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# EFFECT OF WING ASPECT RATIO AND FLAP SPAN ON AERODYNAMIC CHARACTERISTICS OF AN EXTERNALLY BLOWN JET-FLAP STOL MODEL

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16. Abstract


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# EFFECT OF WING ASPECT RATIO AND FLAP SPAN ON AERODYNAMIC CHARACTERISTICS OF AN EXTERNALLY BLOWN JET-FLAP STOL MODEL

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## SUMMARY

An investigation has been conducted to determine the effects of flap span and wing aspect ratio on the static longitudinal aerodynamic characteristics and chordwise and spanwise pressure distributions on the wing and trailing-edge flap of a straight-wing STOL model having an externally blown jet flap without vertical and horizontal tail surfaces. The force tests were made over an angle-of-attack range for several thrust coefficients and two flap deflections. The pressure data are presented as tabulated and plotted chordwise pressure-distribution coefficients for angles of attack of $1^{\circ}$ and $16^{\circ}$. Pressure-distribution measurements were made at several spanwise stations.

The results of the investigation showed that reducing the flap span or wing aspect ratio adversely affected the aerodynamic characteristics of the model which had four engines located uniformly over the exposed span of the flap. The two-engine configuration with only the two inboard engines operating had about the same longitudinal aerodynamic characteristics as the configuration with all four engines operating. The spanwise lift distribution of an externally blown jet flap is characterized by high peak loads, mainly on the flaps behind each engine. There is a substantial spanwise lift carryover to stations far removed from the jet itself.

## INTRODUCTION

The present investigation was a part of a general research program to provide some fundamental information on the effects of geometric changes on the aerodynamic characteristics of an external-flow jet-flap STOL model. A previous part of the program (ref. 1) studied the effects of vertical and longitudinal engine positions, jet-exhaust deflectors, and leading-edge and trailing-edge flap geometry on the aerodynamic characteristics of an externally blown jet-flap (EBF) model. The object of the present part of the program was to determine the effects of flap span and wing aspect ratio on the aerodynamic characteristics of the model. The same basic model has been used in both parts of the program.

This paper presents the effects of wing aspect ratio and flap span on the static longitudinal aerodynamic characteristics and the chordwise and spanwise pressure distribution on the wing and flap of an EBF configuration without vertical or horizontal tail surfaces. The model used in the investigation was powered by four simulated high-bypass-ratio turbofan engines and was equipped with an unswept, untapered wing having a double-slotted trailing-edge flap and a leading-edge slat. The position of the engines along the span of the wing varied to provide uniform spacing over the exposed span of the flaps. The force tests were made over an angle-of-attack range for several thrust coefficients and two flap deflections. The pressure-distribution tests were made for the same flap deflections and thrust coefficients at angles of attack of $1^{\circ}$ and $16^{\circ}$.

## SYMBOLS

The data are referred to the stability-axis system with the origin at the moment reference center location (0.40 mean aerodynamic chord). The pressure coefficients are based on free-stream dynamic pressure. Measurements were made in the U.S. Customary Units. They are presented herein in the International System of Units (SI) with the equivalent values in the U.S. Customary Units given parenthetically.

| | |
|---|---|
| $A$ | wing aspect ratio |
| $b$ | wing span, m (ft) |
| $C_D$ | drag coefficient, $F_D/qS$ |
| $C_L$ | lift coefficient, $F_L/qS$ |
| $\Delta C_L$ | incremental lift coefficient due to flap deflection |
| $C_{L,trim}$ | trim lift coefficient, $C_L + \frac{C_m}{l/c}$ |
| $C_{L,\Gamma}$ | circulation lift coefficient due to power |
| $C_m$ | pitching-moment coefficient, $M_Y/qSc$ |
| $C_\mu$ | gross-thrust coefficient, $T/qS$ |
| $c$ | wing chord, 0.254 m (0.833 ft) |

$c_f$ chord of rear element of trailing-edge flap, m (ft)

$c_n$ wing-section normal-force coefficient, $\int_0^1 c_p \, dx/c$

$c_p$ pressure coefficient, $\frac{p - p_\infty}{q}$

$c_v$ vane chord, m (ft)

$F_A$ net axial force, N (lb)

$F_D$ drag force, N (lb)

$F_L$ lift force, N (lb)

$F_N$ normal force, N (lb)

$F_R$ resultant force, $\sqrt{{F_N}^2 + {F_A}^2}$, N (lb)

$l$ tail length (assumed), m (ft)

$M_Y$ pitching moment, m-N (ft-lb)

$p$ surface static pressure, $N/m^2$ $(lb/ft^2)$

$p_\infty$ free-stream static pressure, $N/m^2$ $(lb/ft^2)$

$q$ free-stream dynamic pressure, $N/m^2$ $(lb/ft^2)$

$S$ wing area, $m^2$ $(ft^2)$

$T$ measured gross engine thrust, N (lb)

$W$ weight

$x$ longitudinal coordinate of airfoil, m (ft)

$y$ lateral distance from center line, measured perpendicular to plane of symmetry, m (ft)

$z$ airfoil surface ordinate, m (ft)

$\alpha$ angle of attack, deg

$\delta_f$ deflection of rear element of trailing-edge flap (positive when trailing edge is down), deg

$\delta_j$ jet turning angle, $\tan^{-1} \frac{F_N}{-F_A}$, deg

$\delta_v$ deflection of vane from wing chord plane, deg

$\eta$ flap-system turning efficiency, $F_R/T$

Subscripts:

l lower

u upper

## MODEL AND APPARATUS

Figure 1 presents a three-view drawing of the model with the aspect-ratio-7 wing and full-span flap. Figure 2 shows the planform arrangement of the wing and engines for $A = 5.25$ with full-span flap and $A = 7$ with both full-span and partial-span flaps. Note that in each case the engines were located so as to provide a uniform spacing over the exposed span of the flaps. Dimensional characteristics of the model are given in table I. The aspect-ratio-7, full-span-flap model was the same as that of reference 1, and the vertical and chordwise engine position was the same as position 1 of reference 1 (see fig. 3). A detailed sketch of the wing leading-edge slat and trailing-edge flap assembly is shown in figure 4. An NACA 4415 airfoil was used on the wing. The airfoil sections for the vane and flap of the trailing-edge flap assembly were identical, and their coordinates are presented in table II. Flap deflections $\delta_f$ of $35^{\circ}$ and $55^{\circ}$ were obtained by using separate flap brackets for each case. In all tests with flaps deflected, $\delta_v = \frac{\delta_f}{2}$.

The engines on the model represented high-bypass-ratio fan-jet engines and compressed-air-driven turbines drove the fans. The basic engine is illustrated in figure 5.

In order to determine the chordwise and spanwise pressure distributions on the wing, pressure orifices were located on the upper and lower surfaces on the left wing and flap at eight spanwise stations. (See figs. 6 and 7.) In tests of the model with the reduced flap span and/or wing aspect ratio, only six spanwise locations of pressure orifices were used (1 to 6) because stations 7 and 8 were eliminated when the wing tip was altered to obtain these configurations.

The model was sting mounted on a six-component internal strain-gage balance in the 9- by 18-m (30- by 60-ft) test section of the Langley full-scale tunnel.

## TESTS AND PROCEDURES

In preparation for the tests, engine calibrations were made to determine gross thrust as a function of engine rotational speed in the static condition. These calibrations were made with the engines mounted on the wing, bellmouth inlets installed, and trailing-edge flaps removed. The tests were then run by setting the engine rotational speed to give the desired thrust and holding these speeds constant over the angle-of-attack range.

Tests were made at zero airspeed to determine flap turning angles $\delta_j$ and turning efficiencies $\eta$ under static conditions. These tests and the wind-on tests were made at $\delta_f = 35^o$ and $55^o$.

All wind-on force tests were made over an angle-of-attack range from $-4^o$ to $31^o$ at gross-thrust coefficients $C_\mu$ of 0, 2.05, and 4.10 for configurations having a wing aspect ratio of 7 and $C_\mu = 0$, 2.75, and 5.50 for a wing aspect ratio of 5.25. These $C_\mu$ values correspond to the same thrust of the engines and differ only by being based on a different wing area. The free-stream dynamic pressure for both the force tests and the pressure-distribution tests was 166 N/m$^2$ (3.46 lb/ft$^2$) which corresponds to an airspeed of 16.4 m/sec (54 ft/sec). The Reynolds number was $3.47 \times 10^5$ based on the wing chord.

No wind-tunnel jet-boundary corrections were considered necessary since the model was very small relative to the size of the test section.

## RESULTS AND DISCUSSION

### Static Turning

Since the effectiveness of a jet-flap system is dependent to a large degree upon the capability of the system for turning and spreading the jet exhaust efficiently, static turning tests were made of all configurations included in the present investigation to identify the relative performance of each. Results of these tests (see fig. 8) show there is very little change in the jet turning angle due to changes in the aspect ratio of the wing and/or the flap span. The ratio of the normal force to thrust $F_N/T$ is plotted as a function of the ratio of net axial force to thrust $-F_A/T$ in figure 9. These data indicate that the losses caused by turning and spreading of the jet were from 8 to 10 percent for $\delta_f = 35^o$

and from 35 to 40 percent for $\delta_f = 55^\circ$. The turning of the jet was better when the trailing-edge flap was deflected $70^\circ$ rather than $55^\circ$ because the flap captured more of the jet engine exhaust. However, a trailing-edge-flap deflection of $55^\circ$ instead of $70^\circ$ was used in the present investigation because the data of reference 1 indicate that undesirable large negative angles of attack would be associated with flight at $\delta_f = 70^\circ$.

## Wind-On Data

Four engines.- The basic aerodynamic data for the model are presented in figures 10 to 12 for $\delta_f = 35^\circ$ and figures 13 to 15 for $\delta_f = 55^\circ$. These data show that an increase in thrust coefficient caused the usual increase in maximum lift coefficient and nose-down pitching moment.

In order to show more clearly the effects of wing aspect ratio and flap span on the longitudinal aerodynamic characteristics, the data of figures 10 to 15 have been replotted in terms of trim lift coefficient and drag coefficient versus thrust coefficient $C_\mu$ and presented as figure 16. Comparison of the plots shows that there was little loss in trim lift coefficient with reduction in aspect ratio from 7 to 5.25 but that there is more than twice as much loss in lift from reduction in flap span from full span to 0.75-span for the $A = 7$ wing. This comparison would suggest that there might be little lift carryover onto the unflapped tip section of the wing. In order to investigate this point the data for the $A = 5.25$ wing were recomputed based on the area of the $A = 7$ wing. Comparison of the plots (fig. 16) shows that the unflapped tips added an increment of $C_L$ of 0.2 to 0.4 (based on the total area of the $A = 7$ wing). Therefore, based on the area of the tips themselves, they added an increment of $C_L$ four times as great. On the basis of this gross analysis of lift, it is apparent that the unflapped tips were causing an increment of lift much greater than would normally be attributed to them.

Presented in figure 17 are values of added circulation lift due to power $C_{L,\Gamma}$ as a function of wing aspect ratio. These data were obtained from reference 2 for the internal-flow jet-flap concept and from the present investigation for the EBF concept. The data from reference 2 show the increase in added circulation to be expected from a good internal-flow jet-flap system as the wing aspect ratio is increased. The data from the present investigation show, as expected, that the increase in $C_{L,\Gamma}$ with aspect ratio is somewhat less for the EBF than for the internal-flow system.

In figure 18 are values of $C_{L,\Gamma}$ for several different thrust coefficients and values of $\Delta C_L$ (incremental lift due to flap deflection) for $C_\mu = 0$ as a function of the ratio of flap span to wing span. Also presented for comparison purposes are calculated values of $\Delta C_L$ from the method presented in reference 3. These data show that the measured values of $\Delta C_L$ at $C_\mu = 0$ are considerably lower than the calculated values for a given flap span. The values of $C_{L,\Gamma}$ for the power-on tests are shown to vary almost linearly with flap span in the same manner as would be expected for circulation lift of an unpowered wing (ref. 3). It should be pointed out that the results presented in figure 18 are not only a function of flap span and wing aspect ratio, but also of engine position; and the present data were obtained with uniform spacing of the engines over the exposed span of the flap.

Two engines. - In order to determine the effects of spanwise engine location on the longitudinal aerodynamic characteristics of the model, a few tests were made with only the inboard engines operating and the results are presented in figures 19 and 20. The summary plot presented as figure 21 shows that for a given thrust coefficient $C_\mu$ the two-engine configuration with engines close inboard produced almost as much total lift and circulation lift coefficients $\left(C_L \text{ and } C_{L,\Gamma}\right)$ as the four-engine configuration with the engines spread uniformly over the exposed span of the flap. In order to remove differences in pitching moment from the comparison, the data are presented in figure 22 in terms of $C_{L,trim}$. These data show that for a given thrust coefficient $C_\mu$ the trim lift coefficients and the drag coefficients $\left(C_{L,trim} \text{ and } C_D\right)$ for the two-engine inboard configuration are the same as those of the four-engine spread configuration. This result is further evidence of substantial lift carryover, or induced lift, far removed spanwise from the jet itself.

One means of determining the overall efficiencies of jet-flap configurations is to compare the thrust-weight ratio $T/W$ required to fly in level flight. In the present investigation the term $\frac{C_\mu + C_D}{C_{L,trim}}$ is used to provide a measure of this efficiency. This term is approximately equal to the thrust-weight ratio required to fly in level flight at an angle of attack of $0^\circ$ and provides a convenient method for making a comparison when data are not available for the exact flap angle required for trim drag conditions. The $C_{L,trim}$ is the tail-off lift coefficient $C_L$ corrected for pitch trim; that is, $C_{L,trim} = C_L + \frac{C_m}{l/c}$ where a tail arm $l/c$ of 3.5 is assumed. Data are presented in terms of the parameter $\frac{C_\mu + C_D}{C_{L,trim}}$ in figure 23 and show that the minimum thrust required to fly at a given $C_L$ was obtained with the wing having an aspect ratio of 7 and a full-span flap. Reducing the wing aspect ratio or the span of the flap increased the thrust required to fly at a given trim lift coefficient $C_{L,trim}$.

Inoperative engine. - The basic aerodynamic wind-on data for the model with one engine inoperative are presented in figures 24 to 29. For convenience in analyzing the basic data, summary plots of the basic data are presented in figure 30 and show that a greater loss in lift occurred with an inboard engine inoperative than with an outboard engine inoperative for the configurations investigated. This result is generally similar to that reported in other investigations (for example, ref. 4).

## Pressure Data

In order to gain a better understanding of the spreading of the engine jet exhaust and spanwise lift distribution, chordwise pressure-distribution data were obtained for several spanwise stations and are presented in tables III to XXVII and also presented in figures 31 to 80. In general, these data show that the flaps have large loads, especially behind the engines where very large positive and negative pressures were measured. In order to illustrate further the type of spanwise loading obtained in the tests, the pressure plots of figures 48, 51, 53, 58, 62, 66, 74, and 78 were faired and integrated to determine the section normal-force coefficient $c_n$ for each section along the span. A sample of the fairing method used is illustrated in figure 78. This is the coefficient of force normal to the surface of the wing at each chordwise station. These normal-force coefficients $c_n$ were then plotted against the wing semispan and presented as figures 81 to 84. Portions of the curves are estimated, but are believed to be a representative illustration of a typical spanwise load distribution for a straight-wing, externally blown jet-flap configuration. The plots in figure 81 present a convenient comparison of the spanwise load distribution of the three configurations tested and show that high peak loads are obtained behind the engine positions regardless of the wing aspect ratio or flap span. One significant point noted in figure 81 is that the wing with the largest flap span and, consequently, the greatest distance between the engines, still showed relatively high values of section normal-force coefficients between the engines, indicating fairly good lift carryover at the wing midsemispan where the exhaust flow is probably minimum.

Typical spanwise loading curves for the model with the two- and four-engine configurations, both for the same total-thrust coefficient $C_\mu$, are presented in figures 82 and 83. The plots show a substantial lift carryover to the outer wing panels when the engines are located close inboard. For instance, values of $c_n$ of about 2.5 near the tip of the flap were noted for the two-engine configurations compared with about 3 between the engines for the four-engine configurations. Typical spanwise loading curves for an engine-inoperative case are presented in figure 84 for the wing having an aspect ratio 7 and a partial-span flap. The plots show that with an engine inoperative there is still a substantial lift carryover behind the inoperative engine.

## CONCLUSIONS

The following conclusions are drawn from a wind-tunnel investigation to determine the effects of flap span and wing aspect ratio on the aerodynamic characteristics of an externally blown jet-flap STOL model:

1. Reducing the wing flap span or wing aspect ratio adversely affected the aerodynamic characteristics of the model.

2. An inoperative inboard engine caused a greater loss in trim lift than an inoperative outboard engine.

3. The two-engine configuration with the engines located close inboard had about the same longitudinal aerodynamic characteristics as the four-engine configuration with the engines located uniformly over the exposed span of the flap.

4. The spanwise lift distribution of an externally blown jet flap is characterized by high peak loads, mainly on the flaps behind each engine.

5. There is a substantial spanwise lift carryover to stations far removed from the jet itself. This result was evidenced by the lift on the unflapped tip portion of the wing with a partial-span flap, on the outer part of the wing when only the inboard engine was operating, and by the lift between fairly widely spaced engines of the aspect-ratio-7 wing with a full-span flap.

Langley Research Center,
National Aeronautics and Space Administration,
Hampton, Va., April 20, 1973.

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TABLE I. - DIMENSIONS OF MODEL

| | |
|---|---|
| Fuselage: | |
| Length, m (ft) | 2.046 (6.714) |
| Diameter, m (ft) | 0.196 (0.642) |
| Wing: | |
| Aspect ratio | 7.00 |
| Area, $m^2$ ($ft^2$) | 0.452 (4.86) |
| Span, m (ft) | 1.778 (5.833) |
| Chord, m (ft) | 0.254 (0.833) |
| Flap span, percent wing span | 1.00 and 0.75 |
| Aspect ratio | 5.25 |
| Area, $m^2$ ($ft^2$) | 0.339 (3.65) |
| Span, m (ft) | 1.334 (4.375) |
| Chord, m (ft) | 0.254 (0.833) |
| Flap span, percent wing span | 1.00 |
| Vane chord $c_v$, m (ft) | 0.038 (0.125) |
| Flap chord $c_f$, m (ft) | 0.076 (0.250) |
| Leading-edge slat: | |
| Span, percent wing span | 1.00 |
| Chord, m (ft) | 0.048 (0.158) |

TABLE II.- VANE AND FLAP AIRFOIL COORDINATES[a]

| $\frac{x}{\text{Chord}} \times 100$ | $\frac{z_u}{\text{Chord}} \times 100$ | $\frac{z_l}{\text{Chord}} \times 100$ |
|---|---|---|
| 0 | 0 | 0 |
| 5 | 9.8 | -3.3 |
| 10 | 13.0 | -4.1 |
| 15 | 15.0 | -3.8 |
| 20 | 16.0 | -3.8 |
| 25 | 17.2 | -3.5 |
| 30 | 17.3 | -3.3 |
| 40 | 17.0 | -2.8 |
| 50 | 15.2 | -2.2 |
| 60 | 12.5 | -1.7 |
| 70 | 10.0 | -1.3 |
| 80 | 7.1 | -.8 |
| 90 | 4.0 | -.7 |
| 100 | 1.2 | -.3 |

[a] Values are given in percent vane or flap chord.

TABLE III.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. FULL-SPAN FLAP; $\delta_f = 35^{\circ}$; $C_{\mu} = 2.05$. ALL ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.2263 | -.6560 | -1.8272 | -2.5228 | -2.3335 | -1.1256 | -.9910 | -1.1413 |
| 2 | -2.4857 | -1.2268 | -2.1929 | -2.5023 | -2.2867 | -1.8043 | -1.3958 | -1.2706 |
| 3 | -2.4476 | -2.5737 | -2.1605 | -2.4408 | -2.3204 | -2.0362 | -1.8026 | -1.3040 |
| 4 | -2.0959 | -2.1999 | -1.9958 | -2.2681 | -2.0381 | -2.0324 | -1.6941 | -1.2977 |
| 5 | -1.8614 | -2.0153 | -2.2186 | -2.1280 | -1.9857 | -1.9296 | -1.5773 | -1.2539 |
| 6 | -1.8453 | -1.9083 | -1.9810 | -1.9434 | -1.9109 | -1.8922 | -1.6253 | -1.3436 |
| 7 | -1.6914 | -1.9611 | -1.9537 | -1.8767 | -1.8380 | -1.8810 | -1.7067 | -1.4605 |
| 8 | -1.8013 | -.0117 | -.0103 | -1.7964 | -1.7912 | -1.8268 | -1.7734 | -1.6023 |
| 9 | .6128 | .6670 | .6496 | .6428 | .6134 | .6003 | .4362 | .2818 |
| 10 | .6011 | -.2976 | .5812 | .6359 | .5760 | .3815 | .3423 | .2943 |
| 11 | -2.9386 | -5.0241 | -3.9517 | -3.1057 | -3.1076 | -2.8252 | -2.7144 | -2.7770 |
| 12 | -3.6772 | -5.1384 | -5.0422 | -4.1705 | -4.0667 | -4.8502 | -4.6634 | -4.4657 |
| 13 | -3.0602 | -4.0756 | -4.0218 | -3.3296 | -3.3319 | -3.9957 | -3.8723 | -3.6491 |
| 14 | -1.4144 | -1.8673 | -2.1229 | -1.4528 | -1.6230 | -2.0100 | -2.1385 | -1.7254 |
| 15 | .6245 | .4970 | .0581 | .5145 | .4320 | .2955 | .0313 | .2379 |
| 16 | 1.0467 | 4.2779 | 3.8326 | 1.0205 | 1.0135 | 1.2361 | 1.4883 | .9539 |
| 17 | .7662 | 5.9462 | 6.1643 | .9624 | .7050 | 1.3483 | 1.6971 | .6558 |
| 18 | -1.7295 | -1.1213 | -11.2758 | -1.8306 | -1.8773 | -3.1019 | -5.0929 | -2.1907 |
| 19 | -2.6975 | -6.5218 | -8.2334 | -2.6903 | -2.9823 | -4.7660 | -5.8043 | -3.8202 |
| 20 | -2.2292 | -3.7055 | -4.5671 | -1.9844 | -2.4064 | -3.4815 | -3.8077 | -3.2923 |
| 21 | -1.0612 | -1.1462 | -1.0990 | -.8016 | -1.0620 | -1.0714 | -1.3958 | -1.9153 |
| 22 | .9573 | 10.8281 | 21.5133 | .9727 | .8901 | 1.8120 | 4.1457 | .8934 |
| 23 | .8943 | 8.3651 | 16.5713 | .9128 | -.1552 | 1.8588 | 5.3230 | .7410 |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.5560 | -3.4005 | -4.0622 | -5.9718 | -5.4863 | -3.3295 | -3.7636 | -3.5469 |
| 2 | -5.6142 | -3.6029 | -4.1553 | -5.5030 | -5.1300 | -3.6670 | -3.5533 | -3.2862 |
| 3 | -4.6647 | -3.6207 | -3.7813 | -4.8378 | -4.4249 | -3.5011 | -3.1746 | -2.8085 |
| 4 | -3.4665 | -3.2690 | -3.6762 | -3.8761 | -3.4992 | -3.1730 | -2.7075 | -2.3752 |
| 5 | -2.5050 | -2.7591 | -3.2057 | -3.2005 | -2.9449 | -2.9977 | -2.4086 | -2.0238 |
| 6 | -2.1843 | -2.4237 | -2.6162 | -2.6231 | -2.5716 | -2.7074 | -2.2931 | -2.0133 |
| 7 | -2.0291 | -2.1473 | -2.3801 | -2.3163 | -2.3058 | -2.4019 | -2.3499 | -2.2363 |
| 8 | -2.0336 | -.0163 | -.0103 | -2.1492 | -2.2209 | -2.2172 | -2.3562 | -2.4277 |
| 9 | .7731 | .9180 | 1.2755 | .8153 | .7486 | .6939 | .5577 | .3135 |
| 10 | .8544 | -.1596 | 1.5651 | .8756 | .8070 | .7052 | .5682 | .4061 |
| 11 | -3.0044 | -6.1757 | -4.8343 | -3.4966 | -3.5708 | -3.0693 | -4.3800 | -3.4439 |
| 12 | -3.5941 | -4.9610 | -4.9102 | -4.6809 | -4.4513 | -5.4958 | -6.3661 | -6.5048 |
| 13 | -2.8714 | -3.4330 | -3.6176 | -3.7003 | -3.5633 | -4.5022 | -4.9018 | -5.5224 |
| 14 | -1.5252 | -1.6493 | -2.1474 | -1.5597 | -1.7986 | -2.3284 | -2.7980 | -2.7749 |
| 15 | .6366 | 2.0355 | .3068 | .5550 | .4563 | .3884 | 1.5259 | .1746 |
| 16 | 1.0569 | 6.2411 | 7.4670 | 1.0221 | 1.0295 | 1.0823 | 2.7426 | .7282 |
| 17 | .6145 | 7.7504 | 9.4975 | 1.0239 | .7429 | 1.3444 | 2.6120 | .7092 |
| 18 | -1.7557 | -1.0789 | -12.4572 | -1.9268 | -2.0381 | -3.2089 | -5.6761 | -3.3155 |
| 19 | -2.7045 | -5.4590 | -8.6363 | -2.9178 | -3.0411 | -5.1753 | -7.1528 | -5.7769 |
| 20 | -2.1466 | -2.7104 | -4.1243 | -2.2181 | -2.4227 | -3.8687 | -4.9922 | -5.0196 |
| 21 | -1.2016 | -1.0612 | -1.1651 | -1.0341 | -1.1274 | -1.2349 | -2.0617 | -2.9495 |
| 22 | 1.0244 | 11.7357 | 20.2585 | 1.0377 | .9088 | 1.6555 | 4.6653 | .6924 |
| 23 | .9786 | 9.3927 | 13.8481 | .9911 | -.1169 | 1.4745 | 5.9420 | .7619 |

TABLE IV.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. FULL-SPAN FLAP; $\delta_f = 35^{\circ}$;

$C_{\mu} = 4.11$. ALL ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.3976 | -.9074 | -1.8641 | -2.7228 | -2.3541 | -1.1556 | -1.0774 | -1.1044 |
| 2 | -2.5700 | -1.3194 | -2.0600 | -2.6615 | -2.3672 | -1.6626 | -1.6346 | -1.2833 |
| 3 | -2.5948 | -2.6650 | -2.1673 | -2.5575 | -2.4175 | -2.1752 | -1.9239 | -1.3769 |
| 4 | -2.3041 | -2.4356 | -2.2372 | -2.4468 | -2.1957 | -2.2143 | -1.8240 | -1.3727 |
| 5 | -2.0309 | -2.2793 | -2.3650 | -2.3377 | -2.1510 | -2.1342 | -1.7096 | -1.4101 |
| 6 | -2.0806 | -2.1741 | -2.2202 | -2.1588 | -2.1379 | -2.1361 | -1.8157 | -1.5453 |
| 7 | -1.9403 | -2.2939 | -2.2713 | -2.1466 | -2.0969 | -2.1398 | -2.0071 | -1.6868 |
| 8 | -2.1960 | -.0132 | -.0051 | -2.1128 | -2.0969 | -2.1584 | -2.1027 | -1.8781 |
| 9 | .6357 | .4297 | .5958 | .6748 | .5947 | .4977 | .4266 | .3267 |
| 10 | .5933 | -1.0871 | .5470 | .6544 | .5555 | .3020 | .3433 | .2830 |
| 11 | -2.9528 | -5.2465 | -5.1165 | -3.2698 | -3.4166 | -3.0345 | -3.1364 | -2.9409 |
| 12 | -3.9798 | -6.0018 | -6.5054 | -4.7504 | -4.7120 | -5.5582 | -5.7612 | -5.1518 |
| 13 | -3.5152 | -4.8725 | -5.0957 | -3.7571 | -3.9497 | -4.8406 | -4.8294 | -4.1223 |
| 14 | -1.8936 | -2.4473 | -2.6751 | -1.8572 | -2.1528 | -2.5498 | -2.7205 | -2.2400 |
| 15 | -.2294 | -3.9681 | -.5282 | .4192 | .1864 | -.0559 | -.6593 | -.1394 |
| 16 | .8476 | 3.3452 | 6.6272 | 1.0872 | 1.0514 | 1.2546 | 1.7271 | 1.0404 |
| 17 | .6883 | 6.2155 | 11.0749 | .9952 | .7382 | 2.0133 | 2.0580 | .9468 |
| 18 | -2.1931 | -1.8161 | -18.9114 | -2.2628 | -2.3728 | -3.4967 | -5.5262 | -2.5395 |
| 19 | -3.5810 | -8.8974 | -12.6275 | -3.5049 | -3.9832 | -6.2516 | -7.0653 | -4.6360 |
| 20 | -2.9104 | -5.1165 | -6.4339 | -2.8506 | -3.4762 | -4.7474 | -4.9418 | -4.0557 |
| 21 | -1.4743 | -1.6525 | -1.5045 | -1.3887 | -1.6048 | -1.2768 | -1.8344 | -2.4709 |
| 22 | .9441 | 14.6992 | 40.8029 | .9713 | .8240 | 2.8969 | 4.3221 | .8906 |
| 23 | .9806 | 15.6491 | 31.2242 | .9356 | .0913 | 2.5930 | 7.2125 | .8906 |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -6.1622 | -4.1097 | -4.1424 | -6.4642 | -5.9713 | -3.2419 | -3.6321 | -3.8144 |
| 2 | -6.2093 | -3.7565 | -4.4977 | -6.1176 | -5.5508 | -3.9196 | -3.5882 | -3.5232 |
| 3 | -5.2044 | -4.0332 | -4.1699 | -5.3351 | -4.8356 | -3.8632 | -3.3138 | -3.0456 |
| 4 | -3.9302 | -3.7166 | -4.2488 | -4.3690 | -3.8877 | -3.6061 | -3.0540 | -2.6875 |
| 5 | -2.9032 | -3.1724 | -3.6414 | -3.6791 | -3.3170 | -3.6324 | -2.6958 | -2.2957 |
| 6 | -2.6265 | -2.8956 | -3.0923 | -3.0699 | -2.9697 | -3.0373 | -2.6079 | -2.2706 |
| 7 | -2.5294 | -2.8399 | -2.9841 | -2.8400 | -2.7651 | -2.8402 | -2.7629 | -2.5345 |
| 8 | -2.5692 | -.0294 | -.0086 | -2.6564 | -2.6975 | -2.6806 | -2.8592 | -2.7691 |
| 9 | .7712 | .5343 | 1.2065 | .8444 | .7284 | .3661 | .5006 | .3562 |
| 10 | .8419 | -1.0522 | 1.4588 | .8907 | .7848 | .4919 | .5176 | .4233 |
| 11 | -3.5594 | -6.5507 | -6.2617 | -4.0258 | -4.1936 | -3.7225 | -4.3234 | -3.8793 |
| 12 | -4.2480 | -6.3667 | -6.7268 | -5.6148 | -5.5152 | -6.3130 | -7.7251 | -7.3146 |
| 13 | -3.5329 | -4.7630 | -5.1000 | -4.4513 | -4.4996 | -5.8268 | -6.1185 | -6.2065 |
| 14 | -2.1572 | -2.5221 | -3.0047 | -2.1622 | -2.4967 | -2.9791 | -3.2928 | -3.3263 |
| 15 | .0574 | -2.7045 | .2197 | .4325 | .3004 | -.1051 | .1718 | -.1278 |
| 16 | 1.0465 | 5.2913 | 9.2625 | 1.1138 | 1.0908 | 1.4118 | 3.0598 | .8215 |
| 17 | .8743 | 8.6323 | 13.6388 | 1.0675 | .8317 | 2.4575 | 3.6633 | .8320 |
| 18 | -2.4529 | -1.8379 | -20.1442 | -2.6409 | -2.9190 | -4.1505 | -7.2559 | -3.8500 |
| 19 | -3.5579 | -8.4443 | -13.0777 | -3.9571 | -4.4977 | -7.7603 | -9.0699 | -6.7930 |
| 20 | -2.8796 | -4.7291 | -6.4779 | -3.2072 | -3.7600 | -5.6222 | -6.4243 | -5.9635 |
| 21 | -1.6598 | -1.5510 | -1.7332 | -1.6474 | -1.7890 | -1.6538 | -2.7545 | -3.7013 |
| 22 | 1.0215 | 17.2765 | 40.0344 | 1.0400 | .8692 | 3.3362 | 6.4528 | .7565 |
| 23 | 1.1201 | 17.4634 | 27.6175 | 1.0675 | .5520 | 3.0489 | 8.8818 | .9116 |

## TABLE V.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 35^{\circ}$; $C_{\mu} = 0$.

### (a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -1.3313 | -.9240 | -1.2242 | -1.0845 | -.8978 | -1.0086 | | |
| 2 | -1.3356 | -1.0423 | -1.3150 | -1.2591 | -.9895 | -1.0602 | | |
| 3 | -1.4062 | -1.3373 | -1.4547 | -1.4320 | -1.2321 | -1.1335 | | |
| 4 | -1.3328 | -1.2984 | -1.4530 | -1.4600 | -1.2551 | -1.2073 | | |
| 5 | -1.0828 | -1.0962 | -1.3150 | -1.3395 | -1.1958 | -1.0602 | | |
| 6 | -1.0348 | -1.1082 | -1.1806 | -1.1404 | -1.0698 | -.9322 | | |
| 7 | -.8282 | -1.0483 | -1.0862 | -1.0635 | -.9552 | -.7756 | | |
| 8 | -.7923 | .0075 | -.0035 | -.9972 | -.8348 | -.6743 | | |
| 9 | .3610 | .3894 | .3790 | .2969 | .2904 | .1739 | | |
| 10 | .3789 | .3535 | .4052 | .3301 | .2407 | .2847 | | |
| 11 | -2.1325 | -2.0262 | -2.9741 | -2.9077 | -2.2675 | -2.6114 | | |
| 12 | -1.9483 | -2.1819 | -2.6300 | -2.7540 | -2.2561 | -2.1166 | | |
| 13 | -1.5949 | -1.7297 | -1.8250 | -1.8704 | -1.6027 | -1.3277 | | |
| 14 | -.6170 | -.6889 | -.7195 | -2.5008 | -.7183 | -.5349 | | |
| 15 | .7968 | -.0090 | .4314 | .4297 | -.4375 | .5942 | | |
| 16 | .9750 | .4179 | .9781 | .7441 | -4.0345 | .7719 | | |
| 17 | .8432 | .5107 | .8856 | .7703 | .4165 | .6191 | | |
| 18 | -1.0603 | -.0749 | -1.1317 | -1.1963 | -1.0182 | -.9456 | | |
| 19 | -1.5679 | -1.1846 | -1.4233 | -1.2382 | -1.1233 | -1.2016 | | |
| 20 | -.5961 | -.7818 | -1.0112 | -.7841 | -.7106 | -.9762 | | |
| 21 | -.3025 | -.4433 | -.1816 | -.1485 | -.1891 | -.4699 | | |
| 22 | .9601 | .5332 | .9886 | .7703 | .3573 | .7089 | | |
| 23 | .5916 | .5931 | .8262 | .6602 | .3325 | .4146 | | |

### (b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.9951 | -2.1288 | -3.4262 | -2.9780 | -2.4417 | -2.7156 | | |
| 2 | -2.8014 | -2.2099 | -3.4105 | -2.9500 | -2.6467 | -2.8784 | | |
| 3 | -2.2715 | -1.9322 | -2.9045 | -2.6489 | -2.3556 | -2.6045 | | |
| 4 | -1.4278 | -1.6454 | -2.1114 | -2.0659 | -1.8998 | -2.0606 | | |
| 5 | -.8258 | -1.2356 | -1.4987 | -1.5214 | -1.6068 | -1.5034 | | |
| 6 | -.7027 | -1.0059 | -1.0277 | -1.1030 | -1.3272 | -1.2238 | | |
| 7 | -.6036 | -.7582 | -.7196 | -.8456 | -1.1357 | -.9805 | | |
| 8 | -.5751 | -.0030 | -.0018 | -.7581 | -1.0112 | -.8388 | | |
| 9 | .5871 | .5916 | .5673 | .5166 | .4693 | .3601 | | |
| 10 | .6397 | .6006 | .6426 | .6129 | .5402 | .4827 | | |
| 11 | -.4580 | -1.6019 | -.8859 | -2.4668 | -2.9454 | -3.1235 | | |
| 12 | -.4880 | -1.5359 | -.8176 | -1.9293 | -2.6237 | -2.3709 | | |
| 13 | -.8123 | -.9038 | -.8789 | -1.1660 | -1.8059 | -1.5570 | | |
| 14 | -.4610 | -.5736 | -.8491 | -1.9941 | -.7450 | -.5937 | | |
| 15 | .9069 | .6111 | .6531 | .6654 | .2279 | .5727 | | |
| 16 | .9355 | .7222 | 1.0261 | .8843 | -2.7386 | .9233 | | |
| 17 | .8333 | .7057 | .9211 | .9246 | .6110 | .7777 | | |
| 18 | -1.0374 | -.0706 | -.5182 | -1.0837 | -1.0437 | -1.1471 | | |
| 19 | -1.4698 | -1.0014 | -.4465 | -1.0260 | -1.4478 | -1.4765 | | |
| 20 | -.6456 | -.6651 | -.4114 | -.7003 | -1.0533 | -1.1969 | | |
| 21 | -.4460 | -.6306 | -.4149 | -.7108 | -.2356 | -.4960 | | |
| 22 | .9790 | .6967 | .9876 | .9946 | .6493 | .7068 | | |
| 23 | 1.1051 | .7027 | .8458 | .7740 | .5785 | .4118 | | |

TABLE VI.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 35^{\circ}$;

$C_{\mu} = 2.05$. ALL ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.0063 | -1.9567 | -2.0924 | -1.6311 | -1.2816 | -1.2682 | | |
| 2 | -2.0048 | -1.7943 | -2.1363 | -1.9153 | -1.4677 | -1.4754 | | |
| 3 | -2.0364 | -2.1237 | -2.1573 | -2.0433 | -1.6500 | -1.6423 | | |
| 4 | -1.9748 | -2.0094 | -2.1994 | -1.9960 | -1.7612 | -1.6097 | | |
| 5 | -1.7386 | -1.8289 | -1.9995 | -1.9626 | -1.7478 | -1.5252 | | |
| 6 | -1.8123 | -1.9447 | -1.9118 | -1.8241 | -1.6807 | -1.4428 | | |
| 7 | -1.8424 | -2.0319 | -1.9451 | -1.8837 | -1.7075 | -1.4466 | | |
| 8 | -2.1372 | -.0211 | -.0105 | -1.8942 | -1.8245 | -1.4447 | | |
| 9 | .4528 | .4768 | .6420 | .5947 | .2917 | .4318 | | |
| 10 | .4663 | -.5084 | .6210 | .5649 | .4164 | .3646 | | |
| 11 | -4.2427 | -8.4372 | -4.2340 | -3.6815 | -5.8266 | -4.3417 | | |
| 12 | -4.8142 | -7.0310 | -5.1793 | -4.5918 | -5.8017 | -4.1172 | | |
| 13 | -3.9946 | -5.2383 | -3.9463 | -3.4728 | -4.4779 | -3.1138 | | |
| 14 | -1.9266 | -2.1898 | -2.1030 | -3.2833 | -2.2965 | -1.6883 | | |
| 15 | .2181 | 2.5602 | .2193 | .7175 | -1.2355 | -.2878 | | |
| 16 | .9943 | 11.5044 | 1.1964 | .7806 | -3.4361 | 1.0190 | | |
| 17 | .8664 | 15.6185 | 1.2876 | 1.3876 | 3.3600 | .9921 | | |
| 18 | -2.5297 | -4.4984 | -2.7344 | -2.5327 | -7.8488 | -2.3771 | | |
| 19 | -3.3554 | -11.5097 | -4.5812 | -4.5777 | -7.7720 | -3.8333 | | |
| 20 | -3.0741 | -5.1962 | -3.4464 | -3.5043 | -5.0112 | -3.7853 | | |
| 21 | -1.1987 | -1.7627 | -1.2348 | -.5735 | -1.2912 | -2.5958 | | |
| 22 | 1.1883 | 36.1047 | 1.7875 | .7455 | 8.3761 | 1.0036 | | |
| 23 | .9101 | 19.9417 | 1.2367 | .9982 | 9.3682 | .7330 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -4.9635 | -5.0810 | -5.4810 | -4.6958 | -2.8075 | -3.6991 | | |
| 2 | -4.7075 | -4.0688 | -5.4266 | -4.6062 | -3.8682 | -3.9720 | | |
| 3 | -3.8277 | -3.7871 | -4.5921 | -4.1090 | -3.7030 | -3.5781 | | |
| 4 | -2.8275 | -3.1951 | -3.6487 | -3.4081 | -3.1207 | -2.9209 | | |
| 5 | -2.1542 | -2.6332 | -2.9759 | -2.9250 | -2.8094 | -2.3886 | | |
| 6 | -2.0472 | -2.5232 | -2.5947 | -2.5174 | -2.5615 | -2.1580 | | |
| 7 | -2.1195 | -2.4133 | -2.4489 | -2.3857 | -2.4578 | -1.9889 | | |
| 8 | -2.1964 | -.0105 | -.0211 | -2.2802 | -2.4693 | -1.8870 | | |
| 9 | .6358 | .7202 | .7959 | .6923 | .3633 | .5824 | | |
| 10 | .7443 | -.2034 | .8451 | .7608 | .6900 | .5843 | | |
| 11 | -4.0175 | -8.8364 | -4.6659 | -3.9825 | -6.9505 | -5.3037 | | |
| 12 | -3.7223 | -7.4008 | -5.2720 | -4.9434 | -6.8218 | -5.2307 | | |
| 13 | -3.2056 | -5.3492 | -3.9597 | -3.6927 | -5.2537 | -3.9893 | | |
| 14 | -1.7701 | -2.1015 | -2.3119 | -4.1354 | -2.6519 | -2.1849 | | |
| 15 | .2591 | 3.1399 | .2794 | .5500 | -1.4047 | -.5073 | | |
| 16 | .9402 | 13.0868 | 1.2791 | .6237 | -3.0208 | 1.0340 | | |
| 17 | .9447 | 16.5174 | 1.4865 | 1.4882 | 3.4058 | .9610 | | |
| 18 | -2.2295 | -4.0808 | -2.9671 | -2.9039 | -7.9479 | -3.0573 | | |
| 19 | -3.1318 | -11.2134 | -4.5324 | -4.8380 | -7.8825 | -4.7580 | | |
| 20 | -2.3786 | -4.8716 | -3.2710 | -3.5381 | -5.2691 | -4.6100 | | |
| 21 | -1.1961 | -1.9764 | -1.2807 | -.7923 | -1.6392 | -3.1918 | | |
| 22 | 1.2867 | 33.7460 | 2.0417 | .8680 | 8.8451 | .9437 | | |
| 23 | 1.2113 | 18.8271 | 1.3301 | 1.2598 | 11.1669 | .8572 | | |

## TABLE VII.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 35^o$; $C_\mu = 4.11$. ALL ENGINES OPERATING.

### (a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.2367 | -3.1640 | -2.2747 | -1.4763 | -1.5480 | -1.1734 | | |
| 2 | -2.2382 | -1.8502 | -2.4703 | -1.8833 | -1.6894 | -1.4371 | | |
| 3 | -2.1678 | -2.1573 | -2.3603 | -2.0825 | -1.8155 | -1.6626 | | |
| 4 | -2.1124 | -2.0839 | -2.3515 | -2.0650 | -1.8403 | -1.6855 | | |
| 5 | -1.9386 | -1.8966 | -2.2921 | -2.0650 | -1.9684 | -1.6034 | | |
| 6 | -2.0180 | -2.1453 | -2.1733 | -2.0021 | -1.9034 | -1.6129 | | |
| 7 | -2.1243 | -2.3191 | -2.2624 | -2.1192 | -2.0334 | -1.6550 | | |
| 8 | -2.5408 | -.0225 | -.0105 | -2.2030 | -2.2302 | -1.7238 | | |
| 9 | .1483 | .3671 | .6133 | .5854 | .0975 | .5906 | | |
| 10 | .1843 | -1.2045 | .5958 | .5260 | .3211 | .3574 | | |
| 11 | -4.8793 | -12.4100 | -4.3117 | -2.7551 | -7.0862 | -4.8942 | | |
| 12 | -5.4530 | -9.2851 | -6.0710 | -4.4812 | -6.8874 | -4.8063 | | |
| 13 | -4.6890 | -6.6290 | -4.7922 | -3.8907 | -5.4388 | -3.9692 | | |
| 14 | -2.5483 | -2.6547 | -2.8722 | -3.4732 | -3.0367 | -2.3773 | | |
| 15 | -.6877 | 3.8658 | .1206 | -.8229 | -2.6927 | -1.7563 | | |
| 16 | .8840 | 20.0270 | 1.0799 | .0210 | -2.6411 | .7780 | | |
| 17 | .8091 | 28.7804 | 1.9605 | 2.3327 | 4.5511 | 1.0780 | | |
| 18 | -3.1550 | -8.6978 | -3.5133 | -3.1639 | -10.3636 | -3.2526 | | |
| 19 | -3.8381 | -18.1431 | -6.1776 | -6.4624 | -10.3311 | -5.2420 | | |
| 20 | -4.0254 | -7.4859 | -4.6245 | -4.9879 | -6.6180 | -5.2344 | | |
| 21 | -1.5895 | -2.3550 | -1.6248 | -.3704 | -1.6626 | -3.2736 | | |
| 22 | 1.2376 | | 2.4498 | 1.8505 | 10.4039 | 1.0857 | | |
| 23 | 1.2766 | 42.3570 | 1.6792 | 2.6228 | 14.5956 | 1.1373 | | |

### (b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.5120 | -5.7872 | -6.0631 | -4.8596 | -3.0474 | -3.8151 | | |
| 2 | -5.1675 | -4.4063 | -5.9052 | -4.8894 | -4.3716 | -4.3006 | | |
| 3 | -4.2303 | -4.2784 | -4.9824 | -4.4543 | -4.1298 | -3.8803 | | |
| 4 | -3.2449 | -3.5849 | -4.0666 | -3.7544 | -3.4907 | -3.2202 | | |
| 5 | -2.5454 | -2.9742 | -3.4123 | -3.2509 | -3.1511 | -2.6387 | | |
| 6 | -2.5108 | -3.0072 | -3.0649 | -2.8877 | -2.9611 | -2.4583 | | |
| 7 | -2.6943 | -2.9546 | -2.9579 | -2.8351 | -2.9016 | -2.3700 | | |
| 8 | -2.9711 | -.0226 | -.0123 | -2.7965 | -3.0686 | -2.3393 | | |
| 9 | .5281 | .5025 | .7843 | .6422 | .2227 | .6756 | | |
| 10 | .5733 | -1.0125 | .8440 | .7440 | .6776 | .5912 | | |
| 11 | -4.8520 | -12.7463 | -4.9666 | -3.4719 | -8.3248 | -6.2925 | | |
| 12 | -4.8425 | -10.2145 | -6.7052 | -5.2649 | -8.3286 | -6.3098 | | |
| 13 | -4.1896 | -7.2765 | -5.2596 | -4.3736 | -6.5439 | -5.0855 | | |
| 14 | -2.5123 | -2.8553 | -3.2456 | -3.4649 | -3.5829 | -3.0379 | | |
| 15 | -.5522 | 4.1588 | .0000 | -.9193 | -3.1855 | -1.4719 | | |
| 16 | .9314 | 21.9630 | 1.1546 | -.0509 | -2.2031 | .9808 | | |
| 17 | 1.0021 | 30.3393 | 2.3144 | 2.2512 | 5.0462 | 1.1056 | | |
| 18 | -3.1996 | -8.5582 | -4.1965 | -3.6631 | -11.1036 | -4.2756 | | |
| 19 | -3.3969 | -18.5966 | -6.6070 | -6.8070 | -11.1803 | -6.5286 | | |
| 20 | -3.4360 | -7.6150 | -4.8456 | -5.0122 | -7.4229 | -6.5439 | | |
| 21 | -1.5962 | -2.6116 | -1.8544 | -.5561 | -2.1724 | -4.3869 | | |
| 22 | 1.3673 | | 2.9338 | 1.6283 | 11.7699 | 1.0365 | | |
| 23 | 1.5723 | 38.1182 | 1.9038 | 2.6636 | 16.8794 | 1.2112 | | |

TABLE VIII.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 5.25. FULL-SPAN FLAP; $\delta_f = 35^{\circ}$; $C_{\mu} = 2.75$. ALL ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -1.9709 | -2.5584 | -1.8458 | -1.4187 | -1.0994 | -.8117 | | |
| 2 | -1.9393 | -1.4998 | -2.0133 | -1.5477 | -1.1434 | -.8685 | | |
| 3 | -1.9091 | -2.0571 | -1.9580 | -1.8073 | -1.1544 | -.9565 | | |
| 4 | -1.8344 | -4.7934 | -1.9966 | -1.8224 | -1.3724 | -1.0389 | | |
| 5 | -1.7669 | -2.2496 | -1.9748 | -1.8140 | -1.4329 | -1.0591 | | |
| 6 | -1.8402 | -1.9307 | -1.8743 | -1.7520 | -1.4512 | -1.1709 | | |
| 7 | -1.7583 | -1.9508 | -1.8961 | -1.7872 | -1.5685 | -1.3394 | | |
| 8 | -2.0097 | -.0129 | -.0067 | -1.8408 | -1.8452 | -1.6564 | | |
| 9 | .4540 | .5704 | .6451 | .5680 | .3080 | .1998 | | |
| 10 | .4565 | -.4497 | .5932 | .4960 | .2218 | .1833 | | |
| 11 | -3.8238 | -7.5225 | -3.2896 | -2.7335 | -4.5075 | -4.1960 | | |
| 12 | -4.6397 | -6.7167 | -4.6849 | -4.0350 | -5.3247 | -4.6779 | | |
| 13 | -4.1599 | -5.0218 | -3.6732 | -3.1858 | -3.8772 | -4.4837 | | |
| 14 | -1.8890 | -2.4995 | -2.0502 | -2.6665 | -2.0614 | -2.7632 | | |
| 15 | .2931 | 2.0820 | .3854 | .3954 | -.4947 | -.1796 | | |
| 16 | .6437 | 11.1068 | 1.0238 | .6619 | -1.4402 | .9330 | | |
| 17 | .6724 | 15.1444 | .6066 | 1.5550 | 3.6734 | .8340 | | |
| 18 | -2.3645 | -3.9703 | -2.5242 | -2.2779 | -8.8538 | -3.4686 | | |
| 19 | -3.9172 | -10.7917 | -4.1623 | -3.8792 | -7.7489 | -5.8323 | | |
| 20 | -3.0453 | -4.8839 | -3.2930 | -3.0049 | -4.8433 | -6.3105 | | |
| 21 | -1.1062 | -1.9623 | -1.2244 | -.6331 | -1.7480 | -3.9981 | | |
| 22 | 1.1437 | 36.7661 | 1.4829 | .6887 | 11.0771 | .8560 | | |
| 23 | .8621 | 20.3142 | 1.1361 | .5194 | 10.4814 | .5829 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -4.7957 | -.9949 | -4.9572 | -3.9070 | -2.0059 | -1.7732 | | |
| 2 | -4.5582 | -3.0553 | -4.9318 | -3.8563 | -2.8020 | -2.1537 | | |
| 3 | -3.7315 | -3.7315 | -4.2447 | -3.4494 | -2.7595 | -2.0521 | | |
| 4 | -2.8424 | -4.1528 | -3.3346 | -2.8906 | -2.3365 | -1.8193 | | |
| 5 | -2.2604 | -2.7570 | -2.8382 | -2.5782 | -2.1315 | -1.7602 | | |
| 6 | -2.0403 | -2.4920 | -2.4482 | -2.4887 | -2.0502 | -1.9763 | | |
| 7 | -1.9013 | -2.3458 | -2.3351 | -2.3638 | -2.2386 | -2.7706 | | |
| 8 | -1.9636 | -.0203 | -.0219 | -2.2422 | -2.5932 | -4.3959 | | |
| 9 | .6083 | .7271 | .7871 | .6283 | .2993 | .0813 | | |
| 10 | .7083 | -.1651 | .7888 | .7162 | .3973 | .1608 | | |
| 11 | -3.6895 | -7.8001 | -3.7331 | -3.2401 | -5.8643 | -8.4964 | | |
| 12 | -3.8415 | -6.9733 | -4.8559 | -4.7107 | -5.3656 | -9.7690 | | |
| 13 | -3.4520 | -5.0824 | -3.8665 | -3.6385 | -5.2105 | -9.1465 | | |
| 14 | -1.7420 | -2.7034 | -2.2017 | -3.0307 | -2.7558 | -5.5319 | | |
| 15 | .2810 | 3.1633 | .4273 | .6706 | .1608 | -1.1932 | | |
| 16 | .6706 | 12.4286 | 1.0557 | .6908 | -.8016 | .7668 | | |
| 17 | .7198 | 15.5484 | .4848 | 1.2516 | 3.4498 | .7354 | | |
| 18 | -2.2126 | -3.6156 | -2.8011 | -2.6289 | -7.3794 | -5.9752 | | |
| 19 | -3.4013 | -10.7567 | -4.3173 | -4.1332 | -8.6903 | -8.1417 | | |
| 20 | -2.3530 | -4.9390 | -3.2856 | -3.2367 | -6.0675 | -7.1591 | | |
| 21 | -1.0702 | -2.0533 | -1.2494 | -.8949 | -2.6708 | -4.0432 | | |
| 22 | 1.2862 | 31.3213 | 1.7904 | .4966 | 8.7159 | .6744 | | |
| 23 | 1.0631 | 19.3968 | 1.2449 | .3817 | 11.2492 | .7871 | | |

TABLE IX.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 5.25. FULL-SPAN FLAP; $\delta_f = 35^{\circ}$;

$C_{\mu} = 5.49$. ALL ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.1240 | -4.1276 | -1.9122 | -1.4512 | -1.5127 | -.8897 | | |
| 2 | -2.0710 | -1.6543 | -2.2278 | -1.6249 | -1.2679 | -.9299 | | |
| 3 | -2.0968 | -2.0524 | -2.1910 | -1.8303 | -1.3830 | -.9847 | | |
| 4 | -2.0496 | -5.7101 | -2.1977 | -1.8871 | -1.5323 | -1.0943 | | |
| 5 | -1.9293 | -2.5293 | -2.1543 | -1.9489 | -1.6424 | -1.1583 | | |
| 6 | -2.0868 | -2.1025 | -2.1359 | -1.9122 | -1.7301 | -1.3172 | | |
| 7 | -2.0553 | -2.2357 | -2.1860 | -2.0240 | -1.9128 | -1.6442 | | |
| 8 | -2.4148 | -.0158 | -.0084 | -2.1109 | -2.2818 | -2.1229 | | |
| 9 | .0716 | .3811 | .6115 | .2372 | .1590 | .2412 | | |
| 10 | .1003 | -1.3378 | .5630 | .4227 | .1371 | .1681 | | |
| 11 | -4.5271 | -10.9130 | -3.4920 | -2.0508 | -5.5501 | -4.9710 | | |
| 12 | -4.9482 | -8.7075 | -5.4275 | -4.1951 | -5.1190 | -5.6561 | | |
| 13 | -3.9772 | -6.2987 | -4.3904 | -3.6306 | -4.9874 | -5.0423 | | |
| 14 | -2.4749 | -2.9704 | -2.6286 | -1.7786 | -2.7156 | -3.3524 | | |
| 15 | -.9053 | 3.0600 | .0969 | -.5845 | -.8806 | -.5371 | | |
| 16 | .4054 | 18.9074 | .7401 | .0468 | -1.2551 | 1.0034 | | |
| 17 | .6361 | 26.4629 | -.1653 | 1.8995 | 5.4646 | .9833 | | |
| 18 | -2.8988 | -7.5489 | -3.0862 | -2.6035 | -12.7244 | -4.1690 | | |
| 19 | -4.6747 | -16.3909 | -5.3507 | -4.8881 | -11.1843 | -7.5433 | | |
| 20 | -4.0273 | -6.7226 | -4.2752 | -3.7993 | -6.7869 | -8.1480 | | |
| 21 | -1.5068 | -2.2415 | -1.5748 | -.6129 | -2.6947 | -5.3492 | | |
| 22 | 1.3481 | | 1.8461 | .9857 | 16.5985 | .9431 | | |
| 23 | 1.3438 | | 1.4234 | .9088 | 16.1325 | .8700 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.1901 | .6562 | -5.3662 | -4.1750 | -1.9998 | -1.9408 | | |
| 2 | -5.0153 | -3.4071 | -5.3814 | -4.1127 | -3.1136 | -2.3611 | | |
| 3 | -4.2105 | -4.0617 | -4.6771 | -3.7959 | -3.0965 | -2.3224 | | |
| 4 | -3.2381 | -3.5097 | -3.8397 | -3.2399 | -2.7444 | -2.0938 | | |
| 5 | -2.5966 | -3.0185 | -3.2635 | -2.9721 | -2.5048 | -2.1104 | | |
| 6 | -2.4810 | -2.8610 | -2.9518 | -2.8137 | -2.4643 | -2.3426 | | |
| 7 | -2.4752 | -2.8379 | -2.8659 | -2.7328 | -2.7242 | -3.4632 | | |
| 8 | -2.7685 | -.0231 | -.0253 | -2.6924 | -3.2144 | -5.4243 | | |
| 9 | .2428 | .5476 | .7338 | .4837 | .2102 | .0627 | | |
| 10 | .4307 | -1.2196 | .8175 | .6338 | .3559 | .1475 | | |
| 11 | -4.7176 | -12.3204 | -4.1649 | -2.7379 | -7.3209 | -9.5216 | | |
| 12 | -4.7537 | -9.9480 | -6.2457 | -5.0899 | -7.7854 | -11.3481 | | |
| 13 | -4.2639 | -7.0583 | -5.0276 | -4.3166 | -6.6316 | -11.1952 | | |
| 14 | -2.6602 | -3.4375 | -3.1439 | -2.9906 | -3.6144 | -7.2343 | | |
| 15 | -.6200 | 5.1685 | .0876 | -1.0193 | -.3207 | -1.6220 | | |
| 16 | .5232 | 21.5584 | .8562 | -.4802 | -.1069 | .8445 | | |
| 17 | .7443 | 28.2994 | -.4667 | 1.4293 | 5.5445 | .8574 | | |
| 18 | -3.1153 | -7.3256 | -3.7538 | -2.7884 | -12.1167 | -8.0582 | | |
| 19 | -3.3075 | -17.0234 | -6.0317 | -5.1876 | -12.5572 | -12.0117 | | |
| 20 | -3.5372 | -7.2678 | -4.7816 | -4.1481 | -8.4452 | -11.5453 | | |
| 21 | -1.5967 | -2.7541 | -1.9005 | -.9031 | -3.7618 | -5.9920 | | |
| 22 | 1.6650 | | 2.1575 | .4719 | 14.4061 | .6822 | | |
| 23 | 1.5581 | 42.1961 | 1.6366 | .3590 | 16.3753 | .9828 | | |

TABLE X.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. FULL-SPAN FLAP; $\delta_f = 55^o$; $C_\mu = 0$.

(a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -1.2951 | -.5588 | -1.6163 | -1.3888 | -1.1281 | -1.2272 | -.9752 | -.7163 |
| 2 | -1.4770 | -.8390 | -1.4384 | -1.2503 | -1.2010 | -1.0963 | -.9961 | -.7560 |
| 3 | -1.6281 | -2.3937 | -1.3683 | -1.4111 | -1.3020 | -1.2665 | -1.0441 | -.9188 |
| 4 | -1.4946 | -1.5680 | -1.3461 | -1.2349 | -1.1917 | -1.2366 | -.9293 | -.8270 |
| 5 | -1.2570 | -1.1294 | -1.1767 | -.9339 | -1.0327 | -1.0514 | -.9710 | -.6557 |
| 6 | -1.1734 | -1.0854 | -1.0006 | -.6602 | -.8662 | -.9054 | -.9710 | -.7372 |
| 7 | -1.1411 | -1.0707 | -.7509 | -.5678 | -.5163 | -.9447 | -.9188 | -.9188 |
| 8 | -1.1602 | -.0103 | .0017 | -.4943 | -.4396 | -.5425 | -.8938 | -1.0400 |
| 9 | .5177 | .4943 | .5149 | .5679 | .5183 | .4491 | .3634 | .3133 |
| 10 | .5148 | .4664 | .4995 | .5251 | .5033 | .4229 | .3739 | .2506 |
| 11 | -3.6874 | -3.4498 | -2.2800 | -.6790 | -.7969 | -1.8184 | -1.9463 | -2.9988 |
| 12 | -3.2459 | -3.1403 | -1.5103 | -.6978 | -.7558 | -1.1898 | -2.6960 | -3.3976 |
| 13 | -1.8965 | -2.1224 | -.8928 | -.7748 | -.7446 | -1.0738 | -1.5892 | -2.5623 |
| 14 | -.7231 | -.8184 | -.8911 | -.6517 | -.7371 | -.8587 | -.8019 | -1.0922 |
| 15 | .5280 | .5764 | .2378 | .2053 | .1572 | .1703 | .2569 | .1859 |
| 16 | .9915 | .8536 | .9014 | .9750 | 3.1061 | .8401 | .4323 | .9315 |
| 17 | .9592 | .7392 | .8022 | .9544 | .9262 | .8177 | .4846 | 1.1091 |
| 18 | -1.7088 | -.1027 | -.4635 | -.3660 | -.5107 | -.8456 | -1.5161 | -2.0841 |
| 19 | -1.6296 | -1.6296 | -.4293 | -.4190 | -.4883 | -1.3582 | -1.1026 | -2.3222 |
| 20 | -1.0443 | -.8859 | -.4481 | -.3797 | -.4546 | -.7689 | -.5910 | -1.6748 |
| 21 | -.3799 | -.3960 | -.4550 | -.3694 | -.4471 | -.4733 | -.4469 | -.4532 |
| 22 | .9915 | .8521 | .9066 | .9818 | .9561 | .8008 | .4156 | .9169 |
| 23 | .9328 | .7025 | .6329 | .9271 | .9187 | .8832 | .7592 | 7.1203 |

(b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.0861 | -1.5879 | -2.7775 | -3.5781 | -3.3210 | -2.6760 | -2.7275 | -2.5684 |
| 2 | -3.1037 | -1.8070 | -2.6523 | -3.2455 | -3.0435 | -2.4734 | -2.4449 | -2.2942 |
| 3 | -2.5494 | -1.7952 | -2.1500 | -2.7706 | -2.6160 | -2.1415 | -2.0661 | -1.8986 |
| 4 | -1.7040 | -1.3644 | -1.5345 | -2.0471 | -1.8921 | -1.6071 | -1.5909 | -1.4548 |
| 5 | -1.0204 | -1.0139 | -1.1333 | -1.3647 | -1.2808 | -1.1645 | -1.3334 | -1.1764 |
| 6 | -.7719 | -.9601 | -.9001 | -.8058 | -.7764 | -.8851 | -1.0676 | -.9755 |
| 7 | -.7028 | -.7910 | -.8504 | -.5298 | -.5307 | -.6113 | -.8582 | -.8266 |
| 8 | -.6557 | -.0044 | -.0120 | -.4698 | -.4782 | -.4107 | -.8875 | -.9294 |
| 9 | .6983 | .7013 | .6738 | .6721 | .6452 | .6058 | .4418 | .3120 |
| 10 | .7219 | .7116 | .6841 | .7047 | .6640 | .6171 | .4585 | .2931 |
| 11 | -.6396 | -.6234 | -.7629 | -.6566 | -.6901 | -.7013 | -2.2252 | -2.5391 |
| 12 | -.6616 | -.6454 | -.7287 | -.6927 | -.6976 | -.7276 | -2.0472 | -3.2090 |
| 13 | -.6675 | -.6822 | -.7201 | -.7081 | -.7276 | -.7463 | -1.1785 | -2.2210 |
| 14 | -.6410 | -.6013 | -.6858 | -.6618 | -.6976 | -.7107 | -.7431 | -.9524 |
| 15 | .7704 | .6954 | .5555 | .4149 | .3958 | .4408 | .6344 | .4460 |
| 16 | 1.0115 | .9542 | .9207 | .9962 | 2.0725 | .9847 | .6114 | .7558 |
| 17 | .9600 | .9306 | .8299 | .9447 | .9434 | .9115 | .6155 | .7370 |
| 18 | -.3823 | .0265 | -.7664 | -.4269 | -.3713 | -.5063 | -.7222 | -1.6914 |
| 19 | -.3778 | -.3734 | -.5315 | -.4115 | -.4032 | -.4669 | -.5987 | -1.7186 |
| 20 | -.4131 | -.3911 | -.4715 | -.4252 | -.5194 | -.4501 | -.6343 | -1.0069 |
| 21 | -.3852 | -.3734 | -.4441 | -.4200 | -.3919 | -.4369 | -.5673 | -.6615 |
| 22 | .9953 | .9659 | .8281 | .9756 | .9584 | .9341 | .6784 | .6365 |
| 23 | .9542 | .8601 | .6944 | .9687 | .9584 | .9397 | .6490 | 5.0249 |

TABLE XI.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. FULL-SPAN FLAP; $\delta_f = 55^o$;

$C_\mu = 2.05$. ALL ENGINES OPERATING.

