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# TECHNICAL NOTE

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DATA FROM A STATIC-THRUST INVESTIGATION OF A LARGE-SCALE GENERAL RESEARCH VTOL-STOL MODEL IN GROUND EFFECT

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# DATA FROM A STATIC-THRUST INVESTIGATION OF A LARGE-SCALE GENERAL RESEARCH VTOL-STOL MODEL IN GROUND EFFECT

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## SUMMARY

The model was tested at two different elevations with the wing pivot at 1.008 and 2.425 propeller diameters above the ground. The slipstream of the propellers was deflected by tilting the wing and propellers, by deflections of large-chord trailing-edge flaps, and by combinations of flap deflection and wing tilt. Tests were conducted over a range of propeller disk loadings from 7.41 to 29.70 pounds per square foot. Force data for the complete model and pressure distributions for the wing and flaps behind one propeller were recorded and are presented in tabular form without analysis.

## INTRODUCTION

Extensive use of the helicopter has proven the utility of aircraft that are capable of operating without runways. The possible advantages of an airplane which combines both the vertical take-off capabilities of the helicopter and the high cruising speed of conventional airplanes are readily apparent. One possible means of achieving these advantages could be with a tilting wing and propeller or by a combination of flap deflection and wing tilt.

Extensive model investigations (for example, see refs. 1 to 5) have been made of various configurations designed for vertical take-off and landings (VTOL) or for short take-off and landing (STOL). (For a more complete bibliography, see ref. 6.) The model sizes used in the earlier work have prevented obtaining more detailed information on the distribution of aerodynamic loading over the wing and flaps. In addition, the extent to which the model scale might affect the thrust recovery and slipstream turning angles measured was not known. In an effort to provide information of this type, it was decided to test a large-scale general-research VTOL-STOL model.

The present investigation covers the static-thrust characteristics of the model as obtained from tests conducted outdoors at two different elevations (wing pivot at 1.008 and 2.425 propeller diameters above the ground). The propeller slipstream was deflected by tilting the wing and propeller, by deflecting large-chord trailing-edge flaps, and by using combinations of flap deflection and wing tilt. Performance data were obtained over a range of propeller disk loadings. Pressure distributions were measured over a portion of the wing in order to define the distribution of load on the wing and flaps behind one of the propellers.

## SYMBOLS

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The positive sense of forces, moments, and angles are indicated in figure 1.

| | |
|---|---|
| b | propeller blade chord, ft |
| D | propeller diameter, ft |
| h | propeller blade thickness, ft |
| R | propeller radius, ft |
| r | radius of any propeller blade section, ft |
| n | rotational speed, rpm |
| c | chord, ft |
| F | resultant force, lb |
| $F_X$ | net longitudinal force (thrust minus drag), lb |
| L | lift, lb |
| $M_Y$ | pitching moment, ft-lb |
| T | propeller thrust, total (longitudinal force with wing and flaps undeflected), lb |
| z | distance from ground to wing pivot, ft |
| $\Delta p$ | differential pressure, $p - p_a$ |
| p | local static pressure |
| $p_a$ | atmospheric pressure |

$q_s$ slipstream dynamic pressure, $\frac{T}{6\pi R^2}$

$\alpha$ angle of attack, inclination of wing chord above horizontal plane, deg

$\delta_f$ flap deflection, deg

$\theta$ turning angle, inclination of resultant force vector from wing-chord plane

Subscripts:

55 55-percent-chord flap

30 30-percent-chord flap

## APPARATUS AND TESTS

A sketch of the model used in these tests is shown in figure 2, and photographs of the model are shown in figures 3, 4, and 5. The airfoil coordinates are given in table I. The geometric characteristics of the model are as follows:

Propeller:
- Diameter, ft . . . . . . . . . . . . . . . . . . . . . . . . . 5.0
- Solidity (thrust basis) . . . . . . . . . . . . . . . . . . 0.1935
- Airfoil section . . . . . . . . . . . . . . . . . . . . . . NACA 64-0XX

Wing:
- Span, ft . . . . . . . . . . . . . . . . . . . . . . . . . 35.0
- Chord, ft . . . . . . . . . . . . . . . . . . . . . . . . 4.375
- Area, sq ft . . . . . . . . . . . . . . . . . . . . . . . 153.125
- Airfoil section . . . . . . . . . . . . . . . . . . . . . . NACA $63_2$A215
- Pivot, percent c . . . . . . . . . . . . . . . . . . . . . 35

Flaps:
- Span, each wing, ft . . . . . . . . . . . . . . . . . . . . 15.458
- Chord, projection of both, percent c . . . . . . . . . . . . 55
- Chord, projection of rear, percent c . . . . . . . . . . . . 30

Vertical stabilizer:

| | |
|---|---|
| Span, ft | 6.0 |
| Chord, ft | 3.5 |
| Area, sq ft | 21.0 |
| Airfoil section | NACA 0012 |

Horizontal stabilizer:

| | |
|---|---|
| Span, ft | 16.0 |
| Chord, ft | 3.0 |
| Area, sq ft | 48.0 |
| Airfoil section | NACA 0012 |
| Pivot, percent c | 22.86 |



The model is powered by a single 1,000-horsepower, water-cooled, electric motor located in the fuselage. Power is transmitted to the propellers by means of extension shafts and gear boxes.

The four-bladed propellers have solid aluminum blades. Blade pitch is manually adjustable. Blade form curves are presented in figure 6. The direction of propeller rotation is indicated in figure 2. Rotational speed was measured with signals which were generated by steel vanes on the motor shaft rotating past a magnetic pickup. The output of this pickup was then read on an impulse counter.

The two slotted flaps, 55- and 30-percent wing chord, were mounted on external brackets, as shown in figures 3 and 4. The contours of the flaps are shown in figure 7. The flaps were adjusted manually and were locked in place by pins inserted in the brackets. Flap deflection was measured prior to each run.

The wing was pivoted at the 35-percent-chord station and could be rotated during the test to angles of attack between $0^{\circ}$ and $90^{\circ}$. The all-movable horizontal stabilizer was mass-balanced about, and pivoted at, the 22.9-percent-chord station. It was either locked at zero incidence or allowed to float freely, as desired, for each test. Electrical position indicators measured the deflections of the wing and stabilizer.

Four total-pressure tubes (see fig. 8) were installed on the stabilizer chord line and were equally spaced across the right semispan. In order to obtain the average total pressure at the stabilizer, these tubes were manifolded to a single manometer tube. One static-pressure probe was installed at the center of the stabilizer semispan.

The wing and flap behind the center propeller of the right-hand wing panel were fitted with static-pressure orifices. The chordwise and spanwise location of these orifices are given in figure 9. The pressures were indicated on a fluid manometer and photographically recorded.

The surfaces of the wing and flaps had several spanwise joints between wood and metal. It was extremely difficult to maintain a smooth surface over these joints under outdoor conditions where temperature and humidity vary greatly. It is felt, however, that the condition of the surfaces was at least as good as those found on production aircraft. The flaps which were fitted with static-pressure orifices were wrapped in fiber glass in order to maintain an accurate contour.



The model was mounted on a balance composed of four load cells (figs. 10 and 11). The static weight of the model was supported by automotive-type coil springs in order that more sensitive load cells could be used to measure the aerodynamic loads. The load cells were calibrated in place and thus tares due to the supporting springs and the weight of the model were eliminated. Three vertically oriented load cells, two at the front model supports and one at the rear support, measured lift. A single horizontal load cell at the rear support measured longitudinal force. Pitching moment was calculated from the differences in the restraining forces at the four load cells.

In the low ground position ($z/D = 1.008$), the balance was attached directly to steel plates mounted on a concrete driveway. In the high position ($z/D = 2.425$), the balance and the steel plates were joined by a rigid pipe and channel structure 85.125 inches high, as shown in figures 4 and 5.

The tests were conducted outdoors in an unobstructed area at the Langley Research Center. The nearest structure was a power transformer, which was approximately 25 feet from the left wing tip. The next nearest structure was the Langley helicopter tower, which was approximately 130 feet behind the model. During the early phases of the program, a serious problem of blade pitting developed from recirculation of dirt and sand from the ground areas under the wings and it was necessary to pave a large area beneath the wings of the model.

Most of the data presented were obtained in random-direction winds of from 3 to 6 miles per hour. Approximately 10 percent of the data were obtained at wind speeds below 3 miles per hour.

The electrical power input to the motor was measured throughout the test. Inasmuch as those measurements included large undetermined tares in the power transmission system, the data are not presented.

There were no provisions for direct measurement of the thrust of the propellers. Therefore, all data were reduced by referring the measured forces to a value of propeller thrust defined by the longitudinal force that was measured when both wing and flaps were undeflected and the model was in the high position ($z/D = 2.425$). Therefore the values of thrust used in data reduction do not reflect the possible effects of flap deflection, angle of attack, ground effect, and the random winds previously discussed. For reference purposes, the values of thrust used in the data reduction, in terms of propeller disk loadings, are given as a function of propeller rotational speed in the following table:

| n | Propeller disk loading, lb/sq ft |
|---|---|
| 1,510 | 7.41 |
| 2,085 | 14.56 |
| 2,680 | 24.81 |
| 2,915 | 29.70 |

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A constant propeller blade pitch angle of $16.3^{\circ}$ (at the three-quarter radius) was used throughout the test. The rotational speed of the propellers was held to within ±20 revolutions per minute of the desired speed.

The accuracy of the data is believed to be as follows:

| | |
|---|---|
| Lift, lb . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | ±50 |
| Longitudinal force, lb . . . . . . . . . . . . . . . . . . . . . . . | ±50 |
| All angles, deg . . . . . . . . . . . . . . . . . . . . . . . . . | ±0.2 |

The pitching moment is known to contain large errors due to the large moment arms between restraining load cells; consequently, the pitching-moment data given herein should be considered only as a qualitative indication of magnitude.

Inasmuch as the dynamic pressure measured at the floating stabilizer was of the order of 5 percent of the propeller slipstream dynamic pressure, except for the case where the wing and flaps were undeflected, these data are not presented herein.

## PRESENTATION OF DATA

The data are presented in tabular form without analysis. The force data obtained at $z/D = 2.425$ are given in table II. The force data obtained at $z/D = 1.008$ are given in table III. The pressure coefficients measured on the wing and flaps at $z/D = 2.425$ are given in tables IV to XXII. The pressure coefficients measured on the wing and flaps at $z/D = 1.008$ are given in tables XXIII to XLIII.

A motion-picture film supplement to this paper has been prepared and is available on loan. A request card form and a description of the film will be found at the back of this paper, on the page immediately preceding the abstract and index pages.

Langley Research Center,
National Aeronautics and Space Administration,
Langley Field, Va., March 17, 1960.

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## REFERENCES

1. Kuhn, Richard E., and Draper, John W.: Investigation of the Aerodynamic Characteristics of a Model Wing-Propeller Combination and of the Wing and Propeller Separately at Angles of Attack up to 90°. NACA Rep. 1263, 1956. (Supersedes NACA TN 3304 by Draper and Kuhn.)

2. Kuhn, Richard E., and Draper, John W.: An Investigation of a Wing-Propeller Configuration Employing Large-Chord Plain Flaps and Large-Diameter Propellers for Low-Speed Flight and Vertical Take-Off. NACA TN 3307, 1954.

3. Draper, John W., and Kuhn, Richard E.: Some Effects of Propeller Operation and Location on Ability of a Wing With Plain Flaps To Deflect Propeller Slipstreams Downward for Vertical Take-off. NACA TN 3360, 1955.

4. Kuhn, Richard E., and Draper, John W.: Investigation of Effectiveness of Large-Chord Slotted Flaps in Deflecting Propeller Slipstreams Downward for Vertical Take-Off and Low-Speed Flight. NACA TN 3364, 1955.

5. Kuhn, Richard E.: Investigation of the Effects of Ground Proximity and Propeller Position on the Effectiveness of a Wing With Large-Chord Slotted Flaps in Redirecting Propeller Slipstreams Downward for Vertical Take-Off. NACA TN 3629, 1956.

6. Kuhn, Richard E.: Semiempirical Procedure for Estimating Lift and Drag Characteristics of Propeller-Wing-Flap Configurations for Vertical- and Short-Take-Off-and-Landing Airplanes. NASA MEMO 1-16-59L, 1959.

TABLE I.- NACA $63_2$A215 AIRFOIL COORDINATES

[Stations and ordinates given in percent of airfoil chord]

| Upper surface | | Lower surface | |
|---|---|---|---|
| Station | Ordinate | Station | Ordinate |
| 0 | 0 | 0 | 0 |
| .386 | 1.254 | .614 | -1.142 |
| .623 | 1.521 | .877 | -1.363 |
| 1.105 | 1.959 | 1.395 | -1.717 |
| 2.328 | 2.784 | 2.672 | -2.362 |
| 4.804 | 3.974 | 5.196 | -3.252 |
| 7.295 | 4.863 | 7.705 | -3.891 |
| 9.794 | 5.589 | 10.206 | -4.397 |
| 14.804 | 6.720 | 15.196 | -5.158 |
| 19.822 | 7.547 | 20.178 | -5.687 |
| 24.846 | 8.140 | 25.154 | -6.038 |
| 29.873 | 8.531 | 30.127 | -6.235 |
| 34.903 | 8.719 | 35.097 | -6.271 |
| 39.933 | 8.714 | 40.067 | -6.156 |
| 44.963 | 8.529 | 45.037 | -5.901 |
| 49.992 | 8.188 | 50.008 | -5.528 |
| 55.018 | 7.713 | 54.982 | -5.061 |
| 60.041 | 7.122 | 59.959 | -4.518 |
| 65.061 | 6.428 | 64.939 | -3.918 |
| 70.077 | 5.650 | 69.923 | -3.284 |
| 75.090 | 4.810 | 74.910 | -2.650 |
| 80.108 | 3.924 | 79.892 | -2.054 |
| 85.105 | 2.971 | 84.895 | -1.529 |
| 90.074 | 2.000 | 89.925 | -1.020 |
| 95.038 | 1.016 | 94.962 | -.526 |
| 100.00 | 0 | 100.00 | 0 |

Leading-edge radius: 1.630
Slope of radius through leading edge: 0.095

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TABLE II.- FORCE MEASUREMENTS AT $z/D = 2.425$

| $\delta_{f,55}$ | $\delta_{f,30}$ | n | $\alpha$ | $\frac{L}{T}$ | $\frac{F_X}{T}$ | $\frac{F}{T}$ | $\theta + \alpha$ | Stabilizer locked $\frac{M_Y}{TD}$ |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1,510 | 0 | 0.108 | 1.004 | 1.010 | 6.1 | 0.026 |
| 0 | 0 | 2,085 | 0 | .048 | .997 | .997 | 2.8 | -.073 |
| 0 | 0 | 2,915 | 0 | .003 | 1.003 | .986 | .2 | -.068 |
| 0 | 0 | 1,510 | 15.0 | .297 | .956 | 1.000 | 17.3 | .011 |
| 0 | 0 | 2,085 | 15.0 | .295 | .966 | 1.009 | 17.0 | .027 |
| 0 | 0 | 2,915 | 15.0 | .238 | .975 | 1.005 | 13.7 | .012 |
| 0 | 0 | 1,510 | 30.0 | .616 | .850 | 1.049 | 36.0 | -.186 |
| 0 | 0 | 2,085 | 30.0 | .600 | .875 | 1.062 | 34.4 | .004 |
| 0 | 0 | 2,915 | 30.0 | .565 | .862 | 1.031 | 33.2 | -.053 |
| 0 | 0 | 1,510 | 45.0 | .879 | .663 | 1.101 | 53.0 | .039 |
| 0 | 0 | 2,085 | 45.0 | .756 | .664 | 1.006 | 48.7 | -.038 |
| 0 | 0 | 1,510 | 60.0 | .952 | .437 | 1.048 | 65.3 | -.025 |
| 0 | 0 | 2,085 | 60.0 | .900 | .420 | .993 | 65.0 | -.092 |
| 0 | 0 | 2,915 | 60.0 | .897 | .487 | 1.021 | 61.5 | -.040 |
| 0 | 0 | 1,510 | 75.0 | 1.103 | .185 | 1.118 | 80.5 | -.261 |
| 0 | 0 | 2,085 | 75.0 | 1.030 | .203 | 1.049 | 78.9 | -.094 |
| 0 | 0 | 2,915 | 75.0 | .969 | .221 | .993 | 77.2 | .025 |
| 0 | 0 | 1,510 | 90.0 | 1.042 | -.147 | 1.052 | 98.0 | -.014 |
| 0 | 0 | 2,085 | 90.0 | .981 | -.089 | .985 | 95.2 | .001 |
| 0 | 0 | 2,915 | 90.0 | .978 | -.056 | .980 | 93.3 | .040 |
| 0 | 28.5 | 2,915 | 0 | .254 | .958 | .991 | 14.9 | -.070 |
| 0 | 28.5 | 1,510 | 75 | .991 | 0 | .991 | 90.0 | .023 |
| 0 | 28.5 | 2,085 | 75 | .989 | 0 | .989 | 90.0 | -.059 |
| 0 | 28.5 | 2,915 | 75 | .920 | 0 | .920 | 90.0 | -.090 |
| 0 | 38.6 | 2,915 | 0 | .355 | .917 | .983 | 21.2 | -.134 |
| 0 | 38.6 | 1,510 | 68.0 | 1.036 | -.024 | 1.036 | 91.3 | -.092 |
| 0 | 38.6 | 2,085 | 68.0 | .998 | 0 | .998 | 90.0 | -.058 |
| 0 | 38.6 | 2,915 | 68.0 | .948 | .015 | .948 | 89.1 | -.149 |
| 0 | 49.5 | 2,915 | 0 | .399 | .872 | .959 | 24.6 | -.146 |
| 0 | 49.5 | 1,510 | 64.5 | .907 | 0 | .907 | 90.0 | -.160 |
| 0 | 49.5 | 2,085 | 64.5 | .951 | 0 | .951 | 90.0 | -.146 |
| 0 | 49.5 | 2,915 | 64.5 | .930 | .015 | .931 | 89.1 | -.177 |
| 19.8 | 28.5 | 2,915 | 0 | .455 | .867 | .979 | 27.7 | -.218 |
| 19.8 | 28.5 | 1,510 | 62.0 | .957 | -.070 | .960 | 94.2 | -.096 |
| 19.8 | 28.5 | 2,085 | 62.0 | .972 | -.060 | .974 | 93.5 | -.125 |
| 19.8 | 28.5 | 2,915 | 62.0 | .940 | -.029 | .941 | 91.8 | -.136 |

TABLE III.- FORCE MEASUREMENTS AT $z/D = 1.003$ - Continued

| $\delta_{f,55}$ | $\delta_{f,30}$ | n | $\alpha$ | $\frac{L}{T}$ | $\frac{F_X}{T}$ | $\frac{F}{T}$ | $\theta + \alpha$ | Stabilizer locked $\frac{M_Y}{TD}$ | Stabilizer free $\frac{M_Y}{TD}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 38.6 | 1,510 | 0 | 0.230 | 0.941 | 0.969 | 13.8 | -0.148 | |
| 0 | 38.6 | 2,085 | 0 | .223 | .951 | .977 | 13.2 | -.163 | |
| 0 | 38.6 | 2,915 | 0 | .247 | .927 | .960 | 14.9 | -.155 | |
| 0 | 38.6 | 1,510 | 0 | .293 | .938 | .983 | 17.3 | | -0.239 |
| 0 | 38.6 | 2,085 | 0 | .263 | .936 | .973 | 15.7 | | -.246 |
| 0 | 38.6 | 2,915 | 0 | .253 | .926 | .960 | 15.3 | | -.241 |
| 0 | 38.6 | 1,510 | 74.0 | 1.113 | .024 | 1.113 | 88.8 | -.035 | |
| 0 | 38.6 | 2,085 | 74.0 | 1.145 | 0 | 1.145 | 90.0 | -.076 | |
| 0 | 38.6 | 2,915 | 74.0 | 1.138 | 0 | 1.138 | 90.0 | -.083 | |
| 0 | 38.6 | 1,510 | 74.0 | 1.179 | 0 | 1.179 | 90.0 | | -.099 |
| 0 | 38.6 | 2,085 | 74.0 | 1.176 | 0 | 1.176 | 90.0 | | -.058 |
| 0 | 38.6 | 2,915 | 74.0 | 1.130 | 0 | 1.130 | 90.0 | | -.109 |
| 0 | 49.5 | 1,510 | 0 | .334 | .931 | .989 | 19.7 | -.158 | |
| 0 | 49.5 | 2,085 | 0 | .300 | .935 | .983 | 17.8 | -.215 | |
| 0 | 49.5 | 2,915 | 0 | .310 | .913 | .963 | 18.8 | -.187 | |
| 0 | 49.5 | 1,510 | 0 | .378 | .935 | 1.008 | 22.0 | | -.242 |
| 0 | 49.5 | 2,085 | 0 | .359 | .856 | .928 | 22.7 | | -.296 |
| 0 | 49.5 | 2,915 | 0 | .309 | .891 | .943 | 19.1 | | -.262 |
| 0 | 49.5 | 1,510 | 74.0 | 1.106 | 0 | 1.106 | 90.0 | -.208 | |
| 0 | 49.5 | 2,085 | 74.0 | 1.050 | 0 | 1.050 | 90.0 | -.105 | |
| 0 | 49.5 | 2,915 | 74.0 | 1.094 | .006 | 1.094 | 89.7 | -.097 | |
| 0 | 49.5 | 1,510 | 74.0 | 1.088 | 0 | 1.088 | 90.0 | | -.102 |
| 0 | 49.5 | 2,085 | 74.0 | 1.109 | 0 | 1.109 | 90.0 | | -.094 |
| 0 | 49.5 | 2,915 | 74.0 | 1.104 | 0 | 1.104 | 90.0 | | -.120 |
| 19.8 | 28.5 | 1,510 | 0 | .500 | .849 | .985 | 30.5 | -.174 | |
| 19.8 | 28.5 | 2,085 | 0 | .455 | .836 | .952 | 28.6 | -.185 | |
| 19.8 | 28.5 | 2,915 | 0 | .426 | .847 | .949 | 26.7 | -.195 | |
| 19.8 | 28.5 | 1,510 | 0 | .469 | .845 | .967 | 29.1 | | -.294 |
| 19.8 | 28.5 | 2,085 | 0 | .468 | .855 | .975 | 28.7 | | -.255 |
| 19.8 | 28.5 | 2,915 | 0 | .448 | .847 | .958 | 27.9 | | -.252 |
| 19.8 | 28.5 | 1,510 | 69.0 | 1.082 | 0 | 1.082 | 90.0 | -.105 | |
| 19.8 | 28.5 | 2,085 | 69.0 | 1.097 | 0 | 1.097 | 90.0 | -.122 | |
| 19.8 | 28.5 | 2,915 | 69.0 | 1.114 | 0 | 1.114 | 90.0 | -.129 | |
| 19.8 | 28.5 | 1,510 | 69.0 | 1.086 | 0 | 1.086 | 90.0 | | -.120 |
| 19.8 | 28.5 | 2,085 | 69.0 | 1.097 | 0 | 1.097 | 90.0 | | -.141 |
| 19.8 | 28.5 | 2,915 | 69.0 | 1.089 | 0 | 1.089 | 90.0 | | -.145 |
| 19.8 | 38.6 | 1,510 | 0 | .531 | .833 | .988 | 32.5 | -.249 | |
| 19.8 | 38.6 | 2,085 | 0 | .518 | .827 | .975 | 32.1 | -.222 | |
| 19.8 | 38.6 | 2,915 | 0 | .482 | .808 | .941 | 30.8 | -.245 | |
| 19.8 | 38.6 | 1,510 | 0 | .544 | .827 | .989 | 33.3 | | -.258 |
| 19.8 | 38.6 | 2,085 | 0 | .500 | .828 | .967 | 31.1 | | -.259 |
| 19.8 | 38.6 | 2,915 | 0 | .496 | .817 | .956 | 31.3 | | -.257 |
| 19.8 | 38.6 | 1,510 | 64.5 | 1.082 | 0 | 1.082 | 90.0 | -.131 | |
| 19.8 | 38.6 | 2,085 | 64.5 | 1.093 | 0 | 1.093 | 90.0 | -.115 | |
| 19.8 | 38.6 | 2,915 | 64.5 | 1.102 | 0 | 1.102 | 90.0 | -.148 | |
| 19.8 | 38.6 | 1,510 | 64.5 | 1.119 | 0 | 1.119 | 90.0 | | -.146 |
| 19.8 | 38.6 | 2,085 | 64.5 | 1.094 | 0 | 1.094 | 90.0 | | -.186 |
| 19.8 | 38.6 | 2,915 | 64.5 | 1.092 | 0 | 1.092 | 90.0 | | -.167 |
| 19.8 | 49.5 | 1,510 | 0 | .531 | .826 | .981 | 32.7 | -.251 | |
| 19.8 | 49.5 | 2,085 | 0 | .510 | .809 | .957 | 32.2 | -.219 | |
| 19.8 | 49.5 | 2,915 | 0 | .494 | .783 | .925 | 32.3 | -.244 | |
| 19.8 | 49.5 | 1,510 | 0 | .580 | .818 | 1.004 | 35.3 | | -.278 |
| 19.8 | 49.5 | 2,085 | 0 | .539 | .807 | .970 | 33.7 | | -.304 |
| 19.8 | 49.5 | 2,915 | 0 | .518 | .786 | .941 | 33.4 | | -.299 |

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TABLE III.- FORCE MEASUREMENTS AT $z/D = 1.008$ - Continued

| $\delta_{f,55}$ | $\delta_{f,30}$ | n | $\alpha$ | $\frac{L}{T}$ | $\frac{F_X}{T}$ | $\frac{F}{T}$ | $\theta + \alpha$ | Stabilizer locked $\frac{M_Y}{TD}$ | Stabilizer free $\frac{M_Y}{TD}$ |
|---|---|---|---|---|---|---|---|---|---|
| 19.8 | 49.5 | 1,510 | 62.5 | 1.073 | 0 | 1.073 | 90.0 | -0.138 | |
| 19.8 | 49.5 | 2,085 | 62.5 | 1.115 | 0 | 1.115 | 90.0 | -.123 | |
| 19.8 | 49.5 | 2,915 | 62.5 | 1.093 | 0 | 1.093 | 90.0 | -.161 | |
| 19.8 | 49.5 | 1,510 | 62.5 | 1.059 | 0 | 1.059 | 90.0 | | -0.173 |
| 19.8 | 49.5 | 2,085 | 62.5 | 1.051 | 0 | 1.051 | 90.0 | | -.198 |
| 19.8 | 49.5 | 2,915 | 62.5 | 1.085 | 0 | 1.085 | 90.0 | | -.187 |
| 39.3 | 28.5 | 1,510 | 0 | .578 | .725 | .927 | 38.6 | -.238 | |
| 39.3 | 28.5 | 2,085 | 0 | .579 | .712 | .918 | 39.1 | -.238 | |
| 39.3 | 28.5 | 2,915 | 0 | .545 | .697 | .885 | 38.0 | -.253 | |
| 39.3 | 28.5 | 1,510 | 0 | .593 | .698 | .916 | 40.3 | | -.288 |
| 39.3 | 28.5 | 2,085 | 0 | .573 | .711 | .913 | 38.9 | | -.291 |
| 39.3 | 28.5 | 2,915 | 0 | .591 | .715 | .928 | 39.6 | | -.281 |
| 39.3 | 28.5 | 1,510 | 64.4 | 1.023 | 0 | 1.023 | 90.0 | -.100 | |
| 39.3 | 28.5 | 2,085 | 64.4 | 1.054 | -.012 | 1.054 | 90.6 | -.107 | |
| 39.3 | 28.5 | 2,915 | 64.4 | 1.025 | 0 | 1.025 | 90.0 | -.108 | |
| 39.3 | 28.5 | 1,510 | 64.4 | 1.038 | 0 | 1.038 | 90.0 | | -.150 |
| 39.3 | 28.5 | 2,085 | 64.4 | 1.048 | -.012 | 1.048 | 90.6 | | -.145 |
| 39.3 | 28.5 | 2,915 | 64.4 | 1.035 | 0 | 1.035 | 90.0 | | -.130 |
| 39.3 | 38.6 | 1,510 | 0 | .605 | .684 | .913 | 41.5 | -.257 | |
| 39.3 | 38.6 | 2,085 | 0 | .579 | .671 | .886 | 40.8 | -.237 | |
| 39.3 | 38.6 | 2,915 | 0 | .555 | .671 | .871 | 39.6 | -.176 | |
| 39.3 | 38.6 | 1,510 | 0 | .650 | .633 | .908 | 45.8 | | -.326 |
| 39.3 | 38.6 | 2,085 | 0 | .617 | .651 | .892 | 43.8 | | -.309 |
| 39.3 | 38.6 | 2,915 | 0 | .590 | .656 | .883 | 41.9 | | -.336 |
| 39.3 | 38.6 | 1,510 | 61.2 | 1.003 | 0 | 1.003 | 90.0 | -.083 | |
| 39.3 | 38.6 | 2,085 | 61.2 | .997 | 0 | .997 | 90.0 | -.139 | |
| 39.3 | 38.6 | 2,915 | 61.2 | 1.000 | 0 | 1.000 | 90.0 | -.131 | |
| 39.3 | 38.6 | 1,510 | 61.2 | 1.034 | 0 | 1.034 | 90.0 | | -.129 |
| 39.3 | 38.6 | 2,085 | 61.2 | 1.018 | 0 | 1.018 | 90.0 | | -.135 |
| 39.3 | 38.6 | 2,915 | 61.2 | .998 | 0 | .998 | 90.0 | | -.162 |
| 39.3 | 49.5 | 1,510 | 0 | .620 | .646 | .895 | 43.8 | -.256 | |
| 39.3 | 49.5 | 2,085 | 0 | .592 | .641 | .872 | 42.7 | -.260 | |
| 39.3 | 49.5 | 2,915 | 0 | .563 | .632 | .847 | 41.7 | -.293 | |
| 39.3 | 49.5 | 1,510 | 0 | .635 | .649 | .908 | 44.4 | | -.288 |
| 39.3 | 49.5 | 2,085 | 0 | .601 | .635 | .874 | 43.4 | | -.309 |
| 39.3 | 49.5 | 2,915 | 0 | .599 | .682 | .908 | 41.3 | | -.277 |
| 39.3 | 49.5 | 1,510 | 59.0 | 1.018 | 0 | 1.018 | 90.0 | -.089 | |
| 39.3 | 49.5 | 2,085 | 59.0 | .990 | 0 | .990 | 90.0 | -.143 | |
| 39.3 | 49.5 | 2,915 | 59.0 | .987 | 0 | .987 | 90.0 | -.161 | |
| 39.3 | 49.5 | 1,510 | 59.0 | 1.022 | 0 | 1.022 | 90.0 | | -.148 |
| 39.3 | 49.5 | 2,085 | 59.0 | .989 | 0 | .989 | 90.0 | | -.172 |
| 39.3 | 49.5 | 2,915 | 59.0 | .960 | 0 | .960 | 90.0 | | -.186 |
| 59.4 | 28.5 | 1,510 | 0 | .532 | .609 | .809 | 41.1 | -.226 | |
| 59.4 | 28.5 | 2,085 | 0 | .515 | .611 | .799 | 40.1 | -.246 | |
| 59.4 | 28.5 | 2,915 | 0 | .537 | .601 | .806 | 41.8 | -.241 | |
| 59.4 | 28.5 | 1,510 | 0 | .525 | .608 | .803 | 40.8 | | -.267 |
| 59.4 | 28.5 | 2,085 | 0 | .574 | .600 | .830 | 43.7 | | -.237 |
| 59.4 | 28.5 | 2,915 | 0 | .539 | .590 | .799 | 42.4 | | -.313 |
| 59.4 | 28.5 | 1,510 | 59.0 | .968 | 0 | .968 | 90.0 | -.089 | |
| 59.4 | 28.5 | 2,085 | 59.0 | .973 | 0 | .973 | 90.0 | -.099 | |
| 59.4 | 28.5 | 2,915 | 59.0 | .940 | 0 | .940 | 90.0 | -.126 | |
| 59.4 | 28.5 | 1,510 | 59.0 | .969 | -.023 | .969 | 91.4 | | -.162 |
| 59.4 | 28.5 | 2,085 | 59.0 | .968 | -.024 | .968 | 91.4 | | -.169 |
| 59.4 | 28.5 | 2,915 | 59.0 | .964 | 0 | .964 | 90.0 | | -.141 |

