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Effects of Sleeve Blockages on Axial Velocity and Intensity of Turbulence in an Unheated 7 x 7 Rod Bundle

January 1976

**Prepared for the U.S. Nuclear
Regulatory Commission**

Battelle
Pacific Northwest Laboratories

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BNWL-1965

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EFFECTS OF SLEEVE BLOCKAGES
ON AXIAL VELOCITY AND INTENSITY
OF TURBULENCE IN AN UNHEATED
7x7 ROD BUNDLE

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January 1976

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EXECUTIVE SUMMARY

An experimental study was performed to investigate the turbulent flow phenomena near postulated sleeve blockages in a model nuclear fuel rod bundle. The sleeve blockages were characteristic of fuel clad "swelling" or "ballooning" which could occur during loss-of-coolant accidents (LOCA) in pressurized water reactors. The study was conducted to provide information relative to the flow phenomena near postulated blockages to support detailed safety analyses of LOCAs. The results of this study are especially useful for verification of the hydraulic treatment of reactor core computer programs such as COBRA.

The experimental flow model was a 7x7 rod bundle consisting of 0.392-inch diameter pins with pitches of 0.539 inches. Sleeve blockages were positioned on the center nine rods of the bundle. Area reductions of 70 and 90 percent were obtained in the center four subchannels of the bundle. These area reductions were not intended to define those expected during a LOCA, but were chosen to provide a severe test for verification of subchannel (core) computer programs. Axial components of local mean velocity and local intensity of turbulence were measured using a one-velocity component laser Doppler anemometer (LDA). The experiments were performed in water at 85°F at Reynolds numbers of 1.4×10^4 , 2.9×10^4 , and 5.8×10^4 . The conditions modeled those of steam at a point in time during a postulated LOCA at which all of the flooding water (0.5, 1.0, and 2.0 in./sec) would be converted to steam.

The experimental results indicated that a 90 percent blockage located midway between two grid spacers created a severe flow disturbance. Axial velocities measured immediately upstream from the blockage cluster were extremely low and flow reversals were detected downstream from the blockage. The recirculation zone existed for approximately five subchannel hydraulic diameters downstream from the blockage axial centerline. Flow recovery was completed approximately fifty subchannel hydraulic diameters downstream from the blockage. The velocity profiles were independent of Reynolds number when normalized to bundle average velocity. Local intensity of

turbulence values increased by three orders of magnitude near the blockage cluster but the increase was not strongly dependent on Reynolds number.

Data were also obtained with a 90 percent blockage located adjacent to a grid spacer. The results were similar to those obtained with the blockage between spacers; however, flow recovery with the blockage adjacent to a spacer occurred over a much longer length than with the blockage cluster between spacers.

Velocity reductions obtained near a 70 percent blockage located midway between spacers were similar but less severe than those detected near a 90 percent blockage. Flow reversals were detected downstream from the blockage cluster but the recirculation zone persisted for less than three subchannel hydraulic diameters. Local intensity of turbulence values also increased by three orders of magnitude downstream from the cluster.

The experimental axial velocity data were compared to predictions calculated using the COBRA computer program. Predicted subchannel average velocities agreed well with measured values for the cases with the 70 and 90 percent blockages located midway between spacers. Velocity predictions could not be performed using the COBRA program with a 90 percent blockage located adjacent to a spacer since numerical instabilities were encountered. Recent improvements in the COBRA-IIIC program are expected to eliminate this problem. Because of the success of the program in predicting the data for blockages located midway between two spacers, it is recommended that COBRA be used to aid in the definition of future flow blockage experiments.

It is recommended that multi-rod burst experiments be utilized to define "real" flow blockage locations, shapes, and severities expected to occur in nuclear fuel rod bundles during a LOCA. The effects of these "real" blockage configurations on turbulent flow phenomena in rod bundles can then be experimentally evaluated using LDA techniques. In addition, it is recommended that LDA methods similar to those presented herein be used to determine flow distributions near blockages presently being investigated in rod bundle heat transfer studies, such as FLECHT, to aid

in the selection and placement of thermal instrumentation and to assist with the interpretation of the heat transfer results. Future flow blockage experiments in two-phase flowing media similar to those expected during a LOCA should be conducted as state-of-the-art two-phase flow instrumentation is developed. Experiments of this type are needed to verify and improve core safety analysis computer programs such as COBRA under two-phase flow conditions. It is strongly recommended that laser-optical methods be investigated and developed to permit measurements of velocity, intensity of turbulence, and void fraction in two-phase flows.

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CONTENTS

EXECUTIVE SUMMARY.	i
LIST OF FIGURES	vii
LIST OF TABLES.	x
1.0 INTRODUCTION	1
2.0 CONCLUSIONS AND RECOMMENDATIONS	3
2.1 Conclusions	3
2.2 Recommendations.	7
3.0 EXPERIMENTAL METHOD	9
3.1 Equipment.	9
3.1.1 Test Facility	10
3.1.2 Test Assembly	10
3.1.3 Laser Doppler Anemometer	19
3.1.4 Signal Processing Instrumentation	24
3.2 Experimental Procedure	26
3.3 Experimental Data	27
3.3.1 Data Point Locations.	27
3.3.2 Data Reduction Methods	27
3.3.3 Accuracy of Data	33
4.0 EXPERIMENTAL RESULTS AND DISCUSSION.	36
4.1 Bare Rod	36
4.1.1 Axial Velocity.	37
4.1.2 Intensity of Turbulence.	37
4.2 90 Percent Blockage Midway Between Spacers.	40
4.2.1 Axial Velocity.	41
4.2.2 Intensity of Turbulence.	52
4.3 90 Percent Blockage Adjacent to a Spacer	63
4.3.1 Axial Velocity.	63
4.3.2 Intensity of Turbulence.	66
4.4 70 Percent Blockage Midway Between Spacers.	69
4.4.1 Axial Velocity.	71
4.4.2 Intensity of Turbulence.	77

CONTENTS (Continued)

4.5	Friction Factors and Loss Coefficients	83
4.5.1	Bare Rod Friction Factor	83
4.5.2	Spacer Loss Coefficients	83
4.5.3	Blockage Loss Coefficients.	83
5.0	COMPARISONS WITH COBRA PREDICTIONS	88
5.1	COBRA Version and Input Model	88
5.2	Subchannel Average Velocity Estimates	90
5.3	COBRA Predictions	94
5.3.1	70 Percent Blockage Between Spacers.	94
5.3.2	90 Percent Blockage Between Spacers.	94
	ACKNOWLEDGEMENTS	103
	REFERENCES	105
	APPENDIXES	107
	Appendix A, Nomenclature.	A-1
	Appendix B, Uncertainty Analysis	B-1
	Appendix C, Tabulation of Reduced Data	C-1

LIST OF FIGURES

1. Hydraulic Test Facility.	11
2. Test Assembly Arrangement	12
3. Test Assembly Cross Section at the Blockage Axial Centerline	13
4. Model Rod Bundle	15
5. Blocked Subchannel Flow as a Function of Bundle Size	16
6. Bundle Tie Plate	17
7. Simple "Egg Crate" Spacer	18
8. Flow Blockage Sleeves	20
9. Differential Doppler LDA System	22
10. Detail of the Measuring Volume	23
11. LDA Signal Processing Instrumentation	25
12. Blockage and Spacer Axial Locations.	28
13. Data Traverse Locations.	29
14. Laser Beam Deflection from Air to Water	31
15. Bare Rod Velocity Profiles, $U_B = 5.7$ ft/sec	38
16. Bare Rod Intensity Profiles, $U_B = 5.7$ ft/sec.	39
17. Velocity Profiles Upstream from a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec	42
18. Velocity Profiles Immediately Downstream from a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec	43
19. Velocity Profiles Far Downstream from a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 2.7$ ft/sec	44
20. Velocity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 2.7$ ft/sec	46
21. Velocity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 10.7$ ft/sec.	47
22. Comparisons of Velocity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 2.7, 5.7$ and 10.7 ft/sec	48
23. Axial Profiles of Subchannel #1 Center Velocities with a 90 Percent Blockage Located Midway Between Two Spacers	50

LIST OF FIGURES (Continued)

24.	Velocity Profiles Along Inner Traverses at Data Plane #5 (+2.0 in.) with a 90 Percent Blockage, $U_B = 5.7$ ft/sec . . .	51
25.	Velocity Profiles Along Outer Traverses at Data Plane #5 (+2.0 in.) with a 90 Percent Blockage, $U_B = 5.7$ ft/sec . . .	53
26.	Intensity Profiles Upstream from a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec . . .	54
27.	Intensity Profiles Downstream from a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec . . .	55
28.	Intensity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 2.7$ ft/sec . . .	56
29.	Intensity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 10.7$ ft/sec.	57
30.	Intensity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 2.7, 5.7$ and 10.7 ft/sec.	59
31.	Axial Profiles of Subchannel #1 Center Intensities with a 90 Percent Blockage, $U_B = 2.7, 5.7$, and 10.7 ft/sec . . .	60
32.	Intensity Profiles Along Inner Traverses at Data Plane #5 (+2.0 in.) with a 90 Percent Blockage, $U_B = 5.7$ ft/sec . . .	61
33.	Intensity Profiles Along Outer Traverses at Data Plane #5 (+2.0 in.) with a 90 Percent Blockage, $U_B = 5.7$ ft/sec . . .	62
34.	Velocity Profiles Upstream from a 90 Percent Blockage Located Adjacent to Spacer #2, $U_B = 5.7$ ft/sec	64
35.	Velocity Profiles Downstream from a 90 Percent Blockage Located Adjacent to Spacer #2, $U_B = 5.7$ ft/sec	65
36.	Axial Profiles of Subchannel #1 Center Velocities with a 90 Percent Blockage Located Between Two Spacers and Located Adjacent to a Spacer, $U_B = 5.7$ ft/sec	67
37.	Intensity Profiles Near a 90 Percent Blockage Located Adjacent to Spacer #2, $U_B = 5.7$ ft/sec.	68
38.	Axial Profiles of Subchannel #1 Center Intensities with a 90 Percent Blockage Located Midway Between Spacers #1 and #2 and Located Adjacent to Spacer #2, $U_B = 5.7$ ft/sec.	70
39.	Velocity Profiles Upstream from a 70 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec	72
40.	Velocity Profiles Downstream from a 70 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec	73
41.	Axial Profiles of Subchannel #1 Center Velocities with a 70 and a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec	74

LIST OF FIGURES (Continued)

42.	Velocity Profiles at Data Plane #15 (+0.8 in.) with a 70 Percent Blockage, $U_B = 5.7$ ft/sec	76
43.	Intensity Profiles Upstream from a 70 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec	78
44.	Intensity Profiles Downstream from a 70 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec	79
45.	Axial Profiles of Subchannel #1 Center Intensities with a 70 and a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec	81
46.	Intensity Profiles at Data Plane #15 (+0.8 in.) with a 70 Percent Blockage, $U_B = 5.7$ ft/sec.	82
47.	Bare Rod Friction Factors	84
48.	Spacer #2 Loss Coefficients	85
49.	Comparison of Overall Bundle Pressure Losses with No Blockage, with a 70 Percent Blockage, and with a 90 Percent Blockage	87
50.	COBRA Geometry Model.	91
51.	Simplified Subchannel Geometry for Calculating Subchannel Average Velocities.	92
52.	COBRA Velocity Predictions in Subchannels #1, #2, and #3 with a 70 Percent Blockage, $U_B = 5.7$ ft/sec	95
53.	COBRA Velocity Predictions in Subchannels #4, #5, and #6 with a 90 Percent Blockage, $U_B = 5.7$ ft/sec	96
54.	COBRA Velocity Predictions in Subchannels #1, #2, and #3 with a 90 Percent Blockage, $U_B = 5.7$ ft/sec	97
55.	COBRA Velocity Predictions in Subchannels #4, #5, and #6 with a 90 Percent Blockage, $U_B = 5.7$ ft/sec	98
56.	COBRA Velocity Predictions in Subchannels #1, #2, and #3 with a 90 Percent Blockage, $U_B = 2.7$ ft/sec	99
57.	COBRA Velocity Predictions in Subchannels #1, #2, and #3 with a 90 Percent Blockage, $U_B = 10.7$ ft/sec.	100

LIST OF TABLES

1. Uncertainty Values (Run #S7-346)	34
2. COBRA Input Parameters	89
3. Comparisons of Calculated and Measured Bundle Flowrates	93
C-1 Tabulation of Experimental LDA Data.	C-2
C-2 Tabulation of Pressure Loss Data ($T = 85 \pm 4^{\circ}\text{F}$).	C-153

EFFECTS OF SLEEVE BLOCKAGES ON AXIAL VELOCITY
AND INTENSITY OF TURBULENCE IN AN UNHEATED
7x7 ROD BUNDLE

1.0 INTRODUCTION

In the event of a loss-of-coolant accident (LOCA) in a pressurized water reactor (PWR), fuel rod overheating may occur. As clad temperatures increase during a LOCA, internal fuel rod pressures may cause clad "swelling" or "ballooning" which could lead to coolant blockages. It is important that flow and heat transfer phenomena near such blockages are well understood to permit detailed safety analyses to be performed for postulated LOCAs. Consequently, as a first step in gaining such an understanding, a program was initiated to study the effects of blockages on flow distributions in rod bundles. The program objectives were: 1) to evaluate, develop, and apply laser Doppler anemometry (LDA) methods for measurement of flow and turbulence in the vicinity of blockages, and 2) to improve the data base for verification of subchannel (core) programs such as COBRA-IIIC.⁽¹⁾ The intent of the program was to perform a logical sequence of flow blockage experiments using water, air, air-water, and steam-water, in model nuclear fuel rod bundles. Such information was not available for relatively large rod bundles in any of the above mentioned flow media. In addition to providing basic subchannel velocity and turbulence data which could be related to blockages under flowing steam conditions in reactor environments, it was anticipated that the LDA experiments in single-phase water and air could aid in developing state-of-the-art two-phase flow instrumentation. Such instrumentation could subsequently be used in studies using air-water, and finally, using steam-water flow typical of that expected during a LOCA.

The data obtained in blockage experiments of this type are valuable for verification of analytical methods currently being developed for safety analyses. For example, the method of subchannel analysis has recently received rather wide attention as a tool in predicting the hydraulic and

thermal performance of rod bundle nuclear fuel assemblies during both normal operation and accident conditions. Computer programs such as COBRA-IIIC use the subchannel analysis technique for the hydraulic treatment of reactor cores since the program can be applied to complicated fuel rod configurations with relative ease. However, experimental verification of such computer codes is required.

The purpose of this report is to present the local velocity and intensity of turbulence results obtained in the the flow blockage experiment conducted in water. Comparisons of the data with predictions of the COBRA program are provided. An abbreviated follow-on study has been conducted in air to simulate the high quality steam environment expected during a LOCA and will be reported in the near future. Additional experiments should be performed in two-phase flow environments; however, improved state-of-the-art two-phase flow instrumentation must be developed to permit such studies.

2.0 CONCLUSIONS AND RECOMMENDATIONS

2.1 CONCLUSIONS

This experiment provides information regarding the turbulent flow structure resulting from disturbances created by postulated sleeve blockages in a model nuclear fuel rod bundle. The information was obtained with a laser Doppler anemometer by measuring the local mean axial velocity and local intensity of turbulence at selected axial locations in the bundle.

The experimental data indicated that postulated blockages caused severe flow disturbances in the rod bundle. Axially, the flow was not influenced by a 90 percent blockage until the flow reached a location between three and six subchannel hydraulic diameters upstream from the blockage cluster. A recirculation zone existed for approximately five subchannel hydraulic diameters downstream from the cluster. The flow required approximately 50 subchannel hydraulic diameters to completely recover from the effects of the blockage. Local intensity of turbulence profiles were consistent with velocity profiles in that the intensity was relatively uniform upstream from the blockage, increased by three orders of magnitude downstream from the blockage, and was completely recovered from the blockage disturbance 50 subchannel hydraulic diameters downstream from the cluster. Both the velocity profiles and the intensity profiles were found to be essentially independent of Reynolds number over the range investigated.

In the lateral direction, the gross influence of the blockage was confined to those subchannels containing sleeve blockages. Flow increases were detected in the subchannels adjacent to the blockage cluster since flow was diverted around the blockage.

Effects of axial blockage location were studied by comparing data measured with a 90 percent blockage located midway between two spacers with data obtained with the blockage located adjacent to a spacer. The location of the blockage did not affect the flow in the immediate vicinity of the blockage cluster; however, the downstream recovery profile was influenced. The required flow recovery length with the blockage adjacent to a spacer was significantly greater than when the blockage was located midway between spacers.

Blockage severity was investigated by comparing data obtained using 70 percent and 90 percent blockage clusters. The recirculation zone was shorter--approximately 3 subchannel hydraulic diameters compared to approximately 5 diameters--for the less severe blockage. The required flow recovery lengths were essentially the same for the two blockage severities.

COBRA predictions of the experimental velocity data were exceptionally good for the cases with the 70 percent and 90 percent blockages located midway between two spacers. The COBRA program could not predict subchannel velocities when the blockage was located adjacent to a spacer since numerical instabilities were encountered.

The specific conclusions resulting from this investigation are listed below by experimental condition.

Bare Bundle With No Blockages

- The peak-to-average velocity ratios in developed flow were approximately 1.18, which agree with turbulent pipe flow theory and other available rod bundle experimental velocity data. (2,3,4)
- The velocity profiles across the bundle cross section were uniform, which justified the assumption of bundle geometric symmetry.
- Local intensity of turbulence values were approximately 0.05 far removed from a spacer and 0.13 one subchannel hydraulic diameter downstream from a spacer. These intensity values are in agreement with existing rod bundle data. (2,3,4)

90 Percent Blockage Between Spacers

- A 90 percent blockage created severe flow disturbances. Immediately upstream from the blockage cluster, extremely low velocities, $U/U_B \approx 0.1$, were measured. Flow reversals, $U/U_B \approx -0.2$, were detected downstream from the blockage. The recirculation zone extended approximately five subchannel hydraulic diameters (2.5 in.) downstream from the blockage cluster axial centerline.

- The flow essentially recovered from the blockage influence fifty subchannel hydraulic diameters downstream from the cluster.
- The normalized velocity profiles, U/U_B , along the length of the bundle were independent of Reynolds number over the range investigated.
- Local intensity of turbulence values upstream from the blockage increased from 0.05 to 0.9.
- Downstream from the blockage cluster, the turbulence increased to >10.0 .
- Axial intensity profiles along the length of the bundle were independent of Reynolds number except in the downstream tapered region of the blockage cluster.

90 Percent Blockage Adjacent to a Spacer

- Velocity distributions upstream from the blockage were essentially the same as those obtained with the blockage between spacers.
- Flow reversals, $U/U_B \approx -0.2$, were detected downstream from the blockage cluster. The recirculation zone could not be defined since a spacer interfered with LDA measurements.
- The flow recovery length with the blockage cluster adjacent to a spacer was much greater than with the cluster midway between spacers. Uniform flow was not achieved fifty subchannel hydraulic diameters downstream from the blockage.
- Upstream from the blockage, the intensity of turbulence magnitudes were approximately the same as those measured with the blockage midway between spacers.
- Downstream from the blockage, the intensity levels were lower than with the blockage located between spacers, but recovery length was independent of blockage location.

70 Percent Blockage Between Spacers

- A 70 percent blockage did not disturb the flow as severely as a 90 percent blockage. Velocity magnitudes on the order of $U/U_B \approx 0.75$ were measured upstream from the blockage cluster.
- Flow reversals, $U/U_B \approx -0.2$, were measured just downstream from the cluster centerline, but the resulting recirculation zone persisted less than three subchannel hydraulic diameters (1.4 in.) downstream.
- Although the 70 percent blockage did not disturb the flow as severely as the 90 percent blockage, the required flow recovery length was approximately the same for the two blockage severities.
- Local intensity of turbulence magnitudes measured upstream from the blockage increased from ~ 0.05 to ~ 0.15 .
- Downstream from the blockage cluster, intensity values of 2.0 were measured.

Pressure Loss Data

- The friction factor ($f = 0.34 \text{ Re}^{-0.25}$) and spacer loss coefficients ($K_{sp} \approx 1.4$) determined from the pressure drop data agreed satisfactorily with expected values.
- The loss coefficient for the 70 percent blockage was measured to be approximately zero. The loss coefficient for the 90 percent blockage was determined to be between 0.0 and 0.3.

In addition, several conclusions regarding predictions of the COBRA computer program emerged from this study.

70 Percent Blockage Between Spacers

- The COBRA-IIIC program satisfactorily predicted the velocity data obtained using a 70 percent blockage located midway between two spacers.

- The locations and magnitudes of the minimum velocity points upstream and downstream from the blockage cluster were predicted exceptionally well.
- The predicted velocity recovery profile closely agreed with the measured profile.

90 Percent Blockage Between Spacers

- A modified version of the COBRA-IIIC code accurately predicted the experimental data obtained at three bundle flowrates with a 90 percent blockage located midway between two spacers.

90 Percent Blockage Adjacent to a Spacer

- Subchannel velocity predictions could not be performed with the COBRA program when the blockage was adjacent to a spacer. Numerical instabilities were encountered; hence, predictions of the velocity data must await an improved version of COBRA.

2.2 RECOMMENDATIONS

After considering the results of this experimental study, it is strongly recommended that the following investigations be undertaken:

- Multi-rod burst experiments should be performed to define "real" flow blockage locations, shapes, and severities. The effects of "real" blockages on turbulent flow phenomena in rod bundles can then be thoroughly evaluated using LDA techniques.
- Although the present experiment provides valuable information on velocity and intensity of turbulence distributions near postulated blockages, the implications concerning heat transfer are inconclusive at this time. Heat transfer experiments in rod bundles containing blockages, such as FLECHT,⁽⁵⁾ should be performed and integrated with flow experiments of the type performed in the present study. Flow experiments would aid in the selection and placement of thermal instrumentation and assist the interpretation of the heat transfer experimental results.

- The original intent of this experimental program was to perform a sequence of blockage experiments in water, air, air-water, and finally in steam-water. The results of the water experiment are presented herein; an abbreviated air test has been completed and the results will be reported in the near future. Therefore, it is recommended that two-phase flow blockage experiments at expected LOCA conditions be performed once the state-of-the-art advances in two-phase flow measurement techniques.
- It is strongly recommended that laser-optical methods be investigated to advance the state-of-the-art in obtaining local void fraction and phase velocity measurements in two-phase flow.
- Predictions of the COBRA program should continue to be compared with future flow blockage data and its capability should be improved as a result of the comparisons. Since COBRA has successfully predicted the water velocity data with a blockage located midway between two spacers, it should be used to aid in the definition of future flow blockage experiments.

3.0 EXPERIMENTAL METHOD

Experimental measurements of local axial velocity and local intensity of turbulence were made in a model fuel rod bundle using a laser Doppler anemometer. The 7x7 rod bundle contained sleeve blockages characteristic of fuel clad "swelling" and/or "ballooning" of the center nine rods. Area reductions of 70 and 90 percent in the center four subchannels were investigated. The experiments were performed in water at 85°F at Reynolds numbers of 1.4×10^4 ($U_B = 2.7$ ft/sec), 2.9×10^4 ($U_B = 5.7$ ft/sec), and 5.8×10^4 ($U_B = 10.7$ ft/sec). These conditions modeled those of steam at a point in time during a postulated LOCA at which all of the flooding water (0.5, 1.0, and 2.0 in./sec) would be converted to steam.

The model rod bundle was positioned in an existing vertical flow housing. The housing contained windows on the front and back plates to permit a laser beam to pass completely through the rod bundle. Water flow from a hydraulics loop entered the bottom of the test assembly and exited at the top. The LDA system was positioned at desired axial locations with a lift table. Traverses through the bundle along specific subchannel rows were made to obtain local axial velocity and intensity of turbulence profiles.

The following sections describe the equipment required to perform the flow blockage experiment, the experimental procedure, and the experimental data obtained during the testing phase of the study.

3.1 EQUIPMENT

The basic equipment used to perform the flow blockage experiment in water consisted of a hydraulic test facility, a test assembly made up of a flow housing and an unheated 7x7 rod bundle, a laser Doppler anemometer, and signal processing instrumentation. The following sections present detailed discussions of each piece of equipment used in the study.

3.1.1 Test Facility

The flow blockage experiment was performed in the hydraulic facility shown schematically in Figure 1. The facility is an isothermal recirculating flow loop with flow capabilities up to 700 gpm, (depending on pump selection), at temperatures ranging from approximately 60 to 180°F. In-line flow measurements are performed with an orifice meter and a 4-inch turbine meter. Additional flow sensing capabilities are provided with a manifold arrangement. Loop water temperatures are controlled with a U-tube heat exchanger which utilizes process water on the secondary side.

Test assemblies are interfaced with the facility through standard 4-inch piping flanges. The vertical distance between test assembly flow inlets and outlets can be as great as 6.5 feet.

3.1.2 Test Assembly

Figure 2 shows an assembly view of the test section. In this experiment, water entered the bottom of the flow housing, flowed vertically upward through the test section, emerged at the top of the flow housing, and entered the return piping to the recirculation pumps. Rubber expansion couplers were used at the test section inlet and outlet to aid in isolating the test assembly from the normal vibrations of the flow loop.

An 8-inch long flow conditioning section was placed at the inlet to the test assembly. The flow conditioner consisted of four eccentric perforated plates with 1/4-inch holes (60% open) in a triangular array followed by a bank of 1/4-inch tubes 3-1/4 inches long. The plates distributed the flow uniformly across the test assembly cross section; the tubes served as flow straighteners to establish a fixed scale of turbulence.

Figure 3 presents a cross sectional view of the test assembly at the blockage axial centerline. The flow housing body consisted of front and back plates containing windows and solid stainless steel side plates containing pressure taps. The back plate contained the inlet and outlet nozzles and was permanently installed in the test facility. The front and back plates were bolted together with the side plates placed between them.

FIGURE 1. Hydraulic Test Facility

FIGURE 2. Test Assembly Arrangement

FIGURE 3. Test Assembly Cross Section at the Blockage Axial Centerline

A continuous O-ring sealed the interface between plates. Flow housing internal dimensions (4.065 inches square) were maintained by the restraining shoulder next to the O-ring groove on the front and back plates.

The front and back plates each contained nine windows, 2 inches high by 4 inches wide, located on 6-inch axial intervals. The optically flat and parallel windows were fabricated from borosilicate crown glass. The windows were sealed with O-rings and were held in place by thick cover plates. Shims were placed between the windows and cover plates to position the windows "flush" with the inner surface of the flow housing (± 0.002 in.).

The model fuel bundle was an unheated square 7x7 rod array as shown in Figure 4. Various sizes (rod numbers) of square arrays were considered during preliminary design to assure that the flow housing walls would not influence blocked subchannel flowrates. A pre-test analysis performed with the COBRA-IIIC program indicated that the flow housing walls would not force a significant amount of flow through 80 percent blocked subchannels (center four subchannels) of a 7x7 rod bundle. This can be seen graphically in Figure 5 which shows the ratio of blocked subchannel minimum flow to inlet flow as a function of bundle size. In the 1x1 and 3x3 rod bundles, only the center rod contained a sleeve blockage, while the center nine rods contained sleeve blockages for the 5x5, 7x7 and 9x9 rod bundles. The flow ratio became smaller as the rod array was increased, i.e., less flow was forced through the blocked subchannels, until there was essentially no change between a 7x7 and a 9x9 rod bundle. A 7x7 rod array was chosen since an existing flow housing would accept it with rod diameters and rod pitches typical of those found in pressurized water reactors.

Model rods were fabricated from 1/8-inch Sch 10S stainless steel pipe (OD = 0.392 inches) 57 inches long. Brass lower and upper tie plates, shown in Figure 6, positioned the 49 rods to form the bundle. Flow channels in the tie plates were sized to assure uniform velocity distributions over the cross section of the bundle. A rod pitch of 0.539 inches was maintained with three simple "egg crate" spacers fabricated from brass as pictured in the end view of Figure 7. Four "dimples" contacted each rod to firmly hold it in place.

FIGURE 4. Model Rod Bundle

FIGURE 5. Blocked Subchannel Flow as a Function of Bundle Size

FIGURE 6. Bundle Tie Plate

FIGURE 7. Simple "Egg Crate" Spacer

Brass flow blockage sleeves shown in Figure 8 were placed on the center nine rods to characterize clad swelling/ballooning. The blockages were 3 inches long with one-inch tapers at each end. Flow area reductions of 70 and 90 percent could be attained in the center four subchannels. The 70 and 90 percent severities corresponded to area reductions of 35 and 45 percent in the subchannels adjacent to the sides of the cluster and 17 and 22 percent in the subchannels next to the corners of the blockage, respectively. The shape and severity of the blockage clusters used in the present experiment were not intended to define those that would actually exist during a LOCA. The shape of the blockage sleeves was formulated after considering experimental results of high temperature expansion and rupture behavior of Zircaloy tubing.⁽⁶⁾ Severities of 70 and 90 percent were chosen to create gross flow disturbances in the rod bundle. Gross flow disturbances were required to adequately test the capability of the COBRA computer program for predicting such maldistributed flow profiles. Two area reductions were investigated to determine severity effects. Determination of prototype LOCA blockage locations, shapes and severities must await results of experiments designed to obtain such information.

A jack support spider was provided at the top of the bundle to permit a screw jack to vertically position the rod bundle in the flow housing. A vertical travel of seven inches was possible and, since the windows were on six-inch centerlines, data at any axial location within the bundle could be obtained.

3.1.3 Laser Doppler Anemometer

Turbulent flow measurements were made with a laser Doppler anemometer (LDA). The LDA is a highly advanced system used for obtaining measurements of local mean velocity and intensity of turbulence. The most notable advantage of an LDA system is that the noncontact probing does not disturb the flow. An important feature of all LDA systems is that the output signal is a calibration-free frequency linearly related to flow velocity. Single known components of flow velocity can be measured independent of other velocity components; further, velocity measurements in reversing flows are possible.

BLOCKAGE CLUSTER

CORNER SLEEVE

SIDE SLEEVE

CENTER SLEEVE

(3) TAPPED HOLES
WITH SET SCRLWS

FIGURE 8. Flow Blockage Sleeves

The LDA system used in the present experiment is shown schematically in Figure 9 and is discussed in detail by Brayton and Goethert.⁽⁷⁾ The differential Doppler mode, or "fringe mode," of operation was used since it is easily aligned and operates effectively where the intensity of scattered light is low. Natural contaminants in the loop water were used as light scattering particles in this experiment.

The beam from a 15 MW He-Ne laser was divided with a beam splitter. Each beam was passed through a Bragg Cell where the frequency of one beam was shifted by 44 MHz while the frequency of the other beam was shifted by 45 MHz. Frequency shifting was desired to remove the directional ambiguity of the flow measurements, and thereby permit measurements of zero and negative velocities, i.e., the Doppler frequency of scattered light from a particle having zero velocity was 1 MHz ($45-44 = 1$ MHz). Negative axial velocities produced Doppler signals with frequencies less than 1 MHz and positive axial velocities produced Doppler frequencies greater than 1 MHz.

The two beams were passed through a lens and focused at a point in the flow channel. The intersection volume (measuring volume) formed by the two beams was calculated to be ~ 0.008 inches in diameter and ~ 0.089 inches in length which indicates the "localized" characteristics of the measurements. A lens system and 200 μ aperture were used to collect scattered light from particles passing through the measuring volume and to focus the light on the photomultiplier (PM) tube. The aperture eliminated extraneous light from entering the PM tube. The PM tube collected radiant energy resulting from the scattered light and produced an alternating signal current with a beat, or Doppler frequency, f_D .

At the intersection volume, the two laser beams created interference fringes as shown in Figure 10. Because the two light beams were mutually coherent and identically polarized, they interfered constructively and destructively to form closely spaced fringes of maximum and minimum illuminating intensity. Simple trigonometry was used to determine the distance between fringes;

FIGURE 9. Differential Doppler LDA System

FIGURE 10. Detail of the Measuring Volume

$$d_f = \frac{\lambda}{2 \sin \theta/2}$$

Since the product of frequency and distance yields velocity, then

$$U = d_f f_D = \frac{\lambda f_D}{2 \sin \theta/2}$$

Note in Figure 10 that the velocity was that perpendicular (z direction) to the interference fringes, i.e., normal to the bisector of the beam intersecting angle θ and in the plane of the incident laser beams.

For the LDA system presented in Figure 9, $\lambda = 6328\text{\AA}$ and θ was measured to be 9.7° . Therefore, the final relationship for the axial velocity was

$$U = 13.063 f_D \text{ ft/sec}$$

The measuring volume was located in the flow channel with a hydraulic lift/traversing table capable of positioning the laser and optics as an integral unit. The table was supported on precision linear ball bearings and was driven by variable speed servo-motors. The motor speed control and position control made it possible to locate the beam intersection volume to within 0.001 inches in both the x and y coordinates in a horizontal plane. The hydraulic lifting capability of the table permitted the laser and optics to be positioned at desired axial locations.

3.1.4 Signal Processing Instrumentation

The signal processing instrumentation used to condition, interpret, and obtain the axial velocity intensity of turbulence data from the Doppler signal is presented in Figure 11. The system basically consisted of a Doppler signal processor, oscilloscope, digital voltmeter, and rms voltmeter.

The Doppler signal processor consisted of a preamplifier and frequency tracker which improved the signal-to-noise ratio of the Doppler shifted signal and converted the frequency into an analog voltage which was linearly related to local mean axial flow velocity. The processor possessed

FIGURE 11. LDA Signal Processing Instrumentation

frequency tracking capabilities; once it was "locked on" to the Doppler frequency it followed frequency fluctuations about the mean within each available frequency range. A meter unit was supplied with the processor to indicate Doppler frequencies. A DC digital voltmeter was used to more accurately determine mean velocities proportional to the voltage output of the signal processor. An rms voltmeter was used to measure the alternating component of the processor output voltage which corresponded to the local rms fluctuating component of axial velocity.

A low pass filter preceded the rms voltmeter to filter higher frequency signals. All data were obtained at a cutoff frequency of 4 kHz. This limit was chosen since the intensity of turbulence changed while the cutoff selector was switched between 1 kHz and 3 kHz, but negligible changes were observed above 4 kHz. Also, the 4 kHz cutoff frequency agrees with that used in Reference 2 for similar flow conditions.

3.2 EXPERIMENTAL PROCEDURE

Loop flow and temperature were set at desired values. The loop had very stable flow, pressure, and temperature controls and did not require adjustments during data acquisition.

Once the loop was operating at selected conditions, the LDA optical system was adjusted to produce an optimum Doppler signal as observed on an oscilloscope. The inside surfaces of the windows were located to within ± 0.045 inches by observing the loss of signal on the oscilloscope as the measuring volume was traversed into the windows. Data acquisition was started approximately 0.100 inches from a window and continued to be taken incrementally, usually every 0.135 inches, along a selected traverse across the rod bundle. The measuring volume was positioned to within 0.001 inches relative to its adjacent data locations with the lift/traversing table.

At each data location, the frequency tracker (Doppler signal processor) was checked to assure proper adjustment and the rms voltmeter was nulled to the correct value. The DC voltmeter output (voltage representation of the Doppler frequency), the rms output, the x and y locations, and the other pertinent loop information were then recorded. The lift/traversing table was then used to reposition the measuring volume.

After desired data at one axial location were obtained, the lift/traversing table was used to raise or lower the LDA optics to a new axial location. The above testing procedure was then repeated.

Pressure loss data between taps 1-2, 2-3, 3-4, 4-5, 1-3, and 1-5 were obtained intermittently throughout the course of the experiment. Pressure differentials were measured with strain gauge transducers rated at 1 psid and 5 psid.

3.3 EXPERIMENTAL DATA

Data obtained during the course of this experimental investigation are presented in Appendix C. The data were reduced to engineering units and tabulated based on run number. The following sections discuss data point locations, data reduction methods, and accuracy of the data.

3.3.1 Data Point Locations

The 70 percent blockage cluster was positioned midway between spacer #1 and spacer #2. The 90 percent cluster was positioned midway between spacers #1 and #2, and also placed adjacent to and just upstream from spacer #2. Blockage and spacer locations are shown in Figure 12.

The locations of the traverses performed at any given axial location (data plane) are presented in Figure 13. The bundle cross section symmetry permitted limitation of data acquisition to the indicated quadrant. For wall subchannels ($y = 0.110$ inches), only one measurement was obtained at a location one-half the distance from the wall to the outside edge of the first rod row. Note that partial traverses 0.050 inches on either side of the $y = 1.224$ inch and $y = 1.763$ inch traverses were obtained in selected cases. Partial traverses were performed to determine subchannel velocity profiles in the y direction.

3.3.2 Data Reduction Methods

A digital computer program was written to reduce the experimental data to desired engineering units. Plotting routines were used to display a

FIGURE 12. Blockage and Spacer Axial Locations

FIGURE 13. Data Traverse Locations

significant amount of the data. For each data point it was necessary to 1) shift the measurement location to a consistent set of reference coordinates and correct for refractive index; 2) convert the Doppler frequency to mean axial velocity; and 3) convert the rms voltage to intensity of turbulence.

3.3.2.1 Location Corrections

The measurement location corrections were made by referencing all x locations to the location $x = 1.763$ inches (x centerline of the subchannel row containing subchannel #1), and referencing all y locations to the nominal centerlines $y = 0.110, 0.685, 1.224,$ and 1.763 inches of the subchannel rows shown in Figure 13. The x locations were referenced to $x = 1.763$ inches by examining a particular velocity profile in a data plane and shifting the profile until the peak velocity point in the subchannel containing $x = 1.763$ inches corresponded to $x = 1.763$ inches. The necessary x shift was then applied to each point obtained in that particular data plane. At most data planes, the velocity profile at $y = 0.685$ inches was used to determine the x correction factor since the velocity profile along the x traverse was very distinct, even near the blockage cluster. The y locations were referenced to the nominal y subchannel row centerlines by simply assuming that the centerline traverses corresponded to the row centerlines.

The measurement locations in the x direction were also corrected for index of refraction to compensate for the varying thickness of water to the measuring volume as shown in Figure 14. The correction equation

$$x_c = x_m \cdot n_w$$

was used and was derived from Snell's law of refraction,

$$n_a \sin \theta_1 = n_w \sin \theta_2.$$

FIGURE 14. Laser Beam Deflection From Air to Water

For air, $n_a = 1.0$ and

$$\theta_2 = \sin^{-1} \left(\frac{\sin \theta_1}{n_w} \right)$$

where n_w is the index of refraction of water. The true position, x_c , and the measured position, x_m , were related by

$$x_m \tan \theta_1 = x_c \tan \theta_2$$

$$\therefore x_c = \frac{x_m \tan \theta_1}{\tan \left[\sin^{-1} \left(\frac{\sin \theta_1}{n_w} \right) \right]}$$

The small angle approximation $\tan \theta = \theta = \sin \theta$ was used to reduce the equation to

$$x_c = x_m \cdot n_w$$

3.3.2.2 Mean Axial Velocity

The calculation of mean axial velocity from the Doppler frequency was performed by first converting the voltage output from the DC voltmeter to a frequency. The relationship

$$f_D = \left(E_{DC} \cdot \frac{\text{Range}}{10.0} - f_s \right) \text{ MHz}$$

was used where

f_D - Doppler frequency, MHz.

Range - Full scale value of the range used on the frequency tracker, MHz

E_{DC} - DC voltmeter output, volts

10.0 - Full scale value of the DC voltmeter, volts

f_s - Frequency shift between the two incident laser beams, MHz.

Then, the relationship

$$U = 13.063 f_D \text{ ft/sec}$$

was used to determine mean local axial velocity values.

3.3.2.3 Intensity of Turbulence

Local intensity of turbulence values were determined by calculating the ratio of the rms voltmeter output to the DC voltmeter output,

$$\frac{U'}{U} = \frac{E_{rms}}{E_{DC} - (10.0 f_s / \text{Range})}$$

The local rms fluctuating axial velocity component was then found using the expression

$$U' = U \cdot E_{rms} / [E_{DC} - (10.0 f_s / \text{Range})] \text{ ft/sec}$$

Note that fluctuating components of velocity were normalized with respect to local velocities, not bundle average velocities, to define intensity of turbulence. As local velocities approach zero, local intensity values approach infinity. The infinite intensity values could be eliminated by normalizing the fluctuating velocity component with respect to bundle average velocity. Bundle average velocities were not used since intensity values in regions of low velocities would remain relatively low and could be misleading when considering possible effects on heat transfer. Therefore, local velocity was arbitrarily but consistently chosen for normalizing the fluctuating component of velocity to determine local intensity of turbulence.

3.3.3 Accuracy of Data

An uncertainty analysis using the error and uncertainty methods of Schenck⁽⁸⁾ was performed to estimate data accuracy. These methods are similar to those of describing uncertainties in single sample experiments presented by Kline and McClintock⁽⁹⁾ and those of compounding errors presented by Wilson.⁽¹⁰⁾ The methods and analysis are presented and described in detail in Appendix B. Table 1 is a summary of the results of the uncertainty analysis based on Run S7-346 of the test matrix presented in Appendix C.

3.3.3.1 Axial Velocity

Velocity measurements were found to have an uncertainty of ± 11 percent. The relatively large error was primarily due to 1) the small angle required between the laser beams to permit measurements near the blockage, and 2) the fact that in the vicinity of the blockage, the frequency tracker would not consistently "hold track" on the 1.5 MHz range; hence, all measurements were obtained on the 5 MHz scale.

TABLE 1. Uncertainty Values (Run #S7-346)

Parameter	Nominal Value	Uncertainty	
		Value	Percent
Mean Velocity, U	5.7 ft/sec	± 0.62 ft/sec	± 11
Intensity of Turbulence, U'/U	0.132	± 0.022	± 16
x Data Point Location, x		± 0.001 in.	
y Data Traverse Location, y		± 0.010 in.	
Axial Data Plane Location, z		± 0.100 in.	

The error contribution of a small θ angle is not obvious unless one refers to the detailed uncertainty analysis presented in Appendix B. There, it can be seen that the uncertainty is proportional to $1/\sin(\theta/2)$, $\csc\theta/2$, and $\cot\theta/2$ which are relatively large terms when $\theta/2$ is small.

Since the accuracy of the frequency tracker was based on ± 1 percent of full scale deflection, being forced to take measurements on the low end of the 5 MHz scale accounts for a portion of the velocity uncertainty. All measurements were obtained on the higher range because in nondisturbed flow regions, velocity and turbulence measurements were essentially identical regardless of the range selection. This would lead to the conclusion that the quoted accuracy of the frequency tracker is conservative.

The uncertainty of $\pm 11\%$ is considered to be a very conservative estimate of maximum error in absolute local velocity. The data do not exhibit a large amount of scatter as shown by the consistency, ≤ 5 percent, from point-to-point throughout any one data traverse.

3.3.3.2 Intensity of Turbulence

The relatively large uncertainty in the intensity measurements was a result of reading error of the rms voltmeter. The meter was a "null" model, not a time integrating model, and therefore difficult to read in highly turbulent flows. Again, the consistency from data point-to-data point is much less than the ± 16 percent estimated for absolute uncertainty of intensity.

3.3.3.3 Measurement Locations

Each measurement location was positioned within ± 0.001 inches of its neighbors in the x direction, and each data traverse was located within ± 0.010 inches in the y direction relative to the adjacent rod rows. The axial locations of the data planes were known within ± 0.100 inches relative to the blockage axial centerline.

4.0 EXPERIMENTAL RESULTS AND DISCUSSION

Local axial velocity and intensity of turbulence results of the experiment are presented and discussed in the following sections. In the first section, bare rod results in the absence of a blockage are considered. Bare rod data were obtained in the initial stages of the experiment to verify the correctness of the measurements and to establish a data reference for the study.

In the next section, results obtained with a 90 percent blockage placed midway between two grid spacers are discussed. The data were obtained to compare with the bare rod data and to serve as a blockage data base.

The sections that follow present comparisons of the results obtained with the 90 percent blockage located midway between spacers to results obtained with the 90 percent blockage located adjacent to a spacer, and to results obtained with a 70 percent blockage located midway between spacers. The comparisons with the 90 percent blockage midway between spacers and adjacent to a spacer were made to investigate blockage location effects on flow distributions within the bundle. Severity effects were determined when the 70 and 90 percent blockage results were compared.

In the final section, friction factors and loss coefficients calculated using experimental pressure loss data are presented. These parameters were required as input to the COBRA computer program to predict experimental velocity data as discussed in section 5.0.

4.1 BARE ROD

Axial velocity and intensity of turbulence results obtained with a bare bundle (no blockage cluster) are discussed in the sections to follow. Velocity and intensity profiles obtained in the rod bundle at a Reynolds number of 2.9×10^4 ($U_B = 5.7$ ft/sec) were typical of those measured by other investigators.^(2,3,4) Velocity peak-to-average ratios of ~ 1.18 were measured in well-developed flow while ratios of ~ 1.1 were detected immediately downstream from a spacer. Intensity of turbulence values of ~ 0.05 were measured in well-developed flow regions, but increased to ~ 0.13 just downstream from a spacer.

4.1.1 Axial Velocity

Local axial velocity data in the absence of blockages were obtained to verify that the bundle had maintained geometric symmetry during the assembly activity and to establish a data reference case. The velocity profiles presented in Figure 15 indicate bundle symmetry did exist. Ratios of local measured-to-bundle average velocity are shown as a function of distance from the wall (x traverse). The profiles were obtained at specific axial locations (data planes) along the length of the bundle at y locations of 1.763 or 2.302 inches.

The velocity profile obtained upstream from spacer #1 shows distinct velocity peaks at the subchannel centers and valleys at rod gaps. Axial velocity peak-to-average ratios of ~ 1.18 were measured which agree well with those known to exist in well developed turbulent pipe flow and existing rod bundle data.^(2,3,4) The profile also indicates that the flow conditioning section at the entrance to the test assembly distributed the flow uniformly across the bundle cross section.

At an axial location 0.65 inches (~ 1 subchannel hydraulic diameter) downstream from spacer #1, the velocity profile indicates the presence of the spacer by its "ragged" appearance and because the peak-to-average velocity ratio decreased to approximately 1.1. A decrease in the velocity ratio could be expected since the spacer created uniform turbulence across the bundle cross section which "flattened" the velocity profile.

Approximately 6 inches downstream (~ 12 subchannel hydraulic diameters) from spacer #1, the velocity profile had nearly recovered from the influence of the spacer. The profiles were completely developed far downstream from spacer #1. It was concluded that the bundle was geometrically symmetric since the velocity profiles indicated uniformly distributed flow.

4.1.2 Intensity of Turbulence

An increase in turbulence downstream from spacer #1 is shown vividly in Figure 16 where local intensity of turbulence (ratio of local rms fluctuating axial velocity to local mean axial velocity) is presented as a

FIGURE 15. Bare Rod Velocity Profiles, $U_B = 5.7$ ft/sec

FIGURE 16. Bare Rod Intensity Profiles, $U_B = 5.7$ ft/sec

function of distance from the wall.* Immediately downstream from spacer #1, the measured intensity was approximately three times, 0.005 versus 0.13, that obtained at the other data planes. The intensity profiles well downstream of spacer #1 were uniform and indicate that peaks occurred at rod gaps and minima occurred at subchannel centerlines. Local intensity of turbulence values of approximately 0.05 were measured and agree well with existing rod bundle data.^(2,3,4)

The occasional spikes in local intensity values obtained near the windows were unreal and were caused by extraneous scattered light from impurities on the windows resulting in erroneous Doppler signals. During the experiments, the occurrence of these spikes could be eliminated by cleaning the test section windows. This occurrence was of minor consequence since only measurements obtained in the close proximity of the windows were affected.

4.2 90 PERCENT BLOCKAGE MIDWAY BETWEEN SPACERS

Results of axial velocity and intensity of turbulence measurements obtained near a 90 percent blockage located midway between two spacers are presented in this section. Data were obtained at three Reynolds numbers, 1.4×10^4 ($U_B = 2.7$ ft/sec), 2.9×10^4 ($U_B = 5.7$ ft/sec), and 5.8×10^4 ($U_B = 10.7$ ft/sec). The velocity data obtained at selected axial locations along the length of the bundle indicated that a 90 percent blockage created severe flow disturbances. Axial velocities measured immediately upstream from the blockage cluster were extremely low and flow reversals were detected downstream from the blockage. The recirculation zone existed for approximately five subchannel hydraulic diameters downstream from the blockage axial centerline. Flow recovery was completed fifty subchannel hydraulic diameters downstream from the blockage cluster. Flow distributions near the blockage cluster were found to be independent

*See Section 3.3.2.3 for an explanation concerning the choice of normalizing the fluctuating component of velocity with respect to local velocity instead of bundle average velocity to define intensity of turbulence.

of Reynolds number over the range investigated. Velocity data obtained between each rod row at a single data plane (axial location) showed that the recirculation zone was restricted, in the lateral direction, to the 90 percent blocked subchannels.

Local intensity of turbulence values increased by an order of magnitude (0.05 to 0.8) just upstream from the blockage cluster. Immediately downstream from the blockage, increases in local intensity of three orders of magnitude (>10.0) were detected. A length of approximately 15 subchannel hydraulic diameters was required for intensity values to completely recover from blockage effects. Intensity values upstream and downstream from the blockage cluster were independent of Reynolds number. In the immediate proximity of the cluster, a random dependency on Reynolds number was detected, but no correlation of the data was attempted.

4.2.1 Axial Velocity

4.2.1.1 Velocity Reduction and Recovery

Figures 17 through 19 present velocity profiles at specific axial locations along the length of the bundle. The data were obtained with a 90 percent blockage located midway between spacers #1 and #2 at an average bundle velocity of 5.7 ft/sec ($Re = 2.9 \times 10^4$). Each plot in the figure presents the ratio of local measured axial velocity-to-bundle average velocity as a function of distance from the wall (window). All velocity profiles are presented for an x traverse at $y = 1.763$ inches. The numbers in parentheses accompanying the data plane designations indicate respective distances from the blockage axial centerline. The negative sign indicates a particular data plane was located upstream from the blockage.

As shown in Figure 17, the velocity profiles are well developed and very uniform upstream from the blockage cluster. Approximately three subchannel hydraulic diameters (1.8 inches) upstream from the blockage centerline, the influence of the blockage is seen as indicated by the relatively low velocities in the inner subchannels and the higher velocities in the outer subchannels. This trend can be clearly seen in the velocity profile obtained in the tapered region of the blockage 1.3 inches upstream

FIGURE 17. Velocity Profiles Upstream From a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

FIGURE 18. Velocity Profiles Immediately Downstream from a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

FIGURE 19. Velocity Profiles Far Downstream From a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

from the blockage centerline. Peak-to-average velocity ratios increased from ~ 1.1 to ~ 1.25 in the outer subchannels. Velocity ratios in the inner subchannels decreased, with the most significant decrease occurring in subchannel #1 (SC #1). The low velocities are realizable since SC #1 had an area reduction of 90 percent, whereas the subchannels on the periphery of the blockage cluster were somewhat less restricted as previously discussed in Section 3.1.2.

Figures 18 and 19 present velocity profiles downstream from the blockage; downstream is designated by the plus sign preceding the distance values. Velocity profiles obtained immediately downstream from the blockage, Figure 18, indicate negative flows were measured and a recirculation zone existed. Laterally, the zone was confined to SC #1. The low inner subchannel velocities were accompanied by relatively high outer subchannel velocities as indicated by the high peak-to-average velocity ratios of ~ 1.3 . Axially, the recirculation pattern persisted for at least 2.5 inches (~ 5 subchannel hydraulic diameters) downstream from the blockage centerline.* Flow reversals did not persist 3.5 inches (~ 7 diameters) downstream from the blockage centerline. At an axial location 7.3 inches downstream from the blockage centerline, the velocity profile began to recover from the influence of the blockage cluster. Additional downstream velocity profiles shown in Figure 19 indicate that, at ~ 13 inches downstream from the blockage, flow recovery continued. At approximately 25 inches or 50 subchannel diameters downstream from the blockage, the velocity profile was essentially recovered from the blockage disturbance.

Velocity profiles at $U_B = 2.7$ ($Re = 1.4 \times 10^4$) and 10.7 ft/sec ($Re = 5.8 \times 10^4$) were also obtained as shown in Figures 20 and 21. In general, the profiles indicate essentially the same trends as those obtained at $U_B = 5.7$ ft/sec. Figure 22 presents a comparison of the velocity data at the three flowrates. The velocity profiles in the outer subchannel agree exceptionally well. The velocity profiles in the inner subchannels show

*Note that no attempt was made to relate the length of the recirculation zone to a blockage characteristic length. Until sufficient data has been obtained with different blockage severities and dimensions, it is premature to "guess" the best blockage characteristic length that should be used to express the length of the recirculation zone.

FIGURE 20. Velocity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 2.7$ ft/sec

FIGURE 21. Velocity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 10.7$ ft/sec

FIGURE 22. Comparisons of Velocity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 2.7, 5.7,$ and 10.7 ft/sec

some scatter in the downstream tapered regions of the blockage. Farther downstream, the three velocity profiles compare surprisingly well. It can be concluded that the velocity distributions resulting from the blockage disturbance were independent of Reynolds number over the range investigated.

Figure 23 presents measured SC #1 center velocities as functions of axial distance along the bundle at all three flowrates. The overall profiles, which essentially coincide, also indicate that the velocity distributions at the entrance and exit regions to the blockage cluster were not strongly dependent on Reynolds number. The downstream minima were actually "searched out" during data acquisition.

4.2.1.2 Typical Data Plane Velocity Profiles

All velocity profiles obtained at data plane #5, approximately 2 inches downstream from the blockage axial centerline, are shown in Figures 24 and 25. The data obtained in the inner row, $y = 1.763$, 1.813 , and 1.713 inches, indicate that the subchannel flows were very turbulent since the velocity profiles in the y direction were essentially flat at any x location.

In the subchannel row adjacent to the blockage cluster, $y = 1.224$, 1.274 , and 1.174 inches, velocity profiles were present in the y direction. In the inner subchannel, $1.5 < x < 2.0$ inches, the profiles are very consistent in that the row centerline traverse ($y = 1.224$ inches) and the traverse farthest removed from the blockage cluster ($y = 1.174$ inches) indicated higher velocities than did the traverse made next to the cluster at $y = 1.274$ inches. Velocity profiles in the y direction in the outer subchannels, $0.0 < x < 1.0$ inches, are in good agreement with normal turbulent pipe flow in that velocities along the centerline traverse, $y = 1.224$ inches, are higher than the velocities obtained along the adjacent traverses at $y = 1.174$ and $y = 1.274$ inches. In the transition subchannel between unblocked and 90 percent blocked subchannels, $1.0 < x < 1.5$ inches, the velocities are random in nature when compared in the y direction.

FIGURE 23. Axial Profiles of Subchannel #1 Center Velocities With a 90 Percent Blockage Located Midway Between Two Spacers

FIGURE 24. Velocity Profiles Along Inner Traverses at Data Plane #5 (+2.0 in) With a 90 Percent Blockage, $U_B = 5.7$ ft/sec

As shown in Figure 25, velocity profiles in the outer subchannel rows, $y = 0.685$ and $y = 0.110$ inches, indicate developed but relatively high flows, $U/UB \sim 1.3$. Higher velocities are reasonable since the blockage cluster diverted flow to the outer subchannels.

4.2.2 Intensity of Turbulence

4.2.2.1 Intensity Profiles Along the Length of the Bundle

Intensity profiles at various bundle axial locations and at $y = 1.763$ inches are presented in Figures 26 and 27. Local intensity of turbulence values upstream from the blockage cluster (~ 0.05) agreed well with those measured with no blockage present, Figure 16. The outer subchannel intensities were ~ 0.04 at the entrance to the blockage, but the intensities measured in SC #1 increased to ~ 0.9 . These intensity values are approximately six times those obtained ~ 1 subchannel hydraulic diameter downstream from a spacer as presented in Figure 16. Note that in the upstream tapered region of the blockage the intensity values near the center of SC #1 were significantly higher than those in the rod gaps. Generally, higher values of intensity exist in decelerating flows and lower values accompany accelerating flows. By examining the velocity profile of Figure 17, it can be seen that this is precisely the phenomenon that occurred in the upstream tapered region of the blockage since SC #1 gap velocities were higher than the center velocity.

Downstream from the blockage, Figure 27, the lower intensity values, ~ 0.04 , persisted in the outer subchannels and higher values, ~ 0.0 , continued to exist in the innermost subchannels. This trend continued downstream ~ 2.5 inches (~ 5 diameters) but the intensity profile was essentially recovered ~ 3.5 inches (~ 7 diameters) downstream from the blockage centerline.

Figures 28 and 29 present intensity of turbulence profiles that existed near the 90 percent blockage at $U_B = 2.7$ and 10.7 ft/sec. The profiles exhibit the same trends as those obtained at $U_B = 5.7$ ft/sec. Relatively high intensities were measured in the blocked inner subchannels, and intensities typical of those obtained in undisturbed well developed flow were measured in outer subchannels. By comparing the profiles at all three

FIGURE 25. Velocity Profiles Along Outer Traverses at Data Plane #5 (+2.0 in) With a 90 Percent Blockage, $U_B = 5.7$ ft/sec

FIGURE 26. Intensity Profiles Upstream From a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

FIGURE 27. Intensity Profiles Downstream From a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

FIGURE 28. Intensity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 2.7$ ft/sec

FIGURE 29. Intensity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 10.7$ ft/sec

flow rates, Figure 30, it appears that intensity magnitudes were essentially independent of Reynolds number over the range investigated. However, if a Reynolds number dependency does exist, it is random in nature.

Such a comparison can also be made by considering a plot of SC #1 center intensities as functions of axial distance along the bundle, Figure 31. Intensity values upstream and downstream of the blockage cluster are independent of Reynolds number. In the immediate proximity of the blockage cluster, intensity data at the three flowrates indicate a dependency on Reynolds number. The intensity appears to have increased as the flow decreased, but no correlation was attempted since the lack of sufficient data would not permit a satisfactory confidence level to be established for such an empirical relationship.

4.2.2.2 Typical Data Plane Intensity Profiles

All intensity profiles obtained at data plane #5, ~ 2 inches downstream from the blockage axial centerline, are presented in Figures 32 and 33. The profiles obtained at $Y = 1.763 \pm 0.050$ inches, shown in Figure 32, indicate that local intensities of turbulence were nearly uniform in the y direction except at the center of SC #1. At the SC #1 center, the intensity nearest the bundle centerline, $y = 1.813$ inches, was higher than the intensities farther removed from the bundle centerline at $y = 1.763$ and $y = 1.713$ inches. Intensities were relatively low in the outer subchannels, ~ 0.04 , indicating flow acceleration, but intensities increased to approximately 3.5 in SC #1 which signifies flow deceleration. Accelerating flow in the outer subchannels and decelerating flow in the inner subchannels was reasonable since flow was being diverted around the blockage cluster.

At $y = 1.224 \pm 0.050$ inches, the intensity profiles again indicate that low intensities (0.05 - 0.10) existed in the outer subchannels and relatively high values (0.25) were present in the inner subchannels. The intensities in the y direction were very nonuniform. In the outer subchannels, $x < 0.8$ inches, the intensities obtained along the row centerline traverse, $y = 1.224$ inches, were lower (0.05 vs. 0.10) than those measured on either side, $y = 1.174$ and 1.274 inches. In the inner subchannel, $1.5 \leq x \leq 2$ inches,

FIGURE 30. Intensity Profiles Near a 90 Percent Blockage Located Midway Between Two Spacers, $U_b = 2.7$, 5.7, and 10.7 ft/sec

FIGURE 31. Axial Profiles of Subchannel #1 Center Intensities With a 90 Percent Blockage, $U_B = 2.7, 5.7, \text{ and } 10.7 \text{ ft/sec}$

FIGURE 33. Intensity Profiles Along Outer Traverses at Data Plane #5 (+2.0 in) With a 90 Percent Blockage, $U_B = 5.7$ ft/sec

the intensities measured nearest the blockage cluster, $y = 1.274$ inches, are slightly higher than those removed from the blockage, $y = 1.224$ and 1.174 inches.

The intensity profiles obtained in the outer subchannels, $y = 0.685$ and 0.110 inches, shown in Figure 33, are much lower ($\sim 0.03 - 0.05$) than those measured in the inner subchannels. The lower values again indicate that accelerating flow existed in the unblocked subchannels.

4.3 90 PERCENT BLOCKAGE ADJACENT TO A SPACER

Velocity and intensity of turbulence results obtained with a 90 percent blockage located adjacent to and upstream from a spacer are discussed in this section. Data at a Reynolds number of 2.9×10^4 ($U_B = 5.7$ ft/sec) were obtained. The velocity reduction and recovery profiles resulting from the blockage disturbance were similar to those obtained with the cluster located midway between two spacers. A recirculation zone was detected immediately downstream from the blockage cluster but the exact length of the zone could not be determined since the spacer interfered with LDA measurements. A much longer flow recovery length, > 50 subchannel hydraulic diameters, was required when the blockage was adjacent to a spacer.

Local intensity of turbulence profiles with the blockage adjacent to a spacer were also similar to those detected with the blockage cluster located midway between spacers. Immediately upstream and downstream from the blockage, increases in local intensity from ~ 0.05 to ~ 1.5 were detected. Even though these intensity values were lower than those measured with the blockage midway between spacers, the recover length was found to be independent of blockage location.

4.3.1 Axial Velocity

4.3.1.1 Velocity Reduction and Recovery

Velocity profiles near a 90 percent blockage cluster located just upstream from spacer #2 are presented in Figures 34 and 35. The upstream velocity profiles of Figure 34 are similar to those obtained with the

FIGURE 34. Velocity Profiles Upstream From a 90 Percent Blockage Located Adjacent to Spacer #2, $U_B = 5.7$ ft/sec

FIGURE 35. Velocity Profiles Downstream From a 90 Percent Blockage Located Adjacent to Spacer #2, $U_B = 5.7$ ft/sec

90 percent cluster located midway between spacers #1 and #2 previously presented in Figure 17. The influence of the blockage was apparent in the upstream tapered region of the blockage where relatively low axial velocities ($U/U_B \approx 0.1$) were measured at inner subchannel centerlines. Higher velocities, $U/U_B \approx 1.2$, were obtained in the outer subchannels.

Downstream from the blockage, Figure 35, the velocity profiles appear much as they did with the blockage between spacers. Flow reversals were detected in the tapered region as indicated by the negative velocities ($U/U_B \approx -0.2$) obtained near the bundle centerline at +7.2 inches. Vivid decreases in velocities are indicated in the 90 percent blocked subchannel (SC #1). Relatively high velocities ($U/U_B \approx 1.3$) existed in the exterior subchannels.

Flow reversals were not present 0.5 inches downstream of spacer #2, i.e., 3.5 inches downstream from the blockage centerline. Subchannels containing the blockage cluster had substantially lower velocities than the outer subchannels. The velocity profiles measured far downstream from the blockage indicate a flow recovery pattern similar to those previously presented for the case with the blockage placed midway between spacers.

Figure 36 compares SC #1 center velocities along the length of the bundle with the 90 percent blockage located adjacent to spacer #2 with velocities obtained with the blockage located midway between spacers #1 and #2. Upstream from the blockage cluster, the velocities at the centers of SC #1 were slightly higher with the blockage adjacent to spacer #2. Higher velocities are realizable since spacer #1 was farther upstream from the blockage and therefore, a longer developing length existed. It is evident that flow recovery downstream from the blockage cluster occurred over a shorter distance when the blockage was midway between spacers.

4.3.2 Intensity of Turbulence

Local intensity of turbulence values were measured near the 90 percent blockage as shown in Figure 37. The intensity profiles are essentially the same as those presented in Figures 26 and 27 with the blockage midway between spacers #1 and #2. The turbulence upstream from the blockage cluster was

FIGURE 36. Axial Profiles of Subchannel #1 Center Velocities With a 90 Percent Blockage Located Between Two Spacers and Located Adjacent to a Spacer, $U_B = 5.7$ ft/sec

FIGURE 37. Intensity Profiles Near a 90 Percent Blockage Located Adjacent to Spacer #2, $U_B = 5.7$ ft/sec

~ 0.05 which agrees well with the bare rod data of Figure 16. In the tapered region of the blockage both upstream and downstream from the cluster, the intensity increased by a factor of approximately 20, from 0.05 to 1.0. Peaks in intensity occurred at the centers of SC #1 while minima were detected at rod gaps. Farther downstream (+3.5 in.), the intensity began to recover from the effects of the blockage. At an axial location of +7.3 in. the intensity profile was essentially developed.

A comparison of intensities measured at the center of SC #1 with the blockage located midway between spacers #1 and #2 to intensities obtained with the blockage located adjacent to spacer #2 is presented in Figure 38. For the most part, the turbulence was not dependent on the blockage location relative to the spacers. In the downstream tapered region of the blockage, the intensity with the blockage cluster located midway between spacers was slightly higher than with the blockage adjacent to spacer #2. The downstream recovery profiles for the two blockage locations were essentially identical.

4.4 70 PERCENT BLOCKAGE MIDWAY BETWEEN SPACERS

Velocity and intensity of turbulence results obtained with a 70 percent blockage located midway between two spacers are presented in the following sections. The velocity profiles measured at selected locations along the length of the bundle indicate that the flow was not influenced by the 70 percent blockage as severely as by the 90 percent blockage. The recirculation zone detected immediately downstream from the blockage cluster extended for less than three subchannel hydraulic diameters. Even though the 70 percent blockage did not disturb the flow as severely as the 90 percent blockage, the required flow recovery length was approximately the same for the two blockage severities.

Local intensity of turbulence values increased by as much as two orders of magnitude near the blockage cluster (~ 0.05 to ~ 2.0). The recovery length for intensity was essentially independent of blockage severity even though lower intensity values were measured in the close proximity of the cluster with a 70 percent blockage.

FIGURE 38. Axial Profiles of Subchannel #1 Center Intensities With a 90 Percent Blockage Located Midway Between Spacers #1 and #2 and Located Adjacent to Spacer #2, $U_B = 5.7$ ft/sec

4.4.1 Axial Velocity

4.4.1.1 Velocity Reduction and Recovery

Figures 39 and 40 present velocity profiles near a 70 percent sleeve blockage located midway between spacers #1 and #2. The two velocity traverses obtained upstream from the blockage, Figure 39, indicate that the flow was well developed prior to the cluster and that the influence of the blockage was present 0.8 inches upstream from its axial centerline.

Velocity profiles obtained downstream from the 70 percent blockage cluster are shown in Figure 40. The profile measured in the tapered region of the blockage, 0.8 inches downstream from the axial centerline, indicates flow reversals did occur. The recirculation zone existed for less than 3 subchannel hydraulic diameters downstream from the blockage axial centerline. Negative flows were detected in the gap regions while jetting was obtained near the centerline of SC #1. The lack of flow reversals 1.4 inches downstream from the blockage centerline indicates redevelopment of the flow field had been initiated. Evidence that jetting occurred in SC #1 was still present as indicated by the relatively high velocity at the subchannel center.

Velocity profiles farther downstream from the blockage show flow redevelopment in progress. Jetting in SC #1 was not present, as indicated by the relatively "flat" velocity profile. Velocity maximums in the outer subchannel centers and minimums in the outer channel gaps were beginning to form. The flow was essentially redeveloped 25.3 inches downstream from the blockage cluster.

The blockage entrance and exit axial velocity profiles are better visualized in Figure 41 where SC #1 center velocities are presented along the length of the bundle. The axial velocity profile obtained with the 90 percent blockage is included for comparison purposes. The velocity profiles in the entrance region to the blockage cluster were similar for the two blockage severities. The axial location of minimum velocities, which were actually "searched out", appear to coincide.

FIGURE 39. Velocity Profiles Upstream From a 70 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

FIGURE 40. Velocity Profiles Downstream From a 70 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7 \text{ ft/sec}$

FIGURE 41. Axial Profiles of Subchannel #1 Center Velocities With a 70 and a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

At the exit region of the blockage, the velocity profile obtained with the 70 percent blockage exhibits a jetting characteristic that was not measured when using the 90 percent blockage. Jetting may not have been detected with the 90 percent blockage because the measuring volume could not be positioned as close to the blockage axial centerline as was possible with the 70 percent blockage. It was possible to locate a data plane only as close as 1.3 inches above the 90 percent blockage, while the data plane could be positioned as near as 0.8 inches above the 70 percent blockage. The inability to measure velocities closer to the axial centerline of the 90 percent blockage would not appear to completely explain the absence of jetting. Possibly, the flowrates in the 90 percent blocked inner subchannels were extremely low and jetting was minimal or simply did not exist.

The velocity profiles immediately downstream from the blockage cluster indicate that the flow with the 90 percent blockage redeveloped more rapidly than that with the 70 percent blockage when compared on a relative basis; i.e., 1.5 inches from the minimums of the two profiles, the flow with the 90 percent blockage recovered from $U/UB = 0.05$ to 0.55 , whereas the flow with the 70 percent blockage recovered from $U/UB = 0.62$ to 0.75 . It is assumed that a shorter flow recovery length required for the 90 percent blockage was due to larger driving potentials present with the more maldistributed flow which accompanied the more severe blockage. The influence of the blockage severities was nullified after the flow passed through spacer #2.

4.4.1.2 Typical Data Plane Velocity Profiles

A comparison of velocity profiles measured at a single cross section (data plane #15) located 0.8 inches downstream from the 70 percent blockage can be made by referring to Figure 42. The lower plot presents profiles at inner traverses, $y = 1.763$ and 1.224 inches. Velocities in the outer subchannels were relatively high for both traverses. Velocity profiles obtained in the inner subchannels indicate that velocities in the subchannel gaps were relatively low but velocities at subchannel centerlines were surprisingly high. Again, the high velocities indicate that jetting occurred in the 70 percent blocked subchannels.

FIGURE 42. Velocity Profiles at Data Plane #15 (+0.8 in) With a 70 Percent Blockage, $U_B = 5.7$ ft/sec

Velocities presented in the upper plot obtained in the outer subchannels, $y = 0.685$ and $y = 0.110$ inches, are relatively high. The high velocities could be expected since the flow was diverted around the blockage cluster.

4.4.2 Intensity of Turbulence

4.4.2.1 Intensity Profiles Along the Length of the Bundle

Local intensities of turbulence measured upstream from the blockage cluster are presented in Figure 43. The flow was well developed ~ 10 hydraulic diameters upstream from the blockage. In the tapered region of the blockage cluster, -0.8 inches, axial intensity values increased in the inner subchannels signifying that deceleration occurred and that the blockage influenced the flow field.

Intensity profiles obtained downstream from the blockage, Figure 44, indicate the same trends as those received with the 90 percent blockage. Extremely high local intensities, ~ 2 , existed in the inner subchannels of the bundle immediately downstream from the blockage. In the tapered region of the blockage intensity peaks occurred at the gaps of SC #1 and minimum intensity values were measured at the subchannel center. Low intensity values in the SC #1 center are reasonable since the velocity profiles of Figure 35 indicated that jetting (accelerating flow) existed. Likewise, low velocities (decelerating flow) were present in the rod gaps which explain the relatively high gap intensities. Intensity magnitudes in the outer subchannels remained at levels comparable to those in the undisturbed flow of data plane #3.

At an axial location 2.0 inches downstream from the blockage centerline, the turbulent intensity profile was beginning to recover from the blockage disturbance. The profile at +7.3 inches was nearly recovered, and intensities had essentially recovered from the blockage at +25.3 inches downstream from the blockage cluster.

FIGURE 43. Intensity Profiles Upstream From a 70 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

FIGURE 44. Intensity Profiles Downstream From a 70 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

Axial intensity profiles obtained at the center of SC #1 with both a 70 percent blockage and a 90 percent blockage are presented in Figure 45. The profiles indicate that intensity values were independent of blockage severity a few subchannel diameters upstream and downstream from the blockage cluster. However, in the close proximity of the cluster, intensities accompanying the 90 percent blockage were much greater than those resulting from the 70 percent blockage. The difference in intensity magnitudes is realizable since jetting occurred downstream from the 70 percent blockage which created low intensities of turbulence, and flow deceleration was detected near the 90 percent blockage which explains the relatively high intensity values.

Lengths required for redevelopment of the intensity profiles corresponded to those of the velocity profiles previously presented in Figure 41. The axial intensity profiles also indicate that the length required for flow redevelopment was not strongly dependent on blockage severity.

4.4.2.2 Typical Data Plane Intensity Profiles

Intensities measured throughout data plane #15, 0.8 inches downstream from the blockage centerline, are presented in Figure 46. Data obtained in the inner traverse ($y = 1.763$ in.) indicate accelerating flow existed in the outer subchannels, $x < 1.2$ inches, since the intensity values were relatively low, ~ 0.04 . Chaotic flow was detected in the inner subchannels, $x > 1.2$ inches, as indicated by the relatively high magnitude of intensity, ~ 2 . Peaks in turbulence occurred in rod gaps (decelerating flow) and minima were detected at subchannel centers (accelerating flow) which is consistent with the velocity profile presented in Figure 40.

At $y = 1.224$ inches the same trends were present in the intensity profile that were present at $y = 1.763$ inches, but the peaks were less severe (0.25 versus 2). Intensities obtained in the outer traverses, $y = 0.685$ inches and $y = 0.110$ inches, again indicate that the flow in the outer subchannels was accelerating, which is logical since flow was being diverted around the blockage cluster.

FIGURE 45. Axial Profiles of Subchannel #1 Center Intensities With a 70 and a 90 Percent Blockage Located Midway Between Two Spacers, $U_B = 5.7$ ft/sec

FIGURE 46. Intensity Profiles at Data Plane #15 (+0.8 in)
With a 70 Percent Blockage, $U_B = 5.7$ ft/sec

4.5 FRICTION FACTOR AND LOSS COEFFICIENTS

Pressure loss data presented in Appendix C were obtained along the length of the bundle at pressure tap locations 1 through 5 previously identified in Figure 2. The data were required to calculate friction factors, spacer loss coefficients, and blockage loss coefficients making up the input to the COBRA computer code.

4.5.1 Bare Rod Friction Factor

Pressure losses between taps 4 and 5 were used to obtain bare rod friction factors presented in Figure 47. The experimental friction factor curve lies approximately 15 percent above the smooth tube curve. A least squares fit of the friction factor data was performed to obtain the coefficient (0.34) and the exponent (-0.25) presented in the friction factor relationship. The relationship agrees well with those determined in the past for similar rod bundles.⁽²⁾

4.5.2 Spacer Loss Coefficients

Pressure losses resulting from spacer #2 were obtained by subtracting frictional losses from the pressure losses measured between taps 3 and 4. The friction factor relationship presented above was used to predict friction pressure losses. Spacer loss coefficients presented in Figure 48 were then calculated from the standard relationship

$$K_{SP} = 2g \Delta P_{SP} / \rho U_B^2.$$

Since K_{SP} was based on U_B , the loss coefficient is a bundle average value, not a subchannel value. The slight slope of the loss coefficient curve indicates that minor friction losses existed. However, the curve is characteristic of other spacer loss coefficient curves obtained in rod bundles.

4.5.3 Blockage Loss Coefficients

Pressure losses due to blockages were determined by subtracting the overall bundle pressure loss (taps 1 to 5) with a blockage from the overall

FIGURE 47. Bare Rod Friction Factors

FIGURE 48. Spacer #2 Loss Coefficients

loss in the absence of a blockage. Pressure losses in the presence of blockages were normalized to bare bundle flow conditions by considering the ΔP - flow relationship presented in Figure 49, i.e., $\Delta P \propto U_B^{1.82}$ in all cases.

Therefore,

$$\Delta P_{\text{Norm}} = \Delta P \cdot \left[\frac{U_B^{1.82}(\text{without blockage})}{U_B^{1.82}(\text{with blockage})} \right]^{-5}$$

The pressure drop curves indicate that very little form loss was present since their slopes are near 1.8 (all friction) instead of 2.0 (all form).

Blockage loss coefficients were also based on U_B and were calculated using the relationship

$$K_{BL} = 2g \Delta P_{BL} / \rho U_B^2.$$

In the case of the 70 percent blockage, the loss coefficient was assumed to be zero since the blockage did not increase the overall bundle pressure loss, Figure 49. Figure 49 indicates that the 90 percent blockage contributed slightly (0.01 to 0.04 psi) to the overall pressure loss. Blockage loss coefficients ranging from 0.03 to 0.27 were calculated using these pressure losses. An order-of-magnitude scatter in the loss coefficient indicates that accuracies of pressure loss measurements were not good enough to accurately predict the low pressure losses due to the blockage. Therefore, the 90 percent blockage loss coefficient was ranged from 0 to 0.5 in the COBRA predictions as presented and discussed in the following section.

FIGURE 49. Comparison of Overall Bundle Pressure Losses With No Blockage, With a 70 Percent Blockage and With a 90 Percent Blockage

5.0 COMPARISONS WITH COBRA PREDICTIONS

Comparisons of the measured velocity data with predictions obtained using the COBRA program are presented in this section. The comparisons are of major importance in the continuing verification and development of the COBRA program for subchannel (core) analyses at postulated nuclear reactor accident conditions.

The methods used to compare COBRA predictions with the experimental velocity data will be presented in this section. The COBRA versions used to perform the predictions and the input models will be discussed first. The technique used to estimate subchannel average velocities from measured local axial velocity values will then be presented. Finally, COBRA velocity predictions will be compared to measured values for a 70 and a 90 percent blockage positioned midway between spacers #1 and #2. COBRA velocity predictions with the blockage cluster located adjacent to spacer #2 were unsuccessful due to numerical instabilities. Therefore, predictions of that data will be performed with future improved versions of the COBRA code.

5.1 COBRA VERSION AND INPUT MODEL

Predictions of the data obtained with the 70 percent blockage were performed using COBRA-IIIC.⁽¹⁾ Data obtained near the 90 percent blockage could not be predicted with COBRA-IIIC using standard steady-state techniques since instabilities in the numerical solution were encountered. Therefore, predictions of the 90 percent data were performed with a modified version of COBRA-IIIC using a "two step" approach as follows:

- (1) Steady-state predictions with a 70 percent blockage were performed.
- (2) A transient solution, which extended the 70 percent blockage solution to a 90 percent blockage solution, was then performed. During each transient time increment, a slightly greater blockage severity was introduced into the input geometry. After a

90 percent severity had been obtained, sufficient time steps were completed to assure convergence to the correct solution. It is important to note that the solution was transient with respect to blockage severity only, and that all other input parameters remained constant with time.

The input parameters used to predict the axial velocity data are summarized in Table 2. As indicated, the values of the parameters are typical of those commonly used in nonheated bundle predictions. The blockage loss coefficient was varied from subchannel to subchannel and ranged from 0 to 0.5 depending on subchannel location relative to the blockage cluster.

TABLE 2. COBRA Input Parameters

Parameter	COBRA Symbol	Value	
		70%	90%
Cross Flow Resistance	K_{ij}	0.02	0.02
Transverse Momentum	s/l	0.25	0.25
Turbulent Momentum Factor	ft	1.0	1.0
Bare Rod Friction Factor	f	$0.34 Re^{-0.25}$	$0.34 Re^{-0.25}$
Subchannel Spacer Loss Coefficient	K_{s1}	1.14	1.14
Subchannel Blockage Loss Coefficient	K_{s2}		
For Subchannel #1		0.5	0.5
For Subchannel #2		0.0	0.05
Other Subchannels		0.0	0.0
Model Length (in.)		40	40
Calculation Increment (in.)	Δz	0.5	0.5
Total Transient Time (sec)	t	0.0	2.0
Turbulent Mixing	β	0.02	0.02
Temperature (°F)	T	85.0	85.0

The geometry model presented in Figure 50 identifies the location of the subchannels. The model was a one-eighth sector of the total bundle cross section and was justifiable based on geometric symmetry. Dimensions of the model were as-built dimensions measured during and after bundle assembly. The rod diameters were measured to be 0.392 inches. The rod pitch was 0.539 inches and the rod-to-wall spacing was 0.220 inches. The sleeve blockages were modeled as flow area reductions. The area reductions in the tapered region of the blockage sleeves were assumed to vary linearly along the length of the tapers.

5.2 SUBCHANNEL AVERAGE VELOCITY PREDICTIONS

Prior to comparing the measured axial velocity profiles with COBRA predictions, the local measured velocity data were used to calculate subchannel average velocities. Subchannel average velocities were required since the COBRA code computes average values only.

For subchannels #1, #2, and #3, an area-weighting approach in conjunction with the assumption of highly turbulent flow was used to calculate subchannel average velocities from experimental local velocity data. The subchannel cross sections were simplified by replacing the round rods with square rods of equal area as shown in Figure 51. This simplified the area-weighting calculations greatly without altering the actual cross sectional subchannel flow areas. Inner sub-area boundaries were defined as being one-half the distance between a data location and its adjacent neighbors. Similarly, wall sub-areas were defined as being midway between the wall and an adjacent data location. Weighting factors for each sub-area were obtained by dividing the appropriate sub-area by the total subchannel flow area.

Subchannel average velocities were calculated by summing the products of the weighting factors and corresponding measured velocities. The velocity used with a wall sub-area was one-half the value of the velocity of the adjacent sub-area, e.g., one-half the velocity corresponding to sub-area 8 was assumed to exist in sub-area 12. This velocity decay assumption roughly approximated that obtained using the universal "law of the wall."⁽¹¹⁾

FIGURE 50. COBRA Geometry Model

FIGURE 51. Simplified Subchannel Geometry for Calculating Subchannel Average Velocities

Average velocities for subchannels #4 through #10 were determined by inspecting the velocity profiles at nondisturbed data planes, e.g., #3, and estimating the ratio of the average subchannel velocity to the center-point subchannel velocity. Average subchannel velocities at undisturbed data planes were known to be approximately equal to the average bundle velocity. This approach was also used for subchannels #1, #2, and #3 at locations not influenced by the blockage cluster.

In Table 3, a selected number of calculated bundle flowrates determined using the measured LDA velocity data are compared to bundle flowrates measured with the loop turbine meter. Calculated flows were determined by summing the flowrates in each subchannel, $F \propto \sum_{sc=1}^{10} U_{sc} A_{sc}$, and multiplying the sum by eight to account for all eight sectors making up the bundle cross section. As indicated, the calculated flowrates agreed exceptionally well, ± 5 percent, with the measured flowrates.

TABLE 3. Comparisons of Calculated and Measured Bundle Flowrates

Data Plane No.	Calculated Flow, gpm	Measured Flow, gpm	Percent Diff. $\left(\frac{F_m - F_c}{F_m} \right) 100$
#3 (-4.8 in.)	187.6	187.5	-0.1
#9 (-1.2 in.)	194.4	188.5	-3.2
#4 (+1.2 in.)	177.6	186.5	+4.8
#5 (+2.0 in.)	184.9	186.0	+1.4
#12 (+3.5 in.)	197.3	187.9	-5.0
#7 (+25.3 in.)	189.1	186.1	-1.6
#3 (-4.8 in.)	353.7	353.2	-0.1
#9 (-1.2 in.)	366.3	354.5	-3.3
#5 (+2.0 in.)	350.3	355.0	+1.3
#7 (+25.3 in.)	355.0	354.2	-0.2

5.3 COBRA PREDICTIONS

5.3.1 70 Percent Blockage Midway Between Spacers

COBRA-IIIC predictions of the velocity data obtained with the 70 percent blockage located midway between spacers #1 and #2 are presented in Figures 52 and 53. In each figure, the ratio of average subchannel velocity to bundle average velocity is presented as a function of axial location along the bundle. The measured data points are actually subchannel average velocities calculated using measured local axial velocities as discussed in the previous section.

Predictions of the velocity data obtained in subchannels #1, #2, and #3 are shown in Figure 52. COBRA predicted the axial velocity profiles upstream of the blockage cluster extremely well. The predicted locations of the minimum velocity points were in excellent agreement with the experimental data.

Downstream from the blockage, the predicted locations and magnitudes of the minimum velocity points were also in good agreement with measured values. The jetting predicted by COBRA was measured experimentally in the downstream tapered region of the blockage. The flow recovery profiles were in good agreement with measured profiles.

Figure 53 presents COBRA predictions of SC #4, 5 and 6 average velocities. As indicated, the predicted subchannel velocities agree satisfactorily with measured values. COBRA predictions of SC #7 through #10 velocities, not presented herein, were also in excellent agreement with the experimental data.

5.3.2 90 Percent Blockage Midway Between Spacers

COBRA predictions of the velocity data obtained with the 90 percent blockage located midway between spacers #1 and #2 are presented in Figures 54 through 57. Figures 54 and 55 are comparisons of COBRA predictions with measured data at an average bundle velocity of 5.7 ft/sec. The predictions for SC #1 through #6 are in excellent agreement with the

FIGURE 52. COBRA Velocity Predictions in Subchannels #1, #2, and #3 With a 70 Percent Blockage, $U_B = 5.7$ ft/sec

FIGURE 53. COBRA Velocity Predictions in Subchannels #4, #5, and #6 With a 70 Percent Blockage, $U_B = 5.7$ ft/sec

FIGURE 54. COBRA Velocity Predictions in Subchannels #1, #2, and #3 With a 90 Percent Blockage, $U_B = 5.7$ ft/sec

FIGURE 55. COBRA Velocity Predictions in Subchannels #4, #5, and #6 With a 90 Percent Blockage, $U_B = 5.7$ ft/sec

FIGURE 56. COBRA Velocity Predictions in Subchannels #1, #2, and #3 With a 90 Percent Blockage, $U_B = 2.7$ ft/sec

FIGURE 57. COBRA Velocity Predictions in Subchannels #1, #2, and #3
With a 90 Percent Blockage, $U_B = 10.7$ ft/sec.

experimental data. Upstream from the blockage cluster in SC #1, Figure 54, COBRA predicted the location and magnitude of the severe velocity reduction, but the jetting effect predicted by COBRA was not detected experimentally. Two possible reasons for the jet remaining undetected experimentally were:

- the measuring volume could not be positioned in the "core" of the blockage cluster, i.e., close to the blockage axial centerline. This was caused by the geometrical restraint created by the angle between the laser beams and the restriction of the tapered region of the blockage cluster; and
- jetting may not have actually existed since the severity of the blockage in the center four subchannels may have "choked" the flow and forced the majority of the flow into the outer subchannels.

COBRA predictions agreed exceptionally well with experimental data obtained downstream from the blockage cluster. The predicted velocity recovery profiles in the reported subchannels #1 through #6 essentially coincide with the experimental data. The velocity minimum measured in SC #1 was actually "searched out" and agrees nicely with the predicted location and value. COBRA predictions of SC #7 through #10 velocities, not presented in this report, essentially coincided with the experimental data.

COBRA predictions with experimental data obtained at average bundle velocities of 2.7 and 10.7 ft/sec are presented in Figures 56 and 57, respectively. The comparisons in SC #1 through #3 are again good, and are similar to the comparisons at $U_B = 5.7$ ft/sec. The minimum velocity locations upstream from the blockage were predicted satisfactorily, but the predicted magnitudes differed slightly from the measured values. Again, the upstream jetting phenomenon predicted in SC #1 was not detected experimentally as previously discussed when $U_B = 5.7$ ft/sec.

COBRA predicted the downstream velocity profiles satisfactorily. The locations of the velocity minima were predicted very accurately, but the measured minimum magnitudes (actually "searched out") were slightly greater than COBRA predictions. It is interesting to note that COBRA predicted a shorter flow recovery length than was obtained experimentally at $U_B = 2.7$ ft/sec. No obvious reason for this discrepancy has been formulated.

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APPENDIXES

APPENDIX A
NOMENCLATURE

APPENDIX A - NOMENCLATURE

A_{sc}	- subchannel area,
b_o	- laser beam radius at focal point,
BLC	- blockage axial centerline,
BR	- designates bare rod,
d_f	- distance between fringes,
DP	- designates data plane,
E, E_{DC}	- DC voltage,
$E_{rms}, \Delta E$	- rms voltage,
f	- Darcy friction factor,
f_D	- Doppler frequency,
f_i	- frequency of incident laser beam,
f_s	- frequency shift,
$F, Flow$	- bundle flowrate,
F_c	- calculated bundle flowrate,
F_m	- measured bundle flowrate,
ft	- turbulent momentum factor,
g	- gravitational constant,
K_{BL}	- blockage loss coefficient,
K_{ij}	- crossflow resistance,
K_{sp}	- spacer loss coefficient,
K_{s1}	- subchannel spacer loss coefficient,
K_{s2}	- subchannel blockage loss coefficient,
n	- number of readings,
n_a	- index of refraction of air,
n_w	- index of refraction of water,
P	- pressure,
PT	- pressure tap location,
ΔP	- pressure drop,
ΔP_{BL}	- pressure drop across the blockage,
ΔP_{SP}	- pressure drop across a spacer,
ΔP_{Norm}	- pressure drop normalized to bare rod flow,
R	- resultant,
Re	- Reynolds number,
Range	- Full scale value of a frequency tracker range,

APPENDIX A - NOMENCLATURE (Continued)

s	- standard deviation,
s/ℓ	- transverse momentum,
SB	- designates a 90 percent blockage midway between spacers,
SN	- designates a 90 percent blockage adjacent to a spacer,
S7	- designates a 70 percent blockage midway between spacers,
t	- time,
T, Temp	- temperature,
U, U_{local}	- local measured mean axial velocity,
U_B, U_B	- bundle average velocity,
$U/U_B, \text{VRATIO}$	- ratio of local mean velocity to bundle average velocity,
$U_{sc}, \bar{U}$	- subchannel average velocity,
U', U_P, U_{Fluc}	- rms fluctuating component of velocity,
$U'/U, U_P/U$ I, Turb	- intensity of turbulence,
W	- uncertainty,
x	- x coordinate,
x_c	- corrected x location,
x_m	- measured x location,
x_1, y_1, r_1	- deviations from a correct reading,
x_c, y_c	- measured variables,
y	- y coordinate,
y_T	- y traverse location,
Δy	- incremental length in y direction
z	- z coordinate,
Δz	- calculation increment,
β	- turbulent mixing,
λ	- wavelength,
ρ	- density,
θ	- angle between incident laser beams,
θ_1, θ_2	- angles of deflection.

APPENDIX B
UNCERTAINTY ANALYSIS

APPENDIX B - UNCERTAINTY ANALYSIS

THEORETICAL APPROACH

Accuracies of the results of the blockage study were estimated using the uncertainty method presented by Schenck.⁽⁸⁾ Consider the general case of a result R , which is a function of the two measured variables X_c and Y_c :

$$R + r_1 = f(X_c + x_1, Y_c + y_1).$$

If this function is continuous and has derivatives, it can be expanded in a "Taylor series," using the first two terms only:

$$R + r_1 = f(X_c, Y_c) + \left[\left(\frac{\partial R}{\partial X_c} \right)_y \frac{X_c + x_1 - X_c}{1!} + \left(\frac{\partial R}{\partial Y_c} \right)_x \frac{Y_c + y_1 - Y_c}{1!} \right].$$

Or, since $R = f(X_c, Y_c)$:

$$r_1 = \left(\frac{\partial R}{\partial X_c} \right)_y x_1 + \left(\frac{\partial R}{\partial Y_c} \right)_x y_1$$

where the lower case letters (r_1 , x_1 , and y_1) apply to deviations from the correct readings, and

$$\sum r_1^2 = \left(\frac{\partial R}{\partial X_c} \right)_y^2 \sum x_1^2 + 2 \left(\frac{\partial R}{\partial X_c} \right)_y \left(\frac{\partial R}{\partial Y_c} \right)_x \sum x_1 y_1 + \left(\frac{\partial R}{\partial Y_c} \right)_x^2 \sum y_1^2$$

$\sum x_1 y_1$ tends to zero and $s_r^2 = \sum r_1^2 / n$ (standard deviation) so that

$$s_r^2 = \left(\frac{\partial R}{\partial X_c} \right)_y^2 s_x^2 + \left(\frac{\partial R}{\partial Y_c} \right)_x^2 s_y^2$$

and, for the uncertainty interval W

$$W_r^2 = \left(\frac{\partial R}{\partial X_c} \right)_y^2 W_x^2 + \left(\frac{\partial R}{\partial Y_c} \right)_x^2 W_y^2$$

where W for this analysis is that precision index enclosing 95 percent of all readings or values.

ANALYSIS DETAILS

Velocity Uncertainty

The uncertainty of the local axial velocity measurements can be estimated by referring to the relationship,

$$U = \lambda f_D / 2 \sin \theta / 2$$

$$\therefore W_u^2 = \left(\frac{\partial U}{\partial \lambda} \right)^2 W_\lambda^2 + \left(\frac{\partial U}{\partial f_D} \right)^2 W_{fD}^2 + \left(\frac{\partial U}{\partial \theta / 2} \right)^2 W_{\theta / 2}^2$$

It can be assumed that the uncertainty of the wavelength of the laser light is negligible. It was estimated, by considering instrument accuracies, that the Doppler frequency uncertainty was $W_{fD} \approx \pm 0.05$ MHz. The half angle uncertainty was calculated to be 0.06° using the above uncertainty methods. Since $\lambda = 6328 \text{ \AA}$, $\theta = 9.7^\circ$, and let $f_D = 0.44$ MHz (Run S7-346) then,

$$W_u^2 = \left(f_D / 2 \sin \theta / 2 \right)^2 W_\lambda^2 + \left(\lambda / 2 \sin \theta / 2 \right)^2 W_{fD}^2 + \left(\frac{-\lambda f_D}{2} \csc \theta / 2 \cdot \cot \theta / 2 \right)^2 W_{\theta / 2}^2$$

The uncertainty term associated with λ goes to zero since $W_\lambda \approx 0$. Therefore,

$$W_u^2 = (2.1 \times 10^{-6} / 2 \cdot 0.0846)^2 (0.05 \times 10^6)^2 + (-2.1 \times 10^{-6} \cdot 0.44 \times 10^6 / 2 \cdot 11.83 \cdot 11.79)^2 0.001^2$$

$$W_u^2 = 0.385 + 0.004$$

$$W_u = \pm 0.624 \text{ ft/sec nr}$$

$$W_u / U = 0.624 / 5.7 \approx \pm 11\%$$

Intensity of Turbulence Uncertainty

The uncertainty in local intensity can be determined using the relationship,

$$I = U'/U = E_{rms}/E_{Dc}$$

$$\therefore W_I^2 = \left(\frac{\partial I}{\partial E_{rms}}\right)^2 W_{Erms}^2 + \left(\frac{\partial I}{\partial E_{Dc}}\right)^2 W_{EDc}^2$$

$$W_I^2 = (1/E_{Dc})^2 W_{Erms}^2 + (-1E_{rms}E_{Dc}^{-2})^2 W_{EDc}^2$$

The accuracy of the DC voltage was specified to be $\sim \pm 0.11v$ and the accuracy of the rms voltage was $\sim \pm 12\text{ mv}$. The rms uncertainty consisted of instrument error ($\pm 2\%$), readability error ($\pm 10\text{ mv}$), noise ($\pm 5\text{ mv}$), and Doppler broadening ($\pm 2\%$). A detailed discussion on error due to Doppler broadening is presented in Reference 2. Therefore, for Run No. S7-346,

$$W_I^2 = (1/0.87)^2 0.012^2 + (-0.115 \cdot 0.87^{-2})^2 0.11^2$$

$$W_I^2 = 0.00019 + 0.00028$$

$$W_I = \pm 0.0217$$

$$W_I/I = 0.0217/0.132 \approx \pm 16\%$$

Data Point Location Uncertainty

The uncertainty in the location of a particular data point relative to its neighbors in the x direction (parallel to the laser beam) was ± 0.001 inches. This uncertainty is essentially that of the positioning capability of the lift/traversing table.

