21.27	18.01	23.29	0.30237	-0.84	-11.26	5.15	0.88046
34.73	7.33	6.45	6.31	6.58	0.01731	22.42	19.88	25.24	0.30513	6.01	0.68	10.31	0.58335
34.73	17.33	6.84	6.69	6.96	0.01839	20.78	18.23	23.78	0.34390	-1.88	-7.34	4.33	0.60289
35.08	2.67	6.57	5.91	7.42	0.00304	20.52	10.90	33.65	0.05592	2.86	-26.28	35.93	0.16783
35.08	3.45	6.57	5.74	7.46	0.00543	22.56	10.05	36.41	0.10821	12.27	-19.97	49.82	0.27863
35.08	4.22	6.55	5.97	7.54	0.00552	24.31	11.10	37.94	0.10232	13.99	-13.62	36.03	0.24177
35.08	5.00	6.44	5.79	7.16	0.00604	23.34	11.01	38.09	0.11655	15.55	-14.58	55.37	0.28171
35.08	5.78	6.37	5.52	7.46	0.00623	21.97	11.30	34.01	0.11766	6.56	-21.19	44.52	0.29047
35.08	6.55	6.44	5.47	7.09	0.00599	23.96	11.18	36.54	0.11108	7.13	-15.10	53.94	0.27859
35.08	7.33	6.44	5.53	7.78	0.00321	22.90	8.54	42.19	0.06068	6.88	-29.45	50.86	0.16130
35.08	12.67	6.53	5.93	7.40	0.00296	24.46	12.67	34.38	0.05440	-1.78	-23.78	23.98	0.12682
35.08	13.45	6.55	5.98	7.06	0.00481	24.04	15.85	31.61	0.09110	-0.05	-23.37	23.64	0.23043
35.08	14.22	6.55	5.95	7.12	0.00513	21.77	13.82	32.82	0.09211	2.31	-27.40	25.47	0.26796
35.08	15.00	6.53	5.98	7.03	0.00472	19.45	13.26	28.04	0.08596	-2.09	-29.23	26.58	0.29442
35.08	15.78	6.66	6.09	7.32	0.00505	21.73	14.04	30.48	0.09069	-2.80	-24.90	27.00	0.26004
35.08	16.55	6.76	6.04	7.51	0.00560	21.88	13.51	31.25	0.09552	0.10	-26.19	23.36	0.26039
35.08	17.33	6.83	6.25	7.52	0.00303	21.04	12.02	31.69	0.05025	-2.19	-38.57	24.82	0.14248
35.21	2.67	7.42	6.97	7.91	0.00699	3.56	0.08	11.58	0.08606	9.55	-87.96	89.86	2.08131
35.21	12.67	7.34	6.92	7.80	0.00763	5.38	0.20	11.68	0.10621	-20.89	-89.09	89.71	1.53891
35.35	2.67	7.35	6.84	7.75	0.00682	3.74	0.30	10.80	0.09063	10.93	-89.26	89.81	2.07634
35.35	12.67	7.29	6.75	7.72	0.00735	6.04	0.40	10.81	0.09987	-18.80	-87.29	89.93	1.45497
35.49	2.67	7.39	6.92	7.83	0.00693	3.72	0.22	9.65	0.08775	9.12	-88.62	89.53	2.00150
35.49	12.67	7.29	6.80	7.70	0.00750	5.56	0.32	11.13	0.10220	-20.15	-89.72	86.71	1.73098
35.62	2.67	7.34	6.94	7.73	0.00655	3.48	0.17	11.21	0.08051	6.46	-89.36	89.65	2.17972
35.62	12.67	7.26	6.84	7.83	0.00725	5.84	0.39	12.44	0.10608	-19.60	-88.28	85.64	1.52520
35.76	2.67	7.38	6.95	7.78	0.00633	3.98	0.09	9.94	0.08809	12.88	-87.16	89.24	1.97899
35.76	12.67	7.29	6.87	7.77	0.00688	6.04	0.47	11.65	0.10441	-18.46	-87.35	87.68	1.35033
35.89	2.67	7.40	6.89	7.94	0.00229	3.80	0.11	14.32	0.03274	9.35	-89.98	89.98	0.74534
35.89	3.45	7.33	6.92	7.84	0.00460	4.42	0.22	15.67	0.07255	6.44	-89.23	89.88	1.48137
35.89	4.22	7.31	6.85	7.74	0.00464	5.29	0.36	13.79	0.07424	18.95	-88.88	89.60	1.25498

35.89	5.00	7.32	6.82	8.01	0.00458	4.83	0.32	13.88	0.06968	17.18	-89.98	89.91	1.37183
35.89	5.78	7.29	6.74	7.89	0.00505	4.28	0.23	13.87	0.07196	7.13	-89.85	89.81	1.43144
35.89	6.55	7.27	6.80	7.72	0.00501	4.36	0.08	12.62	0.07233	2.08	-89.95	89.47	1.42216
35.89	7.33	7.25	6.71	7.77	0.00294	3.98	0.12	13.99	0.03877	-0.88	-89.87	89.92	0.79675
35.89	12.67	7.33	6.76	7.94	0.00247	5.71	0.01	15.51	0.03987	-17.74	-89.91	89.98	0.56146
35.89	13.45	7.31	6.77	7.85	0.00441	5.67	0.25	14.01	0.07669	-19.12	-89.92	89.93	1.18712
35.89	14.22	7.37	6.83	7.82	0.00461	4.87	0.05	13.11	0.07051	-20.15	-89.97	89.85	1.42398
35.89	15.00	7.45	6.84	7.96	0.00464	4.80	0.06	12.01	0.06636	-20.99	-89.94	89.98	1.57221
35.89	15.78	7.50	6.98	7.97	0.00461	6.13	0.09	14.61	0.07484	-33.64	-89.47	89.80	1.24823
35.89	16.55	7.62	7.10	8.15	0.00516	7.30	0.31	16.44	0.08163	-35.64	-89.88	89.06	0.93103
35.89	17.33	7.72	7.03	8.37	0.00298	7.41	0.29	16.52	0.04904	-37.55	-89.85	89.99	0.53090

Appendix C

Turbulence Intensity Values at 155 MW Turbine Load

Appendix C

Turbulence Intensity Values at 155 MW Turbine Load

The table in this appendix lists turbulence intensity values for X, Y, and Z vectors and magnitude turbulence intensity for flow data collected at locations along the bar screen surface of the ESBS, at 155 MW turbine load.

Location (ft.)		RMS Turbulence Intensity (ft/sec)			
Vertical	Horizontal	Magnitude	X-vector	Y-vector	Z-vector
-0.02	2.67	0.17	0.23	0.25	0.27
-0.02	3.45	0.24	0.31	0.43	0.55
-0.02	4.22	0.25	0.42	0.63	0.35
-0.02	5.00	0.20	0.34	0.42	0.25
-0.02	5.78	0.36	0.39	0.50	0.54
-0.02	6.55	0.33	0.28	0.31	0.54
-0.02	7.33	0.15	0.25	0.22	0.22
-0.02	12.67	0.17	0.27	0.23	0.26
-0.02	13.45	0.34	0.39	0.30	0.42
-0.02	14.22	0.60	0.44	0.43	0.61
-0.02	15.00	0.36	0.27	0.34	0.43
-0.02	15.78	0.50	0.41	0.51	0.68
-0.02	16.55	0.24	0.30	0.28	0.37
-0.02	17.33	0.23	0.38	0.35	0.35
0.30	7.33	0.66	0.40	0.19	0.71
0.30	17.33	0.84	0.74	0.28	0.61
0.63	7.33	0.34	0.27	0.17	0.37
0.63	17.33	0.38	0.42	0.24	0.46
0.95	7.33	0.14	0.15	0.14	0.18
0.95	17.33	0.22	0.22	0.24	0.17
1.27	7.33	0.19	0.22	0.16	0.20
1.27	17.33	0.17	0.17	0.26	0.24
1.60	7.33	0.15	0.17	0.19	0.14
1.60	17.33	0.21	0.22	0.23	0.22
1.92	2.67	0.16	0.18	0.23	0.19
1.92	3.45	0.16	0.21	0.18	0.16
1.92	4.22	0.17	0.22	0.21	0.19
1.92	5.00	0.21	0.22	0.20	0.19
1.92	5.78	0.18	0.20	0.29	0.17
1.92	6.55	0.19	0.21	0.15	0.17
1.92	7.33	0.16	0.18	0.18	0.18
1.92	12.67	0.18	0.22	0.22	0.22
1.92	13.45	0.17	0.20	0.21	0.19
1.92	14.22	0.17	0.19	0.20	0.18
1.92	15.00	0.19	0.22	0.28	0.17
1.92	15.78	0.15	0.17	0.19	0.18
1.92	16.55	0.17	0.22	0.24	0.16
1.92	17.33	0.23	0.25	0.25	0.22
2.67	2.67	0.59	0.50	0.19	0.42
2.67	12.67	0.48	0.42	0.20	0.39
3.42	2.67	0.29	0.28	0.20	0.25
3.42	12.67	0.28	0.27	0.23	0.23
4.17	2.67	0.17	0.22	0.20	0.20
4.17	12.67	0.18	0.21	0.20	0.21
4.92	2.67	0.27	0.25	0.19	0.26

