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An Experimental Study of the Aerodynamics of a Swept and Unswept Semispan Wing With a Simulated Glaze Ice Accretion

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AN EXPERIMENTAL STUDY OF THE AERODYNAMICS OF A SWEPT AND UNSWEPT SEMISPAN WING WITH A SIMULATED GLAZE ICE ACCRETION

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ABSTRACT

Two semispan wings, one with a rectangular planform and one with 30 degrees of leading edge sweep were tested Both had a NACA 0012 airfoil section, and both were tested clean and with simulated glaze ice shapes on their leading edges. Several surface roughness were tested. Each model geometry is documented and each surface roughness is explained. Aerodynamic performance of the wing in the form of sectional lift and integrated three-dimensional lift is documented through pressure measurements obtained from rows of surface pressure taps placed at five span locations on the wing. For the rectangular wing, sectional drag near the midspan is obtained from wake total pressure profiles. The data is presented in tabular and graphical form and is also available on computer disk.

ACKNOWLEDGMENT

All measurements were taken in the Ohio State University's 3 by 5 foot subsonic wind tunnel. This research was supported by NASA Lewis under grant NAG 3-28. The preparation of this report was completed at the University of Illinois and supported by grant NAG 3-1134 also from NASA Lewis. The author would like to ackowledge Dr. Abdi Khodadoust who acquired and reduced most of the data and Steve Wells who was primarily responsible for the preparation of this report.

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NOMENCLATURE

Symbol	**Description**
AOA	Angle of attack
b	Span of the semispan model
c	Sectional chord length
C_d	Sectional drag coefficient
C_{d_0}	Sectional drag coefficient at zero lift
C_l	Sectional lift coefficient
C_L	Wing lift coefficient
$C_{m\ c/4}$	Sectional moment coefficient about the quarter chord
C_p	Pressure coefficient
k	Roughness height
MACH	Mach number
Re	Reynolds number
x	Wing coordinate in the chordwise direction
y	Wing coordinate in the spanwise direction
z	Wing coordinate perpendicular to the x-y plane
α	Angle of attack
Λ	Leading edge sweep

Subscripts

geo	Geometric
wake	Sectional data from the wake probe

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INTRODUCTION

This report is an extension of work started at the Ohio State University[1,2] which examined in detail the aerodynamics of a NACA 0012 airfoil with simulated ice. This report extends the study to thee dimensions by studying the aerodynamics of a semispan wing with the same airfoil section and simulated ice shape used in the previous study. In this study, both a rectangular wing and a wing with a leading edge sweep of 30 degrees are examined.

In both the rectangular and the swept wing configurations, the model was tested clean, tripped, iced, and iced with isotropic roughness. In addition to these conditions, the rectangular wing was tested with ice and three-dimensional roughness. A complete description of the tested roughnesses will be given in the next section. In all cases, sectional pressure distributions, integrated sectional lift coefficients at five spanwise stations, and integrated three dimensional lift coefficients are presented. For the rectangular wing, sectional drag coefficients near the midspan of the wing are calculated by integration of wake probe pressure data.

In order to better organize the large quantity of data presented in this report, the data are separated into several sections following the text. The first section is the MODEL GEOMETRY section. This section contains figures and tables documenting the test article and its installation in the wind tunnel. The next section is the RUN SUMMARIES section. This contains a tabulated list of lift, drag and tunnel conditions for each run number. The tables are separated into separate tables for each model geometry. The run summaries are also intended to serve as an index for the following plotted data sections. For each of the model geometries summarized in the preceding RUN SUMMARIES section, a separate section is allocated for the presentation of the plotted sectional pressure distributions. For the rectangular wing, the plotted wake pressure profiles are included as well. In addition to the tabulated data, most of the data presented in this report is available in compressed format on 5.25 inch or 3.5 inch diskettes formatted for personal computers. Appendix A contains a summary of the files on these disks as well as instructions for extracting these files.

The purpose of this report is to document the tested geometry and present the data collected from this geometry in an easily referenced format. It is not intended to provide analysis of the data. Analysis of the data can be found in the technical papers[3,4,5] which are included in Appendix B.

MODEL GEOMETRY & FACILITY DESCRIPTION

Figs. 1 and 2 in the GEOMETRY section show the planform of the rectangular wing. The wing has a NACA 0012 section with a chord of 15 inches and a span of 37.25 inches. The wing was made with several sections to allow iced and clean leading edges to be attached to the model. Fig. 1 shows the rectangular wing with its coordinate system and its five main tap rows. The sparse wing tip tap row was not used in this study. Fig. 2 shows a schematic of the rectangular wing which gives the spanwise location of the tap rows. The coordinates of the airfoil sections at each pressure tap row for the clean rectangular wing can be found in Table 1, and the coordinates for the iced rectangular wing can be found in Table 2

Figs. 3 and 4 show the 30 swept wing. Fig. 3 shows the different root and tip wing sections used to change the rectangular wing into the swept model. Fig. 4 also shows the coordinate system for the swept configuration. For the swept model, the Y axis is along the leading edge and the X axis is perpendicular to the leading edge. Figure 4 shows the spanwise location of the tap rows in this coordinate system. Tables 3 and 4 give the coordinates of the pressure taps for the clean and iced configurations respectively.

The simulated ice shape used in this study is an average shape derived from an actual ice shape accreted in the NASA Lewis Icing Research Tunnel. Fig. 5 shows the actual ice shape on the leading edge of the NACA 0012 and the simulated shape used in this work. Fig. 5 also shows the conditions under which the actual ice shape was formed.

Several surface roughnesses were tested on the above wing geometries. To ensure transition on the model at the low test Reynolds numbers, trip strips were made by lightly applying 100 grit roughness particles to 0.25 inch wide double sided cellophane tape. The tape with grit on one side was then attached to the model on the upper and lower surfaces at the 5% chord station. The trip strip was used only on the clean rectangular and swept wing models. In an effort to simulate the rough, irregular surface of actual ice accretions, two surface roughness modifications were used on the smooth simulated ice shape of the test article. Both roughness were applied from the 8.5% chord location on the lower surface to the 1.5% location on the upper surface. For the first roughness tested, 50 grit cloth backed sandpaper was used. Due to the near uniform distribution of the roughness of the sand paper this roughness is referred to as isotropic roughness. The 50 grit sandpaper has a nominal particle size of 0.015 inches or a k/c of 0.001. The second roughness tested on the model was the three-dimensional roughness. Shown in figure 6, the three-dimensional roughness consisted of 0.25 inch square layers of tape layered to an average height of 0.054 inches. The tape squares were then arranged one inch apart and in rows offset by 0.5 inches. The three dimensional roughness is used to simulate the large irregular peaks which can be found on some ice shapes.

Each of the wing geometries were tested in the Ohio State University 3 by 5 foot subsonic wind tunnel. Figs. 7 and 8 respectively show the rectangular wing and swept wings in the tunnel test section. The figures also show the splitter plate to which the wing root was sealed. The splitter plate served as the reflection plane for the semispan model. By mounting the wing root to the splitter plate the thick, tunnel-side-wall boundary layer is allowed to pass behind the model and only the fresh, thinner boundary layer which starts at the leading edge of the splitter plate encounters the wing wall junction. The thinner boundary layer on the splitter plate reduces the effects of the wing-wall interaction on the reflection plane behavior of the semispan model.

Fig. 9 shows an end view of the test section showing the two locations of the wake probe. The surface roughness of the dense pressure taps on the model midspan caused a measurable drag rise in the wake data directly downstream of the tap row. Therefore, the wake probe was moved half way between the midspan tap row and the next inboard row. Presented drag data will show the location of the measurement.

DATA REDUCTION

Five rows of pressure taps were arranged at five spanwise stations in order to obtain sectional lift and moment coefficients at each of these spanwise stations as well as allowing integration of the sectional lift values over the wing span to obtain the three-dimensional lift coefficient for the semispan wing. To obtain three dimensional lift values, the sectional lift at the wing tip was approximated using Schrenk's approximation for additional lift.[6] Once the sectional lift at the wing tip was calculated, integration was performed over the wing span by utilizing a trapezoidal integration scheme.

Sectional drag data were acquired for the midspan of the rectangular wing by using a momentum deficit method in the wake near the midspan. Sectional pressure distributions on the midspan of the wing compared well to two-dimensional profiles taken eariler. This supports the conclusion that the midspan of the wing behaves very much like the two dimensional case. Therefore, because of the two-dimensional nature of the flow near the midspan of the model, wake drag data can be utilized with confidence as a measure of sectional drag at the model midspan. As further proof of the two-dimensionality of the flow in this region, it was found that the small roughness produced by the presence of the dense midspan tap row caused higher than expected C_d results for the clean wing when the wake probe was placed directly behind the midspan tap row. By placing the probe between tap rows 2 and 3 at $y/b = 0.417$, C_d was reduced.

MODEL GEOMETRY

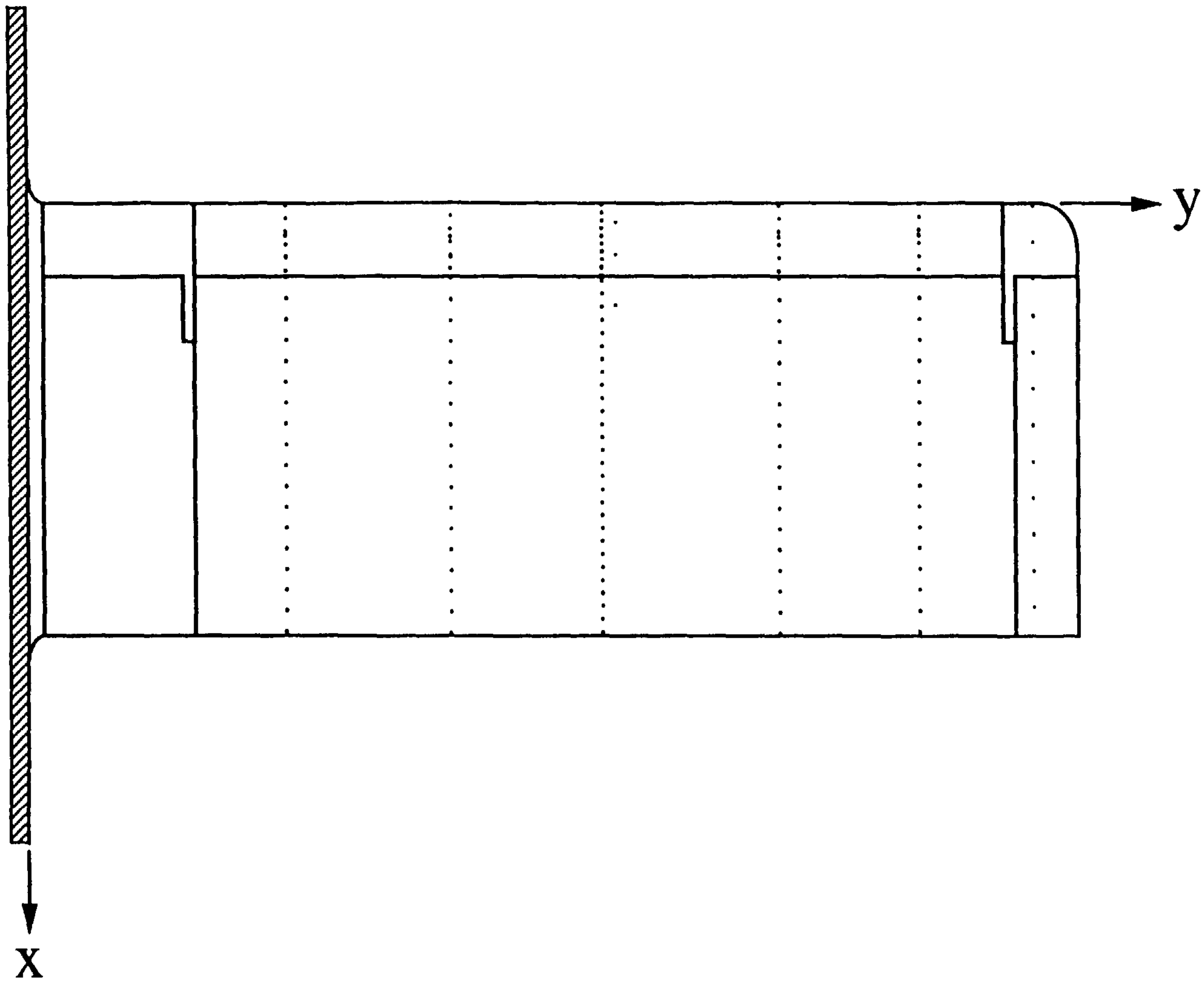


Fig. 1. Rectangular wing showing coordinate system, modular design, and tap rows

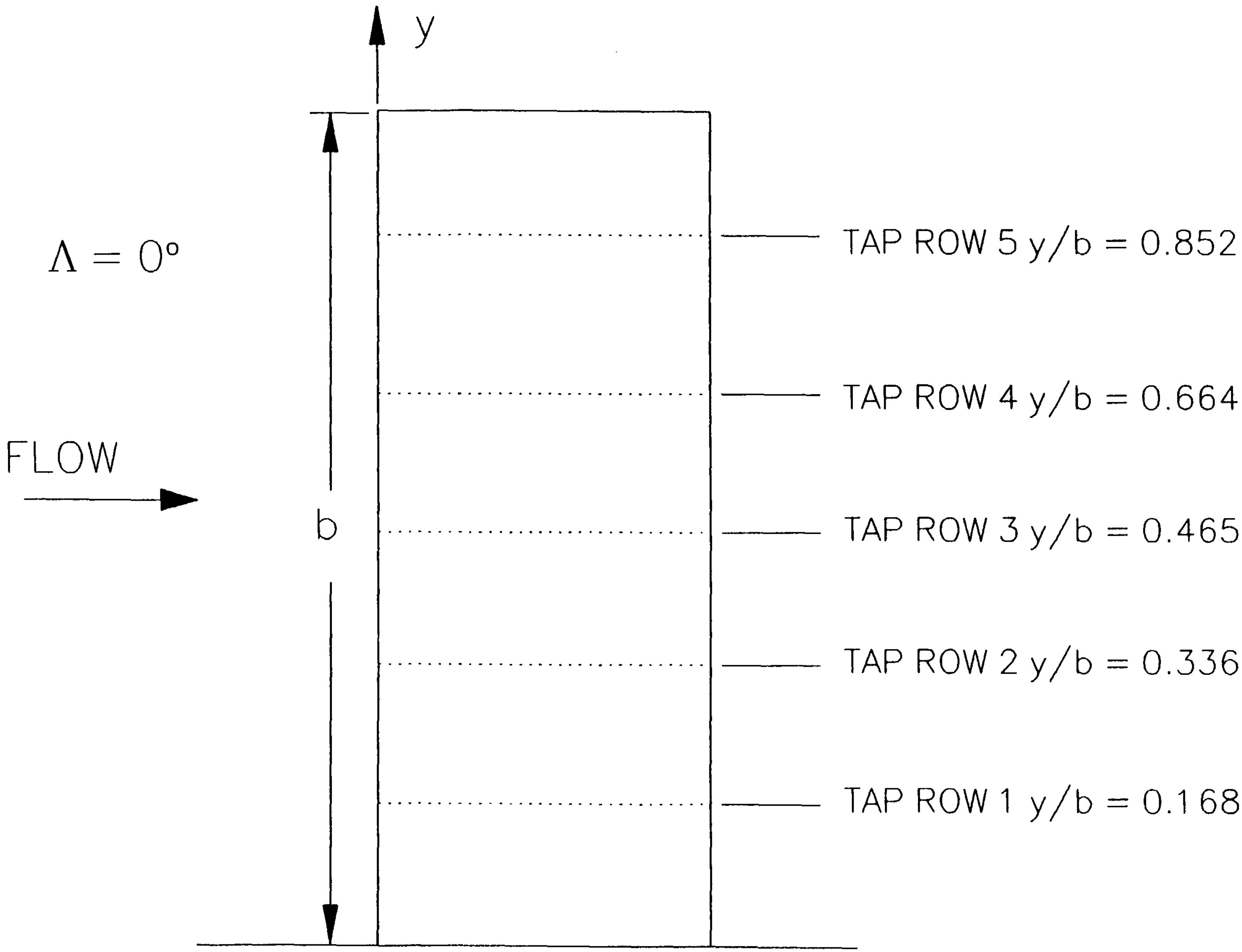


Fig. 2. Rectangular wing showing tap row locations

COORDINATES FOR THE CLEAN RECTANGULAR WING

TAP ROW 1					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.1680	0.0000	0.0075	0.1680	-0.0146
0.0075	0.1680	0.0146	0.0300	0.1680	-0.0283
0.0300	0.1680	0.0283	0.0600	0.1680	-0.0384
0.0600	0.1680	0.0384	0.0900	0.1680	-0.0450
0.0900	0.1680	0.0450	0.1200	0.1680	-0.0499
0.1200	0.1680	0.0499	0.1500	0.1680	-0.0534
0.1500	0.1680	0.0534	0.2400	0.1680	-0.0591
0.1800	0.1680	0.0561	0.3000	0.1680	-0.0600
0.2100	0.1680	0.0579	0.3400	0.1680	-0.0597
0.2400	0.1680	0.0591	0.3800	0.1680	-0.0587
0.2700	0.1680	0.0598	0.4200	0.1680	-0.0572
0.3000	0.1680	0.0600	0.5000	0.1680	-0.0529
0.3400	0.1680	0.0597	0.6000	0.1680	-0.0456
0.3800	0.1680	0.0587	0.7000	0.1680	-0.0366
0.4200	0.1680	0.0572	0.8000	0.1680	-0.0262
0.5000	0.1680	0.0529	0.9000	0.1680	-0.0145
0.6000	0.1680	0.0456	1.0000	0.1680	0.0000
0.7000	0.1680	0.0366			
0.8000	0.1680	0.0262			
0.9000	0.1680	0.0145			

TAP ROW 2					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.3360	0.0000	0.0075	0.3360	-0.0146
0.0075	0.3360	0.0146	0.0300	0.3360	-0.0283
0.0300	0.3360	0.0283	0.0600	0.3360	-0.0384
0.0600	0.3360	0.0384	0.0900	0.3360	-0.0450
0.0900	0.3360	0.0450	0.1200	0.3360	-0.0499
0.1200	0.3360	0.0499	0.1500	0.3360	-0.0534
0.1500	0.3360	0.0534	0.1800	0.3360	-0.0561
0.1800	0.3360	0.0561	0.2100	0.3360	-0.0579
0.2100	0.3360	0.0579	0.2400	0.3360	-0.0591
0.2400	0.3360	0.0591	0.2700	0.3360	-0.0598
0.2700	0.3360	0.0598	0.3000	0.3360	-0.0600
0.3000	0.3360	0.0600	0.3400	0.3360	-0.0597
0.3400	0.3360	0.0597	0.3800	0.3360	-0.0587
0.3800	0.3360	0.0587	0.4200	0.3360	-0.0572
0.4200	0.3360	0.0572	0.5000	0.3360	-0.0529
0.5000	0.3360	0.0529	0.6000	0.3360	-0.0456
0.6000	0.3360	0.0456	0.7000	0.3360	-0.0366
0.7000	0.3360	0.0366	0.8000	0.3360	-0.0262
0.8000	0.3360	0.0262	0.9000	0.3360	-0.0145
0.9000	0.3360	0.0145	1.0000	0.3360	0.0000

Table 1. Clean rectangular wing coordinates

TAP ROW 3					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.4970	0.0000	0.0075	0.4970	-0.0146
0.0075	0.4970	0.0146	0.0150	0.4970	-0.0205
0.0150	0.4970	0.0205	0.0300	0.4970	-0.0283
0.0300	0.4970	0.0283	0.0450	0.4970	-0.0339
0.0450	0.4970	0.0339	0.0600	0.4970	-0.0384
0.0600	0.4970	0.0384	0.0750	0.4970	-0.0420
0.0750	0.4970	0.0420	0.0900	0.4970	-0.0450
0.0900	0.4970	0.0450	0.1050	0.4970	-0.0476
0.1050	0.4970	0.0476	0.1200	0.4970	-0.0499
0.1200	0.4970	0.0499	0.1350	0.4970	-0.0518
0.1350	0.4970	0.0518	0.1500	0.4970	-0.0534
0.1500	0.4970	0.0534	0.1650	0.4970	-0.0549
0.1650	0.4970	0.0549	0.1800	0.4970	-0.0561
0.1800	0.4970	0.0561	0.1950	0.4970	-0.0571
0.1950	0.4970	0.0571	0.2100	0.4970	-0.0579
0.2100	0.4970	0.0579	0.2250	0.4970	-0.0586
0.2250	0.4970	0.0586	0.2400	0.4970	-0.0591
0.2400	0.4970	0.0591	0.2550	0.4970	-0.0595
0.2550	0.4970	0.0595	0.2700	0.4970	-0.0598
0.2700	0.4970	0.0598	0.2850	0.4970	-0.0600
0.2850	0.4970	0.0600	0.3000	0.4970	-0.0600
0.3000	0.4970	0.0600	0.3200	0.4970	-0.0599
0.3200	0.4970	0.0599	0.3400	0.4970	-0.0597
0.3400	0.4970	0.0597	0.3600	0.4970	-0.0593
0.3600	0.4970	0.0593	0.3800	0.4970	-0.0587
0.3800	0.4970	0.0587	0.4000	0.4970	-0.0580
0.4000	0.4970	0.0580	0.4200	0.4970	-0.0572
0.4200	0.4970	0.0572	0.4500	0.4970	-0.0558
0.4500	0.4970	0.0558	0.5000	0.4970	-0.0529
0.5000	0.4970	0.0529	0.5500	0.4970	-0.0495
0.5500	0.4970	0.0495	0.6000	0.4970	-0.0456
0.6000	0.4970	0.0456	0.6500	0.4970	-0.0413
0.6500	0.4970	0.0413	0.7000	0.4970	-0.0366
0.7000	0.4970	0.0366	0.7500	0.4970	-0.0316
0.7500	0.4970	0.0316	0.8000	0.4970	-0.0262
0.8000	0.4970	0.0262	0.8500	0.4970	-0.0205
0.8500	0.4970	0.0205	0.9000	0.4970	-0.0145
0.9000	0.4970	0.0145	0.9500	0.4970	-0.0081
0.9500	0.4970	0.0081	0.9750	0.4970	-0.0047
0.9750	0.4970	0.0047	1.0000	0.4970	0.0000

Table 1. Continued

TAP ROW 4					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.6640	0.0000	0.0075	0.6640	-0.0146
0.0075	0.6640	0.0146	0.0300	0.6640	-0.0283
0.0300	0.6640	0.0283	0.0600	0.6640	-0.0384
0.0600	0.6640	0.0384	0.0900	0.6640	-0.0450
0.0900	0.6640	0.0450	0.1200	0.6640	-0.0499
0.1200	0.6640	0.0499	0.1500	0.6640	-0.0534
0.1500	0.6640	0.0534	0.1800	0.6640	-0.0561
0.1800	0.6640	0.0561	0.2100	0.6640	-0.0579
0.2100	0.6640	0.0579	0.2400	0.6640	-0.0591
0.2400	0.6640	0.0591	0.2700	0.6640	-0.0598
0.2700	0.6640	0.0598	0.3000	0.6640	-0.0600
0.3000	0.6640	0.0600	0.3400	0.6640	-0.0597
0.3400	0.6640	0.0597	0.3800	0.6640	-0.0587
0.3800	0.6640	0.0587	0.4200	0.6640	-0.0572
0.4200	0.6640	0.0572	0.5000	0.6640	-0.0529
0.5000	0.6640	0.0529	0.6000	0.6640	-0.0456
0.6000	0.6640	0.0456	0.7000	0.6640	-0.0366
0.7000	0.6640	0.0366	0.8000	0.6640	-0.0262
0.8000	0.6640	0.0262	0.9000	0.6640	-0.0145
0.9000	0.6640	0.0145	1.0000	0.6640	0.0000

TAP ROW 5					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.8520	0.0000	0.0075	0.8520	-0.0146
0.0075	0.8520	0.0146	0.0300	0.8520	-0.0283
0.0300	0.8520	0.0283	0.0600	0.8520	-0.0384
0.0600	0.8520	0.0384	0.0900	0.8520	-0.0450
0.0900	0.8520	0.0450	0.1200	0.8520	-0.0499
0.1200	0.8520	0.0499	0.1500	0.8520	-0.0534
0.1500	0.8520	0.0534	0.1800	0.8520	-0.0561
0.1800	0.8520	0.0561	0.2100	0.8520	-0.0579
0.2100	0.8520	0.0579	0.2400	0.8520	-0.0591
0.2400	0.8520	0.0591	0.2700	0.8520	-0.0598
0.2700	0.8520	0.0598	0.3000	0.8520	-0.0600
0.3000	0.8520	0.0600	0.3400	0.8520	-0.0597
0.3400	0.8520	0.0597	0.3800	0.8520	-0.0587
0.3800	0.8520	0.0587	0.4200	0.8520	-0.0572
0.4200	0.8520	0.0572	0.5000	0.8520	-0.0529
0.5000	0.8520	0.0529	0.6000	0.8520	-0.0456
0.6000	0.8520	0.0456	0.7000	0.8520	-0.0366
0.7000	0.8520	0.0366	0.8000	0.8520	-0.0262
0.8000	0.8520	0.0262	0.9000	0.8520	-0.0145
0.9000	0.8520	0.0145	1.0000	0.8520	0.0000

Table 1. Concluded

COORDINATES FOR THE ICED RECTANGULAR WING

TAP ROW 1					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.1680	0.0048	0.0000	0.1680	-0.0325
-0.0225	0.1680	0.0297	0.0300	0.1680	-0.0530
0.0000	0.1680	0.0268	0.0600	0.1680	-0.0441
0.0300	0.1680	0.0296	0.0900	0.1680	-0.0454
0.0600	0.1680	0.0391	0.1500	0.1680	-0.0532
0.0900	·0.1680	0.0457	0.2100	0.1680	-0.0579
0.1200	0.1680	0.0500	0.2400	0.1680	-0.0591
0.1500	0.1680	0.0534	0.2700	0.1680	-0.0598
0.1800	0.1680	0.0561	0.3000	0.1680	-0.0600
0.2100	0.1680	0.0579	0.3400	0.1680	-0.0597
0.2400	0.1680	0.0591	0.3800	0.1680	-0.0587
0.2700	0.1680	0.0598	0.4200	0.1680	-0.0572
0.3000	0.1680	0.0600	0.5000	0.1680	-0.0529
0.3400	0.1680	0.0597	0.6000	0.1680	-0.0456
0.3800	0.1680	0.0587	0.7000	0.1680	-0.0366
0.4200	0.1680	0.0572	0.8000	0.1680	-0.0262
0.5000	0.1680	0.0529	0.9000	0.1680	-0.0145
0.6000	0.1680	0.0456	1.0000	0.1680	0.0000
0.7000	0.1680	0.0366			
0.8000	0.1680	0.0262			
0.9000	0.1680	0.0145			

TAP ROW 2					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.3360	0.0048	0.0000	0.3360	-0.0325
-0.0225	0.3360	0.0297	0.0300	0.3360	-0.0530
0.0000	0.3360	0.0268	0.0600	0.3360	-0.0441
0.0300	0.3360	0.0296	0.0900	0.3360	-0.0454
0.0600	0.3360	0.0391	0.1200	0.3360	-0.0501
0.0900	0.3360	0.0457	0.1500	0.3360	-0.0532
0.1200	0.3360	0.0500	0.1800	0.3360	-0.0561
0.1500	0.3360	0.0534	0.2100	0.3360	-0.0579
0.1800	0.3360	0.0561	0.2400	0.3360	-0.0591
0.2100	0.3360	0.0579	0.2700	0.3360	-0.0598
0.2400	0.3360	0.0591	0.3000	0.3360	-0.0600
0.2700	0.3360	0.0598	0.3800	0.3360	-0.0587
0.3000	0.3360	0.0600	0.5000	0.3360	-0.0529
0.3400	0.3360	0.0597	0.6000	0.3360	-0.0456
0.3800	0.3360	0.0587	0.7000	0.3360	-0.0366
0.4200	0.3360	0.0572	0.8000	0.3360	-0.0262
0.5000	0.3360	0.0529	0.9000	0.3360	-0.0145
0.6000	0.3360	0.0456	1.0000	0.3360	0.0000
0.7000	0.3360	0.0366			
0.8000	0.3360	0.0262			
0.9000	0.3360	0.0145			

Table 2. Iced rectangular wing coordinates

TAP ROW 3					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.4970	0.0048	0.0000	0.4970	-0.0325
-0.0225	0.4970	0.0297	0.0150	0.4970	-0.0474
-0.0150	0.4970	-0.0112	0.0450	0.4970	-0.0487
-0.0150	0.4970	0.0296	0.0600	0.4970	-0.0441
0.0000	0.4970	0.0268	0.0750	0.4970	-0.0429
0.0150	0.4970	0.0257	0.0900	0.4970	-0.0454
0.0300	0.4970	0.0296	0.1050	0.4970	-0.0480
0.0300	0.4970	0.0296	0.1200	0.4970	-0.0501
0.0450	0.4970	0.0347	0.1350	0.4970	-0.0516
0.0600	0.4970	0.0391	0.1500	0.4970	-0.0532
0.0750	0.4970	0.0426	0.1650	0.4970	-0.0549
0.0900	0.4970	0.0457	0.1800	0.4970	-0.0561
0.1050	0.4970	0.0480	0.1950	0.4970	-0.0571
0.1200	0.4970	0.0500	0.2100	0.4970	-0.0579
0.1350	0.4970	0.0519	0.2250	0.4970	-0.0586
0.1500	0.4970	0.0534	0.2400	0.4970	-0.0591
0.1650	0.4970	0.0549	0.2550	0.4970	-0.0595
0.1800	0.4970	0.0561	0.2700	0.4970	-0.0598
0.1950	0.4970	0.0571	0.2850	0.4970	-0.0600
0.2100	0.4970	0.0579	0.3000	0.4970	-0.0600
0.2250	0.4970	0.0586	0.3200	0.4970	-0.0599
0.2400	0.4970	0.0591	0.3400	0.4970	-0.0597
0.2550	0.4970	0.0595	0.3600	0.4970	-0.0593
0.2700	0.4970	0.0598	0.3800	0.4970	-0.0587
0.2850	0.4970	0.0600	0.4000	0.4970	-0.0580
0.3000	0.4970	0.0600	0.4200	0.4970	-0.0572
0.3200	0.4970	0.0599	0.4500	0.4970	-0.0558
0.3400	0.4970	0.0597	0.5000	0.4970	-0.0529
0.3600	0.4970	0.0593	0.5500	0.4970	-0.0495
0.3800	0.4970	0.0587	0.6000	0.4970	-0.0456
0.4000	0.4970	0.0580	0.6500	0.4970	-0.0413
0.4200	0.4970	0.0572	0.7000	0.4970	-0.0366
0.4500	0.4970	0.0558	0.7500	0.4970	-0.0316
0.5000	0.4970	0.0529	0.8000	0.4970	-0.0262
0.5500	0.4970	0.0495	0.8500	0.4970	-0.0205
0.6000	0.4970	0.0456	0.9000	0.4970	-0.0145
0.6500	0.4970	0.0413	0.9500	0.4970	-0.0081
0.7000	0.4970	0.0366	0.9750	0.4970	-0.0047
0.7500	0.4970	0.0316	1.0000	0.4970	0.0000
0.8000	0.4970	0.0262			
0.8500	0.4970	0.0205			
0.9000	0.4970	0.0145			
0.9500	0.4970	0.0081			
0.9750	0.4970	0.0047			

Table 2. Continued

TAP ROW 4					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.6640	0.0048	0.0000	0.6640	-0.0325
-0.0225	0.6640	0.0297	0.0300	0.6640	-0.0530
0.0000	0.6640	0.0268	0.0600	0.6640	-0.0441
0.0300	0.6640	0.0296	0.0900	0.6640	-0.0454
0.0600	0.6640	0.0391	0.1200	0.6640	-0.0501
0.0900	0.6640	0.0457	0.1500	0.6640	-0.0532
0.1200	0.6640	0.0500	0.1800	0.6640	-0.0561
0.1500	0.6640	0.0534	0.2100	0.6640	-0.0579
0.1800	0.6640	0.0561	0.2400	0.6640	-0.0591
0.2100	0.6640	0.0579	0.2700	0.6640	-0.0598
0.2400	0.6640	0.0591	0.3000	0.6640	-0.0600
0.2700	0.6640	0.0598	0.3400	0.6640	-0.0597
0.3000	0.6640	0.0600	0.3800	0.6640	-0.0587
0.3400	0.6640	0.0597	0.4200	0.6640	-0.0572
0.3800	0.6640	0.0587	0.5000	0.6640	-0.0529
0.4200	0.6640	0.0572	0.6000	0.6640	-0.0456
0.5000	0.6640	0.0529	0.7000	0.6640	-0.0366
0.6000	0.6640	0.0456	0.8000	0.6640	-0.0262
0.7000	0.6640	0.0366	0.9000	0.6640	-0.0145
0.8000	0.6640	0.0262	1.0000	0.6640	0.0000
0.9000	0.6640	0.0145			

TAP ROW 5					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.8520	0.0048	0.0000	0.8520	-0.0325
-0.0225	0.8520	0.0297	0.0300	0.8520	-0.0530
0.0000	0.8520	0.0268	0.0600	0.8520	-0.0441
0.0300	0.8520	0.0296	0.0900	0.8520	-0.0454
0.0600	0.8520	0.0391	0.1200	0.8520	-0.0501
0.0900	0.8520	0.0457	0.1500	0.8520	-0.0532
0.1200	0.8520	0.0500	0.1800	0.8520	-0.0561
0.1500	0.8520	0.0534	0.2100	0.8520	-0.0579
0.1800	0.8520	0.0561	0.2400	0.8520	-0.0591
0.2100	0.8520	0.0579	0.2700	0.8520	-0.0598
0.2400	0.8520	0.0591	0.3000	0.8520	-0.0600
0.2700	0.8520	0.0598	0.3400	0.8520	-0.0597
0.3000	0.8520	0.0600	0.3800	0.8520	-0.0587
0.3400	0.8520	0.0597	0.4200	0.8520	-0.0572
0.3800	0.8520	0.0587	0.5000	0.8520	-0.0529
0.4200	0.8520	0.0572	0.6000	0.8520	-0.0456
0.5000	0.8520	0.0529	0.7000	0.8520	-0.0366
0.6000	0.8520	0.0456	0.8000	0.8520	-0.0262
0.7000	0.8520	0.0366	0.9000	0.8520	-0.0145
0.8000	0.8520	0.0262	1.0000	0.8520	0.0000
0.9000	0.8520	0.0145			

Table 2. Concluded

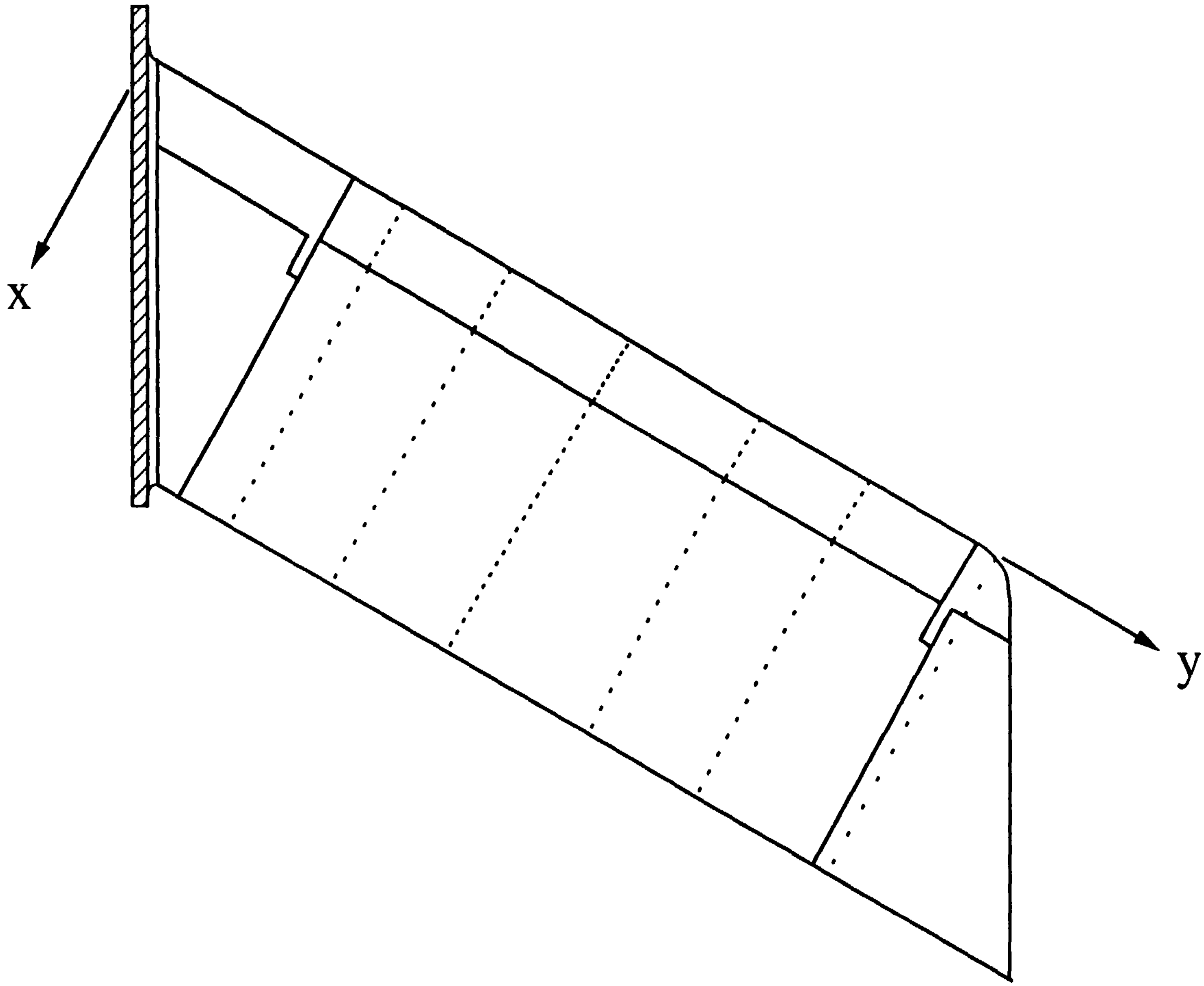


Fig. 3. Swept wing showing coordinate system, modular design, and tap rows

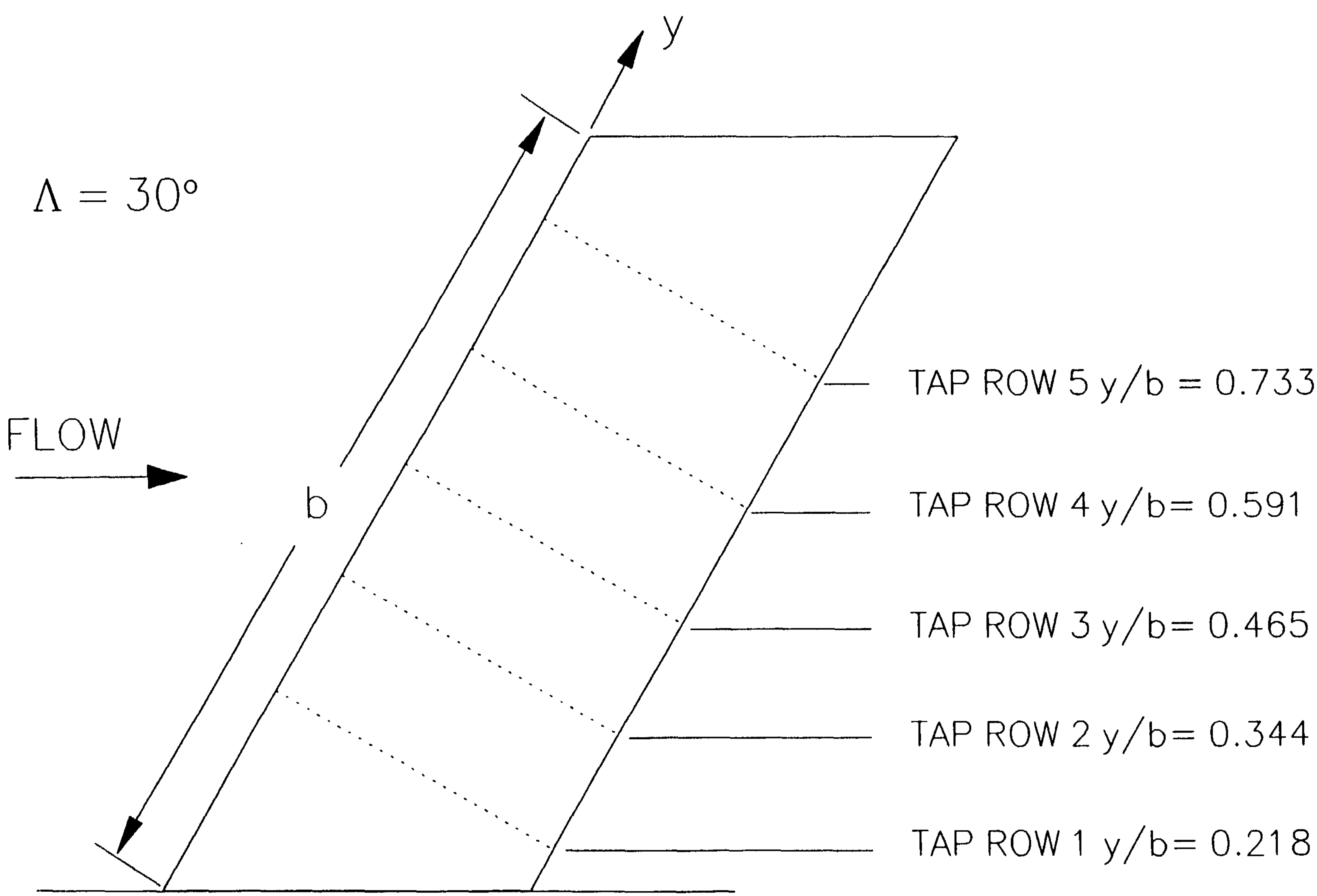


Fig. 4. Swept wing showing tap row locations

COORDINATES FOR THE CLEAN SWEPT WING

TAP ROW 1					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.2180	0.0000	0.0075	0.2180	-0.0146
0.0075	0.2180	0.0146	0.0300	0.2180	-0.0283
0.0300	0.2180	0.0283	0.0600	0.2180	-0.0384
0.0600	0.2180	0.0384	0.0900	0.2180	-0.0450
0.0900	0.2180	0.0450	0.1200	0.2180	-0.0499
0.1200	0.2180	0.0499	0.1500	0.2180	-0.0534
0.1500	0.2180	0.0534	0.2400	0.2180	-0.0591
0.1800	0.2180	0.0561	0.3000	0.2180	-0.0600
0.2100	0.2180	0.0579	0.3400	0.2180	-0.0597
0.2400	0.2180	0.0591	0.3800	0.2180	-0.0587
0.2700	0.2180	0.0598	0.4200	0.2180	-0.0572
0.3000	0.2180	0.0600	0.5000	0.2180	-0.0529
0.3400	0.2180	0.0597	0.6000	0.2180	-0.0456
0.3800	0.2180	0.0587	0.7000	0.2180	-0.0366
0.4200	0.2180	0.0572	0.8000	0.2180	-0.0262
0.5000	0.2180	0.0529	0.9000	0.2180	-0.0145
0.6000	0.2180	0.0456	1.0000	0.2180	0.0000
0.7000	0.2180	0.0366			
0.8000	0.2180	0.0262			
0.9000	0.2180	0.0145			

TAP ROW 2					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.3440	0.0000	0.0075	0.3440	-0.0146
0.0075	0.3440	0.0146	0.0300	0.3440	-0.0283
0.0300	0.3440	0.0283	0.0600	0.3440	-0.0384
0.0600	0.3440	0.0384	0.0900	0.3440	-0.0450
0.0900	0.3440	0.0450	0.1200	0.3440	-0.0499
0.1200	0.3440	0.0499	0.1500	0.3440	-0.0534
0.1500	0.3440	0.0534	0.1800	0.3440	-0.0561
0.1800	0.3440	0.0561	0.2100	0.3440	-0.0579
0.2100	0.3440	0.0579	0.2400	0.3440	-0.0591
0.2400	0.3440	0.0591	0.2700	0.3440	-0.0598
0.2700	0.3440	0.0598	0.3000	0.3440	-0.0600
0.3000	0.3440	0.0600	0.3400	0.3440	-0.0597
0.3400	0.3440	0.0597	0.3800	0.3440	-0.0587
0.3800	0.3440	0.0587	0.4200	0.3440	-0.0572
0.4200	0.3440	0.0572	0.5000	0.3440	-0.0529
0.5000	0.3440	0.0529	0.6000	0.3440	-0.0456
0.6000	0.3440	0.0456	0.7000	0.3440	-0.0366
0.7000	0.3440	0.0366	0.8000	0.3440	-0.0262
0.8000	0.3440	0.0262	0.9000	0.3440	-0.0145
0.9000	0.3440	0.0145	1.0000	0.3440	0.0000

Table 3. Clean swept wing coordinates

TAP ROW 3					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.4650	0.0000	0.0075	0.4650	-0.0146
0.0075	0.4650	0.0146	0.0150	0.4650	-0.0205
0.0150	0.4650	0.0205	0.0300	0.4650	-0.0283
0.0300	0.4650	0.0283	0.0450	0.4650	-0.0339
0.0450	0.4650	0.0339	0.0600	0.4650	-0.0384
0.0600	0.4650	0.0384	0.0750	0.4650	-0.0420
0.0750	0.4650	0.0420	0.0900	0.4650	-0.0450
0.0900	0.4650	0.0450	0.1050	0.4650	-0.0476
0.1050	0.4650	0.0476	0.1200	0.4650	-0.0499
0.1200	0.4650	0.0499	0.1350	0.4650	-0.0518
0.1350	0.4650	0.0518	0.1500	0.4650	-0.0534
0.1500	0.4650	0.0534	0.1650	0.4650	-0.0549
0.1650	0.4650	0.0549	0.1800	0.4650	-0.0561
0.1800	0.4650	0.0561	0.1950	0.4650	-0.0571
0.1950	0.4650	0.0571	0.2100	0.4650	-0.0579
0.2100	0.4650	0.0579	0.2250	0.4650	-0.0586
0.2250	0.4650	0.0586	0.2400	0.4650	-0.0591
0.2400	0.4650	0.0591	0.2550	0.4650	-0.0595
0.2550	0.4650	0.0595	0.2700	0.4650	-0.0598
0.2700	0.4650	0.0598	0.2850	0.4650	-0.0600
0.2850	0.4650	0.0600	0.3000	0.4650	-0.0600
0.3000	0.4650	0.0600	0.3200	0.4650	-0.0599
0.3200	0.4650	0.0599	0.3400	0.4650	-0.0597
0.3400	0.4650	0.0597	0.3600	0.4650	-0.0593
0.3600	0.4650	0.0593	0.3800	0.4650	-0.0587
0.3800	0.4650	0.0587	0.4000	0.4650	-0.0580
0.4000	0.4650	0.0580	0.4200	0.4650	-0.0572
0.4200	0.4650	0.0572	0.4500	0.4650	-0.0558
0.4500	0.4650	0.0558	0.5000	0.4650	-0.0529
0.5000	0.4650	0.0529	0.5500	0.4650	-0.0495
0.5500	0.4650	0.0495	0.6000	0.4650	-0.0456
0.6000	0.4650	0.0456	0.6500	0.4650	-0.0413
0.6500	0.4650	0.0413	0.7000	0.4650	-0.0366
0.7000	0.4650	0.0366	0.7500	0.4650	-0.0316
0.7500	0.4650	0.0316	0.8000	0.4650	-0.0262
0.8000	0.4650	0.0262	0.8500	0.4650	-0.0205
0.8500	0.4650	0.0205	0.9000	0.4650	-0.0145
0.9000	0.4650	0.0145	0.9500	0.4650	-0.0081
0.9500	0.4650	0.0081	0.9750	0.4650	-0.0047
0.9750	0.4650	0.0047	1.0000	0.4650	0.0000

Table 3. Continued

TAP ROW 4					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.5910	0.0000	0.0075	0.5910	-0.0146
0.0075	0.5910	0.0146	0.0300	0.5910	-0.0283
0.0300	0.5910	0.0283	0.0600	0.5910	-0.0384
0.0600	0.5910	0.0384	0.0900	0.5910	-0.0450
0.0900	0.5910	0.0450	0.1200	0.5910	-0.0499
0.1200	0.5910	0.0499	0.1500	0.5910	-0.0534
0.1500	0.5910	0.0534	0.1800	0.5910	-0.0561
0.1800	0.5910	0.0561	0.2100	0.5910	-0.0579
0.2100	0.5910	0.0579	0.2400	0.5910	-0.0591
0.2400	0.5910	0.0591	0.2700	0.5910	-0.0598
0.2700	0.5910	0.0598	0.3000	0.5910	-0.0600
0.3000	0.5910	0.0600	0.3400	0.5910	-0.0597
0.3400	0.5910	0.0597	0.3800	0.5910	-0.0587
0.3800	0.5910	0.0587	0.4200	0.5910	-0.0572
0.4200	0.5910	0.0572	0.5000	0.5910	-0.0529
0.5000	0.5910	0.0529	0.6000	0.5910	-0.0456
0.6000	0.5910	0.0456	0.7000	0.5910	-0.0366
0.7000	0.5910	0.0366	0.8000	0.5910	-0.0262
0.8000	0.5910	0.0262	0.9000	0.5910	-0.0145
0.9000	0.5910	0.0145	1.0000	0.5910	0.0000

TAP ROW 5					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
0.0000	0.7330	0.0000	0.0075	0.7330	-0.0146
0.0075	0.7330	0.0146	0.0300	0.7330	-0.0283
0.0300	0.7330	0.0283	0.0600	0.7330	-0.0384
0.0600	0.7330	0.0384	0.0900	0.7330	-0.0450
0.0900	0.7330	0.0450	0.1200	0.7330	-0.0499
0.1200	0.7330	0.0499	0.1500	0.7330	-0.0534
0.1500	0.7330	0.0534	0.1800	0.7330	-0.0561
0.1800	0.7330	0.0561	0.2100	0.7330	-0.0579
0.2100	0.7330	0.0579	0.2400	0.7330	-0.0591
0.2400	0.7330	0.0591	0.2700	0.7330	-0.0598
0.2700	0.7330	0.0598	0.3000	0.7330	-0.0600
0.3000	0.7330	0.0600	0.3400	0.7330	-0.0597
0.3400	0.7330	0.0597	0.3800	0.7330	-0.0587
0.3800	0.7330	0.0587	0.4200	0.7330	-0.0572
0.4200	0.7330	0.0572	0.5000	0.7330	-0.0529
0.5000	0.7330	0.0529	0.6000	0.7330	-0.0456
0.6000	0.7330	0.0456	0.7000	0.7330	-0.0366
0.7000	0.7330	0.0366	0.8000	0.7330	-0.0262
0.8000	0.7330	0.0262	0.9000	0.7330	-0.0145
0.9000	0.7330	0.0145	1.0000	0.7330	0.0000

Table 3. Concluded

COORDINATES FOR THE ICED SWEPT WING

TAP ROW 1					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.2180	0.0048	0.0000	0.2180	-0.0325
-0.0225	0.2180	0.0297	0.0300	0.2180	-0.0530
0.0000	0.2180	0.0268	0.0600	0.2180	-0.0441
0.0300	0.2180	0.0296	0.0900	0.2180	-0.0454
0.0600	0.2180	0.0391	0.1500	0.2180	-0.0532
0.0900	0.2180	0.0457	0.2100	0.2180	-0.0579
0.1200	0.2180	0.0500	0.2400	0.2180	-0.0591
0.1500	0.2180	0.0534	0.2700	0.2180	-0.0598
0.1800	0.2180	0.0561	0.3000	0.2180	-0.0600
0.2100	0.2180	0.0579	0.3400	0.2180	-0.0597
0.2400	0.2180	0.0591	0.3800	0.2180	-0.0587
0.2700	0.2180	0.0598	0.4200	0.2180	-0.0572
0.3000	0.2180	0.0600	0.5000	0.2180	-0.0529
0.3400	0.2180	0.0597	0.6000	0.2180	-0.0456
0.3800	0.2180	0.0587	0.7000	0.2180	-0.0366
0.4200	0.2180	0.0572	0.8000	0.2180	-0.0262
0.5000	0.2180	0.0529	0.9000	0.2180	-0.0145
0.6000	0.2180	0.0456	1.0000	0.2180	0.0000
0.7000	0.2180	0.0366			
0.8000	0.2180	0.0262			
0.9000	0.2180	0.0145			

TAP ROW 2					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.3440	0.0048	0.0000	0.3440	-0.0325
-0.0225	0.3440	0.0297	0.0300	0.3440	-0.0530
0.0000	0.3440	0.0268	0.0600	0.3440	-0.0441
0.0300	0.3440	0.0296	0.0900	0.3440	-0.0454
0.0600	0.3440	0.0391	0.1200	0.3440	-0.0501
0.0900	0.3440	0.0457	0.1500	0.3440	-0.0532
0.1200	0.3440	0.0500	0.1800	0.3440	-0.0561
0.1500	0.3440	0.0534	0.2100	0.3440	-0.0579
0.1800	0.3440	0.0561	0.2400	0.3440	-0.0591
0.2100	0.3440	0.0579	0.2700	0.3440	-0.0598
0.2400	0.3440	0.0591	0.3000	0.3440	-0.0600
0.2700	0.3440	0.0598	0.3800	0.3440	-0.0587
0.3000	0.3440	0.0600	0.5000	0.3440	-0.0529
0.3400	0.3440	0.0597	0.6000	0.3440	-0.0456
0.3800	0.3440	0.0587	0.7000	0.3440	-0.0366
0.4200	0.3440	0.0572	0.8000	0.3440	-0.0262
0.5000	0.3440	0.0529	0.9000	0.3440	-0.0145
0.6000	0.3440	0.0456	1.0000	0.3440	0.0000
0.7000	0.3440	0.0366			
0.8000	0.3440	0.0262			
0.9000	0.3440	0.0145			

Table 4. Iced swept wing coordinates

TAP ROW 3					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.4650	0.0048	0.0000	0.4650	-0.0325
-0.0225	0.4650	0.0297	0.0150	0.4650	-0.0474
-0.0150	0.4650	-0.0112	0.0450	0.4650	-0.0487
-0.0150	0.4650	0.0296	0.0600	0.4650	-0.0441
0.0000	0.4650	0.0268	0.0750	0.4650	-0.0429
0.0150	0.4650	0.0257	0.0900	0.4650	-0.0454
0.0300	0.4650	0.0296	0.1050	0.4650	-0.0480
0.0300	0.4650	0.0296	0.1200	0.4650	-0.0501
0.0450	0.4650	0.0347	0.1350	0.4650	-0.0516
0.0600	0.4650	0.0391	0.1500	0.4650	-0.0532
0.0750	0.4650	0.0426	0.1650	0.4650	-0.0549
0.0900	0.4650	0.0457	0.1800	0.4650	-0.0561
0.1050	0.4650	0.0480	0.1950	0.4650	-0.0571
0.1200	0.4650	0.0500	0.2100	0.4650	-0.0579
0.1350	0.4650	0.0519	0.2250	0.4650	-0.0586
0.1500	0.4650	0.0534	0.2400	0.4650	-0.0591
0.1650	0.4650	0.0549	0.2550	0.4650	-0.0595
0.1800	0.4650	0.0561	0.2700	0.4650	-0.0598
0.1950	0.4650	0.0571	0.2850	0.4650	-0.0600
0.2100	0.4650	0.0579	0.3000	0.4650	-0.0600
0.2250	0.4650	0.0586	0.3200	0.4650	-0.0599
0.2400	0.4650	0.0591	0.3400	0.4650	-0.0597
0.2550	0.4650	0.0595	0.3600	0.4650	-0.0593
0.2700	0.4650	0.0598	0.3800	0.4650	-0.0587
0.2850	0.4650	0.0600	0.4000	0.4650	-0.0580
0.3000	0.4650	0.0600	0.4200	0.4650	-0.0572
0.3200	0.4650	0.0599	0.4500	0.4650	-0.0558
0.3400	0.4650	0.0597	0.5000	0.4650	-0.0529
0.3600	0.4650	0.0593	0.5500	0.4650	-0.0495
0.3800	0.4650	0.0587	0.6000	0.4650	-0.0456
0.4000	0.4650	0.0580	0.6500	0.4650	-0.0413
0.4200	0.4650	0.0572	0.7000	0.4650	-0.0366
0.4500	0.4650	0.0558	0.7500	0.4650	-0.0316
0.5000	0.4650	0.0529	0.8000	0.4650	-0.0262
0.5500	0.4650	0.0495	0.8500	0.4650	-0.0205
0.6000	0.4650	0.0456	0.9000	0.4650	-0.0145
0.6500	0.4650	0.0413	0.9500	0.4650	-0.0081
0.7000	0.4650	0.0366	0.9750	0.4650	-0.0047
0.7500	0.4650	0.0316	1.0000	0.4650	0.0000
0.8000	0.4650	0.0262			
0.8500	0.4650	0.0205			
0.9000	0.4650	0.0145			
0.9500	0.4650	0.0081			
0.9750	0.4650	0.0047			

Table 4. Continued

TAP ROW 4					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.5910	0.0048	0.0000	0.5910	-0.0325
-0.0225	0.5910	0.0297	0.0300	0.5910	-0.0530
0.0000	0.5910	0.0268	0.0600	0.5910	-0.0441
0.0300	0.5910	0.0296	0.0900	0.5910	-0.0454
0.0600	0.5910	0.0391	0.1200	0.5910	-0.0501
0.0900	0.5910	0.0457	0.1500	0.5910	-0.0532
0.1200	0.5910	0.0500	0.1800	0.5910	-0.0561
0.1500	0.5910	0.0534	0.2100	0.5910	-0.0579
0.1800	0.5910	0.0561	0.2400	0.5910	-0.0591
0.2100	0.5910	0.0579	0.2700	0.5910	-0.0598
0.2400	0.5910	0.0591	0.3000	0.5910	-0.0600
0.2700	0.5910	0.0598	0.3400	0.5910	-0.0597
0.3000	0.5910	0.0600	0.3800	0.5910	-0.0587
0.3400	0.5910	0.0597	0.4200	0.5910	-0.0572
0.3800	0.5910	0.0587	0.5000	0.5910	-0.0529
0.4200	0.5910	0.0572	0.6000	0.5910	-0.0456
0.5000	0.5910	0.0529	0.7000	0.5910	-0.0366
0.6000	0.5910	0.0456	0.8000	0.5910	-0.0262
0.7000	0.5910	0.0366	0.9000	0.5910	-0.0145
0.8000	0.5910	0.0262	1.0000	0.5910	0.0000
0.9000	0.5910	0.0145			

TAP ROW 5					
X/C UPPER	Y/C UPPER	Z/C UPPER	X/C LOWER	Y/C LOWER	Z/C LOWER
-0.0225	0.7330	0.0048	0.0000	0.7330	-0.0325
-0.0225	0.7330	0.0297	0.0300	0.7330	-0.0530
0.0000	0.7330	0.0268	0.0600	0.7330	-0.0441
0.0300	0.7330	0.0296	0.0900	0.7330	-0.0454
0.0600	0.7330	0.0391	0.1200	0.7330	-0.0501
0.0900	0.7330	0.0457	0.1500	0.7330	-0.0532
0.1200	0.7330	0.0500	0.1800	0.7330	-0.0561
0.1500	0.7330	0.0534	0.2100	0.7330	-0.0579
0.1800	0.7330	0.0561	0.2400	0.7330	-0.0591
0.2100	0.7330	0.0579	0.2700	0.7330	-0.0598
0.2400	0.7330	0.0591	0.3000	0.7330	-0.0600
0.2700	0.7330	0.0598	0.3400	0.7330	-0.0597
0.3000	0.7330	0.0600	0.3800	0.7330	-0.0587
0.3400	0.7330	0.0597	0.4200	0.7330	-0.0572
0.3800	0.7330	0.0587	0.5000	0.7330	-0.0529
0.4200	0.7330	0.0572	0.6000	0.7330	-0.0456
0.5000	0.7330	0.0529	0.7000	0.7330	-0.0366
0.6000	0.7330	0.0456	0.8000	0.7330	-0.0262
0.7000	0.7330	0.0366	0.9000	0.7330	-0.0145
0.8000	0.7330	0.0262	1.0000	0.7330	0.0000
0.9000	0.7330	0.0145			

Table 4. Concluded

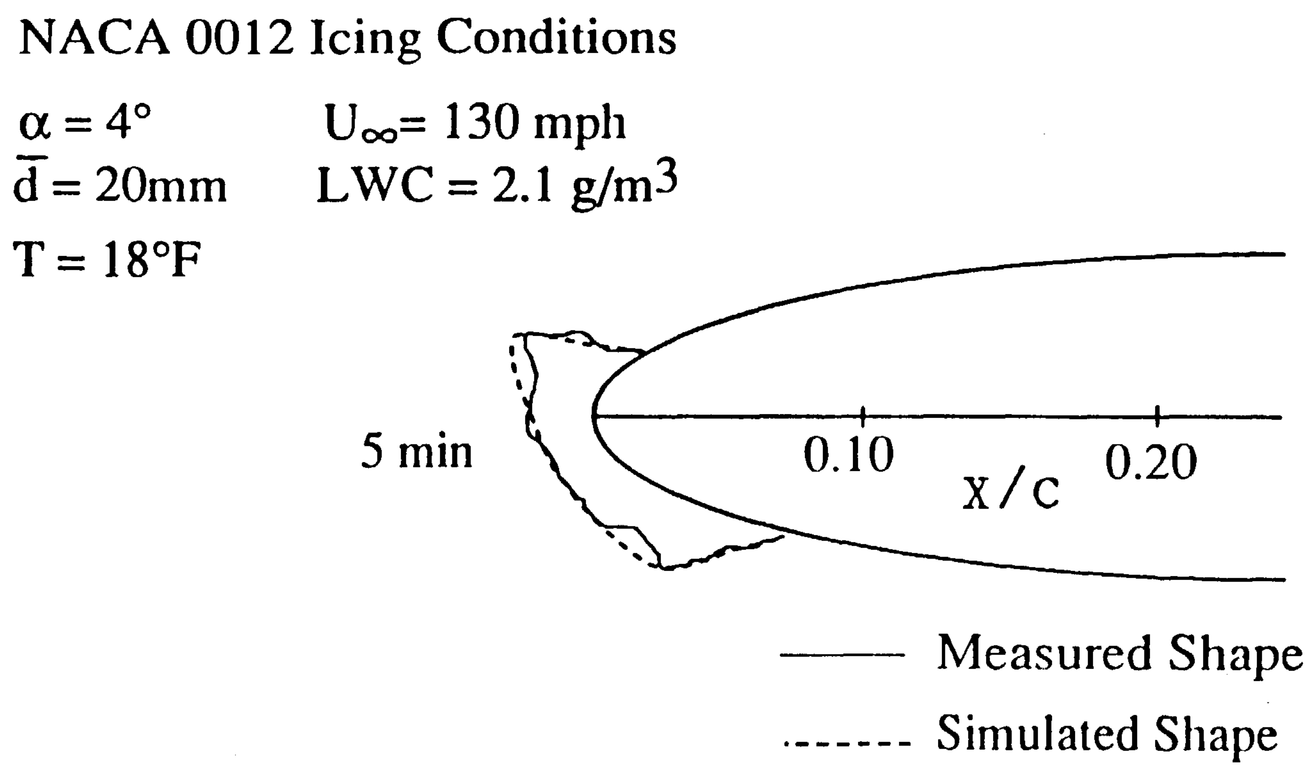
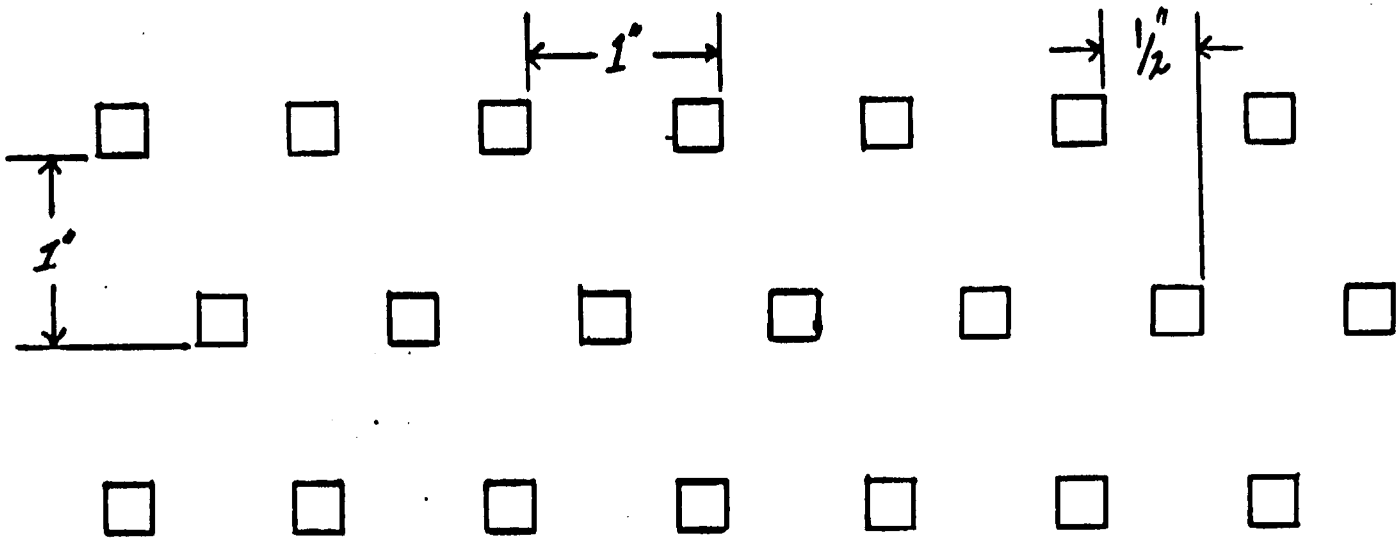


Fig. 5. Actual and simulated ice accretions on a NACA 0012

3-D ROUGHNESS LAYOUT



- PARTICLE DIMENSION: 1/4" x 1/4" x 0.054"
- PARTICLES PLACED ONE INCH APART
- ROWS OFFSET BY 1/2"

Fig. 6. Three-dimensional roughness geometry

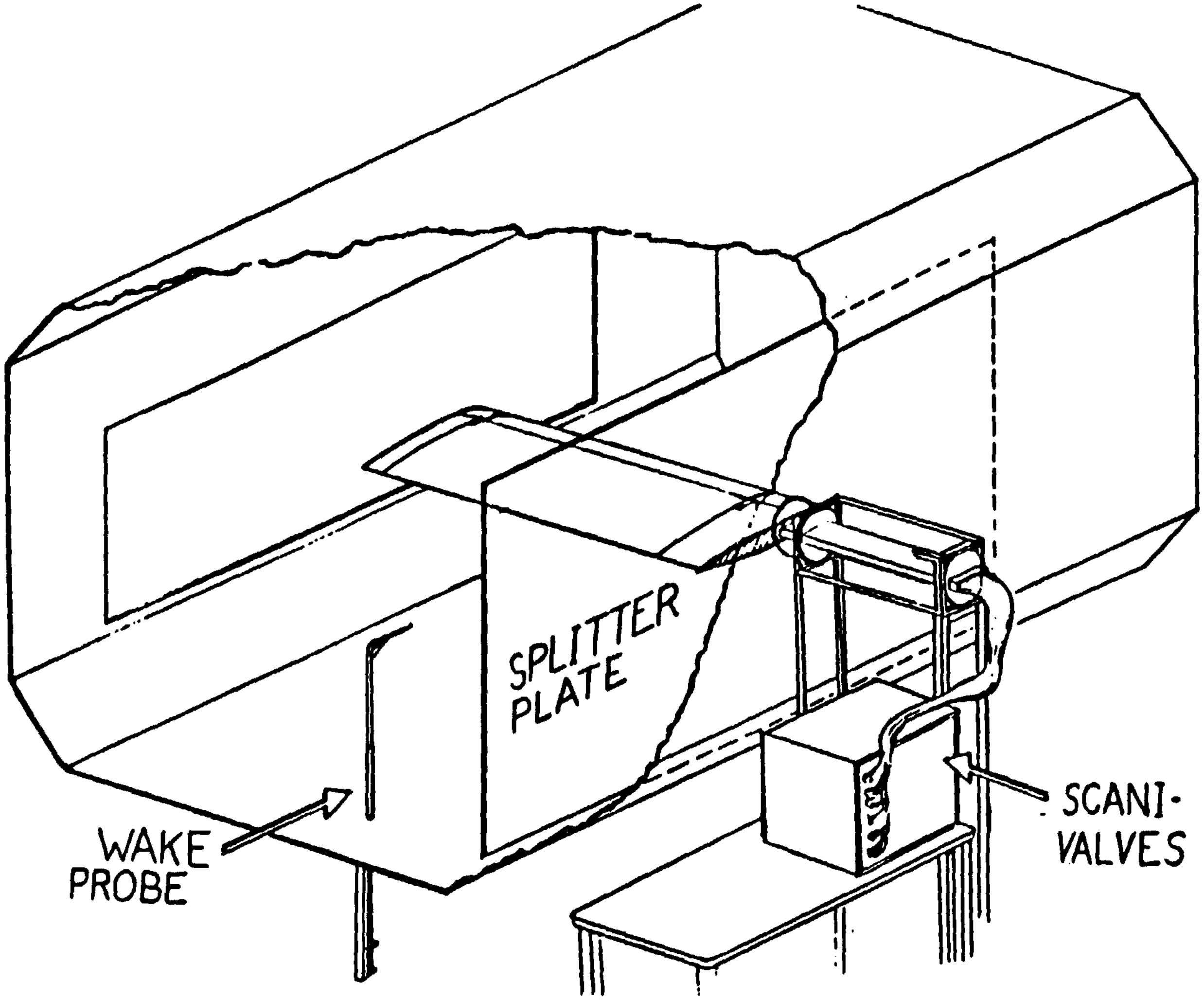


Fig. 7. Rectangular wing in the OSU 3' x 5' subsonic wind tunnel

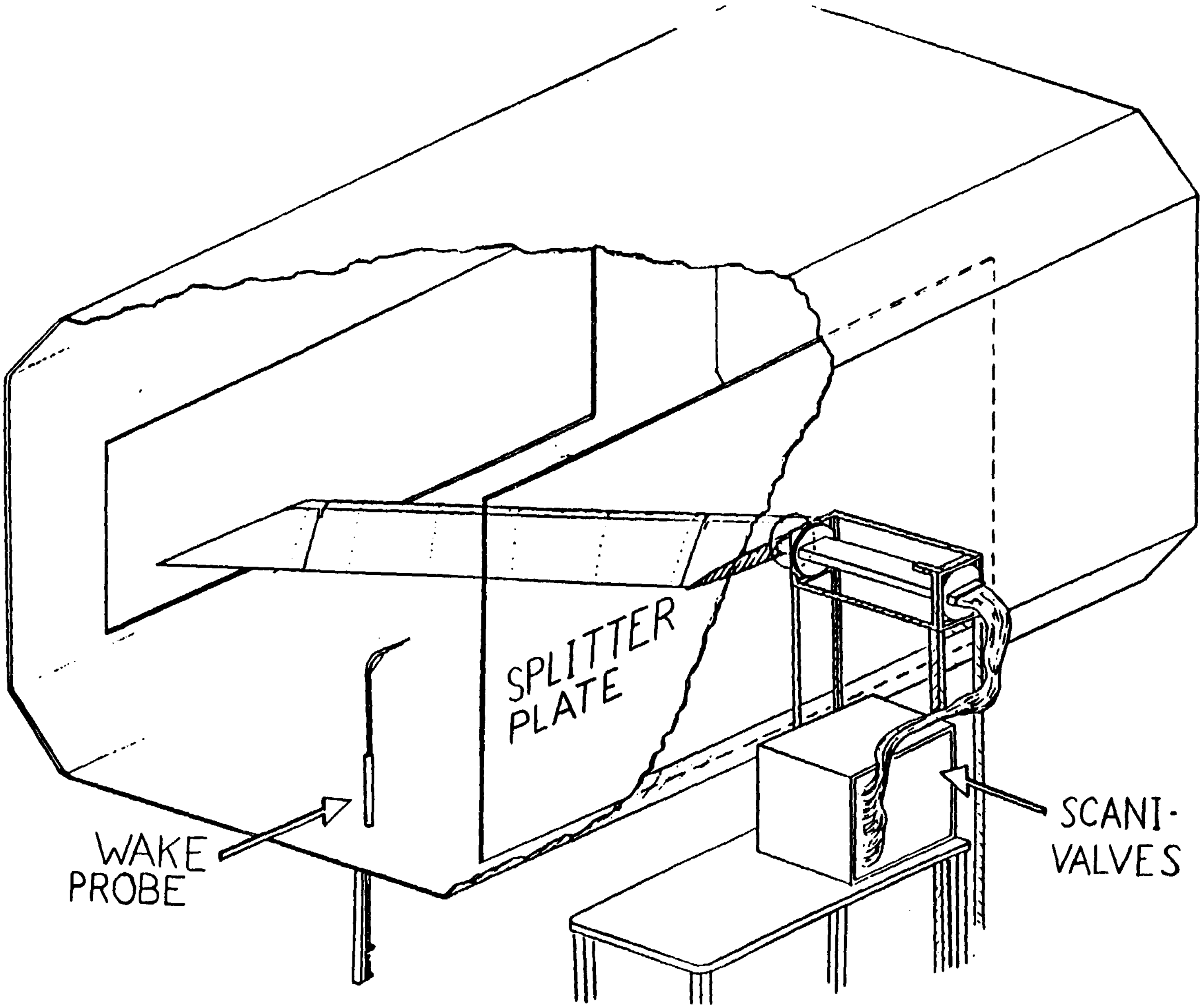


Fig. 8. Swept wing in the OSU 3' x 5' subsonic wind tunnel

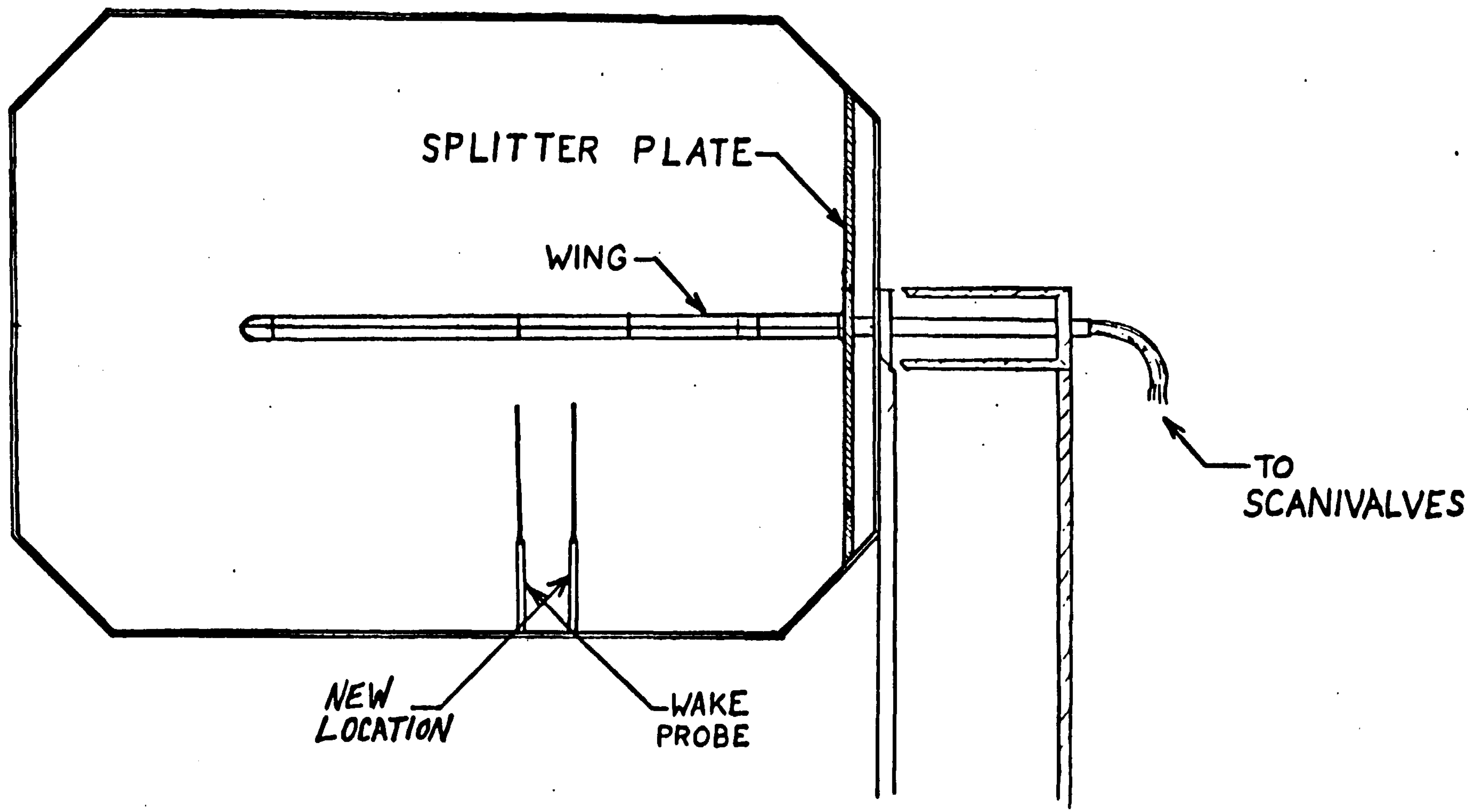


Fig. 9. Upstream view of the rectangular wing showing the two wake probe locations