Uncertainties of the locations of the data traverses in the y direction (perpendicular to the laser beam) relative to adjacent rod rows can be estimated as follows:

$$y_T = \Delta y/2$$

where

y_T = y location of the data traverse

Δy = distance between rod rows as measured with the LDA.

The uncertainty of measuring the distance between rods was estimated to be ± 0.020 inches. Therefore,

$$w_{yT}^2 = \left(\frac{\partial y_T}{\partial \Delta y} \right)^2 w_{\Delta y}^2$$

$$w_{yT}^2 = (1/2)^2 w_{\Delta y}^2$$

$$w_{yT}^2 = 1/4 \cdot 0.020^2 = 0.0001$$

$$w_{yT} = \pm 0.010 \text{ inches.}$$

The axial location of a particular data plane relative to the blockage axial centerline could be determined within ± 0.100 inches. This uncertainty estimate was determined by considering measurement accuracy and trueness of the horizontal travel of the lift/traversing table during any one data traverse.

APPENDIX C
TABULATION OF
REDUCED DATA

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.21. AXIAL DISTANCE#15.50 IN. BLOCKAGE CENTERLINE= 0.00 IN. P#17.00 PSI RE# 29500.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 6.	84.6	187.4	3.019	2.293	2.89	55.	5.67	5.81	.36	.062	1.026
BR 5.	84.6	187.4	3.094	2.293	2.91	61.	5.67	5.94	.40	.067	1.049
BR 4.	84.6	187.4	3.170	2.293	2.97	67.	5.67	6.34	.44	.069	1.118
BR 3.	84.6	187.4	3.244	2.293	3.02	56.	5.67	6.66	.37	.055	1.176
BR 2.	84.6	187.4	3.320	2.293	3.01	68.	5.67	6.60	.44	.067	1.164
BR 1.	84.6	187.4	3.395	2.293	2.90	110.	5.67	5.08	.72	.122	1.037
BR 8.	84.0	187.4	.052	2.301	2.77	204.	5.67	5.03	1.33	.265	.887
BR 9.	84.0	187.4	.024	2.301	2.96	110.	5.67	6.27	.72	.115	1.106
BR 10.	84.0	187.4	.100	2.301	3.03	64.	5.67	6.73	.42	.062	1.187
BR 11.	84.0	187.4	.176	2.301	3.00	64.	5.67	6.53	.42	.064	1.153
BR 12.	84.0	187.4	.252	2.301	2.95	65.	5.67	6.20	.42	.058	1.095
BR 13.	84.0	187.4	.328	2.301	2.90	55.	5.67	5.88	.36	.061	1.037
BR 14.	84.0	187.4	.404	2.301	2.89	50.	5.67	5.81	.33	.056	1.026
BR 15.	84.0	187.4	.480	2.301	2.92	55.	5.67	6.01	.36	.060	1.050
BR 16.	84.0	187.4	.556	2.301	2.96	52.	5.67	6.27	.34	.054	1.106
BR 17.	84.0	187.4	.632	2.301	2.99	45.	5.67	6.47	.29	.045	1.141
BR 18.	84.0	187.4	.708	2.301	2.98	51.	5.67	6.40	.33	.052	1.129
BR 19.	84.0	187.4	.784	2.301	2.94	50.	5.67	6.14	.33	.053	1.083
BR 20.	84.0	187.4	.859	2.301	2.93	46.	5.67	6.07	.30	.049	1.072
BR 21.	84.0	187.4	.935	2.301	2.93	43.	5.67	6.07	.28	.046	1.072
BR 22.	84.0	187.4	1.011	2.301	2.93	48.	5.67	6.07	.31	.052	1.072
BR 23.	84.0	187.4	1.087	2.301	2.98	49.	5.67	6.40	.32	.050	1.129
BR 24.	84.0	187.4	1.163	2.301	2.97	44.	5.67	6.34	.29	.045	1.118
BR 25.	84.0	187.4	1.239	2.301	2.95	48.	5.67	6.20	.31	.051	1.095
BR 26.	84.0	187.4	1.315	2.301	2.91	53.	5.67	5.94	.35	.058	1.049
BR 27.	84.0	187.4	1.391	2.301	2.91	50.	5.67	5.94	.33	.055	1.049
BR 28.	84.0	187.4	1.467	2.301	2.90	46.	5.67	5.88	.30	.051	1.037
BR 29.	84.0	187.4	1.543	2.301	2.93	49.	5.67	6.07	.32	.053	1.072
BR 30.	84.0	187.4	1.619	2.301	2.97	48.	5.67	6.34	.31	.049	1.118
BR 31.	84.0	187.4	1.695	2.301	2.99	43.	5.67	6.47	.28	.043	1.141
BR 32.	84.0	187.4	1.771	2.301	2.97	47.	5.67	6.34	.31	.048	1.118
BR 33.	84.0	187.4	1.846	2.301	2.94	49.	5.67	6.14	.32	.052	1.083
BR 34.	84.0	187.4	1.922	2.301	2.90	45.	5.67	5.88	.29	.050	1.037
BR 35.	84.0	187.4	1.998	2.301	2.91	47.	5.67	5.94	.31	.052	1.049
BR 36.	84.0	187.4	2.074	2.301	2.95	52.	5.67	6.20	.34	.055	1.095
BR 37.	84.0	187.4	2.150	2.301	2.99	53.	5.67	6.47	.35	.054	1.141
BR 38.	84.0	187.4	2.226	2.301	3.03	46.	5.67	6.73	.30	.045	1.187
BR 39.	84.0	187.4	2.302	2.301	3.02	50.	5.67	6.66	.33	.049	1.176
BR 40.	84.0	187.4	2.378	2.301	2.98	54.	5.67	6.40	.35	.035	1.129
BR 41.	84.0	187.4	2.454	2.301	2.93	53.	5.67	6.07	.35	.057	1.072
BR 42.	84.0	187.4	2.530	2.301	2.90	48.	5.67	5.88	.31	.053	1.037
BR 43.	84.0	187.4	2.608	2.301	2.92	49.	5.67	6.01	.32	.053	1.060
BR 44.	84.0	187.4	2.682	2.301	2.96	51.	5.67	6.27	.33	.053	1.106
BR 45.	84.0	187.4	2.758	2.301	3.00	48.	5.67	6.53	.31	.048	1.153
BR 46.	84.0	187.4	2.833	2.301	3.02	45.	5.67	6.66	.29	.044	1.176
BR 47.	84.0	187.4	2.909	2.301	3.00	52.	5.67	6.53	.34	.052	1.153
BR 48.	84.0	187.4	2.985	2.301	2.95	53.	5.67	6.20	.35	.056	1.095
BR 49.	84.0	187.4	3.061	2.301	2.91	48.	5.67	5.94	.31	.053	1.049
BR 50.	84.0	187.4	3.137	2.301	2.90	47.	5.67	5.88	.31	.052	1.037

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U (LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 51.	84.0	187.4	3.213	2.301	2.94	52.	5.67	6.14	.34	.055	1.083
BR 52.	84.0	187.4	3.239	2.301	2.98	51.	5.67	6.40	.33	.052	1.129
BR 53.	84.0	187.4	3.365	2.301	3.00	49.	5.67	6.53	.32	.049	1.153
BR 54.	84.0	187.4	3.441	2.301	2.99	55.	5.67	6.47	.36	.056	1.141
BR 55.	84.0	187.4	3.517	2.301	2.94	58.	5.67	6.14	.38	.062	1.083
BR 56.	84.0	187.4	3.593	2.301	2.91	53.	5.67	5.94	.35	.058	1.049
BR 57.	84.0	187.4	3.659	2.301	2.91	57.	5.67	5.94	.37	.063	1.049
BR 58.	84.0	187.4	3.745	2.301	2.96	65.	5.67	6.27	.42	.068	1.106
BR 59.	84.0	187.4	3.820	2.301	3.01	62.	5.67	6.60	.40	.061	1.164
BR 60.	84.0	187.4	3.896	2.301	3.03	63.	5.67	6.73	.41	.061	1.187
BR 61.	84.0	187.4	3.972	2.301	2.97	93.	5.67	6.34	.61	.096	1.118
BR 69.	83.5	187.4	.159	.685	2.97	160.	5.67	6.34	1.05	.165	1.118
BR 68.	83.5	187.4	.685	.685	3.03	54.	5.67	6.73	.35	.052	1.187
BR 67.	83.5	187.4	1.223	.685	3.01	52.	5.67	6.60	.34	.051	1.184
BR 66.	83.5	187.4	1.763	.685	3.03	57.	5.67	6.73	.37	.055	1.187
BR 65.	83.5	187.4	2.302	.685	3.01	55.	5.67	6.60	.36	.054	1.184
BR 64.	83.5	187.4	2.840	.685	3.00	57.	5.67	6.53	.37	.057	1.153
BR 63.	83.5	187.4	3.380	.685	3.02	61.	5.67	6.66	.40	.060	1.176
BR 70.	83.5	187.1	.309	.110	3.00	84.	5.66	6.53	.55	.084	1.154
BR 71.	83.5	187.1	.685	.110	3.02	46.	5.66	6.66	.30	.045	1.177
BR 72.	83.5	187.1	1.223	.110	3.02	47.	5.66	6.66	.31	.046	1.177
BR 73.	83.5	187.1	1.763	.110	3.01	150.	5.66	6.60	.98	.149	1.166
BR 74.	83.5	187.1	2.302	.110	2.99	45.	5.66	6.47	.29	.045	1.143
BR 75.	83.5	187.1	.309	.110	2.99	92.	5.66	6.47	.60	.093	1.143
BR 76.	83.5	187.1	.685	.110	3.03	52.	5.66	6.73	.34	.050	1.189
BR 77.	83.5	187.1	1.223	.110	3.02	44.	5.66	6.66	.29	.043	1.177
BR 78.	83.5	187.1	1.763	.110	3.02	59.	5.66	6.66	.39	.058	1.177
BR 79.	83.5	187.1	2.302	.110	3.00	47.	5.66	6.53	.31	.047	1.154
BR 80.	83.5	187.1	2.840	.110	2.99	45.	5.66	6.47	.29	.045	1.143
BR 81.	83.5	187.1	3.380	.110	2.99	53.	5.66	6.47	.35	.054	1.143
BR 82.	83.5	187.1	3.755	.110	2.98	55.	5.66	6.40	.36	.056	1.131
BR 91.	83.5	187.1	.139	.685	2.93	190.	5.66	6.07	1.24	.204	1.074
BR 90.	83.5	187.1	.309	.685	2.93	109.	5.66	6.07	.71	.117	1.074
BR 89.	83.5	187.1	.685	.685	3.03	57.	5.66	6.73	.37	.055	1.189
BR 88.	83.5	187.1	1.223	.685	3.01	54.	5.66	6.60	.35	.053	1.166
BR 87.	83.5	187.1	1.763	.685	3.03	57.	5.66	6.73	.37	.055	1.189
BR 86.	83.5	187.1	2.302	.685	3.02	57.	5.66	6.66	.37	.056	1.177
BR 85.	83.5	187.1	2.840	.685	3.01	57.	5.66	6.60	.37	.056	1.166
BR 84.	83.5	187.1	3.380	.685	3.04	57.	5.66	6.79	.37	.055	1.201
BR 83.	83.5	187.1	3.903	.685	3.03	155.	5.66	6.73	1.01	.150	1.189
BR 93.	83.5	187.1	.139	1.224	2.74	172.	5.66	4.83	1.12	.232	.854
BR 92.	83.5	187.1	.685	1.224	2.98	72.	5.66	6.40	.47	.073	1.131
BR 94.	83.5	187.1	1.223	1.224	3.04	60.	5.66	6.79	.39	.058	1.201
BR 95.	83.5	187.1	1.763	1.224	3.03	53.	5.66	6.73	.35	.051	1.189
BR 96.	83.5	187.1	2.302	1.224	3.05	60.	5.66	6.86	.39	.057	1.212
BR 97.	83.5	187.1	2.840	1.224	3.03	60.	5.66	6.73	.39	.058	1.189
BR 98.	83.5	187.1	3.380	1.224	3.04	62.	5.66	6.79	.40	.060	1.201

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 99.	83.5	187.1	3.903	1.224	3.04	162.	5.66	6.79	1.06	.156	1.201
BR 107.	83.5	187.1	.139	1.763	2.77	268.	5.66	5.03	1.75	.348	.889
BR 106.	83.5	187.1	.685	1.763	3.02	58.	5.66	6.66	.38	.057	1.177
BR 105.	83.5	187.1	1.223	1.763	3.01	62.	5.66	6.60	.40	.061	1.166
BR 104.	83.5	187.1	1.763	1.763	3.03	57.	5.66	6.73	.37	.055	1.189
BR 103.	83.5	187.1	2.302	1.763	3.05	58.	5.66	6.86	.38	.055	1.212
BR 102.	83.5	187.1	2.840	1.763	3.01	52.	5.66	6.60	.34	.051	1.166
BR 101.	83.5	187.1	3.380	1.763	3.03	57.	5.66	6.73	.37	.055	1.189
BR 100.	83.5	187.1	3.903	1.763	3.04	82.	5.66	6.79	.54	.079	1.201
BR 109.	83.5	187.1	.139	2.823	2.82	208.	5.66	5.36	1.36	.254	.947
BR 108.	83.5	187.1	.685	2.823	2.98	58.	5.66	6.40	.38	.059	1.131
BR 110.	83.5	187.1	1.223	2.823	3.02	74.	5.66	6.65	.48	.073	1.177
BR 111.	83.5	187.1	1.763	2.823	3.02	68.	5.66	6.65	.44	.067	1.177
BR 112.	83.5	187.1	2.302	2.823	2.98	58.	5.66	6.40	.38	.059	1.131
BR 113.	83.5	187.1	2.840	2.823	3.01	70.	5.66	6.60	.46	.069	1.166
BR 114.	83.5	187.1	3.380	2.823	3.00	65.	5.66	6.53	.42	.065	1.154
BR 115.	83.5	187.1	3.903	2.823	2.98	155.	5.66	6.40	1.01	.158	1.131
BR 123.	83.5	187.1	.139	3.372	2.77	194.	5.66	5.03	1.27	.252	.889
BR 122.	83.5	187.1	.685	3.372	2.97	84.	5.66	6.34	.55	.087	1.120
BR 121.	83.5	187.1	1.223	3.372	3.02	64.	5.66	6.66	.42	.063	1.177
BR 120.	83.5	187.1	1.763	3.372	3.02	63.	5.66	6.66	.41	.062	1.177
BR 119.	83.5	187.1	2.302	3.372	2.99	63.	5.66	6.47	.41	.064	1.143
BR 118.	83.5	187.1	2.840	3.372	3.01	70.	5.66	6.60	.46	.069	1.166
BR 116.	83.5	187.1	3.380	3.372	3.00	65.	5.66	6.53	.42	.065	1.154
BR 117.	83.5	187.1	3.903	3.372	2.98	230.	5.66	6.40	1.50	.235	1.131
BR 125.	83.5	187.1	.338	3.913	2.88	184.	5.66	5.75	1.20	.209	1.016
BR 124.	83.5	187.1	.685	3.913	3.02	134.	5.66	6.66	.88	.131	1.177
BR 126.	83.5	187.1	1.223	3.913	3.00	50.	5.66	6.53	.33	.050	1.154
BR 127.	83.5	187.1	1.763	3.913	3.02	50.	5.66	6.66	.33	.049	1.177
BR 128.	83.5	187.1	2.302	3.913	3.02	80.	5.66	6.66	.52	.078	1.177
BR 129.	83.5	187.1	2.840	3.913	3.03	60.	5.66	6.73	.39	.058	1.189
BR 130.	83.5	187.1	3.380	3.913	3.06	60.	5.66	6.92	.39	.057	1.224
BR 131.	83.5	187.1	3.903	3.913	2.94	230.	5.66	6.14	1.50	.245	1.085

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 23. AXIAL DISTANCE 27.50 IN. BLOCKAGE CENTERLINE = 0.00 IN. P = 17.00 PSI RE = 29200.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 184.	84.0	186.9	.024	1.729	2.57	250.	5.65	3.72	1.63	.439	.659
BR 183.	84.0	186.9	.100	1.729	2.83	240.	5.65	5.42	1.57	.289	.959
BR 182.	84.0	186.9	.176	1.729	2.99	120.	5.65	6.47	.78	.121	1.144
BR 181.	84.0	186.9	.252	1.729	2.97	84.	5.65	6.34	.55	.087	1.121
BR 180.	84.0	186.9	.328	1.729	2.91	94.	5.65	5.94	.61	.103	1.052
BR 179.	84.0	186.9	.404	1.729	2.89	81.	5.65	5.81	.53	.091	1.028
BR 178.	84.0	186.9	.480	1.729	2.89	64.	5.65	5.81	.42	.072	1.028
BR 177.	84.0	186.9	.556	1.729	2.92	48.	5.65	6.01	.31	.052	1.063
BR 176.	84.0	186.9	.632	1.729	2.94	38.	5.65	6.14	.25	.040	1.086
BR 175.	84.0	186.9	.708	1.729	2.94	39.	5.65	6.14	.25	.041	1.086
BR 174.	84.0	186.9	.784	1.729	2.92	43.	5.65	6.01	.28	.047	1.063
BR 173.	84.0	186.9	.859	1.729	2.89	50.	5.65	5.81	.33	.056	1.028
BR 172.	84.0	186.9	.935	1.729	2.87	54.	5.65	5.68	.35	.062	1.005
BR 171.	84.0	186.9	1.011	1.729	2.89	54.	5.65	5.81	.35	.061	1.028
BR 170.	84.0	186.9	1.087	1.729	2.93	51.	5.65	6.07	.33	.055	1.075
BR 169.	84.0	186.9	1.163	1.729	2.96	43.	5.65	6.27	.28	.045	1.109
BR 168.	84.0	186.9	1.239	1.729	2.98	40.	5.65	6.40	.26	.041	1.132
BR 167.	84.0	186.9	1.315	1.729	2.96	48.	5.65	6.27	.31	.050	1.109
BR 166.	84.0	186.9	1.391	1.729	2.91	61.	5.65	5.94	.40	.067	1.052
BR 165.	84.0	186.9	1.467	1.729	2.88	62.	5.65	5.75	.40	.070	1.017
BR 164.	84.0	186.9	1.543	1.729	2.90	62.	5.65	5.83	.40	.059	1.040
BR 163.	84.0	186.9	1.619	1.729	2.93	59.	5.65	6.07	.39	.063	1.075
BR 162.	84.0	186.9	1.695	1.729	2.97	48.	5.65	6.34	.31	.049	1.121
BR 161.	84.0	186.9	1.771	1.729	2.98	44.	5.65	6.40	.29	.045	1.132
BR 160.	84.0	186.9	1.846	1.729	2.97	50.	5.65	6.34	.33	.052	1.121
BR 159.	84.0	186.9	1.922	1.729	2.93	58.	5.65	6.07	.38	.062	1.075
BR 158.	84.0	186.9	1.998	1.729	2.89	61.	5.65	5.81	.40	.069	1.028
BR 157.	84.0	186.9	2.074	1.729	2.89	60.	5.65	5.81	.39	.067	1.028
BR 156.	84.0	186.9	2.150	1.729	2.92	55.	5.65	6.01	.36	.060	1.063
BR 155.	84.0	186.9	2.226	1.729	2.96	49.	5.65	6.27	.32	.051	1.109
BR 154.	84.0	186.9	2.302	1.729	2.98	40.	5.65	6.40	.26	.041	1.132
BR 153.	84.0	186.9	2.378	1.729	2.98	44.	5.65	6.40	.29	.045	1.132
BR 152.	84.0	186.9	2.454	1.729	2.95	55.	5.65	6.20	.36	.058	1.098
BR 151.	84.0	186.9	2.530	1.729	2.91	62.	5.65	5.94	.40	.068	1.052
BR 150.	84.0	186.9	2.606	1.729	2.89	65.	5.65	5.81	.42	.073	1.028
BR 149.	84.0	186.9	2.682	1.729	2.92	59.	5.65	6.01	.39	.064	1.063
BR 148.	84.0	186.9	2.758	1.729	2.94	50.	5.65	6.14	.33	.053	1.086
BR 147.	84.0	186.9	2.833	1.729	2.96	42.	5.65	6.27	.27	.044	1.109
BR 146.	84.0	186.9	2.909	1.729	2.95	44.	5.65	6.20	.29	.046	1.098
BR 145.	84.0	186.9	2.985	1.729	2.92	54.	5.65	6.01	.35	.059	1.063
BR 144.	84.0	186.9	3.061	1.729	2.88	58.	5.65	5.75	.38	.066	1.017
BR 143.	84.0	186.9	3.137	1.729	2.85	59.	5.65	5.55	.39	.069	.982
BR 142.	84.0	186.9	3.213	1.729	2.88	56.	5.65	5.75	.37	.064	1.017
BR 141.	84.0	186.9	3.289	1.729	2.92	50.	5.65	6.01	.33	.054	1.063
BR 140.	84.0	186.9	3.365	1.729	2.96	41.	5.65	6.27	.27	.043	1.109
BR 139.	84.0	186.9	3.441	1.729	2.97	35.	5.65	6.34	.25	.040	1.121
BR 138.	84.0	186.9	3.517	1.729	2.95	43.	5.65	6.20	.31	.051	1.098
BR 137.	84.0	186.9	3.593	1.729	2.91	57.	5.65	5.94	.37	.063	1.052
BR 136.	84.0	186.9	3.669	1.729	2.91	62.	5.65	5.94	.40	.068	1.052
BR 135.	84.0	186.9	3.745	1.729	2.95	63.	5.65	5.20	.41	.066	1.098
BR 134.	84.0	186.9	3.820	1.729	3.00	59.	5.65	5.53	.39	.059	1.156

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 133.	84.0	188.9	3.898	1.729	3.02	75.	5.65	6.66	.49	.074	1.179
BR 132.	84.0	188.9	3.972	1.729	2.92	230.	5.65	6.01	1.50	.250	1.063
BR 235.	84.0	186.9	.176	1.763	2.63	380.	5.65	4.11	2.48	.603	.728
BR 234.	84.0	188.9	.252	1.768	2.86	198.	5.65	5.62	1.29	.230	.994
BR 233.	84.0	186.9	.328	1.763	2.91	140.	5.65	5.94	.91	.154	1.052
BR 232.	84.0	188.9	.404	1.763	2.89	98.	5.65	5.81	.64	.110	1.020
BR 231.	84.0	186.9	.480	1.763	2.90	59.	5.65	5.88	.39	.066	1.040
BR 230.	84.0	186.9	.556	1.763	2.92	49.	5.65	6.01	.32	.053	1.063
BR 229.	84.0	188.9	.632	1.763	2.93	42.	5.65	6.07	.27	.045	1.075
BR 228.	84.0	186.9	.708	1.763	2.93	46.	5.65	6.07	.30	.049	1.075
BR 227.	84.0	186.9	.784	1.763	2.90	52.	5.65	5.88	.34	.058	1.040
BR 226.	84.0	186.9	.859	1.763	2.88	56.	5.65	5.75	.37	.064	1.017
BR 225.	84.0	186.9	.935	1.763	2.88	56.	5.65	5.75	.37	.064	1.017
BR 224.	84.0	188.9	1.011	1.763	2.89	52.	5.65	5.81	.34	.058	1.028
BR 223.	84.0	186.9	1.087	1.763	2.92	52.	5.65	6.01	.34	.057	1.063
BR 222.	84.0	186.9	1.163	1.763	2.95	48.	5.65	6.20	.31	.051	1.098
BR 221.	84.0	188.9	1.239	1.763	2.96	45.	5.65	6.27	.29	.047	1.109
BR 220.	84.0	186.9	1.315	1.763	2.95	47.	5.65	6.20	.31	.049	1.098
BR 219.	84.0	186.9	1.391	1.763	2.93	52.	5.65	6.07	.34	.056	1.075
BR 218.	84.0	186.9	1.467	1.763	2.91	55.	5.65	5.94	.36	.060	1.052
BR 217.	84.0	188.9	1.543	1.763	2.91	55.	5.65	5.94	.36	.060	1.052
BR 216.	84.0	186.9	1.619	1.763	2.94	55.	5.65	6.14	.36	.059	1.086
BR 215.	84.0	186.9	1.695	1.763	2.97	49.	5.65	6.34	.32	.051	1.121
BR 214.	84.0	186.9	1.771	1.763	2.98	49.	5.65	6.40	.32	.050	1.132
BR 213.	84.0	186.9	1.846	1.763	2.96	52.	5.65	6.27	.34	.054	1.109
BR 212.	84.0	186.9	1.922	1.763	2.94	55.	5.65	6.14	.36	.059	1.086
BR 211.	84.0	188.9	1.998	1.763	2.91	55.	5.65	5.94	.36	.060	1.052
BR 210.	84.0	186.9	2.074	1.763	2.93	54.	5.65	5.88	.35	.060	1.040
BR 209.	84.0	186.9	2.150	1.763	2.92	56.	5.65	6.01	.37	.061	1.063
BR 208.	84.0	186.9	2.226	1.763	2.95	52.	5.65	6.20	.34	.055	1.098
BR 207.	84.0	186.9	2.302	1.763	2.98	46.	5.65	6.40	.30	.047	1.132
BR 206.	84.0	186.9	2.378	1.763	2.98	48.	5.65	6.40	.31	.049	1.132
BR 205.	84.0	188.9	2.454	1.763	2.96	53.	5.65	6.27	.35	.055	1.109
BR 204.	84.0	186.9	2.530	1.763	2.94	57.	5.65	6.14	.37	.061	1.086
BR 203.	84.0	186.9	2.606	1.763	2.94	52.	5.65	6.14	.34	.055	1.086
BR 202.	84.0	186.9	2.682	1.763	2.94	50.	5.65	6.14	.33	.053	1.086
BR 201.	84.0	186.9	2.758	1.763	2.97	48.	5.65	6.34	.31	.049	1.121
BR 200.	84.0	186.9	2.833	1.763	2.97	44.	5.65	6.34	.29	.045	1.121
BR 199.	84.0	186.9	2.909	1.763	2.96	45.	5.65	6.27	.29	.047	1.109
BR 198.	84.0	186.9	2.985	1.763	2.94	52.	5.65	6.14	.34	.055	1.086
BR 197.	84.0	186.9	3.061	1.763	2.91	54.	5.65	5.94	.35	.059	1.052
BR 196.	84.0	186.9	3.137	1.763	2.89	48.	5.65	5.81	.31	.054	1.028
BR 195.	84.0	186.9	3.213	1.763	2.91	52.	5.65	5.94	.34	.057	1.052
BR 194.	84.0	186.9	3.289	1.763	2.93	54.	5.65	6.07	.35	.058	1.075
BR 193.	84.0	186.9	3.365	1.763	2.76	44.	5.65	4.96	.29	.058	.878
BR 192.	84.0	186.9	3.441	1.763	2.97	46.	5.65	6.34	.30	.047	1.121
BR 191.	84.0	186.9	3.517	1.763	2.95	50.	5.65	6.20	.33	.053	1.098
BR 190.	84.0	186.9	3.593	1.763	2.93	60.	5.65	6.07	.39	.065	1.075
BR 189.	84.0	186.9	3.669	1.763	2.92	70.	5.65	6.01	.46	.076	1.063
BR 188.	84.0	186.9	3.745	1.763	2.93	70.	5.65	6.07	.46	.075	1.075
BR 187.	84.0	186.9	3.820	1.763	3.01	80.	5.65	6.60	.52	.079	1.167
BR 186.	84.0	186.9	3.896	1.763	2.97	170.	5.65	6.34	1.11	.175	1.121
BR 185.	84.0	186.9	3.972	1.763	2.98	260.	5.65	6.40	1.70	.265	1.132

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
BR 238.	84.0	186.9	2.302	1.224	2.97	52.	5.65	6.34	.34	.054	1.121
BR 237.	84.0	186.9	2.840	1.224	2.95	52.	5.65	6.20	.34	.055	1.098
BR 236.	84.0	186.9	3.380	1.224	2.97	52.	5.65	6.34	.34	.054	1.121
BR 247.	84.0	186.9	3.831	1.224	2.90	280.	5.65	5.88	1.83	.311	1.040
BR 239.	84.0	186.9	2.302	.685	2.95	46.	5.65	6.20	.30	.048	1.098
BR 240.	84.0	186.9	2.840	.685	2.95	46.	5.65	6.20	.30	.048	1.098
BR 241.	84.0	186.9	3.380	.685	2.95	54.	5.65	6.20	.35	.057	1.098
BR 246.	84.0	186.9	3.831	.685	3.01	160.	5.65	6.60	1.05	.158	1.167
BR 244.	84.0	186.9	2.302	.110	3.03	50.	5.65	6.73	.33	.049	1.190
BR 243.	84.0	186.9	2.840	.110	2.93	48.	5.65	6.07	.31	.052	1.075
BR 242.	84.0	186.9	3.380	.110	3.00	54.	5.65	6.53	.35	.054	1.156
BR 245.	84.0	186.9	3.831	.110	2.96	150.	5.65	6.27	.98	.156	1.109

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.22. AXIAL DISTANCE 21.50 IN. BLOCKAGE CENTERLINE= 0.00 IN. P=17.00 PSI RE= 29400.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 299.	84.3	187.4	.128	1.763	2.54	110.	5.67	3.53	.72	.204	.622
BR 298.	84.3	187.4	.052	1.763	2.59	135.	5.67	3.85	.88	.229	.680
BR 297.	84.3	187.4	.024	1.763	2.84	150.	5.67	5.49	.98	.179	.968
BR 296.	84.3	187.4	.100	1.763	2.92	125.	5.67	6.01	.82	.136	1.060
BR 295.	84.3	187.4	.178	1.763	2.94	120.	5.67	6.14	.78	.128	1.083
BR 294.	84.3	187.4	.252	1.763	2.94	120.	5.67	6.14	.78	.128	1.083
BR 293.	84.3	187.4	.328	1.763	2.91	120.	5.67	5.94	.78	.132	1.049
BR 292.	84.3	187.4	.404	1.763	2.86	120.	5.67	5.62	.78	.140	.991
BR 291.	84.3	187.4	.480	1.763	2.83	120.	5.67	5.42	.78	.145	.957
BR 290.	84.3	187.4	.556	1.763	2.86	120.	5.67	5.62	.78	.140	.991
BR 289.	84.3	187.4	.632	1.763	2.88	128.	5.67	5.75	.84	.145	1.014
BR 288.	84.3	187.4	.708	1.763	2.87	128.	5.67	5.68	.84	.147	1.003
BR 287.	84.3	187.4	.784	1.763	2.86	128.	5.67	5.62	.84	.149	.991
BR 286.	84.3	187.4	.859	1.763	2.85	125.	5.67	5.55	.82	.147	.980
BR 285.	84.3	187.4	.935	1.763	2.83	115.	5.67	5.42	.75	.139	.957
BR 284.	84.3	187.4	1.011	1.763	2.81	105.	5.67	5.29	.69	.130	.933
BR 283.	84.3	187.4	1.087	1.763	2.84	115.	5.67	5.49	.75	.137	.967
BR 282.	84.3	187.4	1.163	1.763	2.89	119.	5.67	5.81	.78	.134	1.025
BR 281.	84.3	187.4	1.239	1.763	2.92	115.	5.67	6.01	.75	.125	1.059
BR 280.	84.3	187.4	1.315	1.763	2.92	123.	5.67	6.01	.80	.134	1.059
BR 279.	84.3	187.4	1.391	1.763	2.91	128.	5.67	5.94	.84	.141	1.048
BR 278.	84.3	187.4	1.467	1.763	2.87	120.	5.67	5.68	.78	.138	1.002
BR 277.	84.3	187.4	1.543	1.763	2.84	115.	5.67	5.49	.75	.137	.967
BR 276.	84.3	187.4	1.619	1.763	2.84	115.	5.67	5.49	.75	.137	.967
BR 275.	84.3	187.4	1.695	1.763	2.87	120.	5.67	5.68	.78	.138	1.002
BR 274.	84.3	187.4	1.771	1.763	2.87	125.	5.67	5.68	.82	.144	1.002
BR 273.	84.3	187.4	1.846	1.763	2.86	125.	5.67	5.62	.82	.145	.990
BR 272.	84.3	187.4	1.922	1.763	2.84	118.	5.67	5.49	.77	.140	.967
BR 271.	84.3	187.4	1.998	1.763	2.83	115.	5.67	5.42	.75	.139	.956
BR 270.	84.3	187.4	2.074	1.763	2.82	108.	5.67	5.36	.71	.132	.944
BR 269.	84.3	187.4	2.150	1.763	2.86	115.	5.67	5.62	.75	.134	.990
BR 268.	84.3	187.4	2.226	1.763	2.95	125.	5.67	6.20	.82	.132	1.094
BR 267.	84.3	187.4	2.302	1.763	2.96	125.	5.67	6.27	.82	.130	1.105
BR 266.	84.3	187.4	2.378	1.763	2.95	120.	5.67	6.20	.78	.126	1.094
BR 265.	84.3	187.4	2.454	1.763	2.93	120.	5.67	6.07	.78	.129	1.071
BR 264.	84.3	187.4	2.530	1.763	2.91	118.	5.67	5.94	.77	.130	1.048
BR 263.	84.3	187.4	2.606	1.763	2.87	109.	5.67	5.68	.71	.125	1.002
BR 262.	84.3	187.4	2.682	1.763	2.83	106.	5.67	5.42	.69	.128	.956
BR 261.	84.3	187.4	2.758	1.763	2.85	112.	5.67	5.55	.73	.132	.979
BR 260.	84.3	187.4	2.833	1.763	2.87	112.	5.67	5.68	.73	.129	1.002
BR 259.	84.3	187.4	2.909	1.763	2.85	115.	5.67	5.55	.75	.135	.979
BR 258.	84.3	187.4	2.985	1.763	2.83	115.	5.67	5.42	.75	.139	.956
BR 257.	84.3	187.4	3.061	1.763	2.81	108.	5.67	5.29	.71	.133	.933
BR 256.	84.3	187.4	3.137	1.763	2.81	102.	5.67	5.29	.67	.126	.933
BR 255.	84.3	187.4	3.213	1.763	2.80	103.	5.67	5.23	.67	.129	.921
BR 254.	84.3	187.4	3.289	1.763	2.86	112.	5.67	5.62	.73	.130	.990
BR 253.	84.3	187.4	3.365	1.763	2.90	115.	5.67	5.88	.75	.128	1.036
BR 252.	84.3	187.4	3.441	1.763	2.92	115.	5.67	6.01	.75	.125	1.059
BR 251.	84.3	187.4	3.517	1.763	2.92	115.	5.67	6.01	.75	.125	1.059
BR 250.	84.3	187.4	3.593	1.763	2.92	115.	5.67	6.01	.75	.125	1.059
BR 249.	84.3	187.4	3.669	1.763	2.87	125.	5.67	5.68	.82	.144	1.002

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
BR 248.	84.3	187.4	3.749	1.763	2.98	180.	5.67	6.40	1.18	.184	1.128
BR 303.	84.3	187.4	2.302	1.224	2.90	135.	5.67	5.88	.88	.150	1.037
BR 302.	84.3	187.4	2.841	1.224	2.89	140.	5.67	5.81	.91	.157	1.026
BR 300.	84.3	187.4	3.380	1.224	2.93	125.	5.67	6.07	.82	.134	1.072
BR 301.	84.3	187.4	3.733	1.224	2.61	270.	5.67	3.98	1.76	.443	.703
BR 304.	84.3	187.4	2.302	.689	2.92	135.	5.67	6.01	.88	.147	1.060
BR 305.	84.3	187.4	2.841	.689	2.87	135.	5.67	5.68	.88	.155	1.003
BR 306.	84.3	187.4	3.380	.689	2.91	125.	5.67	5.94	.82	.137	1.049
BR 307.	84.3	187.4	3.733	.689	2.79	270.	5.67	5.16	1.76	.342	.910
BR 311.	84.3	187.4	2.302	.110	2.93	-0.	5.67	6.07	0.00	0.000	1.072
BR 310.	84.3	187.4	2.841	.110	2.91	130.	5.67	5.94	.85	.143	1.049
BR 308.	84.3	187.4	3.380	.110	2.99	120.	5.67	6.47	.78	.121	1.141
BR 309.	84.3	187.4	3.733	.110	2.77	270.	5.67	5.03	1.76	.351	.887

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 24, AXIAL DISTANCE 433.50 IN. BLOCKAGE CENTERLINE = 0.00 IN. P = 17.00 PSI RE = 29400.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 364.	84.2	187.4	.024	1.763	2.94	90.	5.67	6.14	.59	.096	1.083
BR 363.	84.2	187.4	.100	1.763	3.02	56.	5.67	6.66	.37	.055	1.176
BR 362.	84.2	187.4	.176	1.763	3.01	55.	5.67	6.60	.36	.054	1.164
BR 361.	84.2	187.4	.252	1.763	2.96	58.	5.67	6.27	.38	.060	1.106
BR 360.	84.2	187.4	.328	1.763	2.92	51.	5.67	6.01	.33	.055	1.060
BR 359.	84.2	187.4	.404	1.763	2.91	52.	5.67	5.94	.34	.057	1.049
BR 358.	84.2	187.4	.480	1.763	2.95	55.	5.67	6.20	.36	.058	1.095
BR 357.	84.2	187.4	.556	1.763	2.99	49.	5.67	6.47	.32	.049	1.141
BR 356.	84.2	187.4	.632	1.763	3.01	43.	5.67	6.60	.28	.043	1.164
BR 355.	84.2	187.4	.708	1.763	2.99	49.	5.67	6.47	.32	.049	1.141
BR 354.	84.2	187.4	.784	1.763	2.95	56.	5.67	6.20	.37	.059	1.095
BR 353.	84.2	187.4	.859	1.763	2.91	49.	5.67	5.94	.32	.054	1.049
BR 352.	84.2	187.4	.935	1.763	2.90	48.	5.67	5.88	.31	.053	1.037
BR 351.	84.2	187.4	1.011	1.763	2.94	53.	5.67	6.14	.35	.056	1.083
BR 350.	84.2	187.4	1.087	1.763	2.98	50.	5.67	6.40	.33	.051	1.129
BR 349.	84.2	187.4	1.163	1.763	3.02	41.	5.67	6.66	.27	.040	1.176
BR 348.	84.2	187.4	1.239	1.763	3.00	46.	5.67	6.53	.30	.046	1.153
BR 347.	84.2	187.4	1.315	1.763	2.96	54.	5.67	6.27	.35	.056	1.106
BR 346.	84.2	187.4	1.391	1.763	2.93	51.	5.67	6.07	.33	.055	1.072
BR 345.	84.2	187.4	1.467	1.763	2.91	51.	5.67	5.94	.33	.056	1.049
BR 344.	84.2	187.4	1.543	1.763	2.95	52.	5.67	6.20	.34	.055	1.095
BR 343.	84.2	187.4	1.619	1.763	2.98	52.	5.67	6.40	.34	.053	1.129
BR 342.	84.2	187.4	1.695	1.763	3.01	43.	5.67	6.60	.28	.043	1.164
BR 341.	84.2	187.4	1.771	1.763	3.01	47.	5.67	6.60	.31	.047	1.164
BR 340.	84.2	187.4	1.846	1.763	2.97	55.	5.67	6.34	.36	.057	1.118
BR 339.	84.2	187.4	1.922	1.763	2.92	52.	5.67	6.01	.34	.057	1.060
BR 338.	84.2	187.4	1.998	1.763	2.90	48.	5.67	5.88	.31	.053	1.037
BR 337.	84.2	187.4	2.074	1.763	2.92	53.	5.67	6.01	.35	.058	1.060
BR 336.	84.2	187.4	2.150	1.763	2.97	52.	5.67	6.34	.34	.054	1.118
BR 335.	84.2	187.4	2.226	1.763	3.00	46.	5.67	6.53	.30	.046	1.153
BR 334.	84.2	187.4	2.302	1.763	3.02	43.	5.67	6.66	.28	.042	1.176
BR 333.	84.2	187.4	2.378	1.763	2.99	52.	5.67	6.47	.34	.053	1.141
BR 332.	84.2	187.4	2.454	1.763	2.95	52.	5.67	6.20	.34	.055	1.095
BR 331.	84.2	187.4	2.530	1.763	2.92	49.	5.67	6.01	.32	.053	1.060
BR 330.	84.2	187.4	2.606	1.763	2.92	48.	5.67	6.01	.31	.052	1.060
BR 329.	84.2	187.4	2.682	1.763	2.96	52.	5.67	6.27	.34	.054	1.106
BR 328.	84.2	187.4	2.758	1.763	2.99	48.	5.67	6.47	.31	.048	1.141
BR 327.	84.2	187.4	2.833	1.763	3.01	45.	5.67	6.60	.29	.045	1.164
BR 326.	84.2	187.4	2.909	1.763	2.99	57.	5.67	6.47	.37	.058	1.141
BR 325.	84.2	187.4	2.985	1.763	2.95	56.	5.67	6.20	.37	.059	1.095
BR 324.	84.2	187.4	3.061	1.763	2.91	52.	5.67	5.94	.34	.057	1.049
BR 323.	84.2	187.4	3.137	1.763	2.90	50.	5.67	5.88	.33	.056	1.037
BR 322.	84.2	187.4	3.213	1.763	2.93	54.	5.67	6.07	.35	.058	1.072
BR 321.	84.2	187.4	3.289	1.763	2.98	50.	5.67	6.40	.33	.051	1.129
BR 320.	84.2	187.4	3.365	1.763	3.00	42.	5.67	6.53	.27	.042	1.153
BR 319.	84.2	187.4	3.441	1.763	2.99	47.	5.67	6.47	.31	.047	1.141
BR 318.	84.2	187.4	3.517	1.763	2.96	52.	5.67	6.27	.34	.054	1.106
BR 317.	84.2	187.4	3.593	1.763	2.93	51.	5.67	6.07	.33	.055	1.072
BR 316.	84.2	187.4	3.669	1.763	2.94	54.	5.67	6.14	.35	.057	1.083
BR 315.	84.2	187.4	3.745	1.763	2.98	62.	5.67	6.40	.40	.063	1.129
BR 314.	84.2	187.4	3.820	1.763	3.04	59.	5.67	6.79	.39	.057	1.199

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 313.	84.2	187.4	3.898	1.763	3.07	53.	5.67	6.99	.35	.050	1.233
BR 312.	84.2	187.4	3.972	1.763	3.02	85.	5.67	6.66	.56	.083	1.176
BR 368.	84.2	187.4	2.302	1.224	3.02	44.	5.67	6.66	.29	.043	1.176
BR 367.	84.2	187.4	2.841	1.224	3.00	42.	5.67	6.53	.27	.042	1.153
BR 365.	84.2	187.4	3.381	1.224	3.01	42.	5.67	6.60	.27	.042	1.164
BR 366.	84.2	187.4	3.908	1.224	3.06	52.	5.67	6.92	.34	.049	1.222
BR 369.	84.2	187.4	2.302	.689	3.01	44.	5.67	6.60	.29	.044	1.164
BR 370.	84.2	187.4	2.841	.689	3.00	44.	5.67	6.53	.29	.044	1.153
BR 371.	84.2	187.4	3.381	.689	2.99	42.	5.67	6.47	.27	.042	1.141
BR 372.	84.2	187.4	3.908	.689	3.05	58.	5.67	6.86	.38	.055	1.210
BR 376.	84.2	187.4	2.302	.110	3.01	45.	5.67	6.60	.29	.045	1.164
BR 375.	84.2	187.4	2.841	.110	2.99	42.	5.67	6.47	.27	.042	1.141
BR 374.	84.2	187.4	3.381	.110	3.02	47.	5.67	6.66	.31	.046	1.176
BR 373.	84.2	187.4	3.908	.110	3.01	61.	5.67	6.60	.40	.060	1.164

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.25, AXIAL DISTANCE 439.50 IN. BLOCKAGE CENTERLINE= 0.00 IN. P=17.00 PSI RE= 29900.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 428.	85.8	187.1	.024	1.763	2.90	94.	5.66	5.88	.61	.104	1.039
BR 427.	85.8	187.1	.100	1.763	2.99	59.	5.66	6.47	.39	.060	1.143
BR 426.	85.8	187.1	.176	1.763	2.99	53.	5.66	6.47	.35	.054	1.143
BR 425.	85.8	187.1	.252	1.763	2.96	53.	5.66	6.27	.35	.055	1.108
BR 424.	85.8	187.1	.328	1.763	2.92	49.	5.66	6.01	.32	.053	1.062
BR 423.	85.8	187.1	.404	1.763	2.90	44.	5.66	5.88	.29	.049	1.039
BR 422.	85.8	187.1	.480	1.763	2.93	47.	5.66	6.07	.31	.051	1.074
BR 421.	85.8	187.1	.556	1.763	2.98	47.	5.66	6.40	.31	.048	1.131
BR 420.	85.8	187.1	.632	1.763	3.01	41.	5.66	6.60	.27	.041	1.166
BR 419.	85.8	187.1	.708	1.763	3.00	46.	5.66	6.53	.30	.046	1.154
BR 418.	85.8	187.1	.784	1.763	2.97	50.	5.66	6.34	.33	.052	1.120
BR 417.	85.8	187.1	.859	1.763	2.93	47.	5.66	6.07	.31	.051	1.074
BR 416.	85.8	187.1	.935	1.763	2.92	42.	5.66	6.01	.27	.046	1.062
BR 415.	85.8	187.1	1.011	1.763	2.94	46.	5.66	6.14	.30	.049	1.085
BR 414.	85.8	187.1	1.087	1.763	2.98	47.	5.66	6.40	.31	.048	1.131
BR 413.	85.8	187.1	1.163	1.763	3.01	40.	5.66	6.60	.26	.040	1.166
BR 412.	85.8	187.1	1.239	1.763	3.00	45.	5.66	6.53	.29	.045	1.154
BR 411.	85.8	187.1	1.315	1.763	2.96	57.	5.66	6.27	.37	.059	1.108
BR 410.	85.8	187.1	1.391	1.763	2.91	49.	5.66	5.94	.32	.054	1.050
BR 409.	85.8	187.1	1.467	1.763	2.89	43.	5.66	5.81	.28	.048	1.027
BR 408.	85.8	187.1	1.543	1.763	2.90	48.	5.66	5.88	.31	.053	1.039
BR 407.	85.8	187.1	1.619	1.763	2.94	49.	5.66	6.14	.32	.052	1.085
BR 406.	85.8	187.1	1.695	1.763	2.98	42.	5.67	6.40	.27	.043	1.129
BR 405.	85.8	187.1	1.771	1.763	2.99	43.	5.67	6.47	.28	.043	1.141
BR 404.	85.8	187.1	1.846	1.763	2.96	49.	5.67	6.27	.32	.051	1.106
BR 403.	85.8	187.1	1.922	1.763	2.93	47.	5.67	6.07	.31	.051	1.072
BR 402.	85.8	187.1	1.998	1.763	2.91	43.	5.67	5.94	.28	.047	1.049
BR 401.	85.8	187.1	2.074	1.763	2.92	45.	5.67	6.01	.29	.049	1.060
BR 400.	85.8	187.1	2.150	1.763	2.97	49.	5.67	6.34	.32	.051	1.118
BR 399.	85.8	187.1	2.226	1.763	3.00	44.	5.67	6.53	.29	.044	1.153
BR 398.	85.8	187.1	2.302	1.763	3.01	42.	5.67	6.60	.27	.042	1.164
BR 397.	85.8	187.1	2.378	1.763	2.99	47.	5.67	6.47	.31	.047	1.141
BR 396.	85.8	187.1	2.454	1.763	2.95	49.	5.67	6.20	.32	.052	1.095
BR 395.	85.8	187.1	2.530	1.763	2.92	43.	5.67	6.01	.28	.047	1.060
BR 394.	85.8	187.1	2.606	1.763	2.92	43.	5.67	6.01	.28	.047	1.060
BR 393.	85.8	187.1	2.682	1.763	2.95	46.	5.67	6.20	.30	.048	1.095
BR 392.	85.8	187.1	2.758	1.763	3.00	45.	5.67	6.53	.29	.045	1.153
BR 391.	85.8	187.1	2.833	1.763	3.03	39.	5.67	6.73	.25	.038	1.187
BR 390.	85.8	187.1	2.909	1.763	3.01	45.	5.67	6.60	.29	.045	1.164
BR 389.	85.8	187.1	2.985	1.763	2.98	49.	5.67	6.40	.32	.050	1.129
BR 388.	85.8	187.1	3.061	1.763	2.95	46.	5.67	6.20	.30	.048	1.095
BR 387.	85.8	187.1	3.137	1.763	2.94	42.	5.67	6.14	.27	.045	1.083
BR 386.	85.8	187.1	3.213	1.763	2.96	49.	5.67	6.27	.32	.051	1.106
BR 385.	85.8	187.1	3.289	1.763	3.01	46.	5.67	6.60	.30	.046	1.164
BR 384.	85.8	187.1	3.365	1.763	3.03	40.	5.67	6.73	.26	.039	1.187
BR 383.	85.8	187.1	3.441	1.763	3.01	46.	5.67	6.60	.30	.046	1.164
BR 382.	85.8	187.1	3.517	1.763	2.99	46.	5.67	6.47	.30	.046	1.141
BR 381.	85.8	187.1	3.593	1.763	2.97	43.	5.67	6.34	.28	.044	1.118
BR 380.	85.8	187.1	3.669	1.763	2.98	49.	5.67	6.40	.32	.050	1.129
BR 379.	85.8	187.1	3.745	1.763	3.03	58.	5.67	6.73	.38	.056	1.187
BR 378.	85.8	187.1	3.820	1.763	3.08	53.	5.67	7.05	.35	.049	1.245

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
BR 377.	85.8	187.1	3.898	1.763	3.09	61.	5.67	7.12	.40	.056	1.256
BR 432.	85.8	187.1	2.302	1.224	3.02	42.	5.66	6.66	.27	.041	1.177
BR 431.	85.8	187.1	2.841	1.224	3.02	42.	5.66	6.66	.27	.041	1.177
BR 429.	85.8	187.1	3.380	1.224	3.03	41.	5.66	6.73	.27	.040	1.189
BR 430.	85.8	187.1	3.822	1.224	3.07	54.	5.66	6.99	.35	.050	1.235
BR 433.	85.8	187.1	2.302	.685	3.01	42.	5.66	6.60	.27	.042	1.166
BR 436.	85.8	187.1	2.841	.685	3.00	42.	5.66	6.53	.27	.042	1.154
BR 435.	85.8	187.1	3.380	.685	3.00	42.	5.66	6.53	.27	.042	1.154
BR 436.	85.8	187.1	3.822	.685	3.04	58.	5.66	6.79	.38	.056	1.201
BR 440.	85.8	187.1	2.302	.110	3.07	42.	5.66	6.99	.27	.039	1.235
BR 439.	85.8	187.1	2.841	.110	3.06	40.	5.66	6.92	.26	.038	1.224
BR 438.	85.8	187.1	3.380	.110	3.04	40.	5.66	6.79	.26	.038	1.201
BR 437.	85.8	187.1	3.822	.110	3.02	47.	5.66	6.66	.31	.046	1.177

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 1, AXIAL DISTANCE=24.00 IN, BLOCKAGE CENTERLINE=26.25 IN, P=27.00 PSI RE= 29700.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 1.	85.1	187.4	.211	2.299	3.10	105.	5.67	7.18	.69	.095	1.268
SB 2.	85.1	187.4	.287	2.299	3.11	49.	5.67	7.25	.32	.044	1.279
SB 3.	85.1	187.4	.362	2.299	3.09	41.	5.67	7.12	.27	.038	1.256
SB 4.	85.1	187.4	.438	2.299	3.08	42.	5.67	7.05	.27	.039	1.245
SB 5.	85.1	187.4	.512	2.299	3.09	46.	5.67	7.12	.30	.042	1.256
SB 6.	85.1	187.4	.587	2.299	3.10	46.	5.67	7.18	.30	.042	1.268
SB 7.	85.1	187.4	.663	2.299	3.10	42.	5.67	7.18	.27	.038	1.268
SB 8.	85.1	187.4	.739	2.299	3.10	38.	5.67	7.18	.25	.035	1.268
SB 9.	85.1	187.4	.813	2.299	3.08	49.	5.67	7.05	.32	.045	1.245
SB 10.	85.1	187.4	.888	2.299	3.04	68.	5.67	6.79	.44	.065	1.199
SB 11.	85.1	187.4	.964	2.299	2.99	65.	5.67	6.47	.42	.066	1.141
SB 12.	85.1	187.4	1.040	2.299	2.95	65.	5.67	6.20	.42	.068	1.095
SB 13.	85.1	187.4	1.114	2.299	2.92	69.	5.67	6.01	.45	.075	1.060
SB 14.	85.1	187.4	1.190	2.299	2.91	93.	5.67	5.94	.61	.102	1.049
SB 15.	85.1	187.4	1.266	2.299	2.86	163.	5.67	5.62	1.06	.190	.991
SB 16.	85.1	187.4	1.341	2.299	2.66	232.	5.67	4.31	1.52	.352	.761
SB 17.	85.1	187.4	1.415	2.299	2.42	232.	5.67	2.74	1.52	.552	.484
SB 18.	85.1	187.4	1.491	2.299	2.25	182.	5.67	1.63	1.19	.728	.288
SB 19.	85.1	187.4	1.566	2.299	2.15	135.	5.67	.99	.88	.900	.173
SB 20.	85.1	187.4	1.640	2.299	2.09	105.	5.67	.59	.69	1.167	.104
SB 21.	85.1	187.4	1.716	2.299	2.07	105.	5.67	.46	.69	1.500	.081
SB 22.	85.1	187.4	1.792	2.299	2.04	95.	5.67	.26	.62	2.375	.046
SB 23.	85.1	187.4	1.867	2.299	2.02	100.	5.67	.13	.65	5.000	.023
SB 24.	85.1	187.4	1.941	2.299	1.96	98.	5.67	-.26	.64	2.450	-.046
SB 25.	85.1	187.4	2.017	2.299	1.93	88.	5.67	-.46	.57	1.257	-.081
SB 26.	85.1	187.4	2.092	2.299	1.91	88.	5.67	-.59	.57	.978	-.104
SB 27.	85.1	187.4	2.168	2.299	1.92	85.	5.67	-.52	.56	1.063	-.092
SB 28.	85.1	187.4	2.245	2.299	1.92	88.	5.67	-.52	.57	1.100	-.092
SB 29.	85.1	187.4	2.320	2.299	1.93	80.	5.67	-.46	.57	1.257	-.081
SB 30.	85.1	187.4	2.394	2.299	1.97	88.	5.67	-.20	.57	2.933	-.035
SB 31.	85.1	187.4	2.470	2.299	1.99	98.	5.67	-.07	.64	9.800	-.012
SB 32.	85.1	187.4	2.546	2.299	2.03	104.	5.67	.20	.68	3.467	.035
SB 33.	85.1	187.4	2.634	2.299	2.13	130.	5.67	.85	.85	1.000	.150
SB 34.	85.1	187.4	2.697	2.299	2.15	158.	5.67	.98	1.03	1.053	.173
SB 35.	85.1	187.4	2.773	2.299	2.26	212.	5.67	1.70	1.38	.815	.300
SB 36.	85.1	187.4	2.849	2.299	2.44	292.	5.67	2.87	1.91	.664	.507
SB 37.	85.1	187.4	2.923	2.299	2.57	382.	5.67	3.72	2.50	.670	.657
SB 38.	85.1	187.4	2.923	2.299	2.77	254.	5.67	5.03	1.66	.330	.887
SB 39.	85.1	187.4	2.999	2.299	2.82	282.	5.67	5.36	1.84	.344	.945
SB 40.	85.1	187.4	2.999	2.299	2.94	130.	5.67	6.14	.85	.138	1.083
SB 41.	85.1	187.4	3.074	2.299	2.95	84.	5.67	6.20	.55	.088	1.095
SB 42.	85.1	187.4	3.150	2.299	2.98	68.	5.67	6.40	.44	.069	1.129
SB 43.	85.1	187.4	3.226	2.299	3.02	68.	5.67	6.66	.44	.067	1.176
SB 44.	85.1	187.4	3.300	2.299	3.08	55.	5.67	7.05	.36	.051	1.245
SB 45.	85.1	187.4	3.376	2.299	3.11	42.	5.67	7.25	.27	.038	1.279
SB 46.	85.1	187.4	3.451	2.299	3.12	35.	5.67	7.32	.23	.031	1.291
SB 47.	85.1	187.4	3.527	2.299	3.12	37.	5.67	7.32	.24	.033	1.291
SB 48.	85.1	187.4	3.601	2.299	3.12	42.	5.67	7.32	.27	.038	1.291
SB 49.	85.1	187.4	3.676	2.299	3.11	49.	5.67	7.25	.32	.044	1.279
SB 50.	85.1	187.4	3.752	2.299	3.09	47.	5.67	7.12	.31	.043	1.256
SB 51.	85.1	187.4	3.828	2.299	3.10	45.	5.67	7.18	.29	.041	1.268

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 52.	85.1	187.4	3.902	2.295	3.12	48.	5.67	7.32	.31	.043	1.291
SB 53.	85.1	187.4	3.978	2.295	3.14	56.	5.67	7.45	.37	.049	1.314
SB 54.	85.1	187.4	4.053	2.295	3.08	116.	5.67	7.05	.76	.107	1.245
SB 64.	85.1	187.4	1.830	2.249	1.94	82.	5.67	-.39	.54	1.367	-.069
SB 63.	85.1	187.4	1.906	2.249	1.91	78.	5.67	-.59	.51	.867	-.104
SB 62.	85.1	187.4	1.981	2.249	1.89	70.	5.67	-.72	.46	.636	-.127
SB 61.	85.1	187.4	2.057	2.249	1.87	70.	5.67	-.85	.46	.538	-.150
SB 60.	85.1	187.4	2.133	2.249	1.87	63.	5.67	-.85	.41	.485	-.150
SB 59.	85.1	187.4	2.209	2.249	1.87	63.	5.67	-.85	.41	.485	-.150
SB 58.	85.1	187.4	2.284	2.249	1.88	74.	5.67	-.78	.48	.617	-.138
SB 57.	85.1	187.4	2.358	2.249	1.91	76.	5.67	-.59	.48	.822	-.104
SB 56.	85.1	187.4	2.434	2.249	1.94	96.	5.67	-.39	.63	1.600	-.069
SB 55.	85.1	187.4	2.510	2.249	2.00	100.	5.67	0.00	.65	*****	0.000
SB 65.	85.1	187.4	1.830	2.345	2.05	112.	5.67	.33	.73	2.240	.058
SB 66.	85.1	187.4	1.906	2.349	2.02	112.	5.67	.13	.73	5.600	.023
SB 67.	85.1	187.4	1.981	2.349	1.98	112.	5.67	-.13	.73	5.600	-.023
SB 68.	85.1	187.4	2.057	2.349	1.94	112.	5.67	-.39	.73	1.867	-.069
SB 69.	85.1	187.4	2.133	2.349	1.92	102.	5.67	-.52	.67	1.275	-.092
SB 70.	85.1	187.4	2.209	2.349	1.93	102.	5.67	-.46	.67	1.457	-.081
SB 71.	85.1	187.4	2.284	2.349	1.97	102.	5.67	-.20	.67	3.400	-.035
SB 72.	85.1	187.4	2.358	2.345	2.00	110.	5.67	0.00	.72	*****	0.000
SB 73.	85.1	187.4	2.434	2.345	2.02	110.	5.67	.13	.72	5.500	.023
SB 74.	85.1	187.4	2.510	2.345	2.06	115.	5.67	.39	.75	1.917	.069
SB 77.	85.1	187.4	2.409	1.763	1.91	84.	5.67	-.59	.55	.933	-.104
SB 76.	85.1	187.4	2.947	1.763	2.85	193.	5.67	5.55	1.26	.227	.980
SB 75.	85.1	187.4	3.487	1.763	3.08	43.	5.67	7.05	.28	.040	1.245
SB 93.	85.0	187.6	.258	.685	3.08	102.	5.67	7.05	.67	.094	1.243
SB 78.	85.0	187.6	.408	.685	3.05	52.	5.67	6.86	.34	.050	1.209
SB 79.	85.0	187.6	.559	.685	3.08	47.	5.67	7.05	.31	.044	1.243
SB 80.	85.0	187.6	.709	.685	3.10	36.	5.67	7.13	.24	.033	1.266
SB 81.	85.0	187.6	.860	.685	3.06	40.	5.67	5.92	.26	.038	1.220
SB 82.	85.0	187.6	1.010	.685	3.05	52.	5.67	6.86	.34	.050	1.209
SB 83.	85.0	187.6	1.161	.685	3.11	40.	5.67	7.25	.26	.036	1.278
SB 84.	85.0	187.6	1.311	.685	3.08	36.	5.67	7.05	.24	.033	1.243
SB 85.	85.0	187.6	1.462	.685	3.05	43.	5.67	6.86	.28	.041	1.209
SB 86.	85.0	187.6	1.612	.685	3.10	47.	5.67	7.18	.31	.043	1.266
SB 87.	85.0	187.6	1.763	.685	3.12	35.	5.67	7.32	.23	.031	1.289
SB 88.	85.0	187.6	1.914	.685	3.07	42.	5.67	6.99	.27	.039	1.232
SB 89.	85.0	187.6	2.064	.685	3.02	48.	5.67	6.66	.31	.047	1.174
SB 90.	85.0	187.6	2.215	.685	3.07	41.	5.67	6.99	.27	.038	1.232
SB 91.	85.0	187.6	2.365	.685	3.12	33.	5.67	7.32	.22	.029	1.289
SB 92.	85.0	187.6	2.516	.685	3.10	42.	5.67	7.18	.27	.038	1.266
SB 94.	85.0	187.6	.258	1.224	3.08	92.	5.67	7.05	.60	.085	1.243
SB 95.	85.0	187.6	.408	1.224	3.04	54.	5.67	6.79	.35	.052	1.197
SB 96.	85.0	187.6	.559	1.224	3.08	52.	5.67	7.05	.34	.048	1.243
SB 97.	85.0	187.6	.709	1.224	3.11	36.	5.67	7.25	.24	.032	1.278
SB 98.	85.0	187.6	.860	1.224	3.09	33.	5.67	7.12	.22	.030	1.255

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 99.	85.0	187.6	1.010	1.224	3.10	40.	5.67	7.18	.26	.036	1.266
SB 100.	85.0	187.6	1.161	1.224	3.02	80.	5.67	6.66	.52	.078	1.174
SB 101.	85.0	187.6	1.311	1.224	2.96	69.	5.67	6.27	.45	.072	1.105
SB 102.	85.0	187.6	1.462	1.224	2.79	125.	5.67	5.16	.82	.158	.910
SB 103.	85.0	187.6	1.612	1.224	2.65	112.	5.67	4.25	.73	.172	.748
SB 104.	85.0	187.6	1.763	1.224	2.76	145.	5.67	4.93	.95	.191	.875
SB 105.	85.0	187.6	1.914	1.224	2.78	155.	5.67	5.09	1.01	.199	.898
SB 106.	85.0	187.6	2.064	1.224	2.66	125.	5.67	4.31	.82	.189	.760
SB 107.	85.0	187.6	2.219	1.224	2.78	145.	5.67	5.09	.95	.186	.898
SB 108.	85.0	187.6	2.365	1.224	2.85	165.	5.67	5.55	1.08	.194	.979
SB 109.	85.0	187.6	2.510	1.224	2.66	135.	5.67	4.31	.88	.205	.760
SB 110.	85.0	187.6	.258	1.763	2.79	210.	5.67	5.16	1.37	.266	.910
SB 111.	85.0	187.6	.409	1.763	2.94	165.	5.67	6.14	1.08	.176	1.082
SB 112.	85.0	187.6	.559	1.763	3.05	125.	5.67	6.86	.82	.119	1.209
SB 113.	85.0	187.6	.709	1.763	3.11	62.	5.67	7.25	.40	.056	1.278
SB 114.	85.0	187.6	.860	1.763	3.09	68.	5.67	7.12	.44	.062	1.255
SB 115.	85.0	187.6	1.010	1.763	3.01	82.	5.67	6.60	.54	.081	1.163
SB 116.	85.0	187.6	1.161	1.763	2.96	105.	5.67	6.27	.69	.109	1.105
SB 117.	85.0	187.6	1.311	1.763	2.70	229.	5.67	4.57	1.50	.327	.806
SB 118.	85.0	187.6	1.462	1.763	2.43	176.	5.67	2.81	1.15	.409	.485
SB 119.	85.0	187.6	1.612	1.763	2.25	176.	5.67	1.63	1.15	.704	.288
SB 120.	85.0	187.6	1.763	1.763	2.06	120.	5.67	.39	.78	2.000	.069
SB 121.	85.0	187.6	1.914	1.763	1.96	97.	5.67	-.26	.63	2.425	-.046
SB 122.	85.0	187.6	2.064	1.763	1.93	97.	5.67	-.46	.63	1.386	-.081
SB 123.	85.0	187.6	2.219	1.763	1.92	97.	5.67	-.52	.63	1.213	-.092
SB 124.	85.0	187.5	2.369	1.763	1.91	96.	5.67	-.59	.63	1.067	-.104
SB 125.	85.0	187.5	2.516	1.763	1.98	119.	5.67	-.13	.78	5.950	-.023
SB 135.	85.0	187.6	1.161	1.813	2.73	310.	5.67	4.77	2.02	.425	.840
SB 134.	85.0	187.6	1.311	1.813	2.49	340.	5.67	3.20	2.22	.694	.564
SB 133.	85.0	187.6	1.462	1.813	2.31	230.	5.67	2.02	1.50	.742	.357
SB 132.	85.0	187.6	1.612	1.813	2.19	190.	5.67	1.24	1.24	1.000	.219
SB 131.	85.0	187.6	1.763	1.813	2.03	150.	5.67	.20	.98	5.000	.035
SB 130.	85.0	187.6	1.914	1.813	1.99	160.	5.67	-.07	1.05	16.000	-.012
SB 129.	85.0	187.6	2.064	1.813	1.94	119.	5.67	-.39	.78	1.983	-.069
SB 128.	85.0	187.6	2.219	1.813	1.92	124.	5.67	-.52	.81	1.550	-.092
SB 127.	85.0	187.6	2.365	1.813	1.89	120.	5.67	-.72	.78	1.091	-.127
SB 126.	85.0	187.6	2.516	1.813	1.93	130.	5.67	-.46	.85	1.857	-.081
SB 136.	85.0	187.6	1.161	1.713	2.74	340.	5.67	4.83	2.22	.459	.852
SB 137.	85.0	187.6	1.311	1.713	2.51	340.	5.67	3.33	2.22	.667	.587
SB 138.	85.0	187.6	1.462	1.713	2.31	210.	5.67	2.02	1.37	.677	.357
SB 139.	85.0	187.6	1.612	1.713	2.17	170.	5.67	1.11	1.11	1.000	.196
SB 140.	85.0	187.6	1.763	1.713	2.09	150.	5.67	.59	.98	1.667	.104
SB 141.	85.0	187.6	1.914	1.713	2.01	115.	5.67	.07	.75	11.500	.012
SB 142.	85.0	187.6	2.064	1.713	1.97	125.	5.67	-.20	.82	4.167	-.035
SB 143.	85.0	187.6	2.215	1.713	1.96	115.	5.67	-.26	.75	2.875	-.046
SB 144.	85.0	187.6	2.365	1.713	1.94	118.	5.67	-.39	.77	1.967	-.069
SB 145.	85.0	187.6	2.516	1.713	1.99	135.	5.67	-.07	.88	13.500	-.012

TABLE C-1. TABULATION OF EXPERIMENTAL LOA DATA

DATA PLANE NO. 1, AXIAL DISTANCE#20.00 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.00 PSI RE= 29800.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 155.	85.2	187.9	1.010	1.274	3.04	54.	5.68	6.79	.35	.052	1.195
SB 154.	85.2	187.9	1.161	1.274	3.00	53.	5.68	6.53	.35	.053	1.149
SB 153.	85.2	187.9	1.311	1.274	2.79	127.	5.68	5.16	.83	.161	.908
SB 152.	85.2	187.9	1.462	1.274	2.59	125.	5.68	3.85	.82	.212	.678
SB 151.	85.2	187.9	1.612	1.274	2.67	155.	5.68	4.38	1.01	.231	.770
SB 150.	85.2	187.9	1.763	1.274	2.72	161.	5.68	4.70	1.05	.224	.823
SB 149.	85.2	187.9	1.914	1.274	2.59	110.	5.68	3.85	.72	.166	.678
SB 148.	85.2	187.9	2.064	1.274	2.68	150.	5.68	4.44	.98	.221	.782
SB 147.	85.2	187.9	2.215	1.274	2.79	157.	5.68	5.16	1.03	.199	.908
SB 146.	85.2	187.9	2.365	1.274	2.63	126.	5.68	4.11	.82	.200	.724
SB 156.	85.2	187.9	1.010	1.174	2.91	79.	5.68	5.94	.52	.087	1.046
SB 157.	85.2	187.9	1.161	1.174	2.94	92.	5.68	6.14	.60	.098	1.080
SB 158.	85.2	187.9	1.311	1.174	2.76	142.	5.68	4.96	.93	.187	.874
SB 159.	85.2	187.9	1.462	1.174	2.61	130.	5.68	3.98	.85	.213	.701
SB 160.	85.2	187.9	1.612	1.174	2.81	139.	5.68	5.29	.91	.172	.931
SB 161.	85.2	187.9	1.763	1.174	2.80	146.	5.68	5.23	.95	.183	.920
SB 162.	85.2	187.9	1.914	1.174	2.66	107.	5.68	4.31	.70	.162	.759
SB 163.	85.2	187.9	2.064	1.174	2.75	127.	5.68	4.90	.83	.169	.862
SB 164.	85.2	187.9	2.215	1.174	2.88	130.	5.68	5.75	.85	.148	1.012
SB 165.	85.2	187.9	2.365	1.174	2.69	137.	5.68	4.51	.89	.199	.793

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 2, AXIAL DISTANCE=33.50 IN, BLOCKAGE CENTERLINE=26.25 IN, P=17.00 PSI RE= 29800.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 204.	85.3	187.9	.199	1.763	2.81	186.	5.68	5.29	1.21	.230	.931
SB 203.	85.3	187.9	.299	1.763	2.98	123.	5.68	6.40	.80	.126	1.126
SB 202.	85.3	187.9	.400	1.763	2.96	59.	5.68	6.27	.39	.061	1.103
SB 201.	85.3	187.9	.500	1.763	2.94	45.	5.68	6.14	.29	.048	1.080
SB 200.	85.3	187.9	.600	1.763	2.98	49.	5.68	6.40	.32	.050	1.126
SB 199.	85.3	187.9	.700	1.763	3.03	49.	5.68	6.73	.32	.048	1.184
SB 198.	85.3	187.9	.800	1.763	3.07	50.	5.68	6.99	.33	.047	1.230
SB 197.	85.3	187.9	.900	1.763	3.04	59.	5.68	6.79	.39	.057	1.195
SB 196.	85.3	187.9	1.001	1.763	2.97	62.	5.68	6.34	.40	.064	1.115
SB 195.	85.3	187.9	1.101	1.763	2.93	56.	5.68	6.07	.37	.060	1.069
SB 194.	85.3	187.9	1.201	1.763	2.92	52.	5.68	6.01	.34	.057	1.057
SB 193.	85.3	187.9	1.301	1.763	2.91	62.	5.68	5.94	.40	.068	1.046
SB 192.	85.3	187.9	1.401	1.763	2.88	76.	5.68	5.75	.50	.086	1.012
SB 191.	85.3	187.9	1.502	1.763	2.82	90.	5.68	5.36	.59	.110	.943
SB 190.	85.3	187.9	1.602	1.763	2.77	84.	5.68	5.03	.55	.109	.885
SB 189.	85.3	187.9	1.702	1.763	2.73	70.	5.68	4.77	.46	.096	.839
SB 188.	85.3	187.9	1.802	1.763	2.71	59.	5.68	4.64	.39	.083	.816
SB 187.	85.3	187.9	1.902	1.763	2.69	60.	5.68	4.51	.39	.087	.793
SB 186.	85.3	187.9	2.003	1.763	2.69	60.	5.68	4.51	.39	.087	.793
SB 185.	85.3	187.9	2.103	1.763	2.68	62.	5.68	4.44	.40	.091	.782
SB 184.	85.3	187.9	2.203	1.763	2.69	69.	5.68	4.51	.45	.100	.793
SB 183.	85.3	187.9	2.302	1.763	2.70	70.	5.68	4.57	.46	.100	.805
SB 182.	85.3	187.9	2.402	1.763	2.71	70.	5.68	4.64	.46	.099	.816
SB 181.	85.3	187.9	2.502	1.763	2.73	82.	5.68	4.77	.54	.112	.839
SB 180.	85.3	187.9	2.603	1.763	2.76	88.	5.68	4.96	.57	.116	.874
SB 179.	85.3	187.9	2.703	1.763	2.80	89.	5.68	5.23	.58	.111	.920
SB 178.	85.3	187.9	2.803	1.763	2.84	79.	5.68	5.49	.52	.094	.966
SB 177.	85.3	187.9	2.903	1.763	2.87	66.	5.68	5.68	.43	.076	1.000
SB 176.	85.3	187.9	3.003	1.763	2.88	63.	5.68	5.75	.41	.072	1.012
SB 175.	85.3	187.9	3.104	1.763	2.92	70.	5.68	6.01	.46	.076	1.057
SB 174.	85.3	187.9	3.204	1.763	2.99	78.	5.68	6.47	.51	.079	1.138
SB 173.	85.3	187.9	3.304	1.763	3.07	66.	5.68	6.99	.43	.062	1.230
SB 172.	85.3	187.9	3.404	1.763	3.09	53.	5.68	7.12	.35	.049	1.253
SB 171.	85.3	187.9	3.504	1.763	3.03	59.	5.68	6.73	.39	.057	1.184
SB 170.	85.3	187.9	3.605	1.763	2.97	57.	5.68	6.34	.37	.059	1.115
SB 169.	85.3	187.9	3.705	1.763	2.97	56.	5.68	6.34	.37	.058	1.115
SB 168.	85.3	187.9	3.805	1.763	3.02	73.	5.68	6.66	.48	.072	1.172
SB 167.	85.3	187.9	3.905	1.763	3.02	150.	5.68	6.66	.98	.147	1.172
SB 166.	85.3	187.9	4.005	1.763	2.75	232.	5.68	4.90	1.52	.309	.862
SB 219.	85.3	187.9	.900	1.813	2.95	85.	5.68	6.20	.56	.089	1.092
SB 218.	85.3	187.9	1.001	1.813	2.86	89.	5.68	5.62	.58	.103	.989
SB 217.	85.3	187.9	1.101	1.813	2.87	75.	5.68	5.68	.49	.086	1.000
SB 216.	85.3	187.9	1.201	1.813	2.90	63.	5.68	5.88	.41	.070	1.035
SB 215.	85.3	187.9	1.301	1.813	2.90	68.	5.68	5.88	.44	.076	1.035
SB 214.	85.3	187.9	1.401	1.813	2.85	89.	5.68	5.55	.58	.105	.977
SB 213.	85.3	187.9	1.502	1.813	2.76	105.	5.68	4.96	.69	.138	.874
SB 212.	85.3	187.9	1.602	1.813	2.72	95.	5.68	4.70	.62	.132	.828
SB 211.	85.3	187.9	1.702	1.813	2.71	78.	5.68	4.64	.51	.110	.816
SB 210.	85.3	187.9	1.802	1.813	2.70	64.	5.68	4.57	.42	.091	.805

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 209.	85.3	187.9	1.902	1.819	2.68	69.	5.68	4.44	.45	.101	.782
SB 208.	85.3	187.9	2.009	1.813	2.64	86.	5.68	4.18	.56	.134	.736
SB 207.	85.3	187.9	2.103	1.813	2.60	92.	5.68	3.92	.60	.153	.690
SB 206.	85.3	187.9	2.203	1.813	2.65	80.	5.68	4.25	.52	.123	.747
SB 205.	85.3	187.9	2.302	1.813	2.67	67.	5.68	4.38	.44	.100	.770
SB 220.	85.3	187.9	1.900	.713	2.92	83.	5.68	6.01	.54	.090	1.057
SB 221.	85.3	187.9	1.001	.713	2.87	79.	5.68	5.68	.52	.091	1.000
SB 222.	85.3	187.9	1.101	.713	2.87	65.	5.68	5.68	.42	.075	1.000
SB 223.	85.3	187.9	1.201	.713	2.89	55.	5.68	5.81	.36	.062	1.023
SB 224.	85.3	187.9	1.301	.713	2.88	65.	5.68	5.75	.42	.074	1.012
SB 225.	85.3	187.9	1.401	.713	2.84	81.	5.68	5.49	.53	.096	.966
SB 226.	85.3	187.9	1.502	.713	2.78	86.	5.68	5.09	.56	.110	.897
SB 227.	85.3	187.9	1.602	.713	2.73	76.	5.68	4.77	.50	.104	.839
SB 228.	85.3	187.9	1.702	.713	2.71	62.	5.68	4.64	.40	.087	.816
SB 229.	85.3	187.9	1.802	.713	2.70	63.	5.68	4.57	.41	.090	.805
SB 230.	85.3	187.9	1.902	.713	2.68	65.	5.68	4.44	.42	.096	.782
SB 231.	85.3	187.9	2.003	.713	2.65	67.	5.68	4.25	.44	.103	.747
SB 232.	85.3	187.9	2.103	.713	2.64	66.	5.68	4.18	.43	.103	.736
SB 233.	85.3	187.9	2.203	.713	2.67	67.	5.68	4.38	.44	.100	.770
SB 234.	85.3	187.9	2.302	.713	2.69	68.	5.68	4.51	.44	.099	.793

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 2. AXIAL DISTANCE#33.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.00 PSI RE= 29800.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 235.	85.0	188.4	.114	.685	2.96	84.	5.70	6.27	.55	.088	1.101
SB 236.	85.0	188.4	.214	.685	3.05	59.	5.70	6.86	.39	.056	1.204
SB 237.	85.0	188.4	.314	.685	3.03	55.	5.70	6.73	.36	.053	1.181
SB 238.	85.0	188.4	.414	.685	2.97	52.	5.70	6.34	.34	.054	1.112
SB 239.	85.0	188.4	.514	.685	2.96	45.	5.70	6.27	.29	.047	1.101
SB 240.	85.0	188.4	.613	.685	3.01	55.	5.70	6.60	.36	.054	1.158
SB 241.	85.0	188.4	.715	.685	3.05	53.	5.70	6.86	.35	.050	1.204
SB 242.	85.0	188.4	.815	.685	3.00	58.	5.70	6.53	.38	.058	1.146
SB 243.	85.0	188.4	.915	.685	2.93	52.	5.70	6.07	.34	.056	1.066
SB 244.	85.0	188.4	1.014	.685	2.92	44.	5.70	6.01	.29	.048	1.055
SB 245.	85.0	188.4	1.114	.685	2.97	49.	5.70	6.34	.32	.051	1.112
SB 246.	85.0	188.4	1.214	.685	3.03	54.	5.70	6.73	.35	.052	1.181
SB 247.	85.0	188.4	1.314	.685	3.03	49.	5.70	6.73	.32	.048	1.181
SB 248.	85.0	188.4	1.414	.685	2.98	52.	5.70	6.40	.34	.053	1.123
SB 249.	85.0	188.4	1.514	.685	2.95	44.	5.70	6.20	.29	.046	1.089
SB 250.	85.0	188.4	1.614	.685	2.98	50.	5.70	6.40	.33	.051	1.123
SB 251.	85.0	188.4	1.712	.685	3.03	56.	5.70	6.73	.37	.054	1.181
SB 252.	85.0	188.4	1.814	.685	3.03	55.	5.70	6.73	.36	.053	1.181
SB 253.	85.0	188.4	1.914	.685	2.95	58.	5.70	6.20	.38	.061	1.089
SB 254.	85.0	188.4	2.013	.685	2.89	48.	5.70	5.81	.31	.054	1.020
SB 255.	85.0	188.4	2.115	.685	2.91	48.	5.70	5.94	.31	.053	1.043
SB 256.	85.0	188.4	2.215	.685	2.97	57.	5.70	6.34	.37	.059	1.112
SB 250.	85.2	188.4	.214	.110	2.99	54.	5.70	6.47	.35	.055	1.135
SB 259.	85.2	188.4	.715	.110	3.05	43.	5.70	6.86	.28	.041	1.204
SB 258.	85.2	188.4	1.263	.110	3.04	54.	5.70	6.79	.35	.052	1.192
SB 257.	85.2	188.4	1.763	.110	3.06	51.	5.70	6.92	.33	.048	1.215
SB 261.	85.2	188.4	.114	1.224	2.99	88.	5.70	6.47	.57	.089	1.135
SB 262.	85.2	188.4	.214	1.224	3.04	57.	5.70	6.79	.37	.055	1.192
SB 263.	85.2	188.4	.314	1.224	2.98	60.	5.70	6.40	.39	.061	1.123
SB 264.	85.2	188.4	.414	1.224	2.90	54.	5.70	5.88	.35	.060	1.032
SB 265.	85.2	188.4	.514	1.224	2.90	47.	5.70	5.88	.31	.052	1.032
SB 266.	85.2	188.4	.613	1.224	2.96	51.	5.70	6.27	.33	.053	1.101
SB 267.	85.2	188.4	.715	1.224	3.02	54.	5.70	6.66	.35	.053	1.169
SB 268.	85.2	188.4	.815	1.224	3.05	50.	5.70	6.86	.33	.048	1.204
SB 269.	85.2	188.4	.915	1.224	3.00	50.	5.70	6.53	.33	.050	1.146
SB 270.	85.2	188.4	1.014	1.224	2.96	48.	5.70	6.27	.31	.050	1.101
SB 271.	85.2	188.4	1.114	1.224	2.96	40.	5.70	6.27	.26	.042	1.101
SB 272.	85.2	188.4	1.214	1.224	2.97	38.	5.70	6.34	.25	.039	1.112
SB 273.	85.2	188.4	1.314	1.224	2.96	46.	5.70	6.27	.30	.048	1.101
SB 274.	85.2	188.4	1.414	1.224	2.92	61.	5.70	6.01	.40	.066	1.055
SB 275.	85.2	188.4	1.514	1.224	2.87	73.	5.70	5.68	.48	.084	.997
SB 276.	85.2	188.4	1.614	1.224	2.84	65.	5.70	5.49	.42	.077	.963
SB 277.	85.2	188.4	1.712	1.224	2.85	61.	5.70	5.55	.40	.072	.974
SB 278.	85.2	188.4	1.814	1.224	2.86	64.	5.70	5.62	.42	.074	.986
SB 279.	85.2	188.4	1.914	1.224	2.85	62.	5.70	5.55	.40	.073	.974
SB 280.	85.2	188.4	2.013	1.224	2.83	60.	5.70	5.42	.39	.072	.952
SB 281.	85.2	188.4	2.115	1.224	2.83	61.	5.70	5.42	.40	.073	.952

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 282.	85.2	188.4	2.219	1.224	2.85	61.	5.70	5.55	.40	.072	.974
SB 297.	85.2	188.4	.815	1.174	2.99	63.	5.70	6.47	.41	.064	1.135
SB 296.	85.2	188.4	.919	1.174	2.92	71.	5.70	6.31	.46	.077	1.055
SB 295.	85.2	188.4	1.014	1.174	2.87	65.	5.70	5.68	.42	.075	.997
SB 294.	85.2	183.4	1.114	1.174	2.89	52.	5.70	5.31	.34	.058	1.020
SB 293.	85.2	188.4	1.214	1.174	2.93	48.	5.70	6.37	.31	.052	1.066
SB 292.	85.2	184.4	1.314	1.174	2.92	53.	5.70	6.31	.35	.058	1.055
SB 291.	85.2	183.4	1.414	1.174	2.87	69.	5.70	5.58	.45	.079	.997
SB 290.	85.2	183.4	1.514	1.174	2.82	71.	5.70	5.36	.46	.087	.940
SB 289.	85.2	182.4	1.614	1.174	2.83	60.	5.70	5.42	.39	.072	.952
SB 288.	85.2	188.4	1.712	1.174	2.85	57.	5.70	5.55	.37	.067	.974
SB 287.	85.2	188.4	1.814	1.174	2.86	58.	5.70	5.62	.38	.067	.986
SB 286.	85.2	183.4	1.914	1.174	2.83	62.	5.70	5.42	.40	.075	.952
SB 285.	85.2	188.4	2.013	1.174	2.81	60.	5.70	5.29	.39	.074	.929
SB 284.	85.2	188.4	2.119	1.174	2.81	59.	5.70	5.29	.39	.073	.929
SB 283.	85.2	188.4	2.215	1.174	2.84	61.	5.70	5.49	.40	.073	.963
SB 298.	85.2	188.4	.815	1.274	2.99	70.	5.70	5.47	.46	.071	1.135
SB 299.	85.2	188.4	.919	1.274	2.89	81.	5.70	5.81	.53	.091	1.020
SB 300.	85.2	188.4	1.014	1.274	2.86	72.	5.70	5.62	.47	.084	.986
SB 301.	85.2	183.4	1.114	1.274	2.91	60.	5.70	5.94	.39	.066	1.043
SB 302.	85.2	188.4	1.214	1.274	2.97	50.	5.70	6.34	.33	.052	1.112
SB 303.	85.2	188.4	1.314	1.274	2.96	50.	5.70	6.27	.39	.063	1.101
SB 304.	85.2	188.4	1.414	1.274	2.87	92.	5.70	5.63	.60	.106	.997
SB 305.	85.2	183.4	1.514	1.274	2.74	97.	5.70	4.83	.63	.131	.848
SB 306.	85.2	185.4	1.614	1.274	2.76	82.	5.70	4.96	.54	.108	.871
SB 307.	85.2	188.4	1.712	1.274	2.83	72.	5.70	5.42	.47	.087	.952
SB 308.	85.2	188.4	1.814	1.274	2.85	68.	5.70	5.55	.44	.080	.974
SB 309.	85.2	188.4	1.914	1.274	2.82	73.	5.70	5.36	.48	.089	.940
SB 310.	85.2	188.4	2.013	1.274	2.75	82.	5.70	4.90	.54	.109	.860
SB 311.	85.2	188.4	2.119	1.274	2.76	79.	5.70	4.96	.52	.104	.871
SB 312.	85.2	188.4	2.219	1.274	2.82	73.	5.70	5.36	.48	.089	.940

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 3. AXIAL DISTANCE=21.55 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.00 PSI RE= 29400.