4.92	12.67	0.30	0.29	0.21	0.23
5.67	2.67	0.43	0.34	0.18	0.75
5.67	12.67	0.35	0.31	0.18	0.61
6.41	2.67	0.42	0.42	0.37	0.29
6.41	3.45	0.35	0.35	0.35	0.29
6.41	4.22	0.33	0.34	0.36	0.27
6.41	5.00	0.33	0.32	0.34	0.29
6.41	5.78	0.33	0.33	0.33	0.29
6.41	6.55	0.38	0.37	0.34	0.35
6.41	7.33	0.37	0.36	0.34	0.30
6.41	12.67	0.32	0.31	0.35	0.26
6.41	13.45	0.33	0.33	0.33	0.28
6.41	14.22	0.33	0.33	0.33	0.26
6.41	15.00	0.33	0.34	0.33	0.25
6.41	15.78	0.33	0.33	0.33	0.22
6.41	16.55	0.30	0.30	0.31	0.23
6.41	17.33	0.42	0.38	0.36	0.33
6.83	7.33	0.38	0.37	0.33	0.32
6.83	17.33	0.43	0.40	0.36	0.34
7.25	7.33	0.42	0.40	0.33	0.31
7.25	17.33	0.43	0.41	0.37	0.31
7.66	7.33	0.38	0.37	0.33	0.27
7.66	17.33	0.46	0.42	0.36	0.33
8.08	7.33	0.35	0.34	0.34	0.32
8.08	17.33	0.40	0.38	0.36	0.32
8.50	7.33	0.36	0.36	0.33	0.26
8.50	17.33	0.50	0.45	0.38	0.37
8.85	2.67	0.37	0.36	0.32	0.26
8.85	3.45	0.34	0.33	0.36	0.25
8.85	4.22	0.32	0.32	0.31	0.26
8.85	5.00	0.34	0.34	0.34	0.25
8.85	5.78	0.33	0.33	0.32	0.30
8.85	6.55	0.33	0.32	0.32	0.29
8.85	7.33	0.37	0.36	0.31	0.27
8.85	12.67	0.32	0.32	0.31	0.23
8.85	13.45	0.34	0.33	0.33	0.23
8.85	14.22	0.36	0.38	0.33	0.22
8.85	15.00	0.33	0.33	0.29	0.24
8.85	15.78	0.33	0.31	0.33	0.25
8.85	16.55	0.41	0.38	0.35	0.32
8.85	17.33	0.40	0.36	0.35	0.30
8.92	2.67	0.37	0.36	0.34	0.26
8.92	3.45	0.34	0.34	0.33	0.26
8.92	4.22	0.34	0.33	0.34	0.25
8.92	5.00	0.34	0.35	0.32	0.25
8.92	5.78	0.35	0.35	0.32	0.26
8.92	6.55	0.32	0.32	0.33	0.29
8.92	7.33	0.35	0.34	0.33	0.26
8.92	12.67	0.31	0.31	0.33	0.23
8.92	13.45	0.31	0.31	0.35	0.23
8.92	14.22	0.32	0.32	0.34	0.22
8.92	15.00	0.33	0.33	0.37	0.24
8.92	15.78	0.33	0.32	0.32	0.22
8.92	16.55	0.41	0.39	0.36	0.31
8.92	17.33	0.43	0.40	0.35	0.32
8.94	2.67	0.34	0.31	0.36	0.26
8.94	12.67	0.34	0.33	0.28	0.19
9.02	2.67	0.31	0.29	0.35	0.27
9.02	12.67	0.32	0.33	0.31	0.20

9.10	2.67	0.43	0.42	0.35	0.28
9.10	12.67	0.26	0.26	0.29	0.28
9.19	2.67	0.29	0.27	0.31	0.24
9.19	12.67	0.27	0.26	0.36	0.22
9.27	2.67	0.35	0.33	0.32	0.31
9.27	12.67	0.35	0.35	0.30	0.19
9.35	2.67	0.37	0.36	0.31	0.26
9.35	3.45	0.30	0.30	0.30	0.26
9.35	4.22	0.33	0.33	0.36	0.25
9.35	5.00	0.30	0.31	0.31	0.22
9.35	5.78	0.38	0.38	0.34	0.25
9.35	6.55	0.32	0.32	0.30	0.28
9.35	7.33	0.36	0.35	0.32	0.26
9.35	12.67	0.33	0.33	0.32	0.22
9.35	13.45	0.31	0.31	0.31	0.22
9.35	14.22	0.31	0.32	0.33	0.21
9.35	15.00	0.32	0.31	0.35	0.21
9.35	15.78	0.32	0.32	0.34	0.23
9.35	16.55	0.38	0.35	0.34	0.32
9.35	17.33	0.41	0.38	0.36	0.32
9.38	2.67	0.39	0.38	0.34	0.24
9.38	12.67	0.32	0.31	0.32	0.20
9.44	7.33	0.31	0.30	0.33	0.21
9.44	17.33	0.40	0.38	0.34	0.27
9.52	7.33	0.35	0.35	0.30	0.12
9.52	17.33	0.33	0.35	0.34	0.24
9.60	7.33	0.34	0.31	0.32	0.30
9.60	17.33	0.38	0.36	0.32	0.30
9.69	7.33	0.32	0.32	0.34	0.19
9.69	17.33	0.45	0.45	0.32	0.21
9.77	7.33	0.34	0.33	0.32	0.25
9.77	17.33	0.41	0.38	0.29	0.28
9.84	2.67	0.37	0.37	0.33	0.21
9.84	12.67	0.32	0.32	0.32	0.19
9.85	2.67	0.39	0.38	0.32	0.23
9.85	3.45	0.34	0.34	0.31	0.25
9.85	4.22	0.34	0.34	0.33	0.21
9.85	5.00	0.36	0.36	0.33	0.21
9.85	5.78	0.32	0.32	0.37	0.22
9.85	6.55	0.34	0.34	0.30	0.27
9.85	7.33	0.34	0.33	0.34	0.22
9.85	12.67	0.32	0.31	0.30	0.19
9.85	13.45	0.32	0.32	0.31	0.21
9.85	14.22	0.31	0.31	0.29	0.22
9.85	15.00	0.33	0.31	0.34	0.22
9.85	15.78	0.34	0.33	0.36	0.23
9.85	16.55	0.38	0.36	0.33	0.28
9.85	17.33	0.41	0.38	0.35	0.31
9.93	2.67	0.39	0.38	0.29	0.26
9.93	12.67	0.29	0.28	0.29	0.17
10.00	2.67	0.34	0.35	0.23	0.28
10.00	12.67	0.37	0.33	0.27	0.31
10.07	2.67	0.43	0.41	0.31	0.26
10.07	12.67	0.31	0.30	0.32	0.23
10.13	2.67	0.36	0.35	0.43	0.23
10.13	12.67	0.34	0.33	0.30	0.18
10.20	2.67	0.33	0.32	0.33	0.25
10.20	12.67	0.39	0.35	0.35	0.23
10.27	2.67	0.39	0.38	0.34	0.25