RUN SUMMARIES

RUN SUMMARY FOR 3-D WING TESTS

RECTANGULAR WING, CLEAN & SMOOTH, WAKE PROBE BEHIND TAP ROW 3

RUN #	α_{geo}	Rex10^6	Mach	$C_{d\ wake}$	$C_{l\ row1}$ y/b=0.168	$C_{l\ row2}$ y/b=0.336	$C_{l\ row3}$ y/b=0.497	$C_{l\ row4}$ y/b=0.664	$C_{l\ row5}$ y/b=0.852	C_L
2104	0.00	1.29	0.15	0.0081	-0.013	-0.079	-0.003	-0.029	-0.016	-0.025
2106	2.00	1.28	0.15	0.0078	0.160	0.129	0.155	0.110	0.091	0.125
2108	4.00	1.28	0.15	0.0078	0.337	0.301	0.312	0.250	0.202	0.272
2110	6.00	1.28	0.15	0.0090	0.513	0.467	0.467	0.388	0.317	0.417
2112	8.00	1.27	0.15	0.0106	0.682	0.647	0.632	0.530	0.411	0.560
2114	10.00	1.26	0.15	0.0156	0.862	0.814	0.786	0.682	0.533	0.711
2116	12.00	1.26	0.15	0.0179	1.014	0.960	0.930	0.810	0.653	0.844
2118	14.00	1.25	0.15	0.0208	1.112	1.071	1.041	0.897	0.771	0.945
2120	16.00	1.24	0.14	-NA-	0.965	0.917	1.051	0.947	0.826	0.904
2124	0.00	1.28	0.15	0.0084	-0.010	-0.033	0.006	-0.026	-0.015	-0.015
2125	-2.00	1.28	0.15	0.0096	-0.183	-0.198	-0.148	-0.161	-0.117	-0.156
2126	-4.00	1.31	0.15	0.0111	-0.373	-0.372	-0.303	-0.306	-0.217	-0.304
2127	-6.00	1.31	0.15	0.0119	-0.545	-0.535	-0.450	-0.446	-0.339	-0.448
2128	-8.00	1.31	0.15	0.0133	-0.730	-0.697	-0.596	-0.589	-0.428	-0.589
2129	-10.00	1.31	0.15	0.0167	-0.910	-0.863	-0.741	-0.734	-0.569	-0.739
2131	-14.00	1.31	0.15	0.0258	-1.222	-1.128	-0.969	-0.960	-0.781	-0.983
2132	-16.00	1.22	0.14	0.0290	-0.797	-1.061	-0.959	-1.003	-0.837	-0.882
2133	-18.00	1.21	0.14	-NA-	-0.823	-1.145	-1.032	-1.104	-0.958	-0.957

RECTANGULAR WING, CLEAN, TRIP STRIP AT ±0.05 CHORD, WAKE PROBE BEHIND TAP ROW 3

RUN #	α_{geo}	Rex10^6	Mach	$C_{d\ wake}$	$C_{l\ row1}$ y/b=0.168	$C_{l\ row2}$ y/b=0.336	$C_{l\ row3}$ y/b=0.497	$C_{l\ row4}$ y/b=0.664	$C_{l\ row5}$ y/b=0.852	C_L
2150	0.00	1.25	0.15	0.0122	-0.010	-0.074	0.005	-0.021	-0.016	-0.021
2152	2.00	1.26	0.15	0.0117	0.163	0.131	0.161	0.118	0.096	0.129
2154	4.00	1.25	0.15	0.0116	0.340	0.305	0.321	0.259	0.199	0.276
2156	6.00	1.24	0.14	0.0120	0.517	0.480	0.483	0.403	0.316	0.425
2158	8.00	1.24	0.14	0.0124	0.681	0.645	0.632	0.540	0.422	0.564
2160	10.00	1.24	0.14	0.0185	0.842	0.790	0.775	0.668	0.533	0.697
2162	12.00	1.23	0.14	0.0215	0.982	0.931	0.909	0.781	0.648	0.821
2164	14.00	1.23	0.14	0.0274	1.066	1.036	1.022	0.883	0.746	0.916
2166	16.00	1.23	0.14	-NA-	0.717	0.657	0.901	0.838	0.748	0.739
2169	0.00	1.26	0.14	0.0124	-0.014	-0.048	0.002	-0.022	-0.007	-0.016
2170	-2.00	1.25	0.14	0.0124	-0.186	-0.199	-0.147	-0.161	-0.125	-0.158
2171	-4.00	1.26	0.15	0.0129	-0.366	-0.365	-0.300	-0.293	-0.228	-0.300
2172	-6.00	1.26	0.15	0.0131	-0.548	-0.530	-0.444	-0.439	-0.339	-0.446
2173	-8.00	1.26	0.15	0.0143	-0.733	-0.700	-0.593	-0.594	-0.458	-0.596
2174	-10.00	1.26	0.15	0.0201	-0.893	-0.838	-0.715	-0.718	-0.533	-0.717
2175	-12.00	1.25	0.14	0.0247	-1.049	-0.968	-0.839	-0.834	-0.660	-0.845
2176	-14.00	1.25	0.14	0.0332	-1.185	-1.088	-0.935	-0.941	-0.765	-0.955
2177	-16.00	1.17	0.14	0.0356	-0.829	-1.046	-0.938	-0.992	-0.832	-0.881
2178	-18.00	1.17	0.13	-NA-	-0.852	-0.920	-0.702	-0.786	-0.842	-0.793

RECTANGULAR WING, CLEAN & SMOOTH, WAKE PROBE BETWEEN TAP ROWS 2 & 3

RUN #	α_{geo}	Rex10^6	Mach	C_d wake	C_l row1 y/b=0.168	C_l row2 y/b=0.336	C_l row3 y/b=0.497	C_l row4 y/b=0.664	C_l row5 y/b=0.852	C_L
2185	0.00	1.21	0.15	0.0070	-0.014	-0.101	0.005	-0.030	-0.033	-0.032
2187	1.00	1.20	0.14	0.0073	0.067	0.034	0.079	0.036	0.036	0.049
2189	2.00	1.19	0.14	0.0086	0.174	0.144	0.174	0.108	0.110	0.138
2195	3.00	1.20	0.14	0.0070	0.252	0.170	0.241	0.168	0.156	0.193
2196	4.00	1.19	0.14	0.0068	0.327	0.276	0.307	0.226	0.202	0.260
2197	5.00	1.19	0.14	0.0078	0.411	0.367	0.384	0.302	0.249	0.331
2198	0.00	1.19	0.14	0.0071	-0.019	-0.041	-0.003	-0.040	-0.012	-0.021
2199	-2.00	1.20	0.14	0.0072	-0.177	-0.195	-0.139	-0.156	-0.114	-0.150
2200	-4.00	1.20	0.14	0.0078	-0.360	-0.352	-0.282	-0.287	-0.202	-0.287
2203	-6.00	1.20	0.14	0.0089	-0.535	-0.522	-0.425	-0.434	-0.327	-0.435
2204	-8.00	1.22	0.14	0.0114	-0.712	-0.717	-0.568	-0.567	-0.430	-0.579
2205	-10.00	1.21	0.14	0.0127	-0.913	-0.870	-0.728	-0.737	-0.574	-0.741
2206	-12.00	1.21	0.14	0.0170	-1.090	-1.017	-0.863	-0.863	-0.687	-0.878
2207	-14.00	1.21	0.14	0.0207	-1.143	-1.092	-0.954	-0.967	-0.787	-0.957
2208	-16.00	1.13	0.13	0.0212	-0.807	-1.059	-0.942	-1.009	-0.841	-0.884
2210	0.00	1.20	0.14	0.0068	-0.014	-0.094	-0.002	-0.026	-0.020	-0.028
2211	2.00	1.20	0.14	0.0109	0.155	0.112	0.163	0.111	0.083	0.121
2212	4.00	1.20	0.14	0.0114	0.336	0.294	0.321	0.254	0.218	0.276
2213	5.00	1.20	0.14	0.0116	0.425	0.383	0.400	0.326	0.251	0.345
2214	-2.00	1.23	0.14	0.0109	-0.185	-0.243	-0.140	-0.162	-0.113	-0.161
2215	-4.00	1.22	0.14	0.0114	-0.363	-0.379	-0.291	-0.307	-0.232	-0.304
2216	-6.00	1.22	0.14	0.0123	-0.550	-0.539	-0.442	-0.454	-0.344	-0.451
2217	-8.00	1.23	0.14	0.0125	-0.724	-0.694	-0.582	-0.592	-0.452	-0.590
2218	-10.00	1.22	0.14	0.0151	-0.897	-0.846	-0.713	-0.723	-0.556	-0.724
2219	-12.00	1.22	0.14	0.0186	-1.059	-0.981	-0.836	-0.850	-0.674	-0.854
2220	-14.00	1.22	0.14	0.0238	-1.189	-1.097	-0.934	-0.946	-0.768	-0.958
2221	-16.00	1.14	0.13	0.0223	-0.725	-0.990	-0.936	-1.000	-0.845	-0.850

RECTANGULAR WING, 5 MININUTE GLAZE ICE, SMOOTH, WAKE PROBE BETWEEN TAP ROWS 2 & 3

RUN #	α_{geo}	Rex10^6	Mach	C_d wake	C_l row1 y/b=0.168	C_l row2 y/b=0.336	C_l row3 y/b=0.497	C_l row4 y/b=0.664	C_l row5 y/b=0.852	C_L
2484	0.00	1.18	0.14	0.0266	-0.020	-0.030	-0.026	-0.017	-0.003	-0.018
2486	2.00	1.17	0.14	0.0261	0.136	0.129	0.129	0.119	0.082	0.115
2489	4.00	1.19	0.15	0.0322	0.286	0.288	0.280	0.257	0.176	0.247
2492	6.00	1.18	0.14	0.0506	0.449	0.442	0.431	0.389	0.307	0.389
2494	8.00	1.20	0.14	0.1047	0.553	0.555	0.538	0.503	0.396	0.490
2496	10.00	1.18	0.14	0.1819	0.501	0.506	0.534	0.570	0.481	0.497
2498	12.00	1.17	0.14	0.2227	0.383	0.408	0.511	0.598	0.575	0.471
2499	13.00	1.17	0.14	0.2354	0.366	0.383	0.497	0.614	0.614	0.472
2500	15.00	1.16	0.14	0.2525	0.374	0.390	0.506	0.651	0.655	0.491
2509	-2.00	1.22	0.15	0.0283	-0.181	-0.189	-0.175	-0.149	-0.109	-0.154
2512	-4.00	1.22	0.15	0.0392	-0.350	-0.349	-0.316	-0.289	-0.219	-0.294
2514	-6.00	1.21	0.14	0.0657	-0.507	-0.487	-0.446	-0.419	-0.331	-0.423
2516	-8.00	1.19	0.14	0.0937	-0.544	-0.527	-0.523	-0.495	-0.423	-0.484
2518	-10.00	1.17	0.14	0.1172	-0.564	-0.608	-0.581	-0.558	-0.522	-0.544
2520	-12.00	1.15	0.14	0.1657	-0.507	-0.586	-0.626	-0.624	-0.608	-0.562
2522	-14.00	1.14	0.14	0.1613	-0.454	-0.588	-0.756	-0.693	-0.646	-0.591
2524	-16.00	1.10	0.14	0.2033	-0.494	-0.599	-0.734	-0.749	-0.669	-0.614

RECTANGULAR WING, 5 MINUTE GLAZE ICE, 50 GRIT ROUGHNESS (K/C = 0.001), WAKE PROBE BETWEEN TAP ROWS 2 & 3

RUN #	α_{geo}	Rex10^6	Mach	$C_{d\ wake}$	$C_{l\ row1}$ y/b=0.168	$C_{l\ row2}$ y/b=0.336	$C_{l\ row3}$ y/b=0.497	$C_{l\ row4}$ y/b=0.664	$C_{l\ row5}$ y/b=0.852	C_L
2540	0.00	1.24	0.15	0.0273	-0.024	-0.052	-0.012	0.013	-0.028	-0.020
2542	2.00	1.23	0.15	0.0301	0.123	0.106	0.116	0.156	0.064	0.108
2544	4.00	1.23	0.15	0.0373	0.270	0.255	0.251	0.261	0.148	0.228
2548	6.00	1.22	0.15	0.0565	0.419	0.408	0.381	0.382	0.255	0.355
2550	8.00	1.21	0.14	0.1190	0.517	0.503	0.481	0.541	0.352	0.460
2553	10.00	1.19	0.14	0.1874	0.466	0.467	0.458	0.523	0.453	0.455
2555	12.00	1.17	0.14	0.2263	0.365	0.358	0.443	0.561	0.533	0.433
2576	-2.00	1.19	0.15	0.0318	-0.171	-0.195	-0.174	-0.138	-0.113	-0.151
2579	-4.00	1.17	0.14	0.0456	-0.352	-0.351	-0.324	-0.271	-0.226	-0.294
2581	-6.00	1.19	0.14	0.0724	-0.458	-0.458	-0.430	-0.385	-0.321	-0.395
2583	-8.00	1.17	0.14	0.1233	-0.417	-0.440	-0.467	-0.455	-0.413	-0.420
2585	-10.00	1.15	0.14	0.1579	-0.351	-0.406	-0.493	-0.537	-0.502	-0.434
2587	-12.00	1.14	0.14	0.1921	-0.354	-0.394	-0.504	-0.589	-0.583	-0.460
2589	-14.00	1.12	0.14	0.2172	-0.411	-0.435	-0.543	-0.654	-0.671	-0.518
2591	-16.00	1.12	0.14	0.2408	-0.460	-0.475	-0.559	-0.676	-0.710	-0.551

RECTANGULAR WING, 5 MINUTE GLAZE ICE, 3-D ROUGHNESS, WAKE PROBE BETWEEN TAP ROWS 2 & 3

RUN #	α_{geo}	Rex10^6	Mach	$C_{d\ wake}$	$C_{l\ row1}$ y/b=0.168	$C_{l\ row2}$ y/b=0.336	$C_{l\ row3}$ y/b=0.497	$C_{l\ row4}$ y/b=0.664	$C_{l\ row5}$ y/b=0.852	C_L
2598	0.00	1.23	0.15	0.0289	-0.047	-0.024	-0.014	0.004	-0.005	-0.018
2599	2.00	1.23	0.15	0.0316	0.117	0.139	0.135	0.135	0.083	0.116
2600	4.00	1.22	0.15	0.0368	0.286	0.307	0.285	0.266	0.188	0.255
2601	6.00	1.22	0.15	0.0548	0.447	0.448	0.420	0.390	0.295	0.385
2602	8.00	1.20	0.14	0.1012	0.565	0.573	0.535	0.504	0.407	0.497
2603	10.00	1.18	0.14	0.1731	0.624	0.617	0.594	0.590	0.495	0.562
2605	12.00	1.17	0.14	0.1931	0.651	0.631	0.641	0.655	0.576	0.607
2613	-2.00	1.23	0.15	0.0343	-0.197	-0.175	-0.154	-0.124	-0.091	-0.144
2615	-4.00	1.22	0.14	0.0421	-0.345	-0.330	-0.300	-0.258	-0.192	-0.276
2616	-6.00	1.22	0.15	0.0545	-0.471	-0.472	-0.434	-0.371	-0.303	-0.395
2617	-8.00	1.22	0.14	0.0737	-0.582	-0.601	-0.560	-0.493	-0.396	-0.506
2620	-10.00	1.20	0.14	0.1141	-0.664	-0.688	-0.650	-0.577	-0.481	-0.588
2623	-12.00	1.17	0.14	0.1635	-0.629	-0.711	-0.711	-0.658	-0.571	-0.626

30 DEGREE SWEEP WING, CLEAN, TRIP STRIP AT ±0.05 CHORD

RUN #	α_{geo}	Rex10^6	Mach	$C_{d\ wake}$	$C_{l\ row1}$ y/b=0.218	$C_{l\ row2}$ y/b=0.344	$C_{l\ row3}$ y/b=0.465	$C_{l\ row4}$ y/b=0.591	$C_{l\ row5}$ y/b=0.733	C_L
2674	0.00	1.46	0.13	-NA-	0.029	-0.005	0.023	0.012	0.012	0.015
2677	2.00	1.47	0.13	-NA-	0.179	0.139	0.160	0.139	0.119	0.141
2680	4.00	1.47	0.13	-NA-	0.329	0.294	0.314	0.280	0.230	0.275
2682	6.00	1.47	0.13	-NA-	0.482	0.449	0.461	0.420	0.346	0.409
2684	8.00	1.46	0.13	-NA-	0.626	0.597	0.589	0.546	0.452	0.533
2686	10.00	1.46	0.13	-NA-	0.776	0.738	0.722	0.670	0.552	0.656
2688	12.00	1.45	0.13	-NA-	0.922	0.876	0.850	0.772	0.634	0.769

2691	14.00	1.44	0.13	-NA-	1.049	1.022	0.972	0.884	0.724	0.881
2693	16.00	1.39	0.13	-NA-	1.253	1.089	1.018	0.839	0.606	0.907
2695	-2.00	1.48	0.13	-NA-	-0.126	-0.160	-0.119	-0.133	-0.106	-0.121
2696	-4.00	1.49	0.13	-NA-	-0.285	-0.322	-0.286	-0.282	-0.228	-0.264
2697	-6.00	1.48	0.13	-NA-	-0.442	-0.470	-0.434	-0.414	-0.337	-0.396
2698	-8.00	1.48	0.13	-NA-	-0.602	-0.620	-0.578	-0.551	-0.444	-0.528
2699	-11.18	1.48	0.13	-NA-	-0.839	-0.827	-0.780	-0.734	-0.604	-0.717
2701	-14.86	1.43	0.13	-NA-	-1.146	-1.107	-1.053	-0.916	-0.733	-0.936
2702	-16.89	1.40	0.13	-NA-	-1.200	-1.105	-0.957	-0.759	-0.537	-0.857

30 DEGREE SWEEP WING, CLEAN & SMOOTH

RUN #	α_{geo}	Rex10^6	Mach	C_d wake	C_l row1 y/b=0.218	C_l row2 y/b=0.344	C_l row3 y/b=0.465	C_l row4 y/b=0.591	C_l row5 y/b=0.733	C_L
2703	0.00	1.48	0.13	-NA-	0.038	-0.004	0.028	0.000	0.017	0.017
2704	1.00	1.48	0.13	-NA-	0.103	0.065	0.084	0.076	0.057	0.074
2705	2.00	1.49	0.13	-NA-	0.193	0.132	0.153	0.133	0.113	0.139
2706	3.00	1.49	0.13	-NA-	0.248	0.213	0.226	0.197	0.165	0.200
2707	4.00	1.49	0.13	-NA-	0.326	0.289	0.299	0.272	0.220	0.267
2708	5.00	1.48	0.13	-NA-	0.406	0.372	0.373	0.342	0.283	0.337
2709	6.00	1.48	0.13	-NA-	0.491	0.446	0.454	0.413	0.366	0.414
2710	7.00	1.48	0.13	-NA-	0.558	0.529	0.530	0.487	0.416	0.479
2711	8.00	1.47	0.13	-NA-	0.638	0.615	0.608	0.566	0.459	0.547
2712	9.00	1.48	0.13	-NA-	0.707	0.671	0.663	0.618	0.510	0.601
2713	10.00	1.48	0.13	-NA-	0.821	0.780	0.765	0.701	0.579	0.692
2714	11.00	1.46	0.13	-NA-	0.857	0.816	0.799	0.729	0.618	0.725
2715	12.00	1.46	0.13	-NA-	0.934	0.888	0.867	0.792	0.641	0.781
2716	13.00	1.46	0.13	-NA-	0.985	0.953	0.923	0.839	0.687	0.831
2717	14.00	1.45	0.13	-NA-	1.045	1.026	0.978	0.898	0.728	0.884
2718	15.00	1.44	0.13	-NA-	1.122	1.110	1.054	0.965	0.785	0.952
2719	16.00	1.44	0.13	-NA-	1.196	1.180	1.121	1.029	0.848	1.017
2721	18.00	1.37	0.12	-NA-	1.228	1.076	0.928	0.724	0.531	0.847
2723	0.00	1.48	0.13	-NA-	0.034	-0.009	0.031	0.007	0.007	0.014
2724	-2.00	1.46	0.13	-NA-	-0.118	-0.156	-0.127	-0.132	-0.104	-0.119
2725	-4.00	1.47	0.13	-NA-	-0.280	-0.306	-0.271	-0.264	-0.212	-0.251
2726	-6.00	1.46	0.13	-NA-	-0.432	-0.458	-0.418	-0.411	-0.320	-0.384
2727	-8.16	1.47	0.13	-NA-	-0.618	-0.624	-0.589	-0.560	-0.453	-0.538
2728	-10.00	1.46	0.13	-NA-	-0.766	-0.772	-0.717	-0.680	-0.552	-0.659
2729	-12.05	1.46	0.13	-NA-	-0.925	-0.886	-0.841	-0.788	-0.644	-0.774
2730	-13.97	1.46	0.13	-NA-	-1.056	-1.013	-0.970	-0.892	-0.721	-0.881
2732	-17.11	1.41	0.13	-NA-	-1.207	-1.100	-0.955	-0.757	-0.538	-0.857

30 DEGREE SWEEP WING, 5 MINUTE GLAZE ICE, SMOOTH

RUN #	α_{geo}	Rex10^6	Mach	C_d wake	C_l row1 y/b=0.218	C_l row2 y/b=0.344	C_l row3 y/b=0.465	C_l row4 y/b=0.591	C_l row5 y/b=0.733	C_L
2744	0.00	1.49	0.13	-NA-	0.004	-0.019	-0.004	0.002	0.002	-0.002
2748	2.00	1.52	0.13	-NA-	0.157	0.136	0.157	0.135	0.096	0.128
2750	4.00	1.52	0.13	-NA-	0.314	0.285	0.311	0.264	0.192	0.257
2752	6.00	1.52	0.13	-NA-	0.493	0.466	0.451	0.404	0.308	0.401
2754	8.00	1.51	0.13	-NA-	0.657	0.599	0.595	0.505	0.370	0.513

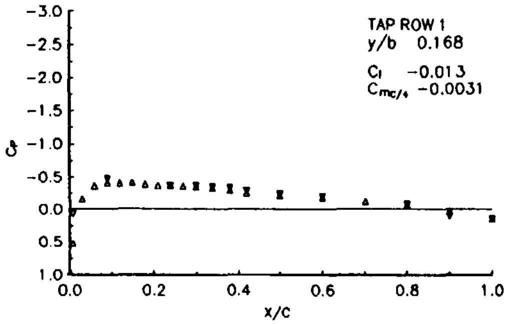
2756	10.00	1.48	0.13	-NA-	0.857	0.745	0.714	0.581	0.401	0.621
2764	-2.00	1.67	0.14	-NA-	-0.154	-0.147	-0.129	-0.108	-0.082	-0.117
2766	-4.00	1.66	0.14	-NA-	-0.294	-0.296	-0.263	-0.227	-0.163	-0.233
2768	-6.00	1.65	0.14	-NA-	-0.375	-0.479	-0.399	-0.353	-0.243	-0.342
2770	-8.00	1.64	0.14	-NA-	-0.519	-0.609	-0.513	-0.467	-0.331	-0.454
2772	-10.05	1.64	0.14	-NA-	-0.690	-0.720	-0.634	-0.538	-0.358	-0.548
2775	-12.96	1.62	0.14	-NA-	-0.870	-0.934	-0.749	-0.585	-0.429	-0.666

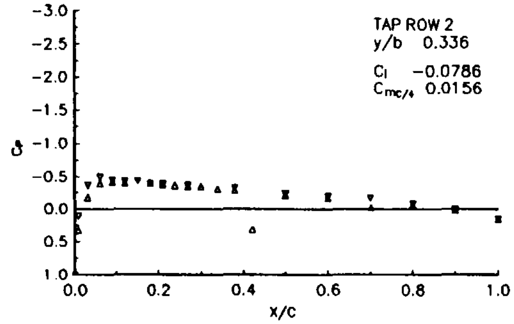
30 DEGREE SWEEP WING, 5 MINUTE GLAZE ICE, 50 GRIT ROUGHNESS (K/C = 0.001)

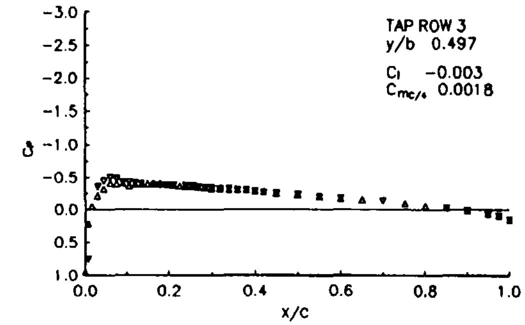
RUN #	α_{geo}	Rex10^6	Mach	$C_{d\ wake}$	$C_{l\ row1}$ y/b=0.218	$C_{l\ row2}$ y/b=0.344	$C_{l\ row3}$ y/b=0.465	$C_{l\ row4}$ y/b=0.591	$C_{l\ row5}$ y/b=0.733	C_L
2790	0.00	1.43	0.13	-NA-	-0.038	0.004	-0.010	-0.013	-0.020	-0.017
2792	2.00	1.40	0.13	-NA-	0.132	0.137	0.141	0.118	0.076	0.112
2794	4.00	1.42	0.13	-NA-	0.291	0.293	0.287	0.250	0.171	0.241
2796	6.00	1.40	0.13	-NA-	0.448	0.457	0.442	0.383	0.262	0.372
2798	8.00	1.40	0.13	-NA-	0.619	0.601	0.579	0.484	0.335	0.489
2800	10.00	1.37	0.13	-NA-	0.780	0.747	0.694	0.544	0.359	0.583
2802	12.00	1.36	0.13	-NA-	0.913	0.841	0.747	0.559	0.368	0.641
2814	-2.00	1.41	0.13	-NA-	-0.146	-0.156	-0.126	-0.131	-0.100	-0.124
2816	-4.00	1.41	0.13	-NA-	-0.302	-0.313	-0.284	-0.246	-0.187	-0.250
2819	-6.00	1.40	0.13	-NA-	-0.465	-0.478	-0.447	-0.375	-0.265	-0.379
2821	-8.00	1.39	0.13	-NA-	-0.616	-0.628	-0.584	-0.470	-0.328	-0.490
2823	-10.00	1.39	0.13	-NA-	-0.790	-0.802	-0.712	-0.558	-0.382	-0.605
2825	-12.13	1.38	0.13	-NA-	-0.907	-0.889	-0.764	-0.583	-0.386	-0.658