RUN	TEMP	FLOW GPH	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 313.	84.8	186.4	.165	1.763	2.96	39.	5.64	6.27	.25	.041	1.112
SB 314.	84.8	186.4	.298	1.763	2.92	45.	5.64	6.01	.29	.049	1.066
SB 315.	84.8	186.4	.431	1.763	2.90	45.	5.64	5.88	.29	.050	1.043
SB 316.	84.8	186.4	.564	1.763	2.93	44.	5.64	6.07	.29	.047	1.078
SB 317.	84.8	186.4	.697	1.763	2.96	40.	5.64	6.27	.26	.042	1.112
SB 318.	84.8	186.4	.831	1.763	2.95	47.	5.64	6.20	.31	.049	1.101
SB 319.	84.8	186.4	.964	1.763	2.94	50.	5.64	6.14	.33	.053	1.089
SB 320.	84.8	186.4	1.097	1.763	2.96	43.	5.64	6.27	.28	.045	1.112
SB 321.	84.8	186.4	1.230	1.763	2.96	41.	5.64	6.27	.27	.043	1.112
SB 322.	84.8	186.4	1.363	1.763	2.91	48.	5.64	5.94	.31	.053	1.054
SB 323.	84.8	186.4	1.497	1.763	2.88	45.	5.64	5.75	.29	.051	1.020
SB 324.	84.8	186.4	1.630	1.763	2.92	44.	5.64	6.01	.29	.048	1.066
SB 325.	84.8	186.4	1.763	1.763	2.96	40.	5.64	6.27	.26	.042	1.112
SB 326.	84.8	186.4	1.896	1.763	2.95	44.	5.64	6.20	.29	.046	1.101
SB 327.	84.8	186.4	2.029	1.763	2.94	48.	5.64	6.14	.31	.051	1.089
SB 328.	84.8	186.4	2.163	1.763	2.96	42.	5.64	6.27	.27	.044	1.112
SB 332.	84.8	186.4	.142	1.224	2.96	39.	5.64	6.27	.25	.041	1.112
SB 331.	84.8	186.4	.683	1.224	2.95	41.	5.64	6.20	.27	.043	1.101
SB 330.	84.8	186.4	1.222	1.224	2.97	39.	5.64	6.34	.25	.040	1.124
SB 329.	84.8	186.4	1.763	1.224	2.96	39.	5.64	6.27	.25	.041	1.112
SB 333.	84.8	186.4	.142	.689	2.92	39.	5.64	6.01	.25	.042	1.066
SB 334.	84.8	186.4	.683	.689	2.95	44.	5.64	6.20	.29	.046	1.101
SB 335.	84.8	186.4	1.222	.689	2.95	40.	5.64	6.20	.26	.042	1.101
SB 336.	84.8	186.4	1.763	.689	2.97	41.	5.64	6.34	.27	.042	1.124
SB 340.	84.8	186.4	.142	.110	2.96	43.	5.64	6.27	.28	.045	1.112
SB 339.	84.8	186.4	.683	.110	2.96	39.	5.64	6.27	.25	.041	1.112
SB 338.	84.8	186.4	1.222	.110	3.02	38.	5.64	6.66	.25	.037	1.182
SB 337.	84.8	186.4	1.763	.110	3.00	40.	5.64	6.53	.26	.040	1.159

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 4. AXIAL DISTANCE 27.45 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.00 PSI RE= 29400.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB 341.	84.8	186.4	.209	.689	3.05	120.	5.64	6.86	.78	.114	1.217
SB 342.	84.8	186.4	.344	.689	3.03	64.	5.64	6.73	.42	.062	1.193
SB 343.	84.8	186.4	.479	.689	3.05	53.	5.64	6.86	.35	.050	1.217
SB 344.	84.8	186.4	.613	.685	3.09	41.	5.64	7.12	.27	.038	1.263
SB 345.	84.8	186.4	.749	.689	3.07	36.	5.64	6.99	.24	.034	1.240
SB 346.	84.8	186.4	.884	.685	3.06	42.	5.64	6.92	.27	.040	1.228
SB 347.	84.8	186.4	1.018	.689	3.08	45.	5.64	7.05	.29	.042	1.251
SB 348.	84.8	186.4	1.154	.689	3.10	42.	5.64	7.18	.27	.038	1.275
SB 349.	84.8	186.4	1.289	.689	3.07	37.	5.64	6.99	.24	.035	1.240
SB 350.	84.8	186.4	1.423	.689	3.07	41.	5.64	6.99	.27	.038	1.240
SB 351.	84.8	186.4	1.559	.683	3.10	37.	5.64	7.18	.24	.034	1.275
SB 352.	84.8	186.4	1.694	.669	3.11	36.	5.64	7.25	.24	.032	1.286
SB 353.	84.8	186.4	1.828	.689	3.09	40.	5.64	7.12	.26	.037	1.263
SB 354.	84.8	186.4	1.964	.689	3.05	39.	5.64	6.86	.25	.037	1.217
SB 355.	84.8	186.4	2.099	.689	3.05	41.	5.64	6.86	.27	.039	1.217
SB 356.	84.8	186.4	2.235	.689	3.09	38.	5.64	7.12	.25	.035	1.263
SB 357.	84.8	186.4	2.369	.685	3.11	37.	5.64	7.25	.24	.033	1.286
SB 358.	84.8	186.4	2.504	.683	3.09	40.	5.64	7.12	.26	.037	1.263
SB 362.	84.8	186.4	.155	.110	3.03	142.	5.64	6.73	.93	.138	1.193
SB 361.	84.8	186.4	.687	.110	3.11	38.	5.64	7.25	.25	.034	1.286
SB 360.	84.8	186.4	1.229	.110	3.15	45.	5.64	7.51	.29	.039	1.333
SB 359.	84.8	186.4	1.763	.110	3.15	39.	5.64	7.51	.25	.034	1.333
SB 378.	84.8	186.8	.165	1.224	3.06	152.	5.65	6.92	.99	.143	1.226
SB 377.	84.8	186.8	.293	1.224	3.02	107.	5.65	6.66	.70	.105	1.179
SB 376.	84.8	186.8	.431	1.224	3.02	115.	5.65	6.66	.75	.113	1.179
SB 375.	84.8	186.8	.564	1.224	3.09	48.	5.65	7.12	.31	.044	1.260
SB 374.	84.8	186.8	.697	1.224	3.08	42.	5.65	7.05	.27	.039	1.249
SB 373.	84.8	186.8	.831	1.224	3.10	43.	5.65	7.18	.28	.039	1.272
SB 372.	84.8	186.8	.964	1.224	3.10	54.	5.65	7.18	.35	.049	1.272
SB 371.	84.8	186.8	1.097	1.224	3.06	53.	5.65	6.92	.35	.050	1.226
SB 370.	84.8	186.8	1.230	1.224	3.00	71.	5.65	6.53	.46	.071	1.156
SB 369.	84.8	186.8	1.363	1.224	2.79	157.	5.65	5.16	1.03	.199	.913
SB 368.	84.8	186.8	1.497	1.224	2.52	166.	5.65	3.40	1.08	.319	.601
SB 367.	84.8	186.8	1.630	1.224	2.61	192.	5.65	3.98	1.25	.315	.705
SB 366.	84.8	186.8	1.763	1.224	2.71	166.	5.65	4.64	1.08	.234	.821
SB 365.	84.8	186.8	1.896	1.224	2.67	199.	5.65	4.38	1.30	.297	.775
SB 364.	84.8	186.8	2.029	1.224	2.52	173.	5.65	3.40	1.13	.333	.601
SB 363.	84.8	186.8	2.163	1.224	2.72	171.	5.65	4.70	1.12	.238	.832
SB 394.	84.8	186.8	.165	1.763	2.62	228.	5.65	4.05	1.49	.368	.717
SB 393.	84.8	186.8	.298	1.763	2.70	200.	5.65	4.57	1.31	.286	.809
SB 392.	84.8	186.8	.431	1.763	2.78	230.	5.65	5.09	1.50	.295	.902
SB 391.	84.8	186.8	.564	1.763	2.88	288.	5.65	5.75	1.88	.327	1.017
SB 390.	84.8	186.8	.697	1.763	3.07	104.	5.65	6.99	.68	.097	1.237
SB 389.	84.8	186.8	.831	1.763	3.06	113.	5.65	6.92	.74	.107	1.226
SB 388.	84.8	186.8	.964	1.763	3.00	95.	5.65	6.53	.62	.095	1.156

RUN	TEMP	FLCW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 387.	84.8	186.8	1.097	1.763	3.00	94.	5.65	6.53	.61	.094	1.156
SB 386.	84.8	186.8	1.230	1.763	2.84	254.	5.65	5.49	1.66	.302	.971
SB 385.	84.8	186.8	1.363	1.763	2.33	239.	5.65	2.16	1.56	.724	.382
SB 384.	84.8	186.8	1.497	1.763	2.19	239.	5.65	1.24	1.56	1.258	.220
SB 383.	84.8	186.8	1.630	1.763	2.38	243.	5.65	2.48	1.59	.639	.439
SB 382.	84.8	186.8	1.763	1.763	2.10	232.	5.65	.65	1.52	2.320	.116
SB 381.	84.8	186.8	1.898	1.763	1.86	96.	5.65	-.91	.63	.686	-.162
SB 380.	84.8	186.8	2.029	1.763	1.86	62.	5.65	-.91	.40	.443	-.162
SB 379.	84.8	186.8	2.163	1.763	1.87	94.	5.65	-.85	.61	.723	-.150

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 5, AXIAL DISTANCE=20.20 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.30 PSI RE= 29400.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 395.	84.1	188.1	.165	.689	3.08	107.	5.69	7.35	.70	.099	1.240
SB 396.	84.1	188.1	.231	.689	3.10	61.	5.69	7.18	.40	.055	1.263
SB 397.	84.1	188.1	.298	.689	3.07	48.	5.69	6.99	.31	.045	1.229
SB 398.	84.1	188.1	.364	.689	3.05	47.	5.69	6.86	.31	.045	1.206
SB 399.	84.1	188.1	.431	.689	3.04	47.	5.69	6.79	.31	.045	1.194
SB 400.	84.1	188.1	.498	.689	3.06	47.	5.69	6.92	.31	.044	1.217
SB 401.	84.1	188.1	.564	.689	3.10	43.	5.69	7.18	.28	.039	1.263
SB 402.	84.1	188.1	.631	.689	3.11	36.	5.69	7.25	.24	.032	1.275
SB 403.	84.1	188.1	.697	.689	3.11	35.	5.69	7.25	.23	.032	1.275
SB 404.	84.1	188.1	.764	.689	3.09	36.	5.69	7.12	.24	.033	1.252
SB 405.	84.1	188.1	.831	.689	3.07	41.	5.69	6.99	.27	.038	1.229
SB 406.	84.1	188.1	.897	.689	3.05	48.	5.69	6.86	.31	.046	1.206
SB 407.	84.1	188.1	.964	.689	3.05	53.	5.69	6.86	.35	.050	1.206
SB 408.	84.1	188.1	1.030	.689	3.07	53.	5.69	6.99	.35	.050	1.229
SB 409.	84.1	188.1	1.097	.689	3.11	47.	5.69	7.25	.31	.042	1.275
SB 410.	84.1	188.1	1.164	.689	3.12	38.	5.69	7.32	.25	.034	1.286
SB 411.	84.1	188.1	1.230	.689	3.11	38.	5.69	7.25	.25	.034	1.275
SB 412.	84.1	188.1	1.297	.689	3.08	37.	5.69	7.05	.24	.034	1.240
SB 413.	84.1	188.1	1.363	.689	3.06	40.	5.69	6.92	.26	.038	1.217
SB 414.	84.1	188.1	1.430	.689	3.04	48.	5.69	6.79	.31	.046	1.194
SB 415.	84.1	188.1	1.497	.689	3.05	54.	5.69	6.86	.35	.051	1.206
SB 416.	84.1	188.1	1.563	.689	3.09	51.	5.69	7.12	.33	.047	1.252
SB 417.	84.1	188.1	1.630	.689	3.12	44.	5.69	7.32	.29	.039	1.286
SB 418.	84.1	188.1	1.696	.689	3.13	36.	5.69	7.38	.24	.032	1.298
SB 419.	84.1	188.1	1.763	.689	3.12	36.	5.69	7.32	.24	.032	1.286
SB 420.	84.1	188.1	1.830	.689	3.09	41.	5.69	7.12	.27	.038	1.252
SB 421.	84.1	188.1	1.896	.689	3.06	48.	5.69	6.92	.31	.045	1.217
SB 422.	84.1	188.1	1.963	.689	3.02	50.	5.69	6.66	.33	.049	1.171
SB 423.	84.1	188.1	2.029	.689	3.01	51.	5.69	6.60	.33	.050	1.160
SB 424.	84.1	188.1	2.096	.689	3.02	50.	5.69	6.66	.33	.049	1.171
SB 425.	84.1	188.1	2.163	.689	3.06	46.	5.69	6.92	.30	.043	1.217
SB 426.	84.1	188.1	2.229	.689	3.09	39.	5.69	7.12	.25	.036	1.252
SB 430.	84.1	188.1	.234	.110	3.03	128.	5.69	6.73	.84	.124	1.183
SB 429.	84.1	188.1	.687	.110	3.13	36.	5.69	7.38	.24	.032	1.298
SB 428.	84.1	188.1	1.225	.110	3.15	49.	5.69	7.51	.32	.043	1.320
SB 427.	84.1	188.1	1.763	.110	3.16	41.	5.69	7.58	.27	.035	1.332
SB 447.	85.1	188.1	.165	1.224	3.04	219.	5.69	6.79	1.43	.211	1.194
SB 446.	85.1	188.1	.298	1.224	3.07	45.	5.69	6.99	.29	.042	1.229
SB 445.	85.1	188.1	.431	1.224	3.03	50.	5.69	6.73	.33	.049	1.183
SB 443.	85.1	188.1	.564	1.224	3.09	49.	5.69	7.12	.32	.045	1.252
SB 442.	85.1	188.1	.697	1.224	3.11	34.	5.69	7.25	.22	.031	1.275
SB 441.	85.1	188.1	.831	1.224	3.10	32.	5.69	7.18	.21	.029	1.263
SB 440.	85.1	188.1	.964	1.224	3.11	41.	5.69	7.25	.27	.037	1.275
SB 439.	85.1	188.1	1.097	1.224	3.03	71.	5.69	6.73	.46	.069	1.183
SB 438.	85.1	188.1	1.230	1.224	2.97	83.	5.69	6.34	.54	.086	1.114
SB 437.	85.1	188.1	1.363	1.224	2.95	111.	5.69	6.20	.72	.117	1.091
SB 436.	85.1	188.1	1.497	1.224	2.74	129.	5.69	4.83	.84	.174	.850

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 435.	85.1	188.1	1.630	1.224	2.73	140.	5.69	4.77	.91	.192	.838
SB 434.	85.1	188.1	1.763	1.224	2.89	144.	5.69	5.81	.94	.162	1.022
SB 433.	85.1	188.1	1.896	1.224	2.80	137.	5.69	5.23	.89	.171	.919
SB 432.	85.1	188.1	2.029	1.224	2.70	113.	5.69	4.57	.74	.161	.804
SB 431.	85.1	188.1	2.163	1.224	2.82	133.	5.69	5.36	.87	.162	.942
SB 463.	85.1	188.1	.165	1.274	3.08	67.	5.69	7.05	.44	.062	1.240
SB 462.	85.1	188.1	.298	1.274	2.98	83.	5.69	6.40	.54	.085	1.125
SB 461.	85.1	188.1	.431	1.274	2.83	109.	5.69	5.42	.71	.131	.953
SB 460.	85.1	188.1	.564	1.274	2.98	93.	5.69	6.40	.61	.095	1.125
SB 459.	85.1	188.1	.697	1.274	3.07	42.	5.69	6.99	.27	.039	1.229
SB 458.	85.1	188.1	.831	1.274	3.04	45.	5.69	6.79	.29	.043	1.194
SB 457.	85.1	188.1	.964	1.274	2.95	95.	5.69	6.20	.62	.100	1.091
SB 456.	85.1	188.1	1.097	1.274	3.02	65.	5.69	6.66	.42	.064	1.171
SB 455.	85.1	188.1	1.230	1.274	3.01	52.	5.69	6.60	.34	.051	1.160
SB 454.	85.1	188.1	1.363	1.274	2.89	113.	5.69	5.81	.74	.127	1.022
SB 453.	85.1	188.1	1.497	1.274	2.61	128.	5.69	3.98	.84	.210	.700
SB 452.	85.1	188.1	1.630	1.274	2.61	137.	5.69	3.98	.89	.225	.700
SB 451.	85.1	188.1	1.763	1.274	2.73	185.	5.69	4.77	1.21	.253	.838
SB 450.	85.1	188.1	1.896	1.274	2.70	153.	5.69	4.57	1.00	.219	.804
SB 449.	85.1	188.1	2.029	1.274	2.57	122.	5.69	3.72	.80	.214	.654
SB 448.	85.1	188.1	2.163	1.274	2.68	152.	5.69	4.44	.99	.224	.781
SB 464.	85.1	188.1	.165	1.174	3.11	66.	5.69	7.25	.43	.059	1.275
SB 465.	85.1	188.1	.298	1.174	2.99	90.	5.69	6.47	.59	.091	1.137
SB 466.	85.1	188.1	.431	1.174	2.85	91.	5.69	5.55	.59	.107	.976
SB 467.	85.1	188.1	.564	1.174	2.98	91.	5.69	6.40	.59	.093	1.125
SB 468.	85.1	188.1	.697	1.174	3.11	43.	5.69	7.25	.28	.039	1.275
SB 469.	85.1	188.1	.831	1.174	3.07	56.	5.69	6.99	.37	.052	1.229
SB 470.	85.1	188.1	.964	1.174	2.96	81.	5.69	6.27	.53	.084	1.102
SB 471.	85.1	188.1	1.097	1.174	2.92	85.	5.69	6.01	.56	.092	1.056
SB 472.	85.1	188.1	1.230	1.174	2.91	96.	5.69	5.94	.63	.105	1.045
SB 473.	85.1	188.1	1.363	1.174	2.89	116.	5.69	5.81	.76	.130	1.022
SB 474.	85.1	188.1	1.497	1.174	2.65	112.	5.69	4.25	.73	.172	.746
SB 475.	85.1	188.1	1.630	1.174	2.70	149.	5.69	4.57	.97	.213	.804
SB 476.	85.1	188.1	1.763	1.174	2.90	132.	5.69	5.88	.86	.147	1.033
SB 477.	85.1	188.1	1.896	1.174	2.75	130.	5.69	4.90	.85	.173	.861
SB 478.	85.1	188.1	2.029	1.174	2.67	103.	5.69	4.38	.67	.154	.769
SB 479.	85.1	188.1	2.163	1.174	2.77	125.	5.69	5.03	.82	.162	.884
SB 495.	85.1	188.1	.165	1.763	3.11	57.	5.69	7.25	.37	.051	1.275
SB 494.	85.1	188.1	.298	1.763	3.08	51.	5.69	7.05	.33	.047	1.240
SB 493.	85.1	188.1	.431	1.763	3.07	47.	5.69	6.99	.31	.044	1.229
SB 492.	85.1	188.1	.564	1.763	3.11	48.	5.69	7.25	.31	.043	1.275
SB 491.	85.1	188.1	.697	1.763	3.13	32.	5.69	7.38	.21	.028	1.298
SB 490.	85.1	188.1	.831	1.763	3.13	34.	5.69	7.38	.22	.030	1.298
SB 489.	85.1	188.1	.964	1.763	3.08	58.	5.69	7.05	.38	.054	1.240
SB 488.	85.1	188.1	1.097	1.763	2.97	63.	5.69	6.34	.41	.065	1.114
SB 487.	85.1	188.1	1.230	1.763	2.94	92.	5.69	6.14	.60	.098	1.079
SB 486.	85.1	188.1	1.363	1.763	2.69	159.	5.69	4.51	1.04	.230	.792
SB 485.	85.1	188.1	1.497	1.763	2.43	118.	5.69	2.81	.77	.274	.494
SB 484.	85.1	188.1	1.630	1.763	2.26	119.	5.69	1.70	.78	.458	.299
SB 483.	85.1	188.1	1.763	1.763	2.04	101.	5.69	.26	.66	2.525	.046
SB 482.	85.1	188.1	1.896	1.763	1.92	67.	5.69	-.52	.44	.838	-.092

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VCLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 481.	85.1	188.1	2.029	1.763	1.87	61.	5.69	-.85	.40	.469	-.149
SB 480.	85.1	188.1	2.163	1.763	1.86	59.	5.69	-.91	.39	.421	-.161
SB 496.	85.1	188.1	.831	1.813	3.11	39.	5.69	7.25	.25	.035	1.275
SB 497.	85.1	188.1	.964	1.813	3.04	71.	5.69	6.79	.46	.068	1.194
SB 498.	85.1	188.1	1.097	1.813	2.95	67.	5.69	6.20	.44	.071	1.091
SB 499.	85.1	188.1	1.230	1.813	2.84	95.	5.69	6.14	.62	.101	1.079
SB 500.	85.1	188.1	1.363	1.813	2.72	162.	5.69	4.70	1.06	.225	.827
SB 501.	85.1	188.1	1.497	1.813	2.45	117.	5.69	2.94	.76	.260	.517
SB 502.	85.1	188.1	1.630	1.813	2.25	119.	5.69	1.63	.78	.476	.287
SB 503.	85.1	188.1	1.763	1.813	2.03	104.	5.69	.20	.68	3.467	.034
SB 504.	85.1	188.1	1.896	1.813	1.91	72.	5.69	-.55	.47	.800	-.103
SB 505.	85.1	188.1	2.029	1.813	1.86	58.	5.69	-.91	.38	.414	-.161
SB 506.	85.1	188.1	2.163	1.813	1.86	55.	5.69	-.91	.36	.393	-.161
SB 517.	85.1	188.1	.831	1.713	3.10	54.	5.69	7.18	.35	.049	1.263
SB 516.	85.1	188.1	.964	1.713	2.98	87.	5.69	6.40	.57	.089	1.125
SB 515.	85.1	188.1	1.097	1.713	2.93	76.	5.69	6.07	.50	.082	1.068
SB 514.	85.1	188.1	1.230	1.713	2.86	120.	5.69	5.62	.78	.140	.987
SB 513.	85.1	188.1	1.363	1.713	2.62	140.	5.69	4.03	.91	.226	.712
SB 512.	85.1	188.1	1.497	1.713	2.41	111.	5.69	2.68	.72	.271	.471
SB 511.	85.1	188.1	1.630	1.713	2.26	127.	5.69	1.70	.83	.458	.299
SB 510.	85.1	188.1	1.763	1.713	2.06	100.	5.69	.39	.65	1.667	.069
SB 509.	85.1	188.1	1.896	1.713	1.95	78.	5.69	-.33	.51	1.550	-.057
SB 508.	85.1	188.1	2.029	1.713	1.88	60.	5.69	-.78	.39	.500	-.138
SB 507.	85.1	188.1	2.163	1.713	1.89	65.	5.69	-.72	.42	.591	-.126

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 6, AXIAL DISTANCE=39.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.00 PSI RE= 30000.

RUN	TEMP	FLOW GPH	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 518.	86.2	187.4	.231	1.763	3.03	65.	5.67	6.73	.42	.063	1.187
SB 519.	86.2	187.4	.298	1.763	3.02	63.	5.67	6.66	.41	.062	1.176
SB 520.	86.2	187.4	.364	1.763	3.00	62.	5.67	6.53	.40	.062	1.153
SB 521.	86.2	187.4	.431	1.763	2.98	64.	5.67	6.40	.42	.065	1.129
SB 522.	86.2	187.4	.498	1.763	2.97	62.	5.67	6.34	.40	.064	1.118
SB 523.	86.2	187.4	.564	1.763	2.96	62.	5.67	6.27	.40	.065	1.106
SB 524.	86.2	187.4	.631	1.763	2.95	62.	5.67	6.20	.40	.065	1.095
SB 525.	86.2	187.4	.697	1.763	2.95	62.	5.67	6.20	.40	.065	1.095
SB 526.	86.2	187.4	.764	1.763	2.94	60.	5.67	6.14	.39	.064	1.083
SB 527.	86.2	187.4	.831	1.763	2.94	58.	5.67	6.14	.38	.062	1.083
SB 528.	86.2	187.4	.897	1.763	2.95	59.	5.67	6.20	.39	.062	1.095
SB 529.	86.2	187.4	.964	1.763	2.95	59.	5.67	6.20	.39	.062	1.095
SB 530.	86.2	187.4	1.030	1.763	2.95	59.	5.67	6.20	.39	.062	1.095
SB 531.	86.2	187.4	1.097	1.763	2.95	59.	5.67	6.20	.39	.062	1.095
SB 532.	86.2	187.4	1.164	1.763	2.94	59.	5.67	6.14	.39	.063	1.083
SB 533.	86.2	187.4	1.230	1.763	2.94	61.	5.67	6.14	.40	.065	1.083
SB 534.	86.2	187.4	1.297	1.763	2.92	62.	5.67	6.01	.40	.067	1.060
SB 535.	86.2	187.4	1.363	1.763	2.91	62.	5.67	5.94	.40	.068	1.049
SB 536.	86.2	187.4	1.430	1.763	2.89	62.	5.67	5.81	.40	.070	1.026
SB 537.	86.2	187.4	1.497	1.763	2.88	62.	5.67	5.75	.40	.070	1.014
SB 538.	86.2	187.4	1.563	1.763	2.86	62.	5.67	5.62	.40	.072	.991
SB 539.	86.2	187.4	1.630	1.763	2.86	62.	5.67	5.62	.40	.072	.991
SB 540.	86.2	187.4	1.696	1.763	2.85	59.	5.67	5.55	.39	.069	.980
SB 541.	86.2	187.4	1.763	1.763	2.85	55.	5.67	5.55	.36	.065	.980
SB 542.	86.2	187.4	1.830	1.763	2.83	55.	5.67	5.55	.36	.065	.980
SB 543.	86.2	187.4	1.898	1.763	2.84	55.	5.67	5.49	.36	.065	.968
SB 544.	86.2	187.4	1.963	1.763	2.85	55.	5.67	5.55	.36	.065	.980
SB 545.	86.2	187.4	2.029	1.763	2.85	55.	5.67	5.55	.36	.065	.980
SB 546.	86.2	187.4	2.096	1.763	2.85	55.	5.67	5.55	.36	.065	.980
SB 547.	86.2	187.4	2.163	1.763	2.85	55.	5.67	5.55	.36	.065	.980
SB 548.	86.2	187.4	2.229	1.763	2.86	55.	5.67	5.62	.36	.064	.991
SB 549.	86.2	187.4	2.296	1.763	2.87	55.	5.67	5.68	.36	.063	1.003
SB 550.	86.2	187.4	.231	1.224	2.98	64.	5.67	6.40	.42	.065	1.129
SB 551.	86.2	187.4	.298	1.224	2.96	64.	5.67	6.27	.42	.067	1.106
SB 552.	86.2	187.4	.364	1.224	2.94	64.	5.67	6.14	.42	.068	1.083
SB 553.	86.2	187.4	.431	1.224	2.91	64.	5.67	5.94	.42	.070	1.049
SB 554.	86.2	187.4	.498	1.224	2.90	62.	5.67	5.88	.40	.069	1.037
SB 555.	86.2	187.4	.564	1.224	2.90	62.	5.67	5.88	.40	.069	1.037
SB 556.	86.2	187.4	.631	1.224	2.91	60.	5.67	5.94	.39	.066	1.049
SB 557.	86.2	187.4	.697	1.224	2.93	60.	5.67	6.07	.39	.065	1.072
SB 558.	86.2	187.4	.764	1.224	2.94	60.	5.67	6.14	.39	.064	1.083
SB 559.	86.2	187.4	.831	1.224	2.94	60.	5.67	6.14	.39	.064	1.083
SB 560.	86.2	187.4	.897	1.224	2.95	64.	5.67	6.20	.42	.067	1.095
SB 561.	86.2	187.4	.964	1.224	2.96	65.	5.67	6.27	.42	.068	1.106
SB 562.	86.2	187.4	1.030	1.224	2.97	68.	5.67	6.34	.44	.070	1.118
SB 563.	86.2	187.4	1.097	1.224	2.97	68.	5.67	6.34	.44	.070	1.118
SB 564.	86.2	187.4	1.164	1.224	2.96	68.	5.67	6.27	.44	.071	1.106
SB 565.	86.2	187.4	1.230	1.224	2.94	68.	5.67	6.14	.44	.072	1.083
SB 566.	86.2	187.4	1.297	1.224	2.91	66.	5.67	5.94	.43	.073	1.049

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 567.	86.2	187.4	1.363	1.224	2.89	64.	5.67	5.81	.42	.072	1.026
SB 568.	86.2	187.4	1.430	1.224	2.87	64.	5.67	5.68	.42	.074	1.003
SB 569.	86.2	187.4	1.497	1.224	2.85	60.	5.67	5.55	.39	.071	.980
SB 570.	86.2	187.4	1.563	1.224	2.85	60.	5.67	5.55	.39	.071	.980
SB 571.	86.2	187.4	1.630	1.224	2.86	60.	5.67	5.62	.39	.070	.991
SB 572.	86.2	187.4	1.698	1.224	2.88	60.	5.67	5.75	.39	.068	1.014
SB 573.	86.2	187.4	1.763	1.224	2.88	58.	5.67	5.75	.38	.066	1.014
SB 574.	86.2	187.4	1.830	1.224	2.89	58.	5.67	5.81	.38	.065	1.026
SB 575.	86.2	187.4	1.899	1.224	2.89	58.	5.67	5.81	.38	.065	1.026
SB 576.	86.2	187.4	1.963	1.224	2.89	58.	5.67	5.81	.38	.065	1.026
SB 577.	86.2	187.4	2.029	1.224	2.89	61.	5.67	5.81	.40	.069	1.026
SB 578.	86.2	187.4	2.096	1.224	2.90	61.	5.67	5.88	.40	.068	1.037
SB 579.	86.2	187.4	2.163	1.224	2.91	61.	5.67	5.94	.40	.067	1.049
SB 580.	86.2	187.4	2.229	1.224	2.90	61.	5.67	5.88	.40	.068	1.037
SB 581.	86.2	187.4	2.296	1.224	2.89	61.	5.67	5.81	.40	.069	1.026
SB 582.	86.2	187.4	2.362	1.224	2.87	61.	5.67	5.68	.40	.070	1.003
SB 583.	86.2	187.4	2.429	1.224	2.86	61.	5.67	5.62	.40	.071	.991
SB 584.	86.2	187.4	2.496	1.224	2.88	61.	5.67	5.55	.40	.072	.980
SB 585.	86.2	187.4	2.562	1.224	2.83	61.	5.67	5.42	.40	.073	.957
SB 586.	86.2	187.4	2.629	1.224	2.82	58.	5.67	5.36	.38	.071	.945
SB 587.	86.2	187.4	2.695	1.224	2.84	58.	5.67	5.49	.38	.069	.968
SB 588.	86.2	187.4	2.762	1.224	2.86	58.	5.67	5.62	.38	.067	.991
SB 589.	86.2	187.4	2.829	1.224	2.88	62.	5.67	5.75	.40	.070	1.014
SB 590.	86.2	187.4	.231	.685	2.90	73.	5.67	5.88	.48	.081	1.037
SB 591.	86.2	187.4	.298	.685	2.89	70.	5.67	5.81	.46	.079	1.026
SB 592.	86.2	187.4	.364	.685	2.90	70.	5.67	5.88	.46	.078	1.037
SB 593.	86.2	187.4	.431	.685	2.91	70.	5.67	5.94	.46	.077	1.049
SB 594.	86.2	187.4	.498	.685	2.93	70.	5.67	6.07	.46	.075	1.072
SB 595.	86.2	187.4	.564	.685	2.94	70.	5.67	6.14	.46	.074	1.083
SB 596.	86.2	187.4	.631	.685	2.94	68.	5.67	6.14	.44	.072	1.083
SB 597.	86.2	187.4	.697	.685	2.93	62.	5.67	6.07	.40	.067	1.072
SB 598.	86.2	187.4	.764	.685	2.93	62.	5.67	6.07	.40	.067	1.072
SB 599.	86.2	187.4	.831	.685	2.93	62.	5.67	6.07	.40	.067	1.072
SB 600.	86.2	187.4	.897	.685	2.93	62.	5.67	6.07	.40	.067	1.072
SB 601.	86.2	187.4	.964	.685	2.93	64.	5.67	6.07	.42	.069	1.072
SB 602.	86.2	187.4	1.030	.685	2.93	68.	5.67	6.07	.44	.073	1.072
SB 603.	86.2	187.4	1.097	.685	2.95	66.	5.67	6.20	.43	.069	1.095
SB 604.	86.2	187.4	1.164	.685	2.95	66.	5.67	6.20	.43	.069	1.095
SB 605.	86.2	187.4	1.230	.685	2.93	66.	5.67	6.07	.43	.071	1.072
SB 606.	86.2	187.4	1.297	.685	2.92	66.	5.67	6.01	.43	.072	1.060
SB 607.	86.2	187.4	1.363	.685	2.93	66.	5.67	6.07	.43	.071	1.072
SB 608.	86.2	187.4	1.430	.685	2.93	68.	5.67	6.07	.44	.073	1.072
SB 609.	86.2	187.4	1.497	.685	2.93	68.	5.67	6.07	.44	.073	1.072
SB 610.	86.2	187.4	1.563	.685	2.93	68.	5.67	6.07	.44	.073	1.072
SB 611.	86.2	187.4	1.630	.685	2.93	68.	5.67	6.07	.44	.073	1.072
SB 612.	86.2	187.4	1.696	.685	2.94	64.	5.67	6.14	.42	.068	1.083
SB 613.	86.2	187.4	1.763	.685	2.94	64.	5.67	6.14	.42	.068	1.083
SB 614.	86.2	187.4	1.830	.685	2.93	61.	5.67	6.07	.40	.066	1.072
SB 615.	86.2	187.4	1.896	.685	2.92	61.	5.67	6.01	.40	.066	1.060
SB 616.	86.2	187.4	1.963	.685	2.90	61.	5.67	5.88	.40	.068	1.037
SB 617.	86.2	187.4	2.029	.685	2.89	61.	5.67	5.81	.40	.069	1.026
SB 618.	86.2	187.4	2.096	.685	2.89	61.	5.67	5.81	.40	.069	1.026
SB 619.	86.2	187.4	2.163	.685	2.91	62.	5.67	5.94	.40	.068	1.049
SB 620.	86.2	187.4	2.229	.685	2.92	62.	5.67	6.01	.40	.067	1.060

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 692.	86.2	187.4	.310	.110	3.05	67.	5.67	6.86	.44	.064	1.210
SB 691.	86.2	187.4	.687	.110	2.98	74.	5.67	6.40	.48	.076	1.129
SB 690.	86.2	187.4	1.229	.110	3.01	68.	5.67	6.60	.44	.067	1.164
SB 689.	86.2	187.4	1.763	.110	3.00	58.	5.67	6.53	.38	.058	1.153

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 7, AXIAL DISTANCE=51.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.00 PSI RE= 30000.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 621.	86.2	187.4	.298	.689	2.73	192.	5.67	4.77	1.25	.263	.841
SB 622.	86.2	187.4	.364	.689	2.84	192.	5.67	5.49	1.25	.229	.968
SB 623.	86.2	187.4	.431	.689	2.89	125.	5.67	5.81	.82	.140	1.026
SB 624.	86.2	187.4	.498	.688	2.94	80.	5.67	6.14	.52	.085	1.083
SB 625.	86.2	187.4	.564	.689	2.99	70.	5.67	6.47	.46	.071	1.141
SB 626.	86.2	187.4	.631	.689	3.01	49.	5.67	6.60	.32	.049	1.164
SB 627.	86.2	187.4	.697	.689	3.01	46.	5.67	6.60	.30	.046	1.154
SB 628.	86.2	187.4	.764	.689	2.97	53.	5.67	6.34	.35	.055	1.118
SB 629.	86.2	187.4	.831	.683	2.93	53.	5.67	6.07	.35	.057	1.072
SB 630.	86.2	187.4	.897	.688	2.90	46.	5.67	5.88	.30	.051	1.037
SB 631.	86.2	187.4	.964	.689	2.90	50.	5.67	5.88	.33	.056	1.037
SB 632.	86.2	187.4	1.030	.689	2.92	58.	5.67	6.01	.38	.063	1.050
SB 633.	86.2	187.4	1.097	.689	2.97	58.	5.67	6.34	.38	.060	1.118
SB 634.	86.2	187.4	1.164	.689	3.01	50.	5.67	6.50	.33	.050	1.164
SB 635.	86.2	187.4	1.230	.685	3.03	44.	5.67	6.73	.29	.043	1.187
SB 636.	86.2	187.4	1.297	.609	3.02	44.	5.67	6.66	.29	.043	1.176
SB 637.	86.2	187.4	1.363	.685	2.98	49.	5.67	6.40	.32	.050	1.129
SB 638.	86.2	187.4	1.430	.685	2.95	49.	5.67	6.20	.32	.052	1.095
SB 639.	86.2	187.4	1.497	.689	2.93	46.	5.67	6.07	.30	.049	1.072
SB 640.	86.2	187.4	1.563	.689	2.94	51.	5.67	6.14	.33	.054	1.083
SB 641.	86.2	187.4	1.630	.685	2.97	55.	5.67	6.34	.36	.057	1.118
SB 642.	86.2	187.4	1.696	.689	3.00	51.	5.67	6.53	.33	.051	1.153
SB 643.	86.2	187.4	1.763	.689	3.02	43.	5.67	6.66	.28	.042	1.176
SB 644.	86.2	187.4	1.830	.685	3.01	50.	5.67	6.60	.33	.050	1.164
SB 645.	86.2	187.4	1.896	.689	2.96	58.	5.67	6.27	.38	.060	1.106
SB 646.	86.2	187.4	1.963	.689	2.92	54.	5.67	6.01	.35	.059	1.050
SB 647.	86.2	187.4	2.029	.685	2.89	49.	5.67	5.81	.32	.055	1.026
SB 648.	86.2	187.4	2.098	.689	2.90	52.	5.67	5.88	.34	.058	1.037
SB 649.	86.2	187.4	2.163	.685	2.94	62.	5.67	6.14	.40	.066	1.083
SB 650.	86.2	187.4	2.229	.685	2.99	57.	5.67	6.47	.37	.058	1.141
SB 654.	86.2	187.4	.364	.110	2.99	105.	5.67	6.47	.69	.106	1.141
SB 653.	86.2	187.4	.637	.110	3.00	44.	5.67	6.53	.29	.044	1.153
SB 652.	86.2	187.4	1.229	.110	3.04	50.	5.67	6.79	.33	.048	1.199
SB 651.	86.2	187.4	1.763	.110	3.02	45.	5.67	6.66	.29	.044	1.176
SB 658.	86.2	187.4	.364	1.224	2.70	218.	5.67	4.57	1.42	.311	.807
SB 657.	86.2	187.4	.687	1.224	3.01	58.	5.67	6.60	.38	.057	1.164
SB 656.	86.2	187.4	1.225	1.224	3.00	44.	5.67	6.53	.29	.044	1.153
SB 655.	86.2	187.4	1.763	1.224	2.99	50.	5.67	6.47	.33	.051	1.141
SB 688.	86.2	187.4	.298	1.763	2.84	230.	5.67	5.49	1.50	.274	.968
SB 687.	86.2	187.4	.364	1.763	3.00	160.	5.67	6.53	1.05	.160	1.153
SB 686.	86.2	187.4	.431	1.763	3.01	100.	5.67	6.60	.65	.099	1.164
SB 685.	86.2	187.4	.498	1.763	2.99	65.	5.67	6.47	.42	.066	1.141
SB 684.	86.2	187.4	.564	1.763	2.99	52.	5.67	6.47	.34	.053	1.141
SB 683.	86.2	187.4	.631	1.763	3.01	48.	5.67	6.60	.31	.048	1.164
SB 682.	86.2	187.4	.697	1.763	3.04	44.	5.67	6.79	.29	.042	1.199

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 681.	86.2	187.4	.764	1.768	3.03	48.	5.67	6.73	.31	.047	1.187
SB 680.	86.2	187.4	.831	1.763	2.99	65.	5.67	6.47	.42	.066	1.141
SB 679.	86.2	187.4	.897	1.763	2.94	71.	5.67	6.14	.46	.076	1.083
SB 678.	86.2	187.4	.964	1.763	2.88	61.	5.67	5.75	.40	.069	1.014
SB 677.	86.2	187.4	1.030	1.763	2.86	51.	5.67	5.62	.33	.059	.991
SB 676.	86.2	187.4	1.097	1.763	2.89	55.	5.67	5.81	.36	.062	1.026
SB 675.	86.2	187.4	1.164	1.763	2.94	59.	5.67	6.14	.39	.063	1.083
SB 674.	86.2	187.4	1.230	1.763	2.98	52.	5.67	6.40	.34	.053	1.129
SB 673.	86.2	187.4	1.297	1.763	3.00	45.	5.67	6.53	.29	.045	1.153
SB 672.	86.2	187.4	1.363	1.763	2.98	50.	5.67	6.40	.33	.051	1.129
SB 671.	86.2	187.4	1.430	1.763	2.95	55.	5.67	6.20	.36	.058	1.095
SB 670.	86.2	187.4	1.497	1.763	2.92	50.	5.67	6.01	.33	.054	1.060
SB 669.	86.2	187.4	1.563	1.763	2.90	46.	5.67	5.88	.30	.051	1.037
SB 668.	86.2	187.4	1.630	1.763	2.91	46.	5.67	5.94	.30	.051	1.049
SB 667.	86.2	187.4	1.696	1.763	2.94	48.	5.67	6.14	.31	.051	1.083
SB 666.	86.2	187.4	1.763	1.763	2.97	40.	5.67	6.34	.26	.041	1.118
SB 665.	86.2	187.4	1.830	1.763	2.97	43.	5.67	6.34	.28	.044	1.118
SB 664.	86.2	187.4	1.896	1.763	2.94	57.	5.67	6.14	.37	.061	1.083
SB 663.	86.2	187.4	1.963	1.763	2.90	50.	5.67	5.88	.33	.056	1.037
SB 662.	86.2	187.4	2.029	1.763	2.86	45.	5.67	5.62	.29	.052	.991
SB 661.	86.2	187.4	2.096	1.763	2.87	48.	5.67	5.68	.31	.055	1.003
SB 660.	86.2	187.4	2.163	1.763	2.90	55.	5.67	5.88	.36	.061	1.037
SB 659.	86.2	187.4	2.229	1.763	2.94	55.	5.67	6.14	.36	.059	1.083

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 8, AXIAL DISTANCE=20.05 IN, BLOCKAGE CENTERLINE=28.18 IN, P=17.00 PSI RE=30100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 693.	85.6	188.7	.098	.685	3.10	65.	5.71	7.18	.42	.059	1.259
SB 694.	85.6	188.7	.165	.685	3.13	39.	5.71	7.38	.25	.035	1.293
SB 695.	85.6	188.7	.231	.685	3.11	41.	5.71	7.25	.27	.037	1.270
SB 696.	85.6	188.7	.298	.685	3.08	44.	5.71	7.05	.29	.041	1.236
SB 697.	85.6	188.7	.364	.685	3.05	40.	5.71	6.86	.26	.038	1.202
SB 698.	85.6	188.7	.431	.685	3.05	42.	5.71	6.86	.27	.040	1.202
SB 699.	85.6	188.7	.498	.685	3.06	43.	5.71	6.92	.28	.041	1.213
SB 700.	85.6	188.7	.564	.685	3.09	40.	5.71	7.12	.26	.037	1.248
SB 701.	85.6	188.7	.631	.685	3.10	37.	5.71	7.18	.24	.034	1.259
SB 702.	85.6	188.7	.697	.685	3.10	37.	5.71	7.18	.24	.034	1.259
SB 703.	85.6	188.7	.764	.685	3.08	37.	5.71	7.05	.24	.034	1.236
SB 704.	85.6	188.7	.831	.685	3.08	36.	5.71	7.05	.24	.033	1.236
SB 705.	85.6	188.7	.897	.685	3.09	39.	5.71	7.12	.25	.036	1.248
SB 706.	85.6	188.7	.964	.685	3.11	44.	5.71	7.25	.29	.040	1.270
SB 707.	85.6	188.7	1.030	.685	3.12	45.	5.71	7.32	.29	.040	1.282
SB 708.	85.6	188.7	1.097	.685	3.12	43.	5.71	7.32	.28	.038	1.282
SB 709.	85.6	188.7	1.164	.685	3.13	43.	5.71	7.38	.28	.038	1.293
SB 710.	85.6	188.7	1.230	.685	3.11	44.	5.71	7.25	.29	.040	1.270
SB 711.	85.6	188.7	1.297	.685	3.08	44.	5.71	7.05	.29	.041	1.236
SB 712.	85.6	188.7	1.363	.685	3.06	40.	5.71	6.92	.26	.038	1.213
SB 713.	85.6	188.7	1.430	.685	3.07	40.	5.71	6.99	.26	.037	1.225
SB 714.	85.6	188.7	1.497	.685	3.09	41.	5.71	7.12	.27	.038	1.248
SB 715.	85.6	188.7	1.563	.685	3.12	41.	5.71	7.32	.27	.037	1.282
SB 716.	85.6	188.7	1.630	.685	3.13	38.	5.71	7.38	.25	.034	1.293
SB 717.	85.6	188.7	1.696	.685	3.14	36.	5.71	7.45	.24	.032	1.305
SB 718.	85.6	188.7	1.763	.685	3.14	38.	5.71	7.45	.25	.033	1.305
SB 719.	85.6	188.7	1.830	.685	3.13	40.	5.71	7.38	.26	.035	1.293
SB 720.	85.6	188.7	1.896	.685	3.10	43.	5.71	7.18	.28	.039	1.259
SB 721.	85.6	188.7	1.963	.685	3.08	41.	5.71	7.05	.27	.038	1.236
SB 722.	85.6	188.7	2.029	.685	3.07	41.	5.71	6.99	.27	.038	1.225
SB 723.	85.6	188.7	2.096	.685	3.07	41.	5.71	6.99	.27	.038	1.225
SB 724.	85.6	188.7	2.163	.685	3.08	42.	5.71	7.05	.27	.039	1.236
SB 725.	85.6	188.7	2.229	.685	3.10	41.	5.71	7.18	.27	.037	1.259
SB 726.	85.6	188.7	2.296	.685	3.13	39.	5.71	7.38	.25	.035	1.293
SB 727.	85.6	188.7	2.362	.685	3.14	37.	5.71	7.45	.24	.032	1.305
SB 728.	85.6	188.7	2.429	.685	3.14	37.	5.71	7.45	.24	.032	1.305
SB 729.	85.6	188.7	2.496	.685	3.13	39.	5.71	7.38	.25	.035	1.293
SB 766.	85.6	188.7	.098	.110	3.08	69.	5.71	7.05	.45	.064	1.236
SB 765.	85.6	188.7	.165	.110	3.12	42.	5.71	7.32	.27	.038	1.282
SB 764.	85.6	188.7	.231	.110	3.12	38.	5.71	7.32	.25	.034	1.282
SB 763.	85.6	188.7	.298	.110	3.11	38.	5.71	7.25	.25	.034	1.270
SB 762.	85.6	188.7	.364	.110	3.11	37.	5.71	7.25	.24	.033	1.270
SB 761.	85.6	188.7	.431	.110	3.11	37.	5.71	7.25	.24	.033	1.270
SB 760.	85.6	188.7	.498	.110	3.12	37.	5.71	7.32	.24	.033	1.282
SB 759.	85.6	188.7	.564	.110	3.12	35.	5.71	7.32	.23	.031	1.282
SB 758.	85.6	188.7	.631	.110	3.13	34.	5.71	7.38	.22	.030	1.293
SB 7	85.6	188.7	.697	.110	3.13	34.	5.71	7.38	.22	.030	1.
SB 7	85.6	188.7	.764	.110	3.12	35.	5.71	7.32	.23	.031	1.
SB 7	85.6	188.7	.831	.110	3.12	36.	5.71	7.32	.24	.032	1.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB 754.	85.6	188.7	.897	.110	3.13	37.	5.71	7.38	.24	.033	1.293
SB 753.	85.6	188.7	.964	.110	3.14	39.	5.71	7.45	.25	.034	1.305
SB 752.	85.6	188.7	1.030	.110	3.15	40.	5.71	7.51	.26	.035	1.316
SB 751.	85.6	188.7	1.097	.110	3.16	40.	5.71	7.58	.26	.034	1.328
SB 750.	85.6	188.7	1.164	.110	3.18	39.	5.71	7.71	.25	.033	1.351
SB 749.	85.6	188.7	1.230	.110	3.18	39.	5.71	7.71	.25	.033	1.351
SB 748.	85.6	188.7	1.297	.110	3.18	39.	5.71	7.71	.25	.033	1.351
SB 747.	85.6	188.7	1.363	.110	3.17	39.	5.71	7.64	.25	.033	1.339
SB 746.	85.6	188.7	1.430	.110	3.17	39.	5.71	7.64	.25	.033	1.339
SB 745.	85.6	188.7	1.497	.110	3.17	38.	5.71	7.64	.25	.032	1.339
SB 744.	85.6	188.7	1.563	.110	3.17	38.	5.71	7.64	.25	.032	1.339
SB 743.	85.6	188.7	1.630	.110	3.18	38.	5.71	7.71	.25	.032	1.351
SB 742.	85.6	188.7	1.696	.110	3.19	34.	5.71	7.77	.22	.029	1.362
SB 741.	85.6	188.7	1.763	.110	3.19	34.	5.71	7.77	.22	.029	1.362
SB 740.	85.6	188.7	1.830	.110	3.18	35.	5.71	7.71	.23	.030	1.351
SB 739.	85.6	188.7	1.896	.110	3.16	39.	5.71	7.58	.25	.034	1.328
SB 738.	85.6	188.7	1.963	.110	3.15	40.	5.71	7.51	.26	.035	1.316
SB 737.	85.6	188.7	2.029	.110	3.14	38.	5.71	7.45	.25	.033	1.305
SB 736.	85.6	188.7	2.096	.110	3.14	38.	5.71	7.45	.25	.033	1.305
SB 735.	85.6	188.7	2.163	.110	3.15	37.	5.71	7.51	.24	.032	1.316
SB 734.	85.6	188.7	2.229	.110	3.16	36.	5.71	7.58	.24	.031	1.328
SB 733.	85.6	188.7	2.296	.110	3.17	34.	5.71	7.64	.22	.029	1.339
SB 732.	85.6	188.7	2.362	.110	3.17	35.	5.71	7.64	.23	.030	1.339
SB 731.	85.6	188.7	2.429	.110	3.17	36.	5.71	7.64	.24	.031	1.339
SB 730.	85.6	188.7	2.496	.110	3.15	37.	5.71	7.51	.24	.032	1.316

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 9, AXIAL DISTANCE=26.95 IN. BLOCKAGE CENTERLINE=28.18 IN. P=17.00 PSI RE= 30100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E RVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB 767.	85.6	188.7	.165	1.763	3.07	71.	5.71	6.99	.46	.066	1.225
SB 768.	85.6	188.7	.231	1.763	3.08	48.	5.71	7.05	.31	.044	1.236
SB 769.	85.6	188.7	.298	1.763	3.05	53.	5.71	6.86	.35	.050	1.202
SB 770.	85.6	188.7	.364	1.763	3.01	50.	5.71	6.60	.33	.050	1.156
SB 771.	85.6	188.7	.431	1.763	2.98	49.	5.71	6.40	.32	.050	1.122
SB 772.	85.6	188.7	.498	1.763	2.99	49.	5.71	6.47	.32	.049	1.133
SB 773.	85.6	188.7	.564	1.763	3.02	48.	5.71	6.66	.31	.047	1.167
SB 774.	85.6	188.7	.631	1.763	3.04	42.	5.71	6.79	.27	.040	1.190
SB 775.	85.6	188.7	.697	1.763	3.05	38.	5.71	6.85	.25	.036	1.202
SB 776.	85.6	188.7	.764	1.763	3.04	43.	5.71	6.79	.28	.041	1.190
SB 777.	85.6	188.7	.831	1.763	3.01	44.	5.71	6.60	.29	.044	1.156
SB 778.	85.6	188.7	.897	1.763	3.00	43.	5.71	6.53	.28	.043	1.145
SB 779.	85.6	188.7	.964	1.763	3.01	42.	5.71	6.60	.27	.042	1.156
SB 780.	85.6	188.7	1.030	1.763	3.01	41.	5.71	6.60	.27	.041	1.156
SB 781.	85.6	188.7	1.097	1.763	3.00	46.	5.71	6.53	.30	.046	1.145
SB 782.	85.6	188.7	1.164	1.763	2.97	61.	5.71	6.34	.40	.063	1.110
SB 783.	85.6	188.7	1.230	1.763	2.91	72.	5.71	5.94	.47	.079	1.042
SB 784.	85.6	188.7	1.297	1.763	2.88	62.	5.71	5.75	.40	.070	1.007
SB 785.	85.6	188.7	1.363	1.763	2.87	60.	5.71	5.68	.39	.069	.996
SB 786.	85.6	188.7	1.430	1.763	2.85	72.	5.71	5.55	.47	.085	.973
SB 787.	85.6	188.7	1.497	1.763	2.75	101.	5.71	4.90	.66	.135	.858
SB 788.	85.6	188.7	1.563	1.762	2.59	124.	5.71	3.85	.81	.210	.675
SB 789.	85.6	188.7	1.630	1.763	2.46	128.	5.71	3.00	.84	.278	.527
SB 790.	85.6	188.7	1.696	1.763	2.37	143.	5.71	2.42	.93	.386	.423
SB 791.	85.6	188.7	1.763	1.763	2.28	155.	5.71	1.83	1.01	.554	.320
SB 792.	85.6	188.7	1.830	1.763	2.19	148.	5.71	1.24	.97	.779	.217
SB 793.	85.6	188.7	1.896	1.763	2.15	125.	5.71	.98	.82	.833	.172
SB 794.	85.6	188.7	1.963	1.763	2.19	118.	5.71	1.24	.77	.621	.217
SB 795.	85.6	188.7	2.029	1.763	2.26	107.	5.71	1.70	.70	.412	.298
SB 796.	85.6	188.7	2.096	1.763	2.27	91.	5.71	1.76	.59	.337	.309
SB 797.	85.6	188.7	2.163	1.763	2.27	98.	5.71	1.76	.64	.363	.309
SB 798.	85.6	188.7	2.229	1.763	2.25	114.	5.71	1.63	.74	.456	.286
SB 799.	85.6	188.7	2.296	1.763	2.16	130.	5.71	1.05	.85	.813	.183
SB 800.	85.6	188.7	2.362	1.763	2.07	121.	5.71	.46	.79	1.729	.080
SB 801.	85.6	188.7	2.429	1.763	2.05	131.	5.71	.33	.86	2.620	.057
SB 802.	85.6	188.7	2.496	1.763	2.09	165.	5.71	.59	1.08	1.833	.103
SB 803.	85.6	188.7	2.562	1.763	2.18	169.	5.71	1.18	1.10	.939	.206
SB 840.	85.6	188.4	.165	.110	3.02	75.	5.70	6.66	.49	.074	1.169
SB 839.	85.6	188.4	.231	.110	3.06	43.	5.70	6.92	.28	.041	1.215
SB 838.	85.6	188.4	.298	.110	3.06	42.	5.70	6.92	.27	.040	1.215
SB 837.	85.6	188.4	.364	.110	3.06	44.	5.70	6.92	.29	.042	1.215
SB 836.	85.6	188.4	.431	.110	3.06	43.	5.70	6.92	.28	.041	1.215
SB 835.	85.6	188.4	.498	.110	3.05	43.	5.70	6.86	.28	.041	1.204
SB 834.	85.6	188.4	.564	.110	3.06	42.	5.70	6.92	.27	.040	1.215
SB 833.	85.6	188.4	.631	.110	3.06	40.	5.70	6.92	.26	.038	1.215
SB 832.	85.6	188.4	.697	.110	3.07	39.	5.71	6.99	.25	.036	1.225
SB 831.	85.6	188.4	.764	.110	3.07	38.	5.71	6.99	.25	.036	1.225
SB 8	85.6	188.4	.831	.110	3.06	40.	5.71	6.92	.26	.038	1.
SB 8	85.6	188.4	.897	.110	3.06	44.	5.71	6.92	.29	.042	1.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 828.	85.6	188.4	.964	.110	3.07	43.	5.71	6.99	.28	.040	1.225
SB 827.	85.6	188.4	1.030	.110	3.08	46.	5.71	7.05	.30	.043	1.236
SB 826.	85.6	188.4	1.097	.110	3.09	46.	5.71	7.12	.30	.042	1.248
SB 825.	85.6	188.4	1.164	.110	3.10	46.	5.71	7.18	.30	.042	1.259
SB 824.	85.6	188.4	1.230	.110	3.11	45.	5.71	7.25	.29	.041	1.270
SB 823.	85.6	188.4	1.297	.110	3.11	44.	5.71	7.25	.29	.040	1.270
SB 822.	85.6	188.4	1.363	.110	3.11	43.	5.71	7.25	.28	.039	1.270
SB 821.	85.6	188.4	1.430	.110	3.10	44.	5.71	7.18	.29	.040	1.259
SB 820.	85.6	188.4	1.497	.110	3.09	45.	5.71	7.12	.29	.041	1.248
SB 819.	85.6	188.4	1.563	.110	3.10	45.	5.71	7.18	.29	.041	1.259
SB 818.	85.6	188.4	1.630	.110	3.10	44.	5.71	7.18	.29	.040	1.259
SB 817.	85.6	188.4	1.696	.110	3.11	41.	5.71	7.25	.27	.037	1.270
SB 816.	85.6	188.4	1.763	.110	3.11	39.	5.71	7.25	.25	.035	1.270
SB 815.	85.6	188.4	1.830	.110	3.11	39.	5.71	7.25	.25	.035	1.270
SB 814.	85.6	188.4	1.896	.110	3.10	41.	5.71	7.18	.27	.037	1.259
SB 813.	85.6	188.4	1.963	.110	3.08	46.	5.71	7.05	.30	.043	1.236
SB 812.	85.6	188.4	2.029	.110	3.07	45.	5.71	6.99	.29	.042	1.225
SB 811.	85.6	188.4	2.096	.110	3.07	45.	5.71	6.99	.29	.042	1.225
SB 810.	85.6	188.4	2.163	.110	3.07	44.	5.71	6.99	.29	.041	1.225
SB 809.	85.6	188.4	2.229	.110	3.08	44.	5.71	7.05	.29	.041	1.236
SB 808.	85.6	188.4	2.296	.110	3.09	41.	5.71	7.12	.27	.038	1.248
SB 807.	85.6	188.4	2.362	.110	3.09	40.	5.71	7.12	.26	.037	1.248
SB 806.	85.6	188.4	2.429	.110	3.09	42.	5.71	7.12	.27	.039	1.248
SB 805.	85.6	188.4	2.496	.110	3.08	42.	5.71	7.05	.27	.039	1.236
SB 804.	85.6	188.4	2.562	.110	3.07	43.	5.71	6.99	.28	.040	1.225
SB 877.	85.6	188.4	.231	1.224	1.98	58.	5.70	6.13	.38	2.900	-.023
SB 876.	85.6	188.4	.298	1.224	3.04	65.	5.70	6.79	.42	.063	1.192
SB 875.	85.6	188.4	.364	1.224	2.98	59.	5.70	6.40	.39	.060	1.123
SB 874.	85.6	188.4	.431	1.224	2.97	47.	5.70	6.34	.31	.048	1.112
SB 873.	85.6	188.4	.498	1.224	2.98	50.	5.70	6.40	.33	.051	1.123
SB 872.	85.6	188.4	.564	1.224	3.00	50.	5.70	6.53	.33	.050	1.146
SB 871.	85.6	188.4	.631	1.224	3.02	47.	5.70	6.66	.31	.046	1.169
SB 870.	85.6	188.4	.697	1.224	3.03	44.	5.70	6.73	.29	.043	1.181
SB 869.	85.6	188.4	.764	1.224	3.01	51.	5.70	6.60	.33	.050	1.158
SB 868.	85.6	188.4	.831	1.224	2.98	55.	5.70	6.40	.36	.056	1.123
SB 867.	85.6	188.4	.897	1.224	2.96	51.	5.70	6.27	.33	.053	1.101
SB 866.	85.6	188.4	.964	1.224	2.96	54.	5.70	6.27	.35	.056	1.101
SB 865.	85.6	188.4	1.030	1.224	2.98	56.	5.70	6.40	.37	.057	1.123
SB 864.	85.6	188.4	1.097	1.224	2.99	53.	5.70	6.47	.35	.054	1.135
SB 863.	85.6	188.4	1.164	1.224	2.99	51.	5.70	6.47	.33	.052	1.135
SB 862.	85.6	188.4	1.230	1.224	2.95	61.	5.70	6.20	.40	.064	1.089
SB 860.	85.6	188.4	1.297	1.224	2.92	72.	5.70	6.01	.47	.078	1.055
SB 859.	85.6	188.4	1.363	1.224	2.88	68.	5.70	5.75	.44	.077	1.009
SB 858.	85.6	188.4	1.430	1.224	2.86	70.	5.70	5.62	.46	.081	.986
SB 857.	85.6	188.4	1.497	1.224	2.84	74.	5.70	5.49	.48	.088	.963
SB 856.	85.6	188.4	1.563	1.224	2.82	73.	5.70	5.36	.48	.089	.940
SB 855.	85.6	188.4	1.630	1.224	2.83	72.	5.70	5.42	.47	.087	.952
SB 854.	85.6	188.4	1.696	1.224	2.85	70.	5.70	5.55	.46	.082	.974
SB 853.	85.6	188.4	1.763	1.224	2.88	63.	5.70	5.75	.41	.072	1.009
SB 852.	85.6	188.4	1.830	1.224	2.87	71.	5.70	5.68	.46	.082	.997
SB 851.	85.6	188.4	1.896	1.224	2.82	76.	5.70	5.36	.50	.093	.940
SB 850.	85.6	188.4	1.963	1.224	2.77	81.	5.70	5.03	.53	.105	.883
SB 849.	85.6	188.4	2.029	1.224	2.71	75.	5.70	4.64	.49	.106	.814
SB 848.	85.6	188.4	2.096	1.224	2.71	66.	5.70	4.64	.43	.093	.814
SB 847.	85.6	188.4	2.163	1.224	2.70	67.	5.70	4.57	.44	.096	.802

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB 846.	85.6	188.4	2.229	1.224	2.71	77.	5.70	4.64	.50	.108	.814
SB 845.	85.6	188.4	2.298	1.224	2.75	85.	5.70	4.90	.56	.113	.860
SB 844.	85.6	188.4	2.362	1.224	2.82	84.	5.70	5.36	.55	.102	.940
SB 843.	85.6	188.4	2.429	1.224	2.87	69.	5.70	5.68	.45	.079	.997
SB 842.	85.6	188.4	2.498	1.224	2.88	62.	5.70	5.75	.40	.070	1.009
SB 841.	85.6	188.4	2.562	1.224	2.86	63.	5.70	5.62	.41	.073	.986
SB 914.	85.6	188.4	.165	.685	3.02	71.	5.70	6.66	.46	.070	1.169
SB 913.	85.6	188.4	.231	.685	3.04	49.	5.70	6.79	.32	.047	1.192
SB 912.	85.6	188.4	.298	.685	3.03	50.	5.70	6.73	.33	.049	1.181
SB 911.	85.6	188.4	.364	.685	3.00	56.	5.70	6.53	.37	.056	1.146
SB 910.	85.6	188.4	.431	.685	2.97	54.	5.70	6.34	.35	.056	1.112
SB 909.	85.6	188.4	.498	.685	2.97	50.	5.70	6.34	.33	.052	1.112
SB 908.	85.6	188.4	.564	.685	2.98	53.	5.70	6.40	.35	.054	1.123
SB 907.	85.6	188.4	.631	.685	3.00	49.	5.70	6.53	.32	.049	1.146
SB 906.	85.6	188.4	.697	.685	3.02	45.	5.70	6.66	.29	.044	1.169
SB 905.	85.6	188.4	.764	.685	3.02	43.	5.70	6.66	.28	.042	1.169
SB 904.	85.6	188.4	.831	.685	3.00	47.	5.70	6.53	.31	.047	1.146
SB 903.	85.6	188.4	.897	.685	2.99	45.	5.70	6.47	.29	.045	1.135
SB 902.	85.6	188.4	.964	.685	2.99	48.	5.70	6.47	.31	.048	1.135
SB 901.	85.6	188.4	1.030	.685	3.00	53.	5.70	6.53	.35	.053	1.146
SB 900.	85.6	188.4	1.097	.685	3.02	53.	5.70	6.66	.35	.052	1.169
SB 899.	85.6	188.4	1.164	.685	3.03	50.	5.70	6.73	.33	.049	1.181
SB 898.	85.6	188.4	1.230	.685	3.03	47.	5.70	6.73	.31	.046	1.181
SB 897.	85.6	188.4	1.297	.685	3.02	51.	5.70	6.66	.33	.050	1.169
SB 896.	85.6	188.4	1.363	.685	2.99	58.	5.70	6.47	.38	.059	1.135
SB 895.	85.6	188.4	1.430	.685	2.96	56.	5.70	6.27	.37	.058	1.101
SB 894.	85.6	188.4	1.497	.685	2.95	51.	5.70	6.20	.33	.054	1.089
SB 893.	85.6	188.4	1.563	.685	2.96	56.	5.70	6.27	.37	.058	1.101
SB 892.	85.6	188.4	1.630	.685	2.97	59.	5.70	6.34	.39	.061	1.112
SB 891.	85.6	188.4	1.696	.685	3.00	57.	5.70	6.53	.37	.057	1.146
SB 890.	85.6	188.4	1.763	.685	3.01	51.	5.70	6.60	.33	.050	1.158
SB 889.	85.6	188.4	1.830	.685	3.00	56.	5.70	6.53	.37	.056	1.146
SB 888.	85.6	188.4	1.896	.685	2.98	62.	5.70	6.40	.40	.063	1.123
SB 887.	85.6	188.4	1.963	.685	2.96	63.	5.70	6.27	.41	.066	1.101
SB 886.	85.6	188.4	2.029	.685	2.95	58.	5.70	6.20	.38	.061	1.089
SB 885.	85.6	188.4	2.096	.685	2.96	53.	5.70	6.27	.35	.055	1.101
SB 884.	85.6	188.4	2.163	.685	2.96	56.	5.70	6.27	.37	.058	1.101
SB 883.	85.6	188.4	2.229	.685	2.96	67.	5.70	6.27	.44	.070	1.101
SB 882.	85.6	188.4	2.296	.685	2.96	65.	5.70	6.27	.42	.068	1.101
SB 881.	85.6	188.4	2.362	.685	2.99	59.	5.70	6.47	.39	.060	1.135
SB 880.	85.6	188.4	2.429	.685	3.01	56.	5.70	6.60	.37	.055	1.158
SB 879.	85.6	188.4	2.496	.685	3.00	58.	5.70	6.53	.38	.058	1.146
SB 878.	85.6	188.4	2.562	.685	2.96	65.	5.70	6.27	.42	.068	1.101

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.10. AXIAL DISTANCE 432.80 IN. BLOCKAGE CENTERLINE=28.25 IN. P=16.00 PSI RE= 30000.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB 915.	85.8	188.2	.165	.685	3.05	80.	5.69	6.86	.52	.076	1.205
SB 916.	85.8	188.2	.231	.685	3.06	61.	5.69	6.92	.40	.058	1.216
SB 917.	85.8	188.2	.298	.685	3.03	62.	5.69	6.73	.40	.060	1.182
SB 918.	85.8	188.2	.364	.685	2.99	64.	5.69	6.47	.42	.065	1.136
SB 919.	85.8	188.2	.431	.685	2.96	64.	5.69	6.27	.42	.067	1.102
SB 920.	85.8	188.2	.498	.685	2.97	54.	5.69	6.34	.35	.056	1.113
SB 921.	85.8	188.2	.564	.685	2.99	58.	5.69	6.47	.38	.059	1.136
SB 922.	85.8	188.2	.631	.685	3.03	58.	5.69	6.73	.38	.056	1.182
SB 923.	85.8	188.2	.697	.685	3.05	50.	5.69	6.86	.33	.048	1.205
SB 924.	85.8	188.2	.764	.685	3.04	50.	5.69	6.79	.33	.048	1.194
SB 925.	85.8	188.2	.831	.685	3.00	60.	5.69	6.53	.39	.060	1.148
SB 926.	85.8	188.2	.897	.685	2.96	60.	5.69	6.27	.39	.063	1.102
SB 927.	85.8	188.2	.964	.685	2.93	50.	5.69	6.07	.33	.054	1.067
SB 928.	85.8	188.2	1.030	.685	2.94	50.	5.69	6.14	.33	.053	1.079
SB 929.	85.8	188.2	1.097	.685	2.97	54.	5.69	6.34	.35	.056	1.113
SB 930.	85.8	188.2	1.164	.685	3.01	64.	5.69	6.60	.42	.063	1.159
SB 931.	85.8	188.2	1.230	.685	3.04	58.	5.69	6.79	.38	.056	1.194
SB 932.	85.8	188.2	1.297	.685	3.04	54.	5.69	6.79	.35	.052	1.194
SB 933.	85.8	188.2	1.363	.685	3.00	56.	5.69	6.53	.37	.056	1.148
SB 934.	85.8	188.2	1.430	.685	2.96	57.	5.69	6.27	.37	.059	1.102
SB 935.	85.8	188.2	1.497	.685	2.95	51.	5.69	6.20	.33	.054	1.090
SB 936.	85.8	188.2	1.563	.685	2.95	51.	5.69	6.20	.33	.054	1.090
SB 937.	85.8	188.2	1.630	.685	2.97	61.	5.69	6.34	.40	.063	1.113
SB 938.	85.8	188.2	1.696	.685	3.01	66.	5.69	6.60	.43	.065	1.159
SB 939.	85.8	188.2	1.763	.685	3.04	60.	5.69	6.79	.39	.058	1.194
SB 940.	85.8	188.2	1.830	.685	3.00	66.	5.69	6.53	.43	.066	1.148
SB 941.	85.8	188.2	1.896	.685	2.94	66.	5.69	6.14	.43	.070	1.079
SB 942.	85.8	188.2	1.963	.685	2.91	56.	5.69	5.94	.37	.062	1.044
SB 943.	85.8	188.2	2.029	.685	2.89	48.	5.69	5.81	.31	.054	1.021
SB 944.	85.8	188.2	2.096	.685	2.90	50.	5.69	5.88	.33	.056	1.033
SB 945.	85.8	188.2	2.163	.685	2.93	58.	5.69	6.07	.38	.062	1.067
SB 946.	85.8	188.2	2.229	.685	2.99	67.	5.69	6.47	.44	.068	1.136
SB 947.	85.8	188.2	2.296	.685	3.04	62.	5.69	6.79	.40	.060	1.194
SB 948.	85.8	188.2	2.362	.685	3.05	58.	5.69	6.86	.38	.055	1.205
SB 949.	85.8	188.2	2.429	.685	3.01	62.	5.69	6.60	.40	.061	1.159
SB 950.	85.8	188.2	2.496	.685	2.97	57.	5.69	6.34	.37	.059	1.113
SB 966.	85.8	188.2	.165	1.224	3.07	74.	5.69	6.99	.48	.069	1.228
SB 965.	85.8	188.2	.298	1.224	3.04	62.	5.69	6.79	.40	.060	1.194
SB 964.	85.8	188.2	.431	1.224	2.95	62.	5.69	6.20	.40	.065	1.090
SB 963.	85.8	188.2	.564	1.224	2.96	54.	5.69	6.27	.35	.056	1.102
SB 962.	85.8	188.2	.697	1.224	3.04	56.	5.69	6.79	.37	.054	1.194
SB 961.	85.8	188.2	.831	1.224	3.07	41.	5.69	6.99	.27	.038	1.228
SB 960.	85.8	188.2	.964	1.224	3.02	51.	5.69	6.66	.33	.050	1.171
SB 959.	85.8	188.2	1.097	1.224	2.98	55.	5.69	6.40	.36	.056	1.125
SB 958.	85.8	188.2	1.230	1.224	2.97	44.	5.69	6.34	.29	.045	1.113
SB 957.	85.8	188.2	1.363	1.224	2.95	55.	5.69	6.20	.36	.058	1.090
SB 956.	85.8	188.2	1.497	1.224	2.90	80.	5.69	5.88	.52	.089	1.033
SB 955.	85.8	188.2	1.630	1.224	2.84	83.	5.69	5.49	.54	.099	.964
SB 954.	85.8	188.2	1.763	1.224	2.85	72.	5.69	5.55	.52	.093	.975

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	U(FLUC) FPS	TURB	VRATIO
SB 953.	85.8	188.2	1.898	1.224	2.83	85.	5.69	5.42	.56	.102	.953
SB 952.	85.8	188.2	2.029	1.224	2.77	80.	5.69	5.03	.52	.104	.884
SB 951.	85.8	188.2	2.163	1.224	2.80	83.	5.69	5.23	.54	.104	.918
SB 967.	85.8	188.2	.831	1.174	3.01	74.	5.69	6.60	.48	.073	1.159
SB 968.	85.8	188.2	.964	1.174	2.90	88.	5.69	5.88	.57	.098	1.033
SB 969.	85.8	188.2	1.097	1.174	2.89	64.	5.69	5.81	.42	.072	1.021
SB 970.	85.8	188.2	1.230	1.174	2.94	55.	5.69	6.14	.36	.059	1.079
SB 971.	85.8	188.2	1.363	1.174	2.91	69.	5.69	5.64	.45	.076	1.044
SB 972.	85.8	188.2	1.497	1.174	2.82	89.	5.69	5.36	.58	.109	.941
SB 973.	85.8	188.2	1.630	1.174	2.81	78.	5.69	5.29	.51	.096	.930
SB 974.	85.8	188.2	1.763	1.174	2.86	90.	5.69	5.62	.59	.105	.987
SB 975.	85.8	188.2	1.896	1.174	2.82	90.	5.69	5.36	.59	.110	.941
SB 976.	85.8	188.2	2.029	1.174	2.75	75.	5.69	4.90	.49	.100	.861
SB 977.	85.8	188.2	2.163	1.174	2.78	87.	5.69	5.09	.57	.112	.895
SB 988.	85.8	188.2	.831	1.274	2.99	80.	5.69	6.47	.52	.081	1.136
SB 987.	85.8	188.2	.964	1.274	2.87	94.	5.69	5.58	.61	.108	.998
SB 986.	85.8	188.2	1.097	1.274	2.93	78.	5.69	6.37	.51	.084	1.067
SB 985.	85.8	188.2	1.230	1.274	2.97	51.	5.69	6.34	.33	.053	1.113
SB 984.	85.8	188.2	1.363	1.274	2.93	65.	5.69	6.07	.42	.070	1.067
SB 983.	85.8	188.2	1.497	1.274	2.77	115.	5.69	5.03	.75	.149	.884
SB 982.	85.8	188.2	1.630	1.274	2.77	95.	5.69	5.03	.62	.123	.884
SB 981.	85.8	188.2	1.763	1.274	2.83	86.	5.69	5.42	.56	.104	.953
SB 980.	85.8	188.2	1.896	1.274	2.80	93.	5.69	5.23	.61	.116	.918
SB 979.	85.8	188.2	2.029	1.274	2.69	99.	5.69	4.51	.65	.143	.792
SB 978.	85.8	188.2	2.163	1.274	2.77	99.	5.69	5.03	.65	.129	.884
SB1005.	85.8	188.2	.165	1.763	3.08	69.	5.69	7.05	.45	.064	1.239
SB1003.	85.8	188.2	.298	1.763	3.04	62.	5.69	6.79	.40	.060	1.194
SB1002.	85.8	188.2	.431	1.763	2.98	58.	5.69	6.40	.38	.059	1.125
SB1001.	85.8	188.2	.564	1.763	2.99	54.	5.69	6.47	.35	.055	1.136
SB1000.	85.8	188.2	.697	1.763	3.06	52.	5.69	6.92	.34	.049	1.216
SB 999.	85.8	188.2	.831	1.763	3.09	42.	5.69	7.12	.27	.039	1.251
SB 998.	85.8	188.2	.964	1.763	3.03	67.	5.69	6.73	.44	.065	1.182
SB 997.	85.8	188.2	1.097	1.763	2.96	93.	5.69	6.27	.61	.097	1.102
SB 996.	85.8	188.2	1.230	1.763	2.90	82.	5.69	5.89	.54	.091	1.033
SB 995.	85.8	188.2	1.363	1.763	2.84	84.	5.69	5.49	.55	.100	.964
SB 994.	85.8	188.2	1.497	1.763	2.77	121.	5.69	5.03	.79	.157	.884
SB 993.	85.8	188.2	1.630	1.763	2.66	121.	5.69	4.31	.79	.183	.757
SB 992.	85.8	188.2	1.763	1.763	2.59	97.	5.69	3.85	.63	.164	.677
SB 991.	85.8	188.2	1.896	1.763	2.56	95.	5.69	3.66	.62	.170	.643
SB 990.	85.8	188.2	2.029	1.763	2.54	90.	5.69	3.53	.59	.167	.620
SB 989.	85.8	188.2	2.163	1.763	2.54	95.	5.69	3.53	.62	.176	.620
SB1004.	85.8	188.2	.697	1.713	2.96	92.	5.69	6.27	.60	.096	1.102
SB1006.	85.8	188.2	.831	1.713	3.01	82.	5.69	6.60	.54	.082	1.159
SB1007.	85.8	188.2	.964	1.713	2.89	97.	5.69	5.81	.63	.109	1.021
SB1008.	85.8	188.2	1.097	1.713	2.86	90.	5.69	5.62	.59	.105	.987
SB1009.	85.8	188.2	1.230	1.713	2.87	87.	5.69	5.68	.57	.100	.998
SB1010.	85.8	188.2	1.363	1.713	2.81	87.	5.69	5.29	.57	.107	.937
SB1011.	85.8	188.2	1.497	1.713	2.71	99.	5.69	4.64	.65	.139	.81
SB1012.	85.8	188.2	1.630	1.713	2.63	104.	5.69	4.11	.68	.165	.72

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1013.	85.8	188.2	1.763	1.719	2.59	100.	5.69	3.85	.65	.169	.677
SB1014.	85.8	188.2	1.896	1.719	2.55	100.	5.69	3.59	.65	.182	.631
SB1015.	85.8	188.2	2.029	1.713	2.50	88.	5.69	3.27	.57	.176	.574
SB1016.	85.8	188.2	2.163	1.713	2.51	96.	5.69	3.33	.63	.188	.585
SB1027.	85.8	188.2	.831	1.819	3.03	73.	5.69	6.73	.48	.071	1.182
SB1026.	85.8	188.2	.964	1.813	2.91	99.	5.69	5.94	.65	.109	1.044
SB1025.	85.8	188.2	1.097	1.813	2.89	98.	5.69	5.81	.64	.110	1.021
SB1024.	85.8	188.2	1.230	1.813	2.89	90.	5.69	5.81	.59	.101	1.021
SB1023.	85.8	188.2	1.363	1.819	2.84	99.	5.69	5.49	.65	.118	.964
SB1022.	85.8	188.2	1.497	1.813	2.71	139.	5.69	4.64	.91	.196	.815
SB1021.	85.8	188.2	1.630	1.813	2.62	139.	5.69	4.05	.91	.224	.712
SB1020.	85.8	188.2	1.763	1.813	2.59	107.	5.69	3.85	.70	.181	.677
SB1019.	85.8	188.2	1.896	1.813	2.56	105.	5.69	3.66	.69	.188	.643
SB1018.	85.8	188.2	2.029	1.813	2.49	105.	5.69	3.20	.69	.214	.562
SB1017.	85.8	188.2	2.163	1.813	2.51	105.	5.69	3.33	.69	.206	.585
SB1031.	85.8	188.2	.231	.110	3.02	66.	5.69	6.66	.43	.065	1.171
SB1030.	85.8	188.2	.697	.110	3.07	45.	5.69	6.99	.29	.042	1.228
SB1029.	85.8	188.2	1.230	.110	3.06	67.	5.69	6.92	.44	.063	1.216
SB1028.	85.8	188.2	1.763	.110	3.07	57.	5.69	6.99	.37	.053	1.228

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.11. AXIAL DISTANCE=33.00 IN. BLOCKAGE CENTERLINE=30.50 IN. P=21.00 PSI RE= 29600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1032.	85.0	187.1	.098	.685	2.96	148.	5.66	6.27	.97	.154	1.108
SB1033.	85.0	187.1	.165	.685	3.05	87.	5.66	6.36	.57	.083	1.212
SB1034.	85.0	187.1	.231	.685	3.07	55.	5.66	6.99	.36	.051	1.235
SB1035.	85.0	187.1	.298	.685	3.04	57.	5.30	6.79	.37	.055	1.201
SB1036.	85.0	187.1	.364	.685	3.01	60.	5.66	6.60	.39	.059	1.166
SB1037.	85.0	187.1	.431	.685	2.98	60.	5.66	6.40	.39	.061	1.131
SB1038.	85.0	187.1	.498	.685	2.98	55.	5.66	6.40	.36	.056	1.131
SB1039.	85.0	187.1	.564	.685	3.01	55.	5.66	6.60	.36	.054	1.166
SB1040.	85.0	187.1	.631	.685	3.04	50.	5.66	6.79	.33	.048	1.201
SB1041.	85.0	187.1	.697	.685	3.05	41.	5.66	6.86	.27	.039	1.212
SB1042.	85.0	187.1	.764	.685	3.04	41.	5.66	6.79	.27	.039	1.201
SB1043.	85.0	187.1	.831	.685	3.02	48.	5.66	6.66	.31	.047	1.177
SB1044.	85.0	187.1	.897	.685	2.99	56.	5.66	6.47	.37	.057	1.143
SB1045.	85.0	187.1	.964	.685	2.97	56.	5.66	6.34	.37	.058	1.120
SB1046.	85.0	187.1	1.030	.685	2.97	56.	5.66	6.34	.37	.058	1.120
SB1047.	85.0	187.1	1.097	.685	3.00	62.	5.66	6.53	.40	.062	1.154
SB1048.	85.0	187.1	1.164	.685	3.03	56.	5.66	6.73	.37	.054	1.189
SB1049.	85.0	187.1	1.230	.685	3.05	48.	5.66	6.86	.31	.046	1.212
SB1050.	85.0	187.1	1.297	.685	3.04	47.	5.66	6.79	.31	.045	1.201
SB1051.	85.0	187.1	1.363	.685	3.01	52.	5.66	6.60	.34	.051	1.166
SB1052.	85.0	187.1	1.430	.685	2.98	58.	5.66	6.40	.38	.059	1.131
SB1053.	85.0	187.1	1.497	.685	2.96	58.	5.66	6.27	.38	.060	1.108
SB1054.	85.0	187.1	1.563	.685	2.97	62.	5.66	6.34	.40	.064	1.120
SB1055.	85.0	187.1	1.630	.685	2.99	66.	5.66	6.47	.43	.067	1.143
SB1056.	85.0	187.1	1.696	.685	3.03	64.	5.66	6.73	.42	.062	1.189
SB1057.	85.0	187.1	1.763	.685	3.05	52.	5.66	6.85	.36	.050	1.212
SB1058.	85.0	187.1	1.830	.685	3.03	56.	5.66	6.73	.37	.054	1.189
SB1059.	85.0	187.1	1.896	.685	2.99	68.	5.66	6.47	.44	.069	1.143
SB1060.	85.0	187.1	1.963	.685	2.95	67.	5.66	6.20	.44	.071	1.097
SB1061.	85.0	187.1	2.029	.685	2.92	61.	5.66	6.01	.40	.066	1.062
SB1062.	85.0	187.1	2.096	.685	2.92	61.	5.66	6.01	.40	.066	1.062
SB1063.	85.0	187.1	2.163	.685	2.94	61.	5.66	6.14	.40	.065	1.085
SB1064.	85.0	187.1	2.229	.685	2.98	61.	5.66	6.40	.40	.062	1.131
SB1065.	85.0	187.1	2.296	.685	3.03	52.	5.66	6.73	.34	.050	1.189
SB1066.	85.0	187.1	2.362	.685	3.05	46.	5.66	6.86	.30	.044	1.212
SB1067.	85.0	187.1	2.429	.685	3.05	55.	5.66	6.86	.36	.052	1.212
SB1068.	85.0	187.1	2.496	.685	3.01	64.	5.66	6.60	.42	.063	1.166
C											
SB1072.	85.0	187.1	.231	.110	3.03	131.	5.66	6.73	.86	.127	1.189
SB1071.	85.0	187.1	.697	.110	3.07	41.	5.66	6.99	.27	.038	1.235
SB1070.	85.0	187.1	1.230	.110	3.08	57.	5.66	7.05	.37	.053	1.247
SB1069.	85.0	187.1	1.763	.110	3.09	51.	5.66	7.12	.33	.047	1.258
C											
SB1092.	85.0	187.1	.165	1.224	3.08	62.	5.66	7.85	.40	.057	1.247
SB1091.	85.0	187.1	.298	1.224	3.03	62.	5.66	6.73	.40	.060	1.189
SB1090.	85.0	187.1	.431	1.224	2.96	55.	5.66	6.27	.36	.057	1.108
SB1089.	85.0	187.1	.564	1.224	3.00	62.	5.66	6.53	.40	.062	1.154
SB1088.	85.0	187.1	.697	1.224	3.05	40.	5.66	6.86	.26	.038	1.21
SB1087.	85.0	187.1	.831	1.224	3.03	35.	5.66	6.73	.23	.034	1.18

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB1086.	85.0	187.1	.964	1.224	3.02	41.	5.66	6.66	.27	.040	1.177
SB1085.	85.0	187.1	1.097	1.224	2.99	64.	5.66	6.47	.42	.065	1.143
SB1084.	85.0	187.1	1.230	1.224	2.87	72.	5.66	5.68	.47	.083	1.004
SB1083.	85.0	187.1	1.363	1.224	2.92	79.	5.66	6.01	.52	.086	1.062
SB1082.	85.0	187.1	1.497	1.224	2.83	116.	5.66	5.42	.76	.140	.958
SB1081.	85.0	187.1	1.630	1.224	2.74	106.	5.66	4.83	.69	.143	.854
SB1080.	85.0	187.1	1.763	1.224	2.80	112.	5.66	5.23	.73	.140	.923
SB1079.	85.0	187.1	1.896	1.224	2.77	108.	5.66	5.03	.71	.140	.889
SB1075.	85.0	187.1	2.029	1.224	2.70	99.	5.66	4.57	.65	.141	.808
SB1078.	85.0	187.1	2.163	1.224	2.68	99.	5.66	4.44	.65	.146	.785
SB1074.	85.0	187.1	2.296	1.224	2.69	94.	5.66	4.51	.61	.136	.797
SB1077.	85.0	187.1	2.429	1.224	2.73	99.	5.66	4.77	.65	.136	.843
SB1073.	85.0	187.1	2.562	1.224	2.77	103.	5.66	5.03	.67	.134	.889
SB1076.	85.0	187.1	2.695	1.224	2.82	99.	5.66	5.36	.65	.121	.947
SB1093.	85.0	187.1	.831	1.174	3.02	59.	5.66	6.66	.39	.058	1.177
SB1094.	85.0	187.1	.964	1.174	2.91	90.	5.66	5.94	.59	.099	1.050
SB1095.	85.0	187.1	1.097	1.174	2.89	77.	5.66	5.81	.50	.087	1.027
SB1096.	85.0	187.1	1.230	1.174	2.89	72.	5.66	5.81	.47	.081	1.027
SB1097.	85.0	187.1	1.363	1.174	2.91	87.	5.66	5.94	.57	.096	1.050
SB1098.	85.0	187.1	1.497	1.174	2.89	80.	5.66	5.81	.52	.090	1.027
SB1099.	85.0	187.1	1.630	1.174	2.70	102.	5.66	4.57	.67	.146	.808
SB1100.	85.0	187.1	1.763	1.174	2.84	115.	5.66	5.49	.75	.137	.970
SB1101.	85.0	187.1	1.896	1.174	2.78	115.	5.66	5.09	.75	.147	.900
SB1102.	85.0	187.1	2.029	1.174	2.65	86.	5.66	4.25	.56	.132	.750
SB1103.	85.0	187.1	2.163	1.174	2.70	102.	5.66	4.57	.67	.146	.808
SB1104.	85.0	187.1	2.296	1.174	2.82	100.	5.66	5.36	.65	.122	.947
SB1116.	85.0	187.1	.831	1.274	2.97	60.	5.66	6.34	.39	.062	1.120
SB1115.	85.0	187.1	.964	1.274	2.87	106.	5.66	5.68	.69	.122	1.004
SB1114.	85.0	187.1	1.097	1.274	2.94	84.	5.66	6.14	.55	.089	1.085
SB1113.	85.0	187.1	1.230	1.274	2.90	72.	5.66	5.88	.47	.080	1.039
SB1112.	85.0	187.1	1.363	1.274	2.91	78.	5.66	5.94	.51	.086	1.050
SB1111.	85.0	187.1	1.497	1.274	2.72	133.	5.66	4.70	.87	.185	.831
SB1110.	85.0	187.1	1.630	1.274	2.68	125.	5.66	4.44	.82	.184	.785
SB1109.	85.0	187.1	1.763	1.274	2.79	125.	5.66	5.16	.82	.158	.912
SB1108.	85.0	187.1	1.896	1.274	2.76	120.	5.66	4.96	.78	.158	.877
SB1107.	85.0	187.1	2.029	1.274	2.61	116.	5.66	3.98	.76	.190	.704
SB1106.	85.0	187.1	2.163	1.274	2.71	125.	5.66	4.64	.82	.176	.820
SB1105.	85.0	187.1	2.296	1.274	2.81	112.	5.66	5.29	.73	.138	.935
SB1133.	85.0	187.1	.165	1.763	3.04	160.	5.66	6.79	1.05	.154	1.201
SB1132.	85.0	187.1	.298	1.763	3.03	60.	5.66	6.73	.39	.058	1.189
SB1131.	85.0	187.1	.431	1.763	2.99	58.	5.66	6.47	.38	.059	1.143
SB1130.	85.0	187.1	.564	1.763	3.02	58.	5.66	6.66	.38	.057	1.177
SB1129.	85.0	187.1	.697	1.763	3.07	41.	5.66	6.99	.27	.038	1.235
SB1128.	85.0	187.1	.831	1.763	3.06	38.	5.66	6.92	.25	.036	1.224
SB1127.	85.0	187.1	.964	1.763	3.04	50.	5.66	6.79	.33	.048	1.201
SB1126.	85.0	187.1	1.097	1.763	2.96	79.	5.66	6.27	.52	.082	1.108
SB1125.	85.0	187.1	1.230	1.763	2.85	98.	5.66	5.55	.64	.115	.981
SB1124.	85.0	187.1	1.363	1.763	2.76	128.	5.66	4.96	.84	.168	.877
SB1123.	85.0	187.1	1.497	1.763	2.62	150.	5.66	4.05	.98	.242	.716
SB1122.	85.0	187.1	1.630	1.763	2.41	176.	5.66	2.68	1.15	.429	.473
SB1121.	85.0	187.1	1.763	1.763	2.20	149.	5.66	1.31	.97	.745	.231

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E RVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1120.	85.0	187.1	1.896	1.763	2.09	125.	5.66	.59	.82	1.389	.104
SB1119.	85.0	187.1	2.029	1.763	1.98	99.	5.66	-.13	.65	4.950	-.023
SB1118.	85.0	187.1	2.163	1.763	1.97	99.	5.66	-.20	.65	3.300	-.035
SB1117.	85.0	187.1	2.296	1.763	2.07	149.	5.66	.46	.97	2.129	.081
SB1134.	85.0	187.1	.831	1.713	3.03	68.	5.66	6.73	.44	.066	1.189
SB1135.	85.0	187.1	.964	1.713	2.89	110.	5.66	5.81	.72	.124	1.027
SB1136.	85.0	187.1	1.097	1.713	2.85	102.	5.66	5.55	.67	.120	.981
SB1137.	85.0	187.1	1.230	1.713	2.77	114.	5.66	5.43	.74	.148	.889
SB1138.	85.0	187.1	1.363	1.713	2.67	134.	5.66	4.38	.88	.200	.773
SB1139.	85.0	187.1	1.497	1.713	2.51	136.	5.66	3.33	.89	.267	.589
SB1140.	85.0	187.1	1.630	1.713	2.31	165.	5.66	2.02	1.08	.532	.358
SB1141.	85.0	187.1	1.763	1.713	2.21	140.	5.66	1.37	.91	.667	.242
SB1142.	85.0	187.1	1.896	1.713	2.12	150.	5.66	.78	.98	1.250	.139
SB1143.	85.0	187.1	2.029	1.713	1.97	110.	5.66	-.20	.72	3.667	-.035
SB1144.	85.0	187.1	2.163	1.713	1.96	112.	5.66	-.26	.73	2.800	-.046
SB1145.	85.0	187.1	2.296	1.713	2.11	158.	5.66	.72	1.03	1.436	.127
SB1157.	85.0	187.1	.831	1.813	3.03	50.	5.66	6.73	.33	.049	1.189
SB1156.	85.0	187.1	.964	1.813	2.96	90.	5.66	6.27	.59	.094	1.108
SB1155.	85.0	187.1	1.097	1.813	2.91	94.	5.66	5.94	.61	.103	1.050
SB1154.	85.0	187.1	1.230	1.813	2.86	215.	5.66	5.52	1.40	.250	.993
SB1153.	85.0	187.1	1.363	1.813	2.71	215.	5.66	4.54	1.40	.303	.820
SB1152.	85.0	187.1	1.497	1.813	2.58	215.	5.66	3.79	1.40	.371	.670
SB1151.	85.0	187.1	1.630	1.813	2.38	195.	5.66	2.48	1.27	.513	.439
SB1150.	85.0	187.1	1.763	1.813	2.15	165.	5.66	.98	1.08	1.100	.173
SB1149.	85.0	187.1	1.896	1.813	2.04	120.	5.66	.26	.78	3.000	.046
SB1148.	85.0	187.1	2.029	1.813	1.96	94.	5.66	-.26	.61	2.350	-.046
SB1147.	85.0	187.1	2.163	1.813	1.94	94.	5.66	-.39	.61	1.567	-.069
SB1146.	85.0	187.1	2.296	1.813	2.04	136.	5.66	.26	.89	3.400	.046

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.13. AXIAL DISTANCE#27.30 IN. BLOCKAGE CENTERLINE=30.50 IN. P=21.08 PSI RE= 29600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LGCL) FPS	UFLUC FPS	TURB	VRATIO
SB1158.	85.0	187.1	.098	1.763	3.00	48.	5.66	6.53	.31	.048	1.154
SB1159.	85.0	187.1	.165	1.763	2.99	46.	5.66	6.47	.30	.046	1.143
SB1160.	85.0	187.1	.231	1.763	2.96	55.	5.66	6.27	.36	.057	1.108
SB1161.	85.0	187.1	.298	1.763	2.92	57.	5.66	6.01	.37	.062	1.062
SB1162.	85.0	187.1	.364	1.763	2.89	52.	5.66	5.81	.34	.058	1.027
SB1163.	85.0	187.1	.431	1.763	2.88	49.	5.66	5.75	.32	.056	1.016
SB1164.	85.0	187.1	.498	1.763	2.89	49.	5.66	5.81	.32	.055	1.027
SB1165.	85.0	187.1	.564	1.763	2.92	46.	5.66	6.01	.30	.050	1.062
SB1166.	85.0	187.1	.631	1.763	2.94	42.	5.66	6.14	.27	.045	1.085
SB1167.	85.0	187.1	.697	1.763	2.95	40.	5.66	6.20	.26	.042	1.097
SB1168.	85.0	187.1	.764	1.763	2.94	43.	5.66	6.14	.28	.046	1.085
SB1169.	85.0	187.1	.831	1.763	2.91	48.	5.66	5.94	.31	.053	1.050
SB1170.	85.0	187.1	.897	1.763	2.90	50.	5.66	5.88	.33	.056	1.039
SB1171.	85.0	187.1	.964	1.763	2.89	50.	5.66	5.81	.33	.056	1.027
SB1172.	85.0	187.1	1.030	1.763	2.90	46.	5.66	5.88	.30	.051	1.039
SB1173.	85.0	187.1	1.097	1.763	2.92	42.	5.66	6.01	.27	.046	1.062
SB1174.	85.0	187.1	1.164	1.763	2.92	39.	5.66	6.01	.25	.042	1.062
SB1175.	85.0	187.1	1.230	1.763	2.92	40.	5.66	6.01	.26	.043	1.062
SB1176.	85.0	187.1	1.297	1.763	2.90	50.	5.66	5.88	.33	.056	1.039
SB1177.	85.0	187.1	1.363	1.763	2.86	55.	5.66	5.62	.36	.064	.993
SB1178.	85.0	187.1	1.430	1.763	2.83	52.	5.66	5.42	.34	.063	.958
SB1179.	85.0	187.1	1.497	1.763	2.82	49.	5.66	5.36	.32	.060	.947
SB1180.	85.0	187.1	1.563	1.763	2.84	48.	5.66	5.49	.31	.057	.970
SB1181.	85.0	187.1	1.630	1.763	2.87	44.	5.66	5.68	.29	.051	1.004
SB1182.	85.0	187.1	1.696	1.763	2.91	40.	5.66	5.94	.26	.044	1.050
SB1183.	85.0	187.1	1.763	1.763	2.91	40.	5.66	5.94	.26	.044	1.050
SB1184.	85.0	187.1	1.830	1.763	2.92	40.	5.66	6.01	.26	.043	1.062
SB1185.	85.0	187.1	1.896	1.763	2.90	45.	5.66	5.88	.29	.050	1.039
SB1186.	85.0	187.1	1.963	1.763	2.88	48.	5.66	5.75	.31	.055	1.016
SB1187.	85.0	187.1	2.029	1.763	2.87	49.	5.66	5.68	.32	.056	1.004
SB1188.	85.0	187.1	2.096	1.763	2.88	48.	5.66	5.75	.31	.055	1.016
SB1189.	85.0	187.1	2.163	1.763	2.89	47.	5.66	5.81	.31	.053	1.027
SB1190.	85.0	187.1	2.229	1.763	2.91	42.	5.66	5.94	.27	.046	1.050
SB1194.	85.0	187.1	.165	1.224	2.99	48.	5.66	6.47	.31	.048	1.143
SB1193.	85.0	187.1	.697	1.224	2.94	39.	5.66	6.14	.25	.041	1.085
SB1192.	85.0	187.1	1.230	1.224	2.93	38.	5.66	6.07	.25	.041	1.074
SB1191.	85.0	187.1	1.763	1.224	2.93	39.	5.66	6.07	.25	.042	1.074
SB1198.	85.0	187.1	.165	.685	2.93	73.	5.66	6.07	.48	.078	1.074
SB1197.	85.0	187.1	.697	.685	2.93	43.	5.66	6.07	.28	.046	1.074
SB1196.	85.0	187.1	1.230	.685	2.94	39.	5.66	6.14	.25	.041	1.085
SB1195.	85.0	187.1	1.763	.685	2.94	38.	5.66	6.14	.25	.040	1.085
SB1202.	85.0	187.1	.165	.110	2.91	184.	5.66	5.94	1.20	.202	1.050
SB1201.	85.0	187.1	.697	.110	2.97	40.	5.66	6.34	.26	.041	1.120
SB1200.	85.0	187.1	1.230	.110	3.01	41.	5.66	6.60	.27	.041	1.166
SB1199.	85.0	187.1	1.763	.110	2.99	39.	5.66	6.47	.25	.039	1.143