10.27	3.45	0.38	0.36	0.33	0.25
10.27	4.22	0.40	0.39	0.36	0.26
10.27	5.00	0.33	0.34	0.30	0.21
10.27	5.78	0.34	0.34	0.32	0.21
10.27	6.55	0.36	0.34	0.33	0.28
10.27	7.33	0.37	0.36	0.33	0.25
10.27	12.67	0.34	0.32	0.32	0.22
10.27	13.45	0.33	0.33	0.31	0.22
10.27	14.22	0.37	0.36	0.31	0.24
10.27	15.00	0.33	0.33	0.30	0.22
10.27	15.78	0.34	0.34	0.33	0.23
10.27	16.55	0.39	0.37	0.34	0.27
10.27	17.33	0.38	0.36	0.33	0.29
10.29	2.67	0.54	0.51	0.31	0.31
10.29	12.67	0.44	0.42	0.31	0.30
10.75	2.67	0.38	0.38	0.33	0.23
10.75	12.67	0.32	0.31	0.32	0.25
10.86	2.67	0.39	0.38	0.34	0.25
10.86	3.45	0.35	0.34	0.34	0.27
10.86	4.22	0.36	0.36	0.31	0.25
10.86	5.00	0.36	0.36	0.31	0.22
10.86	5.78	0.34	0.33	0.31	0.28
10.86	6.55	0.33	0.32	0.31	0.26
10.86	7.33	0.39	0.37	0.30	0.29
10.86	12.67	0.34	0.33	0.32	0.24
10.86	13.45	0.35	0.34	0.30	0.23
10.86	14.22	0.35	0.34	0.30	0.26
10.86	15.00	0.39	0.39	0.33	0.24
10.86	15.78	0.36	0.34	0.31	0.22
10.86	16.55	0.36	0.35	0.35	0.27
10.86	17.33	0.39	0.36	0.37	0.30
10.92	2.67	0.28	0.27	0.24	0.22
10.92	12.67	0.53	0.51	0.40	0.25
10.97	2.67	0.42	0.41	0.37	0.28
10.97	12.67	0.26	0.25	0.27	0.20
11.03	2.67	0.36	0.34	0.24	0.32
11.03	12.67	0.30	0.32	0.32	0.21
11.09	2.67	0.35	0.32	0.32	0.30
11.09	12.67	0.30	0.30	0.36	0.16
11.14	2.67	0.36	0.29	0.36	0.29
11.14	12.67	0.25	0.25	0.30	0.23
11.20	2.67	0.36	0.35	0.31	0.25
11.20	3.45	0.36	0.34	0.32	0.27
11.20	4.22	0.33	0.33	0.31	0.24
11.20	5.00	0.37	0.37	0.32	0.22
11.20	5.78	0.38	0.37	0.28	0.25
11.20	6.55	0.33	0.32	0.33	0.25
11.20	7.33	0.33	0.32	0.27	0.22
11.20	12.67	0.35	0.34	0.30	0.22
11.20	13.45	0.35	0.34	0.29	0.24
11.20	14.22	0.32	0.31	0.29	0.20
11.20	15.00	0.36	0.36	0.32	0.20
11.20	15.78	0.36	0.35	0.33	0.23
11.20	16.55	0.36	0.34	0.29	0.25
11.20	17.33	0.34	0.32	0.30	0.26
11.21	2.67	0.36	0.36	0.29	0.22
11.21	12.67	0.34	0.33	0.31	0.24
11.28	7.33	0.23	0.24	0.32	0.19
11.28	17.33	0.24	0.22	0.22	0.19

11.37	7.33	0.39	0.37	0.34	0.21
11.37	17.33	0.30	0.29	0.27	0.23
11.45	7.33	0.22	0.24	0.38	0.20
11.45	17.33	0.27	0.26	0.28	0.24
11.53	7.33	0.34	0.31	0.21	0.32
11.53	17.33	0.32	0.28	0.23	0.24
11.62	7.33	0.28	0.27	0.26	0.29
11.62	17.33	0.33	0.28	0.29	0.31
11.67	2.67	0.35	0.35	0.30	0.23
11.67	3.45	0.36	0.36	0.31	0.25
11.67	4.22	0.41	0.40	0.32	0.24
11.67	5.00	0.38	0.37	0.33	0.24
11.67	5.78	0.37	0.36	0.33	0.25
11.67	6.55	0.39	0.37	0.34	0.27
11.67	7.33	0.37	0.35	0.31	0.26
11.67	12.67	0.35	0.34	0.32	0.23
11.67	13.45	0.37	0.36	0.32	0.24
11.67	14.22	0.38	0.37	0.29	0.22
11.67	15.00	0.36	0.36	0.31	0.21
11.67	15.78	0.37	0.36	0.33	0.25
11.67	16.55	0.36	0.34	0.31	0.28
11.67	17.33	0.38	0.36	0.33	0.27
11.70	2.67	0.37	0.36	0.31	0.25
11.70	3.45	0.41	0.39	0.30	0.29
11.70	4.22	0.40	0.39	0.31	0.27
11.70	5.00	0.40	0.40	0.33	0.22
11.70	5.78	0.37	0.37	0.32	0.24
11.70	6.55	0.33	0.32	0.30	0.23
11.70	7.33	0.37	0.36	0.32	0.28
11.70	12.67	0.36	0.34	0.32	0.23
11.70	13.45	0.37	0.36	0.29	0.26
11.70	14.22	0.36	0.36	0.29	0.23
11.70	15.00	0.34	0.34	0.31	0.22
11.70	15.78	0.36	0.33	0.33	0.26
11.70	16.55	0.36	0.33	0.34	0.24
11.70	17.33	0.37	0.35	0.31	0.24
12.09	7.33	0.39	0.35	0.30	0.29
12.09	17.33	0.41	0.39	0.33	0.25
12.50	7.33	0.33	0.32	0.30	0.26
12.50	17.33	0.39	0.34	0.32	0.27
12.92	7.33	0.32	0.32	0.29	0.24
12.92	17.33	0.36	0.33	0.34	0.24
13.34	7.33	0.33	0.32	0.29	0.24
13.34	17.33	0.34	0.29	0.36	0.27
13.75	7.33	0.40	0.38	0.30	0.26
13.75	17.33	0.36	0.34	0.31	0.22
14.22	2.67	0.37	0.36	0.30	0.24
14.22	3.45	0.35	0.33	0.32	0.24
14.22	4.22	0.35	0.34	0.31	0.22
14.22	5.00	0.37	0.36	0.32	0.22
14.22	5.78	0.37	0.36	0.32	0.21
14.22	6.55	0.35	0.34	0.30	0.23
14.22	7.33	0.35	0.34	0.30	0.23
14.22	12.67	0.32	0.30	0.29	0.21
14.22	13.45	0.30	0.29	0.28	0.19
14.22	14.22	0.35	0.33	0.30	0.20
14.22	15.00	0.41	0.37	0.32	0.28
14.22	15.78	0.37	0.33	0.33	0.27
14.22	16.55	0.39	0.35	0.36	0.25