(a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.4895 | -1.7492 | -2.6417 | -3.7551 | -3.4067 | -1.8298 | -1.8260 | -1.9796 |
| 2 | -3.5289 | -2.2900 | -2.7895 | -3.6395 | -3.2319 | -2.3449 | -2.1020 | -1.8571 |
| 3 | -3.3933 | -3.3059 | -2.8456 | -3.4950 | -3.0292 | -2.6146 | -2.1746 | -1.8903 |
| 4 | -2.8890 | -3.0581 | -2.9374 | -3.1720 | -2.7912 | -2.6648 | -2.2659 | -1.8011 |
| 5 | -2.5450 | -2.8540 | -3.0020 | -2.9544 | -2.6703 | -2.6220 | -2.1622 | -1.8281 |
| 6 | -2.5363 | -2.6616 | -2.7164 | -2.6621 | -2.6239 | -2.8823 | -2.2389 | -1.8654 |
| 7 | -2.5421 | -2.7812 | -2.7895 | -2.6094 | -2.6015 | -2.6927 | -2.5087 | -2.1414 |
| 8 | -2.7987 | -.0233 | -.0119 | -2.2949 | -2.3412 | -2.4230 | -2.5336 | -2.4547 |
| 9 | .2683 | .9536 | .9589 | .8042 | .7588 | .7476 | .7660 | .4732 |
| 10 | .6619 | -.0292 | .9130 | .8025 | .7458 | .6156 | .5895 | .3777 |
| 11 | -6.6594 | -16.3962 | -12.4178 | -8.2139 | -8.5559 | -8.2063 | -7.5841 | -5.1190 |
| 12 | -6.6247 | -11.9098 | -10.8250 | -8.2989 | -8.3048 | -9.8985 | -9.8023 | -8.4017 |
| 13 | -5.0622 | -7.8564 | -7.4456 | -5.6267 | -5.7851 | -7.5219 | -7.2646 | -6.1980 |
| 14 | -2.8161 | -3.3700 | -2.3153 | -2.8541 | -3.2133 | -3.7284 | -3.9301 | -3.4238 |
| 15 | -.3091 | -.7246 | -4.8685 | .0221 | -.3180 | -.9168 | -2.1041 | -1.9588 |
| 16 | .7757 | 8.8298 | 5.5560 | 1.1187 | 1.1996 | 1.3223 | 2.4455 | .9217 |
| 17 | .4039 | 10.2878 | 9.1313 | 1.0439 | .7216 | 1.5288 | 2.6843 | .8781 |
| 18 | -4.4049 | -2.8803 | -24.5517 | -4.5302 | -4.8758 | -8.6507 | -12.9999 | -6.0901 |
| 19 | -4.9558 | -11.3108 | -15.6085 | -4.4572 | -5.1807 | -9.1900 | -11.5951 | -7.6277 |
| 20 | -3.4997 | -6.0869 | -7.4983 | -3.0615 | -3.8251 | -5.8111 | -6.6857 | -6.0341 |
| 21 | -1.6239 | -1.6239 | -1.5401 | -1.3514 | -1.6476 | -1.5379 | -2.0833 | -3.6354 |
| 22 | .6838 | 11.3391 | 26.0475 | .9181 | .7662 | 1.8914 | 3.9320 | .4712 |
| 23 | 1.0469 | 11.3814 | 25.6225 | 1.1867 | .6639 | 3.3272 | 8.1278 | -1.5334 |

(b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -6.2709 | -4.2730 | -4.6038 | -6.9048 | -6.5098 | -4.0375 | -4.3905 | -4.2444 |
| 2 | -6.1932 | -4.2114 | -4.5935 | -6.5099 | -6.0329 | -4.4677 | -4.1339 | -3.8876 |
| 3 | -5.0880 | -3.8875 | -4.1165 | -5.6261 | -5.1371 | -4.1161 | -3.6288 | -3.3096 |
| 4 | -3.7160 | -3.5093 | -4.4687 | -4.4909 | -4.1217 | -3.7570 | -3.2073 | -2.8672 |
| 5 | -2.9433 | -2.9904 | -3.4191 | -3.6721 | -3.4728 | -3.5681 | -2.9006 | -2.6105 |
| 6 | -2.2560 | -2.6388 | -2.9729 | -3.0857 | -3.1100 | -3.3344 | -2.8505 | -2.6606 |
| 7 | -2.2516 | -2.4524 | -2.8429 | -2.7917 | -2.8874 | -3.0800 | -3.1051 | -2.9381 |
| 8 | -2.2062 | -.0117 | -.0120 | -2.3609 | -2.6387 | -2.6499 | -3.1844 | -3.3618 |
| 9 | .8079 | 1.2126 | 1.5302 | .8822 | .8267 | .7949 | .7035 | .4425 |
| 10 | .8900 | -.1100 | 1.6944 | .9267 | .8734 | .7968 | .6972 | .3924 |
| 11 | -4.5705 | -13.7333 | -12.0282 | -7.9630 | -8.8493 | -8.7763 | -9.8512 | -6.6192 |
| 12 | -3.4038 | -7.5740 | -7.6091 | -7.3441 | -7.7908 | -10.1172 | -11.4583 | -10.9826 |
| 13 | -2.9404 | -4.4386 | -5.1662 | -4.7559 | -4.9894 | -7.7515 | -8.3825 | -8.3407 |
| 14 | -1.7489 | -1.8720 | -3.1096 | -2.5575 | -3.0950 | -3.8786 | -4.6973 | -4.6409 |
| 15 | .3182 | -.8327 | -8.9921 | -.0085 | -.4040 | -.6564 | -.4111 | -4.0754 |
| 16 | 1.0982 | 9.0132 | 9.3608 | 1.1182 | -.7593 | 1.2120 | 3.4824 | .7724 |
| 17 | .8944 | 10.9370 | 15.2304 | 1.0771 | .4302 | 1.7188 | 3.3989 | .7787 |
| 18 | -2.6796 | -1.9790 | -24.3915 | -3.9849 | -4.6341 | -9.0830 | -13.8644 | -8.0945 |
| 19 | -2.7207 | -8.0562 | -13.5976 | -3.7952 | -4.9127 | -9.4028 | -12.9545 | -9.8140 |
| 20 | -2.0963 | -3.8992 | -6.0329 | -2.6737 | -3.6018 | -5.7337 | -7.8483 | -7.2452 |
| 21 | -1.3912 | -1.5656 | -1.5249 | -1.3659 | -1.6476 | -1.6045 | -2.7649 | -4.1610 |
| 22 | .8900 | 13.6437 | 30.6249 | 1.0258 | .7893 | 1.7300 | 3.9230 | .4467 |
| 23 | 1.1618 | 14.2112 | 21.7308 | 1.1968 | .8903 | 3.3984 | 10.0508 | -.9703 |

TABLE XII. - PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. FULL-SPAN FLAP; $\delta_f = 55^{\circ}$; $C_{\mu} = 4.11$. ALL ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -4.1229 | -2.0124 | -2.8630 | -4.1125 | -3.8930 | -1.7595 | -1.8653 | -2.1574 |
| 2 | -4.0159 | -2.2601 | -3.1177 | -4.1211 | -3.5246 | -2.6084 | -2.2012 | -2.1157 |
| 3 | -3.6377 | -3.7198 | -3.0835 | -3.8493 | -3.3414 | -2.9094 | -2.4954 | -2.0009 |
| 4 | -3.2772 | -3.4912 | -3.1861 | -3.5621 | -3.1263 | -3.0029 | -2.7103 | -1.9986 |
| 5 | -2.9152 | -3.1644 | -3.4869 | -3.3451 | -3.0403 | -2.9487 | -2.5079 | -2.0739 |
| 6 | -2.9240 | -3.0955 | -3.1690 | -3.1006 | -3.0291 | -3.2703 | -2.6498 | -2.2325 |
| 7 | -2.9958 | -3.3576 | -3.3109 | -3.0767 | -3.0497 | -3.1955 | -2.9857 | -2.5830 |
| 8 | -3.4076 | -.0161 | -.0137 | -2.6819 | -2.7393 | -2.8496 | -3.0233 | -2.9648 |
| 9 | .7521 | .5380 | 1.0325 | .7966 | .6246 | .6414 | .7535 | .5051 |
| 10 | .7462 | -.9337 | .9436 | .8120 | .6788 | .4301 | .5385 | .3485 |
| 11 | -8.0521 | -19.8653 | -16.1732 | -9.4215 | -10.2597 | -10.8431 | -8.9759 | -6.0423 |
| 12 | -7.8894 | -14.6355 | -13.6896 | -9.8660 | -10.1325 | -12.2828 | -12.1097 | -9.9315 |
| 13 | -6.2568 | -10.0966 | -9.5395 | -7.0080 | -6.8080 | -9.3921 | -9.0665 | -7.4486 |
| 14 | -3.5967 | -4.6783 | -5.9124 | -3.7091 | -4.2408 | -4.7176 | -4.9783 | -4.2676 |
| 15 | -1.5566 | -14.3879 | -11.0539 | -.4718 | -1.9689 | -3.0310 | -2.9753 | -3.1985 |
| 16 | .9002 | 6.0417 | 7.6654 | 1.1197 | -.3478 | 1.2829 | 3.3546 | 1.0500 |
| 17 | .9178 | 13.5817 | 15.4248 | 1.0804 | .6751 | 2.4872 | 3.3984 | 1.0500 |
| 18 | -5.6104 | -.3475 | -41.4842 | -5.9397 | -6.6940 | -12.4249 | -18.3273 | -7.4465 |
| 19 | -6.8342 | -10.8851 | -24.5521 | -6.4064 | -7.7298 | -12.5016 | -16.2200 | -9.5747 |
| 20 | -5.0667 | -8.8948 | -11.3667 | -4.7757 | -6.0376 | -7.8009 | -9.1929 | -7.6802 |
| 21 | -2.3671 | -2.3114 | -2.2306 | -2.3913 | -2.5486 | -1.9820 | -2.9252 | -4.7467 |
| 22 | .6773 | 23.2944 | 46.7854 | .9265 | .2207 | 1.0098 | 4.8514 | .6533 |
| 23 | 1.3869 | 26.0124 | 50.3839 | 1.3180 | .8696 | 5.4306 | 12.4604 | -2.5705 |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -7.9059 | -5.2220 | -5.3321 | -8.2834 | -7.6361 | -4.3850 | -4.8301 | -4.8510 |
| 2 | -7.7320 | -5.0835 | -5.6844 | -7.8348 | -7.1491 | -5.0732 | -4.6328 | -4.4650 |
| 3 | -6.0650 | -4.6546 | -5.1602 | -6.8138 | -6.1111 | -4.8927 | -4.1397 | -3.8376 |
| 4 | -4.6885 | -4.2817 | -5.2306 | -5.5280 | -4.9359 | -4.5223 | -3.8124 | -3.3068 |
| 5 | -3.4696 | -3.8734 | -4.5689 | -4.6582 | -4.3004 | -4.6915 | -3.4809 | -3.1179 |
| 6 | -3.2043 | -3.6302 | -4.1133 | -4.0085 | -3.9375 | -4.0634 | -3.4935 | -3.2837 |
| 7 | -3.4460 | -3.5005 | -3.9947 | -3.6853 | -3.8058 | -3.8040 | -3.8544 | -3.6131 |
| 8 | -3.5801 | -.0206 | -.0206 | -3.2212 | -3.5652 | -3.3151 | -3.8880 | -4.1188 |
| 9 | .8522 | .7283 | 1.6177 | .8596 | .6450 | .6676 | .7767 | .5142 |
| 10 | .8816 | -.9965 | 1.7346 | .9318 | .8199 | .6300 | .7641 | .4135 |
| 11 | -7.1365 | -19.5950 | -17.8062 | -10.6211 | -12.0606 | -12.0455 | -11.8234 | -8.1389 |
| 12 | -5.4519 | -12.2434 | -13.1686 | -10.2241 | -10.9154 | -13.4990 | -14.4692 | -13.5984 |
| 13 | -4.5116 | -7.7894 | -9.1205 | -7.0905 | -6.8614 | -10.4999 | -10.8267 | -10.0504 |
| 14 | -3.2249 | -3.7128 | -6.8808 | -3.9638 | -4.6934 | -5.4154 | -6.1855 | -5.8896 |
| 15 | -1.4224 | -12.3790 | -11.9688 | -.3266 | -1.8822 | -2.4238 | -1.5946 | -2.6941 |
| 16 | .9804 | 7.6075 | 10.4299 | 1.2189 | -.0113 | 1.4274 | 4.2972 | .9992 |
| 17 | 1.0777 | 15.4583 | 18.6181 | 1.1312 | 1.1453 | 2.6892 | 4.3623 | .9299 |
| 18 | -4.7032 | -.2241 | -41.0321 | -6.2603 | -7.6700 | -13.3956 | -19.4671 | -10.2980 |
| 19 | -5.0098 | -8.1328 | -24.2693 | -6.4425 | -8.4315 | -13.7115 | -18.4348 | -12.6710 |
| 20 | -3.8955 | -6.6546 | -10.8790 | -4.6290 | -6.3631 | -8.4898 | -11.2757 | -9.7000 |
| 21 | -2.4600 | -2.4349 | -2.5234 | -2.4787 | -2.6607 | -2.4351 | -4.0202 | -5.8393 |
| 22 | .6428 | 19.1368 | 46.7997 | .9300 | .2106 | 1.6606 | 4.5407 | .3946 |
| 23 | 1.4699 | 29.4467 | 44.5253 | 1.3701 | 1.1415 | 6.0574 | 12.9106 | -1.0071 |

TABLE XIII. - PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^o$; $C_\mu = 0$.

(a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -1.4621 | -.5267 | -1.1499 | -1.0716 | -.7937 | -1.0431 | | |
| 2 | -1.4427 | -.9250 | -1.2751 | -1.1116 | -1.0792 | -.9955 | | |
| 3 | -1.5800 | -1.3786 | -1.4334 | -1.2856 | -1.3400 | -1.0602 | | |
| 4 | -1.3443 | -1.3473 | -1.3238 | -1.3064 | -1.2486 | -1.1363 | | |
| 5 | -1.2025 | -1.0668 | -1.1168 | -1.1916 | -1.1858 | -1.0469 | | |
| 6 | -1.1160 | -.9952 | -.8402 | -.9811 | -1.0659 | -.9365 | | |
| 7 | -.9504 | -.8012 | -.5984 | -.7759 | -.9860 | -.8451 | | |
| 8 | -.9698 | -.0000 | .0017 | -.7132 | -.8109 | -.7633 | | |
| 9 | .4477 | .4641 | .5082 | .4090 | .3864 | .2836 | | |
| 10 | .4551 | .4611 | .4856 | .4403 | .3655 | .3350 | | |
| 11 | -3.5075 | -1.9351 | -.7585 | -2.7729 | -2.6648 | -2.8133 | | |
| 12 | -2.8944 | -1.9127 | -.7828 | -2.0458 | -3.0645 | -2.5163 | | |
| 13 | -1.8202 | -1.0921 | -.7915 | -1.3795 | -2.0538 | -1.7302 | | |
| 14 | -.7296 | -.8161 | -.7515 | -2.3224 | -.9593 | -.7519 | | |
| 15 | .5655 | .2582 | .2489 | .3481 | .0114 | .3122 | | |
| 16 | .9461 | .5566 | .9938 | .8302 | -2.0557 | .6605 | | |
| 17 | .9132 | .6148 | .9416 | .8076 | .4568 | .6548 | | |
| 18 | -1.5263 | .0119 | -.4123 | -1.4352 | -1.5703 | -1.6008 | | |
| 19 | -1.5099 | -.4954 | -.4297 | -1.0838 | -1.4276 | -1.5513 | | |
| 20 | -.9295 | -.4864 | -.5289 | -.5967 | -.7576 | -1.0107 | | |
| 21 | -.3551 | -.5894 | -.4210 | -.3966 | -.2303 | -.4759 | | |
| 22 | .9923 | .6282 | 1.0008 | .8041 | .3902 | .6186 | | |
| 23 | .9386 | .9475 | .9572 | .8650 | .4835 | .8299 | | |

(b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.1077 | -1.3774 | -3.4309 | -2.7934 | -2.4510 | -2.6944 | | |
| 2 | -2.8734 | -2.2065 | -3.3504 | -2.9003 | -2.7346 | -2.8783 | | |
| 3 | -2.2982 | -2.1900 | -2.8145 | -2.6131 | -2.4395 | -2.6349 | | |
| 4 | -1.3414 | -1.7034 | -2.0491 | -2.0123 | -2.0198 | -2.1099 | | |
| 5 | -1.2317 | -1.2227 | -1.3223 | -1.4729 | -1.6250 | -1.5714 | | |
| 6 | -.8818 | -.9388 | -.8880 | -.9966 | -1.3031 | -1.2188 | | |
| 7 | -.7180 | -.6970 | -.6498 | -.8144 | -1.1364 | -1.0521 | | |
| 8 | -.6339 | -.0180 | .0000 | -.7671 | -1.0444 | -.9562 | | |
| 9 | .6730 | .6790 | .6869 | .6168 | .5596 | .4638 | | |
| 10 | .7166 | .6655 | .7254 | .6588 | .5979 | .5289 | | |
| 11 | -.6490 | -1.2317 | -.6183 | -2.8162 | -3.4705 | -3.2558 | | |
| 12 | -.6640 | -.9959 | -.6200 | -1.9020 | -2.7538 | -2.7691 | | |
| 13 | -.6790 | -.8067 | -.6430 | -1.0263 | -1.8703 | -1.9815 | | |
| 14 | -.6369 | -.7796 | -.6183 | -1.8512 | -.8815 | -.8183 | | |
| 15 | .7662 | .6745 | .5099 | .5502 | .5691 | .4963 | | |
| 16 | 1.0111 | .8293 | 1.0058 | .2155 | -2.1597 | .9122 | | |
| 17 | 1.7772 | .7917 | .9497 | .6974 | .6362 | .7129 | | |
| 18 | -.3651 | .0030 | -.3433 | -1.4852 | -1.7439 | -1.7074 | | |
| 19 | -.3786 | -.4582 | -.3573 | -1.0859 | -1.6270 | -1.7841 | | |
| 20 | -.3996 | -.4206 | -.3521 | -.4694 | -.9313 | -1.2456 | | |
| 21 | -.3591 | -.6414 | -.3310 | -.3801 | -.2453 | -.4925 | | |
| 22 | .9870 | .8488 | .9918 | .9357 | .7225 | .6094 | | |
| 23 | .9555 | .8007 | .9655 | 1.9327 | .7014 | .6190 | | |

TABLE XIV.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^o$;

$C_\mu = 2.05$. ALL ENGINES OPERATING.

(a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.1447 | -1.3229 | -2.9802 | -2.4334 | -1.3858 | -1.6667 | | |
| 2 | -3.1087 | -2.3222 | -3.1321 | -2.6849 | -2.0012 | -2.1656 | | |
| 3 | -2.9439 | -2.8675 | -3.0797 | -2.6710 | -2.3051 | -2.2000 | | |
| 4 | -2.4091 | -2.6833 | -2.8369 | -2.5697 | -2.2210 | -2.0643 | | |
| 5 | -2.2158 | -2.4211 | -2.6780 | -2.5469 | -2.2344 | -1.9267 | | |
| 6 | -2.4555 | -2.6128 | -2.6255 | -2.4177 | -2.1981 | -1.8961 | | |
| 7 | -2.6173 | -2.8376 | -2.7059 | -2.5172 | -2.2918 | -1.9726 | | |
| 8 | -3.1297 | -.0195 | -.0175 | -2.6325 | -2.3625 | -2.0911 | | |
| 9 | .0869 | .6893 | .7777 | .6589 | .4989 | .5390 | | |
| 10 | .3716 | .1139 | .7638 | .6799 | .4702 | .4626 | | |
| 11 | -7.9268 | -16.0947 | -7.7421 | -5.4310 | -9.0314 | -5.9903 | | |
| 12 | -7.6466 | -11.9583 | -8.7133 | -7.2145 | -8.7791 | -6.4491 | | |
| 13 | -6.0751 | -8.1859 | -6.4512 | -5.6633 | -6.7874 | -5.0136 | | |
| 14 | -3.4743 | -3.8173 | -3.6143 | -3.4046 | -3.7540 | -3.0640 | | |
| 15 | -1.1072 | .2667 | -1.6333 | -2.0963 | -1.3858 | -.8563 | | |
| 16 | .3611 | 11.6834 | 1.2549 | -.5817 | -2.5001 | .9882 | | |
| 17 | 1.7367 | 17.4060 | 1.4594 | 1.1640 | 3.5973 | 1.1067 | | |
| 18 | -6.7747 | -7.0773 | -6.5263 | -6.3149 | -16.5489 | -6.0935 | | |
| 19 | -7.1687 | -16.2250 | -7.5150 | -6.7848 | -11.8296 | -7.2920 | | |
| 20 | -4.7852 | -7.4713 | -5.3454 | -4.3672 | -7.1448 | -6.5007 | | |
| 21 | -1.6465 | -1.9027 | -1.7888 | -.8735 | -1.7547 | -4.1554 | | |
| 22 | 1.4445 | 34.5722 | 1.7110 | 1.9173 | 9.4691 | .7799 | | |
| 23 | 1.5986 | 23.3203 | 4.9705 | 2.1532 | 15.4422 | 1.4546 | | |

(b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.7376 | -2.5899 | -6.2793 | -5.0030 | -3.7536 | -4.2416 | | |
| 2 | -5.3536 | -4.1426 | -6.1471 | -5.2709 | -4.4731 | -4.6930 | | |
| 3 | -3.6210 | -4.2756 | -5.1810 | -4.6099 | -4.0758 | -4.1529 | | |
| 4 | -2.7910 | -3.6346 | -4.0828 | -3.8871 | -3.5279 | -3.4296 | | |
| 5 | -2.4992 | -2.9331 | -3.3106 | -3.3582 | -3.1094 | -2.8008 | | |
| 6 | -2.3026 | -2.7970 | -2.9457 | -2.9369 | -2.8297 | -2.5269 | | |
| 7 | -2.2210 | -2.6428 | -2.7853 | -2.8664 | -2.7776 | -2.5191 | | |
| 8 | -2.2134 | -.0242 | -.0106 | -2.9263 | -2.8432 | -2.5346 | | |
| 9 | .6533 | 1.1069 | .8836 | .7231 | .6346 | .6423 | | |
| 10 | .5822 | .2314 | .9101 | .8554 | .7060 | .6423 | | |
| 11 | -5.3672 | -14.9675 | -7.1536 | -4.5834 | -10.1672 | -7.0617 | | |
| 12 | -4.1895 | -9.9572 | -7.2894 | -6.3780 | -9.5692 | -7.5709 | | |
| 13 | -3.2203 | -6.3559 | -5.3009 | -5.1757 | -7.2874 | -5.7963 | | |
| 14 | -2.0623 | -2.7033 | -3.0039 | -4.6275 | -4.0584 | -3.5820 | | |
| 15 | -.6472 | -.8452 | -1.8087 | -2.8664 | -1.6955 | -1.2480 | | |
| 16 | .8604 | 12.2561 | 1.4939 | -1.8193 | -2.3745 | .9355 | | |
| 17 | 2.2350 | 17.7921 | 1.5450 | .9524 | 3.6996 | 1.1400 | | |
| 18 | -4.5523 | -5.5773 | -5.6958 | -6.3692 | -16.2162 | -7.0771 | | |
| 19 | -4.2605 | -12.9991 | -5.9179 | -6.6847 | -12.4587 | -8.3791 | | |
| 20 | -2.7381 | -5.1132 | -4.0317 | -4.3754 | -7.5343 | -7.4629 | | |
| 21 | -1.5513 | -2.2422 | -1.5707 | -.8991 | -2.0986 | -4.8975 | | |
| 22 | 1.9431 | 33.2419 | 2.8484 | 2.0018 | 7.6828 | .5883 | | |
| 23 | 2.6297 | 21.3805 | 3.6527 | 2.3422 | 16.6174 | 1.5026 | | |

TABLE XV.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^o$;

$C_\mu = 4.11$. ALL ENGINES OPERATING.

(a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.7156 | -1.4713 | -3.4379 | -2.7762 | -1.5993 | -1.8828 | | |
| 2 | -3.5910 | -2.7338 | -3.5902 | -2.9127 | -2.3041 | -2.3846 | | |
| 3 | -3.3238 | -3.3178 | -3.4029 | -2.9950 | -2.4957 | -2.4612 | | |
| 4 | -2.7023 | -2.9920 | -3.1473 | -2.8217 | -2.4746 | -2.3156 | | |
| 5 | -2.4786 | -2.7503 | -3.0615 | -2.8235 | -2.5550 | -2.1662 | | |
| 6 | -2.9199 | -3.0145 | -3.0248 | -2.7132 | -2.5301 | -2.1586 | | |
| 7 | -3.2052 | -3.4138 | -3.2033 | -2.8952 | -2.7255 | -2.3712 | | |
| 8 | -3.9348 | -.0496 | -.0123 | -2.9180 | -2.8538 | -2.5340 | | |
| 9 | -.9203 | .4760 | .7793 | -.5724 | .4252 | .5650 | | |
| 10 | -.1742 | -.2493 | .7531 | .5867 | .4080 | .4597 | | |
| 11 | -8.9098 | -23.6683 | -8.7819 | -6.6779 | -11.4478 | -7.1728 | | |
| 12 | -8.8257 | -16.1517 | -10.8440 | -9.0060 | -10.9115 | -8.0175 | | |
| 13 | -7.3200 | -10.7503 | -8.1378 | -7.0945 | -8.4235 | -6.3397 | | |
| 14 | -4.6283 | -4.8925 | -4.7227 | -4.4269 | -4.8457 | -4.0930 | | |
| 15 | -4.7169 | -5.0652 | -3.4379 | -5.5261 | -4.4627 | -1.9958 | | |
| 16 | -.8348 | 21.6083 | 1.9527 | -.5497 | -2.0456 | .9653 | | |
| 17 | 2.4910 | 34.8832 | 1.9790 | 1.7583 | 5.2231 | 1.3982 | | |
| 18 | -9.5508 | -12.5202 | -8.8485 | -8.3899 | -24.0583 | -8.1995 | | |
| 19 | -10.2789 | -26.4500 | -10.5586 | -8.9325 | -17.1727 | -9.9386 | | |
| 20 | -7.1098 | -10.6662 | -7.4324 | -5.9130 | -9.7719 | -8.7913 | | |
| 21 | -2.2924 | -2.7608 | -2.4296 | -.8770 | -2.2888 | -5.1062 | | |
| 22 | .8544 | | 5.4045 | 2.1261 | 13.1631 | .7661 | | |
| 23 | 2.9220 | 36.5064 | 7.1331 | 2.1646 | 25.3645 | 2.2409 | | |

(b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -6.9733 | -2.7198 | -7.5061 | -5.7002 | -4.2131 | -4.7988 | | |
| 2 | -6.5459 | -4.8255 | -7.3903 | -5.8336 | -5.1176 | -5.1618 | | |
| 3 | -4.9023 | -5.1416 | -6.2267 | -5.2597 | -4.7796 | -4.7259 | | |
| 4 | -3.7087 | -4.5170 | -5.0123 | -4.5981 | -4.1555 | -3.9270 | | |
| 5 | -3.2060 | -3.8773 | -4.2594 | -4.1137 | -3.7292 | -3.2895 | | |
| 6 | -3.3249 | -3.8788 | -3.9224 | -3.7171 | -3.4546 | -3.0398 | | |
| 7 | -3.3475 | -3.9657 | -3.9452 | -3.7189 | -3.5007 | -3.1339 | | |
| 8 | -3.9992 | -.0632 | -.0316 | -3.7855 | -3.5718 | -3.2453 | | |
| 9 | .2800 | 1.0839 | .8850 | .0632 | .5588 | .6875 | | |
| 10 | -.2499 | -.1716 | .9060 | .7726 | .6471 | .6529 | | |
| 11 | -10.3087 | -22.3376 | -10.2264 | -5.5774 | -14.0719 | -8.8833 | | |
| 12 | -7.7379 | -16.0522 | -10.9213 | -8.5363 | -12.8295 | -9.7109 | | |
| 13 | -6.0672 | -10.8550 | -8.2397 | -7.1130 | -9.7532 | -7.6793 | | |
| 14 | -3.8427 | -4.8075 | -4.9684 | -4.8227 | -5.6399 | -4.9832 | | |
| 15 | -4.3860 | -4.7488 | -3.9488 | -5.1895 | -5.2021 | -2.5598 | | |
| 16 | .7346 | 20.6860 | 2.1509 | -1.7954 | -1.9894 | .9774 | | |
| 17 | 4.3763 | 33.0922 | 1.9771 | 1.9701 | 5.4306 | 1.4517 | | |
| 18 | -8.9736 | -11.5399 | -9.2909 | -9.5875 | -23.4084 | -10.0086 | | |
| 19 | -8.5206 | -25.4352 | -10.2667 | -9.8157 | -18.1871 | -11.9961 | | |
| 20 | -5.3026 | -10.3689 | -6.8708 | -6.6199 | -10.9323 | -10.9015 | | |
| 21 | -2.1193 | -3.3761 | -2.5869 | -1.3321 | -3.0456 | -7.0283 | | |
| 22 | 2.5141 | | 5.7189 | 3.4485 | 9.3922 | .4052 | | |
| 23 | 5.9494 | 43.5173 | 6.5968 | 3.7698 | 24.3033 | 2.1930 | | |

TABLE XVI.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.
WING ASPECT RATIO = 5.25. FULL-SPAN FLAP; $\delta_f = 55^{\circ}$;
$C_{\mu} = 2.75$. ALL ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.1541 | 1.2219 | -2.9229 | -2.3285 | -1.2188 | -.9038 | | |
| 2 | -3.0577 | -.6475 | -3.0473 | -2.4869 | -1.8245 | -1.2132 | | |
| 3 | -2.9496 | -.9528 | -2.9808 | -2.5448 | -1.9363 | -1.3232 | | |
| 4 | -2.7100 | -1.6714 | -2.5482 | -2.4664 | -1.9381 | -1.3735 | | |
| 5 | -2.4603 | -1.9797 | -1.9299 | -2.4835 | -2.0276 | -1.4983 | | |
| 6 | -2.5771 | -2.7159 | -2.7032 | -2.4681 | -2.1320 | -1.7779 | | |
| 7 | -2.6911 | -2.9394 | -2.9076 | -2.7202 | -2.4842 | -2.2289 | | |
| 8 | -3.2520 | -.0205 | -.0358 | -3.1120 | -3.1793 | -3.0693 | | |
| 9 | -.1330 | .5247 | .7585 | .4534 | .4214 | .2666 | | |
| 10 | .2587 | .0468 | .7432 | .6102 | .3748 | .2014 | | |
| 11 | -8.1952 | -16.3038 | -8.5184 | -6.7554 | -9.9572 | -8.2166 | | |
| 12 | -8.0929 | -12.2736 | -9.2559 | -7.8217 | -8.9583 | -9.5863 | | |
| 13 | -6.7417 | -8.3924 | -6.6890 | -6.0451 | -7.2158 | -8.4514 | | |
| 14 | -3.6683 | -4.1065 | -3.8036 | -4.4815 | -4.0216 | -5.7417 | | |
| 15 | -1.3179 | -1.6116 | -.6251 | -1.9384 | -1.3716 | -1.6400 | | |
| 16 | .0877 | 17.2209 | 1.5749 | -.5093 | 1.5215 | .8186 | | |
| 17 | .9530 | 22.9022 | -2.0185 | .7636 | 6.0059 | .8689 | | |
| 18 | -7.2165 | -8.4844 | -6.8968 | -6.4454 | -19.7094 | -8.9658 | | |
| 19 | -7.7584 | -16.9524 | -7.9665 | -7.4163 | -14.7093 | -10.7641 | | |
| 20 | -5.2576 | -7.3479 | -5.4677 | -5.0759 | -8.7645 | -8.5539 | | |
| 21 | -1.7781 | -2.2221 | -1.7800 | -1.3082 | -2.6724 | -4.8435 | | |
| 22 | 1.4952 | 37.7041 | .9392 | 1.0056 | 13.3134 | .3934 | | |
| 23 | 2.2670 | 25.6516 | 1.6005 | .9647 | 19.2988 | 1.3574 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.6469 | 3.7133 | -6.0350 | -4.7791 | -2.4786 | -2.3083 | | |
| 2 | -5.3842 | -.5491 | -5.9187 | -4.7602 | -3.3866 | -2.6995 | | |
| 3 | -4.2294 | -1.1919 | -5.0101 | -4.2572 | -3.2668 | -2.6078 | | |
| 4 | -3.3240 | -2.2910 | -3.5796 | -3.5437 | -2.8736 | -2.3364 | | |
| 5 | -2.6930 | -2.4127 | -2.4503 | -3.2442 | -2.6958 | -2.3027 | | |
| 6 | -2.6417 | -3.0936 | -3.2425 | -3.1416 | -2.7257 | -2.8493 | | |
| 7 | -2.5184 | -3.1112 | -3.2442 | -3.2648 | -3.1339 | -4.6521 | | |
| 8 | -2.7121 | -.0147 | -.0291 | -3.5882 | -3.9033 | -6.7807 | | |
| 9 | .4889 | .9235 | .8578 | .5171 | .4982 | .1967 | | |
| 10 | .3245 | .1879 | .9126 | .7602 | .5338 | .1442 | | |
| 11 | -7.1627 | -16.5526 | -8.9113 | -6.9299 | -11.1669 | -13.5145 | | |
| 12 | -5.3857 | -11.7410 | -8.6821 | -8.0028 | -11.0677 | -15.4222 | | |
| 13 | -4.3306 | -7.6954 | -6.3225 | -6.2592 | -8.9897 | -11.8465 | | |
| 14 | -2.4113 | -3.6248 | -3.6121 | -4.9502 | -5.0003 | -6.4998 | | |
| 15 | -1.5939 | -2.9586 | -.8350 | -1.7676 | -1.5725 | -3.3286 | | |
| 16 | .3847 | 18.2595 | 1.7465 | -.7169 | 1.1988 | .6631 | | |
| 17 | 1.6210 | 23.5688 | -2.5461 | .7465 | 5.8385 | 1.0171 | | |
| 18 | -5.6190 | -7.7482 | -6.8375 | -6.9984 | -19.6774 | -9.3248 | | |
| 19 | -5.3813 | -16.1124 | -7.2550 | -7.7529 | -16.1972 | -9.4596 | | |
| 20 | -3.1054 | -7.0615 | -4.7346 | -5.2770 | -10.4424 | -7.0802 | | |
| 21 | -1.5015 | -2.6241 | -1.7128 | -1.5126 | -3.9108 | -4.7120 | | |
| 22 | 1.9983 | 34.1580 | .9760 | 1.9862 | 9.3693 | .3147 | | |
| 23 | 3.2478 | 23.3882 | 1.7465 | 1.2602 | 20.8177 | 1.1520 | | |

TABLE XVII.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 5.25. FULL-SPAN FLAP; $\delta_f = 55^{\circ}$;

$C_\mu = 5.49$. ALL ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.6329 | 3.0126 | -3.1858 | -2.3655 | -1.5473 | -1.2251 | | |
| 2 | -3.5847 | -.7855 | -3.4887 | -2.6854 | -2.3516 | -1.3052 | | |
| 3 | -3.4709 | -1.3095 | -3.4445 | -2.7688 | -2.3535 | -1.5100 | | |
| 4 | -3.0841 | -2.1253 | -2.8454 | -2.7195 | -2.2864 | -1.5528 | | |
| 5 | -2.8535 | -2.3982 | -2.4710 | -2.7961 | -2.4559 | -1.7409 | | |
| 6 | -3.0024 | -3.1571 | -3.1296 | -2.8352 | -2.5657 | -2.1393 | | |
| 7 | -3.2564 | -3.5512 | -3.4223 | -3.2028 | -3.0778 | -2.8916 | | |
| 8 | -4.0488 | -.0336 | -.0102 | -3.7644 | -4.0180 | -4.0962 | | |
| 9 | -.1796 | .1650 | .7237 | -1.5044 | .2217 | .2943 | | |
| 10 | -.2351 | -.5432 | .7135 | .5007 | .2962 | .1937 | | |
| 11 | -10.5973 | -24.7247 | -10.3180 | -7.7772 | -12.6983 | -9.9296 | | |
| 12 | -10.2704 | -17.0349 | -11.5382 | -10.0202 | -12.0764 | -12.0317 | | |
| 13 | -8.5381 | -11.2351 | -8.4699 | -8.1602 | -9.6466 | -10.9797 | | |
| 14 | -4.7931 | -5.3652 | -5.0288 | -5.3556 | -5.3772 | -7.5687 | | |
| 15 | -5.1989 | -4.2064 | -1.6797 | -7.6241 | -2.2175 | -2.5676 | | |
| 16 | -.8833 | 28.1110 | 2.3603 | -2.1613 | .7619 | .8160 | | |
| 17 | 1.4559 | 39.6008 | -4.6068 | .7680 | 9.8140 | 1.1308 | | |
| 18 | -10.9622 | -17.1721 | -9.3991 | -8.6384 | -28.6884 | -12.3594 | | |
| 19 | -11.1636 | -27.1444 | -10.9562 | -9.6305 | -21.7416 | -15.2249 | | |
| 20 | -7.8944 | -11.2730 | -7.6343 | -6.9076 | -12.2589 | -12.5940 | | |
| 21 | -2.6594 | -3.0126 | -2.5051 | -1.4891 | -3.3533 | -6.7495 | | |
| 22 | .8557 | | .7254 | 2.3586 | 18.9983 | .4192 | | |
| 23 | 3.7734 | | 2.3092 | 1.2517 | 27.4318 | 1.8611 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -6.5674 | 4.5225 | -6.9489 | -5.3511 | -2.5780 | -2.6607 | | |
| 2 | -6.0464 | -1.1145 | -6.7841 | -5.3820 | -3.8830 | -3.1413 | | |
| 3 | -4.6114 | -1.9019 | -5.8316 | -4.8894 | -3.9262 | -2.9892 | | |
| 4 | -3.7666 | -3.0617 | -4.1772 | -4.1875 | -3.4192 | -2.7790 | | |
| 5 | -3.4428 | -3.1514 | -3.2419 | -3.8443 | -3.3066 | -2.9292 | | |
| 6 | -3.4340 | -3.8638 | -3.9352 | -3.7791 | -3.3366 | -3.7797 | | |
| 7 | -3.5606 | -4.0610 | -4.1463 | -4.0107 | -3.9262 | -6.0198 | | |
| 8 | -4.0154 | -.0280 | -.0086 | -4.4020 | -4.9664 | -9.1123 | | |
| 9 | .6598 | .3888 | .8243 | -.7088 | .3720 | .1616 | | |
| 10 | -.0810 | -.5522 | .8793 | .6543 | .4659 | .1033 | | |
| 11 | -10.8356 | -24.5467 | -11.4968 | -7.6662 | -14.3097 | -17.1694 | | |
| 12 | -8.0348 | -17.0229 | -11.5466 | -10.0912 | -14.1782 | -20.0816 | | |
| 13 | -6.7117 | -11.0284 | -8.7011 | -8.4231 | -11.4838 | -16.3432 | | |
| 14 | -4.1154 | -5.2870 | -5.4386 | -5.4609 | -6.6263 | -9.4221 | | |
| 15 | -5.6373 | -5.1104 | -2.0234 | -6.2195 | -3.2840 | -4.7355 | | |
| 16 | -.0118 | 30.0909 | 2.4060 | -3.3603 | 1.2512 | .6068 | | |
| 17 | 2.7789 | 40.7014 | -4.7213 | -.0154 | 9.6170 | 1.2174 | | |
| 18 | -10.6678 | -15.4158 | -10.1925 | -9.2022 | -28.1499 | -13.3108 | | |
| 19 | -10.0747 | -25.9552 | -11.2857 | -10.2800 | -23.4595 | -13.2357 | | |
| 20 | -6.7337 | -10.3882 | -7.7898 | -7.0295 | -14.4054 | -9.7808 | | |
| 21 | -2.6157 | -3.5473 | -2.8249 | -1.8552 | -5.1054 | -6.0573 | | |
| 22 | 2.2856 | | .8604 | 2.4524 | 13.8798 | .1428 | | |
| 23 | 5.7198 | | 2.5297 | 1.3378 | 28.3720 | 1.7115 | | |

TABLE XVIII.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^\circ$;

$C_\mu = 1.54$. OUTBOARD ENGINE INOPERATIVE.

(a) $\alpha = 1^\circ$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.9270 | -.3447 | -2.8636 | -2.0249 | -1.8374 | -1.7433 | | |
| 2 | -2.8608 | -2.0933 | -2.8952 | -2.3530 | -1.9987 | -1.8028 | | |
| 3 | -2.7329 | -2.7795 | -2.8356 | -2.5899 | -2.1234 | -2.0025 | | |
| 4 | -2.1941 | -2.5252 | -2.6689 | -2.3706 | -2.0083 | -1.8259 | | |
| 5 | -2.1535 | -2.2152 | -2.4495 | -2.2565 | -1.8854 | -1.5974 | | |
| 6 | -2.2889 | -2.4138 | -2.4022 | -2.0723 | -1.7683 | -1.4745 | | |
| 7 | -2.4575 | -2.6531 | -2.4776 | -2.1161 | -1.6646 | -1.4265 | | |
| 8 | -2.8894 | -.0211 | -.0228 | -2.0302 | -1.5628 | -1.3593 | | |
| 9 | .3537 | .8865 | .7619 | .5741 | .4704 | .3398 | | |
| 10 | .4199 | .0512 | .7057 | .6144 | .5011 | .4109 | | |
| 11 | -7.4957 | -15.6083 | -7.2450 | -6.2150 | -5.1147 | -4.2853 | | |
| 12 | -7.2820 | -11.5332 | -7.9328 | -6.0536 | -4.9227 | -3.9666 | | |
| 13 | -5.8298 | -7.8538 | -5.9062 | -4.0270 | -3.5768 | -2.9106 | | |
| 14 | -3.2851 | -3.5590 | -3.3655 | -4.0515 | -1.6876 | -1.4438 | | |
| 15 | -.5238 | -1.5621 | -1.1985 | .6021 | .5587 | .2246 | | |
| 16 | .8007 | 12.0817 | 1.4852 | .9023 | -1.2710 | .9561 | | |
| 17 | 2.1132 | 17.7471 | 1.4132 | .5302 | .6528 | .7833 | | |
| 18 | -6.4062 | -5.3468 | -6.0150 | -3.1567 | -2.9740 | -2.7205 | | |
| 19 | -6.2121 | -16.4389 | -7.0327 | -2.3144 | -2.8185 | -2.9452 | | |
| 20 | -4.5974 | -6.5627 | -4.8903 | -1.2529 | -1.5955 | -2.1580 | | |
| 21 | -1.3665 | -1.8450 | -1.5511 | -1.1177 | -.4992 | -1.0905 | | |
| 22 | 1.7113 | 37.1905 | 3.5848 | -.2211 | .6854 | .6163 | | |
| 23 | 2.3736 | 25.0636 | 1.2728 | .3739 | .6816 | .6105 | | |

(b) $\alpha = 16^\circ$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.3312 | -.6259 | -5.7992 | -4.4916 | -3.8320 | -4.0156 | | |
| 2 | -4.8976 | -3.9719 | -5.6348 | -4.6065 | -4.1026 | -4.2747 | | |
| 3 | -3.6249 | -4.1250 | -4.8167 | -4.1170 | -3.6096 | -3.7624 | | |
| 4 | -2.6778 | -3.4112 | -3.8361 | -3.4456 | -2.9851 | -3.0161 | | |
| 5 | -2.4277 | -2.7141 | -3.0622 | -2.9031 | -2.5327 | -2.3134 | | |
| 6 | -2.1580 | -2.6293 | -2.6540 | -2.4543 | -2.1538 | -1.9527 | | |
| 7 | -2.1246 | -2.5383 | -2.5727 | -2.3218 | -1.9759 | -1.7690 | | |
| 8 | -2.0034 | -.0212 | -.0247 | -2.1151 | -1.8135 | -1.6163 | | |
| 9 | .6699 | 1.1565 | .8698 | .7160 | .6225 | .4891 | | |
| 10 | .6760 | .2425 | .8875 | .8079 | .7560 | .6225 | | |
| 11 | -4.8008 | -13.7461 | -6.3681 | -5.5801 | -5.2008 | -4.4139 | | |
| 12 | -3.6112 | -9.5000 | -5.9564 | -5.1012 | -4.2515 | -4.3114 | | |
| 13 | -2.8869 | -5.9661 | -4.3980 | -3.2477 | -2.9561 | -3.0818 | | |
| 14 | -1.7897 | -2.5020 | -2.5586 | -2.7989 | -1.4771 | -1.5254 | | |
| 15 | -.0879 | -1.8610 | -1.4507 | .7849 | .3519 | .3306 | | |
| 16 | .8943 | 12.1876 | 1.6034 | .8008 | -.5259 | .8352 | | |
| 17 | 1.9113 | 17.9502 | 1.4850 | .4561 | .7115 | .7637 | | |
| 18 | -4.3704 | -5.2630 | -5.1224 | -2.4649 | -2.8150 | -2.7415 | | |
| 19 | -3.9658 | -13.3324 | -4.8927 | -2.0444 | -2.3877 | -2.9774 | | |
| 20 | -2.4247 | -4.8720 | -3.1434 | -1.0390 | -1.4191 | -2.1248 | | |
| 21 | -1.1548 | -2.1519 | -1.2139 | -.8888 | -.7076 | -1.1078 | | |
| 22 | 2.0795 | 33.8589 | 3.4791 | -.4612 | .6458 | .5607 | | |
| 23 | 2.4099 | 21.2423 | 1.3807 | -.1909 | .8198 | .6361 | | |

TABLE XIX.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^{\circ}$; $C_{\mu} = 3.08$. OUTBOARD ENGINE INOPERATIVE.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.2847 | -.5909 | -3.0783 | -2.4365 | -2.0362 | -2.0763 | | |
| 2 | -3.3341 | -2.4980 | -3.3591 | -2.7330 | -2.3873 | -2.1488 | | |
| 3 | -3.1097 | -3.1157 | -3.2108 | -2.8533 | -2.3930 | -2.2060 | | |
| 4 | -2.5399 | -2.8540 | -2.9928 | -2.6405 | -2.2652 | -1.9980 | | |
| 5 | -2.4875 | -2.6072 | -2.8411 | -2.6126 | -2.1335 | -1.8473 | | |
| 6 | -2.6924 | -2.8555 | -2.7957 | -2.4103 | -1.9980 | -1.7232 | | |
| 7 | -3.0200 | -3.2055 | -2.9998 | -2.4731 | -1.9656 | -1.6583 | | |
| 8 | -3.7290 | -.0299 | -.0209 | -2.3998 | -1.8873 | -1.5667 | | |
| 9 | -.9678 | .4787 | .7364 | .6212 | .4675 | .3359 | | |
| 10 | -.2723 | -.2349 | .6997 | .6456 | .5324 | .4217 | | |
| 11 | -8.5303 | -23.4264 | -8.3907 | -6.2402 | -5.9979 | -4.7975 | | |
| 12 | -8.3239 | -15.4855 | -10.1068 | -6.8419 | -5.8643 | -4.5895 | | |
| 13 | -7.0316 | -10.4224 | -7.6215 | -4.6985 | -4.2880 | -3.4770 | | |
| 14 | -4.3048 | -4.5322 | -4.4665 | -3.5980 | -2.1087 | -1.8034 | | |
| 15 | -4.1164 | -5.7991 | -3.0085 | .5584 | .3435 | .2614 | | |
| 16 | -.7001 | 21.0448 | 2.5738 | -.1029 | -1.7633 | .9274 | | |
| 17 | 2.3772 | 33.6161 | 1.9875 | -.4012 | .6775 | .7347 | | |
| 18 | -9.0433 | -12.0049 | -8.2895 | -3.5370 | -3.6735 | -3.1774 | | |
| 19 | -9.6760 | -25.8465 | -9.9638 | -3.4184 | -3.6697 | -3.5953 | | |
| 20 | -6.7279 | -10.2459 | -6.9745 | -1.9045 | -2.2404 | -2.8014 | | |
| 21 | -2.0986 | -3.1905 | -2.1871 | -1.5139 | -.7996 | -1.4790 | | |
| 22 | 1.2851 | | 6.7337 | -1.1058 | .6278 | .5763 | | |
| 23 | 3.1791 | | 4.7497 | -1.8156 | .7194 | .5744 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -6.4624 | -.0663 | -6.8094 | -5.0943 | -4.3666 | -4.5012 | | |
| 2 | -6.0630 | -4.6207 | -6.8094 | -5.3210 | -4.8223 | -4.8146 | | |
| 3 | -4.6313 | -4.8589 | -5.7708 | -4.7323 | -4.1743 | -4.1955 | | |
| 4 | -3.4437 | -4.1792 | -4.6075 | -4.0997 | -3.4744 | -3.4168 | | |
| 5 | -3.1514 | -3.4980 | -3.8291 | -3.4847 | -3.0130 | -2.6669 | | |
| 6 | -3.1061 | -3.5522 | -3.5057 | -3.0822 | -2.6284 | -2.3323 | | |
| 7 | -3.1604 | -3.6622 | -3.4934 | -2.9891 | -2.4554 | -2.1708 | | |
| 8 | -3.6773 | -.0301 | -.0158 | -2.7835 | -2.3419 | -2.0727 | | |
| 9 | .0121 | 1.1215 | .8843 | .7542 | .6307 | .4711 | | |
| 10 | -.1085 | -.1914 | .8984 | .8421 | .7960 | .6134 | | |
| 11 | -9.2821 | -23.3053 | -9.1904 | -6.6600 | -6.7470 | -5.4530 | | |
| 12 | -7.2792 | -15.7428 | -9.9917 | -6.7426 | -6.0510 | -5.5357 | | |
| 13 | -5.4933 | -10.4968 | -7.3330 | -4.4916 | -4.3147 | -4.1839 | | |
| 14 | -3.5206 | -4.4625 | -4.4336 | -2.7993 | -2.2708 | -2.1708 | | |
| 15 | -3.6803 | -6.7261 | -2.7501 | .6153 | .3403 | .3384 | | |
| 16 | .3934 | 21.7603 | 3.0328 | -.1266 | .1327 | .9018 | | |
| 17 | 3.5257 | 35.2497 | 2.0394 | -.0563 | .6903 | .7441 | | |
| 18 | -8.1337 | -12.0400 | -8.4489 | -3.5128 | -3.7859 | -3.8821 | | |
| 19 | -8.1201 | -26.6133 | -9.4452 | -3.3599 | -3.6706 | -4.3320 | | |
| 20 | -5.1979 | -10.3868 | -6.3771 | -1.8662 | -2.3708 | -3.2437 | | |
| 21 | -2.0482 | -2.9765 | -2.0982 | -1.3232 | -.9441 | -1.7363 | | |
| 22 | 3.0102 | | 6.4400 | -1.1827 | .6461 | .4826 | | |
| 23 | 4.8477 | 42.4662 | 3.9892 | -1.7907 | .8403 | .6287 | | |

TABLE XX. - PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^o$; $C_\mu = 1.54$. INBOARD ENGINE INOPERATIVE.

(a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.4301 | -1.5860 | -2.5690 | -1.9004 | -1.4031 | -1.3513 | | |
| 2 | -2.5068 | -1.8011 | -2.5935 | -2.1303 | -1.5605 | -1.6757 | | |
| 3 | -2.2977 | -2.2255 | -2.4040 | -2.2654 | -1.8811 | -1.9291 | | |
| 4 | -1.9275 | -1.9682 | -2.1777 | -2.1496 | -1.9655 | -1.8120 | | |
| 5 | -3.3058 | -1.7364 | -2.0303 | -2.0618 | -1.9674 | -1.6757 | | |
| 6 | -1.2173 | -1.5529 | -1.7828 | -1.8934 | -1.9195 | -1.5893 | | |
| 7 | -.8291 | -1.3663 | -1.7144 | -1.9530 | -2.0173 | -1.6853 | | |
| 8 | -.7028 | -.0150 | -.0211 | -1.9408 | -2.0269 | -1.8081 | | |
| 9 | .6366 | .6331 | .6406 | .5335 | .4992 | .5932 | | |
| 10 | .6351 | .6005 | .7161 | .5721 | .5318 | .4550 | | |
| 11 | -.9721 | -3.5089 | -5.3239 | -5.5871 | -7.5511 | -5.1787 | | |
| 12 | -.9781 | -3.2471 | -5.1239 | -6.4101 | -8.1404 | -5.5894 | | |
| 13 | -1.2926 | -1.9922 | -3.3551 | -4.8431 | -6.1365 | -4.2708 | | |
| 14 | -.9600 | -1.1903 | -1.6267 | -3.9219 | -3.2170 | -2.6066 | | |
| 15 | .7565 | .6441 | .3299 | -1.2494 | -1.4933 | -1.0096 | | |
| 16 | 1.0186 | .8623 | .9232 | .8284 | -2.1152 | .9830 | | |
| 17 | .9617 | .8036 | .7898 | 2.8730 | 2.9700 | 1.1596 | | |
| 18 | -.5342 | -.4455 | -2.7427 | -6.0118 | -13.7471 | -5.1787 | | |
| 19 | -1.6988 | -1.2610 | -2.7602 | -6.9155 | -10.8161 | -6.2267 | | |
| 20 | -.6050 | -.7735 | -1.6793 | -4.7273 | -6.2824 | -5.4954 | | |
| 21 | -.5568 | -.9149 | -.7054 | -1.1318 | -1.3571 | -3.2746 | | |
| 22 | 1.0204 | .8368 | .7582 | 2.2535 | 6.6887 | .6538 | | |
| 23 | .8368 | .7465 | .7863 | 2.8555 | 13.6769 | 1.3784 | | |

(b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.6179 | -2.9817 | -4.6950 | -4.2368 | -2.6990 | -3.5993 | | |
| 2 | -3.4426 | -2.8608 | -4.6281 | -4.1540 | -3.8190 | -3.8884 | | |
| 3 | -2.4528 | -2.6432 | -3.8227 | -3.7134 | -3.6108 | -3.4373 | | |
| 4 | -1.6730 | -2.3077 | -2.8128 | -3.0684 | -3.0672 | -2.9091 | | |
| 5 | -2.7866 | -1.8498 | -2.2577 | -2.4603 | -2.8917 | -2.3057 | | |
| 6 | -1.2740 | -1.5249 | -1.7607 | -1.9510 | -2.5659 | -2.0262 | | |
| 7 | -1.1380 | -1.2771 | -1.4857 | -1.8840 | -2.3095 | -2.0801 | | |
| 8 | -1.1108 | .0015 | -.0071 | -1.8875 | -2.2035 | -2.1727 | | |
| 9 | .7935 | .8464 | .8320 | .6681 | .5958 | .6729 | | |
| 10 | .8449 | .8646 | .8814 | .7668 | .7674 | .6672 | | |
| 11 | -.8025 | -1.9208 | -3.7310 | -5.0475 | -8.0776 | -6.0919 | | |
| 12 | -.7965 | -1.7002 | -2.4691 | -4.6651 | -8.5210 | -6.3561 | | |
| 13 | -1.2211 | -1.6125 | -1.7219 | -3.6781 | -6.6067 | -4.8909 | | |
| 14 | -.8025 | -1.2725 | -1.6179 | -2.9908 | -3.3313 | -2.9207 | | |
| 15 | .8177 | .7452 | .4195 | -1.1914 | -.9369 | -1.0121 | | |
| 16 | 1.0445 | 1.0082 | .9554 | .5958 | -1.8488 | 1.0412 | | |
| 17 | .9840 | .9462 | .8902 | 2.3285 | 3.6328 | 1.2225 | | |
| 18 | -1.9042 | -.4610 | -2.7370 | -5.2907 | -14.0423 | -5.9454 | | |
| 19 | -1.8876 | -1.6609 | -2.0462 | -6.0063 | -10.9539 | -6.9248 | | |
| 20 | -1.0232 | -1.2242 | -1.4117 | -4.2685 | -6.3098 | -6.0572 | | |
| 21 | -.7874 | -1.1395 | -1.0716 | -1.3553 | -1.4979 | -3.4624 | | |
| 22 | .9976 | .8525 | .7174 | 2.3391 | 6.9242 | .5418 | | |
| 23 | .8918 | .8782 | .9818 | 3.0142 | 16.1372 | 1.3401 | | |

TABLE XXI. - PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^o$;

$C_\mu = 3.08$. INBOARD ENGINE INOPERATIVE.

(a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.6349 | -1.9687 | -2.7511 | -2.3099 | -1.4422 | -1.5075 | | |
| 2 | -2.8007 | -2.0727 | -2.9005 | -2.2536 | -1.9363 | -1.8287 | | |
| 3 | -2.5505 | -2.5279 | -2.6562 | -2.3942 | -2.1440 | -1.9575 | | |
| 4 | -2.1194 | -2.2490 | -2.3802 | -2.3450 | -2.1959 | -2.0036 | | |
| 5 | -3.2876 | -1.9717 | -2.3204 | -2.2747 | -2.3190 | -1.8460 | | |
| 6 | -1.4426 | -1.8330 | -2.0268 | -2.1517 | -2.2286 | -1.8517 | | |
| 7 | -1.0070 | -1.6536 | -1.9811 | -2.2782 | -2.4055 | -2.0652 | | |
| 8 | -.8321 | -.0045 | .0070 | -2.2870 | -2.4478 | -2.2882 | | |
| 9 | .6830 | .7011 | .6136 | .4712 | .4020 | .6404 | | |
| 10 | .7011 | .6935 | .8176 | .4308 | .5174 | .4885 | | |
| 11 | -1.2165 | -4.2206 | -5.4371 | -7.6274 | -9.6048 | -6.7416 | | |
| 12 | -1.2029 | -4.1995 | -5.6920 | -8.5978 | -10.0221 | -7.2397 | | |
| 13 | -1.3974 | -2.7208 | -3.9798 | -6.5340 | -7.7569 | -5.7610 | | |
| 14 | -1.2014 | -1.4185 | -2.0304 | -4.6637 | -4.1688 | -3.6227 | | |
| 15 | .7764 | .4990 | .0246 | -3.5931 | -3.3227 | -2.3094 | | |
| 16 | 1.0388 | .9091 | .6277 | 1.7195 | -.7845 | 1.0463 | | |
| 17 | .9724 | .8488 | .5697 | 6.2433 | 4.5293 | 1.6136 | | |
| 18 | -.7040 | -.7749 | -3.1730 | -8.8035 | -20.2576 | -7.2954 | | |
| 19 | -1.4758 | -1.7561 | -3.2398 | -9.6385 | -15.8542 | -8.7395 | | |
| 20 | -.7869 | -.9919 | -2.0726 | -6.7520 | -8.8068 | -7.6281 | | |
| 21 | -.6904 | -1.0959 | -1.0460 | -1.2727 | -1.6806 | -4.0996 | | |
| 22 | .9996 | .7975 | .0141 | 4.9387 | 8.6773 | .4347 | | |
| 23 | .8970 | .7930 | .7226 | 5.7809 | 22.2541 | 2.0329 | | |

(b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.4354 | -3.4565 | -5.0466 | -4.6688 | -3.0369 | -3.8711 | | |
| 2 | -3.3345 | -3.2486 | -4.9974 | -4.7005 | -4.2498 | -4.3690 | | |
| 3 | -2.3626 | -2.9925 | -3.9730 | -4.1364 | -4.1229 | -3.8692 | | |
| 4 | -1.9227 | -2.5148 | -3.1647 | -3.4107 | -3.5751 | -3.1984 | | |
| 5 | -2.0251 | -2.0960 | -2.5391 | -2.9169 | -3.2042 | -2.6660 | | |
| 6 | -1.6274 | -1.7856 | -2.2158 | -2.4671 | -3.0466 | -2.4449 | | |
| 7 | -1.5385 | -1.6846 | -2.1192 | -2.5567 | -2.9870 | -2.5929 | | |
| 8 | -1.5234 | -.0060 | -.0035 | -2.4073 | -2.8659 | -2.6737 | | |
| 9 | .8243 | .8515 | .8700 | .6380 | .6460 | .8036 | | |
| 10 | .8922 | .8922 | .9596 | .6714 | .7594 | .6940 | | |
| 11 | -1.1211 | -2.7695 | -5.4596 | -7.3450 | -11.6711 | -7.9614 | | |
| 12 | -1.0879 | -1.8714 | -4.0960 | -6.9286 | -11.3040 | -8.3766 | | |
| 13 | -1.3320 | -1.7027 | -2.7166 | -5.6019 | -8.4150 | -6.6351 | | |
| 14 | -1.1301 | -1.4330 | -1.8486 | -3.3755 | -4.4766 | -4.0384 | | |
| 15 | .8032 | .4416 | .0334 | -2.4302 | -5.5588 | -2.7832 | | |
| 16 | 1.0353 | .9404 | .8928 | 1.4675 | -1.5915 | 1.0285 | | |
| 17 | .9731 | .9555 | .9473 | 5.5009 | 5.1023 | 1.6091 | | |
| 18 | -2.3657 | -.6872 | -3.4564 | -9.1092 | -20.0650 | -8.1671 | | |
| 19 | -1.9513 | -2.1095 | -2.8115 | -11.0456 | -15.7383 | -9.7778 | | |
| 20 | -1.3516 | -1.5927 | -2.0366 | -7.9495 | -9.1762 | -8.3689 | | |
| 21 | -1.0985 | -1.4420 | -1.5094 | -1.9804 | -2.0355 | -4.9360 | | |
| 22 | .9660 | .7535 | .0984 | 6.1160 | 6.0866 | -.0269 | | |
| 23 | .9359 | .8861 | 1.1916 | 6.6116 | 22.8643 | 1.8129 | | |

TABLE XXII.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 35^{\circ}$; $C_{\mu} = 1.03$. INBOARD ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -1.9549 | -1.3783 | -1.9104 | -1.4176 | -1.2803 | -1.2432 | | |
| 2 | -1.9607 | -1.6238 | -2.0612 | -1.6005 | -1.5878 | -1.2933 | | |
| 3 | -1.9811 | -1.9056 | -2.0324 | -1.8867 | -1.6471 | -1.4452 | | |
| 4 | -1.7995 | -1.7763 | -1.8207 | -1.8444 | -1.5823 | -1.4137 | | |
| 5 | -1.6441 | -1.7400 | -1.8071 | -1.7224 | -1.4507 | -1.2377 | | |
| 6 | -1.7327 | -1.7981 | -1.7292 | -1.5632 | -1.3099 | -1.1284 | | |
| 7 | -1.7124 | -1.8475 | -1.7648 | -1.5040 | -1.2117 | -.9616 | | |
| 8 | -1.9709 | -.0102 | -.0186 | -1.4447 | -1.1209 | -.8560 | | |
| 9 | .4241 | .5258 | .5708 | .4200 | .3538 | .2186 | | |
| 10 | .4488 | -3.8983 | .5250 | .4624 | .3890 | .3242 | | |
| 11 | -3.9563 | -8.7231 | -3.8700 | -3.5990 | -3.0682 | -3.2276 | | |
| 12 | -4.3529 | -7.0137 | -4.6406 | -3.9089 | -3.6167 | -2.5550 | | |
| 13 | -4.0043 | -5.1459 | -3.4991 | -3.0994 | -2.2345 | -1.6416 | | |
| 14 | -1.8373 | -2.0174 | -1.9341 | -2.3220 | -.9505 | -.6948 | | |
| 15 | .2411 | 3.6993 | .2117 | .6961 | -.1167 | .5483 | | |
| 16 | .6550 | 11.8356 | 1.0518 | .8943 | -.7393 | .8800 | | |
| 17 | .7916 | 15.2256 | 1.0044 | .8282 | .5261 | .7188 | | |
| 18 | -2.4095 | -4.3078 | -2.3592 | -1.8122 | -1.1710 | -1.2618 | | |
| 19 | -3.5744 | -10.6171 | -3.8412 | -2.0307 | -1.5767 | -1.6082 | | |
| 20 | -3.0181 | -4.7682 | -2.9757 | -1.2177 | -1.1524 | -1.2488 | | |
| 21 | -1.1430 | -1.7385 | -1.0331 | -.4641 | -.2835 | -.6763 | | |
| 22 | .7596 | 37.3646 | 1.4837 | .7164 | .5113 | .8985 | | |
| 23 | .9034 | 21.3053 | 1.0281 | .6944 | .4817 | .5706 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -4.6562 | -3.0744 | -4.8592 | -4.0718 | -3.4118 | -3.5613 | | |
| 2 | -4.4365 | -3.2589 | -4.9138 | -4.0496 | -3.5837 | -3.7313 | | |
| 3 | -3.6588 | -3.7320 | -4.1487 | -3.6124 | -3.1745 | -3.3091 | | |
| 4 | -2.7551 | -2.9733 | -3.0521 | -2.9070 | -2.6252 | -2.6308 | | |
| 5 | -2.1428 | -2.4885 | -2.6525 | -2.3792 | -2.1450 | -2.0011 | | |
| 6 | -1.9744 | -2.2996 | -2.2648 | -2.0444 | -1.7676 | -1.6274 | | |
| 7 | -1.9012 | -2.1560 | -2.0837 | -1.8719 | -1.5359 | -1.3285 | | |
| 8 | -1.9422 | -.0190 | -.0034 | -1.6806 | -1.3957 | -1.1323 | | |
| 9 | .6269 | .7734 | .7481 | .6063 | .5231 | .3830 | | |
| 10 | .7221 | -4.0469 | .7840 | .7088 | .5997 | .5511 | | |
| 11 | -3.6808 | -10.4491 | -3.9830 | -3.9403 | -3.6547 | -3.7949 | | |
| 12 | -3.8536 | -7.7555 | -4.7311 | -3.8327 | -3.6080 | -3.0942 | | |
| 13 | -3.3073 | -5.3300 | -3.3886 | -2.6696 | -2.2011 | -2.1487 | | |
| 14 | -1.4867 | -1.8733 | -1.8736 | -2.3741 | -.9679 | -.8502 | | |
| 15 | .3837 | 6.1400 | .2921 | .7139 | .3232 | .4913 | | |
| 16 | .5361 | 13.9746 | 1.1119 | .9035 | -.0504 | .8837 | | |
| 17 | .8275 | 15.6927 | .8728 | .7584 | .6819 | .7323 | | |
| 18 | -2.2249 | -3.7730 | -2.4851 | -1.7302 | -1.5116 | -1.3864 | | |
| 19 | -2.7888 | -10.4491 | -3.6329 | -1.9949 | -1.7508 | -1.8685 | | |
| 20 | -2.4050 | -4.4951 | -2.6252 | -1.2946 | -1.4070 | -1.4985 | | |
| 21 | -1.0619 | -1.7635 | -.9582 | -.3860 | -.5026 | -.7493 | | |
| 22 | 1.1205 | 32.7241 | 1.7763 | .5449 | .6875 | .7137 | | |
| 23 | 1.1630 | 18.9501 | 1.1290 | .6508 | .6931 | .4241 | | |

TABLE XXIII. - PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 35^{\circ}$; $C_{\mu} = 2.05$. INBOARD ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -1.7194 | -2.3599 | -1.8001 | -1.5309 | -1.4265 | -1.2968 | | |
| 2 | -2.0607 | -1.8937 | -2.2370 | -1.6985 | -1.7173 | -1.4117 | | |
| 3 | -2.2103 | -2.0433 | -2.3132 | -2.0169 | -1.8359 | -1.5691 | | |
| 4 | -1.8603 | -1.9140 | -1.9237 | -2.0440 | -1.6599 | -1.5858 | | |
| 5 | -1.7993 | -1.9271 | -1.9881 | -1.9525 | -1.5710 | -1.3820 | | |
| 6 | -1.9315 | -2.0229 | -1.8814 | -1.7341 | -1.3876 | -1.2320 | | |
| 7 | -1.9358 | -2.1420 | -1.9864 | -1.6697 | -1.3005 | -1.0708 | | |
| 8 | -2.3628 | -.0116 | -.0152 | -1.6003 | -1.2394 | -.9615 | | |
| 9 | .1394 | .1626 | .5453 | .4403 | .3371 | .2019 | | |
| 10 | .1162 | -7.6213 | .4793 | .4776 | .3723 | .3149 | | |
| 11 | -4.6849 | -13.5652 | -3.9457 | -3.6189 | -3.1901 | -3.4291 | | |
| 12 | -4.8374 | -9.1534 | -5.2496 | -4.1150 | -3.1660 | -2.7103 | | |
| 13 | -4.2957 | -6.3593 | -4.2387 | -3.0448 | -2.4083 | -1.8748 | | |
| 14 | -2.3599 | -2.4426 | -2.5639 | -2.5656 | -1.0726 | -.7577 | | |
| 15 | -.8859 | 4.8141 | -.1389 | .6198 | -.1019 | .6076 | | |
| 16 | .7130 | 20.6419 | .8434 | .7502 | -.2779 | .9280 | | |
| 17 | .7523 | 26.9910 | .2930 | .5385 | .5279 | .7354 | | |
| 18 | -2.8667 | -8.4577 | -3.0837 | -1.9034 | -1.3950 | -1.4024 | | |
| 19 | -3.8876 | -16.5466 | -5.1057 | -2.3048 | -1.7822 | -1.7470 | | |
| 20 | -4.0357 | -6.7703 | -4.0253 | -1.5851 | -1.3135 | -1.3950 | | |
| 21 | -1.5873 | -2.2916 | -1.4140 | -.5741 | -.3687 | -.7947 | | |
| 22 | .7116 | | 1.7849 | .2472 | .4834 | .9336 | | |
| 23 | 1.2823 | | 1.3141 | .0881 | .4946 | .5946 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.0585 | -.3276 | -5.2025 | -4.3943 | -3.6723 | -3.8358 | | |
| 2 | -4.7236 | -3.4903 | -5.2059 | -4.3773 | -3.8321 | -4.0735 | | |
| 3 | -3.9912 | -3.9766 | -4.4911 | -3.8612 | -3.4197 | -3.5089 | | |
| 4 | -3.0928 | -.8562 | -3.5233 | -3.1565 | -2.8531 | -2.7919 | | |
| 5 | -2.4448 | -2.4827 | -2.9986 | -2.6284 | -2.3758 | -2.1622 | | |
| 6 | -2.3734 | -2.6530 | -2.5962 | -2.3109 | -1.9634 | -1.7962 | | |
| 7 | -2.3239 | -2.6326 | -2.4705 | -2.1836 | -1.7256 | -1.5139 | | |
| 8 | -2.5860 | -.0189 | -.0221 | -2.0002 | -1.6030 | -1.3356 | | |
| 9 | .2228 | .4106 | .7166 | .6249 | .5145 | .3882 | | |
| 10 | .4179 | -3.3752 | .7675 | .7505 | .6147 | .5683 | | |
| 11 | -4.8677 | -15.0022 | -4.5268 | -4.1532 | -4.0531 | -4.1813 | | |
| 12 | -4.8168 | -10.8916 | -5.7731 | -4.4113 | -3.5441 | -3.5497 | | |
| 13 | -4.0072 | -7.1538 | -4.5573 | -3.1514 | -2.7045 | -2.5578 | | |
| 14 | -2.4666 | -2.5627 | -2.7762 | -1.2820 | -1.2315 | -1.0866 | | |
| 15 | -.5926 | 4.8474 | .1121 | .8082 | .2934 | .4643 | | |
| 16 | .5402 | 22.7865 | .8473 | .7318 | .0371 | .9082 | | |
| 17 | 1.0062 | 28.1042 | -.0374 | .4822 | .7002 | .7299 | | |
| 18 | -3.0491 | -7.8994 | -3.6048 | -1.9679 | -1.8148 | -1.6253 | | |
| 19 | -4.0698 | -17.3567 | -5.4640 | -2.4145 | -2.2699 | -2.2755 | | |
| 20 | -3.6650 | -7.1713 | -4.0038 | -1.5859 | -1.8464 | -1.8687 | | |
| 21 | -1.5245 | -2.3516 | -1.4467 | -.6215 | -.6483 | -.9845 | | |
| 22 | 1.1838 | | 2.1208 | .0357 | .6742 | .7058 | | |
| 23 | 1.2683 | 41.1713 | 1.3703 | -.1019 | .7392 | .5052 | | |

TABLE XXIV.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL.

WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^{\circ}$;

$C_{\mu} = 1.03$. INBOARD ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.8882 | .0392 | -2.7723 | -2.0832 | -1.8249 | -1.8287 | | |
| 2 | -2.9726 | -2.0124 | -2.9182 | -2.2941 | -2.0114 | -1.7576 | | |
| 3 | -2.7480 | -2.6531 | -2.8057 | -2.4629 | -2.1172 | -1.8902 | | |
| 4 | -2.1285 | -2.4059 | -2.5666 | -2.2730 | -1.9979 | -1.7576 | | |
| 5 | 1.9449 | -2.1813 | -2.4084 | -2.1904 | -1.8595 | -1.5633 | | |
| 6 | -2.2898 | -2.3802 | -2.3451 | -2.0251 | -1.7364 | -1.4441 | | |
| 7 | -2.3652 | -2.6003 | -2.3926 | -2.0462 | -1.6441 | -1.3864 | | |
| 8 | -2.8189 | -.0211 | .0018 | -1.9390 | -1.5287 | -1.3038 | | |
| 9 | -.2834 | .7538 | .7560 | .5908 | .4481 | .3424 | | |
| 10 | .0347 | -.0724 | .6980 | .6189 | .5058 | .3924 | | |
| 11 | -6.5572 | -15.5412 | -7.0862 | -6.1176 | -4.9054 | -4.1920 | | |
| 12 | -6.9295 | -11.3959 | -7.9406 | -5.8574 | -4.9804 | -3.8940 | | |
| 13 | -5.8759 | -7.8596 | -5.7432 | -3.8903 | -3.5017 | -2.8998 | | |
| 14 | -3.2605 | -3.5786 | -3.2557 | -3.6829 | -1.6210 | -1.4384 | | |
| 15 | -1.6914 | -1.7908 | -1.1145 | .5697 | .5539 | .2270 | | |
| 16 | -.1070 | 11.4297 | 1.8092 | .9846 | .9847 | .9559 | | |
| 17 | .6558 | 17.4062 | 1.4470 | .7560 | .6501 | .7751 | | |
| 18 | -6.2994 | -7.6330 | -5.7977 | -3.0324 | -2.8883 | -2.6710 | | |
| 19 | -7.1797 | -16.1049 | -6.8665 | -2.2765 | -2.7863 | -2.8844 | | |
| 20 | -4.7122 | -7.0426 | -4.8115 | -1.2429 | -1.5422 | -2.0979 | | |
| 21 | -1.5135 | -1.8798 | -1.5329 | -1.0706 | -.4827 | -1.0595 | | |
| 22 | 1.3539 | 38.6178 | 3.0207 | .0844 | .6885 | .6462 | | |
| 23 | 2.1092 | 26.3350 | 1.1815 | .4976 | .6828 | .6385 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.3782 | -.0136 | -5.8483 | -4.4233 | -3.7955 | -3.8766 | | |
| 2 | -4.8740 | -4.0382 | -5.6841 | -4.5875 | -4.1316 | -4.2069 | | |
| 3 | -4.0246 | -4.0201 | -4.8842 | -4.0101 | -3.6796 | -3.7028 | | |
| 4 | -2.7028 | -3.4159 | -3.8194 | -3.3850 | -2.9437 | -2.9668 | | |
| 5 | -.5315 | -2.6937 | -3.2367 | -2.8341 | -2.5554 | -2.2831 | | |
| 6 | -2.3167 | -2.6528 | -2.7335 | -2.4368 | -2.1962 | -1.9412 | | |
| 7 | -2.3712 | -2.6574 | -2.7123 | -2.3256 | -2.0397 | -1.7674 | | |
| 8 | -2.6301 | -.0273 | -.0212 | -1.9918 | -1.8948 | -1.5298 | | |
| 9 | .3725 | 1.1676 | .8901 | .7312 | .6259 | .4984 | | |
| 10 | .3589 | .1954 | .9060 | .8424 | .7419 | .6201 | | |
| 11 | -5.7053 | -14.5130 | -6.5635 | -6.0125 | -5.1804 | -4.5140 | | |
| 12 | -4.2063 | -10.2159 | -6.1185 | -5.2815 | -4.3344 | -4.3518 | | |
| 13 | -3.3569 | -6.5865 | -4.9266 | -3.3003 | -3.2913 | -3.1291 | | |
| 14 | -2.1895 | -2.9117 | -2.3977 | -3.3427 | -1.6689 | -1.6283 | | |
| 15 | -1.1130 | -1.5717 | -1.1760 | .7630 | .3709 | .3246 | | |
| 16 | .6224 | 11.6217 | 2.0081 | .8848 | 1.0259 | .8404 | | |
| 17 | 1.4629 | 17.6915 | 1.4729 | .5351 | .7187 | .7013 | | |
| 18 | -4.9149 | -6.3321 | -5.1120 | -2.4474 | -2.6829 | -2.7409 | | |
| 19 | -4.5152 | -14.2222 | -5.2444 | -1.9495 | -2.4627 | -2.9842 | | |
| 20 | -2.8391 | -5.9279 | -3.3586 | -1.0171 | -1.4429 | -2.1614 | | |
| 21 | -1.3628 | -2.0623 | -1.2025 | -.8476 | -.6258 | -1.0720 | | |
| 22 | 2.2944 | 33.5703 | 3.1419 | -.3179 | .7013 | .6086 | | |
| 23 | 2.8532 | 21.8895 | 1.1020 | .0318 | .7998 | .6839 | | |

TABLE XXV.- PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 7. PARTIAL-SPAN FLAP; $\delta_f = 55^o$; $C_\mu = 2.05$. INBOARD ENGINES OPERATING.

(a) $\alpha = 1^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.3350 | .2782 | -3.1005 | -2.2318 | -1.9953 | -1.8421 | | |
| 2 | -3.2970 | -2.4975 | -3.1200 | -2.7335 | -2.1330 | -2.0962 | | |
| 3 | -3.0766 | -3.0751 | -3.0189 | -2.8026 | -2.2455 | -2.1233 | | |
| 4 | -2.4473 | -2.7863 | -2.8540 | -2.6484 | -2.1543 | -2.0166 | | |
| 5 | 6.9069 | -2.5568 | -2.7211 | -2.5651 | -2.0457 | -1.8092 | | |
| 6 | -2.6723 | -2.8000 | -2.7016 | -2.3400 | -1.9391 | -1.6366 | | |
| 7 | -2.8471 | -3.1876 | -2.8789 | -2.4534 | -1.8906 | -1.6191 | | |
| 8 | -3.5479 | -.0410 | -.0124 | -2.3861 | -1.8324 | -1.5435 | | |
| 9 | -.5868 | .7875 | .7571 | .6347 | .5043 | .3297 | | |
| 10 | -.7267 | -.4363 | .6791 | .6454 | .5372 | .4209 | | |
| 11 | -9.5170 | -21.1134 | -8.1083 | -6.5288 | -5.8114 | -4.7992 | | |
| 12 | -9.1082 | -14.8328 | -9.7002 | -6.9614 | -5.6990 | -4.5879 | | |
| 13 | -7.4392 | -10.2740 | -7.4081 | -4.7934 | -4.1632 | -3.5117 | | |
| 14 | -4.3337 | -4.6073 | -4.3449 | -3.0951 | -2.0380 | -1.7762 | | |
| 15 | -4.0996 | -7.6520 | -2.4641 | .7252 | .5120 | .3026 | | |
| 16 | .0471 | 17.5782 | 2.5904 | .1383 | 2.7502 | .9639 | | |
| 17 | 1.5173 | 31.1929 | 2.0833 | -.2766 | .6846 | .7448 | | |
| 18 | -9.4152 | -15.5531 | -7.8619 | -3.5401 | -3.6028 | -3.0987 | | |
| 19 | -9.9259 | -25.9183 | -9.6417 | -3.2937 | -3.5543 | -3.5505 | | |
| 20 | -7.3023 | -10.6024 | -6.8089 | -1.8613 | -2.1989 | -2.7826 | | |
| 21 | -2.3850 | -2.6830 | -2.2283 | -1.5157 | -.7621 | -1.4659 | | |
| 22 | 1.5295 | | 5.0584 | -1.2054 | .6381 | .5857 | | |
| 23 | 3.8814 | | 2.0389 | -1.6291 | .7312 | .6206 | | |

(b) $\alpha = 16^o$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -6.3136 | .7865 | -6.5667 | -5.0206 | -4.2126 | -4.4245 | | |
| 2 | -5.9341 | -4.5260 | -6.4707 | -5.2356 | -4.6209 | -4.7861 | | |
| 3 | -4.4956 | -4.7089 | -5.5430 | -4.6633 | -4.0591 | -4.1640 | | |
| 4 | -3.3313 | -4.0460 | -4.4910 | -3.9880 | -3.4137 | -3.3612 | | |
| 5 | -1.2695 | -3.3862 | -3.7765 | -3.4549 | -2.9724 | -2.6419 | | |
| 6 | -3.0509 | -3.4669 | -3.4211 | -3.0319 | -2.6069 | -2.2900 | | |
| 7 | -3.0783 | -3.5386 | -3.4353 | -2.9182 | -2.4358 | -2.1228 | | |
| 8 | -3.3785 | -.0168 | -.0213 | -2.6978 | -2.2861 | -2.0043 | | |
| 9 | .0381 | 1.2194 | .8692 | .7465 | .6339 | .4589 | | |
| 10 | -.2774 | -.5014 | .8816 | .8372 | .7661 | .6241 | | |
| 11 | -9.2409 | -22.0279 | -8.9677 | -6.6982 | -6.6135 | -5.3829 | | |
| 12 | -7.4595 | -15.3335 | -9.5613 | -6.5845 | -5.8048 | -5.3985 | | |
| 13 | -5.8229 | -10.2818 | -7.3522 | -4.5105 | -4.3060 | -4.1874 | | |
| 14 | -3.7900 | -4.4559 | -4.4927 | -2.8950 | -2.2648 | -2.1462 | | |
| 15 | -3.9561 | -6.4538 | -2.1255 | .7039 | .3539 | .2975 | | |
| 16 | .6203 | 19.7063 | 2.0406 | .0587 | 1.8024 | .8944 | | |
| 17 | 1.9906 | 32.4379 | 3.1248 | -.3324 | .6922 | .7311 | | |
| 18 | -8.7289 | -15.0622 | -8.2159 | -3.5171 | -3.8569 | -3.8452 | | |
| 19 | -7.9624 | -25.7919 | -9.1827 | -3.2665 | -3.6897 | -4.2340 | | |
| 20 | -5.3733 | -10.3656 | -6.1313 | -1.8074 | -2.3056 | -3.2640 | | |
| 21 | -2.1351 | -2.9031 | -2.2037 | -1.3507 | -.9234 | -1.7049 | | |
| 22 | 2.2345 | 999.0000 | 4.7210 | -1.1427 | .6066 | .4822 | | |
| 23 | 4.6336 | 999.0000 | 1.2887 | -1.3216 | .8205 | .6475 | | |

TABLE XXVI. - PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 5.25. FULL-SPAN FLAP; $\delta_f = 55^{\circ}$; $C_{\mu} = 1.38$. INBOARD ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -2.8472 | 2.1313 | -2.5696 | -1.7577 | -1.3277 | -.9089 | | |
| 2 | -2.7766 | -.0707 | -2.7670 | -2.1439 | -1.5568 | -1.0817 | | |
| 3 | -2.6838 | -.4389 | -2.6794 | -2.2812 | -1.6770 | -1.1399 | | |
| 4 | -2.5675 | -1.2781 | -2.3859 | -2.1799 | -1.7277 | -1.1794 | | |
| 5 | -2.2201 | -1.6534 | -1.5122 | -2.1937 | -1.6038 | -1.2489 | | |
| 6 | -2.3409 | -2.4542 | -2.3790 | -2.1473 | -1.5568 | -1.2808 | | |
| 7 | -2.4807 | -2.7030 | -2.5919 | -2.2177 | -1.7578 | -1.5230 | | |
| 8 | -2.9915 | -.0088 | -.0103 | -2.3619 | -2.0658 | -2.0902 | | |
| 9 | .0383 | .6127 | .7351 | .5222 | .3570 | .0695 | | |
| 10 | .2327 | -.0560 | .6785 | .5668 | .4303 | .1691 | | |
| 11 | -8.1318 | -16.1808 | -7.8563 | -6.1244 | -5.1888 | -5.7147 | | |
| 12 | -7.8933 | -11.8354 | -8.3369 | -5.9630 | -4.9597 | -6.3832 | | |
| 13 | -6.4095 | -8.0626 | -6.1141 | -4.0698 | -4.1560 | -5.6621 | | |
| 14 | -3.4787 | -3.8350 | -3.5136 | -2.9180 | -2.2442 | -3.2902 | | |
| 15 | -1.2972 | -2.9620 | -.4875 | .4638 | .0225 | -.1991 | | |
| 16 | .2327 | 16.9207 | 1.5167 | 1.0271 | 1.5840 | .5938 | | |
| 17 | .8911 | 23.2159 | -1.9843 | .8674 | .5994 | .4040 | | |
| 18 | -6.7834 | -8.2922 | -6.3596 | -3.5428 | -3.6207 | -4.4508 | | |
| 19 | -6.3271 | -16.5930 | -7.2487 | -2.6657 | -3.8029 | -5.3804 | | |
| 20 | -4.9699 | -7.1485 | -4.8971 | -1.3732 | -2.4770 | -3.6733 | | |
| 21 | -1.6578 | -1.8271 | -1.4745 | -1.2290 | -.8826 | -1.6564 | | |
| 22 | 1.3654 | 38.1261 | .9310 | .2972 | .3626 | .1409 | | |
| 23 | 2.1225 | 24.8641 | 1.6146 | .9962 | .7234 | .5036 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.2178 | 2[illegible].4502 | -5.2780 | -4.1591 | -2.8677 | -2.1245 | | |
| 2 | -5.0021 | -.2525 | -5.3242 | -4.1232 | -3.1185 | -2.4240 | | |
| 3 | -4.1320 | -.6841 | -4.5834 | -3.6767 | -2.8358 | -2.2387 | | |
| 4 | -3.0756 | -1.9033 | -3.2045 | -3.0881 | -2.4053 | -1.9898 | | |
| 5 | -2.5078 | -2.0588 | -1.9145 | -2.8075 | -2.1901 | -1.8700 | | |
| 6 | -2.4286 | -2.8658 | -2.8674 | -2.5013 | -2.1676 | -2.1245 | | |
| 7 | -2.5166 | -2.8731 | -2.9513 | -2.5253 | -2.3417 | -3.1952 | | |
| 8 | -2.6985 | -.0147 | -.0051 | -2.6159 | -2.7198 | -4.4737 | | |
| 9 | .4492 | .8486 | .8389 | .6129 | .3615 | -.0187 | | |
| 10 | .2569 | .1057 | .8492 | .7293 | .4382 | .1180 | | |
| 11 | -6.5749 | -16.1705 | -7.8786 | -6.4089 | -6.4691 | -8.1575 | | |
| 12 | -5.6447 | -11.0998 | -7.9675 | -6.1814 | -6.0086 | -8.5543 | | |
| 13 | -4.4357 | -7.4230 | -5.6579 | -4.2755 | -5.1607 | -6.9127 | | |
| 14 | -2.4785 | -3.5671 | -3.3311 | -2.8520 | -2.7778 | -3.6014 | | |
| 15 | -1.0597 | -2.0354 | -.6484 | .5872 | -.3107 | -.8760 | | |
| 16 | .3773 | 18.1163 | 1.7326 | 1.0734 | 1.7193 | .3259 | | |
| 17 | 1.2846 | 22.9037 | -2.5133 | .8012 | .6555 | .3839 | | |
| 18 | -5.3014 | -7.3966 | -6.1027 | -3.6236 | -4.5392 | -5.4040 | | |
| 19 | -4.7277 | -15.1757 | -6.6142 | -2.7802 | -4.5692 | -5.1288 | | |
| 20 | -3.1519 | -6.5808 | -4.1951 | -1.5877 | -2.6299 | -3.2252 | | |
| 21 | -1.3707 | -1.5805 | -1.3755 | -1.2592 | -1.3047 | -1.9205 | | |
| 22 | 1.9775 | 33.0101 | .9159 | -.2327 | .2341 | -.4006 | | |
| 23 | 2.7145 | 21.0569 | 1.7154 | .4486 | .5394 | .7023 | | |

TABLE XXVII. - PRESSURE COEFFICIENTS FOR WING AND FLAP OF MODEL. WING ASPECT RATIO = 5.25. FULL-SPAN FLAP; $\delta_f = 55^{\circ}$; $C_{\mu} = 2.75$. INBOARD ENGINES OPERATING.

(a) $\alpha = 1^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -3.2520 | 2.8398 | -2.9942 | -2.0518 | -1.5867 | -1.0180 | | |
| 2 | -3.2301 | -.0673 | -3.1969 | -2.3858 | -1.8682 | -1.2082 | | |
| 3 | -3.0679 | -.5469 | -3.0351 | -2.5034 | -1.9502 | -1.2809 | | |
| 4 | -2.7581 | -1.5421 | -2.5374 | -2.4829 | -1.8645 | -1.3629 | | |
| 5 | -2.5286 | -1.9397 | -1.7876 | -2.4880 | -1.8365 | -1.4655 | | |
| 6 | -2.7157 | -2.8487 | -2.7556 | -2.4165 | -1.8085 | -1.4972 | | |
| 7 | -2.9144 | -3.2506 | -3.0402 | -2.6465 | -2.0528 | -1.7750 | | |
| 8 | -3.7036 | -.0132 | .0102 | -2.8629 | -2.4891 | -2.4219 | | |
| 9 | -.2764 | .2208 | .7128 | .5355 | .3003 | .0243 | | |
| 10 | -.2968 | -1.0584 | .6702 | .6088 | .4011 | .1362 | | |
| 11 | -9.9234 | -24.1987 | -9.3846 | -6.8932 | -6.0987 | -6.5126 | | |
| 12 | -9.6429 | -16.1944 | -10.2469 | -7.5016 | -6.5237 | -7.5604 | | |
| 13 | -7.7635 | -10.5811 | -7.6106 | -5.2487 | -4.9688 | -6.7605 | | |
| 14 | -4.3729 | -4.7164 | -4.5176 | -2.4556 | -2.7575 | -4.2025 | | |
| 15 | -4.6082 | -7.1336 | -1.4008 | .7264 | -.1361 | -.4605 | | |
| 16 | -.8553 | 25.2891 | 2.1845 | .8867 | 1.9159 | .4552 | | |
| 17 | 1.1391 | 36.6834 | -4.1035 | .2728 | .6100 | .2910 | | |
| 18 | -9.8460 | -17.2028 | -8.3945 | -4.4188 | -4.3647 | -5.9271 | | |
| 19 | -10.1134 | -26.9623 | -9.9248 | -4.1257 | -4.7506 | -7.0588 | | |
| 20 | -7.2987 | -10.9172 | -6.8813 | -2.4727 | -3.2796 | -5.1254 | | |
| 21 | -2.4278 | -2.6821 | -2.1659 | -1.3497 | -1.2268 | -2.3660 | | |
| 22 | .7589 | | .8748 | -1.1537 | .1865 | -.2592 | | |
| 23 | 3.3575 | | 2.2919 | -1.3633 | .3078 | .2462 | | |

(b) $\alpha = 16^{\circ}$

WING STATIONS

| TUBE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | -5.9385 | 3.8441 | -6.0684 | -4.6955 | -3.2906 | -2.5022 | | |
| 2 | -5.6728 | -.3423 | -6.0941 | -4.6716 | -3.5978 | -2.7344 | | |
| 3 | -4.4705 | -.9546 | -5.1731 | -4.2128 | -3.2026 | -2.6033 | | |
| 4 | -3.5838 | -2.3712 | -3.7027 | -3.6411 | -2.7363 | -2.3523 | | |
| 5 | -3.1830 | -2.5547 | -2.4359 | -3.3535 | -2.5715 | -2.2980 | | |
| 6 | -3.1316 | -3.4796 | -3.5024 | -3.0197 | -2.5715 | -2.7475 | | |
| 7 | -3.3357 | -3.6763 | -3.6924 | -3.1172 | -2.8337 | -4.2589 | | |
| 8 | -3.9479 | -.0250 | -.0103 | -3.2970 | -3.3356 | -6.0756 | | |
| 9 | .3643 | .2703 | .8411 | .5704 | .3186 | -.1798 | | |
| 10 | -.3173 | -.8973 | .8411 | .7383 | .4460 | .0169 | | |
| 11 | -10.4395 | -24.5516 | -10.3908 | -7.6125 | -7.8736 | -10.7522 | | |
| 12 | -8.6646 | -16.5817 | -10.7982 | -8.0267 | -7.5851 | -12.4602 | | |
| 13 | -6.8502 | -10.8432 | -7.8692 | -5.5891 | -6.6599 | -10.1791 | | |
| 14 | -4.0095 | -5.1443 | -4.8855 | -3.4716 | -3.6989 | -5.5343 | | |
| 15 | -5.2397 | -5.6082 | -1.6502 | .8239 | -.5356 | -1.5845 | | |
| 16 | -.3878 | 28.7979 | 2.2543 | .8394 | 1.2162 | .2492 | | |
| 17 | 2.2460 | 41.0751 | -4.6613 | -.0205 | .5959 | .3448 | | |
| 18 | -10.1092 | -16.9208 | -9.1480 | -4.6082 | -5.8621 | -7.8698 | | |
| 19 | -9.6409 | -26.8197 | -10.1853 | -4.4798 | -6.1880 | -8.1676 | | |
| 20 | -6.4097 | -10.8711 | -6.7874 | -2.7954 | -3.9742 | -4.7777 | | |
| 21 | -2.4196 | -2.8880 | -2.2887 | -1.5184 | -1.7474 | -2.8280 | | |
| 22 | 2.1226 | | .8753 | -1.5167 | .0487 | -.6349 | | |
| 23 | 5.0927 | | 2.4598 | -1.8162 | -.0225 | .1087 | | |

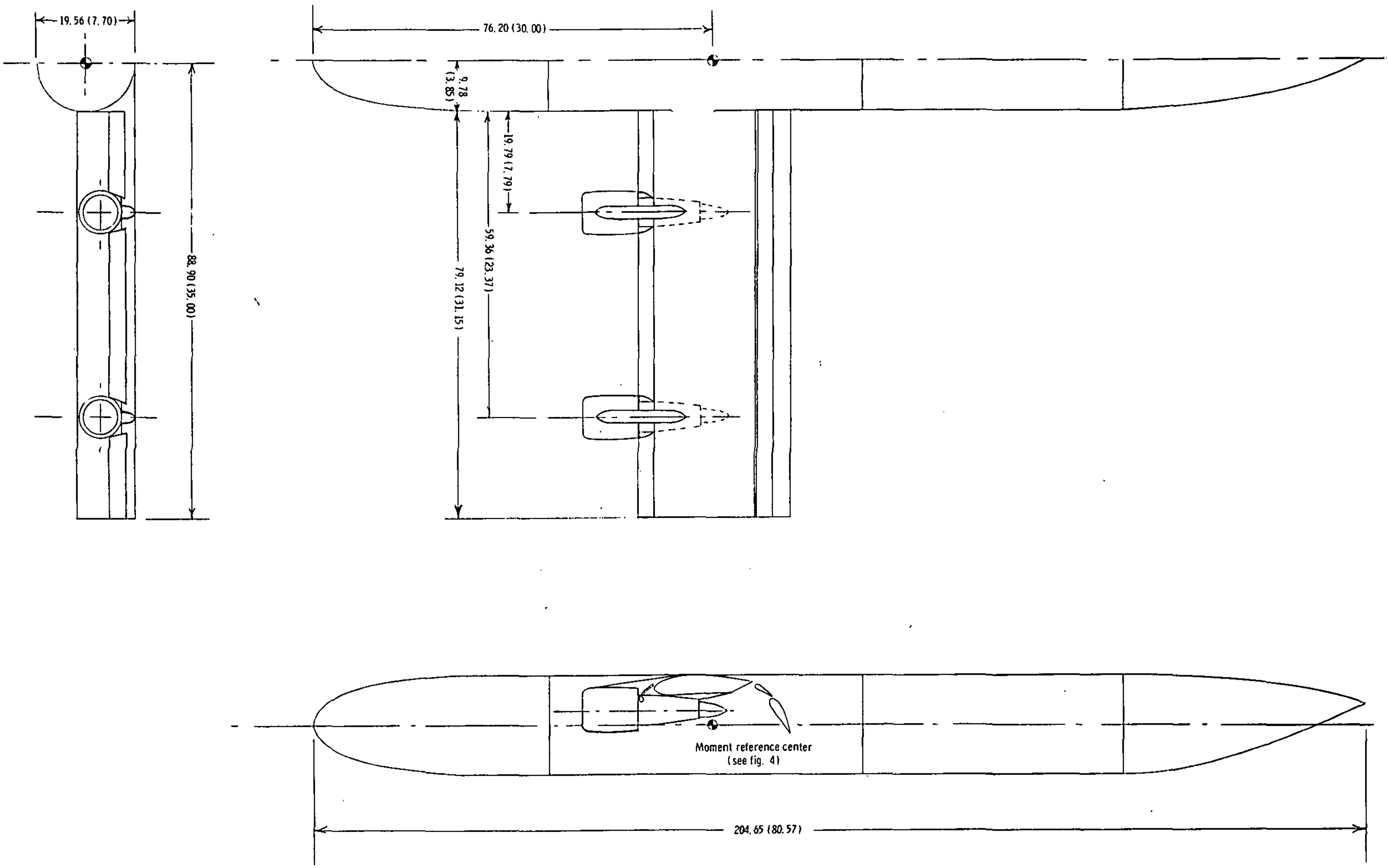
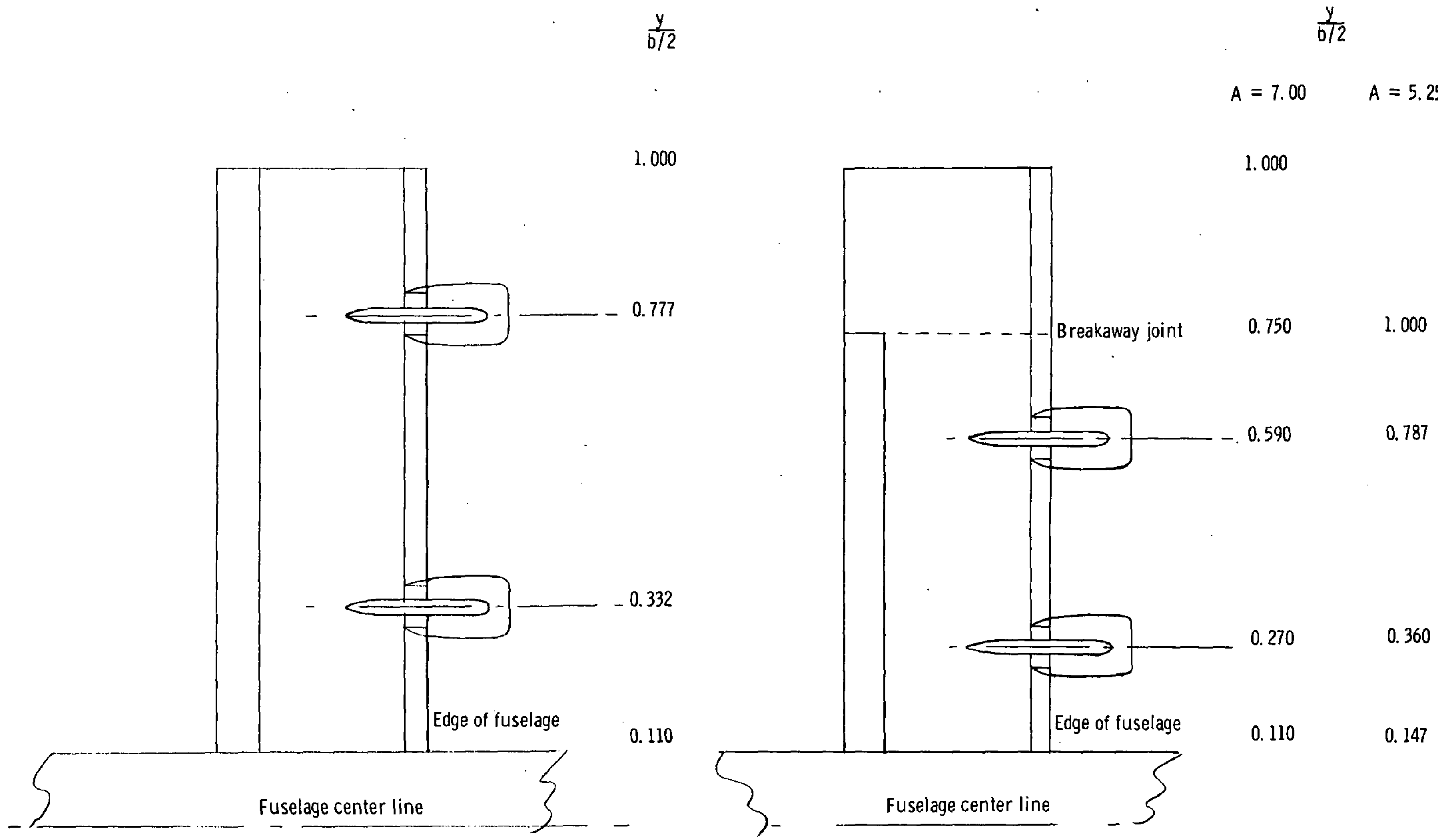



Figure 1.- Three-view drawing of model used in investigation in the aspect-ratio-7 full-span-flap configuration. Dimensions are in centimeters (in.).




Wing aspect ratio = 7.00, full-span flap

Wing aspect ratio = 7.00, partial-span flap

Wing aspect ratio = 5.25, full-span flap

**Figure 2.- Spanwise engine locations used in investigation.**

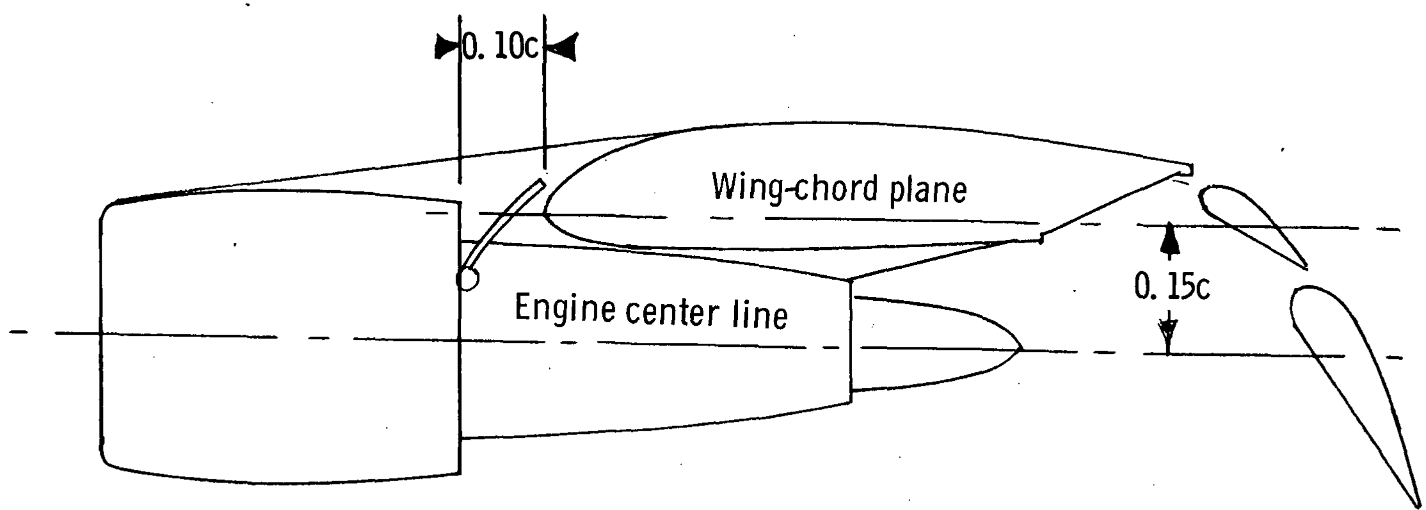
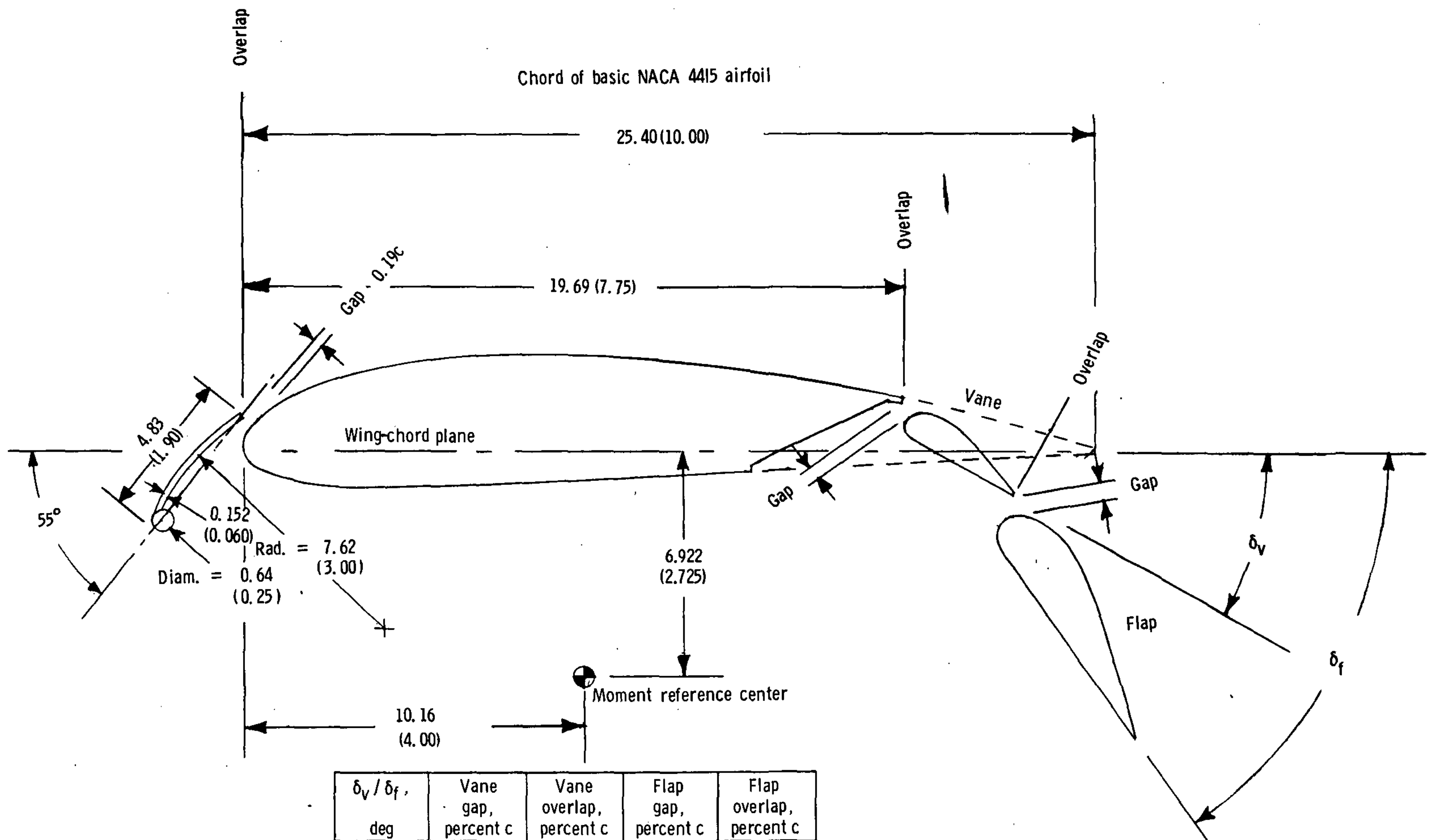



Figure 3.- Engine position used in the investigation.




| $\delta_v / \delta_f$, deg | Vane gap, percent c | Vane overlap, percent c | Flap gap, percent c | Flap overlap, percent c |
|---|---|---|---|---|
| 17.5/35 | 2 | 0 | 2 | 0 |
| 27.5/55 | 2 | 0 | 2 | 0 |

Figure 4.- Details of slats and flaps. Dimensions are in centimeters (in.).

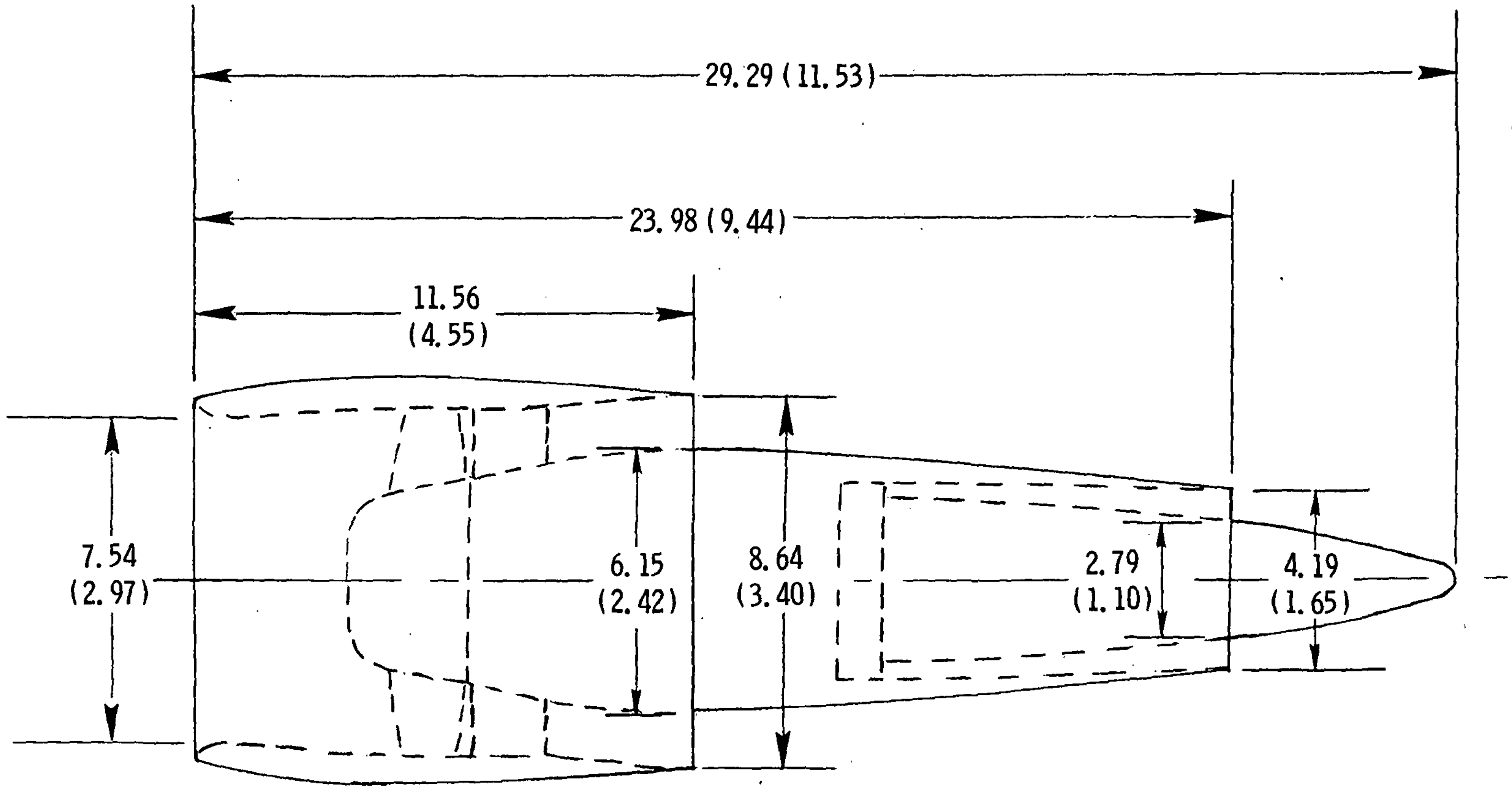
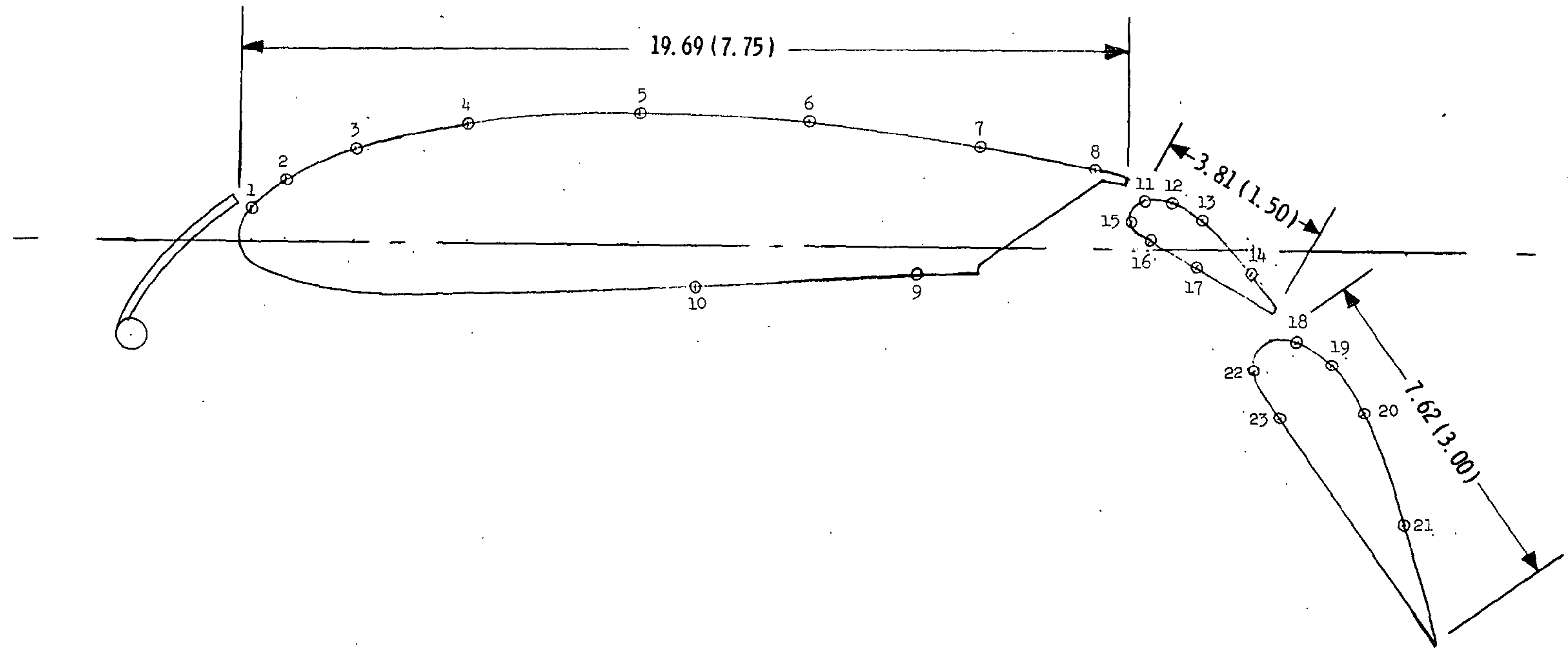



Figure 5.- Basic engine. Dimensions are in centimeters (in.).




Wing

| Tube no. | $\frac{x}{c}$ | $\frac{z}{c}$ |
|---|---|---|
| 1 | 0.01 | 0.028 |
| 2 | .04 | .053 |
| 3 | .10 | .078 |
| 4 | .20 | .103 |
| 5 | .35 | .112 |
| 6 | .50 | .105 |
| 7 | .65 | .084 |
| 8 | .75 | .066 |
| 9 | .60 | -.021 |
| 10 | .40 | -.033 |

Vane

| Tube no. | $\frac{x}{c_v}$ | $\frac{z}{c_v}$ |
|---|---|---|
| 11 | 0.05 | 0.098 |
| 12 | .20 | .163 |
| 13 | .40 | .168 |
| 14 | .80 | .070 |
| 15 | .05 | -.033 |
| 16 | .20 | -.037 |
| 17 | .50 | -.024 |

Flap

| Tube no. | $\frac{x}{c_f}$ | $\frac{z}{c_f}$ |
|---|---|---|
| 18 | 0.05 | 0.098 |
| 19 | .17 | .157 |
| 20 | .33 | .173 |
| 21 | .67 | .107 |
| 22 | .05 | -.033 |
| 23 | .20 | -.037 |

Figure 6.- Chordwise location of pressure orifices. Dimensions are in centimeters (in.).

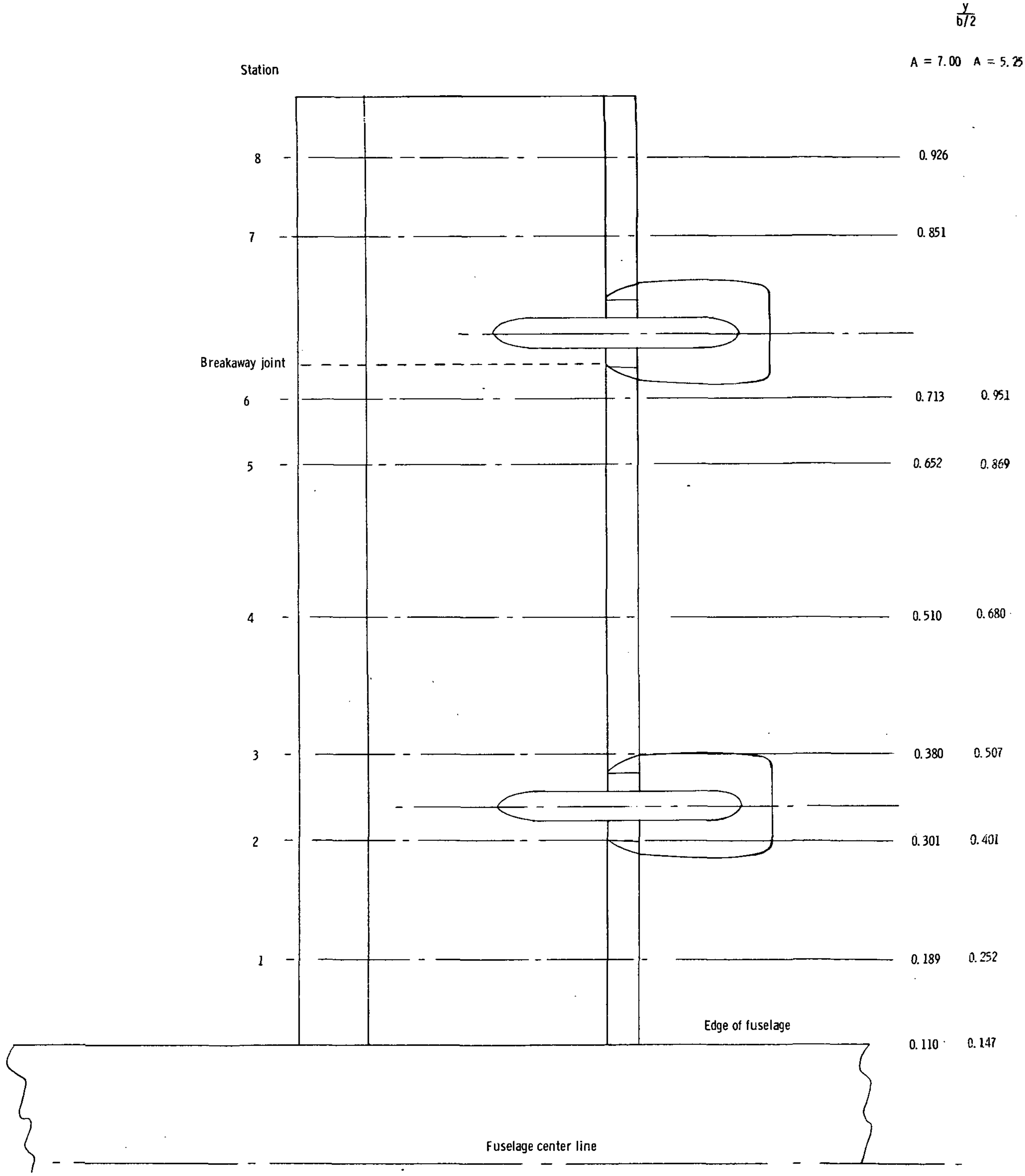



Figure 7.- Spanwise location of pressure orifices.

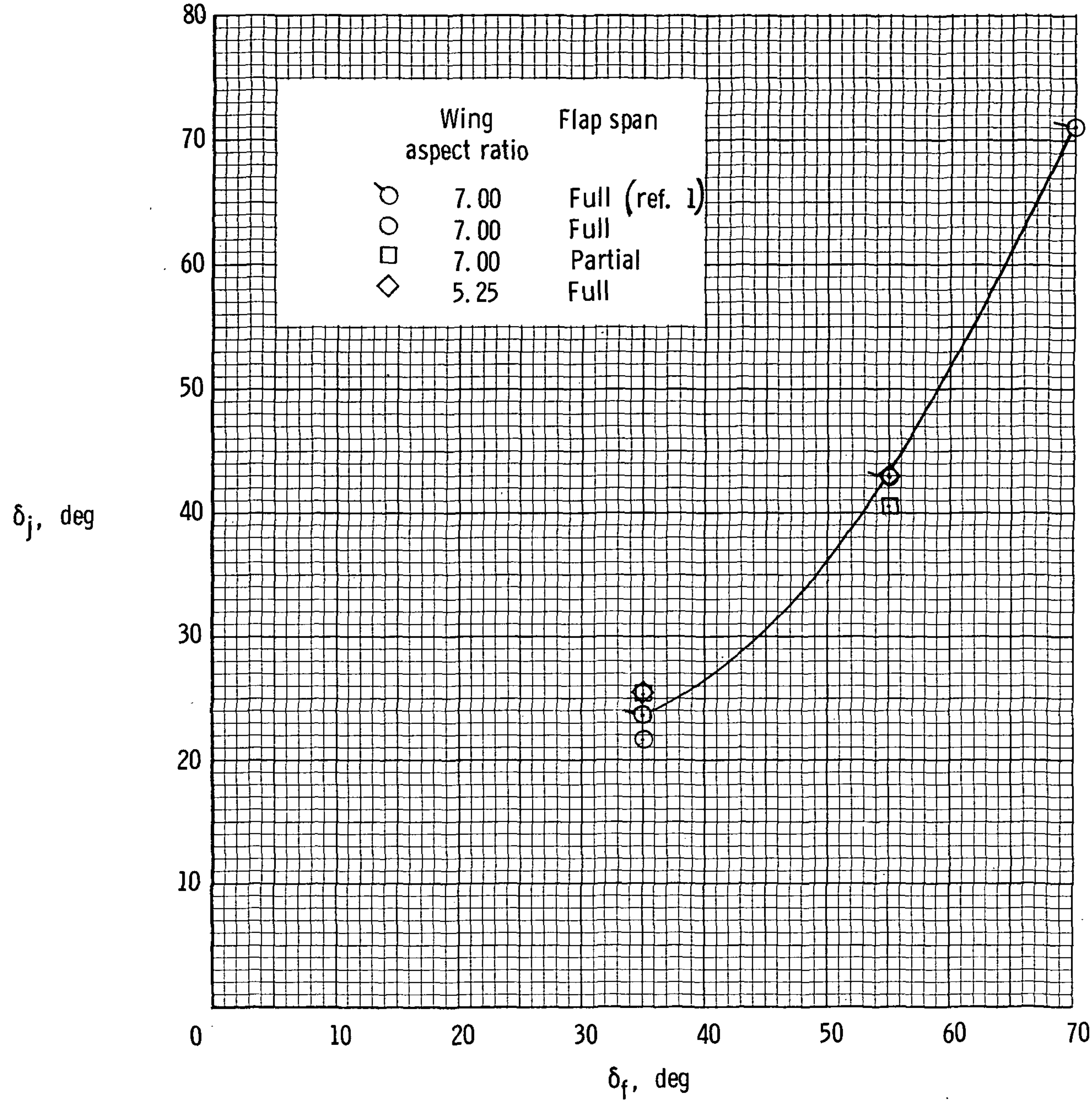
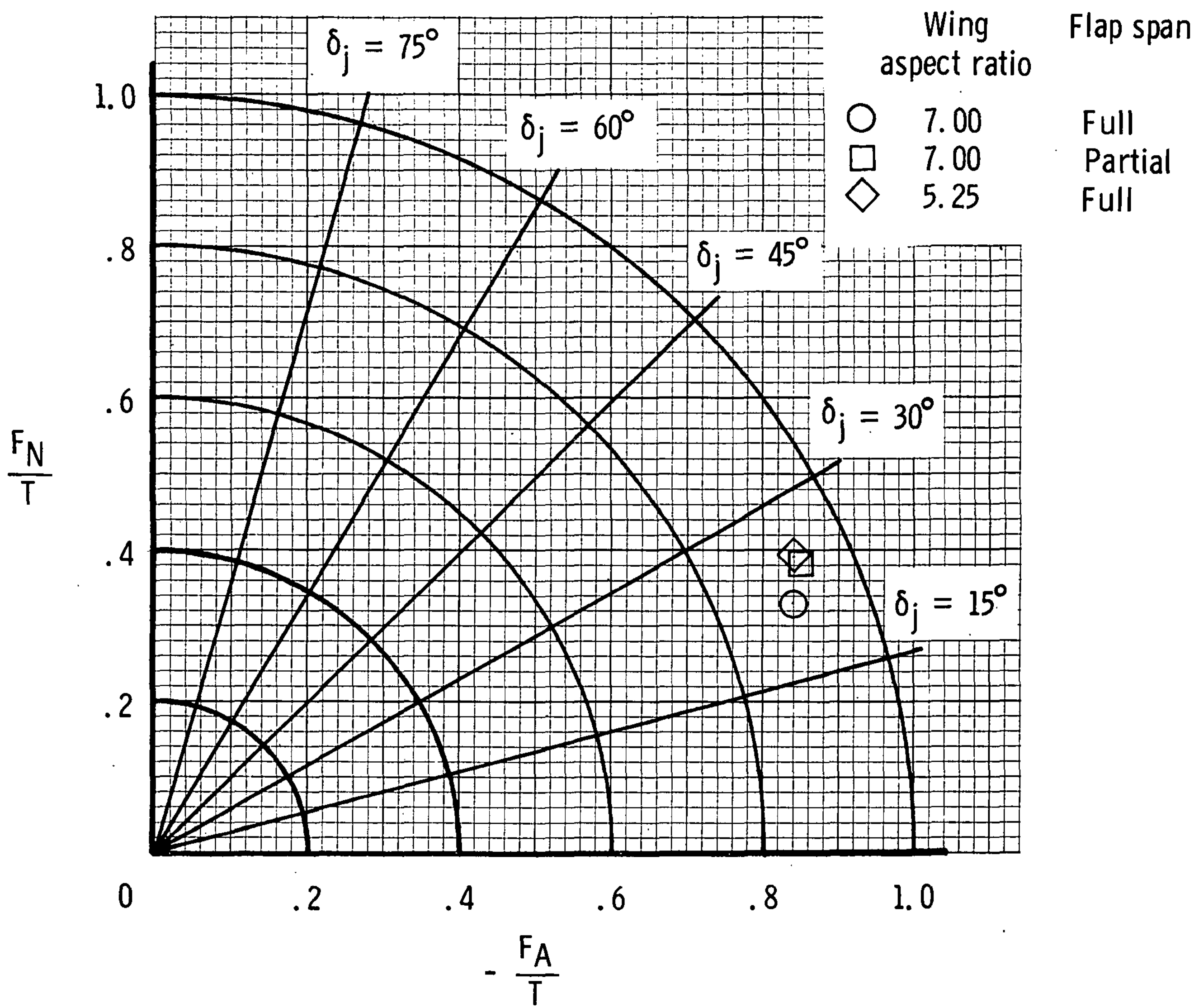
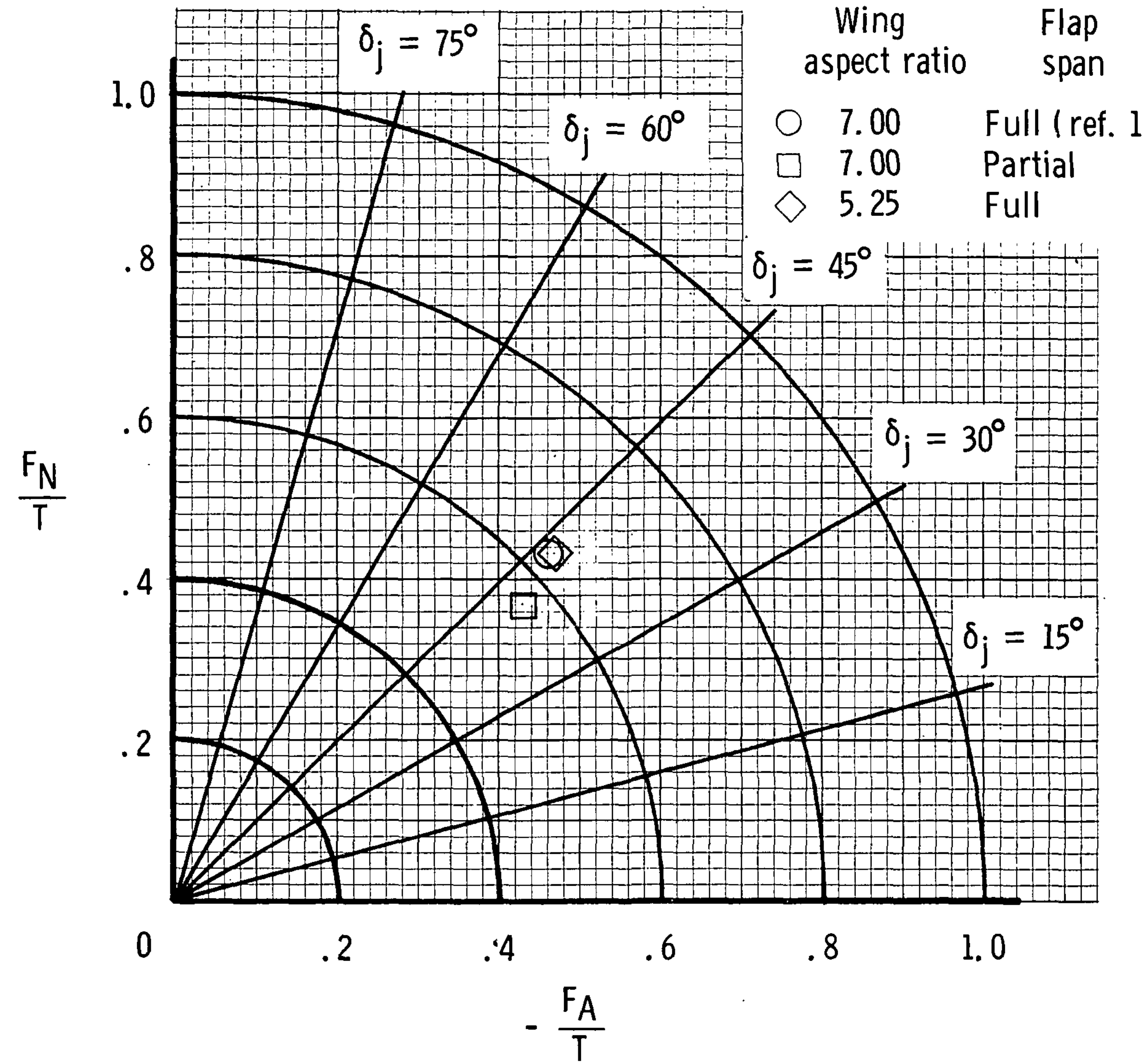



Figure 8.- Calibration of jet turning angles.




(a) $\delta_f = 35^{\circ}$.

Figure 9.- Summary of flap turning efficiency and turning angle.




(b) $\delta_f = 55^{\circ}$.

Figure 9.- Concluded.

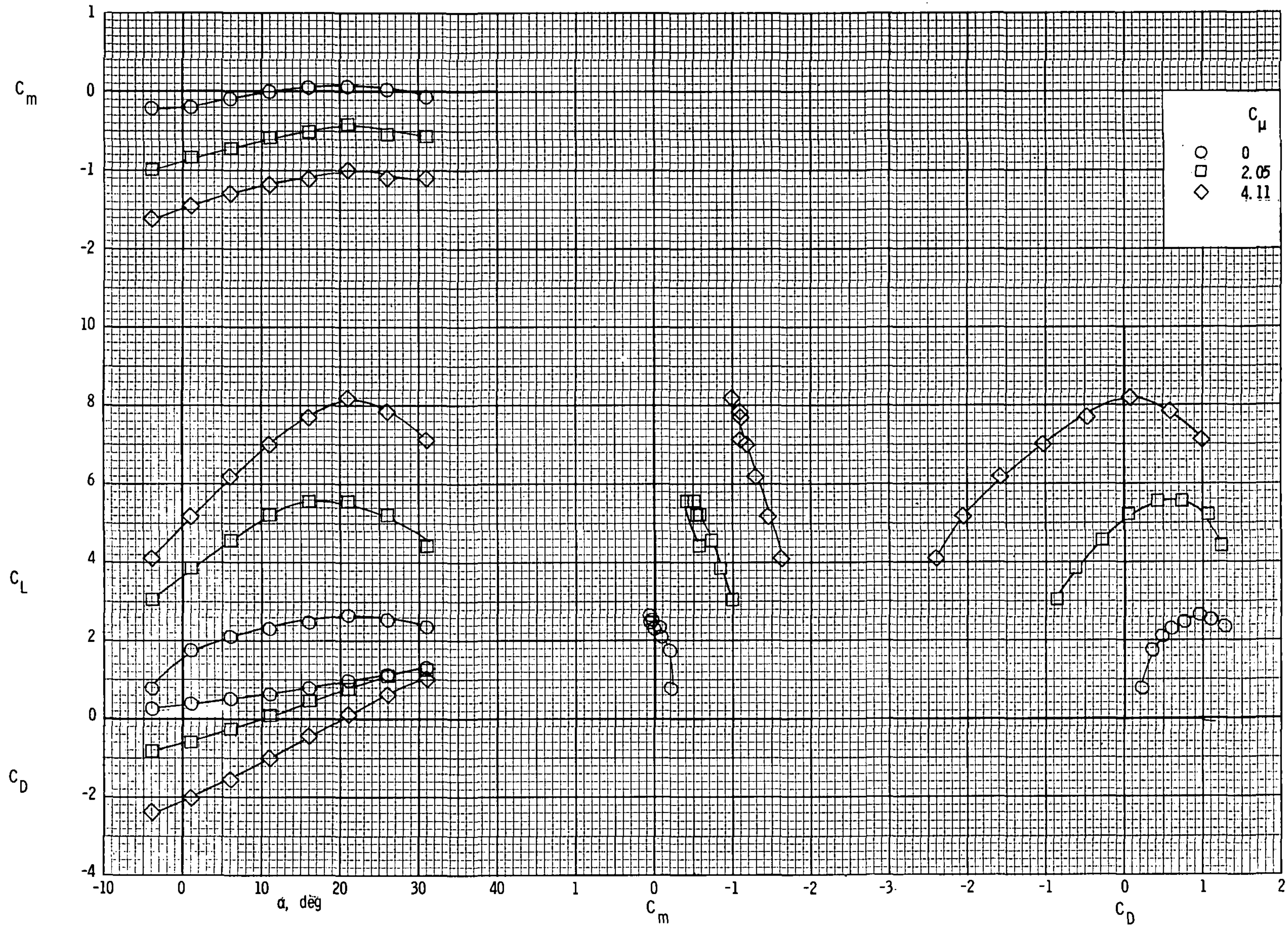



Figure 10.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a full-span flap. $\delta_f = 35^{\circ}$.

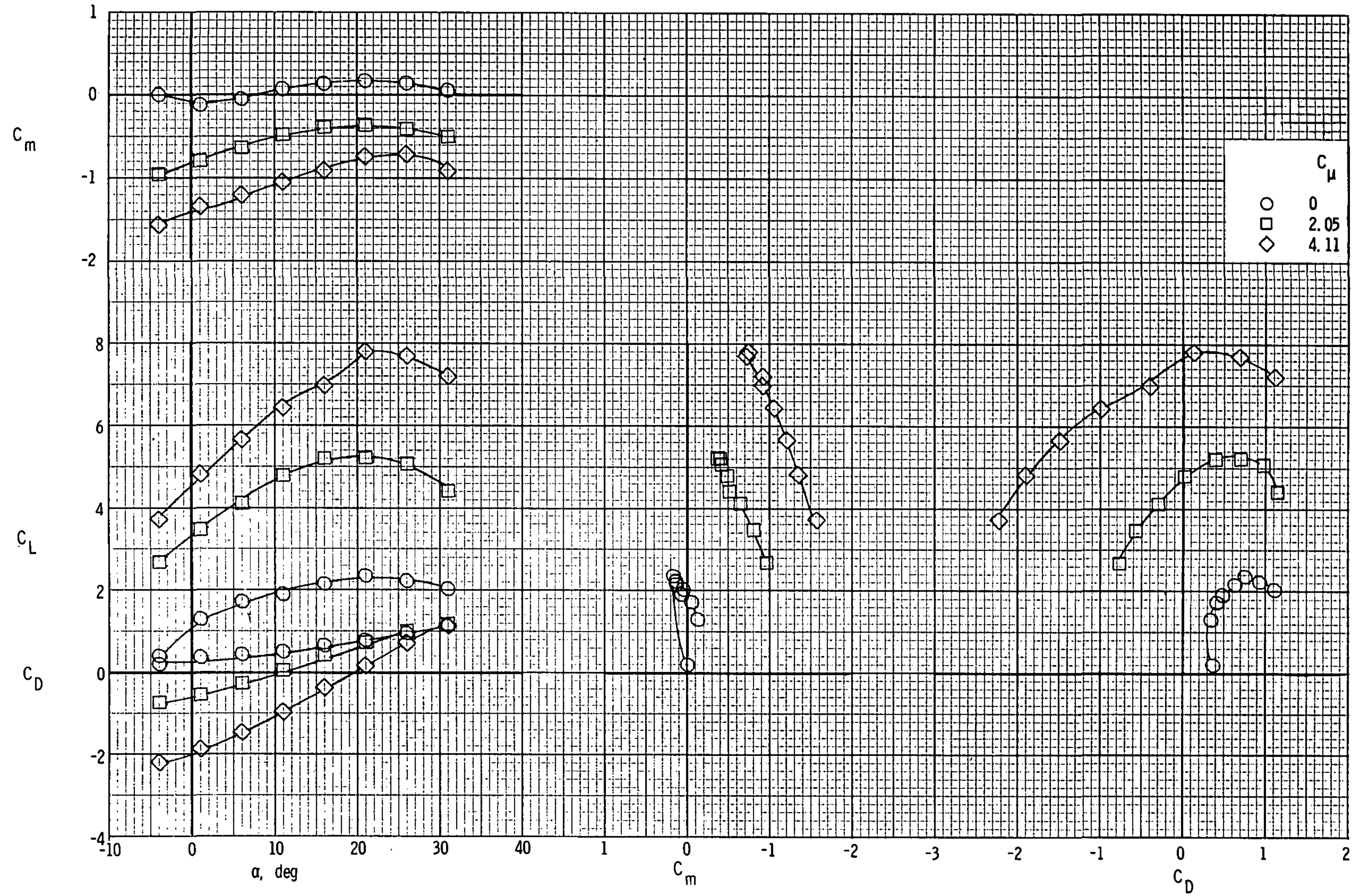



Figure 11.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a partial-span flap. $\delta_f = 35^o$.