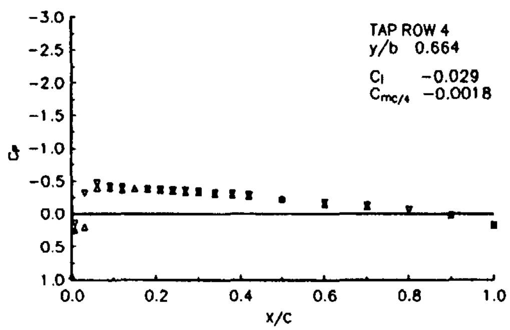
RUNS 2104 - 2133

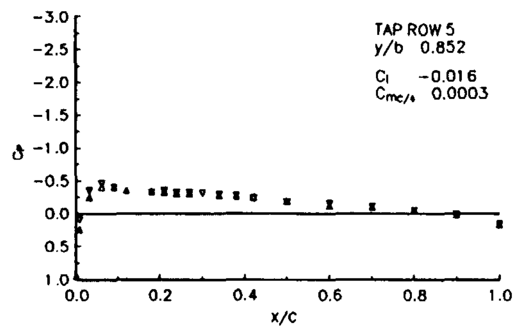
RECTANGULAR WING, CLEAN & SMOOTH, WAKE PROBE BEHIND TAP ROW 3

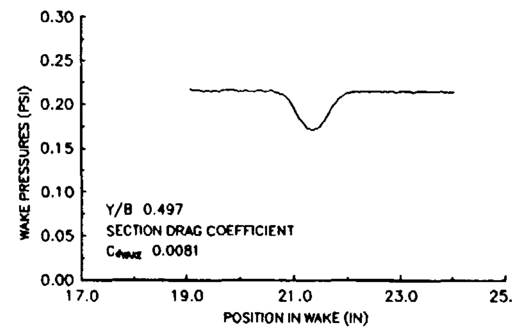










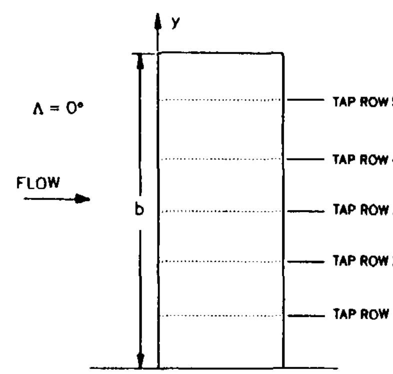


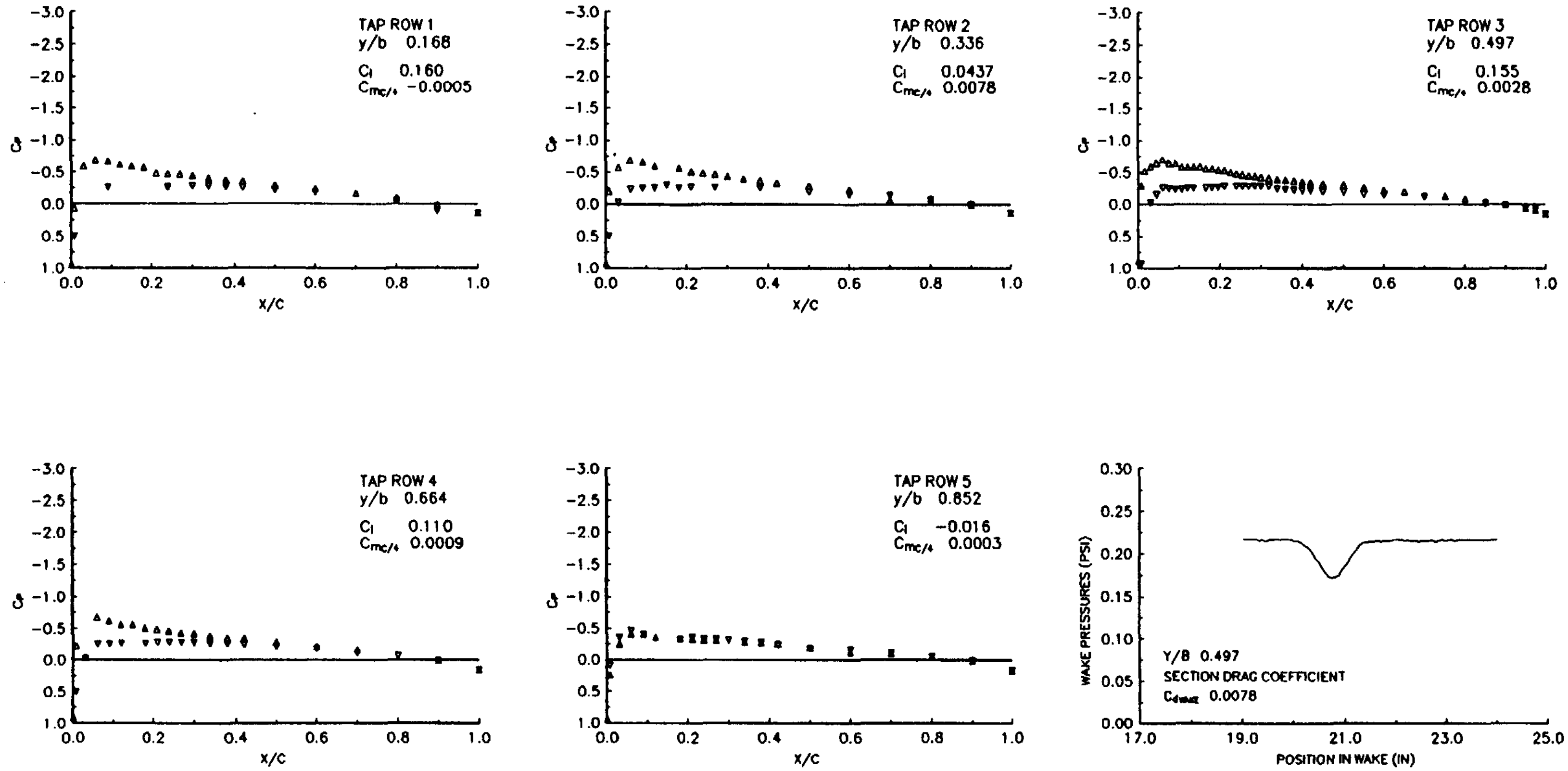
RUN NUMBER 2104

$AOA_{GEOMETRIC}$ 0°

MACH 0.15

RE 1.29×10^6



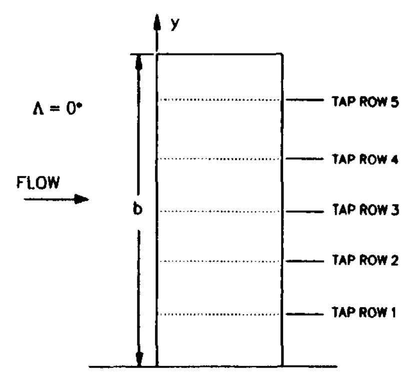


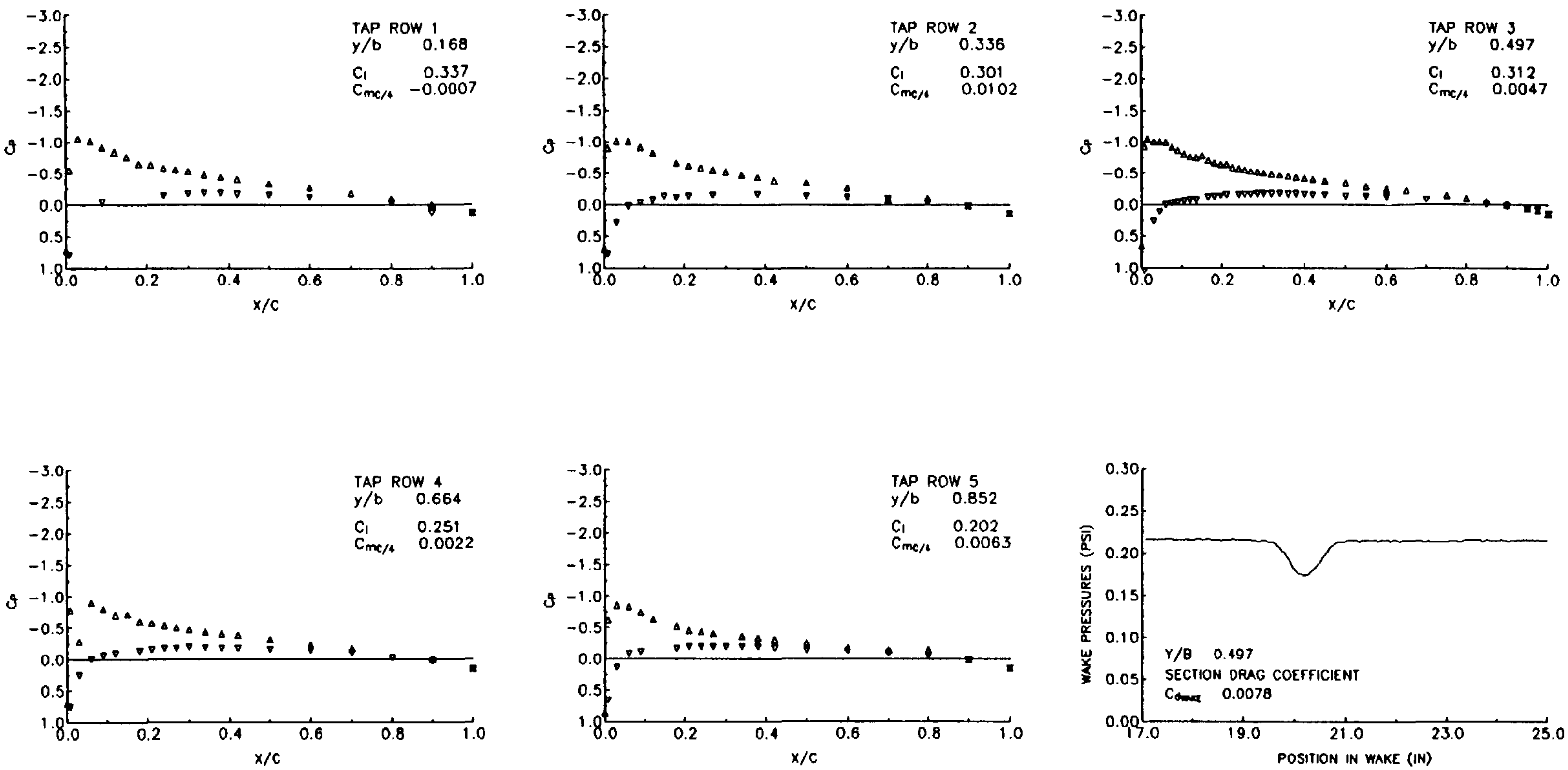
RUN NUMBER 2106

$AOA_{GEOMETRIC}$ 2°

MACH 0.15

RE 1.28×10^6



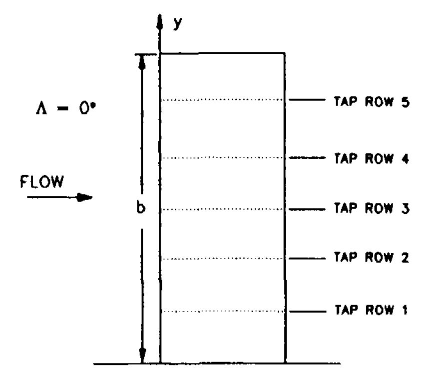


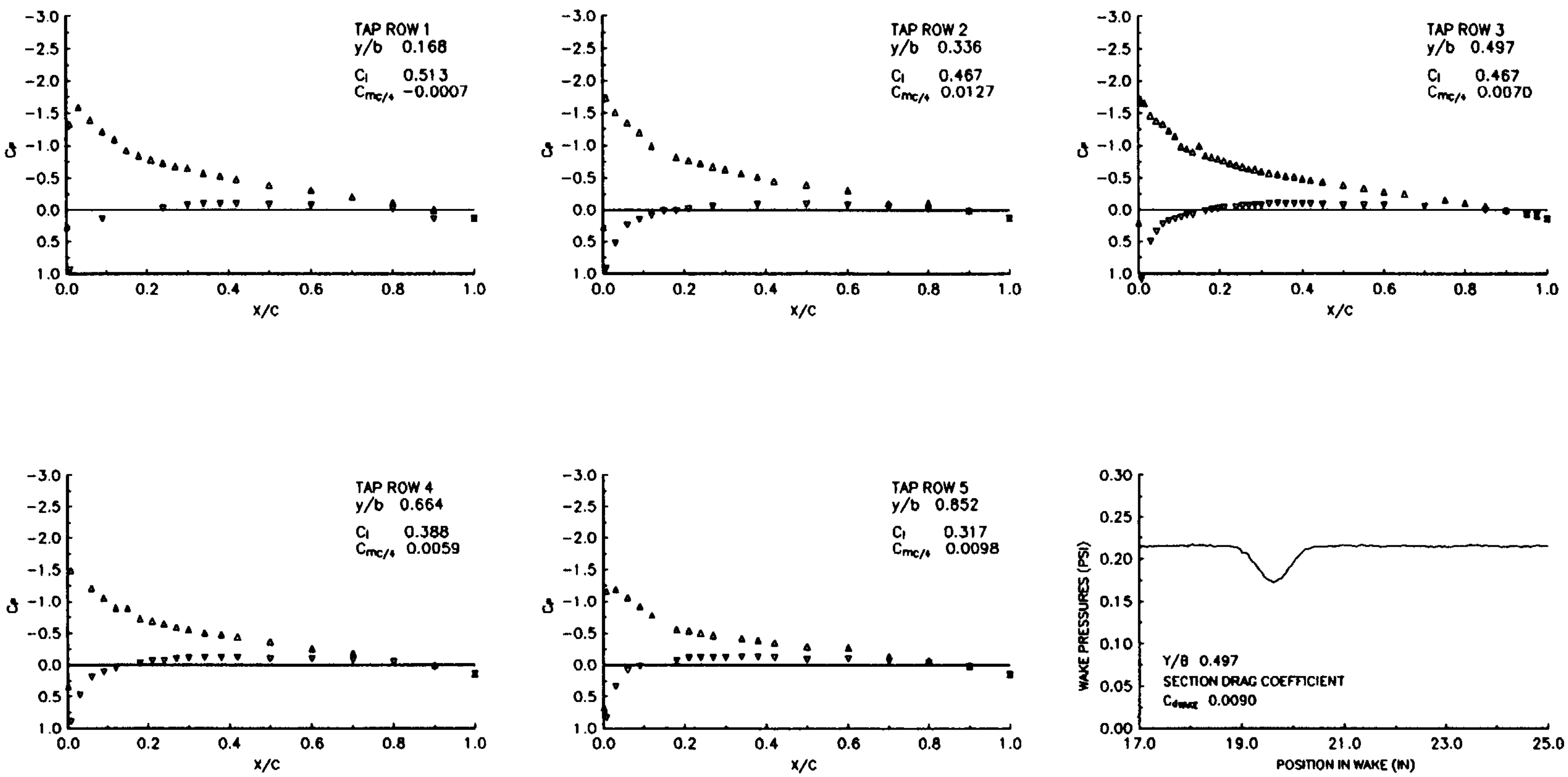
RUN NUMBER 2108

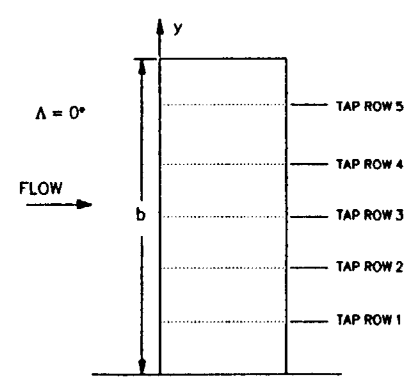
$AOA_{GEOMETRIC}$ 4°

MACH 0.15

RE 1.28×10^6





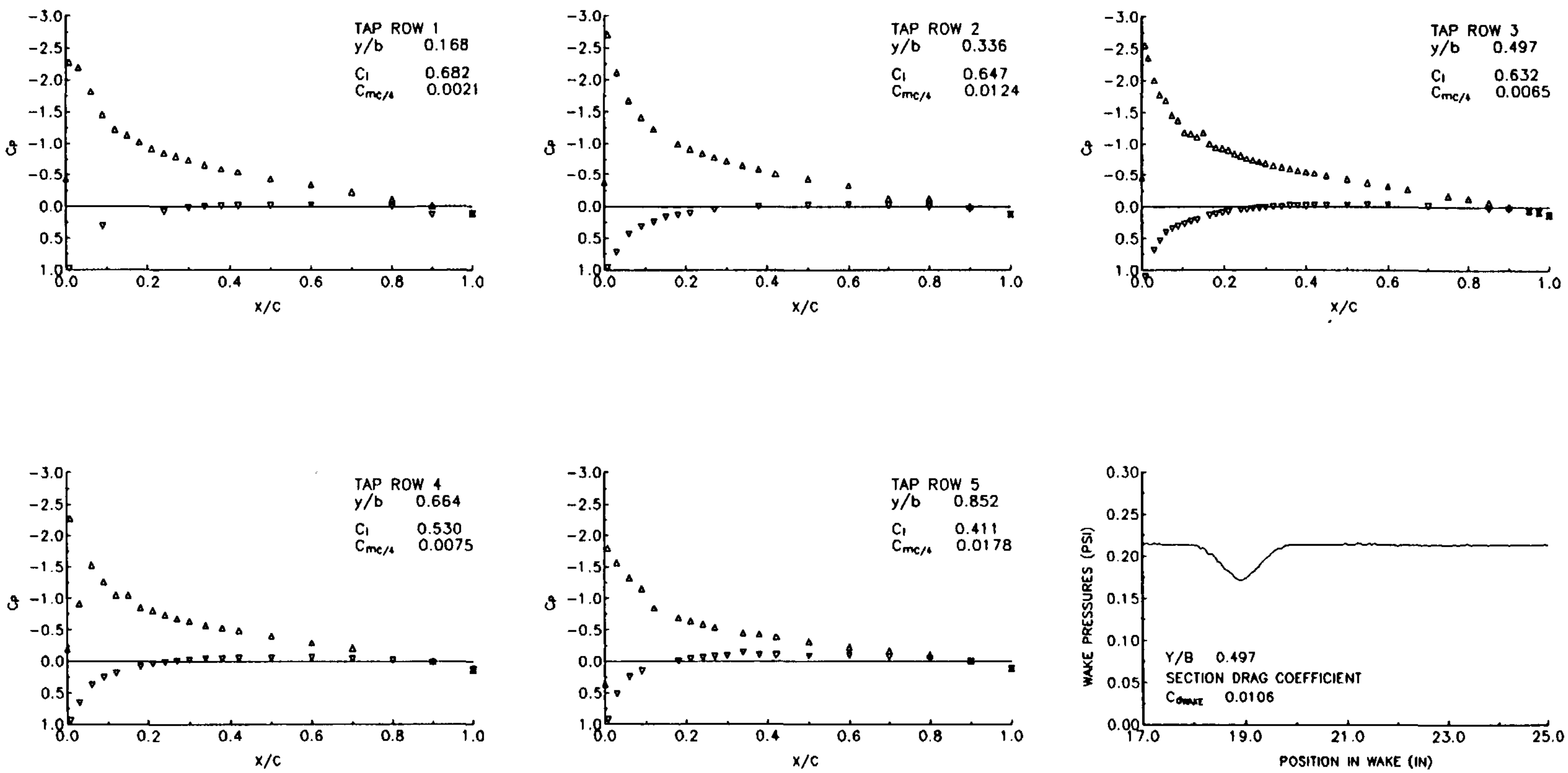


RUN NUMBER 2110

$AOA_{GEOMETRIC}$ 6°

MACH 0.15

RE 1.28×10^6

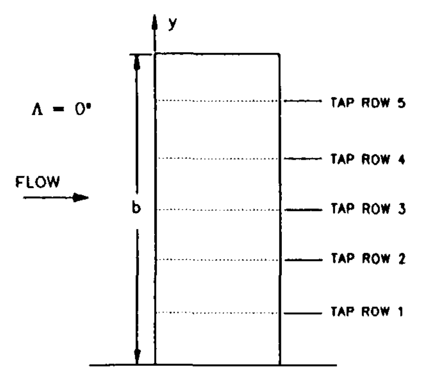


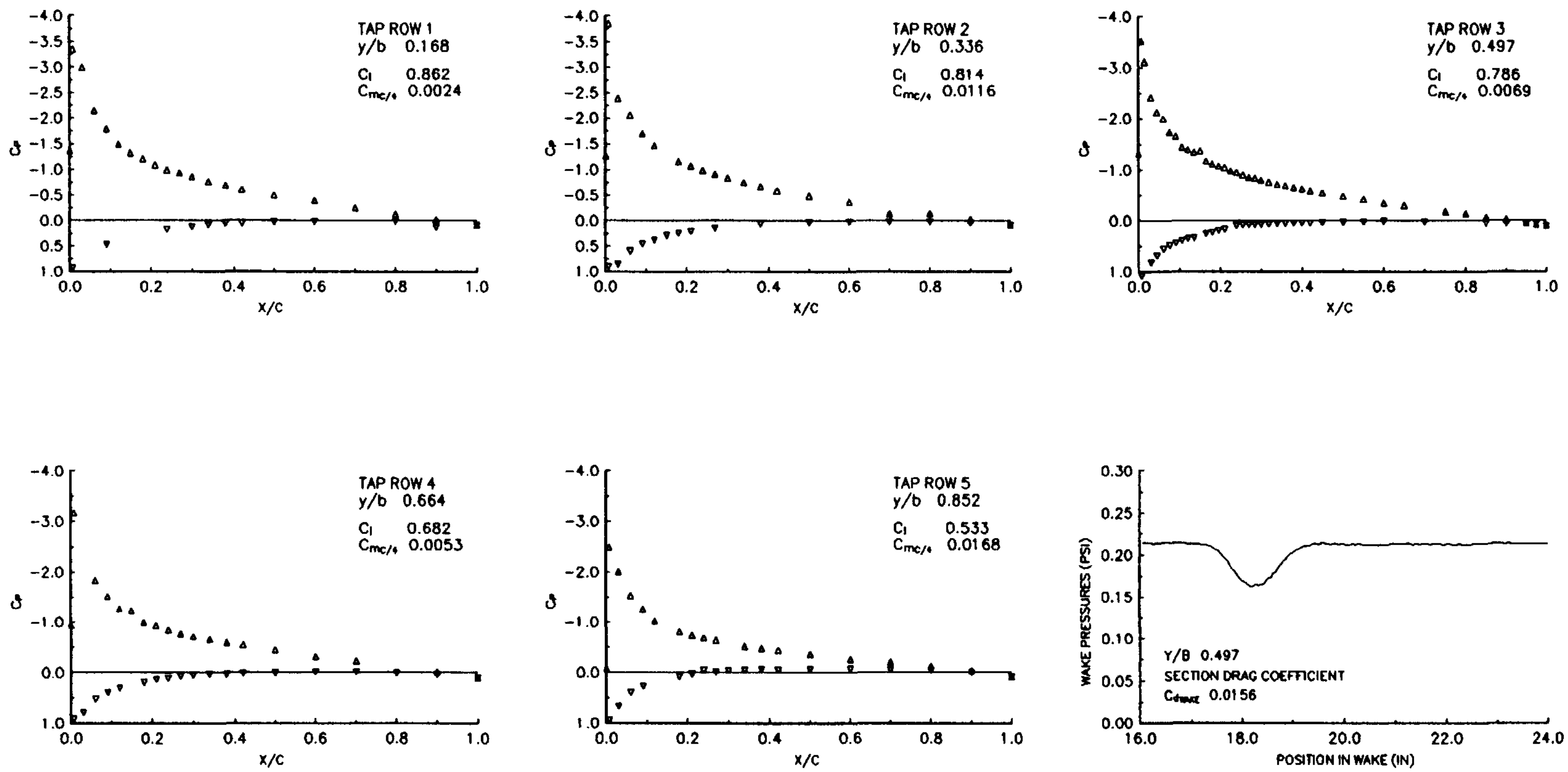
RUN NUMBER 2112

AOA$_{GEOMETRIC}$ 8°

MACH 0.15

RE 1.27×10^6



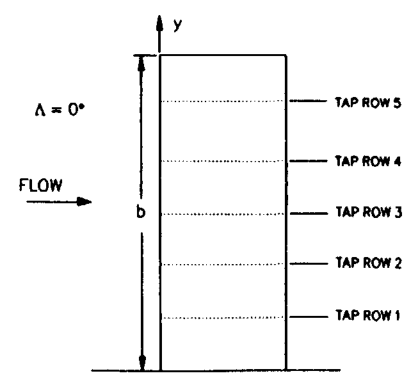


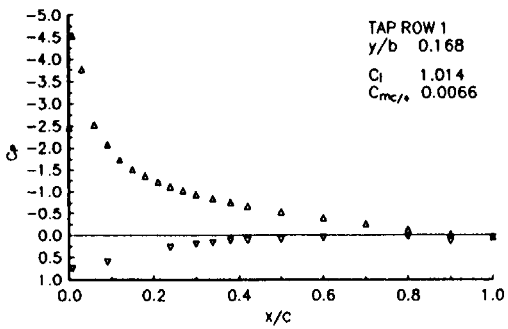
RUN NUMBER 2114

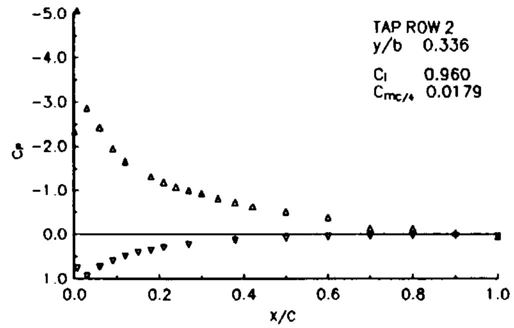
$AOA_{GEOMETRIC}$ 10°

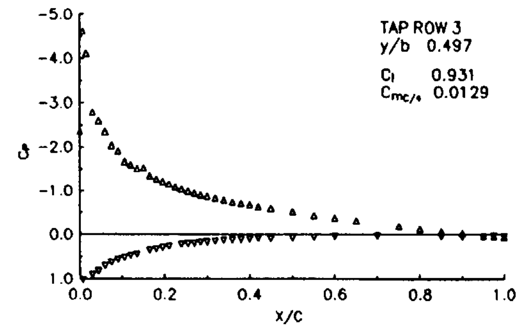
MACH 0.15

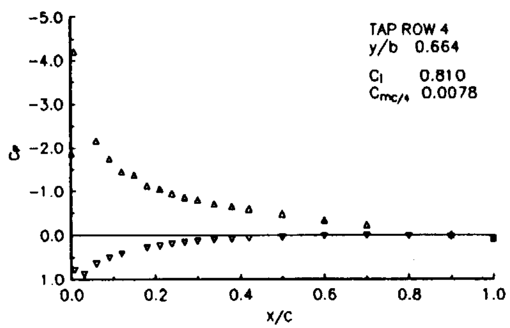
RE 1.26×10^6

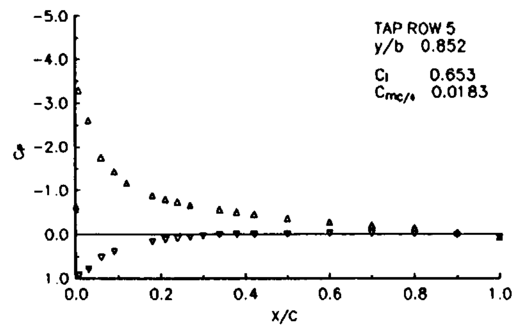


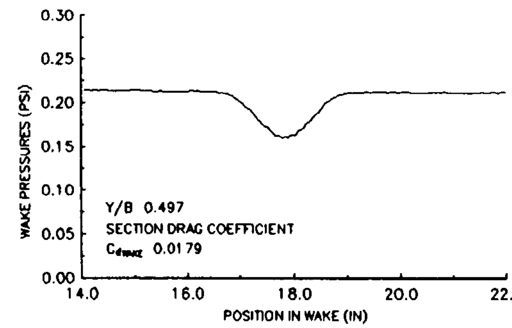










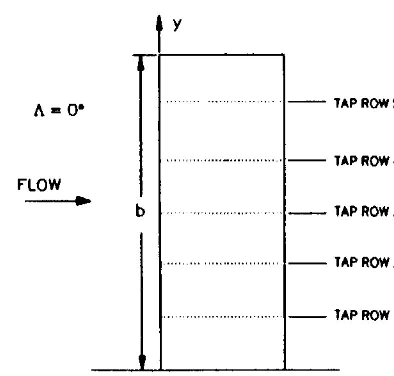


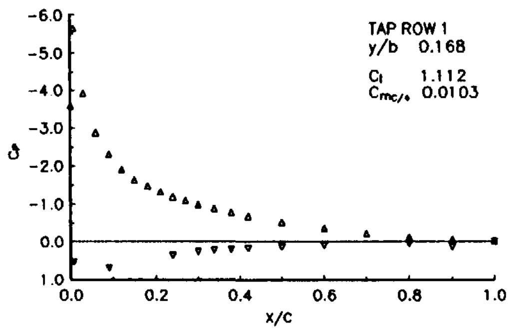
RUN NUMBER 2116

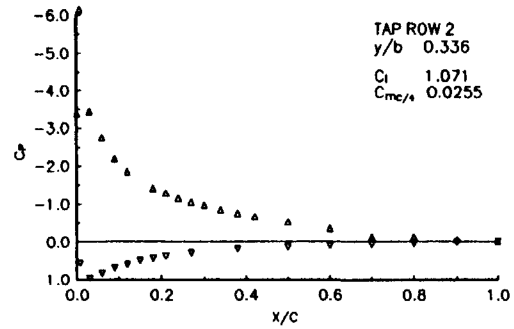
$AOA_{GEOMETRIC}$ 12°

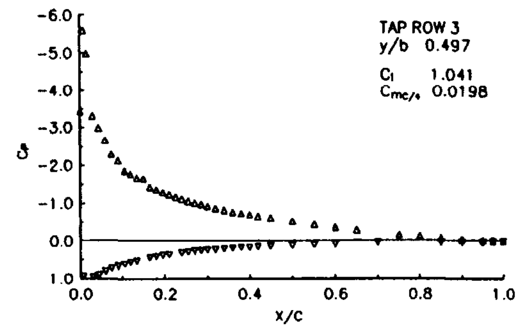
MACH 0.15

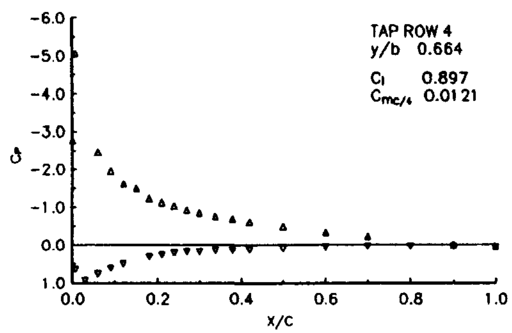
RE 1.26×10^6

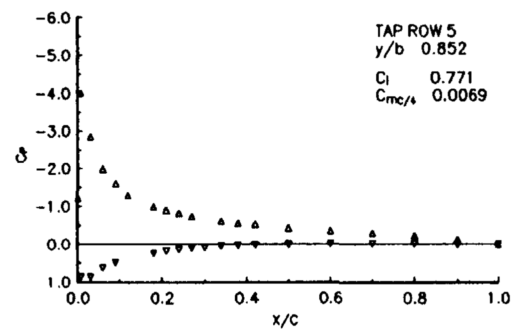


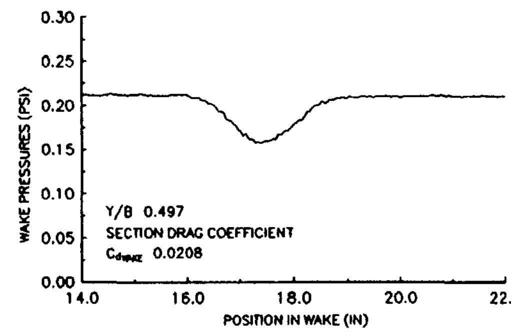










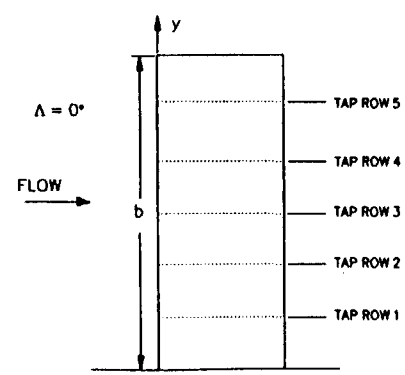


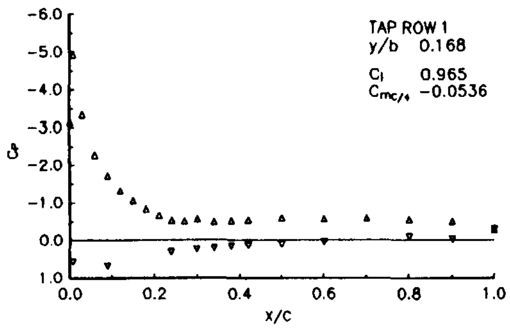
RUN NUMBER 2118

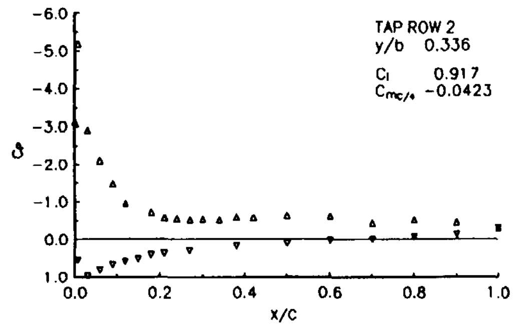
$AOA_{GEOMETRIC}$ 14°

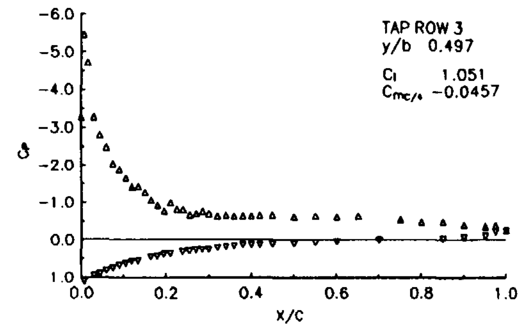
MACH 0.15

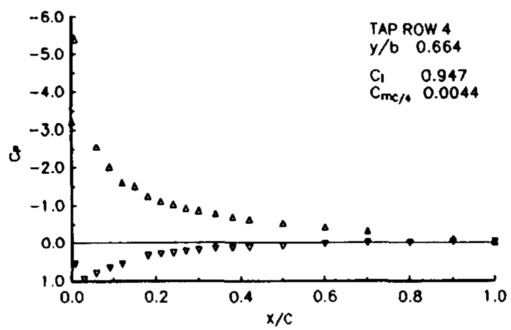
RE 1.25×10^6

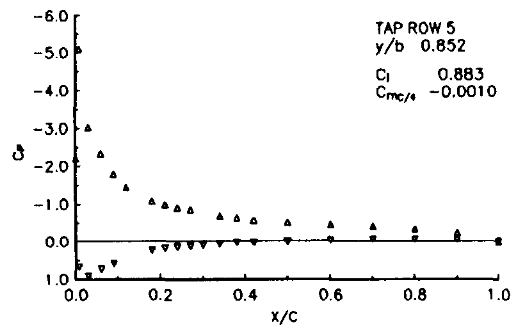


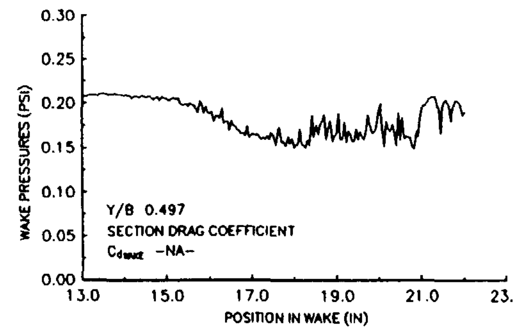










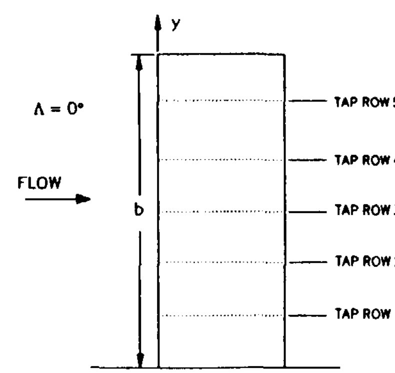


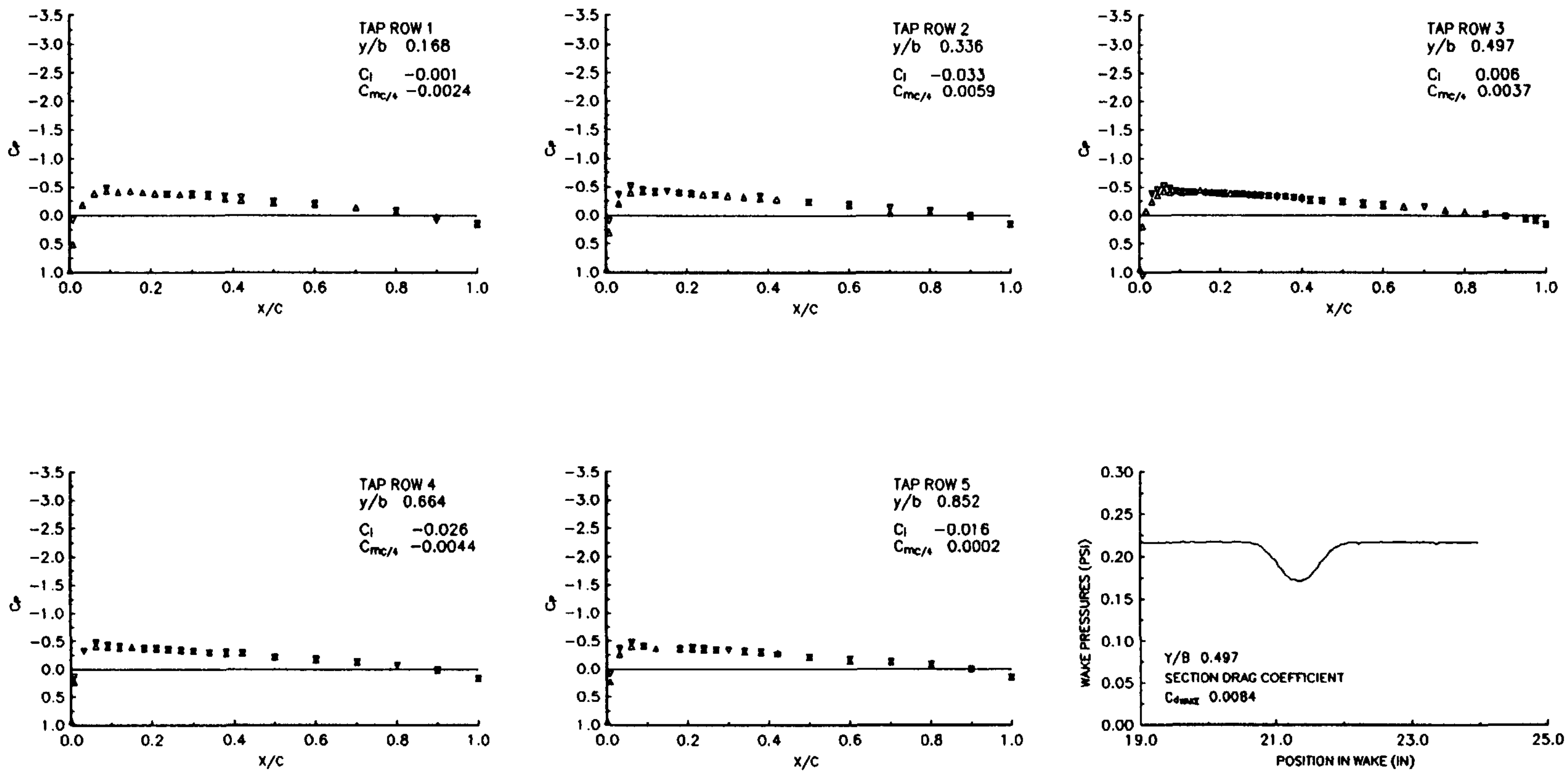
RUN NUMBER 2120

AOA$_{GEOMETRIC}$ 16°

MACH 0.14

RE 1.25×10^6



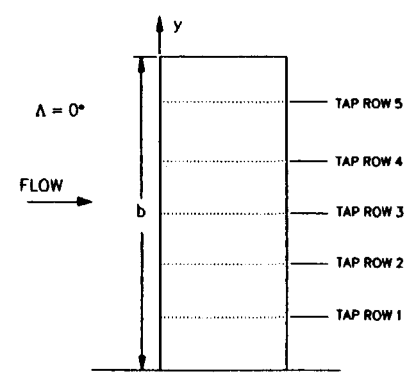


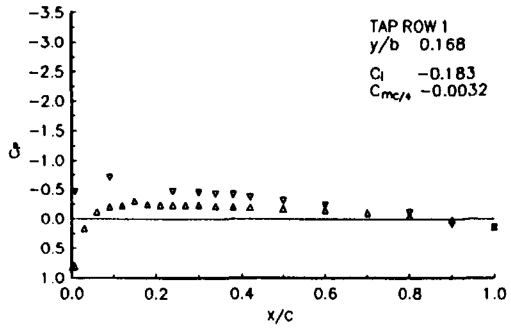
RUN NUMBER 2124

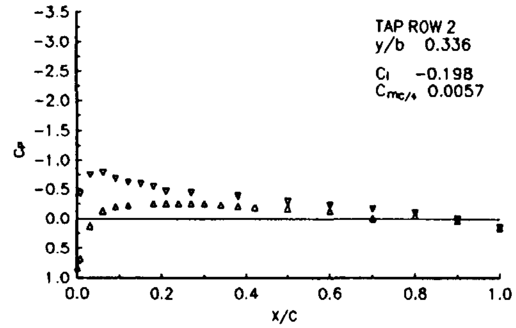
$AOA_{GEOMETRIC}$ 0°

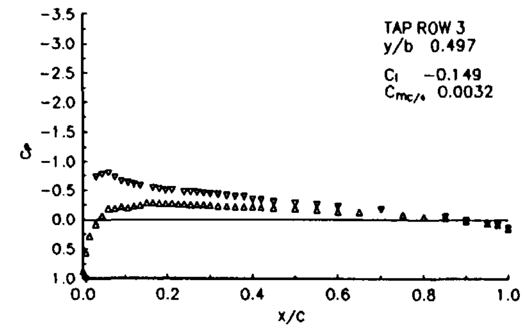
MACH 0.15

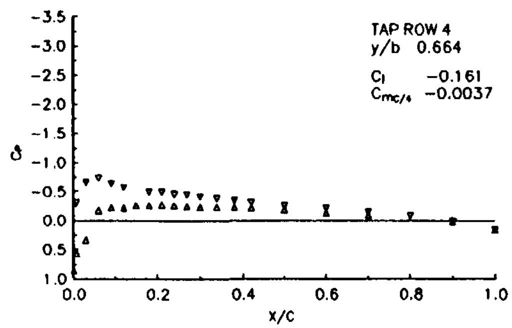
RE 1.28×10^6

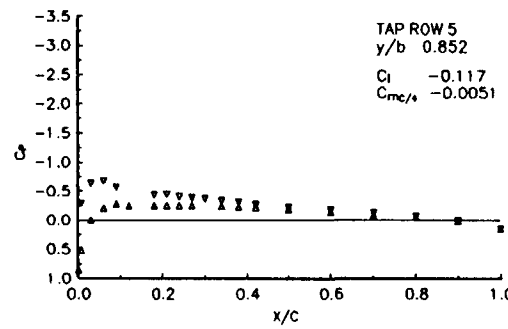


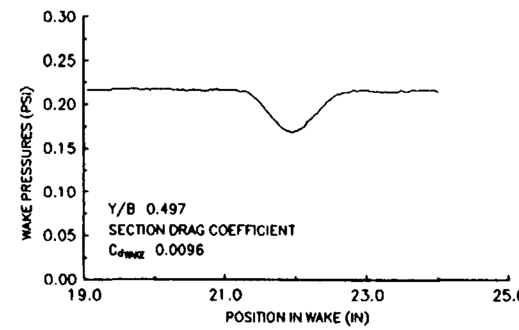










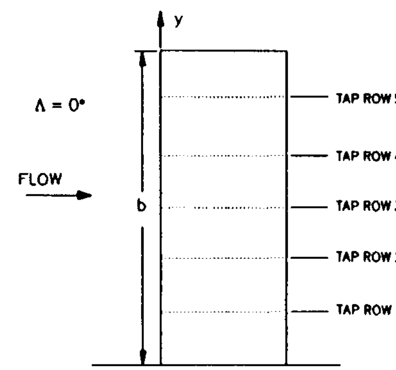


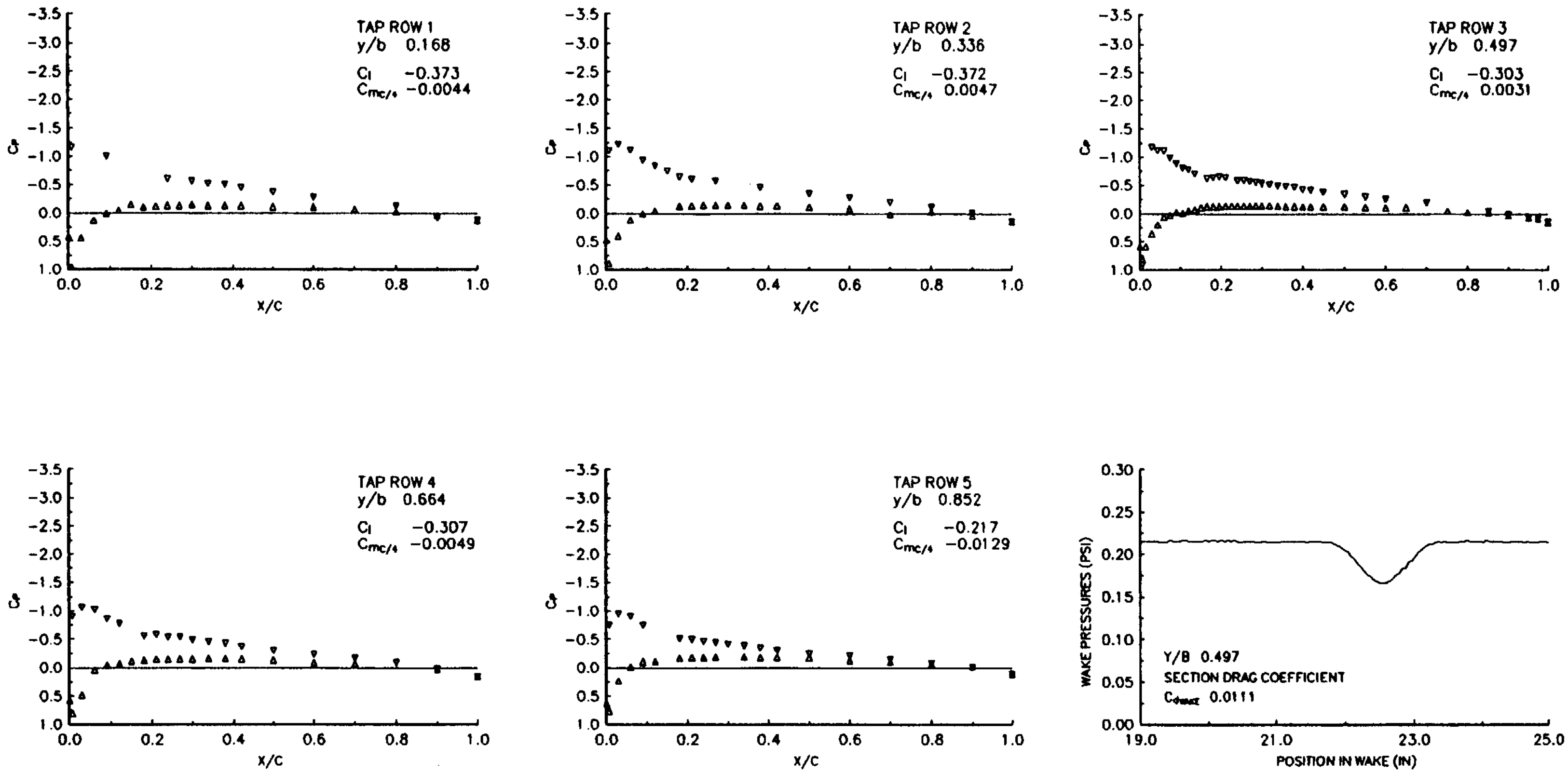
RUN NUMBER 2125

$AOA_{GEOMETRIC}$ $-2°$

MACH 0.15

RE 1.28×10^6



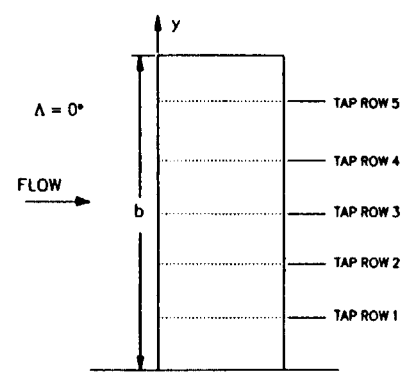


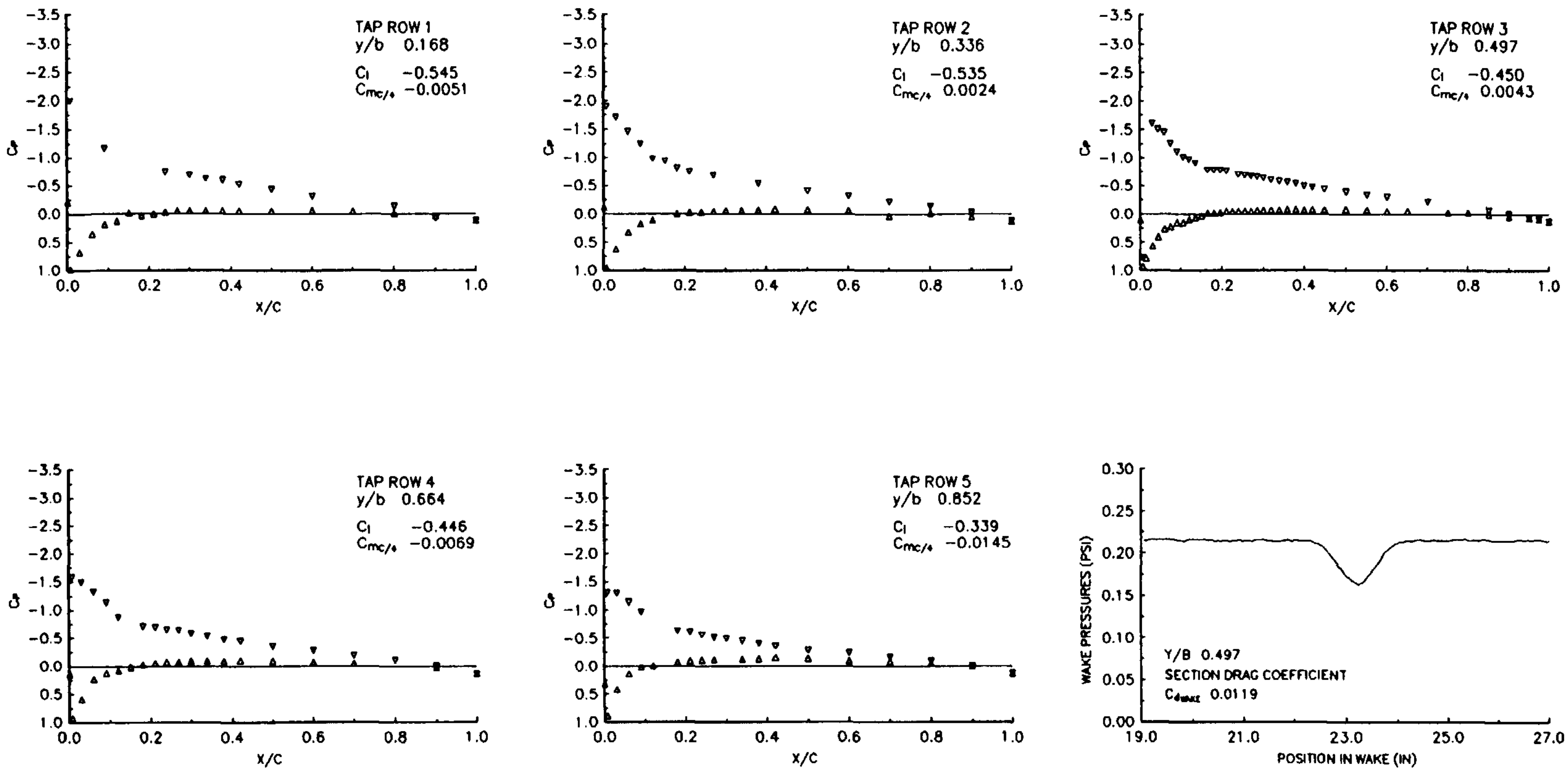
RUN NUMBER 2126

AOA GEOMETRIC −4°

MACH 0.15

RE 1.30 X 10^6



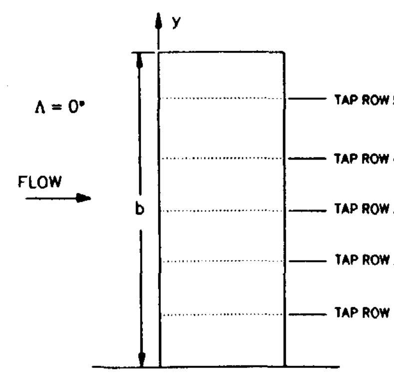


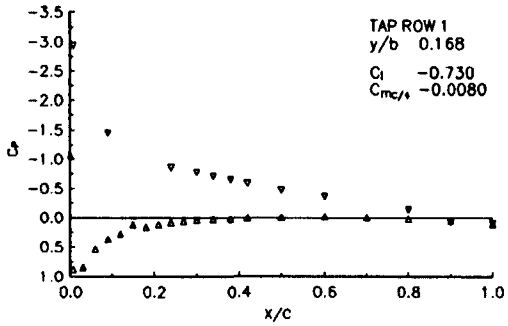
RUN NUMBER 2127

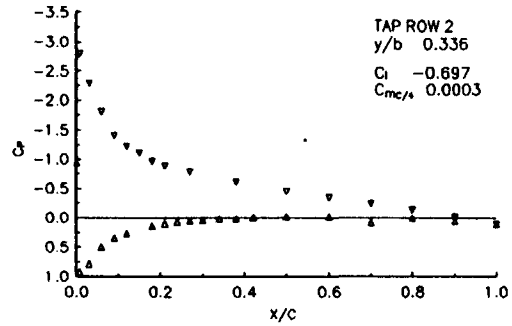
$AOA_{GEOMETRIC}$ −6°

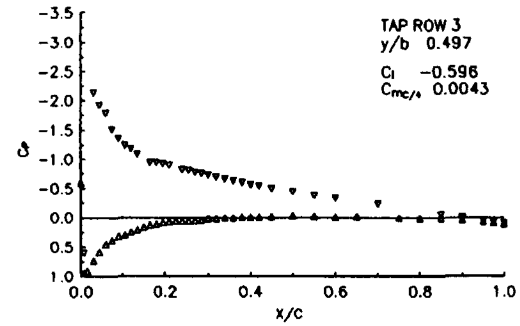
MACH 0.15

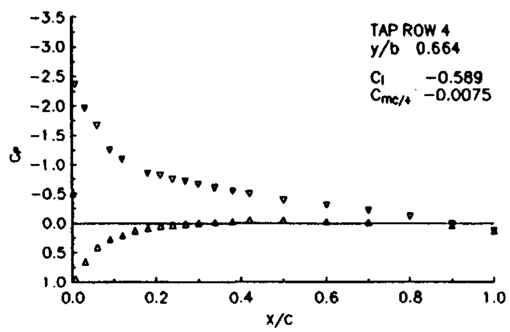
RE 1.31×10^6

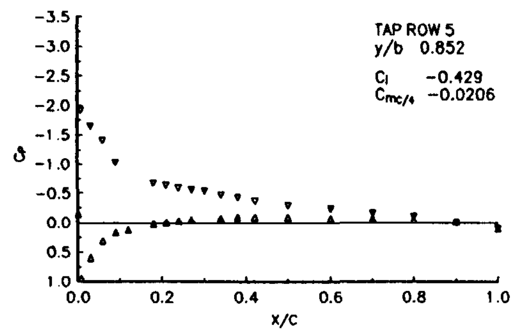


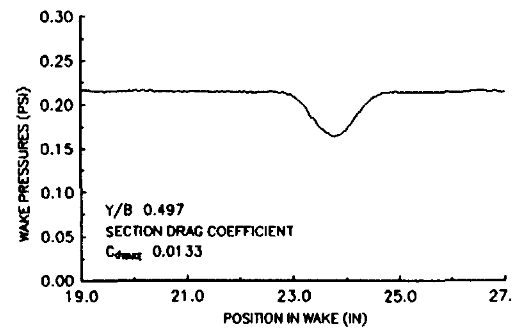










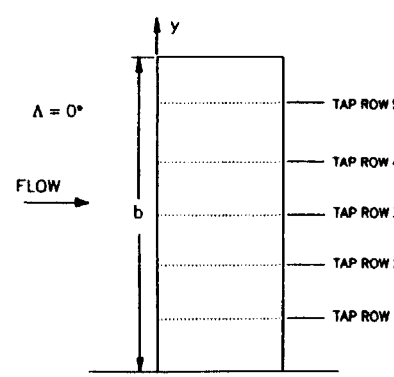


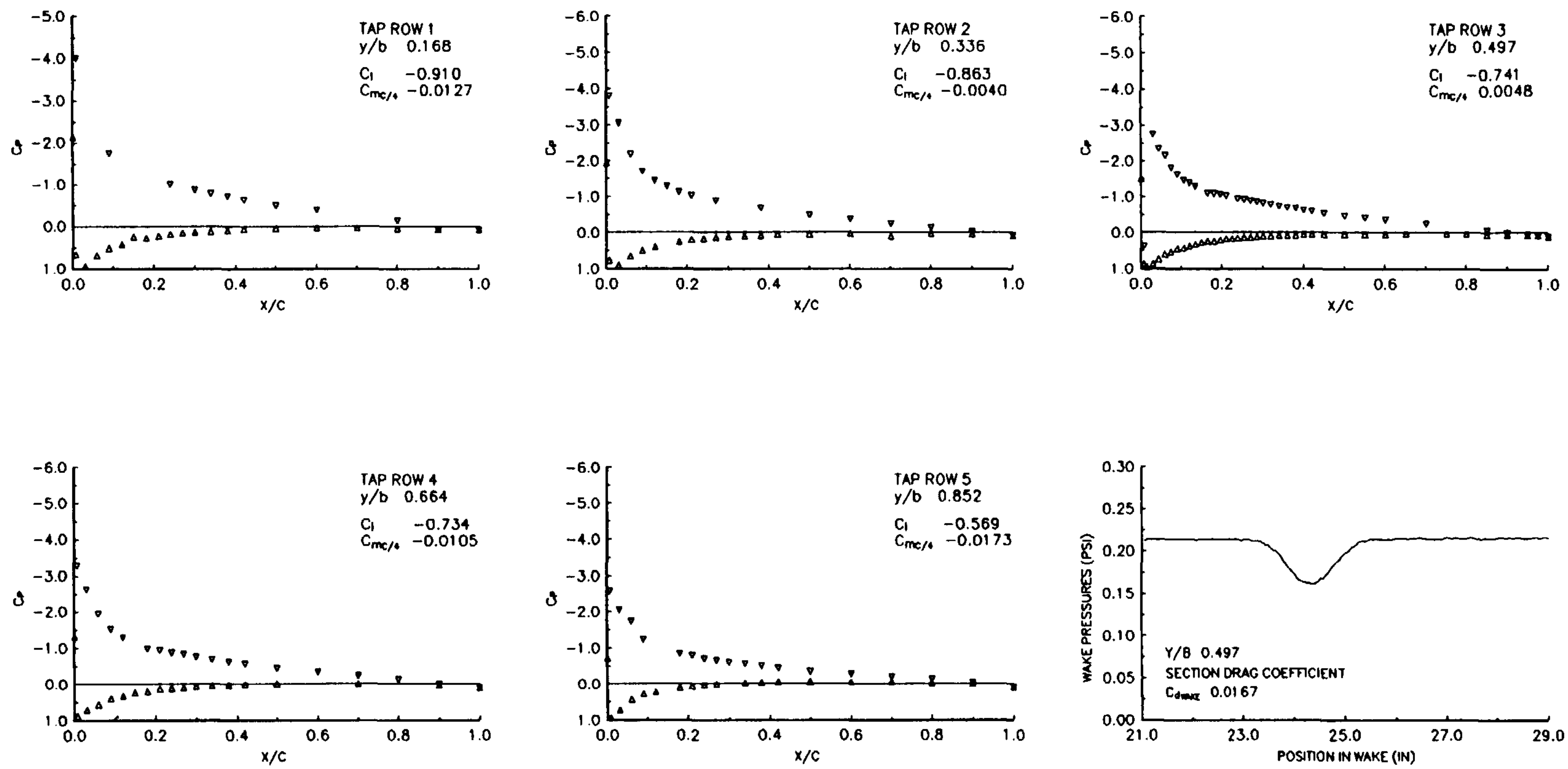
RUN NUMBER 2128

$AOA_{GEOMETRIC}$ $-8°$

MACH 0.15

RE 1.31×10^6



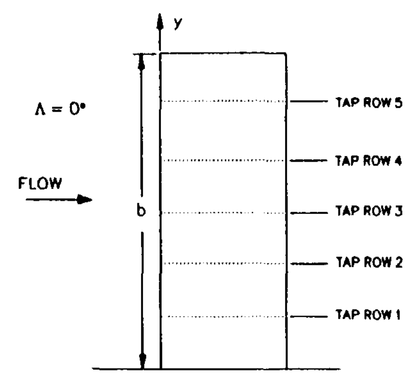


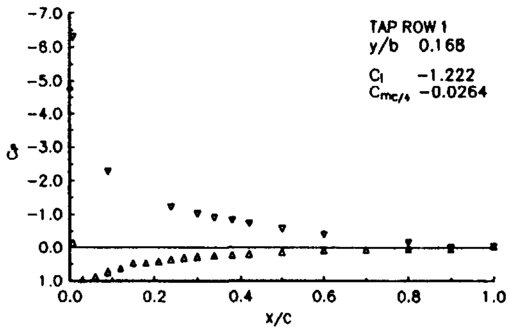
RUN NUMBER 2129

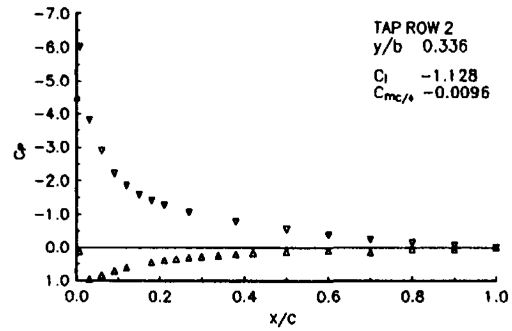
AOA$_{GEOMETRIC}$ $-10°$

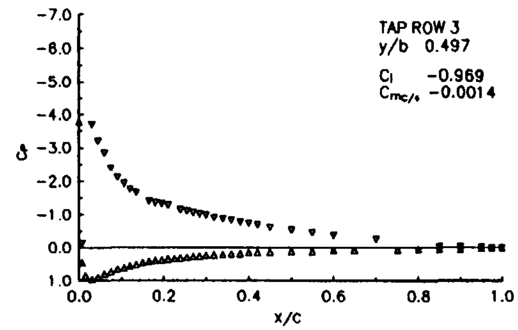
MACH 0.15

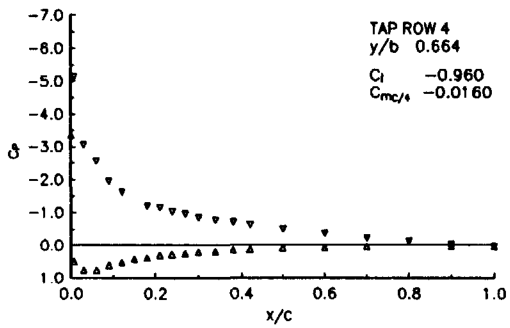
RE 1.31×10^6

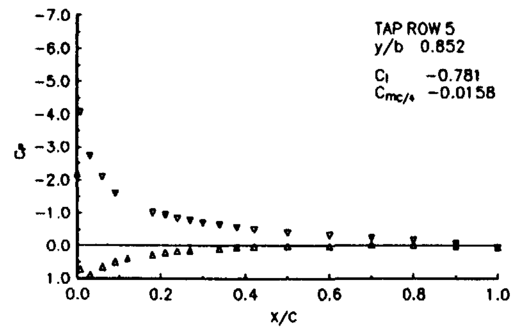


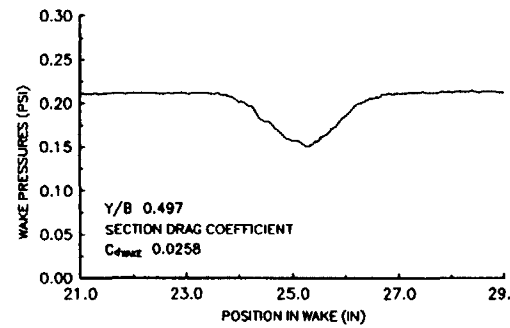










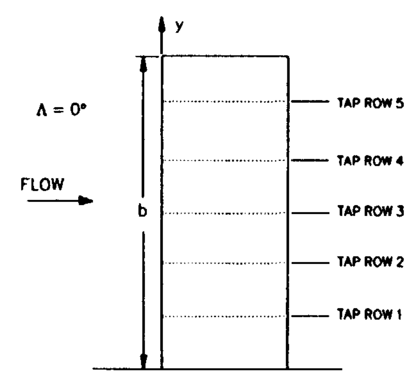


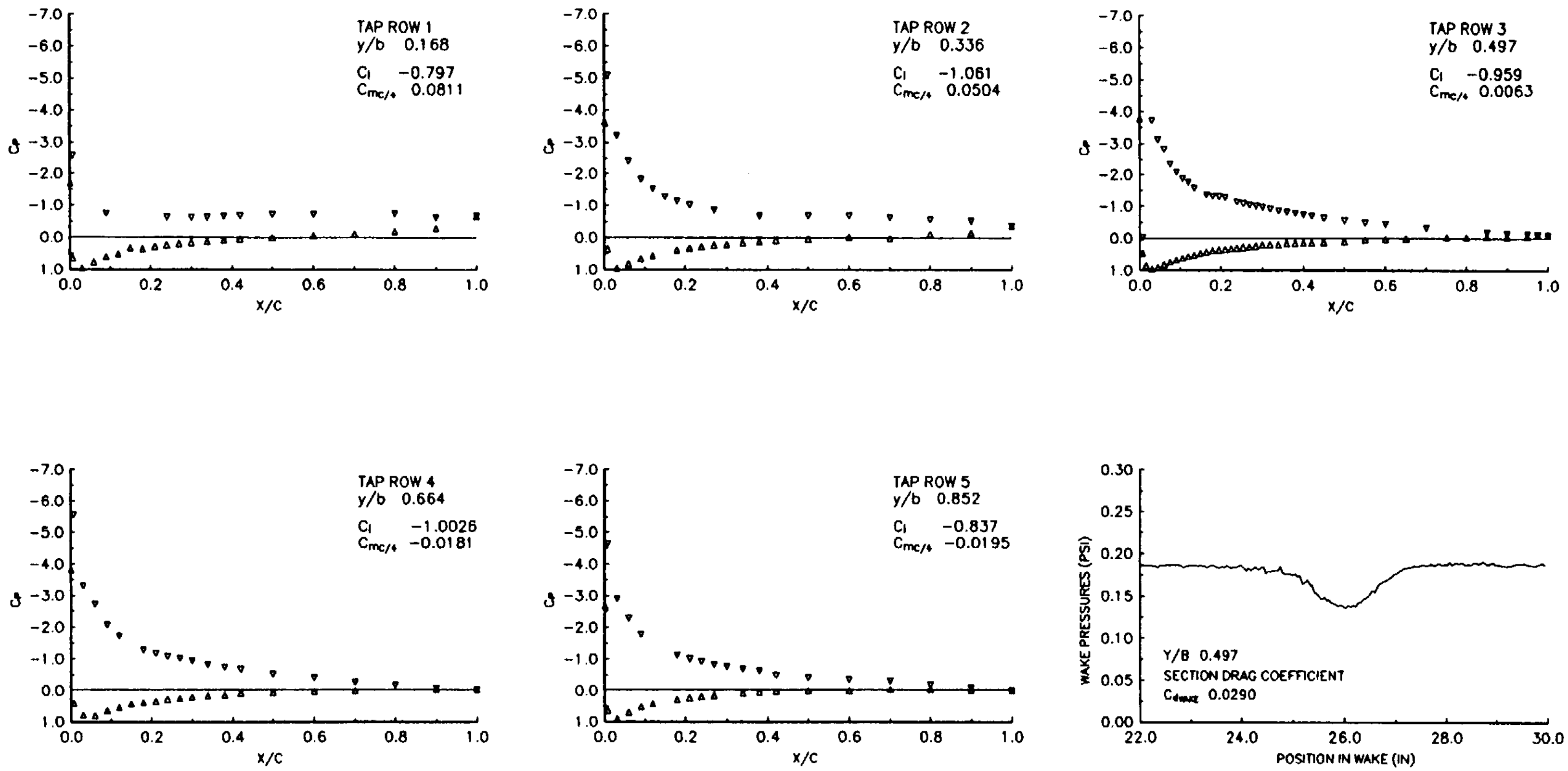
RUN NUMBER 2131

$AOA_{GEOMETRIC}$ $-14°$

MACH 0.15

RE 1.31×10^6



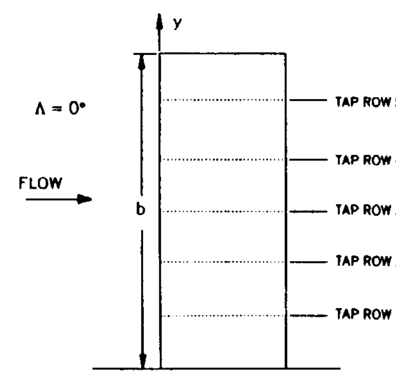


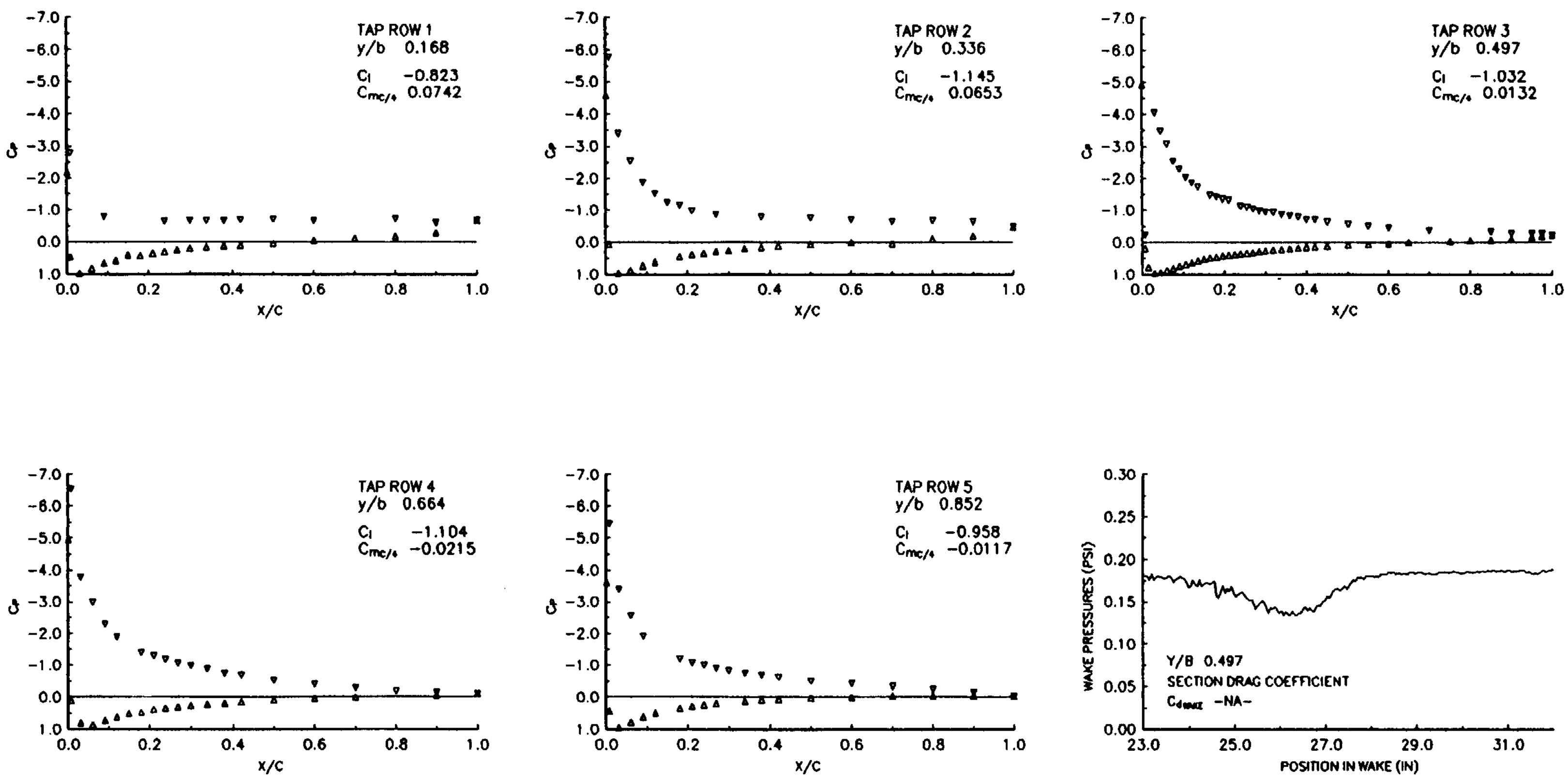
RUN NUMBER 2132

$AOA_{GEOMETRIC}$ −16°

MACH 0.14

RE 1.22×10^6



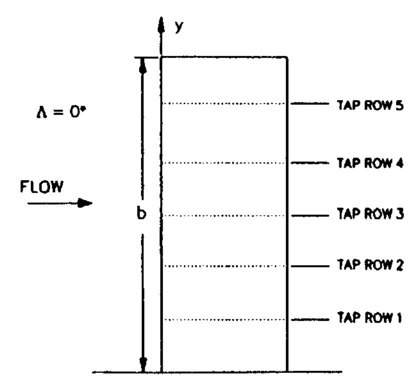


RUN NUMBER 2133

AOA$_{GEOMETRIC}$ $-18°$

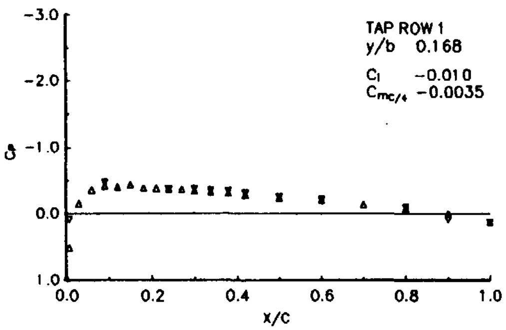
MACH 0.14

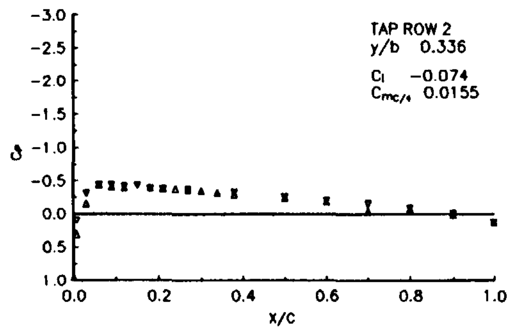
RE 1.21×10^6

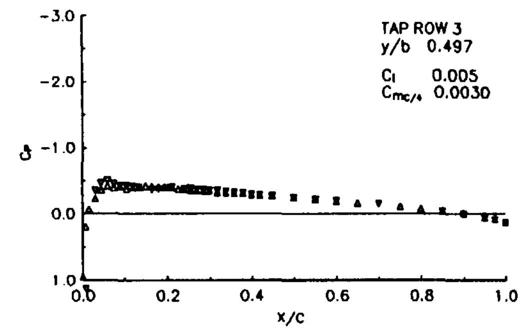


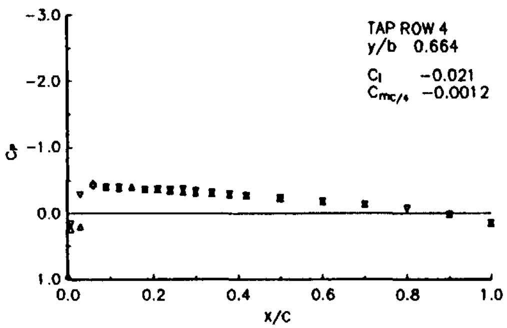
RUNS 2150 - 2178

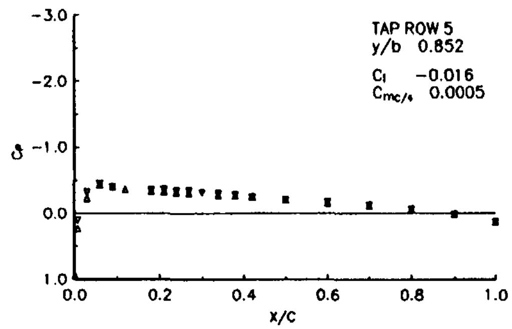
RECTANGULAR WING, CLEAN, WITH TRIP STRIP AT ±0.05 CHORD, WAKE PROBE BEHIND TAP ROW 3