TABLE C-1. TABULATION OF EXPERIMENTAL LCA DATA

DATA PLANE NO.12. AXIAL DISTANCE 434.00 IN. BLOCKAGE CENTERLINE 30.50 IN. P=21.08 PSI RE= 29700.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1203.	85.0	187.9	.098	.688	2.77	450.	5.68	5.03	2.94	.584	.885
SB1204.	85.0	187.9	.165	.685	3.08	64.	5.68	7.05	.42	.059	1.241
SB1205.	85.0	187.9	.231	.689	3.07	60.	5.68	6.99	.39	.056	1.230
SB1206.	85.0	187.9	.298	.689	3.03	65.	5.68	6.73	.42	.063	1.184
SB1207.	85.0	187.9	.364	.689	2.99	65.	5.68	6.47	.42	.066	1.138
SB1208.	85.0	187.9	.431	.685	2.98	57.	5.68	6.40	.37	.058	1.126
SB1209.	85.0	187.9	.498	.685	3.01	57.	5.68	6.60	.37	.056	1.161
SB1210.	85.0	187.9	.564	.685	3.05	59.	5.68	6.86	.39	.056	1.207
SB1211.	85.0	187.9	.631	.685	3.07	50.	5.68	6.99	.33	.047	1.230
SB1212.	85.0	187.9	.697	.689	3.07	45.	5.68	6.99	.29	.042	1.230
SB1213.	85.0	187.9	.764	.685	3.04	52.	5.68	6.79	.34	.050	1.195
SB1214.	85.0	187.9	.831	.685	3.00	62.	5.68	6.53	.40	.062	1.149
SB1215.	85.0	187.9	.897	.689	2.97	60.	5.68	6.34	.39	.062	1.115
SB1216.	85.0	187.9	.964	.685	2.96	52.	5.68	6.27	.34	.054	1.103
SB1217.	85.0	187.9	1.030	.685	2.98	58.	5.68	6.40	.38	.059	1.126
SB1218.	85.0	187.9	1.097	.685	3.02	64.	5.68	6.66	.42	.063	1.172
SB1219.	85.0	187.9	1.164	.685	3.06	56.	5.68	6.92	.37	.053	1.218
SB1220.	85.0	187.9	1.230	.685	3.06	50.	5.68	6.92	.33	.047	1.218
SB1221.	85.0	187.9	1.297	.685	3.04	56.	5.68	6.79	.37	.054	1.195
SB1222.	85.0	187.9	1.363	.685	2.99	59.	5.68	6.47	.39	.060	1.138
SB1223.	85.0	187.9	1.430	.685	2.96	58.	5.68	6.27	.38	.060	1.103
SB1224.	85.0	187.9	1.497	.685	2.96	56.	5.68	6.27	.37	.058	1.103
SB1225.	85.0	187.9	1.563	.685	2.97	62.	5.68	6.34	.40	.064	1.115
SB1226.	85.0	187.9	1.630	.685	3.01	69.	5.68	6.60	.45	.068	1.161
SB1227.	85.0	187.9	1.696	.685	3.06	62.	5.68	6.92	.40	.058	1.218
SB1228.	85.0	187.9	1.763	.685	3.04	62.	5.68	6.79	.40	.060	1.195
SB1229.	85.0	187.9	1.830	.685	2.98	70.	5.68	6.40	.46	.071	1.126
SB1230.	85.0	187.9	1.896	.689	2.93	66.	5.68	6.07	.43	.071	1.069
SB1231.	85.0	187.9	1.963	.685	2.92	57.	5.68	6.01	.37	.062	1.057
SB1232.	85.0	187.9	2.029	.685	2.92	55.	5.68	6.01	.36	.060	1.057
SB1233.	85.0	187.9	2.096	.685	2.94	59.	5.68	6.14	.39	.063	1.080
SB1234.	85.0	187.9	2.163	.685	2.98	65.	5.68	6.40	.42	.066	1.126
SB1235.	85.0	187.9	2.229	.685	3.04	62.	5.68	6.79	.40	.060	1.195
SB1239.	85.0	187.9	.165	.110	3.01	150.	5.68	6.60	.98	.149	1.161
SB1238.	85.0	187.9	.697	.110	3.08	48.	5.68	7.05	.31	.044	1.241
SB1237.	85.0	187.9	1.230	.110	3.08	65.	5.68	7.05	.42	.060	1.241
SB1236.	85.0	187.9	1.763	.110	3.09	60.	5.68	7.12	.39	.055	1.253
SB1261.	85.0	187.9	.165	1.224	3.06	75.	5.68	6.92	.49	.071	1.218
SB1260.	85.0	187.9	.298	1.224	2.99	75.	5.68	6.47	.49	.076	1.138
SB1259.	85.0	187.9	.431	1.224	2.94	62.	5.68	6.14	.40	.066	1.080
SB1258.	85.0	187.9	.564	1.224	3.00	65.	5.68	6.53	.42	.065	1.149
SB1257.	85.0	187.9	.697	1.224	3.06	45.	5.68	6.92	.29	.042	1.218
SB1256.	85.0	187.9	.831	1.224	3.04	42.	5.68	6.79	.27	.040	1.195
SB1255.	85.0	187.9	.964	1.224	3.00	55.	5.68	6.53	.36	.055	1.149
SB1254.	85.0	187.9	1.097	1.224	2.96	62.	5.68	6.27	.40	.065	1.103
SB	85.0	187.9	1.230	1.224	2.93	55.	5.68	6.07	.36	.059	
SB	85.0	187.9	1.363	1.224	2.91	74.	5.68	5.94	.48	.081	

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E BVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB1251.	85.0	187.9	1.497	1.224	2.84	92.	5.68	5.49	.60	.110	.966
SB1250.	85.0	187.9	1.630	1.224	2.80	94.	5.68	5.23	.61	.118	.920
SB1249.	85.0	187.9	1.763	1.224	2.82	94.	5.68	5.36	.61	.115	.943
SB1248.	85.0	187.9	1.896	1.224	2.75	94.	5.68	4.90	.61	.125	.862
SB1245.	85.0	187.9	2.029	1.224	2.77	97.	5.68	5.03	.63	.126	.885
SB1241.	85.0	187.9	2.163	1.224	2.79	90.	5.68	5.16	.59	.114	.908
SB1247.	85.0	187.9	2.296	1.224	2.73	89.	5.68	4.77	.58	.122	.839
SB1244.	85.0	187.9	2.429	1.224	2.74	85.	5.68	4.83	.56	.115	.851
SB1240.	85.0	187.9	2.562	1.224	2.77	90.	5.68	5.03	.59	.117	.885
SB1246.	85.0	187.9	2.695	1.224	2.79	95.	5.68	5.16	.62	.120	.908
SB1243.	85.0	187.9	2.829	1.224	2.81	90.	5.68	5.29	.59	.111	.931
SB1262.	85.0	187.9	.831	1.174	2.98	100.	5.68	6.40	.65	.102	1.126
SB1263.	85.0	187.9	.964	1.174	2.91	100.	5.68	5.94	.65	.110	1.046
SB1264.	85.0	187.9	1.097	1.174	2.89	70.	5.68	5.81	.46	.079	1.023
SB1265.	85.0	187.9	1.230	1.174	2.94	73.	5.68	6.14	.48	.078	1.080
SB1266.	85.0	187.9	1.363	1.174	2.88	96.	5.68	5.75	.63	.109	1.012
SB1267.	85.0	187.9	1.497	1.174	2.74	96.	5.68	4.83	.63	.130	.851
SB1268.	85.0	187.9	1.630	1.174	2.76	98.	5.68	4.96	.64	.129	.874
SB1269.	85.0	187.9	1.763	1.174	2.83	120.	5.68	5.42	.78	.145	.954
SB1270.	85.0	187.9	1.896	1.174	2.73	105.	5.68	4.77	.69	.144	.839
SB1271.	85.0	187.9	2.029	1.174	2.69	85.	5.68	4.51	.56	.123	.793
SB1272.	85.0	187.9	2.163	1.174	2.76	112.	5.68	4.96	.73	.147	.874
SB1283.	85.0	187.9	.831	1.274	2.93	94.	5.68	6.07	.61	.101	1.069
SB1282.	85.0	187.9	.964	1.274	2.87	98.	5.68	5.68	.64	.113	1.000
SB1281.	85.0	187.9	1.097	1.274	2.95	72.	5.68	6.20	.47	.076	1.092
SB1280.	85.0	187.9	1.230	1.274	2.91	56.	5.68	5.94	.37	.062	1.046
SB1279.	85.0	187.9	1.363	1.274	2.88	100.	5.68	5.75	.65	.114	1.012
SB1278.	85.0	187.9	1.497	1.274	2.69	130.	5.68	4.51	.85	.188	.793
SB1277.	85.0	187.9	1.630	1.274	2.74	110.	5.68	4.83	.72	.149	.851
SB1276.	85.0	187.9	1.763	1.274	2.77	100.	5.68	5.03	.65	.130	.885
SB1275.	85.0	187.9	1.896	1.274	2.70	114.	5.68	4.57	.74	.163	.805
SB1274.	85.0	187.9	2.029	1.274	2.63	119.	5.68	4.11	.78	.189	.724
SB1273.	85.0	187.9	2.163	1.274	2.74	110.	5.68	4.83	.72	.149	.851
SB1300.	85.0	187.9	.031	1.763	2.79	362.	5.68	5.16	2.36	.458	.908
SB1299.	85.0	187.9	.165	1.763	3.07	62.	5.68	6.99	.40	.058	1.230
SB1298.	85.0	187.9	.298	1.763	3.01	66.	5.68	6.60	.43	.065	1.161
SB1297.	85.0	187.9	.431	1.763	2.97	62.	5.68	6.34	.40	.064	1.115
SB1296.	85.0	187.9	.564	1.763	3.03	60.	5.68	6.73	.39	.058	1.184
SB1295.	85.0	187.9	.697	1.763	3.08	40.	5.68	7.05	.26	.037	1.241
SB1294.	85.0	187.9	.831	1.763	3.08	40.	5.68	7.05	.26	.037	1.241
SB1293.	85.0	187.9	.964	1.763	3.03	65.	5.68	6.73	.42	.063	1.184
SB1292.	85.0	187.9	1.097	1.763	2.94	98.	5.68	6.14	.64	.104	1.080
SB1291.	85.0	187.9	1.230	1.763	2.83	94.	5.68	5.42	.61	.113	.954
SB1290.	85.0	187.9	1.363	1.763	2.78	92.	5.68	5.09	.60	.118	.897
SB1289.	85.0	187.9	1.497	1.763	2.70	132.	5.68	4.57	.86	.189	.805
SB1288.	85.0	187.9	1.630	1.763	2.56	148.	5.68	3.66	.97	.264	.644
SB1287.	85.0	187.9	1.763	1.763	2.48	138.	5.68	3.14	.90	.288	.552
SB1286.	85.0	187.9	1.896	1.763	2.39	125.	5.68	2.55	.82	.321	.448
SB1285.	85.0	187.9	2.029	1.763	2.34	110.	5.68	2.22	.72	.324	.391
SB1284.	85.0	187.9	2.163	1.763	2.39	134.	5.68	2.55	.88	.344	.448

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1301.	85.0	187.9	.831	1.713	2.96	100.	5.68	6.27	.65	.104	1.103
SB1302.	85.0	187.9	.964	1.713	2.85	110.	5.68	5.55	.72	.129	.977
SB1303.	85.0	187.9	1.097	1.713	2.83	110.	5.68	5.42	.72	.133	.954
SB1304.	85.0	187.9	1.230	1.713	2.79	100.	5.68	5.16	.65	.127	.908
SB1305.	85.0	187.9	1.363	1.713	2.71	112.	5.68	4.64	.73	.158	.816
SB1306.	85.0	187.9	1.497	1.713	2.59	136.	5.68	3.85	.89	.231	.678
SB1307.	85.0	187.9	1.630	1.713	2.51	136.	5.68	3.33	.89	.267	.586
SB1308.	85.0	187.9	1.763	1.713	2.48	149.	5.68	3.14	.97	.310	.552
SB1309.	85.0	187.9	1.896	1.713	2.35	134.	5.68	2.29	.88	.383	.402
SB1310.	85.0	187.9	2.029	1.713	2.30	106.	5.65	1.96	.69	.353	.345
SB1311.	85.0	187.9	2.163	1.713	2.37	139.	5.68	2.42	.91	.376	.425
SB1322.	85.0	187.9	.831	1.813	3.00	94.	5.68	6.53	.61	.094	1.149
SB1321.	85.0	187.9	.964	1.813	2.90	104.	5.68	5.86	.68	.116	1.035
SB1320.	85.0	187.9	1.097	1.813	2.89	104.	5.68	5.81	.68	.117	1.023
SB1319.	85.0	187.9	1.230	1.813	2.84	104.	5.68	5.49	.68	.124	.966
SB1318.	85.0	187.9	1.363	1.813	2.79	104.	5.68	5.16	.68	.132	.908
SB1317.	85.0	187.9	1.497	1.813	2.66	160.	5.68	4.31	1.05	.242	.759
SB1316.	85.0	187.9	1.630	1.813	2.54	178.	5.68	3.53	1.16	.330	.621
SB1315.	85.0	187.9	1.763	1.813	2.45	138.	5.68	2.94	.90	.307	.517
SB1314.	85.0	187.9	1.896	1.813	2.38	124.	5.68	2.48	.81	.326	.437
SB1313.	85.0	187.9	2.029	1.813	2.31	120.	5.68	2.02	.78	.387	.356
SB1312.	85.0	187.9	2.163	1.813	2.36	135.	5.68	2.35	.88	.375	.414

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.12. AXIAL DISTANCE=34.00 IN. BLOCKAGE CENTERLINE=30.50 IN. P=25.00 PSI RE= 14300.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1408.	85.8	89.3	.298	1.763	2.49	56.	2.70	3.20	.37	.114	1.185
SB1407.	85.8	89.3	.431	1.763	2.47	36.	2.70	3.07	.24	.077	1.137
SB1406.	85.8	89.3	.564	1.763	2.48	34.	2.70	3.14	.22	.071	1.161
SB1405.	85.8	89.3	.697	1.763	2.50	30.	2.70	3.27	.20	.060	1.209
SB1404.	85.8	89.3	.831	1.763	2.52	21.	2.70	3.40	.14	.040	1.258
SB1403.	85.8	89.3	.964	1.763	2.51	29.	2.70	3.33	.19	.057	1.233
SB1402.	85.8	89.3	1.097	1.763	2.46	52.	2.70	3.00	.34	.113	1.113
SB1401.	85.8	89.3	1.230	1.763	2.39	52.	2.70	2.55	.34	.133	.943
SB1400.	85.8	89.3	1.363	1.763	2.36	42.	2.70	2.55	.27	.117	.871
SB1399.	85.8	89.3	1.497	1.763	2.33	48.	2.70	2.16	.31	.145	.798
SB1398.	85.8	89.3	1.630	1.763	2.28	68.	2.70	1.83	.44	.243	.677
SB1397.	85.8	89.3	1.763	1.763	2.22	62.	2.70	1.44	.40	.282	.532
SB1396.	85.8	89.3	1.896	1.763	2.18	60.	2.70	1.18	.39	.333	.435
SB1395.	85.8	89.3	2.029	1.763	2.15	50.	2.70	.98	.33	.333	.363
SB1394.	85.8	89.3	2.163	1.763	2.13	50.	2.70	.85	.33	.385	.314
SB1323.	85.6	89.3	.298	.685	2.38	260.	2.70	2.48	1.70	.684	.919
SB1324.	85.6	89.3	.364	.685	2.44	170.	2.70	2.87	1.11	.386	1.064
SB1325.	85.6	89.3	.431	.685	2.47	80.	2.70	3.07	.52	.170	1.137
SB1326.	85.6	89.3	.498	.685	2.44	70.	2.70	2.87	.46	.159	1.064
SB1327.	85.6	89.3	.564	.685	2.47	70.	2.70	3.07	.46	.149	1.137
SB1328.	85.6	89.3	.631	.685	2.51	50.	2.70	3.33	.33	.098	1.233
SB1329.	85.6	89.3	.697	.685	2.53	55.	2.70	3.46	.36	.104	1.282
SB1330.	85.6	89.3	.764	.685	2.52	65.	2.70	3.40	.42	.125	1.258
SB1331.	85.6	89.3	.831	.685	2.51	52.	2.70	3.33	.34	.102	1.233
SB1332.	85.6	89.3	.897	.685	2.49	52.	2.70	3.20	.34	.106	1.185
SB1333.	85.6	89.3	.964	.685	2.47	38.	2.70	3.07	.25	.081	1.137
SB1334.	85.6	89.3	1.030	.685	2.47	36.	2.70	3.07	.24	.077	1.137
SB1335.	85.6	89.3	1.097	.685	2.48	39.	2.70	3.14	.25	.081	1.161
SB1336.	85.6	89.3	1.164	.685	2.50	41.	2.70	3.27	.27	.082	1.209
SB1337.	85.6	89.3	1.230	.685	2.52	38.	2.70	3.40	.25	.073	1.258
SB1338.	85.6	89.3	1.297	.685	2.52	33.	2.70	3.40	.22	.063	1.258
SB1339.	85.6	89.3	1.363	.685	2.50	38.	2.70	3.27	.25	.076	1.209
SB1340.	85.6	89.3	1.430	.685	2.48	38.	2.70	3.14	.25	.079	1.161
SB1341.	85.6	89.3	1.497	.685	2.46	40.	2.70	3.00	.26	.087	1.113
SB1342.	85.6	89.3	1.563	.685	2.46	40.	2.70	3.00	.26	.087	1.113
SB1343.	85.6	89.3	1.630	.685	2.46	43.	2.70	3.00	.28	.093	1.113
SB1344.	85.6	89.3	1.696	.685	2.48	48.	2.70	3.14	.31	.100	1.161
SB1345.	85.6	89.3	1.763	.685	2.51	44.	2.70	3.33	.29	.086	1.233
SB1346.	85.6	89.3	1.830	.685	2.50	47.	2.70	3.27	.31	.094	1.209
SB1347.	85.6	89.3	1.896	.685	2.46	48.	2.70	3.00	.31	.104	1.113
SB1348.	85.6	89.3	1.963	.685	2.44	42.	2.70	2.87	.27	.095	1.064
SB1349.	85.6	89.3	2.029	.685	2.44	38.	2.70	2.87	.25	.086	1.064
SB1350.	85.6	89.3	2.096	.685	2.44	38.	2.70	2.87	.25	.086	1.064
SB1351.	85.6	89.3	2.163	.685	2.45	41.	2.70	2.94	.27	.091	1.088
SB1352.	85.6	89.3	2.229	.685	2.48	44.	2.70	3.14	.29	.092	1.161

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E BVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1356.	85.6	89.3	.431	.110	2.50	39.	2.70	3.27	.25	.078	1.209
SB1355.	85.6	89.3	.697	.110	2.48	41.	2.70	3.14	.27	.085	1.161
SB1354.	85.6	89.3	1.230	.110	2.52	42.	2.70	3.40	.27	.081	1.258
SB1353.	85.6	89.3	1.763	.110	2.52	42.	2.70	3.40	.27	.081	1.258
SB1371.	85.8	89.3	.298	1.224	2.49	51.	2.70	3.20	.33	.104	1.185
SB1370.	85.8	89.3	.431	1.224	2.45	37.	2.70	2.94	.24	.082	1.088
SB1369.	85.8	89.3	.564	1.224	2.46	34.	2.70	3.00	.22	.074	1.113
SB1368.	85.8	89.3	.697	1.224	2.49	32.	2.70	3.20	.21	.065	1.185
SB1367.	85.8	89.3	.831	1.224	2.51	29.	2.70	3.33	.19	.057	1.233
SB1366.	85.8	89.3	.964	1.224	2.49	27.	2.70	3.20	.18	.055	1.185
SB1365.	85.8	89.3	1.097	1.224	2.47	36.	2.70	3.07	.24	.077	1.137
SB1364.	85.8	89.3	1.230	1.224	2.43	33.	2.70	2.81	.22	.077	1.040
SB1363.	85.8	89.3	1.363	1.224	2.42	34.	2.70	2.74	.22	.081	1.016
SB1362.	85.8	89.3	1.497	1.224	2.40	42.	2.70	2.61	.27	.105	.967
SB1361.	85.8	89.3	1.630	1.224	2.37	44.	2.70	2.42	.29	.119	.895
SB1360.	85.8	89.3	1.763	1.224	2.37	42.	2.70	2.42	.27	.114	.895
SB1359.	85.8	89.3	1.896	1.224	2.35	44.	2.70	2.29	.29	.126	.847
SB1358.	85.8	89.3	2.029	1.224	2.33	44.	2.70	2.16	.29	.133	.798
SB1357.	85.8	89.3	2.163	1.224	2.34	44.	2.70	2.22	.29	.129	.822
SB1372.	85.8	89.3	.831	1.174	2.48	37.	2.70	3.14	.24	.077	1.161
SB1373.	85.8	89.3	.964	1.174	2.42	55.	2.70	2.74	.36	.131	1.016
SB1374.	85.8	89.3	1.097	1.174	2.41	45.	2.70	2.68	.29	.110	.992
SB1375.	85.8	89.3	1.230	1.174	2.43	36.	2.70	2.81	.24	.084	1.040
SB1376.	85.8	89.3	1.363	1.174	2.42	48.	2.70	2.74	.31	.114	1.016
SB1377.	85.8	89.3	1.497	1.174	2.35	58.	2.70	2.29	.38	.166	.847
SB1378.	85.8	89.3	1.630	1.174	2.34	48.	2.70	2.22	.31	.141	.822
SB1379.	85.8	89.3	1.763	1.174	2.37	50.	2.70	2.42	.33	.135	.895
SB1380.	85.8	89.3	1.896	1.174	2.35	50.	2.70	2.29	.33	.143	.847
SB1381.	85.8	89.3	2.029	1.174	2.32	44.	2.70	2.09	.29	.138	.774
SB1382.	85.8	89.3	2.163	1.174	2.32	45.	2.70	2.09	.29	.141	.774
SB1393.	85.8	89.3	.831	1.274	2.48	32.	2.70	3.14	.21	.067	1.161
SB1392.	85.8	89.3	.964	1.274	2.43	62.	2.70	2.81	.40	.144	1.040
SB1390.	85.8	89.3	1.097	1.274	2.43	37.	2.70	2.81	.24	.086	1.040
SB1391.	85.8	89.3	1.230	1.274	2.45	55.	2.70	2.94	.36	.122	1.088
SB1389.	85.8	89.3	1.363	1.274	2.41	38.	2.70	2.68	.25	.093	.992
SB1388.	85.8	89.3	1.497	1.274	2.33	72.	2.70	2.16	.47	.218	.798
SB1387.	85.8	89.3	1.630	1.274	2.33	58.	2.70	2.16	.38	.176	.798
SB1386.	85.8	89.3	1.763	1.274	2.36	45.	2.70	2.35	.29	.125	.871
SB1385.	85.8	89.3	1.896	1.274	2.34	48.	2.70	2.22	.31	.141	.822
SB1384.	85.8	89.3	2.029	1.274	2.28	61.	2.70	1.83	.40	.218	.677
SB1383.	85.8	89.3	2.163	1.274	2.31	60.	2.70	2.02	.39	.194	.750
SB1409.	85.8	89.3	.831	1.713	2.49	40.	2.70	3.20	.26	.082	1.185
SB1410.	85.8	89.3	.964	1.713	2.42	68.	2.70	2.74	.44	.162	1.016
SB1411.	85.8	89.3	1.097	1.713	2.39	60.	2.70	2.55	.39	.154	.943
SB1412.	85.8	89.3	1.230	1.713	2.38	52.	2.70	2.48	.34	.137	.919
SB141	85.8	89.3	1.363	1.713	2.35	48.	2.70	2.29	.31	.137	.847
SB14	85.8	89.3	1.497	1.713	2.30	59.	2.70	1.96	.39	.197	.
SB14	85.8	89.3	1.630	1.713	2.25	61.	2.70	1.63	.40	.244	.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UPLUG FPS	TURB	VRATIO
SB1416.	85.8	89.3	1.763	1.713	2.23	59.	2.70	1.50	.39	.257	.556
SB1417.	85.8	89.3	1.896	1.713	2.18	68.	2.70	1.18	.44	.378	.435
SB1418.	85.8	89.3	2.029	1.713	2.13	54.	2.70	.85	.35	.415	.314
SB1419.	85.8	89.3	2.163	1.713	2.13	49.	2.70	.85	.32	.377	.314
SB1430.	85.8	89.3	.831	1.813	2.50	31.	2.70	3.27	.20	.062	1.209
SB1429.	85.8	89.3	.964	1.813	2.45	62.	2.70	2.94	.40	.138	1.088
SB1428.	85.8	89.3	1.091	1.813	2.41	62.	2.70	2.68	.40	.151	.992
SB1427.	85.8	89.3	1.230	1.813	2.38	50.	2.70	2.48	.33	.132	.919
SB1426.	85.8	89.3	1.363	1.813	2.36	44.	2.70	2.35	.29	.122	.871
SB1425.	85.8	89.3	1.497	1.813	2.32	67.	2.70	2.09	.44	.209	.774
SB1424.	85.8	89.3	1.630	1.813	2.25	77.	2.70	1.63	.50	.308	.605
SB1423.	85.8	89.3	1.763	1.813	2.21	69.	2.70	1.37	.45	.329	.508
SB1422.	85.8	89.3	1.896	1.813	2.19	57.	2.70	1.24	.37	.300	.460
SB1421.	85.8	89.3	2.029	1.813	2.14	57.	2.70	.91	.37	.407	.339
SB1420.	85.8	89.3	2.163	1.813	2.12	50.	2.70	.78	.33	.417	.290

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.11, AXIAL DISTANCE=33.00 IN. BLOCKAGE CENTERLINE=30.50 IN. P=23.50 PSI RE= 14000.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1431.	84.2	89.3	.198	.688	2.51	11.	2.70	3.34	.07	.022	1.236
SB1432.	84.2	89.3	.265	.688	2.54	30.	2.70	3.53	.20	.056	1.306
SB1433.	84.2	89.3	.331	.688	2.52	30.	2.70	3.40	.20	.058	1.258
SB1434.	84.2	89.3	.398	.685	2.49	30.	2.70	3.20	.20	.061	1.185
SB1435.	84.2	89.3	.464	.688	2.49	28.	2.70	3.20	.18	.057	1.185
SB1436.	84.2	89.3	.531	.685	2.50	28.	2.70	3.27	.18	.056	1.209
SB1437.	84.2	89.3	.598	.688	2.52	25.	2.70	3.40	.16	.048	1.258
SB1438.	84.2	89.3	.664	.688	2.53	19.	2.70	3.46	.12	.036	1.282
SB1439.	84.2	89.3	.731	.688	2.53	17.	2.70	3.45	.11	.032	1.282
SB1440.	84.2	89.3	.797	.685	2.52	19.	2.70	3.40	.12	.037	1.258
SB1441.	84.2	89.3	.864	.685	2.51	23.	2.70	3.33	.15	.045	1.233
SB1442.	84.2	89.3	.931	.688	2.50	27.	2.70	3.27	.18	.054	1.209
SB1443.	84.2	89.3	.997	.688	2.49	29.	2.70	3.20	.19	.059	1.185
SB1444.	84.2	89.3	1.064	.688	2.50	34.	2.70	3.27	.22	.068	1.209
SB1445.	84.2	89.3	1.130	.688	2.52	34.	2.70	3.40	.22	.065	1.258
SB1446.	84.2	89.3	1.197	.688	2.53	25.	2.70	3.46	.16	.047	1.282
SB1447.	84.2	89.3	1.264	.688	2.53	22.	2.70	3.46	.14	.042	1.282
SB1448.	84.2	89.3	1.330	.688	2.52	24.	2.70	3.40	.16	.046	1.258
SB1449.	84.2	89.3	1.397	.688	2.50	27.	2.70	3.27	.18	.054	1.209
SB1450.	84.2	89.3	1.463	.688	2.49	31.	2.70	3.20	.20	.063	1.185
SB1451.	84.2	89.3	1.530	.688	2.48	36.	2.70	3.14	.24	.075	1.161
SB1452.	84.2	89.3	1.597	.688	2.48	42.	2.70	3.14	.27	.088	1.161
SB1453.	84.2	89.3	1.663	.688	2.50	47.	2.70	3.27	.31	.094	1.209
SB1454.	84.2	89.3	1.730	.688	2.53	34.	2.70	3.46	.22	.064	1.282
SB1455.	84.2	89.3	1.796	.685	2.53	31.	2.70	3.46	.20	.058	1.282
SB1456.	84.2	89.3	1.863	.688	2.49	42.	2.70	3.20	.27	.086	1.185
SB1457.	84.2	89.3	1.930	.688	2.47	40.	2.70	3.07	.26	.085	1.137
SB1458.	84.2	89.3	1.996	.688	2.46	35.	2.70	3.00	.23	.076	1.113
SB1459.	84.2	89.3	2.063	.688	2.46	34.	2.70	3.00	.22	.074	1.113
SB1460.	84.2	89.3	2.129	.688	2.47	34.	2.70	3.07	.22	.072	1.137
SB1461.	84.2	89.3	2.196	.688	2.49	36.	2.70	3.20	.24	.073	1.185
SB1465.	84.2	89.3	.265	.110	2.51	43.	2.70	3.33	.28	.084	1.233
SB1464.	84.2	89.3	.697	.110	2.54	23.	2.70	3.53	.15	.043	1.306
SB1463.	84.2	89.3	1.230	.110	2.54	30.	2.70	3.53	.20	.056	1.306
SB1462.	84.2	89.3	1.763	.110	2.54	26.	2.70	3.53	.17	.048	1.306
SB1482.	84.4	89.3	.165	1.224	2.53	43.	2.70	3.46	.28	.081	1.282
SB1481.	84.4	89.3	.298	1.224	2.51	33.	2.70	3.33	.22	.065	1.233
SB1480.	84.4	89.3	.431	1.224	2.48	34.	2.70	3.14	.22	.071	1.161
SB1479.	84.4	89.3	.564	1.224	2.50	36.	2.70	3.27	.24	.072	1.209
SB1478.	84.4	89.3	.697	1.224	2.53	24.	2.70	3.46	.16	.045	1.282
SB1477.	84.4	89.3	.831	1.224	2.53	19.	2.70	3.46	.12	.036	1.282
SB1476.	84.4	89.3	.964	1.224	2.52	26.	2.70	3.40	.17	.050	1.258
SB1475.	84.4	89.3	1.097	1.224	2.48	45.	2.70	3.14	.29	.094	1.161
SB1474.	84.4	89.3	1.230	1.224	2.41	38.	2.70	2.68	.25	.093	.992
SB1473.	84.4	89.3	1.363	1.224	2.43	45.	2.70	2.81	.29	.105	1.040
SB1472.	84.4	89.3	1.497	1.224	2.39	58.	2.70	2.55	.38	.149	.943
SB1471.	84.4	89.3	1.630	1.224	2.36	56.	2.70	2.35	.37	.156	.871

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1470.	84.4	89.3	1.763	1.224	2.38	56.	2.70	2.48	.37	.147	.919
SB1469.	84.4	89.3	1.898	1.224	2.36	54.	2.70	2.35	.35	.150	.871
SB1468.	84.4	89.3	2.029	1.224	2.33	53.	2.70	2.16	.35	.161	.798
SB1467.	84.4	89.3	2.163	1.224	2.35	58.	2.70	2.29	.38	.166	.847
SB1466.	84.4	89.3	2.296	1.224	2.37	61.	2.70	2.42	.40	.165	.895
SB1483.	84.4	89.3	.831	1.174	2.51	36.	2.70	3.33	.24	.071	1.233
SB1484.	84.4	89.3	.964	1.174	2.43	58.	2.70	2.81	.38	.135	1.040
SB1485.	84.4	89.3	1.097	1.174	2.43	50.	2.70	2.81	.33	.116	1.040
SB1486.	84.4	89.3	1.230	1.174	2.42	40.	2.70	2.74	.26	.095	1.016
SB1487.	84.4	89.3	1.363	1.174	2.42	52.	2.70	2.74	.34	.124	1.016
SB1488.	84.4	89.3	1.497	1.174	2.34	64.	2.70	2.22	.42	.188	.822
SB1489.	84.4	89.3	1.630	1.174	2.34	54.	2.70	2.22	.35	.159	.822
SB1490.	84.4	89.3	1.763	1.174	2.39	57.	2.70	2.55	.37	.146	.943
SB1491.	84.4	89.3	1.896	1.174	2.35	57.	2.70	2.29	.37	.163	.847
SB1492.	84.4	89.3	2.029	1.174	2.32	50.	2.70	2.09	.33	.156	.774
SB1493.	84.4	89.3	2.163	1.174	2.34	56.	2.70	2.22	.37	.165	.822
SB1494.	84.4	89.3	2.296	1.174	2.38	59.	2.70	2.48	.39	.155	.919
SB1506.	85.5	89.5	.831	1.274	2.51	23.	2.71	3.33	.15	.045	1.231
SB1505.	85.5	89.5	.964	1.274	2.48	40.	2.71	3.14	.26	.083	1.158
SB1504.	85.5	89.5	1.097	1.274	2.48	43.	2.71	3.14	.28	.090	1.158
SB1503.	85.5	89.5	1.230	1.274	2.42	41.	2.71	2.74	.27	.098	1.014
SB1502.	85.5	89.5	1.363	1.274	2.43	49.	2.71	2.81	.32	.114	1.038
SB1501.	85.5	89.5	1.497	1.274	2.35	70.	2.71	2.29	.46	.200	.845
SB1500.	85.5	89.5	1.630	1.274	2.34	61.	2.71	2.22	.40	.179	.820
SB1499.	85.5	89.5	1.763	1.274	2.38	59.	2.71	2.48	.39	.155	.917
SB1498.	85.5	89.5	1.896	1.274	2.36	59.	2.71	2.35	.39	.164	.869
SB1497.	85.5	89.5	2.029	1.274	2.30	64.	2.71	1.96	.42	.213	.724
SB1496.	85.5	89.5	2.163	1.274	2.35	67.	2.70	2.29	.44	.191	.847
SB1495.	85.5	89.5	2.296	1.274	2.35	69.	2.70	2.29	.45	.197	.847
SB1523.	86.0	89.5	.169	1.763	2.53	64.	2.71	3.46	.42	.121	1.279
SB1522.	86.0	89.5	.298	1.763	2.52	32.	2.71	3.40	.21	.062	1.255
SB1521.	86.0	89.5	.431	1.763	2.51	28.	2.71	3.33	.18	.055	1.231
SB1520.	86.0	89.5	.564	1.763	2.53	28.	2.71	3.46	.18	.053	1.279
SB1519.	86.0	89.5	.697	1.763	2.54	22.	2.71	3.53	.14	.041	1.303
SB1518.	86.0	89.5	.831	1.763	2.54	20.	2.71	3.53	.13	.037	1.303
SB1517.	86.0	89.5	.964	1.763	2.51	30.	2.71	3.33	.20	.059	1.231
SB1516.	86.0	89.5	1.097	1.763	2.45	48.	2.71	2.94	.31	.107	1.086
SB1515.	86.0	89.5	1.230	1.763	2.40	50.	2.71	2.61	.33	.125	.965
SB1514.	86.0	89.5	1.363	1.763	2.36	55.	2.71	2.35	.36	.153	.869
SB1513.	86.0	89.5	1.497	1.763	2.31	65.	2.71	2.02	.42	.210	.748
SB1512.	86.0	89.5	1.630	1.763	2.22	81.	2.71	1.44	.53	.368	.531
SB1511.	86.0	89.5	1.763	1.763	2.13	63.	2.71	.85	.41	.485	.314
SB1510.	86.0	89.5	1.896	1.763	2.09	56.	2.71	.59	.37	.622	.217
SB1509.	86.0	89.5	2.029	1.763	2.03	53.	2.71	.20	.35	1.767	.072
SB1508.	86.0	89.5	2.163	1.763	2.02	43.	2.71	.13	.28	2.150	.048
SB1507.	86.0	89.5	2.296	1.763	2.06	63.	2.71	.39	.41	1.050	.145
SB1524.	86.0	89.5	.831	1.713	2.53	35.	2.71	3.46	.23	.066	1.279
SB1525.	86.0	89.5	.964	1.713	2.45	67.	2.71	2.94	.44	.149	1.086
SB1526.	86.0	89.5	1.097	1.713	2.40	65.	2.71	2.61	.42	.163	.965

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(OOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1527.	86.0	89.5	1.230	1.713	2.37	55.	2.71	2.42	.36	.149	.893
SB1528.	86.0	89.5	1.363	1.713	2.32	62.	2.71	2.09	.40	.194	.772
SB1529.	86.0	89.5	1.497	1.713	2.25	66.	2.71	1.63	.43	.264	.603
SB1530.	86.0	89.5	1.630	1.713	2.18	69.	2.71	1.16	.45	.383	.434
SB1531.	86.0	89.5	1.763	1.713	2.14	65.	2.71	.91	.42	.464	.338
SB1532.	86.0	89.5	1.896	1.713	2.09	68.	2.71	.59	.44	.756	.217
SB1533.	86.0	89.5	2.029	1.713	2.02	50.	2.71	.13	.33	2.500	.048
SB1534.	86.0	89.5	2.163	1.713	2.01	42.	2.71	.07	.27	4.200	.024
SB1535.	86.0	89.5	2.296	1.713	2.06	65.	2.71	.39	.42	1.083	.145
SB1547.	86.0	89.5	.831	1.813	2.52	27.	2.71	3.40	.18	.052	1.255
SB1546.	86.0	89.5	.964	1.813	2.47	56.	2.71	3.07	.37	.119	1.134
SB1545.	86.0	89.5	1.097	1.813	2.42	56.	2.71	2.74	.37	.133	1.014
SB1543.	86.0	89.5	1.230	1.813	2.37	58.	2.71	2.42	.38	.157	.893
SB1544.	86.0	89.5	1.363	1.813	2.39	52.	2.71	2.55	.34	.133	.941
SB1542.	86.0	89.5	1.497	1.813	2.30	76.	2.71	1.96	.50	.253	.724
SB1541.	86.0	89.5	1.630	1.813	2.21	86.	2.71	1.37	.56	.410	.507
SB1540.	86.0	89.5	1.763	1.813	2.11	69.	2.71	.72	.45	.627	.265
SB1539.	86.0	89.5	1.896	1.813	2.07	55.	2.71	.46	.36	.786	.169
SB1538.	86.0	89.5	2.029	1.813	2.02	42.	2.71	.13	.27	2.100	.048
SB1537.	86.0	89.5	2.163	1.813	2.00	40.	2.71	0.00	.26	*****	0.000
SB1536.	86.0	89.5	2.296	1.813	2.04	65.	2.71	.25	.42	1.625	.097

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.11. AXIAL DISTANCE#33.00 IN. BLOCKAGE CENTERLINE=30.50 IN. P=32.00 PSI RE= 61400.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB1549.	87.8	376.0	.215	.685	3.40	170.	11.37	9.14	1.11	.121	.804
SB1550.	87.8	376.0	.282	.685	3.37	160.	11.37	8.95	1.05	.117	.787
SB1551.	87.8	376.0	.348	.685	3.36	160.	11.37	8.88	1.05	.118	.781
SB1552.	86.5	354.0	.165	.685	4.01	120.	10.71	13.13	.78	.060	1.226
SB1553.	86.5	354.0	.231	.685	4.04	95.	10.71	13.32	.62	.047	1.245
SB1554.	86.5	354.0	.298	.685	3.97	92.	10.71	12.87	.60	.047	1.202
SB1555.	86.5	354.0	.364	.685	3.90	92.	10.71	12.41	.60	.048	1.159
SB1555.	86.5	354.0	.431	.685	3.87	92.	10.71	12.21	.60	.049	1.141
SB1556.	86.5	354.0	.498	.685	3.88	90.	10.71	12.28	.59	.048	1.147
SB1557.	86.5	354.0	.564	.685	3.93	81.	10.71	12.61	.53	.042	1.178
SB1558.	86.5	354.0	.631	.685	3.97	70.	10.71	12.87	.46	.036	1.202
SB1559.	86.5	354.0	.697	.685	3.99	61.	10.71	13.00	.40	.031	1.214
SB1560.	86.5	354.0	.764	.685	3.97	64.	10.71	12.87	.42	.032	1.202
SB1561.	86.5	354.0	.831	.685	3.93	73.	10.71	12.61	.48	.038	1.178
SB1562.	86.5	354.0	.897	.685	3.89	85.	10.71	12.34	.56	.045	1.153
SB1563.	86.5	354.0	.964	.685	3.86	90.	10.71	12.15	.59	.048	1.135
SB1564.	86.5	354.0	1.030	.685	3.86	92.	10.71	12.15	.60	.049	1.135
SB1565.	86.5	354.0	1.097	.685	3.90	94.	10.71	12.41	.61	.049	1.159
SB1566.	86.5	354.0	1.164	.685	3.96	94.	10.71	12.80	.61	.048	1.196
SB1567.	86.5	354.0	1.230	.685	3.99	71.	10.71	13.00	.46	.036	1.214
SB1568.	86.5	354.0	1.297	.685	3.97	72.	10.71	12.87	.47	.037	1.202
SB1569.	86.5	354.0	1.363	.685	3.92	76.	10.71	12.54	.50	.040	1.171
SB1569.	86.5	354.0	1.430	.685	3.86	86.	10.71	12.15	.56	.046	1.135
SB1570.	86.5	354.0	1.497	.685	3.83	92.	10.71	11.95	.60	.050	1.117
SB1571.	86.5	354.0	1.563	.685	3.84	97.	10.71	12.02	.63	.053	1.123
SB1572.	86.5	354.0	1.630	.685	3.88	102.	10.71	12.28	.67	.054	1.147
SB1573.	86.5	354.0	1.696	.685	3.94	99.	10.71	12.67	.65	.051	1.184
SB1574.	86.5	354.0	1.763	.685	3.98	78.	10.71	12.93	.51	.039	1.208
SB1575.	86.5	354.0	1.830	.685	3.93	90.	10.71	12.61	.59	.047	1.178
SB1576.	86.5	354.0	1.896	.685	3.86	105.	10.71	12.15	.69	.056	1.135
SB1577.	86.5	354.0	1.963	.685	3.79	107.	10.71	11.69	.70	.060	1.092
SB1578.	86.5	354.0	2.029	.685	3.76	97.	10.71	11.50	.63	.055	1.074
SB1579.	86.5	354.0	2.096	.685	3.76	101.	10.71	11.50	.66	.057	1.074
SB1580.	86.5	354.0	2.163	.685	3.82	101.	10.71	11.89	.66	.055	1.110
SB1581.	86.5	354.0	2.229	.685	3.88	97.	10.71	12.28	.63	.052	1.147
SB1585.	86.5	354.0	.231	.110	4.04	78.	10.71	13.32	.51	.038	1.245
SB1584.	86.5	354.0	.697	.110	4.05	62.	10.71	13.39	.40	.030	1.251
SB1583.	86.5	354.0	1.230	.110	4.09	84.	10.71	13.65	.55	.040	1.275
SB1582.	86.5	354.0	1.763	.110	4.09	71.	10.71	13.65	.46	.034	1.275
SB1607.	86.5	354.0	.165	1.224	4.06	109.	10.71	13.45	.71	.053	1.257
SB1600.	86.5	354.0	.298	1.224	3.96	92.	10.71	12.80	.60	.047	1.196
SB1599.	86.5	354.0	.431	1.224	3.86	90.	10.71	12.15	.59	.048	1.135
SB1598.	86.5	354.0	.564	1.224	3.89	94.	10.71	12.34	.61	.050	1.153
SB1597.	86.5	354.0	.697	1.224	3.99	63.	10.71	13.00	.41	.032	1.214
SB1596.	86.5	354.0	.831	1.224	3.97	51.	10.71	12.87	.33	.026	1.202

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1595.	86.5	354.0	.964	1.224	3.96	60.	10.71	12.80	.39	.031	1.196
SB1594.	86.5	354.0	1.097	1.224	3.87	104.	10.71	12.21	.68	.056	1.141
SB1593.	86.5	354.0	1.230	1.224	3.68	136.	10.71	10.97	.89	.081	1.025
SB1592.	86.5	354.0	1.363	1.224	3.85	102.	10.71	12.08	.67	.055	1.129
SB1591.	86.5	354.0	1.497	1.224	3.67	184.	10.71	10.91	1.20	.110	1.019
SB1590.	86.5	354.0	1.630	1.224	3.44	180.	10.71	9.41	1.18	.125	.879
SB1589.	86.5	354.0	1.763	1.224	3.54	182.	10.71	10.06	1.19	.118	.940
SB1588.	86.5	354.0	1.896	1.224	3.51	158.	10.71	9.86	1.03	.105	.921
SB1587.	86.5	354.0	2.029	1.224	3.30	148.	10.71	8.49	.97	.114	.793
SB1586.	86.5	354.0	2.163	1.224	3.37	158.	10.71	8.95	1.03	.115	.836
SB1602.	86.5	354.0	.831	1.174	3.94	108.	10.71	12.67	.71	.056	1.184
SB1603.	86.5	354.0	.964	1.174	3.74	136.	10.71	11.36	.89	.078	1.062
SB1604.	86.5	354.0	1.097	1.174	3.66	124.	10.71	10.84	.81	.075	1.013
SB1605.	86.5	354.0	1.230	1.174	3.59	135.	10.71	10.39	.88	.085	.970
SB1606.	86.5	354.0	1.363	1.174	3.71	173.	10.71	11.17	1.13	.101	1.043
SB1607.	86.5	354.0	1.497	1.174	3.48	170.	10.71	9.67	1.11	.115	.903
SB1608.	86.5	354.0	1.630	1.174	3.38	150.	10.71	9.01	.98	.109	.842
SB1609.	86.5	354.0	1.763	1.174	3.48	198.	10.71	9.67	1.29	.134	.903
SB1610.	86.5	354.0	1.896	1.174	3.49	208.	10.71	9.73	1.36	.140	.909
SB1611.	86.5	354.0	2.029	1.174	3.25	144.	10.71	8.16	.94	.115	.763
SB1612.	86.5	354.0	2.163	1.174	3.31	158.	10.71	8.56	1.03	.121	.799
SB1623.	86.5	354.0	.831	1.274	3.87	80.	10.71	12.21	.52	.043	1.141
SB1622.	86.5	354.0	.964	1.274	3.61	145.	10.71	10.52	.95	.090	.982
SB1621.	86.5	354.0	1.097	1.274	3.77	134.	10.71	11.56	.88	.076	1.080
SB1620.	86.5	354.0	1.230	1.274	3.83	93.	10.71	11.55	.61	.051	1.117
SB1619.	86.5	354.0	1.363	1.274	3.83	89.	10.71	11.55	.58	.049	1.117
SB1618.	86.5	354.0	1.497	1.274	3.46	189.	10.71	9.54	1.23	.129	.891
SB1617.	86.5	354.0	1.630	1.274	3.31	180.	10.71	8.56	1.18	.137	.799
SB1616.	86.5	354.0	1.763	1.274	3.52	189.	10.71	9.93	1.23	.124	.927
SB1615.	86.5	354.0	1.896	1.274	3.46	175.	10.71	9.54	1.14	.120	.891
SB1614.	86.5	354.0	2.029	1.274	3.17	168.	10.71	7.64	1.10	.144	.714
SB1613.	86.5	354.0	2.163	1.274	3.28	198.	10.71	8.36	1.29	.155	.781
SB1639.	86.3	352.2	.169	1.763	4.03	108.	10.65	13.26	.71	.053	1.245
SB1638.	86.3	352.2	.298	1.763	3.97	87.	10.65	12.87	.57	.044	1.208
SB1637.	86.3	352.2	.431	1.763	3.90	87.	10.65	12.41	.57	.046	1.165
SB1636.	86.3	352.2	.564	1.763	3.94	87.	10.65	12.67	.57	.045	1.190
SB1635.	86.3	352.2	.697	1.763	4.02	60.	10.65	13.19	.39	.030	1.239
SB1634.	86.3	352.2	.831	1.763	4.02	48.	10.65	13.19	.31	.024	1.239
SB1633.	86.3	352.2	.964	1.763	4.01	62.	10.71	13.13	.40	.031	1.226
SB1632.	86.3	352.2	1.097	1.763	3.90	102.	10.71	12.41	.67	.054	1.159
SB1631.	86.3	352.2	1.230	1.763	3.71	134.	10.71	11.17	.88	.078	1.043
SB1630.	86.3	352.2	1.363	1.763	3.57	193.	10.71	10.25	1.27	.124	.958
SB1629.	86.3	352.2	1.497	1.763	3.33	247.	10.71	8.69	1.61	.186	.811
SB1628.	86.3	352.2	1.630	1.763	2.95	289.	10.71	6.20	1.89	.304	.580
SB1627.	86.3	352.2	1.763	1.763	2.53	265.	10.71	3.46	1.73	.500	.323
SB1626.	86.3	352.2	1.896	1.763	2.20	249.	10.71	1.31	1.63	1.245	.122
SB1625.	86.3	352.2	2.029	1.763	2.04	189.	10.71	.26	1.23	4.725	.024
SE	86.3	352.2	2.163	1.763	1.99	180.	10.71	-.07	1.18	18.000	6

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1640.	86.3	352.2	.831	1.710	3.94	116.	10.65	12.67	.76	.060	1.190
SB1641.	86.3	352.2	.964	1.710	3.71	159.	10.65	11.17	1.04	.093	1.049
SB1642.	86.3	352.2	1.097	1.710	3.62	157.	10.65	10.58	1.03	.097	.993
SB1643.	86.3	352.2	1.230	1.713	3.49	188.	10.65	9.73	1.23	.126	.914
SB1644.	86.3	352.2	1.363	1.713	3.33	208.	10.65	8.69	1.36	.156	.816
SB1645.	86.3	352.2	1.497	1.713	3.03	229.	10.65	6.73	1.50	.222	.632
SB1646.	86.3	352.2	1.630	1.719	2.70	259.	10.65	4.57	1.69	.370	.429
SB1647.	86.3	352.2	1.763	1.713	2.55	250.	10.65	3.59	1.63	.455	.337
SB1648.	86.3	352.2	1.898	1.713	2.31	265.	10.65	2.02	1.73	.855	.190
SB1649.	86.3	352.2	2.029	1.713	2.03	199.	10.65	.20	1.30	6.633	.018
SB1650.	86.3	352.2	2.163	1.713	2.00	188.	10.65	0.00	1.23	*****	0.000
SB1661.	86.3	352.2	.831	1.813	3.98	62.	10.65	12.93	.40	.031	1.214
SB1660.	86.3	352.2	.964	1.813	3.89	115.	10.65	12.34	.75	.061	1.159
SB1659.	86.3	352.2	1.097	1.813	3.81	129.	10.65	11.82	.84	.071	1.110
SB1658.	86.3	352.2	1.230	1.813	3.70	139.	10.65	11.10	.91	.082	1.043
SB1657.	86.3	352.2	1.363	1.813	3.62	186.	10.65	10.58	1.21	.115	.993
SB1656.	86.3	352.2	1.497	1.813	3.34	275.	10.65	8.75	1.80	.205	.822
SB1655.	86.3	352.2	1.630	1.813	2.94	335.	10.65	6.14	2.19	.356	.576
SB1654.	86.3	352.2	1.763	1.813	2.48	295.	10.65	3.14	1.93	.615	.294
SB1653.	86.3	352.2	1.898	1.813	2.21	229.	10.65	1.37	1.50	1.090	.129
SB1652.	86.3	352.2	2.029	1.813	2.02	182.	10.65	.13	1.19	9.100	.012
SB1651.	86.3	352.2	2.163	1.813	1.99	182.	10.65	-.07	1.19	18.200	-.006

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.12, AXIAL DISTANCE=34.00 IN. BLOCKAGE CENTERLINE=30.50 IN. P=92.00 PSI RE= 57300.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1662.	87.0	354.2	.031	.685	3.62	297.	10.71	10.58	1.94	.183	.988
SB1663.	87.0	354.2	.098	.685	3.92	170.	10.71	12.54	1.11	.089	1.171
SB1664.	87.0	354.2	.165	.685	3.91	190.	10.71	12.48	1.24	.099	1.165
SB1665.	87.0	354.2	.231	.685	3.97	100.	10.71	12.87	.65	.051	1.201
SB1666.	87.0	354.2	.298	.685	3.89	106.	10.71	12.34	.69	.056	1.152
SB1667.	87.0	354.2	.364	.685	3.83	95.	10.71	11.95	.62	.052	1.116
SB1668.	87.0	354.2	.431	.685	3.81	94.	10.71	11.82	.61	.052	1.104
SB1669.	87.0	354.2	.498	.685	3.86	94.	10.71	12.15	.61	.051	1.134
SB1670.	87.0	354.2	.564	.685	3.93	85.	10.71	12.61	.56	.044	1.177
SB1671.	87.0	354.2	.631	.685	3.98	66.	10.71	12.93	.43	.033	1.207
SB1672.	87.0	354.2	.697	.685	3.97	64.	10.71	12.87	.42	.032	1.201
SB1673.	87.0	354.2	.764	.685	3.92	79.	10.71	12.54	.52	.041	1.171
SB1674.	87.0	354.2	.831	.685	3.85	92.	10.71	12.08	.60	.050	1.128
SB1675.	87.0	354.2	.897	.685	3.80	89.	10.71	11.76	.58	.049	1.098
SB1676.	87.0	354.2	.964	.685	3.78	84.	10.71	11.63	.55	.047	1.085
SB1677.	87.0	354.2	1.030	.685	3.80	91.	10.71	11.76	.59	.051	1.098
SB1678.	87.0	354.2	1.097	.685	3.86	101.	10.71	12.15	.66	.054	1.134
SB1679.	87.0	354.2	1.164	.685	3.94	92.	10.71	12.67	.60	.047	1.183
SB1680.	87.0	354.2	1.230	.685	3.96	74.	10.71	12.80	.48	.038	1.195
SB1681.	87.0	354.2	1.297	.685	3.91	86.	10.71	12.48	.56	.045	1.165
SB1682.	87.0	354.2	1.363	.685	3.83	92.	10.71	11.95	.60	.050	1.116
SB1683.	87.0	354.2	1.430	.685	3.77	91.	10.71	11.56	.59	.051	1.079
SB1684.	87.0	354.2	1.497	.685	3.75	86.	10.71	11.43	.56	.049	1.067
SB1685.	87.0	354.2	1.563	.685	3.77	98.	10.71	11.56	.64	.055	1.079
SB1686.	87.0	354.2	1.630	.685	3.82	109.	10.71	11.89	.71	.060	1.110
SB1687.	87.0	354.2	1.696	.685	3.91	100.	10.71	12.48	.65	.052	1.165
SB1688.	87.0	354.2	1.763	.685	3.91	97.	10.71	12.48	.63	.051	1.165
SB1689.	87.0	354.2	1.830	.685	3.81	113.	10.71	11.82	.74	.062	1.104
SB1690.	87.0	354.2	1.896	.685	3.71	107.	10.71	11.17	.70	.063	1.043
SB1691.	87.0	354.2	1.963	.685	3.68	92.	10.71	10.97	.60	.055	1.024
SB1692.	87.0	354.2	2.029	.685	3.68	86.	10.71	10.97	.56	.051	1.024
SB1693.	87.0	354.2	2.096	.685	3.71	96.	10.71	11.17	.63	.056	1.043
SB1694.	87.0	354.2	2.163	.685	3.79	109.	10.71	11.69	.71	.061	1.091
SB1698.	87.0	354.2	.231	.110	3.97	94.	10.71	12.87	.61	.048	1.201
SB1697.	87.0	354.2	.697	.110	4.03	63.	10.71	13.26	.41	.031	1.238
SB1696.	87.0	354.2	1.230	.110	4.05	96.	10.71	13.39	.63	.047	1.250
SB1695.	87.0	354.2	1.763	.110	4.05	84.	10.71	13.39	.55	.041	1.250
SB1715.	86.5	354.5	.031	1.224	3.84	208.	10.72	12.02	1.36	.113	1.121
SB1714.	86.5	354.5	.165	1.224	4.04	89.	10.72	13.32	.58	.044	1.243
SB1713.	86.5	354.5	.298	1.224	3.93	102.	10.72	12.41	.67	.054	1.158
SB1712.	86.5	354.5	.431	1.224	3.79	86.	10.72	11.69	.56	.048	1.091
SB1711.	86.5	354.5	.564	1.224	3.87	97.	10.72	12.21	.63	.052	1.139
SB1710.	86.5	354.5	.697	1.224	3.93	59.	10.72	13.00	.39	.030	1.212
SB1709.	86.5	354.5	.831	1.224	3.97	54.	10.72	12.87	.35	.027	1.200
SB1708.	86.5	354.5	.964	1.224	3.91	73.	10.72	12.48	.48	.038	1.164
SB1707.	86.5	354.5	1.097	1.224	3.79	114.	10.72	11.69	.74	.064	1.091
SB1	86.5	354.5	1.230	1.224	3.69	102.	10.72	11.04	.67	.060	

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E BVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB1705.	86.5	354.5	1.363	1.224	3.80	109.	10.72	11.76	.71	.061	1.097
SB1704.	86.5	354.5	1.497	1.224	3.64	175.	10.72	10.71	1.14	.107	.999
SB1703.	86.5	354.5	1.630	1.224	3.51	148.	10.72	9.86	.97	.098	.920
SB1702.	86.5	354.5	1.763	1.224	3.60	157.	10.72	10.45	1.03	.098	.975
SB1701.	86.5	354.5	1.896	1.224	3.49	163.	10.72	9.73	1.06	.109	.908
SB1700.	86.5	354.5	2.029	1.224	3.37	137.	10.72	8.95	.89	.100	.835
SB1699.	86.5	354.5	2.163	1.224	3.50	155.	10.72	9.80	1.01	.103	.914
SB1716.	86.5	354.5	.831	1.174	3.84	124.	10.72	12.02	.81	.067	1.121
SB1717.	86.5	354.5	.964	1.174	3.62	135.	10.72	10.58	.88	.083	.987
SB1718.	86.5	354.5	1.097	1.174	3.60	108.	10.72	10.45	.71	.068	.975
SB1719.	86.5	354.5	1.230	1.174	3.70	111.	10.72	11.10	.72	.065	1.036
SB1720.	86.5	354.5	1.363	1.174	3.66	133.	10.72	10.84	.87	.080	1.011
SB1721.	86.5	354.5	1.497	1.174	3.49	139.	10.72	9.73	.91	.093	.908
SB1722.	86.5	354.5	1.630	1.174	3.46	135.	10.72	9.54	.88	.092	.890
SB1723.	86.5	354.5	1.763	1.174	3.58	185.	10.72	10.32	1.21	.117	.963
SB1724.	86.5	354.5	1.896	1.174	3.43	165.	10.72	9.34	1.08	.115	.871
SB1725.	86.5	354.5	2.029	1.174	3.33	124.	10.72	8.69	.81	.093	.810
SB1726.	86.5	354.5	2.163	1.174	3.46	175.	10.72	9.54	1.14	.120	.890
SB1737.	86.5	354.5	.831	1.274	3.74	136.	10.72	11.36	.89	.078	1.060
SB1736.	86.5	354.5	.964	1.274	3.54	139.	10.72	10.06	.91	.090	.938
SB1735.	86.5	354.5	1.097	1.274	3.76	118.	10.72	11.50	.77	.067	1.072
SB1734.	86.5	354.5	1.230	1.274	3.72	105.	10.72	11.23	.69	.061	1.048
SB1733.	86.5	354.5	1.363	1.274	3.75	136.	10.72	11.43	.89	.078	1.066
SB1732.	86.5	354.5	1.497	1.274	3.30	178.	10.72	8.49	1.16	.137	.792
SB1731.	86.5	354.5	1.630	1.274	3.39	170.	10.72	9.08	1.11	.122	.847
SB1730.	86.5	354.5	1.763	1.274	3.56	144.	10.72	10.19	.94	.092	.950
SB1729.	86.5	354.5	1.896	1.274	3.42	164.	10.72	9.27	1.07	.115	.865
SB1728.	86.5	354.5	2.029	1.274	3.16	169.	10.72	7.58	1.10	.146	.707
SB1727.	86.5	354.5	2.163	1.274	3.44	168.	10.72	9.41	1.10	.117	.877
SB1754.	86.3	353.7	.031	1.763	3.72	225.	10.70	11.23	1.47	.131	1.050
SB1753.	86.3	353.7	.165	1.763	4.02	83.	10.70	13.19	.54	.041	1.233
SB1752.	86.3	353.7	.298	1.763	3.92	96.	10.70	12.54	.63	.050	1.172
SB1751.	86.3	353.7	.431	1.763	3.84	87.	10.70	12.02	.57	.047	1.124
SB1750.	86.3	353.7	.564	1.763	3.91	92.	10.70	12.48	.60	.048	1.166
SB1749.	86.3	353.7	.697	1.763	4.00	60.	10.70	13.06	.39	.030	1.221
SB1748.	86.3	353.7	.831	1.763	4.02	49.	10.70	13.19	.32	.024	1.233
SB1747.	86.3	353.7	.964	1.763	3.99	74.	10.70	13.00	.48	.037	1.215
SB1746.	86.3	353.7	1.097	1.763	3.85	150.	10.70	12.08	.98	.081	1.130
SB1745.	86.3	353.7	1.230	1.763	3.62	159.	10.70	10.58	1.04	.098	.989
SB1744.	86.3	353.7	1.363	1.763	3.54	152.	10.70	10.06	.99	.099	.940
SB1743.	86.3	353.7	1.497	1.763	3.42	208.	10.70	9.27	1.36	.146	.867
SB1742.	86.3	353.7	1.630	1.763	3.16	256.	10.70	7.58	1.67	.221	.708
SB1741.	86.3	353.7	1.763	1.763	3.00	226.	10.70	6.53	1.48	.226	.611
SB1740.	86.3	353.7	1.896	1.763	2.85	220.	10.70	5.55	1.44	.259	.519
SB1739.	86.3	353.7	2.029	1.763	2.74	194.	10.70	4.83	1.27	.262	.452
SB1738.	86.3	353.7	2.163	1.763	2.76	215.	10.70	4.96	1.40	.283	.464
SB1755.	86.3	353.7	.831	1.713	3.86	136.	10.70	12.15	.89	.073	1.136
SB1756.	86.3	353.7	.964	1.713	3.69	153.	10.70	11.04	1.00	.091	1.032
SB1757.	86.3	353.7	1.097	1.713	3.59	166.	10.70	10.39	1.08	.104	.971

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E BVOLTS	UB FPS	U(LSCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1758.	86.3	353.7	1.230	1.718	3.54	153.	10.70	10.06	1.00	.099	.940
SB1759.	86.3	353.7	1.363	1.713	3.43	168.	10.70	9.34	1.10	.117	.873
SB1760.	86.3	353.7	1.497	1.719	3.24	200.	10.70	8.10	1.31	.161	.757
SB1761.	86.3	353.7	1.630	1.713	3.10	210.	10.70	7.18	1.37	.191	.672
SB1762.	86.3	353.7	1.763	1.713	3.13	242.	10.70	7.38	1.58	.214	.690
SB1763.	86.3	353.7	1.898	1.713	2.81	219.	10.70	5.29	1.43	.270	.495
SB1764.	86.3	353.7	2.029	1.713	2.65	179.	10.70	4.25	1.17	.275	.397
SB1765.	86.3	353.7	2.163	1.713	2.72	211.	10.70	4.70	1.38	.293	.440
SB1776.	86.3	353.7	.831	1.813	3.90	108.	10.70	12.41	.71	.057	1.160
SB1775.	86.3	353.7	.964	1.813	3.66	146.	10.70	10.84	.98	.088	1.014
SB1774.	86.3	353.7	1.097	1.813	3.69	176.	10.70	11.04	1.15	.104	1.032
SB1773.	86.3	353.7	1.230	1.813	3.64	148.	10.70	10.71	.97	.090	1.001
SB1772.	86.3	353.7	1.363	1.813	3.53	166.	10.70	9.99	1.08	.108	.934
SB1771.	86.3	353.7	1.497	1.813	3.25	252.	10.70	8.16	1.65	.202	.763
SB1770.	86.3	353.7	1.630	1.813	3.07	292.	10.70	6.99	1.91	.273	.653
SB1769.	86.3	353.7	1.763	1.813	2.96	235.	10.70	6.27	1.53	.245	.586
SB1768.	86.3	353.7	1.898	1.813	2.85	219.	10.70	5.55	1.43	.258	.519
SB1767.	86.3	353.7	2.029	1.813	2.65	203.	10.70	4.25	1.33	.312	.397
SB1766.	86.3	353.7	2.163	1.813	2.76	223.	10.70	4.96	1.46	.293	.464

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 9. AXIAL DISTANCE 426.95 IN. BLOCKAGE CENTERLINE=28.25 IN. P=18.50 PSI RE= 14200.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1777.	85.7	89.0	.098	1.763	2.52	58.	2.69	3.40	.38	.112	1.262
SB1778.	85.7	89.0	.165	1.763	2.54	32.	2.69	3.53	.21	.059	1.310
SB1779.	85.7	89.0	.231	1.763	2.54	29.	2.69	3.53	.19	.054	1.310
SB1780.	85.7	89.0	.298	1.763	2.52	30.	2.69	3.40	.20	.058	1.262
SB1781.	85.7	89.0	.364	1.763	2.50	27.	2.69	3.27	.18	.054	1.213
SB1782.	85.7	89.0	.431	1.763	2.50	28.	2.69	3.27	.18	.056	1.213
SB1783.	85.7	89.0	.498	1.763	2.51	28.	2.69	3.33	.18	.055	1.238
SB1784.	85.7	89.0	.564	1.763	2.52	27.	2.69	3.40	.18	.052	1.262
SB1785.	85.7	89.0	.631	1.763	2.53	24.	2.69	3.46	.16	.045	1.286
SB1786.	85.7	89.0	.697	1.763	2.53	24.	2.69	3.46	.16	.045	1.286
SB1787.	85.7	89.0	.764	1.763	2.52	27.	2.69	3.40	.18	.052	1.262
SB1788.	85.7	89.0	.831	1.763	2.51	26.	2.69	3.33	.17	.051	1.238
SB1789.	85.7	89.0	.897	1.763	2.51	24.	2.69	3.33	.16	.047	1.238
SB1790.	85.7	89.0	.964	1.763	2.51	22.	2.69	3.33	.14	.043	1.238
SB1791.	85.7	89.0	1.030	1.763	2.51	26.	2.69	3.33	.17	.051	1.238
SB1792.	85.7	89.0	1.097	1.763	2.50	31.	2.69	3.27	.20	.062	1.213
SB1793.	85.7	89.0	1.164	1.763	2.48	36.	2.69	3.14	.24	.075	1.165
SB1794.	85.7	89.0	1.230	1.763	2.46	35.	2.69	3.00	.23	.076	1.116
SB1795.	85.7	89.0	1.297	1.763	2.46	34.	2.69	3.00	.22	.074	1.116
SB1796.	85.7	89.0	1.363	1.763	2.45	42.	2.69	2.94	.27	.093	1.092
SB1797.	85.7	89.0	1.430	1.763	2.40	66.	2.69	2.61	.43	.165	.971
SB1798.	85.7	89.0	1.497	1.763	2.31	98.	2.69	2.02	.64	.316	.752
SB1799.	85.7	89.0	1.563	1.763	2.20	110.	2.69	1.31	.72	.550	.485
SB1800.	85.7	89.0	1.630	1.763	2.14	88.	2.69	.91	.57	.629	.340
SB1801.	85.7	89.0	1.698	1.763	2.13	79.	2.69	.85	.52	.608	.315
SB1802.	85.7	89.0	1.763	1.763	2.10	74.	2.69	.65	.48	.740	.243
SB1803.	85.7	89.0	1.830	1.763	2.06	57.	2.69	.39	.37	.950	.146
SB1804.	85.7	89.0	1.896	1.763	2.07	54.	2.69	.46	.35	.771	.170
SB1805.	85.7	89.0	1.963	1.763	2.11	54.	2.69	.72	.35	.491	.267
SB1806.	85.7	89.0	2.029	1.763	2.12	47.	2.69	.78	.31	.392	.291
SB1807.	85.7	89.0	2.096	1.763	2.12	46.	2.69	.78	.30	.383	.291
SB1808.	85.7	89.0	2.163	1.763	2.10	50.	2.69	.65	.33	.500	.243
SB1809.	85.7	89.0	2.229	1.763	2.10	57.	2.69	.65	.37	.570	.243
SB1810.	85.7	89.0	2.296	1.763	2.07	61.	2.69	.46	.40	.871	.170
SB1811.	85.7	89.0	2.362	1.763	2.04	61.	2.69	.26	.40	1.525	.097
SB1812.	85.7	89.0	2.429	1.763	2.05	63.	2.69	.33	.41	1.260	.121
SB1842.	85.8	89.0	.098	.685	2.46	127.	2.69	3.00	.83	.276	1.116
SB1847.	85.8	89.0	.169	.685	2.51	43.	2.69	3.33	.28	.084	1.238
SB1846.	85.8	89.0	.231	.685	2.52	34.	2.69	3.40	.22	.065	1.262
SB1845.	85.8	89.0	.298	.685	2.50	40.	2.69	3.27	.26	.080	1.213
SB1844.	85.8	89.0	.364	.685	2.49	40.	2.69	3.20	.26	.082	1.189
SB1843.	85.8	89.0	.431	.635	2.47	43.	2.69	3.07	.28	.091	1.141
SB1842.	85.8	89.0	.498	.685	2.48	43.	2.69	3.14	.28	.090	1.165
SB1841.	85.8	89.0	.564	.685	2.50	35.	2.69	3.27	.23	.070	1.213
SB1840.	85.8	89.0	.631	.685	2.51	31.	2.69	3.33	.20	.061	1.238
SB1839.	85.8	89.0	.697	.685	2.52	29.	2.69	3.40	.19	.056	1.262
SB1838.	85.8	89.0	.764	.685	2.51	28.	2.69	3.33	.18	.055	1.238
SB1837.	85.8	89.0	.831	.685	2.51	28.	2.69	3.33	.18	.055	1.238
SB1836.	85.8	89.0	.897	.685	2.50	28.	2.69	3.27	.18	.056	1.213

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1835.	85.8	89.0	.964	.685	2.50	30.	2.69	3.27	.20	.060	1.213
SB1834.	85.8	89.0	1.030	.685	2.51	33.	2.69	3.33	.22	.065	1.238
SB1833.	85.8	89.0	1.097	.685	2.53	28.	2.69	3.46	.18	.053	1.286
SB1832.	85.8	89.0	1.164	.685	2.53	25.	2.69	3.46	.16	.047	1.286
SB1831.	85.8	89.0	1.230	.685	2.53	25.	2.69	3.46	.16	.047	1.286
SB1830.	85.8	89.0	1.297	.685	2.52	28.	2.69	3.40	.18	.054	1.262
SB1829.	85.8	89.0	1.363	.685	2.51	30.	2.69	3.33	.20	.059	1.238
SB1828.	85.8	89.0	1.430	.685	2.50	28.	2.69	3.27	.18	.056	1.213
SB1827.	85.8	89.0	1.497	.685	2.50	28.	2.69	3.27	.18	.056	1.213
SB1826.	85.8	89.0	1.563	.685	2.50	27.	2.69	3.27	.18	.054	1.213
SB1825.	85.8	89.0	1.630	.685	2.51	29.	2.69	3.33	.19	.057	1.238
SB1824.	85.8	89.0	1.696	.685	2.53	27.	2.69	3.46	.18	.051	1.286
SB1823.	85.8	89.0	1.763	.685	2.52	26.	2.69	3.40	.17	.050	1.262
SB1822.	85.8	89.0	1.830	.685	2.52	29.	2.69	3.40	.19	.056	1.262
SB1821.	85.8	89.0	1.896	.685	2.51	31.	2.69	3.33	.20	.061	1.238
SB1820.	85.8	89.0	1.963	.685	2.50	30.	2.69	3.27	.20	.060	1.213
SB1819.	85.8	89.0	2.029	.685	2.49	28.	2.69	3.20	.18	.057	1.189
SB1818.	85.8	89.0	2.096	.685	2.49	26.	2.69	3.20	.17	.053	1.189
SB1817.	85.8	89.0	2.163	.685	2.50	27.	2.69	3.27	.18	.054	1.213
SB1816.	85.8	89.0	2.229	.685	2.50	30.	2.69	3.27	.20	.060	1.213
SB1815.	85.8	89.0	2.296	.685	2.51	30.	2.69	3.33	.20	.059	1.238
SB1814.	85.8	89.0	2.362	.685	2.52	28.	2.69	3.40	.18	.054	1.262
SB1813.	85.8	89.0	2.429	.685	2.52	26.	2.69	3.40	.17	.050	1.262
SB1800.	85.8	89.0	.098	1.224	2.50	70.	2.69	3.27	.46	.140	1.213
SB1879.	85.8	89.0	.165	1.224	2.53	38.	2.69	3.46	.25	.072	1.286
SB1878.	85.8	89.0	.231	1.224	2.53	31.	2.69	3.46	.20	.058	1.286
SB1877.	85.8	89.0	.298	1.224	2.51	32.	2.69	3.33	.21	.063	1.238
SB1876.	85.8	89.0	.364	1.224	2.49	29.	2.69	3.20	.19	.059	1.189
SB1875.	85.8	89.0	.431	1.224	2.49	28.	2.69	3.20	.18	.057	1.189
SB1874.	85.8	89.0	.498	1.224	2.50	27.	2.69	3.27	.18	.054	1.213
SB1873.	85.8	89.0	.564	1.224	2.51	26.	2.69	3.33	.17	.051	1.238
SB1872.	85.8	89.0	.631	1.224	2.52	24.	2.69	3.40	.16	.046	1.262
SB1871.	85.8	89.0	.697	1.224	2.52	27.	2.69	3.40	.18	.052	1.262
SB1870.	85.8	89.0	.764	1.224	2.50	31.	2.69	3.27	.20	.062	1.213
SB1869.	85.8	89.0	.831	1.224	2.48	30.	2.69	3.14	.20	.063	1.165
SB1868.	85.8	89.0	.897	1.224	2.48	27.	2.69	3.14	.18	.056	1.165
SB1867.	85.8	89.0	.964	1.224	2.48	25.	2.69	3.14	.16	.052	1.165
SB1866.	85.8	89.0	1.030	1.224	2.49	24.	2.69	3.20	.16	.049	1.189
SB1865.	85.8	89.0	1.097	1.224	2.49	23.	2.69	3.20	.15	.047	1.189
SB1864.	85.8	89.0	1.164	1.224	2.49	26.	2.69	3.20	.17	.053	1.189
SB1863.	85.8	89.0	1.230	1.224	2.47	34.	2.69	3.07	.22	.072	1.141
SB1862.	85.8	89.0	1.297	1.224	2.45	36.	2.69	2.94	.24	.080	1.092
SB1861.	85.8	89.0	1.363	1.224	2.44	33.	2.69	2.87	.22	.075	1.068
SB1860.	85.8	89.0	1.430	1.224	2.45	33.	2.69	2.94	.22	.073	1.092
SB1859.	85.8	89.0	1.497	1.224	2.46	32.	2.69	3.00	.21	.070	1.116
SB1858.	85.8	89.0	1.563	1.224	2.46	31.	2.69	3.00	.20	.067	1.116
SB1857.	85.8	89.0	1.630	1.224	2.46	30.	2.69	3.00	.20	.065	1.116
SB1856.	85.8	89.0	1.696	1.224	2.47	30.	2.69	3.07	.20	.064	1.141
SB1855.	85.8	89.0	1.763	1.224	2.46	31.	2.69	3.00	.20	.067	1.116
SB1854.	85.8	89.0	1.830	1.224	2.45	35.	2.69	2.94	.23	.078	1.092
SB1853.	85.8	89.0	1.896	1.224	2.43	39.	2.69	2.81	.25	.091	1.044
SB1852.	85.8	89.0	1.963	1.224	2.41	39.	2.69	2.68	.25	.095	.995
SB1851.	85.8	89.0	2.029	1.224	2.39	37.	2.69	2.55	.24	.095	.946
SB1850.	85.8	89.0	2.096	1.224	2.39	35.	2.69	2.55	.23	.090	.946
SB1849.	85.8	89.0	2.163	1.224	2.39	36.	2.69	2.55	.24	.092	.946

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1884.	85.8	89.0	.231	.110	2.50	82.	2.69	3.27	.54	.164	1.213
SB1883.	85.8	89.0	.697	.110	2.53	22.	2.69	3.46	.14	.042	1.286
SB1882.	85.8	89.0	1.230	.110	2.55	23.	2.69	3.59	.15	.042	1.335
SB1881.	85.8	89.0	1.769	.110	2.55	21.	2.69	3.59	.14	.038	1.335

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 8. AXIAL DISTANCE=28.05 IN. BLOCKAGE CENTERLINE=28.18 IN. P=15.00 PSI RE=14000.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E mVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB1885.	85.0	88.6	.165	.688	2.53	43.	2.68	3.46	.28	.081	1.292
SB1886.	85.0	88.6	.231	.688	2.52	28.	2.68	3.40	.18	.054	1.268
SB1887.	85.0	88.6	.298	.688	2.51	24.	2.68	3.33	.16	.047	1.243
SB1888.	85.0	88.6	.364	.688	2.51	24.	2.68	3.33	.16	.047	1.243
SB1889.	85.0	88.6	.431	.685	2.52	23.	2.68	3.40	.15	.044	1.268
SB1890.	85.0	88.6	.498	.685	2.53	22.	2.68	3.46	.14	.042	1.292
SB1891.	85.0	88.6	.564	.685	2.54	21.	2.68	3.53	.14	.039	1.316
SB1892.	85.0	88.6	.631	.685	2.53	21.	2.68	3.46	.14	.040	1.292
SB1893.	85.0	88.6	.697	.685	2.53	21.	2.68	3.46	.14	.040	1.292
SB1894.	85.0	88.6	.764	.685	2.53	22.	2.68	3.46	.14	.042	1.292
SB1895.	85.0	88.6	.831	.685	2.53	24.	2.68	3.46	.16	.045	1.292
SB1896.	85.0	88.6	.897	.685	2.54	25.	2.68	3.53	.16	.046	1.316
SB1897.	85.0	88.6	.964	.685	2.55	26.	2.68	3.59	.17	.047	1.341
SB1898.	85.0	88.6	1.030	.685	2.55	25.	2.68	3.59	.16	.045	1.341
SB1899.	85.0	88.6	1.097	.688	2.55	27.	2.68	3.59	.18	.049	1.341
SB1900.	85.0	88.6	1.164	.685	2.53	28.	2.68	3.46	.18	.053	1.292
SB1901.	85.0	88.6	1.230	.688	2.52	25.	2.68	3.40	.16	.048	1.268
SB1902.	85.0	88.6	1.297	.685	2.52	23.	2.68	3.40	.15	.044	1.268
SB1903.	85.0	88.6	1.363	.685	2.52	23.	2.68	3.40	.15	.044	1.268
SB1904.	85.0	88.6	1.430	.685	2.53	23.	2.68	3.46	.15	.043	1.292
SB1905.	85.0	88.6	1.497	.685	2.54	21.	2.68	3.53	.14	.039	1.316
SB1906.	85.0	88.6	1.563	.685	2.56	20.	2.68	3.66	.13	.036	1.365
SB1907.	85.0	88.6	1.630	.685	2.56	20.	2.68	3.66	.13	.036	1.365
SB1908.	85.0	88.6	1.696	.685	2.56	21.	2.68	3.66	.14	.038	1.365
SB1909.	85.0	88.6	1.762	.688	2.56	24.	2.68	3.66	.16	.043	1.365
SB1910.	85.0	88.6	1.830	.685	2.54	25.	2.68	3.53	.16	.046	1.316
SB1911.	85.0	88.6	1.896	.685	2.53	24.	2.68	3.46	.16	.045	1.292
SB1912.	85.0	88.6	1.963	.685	2.52	22.	2.68	3.40	.14	.042	1.268
SB1913.	85.0	88.6	2.029	.685	2.52	22.	2.68	3.40	.14	.042	1.268
SB1914.	85.0	88.6	2.096	.685	2.53	23.	2.68	3.46	.15	.043	1.292
SB1915.	85.0	88.6	2.162	.685	2.55	22.	2.68	3.59	.14	.040	1.341
SB1916.	85.0	88.6	2.229	.685	2.56	21.	2.68	3.66	.14	.038	1.365
SB1917.	85.0	88.6	2.296	.685	2.57	21.	2.68	3.72	.14	.037	1.390
SB1951.	85.0	88.6	.165	.110	2.48	197.	2.68	3.14	1.29	.410	1.170
SB1959.	85.0	88.6	.231	.110	2.51	94.	2.68	3.33	.61	.184	1.243
SB1948.	85.0	88.6	.298	.110	2.52	50.	2.68	3.40	.33	.096	1.268
SB1947.	85.0	88.6	.364	.110	2.52	32.	2.68	3.40	.21	.062	1.268
SB1946.	85.0	88.6	.431	.110	2.53	28.	2.68	3.46	.18	.053	1.292
SB1945.	85.0	88.6	.498	.110	2.54	24.	2.68	3.53	.16	.044	1.316
SB1944.	85.0	88.6	.564	.110	2.55	22.	2.68	3.59	.14	.040	1.341
SB1943.	85.0	88.6	.631	.110	2.55	23.	2.68	3.59	.15	.042	1.341
SB1942.	85.0	88.6	.697	.110	2.55	24.	2.68	3.59	.16	.044	1.341
SB1941.	85.0	88.6	.764	.110	2.55	24.	2.68	3.59	.16	.044	1.341
SB1940.	85.0	88.6	.831	.110	2.55	25.	2.68	3.59	.16	.045	1.341
SB1939.	85.0	88.6	.897	.110	2.55	23.	2.68	3.59	.15	.042	1.341
SB1938.	85.0	88.6	.964	.110	2.56	24.	2.68	3.66	.16	.043	1.365
SB1937.	85.0	88.6	1.030	.110	2.57	24.	2.68	3.72	.16	.042	1.341
SB1936.	85.0	88.6	1.097	.110	2.58	24.	2.68	3.79	.16	.041	1.4
SB1935.	85.0	88.6	1.164	.110	2.58	23.	2.68	3.79	.15	.040	1.4

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB1934.	85.0	88.6	1.230	.110	2.57	23.	2.68	3.72	.15	.040	1.390
SB1933.	85.0	88.6	1.297	.110	2.57	22.	2.68	3.72	.14	.039	1.390
SB1932.	85.0	88.6	1.363	.110	2.56	22.	2.68	3.66	.14	.039	1.365
SB1931.	85.0	88.6	1.430	.110	2.56	22.	2.68	3.66	.14	.039	1.365
SB1930.	85.0	88.6	1.497	.110	2.56	23.	2.68	3.66	.15	.041	1.365
SB1929.	85.0	88.6	1.569	.110	2.57	23.	2.68	3.72	.15	.040	1.390
SB1928.	85.0	88.6	1.630	.110	2.57	20.	2.68	3.72	.13	.035	1.390
SB1927.	85.0	88.6	1.696	.110	2.58	20.	2.68	3.79	.13	.034	1.414
SB1926.	85.0	88.6	1.769	.110	2.57	22.	2.68	3.72	.14	.039	1.390
SB1925.	85.0	88.6	1.830	.110	2.57	21.	2.68	3.72	.14	.037	1.390
SB1924.	85.0	88.6	1.896	.110	2.56	21.	2.68	3.66	.14	.038	1.365
SB1923.	85.0	88.6	1.963	.110	2.56	20.	2.68	3.66	.13	.036	1.365
SB1922.	85.0	88.6	2.029	.110	2.56	20.	2.68	3.66	.13	.036	1.365
SB1921.	85.0	88.6	2.090	.110	2.56	21.	2.68	3.66	.14	.038	1.365
SB1920.	85.0	88.6	2.163	.110	2.57	20.	2.68	3.72	.13	.035	1.390
SB1919.	85.0	88.6	2.229	.110	2.58	19.	2.68	3.79	.12	.033	1.414
SB1918.	85.0	88.6	2.296	.110	2.58	20.	2.68	3.79	.13	.034	1.414

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 8, AXIAL DISTANCE=28.05 IN. BLOCKAGE CENTERLINE=28.18 IN. P=28.00 PSI RE= 57400.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	L (LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB1984.	87.1	354.5	.165	.685	4.04	75.	10.72	13.32	.49	.037	1.243
SB1983.	87.1	354.5	.231	.685	4.00	74.	10.72	13.06	.48	.037	1.219
SB1982.	87.1	354.5	.298	.685	3.96	70.	10.72	12.80	.46	.036	1.194
SB1981.	87.1	354.5	.364	.685	3.94	70.	10.72	12.67	.46	.036	1.182
SB1980.	87.1	354.5	.431	.685	3.95	75.	10.72	12.80	.49	.038	1.194
SB1979.	87.1	354.5	.498	.685	3.99	76.	10.72	13.00	.50	.038	1.212
SB1978.	87.1	354.5	.564	.685	4.03	69.	10.72	13.26	.45	.034	1.237
SB1977.	87.1	354.5	.631	.685	4.04	65.	10.72	13.32	.42	.032	1.243
SB1976.	87.1	354.5	.697	.685	4.02	63.	10.72	13.19	.41	.031	1.231
SB1975.	87.1	354.5	.764	.685	4.01	62.	10.72	13.13	.40	.031	1.225
SB1974.	87.1	354.5	.831	.685	4.01	64.	10.72	13.13	.42	.032	1.225
SB1973.	87.1	354.5	.897	.685	4.02	71.	10.72	13.19	.46	.035	1.231
SB1972.	87.1	354.5	.964	.685	4.04	78.	10.72	13.32	.51	.038	1.243
SB1971.	87.1	354.5	1.030	.685	4.06	77.	10.72	13.45	.50	.037	1.255
SB1970.	87.1	354.5	1.097	.685	4.07	73.	10.72	13.52	.48	.035	1.261
SB1969.	87.1	354.5	1.164	.685	4.06	75.	10.72	13.45	.49	.036	1.255
SB1968.	87.1	354.5	1.230	.685	4.03	75.	10.72	13.26	.49	.037	1.237
SB1967.	87.1	354.5	1.297	.685	3.99	69.	10.72	13.00	.45	.035	1.212
SB1966.	87.1	354.5	1.363	.685	3.98	66.	10.72	12.93	.43	.033	1.206
SB1965.	87.1	354.5	1.430	.685	4.00	68.	10.72	13.06	.44	.034	1.219
SB1964.	87.1	354.5	1.497	.685	4.04	70.	10.72	13.32	.46	.034	1.243
SB1963.	87.1	354.5	1.563	.685	4.07	67.	10.72	13.52	.44	.032	1.261
SB1962.	87.1	354.5	1.630	.685	4.10	64.	10.72	13.72	.42	.030	1.279
SB1961.	87.1	354.5	1.696	.685	4.12	64.	10.72	13.85	.42	.030	1.292
SB1960.	87.1	354.5	1.763	.685	4.12	67.	10.72	13.85	.44	.032	1.292
SB1959.	87.1	354.5	1.830	.685	4.10	70.	10.72	13.72	.46	.033	1.279
SB1958.	87.1	354.5	1.896	.685	4.04	73.	10.72	13.32	.48	.036	1.243
SB1957.	87.1	354.5	1.963	.685	4.00	70.	10.72	13.06	.46	.035	1.219
SB1956.	87.1	354.5	2.029	.685	4.00	70.	10.72	13.06	.46	.035	1.219
SB1955.	87.1	354.5	2.096	.685	4.00	70.	10.72	13.06	.46	.035	1.219
SB1954.	87.1	354.5	2.163	.685	4.01	70.	10.72	13.13	.46	.035	1.225
SB1953.	87.1	354.5	2.229	.685	4.06	71.	10.72	13.45	.46	.034	1.255
SB1952.	87.1	354.5	2.296	.685	4.10	67.	10.72	13.72	.44	.032	1.279
SB2017.	87.1	354.5	.165	.110	4.01	390.	10.72	13.13	2.55	.194	1.225
SB2016.	87.1	354.5	.231	.110	3.01	250.	10.72	6.60	1.63	.248	.615
SB2015.	87.1	354.5	.298	.110	4.09	79.	10.72	13.65	.52	.038	1.273
SB2014.	87.1	354.5	.364	.110	4.07	76.	10.72	13.52	.50	.037	1.261
SB2013.	87.1	354.5	.431	.110	4.06	74.	10.72	13.45	.48	.036	1.255
SB2012.	87.1	354.5	.498	.110	4.08	74.	10.72	13.59	.48	.036	1.267
SB2011.	87.1	354.5	.564	.110	4.09	69.	10.72	13.65	.45	.033	1.273
SB2010.	87.1	354.5	.631	.110	4.10	65.	10.72	13.72	.42	.031	1.279
SB2009.	87.1	354.5	.697	.110	4.10	63.	10.72	13.72	.41	.030	1.279
SB2008.	87.1	354.5	.764	.110	4.09	69.	10.72	13.65	.45	.033	1.273
SB2007.	87.1	354.5	.831	.110	4.09	72.	10.72	13.65	.47	.034	1.273
SB2006.	87.1	354.5	.897	.110	4.10	72.	10.72	13.72	.47	.034	1.279
SB2005.	87.1	354.5	.964	.110	4.12	75.	10.72	13.85	.49	.035	1.292
SB2004.	87.1	354.5	1.030	.110	4.14	76.	10.72	13.98	.50	.036	1.304
SB2003.	37.1	354.5	1.097	.110	4.18	72.	10.72	14.24	.47	.033	1.328
SB2002.	37.1	354.5	1.164	.110	4.21	65.	10.72	14.43	.42	.029	1.346

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2001.	87.1	354.5	1.230	.110	4.22	62.	10.72	14.50	.40	.028	1.353
SB2000.	87.1	354.5	1.297	.110	4.22	65.	10.72	14.50	.42	.029	1.353
SB1999.	87.1	354.5	1.363	.110	4.20	69.	10.72	14.37	.45	.031	1.340
SB1998.	87.1	354.5	1.430	.110	4.19	70.	10.72	14.30	.46	.032	1.334
SB1997.	87.1	354.5	1.497	.110	4.18	71.	10.72	14.24	.46	.033	1.328
SB1996.	87.1	354.5	1.563	.110	4.19	71.	10.72	14.30	.46	.032	1.334
SB1995.	87.1	354.5	1.630	.110	4.20	69.	10.72	14.37	.45	.031	1.340
SB1994.	87.1	354.5	1.696	.110	4.20	66.	10.72	14.37	.43	.030	1.340
SB1993.	87.1	354.5	1.763	.110	4.20	65.	10.72	14.37	.42	.030	1.340
SB1992.	87.1	354.5	1.830	.110	4.17	71.	10.72	14.17	.46	.033	1.322
SB1991.	87.1	354.5	1.898	.110	4.13	79.	10.72	13.91	.52	.037	1.298
SB1990.	87.1	354.5	1.963	.110	4.11	78.	10.72	13.78	.51	.037	1.286
SB1989.	87.1	354.5	2.029	.110	4.10	78.	10.72	13.72	.51	.037	1.279
SB1988.	87.1	354.5	2.096	.110	4.10	79.	10.72	13.72	.52	.038	1.279
SB1987.	87.1	354.5	2.163	.110	4.12	75.	10.72	13.85	.49	.035	1.292
SB1986.	87.1	354.5	2.229	.110	4.15	73.	10.72	14.04	.48	.034	1.310
SB1985.	87.1	354.5	2.296	.110	4.18	64.	10.72	14.24	.42	.029	1.328

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 9. AXIAL DISTANCE=20.95 IN. BLOCKAGE CENTERLINE=28.25 IN. P=15.00 PSI RE= 57400.