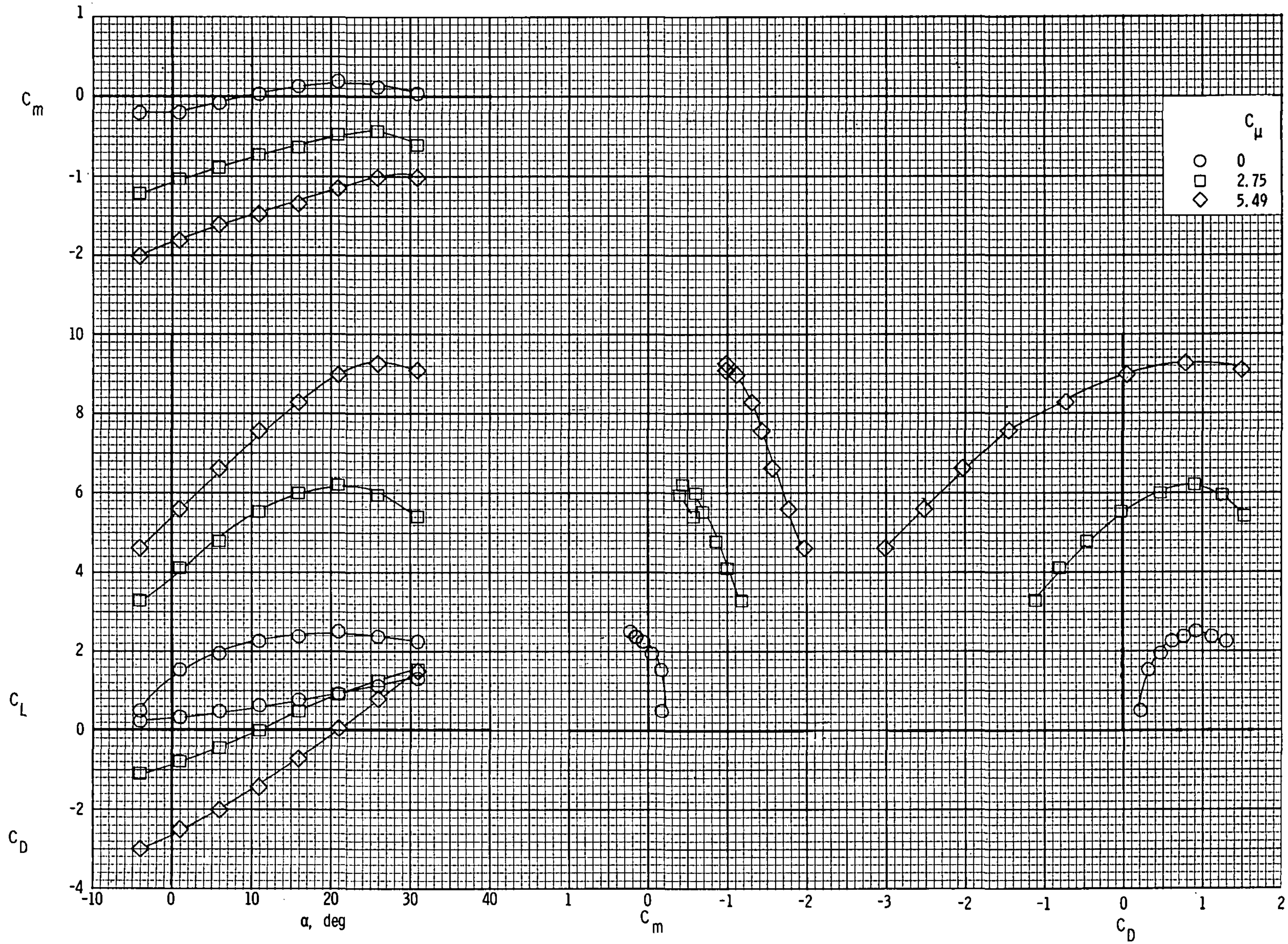



Figure 12.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 5.25 and a full-span flap. All engines operating. $\delta_f = 35^{\circ}$.

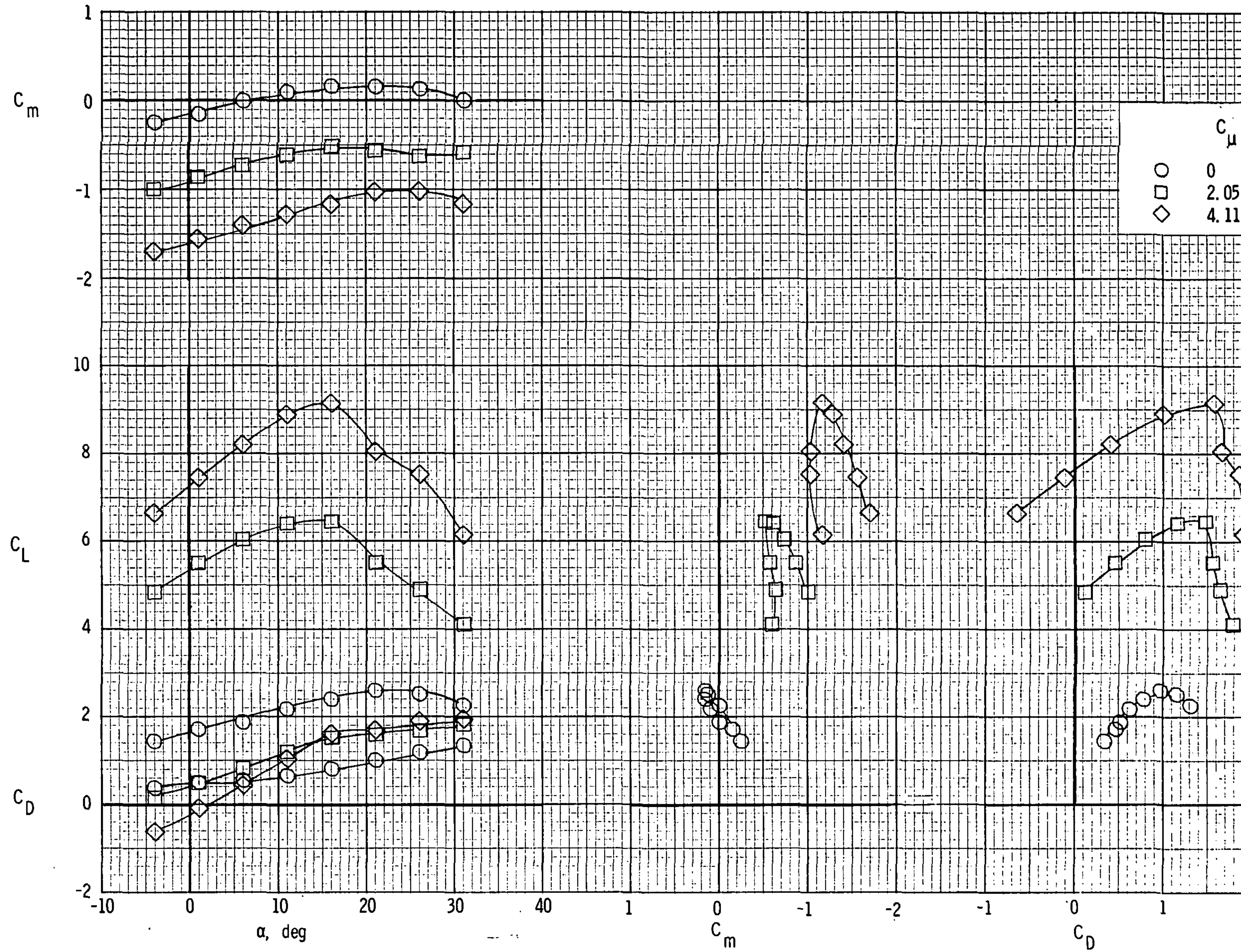



Figure 13.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a full-span flap. $\delta_f = 55^{\circ}$.

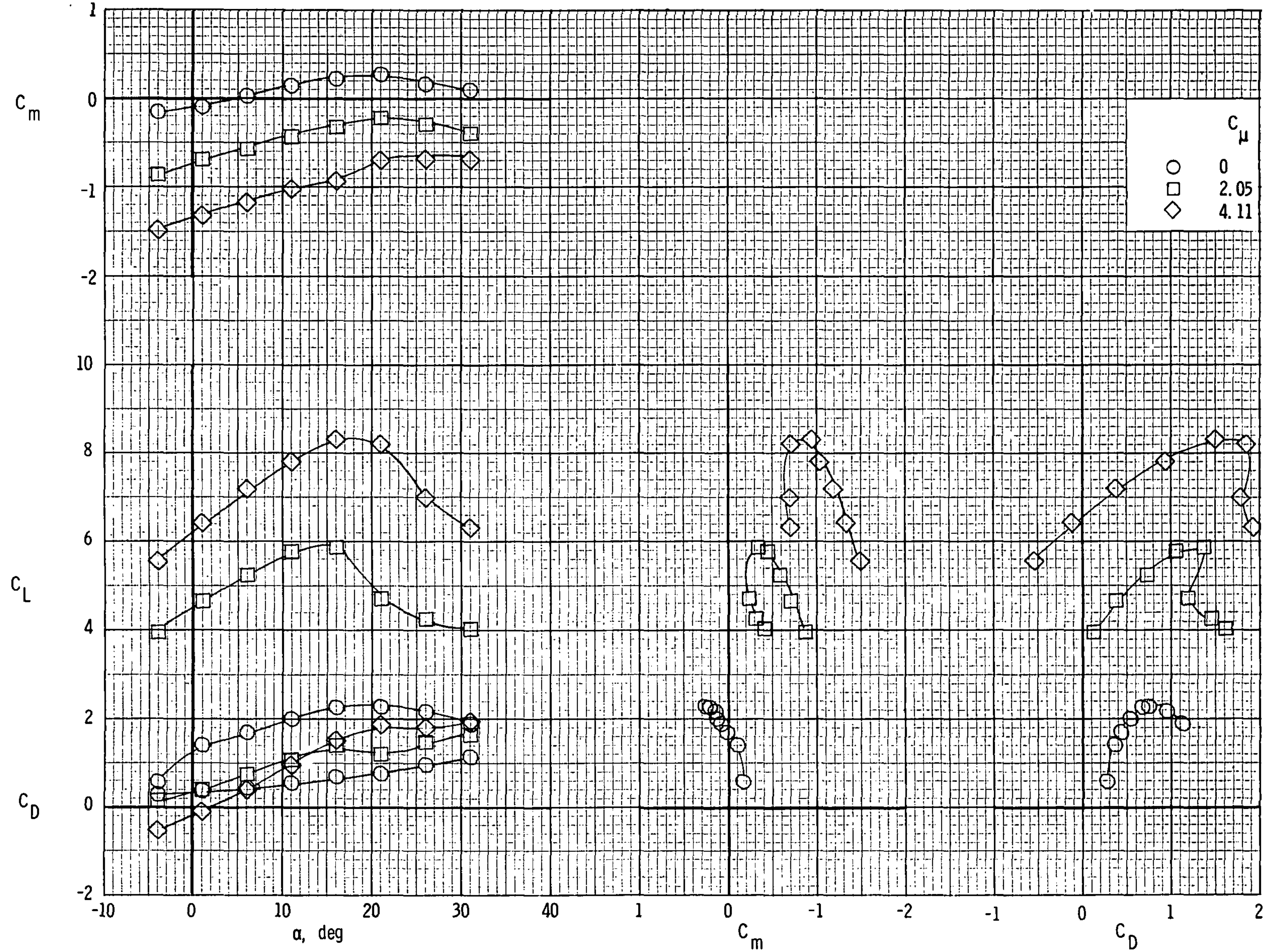



Figure 14.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a partial-span flap. $\delta_f = 55^o$.

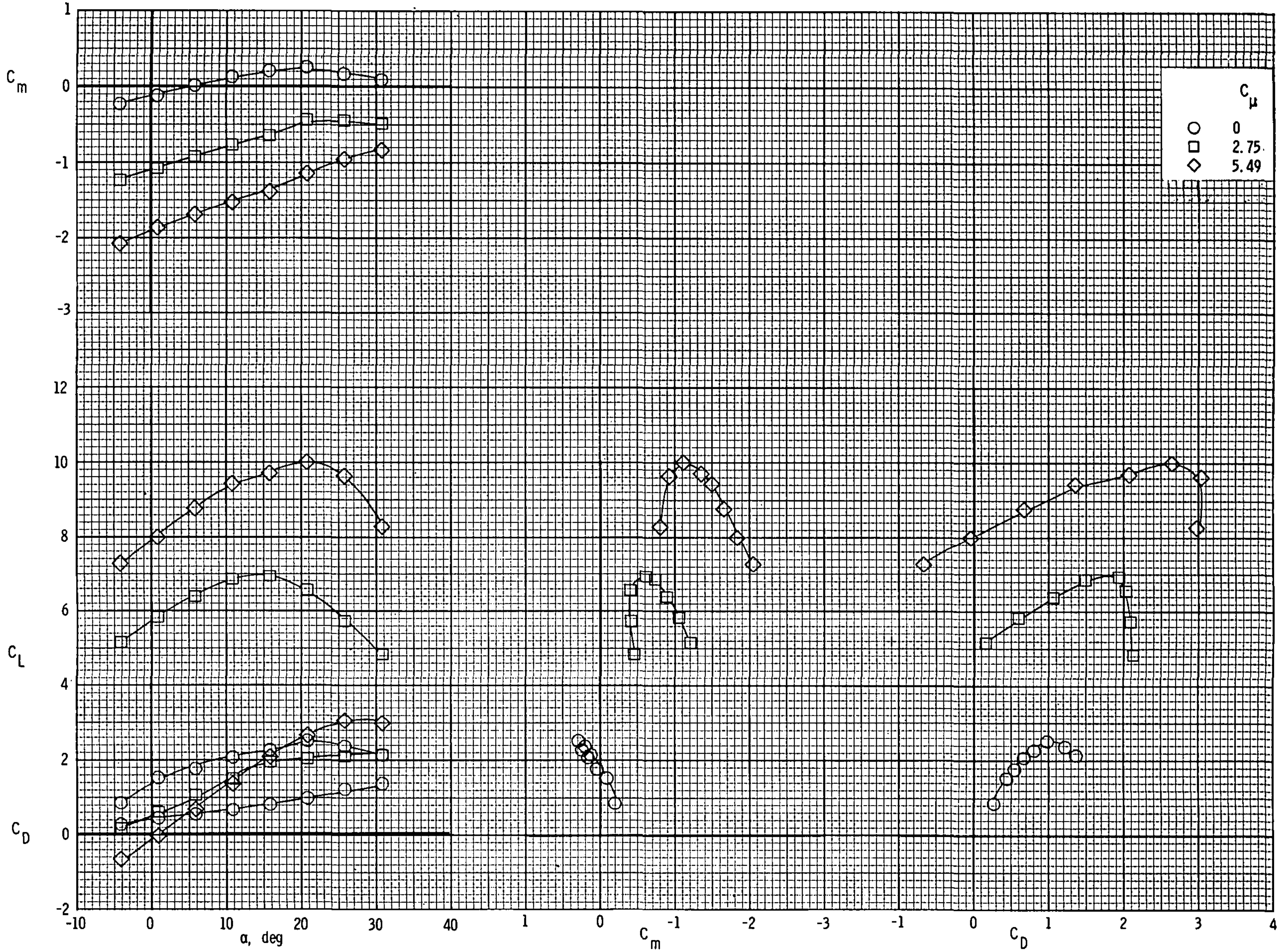
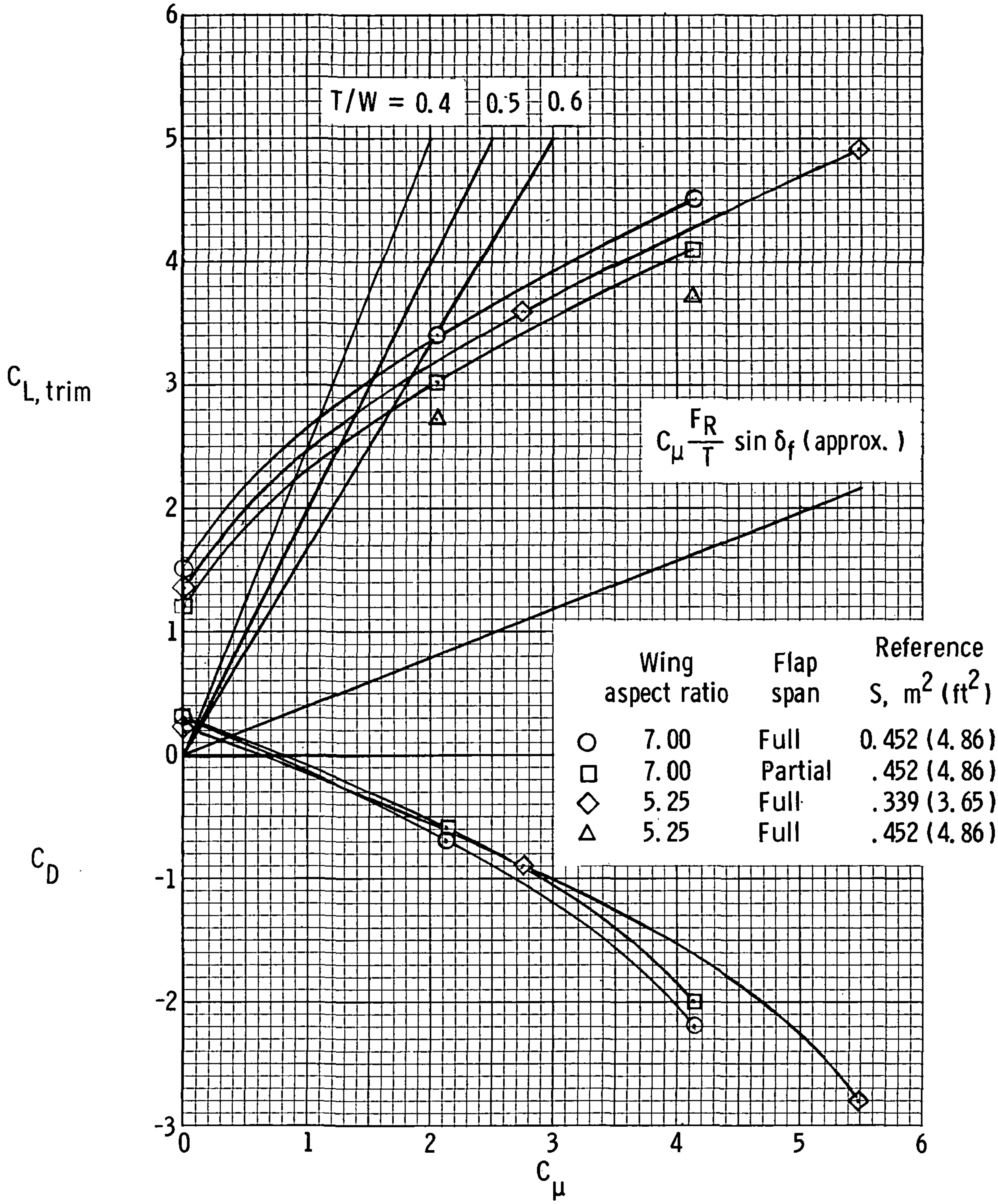
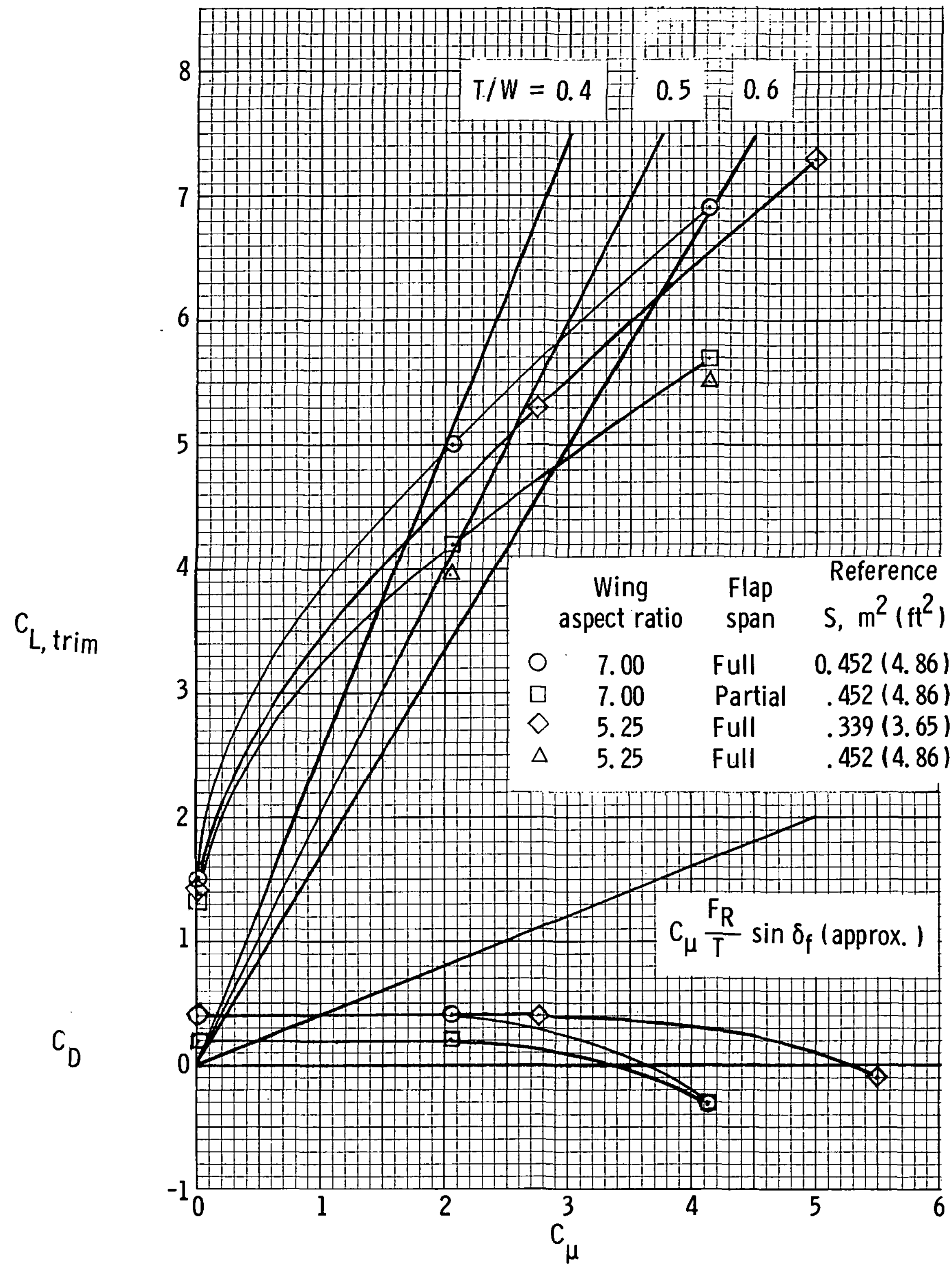



Figure 15.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 5.25 and a full-span flap. All engines operating. $\delta_f = 55^{\circ}$.




(a) $\delta_f = 35^o$.

Figure 16.- Longitudinal aerodynamic characteristics of the model versus thrust coefficient. $\alpha = 1^o$.




(b) $\delta_f = 55^{\circ}$.

Figure 16.- Concluded.

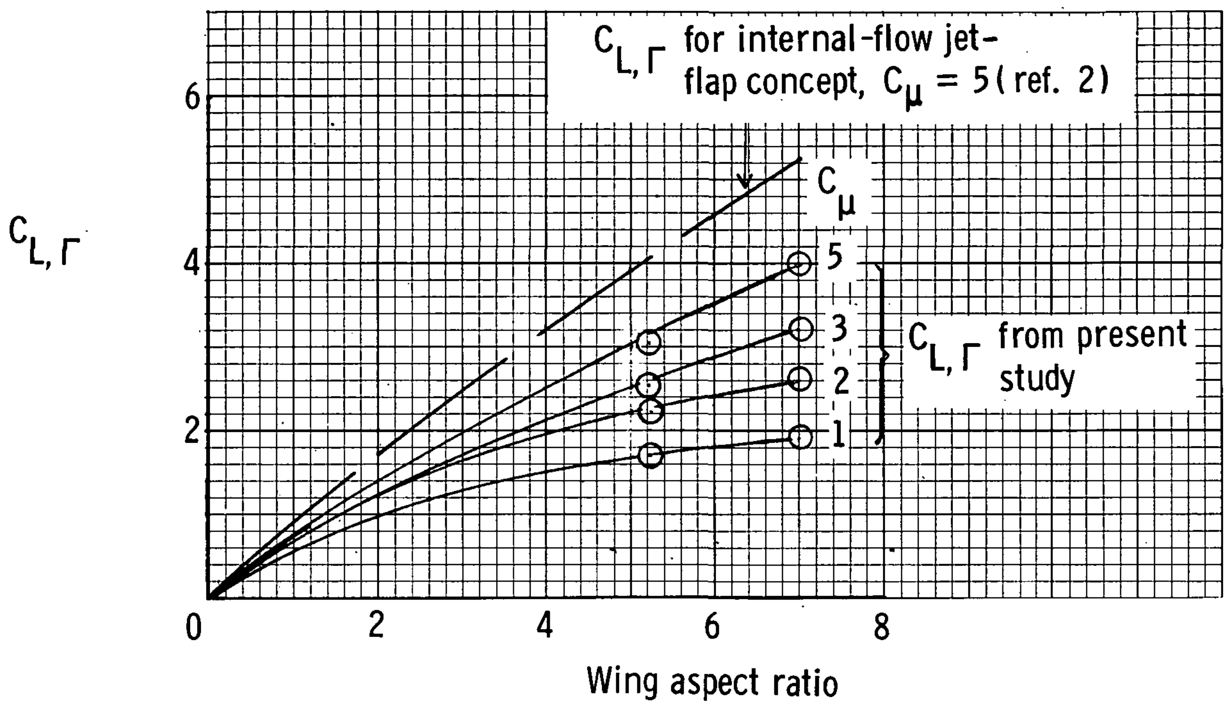



Figure 17.- Variation of added circulation lift with wing aspect ratio for several thrust coefficients. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$.

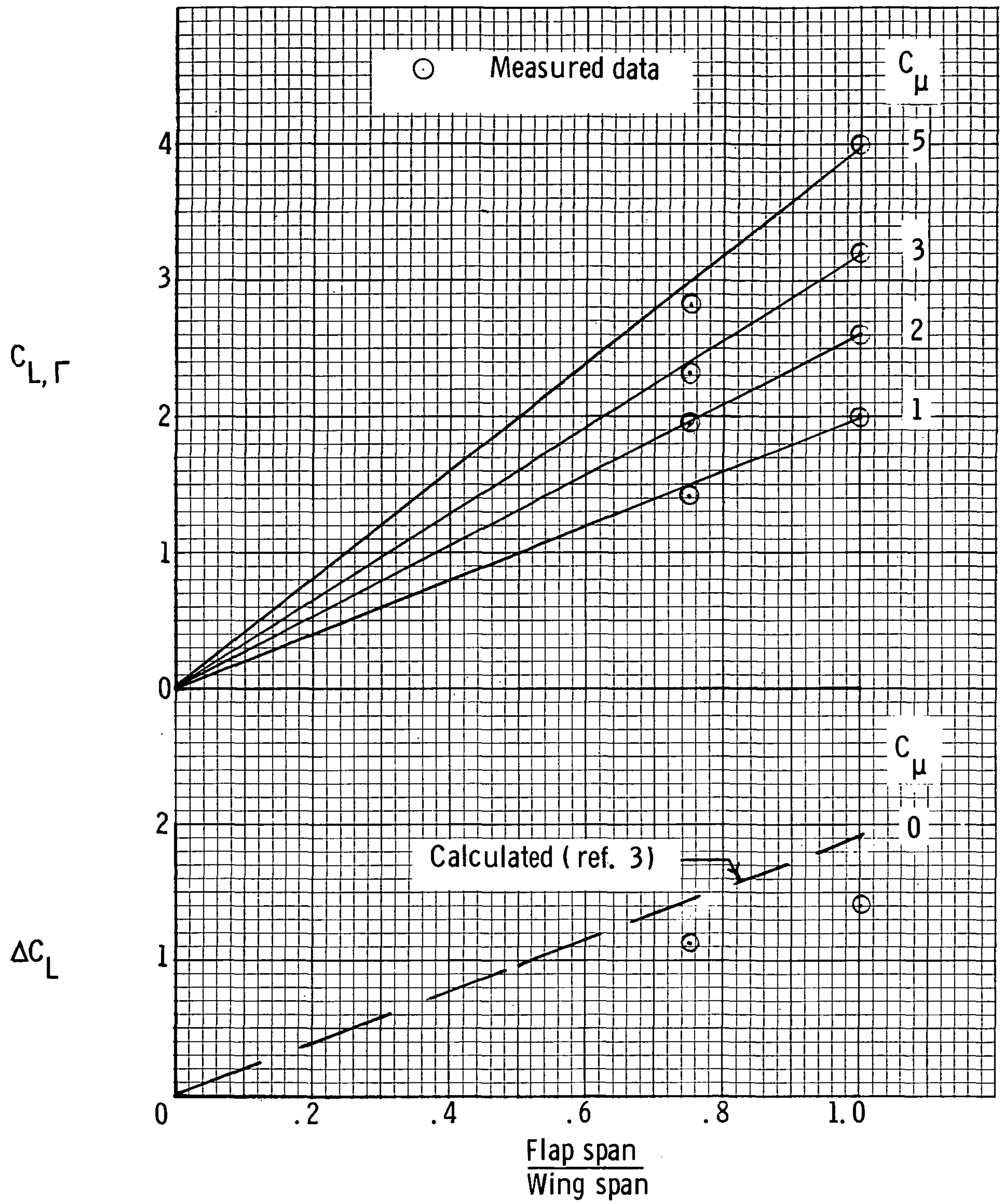
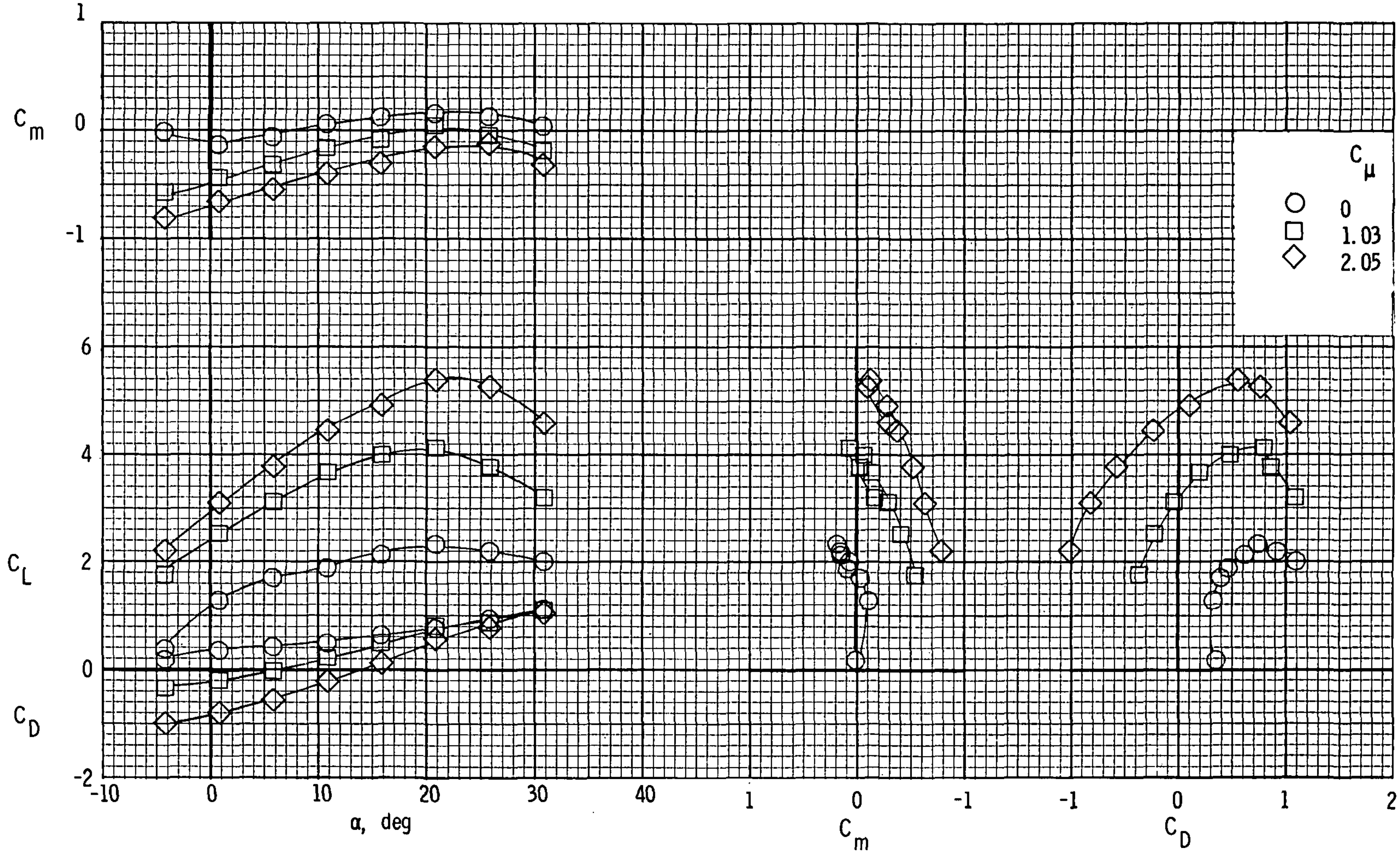
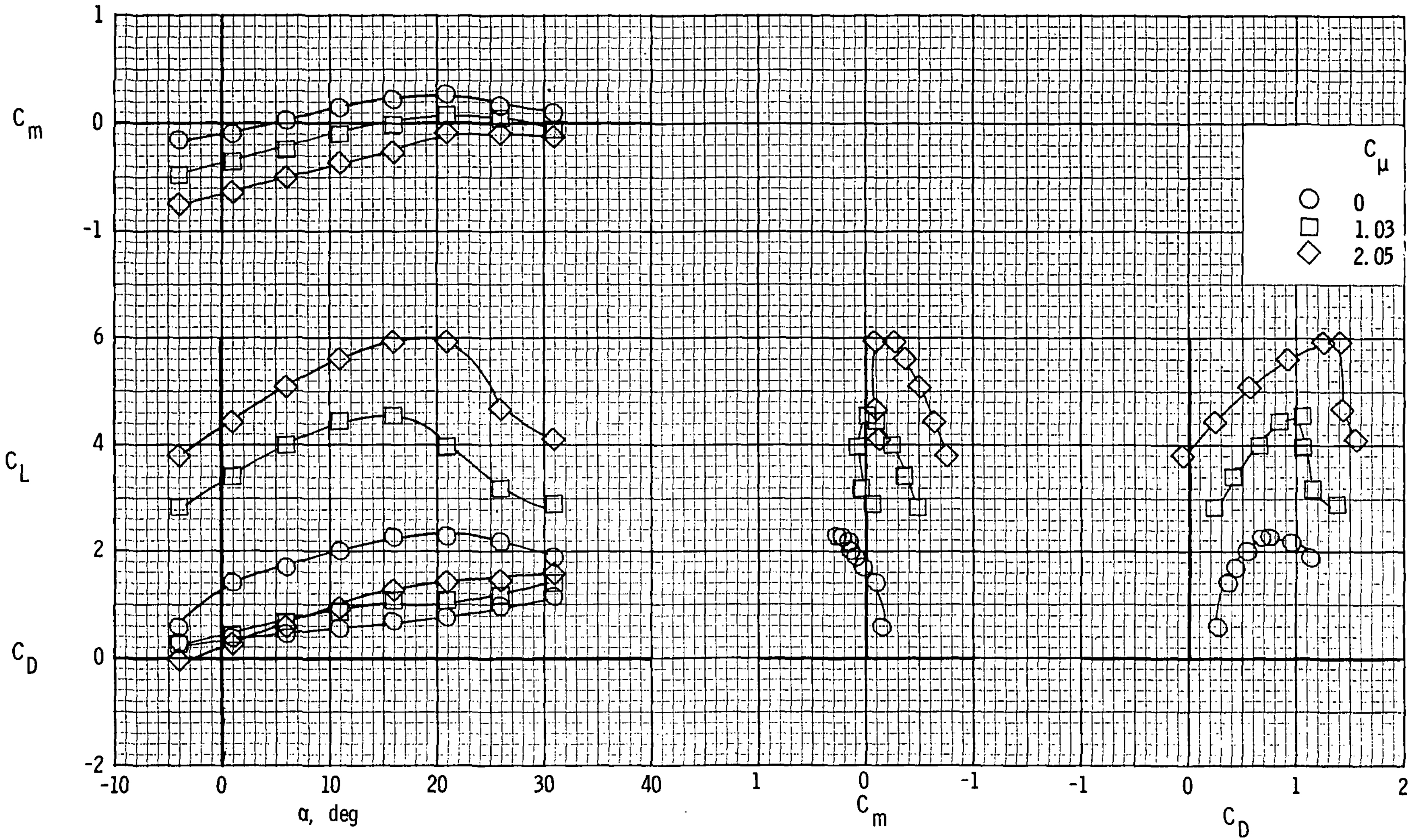



Figure 18.- Effect of span of trailing-edge flap on added circulation lift. $A = 7$; $\delta_f = 55^\circ$; $\alpha = 1^\circ$.




(a) $\delta_f = 35^o$.

Figure 19.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a partial-span flap. Inboard engines operating.




(b) $\delta_f = 55^o$.

Figure 19.- Concluded.

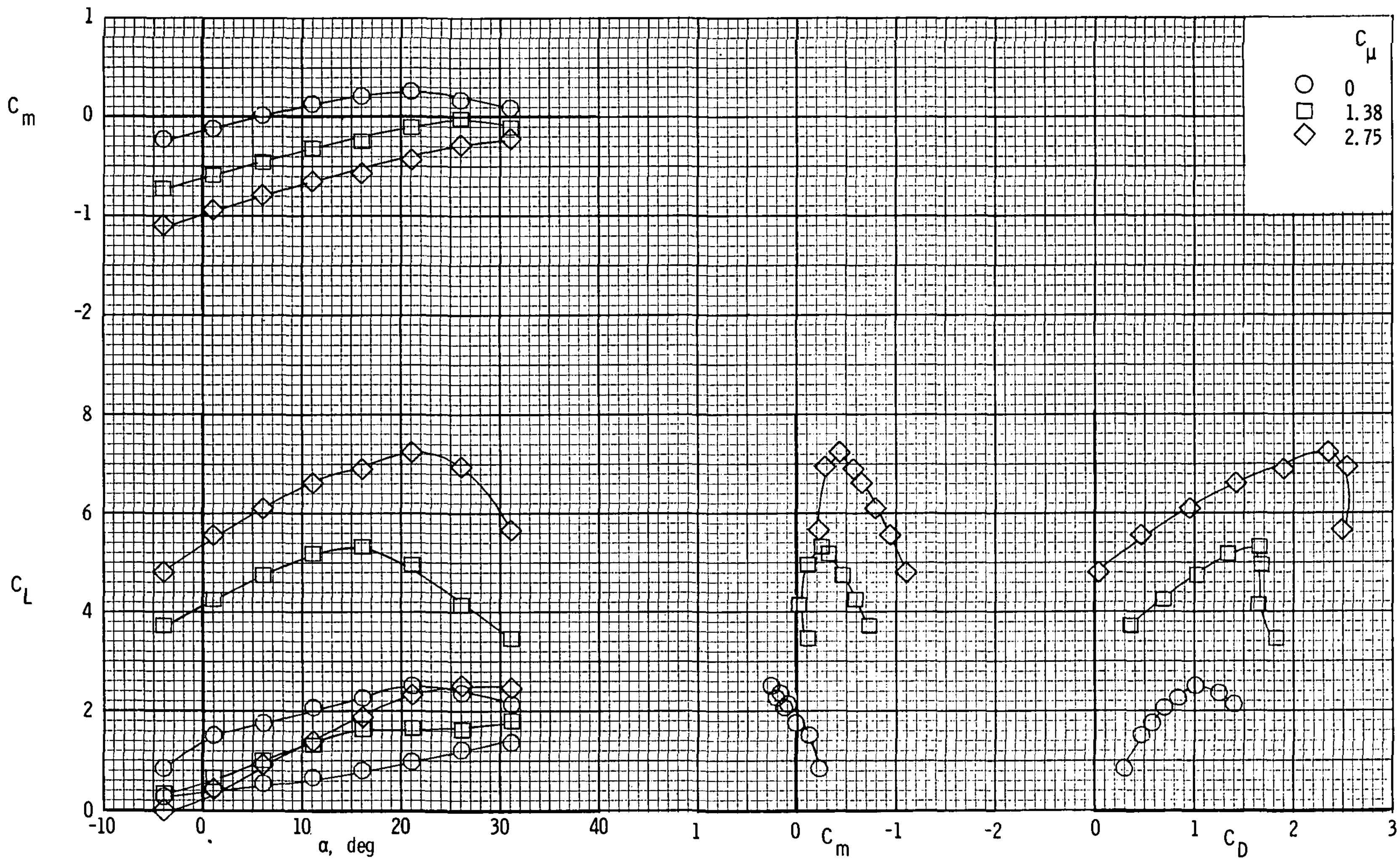



Figure 20.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 5.25 and a full-span flap. Inboard engines operating. $\delta_f = 55^o$.

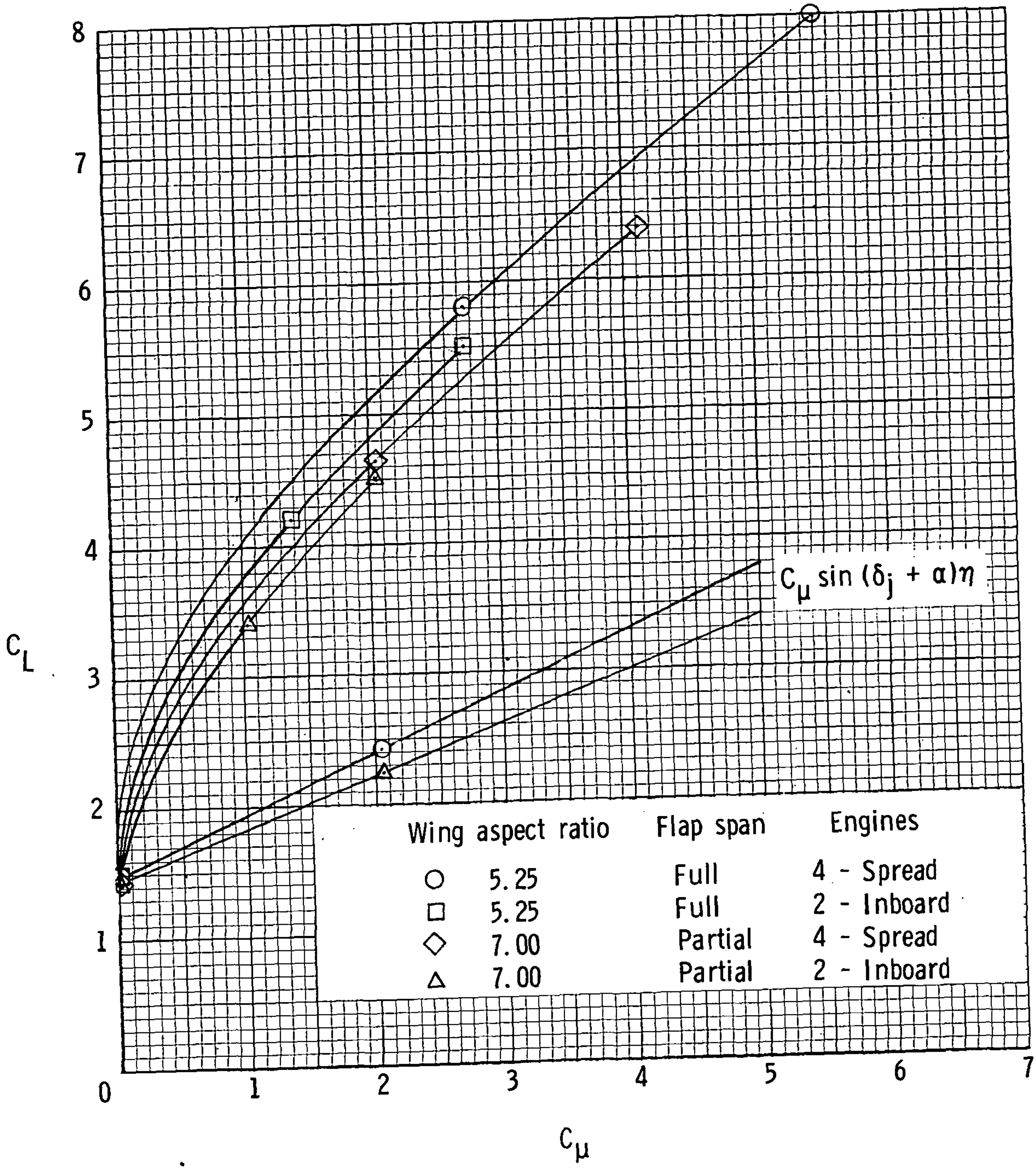



Figure 21.- Effect of spanwise engine location on lift coefficient. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$.

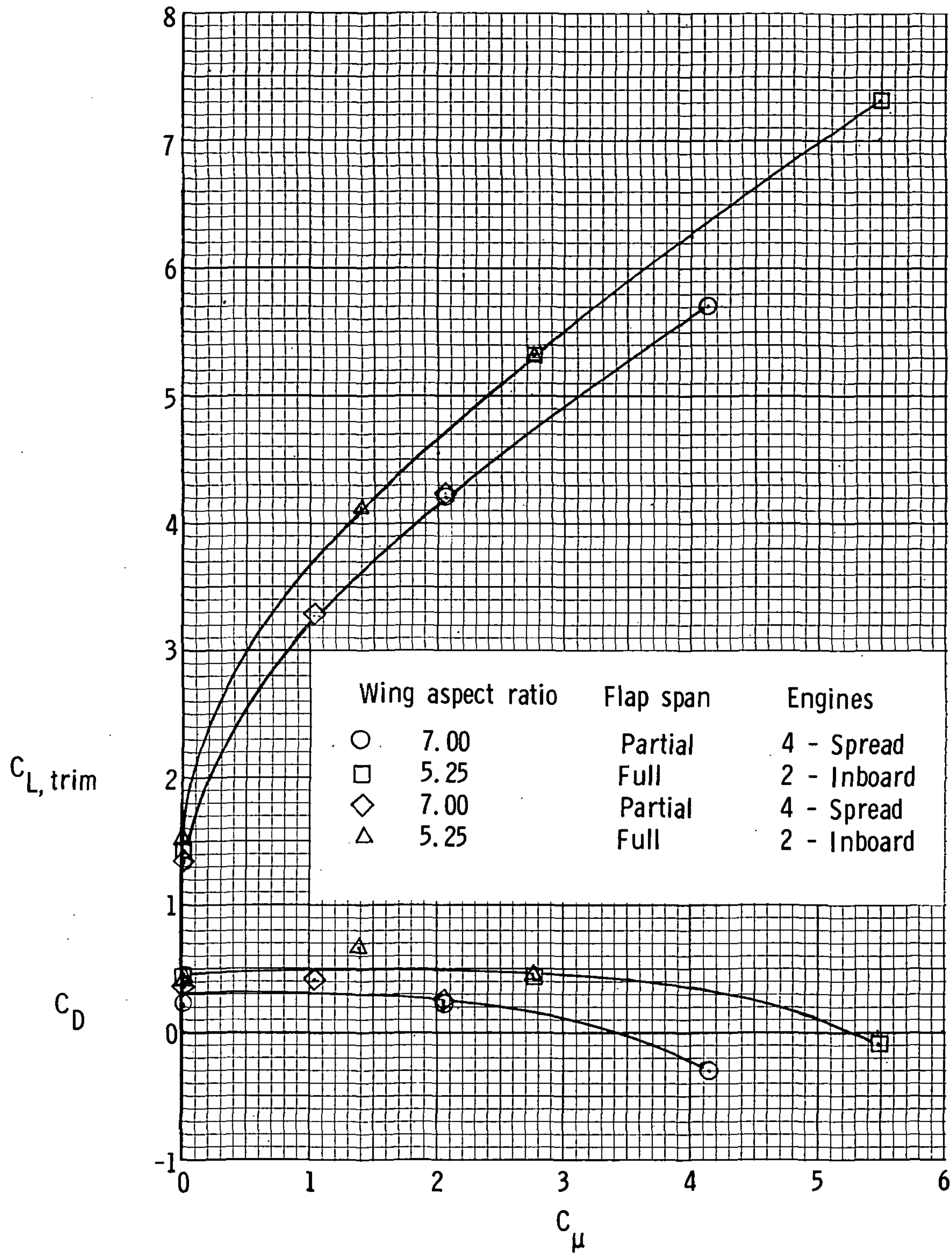
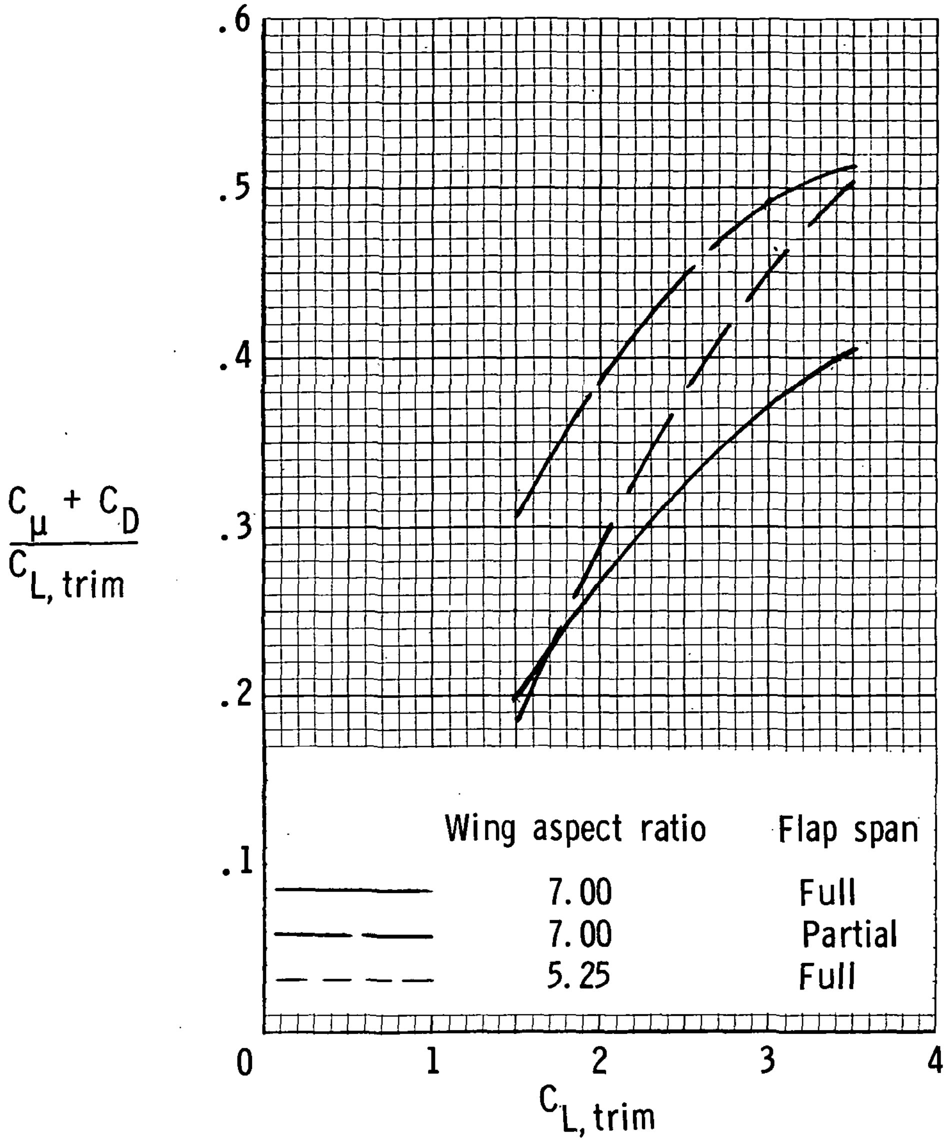
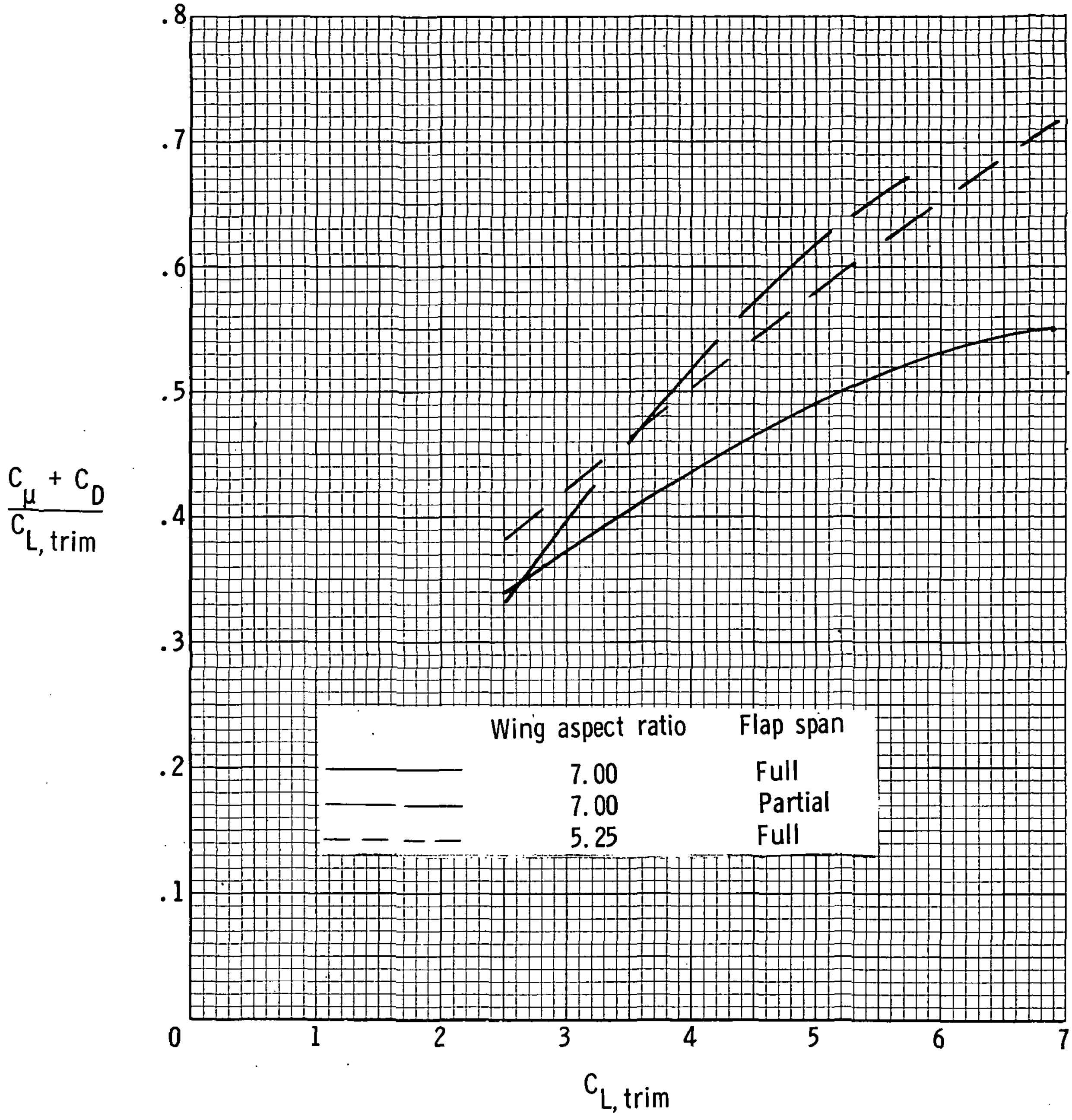



Figure 22.- Comparison of the longitudinal characteristics of the model for the spread and inboard engine configurations. $\delta_f = 55^o$; $\alpha = 1^o$.




(a) $\delta_f = 35^o$.

Figure 23.- Summary of effect of spanwise variables on longitudinal aerodynamic characteristics of model. $\alpha = 1^o$.




(b) $\delta_f = 55^o$.

Figure 23.- Concluded.

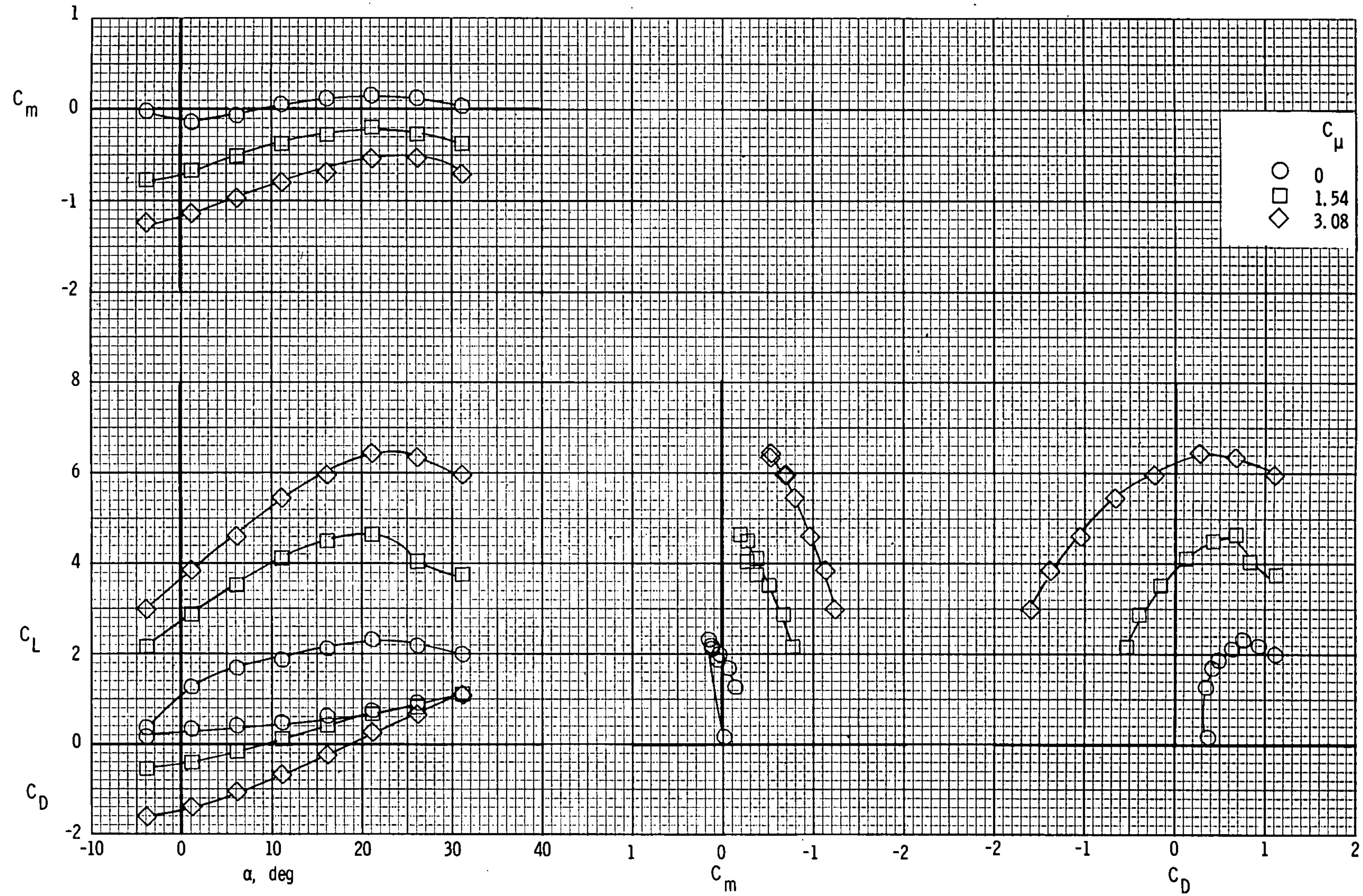



Figure 24.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a partial-span flap. Outboard engine inoperative. $\delta_f = 35^o$.

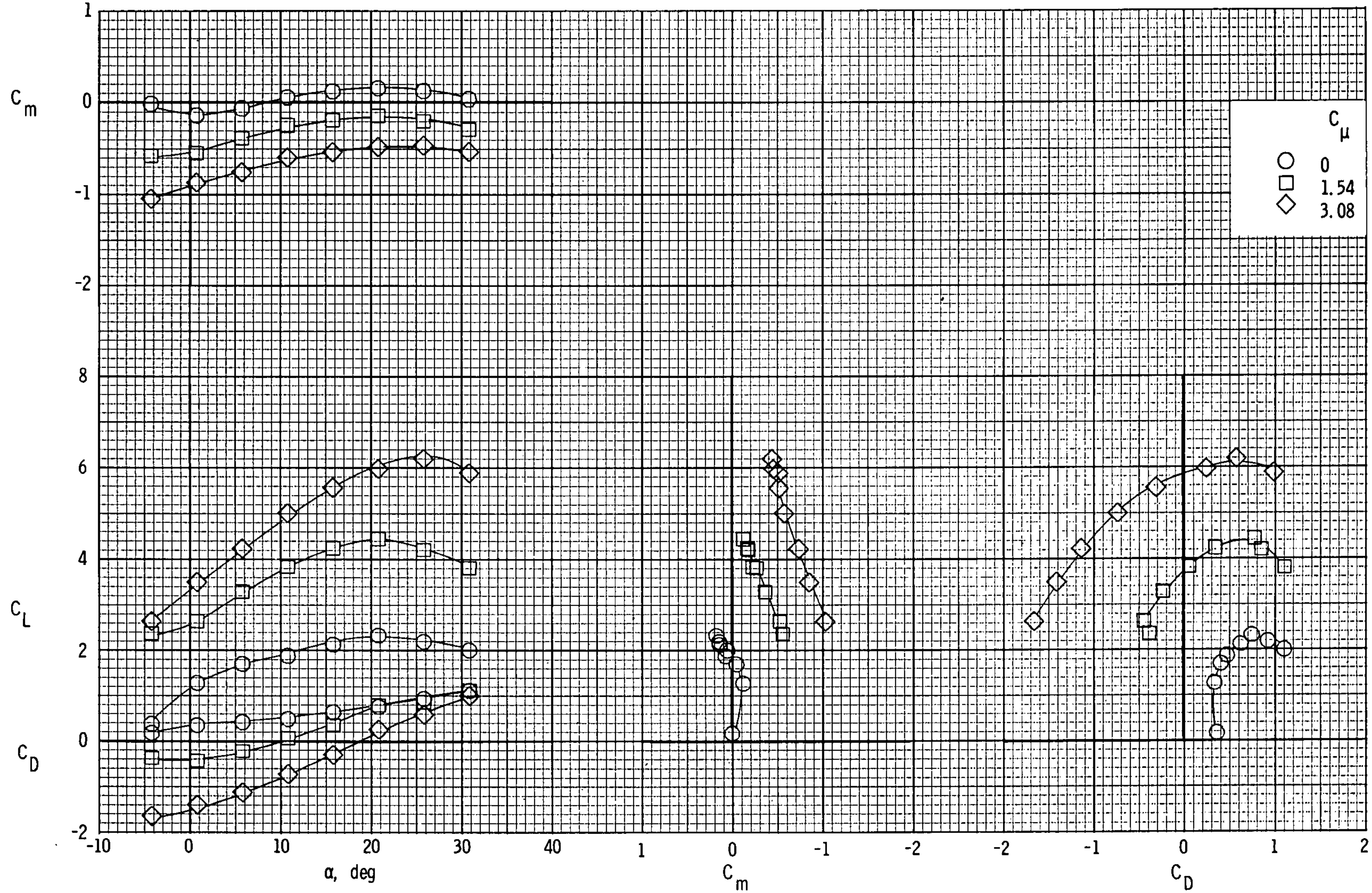



Figure 25.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a partial-span flap. Inboard engine inoperative. $\delta_f = 35^{\circ}$.

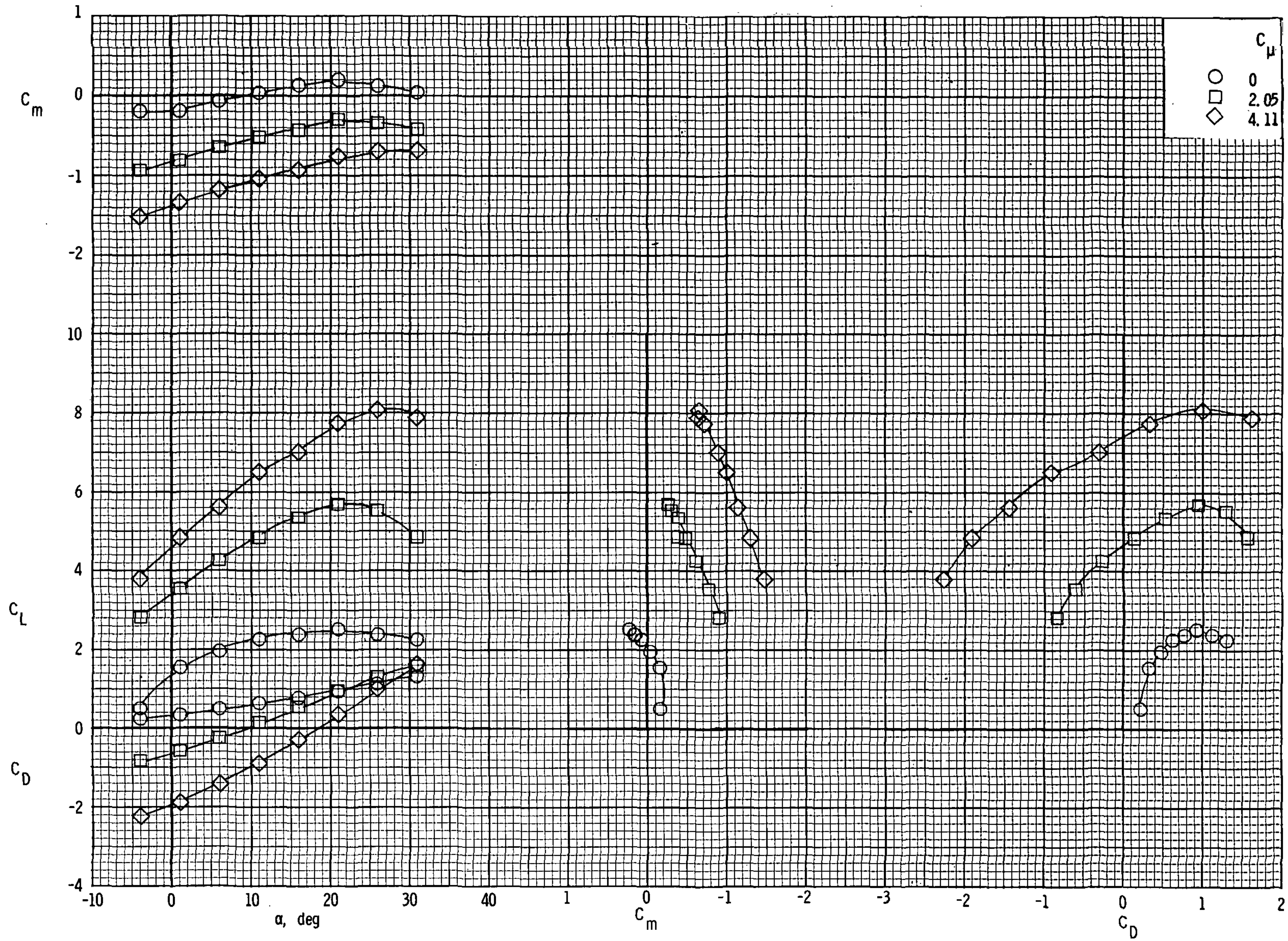



Figure 26.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 5.25 and a full-span flap. Outboard engine inoperative. $\delta_f = 35^{\circ}$.