14.22	17.33	0.35	0.33	0.33	0.24
14.68	2.67	0.36	0.36	0.28	0.23
14.68	12.67	0.32	0.31	0.28	0.22
15.15	2.67	0.31	0.31	0.28	0.22
15.15	12.67	0.31	0.31	0.28	0.19
15.61	2.67	0.32	0.33	0.30	0.21
15.61	12.67	0.31	0.30	0.29	0.21
16.07	2.67	0.30	0.30	0.28	0.23
16.07	12.67	0.28	0.27	0.24	0.18
16.54	2.67	0.34	0.33	0.27	0.20
16.54	12.67	0.30	0.30	0.27	0.19
16.99	2.67	0.33	0.32	0.27	0.21
16.99	3.45	0.34	0.34	0.29	0.22
16.99	4.22	0.31	0.30	0.27	0.20
16.99	5.00	0.34	0.33	0.30	0.19
16.99	5.78	0.39	0.38	0.29	0.21
16.99	6.55	0.34	0.33	0.28	0.19
16.99	7.33	0.32	0.32	0.26	0.21
16.99	12.67	0.29	0.28	0.26	0.19
16.99	13.45	0.31	0.29	0.28	0.19
16.99	14.22	0.31	0.32	0.28	0.19
16.99	15.00	0.30	0.30	0.29	0.21
16.99	15.78	0.31	0.30	0.29	0.23
16.99	16.55	0.32	0.32	0.31	0.25
16.99	17.33	0.32	0.32	0.32	0.26
17.41	7.33	0.33	0.35	0.29	0.18
17.41	17.33	0.34	0.31	0.30	0.29
17.83	7.33	0.27	0.28	0.26	0.18
17.83	17.33	0.28	0.31	0.29	0.23
18.24	7.33	0.33	0.33	0.27	0.20
18.24	17.33	0.28	0.32	0.30	0.28
18.66	7.33	0.23	0.25	0.29	0.20
18.66	17.33	0.26	0.31	0.31	0.25
19.08	7.33	0.34	0.36	0.25	0.19
19.08	17.33	0.39	0.38	0.29	0.23
19.47	2.67	0.33	0.33	0.27	0.22
19.47	3.45	0.33	0.32	0.27	0.20
19.47	4.22	0.32	0.31	0.26	0.19
19.47	5.00	0.34	0.35	0.28	0.19
19.47	5.78	0.35	0.35	0.25	0.20
19.47	6.55	0.30	0.30	0.26	0.20
19.47	7.33	0.31	0.31	0.26	0.20
19.47	12.67	0.29	0.28	0.26	0.18
19.47	13.45	0.31	0.31	0.26	0.16
19.47	14.22	0.31	0.32	0.28	0.18
19.47	15.00	0.27	0.28	0.29	0.18
19.47	15.78	0.28	0.28	0.27	0.18
19.47	16.55	0.31	0.29	0.29	0.24
19.47	17.33	0.32	0.32	0.31	0.24
19.95	2.67	0.46	0.41	0.30	0.34
19.95	12.67	0.45	0.40	0.28	0.32
20.42	2.67	0.24	0.28	0.29	0.20
20.42	12.67	0.23	0.28	0.29	0.18
20.90	2.67	0.24	0.28	0.30	0.20
20.90	12.67	0.21	0.27	0.29	0.18
21.38	2.67	0.25	0.30	0.28	0.20
21.38	12.67	0.22	0.27	0.28	0.16
21.85	2.67	0.26	0.31	0.27	0.22
21.85	12.67	0.26	0.30	0.30	0.19

22.37	2.67	0.26	0.29	0.29	0.21
22.37	3.45	0.25	0.29	0.31	0.23
22.37	4.22	0.26	0.29	0.31	0.19
22.37	5.00	0.27	0.32	0.34	0.18
22.37	5.78	0.26	0.29	0.30	0.20
22.37	6.55	0.25	0.29	0.28	0.22
22.37	7.33	0.24	0.28	0.27	0.21
22.37	12.67	0.23	0.27	0.28	0.18
22.37	13.45	0.22	0.25	0.30	0.17
22.37	14.22	0.24	0.28	0.27	0.17
22.37	15.00	0.23	0.28	0.27	0.17
22.37	15.78	0.22	0.25	0.29	0.19
22.37	16.55	0.23	0.27	0.29	0.23
22.37	17.33	0.23	0.27	0.28	0.22
22.78	7.33	0.21	0.27	0.27	0.20
22.78	17.33	0.23	0.27	0.28	0.22
23.19	7.33	0.23	0.28	0.28	0.19
23.19	17.33	0.23	0.26	0.27	0.21
23.60	7.33	0.23	0.27	0.27	0.19
23.60	17.33	0.22	0.25	0.28	0.20
24.01	7.33	0.22	0.26	0.28	0.19
24.01	17.33	0.24	0.27	0.28	0.21
24.42	7.33	0.29	0.33	0.28	0.22
24.42	17.33	0.27	0.33	0.30	0.22
24.97	2.67	0.24	0.27	0.28	0.21
24.97	3.45	0.23	0.29	0.28	0.19
24.97	4.22	0.23	0.27	0.29	0.20
24.97	5.00	0.25	0.30	0.31	0.20
24.97	5.78	0.26	0.33	0.28	0.21
24.97	6.55	0.23	0.29	0.30	0.23
24.97	7.33	0.22	0.27	0.28	0.21
24.97	12.67	0.23	0.26	0.28	0.18
24.97	13.45	0.22	0.26	0.30	0.19
24.97	14.22	0.20	0.25	0.27	0.17
24.97	15.00	0.23	0.27	0.27	0.20
24.97	15.78	0.21	0.26	0.26	0.19
24.97	16.55	0.22	0.28	0.28	0.20
24.97	17.33	0.22	0.27	0.29	0.19
25.42	2.67	0.24	0.29	0.29	0.22
25.42	12.67	0.22	0.27	0.27	0.20
25.87	2.67	0.19	0.26	0.28	0.18
25.87	12.67	0.20	0.26	0.26	0.17
26.32	2.67	0.31	0.28	0.28	0.36
26.32	12.67	0.28	0.32	0.30	0.41
26.77	2.67	0.26	0.35	0.25	0.22
26.77	12.67	0.26	0.31	0.28	0.24
27.22	2.67	0.19	0.25	0.27	0.15
27.22	12.67	0.20	0.27	0.30	0.16
27.67	2.67	0.22	0.29	0.29	0.19
27.67	3.45	0.26	0.35	0.36	0.19
27.67	4.22	0.25	0.35	0.36	0.18
27.67	5.00	0.26	0.35	0.39	0.19
27.67	5.78	0.26	0.35	0.35	0.20
27.67	6.55	0.25	0.33	0.35	0.20
27.67	7.33	0.22	0.29	0.31	0.20
27.67	12.67	0.23	0.28	0.29	0.20
27.67	13.45	0.23	0.28	0.32	0.20
27.67	14.22	0.25	0.33	0.33	0.18
27.67	15.00	0.25	0.34	0.31	0.19

27.67	15.78	0.24	0.31	0.34	0.18
27.67	16.55	0.25	0.34	0.34	0.19
27.67	17.33	0.23	0.32	0.30	0.19
28.07	7.33	0.25	0.28	0.30	0.22
28.07	17.33	0.27	0.38	0.29	0.20
28.47	7.33	0.27	0.29	0.27	0.21
28.47	17.33	0.26	0.30	0.27	0.25
28.88	7.33	0.23	0.28	0.30	0.22
28.88	17.33	0.26	0.32	0.29	0.24
29.28	7.33	0.22	0.31	0.27	0.17
29.28	17.33	0.23	0.30	0.32	0.21
29.68	7.33	0.24	0.35	0.24	0.14
29.68	17.33	0.26	0.37	0.33	0.17
30.10	2.67	0.19	0.24	0.21	0.16
30.10	3.45	0.19	0.24	0.21	0.15
30.10	4.22	0.18	0.23	0.23	0.15
30.10	5.00	0.19	0.26	0.23	0.16
30.10	5.78	0.19	0.26	0.21	0.15
30.10	6.55	0.18	0.23	0.22	0.14
30.10	7.33	0.19	0.24	0.22	0.15
30.10	12.67	0.20	0.24	0.22	0.16
30.10	13.45	0.19	0.23	0.21	0.15
30.10	14.22	0.20	0.25	0.24	0.16
30.10	15.00	0.18	0.25	0.28	0.14
30.10	15.78	0.20	0.23	0.24	0.14
30.10	16.55	0.20	0.24	0.24	0.16
30.10	17.33	0.21	0.26	0.24	0.17
30.11	2.67	0.22	0.30	0.26	0.16
30.11	3.45	0.24	0.32	0.28	0.17
30.11	4.22	0.19	0.27	0.25	0.15
30.11	5.00	0.22	0.31	0.29	0.17
30.11	5.78	0.22	0.32	0.31	0.16
30.11	6.55	0.23	0.32	0.28	0.16
30.11	7.33	0.14	0.16	0.11	0.10
30.11	12.67	0.23	0.28	0.25	0.19
30.11	13.45	0.23	0.30	0.27	0.18
30.11	14.22	0.22	0.28	0.28	0.18
30.11	15.00	0.23	0.30	0.28	0.18
30.11	15.78	0.24	0.34	0.28	0.16
30.11	16.55	0.25	0.30	0.28	0.17
30.11	17.33	0.11	0.12	0.10	0.09
30.20	7.33	0.14	0.18	0.12	0.07
30.20	17.33	0.08	0.12	0.10	0.09
30.29	7.33	0.12	0.14	0.13	0.08
30.29	17.33	0.11	0.07	0.12	0.10
30.38	7.33	0.07	0.14	0.10	0.06
30.38	17.33	0.16	0.15	0.08	0.09
30.46	7.33	0.10	0.08	0.10	0.10
30.46	17.33	0.10	0.08	0.13	0.09
30.55	7.33	0.12	0.10	0.09	0.10
30.55	17.33	0.13	0.16	0.06	0.08
30.64	2.67	0.09	0.12	0.11	0.06
30.64	3.45	0.10	0.14	0.09	0.08
30.64	4.22	0.09	0.10	0.11	0.08
30.64	5.00	0.10	0.16	0.15	0.08
30.64	5.78	0.12	0.17	0.15	0.09
30.64	6.55	0.11	0.13	0.09	0.10
30.64	7.33	0.11	0.13	0.10	0.09
30.64	12.67	0.10	0.12	0.12	0.09