TABLE III.- FORCE MEASUREMENTS AT $z/D = 1.008$ - Concluded

| $\delta_{f,55}$ | $\delta_{f,30}$ | n | $\alpha$ | $\frac{L}{T}$ | $\frac{F_X}{T}$ | $\frac{F}{T}$ | $\theta + \alpha$ | Stabilizer locked $\frac{M_Y}{TD}$ | Stabilizer free $\frac{M_Y}{TD}$ |
|---|---|---|---|---|---|---|---|---|---|
| 59.4 | 38.6 | 1,510 | 0 | 0.562 | 0.569 | 0.800 | 44.7 | -0.248 | |
| 59.4 | 38.6 | 2,085 | 0 | .563 | .574 | .804 | 44.5 | -.248 | |
| 59.4 | 38.6 | 2,915 | 0 | .562 | .595 | .819 | 43.4 | -.269 | |
| 59.4 | 38.6 | 1,510 | 0 | .587 | .608 | .844 | 44.0 | | -0.229 |
| 59.4 | 38.6 | 2,085 | 0 | .572 | .591 | .823 | 44.0 | | -.263 |
| 59.4 | 38.6 | 2,915 | 0 | .588 | .588 | .830 | 45.1 | | -.245 |
| 59.4 | 38.6 | 1,510 | 58.2 | .941 | 0 | .941 | 90.0 | -.327 | |
| 59.4 | 38.6 | 2,085 | 58.2 | .949 | 0 | .949 | 90.0 | -.107 | |
| 59.4 | 38.6 | 2,915 | 58.2 | .921 | 0 | .921 | 90.0 | -.134 | |
| 59.4 | 38.6 | 1,510 | 58.2 | .955 | -.013 | .956 | 91.4 | | -.085 |
| 59.4 | 38.6 | 2,085 | 58.2 | .953 | -.012 | .953 | 90.7 | | -.077 |
| 59.4 | 38.6 | 2,915 | 58.2 | .947 | -.012 | .947 | 90.7 | | -.143 |
| 59.4 | 49.5 | 1,510 | 0 | .599 | .574 | .830 | 46.2 | -.206 | |
| 59.4 | 49.5 | 2,085 | 0 | .557 | .556 | .787 | 45.1 | -.278 | |
| 59.4 | 49.5 | 2,915 | 0 | .556 | .558 | .787 | 44.9 | -.254 | |
| 59.4 | 49.5 | 1,510 | 0 | .579 | .568 | .811 | 45.6 | | -.300 |
| 59.4 | 49.5 | 2,085 | 0 | .569 | .583 | .815 | 44.3 | | -.284 |
| 59.4 | 49.5 | 2,915 | 0 | .563 | .564 | .797 | 45.0 | | -.290 |
| 59.4 | 49.5 | 1,510 | 57.8 | .886 | .012 | .886 | 89.3 | -.117 | |
| 59.4 | 49.5 | 2,085 | 57.8 | .921 | .006 | .921 | 89.6 | -.107 | |
| 59.4 | 49.5 | 2,915 | 57.8 | .904 | .003 | .904 | 89.8 | -.127 | |
| 59.4 | 49.5 | 1,510 | 57.8 | .919 | 0 | .919 | 90.0 | | -.093 |
| 59.4 | 49.5 | 2,085 | 57.8 | .890 | -.023 | .890 | 91.5 | | -.149 |
| 59.4 | 49.5 | 2,915 | 57.8 | .897 | 0 | .897 | 90.0 | | -.157 |
| 69.3 | 28.5 | 1,510 | 0 | .520 | .580 | .781 | 41.7 | -.224 | |
| 69.3 | 28.5 | 2,085 | 0 | .530 | .588 | .792 | 42.0 | -.230 | |
| 69.3 | 28.5 | 2,915 | 0 | .481 | .593 | .763 | 39.1 | -.232 | |
| 69.3 | 28.5 | 1,510 | 0 | .550 | .590 | .807 | 43.0 | | -.273 |
| 69.3 | 28.5 | 2,085 | 0 | .564 | .603 | .827 | 43.0 | | -.280 |
| 69.3 | 28.5 | 2,915 | 0 | .537 | .589 | .797 | 42.4 | | -.282 |
| 69.3 | 28.5 | 1,510 | 58.8 | .901 | 0 | .901 | 90.0 | -.113 | |
| 69.3 | 28.5 | 2,085 | 58.8 | .904 | 0 | .904 | 90.0 | -.118 | |
| 69.3 | 28.5 | 2,915 | 58.8 | .911 | 0 | .911 | 90.0 | -.100 | |
| 69.3 | 28.5 | 1,510 | 58.8 | .930 | 0 | .930 | 90.0 | | -.132 |
| 69.3 | 28.5 | 2,085 | 58.8 | .929 | 0 | .929 | 90.0 | | -.102 |
| 69.3 | 28.5 | 2,915 | 58.8 | .930 | 0 | .930 | 90.0 | | -.119 |
| 69.3 | 38.6 | 1,510 | 0 | .496 | .548 | .739 | 42.2 | -.203 | |
| 69.3 | 38.6 | 2,085 | 0 | .520 | .573 | .773 | 42.2 | -.222 | |
| 69.3 | 38.6 | 2,915 | 0 | .500 | .558 | .750 | 41.9 | -.215 | |
| 69.3 | 38.6 | 1,510 | 0 | .493 | .556 | .743 | 41.6 | | -.316 |
| 69.3 | 38.6 | 2,085 | 0 | .517 | .571 | .771 | 42.1 | | -.281 |
| 69.3 | 38.6 | 2,915 | 0 | .520 | .575 | .776 | 42.1 | | -.256 |
| 69.3 | 38.6 | 1,510 | 58.2 | .889 | -.023 | .889 | 91.5 | -.086 | |
| 69.3 | 38.6 | 2,085 | 58.2 | .902 | 0 | .902 | 90.0 | -.059 | |
| 69.3 | 38.6 | 2,915 | 58.2 | .887 | 0 | .887 | 90.0 | -.088 | |
| 69.3 | 38.6 | 1,510 | 58.2 | .872 | -.023 | .872 | 91.5 | | -.165 |
| 69.3 | 38.6 | 2,085 | 58.2 | .908 | -.012 | .908 | 90.8 | | -.119 |
| 69.3 | 38.6 | 2,915 | 58.2 | .901 | 0 | .901 | 90.0 | | -.119 |

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TABLE IV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = | | | | | n = α = | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.244 | | | .777 | .571 | | | | | | | | | | | 1 |
| 2 | .239 | .369 | | -.107 | -.439 | | | | | | | | | | | 2 |
| 3 | .300 | -.066 | | -.235 | -.278 | | | | | | | | | | | 3 |
| 4 | .174 | -.154 | | -.167 | -.154 | | | | | | | | | | | 4 |
| 5 | .056 | -.114 | | -.093 | -.081 | | | | | | | | | | | 5 |
| 6 | -.348 | -1.039 | | .126 | .388 | | | | | | | | | | | 6 |
| 7 | -.246 | -.246 | | -.042 | .077 | | | | | | | | | | | 7 |
| 8 | -.218 | -.302 | | -.225 | -.059 | | | | | | | | | | | 8 |
| 9 | -.035 | -.043 | .072 | .003 | .100 | | | | | | | | | | | 9 |
| 10 | -.056 | -.107 | -.139 | -.093 | -.017 | | | | | | | | | | | 10 |
| 11 | -.056 | -.147 | -.179 | -.095 | -.035 | | | | | | | | | | | 11 |
| 12 | -.029 | -.077 | -.042 | .010 | .093 | | | | | | | | | | | 12 |
| 13 | -.056 | -.147 | -.174 | -.095 | -.033 | | | | | | | | | | | 13 |
| 14 | -.052 | -.169 | -.174 | -.131 | -.110 | | | | | | | | | | | 14 |
| 15 | .049 | -.056 | -.061 | -.036 | -.031 | | | | | | | | | | | 15 |
| 16 | .036 | -.045 | -.045 | -.042 | -.040 | | | | | | | | | | | 16 |
| 17 | -.207 | -.140 | -.128 | -.151 | -.137 | | | | | | | | | | | 17 |
| 18 | -.102 | -.088 | -.112 | -.077 | -.045 | | | | | | | | | | | 18 |
| 19 | -.043 | -.033 | -.049 | -.035 | -.005 | | | | | | | | | | | 19 |
| 20 | .066 | .116 | .082 | .158 | .135 | | | | | | | | | | | 20 |
| 21 | .014 | -.038 | -.068 | -.051 | .001 | | | | | | | | | | | 21 |
| 22 | .072 | .112 | .081 | .160 | .160 | | | | | | | | | | | 22 |
| 23 | .017 | -.068 | -.065 | .082 | .066 | | | | | | | | | | | 23 |
| 24 | .052 | .001 | .012 | .031 | .000 | | | | | | | | | | | 24 |
| 25 | .059 | .017 | .010 | .010 | .005 | | | | | | | | | | | 25 |
| 26 | .086 | .061 | .051 | .051 | .059 | | | | | | | | | | | 26 |
| 27 | .036 | .022 | .001 | .031 | .054 | | | | | | | | | | | 27 |
| 28 | | .056 | .045 | .077 | .086 | | | | | | | | | | | 28 |

TABLE V

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

| Tube number | n = 2915 α = | | | | | n = 2915 α = 15.0 | | | | | n = 2680 α = 15.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | .184 | | | .511 | .356 | .009 | | | .545 | .371 | 1 |
| 2 | | | | | | .111 | .316 | | -.297 | -.172 | .102 | .307 | | -.291 | -.286 | 2 |
| 3 | | | | | | | | | | | | | | | | 3 |
| 4 | | | | | | | | | -.172 | -.115 | | | | -.170 | -.087 | 4 |
| 5 | | | | | | -.054 | -.127 | | -.131 | -.118 | -.041 | -.125 | | -.128 | -.108 | 5 |
| 6 | | | | | | -.541 | -.004 | | .345 | .525 | -.577 | -.795 | | .339 | .521 | 6 |
| 7 | | | | | | -.302 | -.356 | | .054 | .159 | -.318 | -.356 | | .053 | .149 | 7 |
| 8 | | | | | | -.268 | -.254 | | -.206 | -.011 | -.276 | -.246 | | -.195 | -.024 | 8 |
| 9 | | | | | | .020 | -.036 | .118 | .047 | .213 | .022 | -.022 | .111 | .053 | .206 | 9 |
| 10 | | | | | | -.075 | -.125 | -.154 | -.056 | -.059 | -.072 | -.125 | -.149 | -.056 | -.060 | 10 |
| 11 | | | | | | -.088 | -.175 | -.211 | -.118 | -.068 | -.083 | -.161 | -.210 | -.113 | -.070 | 11 |
| 12 | | | | | | .011 | -.104 | -.029 | .059 | .159 | .018 | -.087 | -.035 | .064 | .151 | 12 |
| 13 | | | | | | -.077 | -.181 | -.209 | -.109 | -.063 | -.096 | -.178 | -.208 | -.106 | -.064 | 13 |
| 14 | | | | | | -.122 | -.193 | -.202 | -.181 | -.156 | -.115 | -.191 | -.193 | -.180 | -.153 | 14 |
| 15 | | | | | | -.015 | -.059 | -.068 | -.068 | -.052 | -.017 | -.058 | -.068 | -.064 | -.045 | 15 |
| 16 | | | | | | -.011 | -.043 | -.052 | -.040 | -.051 | -.005 | -.043 | -.051 | -.034 | -.028 | 16 |
| 17 | | | | | | -.304 | -.177 | -.161 | -.161 | -.188 | -.314 | -.166 | -.149 | -.163 | -.191 | 17 |
| 18 | | | | | | -.131 | -.143 | -.093 | -.070 | -.027 | -.134 | -.123 | -.094 | -.064 | -.028 | 18 |
| 19 | | | | | | -.056 | -.077 | -.063 | -.011 | .002 | -.062 | -.072 | -.070 | -.005 | -.003 | 19 |
| 20 | | | | | | .070 | .054 | .127 | .175 | .115 | .070 | .056 | .130 | .164 | .113 | 20 |
| 21 | | | | | | -.025 | -.038 | -.070 | -.049 | -.004 | -.024 | -.034 | -.068 | -.047 | -.001 | 21 |
| 22 | | | | | | .075 | .056 | .125 | .184 | .175 | .075 | .062 | .132 | .180 | .172 | 22 |
| 23 | | | | | | -.018 | -.072 | -.072 | -.054 | .004 | -.013 | -.072 | -.075 | -.049 | .007 | 23 |
| 24 | | | | | | .002 | -.006 | .009 | -.006 | -.020 | .005 | .007 | .011 | -.005 | -.015 | 24 |
| 25 | | | | | | .029 | .018 | .018 | .009 | .002 | .028 | .018 | .018 | .005 | .009 | 25 |
| 26 | | | | | | .079 | .066 | .072 | .063 | .059 | .075 | .072 | .060 | .060 | .062 | 26 |
| 27 | | | | | | .043 | .045 | .034 | .049 | .052 | .041 | .047 | .037 | .051 | .047 | 27 |
| 28 | | | | | | | -.002 | .056 | .097 | .079 | | -.011 | .064 | .096 | .079 | 28 |

TABLE VI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

| Tube number | n = 2915 α = | | | | | n = 2915 α = 30.0 | | | | | n = 2680 α = 30.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | .507 | | | .409 | .254 | .247 | | | .342 | .305 | 1 |
| 2 | | | | | | .113 | .291 | | -.184 | -.141 | .110 | .272 | | -.276 | -.094 | 2 |
| 3 | | | | | | | | | | | | | | | | 3 |
| 4 | | | | | | | | | -.239 | .223 | | | | -.245 | -.154 | 4 |
| 5 | | | | | | -.081 | -.143 | | -.150 | -.134 | -.056 | -.145 | | -.150 | -.129 | 5 |
| 6 | | | | | | -.462 | -.696 | | .557 | .559 | -.477 | -.683 | | .566 | .524 | 6 |
| 7 | | | | | | -.263 | -.318 | | .075 | .204 | -.274 | -.321 | | .075 | .160 | 7 |
| 8 | | | | | | -.245 | -.254 | | -.191 | .009 | -.257 | -.263 | | -.185 | -.003 | 8 |
| 9 | | | | | | .011 | -.040 | .179 | .029 | .245 | .085 | -.050 | .164 | .040 | .170 | 9 |
| 10 | | | | | | -.084 | -.143 | -.166 | -.063 | -.059 | -.118 | -.145 | -.170 | -.065 | -.069 | 10 |
| 11 | | | | | | -.100 | -.202 | -.229 | -.136 | -.072 | -.139 | -.203 | -.232 | -.137 | -.079 | 11 |
| 12 | | | | | | .004 | -.102 | -.004 | .040 | .191 | .023 | -.116 | -.019 | .050 | .114 | 12 |
| 13 | | | | | | -.086 | -.200 | -.216 | -.122 | -.068 | -.183 | -.203 | -.224 | -.125 | -.075 | 13 |
| 14 | | | | | | -.143 | -.213 | -.197 | -.204 | -.186 | -.141 | -.210 | -.203 | -.205 | -.158 | 14 |
| 15 | | | | | | -.022 | -.072 | -.075 | -.075 | -.066 | -.056 | -.071 | -.079 | -.083 | -.069 | 15 |
| 16 | | | | | | -.022 | -.050 | -.047 | -.045 | -.040 | -.017 | -.050 | -.048 | -.054 | -.052 | 16 |
| 17 | | | | | | -.289 | -.159 | -.152 | -.143 | -.154 | -.268 | -.183 | -.180 | -.139 | -.147 | 17 |
| 18 | | | | | | -.120 | -.136 | -.066 | -.056 | .000 | -.121 | -.147 | -.065 | -.061 | -.025 | 18 |
| 19 | | | | | | -.052 | -.063 | -.045 | .004 | .025 | -.052 | -.069 | -.065 | -.001 | .005 | 19 |
| 20 | | | | | | .079 | .081 | .143 | .195 | .134 | .087 | .071 | .139 | .189 | .077 | 20 |
| 21 | | | | | | -.029 | -.045 | -.070 | -.068 | -.009 | -.036 | -.050 | -.075 | -.065 | -.027 | 21 |
| 22 | | | | | | .084 | .081 | .141 | .193 | .186 | .090 | .071 | .139 | .191 | .129 | 22 |
| 23 | | | | | | -.020 | -.077 | -.072 | -.066 | .004 | -.021 | -.073 | -.079 | -.069 | -.021 | 23 |
| 24 | | | | | | -.011 | -.009 | .013 | -.004 | -.025 | -.001 | -.009 | .003 | -.015 | -.038 | 24 |
| 25 | | | | | | .031 | .018 | .022 | .013 | .004 | .030 | .017 | .017 | .005 | -.003 | 25 |
| 26 | | | | | | .084 | .072 | .070 | .070 | .063 | .083 | .069 | .063 | .061 | .040 | 26 |
| 27 | | | | | | .047 | .081 | .047 | .052 | .063 | .050 | .077 | .048 | .052 | .052 | 27 |
| 28 | | | | | | | .034 | .070 | .100 | .095 | | .029 | .071 | .096 | .071 | 28 |

TABLE VII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

| Tube number | n = 2915, α = | | | | | n = 2915, α 60.0 | | | | | n = 2680, α = 60.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | .184 | | | .589 | .566 | .055 | | | .776 | .537 | 1 |
| 2 | | | | | | .213 | .317 | | -.179 | -.478 | .151 | .374 | | -.120 | -.485 | 2 |
| 3 | | | | | | .245 | -.103 | | -.272 | -.319 | .214 | -.059 | | -.250 | -.309 | 3 |
| 4 | | | | | | .114 | -.193 | | -.222 | -.193 | .118 | -.147 | | -.185 | -.181 | 4 |
| 5 | | | | | | .006 | -.155 | | -.146 | -.114 | .021 | -.122 | | -.112 | -.107 | 5 |
| 6 | | | | | | -.274 | -.757 | | .227 | .422 | -.334 | -1.005 | | .137 | .445 | 6 |
| 7 | | | | | | -.222 | -.366 | | .008 | .101 | -.242 | -.457 | | -.032 | .103 | 7 |
| 8 | | | | | | -.222 | -.303 | | -.200 | -.038 | -.229 | -.319 | | -.216 | -.042 | 8 |
| 9 | | | | | | .011 | -.006 | .141 | .035 | .159 | .011 | -.013 | .108 | .036 | .151 | 9 |
| 10 | | | | | | -.074 | -.114 | -.159 | -.085 | -.056 | -.068 | -.093 | -.143 | -.055 | -.044 | 10 |
| 11 | | | | | | -.076 | -.195 | -.220 | -.139 | -.065 | -.070 | -.147 | -.196 | -.101 | -.055 | 11 |
| 12 | | | | | | .011 | -.054 | -.006 | .024 | .123 | .019 | -.042 | -.017 | .042 | .116 | 12 |
| 13 | | | | | | -.004 | -.186 | -.211 | -.130 | -.060 | -.177 | -.164 | -.193 | -.091 | -.053 | 13 |
| 14 | | | | | | -.085 | -.227 | -.215 | -.191 | -.152 | -.080 | -.187 | -.191 | -.156 | -.139 | 14 |
| 15 | | | | | | -.002 | -.083 | -.076 | -.062 | -.051 | -.059 | -.065 | -.063 | -.044 | -.044 | 15 |
| 16 | | | | | | .008 | -.062 | -.054 | -.042 | -.033 | .022 | -.040 | -.047 | -.030 | -.030 | 16 |
| 17 | | | | | | -.242 | -.125 | -.119 | -.152 | -.173 | -.250 | -.131 | -.112 | -.162 | -.168 | 17 |
| 18 | | | | | | -.096 | -.074 | -.060 | -.074 | -.035 | -.105 | -.072 | -.061 | -.078 | -.030 | 18 |
| 19 | | | | | | -.042 | -.035 | -.022 | -.024 | .000 | -.040 | -.030 | -.019 | -.022 | .003 | 19 |
| 20 | | | | | | .085 | .094 | .110 | .164 | .128 | .084 | .118 | .082 | .154 | .131 | 20 |
| 21 | | | | | | -.004 | -.047 | -.078 | -.065 | -.006 | .005 | -.011 | -.074 | -.042 | .001 | 21 |
| 22 | | | | | | .092 | .096 | .114 | .168 | .173 | .091 | .114 | .080 | .166 | .175 | 22 |
| 23 | | | | | | .000 | -.080 | -.074 | -.065 | .006 | .009 | -.068 | -.072 | -.045 | .011 | 23 |
| 24 | | | | | | .029 | .011 | -.013 | .011 | -.006 | .042 | .049 | .000 | .019 | -.003 | 24 |
| 25 | | | | | | .038 | .015 | .024 | .015 | .011 | .055 | .021 | .024 | .011 | .015 | 25 |
| 26 | | | | | | .080 | .060 | .065 | .074 | .072 | .095 | .066 | .059 | .053 | .072 | 26 |
| 27 | | | | | | .042 | .125 | .015 | .029 | .054 | .047 | .116 | .009 | .051 | .063 | 27 |
| 28 | | | | | | | .065 | .051 | .087 | .092 | | .042 | .049 | .082 | .099 | 28 |

TABLE VIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

| Tube number | n = 2915 α = | | | | | n = 2915 α = 75.0 | | | | | n = 2680 α = 75.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | -.061 | | | .734 | .611 | .112 | | | .583 | .507 | 1 |
| 2 | | | | | | .311 | .363 | | -.152 | -.450 | .326 | .315 | | -.213 | -.517 | 2 |
| 3 | | | | | | .316 | -.059 | | -.252 | -.297 | .301 | -.110 | | -.293 | -.340 | 3 |
| 4 | | | | | | .159 | -.184 | | -.197 | -.175 | .124 | -.202 | | -.243 | -.208 | 4 |
| 5 | | | | | | .034 | -.136 | | -.118 | -.095 | .015 | -.153 | | -.163 | -.120 | 5 |
| 6 | | | | | | -.277 | -.952 | | .188 | .409 | -.229 | -.815 | | .213 | .463 | 6 |
| 7 | | | | | | -.238 | -.448 | | -.002 | .086 | -.204 | -.412 | | .019 | .124 | 7 |
| 8 | | | | | | -.232 | -.320 | | -.197 | -.059 | -.216 | -.328 | | -.165 | -.025 | 8 |
| 9 | | | | | | -.036 | -.020 | .138 | .036 | .120 | -.009 | -.009 | .147 | .046 | .142 | 9 |
| 10 | | | | | | -.052 | -.097 | -.156 | -.038 | -.036 | -.060 | -.098 | -.169 | -.050 | -.038 | 10 |
| 11 | | | | | | -.056 | -.168 | -.225 | -.106 | -.052 | -.066 | -.182 | -.231 | -.136 | -.060 | 11 |
| 12 | | | | | | -.029 | -.047 | -.002 | .052 | .106 | .000 | -.040 | -.001 | .064 | .118 | 12 |
| 13 | | | | | | .002 | -.168 | -.220 | -.093 | -.050 | -.200 | -.178 | -.221 | -.124 | -.054 | 13 |
| 14 | | | | | | -.066 | -.204 | -.227 | -.163 | -.129 | -.083 | -.219 | -.225 | -.206 | -.155 | 14 |
| 15 | | | | | | .000 | -.070 | -.088 | -.050 | -.040 | -.068 | -.081 | -.087 | -.077 | -.056 | 15 |
| 16 | | | | | | .022 | -.050 | -.063 | -.031 | -.031 | .017 | -.054 | -.060 | -.035 | -.036 | 16 |
| 17 | | | | | | -.216 | -.118 | -.125 | -.141 | -.156 | -.231 | -.116 | -.112 | -.138 | -.143 | 17 |
| 18 | | | | | | -.109 | -.066 | -.066 | -.061 | -.036 | -.107 | -.062 | -.058 | -.066 | -.015 | 18 |
| 19 | | | | | | -.050 | -.031 | -.020 | -.011 | .002 | -.046 | -.027 | -.023 | -.021 | .017 | 19 |
| 20 | | | | | | .052 | .102 | .111 | .170 | .125 | .079 | .091 | .099 | .167 | .132 | 20 |
| 21 | | | | | | .000 | -.025 | -.084 | -.045 | -.004 | -.001 | -.035 | -.077 | -.054 | -.005 | 21 |
| 22 | | | | | | .056 | .100 | .111 | .170 | .166 | .081 | .091 | .093 | .173 | .173 | 22 |
| 23 | | | | | | .002 | -.070 | -.084 | -.050 | .002 | .011 | -.073 | -.077 | -.054 | .001 | 23 |
| 24 | | | | | | .050 | .047 | -.006 | .020 | -.006 | .035 | .027 | -.009 | .003 | -.013 | 24 |
| 25 | | | | | | .050 | .025 | .027 | .015 | .009 | .050 | .027 | .025 | .011 | .013 | 25 |
| 26 | | | | | | .079 | .068 | .068 | .068 | .059 | .091 | .079 | .066 | .083 | .073 | 26 |
| 27 | | | | | | .025 | .122 | .013 | .075 | .052 | .036 | .114 | .019 | .077 | .070 | 27 |
| 28 | | | | | | | .072 | .045 | .093 | .043 | | .083 | .060 | .077 | .107 | 28 |

TABLE IX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

| Tube number | n = 2915 α = | | | | | n = 2915 α = 90.0 | | | | | n = 2680 α = 90.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | .191 | | | .506 | .442 | .147 | | | .439 | .470 | 1 |
| 2 | | | | | | .360 | .289 | | -.241 | -.542 | .350 | .301 | | -.297 | -.538 | 2 |
| 3 | | | | | | .291 | -.125 | | -.303 | -.364 | .293 | -.113 | | -.322 | -.356 | 3 |
| 4 | | | | | | .100 | -.207 | | -.255 | -.230 | .110 | -.204 | | -.248 | -.229 | 4 |
| 5 | | | | | | -.002 | -.159 | | -.173 | -.139 | .001 | -.161 | | -.157 | -.132 | 5 |
| 6 | | | | | | -.173 | -.752 | | .228 | .472 | -.208 | -.748 | | .297 | .460 | 6 |
| 7 | | | | | | -.177 | -.387 | | .029 | .134 | -.195 | -.362 | | .058 | .127 | 7 |
| 8 | | | | | | -.207 | -.312 | | -.148 | -.018 | -.212 | -.284 | | -.149 | -.018 | 8 |
| 9 | | | | | | .013 | .002 | -.066 | .070 | .143 | .005 | .000 | .149 | .056 | .146 | 9 |
| 10 | | | | | | -.070 | -.088 | .187 | -.050 | -.045 | -.068 | -.098 | -.157 | -.051 | -.041 | 10 |
| 11 | | | | | | -.079 | -.173 | -.157 | -.139 | -.066 | -.079 | -.180 | -.229 | -.130 | -.064 | 11 |
| 12 | | | | | | .020 | -.032 | -.232 | .082 | .120 | .011 | -.034 | .007 | .060 | .121 | 12 |
| 13 | | | | | | .022 | -.173 | .032 | -.132 | -.061 | -.176 | -.180 | -.223 | -.117 | -.066 | 13 |
| 14 | | | | | | -.098 | -.225 | -.221 | -.219 | -.166 | -.094 | -.223 | -.231 | -.202 | -.168 | 14 |
| 15 | | | | | | .029 | -.084 | -.234 | -.091 | -.061 | -.066 | -.085 | -.094 | -.073 | -.060 | 15 |
| 16 | | | | | | .004 | -.054 | -.093 | -.045 | -.041 | .005 | -.056 | -.062 | -.047 | -.041 | 16 |
| 17 | | | | | | -.230 | .103 | -.066 | .129 | .129 | -.229 | -.094 | .096 | -.119 | -.136 | 17 |
| 18 | | | | | | -.093 | | -.086 | -.056 | -.013 | -.096 | -.051 | -.049 | -.041 | -.015 | 18 |
| 19 | | | | | | -.043 | -.022 | -.032 | -.011 | .029 | -.045 | -.017 | -.013 | .001 | .024 | 19 |
| 20 | | | | | | .086 | .091 | -.002 | .171 | .129 | .085 | .104 | .094 | .182 | .125 | 20 |
| 21 | | | | | | -.013 | -.036 | .102 | -.054 | -.011 | -.015 | -.037 | -.075 | -.053 | -.011 | 21 |
| 22 | | | | | | .102 | .088 | -.075 | .177 | .177 | .093 | .102 | .094 | .182 | .170 | 22 |
| 23 | | | | | | -.009 | -.084 | .107 | -.056 | -.002 | -.007 | -.077 | -.072 | -.056 | -.001 | 23 |
| 24 | | | | | | .020 | .022 | -.068 | -.009 | -.020 | .018 | .013 | -.001 | .001 | -.022 | 24 |
| 25 | | | | | | .038 | .025 | -.004 | .013 | .006 | .041 | .022 | .028 | .009 | .007 | 25 |
| 26 | | | | | | .084 | .079 | .038 | .082 | .079 | .083 | .075 | .068 | .085 | .070 | 26 |
| 27 | | | | | | .043 | .109 | .073 | .079 | .075 | .039 | .130 | .022 | .085 | .073 | 27 |
| 28 | | | | | | | .079 | .022 | .079 | .066 | | .081 | .058 | .096 | .036 | 28 |

TABLE X

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 28.5 z/D = 2.425

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 75.0 | | | | | n = α = | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.114 | | | .610 | .467 | .062 | | | .467 | .392 | | | | | | 1 |
| 2 | .100 | .343 | | -.267 | -.294 | .104 | .285 | | -.333 | -.090 | | | | | | 2 |
| 3 | .098 | -.059 | | | | .068 | -.073 | | | | | | | | | 3 |
| 4 | | | | -.211 | -.281 | | | | -.212 | -.020 | | | | | | 4 |
| 5 | -.005 | -.134 | | -.134 | -.119 | -.034 | -.151 | | -.159 | -.134 | | | | | | 5 |
| 6 | -.444 | -.874 | | .286 | .494 | -.465 | -.691 | | .395 | .530 | | | | | | 6 |
| 7 | -.235 | -.343 | | .066 | .152 | -.236 | -.261 | | .107 | .179 | | | | | | 7 |
| 8 | -.159 | -.153 | | -.114 | .026 | -.164 | -.124 | | -.102 | .043 | | | | | | 8 |
| 9 | .153 | .091 | .125 | .136 | .256 | .136 | .079 | .183 | .159 | .301 | | | | | | 9 |
| 10 | -.030 | -.085 | -.119 | -.059 | .009 | -.054 | -.092 | -.145 | -.054 | -.020 | | | | | | 10 |
| 11 | .045 | -.167 | -.233 | -.133 | -.020 | -.073 | -.181 | -.267 | -.142 | -.045 | | | | | | 11 |
| 12 | .144 | .020 | .038 | .127 | .214 | .132 | .013 | .049 | .149 | .233 | | | | | | 12 |
| 13 | -.030 | -.178 | -.214 | -.114 | -.015 | -.079 | -.195 | -.250 | -.124 | -.039 | | | | | | 13 |
| 14 | -.106 | -.228 | -.237 | -.218 | -.178 | -.132 | -.250 | -.270 | -.257 | -.229 | | | | | | 14 |
| 15 | -.028 | -.131 | -.150 | -.119 | -.110 | -.062 | -.151 | -.176 | -.147 | -.132 | | | | | | 15 |
| 16 | -.096 | -.171 | -.201 | -.136 | -.155 | -.117 | -.200 | -.229 | -.155 | -.176 | | | | | | 16 |
| 17 | -.077 | .051 | .077 | .028 | .017 | -.085 | .018 | .034 | .028 | -.001 | | | | | | 17 |
| 18 | .100 | .106 | .079 | .119 | .172 | .083 | .081 | .079 | .134 | .179 | | | | | | 18 |
| 19 | .190 | .186 | .197 | .224 | .279 | .176 | .161 | .157 | .246 | .274 | | | | | | 19 |
| 20 | .235 | .201 | .220 | .275 | .343 | .248 | .196 | .214 | .297 | .337 | | | | | | 20 |
| 21 | -.051 | -.083 | -.167 | -.043 | .039 | -.053 | -.090 | -.189 | -.062 | .020 | | | | | | 21 |
| 22 | .051 | -.028 | -.104 | .013 | .047 | .064 | -.053 | -.130 | .001 | .028 | | | | | | 22 |
| 23 | -.290 | -.391 | -.425 | -.338 | -.286 | -.312 | -.446 | -.465 | -.378 | -.318 | | | | | | 23 |
| 24 | -.651 | -.628 | -.895 | -.917 | -.860 | -.615 | -.613 | -.926 | -1.001 | -.922 | | | | | | 24 |
| 25 | -.123 | -.131 | -.127 | -.114 | -.076 | -.144 | -.151 | -.149 | -.115 | -.096 | | | | | | 25 |
| 26 | -.030 | -.034 | .017 | .026 | .041 | -.058 | -.037 | .032 | .037 | .020 | | | | | | 26 |
| 27 | .469 | .361 | .454 | .628 | .667 | .494 | .376 | .488 | .647 | .659 | | | | | | 27 |
| 28 | | .195 | .266 | .378 | .397 | | .181 | .299 | .399 | .390 | | | | | | 28 |