RUN	TEMP	FLOW BPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2051.	87.1	354.5	.165	1.224	3.97	107.	10.72	12.87	.70	.054	1.200
SB2050.	87.1	354.5	.231	1.224	3.94	105.	10.72	12.67	.69	.054	1.182
SB2049.	87.1	354.5	.298	1.224	3.87	95.	10.72	12.21	.62	.051	1.139
SB2048.	87.1	354.5	.364	1.224	3.86	85.	10.72	12.15	.56	.046	1.133
SB2047.	87.1	354.5	.431	1.224	3.86	80.	10.72	12.15	.52	.043	1.133
SB2046.	87.1	354.5	.498	1.224	3.89	82.	10.72	12.34	.54	.043	1.152
SB2045.	87.1	354.5	.564	1.224	3.93	75.	10.72	12.61	.49	.039	1.176
SB2044.	87.1	354.5	.631	1.224	3.95	71.	10.72	12.74	.46	.036	1.188
SB2043.	87.1	354.5	.697	1.224	3.93	79.	10.72	12.61	.52	.041	1.176
SB2042.	87.1	354.5	.764	1.224	3.89	87.	10.72	12.34	.57	.046	1.152
SB2041.	87.1	354.5	.831	1.224	3.85	88.	10.72	12.08	.57	.048	1.127
SB2040.	87.1	354.5	.897	1.224	3.85	87.	10.72	12.08	.57	.047	1.127
SB2039.	87.1	354.5	.964	1.224	3.87	88.	10.72	12.21	.57	.047	1.139
SB2038.	87.1	354.5	1.030	1.224	3.90	85.	10.72	12.41	.56	.045	1.158
SB2037.	87.1	354.5	1.097	1.224	3.91	82.	10.72	12.48	.54	.043	1.164
SB2036.	87.1	354.5	1.164	1.224	3.88	95.	10.72	12.28	.62	.051	1.145
SB2035.	87.1	354.5	1.230	1.224	3.81	116.	10.72	11.82	.76	.064	1.103
SB2034.	87.1	354.5	1.297	1.224	3.75	113.	10.72	11.43	.74	.065	1.066
SB2033.	87.1	354.5	1.363	1.224	3.70	108.	10.72	11.10	.71	.064	1.036
SB2032.	87.1	354.5	1.430	1.224	3.68	116.	10.72	10.97	.76	.069	1.024
SB2031.	87.1	354.5	1.497	1.224	3.64	116.	10.72	10.71	.76	.071	.999
SB2030.	87.1	354.5	1.563	1.224	3.63	116.	10.72	10.65	.76	.071	.993
SB2029.	87.1	354.5	1.630	1.224	3.66	111.	10.72	10.84	.72	.067	1.011
SB2028.	87.1	354.5	1.696	1.224	3.70	109.	10.72	11.10	.71	.064	1.036
SB2027.	87.1	354.5	1.763	1.224	3.72	105.	10.72	11.23	.69	.061	1.048
SB2026.	87.1	354.5	1.830	1.224	3.67	125.	10.72	10.91	.82	.075	1.017
SB2025.	87.1	354.5	1.898	1.224	3.58	136.	10.72	10.32	.89	.086	.963
SB2024.	87.1	354.5	1.963	1.224	3.46	121.	10.72	9.54	.79	.083	.890
SB2023.	87.1	354.5	2.029	1.224	3.41	112.	10.72	9.21	.73	.079	.859
SB2022.	87.1	354.5	2.096	1.224	3.39	109.	10.72	9.08	.71	.078	.847
SB2021.	87.1	354.5	2.163	1.224	3.39	112.	10.72	9.08	.73	.081	.847
SB2020.	87.1	354.5	2.229	1.224	3.48	145.	10.72	9.67	.95	.098	.902
SB2019.	87.1	354.5	2.296	1.224	3.58	146.	10.72	10.32	.95	.092	.963
SB2018.	87.1	354.5	2.362	1.224	3.68	126.	10.72	10.97	.82	.075	1.024
SB2085.	87.1	354.5	.165	.685	3.92	92.	10.72	12.54	.60	.048	1.170
SB2084.	87.1	354.5	.231	.685	3.89	93.	10.72	12.34	.61	.049	1.152
SB2083.	87.1	354.5	.298	.685	3.86	92.	10.72	12.15	.60	.049	1.133
SB2082.	87.1	354.5	.364	.685	3.83	90.	10.72	11.95	.59	.049	1.115
SB2081.	87.1	354.5	.431	.685	3.83	90.	10.72	11.95	.59	.049	1.115
SB2080.	87.1	354.5	.498	.685	3.85	94.	10.72	12.08	.61	.051	1.127
SB2079.	87.1	354.5	.564	.685	3.88	91.	10.72	12.28	.59	.048	1.145
SB2078.	87.1	354.5	.631	.685	3.92	79.	10.72	12.54	.52	.041	1.170
SB2077.	87.1	354.5	.697	.685	3.92	79.	10.72	12.54	.52	.041	1.170
SB2076.	87.1	354.5	.764	.685	3.90	79.	10.72	12.41	.52	.042	1.158
SB2075.	87.1	354.5	.831	.685	3.87	80.	10.72	12.21	.52	.043	1.139
SB2074.	87.1	354.5	.897	.685	3.88	81.	10.72	12.28	.53	.043	1.145
SB2073.	87.1	354.5	.964	.685	3.88	89.	10.72	12.28	.58	.047	1.145
SB20	87.1	354.5	1.030	.685	3.91	89.	10.72	12.48	.58	.047	1
SB20	87.1	354.5	1.097	.685	3.93	84.	10.72	12.51	.55	.044	1

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2070.	87.1	354.5	1.164	.685	3.95	76.	10.72	12.74	.50	.039	1.188
SB2069.	87.1	354.5	1.230	.685	3.94	83.	10.72	12.67	.54	.043	1.182
SB2068.	87.1	354.5	1.297	.685	3.89	95.	10.72	12.34	.62	.050	1.152
SB2067.	87.1	354.5	1.363	.685	3.84	93.	10.72	12.02	.61	.051	1.121
SB2066.	87.1	354.5	1.430	.685	3.82	93.	10.72	11.89	.61	.051	1.109
SB2065.	87.1	354.5	1.497	.685	3.83	95.	10.72	11.95	.62	.052	1.115
SB2064.	87.1	354.5	1.563	.685	3.86	99.	10.72	12.15	.65	.053	1.133
SB2063.	87.1	354.5	1.630	.685	3.87	97.	10.72	12.34	.63	.051	1.152
SB2062.	87.1	354.5	1.696	.685	3.91	94.	10.72	12.48	.61	.049	1.164
SB2061.	87.1	354.5	1.763	.685	3.91	91.	10.72	12.48	.59	.048	1.164
SB2060.	87.1	354.5	1.830	.685	3.86	103.	10.72	12.15	.67	.055	1.133
SB2059.	87.1	354.5	1.896	.685	3.83	109.	10.72	11.95	.71	.060	1.115
SB2058.	87.1	354.5	1.963	.685	3.80	106.	10.72	11.76	.69	.059	1.097
SB2057.	87.1	354.5	2.029	.685	3.81	94.	10.72	11.82	.61	.052	1.103
SB2056.	87.1	354.5	2.096	.685	3.82	98.	10.72	11.89	.64	.054	1.109
SB2055.	87.1	354.5	2.163	.685	3.81	106.	10.72	11.82	.69	.059	1.103
SB2054.	87.1	354.5	2.229	.685	3.81	115.	10.72	11.82	.75	.064	1.103
SB2053.	87.1	354.5	2.296	.685	3.85	108.	10.72	12.08	.71	.058	1.127
SB2052.	87.1	354.5	2.362	.685	3.89	102.	10.72	12.34	.67	.054	1.152

TABLE C#1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 9. AXIAL DISTANCE#26.95 IN. BLOCKAGE CENTERLINE#28.18 IN. P#28.00 PSI RE# 58100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LCCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2110.	88.3	354.0	.165	.110	4.01	87.	10.71	13.13	.57	.043	1.226
SB2111.	88.3	354.0	.231	.110	4.03	69.	10.71	13.26	.45	.034	1.239
SB2117.	88.3	354.0	.298	.110	4.02	69.	10.71	13.19	.45	.034	1.232
SB2116.	88.3	354.0	.364	.110	4.02	70.	10.71	13.19	.46	.035	1.232
SB2115.	88.3	354.0	.431	.110	4.03	74.	10.71	13.26	.48	.036	1.239
SB2114.	88.3	354.0	.498	.110	4.03	72.	10.71	13.26	.47	.035	1.239
SB2113.	88.3	354.0	.564	.110	4.04	70.	10.71	13.32	.46	.034	1.245
SB2112.	88.3	354.0	.631	.110	4.05	66.	10.71	13.39	.43	.032	1.251
SB2111.	88.3	354.0	.697	.110	4.05	61.	10.71	13.39	.40	.030	1.251
SB2110.	88.3	354.0	.764	.110	4.04	62.	10.71	13.32	.40	.030	1.245
SB2109.	88.3	354.0	.831	.110	4.04	68.	10.71	13.32	.44	.033	1.245
SB2108.	88.3	354.0	.897	.110	4.03	74.	10.71	13.26	.48	.036	1.239
SB2107.	88.3	354.0	.964	.110	4.05	73.	10.71	13.39	.48	.036	1.251
SB2106.	88.3	354.0	1.030	.110	4.06	73.	10.71	13.45	.48	.035	1.257
SB2105.	88.3	354.0	1.097	.110	4.08	77.	10.71	13.59	.50	.037	1.269
SB2104.	88.3	354.0	1.164	.110	4.11	72.	10.71	13.78	.47	.034	1.287
SB2103.	88.3	354.0	1.230	.110	4.13	68.	10.71	13.91	.44	.032	1.300
SB2102.	88.3	354.0	1.297	.110	4.13	66.	10.71	13.91	.43	.031	1.300
SB2101.	88.3	354.0	1.363	.110	4.13	67.	10.71	13.91	.44	.031	1.300
SB2100.	88.3	354.0	1.430	.110	4.12	73.	10.71	13.85	.48	.034	1.293
SB2099.	88.3	354.0	1.497	.110	4.11	74.	10.71	13.78	.48	.035	1.287
SB2098.	88.3	354.0	1.563	.110	4.12	76.	10.71	13.85	.50	.036	1.293
SB2097.	88.3	354.0	1.630	.110	4.13	70.	10.71	13.91	.46	.033	1.300
SB2096.	88.3	354.0	1.698	.110	4.13	66.	10.71	13.91	.43	.031	1.300
SB2095.	88.3	354.0	1.763	.110	4.13	60.	10.71	13.91	.39	.028	1.300
SB2094.	88.3	354.0	1.830	.110	4.12	61.	10.71	13.85	.40	.029	1.293
SB2093.	88.3	354.0	1.898	.110	4.09	69.	10.71	13.65	.45	.033	1.275
SB2092.	88.3	354.0	1.963	.110	4.06	78.	10.71	13.45	.51	.038	1.257
SB2091.	88.3	354.0	2.029	.110	4.04	82.	10.71	13.32	.54	.040	1.245
SB2090.	88.3	354.0	2.098	.110	4.03	83.	10.71	13.26	.54	.041	1.239
SB2089.	88.3	354.0	2.163	.110	4.05	78.	10.71	13.39	.51	.038	1.251
SB2088.	88.3	354.0	2.229	.110	4.06	77.	10.71	13.45	.50	.037	1.257
SB2087.	88.3	354.0	2.298	.110	4.09	69.	10.71	13.65	.45	.033	1.275
SB2086.	88.3	354.0	2.362	.110	4.11	62.	10.71	13.78	.40	.029	1.287
SB2153.	88.3	354.0	.165	1.763	4.01	127.	10.71	13.13	.83	.063	1.226
SB2152.	88.3	354.0	.231	1.763	3.99	111.	10.71	13.00	.72	.056	1.214
SB2151.	88.3	354.0	.298	1.768	3.95	102.	10.71	12.74	.67	.052	1.190
SB2150.	88.3	354.0	.364	1.763	3.91	88.	10.71	12.48	.57	.046	1.165
SB2149.	88.3	354.0	.431	1.768	3.90	87.	10.71	12.41	.57	.046	1.159
SB2148.	88.3	354.0	.498	1.763	3.93	87.	10.71	12.61	.57	.045	1.178
SB2147.	88.3	354.0	.564	1.763	3.96	84.	10.71	12.80	.55	.043	1.196
SB2146.	88.3	354.0	.631	1.763	3.99	73.	10.71	13.00	.48	.037	1.214
SB2145.	88.3	354.0	.697	1.763	4.00	70.	10.71	13.06	.46	.035	1.220
SB2144.	88.3	354.0	.764	1.763	3.98	77.	10.71	12.93	.50	.039	1.208
SB2143.	88.3	354.0	.831	1.763	3.96	77.	10.71	12.80	.50	.039	1.196
SB2142.	88.3	354.0	.897	1.763	3.97	73.	10.71	12.87	.48	.037	1.202
SB2141.	88.3	354.0	.964	1.763	3.99	68.	10.71	13.00	.44	.034	1.214
SB2140.	88.3	354.0	1.030	1.763	3.99	72.	10.71	13.00	.47	.036	1.214
SB2139.	88.3	354.0	1.097	1.763	3.96	90.	10.71	12.80	.59	.046	1.196

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2138.	AA.3	354.0	1.164	1.763	3.90	112.	10.71	12.41	.73	.059	1.159
SB2137.	AA.3	354.0	1.230	1.763	3.83	109.	10.71	11.95	.71	.060	1.117
SB2136.	AA.3	354.0	1.297	1.763	3.80	97.	10.71	11.76	.63	.054	1.098
SB2135.	AA.3	354.0	1.363	1.763	3.77	110.	10.71	11.56	.72	.062	1.080
SB2134.	AA.3	354.0	1.430	1.763	3.65	171.	10.71	10.78	1.12	.104	1.007
SB2133.	AA.3	354.0	1.497	1.763	3.43	227.	10.71	9.34	1.48	.159	.872
SB2132.	AA.3	354.0	1.563	1.763	3.10	300.	10.71	7.18	1.96	.273	.671
SB2131.	AA.3	354.0	1.630	1.763	2.70	306.	10.71	4.57	2.00	.437	.427
SB2130.	AA.3	354.0	1.696	1.763	2.48	303.	10.71	3.14	1.98	.631	.293
SB2129.	AA.3	354.0	1.763	1.763	2.35	284.	10.71	2.29	1.85	.811	.214
SB2128.	AA.3	354.0	1.830	1.763	2.25	229.	10.71	1.63	1.50	.916	.153
SB2127.	AA.3	334.0	1.896	1.763	2.25	223.	10.71	1.63	1.46	.892	.153
SB2126.	AA.3	354.0	1.963	1.763	2.43	236.	10.71	2.61	1.54	.549	.262
SB2125.	AA.3	354.0	2.029	1.763	2.57	190.	10.71	3.72	1.24	.333	.348
SB2124.	AA.3	354.0	2.096	1.763	2.59	171.	10.71	3.85	1.12	.290	.360
SB2123.	AA.3	354.0	2.163	1.763	2.56	177.	10.71	3.66	1.16	.316	.342
SB2122.	AA.3	354.0	2.229	1.763	2.47	216.	10.71	3.07	1.41	.460	.287
SB2121.	AA.3	354.0	2.296	1.763	2.21	249.	10.71	1.37	1.63	1.186	.123
SB2120.	AA.3	354.0	2.362	1.763	2.04	215.	10.71	.26	1.40	5.375	.024

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 4, AXIAL DISTANCE 21.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=23.00 PSI RE= 58300.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LCCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2154.	88.3	355.0	.298	.685	3.99	81.	10.74	13.00	.53	.041	1.211
SB2155.	88.3	355.0	.364	.685	3.99	75.	10.74	13.00	.49	.038	1.211
SB2156.	88.3	355.0	.431	.685	3.97	77.	10.74	12.87	.50	.039	1.199
SB2157.	88.3	355.0	.498	.685	3.97	97.	10.74	12.87	.63	.049	1.199
SB2158.	88.3	355.0	.564	.685	4.00	99.	10.74	13.06	.65	.050	1.217
SB2159.	88.3	355.0	.631	.685	4.05	99.	10.74	13.39	.65	.048	1.247
SB2160.	88.3	355.0	.697	.685	4.08	84.	10.74	13.59	.55	.040	1.265
SB2161.	88.3	355.0	.764	.685	4.09	75.	10.74	13.65	.49	.036	1.272
SB2162.	88.3	355.0	.831	.685	4.07	73.	10.74	13.52	.48	.035	1.259
SB2163.	88.3	355.0	.897	.685	4.05	79.	10.74	13.39	.52	.039	1.247
SB2164.	88.3	355.0	.964	.685	4.04	84.	10.74	13.32	.55	.041	1.241
SB2165.	88.3	355.0	1.030	.685	4.03	93.	10.74	13.26	.61	.046	1.235
SB2166.	88.3	355.0	1.097	.685	4.05	96.	10.74	13.39	.63	.047	1.247
SB2167.	88.3	355.0	1.164	.685	4.08	98.	10.74	13.59	.64	.047	1.265
SB2168.	88.3	355.0	1.230	.685	4.10	79.	10.74	13.72	.52	.038	1.278
SB2169.	88.3	355.0	1.297	.685	4.09	77.	10.74	13.65	.50	.037	1.272
SB2170.	88.3	355.0	1.363	.685	4.06	76.	10.74	13.45	.50	.037	1.253
SB2171.	88.3	355.0	1.430	.685	4.03	71.	10.74	13.26	.46	.035	1.235
SB2172.	88.3	355.0	1.497	.685	4.02	70.	10.74	13.19	.46	.035	1.229
SB2173.	88.3	355.0	1.563	.685	4.05	75.	10.74	13.39	.49	.037	1.247
SB2174.	88.3	355.0	1.630	.685	4.07	79.	10.74	13.52	.52	.038	1.259
SB2175.	88.3	355.0	1.696	.685	4.11	73.	10.74	13.78	.48	.035	1.284
SB2176.	88.3	355.0	1.763	.685	4.13	70.	10.74	13.91	.46	.033	1.296
SB2177.	88.3	355.0	1.830	.685	4.13	67.	10.74	13.91	.44	.031	1.296
SB2178.	88.3	355.0	1.896	.685	4.12	68.	10.74	13.95	.44	.032	1.290
SB2179.	88.3	355.0	1.963	.685	4.09	73.	10.74	13.55	.43	.035	1.272
SB2180.	88.3	355.0	2.029	.685	4.06	76.	10.74	13.45	.50	.037	1.253
SB2181.	88.3	355.0	2.096	.685	4.01	73.	10.74	13.13	.48	.036	1.223
SB2182.	88.3	355.0	2.163	.685	4.00	72.	10.74	13.06	.47	.036	1.217
SB2183.	88.3	355.0	2.229	.685	4.01	74.	10.74	13.13	.48	.037	1.223
SB2184.	88.3	355.0	2.296	.685	4.05	75.	10.74	13.39	.49	.037	1.247
SB2185.	88.3	355.0	2.362	.685	4.09	71.	10.74	13.55	.46	.034	1.272
SB2189.	88.3	355.0	.364	.110	4.05	114.	10.74	13.39	.74	.056	1.247
SB2188.	88.3	355.0	.697	.110	4.13	80.	10.74	13.91	.52	.038	1.296
SB2187.	88.3	355.0	1.230	.110	4.20	90.	10.74	14.37	.59	.041	1.338
SB2186.	88.3	355.0	1.763	.110	4.21	83.	10.74	14.43	.54	.038	1.345
SB2205.	88.3	355.0	.298	1.224	4.01	120.	10.74	13.13	.78	.060	1.223
SB2204.	88.3	355.0	.431	1.224	3.98	120.	10.74	12.93	.78	.061	1.205
SB2203.	88.3	355.0	.564	1.224	4.00	119.	10.74	13.06	.78	.060	1.217
SB2202.	88.3	355.0	.697	1.224	4.10	84.	10.74	13.72	.55	.040	1.278
SB2201.	88.3	355.0	.831	1.224	4.07	72.	10.74	13.52	.47	.035	1.259
SB2200.	88.3	355.0	.964	1.224	4.08	75.	10.74	13.59	.49	.036	1.265
SB2199.	88.3	355.0	1.097	1.224	4.08	93.	10.74	13.59	.61	.045	1.255
SB2198.	88.3	355.0	1.230	1.224	4.03	86.	10.74	13.26	.56	.042	1.235
SB2197.	88.3	355.0	1.363	1.224	3.94	85.	10.74	12.67	.56	.044	1.180
SB2196.	88.3	355.0	1.497	1.224	3.76	196.	10.74	11.50	1.28	.111	1.071
SB2195.	88.3	355.0	1.630	1.224	3.26	290.	10.74	8.23	1.89	.230	.767

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2194.	88.3	355.0	1.763	1.224	3.36	330.	10.74	8.88	2.16	.243	.827
SB2193.	88.3	355.0	1.896	1.224	3.78	210.	10.74	11.63	1.37	.118	1.083
SB2192.	88.3	355.0	2.029	1.224	3.69	282.	10.74	11.04	1.84	.167	1.028
SB2191.	88.3	355.0	2.163	1.224	3.10	308.	10.74	7.18	2.01	.280	.669
SB2190.	88.3	355.0	2.296	1.224	3.46	310.	10.74	9.54	2.02	.212	.888
SB2221.	88.3	355.0	.298	1.763	4.03	210.	10.74	13.26	1.37	.103	1.235
SB2220.	88.3	355.0	.431	1.763	4.04	127.	10.74	13.32	.83	.062	1.241
SB2219.	88.3	355.0	.564	1.763	4.08	127.	10.74	13.59	.83	.061	1.265
SB2218.	88.3	355.0	.697	1.763	4.15	86.	10.74	14.04	.55	.040	1.308
SB2217.	88.3	355.0	.831	1.763	4.13	80.	10.74	13.91	.52	.038	1.236
SB2216.	88.3	355.0	.964	1.763	4.06	98.	10.74	13.45	.64	.048	1.253
SB2215.	88.3	355.0	1.097	1.763	3.94	131.	10.74	12.67	.86	.068	1.180
SB2214.	88.3	355.0	1.230	1.763	3.91	180.	10.74	12.48	1.18	.094	1.162
SB2213.	88.3	355.0	1.363	1.763	3.62	350.	10.74	10.58	2.29	.216	.986
SB2212.	88.3	355.0	1.497	1.763	3.03	400.	10.74	6.73	2.61	.388	.627
SB2211.	88.3	355.0	1.630	1.763	2.71	510.	10.74	4.64	3.33	.718	.432
SB2210.	88.3	355.0	1.763	1.763	2.39	400.	10.74	2.55	2.61	1.026	.237
SB2209.	88.3	355.0	1.896	1.763	2.34	320.	10.74	2.22	2.09	.941	.207
SB2208.	88.3	355.0	2.029	1.763	2.31	300.	10.74	2.02	1.96	.968	.189
SB2207.	88.3	355.0	2.163	1.763	2.23	360.	10.74	1.50	2.35	1.565	.140
SB2206.	88.3	355.0	2.296	1.763	2.32	400.	10.74	2.09	2.61	1.250	.195

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 5, AXIAL DISTANCE=20.20 IN. BLOCKAGE CENTERLINE=26.25 IN. P=23.00 PSI RE= 58200.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LJCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2222.	88.1	355.0	.231	.688	3.93	102.	10.74	12.61	.67	.053	1.174
SB2223.	88.1	355.0	.298	.685	3.94	101.	10.74	12.67	.66	.052	1.180
SB2224.	88.1	355.0	.364	.685	3.91	104.	10.74	12.48	.68	.054	1.162
SB2225.	88.1	355.0	.431	.685	3.91	105.	10.74	12.48	.69	.055	1.162
SB2226.	88.1	355.0	.498	.685	3.90	119.	10.74	12.41	.78	.063	1.156
SB2227.	88.1	355.0	.564	.685	3.95	145.	10.74	12.74	.95	.074	1.186
SB2228.	88.1	355.0	.631	.685	3.99	127.	10.74	13.00	.83	.064	1.211
SB2229.	88.1	355.0	.697	.685	4.02	114.	10.74	13.19	.74	.056	1.229
SB2230.	88.1	355.0	.764	.685	4.02	100.	10.74	13.19	.65	.050	1.229
SB2231.	88.1	355.0	.831	.685	4.01	90.	10.74	13.13	.59	.045	1.223
SB2232.	88.1	355.0	.897	.685	3.96	100.	10.74	12.80	.65	.051	1.192
SB2233.	88.1	355.0	.964	.685	3.94	85.	10.74	12.67	.56	.044	1.180
SB2234.	88.1	355.0	1.030	.685	3.94	90.	10.74	12.67	.59	.046	1.180
SB2235.	88.1	355.0	1.097	.685	3.96	95.	10.74	12.80	.62	.048	1.192
SB2236.	88.1	355.0	1.164	.685	4.01	87.	10.74	13.13	.57	.043	1.223
SB2237.	88.1	355.0	1.230	.685	4.04	69.	10.74	13.32	.45	.034	1.241
SB2238.	88.1	355.0	1.297	.685	4.02	69.	10.74	13.19	.45	.034	1.229
SB2239.	88.1	355.0	1.363	.685	3.98	66.	10.74	12.93	.43	.033	1.205
SB2240.	88.1	355.0	1.430	.685	3.95	66.	10.74	12.74	.43	.034	1.186
SB2241.	88.1	355.0	1.497	.685	3.93	73.	10.74	12.61	.48	.038	1.174
SB2242.	88.1	355.0	1.563	.685	3.94	88.	10.74	12.67	.57	.045	1.180
SB2243.	88.1	355.0	1.630	.685	3.99	90.	10.74	13.00	.59	.045	1.211
SB2244.	88.1	355.0	1.696	.685	4.03	78.	10.74	13.26	.51	.038	1.235
SB2245.	88.1	355.0	1.763	.685	4.06	66.	10.74	13.45	.43	.032	1.253
SB2246.	88.1	355.0	1.830	.685	4.05	64.	10.74	13.39	.42	.031	1.247
SB2247.	88.1	355.0	1.896	.685	4.02	69.	10.74	13.19	.45	.034	1.229
SB2248.	88.1	355.0	1.963	.685	3.97	81.	10.74	12.87	.53	.041	1.199
SB2249.	88.1	355.0	2.029	.685	3.92	85.	10.74	12.54	.56	.044	1.168
SB2250.	88.1	355.0	2.098	.685	3.88	83.	10.74	12.28	.54	.044	1.144
SB2251.	88.1	355.0	2.163	.685	3.89	84.	10.74	12.34	.55	.044	1.150
SB2252.	88.1	355.0	2.229	.685	3.94	77.	10.74	12.67	.50	.040	1.180
SB2253.	88.1	355.0	2.296	.685	3.99	72.	10.74	13.00	.47	.036	1.211
SB2257.	88.1	355.0	.298	.110	3.97	88.	10.74	12.87	.57	.045	1.199
SB2256.	88.1	355.0	.697	.110	4.09	74.	10.74	13.65	.48	.035	1.272
SB2255.	88.1	355.0	1.230	.110	4.15	85.	10.74	14.04	.56	.040	1.308
SB2254.	88.1	355.0	1.763	.110	4.13	83.	10.74	13.91	.54	.039	1.296
SB2273.	88.1	355.0	.298	1.224	3.97	66.	10.74	12.87	.43	.034	1.199
SB2272.	88.1	355.0	.431	1.224	3.92	76.	10.74	12.54	.50	.040	1.168
SB2271.	88.1	355.0	.564	1.224	3.96	95.	10.74	12.80	.62	.048	1.192
SB2270.	88.1	355.0	.697	1.224	4.05	70.	10.74	13.39	.46	.034	1.247
SB2269.	88.1	355.0	.831	1.224	4.01	60.	10.74	13.13	.39	.030	1.223
SB2268.	88.1	355.0	.964	1.224	4.01	61.	10.74	13.13	.40	.030	1.223
SB2267.	88.1	355.0	1.097	1.224	3.99	81.	10.74	13.00	.53	.041	1.211
SB2266.	88.1	355.0	1.230	1.224	3.88	103.	10.74	12.28	.67	.055	1.144
SB2265.	88.1	355.0	1.363	1.224	3.90	75.	10.74	12.41	.49	.039	1.156
SB2264.	88.1	355.0	1.497	1.224	3.80	154.	10.74	11.76	1.01	.086	1.095
SB2263.	88.1	355.0	1.630	1.224	3.39	216.	10.74	9.08	1.41	.155	.846

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E RVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2262.	88.1	355.0	1.763	1.224	3.52	263.	10.74	9.93	1.72	.173	.925
SB2261.	88.1	355.0	1.896	1.224	3.74	197.	10.74	11.36	1.29	.113	1.059
SB2260.	88.1	355.0	2.029	1.224	3.47	218.	10.74	9.60	1.42	.148	.894
SB2259.	88.1	355.0	2.163	1.224	3.37	215.	10.74	8.95	1.40	.157	.834
SB2258.	88.1	355.0	2.296	1.224	3.70	214.	10.74	11.10	1.40	.126	1.034
SB2274.	88.1	355.0	.831	1.174	4.04	72.	10.74	13.32	.47	.035	1.241
SB2275.	88.1	355.0	.964	1.174	3.94	117.	10.74	12.67	.76	.060	1.180
SB2276.	88.1	355.0	1.097	1.174	3.78	139.	10.74	11.63	.91	.078	1.083
SB2277.	88.1	355.0	1.230	1.174	3.68	165.	10.74	10.97	1.08	.098	1.022
SB2278.	88.1	355.0	1.363	1.174	3.85	154.	10.74	12.15	1.01	.083	1.132
SB2279.	88.1	355.0	1.497	1.174	3.66	213.	10.74	10.84	1.39	.128	1.010
SB2280.	88.1	355.0	1.630	1.174	3.31	183.	10.74	8.56	1.20	.140	.797
SB2281.	88.1	355.0	1.763	1.174	3.53	267.	10.74	9.99	1.74	.175	.931
SB2282.	88.1	355.0	1.896	1.174	3.67	194.	10.74	10.91	1.27	.116	1.016
SB2283.	88.1	355.0	2.029	1.174	3.34	209.	10.74	8.75	1.37	.156	.815
SB2284.	88.1	355.0	2.163	1.174	3.31	199.	10.74	8.56	1.30	.152	.797
SB2285.	88.1	355.0	2.296	1.174	3.52	210.	10.74	9.93	1.37	.138	.925
SB2297.	88.1	355.0	.831	1.274	3.96	64.	10.74	12.80	.42	.033	1.192
SB2296.	88.1	355.0	.964	1.274	3.82	144.	10.74	11.89	.94	.079	1.107
SB2295.	88.1	355.0	1.097	1.274	3.68	174.	10.74	10.97	1.14	.104	1.022
SB2294.	88.1	355.0	1.230	1.274	3.91	95.	10.74	12.48	.62	.050	1.162
SB2293.	88.1	355.0	1.363	1.274	3.86	74.	10.74	12.15	.48	.040	1.132
SB2292.	88.1	355.0	1.497	1.274	3.60	209.	10.74	10.45	1.37	.131	.973
SB2291.	88.1	355.0	1.630	1.274	3.62	217.	10.74	10.58	1.42	.134	.986
SB2290.	88.1	355.0	1.763	1.274	3.36	256.	10.74	8.88	1.74	.196	.827
SB2289.	88.1	355.0	1.896	1.274	3.04	248.	10.74	10.71	1.62	.151	.998
SB2288.	88.1	355.0	2.029	1.274	3.28	248.	10.74	8.36	1.62	.194	.779
SB2287.	88.1	355.0	2.163	1.274	3.03	214.	10.74	6.73	1.40	.208	.627
SB2286.	88.1	355.0	2.296	1.274	3.41	200.	10.74	9.21	1.31	.142	.858
SB2313.	88.1	355.0	.298	1.763	4.00	67.	10.74	13.06	.44	.034	1.217
SB2312.	88.1	355.0	.431	1.763	3.99	78.	10.74	13.00	.51	.039	1.211
SB2311.	88.1	355.0	.564	1.763	4.00	94.	10.74	13.06	.61	.047	1.217
SB2310.	88.1	355.0	.697	1.763	4.07	71.	10.74	13.52	.46	.034	1.259
SB2309.	88.1	355.0	.831	1.763	4.05	58.	10.74	13.39	.38	.028	1.247
SB2308.	88.1	355.0	.964	1.763	4.02	67.	10.74	13.19	.44	.033	1.229
SB2307.	88.1	355.0	1.097	1.763	3.90	97.	10.74	12.41	.63	.051	1.156
SB2306.	88.1	355.0	1.230	1.763	3.79	120.	10.74	11.69	.78	.067	1.089
SB2305.	88.1	355.0	1.363	1.763	3.75	240.	10.74	11.43	1.57	.137	1.065
SB2304.	88.1	355.0	1.497	1.763	3.14	350.	10.74	7.45	2.29	.307	.694
SB2303.	88.1	355.0	1.630	1.763	2.57	299.	10.74	3.72	1.95	.525	.347
SB2302.	88.1	355.0	1.763	1.763	2.14	199.	10.74	.91	1.30	1.421	.085
SB2301.	88.1	355.0	1.896	1.763	2.03	184.	10.74	.20	1.20	6.133	.018
SB2300.	88.1	355.0	2.029	1.763	1.86	176.	10.74	-.91	1.15	1.257	-.085
SB2299.	88.1	355.0	2.163	1.763	1.69	160.	10.74	-2.02	1.05	.516	-.189
SB2298.	88.1	355.0	2.296	1.763	1.71	190.	10.74	-1.89	1.24	.655	-.176
SB2314.	88.1	355.0	.831	1.713	4.06	84.	10.74	13.45	.55	.041	1.253
SB2315.	88.1	355.0	.964	1.713	3.93	137.	10.74	12.61	.89	.071	1.174
SB2316.	88.1	355.0	1.097	1.713	3.78	156.	10.74	11.63	1.02	.088	1.083
SB2317.	88.1	355.0	1.230	1.713	3.71	146.	10.74	11.17	.95	.085	1.040

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2318.	88.1	355.0	1.363	1.719	3.53	239.	10.74	9.99	1.56	.156	.931
SB2319.	88.1	355.0	1.497	1.719	3.08	299.	10.74	7.05	1.95	.277	.657
SB2320.	88.1	355.0	1.630	1.719	2.57	350.	10.74	3.72	2.29	.614	.347
SB2321.	88.1	355.0	1.763	1.719	2.26	240.	10.74	1.70	1.57	.923	.158
SB2322.	88.1	355.0	1.896	1.719	2.11	220.	10.74	.72	1.44	2.000	.067
SB2323.	88.1	355.0	2.029	1.719	1.92	250.	10.74	-.52	1.63	3.125	-.049
SB2324.	88.1	355.0	2.163	1.719	1.71	190.	10.74	-1.89	1.24	.655	-.176
SB2325.	88.1	355.0	2.296	1.719	1.80	190.	10.74	-1.31	1.24	.950	-.122
SB2337.	88.1	355.0	.831	1.813	4.02	64.	10.74	13.19	.42	.032	1.229
SB2336.	88.1	355.0	.964	1.813	3.96	98.	10.74	12.80	.64	.050	1.192
SB2335.	88.1	355.0	1.097	1.813	3.79	128.	10.74	11.69	.84	.072	1.089
SB2334.	88.1	355.0	1.230	1.813	3.71	134.	10.74	11.17	.88	.078	1.040
SB2333.	88.1	355.0	1.363	1.813	3.68	250.	10.74	10.97	1.63	.149	1.022
SB2332.	88.1	355.0	1.497	1.813	2.97	360.	10.74	6.34	2.35	.371	.590
SB2331.	88.1	355.0	1.630	1.813	2.55	300.	10.74	3.59	1.96	.545	.335
SB2330.	88.1	355.0	1.763	1.813	2.15	240.	10.74	.98	1.57	1.600	.091
SB2329.	88.1	355.0	1.896	1.813	1.89	178.	10.74	-.72	1.16	1.618	-.067
SB2328.	88.1	355.0	2.029	1.813	1.75	151.	10.74	-1.63	.99	.604	-.152
SB2327.	88.1	355.0	2.163	1.813	1.68	130.	10.74	-2.09	.85	.406	-.195
SB2326.	88.1	355.0	2.296	1.813	1.69	150.	10.74	-2.02	.98	.484	-.189

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 2. AXIAL DISTANCE=33.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=30.00 PSI RE= 58200.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2369.	88.2	355.0	.231	.685	3.90	100.	10.74	12.41	.65	.053	1.156
SB2368.	88.2	355.0	.298	.685	3.84	97.	10.74	12.02	.63	.053	1.119
SB2367.	88.2	355.0	.364	.685	3.79	99.	10.74	11.69	.65	.055	1.089
SB2366.	88.2	355.0	.431	.685	3.75	84.	10.74	11.43	.55	.048	1.065
SB2365.	88.2	355.0	.498	.685	3.76	87.	10.74	11.50	.57	.049	1.071
SB2364.	88.2	355.0	.564	.685	3.82	103.	10.74	11.89	.67	.057	1.107
SB2363.	88.2	355.0	.631	.685	3.91	108.	10.74	12.48	.71	.057	1.162
SB2362.	88.2	355.0	.697	.685	3.98	96.	10.74	12.93	.63	.048	1.205
SB2361.	88.2	355.0	.764	.685	3.96	100.	10.74	12.80	.65	.051	1.192
SB2360.	88.2	355.0	.831	.685	3.86	119.	10.74	12.15	.78	.064	1.132
SB2359.	88.2	355.0	.897	.685	3.78	105.	10.74	11.63	.69	.059	1.083
SB2358.	88.2	355.0	.964	.685	3.72	86.	10.74	11.23	.56	.050	1.046
SB2357.	88.2	355.0	1.030	.685	3.73	80.	10.74	11.30	.52	.046	1.053
SB2356.	88.2	355.0	1.097	.685	3.78	90.	10.74	11.63	.59	.051	1.083
SB2355.	88.2	355.0	1.164	.685	3.85	99.	10.74	12.08	.65	.054	1.126
SB2354.	88.2	355.0	1.230	.685	3.95	91.	10.74	12.74	.59	.047	1.186
SB2353.	88.2	355.0	1.297	.685	3.98	80.	10.74	12.93	.52	.040	1.205
SB2352.	88.2	355.0	1.363	.685	3.92	97.	10.74	12.54	.63	.051	1.168
SB2351.	88.2	355.0	1.430	.685	3.84	98.	10.74	12.02	.64	.053	1.119
SB2350.	88.2	355.0	1.497	.685	3.79	82.	10.74	11.69	.54	.046	1.089
SB2349.	88.2	355.0	1.563	.685	3.79	80.	10.74	11.69	.52	.045	1.089
SB2348.	88.2	355.0	1.630	.685	3.84	92.	10.74	12.02	.60	.050	1.119
SB2347.	88.2	355.0	1.696	.685	3.91	99.	10.74	12.48	.65	.052	1.162
SB2346.	88.2	355.0	1.763	.685	3.98	91.	10.74	12.93	.59	.046	1.205
SB2345.	88.2	355.0	1.830	.685	3.97	93.	10.74	12.87	.61	.047	1.199
SB2344.	88.2	355.0	1.896	.685	3.87	110.	10.74	12.21	.72	.059	1.138
SB2343.	88.2	355.0	1.963	.685	3.77	102.	10.74	11.56	.67	.058	1.077
SB2342.	88.2	355.0	2.029	.685	3.70	85.	10.74	11.10	.56	.050	1.034
SB2341.	88.2	355.0	2.096	.685	3.68	79.	10.74	10.97	.52	.047	1.022
SB2340.	88.2	355.0	2.163	.685	3.74	96.	10.74	11.36	.63	.055	1.059
SB2339.	88.2	355.0	2.229	.685	3.84	10.	10.74	12.02	.07	.005	1.119
SB2338.	88.2	355.0	2.296	.685	3.96	99.	10.74	12.80	.65	.051	1.192
SB2373.	88.2	355.0	.298	.110	3.77	272.	10.74	11.56	1.78	.154	1.077
SB2372.	88.2	355.0	.697	.110	3.92	118.	10.74	12.54	.77	.061	1.168
SB2371.	88.2	355.0	1.230	.110	3.95	113.	10.74	12.74	.74	.058	1.186
SB2370.	88.2	355.0	1.763	.110	3.99	110.	10.74	13.00	.72	.055	1.211
SB2389.	88.1	356.0	.298	1.224	3.88	107.	10.77	12.28	.70	.057	1.141
SB2388.	88.1	356.0	.431	1.224	3.72	90.	10.77	11.23	.59	.052	1.044
SB2387.	88.1	356.0	.564	1.224	3.72	84.	10.77	11.23	.55	.049	1.044
SB2386.	88.1	356.0	.697	1.224	3.68	101.	10.77	12.28	.66	.054	1.141
SB2385.	88.1	356.0	.831	1.224	4.02	76.	10.77	13.19	.50	.038	1.226
SB2384.	88.1	356.0	.964	1.224	3.91	100.	10.77	12.48	.65	.052	1.159
SB2383.	88.1	356.0	1.097	1.224	3.80	85.	10.77	11.76	.56	.047	1.092
SB2382.	88.1	356.0	1.230	1.224	3.83	62.	10.77	11.95	.40	.034	1.110
SB2381.	88.1	356.0	1.363	1.224	3.82	81.	10.74	11.89	.53	.045	1.107
SB2380.	88.1	356.0	1.497	1.224	3.73	123.	10.74	11.30	.80	.071	1.053
SB2379.	88.1	356.0	1.630	1.224	3.64	119.	10.74	10.71	.78	.073	.998

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U (LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2378.	88.1	356.0	1.763	1.224	3.69	110.	10.74	11.04	.72	.065	1.028
SB2377.	88.1	356.0	1.896	1.224	3.69	119.	10.74	11.04	.78	.070	1.028
SB2376.	88.1	356.0	2.029	1.224	3.64	118.	10.74	10.71	.77	.072	.998
SB2375.	88.1	356.0	2.163	1.224	3.62	121.	10.74	10.58	.79	.075	.986
SB2374.	88.1	356.0	2.296	1.224	3.63	119.	10.74	10.55	.78	.073	.992
SB2390.	88.1	356.0	.831	1.174	3.90	103.	10.77	12.41	.67	.054	1.153
SB2391.	88.1	356.0	.964	1.174	3.69	168.	10.77	11.04	1.10	.099	1.025
SB2392.	88.1	356.0	1.097	1.174	3.60	163.	10.77	10.45	1.06	.102	.971
SB2393.	88.1	356.0	1.230	1.174	3.74	93.	10.77	11.36	.61	.053	1.056
SB2394.	88.1	356.0	1.363	1.174	3.73	119.	10.77	11.30	.78	.069	1.050
SB2395.	88.1	356.0	1.497	1.174	3.63	144.	10.77	10.65	.94	.088	.989
SB2396.	88.1	356.0	1.630	1.174	3.63	121.	10.77	10.65	.79	.074	.989
SB2397.	88.1	356.0	1.763	1.174	3.68	108.	10.77	10.97	.71	.064	1.019
SB2398.	88.1	356.0	1.896	1.174	3.69	120.	10.77	11.04	.78	.071	1.025
SB2399.	88.1	356.0	2.029	1.174	3.60	119.	10.77	10.45	.78	.074	.971
SB2400.	88.1	356.0	2.163	1.174	3.60	116.	10.77	10.45	.76	.073	.971
SB2411.	88.1	356.0	.831	1.274	3.92	119.	10.77	12.54	.78	.062	1.165
SB2410.	88.1	356.0	.964	1.274	3.61	142.	10.77	10.52	.93	.088	.977
SB2409.	88.1	356.0	1.097	1.274	3.65	122.	10.77	10.78	.80	.074	1.001
SB2408.	88.1	356.0	1.230	1.274	3.84	70.	10.77	12.02	.46	.038	1.116
SB2407.	88.1	356.0	1.363	1.274	3.83	88.	10.77	11.95	.57	.048	1.110
SB2406.	88.1	356.0	1.497	1.274	3.53	181.	10.77	9.99	1.18	.118	.928
SB2405.	88.1	356.0	1.630	1.274	3.40	181.	10.77	9.14	1.18	.129	.849
SB2404.	88.1	356.0	1.763	1.274	3.66	139.	10.77	10.84	.91	.084	1.007
SB2403.	88.1	356.0	1.896	1.274	3.66	138.	10.77	10.84	.90	.083	1.007
SB2402.	88.1	356.0	2.029	1.274	3.47	159.	10.77	9.60	1.04	.108	.892
SB2401.	88.1	356.0	2.163	1.274	3.46	155.	10.77	9.56	1.01	.106	.886
SB2426.	88.1	356.0	.298	1.763	3.92	103.	10.77	12.54	.67	.054	1.165
SB2425.	88.1	356.0	.431	1.763	3.79	94.	10.77	11.69	.61	.053	1.086
SB2424.	88.1	356.0	.564	1.763	3.78	86.	10.77	11.63	.56	.048	1.080
SB2423.	88.1	356.0	.697	1.763	3.92	93.	10.77	12.54	.61	.048	1.165
SB2422.	88.1	356.0	.831	1.763	4.03	84.	10.77	13.26	.55	.041	1.232
SB2421.	88.1	356.0	.964	1.763	3.89	180.	10.77	12.34	1.18	.095	1.147
SB2420.	88.1	356.0	1.097	1.763	3.71	115.	10.77	11.17	.75	.067	1.037
SB2419.	88.1	356.0	1.230	1.763	3.70	100.	10.77	11.10	.63	.059	1.031
SB2418.	88.1	356.0	1.363	1.763	3.69	127.	10.77	11.04	.83	.075	1.025
SB2417.	88.1	356.0	1.497	1.763	3.58	174.	10.77	10.32	1.14	.110	.959
SB2416.	88.1	356.0	1.630	1.763	3.39	173.	10.77	9.08	1.13	.124	.843
SB2415.	88.1	356.0	1.763	1.763	3.36	126.	10.77	8.88	.82	.093	.825
SB2414.	88.1	356.0	1.896	1.763	3.33	120.	10.77	8.69	.78	.090	.807
SB2413.	88.1	356.0	2.029	1.763	3.34	123.	10.77	8.75	.80	.092	.813
SB2412.	88.1	356.0	2.163	1.763	3.33	124.	10.77	8.69	.81	.093	.807
SB2427.	88.1	356.0	.831	1.713	3.92	135.	10.77	12.54	.88	.070	1.165
SB2428.	88.1	356.0	.964	1.713	3.69	150.	10.77	11.04	1.03	.093	1.025
SB2429.	88.1	356.0	1.097	1.713	3.61	140.	10.77	10.52	.91	.087	.977
SB2430.	88.1	356.0	1.230	1.713	3.67	112.	10.77	10.91	.73	.067	1.013
SB2431.	88.1	356.0	1.363	1.713	3.67	145.	10.77	10.91	.95	.087	1.013
SB2432.	88.1	356.0	1.497	1.713	3.51	167.	10.77	9.86	1.09	.111	.916
SB2433.	88.1	356.0	1.630	1.713	3.39	146.	10.77	9.88	.95	.105	.843

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2434.	88.1	356.0	1.763	1.713	3.36	125.	10.77	8.88	.82	.092	.825
SB2435.	88.1	356.0	1.896	1.713	3.33	135.	10.77	8.69	.88	.102	.807
SB2436.	88.1	356.0	2.029	1.713	3.27	131.	10.77	8.30	.86	.103	.770
SB2437.	88.1	356.0	2.163	1.713	3.27	120.	10.77	8.30	.78	.094	.770
SB2448.	88.1	356.0	.831	1.813	3.98	102.	10.77	12.93	.67	.052	1.201
SB2447.	88.1	356.0	.964	1.813	3.67	159.	10.77	10.91	1.04	.095	1.013
SB2446.	88.1	356.0	1.097	1.813	3.58	144.	10.77	10.32	.94	.091	.959
SB2445.	88.1	356.0	1.230	1.813	3.67	113.	10.77	10.91	.74	.068	1.013
SB2444.	88.1	356.0	1.363	1.813	3.69	130.	10.77	11.04	.85	.077	1.025
SB2443.	88.1	356.0	1.497	1.813	3.49	188.	10.77	9.73	1.23	.126	.904
SB2442.	88.1	356.0	1.630	1.813	3.39	162.	10.77	9.08	1.06	.117	.843
SB2441.	88.1	356.0	1.763	1.813	3.37	131.	10.77	8.95	.86	.096	.831
SB2440.	88.1	356.0	1.896	1.813	3.35	120.	10.77	8.82	.78	.089	.819
SB2439.	88.1	356.0	2.029	1.813	3.27	155.	10.77	8.30	1.01	.122	.770
SB2438.	88.1	356.0	2.163	1.813	3.20	160.	10.77	7.84	1.05	.133	.728

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 6, AXIAL DISTANCE=34.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=22.00 PSI RE= 58200.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2479.	88.1	355.0	.298	.689	3.65	214.	10.74	10.78	1.40	.130	1.004
SB2478.	88.1	355.0	.364	.689	3.61	151.	10.74	10.52	.99	.094	.980
SB2477.	88.1	355.0	.431	.689	3.59	146.	10.74	10.39	.95	.092	.967
SB2476.	88.1	355.0	.498	.689	3.63	137.	10.74	10.65	.89	.084	.992
SB2475.	88.1	355.0	.564	.689	3.71	136.	10.74	11.17	.89	.080	1.040
SB2474.	88.1	355.0	.631	.689	3.74	132.	10.74	11.36	.86	.076	1.059
SB2473.	88.1	355.0	.697	.689	3.75	127.	10.74	11.43	.83	.073	1.065
SB2472.	88.1	355.0	.764	.689	3.75	125.	10.74	11.43	.82	.071	1.065
SB2471.	88.1	355.0	.831	.689	3.73	124.	10.74	11.30	.81	.072	1.053
SB2470.	88.1	355.0	.897	.689	3.72	122.	10.74	11.23	.80	.071	1.046
SB2469.	88.1	355.0	.964	.689	3.72	122.	10.74	11.23	.80	.071	1.046
SB2468.	88.1	355.0	1.030	.689	3.72	127.	10.74	11.23	.83	.074	1.046
SB2467.	88.1	355.0	1.097	.689	3.74	122.	10.74	11.36	.80	.070	1.059
SB2466.	88.1	355.0	1.164	.689	3.76	123.	10.74	11.50	.80	.070	1.071
SB2465.	88.1	355.0	1.230	.689	3.76	125.	10.74	11.50	.82	.071	1.071
SB2464.	88.1	355.0	1.297	.689	3.74	124.	10.74	11.36	.81	.071	1.059
SB2463.	88.1	355.0	1.363	.689	3.72	126.	10.74	11.23	.82	.073	1.046
SB2462.	88.1	355.0	1.430	.689	3.70	124.	10.74	11.10	.81	.073	1.034
SB2461.	88.1	355.0	1.497	.689	3.69	126.	10.74	11.04	.82	.075	1.028
SB2460.	88.1	355.0	1.563	.689	3.70	123.	10.74	11.10	.80	.072	1.034
SB2459.	88.1	355.0	1.630	.689	3.71	121.	10.74	11.17	.79	.071	1.040
SB2458.	88.1	355.0	1.696	.689	3.73	121.	10.74	11.30	.79	.070	1.053
SB2457.	88.1	355.0	1.763	.689	3.73	119.	10.74	11.30	.78	.069	1.053
SB2456.	88.1	355.0	1.830	.689	3.72	117.	10.74	11.23	.76	.068	1.046
SB2455.	88.1	355.0	1.896	.689	3.71	118.	10.74	11.17	.77	.069	1.040
SB2454.	88.1	355.0	1.963	.689	3.68	119.	10.74	10.97	.78	.071	1.022
SB2453.	88.1	355.0	2.029	.689	3.66	116.	10.74	10.84	.76	.070	1.010
SB2452.	88.1	355.0	2.096	.689	3.65	114.	10.74	10.78	.74	.069	1.004
SB2451.	88.1	355.0	2.163	.689	3.65	117.	10.74	10.78	.76	.071	1.004
SB2450.	88.1	355.0	2.229	.689	3.69	119.	10.74	11.04	.78	.070	1.028
SB2449.	88.1	355.0	2.296	.689	3.71	119.	10.74	11.17	.78	.070	1.040
SB2483.	88.1	355.0	.298	.110	3.76	300.	10.74	11.50	1.96	.170	1.071
SB2482.	88.1	355.0	.697	.110	3.92	155.	10.74	12.54	1.01	.081	1.168
SB2481.	88.1	355.0	1.230	.110	4.02	130.	10.74	13.19	.85	.064	1.229
SB2480.	88.1	355.0	1.763	.110	3.87	135.	10.74	12.21	.88	.072	1.138
SB2498.	88.1	355.0	.431	1.224	3.66	280.	10.74	10.84	1.83	.169	1.010
SB2497.	88.1	355.0	.564	1.224	3.66	128.	10.74	10.84	.84	.077	1.010
SB2496.	88.1	355.0	.697	1.224	3.69	125.	10.74	11.04	.82	.074	1.028
SB2495.	88.1	355.0	.831	1.224	3.72	128.	10.74	11.23	.84	.074	1.046
SB2494.	88.1	355.0	.964	1.224	3.73	133.	10.74	11.30	.87	.077	1.053
SB2493.	88.1	355.0	1.097	1.224	3.78	136.	10.74	11.63	.89	.076	1.083
SB2492.	88.1	355.0	1.230	1.224	3.77	136.	10.74	11.56	.89	.077	1.077
SB2491.	88.1	355.0	1.363	1.224	3.72	129.	10.74	11.23	.84	.075	1.046
SB2490.	88.1	355.0	1.497	1.224	3.66	119.	10.74	10.84	.78	.072	1.010
SB2489.	88.1	355.0	1.630	1.224	3.61	117.	10.74	10.52	.76	.073	.980
SB2488.	88.1	355.0	1.763	1.224	3.66	116.	10.74	10.84	.76	.070	1.010
SB2487.	88.1	355.0	1.896	1.224	3.66	114.	10.74	10.84	.74	.069	1.010

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2486.	88.1	355.0	2.029	1.224	3.63	117.	10.74	10.65	.76	.072	.992
SB2485.	88.1	355.0	2.163	1.224	3.67	121.	10.74	10.91	.79	.072	1.016
SB2484.	88.1	355.0	2.296	1.224	3.69	123.	10.74	11.04	.80	.073	1.028
SB2499.	88.1	355.0	.831	1.174	3.75	158.	10.74	11.43	1.03	.090	1.065
SB2500.	88.1	355.0	.964	1.174	3.75	158.	10.74	11.43	1.03	.090	1.065
SB2501.	88.1	355.0	1.097	1.174	3.71	167.	10.74	11.17	1.09	.098	1.040
SB2502.	88.1	355.0	1.230	1.174	3.71	174.	10.74	11.17	1.14	.102	1.040
SB2503.	88.1	355.0	1.363	1.174	3.68	152.	10.74	10.97	.99	.090	1.022
SB2504.	88.1	355.0	1.497	1.174	3.59	139.	10.74	10.39	.91	.087	.967
SB2505.	88.1	355.0	1.630	1.174	3.57	159.	10.74	10.25	1.04	.101	.955
SB2506.	88.1	355.0	1.763	1.174	3.62	140.	10.74	10.58	.91	.086	.986
SB2507.	88.1	355.0	1.896	1.174	3.65	132.	10.74	10.78	.86	.080	1.004
SB2508.	88.1	355.0	2.029	1.174	3.62	131.	10.74	10.58	.86	.081	.986
SB2509.	88.1	355.0	2.163	1.174	3.59	156.	10.74	10.39	1.02	.098	.967
SB2510.	88.1	355.0	2.296	1.174	3.60	158.	10.74	10.45	1.03	.099	.973
SB2522.	88.1	355.0	.831	1.274	3.69	131.	10.74	11.04	.86	.078	1.028
SB2521.	88.1	355.0	.964	1.274	3.69	129.	10.74	11.04	.84	.076	1.028
SB2520.	88.1	355.0	1.097	1.274	3.60	158.	10.74	10.45	1.03	.099	.973
SB2519.	88.1	355.0	1.230	1.274	3.65	156.	10.74	10.78	1.02	.095	1.004
SB2518.	88.1	355.0	1.363	1.274	3.71	128.	10.74	11.17	.84	.075	1.040
SB2517.	88.1	355.0	1.497	1.274	3.63	124.	10.74	10.65	.81	.076	.992
SB2516.	88.1	355.0	1.630	1.274	3.36	195.	10.74	8.88	1.27	.143	.827
SB2515.	88.1	355.0	1.763	1.274	3.51	195.	10.74	9.86	1.27	.129	.919
SB2514.	88.1	355.0	1.896	1.274	3.60	123.	10.74	10.45	.80	.077	.973
SB2513.	88.1	355.0	2.029	1.274	3.61	119.	10.74	10.52	.78	.074	.980
SB2512.	88.1	355.0	2.163	1.274	3.55	139.	10.74	10.12	.91	.090	.943
SB2511.	88.1	355.0	2.296	1.274	3.56	152.	10.74	10.19	.99	.097	.949
SB2537.	88.1	355.0	.431	1.763	3.76	400.	10.74	11.50	2.61	.227	1.071
SB2536.	88.1	355.0	.564	1.763	3.71	149.	10.74	11.17	.97	.087	1.040
SB2535.	88.1	355.0	.697	1.763	3.68	139.	10.74	10.97	.91	.083	1.022
SB2534.	88.1	355.0	.831	1.763	3.69	129.	10.74	11.04	.84	.076	1.028
SB2533.	88.1	355.0	.964	1.763	3.71	128.	10.74	11.17	.84	.075	1.040
SB2532.	88.1	355.0	1.097	1.763	3.73	128.	10.74	11.30	.84	.074	1.053
SB2531.	88.1	355.0	1.230	1.763	3.78	129.	10.74	11.63	.84	.072	1.083
SB2530.	88.1	355.0	1.363	1.763	3.73	128.	10.74	11.30	.84	.074	1.053
SB2529.	88.1	355.0	1.497	1.763	3.66	129.	10.74	10.84	.84	.078	1.010
SB2528.	88.1	355.0	1.630	1.763	3.61	126.	10.74	10.52	.82	.078	.980
SB2527.	88.1	355.0	1.763	1.763	3.56	118.	10.74	10.19	.77	.076	.949
SB2526.	88.1	355.0	1.896	1.763	3.55	116.	10.74	10.12	.76	.075	.943
SB2525.	88.1	355.0	2.029	1.763	3.58	113.	10.74	10.32	.74	.072	.961
SB2524.	88.1	355.0	2.163	1.763	3.58	112.	10.74	10.32	.73	.071	.961
SB2523.	88.1	355.0	2.296	1.763	3.59	107.	10.74	10.39	.70	.067	.967
SB2538.	88.1	355.0	.831	1.713	3.74	163.	10.74	11.36	1.06	.094	1.059
SB2539.	88.1	355.0	.964	1.713	3.73	157.	10.74	11.30	1.03	.091	1.053
SB2540.	88.1	355.0	1.097	1.713	3.68	179.	10.74	10.97	1.17	.107	1.022
SB2541.	88.1	355.0	1.230	1.713	3.65	160.	10.74	10.78	1.05	.097	1.004
SB2542.	88.1	355.0	1.363	1.713	3.71	144.	10.74	11.17	.94	.084	1.040
SB2543.	88.1	355.0	1.497	1.713	3.66	147.	10.74	10.84	.96	.089	1.010
SB2544.	88.1	355.0	1.630	1.713	3.57	148.	10.74	10.25	.97	.094	.955

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2545.	88.1	355.0	1.763	1.713	3.52	144.	10.74	9.93	.94	.095	.925
SB2546.	88.1	355.0	1.898	1.713	3.54	127.	10.74	10.06	.83	.082	.937
SB2547.	88.1	355.0	2.029	1.713	3.52	139.	10.74	9.93	.91	.091	.925
SB2548.	88.1	355.0	2.163	1.713	3.45	149.	10.74	9.47	.97	.103	.882
SB2549.	88.1	355.0	2.296	1.713	3.50	136.	10.74	9.80	.89	.091	.913
SB2551.	88.1	355.0	.831	1.813	3.66	126.	10.74	10.84	.82	.076	1.010
SB2550.	88.1	355.0	.964	1.813	3.68	128.	10.74	10.97	.84	.076	1.022
SB2559.	88.1	355.0	1.097	1.813	3.58	164.	10.74	10.32	1.07	.104	.961
SB2558.	88.1	355.0	1.230	1.813	3.63	154.	10.74	10.65	1.01	.094	.992
SB2557.	88.1	355.0	1.363	1.813	3.68	124.	10.74	10.97	.81	.074	1.022
SB2556.	88.1	355.0	1.497	1.813	3.62	124.	10.74	10.58	.81	.077	.986
SB2555.	88.1	355.0	1.630	1.813	3.50	145.	10.74	9.80	.95	.097	.913
SB2554.	88.1	355.0	1.763	1.813	3.47	129.	10.74	9.60	.84	.088	.894
SB2553.	88.1	355.0	1.898	1.813	3.52	114.	10.74	9.93	.74	.075	.925
SB2552.	88.1	355.0	2.029	1.813	3.54	113.	10.74	10.06	.74	.073	.937
SB2551.	88.1	355.0	2.163	1.813	3.51	134.	10.74	9.86	.88	.089	.919
SB2550.	88.1	355.0	2.296	1.813	3.49	137.	10.74	9.73	.89	.092	.907

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 6, AXIAL DISTANCE=39.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=22.00 PSI RE= 13900.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E BVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2616.	84.2	88.5	.968	.685	2.40	63.	2.68	2.61	.41	.158	.976
SB2615.	84.2	88.5	.901	.685	2.41	31.	2.68	2.68	.20	.076	1.001
SB2614.	84.2	88.5	.834	.685	2.42	33.	2.68	2.74	.22	.079	1.025
SB2613.	84.2	88.5	.768	.685	2.42	33.	2.68	2.74	.22	.079	1.025
SB2612.	84.2	88.5	.701	.685	2.44	33.	2.68	2.87	.22	.075	1.074
SB2611.	84.2	88.5	.635	.685	2.44	32.	2.68	2.87	.21	.073	1.074
SB2610.	84.2	88.5	.568	.685	2.44	30.	2.68	2.87	.20	.068	1.074
SB2609.	84.2	88.5	.501	.685	2.44	31.	2.68	2.87	.20	.070	1.074
SB2608.	84.2	88.5	.435	.685	2.44	30.	2.68	2.87	.20	.068	1.074
SB2607.	84.2	88.5	.368	.685	2.44	30.	2.68	2.87	.20	.068	1.074
SB2584.	84.2	88.5	.302	.685	2.46	31.	2.70	3.00	.20	.067	1.114
SB2606.	84.2	88.5	.235	.685	2.44	31.	2.68	2.87	.20	.070	1.074
SB2583.	84.2	88.5	.168	.685	2.46	32.	2.70	3.00	.21	.070	1.114
SB2605.	84.2	88.5	.102	.685	2.44	34.	2.68	2.87	.22	.077	1.074
SB2582.	84.2	88.5	.035	.685	2.47	34.	2.70	3.07	.22	.072	1.138
SB2604.	84.2	88.5	.031	.685	2.44	35.	2.68	2.87	.23	.080	1.074
SB2581.	84.2	88.5	.098	.685	2.47	35.	2.70	3.07	.23	.074	1.138
SB2603.	84.2	88.5	.165	.685	2.44	35.	2.68	2.87	.23	.080	1.074
SB2580.	84.2	88.5	.231	.685	2.47	35.	2.70	3.07	.23	.074	1.138
SB2602.	84.2	89.5	.298	.685	2.44	36.	2.68	2.87	.24	.082	1.074
SB2579.	84.2	88.5	.364	.685	2.47	34.	2.70	3.07	.22	.072	1.138
SB2601.	84.2	88.5	.431	.685	2.44	34.	2.68	2.87	.22	.077	1.074
SB2578.	84.2	88.5	.498	.685	2.47	34.	2.70	3.07	.22	.072	1.138
SB2600.	84.2	88.5	.564	.685	2.44	33.	2.68	2.87	.22	.075	1.074
SB2577.	84.2	88.5	.631	.685	2.47	33.	2.70	3.07	.22	.070	1.138
SB2599.	84.2	88.5	.697	.685	2.44	32.	2.68	2.87	.21	.073	1.074
SB2576.	84.2	88.5	.764	.685	2.46	33.	2.70	3.00	.22	.072	1.114
SB2598.	84.2	88.5	.831	.685	2.44	33.	2.68	2.87	.22	.075	1.074
SB2575.	84.2	88.5	.897	.685	2.47	33.	2.70	3.07	.22	.070	1.138
SB2597.	84.2	88.5	.964	.685	2.43	33.	2.68	2.81	.22	.077	1.049
SB2574.	84.2	88.5	1.030	.685	2.46	33.	2.70	3.00	.22	.072	1.114
SB2596.	84.2	88.5	1.097	.685	2.43	32.	2.68	2.81	.21	.074	1.049
SB2573.	84.2	88.5	1.164	.685	2.46	33.	2.70	3.00	.22	.072	1.114
SB2595.	84.2	88.5	1.230	.685	2.43	32.	2.68	2.81	.21	.074	1.049
SB2572.	84.2	88.5	1.297	.685	2.47	32.	2.70	3.07	.21	.068	1.138
SB2594.	84.2	88.5	1.363	.685	2.44	32.	2.68	2.87	.21	.073	1.074
SB2571.	84.2	88.5	1.430	.685	2.47	31.	2.70	3.07	.20	.066	1.138
SB2593.	84.2	88.5	1.497	.685	2.44	31.	2.68	2.87	.20	.070	1.074
SB2570.	84.2	88.5	1.563	.685	2.47	31.	2.70	3.07	.20	.066	1.138
SB2592.	84.2	88.5	1.630	.685	2.44	31.	2.68	2.87	.20	.070	1.074
SB2569.	84.2	88.5	1.696	.685	2.46	31.	2.70	3.00	.20	.067	1.114
SB2591.	84.2	88.5	1.763	.685	2.43	31.	2.68	2.81	.20	.072	1.049
SB2568.	84.2	88.5	1.830	.685	2.45	31.	2.70	2.94	.20	.069	1.090
SB2590.	84.2	88.5	1.896	.685	2.41	31.	2.68	2.68	.20	.076	1.001
SB2567.	84.2	88.5	1.963	.685	2.45	31.	2.70	2.94	.20	.069	1.090
SB2566.	84.2	88.5	2.029	.685	2.44	32.	2.70	2.87	.21	.073	1.065
SB2589.	84.2	88.5	2.096	.685	2.40	30.	2.68	2.61	.20	.075	.976
SB2588.	84.2	88.5	2.163	.685	2.40	31.	2.68	2.61	.20	.078	.976
SB2565.	84.2	88.5	2.229	.685	2.44	32.	2.70	2.87	.21	.073	1.065
SB2587.	84.2	88.5	2.296	.685	2.41	33.	2.68	2.68	.22	.080	1.001
SB2564.	84.2	88.5	2.362	.685	2.45	33.	2.70	2.94	.22	.073	1.090

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	U(FLUC) FPS	TURB.	VRATIO
SB2586.	84.2	88.5	2.429	.689	2.42	33.	2.68	2.74	.22	.079	1.025
SB2563.	84.2	88.5	2.498	.685	2.46	33.	2.70	3.00	.22	.072	1.114
SB2585.	84.2	88.5	2.562	.689	2.43	32.	2.68	2.81	.21	.074	1.049
SB2562.	84.2	88.5	2.629	.689	2.47	32.	2.70	3.07	.21	.068	1.138
SB2648.	84.2	88.5	.098	.110	2.43	95.	2.68	2.81	.62	.221	1.049
SB2647.	84.2	88.5	.165	.110	2.47	38.	2.68	3.07	.25	.081	1.147
SB2646.	84.2	88.5	.231	.110	2.47	31.	2.68	3.07	.20	.066	1.147
SB2645.	84.2	88.5	.298	.110	2.48	32.	2.68	3.14	.21	.067	1.171
SB2644.	84.2	88.5	.364	.110	2.47	34.	2.68	3.07	.22	.072	1.147
SB2643.	84.2	88.5	.431	.110	2.47	37.	2.68	3.07	.24	.079	1.147
SB2642.	84.2	88.5	.498	.110	2.46	39.	2.68	3.00	.25	.083	1.123
SB2641.	84.2	88.5	.564	.110	2.46	37.	2.68	3.00	.24	.080	1.123
SB2640.	84.2	88.5	.631	.110	2.46	34.	2.68	3.00	.22	.074	1.123
SB2639.	84.2	88.5	.697	.110	2.47	31.	2.68	3.07	.20	.066	1.147
SB2638.	84.2	88.5	.764	.110	2.49	29.	2.68	3.20	.19	.059	1.196
SB2637.	84.2	88.5	.831	.110	2.50	29.	2.68	3.27	.19	.058	1.220
SB2636.	84.2	88.5	.897	.110	2.51	28.	2.68	3.33	.18	.055	1.245
SB2635.	84.2	88.5	.964	.110	2.51	30.	2.68	3.33	.20	.059	1.245
SB2634.	84.2	88.5	1.030	.110	2.51	32.	2.68	3.33	.21	.063	1.245
SB2633.	84.2	88.5	1.097	.110	2.51	34.	2.68	3.33	.22	.067	1.245
SB2632.	84.2	88.5	1.164	.110	2.49	33.	2.68	3.20	.22	.067	1.196
SB2631.	84.2	88.5	1.230	.110	2.47	30.	2.68	3.07	.20	.064	1.147
SB2630.	84.2	88.5	1.297	.110	2.47	32.	2.68	3.07	.21	.068	1.147
SB2629.	84.2	88.5	1.363	.110	2.47	35.	2.68	3.07	.23	.074	1.147
SB2628.	84.2	88.5	1.430	.110	2.46	37.	2.68	3.00	.24	.080	1.123
SB2627.	84.2	88.5	1.497	.110	2.46	36.	2.68	3.00	.24	.078	1.123
SB2626.	84.2	88.5	1.563	.110	2.47	34.	2.68	3.07	.22	.072	1.147
SB2625.	84.2	88.5	1.630	.110	2.48	31.	2.68	3.14	.20	.065	1.171
SB2624.	84.2	88.5	1.696	.110	2.47	29.	2.68	3.07	.19	.062	1.147
SB2623.	84.2	88.5	1.763	.110	2.47	28.	2.68	3.07	.18	.060	1.147
SB2622.	84.2	88.5	1.830	.110	2.48	28.	2.68	3.14	.18	.058	1.171
SB2621.	84.2	88.5	1.898	.110	2.49	31.	2.68	3.20	.20	.063	1.196
SB2620.	84.2	88.5	1.963	.110	2.51	30.	2.68	3.33	.20	.059	1.245
SB2619.	84.2	88.5	2.029	.110	2.52	30.	2.68	3.40	.20	.058	1.269
SB2618.	84.2	88.5	2.096	.110	2.52	31.	2.68	3.40	.20	.060	1.269
SB2617.	84.2	88.5	2.163	.110	2.51	33.	2.68	3.33	.22	.065	1.245
SB2680.	84.2	88.5	.098	1.224	2.23	151.	2.68	1.50	.99	.657	.561
SB2679.	84.2	88.5	.165	1.224	2.30	165.	2.68	1.96	1.08	.550	.732
SB2678.	84.2	88.5	.231	1.224	2.39	95.	2.68	2.55	.62	.244	.952
SB2677.	84.2	88.5	.298	1.224	2.41	44.	2.68	2.68	.29	.107	1.001
SB2676.	84.2	88.5	.364	1.224	2.41	33.	2.68	2.68	.22	.080	1.001
SB2675.	84.2	88.5	.431	1.224	2.41	32.	2.68	2.68	.21	.078	1.001
SB2674.	84.2	88.5	.498	1.224	2.42	31.	2.68	2.74	.20	.074	1.025
SB2673.	84.2	88.5	.564	1.224	2.43	31.	2.68	2.81	.20	.072	1.049
SB2672.	84.2	88.5	.631	1.224	2.44	30.	2.68	2.87	.20	.068	1.074
SB2671.	84.2	88.5	.697	1.224	2.44	31.	2.68	2.87	.20	.070	1.074
SB2670.	84.2	88.5	.764	1.224	2.45	31.	2.68	2.94	.20	.069	1.098
SB2669.	84.2	88.5	.831	1.224	2.46	33.	2.68	3.00	.22	.072	1.123
SB2668.	84.2	88.5	.897	1.224	2.46	33.	2.68	3.00	.22	.072	1.123
SB2667.	84.2	88.5	.964	1.224	2.46	34.	2.68	3.00	.22	.074	1.123
SB2666.	84.2	88.5	1.030	1.224	2.45	34.	2.68	2.94	.22	.076	1.098
SB2665.	84.2	88.5	1.097	1.224	2.44	34.	2.68	2.87	.22	.077	1.074
SB2664.	84.2	88.5	1.164	1.224	2.43	33.	2.68	2.81	.22	.077	1.049

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E BVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2663.	84.2	88.5	1.230	1.224	2.42	33.	2.68	2.74	.22	.079	1.025
SB2662.	84.2	88.5	1.297	1.224	2.40	32.	2.68	2.61	.21	.080	.976
SB2661.	84.2	88.5	1.363	1.224	2.39	30.	2.68	2.55	.20	.077	.952
SB2660.	84.2	88.5	1.430	1.224	2.38	31.	2.68	2.48	.20	.082	.927
SB2659.	84.2	88.5	1.497	1.224	2.39	31.	2.68	2.55	.20	.079	.952
SB2658.	84.2	88.5	1.563	1.224	2.39	31.	2.68	2.55	.20	.079	.952
SB2657.	84.2	88.5	1.630	1.224	2.40	29.	2.68	2.61	.19	.073	.976
SB2656.	84.2	88.5	1.698	1.224	2.41	28.	2.68	2.68	.18	.068	1.001
SB2655.	84.2	88.5	1.763	1.224	2.42	29.	2.68	2.74	.19	.069	1.025
SB2654.	84.2	88.5	1.830	1.224	2.42	29.	2.68	2.74	.19	.069	1.025
SB2653.	84.2	88.5	1.896	1.224	2.42	30.	2.68	2.74	.20	.071	1.025
SB2652.	84.2	88.5	1.963	1.224	2.42	30.	2.68	2.74	.20	.071	1.025
SB2651.	84.2	88.5	2.029	1.224	2.42	30.	2.68	2.74	.20	.071	1.025
SB2650.	84.2	88.5	2.096	1.224	2.42	30.	2.68	2.74	.20	.071	1.025
SB2649.	84.2	88.5	2.163	1.224	2.42	31.	2.68	2.74	.20	.074	1.025
SB2700.	84.2	88.5	.897	1.174	2.43	47.	2.68	2.81	.31	.109	1.049
SB2699.	84.2	88.5	.964	1.174	2.44	44.	2.68	2.87	.29	.100	1.074
SB2698.	84.2	88.5	1.030	1.174	2.44	43.	2.68	2.87	.28	.098	1.074
SB2697.	84.2	88.5	1.097	1.174	2.43	38.	2.68	2.81	.25	.088	1.049
SB2696.	84.2	88.5	1.164	1.174	2.42	38.	2.68	2.74	.25	.090	1.025
SB2695.	84.2	88.5	1.230	1.174	2.41	31.	2.68	2.68	.20	.076	1.001
SB2694.	84.2	88.5	1.297	1.174	2.39	34.	2.68	2.55	.22	.087	.952
SB2693.	84.2	88.5	1.363	1.174	2.37	49.	2.68	2.42	.32	.132	.903
SB2692.	84.2	88.5	1.430	1.174	2.35	59.	2.68	2.29	.39	.169	.854
SB2691.	84.2	88.5	1.497	1.174	2.36	49.	2.68	2.35	.32	.136	.879
SB2690.	84.2	88.5	1.563	1.174	2.38	39.	2.68	2.48	.25	.103	.927
SB2689.	84.2	88.5	1.630	1.174	2.41	33.	2.68	2.68	.22	.080	1.001
SB2688.	84.2	88.5	1.698	1.174	2.41	30.	2.68	2.68	.20	.073	1.001
SB2687.	84.2	88.5	1.763	1.174	2.41	30.	2.68	2.68	.20	.073	1.001
SB2686.	84.2	88.5	1.830	1.174	2.41	34.	2.68	2.68	.22	.083	1.001
SB2685.	84.2	88.5	1.896	1.174	2.40	34.	2.68	2.61	.22	.085	.976
SB2684.	84.2	88.5	1.963	1.174	2.39	40.	2.68	2.55	.26	.103	.952
SB2683.	84.2	88.5	2.029	1.174	2.39	41.	2.68	2.55	.27	.105	.952
SB2682.	84.2	88.5	2.096	1.174	2.40	39.	2.68	2.61	.25	.098	.976
SB2681.	84.2	88.5	2.163	1.174	2.41	34.	2.68	2.68	.22	.083	1.001
SB2701.	84.2	88.5	.897	1.274	2.42	47.	2.68	2.74	.31	.112	1.025
SB2702.	84.2	88.5	.964	1.274	2.42	49.	2.68	2.74	.32	.117	1.025
SB2703.	84.2	88.5	1.030	1.274	2.43	40.	2.68	2.81	.26	.093	1.049
SB2704.	84.2	88.5	1.097	1.274	2.44	34.	2.68	2.87	.22	.077	1.074
SB2705.	84.2	88.5	1.164	1.274	2.43	33.	2.68	2.81	.22	.077	1.049
SB2706.	84.2	88.5	1.230	1.274	2.42	33.	2.68	2.74	.22	.079	1.025
SB2707.	84.2	88.5	1.297	1.274	2.40	35.	2.68	2.61	.23	.088	.976
SB2708.	84.2	88.5	1.363	1.274	2.40	35.	2.68	2.61	.23	.088	.976
SB2709.	84.2	88.5	1.430	1.274	2.37	42.	2.68	2.42	.27	.114	.903
SB2710.	84.2	88.5	1.497	1.274	2.31	57.	2.68	2.02	.37	.184	.757
SB2711.	84.2	88.5	1.563	1.274	2.34	53.	2.68	2.22	.35	.156	.830
SB2712.	84.2	88.5	1.630	1.274	2.38	37.	2.68	2.48	.24	.097	.927
SB2713.	84.2	88.5	1.698	1.274	2.40	30.	2.68	2.61	.20	.075	.976
SB2714.	84.2	88.5	1.763	1.274	2.41	28.	2.68	2.58	.18	.068	1.001
SB2715.	84.2	88.5	1.830	1.274	2.41	29.	2.68	2.68	.19	.071	1.001
SB2716.	84.2	88.5	1.896	1.274	2.40	32.	2.68	2.61	.21	.080	.976
SB2717.	84.2	88.5	1.963	1.274	2.38	42.	2.68	2.48	.27	.111	.927
SB2718.	84.2	88.5	2.029	1.274	2.38	46.	2.68	2.48	.30	.121	.927

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(OOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2719.	84.2	88.5	2.098	1.274	2.40	41.	2.68	2.61	.27	.103	.976
SB2720.	84.2	88.5	2.163	1.274	2.41	33.	2.68	2.68	.22	.080	1.001
SB2751.	84.2	88.5	.165	1.769	2.20	179.	2.68	1.31	1.17	.895	.488
SB2750.	84.2	88.5	.231	1.768	2.39	119.	2.68	2.55	.78	.305	.952
SB2749.	84.2	88.5	.298	1.763	2.45	59.	2.68	2.94	.39	.131	1.098
SB2748.	84.2	88.5	.364	1.763	2.45	39.	2.68	2.94	.25	.087	1.098
SB2747.	84.2	88.5	.431	1.763	2.44	34.	2.68	2.87	.22	.077	1.074
SB2746.	84.2	88.5	.498	1.763	2.44	33.	2.68	2.87	.22	.075	1.074
SB2745.	84.2	88.5	.564	1.763	2.44	32.	2.68	2.87	.21	.073	1.074
SB2744.	84.2	88.5	.631	1.763	2.44	31.	2.68	2.87	.20	.070	1.074
SB2743.	84.2	88.5	.697	1.769	2.43	31.	2.68	2.81	.20	.072	1.049
SB2742.	84.2	88.5	.764	1.763	2.43	32.	2.68	2.81	.21	.074	1.049
SB2741.	84.2	88.5	.831	1.763	2.43	32.	2.68	2.81	.21	.074	1.049
SB2740.	84.2	88.5	.897	1.763	2.43	32.	2.68	2.81	.21	.074	1.049
SB2739.	84.2	88.5	.964	1.763	2.43	31.	2.68	2.81	.20	.072	1.049
SB2738.	84.2	88.5	1.030	1.763	2.43	32.	2.68	2.81	.21	.074	1.049
SB2737.	84.2	88.5	1.097	1.763	2.43	31.	2.68	2.81	.20	.072	1.049
SB2736.	84.2	88.5	1.164	1.763	2.43	31.	2.68	2.81	.20	.072	1.049
SB2735.	84.2	88.5	1.230	1.763	2.42	30.	2.68	2.74	.20	.071	1.025
SB2734.	84.2	88.5	1.297	1.763	2.42	31.	2.68	2.74	.20	.074	1.025
SB2733.	84.2	88.5	1.363	1.763	2.41	30.	2.68	2.68	.20	.073	1.001
SB2732.	84.2	88.5	1.430	1.763	2.40	30.	2.68	2.61	.20	.075	.976
SB2731.	84.2	88.5	1.497	1.763	2.40	30.	2.68	2.61	.20	.075	.976
SB2730.	84.2	88.5	1.563	1.763	2.40	29.	2.68	2.61	.19	.073	.976
SB2729.	84.2	88.5	1.630	1.763	2.40	28.	2.68	2.61	.18	.070	.976
SB2728.	84.2	88.5	1.696	1.763	2.39	27.	2.68	2.55	.18	.069	.952
SB2727.	84.2	88.5	1.763	1.763	2.39	28.	2.68	2.55	.18	.072	.952
SB2726.	84.2	88.5	1.830	1.763	2.38	27.	2.68	2.48	.18	.071	.927
SB2725.	84.2	88.5	1.896	1.763	2.38	27.	2.68	2.48	.18	.071	.927
SB2724.	84.2	88.5	1.963	1.763	2.37	27.	2.68	2.42	.18	.073	.903
SB2723.	84.2	88.5	2.029	1.763	2.37	28.	2.68	2.42	.18	.076	.903
SB2722.	84.2	88.5	2.098	1.763	2.38	29.	2.68	2.48	.19	.076	.927
SB2721.	84.2	88.5	2.163	1.763	2.38	29.	2.68	2.48	.19	.076	.927
SB2752.	84.2	88.5	.897	1.813	2.36	64.	2.68	2.35	.42	.178	.879
SB2753.	84.2	88.5	.964	1.813	2.35	66.	2.68	2.29	.43	.189	.854
SB2754.	84.2	88.5	1.030	1.813	2.59	49.	2.68	3.85	.32	.083	1.440
SB2755.	84.2	88.5	1.097	1.813	2.41	40.	2.68	2.68	.26	.098	1.001
SB2756.	84.2	88.5	1.164	1.813	2.41	35.	2.68	2.63	.23	.085	1.001
SB2757.	84.2	88.5	1.230	1.813	2.41	32.	2.68	2.63	.21	.078	1.001
SB2758.	84.2	88.5	1.297	1.813	2.40	32.	2.68	2.61	.21	.080	.976
SB2759.	84.2	88.5	1.363	1.813	2.40	37.	2.68	2.61	.24	.093	.976
SB2760.	84.2	88.5	1.430	1.813	2.38	43.	2.68	2.48	.28	.113	.927
SB2761.	84.2	88.5	1.497	1.813	2.36	45.	2.68	2.35	.29	.125	.879
SB2762.	84.2	88.5	1.563	1.813	2.37	41.	2.68	2.42	.27	.111	.903
SB2763.	84.2	88.5	1.630	1.813	2.39	32.	2.68	2.55	.21	.082	.952
SB2764.	84.2	88.5	1.696	1.819	2.38	32.	2.68	2.48	.21	.084	.927
SB2765.	84.2	88.5	1.763	1.813	2.38	31.	2.68	2.48	.20	.082	.927
SB2766.	84.2	88.5	1.830	1.819	2.36	37.	2.68	2.35	.24	.103	.879
SB2767.	84.2	88.5	1.896	1.813	2.36	36.	2.68	2.35	.24	.100	.879
SB2768.	84.2	88.5	1.963	1.813	2.34	49.	2.68	2.22	.32	.144	.830
SB2769.	84.2	88.5	2.029	1.813	2.32	49.	2.68	2.09	.32	.153	.781
SB2770.	84.2	88.5	2.098	1.813	2.34	44.	2.68	2.22	.29	.129	.830
SB2771.	84.2	88.5	2.163	1.813	2.37	38.	2.68	2.42	.25	.103	.903

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S82789.	84.2	88.5	1.030	1.713	2.41	39.	2.68	2.68	.25	.095	1.001
S8278A.	84.2	88.5	1.097	1.713	2.43	34.	2.68	2.81	.22	.079	1.049
S827A7.	84.2	88.5	1.164	1.713	2.43	35.	2.68	2.81	.23	.081	1.049
S827AA.	84.2	88.5	1.230	1.713	2.43	34.	2.68	2.81	.22	.079	1.049
S82785.	84.2	88.5	1.297	1.713	2.42	34.	2.68	2.74	.22	.081	1.025
S82784.	84.2	88.5	1.363	1.713	2.41	35.	2.68	2.68	.23	.085	1.001
S82783.	84.2	88.5	1.430	1.713	2.39	40.	2.68	2.55	.26	.103	.952
S827A2.	84.2	88.5	1.497	1.713	2.38	40.	2.68	2.48	.26	.105	.927
S82781.	84.2	88.5	1.563	1.713	2.38	37.	2.68	2.48	.24	.097	.927
S82780.	84.2	88.5	1.630	1.713	2.39	33.	2.68	2.55	.22	.085	.952
S82779.	84.2	88.5	1.698	1.713	2.39	30.	2.68	2.55	.20	.077	.952
S82778.	84.2	88.5	1.763	1.713	2.39	30.	2.68	2.55	.20	.077	.952
S82777.	84.2	88.5	1.830	1.713	2.39	30.	2.68	2.55	.20	.077	.952
S82776.	84.2	88.5	1.896	1.713	2.37	30.	2.68	2.42	.20	.081	.903
S82775.	84.2	88.5	1.963	1.713	2.36	38.	2.68	2.35	.25	.106	.879
S82774.	84.2	88.5	2.029	1.713	2.35	39.	2.68	2.29	.25	.111	.854
S82773.	84.2	88.5	2.098	1.713	2.37	36.	2.68	2.42	.24	.097	.903
S82772.	84.2	88.5	2.163	1.713	2.39	32.	2.68	2.55	.21	.082	.952

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 2. AXIAL DISTANCE=33.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=21.00 PSI RE= 13900.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LCCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2823.	84.6	88.5	.098	.685	2.33	154.	2.68	2.16	1.01	.467	.805
SB2822.	84.6	88.5	.165	.685	2.47	87.	2.68	3.07	.57	.185	1.147
SB2821.	84.6	88.5	.231	.685	2.48	34.	2.68	3.14	.22	.071	1.171
SB2820.	84.6	88.5	.298	.685	2.46	28.	2.68	3.00	.18	.061	1.123
SB2819.	84.6	88.5	.364	.685	2.45	25.	2.68	2.94	.16	.056	1.098
SB2818.	84.6	88.5	.431	.685	2.46	27.	2.68	3.00	.18	.059	1.123
SB2817.	84.6	88.5	.498	.685	2.48	30.	2.68	3.14	.20	.063	1.171
SB2815.	84.6	88.5	.564	.685	2.52	26.	2.68	3.40	.17	.050	1.269
SB2816.	84.6	88.5	.631	.685	2.51	30.	2.68	3.33	.20	.059	1.245
SB2814.	84.6	88.5	.697	.685	2.52	28.	2.68	3.40	.18	.054	1.269
SB2813.	84.6	88.5	.764	.685	2.49	32.	2.68	3.20	.21	.065	1.196
SB2812.	84.6	88.5	.831	.685	2.47	31.	2.68	3.07	.20	.066	1.147
SB2811.	84.6	88.5	.897	.685	2.45	27.	2.68	2.94	.18	.060	1.098
SB2810.	84.6	88.5	.964	.685	2.45	27.	2.68	2.94	.18	.060	1.098
SB2809.	84.6	88.5	1.030	.685	2.48	27.	2.68	3.14	.18	.056	1.171
SB2808.	84.6	88.5	1.097	.685	2.50	27.	2.68	3.27	.18	.054	1.220
SB2807.	84.6	88.5	1.164	.685	2.52	25.	2.68	3.40	.16	.048	1.269
SB2806.	84.6	88.5	1.230	.685	2.53	22.	2.68	3.46	.14	.042	1.293
SB2805.	84.6	88.5	1.297	.685	2.51	28.	2.68	3.33	.18	.055	1.245
SB2804.	84.6	88.5	1.363	.685	2.49	30.	2.68	3.20	.20	.061	1.196
SB2803.	84.6	88.5	1.430	.685	2.47	28.	2.68	3.07	.18	.060	1.147
SB2802.	84.6	88.5	1.497	.685	2.46	25.	2.68	3.00	.16	.054	1.123
SB2801.	84.6	88.5	1.563	.685	2.48	28.	2.68	3.14	.18	.058	1.171
SB2800.	84.6	88.5	1.630	.685	2.50	27.	2.68	3.27	.18	.054	1.220
SB2799.	84.6	88.5	1.698	.685	2.52	24.	2.68	3.40	.16	.046	1.269
SB2798.	84.6	88.5	1.763	.685	2.51	27.	2.68	3.33	.18	.053	1.245
SB2797.	84.6	88.5	1.830	.685	2.49	33.	2.68	3.20	.22	.067	1.196
SB2796.	84.6	88.5	1.896	.685	2.46	32.	2.68	3.00	.21	.070	1.123
SB2795.	84.6	88.5	1.963	.685	2.44	28.	2.68	2.87	.18	.064	1.074
SB2794.	84.6	88.5	2.029	.685	2.44	29.	2.68	2.87	.19	.066	1.074
SB2793.	84.6	88.5	2.096	.685	2.47	33.	2.68	3.07	.22	.070	1.147
SB2792.	84.6	88.5	2.163	.685	2.50	33.	2.68	3.27	.22	.066	1.220
SB2791.	84.6	88.5	2.229	.685	2.52	27.	2.68	3.40	.18	.052	1.269
SB2827.	84.6	88.5	.231	.110	2.46	86.	2.68	3.00	.56	.187	1.123
SB2826.	84.6	88.5	.697	.110	2.52	26.	2.68	3.40	.17	.050	1.269
SB2825.	84.6	88.5	1.230	.110	2.52	27.	2.68	3.40	.18	.052	1.269
SB2824.	84.6	88.5	1.763	.110	2.53	28.	2.68	3.46	.18	.053	1.293
SB2843.	84.6	88.5	.165	1.240	2.48	52.	2.68	3.14	.34	.108	1.171
SB2842.	84.6	88.5	.298	1.240	2.46	32.	2.68	3.00	.21	.070	1.123
SB2841.	84.6	88.5	.431	1.240	2.43	28.	2.68	2.81	.18	.065	1.049
SB2840.	84.6	88.5	.564	1.240	2.48	29.	2.68	3.14	.19	.060	1.171
SB2839.	84.6	88.5	.697	1.240	2.52	25.	2.68	3.40	.16	.048	1.269
SB2838.	84.6	88.5	.831	1.240	2.52	31.	2.68	3.40	.20	.058	1.269
SB2837.	84.6	88.5	.964	1.240	2.48	31.	2.68	3.14	.20	.065	1.171
SB2836.	84.6	88.5	1.097	1.240	2.48	22.	2.68	3.14	.14	.046	1.171
SB2835.	84.6	88.5	1.230	1.240	2.49	23.	2.68	3.20	.15	.047	1.196
SB2834.	84.6	88.5	1.363	1.240	2.46	35.	2.68	3.00	.23	.076	1.123

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2833.	84.6	88.5	1.497	1.248	2.41	38.	2.68	2.68	.25	.093	1.001
SB2832.	84.6	88.5	1.630	1.245	2.42	31.	2.68	2.74	.20	.074	1.025
SB2831.	84.6	88.5	1.763	1.240	2.43	29.	2.68	2.81	.19	.067	1.049
SB2830.	84.6	88.5	1.896	1.240	2.41	34.	2.68	2.68	.22	.083	1.001
SB2829.	84.6	88.5	2.029	1.240	2.39	35.	2.68	2.55	.23	.090	.952
SB2828.	84.6	88.5	2.163	1.240	2.40	36.	2.68	2.61	.24	.090	.976
SB2844.	84.6	88.5	.964	1.198	2.49	34.	2.68	3.20	.22	.069	1.196
SB2845.	84.6	88.5	1.097	1.198	2.46	34.	2.68	3.00	.22	.074	1.123
SB2846.	84.6	88.5	1.230	1.198	2.47	25.	2.68	3.07	.16	.053	1.147
SB2847.	84.6	88.5	1.363	1.198	2.47	24.	2.68	3.07	.16	.051	1.147
SB2849.	84.6	88.5	1.497	1.198	2.41	33.	2.68	2.68	.22	.080	1.001
SB2850.	84.6	88.5	1.630	1.198	2.42	28.	2.68	2.74	.18	.067	1.025
SB2851.	84.6	88.5	1.763	1.198	2.43	28.	2.68	2.81	.18	.065	1.049
SB2852.	84.6	88.5	1.896	1.198	2.41	32.	2.68	2.68	.21	.078	1.001
SB2853.	84.6	88.5	2.029	1.198	2.40	31.	2.68	2.61	.20	.078	.976
SB2854.	84.6	88.5	2.163	1.198	2.41	32.	2.68	2.68	.21	.078	1.001
SB2848.	84.6	88.5	2.296	1.198	2.44	34.	2.68	2.87	.22	.077	1.074
SB2865.	84.6	88.5	.831	1.274	2.47	49.	2.68	3.07	.32	.104	1.147
SB2864.	84.6	88.5	.964	1.274	2.41	50.	2.68	2.68	.33	.122	1.001
SB2863.	84.6	88.5	1.097	1.274	2.47	29.	2.68	3.07	.19	.062	1.147
SB2862.	84.6	88.5	1.230	1.274	2.49	23.	2.68	3.20	.15	.047	1.196
SB2861.	84.6	88.5	1.363	1.274	2.43	52.	2.68	2.81	.34	.121	1.049
SB2860.	84.6	88.5	1.497	1.274	2.07	96.	2.68	.46	.63	1.371	.171
SB2859.	84.6	88.5	1.630	1.274	2.40	39.	2.68	2.61	.25	.098	.976
SB2858.	84.6	88.5	1.763	1.274	2.43	29.	2.68	2.81	.19	.067	1.049
SB2857.	84.6	88.5	1.896	1.274	2.39	45.	2.68	2.55	.29	.115	.952
SB2856.	84.6	88.5	2.029	1.274	2.33	59.	2.68	2.16	.39	.179	.805
SB2855.	84.6	88.5	2.163	1.274	2.39	43.	2.66	2.55	.28	.110	.952
SB2866.	84.6	88.5	.831	1.174	2.47	40.	2.68	3.07	.26	.085	1.147
SB2867.	84.6	88.5	.964	1.174	2.43	41.	2.68	2.81	.27	.095	1.049
SB2868.	84.6	88.5	1.097	1.174	2.46	30.	2.68	3.00	.20	.065	1.123
SB2869.	84.6	88.5	1.230	1.174	2.47	29.	2.68	3.07	.19	.062	1.147
SB2870.	84.6	88.5	1.363	1.174	2.42	41.	2.68	2.74	.27	.098	1.025
SB2871.	84.6	88.5	1.497	1.174	2.39	42.	2.68	2.55	.27	.108	.952
SB2872.	84.6	88.5	1.630	1.174	2.42	30.	2.68	2.74	.20	.071	1.025
SB2873.	84.6	88.5	1.763	1.174	2.43	31.	2.68	2.81	.20	.072	1.049
SB2874.	84.6	88.5	1.896	1.174	2.40	34.	2.68	2.61	.22	.085	.976
SB2875.	84.6	88.5	2.029	1.174	2.39	34.	2.68	2.55	.22	.087	.952
SB2876.	84.6	88.5	2.163	1.174	2.41	32.	2.68	2.68	.21	.078	1.001
SB2892.	84.6	88.5	.165	1.224	2.44	97.	2.68	2.87	.63	.220	1.074
SB2891.	84.6	88.5	.298	1.224	2.45	35.	2.68	2.94	.23	.078	1.098
SB2890.	84.6	88.5	.431	1.224	2.43	25.	2.68	2.81	.16	.058	1.049
SB2889.	84.6	88.5	.564	1.224	2.47	27.	2.68	3.07	.18	.057	1.147
SB2888.	84.6	88.5	.697	1.224	2.52	25.	2.68	3.40	.16	.048	1.269
SB2887.	84.6	88.5	.831	1.224	2.52	28.	2.68	3.40	.18	.054	1.269
SB2886.	84.6	88.5	.964	1.224	2.48	29.	2.68	3.14	.19	.060	1.171
SB2885.	84.6	88.5	1.097	1.224	2.48	22.	2.68	3.14	.14	.046	1.171
SB2884.	84.6	88.5	1.230	1.224	2.48	22.	2.68	3.14	.14	.046	1.171
SB2883.	84.6	88.5	1.363	1.224	2.45	35.	2.68	2.94	.23	.078	1.098