30.64	13.45	0.12	0.13	0.09	0.09
30.64	14.22	0.11	0.14	0.14	0.09
30.64	15.00	0.10	0.11	0.18	0.09
30.64	15.78	0.11	0.10	0.12	0.10
30.64	16.55	0.12	0.12	0.10	0.11
30.64	17.33	0.14	0.14	0.10	0.09
30.69	2.67	0.11	0.13	0.05	0.09
30.69	12.67	0.12	0.13	0.11	0.08
30.78	2.67	0.11	0.10	0.11	0.08
30.78	12.67	0.10	0.12	0.11	0.08
30.86	2.67	0.14	0.08	0.11	0.17
30.86	12.67	0.20	0.15	0.13	0.25
30.94	2.67	0.05	0.08	0.09	0.05
30.94	12.67	0.10	0.10	0.06	0.08
31.03	2.67	0.06	0.11	0.07	0.03
31.03	12.67	0.06	0.19	0.11	0.11
31.11	2.67	0.09	0.11	0.12	0.08
31.11	3.45	0.09	0.13	0.13	0.07
31.11	4.22	0.09	0.11	0.12	0.09
31.11	5.00	0.10	0.16	0.17	0.09
31.11	5.78	0.10	0.16	0.13	0.08
31.11	6.55	0.12	0.16	0.12	0.09
31.11	7.33	0.11	0.17	0.12	0.08
31.11	12.67	0.10	0.14	0.10	0.09
31.11	13.45	0.11	0.14	0.12	0.10
31.11	14.22	0.11	0.20	0.14	0.08
31.11	15.00	0.11	0.17	0.12	0.08
31.11	15.78	0.09	0.09	0.11	0.08
31.11	16.55	0.09	0.10	0.11	0.09
31.11	17.33	0.09	0.10	0.11	0.08
31.19	7.33	0.14	0.16	0.23	0.13
31.19	17.33	0.06	0.08	0.08	0.04
31.28	7.33	0.07	0.10	0.07	0.05
31.28	17.33	0.06	0.11	0.06	0.09
31.36	7.33	0.15	0.20	0.08	0.14
31.36	17.33	0.18	0.12	0.09	0.15
31.44	7.33	0.10	0.17	0.09	0.14
31.44	17.33	0.12	0.05	0.10	0.12
31.53	7.33	0.12	0.21	0.15	0.15
31.53	17.33	0.15	0.14	0.13	0.17
31.61	2.67	0.10	0.11	0.12	0.08
31.61	3.45	0.09	0.12	0.11	0.07
31.61	4.22	0.07	0.10	0.10	0.07
31.61	5.00	0.10	0.15	0.20	0.09
31.61	5.78	0.09	0.16	0.14	0.09
31.61	6.55	0.10	0.15	0.13	0.10
31.61	7.33	0.09	0.14	0.12	0.08
31.61	12.67	0.10	0.14	0.12	0.09
31.61	13.45	0.09	0.17	0.16	0.09
31.61	14.22	0.11	0.14	0.14	0.09
31.61	15.00	0.12	0.17	0.13	0.08
31.61	15.78	0.11	0.11	0.11	0.09
31.61	16.55	0.11	0.13	0.11	0.08
31.61	17.33	0.09	0.12	0.10	0.08
31.67	2.67	0.11	0.12	0.12	0.07
31.67	12.67	0.13	0.12	0.15	0.10
31.72	2.67	0.09	0.10	0.09	0.09
31.72	12.67	0.12	0.15	0.13	0.10
31.78	2.67	0.16	0.20	0.10	0.08

31.78	12.67	0.14	0.16	0.11	0.11
31.84	2.67	0.12	0.15	0.07	0.07
31.84	12.67	0.13	0.13	0.14	0.15
31.89	2.67	0.11	0.15	0.09	0.09
31.89	12.67	0.07	0.14	0.13	0.07
31.95	2.67	0.10	0.11	0.11	0.08
31.95	3.45	0.09	0.15	0.17	0.09
31.95	4.22	0.09	0.11	0.11	0.08
31.95	5.00	0.10	0.14	0.10	0.07
31.95	5.78	0.11	0.18	0.25	0.08
31.95	6.55	0.13	0.14	0.14	0.10
31.95	7.33	0.09	0.15	0.12	0.09
31.95	12.67	0.10	0.13	0.13	0.09
31.95	13.45	0.11	0.14	0.14	0.10
31.95	14.22	0.11	0.17	0.13	0.08
31.95	15.00	0.09	0.13	0.17	0.09
31.95	15.78	0.18	0.24	0.15	0.10
31.95	16.55	0.10	0.12	0.12	0.10
31.95	17.33	0.11	0.14	0.11	0.09
32.02	7.33	0.13	0.18	0.10	0.11
32.02	17.33	0.12	0.15	0.10	0.05
32.10	7.33	0.14	0.15	0.15	0.10
32.10	17.33	0.12	0.12	0.06	0.08
32.18	7.33	0.08	0.15	0.15	0.05
32.18	17.33	0.11	0.14	0.15	0.07
32.25	7.33	0.08	0.14	0.11	0.10
32.25	17.33	0.11	0.09	0.12	0.09
32.33	7.33	0.09	0.10	0.13	0.10
32.33	17.33	0.08	0.10	0.11	0.06
32.41	2.67	0.10	0.13	0.10	0.08
32.41	3.45	0.08	0.11	0.10	0.07
32.41	4.22	0.11	0.14	0.13	0.09
32.41	5.00	0.09	0.12	0.15	0.08
32.41	5.78	0.17	0.26	0.18	0.08
32.41	6.55	0.11	0.19	0.15	0.08
32.41	7.33	0.10	0.14	0.12	0.09
32.41	12.67	0.09	0.13	0.11	0.09
32.41	13.45	0.10	0.13	0.13	0.09
32.41	14.22	0.10	0.13	0.14	0.09
32.41	15.00	0.14	0.25	0.16	0.09
32.41	15.78	0.13	0.18	0.26	0.08
32.41	16.55	0.10	0.11	0.15	0.09
32.41	17.33	0.10	0.13	0.10	0.10
32.48	2.67	0.03	0.07	0.05	0.07
32.48	12.67	0.06	0.20	0.13	0.12
32.56	2.67	0.08	0.05	0.05	0.07
32.56	12.67	0.08	0.11	0.03	0.02
32.64	2.67	0.10	0.10	0.03	0.08
32.64	12.67	0.06	0.11	0.06	0.16
32.71	2.67	0.00	0.13	0.06	0.09
32.71	12.67	0.03	0.01	0.04	0.03
32.79	2.67	0.01	0.08	0.08	0.06
32.79	12.67	0.08	0.01	0.02	0.10
32.87	2.67	0.09	0.12	0.11	0.08
32.87	3.45	0.09	0.11	0.16	0.09
32.87	4.22	0.08	0.12	0.11	0.07
32.87	5.00	0.11	0.19	0.15	0.07
32.87	5.78	0.10	0.19	0.11	0.07
32.87	6.55	0.09	0.14	0.13	0.08