TABLE XI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_o}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 38.6 z/D = 2.425

| Tube number | n = 2915 α = 0.0 | | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | .028 | | | .601 | .431 |
| 2 | .095 | .349 | | -.298 | -.412 |
| 3 | .074 | -.070 | | | |
| 4 | | | | -.227 | -.360 |
| 5 | -.028 | -.151 | | -.157 | -.125 |
| 6 | -.436 | -.767 | | .341 | .518 |
| 7 | -.208 | -.263 | | .100 | .184 |
| 8 | -.110 | -.068 | | -.076 | .062 |
| 9 | .167 | .115 | .184 | .174 | .313 |
| 10 | -.007 | -.068 | -.117 | -.062 | .026 |
| 11 | -.030 | -.188 | -.262 | -.155 | -.003 |
| 12 | .163 | .053 | .072 | .151 | .258 |
| 13 | -.018 | -.197 | -.241 | -.133 | .007 |
| 14 | -.121 | -.267 | -.275 | -.269 | -.199 |
| 15 | -.039 | -.167 | -.189 | -.157 | -.127 |
| 16 | -.093 | -.227 | -.260 | -.150 | -.180 |
| 17 | .013 | .131 | .150 | .112 | .085 |
| 18 | .159 | .176 | .159 | .205 | .252 |
| 19 | .250 | .248 | .263 | .320 | .381 |
| 20 | .294 | .273 | .286 | .351 | .415 |
| 21 | .028 | -.028 | -.163 | -.051 | .047 |
| 22 | .036 | -.127 | -.273 | -.142 | -.133 |
| 23 | -.607 | -1.019 | -1.065 | -.978 | -.791 |
| 24 | -.290 | -.326 | -1.175 | -1.184 | -.947 |
| 25 | -.207 | -.231 | -.214 | -.146 | -.121 |
| 26 | -.163 | -.106 | .015 | .030 | .009 |
| 27 | .567 | .425 | .586 | .776 | .810 |
| 28 | | .281 | .372 | .514 | .508 |

| Tube number | n = 2915 α = 68.0 | | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | .448 | | | .290 | .230 |
| 2 | .124 | .252 | | -.427 | -.070 |
| 3 | .030 | -.105 | | | |
| 4 | | | | -.250 | .000 |
| 5 | -.087 | -.187 | | -.194 | -.169 |
| 6 | -.440 | -.572 | | .444 | .603 |
| 7 | -.202 | -.206 | | .143 | .250 |
| 8 | -.110 | -.089 | | -.062 | .114 |
| 9 | .118 | .091 | .242 | .192 | .377 |
| 10 | -.070 | -.103 | -.143 | -.068 | -.011 |
| 11 | -.089 | -.223 | -.282 | -.183 | -.043 |
| 12 | .116 | .028 | .095 | .179 | .292 |
| 13 | -.084 | -.221 | -.271 | -.158 | -.036 |
| 14 | -.175 | -.305 | -.297 | -.324 | -.290 |
| 15 | -.093 | -.208 | -.209 | -.198 | -.171 |
| 16 | -.145 | -.276 | -.280 | -.206 | -.227 |
| 17 | .021 | .062 | .089 | .099 | .084 |
| 18 | .143 | .118 | .156 | .208 | .267 |
| 19 | .234 | .202 | .219 | .328 | .379 |
| 20 | .284 | .230 | .290 | .360 | .410 |
| 21 | .009 | -.061 | -.175 | -.080 | .022 |
| 22 | .021 | -.198 | -.286 | -.175 | -.160 |
| 23 | -.706 | -1.129 | -1.126 | -1.078 | -.885 |
| 24 | -.334 | -.347 | -1.204 | -1.294 | -1.066 |
| 25 | -.255 | -.234 | -.217 | -.164 | -.173 |
| 26 | -.189 | -.118 | .028 | .024 | -.034 |
| 27 | .536 | .442 | .631 | .784 | .801 |
| 28 | | .253 | .425 | .517 | .501 |

| Tube number | n = 2085 α = 68.0 | | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | .658 | | | -.058 | .151 |
| 2 | .081 | .144 | | -.599 | -.120 |
| 3 | -.011 | -.043 | | | |
| 4 | | | | -.288 | -.070 |
| 5 | -.120 | -.202 | | -.214 | -.202 |
| 6 | -.366 | -.342 | | .541 | .596 |
| 7 | -.175 | -.222 | | .175 | .249 |
| 8 | -.113 | -.140 | | -.070 | .120 |
| 9 | .113 | .113 | .296 | .206 | .366 |
| 10 | -.085 | -.124 | -.183 | -.070 | -.023 |
| 11 | -.120 | -.253 | -.319 | -.191 | -.066 |
| 12 | .113 | .031 | .105 | .194 | .288 |
| 13 | -.085 | -.253 | -.303 | -.171 | -.054 |
| 14 | -.206 | -.327 | -.327 | -.335 | -.296 |
| 15 | -.113 | -.218 | -.241 | -.233 | -.202 |
| 16 | -.159 | -.288 | -.315 | -.226 | -.272 |
| 17 | .007 | .038 | .050 | .089 | .097 |
| 18 | .128 | .101 | .155 | .202 | .268 |
| 19 | .222 | .171 | .191 | .335 | .381 |
| 20 | .268 | .194 | .323 | .381 | .413 |
| 21 | -.019 | -.093 | -.194 | -.109 | -.003 |
| 22 | -.011 | -.257 | -.288 | -.194 | -.206 |
| 23 | -.732 | -1.118 | -1.149 | -1.164 | -.989 |
| 24 | -.338 | -.385 | -1.262 | -1.390 | -1.227 |
| 25 | -.261 | -.226 | -.202 | -.163 | -.214 |
| 26 | -.218 | -.116 | .011 | .023 | -.066 |
| 27 | .526 | .432 | .623 | .806 | .833 |
| 28 | | .303 | .416 | .526 | .494 |

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TABLE XII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 49.5 z/D = 2.425

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 64.5 | | | | | n = 2085 α = 64.5 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .028 | | | .668 | .438 | .197 | | | .411 | .397 | .293 | | | .548 | .321 | 1 |
| 2 | .104 | .354 | | -.266 | -.546 | .110 | | | -.392 | -.559 | .097 | .313 | | -.360 | -.623 | 2 |
| 3 | .087 | -.068 | | | | .072 | | | | | .023 | .039 | | | | 3 |
| 4 | | | | -.213 | -.125 | | | | -.241 | -.184 | | | | -.231 | -.223 | 4 |
| 5 | -.009 | -.148 | | -.144 | -.125 | -.032 | | | -.171 | -.127 | -.074 | -.156 | | -.164 | -.156 | 5 |
| 6 | -.386 | -.784 | | .316 | .542 | -.392 | | | .416 | .561 | -.423 | -.666 | | .399 | .572 | 6 |
| 7 | -.165 | -.245 | | .110 | .211 | -.161 | | | .152 | .226 | -.168 | -.192 | | .133 | .227 | 7 |
| 8 | -.053 | -.022 | | -.030 | .053 | -.055 | | | -.024 | .121 | -.062 | -.007 | | -.027 | .121 | 8 |
| 9 | .243 | .171 | .188 | .217 | .367 | .217 | | .234 | .228 | .401 | .180 | .164 | .235 | .258 | .380 | 9 |
| 10 | .017 | -.041 | -.062 | -.051 | .064 | -.024 | | -.089 | -.051 | .032 | -.047 | -.050 | -.094 | -.043 | .027 | 10 |
| 11 | .000 | -.173 | -.222 | -.142 | .030 | -.038 | | -.241 | -.167 | .005 | -.070 | -.172 | -.246 | -.133 | -.003 | 11 |
| 12 | .230 | .091 | .110 | .182 | .299 | .207 | | .116 | .199 | .315 | .164 | .105 | .117 | .227 | .313 | 12 |
| 13 | .011 | -.171 | -.196 | -.119 | .038 | -.030 | | -.220 | -.140 | .015 | -.043 | -.172 | -.215 | -.117 | .000 | 13 |
| 14 | -.095 | -.262 | -.259 | -.262 | -.219 | -.116 | | -.276 | -.302 | -.245 | -.156 | -.262 | -.262 | -.258 | -.231 | 14 |
| 15 | -.021 | -.152 | -.169 | -.140 | -.137 | -.028 | | -.177 | -.169 | -.139 | -.058 | -.164 | -.184 | -.164 | -.168 | 15 |
| 16 | -.072 | -.182 | -.236 | -.150 | -.200 | -.081 | | -.237 | -.188 | -.201 | -.113 | -.199 | -.250 | -.211 | -.227 | 16 |
| 17 | .089 | .198 | .222 | .186 | .194 | .095 | | .184 | .180 | .186 | .101 | .172 | .192 | .203 | .196 | 17 |
| 18 | .238 | .245 | .226 | .350 | .356 | .232 | | .203 | .352 | .352 | .207 | .231 | .207 | .356 | .352 | 18 |
| 19 | .329 | .318 | .341 | .386 | .491 | .319 | | .304 | .397 | .485 | .293 | .301 | .348 | .419 | .493 | 19 |
| 20 | .346 | .321 | .327 | .407 | .518 | .359 | | .335 | .414 | .514 | .321 | .329 | .356 | .442 | .513 | 20 |
| 21 | .165 | .133 | .070 | .201 | .281 | .178 | | .100 | .207 | .276 | .149 | .133 | .117 | .211 | .258 | 21 |
| 22 | -.066 | -.196 | -.455 | -.301 | -.381 | -.060 | | -.443 | -.327 | -.382 | -.070 | -.270 | -.474 | -.352 | -.431 | 22 |
| 23 | -.740 | -1.053 | -1.207 | -1.302 | -1.192 | -.767 | | -1.180 | -1.334 | -1.206 | -.787 | -1.308 | -1.457 | -1.387 | -1.293 | 23 |
| 24 | -.224 | -.224 | -.942 | -.935 | -.838 | -.230 | | -.759 | -.799 | -.848 | -.266 | -.243 | -.948 | -.909 | -.897 | 24 |
| 25 | -.207 | -.320 | -.289 | -.245 | -.186 | -.201 | | -.308 | -.308 | -.205 | -.235 | -.333 | -.286 | -.266 | -.239 | 25 |
| 26 | -.167 | -.234 | -.127 | -.062 | -.028 | -.180 | | -.192 | -.144 | -.047 | -.211 | -.196 | -.113 | -.094 | -.082 | 26 |
| 27 | .668 | .430 | .622 | .933 | .937 | .679 | | .654 | .854 | .928 | .576 | .497 | .713 | .897 | .948 | 27 |
| 28 | | .346 | .409 | .575 | .657 | | | .451 | .590 | .635 | | .329 | .505 | .627 | .638 | 28 |

TABLE XIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 19.8$ $\delta_{f,30} = 28.5$ $z/D = 2.425$

| Tube number | n = 2915 | α = 0.0 | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | -.037 | | | .659 | .487 |
| 2 | .108 | .323 | | -.225 | -.485 |
| 3 | .156 | -.075 | | | |
| 4 | | | | -.182 | -.137 |
| 5 | -.037 | -.210 | | -.160 | -.134 |
| 6 | -.262 | -.690 | | .336 | .495 |
| 7 | -.085 | -.164 | | .155 | .209 |
| 8 | .049 | .062 | | .056 | .157 |
| 9 | .191 | .214 | .243 | .222 | .239 |
| 10 | .165 | .139 | .151 | .186 | .318 |
| 11 | .060 | -.034 | -.042 | .039 | .171 |
| 12 | .145 | .085 | .109 | .164 | .249 |
| 13 | -.205 | -.498 | -.463 | -.289 | -.205 |
| 14 | -.539 | -.827 | -.778 | -.498 | -.667 |
| 15 | -.132 | -.310 | -.307 | -.228 | -.164 |
| 16 | -.166 | -.271 | -.280 | -.130 | -.144 |
| 17 | .210 | .230 | .240 | .266 | .487 |
| 18 | .391 | .362 | .323 | .593 | .679 |
| 19 | .428 | .431 | .445 | .461 | .528 |
| 20 | .415 | .397 | .373 | .444 | .504 |
| 21 | -.082 | -.119 | -.191 | -.040 | .082 |
| 22 | .092 | .024 | -.076 | .044 | .092 |
| 23 | -.388 | -.474 | -.484 | -.352 | |
| 24 | -.714 | -.719 | -.793 | -.800 | -.676 |
| 25 | -.053 | -.076 | -.080 | -.086 | -.043 |
| 26 | .060 | .046 | .016 | .037 | .046 |
| 27 | .589 | .471 | .544 | .681 | .733 |
| 28 | | .323 | .356 | .481 | .497 |

| Tube number | n = 2915 | α = 62.5 | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | -.020 | | | .714 | .486 |
| 2 | .105 | .320 | | -.228 | -.496 |
| 3 | .130 | -.057 | | | |
| 4 | | | | -.185 | -.173 |
| 5 | -.040 | -.195 | | -.179 | -.148 |
| 6 | -.245 | -.702 | | .312 | .495 |
| 7 | -.077 | -.170 | | .132 | .203 |
| 8 | .047 | .058 | | .047 | .157 |
| 9 | .183 | .196 | .218 | .213 | .223 |
| 10 | .149 | .129 | .147 | .186 | .310 |
| 11 | .038 | -.033 | -.046 | .041 | .161 |
| 12 | .146 | .076 | .105 | .163 | .227 |
| 13 | -.294 | -.476 | -.467 | -.302 | -.224 |
| 14 | -.565 | -.795 | -.768 | -.729 | -.680 |
| 15 | -.206 | -.304 | -.313 | -.250 | -.168 |
| 16 | -.180 | -.267 | -.287 | -.143 | -.148 |
| 17 | .210 | .233 | .245 | .282 | .508 |
| 18 | .384 | .361 | .331 | .616 | .682 |
| 19 | .423 | .420 | .437 | .469 | .534 |
| 20 | .411 | .384 | .348 | .445 | .513 |
| 21 | -.084 | -.122 | -.216 | -.034 | .073 |
| 22 | .092 | .014 | -.111 | .046 | .095 |
| 23 | -.399 | -.483 | -.495 | -.370 | |
| 24 | -.749 | -.763 | -.803 | -.819 | -.679 |
| 25 | -.060 | -.100 | -.101 | -.093 | -.049 |
| 26 | .062 | .038 | .022 | .033 | .047 |
| 27 | .580 | .458 | .542 | .686 | .741 |
| 28 | | .287 | .361 | .486 | .502 |

| Tube number | n = 2085 | α = 62.5 | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | .608 | | | .242 | .206 |
| 2 | .099 | .196 | | -.534 | -.620 |
| 3 | -.028 | -.127 | | | |
| 4 | | | | -.291 | -.155 |
| 5 | -.196 | -.286 | | -.291 | -.209 |
| 6 | -.380 | -.332 | | .528 | .613 |
| 7 | -.117 | -.079 | | .209 | .273 |
| 8 | .033 | .007 | | .035 | .184 |
| 9 | .178 | .143 | .281 | .237 | .224 |
| 10 | .112 | .071 | .158 | .194 | .344 |
| 11 | -.033 | -.143 | -.102 | -.002 | .145 |
| 12 | .094 | -.030 | .076 | .168 | .245 |
| 13 | -.452 | -.674 | -.625 | -.449 | -.316 |
| 14 | -.855 | -.970 | -.929 | -.802 | -.799 |
| 15 | -.324 | -.403 | -.398 | -.393 | -.457 |
| 16 | -.298 | -.352 | -.352 | -.224 | -.224 |
| 17 | .153 | .260 | .311 | .321 | .600 |
| 18 | .301 | .273 | .452 | .707 | .707 |
| 19 | .334 | .311 | .355 | .526 | .546 |
| 20 | .360 | .273 | .393 | .492 | .528 |
| 21 | -.114 | -.181 | -.265 | -.097 | .061 |
| 22 | .145 | -.132 | -.168 | .005 | .107 |
| 23 | -.508 | -.597 | -.608 | -.436 | |
| 24 | -.702 | -.697 | -.978 | -1.037 | -.773 |
| 25 | -.076 | -.148 | -.137 | -.127 | -.114 |
| 26 | .007 | .030 | .051 | .045 | .002 |
| 27 | .390 | .426 | .636 | .746 | .758 |
| 28 | | .286 | .459 | .544 | .487 |

TABLE XIV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 19.8 $\delta_{f,30}$ = 38.6 z/D = 2.425

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 57.8 | | | | | n = 2085 α = 57.8 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.041 | | | .616 | .340 | -.005 | | | .679 | .556 | | | | .737 | | 1 |
| 2 | .077 | .302 | | -.291 | -.490 | .140 | .331 | | -.275 | -.482 | | .329 | | -.243 | | 2 |
| 3 | .094 | -.064 | | | | .185 | -.095 | | | | | -.091 | | | | 3 |
| 4 | | | | -.200 | -.140 | | | | -.228 | -.140 | | | | -.205 | | 4 |
| 5 | -.041 | -.194 | | -.193 | -.151 | -.033 | -.269 | | -.218 | -.136 | | -.220 | | -.200 | | 5 |
| 6 | -.280 | -.613 | | .357 | .510 | -.207 | -.597 | | .394 | .521 | | -.699 | | .273 | | 6 |
| 7 | -.043 | -.100 | | .160 | .228 | -.023 | -.076 | | .187 | .236 | | -.144 | | .109 | | 7 |
| 8 | .124 | .121 | | .088 | .196 | .125 | .144 | | .093 | .205 | | .098 | | .037 | | 8 |
| 9 | .232 | .247 | .272 | .245 | .287 | .255 | .281 | | .263 | .296 | | .278 | .286 | .233 | | 9 |
| 10 | .189 | .168 | .185 | .230 | .368 | .189 | .166 | | .210 | .398 | | .174 | .184 | .182 | | 10 |
| 11 | .071 | -.001 | .001 | .060 | .196 | .054 | -.042 | | .025 | .216 | | -.035 | -.033 | .017 | | 11 |
| 12 | .170 | .128 | .145 | .200 | .293 | .181 | .126 | | .183 | .306 | | .121 | .129 | .149 | | 12 |
| 13 | -.257 | -.456 | -.420 | -.331 | -.234 | -.339 | -.603 | | -.378 | -.234 | | -.499 | -.491 | -.359 | | 13 |
| 14 | -.529 | -.783 | -.722 | -.760 | -.696 | -.575 | -.974 | | -.827 | -.710 | | -.851 | -.815 | -.785 | | 14 |
| 15 | -.177 | -.319 | -.285 | -.270 | -.198 | -.216 | -.398 | | -.304 | -.171 | | -.339 | -.334 | -.283 | | 15 |
| 16 | -.174 | -.285 | -.263 | -.162 | -.191 | -.187 | -.367 | | -.163 | -.162 | | -.311 | -.319 | -.081 | | 16 |
| 17 | .228 | .238 | .264 | .350 | .575 | .251 | .275 | | .304 | .624 | | .266 | .268 | .235 | | 17 |
| 18 | .370 | .333 | .372 | .652 | .698 | .435 | .363 | | .689 | .761 | | .357 | .405 | .597 | | 18 |
| 19 | .403 | .391 | .423 | .537 | .599 | .484 | .421 | | .564 | .646 | | .438 | .458 | .534 | | 19 |
| 20 | .420 | .380 | .446 | .516 | .582 | .478 | .402 | | .529 | .624 | | .423 | .433 | .491 | | 20 |
| 21 | .039 | -.009 | -.083 | -.009 | .094 | .033 | -.068 | | -.050 | .119 | | -.098 | -.118 | -.043 | | 21 |
| 22 | .090 | -.132 | -.170 | -.121 | -.075 | .072 | -.210 | | -.125 | -.044 | | -.157 | -.215 | -.116 | | 22 |
| 23 | -.673 | -.936 | -.841 | -.822 | -.631 | -.781 | -1.089 | | -.919 | -.638 | | -.947 | -.972 | -.881 | | 23 |
| 24 | -.563 | -.584 | -.838 | -.942 | -.754 | -.669 | -.732 | | -1.075 | -.767 | | -.669 | -.988 | -1.026 | | 24 |
| 25 | -.073 | -.141 | -.104 | -.115 | -.107 | -.084 | -.160 | | -.115 | -.072 | | -.126 | -.114 | -.116 | | 25 |
| 26 | .015 | .009 | .043 | .030 | .005 | .017 | .003 | | .046 | .035 | | .020 | .035 | .035 | | 26 |
| 27 | .524 | .514 | .645 | .794 | .828 | .636 | .540 | | .862 | .886 | | .577 | .645 | .891 | | 27 |
| 28 | | .350 | .452 | .596 | .592 | | .390 | | .628 | | | .430 | .466 | .595 | | 28 |

LB

TABLE XV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 19.8$ $\delta_{f,30} = 49.5$ $z/D = 2.425$

| Tube number | n = 2915, α = 0.0 | | | | | n = 2915, α = 51.9 | | | | | n = 2085, α = 51.9 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .166 | | | .532 | .307 | .385 | | | .417 | .264 | .444 | | | .627 | .370 | 1 |
| 2 | .115 | .281 | | -.366 | -.601 | .102 | .256 | | -.408 | -.617 | .062 | .296 | | -.315 | -.573 | 2 |
| 3 | .079 | -.077 | | | | .032 | -.098 | | | | -.003 | -.085 | | | | 3 |
| 4 | | | | -.243 | -.217 | | | | -.250 | -.224 | | | | -.222 | -.187 | 4 |
| 5 | -.105 | -.235 | | -.249 | -.224 | -.134 | -.264 | | -.258 | -.239 | -.136 | -.237 | | -.226 | -.198 | 5 |
| 6 | -.264 | -.484 | | .409 | .581 | -.313 | -.389 | | .465 | .621 | -.276 | -.467 | | .432 | .596 | 6 |
| 7 | -.018 | -.024 | | .201 | .290 | -.028 | .017 | | .231 | .315 | -.015 | -.003 | | .218 | .280 | 7 |
| 8 | .139 | .162 | | .118 | .245 | .148 | .178 | | .129 | .267 | .163 | .194 | | .128 | .253 | 8 |
| 9 | .254 | .269 | .256 | .262 | .307 | .262 | .258 | .235 | .269 | .317 | .280 | .284 | .292 | .276 | .335 | 9 |
| 10 | .196 | .179 | .166 | .241 | .405 | .178 | .165 | .144 | .239 | .431 | .198 | .191 | .183 | .253 | .428 | 10 |
| 11 | .049 | -.015 | -.062 | .041 | .201 | .018 | -.039 | -.087 | .030 | .208 | .038 | -.027 | -.062 | .050 | .218 | 11 |
| 12 | .175 | .139 | .115 | .203 | .309 | .159 | .131 | .085 | .199 | .321 | .175 | .151 | .116 | .214 | .327 | 12 |
| 13 | -.296 | -.530 | -.596 | -.420 | -.313 | -.431 | -.573 | -.604 | -.450 | -.351 | -.362 | -.526 | -.568 | -.389 | -.300 | 13 |
| 14 | -.707 | -.896 | -.928 | -.903 | -.858 | -.777 | -.934 | -.919 | -.928 | -.904 | -.717 | -.904 | -.880 | -.853 | -.814 | 14 |
| 15 | -.200 | -.367 | -.409 | -.343 | -.271 | -.281 | -.400 | -.416 | -.353 | -.283 | -.245 | -.381 | -.397 | -.319 | -.237 | 15 |
| 16 | -.170 | -.334 | -.390 | .230 | .264 | .226 | -.372 | -.397 | -.250 | -.271 | -.233 | -.374 | -.389 | -.206 | -.224 | 16 |
| 17 | .247 | .251 | .264 | .388 | .656 | .245 | .245 | .256 | .393 | .748 | .261 | .276 | .292 | .405 | .654 | 17 |
| 18 | .452 | .341 | .407 | .679 | .735 | .484 | .321 | .419 | .691 | .788 | .475 | .362 | .483 | .783 | .795 | 18 |
| 19 | .456 | .411 | .428 | .588 | .643 | .454 | .381 | .379 | .596 | .691 | .444 | .421 | .424 | .627 | .709 | 19 |
| 20 | .458 | .384 | .424 | .549 | .622 | .467 | .349 | .406 | .556 | .661 | .448 | .389 | .448 | .557 | .654 | 20 |
| 21 | .209 | .167 | .069 | .198 | .277 | .218 | .144 | .051 | .180 | .286 | .187 | .136 | .089 | .214 | .303 | 21 |
| 22 | -.088 | -.394 | -.577 | -.405 | -.377 | -.108 | -.463 | -.577 | -.425 | -.402 | -.097 | -.459 | -.568 | -.397 | -.354 | 22 |
| 23 | -.845 | -1.347 | -1.466 | -1.303 | -1.011 | -.934 | -1.500 | -1.531 | -1.392 | -1.084 | -1.028 | -1.582 | -1.597 | -1.313 | -.993 | 23 |
| 24 | -.279 | -.294 | -1.017 | -.915 | -.700 | -.302 | -.338 | -1.080 | -.987 | -.763 | -.421 | -.424 | -1.184 | -1.021 | -.686 | 24 |
| 25 | -.192 | -.234 | -.247 | -.190 | -.183 | -.218 | -.231 | -.243 | -.176 | -.182 | -.233 | -.183 | -.167 | -.128 | -.159 | 25 |
| 26 | -.130 | -.088 | -.045 | -.017 | -.039 | -.151 | -.057 | -.022 | .015 | -.032 | -.121 | -.011 | .043 | .043 | -.015 | 26 |
| 27 | .662 | .558 | .686 | .884 | .888 | .653 | .524 | .653 | .915 | .959 | .596 | .573 | .709 | .943 | .958 | 27 |
| 28 | | .400 | .520 | .692 | .673 | | .370 | .490 | .718 | .737 | | .413 | .561 | .736 | .732 | 28 |

TABLE XVI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 39.3$ $\delta_{f,30} = 28.5$ $z/D = 2.425$

| Tube number | n = 2915, α = 0.0 | | | | | n = 2915, α = 49.3 | | | | | n = 2085, α = 49.3 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .182 | | | .579 | .314 | .362 | | | .476 | .323 | .499 | | | .514 | .409 | 1 |
| 2 | .151 | .291 | | -.260 | -.574 | .088 | .241 | | -.385 | -.587 | .078 | .254 | | -.374 | -.575 | 2 |
| 3 | .159 | -.062 | | | | .066 | -.079 | | | | .035 | -.094 | | | | 3 |
| 4 | | | | -.192 | -.143 | | | | -.234 | -.205 | | | | -.241 | -.203 | 4 |
| 5 | -.091 | -.213 | | -.205 | -.208 | -.123 | -.280 | | -.255 | -.223 | -.137 | -.297 | | -.267 | -.224 | 5 |
| 6 | -.101 | -.469 | | .345 | .568 | -.159 | -.317 | | .486 | .621 | -.122 | -.295 | | .501 | .631 | 6 |
| 7 | .075 | -.001 | | .204 | .307 | .073 | .086 | | .285 | .340 | .086 | .099 | | .297 | .346 | 7 |
| 8 | .235 | .211 | | .178 | .304 | .252 | .225 | | .227 | .335 | .269 | .241 | | .213 | .348 | 8 |
| 9 | .336 | .330 | .318 | .286 | .343 | .353 | .330 | .284 | .295 | .359 | .356 | .335 | .280 | .297 | .374 | 9 |
| 10 | .369 | .348 | .333 | .433 | .564 | .382 | .342 | .306 | .508 | .632 | .376 | .341 | .313 | .526 | .682 | 10 |
| 11 | .111 | .071 | .060 | .208 | .336 | .101 | .025 | .030 | .248 | .371 | .111 | .012 | .035 | .241 | .389 | 11 |
| 12 | .069 | .002 | -.058 | .049 | .112 | .068 | -.058 | -.104 | .066 | .139 | .071 | -.086 | -.124 | .048 | .160 | 12 |
| 13 | | -.916 | -.947 | -.901 | -.903 | | -1.057 | -1.062 | -1.028 | -.976 | | -1.081 | -1.066 | -1.071 | -.969 | 13 |
| 14 | -1.073 | -1.234 | -1.266 | -1.083 | -1.113 | -1.177 | -1.449 | -1.429 | -1.205 | -1.173 | -1.178 | -1.499 | -1.435 | -1.308 | -1.171 | 14 |
| 15 | -.293 | -.385 | -.398 | -.241 | | -.342 | -.465 | -.451 | -.273 | | -.295 | -.475 | -.450 | -.343 | | 15 |
| 16 | -.244 | -.298 | -.304 | -.200 | -.211 | -.288 | -.362 | -.354 | -.222 | -.208 | -.285 | -.376 | -.348 | -.254 | -.203 | 16 |
| 17 | .272 | .278 | .294 | .218 | .381 | .258 | .253 | .270 | .236 | .415 | .280 | .267 | .282 | .213 | .391 | 17 |
| 18 | .567 | .439 | .505 | .852 | .929 | .588 | .450 | .537 | .883 | .984 | .588 | .440 | .577 | .929 | 1.020 | 18 |
| 19 | .577 | .569 | .595 | .661 | .727 | .601 | .592 | .611 | .698 | .793 | .521 | .598 | .613 | .712 | .824 | 19 |
| 20 | .552 | .494 | .522 | .649 | .698 | .552 | .463 | .488 | .707 | .773 | .557 | .450 | .488 | .712 | .766 | 20 |
| 21 | -.094 | -.130 | -.185 | -.039 | .055 | -.162 | -.205 | -.234 | -.048 | .053 | -.152 | -.229 | -.213 | -.084 | .066 | 21 |
| 22 | .163 | .019 | -.052 | .054 | .097 | .094 | -.023 | -.087 | .038 | .111 | .091 | -.048 | -.084 | .015 | .127 | 22 |
| 23 | -.452 | -.486 | -.507 | -.381 | | -.532 | -.591 | -.572 | -.412 | | -.539 | -.600 | -.560 | -.458 | | 23 |
| 24 | -.684 | -.672 | -.758 | -.744 | -.640 | -.836 | -.870 | -.845 | -.801 | -.647 | -.840 | -.896 | -.875 | -.878 | -.659 | 24 |
| 25 | -.039 | -.084 | -.091 | -.086 | -.066 | -.073 | -.108 | -.109 | -.103 | -.071 | -.061 | -.122 | -.101 | -.111 | -.073 | 25 |
| 26 | .074 | .052 | .027 | .035 | .030 | .076 | .051 | .026 | .032 | .027 | .086 | .048 | .038 | .035 | .028 | 26 |
| 27 | .659 | .590 | .642 | .777 | .813 | .700 | .562 | .602 | .828 | .877 | .722 | .562 | .618 | .847 | .906 | 27 |
| 28 | | .426 | .453 | .577 | .600 | | .377 | .426 | .627 | .667 | | .379 | .445 | .649 | .672 | 28 |

TABLE XVII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 39.3$ $\delta_{f,30} = 38.6$ $z/D = 2.425$

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 43.5 | | | | | n = 2085 α = 43.5 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .399 | | | .389 | .309 | .572 | | | .299 | .208 | .647 | | | .289 | .271 | 1 |
| 2 | .131 | .154 | | -.564 | -.586 | .094 | .204 | | -.459 | -.659 | .078 | .162 | | -.535 | -.660 | 2 |
| 3 | .098 | .086 | | | | .026 | -.123 | | | | .002 | -.111 | | | | 3 |
| 4 | | | | -.218 | -.229 | | | | -.285 | -.254 | | | | -.284 | -.261 | 4 |
| 5 | -.164 | -.186 | | -.253 | -.257 | -.182 | -.344 | | -.318 | -.286 | -.210 | -.309 | | -.320 | -.294 | 5 |
| 6 | -.106 | -.125 | | .553 | .583 | -.156 | -.126 | | .534 | .671 | -.144 | -.144 | | .566 | .672 | 6 |
| 7 | .099 | .102 | | .329 | .362 | .105 | .163 | | .324 | .391 | .109 | .139 | | .335 | .396 | 7 |
| 8 | .274 | .275 | | .345 | .366 | .290 | .239 | | .248 | .386 | .304 | .259 | | .274 | .396 | 8 |
| 9 | .347 | .351 | .322 | .394 | .386 | .352 | .332 | | .300 | .397 | .360 | .337 | .294 | .327 | .403 | 9 |
| 10 | .371 | .377 | .350 | .603 | .608 | .392 | .341 | | .496 | .692 | .391 | .355 | .320 | .579 | .718 | 10 |
| 11 | .089 | .086 | .020 | .336 | .330 | .093 | .013 | | .202 | .375 | .078 | .017 | .005 | .266 | .373 | 11 |
| 12 | .050 | .039 | -.126 | .119 | .106 | .051 | -.061 | | .025 | .133 | .028 | -.071 | -.172 | .045 | .116 | 12 |
| 13 | | -.688 | -1.172 | -.980 | -.982 | | -1.192 | | -1.167 | -1.101 | | -1.109 | -1.173 | -1.148 | -1.125 | 13 |
| 14 | -1.291 | -1.310 | -1.566 | -1.248 | -1.248 | -1.371 | -1.625 | | -1.339 | -1.350 | -1.414 | -1.546 | -1.597 | -1.378 | -1.399 | 14 |
| 15 | -.325 | -.356 | -.495 | .007 | | -.404 | -.560 | | .408 | | -.447 | -.535 | -.533 | -.299 | | 15 |
| 16 | -.250 | -.248 | -.419 | -.280 | -.279 | -.361 | -.458 | | -.275 | -.295 | -.383 | -.441 | -.436 | -.317 | -.320 | 16 |
| 17 | .281 | .287 | .323 | .440 | .448 | .274 | .269 | | .263 | .474 | .276 | .266 | .284 | .350 | .469 | 17 |
| 18 | .591 | .577 | .590 | .924 | .912 | .584 | .399 | | .871 | 1.005 | .543 | .436 | .601 | 1.008 | 1.036 | 18 |
| 19 | .590 | .577 | .582 | .755 | .748 | .591 | .556 | | .714 | .834 | .573 | .556 | .584 | .769 | .866 | 19 |
| 20 | .574 | .570 | .556 | .712 | .703 | .572 | .430 | | .693 | .800 | .566 | .457 | .495 | .728 | .800 | 20 |
| 21 | -.024 | -.034 | -.200 | .054 | .052 | -.080 | -.104 | | -.088 | .039 | -.071 | -.094 | -.210 | -.040 | .035 | 21 |
| 22 | .033 | .019 | -.297 | -.108 | -.104 | -.051 | -.219 | | -.182 | -.125 | -.043 | -.170 | -.312 | -.177 | -.142 | 22 |
| 23 | -.930 | -.941 | -1.062 | -.631 | | -1.080 | -1.123 | | -.986 | | -1.089 | -1.135 | -1.168 | -.914 | | 23 |
| 24 | -.774 | -.778 | -1.053 | -.807 | -.782 | -.938 | -.893 | | -1.077 | -.819 | -.914 | -.901 | -1.158 | -1.016 | -.881 | 24 |
| 25 | -.078 | -.090 | -.102 | -.109 | -.102 | -.083 | -.126 | | -.131 | -.112 | -.073 | -.134 | -.127 | -.132 | -.129 | 25 |
| 26 | .018 | .016 | .056 | .012 | .016 | .034 | .047 | | .053 | .012 | .040 | .038 | .063 | .025 | .005 | 26 |
| 27 | .711 | .698 | .721 | .882 | .875 | .754 | .549 | | .887 | .962 | .731 | .573 | .665 | .934 | .998 | 27 |
| 28 | | .268 | .569 | .685 | .682 | | .399 | | .704 | .769 | | .378 | .518 | .746 | .789 | 28 |