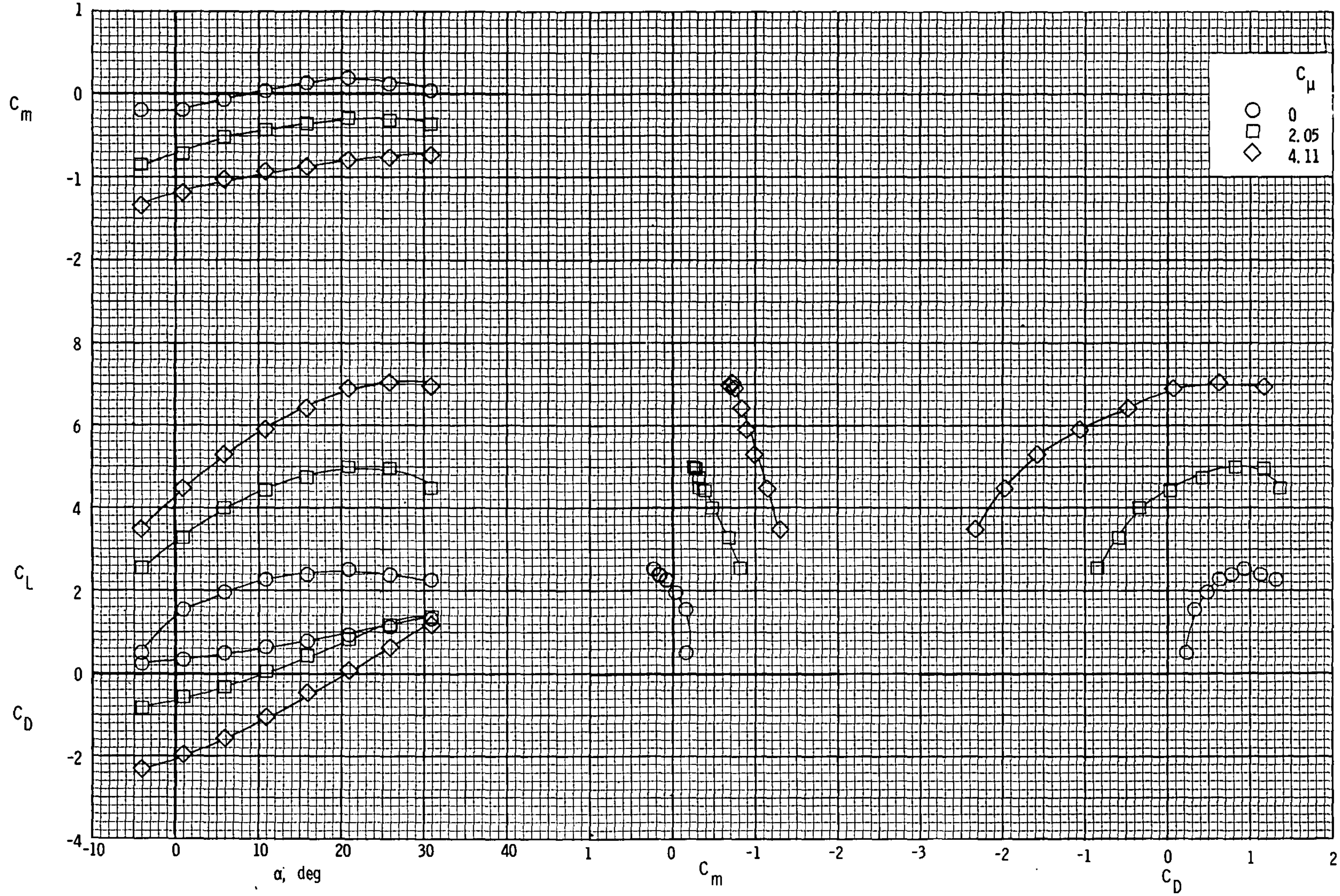



Figure 27.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 5.25 and a full-span flap. Inboard engine inoperative. $\delta_f = 35^{\circ}$.

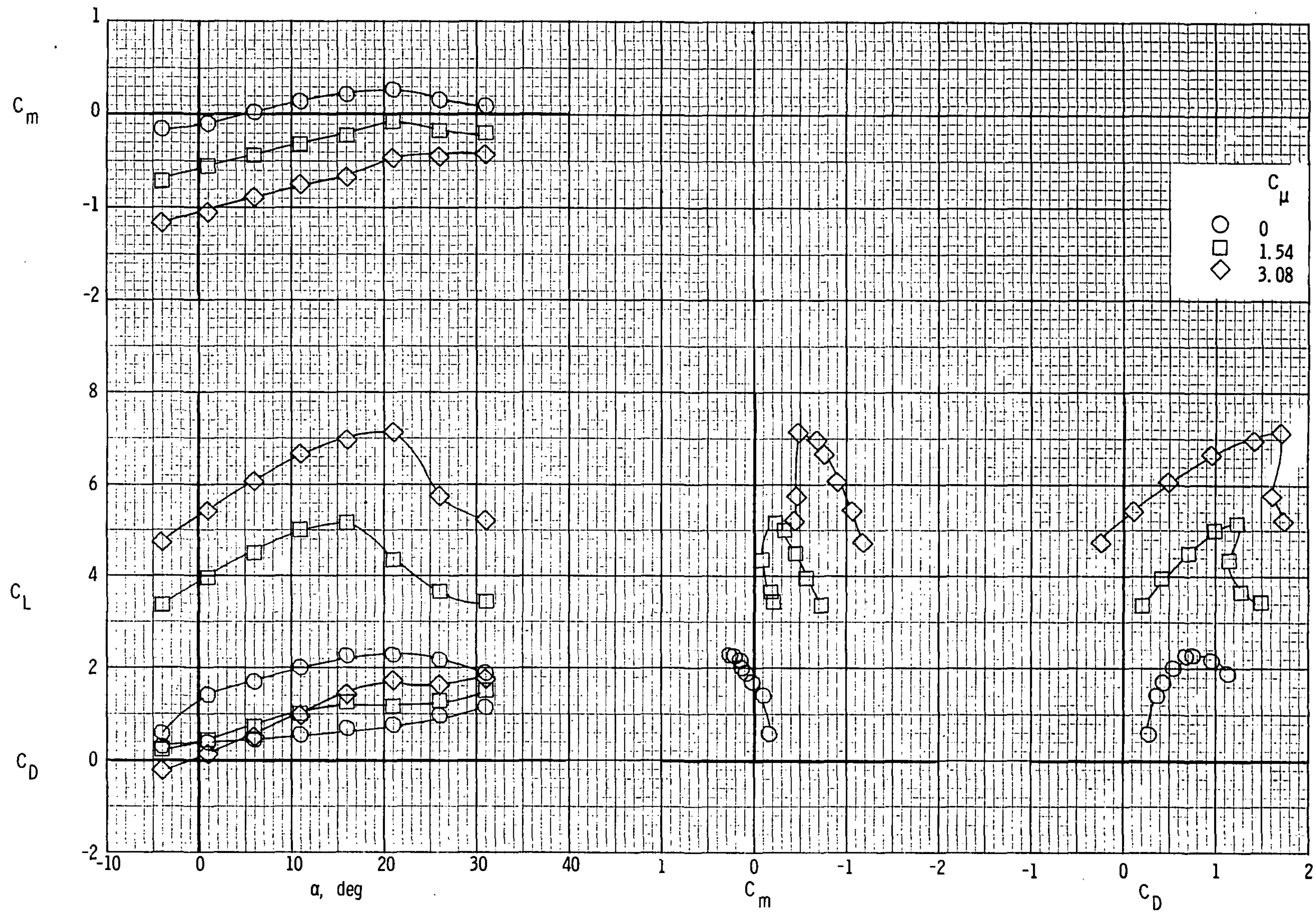



Figure 28.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a partial-span flap. Outboard engine inoperative. $\delta_f = 55^{\circ}$.

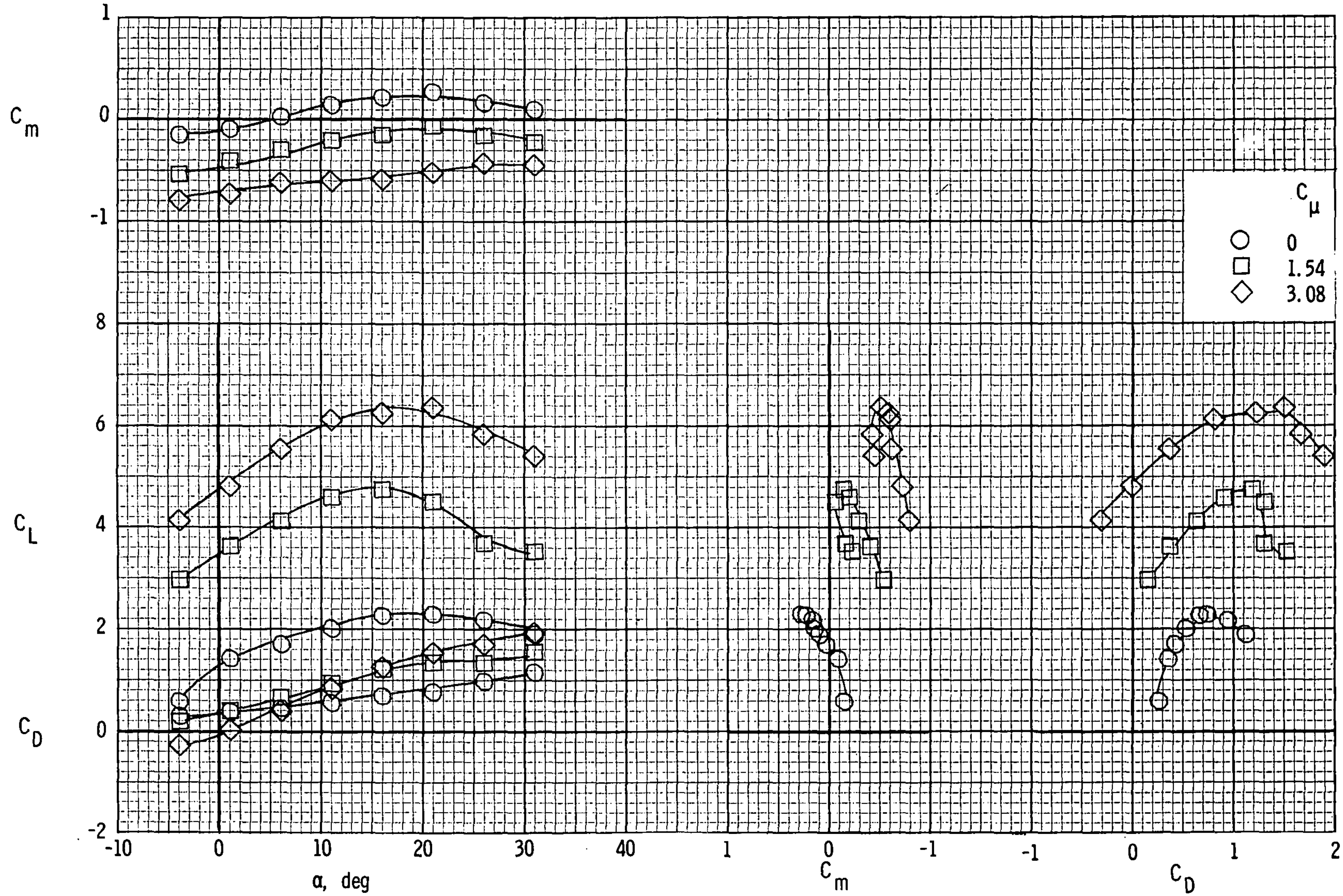
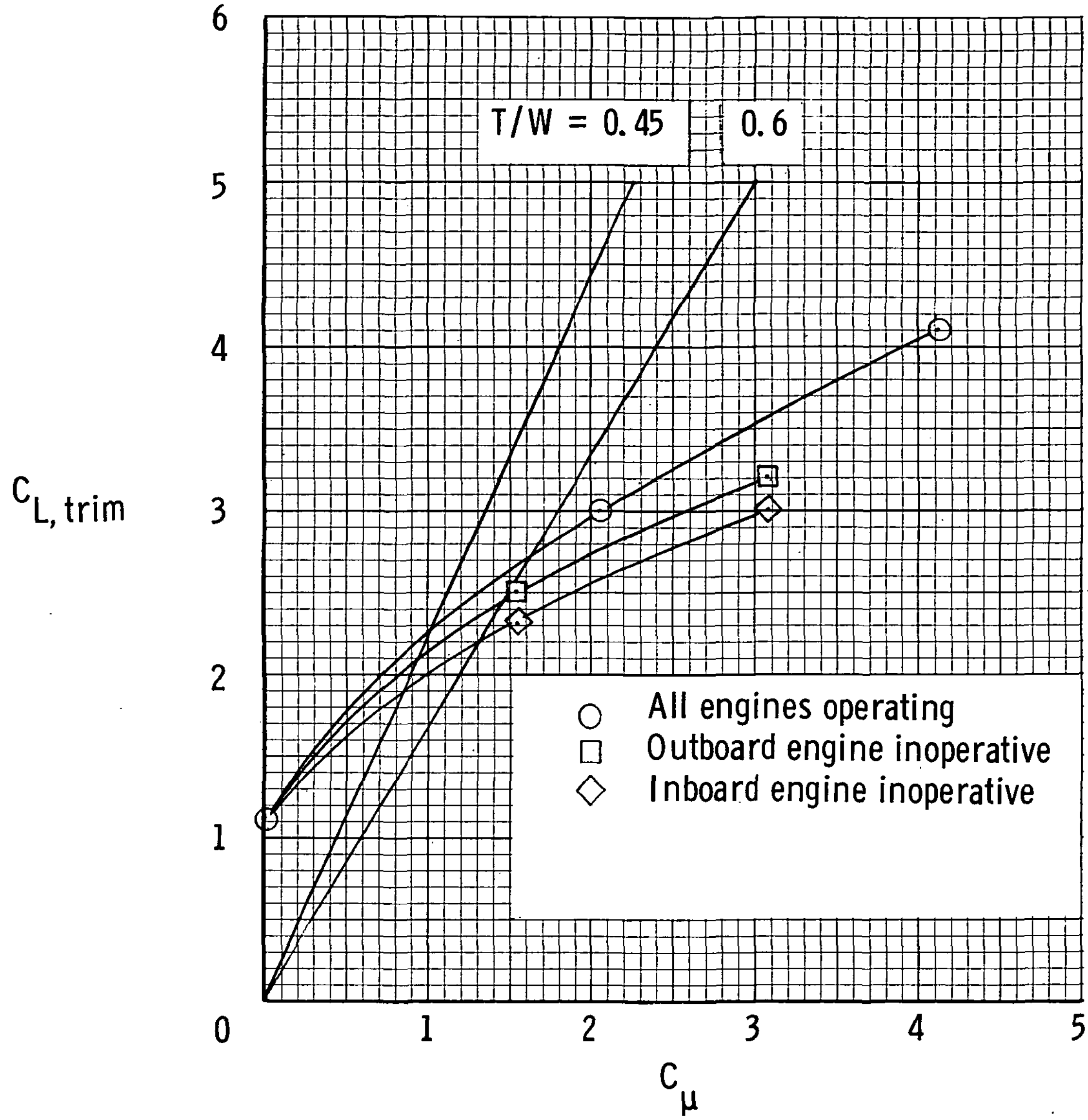
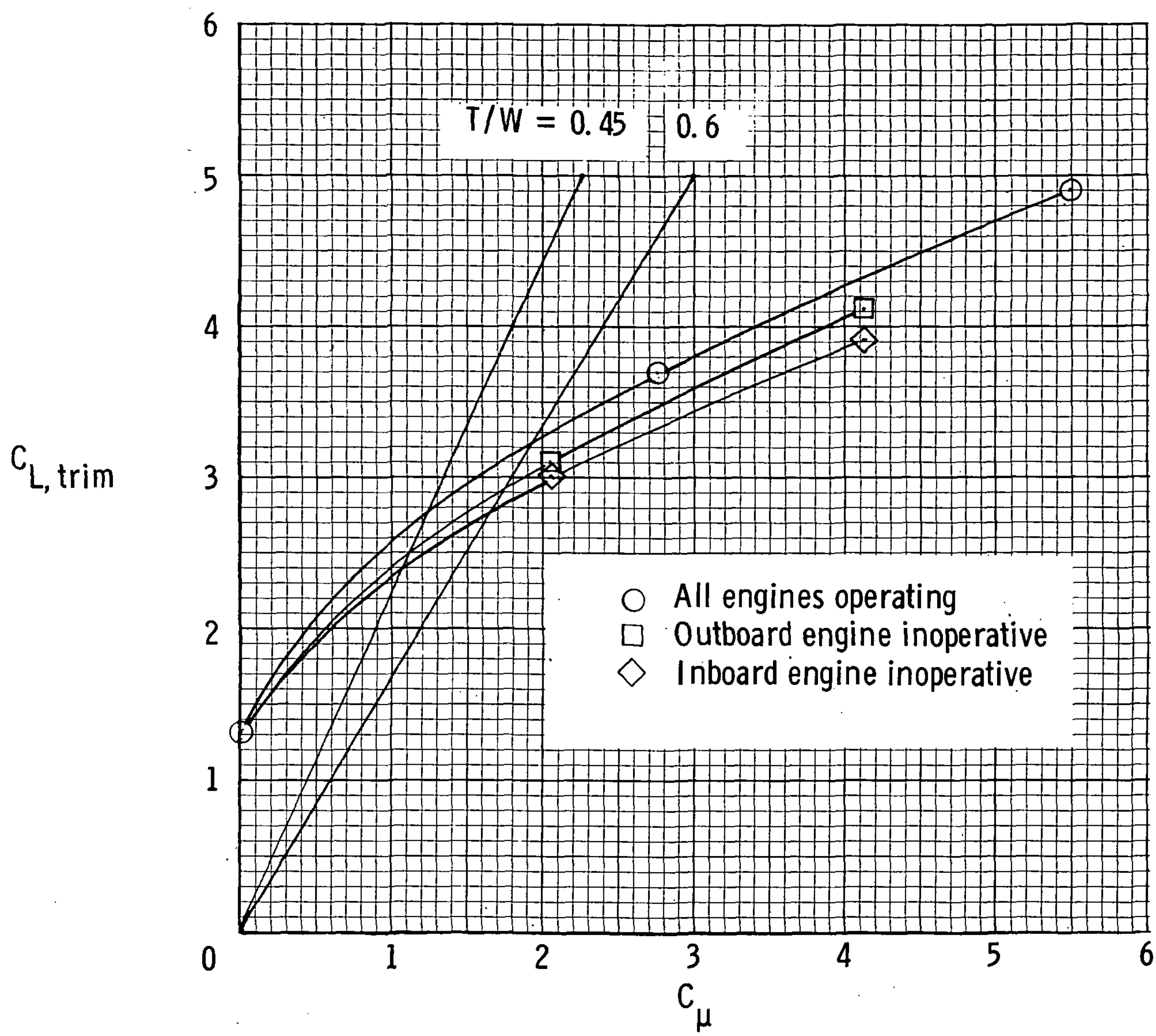



Figure 29.- Longitudinal aerodynamic characteristics of model with a wing having an aspect ratio of 7 and a partial-span flap. Inboard engine inoperative. $\delta_f = 55^o$.



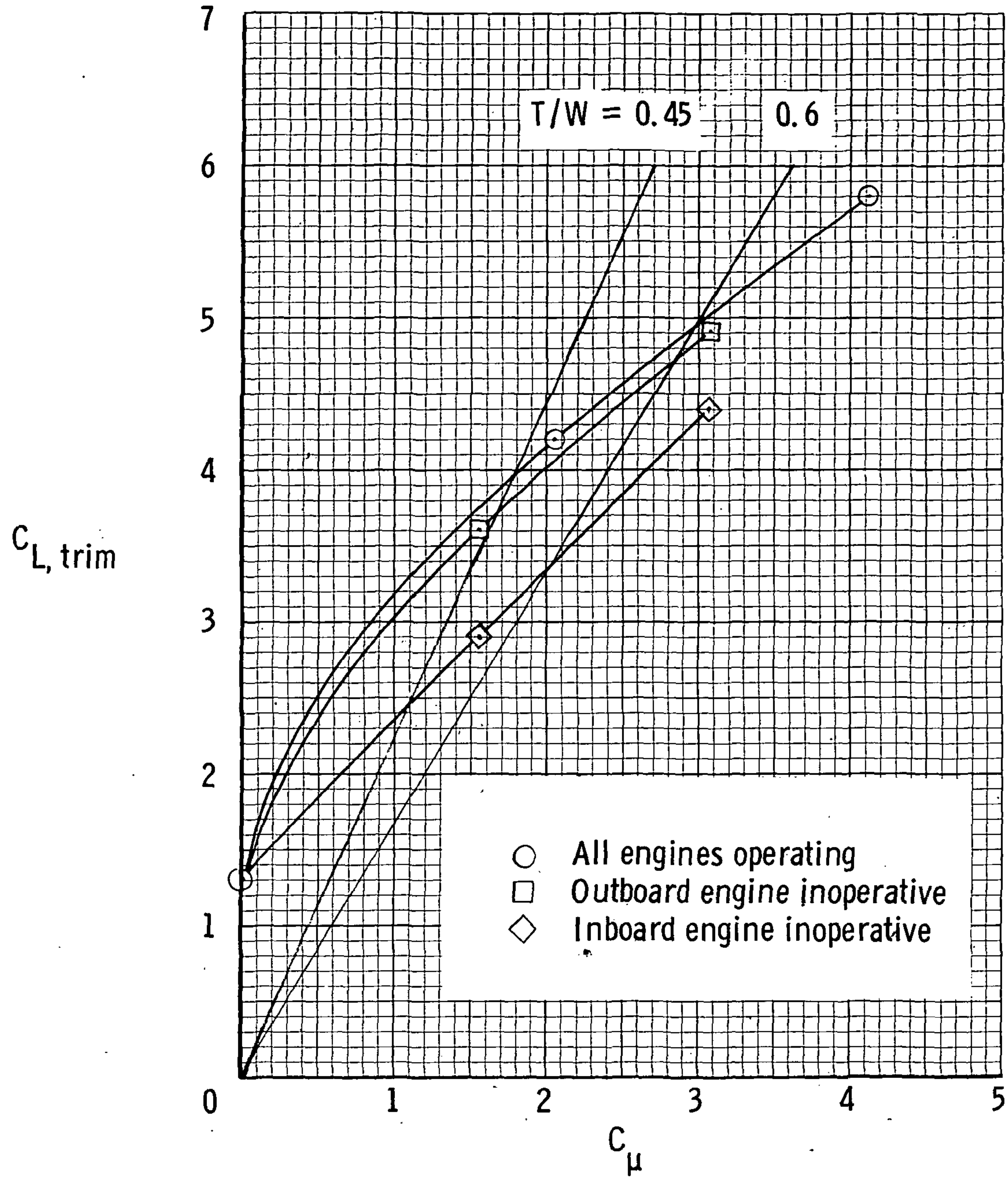

(a) Partial-span flap; A = 7; $\delta_f = 35^o$.

Figure 30.- Effect of engine-out condition on trim lift. $\alpha = 1^o$.



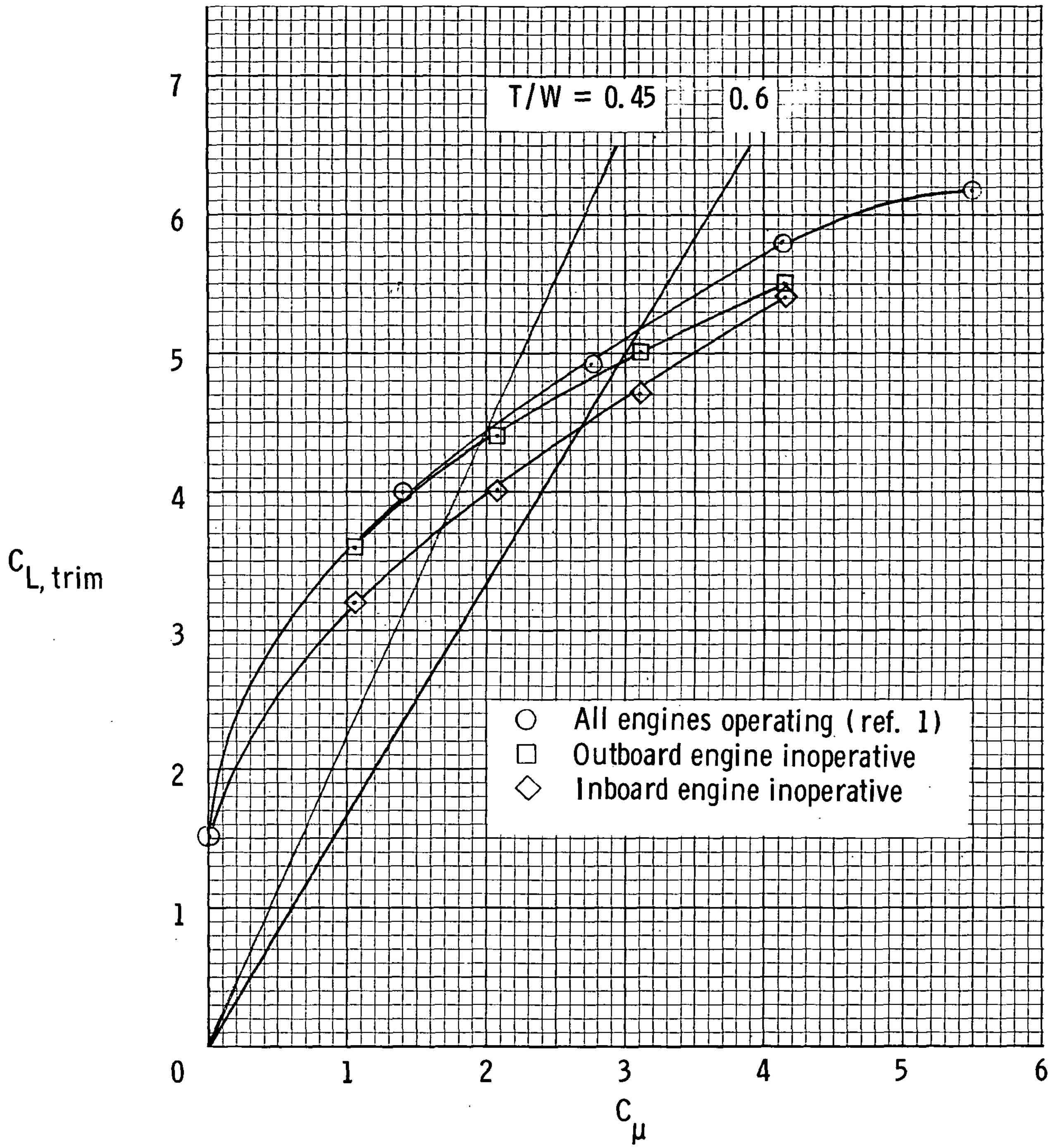

(b) Full-span flap; A = 5.25; $\delta_f = 35^o$.

Figure 30.- Continued.



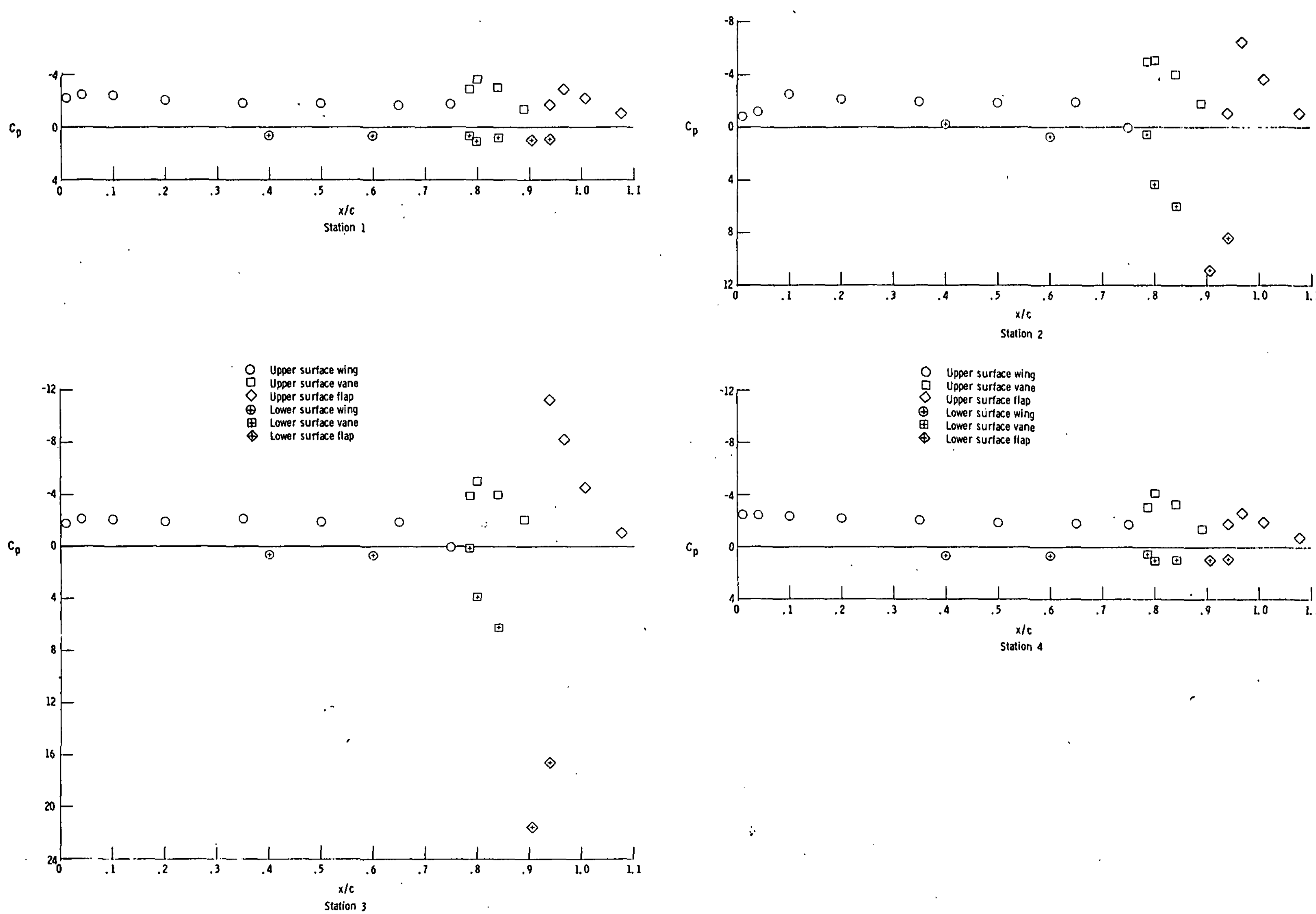

(c) Partial-span flap; A = 7; $\delta_f = 55^\circ$.

Figure 30.- Continued.



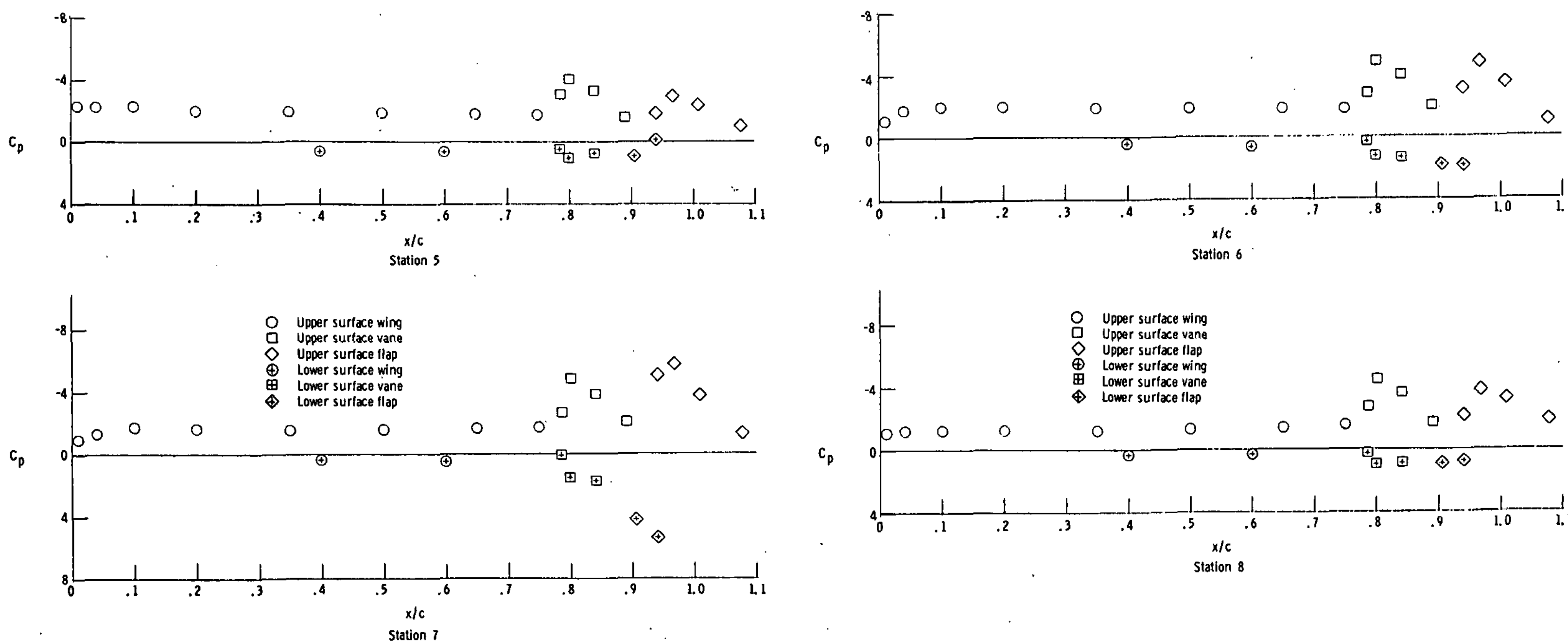

(d) Full-span flap; A = 7; $\delta_f = 55^{\circ}$.

Figure 30.- Concluded.



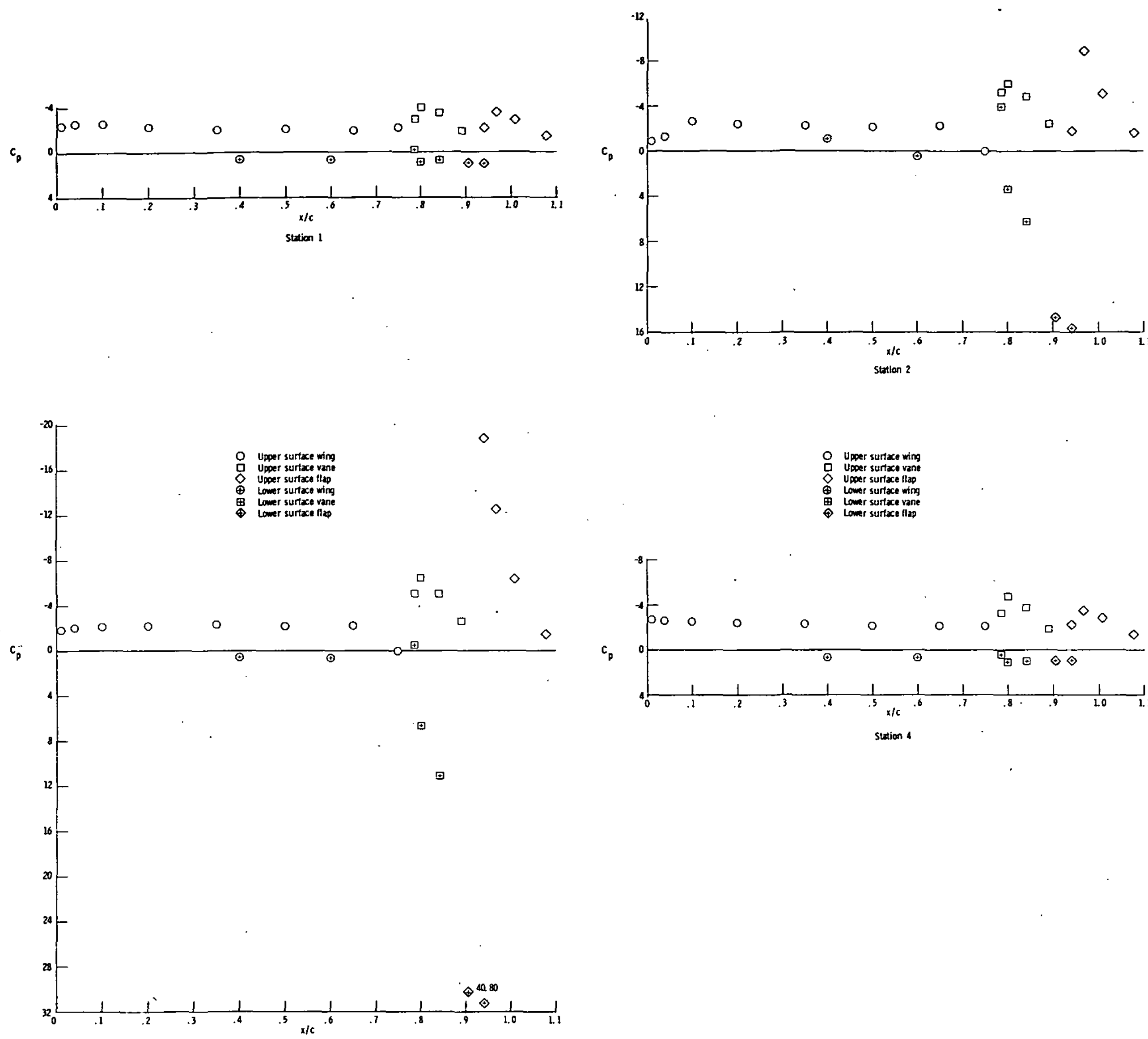

(a) Stations 1 to 4.

Figure 31.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 35^o$; $\alpha = 1^o$; $C_\mu = 2.05$; A = 7.



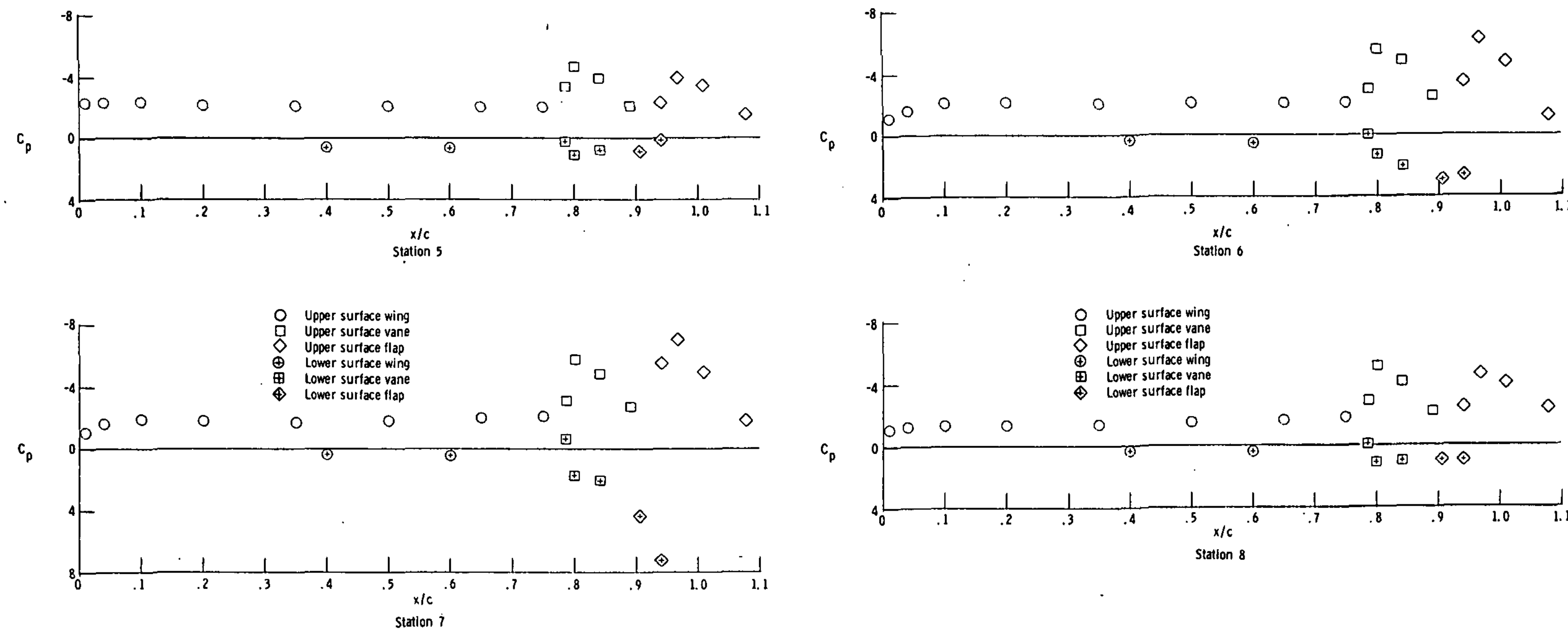

(b) Stations 5 to 8.

Figure 31.- Concluded.



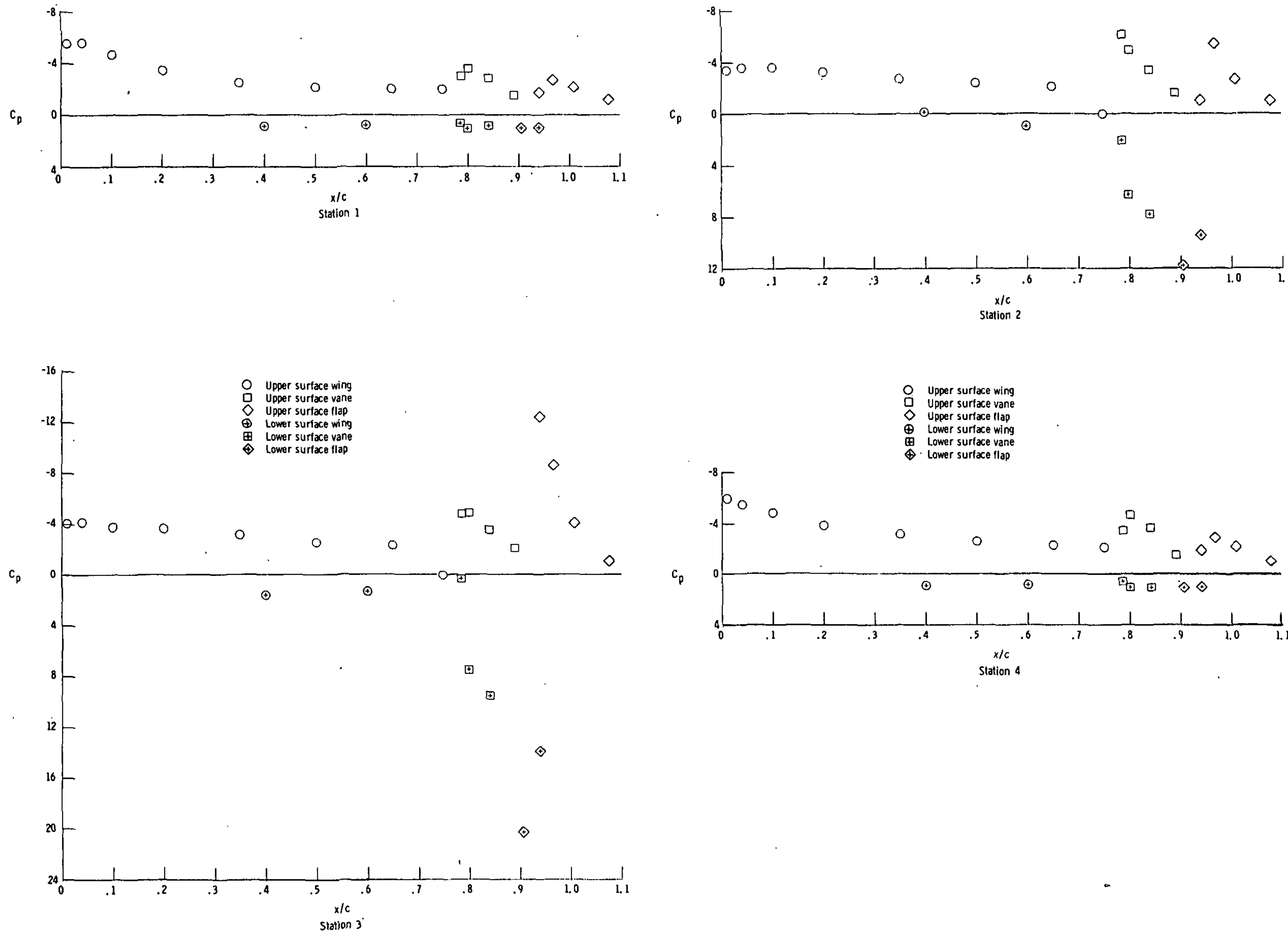

(a) Stations 1 to 4.

Figure 32.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 35^o$; $\alpha = 1^o$; $C_\mu = 4.11$; A = 7.



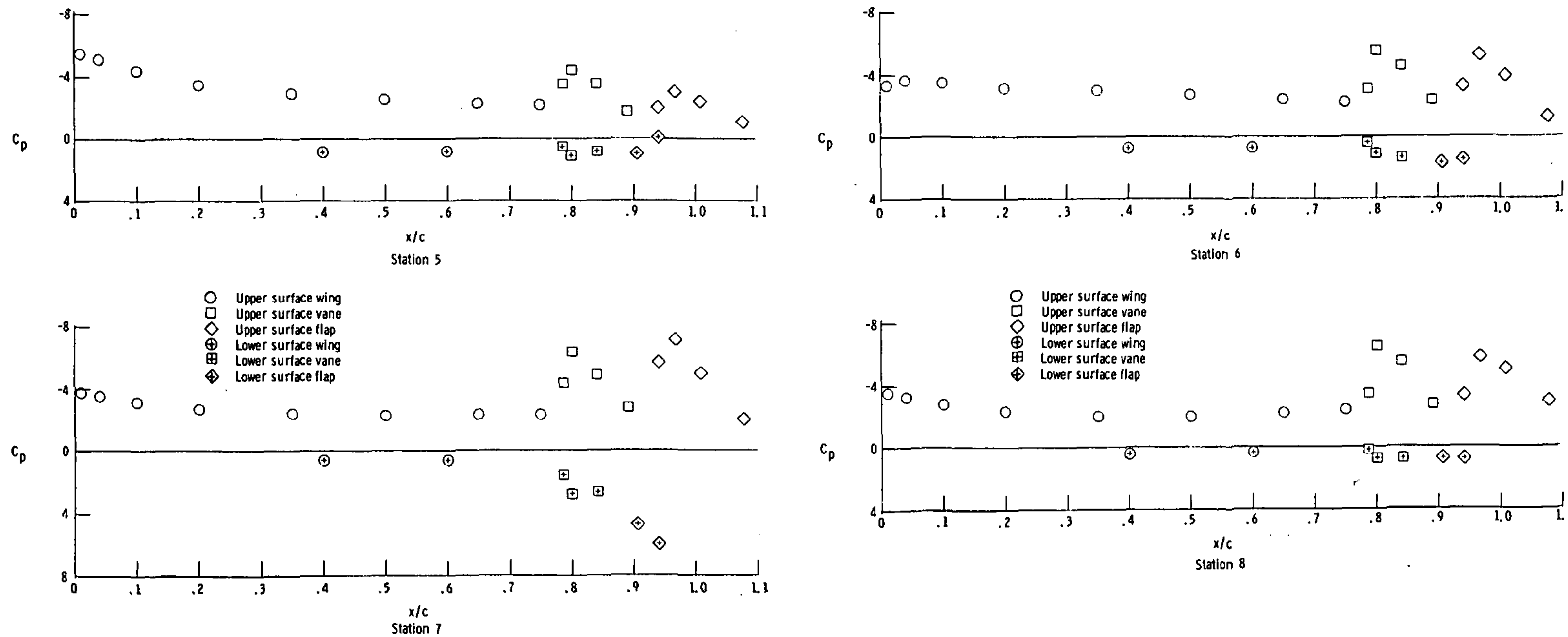

(b) Stations 5 to 8.

Figure 32.- Concluded.



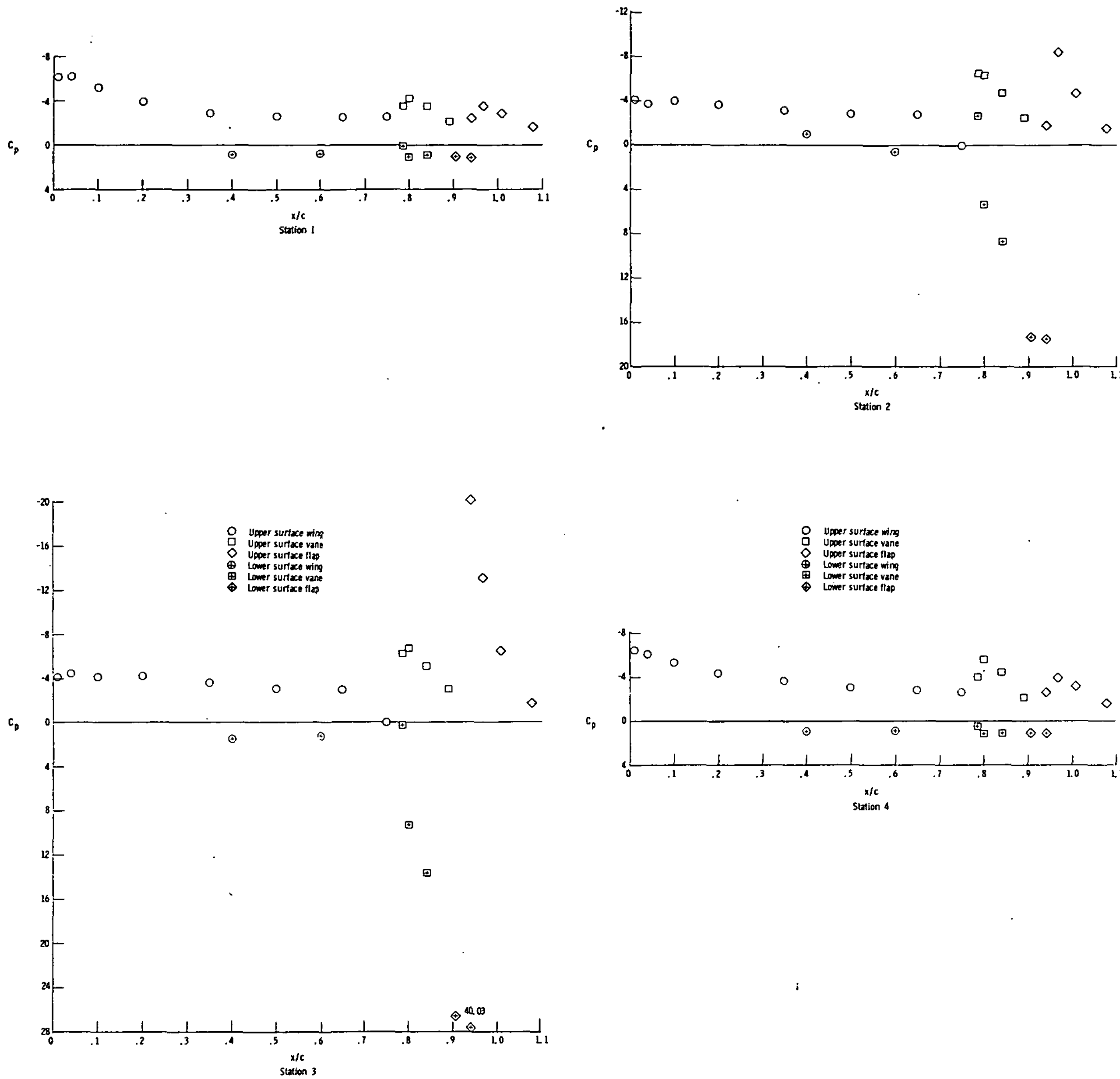

(a) Stations 1 to 4.

Figure 33.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 35^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 2.05$; $A = 7$.



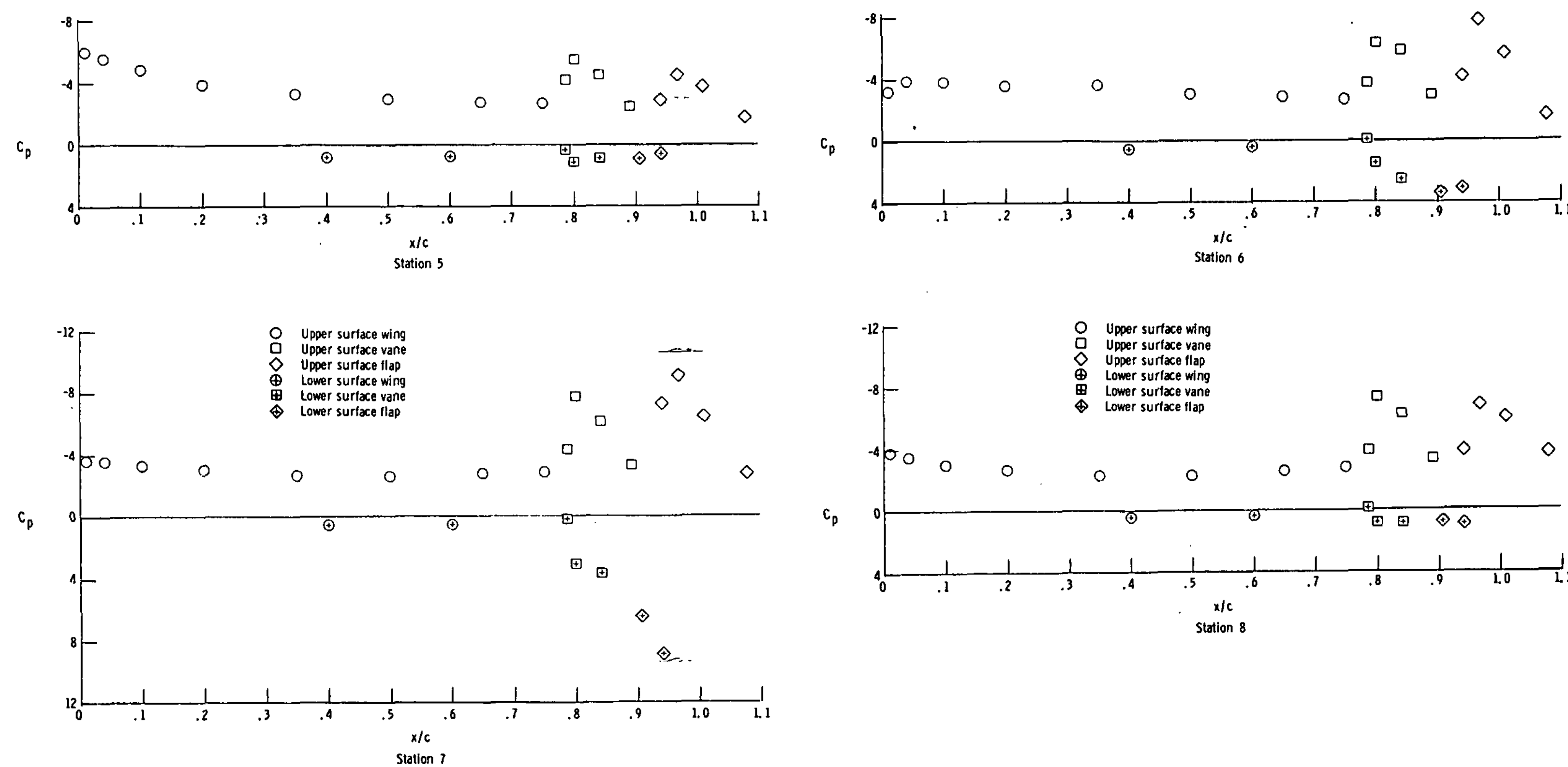

(b) Stations 5 to 8.

Figure 33.- Concluded.




(a) Stations 1 to 4.

Figure 34.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 35^o$; $\alpha = 16^o$; $C_\mu = 4.11$; $A = 7$.




(b) Stations 5 to 8.

Figure 34.- Concluded.

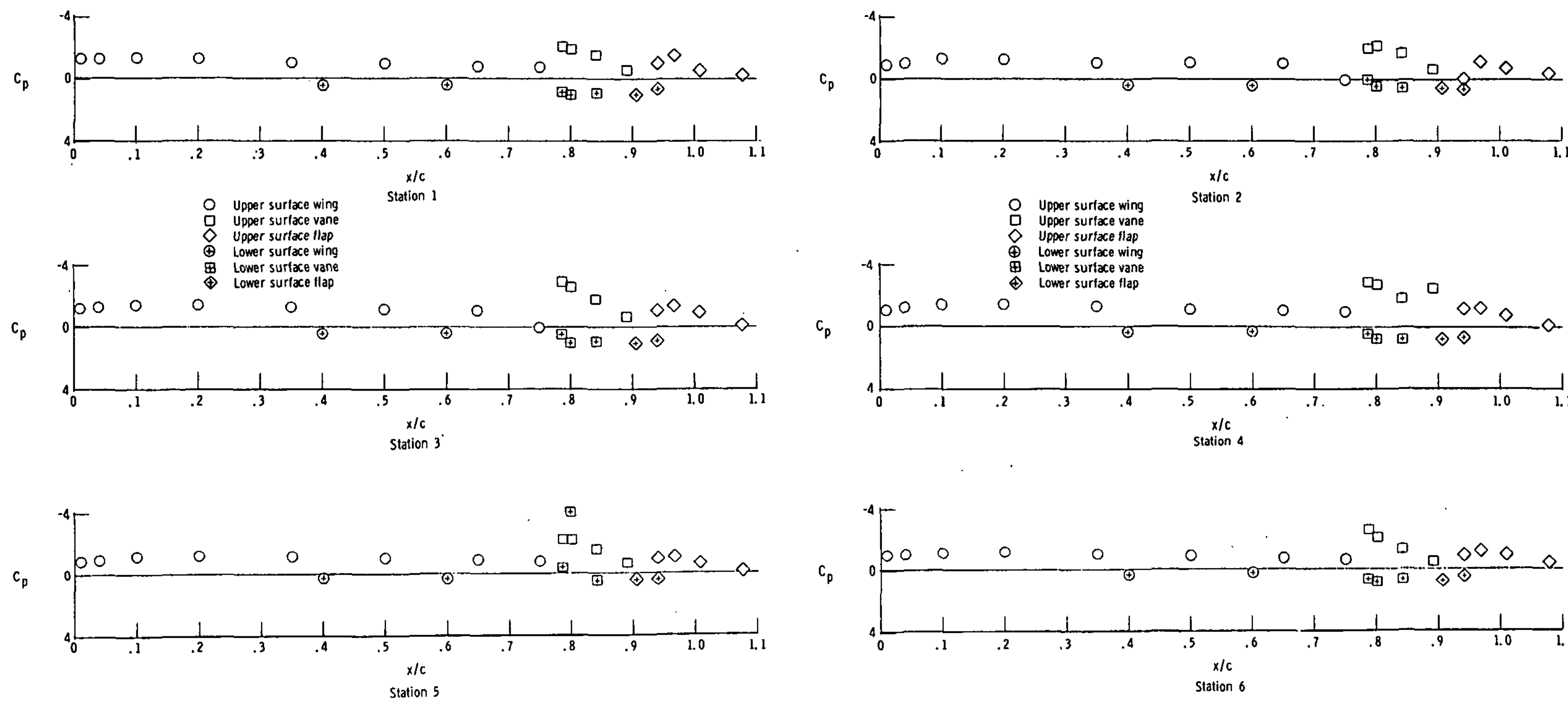



Figure 35.- Pressure distributions on wing and flap of model. Partial-span flap. $\delta_f = 35^o$; $\alpha = 1^o$; $C_\mu = 0$; A = 7.

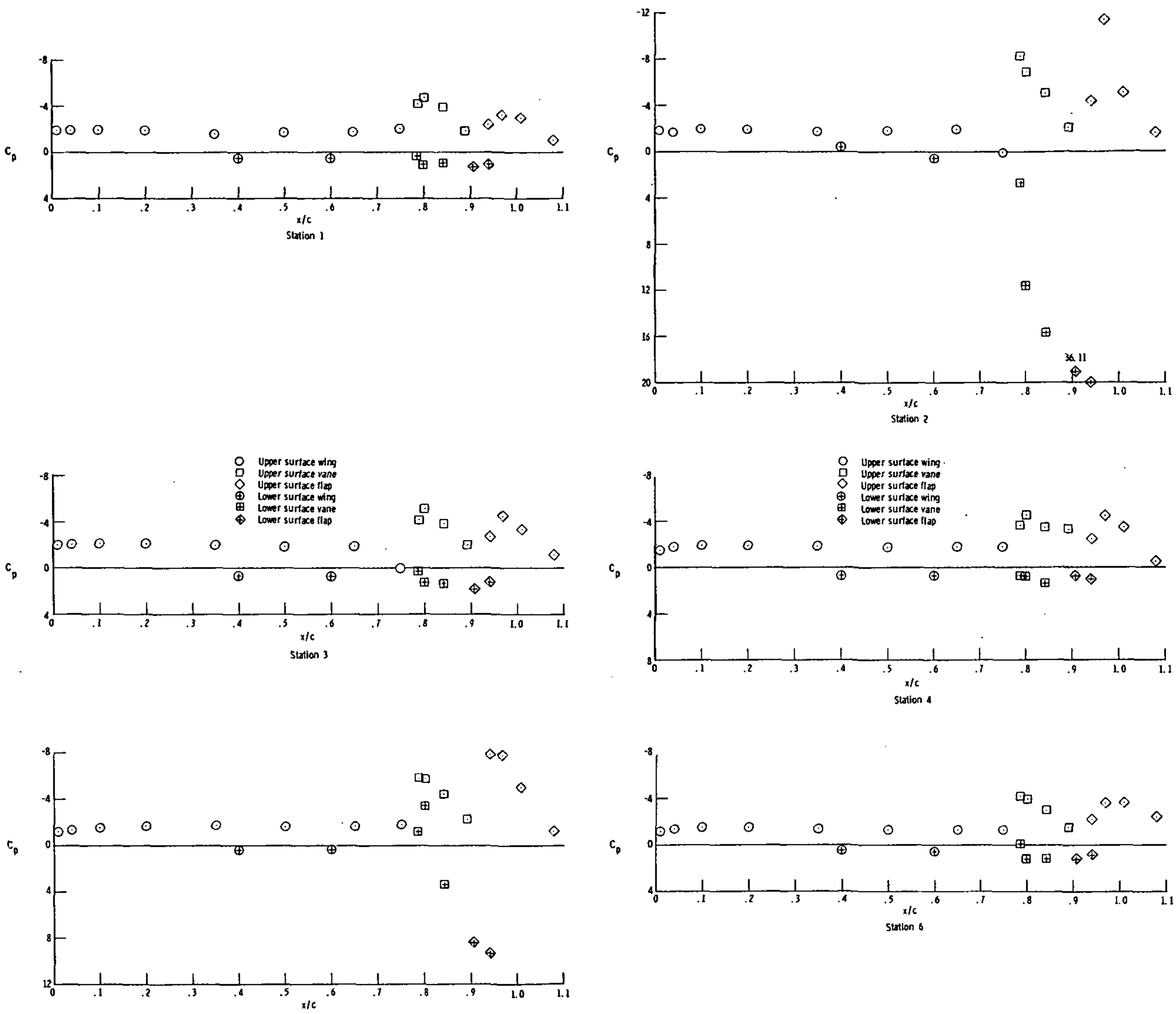



Figure 36.- Pressure distributions on wing and flap of model. All engines operating. Partial-span flap. $\delta_f = 35^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 2.05$; $A = 7$.

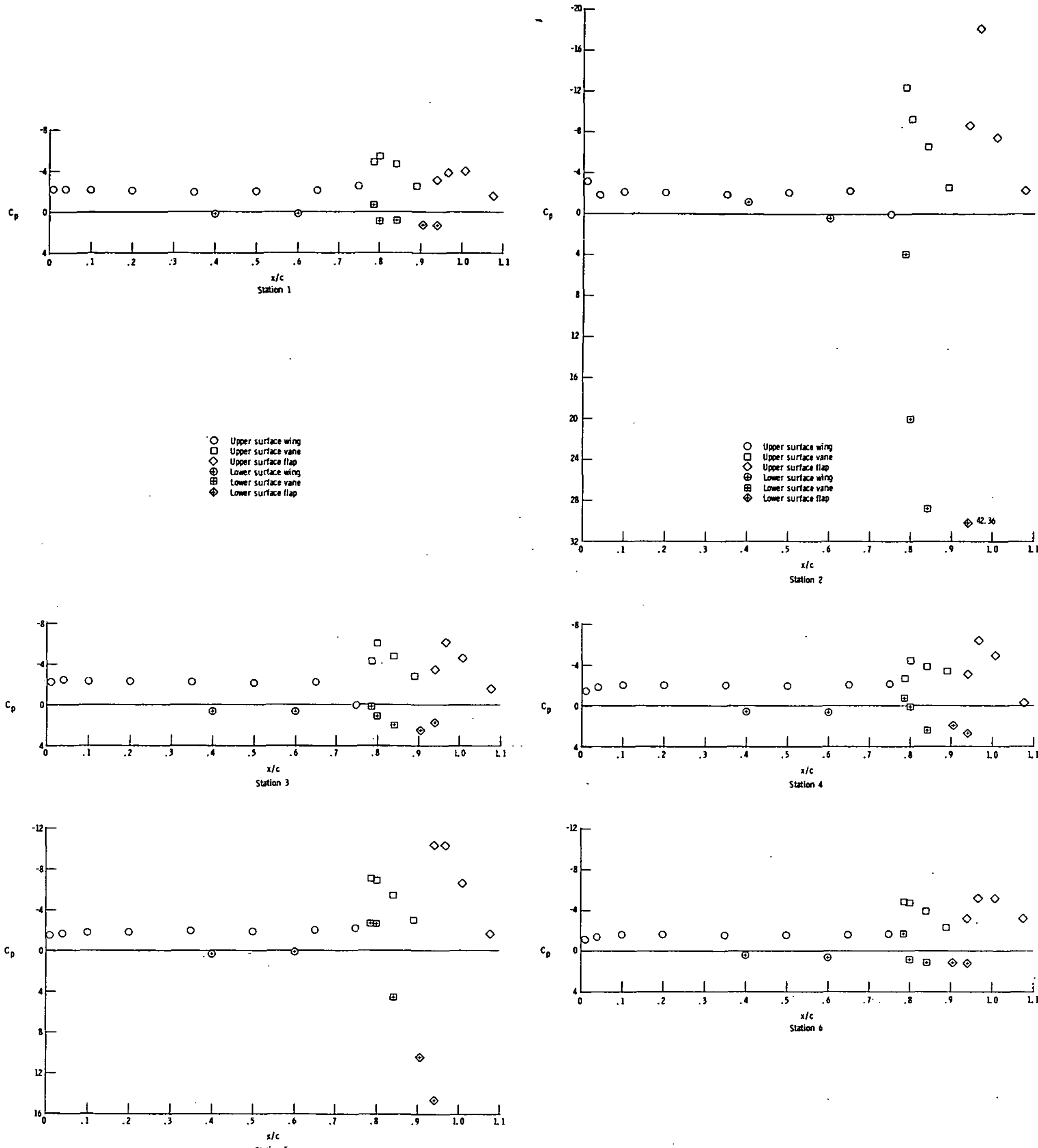



Figure 37.- Pressure distributions on wing and flap of model. All engines operating. Partial-span flap. $\delta_f = 35^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 4.11$; $A = 7$.