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2882.	84.6	88.5	1.497	1.224	2.41	33.	2.68	2.58	.22	.080	1.001
SB2881.	84.6	88.5	1.630	1.224	2.42	28.	2.68	2.74	.18	.067	1.025
SB2880.	84.6	88.5	1.763	1.224	2.43	29.	2.68	2.81	.19	.067	1.049
SB2879.	84.6	88.5	1.896	1.224	2.41	35.	2.68	2.68	.23	.085	1.001
SB2878.	84.6	88.5	2.029	1.224	2.39	33.	2.68	2.55	.22	.085	.952
SB2877.	84.6	88.5	2.163	1.224	2.41	32.	2.68	2.68	.21	.078	1.001
SB2908.	84.6	88.5	.169	1.763	2.48	70.	2.68	3.14	.46	.146	1.171
SB2907.	84.6	88.5	.298	1.763	2.48	30.	2.68	3.14	.20	.063	1.171
SB2906.	84.6	88.5	.431	1.763	2.46	26.	2.68	3.00	.17	.057	1.123
SB2905.	84.6	88.5	.564	1.763	2.49	24.	2.68	3.20	.16	.049	1.196
SB2904.	84.6	88.5	.697	1.763	2.51	23.	2.68	3.33	.15	.045	1.245
SB2903.	84.6	88.5	.831	1.763	2.51	31.	2.68	3.33	.20	.061	1.245
SB2902.	84.6	88.5	.964	1.763	2.46	35.	2.68	3.00	.23	.076	1.123
SB2901.	84.6	88.5	1.097	1.763	2.43	28.	2.68	2.81	.18	.065	1.049
SB2900.	84.6	88.5	1.230	1.763	2.42	25.	2.68	2.74	.16	.060	1.025
SB2899.	84.6	88.5	1.363	1.763	2.40	34.	2.68	2.61	.22	.085	.976
SB2898.	84.6	88.5	1.497	1.763	2.37	43.	2.68	2.42	.28	.116	.903
SB2897.	84.6	88.5	1.630	1.763	2.34	35.	2.68	2.22	.23	.103	.830
SB2896.	84.6	88.5	1.763	1.763	2.33	30.	2.68	2.16	.20	.091	.805
SB2895.	84.6	88.5	1.896	1.763	2.33	31.	2.68	2.16	.20	.094	.805
SB2894.	84.6	88.5	2.029	1.763	2.31	32.	2.68	2.02	.21	.103	.757
SB2893.	84.6	88.5	2.163	1.763	2.31	29.	2.68	2.02	.19	.094	.757
SB2909.	84.6	88.5	.831	1.713	2.45	47.	2.68	2.94	.31	.104	1.098
SB2910.	84.6	88.5	.964	1.713	2.41	48.	2.68	2.68	.31	.117	1.001
SB2911.	84.6	88.5	1.097	1.713	2.42	36.	2.68	2.74	.24	.086	1.025
SB2912.	84.6	88.5	1.230	1.713	2.42	28.	2.68	2.74	.18	.067	1.025
SB2913.	84.6	88.5	1.363	1.713	2.39	39.	2.68	2.55	.25	.100	.952
SB2914.	84.6	88.5	1.497	1.713	2.35	42.	2.68	2.29	.27	.120	.854
SB2915.	84.6	88.5	1.630	1.713	2.33	31.	2.68	2.16	.20	.094	.805
SB2916.	84.6	88.5	1.763	1.713	2.34	32.	2.68	2.22	.21	.094	.830
SB2917.	84.6	88.5	1.896	1.713	2.32	36.	2.68	2.09	.24	.113	.781
SB2918.	84.6	88.5	2.029	1.713	2.29	36.	2.68	1.89	.24	.124	.708
SB2919.	84.6	88.5	2.163	1.713	2.30	30.	2.68	1.96	.20	.100	.732
SB2930.	84.6	88.5	.831	1.813	2.48	43.	2.68	3.14	.28	.090	1.171
SB2929.	84.6	88.5	.964	1.813	2.40	50.	2.68	2.61	.33	.125	.976
SB2928.	84.6	88.5	1.097	1.813	2.41	33.	2.68	2.68	.22	.080	1.001
SB2927.	84.6	88.5	1.230	1.813	2.42	27.	2.68	2.74	.18	.064	1.025
SB2926.	84.6	88.5	1.363	1.813	2.39	44.	2.68	2.55	.29	.113	.952
SB2925.	84.6	88.5	1.497	1.813	2.32	52.	2.68	2.09	.34	.163	.781
SB2924.	84.6	88.5	1.630	1.813	2.33	35.	2.68	2.16	.23	.106	.805
SB2923.	84.6	88.5	1.763	1.813	2.33	28.	2.68	2.16	.18	.085	.805
SB2922.	84.6	88.5	1.896	1.813	2.32	36.	2.68	2.09	.24	.113	.781
SB2921.	84.6	88.5	2.029	1.813	2.26	54.	2.68	1.70	.35	.208	.635
SB2920.	84.6	88.5	2.163	1.813	2.30	36.	2.68	1.96	.24	.120	.732

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 7. AXIAL DISTANCE=51.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=20.00 PSI RE= 13900.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2962.	84.0	88.8	.165	1.763	2.49	58.	2.69	3.20	.38	.118	1.192
SB2961.	84.0	88.8	.231	1.763	2.52	31.	2.69	3.40	.20	.060	1.265
SB2960.	84.0	88.8	.298	1.763	2.51	28.	2.69	3.33	.18	.055	1.240
SB2959.	84.0	88.8	.364	1.763	2.49	29.	2.69	3.20	.19	.059	1.192
SB2958.	84.0	88.8	.431	1.763	2.48	25.	2.69	3.14	.16	.052	1.167
SB2957.	84.0	88.8	.498	1.763	2.48	22.	2.69	3.14	.14	.046	1.167
SB2956.	84.0	88.8	.564	1.763	2.49	22.	2.69	3.20	.14	.045	1.192
SB2955.	84.0	88.8	.631	1.763	2.50	20.	2.69	3.27	.13	.040	1.216
SB2954.	84.0	88.8	.697	1.763	2.50	23.	2.69	3.27	.15	.046	1.216
SB2953.	84.0	88.8	.764	1.763	2.48	32.	2.69	3.14	.21	.067	1.167
SB2952.	84.0	88.8	.831	1.763	2.45	34.	2.69	2.94	.22	.076	1.095
SB2951.	84.0	88.8	.897	1.763	2.42	31.	2.69	2.74	.20	.074	1.022
SB2950.	84.0	88.8	.964	1.763	2.41	27.	2.69	2.68	.18	.066	.997
SB2949.	84.0	88.8	1.030	1.763	2.42	28.	2.69	2.74	.18	.067	1.022
SB2948.	84.0	88.8	1.097	1.763	2.45	29.	2.69	2.94	.19	.064	1.095
SB2947.	84.0	88.8	1.164	1.763	2.47	25.	2.69	3.07	.16	.053	1.143
SB2946.	84.0	88.8	1.230	1.763	2.49	21.	2.69	3.20	.14	.043	1.192
SB2945.	84.0	88.8	1.297	1.763	2.48	25.	2.69	3.14	.16	.052	1.167
SB2944.	84.0	88.8	1.363	1.763	2.46	28.	2.69	3.00	.18	.061	1.119
SB2943.	84.0	88.8	1.430	1.763	2.44	26.	2.69	2.87	.17	.059	1.070
SB2942.	84.0	88.8	1.497	1.763	2.43	23.	2.69	2.81	.15	.053	1.046
SB2941.	84.0	88.8	1.563	1.763	2.44	23.	2.69	2.87	.15	.052	1.070
SB2940.	84.0	88.8	1.630	1.763	2.46	23.	2.69	3.00	.15	.050	1.119
SB2939.	84.0	88.8	1.696	1.763	2.47	20.	2.69	3.07	.13	.043	1.143
SB2938.	84.0	88.8	1.830	1.763	2.47	20.	2.69	3.07	.13	.043	1.143
SB2937.	84.0	88.8	1.830	1.763	2.45	26.	2.69	2.94	.17	.058	1.095
SB2936.	84.0	88.8	1.898	1.763	2.43	29.	2.69	2.81	.19	.067	1.046
SB2935.	84.0	88.8	1.963	1.763	2.41	26.	2.69	2.68	.17	.063	.997
SB2934.	84.0	88.8	2.029	1.763	2.40	24.	2.69	2.61	.16	.060	.973
SB2933.	84.0	88.8	2.096	1.763	2.42	26.	2.69	2.74	.17	.062	1.022
SB2932.	84.0	88.8	2.163	1.763	2.44	26.	2.69	2.87	.17	.059	1.070
SB2931.	84.0	88.8	2.229	1.763	2.46	22.	2.69	3.00	.14	.048	1.119
SB2966.	84.0	88.8	.231	1.224	2.45	48.	2.69	2.94	.31	.107	1.095
SB2965.	84.0	88.8	.697	1.224	2.49	24.	2.69	3.20	.16	.049	1.192
SB2964.	84.0	88.8	1.230	1.224	2.47	27.	2.69	3.07	.18	.057	1.143
SB2963.	84.0	88.8	1.763	1.224	2.48	24.	2.69	3.14	.16	.050	1.167
SB2970.	84.0	88.8	.231	.688	2.46	33.	2.69	3.00	.22	.072	1.119
SB2969.	84.0	88.8	.697	.688	2.46	28.	2.69	3.00	.18	.061	1.119
SB2968.	84.0	88.8	1.230	.688	2.49	24.	2.69	3.20	.16	.049	1.192
SB2967.	84.0	88.8	1.763	.688	2.48	25.	2.69	3.14	.16	.052	1.167
SB2974.	84.0	88.8	.231	.110	2.45	70.	2.69	2.94	.46	.156	1.095
SB2973.	84.0	88.8	.697	.110	2.48	26.	2.69	3.14	.17	.054	1.167
SB2972.	84.0	88.8	1.230	.110	2.50	27.	2.69	3.27	.18	.054	1.216
SB2971.	84.0	88.8	1.763	.110	2.50	25.	2.69	3.27	.16	.050	1.216

TABLE CR1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 7. AXIAL DISTANCE=51.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=38.00 PSI RE= 60100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E RVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB2975.	91.2	354.2	.093	1.763	3.69	155.	10.71	11.64	1.01	.092	1.031
SB2976.	91.2	354.2	.165	1.763	3.86	120.	10.71	12.15	.78	.065	1.134
SB2977.	91.2	354.2	.231	1.763	3.96	92.	10.71	12.80	.60	.047	1.195
SB2978.	91.2	354.2	.298	1.763	3.96	92.	10.71	12.80	.60	.047	1.195
SB2979.	91.2	354.2	.364	1.763	3.90	98.	10.71	12.41	.64	.052	1.159
SB2980.	91.2	354.2	.431	1.763	3.85	89.	10.71	12.38	.58	.048	1.128
SB2981.	91.2	354.2	.498	1.763	3.83	80.	10.71	11.95	.52	.044	1.116
SB2982.	91.2	354.2	.564	1.763	3.87	80.	10.71	12.21	.52	.043	1.140
SB2983.	91.2	354.2	.631	1.763	3.90	73.	10.71	12.41	.48	.038	1.159
SB2984.	91.2	354.2	.697	1.763	3.92	76.	10.71	12.54	.50	.040	1.171
SB2985.	91.2	354.2	.764	1.763	3.87	100.	10.71	12.21	.65	.053	1.140
SB2986.	91.2	354.2	.831	1.763	3.77	114.	10.71	11.56	.74	.064	1.079
SB2987.	91.2	354.2	.897	1.763	3.67	98.	10.71	11.91	.64	.059	1.018
SB2988.	91.2	354.2	.964	1.763	3.63	82.	10.71	11.65	.54	.050	.994
SB2989.	91.2	354.2	1.030	1.763	3.65	92.	10.71	11.84	.60	.055	1.012
SB2990.	91.2	354.2	1.097	1.763	3.75	102.	10.71	11.43	.67	.058	1.067
SB2991.	91.2	354.2	1.164	1.763	3.84	91.	10.71	12.02	.59	.049	1.122
SB2992.	91.2	354.2	1.230	1.763	3.88	72.	10.71	12.28	.47	.038	1.146
SB2993.	91.2	354.2	1.297	1.763	3.86	87.	10.71	12.15	.57	.047	1.134
SB2994.	91.2	354.2	1.363	1.763	3.80	99.	10.71	11.76	.65	.055	1.098
SB2995.	91.2	354.2	1.430	1.763	3.71	96.	10.71	11.17	.63	.056	1.043
SB2996.	91.2	354.2	1.497	1.763	3.68	85.	10.71	10.97	.56	.051	1.024
SB2997.	91.2	354.2	1.563	1.763	3.70	86.	10.71	11.10	.56	.051	1.037
SB2998.	91.2	354.2	1.630	1.763	3.75	82.	10.71	11.43	.54	.047	1.067
SB2999.	91.2	354.2	1.696	1.763	3.81	72.	10.71	11.82	.47	.040	1.104
SB3000.	91.2	354.2	1.763	1.763	3.80	69.	10.71	11.76	.45	.038	1.098
SB3001.	91.2	354.2	1.830	1.763	3.75	82.	10.71	11.43	.54	.047	1.067
SB3002.	91.2	354.2	1.896	1.763	3.67	85.	10.71	10.91	.56	.051	1.018
SB3003.	91.2	354.2	1.963	1.763	3.62	74.	10.71	10.58	.48	.046	.988
SB3004.	91.2	354.2	2.029	1.763	3.62	80.	10.71	10.58	.52	.049	.988
SB3005.	91.2	354.2	2.096	1.763	3.65	88.	10.71	10.78	.57	.053	1.006
SB3009.	91.2	354.2	.231	1.224	3.85	121.	10.71	12.08	.79	.065	1.128
SB3008.	91.2	354.2	.697	1.224	3.91	75.	10.71	12.48	.49	.039	1.165
SB3007.	91.2	354.2	1.230	1.224	3.88	74.	10.71	12.28	.48	.039	1.146
SB3006.	91.2	354.2	1.763	1.224	3.86	74.	10.71	12.15	.48	.040	1.134
SB3013.	91.2	354.2	.165	.685	3.90	83.	10.71	12.41	.54	.044	1.159
SB3012.	91.2	354.2	.697	.685	3.82	83.	10.71	11.89	.54	.046	1.110
SB3011.	91.2	354.2	1.230	.685	3.91	75.	10.71	12.48	.49	.039	1.165
SB3010.	91.2	354.2	1.763	.685	3.89	81.	10.71	12.34	.53	.043	1.152
SB3017.	91.2	354.2	.231	.110	3.90	83.	10.71	12.41	.54	.044	1.159
SB3016.	91.2	354.2	.697	.110	3.91	85.	10.71	12.48	.56	.045	1.165
SB3015.	91.2	354.2	1.230	.110	3.98	97.	10.71	12.93	.63	.049	1.207
SB3014.	91.2	354.2	1.763	.110	3.97	82.	10.71	12.87	.54	.042	1.201

TABLE CW1. TABULATION OF EXPERIMENTAL LOA DATA

DATA PLANE NO. 3. AXIAL DISTANCE=21.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=38.00 PSI RE= 59800.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3018.	90.7	354.2	.098	1.763	3.62	200.	10.71	10.58	1.31	.123	.988
SB3019.	90.7	354.2	.165	1.763	3.66	110.	10.71	10.84	.72	.066	1.012
SB3020.	90.7	354.2	.231	1.763	3.70	99.	10.71	11.10	.65	.058	1.037
SB3021.	90.7	354.2	.298	1.763	3.70	94.	10.71	11.10	.61	.055	1.037
SB3022.	90.7	354.2	.364	1.763	3.70	95.	10.71	11.10	.62	.056	1.037
SB3023.	90.7	354.2	.431	1.763	3.70	95.	10.71	11.10	.62	.056	1.037
SB3024.	90.7	354.2	.498	1.763	3.73	95.	10.71	11.30	.62	.055	1.055
SB3025.	90.7	354.2	.564	1.763	3.77	93.	10.71	11.56	.61	.053	1.079
SB3026.	90.7	354.2	.631	1.763	3.81	88.	10.71	11.82	.57	.049	1.104
SB3027.	90.7	354.2	.697	1.763	3.83	84.	10.71	11.95	.55	.046	1.116
SB3028.	90.7	354.2	.764	1.763	3.82	86.	10.71	11.89	.56	.047	1.110
SB3029.	90.7	354.2	.831	1.763	3.80	94.	10.71	11.76	.61	.052	1.098
SB3030.	90.7	354.2	.897	1.763	3.78	98.	10.71	11.63	.64	.055	1.085
SB3031.	90.7	354.2	.964	1.763	3.78	99.	10.71	11.63	.65	.056	1.085
SB3032.	90.7	354.2	1.030	1.763	3.79	92.	10.71	11.69	.60	.051	1.091
SB3033.	90.7	354.2	1.097	1.763	3.81	90.	10.71	11.82	.59	.050	1.104
SB3034.	90.7	354.2	1.164	1.763	3.83	82.	10.71	11.95	.54	.045	1.116
SB3035.	90.7	354.2	1.230	1.763	3.83	81.	10.71	11.95	.53	.044	1.116
SB3036.	90.7	354.2	1.297	1.763	3.82	86.	10.71	11.89	.56	.047	1.110
SB3037.	90.7	354.2	1.363	1.763	3.78	92.	10.71	11.63	.60	.052	1.085
SB3038.	90.7	354.2	1.430	1.763	3.73	95.	10.71	11.30	.62	.055	1.055
SB3039.	90.7	354.2	1.497	1.763	3.72	93.	10.71	11.23	.61	.054	1.049
SB3040.	90.7	354.2	1.563	1.763	3.73	91.	10.71	11.30	.59	.053	1.055
SB3041.	90.7	354.2	1.630	1.763	3.76	90.	10.71	11.50	.59	.051	1.073
SB3042.	90.7	354.2	1.696	1.763	3.80	87.	10.71	11.76	.57	.048	1.098
SB3043.	90.7	354.2	1.763	1.763	3.83	84.	10.71	11.95	.55	.046	1.116
SB3044.	90.7	354.2	1.830	1.763	3.85	82.	10.71	12.08	.54	.044	1.128
SB3045.	90.7	354.2	1.896	1.763	3.84	84.	10.71	12.02	.55	.046	1.122
SB3046.	90.7	354.2	1.963	1.763	3.82	93.	10.71	11.89	.61	.051	1.110
SB3047.	90.7	354.2	2.029	1.763	3.81	97.	10.71	11.82	.63	.054	1.104
SB3048.	90.7	354.2	2.096	1.763	3.81	96.	10.71	11.82	.63	.053	1.104
SB3049.	90.7	354.2	2.163	1.763	3.83	92.	10.71	11.95	.60	.050	1.116
SB3053.	90.7	354.2	.231	1.224	3.74	97.	10.71	11.36	.63	.056	1.061
SB3052.	90.7	354.2	.697	1.224	3.81	86.	10.71	11.82	.56	.048	1.104
SB3051.	90.7	354.2	1.230	1.224	3.81	80.	10.71	11.82	.52	.044	1.104
SB3050.	90.7	354.2	1.763	1.224	3.85	80.	10.71	12.08	.52	.043	1.128
SB3057.	90.7	354.2	.231	.685	3.63	90.	10.71	10.65	.59	.055	.994
SB3056.	90.7	354.2	.697	.685	3.80	91.	10.71	11.76	.59	.051	1.098
SB3055.	90.7	354.2	1.230	.685	3.80	87.	10.71	11.76	.57	.048	1.098
SB3054.	90.7	354.2	1.763	.685	3.84	87.	10.71	12.02	.57	.047	1.122
SB3061.	90.7	354.2	.231	.110	3.80	108.	10.71	11.76	.71	.060	1.098
SB3060.	90.7	354.2	.697	.110	3.85	83.	10.71	12.08	.54	.045	1.128
SB3059.	90.7	354.2	1.230	.110	3.95	77.	10.71	12.74	.50	.039	1.189
SB3058.	90.7	354.2	1.763	.110	3.91	81.	10.71	12.48	.53	.042	1.165

TABLE Cw1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 3. AXIAL DISTANCE=21.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=28.50 PSI RE= 14100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SB3093.	84.6	89.6	.165	1.763	2.43	33.	2.71	2.81	.22	.077	1.037
SB3092.	84.6	89.6	.231	1.763	2.44	28.	2.71	2.87	.18	.064	1.061
SB3091.	84.6	89.6	.298	1.763	2.45	28.	2.71	2.94	.18	.062	1.085
SB3090.	84.6	89.6	.364	1.763	2.45	27.	2.71	2.94	.18	.060	1.085
SB3089.	84.6	89.6	.431	1.763	2.47	27.	2.71	3.07	.18	.057	1.133
SB3088.	84.6	89.6	.498	1.763	2.48	26.	2.71	3.14	.17	.054	1.157
SB3087.	84.6	89.6	.564	1.763	2.49	23.	2.71	3.20	.15	.047	1.181
SB3086.	84.6	89.6	.631	1.763	2.50	22.	2.71	3.27	.14	.044	1.205
SB3085.	84.6	89.6	.697	1.763	2.50	22.	2.71	3.27	.14	.044	1.205
SB3084.	84.6	89.6	.764	1.763	2.50	24.	2.71	3.27	.16	.048	1.205
SB3083.	84.6	89.6	.831	1.763	2.49	26.	2.71	3.20	.17	.053	1.181
SB3082.	84.6	89.6	.897	1.763	2.49	27.	2.71	3.20	.18	.055	1.181
SB3081.	84.6	89.6	.964	1.763	2.48	26.	2.71	3.14	.17	.054	1.157
SB3080.	84.6	89.6	1.030	1.763	2.49	25.	2.71	3.20	.16	.051	1.181
SB3079.	84.6	89.6	1.097	1.763	2.50	22.	2.71	3.27	.14	.044	1.205
SB3078.	84.6	89.6	1.164	1.763	2.50	22.	2.71	3.27	.14	.044	1.205
SB3077.	84.6	89.6	1.230	1.763	2.49	24.	2.71	3.20	.16	.049	1.181
SB3076.	84.6	89.6	1.297	1.763	2.47	28.	2.71	3.07	.18	.060	1.133
SB3075.	84.6	89.6	1.363	1.763	2.46	29.	2.71	3.00	.19	.063	1.109
SB3074.	84.6	89.6	1.430	1.763	2.45	27.	2.71	2.94	.18	.060	1.085
SB3073.	84.6	89.6	1.497	1.763	2.45	27.	2.71	2.94	.18	.060	1.085
SB3072.	84.6	89.6	1.563	1.763	2.46	28.	2.71	3.00	.18	.061	1.109
SB3071.	84.6	89.6	1.630	1.763	2.48	27.	2.71	3.14	.18	.056	1.157
SB3070.	84.6	89.6	1.696	1.763	2.50	24.	2.71	3.27	.16	.048	1.205
SB3069.	84.6	89.6	1.763	1.763	2.50	22.	2.71	3.27	.14	.044	1.205
SB3068.	84.6	89.6	1.830	1.763	2.51	22.	2.71	3.33	.14	.043	1.229
SB3067.	84.6	89.6	1.896	1.763	2.50	27.	2.71	3.27	.18	.054	1.205
SB3066.	84.6	89.6	1.963	1.763	2.49	27.	2.71	3.20	.18	.055	1.181
SB3065.	84.6	89.6	2.029	1.763	2.49	27.	2.71	3.20	.18	.055	1.181
SB3064.	84.6	89.6	2.096	1.763	2.49	26.	2.71	3.20	.17	.053	1.181
SB3063.	84.6	89.6	2.163	1.763	2.50	24.	2.71	3.27	.16	.048	1.205
SB3062.	84.6	89.6	2.229	1.763	2.51	23.	2.71	3.33	.15	.045	1.229
SB3097.	84.6	89.6	.298	1.224	2.45	28.	2.71	2.94	.18	.062	1.085
SB3096.	84.6	89.6	.697	1.224	2.49	23.	2.71	3.20	.15	.047	1.181
SB3095.	84.6	89.6	1.230	1.224	2.49	22.	2.71	3.20	.14	.045	1.181
SB3094.	84.6	89.6	1.763	1.224	2.50	22.	2.71	3.27	.14	.044	1.205
SB3101.	84.6	89.6	.298	.685	2.43	26.	2.71	2.81	.17	.060	1.037
SB3100.	84.6	89.6	.697	.685	2.49	24.	2.71	3.20	.16	.049	1.181
SB3099.	84.6	89.6	1.230	.685	2.49	24.	2.71	3.20	.16	.049	1.181
SB3098.	84.6	89.6	1.763	.685	2.50	22.	2.71	3.27	.14	.044	1.205
SB3105.	84.6	89.6	.298	.110	2.47	31.	2.71	3.37	.20	.066	1.133
SB3104.	84.6	89.6	.697	.110	2.50	22.	2.71	3.27	.14	.044	1.205
SB3103.	84.6	89.6	1.230	.110	2.52	22.	2.71	3.40	.14	.042	1.253
SB3102.	84.6	89.6	1.763	.110	2.51	21.	2.71	3.33	.14	.041	1.229

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 5. AXIAL DISTANCE 420.20 IN. BLOCKAGE CENTERLINE=26.25 IN. P=28.50 PSI RE= 14100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3138.	84.6	89.6	.165	.688	2.49	66.	2.71	3.20	.43	.135	1.181
SB3137.	84.6	89.6	.231	.685	2.51	33.	2.71	3.33	.22	.065	1.229
SB3136.	84.6	89.6	.298	.685	2.51	25.	2.71	3.33	.16	.049	1.229
SB3135.	84.6	89.6	.364	.685	2.50	24.	2.71	3.27	.16	.048	1.205
SB3134.	84.6	89.6	.431	.685	2.50	28.	2.71	3.27	.18	.056	1.205
SB3133.	84.6	89.6	.498	.685	2.51	31.	2.71	3.33	.20	.061	1.229
SB3132.	84.6	89.6	.564	.685	2.53	30.	2.71	3.46	.20	.057	1.278
SB3131.	84.6	89.6	.631	.685	2.55	23.	2.71	3.59	.15	.042	1.326
SB3130.	84.6	89.6	.697	.685	2.55	20.	2.71	3.59	.13	.036	1.326
SB3129.	84.6	89.6	.764	.685	2.54	20.	2.71	3.53	.13	.037	1.302
SB3128.	84.6	89.6	.831	.685	2.53	20.	2.71	3.46	.13	.038	1.278
SB3127.	84.6	89.6	.897	.685	2.52	24.	2.71	3.40	.16	.046	1.253
SB3126.	84.6	89.6	.964	.685	2.52	30.	2.71	3.40	.20	.058	1.253
SB3125.	84.6	89.6	1.030	.685	2.52	34.	2.71	3.40	.22	.065	1.253
SB3124.	84.6	89.6	1.097	.685	2.54	33.	2.71	3.53	.22	.061	1.302
SB3123.	84.6	89.6	1.164	.685	2.55	27.	2.71	3.59	.18	.049	1.326
SB3122.	84.6	89.6	1.230	.685	2.55	22.	2.71	3.59	.14	.040	1.326
SB3121.	84.6	89.6	1.297	.685	2.54	21.	2.71	3.53	.14	.039	1.302
SB3120.	84.6	89.6	1.363	.685	2.53	21.	2.71	3.46	.14	.040	1.278
SB3119.	84.6	89.6	1.430	.685	2.52	23.	2.71	3.40	.15	.044	1.253
SB3118.	84.6	89.6	1.497	.685	2.51	29.	2.71	3.33	.19	.057	1.229
SB3117.	84.6	89.6	1.563	.685	2.52	34.	2.71	3.40	.22	.065	1.253
SB3116.	84.6	89.6	1.630	.685	2.53	39.	2.71	3.46	.25	.074	1.278
SB3115.	84.6	89.6	1.696	.685	2.54	36.	2.71	3.53	.24	.067	1.302
SB3114.	84.6	89.6	1.763	.685	2.56	23.	2.71	3.66	.15	.041	1.350
SB3113.	84.6	89.6	1.830	.685	2.55	22.	2.71	3.59	.14	.040	1.326
SB3112.	84.6	89.6	1.896	.685	2.53	29.	2.71	3.46	.19	.055	1.278
SB3111.	84.6	89.6	1.963	.685	2.51	32.	2.71	3.33	.21	.063	1.229
SB3110.	84.6	89.6	2.029	.685	2.50	31.	2.71	3.27	.20	.062	1.205
SB3109.	84.6	89.6	2.096	.685	2.49	30.	2.71	3.20	.20	.061	1.181
SB3108.	84.6	89.6	2.163	.685	2.51	29.	2.71	3.33	.19	.057	1.229
SB3107.	84.6	89.6	2.229	.685	2.53	27.	2.71	3.46	.18	.051	1.278
SB3106.	84.6	89.6	2.296	.685	2.54	22.	2.71	3.53	.14	.041	1.302
SB3142.	84.6	89.6	.298	.110	2.50	89.	2.71	3.27	.58	.178	1.205
SB3141.	84.6	89.6	.697	.110	2.56	23.	2.71	3.66	.15	.041	1.350
SB3140.	84.6	89.6	1.230	.110	2.58	21.	2.71	3.79	.14	.036	1.398
SB3139.	84.6	89.6	1.763	.110	2.57	21.	2.71	3.72	.14	.037	1.374
SB3157.	84.7	89.6	.298	1.224	2.51	26.	2.71	3.33	.17	.051	1.229
SB3156.	84.7	89.6	.431	1.224	2.50	28.	2.71	3.27	.18	.056	1.205
SB3155.	84.7	89.6	.564	1.224	2.52	35.	2.71	3.40	.23	.067	1.253
SB3154.	84.7	89.6	.697	1.224	2.55	22.	2.71	3.59	.14	.040	1.326
SB3153.	84.7	89.6	.831	1.224	2.54	19.	2.71	3.53	.12	.035	1.302
SB3152.	84.7	89.6	.964	1.224	2.54	21.	2.71	3.53	.14	.039	1.302
SB3151.	84.7	89.6	1.097	1.224	2.51	39.	2.71	3.33	.25	.076	1.229
SB3150.	84.7	89.6	1.230	1.224	2.42	53.	2.71	2.74	.35	.126	1.012
SB3149.	84.7	89.6	1.363	1.224	2.46	45.	2.71	3.00	.29	.098	1.109
SB3148.	84.7	89.6	1.497	1.224	2.41	69.	2.71	2.68	.45	.168	.988

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3147.	84.7	89.6	1.630	1.224	2.32	65.	2.71	2.09	.42	.203	.771
SB3146.	84.7	89.6	1.763	1.224	2.38	82.	2.71	2.48	.54	.216	.916
SB3145.	84.7	89.6	1.896	1.224	2.43	67.	2.71	2.81	.44	.156	1.037
SB3144.	84.7	89.6	2.029	1.224	2.36	65.	2.71	2.35	.42	.181	.868
SB3143.	84.7	89.6	2.163	1.224	2.36	70.	2.71	2.35	.46	.194	.868
SB3168.	84.7	89.6	.831	1.174	2.54	32.	2.71	3.53	.21	.059	1.302
SB3167.	84.7	89.6	.964	1.174	2.51	50.	2.71	3.33	.33	.098	1.229
SB3166.	84.7	89.6	1.097	1.174	2.47	66.	2.71	3.07	.43	.140	1.133
SB3165.	84.7	89.6	1.230	1.174	2.39	64.	2.71	2.55	.42	.164	.940
SB3164.	84.7	89.6	1.363	1.174	2.45	64.	2.71	2.94	.42	.142	1.085
SB3163.	84.7	89.6	1.497	1.174	2.36	99.	2.71	2.35	.65	.275	.868
SB3162.	84.7	89.6	1.630	1.174	2.31	85.	2.71	2.02	.56	.274	.747
SB3161.	84.7	89.6	1.763	1.174	2.41	90.	2.71	2.68	.59	.220	.988
SB3160.	84.7	89.6	1.896	1.174	2.42	77.	2.71	2.74	.50	.183	1.012
SB3159.	84.7	89.6	2.029	1.174	2.33	72.	2.71	2.16	.47	.218	.795
SB3158.	84.7	89.6	2.163	1.174	2.35	69.	2.71	2.29	.45	.197	.844
SB3169.	84.7	89.6	.831	1.274	2.53	20.	2.71	3.46	.13	.038	1.278
SB3170.	84.7	89.6	.964	1.274	2.51	37.	2.71	3.33	.24	.073	1.229
SB3171.	84.7	89.6	1.097	1.274	2.48	44.	2.71	3.14	.29	.092	1.157
SB3172.	84.7	89.6	1.230	1.274	2.48	42.	2.71	3.14	.27	.088	1.157
SB3173.	84.7	89.6	1.363	1.274	2.48	33.	2.71	3.14	.22	.069	1.157
SB3174.	84.7	89.6	1.497	1.274	2.37	71.	2.71	2.42	.46	.192	.892
SB3175.	84.7	89.6	1.630	1.274	2.26	63.	2.71	1.70	.41	.242	.627
SB3176.	84.7	89.6	1.763	1.274	2.33	81.	2.71	2.16	.53	.245	.795
SB3177.	84.7	89.6	1.896	1.274	2.41	73.	2.71	2.68	.48	.178	.988
SB3178.	84.7	89.6	2.029	1.274	2.31	74.	2.71	2.02	.48	.239	.747
SB3179.	84.7	89.6	2.163	1.274	2.28	78.	2.71	1.83	.51	.279	.675
SB3194.	84.7	89.6	.298	1.763	2.53	25.	2.71	3.46	.16	.047	1.278
SB3193.	84.7	89.6	.431	1.763	2.53	27.	2.71	3.46	.18	.051	1.278
SB3192.	84.7	89.6	.564	1.763	2.55	33.	2.71	3.59	.22	.060	1.326
SB3191.	84.7	89.6	.697	1.763	2.56	21.	2.71	3.66	.14	.038	1.350
SB3190.	84.7	89.6	.831	1.763	2.56	20.	2.71	3.66	.13	.036	1.350
SB3189.	84.7	89.6	.964	1.763	2.52	37.	2.71	3.40	.24	.071	1.253
SB3188.	84.7	89.6	1.097	1.763	2.47	38.	2.71	3.07	.25	.081	1.133
SB3187.	84.7	89.6	1.230	1.763	2.45	47.	2.71	2.94	.31	.104	1.085
SB3186.	84.7	89.6	1.363	1.763	2.40	69.	2.71	2.61	.45	.173	.964
SB3185.	84.7	89.6	1.497	1.763	2.27	82.	2.71	1.76	.54	.304	.651
SB3184.	84.7	89.6	1.630	1.763	2.16	63.	2.71	1.05	.41	.394	.386
SB3183.	84.7	89.6	1.763	1.763	2.09	46.	2.71	.59	.30	.511	.217
SB3182.	84.7	89.6	1.896	1.763	2.03	35.	2.71	.20	.23	1.167	.072
SB3181.	84.7	89.6	2.029	1.763	2.00	26.	2.71	0.00	.17	*****	0.000
SB3180.	84.7	89.6	2.163	1.763	1.98	25.	2.71	-.13	.16	1.250	-.048
SB3195.	84.7	89.6	.831	1.713	2.56	27.	2.71	3.66	.18	.048	1.350
SB3196.	84.7	89.6	.964	1.713	2.53	50.	2.71	3.46	.33	.094	1.278
SB3197.	84.7	89.6	1.097	1.713	2.44	79.	2.71	2.87	.52	.180	1.061
SB3198.	84.7	89.6	1.230	1.713	2.41	73.	2.71	2.68	.48	.178	.988
SB3199.	84.7	89.6	1.363	1.713	2.33	98.	2.71	2.16	.64	.297	.795
SB3200.	84.7	89.6	1.497	1.713	2.21	91.	2.71	1.37	.59	.433	.506
SB3201.	84.7	89.6	1.630	1.713	2.12	58.	2.71	.78	.38	.483	.289

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3202.	84.7	89.6	1.763	1.719	2.08	50.	2.71	.52	.33	.625	.193
SB3203.	84.7	89.6	1.896	1.713	2.04	38.	2.71	.26	.25	.950	.096
SB3204.	84.7	89.6	2.029	1.713	2.00	30.	2.71	0.00	.20	*****	0.000
SB3205.	84.7	89.6	2.163	1.713	1.98	31.	2.71	-.13	.20	1.550	-.048
SB3216.	84.7	89.6	.831	1.819	2.55	21.	2.71	3.59	.14	.038	1.326
SB3215.	84.7	89.6	.964	1.819	2.52	37.	2.71	3.40	.24	.071	1.253
SB3214.	84.7	89.6	1.097	1.819	2.46	48.	2.71	3.00	.31	.104	1.109
SB3213.	84.7	89.6	1.230	1.819	2.44	52.	2.71	2.87	.34	.118	1.061
SB3212.	84.7	89.6	1.363	1.813	2.42	66.	2.71	2.74	.43	.157	1.012
SB3211.	84.7	89.6	1.497	1.813	2.27	84.	2.71	1.76	.55	.311	.651
SB3210.	84.7	89.6	1.630	1.813	2.15	58.	2.71	.98	.38	.387	.362
SB3209.	84.7	89.6	1.763	1.813	2.09	44.	2.71	.59	.29	.489	.217
SB3208.	84.7	89.6	1.896	1.813	2.03	33.	2.71	.20	.22	1.100	.072
SB3207.	84.7	89.6	2.029	1.813	1.99	23.	2.71	-.07	.15	2.300	-.024
SB3206.	84.7	89.6	2.163	1.813	1.98	24.	2.71	-.13	.16	1.200	-.048

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 4. AXIAL DISTANCE=27.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=29.00 PSI RE=14100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3217.	A4.3	89.8	.298	.688	2.53	19.	2.72	3.46	.12	.036	1.275
SB3218.	A4.3	89.8	.364	.688	2.52	19.	2.72	3.40	.12	.037	1.251
SB3219.	A4.3	89.8	.431	.688	2.52	22.	2.72	3.40	.14	.042	1.251
SB3220.	A4.3	89.8	.498	.688	2.53	25.	2.72	3.46	.16	.047	1.275
SB3221.	A4.3	89.8	.564	.688	2.54	27.	2.72	3.53	.18	.050	1.299
SB3222.	A4.3	89.8	.631	.688	2.55	25.	2.72	3.59	.16	.045	1.323
SB3223.	A4.3	89.8	.697	.688	2.56	20.	2.72	3.66	.13	.036	1.347
SB3224.	A4.3	89.8	.764	.688	2.56	20.	2.72	3.66	.13	.036	1.347
SB3225.	A4.3	89.8	.831	.688	2.55	20.	2.72	3.59	.13	.036	1.323
SB3226.	A4.3	89.8	.897	.688	2.55	19.	2.72	3.59	.12	.035	1.323
SB3227.	A4.3	89.8	.964	.688	2.55	22.	2.72	3.59	.14	.040	1.323
SB3228.	A4.3	89.8	1.030	.688	2.55	27.	2.72	3.59	.18	.049	1.323
SB3229.	A4.3	89.8	1.097	.688	2.56	27.	2.72	3.66	.18	.048	1.347
SB3230.	A4.3	89.8	1.164	.688	2.58	23.	2.72	3.79	.15	.040	1.395
SB3231.	A4.3	89.8	1.230	.688	2.58	21.	2.72	3.79	.14	.036	1.395
SB3232.	A4.3	89.8	1.297	.688	2.57	22.	2.72	3.72	.14	.039	1.371
SB3233.	A4.3	89.8	1.363	.688	2.55	22.	2.72	3.59	.14	.040	1.323
SB3234.	A4.3	89.8	1.430	.688	2.54	19.	2.72	3.53	.12	.035	1.299
SB3235.	A4.3	89.8	1.497	.688	2.55	20.	2.72	3.59	.13	.036	1.323
SB3236.	A4.3	89.8	1.563	.688	2.55	22.	2.72	3.59	.14	.040	1.323
SB3237.	A4.3	89.8	1.630	.688	2.56	23.	2.72	3.66	.15	.041	1.347
SB3238.	A4.3	89.8	1.696	.688	2.57	21.	2.72	3.72	.14	.037	1.371
SB3239.	A4.3	89.8	1.763	.688	2.58	19.	2.72	3.79	.12	.033	1.395
SB3240.	A4.3	89.8	1.830	.688	2.58	19.	2.72	3.79	.12	.033	1.395
SB3241.	A4.3	89.8	1.896	.688	2.58	21.	2.72	3.79	.14	.036	1.395
SB3242.	A4.3	89.8	1.963	.688	2.57	21.	2.72	3.72	.14	.037	1.371
SB3243.	A4.3	89.8	2.029	.688	2.55	22.	2.72	3.59	.14	.040	1.323
SB3244.	A4.3	89.8	2.096	.688	2.54	23.	2.72	3.53	.15	.043	1.299
SB3245.	A4.3	89.8	2.163	.688	2.53	22.	2.72	3.46	.14	.042	1.275
SB3246.	A4.3	89.8	2.229	.688	2.54	22.	2.72	3.53	.14	.041	1.299
SB3247.	A4.3	89.8	2.296	.688	2.56	21.	2.72	3.66	.14	.038	1.347
SB3248.	A4.3	89.8	2.362	.688	2.57	20.	2.72	3.72	.13	.035	1.371
SB3249.	A4.3	89.8	2.429	.688	2.58	19.	2.72	3.79	.12	.033	1.395
SB3253.	A4.3	89.8	8.822	.110	2.52	78.	2.72	3.40	.51	.150	1.251
SB3252.	A4.3	89.8	8.522	.110	2.59	23.	2.72	3.85	.15	.039	1.419
SB3251.	A4.3	89.8	8.122	.110	2.59	24.	2.72	3.85	.16	.041	1.419
SB3250.	A4.3	89.8	7.722	.110	2.59	22.	2.72	3.85	.14	.037	1.419
SB3250.	A4.3	89.8	7.522	.110	2.57	22.	2.72	3.72	.14	.039	1.371
SB3270.	A4.3	89.8	.298	1.224	2.52	23.	2.72	3.40	.15	.044	1.251
SB3269.	A4.3	89.8	.431	1.224	2.53	23.	2.72	3.46	.15	.043	1.275
SB3268.	A4.3	89.8	.564	1.224	2.55	31.	2.72	3.59	.20	.056	1.323
SB3267.	A4.3	89.8	.697	1.224	2.57	22.	2.72	3.72	.14	.039	1.371
SB3266.	A4.3	89.8	.831	1.224	2.56	20.	2.72	3.66	.13	.036	1.347
SB3265.	A4.3	89.8	.964	1.224	2.57	22.	2.72	3.72	.14	.039	1.371
SB3264.	A4.3	89.8	1.097	1.224	2.54	41.	2.72	3.53	.27	.076	1.299
SB3263.	A4.3	89.8	1.230	1.224	2.54	31.	2.72	3.53	.20	.057	1.299
SB3262.	A4.3	89.8	1.363	1.224	2.52	33.	2.72	3.40	.22	.063	1.251

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3261.	84.3	89.8	1.497	1.224	2.42	70.	2.72	2.74	.46	.167	1.010
SB3260.	84.3	89.8	1.630	1.224	2.18	80.	2.72	1.18	.52	.444	.433
SB3259.	84.3	89.8	1.763	1.224	2.30	90.	2.72	1.96	.59	.300	.722
SB3258.	84.3	89.8	1.896	1.224	2.43	65.	2.72	2.81	.42	.151	1.034
SB3257.	84.3	89.8	2.029	1.224	2.39	95.	2.72	2.55	.62	.244	.938
SB3255.	84.3	89.8	2.163	1.224	2.28	108.	2.72	1.83	.71	.386	.673
SB3256.	84.3	89.8	2.296	1.224	2.18	85.	2.72	1.18	.56	.472	.433
SB3254.	84.3	89.8	2.429	1.224	2.22	108.	2.72	1.44	.71	.491	.529
SB3286.	84.3	89.8	.298	1.763	2.25	195.	2.72	1.63	1.27	.780	.601
SB3285.	84.3	89.8	.431	1.763	2.52	120.	2.72	3.40	.78	.231	1.251
SB3284.	84.3	89.8	.564	1.763	2.57	40.	2.72	3.72	.26	.070	1.371
SB3283.	84.3	89.8	.697	1.763	2.59	30.	2.72	3.85	.20	.051	1.419
SB3282.	84.3	89.8	.831	1.763	2.58	31.	2.72	3.79	.20	.053	1.395
SB3281.	84.3	89.8	.964	1.763	2.52	53.	2.72	3.40	.35	.102	1.251
SB3280.	84.3	89.8	1.097	1.763	2.49	47.	2.72	3.20	.31	.096	1.179
SB3279.	84.3	89.8	1.230	1.763	2.51	52.	2.72	3.33	.34	.102	1.227
SB3278.	84.3	89.8	1.363	1.763	2.45	78.	2.72	2.94	.51	.173	1.082
SB3277.	84.3	89.8	1.497	1.763	2.14	135.	2.72	.91	.88	.964	.337
SB3276.	84.3	89.8	1.630	1.763	1.95	46.	2.72	-.33	.30	.920	-.120
SB3275.	84.3	89.8	1.763	1.763	2.03	99.	2.72	.20	.65	3.300	.072
SB3274.	84.3	89.8	1.896	1.763	2.32	150.	2.72	2.09	.98	.469	.770
SB3273.	84.3	89.8	2.029	1.763	2.00	90.	2.72	0.00	.59	*****	0.000
SB3272.	84.3	89.8	2.163	1.763	2.02	35.	2.72	.13	.23	1.750	.048
SB3271.	84.3	89.8	2.296	1.763	2.05	47.	2.72	.33	.31	.940	.120

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 4, AXIAL DISTANCE=27.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.00 PSI RE= 29600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3287.	84.7	187.9	.031	.685	2.96	96.	5.68	6.27	.63	.100	1.103
SB3289.	84.7	187.9	.098	.685	2.94	33.	5.68	6.14	.22	.035	1.080
SB3288.	84.7	187.9	.168	.685	3.03	38.	5.68	6.73	.25	.037	1.184
SB3290.	84.7	187.9	.231	.685	3.05	40.	5.68	6.86	.26	.038	1.207
SB3291.	84.7	187.9	.298	.685	3.06	29.	5.68	6.92	.19	.027	1.218
SB3292.	84.7	187.9	.364	.685	3.05	31.	5.68	6.86	.20	.030	1.207
SB3293.	84.7	187.9	.431	.685	3.04	36.	5.68	6.79	.24	.035	1.195
SB3294.	84.7	187.9	.498	.685	3.06	44.	5.68	6.92	.29	.042	1.218
SB3295.	84.7	187.9	.564	.685	3.08	45.	5.68	7.05	.29	.042	1.241
SB3296.	84.7	187.9	.631	.685	3.11	40.	5.68	7.25	.26	.036	1.276
SB3297.	84.7	187.9	.697	.685	3.13	36.	5.68	7.38	.24	.032	1.299
SB3298.	84.7	187.9	.764	.685	3.12	35.	5.68	7.32	.23	.031	1.287
SB3299.	84.7	187.9	.831	.685	3.10	32.	5.68	7.18	.21	.029	1.264
SB3300.	84.7	187.9	.897	.685	3.10	33.	5.68	7.18	.22	.030	1.264
SB3301.	84.7	187.9	.964	.685	3.09	39.	5.68	7.12	.25	.036	1.253
SB3302.	84.7	187.9	1.030	.685	3.09	46.	5.68	7.12	.30	.042	1.253
SB3303.	84.7	187.9	1.097	.685	3.11	45.	5.68	7.25	.29	.041	1.276
SB3304.	84.7	187.9	1.164	.685	3.13	40.	5.68	7.38	.26	.035	1.299
SB3305.	84.7	187.9	1.230	.685	3.14	37.	5.68	7.45	.24	.032	1.310
SB3306.	84.7	187.9	1.297	.685	3.12	37.	5.68	7.32	.24	.033	1.287
SB3307.	84.7	187.9	1.363	.685	3.10	36.	5.68	7.18	.24	.033	1.264
SB3308.	84.7	187.9	1.430	.685	3.08	33.	5.68	7.05	.22	.031	1.241
SB3309.	84.7	187.9	1.497	.685	3.09	35.	5.68	7.12	.23	.032	1.253
SB3310.	84.7	187.9	1.563	.685	3.10	39.	5.68	7.18	.25	.035	1.264
SB3311.	84.7	187.9	1.630	.685	3.12	38.	5.68	7.32	.25	.034	1.287
SB3312.	84.7	187.9	1.696	.685	3.15	35.	5.68	7.51	.23	.030	1.322
SB3313.	84.7	187.9	1.763	.685	3.16	33.	5.68	7.58	.22	.028	1.333
SB3314.	84.7	187.9	1.830	.685	3.15	35.	5.68	7.51	.23	.030	1.322
SB3315.	84.7	187.9	1.896	.685	3.13	35.	5.68	7.38	.23	.031	1.299
SB3316.	84.7	187.9	1.963	.685	3.12	36.	5.68	7.32	.24	.032	1.287
SB3317.	84.7	187.9	2.029	.685	3.09	37.	5.68	7.12	.24	.034	1.253
SB3318.	84.7	187.9	2.096	.685	3.07	37.	5.68	6.99	.24	.035	1.230
SB3319.	84.7	187.9	2.163	.685	3.06	37.	5.68	6.92	.24	.035	1.218
SB3320.	84.7	187.9	2.229	.685	3.08	36.	5.68	7.05	.24	.033	1.241
SB3321.	84.7	187.9	2.296	.685	3.10	35.	5.68	7.18	.23	.032	1.264
SB3325.	84.7	187.9	.298	.110	3.05	100.	5.68	6.86	.65	.095	1.207
SB3324.	84.7	187.9	.697	.110	3.14	38.	5.68	7.45	.25	.033	1.310
SB3323.	84.7	187.9	1.230	.110	3.18	41.	5.68	7.71	.27	.035	1.356
SB3322.	84.7	187.9	1.763	.110	3.18	39.	5.68	7.71	.26	.033	1.356
SB3342.	84.7	187.9	.165	1.224	2.95	116.	5.68	6.20	.76	.122	1.092
SB3341.	84.7	187.9	.298	1.224	3.06	36.	5.68	6.92	.24	.034	1.218
SB3340.	84.7	187.9	.431	1.224	3.06	37.	5.68	6.92	.24	.035	1.218
SB3339.	84.7	187.9	.564	1.224	3.09	48.	5.68	7.12	.31	.044	1.253
SB3338.	84.7	187.9	.697	1.224	3.14	38.	5.68	7.45	.25	.033	1.310
SB3337.	84.7	187.9	.831	1.224	3.11	34.	5.68	7.25	.22	.031	1.276
SB3336.	84.7	187.9	.964	1.224	3.13	36.	5.68	7.38	.24	.032	1.299
SB3335.	84.7	187.9	1.097	1.224	3.12	48.	5.68	7.32	.31	.043	1.287

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3334.	84.7	187.9	1.230	1.224	3.08	44.	5.68	7.05	.29	.041	1.241
SB3333.	84.7	187.9	1.363	1.224	3.03	42.	5.68	6.73	.27	.041	1.184
SB3332.	84.7	187.9	1.497	1.224	2.84	108.	5.68	5.49	.71	.129	.966
SB3331.	84.7	187.9	1.630	1.224	2.49	118.	5.68	3.20	.77	.241	.563
SB3330.	84.7	187.9	1.763	1.224	2.73	158.	5.68	4.77	1.03	.216	.839
SB3329.	84.7	187.9	1.896	1.224	2.95	108.	5.68	6.20	.71	.114	1.092
SB3328.	84.7	187.9	2.029	1.224	2.81	155.	5.68	5.29	1.01	.191	.931
SB3327.	84.7	187.9	2.163	1.224	2.43	144.	5.68	2.81	.94	.335	.494
SB3326.	84.7	187.9	2.296	1.224	2.80	147.	5.68	5.23	.96	.184	.920
SB3359.	84.7	187.9	.165	1.763	3.02	150.	5.68	6.66	.98	.147	1.172
SB3358.	84.7	187.9	.298	1.763	3.09	250.	5.68	7.12	1.63	.229	1.253
SB3357.	84.7	187.9	.431	1.763	3.10	50.	5.68	7.18	.33	.045	1.264
SB3356.	84.7	187.9	.564	1.763	3.14	49.	5.68	7.45	.32	.043	1.310
SB3355.	84.7	187.9	.697	1.763	3.16	35.	5.68	7.58	.23	.030	1.333
SB3354.	84.7	187.9	.831	1.763	3.15	36.	5.68	7.51	.24	.031	1.322
SB3353.	84.7	187.9	.964	1.763	3.11	60.	5.68	7.25	.39	.054	1.276
SB3352.	84.7	187.9	1.097	1.763	3.00	69.	5.68	6.53	.45	.069	1.149
SB3351.	84.7	187.9	1.230	1.763	3.04	82.	5.68	6.79	.54	.079	1.195
SB3350.	84.7	187.9	1.363	1.763	2.90	175.	5.68	5.88	1.14	.194	1.035
SB3349.	84.7	187.9	1.497	1.763	2.08	175.	5.68	.52	1.14	2.188	.092
SB3348.	84.7	187.9	1.630	1.763	1.99	99.	5.68	-.07	.65	9.900	-.011
SB3347.	84.7	187.9	1.763	1.763	2.12	159.	5.68	.78	1.04	1.325	.138
SB3346.	84.7	187.9	1.896	1.763	2.22	209.	5.68	1.44	1.37	.950	.253
SB3345.	84.7	187.9	2.029	1.763	1.94	85.	5.68	-.39	.56	1.417	-.069
SB3344.	84.7	187.9	2.163	1.763	1.98	64.	5.68	-.13	.42	3.200	-.023
SB3343.	84.7	187.9	2.296	1.763	1.99	84.	5.68	-.07	.55	8.400	-.011

TABLE C-1. TABULATION OF EXPERIMENTAL LOA DATA

DATA PLANE NO.14, AXIAL DISTANCE=27.60 IN, BLOCKAGE CENTERLINE=29.25 IN, P=17.00 PSI RE= 29600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3367.	85.0	187.4	.231	1.763	2.96	50.	5.67	6.27	.33	.052	1.106
SB3368.	85.0	187.4	.298	1.763	2.91	50.	5.67	5.94	.33	.055	1.049
SB3369.	85.0	187.4	.364	1.763	2.89	46.	5.67	5.81	.30	.052	1.026
SB3370.	85.0	187.4	.431	1.763	2.87	46.	5.67	5.68	.30	.053	1.003
SB3371.	85.0	187.4	.498	1.763	2.89	48.	5.67	5.81	.31	.054	1.026
SB3372.	85.0	187.4	.564	1.763	2.92	46.	5.67	6.01	.30	.050	1.060
SB3373.	85.0	187.4	.631	1.763	2.94	38.	5.67	6.14	.25	.040	1.083
SB3374.	85.0	187.4	.697	1.763	2.95	34.	5.67	6.20	.25	.040	1.095
SB3375.	85.0	187.4	.764	1.763	2.93	45.	5.67	6.07	.29	.048	1.072
SB3376.	85.0	187.4	.831	1.763	2.90	46.	5.67	5.88	.30	.051	1.037
SB3377.	85.0	187.4	.897	1.763	2.88	44.	5.67	5.75	.29	.050	1.014
SB3378.	85.0	187.4	.964	1.763	2.88	44.	5.67	5.75	.29	.050	1.014
SB3379.	85.0	187.4	1.030	1.763	2.88	40.	5.67	5.75	.26	.045	1.014
SB3380.	85.0	187.4	1.097	1.763	2.87	38.	5.67	5.68	.25	.044	1.003
SB3381.	85.0	187.4	1.164	1.763	2.86	39.	5.67	5.62	.25	.045	.991
SB3382.	85.0	187.4	1.230	1.763	2.82	57.	5.67	5.36	.37	.070	.945
SB3383.	85.0	187.4	1.297	1.763	2.76	58.	5.67	4.96	.38	.076	.876
SB3384.	85.0	187.4	1.363	1.763	2.70	59.	5.67	4.57	.39	.084	.807
SB3385.	85.0	187.4	1.430	1.763	2.68	56.	5.67	4.44	.37	.082	.784
SB3386.	85.0	187.4	1.497	1.763	2.67	55.	5.67	4.38	.36	.082	.772
SB3387.	85.0	187.4	1.563	1.763	2.66	57.	5.67	4.31	.37	.086	.761
SB3388.	85.0	187.4	1.630	1.763	2.65	52.	5.67	4.25	.34	.080	.749
SB3389.	85.0	187.4	1.698	1.763	2.65	47.	5.67	4.25	.31	.072	.749
SB3390.	85.0	187.4	1.763	1.763	2.64	47.	5.67	4.18	.31	.073	.738
SB3391.	85.0	187.4	1.830	1.763	2.62	64.	5.67	4.05	.42	.103	.715
SB3372.	85.0	187.4	1.896	1.763	2.56	87.	5.67	3.66	.57	.155	.645
SB3393.	85.0	187.4	1.963	1.763	2.50	93.	5.67	3.27	.61	.186	.576
SB3394.	85.0	187.4	2.029	1.763	2.48	89.	5.67	3.14	.58	.185	.553
SB3395.	85.0	187.4	2.096	1.763	2.46	88.	5.67	3.00	.57	.191	.530
SB3396.	85.0	187.4	2.163	1.763	2.46	94.	5.67	3.00	.61	.204	.530
SB3397.	85.0	187.4	2.229	1.763	2.48	98.	5.67	3.14	.64	.204	.553
SB3398.	85.0	187.4	2.296	1.763	2.53	96.	5.67	3.46	.63	.181	.611
SB3399.	85.0	187.4	2.362	1.763	2.58	76.	5.67	3.79	.50	.131	.668
SB3403.	85.0	187.4	.231	1.224	2.93	50.	5.67	6.07	.33	.054	1.072
SB3402.	85.0	187.4	.697	1.224	2.94	36.	5.67	6.14	.24	.038	1.083
SB3401.	85.0	187.4	1.230	1.224	2.89	43.	5.67	5.81	.28	.048	1.026
SB3400.	85.0	187.4	1.763	1.224	2.82	49.	5.67	5.36	.32	.060	.945
SB3407.	85.0	187.4	.231	.685	2.92	43.	5.67	6.01	.28	.047	1.060
SB3406.	85.0	187.4	.697	.685	2.94	39.	5.67	6.14	.25	.041	1.083
SB3405.	85.0	187.4	1.230	.685	2.95	38.	5.67	6.20	.25	.040	1.095
SB3404.	85.0	187.4	1.763	.685	2.94	39.	5.67	6.14	.25	.041	1.083
SB3411.	85.0	187.4	.298	.110	2.95	42.	5.67	6.20	.27	.044	1.095
SB3410.	85.0	187.4	.697	.110	2.99	34.	5.67	6.47	.22	.034	1.141
SB3409.	85.0	187.4	1.230	.110	3.02	37.	5.67	6.66	.24	.036	1.176
SB3408.	85.0	187.4	1.763	.110	3.01	34.	5.67	6.60	.22	.034	1.164

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 14, AXIAL DISTANCE 427.60 IN, BLOCKAGE CENTERLINE = 29.25 IN, P = 20.00 PSI RE = 14100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E (DOP) VOLTS	BELTA E MVOLTS	UB FPS	U (LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3412.	85.0	89.0	.231	1.773	2.40	68.	2.69	2.61	.44	.170	.971
SB3413.	85.0	89.0	.298	1.778	2.38	40.	2.69	2.48	.26	.105	.922
SB3414.	84.2	89.0	.098	1.763	2.52	28.	2.69	3.40	.18	.054	1.262
SB3415.	84.2	89.0	.165	1.763	2.51	30.	2.69	3.33	.20	.059	1.238
SB3416.	84.2	89.0	.231	1.763	2.48	32.	2.69	3.14	.21	.067	1.165
SB3417.	84.2	89.0	.298	1.763	2.46	32.	2.69	3.00	.21	.070	1.116
SB3418.	84.2	89.0	.364	1.763	2.46	32.	2.69	3.00	.21	.070	1.116
SB3419.	84.2	89.0	.431	1.763	2.48	34.	2.69	3.14	.22	.071	1.165
SB3420.	84.2	89.0	.498	1.763	2.49	30.	2.69	3.20	.20	.061	1.189
SB3421.	84.2	89.0	.564	1.763	2.50	26.	2.69	3.27	.17	.052	1.213
SB3422.	84.2	89.0	.631	1.763	2.50	28.	2.69	3.27	.18	.056	1.213
SB3423.	84.2	89.0	.697	1.763	2.49	32.	2.69	3.20	.21	.065	1.189
SB3424.	84.2	89.0	.764	1.763	2.47	33.	2.69	3.07	.22	.070	1.141
SB3425.	84.2	89.0	.831	1.763	2.46	32.	2.69	3.00	.21	.070	1.116
SB3426.	84.2	89.0	.897	1.763	2.45	31.	2.69	2.94	.20	.069	1.092
SB3427.	84.2	89.0	.964	1.763	2.46	29.	2.69	3.00	.19	.063	1.116
SB3428.	84.2	89.0	1.030	1.763	2.45	26.	2.69	2.94	.17	.058	1.092
SB3429.	84.2	89.0	1.097	1.763	2.44	32.	2.69	2.87	.21	.073	1.068
SB3430.	84.2	89.0	1.164	1.763	2.42	41.	2.69	2.74	.27	.098	1.019
SB3431.	84.2	89.0	1.230	1.763	2.38	42.	2.69	2.48	.27	.111	.922
SB3432.	84.2	89.0	1.297	1.763	2.36	39.	2.69	2.35	.25	.108	.874
SB3433.	84.2	89.0	1.363	1.763	2.35	42.	2.69	2.29	.27	.120	.849
SB3434.	84.2	89.0	1.430	1.763	2.34	45.	2.69	2.22	.29	.132	.825
SB3435.	84.2	89.0	1.497	1.763	2.33	45.	2.69	2.16	.29	.136	.801
SB3436.	84.2	89.0	1.563	1.763	2.33	40.	2.69	2.16	.26	.121	.801
SB3437.	84.2	89.0	1.630	1.763	2.33	36.	2.69	2.16	.24	.109	.801
SB3438.	84.2	89.0	1.696	1.763	2.32	46.	2.69	2.09	.30	.144	.777
SB3439.	84.2	89.0	1.763	1.763	2.28	68.	2.69	1.83	.44	.243	.679
SB3440.	84.2	89.0	1.830	1.763	2.22	79.	2.69	1.44	.52	.359	.534
SB3441.	84.2	89.0	1.896	1.763	2.18	71.	2.69	1.18	.46	.394	.437
SB3442.	84.2	89.0	1.963	1.763	2.17	71.	2.69	1.11	.46	.418	.413
SB3443.	84.2	89.0	2.029	1.763	2.17	68.	2.69	1.11	.44	.400	.413
SB3444.	84.2	89.0	2.096	1.763	2.17	70.	2.69	1.11	.46	.412	.413
SB3445.	84.2	89.0	2.163	1.763	2.19	72.	2.69	1.24	.47	.379	.461
SB3446.	84.2	89.0	2.229	1.763	2.23	78.	2.69	1.50	.51	.339	.558
SB3450.	84.2	89.0	.165	1.224	2.50	33.	2.69	3.27	.22	.066	1.213
SB3449.	84.2	89.0	.697	1.224	2.48	30.	2.69	3.14	.20	.063	1.165
SB3448.	84.2	89.0	1.230	1.224	2.43	42.	2.69	2.81	.27	.098	1.044
SB3447.	84.2	89.0	1.763	1.224	2.41	42.	2.69	2.68	.27	.102	.995
SB3454.	84.2	89.0	.165	.685	2.49	28.	2.69	3.20	.18	.057	1.189
SB3453.	84.2	89.0	.697	.685	2.49	28.	2.69	3.20	.18	.057	1.189
SB3452.	84.2	89.0	1.230	.685	2.49	28.	2.69	3.20	.18	.057	1.189
SB3451.	84.2	89.0	1.763	.685	2.49	30.	2.69	3.20	.20	.061	1.189

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB345A.	84.2	89.0	.169	.110	2.49	46.	2.69	3.20	.30	.094	1.189
SB3457.	84.2	89.0	.697	.110	2.52	22.	2.69	3.40	.14	.042	1.262
SB3456.	84.2	89.0	1.230	.110	2.53	24.	2.69	3.46	.16	.045	1.286
SB3455.	84.2	89.0	1.763	.110	2.53	24.	2.69	3.46	.16	.045	1.286

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.14, AXIAL DISTANCE=27.60 IN. BLOCKAGE CENTERLINE=29.25 IN. P=38.00 PSI RE= 61200.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SB3459.	91.2	360.4	.098	1.763	3.96	70.	10.90	12.80	.46	.036	1.175
SB3460.	91.2	360.4	.165	1.763	3.90	80.	10.90	12.41	.52	.042	1.139
SB3461.	91.2	360.4	.231	1.763	3.84	79.	10.90	12.02	.52	.043	1.103
SB3462.	91.2	360.4	.298	1.763	3.81	75.	10.90	11.82	.49	.041	1.085
SB3463.	91.2	360.4	.364	1.763	3.81	77.	10.90	11.82	.50	.043	1.085
SB3464.	91.2	360.4	.431	1.763	3.85	78.	10.90	12.08	.51	.042	1.109
SB3465.	91.2	360.4	.498	1.763	3.88	71.	10.90	12.28	.46	.038	1.127
SB3466.	91.2	360.4	.564	1.763	3.90	62.	10.90	12.41	.40	.033	1.139
SB3467.	91.2	360.4	.631	1.763	3.89	67.	10.90	12.34	.44	.035	1.133
SB3468.	91.2	360.4	.697	1.763	3.84	79.	10.90	12.02	.52	.043	1.103
SB3469.	91.2	360.4	.764	1.763	3.79	79.	10.90	11.69	.52	.044	1.073
SB3470.	91.2	360.4	.831	1.763	3.77	78.	10.90	11.56	.51	.044	1.061
SB3471.	91.2	360.4	.897	1.763	3.77	78.	10.90	11.56	.51	.044	1.061
SB3472.	91.2	360.4	.964	1.763	3.77	68.	10.90	11.56	.44	.038	1.061
SB3473.	91.2	360.4	1.030	1.763	3.75	64.	10.90	11.43	.42	.037	1.049
SB3474.	91.2	360.4	1.097	1.763	3.72	75.	10.90	11.23	.49	.044	1.031
SB3475.	91.2	360.4	1.164	1.763	3.64	96.	10.90	10.71	.63	.059	.983
SB3476.	91.2	360.4	1.230	1.763	3.53	109.	10.90	9.99	.71	.071	.917
SB3477.	91.2	360.4	1.297	1.763	3.44	93.	10.90	9.41	.61	.065	.863
SB3478.	91.2	360.4	1.363	1.763	3.41	94.	10.90	9.21	.61	.067	.845
SB3479.	91.2	360.4	1.430	1.763	3.39	94.	10.90	9.08	.61	.068	.833
SB3480.	91.2	360.4	1.497	1.763	3.35	94.	10.90	8.82	.61	.070	.809
SB3481.	91.2	360.4	1.563	1.763	3.33	87.	10.90	8.69	.57	.065	.797
SB3482.	91.2	360.4	1.630	1.763	3.32	79.	10.90	8.62	.52	.060	.791
SB3483.	91.2	360.4	1.698	1.763	3.29	85.	10.90	8.43	.56	.066	.773
SB3484.	91.2	360.4	1.763	1.763	3.22	119.	10.90	7.97	.78	.098	.731
SB3485.	91.2	360.4	1.830	1.763	3.09	157.	10.90	7.12	1.03	.144	.653
SB3486.	91.2	360.4	1.898	1.763	3.02	162.	10.90	6.66	1.06	.159	.611
SB3487.	91.2	360.4	1.963	1.763	2.99	154.	10.90	6.47	1.01	.156	.593
SB3488.	91.2	360.4	2.029	1.763	2.98	157.	10.90	6.40	1.03	.160	.587
SB3489.	91.2	360.4	2.098	1.763	2.98	167.	10.90	6.40	1.09	.170	.587
SB3490.	91.2	360.4	2.163	1.763	3.02	179.	10.90	6.66	1.17	.175	.611
SB3491.	91.2	360.4	2.229	1.763	3.13	156.	10.90	7.38	1.02	.138	.677
SB3495.	91.2	360.4	.165	1.224	3.89	87.	10.90	12.34	.57	.046	1.133
SB3496.	91.2	360.4	.697	1.224	3.84	83.	10.90	12.02	.54	.045	1.103
SB3493.	91.2	360.4	1.230	1.224	3.69	90.	10.90	11.04	.59	.053	1.013
SB3492.	91.2	360.4	1.763	1.224	3.62	105.	10.90	10.58	.69	.065	.971
SB3499.	91.2	360.4	.165	.685	3.86	72.	10.90	12.15	.47	.039	1.115
SB3498.	91.2	360.4	.697	.685	3.87	75.	10.90	12.21	.49	.040	1.121
SB3497.	91.2	360.4	1.230	.685	3.83	89.	10.90	11.95	.58	.049	1.097
SB3496.	91.2	360.4	1.763	.685	3.87	82.	10.90	12.21	.54	.044	1.121
SB3503.	91.2	360.4	.165	.110	3.93	67.	10.90	12.61	.44	.035	1.157
SB3502.	91.2	360.4	.697	.110	3.99	69.	10.90	13.00	.45	.035	1.193
SB3501.	91.2	360.4	1.230	.110	4.06	70.	10.90	13.45	.46	.034	1.235
SB3500.	91.2	360.4	1.763	.110	4.02	67.	10.90	13.19	.44	.033	1.211

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 4, AXIAL DISTANCE=27.90 IN, BLOCKAGE CENTERLINE=26.75 IN, P=29.00 PSI, RE= 29600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 1.	84.9	187.4	.165	1.769	3.07	64.	5.67	6.99	.42	.060	1.233
SN 2.	84.9	187.4	.231	1.763	3.10	43.	5.67	7.18	.28	.039	1.268
SN 3.	84.9	187.4	.298	1.769	3.09	39.	5.67	7.12	.25	.036	1.256
SN 4.	84.9	187.4	.364	1.763	3.07	37.	5.67	6.99	.24	.035	1.233
SN 5.	84.9	187.4	.431	1.763	3.07	38.	5.67	6.99	.25	.036	1.233
SN 6.	84.9	187.4	.498	1.763	3.08	44.	5.67	7.05	.29	.041	1.245
SN 7.	84.9	187.4	.564	1.763	3.11	44.	5.67	7.25	.29	.040	1.279
SN 8.	84.9	187.4	.631	1.763	3.13	39.	5.67	7.38	.25	.035	1.302
SN 9.	84.9	187.4	.697	1.763	3.12	39.	5.67	7.32	.25	.035	1.291
SN 10.	84.9	187.4	.764	1.763	3.11	38.	5.67	7.25	.25	.034	1.279
SN 11.	84.9	187.4	.831	1.763	3.12	38.	5.67	7.32	.25	.034	1.291
SN 12.	84.9	187.4	.897	1.763	3.13	40.	5.67	7.38	.26	.035	1.302
SN 13.	84.9	187.4	.964	1.763	3.13	50.	5.67	7.38	.33	.044	1.302
SN 14.	84.9	187.4	1.030	1.763	3.09	61.	5.67	7.12	.40	.056	1.256
SN 15.	84.9	187.4	1.097	1.763	3.06	69.	5.67	6.92	.45	.065	1.222
SN 16.	84.9	187.4	1.164	1.763	3.07	78.	5.67	6.99	.51	.073	1.233
SN 17.	84.9	187.4	1.230	1.763	3.11	78.	5.67	7.25	.51	.070	1.279
SN 18.	84.9	187.4	1.297	1.763	3.10	85.	5.67	7.18	.56	.077	1.268
SN 19.	84.9	187.4	1.363	1.763	3.02	98.	5.67	6.66	.64	.096	1.176
SN 20.	84.9	187.4	1.430	1.763	2.93	104.	5.67	6.07	.68	.112	1.072
SN 21.	84.9	187.4	1.497	1.769	2.81	106.	5.67	5.29	.69	.131	.934
SN 22.	84.9	187.4	1.563	1.763	2.65	160.	5.67	4.25	1.05	.246	.749
SN 23.	84.9	187.4	1.630	1.763	2.13	185.	5.67	.85	1.21	1.423	.150
SN 24.	84.9	187.4	1.696	1.763	2.10	96.	5.67	.65	.63	.960	.115
SN 25.	84.9	187.4	1.763	1.763	2.16	105.	5.67	1.05	.69	.656	.184
SN 26.	84.9	187.4	1.830	1.763	2.11	105.	5.67	.72	.69	.955	.127
SN 27.	84.9	187.4	1.896	1.763	2.05	115.	5.67	.33	.75	2.300	.058
SN 28.	84.9	187.4	1.963	1.763	1.91	100.	5.67	-.59	.65	1.111	-.104
SN 29.	84.9	187.4	2.029	1.763	1.84	69.	5.67	-1.05	.45	.431	-.184
SN 30.	84.9	187.4	2.096	1.768	1.83	71.	5.67	-1.11	.46	.418	-.196
SN 31.	84.9	187.4	2.163	1.763	1.89	98.	5.67	-.72	.64	.891	-.127
SN 32.	84.9	187.4	2.229	1.763	2.00	149.	5.67	0.00	.97	*****	0.000
SN 33.	84.9	187.4	2.296	1.763	2.23	220.	5.67	1.50	1.44	.957	.265
SN 66.	84.9	187.4	.165	1.224	3.05	49.	5.67	6.86	.32	.047	1.210
SN 65.	84.9	187.4	.231	1.224	3.05	39.	5.67	6.86	.25	.037	1.210
SN 64.	84.9	187.4	.298	1.224	3.04	36.	5.67	6.79	.24	.035	1.199
SN 63.	84.9	187.4	.364	1.224	3.03	39.	5.67	6.73	.25	.038	1.187
SN 62.	84.9	187.4	.431	1.224	3.04	46.	5.67	6.79	.30	.044	1.199
SN 61.	84.9	187.4	.498	1.224	3.07	50.	5.67	6.99	.33	.047	1.233
SN 60.	84.9	187.4	.564	1.224	3.09	46.	5.67	7.12	.30	.042	1.256
SN 59.	84.9	187.4	.631	1.224	3.11	39.	5.67	7.25	.25	.035	1.279
SN 58.	84.9	187.4	.697	1.224	3.09	39.	5.67	7.12	.25	.036	1.256
SN 57.	84.9	187.4	.764	1.224	3.07	36.	5.67	6.99	.24	.034	1.233
SN 56.	84.9	187.4	.831	1.224	3.07	34.	5.67	6.99	.22	.032	1.233
SN 55.	84.9	187.4	.897	1.224	3.08	38.	5.67	7.05	.25	.035	1.245
SN 54.	84.9	187.4	.964	1.224	3.09	42.	5.67	7.12	.27	.039	1.256
SN 53.	84.9	187.4	1.030	1.224	3.08	47.	5.67	7.05	.31	.044	1.245
SN 52.	84.9	187.4	1.097	1.224	3.06	56.	5.67	6.92	.37	.053	1.222
SN 51.	84.9	187.4	1.164	1.224	3.03	57.	5.67	6.73	.37	.055	1.187

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 50.	R4.9	187.4	1.230	1.224	3.01	44.	5.67	6.60	.29	.044	1.164
SN 49.	R4.9	187.4	1.297	1.224	3.00	38.	5.67	6.53	.25	.038	1.153
SN 48.	R4.9	187.4	1.363	1.224	3.02	48.	5.67	6.66	.31	.047	1.176
SN 47.	R4.9	187.4	1.430	1.224	2.98	68.	5.67	6.40	.44	.069	1.129
SN 46.	R4.9	187.4	1.497	1.224	2.89	87.	5.67	5.81	.57	.098	1.026
SN 45.	R4.9	187.4	1.563	1.224	2.75	115.	5.67	4.90	.75	.153	.864
SN 44.	R4.9	187.4	1.630	1.224	2.64	125.	5.67	4.18	.82	.195	.738
SN 43.	R4.9	187.4	1.696	1.224	2.78	164.	5.67	5.09	1.07	.210	.899
SN 42.	R4.9	187.4	1.763	1.224	3.00	112.	5.67	6.53	.73	.112	1.153
SN 41.	R4.9	187.4	1.830	1.224	3.07	80.	5.67	6.99	.52	.075	1.233
SN 40.	R4.9	187.4	1.896	1.224	3.04	96.	5.67	6.79	.63	.092	1.199
SN 39.	R4.9	187.4	1.963	1.224	2.92	165.	5.67	6.01	1.08	.179	1.060
SN 38.	R4.9	187.4	2.029	1.224	2.67	230.	5.67	4.38	1.50	.343	.772
SN 37.	R4.9	187.4	2.096	1.224	2.52	180.	5.67	3.40	1.18	.346	.599
SN 36.	R4.9	187.4	2.163	1.224	2.67	220.	5.67	4.38	1.44	.328	.772
SN 35.	R4.9	187.4	2.229	1.224	2.95	147.	5.67	6.20	.96	.155	1.095
SN 34.	R4.9	187.4	2.296	1.224	3.05	87.	5.67	6.86	.57	.083	1.210
SN 99.	R4.7	187.7	.165	.688	3.06	52.	5.68	6.92	.34	.049	1.220
SN 98.	R4.7	187.7	.231	.688	3.07	44.	5.68	6.99	.29	.041	1.231
SN 97.	R4.7	187.7	.298	.688	3.04	46.	5.68	6.79	.30	.044	1.197
SN 96.	R4.7	187.7	.364	.688	3.00	44.	5.68	6.53	.29	.044	1.151
SN 95.	R4.7	187.7	.431	.688	3.00	45.	5.68	6.53	.29	.045	1.151
SN 94.	R4.7	187.7	.498	.688	3.02	50.	5.68	6.66	.33	.049	1.174
SN 93.	R4.7	187.7	.564	.688	3.05	49.	5.68	6.86	.32	.047	1.208
SN 92.	R4.7	187.7	.631	.688	3.08	42.	5.68	7.05	.27	.039	1.243
SN 91.	R4.7	187.7	.697	.688	3.08	43.	5.68	7.05	.28	.040	1.243
SN 90.	R4.7	187.7	.764	.688	3.05	47.	5.68	6.86	.31	.045	1.208
SN 89.	R4.7	187.7	.831	.688	3.02	44.	5.68	6.66	.29	.043	1.174
SN 88.	R4.7	187.7	.897	.688	3.00	43.	5.68	6.53	.28	.043	1.151
SN 87.	R4.7	187.7	.964	.688	2.99	49.	5.68	6.47	.32	.049	1.139
SN 86.	R4.7	187.7	1.030	.688	3.01	50.	5.68	6.60	.33	.050	1.162
SN 85.	R4.7	187.7	1.097	.688	3.05	50.	5.68	6.86	.33	.048	1.208
SN 84.	R4.7	187.7	1.164	.688	3.08	41.	5.68	7.05	.27	.038	1.243
SN 83.	R4.7	187.7	1.230	.688	3.07	41.	5.68	6.99	.27	.038	1.231
SN 82.	R4.7	187.7	1.297	.688	3.05	40.	5.68	6.86	.26	.038	1.208
SN 81.	R4.7	187.7	1.363	.688	3.03	39.	5.68	6.73	.25	.038	1.185
SN 80.	R4.7	187.7	1.430	.688	3.01	38.	5.68	6.60	.25	.038	1.162
SN 79.	R4.7	187.7	1.497	.688	3.00	44.	5.68	6.53	.29	.044	1.151
SN 78.	R4.7	187.7	1.563	.688	3.01	46.	5.68	6.60	.30	.046	1.162
SN 77.	R4.7	187.7	1.630	.688	3.04	41.	5.68	6.79	.27	.039	1.197
SN 76.	R4.7	187.7	1.696	.688	3.07	38.	5.68	6.99	.25	.036	1.231
SN 75.	R4.7	187.7	1.763	.688	3.08	37.	5.68	7.05	.24	.034	1.243
SN 74.	R4.7	187.7	1.830	.688	3.07	41.	5.68	6.99	.27	.038	1.231
SN 73.	R4.7	187.7	1.896	.688	3.05	41.	5.68	6.86	.27	.039	1.208
SN 72.	R4.7	187.7	1.963	.688	3.02	45.	5.68	6.66	.29	.044	1.174
SN 71.	R4.7	187.7	2.029	.688	2.97	52.	5.68	6.34	.34	.054	1.116
SN 70.	R4.7	187.7	2.096	.688	2.94	52.	5.68	6.14	.34	.055	1.082
SN 69.	R4.7	187.7	2.163	.688	2.96	49.	5.68	6.27	.32	.051	1.105
SN 68.	R4.7	187.7	2.229	.688	3.00	40.	5.68	6.53	.26	.040	1.151
SN 67.	R4.7	187.7	2.296	.688	3.04	39.	5.68	6.79	.25	.038	1.197
SN 103.	R4.7	187.7	.298	.110	3.04	44.	5.68	6.79	.29	.042	1.197
SN 102.	R4.7	187.7	.697	.110	3.11	47.	5.68	7.25	.31	.042	1.277
SN 101.	R4.7	187.7	1.230	.110	3.13	41.	5.68	7.38	.27	.036	1.300

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E BVOLTS	UB FPS	U(LCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 100.	84.7	187.7	1.763	.110	3.18	41.	5.68	7.71	.27	.035	1.358

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 8. AXIAL DISTANCE=26.80 IN. BLOCKAGE CENTERLINE=26.75 IN. P=29.00 PSI RE= 29700.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 103.	85.0	187.7	.165	.685	3.10	50.	5.68	7.18	.33	.045	1.266
SN 104.	85.0	187.7	.231	.685	3.06	48.	5.68	6.92	.31	.045	1.220
SN 105.	85.0	187.7	.298	.685	3.03	44.	5.68	6.73	.29	.043	1.185
SN 106.	85.0	187.7	.364	.685	3.03	46.	5.68	6.73	.30	.045	1.185
SN 107.	85.0	187.7	.431	.685	3.05	49.	5.68	6.86	.32	.047	1.208
SN 108.	85.0	187.7	.498	.685	3.09	49.	5.68	7.12	.32	.045	1.254
SN 109.	85.0	187.7	.564	.685	3.11	44.	5.68	7.25	.29	.040	1.277
SN 110.	85.0	187.7	.631	.685	3.11	46.	5.68	7.25	.31	.043	1.277
SN 111.	85.0	187.7	.697	.685	3.07	52.	5.68	6.99	.34	.049	1.231
SN 112.	85.0	187.7	.764	.685	3.04	44.	5.68	6.79	.29	.042	1.197
SN 113.	85.0	187.7	.831	.685	3.03	41.	5.68	6.73	.27	.040	1.185
SN 114.	85.0	187.7	.897	.685	3.05	45.	5.68	6.86	.29	.043	1.208
SN 115.	85.0	187.7	.964	.685	3.07	45.	5.68	6.99	.29	.042	1.231
SN 116.	85.0	187.7	1.030	.685	3.10	44.	5.68	7.18	.29	.040	1.266
SN 117.	85.0	187.7	1.097	.685	3.12	42.	5.68	7.32	.27	.038	1.289
SN 118.	85.0	187.7	1.164	.685	3.11	45.	5.68	7.25	.29	.041	1.277
SN 119.	85.0	187.7	1.230	.685	3.08	46.	5.68	7.05	.30	.043	1.243
SN 120.	85.0	187.7	1.297	.685	3.06	42.	5.68	6.92	.27	.040	1.220
SN 121.	85.0	187.7	1.363	.685	3.06	38.	5.68	6.92	.25	.036	1.220
SN 122.	85.0	187.7	1.430	.685	3.07	39.	5.68	6.99	.25	.036	1.231
SN 123.	85.0	187.7	1.497	.685	3.08	41.	5.68	7.05	.27	.038	1.243
SN 124.	85.0	187.7	1.563	.685	3.10	41.	5.68	7.18	.27	.037	1.266
SN 125.	85.0	187.7	1.630	.685	3.13	40.	5.68	7.38	.26	.035	1.300
SN 126.	85.0	187.7	1.696	.685	3.14	40.	5.68	7.45	.26	.035	1.312
SN 127.	85.0	187.7	1.763	.685	3.13	44.	5.68	7.38	.29	.039	1.300
SN 128.	85.0	187.7	1.830	.685	3.10	45.	5.68	7.18	.29	.041	1.266
SN 129.	85.0	187.7	1.896	.685	3.07	42.	5.68	6.99	.27	.039	1.231
SN 130.	85.0	187.7	1.963	.685	3.06	40.	5.68	6.92	.26	.038	1.220
SN 131.	85.0	187.7	2.029	.685	3.05	39.	5.68	6.86	.25	.037	1.208
SN 132.	85.0	187.7	2.096	.685	3.06	38.	5.68	6.92	.25	.036	1.220
SN 133.	85.0	187.7	2.163	.685	3.08	41.	5.68	7.05	.27	.038	1.243
SN 134.	85.0	187.7	2.229	.685	3.11	42.	5.68	7.25	.27	.038	1.277
SN 166.	85.0	187.7	.165	.110	3.00	135.	5.68	6.53	.88	.135	1.151
SN 165.	85.0	187.7	.231	.110	3.05	45.	5.68	6.86	.29	.043	1.208
SN 164.	85.0	187.7	.298	.110	3.05	39.	5.68	6.86	.25	.037	1.208
SN 163.	85.0	187.7	.364	.110	3.06	38.	5.68	6.92	.25	.036	1.220
SN 162.	85.0	187.7	.431	.110	3.08	41.	5.68	7.05	.27	.038	1.243
SN 161.	85.0	187.7	.498	.110	3.10	42.	5.68	7.18	.27	.038	1.266
SN 160.	85.0	187.7	.564	.110	3.12	43.	5.68	7.32	.28	.038	1.289
SN 159.	85.0	187.7	.631	.110	3.13	43.	5.68	7.38	.28	.038	1.300
SN 158.	85.0	187.7	.697	.110	3.13	40.	5.68	7.38	.26	.035	1.300
SN 157.	85.0	187.7	.764	.110	3.12	40.	5.68	7.32	.26	.036	1.289
SN 156.	85.0	187.7	.831	.110	3.11	40.	5.68	7.25	.26	.036	1.277
SN 155.	85.0	187.7	.897	.110	3.11	40.	5.68	7.25	.26	.036	1.277
SN 154.	85.0	187.7	.964	.110	3.11	41.	5.68	7.25	.27	.037	1.277
SN 153.	85.0	187.7	1.030	.110	3.13	41.	5.68	7.38	.27	.036	1.300
SN 152.	85.0	187.7	1.097	.110	3.15	39.	5.68	7.51	.25	.034	1.323
SN 151.	85.0	187.7	1.164	.110	3.13	39.	5.68	7.51	.25	.034	1.323
SN 150.	85.0	187.7	1.230	.110	3.14	40.	5.68	7.45	.26	.035	1.312

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DCP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 149.	85.0	187.7	1.297	.110	3.12	39.	5.68	7.32	.25	.035	1.289
SN 148.	85.0	187.7	1.363	.110	3.11	38.	5.68	7.25	.25	.034	1.277
SN 147.	85.0	187.7	1.430	.110	3.11	39.	5.68	7.25	.25	.035	1.277
SN 146.	85.0	187.7	1.497	.110	3.12	42.	5.68	7.32	.27	.038	1.289
SN 145.	85.0	187.7	1.563	.110	3.13	44.	5.68	7.33	.29	.039	1.300
SN 144.	85.0	187.7	1.630	.110	3.16	44.	5.68	7.53	.29	.038	1.335
SN 143.	85.0	187.7	1.696	.110	3.18	40.	5.68	7.71	.26	.034	1.358
SN 142.	85.0	187.7	1.763	.110	3.18	41.	5.68	7.71	.27	.035	1.358
SN 141.	85.0	187.7	1.830	.110	3.17	43.	5.68	7.64	.28	.037	1.346
SN 140.	85.0	187.7	1.896	.110	3.15	43.	5.68	7.51	.28	.037	1.323
SN 139.	85.0	187.7	1.963	.110	3.14	39.	5.68	7.45	.25	.034	1.312
SN 138.	85.0	187.7	2.029	.110	3.14	38.	5.68	7.45	.25	.033	1.312
SN 137.	85.0	187.7	2.096	.110	3.14	40.	5.68	7.45	.26	.035	1.312
SN 136.	85.0	187.7	2.163	.110	3.16	40.	5.68	7.58	.26	.034	1.335
SN 135.	85.0	187.7	2.229	.110	3.17	40.	5.68	7.64	.26	.034	1.346

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 3. AXIAL DISTANCE=22.00 IN. BLOCKAGE CENTERLINE=26.75 IN. P=27.00 PSI RE= 29500.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 167.	84.5	187.7	.098	1.763	2.83	265.	5.68	5.42	1.73	.319	.955
SN 168.	84.5	187.7	.165	1.763	3.01	99.	5.68	6.60	.65	.098	1.162
SN 169.	84.5	187.7	.231	1.763	3.02	60.	5.68	6.66	.39	.059	1.174
SN 170.	84.5	187.7	.298	1.763	2.99	60.	5.68	6.47	.39	.061	1.139
SN 171.	84.5	187.7	.364	1.763	2.95	54.	5.68	6.20	.35	.057	1.093
SN 172.	84.5	187.7	.431	1.763	2.94	50.	5.68	6.14	.33	.053	1.082
SN 173.	84.5	187.7	.498	1.763	2.96	48.	5.68	6.27	.31	.050	1.105
SN 174.	84.5	187.7	.564	1.763	3.00	46.	5.68	6.53	.30	.046	1.151
SN 175.	84.5	187.7	.631	1.763	3.02	41.	5.68	6.66	.27	.040	1.174
SN 176.	84.5	187.7	.697	1.763	3.02	46.	5.68	6.66	.30	.045	1.174
SN 177.	84.5	187.7	.764	1.763	2.99	56.	5.68	6.47	.37	.057	1.139
SN 178.	84.5	187.7	.831	1.763	2.94	57.	5.68	6.14	.37	.061	1.082
SN 179.	84.5	187.7	.897	1.763	2.91	50.	5.68	5.94	.33	.055	1.047
SN 180.	84.5	187.7	.964	1.763	2.91	47.	5.68	5.94	.31	.052	1.047
SN 181.	84.5	187.7	1.030	1.763	2.94	53.	5.68	6.14	.35	.056	1.082
SN 182.	84.5	187.7	1.097	1.763	2.99	52.	5.68	6.47	.34	.053	1.139
SN 183.	84.5	187.7	1.164	1.763	3.02	48.	5.68	6.66	.29	.044	1.174
SN 184.	84.5	187.7	1.230	1.763	3.03	43.	5.68	6.73	.28	.042	1.185
SN 185.	84.5	187.7	1.297	1.763	3.00	53.	5.68	6.53	.35	.053	1.151
SN 186.	84.5	187.7	1.363	1.763	2.96	54.	5.68	6.27	.35	.056	1.105
SN 187.	84.5	187.7	1.430	1.763	2.93	50.	5.68	6.07	.33	.054	1.070
SN 188.	84.5	187.7	1.497	1.763	2.92	49.	5.68	6.01	.32	.053	1.059
SN 189.	84.5	187.7	1.563	1.763	2.95	52.	5.68	6.20	.34	.055	1.093
SN 190.	84.5	187.7	1.630	1.763	2.99	52.	5.68	6.47	.34	.053	1.139
SN 191.	84.5	187.7	1.698	1.763	3.02	52.	5.68	6.66	.34	.051	1.174
SN 192.	84.5	187.7	1.763	1.763	3.03	45.	5.68	6.73	.29	.044	1.185
SN 193.	84.5	187.7	1.830	1.763	3.00	55.	5.68	6.53	.36	.055	1.151
SN 194.	84.5	187.7	1.896	1.763	2.96	59.	5.68	6.27	.39	.061	1.105
SN 195.	84.5	187.7	1.963	1.763	2.92	54.	5.68	6.01	.35	.059	1.059
SN 196.	84.5	187.7	2.029	1.763	2.90	47.	5.68	5.88	.31	.052	1.036
SN 197.	84.5	187.7	2.096	1.763	2.93	50.	5.68	6.07	.33	.054	1.070
SN 198.	84.5	187.7	2.163	1.763	2.96	54.	5.68	6.27	.35	.056	1.105
SN 202.	84.5	187.7	.165	1.224	2.97	54.	5.68	6.34	.35	.056	1.116
SN 201.	84.5	187.7	.697	1.224	2.99	50.	5.68	6.47	.33	.051	1.139
SN 200.	84.5	187.7	1.230	1.224	3.00	54.	5.68	6.53	.35	.054	1.151
SN 199.	84.5	187.7	1.763	1.224	3.02	46.	5.68	6.66	.30	.045	1.174
SN 206.	84.5	187.7	.165	.685	2.92	56.	5.68	6.01	.37	.061	1.059
SN 205.	84.5	187.7	.697	.685	2.99	51.	5.68	6.47	.33	.052	1.139
SN 204.	84.5	187.7	1.230	.685	3.01	45.	5.68	6.60	.29	.045	1.162
SN 203.	84.5	187.7	1.763	.685	3.02	44.	5.68	6.66	.29	.043	1.174
SN 210.	84.5	187.7	.165	.110	2.94	50.	5.68	6.14	.33	.053	1.082
SN 209.	84.5	187.7	.697	.110	3.02	46.	5.68	6.66	.30	.045	1.174
SN 208.	84.5	187.7	1.230	.110	3.02	45.	5.68	6.66	.29	.044	1.174
SN 207.	84.5	187.7	1.763	.110	3.04	45.	5.68	6.79	.29	.043	1.197

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 2, AXIAL DISTANCE=34.00 IN, BLOCKAGE CENTERLINE=26.75 IN, P=27.00 PSI RE= 29500.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 211.	84.5	187.7	.165	.685	2.98	140.	5.68	6.40	.91	.143	1.128
SN 212.	84.5	187.7	.231	.685	2.98	61.	5.68	6.40	.40	.062	1.128
SN 213.	84.5	187.7	.298	.685	2.95	57.	5.68	6.20	.37	.060	1.093
SN 214.	84.5	187.7	.364	.685	2.92	53.	5.68	6.01	.35	.058	1.059
SN 215.	84.5	187.7	.431	.685	2.93	53.	5.68	6.07	.35	.057	1.070
SN 216.	84.5	187.7	.498	.685	2.95	57.	5.68	6.20	.37	.060	1.093
SN 217.	84.5	187.7	.564	.685	2.98	54.	5.68	6.40	.35	.055	1.128
SN 218.	84.5	187.7	.631	.685	3.00	51.	5.68	6.53	.33	.051	1.151
SN 219.	84.5	187.7	.697	.685	2.99	54.	5.68	6.47	.35	.055	1.139
SN 220.	84.5	187.7	.764	.685	2.96	59.	5.68	6.27	.39	.061	1.105
SN 221.	84.5	187.7	.831	.685	2.90	58.	5.68	5.88	.38	.064	1.036
SN 222.	84.5	187.7	.897	.685	2.90	58.	5.68	5.88	.38	.064	1.036
SN 223.	84.5	187.7	.964	.685	2.90	56.	5.68	5.88	.37	.062	1.036
SN 224.	84.5	187.7	1.030	.685	2.92	58.	5.68	6.01	.38	.063	1.059
SN 225.	84.5	187.7	1.097	.685	2.95	57.	5.68	6.20	.37	.060	1.093
SN 226.	84.5	187.7	1.164	.685	2.97	51.	5.68	6.34	.33	.053	1.116
SN 227.	84.5	187.7	1.230	.685	2.99	45.	5.68	6.47	.29	.045	1.139
SN 228.	84.5	187.7	1.297	.685	2.98	49.	5.68	6.40	.32	.050	1.128
SN 229.	84.5	187.7	1.363	.685	2.97	52.	5.68	6.34	.34	.054	1.116
SN 230.	84.5	187.7	1.430	.685	2.95	54.	5.68	6.20	.35	.057	1.093
SN 231.	84.5	187.7	1.497	.685	2.95	57.	5.68	6.20	.37	.060	1.093
SN 232.	84.5	187.7	1.563	.685	2.97	57.	5.68	6.34	.37	.059	1.116
SN 233.	84.5	187.7	1.630	.685	2.99	52.	5.68	6.47	.34	.053	1.139
SN 234.	84.5	187.7	1.696	.685	3.00	50.	5.68	6.53	.33	.050	1.151
SN 235.	84.5	187.7	1.763	.685	2.99	52.	5.68	6.47	.34	.053	1.139
SN 236.	84.5	187.7	1.830	.685	2.96	57.	5.68	6.27	.37	.059	1.105
SN 237.	84.5	187.7	1.896	.685	2.93	60.	5.68	6.07	.39	.065	1.070
SN 238.	84.5	187.7	1.963	.685	2.90	60.	5.68	5.88	.39	.067	1.036
SN 239.	84.5	187.7	2.029	.685	2.89	59.	5.68	5.81	.39	.066	1.024
SN 240.	84.5	187.7	2.096	.685	2.93	59.	5.68	6.07	.39	.063	1.070
SN 241.	84.5	187.7	2.163	.685	2.97	55.	5.68	6.34	.36	.057	1.116
SN 257.	84.5	187.7	.165	1.224	3.00	168.	5.68	6.53	1.10	.168	1.151
SN 256.	84.5	187.7	.298	1.224	2.96	58.	5.68	6.27	.38	.060	1.105
SN 255.	84.5	187.7	.431	1.224	2.94	54.	5.68	6.14	.35	.057	1.082
SN 254.	84.5	187.7	.564	1.224	2.96	49.	5.68	6.27	.32	.051	1.105
SN 253.	84.5	187.7	.697	1.224	2.97	48.	5.68	6.34	.31	.049	1.116
SN 252.	84.5	187.7	.831	1.224	2.93	54.	5.68	6.07	.35	.058	1.070
SN 251.	84.5	187.7	.964	1.224	2.90	56.	5.68	5.88	.37	.062	1.036
SN 250.	84.5	187.7	1.097	1.224	2.93	56.	5.68	6.07	.37	.060	1.070
SN 249.	84.5	187.7	1.230	1.224	2.93	59.	5.68	6.07	.39	.063	1.070
SN 248.	84.5	187.7	1.363	1.224	2.88	65.	5.68	5.75	.42	.074	1.013
SN 247.	84.5	187.7	1.497	1.224	2.83	62.	5.68	5.42	.40	.075	.955
SN 246.	84.5	187.7	1.630	1.224	2.83	63.	5.68	5.42	.41	.076	.955
SN 245.	84.5	187.7	1.763	1.224	2.84	71.	5.68	5.49	.46	.085	.957
SN 244.	84.5	187.7	1.896	1.224	2.79	80.	5.68	5.16	.52	.101	.909
SN 243.	84.5	187.7	2.029	1.224	2.75	72.	5.68	4.90	.47	.096	.863
SN 242.	84.5	187.7	2.163	1.224	2.77	80.	5.68	5.03	.52	.104	.886