TABLE XVIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 39.3 $\delta_{f,30}$ = 49.5 z/D = 2.425

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 42.5 | | | | | n = 2085 α = 42.5 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .373 | | | .570 | .578 | .488 | | | .538 | .311 | .513 | | | .502 | .297 | 1 |
| 2 | .192 | .287 | | -.254 | -.438 | .090 | .253 | | -.347 | -.606 | .061 | .233 | | -.388 | -.624 | 2 |
| 3 | .193 | -.068 | | | | .073 | -.077 | | | | .022 | -.119 | | | | 3 |
| 4 | | | | -.220 | -.172 | | | | -.235 | -.231 | | | | -.264 | -.249 | 4 |
| 5 | -.131 | -.247 | | -.237 | -.186 | -.138 | -.270 | | -.254 | -.257 | -.157 | -.312 | | -.299 | -.284 | 5 |
| 6 | .025 | -.354 | | .391 | .487 | -.048 | -.231 | | .487 | .659 | -.033 | -.149 | | .513 | .675 | 6 |
| 7 | .155 | .096 | | .281 | .300 | .168 | .164 | | .336 | .407 | .182 | .177 | | .340 | .416 | 7 |
| 8 | .305 | .319 | | .294 | .363 | .350 | .293 | | .299 | .424 | .370 | .276 | | .294 | .436 | 8 |
| 9 | .399 | .426 | .343 | .395 | .447 | .407 | .398 | .336 | .357 | .444 | .381 | .386 | .317 | .340 | .431 | 9 |
| 10 | .432 | .437 | .365 | .537 | .612 | .441 | .414 | .364 | .561 | .733 | .393 | .388 | .350 | .530 | .736 | 10 |
| 11 | .109 | .088 | .026 | .249 | .367 | .119 | .067 | .049 | .262 | .393 | .109 | .035 | .035 | .223 | .370 | 11 |
| 12 | .057 | .012 | -.120 | .088 | .170 | .074 | -.017 | -.092 | .088 | .165 | .073 | -.055 | -.134 | .033 | .134 | 12 |
| 13 | | -1.022 | -1.160 | -.948 | -.799 | | -1.066 | -1.138 | -1.056 | -1.055 | | -1.130 | -1.148 | -1.109 | -1.046 | 13 |
| 14 | -1.172 | -1.428 | -1.555 | -1.090 | -1.055 | -1.268 | -1.479 | -1.554 | -1.341 | -1.311 | -1.213 | -1.572 | -1.551 | -1.330 | -1.310 | 14 |
| 15 | -.322 | -.443 | -.497 | -.274 | | -.363 | -.476 | -.508 | -.309 | | -.304 | -.543 | -.528 | -.416 | | 15 |
| 16 | -.170 | -.324 | -.415 | -.237 | -.237 | -.288 | -.388 | -.435 | -.287 | -.285 | -.292 | -.454 | -.454 | -.294 | -.304 | 16 |
| 17 | .320 | .362 | .371 | .372 | .459 | .336 | .324 | .346 | .343 | .516 | .335 | .324 | .330 | .324 | .495 | 17 |
| 18 | .623 | .537 | .595 | .877 | .930 | .636 | .503 | .575 | .876 | .996 | .573 | .459 | .584 | .901 | .985 | 18 |
| 19 | .625 | .603 | .612 | .744 | .793 | .644 | .647 | .678 | .750 | .868 | .604 | .627 | .662 | .746 | .866 | 19 |
| 20 | .599 | .592 | .568 | .696 | .731 | .612 | .532 | .542 | .717 | .816 | .589 | .497 | .518 | .685 | .777 | 20 |
| 21 | .226 | .205 | .104 | .247 | .307 | .242 | .210 | .070 | .227 | .294 | .236 | .172 | .071 | .200 | .284 | 21 |
| 22 | -.181 | -.318 | -.556 | -.349 | -.329 | -.257 | -.409 | -.572 | -.381 | -.368 | -.208 | -.472 | -.576 | -.436 | -.375 | 22 |
| 23 | -.959 | -1.141 | -1.359 | -1.119 | | -1.144 | -1.364 | -1.471 | -1.163 | | -1.102 | -1.510 | -1.554 | -1.318 | | 23 |
| 24 | -.428 | -.391 | -.965 | -.932 | -.765 | -.502 | -.492 | -1.086 | -.911 | -.711 | -.500 | -.573 | -1.163 | -1.061 | -.698 | 24 |
| 25 | -.137 | -.176 | -.158 | -.117 | -.101 | -.152 | -.124 | -.109 | -.123 | -.126 | -.142 | -.124 | -.121 | -.137 | -.147 | 25 |
| 26 | -.067 | -.046 | .029 | .033 | .009 | -.057 | .006 | .041 | .039 | .008 | -.033 | .028 | .050 | .035 | .002 | 26 |
| 27 | .761 | .708 | .747 | .906 | .939 | .844 | .666 | .704 | .925 | 1.033 | .782 | .627 | .693 | .919 | 1.003 | 27 |
| 28 | | .567 | .617 | .769 | .782 | | .505 | .551 | .772 | .865 | | .497 | .553 | .767 | .843 | 28 |

TABLE XIX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 59.4$ $\delta_{f,30} = 28.5$ $z/D = 2.425$

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 39.0 | | | | | n = 2085 α = 36.1 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .419 | | | .600 | .384 | .854 | | | -.333 | .029 | .611 | | | .545 | .313 | 1 |
| 2 | .105 | .277 | | -.240 | --.515 | .046 | .062 | | -.627 | -.702 | .070 | .217 | | -.346 | -.563 | 2 |
| 3 | .092 | -.098 | | | | -.034 | -.176 | | | | .053 | -.103 | | | | 3 |
| 4 | | | | -.238 | -.212 | | | | -.329 | -.283 | | | | -.240 | -.202 | 4 |
| 5 | -.149 | -.278 | | -.275 | -.255 | -.209 | -.284 | | -.333 | -.321 | -.141 | -.267 | | -.273 | -.255 | 5 |
| 6 | .019 | -.272 | | .431 | .577 | .009 | .164 | | .622 | .697 | .070 | -.068 | | .543 | .657 | 6 |
| 7 | .201 | .157 | | .319 | .386 | .196 | .248 | | .405 | .453 | .252 | .232 | | .384 | .442 | 7 |
| 8 | .371 | .333 | | .320 | .440 | .363 | .284 | | .325 | .459 | .424 | .303 | | .348 | .485 | 8 |
| 9 | .395 | .437 | .353 | .391 | .491 | .383 | .351 | .408 | .346 | .482 | .427 | .419 | .449 | .384 | .505 | 9 |
| 10 | .412 | .448 | .346 | .407 | .572 | .415 | .374 | .418 | .368 | .552 | .444 | .429 | .454 | .429 | .593 | 10 |
| 11 | .396 | .386 | .378 | .584 | .739 | .406 | .331 | .407 | .640 | .795 | .424 | .358 | .412 | .659 | .806 | 11 |
| 12 | -.427 | -.572 | -.833 | -.664 | -.591 | -.438 | -.417 | -.670 | -.729 | -.693 | -.460 | -.591 | -.672 | -.692 | -.649 | 12 |
| 13 | | -1.509 | -1.928 | -1.802 | -1.620 | | -.982 | -1.589 | -1.679 | -1.729 | | -1.698 | -1.647 | -1.771 | -1.673 | 13 |
| 14 | -1.011 | -1.021 | -1.484 | -1.446 | -1.217 | -.396 | -.416 | -1.079 | -1.010 | -1.072 | -1.159 | -1.561 | -1.258 | -1.488 | -1.172 | 14 |
| 15 | -.384 | -.482 | -.545 | -.419 | | -.316 | -.243 | -.429 | -.365 | | -.318 | -.495 | -.470 | -.386 | | 15 |
| 16 | -.356 | -.386 | -.433 | -.297 | -.304 | -.276 | -.243 | -.347 | -.338 | -.385 | -.323 | -.343 | -.333 | -.265 | -.310 | 16 |
| 17 | .257 | .289 | .270 | .192 | .352 | .212 | .281 | .277 | .189 | .341 | .267 | .290 | .285 | .219 | .346 | 17 |
| 18 | .631 | .650 | .611 | .863 | .920 | .650 | .558 | .607 | .860 | .979 | .710 | .603 | .626 | .914 | .995 | 18 |
| 19 | .692 | .699 | .685 | .789 | .855 | .670 | .574 | .577 | .778 | .892 | .758 | .626 | .626 | .844 | .914 | 19 |
| 20 | .638 | .584 | .574 | .732 | .794 | .651 | .450 | .618 | .720 | .828 | .697 | .535 | .644 | .778 | .846 | 20 |
| 21 | -.218 | -.246 | -.302 | -.125 | .009 | -.192 | -.171 | -.203 | -.175 | -.058 | -.166 | -.174 | -.141 | -.086 | .005 | 21 |
| 22 | .127 | .012 | -.151 | .009 | .104 | .135 | .034 | -.025 | -.042 | .035 | .146 | .022 | .027 | .025 | .101 | 22 |
| 23 | -.503 | -.491 | -.581 | -.435 | | -.444 | -.333 | -.475 | -.400 | | -.520 | -.497 | -.492 | -.391 | | 23 |
| 24 | -.477 | -.516 | -.696 | -.725 | -.607 | -.368 | -.405 | -.507 | -.540 | -.555 | -.619 | -.657 | -.581 | -.740 | -.611 | 24 |
| 25 | -.092 | -.100 | -.147 | -.110 | -.095 | -.187 | -.191 | -.167 | -.193 | -.174 | -.060 | -.068 | -.065 | -.075 | -.091 | 25 |
| 26 | -.027 | -.019 | -.007 | .009 | .005 | -.151 | -.140 | -.039 | -.141 | -.115 | .045 | .063 | .005 | .055 | -.005 | 26 |
| 27 | .731 | .650 | .643 | .820 | .859 | .736 | .493 | .665 | .837 | .896 | .806 | .593 | .712 | .894 | .920 | 27 |
| 28 | | .516 | .503 | .674 | .707 | | .392 | .497 | .678 | .719 | | .460 | .545 | .743 | .763 | 28 |

TABLE XX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 59.4 $\delta_{f,30}$ = 38.6 z/D = 2.425

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 36.1 | | | | | n = 2085 α = 39.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .473 | | | .686 | .446 | .627 | | | .672 | | .566 | | | .355 | .307 | 1 |
| 2 | .099 | .243 | | -.100 | -.443 | .082 | .233 | | -.251 | -.594 | .063 | .177 | | -.386 | -.558 | 2 |
| 3 | .114 | -.128 | | | | .066 | -.106 | | | | .058 | -.134 | | | | 3 |
| 4 | | | | -.216 | -.131 | | | | -.206 | -.200 | | | | -.249 | -.177 | 4 |
| 5 | -.124 | -.272 | | -.249 | -.155 | -.151 | -.253 | | -.206 | -.222 | -.132 | -.332 | | -.284 | -.200 | 5 |
| 6 | .111 | -.185 | | .356 | .588 | .121 | -.106 | | .501 | .709 | .157 | .053 | | .573 | .683 | 6 |
| 7 | .273 | .231 | | .335 | .411 | .302 | .251 | | .395 | .489 | .307 | .264 | | .426 | .464 | 7 |
| 8 | .446 | .443 | | .400 | .496 | .467 | .381 | | .396 | .529 | .469 | .327 | | .381 | .525 | 8 |
| 9 | .452 | .510 | .427 | .488 | .548 | .466 | .483 | .451 | .452 | .574 | .434 | .408 | .370 | .411 | .530 | 9 |
| 10 | .466 | .524 | .432 | .482 | .606 | .501 | .503 | .457 | .483 | .634 | .449 | .426 | .365 | .441 | .609 | 10 |
| 11 | .443 | .455 | .429 | .579 | .749 | .478 | .443 | .421 | .651 | .831 | .434 | .363 | .391 | .639 | .789 | 11 |
| 12 | -.431 | -.594 | -.726 | -.588 | -.438 | -.489 | -.544 | -.667 | -.554 | -.565 | -.436 | -.642 | -.802 | -.675 | -.464 | 12 |
| 13 | | -1.821 | -1.869 | -1.755 | -1.253 | | -1.772 | -1.807 | -1.564 | -1.555 | | -1.884 | -1.914 | -1.800 | -1.254 | 13 |
| 14 | -1.260 | -1.515 | -1.606 | -1.462 | -.984 | -1.465 | -1.444 | -1.515 | -1.290 | -1.060 | -1.239 | -1.615 | -1.630 | -1.549 | -.917 | 14 |
| 15 | -.369 | -.525 | -.502 | -.410 | | -.440 | -.491 | -.468 | -.323 | | -.304 | -.589 | -.571 | -.434 | | 15 |
| 16 | -.289 | -.374 | -.363 | -.213 | -.201 | -.344 | -.328 | -.335 | -.216 | -.237 | -.284 | -.421 | -.436 | -.269 | -.177 | 16 |
| 17 | .325 | .365 | .334 | .313 | .412 | .283 | .346 | .359 | .291 | .429 | .299 | .309 | .309 | .256 | .368 | 17 |
| 18 | .680 | .619 | .629 | .842 | .934 | .744 | .785 | .620 | .895 | .987 | .713 | .670 | .601 | .888 | .957 | 18 |
| 19 | .709 | .646 | .642 | .799 | .888 | .788 | .810 | .809 | .818 | .934 | .756 | .685 | .693 | .812 | .929 | 19 |
| 20 | .680 | .667 | .652 | .742 | .816 | .735 | .629 | .629 | .758 | .861 | .695 | .538 | .558 | .734 | .805 | 20 |
| 21 | .011 | -.055 | -.125 | -.027 | .109 | -.060 | -.068 | -.098 | -.003 | .095 | -.017 | -.096 | -.167 | -.066 | .104 | 21 |
| 22 | .088 | -.080 | -.191 | -.074 | -.010 | -.011 | -.046 | -.156 | -.084 | -.033 | .017 | -.127 | -.246 | -.152 | -.028 | 22 |
| 23 | -.743 | -.770 | -.803 | -.713 | | -.869 | -.708 | -.747 | -.566 | | -.815 | -.827 | -.909 | -.756 | | 23 |
| 24 | -.614 | -.559 | -.788 | -.773 | -.620 | -.721 | -.703 | -.714 | -.748 | -.642 | -.713 | -.751 | -.761 | -.876 | -.624 | 24 |
| 25 | -.034 | -.028 | -.044 | -.054 | -.049 | -.044 | -.023 | -.018 | -.057 | -.057 | -.028 | -.071 | -.076 | -.088 | -.063 | 25 |
| 26 | .048 | .080 | .058 | .066 | .043 | .044 | .074 | .049 | .059 | .052 | .071 | .063 | .017 | .061 | .040 | 26 |
| 27 | .772 | .748 | .735 | .852 | .928 | .877 | .701 | .696 | .893 | .964 | .840 | .604 | .635 | .886 | .967 | 27 |
| 28 | | .657 | .621 | .758 | .805 | | .598 | .555 | .741 | .870 | | .500 | .515 | .756 | .850 | 28 |

TABLE XXI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 59.4$ $\delta_{f,30} = 49.5$ $z/D = 2.425$

| Tube number | n = 2915, α = 0.0; Spanwise station 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
|---|---|---|---|---|---|
| 1 | .382 | | | .410 | .275 |
| 2 | .180 | .229 | | -.358 | -.521 |
| 3 | .197 | -.125 | | | |
| 4 | | | | -.280 | -.148 |
| 5 | -.084 | -.368 | | -.323 | -.176 |
| 6 | .196 | .001 | | .541 | .655 |
| 7 | .349 | .275 | | .408 | .466 |
| 8 | .507 | .351 | | .392 | .532 |
| 9 | .504 | .455 | .468 | .433 | .586 |
| 10 | .530 | .475 | .466 | .443 | .653 |
| 11 | [illegible] | .395 | .463 | .628 | .792 |
| 12 | -.407 | -.715 | -.714 | -.728 | -.475 |
| 13 | | -2.165 | -1.732 | -1.969 | -1.332 |
| 14 | -1.240 | -1.876 | -1.525 | -1.747 | -.991 |
| 15 | -.359 | -.048 | -.490 | -.519 | |
| 16 | -.257 | -.463 | -.343 | -.207 | -.183 |
| 17 | .364 | .327 | .346 | .266 | .474 |
| 18 | .639 | .614 | .649 | .897 | .960 |
| 19 | .698 | .682 | .702 | .838 | .904 |
| 20 | .695 | .591 | .668 | .748 | .836 |
| 21 | .280 | .184 | .169 | .199 | .334 |
| 22 | -.098 | -.444 | -.418 | -.387 | -.241 |
| 23 | -.846 | -1.174 | -1.209 | -1.213 | |
| 24 | -.387 | -.400 | -.766 | -.953 | -.577 |
| 25 | -.064 | -.087 | -.068 | -.079 | -.061 |
| 26 | .006 | .067 | .067 | .068 | .049 |
| 27 | .771 | .660 | .750 | .928 | .942 |
| 28 | | .591 | .669 | .816 | .866 |

| Tube number | n = 2915, α = 35.7; Spanwise station 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
|---|---|---|---|---|---|
| 1 | | | | .530 | .174 |
| 2 | | .213 | | -.294 | -.607 |
| 3 | | -.110 | | | |
| 4 | | | | -.220 | -.203 |
| 5 | | -.296 | | -.236 | -.229 |
| 6 | | .027 | | .538 | .731 |
| 7 | | .327 | | .436 | .519 |
| 8 | | .415 | | .426 | .561 |
| 9 | .480 | .503 | .449 | .481 | .599 |
| 10 | .525 | .523 | .457 | .524 | .679 |
| 11 | .523 | .460 | .437 | .656 | .833 |
| 12 | -.530 | -.605 | -.671 | -.581 | -.560 |
| 13 | | -1.912 | -1.799 | -1.667 | -1.550 |
| 14 | -1.478 | -1.521 | -1.556 | -1.353 | -1.081 |
| 15 | -.434 | -.563 | [illegible] | -.328 | |
| 16 | -.331 | -.374 | -.358 | -.245 | -.243 |
| 17 | .286 | .343 | .368 | .349 | .475 |
| 18 | .759 | .790 | .626 | .885 | .993 |
| 19 | .782 | .811 | .829 | .807 | .945 |
| 20 | .759 | .657 | .620 | .745 | .870 |
| 21 | .255 | .234 | .150 | .250 | .324 |
| 22 | -.244 | -.258 | -.404 | -.286 | -.274 |
| 23 | -1.045 | -.850 | -1.047 | -.673 | |
| 24 | -.547 | -.518 | -.733 | -.724 | -.592 |
| 25 | -.081 | -.026 | -.034 | -.059 | -.069 |
| 26 | -.014 | .059 | .062 | .059 | .047 |
| 27 | .888 | .739 | .698 | .989 | .972 |
| 28 | | .640 | .589 | .731 | .930 |

| Tube number | n = 2085, α = 35.7; Spanwise station 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
|---|---|---|---|---|---|
| 1 | .789 | | | -.002 | .124 |
| 2 | .050 | .106 | | -.543 | -.613 |
| 3 | -.010 | -.136 | | | |
| 4 | | | | -.317 | -.197 |
| 5 | -.175 | -.314 | | -.360 | -.246 |
| 6 | .124 | .154 | | .609 | .748 |
| 7 | .352 | .299 | | .431 | .520 |
| 8 | .510 | .360 | | .400 | .555 |
| 9 | .466 | .413 | .395 | .436 | .558 |
| 10 | .510 | .446 | .375 | .507 | .748 |
| 11 | .461 | .380 | .426 | .677 | .839 |
| 12 | -.484 | -.527 | -.837 | -.740 | -.624 |
| 13 | | -1.017 | -1.826 | -1.867 | -1.639 |
| 14 | -1.519 | -.875 | -1.294 | -1.382 | -1.258 |
| 15 | -.497 | -.446 | -.538 | -.395 | |
| 16 | -.357 | -.416 | -.472 | -.327 | -.284 |
| 17 | .390 | .304 | .347 | .329 | .484 |
| 18 | .611 | .588 | .631 | .872 | .976 |
| 19 | .629 | .601 | .613 | .806 | .946 |
| 20 | .712 | .573 | .558 | .736 | .875 |
| 21 | .296 | .208 | .061 | .182 | .312 |
| 22 | -.099 | -.284 | -.555 | -.451 | -.296 |
| 23 | -1.004 | -.700 | -.862 | -.641 | |
| 24 | -.439 | -.482 | -.690 | -.740 | -.637 |
| 25 | -.103 | -.187 | -.154 | -.202 | -.106 |
| 26 | -.012 | -.121 | -.086 | -.111 | -.005 |
| 27 | .748 | .624 | .654 | .964 | .976 |
| 28 | | .497 | .558 | .771 | .916 |

TABLE XXII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 69.3 $\delta_{f,30}$ = 38.6 z/D = 2.425

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 43.0 | | | | | n = 2085 α = 43.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .591 | | | .363 | .267 | .762 | | | .278 | .114 | .677 | | | -.027 | -.345 | 1 |
| 2 | .128 | .524 | | -.373 | -.558 | .081 | .158 | | -.417 | -.610 | -.010 | .053 | | -.574 | -.586 | 2 |
| 3 | .127 | -.104 | | | | .055 | -.082 | | | | -.053 | -.103 | | | | 3 |
| 4 | | | | -.253 | -.197 | | | | -.222 | -.207 | | | | -.266 | -.141 | 4 |
| 5 | -.083 | -.212 | | -.248 | -.223 | -.093 | -.170 | | -.222 | -.228 | -.103 | -.181 | | -.246 | -.158 | 5 |
| 6 | .172 | .045 | | .552 | .677 | .185 | .072 | | .590 | .740 | .143 | .199 | | .639 | .689 | 6 |
| 7 | .335 | .287 | | .427 | .492 | .357 | .298 | | .456 | .531 | .367 | .334 | | .448 | .513 | 7 |
| 8 | .492 | .349 | | .410 | .548 | .505 | .378 | | .451 | .573 | .476 | .385 | | .428 | .543 | 8 |
| 9 | .441 | .439 | .402 | .443 | .546 | .460 | .446 | .416 | .492 | .581 | .458 | .435 | .410 | .473 | .546 | 9 |
| 10 | .456 | .459 | .399 | .447 | .627 | .494 | .475 | .418 | .507 | .628 | .468 | .460 | .415 | .483 | .664 | 10 |
| 11 | .483 | .441 | .442 | .625 | .791 | .511 | .461 | .433 | .695 | .840 | .428 | .423 | .478 | .778 | .836 | 11 |
| 12 | -.783 | -.844 | -1.114 | -1.280 | -1.255 | -.801 | -.818 | -.951 | -1.290 | -1.345 | -.684 | -.956 | -1.432 | -1.314 | -1.107 | 12 |
| 13 | | -.755 | -.923 | -1.530 | -1.582 | | -.866 | -1.085 | -1.658 | -1.690 | | -1.253 | -2.004 | -1.538 | -1.198 | 13 |
| 14 | -.264 | -.283 | -.319 | -.695 | -.873 | -.284 | -.295 | -.403 | -.893 | -.904 | -.951 | -1.090 | -1.445 | -1.105 | -.916 | 14 |
| 15 | -.207 | -.249 | -.249 | -.317 | | -.195 | -.241 | -.246 | -.227 | | -.352 | -.375 | -.508 | -.236 | | 15 |
| 16 | -.225 | -.246 | -.247 | -.363 | -.352 | -.197 | -.232 | -.281 | -.310 | -.322 | -.251 | -.277 | -.345 | -.272 | -.199 | 16 |
| 17 | .198 | .258 | .284 | .186 | .359 | .208 | .259 | .281 | .254 | .360 | .367 | .246 | .176 | .236 | .387 | 17 |
| 18 | .683 | .677 | .629 | .831 | .874 | .735 | .692 | .649 | .850 | .930 | .485 | .418 | .609 | .951 | .896 | 18 |
| 19 | .759 | .754 | .770 | .834 | .899 | .795 | .757 | .758 | .854 | .951 | .531 | .480 | .473 | .969 | .921 | 19 |
| 20 | .720 | .584 | .603 | .753 | .807 | .762 | .619 | .583 | .789 | .870 | .589 | .629 | .674 | .866 | .848 | 20 |
| 21 | -.009 | -.030 | -.095 | -.101 | .007 | .013 | .002 | -.116 | -.035 | .044 | .171 | .105 | -.073 | .040 | .126 | 21 |
| 22 | .052 | -.036 | -.166 | -.187 | -.102 | .069 | -.002 | -.170 | -.137 | -.084 | .327 | .065 | -.196 | -.073 | .010 | 22 |
| 23 | -.465 | -.409 | -.401 | -.394 | | -.419 | -.394 | -.357 | -.277 | | -.526 | -.619 | -.720 | -.332 | | 23 |
| 24 | -.370 | -.390 | -.366 | -.564 | -.607 | -.328 | -.328 | -.411 | -.601 | -.598 | -.407 | -.392 | -.579 | -.616 | -.604 | 24 |
| 25 | -.170 | -.197 | -.210 | -.225 | -.175 | -.159 | -.163 | -.138 | -.136 | -.098 | -.015 | -.045 | -.065 | -.083 | -.085 | 25 |
| 26 | -.138 | -.175 | -.194 | -.161 | -.085 | -.125 | -.128 | -.142 | -.045 | -.001 | .065 | .047 | .065 | .004 | -.004 | 26 |
| 27 | .815 | .640 | .659 | .862 | .908 | .865 | .664 | .645 | .883 | .958 | .538 | .644 | .750 | .969 | .926 | 27 |
| 28 | | .521 | .537 | .753 | .837 | | .494 | .535 | .823 | .907 | | .569 | .692 | .959 | .841 | 28 |

TABLE XXIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = | | | | | n = α = | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.758 | -.630 | | .788 | .231 | | | | | | | | | | | 1 |
| 2 | .040 | .347 | | -.263 | -.502 | | | | | | | | | | | 2 |
| 3 | -.008 | -.055 | | -.297 | -.243 | | | | | | | | | | | 3 |
| 4 | -.017 | -.124 | | -.220 | -.101 | | | | | | | | | | | 4 |
| 5 | -.036 | -.098 | | -.154 | -.054 | | | | | | | | | | | 5 |
| 6 | -.931 | -.892 | | .206 | .451 | | | | | | | | | | | 6 |
| 7 | -.483 | -.374 | | -.078 | .075 | | | | | | | | | | | 7 |
| 8 | -.374 | -.222 | | -.350 | -.112 | | | | | | | | | | | 8 |
| 9 | -.179 | -.049 | .028 | -.067 | .083 | | | | | | | | | | | 9 |
| 10 | -.063 | -.115 | -.160 | -.072 | -.024 | | | | | | | | | | | 10 |
| 11 | -.068 | -.150 | -.219 | -.111 | -.030 | | | | | | | | | | | 11 |
| 12 | -.179 | -.086 | -.081 | -.042 | .063 | | | | | | | | | | | 12 |
| 13 | -.070 | -.158 | -.211 | -.099 | -.030 | | | | | | | | | | | 13 |
| 14 | -.101 | -.178 | -.210 | -.184 | -.102 | | | | | | | | | | | 14 |
| 15 | -.004 | -.060 | -.089 | -.081 | -.036 | | | | | | | | | | | 15 |
| 16 | -.014 | -.055 | -.087 | -.021 | -.029 | | | | | | | | | | | 16 |
| 17 | -.306 | -.170 | -.317 | -.290 | -.271 | | | | | | | | | | | 17 |
| 18 | -.237 | -.154 | -.259 | -.179 | -.122 | | | | | | | | | | | 18 |
| 19 | -.131 | -.095 | -.127 | -.095 | -.087 | | | | | | | | | | | 19 |
| 20 | -.004 | .104 | .056 | .126 | .067 | | | | | | | | | | | 20 |
| 21 | -.033 | -.093 | -.109 | -.062 | -.011 | | | | | | | | | | | 21 |
| 22 | -.004 | .101 | .054 | .133 | .100 | | | | | | | | | | | 22 |
| 23 | -.030 | -.095 | -.107 | -.063 | -.002 | | | | | | | | | | | 23 |
| 24 | .035 | .015 | -.028 | -.001 | -.014 | | | | | | | | | | | 24 |
| 25 | .001 | -.024 | -.047 | -.009 | -.013 | | | | | | | | | | | 25 |
| 26 | .014 | .004 | -.009 | .031 | .014 | | | | | | | | | | | 26 |
| 27 | -.073 | -.017 | -.044 | -.022 | -.034 | | | | | | | | | | | 27 |
| 28 | | .005 | -.005 | .036 | .007 | | | | | | | | | | | 28 |

TABLE XXIV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

| Tube number | n = 2915 α = | | | | | n = 2915 α = 15.0 | | | | | n = 2680 α = 15.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | -.038 | -.371 | | .673 | .372 | -.244 | -.350 | | .623 | .295 | 1 |
| 2 | | | | | | .130 | .345 | | -.297 | -.549 | .111 | .318 | | -.317 | -.572 | 2 |
| 3 | | | | | | .019 | -.073 | | -.307 | -.313 | .017 | -.066 | | -.329 | -.326 | 3 |
| 4 | | | | | | -.033 | -.157 | | -.205 | -.162 | -.026 | -.143 | | -.200 | -.161 | 4 |
| 5 | | | | | | -.063 | -.120 | | -.136 | -.091 | -.058 | -.122 | | -.124 | -.079 | 5 |
| 6 | | | | | | -.636 | -.864 | | .300 | .518 | -.667 | -.860 | | .305 | .527 | 6 |
| 7 | | | | | | -.347 | -.379 | | .001 | .139 | -.363 | -.385 | | .013 | .143 | 7 |
| 8 | | | | | | -.299 | -.274 | | -.262 | -.040 | -.303 | -.277 | | -.233 | -.040 | 8 |
| 9 | | | | | | -.016 | -.059 | .080 | .002 | .164 | -.009 | -.036 | .066 | .034 | .163 | 9 |
| 10 | | | | | | -.060 | -.126 | -.140 | -.046 | -.025 | -.063 | -.110 | -.137 | -.044 | -.023 | 10 |
| 11 | | | | | | -.074 | -.171 | -.196 | -.106 | -.030 | -.071 | -.146 | -.199 | -.090 | -.030 | 11 |
| 12 | | | | | | -.028 | -.118 | -.036 | .022 | .125 | -.025 | -.099 | -.046 | .047 | .117 | 12 |
| 13 | | | | | | -.074 | -.164 | -.188 | -.099 | -.028 | -.071 | -.161 | -.188 | -.080 | -.029 | 13 |
| 14 | | | | | | -.120 | -.189 | -.191 | -.193 | -.139 | -.111 | -.184 | -.186 | -.180 | -.136 | 14 |
| 15 | | | | | | -.015 | -.057 | -.070 | -.078 | -.040 | -.005 | -.057 | -.067 | -.066 | -.033 | 15 |
| 16 | | | | | | -.012 | -.042 | -.053 | -.033 | -.023 | -.010 | -.041 | -.055 | -.029 | -.019 | 16 |
| 17 | | | | | | -.316 | -.192 | -.175 | -.201 | -.184 | -.318 | -.220 | -.175 | -.200 | -.190 | 17 |
| 18 | | | | | | -.161 | -.170 | -.112 | -.109 | -.043 | -.166 | -.167 | -.122 | -.102 | -.046 | 18 |
| 19 | | | | | | -.071 | -.108 | -.047 | -.033 | -.012 | -.074 | -.110 | -.055 | -.034 | -.014 | 19 |
| 20 | | | | | | .057 | .053 | .129 | .182 | .113 | .055 | .044 | .130 | .156 | .108 | 20 |
| 21 | | | | | | -.019 | -.074 | -.081 | -.074 | .002 | -.020 | -.066 | -.082 | -.048 | .004 | 21 |
| 22 | | | | | | .061 | .050 | .129 | .182 | .161 | .059 | .042 | .129 | .173 | .156 | 22 |
| 23 | | | | | | -.012 | -.077 | -.081 | -.071 | .012 | -.011 | -.071 | -.084 | -.051 | .013 | 23 |
| 24 | | | | | | .001 | .022 | .011 | -.011 | -.014 | .009 | .011 | .008 | -.009 | -.013 | 24 |
| 25 | | | | | | .026 | .012 | .001 | -.008 | .004 | .026 | .011 | -.005 | -.005 | .002 | 25 |
| 26 | | | | | | .071 | .047 | .049 | .050 | .047 | .064 | .053 | .039 | .046 | .046 | 26 |
| 27 | | | | | | .029 | -.029 | .036 | .035 | .040 | .021 | -.036 | .025 | .033 | .038 | 27 |
| 28 | | | | | | | .009 | .064 | .091 | .075 | | -.044 | .058 | .086 | .072 | 28 |