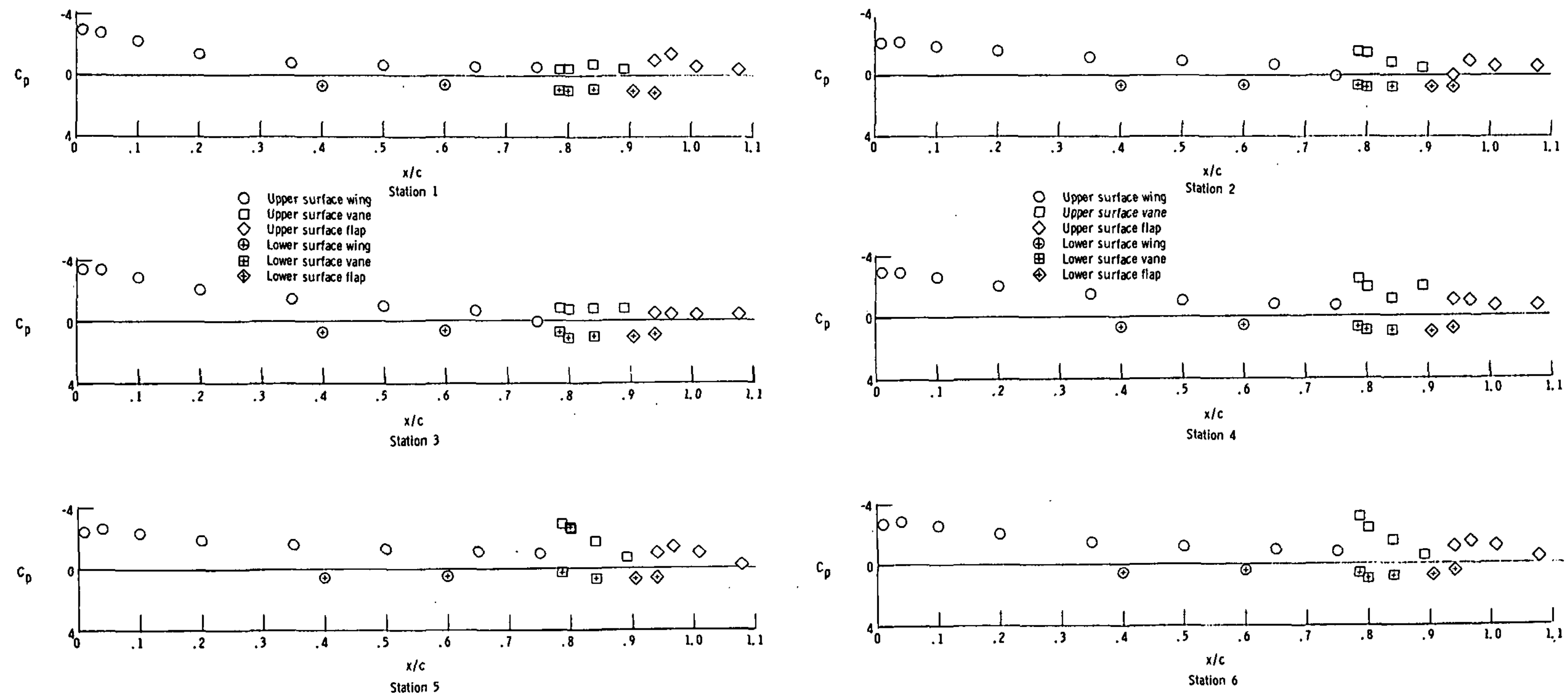



Figure 38.- Pressure distributions on wing and flap of model. Partial-span flap. $\delta_f = 35^o$; $\alpha = 16^o$; $C_\mu = 0$; $A = 7$.

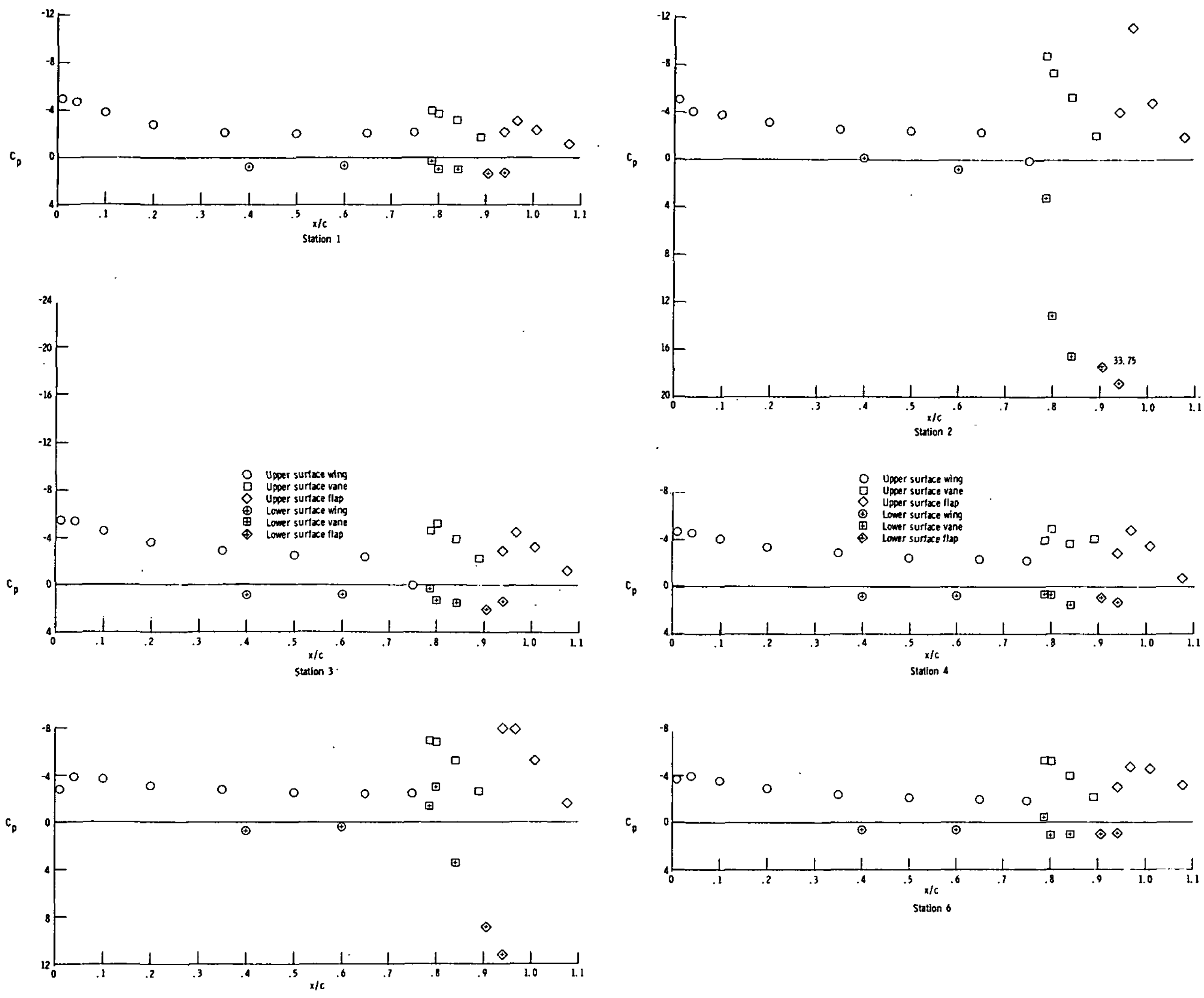



Figure 39.- Pressure distributions on wing and flap of model. All engines operating. Partial-span flap. $\delta_f = 35^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 2.05$; $A = 7$.

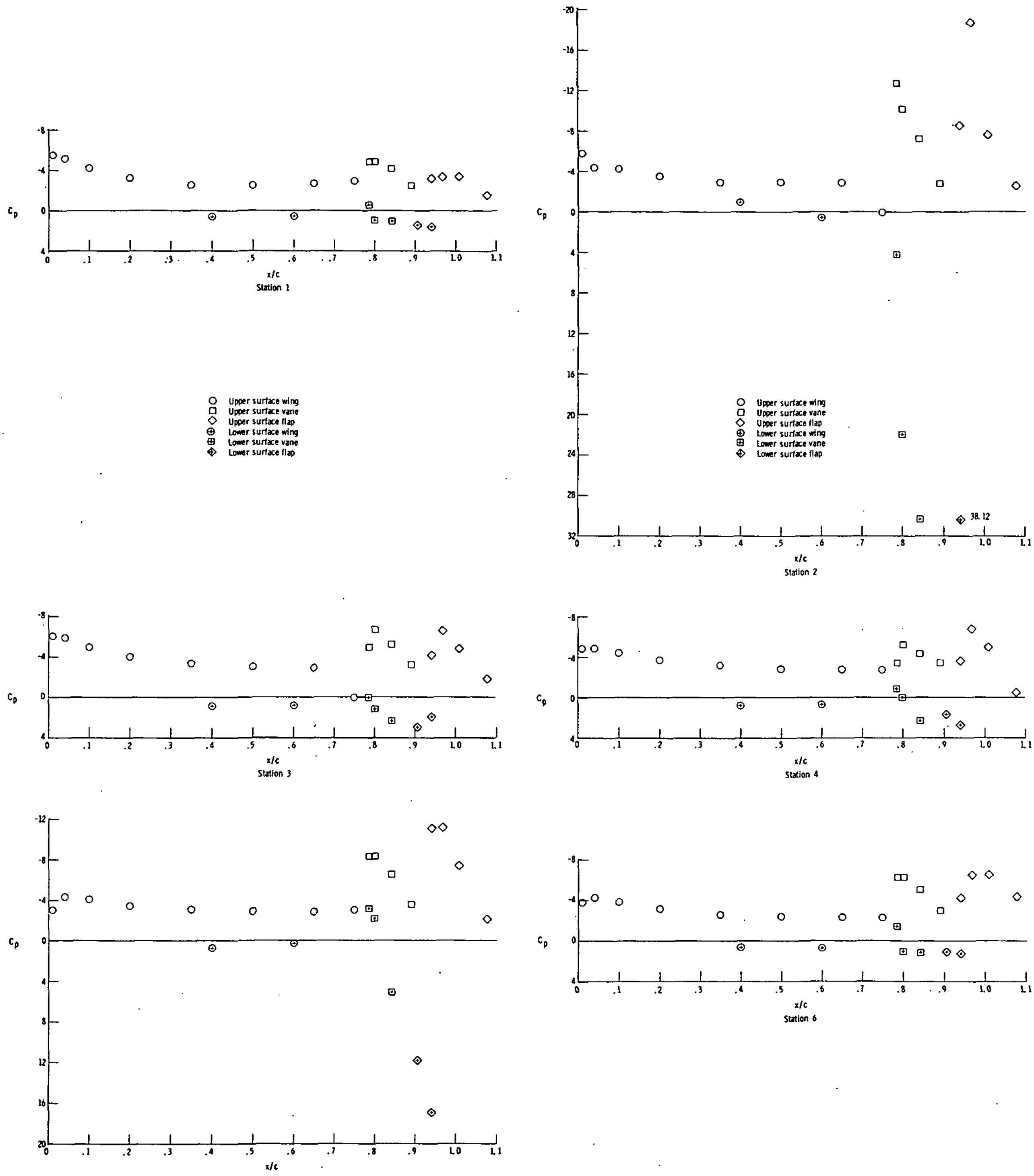



Figure 40.- Pressure distributions on wing and flap of model. All engines operating. Partial-span flap. $\delta_f = 35^o$; $\alpha = 16^o$; $C_\mu = 4.11$; A = 7.

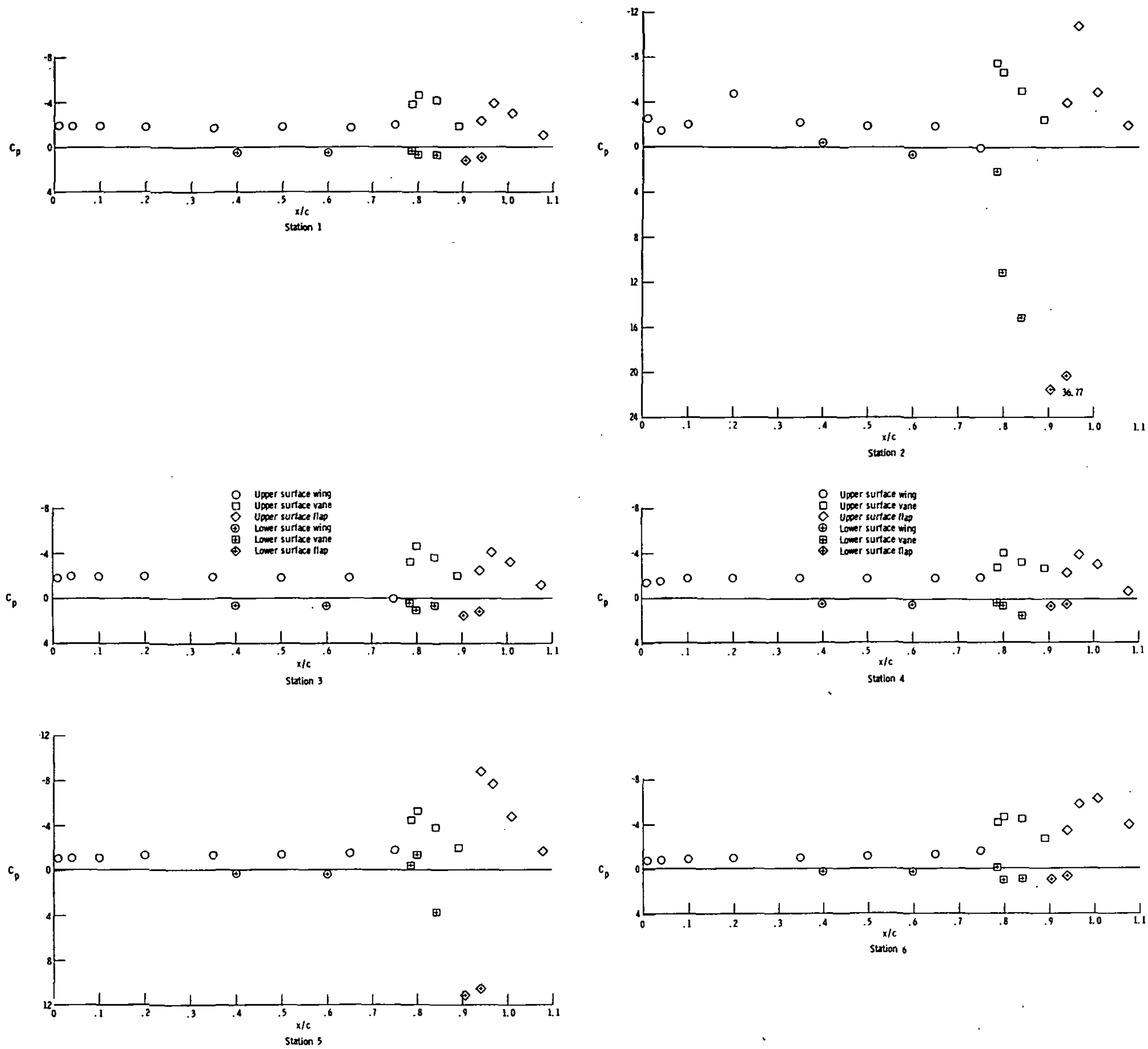



Figure 41.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 35^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 2.75$; A = 5.25.

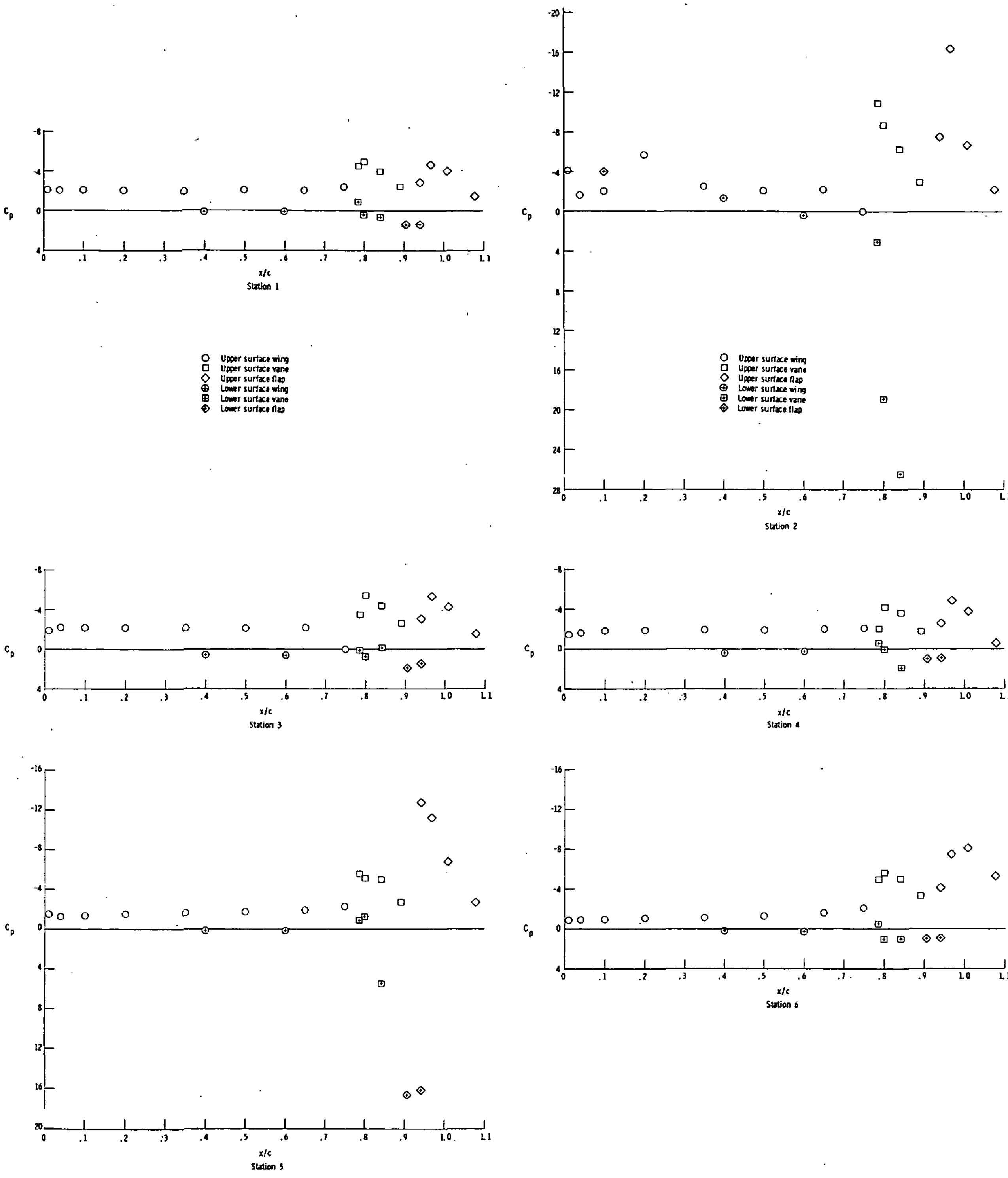



Figure 42.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 35^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 5.49$; $A = 5.25$.

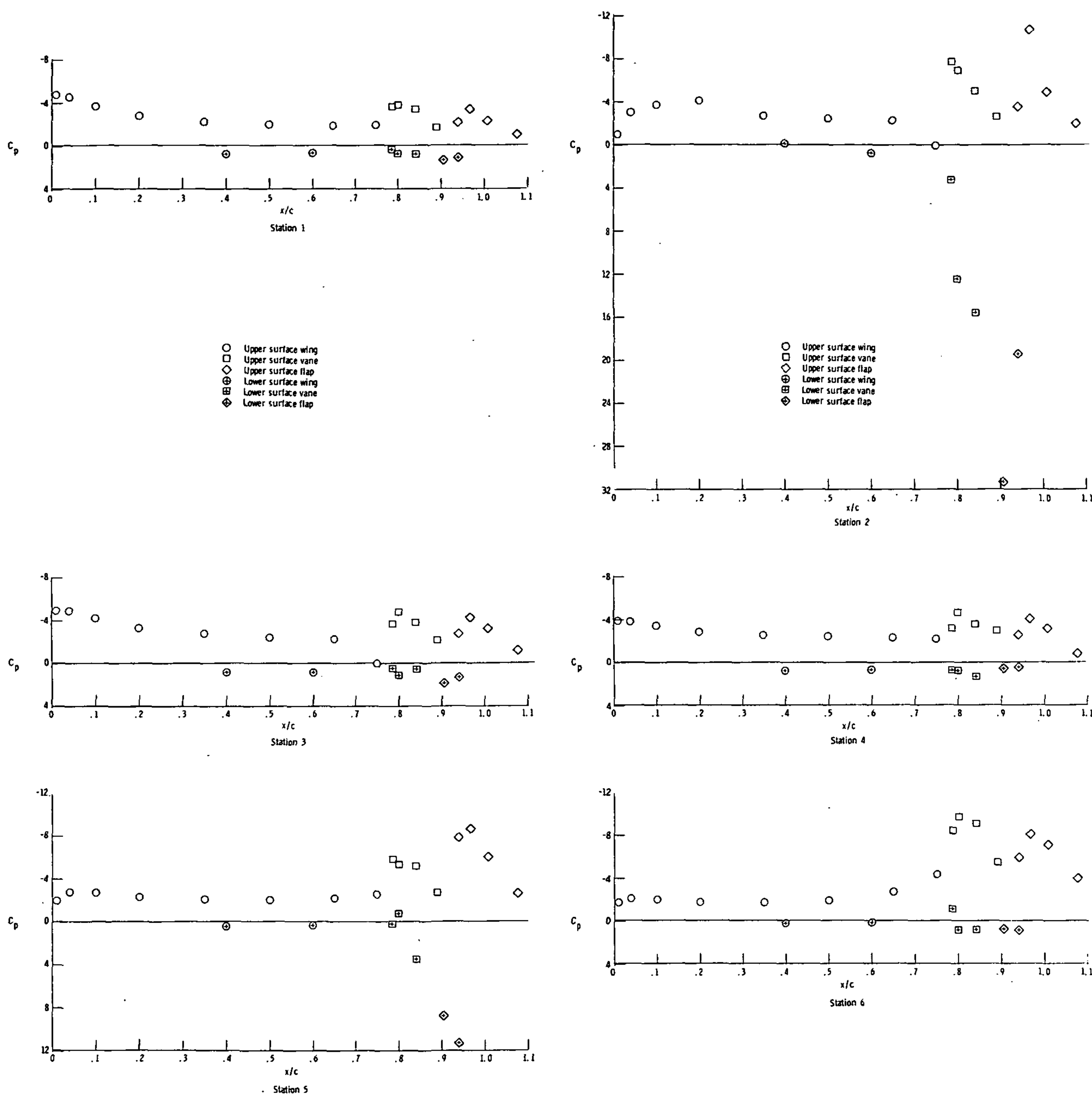



Figure 43.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 35^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 2.75$; $A = 5.25$.

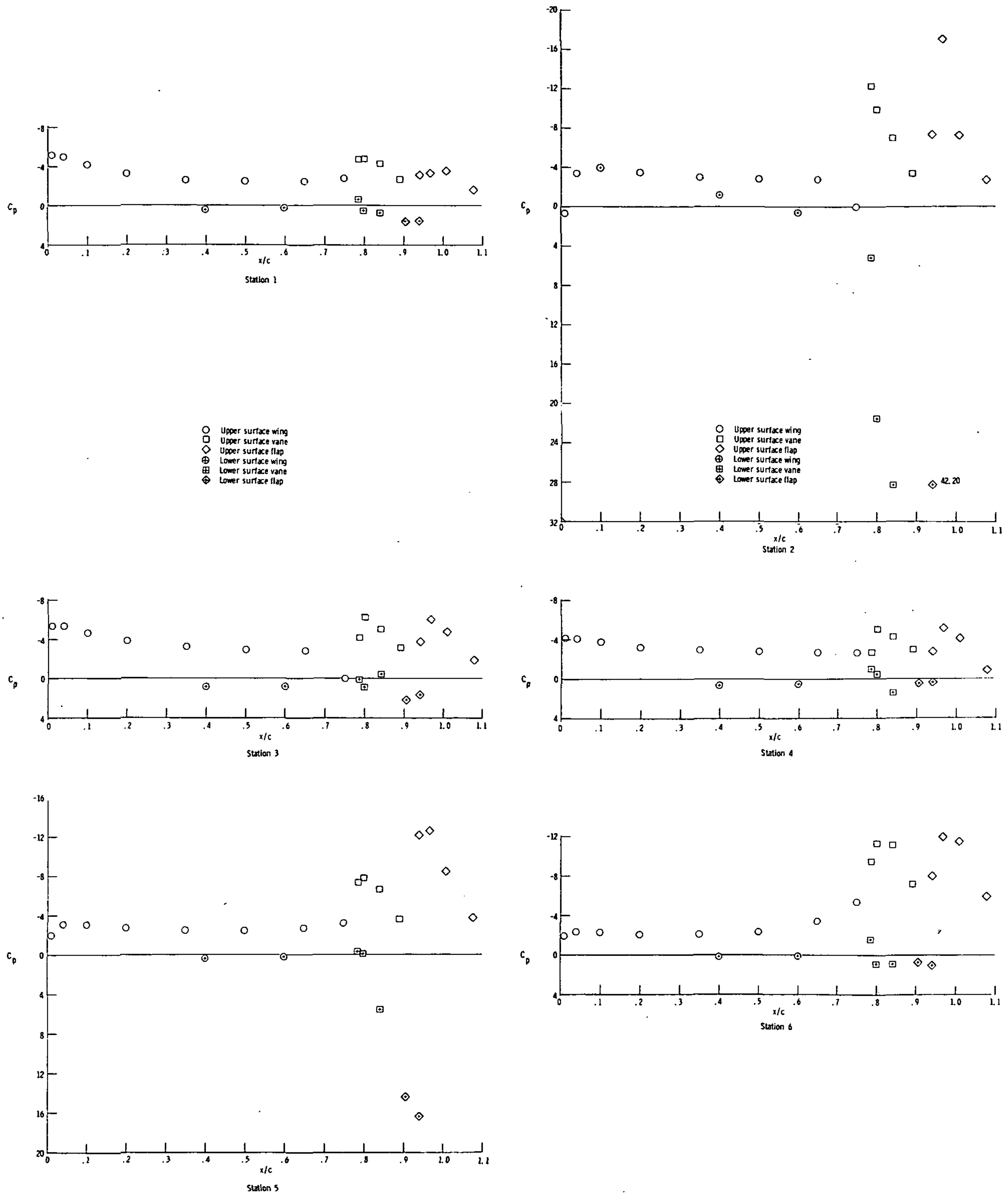
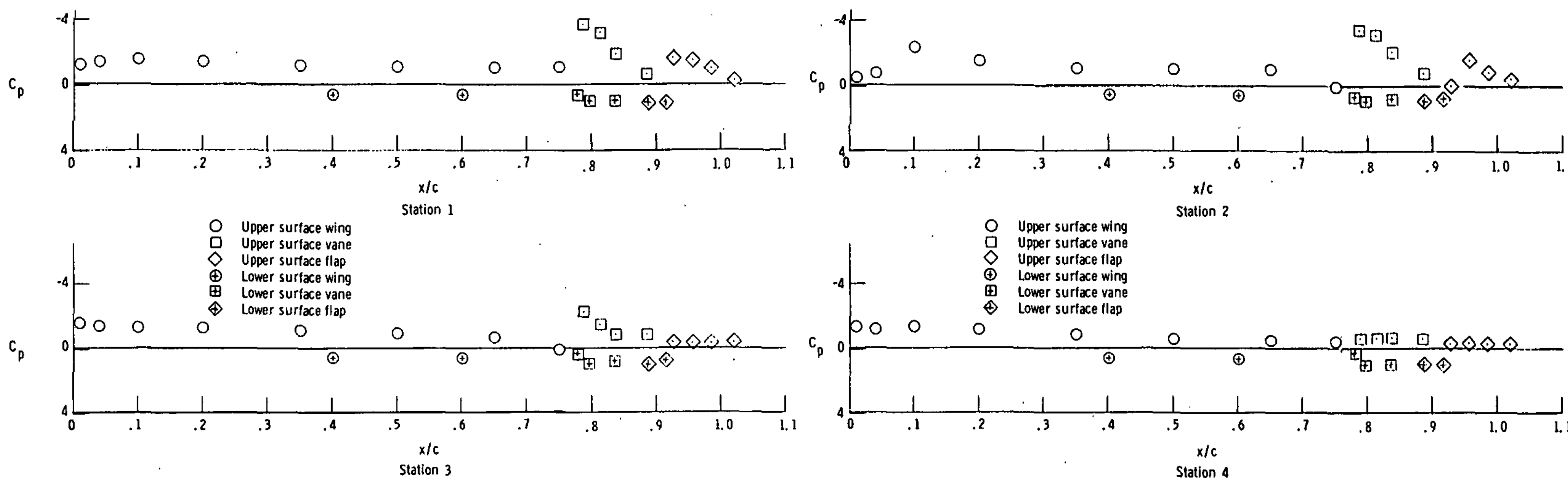
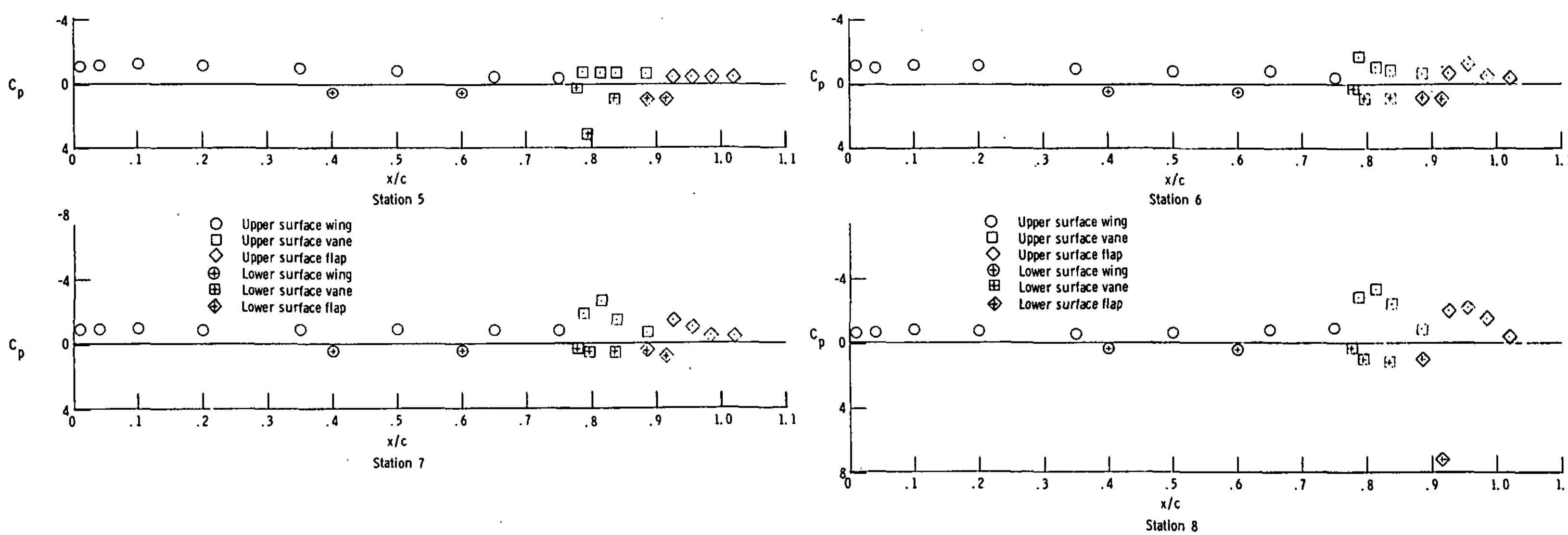



Figure 44.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 35^o$; $\alpha = 16^o$; $C_\mu = 5.49$; A = 5.25.

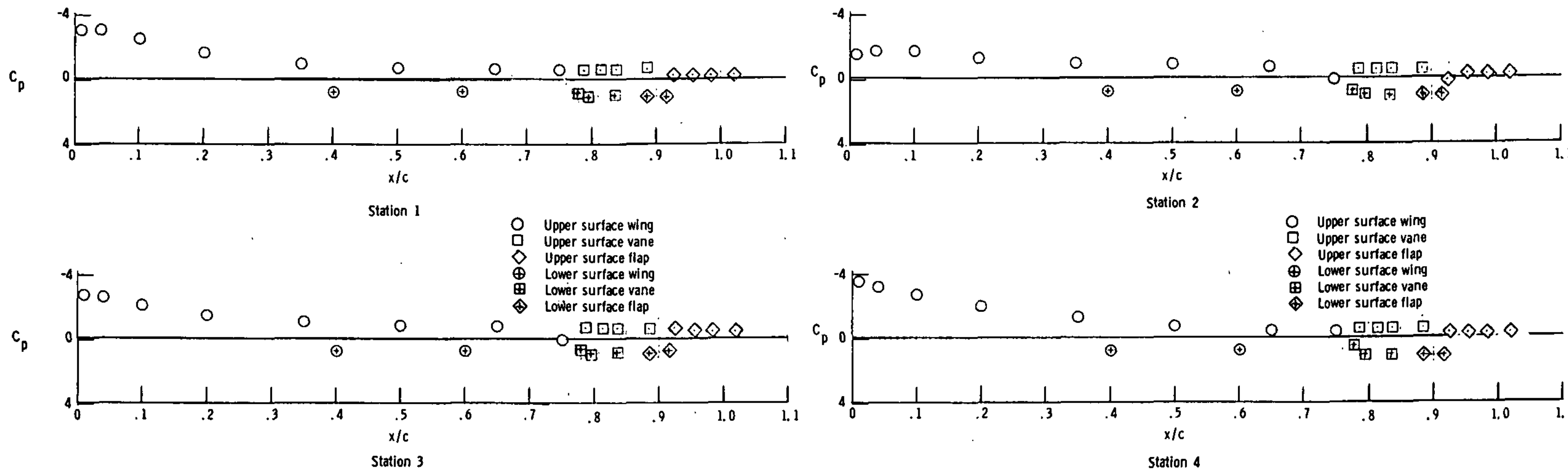



(a) Stations 1 to 4.

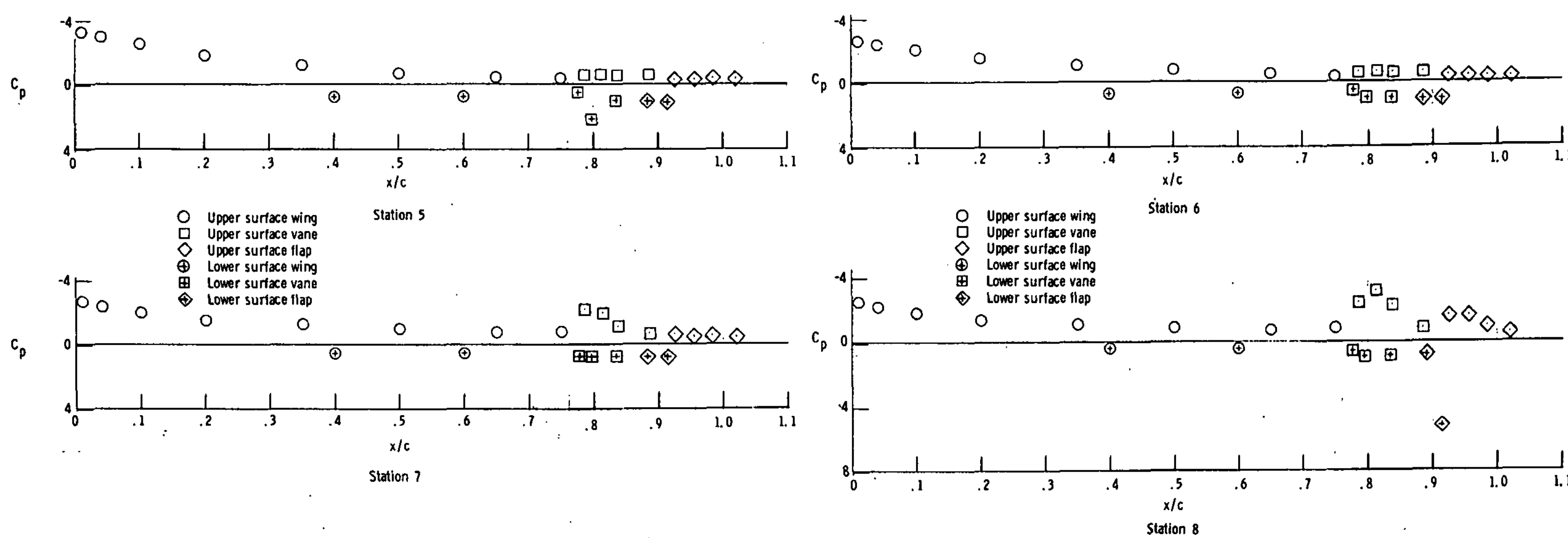



(b) Stations 5 to 8.

Figure 45.- Pressure distributions on wing and flap of model. Full-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 0$; $A = 7$.

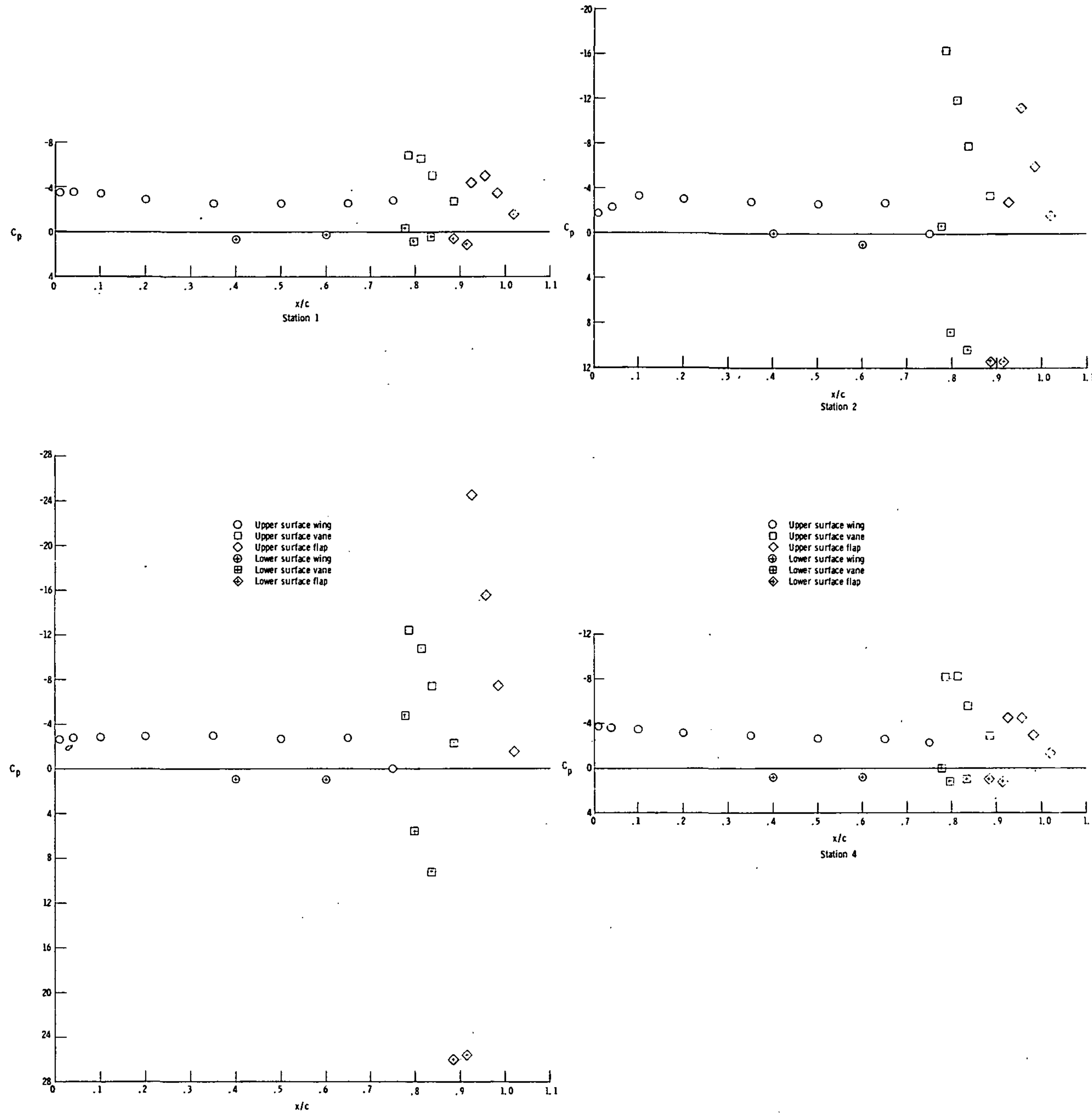



(a) Stations 1 to 4.



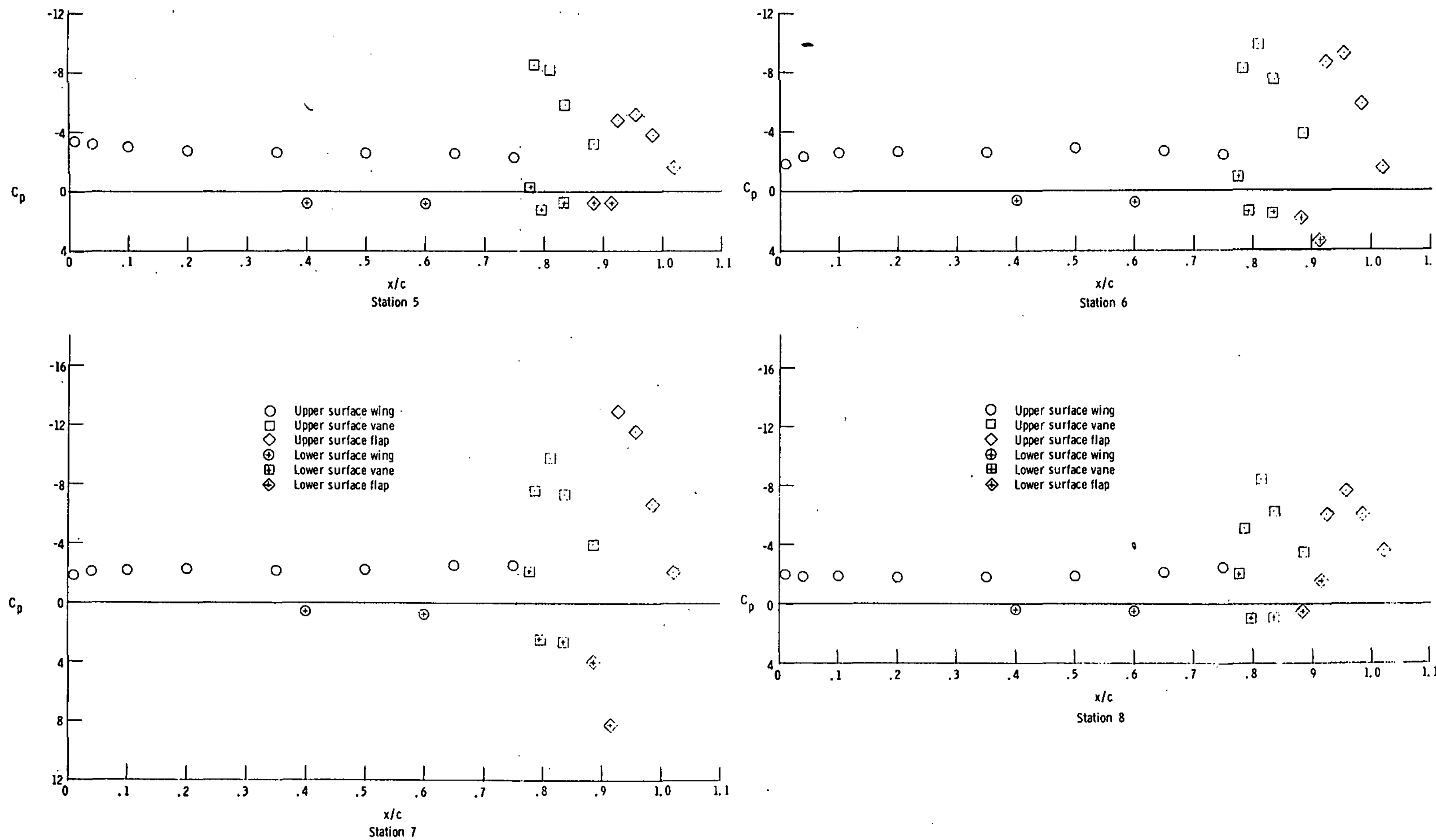

(b) Stations 5 to 8.

Figure 46.- Pressure distributions on wing and flap of model. Full-span flap. $\delta_f = 55^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 0$; $A = 7$.



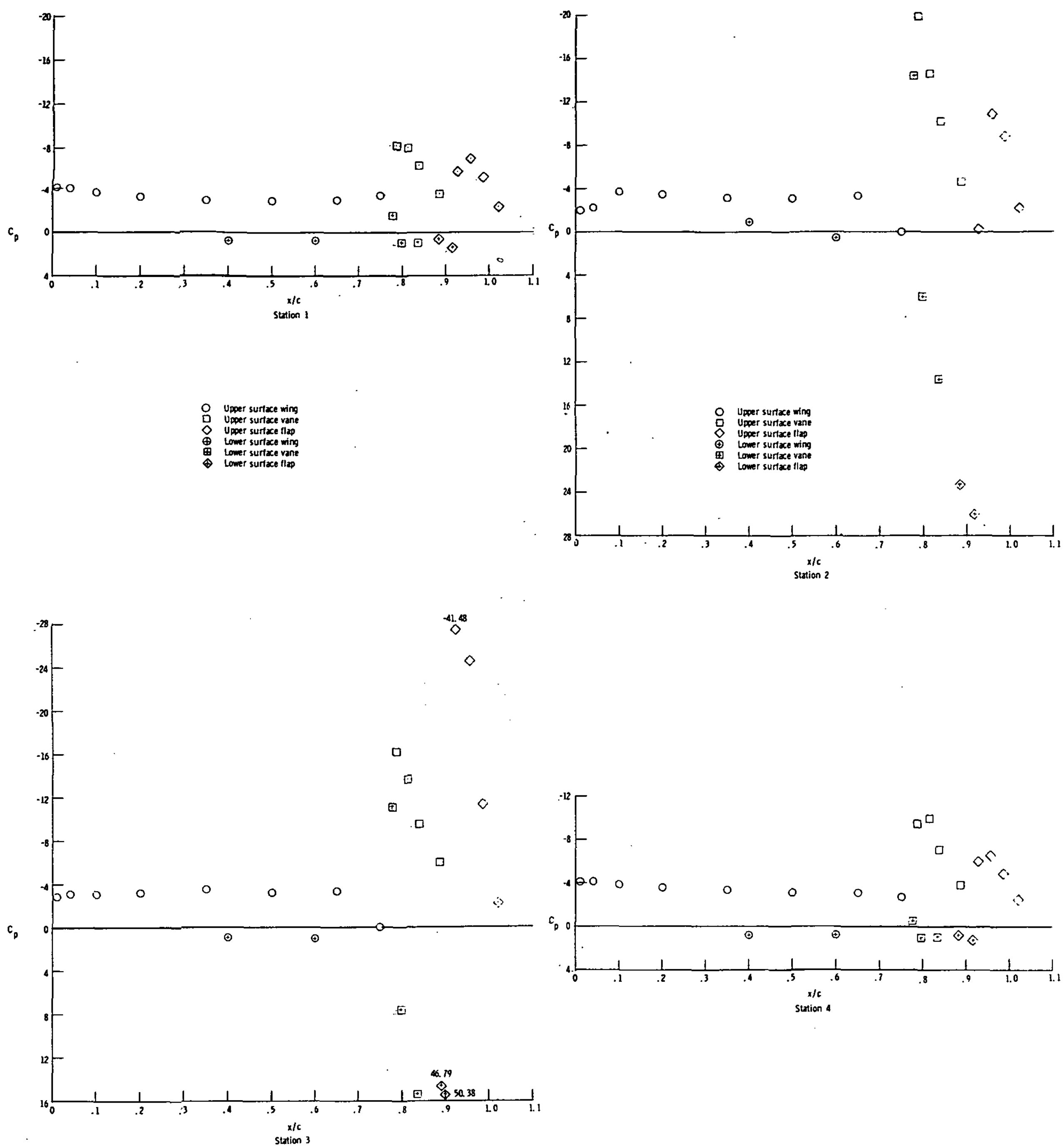

(a) Stations 1 to 4.

Figure 47.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 2.05$; A = 7.



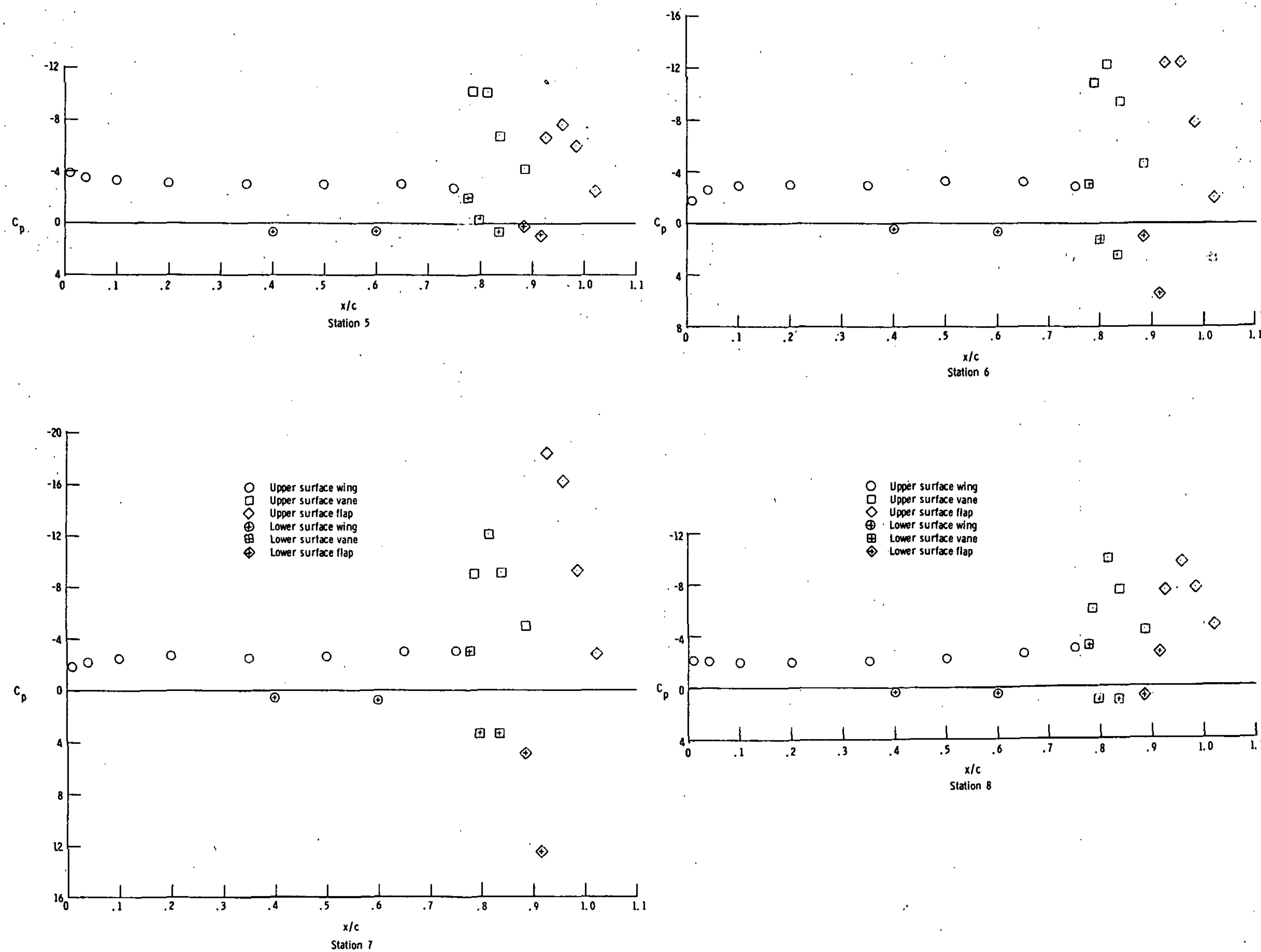

(b) Stations 5 to 8.

Figure 47.- Concluded.



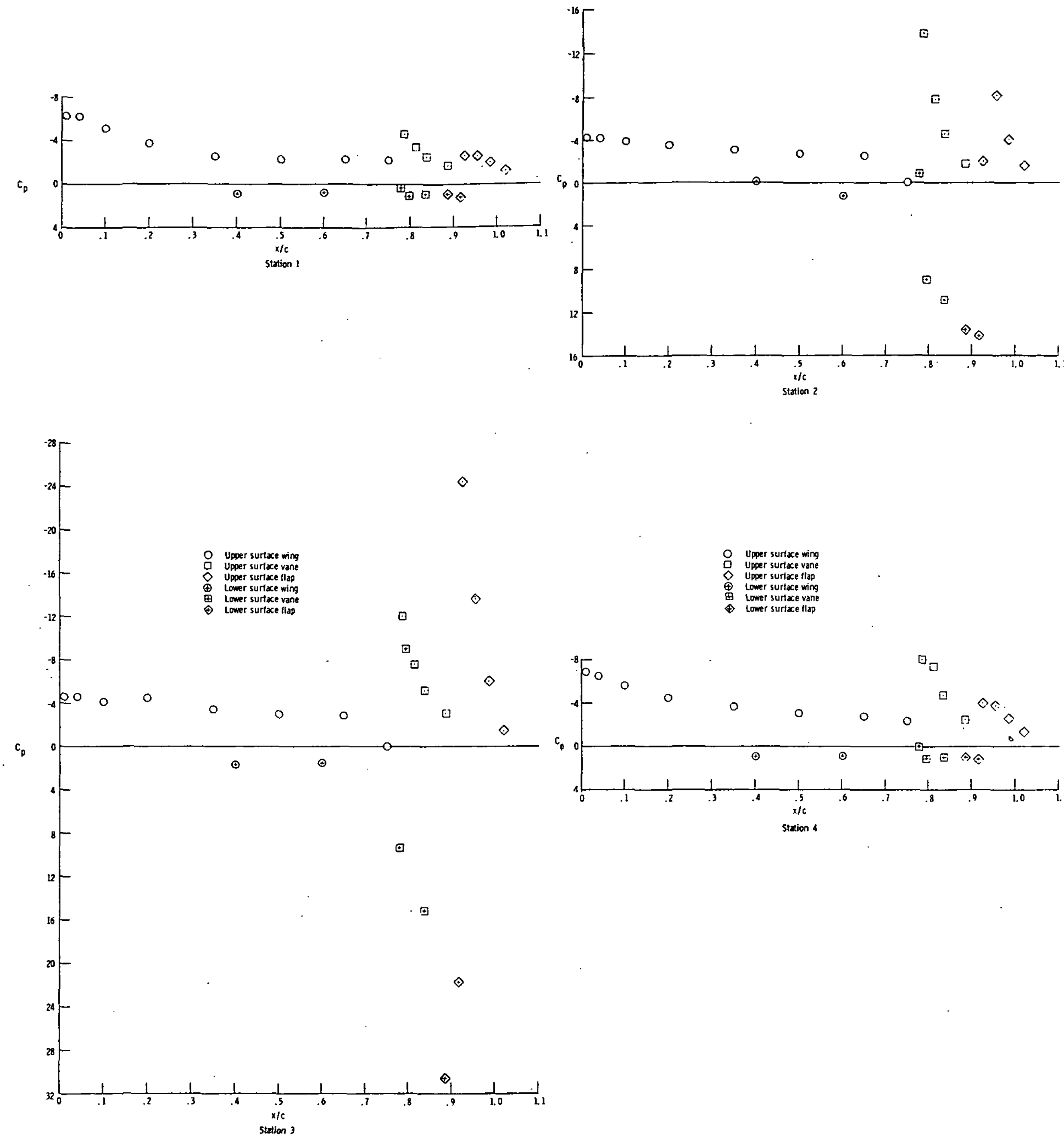

(a) Stations 1 to 4.

Figure 48.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 4.11$; A = 7.



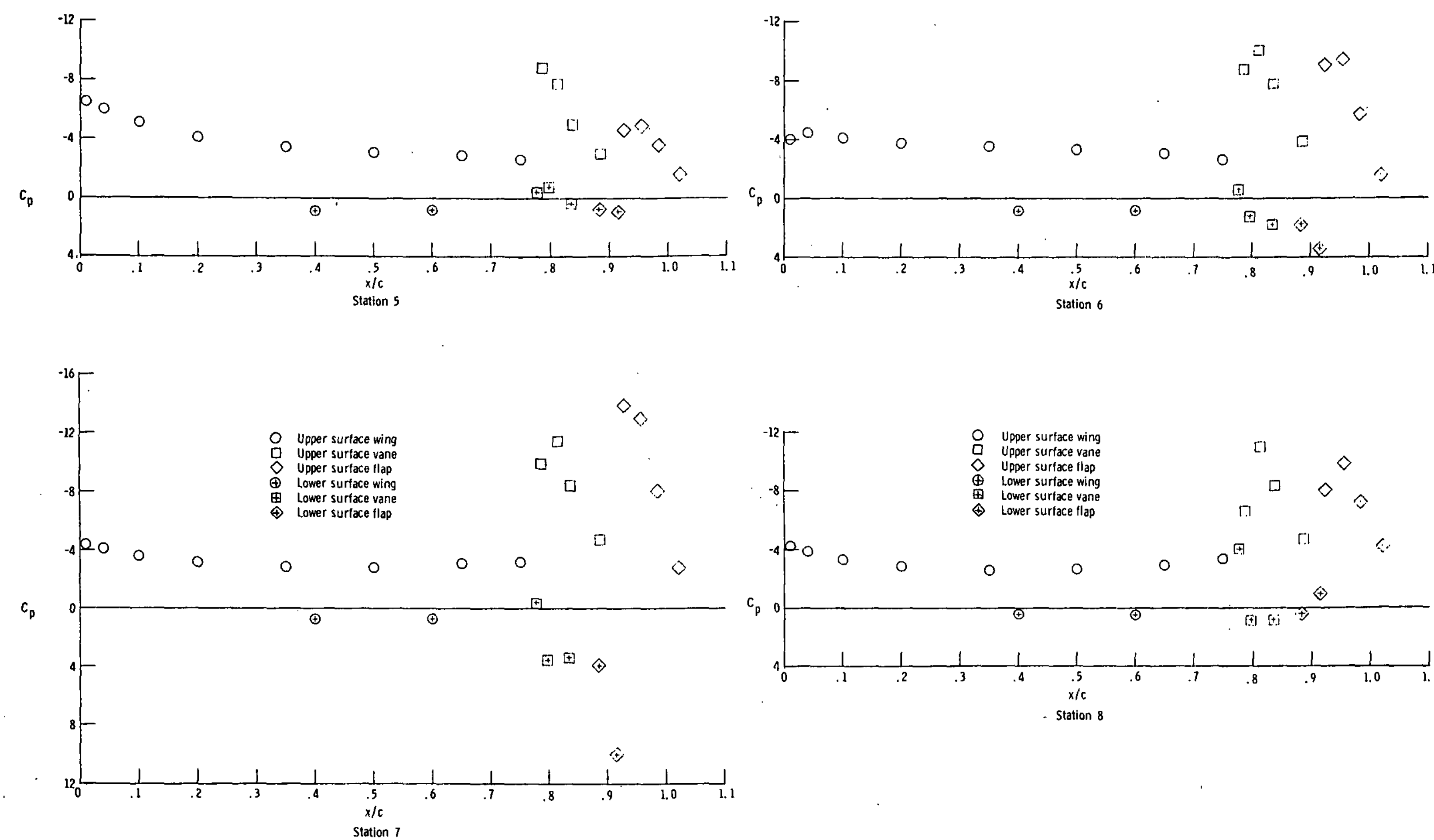

(b) Stations 5 to 8.

Figure 48.- Concluded.



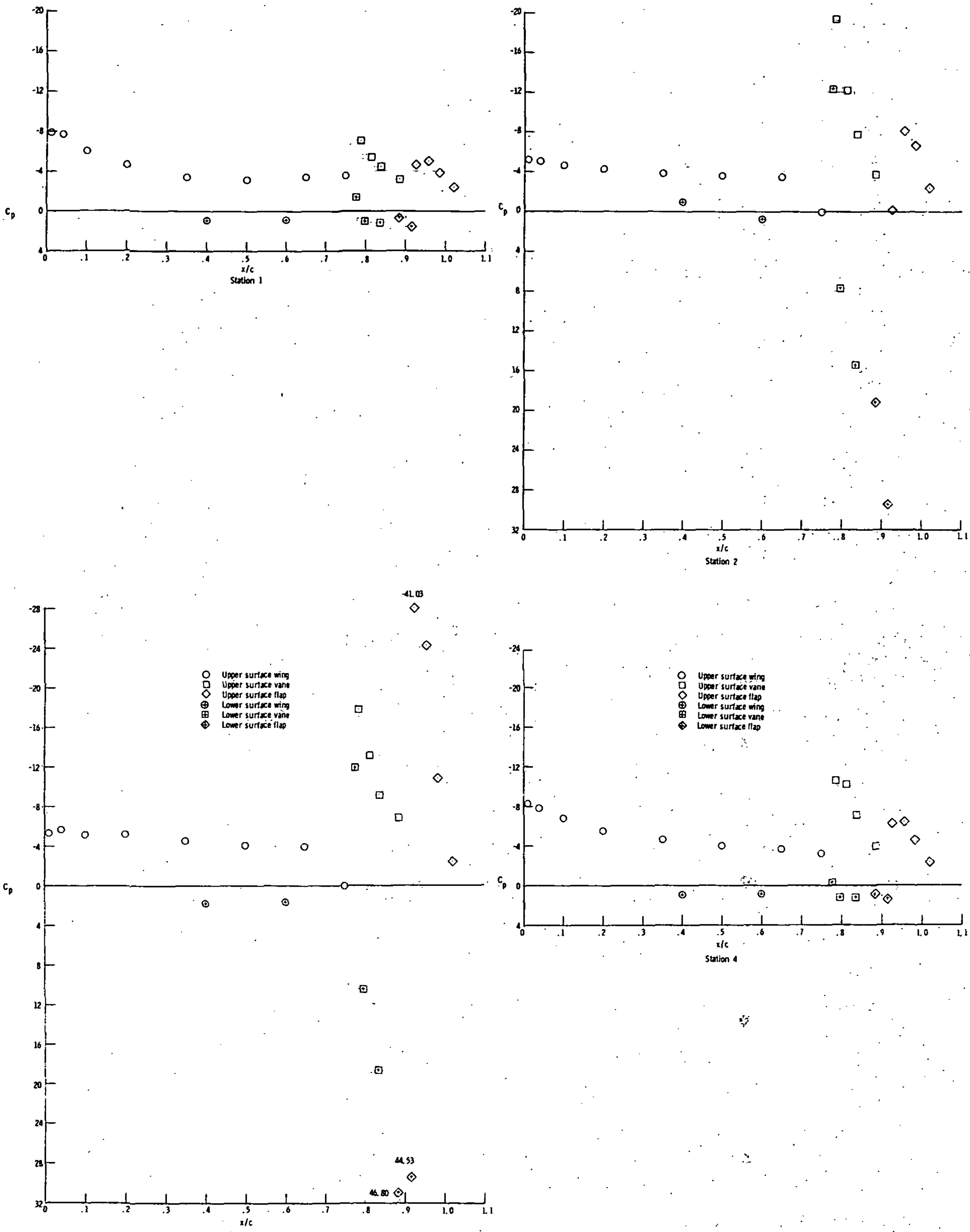

(a) Stations 1 to 4.

Figure 49.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 2.05$; $A = 7$.



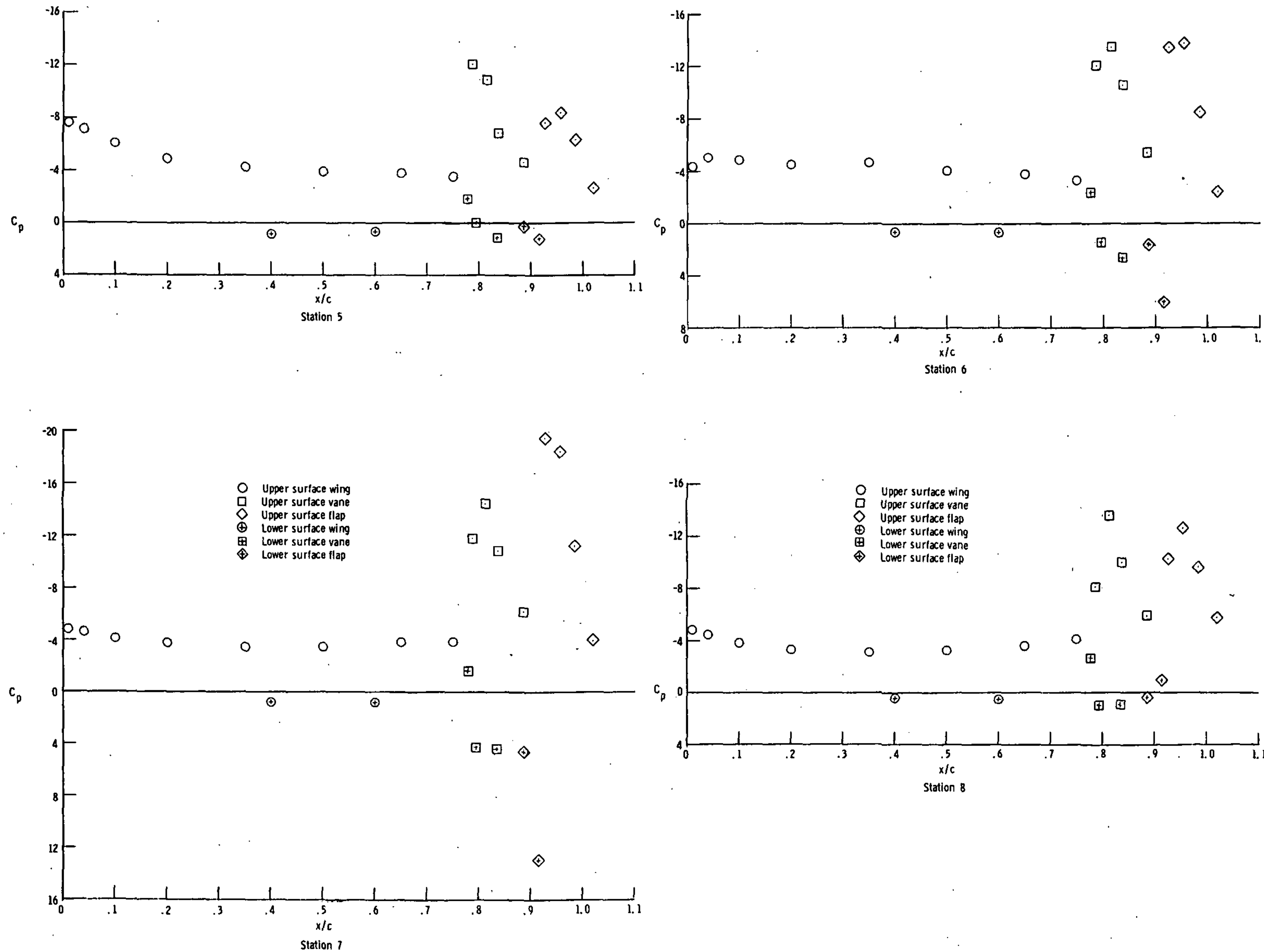

(b) Stations 5 to 8.

Figure 49.- Concluded.




(a) Stations 1 to 4.

Figure 50. - Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 55^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 4.11$; A = 7.




(b) Stations 5 to 8.

Figure 50.- Concluded.