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 258.	84.5	187.7	.831	1.174	2.89	73.	5.68	5.81	.48	.082	1.024
SN 259.	84.5	187.7	.964	1.174	2.84	76.	5.68	5.49	.50	.090	.967
SN 260.	84.5	187.7	1.097	1.174	2.90	66.	5.68	5.88	.43	.073	1.036
SN 261.	84.5	187.7	1.230	1.174	2.94	60.	5.68	6.14	.39	.064	1.082
SN 262.	84.5	187.7	1.363	1.174	2.87	76.	5.68	5.68	.50	.087	1.001
SN 263.	84.5	187.7	1.497	1.174	2.76	83.	5.68	4.96	.54	.109	.875
SN 264.	84.5	187.7	1.630	1.174	2.81	70.	5.68	5.29	.46	.086	.932
SN 265.	84.5	187.7	1.763	1.174	2.85	72.	5.68	5.55	.47	.085	.978
SN 266.	84.5	187.7	1.896	1.174	2.77	92.	5.68	5.03	.60	.119	.886
SN 267.	84.5	187.7	2.029	1.174	2.68	85.	5.68	4.44	.56	.125	.782
SN 268.	84.5	187.7	2.163	1.174	2.77	87.	5.68	5.03	.57	.113	.886
SN 279.	84.5	187.7	.831	1.274	2.90	85.	5.68	5.88	.56	.094	1.036
SN 278.	84.5	187.7	.964	1.274	2.86	99.	5.68	5.62	.65	.115	.990
SN 277.	84.5	187.7	1.097	1.274	2.89	74.	5.68	5.81	.48	.083	1.024
SN 276.	84.5	187.7	1.230	1.274	2.92	74.	5.68	6.01	.48	.080	1.059
SN 275.	84.5	187.7	1.363	1.274	2.86	84.	5.68	5.62	.55	.098	.990
SN 274.	84.5	187.7	1.497	1.274	2.78	89.	5.68	5.09	.58	.114	.898
SN 273.	84.5	187.7	1.630	1.274	2.81	78.	5.68	5.29	.51	.096	.932
SN 272.	84.5	187.7	1.763	1.274	2.82	82.	5.68	5.36	.54	.100	.944
SN 271.	84.5	187.7	1.896	1.274	2.77	89.	5.68	5.03	.58	.116	.886
SN 270.	84.5	187.7	2.029	1.274	2.70	87.	5.68	4.57	.57	.124	.805
SN 269.	84.5	187.7	2.163	1.274	2.74	87.	5.68	4.83	.57	.118	.852
SN 294.	84.5	187.7	.298	1.763	2.99	59.	5.68	6.47	.39	.060	1.139
SN 293.	84.5	187.7	.431	1.763	2.96	59.	5.68	6.27	.39	.061	1.105
SN 292.	84.5	187.7	.564	1.763	2.96	57.	5.68	6.27	.37	.059	1.105
SN 291.	84.5	187.7	.697	1.763	2.99	54.	5.68	6.47	.35	.055	1.139
SN 290.	84.5	187.7	.831	1.763	2.94	62.	5.68	6.14	.40	.066	1.082
SN 289.	84.5	187.7	.964	1.763	2.88	60.	5.68	5.75	.39	.068	1.013
SN 288.	84.5	187.7	1.097	1.763	2.85	62.	5.68	5.55	.40	.073	.978
SN 287.	84.5	187.7	1.230	1.763	2.80	71.	5.68	5.23	.46	.089	.921
SN 286.	84.5	187.7	1.363	1.763	2.73	76.	5.68	4.77	.50	.104	.840
SN 285.	84.5	187.7	1.497	1.763	2.63	69.	5.68	4.11	.45	.110	.725
SN 284.	84.5	187.7	1.630	1.763	2.57	50.	5.68	3.72	.33	.088	.656
SN 283.	84.5	187.7	1.763	1.763	2.55	45.	5.68	3.59	.29	.082	.633
SN 282.	84.5	187.7	1.896	1.763	2.52	42.	5.68	3.40	.27	.081	.598
SN 281.	84.5	187.7	2.029	1.763	2.51	46.	5.68	3.33	.30	.090	.587
SN 280.	84.5	187.7	2.163	1.763	2.55	52.	5.68	3.59	.34	.095	.633
SN 295.	84.5	187.7	.831	1.713	2.91	80.	5.68	5.94	.52	.088	1.047
SN 296.	84.5	187.7	.964	1.713	2.79	89.	5.68	5.16	.58	.113	.909
SN 297.	84.5	187.7	1.097	1.713	2.82	69.	5.68	5.36	.45	.084	.944
SN 298.	84.5	187.7	1.230	1.713	2.80	70.	5.68	5.23	.46	.088	.921
SN 299.	84.5	187.7	1.363	1.713	2.71	90.	5.68	4.64	.59	.127	.817
SN 300.	84.5	187.7	1.497	1.713	2.51	188.	5.68	3.33	1.23	.369	.587
SN 301.	84.5	187.7	1.630	1.713	2.55	57.	5.68	3.59	.37	.104	.633
SN 302.	84.5	187.7	1.763	1.713	2.55	49.	5.68	3.59	.32	.089	.633
SN 303.	84.5	187.7	1.896	1.713	2.51	51.	5.68	3.33	.33	.100	.587
SN 304.	84.5	187.7	2.029	1.713	2.46	70.	5.68	3.00	.46	.152	.529
SN 305.	84.5	187.7	2.163	1.713	2.55	60.	5.68	3.59	.39	.109	.633

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U (LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 316.	84.5	187.7	.831	1.813	2.92	83.	5.68	6.01	.54	.090	1.059
SN 315.	84.5	187.7	.964	1.813	2.86	80.	5.68	5.62	.52	.093	.990
SN 314.	84.5	187.7	1.097	1.813	2.84	80.	5.68	5.49	.52	.095	.967
SN 313.	84.5	187.7	1.230	1.813	2.80	83.	5.68	5.23	.54	.104	.921
SN 312.	84.5	187.7	1.363	1.813	2.72	95.	5.68	4.70	.62	.132	.828
SN 311.	84.5	187.7	1.497	1.813	2.60	90.	5.68	3.92	.59	.150	.690
SN 310.	84.5	187.7	1.630	1.813	2.56	59.	5.68	3.66	.39	.105	.644
SN 309.	84.5	187.7	1.763	1.813	2.53	52.	5.68	3.46	.34	.098	.610
SN 308.	84.5	187.7	1.896	1.813	2.51	55.	5.68	3.33	.36	.108	.587
SN 307.	84.5	187.7	2.029	1.813	2.49	61.	5.68	3.20	.40	.124	.564
SN 306.	84.5	187.7	2.163	1.813	2.54	60.	5.68	3.53	.39	.111	.621
SN 320.	84.5	187.7	.364	.110	3.06	72.	5.68	6.92	.47	.068	1.220
SN 319.	84.5	187.7	.697	.110	3.08	51.	5.68	7.05	.33	.047	1.243
SN 318.	84.5	187.7	1.230	.110	3.03	53.	5.68	6.73	.35	.051	1.185
SN 317.	84.5	187.7	1.763	.110	3.08	53.	5.68	7.05	.35	.049	1.243

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 7. AXIAL DISTANCE=52.00 IN. BLOCKAGE CENTERLINE=26.75 IN. P=27.00 PSI RE= 29600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 321.	84.6	187.7	.165	1.763	2.98	172.	5.68	6.40	1.12	.176	1.128
SN 322.	84.6	187.7	.231	1.763	2.99	100.	5.68	6.47	.65	.101	1.139
SN 323.	84.6	187.7	.298	1.763	2.97	95.	5.68	6.34	.62	.098	1.116
SN 324.	84.6	187.7	.364	1.763	2.93	95.	5.68	6.07	.62	.102	1.070
SN 325.	84.6	187.7	.431	1.763	2.90	90.	5.68	5.88	.59	.100	1.036
SN 326.	84.6	187.7	.498	1.763	2.90	80.	5.68	5.88	.52	.089	1.036
SN 327.	84.6	187.7	.564	1.763	2.90	79.	5.68	5.88	.52	.088	1.036
SN 328.	84.6	187.7	.631	1.763	2.90	76.	5.68	5.88	.50	.084	1.036
SN 329.	84.6	187.7	.697	1.763	2.89	74.	5.68	5.81	.48	.083	1.024
SN 330.	84.6	187.7	.764	1.763	2.87	70.	5.68	5.68	.46	.080	1.001
SN 331.	84.6	187.7	.831	1.763	2.85	70.	5.68	5.55	.46	.082	.978
SN 332.	84.6	187.7	.897	1.763	2.83	77.	5.68	5.42	.50	.093	.955
SN 333.	84.6	187.7	.964	1.763	2.83	78.	5.68	5.42	.51	.094	.955
SN 334.	84.6	187.7	1.030	1.763	2.85	72.	5.68	5.55	.47	.085	.978
SN 335.	84.6	187.7	1.097	1.763	2.87	69.	5.68	5.68	.45	.079	1.001
SN 336.	84.6	187.7	1.164	1.763	2.87	68.	5.68	5.68	.44	.078	1.001
SN 337.	84.6	187.7	1.230	1.763	2.88	70.	5.68	5.75	.46	.080	1.013
SN 338.	84.6	187.7	1.297	1.763	2.88	72.	5.68	5.75	.47	.082	1.013
SN 339.	84.6	187.7	1.363	1.763	2.86	76.	5.68	5.62	.50	.088	.990
SN 340.	84.6	187.7	1.430	1.763	2.84	78.	5.68	5.49	.51	.093	.967
SN 341.	84.6	187.7	1.497	1.763	2.83	72.	5.68	5.42	.47	.087	.955
SN 342.	84.6	187.7	1.563	1.763	2.83	70.	5.68	5.42	.46	.084	.955
SN 343.	84.6	187.7	1.630	1.763	2.84	67.	5.68	5.49	.44	.080	.967
SN 344.	84.6	187.7	1.696	1.763	2.85	65.	5.68	5.55	.42	.076	.978
SN 345.	84.6	187.7	1.763	1.763	2.86	64.	5.68	5.62	.42	.074	.990
SN 346.	84.6	187.7	1.830	1.763	2.87	66.	5.68	5.68	.43	.076	1.001
SN 347.	84.6	187.7	1.896	1.763	2.85	69.	5.68	5.55	.45	.081	.978
SN 348.	84.6	187.7	1.963	1.763	2.82	76.	5.68	5.36	.50	.093	.944
SN 349.	84.6	187.7	2.029	1.763	2.81	70.	5.68	5.29	.46	.086	.932
SN 350.	84.6	187.7	2.096	1.763	2.83	66.	5.68	5.42	.43	.080	.955
SN 351.	84.6	187.7	2.163	1.763	2.85	64.	5.68	5.55	.42	.075	.978
SN 352.	84.6	187.7	2.229	1.763	2.86	64.	5.68	5.62	.42	.074	.990
SN 356.	84.6	187.7	.298	1.224	2.88	84.	5.68	5.75	.55	.095	1.013
SN 355.	84.6	187.7	.697	1.224	2.88	72.	5.68	5.75	.47	.082	1.013
SN 354.	84.6	187.7	1.230	1.224	2.91	74.	5.68	5.94	.48	.081	1.047
SN 353.	84.6	187.7	1.763	1.224	2.89	68.	5.68	5.81	.44	.076	1.024
SN 360.	84.6	187.7	.298	.685	2.96	80.	5.68	6.27	.52	.083	1.105
SN 359.	84.6	187.7	.697	.685	2.89	74.	5.68	5.81	.48	.083	1.024
SN 358.	84.6	187.7	1.230	.685	2.91	76.	5.68	5.94	.50	.084	1.047
SN 357.	84.6	187.7	1.763	.685	2.91	70.	5.68	5.94	.46	.077	1.047
SN 364.	84.6	187.7	.298	.110	3.05	73.	5.68	6.86	.48	.070	1.208
SN 363.	84.6	187.7	.697	.110	3.02	68.	5.68	6.66	.44	.067	1.174
SN 362.	84.6	187.7	1.230	.110	3.00	64.	5.68	6.53	.42	.064	1.151
SN 361.	84.6	187.7	1.763	.110	3.00	64.	5.68	6.53	.42	.064	1.151

TABLE Cw1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 6, AXIAL DISTANCE 440.00 IN. BLOCKAGE CENTERLINE=26.75 IN. P=27.00 PSI RE= 29600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 365.	84.8	187.7	.231	1.763	2.48	290.	5.68	3.14	1.89	.604	.552
SN 366.	84.8	187.7	.298	1.763	2.66	300.	5.68	4.31	1.96	.455	.759
SN 367.	84.8	187.7	.364	1.763	3.01	110.	5.68	6.60	.72	.109	1.162
SN 368.	84.8	187.7	.431	1.763	2.99	70.	5.68	6.47	.46	.071	1.139
SN 369.	84.8	187.7	.498	1.763	2.97	56.	5.68	6.34	.37	.058	1.116
SN 370.	84.8	187.7	.564	1.763	2.97	52.	5.68	6.34	.34	.054	1.116
SN 371.	84.8	187.7	.631	1.763	2.99	49.	5.68	6.47	.32	.049	1.139
SN 372.	84.8	187.7	.697	1.763	3.02	47.	5.68	6.66	.31	.046	1.174
SN 373.	84.8	187.7	.764	1.763	3.02	49.	5.68	6.66	.32	.048	1.174
SN 374.	84.8	187.7	.831	1.763	3.01	60.	5.68	6.60	.39	.059	1.162
SN 375.	84.8	187.7	.897	1.763	2.97	67.	5.68	6.34	.44	.069	1.116
SN 376.	84.8	187.7	.964	1.763	2.93	67.	5.68	6.07	.44	.072	1.070
SN 377.	84.8	187.7	1.030	1.763	2.90	56.	5.68	5.88	.37	.062	1.036
SN 378.	84.8	187.7	1.097	1.763	2.89	48.	5.68	5.81	.31	.054	1.024
SN 379.	84.8	187.7	1.164	1.763	2.89	43.	5.68	5.81	.28	.048	1.024
SN 380.	84.8	187.7	1.230	1.763	2.89	43.	5.68	5.81	.28	.048	1.024
SN 381.	84.8	187.7	1.297	1.763	2.89	53.	5.68	5.81	.35	.060	1.024
SN 382.	84.8	187.7	1.363	1.763	2.87	64.	5.68	5.68	.42	.074	1.001
SN 383.	84.8	187.7	1.430	1.763	2.83	76.	5.68	5.42	.50	.092	.955
SN 384.	84.8	187.7	1.497	1.763	2.79	68.	5.68	5.16	.44	.086	.909
SN 385.	84.8	187.7	1.563	1.763	2.76	62.	5.68	4.96	.40	.082	.875
SN 386.	84.8	187.7	1.630	1.763	2.74	48.	5.68	4.83	.31	.065	.852
SN 387.	84.8	187.7	1.696	1.763	2.74	41.	5.68	4.83	.27	.055	.852
SN 388.	84.8	187.7	1.763	1.763	2.74	41.	5.68	4.83	.27	.055	.852
SN 389.	84.8	187.7	1.830	1.763	2.73	41.	5.68	4.77	.27	.056	.840
SN 390.	84.8	187.7	1.896	1.763	2.71	42.	5.68	4.64	.27	.059	.817
SN 391.	84.8	187.7	1.963	1.763	2.69	43.	5.68	4.51	.28	.062	.794
SN 392.	84.8	187.7	2.029	1.763	2.68	45.	5.68	4.44	.29	.066	.782
SN 393.	84.8	187.7	2.096	1.763	2.68	46.	5.68	4.44	.30	.068	.782
SN 394.	84.8	187.7	2.163	1.763	2.70	48.	5.68	4.57	.31	.069	.805
SN 395.	84.8	187.7	2.229	1.763	2.72	44.	5.68	4.70	.29	.061	.828
SN 426.	84.8	187.7	.231	.685	3.01	79.	5.68	6.60	.52	.078	1.162
SN 425.	84.8	187.7	.298	.685	2.98	66.	5.68	6.40	.43	.067	1.128
SN 424.	84.8	187.7	.364	.685	2.94	60.	5.68	6.14	.39	.064	1.082
SN 423.	84.8	187.7	.431	.685	2.92	56.	5.68	6.01	.37	.061	1.059
SN 422.	84.8	187.7	.498	.685	2.94	56.	5.68	6.14	.37	.060	1.082
SN 421.	84.8	187.7	.564	.685	2.97	55.	5.68	6.34	.36	.057	1.116
SN 420.	84.8	187.7	.631	.685	3.00	50.	5.68	6.53	.33	.050	1.151
SN 419.	84.8	187.7	.697	.685	3.01	47.	5.68	6.60	.31	.047	1.162
SN 418.	84.8	187.7	.764	.685	2.99	57.	5.68	6.47	.37	.058	1.139
SN 417.	84.8	187.7	.831	.685	2.96	62.	5.68	6.27	.40	.065	1.105
SN 416.	84.8	187.7	.897	.685	2.92	59.	5.68	6.01	.39	.064	1.059
SN 415.	84.8	187.7	.964	.685	2.91	57.	5.68	5.94	.37	.063	1.047
SN 414.	84.8	187.7	1.030	.685	2.92	59.	5.68	6.01	.39	.064	1.059
SN 413.	84.8	187.7	1.097	.685	2.96	59.	5.68	6.27	.39	.061	1.105
SN 412.	84.8	187.7	1.164	.685	2.99	56.	5.68	6.47	.37	.057	1.139
SN 411.	84.8	187.7	1.230	.685	3.01	47.	5.68	6.60	.31	.047	1.162
SN 410.	84.8	187.7	1.297	.685	3.00	51.	5.68	6.53	.33	.051	1.105
SN 409.	84.8	187.7	1.363	.685	2.97	57.	5.68	6.34	.37	.059	1.139

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SN 408.	84.8	187.7	1.430	.688	2.94	55.	5.68	6.14	.36	.059	1.082
SN 407.	84.8	187.7	1.497	.685	2.93	54.	5.68	6.07	.35	.058	1.070
SN 406.	84.8	187.7	1.563	.685	2.94	56.	5.68	6.14	.37	.060	1.082
SN 405.	84.8	187.7	1.630	.685	2.97	57.	5.68	6.34	.37	.059	1.116
SN 404.	84.8	187.7	1.696	.685	2.99	52.	5.68	6.47	.34	.053	1.139
SN 403.	84.8	187.7	1.763	.685	3.01	47.	5.68	6.60	.31	.047	1.162
SN 402.	84.8	187.7	1.830	.685	3.00	52.	5.68	6.53	.34	.052	1.151
SN 401.	84.8	187.7	1.896	.685	2.97	59.	5.68	6.34	.39	.061	1.116
SN 400.	84.8	187.7	1.963	.688	2.93	59.	5.68	6.07	.39	.063	1.070
SN 399.	84.8	187.7	2.029	.685	2.91	58.	5.68	5.94	.38	.064	1.047
SN 398.	84.8	187.7	2.096	.685	2.91	59.	5.68	5.94	.39	.065	1.047
SN 397.	84.8	187.7	2.163	.685	2.94	60.	5.68	6.14	.39	.064	1.082
SN 396.	84.8	187.7	2.229	.688	2.99	59.	5.68	6.47	.39	.060	1.139
SN 430.	84.8	187.7	.298	.110	3.03	60.	5.68	6.73	.39	.058	1.185
SN 429.	84.8	187.7	.697	.110	3.09	60.	5.68	7.12	.39	.055	1.254
SN 428.	84.8	187.7	1.230	.110	3.07	55.	5.68	6.99	.36	.051	1.231
SN 427.	84.8	187.7	1.763	.110	3.06	65.	5.68	6.92	.42	.061	1.220
SN 445.	84.8	187.8	.298	1.224	2.95	69.	5.68	6.20	.45	.073	1.093
SN 444.	84.8	187.8	.431	1.224	2.90	55.	5.68	5.88	.36	.061	1.035
SN 443.	84.8	187.8	.564	1.224	2.96	57.	5.68	6.27	.37	.059	1.104
SN 442.	84.8	187.8	.697	1.224	3.00	46.	5.68	6.53	.30	.046	1.150
SN 441.	84.8	187.8	.831	1.224	2.95	60.	5.68	6.20	.39	.063	1.093
SN 440.	84.8	187.8	.964	1.224	2.90	50.	5.68	5.88	.33	.056	1.035
SN 439.	84.8	187.8	1.097	1.224	2.93	92.	5.68	6.07	.34	.056	1.070
SN 438.	84.8	187.8	1.230	1.224	2.97	46.	5.68	6.34	.30	.047	1.116
SN 437.	84.8	187.8	1.363	1.224	2.94	60.	5.68	6.14	.39	.064	1.081
SN 436.	84.8	187.8	1.497	1.224	2.87	59.	5.68	5.68	.39	.068	1.001
SN 435.	84.8	187.8	1.630	1.224	2.87	49.	5.68	5.68	.32	.056	1.001
SN 434.	84.8	187.8	1.763	1.224	2.90	44.	5.68	5.88	.29	.049	1.035
SN 433.	84.8	187.8	1.896	1.224	2.87	56.	5.68	5.68	.37	.064	1.001
SN 432.	84.8	187.8	2.029	1.224	2.83	54.	5.68	5.42	.35	.065	.955
SN 431.	84.8	187.8	2.163	1.224	2.84	55.	5.68	5.49	.36	.065	.966
SN 446.	84.8	187.8	.831	1.174	2.89	80.	5.68	5.81	.52	.090	1.024
SN 447.	84.8	187.8	.964	1.174	2.79	82.	5.68	5.16	.54	.104	.909
SN 448.	84.8	187.8	1.097	1.174	2.86	73.	5.68	5.62	.48	.085	.989
SN 449.	84.8	187.8	1.230	1.174	2.94	53.	5.68	6.14	.35	.056	1.081
SN 450.	84.8	187.8	1.363	1.174	2.89	77.	5.68	5.81	.50	.087	1.024
SN 451.	84.8	187.8	1.497	1.174	2.78	82.	5.68	5.09	.54	.105	.897
SN 452.	84.8	187.8	1.630	1.174	2.81	68.	5.68	5.29	.44	.084	.932
SN 453.	84.8	187.8	1.763	1.174	2.88	49.	5.68	5.75	.32	.056	1.012
SN 454.	84.8	187.8	1.896	1.174	2.83	70.	5.68	5.42	.46	.084	.955
SN 455.	84.8	187.8	2.029	1.174	2.73	88.	5.68	4.77	.57	.121	.840
SN 456.	84.8	187.8	2.163	1.174	2.78	78.	5.68	5.09	.51	.100	.897
SN 467.	84.8	187.8	.831	1.274	2.91	98.	5.68	5.94	.64	.108	1.047
SN 466.	84.8	187.8	.964	1.274	2.82	98.	5.68	5.36	.64	.120	.943
SN 465.	84.8	187.8	1.097	1.274	2.89	87.	5.68	5.81	.57	.098	1.024
SN 464.	84.8	187.8	1.230	1.274	2.95	82.	5.68	6.20	.54	.086	1.093
SN 463.	84.8	187.8	1.363	1.274	2.89	102.	5.68	5.81	.67	.115	1.024
SN 462.	84.8	187.8	1.497	1.274	2.79	102.	5.68	5.16	.67	.129	.909

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
SN 461.	84.8	187.8	1.630	1.274	2.83	92.	5.68	5.42	.60	.111	.955
SN 460.	84.8	187.8	1.763	1.274	2.89	52.	5.68	5.81	.34	.058	1.024
SN 459.	84.8	187.8	1.896	1.274	2.85	76.	5.68	5.55	.50	.089	.978
SN 458.	84.8	187.8	2.029	1.274	2.75	84.	5.68	4.90	.55	.112	.863
SN 457.	84.8	187.8	2.163	1.274	2.80	78.	5.68	5.23	.51	.098	.920
SN 468.	84.8	187.7	.831	1.713	2.95	80.	5.68	6.20	.52	.084	1.093
SN 469.	84.8	187.7	.964	1.713	2.82	90.	5.68	5.36	.59	.110	.943
SN 470.	84.8	187.7	1.097	1.713	2.82	67.	5.68	5.36	.44	.082	.943
SN 471.	84.8	187.7	1.230	1.713	2.87	50.	5.68	5.68	.33	.057	1.001
SN 472.	84.8	187.7	1.363	1.713	2.82	80.	5.68	5.36	.52	.098	.943
SN 473.	84.8	187.7	1.497	1.713	2.68	99.	5.68	4.44	.65	.146	.782
SN 474.	84.8	187.7	1.630	1.713	2.69	60.	5.68	4.51	.39	.087	.794
SN 475.	84.8	187.7	1.763	1.713	2.73	46.	5.68	4.77	.30	.063	.840
SN 476.	84.8	187.7	1.896	1.713	2.69	56.	5.68	4.51	.37	.081	.794
SN 477.	84.8	187.7	2.029	1.713	2.61	67.	5.68	3.98	.44	.110	.702
SN 478.	84.8	187.7	2.163	1.713	2.66	59.	5.68	4.31	.39	.089	.759
SN 489.	84.8	187.7	.831	1.813	2.94	120.	5.68	6.14	.78	.128	1.082
SN 488.	84.8	187.7	.964	1.813	2.82	119.	5.68	5.36	.78	.145	.944
SN 487.	84.8	187.7	1.097	1.813	2.84	89.	5.68	5.49	.58	.106	.967
SN 486.	84.8	187.7	1.230	1.813	2.88	68.	5.68	5.75	.44	.077	1.013
SN 485.	84.8	187.7	1.363	1.813	2.82	98.	5.68	5.36	.64	.120	.944
SN 484.	84.8	187.7	1.497	1.813	2.72	108.	5.68	4.70	.71	.150	.828
SN 483.	84.8	187.7	1.630	1.813	2.70	70.	5.68	4.57	.46	.100	.805
SN 482.	84.8	187.7	1.763	1.813	2.71	68.	5.68	4.64	.44	.096	.817
SN 481.	84.8	187.7	1.896	1.813	2.68	80.	5.68	4.44	.52	.118	.782
SN 480.	84.8	187.7	2.029	1.813	2.61	77.	5.68	3.98	.50	.126	.702
SN 479.	84.8	187.7	2.163	1.813	2.66	67.	5.68	4.31	.44	.102	.759

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.14, AXIAL DISTANCE 427.50 IN. BLOCKAGE CENTERLINE=29.25 IN. P=22.50 PSI RE= 29700.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 490.	84.9	187.7	.231	1.763	3.03	120.	5.68	6.73	.78	.117	1.185
SN 491.	84.9	187.7	.298	1.763	3.04	55.	5.68	6.79	.36	.053	1.197
SN 492.	84.9	187.7	.364	1.763	2.99	55.	5.68	6.47	.36	.056	1.139
SN 493.	84.9	187.7	.431	1.763	2.96	48.	5.68	6.27	.31	.050	1.105
SN 494.	84.9	187.7	.498	1.763	2.95	45.	5.68	6.20	.29	.047	1.093
SN 495.	84.9	187.7	.564	1.763	2.96	48.	5.68	6.27	.31	.050	1.105
SN 496.	84.9	187.7	.631	1.763	3.00	47.	5.63	6.53	.31	.047	1.151
SN 497.	84.9	187.7	.697	1.763	3.02	42.	5.68	6.66	.27	.041	1.174
SN 498.	84.9	187.7	.764	1.763	3.01	49.	5.68	6.60	.32	.049	1.162
SN 499.	84.9	187.7	.831	1.763	2.97	59.	5.68	6.34	.39	.061	1.116
SN 500.	84.9	187.7	.897	1.763	2.92	54.	5.68	6.01	.35	.059	1.059
SN 501.	84.9	187.7	.964	1.763	2.90	48.	5.68	5.88	.31	.053	1.036
SN 502.	84.9	187.7	1.030	1.763	2.91	52.	5.68	5.94	.34	.057	1.047
SN 503.	84.9	187.7	1.097	1.763	2.93	52.	5.68	6.07	.34	.056	1.070
SN 504.	84.9	187.7	1.164	1.763	2.94	48.	5.68	6.14	.31	.051	1.082
SN 505.	84.9	187.7	1.230	1.763	2.94	45.	5.68	6.14	.29	.048	1.082
SN 506.	84.9	187.7	1.297	1.763	2.91	56.	5.68	5.94	.37	.062	1.047
SN 507.	84.9	187.7	1.363	1.763	2.85	65.	5.68	5.55	.42	.076	.978
SN 508.	84.9	187.7	1.430	1.763	2.79	59.	5.68	5.16	.39	.075	.909
SN 509.	84.9	187.7	1.497	1.763	2.76	59.	5.68	4.96	.39	.078	.875
SN 510.	84.9	187.7	1.563	1.763	2.75	63.	5.68	4.90	.41	.084	.863
SN 511.	84.9	187.7	1.630	1.763	2.74	72.	5.68	4.83	.47	.097	.852
SN 512.	84.9	187.7	1.698	1.763	2.74	70.	5.68	4.83	.46	.095	.852
SN 513.	84.9	187.7	1.763	1.763	2.75	64.	5.68	4.90	.42	.085	.863
SN 514.	84.9	187.7	1.830	1.763	2.73	66.	5.68	4.77	.43	.090	.840
SN 515.	84.9	187.7	1.896	1.763	2.67	89.	5.68	4.38	.58	.133	.771
SN 516.	84.9	187.7	1.963	1.763	2.59	99.	5.68	3.85	.65	.168	.679
SN 517.	84.9	187.7	2.029	1.763	2.54	98.	5.68	3.53	.64	.181	.621
SN 518.	84.9	187.7	2.096	1.763	2.53	82.	5.68	3.46	.54	.155	.610
SN 519.	84.9	187.7	2.163	1.763	2.53	72.	5.68	3.46	.47	.136	.610
SN 520.	84.9	187.7	2.229	1.763	2.54	77.	5.68	3.53	.50	.143	.621
SN 521.	84.9	187.7	2.296	1.763	2.55	88.	5.68	3.59	.57	.160	.633
SN 522.	84.9	187.7	2.362	1.763	2.61	92.	5.68	3.98	.60	.151	.702
SN 526.	84.9	187.7	.364	1.224	2.95	104.	5.68	6.20	.68	.109	1.093
SN 525.	84.9	187.7	.697	1.224	3.03	44.	5.68	6.73	.29	.043	1.185
SN 524.	84.9	187.7	1.230	1.224	2.98	55.	5.68	6.40	.36	.056	1.128
SN 523.	84.9	187.7	1.763	1.224	2.89	59.	5.68	5.81	.39	.066	1.024
SN 530.	84.9	187.7	.364	.685	2.99	87.	5.68	6.47	.57	.088	1.139
SN 529.	84.9	187.7	.697	.685	3.02	47.	5.68	6.66	.31	.046	1.174
SN 528.	84.9	187.7	1.230	.685	3.00	51.	5.68	6.53	.33	.051	1.151
SN 527.	84.9	187.7	1.763	.685	2.99	54.	5.68	6.47	.35	.055	1.139
SN 534.	84.9	187.7	.364	.110	2.95	158.	5.68	6.20	1.03	.166	1.093
SN 533.	84.9	187.7	.697	.110	3.04	48.	5.68	6.79	.31	.046	1.197
SN 532.	84.9	187.7	1.230	.110	3.05	45.	5.68	6.86	.29	.043	1.208
SN 531.	84.9	187.7	1.763	.110	3.06	45.	5.68	6.92	.29	.042	1.220

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. C, AXIAL DISTANCE=27.55 IN, BLOCKAGE CENTERLINE=29.25 IN, P=23.00 PSI RE= 29800.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 535.	85.0	188.2	.231	1.763	2.59	348.	5.69	3.85	2.27	.590	.677
SN 536.	85.0	188.2	.298	1.763	3.13	258.	5.69	7.38	1.69	.228	1.297
SN 537.	85.0	188.2	.364	1.763	3.06	120.	5.69	6.92	.78	.113	1.216
SN 538.	85.0	188.2	.431	1.763	3.03	60.	5.69	6.73	.39	.058	1.182
SN 539.	85.0	188.2	.498	1.763	3.01	50.	5.60	6.60	.33	.050	1.159
SN 540.	85.0	188.2	.564	1.763	3.04	54.	5.69	6.79	.35	.052	1.194
SN 541.	85.0	188.2	.631	1.763	3.07	53.	5.69	6.99	.35	.050	1.228
SN 542.	85.0	188.2	.697	1.763	3.09	50.	5.69	7.12	.33	.046	1.251
SN 543.	85.0	188.2	.764	1.763	3.08	55.	5.69	7.05	.36	.051	1.239
SN 544.	85.0	188.2	.831	1.763	3.04	62.	5.69	6.79	.40	.060	1.194
SN 545.	85.0	188.2	.897	1.763	3.00	55.	5.69	6.53	.36	.055	1.148
SN 546.	85.0	188.2	.964	1.763	3.01	55.	5.69	6.60	.36	.054	1.159
SN 547.	85.0	188.2	1.030	1.763	3.04	54.	5.69	6.79	.35	.052	1.194
SN 548.	85.0	188.2	1.097	1.763	3.04	50.	5.69	6.79	.33	.048	1.194
SN 549.	85.0	188.2	1.164	1.763	3.03	56.	5.69	6.73	.37	.054	1.182
SN 550.	85.0	188.2	1.230	1.763	2.99	56.	5.69	6.47	.37	.057	1.136
SN 551.	85.0	188.2	1.297	1.763	2.94	70.	5.69	6.14	.46	.074	1.079
SN 552.	85.0	188.2	1.363	1.763	2.89	72.	5.69	5.81	.47	.081	1.021
SN 553.	85.0	188.2	1.430	1.763	2.87	72.	5.69	5.68	.47	.083	.998
SN 554.	85.0	188.2	1.497	1.763	2.86	75.	5.69	5.62	.49	.087	.987
SN 555.	85.0	188.2	1.563	1.763	2.79	98.	5.69	5.16	.64	.124	.907
SN 556.	85.0	188.2	1.630	1.763	2.68	118.	5.69	4.44	.77	.174	.780
SN 557.	85.0	188.2	1.696	1.763	2.57	128.	5.69	3.72	.84	.225	.654
SN 558.	85.0	188.2	1.763	1.763	2.47	150.	5.69	3.07	.98	.319	.539
SN 559.	85.0	188.2	1.830	1.763	2.28	180.	5.69	1.83	1.18	.643	.321
SN 560.	85.0	188.2	1.896	1.763	2.14	160.	5.69	.91	1.05	1.143	.161
SN 561.	85.0	188.2	1.963	1.763	2.09	120.	5.69	.59	.78	1.333	.103
SN 562.	85.0	188.2	2.029	1.763	2.12	160.	5.69	.78	1.05	1.333	.138
SN 563.	85.0	188.2	2.096	1.763	2.25	135.	5.69	1.63	.88	.540	.287
SN 564.	85.0	188.2	2.163	1.763	2.31	110.	5.69	2.02	.72	.355	.356

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 9. AXIAL DISTANCE=25.20 IN. BLOCKAGE CENTERLINE=29.25 IN. P=23.00 PSI RE= 29800.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 564.	85.0	188.2	.231	1.763	3.10	350.	5.69	7.18	2.29	.318	1.262
SN 565.	85.0	188.2	.298	1.763	3.07	60.	5.69	6.99	.39	.056	1.228
SN 566.	85.0	188.2	.364	1.763	3.05	52.	5.69	6.86	.34	.050	1.205
SN 567.	85.0	188.2	.431	1.763	3.07	52.	5.69	6.99	.34	.049	1.228
SN 568.	85.0	188.2	.498	1.763	3.09	52.	5.69	7.12	.34	.048	1.251
SN 569.	85.0	188.2	.564	1.763	3.12	48.	5.69	7.32	.31	.043	1.285
SN 570.	85.0	188.2	.631	1.763	3.12	50.	5.69	7.32	.33	.045	1.285
SN 571.	85.0	188.2	.697	1.763	3.09	61.	5.69	7.12	.40	.056	1.251
SN 572.	85.0	188.2	.764	1.763	3.05	56.	5.69	6.86	.37	.053	1.205
SN 573.	85.0	188.2	.831	1.763	3.06	55.	5.69	6.92	.36	.052	1.216
SN 574.	85.0	188.2	.897	1.763	3.10	52.	5.69	7.18	.34	.047	1.262
SN 575.	85.0	188.2	.964	1.763	3.10	52.	5.69	7.18	.34	.047	1.262
SN 576.	85.0	188.2	1.030	1.763	3.08	62.	5.69	7.05	.40	.057	1.239
SN 577.	85.0	188.2	1.097	1.763	3.05	67.	5.69	6.86	.44	.064	1.205
SN 578.	85.0	188.2	1.164	1.763	3.03	68.	5.69	6.73	.44	.066	1.182
SN 579.	85.0	188.2	1.230	1.763	3.02	67.	5.69	6.66	.44	.066	1.171
SN 580.	85.0	188.2	1.297	1.763	3.01	89.	5.69	6.60	.58	.088	1.159
SN 581.	85.0	188.2	1.363	1.763	2.91	145.	5.69	5.94	.95	.159	1.044
SN 582.	85.0	188.2	1.430	1.763	2.74	190.	5.69	4.83	1.24	.257	.849
SN 583.	85.0	188.2	1.497	1.763	2.57	200.	5.69	3.72	1.31	.351	.654
SN 584.	85.0	188.2	1.563	1.763	2.36	210.	5.69	2.35	1.37	.583	.413
SN 585.	85.0	188.2	1.630	1.763	2.21	180.	5.69	1.37	1.16	.857	.241
SN 586.	85.0	188.2	1.696	1.763	2.16	140.	5.69	1.05	.91	.875	.184
SN 587.	85.0	188.2	1.763	1.763	2.13	100.	5.69	.85	.65	.769	.149
SN 588.	85.0	188.2	1.830	1.763	2.12	85.	5.69	.78	.56	.708	.138
SN 589.	85.0	188.2	1.898	1.763	2.14	90.	5.69	.91	.59	.643	.161
SN 590.	85.0	188.2	1.963	1.763	2.20	99.	5.69	1.31	.65	.495	.230
SN 591.	85.0	188.2	2.029	1.763	2.23	92.	5.69	1.50	.60	.400	.264
SN 592.	85.0	188.2	2.096	1.763	2.25	79.	5.69	1.63	.52	.316	.287

SN 622.	85.0	188.2	.231	1.224	3.09	305.	5.69	7.12	1.99	.280	1.251
SN 621.	85.0	188.2	.298	1.224	3.04	65.	5.69	6.79	.42	.063	1.194
SN 620.	85.0	188.2	.364	1.224	3.01	55.	5.69	6.60	.36	.054	1.159
SN 619.	85.0	188.2	.431	1.224	3.02	56.	5.69	6.66	.37	.055	1.171
SN 618.	85.0	188.2	.498	1.224	3.06	58.	5.69	6.92	.38	.055	1.216
SN 617.	85.0	188.2	.564	1.224	3.10	52.	5.69	7.18	.34	.047	1.262
SN 616.	85.0	188.2	.631	1.224	3.12	44.	5.69	7.32	.29	.039	1.285
SN 615.	85.0	188.2	.697	1.224	3.10	53.	5.69	7.18	.35	.048	1.262
SN 614.	85.0	188.2	.764	1.224	3.06	58.	5.69	6.92	.38	.055	1.216
SN 613.	85.0	188.2	.831	1.224	3.04	50.	5.69	6.79	.33	.048	1.194
SN 612.	85.0	188.2	.897	1.224	3.05	57.	5.69	6.86	.37	.054	1.205
SN 611.	85.0	188.2	.964	1.224	3.07	59.	5.69	6.99	.39	.055	1.228
SN 610.	85.0	188.2	1.030	1.224	3.09	60.	5.69	7.12	.39	.055	1.251
SN 609.	85.0	188.2	1.097	1.224	3.08	60.	5.69	7.05	.39	.056	1.239
SN 608.	85.0	188.2	1.164	1.224	3.05	70.	5.69	6.86	.46	.067	1.205
SN 607.	85.0	188.2	1.230	1.224	2.98	76.	5.69	6.40	.50	.078	1.125
SN 606.	85.0	188.2	1.297	1.224	2.93	63.	5.69	6.07	.41	.068	1.067
SN 605.	85.0	188.2	1.363	1.224	2.94	64.	5.69	6.14	.42	.068	1.079
SN 604.	85.0	188.2	1.430	1.224	2.97	66.	5.69	6.34	.43	.068	1.113
SN 603.	85.0	188.2	1.497	1.224	2.98	65.	5.69	6.40	.42	.066	1.125

RUN	TEMP	FLOW GPM	X IN.	Y IN.	Z (DOP) VOLTS	DELTA E MVOLTS	UB FPS	U (LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 602.	85.0	188.2	1.563	1.224	2.99	57.	5.69	6.47	.37	.058	1.136
SN 601.	85.0	188.2	1.630	1.224	3.01	58.	5.69	6.60	.38	.057	1.159
SN 600.	85.0	188.2	1.696	1.224	3.03	56.	5.69	6.73	.37	.054	1.182
SN 599.	85.0	188.2	1.763	1.224	3.05	59.	5.69	6.86	.39	.056	1.205
SN 598.	85.0	188.2	1.830	1.224	3.04	69.	5.69	6.79	.45	.066	1.194
SN 597.	85.0	188.2	1.896	1.224	3.00	85.	5.69	6.53	.56	.085	1.148
SN 596.	85.0	188.2	1.963	1.224	2.92	100.	5.69	6.01	.65	.109	1.056
SN 594.	85.0	188.2	2.029	1.224	2.86	75.	5.69	5.62	.49	.087	.987
SN 595.	85.0	188.2	2.096	1.224	2.86	62.	5.69	5.62	.40	.072	.987
SN 593.	85.0	188.2	2.163	1.224	2.86	62.	5.69	5.62	.40	.072	.987
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SN 650.	85.0	188.2	.298	.685	3.06	120.	5.69	6.92	.78	.113	1.216
SN 649.	85.0	188.2	.364	.685	3.01	80.	5.69	6.60	.52	.079	1.159
SN 648.	85.0	188.2	.431	.685	2.99	59.	5.69	6.47	.39	.060	1.136
SN 647.	85.0	188.2	.498	.685	3.00	57.	5.69	6.53	.37	.057	1.148
SN 646.	85.0	188.2	.564	.685	3.04	57.	5.69	6.79	.37	.055	1.194
SN 645.	85.0	188.2	.631	.685	3.08	55.	5.69	7.05	.36	.051	1.239
SN 644.	85.0	188.2	.697	.685	3.09	59.	5.69	7.12	.39	.054	1.251
SN 643.	85.0	188.2	.764	.685	3.07	65.	5.69	6.99	.42	.061	1.228
SN 642.	85.0	188.2	.831	.685	3.02	68.	5.69	5.66	.44	.067	1.171
SN 641.	85.0	188.2	.897	.685	2.99	52.	5.69	5.47	.34	.053	1.136
SN 640.	85.0	188.2	.964	.685	2.99	52.	5.69	5.47	.34	.053	1.136
SN 639.	85.0	188.2	1.030	.685	3.01	55.	5.69	5.60	.36	.054	1.159
SN 638.	85.0	188.2	1.097	.685	3.04	57.	5.69	6.79	.37	.055	1.194
SN 637.	85.0	188.2	1.164	.685	3.07	54.	5.69	6.99	.35	.050	1.228
SN 636.	85.0	188.2	1.230	.685	3.08	54.	5.69	7.05	.35	.050	1.239
SN 635.	85.0	188.2	1.297	.685	3.06	62.	5.69	6.92	.40	.058	1.216
SN 634.	85.0	188.2	1.363	.685	3.03	60.	5.69	6.73	.39	.058	1.182
SN 633.	85.0	188.2	1.430	.685	3.01	53.	5.69	6.60	.35	.052	1.159
SN 632.	85.0	188.2	1.497	.685	3.01	51.	5.69	6.60	.33	.050	1.159
SN 631.	85.0	188.2	1.563	.685	3.01	60.	5.69	6.60	.39	.059	1.159
SN 630.	85.0	188.2	1.630	.685	3.02	64.	5.69	6.66	.42	.063	1.171
SN 629.	85.0	188.2	1.696	.685	3.05	60.	5.69	6.86	.39	.057	1.205
SN 628.	85.0	188.2	1.763	.685	3.07	58.	5.69	6.99	.38	.054	1.228
SN 627.	85.0	188.2	1.830	.685	3.07	61.	5.69	6.99	.40	.057	1.228
SN 626.	85.0	188.2	1.896	.685	3.03	63.	5.69	6.73	.41	.061	1.182
SN 625.	85.0	188.2	1.963	.685	3.01	62.	5.69	6.60	.40	.061	1.159
SN 624.	85.0	188.2	2.029	.685	3.00	53.	5.69	6.53	.35	.053	1.148
SN 623.	85.0	188.2	2.096	.685	2.99	48.	5.69	6.47	.31	.048	1.136
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SN 654.	85.0	188.2	.431	.110	3.05	51.	5.69	6.86	.33	.049	1.205
SN 653.	85.0	188.2	.697	.110	3.10	53.	5.69	7.18	.35	.048	1.262
SN 652.	85.0	188.2	1.230	.110	3.11	47.	5.69	7.25	.31	.042	1.274
SN 651.	85.0	188.2	1.763	.110	3.14	48.	5.69	7.45	.31	.042	1.308

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 12, AXIAL DISTANCE=34.80 IN. BLOCKAGE CENTERLINE=29.25 IN. P=23.00 PSI RE= 29700.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 655.	85.0	187.7	.165	.685	2.75	350.	5.68	4.90	2.29	.467	.863
SN 656.	85.0	187.7	.231	.685	2.81	220.	5.68	5.29	1.44	.272	.932
SN 657.	85.0	187.7	.298	.685	2.87	165.	5.68	5.68	1.08	.190	1.001
SN 658.	85.0	187.7	.364	.685	2.87	165.	5.68	5.68	1.08	.190	1.001
SN 659.	85.0	187.7	.431	.685	2.91	165.	5.68	5.94	1.08	.181	1.047
SN 660.	85.0	187.7	.498	.685	2.94	155.	5.68	6.14	1.01	.165	1.082
SN 661.	85.0	187.7	.564	.685	2.94	145.	5.68	6.14	.95	.154	1.082
SN 662.	85.0	187.7	.631	.685	2.89	155.	5.68	5.81	1.01	.174	1.024
SN 663.	85.0	187.7	.697	.685	2.86	145.	5.68	5.62	.95	.169	.990
SN 664.	85.0	187.7	.764	.685	2.86	150.	5.68	5.62	.98	.174	.990
SN 665.	85.0	187.7	.831	.685	2.84	175.	5.68	5.49	1.14	.208	.967
SN 666.	85.0	187.7	.897	.685	2.82	179.	5.68	5.36	1.17	.218	.944
SN 667.	85.0	187.7	.964	.685	2.84	180.	5.68	5.49	1.18	.214	.967
SN 668.	85.0	187.7	1.030	.685	2.88	180.	5.68	5.75	1.18	.205	1.013
SN 669.	85.0	187.7	1.097	.685	2.91	175.	5.68	5.94	1.14	.192	1.047
SN 670.	85.0	187.7	1.164	.685	2.88	160.	5.68	5.75	1.05	.182	1.013
SN 671.	85.0	187.7	1.230	.685	2.86	150.	5.68	5.62	.98	.174	.990
SN 672.	85.0	187.7	1.297	.685	2.89	160.	5.68	5.81	1.05	.180	1.024
SN 673.	85.0	187.7	1.363	.685	2.95	169.	5.68	6.20	1.10	.178	1.093
SN 674.	85.0	187.7	1.430	.685	2.98	169.	5.68	6.40	1.10	.172	1.128
SN 675.	85.0	187.7	1.497	.685	2.98	169.	5.68	6.40	1.10	.172	1.128
SN 676.	85.0	187.7	1.563	.685	2.98	170.	5.68	6.40	1.11	.173	1.128
SN 677.	85.0	187.7	1.630	.685	2.95	165.	5.68	6.20	1.08	.174	1.093
SN 678.	85.0	187.7	1.696	.685	2.89	165.	5.68	5.81	1.08	.185	1.024
SN 679.	85.0	187.7	1.763	.685	2.88	159.	5.68	5.75	1.04	.181	1.013
SN 680.	85.0	187.7	1.830	.685	2.88	159.	5.68	5.75	1.04	.181	1.013
SN 681.	85.0	187.7	1.896	.685	2.90	170.	5.68	5.88	1.11	.189	1.036
SN 682.	85.0	187.7	1.963	.685	2.88	185.	5.68	5.75	1.21	.210	1.013
SN 683.	85.0	187.7	2.029	.685	2.85	180.	5.68	5.55	1.18	.212	.978
SN 684.	85.0	187.7	2.096	.685	2.84	180.	5.68	5.49	1.18	.214	.967
SN 685.	85.0	187.7	2.163	.685	2.85	160.	5.68	5.55	1.05	.188	.978
SN 686.	85.0	187.7	2.229	.685	2.84	150.	5.68	5.49	.98	.179	.967
SN 687.	85.0	187.7	2.296	.685	2.84	150.	5.68	5.49	.98	.179	.967
SN 688.	85.0	187.7	2.362	.685	2.88	160.	5.68	5.75	1.05	.182	1.013
SN 689.	85.0	187.7	2.429	.685	2.92	170.	5.68	6.01	1.11	.185	1.059
SN 720.	85.0	187.7	.298	1.763	2.84	300.	5.68	5.49	1.96	.357	.967
SN 719.	85.0	187.7	.364	1.763	2.93	220.	5.68	6.07	1.44	.237	1.070
SN 718.	85.0	187.7	.431	1.763	2.86	230.	5.68	5.62	1.50	.267	.990
SN 717.	85.0	187.7	.498	1.763	2.94	210.	5.68	6.14	1.37	.223	1.082
SN 716.	85.0	187.7	.564	1.763	2.99	190.	5.68	6.47	1.24	.192	1.139
SN 715.	85.0	187.7	.631	1.763	2.95	190.	5.68	6.20	1.24	.200	1.093
SN 714.	85.0	187.7	.697	1.763	2.87	160.	5.68	5.68	1.05	.184	1.001
SN 713.	85.0	187.7	.764	1.763	2.84	150.	5.68	5.49	.98	.179	.967
SN 712.	85.0	187.7	.831	1.763	2.86	150.	5.68	5.62	.98	.174	.990
SN 711.	85.0	187.7	.897	1.763	2.87	160.	5.68	5.68	1.05	.184	1.001
SN 710.	85.0	187.7	.964	1.763	2.91	170.	5.68	5.94	1.11	.187	1.047
SN 709.	85.0	187.7	1.030	1.763	2.97	180.	5.68	6.34	1.18	.186	1.116
SN 708.	85.0	187.7	1.097	1.763	2.99	180.	5.68	6.47	1.18	.182	1.139
SN 707.	85.0	187.7	1.164	1.763	2.89	230.	5.68	5.81	1.50	.258	1.024

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 706.	85.0	187.7	1.230	1.768	2.59	200.	5.68	3.85	1.31	.339	.679
SN 705.	85.0	187.7	1.297	1.763	2.55	155.	5.68	3.59	1.01	.282	.633
SN 704.	85.0	187.7	1.363	1.769	2.55	140.	5.68	3.59	.91	.255	.633
SN 703.	85.0	187.7	1.430	1.763	2.59	130.	5.68	3.85	.85	.220	.679
SN 702.	85.0	187.7	1.497	1.769	2.58	125.	5.68	3.79	.82	.216	.667
SN 701.	85.0	187.7	1.563	1.763	2.56	120.	5.68	3.66	.78	.214	.644
SN 700.	85.0	187.7	1.630	1.763	2.56	120.	5.68	3.66	.78	.214	.644
SN 699.	85.0	187.7	1.696	1.763	2.52	110.	5.68	3.40	.72	.212	.598
SN 698.	85.0	187.7	1.763	1.763	2.47	110.	5.68	3.07	.72	.234	.541
SN 697.	85.0	187.7	1.830	1.763	2.41	120.	5.68	2.68	.78	.293	.472
SN 696.	85.0	187.7	1.896	1.769	2.38	130.	5.68	2.48	.85	.342	.437
SN 695.	85.0	187.7	1.963	1.769	2.35	125.	5.68	2.29	.82	.357	.403
SN 694.	85.0	187.7	2.029	1.763	2.35	115.	5.68	2.29	.75	.329	.403
SN 693.	85.0	187.7	2.096	1.763	2.36	130.	5.68	2.35	.85	.361	.414
SN 692.	85.0	187.7	2.163	1.763	2.41	140.	5.68	2.68	.91	.341	.472
SN 691.	85.0	187.7	2.229	1.769	2.45	135.	5.68	2.94	.88	.300	.518
SN 690.	85.0	187.7	2.296	1.763	2.49	135.	5.68	3.20	.88	.276	.564
SN 721.	85.5	187.7	.298	1.224	2.97	170.	5.68	6.34	1.11	.175	1.116
SN 722.	85.5	187.7	.364	1.224	3.02	165.	5.68	6.66	1.08	.162	1.174
SN 723.	85.5	187.7	.431	1.224	3.01	165.	5.68	6.60	1.08	.163	1.162
SN 724.	85.5	187.7	.498	1.224	3.00	165.	5.68	6.53	1.08	.165	1.151
SN 725.	85.5	187.7	.564	1.224	2.97	165.	5.68	6.34	1.08	.170	1.116
SN 726.	85.5	187.7	.631	1.224	2.90	160.	5.68	5.88	1.05	.178	1.036
SN 727.	85.5	187.7	.697	1.224	2.86	150.	5.68	5.62	.98	.174	.990
SN 728.	85.5	187.7	.764	1.224	2.86	150.	5.68	5.62	.98	.174	.990
SN 729.	85.5	187.7	.831	1.224	2.88	160.	5.68	5.75	1.05	.182	1.013
SN 730.	85.5	187.7	.897	1.224	2.89	170.	5.68	5.81	1.11	.191	1.024
SN 731.	85.5	187.7	.964	1.224	2.93	170.	5.68	6.07	1.11	.183	1.070
SN 732.	85.5	187.7	1.030	1.224	2.96	170.	5.68	6.27	1.11	.177	1.105
SN 733.	85.5	187.7	1.097	1.224	2.94	180.	5.68	6.14	1.18	.191	1.082
SN 734.	85.5	187.7	1.164	1.224	2.88	180.	5.68	5.75	1.18	.205	1.013
SN 735.	85.5	187.7	1.230	1.224	2.84	160.	5.68	5.49	1.05	.190	.967
SN 736.	85.5	187.7	1.297	1.224	2.83	155.	5.68	5.42	1.01	.187	.955
SN 737.	85.5	187.7	1.363	1.224	2.83	170.	5.68	5.42	1.11	.205	.955
SN 738.	85.5	187.7	1.430	1.224	2.82	170.	5.68	5.36	1.11	.207	.944
SN 739.	85.5	187.7	1.497	1.224	2.82	170.	5.68	5.36	1.11	.207	.944
SN 740.	85.5	187.7	1.563	1.224	2.84	175.	5.68	5.49	1.14	.208	.967
SN 741.	85.5	187.7	1.630	1.224	2.86	185.	5.68	5.62	1.21	.215	.990
SN 742.	85.5	187.7	1.696	1.224	2.83	185.	5.68	5.42	1.21	.223	.955
SN 743.	85.5	187.7	1.763	1.224	2.74	165.	5.68	4.83	1.08	.223	.852
SN 744.	85.5	187.7	1.830	1.224	2.66	155.	5.68	4.31	1.01	.235	.759
SN 745.	85.5	187.7	1.896	1.224	2.61	155.	5.68	3.98	1.01	.254	.702
SN 746.	85.5	187.7	1.963	1.224	2.54	150.	5.68	3.53	.98	.278	.621
SN 747.	85.5	187.7	2.029	1.224	2.52	150.	5.68	3.40	.98	.288	.598
SN 748.	85.5	187.7	2.096	1.224	2.51	160.	5.68	3.33	1.05	.314	.587
SN 749.	85.5	187.7	2.163	1.224	2.53	170.	5.68	3.46	1.11	.321	.610
SN 750.	85.5	187.7	2.229	1.224	2.59	170.	5.68	3.85	1.11	.288	.679
SN 751.	85.5	187.7	2.296	1.224	2.66	170.	5.68	4.31	1.11	.258	.759

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 9, AXIAL DISTANCE=28.20 IN. BLOCKAGE CENTERLINE=29.25 IN. P=29.00 PSI RE= 63900.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 756.	161.3	187.7	.231	1.763	3.07	325.	5.68	6.99	2.12	.304	1.231
SN 757.	161.3	187.7	.298	1.763	3.05	175.	5.68	6.86	1.14	.167	1.208
SN 758.	161.3	187.7	.364	1.763	3.00	95.	5.68	6.53	.62	.095	1.151
SN 759.	161.3	187.7	.431	1.763	3.04	78.	5.68	6.79	.51	.075	1.197
SN 760.	161.3	187.7	.498	1.763	3.07	70.	5.68	6.99	.46	.065	1.231
SN 761.	161.3	187.7	.564	1.763	3.09	70.	5.68	7.12	.46	.064	1.254
SN 762.	161.3	187.7	.631	1.763	3.08	70.	5.68	7.05	.46	.065	1.243
SN 763.	161.3	187.7	.697	1.763	3.05	70.	5.68	6.86	.46	.067	1.208
SN 764.	161.3	187.7	.764	1.763	3.02	60.	5.68	6.66	.39	.059	1.174
SN 765.	161.3	187.7	.831	1.763	3.05	60.	5.68	6.86	.39	.057	1.208
SN 766.	161.3	187.7	.897	1.763	3.08	54.	5.68	7.05	.35	.050	1.243
SN 767.	161.3	187.7	.964	1.763	3.08	54.	5.68	7.05	.35	.050	1.243
SN 768.	161.3	187.7	1.030	1.763	3.06	62.	5.68	6.92	.40	.058	1.220
SN 769.	161.3	187.7	1.097	1.763	3.03	70.	5.68	6.73	.46	.068	1.185
SN 770.	161.3	187.7	1.164	1.763	2.99	75.	5.68	6.47	.49	.076	1.139
SN 771.	161.3	187.7	1.230	1.763	2.97	75.	5.68	6.34	.49	.077	1.116
SN 772.	161.3	187.7	1.297	1.763	2.95	85.	5.68	6.20	.56	.089	1.093
SN 773.	161.3	187.7	1.363	1.763	2.87	145.	5.68	5.68	.95	.167	1.001
SN 774.	161.3	187.7	1.430	1.763	2.69	169.	5.68	4.51	1.10	.245	.794
SN 775.	161.3	187.7	1.497	1.763	2.51	199.	5.68	3.33	1.30	.390	.587
SN 776.	161.3	187.7	1.563	1.763	2.29	199.	5.68	1.89	1.30	.686	.334
SN 777.	161.3	187.7	1.630	1.763	2.19	190.	5.68	1.24	1.24	1.000	.219
SN 778.	161.3	187.7	1.696	1.763	2.13	140.	5.68	.85	.91	1.077	.150
SN 779.	161.3	187.7	1.763	1.763	2.11	105.	5.68	.72	.69	.955	.127
SN 780.	161.3	187.7	1.830	1.763	2.09	97.	5.68	.59	.63	1.078	.104
SN 781.	161.3	187.7	1.896	1.763	2.14	120.	5.68	.91	.78	.857	.161
SN 782.	161.3	187.7	1.963	1.763	2.23	110.	5.68	1.50	.72	.478	.265
SN 783.	161.3	187.7	2.029	1.763	2.27	100.	5.68	1.76	.65	.370	.311
SN 784.	161.3	187.7	2.096	1.763	2.28	85.	5.68	1.83	.56	.304	.322
SN 785.	161.3	187.7	2.163	1.763	2.28	95.	5.68	1.83	.62	.339	.322
SN 786.	161.3	187.7	2.229	1.763	2.22	120.	5.68	1.44	.78	.545	.253
SN 787.	161.3	187.7	2.296	1.763	2.12	110.	5.68	.78	.72	.917	.138
SN 788.	161.3	187.7	2.362	1.763	2.10	100.	5.68	.65	.65	1.000	.115
SN 789.	161.3	187.7	2.429	1.763	2.13	130.	5.68	.85	.85	1.000	.150
SN 790.	161.3	187.7	2.496	1.763	2.20	170.	5.68	1.31	1.11	.850	.230
SN 791.	161.3	187.7	2.562	1.763	2.29	200.	5.68	1.89	1.31	.690	.334
SN 827.	161.3	187.7	.231	1.224	3.02	350.	5.68	6.66	2.29	.343	1.174
SN 826.	161.3	187.7	.298	1.224	3.00	70.	5.68	6.53	.46	.070	1.151
SN 825.	161.3	187.7	.364	1.224	3.00	70.	5.68	6.53	.46	.070	1.151
SN 824.	161.3	187.7	.431	1.224	3.02	70.	5.68	6.66	.46	.069	1.174
SN 823.	161.3	187.7	.498	1.224	3.06	75.	5.68	6.92	.49	.071	1.220
SN 822.	161.3	187.7	.564	1.224	3.08	75.	5.68	7.05	.49	.069	1.243
SN 821.	161.3	187.7	.631	1.224	3.08	75.	5.68	7.05	.49	.069	1.243
SN 820.	161.3	187.7	.697	1.224	3.05	85.	5.68	6.86	.56	.081	1.208
SN 819.	161.3	187.7	.764	1.224	3.02	80.	5.68	6.66	.52	.078	1.174
SN 818.	161.3	187.7	.831	1.224	3.01	70.	5.68	6.60	.46	.069	1.162
SN 817.	161.3	187.7	.897	1.224	3.03	75.	5.68	6.73	.49	.073	1.185
SN 816.	161.3	187.7	.964	1.224	3.04	80.	5.68	6.79	.52	.077	1.197
SN 815.	161.3	187.7	1.030	1.224	3.05	75.	5.68	6.86	.49	.071	1.208

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E WVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 814.	161.3	187.7	1.097	1.224	3.04	80.	5.68	6.79	.52	.077	1.197
SN 813.	161.3	187.7	1.164	1.224	2.98	85.	5.68	6.40	.56	.087	1.128
SN 812.	161.3	187.7	1.230	1.224	2.92	75.	5.68	6.01	.49	.082	1.059
SN 811.	161.3	187.7	1.297	1.224	2.91	70.	5.68	5.94	.46	.077	1.047
SN 810.	161.3	187.7	1.363	1.224	2.92	75.	5.68	6.01	.49	.082	1.059
SN 809.	161.3	187.7	1.430	1.224	2.94	70.	5.68	6.14	.46	.074	1.082
SN 808.	161.3	187.7	1.497	1.224	2.95	70.	5.68	6.20	.46	.074	1.093
SN 807.	161.3	187.7	1.563	1.224	2.96	65.	5.68	6.27	.42	.068	1.105
SN 806.	161.3	187.7	1.630	1.224	2.98	60.	5.68	6.40	.39	.061	1.128
SN 805.	161.3	187.7	1.696	1.224	3.00	60.	5.68	6.53	.39	.060	1.151
SN 804.	161.3	187.7	1.763	1.224	2.99	69.	5.68	6.47	.45	.070	1.139
SN 803.	161.3	187.7	1.830	1.224	2.97	80.	5.68	6.34	.52	.082	1.116
SN 802.	161.3	187.7	1.896	1.224	2.90	100.	5.68	5.88	.65	.111	1.036
SN 801.	161.3	187.7	1.963	1.224	2.83	100.	5.68	5.42	.65	.120	.955
SN 800.	161.3	187.7	2.029	1.224	2.82	80.	5.68	5.36	.52	.098	.944
SN 799.	161.3	187.7	2.096	1.224	2.82	80.	5.68	5.36	.52	.098	.944
SN 798.	161.3	187.7	2.163	1.224	2.83	90.	5.68	5.42	.59	.108	.955
SN 797.	161.3	187.7	2.229	1.224	2.90	105.	5.68	5.88	.69	.117	1.036
SN 796.	161.3	187.7	2.296	1.224	2.95	85.	5.68	6.20	.56	.089	1.093
SN 795.	161.3	187.7	2.362	1.224	2.99	70.	5.68	6.47	.46	.071	1.139
SN 794.	161.3	187.7	2.429	1.224	3.00	64.	5.68	6.53	.42	.064	1.151
SN 793.	161.3	187.7	2.496	1.224	2.99	62.	5.68	6.47	.40	.063	1.139
SN 792.	161.3	187.7	2.562	1.224	2.96	70.	5.68	6.27	.46	.073	1.105
SN 862.	161.3	187.7	.298	.685	2.95	300.	5.68	6.20	1.96	.316	1.093
SN 861.	161.3	187.7	.364	.685	2.97	186.	5.68	6.34	1.21	.192	1.116
SN 860.	161.3	187.7	.431	.685	2.94	166.	5.68	6.14	1.08	.177	1.082
SN 859.	161.3	187.7	.498	.685	2.98	156.	5.68	6.40	1.02	.159	1.128
SN 858.	161.3	187.7	.564	.685	3.02	146.	5.68	6.66	.95	.143	1.174
SN 857.	161.3	187.7	.631	.685	3.05	159.	5.68	6.86	1.04	.151	1.208
SN 856.	161.3	187.7	.697	.685	3.03	140.	5.68	6.73	.97	.145	1.185
SN 855.	161.3	187.7	.764	.685	2.99	112.	5.68	6.47	.78	.120	1.139
SN 854.	161.3	187.7	.831	.685	2.97	99.	5.68	6.34	.65	.102	1.116
SN 853.	161.3	187.7	.897	.685	2.96	80.	5.68	6.27	.52	.083	1.105
SN 852.	161.3	187.7	.964	.685	2.97	78.	5.68	6.34	.51	.080	1.116
SN 851.	161.3	187.7	1.030	.685	3.00	78.	5.68	6.53	.51	.078	1.151
SN 850.	161.3	187.7	1.097	.685	3.03	75.	5.68	6.73	.49	.073	1.185
SN 849.	161.3	187.7	1.164	.685	3.05	75.	5.68	6.86	.49	.071	1.208
SN 848.	161.3	187.7	1.230	.685	3.03	79.	5.68	6.73	.52	.077	1.185
SN 847.	161.3	187.7	1.297	.685	3.00	74.	5.68	6.53	.48	.074	1.151
SN 846.	161.3	187.7	1.363	.685	2.98	74.	5.68	6.40	.48	.076	1.128
SN 845.	161.3	187.7	1.430	.685	2.98	70.	5.68	6.40	.46	.071	1.128
SN 844.	161.3	187.7	1.497	.685	2.98	70.	5.68	6.40	.46	.071	1.128
SN 843.	161.3	187.7	1.563	.685	2.98	70.	5.68	6.40	.46	.071	1.128
SN 842.	161.3	187.7	1.630	.685	3.00	73.	5.68	6.53	.48	.073	1.151
SN 841.	161.3	187.7	1.696	.685	3.03	65.	5.68	6.73	.42	.063	1.185
SN 840.	161.3	187.7	1.763	.685	3.04	65.	5.68	6.79	.42	.063	1.197
SN 839.	161.3	187.7	1.830	.685	3.02	75.	5.68	6.66	.49	.074	1.174
SN 838.	161.3	187.7	1.896	.685	2.98	75.	5.68	6.40	.49	.077	1.128
SN 837.	161.3	187.7	1.963	.685	2.97	65.	5.68	6.34	.42	.067	1.116
SN 836.	161.3	187.7	2.029	.685	2.97	60.	5.68	6.34	.39	.062	1.116
SN 835.	161.3	187.7	2.096	.685	2.97	65.	5.68	6.34	.42	.067	1.116
SN 834.	161.3	187.7	2.163	.685	2.96	65.	5.68	6.27	.42	.068	1.105
SN 833.	161.3	187.7	2.229	.685	2.99	65.	5.68	6.47	.42	.066	1.139
SN 832.	161.3	187.7	2.296	.685	3.03	65.	5.68	6.73	.42	.063	1.185
SN	161.3	187.7	2.362	.685	3.05	60.	5.68	6.86	.39	.057	8

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 830.	161.3	187.7	2.429	.688	3.03	69.	5.68	6.73	.45	.067	1.185
SN 829.	161.3	187.7	2.496	.688	3.00	70.	5.68	6.53	.46	.070	1.151
SN 828.	161.3	187.7	2.562	.688	2.99	75.	5.68	6.47	.49	.076	1.139
SN 865.	161.3	187.7	.464	.110	3.07	75.	5.68	6.99	.49	.070	1.231
SN 865.	161.3	187.7	.697	.110	3.10	70.	5.68	7.18	.46	.064	1.266
SN 864.	161.3	187.7	1.230	.110	3.11	48.	5.68	7.25	.31	.043	1.277
SN 863.	161.3	187.7	1.763	.110	3.14	48.	5.68	7.45	.31	.042	1.312
SN 866.	161.3	187.7	1.856	1.838	2.05	125.	5.68	.33	.82	2.500	.058
SN 867.	161.3	187.7	1.896	1.839	2.13	165.	5.68	.85	1.08	1.269	.150

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 9. AXIAL DISTANCE=20.20 IN. BLOCKAGE CENTERLINE=29.25 IN. P=28.08 PSI RE= 60600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 869.	91.6	355.0	.165	1.763	4.00	120.	10.74	13.06	.78	.060	1.217
SN 870.	91.6	355.0	.231	1.768	4.05	88.	10.74	13.39	.57	.043	1.247
SN 871.	91.6	355.0	.298	1.768	3.99	84.	10.74	13.00	.55	.042	1.211
SN 872.	91.6	355.0	.364	1.763	3.94	78.	10.74	12.67	.51	.040	1.180
SN 873.	91.6	355.0	.431	1.768	3.94	76.	10.74	12.67	.50	.039	1.180
SN 874.	91.6	355.0	.498	1.768	3.98	76.	10.74	12.93	.50	.038	1.205
SN 875.	91.6	355.0	.564	1.763	4.03	76.	10.74	13.26	.50	.037	1.235
SN 876.	91.6	355.0	.631	1.763	4.06	75.	10.74	13.45	.49	.036	1.253
SN 877.	91.6	355.0	.697	1.763	4.02	85.	10.74	13.19	.56	.042	1.229
SN 878.	91.6	355.0	.764	1.763	3.95	95.	10.74	12.74	.62	.049	1.186
SN 879.	91.6	355.0	.831	1.763	3.92	85.	10.74	12.54	.56	.044	1.168
SN 880.	91.6	355.0	.897	1.768	3.97	85.	10.74	12.87	.56	.043	1.199
SN 881.	91.6	355.0	.964	1.763	4.01	82.	10.74	13.13	.54	.041	1.223
SN 882.	91.6	355.0	1.030	1.763	3.99	89.	10.74	13.00	.58	.045	1.211
SN 883.	91.6	355.0	1.097	1.763	3.93	100.	10.74	12.61	.65	.052	1.174
SN 884.	91.6	355.0	1.164	1.763	3.87	105.	10.74	12.21	.69	.056	1.138
SN 885.	91.6	355.0	1.230	1.763	3.81	107.	10.74	11.82	.70	.059	1.101
SN 886.	91.6	355.0	1.297	1.768	3.79	115.	10.74	11.69	.75	.064	1.089
SN 887.	91.6	355.0	1.363	1.763	3.70	180.	10.74	11.10	1.18	.106	1.034
SN 888.	91.6	355.0	1.430	1.763	3.43	222.	10.74	9.34	1.45	.155	.870
SN 889.	91.6	355.0	1.497	1.763	3.13	225.	10.74	7.38	1.47	.199	.687
SN 890.	91.6	355.0	1.563	1.763	2.80	249.	10.74	5.23	1.63	.311	.487
SN 891.	91.6	355.0	1.630	1.763	2.53	250.	10.74	3.46	1.63	.472	.322
SN 892.	91.6	355.0	1.698	1.763	2.42	220.	10.74	2.74	1.44	.524	.256
SN 893.	91.6	355.0	1.763	1.763	2.38	170.	10.74	2.48	1.11	.447	.231
SN 894.	91.6	355.0	1.830	1.763	2.34	135.	10.74	2.22	.88	.397	.207
SN 895.	91.6	355.0	1.896	1.763	2.32	135.	10.74	2.09	.88	.422	.195
SN 896.	91.6	355.0	1.963	1.763	2.43	165.	10.74	2.81	1.08	.384	.262
SN 897.	91.6	355.0	2.029	1.763	2.53	150.	10.74	3.46	.98	.283	.322
SN 898.	91.6	355.0	2.096	1.763	2.53	140.	10.74	3.46	.91	.264	.322
SN 899.	91.6	355.0	2.163	1.763	2.53	140.	10.74	3.46	.91	.264	.322
SN 900.	91.6	355.0	2.229	1.763	2.48	155.	10.74	3.14	1.01	.323	.292
SN 901.	91.6	355.0	2.296	1.763	2.31	158.	10.74	2.02	1.03	.510	.189
SN 902.	91.6	355.0	2.362	1.763	2.23	138.	10.74	1.50	.90	.600	.140
SN 935.	91.5	355.0	.231	1.224	4.02	88.	10.74	13.19	.57	.044	1.229
SN 934.	91.5	355.0	.298	1.224	3.95	90.	10.74	12.74	.59	.046	1.186
SN 933.	91.5	355.0	.364	1.224	3.88	82.	10.74	12.28	.54	.044	1.144
SN 932.	91.5	355.0	.431	1.224	3.88	82.	10.74	12.28	.54	.044	1.144
SN 931.	91.5	355.0	.498	1.224	3.93	92.	10.74	12.61	.60	.048	1.174
SN 930.	91.5	355.0	.564	1.224	4.00	87.	10.74	13.06	.57	.044	1.217
SN 929.	91.5	355.0	.631	1.224	4.05	75.	10.74	13.39	.49	.037	1.247
SN 928.	91.5	355.0	.697	1.224	4.04	75.	10.74	13.32	.49	.037	1.241
SN 927.	91.5	355.0	.764	1.224	3.98	79.	10.74	12.93	.52	.040	1.205
SN 926.	91.5	355.0	.831	1.224	3.93	77.	10.74	12.61	.50	.040	1.174
SN 925.	91.5	355.0	.897	1.224	3.93	82.	10.74	12.61	.54	.042	1.174
SN 924.	91.5	355.0	.964	1.224	3.96	96.	10.74	12.80	.63	.049	1.192
SN 923.	91.5	355.0	1.030	1.224	4.00	95.	10.74	13.06	.62	.048	1.217
SN 922.	91.5	355.0	1.097	1.224	4.00	94.	10.74	13.06	.61	.047	1.217
SN 921.	91.5	355.0	1.164	1.224	3.95	100.	10.74	12.74	.65	.051	

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 920.	91.5	355.0	1.230	1.224	3.84	115.	10.74	12.02	.75	.063	1.119
SN 919.	91.5	355.0	1.297	1.224	3.74	94.	10.74	11.36	.61	.054	1.059
SN 918.	91.5	355.0	1.363	1.224	3.74	89.	10.74	11.36	.58	.051	1.059
SN 917.	91.5	355.0	1.430	1.224	3.78	98.	10.74	11.63	.64	.055	1.083
SN 916.	91.5	355.0	1.497	1.224	3.81	100.	10.74	11.82	.65	.055	1.101
SN 915.	91.5	355.0	1.563	1.224	3.81	94.	10.74	11.82	.61	.052	1.101
SN 914.	91.5	355.0	1.630	1.224	3.82	89.	10.74	11.89	.58	.049	1.107
SN 913.	91.5	355.0	1.696	1.224	3.84	88.	10.74	12.02	.57	.048	1.119
SN 912.	91.5	355.0	1.763	1.224	3.85	89.	10.74	12.08	.58	.048	1.126
SN 911.	91.5	355.0	1.830	1.224	3.82	100.	10.74	11.89	.65	.055	1.107
SN 910.	91.5	355.0	1.896	1.224	3.73	112.	10.74	11.30	.73	.065	1.053
SN 909.	91.5	355.0	1.963	1.224	3.62	118.	10.74	10.58	.77	.073	.986
SN 908.	91.5	355.0	2.029	1.224	3.57	105.	10.74	10.25	.69	.067	.955
SN 907.	91.5	355.0	2.096	1.224	3.62	103.	10.74	10.58	.67	.064	.986
SN 906.	91.5	355.0	2.163	1.224	3.60	110.	10.74	10.45	.72	.069	.973
SN 905.	91.5	355.0	2.229	1.224	3.60	115.	10.74	10.45	.75	.072	.973
SN 904.	91.5	355.0	2.296	1.224	3.70	115.	10.74	11.10	.75	.068	1.034
SN 903.	91.5	355.0	2.362	1.224	3.79	104.	10.74	11.69	.68	.058	1.089
SN 969.	91.5	355.0	.165	.685	3.98	124.	10.74	12.93	.81	.063	1.205
SN 968.	91.5	355.0	.231	.685	4.04	84.	10.74	13.32	.55	.041	1.241
SN 967.	91.5	355.0	.298	.685	4.01	86.	10.74	13.13	.56	.043	1.223
SN 966.	91.5	355.0	.364	.685	3.95	86.	10.74	12.74	.56	.044	1.186
SN 965.	91.5	355.0	.431	.685	3.90	77.	10.74	12.41	.50	.041	1.156
SN 964.	91.5	355.0	.498	.685	3.89	75.	10.74	12.34	.49	.040	1.150
SN 963.	91.5	355.0	.564	.685	3.93	82.	10.74	12.61	.54	.042	1.174
SN 962.	91.5	355.0	.631	.685	3.98	82.	10.74	12.93	.54	.041	1.205
SN 961.	91.5	355.0	.697	.685	4.02	79.	10.74	13.19	.52	.039	1.229
SN 960.	91.5	355.0	.764	.685	3.99	95.	10.74	13.00	.62	.048	1.211
SN 959.	91.5	355.0	.831	.685	3.91	97.	10.74	12.48	.63	.051	1.162
SN 958.	91.5	355.0	.897	.685	3.85	81.	10.74	12.08	.53	.044	1.126
SN 957.	91.5	355.0	.964	.685	3.84	80.	10.74	12.02	.52	.043	1.119
SN 956.	91.5	355.0	1.030	.685	3.85	90.	10.74	12.08	.59	.049	1.126
SN 955.	91.5	355.0	1.097	.685	3.90	97.	10.74	12.41	.63	.051	1.156
SN 954.	91.5	355.0	1.164	.685	3.96	89.	10.74	12.80	.58	.045	1.192
SN 953.	91.5	355.0	1.230	.685	3.98	84.	10.74	12.93	.55	.042	1.205
SN 952.	91.5	355.0	1.297	.685	3.94	92.	10.74	12.67	.60	.047	1.180
SN 951.	91.5	355.0	1.363	.685	3.89	94.	10.74	12.34	.61	.050	1.150
SN 950.	91.5	355.0	1.430	.685	3.86	82.	10.74	12.15	.54	.044	1.132
SN 949.	91.5	355.0	1.497	.685	3.86	80.	10.74	12.15	.52	.043	1.132
SN 948.	91.5	355.0	1.563	.685	3.85	97.	10.74	12.08	.63	.052	1.126
SN 947.	91.5	355.0	1.630	.685	3.85	99.	10.74	12.08	.65	.054	1.126
SN 946.	91.5	355.0	1.696	.685	3.88	95.	10.74	12.28	.62	.051	1.144
SN 945.	91.5	355.0	1.763	.685	3.93	94.	10.74	12.61	.61	.049	1.174
SN 944.	91.5	355.0	1.830	.685	3.94	94.	10.74	12.67	.61	.048	1.180
SN 943.	91.5	355.0	1.896	.685	3.88	98.	10.74	12.28	.64	.052	1.144
SN 942.	91.5	355.0	1.963	.685	3.82	98.	10.74	11.89	.64	.054	1.107
SN 941.	91.5	355.0	2.029	.685	3.80	83.	10.74	11.76	.54	.046	1.095
SN 940.	91.5	355.0	2.096	.685	3.82	80.	10.74	11.89	.52	.044	1.107
SN 939.	91.5	355.0	2.163	.685	3.80	85.	10.74	11.76	.56	.047	1.095
SN 938.	91.5	355.0	2.229	.685	3.80	85.	10.74	11.76	.62	.053	1.095
SN 937.	91.5	355.0	2.296	.685	3.87	98.	10.74	12.21	.64	.052	1.138
SN 936.	91.5	355.0	2.362	.685	3.95	98.	10.74	12.74	.64	.050	1.186

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
SN 973.	91.5	355.0	.231	.110	3.93	100.	10.74	12.61	.65	.052	1.174
SN 972.	91.5	355.0	.697	.110	4.11	71.	10.74	13.78	.46	.034	1.284
SN 971.	91.5	355.0	1.230	.110	4.11	71.	10.74	13.78	.46	.034	1.284
SN 970.	91.5	355.0	1.763	.110	4.12	77.	10.74	13.85	.50	.036	1.290
SN 974.	91.5	355.0	1.923	1.800	2.22	170.	10.74	1.44	1.11	.773	.134
SN 975.	91.5	355.0	1.968	1.800	2.48	252.	10.74	3.14	1.65	.525	.292

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 6. AXIAL DISTANCE=34.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=17.00 PSI RE= 29400.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
S7 1.	84.0	188.2	.165	1.763	2.96	70.	5.69	6.27	.46	.073	1.102
S7 2.	84.0	188.2	.231	1.763	2.94	68.	5.69	6.14	.44	.072	1.079
S7 3.	84.0	188.2	.298	1.763	2.92	67.	5.69	6.01	.44	.073	1.056
S7 4.	84.0	188.2	.364	1.763	2.90	66.	5.69	5.88	.43	.073	1.033
S7 5.	84.0	188.2	.431	1.763	2.89	66.	5.69	5.81	.43	.074	1.021
S7 6.	84.0	188.2	.498	1.763	2.89	68.	5.69	5.81	.44	.076	1.021
S7 7.	84.0	188.2	.564	1.763	2.90	68.	5.69	5.88	.44	.076	1.033
S7 8.	84.0	188.2	.631	1.763	2.90	67.	5.69	5.88	.44	.074	1.033
S7 9.	84.0	188.2	.697	1.763	2.90	63.	5.69	5.88	.41	.070	1.033
S7 10.	84.0	188.2	.764	1.763	2.89	62.	5.69	5.81	.40	.070	1.021
S7 11.	84.0	188.2	.831	1.763	2.88	62.	5.69	5.75	.40	.070	1.010
S7 12.	84.0	188.2	.897	1.763	2.86	62.	5.69	5.62	.40	.072	.987
S7 13.	84.0	188.2	.964	1.763	2.85	62.	5.69	5.55	.40	.073	.975
S7 14.	84.0	188.2	1.030	1.763	2.84	60.	5.69	5.49	.39	.071	.964
S7 15.	84.0	188.2	1.097	1.763	2.85	60.	5.69	5.55	.39	.071	.975
S7 16.	84.0	188.2	1.164	1.763	2.86	60.	5.69	5.62	.39	.070	.987
S7 17.	84.0	188.2	1.230	1.763	2.86	59.	5.69	5.62	.39	.069	.987
S7 18.	84.0	188.2	1.297	1.763	2.86	59.	5.69	5.62	.39	.069	.987
S7 19.	84.0	188.2	1.363	1.763	2.86	59.	5.69	5.62	.39	.069	.987
S7 20.	84.0	188.2	1.430	1.763	2.85	59.	5.69	5.55	.39	.069	.975
S7 21.	84.0	188.2	1.497	1.763	2.85	60.	5.69	5.55	.39	.071	.975
S7 22.	84.0	188.2	1.563	1.763	2.84	60.	5.69	5.49	.39	.071	.964
S7 23.	84.0	188.2	1.630	1.763	2.85	60.	5.69	5.55	.39	.071	.975
S7 24.	84.0	188.2	1.696	1.763	2.85	60.	5.69	5.55	.39	.071	.975
S7 25.	84.0	188.2	1.763	1.763	2.85	60.	5.69	5.55	.39	.071	.975
S7 26.	84.0	188.2	1.830	1.763	2.83	59.	5.69	5.42	.39	.071	.953
S7 27.	84.0	188.2	1.896	1.763	2.81	58.	5.69	5.29	.38	.072	.930
S7 28.	84.0	188.2	1.963	1.763	2.79	56.	5.69	5.16	.37	.071	.907
S7 29.	84.0	188.2	2.029	1.763	2.78	56.	5.69	5.09	.37	.072	.895
S7 30.	84.0	188.2	2.096	1.763	2.78	55.	5.69	5.09	.36	.071	.895
S7 31.	84.0	188.2	2.163	1.763	2.78	56.	5.69	5.09	.37	.072	.895
S7 32.	84.0	188.2	2.229	1.763	2.80	56.	5.69	5.23	.37	.070	.918
S7 33.	84.0	188.2	2.296	1.763	2.82	56.	5.69	5.36	.37	.068	.941
S7 37.	84.0	188.2	.231	1.224	2.94	65.	5.69	6.14	.42	.069	1.079
S7 36.	84.0	188.2	.697	1.224	2.90	61.	5.69	5.88	.40	.068	1.033
S7 35.	84.0	188.2	1.230	1.224	2.92	61.	5.69	6.01	.40	.066	1.056
S7 34.	84.0	188.2	1.763	1.224	2.88	62.	5.69	5.75	.40	.070	1.010
S7 41.	84.0	188.2	.231	.685	2.93	61.	5.69	6.07	.40	.066	1.067
S7 40.	84.0	188.2	.697	.685	2.86	61.	5.69	5.62	.40	.071	.987
S7 39.	84.0	188.2	1.230	.685	2.87	62.	5.69	5.68	.40	.071	.998
S7 38.	84.0	188.2	1.763	.685	2.91	63.	5.69	5.94	.41	.069	1.044
S7 45.	84.0	188.2	.231	.110	2.97	55.	5.69	6.34	.36	.057	1.113
S7 44.	84.0	188.2	.697	.110	2.94	59.	5.69	6.14	.39	.063	1.079
S7 43.	84.0	188.2	1.230	.110	2.96	57.	5.69	6.27	.37	.059	1.102
S7 42.	84.0	188.2	1.763	.110	2.94	59.	5.69	6.14	.39	.063	1.079

TABLE C-1. TABULATION OF EXPERIMENTAL LOA DATA

DATA PLANE NO. 7. AXIAL DISTANCE=51.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=16.50 PSI NE=29500.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 46.	84.1	188.2	.165	1.763	3.05	345.	5.69	6.86	2.25	.329	1.205
S7 47.	84.1	188.2	.231	1.763	3.04	125.	5.69	6.79	.82	.120	1.194
S7 48.	84.1	188.2	.298	1.763	3.01	85.	5.69	6.60	.56	.084	1.159
S7 49.	84.1	188.2	.364	1.763	2.96	65.	5.69	6.27	.42	.068	1.102
S7 50.	84.1	188.2	.431	1.763	2.92	52.	5.69	6.01	.34	.057	1.056
S7 51.	84.1	188.2	.498	1.763	2.91	47.	5.69	5.94	.31	.052	1.044
S7 52.	84.1	188.2	.564	1.763	2.93	46.	5.69	6.07	.30	.049	1.067
S7 53.	84.1	188.2	.631	1.763	2.96	44.	5.69	6.27	.29	.046	1.102
S7 54.	84.1	188.2	.697	1.763	2.97	42.	5.69	6.34	.27	.043	1.113
S7 55.	84.1	188.2	.764	1.763	2.95	50.	5.69	6.20	.33	.053	1.090
S7 56.	84.1	188.2	.831	1.763	2.91	60.	5.69	5.94	.39	.066	1.044
S7 57.	84.1	188.2	.897	1.763	2.87	54.	5.69	5.68	.35	.062	.998
S7 58.	84.1	188.2	.964	1.763	2.85	48.	5.69	5.55	.31	.056	.975
S7 59.	84.1	188.2	1.030	1.763	2.86	49.	5.69	5.62	.32	.057	.987
S7 60.	84.1	188.2	1.097	1.763	2.90	54.	5.69	5.88	.35	.060	1.033
S7 61.	84.1	188.2	1.164	1.763	2.95	52.	5.69	6.20	.34	.055	1.090
S7 62.	84.1	188.2	1.230	1.763	2.98	42.	5.69	6.40	.27	.043	1.125
S7 63.	84.1	188.2	1.297	1.763	2.98	56.	5.69	6.40	.37	.057	1.125
S7 64.	84.1	188.2	1.363	1.763	2.94	56.	5.69	6.14	.37	.060	1.079
S7 65.	84.1	188.2	1.430	1.763	2.90	56.	5.69	5.88	.37	.062	1.033
S7 66.	84.1	188.2	1.497	1.763	2.87	48.	5.69	5.68	.31	.055	.998
S7 67.	84.1	188.2	1.563	1.763	2.86	44.	5.69	5.62	.29	.051	.987
S7 68.	84.1	188.2	1.630	1.763	2.88	47.	5.69	5.75	.31	.053	1.010
S7 69.	84.1	188.2	1.698	1.763	2.91	48.	5.69	5.94	.31	.053	1.044
S7 70.	84.1	188.2	1.763	1.763	2.93	43.	5.69	6.07	.28	.046	1.067
S7 71.	84.1	188.2	1.830	1.763	2.93	48.	5.69	6.07	.31	.052	1.067
S7 72.	84.1	188.2	1.896	1.763	2.89	59.	5.69	5.81	.39	.066	1.021
S7 73.	84.1	188.2	1.963	1.763	2.84	61.	5.69	5.49	.40	.073	.964
S7 74.	84.1	188.2	2.029	1.763	2.81	51.	5.69	5.29	.33	.063	.930
S7 75.	84.1	188.2	2.096	1.763	2.81	50.	5.69	5.29	.33	.062	.930
S7 76.	84.1	188.2	2.163	1.763	2.84	58.	5.69	5.49	.38	.069	.964
S7 77.	84.1	188.2	2.229	1.763	2.89	58.	5.69	5.81	.38	.065	1.021
S7 81.	84.1	188.2	.298	1.224	2.96	85.	5.69	6.27	.56	.089	1.102
S7 80.	84.1	188.2	.697	1.224	2.98	45.	5.69	6.40	.29	.046	1.125
S7 79.	84.1	188.2	1.230	1.224	3.01	46.	5.69	6.60	.30	.046	1.159
S7 78.	84.1	188.2	1.763	1.224	2.97	42.	5.69	6.34	.27	.043	1.113
S7 85.	84.1	188.2	.298	.683	2.98	72.	5.69	6.40	.47	.073	1.125
S7 84.	84.1	188.2	.697	.683	2.96	49.	5.69	6.27	.32	.051	1.102
S7 83.	84.1	188.2	1.230	.683	2.99	44.	5.69	6.47	.29	.044	1.136
S7 82.	84.1	188.2	1.763	.683	2.98	45.	5.69	6.40	.29	.046	1.125
S7 89.	84.1	188.2	.298	.110	2.99	52.	5.69	6.47	.34	.053	1.136
S7 88.	84.1	188.2	.697	.110	3.00	49.	5.69	6.53	.32	.049	1.148
S7 87.	84.1	188.2	1.230	.110	3.01	49.	5.69	6.60	.32	.049	1.159
S7 86.	84.1	188.2	1.763	.110	3.00	49.	5.69	6.53	.32	.049	1.148