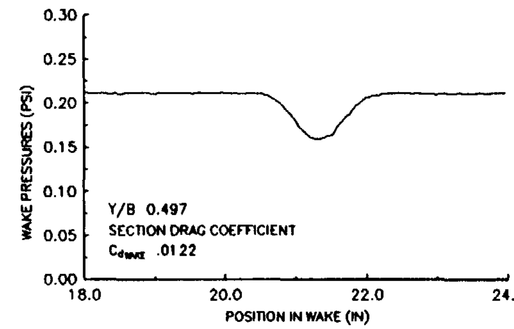










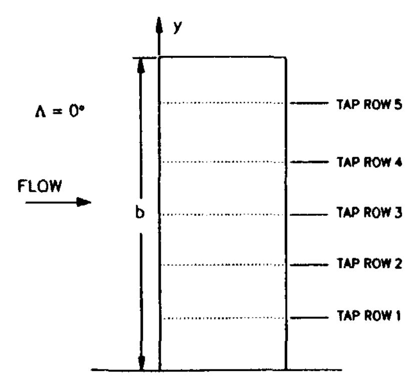


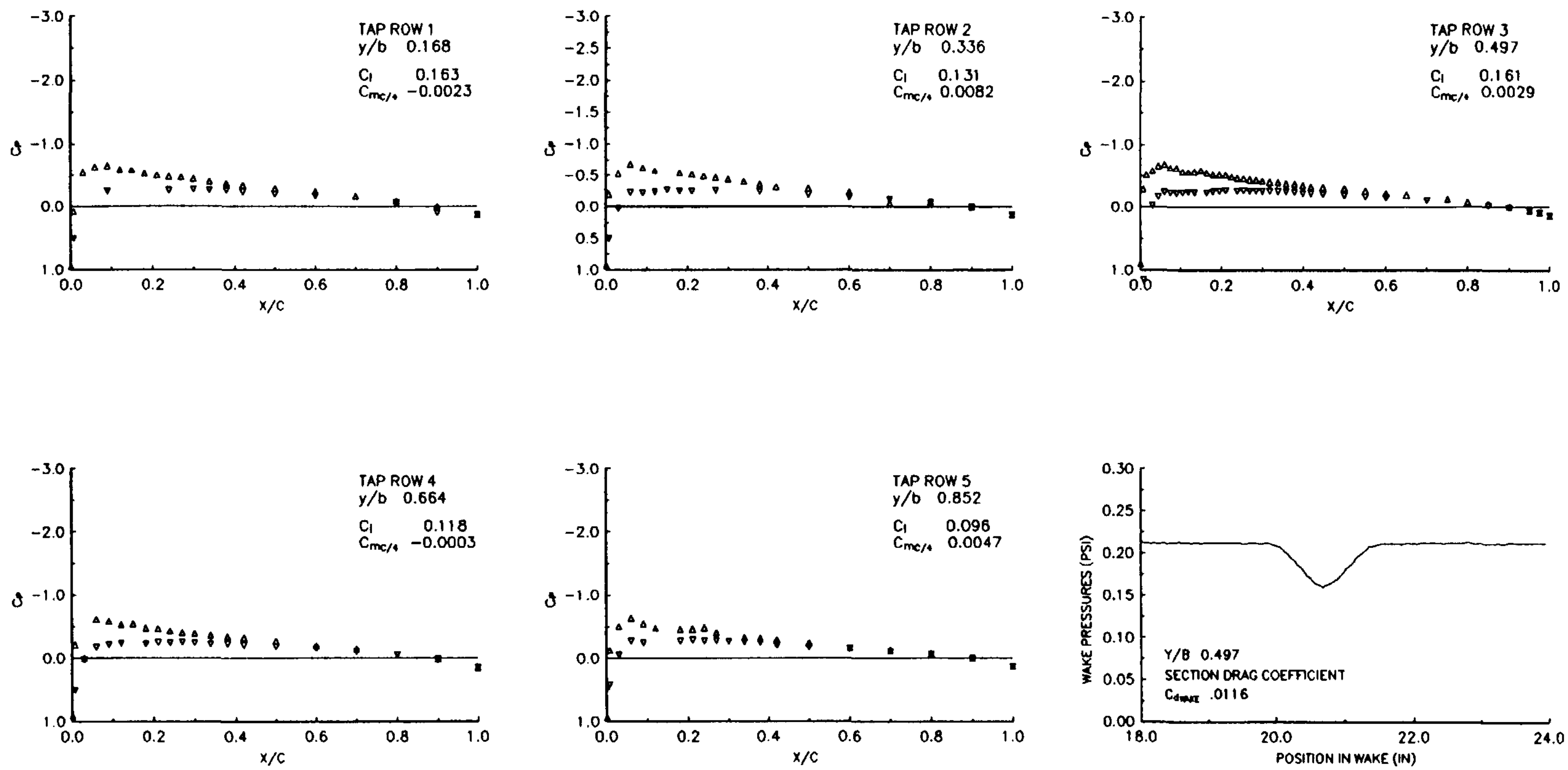
RUN NUMBER 2150

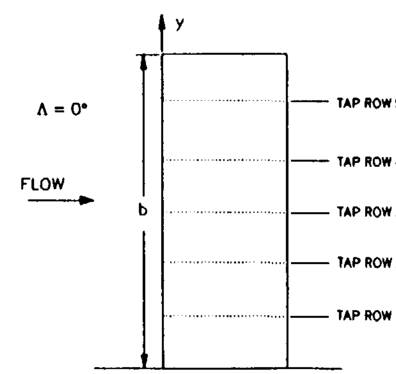
AOA$_{GEOMETRIC}$ 0°

MACH 0.15

RE 1.25×10^6





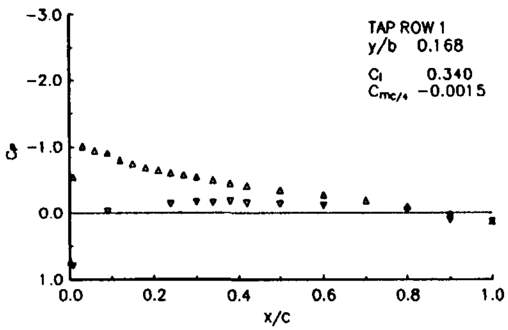


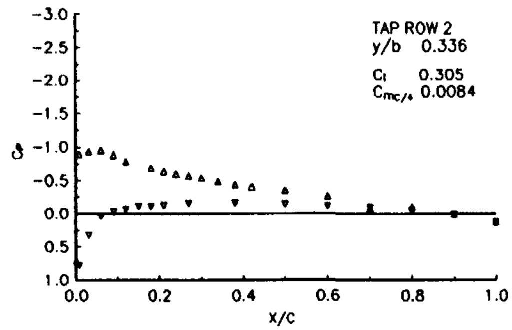
RUN NUMBER 2152

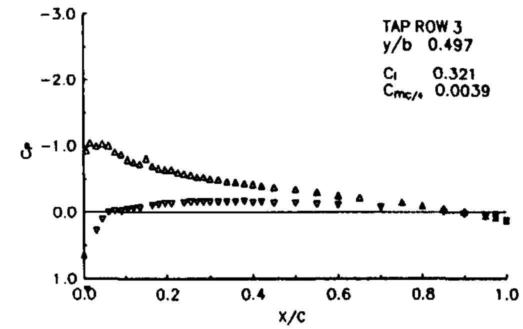
$AOA_{GEOMETRIC}$ 2°

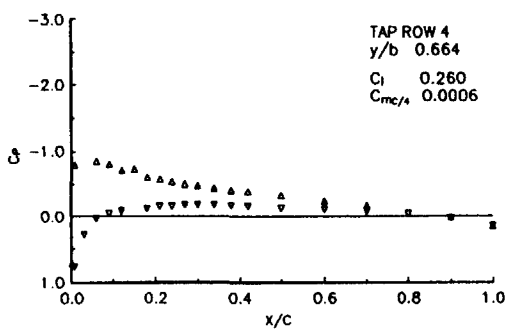
MACH 0.15

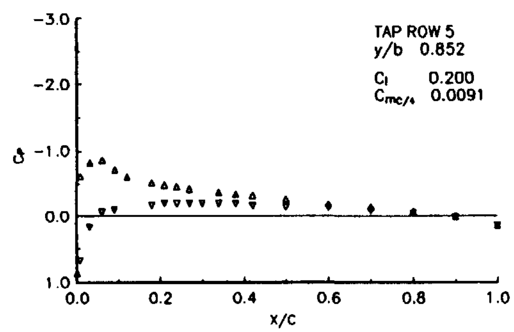
RE 1.26×10^6

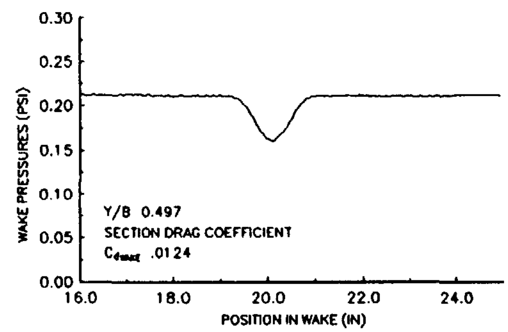










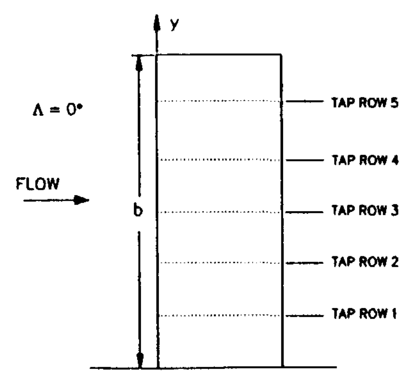


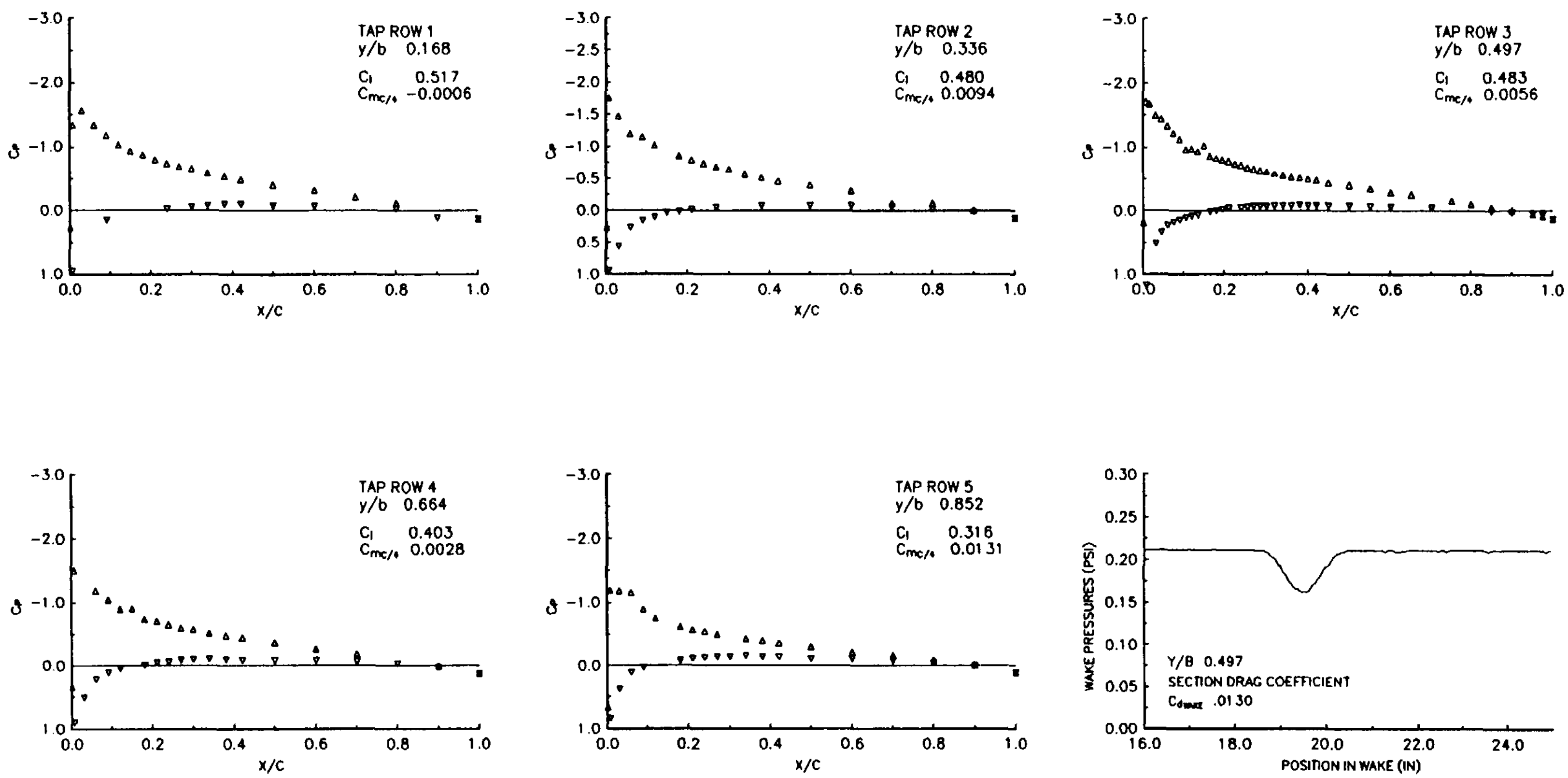
RUN NUMBER 2154

$AOA_{GEOMETRIC}$ 4°

MACH 0.15

RE 1.25×10^6



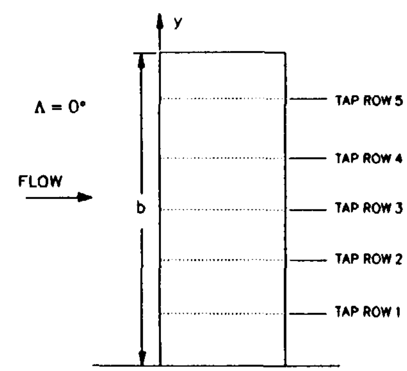


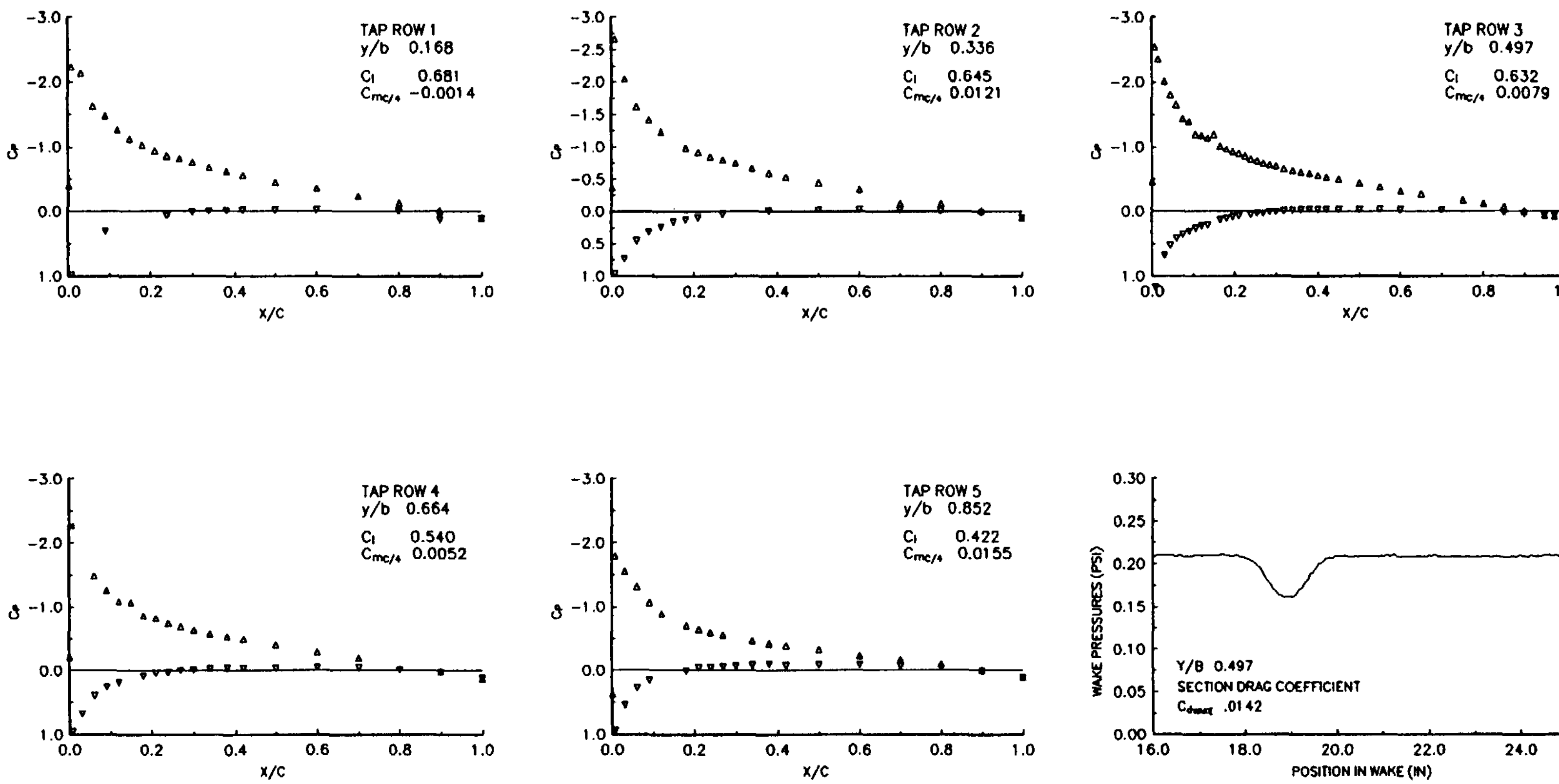
RUN NUMBER 2156

$AOA_{GEOMETRIC}$ 6°

MACH 0.14

RE 1.24×10^6



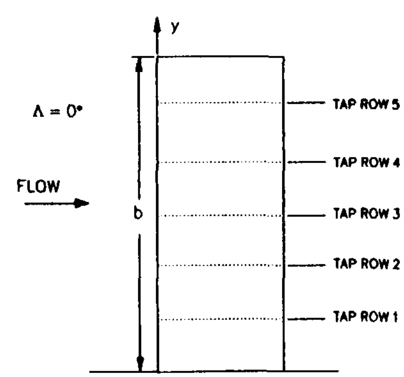


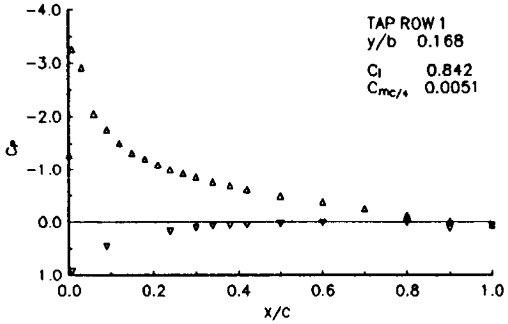
RUN NUMBER 2158

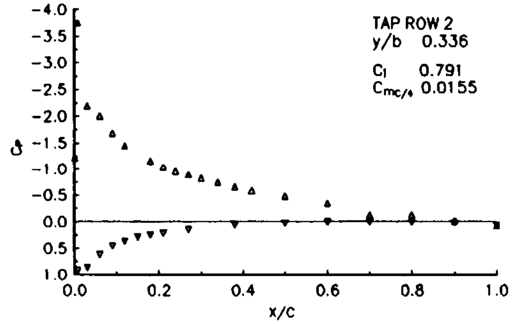
AOA$_{GEOMETRIC}$ 8°

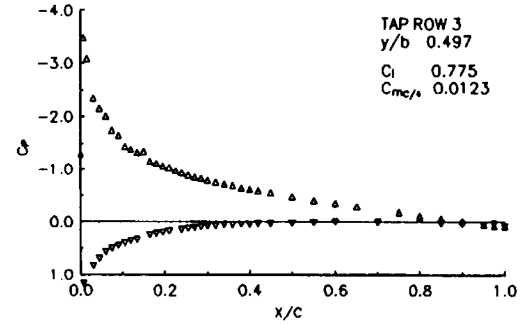
MACH 0.14

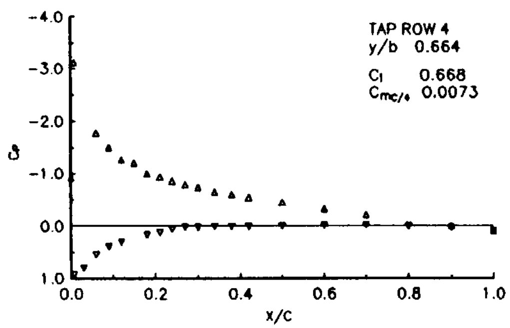
RE 1.24 X 10^6

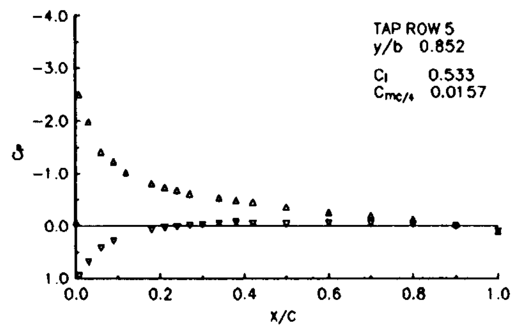


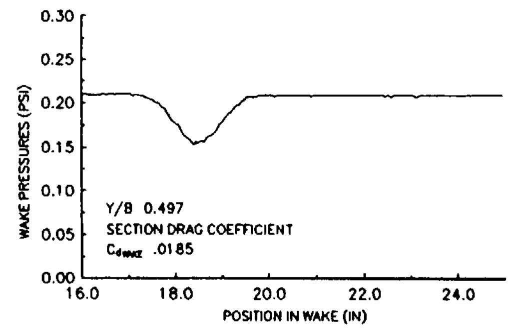










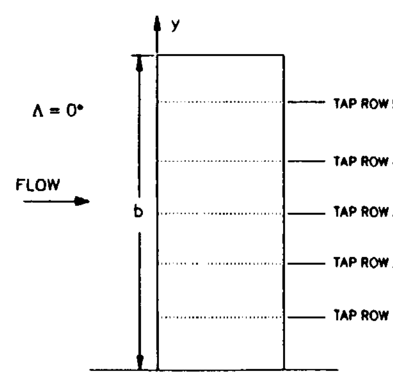


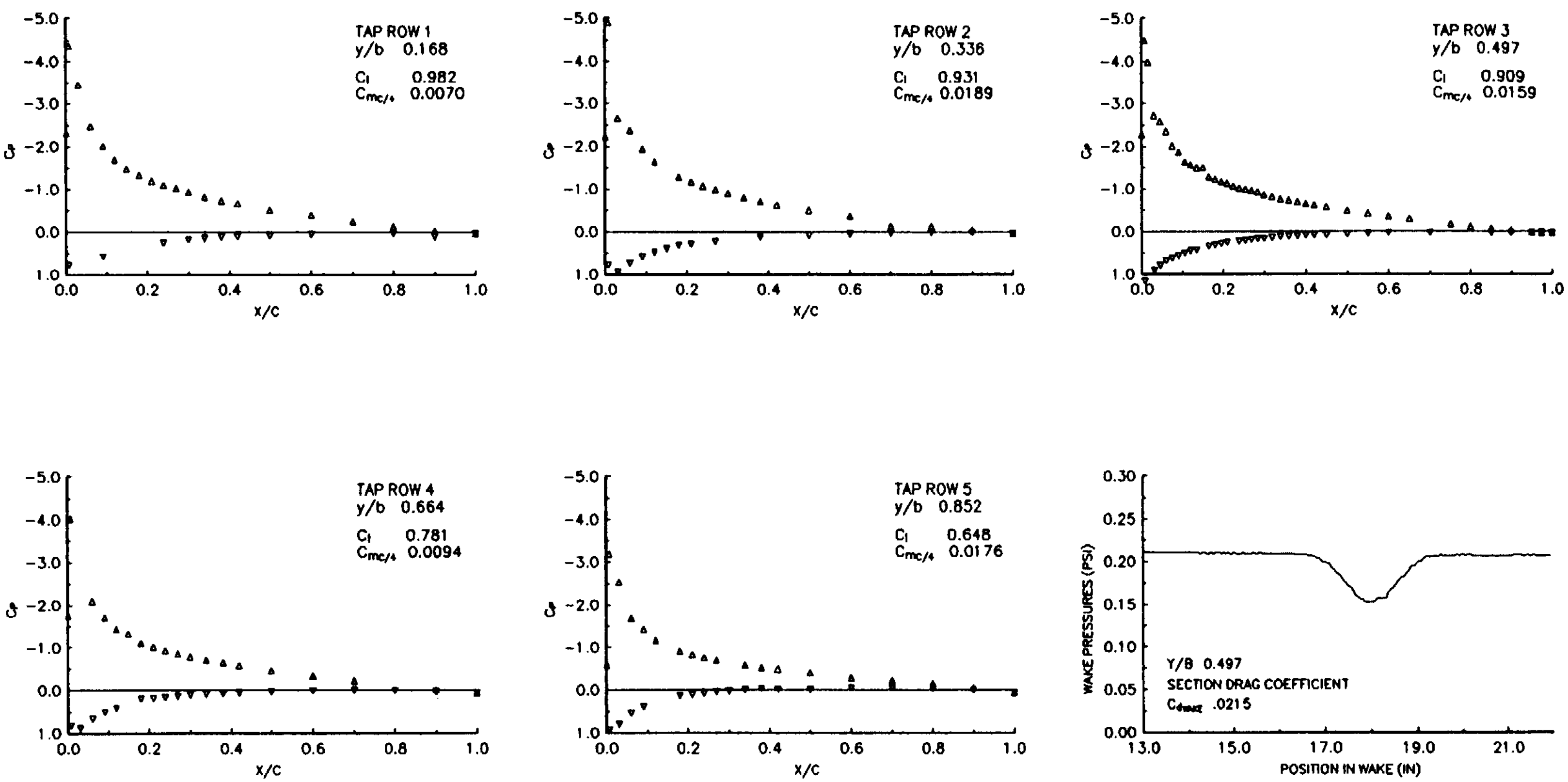
RUN NUMBER 2160

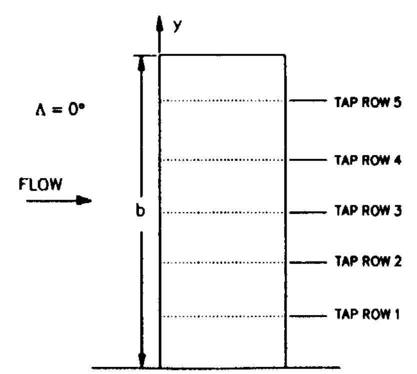
$AOA_{GEOMETRIC}$ 10°

MACH 0.14

RE 1.24×10^6





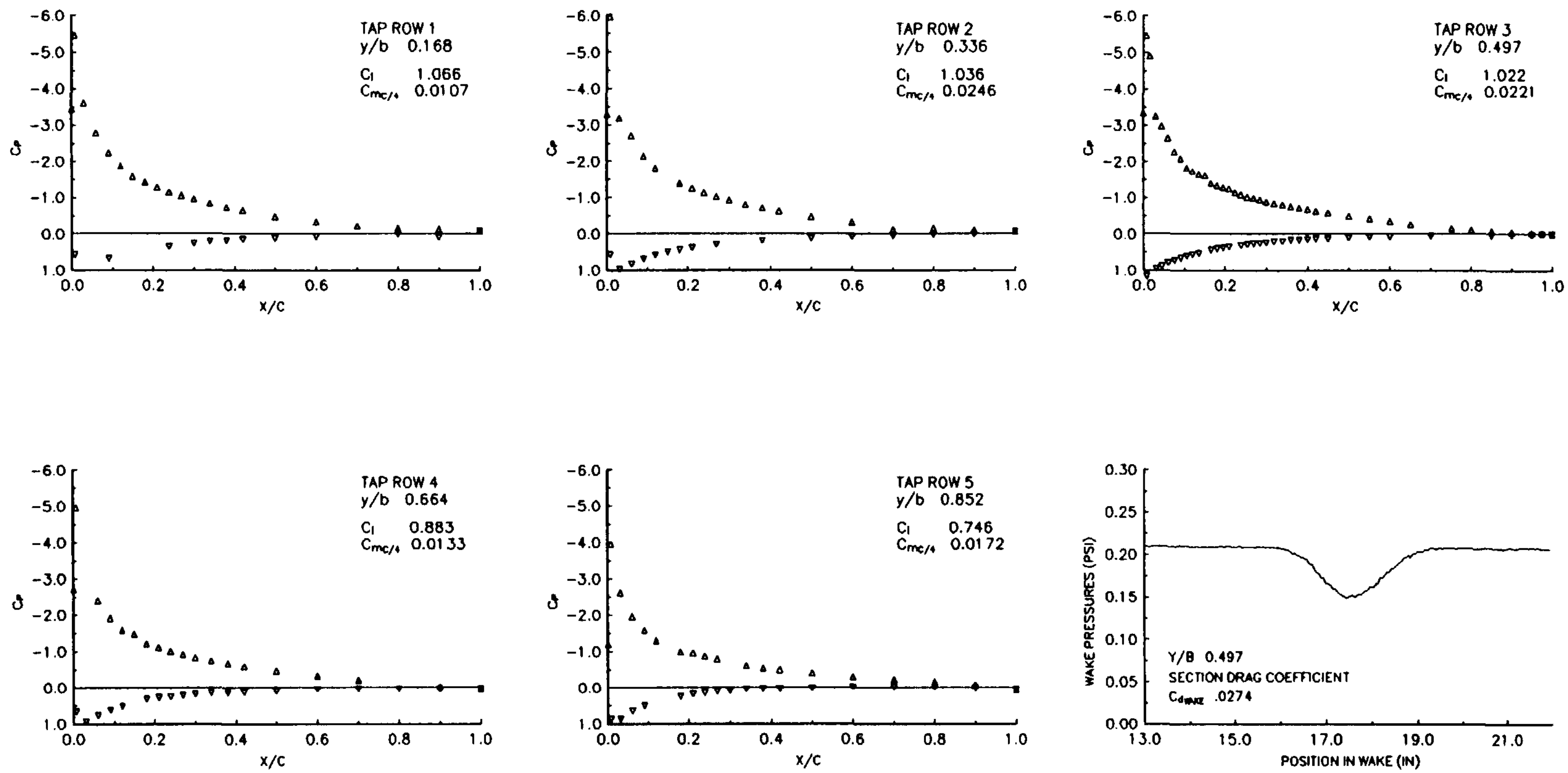


RUN NUMBER 2162

$AOA_{GEOMETRIC}$ 12°

MACH 0.14

RE 1.23×10^6

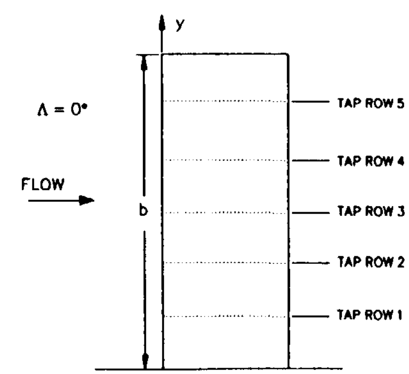


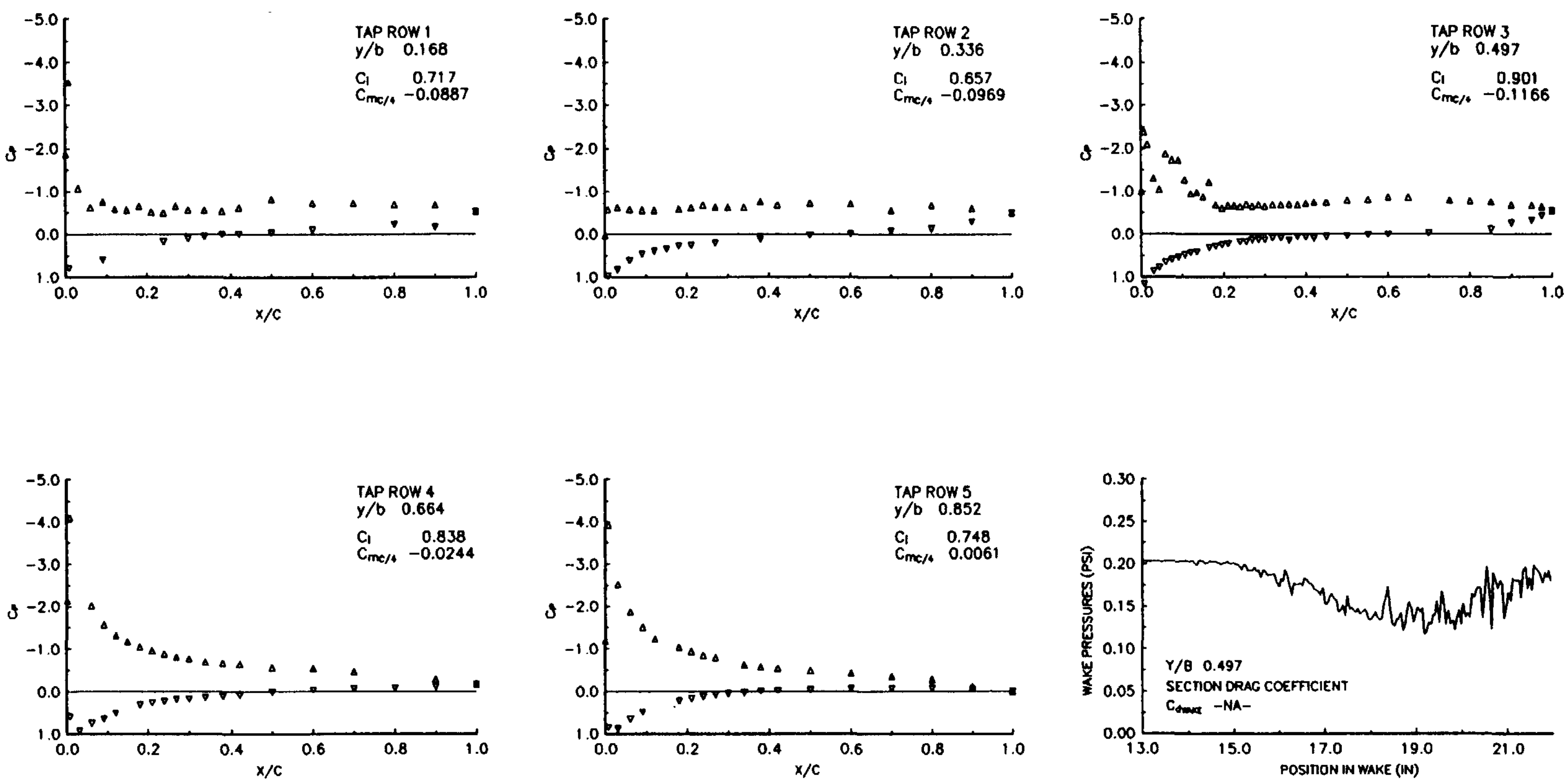
RUN NUMBER 2164

$AOA_{GEOMETRIC}$ 14°

MACH 0.14

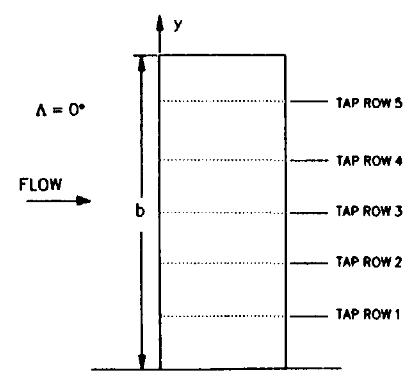
RE 1.23×10^6

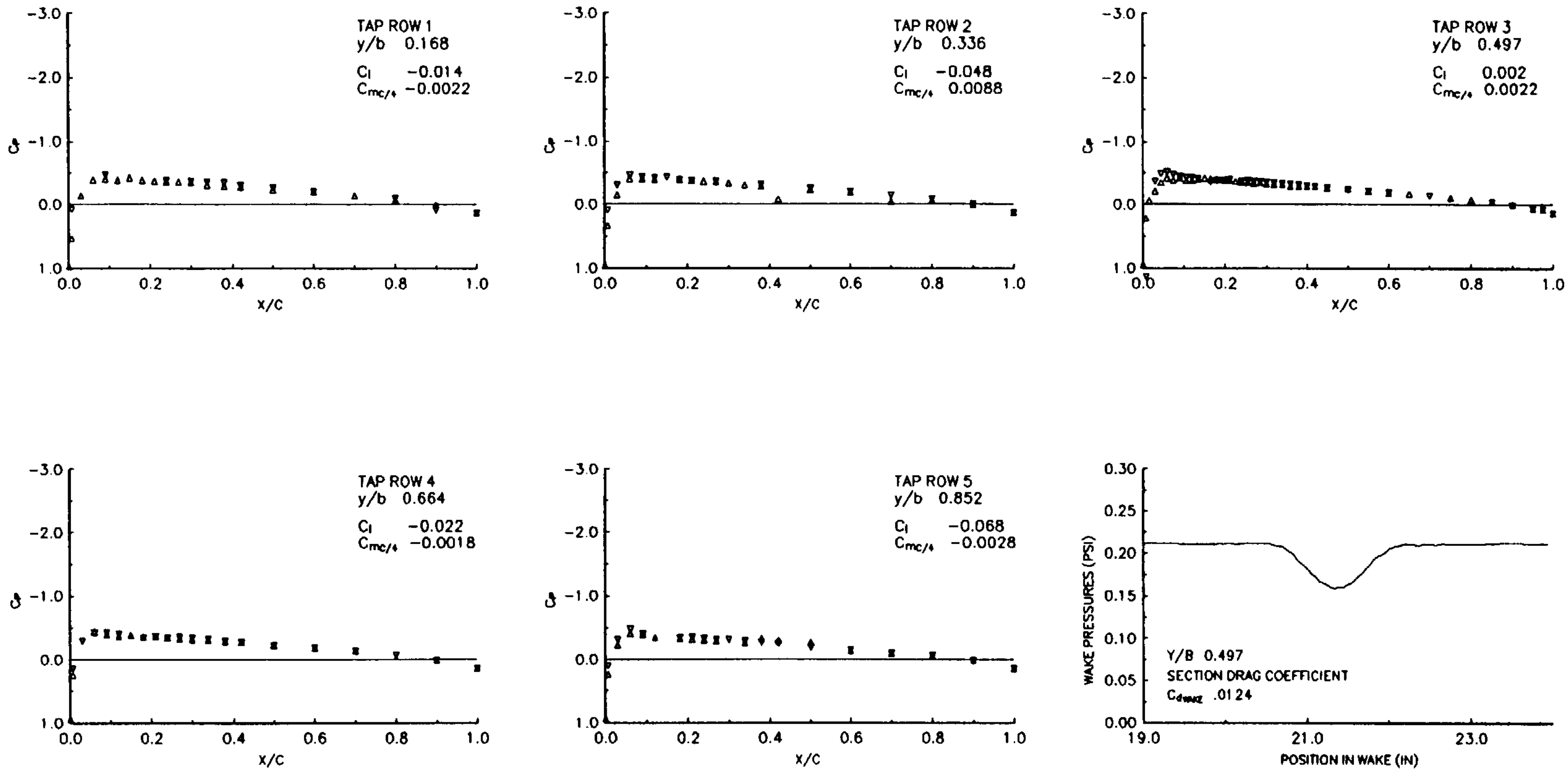




RUN NUMBER 2166

AOA$_{GEOMETRIC}$ 16°
MACH 0.14
RE 1.23×10^6



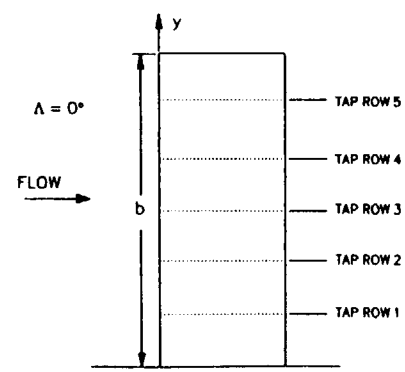


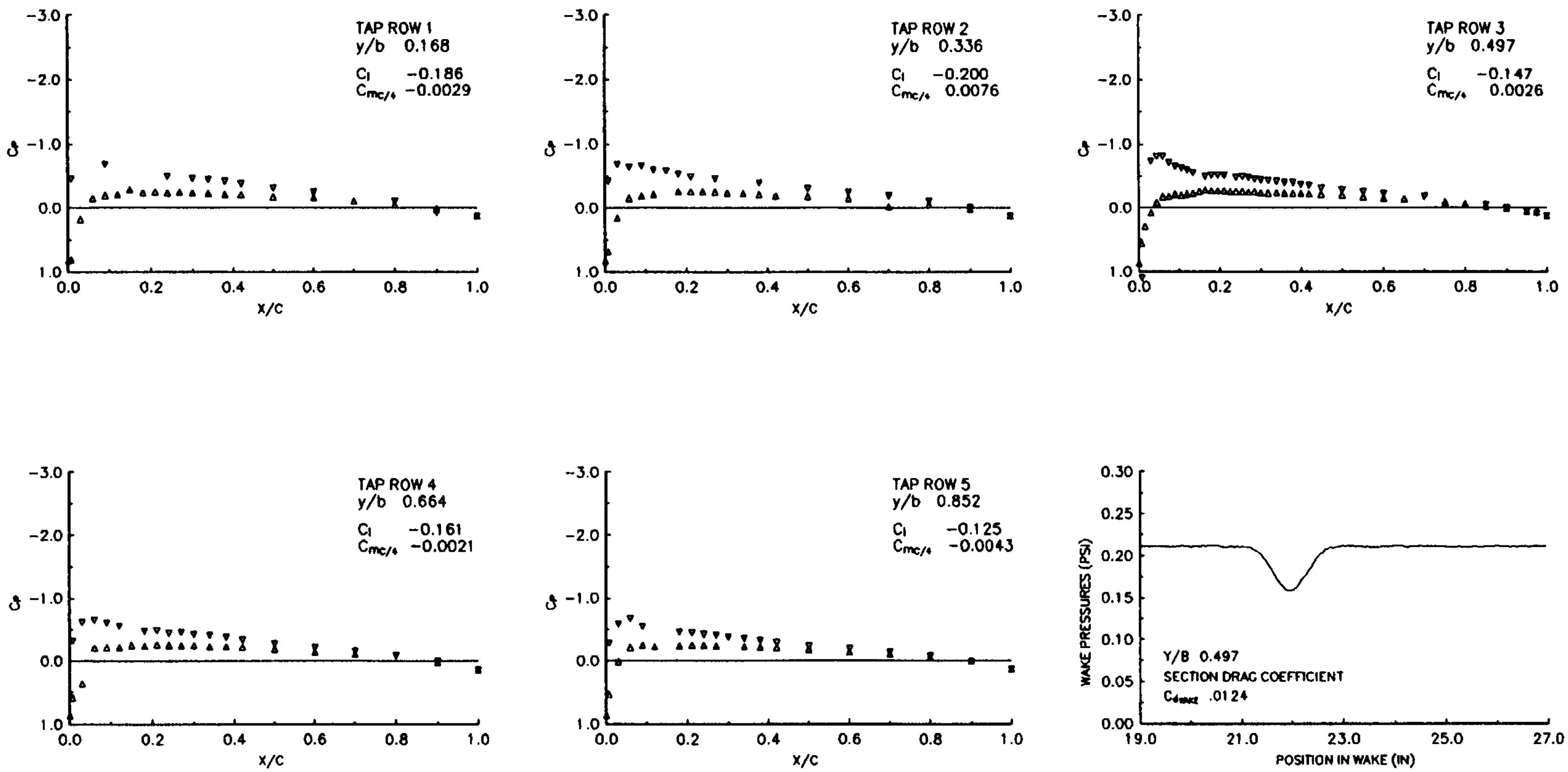
RUN NUMBER 2169

AOA GEOMETRIC 0°

MACH 0.15

RE 1.26×10^6



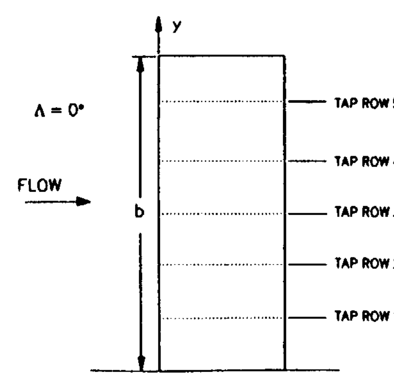


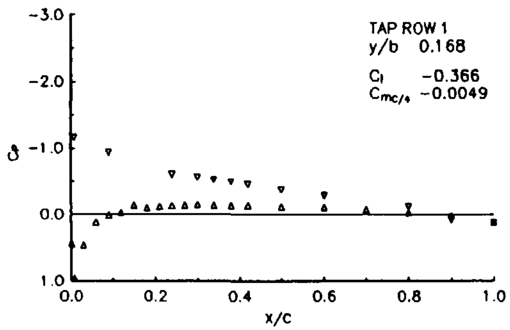
RUN NUMBER 2170

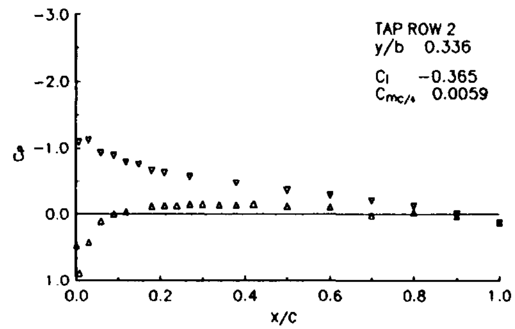
$AOA_{GEOMETRIC}$ $-2°$

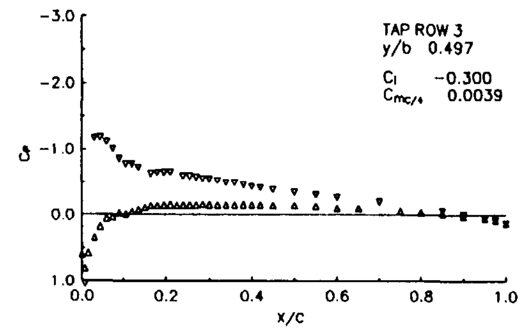
MACH 0.14

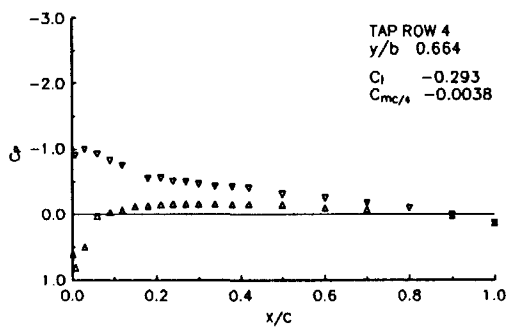
RE 1.25×10^6

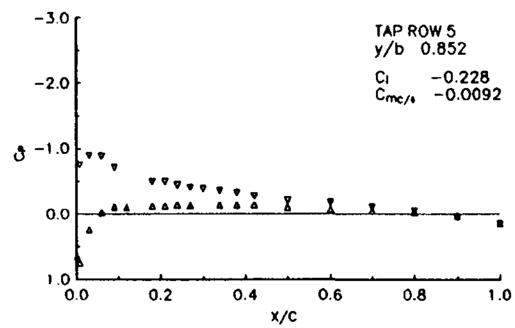


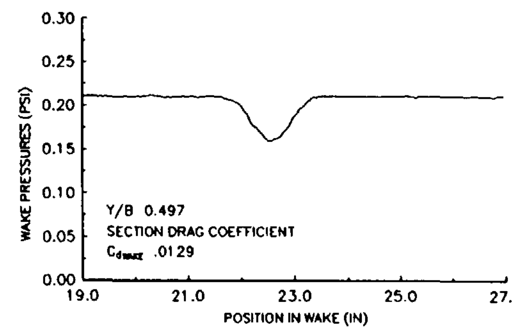










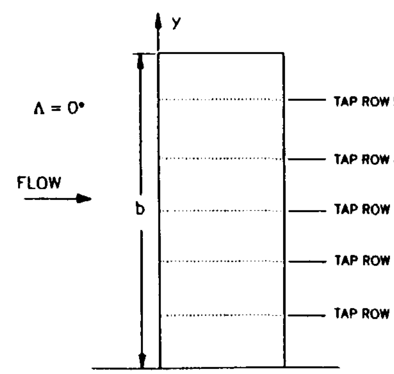


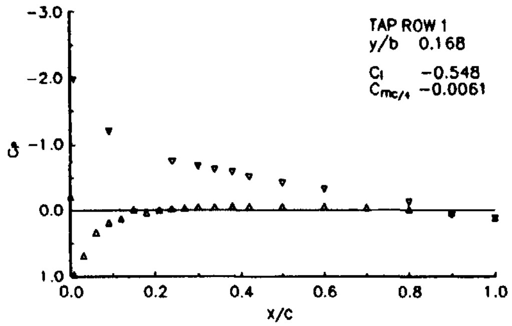
RUN NUMBER 2171

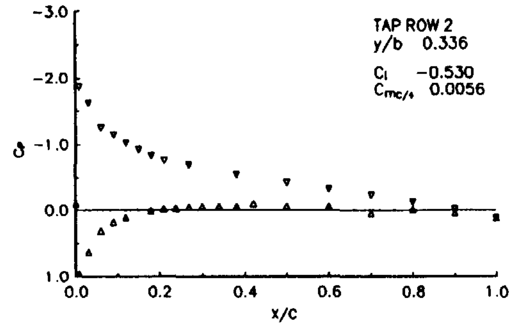
$AOA_{GEOMETRIC}$ $-4°$

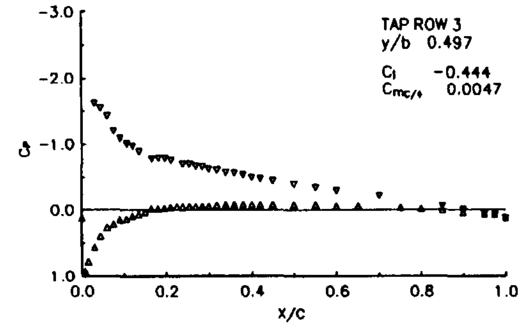
MACH 0.15

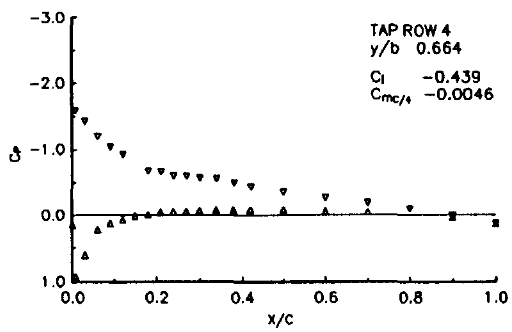
RE 1.26×10^6

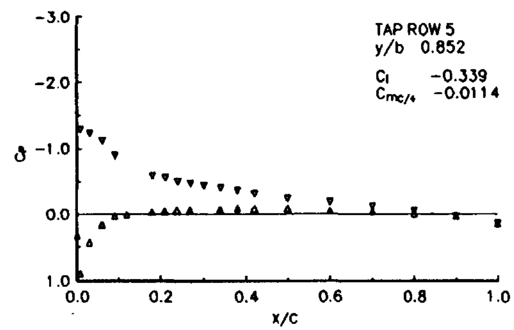


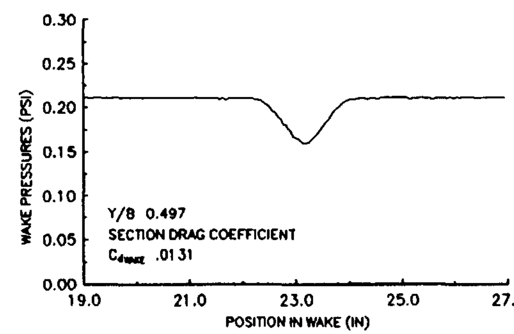










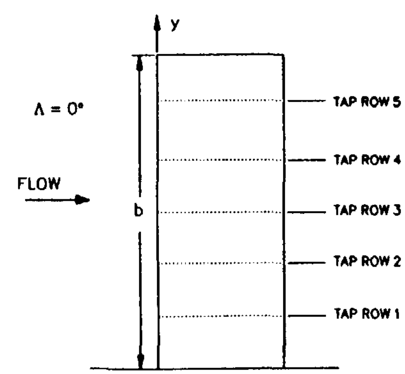


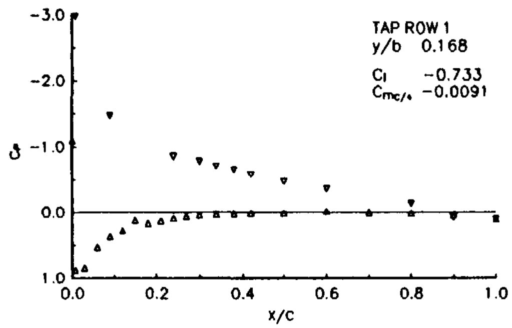
RUN NUMBER 2172

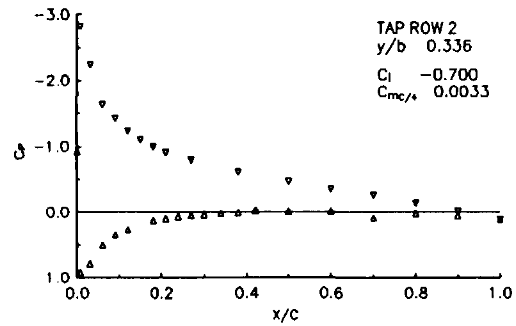
$AOA_{GEOMETRIC}$ $-6°$

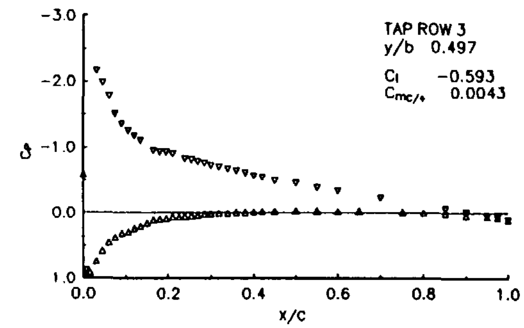
MACH 0.15

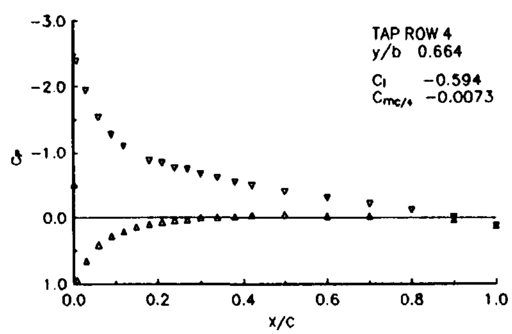
RE 1.26×10^6

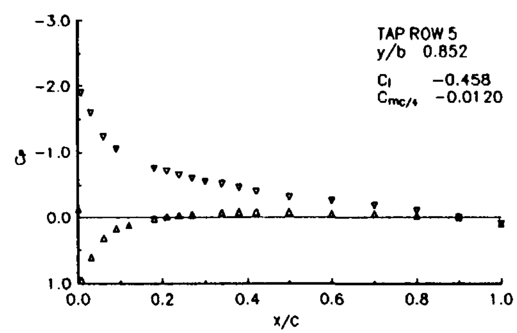


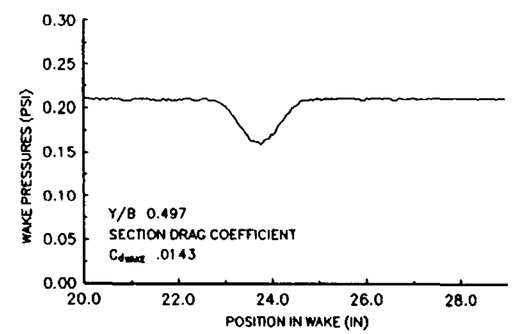










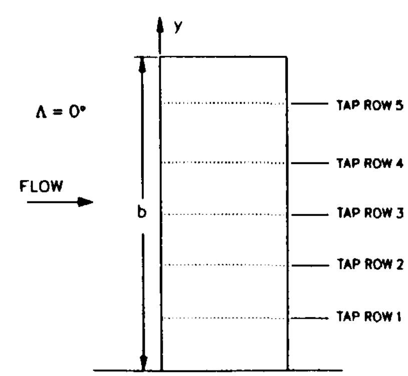


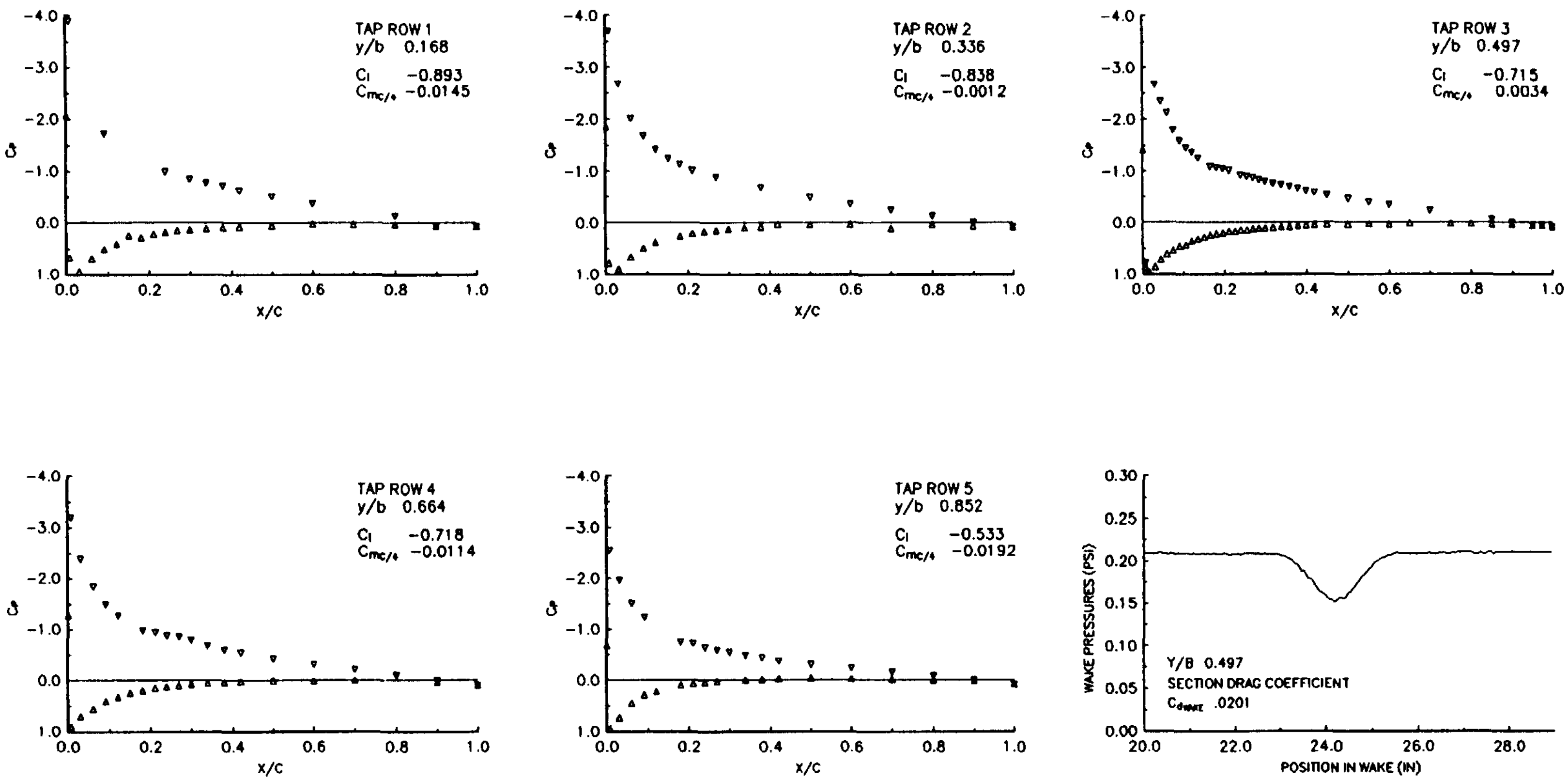
RUN NUMBER 2173

AOA$_{\text{GEOMETRIC}}$ $-8°$

MACH 0.15

RE 1.26×10^6



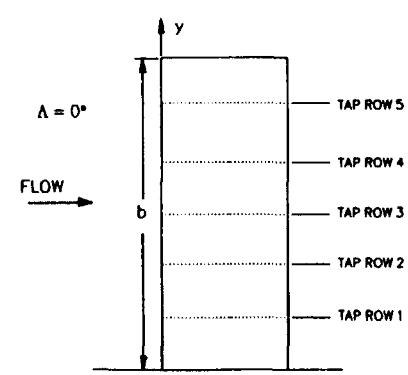


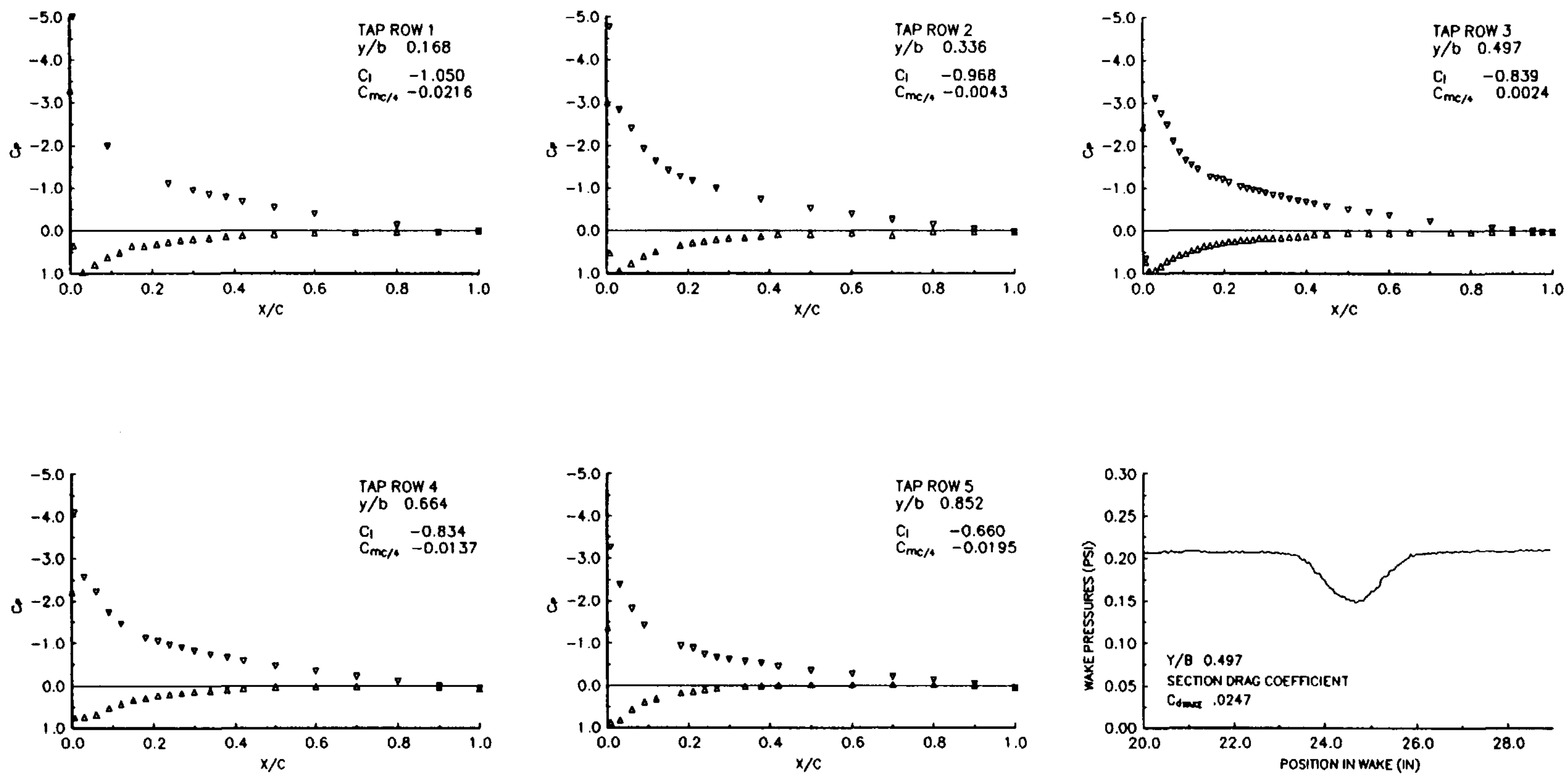
RUN NUMBER 2174

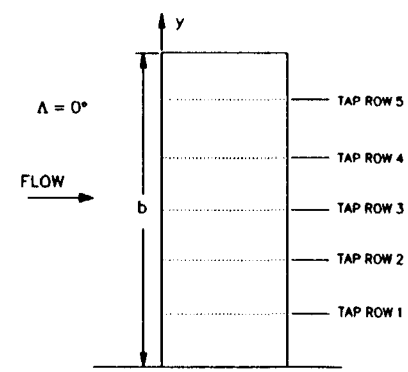
$AOA_{GEOMETRIC}$ $-10°$

MACH 0.15

RE 1.26×10^6





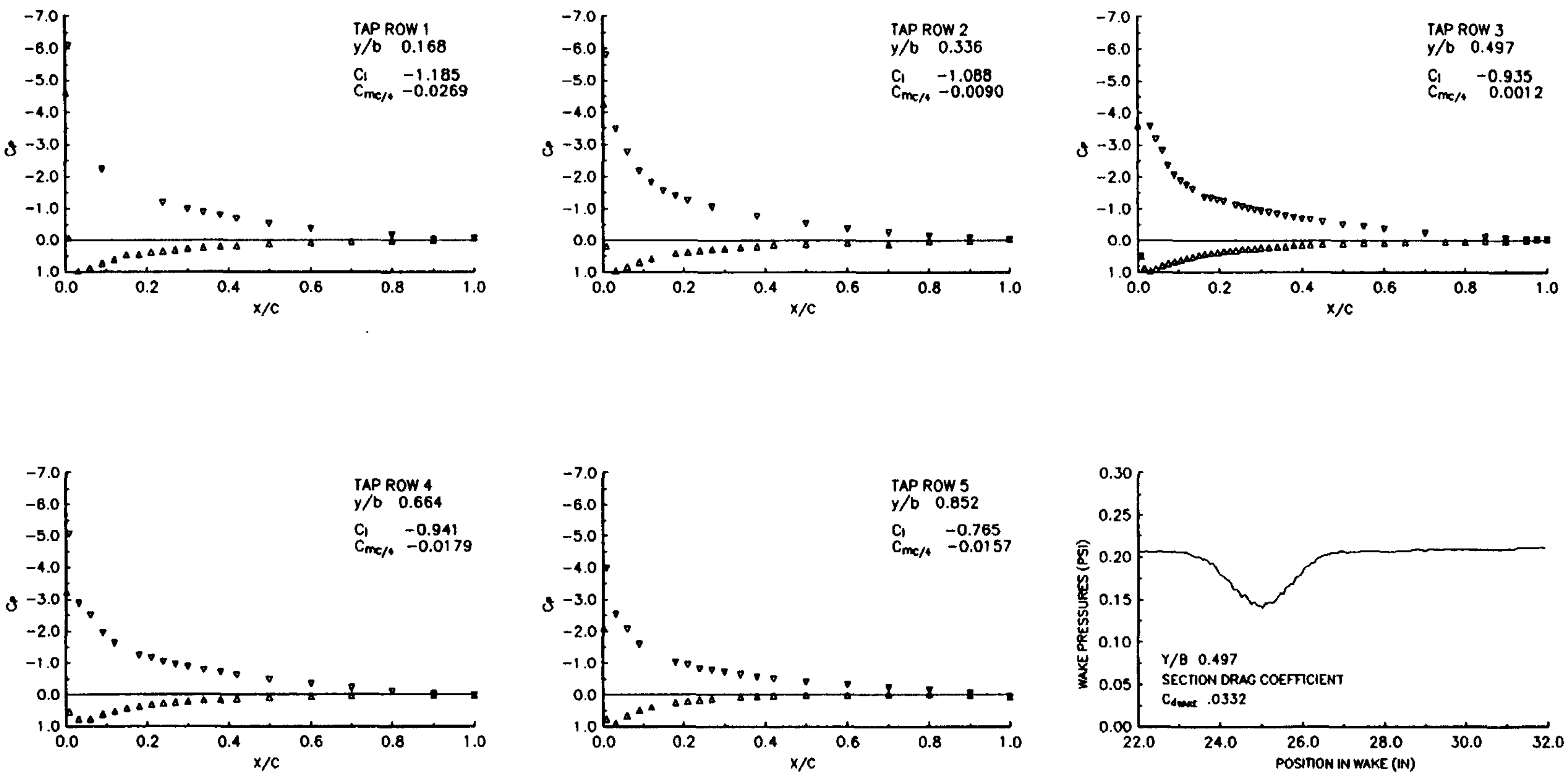


RUN NUMBER 2175

AOA$_{GEOMETRIC}$ −12°

MACH 0.14

RE 1.25×10^6

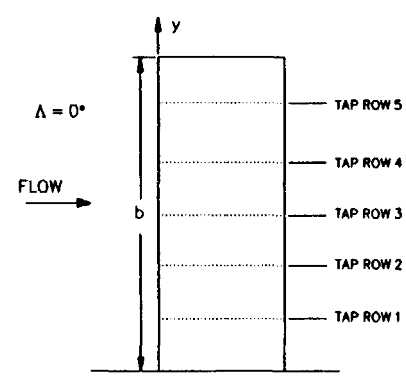


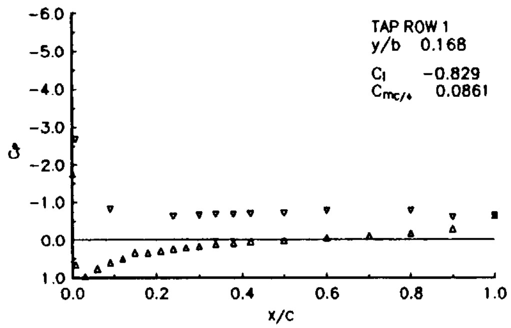
RUN NUMBER 2176

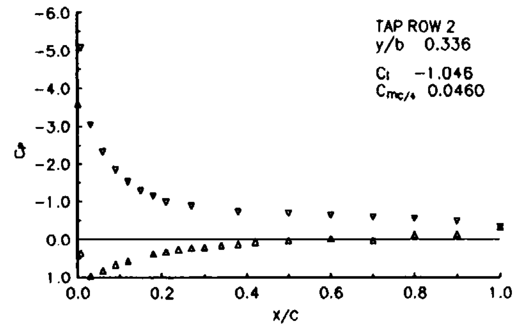
$AOA_{GEOMETRIC}$ $-14°$

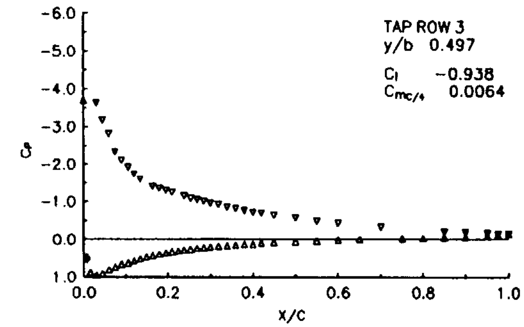
MACH 0.14

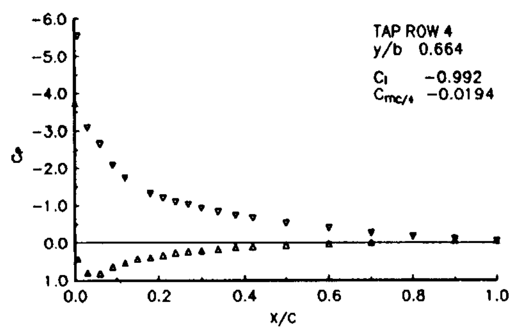
RE 1.25×10^6

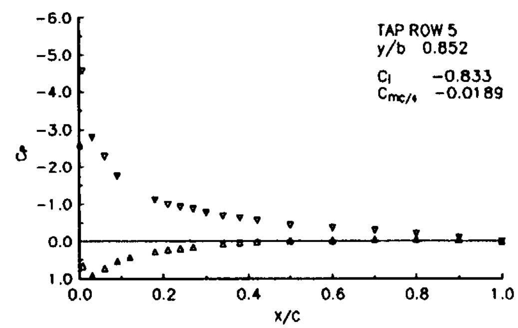


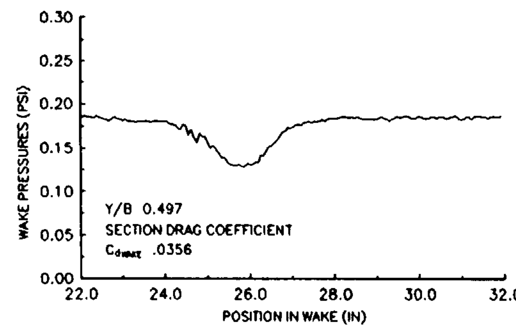










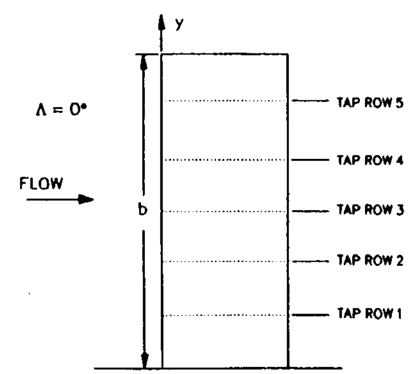


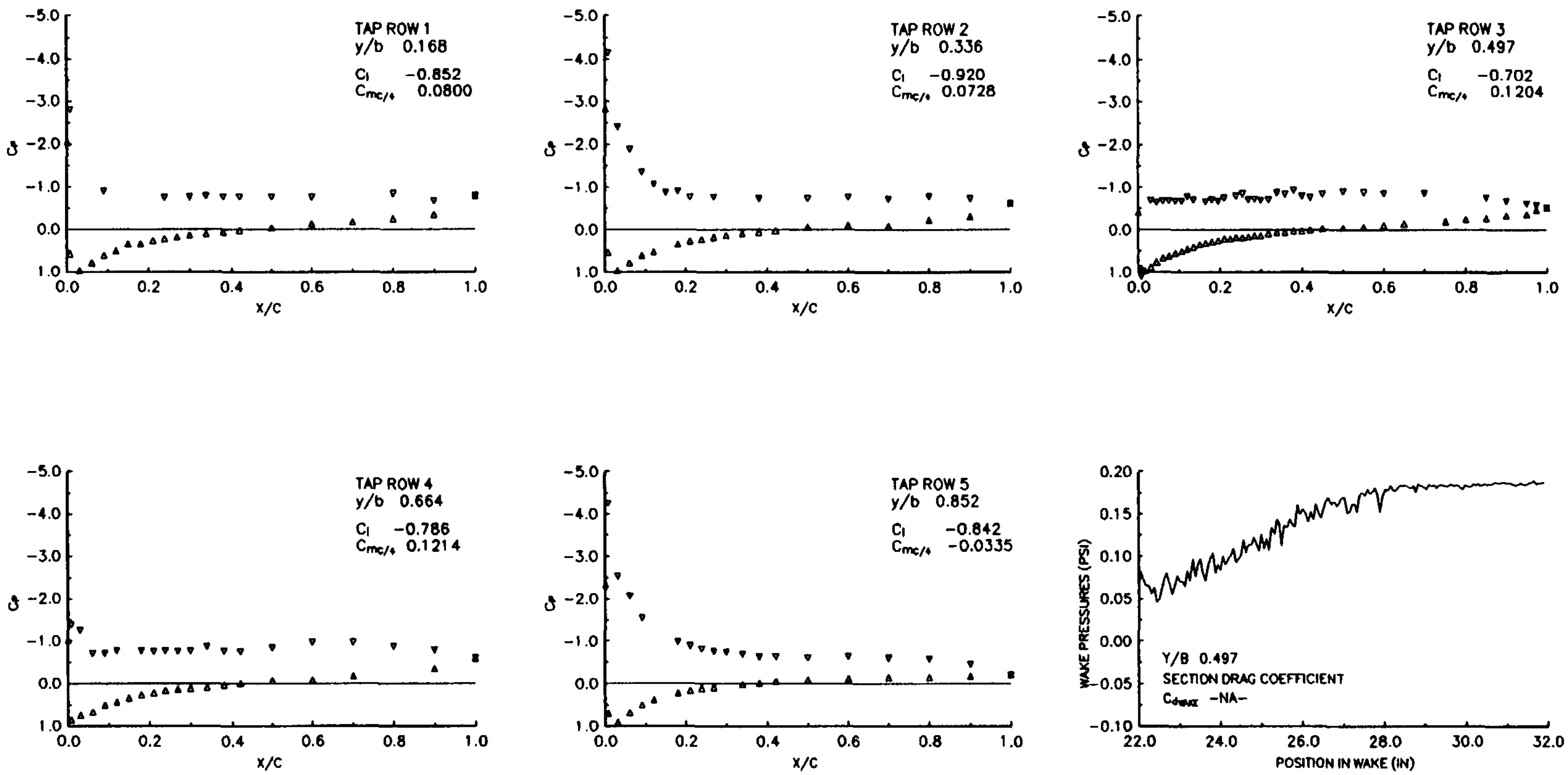
RUN NUMBER 2177

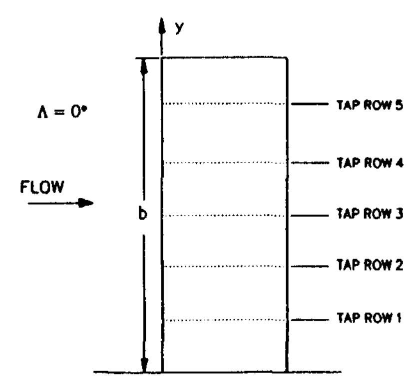
$AOA_{GEOMETRIC}$ −16°

MACH 0.14

RE 1.17×10^6







RUN NUMBER 2178

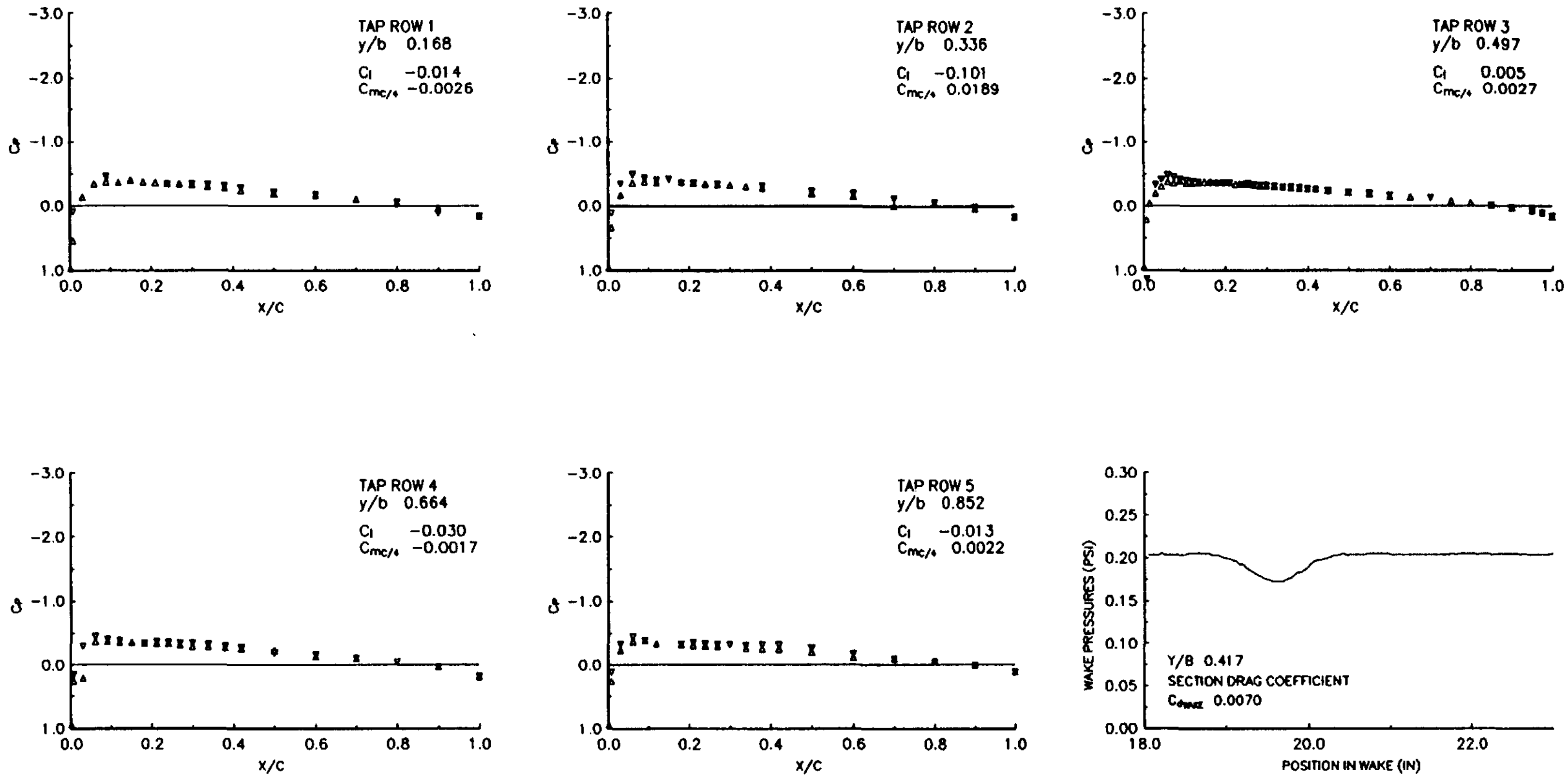
AOA$_{GEOMETRIC}$ $-18°$

MACH 0.13

RE 1.17×10^6

RUNS 2185 - 2221

RECTANGULAR WING, CLEAN & SMOOTH
WAKE PROBE BETWEEN TAP ROWS 2 AND 3

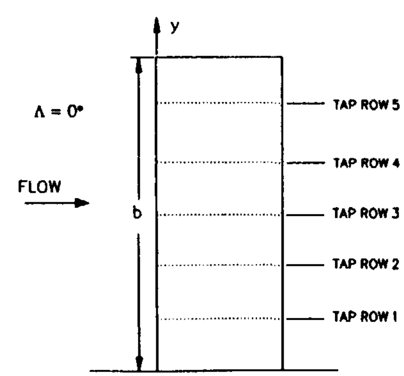


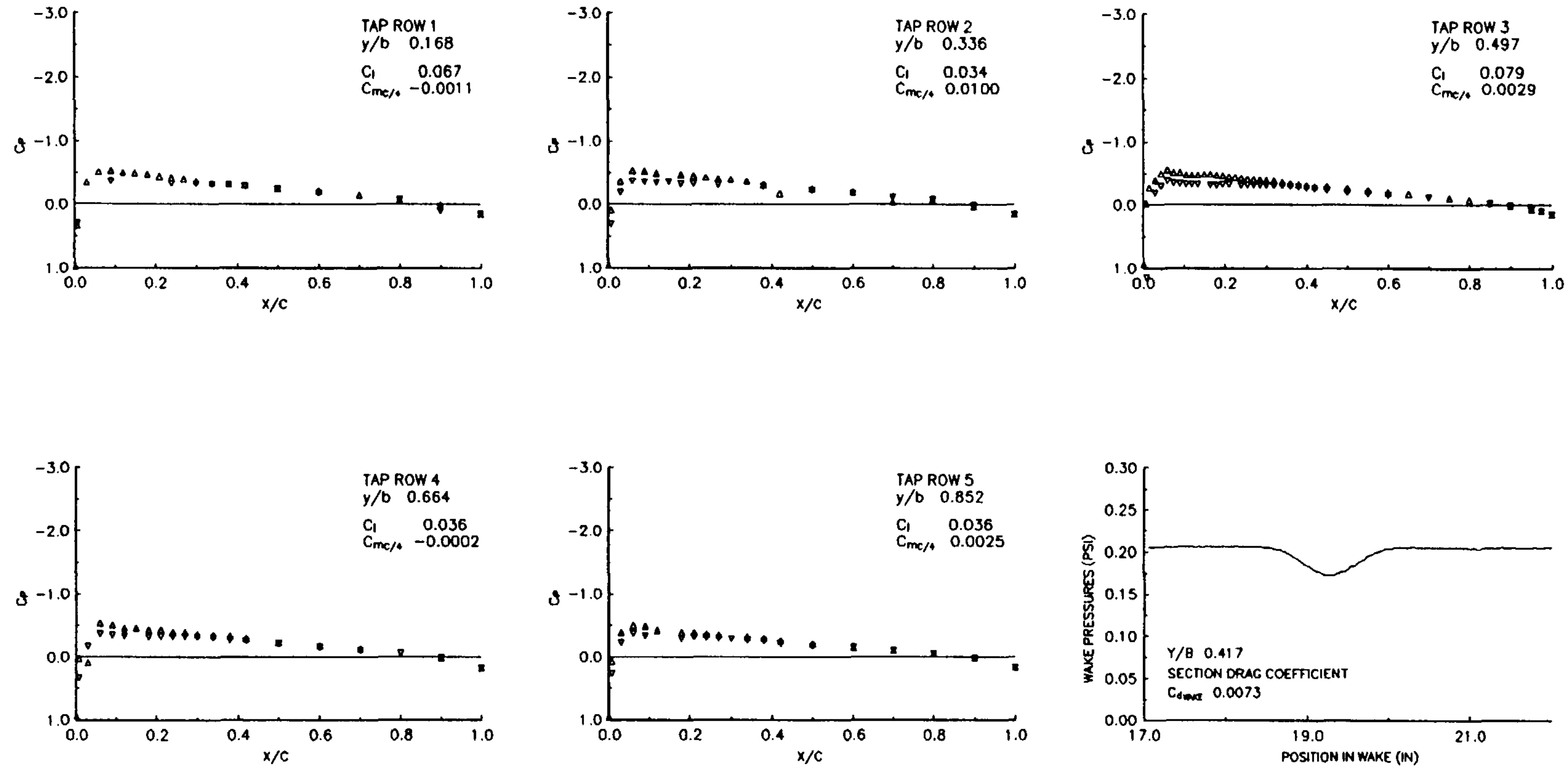
RUN NUMBER 2185

$AOA_{GEOMETRIC}$ 0°

MACH 0.15

RE 1.21×10^6



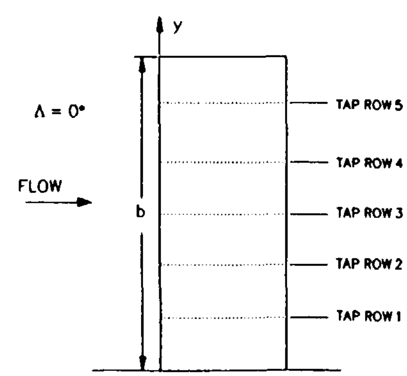


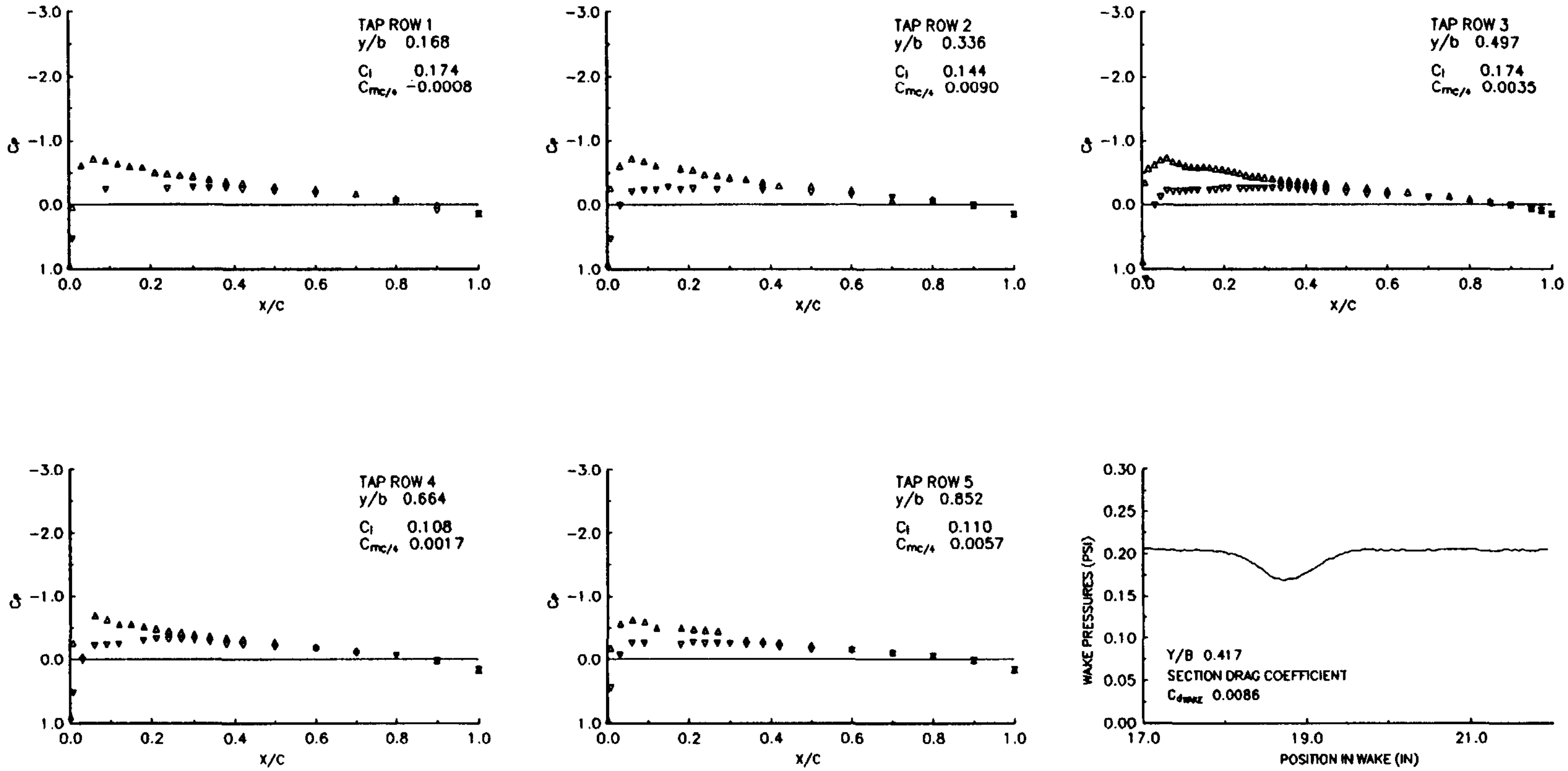
RUN NUMBER 2187

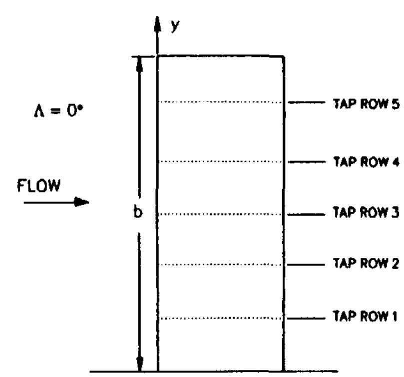
AOA$_{GEOMETRIC}$ 1°

MACH 0.14

RE 1.20×10^6





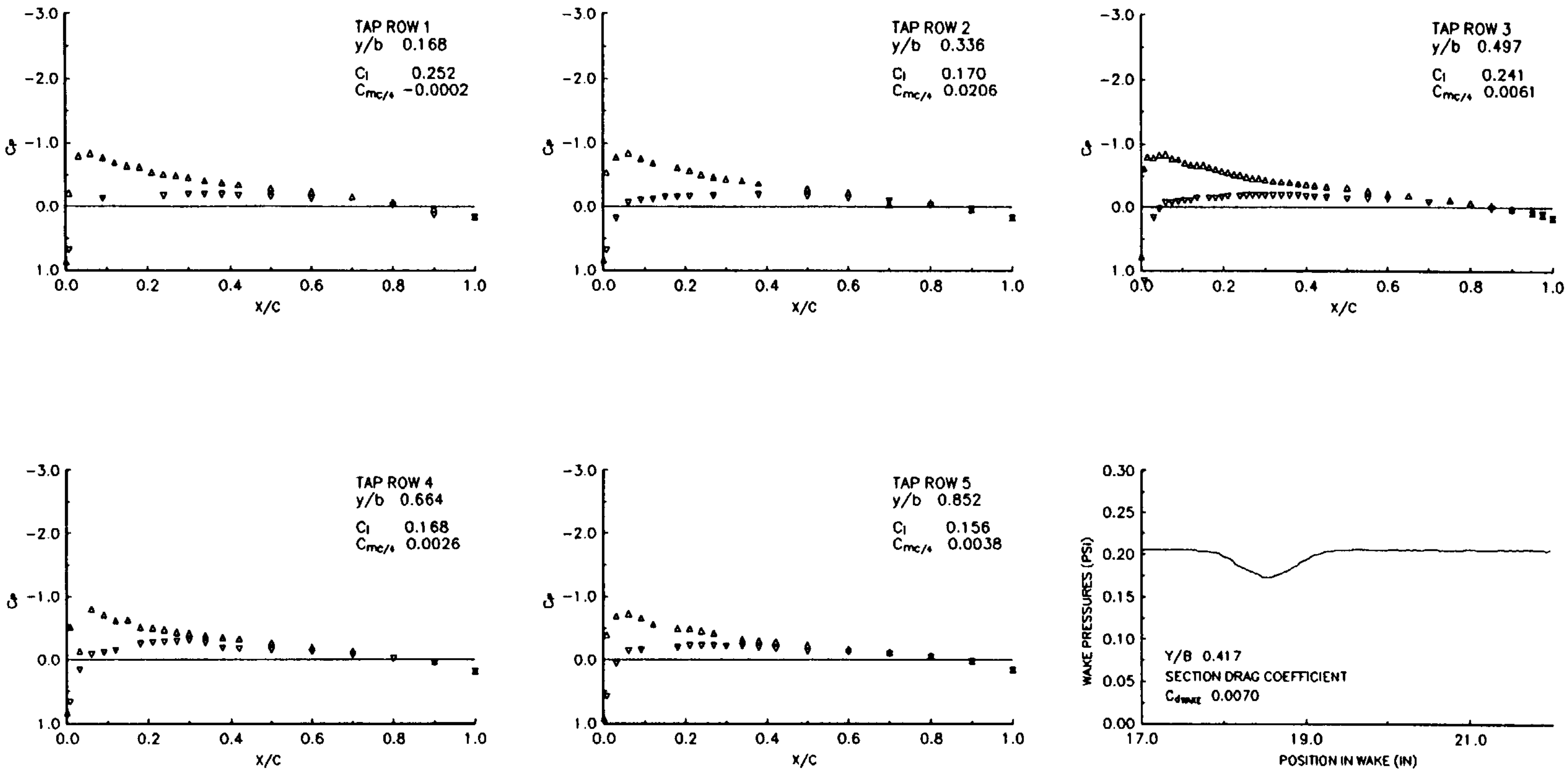


RUN NUMBER 2189

$AOA_{GEOMETRIC}$ 2°

MACH 0.14

RE 1.19×10^6

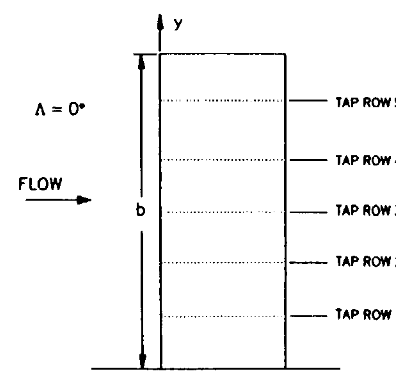


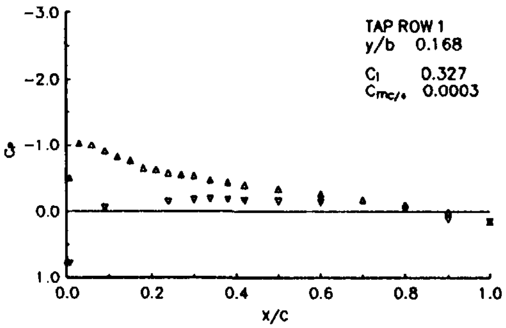
RUN NUMBER 2195

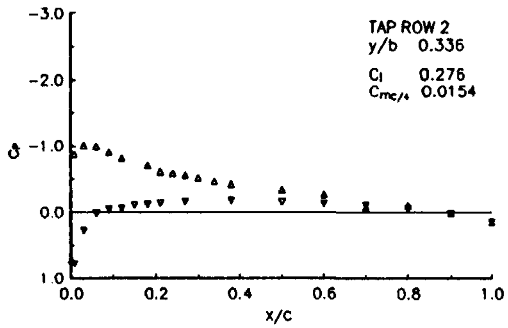
AOA$_{GEOMETRIC}$ 3°

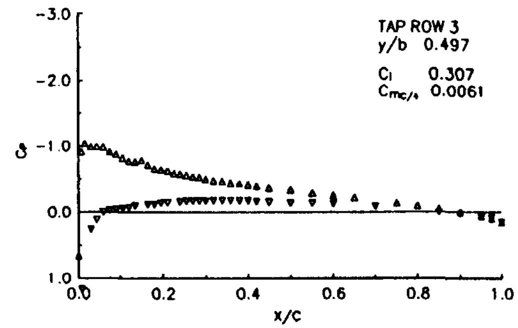
MACH 0.14

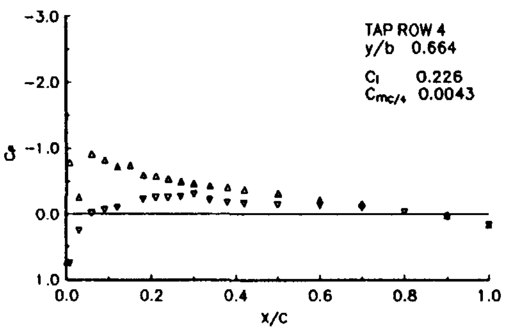
RE 1.20×10^6

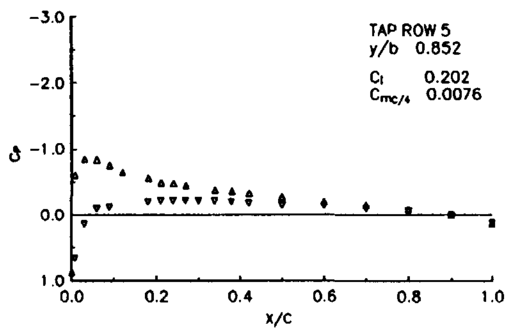


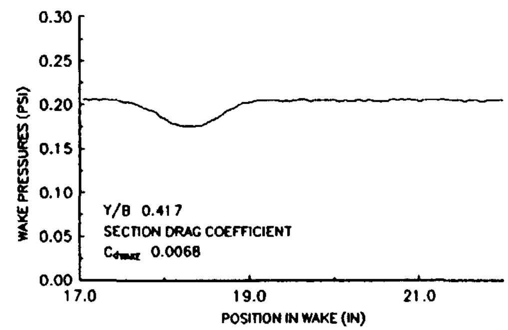










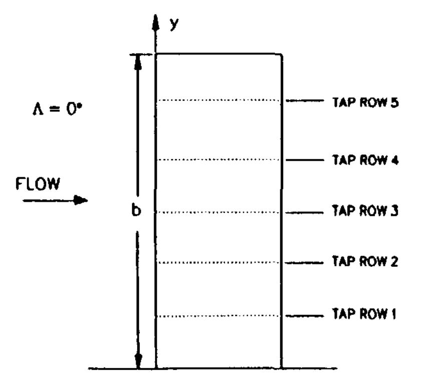


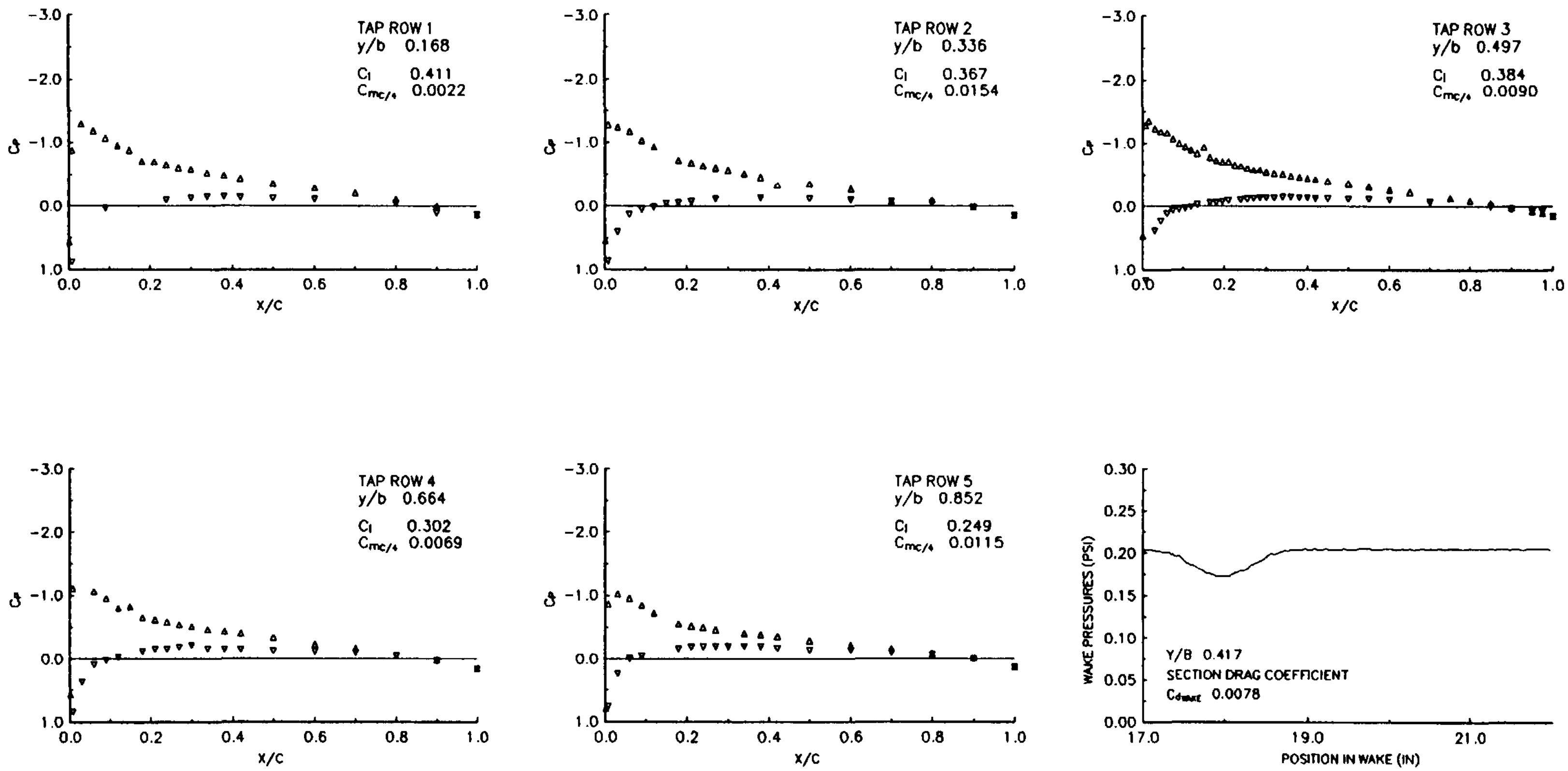
RUN NUMBER 2196

AOA$_{GEOMETRIC}$ 4°

MACH 0.14