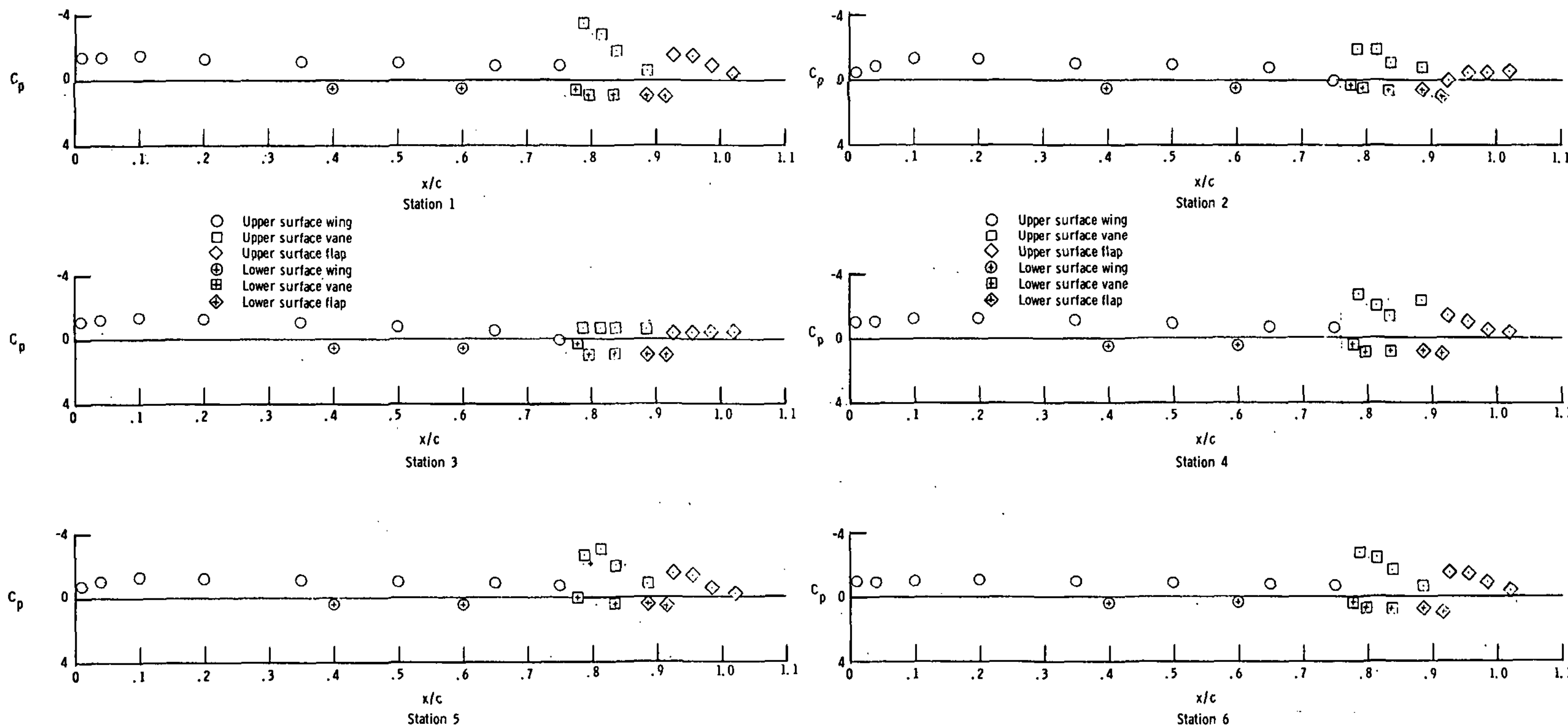



Figure 51.- Pressure distributions on wing and flap of model. Partial-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 0$; A = 7.

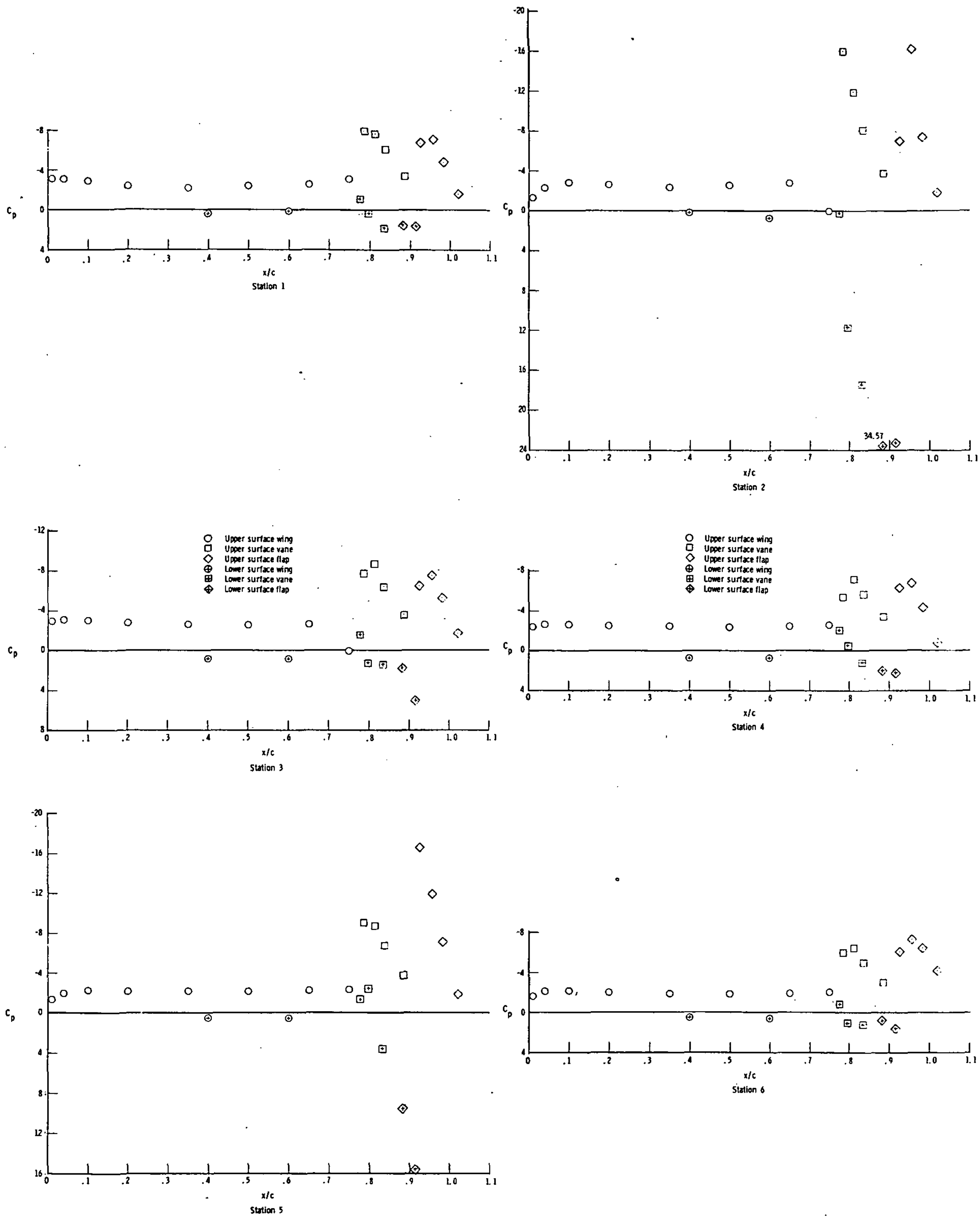



Figure 52.- Pressure distributions on wing and flap of model. All engines operating. Partial-span flap. $\delta_f = 55^o$; $\alpha = 1^o$; $C_\mu = 2.05$; A = 7.

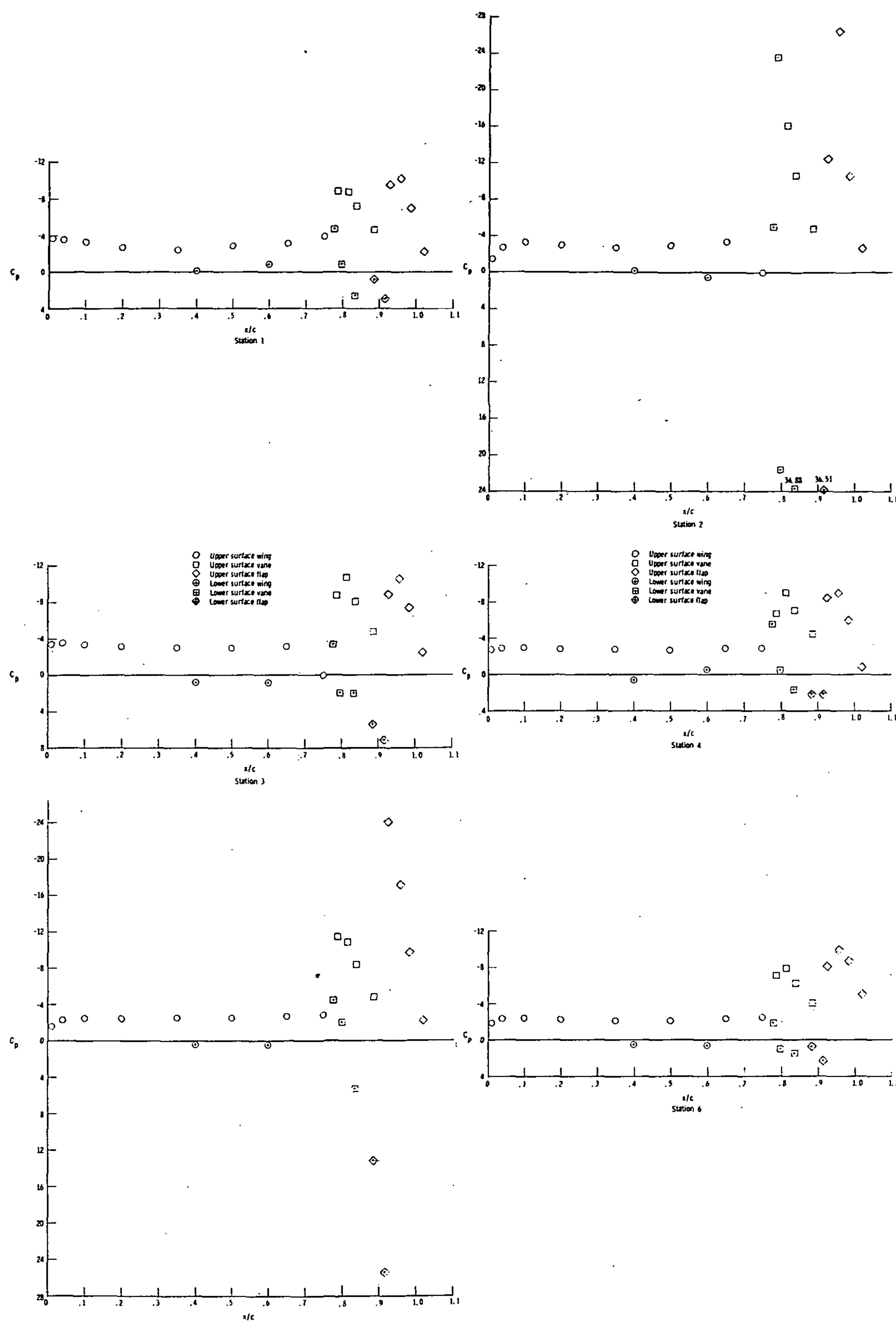



Figure 53.- Pressure distributions on wing and flap of model. All engines operating. Partial-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 4.11$; $A = 7$.

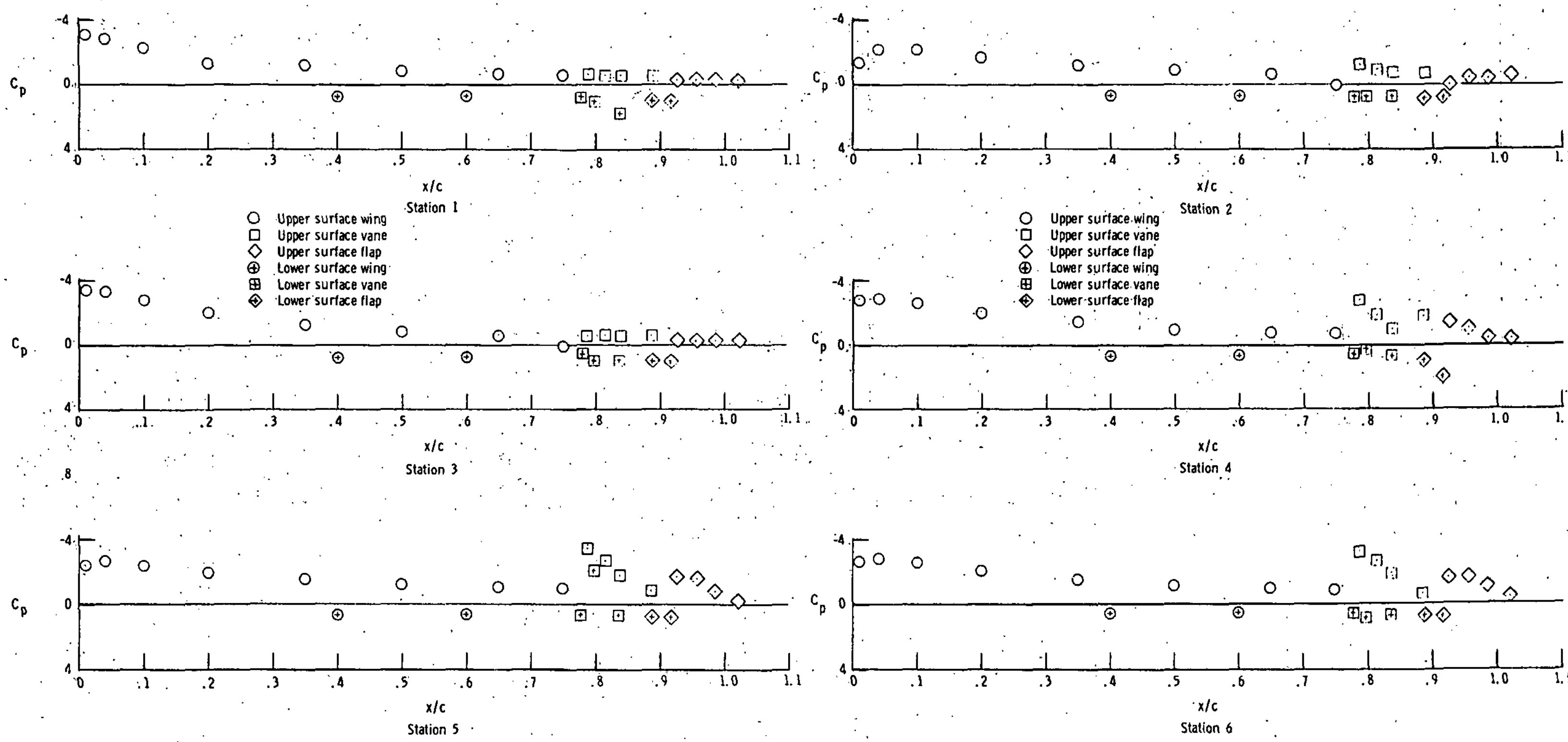



Figure 54.- Pressure distributions on wing and flap of model. Partial-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 0$; A = 7.

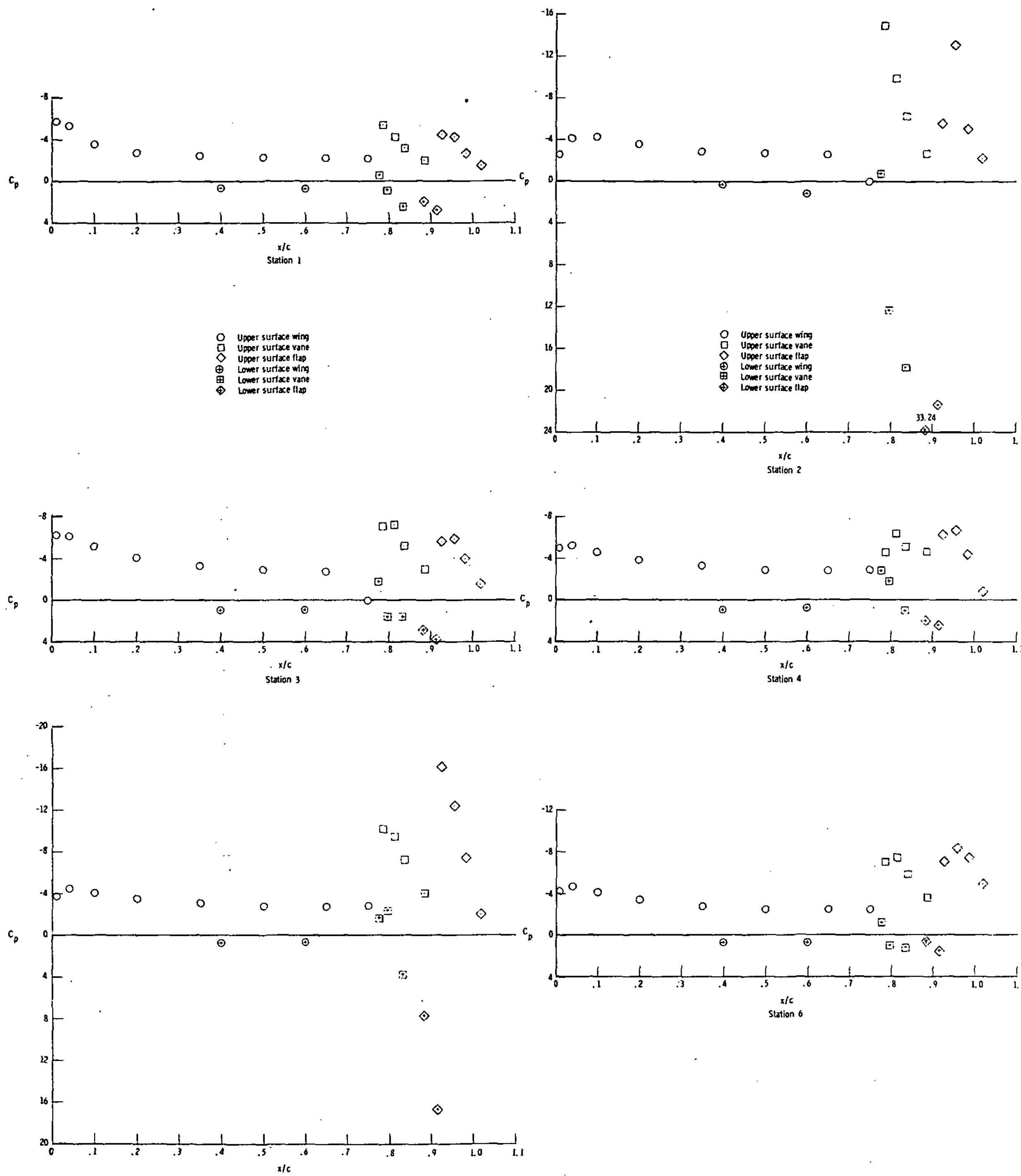



Figure 55.- Pressure distributions on wing and flap of model. All engines operating. Partial-span flap. $\delta_f = 55^\circ$; $\alpha = 16^\circ$; $C_\mu = 2.05$; $A = 7$.

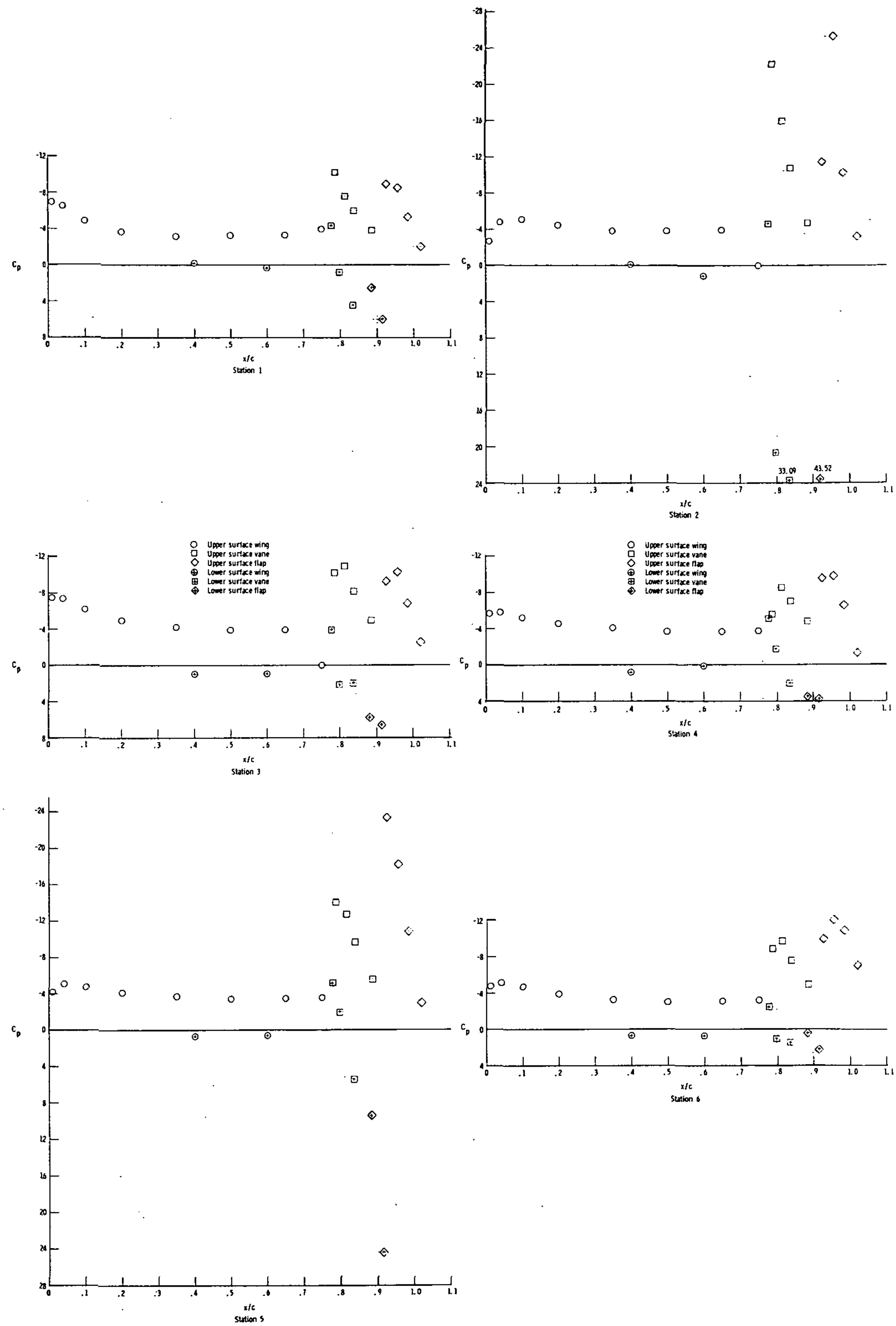


Figure 56.- Pressure distributions on wing and flap of model. All engines operating. Partial-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 4.11$; A = 7.

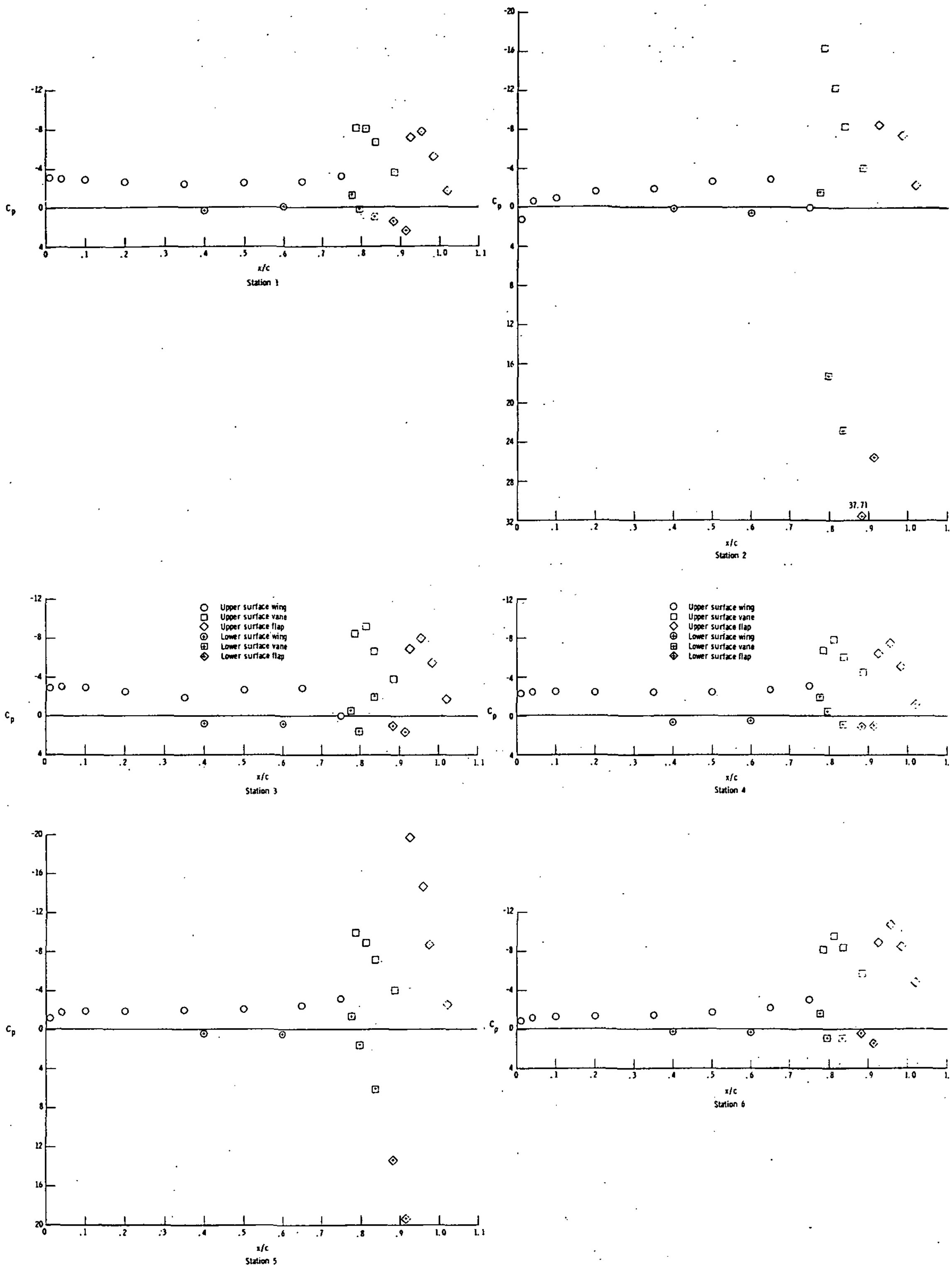



Figure 57.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 55^o$; $\alpha = 1^o$; $C_\mu = 2.75$; A = 5.25.

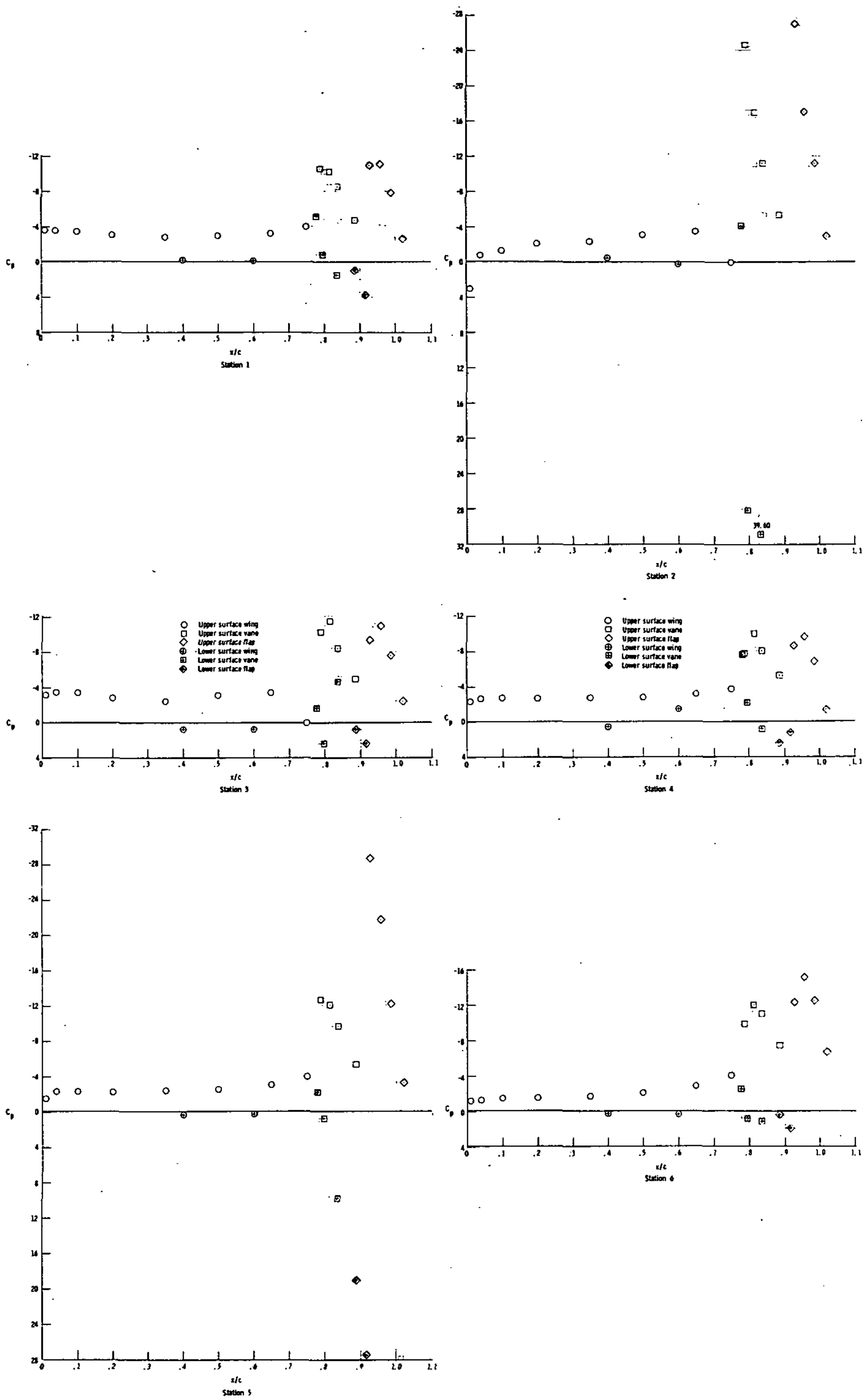



Figure 58.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 55^\circ$; $\alpha = 1^\circ$; $C_\mu = 5.49$; $A = 5.25$.

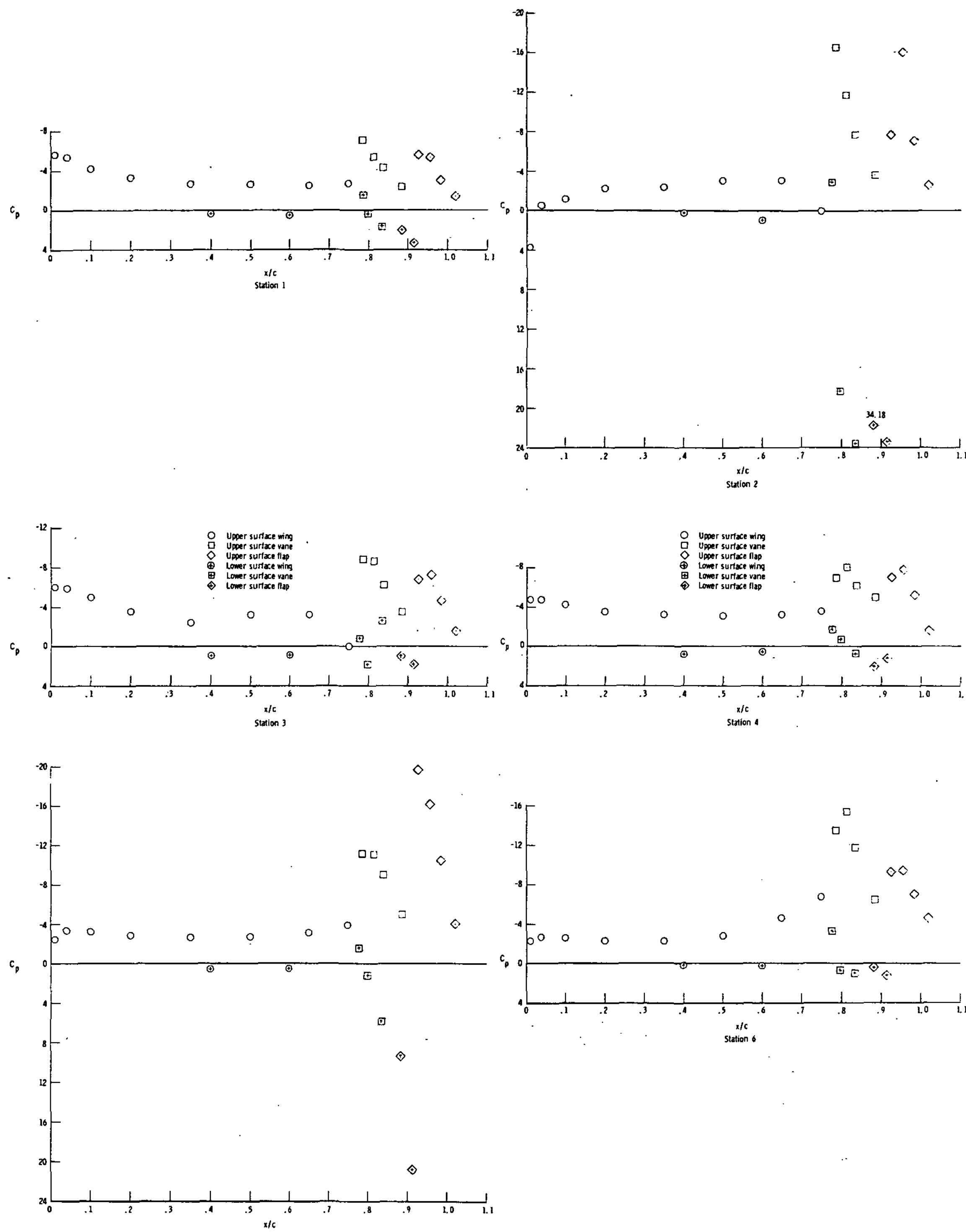



Figure 59.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 55^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 2.75$; A = 5.25.

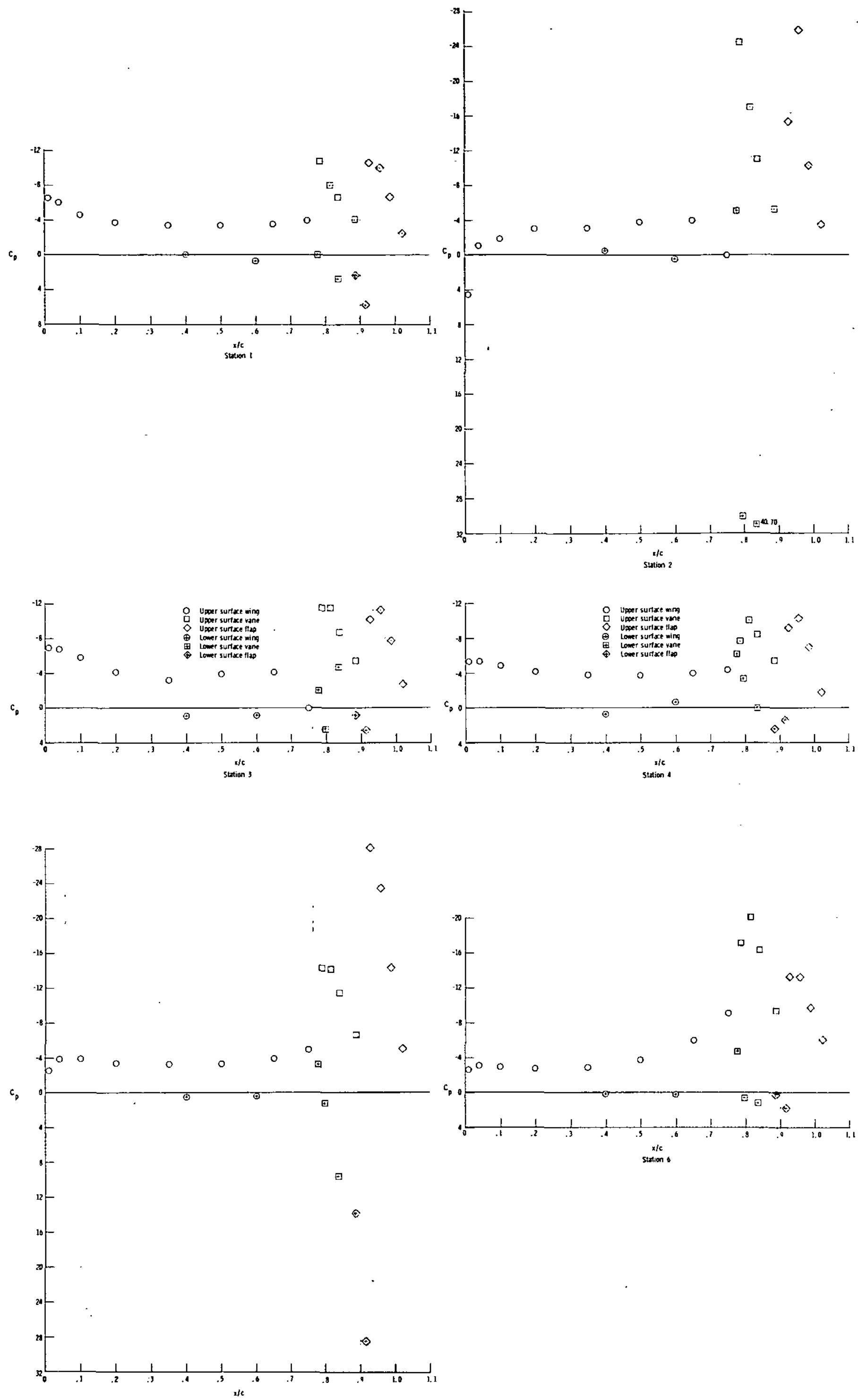



Figure 60.- Pressure distributions on wing and flap of model. All engines operating. Full-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 5.49$; A = 5.25.

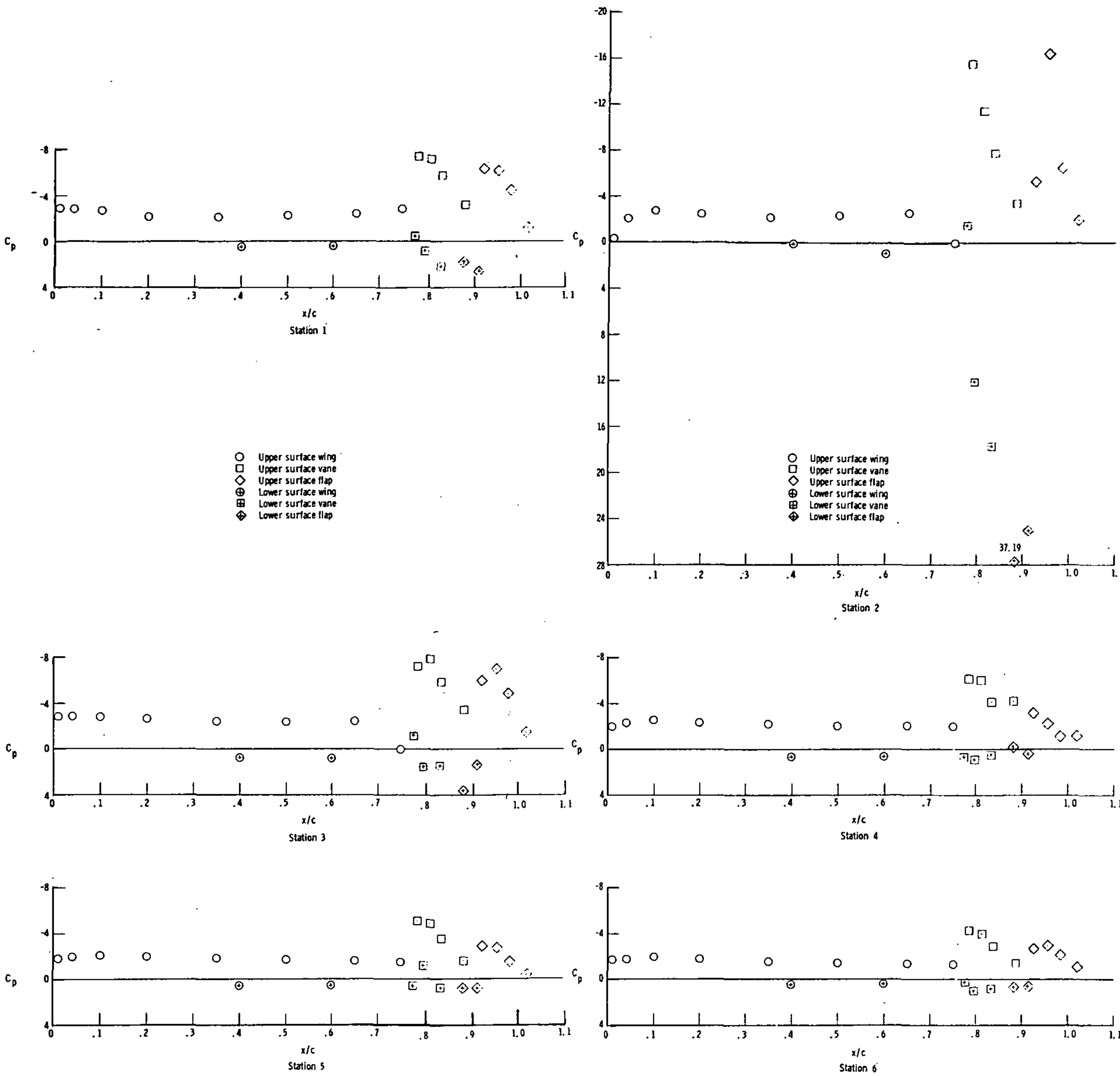



Figure 61.- Pressure distributions on wing and flap of model. Outboard engine inoperative. Partial-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 1.54$; $A = 7$.

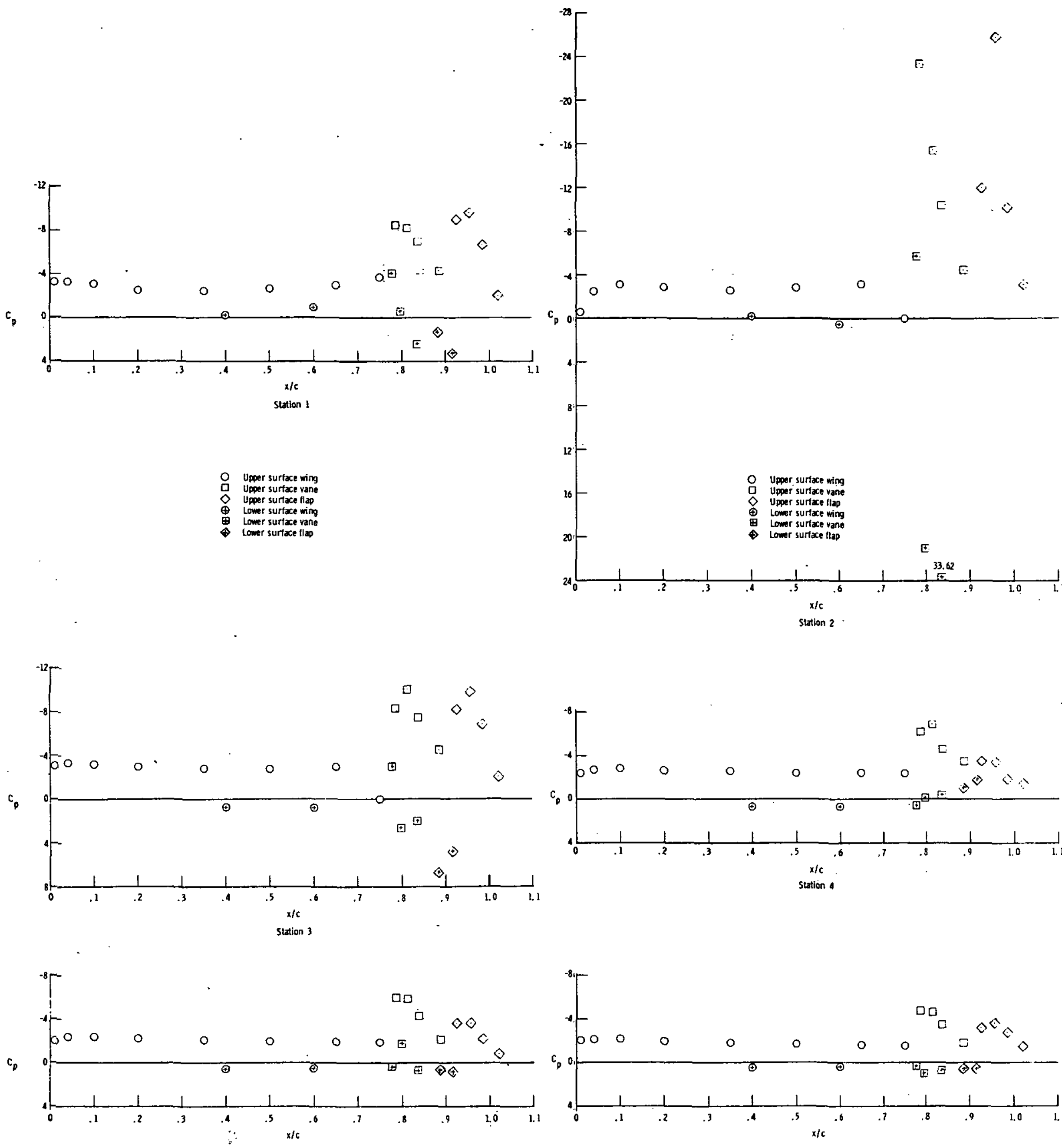



Figure 62.- Pressure distributions on wing and flap of model. Outboard engine inoperative. Partial-span flap. $\delta_f = 55^o$; $\alpha = 1^o$; $C_\mu = 3.08$; A = 7.

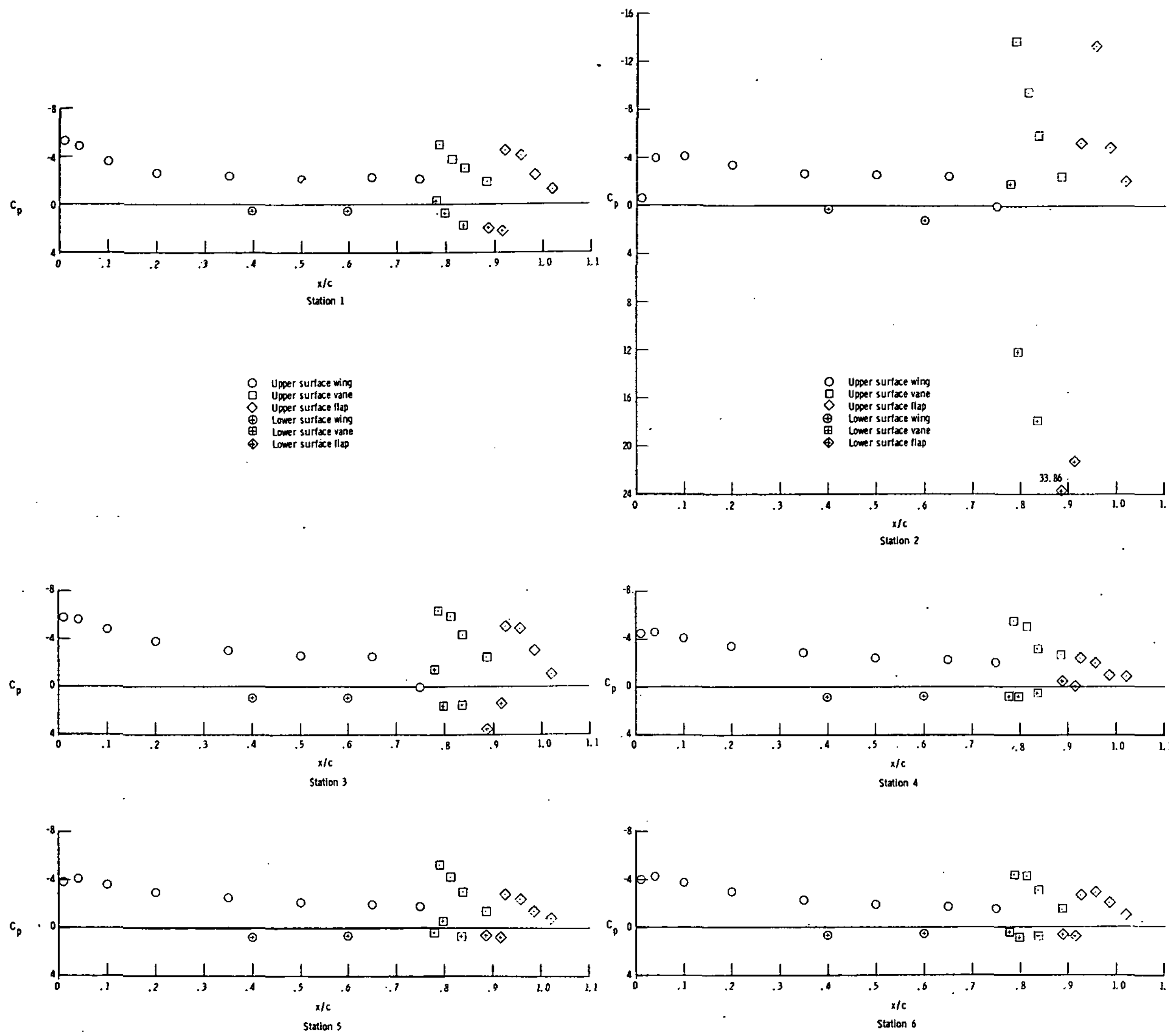



Figure 63.- Pressure distributions on wing and flap of model. Outboard engine inoperative. Partial-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 1.54$; A = 7.

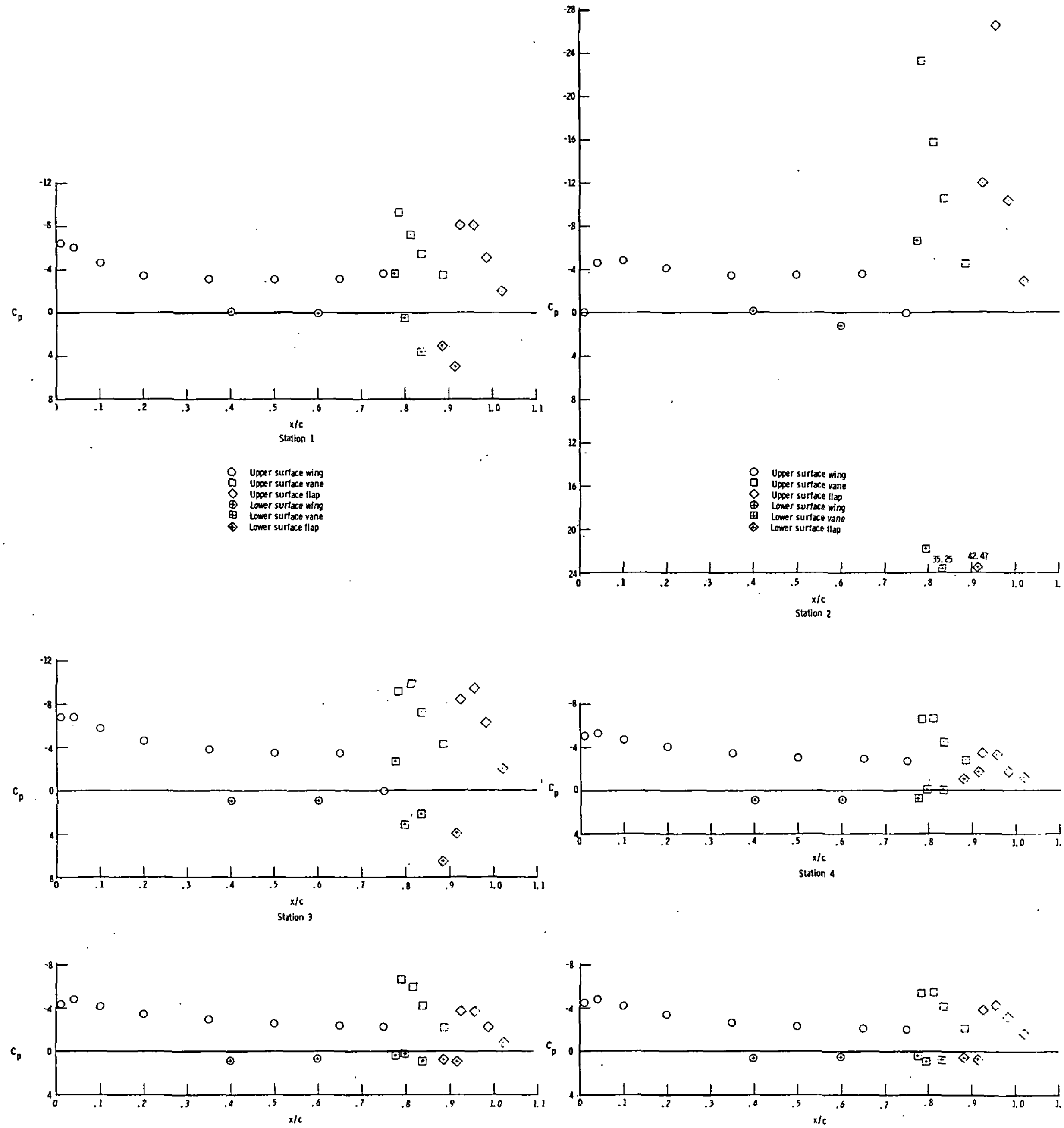



Figure 64.- Pressure distributions on wing and flap of model. Outboard engine inoperative. Partial-span flap. $\delta_f = 55^\circ$; $\alpha = 16^\circ$; $C_\mu = 3.08$; $A = 7$.

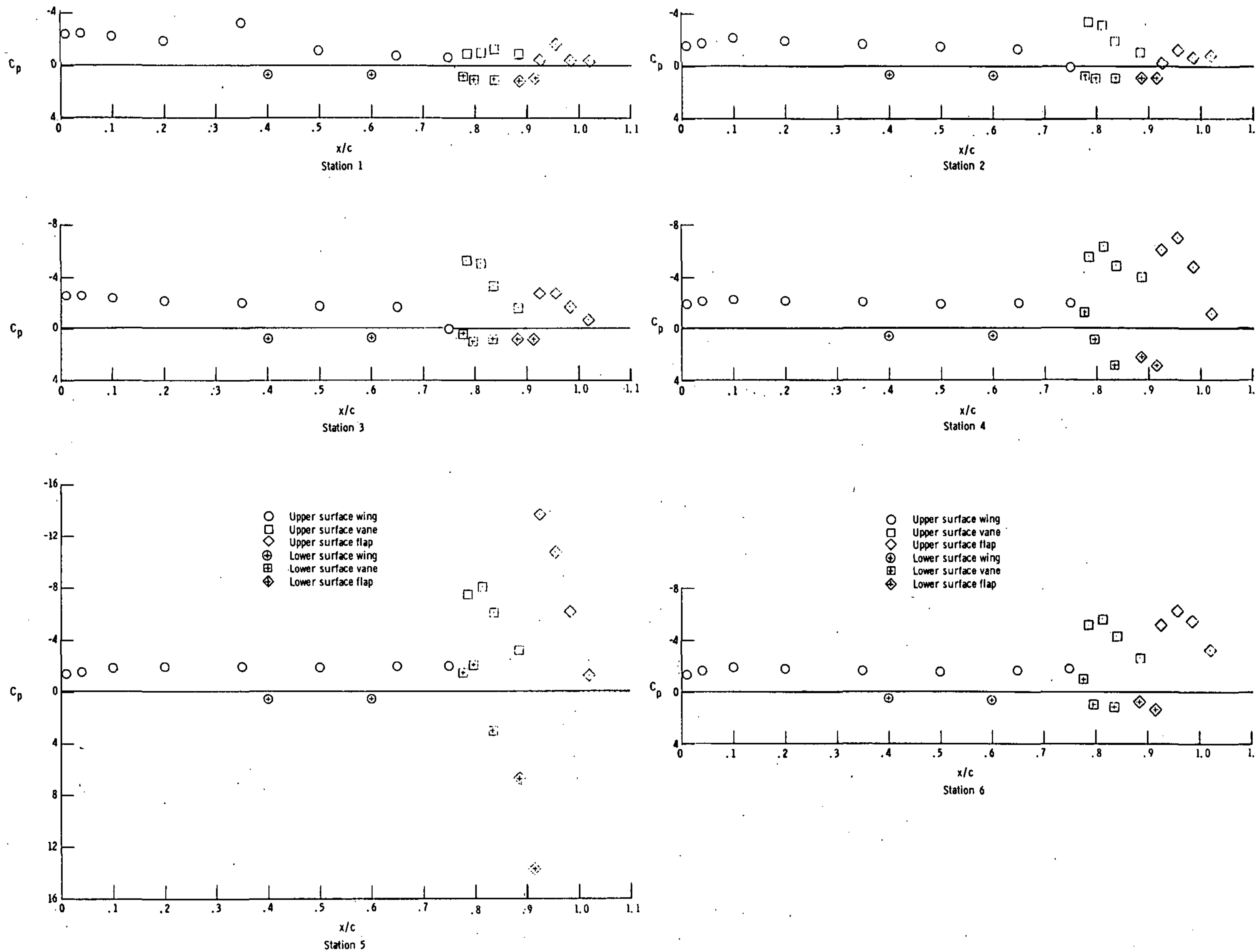



Figure 65.- Pressure distributions on wing and flap of model. Inboard engine inoperative. Partial-span flap. $\delta_f = 55^\circ$; $\alpha = 1^\circ$; $C_\mu = 1.54$; $A = 7$.

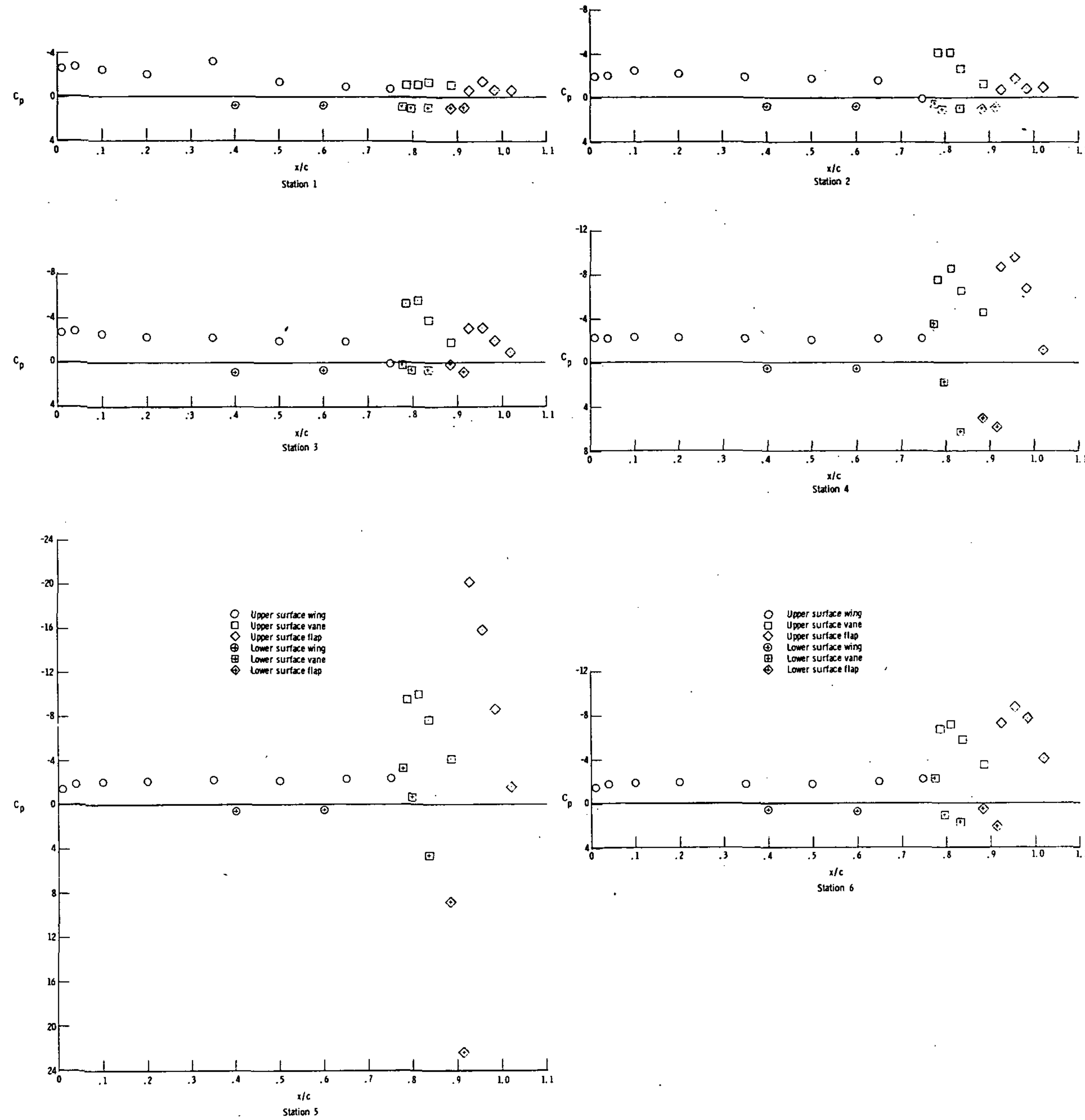



Figure 66.- Pressure distributions on wing and flap of model. Inboard engine inoperative. Partial-span flap. $\delta_f = 55^o$; $\alpha = 1^o$; $C_\mu = 3.08$; A = 7.

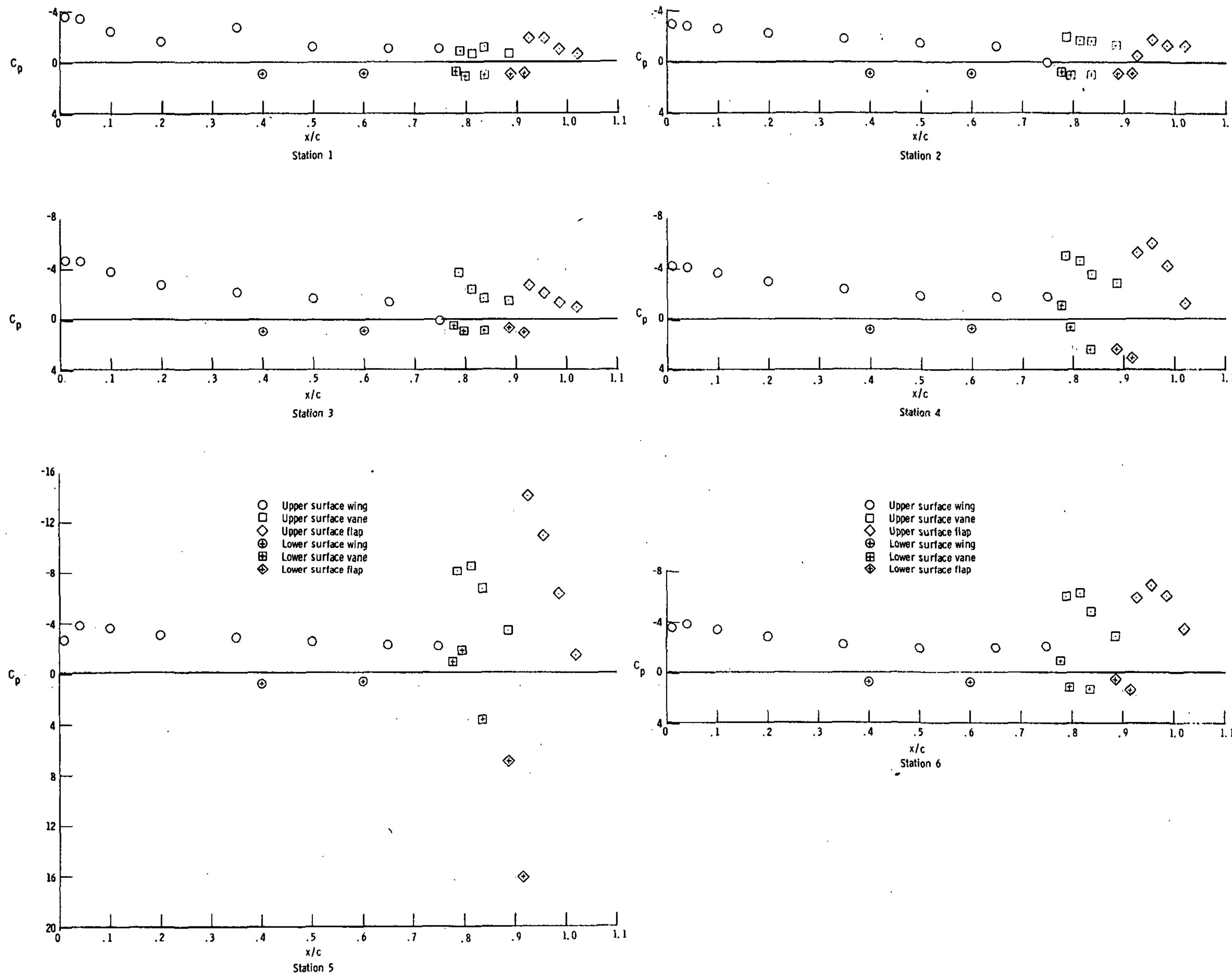



Figure 67.- Pressure distributions on wing and flap of model. Inboard engine inoperative. Partial-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 1.54$; $A = 7$.

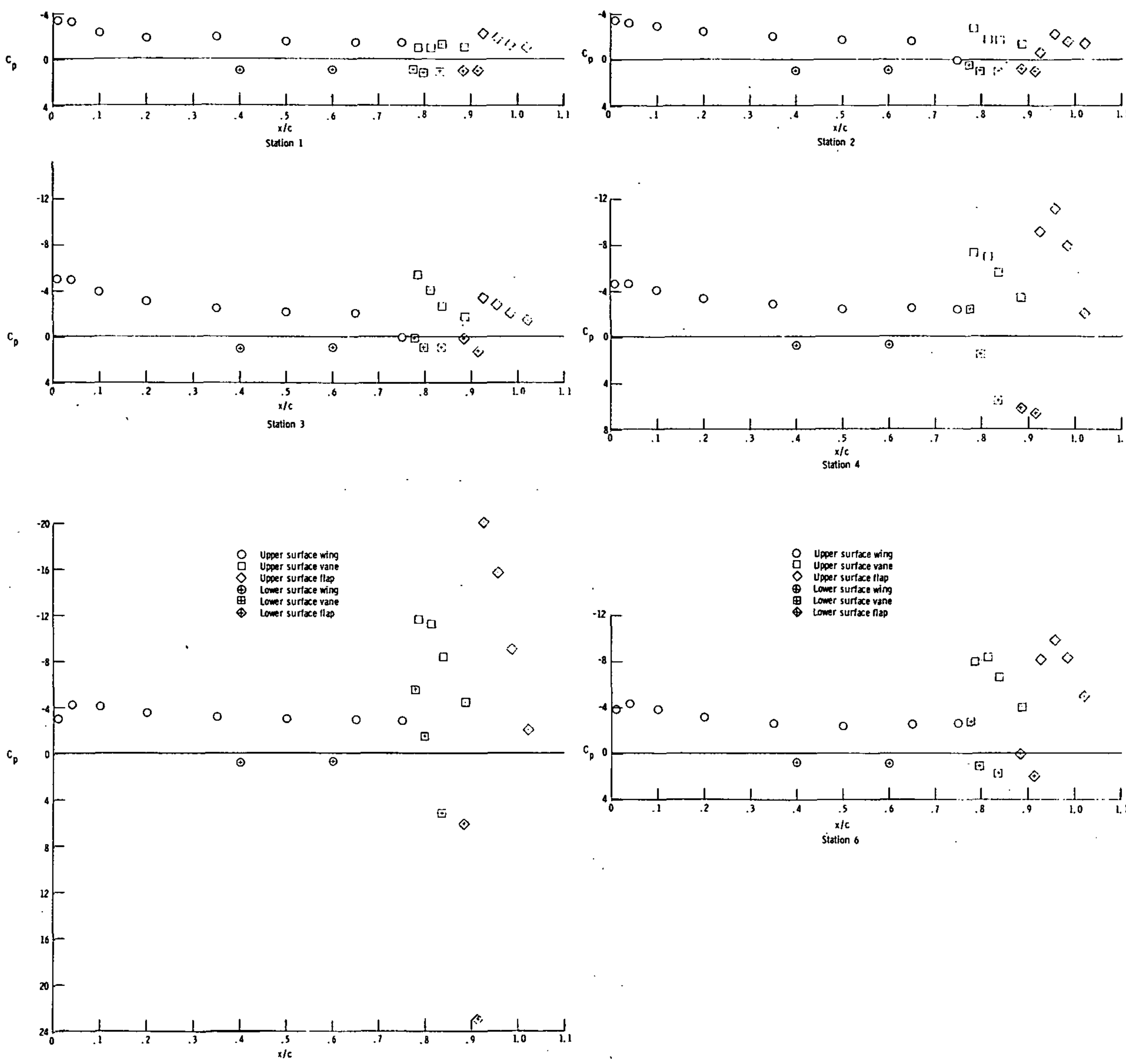



Figure 68.- Pressure distributions on wing and flap of model. Inboard engine inoperative. Partial-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 3.08$; A = 7.