TABLE XXV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

| Tube number | n = 2915 α = | | | | | n = 2915 α = 30.0 | | | | | n = 2680 α = 30.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | .043 | −.126 | | .584 | .697 | .180 | −.052 | | .488 | .574 | 1 |
| 2 | | | | | | .180 | .323 | | −.249 | −.439 | .148 | .313 | | −.292 | −.529 | 2 |
| 3 | | | | | | .221 | −.076 | | −.304 | −.326 | .196 | −.081 | | −.320 | −.384 | 3 |
| 4 | | | | | | .107 | −.164 | | −.229 | −.181 | .083 | −.171 | | −.237 | −.221 | 4 |
| 5 | | | | | | .000 | −.133 | | −.141 | −.104 | −.013 | −.137 | | −.143 | −.128 | 5 |
| 6 | | | | | | −.356 | −.836 | | .231 | .310 | −.375 | −.793 | | .269 | .396 | 6 |
| 7 | | | | | | −.285 | −.425 | | −.004 | .000 | −.296 | −.409 | | .012 | .053 | 7 |
| 8 | | | | | | −.263 | −.303 | | −.201 | −.104 | −.281 | −.308 | | −.183 | −.073 | 8 |
| 9 | | | | | | −.011 | −.014 | .150 | .066 | .130 | −.001 | −.007 | .164 | .097 | .152 | 9 |
| 10 | | | | | | −.068 | −.087 | −.114 | −.053 | −.029 | −.073 | −.088 | −.125 | −.056 | −.038 | 10 |
| 11 | | | | | | −.073 | −.147 | −.194 | −.103 | −.042 | −.077 | −.148 | −.202 | −.109 | −.049 | 11 |
| 12 | | | | | | −.004 | −.048 | .021 | .059 | .099 | .001 | −.039 | .021 | .079 | .111 | 12 |
| 13 | | | | | | −.069 | −.158 | −.184 | −.089 | −.036 | −.077 | −.155 | −.190 | −.097 | −.045 | 13 |
| 14 | | | | | | −.085 | −.191 | −.205 | −.181 | −.151 | −.094 | −.193 | −.213 | −.195 | −.183 | 14 |
| 15 | | | | | | .026 | −.061 | −.061 | −.061 | −.052 | .022 | −.053 | −.067 | −.057 | −.057 | 15 |
| 16 | | | | | | .028 | −.028 | −.032 | −.035 | −.025 | .025 | −.022 | −.032 | −.033 | −.028 | 16 |
| 17 | | | | | | −.221 | −.112 | −.022 | −.130 | −.158 | −.264 | −.107 | −.017 | −.122 | −.156 | 17 |
| 18 | | | | | | −.082 | −.043 | −.029 | .031 | −.012 | −.101 | −.038 | −.025 | −.019 | −.005 | 18 |
| 19 | | | | | | .005 | .015 | .031 | .194 | .052 | −.010 | .026 | .039 | .052 | .057 | 19 |
| 20 | | | | | | .102 | .141 | .178 | −.024 | .141 | .107 | .146 | .193 | .231 | .144 | 20 |
| 21 | | | | | | .022 | −.041 | −.043 | .207 | .008 | .020 | −.031 | −.039 | −.014 | .013 | 21 |
| 22 | | | | | | .104 | .140 | .180 | −.026 | .195 | .113 | .146 | .193 | .242 | .201 | 22 |
| 23 | | | | | | .028 | −.045 | −.043 | .011 | .019 | .027 | −.038 | −.041 | −.015 | .019 | 23 |
| 24 | | | | | | .052 | .019 | .041 | .046 | −.005 | .049 | .032 | .044 | .021 | −.005 | 24 |
| 25 | | | | | | .079 | .062 | .069 | .124 | .028 | .082 | .073 | .073 | .062 | .037 | 25 |
| 26 | | | | | | .137 | .130 | .146 | .123 | .099 | .142 | .148 | .152 | .146 | .116 | 26 |
| 27 | | | | | | .113 | .102 | .120 | .124 | .133 | .106 | .119 | .130 | .138 | .140 | 27 |
| 28 | | | | | | | .102 | .165 | .178 | .181 | | .125 | .177 | .193 | .190 | 28 |

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TABLE XXVI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

| Tube number | n = 2915 α = | | | | | n = 2915 α = 45.0 | | | | | n = 2680 α = 45.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | -.175 | -.238 | | .640 | .825 | -.060 | -.353 | | .845 | .845 | 1 |
| 2 | | | | | | .337 | .350 | | -.064 | -.337 | .301 | .396 | | -.062 | -.335 | 2 |
| 3 | | | | | | .328 | -.108 | | -.258 | -.251 | .282 | -.050 | | -.245 | -.282 | 3 |
| 4 | | | | | | .168 | -.178 | | -.220 | -.125 | .132 | -.132 | | -.183 | -.146 | 4 |
| 5 | | | | | | .045 | -.125 | | -.133 | -.062 | .021 | -.103 | | -.101 | -.077 | 5 |
| 6 | | | | | | -.211 | -.892 | | .053 | .283 | -.225 | -.933 | | .055 | .285 | 6 |
| 7 | | | | | | -.160 | -.386 | | -.037 | .025 | -.198 | -.377 | | -.036 | .033 | 7 |
| 8 | | | | | | -.085 | -.224 | | -.125 | -.028 | -.150 | -.182 | | -.123 | -.025 | 8 |
| 9 | | | | | | .103 | .097 | .191 | .146 | .221 | .089 | .100 | .184 | .152 | .199 | 9 |
| 10 | | | | | | -.002 | -.032 | -.085 | -.037 | .031 | -.025 | -.026 | -.091 | -.009 | .012 | 10 |
| 11 | | | | | | -.014 | -.133 | -.181 | -.105 | .017 | -.036 | -.094 | -.181 | -.062 | -.002 | 11 |
| 12 | | | | | | .105 | .051 | .075 | .120 | .181 | .077 | .070 | .065 | .131 | .152 | 12 |
| 13 | | | | | | -.011 | -.128 | -.168 | -.094 | .021 | -.029 | -.108 | -.166 | -.053 | .000 | 13 |
| 14 | | | | | | -.031 | -.197 | -.194 | -.194 | -.120 | -.049 | -.165 | -.189 | -.164 | -.137 | 14 |
| 15 | | | | | | .064 | -.035 | -.042 | -.041 | -.011 | .047 | -.026 | -.039 | -.029 | -.026 | 15 |
| 16 | | | | | | .072 | .000 | .001 | -.008 | .010 | .059 | .009 | -.006 | -.006 | -.002 | 16 |
| 17 | | | | | | .012 | .054 | .117 | .022 | .001 | -.044 | .067 | .087 | .013 | -.026 | 17 |
| 18 | | | | | | .115 | .108 | .131 | .103 | .134 | .065 | .135 | .096 | .118 | .111 | 18 |
| 19 | | | | | | .173 | .168 | .200 | .187 | .213 | .147 | .190 | .187 | .200 | .193 | 19 |
| 20 | | | | | | .198 | .263 | .300 | .326 | .227 | .193 | .275 | .292 | .309 | .201 | 20 |
| 21 | | | | | | .074 | -.005 | .004 | -.008 | .054 | .062 | .004 | -.009 | .002 | .045 | 21 |
| 22 | | | | | | .213 | .263 | .301 | .328 | .296 | .205 | .275 | .286 | .330 | .268 | 22 |
| 23 | | | | | | .090 | -.010 | .001 | -.008 | .068 | .078 | .000 | -.010 | .003 | .053 | 23 |
| 24 | | | | | | .091 | .071 | .077 | .058 | .034 | .082 | .074 | .072 | .043 | .021 | 24 |
| 25 | | | | | | .144 | .125 | .140 | .100 | .067 | .132 | .123 | .118 | .071 | .065 | 25 |
| 26 | | | | | | .217 | .220 | .240 | .200 | .147 | .212 | .214 | .222 | .158 | .143 | 26 |
| 27 | | | | | | .244 | .257 | .284 | .264 | .303 | .236 | .269 | .269 | .280 | .287 | 27 |
| 28 | | | | | | | .306 | .327 | .317 | .330 | | .256 | .311 | .321 | .316 | 28 |

TABLE XXVII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

| Tube number | n = 2915 α = | | | | | n = 2915 α = 60.0 | | | | | n = 2680 α = 60.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | .258 | .086 | | .640 | .609 | .256 | .002 | | .649 | .578 | 1 |
| 2 | | | | | | .385 | .335 | | -.224 | -.477 | .332 | .335 | | -.232 | -.478 | 2 |
| 3 | | | | | | .316 | -.086 | | -.293 | -.351 | .312 | -.090 | | -.299 | -.344 | 3 |
| 4 | | | | | | .136 | -.160 | | -.222 | -.191 | .149 | -.171 | | -.218 | -.179 | 4 |
| 5 | | | | | | .025 | -.106 | | -.100 | -.092 | .036 | -.110 | | -.106 | -.082 | 5 |
| 6 | | | | | | .044 | -.597 | | .314 | .479 | -.001 | -.627 | | .318 | .485 | 6 |
| 7 | | | | | | .051 | -.163 | | .175 | .204 | .036 | -.147 | | .169 | .205 | 7 |
| 8 | | | | | | .109 | .034 | | .094 | .136 | .110 | .061 | | .090 | .142 | 8 |
| 9 | | | | | | .308 | .264 | .274 | .305 | .335 | .296 | .267 | .284 | .311 | .343 | 9 |
| 10 | | | | | | .013 | .037 | .037 | .023 | .071 | .024 | .039 | .046 | .009 | .078 | 10 |
| 11 | | | | | | -.001 | -.069 | -.115 | -.038 | .049 | .009 | -.073 | -.107 | -.058 | .050 | 11 |
| 12 | | | | | | .296 | .204 | .207 | .261 | .274 | .290 | .205 | .220 | .255 | .279 | 12 |
| 13 | | | | | | .000 | -.062 | -.096 | -.023 | .049 | .017 | -.073 | -.085 | -.041 | .060 | 13 |
| 14 | | | | | | -.047 | -.151 | -.161 | -.161 | -.160 | -.033 | -.163 | -.143 | -.174 | -.171 | 14 |
| 15 | | | | | | .063 | .017 | .016 | .029 | -.006 | .073 | .004 | .014 | .012 | -.008 | 15 |
| 16 | | | | | | .081 | .075 | .099 | .047 | .047 | .093 | .067 | .103 | .024 | .034 | 16 |
| 17 | | | | | | .207 | .253 | .277 | .216 | .163 | .210 | .269 | .285 | .229 | .169 | 17 |
| 18 | | | | | | .278 | .299 | .311 | .293 | .287 | .283 | .316 | .333 | .301 | .288 | 18 |
| 19 | | | | | | .272 | .258 | .348 | .357 | .357 | .296 | .295 | .367 | .370 | .355 | 19 |
| 20 | | | | | | .284 | .373 | .413 | .427 | .329 | .306 | .387 | .426 | .443 | .317 | 20 |
| 21 | | | | | | .071 | .098 | .129 | .129 | .114 | .079 | .088 | .137 | .099 | .099 | 21 |
| 22 | | | | | | .302 | .373 | .415 | .454 | .399 | .328 | .391 | .432 | .459 | .394 | 22 |
| 23 | | | | | | .093 | .103 | .123 | .135 | .127 | .100 | .096 | .142 | .099 | .112 | 23 |
| 24 | | | | | | .093 | .142 | .176 | .141 | .090 | .103 | .139 | .177 | .125 | .069 | 24 |
| 25 | | | | | | .155 | .231 | .249 | .216 | .175 | .165 | .226 | .231 | .198 | .142 | 25 |
| 26 | | | | | | .229 | .290 | .296 | .272 | .268 | .239 | .291 | .282 | .269 | .245 | 26 |
| 27 | | | | | | .277 | .382 | .393 | .452 | .439 | .315 | .393 | .420 | .440 | .432 | 27 |
| 28 | | | | | | | .358 | .402 | .459 | .465 | | .387 | .419 | .470 | .447 | 28 |

TABLE XXVIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

| Tube number | n = 2915 α = | | | | | n = 2915 α = 75.0 | | | | | n = 2680 α = 75.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | .393 | .113 | | .583 | .467 | .385 | .232 | | .466 | .444 | 1 |
| 2 | | | | | | .359 | .315 | | -.231 | -.546 | .352 | .281 | | -.265 | -.556 | 2 |
| 3 | | | | | | .285 | -.092 | | -.299 | -.389 | .286 | -.122 | | -.308 | -.391 | 3 |
| 4 | | | | | | .109 | -.166 | | -.215 | -.209 | .108 | -.181 | | -.215 | -.207 | 4 |
| 5 | | | | | | .026 | -.082 | | -.064 | -.039 | .023 | -.051 | | -.009 | -.049 | 5 |
| 6 | | | | | | .106 | -.566 | | .312 | .532 | .086 | -.487 | | .354 | .537 | 6 |
| 7 | | | | | | .091 | -.129 | | .191 | .240 | .081 | -.096 | | .209 | .241 | 7 |
| 8 | | | | | | .138 | .076 | | .144 | .165 | .135 | .090 | | .162 | .165 | 8 |
| 9 | | | | | | .333 | .291 | .300 | .350 | .353 | .339 | .303 | .288 | .364 | .357 | 9 |
| 10 | | | | | | .038 | .075 | .151 | .064 | .141 | .044 | .106 | .098 | .134 | .135 | 10 |
| 11 | | | | | | .017 | -.026 | .051 | .011 | .123 | .022 | .016 | -.027 | .101 | .119 | 11 |
| 12 | | | | | | .324 | .235 | .263 | .294 | .305 | .326 | .251 | .217 | .318 | .307 | 12 |
| 13 | | | | | | .023 | -.017 | .069 | .022 | .123 | .027 | .032 | -.014 | .103 | .120 | 13 |
| 14 | | | | | | -.036 | -.110 | .011 | -.082 | -.051 | -.037 | -.050 | -.060 | .024 | -.062 | 14 |
| 15 | | | | | | .091 | .067 | .169 | .101 | .126 | .091 | .120 | .109 | .181 | .129 | 15 |
| 16 | | | | | | .125 | .143 | .228 | .116 | .174 | .119 | .190 | .172 | .134 | .185 | 16 |
| 17 | | | | | | .207 | .284 | .284 | .246 | .179 | .204 | .288 | .283 | .259 | .185 | 17 |
| 18 | | | | | | .289 | .318 | .321 | .321 | .297 | .292 | .325 | .313 | .333 | .305 | 18 |
| 19 | | | | | | .265 | .341 | .358 | .362 | .367 | .278 | .348 | .354 | .373 | .367 | 19 |
| 20 | | | | | | .294 | .383 | .420 | .448 | .386 | .304 | .387 | .415 | .457 | .392 | 20 |
| 21 | | | | | | .123 | .181 | .263 | .203 | .221 | .118 | .224 | .218 | .254 | .230 | 21 |
| 22 | | | | | | .306 | .387 | .412 | .458 | .436 | .323 | .389 | .414 | .462 | .435 | 22 |
| 23 | | | | | | .144 | .188 | .266 | .210 | .235 | .140 | .230 | .213 | .266 | .244 | 23 |
| 24 | | | | | | .150 | .209 | .258 | .200 | .206 | .143 | .235 | .224 | .234 | .220 | 24 |
| 25 | | | | | | .213 | .271 | .260 | .234 | .226 | .212 | .271 | .261 | .224 | .234 | 25 |
| 26 | | | | | | .285 | .303 | .284 | .272 | .241 | .283 | .287 | .288 | .272 | .235 | 26 |
| 27 | | | | | | .272 | .374 | .387 | .409 | .418 | .270 | .372 | .386 | .429 | .431 | 27 |
| 28 | | | | | | | .358 | .387 | .427 | .415 | | .349 | .391 | .431 | .425 | 28 |

TABLE XXIX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

| Tube number | n = 2915 α = | | | | | n = 2915 α = 90.0 | | | | | n = 2680 α = 90.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | | | | | | .320 | .139 | | .317 | .424 | .316 | .044 | | .624 | .523 | 1 |
| 2 | | | | | | .324 | .286 | | -.332 | -.557 | .393 | .336 | | -.243 | -.523 | 2 |
| 3 | | | | | | .289 | -.104 | | -.318 | -.382 | .318 | -.077 | | -.298 | -.366 | 3 |
| 4 | | | | | | .121 | -.157 | | -.188 | -.198 | .130 | -.146 | | -.201 | -.188 | 4 |
| 5 | | | | | | .042 | -.016 | | .060 | -.029 | .044 | -.025 | | -.007 | -.036 | 5 |
| 6 | | | | | | -.039 | -.565 | | .374 | .508 | -.003 | -.711 | | .291 | .491 | 6 |
| 7 | | | | | | -.016 | -.197 | | .150 | .179 | .002 | -.247 | | .097 | .174 | 7 |
| 8 | | | | | | .038 | -.036 | | .007 | .060 | .059 | -.070 | | -.035 | .056 | 8 |
| 9 | | | | | | .244 | .224 | .263 | .230 | .245 | .271 | .215 | .255 | .207 | .257 | 9 |
| 10 | | | | | | .045 | .116 | .166 | .172 | .120 | .051 | .094 | .134 | .123 | .123 | 10 |
| 11 | | | | | | .035 | .051 | .135 | .150 | .104 | .033 | .040 | .097 | .095 | .103 | 11 |
| 12 | | | | | | .244 | .188 | .236 | .236 | .227 | .268 | .190 | .191 | .204 | .231 | 12 |
| 13 | | | | | | .026 | .074 | .144 | .148 | .104 | .032 | .056 | .108 | .095 | .108 | 13 |
| 14 | | | | | | -.010 | .004 | .108 | .101 | -.007 | -.016 | -.008 | .086 | .033 | -.009 | 14 |
| 15 | | | | | | .110 | .169 | .220 | .207 | .132 | .118 | .169 | .226 | .190 | .140 | 15 |
| 16 | | | | | | .147 | .227 | .249 | .166 | .179 | .158 | .237 | .259 | .195 | .201 | 16 |
| 17 | | | | | | .139 | .197 | .192 | .102 | .035 | .147 | .173 | .205 | .071 | .032 | 17 |
| 18 | | | | | | .239 | .255 | .227 | .198 | .163 | .239 | .243 | .209 | .178 | .164 | 18 |
| 19 | | | | | | .245 | .304 | .293 | .280 | .245 | .231 | .296 | .279 | .266 | .245 | 19 |
| 20 | | | | | | .274 | .342 | .343 | .395 | .338 | .277 | .332 | .333 | .375 | .351 | 20 |
| 21 | | | | | | .161 | .263 | .291 | .266 | .224 | .170 | .276 | .297 | .266 | .243 | 21 |
| 22 | | | | | | .298 | .345 | .339 | .398 | .361 | .286 | .336 | .338 | .386 | .376 | 22 |
| 23 | | | | | | .174 | .266 | .291 | .271 | .235 | .180 | .288 | .303 | .277 | .255 | 23 |
| 24 | | | | | | .179 | .273 | .257 | .240 | .213 | .194 | .287 | .274 | .254 | .238 | 24 |
| 25 | | | | | | .254 | .301 | .266 | .251 | .245 | .265 | .318 | .286 | .274 | .265 | 25 |
| 26 | | | | | | .318 | .333 | .304 | .274 | .271 | .322 | .343 | .317 | .293 | .296 | 26 |
| 27 | | | | | | .266 | .355 | .355 | .358 | .330 | .238 | .345 | .348 | .343 | .335 | 27 |
| 28 | | | | | | | .357 | .380 | .398 | .364 | | .340 | .386 | .389 | .378 | 28 |

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TABLE XXX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 28.5 z/D = 1.008

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 75.0 | | | | | n = α = | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.316 | -.688 | | .886 | .749 | .352 | .068 | | .714 | .541 | | | | | | 1 |
| 2 | .336 | .427 | | -.041 | -.399 | .416 | .342 | | -.173 | -.502 | | | | | | 2 |
| 3 | .355 | -.054 | | -.221 | -.284 | .315 | -.094 | | -.279 | -.354 | | | | | | 3 |
| 4 | .206 | -.140 | | -.157 | -.140 | .125 | -.168 | | -.207 | -.190 | | | | | | 4 |
| 5 | .051 | -.119 | | -.090 | -.077 | .033 | -.088 | | -.097 | -.089 | | | | | | 5 |
| 6 | -.308 | -1.123 | | .073 | .350 | .084 | -.628 | | .294 | .531 | | | | | | 6 |
| 7 | -.209 | -.453 | | -.038 | .063 | .105 | -.139 | | .176 | .236 | | | | | | 7 |
| 8 | -.127 | -.226 | | -.169 | -.024 | .165 | .071 | | .116 | .170 | | | | | | 8 |
| 9 | .061 | .077 | .143 | .099 | .211 | .362 | .306 | .294 | .319 | .381 | | | | | | 9 |
| 10 | .005 | -.045 | -.095 | -.012 | .036 | .035 | .088 | .094 | .030 | .094 | | | | | | 10 |
| 11 | -.007 | -.142 | -.194 | -.073 | .020 | .023 | -.028 | -.045 | -.042 | .062 | | | | | | 11 |
| 12 | .065 | .046 | .045 | .103 | .184 | .354 | .251 | .243 | .272 | .317 | | | | | | 12 |
| 13 | -.012 | -.141 | -.177 | -.057 | .024 | .028 | -.014 | -.029 | -.024 | .069 | | | | | | 13 |
| 14 | -.038 | -.216 | -.213 | -.167 | -.131 | -.023 | -.113 | -.090 | -.157 | -.184 | | | | | | 14 |
| 15 | .000 | -.115 | -.113 | -.063 | -.062 | .110 | .076 | .093 | .029 | -.019 | | | | | | 15 |
| 16 | -.059 | -.145 | -.158 | -.067 | -.076 | .152 | .174 | .184 | .022 | .012 | | | | | | 16 |
| 17 | .008 | .076 | .088 | .002 | .003 | .246 | .304 | .304 | .246 | .233 | | | | | | 17 |
| 18 | .100 | .127 | .082 | .113 | .147 | .324 | .363 | .338 | .319 | .357 | | | | | | 18 |
| 19 | .183 | .185 | .196 | .241 | .261 | .300 | .326 | .386 | .391 | .450 | | | | | | 19 |
| 20 | .200 | .226 | .268 | .307 | .336 | .292 | .413 | .424 | .444 | .494 | | | | | | 20 |
| 21 | -.011 | -.137 | -.097 | -.002 | .103 | .236 | .267 | .287 | .220 | .233 | | | | | | 21 |
| 22 | .076 | -.051 | .009 | .062 | .103 | .249 | .311 | .321 | .265 | .248 | | | | | | 22 |
| 23 | -.227 | -.360 | -.363 | -.243 | -.152 | .154 | .223 | .220 | .078 | -.008 | | | | | | 23 |
| 24 | -.585 | -.711 | -.745 | -.791 | -.683 | .202 | .282 | .295 | .106 | -.180 | | | | | | 24 |
| 25 | -.065 | -.088 | -.095 | -.086 | -.061 | .234 | .256 | .272 | .239 | .256 | | | | | | 25 |
| 26 | .022 | .005 | .007 | .028 | .043 | .214 | .245 | .273 | .230 | .260 | | | | | | 26 |
| 27 | .336 | .422 | .395 | .617 | .667 | .471 | .509 | .510 | .646 | .763 | | | | | | 27 |
| 28 | | .259 | .260 | .371 | .389 | | .488 | .468 | .481 | .581 | | | | | | 28 |

TABLE XXXI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 38.6 z/D = 1.008

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 74.0 | | | | | n = 2085 α = 74.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.242 | -.587 | | .865 | .756 | .329 | .027 | | .671 | .539 | .351 | .181 | | .734 | .596 | 1 |
| 2 | .357 | .409 | | -.066 | -.396 | .379 | .333 | | -.196 | -.501 | .368 | .315 | | -.171 | -.502 | 2 |
| 3 | .352 | -.078 | | -.247 | -.285 | .317 | -.102 | | -.287 | -.354 | .247 | -.106 | | -.282 | -.388 | 3 |
| 4 | .200 | -.159 | | -.193 | -.144 | .128 | -.181 | | -.217 | -.190 | .065 | -.179 | | -.224 | -.237 | 4 |
| 5 | .050 | -.138 | | -.123 | -.080 | .038 | -.093 | | -.103 | -.091 | .012 | -.080 | | -.095 | -.111 | 5 |
| 6 | -.230 | -1.053 | | .111 | .345 | .050 | -.639 | | .316 | .515 | .080 | -.611 | | .277 | .512 | 6 |
| 7 | -.162 | -.404 | | -.010 | .070 | .071 | -.142 | | .180 | .233 | .048 | -.149 | | .176 | .227 | 7 |
| 8 | -.066 | -.167 | | -.115 | .013 | .142 | .084 | | .108 | .168 | .111 | .070 | | .134 | .164 | 8 |
| 9 | .130 | .136 | .180 | .162 | .266 | .343 | .296 | .270 | .302 | .385 | .292 | .308 | .303 | .340 | .368 | 9 |
| 10 | .028 | -.010 | -.080 | -.026 | .064 | .039 | .085 | .072 | .023 | .097 | .020 | .093 | .113 | .048 | .103 | 10 |
| 11 | .019 | -.139 | -.191 | -.099 | .040 | .027 | -.039 | -.072 | -.051 | .067 | .012 | -.012 | -.012 | -.012 | .075 | 11 |
| 12 | .128 | .091 | .084 | .143 | .221 | .343 | .247 | .228 | .264 | .324 | .303 | .260 | .249 | .305 | .308 | 12 |
| 13 | .021 | -.127 | -.174 | -.080 | .048 | .032 | -.029 | -.045 | -.032 | .076 | .015 | -.005 | .000 | .000 | .075 | 13 |
| 14 | -.032 | -.224 | -.219 | -.207 | -.147 | -.017 | -.130 | -.114 | -.158 | -.190 | -.025 | -.103 | -.073 | -.123 | -.126 | 14 |
| 15 | -.003 | -.107 | -.110 | -.106 | -.068 | .119 | .059 | .055 | .026 | -.014 | .101 | .086 | .113 | .063 | -.005 | 15 |
| 16 | -.050 | -.104 | -.134 | .044 | .087 | .166 | .160 | .146 | .032 | .029 | .156 | .181 | .219 | .063 | .050 | 16 |
| 17 | .097 | .149 | .163 | .081 | .079 | .244 | .324 | .327 | .261 | .263 | .214 | .318 | .328 | .260 | .237 | 17 |
| 18 | .180 | .207 | .189 | .193 | .230 | .327 | .389 | .331 | .335 | .390 | .287 | .376 | .335 | .330 | .368 | 18 |
| 19 | .243 | .225 | .294 | .319 | .355 | .347 | .352 | .401 | .436 | .497 | .290 | .431 | .424 | .411 | .489 | 19 |
| 20 | .233 | .294 | .345 | .356 | .406 | .353 | .452 | .442 | .476 | .531 | .272 | .449 | .449 | .462 | .489 | 20 |
| 21 | .035 | .011 | .002 | .019 | .132 | .291 | .302 | .284 | .280 | .291 | .257 | .305 | .340 | .298 | .282 | 21 |
| 22 | .050 | -.029 | -.016 | -.044 | -.044 | .249 | .307 | .249 | .253 | .150 | .217 | .298 | .343 | .252 | .156 | 22 |
| 23 | -.496 | -.477 | -.641 | -.755 | -.521 | .045 | .155 | .121 | .026 | -.171 | .103 | .186 | .265 | .088 | -.131 | 23 |
| 24 | -.372 | -.189 | -.346 | -.819 | -.771 | .254 | .274 | .282 | .233 | .128 | .247 | .292 | .333 | .262 | .143 | 24 |
| 25 | -.128 | -.141 | -.128 | -.078 | -.074 | .254 | .245 | .233 | .250 | .251 | .015 | .257 | .265 | .255 | .262 | 25 |
| 26 | -.060 | -.063 | -.139 | -.043 | .035 | .237 | .232 | .276 | .249 | .263 | .237 | .267 | .282 | .265 | .257 | 26 |
| 27 | .408 | .535 | .487 | .767 | .804 | .647 | .516 | .569 | .769 | .865 | .560 | .550 | .507 | .762 | .840 | 27 |
| 28 | | .349 | .346 | .467 | .503 | | .531 | .490 | .534 | .638 | | .528 | .477 | .505 | .611 | 28 |

TABLE XXXII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 49.5 z/D = 1.008

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 74.0 | | | | | n = 2085 α = 74.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.222 | -.448 | | .851 | .746 | .095 | .143 | | .596 | .347 | .240 | .257 | | .496 | .165 | 1 |
| 2 | .323 | .420 | | -.062 | -.378 | .080 | .245 | | -.347 | -.516 | .058 | .177 | | -.408 | -.515 | 2 |
| 3 | .340 | -.041 | | -.241 | -.261 | .010 | -.093 | | -.332 | -.281 | -.021 | -.097 | | -.340 | -.243 | 3 |
| 4 | .196 | -.137 | | -.195 | -.124 | -.026 | -.150 | | -.220 | -.121 | -.056 | -.138 | | -.233 | -.104 | 4 |
| 5 | .055 | -.133 | | -.135 | -.077 | -.029 | -.091 | | -.126 | -.041 | -.038 | -.085 | | -.145 | -.068 | 5 |
| 6 | -.202 | -.928 | | .131 | .365 | -.363 | -.258 | | .419 | .543 | -.367 | -.221 | | .413 | .515 | 6 |
| 7 | -.114 | -.330 | | .035 | .104 | -.041 | .077 | | .183 | .232 | -.024 | .070 | | .155 | .214 | 7 |
| 8 | -.005 | -.102 | | -.035 | .071 | .145 | .194 | | .065 | .165 | .185 | .179 | | .031 | .133 | 8 |
| 9 | .170 | .170 | .199 | .233 | .323 | .306 | .253 | .258 | .322 | .414 | .267 | .267 | .289 | .330 | .369 | 9 |
| 10 | .047 | .013 | -.056 | -.006 | .106 | .047 | .058 | .042 | .015 | .124 | .036 | .034 | .002 | .034 | .104 | 10 |
| 11 | .038 | -.102 | -.189 | -.088 | .073 | .026 | -.065 | -.112 | -.074 | .097 | .014 | -.063 | -.158 | -.038 | .080 | 11 |
| 12 | .180 | .130 | .122 | .210 | .281 | .308 | .198 | .213 | .276 | .347 | .265 | .201 | .214 | .282 | .313 | 12 |
| 13 | .035 | -.119 | -.174 | -.062 | .079 | .033 | -.059 | -.089 | -.051 | .104 | .019 | -.075 | -.133 | -.024 | .077 | 13 |
| 14 | -.025 | -.222 | -.236 | -.231 | -.161 | -.055 | -.151 | -.154 | -.211 | -.149 | -.063 | -.165 | -.192 | -.199 | -.145 | 14 |
| 15 | .007 | -.108 | -.120 | -.115 | -.072 | .081 | -.002 | -.023 | -.038 | -.004 | .053 | -.034 | -.065 | -.082 | -.060 | 15 |
| 16 | -.030 | -.102 | -.156 | -.089 | -.097 | .156 | .059 | .013 | .012 | .009 | .124 | .021 | -.031 | -.034 | -.043 | 16 |
| 17 | .161 | .201 | .216 | .169 | .185 | .289 | .248 | .246 | .259 | .271 | .240 | .245 | .238 | .240 | .250 | 17 |
| 18 | .227 | .271 | .250 | .269 | .328 | .342 | .271 | .268 | .357 | .414 | .291 | .282 | .289 | .357 | .384 | 18 |
| 19 | .276 | .338 | .339 | .388 | .465 | .363 | .320 | .372 | .482 | .544 | .306 | .342 | .386 | .491 | .527 | 19 |
| 20 | .282 | .365 | .383 | .421 | .501 | .389 | .332 | .416 | .514 | .584 | .340 | .372 | .445 | .525 | .549 | 20 |
| 21 | .153 | .146 | .132 | .234 | .328 | .376 | .368 | .321 | .385 | .395 | .301 | .274 | .289 | .330 | .355 | 21 |
| 22 | -.012 | -.075 | -.227 | -.242 | -.242 | .328 | .082 | -.074 | -.009 | -.048 | .257 | .060 | -.138 | -.136 | -.131 | 22 |
| 23 | -.581 | -.583 | -.949 | -1.076 | -.839 | .162 | -.075 | -.266 | -.271 | -.329 | .085 | -.167 | -.420 | -.530 | -.420 | 23 |
| 24 | -.196 | -.161 | -.367 | -.634 | -.797 | .266 | .179 | .134 | .134 | .077 | .189 | .129 | .056 | -.189 | -.155 | 24 |
| 25 | -.151 | -.148 | -.209 | -.227 | -.090 | .242 | .179 | .175 | .159 | .140 | .179 | .155 | .153 | .063 | .068 | 25 |
| 26 | -.097 | -.098 | -.161 | -.111 | .022 | .224 | .218 | .180 | .172 | .155 | .182 | .165 | .172 | .136 | .116 | 26 |
| 27 | .449 | .571 | .602 | .880 | .917 | .417 | .456 | .710 | .868 | .864 | .335 | .486 | .773 | .873 | .868 | 27 |
| 28 | | .417 | .433 | .545 | .646 | | .390 | .554 | .676 | .667 | | .428 | .603 | .690 | .642 | 28 |