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 3. AXIAL DISTANCE=21.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=16.00 PSI RE= 29500.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 90.	84.3	187.7	.098	1.763	2.94	120.	5.68	6.14	.78	.128	1.082
S7 91.	84.3	187.7	.169	1.763	2.96	48.	5.68	6.27	.31	.050	1.105
S7 92.	84.3	187.7	.231	1.763	2.94	47.	5.68	6.14	.31	.050	1.082
S7 93.	84.3	187.7	.298	1.763	2.92	47.	5.68	6.01	.31	.051	1.059
S7 94.	84.3	187.7	.364	1.763	2.90	47.	5.68	5.88	.31	.052	1.036
S7 95.	84.3	187.7	.431	1.763	2.90	48.	5.68	5.88	.31	.053	1.036
S7 96.	84.3	187.7	.498	1.763	2.92	46.	5.68	6.01	.30	.050	1.059
S7 97.	84.3	187.7	.564	1.763	2.93	42.	5.68	6.07	.27	.045	1.070
S7 98.	84.3	187.7	.631	1.763	2.94	41.	5.68	6.14	.27	.044	1.082
S7 99.	84.3	187.7	.697	1.763	2.94	42.	5.68	6.14	.27	.045	1.082
S7 100.	84.3	187.7	.764	1.763	2.93	45.	5.68	6.07	.29	.048	1.070
S7 101.	84.3	187.7	.831	1.763	2.91	48.	5.68	5.94	.31	.053	1.047
S7 102.	84.3	187.7	.897	1.763	2.90	49.	5.68	5.88	.32	.054	1.036
S7 103.	84.3	187.7	.964	1.763	2.90	49.	5.68	5.88	.32	.054	1.036
S7 104.	84.3	187.7	1.030	1.763	2.91	48.	5.68	5.94	.31	.053	1.047
S7 105.	84.3	187.7	1.097	1.763	2.93	46.	5.68	6.07	.30	.049	1.070
S7 106.	84.3	187.7	1.164	1.763	2.94	41.	5.68	6.14	.27	.044	1.082
S7 107.	84.3	187.7	1.230	1.763	2.95	41.	5.68	6.20	.27	.043	1.093
S7 108.	84.3	187.7	1.297	1.763	2.94	43.	5.68	6.14	.28	.046	1.082
S7 109.	84.3	187.7	1.363	1.763	2.93	47.	5.68	6.07	.31	.051	1.070
S7 110.	84.3	187.7	1.430	1.763	2.92	49.	5.68	6.01	.32	.053	1.059
S7 111.	84.3	187.7	1.497	1.763	2.92	49.	5.68	6.01	.32	.053	1.059
S7 112.	84.3	187.7	1.563	1.763	2.94	48.	5.68	6.14	.31	.051	1.082
S7 113.	84.3	187.7	1.630	1.763	2.95	45.	5.68	6.20	.29	.047	1.093
S7 114.	84.3	187.7	1.696	1.763	2.96	42.	5.68	6.27	.27	.044	1.105
S7 115.	84.3	187.7	1.763	1.763	2.96	42.	5.68	6.27	.27	.044	1.105
S7 116.	84.3	187.7	1.830	1.763	2.95	45.	5.68	6.20	.29	.047	1.093
S7 117.	84.3	187.7	1.896	1.763	2.93	49.	5.68	6.07	.32	.053	1.070
S7 118.	84.3	187.7	1.963	1.763	2.91	49.	5.68	5.94	.32	.054	1.047
S7 119.	84.3	187.7	2.029	1.763	2.90	49.	5.68	5.88	.32	.054	1.036
S7 120.	84.3	187.7	2.096	1.763	2.91	49.	5.68	5.94	.32	.054	1.047
S7 121.	84.3	187.7	2.163	1.763	2.93	48.	5.68	6.07	.31	.052	1.070
S7 122.	84.3	187.7	2.229	1.763	2.94	48.	5.68	6.14	.31	.051	1.082
S7 126.	84.3	187.7	.231	1.224	2.94	55.	5.68	6.14	.36	.059	1.082
S7 125.	84.3	187.7	.697	1.224	2.94	45.	5.68	6.14	.29	.048	1.082
S7 124.	84.3	187.7	1.230	1.224	2.94	42.	5.68	6.14	.27	.045	1.082
S7 123.	84.3	187.7	1.763	1.224	2.95	42.	5.68	6.20	.27	.044	1.093
S7 130.	84.3	187.7	.231	.685	2.93	67.	5.68	6.07	.44	.072	1.070
S7 129.	84.3	187.7	.697	.685	2.93	45.	5.68	6.07	.29	.048	1.070
S7 128.	84.3	187.7	1.230	.685	2.94	45.	5.68	6.14	.29	.048	1.082
S7 127.	84.3	187.7	1.763	.685	2.93	45.	5.68	6.07	.29	.048	1.070
S7 134.	84.3	187.7	.231	.110	2.94	47.	5.68	6.14	.31	.050	1.082
S7 133.	84.3	187.7	.697	.110	2.96	40.	5.68	6.27	.26	.042	1.105
S7 132.	84.3	187.7	1.230	.110	2.95	40.	5.68	6.20	.26	.042	1.093
S7 131.	84.3	187.7	1.763	.110	2.97	40.	5.68	6.34	.26	.041	1.116

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 15, AXIAL DISTANCE=27.05 IN, BLOCKAGE CENTERLINE=26.25 IN, P=16.00 PSI RE= 29500.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 135.	84.3	187.7	.165	1.763	3.06	190.	5.68	6.92	1.24	.179	1.220
S7 136.	84.3	187.7	.231	1.763	3.08	90.	5.68	7.05	.59	.083	1.243
S7 137.	84.3	187.7	.298	1.763	3.04	65.	5.68	6.79	.42	.063	1.197
S7 138.	84.3	187.7	.364	1.763	3.02	60.	5.68	6.66	.39	.059	1.174
S7 139.	84.3	187.7	.431	1.763	3.02	54.	5.68	6.66	.35	.053	1.174
S7 140.	84.3	187.7	.498	1.763	3.05	55.	5.68	6.86	.36	.052	1.208
S7 141.	84.3	187.7	.564	1.763	3.07	50.	5.68	6.99	.33	.047	1.231
S7 142.	84.3	187.7	.631	1.763	3.09	46.	5.68	7.12	.30	.042	1.254
S7 143.	84.3	187.7	.697	1.763	3.08	45.	5.68	7.05	.29	.042	1.243
S7 144.	84.3	187.7	.764	1.763	3.07	45.	5.68	6.99	.29	.042	1.231
S7 145.	84.3	187.7	.831	1.763	3.08	45.	5.68	7.05	.29	.042	1.243
S7 146.	84.3	187.7	.897	1.763	3.11	45.	5.68	7.25	.29	.041	1.277
S7 147.	84.3	187.7	.964	1.763	3.12	42.	5.68	7.32	.27	.038	1.289
S7 148.	84.3	187.7	1.030	1.763	3.13	44.	5.68	7.38	.29	.039	1.300
S7 149.	84.3	187.7	1.097	1.763	3.13	48.	5.68	7.38	.31	.042	1.300
S7 150.	84.3	187.7	1.164	1.763	3.11	55.	5.68	7.25	.36	.050	1.277
S7 151.	84.3	187.7	1.230	1.763	3.08	80.	5.68	7.05	.52	.074	1.243
S7 152.	84.3	187.7	1.297	1.763	2.96	150.	5.68	6.27	.98	.156	1.105
S7 153.	84.3	187.7	1.363	1.763	2.77	170.	5.68	5.03	1.11	.221	.886
S7 154.	84.3	187.7	1.430	1.763	2.57	215.	5.68	3.72	1.40	.377	.656
S7 155.	84.3	187.7	1.497	1.763	2.19	295.	5.68	1.24	1.93	1.553	.219
S7 156.	84.3	187.7	1.563	1.763	1.97	215.	5.68	.20	1.40	7.167	-.035
S7 157.	84.3	187.7	1.630	1.763	2.14	215.	5.68	.91	1.40	1.536	.161
S7 158.	84.3	187.7	1.696	1.763	2.15	170.	5.68	7.51	1.11	.148	1.323
S7 159.	84.3	187.7	1.763	1.763	3.19	88.	5.68	7.77	.57	.074	1.369
S7 160.	84.3	187.7	1.830	1.763	3.15	88.	5.68	7.51	.57	.077	1.323
S7 161.	84.3	187.7	1.896	1.763	3.09	152.	5.68	7.12	1.03	.145	1.254
S7 162.	84.3	187.7	1.963	1.763	3.14	448.	5.68	7.45	2.93	.393	1.312
S7 163.	84.3	187.7	2.029	1.763	2.15	328.	5.68	.98	2.14	2.187	.173
S7 164.	84.3	187.7	2.096	1.763	1.84	198.	5.68	1.05	1.29	1.238	-.184
S7 165.	84.3	187.7	2.163	1.763	1.84	288.	5.68	1.05	1.89	1.800	-.184
S7 166.	84.3	187.7	2.229	1.763	3.09	278.	5.68	7.12	1.82	.255	1.254
S7 167.	84.3	187.7	2.296	1.763	3.13	118.	5.68	7.38	.77	.104	1.300
S7 200.	84.3	187.7	.165	1.224	3.09	194.	5.68	7.12	1.27	.178	1.254
S7 199.	84.3	187.7	.231	1.224	3.06	84.	5.68	6.92	.55	.079	1.220
S7 198.	84.3	187.7	.298	1.224	3.02	66.	5.68	6.66	.43	.065	1.174
S7 197.	84.3	187.7	.364	1.224	3.00	59.	5.68	6.53	.39	.059	1.151
S7 196.	84.3	187.7	.431	1.224	3.01	58.	5.68	6.60	.38	.057	1.162
S7 195.	84.3	187.7	.498	1.224	3.03	65.	5.68	6.73	.42	.063	1.185
S7 194.	84.3	187.7	.564	1.224	3.05	50.	5.68	6.86	.33	.048	1.208
S7 193.	84.3	187.7	.631	1.224	3.07	50.	5.68	6.99	.33	.047	1.231
S7 192.	84.3	187.7	.697	1.224	3.06	50.	5.68	6.92	.33	.047	1.220
S7 191.	84.3	187.7	.764	1.224	3.03	50.	5.68	6.73	.33	.049	1.185
S7 190.	84.3	187.7	.831	1.224	3.02	47.	5.68	6.66	.31	.046	1.174
S7 189.	84.3	187.7	.897	1.224	3.02	49.	5.68	6.66	.32	.048	1.174
S7 188.	84.3	187.7	.964	1.224	3.04	53.	5.68	6.79	.35	.051	1.197
S7 187.	84.3	187.7	1.030	1.224	3.05	57.	5.68	6.86	.37	.054	1.208
S7 186.	84.3	187.7	1.097	1.224	3.07	55.	5.68	6.99	.36	.051	1.220
S7	84.3	187.7	1.164	1.224	3.06	56.	5.68	6.92	.37	.053	1.220

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 184.	84.3	187.7	1.230	1.224	3.02	60.	5.68	6.66	.39	.059	1.174
S7 183.	84.3	187.7	1.297	1.224	3.00	54.	5.68	6.53	.35	.054	1.151
S7 182.	84.3	187.7	1.363	1.224	2.99	70.	5.68	6.47	.46	.071	1.139
S7 181.	84.3	187.7	1.430	1.224	2.92	130.	5.68	6.01	.85	.141	1.059
S7 180.	84.3	187.7	1.497	1.224	2.85	190.	5.68	5.55	1.24	.224	.978
S7 179.	84.3	187.7	1.563	1.224	2.89	190.	5.68	5.81	1.24	.213	1.024
S7 178.	84.3	187.7	1.630	1.224	2.99	150.	5.68	6.47	.98	.152	1.139
S7 177.	84.3	187.7	1.698	1.224	3.07	79.	5.68	6.99	.52	.074	1.231
S7 176.	84.3	187.7	1.763	1.224	3.07	76.	5.68	6.99	.50	.071	1.231
S7 175.	84.3	187.7	1.830	1.224	3.04	88.	5.68	6.79	.57	.085	1.197
S7 174.	84.3	187.7	1.896	1.224	3.00	88.	5.68	6.53	.57	.088	1.151
S7 173.	84.3	187.7	1.963	1.224	2.94	128.	5.68	6.14	.84	.136	1.082
S7 172.	84.3	187.7	2.029	1.224	2.88	208.	5.68	5.75	1.36	.236	1.013
S7 171.	84.3	187.7	2.098	1.224	2.90	298.	5.68	5.88	1.95	.331	1.036
S7 170.	84.3	187.7	2.163	1.224	2.94	128.	5.68	6.14	.84	.136	1.082
S7 169.	84.3	187.7	2.229	1.224	3.00	98.	5.68	6.53	.64	.098	1.151
S7 168.	84.3	187.7	2.298	1.224	3.03	82.	5.68	6.73	.54	.080	1.185
S7 233.	84.3	187.7	.165	.688	3.10	75.	5.68	7.18	.49	.068	1.266
S7 232.	84.3	187.7	.231	.688	3.07	72.	5.68	6.99	.47	.067	1.231
S7 231.	84.3	187.7	.298	.688	3.03	68.	5.68	6.73	.44	.066	1.185
S7 230.	84.3	187.7	.364	.685	2.99	62.	5.68	6.47	.40	.063	1.139
S7 229.	84.3	187.7	.431	.685	2.98	55.	5.68	6.40	.36	.056	1.128
S7 228.	84.3	187.7	.498	.685	3.00	55.	5.68	6.53	.36	.055	1.151
S7 227.	84.3	187.7	.564	.688	3.03	52.	5.68	6.73	.34	.050	1.185
S7 226.	84.3	187.7	.631	.685	3.05	42.	5.68	6.86	.27	.040	1.208
S7 225.	84.3	187.7	.697	.688	3.05	45.	5.68	6.86	.29	.043	1.208
S7 224.	84.3	187.7	.764	.688	3.02	49.	5.68	6.66	.32	.048	1.174
S7 223.	84.3	187.7	.831	.685	2.99	49.	5.68	6.47	.32	.049	1.139
S7 222.	84.3	187.7	.897	.685	2.97	48.	5.68	6.34	.31	.049	1.116
S7 221.	84.3	187.7	.964	.685	2.98	50.	5.68	6.40	.33	.051	1.128
S7 220.	84.3	187.7	1.030	.688	3.00	54.	5.68	6.53	.35	.054	1.151
S7 219.	84.3	187.7	1.097	.685	3.04	50.	5.68	6.79	.33	.048	1.197
S7 218.	84.3	187.7	1.164	.685	3.06	40.	5.68	6.92	.26	.038	1.220
S7 217.	84.3	187.7	1.230	.685	3.07	40.	5.68	6.99	.26	.037	1.231
S7 216.	84.3	187.7	1.297	.685	3.05	46.	5.68	6.86	.30	.044	1.208
S7 215.	84.3	187.7	1.363	.685	3.03	46.	5.68	6.73	.30	.045	1.185
S7 214.	84.3	187.7	1.430	.688	3.01	45.	5.68	6.60	.29	.045	1.162
S7 213.	84.3	187.7	1.497	.685	2.99	45.	5.68	6.47	.29	.045	1.139
S7 212.	84.3	187.7	1.563	.685	3.00	47.	5.68	6.53	.31	.047	1.151
S7 211.	84.3	187.7	1.630	.685	3.01	46.	5.68	6.60	.30	.046	1.162
S7 210.	84.3	187.7	1.698	.685	3.04	46.	5.68	6.79	.30	.044	1.197
S7 209.	84.3	187.7	1.763	.685	3.05	46.	5.68	6.86	.30	.044	1.208
S7 208.	84.3	187.7	1.830	.685	3.04	46.	5.68	6.79	.30	.044	1.197
S7 207.	84.3	187.7	1.896	.685	3.02	47.	5.68	6.66	.31	.046	1.174
S7 206.	84.3	187.7	1.963	.685	2.99	45.	5.68	6.47	.29	.045	1.139
S7 205.	84.3	187.7	2.029	.685	2.98	42.	5.68	6.40	.27	.043	1.128
S7 204.	84.3	187.7	2.098	.685	2.99	44.	5.68	6.47	.29	.044	1.139
S7 203.	84.3	187.7	2.163	.685	3.01	46.	5.68	6.60	.30	.046	1.162
S7 202.	84.3	187.7	2.229	.685	3.04	47.	5.68	6.79	.31	.045	1.197
S7 201.	84.3	187.7	2.298	.685	3.07	42.	5.68	6.99	.27	.039	1.231
S7 237.	84.3	187.7	.165	.110	3.09	99.	5.68	7.12	.65	.091	1.254
S7 236.	84.3	187.7	.697	.110	3.08	37.	5.68	7.05	.24	.034	1.243
S7 235.	84.3	187.7	1.230	.110	3.08	40.	5.68	7.05	.26	.037	1.243

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 234.	84.3	187.7	1.763	.110	3.09	38.	5.68	7.12	.29	.035	1.254

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 5. AXIAL DISTANCE=20.20 IN. BLOCKAGE CENTERLINE=26.25 IN. P=16.00 PSI RE= 29700.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP: VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 238.	84.6	188.7	.165	.685	3.10	64.	5.71	7.18	.42	.058	1.259
S7 239.	84.6	188.7	.231	.685	3.08	64.	5.71	7.05	.42	.059	1.236
S7 240.	84.6	188.7	.298	.685	3.03	64.	5.71	6.73	.42	.062	1.179
S7 241.	84.6	188.7	.364	.685	2.98	60.	5.71	6.40	.39	.061	1.122
S7 242.	84.6	188.7	.431	.685	2.97	54.	5.71	6.34	.35	.056	1.110
S7 243.	84.6	188.7	.498	.685	2.99	56.	5.71	6.47	.37	.057	1.133
S7 244.	84.6	188.7	.564	.685	3.03	52.	5.71	6.73	.34	.050	1.179
S7 245.	84.6	188.7	.631	.685	3.06	42.	5.71	6.92	.27	.040	1.213
S7 246.	84.6	188.7	.697	.685	3.05	44.	5.71	6.86	.29	.042	1.202
S7 247.	84.6	188.7	.764	.685	3.02	51.	5.71	6.66	.33	.050	1.167
S7 248.	84.6	188.7	.831	.685	2.99	54.	5.71	6.47	.35	.055	1.133
S7 249.	84.6	188.7	.897	.685	2.95	53.	5.71	6.20	.35	.056	1.087
S7 250.	84.6	188.7	.964	.685	2.95	52.	5.71	6.20	.34	.055	1.087
S7 251.	84.6	188.7	1.030	.685	2.97	59.	5.71	6.34	.39	.061	1.110
S7 252.	84.6	188.7	1.097	.685	3.01	58.	5.71	6.60	.38	.057	1.156
S7 253.	84.6	188.7	1.164	.685	3.05	43.	5.71	6.86	.28	.041	1.202
S7 254.	84.6	188.7	1.230	.685	3.06	40.	5.71	6.92	.26	.038	1.213
S7 255.	84.6	188.7	1.297	.685	3.04	46.	5.71	6.79	.30	.044	1.190
S7 256.	84.6	188.7	1.363	.685	3.01	53.	5.71	6.60	.35	.052	1.156
S7 257.	84.6	188.7	1.430	.685	2.97	54.	5.71	6.34	.35	.056	1.110
S7 258.	84.6	188.7	1.497	.685	2.96	50.	5.71	6.27	.33	.052	1.099
S7 259.	84.6	188.7	1.563	.685	2.97	49.	5.71	6.34	.32	.051	1.110
S7 260.	84.6	188.7	1.630	.685	3.00	49.	5.71	6.53	.32	.049	1.145
S7 261.	84.6	188.7	1.696	.685	3.03	42.	5.71	6.73	.27	.041	1.179
S7 262.	84.6	188.7	1.763	.685	3.05	40.	5.71	6.86	.26	.038	1.202
S7 263.	84.6	188.7	1.830	.685	3.03	48.	5.71	6.73	.31	.047	1.179
S7 264.	84.6	188.7	1.896	.685	2.99	56.	5.71	6.47	.37	.057	1.133
S7 265.	84.6	188.7	1.963	.685	2.94	56.	5.71	6.14	.37	.060	1.076
S7 266.	84.6	188.7	2.029	.685	2.93	54.	5.71	6.07	.35	.058	1.064
S7 267.	84.6	188.7	2.096	.685	2.95	56.	5.71	6.20	.37	.059	1.087
S7 268.	84.6	188.7	2.163	.685	2.99	58.	5.71	6.47	.38	.059	1.133
S7 269.	84.6	188.7	2.229	.685	3.05	49.	5.71	6.66	.32	.047	1.202
S7 270.	84.6	188.7	2.296	.685	3.07	39.	5.71	6.59	.25	.036	1.225
S7 274.	84.6	188.7	.231	.110	3.09	52.	5.71	7.12	.34	.048	1.248
S7 273.	84.6	188.7	.697	.110	3.09	36.	5.71	7.12	.24	.033	1.248
S7 272.	84.6	188.7	1.230	.110	3.08	39.	5.71	7.05	.25	.036	1.236
S7 271.	84.6	188.7	1.763	.110	3.08	37.	5.71	7.05	.24	.034	1.236
S7 290.	84.6	188.7	.165	1.224	3.08	64.	5.71	7.05	.42	.059	1.236
S7 289.	84.6	188.7	.298	1.224	3.01	58.	5.71	6.60	.38	.057	1.156
S7 288.	84.6	188.7	.431	1.224	2.98	52.	5.71	6.40	.34	.053	1.122
S7 287.	84.6	188.7	.564	1.224	3.05	46.	5.71	6.86	.30	.044	1.202
S7 286.	84.6	188.7	.697	1.224	3.05	42.	5.71	6.86	.27	.040	1.202
S7 285.	84.6	188.7	.831	1.224	3.00	42.	5.71	6.53	.27	.042	1.145
S7 284.	84.6	188.7	.964	1.224	2.97	45.	5.71	6.34	.29	.046	1.110
S7 283.	84.6	188.7	1.097	1.224	2.99	56.	5.71	6.47	.37	.057	1.179
S7 282.	84.6	188.7	1.230	1.224	3.00	46.	5.71	6.53	.30	.046	1.145
S7 281.	84.6	188.7	1.363	1.224	2.96	40.	5.71	6.27	.26	.042	1.110

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
S7 280.	84.6	188.7	1.497	1.224	2.87	87.	5.71	5.68	.57	.100	.996
S7 279.	84.6	188.7	1.630	1.224	2.76	87.	5.71	4.96	.57	.114	.870
S7 278.	84.6	188.7	1.763	1.224	2.93	86.	5.71	6.07	.56	.092	1.064
S7 277.	84.6	188.7	1.896	1.224	2.79	88.	5.71	5.16	.57	.111	.904
S7 276.	84.6	188.7	2.029	1.224	2.69	78.	5.71	4.51	.51	.113	.790
S7 275.	84.6	188.7	2.163	1.224	2.78	88.	5.71	5.09	.57	.113	.893
S7 291.	84.6	188.7	.831	1.174	2.96	75.	5.71	6.27	.49	.078	1.099
S7 292.	84.6	188.7	.964	1.174	2.87	75.	5.71	5.68	.49	.086	.996
S7 293.	84.6	188.7	1.097	1.174	2.88	79.	5.71	5.75	.52	.090	1.007
S7 294.	84.6	188.7	1.230	1.174	3.00	62.	5.71	6.53	.40	.062	1.145
S7 295.	84.6	188.7	1.363	1.174	2.96	65.	5.71	6.27	.42	.068	1.099
S7 296.	84.6	188.7	1.497	1.174	2.79	95.	5.71	5.16	.62	.120	.904
S7 297.	84.6	188.7	1.630	1.174	2.73	109.	5.71	4.77	.71	.149	.836
S7 298.	84.6	188.7	1.763	1.174	2.93	79.	5.71	6.07	.52	.085	1.064
S7 299.	84.6	188.7	1.896	1.174	2.75	114.	5.71	4.90	.74	.152	.858
S7 300.	84.6	188.7	2.029	1.174	2.57	84.	5.71	3.72	.55	.147	.652
S7 301.	84.6	188.7	2.163	1.174	2.75	114.	5.71	4.90	.74	.152	.858
S7 309.	84.6	188.7	.831	1.274	2.97	58.	5.71	6.34	.38	.060	1.110
S7 312.	84.6	188.7	.964	1.274	2.93	82.	5.71	6.07	.54	.088	1.064
S7 311.	84.6	188.7	1.097	1.274	2.81	114.	5.71	5.29	.74	.141	.927
S7 310.	84.6	188.7	1.230	1.274	2.95	87.	5.71	6.20	.57	.092	1.087
S7 308.	84.6	188.7	1.363	1.274	2.90	73.	5.71	5.88	.48	.081	1.030
S7 307.	84.6	188.7	1.497	1.274	2.73	114.	5.71	4.77	.74	.156	.836
S7 306.	84.6	188.7	1.630	1.274	2.79	114.	5.71	5.16	.74	.144	.904
S7 305.	84.6	188.7	1.763	1.274	2.94	84.	5.71	6.14	.55	.089	1.076
S7 304.	84.6	188.7	1.896	1.274	2.80	107.	5.71	5.23	.70	.134	.916
S7 303.	84.6	188.7	2.029	1.274	2.64	109.	5.71	4.18	.71	.170	.733
S7 302.	84.6	188.7	2.163	1.274	2.78	109.	5.71	5.09	.71	.140	.893
S7 328.	84.7	188.7	.165	1.763	3.08	62.	5.71	7.05	.40	.057	1.236
S7 327.	84.7	188.7	.298	1.763	3.03	59.	5.71	6.73	.39	.057	1.179
S7 326.	84.7	188.7	.431	1.763	2.98	52.	5.71	6.40	.34	.053	1.122
S7 325.	84.7	188.7	.564	1.763	3.03	50.	5.71	6.73	.33	.049	1.179
S7 324.	84.7	188.7	.697	1.763	3.05	38.	5.71	6.86	.25	.036	1.202
S7 323.	84.7	188.7	.831	1.763	3.03	35.	5.71	6.73	.23	.034	1.179
S7 322.	84.7	188.7	.964	1.763	3.04	38.	5.71	6.79	.25	.037	1.190
S7 321.	84.7	188.7	1.097	1.763	3.03	43.	5.71	6.73	.28	.042	1.179
S7 320.	84.7	188.7	1.230	1.763	3.00	49.	5.71	6.53	.32	.049	1.145
S7 319.	84.7	188.7	1.363	1.763	2.94	82.	5.71	6.14	.54	.087	1.076
S7 318.	84.7	188.7	1.497	1.763	2.76	152.	5.71	4.96	.99	.200	.870
S7 317.	84.7	188.7	1.630	1.763	2.54	162.	5.71	3.53	1.06	.300	.618
S7 316.	84.7	188.7	1.763	1.763	2.55	198.	5.71	3.59	1.29	.360	.630
S7 315.	84.7	188.7	1.896	1.763	2.50	184.	5.71	3.27	1.20	.368	.572
S7 314.	84.7	188.7	2.029	1.763	2.45	164.	5.71	3.00	1.07	.357	.527
S7 313.	84.7	188.7	2.163	1.763	2.50	182.	5.71	3.27	1.19	.364	.572
S7 329.	84.7	188.7	.831	1.713	3.02	54.	5.71	6.66	.35	.053	1.167
S7 330.	84.7	188.7	.964	1.713	2.94	80.	5.71	6.14	.52	.085	1.076
S7 331.	84.7	188.7	1.097	1.713	2.97	69.	5.71	6.34	.45	.071	1.110
S7 332.	84.7	188.7	1.230	1.713	2.92	88.	5.71	6.01	.57	.096	1.053
S7 333.	84.7	188.7	1.363	1.713	2.87	107.	5.71	5.68	.70	.123	.996

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 334.	84.7	188.7	1.497	1.713	2.63	134.	5.71	4.11	.88	.213	.721
S7 335.	84.7	188.7	1.630	1.713	2.52	158.	5.71	3.40	1.02	.300	.595
S7 336.	84.7	188.7	1.763	1.713	2.55	198.	5.71	3.59	1.29	.360	.630
S7 337.	84.7	188.7	1.896	1.713	2.49	180.	5.71	3.20	1.18	.367	.561
S7 338.	84.7	188.7	2.029	1.713	2.42	150.	5.71	2.74	.98	.357	.481
S7 339.	84.7	188.7	2.163	1.713	2.47	172.	5.71	3.07	1.12	.366	.538
S7 350.	84.7	188.7	.831	1.813	2.98	64.	5.71	6.40	.42	.065	1.122
S7 349.	84.7	188.7	.964	1.813	2.94	88.	5.71	6.14	.57	.094	1.076
S7 348.	84.7	188.7	1.097	1.813	2.98	72.	5.71	6.40	.47	.073	1.122
S7 347.	84.7	188.7	1.230	1.813	2.95	66.	5.71	6.20	.43	.069	1.087
S7 346.	84.7	188.7	1.363	1.813	2.87	115.	5.71	5.68	.75	.132	.996
S7 345.	84.7	188.7	1.497	1.813	2.57	165.	5.71	3.72	1.08	.289	.652
S7 344.	84.7	188.7	1.630	1.813	2.48	170.	5.71	3.14	1.11	.354	.549
S7 343.	84.7	188.7	1.763	1.813	2.54	204.	5.71	3.53	1.33	.378	.618
S7 342.	84.7	188.7	1.896	1.813	2.48	186.	5.71	3.14	1.21	.388	.549
S7 341.	84.7	188.7	2.029	1.813	2.41	166.	5.71	2.68	1.08	.405	.469
S7 340.	84.7	188.7	2.163	1.813	2.47	186.	5.71	3.07	1.21	.396	.538

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.16. AXIAL DISTANCE=27.65 IN. BLOCKAGE CENTERLINE=26.25 IN. P=23.00 PSI RE= 29700.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 351.	84.6	188.5	.231	1.763	3.09	88.	5.70	7.12	.57	.081	1.249
S7 352.	84.6	188.5	.298	1.763	3.06	68.	5.70	6.92	.44	.064	1.215
S7 353.	84.6	188.5	.364	1.763	3.04	64.	5.70	6.79	.42	.062	1.192
S7 354.	84.6	188.5	.431	1.763	3.00	58.	5.70	6.53	.38	.058	1.146
S7 355.	84.6	188.5	.498	1.763	3.01	58.	5.70	6.60	.38	.057	1.157
S7 356.	84.6	188.5	.564	1.763	3.04	56.	5.70	6.79	.37	.054	1.192
S7 357.	84.6	188.5	.631	1.763	3.06	47.	5.70	6.92	.31	.044	1.215
S7 358.	84.6	188.5	.697	1.763	3.06	42.	5.70	6.92	.27	.040	1.215
S7 359.	84.6	188.5	.764	1.763	3.05	42.	5.70	6.86	.27	.040	1.203
S7 360.	84.6	188.5	.831	1.763	3.05	40.	5.70	6.86	.26	.038	1.203
S7 361.	84.6	188.5	.897	1.763	3.05	39.	5.70	6.86	.25	.037	1.203
S7 362.	84.6	188.5	.964	1.763	3.06	39.	5.70	6.92	.25	.037	1.215
S7 363.	84.6	188.5	1.030	1.763	3.07	40.	5.70	6.99	.26	.037	1.226
S7 364.	84.6	188.5	1.097	1.763	3.07	44.	5.70	6.99	.29	.041	1.226
S7 365.	84.6	188.5	1.164	1.763	3.05	48.	5.70	6.86	.31	.046	1.203
S7 366.	84.6	188.5	1.230	1.763	3.03	48.	5.70	6.73	.31	.047	1.180
S7 367.	84.6	188.5	1.297	1.763	3.01	60.	5.70	6.60	.39	.059	1.157
S7 368.	84.6	188.5	1.363	1.763	2.95	98.	5.70	6.20	.64	.103	1.089
S7 369.	84.6	188.5	1.430	1.763	2.84	135.	5.70	5.49	.88	.161	.962
S7 370.	84.6	188.5	1.497	1.763	2.67	176.	5.70	4.38	1.15	.263	.768
S7 371.	84.6	188.5	1.563	1.763	2.52	196.	5.70	3.40	1.28	.377	.596
S7 372.	84.6	188.5	1.630	1.763	2.43	208.	5.70	2.81	1.36	.484	.493
S7 373.	84.6	188.5	1.696	1.763	2.64	298.	5.70	4.18	1.95	.466	.733
S7 374.	84.6	188.5	1.763	1.763	2.84	288.	5.70	5.49	1.88	.343	.962
S7 375.	84.6	188.5	1.830	1.763	2.89	278.	5.70	5.81	1.82	.312	1.020
S7 376.	84.6	188.5	1.896	1.763	2.75	278.	5.70	4.90	1.82	.371	.859
S7 377.	84.6	188.5	1.963	1.763	2.59	298.	5.70	3.85	1.95	.505	.676
S7 378.	84.6	188.5	2.029	1.763	2.34	248.	5.70	2.22	1.62	.729	.390
S7 379.	84.6	188.5	2.096	1.763	2.31	228.	5.70	2.02	1.49	.735	.355
S7 380.	84.6	188.5	2.163	1.763	2.38	280.	5.70	2.48	1.83	.737	.435
S7 381.	84.6	188.5	2.229	1.763	2.54	299.	5.70	3.53	1.95	.554	.619
S7 414.	84.6	188.7	.231	1.224	3.07	118.	5.71	6.99	.77	.110	1.225
S7 413.	84.6	188.7	.298	1.224	3.04	98.	5.71	6.79	.64	.094	1.190
S7 412.	84.6	188.7	.364	1.224	2.99	60.	5.71	6.47	.39	.061	1.133
S7 411.	84.6	188.7	.431	1.224	2.98	58.	5.71	6.40	.38	.059	1.122
S7 410.	84.6	188.7	.498	1.224	3.00	60.	5.70	6.53	.39	.060	1.146
S7 409.	84.6	188.7	.564	1.224	3.03	56.	5.70	6.73	.37	.054	1.180
S7 408.	84.6	188.7	.631	1.224	3.05	46.	5.70	6.86	.30	.044	1.203
S7 407.	84.6	188.7	.697	1.224	3.05	46.	5.70	6.86	.30	.044	1.203
S7 406.	84.6	188.7	.764	1.224	3.03	47.	5.70	6.73	.31	.046	1.180
S7 405.	84.6	188.7	.831	1.224	3.01	46.	5.70	6.60	.30	.046	1.157
S7 404.	84.6	188.7	.897	1.224	3.00	47.	5.70	6.53	.31	.047	1.146
S7 403.	84.6	188.7	.964	1.224	2.99	47.	5.70	6.47	.31	.047	1.134
S7 402.	84.6	188.7	1.030	1.224	3.00	53.	5.70	6.53	.35	.053	1.146
S7 401.	84.6	188.7	1.097	1.224	3.02	49.	5.70	6.66	.32	.048	1.169
S7 400.	84.6	188.7	1.164	1.224	3.03	47.	5.70	6.73	.31	.046	1.180
S7 399.	84.6	188.7	1.230	1.224	3.02	51.	5.70	6.66	.33	.050	1.169
S7 398.	84.6	188.7	1.297	1.224	2.98	50.	5.70	6.40	.33	.051	1.123
S7 397.	84.6	188.7	1.363	1.224	2.97	44.	5.70	6.34	.29	.045	1.111

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 396.	84.6	188.7	1.430	1.224	2.95	92.	5.70	6.20	.60	.097	1.089
S7 395.	84.6	188.7	1.497	1.224	2.90	92.	5.70	5.88	.60	.102	1.031
S7 394.	84.6	188.7	1.560	1.224	2.82	93.	5.70	5.36	.61	.113	.940
S7 393.	84.6	188.7	1.630	1.224	2.83	103.	5.70	5.42	.67	.124	.951
S7 392.	84.6	188.7	1.696	1.224	2.90	113.	5.70	5.88	.74	.126	1.031
S7 391.	84.6	188.7	1.763	1.224	2.98	75.	5.70	6.40	.49	.077	1.123
S7 390.	84.6	188.7	1.830	1.224	2.97	65.	5.70	6.34	.42	.067	1.111
S7 389.	84.6	188.7	1.896	1.224	2.93	78.	5.70	6.07	.51	.084	1.066
S7 388.	84.6	188.7	1.963	1.224	2.87	88.	5.70	5.68	.57	.101	.997
S7 387.	84.6	188.7	2.029	1.224	2.81	100.	5.70	5.29	.65	.123	.928
S7 386.	84.6	188.7	2.096	1.224	2.78	93.	5.70	5.09	.61	.119	.894
S7 385.	84.6	188.7	2.163	1.224	2.84	93.	5.70	5.49	.61	.111	.962
S7 384.	84.6	188.7	2.229	1.224	2.91	73.	5.70	5.94	.48	.080	1.043
S7 383.	84.6	188.7	2.296	1.224	2.95	66.	5.70	6.20	.43	.069	1.089
S7 382.	84.6	188.7	2.362	1.224	2.74	299.	5.70	4.83	1.95	.404	.848
S7 444.	84.6	188.7	.364	.685	3.00	204.	5.71	6.53	1.33	.204	1.145
S7 443.	84.6	188.7	.431	.685	2.98	94.	5.71	6.40	.61	.096	1.122
S7 442.	84.6	188.7	.498	.685	2.97	84.	5.71	6.34	.53	.087	1.110
S7 441.	84.6	188.7	.564	.685	3.00	66.	5.71	6.53	.43	.066	1.145
S7 440.	84.6	188.7	.631	.685	3.03	54.	5.71	6.73	.35	.052	1.179
S7 439.	84.6	188.7	.697	.685	3.04	48.	5.71	6.79	.31	.046	1.190
S7 438.	84.6	188.7	.764	.685	3.02	54.	5.71	6.66	.35	.053	1.167
S7 437.	84.6	188.7	.831	.685	3.00	56.	5.71	6.53	.37	.056	1.145
S7 436.	84.6	188.7	.897	.685	2.97	57.	5.71	6.34	.37	.059	1.110
S7 435.	84.6	188.7	.964	.685	2.95	56.	5.71	6.20	.37	.059	1.087
S7 434.	84.6	188.7	1.030	.685	2.96	61.	5.71	6.27	.40	.064	1.099
S7 433.	84.6	188.7	1.097	.685	3.00	60.	5.71	6.53	.39	.060	1.145
S7 432.	84.6	188.7	1.164	.685	3.04	50.	5.71	6.79	.33	.048	1.190
S7 431.	84.6	188.7	1.230	.685	3.05	44.	5.71	6.86	.29	.042	1.202
S7 430.	84.6	188.7	1.297	.685	3.05	47.	5.71	6.86	.31	.045	1.202
S7 429.	84.6	188.7	1.363	.685	3.02	51.	5.71	6.66	.33	.050	1.167
S7 428.	84.6	188.7	1.430	.685	3.00	52.	5.71	6.53	.34	.052	1.145
S7 427.	84.6	188.7	1.497	.685	2.97	50.	5.71	6.34	.33	.052	1.110
S7 426.	84.6	188.7	1.563	.685	2.97	48.	5.71	6.34	.31	.049	1.110
S7 425.	84.6	188.7	1.630	.685	2.98	49.	5.71	6.40	.32	.050	1.122
S7 424.	84.6	188.7	1.696	.685	3.01	46.	5.71	6.60	.30	.046	1.156
S7 423.	84.6	188.7	1.763	.685	3.03	44.	5.71	6.73	.29	.043	1.179
S7 422.	84.6	188.7	1.830	.685	3.03	47.	5.71	6.73	.31	.046	1.179
S7 421.	84.6	188.7	1.896	.685	3.01	52.	5.71	6.60	.34	.051	1.156
S7 420.	84.6	188.7	1.963	.685	2.98	52.	5.71	6.40	.34	.053	1.122
S7 419.	84.6	188.7	2.029	.685	2.95	51.	5.71	6.20	.33	.054	1.087
S7 418.	84.6	188.7	2.096	.685	2.95	50.	5.71	6.20	.33	.053	1.087
S7 417.	84.6	188.7	2.163	.685	2.98	53.	5.71	6.40	.35	.054	1.122
S7 416.	84.6	188.7	2.229	.685	3.02	49.	5.71	6.66	.32	.048	1.167
S7 415.	84.6	188.7	2.296	.685	3.05	46.	5.71	6.86	.30	.044	1.202
S7 448.	84.5	188.7	.298	.110	3.07	78.	5.71	6.99	.51	.073	1.225
S7 447.	84.5	188.7	.697	.110	3.07	41.	5.71	6.99	.27	.038	1.225
S7 446.	84.5	188.7	1.230	.110	3.07	43.	5.71	6.99	.26	.040	1.225
S7 44	84.5	188.7	1.763	.110	3.08	42.	5.71	7.05	.27	.039	1.

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 2, AXIAL DISTANCE=33.50 IN. BLOCKAGE CENTERLINE=26.25 IN. P=23.00 PSI RE= 29700.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 449.	85.2	187.4	.165	.685	3.10	280.	5.67	7.18	1.83	.255	1.268
S7 450.	85.2	187.4	.231	.685	3.09	190.	5.67	7.12	1.24	.174	1.256
S7 451.	85.2	187.4	.298	.685	2.99	110.	5.67	6.47	.72	.111	1.141
S7 452.	85.2	187.4	.364	.685	2.95	95.	5.67	6.20	.62	.100	1.095
S7 453.	85.2	187.4	.431	.685	2.94	75.	5.67	6.14	.49	.080	1.083
S7 454.	85.2	187.4	.498	.685	2.95	73.	5.67	6.20	.48	.077	1.095
S7 455.	85.2	187.4	.564	.685	3.00	73.	5.67	6.53	.48	.073	1.153
S7 456.	85.2	187.4	.631	.685	3.03	68.	5.67	6.73	.44	.066	1.187
S7 457.	85.2	187.4	.697	.685	3.04	68.	5.67	6.79	.44	.065	1.199
S7 458.	85.2	187.4	.764	.685	3.00	88.	5.67	6.53	.57	.088	1.153
S7 459.	85.2	187.4	.831	.685	2.96	84.	5.67	6.27	.55	.088	1.106
S7 460.	85.2	187.4	.897	.685	2.92	80.	5.67	6.01	.52	.087	1.060
S7 461.	85.2	187.4	.964	.685	2.90	67.	5.67	5.88	.44	.074	1.037
S7 462.	85.2	187.4	1.030	.685	2.92	67.	5.67	6.01	.44	.073	1.060
S7 463.	85.2	187.4	1.097	.685	2.97	78.	5.67	6.34	.51	.080	1.118
S7 464.	85.2	187.4	1.164	.685	3.02	72.	5.67	6.66	.47	.071	1.176
S7 465.	85.2	187.4	1.230	.685	3.05	72.	5.67	6.86	.47	.069	1.210
S7 466.	85.2	187.4	1.297	.685	3.04	77.	5.67	6.79	.50	.074	1.199
S7 467.	85.2	187.4	1.363	.685	2.98	78.	5.67	6.40	.51	.080	1.129
S7 468.	85.2	187.4	1.430	.685	2.94	78.	5.67	6.14	.51	.083	1.083
S7 469.	85.2	187.4	1.497	.685	2.92	65.	5.67	6.01	.42	.071	1.060
S7 470.	85.2	187.4	1.563	.685	2.93	67.	5.67	6.07	.44	.072	1.072
S7 471.	85.2	187.4	1.630	.685	2.97	72.	5.67	6.34	.47	.074	1.118
S7 472.	85.2	187.4	1.696	.685	3.01	70.	5.67	6.60	.46	.069	1.164
S7 473.	85.2	187.4	1.763	.685	3.05	64.	5.67	6.86	.42	.061	1.210
S7 474.	85.2	187.4	1.830	.685	3.02	77.	5.67	6.66	.50	.075	1.176
S7 475.	85.2	187.4	1.896	.685	2.97	77.	5.67	6.34	.51	.080	1.118
S7 476.	85.2	187.4	1.963	.685	2.92	76.	5.67	6.01	.50	.083	1.060
S7 477.	85.2	187.4	2.029	.685	2.90	60.	5.67	5.88	.39	.067	1.037
S7 478.	85.2	187.4	2.096	.685	2.92	72.	5.67	6.01	.47	.078	1.060
S7 479.	85.2	187.4	2.163	.685	2.98	72.	5.67	6.40	.47	.073	1.129
S7 480.	85.2	187.4	2.229	.685	3.03	70.	5.67	6.73	.46	.068	1.187
S7 484.	85.2	187.4	.298	.110	3.01	112.	5.67	6.60	.73	.111	1.164
S7 483.	85.2	187.4	.697	.110	3.03	68.	5.67	6.73	.44	.066	1.187
S7 482.	85.2	187.4	1.230	.110	3.03	68.	5.67	6.73	.44	.066	1.187
S7 481.	85.2	187.4	1.763	.110	3.05	61.	5.67	6.86	.40	.058	1.210
S7 500.	85.2	187.4	.165	1.224	3.10	270.	5.67	7.18	1.76	.245	1.268
S7 499.	85.2	187.4	.298	1.224	2.99	130.	5.67	6.47	.85	.131	1.141
S7 498.	85.2	187.4	.431	1.224	2.93	79.	5.67	6.07	.52	.085	1.072
S7 497.	85.2	187.4	.564	1.224	3.00	79.	5.67	6.53	.52	.079	1.153
S7 496.	85.2	187.4	.697	1.224	3.06	62.	5.67	6.92	.40	.058	1.222
S7 495.	85.2	187.4	.831	1.224	3.00	86.	5.67	6.53	.56	.086	1.153
S7 494.	85.2	187.4	.964	1.224	2.92	64.	5.67	6.01	.42	.070	1.060
S7 493.	85.2	187.4	1.097	1.224	2.95	56.	5.67	6.20	.37	.059	1.095
S7 492.	85.2	187.4	1.230	1.224	3.02	52.	5.67	6.66	.34	.051	1.176
S7 491.	85.2	187.4	1.363	1.224	3.01	74.	5.67	6.60	.48	.073	1.164
S7 490.	85.2	187.4	1.497	1.224	2.91	75.	5.67	5.94	.49	.082	1.049

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 489.	85.2	187.4	1.630	1.224	2.93	66.	5.67	6.07	.43	.071	1.072
S7 488.	85.2	187.4	1.763	1.224	2.96	70.	5.67	6.27	.46	.073	1.106
S7 487.	85.2	187.4	1.896	1.224	2.90	84.	5.67	5.88	.55	.093	1.037
S7 486.	85.2	187.4	2.029	1.224	2.86	80.	5.67	5.62	.52	.093	.991
S7 485.	85.2	187.4	2.163	1.224	2.90	86.	5.67	5.88	.56	.096	1.037
S7 501.	85.2	187.4	.831	1.174	2.93	114.	5.67	6.07	.74	.123	1.072
S7 502.	85.2	187.4	.964	1.174	2.82	114.	5.67	5.36	.74	.139	.945
S7 503.	85.2	187.4	1.097	1.174	2.90	82.	5.67	5.88	.54	.091	1.037
S7 504.	85.2	187.4	1.230	1.174	2.99	64.	5.67	6.47	.42	.065	1.141
S7 505.	85.2	187.4	1.363	1.174	2.97	94.	5.67	6.34	.61	.097	1.118
S7 506.	85.2	187.4	1.497	1.174	2.84	94.	5.67	5.49	.61	.112	.968
S7 507.	85.2	187.4	1.630	1.174	2.88	79.	5.67	5.75	.52	.090	1.014
S7 508.	85.2	187.4	1.763	1.174	2.94	67.	5.67	6.14	.44	.071	1.083
S7 509.	85.2	187.4	1.896	1.174	2.87	97.	5.67	5.68	.63	.111	1.003
S7 510.	85.2	187.4	2.029	1.174	2.79	97.	5.67	5.16	.63	.123	.910
S7 511.	85.2	187.4	2.163	1.174	2.87	97.	5.67	5.68	.63	.111	1.003
S7 519.	85.2	187.4	.831	1.274	3.00	114.	5.67	6.53	.74	.114	1.153
S7 522.	85.2	187.4	.964	1.274	2.91	145.	5.67	5.94	.95	.159	1.049
S7 521.	85.2	187.4	1.097	1.274	2.81	149.	5.67	5.29	.97	.184	.934
S7 520.	85.2	187.4	1.230	1.274	2.92	129.	5.67	6.01	.84	.140	1.060
S7 518.	85.2	187.4	1.363	1.274	2.92	144.	5.67	6.01	.94	.157	1.060
S7 517.	85.2	187.4	1.497	1.274	2.79	145.	5.67	5.16	.95	.184	.910
S7 516.	85.2	187.4	1.630	1.274	2.86	130.	5.67	5.62	.85	.151	.991
S7 515.	85.2	187.4	1.763	1.274	2.95	90.	5.67	6.20	.59	.095	1.095
S7 514.	85.2	187.4	1.896	1.274	2.86	140.	5.67	5.62	.91	.163	.991
S7 513.	85.2	187.4	2.029	1.274	2.76	130.	5.67	4.96	.85	.171	.876
S7 512.	85.2	187.4	2.163	1.274	2.87	120.	5.67	5.68	.78	.138	1.003
S7 538.	85.2	187.4	.169	1.763	3.04	322.	5.67	6.79	2.10	.310	1.199
S7 537.	85.2	187.4	.298	1.763	3.01	132.	5.67	6.60	.86	.131	1.164
S7 536.	85.2	187.4	.431	1.763	2.93	82.	5.67	6.07	.54	.088	1.072
S7 535.	85.2	187.4	.564	1.763	2.98	78.	5.67	6.40	.51	.080	1.129
S7 534.	85.2	187.4	.697	1.763	3.07	62.	5.67	6.99	.40	.058	1.233
S7 533.	85.2	187.4	.831	1.763	3.03	80.	5.67	6.73	.52	.078	1.187
S7 532.	85.2	187.4	.964	1.763	2.95	76.	5.67	6.20	.50	.080	1.095
S7 531.	85.2	187.4	1.097	1.763	2.97	66.	5.67	6.34	.43	.068	1.118
S7 530.	85.2	187.4	1.230	1.763	3.00	72.	5.67	6.53	.47	.072	1.153
S7 529.	85.2	187.4	1.363	1.763	2.94	90.	5.67	6.14	.59	.096	1.083
S7 528.	85.2	187.4	1.497	1.763	2.85	90.	5.67	5.55	.59	.106	.980
S7 527.	85.2	187.4	1.630	1.763	2.80	74.	5.67	5.23	.48	.093	.922
S7 526.	85.2	187.4	1.763	1.763	2.77	70.	5.67	5.03	.46	.091	.887
S7 525.	85.2	187.4	1.896	1.763	2.75	65.	5.67	4.90	.42	.087	.864
S7 524.	85.2	187.4	2.029	1.763	2.74	70.	5.67	4.83	.46	.095	.853
S7 523.	85.2	187.4	2.163	1.763	2.76	70.	5.67	4.96	.46	.092	.876
S7 539.	85.2	187.4	.831	1.713	2.97	102.	5.67	6.34	.67	.105	1.118
S7 540.	85.2	187.4	.964	1.713	2.87	100.	5.67	5.68	.65	.115	1.003
S7 541.	85.2	187.4	1.097	1.713	2.91	90.	5.67	5.94	.59	.099	1.049
S7 542.	85.2	187.4	1.230	1.713	2.96	78.	5.67	6.27	.51	.081	1.1
S7 543.	85.2	187.4	1.363	1.713	2.88	98.	5.67	5.75	.64	.111	1.0
S7 544.	85.2	187.4	1.497	1.713	2.78	105.	5.67	5.09	.69	.135	.8

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	BELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 545.	85.2	187.4	1.630	1.719	2.78	75.	5.67	5.09	.49	.096	.899
S7 546.	85.2	187.4	1.763	1.718	2.77	72.	5.67	5.03	.47	.094	.887
S7 547.	85.2	187.4	1.896	1.712	2.74	72.	5.67	4.83	.47	.097	.853
S7 548.	85.2	187.4	2.029	1.718	2.71	78.	5.67	4.64	.51	.110	.818
S7 549.	85.2	187.4	2.163	1.718	2.75	76.	5.67	4.90	.50	.101	.864
S7 560.	85.2	187.4	.831	1.813	2.94	155.	5.67	6.14	1.01	.165	1.083
S7 559.	85.2	187.4	.964	1.813	2.84	155.	5.67	5.49	1.01	.185	.968
S7 558.	85.2	187.4	1.097	1.813	2.91	135.	5.67	5.94	.88	.148	1.049
S7 557.	85.2	187.4	1.230	1.813	2.97	155.	5.67	6.34	1.01	.160	1.118
S7 556.	85.2	187.4	1.363	1.813	2.90	175.	5.67	5.88	1.14	.194	1.037
S7 555.	85.2	187.4	1.497	1.813	2.73	175.	5.67	4.77	1.14	.240	.841
S7 554.	85.2	187.4	1.630	1.813	2.71	140.	5.67	4.64	.91	.197	.818
S7 553.	85.2	187.4	1.763	1.813	2.76	110.	5.67	4.96	.72	.145	.876
S7 552.	85.2	187.4	1.896	1.813	2.72	120.	5.67	4.70	.78	.167	.830
S7 551.	85.2	187.4	2.029	1.813	2.63	160.	5.67	4.11	1.05	.254	.726
S7 550.	85.2	187.4	2.163	1.813	2.72	156.	5.67	4.70	1.02	.217	.830

TABLE CW1. TABULATION OF EXPERIMENTAL LOA DATA

DATA PLANE NO. 8. AXIAL DISTANCE=28.20 IN. BLOCKAGE CENTERLINE=28.25 IN. P=23.00 PSI RE= 29900.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E BVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 561.	85.2	188.9	.298	1.224	3.00	80.	5.71	6.53	.52	.080	1.143
S7 562.	85.2	188.9	.364	1.224	2.98	70.	5.71	6.40	.46	.071	1.121
S7 563.	85.2	188.9	.431	1.224	2.98	70.	5.71	6.40	.46	.071	1.121
S7 564.	85.2	188.9	.498	1.224	3.02	64.	5.71	6.66	.42	.063	1.166
S7 565.	85.2	188.9	.564	1.224	3.06	50.	5.71	6.92	.33	.047	1.212
S7 566.	85.2	188.9	.631	1.224	3.08	40.	5.71	7.05	.26	.037	1.235
S7 567.	85.2	188.9	.697	1.224	3.07	44.	5.71	6.99	.29	.041	1.223
S7 568.	85.2	188.9	.764	1.224	3.05	46.	5.71	6.86	.30	.044	1.201
S7 569.	85.2	188.9	.831	1.224	3.04	45.	5.71	6.79	.29	.043	1.189
S7 570.	85.2	188.9	.897	1.224	3.05	48.	5.71	6.86	.31	.046	1.201
S7 571.	85.2	188.9	.964	1.224	3.07	51.	5.71	6.99	.33	.048	1.223
S7 572.	85.2	188.9	1.030	1.224	3.10	46.	5.71	7.18	.30	.042	1.258
S7 573.	85.2	188.9	1.097	1.224	3.11	43.	5.71	7.25	.28	.039	1.269
S7 574.	85.2	188.9	1.164	1.224	3.09	52.	5.71	7.12	.34	.048	1.246
S7 575.	85.2	188.9	1.230	1.224	3.05	56.	5.71	6.86	.37	.053	1.201
S7 576.	85.2	188.9	1.297	1.224	3.03	50.	5.71	6.73	.33	.049	1.178
S7 577.	85.2	188.9	1.363	1.224	3.04	50.	5.71	6.79	.33	.048	1.189
S7 578.	85.2	188.9	1.430	1.224	3.06	54.	5.71	6.92	.35	.051	1.212
S7 579.	85.2	188.9	1.497	1.224	3.08	54.	5.71	7.05	.35	.050	1.235
S7 580.	85.2	188.9	1.563	1.224	3.10	45.	5.71	7.18	.29	.041	1.258
S7 581.	85.2	188.9	1.630	1.224	3.12	43.	5.71	7.32	.28	.038	1.281
S7 582.	85.2	188.9	1.696	1.224	3.13	44.	5.71	7.38	.29	.039	1.292
S7 583.	85.2	188.9	1.763	1.224	3.12	57.	5.71	7.32	.37	.051	1.281
S7 584.	85.2	188.9	1.830	1.224	3.11	62.	5.71	7.25	.40	.056	1.269
S7 585.	85.2	188.9	1.896	1.224	3.09	62.	5.71	7.12	.40	.057	1.246
S7 586.	85.2	188.9	1.963	1.224	3.06	52.	5.71	6.92	.34	.049	1.212
S7 587.	85.2	188.9	2.029	1.224	3.05	49.	5.71	6.86	.32	.047	1.201
S7 588.	85.2	188.9	2.096	1.224	3.05	49.	5.71	6.86	.32	.047	1.201
S7 589.	85.2	188.9	2.163	1.224	3.06	51.	5.71	6.92	.33	.048	1.212
S7 590.	85.2	188.9	2.229	1.224	3.08	59.	5.71	7.05	.39	.055	1.235
S7 591.	85.2	188.9	2.296	1.224	3.10	62.	5.71	7.18	.40	.056	1.258
S7 622.	85.2	188.0	.298	.685	3.03	100.	5.69	6.73	.65	.097	1.183
S7 621.	85.2	188.0	.364	.685	2.99	60.	5.69	6.47	.39	.061	1.137
S7 620.	85.2	188.0	.431	.685	2.98	58.	5.71	6.40	.38	.059	1.121
S7 619.	85.2	188.0	.498	.685	3.01	60.	5.71	6.60	.39	.059	1.155
S7 618.	85.2	188.0	.564	.685	3.04	51.	5.71	6.79	.33	.049	1.189
S7 617.	85.2	188.0	.631	.685	3.06	43.	5.71	6.92	.28	.041	1.212
S7 616.	85.2	188.0	.697	.685	3.05	45.	5.71	6.86	.29	.043	1.201
S7 615.	85.2	188.0	.764	.685	3.03	51.	5.71	6.73	.33	.050	1.178
S7 614.	85.2	188.0	.831	.685	3.00	47.	5.71	6.53	.31	.047	1.143
S7 613.	85.2	188.0	.897	.685	2.99	47.	5.71	6.47	.31	.047	1.132
S7 612.	85.2	188.0	.964	.635	3.00	50.	5.71	6.53	.33	.050	1.143
S7 611.	85.2	188.0	1.030	.685	3.03	51.	5.71	6.73	.33	.050	1.178
S7 610.	85.2	188.0	1.097	.685	3.06	47.	5.71	6.92	.31	.044	1.212
S7 609.	85.2	188.0	1.164	.685	3.08	41.	5.71	7.05	.27	.038	1.235
S7 608.	85.2	188.0	1.230	.685	3.08	41.	5.71	7.05	.27	.038	1.235
S7 607.	85.2	188.0	1.297	.685	3.06	48.	5.71	6.92	.31	.045	1.212
S7 606.	85.2	188.0	1.363	.685	3.04	48.	5.71	6.79	.31	.046	1.189
S7 605.	85.2	188.0	1.430	.685	3.02	45.	5.71	6.66	.29	.044	1.166

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 604.	85.2	188.0	1.497	.685	3.02	45.	5.71	6.66	.29	.044	1.166
S7 603.	85.2	188.0	1.569	.685	3.02	49.	5.71	6.66	.32	.048	1.166
S7 602.	85.2	188.0	1.630	.685	3.03	49.	5.71	6.73	.32	.048	1.178
S7 601.	85.2	188.0	1.696	.685	3.05	48.	5.71	6.86	.31	.046	1.201
S7 600.	85.2	188.0	1.763	.685	3.06	48.	5.71	6.92	.31	.045	1.212
S7 599.	85.2	188.0	1.830	.685	3.05	50.	5.71	6.86	.33	.048	1.201
S7 598.	85.2	188.0	1.896	.685	3.02	51.	5.71	6.66	.33	.050	1.166
S7 597.	85.2	188.0	1.963	.685	3.01	46.	5.71	6.60	.30	.046	1.155
S7 596.	85.2	188.0	2.029	.685	3.00	42.	5.71	6.53	.27	.042	1.143
S7 595.	85.2	188.0	2.096	.685	3.01	44.	5.71	6.60	.29	.044	1.155
S7 594.	85.2	188.0	2.163	.685	3.03	48.	5.71	6.73	.31	.047	1.178
S7 593.	85.2	188.0	2.229	.685	3.06	51.	5.71	6.92	.33	.048	1.212
S7 592.	85.2	188.0	2.296	.685	3.08	46.	5.71	7.05	.30	.043	1.235
S7 626.	85.2	188.0	.298	.110	3.07	85.	5.69	6.99	.56	.079	1.229
S7 625.	85.2	188.0	.697	.110	3.10	35.	5.69	7.18	.23	.032	1.264
S7 624.	85.2	188.0	1.230	.110	3.10	38.	5.69	7.18	.25	.035	1.264
S7 623.	85.2	188.0	1.763	.110	3.11	37.	5.69	7.25	.24	.033	1.275

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 17, AXIAL DISTANCE 427.50 IN, BLOCKAGE CENTERLINE 28.25 IN, P=19.50 PSI RE= 29800.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 627.	85.3	188.0	.298	1.763	3.09	245.	5.69	7.12	1.60	.225	1.252
S7 628.	85.3	188.0	.364	1.763	3.02	115.	5.69	6.66	.75	.113	1.172
S7 629.	85.3	188.0	.431	1.763	3.01	85.	5.69	6.60	.56	.084	1.160
S7 630.	85.3	188.0	.498	1.763	3.03	60.	5.69	6.73	.39	.058	1.183
S7 631.	85.3	188.0	.564	1.763	3.05	65.	5.69	6.86	.42	.062	1.206
S7 632.	85.3	188.0	.631	1.763	3.08	50.	5.69	7.05	.33	.046	1.241
S7 633.	85.3	188.0	.697	1.763	3.07	54.	5.69	6.99	.35	.050	1.229
S7 634.	85.3	188.0	.764	1.763	3.06	56.	5.69	6.92	.37	.053	1.218
S7 635.	85.3	188.0	.831	1.763	3.04	56.	5.69	6.79	.37	.054	1.195
S7 636.	85.3	188.0	.897	1.763	3.05	52.	5.69	6.86	.34	.050	1.206
S7 637.	85.3	188.0	.964	1.763	3.08	50.	5.69	7.05	.33	.046	1.241
S7 638.	85.3	188.0	1.030	1.763	3.10	46.	5.69	7.18	.30	.042	1.264
S7 639.	85.3	188.0	1.097	1.763	3.11	47.	5.69	7.25	.31	.042	1.275
S7 640.	85.3	188.0	1.164	1.763	3.10	51.	5.69	7.18	.33	.046	1.264
S7 641.	85.3	188.0	1.230	1.763	3.08	57.	5.69	7.05	.37	.053	1.241
S7 642.	85.3	188.0	1.297	1.763	3.07	57.	5.69	6.99	.37	.053	1.229
S7 643.	85.3	188.0	1.363	1.763	3.09	66.	5.69	7.12	.43	.061	1.252
S7 644.	85.3	188.0	1.430	1.763	3.04	99.	5.69	6.79	.65	.095	1.195
S7 645.	85.3	188.0	1.497	1.763	2.92	139.	5.69	6.01	.91	.151	1.057
S7 646.	85.3	188.0	1.563	1.763	2.78	120.	5.69	5.09	.78	.154	.896
S7 647.	85.3	188.0	1.630	1.763	2.75	90.	5.69	4.90	.59	.120	.862
S7 648.	85.3	188.0	1.696	1.763	2.78	74.	5.69	5.09	.48	.095	.896
S7 649.	85.3	188.0	1.763	1.763	2.80	65.	5.69	5.23	.42	.081	.919
S7 650.	85.3	188.0	1.830	1.763	2.78	79.	5.69	5.09	.52	.101	.896
S7 651.	85.3	188.0	1.896	1.763	2.73	82.	5.69	4.77	.54	.112	.839
S7 652.	85.3	188.0	1.963	1.763	2.70	69.	5.69	4.57	.45	.099	.804
S7 653.	85.3	188.0	2.029	1.763	2.69	59.	5.69	4.51	.39	.086	.793
S7 654.	85.3	188.0	2.096	1.763	2.67	57.	5.69	4.38	.37	.085	.770
S7 655.	85.3	188.0	2.163	1.763	2.68	56.	5.69	4.44	.37	.082	.781
S7 656.	85.3	188.0	2.229	1.763	2.70	59.	5.69	4.57	.39	.084	.804
S7 657.	85.3	188.0	2.296	1.763	2.71	72.	5.69	4.64	.47	.101	.816
S7 658.	85.3	188.0	2.362	1.763	2.74	78.	5.69	4.83	.51	.105	.850
S7 690.	85.3	188.0	.298	1.224	3.06	224.	5.69	6.92	1.46	.211	1.218
S7 689.	85.3	188.0	.364	1.224	3.00	124.	5.69	6.53	.81	.124	1.149
S7 688.	85.3	188.0	.431	1.224	3.00	84.	5.69	6.53	.55	.084	1.149
S7 687.	85.3	188.0	.498	1.224	3.01	64.	5.69	6.60	.42	.063	1.160
S7 686.	85.3	188.0	.564	1.224	3.04	56.	5.69	6.79	.37	.054	1.195
S7 685.	85.3	188.0	.631	1.224	3.05	52.	5.69	6.86	.34	.050	1.206
S7 684.	85.3	188.0	.697	1.224	3.06	56.	5.69	6.92	.37	.053	1.218
S7 683.	85.3	188.0	.764	1.224	3.04	60.	5.69	6.79	.39	.058	1.195
S7 682.	85.3	188.0	.831	1.224	3.02	62.	5.69	6.66	.40	.061	1.172
S7 681.	85.3	188.0	.897	1.224	3.00	60.	5.69	6.53	.39	.060	1.149
S7 680.	85.3	188.0	.964	1.224	3.01	63.	5.69	6.60	.41	.062	1.160
S7 679.	85.3	188.0	1.030	1.224	3.03	63.	5.69	6.73	.41	.061	1.183
S7 678.	85.3	188.0	1.097	1.224	3.05	60.	5.69	6.86	.39	.057	1.206
S7 677.	85.3	188.0	1.164	1.224	3.05	60.	5.69	6.86	.39	.057	1.206
S7 676.	85.3	188.0	1.230	1.224	3.04	70.	5.69	6.79	.46	.067	1.100
S7 675.	85.3	188.0	1.297	1.224	3.00	78.	5.69	6.53	.51	.078	1.100
S7 674.	85.3	188.0	1.363	1.224	2.97	73.	5.69	6.34	.48	.075	1.100

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E RVOLTS	UB FPS	U(LOCAL) FPS	UPLUC FPS	TURB	VRATIO
S7 673.	85.3	188.0	1.430	1.224	2.96	70.	5.69	6.27	.46	.073	1.103
S7 672.	85.3	188.0	1.497	1.224	2.95	80.	5.69	6.20	.52	.084	1.091
S7 671.	85.3	188.0	1.563	1.224	2.95	84.	5.69	6.20	.55	.088	1.091
S7 670.	85.3	188.0	1.630	1.224	2.98	79.	5.69	6.40	.52	.081	1.126
S7 669.	85.3	188.0	1.696	1.224	3.02	69.	5.69	6.66	.45	.068	1.172
S7 668.	85.3	188.0	1.763	1.224	3.03	70.	5.69	6.73	.46	.068	1.183
S7 667.	85.3	188.0	1.830	1.224	3.02	70.	5.69	6.66	.46	.069	1.172
S7 666.	85.3	188.0	1.898	1.224	2.99	80.	5.69	6.47	.52	.081	1.137
S7 665.	85.3	188.0	1.963	1.224	2.94	80.	5.69	6.14	.52	.085	1.080
S7 664.	85.3	188.0	2.029	1.224	2.91	82.	5.69	5.94	.54	.090	1.045
S7 663.	85.3	188.0	2.096	1.224	2.89	82.	5.69	5.81	.54	.092	1.022
S7 662.	85.3	188.0	2.163	1.224	2.91	74.	5.69	5.94	.48	.081	1.045
S7 661.	85.3	188.0	2.229	1.224	2.94	73.	5.69	6.14	.48	.078	1.080
S7 660.	85.3	188.0	2.296	1.224	2.98	69.	5.69	6.40	.45	.070	1.126
S7 659.	85.3	188.0	2.362	1.224	3.01	66.	5.69	6.60	.43	.065	1.160
S7 721.	85.3	188.0	.364	.685	3.00	103.	5.69	6.53	.67	.103	1.149
S7 720.	85.3	188.0	.431	.685	2.98	68.	5.69	6.40	.44	.069	1.126
S7 719.	85.3	188.0	.498	.685	2.99	63.	5.69	6.47	.41	.064	1.137
S7 718.	85.3	188.0	.564	.685	3.02	59.	5.69	6.66	.39	.058	1.172
S7 717.	85.3	188.0	.631	.685	3.04	49.	5.69	6.79	.32	.047	1.195
S7 716.	85.3	188.0	.697	.685	3.05	44.	5.69	6.86	.29	.042	1.206
S7 715.	85.3	188.0	.764	.685	3.04	55.	5.69	6.79	.30	.053	1.195
S7 714.	85.3	188.0	.831	.685	3.01	55.	5.69	6.60	.36	.054	1.160
S7 713.	85.3	188.0	.897	.685	2.98	54.	5.69	6.40	.35	.055	1.126
S7 712.	85.3	188.0	.964	.685	2.98	52.	5.69	6.40	.34	.053	1.126
S7 711.	85.3	188.0	1.030	.685	3.00	52.	5.69	6.53	.34	.052	1.149
S7 710.	85.3	188.0	1.097	.685	3.02	52.	5.69	6.66	.34	.051	1.172
S7 709.	85.3	188.0	1.164	.685	3.05	49.	5.69	6.86	.32	.047	1.206
S7 708.	85.3	188.0	1.230	.685	3.06	42.	5.69	6.92	.27	.040	1.218
S7 707.	85.3	188.0	1.297	.685	3.06	46.	5.69	6.92	.30	.043	1.218
S7 706.	85.3	188.0	1.363	.685	3.04	54.	5.69	6.79	.35	.052	1.195
S7 705.	85.3	188.0	1.430	.685	3.02	52.	5.69	6.66	.34	.051	1.172
S7 704.	85.3	188.0	1.497	.685	3.00	51.	5.69	6.53	.33	.051	1.149
S7 703.	85.3	188.0	1.563	.685	3.00	53.	5.69	6.53	.35	.053	1.149
S7 702.	85.3	188.0	1.630	.685	3.01	55.	5.69	6.60	.36	.054	1.160
S7 701.	85.3	188.0	1.696	.685	3.03	55.	5.69	6.73	.36	.053	1.183
S7 700.	85.3	188.0	1.763	.685	3.04	52.	5.69	6.79	.34	.050	1.195
S7 699.	85.3	188.0	1.830	.685	3.05	50.	5.69	6.86	.33	.048	1.206
S7 698.	85.3	188.0	1.896	.685	3.03	58.	5.69	6.73	.38	.056	1.183
S7 697.	85.3	188.0	1.963	.685	3.00	62.	5.69	6.53	.40	.062	1.149
S7 696.	85.3	188.0	2.029	.685	2.98	54.	5.69	6.40	.35	.055	1.126
S7 695.	85.3	188.0	2.096	.685	2.98	50.	5.69	6.40	.33	.051	1.126
S7 694.	85.3	188.0	2.163	.685	2.99	54.	5.69	6.47	.35	.055	1.137
S7 693.	85.3	188.0	2.229	.685	3.02	58.	5.69	6.66	.38	.057	1.172
S7 692.	85.3	188.0	2.296	.685	3.05	58.	5.69	6.86	.38	.055	1.206
S7 691.	85.3	188.0	2.362	.685	3.13	48.	5.69	7.38	.31	.042	1.298
S7 725.	85.3	188.0	.298	.110	3.08	159.	5.69	7.05	1.04	.147	1.241
S7 724.	85.3	188.0	.697	.110	3.09	39.	5.69	7.12	.25	.036	1.252
S7 723.	85.3	188.0	1.230	.110	3.09	40.	5.69	7.12	.26	.037	1.252
S7 722.	85.3	188.0	1.769	.110	3.09	40.	5.69	7.12	.26	.037	1.252

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 10, AXIAL DISTANCE 432.80 IN. BLOCKAGE CENTERLINE=28.25 IN, P=19.50 PSI RE= 29600.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
S7 726.	85.3	188.0	.231	.688	3.07	329.	5.64	6.99	2.15	.307	1.240
S7 727.	85.3	188.0	.298	.688	2.96	219.	5.64	6.27	1.43	.228	1.112
S7 728.	85.3	188.0	.364	.685	2.90	159.	5.64	5.88	1.04	.177	1.043
S7 729.	85.3	188.0	.431	.685	2.95	119.	5.64	6.20	.78	.125	1.101
S7 730.	85.3	188.0	.498	.685	2.94	100.	5.64	6.14	.65	.106	1.089
S7 731.	85.3	188.0	.564	.685	2.99	90.	5.64	6.47	.59	.091	1.147
S7 732.	85.3	188.0	.631	.685	3.02	70.	5.64	6.66	.46	.069	1.182
S7 733.	85.3	188.0	.697	.685	3.02	68.	5.64	6.66	.44	.067	1.182
S7 734.	85.3	188.0	.764	.685	2.98	77.	5.64	6.40	.50	.079	1.136
S7 735.	85.3	188.0	.831	.685	2.95	80.	5.64	6.20	.52	.084	1.101
S7 736.	85.3	188.0	.897	.685	2.91	67.	5.64	5.94	.44	.074	1.054
S7 737.	85.3	188.0	.964	.685	2.90	64.	5.64	5.88	.42	.071	1.043
S7 738.	85.3	188.0	1.030	.685	2.94	68.	5.64	6.14	.44	.072	1.089
S7 739.	85.3	188.0	1.097	.685	2.99	76.	5.64	6.47	.50	.077	1.147
S7 740.	85.3	188.0	1.164	.685	3.03	66.	5.64	6.73	.43	.064	1.193
S7 741.	85.3	188.0	1.230	.685	3.04	56.	5.64	6.79	.37	.054	1.205
S7 742.	85.3	188.0	1.297	.685	3.02	67.	5.64	6.66	.44	.066	1.182
S7 743.	85.3	188.0	1.363	.685	3.02	76.	5.64	6.66	.50	.075	1.182
S7 744.	85.3	188.0	1.430	.685	2.93	70.	5.64	6.07	.46	.075	1.078
S7 745.	85.3	188.0	1.497	.685	2.91	59.	5.64	5.94	.39	.065	1.054
S7 746.	85.3	188.0	1.563	.685	2.93	59.	5.64	6.07	.39	.063	1.078
S7 747.	85.3	188.0	1.630	.685	2.97	68.	5.64	6.34	.44	.070	1.124
S7 748.	85.3	188.0	1.696	.685	3.02	62.	5.64	6.66	.40	.061	1.182
S7 749.	85.3	188.0	1.763	.685	3.03	56.	5.64	6.73	.37	.054	1.193
S7 750.	85.3	188.0	1.830	.685	3.00	66.	5.64	6.53	.43	.066	1.159
S7 751.	85.3	188.0	1.898	.685	2.97	76.	5.64	6.34	.50	.078	1.124
S7 752.	85.3	188.0	1.963	.685	2.91	67.	5.64	5.94	.44	.074	1.054
S7 753.	85.3	188.0	2.029	.685	2.90	60.	5.64	5.88	.39	.067	1.043
S7 754.	85.3	188.0	2.095	.685	2.93	70.	5.64	6.07	.46	.075	1.078
S7 755.	85.3	188.0	2.163	.685	2.98	74.	5.64	6.40	.48	.076	1.136
S7 756.	85.3	188.0	2.229	.685	3.03	66.	5.69	6.73	.43	.064	1.183
S7 760.	85.3	188.0	.298	.110	3.05	166.	5.69	6.85	1.08	.158	1.206
S7 759.	85.3	188.0	.697	.110	3.04	66.	5.69	6.79	.43	.063	1.195
S7 758.	85.3	188.0	1.230	.110	3.03	60.	5.69	6.73	.39	.058	1.183
S7 757.	85.3	188.0	1.763	.110	3.04	57.	5.69	6.79	.37	.055	1.195
S7 775.	85.3	186.4	.298	1.224	2.98	183.	5.64	6.40	1.20	.187	1.136
S7 774.	85.3	186.4	.431	1.224	2.93	93.	5.64	6.07	.61	.100	1.078
S7 773.	85.3	186.4	.564	1.224	2.99	84.	5.64	6.47	.55	.085	1.147
S7 772.	85.3	186.4	.697	1.224	3.05	56.	5.64	6.85	.37	.053	1.217
S7 771.	85.3	186.4	.831	1.224	2.99	69.	5.64	6.47	.45	.070	1.147
S7 770.	85.3	186.4	.964	1.224	2.93	62.	5.64	6.07	.40	.067	1.078
S7 769.	85.3	186.4	1.097	1.224	2.95	54.	5.64	6.20	.35	.057	1.101
S7 768.	85.3	186.4	1.230	1.224	3.00	55.	5.64	6.53	.36	.055	1.159
S7 767.	85.3	186.4	1.363	1.224	3.01	58.	5.64	6.60	.38	.057	1.170
S7 766.	85.3	186.4	1.497	1.224	2.92	82.	5.64	6.07	.54	.089	1.06
S7 765.	85.3	186.4	1.630	1.224	2.88	69.	5.64	5.75	.45	.078	1.06
S7 764.	85.3	186.4	1.763	1.224	2.94	65.	5.64	6.14	.42	.069	1.06

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E BVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 763.	85.3	186.4	1.898	1.224	2.88	95.	5.64	5.75	.62	.108	1.020
S7 762.	85.3	186.4	2.029	1.224	2.79	75.	5.64	5.16	.49	.095	.915
S7 761.	85.3	186.4	2.163	1.224	2.88	96.	5.64	5.75	.63	.109	1.020
S7 776.	85.3	186.4	.831	1.174	2.91	106.	5.64	5.94	.69	.116	1.054
S7 777.	85.3	186.4	.964	1.174	2.84	88.	5.64	5.49	.57	.105	.973
S7 778.	85.3	186.4	1.097	1.174	2.89	70.	5.64	5.81	.46	.079	1.031
S7 779.	85.3	186.4	1.230	1.174	2.97	67.	5.64	6.34	.44	.069	1.124
S7 780.	85.3	186.4	1.363	1.174	2.96	84.	5.64	6.27	.55	.088	1.112
S7 781.	85.3	186.4	1.497	1.174	2.84	88.	5.64	5.49	.57	.105	.973
S7 782.	85.3	186.4	1.630	1.174	2.86	76.	5.64	5.62	.50	.088	.996
S7 783.	85.3	186.4	1.763	1.174	2.96	69.	5.64	6.27	.45	.072	1.112
S7 784.	85.3	186.4	1.898	1.174	2.86	112.	5.64	5.62	.73	.130	.996
S7 785.	85.3	186.4	2.029	1.174	2.75	82.	5.64	4.90	.54	.109	.869
S7 786.	85.3	186.4	2.163	1.174	2.85	109.	5.64	5.55	.71	.128	.985
S7 797.	85.3	186.4	.831	1.274	2.95	129.	5.64	6.20	.84	.136	1.101
S7 796.	85.3	186.4	.964	1.274	2.80	125.	5.64	5.23	.82	.156	.927
S7 795.	85.3	186.4	1.097	1.274	2.92	118.	5.64	6.01	.77	.128	1.066
S7 794.	85.3	186.4	1.230	1.274	3.00	88.	5.64	6.53	.57	.088	1.159
S7 793.	85.3	186.4	1.363	1.274	2.92	138.	5.64	6.01	.90	.150	1.066
S7 792.	85.3	186.4	1.497	1.274	2.80	128.	5.64	5.23	.84	.160	.927
S7 791.	85.3	186.4	1.630	1.274	2.83	98.	5.64	5.42	.64	.118	.962
S7 790.	85.3	186.4	1.763	1.274	2.91	95.	5.64	5.94	.62	.104	1.054
S7 789.	85.3	186.4	1.896	1.274	2.81	130.	5.64	5.29	.85	.160	.939
S7 788.	85.3	186.4	2.029	1.274	2.71	139.	5.64	4.64	.91	.196	.823
S7 787.	85.3	186.4	2.163	1.274	2.83	129.	5.64	5.42	.84	.155	.962
S7 812.	85.3	186.4	.298	1.763	2.99	152.	5.64	6.47	.99	.154	1.147
S7 811.	85.3	186.4	.431	1.763	2.94	92.	5.64	6.14	.60	.098	1.089
S7 810.	85.3	186.4	.564	1.763	2.99	71.	5.64	6.47	.46	.072	1.147
S7 809.	85.3	186.4	.697	1.763	3.06	49.	5.64	6.92	.32	.046	1.228
S7 808.	85.3	186.4	.831	1.763	3.04	57.	5.64	6.79	.37	.055	1.205
S7 807.	85.3	186.4	.964	1.763	2.99	64.	5.64	6.47	.42	.065	1.147
S7 806.	85.3	186.4	1.097	1.763	3.00	66.	5.64	6.53	.43	.066	1.159
S7 805.	85.3	186.4	1.230	1.763	2.98	76.	5.64	6.40	.50	.078	1.136
S7 804.	85.3	186.4	1.363	1.763	2.92	96.	5.64	6.01	.63	.104	1.066
S7 803.	85.3	186.4	1.497	1.763	2.83	112.	5.64	5.42	.73	.135	.962
S7 802.	85.3	186.4	1.630	1.763	2.75	99.	5.64	4.90	.65	.132	.869
S7 801.	85.3	186.4	1.763	1.763	2.70	84.	5.64	4.57	.55	.120	.811
S7 800.	85.3	186.4	1.896	1.763	2.67	71.	5.64	4.38	.46	.106	.776
S7 799.	85.3	186.4	2.029	1.763	2.66	70.	5.64	4.31	.46	.106	.765
S7 798.	85.3	186.4	2.163	1.763	2.68	76.	5.64	4.44	.50	.112	.788
S7 813.	85.3	188.0	.831	1.713	2.95	105.	5.64	6.20	.69	.111	1.101
S7 814.	85.3	188.0	.964	1.713	2.85	100.	5.64	5.55	.65	.118	.985
S7 815.	85.3	188.0	1.097	1.713	2.92	92.	5.64	6.01	.60	.100	1.066
S7 816.	85.3	188.0	1.230	1.713	2.93	81.	5.69	6.07	.53	.087	1.068
S7 817.	85.3	188.0	1.363	1.713	2.86	95.	5.69	5.62	.62	.110	.988
S7 818.	85.3	188.0	1.497	1.713	2.75	107.	5.69	4.90	.70	.143	.862
S7 819.	85.3	188.0	1.630	1.713	2.72	90.	5.69	4.70	.59	.125	.827
S7 820.	85.3	188.0	1.763	1.713	2.71	87.	5.69	4.64	.57	.123	.816
S7 821.	85.3	188.0	1.896	1.713	2.66	80.	5.69	4.31	.52	.121	.758

RUN	TEMP	FLOW GRM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FRS	UFLUC FPS	TURB	VRATIO
S7 822.	85.3	188.0	2.029	1.713	2.63	77.	5.69	4.11	.50	.122	.724
S7 823.	85.3	188.0	2.163	1.713	2.68	87.	5.69	4.44	.57	.128	.781
S7 834.	85.3	188.0	.831	1.813	2.98	120.	5.69	6.40	.78	.122	1.126
S7 833.	85.3	188.0	.964	1.813	2.89	120.	5.69	5.81	.78	.135	1.022
S7 832.	85.3	188.0	1.097	1.813	2.95	110.	5.69	6.20	.72	.116	1.091
S7 831.	85.3	188.0	1.230	1.813	2.98	119.	5.69	6.40	.78	.121	1.126
S7 830.	85.3	188.0	1.363	1.813	2.89	129.	5.69	5.91	.84	.145	1.022
S7 829.	85.3	188.0	1.497	1.813	2.76	149.	5.69	4.36	.97	.196	.873
S7 828.	85.3	188.0	1.630	1.813	2.72	107.	5.69	4.70	.70	.149	.827
S7 827.	85.3	188.0	1.763	1.813	2.69	97.	5.69	4.51	.63	.141	.793
S7 826.	85.3	188.0	1.896	1.813	2.64	91.	5.69	4.18	.59	.142	.735
S7 825.	85.3	188.0	2.029	1.813	2.61	96.	5.69	3.98	.63	.157	.701
S7 824.	85.3	188.0	2.163	1.813	2.67	96.	5.69	4.38	.63	.143	.770

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO.18, AXIAL DISTANCE#27.55 IN. BLOCKAGE CENTERLINE=29.25 IN. P=17.00 PSI RE=30000.												
RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO	
S7 835.	85.9	188.0	.231	1.768	3.04	60.	5.69	6.79	.39	.058	1.195	
S7 836.	85.9	188.0	.298	1.763	2.99	60.	5.69	6.47	.39	.061	1.137	
S7 837.	85.9	188.0	.364	1.763	2.96	54.	5.69	6.27	.35	.056	1.103	
S7 838.	85.9	188.0	.431	1.763	2.95	48.	5.69	6.20	.31	.051	1.091	
S7 839.	85.9	188.0	.498	1.763	2.97	45.	5.69	6.34	.29	.046	1.114	
S7 840.	85.9	188.0	.564	1.763	2.99	42.	5.69	6.47	.27	.042	1.137	
S7 841.	85.9	188.0	.631	1.763	3.00	39.	5.69	6.53	.25	.039	1.149	
S7 842.	85.9	188.0	.697	1.763	2.99	42.	5.69	6.47	.27	.042	1.137	
S7 843.	85.9	188.0	.764	1.763	2.97	53.	5.69	6.34	.35	.055	1.114	
S7 844.	85.9	188.0	.831	1.763	2.93	52.	5.69	6.07	.34	.056	1.068	
S7 845.	85.9	188.0	.897	1.763	2.91	48.	5.69	5.94	.31	.053	1.045	
S7 846.	85.9	188.0	.964	1.763	2.91	48.	5.69	5.94	.31	.053	1.045	
S7 847.	85.9	188.0	1.030	1.763	2.92	46.	5.69	6.01	.30	.050	1.057	
S7 848.	85.9	188.0	1.097	1.763	2.94	43.	5.69	6.14	.28	.046	1.080	
S7 849.	85.9	188.0	1.164	1.763	2.94	39.	5.69	6.14	.25	.041	1.080	
S7 850.	85.9	188.0	1.230	1.763	2.93	45.	5.69	6.07	.29	.048	1.068	
S7 851.	85.9	188.0	1.297	1.763	2.90	55.	5.69	5.88	.36	.061	1.034	
S7 852.	85.9	188.0	1.363	1.763	2.86	55.	5.69	5.62	.36	.064	.988	
S7 853.	85.9	188.0	1.430	1.763	2.83	50.	5.69	5.42	.33	.060	.954	
S7 854.	85.9	188.0	1.497	1.763	2.83	50.	5.69	5.42	.33	.060	.954	
S7 855.	85.9	188.0	1.563	1.763	2.84	49.	5.69	5.49	.32	.058	.965	
S7 856.	85.9	188.0	1.630	1.763	2.85	45.	5.69	5.55	.29	.053	.977	
S7 857.	85.9	188.0	1.696	1.763	2.86	39.	5.69	5.62	.25	.045	.988	
S7 858.	85.9	188.0	1.763	1.763	2.86	42.	5.69	5.62	.27	.049	.988	
S7 859.	85.9	188.0	1.830	1.763	2.83	55.	5.69	5.42	.36	.066	.954	
S7 860.	85.9	188.0	1.896	1.763	2.79	65.	5.69	5.16	.42	.082	.908	
S7 861.	85.9	188.0	1.963	1.763	2.75	64.	5.69	4.90	.42	.085	.862	
S7 862.	85.9	188.0	2.029	1.763	2.72	58.	5.69	4.70	.38	.081	.827	
S7 863.	85.9	188.0	2.096	1.763	2.73	58.	5.69	4.77	.38	.079	.839	
S7 864.	85.9	188.0	2.163	1.763	2.75	60.	5.69	4.90	.39	.080	.862	
S7 865.	85.9	188.0	2.229	1.763	2.80	59.	5.69	5.23	.39	.074	.919	
S7 870.	85.9	188.0	.231	1.224	3.01	62.	5.69	6.60	.40	.061	1.160	
S7 869.	85.9	188.0	.697	1.224	2.99	45.	5.69	6.47	.29	.045	1.137	
S7 868.	85.9	188.0	1.230	1.224	2.96	40.	5.69	6.27	.26	.042	1.103	
S7 867.	85.9	188.0	1.763	1.224	2.92	42.	5.69	6.01	.27	.046	1.057	
S7 874.	85.9	188.0	.231	.685	3.02	70.	5.69	6.66	.46	.069	1.172	
S7 873.	85.9	188.0	.697	.685	2.99	47.	5.69	6.47	.31	.047	1.137	
S7 872.	85.9	188.0	1.230	.685	3.00	40.	5.69	6.53	.26	.040	1.149	
S7 871.	85.9	188.0	1.763	.685	2.93	42.	5.69	6.40	.27	.043	1.126	
S7 877.	85.9	188.0	.697	.110	3.04	38.	5.69	6.79	.25	.037	1.195	
S7 876.	85.9	188.0	1.230	.110	3.04	41.	5.69	6.79	.27	.039	1.195	
S7 875.	85.9	188.0	1.763	.110	3.05	35.	5.69	6.86	.23	.033	1.206	

TABLE C-1. TABULATION OF EXPERIMENTAL LDA DATA

DATA PLANE NO. 1 AXIAL DISTANCE 20.20 IN. BLOCKAGE CENTERLINE 29.25 IN. P=17.00 PSI RE= 30100.

RUN	TEMP	FLOW GPM	X IN.	Y IN.	E(DOP) VOLTS	DELTA E MVOLTS	UB FPS	U(LOCAL) FPS	UFLUC FPS	TURB	VRATIO
S7 878.	86.0	188.0	.165	1.763	3.01	69.	5.69	6.60	.45	.068	1.160
S7 878.	86.0	188.0	.231	1.763	3.02	119.	5.69	6.66	.78	.117	1.172
S7 879.	86.0	188.0	.298	1.763	2.99	89.	5.69	6.47	.58	.090	1.137
S7 880.	86.0	188.0	.364	1.763	2.97	59.	5.69	6.34	.39	.061	1.114
S7 881.	86.0	188.0	.431	1.763	2.99	54.	5.69	6.47	.35	.055	1.137
S7 882.	86.0	188.0	.498	1.763	3.02	49.	5.69	6.66	.32	.048	1.172
S7 883.	86.0	188.0	.564	1.763	3.04	42.	5.69	6.79	.27	.040	1.195
S7 884.	86.0	188.0	.631	1.763	3.04	44.	5.69	6.79	.29	.042	1.195
S7 885.	86.0	188.0	.697	1.763	3.01	51.	5.69	6.60	.33	.050	1.160
S7 886.	86.0	188.0	.764	1.763	2.99	49.	5.69	6.47	.32	.049	1.137
S7 887.	86.0	188.0	.831	1.763	2.98	47.	5.69	6.40	.31	.048	1.126
S7 888.	86.0	188.0	.897	1.763	3.00	45.	5.69	6.53	.29	.045	1.149
S7 889.	86.0	188.0	.964	1.763	3.02	40.	5.69	6.66	.26	.039	1.172
S7 890.	86.0	188.0	1.030	1.763	3.04	38.	5.69	6.79	.25	.037	1.195
S7 891.	86.0	188.0	1.097	1.763	3.03	41.	5.69	6.73	.27	.040	1.183
S7 892.	86.0	188.0	1.164	1.763	3.01	51.	5.69	6.60	.33	.050	1.160
S7 893.	86.0	188.0	1.230	1.763	2.98	52.	5.69	6.40	.34	.053	1.126
S7 894.	86.0	188.0	1.297	1.763	2.97	51.	5.69	6.34	.33	.053	1.114
S7 895.	86.0	188.0	1.363	1.763	2.96	56.	5.69	6.27	.37	.058	1.103
S7 896.	86.0	188.0	1.430	1.763	2.93	67.	5.69	6.07	.44	.072	1.068
S7 897.	86.0	188.0	1.497	1.763	2.86	72.	5.69	5.62	.47	.084	.988
S7 898.	86.0	188.0	1.563	1.763	2.81	57.	5.69	5.29	.37	.070	.931
S7 899.	86.0	188.0	1.630	1.763	2.79	46.	5.69	5.16	.30	.058	.908
S7 900.	86.0	188.0	1.696	1.763	2.77	52.	5.69	5.03	.34	.068	.885
S7 901.	86.0	188.0	1.763	1.763	2.73	73.	5.69	4.77	.48	.100	.839
S7 902.	86.0	188.0	1.830	1.763	2.67	89.	5.69	4.38	.58	.133	.770
S7 903.	86.0	188.0	1.896	1.763	2.62	79.	5.69	4.05	.52	.127	.712
S7 904.	86.0	188.0	1.963	1.763	2.61	67.	5.69	3.98	.44	.110	.701
S7 905.	86.0	188.0	2.029	1.763	2.61	61.	5.69	3.98	.40	.100	.701
S7 906.	86.0	188.0	2.096	1.763	2.61	65.	5.69	3.98	.42	.107	.701
S7 907.	86.0	188.0	2.163	1.763	2.62	72.	5.69	4.05	.47	.116	.712
S7 908.	86.0	188.0	2.229	1.763	2.65	83.	5.69	4.25	.54	.128	.747
S7 912.	86.0	188.0	.231	1.224	3.01	68.	5.69	6.60	.44	.067	1.160
S7 911.	86.0	188.0	.697	1.224	3.01	53.	5.69	6.60	.35	.052	1.160
S7 910.	86.0	188.0	1.230	1.224	2.97	69.	5.69	6.34	.45	.071	1.114
S7 909.	86.0	188.0	1.763	1.224	2.95	70.	5.69	6.20	.46	.074	1.091
S7 916.	86.0	188.0	.231	.685	3.02	78.	5.69	6.66	.51	.076	1.172
S7 915.	86.0	188.0	.697	.685	3.01	54.	5.69	6.60	.35	.053	1.160
S7 914.	86.0	188.0	1.230	.685	3.03	48.	5.69	6.73	.31	.047	1.183
S7 913.	86.0	188.0	1.763	.685	3.01	51.	5.69	6.60	.33	.050	1.160
S7 917.	86.0	188.0	.231	.110	3.03	64.	5.69	6.73	.42	.062	1.183
S7 916.	86.0	188.0	.697	.110	3.06	44.	5.69	6.92	.29	.042	1.160
S7 915.	86.0	188.0	1.230	.110	3.05	47.	5.69	6.86	.31	.045	1.183
S7 914.	86.0	188.0	1.763	.110	3.06	44.	5.69	6.92	.29	.042	1.160

TABLE C-2. Tabulation of Pressure Loss Data (T=85 $\pm$ 4°F).

Run No.	Configuration	Flow, F G.P.M.	ΔP_{1-2}	ΔP_{2-3}	ΔP_{3-4}	ΔP_{4-5}	ΔP_{1-3}	ΔP_{1-5}	$[\Delta P_{1-5}]_{\text{Norm}}$
1	Bare Rod	95.7	0.091	0.051	0.098	0.033	0.142	0.280	--
2	"	139.1	0.179	0.098	0.202	0.062	0.277	0.547	--
3	"	187.4	0.315	0.163	0.361	0.105	0.479	0.939	--
4	"	285.9	0.703	0.348	0.792	0.217	1.046	2.056	--
5	"	377.6	1.197	0.573	1.344	0.363	1.768	3.478	--
6	90% Blockage	96.0	0.095	0.063	0.106	0.033	0.157	0.296	0.294
7	"	139.9	0.191	0.121	0.212	0.064	0.311	0.585	0.579
8	"	187.9	0.323	0.199	0.358	0.105	0.660	0.975	0.970
9	"	292.6	0.733	0.431	0.800	0.231	1.151	2.182	2.092
10	"	377.1	1.176	0.681	1.278	0.363	1.852	3.492	3.500
11	70% Blockage	95.5	0.088	0.054	0.099	0.030	0.142	0.272	0.273
12	"	139.6	0.177	0.106	0.199	0.060	0.283	0.542	0.538
13	"	187.4	0.309	0.182	0.349	0.103	0.491	0.941	0.941
14	"	281.9	0.664	0.377	0.743	0.212	1.032	1.984	2.036
15	"	376.0	1.129	0.630	1.259	0.352	1.753	3.364	3.390

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