32.87	7.33	0.10	0.13	0.12	0.09
32.87	12.67	0.10	0.15	0.13	0.08
32.87	13.45	0.10	0.12	0.15	0.10
32.87	14.22	0.10	0.19	0.15	0.08
32.87	15.00	0.11	0.19	0.19	0.08
32.87	15.78	0.08	0.15	0.14	0.06
32.87	16.55	0.09	0.12	0.13	0.08
32.87	17.33	0.08	0.11	0.10	0.07
32.95	2.67	0.08	0.13	0.11	0.07
32.95	3.45	0.09	0.12	0.11	0.09
32.95	4.22	0.08	0.13	0.15	0.07
32.95	5.00	0.11	0.17	0.23	0.08
32.95	5.78	0.09	0.13	0.13	0.07
32.95	6.55	0.11	0.14	0.14	0.09
32.95	7.33	0.11	0.16	0.13	0.09
32.95	12.67	0.10	0.15	0.11	0.09
32.95	13.45	0.10	0.16	0.15	0.10
32.95	14.22	0.09	0.19	0.16	0.06
32.95	15.00	0.12	0.23	0.12	0.08
32.95	15.78	0.10	0.13	0.13	0.08
32.95	16.55	0.12	0.14	0.13	0.09
32.95	17.33	0.10	0.13	0.11	0.08
33.31	7.33	0.11	0.14	0.13	0.09
33.31	17.33	0.11	0.14	0.13	0.07
33.66	7.33	0.51	0.28	0.19	0.63
33.66	17.33	0.50	0.32	0.16	0.63
34.02	7.33	0.09	0.18	0.13	0.09
34.02	17.33	0.08	0.14	0.12	0.08
34.37	7.33	0.07	0.14	0.14	0.06
34.37	17.33	0.08	0.15	0.17	0.10
34.73	7.33	0.08	0.15	0.12	0.07
34.73	17.33	0.08	0.17	0.12	0.11
35.08	2.67	0.16	0.33	0.34	0.16
35.08	3.45	0.17	0.37	0.38	0.17
35.08	4.22	0.17	0.36	0.36	0.16
35.08	5.00	0.19	0.40	0.39	0.17
35.08	5.78	0.19	0.41	0.36	0.18
35.08	6.55	0.19	0.40	0.39	0.17
35.08	7.33	0.19	0.41	0.41	0.19
35.08	12.67	0.17	0.34	0.33	0.18
35.08	13.45	0.15	0.32	0.33	0.17
35.08	14.22	0.16	0.33	0.35	0.17
35.08	15.00	0.15	0.30	0.34	0.15
35.08	15.78	0.16	0.34	0.34	0.16
35.08	16.55	0.18	0.35	0.35	0.17
35.08	17.33	0.19	0.36	0.36	0.19
35.21	2.67	0.16	0.33	0.31	0.16
35.21	12.67	0.16	0.30	0.32	0.16
35.35	2.67	0.15	0.35	0.30	0.15
35.35	12.67	0.16	0.31	0.31	0.16
35.49	2.67	0.16	0.36	0.31	0.15
35.49	12.67	0.16	0.32	0.31	0.16
35.62	2.67	0.15	0.33	0.31	0.15
35.62	12.67	0.16	0.30	0.32	0.16
35.76	2.67	0.14	0.33	0.31	0.14
35.76	12.67	0.15	0.30	0.32	0.15
35.89	2.67	0.14	0.35	0.32	0.14
35.89	3.45	0.14	0.35	0.37	0.14
35.89	4.22	0.14	0.33	0.36	0.14

35.89	5.00	0.14	0.34	0.33	0.14
35.89	5.78	0.16	0.38	0.34	0.16
35.89	6.55	0.16	0.37	0.35	0.16
35.89	7.33	0.16	0.39	0.32	0.16
35.89	12.67	0.16	0.36	0.34	0.16
35.89	13.45	0.15	0.36	0.37	0.15
35.89	14.22	0.15	0.35	0.36	0.16
35.89	15.00	0.16	0.35	0.33	0.16
35.89	15.78	0.15	0.36	0.33	0.16
35.89	16.55	0.17	0.37	0.37	0.17
35.89	17.33	0.16	0.39	0.35	0.17

Appendix D

X, Y, and Z Vector Velocities at 138 MW Turbine Load

Appendix D

X, Y, and Z Vector Velocities at 138 MW Turbine Load

The table in this appendix lists X, Y, and Z vector velocities (ft/sec) for flow data collected at locations along the bar screen surface of the ESBS at 138 MW turbine load. Mean, minimum, and maximum vector velocities and standard error are provided for each sample location.