RE 1.19×10^6



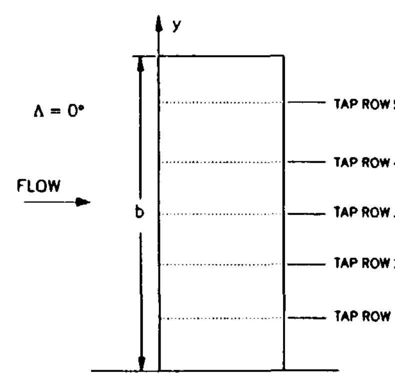


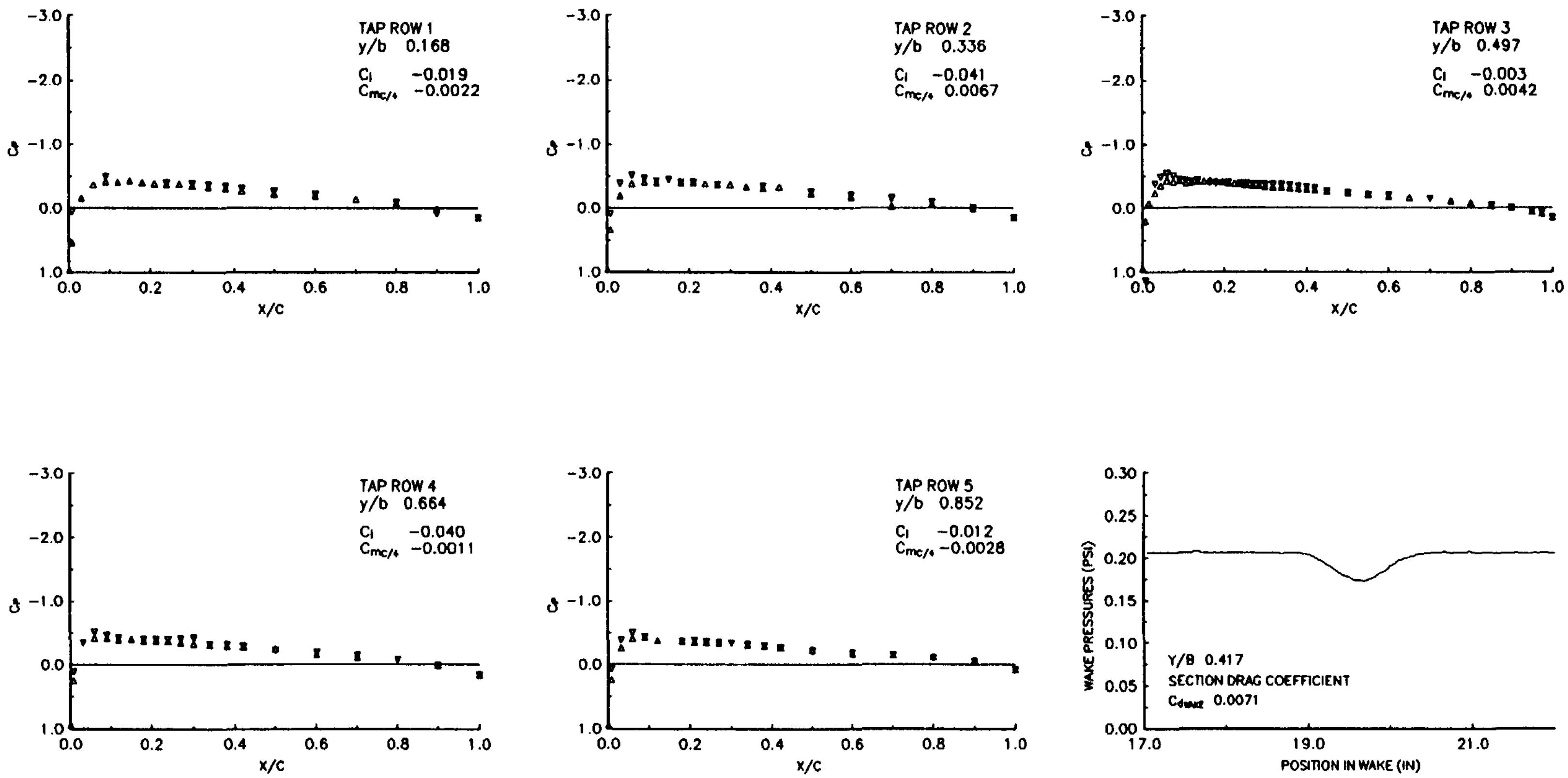
RUN NUMBER 2197

$AOA_{GEOMETRIC}$ 5°

MACH 0.14

RE 1.19×10^6



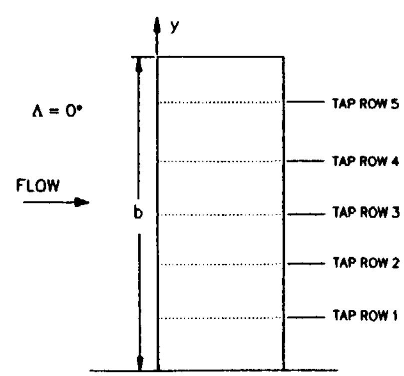


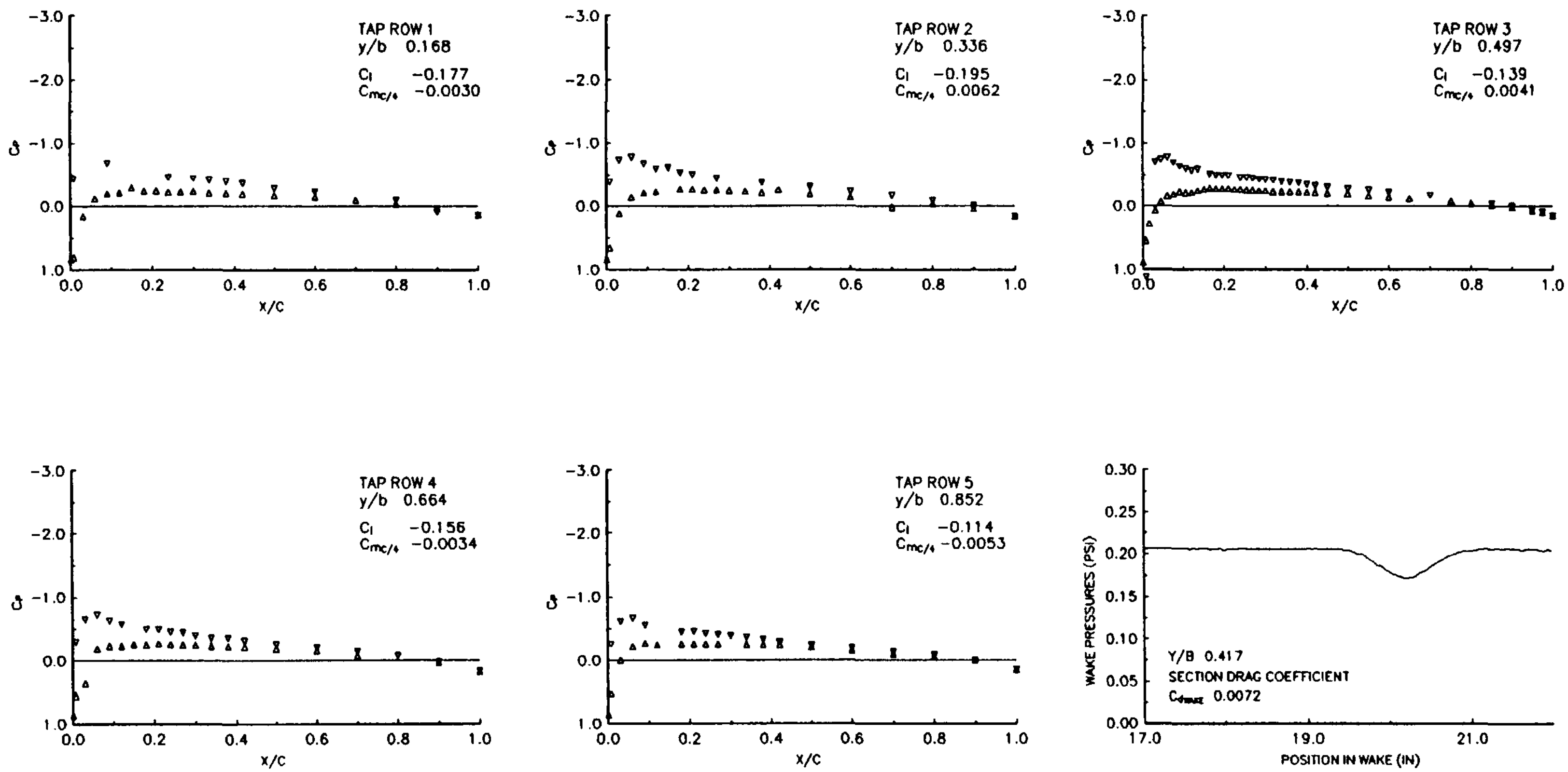
RUN NUMBER 2198

$AOA_{GEOMETRIC}$ 0°

MACH 0.14

RE 1.19×10^6



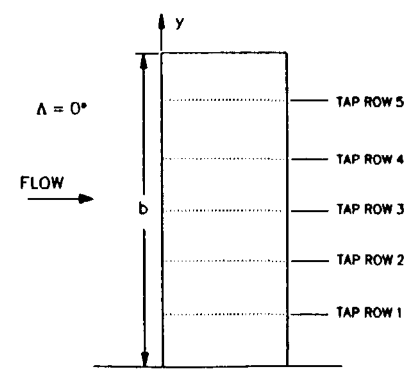


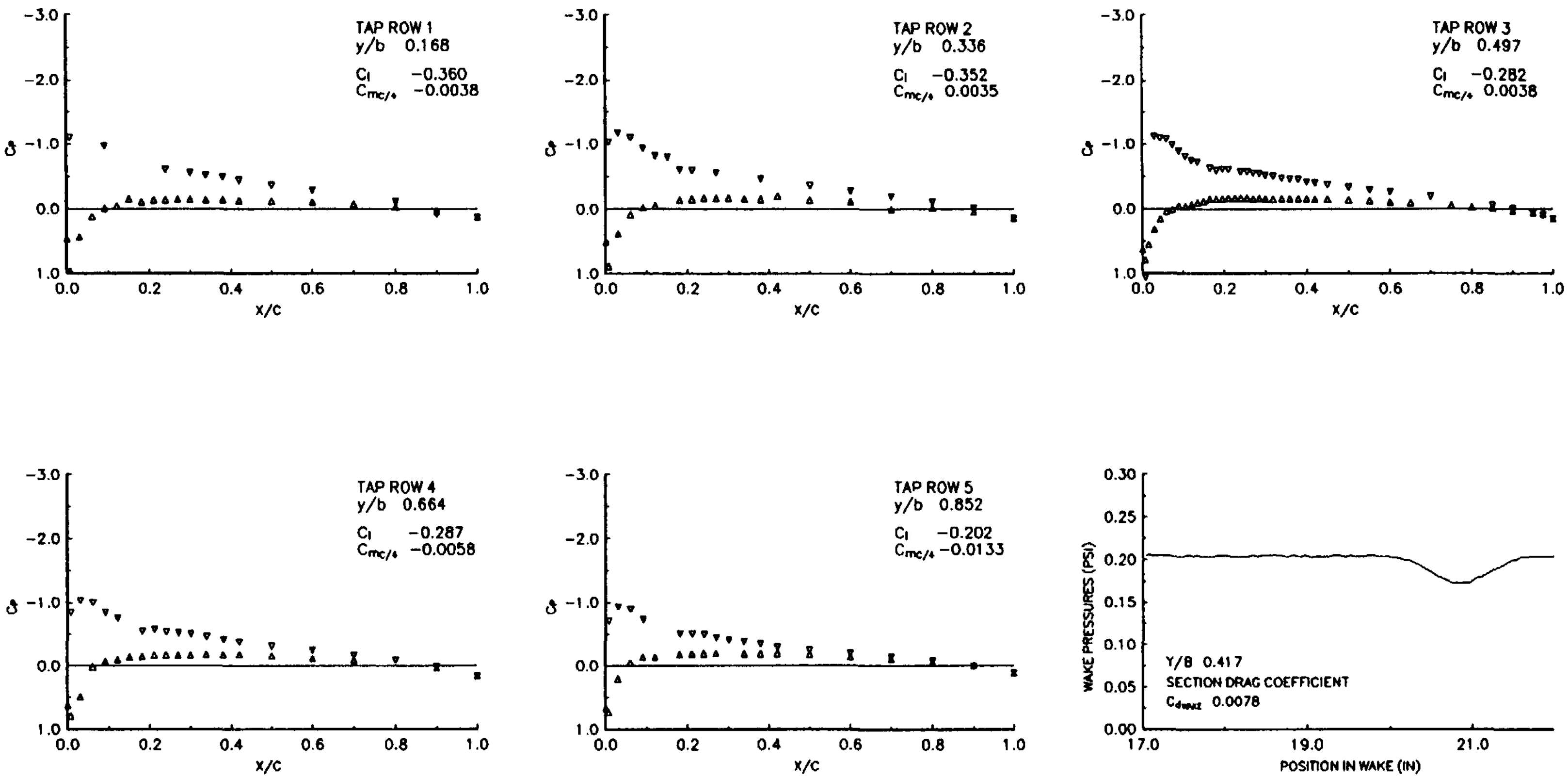
RUN NUMBER 2199

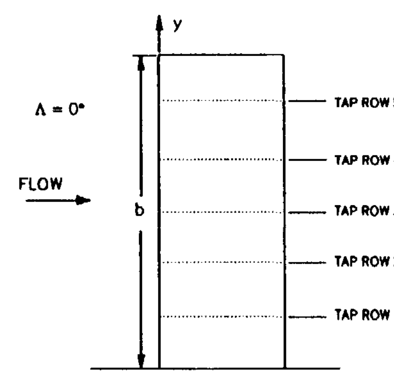
AOA$_{GEOMETRIC}$ $-2°$

MACH 0.14

RE 1.20×10^6





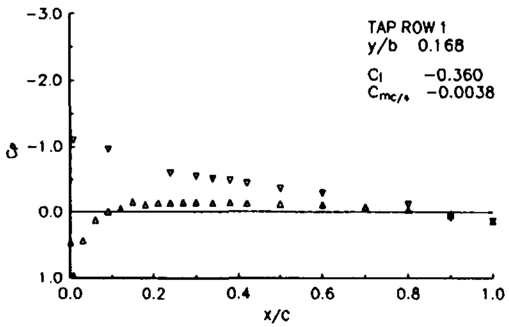


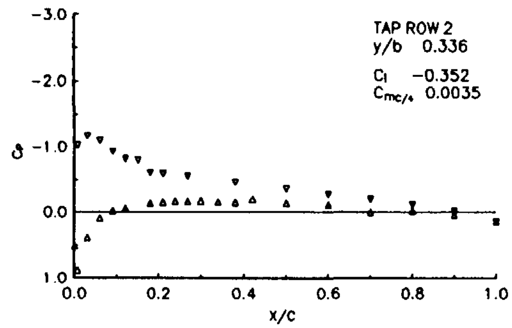
RUN NUMBER 2200

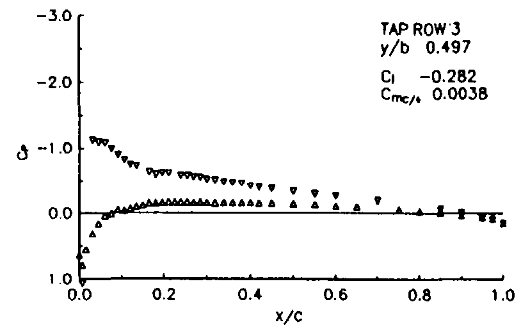
$AOA_{GEOMETRIC}$ −4°

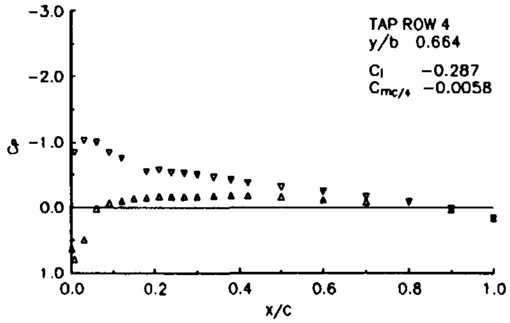
MACH 0.14

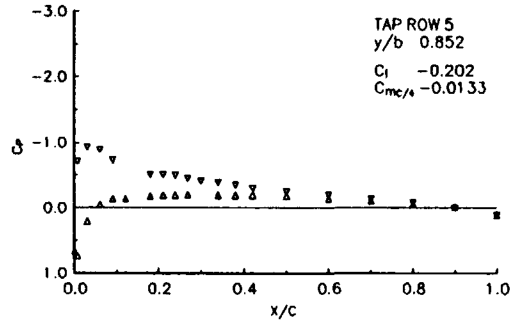
RE 1.20×10^6

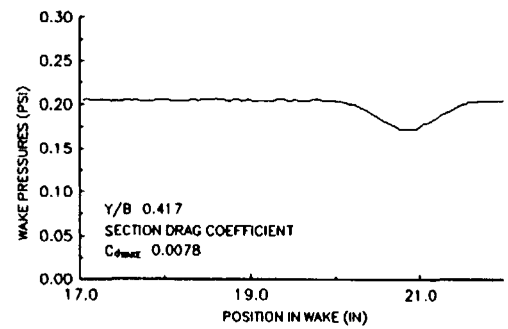


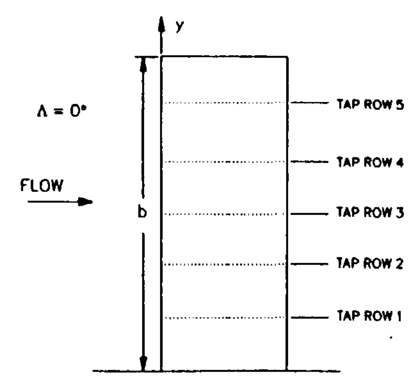










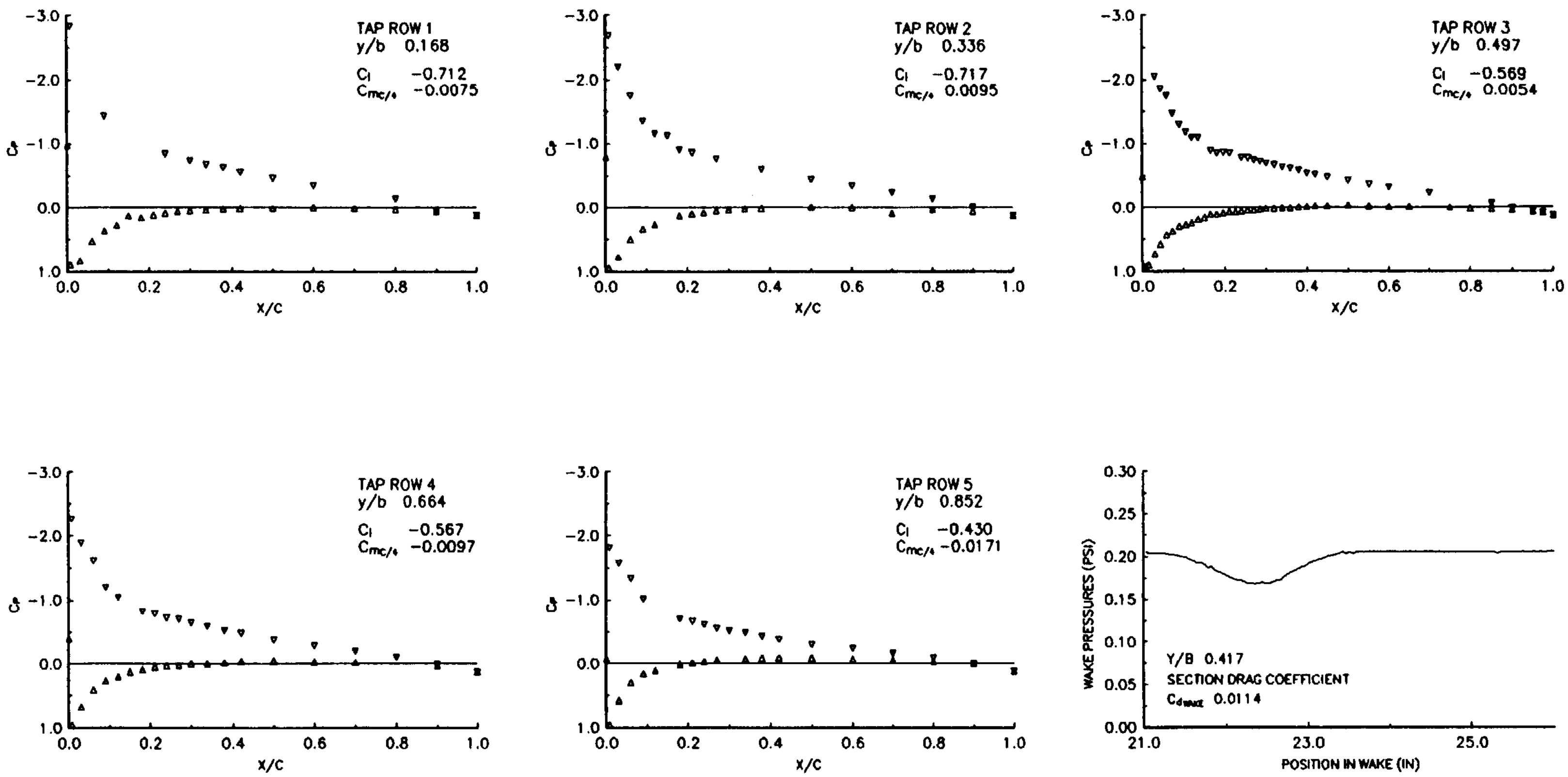


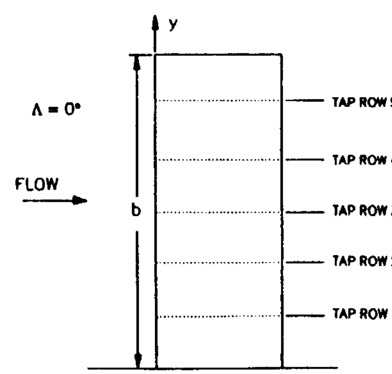
RUN NUMBER 2200

$AOA_{GEOMETRIC}$ −4°

MACH 0.14

RE 1.20×10^6



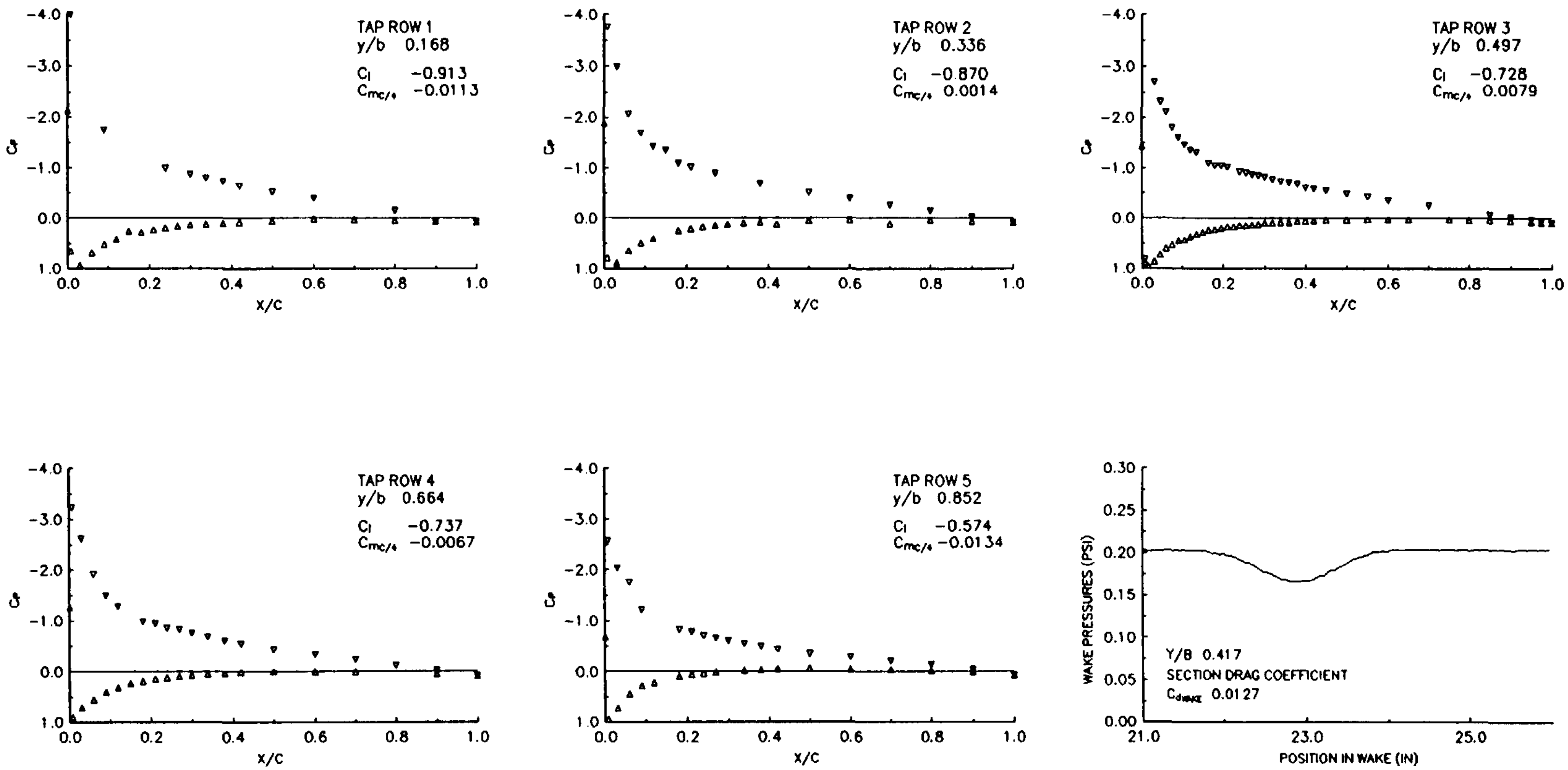


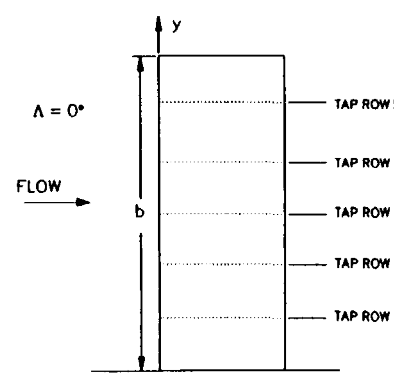
RUN NUMBER 2204

$AOA_{GEOMETRIC}$ −8°

MACH 0.14

RE 1.22×10^6



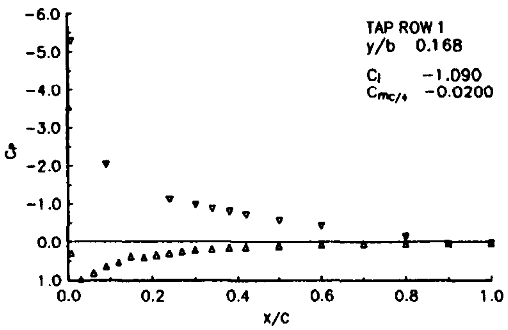


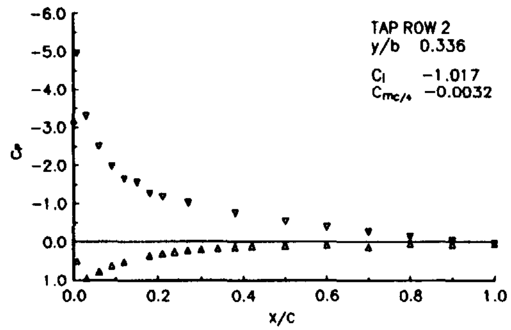
RUN NUMBER 2205

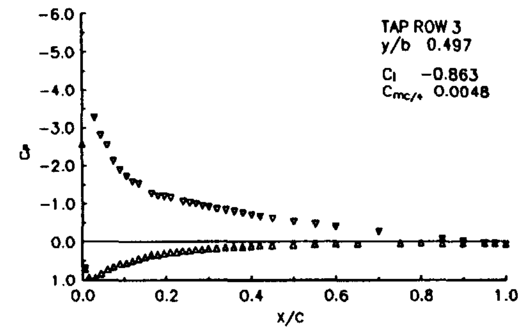
$AOA_{GEOMETRIC}$ −10°

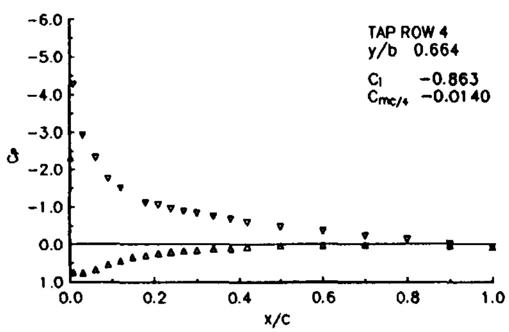
MACH 0.14

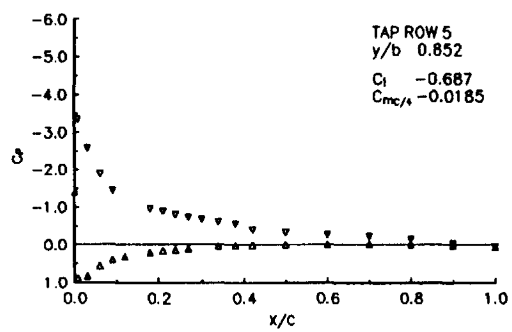
RE 1.21×10^6

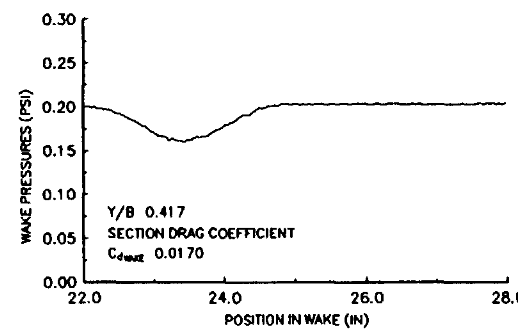










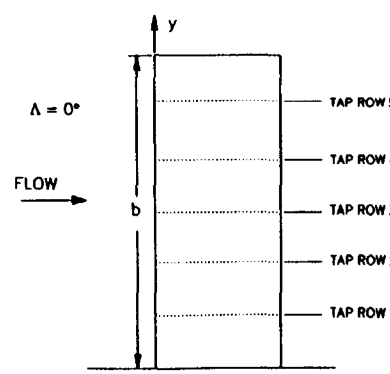


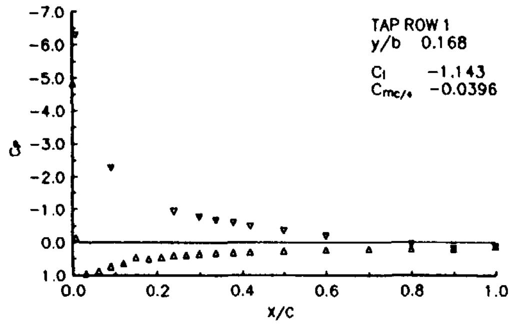
RUN NUMBER 2206

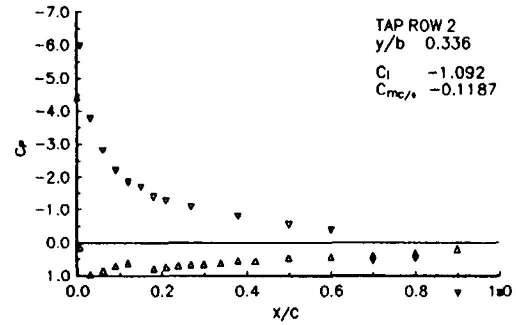
$AOA_{GEOMETRIC}$ −12°

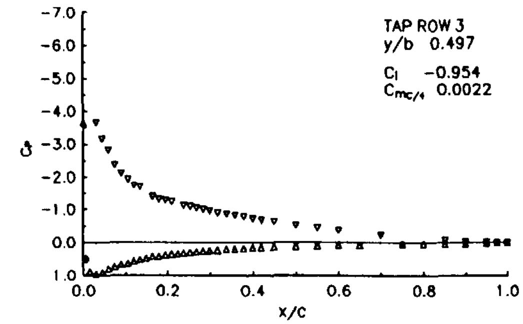
MACH 0.14

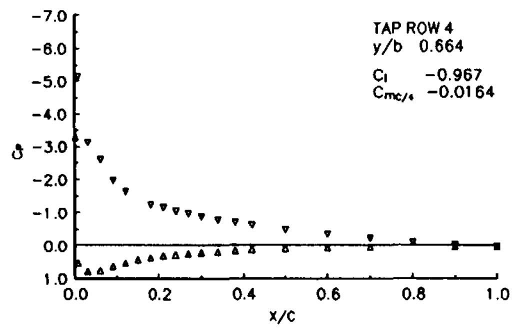
RE 1.21×10^6

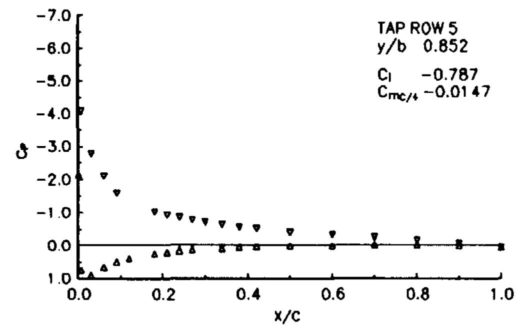


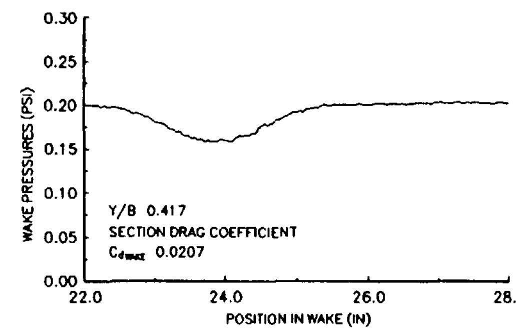










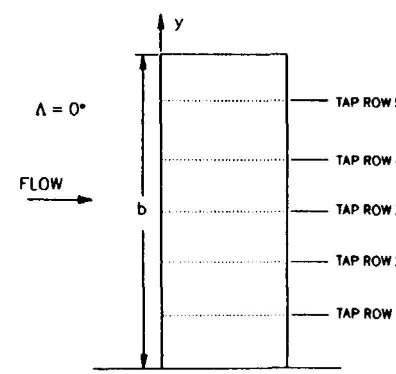


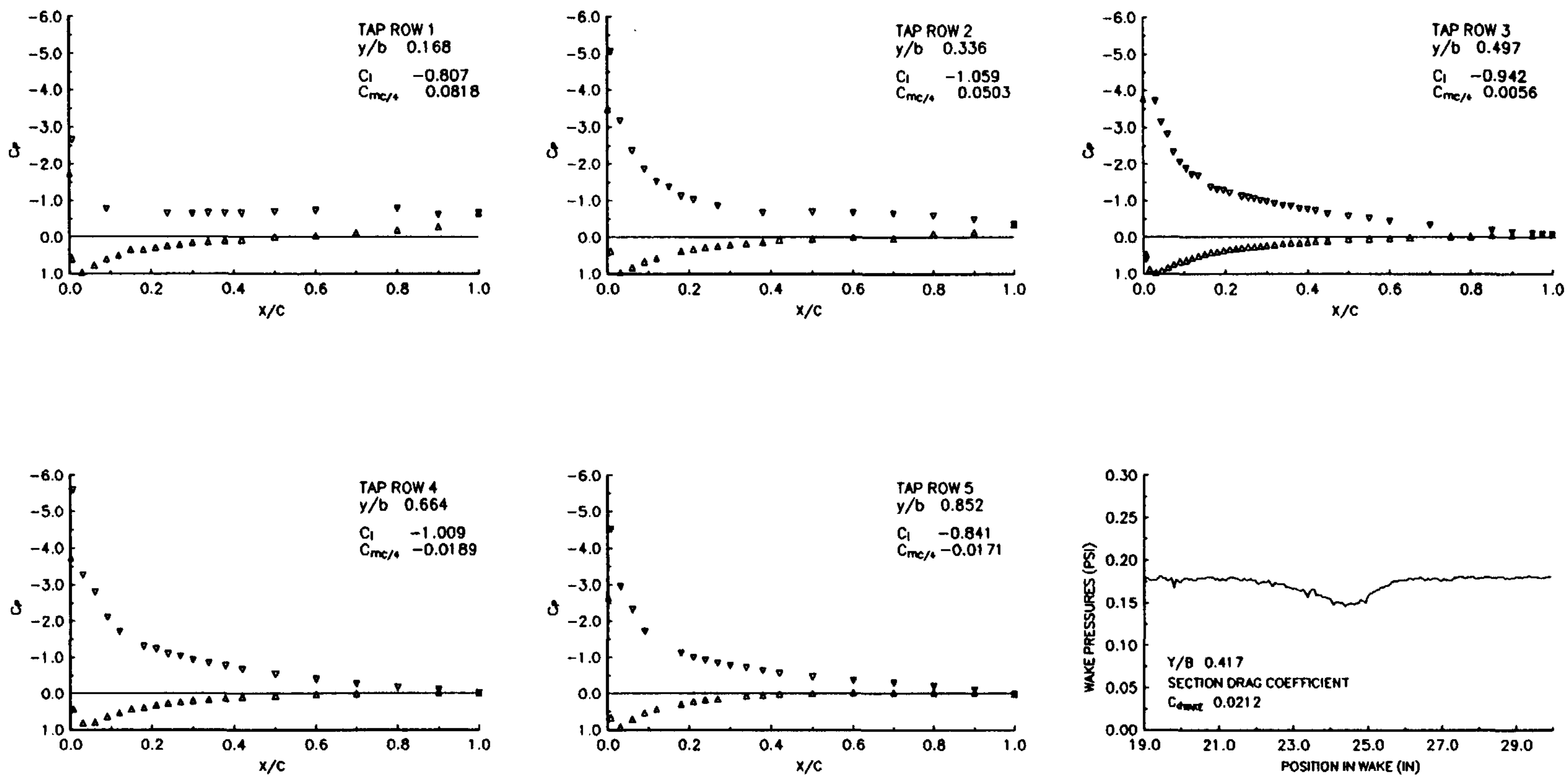
RUN NUMBER 2207

AOA$_{GEOMETRIC}$ −14°

MACH 0.14

RE 1.21 X 10^6



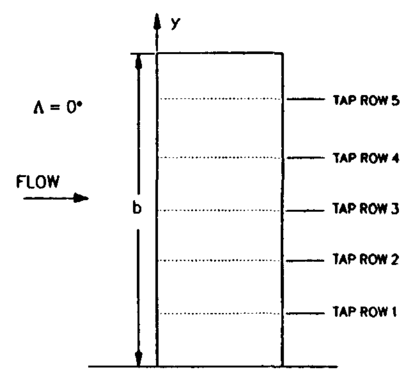


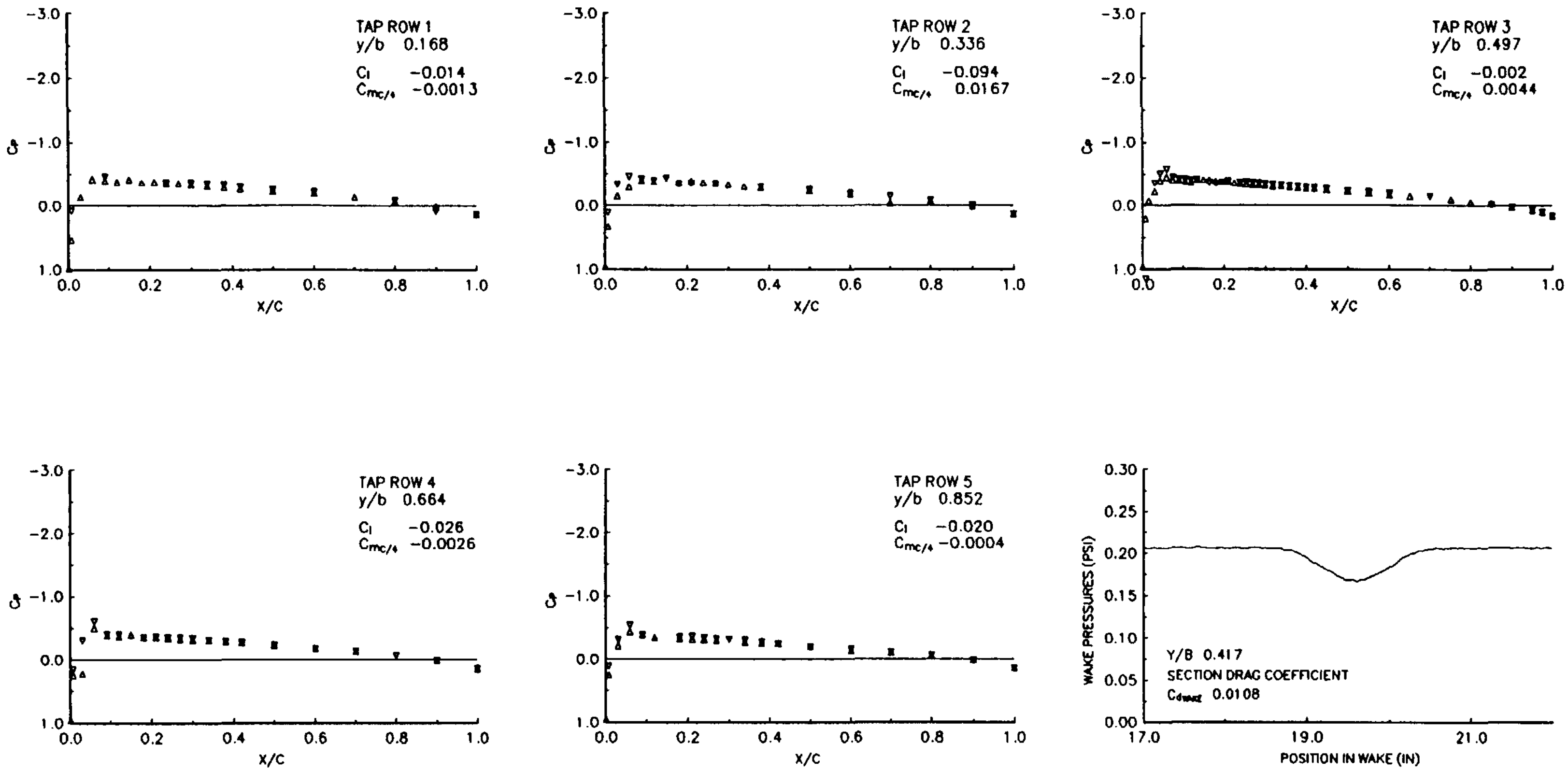
RUN NUMBER 2208

$AOA_{GEOMETRIC}$ $-16°$

MACH 0.13

RE 1.13×10^6



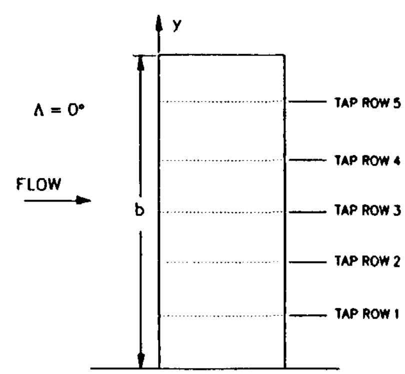


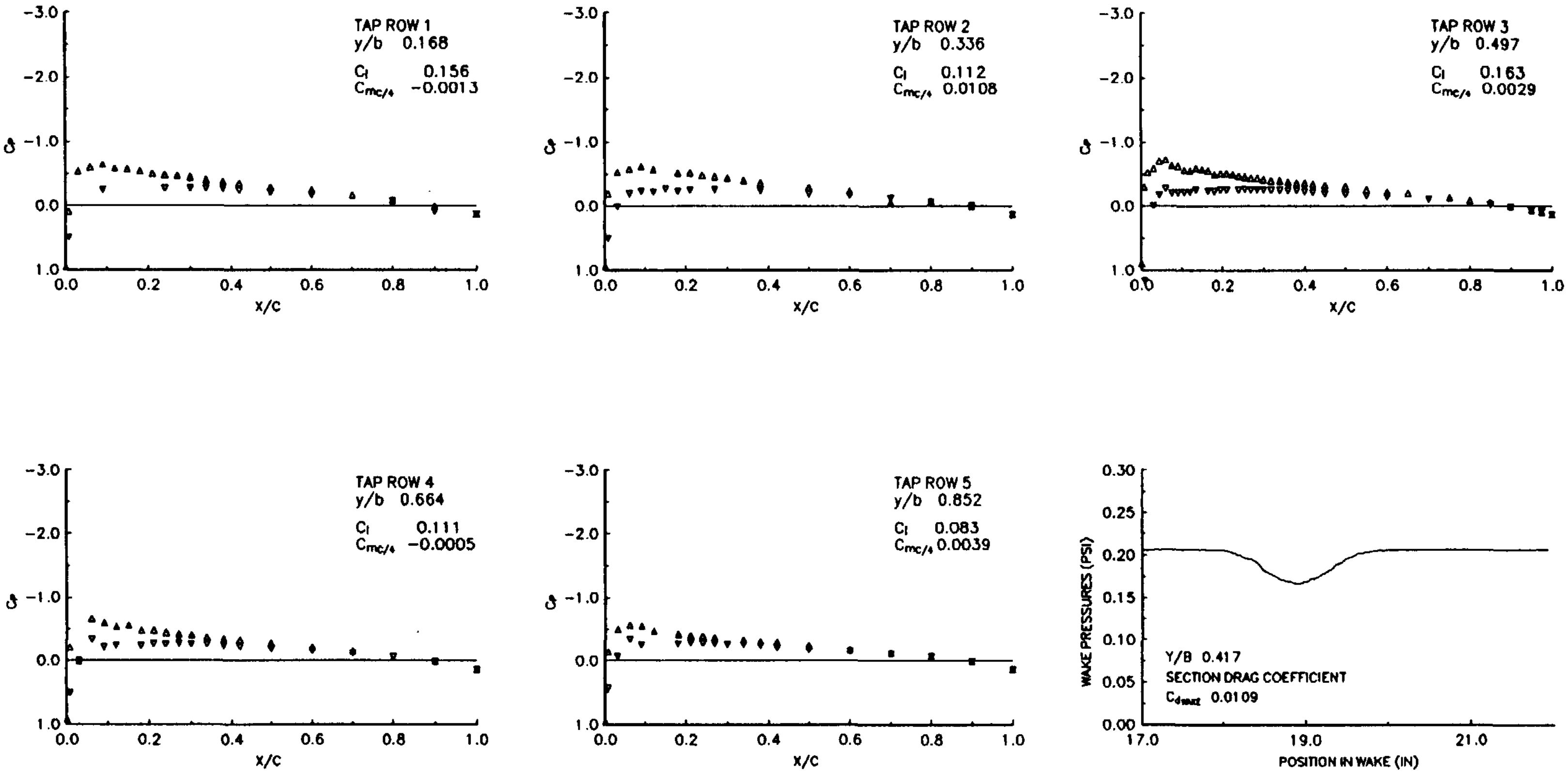
RUN NUMBER 2210

AOA$_{GEOMETRIC}$ 0°

MACH 0.14

RE 1.20×10^6



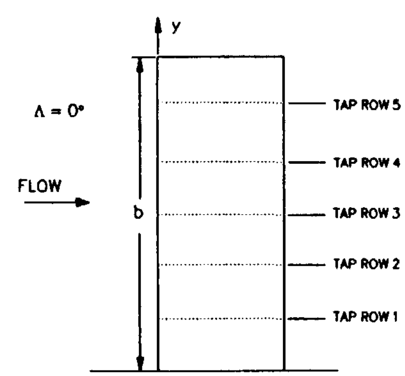


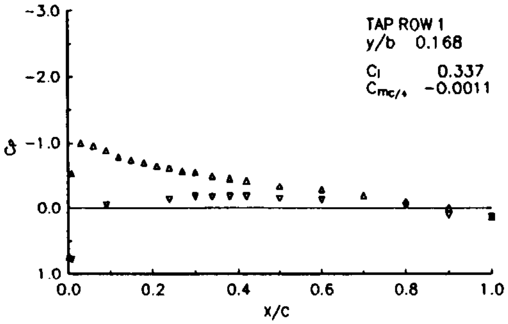
RUN NUMBER 2211

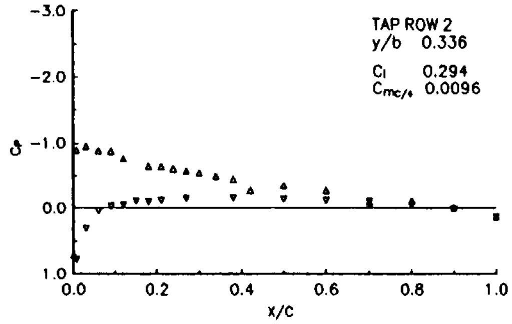
AOA$_{GEOMETRIC}$ 2°

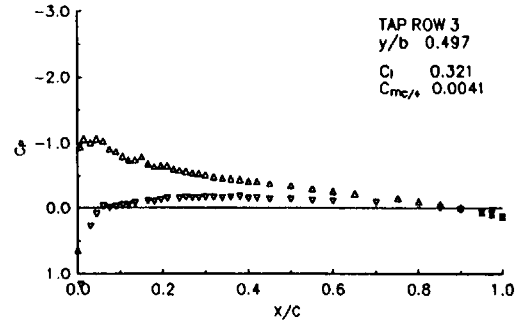
MACH 0.14

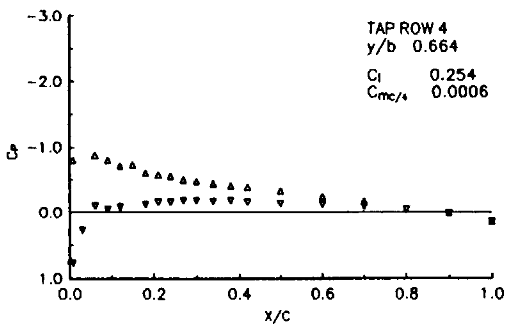
RE 1.20×10^6

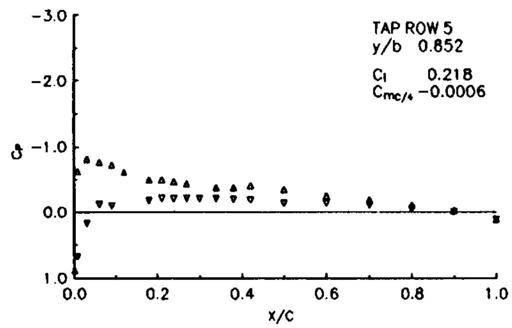


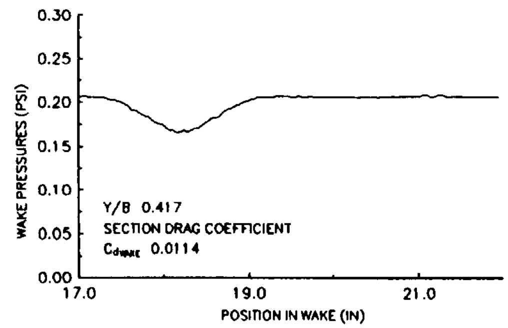










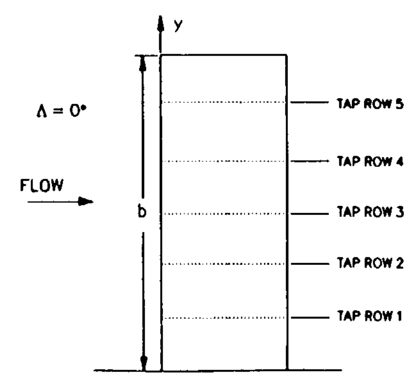


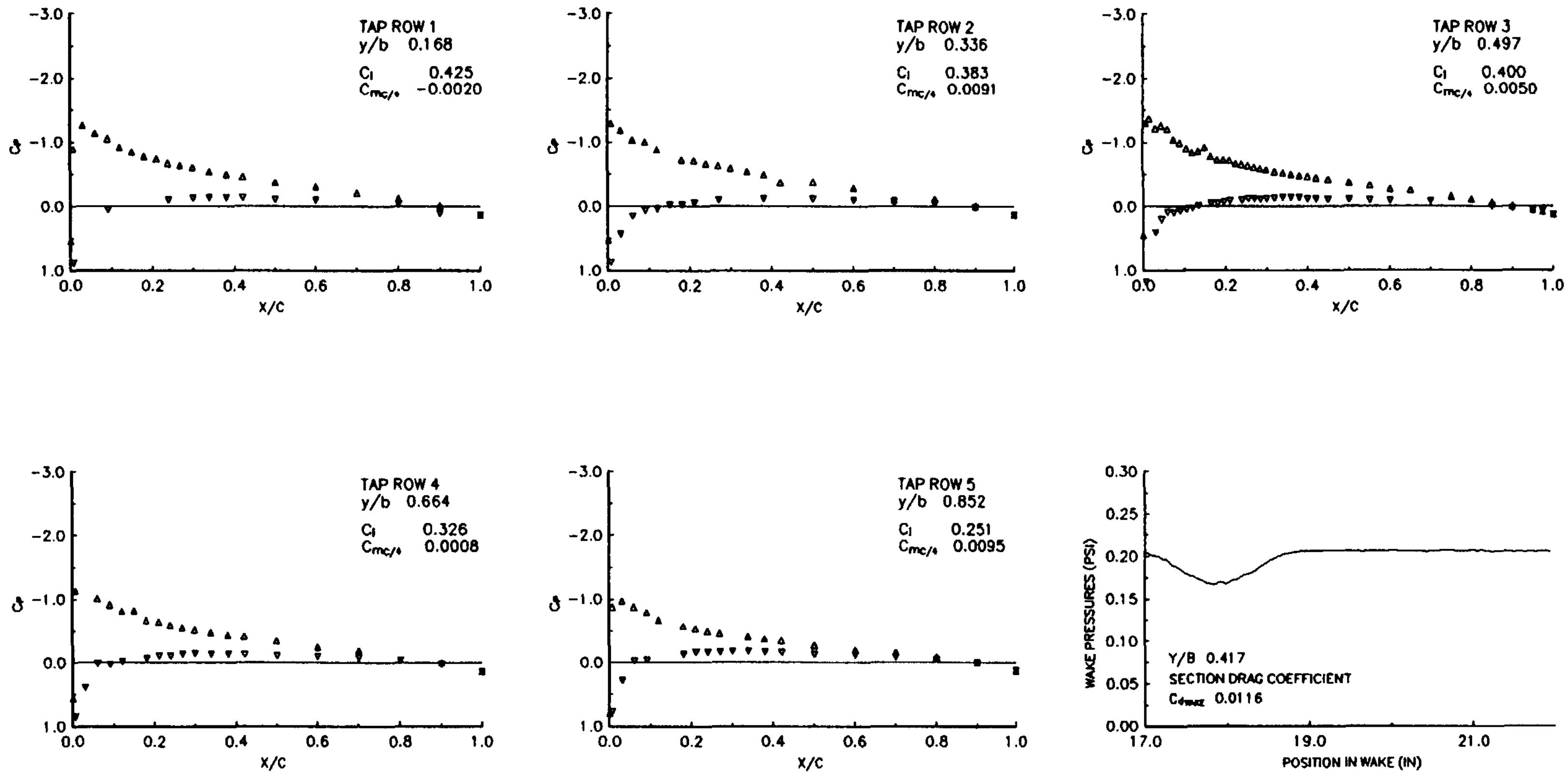
RUN NUMBER 2212

AOA GEOMETRIC 4°

MACH 0.14

RE 1.20×10^6



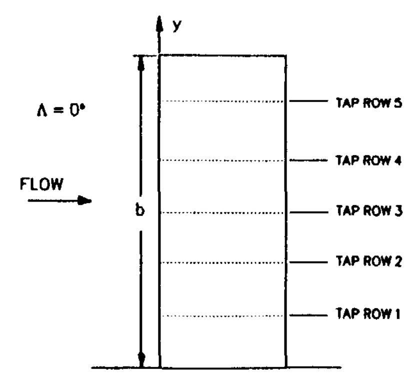


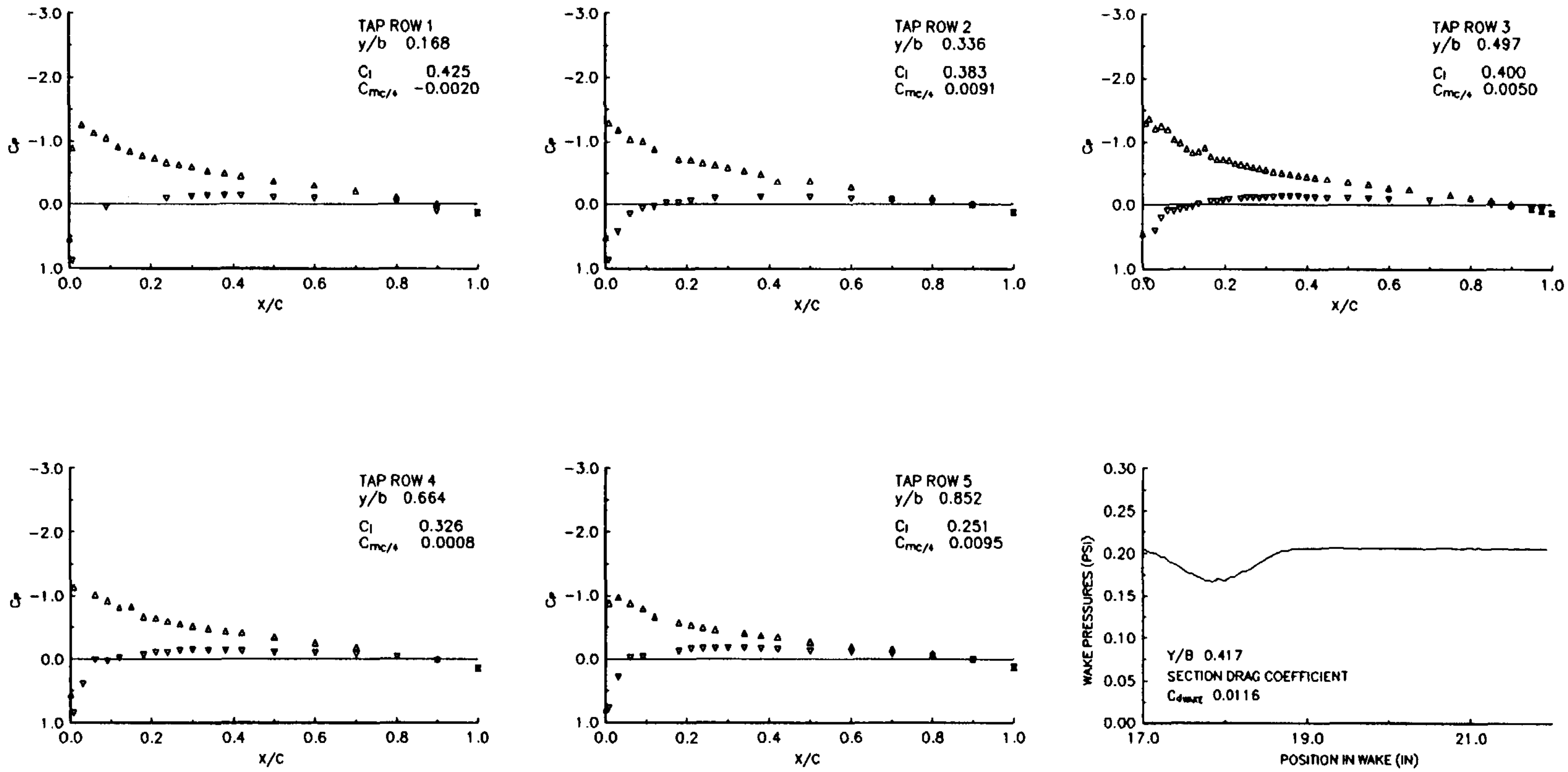
RUN NUMBER 2213

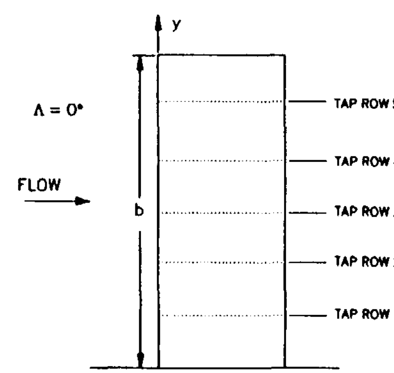
$AOA_{GEOMETRIC}$ 5°

MACH 0.14

RE 1.20×10^6





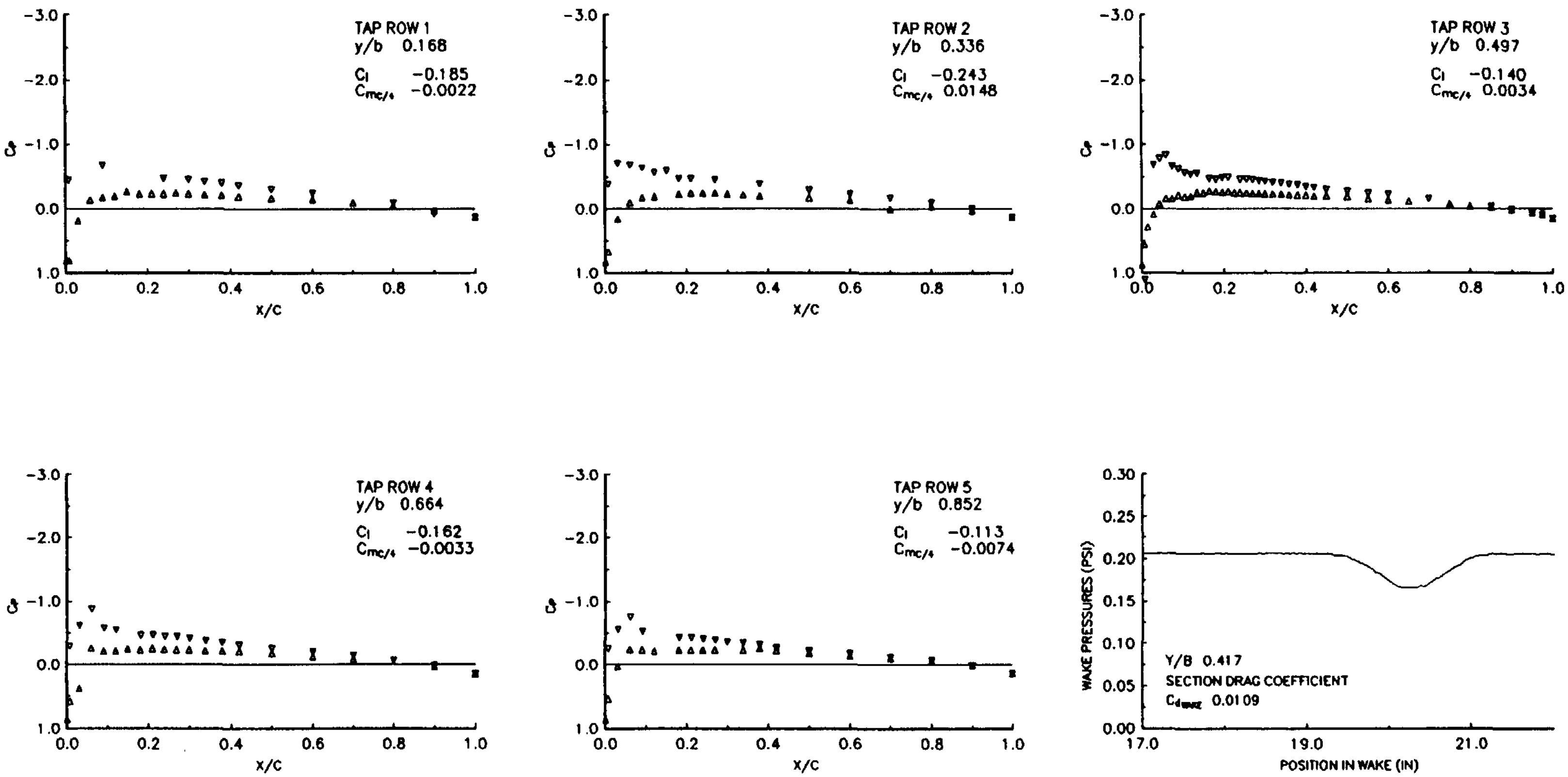


RUN NUMBER 2213

AOA$_{GEOMETRIC}$ 5°

MACH 0.14

RE 1.20×10^6

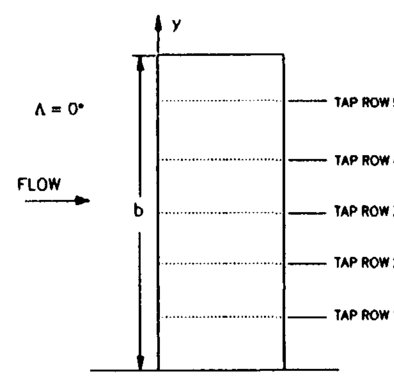


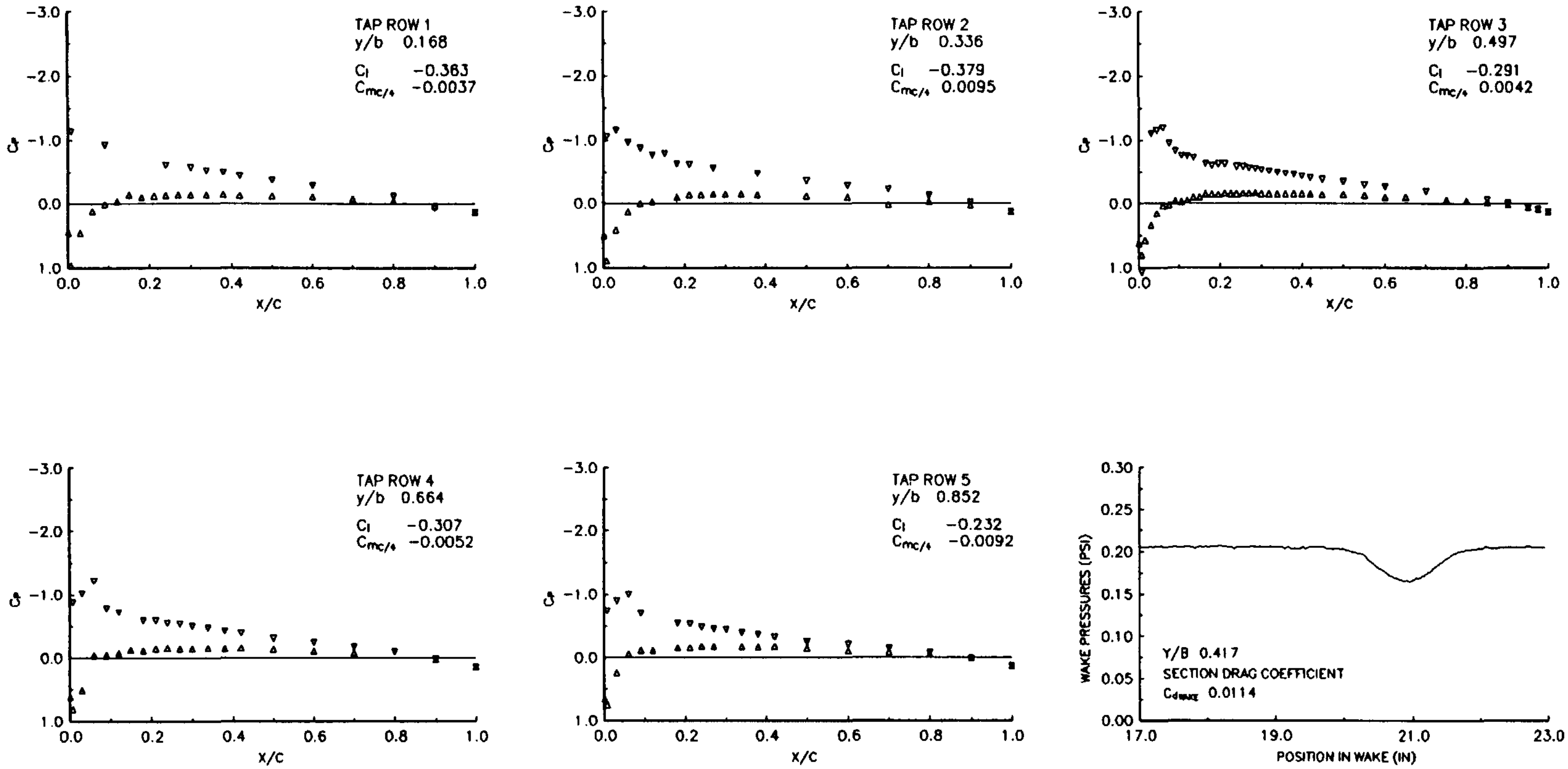
RUN NUMBER 2214

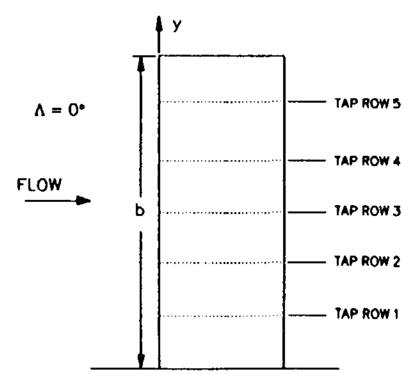
$AOA_{GEOMETRIC}$ $-2°$

MACH 0.14

RE 1.23×10^6





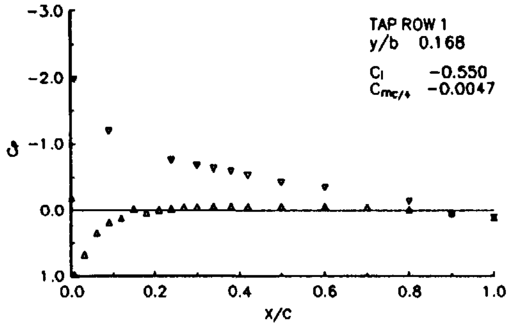


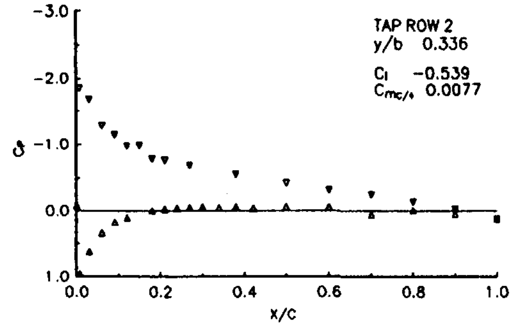
RUN NUMBER 2215

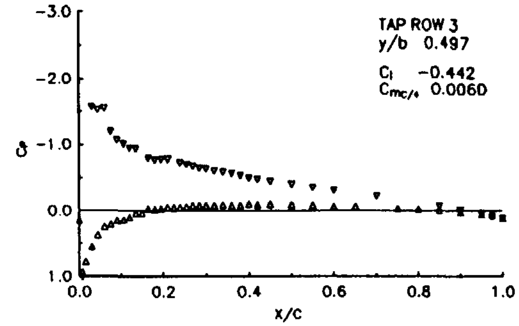
$AOA_{GEOMETRIC}$ −4°

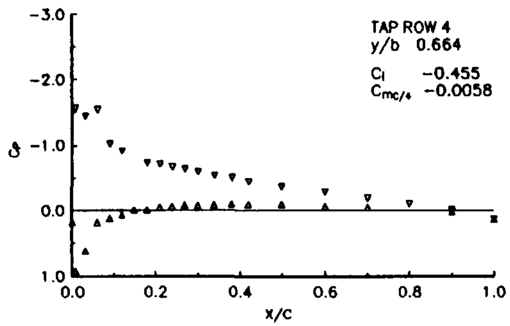
MACH 0.14

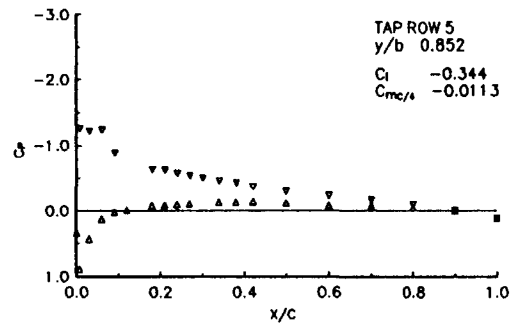
RE 1.22×10^6

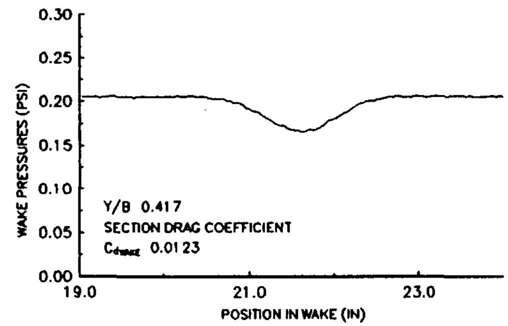










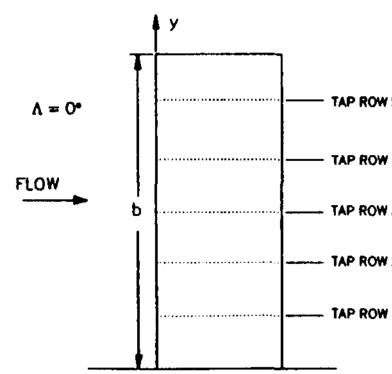


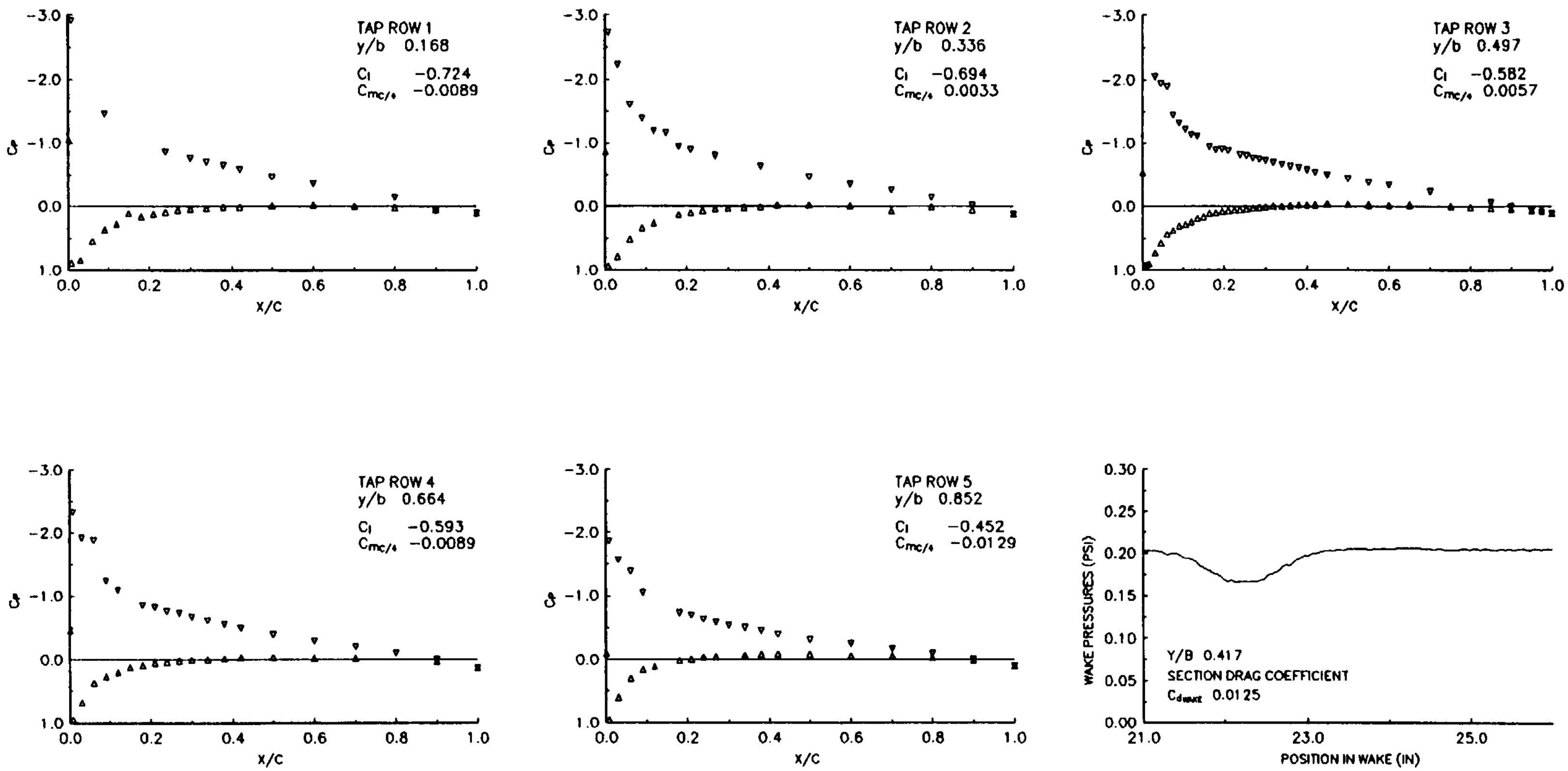
RUN NUMBER 2216

$AOA_{GEOMETRIC}$ −6°

MACH 0.14

RE 1.22×10^6



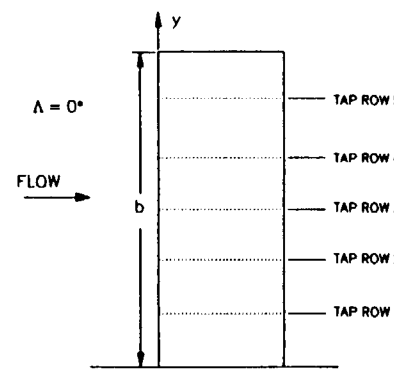


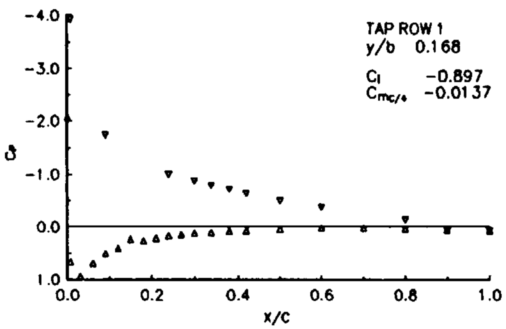
RUN NUMBER 2217

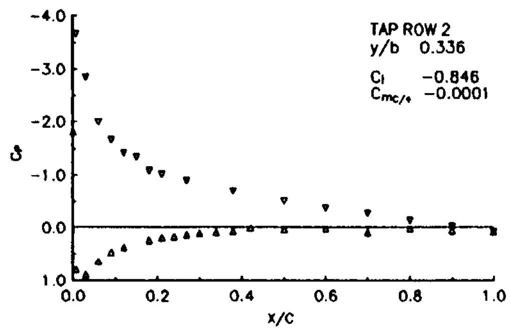
AOA$_{GEOMETRIC}$ −8°

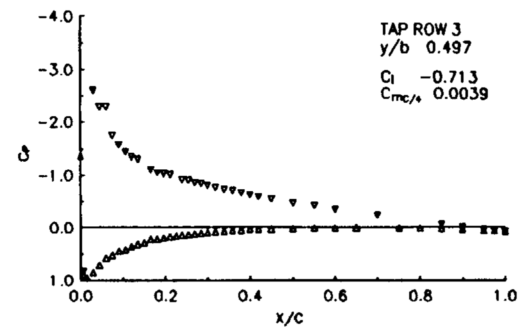
MACH 0.14

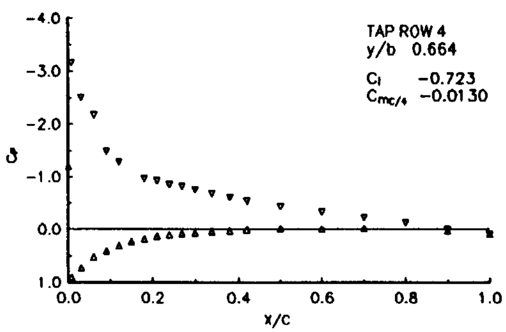
RE 1.22 X 10^6

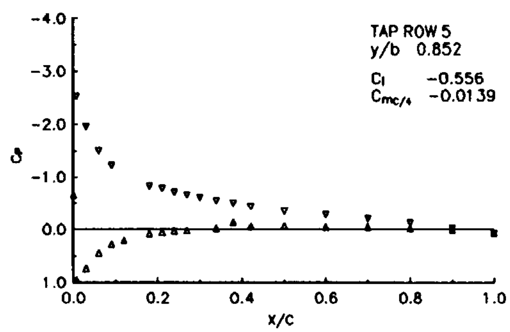


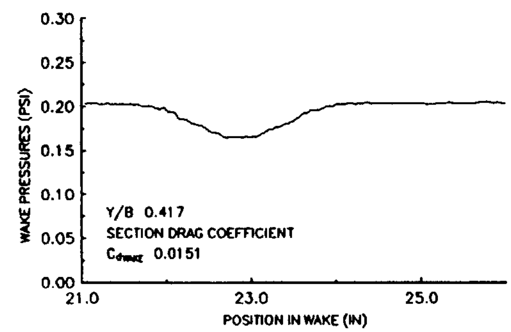










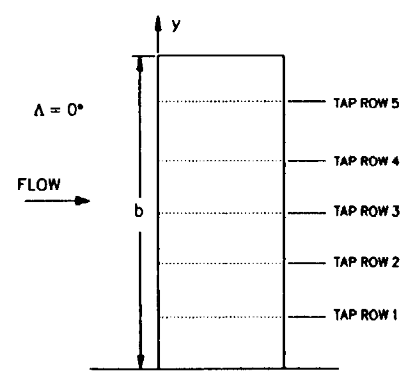


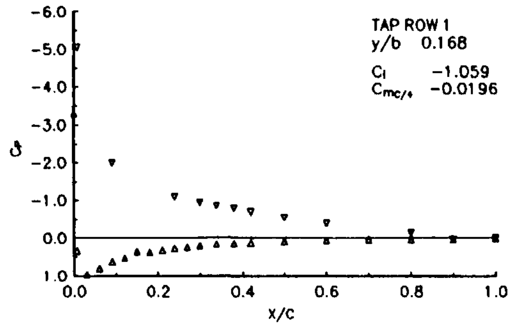
RUN NUMBER 2218

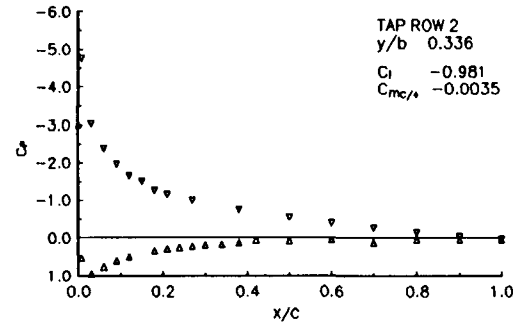
AOA$_{GEOMETRIC}$ $-10°$

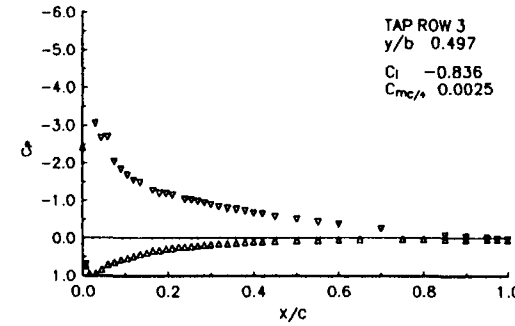
MACH 0.14

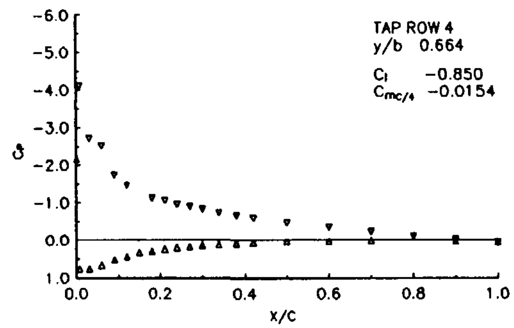
RE 1.22×10^6

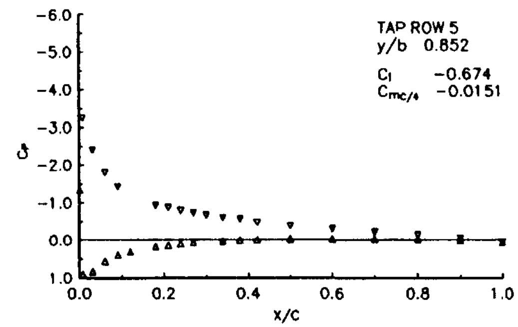


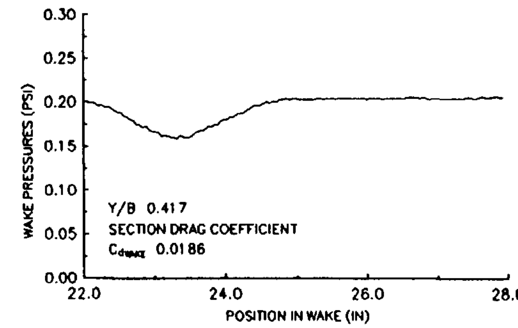










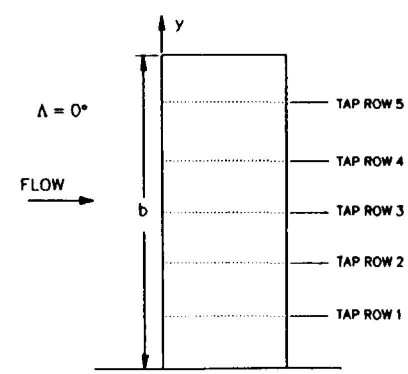


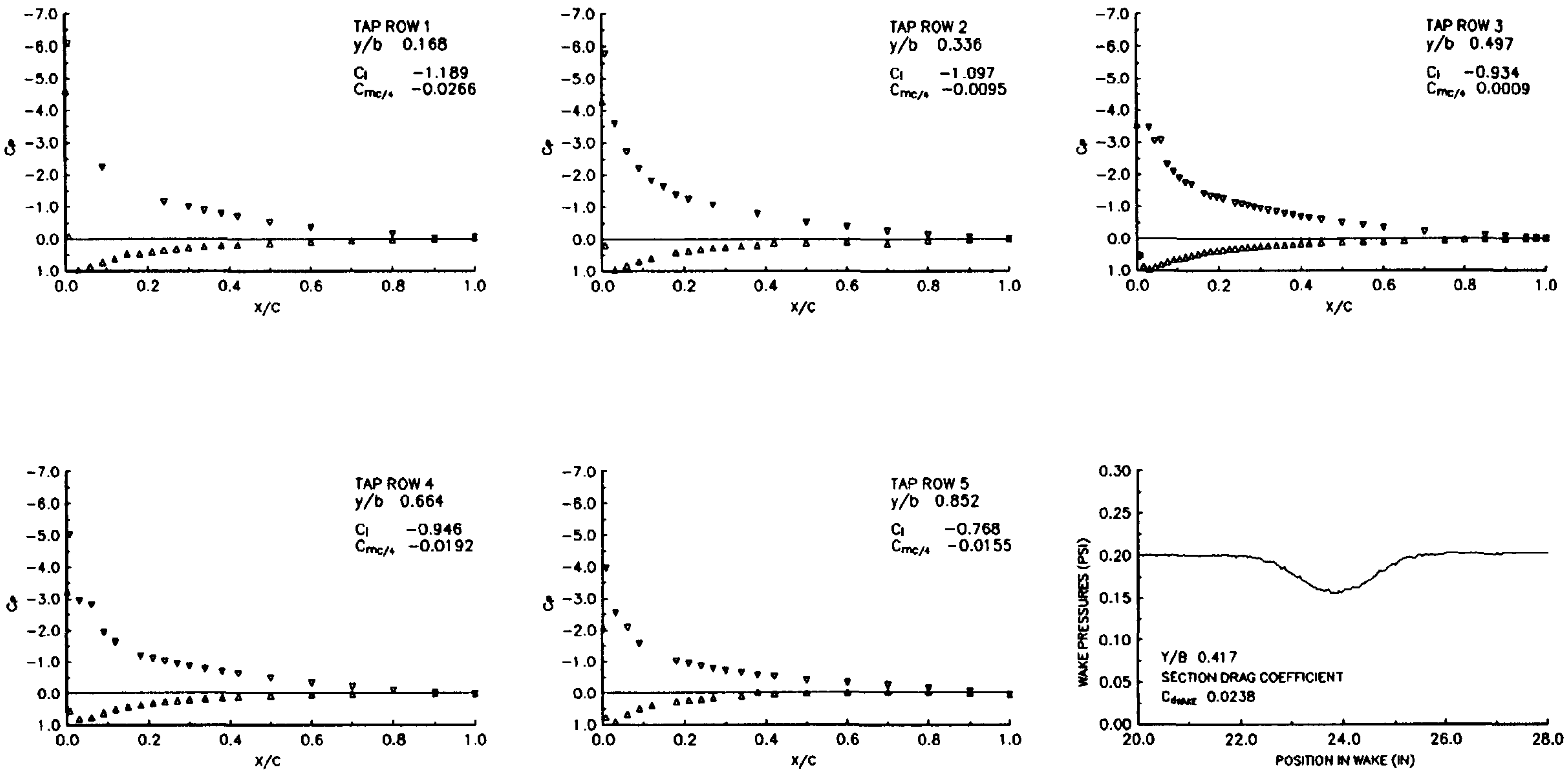
RUN NUMBER 2219

$AOA_{GEOMETRIC}$ $-12°$

MACH 0.14

RE 1.22×10^6



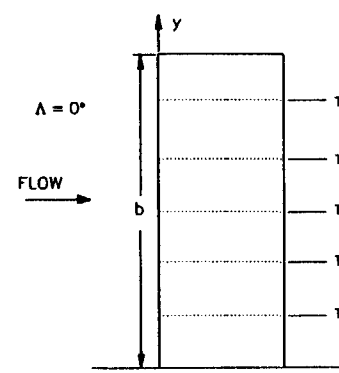


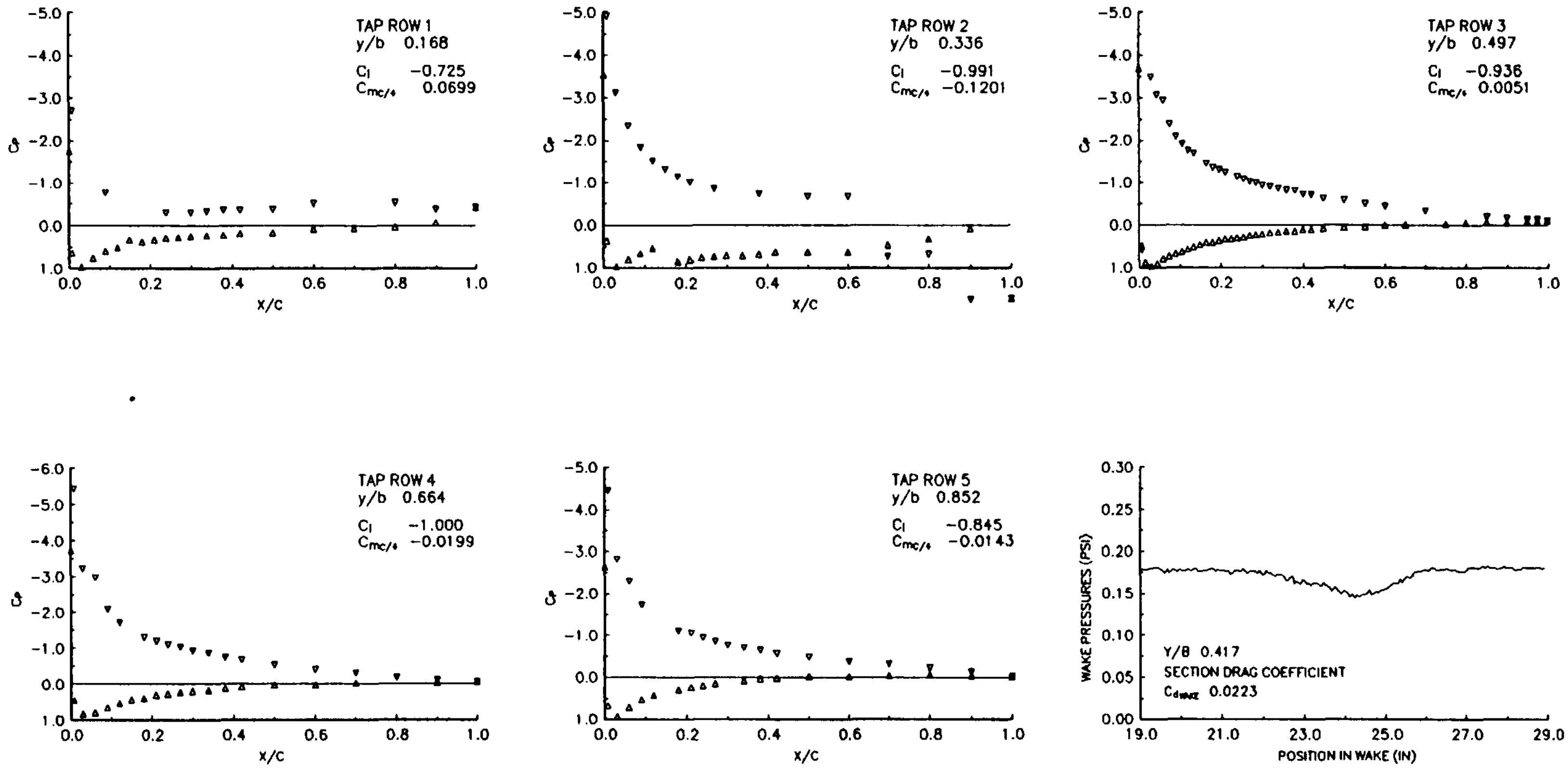
RUN NUMBER 2220

$AOA_{GEOMETRIC}$ $-14°$

MACH 0.14

RE 1.22×10^6



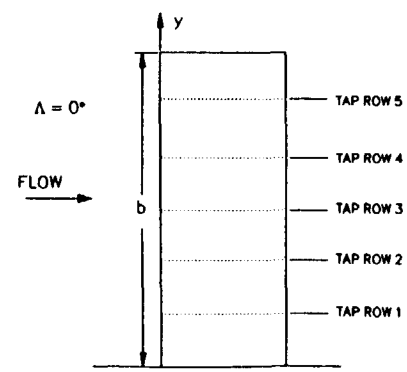


RUN NUMBER 2221

AOA$_{GEOMETRIC}$ −16°

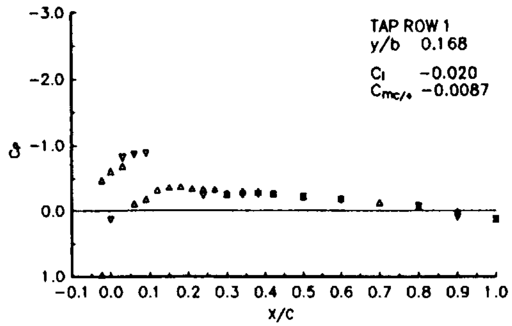
MACH 0.13

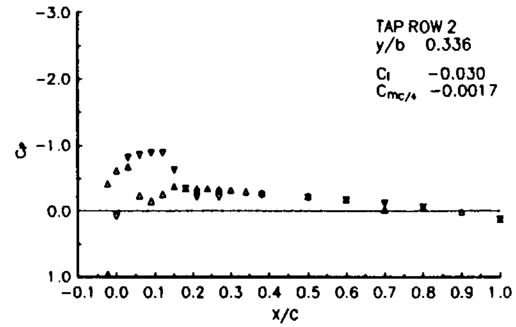
RE 1.14×10^6

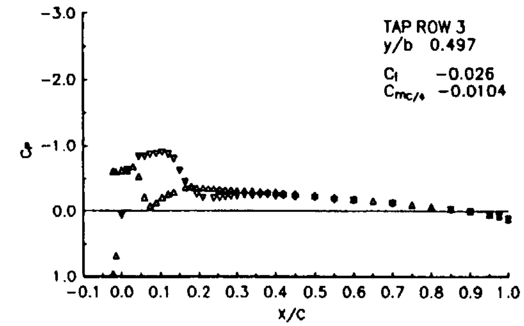


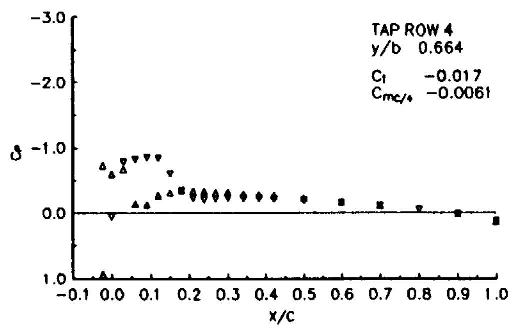
RUNS 2484 - 2524

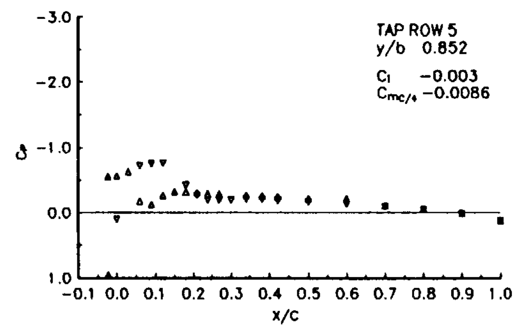
RECTANGULAR WING, 5 MINUTE GLAZE ICE, SMOOTH, WAKE PROBE BETWEEN TAP ROWS 2 AND 3