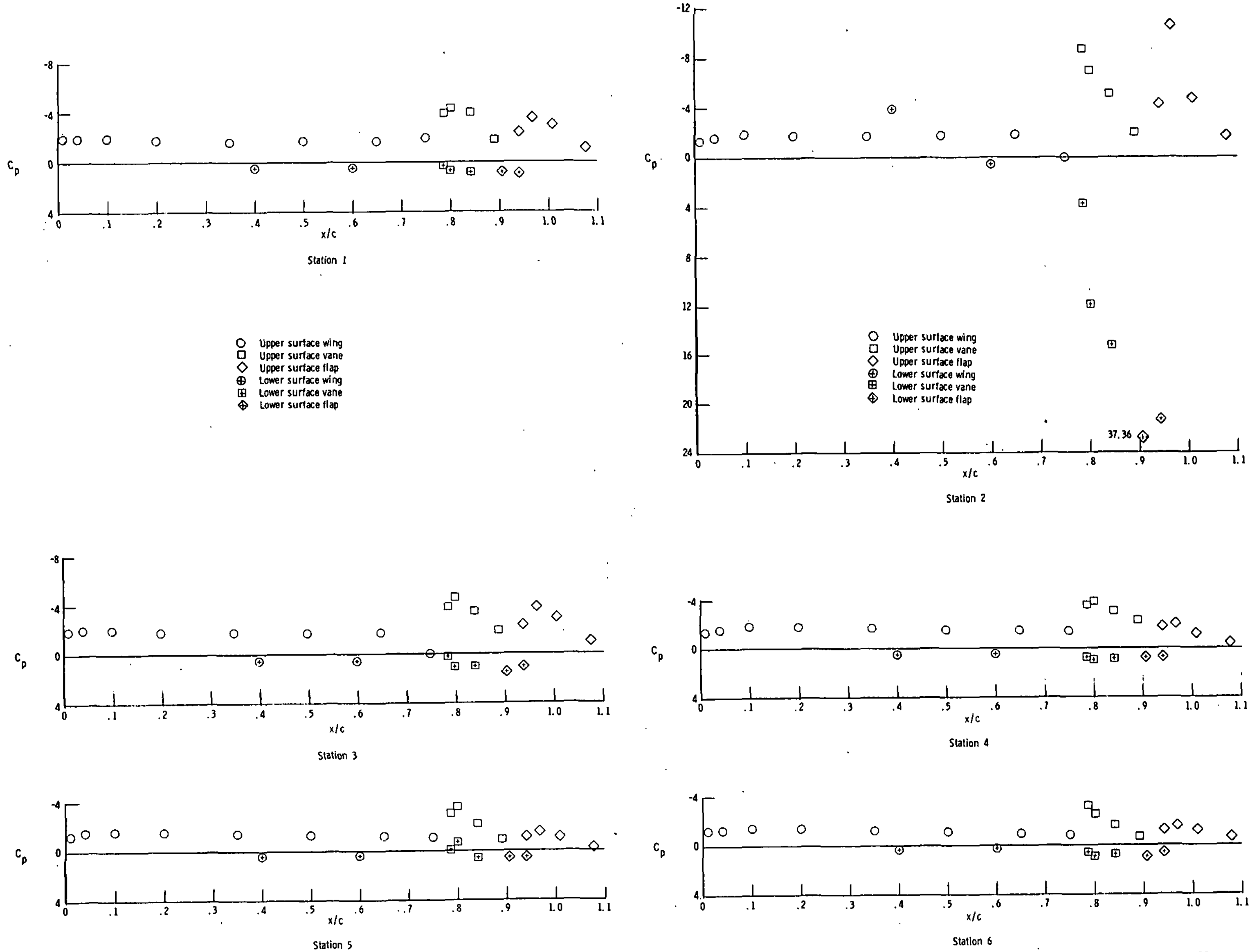



Figure 69.- Pressure distributions on wing and flap of model. Inboard engines operating. Partial-span flap. $\delta_f = 35^o$; $\alpha = 1^o$; $C_\mu = 1.03$; $A = 7$.

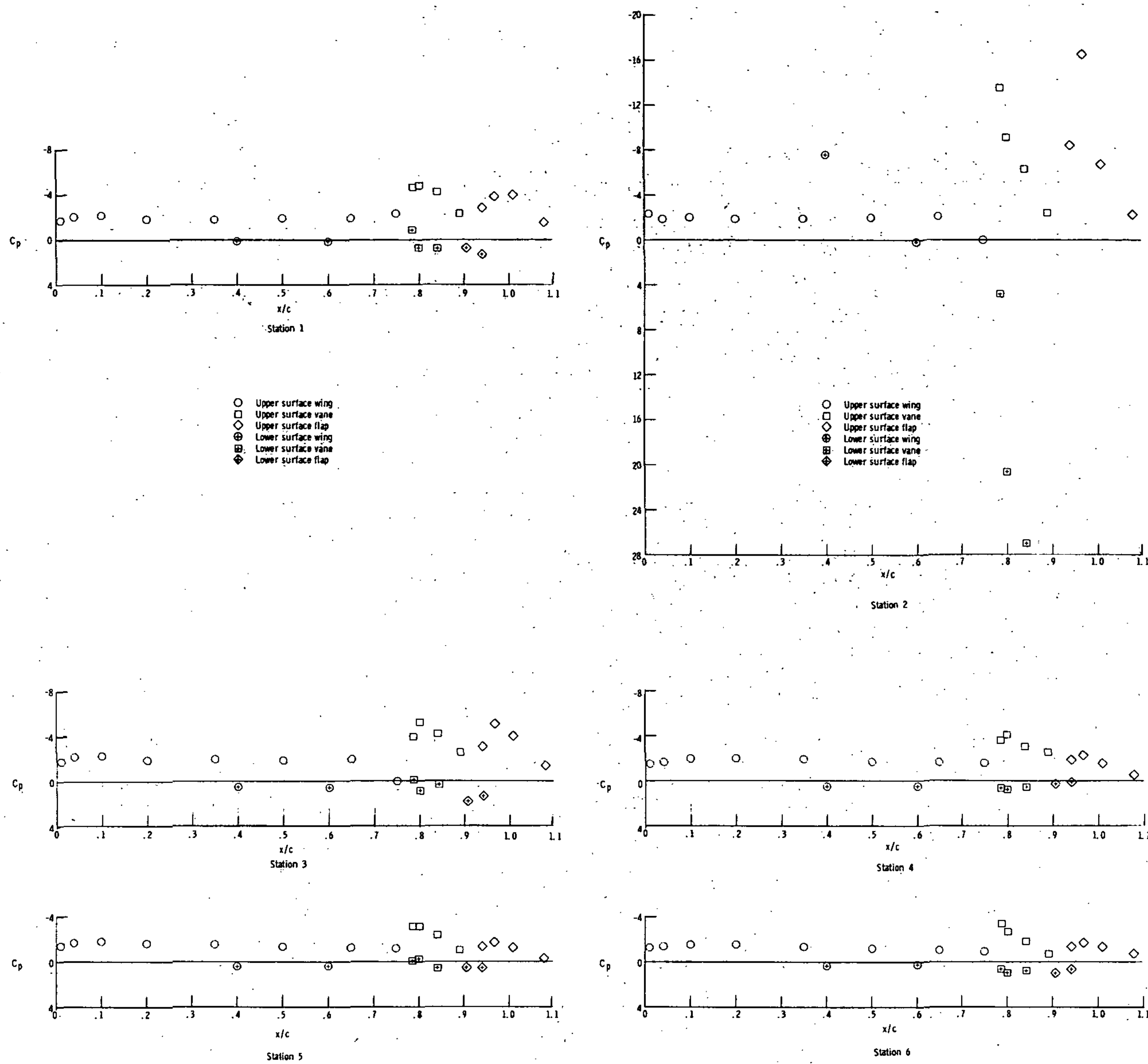



Figure 70. - Pressure distributions on wing and flap of model. Inboard engines operating. Partial-span flap. $\delta_f = 35^{o}$; $\alpha = 1^{o}$; $C_{\mu} = 2.05$; A = 7.

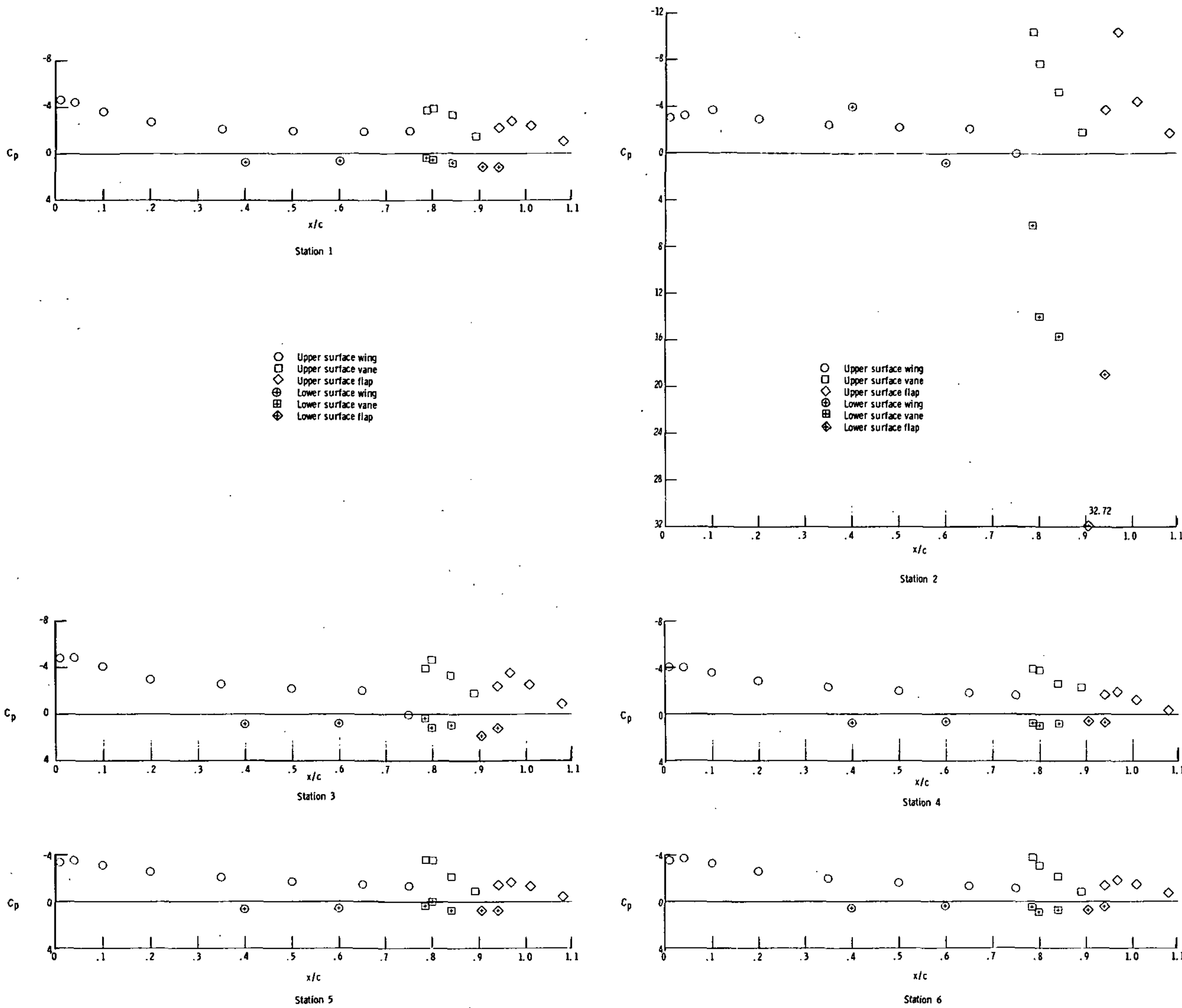



Figure 71.- Pressure distributions on wing and flap of model. Inboard engines operating. Partial-span flap. $\delta_f = 35^o$; $\alpha = 16^o$; $C_\mu = 1.03$; A = 7.

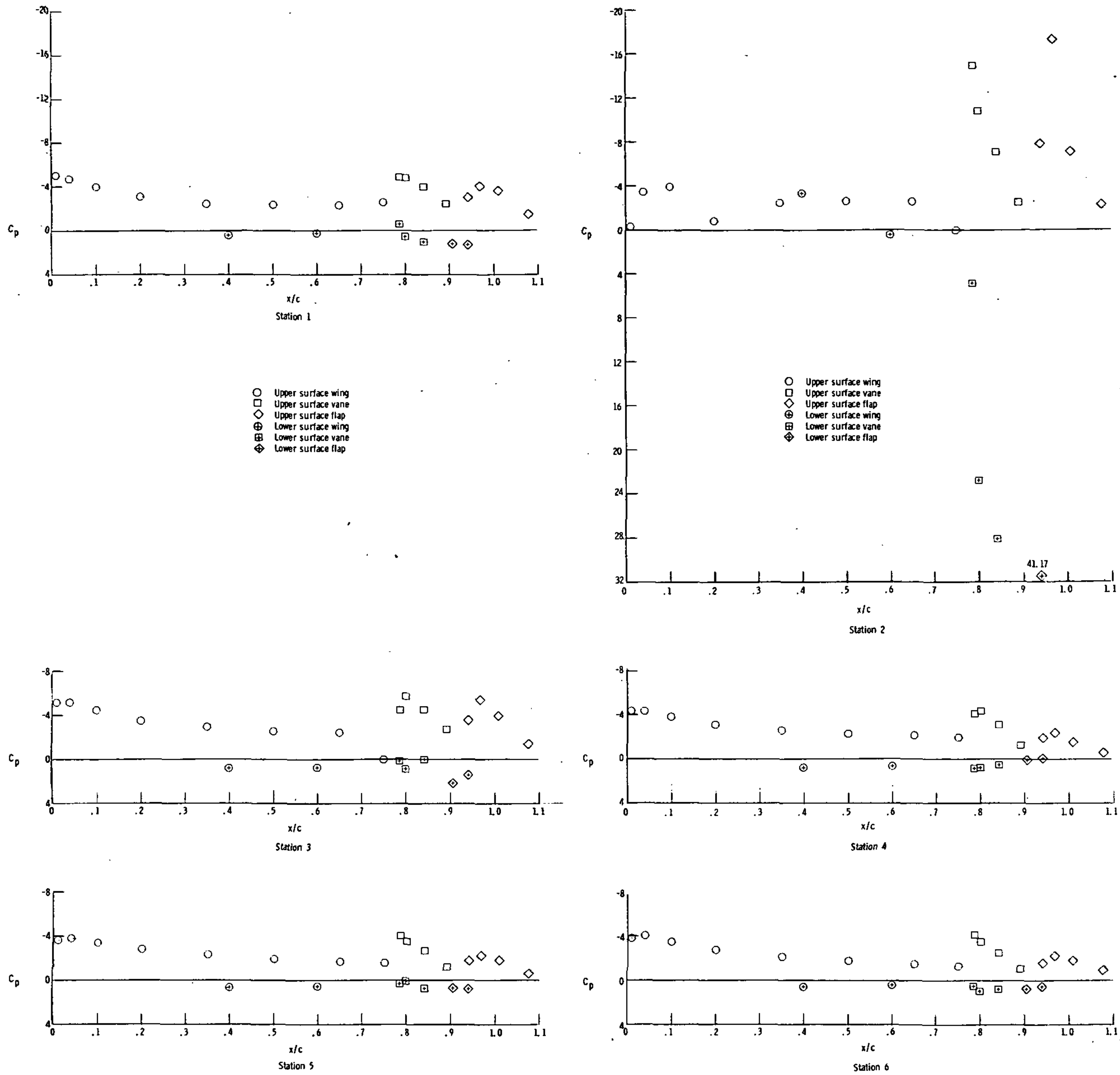



Figure 72.- Pressure distributions on wing and flap of model. Inboard engines operating. Partial-span flap. $\delta_f = 35^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 2.05$; $A = 7$.

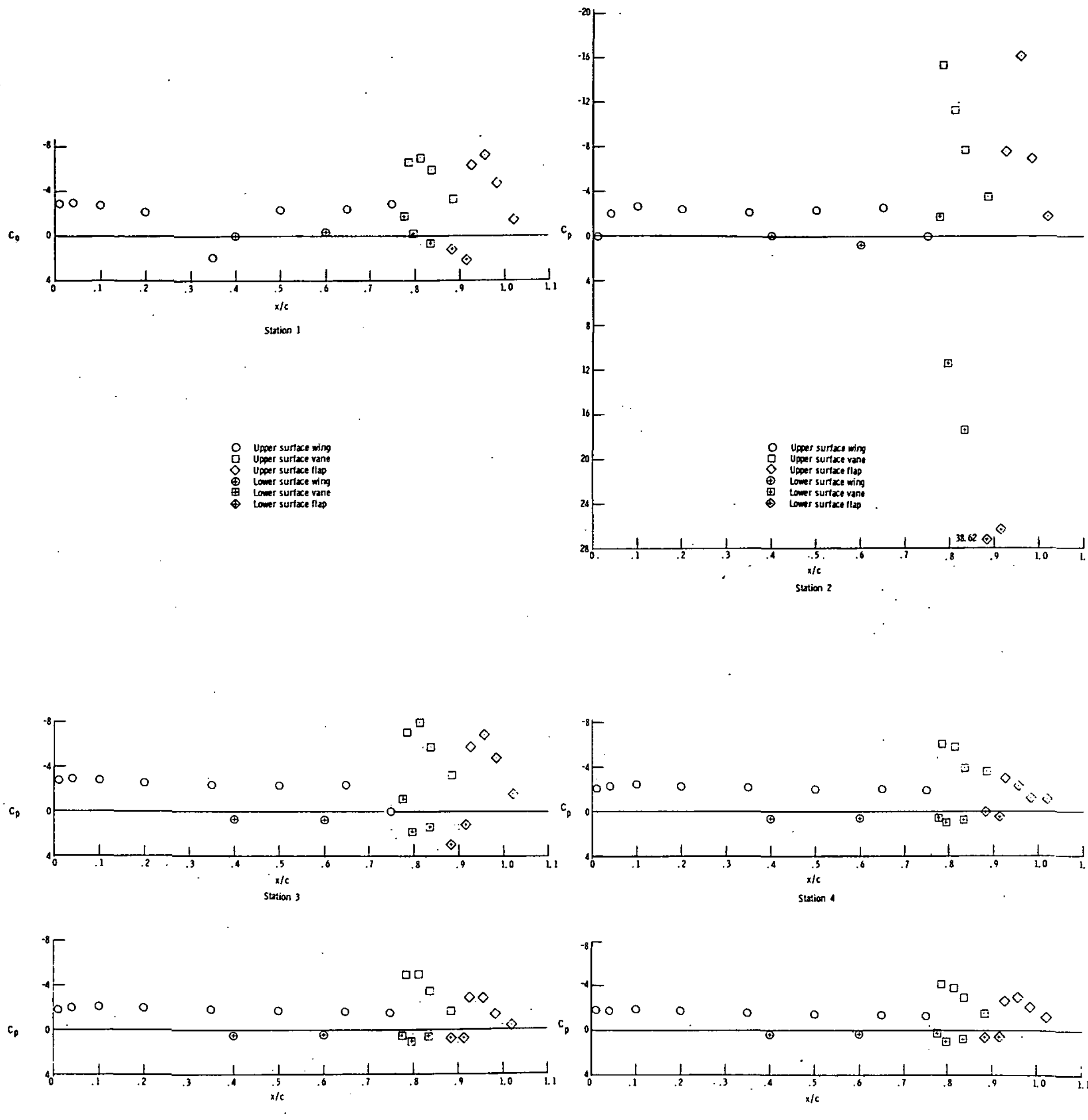



Figure 73.- Pressure distributions on wing and flap of model. Inboard engines operating. Partial-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 1.03$; $A = 7$.

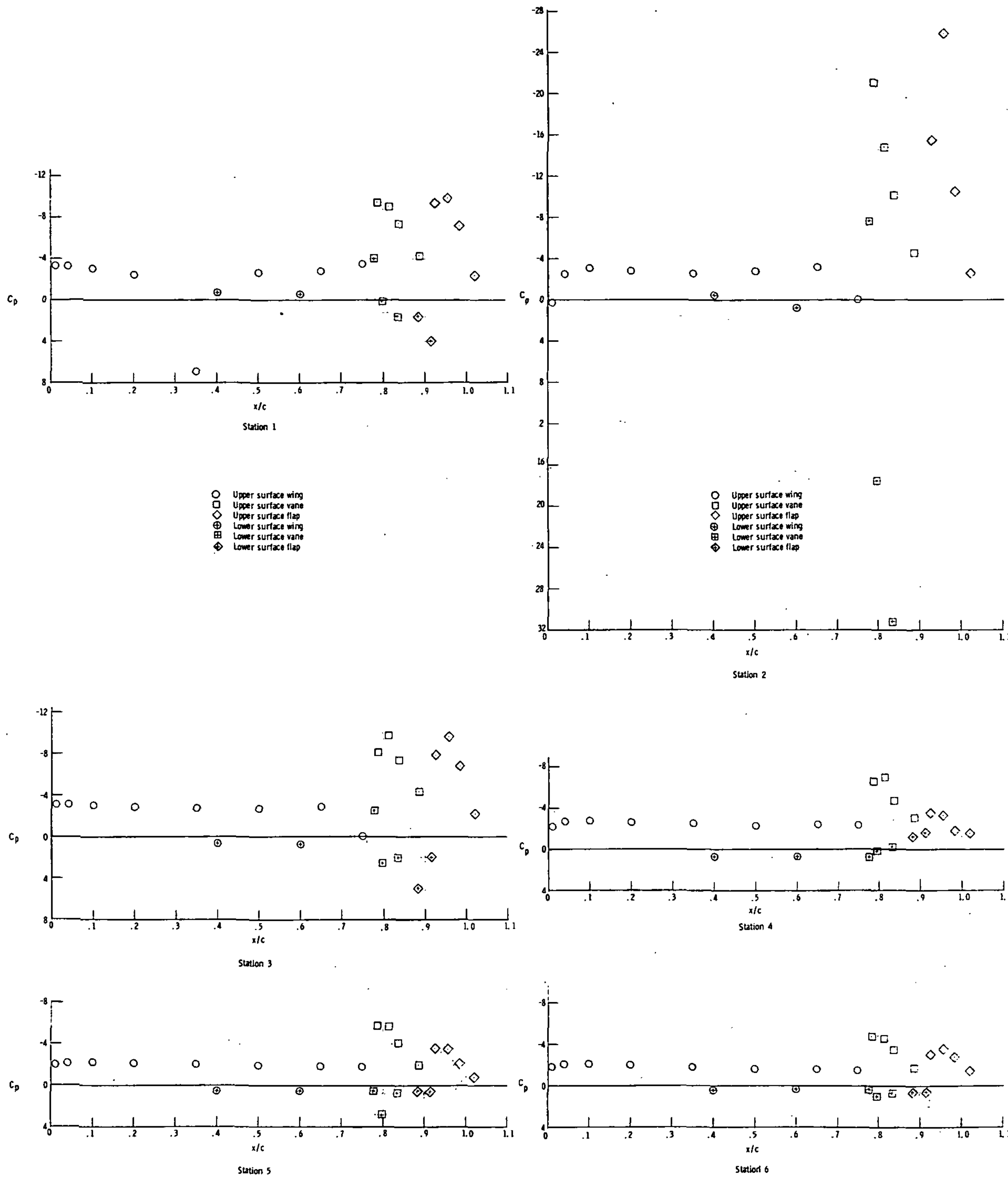



Figure 74.- Pressure distributions on wing and flap of model. Inboard engines operating. Partial-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 2.05$; A = 7.

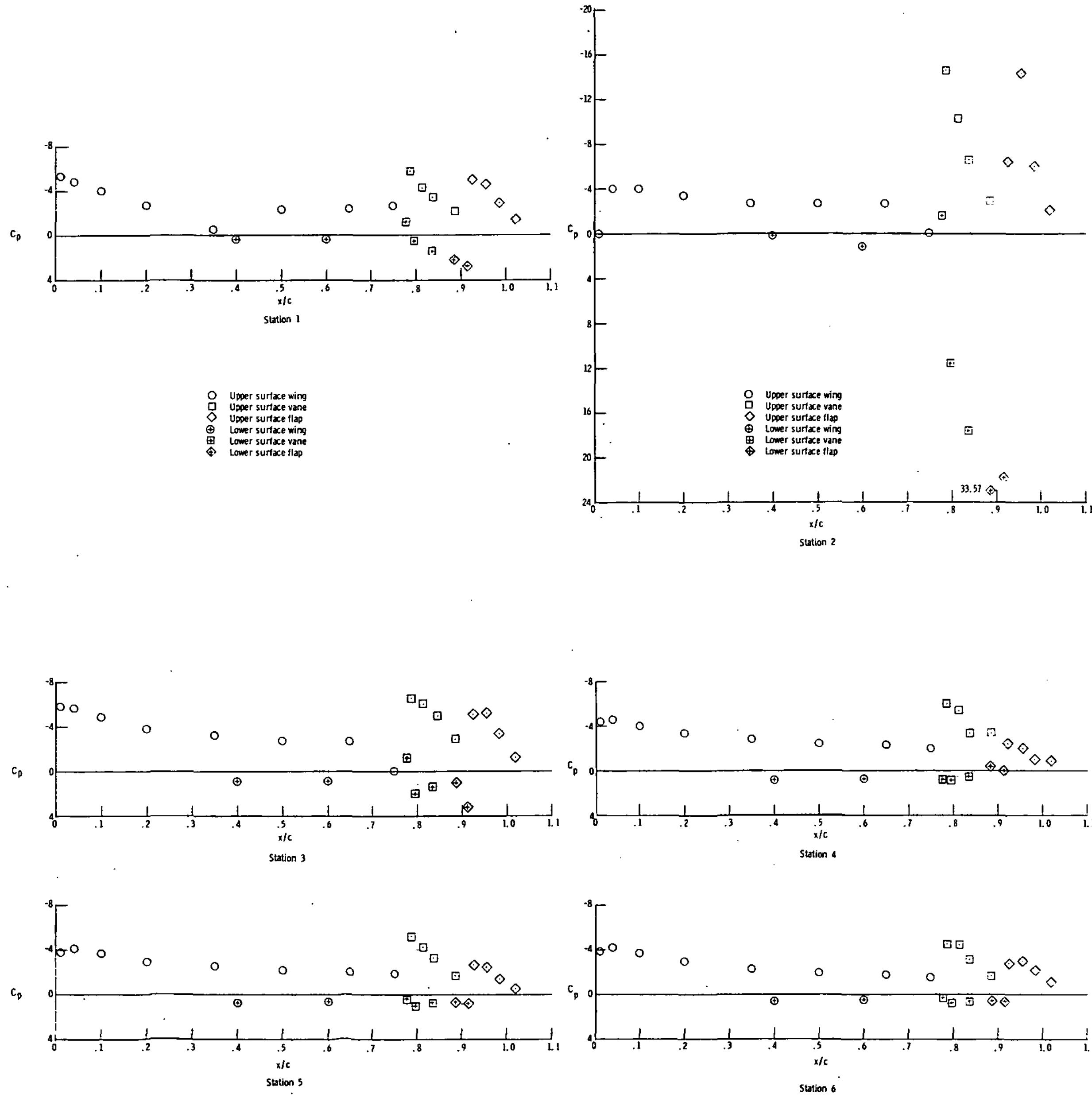



Figure 75.- Pressure distributions on wing and flap of model. Inboard engines operating. Partial-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 1.03$; A = 7.

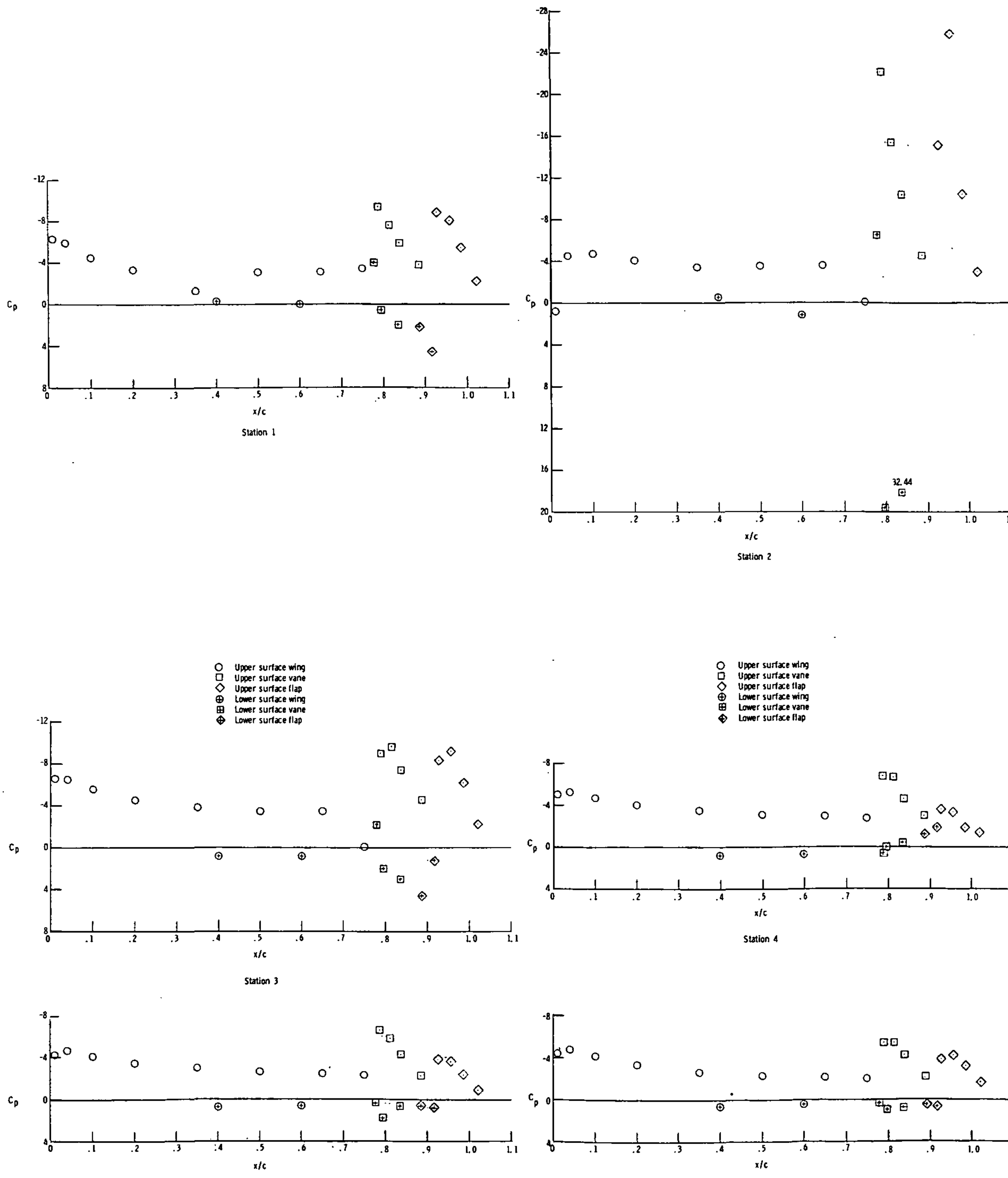



Figure 76.- Pressure distributions on wing and flap of model. Inboard engines operating. Partial-span flap. $\delta_f = 55^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 2.05$; $A = 7$.

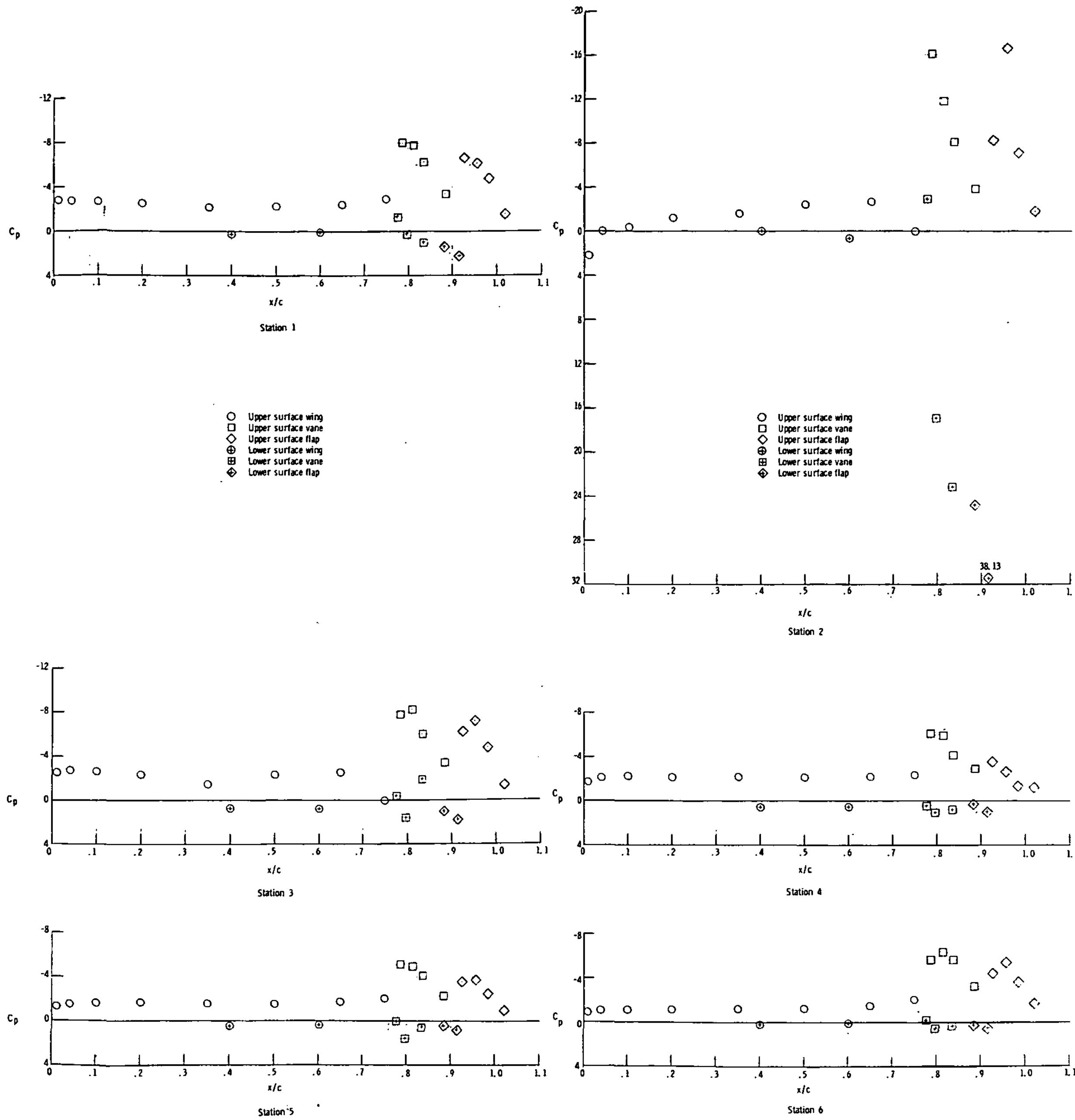



Figure 77.- Pressure distributions on wing and flap of model. Inboard engines operating. Full-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$; $C_{\mu} = 1.38$; A = 5.25.

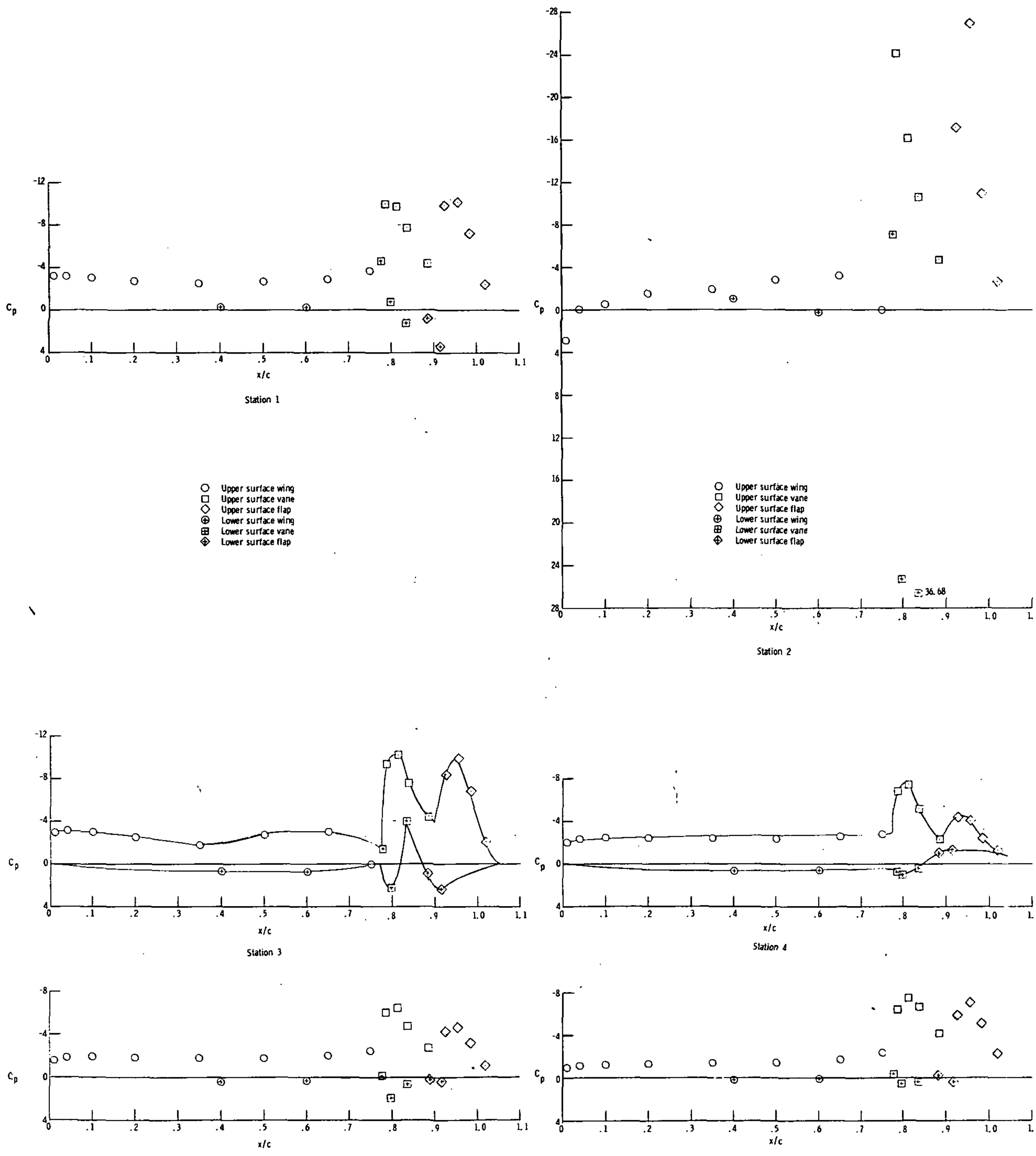



Figure 78.- Pressure distributions on wing and flap of model. Inboard engines operating. Full-span flap. $\delta_f = 55^o$; $\alpha = 1^o$; $C_\mu = 2.75$; A = 5.25.

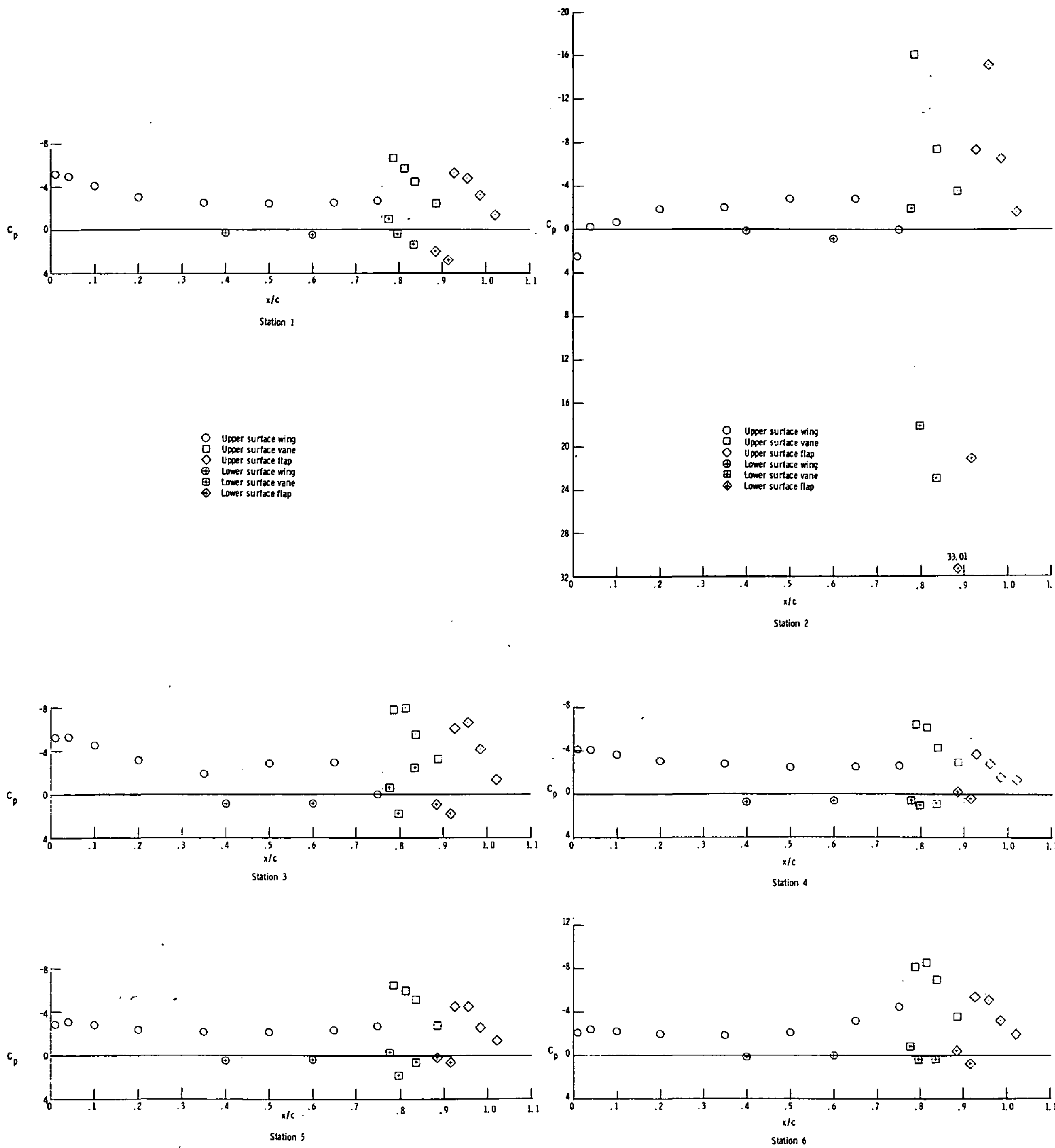



Figure 79.- Pressure distributions on wing and flap of model. Inboard engines operating. Full-span flap. $\delta_f = 55^o$; $\alpha = 16^o$; $C_\mu = 1.38$; $A = 5.25$.

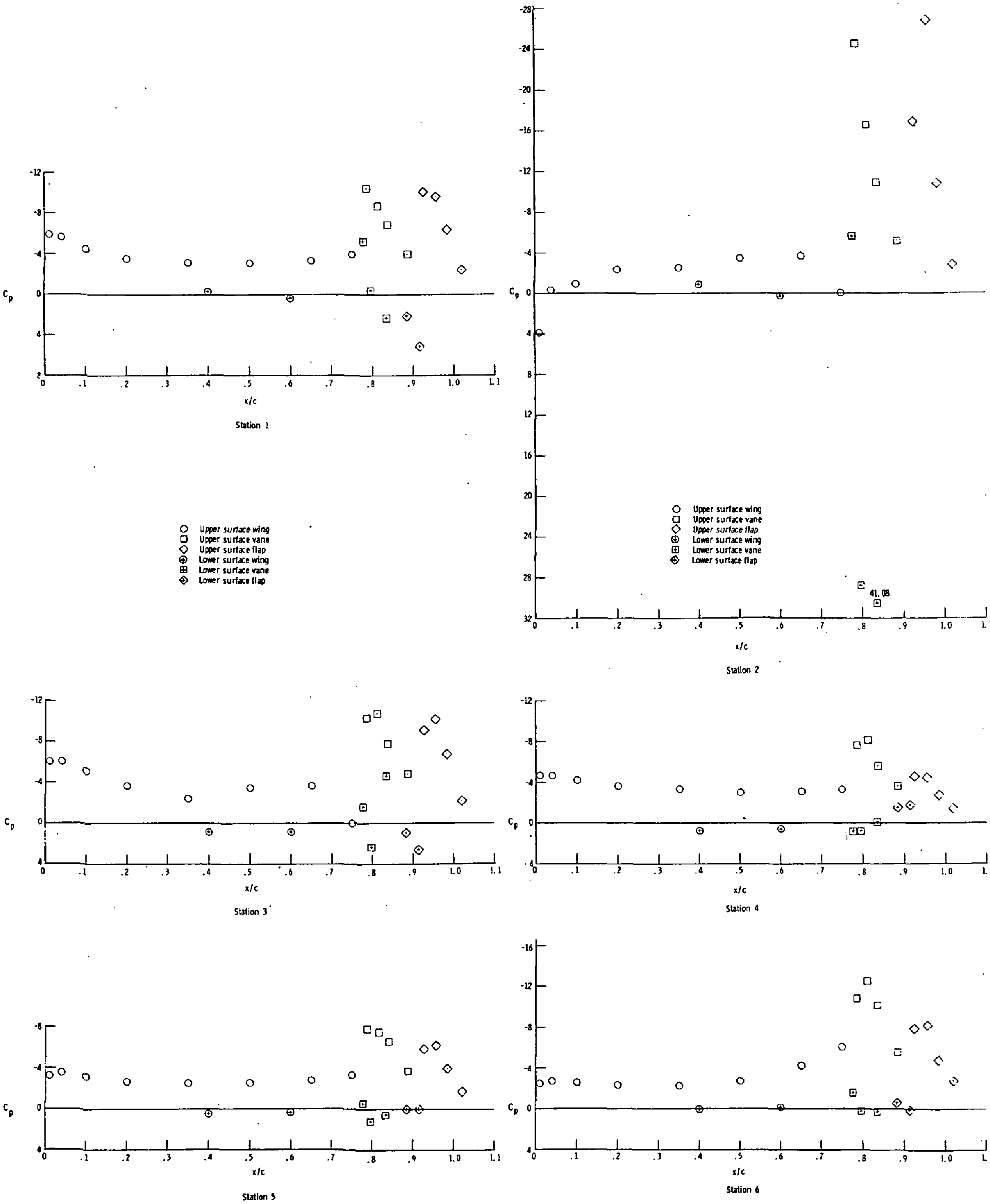
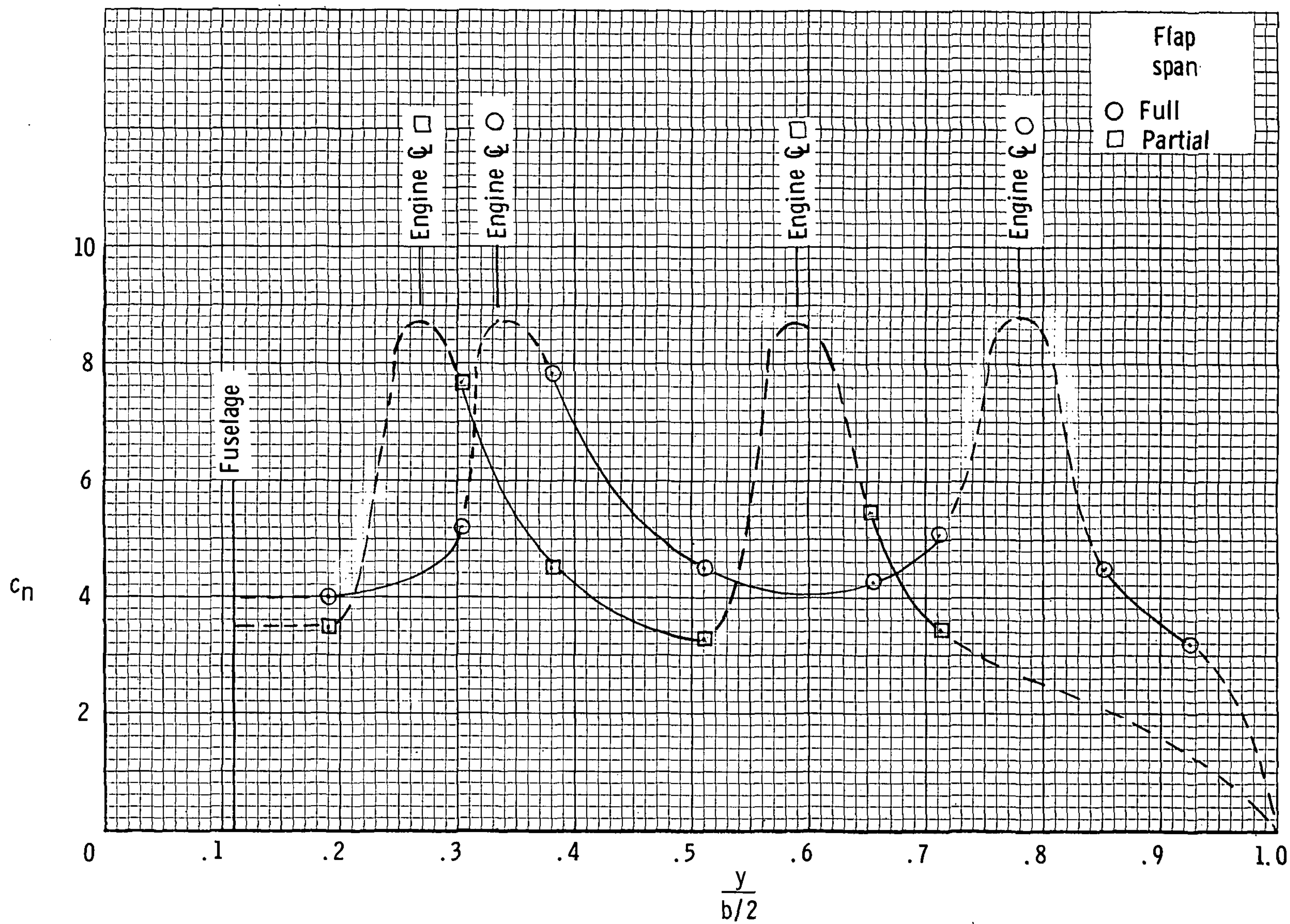
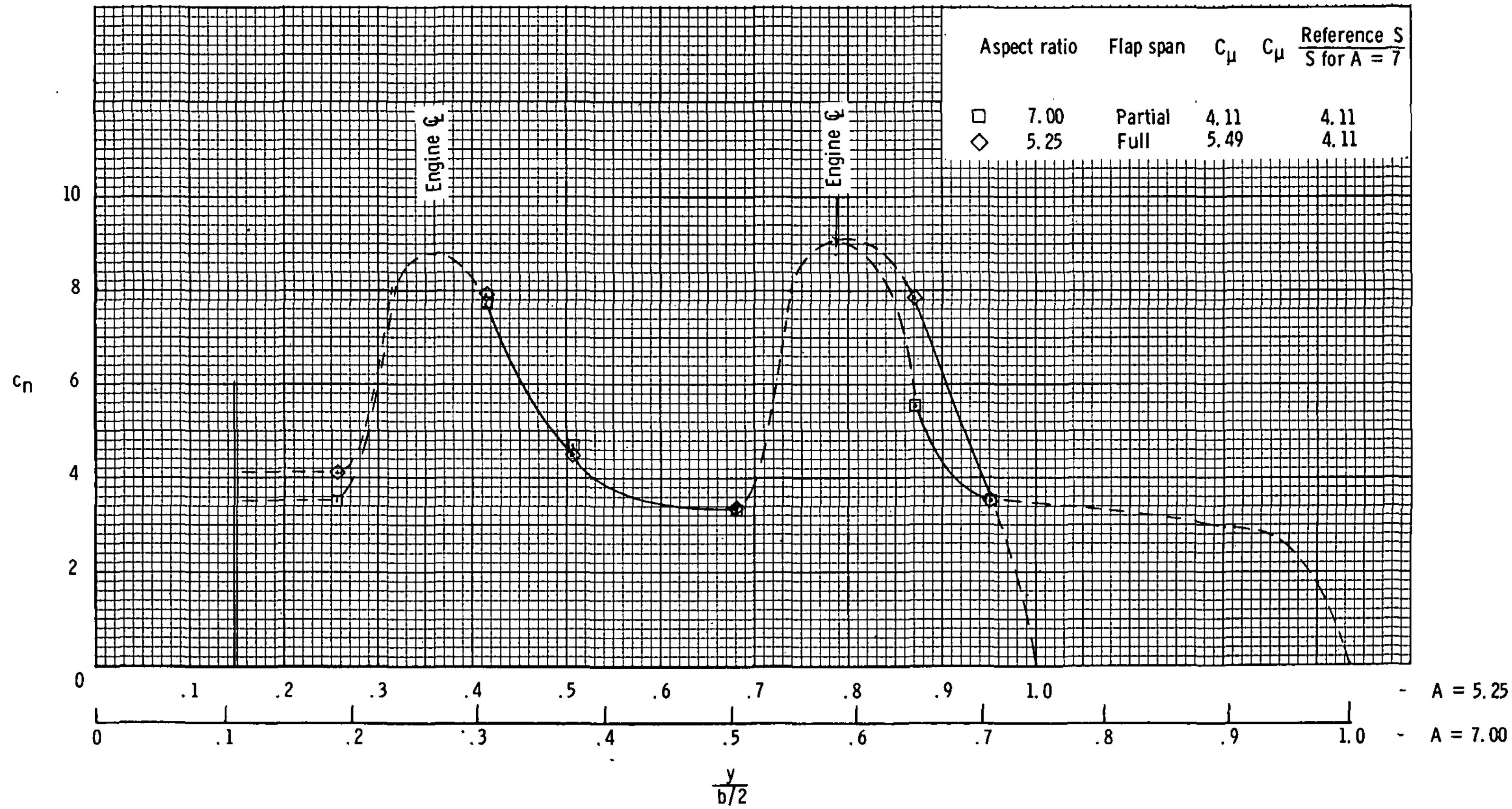



Figure 80.- Pressure distributions on wing and flap of model. Inboard engines operating. Full-span flap. $\delta_f = 55^{\circ}$; $\alpha = 16^{\circ}$; $C_{\mu} = 2.75$; $A = 5.25$.




(a) $A = 7$; $C_\mu = 4.11$.

Figure 81.- Typical spanwise load distribution for the model with all engines operating. $\delta_f = 55^o$; $\alpha = 1^o$.




(b) A = 5.25; full-span flap; A = 7; partial-span flap.

Figure 81.- Concluded.

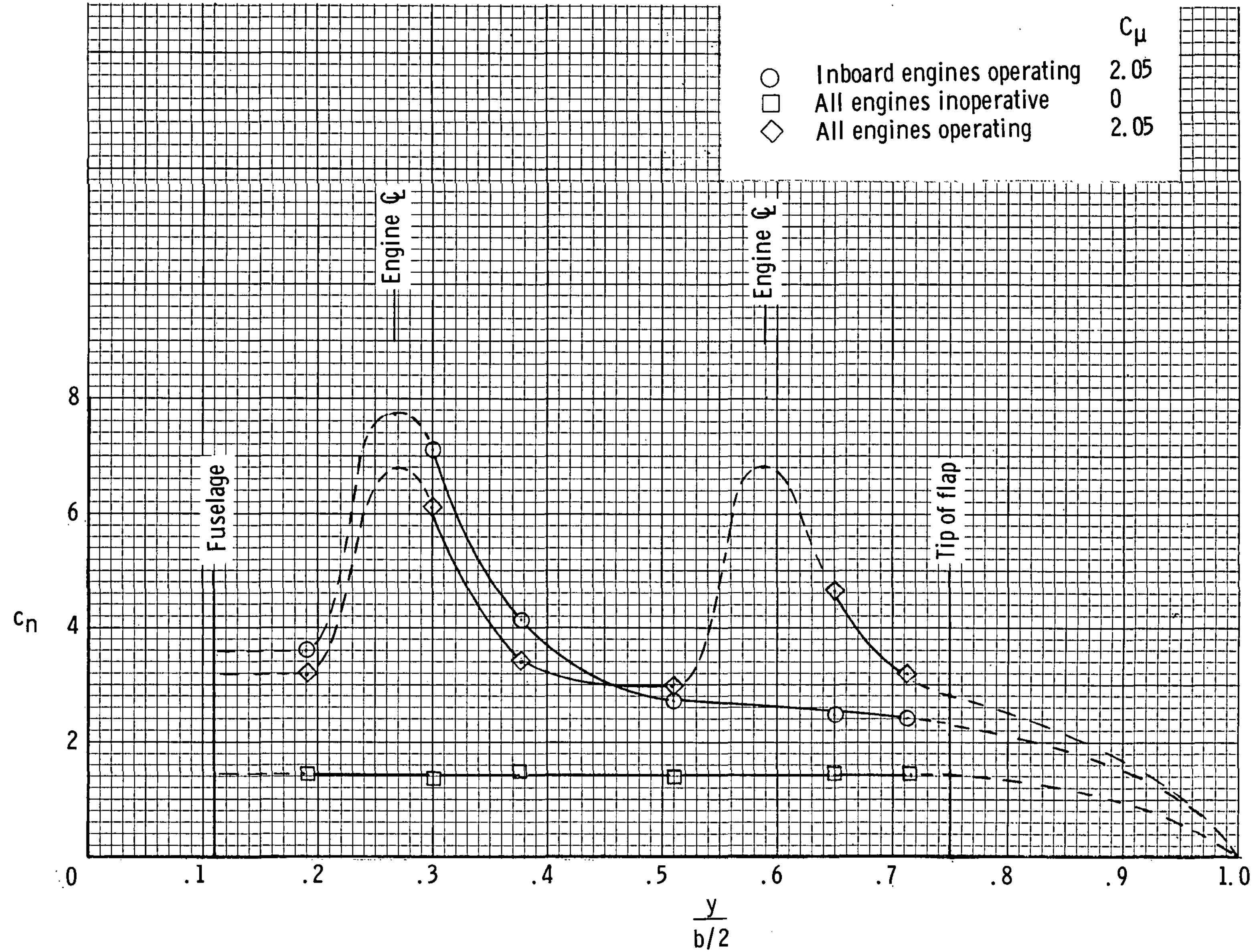



Figure 82. - Typical spanwise load distribution for the model with two engines close inboard and four engines spread out. Partial-span flap; $A = 7$; $\delta_f = 55^o$; $\alpha = 1^o$.

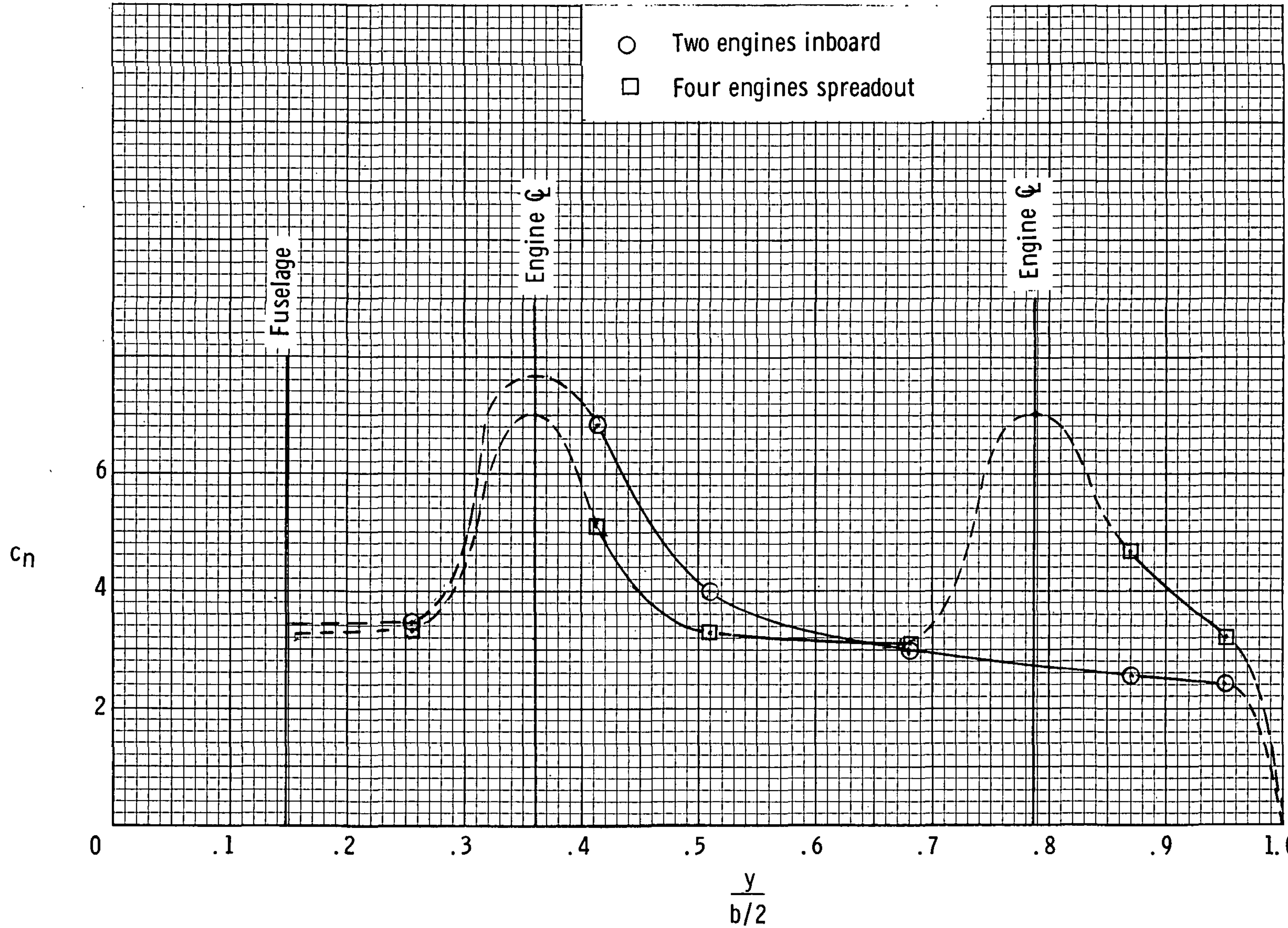



Figure 83.- Typical spanwise load distribution for the model with two engines close inboard and four engines spread out. Full-span flap; $A = 5.25$; $\delta_f = 55^o$; $\alpha = 1^o$; $C_\mu = 2.75$.

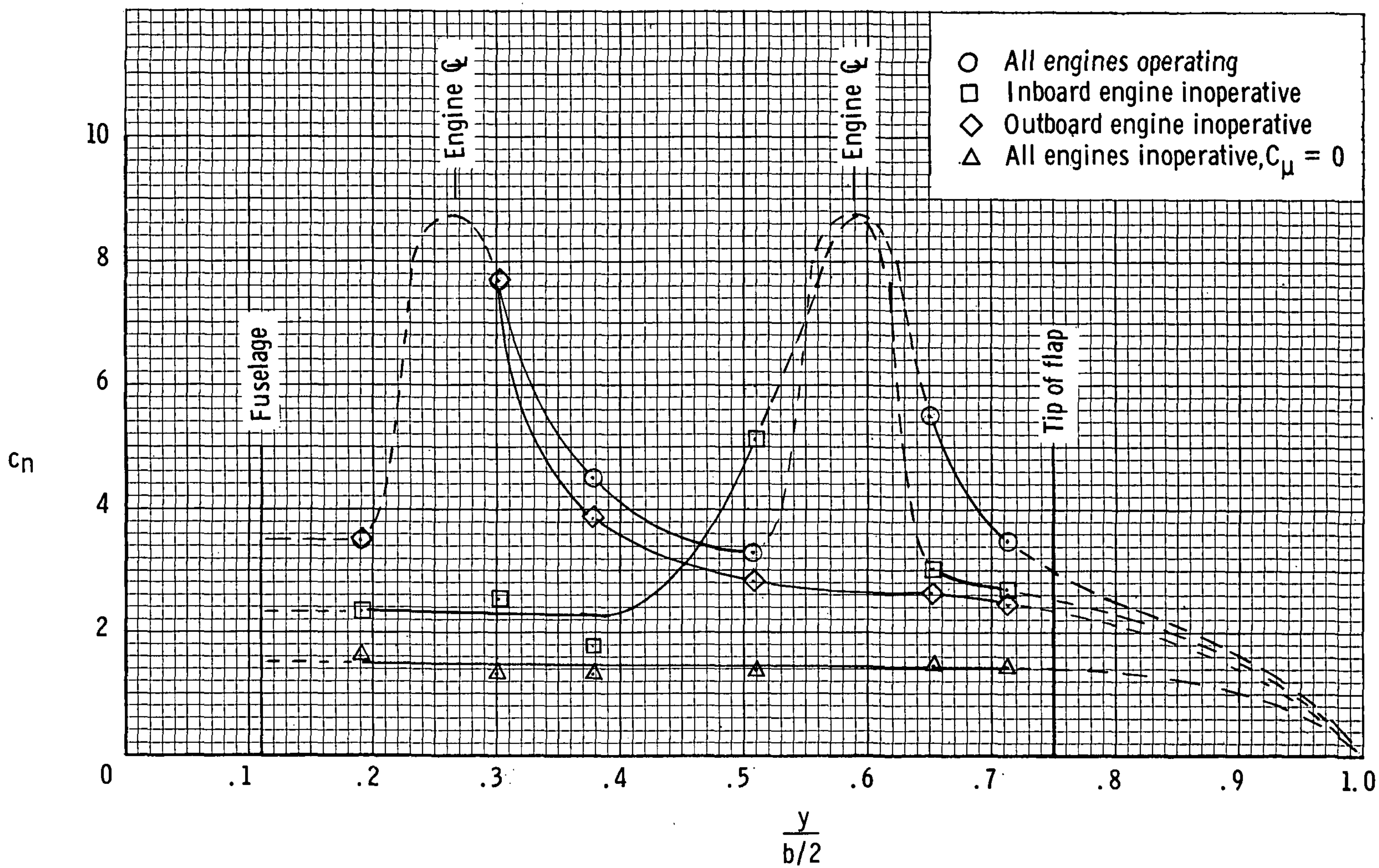



Figure 84.- Typical spanwise load distribution for the model with an engine inoperative on a wing having an aspect ratio of 7 and a partial-span flap. $\delta_f = 55^{\circ}$; $\alpha = 1^{\circ}$.

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