Location (ft.)		X Vector (ft/sec)				Y Vector (ft/sec)				Z Vector (ft/sec)			
Vertical	Horizontal	Mean	Min	Max	Stderr	Mean	Min	Max	Stderr	Mean	Min	Max	Stderr
0.03	2.67	5.34	3.08	7.40	0.02000	0.31	-2.11	2.75	0.02000	-3.94	-5.31	-2.53	0.01000
0.03	3.45	5.13	4.41	5.97	0.03083	0.23	-0.30	0.81	0.02254	-4.07	-4.69	-3.44	0.02578
0.03	4.22	4.47	3.88	5.09	0.02481	0.76	-0.06	1.29	0.02577	-4.09	-4.63	-3.41	0.02951
0.03	5.00	4.38	3.88	5.32	0.02804	0.53	-0.32	1.44	0.03144	-3.33	-4.07	-2.65	0.02767
0.03	5.78	5.10	4.25	5.99	0.03182	-0.06	-0.66	0.54	0.01903	-3.34	-3.92	-2.80	0.02182
0.03	6.55	5.36	4.83	6.17	0.02396	-0.10	-0.53	0.48	0.01842	-3.62	-4.14	-2.93	0.02020
0.03	7.33	5.48	5.04	6.05	0.03000	-0.06	-0.54	0.42	0.02000	-3.71	-4.31	-3.08	0.03000
0.03	12.67	5.56	4.05	6.98	0.01000	0.95	-0.70	2.39	0.01000	-3.79	-4.96	-2.52	0.01000
0.03	13.45	5.56	4.89	6.63	0.02514	0.97	0.15	1.77	0.02179	-3.52	-4.07	-2.72	0.02731
0.03	14.22	4.97	4.17	5.95	0.03845	0.65	-0.40	1.36	0.03039	-3.17	-3.83	-2.54	0.02444
0.03	15.00	4.47	3.94	5.03	0.02172	-0.23	-0.71	0.58	0.02467	-3.75	-4.55	-2.98	0.03502
0.03	15.78	4.84	3.88	5.72	0.03490	0.37	-0.62	1.31	0.04168	-4.34	-4.92	-3.67	0.02410
0.03	16.55	5.51	4.85	6.53	0.03362	0.85	-0.02	1.76	0.02848	-3.84	-4.49	-3.12	0.02888
0.03	17.33	5.61	4.52	6.49	0.04000	0.81	-0.80	1.52	0.04000	-3.91	-4.80	-3.30	0.04000
0.35	2.67	5.38	3.72	6.99	0.03146	0.32	-0.96	1.98	0.03091	-4.07	-5.23	-2.79	0.02169
0.35	12.67	5.65	4.34	6.97	0.02603	1.07	-0.09	2.00	0.02332	-3.82	-5.17	-2.74	0.02321
0.66	2.67	5.38	3.24	6.93	0.02993	0.34	-0.98	1.99	0.02778	-4.02	-5.22	-2.97	0.02194
0.66	12.67	5.57	4.11	6.96	0.02826	0.95	-0.13	1.99	0.02323	-3.89	-4.97	-2.76	0.02235
0.98	2.67	5.54	3.73	6.94	0.02897	0.23	-0.99	1.98	0.02893	-3.99	-5.24	-2.64	0.02440
0.98	12.67	5.61	4.04	6.98	0.02665	0.95	-0.11	1.98	0.02288	-3.88	-4.87	-2.35	0.02133
1.29	2.67	5.02	2.71	6.96	0.04012	0.37	-0.98	1.91	0.02832	-3.86	-5.44	-2.54	0.02559
1.29	12.67	5.23	3.24	6.98	0.03357	0.95	-0.06	1.99	0.02363	-3.70	-4.84	-2.37	0.02504
1.61	2.67	3.41	2.01	5.07	0.02636	0.14	-0.99	1.89	0.02523	-1.99	-4.23	-0.72	0.04077
1.61	12.67	3.54	2.28	5.35	0.02676	0.62	-0.15	1.96	0.02059	-1.99	-3.87	-0.83	0.03472
1.96	2.67	3.33	2.04	4.46	0.01482	0.17	-0.74	1.59	0.01572	-1.57	-2.30	-0.63	0.01072
1.96	3.45	3.26	1.66	4.97	0.01176	0.15	-0.99	1.92	0.01315	-1.61	-2.59	-0.59	0.00898
1.96	4.22	3.22	1.47	4.86	0.01346	0.32	-1.00	1.95	0.01426	-1.71	-2.58	-0.90	0.00811
1.96	5.00	3.12	1.30	4.62	0.01258	0.55	-0.96	1.97	0.01352	-1.41	-2.36	-0.43	0.00933
1.96	5.78	3.23	1.82	4.75	0.01246	0.25	-1.00	1.77	0.01271	-1.18	-2.17	-0.34	0.00919
1.96	6.55	3.37	1.86	4.65	0.01137	0.19	-0.90	1.83	0.01233	-1.20	-1.98	-0.35	0.00855
1.96	7.33	3.38	2.04	4.36	0.01348	0.17	-0.87	1.60	0.01404	-1.21	-1.90	-0.51	0.00984
1.96	12.67	3.33	2.22	4.43	0.01287	0.58	-0.72	1.59	0.01378	-1.56	-2.41	-0.62	0.01089
1.96	13.45	3.37	1.78	4.61	0.01114	0.54	-0.83	1.99	0.01215	-1.50	-2.55	-0.45	0.00956
1.96	14.22	3.47	2.23	4.94	0.01172	0.60	-0.94	1.87	0.01214	-1.32	-2.26	-0.32	0.00988
1.96	15.00	3.14	1.91	4.80	0.01135	0.32	-0.89	1.82	0.01325	-1.32	-2.21	-0.40	0.00913
1.96	15.78	3.07	1.88	4.41	0.01102	0.38	-0.89	1.90	0.01367	-1.54	-2.29	-0.42	0.00768
1.96	16.55	2.98	1.68	4.42	0.01305	0.77	-0.86	1.99	0.01428	-1.40	-2.40	-0.29	0.01079
1.96	17.33	3.10	2.04	4.21	0.01415	0.84	-0.81	1.86	0.01663	-1.28	-2.00	-0.51	0.01121
6.41	2.67	2.69	1.51	3.85	0.00954	0.23	-0.50	1.42	0.00956	-0.09	-0.60	0.65	0.00564
6.41	3.45	2.65	1.06	3.80	0.01327	0.14	-0.94	1.84	0.01343	-0.17	-0.81	0.49	0.00795
6.41	4.22	2.69	1.20	3.84	0.01388	0.30	-0.79	1.92	0.01423	-0.30	-0.96	0.47	0.00799
6.41	5.00	2.41	1.05	3.93	0.01404	0.50	-0.61	1.82	0.01331	-0.30	-0.88	0.60	0.00820
6.41	5.78	2.50	1.05	3.85	0.01472	0.28	-0.94	1.43	0.01349	-0.10	-0.94	0.83	0.01120
6.41	6.55	2.83	1.05	3.95	0.01313	0.44	-0.80	1.65	0.01241	0.17	-0.59	0.95	0.01014
6.41	7.33	2.90	1.58	3.97	0.00957	0.42	-0.50	1.57	0.00962	0.31	-0.70	1.34	0.00781

6.41	12.67	2.88	1.78	3.97	0.00858	0.62	-0.41	1.50	0.00810	0.32	-0.44	0.99	0.00613
6.41	13.45	2.91	1.78	3.88	0.01268	0.66	-0.46	1.94	0.01176	0.45	-0.41	1.22	0.00979
6.41	14.22	2.89	1.87	3.92	0.01320	0.79	-0.39	1.79	0.01204	0.56	-0.40	1.21	0.00901
6.41	15.00	2.33	1.14	3.62	0.01322	0.48	-0.60	1.42	0.01180	0.42	-0.22	1.21	0.00943
6.41	15.78	2.46	1.16	3.81	0.01224	0.48	-0.85	1.58	0.01185	0.38	-0.48	1.17	0.00883
6.41	16.55	2.49	1.35	3.94	0.01332	0.72	-0.66	1.88	0.01397	0.60	-0.23	1.54	0.01006

Appendix E

Spherical Coordinates for Flow Data at 138 MW Turbine Load

Appendix E

Spherical Coordinates for Flow Data at 138 MW Turbine Load

The table in this appendix lists spherical coordinates for flow data collected at locations along the bar screen surface of the ESBS at 138 MW turbine load, where Rho is the magnitude flow velocity (ft/sec) and phi and theta are angles of the flow.