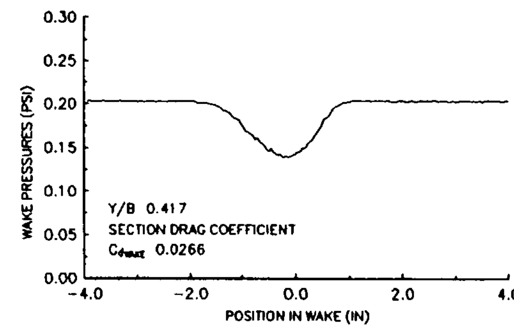










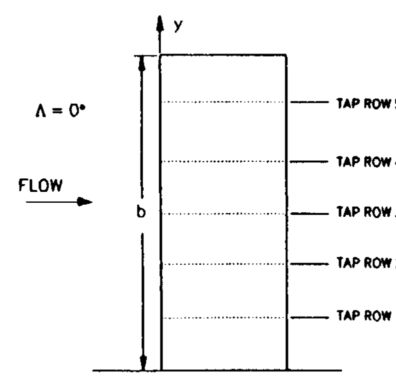


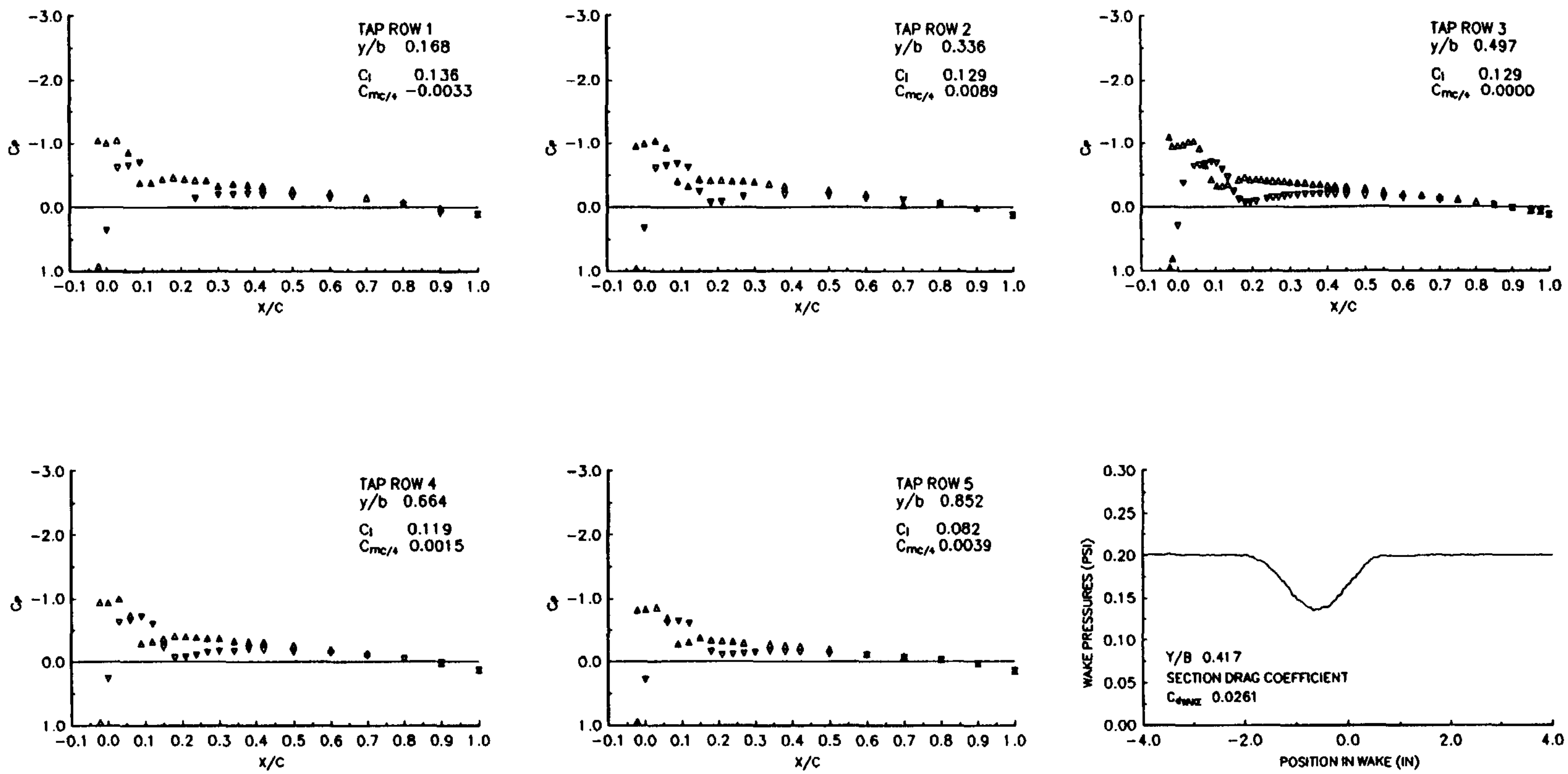
RUN NUMBER 2484

AOA$_{GEOMETRIC}$ 0°

MACH 0.14

RE 1.18×10^6



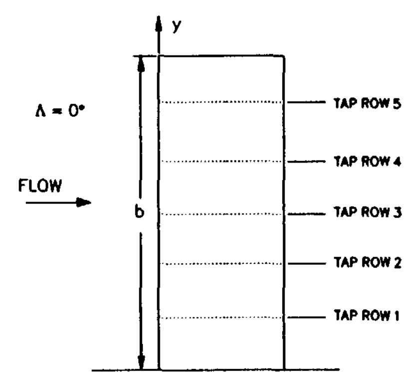


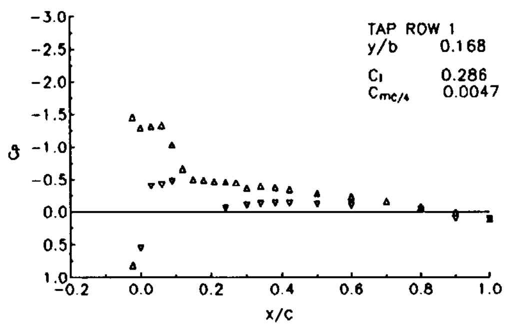
RUN NUMBER 2486

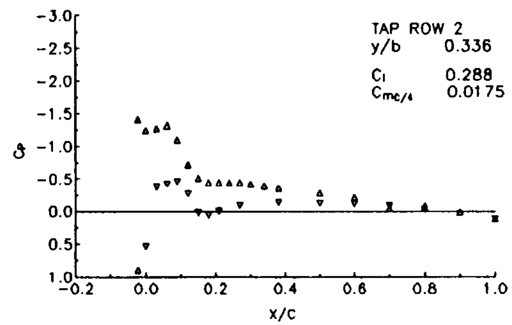
AOA GEOMETRIC 2°

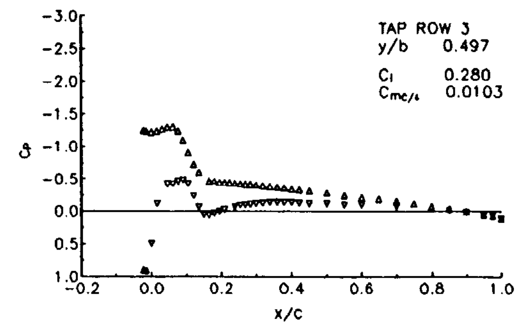
MACH 0.14

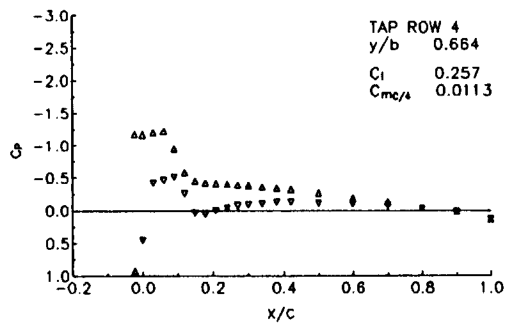
RE 1.17×10^6

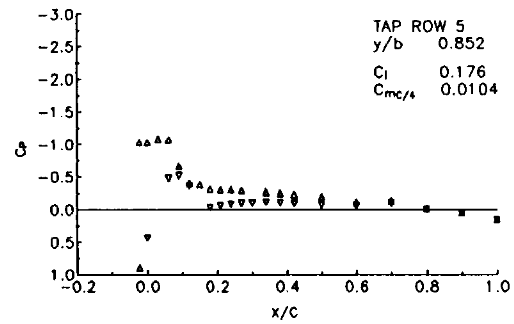


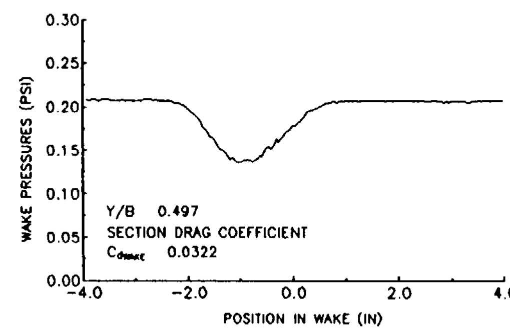










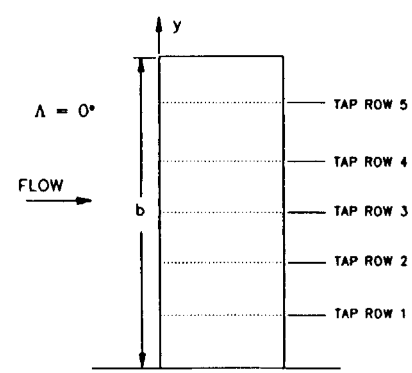


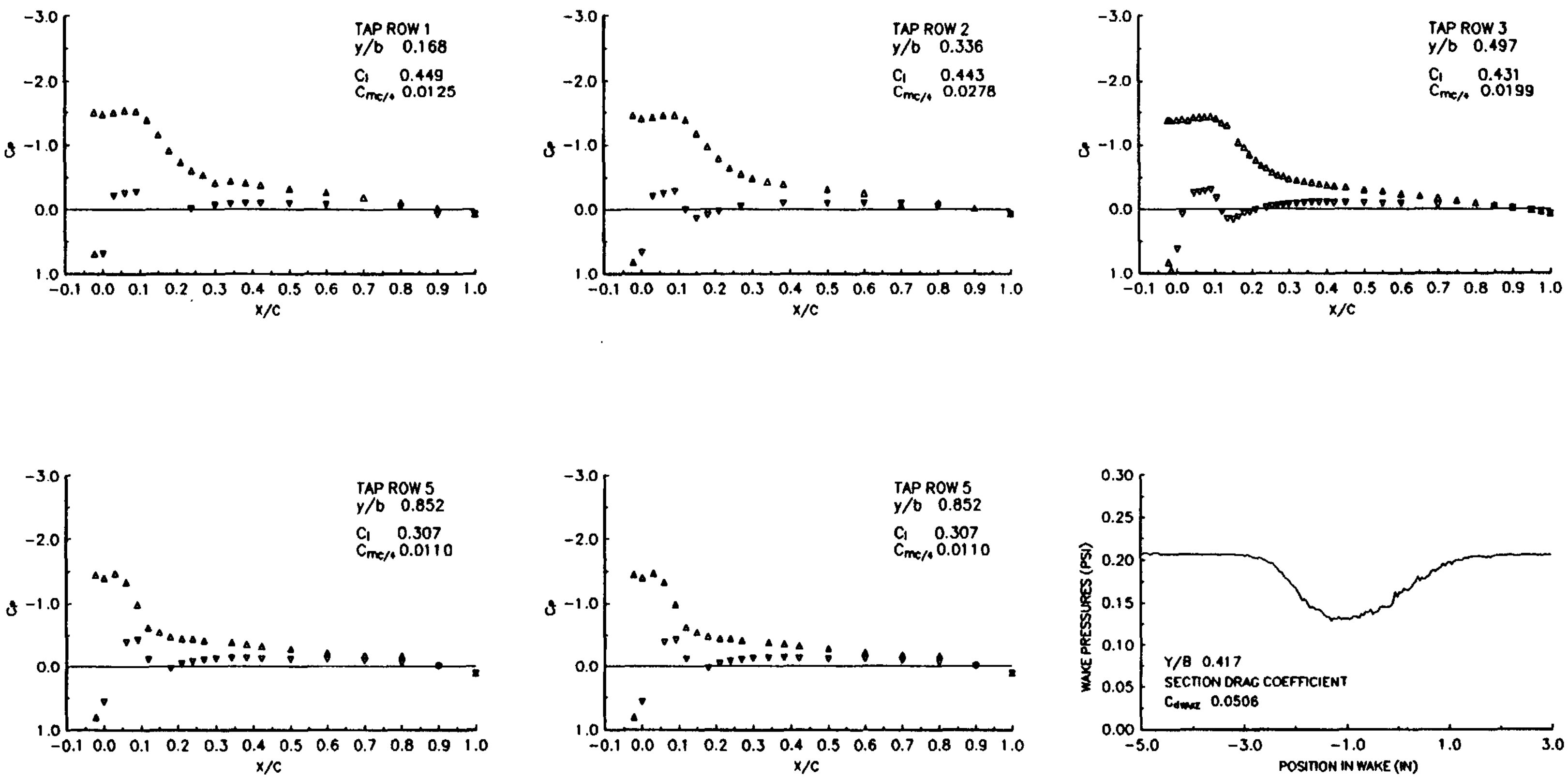
RUN NUMBER 2489

$AOA_{GEOMETRIC}$ 4°

MACH 0.15

RE 1.19×10^6



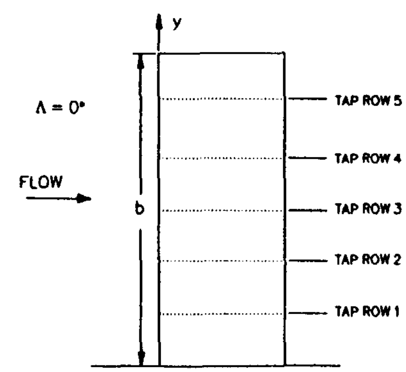


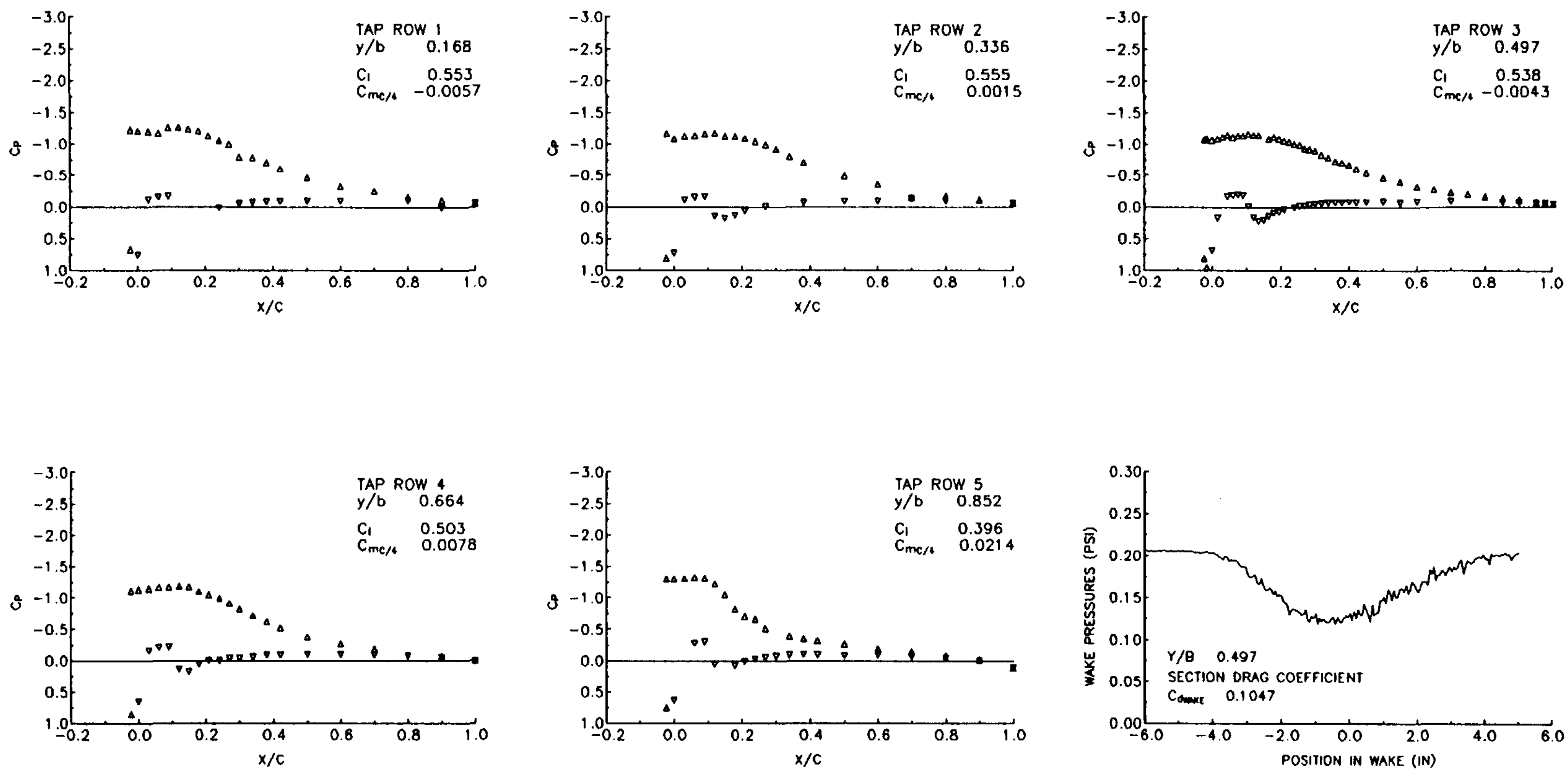
RUN NUMBER 2492

AOA$_{GEOMETRIC}$ 6°

MACH 0.14

RE 1.18×10^6



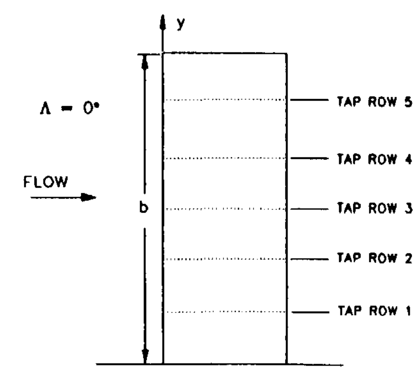


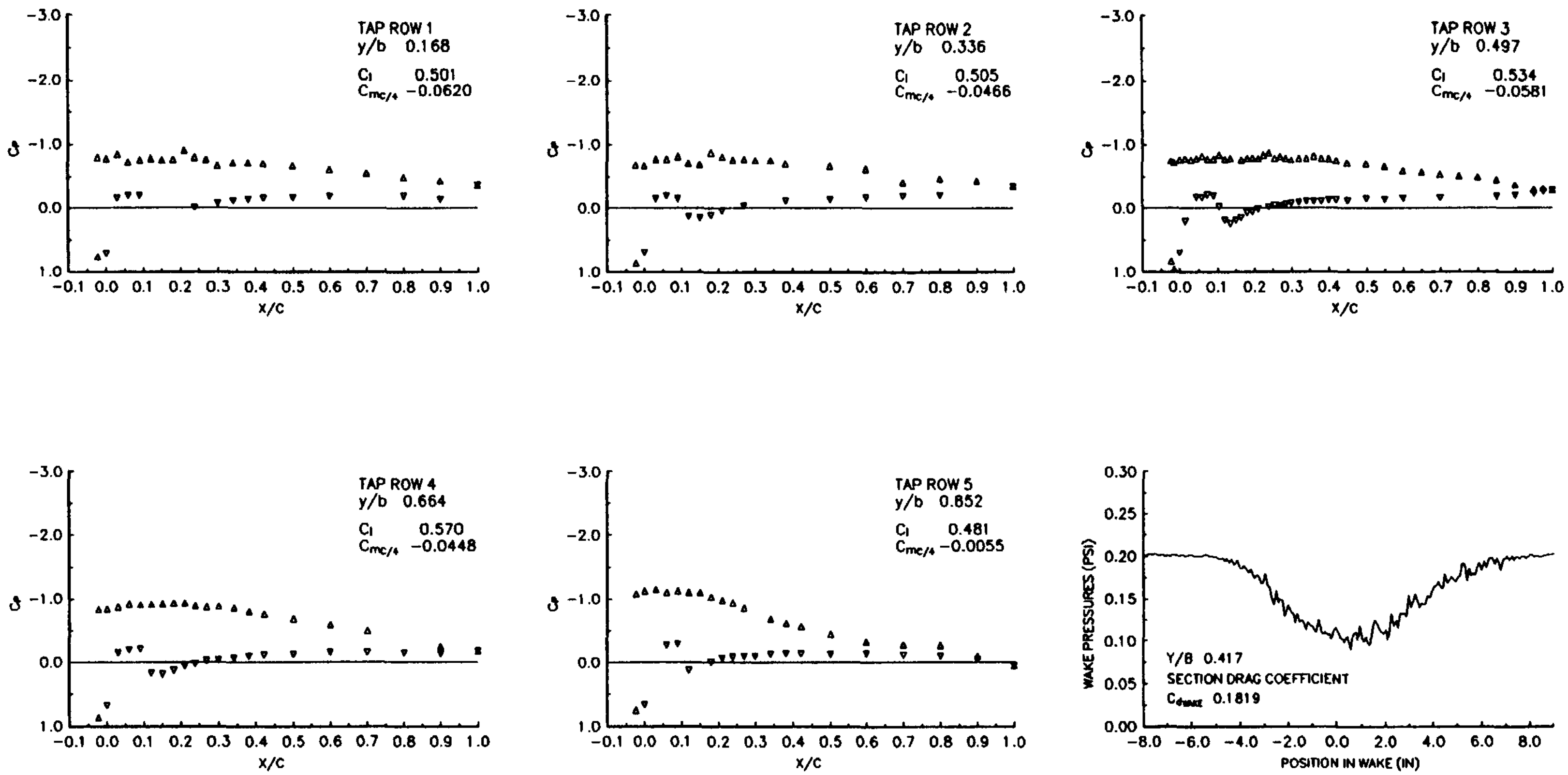
RUN NUMBER 2494

$AOA_{GEOMETRIC}$ 8°

MACH 0.14

RE 1.20×10^{6}



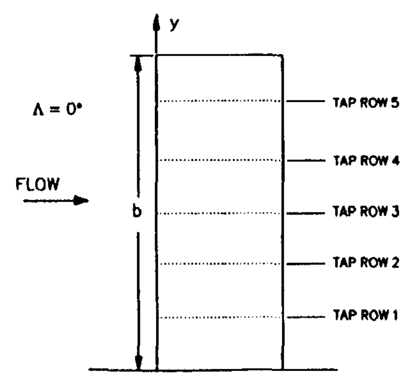


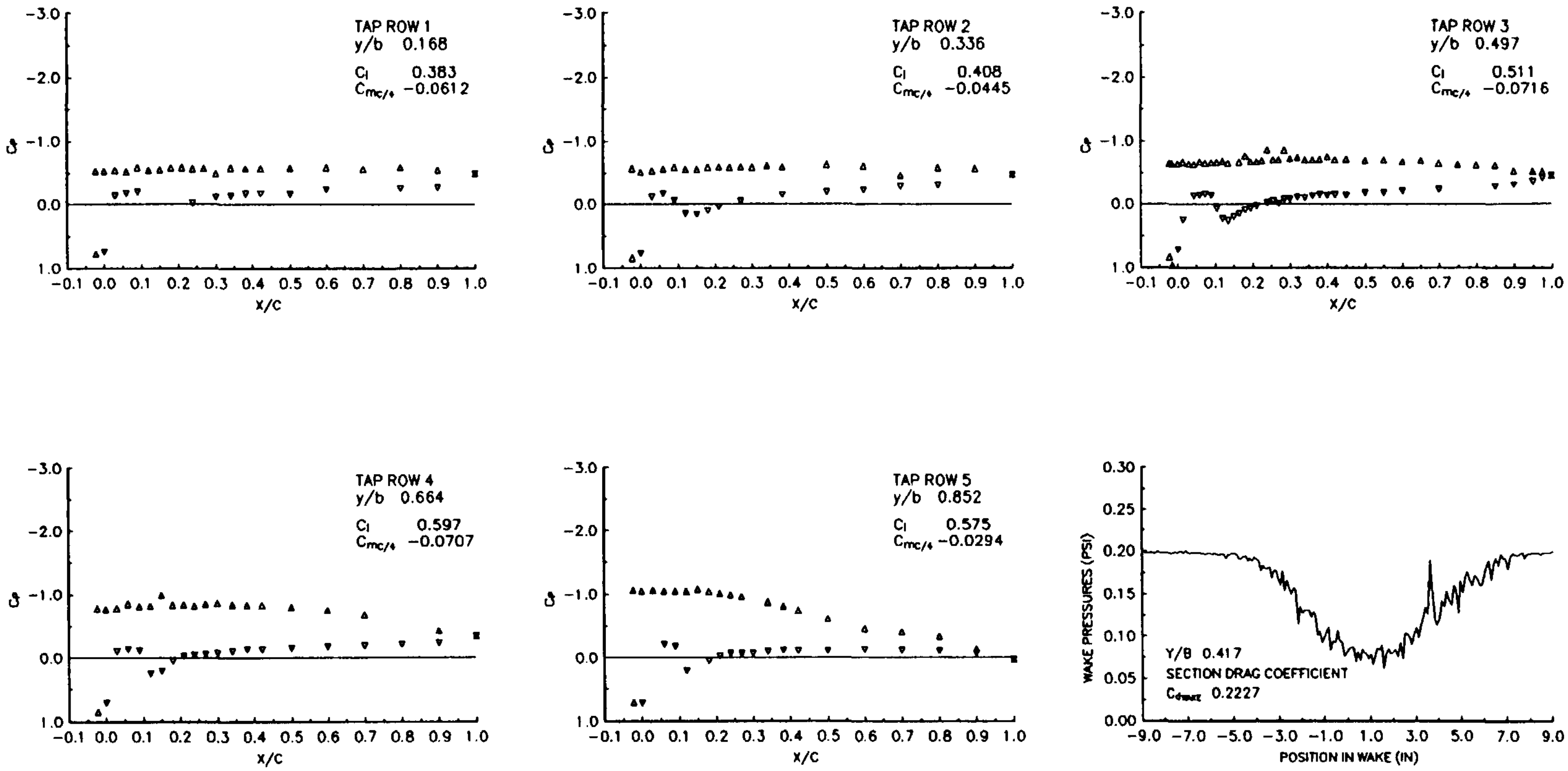
RUN NUMBER 2496

AOA$_{\text{GEOMETRIC}}$ 10°

MACH 0.14

RE 1.18×10^6



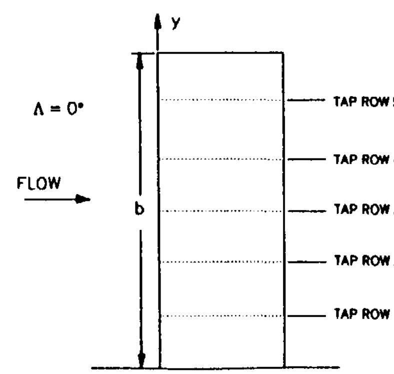


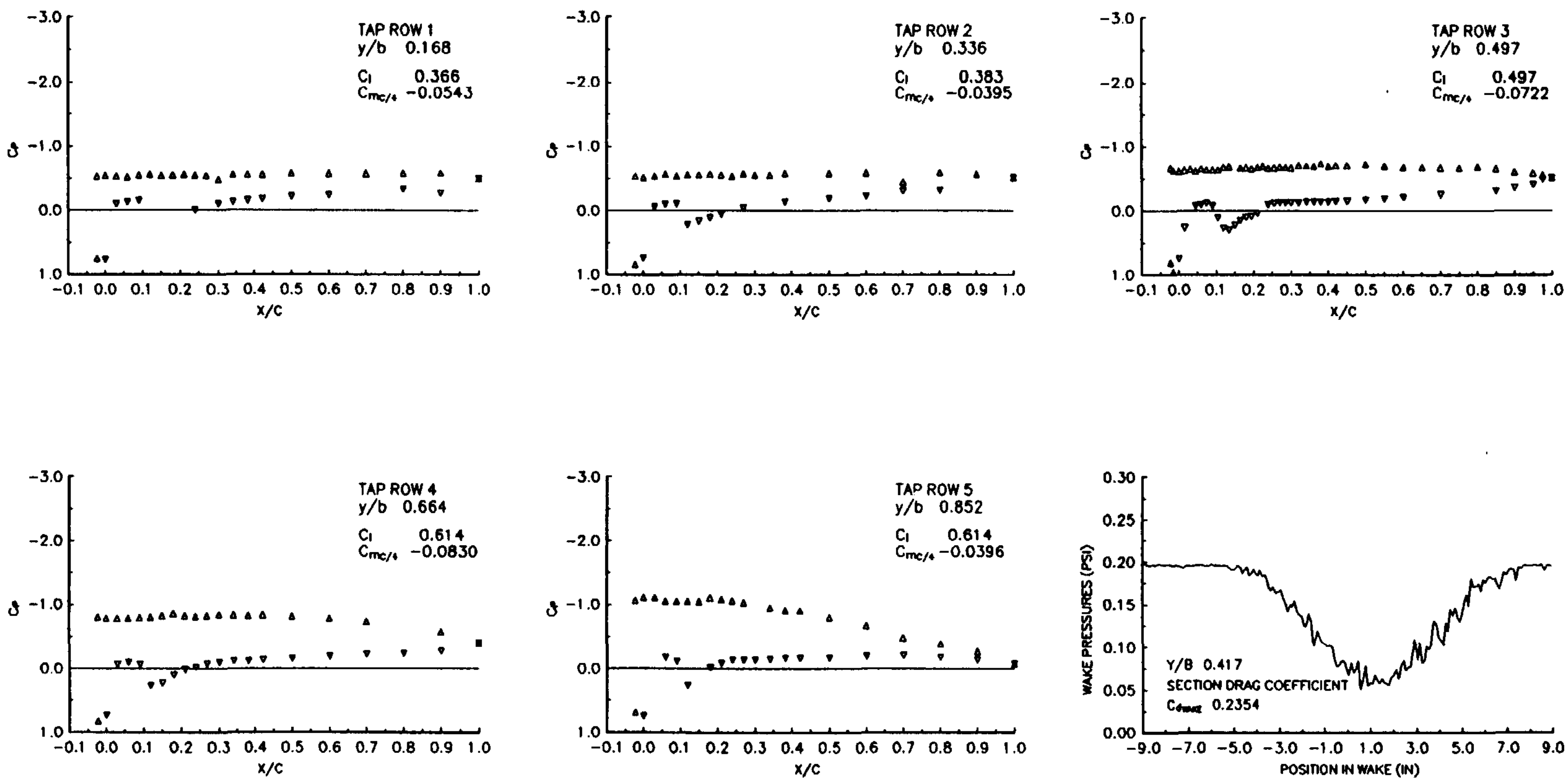
RUN NUMBER 2498

AOA GEOMETRIC 12°

MACH 0.14

RE 1.17×10^6



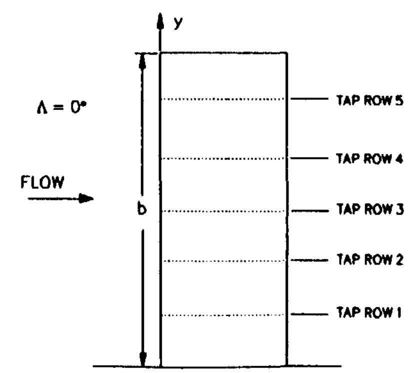


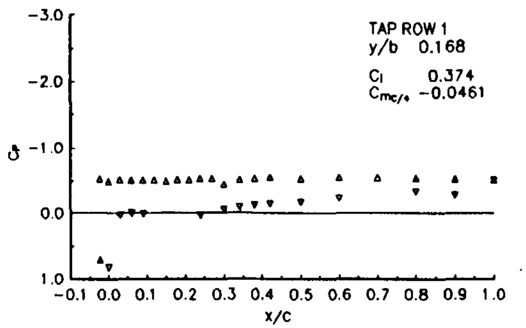
RUN NUMBER 2499

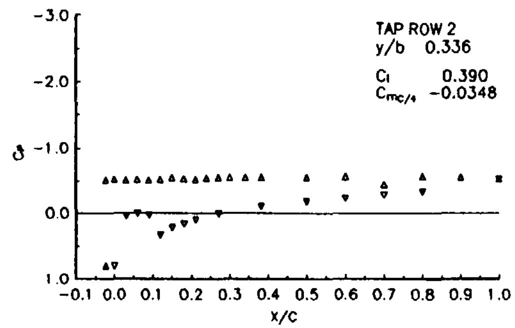
$AOA_{GEOMETRIC}$ 13°

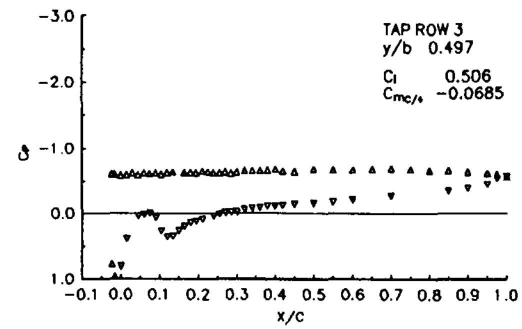
MACH 0.14

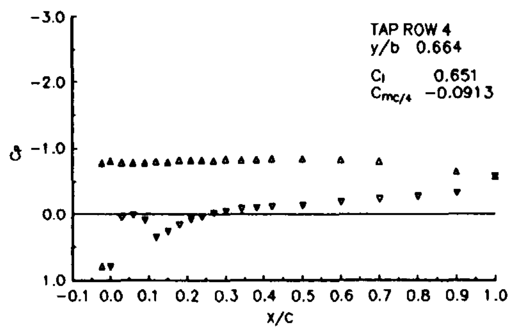
RE 1.17×10^6

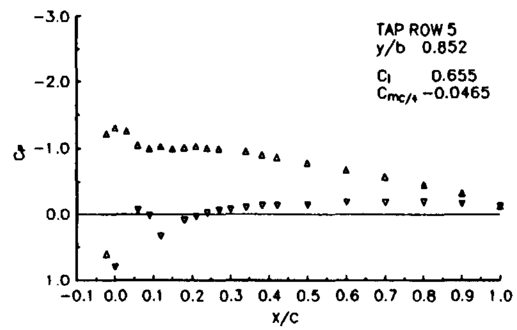


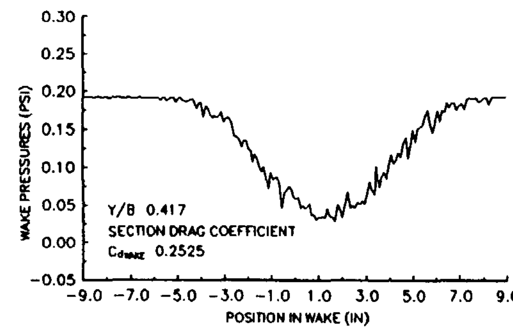










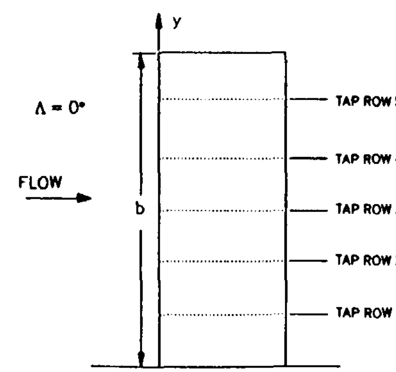


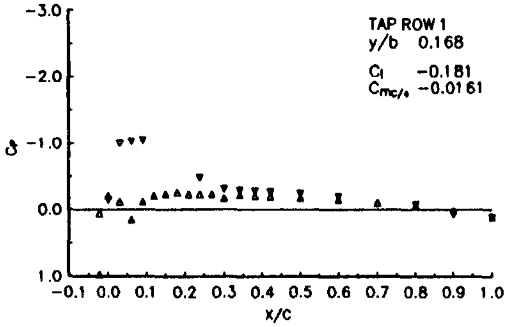
RUN NUMBER 2500

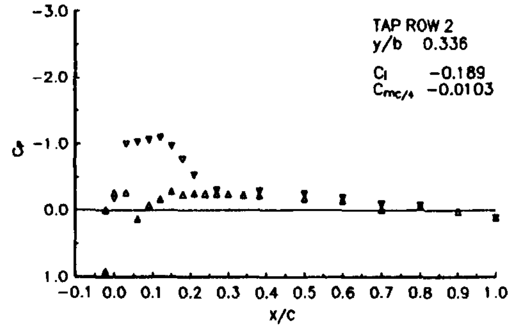
$AOA_{GEOMETRIC}$ 15°

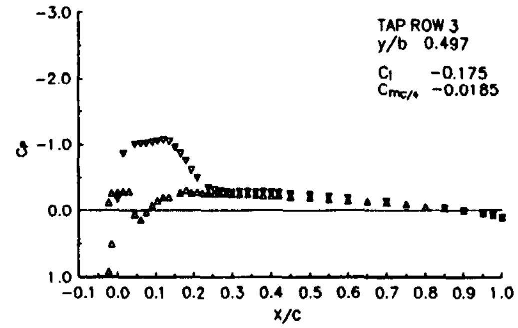
MACH 0.14

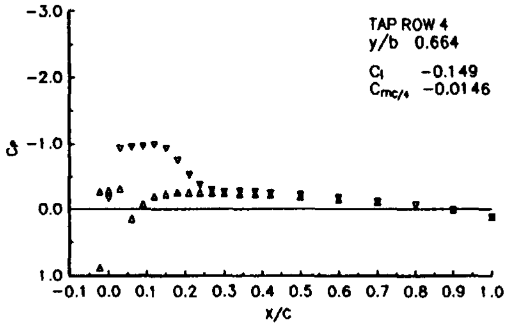
RE 1.16×10^6

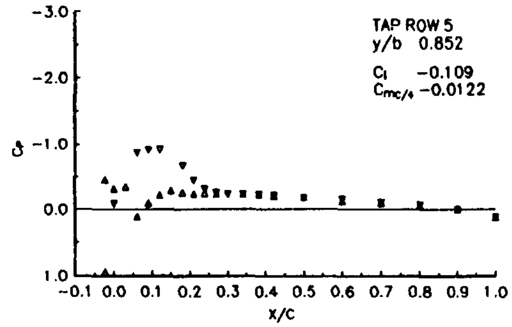


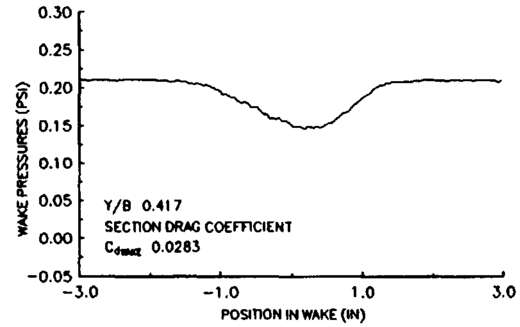










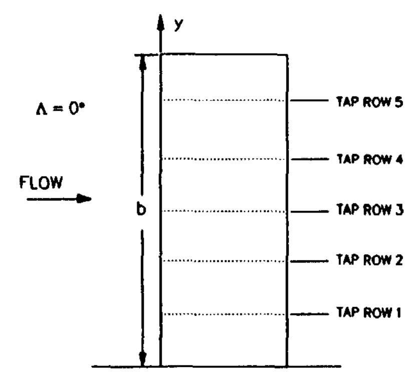


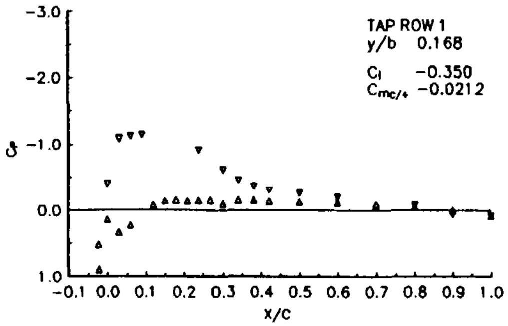
RUN NUMBER 2509

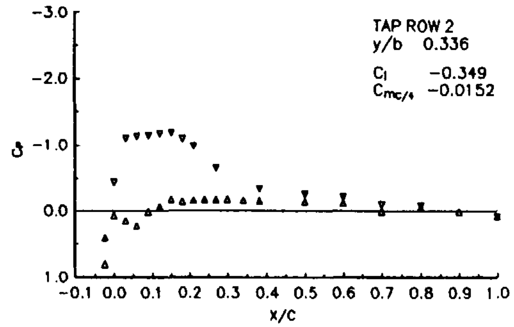
$AOA_{GEOMETRIC}$ −2°

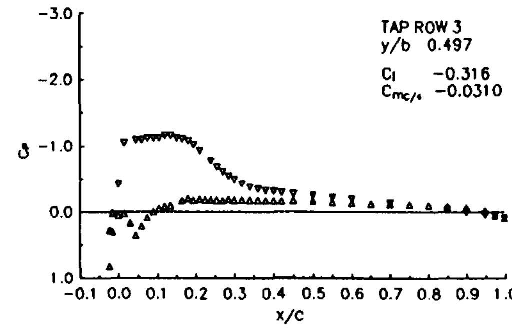
MACH 0.15

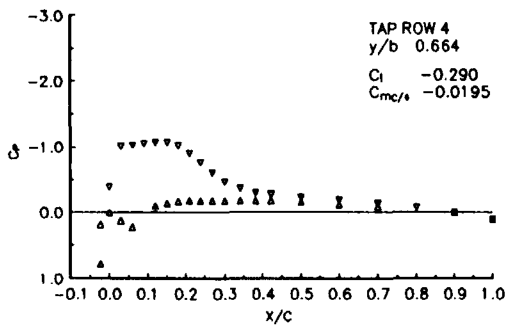
RE 1.22×10^6

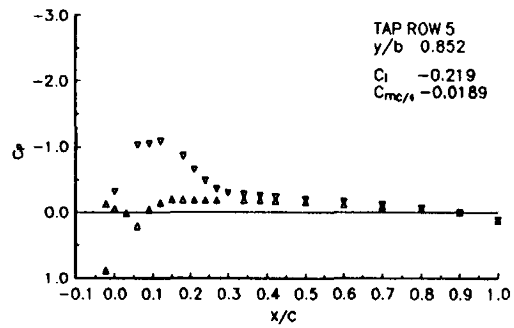


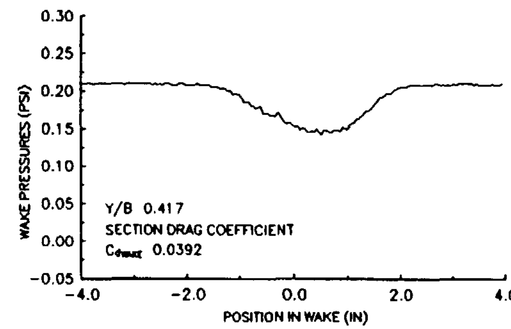










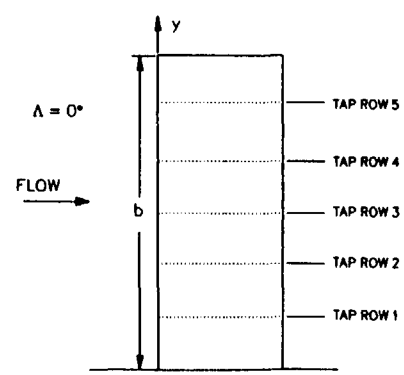


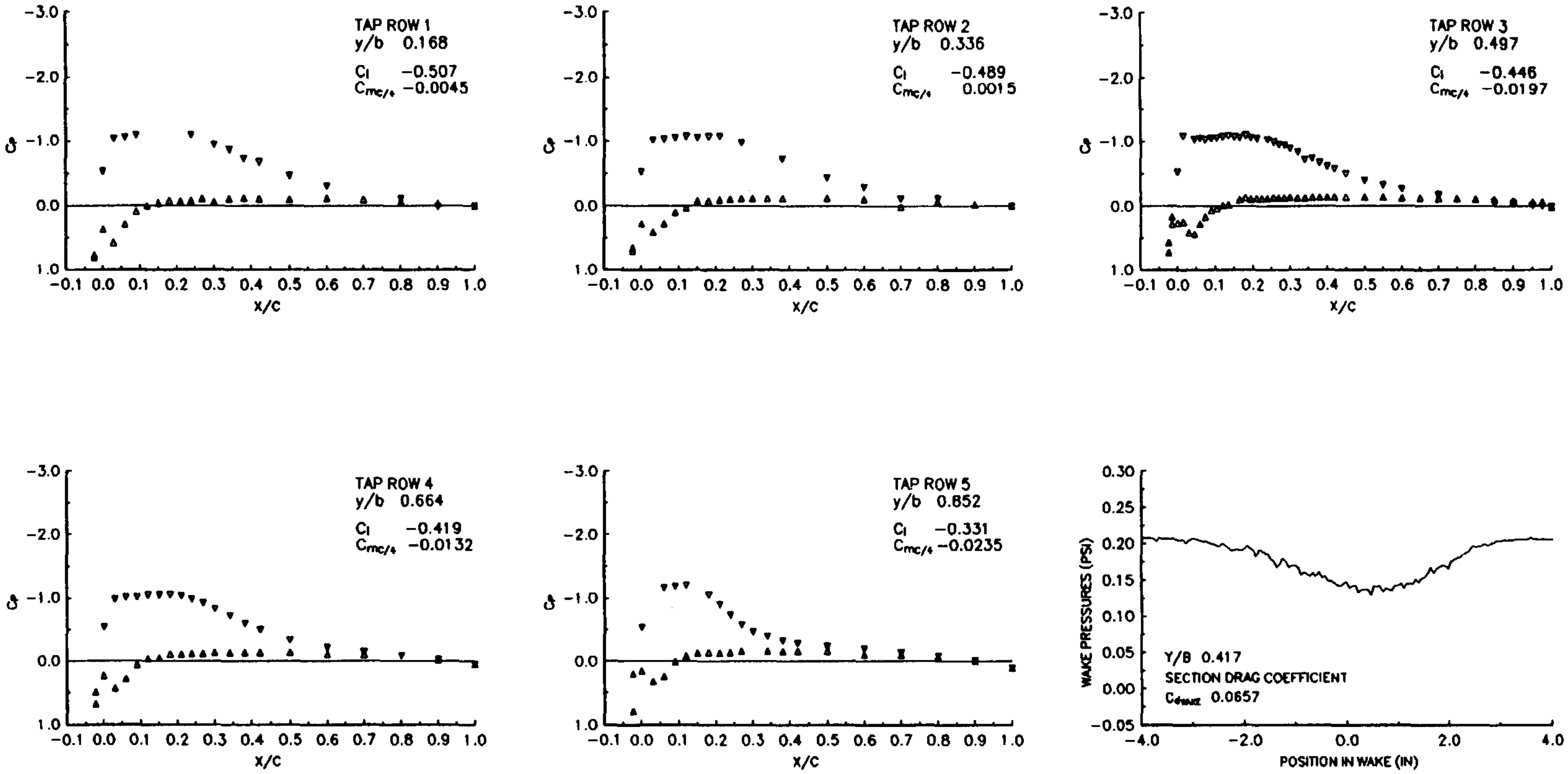
RUN NUMBER 2512

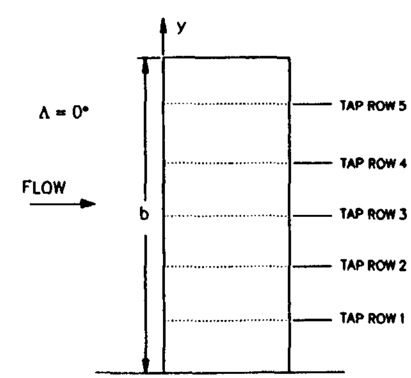
AOA$_{GEOMETRIC}$ -4^{o}

MACH 0.15

RE 1.22×10^{6}





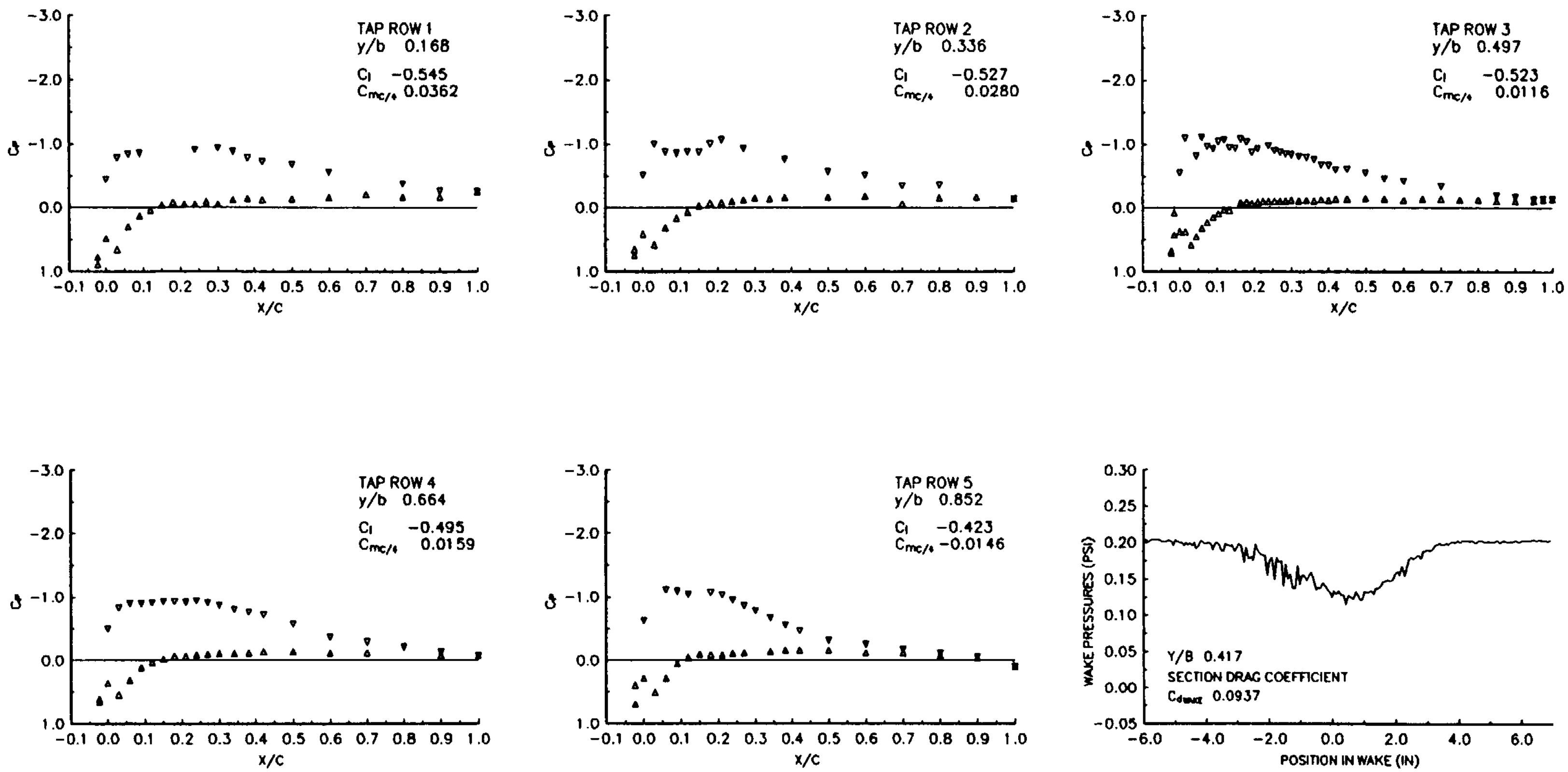


RUN NUMBER 2514

$AOA_{GEOMETRIC}$ $-6°$

MACH 0.14

RE 1.21×10^6

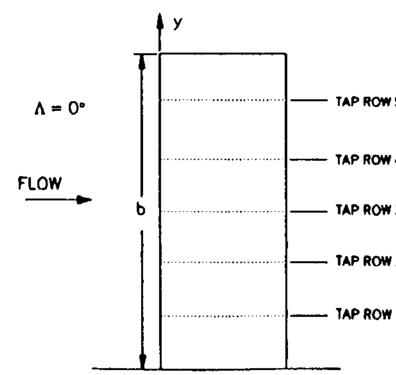


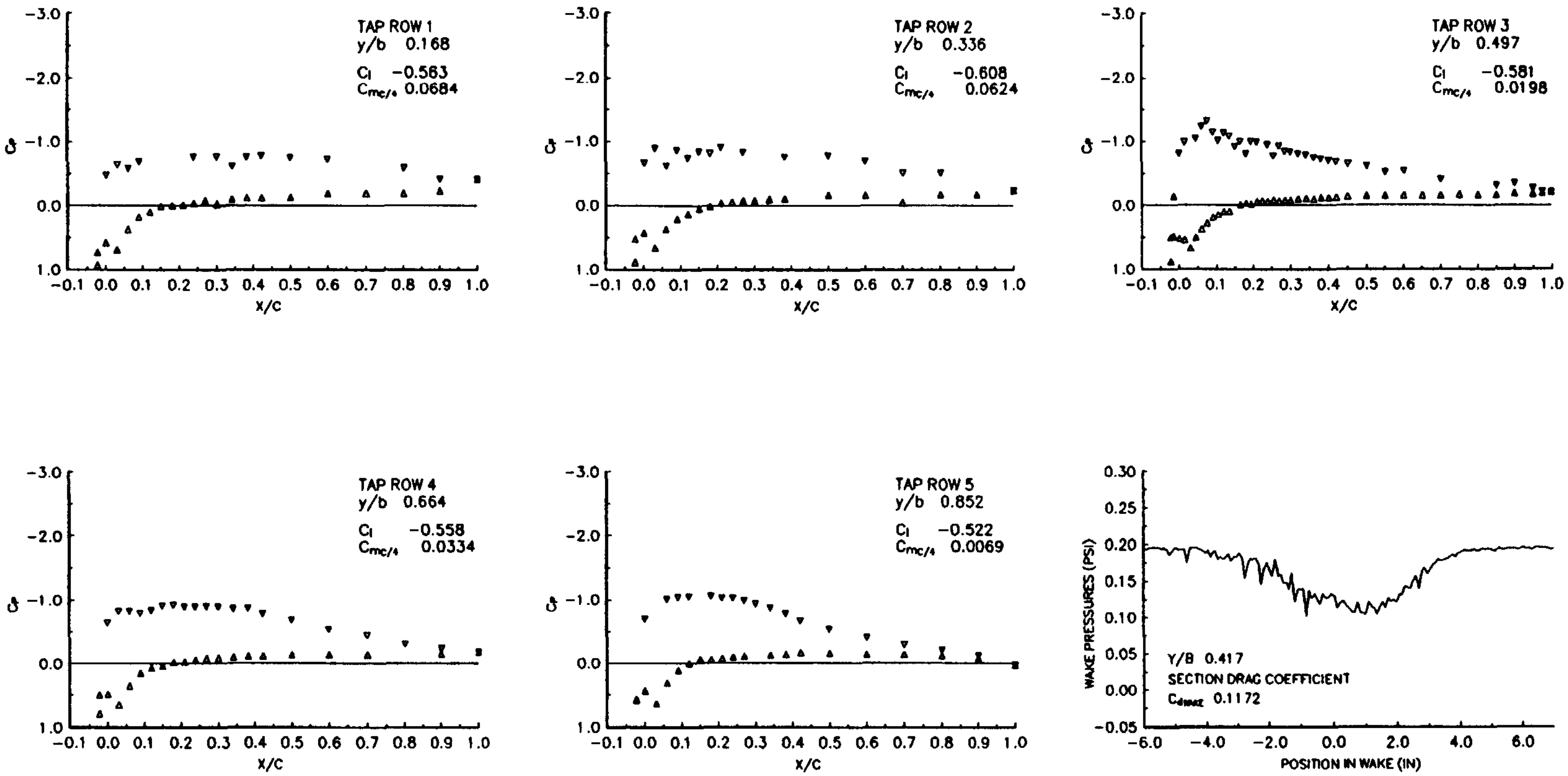
RUN NUMBER 2516

$AOA_{GEOMETRIC}$ -8°

MACH 0.14

RE 1.19×10^{6}



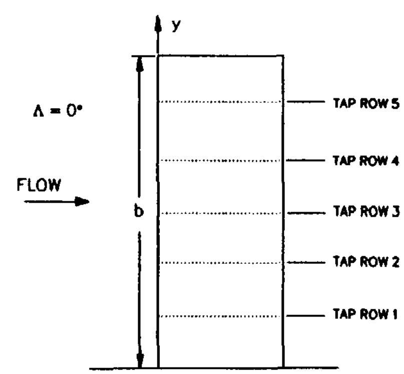


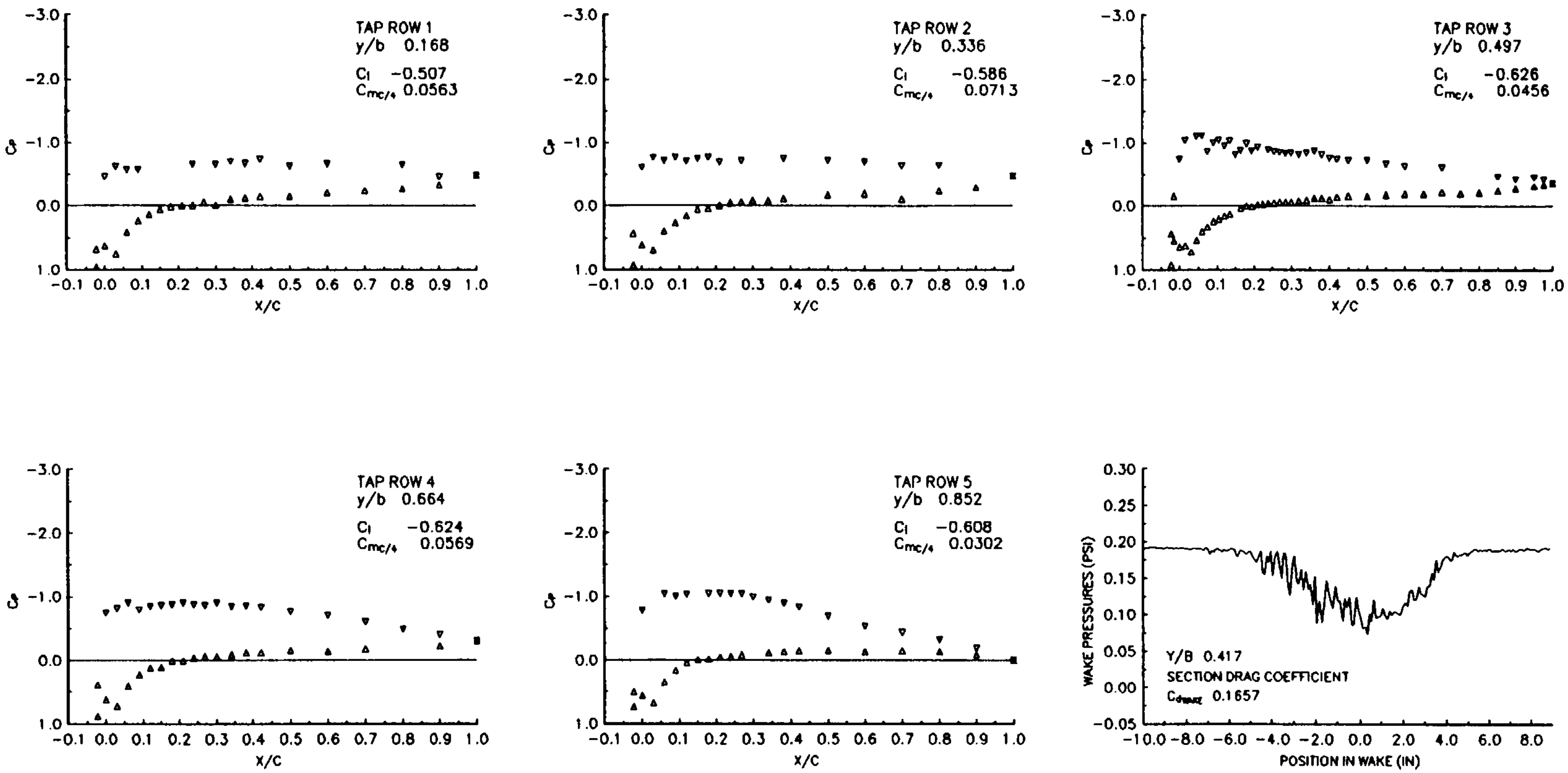
RUN NUMBER 2518

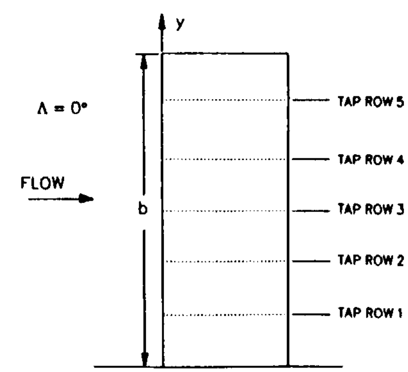
$AOA_{GEOMETRIC}$ $-10°$

MACH 0.14

RE 1.17×10^6





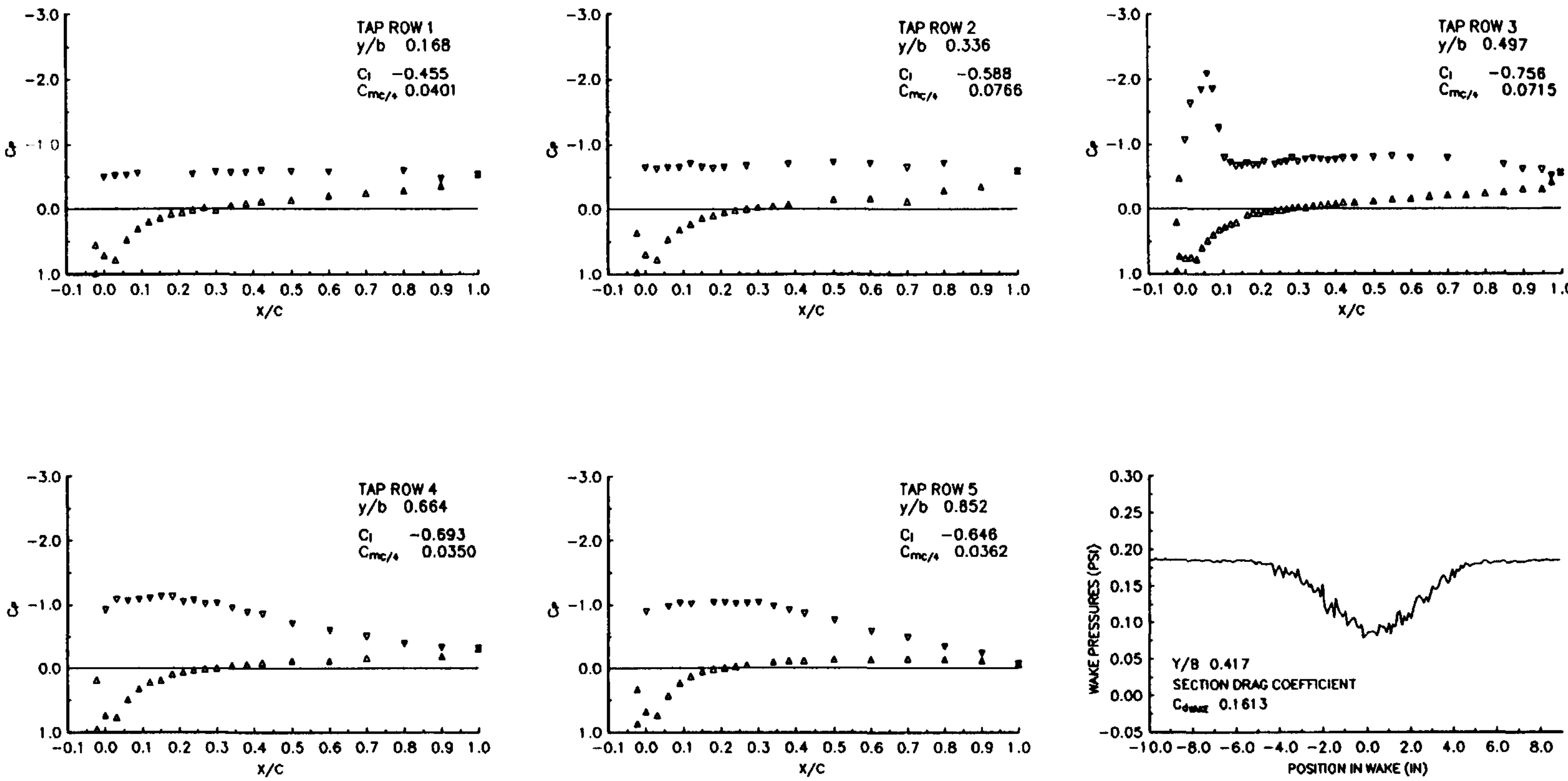


RUN NUMBER 2520

$AOA_{GEOMETRIC}$ −12°

MACH 0.14

RE 1.15×10^{6}

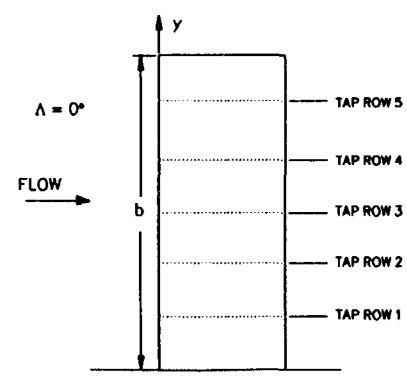


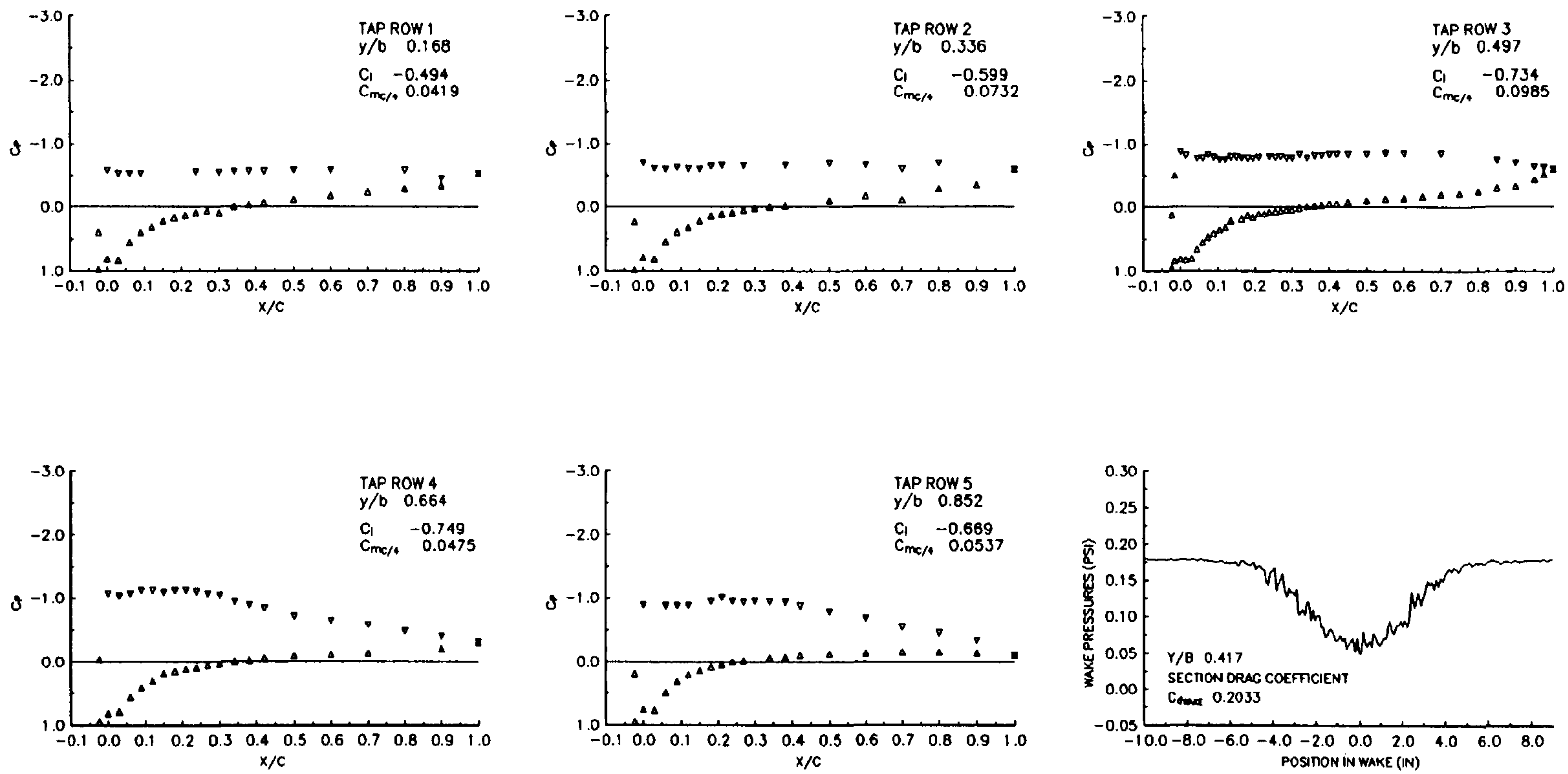
RUN NUMBER 2522

$AOA_{GEOMETRIC}$ $-14°$

MACH 0.14

RE 1.14×10^6



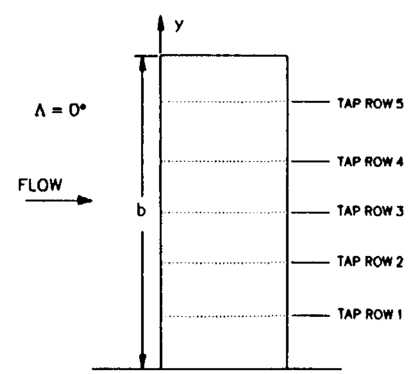


RUN NUMBER 2524

AOA$_{GEOMETRIC}$ −16°

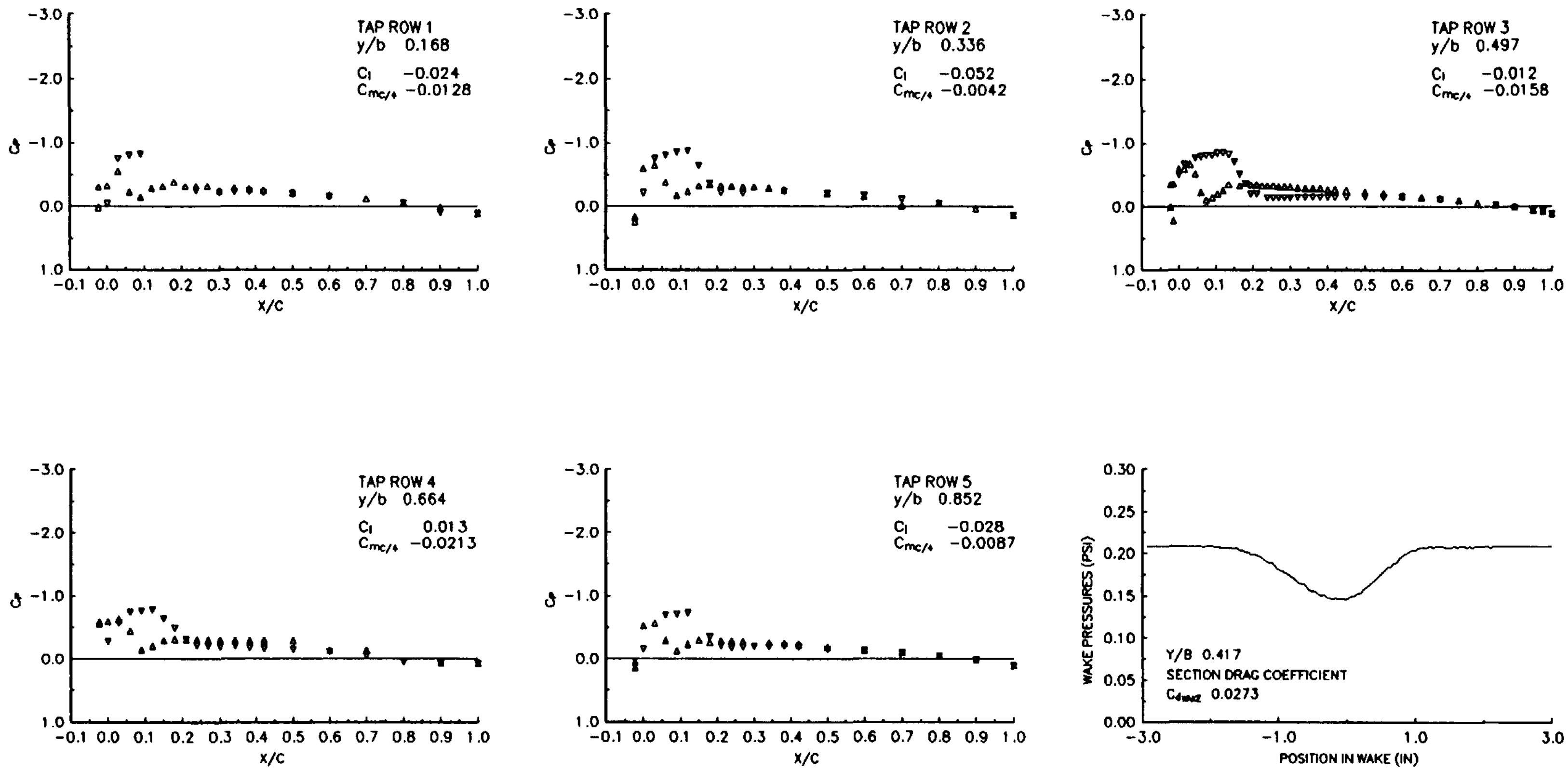
MACH 0.14

RE 1.10 X 10^6



RUNS 2540 - 2591

RECTANGULAR WING, 5 MINUTE GLAZE ICE, 50 GRIT ROUGHNESS (K/C - 0.001), WAKE PROBE BETWEEN TAP ROWS 2 AND 3

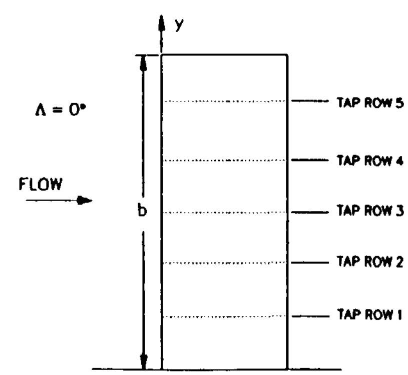


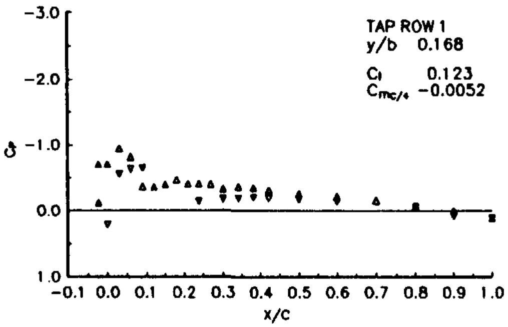
RUN NUMBER 2540

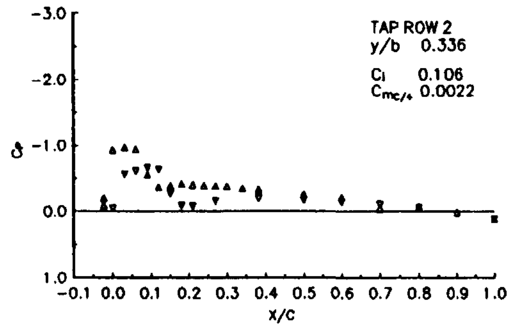
AOAGEOMETRIC 0°

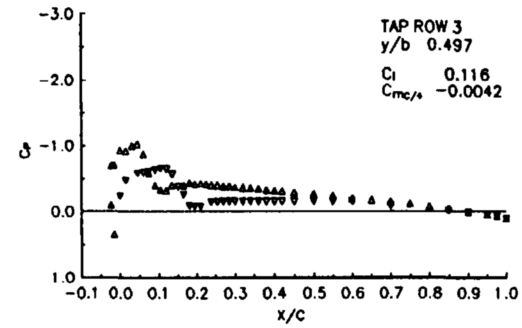
MACH 0.15

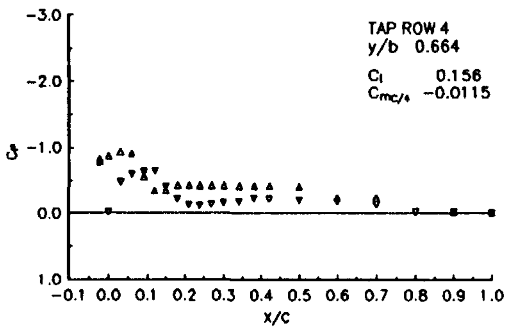
RE 1.24×10^6