TABLE XXXIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 19.8$ $\delta_{f,30} = 28.5$ $z/D = 1.008$

| Tube number | n = 2915 α = 0.0 | | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | -.179 | -.407 | | .804 | .511 |
| 2 | .084 | .359 | | -.169 | -.488 |
| 3 | .064 | -.067 | | -.264 | -.292 |
| 4 | .023 | -.157 | | -.185 | -.154 |
| 5 | -.091 | -.213 | | -.167 | -.153 |
| 6 | -.417 | -.791 | | .241 | .466 |
| 7 | -.145 | -.209 | | .090 | .161 |
| 8 | .015 | .044 | | .017 | .123 |
| 9 | .173 | .195 | .220 | .207 | .230 |
| 10 | .148 | .124 | .144 | .178 | .320 |
| 11 | .042 | -.043 | -.039 | .044 | .173 |
| 12 | .135 | .074 | .108 | .162 | .250 |
| 13 | -.298 | -.504 | -.449 | -.291 | -.222 |
| 14 | -.612 | -.827 | -.773 | -.712 | -.674 |
| 15 | -.221 | -.313 | -.309 | -.235 | -.166 |
| 16 | -.189 | -.269 | -.274 | -.117 | -.142 |
| 17 | .164 | .200 | .209 | .219 | .420 |
| 18 | .325 | .350 | .364 | .598 | .654 |
| 19 | .413 | .397 | .373 | .459 | .520 |
| 20 | .397 | .401 | .366 | .446 | .517 |
| 21 | -.107 | -.132 | -.193 | -.017 | .091 |
| 22 | .070 | .019 | -.089 | .065 | .124 |
| 23 | -.405 | -.479 | -.487 | -.343 | -.254 |
| 24 | -.721 | -.745 | -.787 | -.774 | -.620 |
| 25 | -.037 | -.070 | -.117 | -.077 | -.044 |
| 26 | .063 | .057 | .036 | .043 | .035 |
| 27 | .574 | .481 | .552 | .696 | .689 |
| 28 | | .330 | .372 | .487 | .482 |

| Tube number | n = 2915 α = 69.0 | | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | .429 | .233 | | .434 | .299 |
| 2 | .104 | .255 | | -.376 | -.596 |
| 3 | .043 | -.097 | | -.343 | -.363 |
| 4 | -.016 | -.158 | | -.214 | -.199 |
| 5 | .016 | -.035 | | -.123 | -.167 |
| 6 | -.262 | -.324 | | .454 | .607 |
| 7 | -.005 | .065 | | .242 | .295 |
| 8 | .159 | .197 | | .143 | .242 |
| 9 | .276 | .287 | .237 | .269 | .295 |
| 10 | .261 | .258 | .234 | .272 | .402 |
| 11 | .206 | .193 | .154 | .143 | .225 |
| 12 | .252 | .245 | .206 | .241 | .308 |
| 13 | .042 | -.003 | -.058 | -.193 | -.237 |
| 14 | .062 | .015 | -.014 | -.444 | -.668 |
| 15 | .138 | .113 | .111 | .017 | -.068 |
| 16 | .126 | .100 | .091 | .000 | -.007 |
| 17 | .257 | .262 | .255 | .379 | .633 |
| 18 | .434 | .311 | .388 | .639 | .737 |
| 19 | .444 | .369 | .396 | .531 | .602 |
| 20 | .443 | .373 | .402 | .523 | .592 |
| 21 | .188 | .172 | .143 | .149 | .207 |
| 22 | .288 | .210 | .179 | .198 | .208 |
| 23 | .105 | .100 | .044 | -.058 | -.070 |
| 24 | .237 | .228 | .150 | -.034 | -.232 |
| 25 | .255 | .247 | .220 | .188 | .169 |
| 26 | .242 | .237 | .213 | .205 | .218 |
| 27 | .577 | .469 | .556 | .792 | .792 |
| 28 | | .383 | .429 | .575 | .603 |

| Tube number | n = 2085 α = 69.0 | | | | |
|---|---|---|---|---|---|
| | Spanwise station | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 |
| 1 | .640 | .422 | | .072 | .239 |
| 2 | .076 | .177 | | -.513 | -.645 |
| 3 | -.011 | -.124 | | -.391 | -.402 |
| 4 | -.062 | -.160 | | -.239 | -.244 |
| 5 | .031 | .028 | | -.081 | -.199 |
| 6 | -.249 | -.184 | | .522 | .582 |
| 7 | .000 | .062 | | .249 | .283 |
| 8 | .158 | .177 | | .122 | .230 |
| 9 | .237 | .247 | .278 | .285 | .290 |
| 10 | .242 | .254 | .239 | .285 | .386 |
| 11 | .206 | .206 | .129 | .177 | .206 |
| 12 | .244 | .230 | .196 | .256 | .295 |
| 13 | .117 | .091 | -.146 | -.105 | -.261 |
| 14 | .143 | .141 | -.143 | -.252 | -.693 |
| 15 | .158 | .172 | .072 | .088 | -.098 |
| 16 | .158 | .155 | .062 | -.038 | -.028 |
| 17 | .225 | .235 | .292 | .350 | .590 |
| 18 | .350 | .263 | .415 | .628 | .721 |
| 19 | .367 | .297 | .417 | .520 | .585 |
| 20 | .391 | .316 | .417 | .486 | .561 |
| 21 | .235 | .254 | .141 | .189 | .191 |
| 22 | .314 | .218 | .170 | .249 | .220 |
| 23 | .167 | .143 | .021 | .000 | -.110 |
| 24 | .254 | .232 | .139 | .014 | -.244 |
| 25 | .266 | .266 | .235 | .199 | .163 |
| 26 | .249 | .254 | .225 | .213 | .215 |
| 27 | .470 | .407 | .604 | .813 | .774 |
| 28 | | .347 | .470 | .549 | .585 |

TABLE XXXIV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 19.8$ $\delta_{f,30} = 38.6$ $z/D = 1.008$

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 64.5 | | | | | n = 2085 α = 64.5 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.038 | -.277 | | .764 | .382 | .521 | .383 | | .388 | .104 | .580 | .444 | | .527 | .087 | 1 |
| 2 | .110 | .328 | | -.239 | -.511 | .091 | .204 | | -.407 | -.585 | .058 | .205 | | -.377 | -.536 | 2 |
| 3 | .018 | -.069 | | -.300 | -.282 | -.019 | -.109 | | -.348 | -.317 | -.053 | -.101 | | -.326 | -.275 | 3 |
| 4 | -.038 | -.161 | | -.213 | -.145 | -.082 | -.176 | | -.233 | -.176 | -.096 | -.164 | | -.207 | -.154 | 4 |
| 5 | -.124 | -.204 | | -.218 | -.147 | -.065 | -.150 | | -.204 | -.157 | -.101 | -.171 | | -.193 | -.144 | 5 |
| 6 | -.522 | -.665 | | .261 | .478 | -.233 | -.121 | | .500 | .628 | -.220 | -.116 | | .483 | .572 | 6 |
| 7 | -.138 | -.125 | | .084 | .159 | .069 | .140 | | .264 | .322 | .084 | .154 | | .256 | .304 | 7 |
| 8 | .079 | .107 | | .020 | .138 | .254 | .228 | | .166 | .271 | .287 | .251 | | .169 | .270 | 8 |
| 9 | .213 | .228 | .206 | .211 | .241 | .288 | .281 | .275 | .295 | .316 | .302 | .299 | .282 | .314 | .321 | 9 |
| 10 | .164 | .143 | .143 | .171 | .334 | .252 | .226 | .221 | .276 | .438 | .220 | .224 | .212 | .299 | .432 | 10 |
| 11 | .045 | -.027 | -.041 | .014 | .179 | .150 | .094 | .025 | .101 | .246 | .106 | .043 | .004 | .116 | .246 | 11 |
| 12 | .145 | .098 | .092 | .145 | .262 | .229 | .188 | .161 | .238 | .335 | .207 | .169 | .144 | .258 | .335 | 12 |
| 13 | -.355 | -.476 | -.463 | -.363 | -.223 | -.156 | -.294 | -.416 | -.335 | -.246 | -.302 | -.411 | -.447 | -.311 | -.220 | 13 |
| 14 | -.663 | -.815 | -.765 | -.785 | -.643 | -.159 | -.419 | -.659 | -.742 | -.663 | -.396 | -.635 | -.677 | -.681 | -.551 | 14 |
| 15 | -.232 | -.325 | -.320 | -.294 | -.191 | .031 | -.048 | -.182 | -.178 | -.147 | -.028 | -.140 | -.195 | -.174 | -.130 | 15 |
| 16 | -.187 | -.305 | -.291 | -.144 | -.170 | .040 | -.031 | -.132 | -.091 | -.104 | .004 | -.072 | -.135 | -.062 | -.082 | 16 |
| 17 | .192 | .219 | .209 | .225 | .473 | .254 | .261 | .309 | .413 | .669 | .265 | .290 | .321 | .425 | .609 | 17 |
| 18 | .371 | .308 | .336 | .637 | .667 | .344 | .302 | .471 | .697 | .739 | .328 | .333 | .481 | .730 | .744 | 18 |
| 19 | .386 | .356 | .410 | .508 | .567 | .378 | .348 | .478 | .597 | .658 | .379 | .367 | .485 | .628 | .664 | 19 |
| 20 | .388 | .354 | .406 | .478 | .560 | .414 | .353 | .467 | .573 | .648 | .381 | .369 | .466 | .584 | .633 | 20 |
| 21 | .034 | .022 | -.132 | -.042 | .118 | .296 | .289 | .031 | .097 | .181 | .236 | .241 | .041 | .121 | .198 | 21 |
| 22 | .104 | -.175 | -.247 | -.148 | -.025 | .351 | .078 | -.075 | -.002 | .039 | .275 | .038 | -.074 | .007 | .048 | 22 |
| 23 | -.668 | -.920 | -.901 | -.822 | -.497 | .226 | -.029 | -.528 | -.479 | -.378 | .157 | -.278 | -.510 | -.502 | -.340 | 23 |
| 24 | -.393 | -.926 | -.906 | -.905 | -.600 | .247 | .142 | -.423 | -.415 | -.400 | .246 | -.116 | -.391 | -.488 | -.398 | 24 |
| 25 | -.107 | -.121 | -.104 | -.079 | -.080 | .272 | .250 | .144 | .153 | .045 | .268 | .222 | .161 | .113 | .048 | 25 |
| 26 | -.013 | -.027 | .066 | .058 | .011 | .269 | .269 | .251 | .232 | .126 | .265 | .275 | .261 | .203 | .106 | 26 |
| 27 | .457 | .493 | .665 | .769 | .790 | .409 | .478 | .685 | .846 | .854 | .381 | .512 | .705 | .875 | .889 | 27 |
| 28 | | .389 | .501 | .599 | .555 | | .394 | .554 | .685 | .672 | | .423 | .575 | .730 | .681 | 28 |

TABLE XXXV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 19.8$ $\delta_{f,30} = 49.5$ $z/D = 1.008$

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 62.5 | | | | | n = 2085 α = 62.5 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | -.091 | -.244 | | .751 | .429 | .507 | .434 | | .299 | .096 | .523 | .424 | | .540 | .266 | 1 |
| 2 | .095 | .322 | | -.230 | -.521 | .082 | .167 | | -.461 | -.578 | .064 | .177 | | -.402 | -.553 | 2 |
| 3 | .010 | -.070 | | -.307 | -.297 | -.015 | -.119 | | -.368 | -.299 | -.019 | -.093 | | -.331 | -.293 | 3 |
| 4 | -.041 | -.152 | | -.223 | -.158 | -.070 | -.179 | | -.246 | -.149 | -.064 | -.140 | | -.214 | -.150 | 4 |
| 5 | -.118 | -.183 | | -.227 | -.155 | -.108 | -.169 | | -.218 | -.137 | -.108 | -.165 | | -.195 | -.140 | 5 |
| 6 | -.542 | -.611 | | .247 | .446 | -.202 | -.072 | | .511 | .632 | -.172 | -.106 | | .501 | .612 | 6 |
| 7 | -.122 | -.078 | | .099 | .158 | .109 | .152 | | .275 | .335 | .125 | .170 | | .291 | .331 | 7 |
| 8 | .142 | .154 | | .059 | .159 | .304 | .230 | | .188 | .303 | .325 | .266 | | .224 | .306 | 8 |
| 9 | .253 | .258 | .248 | .241 | .261 | .338 | .292 | .283 | .307 | .348 | .355 | .323 | .308 | .345 | .380 | 9 |
| 10 | .182 | .174 | .174 | .200 | .351 | .254 | .218 | .228 | .316 | .480 | .256 | .246 | .242 | .363 | .484 | 10 |
| 11 | .065 | -.007 | -.030 | .019 | .191 | .112 | .067 | .018 | .122 | .283 | .123 | .071 | .022 | .160 | .281 | 11 |
| 12 | .175 | .130 | .108 | .160 | .264 | .234 | .175 | .152 | .270 | .379 | .237 | .190 | .163 | .298 | .380 | 12 |
| 13 | -.372 | -.466 | -.490 | -.396 | -.233 | -.344 | -.371 | -.466 | -.357 | -.227 | -.372 | -.412 | -.446 | -.311 | -.222 | 13 |
| 14 | -.638 | -.778 | -.773 | -.811 | -.644 | -.475 | -.574 | -.702 | -.736 | -.607 | -.518 | -.647 | -.689 | -.713 | -.620 | 14 |
| 15 | -.205 | -.295 | -.320 | -.293 | -.199 | -.024 | -.088 | -.190 | -.166 | -.123 | -.039 | -.143 | -.202 | .180 | -.118 | 15 |
| 16 | -.160 | -.280 | -.295 | -.130 | -.180 | .038 | -.030 | -.125 | -.084 | -.082 | .044 | -.056 | -.135 | -.076 | -.086 | 16 |
| 17 | .226 | .261 | .261 | .292 | .508 | .287 | .266 | .329 | .481 | .714 | .298 | .306 | .340 | .525 | .661 | 17 |
| 18 | .360 | .330 | .383 | .650 | .666 | .381 | .301 | .474 | .724 | .770 | .419 | .365 | .508 | .778 | .805 | 18 |
| 19 | .411 | .396 | .460 | .566 | .601 | .422 | .347 | .519 | .644 | .721 | .449 | .412 | .538 | .693 | .743 | 19 |
| 20 | .402 | .386 | .447 | .528 | .579 | .447 | .374 | .508 | .630 | .708 | .471 | .427 | .516 | .639 | .696 | 20 |
| 21 | .177 | .181 | .140 | .215 | .301 | .385 | .364 | .278 | .364 | .400 | .390 | .380 | .276 | .360 | .402 | 21 |
| 22 | -.001 | -.342 | -.447 | -.340 | -.253 | .319 | .016 | -.240 | -.111 | -.118 | .311 | -.004 | -.266 | -.172 | -.133 | 22 |
| 23 | -.692 | -1.142 | -1.218 | -1.139 | -.692 | .199 | -.072 | -.628 | -.416 | -.423 | .190 | -.358 | -.735 | -.644 | -.461 | 23 |
| 24 | -.235 | -.805 | -.878 | -.834 | -.533 | .264 | .154 | -.242 | -.079 | -.216 | .271 | .004 | -.422 | -.328 | -.252 | 24 |
| 25 | -.146 | -.135 | -.110 | -.073 | -.111 | .278 | .236 | .170 | .123 | .083 | .286 | .227 | .140 | .103 | .059 | 25 |
| 26 | -.085 | -.073 | .052 | .056 | -.003 | .298 | .272 | .240 | .181 | .127 | .296 | .289 | .229 | .187 | .118 | 26 |
| 27 | .469 | .521 | .707 | .849 | .842 | .453 | .496 | .752 | .898 | .910 | .496 | .555 | .775 | .943 | .938 | 27 |
| 28 | | .469 | .571 | .676 | .622 | | .397 | .628 | .750 | .746 | | .434 | .664 | .792 | .763 | 28 |

TABLE XXXVI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 39.3 $\delta_{f,30}$ = 28.5 z/D = 1.008

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 64.4 | | | | | n = 2085 α = 64.4 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .075 | -.170 | | .644 | .603 | .513 | .415 | | .336 | .167 | .621 | .573 | | .310 | .375 | 1 |
| 2 | .090 | .326 | | -.184 | -.437 | .089 | .215 | | -.400 | -.626 | .064 | .133 | | -.530 | -.585 | 2 |
| 3 | .087 | -.067 | | -.282 | -.308 | .039 | -.101 | | -.349 | -.375 | .014 | -.047 | | -.353 | -.368 | 3 |
| 4 | .033 | -.171 | | -.216 | -.184 | -.011 | -.153 | | -.227 | -.209 | -.021 | -.102 | | -.205 | -.203 | 4 |
| 5 | -.127 | -.267 | | -.226 | -.208 | .031 | -.032 | | -.140 | -.181 | .009 | -.014 | | -.157 | -.162 | 5 |
| 6 | -.292 | -.572 | | .211 | .331 | -.140 | -.161 | | .508 | .656 | -.100 | -.124 | | .590 | .619 | 6 |
| 7 | -.029 | -.040 | | .126 | .144 | .112 | .151 | | .315 | .370 | .114 | .153 | | .349 | .358 | 7 |
| 8 | .192 | .212 | | .146 | .198 | .289 | .245 | | .245 | .367 | .296 | .282 | | .305 | .394 | 8 |
| 9 | .327 | .338 | .313 | .281 | .286 | .367 | .347 | .267 | .314 | .377 | .358 | .360 | .289 | .356 | .384 | 9 |
| 10 | .346 | .352 | .323 | .377 | .444 | .408 | .368 | .322 | .498 | .656 | .382 | .387 | .344 | .640 | .671 | 10 |
| 11 | .095 | .052 | .030 | .157 | .260 | .293 | .263 | .206 | .325 | .423 | .282 | .277 | .207 | .406 | .430 | 11 |
| 12 | .069 | -.029 | -.088 | .032 | .092 | .276 | .239 | .105 | .180 | .216 | .267 | .246 | .081 | .215 | .227 | 12 |
| 13 | -.838 | -1.013 | -.984 | -.862 | -.780 | -.051 | -.063 | -.190 | -.572 | -.748 | -.066 | -.090 | -.248 | -.671 | -.662 | 13 |
| 14 | -1.087 | -1.297 | -1.274 | -1.108 | -.972 | .188 | .170 | .124 | -.317 | -.685 | .179 | .176 | .093 | -.538 | -.540 | 14 |
| 15 | -.314 | -.395 | -.377 | -.314 | -.269 | .195 | .174 | .155 | .052 | -.073 | .181 | .176 | .143 | -.026 | -.021 | 15 |
| 16 | -.227 | -.271 | -.275 | -.180 | -.192 | .187 | .170 | .149 | .008 | -.002 | .186 | .176 | .143 | .002 | .011 | 16 |
| 17 | .247 | .265 | .284 | .198 | .260 | .309 | .310 | .256 | .233 | .405 | .315 | .332 | .275 | .339 | .375 | 17 |
| 18 | .509 | .419 | .469 | .762 | .785 | .518 | .401 | .525 | .831 | .959 | .554 | .442 | .576 | .932 | .965 | 18 |
| 19 | .591 | .523 | .522 | .573 | .584 | .565 | .461 | .483 | .672 | .777 | .600 | .497 | .518 | .764 | .793 | 19 |
| 20 | .537 | .501 | .499 | .550 | .564 | .537 | .452 | .465 | .683 | .758 | .549 | .523 | .492 | .729 | .719 | 20 |
| 21 | -.115 | -.097 | -.146 | -.037 | .059 | .204 | .184 | .179 | .181 | .217 | .222 | .270 | .189 | .215 | .234 | 21 |
| 22 | .129 | .046 | -.023 | .058 | .102 | .329 | .275 | .226 | .232 | .252 | .327 | .349 | .236 | .267 | .277 | 22 |
| 23 | -.413 | -.405 | -.418 | -.345 | -.258 | .094 | .111 | .082 | -.009 | -.072 | .081 | .100 | .069 | -.078 | -.062 | 23 |
| 24 | -.578 | -.506 | -.563 | -.620 | -.503 | .119 | .116 | .091 | -.024 | -.105 | .119 | .117 | .086 | -.095 | -.076 | 24 |
| 25 | .029 | .018 | -.011 | -.035 | -.031 | .184 | .163 | .147 | .116 | .096 | .196 | .181 | .150 | .095 | .097 | 25 |
| 26 | .127 | .123 | .113 | .090 | .053 | .183 | .170 | .153 | .145 | .139 | .191 | .181 | .174 | .143 | .143 | 26 |
| 27 | .659 | .584 | .599 | .664 | .664 | .672 | .532 | .549 | .849 | .858 | .712 | .578 | .592 | .879 | .879 | 27 |
| 28 | | .459 | .474 | .515 | .494 | | .395 | .412 | .611 | .681 | | .349 | .463 | .664 | .678 | 28 |

TABLE XXXVII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 39.3$ $\delta_{f,30} = 38.6$ $z/D = 1.008$

| Tube number | n = 2915, α = 0.0 | | | | | n = 2915, α = 61.2 | | | | | n = 2085, α = 61.2 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .038 | -.021 | | .643 | .489 | .509 | .450 | | .430 | .176 | .728 | .635 | | .222 | .255 | 1 |
| 2 | .091 | .280 | | -.201 | -.432 | .077 | .220 | | -.366 | -.592 | .062 | .133 | | -.499 | -.602 | 2 |
| 3 | .041 | -.072 | | -.276 | -.271 | .016 | -.105 | | -.334 | -.334 | -.023 | -.128 | | -.387 | -.348 | 3 |
| 4 | -.014 | -.166 | | -.201 | -.159 | -.025 | -.165 | | -.220 | -.168 | -.078 | -.176 | | -.248 | -.212 | 4 |
| 5 | -.142 | -.244 | | -.208 | -.184 | -.004 | -.062 | | -.163 | -.165 | -.007 | -.059 | | -.198 | -.200 | 5 |
| 6 | -.332 | -.413 | | .233 | .350 | -.098 | -.079 | | .508 | .660 | -.086 | .004 | | .556 | .649 | 6 |
| 7 | .015 | .058 | | .158 | .172 | .161 | .189 | | .334 | .393 | .148 | .183 | | .334 | .377 | 7 |
| 8 | .268 | .260 | | .192 | .238 | .354 | .255 | | .271 | .396 | .348 | .255 | | .265 | .384 | 8 |
| 9 | .362 | .366 | .323 | .310 | .313 | .406 | .362 | .297 | .327 | .402 | .363 | .329 | .289 | .329 | .377 | 9 |
| 10 | .371 | .380 | .335 | .416 | .483 | .441 | .388 | .345 | .530 | .711 | .389 | .358 | .336 | .559 | .702 | 10 |
| 11 | .111 | .078 | .058 | .192 | .279 | .299 | .258 | .201 | .311 | .418 | .286 | .231 | .186 | .329 | .411 | 11 |
| 12 | .083 | -.003 | -.056 | .063 | .117 | .304 | .222 | .067 | .161 | .216 | .286 | .181 | .052 | .141 | .207 | 12 |
| 13 | -.844 | -.955 | -.895 | -.814 | -.716 | -.149 | -.169 | -.379 | -.693 | -.794 | -.081 | -.179 | -.365 | -.769 | -.788 | 13 |
| 14 | -1.090 | -1.232 | -1.184 | -1.047 | -.885 | .148 | .123 | -.030 | -.562 | -.888 | .176 | .121 | -.042 | -.697 | -.855 | 14 |
| 15 | -.303 | -.380 | -.359 | -.306 | -.249 | .158 | .135 | .098 | -.004 | -.128 | .186 | .133 | .095 | -.062 | -.138 | 15 |
| 16 | -.211 | -.269 | -.267 | -.176 | -.184 | .154 | .127 | .091 | -.025 | -.042 | .176 | .143 | .105 | -.066 | -.047 | 16 |
| 17 | .288 | .295 | .301 | .255 | .319 | .365 | .325 | .288 | .265 | .478 | .346 | .301 | .296 | .305 | .425 | 17 |
| 18 | .497 | .438 | .484 | .759 | .763 | .487 | .392 | .577 | .850 | .926 | .480 | .370 | .594 | .898 | .932 | 18 |
| 19 | .543 | .524 | .540 | .603 | .619 | .552 | .451 | .531 | .717 | .807 | .535 | .422 | .542 | .745 | .805 | 19 |
| 20 | .511 | .513 | .503 | .560 | .580 | .625 | .458 | .519 | .694 | .792 | .597 | .453 | .506 | .712 | .740 | 20 |
| 21 | .024 | .018 | -.079 | .014 | .085 | .352 | .353 | .179 | .163 | .237 | .365 | .367 | .200 | .181 | .234 | 21 |
| 22 | .076 | -.056 | -.173 | -.079 | -.052 | .421 | .203 | .098 | .084 | .121 | .415 | .238 | .124 | .073 | .090 | 22 |
| 23 | -.592 | -.651 | -.713 | -.610 | -.456 | .032 | .037 | -.019 | -.131 | -.259 | .055 | .040 | -.009 | -.196 | -.258 | 23 |
| 24 | -.344 | -.516 | -.643 | -.644 | -.505 | .093 | .059 | .009 | -.120 | -.310 | .105 | .057 | .016 | -.186 | -.286 | 24 |
| 25 | .013 | .010 | -.009 | -.030 | -.048 | .167 | .135 | .101 | .074 | .081 | .176 | .143 | .124 | .064 | .069 | 25 |
| 26 | .078 | .096 | .117 | .084 | .041 | .166 | .149 | .110 | .103 | .134 | .179 | .152 | .133 | .119 | .121 | 26 |
| 27 | .626 | .596 | .647 | .721 | .729 | .634 | .536 | .648 | .900 | .894 | .618 | .513 | .652 | .922 | .910 | 27 |
| 28 | | .492 | .525 | .584 | .564 | | .421 | .428 | .721 | .750 | | .391 | .403 | .740 | .743 | 28 |

TABLE XXXVIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 39.3$ $\delta_{f,30} = 49.5$ $z/D = 1.008$

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 59.0 | | | | | n = 2085 α = 59.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .168 | .056 | | .665 | .498 | .678 | .487 | | .368 | .162 | .716 | .597 | | .223 | .232 | 1 |
| 2 | .090 | .281 | | -.182 | -.408 | .078 | .184 | | -.404 | -.605 | .057 | .161 | | -.455 | -.614 | 2 |
| 3 | .027 | -.066 | | -.268 | -.258 | .000 | -.118 | | -.354 | -.343 | -.019 | -.123 | | -.365 | -.356 | 3 |
| 4 | -.035 | -.158 | | -.192 | -.150 | -.048 | -.174 | | -.236 | -.185 | -.068 | -.170 | | -.244 | -.203 | 4 |
| 5 | -.154 | -.236 | | -.196 | -.167 | -.010 | -.084 | | -.194 | -.177 | -.014 | -.066 | | -.189 | -.203 | 5 |
| 6 | -.263 | -.316 | | .241 | .362 | -.062 | -.003 | | .532 | .678 | -.035 | .047 | | .564 | .678 | 6 |
| 7 | .077 | .113 | | .180 | .198 | .192 | .196 | | .349 | .417 | .201 | .227 | | .379 | .417 | 7 |
| 8 | .311 | .282 | | .225 | .276 | .378 | .251 | | .287 | .426 | .394 | .265 | | .327 | .432 | 8 |
| 9 | .368 | .388 | .343 | .331 | .339 | .417 | .344 | .318 | .333 | .438 | .403 | .374 | .325 | .365 | .432 | 9 |
| 10 | .380 | .392 | .351 | .440 | .519 | .465 | .383 | .372 | .558 | .734 | .436 | .391 | .367 | .569 | .740 | 10 |
| 11 | .115 | .084 | .073 | .215 | .304 | .303 | .234 | .201 | .303 | .424 | .280 | .265 | .196 | .322 | .422 | 11 |
| 12 | .084 | .008 | -.040 | .084 | .141 | .290 | .183 | .058 | .139 | .216 | .275 | .216 | .080 | .144 | .196 | 12 |
| 13 | -.867 | -.950 | -.901 | -.785 | -.669 | -.159 | -.248 | -.434 | -.779 | -.828 | -.170 | -.189 | -.372 | -.766 | -.856 | 13 |
| 14 | -1.101 | -1.221 | -1.172 | -1.014 | -.818 | .154 | .087 | -.118 | -.727 | -.947 | .144 | .120 | -.019 | -.683 | -.977 | 14 |
| 15 | -.303 | -.370 | -.349 | -.285 | -.228 | .165 | .110 | .077 | -.053 | -.148 | .158 | .137 | .104 | -.038 | -.182 | 15 |
| 16 | -.099 | -.188 | -.266 | -.161 | -.168 | .165 | .108 | .075 | -.056 | -.062 | .156 | .132 | .095 | -.064 | -.078 | 16 |
| 17 | .311 | .321 | .324 | .280 | .349 | .375 | .317 | .321 | .347 | .537 | .370 | .337 | .322 | .370 | .503 | 17 |
| 18 | .507 | .439 | .488 | .781 | .754 | .523 | .386 | .594 | .866 | .933 | .545 | .401 | .567 | .873 | .965 | 18 |
| 19 | .538 | .518 | .552 | .630 | .641 | .565 | .442 | .561 | .754 | .833 | .581 | .457 | .522 | .754 | .854 | 19 |
| 20 | .518 | .500 | .503 | .580 | .603 | .641 | .464 | .545 | .718 | .805 | .631 | .488 | .505 | .711 | .788 | 20 |
| 21 | .221 | .220 | .165 | .246 | .279 | .490 | .480 | .338 | .366 | .415 | .477 | .481 | .365 | .384 | .412 | 21 |
| 22 | -.073 | -.235 | -.381 | -.249 | -.227 | .301 | .084 | -.047 | -.105 | -.098 | .244 | .120 | .004 | -.085 | -.130 | 22 |
| 23 | -.596 | -.798 | -.921 | -.785 | -.544 | .006 | -.026 | -.078 | -.245 | -.417 | -.021 | .004 | -.059 | -.249 | -.465 | 23 |
| 24 | -.130 | -.417 | -.589 | -.575 | -.395 | .081 | .021 | -.028 | -.188 | -.311 | .057 | .059 | .002 | -.187 | -.370 | 24 |
| 25 | -.025 | -.017 | .326 | -.034 | -.055 | .161 | .107 | .084 | .047 | .066 | .154 | .147 | .123 | .066 | .047 | 25 |
| 26 | .016 | .048 | .490 | .077 | .026 | .165 | .135 | .098 | .084 | .126 | .166 | .156 | .113 | .104 | .120 | 26 |
| 27 | .626 | .594 | .550 | .754 | .767 | .681 | .538 | .679 | .923 | .934 | .711 | .555 | .645 | .968 | .970 | 27 |
| 28 | | .512 | .511 | .641 | .620 | | .431 | .560 | .794 | .812 | | .436 | .441 | .785 | .835 | 28 |