Location (ft.)		Rho (magnitude velocity)				Phi				Theta			
Vertical	Horizontal	Mean	Min	Max	Stderr	Mean	Min	Max	Stderr	Mean	Min	Max	Stderr
0.03	2.67	6.71	4.77	8.39	0.01056	126.35	109.34	145.34	0.12098	3.42	-30.04	39.67	0.18516
0.03	3.45	6.57	6.26	6.97	0.01336	128.37	121.08	135.68	0.32612	2.59	-3.35	10.07	0.26309
0.03	4.22	6.12	5.47	6.59	0.02503	131.95	124.51	138.51	0.27067	9.61	-0.63	15.82	0.33138
0.03	5.00	5.55	5.16	6.05	0.01697	127.01	118.43	134.90	0.36213	6.91	-3.92	18.57	0.40743
0.03	5.78	6.11	5.48	6.75	0.02404	123.25	116.44	130.88	0.28331	-0.62	-7.03	5.84	0.21362
0.03	6.55	6.48	6.05	6.83	0.01323	124.06	115.43	129.96	0.24938	-1.08	-6.03	5.63	0.20016
0.03	7.33	6.63	6.33	7.01	0.01466	124.10	117.34	130.17	0.29600	-0.66	-5.57	4.61	0.22845
0.03	12.67	6.85	5.54	8.13	0.00726	123.91	109.94	137.71	0.09656	9.62	-9.32	28.94	0.10155
0.03	13.45	6.67	6.28	7.49	0.01660	121.97	113.46	129.21	0.29038	9.87	1.58	15.59	0.21103
0.03	14.22	5.95	5.32	6.59	0.02973	122.41	113.01	131.63	0.34581	7.37	-4.66	14.96	0.32994
0.03	15.00	5.85	5.29	6.52	0.02629	129.87	121.93	138.30	0.30905	-2.97	-9.46	7.87	0.32169
0.03	15.78	6.54	6.12	7.13	0.01749	131.73	123.28	141.63	0.35375	4.15	-7.72	14.12	0.47316
0.03	16.55	6.79	6.34	7.36	0.01897	124.64	115.97	131.55	0.35150	8.66	-0.26	16.49	0.26701
0.03	17.33	6.91	6.33	7.51	0.02356	124.63	116.36	135.83	0.42590	8.10	-10.01	13.77	0.37454
0.35	2.67	6.80	5.62	7.90	0.02396	127.05	113.75	138.50	0.24231	3.45	-11.14	25.81	0.34527
0.35	12.67	6.94	5.80	7.88	0.01821	123.63	111.96	136.14	0.24832	10.67	-0.86	20.53	0.22766
0.66	2.67	6.77	5.47	8.00	0.02171	126.72	114.45	143.58	0.25315	3.61	-13.19	26.64	0.30622
0.66	12.67	6.90	5.66	8.24	0.02075	124.56	111.94	136.39	0.24550	9.69	-1.66	21.40	0.23507
0.98	2.67	6.88	5.52	8.27	0.02167	125.67	112.40	138.14	0.25488	2.41	-10.78	27.82	0.30891
0.98	12.67	6.92	5.85	8.08	0.01899	124.28	110.49	136.37	0.23929	9.56	-1.32	21.78	0.22561
1.29	2.67	6.40	4.20	7.86	0.03262	127.60	112.87	146.65	0.30482	4.36	-10.39	28.61	0.33729
1.29	12.67	6.52	4.76	7.89	0.02909	124.90	108.49	142.39	0.27072	10.32	-0.74	23.80	0.25167
1.61	2.67	4.04	2.75	6.24	0.03322	119.26	101.29	148.16	0.48742	2.36	-24.10	38.20	0.43633
1.61	12.67	4.16	2.67	6.06	0.03497	118.42	102.62	142.66	0.36018	9.84	-2.87	35.23	0.32053
1.96	2.67	3.73	2.30	4.83	0.01361	115.19	99.30	132.73	0.18428	3.09	-14.94	34.86	0.27806
1.96	3.45	3.69	2.13	5.46	0.01077	116.14	98.63	140.90	0.15893	2.68	-17.89	37.42	0.23184
1.96	4.22	3.71	2.39	5.18	0.01166	117.91	103.06	143.16	0.16619	5.70	-17.99	39.21	0.25260
1.96	5.00	3.51	2.06	4.88	0.01199	113.84	96.45	141.15	0.16402	9.92	-25.52	48.15	0.25030
1.96	5.78	3.49	2.32	4.99	0.01183	110.03	95.35	129.39	0.16341	4.41	-22.15	43.38	0.22989
1.96	6.55	3.62	2.19	4.90	0.01079	109.60	95.59	124.94	0.14613	3.22	-22.28	37.19	0.21254
1.96	7.33	3.63	2.35	4.62	0.01256	109.66	97.43	124.29	0.17358	2.88	-18.60	29.52	0.24054
1.96	12.67	3.76	2.50	4.95	0.01186	114.80	100.83	132.22	0.18871	9.77	-12.84	27.78	0.23007
1.96	13.45	3.77	1.96	5.06	0.01040	113.73	97.10	134.50	0.16062	9.06	-12.43	29.52	0.20194
1.96	14.22	3.80	2.46	5.35	0.01118	110.66	94.87	124.41	0.16296	9.73	-15.34	34.20	0.19435
1.96	15.00	3.47	2.21	4.87	0.01068	112.68	96.69	130.76	0.16646	5.67	-21.77	32.35	0.23866
1.96	15.78	3.50	2.35	4.79	0.01033	116.43	97.31	131.14	0.14422	6.98	-20.88	31.09	0.25017
1.96	16.55	3.43	2.17	4.76	0.01195	114.46	94.29	137.16	0.20962	14.24	-18.40	45.06	0.25953
1.96	17.33	3.51	2.41	4.70	0.01353	111.62	97.48	128.86	0.20370	15.03	-14.82	35.84	0.29337
6.41	2.67	2.73	1.52	3.91	0.00934	91.84	74.94	104.81	0.12120	4.96	-16.43	41.89	0.20899
6.41	3.45	2.69	1.07	3.94	0.01290	93.83	77.79	108.65	0.17515	3.10	-24.42	54.56	0.29817
6.41	4.22	2.76	1.34	3.89	0.01323	96.50	80.60	116.34	0.17808	6.66	-18.16	38.84	0.31150
6.41	5.00	2.52	1.24	4.11	0.01378	96.97	76.01	112.02	0.19590	11.90	-10.70	49.85	0.31170
6.41	5.78	2.57	1.18	4.08	0.01471	92.52	72.48	113.81	0.25386	6.21	-26.03	40.11	0.31119
6.41	6.55	2.90	1.56	4.07	0.01335	86.81	65.44	104.80	0.20218	8.76	-19.89	46.33	0.24833
6.41	7.33	2.98	1.70	4.05	0.00972	84.18	66.70	104.02	0.14817	8.26	-14.11	32.63	0.18958

6.41	12.67	2.99	1.81	4.08	0.00884	83.95	71.24	99.22	0.11466	12.15	-6.72	31.43	0.15554
6.41	13.45	3.05	2.15	4.00	0.01323	81.64	68.05	98.51	0.17512	12.76	-10.22	34.58	0.22223
6.41	14.22	3.08	2.07	4.22	0.01324	79.56	66.17	97.96	0.16251	15.34	-6.80	33.69	0.23617
6.41	15.00	2.45	1.21	3.79	0.01323	80.34	62.45	95.28	0.20735	11.87	-13.90	39.94	0.29516
6.41	15.78	2.57	1.26	3.96	0.01256	81.50	59.18	112.09	0.19580	11.09	-15.25	35.14	0.26514
6.41	16.55	2.70	1.60	4.05	0.01431	77.19	55.52	94.27	0.20433	15.95	-18.85	50.13	0.29974

Appendix F

Turbulence Intensity Values at 138 MW Turbine Load

Appendix F

Turbulence Intensity Values at 138 MW Turbine Load

The table in this appendix lists turbulence intensity values for X, Y, and Z-vectors and magnitude turbulence intensity for flow data collected at locations along the bar screen surface of the ESBS at 138 MW turbine load.

Location (ft.)		RMS Turbulence Intensity (ft/sec)			
Vertical	Horizontal	X-Vector	Y-Vector	Z-Vector	Magnitude
0.03	2.67	0.66	0.68	0.43	0.45
0.03	3.45	0.32	0.24	0.27	0.14
0.03	4.22	0.26	0.27	0.31	0.26
0.03	5.00	0.29	0.33	0.29	0.18
0.03	5.78	0.33	0.20	0.23	0.25
0.03	6.55	0.25	0.19	0.21	0.14
0.03	7.33	0.23	0.19	0.24	0.13
0.03	12.67	0.55	0.52	0.44	0.38
0.03	13.45	0.26	0.23	0.29	0.17
0.03	14.22	0.40	0.32	0.26	0.31
0.03	15.00	0.23	0.26	0.37	0.28
0.03	15.78	0.36	0.44	0.25	0.18
0.03	16.55	0.35	0.30	0.30	0.20
0.03	17.33	0.37	0.34	0.31	0.21
0.34	2.67	0.60	0.58	0.41	0.46
0.34	12.67	0.50	0.45	0.45	0.34
0.66	2.67	0.56	0.53	0.40	0.41
0.66	12.67	0.55	0.44	0.44	0.40
0.98	2.67	0.53	0.53	0.47	0.39
0.98	12.67	0.50	0.45	0.41	0.36
1.29	2.67	0.63	0.55	0.47	0.48
1.29	12.67	0.60	0.44	0.43	0.46
1.61	2.67	0.65	0.51	1.00	0.92
1.61	12.67	0.67	0.41	0.83	0.91
1.96	2.67	0.36	0.43	0.29	0.33
1.96	3.45	0.33	0.41	0.30	0.30
1.96	4.22	0.40	0.42	0.27	0.35
1.96	5.00	0.36	0.38	0.33	0.36
1.96	5.78	0.36	0.35	0.31	0.34
1.96	6.55	0.32	0.36	0.29	0.30
1.96	7.33	0.35	0.37	0.31	0.32
1.96	12.67	0.35	0.39	0.31	0.31
1.96	13.45	0.35	0.38	0.32	0.32
1.96	14.22	0.36	0.38	0.33	0.34
1.96	15.00	0.35	0.43	0.31	0.33
1.96	15.78	0.32	0.43	0.26	0.30
1.96	16.55	0.42	0.47	0.37	0.38
1.96	17.33	0.40	0.48	0.35	0.38
6.41	2.67	0.33	0.34	0.23	0.32
6.41	3.45	0.31	0.31	0.21	0.31
6.41	4.22	0.35	0.36	0.22	0.33
6.41	5.00	0.35	0.32	0.24	0.34
6.41	5.78	0.37	0.36	0.32	0.37
6.41	6.55	0.32	0.32	0.28	0.34
6.41	7.33	0.32	0.35	0.30	0.33

6.41	12.67	0.32	0.30	0.25	0.33
6.41	13.45	0.33	0.31	0.27	0.35
6.41	14.22	0.36	0.32	0.25	0.36
6.41	15.00	0.34	0.33	0.26	0.34
6.41	15.78	0.33	0.33	0.25	0.34

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