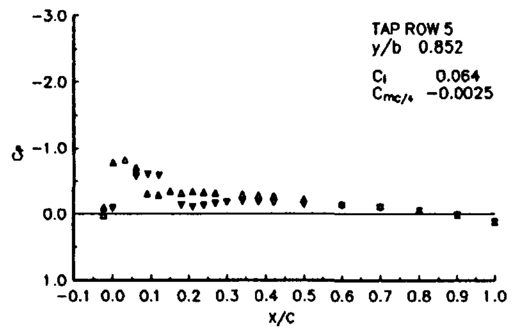


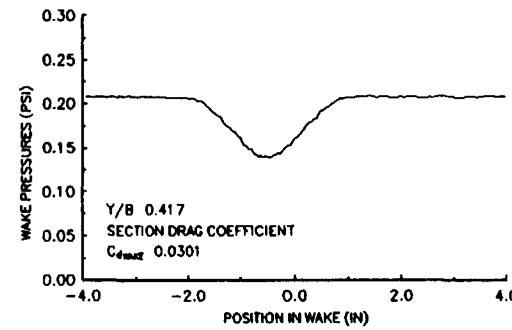












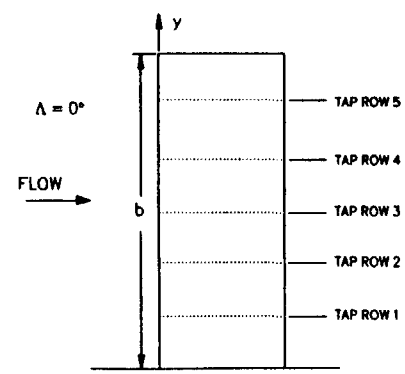
RUN NUMBER 2542

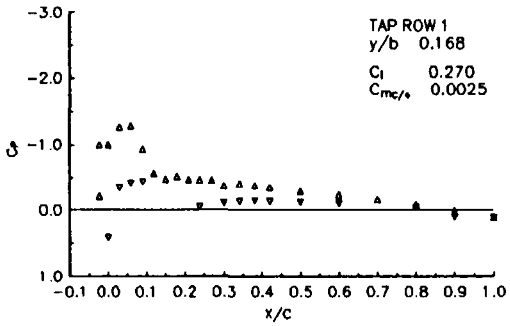
AOA

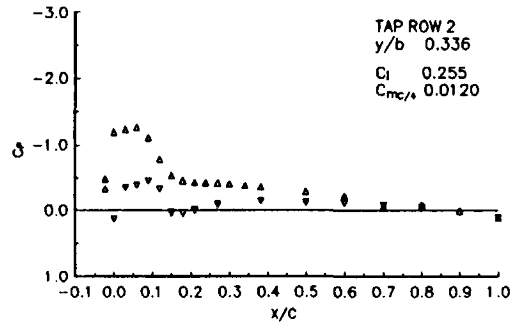
$AOA_{GEOMETRIC}$ 2°

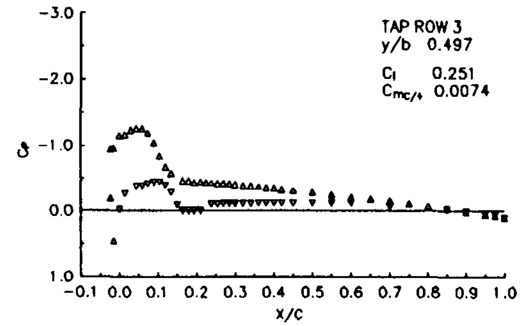
MACH 0.15

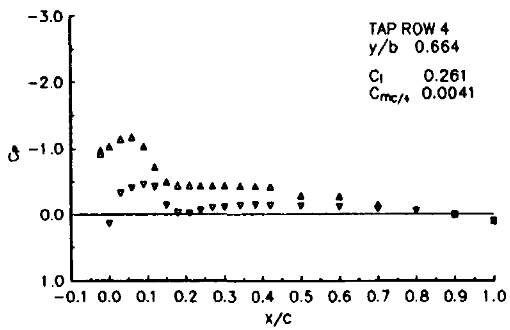
RE 1.23×10^6

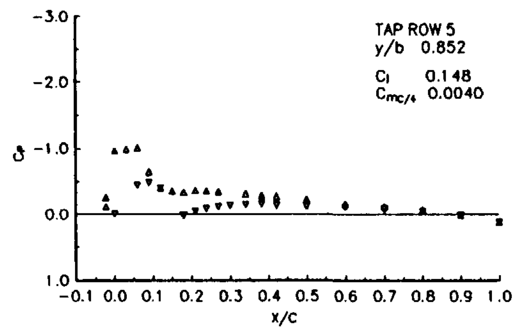


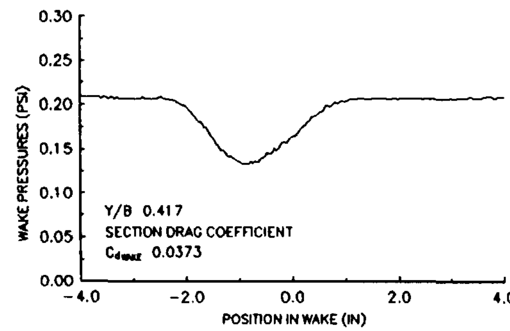










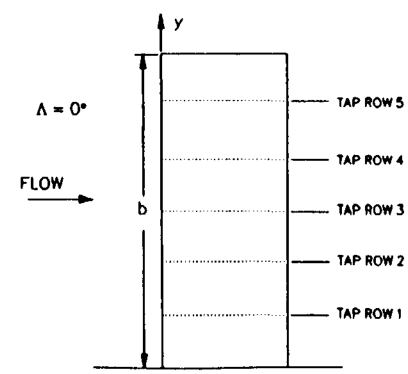


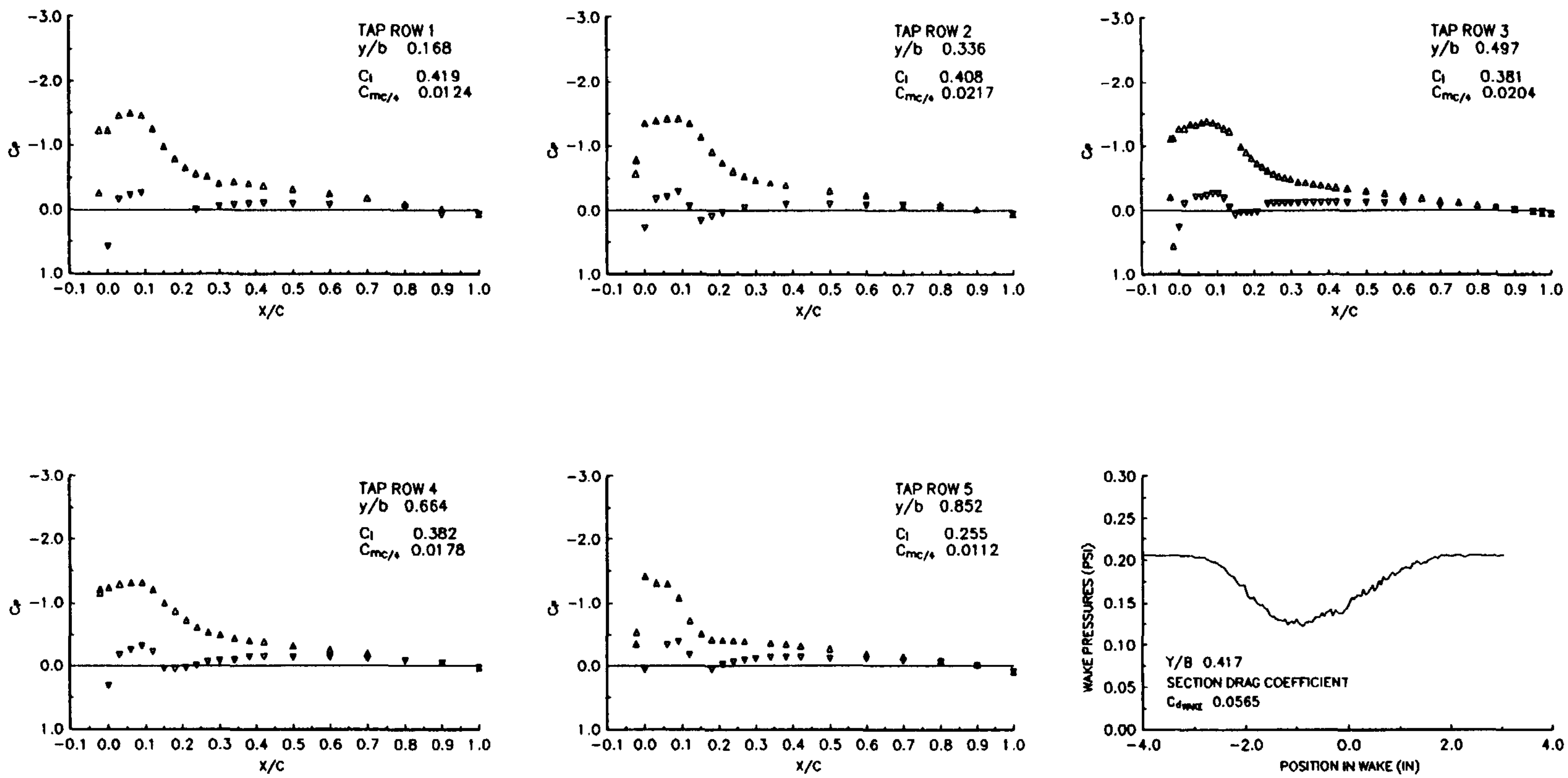
RUN NUMBER 2544

$AOA_{GEOMETRIC}$ 4°

MACH 0.15

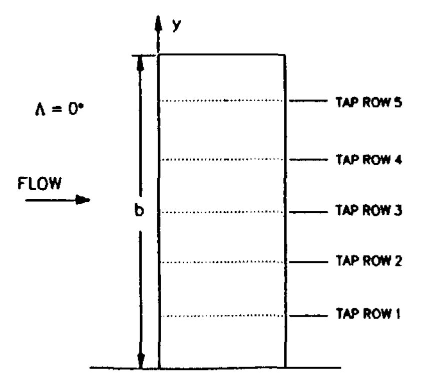
RE 1.23×10^6

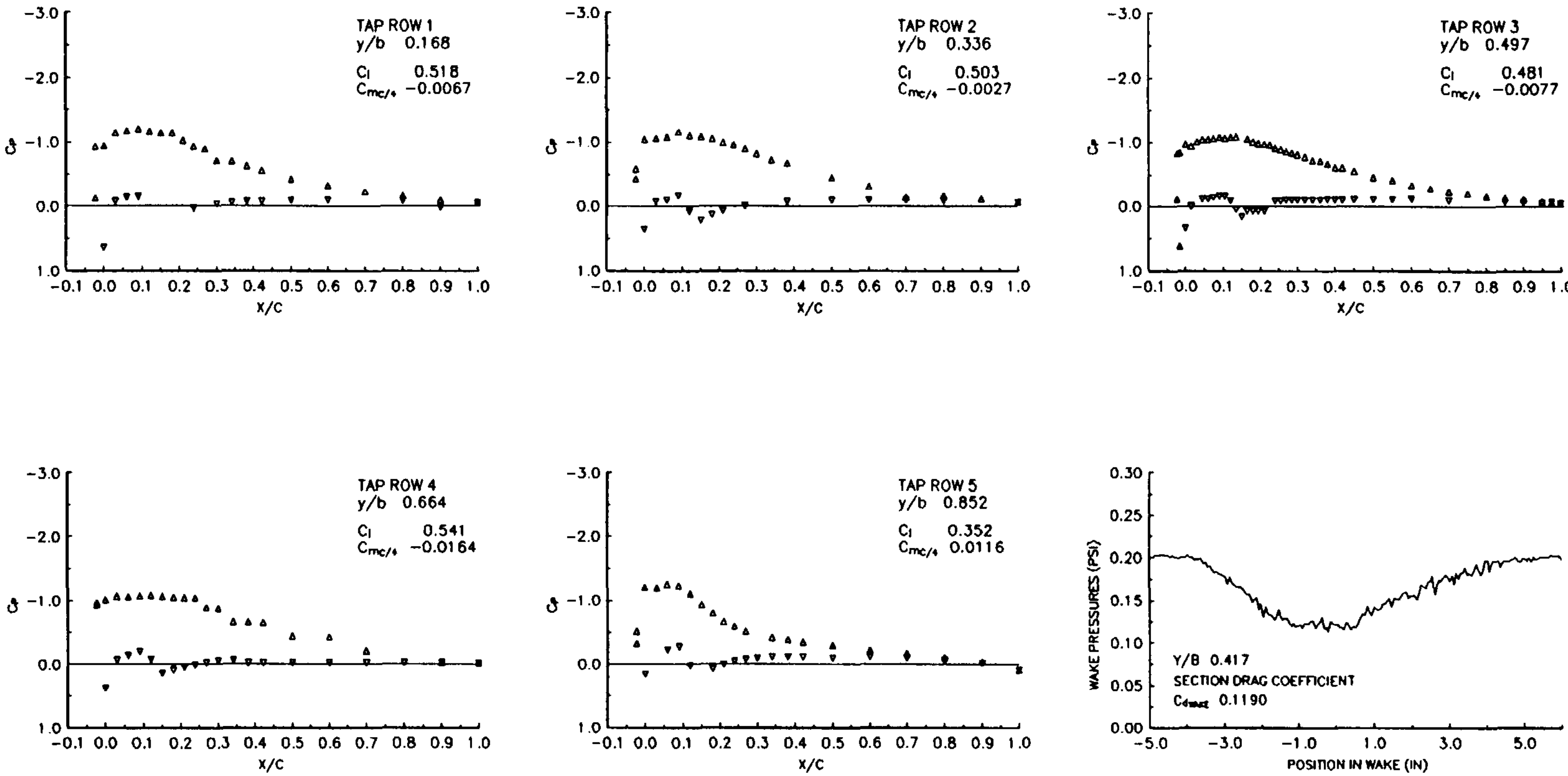




RUN NUMBER 2548

AOA



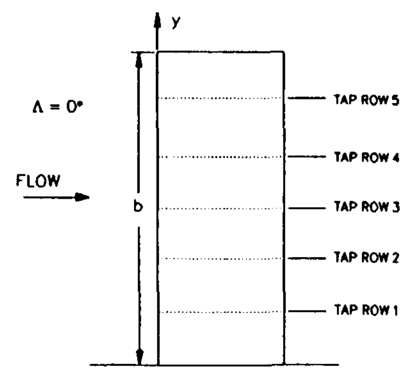


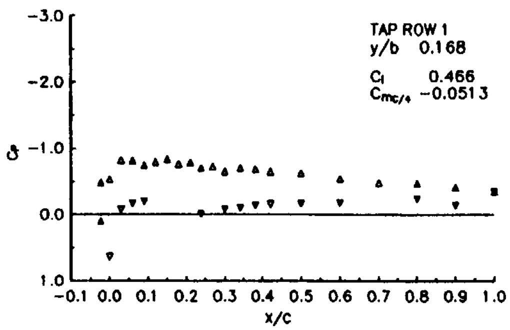
RUN NUMBER 2550

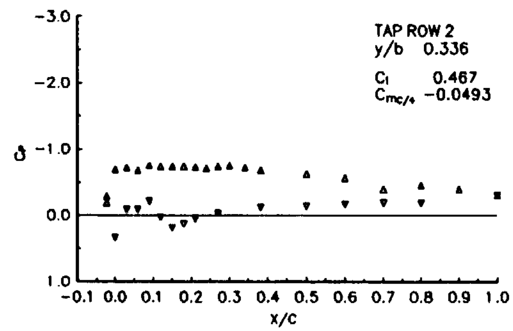
AOA$_{GEOMETRIC}$ 8°

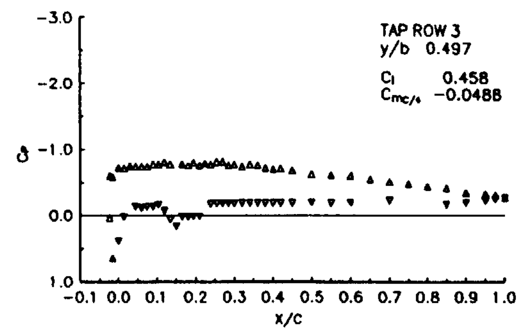
MACH 0.14

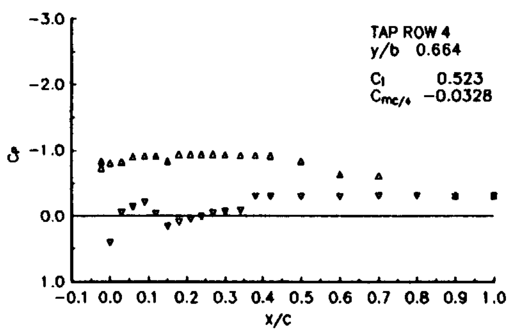
RE 1.21 X 10^6

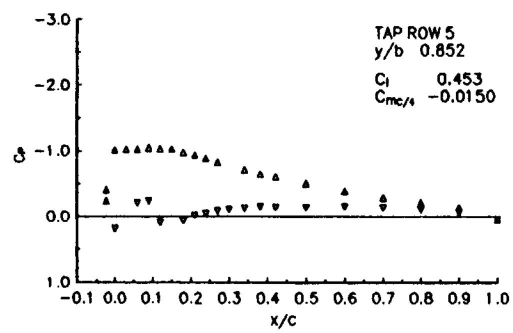


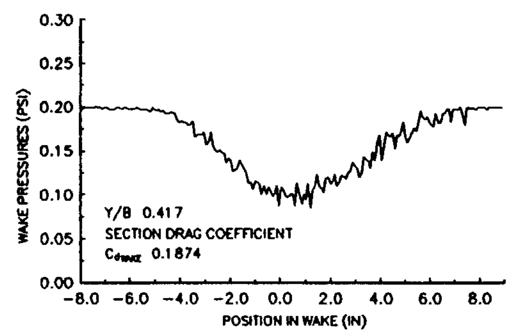










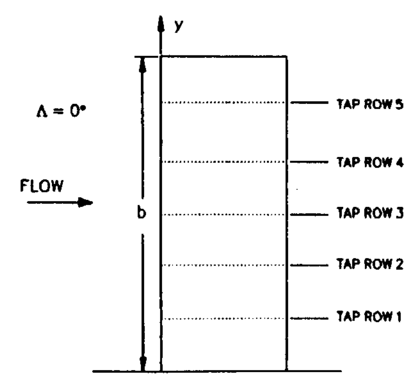


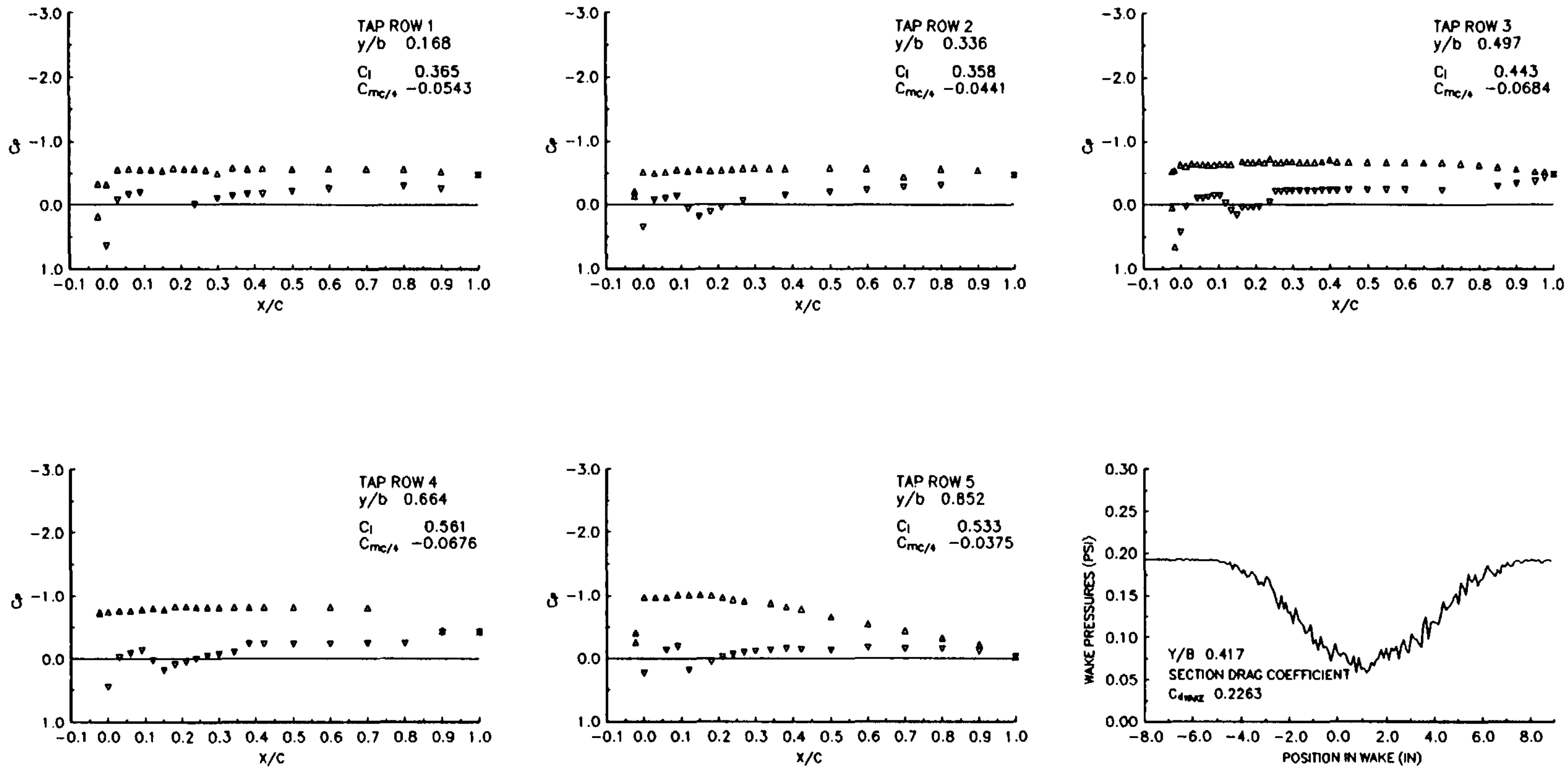
RUN NUMBER 2553

$AOA_{GEOMETRIC}$ 10°

MACH 0.14

RE 1.19×10^6



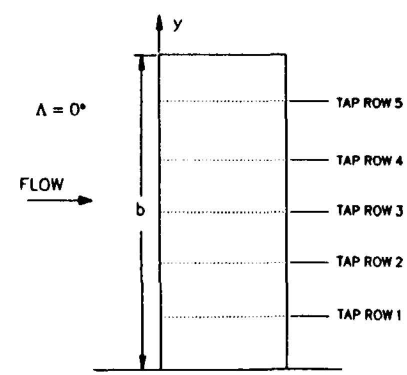


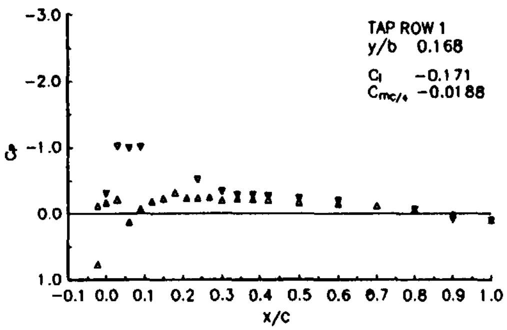
RUN NUMBER 2555

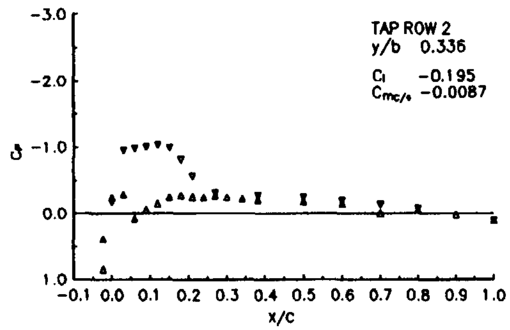
$AOA_{GEOMETRIC}$ 12°

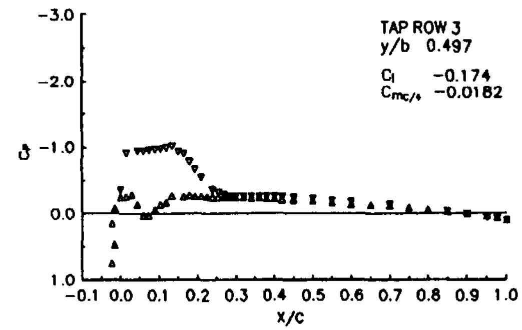
MACH 0.14

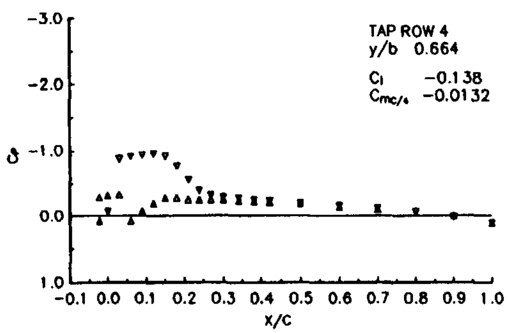
RE 1.17×10^6

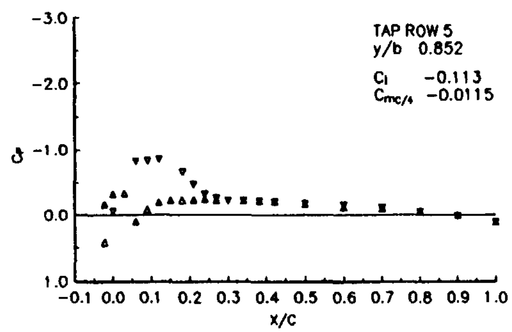


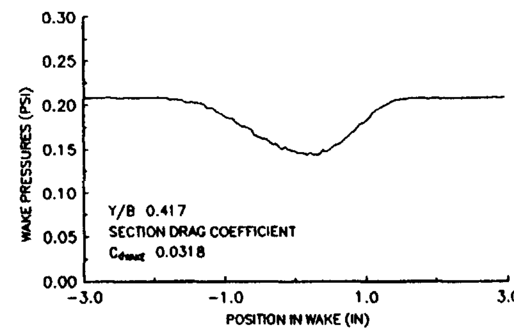


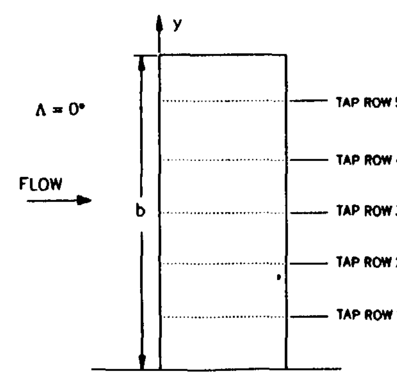










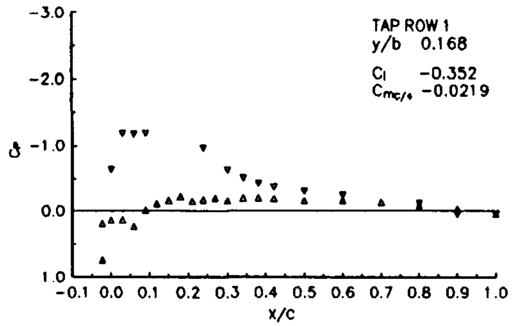


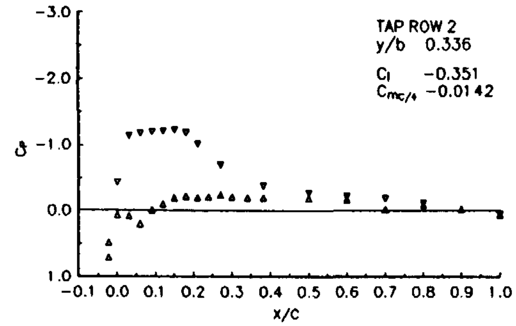
RUN NUMBER 2576

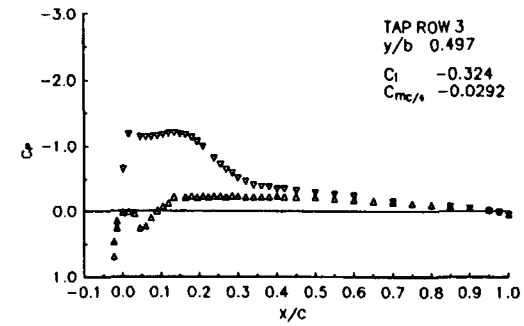
$AOA_{GEOMETRIC}$ $-2°$

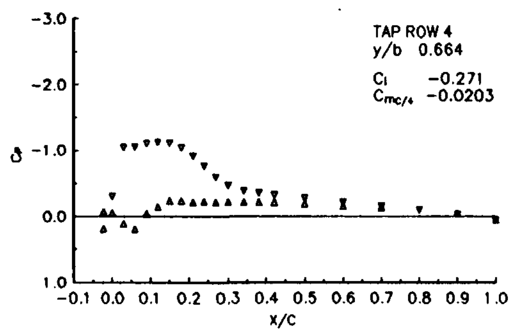
MACH 0.15

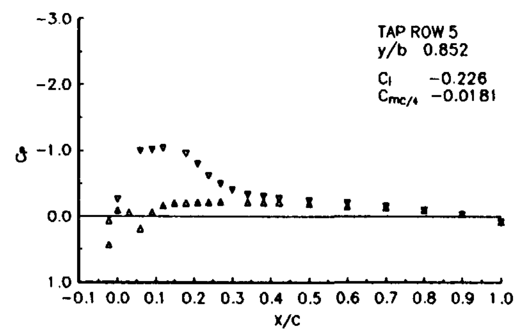
RE 1.19×10^6

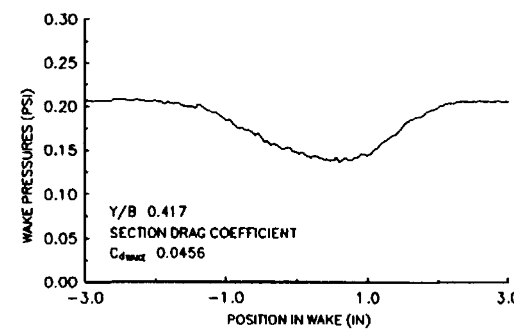










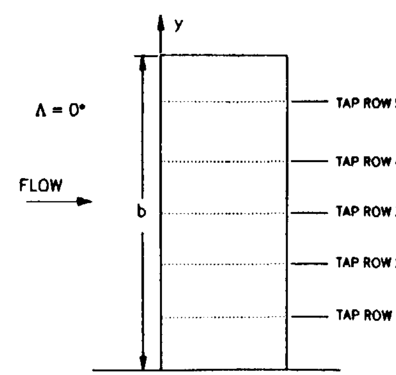


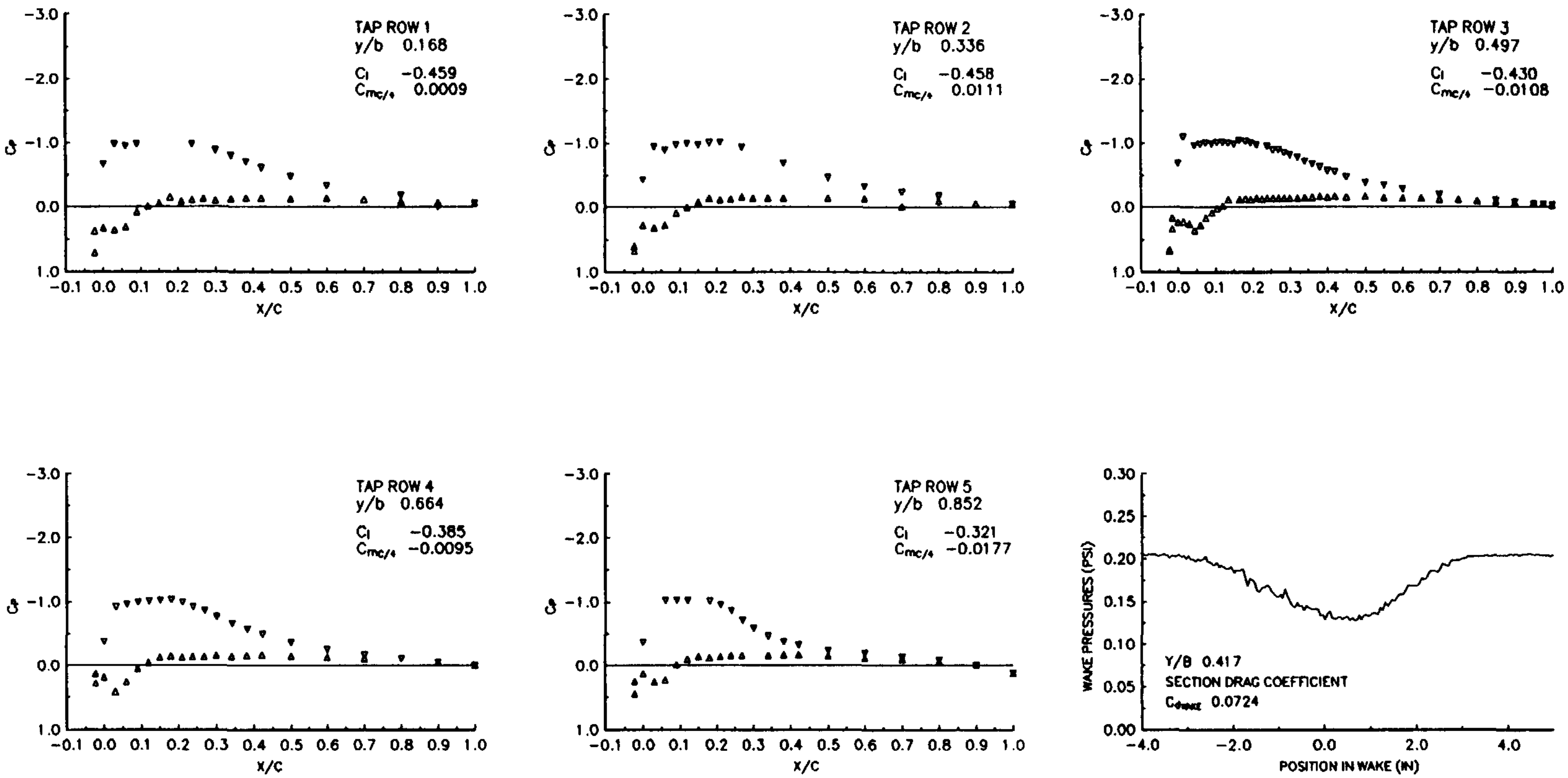
RUN NUMBER 2579

$AOA_{GEOMETRIC}$ −4°

MACH 0.14

RE 1.17×10^6



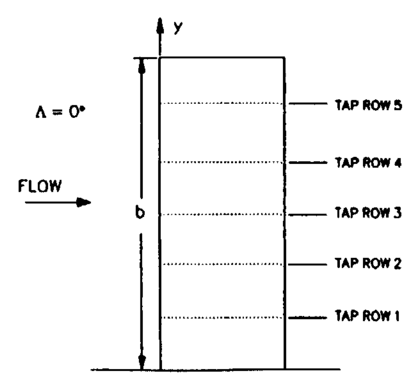


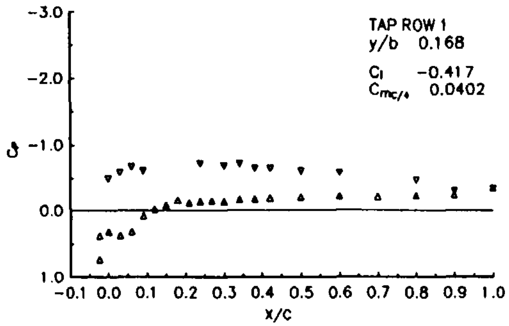
RUN NUMBER 2581

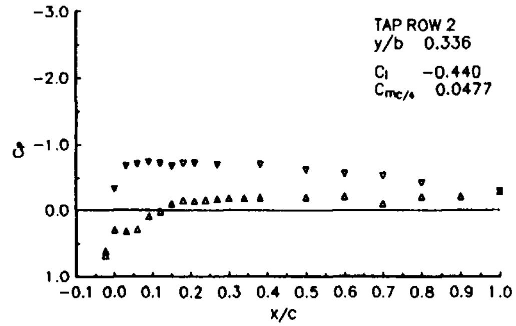
$AOA_{GEOMETRIC}$ −6°

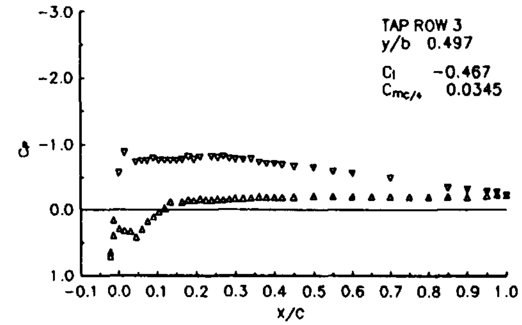
MACH 0.14

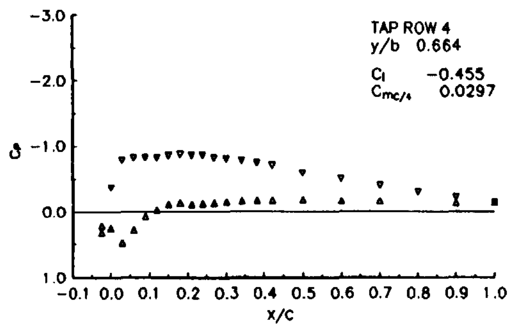
RE 1.19×10^6

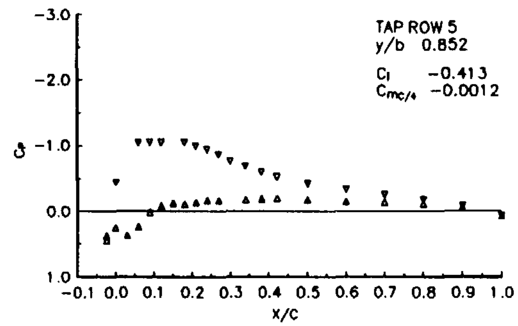


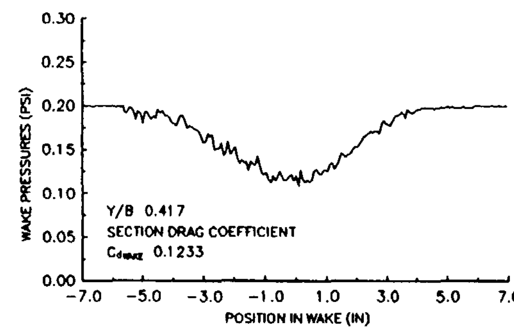










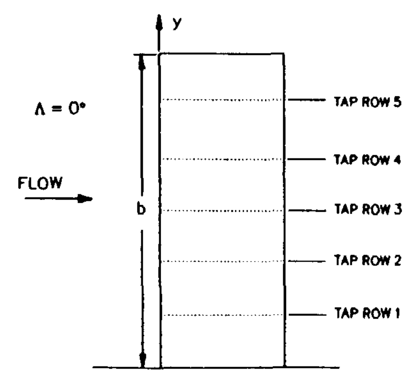


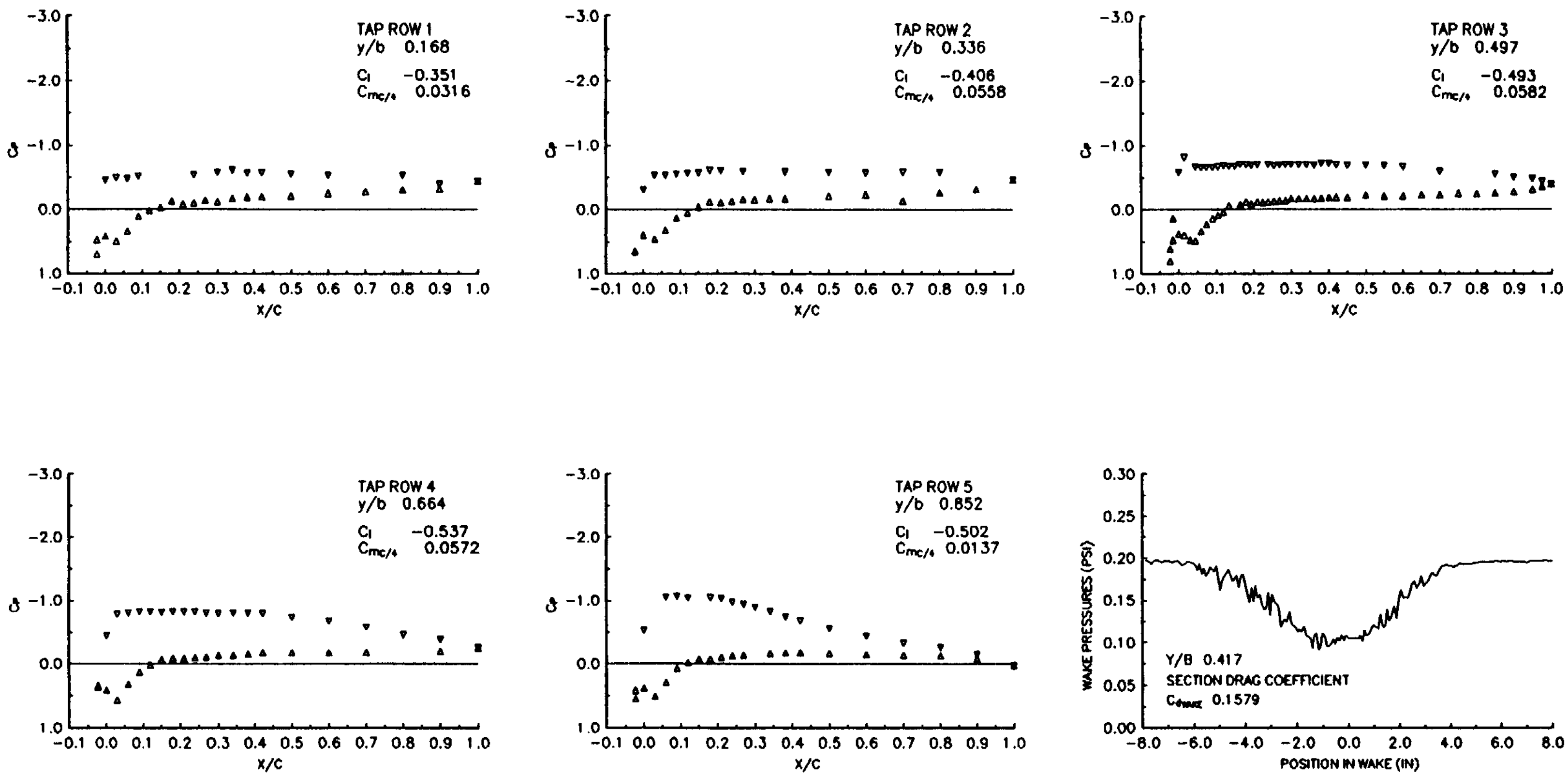
RUN NUMBER 2583

AOA GEOMETRIC −8°

MACH 0.14

RE 1.17×10^6



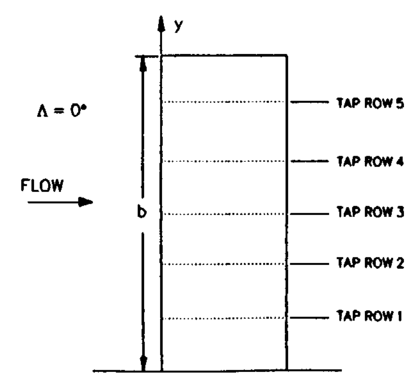


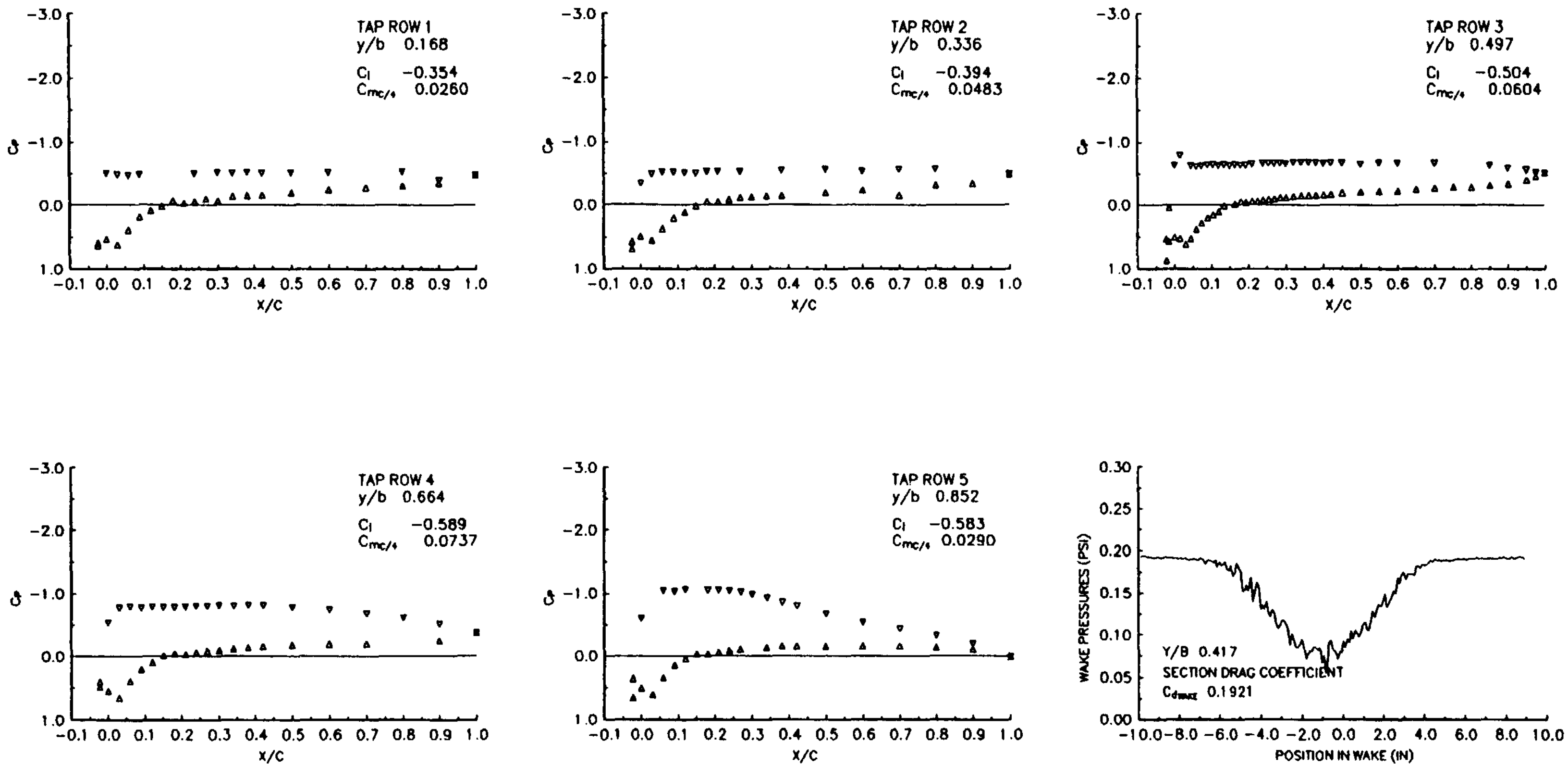
RUN NUMBER 2585

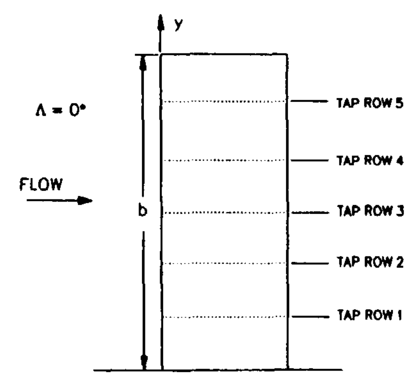
$AOA_{GEOMETRIC}$ $-10°$

MACH 0.14

RE 1.15×10^6





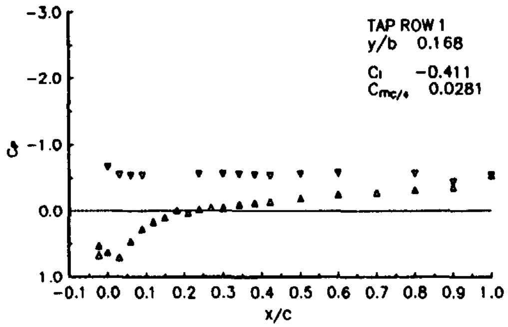


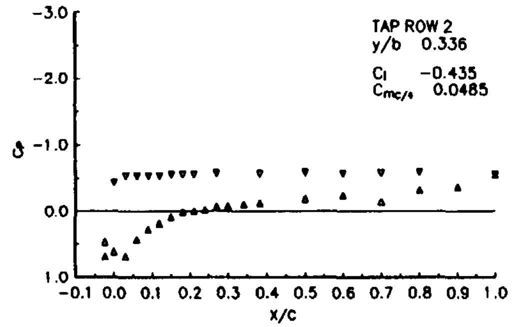
RUN NUMBER 2587

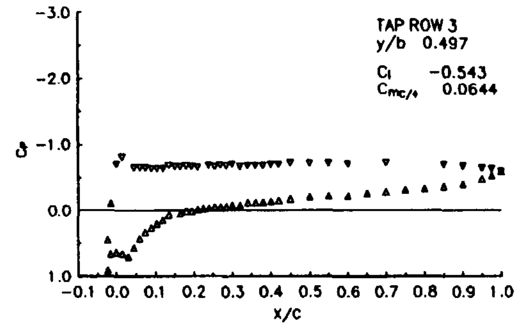
$AOA_{GEOMETRIC}$ −12°

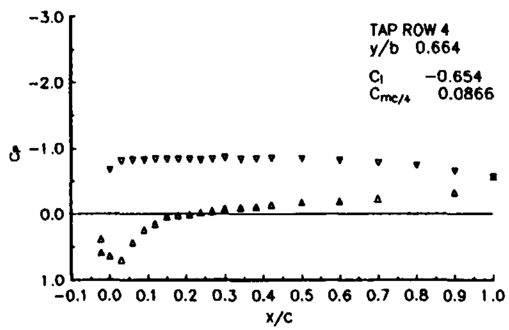
MACH 0.14

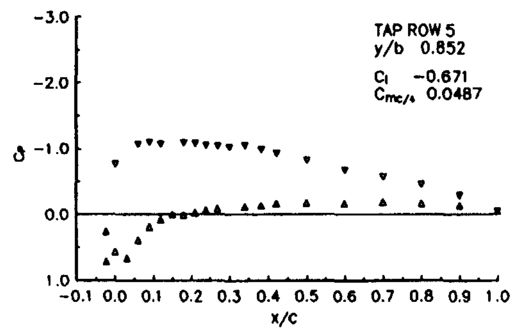
RE 1.14×10^6

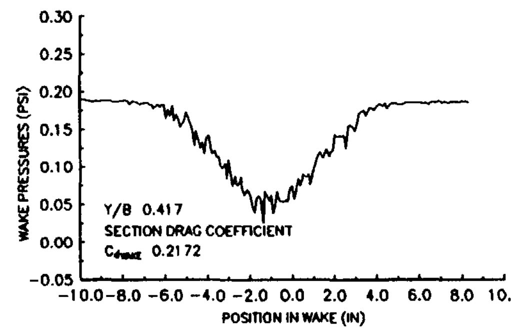










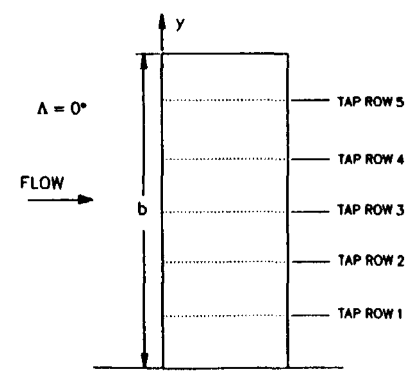


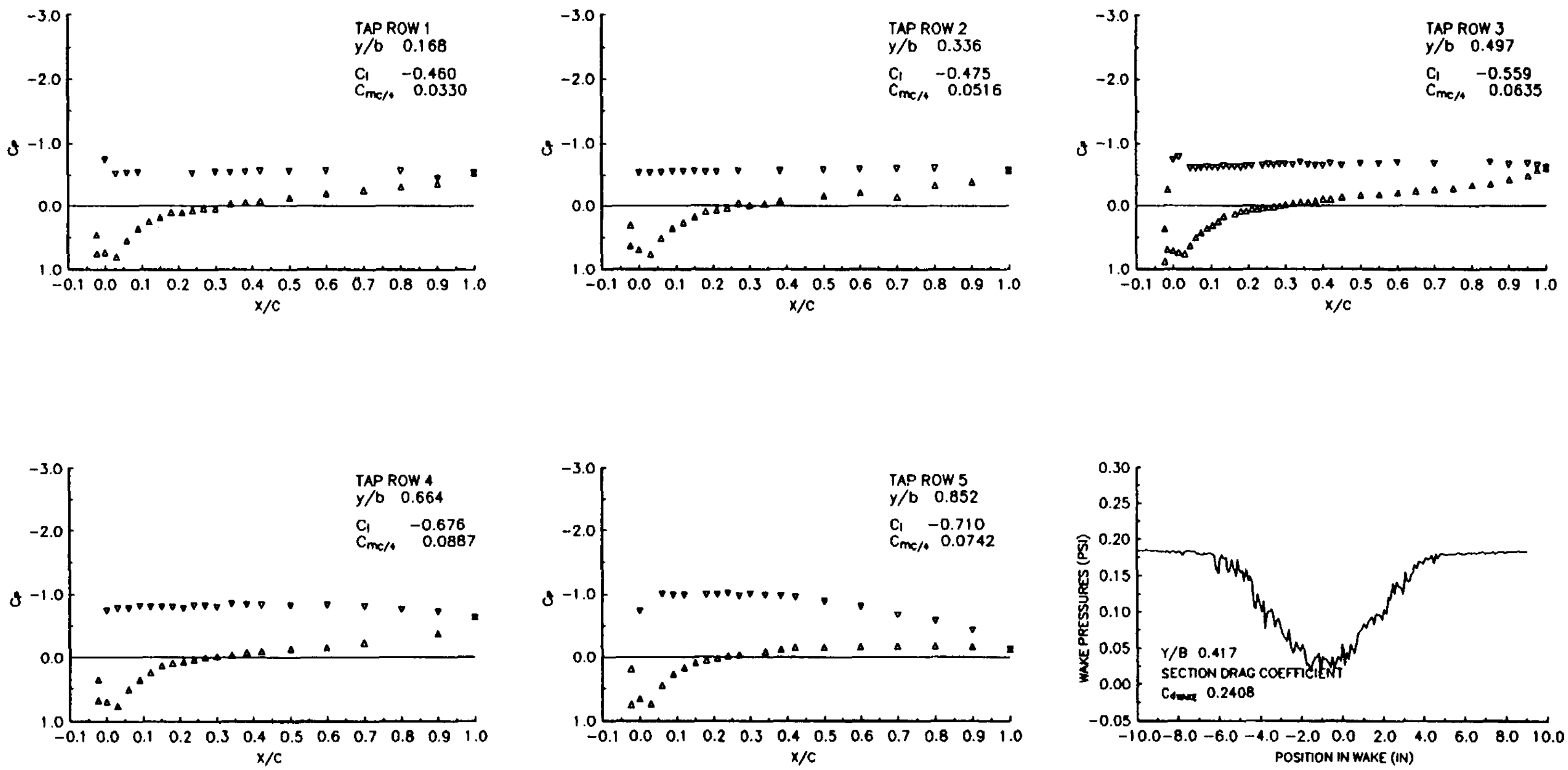
RUN NUMBER 2589

$AOA_{GEOMETRIC}$ −14°

MACH 0.14

RE 1.12×10^6



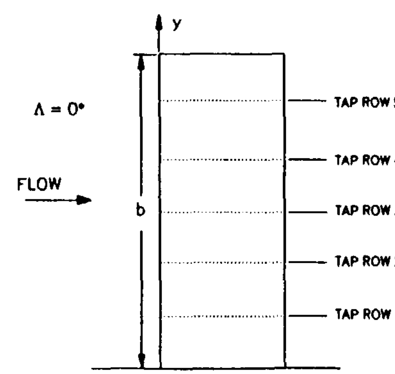


RUN NUMBER 2591

AOA$_{GEOMETRIC}$ $-16°$

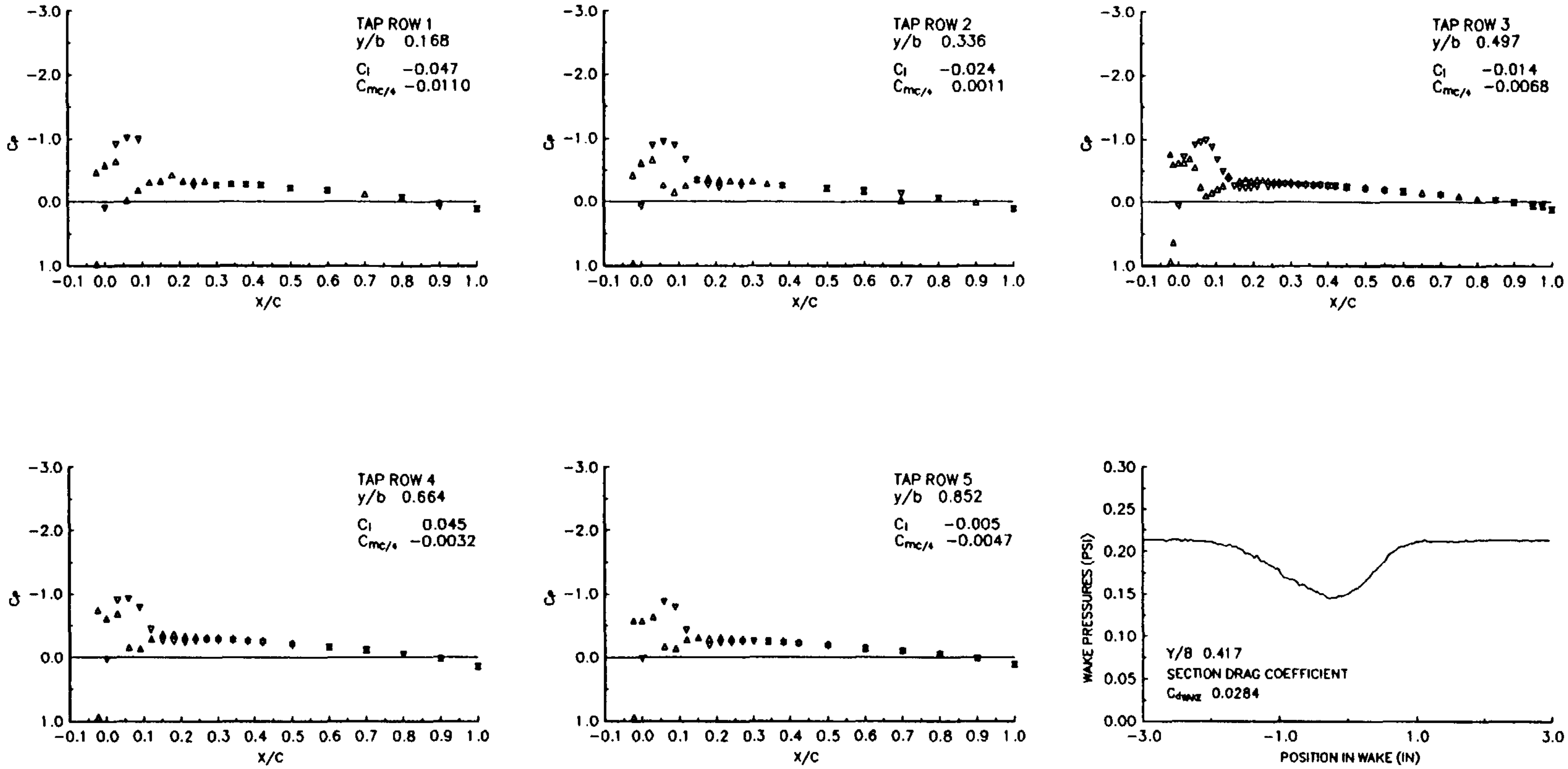
MACH 0.14

RE 1.12×10^6



RUNS 2598 - 2623

RECTANGULAR WING, 5 MINUTE GLAZE ICE, 3-D ROUGHNESS, WAKE PROBE BETWEEN TAP ROWS 2 AND 3

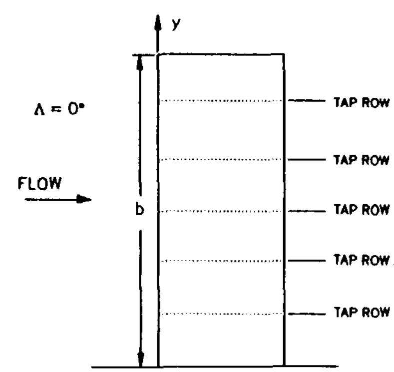


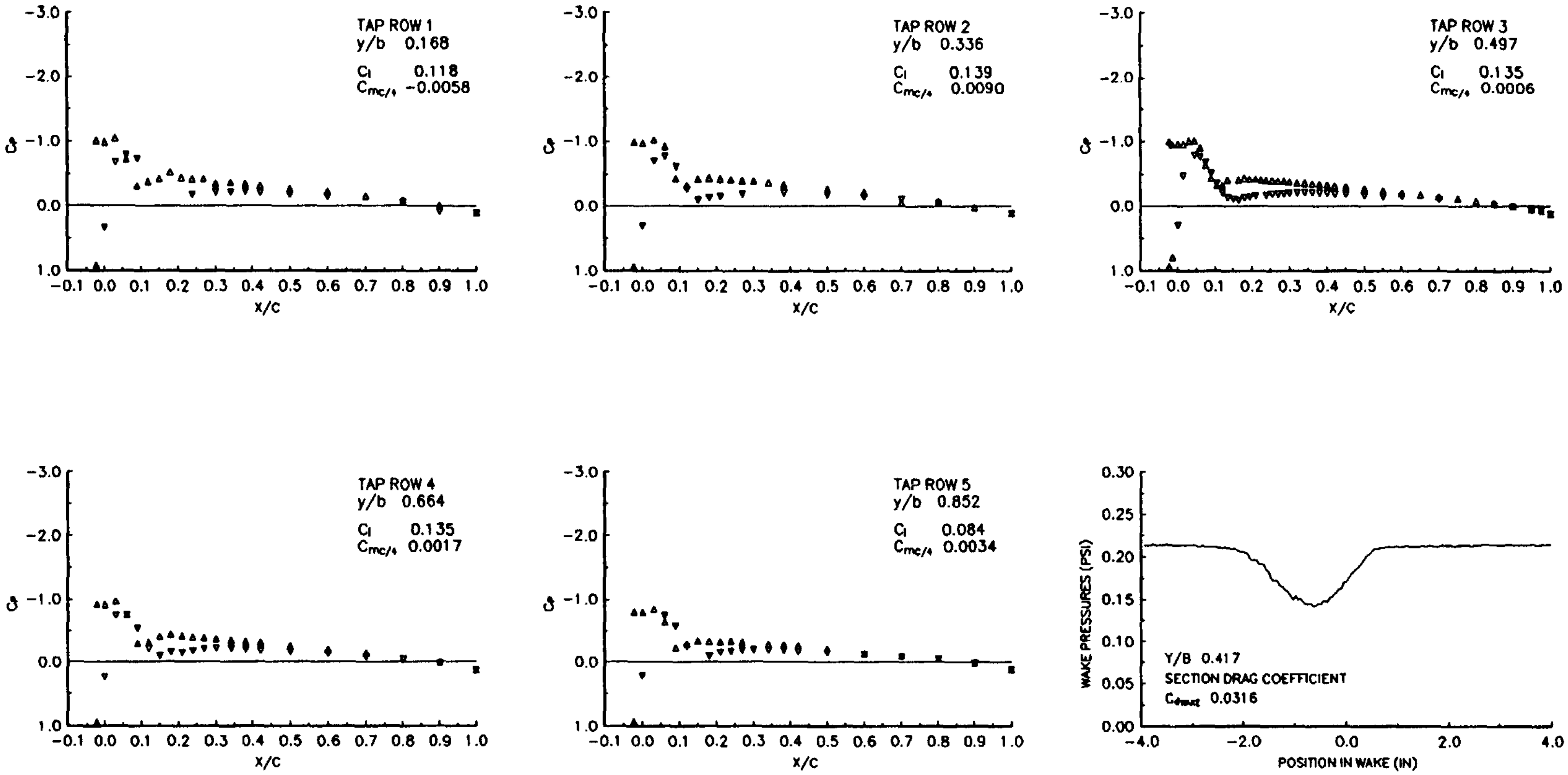
RUN NUMBER 2598

AOA$_{GEOMETRIC}$ 0°

MACH 0.15

RE 1.22×10^6



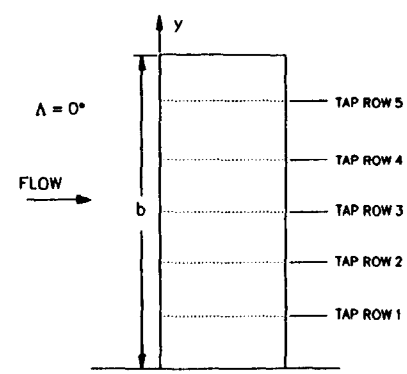


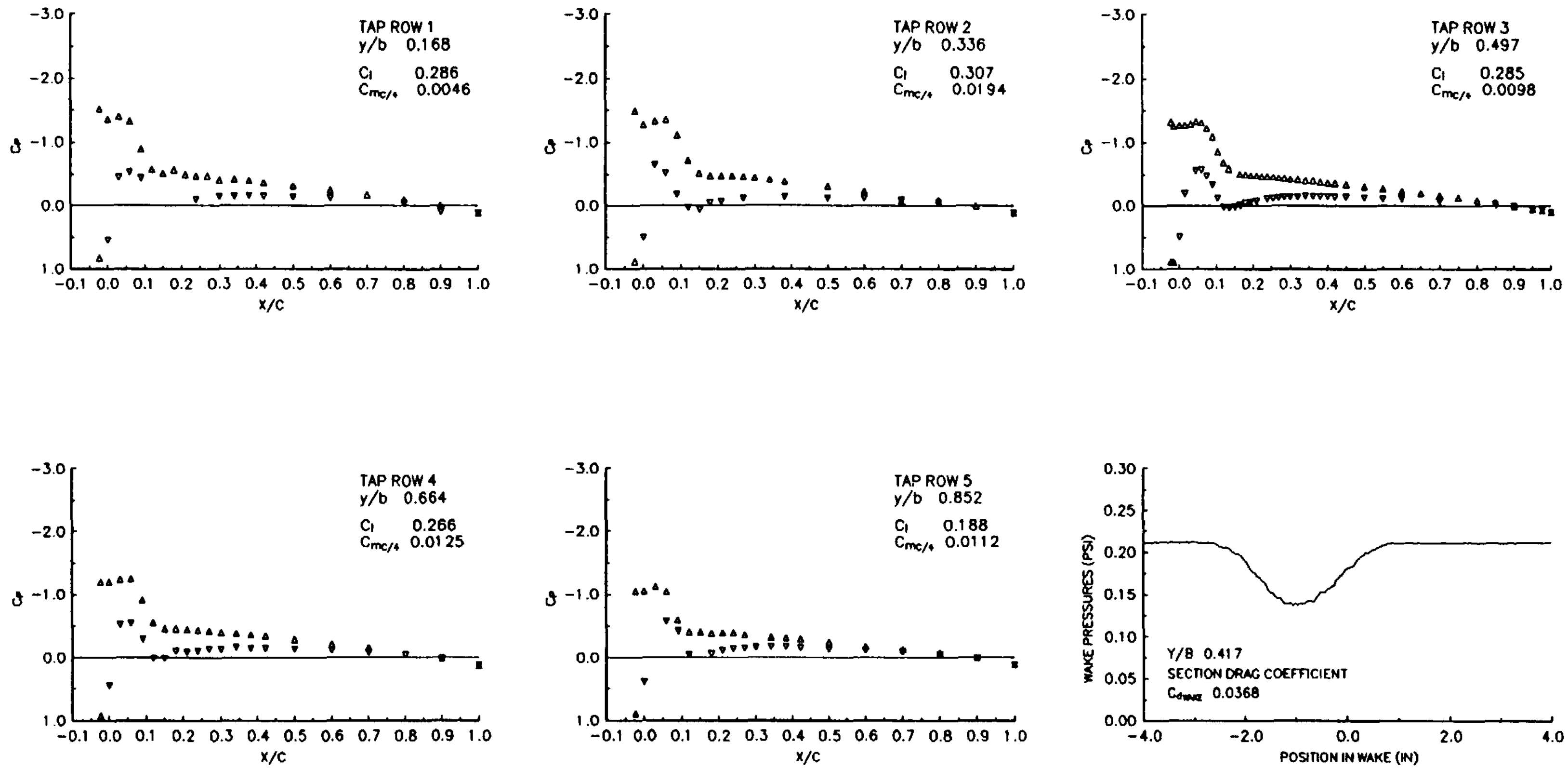
RUN NUMBER 2599

AOA$_{GEOMETRIC}$ 2°

MACH 0.15

RE 1.23×10^6