TABLE XXXIX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 59.4$ $\delta_{f,30} = 28.5$ $z/D = 1.008$

| Tube number | n = 2915, α = 0.0 | | | | | n = 2915, α = 59.0 | | | | | n = 2085, α = 59.0 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .272 | .009 | | .773 | .658 | .676 | .589 | | .210 | .200 | .690 | .549 | | .529 | .391 | 1 |
| 2 | .119 | .351 | | -.043 | -.363 | .090 | .170 | | -.429 | -.606 | .064 | .205 | | -.324 | -.539 | 2 |
| 3 | .153 | -.077 | | -.245 | -.259 | .095 | -.089 | | -.352 | -.372 | .096 | -.099 | | -.299 | -.329 | 3 |
| 4 | .076 | -.171 | | -.193 | -.148 | .031 | -.142 | | -.226 | -.200 | .029 | -.141 | | -.195 | -.173 | 4 |
| 5 | -.067 | -.199 | | -.188 | -.165 | .002 | -.053 | | -.143 | -.135 | .004 | -.061 | | -.131 | -.131 | 5 |
| 6 | .003 | -.372 | | .171 | .361 | .139 | .073 | | .576 | .693 | .185 | -.044 | | .532 | .673 | 6 |
| 7 | .180 | .166 | | .216 | .241 | .280 | .265 | | .418 | .468 | .301 | .250 | | .396 | .460 | 7 |
| 8 | .352 | .398 | | .314 | .356 | .430 | .320 | | .385 | .500 | .450 | .331 | | .373 | .509 | 8 |
| 9 | .431 | .483 | .453 | .427 | .436 | .475 | .448 | .424 | .454 | .566 | .462 | .477 | .440 | .448 | .552 | 9 |
| 10 | .452 | .502 | .456 | .432 | .489 | .507 | .466 | .431 | .472 | .572 | .485 | .490 | .455 | .487 | .589 | 10 |
| 11 | .447 | .456 | .407 | .519 | .610 | .543 | .455 | .454 | .688 | .836 | .505 | .467 | .462 | .675 | .846 | 11 |
| 12 | -.278 | -.377 | -.519 | -.441 | -.372 | -.116 | -.027 | -.257 | -.336 | -.345 | -.121 | -.084 | -.279 | -.356 | -.366 | 12 |
| 13 | -.837 | -.883 | -1.084 | -1.253 | -1.084 | -.174 | -.031 | -.286 | -.605 | -.688 | -.163 | -.096 | -.309 | -.700 | -.831 | 13 |
| 14 | -.360 | -.314 | -.435 | -.768 | -.789 | .137 | .149 | .088 | -.047 | -.120 | .141 | .131 | .084 | -.081 | -.247 | 14 |
| 15 | -.216 | -.273 | -.274 | -.281 | -.255 | .139 | .142 | .110 | .035 | -.017 | .133 | .123 | .108 | .034 | -.059 | 15 |
| 16 | -.192 | -.246 | -.274 | -.154 | -.164 | .137 | .134 | .110 | .015 | .009 | .143 | .121 | .108 | -.014 | -.007 | 16 |
| 17 | .288 | .339 | .338 | .241 | .313 | .281 | .340 | .334 | .252 | .342 | .287 | .378 | .346 | .279 | .326 | 17 |
| 18 | .618 | .531 | .575 | .840 | .815 | .820 | .518 | .610 | .881 | .998 | .822 | .547 | .626 | .873 | 1.007 | 18 |
| 19 | .695 | .647 | .664 | .728 | .736 | .856 | .586 | .587 | .796 | .931 | .871 | .616 | .601 | .806 | .945 | 19 |
| 20 | .645 | .634 | .644 | .686 | .690 | .780 | .598 | .578 | .765 | .863 | .777 | .618 | .594 | .767 | .851 | 20 |
| 21 | -.083 | -.095 | -.159 | -.054 | .078 | .169 | .164 | .153 | .172 | .203 | .203 | .195 | .175 | .178 | .203 | 21 |
| 22 | .218 | .124 | -.002 | .067 | .131 | .383 | .328 | .228 | .207 | .212 | .391 | .339 | .250 | .230 | .215 | 22 |
| 23 | -.313 | -.337 | -.396 | -.354 | -.241 | .021 | .065 | .031 | -.039 | -.082 | .034 | .047 | .029 | -.054 | -.104 | 23 |
| 24 | -.230 | -.224 | -.314 | -.440 | -.408 | .060 | .061 | .052 | -.044 | -.096 | .074 | .052 | .064 | -.049 | -.104 | 24 |
| 25 | -.056 | -.056 | -.084 | -.056 | -.019 | .132 | .127 | .114 | .093 | .074 | .143 | .106 | .131 | .084 | .064 | 25 |
| 26 | -.031 | -.026 | -.033 | .018 | .054 | .123 | .118 | .117 | .112 | .111 | .128 | .121 | .123 | .106 | .099 | 26 |
| 27 | .734 | .693 | .705 | .761 | .743 | .891 | .612 | .603 | .847 | .942 | .908 | .653 | .609 | .824 | .965 | 27 |
| 28 | | .570 | .587 | .621 | .603 | | .453 | .525 | .684 | .807 | | .515 | .495 | .675 | .816 | 28 |

TABLE XL

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 59.4 $\delta_{f,30}$ = 38.6 z/D = 1.008

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 58.2 | | | | | n = 2085 α = 58.2 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .237 | .157 | | .754 | .584 | .488 | .470 | | .534 | .321 | .737 | .661 | | .379 | .198 | 1 |
| 2 | .253 | .297 | | -.008 | -.316 | .315 | .260 | | -.267 | -.552 | .031 | .154 | | -.404 | -.592 | 2 |
| 3 | .269 | -.087 | | -.232 | -.207 | .298 | -.075 | | -.297 | -.352 | -.002 | -.100 | | -.340 | -.335 | 3 |
| 4 | .138 | -.150 | | -.175 | -.106 | .134 | -.133 | | -.201 | -.181 | -.031 | -.149 | | -.213 | -.171 | 4 |
| 5 | -.052 | -.184 | | -.157 | -.105 | .026 | -.041 | | -.127 | -.136 | -.019 | -.080 | | -.161 | -.139 | 5 |
| 6 | .195 | -.200 | | .176 | .431 | .282 | -.035 | | .514 | .687 | .139 | .071 | | .585 | .727 | 6 |
| 7 | .304 | .260 | | .267 | .324 | .343 | .312 | | .415 | .490 | .330 | .281 | | .438 | .497 | 7 |
| 8 | .434 | .436 | | .378 | .443 | .445 | .464 | | .416 | .521 | .502 | .340 | | .411 | .536 | 8 |
| 9 | .460 | .508 | .532 | .476 | .525 | .467 | .535 | .463 | .501 | .589 | .472 | .458 | .409 | .453 | .558 | 9 |
| 10 | .480 | .521 | .544 | .470 | .547 | .553 | .569 | .495 | .512 | .575 | .499 | .482 | .392 | .546 | .703 | 10 |
| 11 | .470 | .473 | .473 | .552 | .680 | .689 | .601 | .467 | .657 | .842 | .507 | .463 | .509 | .717 | .842 | 11 |
| 12 | -.310 | -.408 | -.570 | -.391 | -.281 | -.210 | -.040 | -.130 | -.305 | -.371 | -.056 | -.105 | -.423 | -.416 | -.377 | 12 |
| 13 | -1.100 | -1.177 | -1.453 | -1.178 | -.830 | -.446 | -.028 | -.143 | -.766 | -1.013 | -.115 | -.213 | -.465 | -.810 | -.869 | 13 |
| 14 | -.735 | -.638 | -.956 | -.853 | -.656 | .081 | .133 | .107 | -.180 | -.433 | .149 | .105 | .031 | -.129 | -.205 | 14 |
| 15 | -.268 | -.329 | -.357 | -.251 | -.157 | .086 | .140 | .109 | .000 | -.099 | .154 | .154 | .080 | -.012 | -.095 | 15 |
| 16 | -.210 | -.235 | -.250 | -.103 | -.095 | .083 | .118 | .089 | -.029 | -.040 | .154 | .124 | .083 | -.056 | -.046 | 16 |
| 17 | .334 | .366 | .403 | .304 | .363 | .268 | .381 | .441 | .294 | .347 | .389 | .387 | .252 | .330 | .460 | 17 |
| 18 | .669 | .571 | .620 | .850 | .892 | .915 | .639 | .565 | .866 | 1.012 | .663 | .516 | .671 | .909 | .957 | 18 |
| 19 | .725 | .652 | .715 | .762 | .814 | .880 | .706 | .633 | .772 | .948 | .717 | .563 | .637 | .854 | .938 | 19 |
| 20 | .666 | .646 | .684 | .707 | .738 | .828 | .783 | .658 | .736 | .868 | .730 | .585 | .617 | .796 | .869 | 20 |
| 21 | .041 | .027 | .002 | .062 | .142 | .244 | .254 | .245 | .198 | .192 | .340 | .325 | .191 | .193 | .237 | 21 |
| 22 | .105 | .033 | -.045 | -.007 | .000 | .284 | .367 | .219 | .121 | .026 | .384 | .230 | .115 | .090 | .139 | 22 |
| 23 | -.399 | -.348 | -.477 | -.452 | -.342 | -.090 | -.021 | -.051 | -.101 | -.182 | -.002 | .002 | -.039 | -.151 | -.195 | 23 |
| 24 | -.242 | -.214 | -.350 | -.457 | -.414 | .010 | -.029 | -.034 | -.095 | -.165 | .024 | .027 | .012 | -.122 | -.164 | 24 |
| 25 | .021 | .034 | .039 | -.002 | .016 | .114 | .077 | .076 | .062 | .033 | .139 | .105 | .115 | .063 | .061 | 25 |
| 26 | .051 | .057 | .109 | .071 | .076 | .107 | .107 | .094 | .095 | .071 | .144 | .110 | .122 | .090 | .085 | 26 |
| 27 | .782 | .711 | .769 | .847 | .873 | .940 | .833 | .680 | .993 | .976 | .781 | .617 | .678 | .921 | .957 | 27 |
| 28 | | .639 | .674 | .693 | .748 | | .662 | .587 | .668 | .885 | | .472 | .492 | .801 | .869 | 28 |

TABLE XLI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 59.4$ $\delta_{f,30} = 49.5$ $z/D = 1.008$

| Tube number | n = 2915, α = 0.0 | | | | | n = 2915, α = 57.8 | | | | | n = 2085, α = 57.8 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .220 | .193 | | .628 | .293 | .802 | .676 | | .200 | .007 | .758 | .744 | | .062 | .002 | 1 |
| 2 | .084 | .252 | | -.152 | -.381 | .056 | .129 | | -.441 | -.649 | .011 | .084 | | -.511 | -.607 | 2 |
| 3 | .071 | -.066 | | -.247 | -.193 | .009 | -.126 | | -.363 | -.356 | -.035 | -.096 | | -.336 | -.312 | 3 |
| 4 | .021 | -.136 | | -.172 | -.091 | -.041 | -.173 | | -.239 | -.181 | -.072 | -.139 | | -.206 | -.168 | 4 |
| 5 | -.102 | -.204 | | -.173 | -.124 | -.011 | -.090 | | -.171 | -.132 | -.038 | -.069 | | -.160 | -.146 | 5 |
| 6 | .111 | -.056 | | .308 | .492 | .150 | .157 | | .603 | .757 | .127 | .139 | | .667 | .732 | 6 |
| 7 | .333 | .302 | | .315 | .350 | .366 | .291 | | .457 | .525 | .357 | .321 | | .492 | .509 | 7 |
| 8 | .485 | .408 | | .384 | .442 | .521 | .361 | | .422 | .563 | .514 | .417 | | .480 | .557 | 8 |
| 9 | .470 | .492 | .452 | .457 | .484 | .521 | .453 | .397 | .456 | .593 | .506 | .494 | .413 | .514 | .554 | 9 |
| 10 | .475 | .488 | .465 | .488 | .552 | .553 | .497 | .362 | .529 | .744 | .511 | .518 | .381 | .648 | .698 | 10 |
| 11 | .455 | .444 | .419 | .597 | .648 | .551 | .481 | .500 | .694 | .833 | .502 | .499 | .576 | .797 | .823 | 11 |
| 12 | -.336 | -.443 | -.546 | -.414 | -.328 | -.009 | -.083 | -.420 | -.382 | -.352 | -.016 | -.089 | -.465 | -.417 | -.391 | 12 |
| 13 | -1.273 | -1.456 | -1.453 | -1.181 | -.902 | -.051 | -.199 | -.441 | -.693 | -.734 | -.110 | -.206 | -.557 | -.893 | -.900 | 13 |
| 14 | -.973 | -1.047 | -1.183 | -.907 | -.627 | .171 | .095 | .016 | -.064 | -.099 | .136 | .086 | .016 | -.259 | -.281 | 14 |
| 15 | -.300 | -.297 | -.351 | -.262 | -.187 | .171 | .095 | .050 | .010 | -.036 | .141 | .100 | .062 | -.052 | -.098 | 15 |
| 16 | -.211 | -.260 | -.225 | -.126 | -.109 | .176 | .105 | .058 | -.017 | -.021 | .149 | .120 | .064 | -.052 | -.067 | 16 |
| 17 | .351 | .350 | .376 | .317 | .384 | .440 | .403 | .239 | .366 | .531 | .504 | .454 | .247 | .441 | .463 | 17 |
| 18 | .624 | .536 | .600 | .842 | .789 | .629 | .490 | .661 | .889 | .951 | .598 | .542 | .691 | .951 | .920 | 18 |
| 19 | .682 | .619 | .673 | .762 | .760 | .674 | .530 | .637 | .839 | .926 | .605 | .562 | .663 | .912 | .927 | 19 |
| 20 | .649 | .612 | .640 | .694 | .693 | .767 | .572 | .619 | .782 | .875 | .679 | .614 | .643 | .850 | .828 | 20 |
| 21 | .262 | .253 | .222 | .295 | .321 | .549 | .525 | .340 | .396 | .434 | .511 | .506 | .367 | .422 | .391 | 21 |
| 22 | -.091 | -.191 | -.312 | -.172 | -.136 | .320 | .117 | -.049 | -.050 | -.042 | .393 | .254 | -.028 | -.086 | -.115 | 22 |
| 23 | -.626 | -.620 | -.750 | -.587 | -.400 | -.051 | -.023 | -.082 | -.164 | -.194 | -.035 | -.028 | -.086 | -.254 | -.285 | 23 |
| 24 | -.282 | -.343 | -.495 | -.463 | -.342 | -.025 | .002 | -.011 | -.091 | -.110 | -.002 | .024 | -.014 | -.184 | -.218 | 24 |
| 25 | .007 | .043 | .039 | -.004 | -.023 | .125 | .092 | .097 | .076 | .076 | .120 | .120 | .110 | .055 | .040 | 25 |
| 26 | .081 | .093 | .143 | .086 | .045 | .150 | .118 | .110 | .098 | .112 | .141 | .132 | .115 | .096 | .081 | 26 |
| 27 | .742 | .673 | .744 | .797 | .814 | .775 | .595 | .685 | .931 | .949 | .638 | .598 | .711 | .996 | .963 | 27 |
| 28 | | .588 | .631 | .717 | .703 | | .476 | .482 | .819 | .909 | | .473 | .641 | .898 | .886 | 28 |

TABLE XLII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 69.3$ $\delta_{f,30} = 28.5$ $z/D = 1.008$

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 58.8 | | | | | n = 2085 α = 58.2 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .236 | .175 | | .742 | .465 | .714 | .627 | | .357 | .127 | .533 | .501 | | .570 | .334 | 1 |
| 2 | .150 | .286 | | -.003 | -.333 | .096 | .171 | | -.359 | -.621 | .178 | .225 | | -.287 | -.580 | 2 |
| 3 | .179 | -.085 | | -.229 | -.205 | .093 | -.097 | | -.322 | -.361 | .220 | -.084 | | -.309 | -.359 | 3 |
| 4 | .104 | -.137 | | -.173 | -.107 | .028 | -.138 | | -.198 | -.180 | .121 | -.124 | | -.188 | -.196 | 4 |
| 5 | -.028 | -.137 | | -.145 | -.116 | .024 | -.044 | | -.118 | -.104 | .049 | -.022 | | -.109 | -.129 | 5 |
| 6 | .167 | -.171 | | .164 | .457 | .204 | .081 | | .567 | .732 | .300 | .012 | | .540 | .692 | 6 |
| 7 | .302 | .271 | | .269 | .332 | .351 | .309 | | .446 | .518 | .364 | .322 | | .436 | .510 | 7 |
| 8 | .439 | .450 | | .386 | .440 | .497 | .368 | | .430 | .559 | .481 | .451 | | .446 | .558 | 8 |
| 9 | .461 | .517 | .476 | .474 | .487 | .506 | .476 | .427 | .492 | .588 | .520 | .563 | .486 | .533 | .597 | 9 |
| 10 | .478 | .529 | .497 | .465 | .517 | .545 | .493 | .443 | .497 | .608 | .567 | .570 | .510 | .506 | .533 | 10 |
| 11 | .488 | .510 | .466 | .532 | .639 | .563 | .485 | .453 | .667 | .859 | .622 | .567 | .481 | .672 | .848 | 11 |
| 12 | -.629 | -.749 | -.992 | -.944 | -.852 | -.414 | -.312 | -.727 | -.878 | -.949 | -.518 | -.309 | -.530 | -.917 | -1.044 | 12 |
| 13 | -.700 | -.647 | -1.045 | -1.196 | -.989 | -.007 | .061 | -.201 | -.482 | -.439 | -.126 | .074 | -.039 | -.647 | -.724 | 13 |
| 14 | -.203 | -.243 | -.415 | -.616 | -.652 | .145 | .133 | .045 | -.076 | -.079 | .091 | .143 | .094 | -.111 | -.203 | 14 |
| 15 | -.159 | -.210 | -.281 | -.282 | -.225 | .134 | .123 | .074 | -.008 | -.020 | .096 | .143 | .104 | -.012 | -.081 | 15 |
| 16 | -.139 | -.188 | -.278 | -.146 | -.134 | .148 | .123 | .072 | .000 | -.004 | .101 | .136 | .086 | -.029 | -.037 | 16 |
| 17 | .241 | .289 | .300 | .222 | .294 | .249 | .332 | .288 | .248 | .372 | .255 | .357 | .406 | .238 | .260 | 17 |
| 18 | .684 | .561 | .612 | .827 | .812 | .800 | .548 | .624 | .847 | .948 | .833 | .645 | .627 | .883 | 1.009 | 18 |
| 19 | .768 | .669 | .704 | .785 | .800 | .870 | .619 | .615 | .823 | .959 | .885 | .734 | .655 | .840 | .994 | 19 |
| 20 | .699 | .670 | .671 | .722 | .724 | .800 | .632 | .599 | .769 | .878 | .828 | .749 | .669 | .803 | .893 | 20 |
| 21 | -.054 | -.042 | -.156 | -.046 | .092 | .178 | .169 | .115 | .144 | .195 | .186 | .196 | .181 | .161 | .166 | 21 |
| 22 | .241 | .180 | .016 | .074 | .128 | .394 | .335 | .195 | .202 | .225 | .429 | .471 | .297 | .208 | .166 | 22 |
| 23 | -.271 | -.289 | -.400 | -.340 | -.205 | .034 | .032 | -.008 | -.070 | -.098 | -.017 | .032 | -.014 | -.089 | -.146 | 23 |
| 24 | -.223 | -.255 | -.317 | -.386 | -.354 | .050 | .019 | .012 | -.079 | -.117 | .020 | -.007 | -.010 | -.099 | -.141 | 24 |
| 25 | -.078 | -.068 | -.086 | -.057 | -.009 | .109 | .076 | .073 | .058 | .060 | .096 | .084 | .067 | .049 | .017 | 25 |
| 26 | -.052 | -.038 | -.019 | .009 | .057 | .103 | .085 | .079 | .080 | .086 | .086 | .089 | .076 | .074 | .067 | 26 |
| 27 | .791 | .713 | .744 | .784 | .802 | .890 | .651 | .619 | .898 | .950 | .893 | .776 | .672 | .912 | .984 | 27 |
| 28 | | .613 | .615 | .676 | .678 | | .524 | .527 | .702 | .865 | | .627 | .672 | .684 | .863 | 28 |

TABLE XLIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 69.3$ $\delta_{f,30} = 38.6$ $z/h = 1.008$

| Tube number | n = 2915 α = 0.0 | | | | | n = 2915 α = 58.2 | | | | | n = 2085 α = 58.8 | | | | | Tube number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spanwise station | | | | | Spanwise station | | | | | Spanwise station | | | | | |
| | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | 92.0 | 110.0 | 118.0 | 126.0 | 140.5 | |
| 1 | .200 | .195 | | .564 | .595 | .677 | .659 | | .141 | .096 | .821 | .732 | | .380 | .185 | 1 |
| 2 | .279 | .260 | | -.403 | -.400 | .132 | .141 | | -.614 | -.631 | .056 | .155 | | -.351 | -.615 | 2 |
| 3 | .274 | .274 | | -.241 | -.250 | .163 | .167 | | -.371 | -.380 | .064 | -.126 | | -.321 | -.365 | 3 |
| 4 | .133 | .138 | | -.119 | -.129 | .082 | .068 | | -.189 | -.200 | .010 | -.163 | | -.205 | -.188 | 4 |
| 5 | -.026 | -.016 | | -.115 | -.119 | .036 | .039 | | -.127 | -.132 | .024 | -.052 | | -.126 | -.118 | 5 |
| 6 | .225 | .236 | | .408 | .459 | .276 | .274 | | .737 | .744 | .304 | .173 | | .600 | .751 | 6 |
| 7 | .325 | .344 | | .362 | .344 | .378 | .384 | | .541 | .543 | .415 | .353 | | .487 | .548 | 7 |
| 8 | .435 | .460 | | .481 | .469 | .503 | .507 | | .576 | .571 | .548 | .407 | | .460 | .588 | 8 |
| 9 | .453 | .465 | .458 | .528 | .517 | .525 | .527 | .442 | .605 | .597 | .489 | .472 | .417 | .509 | .588 | 9 |
| 10 | .469 | .483 | .471 | .551 | .529 | .545 | .550 | .472 | .582 | .583 | .494 | .497 | .440 | .501 | .613 | 10 |
| 11 | .480 | .494 | .446 | .693 | .667 | .634 | .630 | .474 | .855 | .859 | .558 | .506 | .464 | .675 | .870 | 11 |
| 12 | -.625 | -.611 | -.999 | -.929 | -.913 | -.531 | -.503 | -.573 | -1.029 | -1.029 | -.472 | -.318 | -.630 | -.942 | -.994 | 12 |
| 13 | -.642 | -.657 | -1.087 | -1.111 | -1.106 | -.067 | -.049 | -.071 | -.703 | -.650 | .024 | .079 | -.061 | -.625 | -.598 | 13 |
| 14 | -.172 | -.178 | -.395 | -.741 | -.748 | .137 | .143 | .094 | -.207 | -.189 | .163 | .140 | .101 | -.106 | -.138 | 14 |
| 15 | -.144 | -.151 | -.284 | -.224 | -.229 | .127 | .142 | .102 | -.108 | -.091 | .168 | .136 | .091 | -.017 | -.064 | 15 |
| 16 | -.125 | -.133 | -.282 | .138 | -.149 | .154 | .149 | .091 | -.056 | -.048 | .168 | .136 | .093 | -.017 | -.032 | 16 |
| 17 | .232 | .242 | .311 | .332 | .305 | .219 | .223 | .359 | .362 | .359 | .249 | .358 | .311 | .239 | .361 | 17 |
| 18 | .648 | .623 | .599 | .882 | .873 | .902 | .878 | .606 | .962 | .962 | .840 | .558 | .615 | .867 | .951 | 18 |
| 19 | .740 | .730 | .689 | .846 | .836 | .929 | .906 | .614 | .969 | .970 | .909 | .625 | .590 | .855 | .986 | 19 |
| 20 | .693 | .694 | .662 | .774 | .756 | .846 | .842 | .608 | .881 | .884 | .821 | .655 | .596 | .788 | .870 | 20 |
| 21 | .067 | .071 | -.084 | .116 | .100 | .294 | .295 | .188 | .198 | .200 | .311 | .304 | .197 | .192 | .229 | 21 |
| 22 | .111 | .120 | -.154 | -.038 | -.057 | .313 | .319 | .133 | .042 | .045 | .321 | .284 | .136 | .091 | .096 | 22 |
| 23 | -.308 | -.320 | -.482 | -.397 | -.407 | -.020 | -.013 | -.043 | -.184 | -.186 | .000 | .010 | -.034 | -.123 | -.175 | 23 |
| 24 | -.224 | -.241 | -.380 | -.477 | -.477 | -.002 | -.004 | -.037 | -.160 | -.161 | .004 | -.012 | -.022 | -.101 | -.136 | 24 |
| 25 | -.073 | -.073 | -.084 | .009 | -.003 | .089 | .084 | .055 | .030 | .027 | .096 | .084 | .071 | .056 | .044 | 25 |
| 26 | -.048 | -.048 | -.007 | .085 | .077 | .089 | .087 | .062 | .069 | .068 | .106 | .091 | .079 | .081 | .084 | 26 |
| 27 | .788 | .784 | .737 | .869 | .863 | .942 | .924 | .642 | .975 | .972 | .949 | .675 | .628 | .897 | .989 | 27 |
| 28 | | .464 | .649 | .777 | .765 | | .482 | .514 | .932 | .929 | | .551 | .509 | .759 | .937 | 28 |

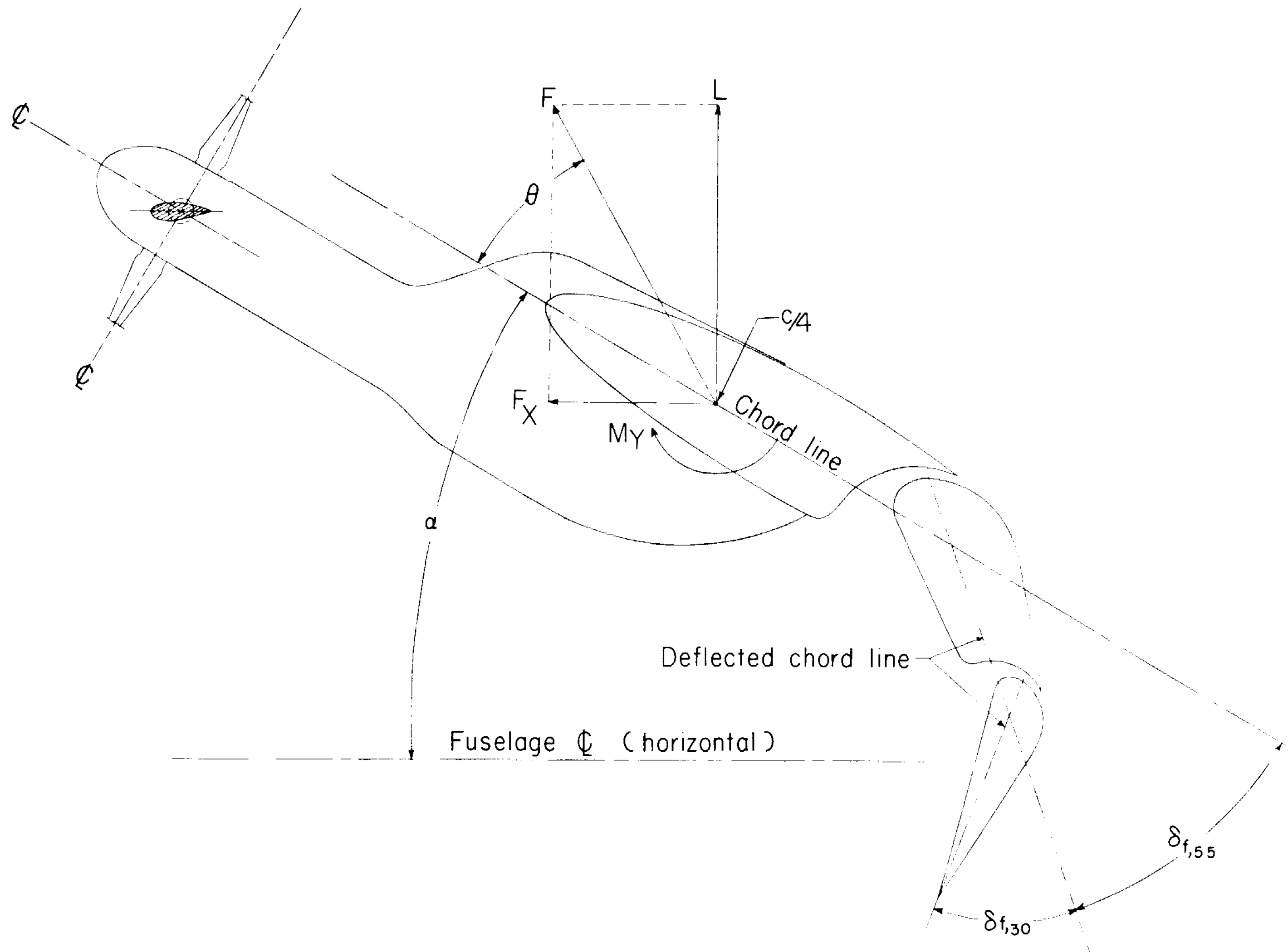



Figure 1.- Conventions used to define positive sense of forces, moments, and angles.

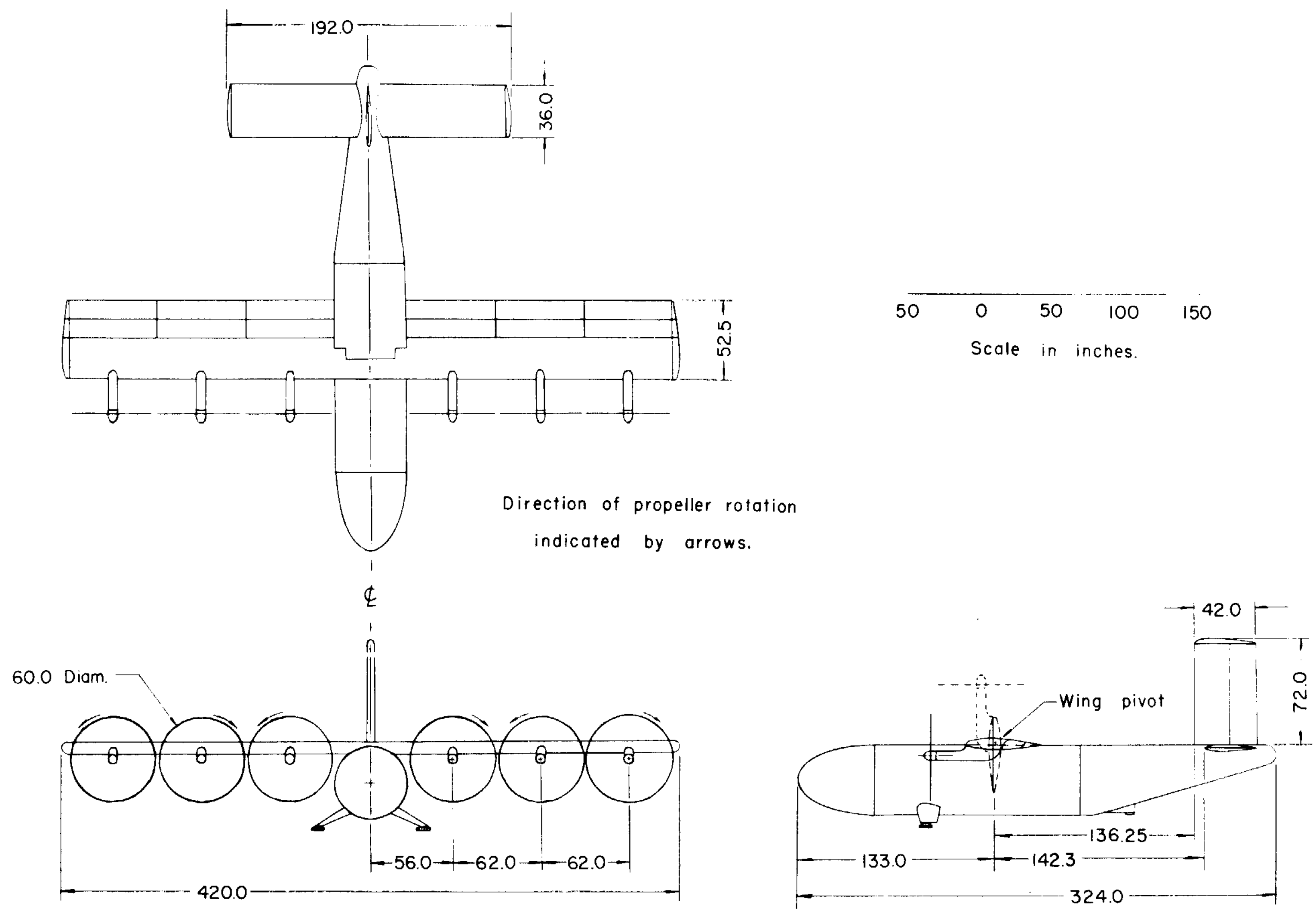



Figure 2.- Three-view sketch of model. All dimensions are in inches.

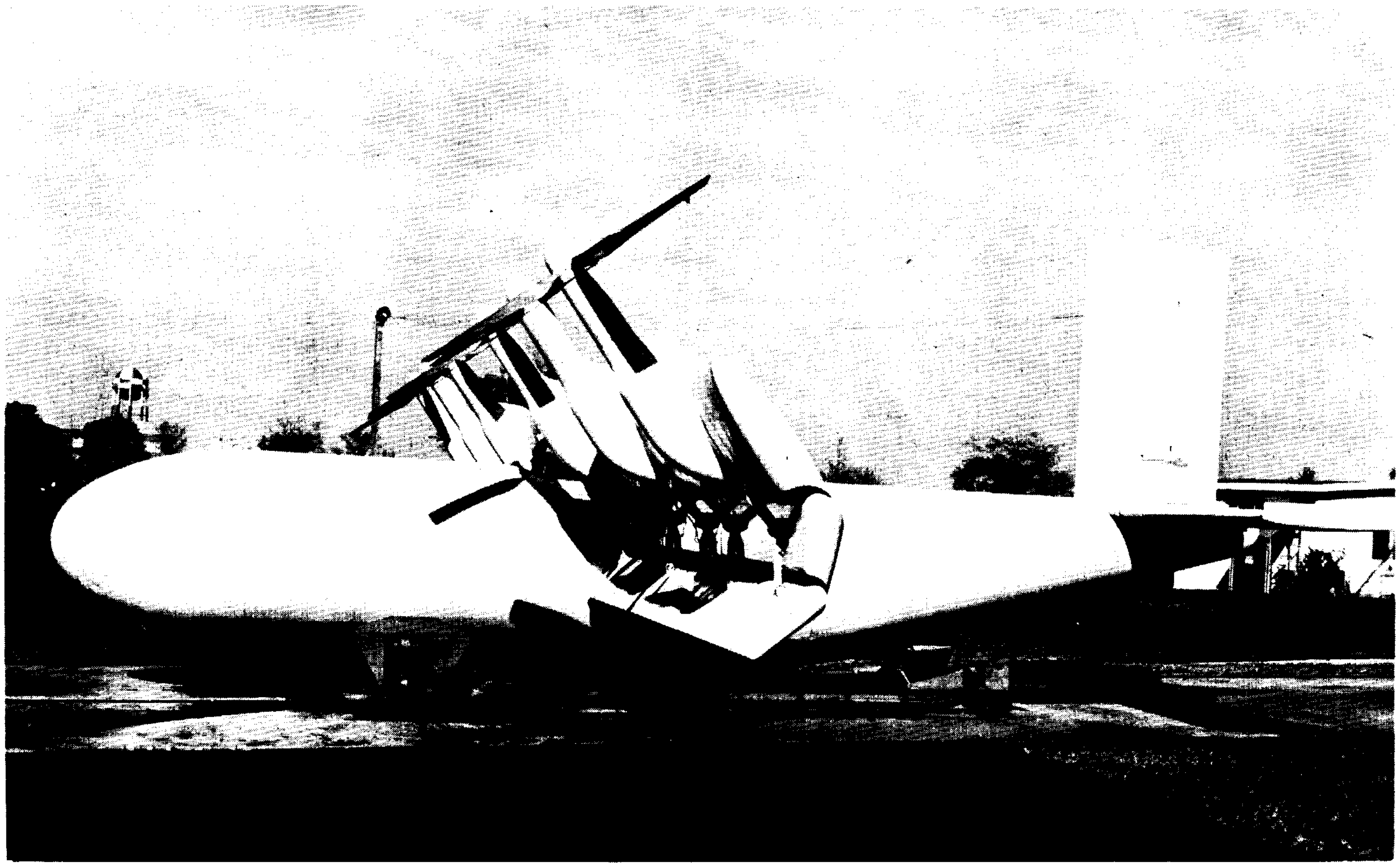


Figure 3.- Model on balance at $z/D = 1.008$. L-59-7989

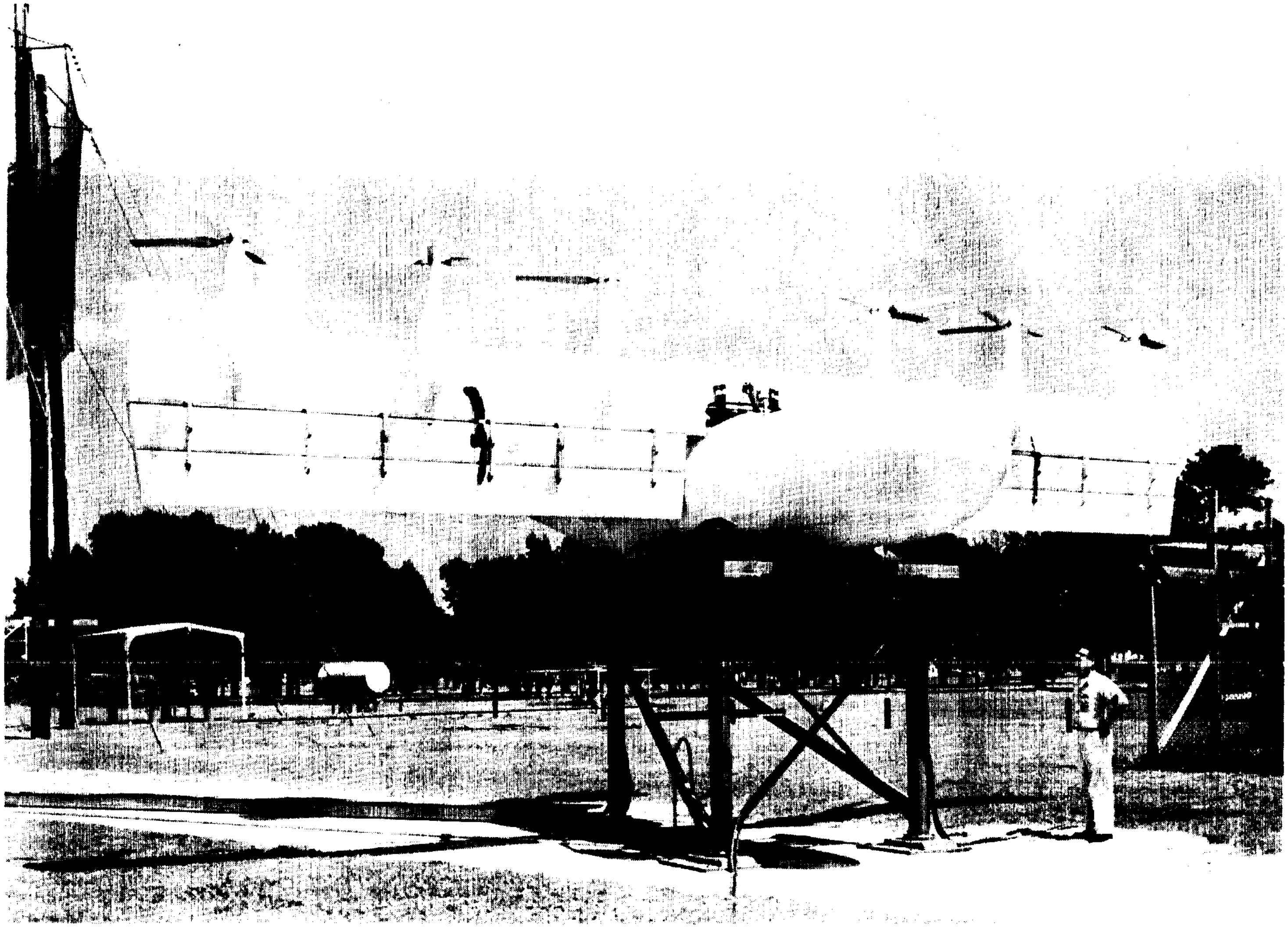


Figure 4.- Model on balance at z/D = 2.425. Wing vertical. L-59-4896

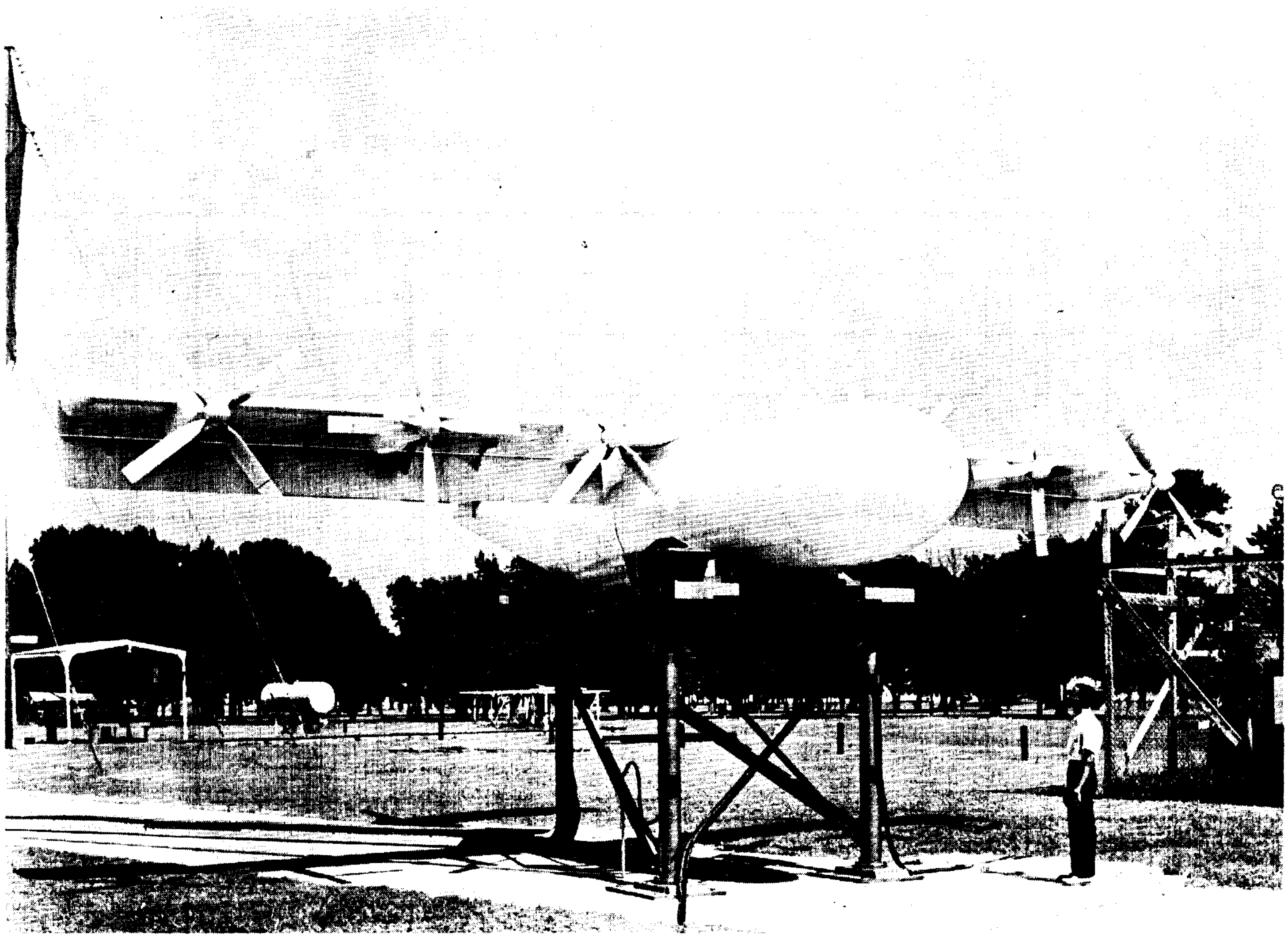


Figure 5.- Model on balance at $z/D = 2.425$. Wing horizontal. L-59-4897

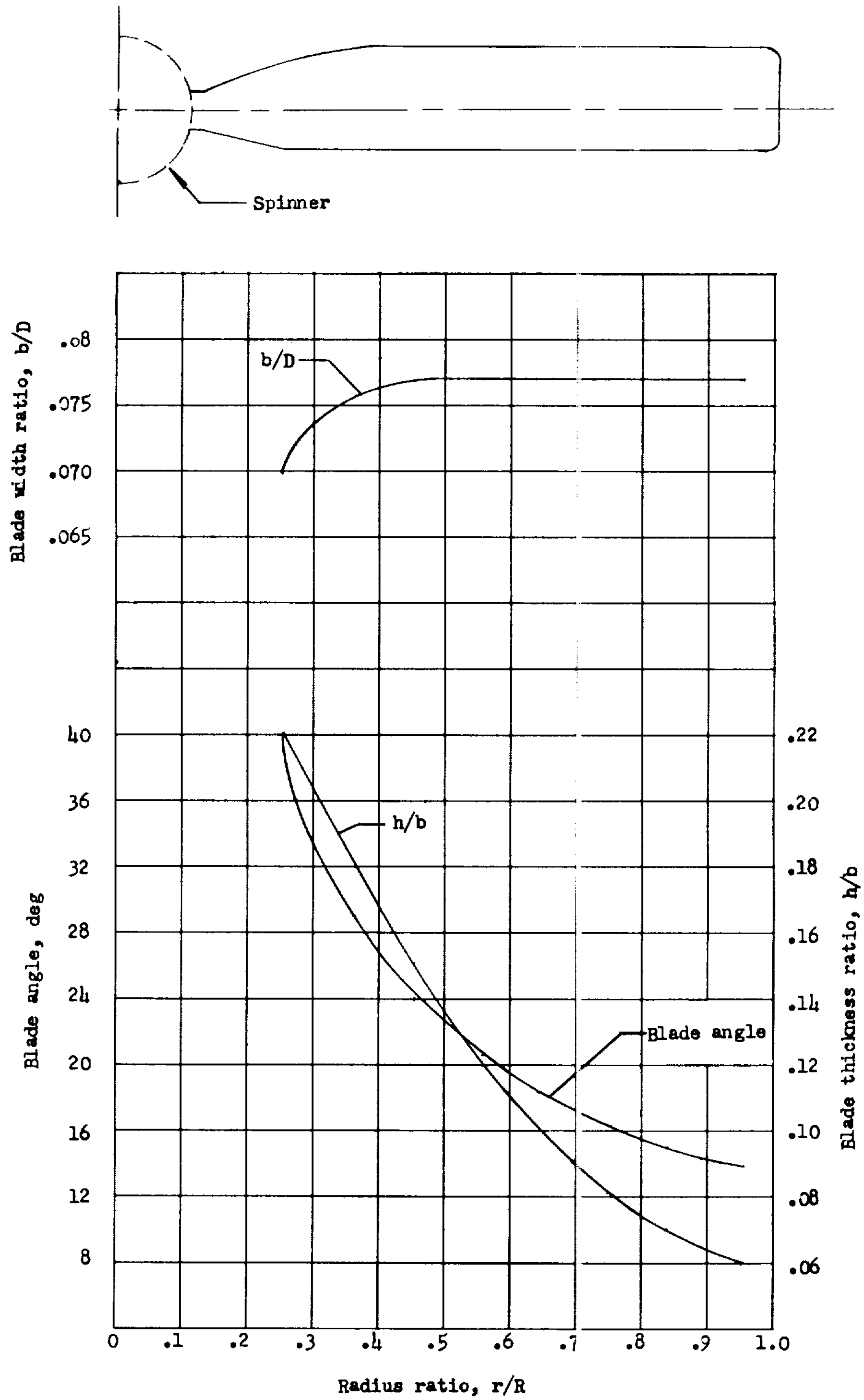



Figure 6.- Propeller blade form curves.

L-987

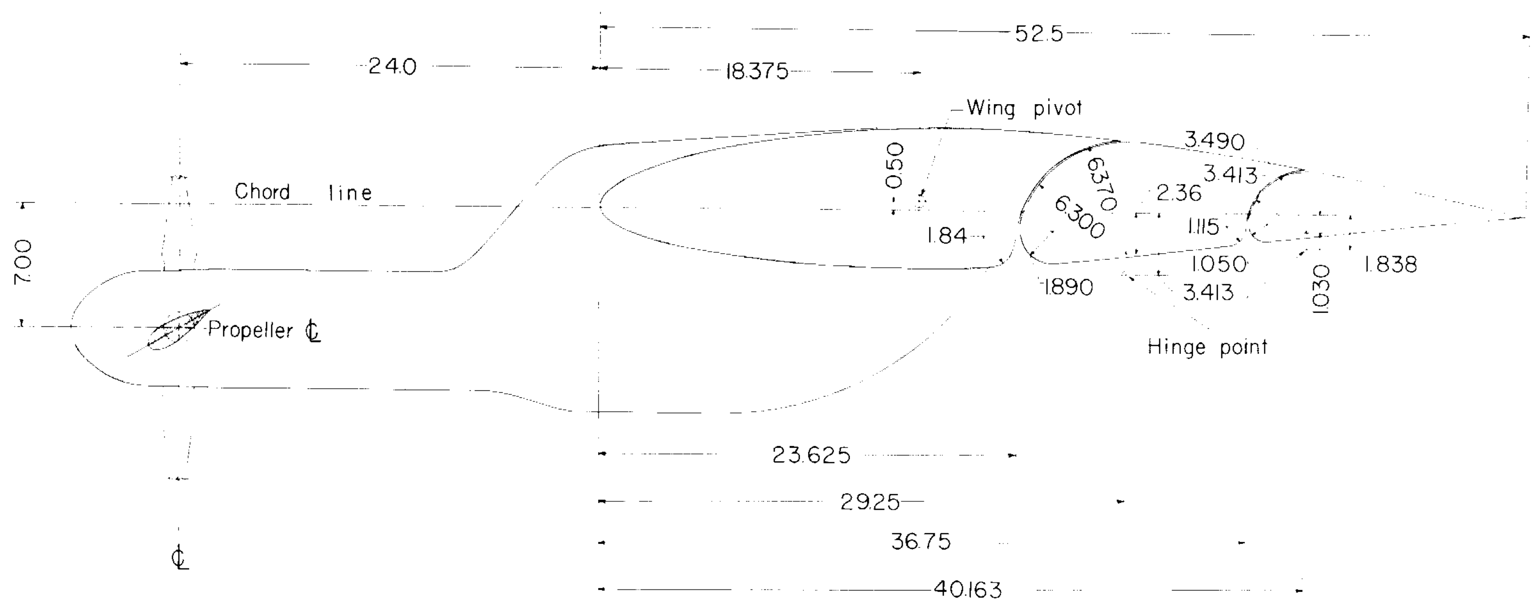



Figure 7.- Geometric characteristics of wing section. All dimensions are in inches.

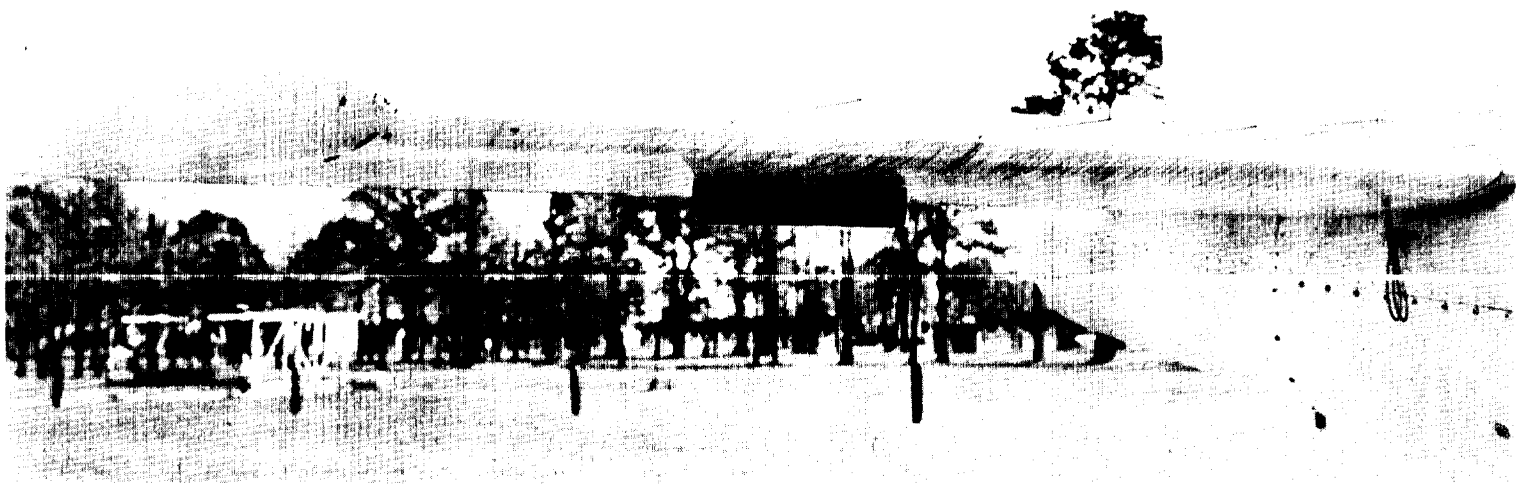


Figure 8.- Horizontal stabilizer. L-59-7992

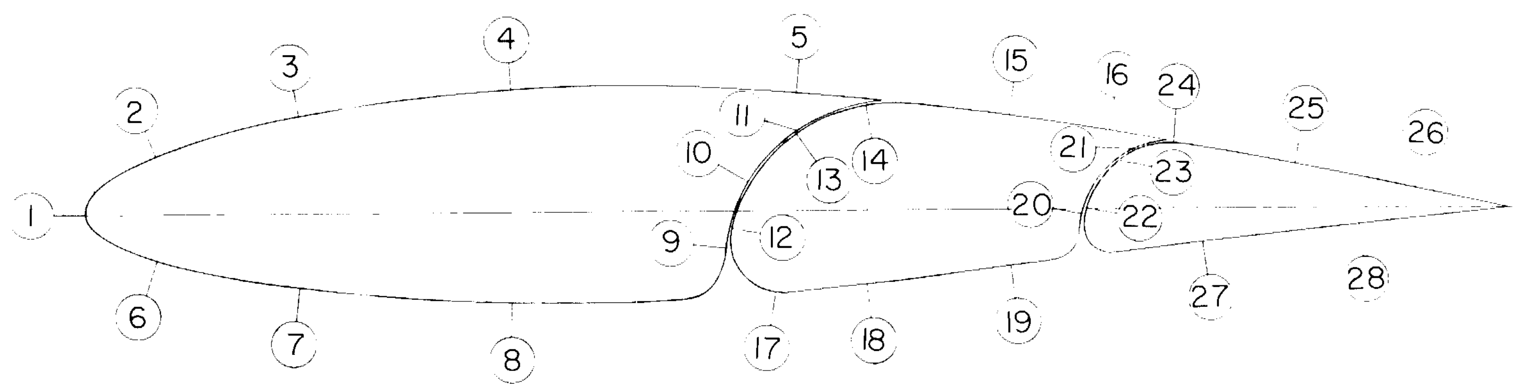
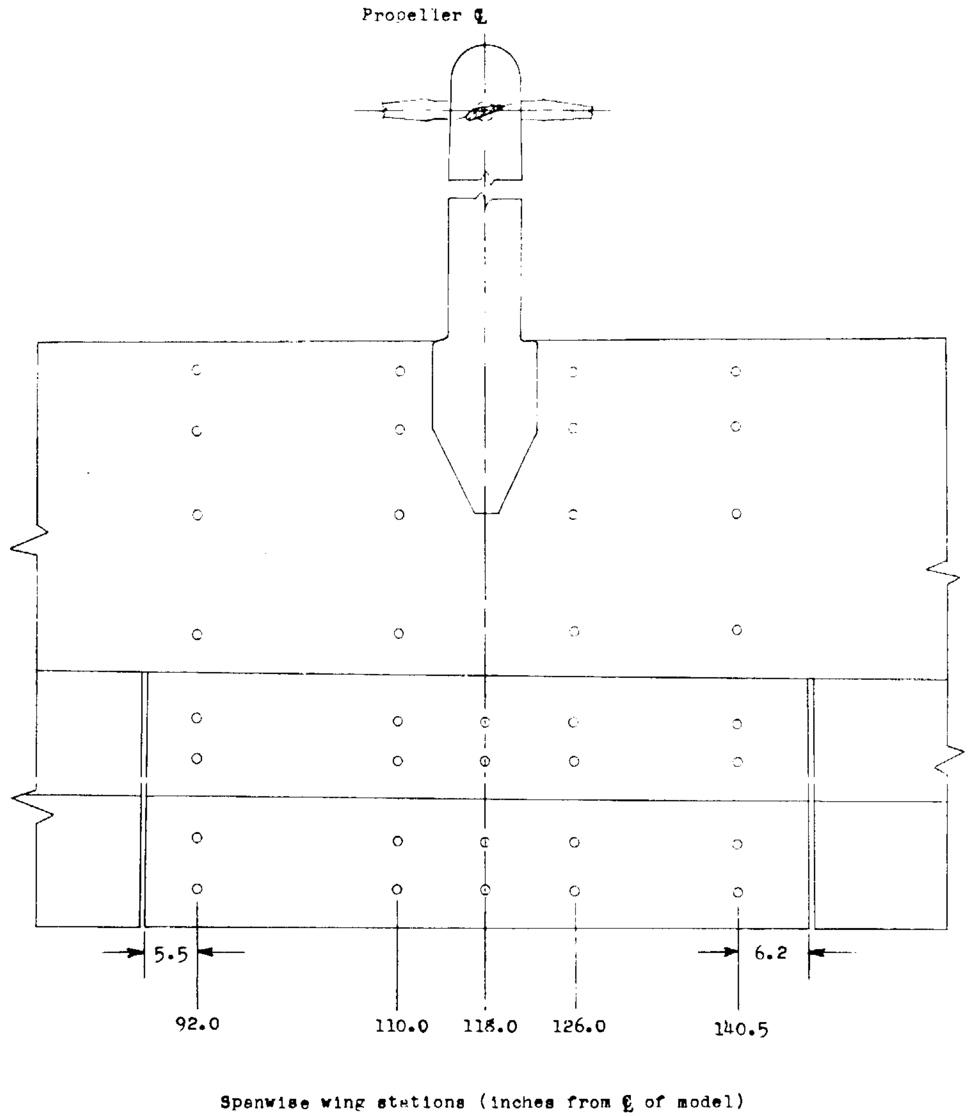



Figure 9.- Orifice locations on wing and flaps.




Orifice Locations

| Tube Number | Station, percent chord | Ordinate, percent chord |
|---|---|---|
| 1 | 0 | 0 |
| 2 | 5.0 | 3.96 |
| 3 | 15.0 | 6.76 |
| 4 | 30.0 | 8.53 |
| 5 | 50.0 | 8.19 |
| 6 | 5.0 | -3.18 |
| 7 | 15.0 | -5.14 |
| 8 | 30.0 | -6.25 |
| 9 | 45.0 | -2.59 |
| 10 | 46.6 | 1.75 |
| 11 | 50.0 | 5.41 |
| 12 | 45.0 | -2.03 |
| 13 | 50.0 | 5.26 |
| 14 | 55.0 | 7.33 |
| 15 | 65.0 | 6.42 |
| 16 | 71.5 | 5.41 |
| 17 | 48.3 | -5.52 |
| 18 | 55.0 | -5.05 |
| 19 | 65.0 | -3.92 |
| 20 | 69.9 | -0.90 |
| 21 | 73.4 | [illegible] |
| 22 | 70.0 | -0.95 |
| 23 | 72.6 | 3.26 |
| 24 | 76.5 | 4.48 |
| 25 | 84.9 | 3.01 |
| 26 | 93.3 | 1.37 |
| 27 | 78.5 | -2.19 |
| 28 | 89.5 | -1.07 |

Figure 9.- Concluded.

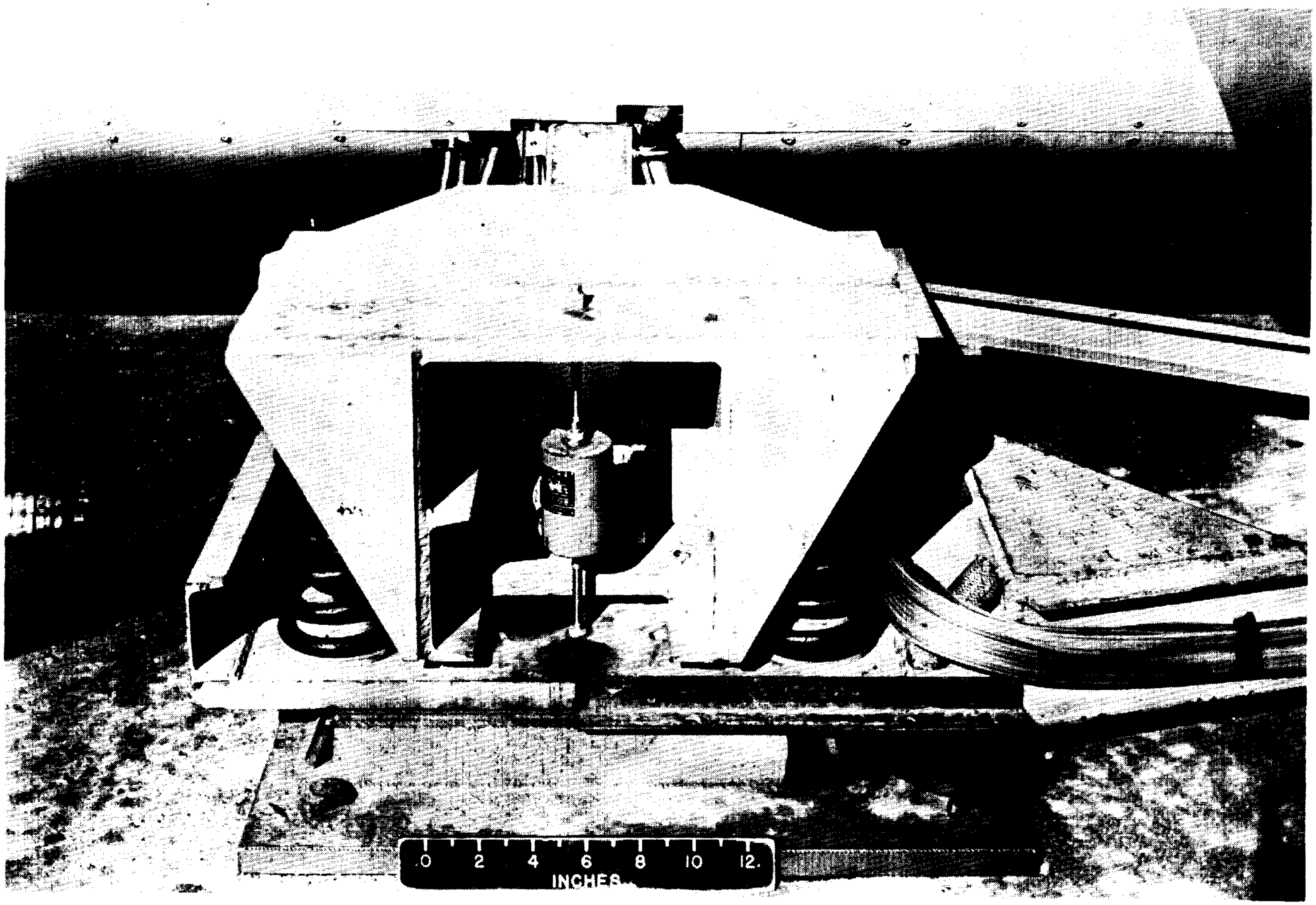



Figure 10.- Left front load cell support assembly. L-59-7994

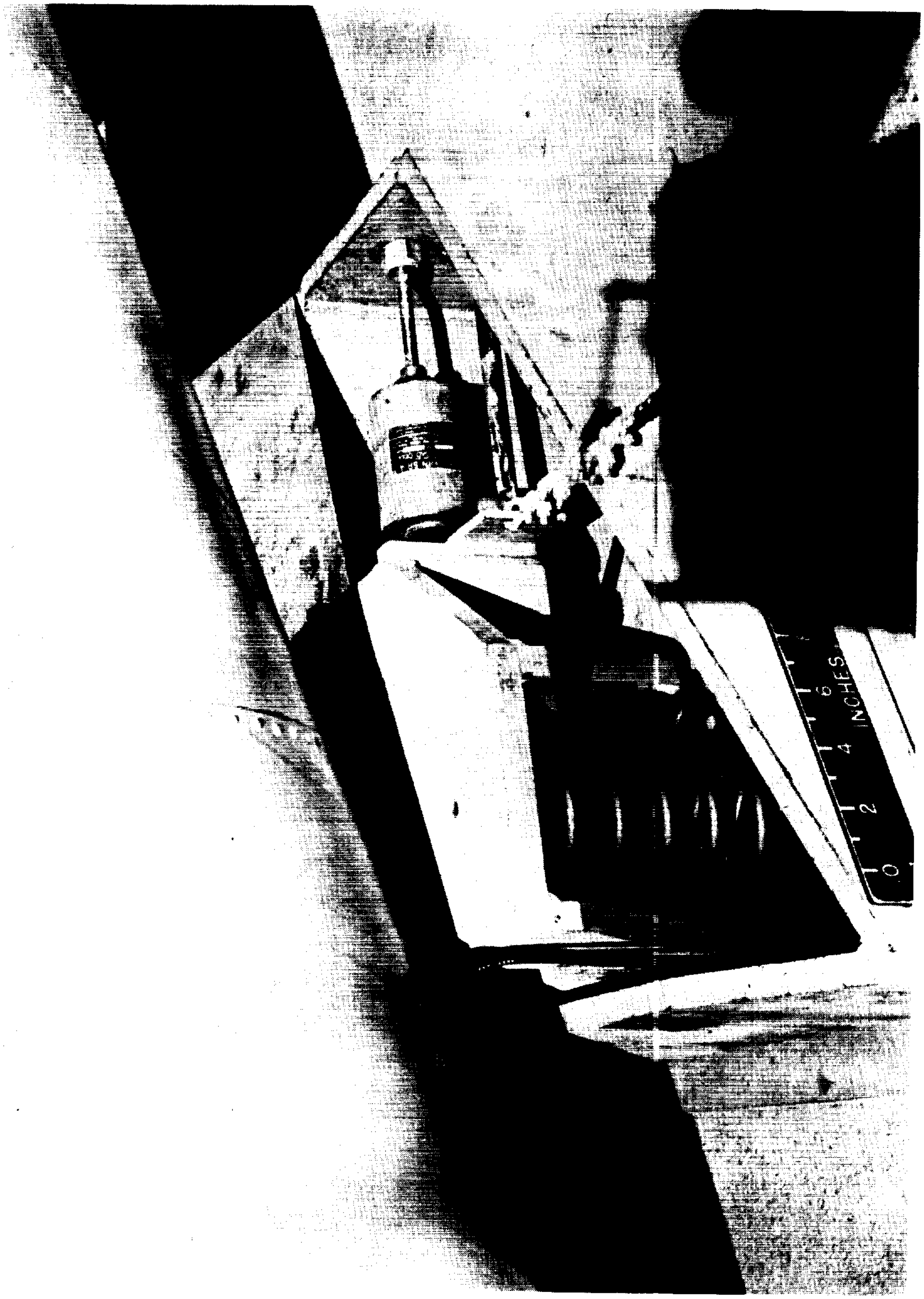



Figure 11.- Rear load cell support assembly. L-59-7995



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