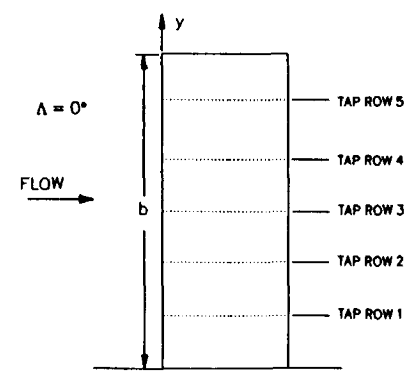


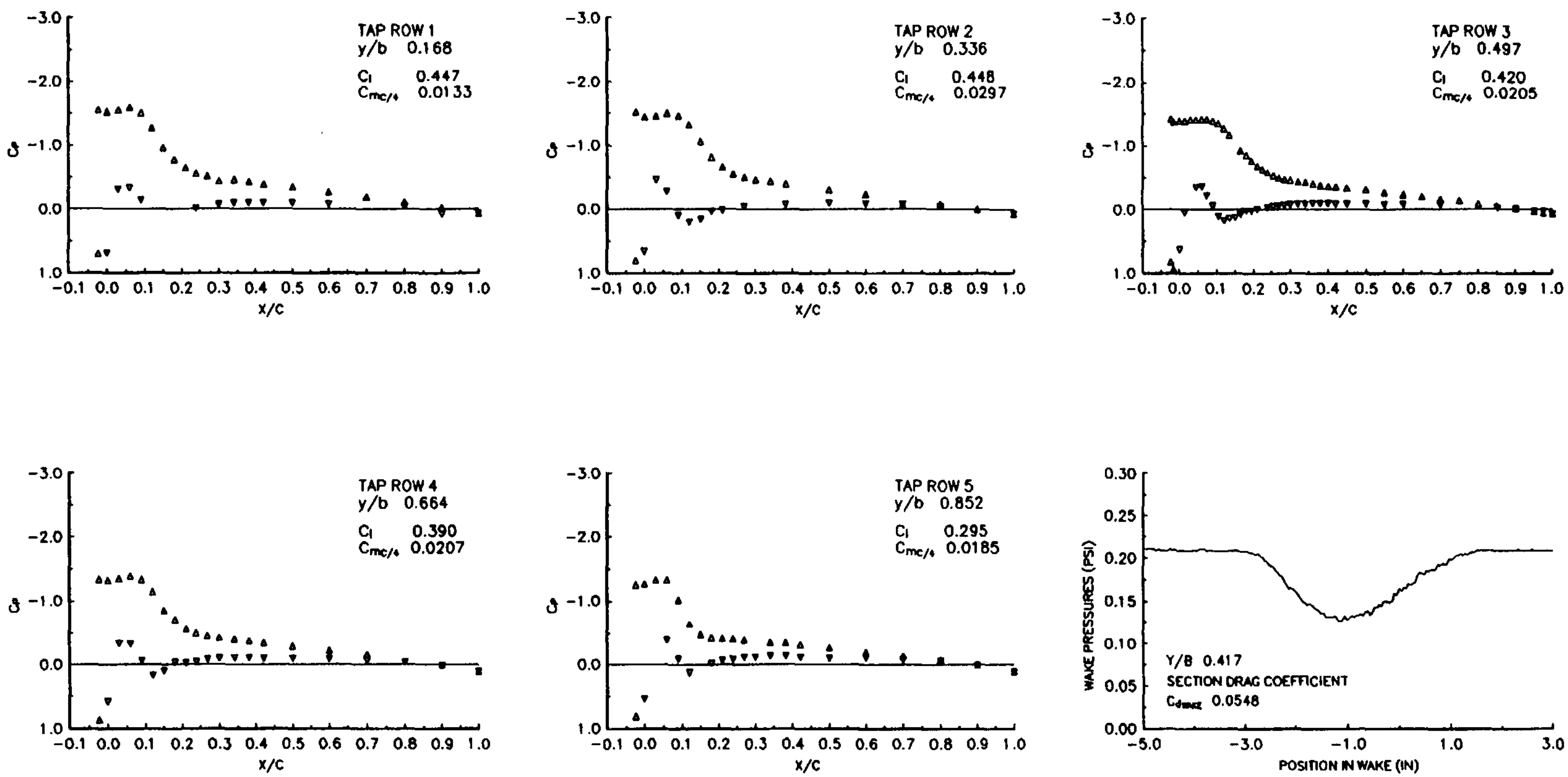
RUN NUMBER 2600

$AOA_{GEOMETRIC}$ 4°

MACH 0.15

RE 1.22×10^6



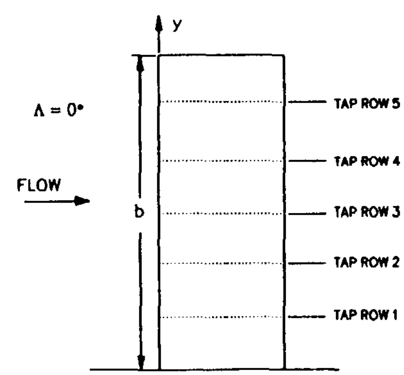


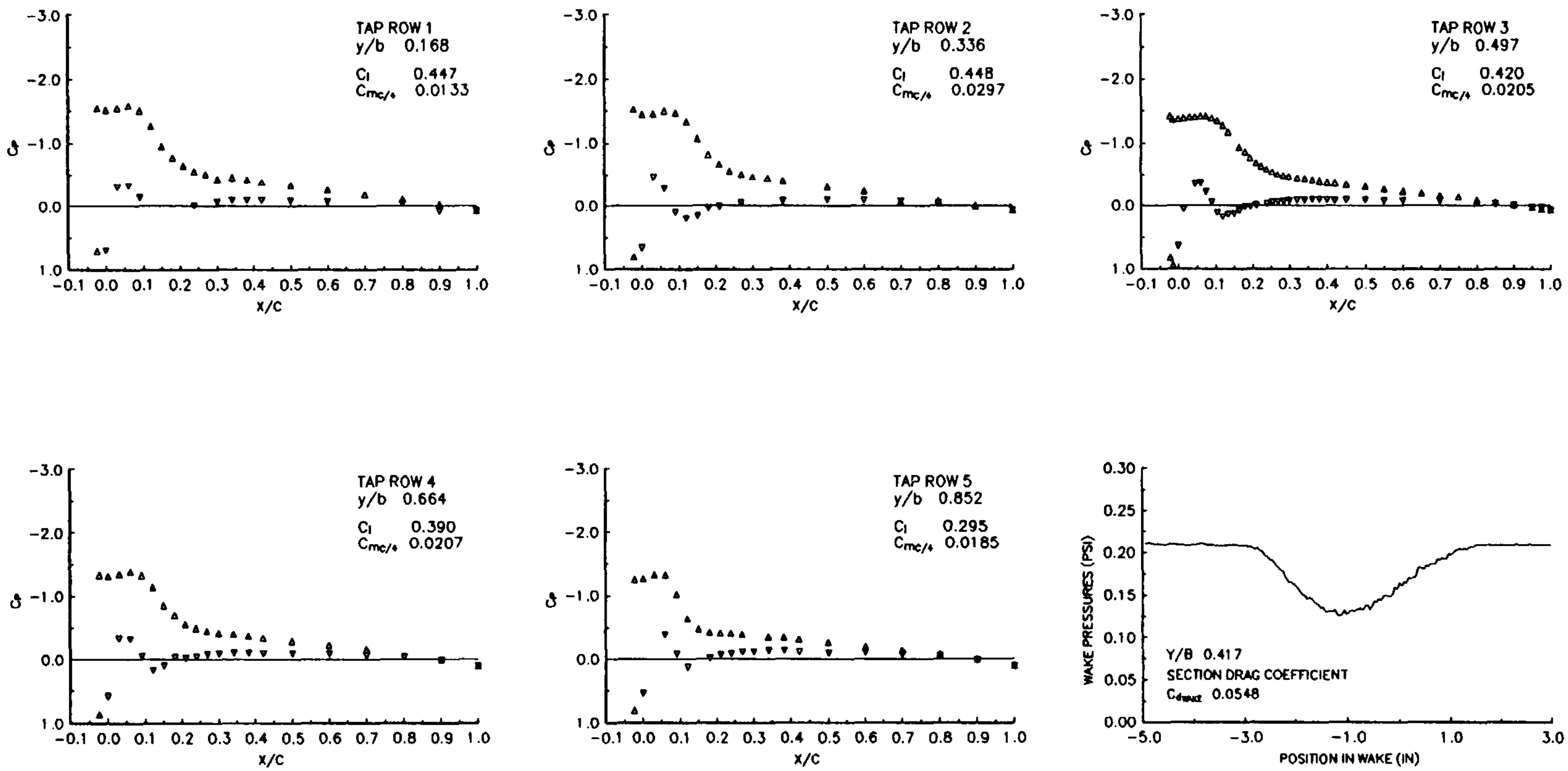
RUN NUMBER 2601

AOA$_{\text{GEOMETRIC}}$ 6°

MACH 0.15

RE 1.22×10^6



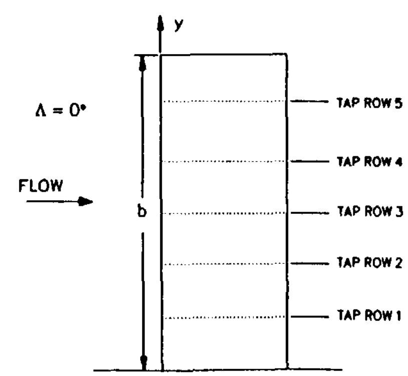


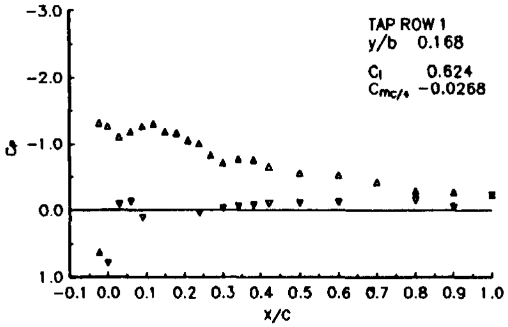
RUN NUMBER 2602

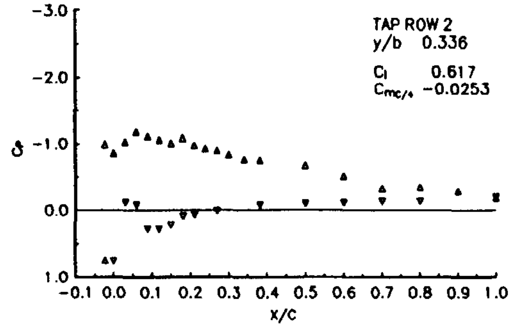
$AOA_{GEOMETRIC}$ 8°

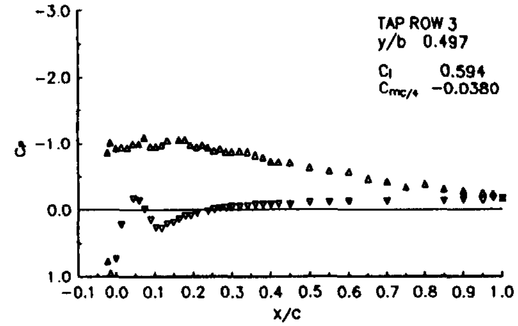
MACH 0.14

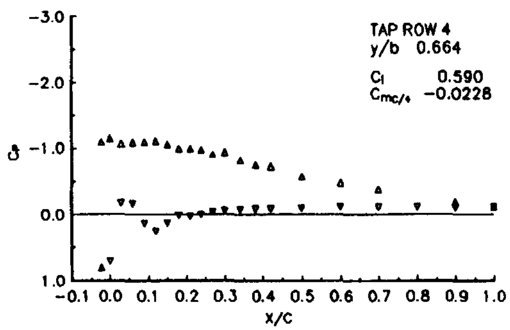
RE 1.20×10^6

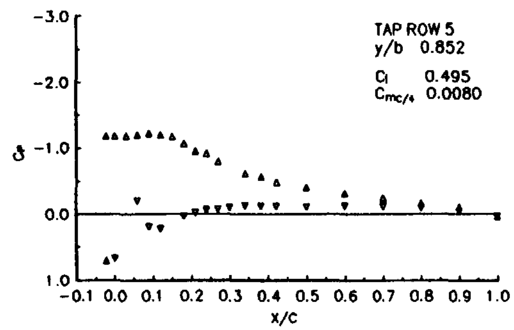


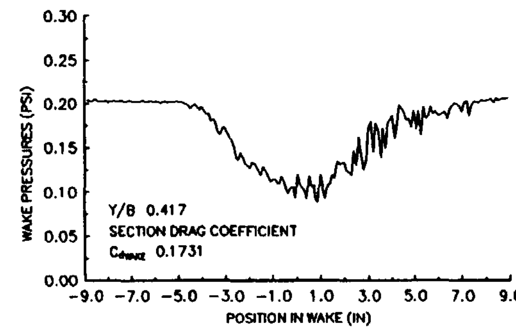










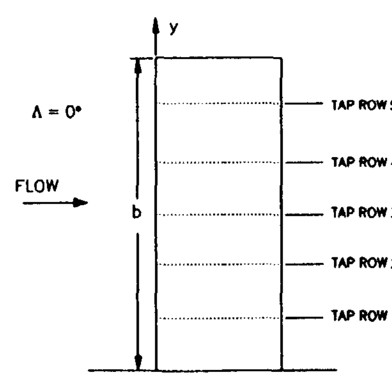


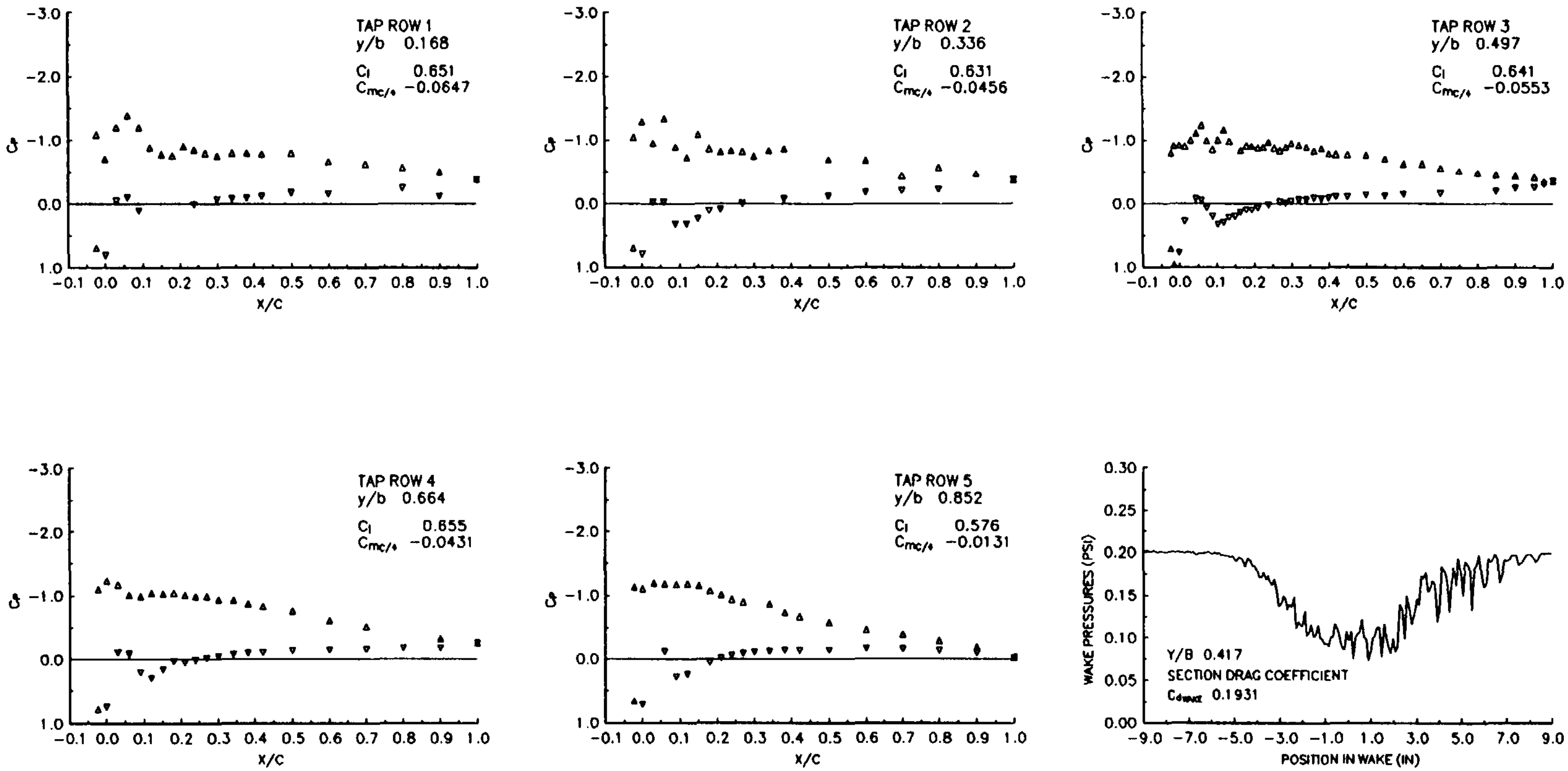
RUN NUMBER 2603

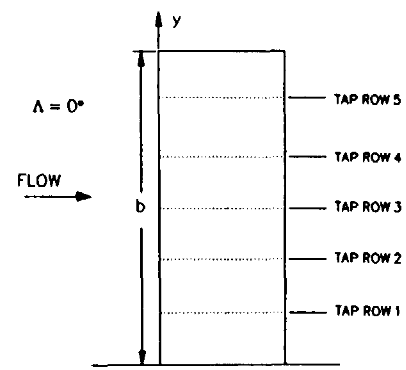
AOA$_{\text{GEOMETRIC}}$ 10°

MACH 0.14

RE 1.18×10^6





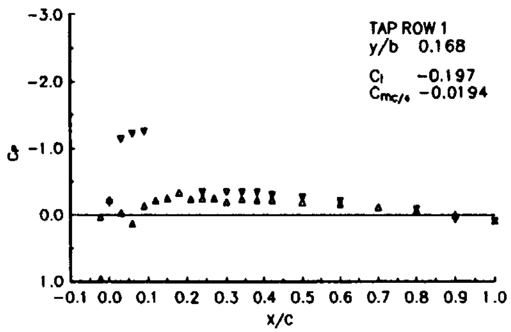


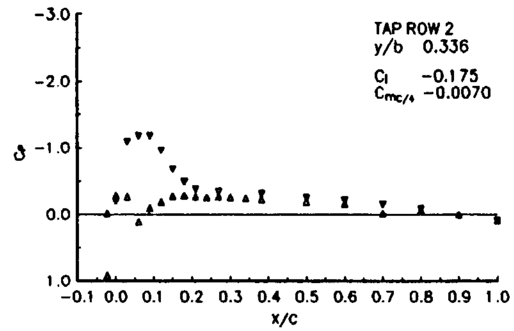
RUN NUMBER 2605

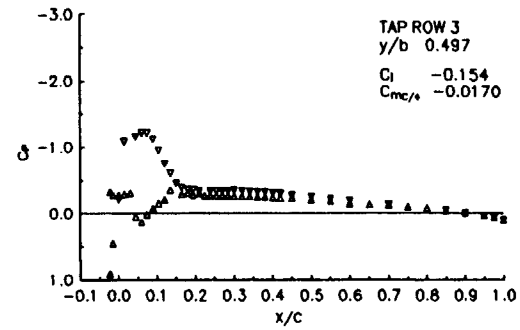
$AOA_{GEOMETRIC}$ 12°

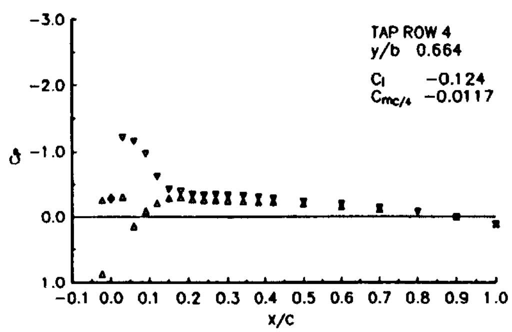
MACH 0.14

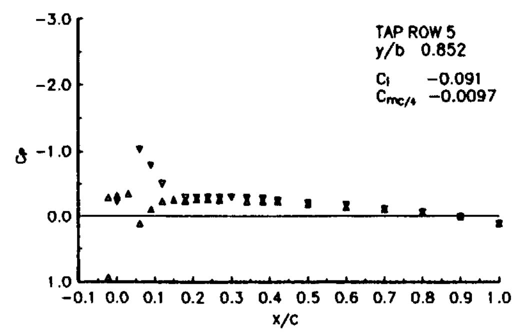
RE 1.17×10^6

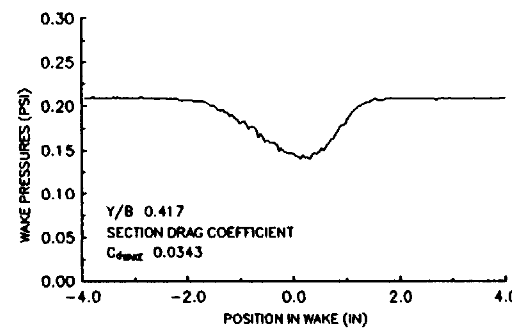










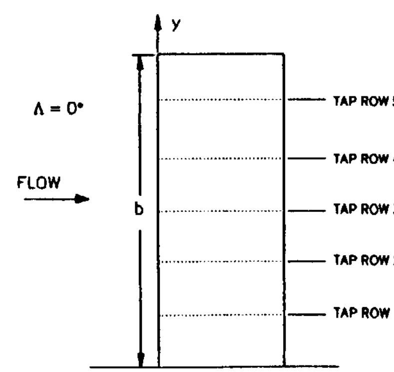


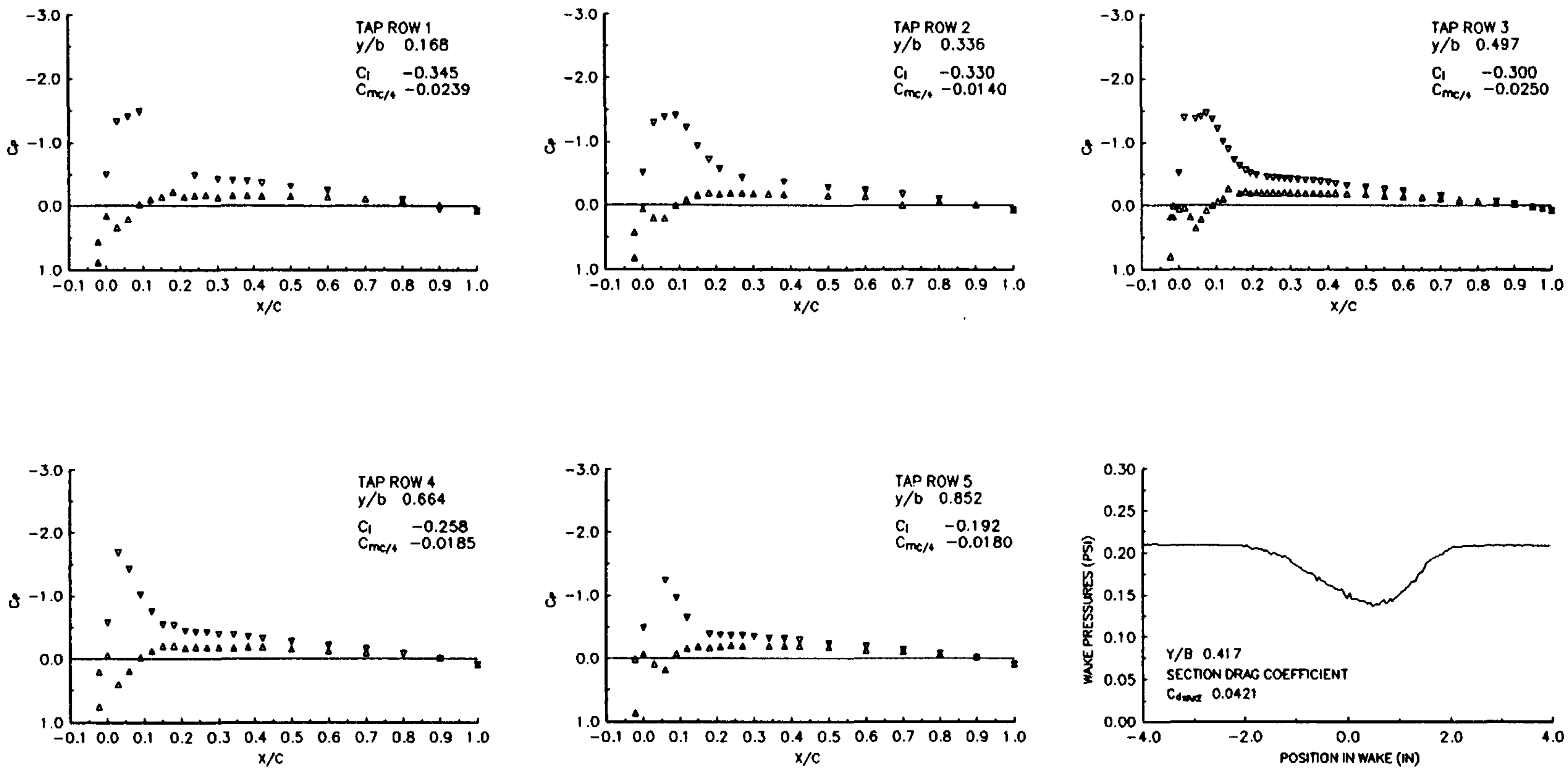
RUN NUMBER 2613

$AOA_{GEOMETRIC}$ $-2°$

MACH 0.15

RE 1.23×10^6



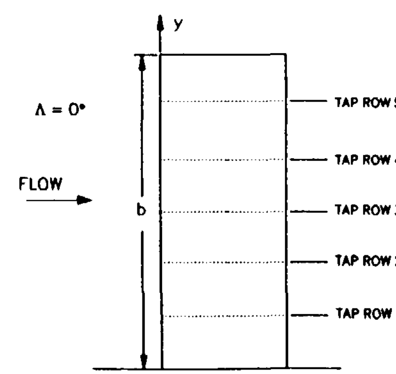


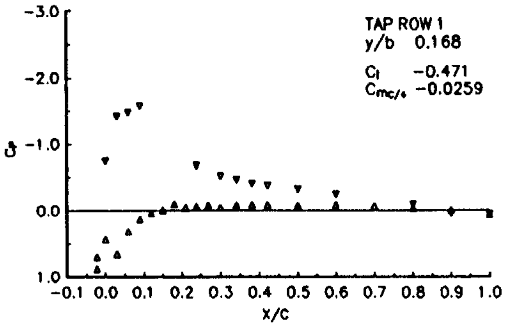
RUN NUMBER 2615

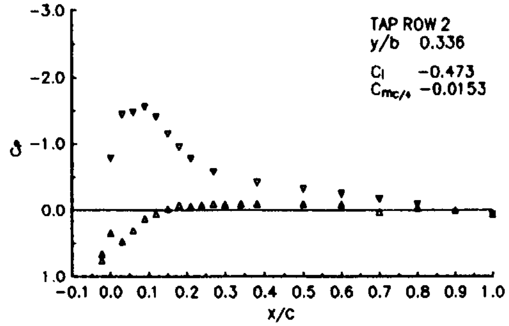
$AOA_{GEOMETRIC}$ $-4°$

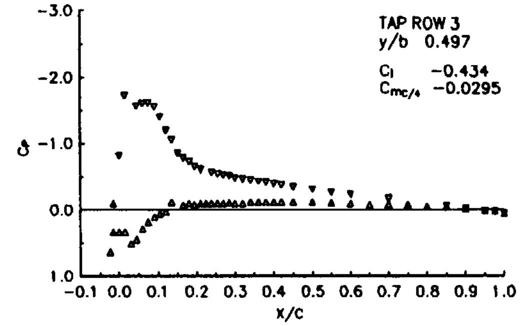
MACH 0.15

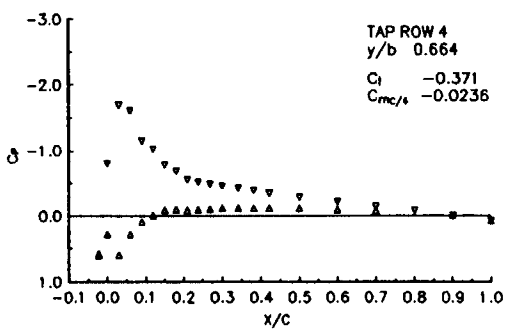
RE 1.22×10^6

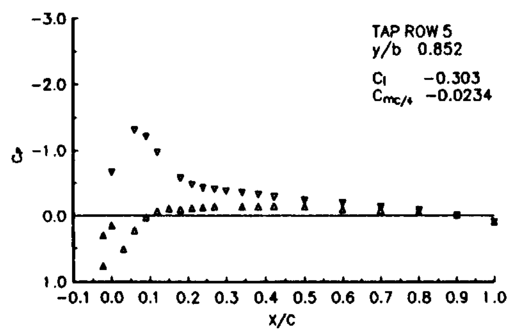


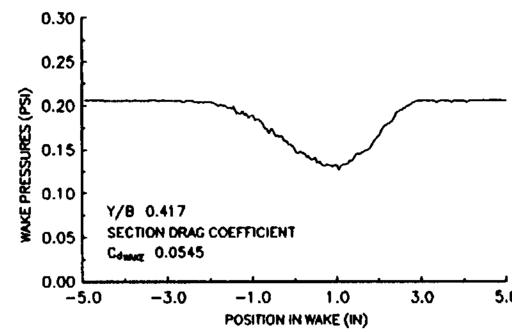










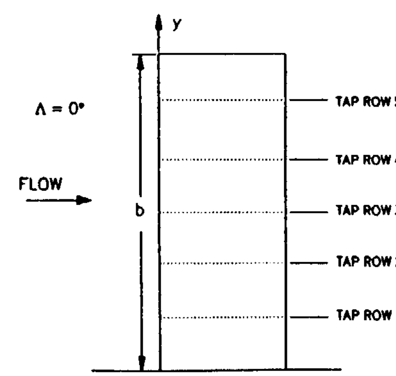


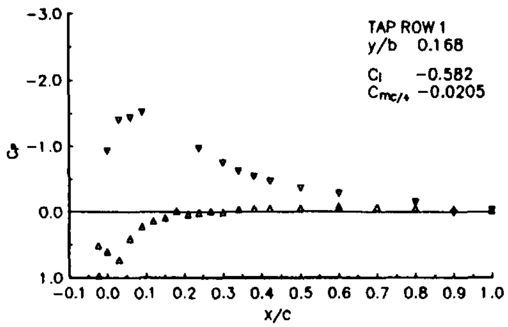
RUN NUMBER 2616

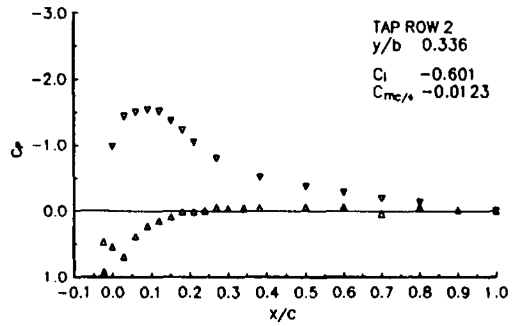
$AOA_{GEOMETRIC}$ $-6°$

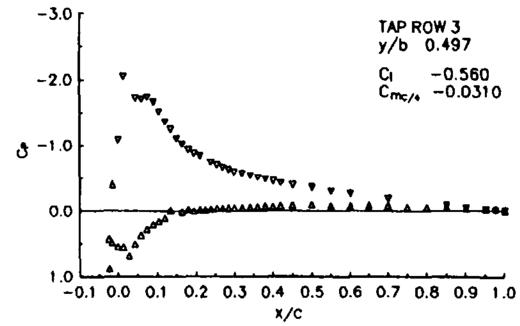
MACH 0.15

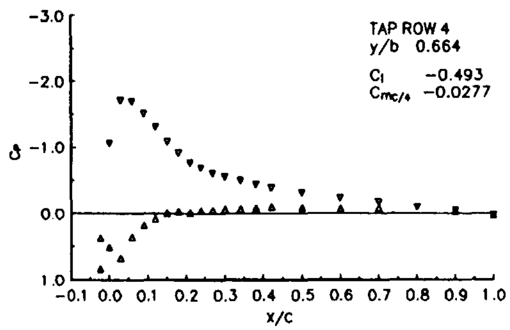
RE 1.22×10^6

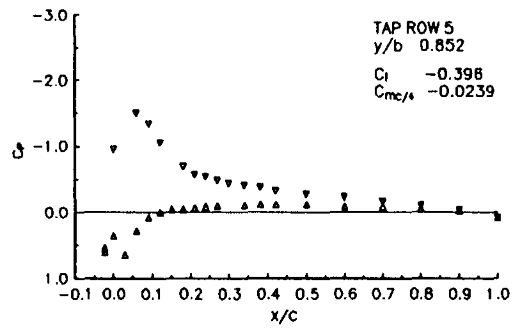


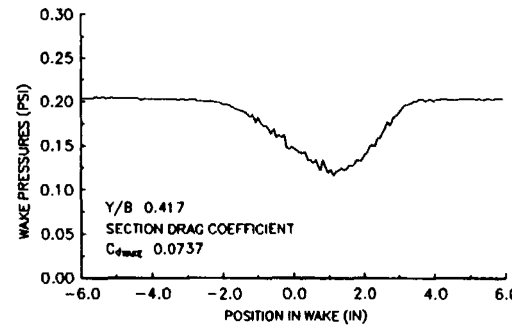










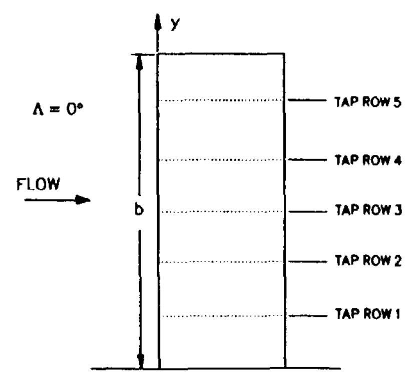


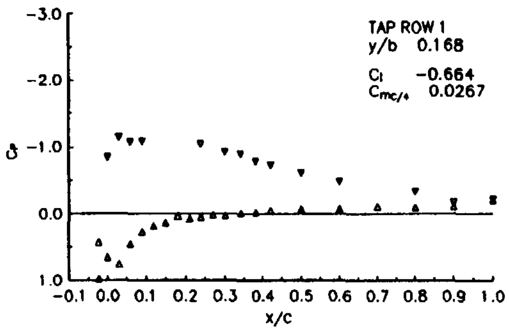
RUN NUMBER 2617

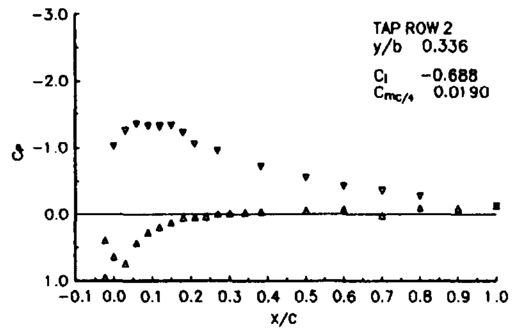
$AOA_{GEOMETRIC}$ −8°

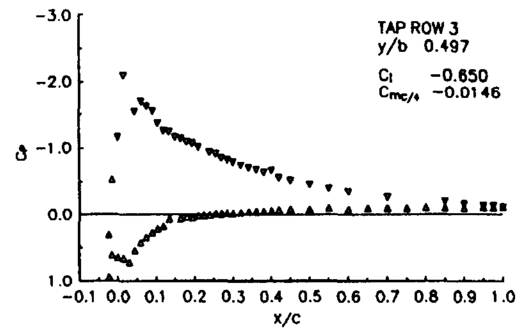
MACH 0.14

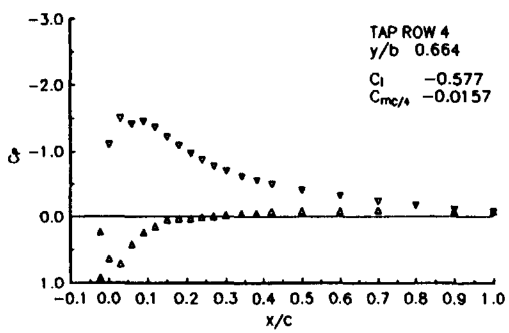
RE 1.22×10^6

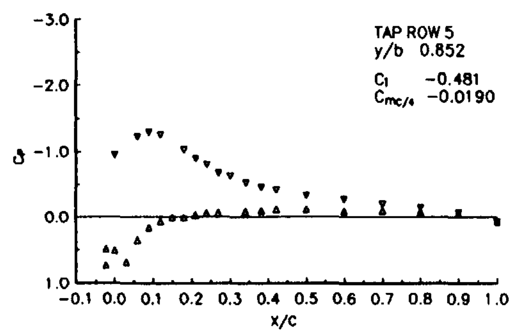


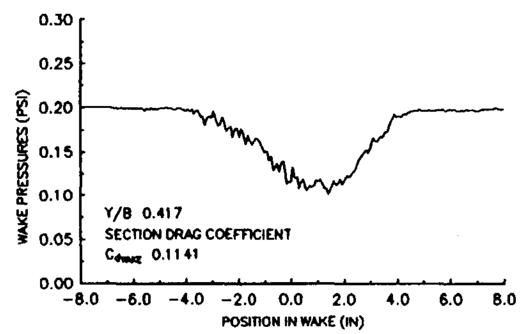










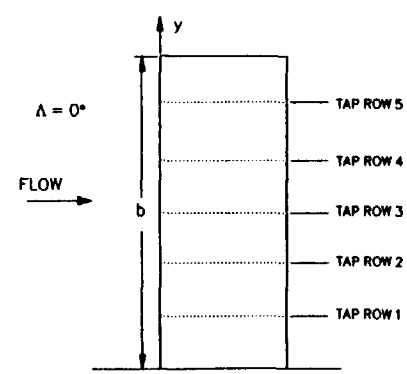


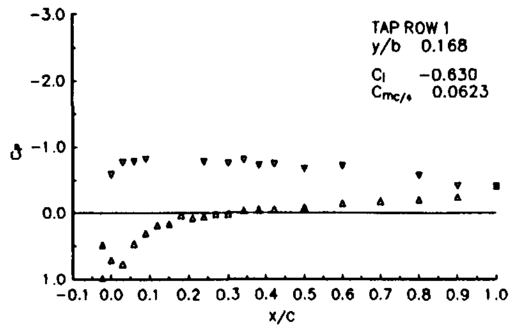
RUN NUMBER 2620

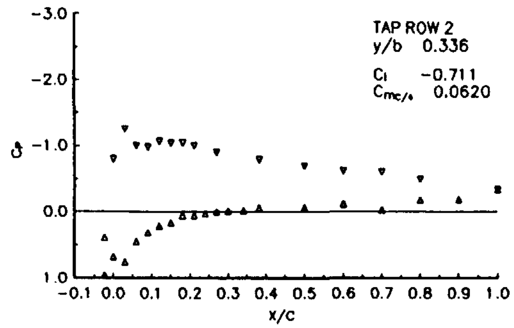
AOA$_{GEOMETRIC}$ −10°

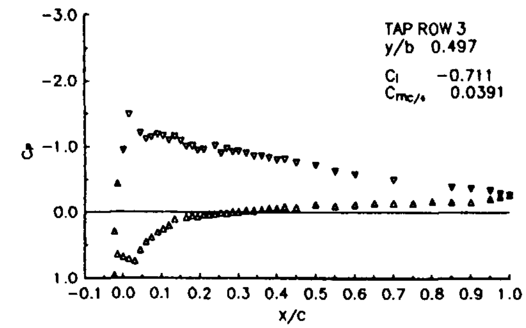
MACH 0.14

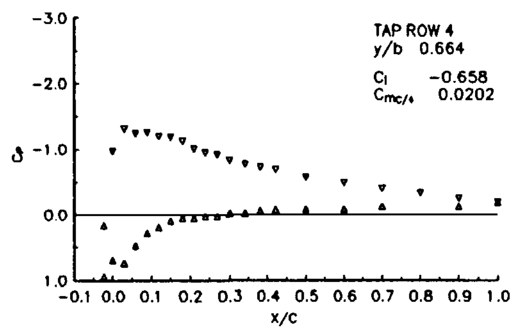
RE 1.20×10^6

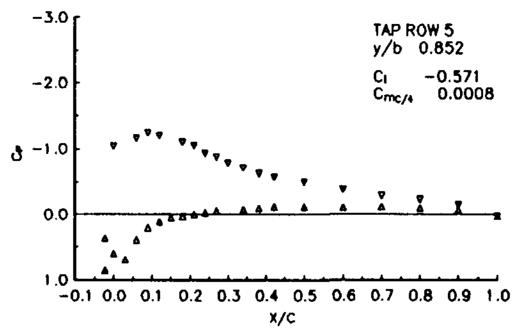


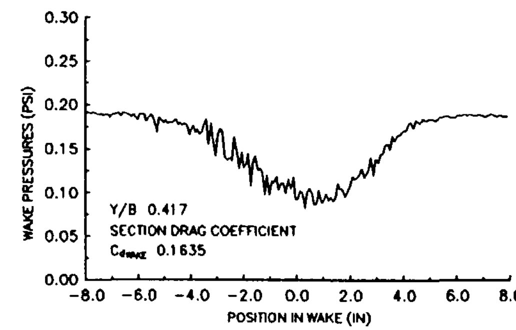










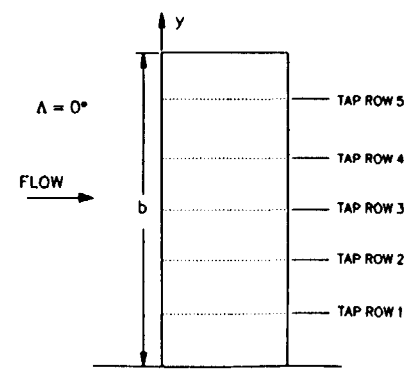


RUN NUMBER 2623

$AOA_{GEOMETRIC}$ $-12°$

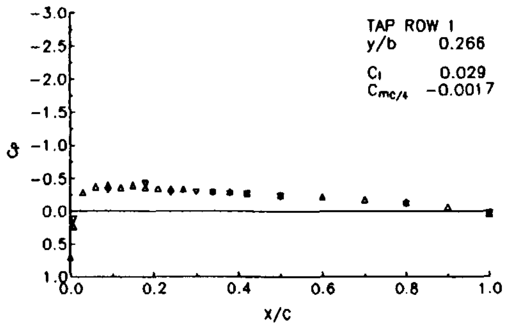
MACH 0.14

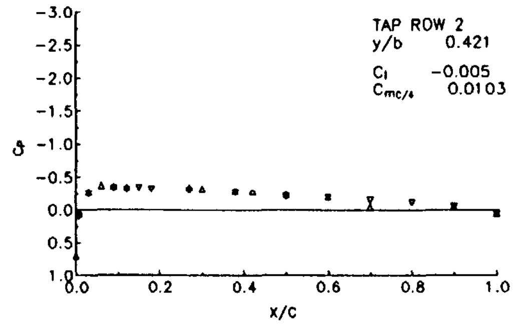
RE 1.17×10^6

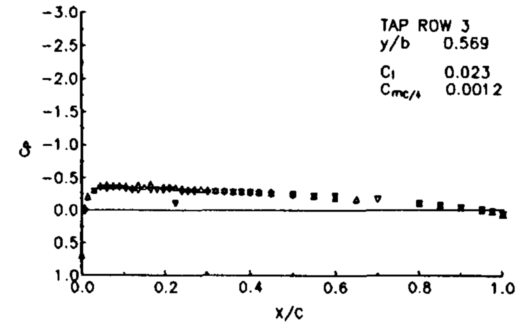


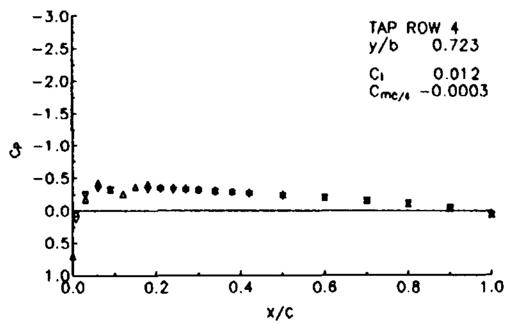
RUNS 2674 - 2702

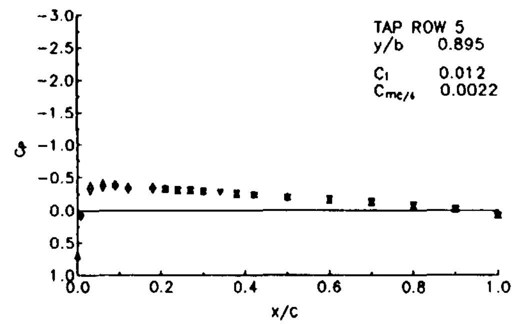
30 DEGREE SWEEP WING, CLEAN, WITH TRIP STRIP AT ±0.05 CHORD









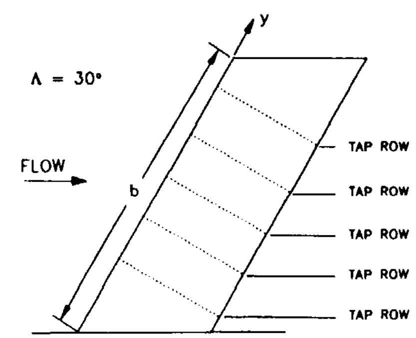


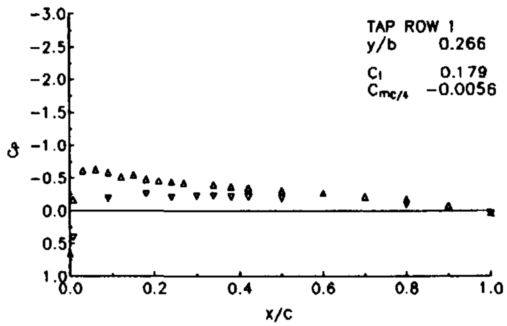
RUN NUMBER 2674

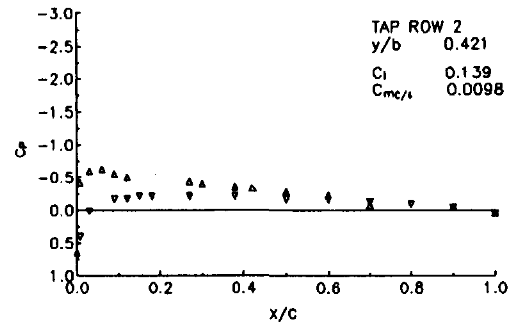
$AOA_{GEOMETRIC}$ 0°

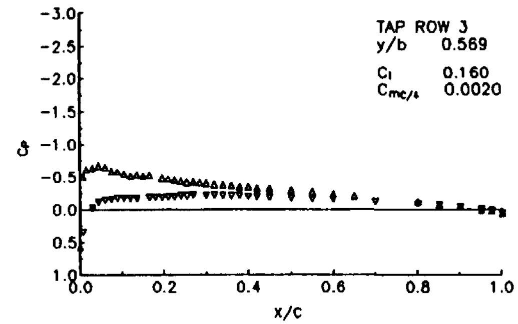
MACH 0.13

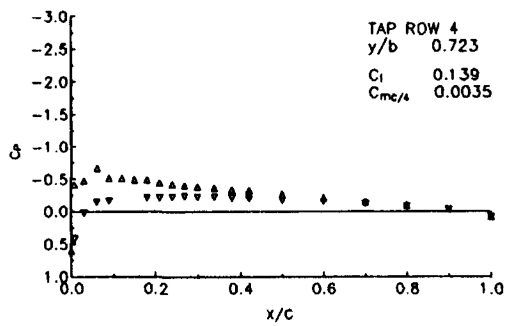
RE 1.45×10^6

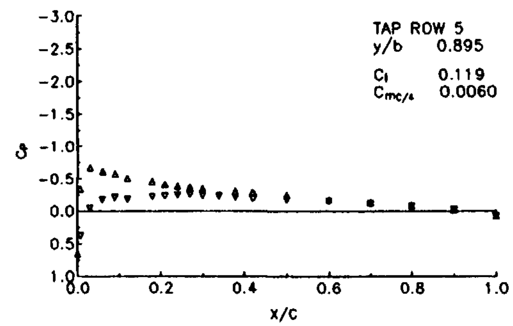










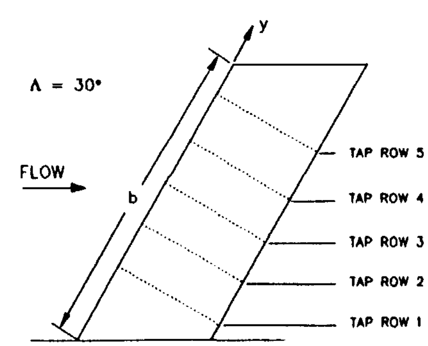


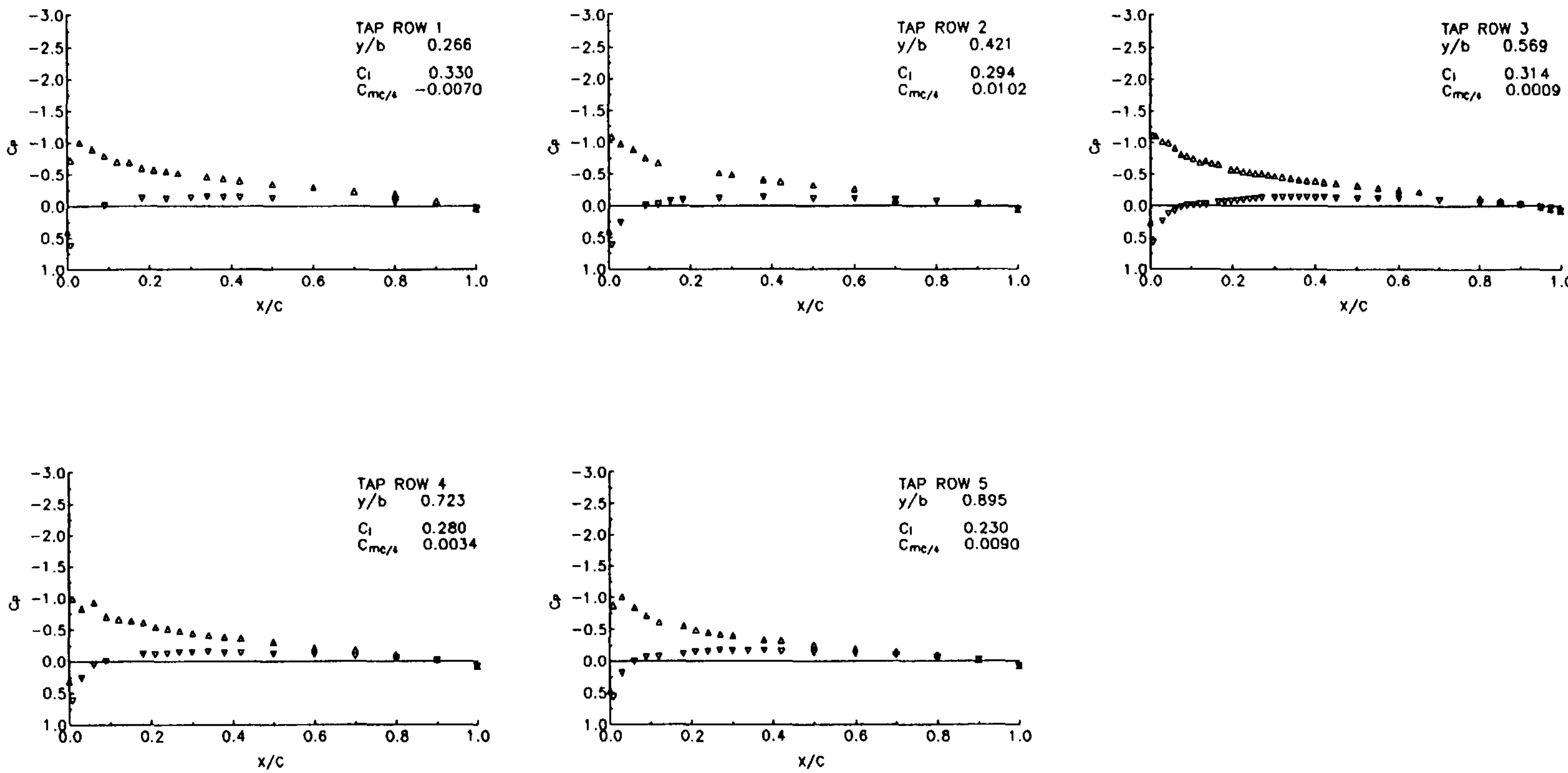
RUN NUMBER 2677

$AOA_{GEOMETRIC}$ 2°

MACH 0.13

RE 1.45×10^6



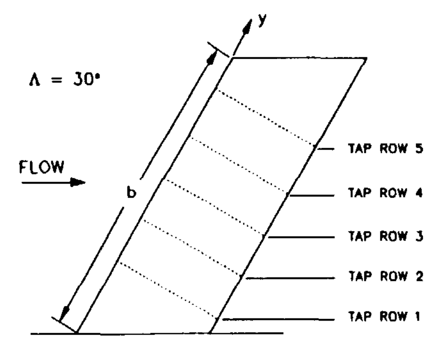


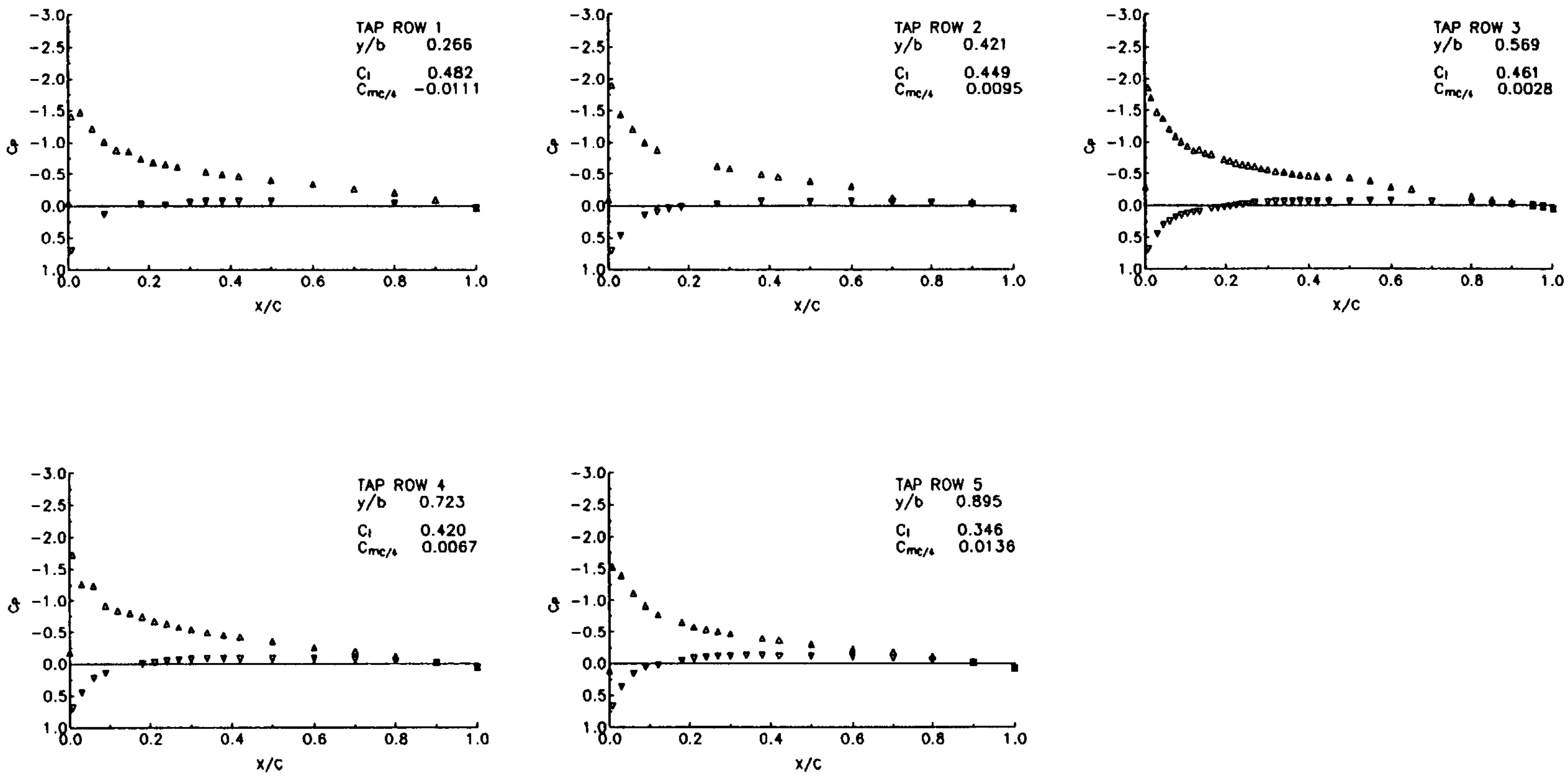
RUN NUMBER 2680

$AOA_{GEOMETRIC}$ 4°

MACH 0.13

RE 1.45×10^6



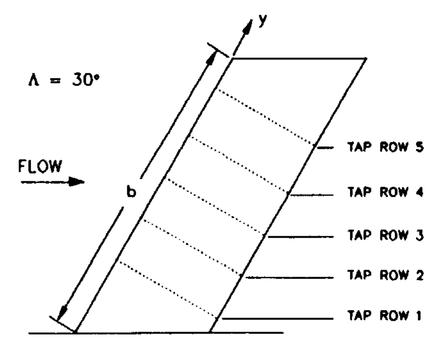


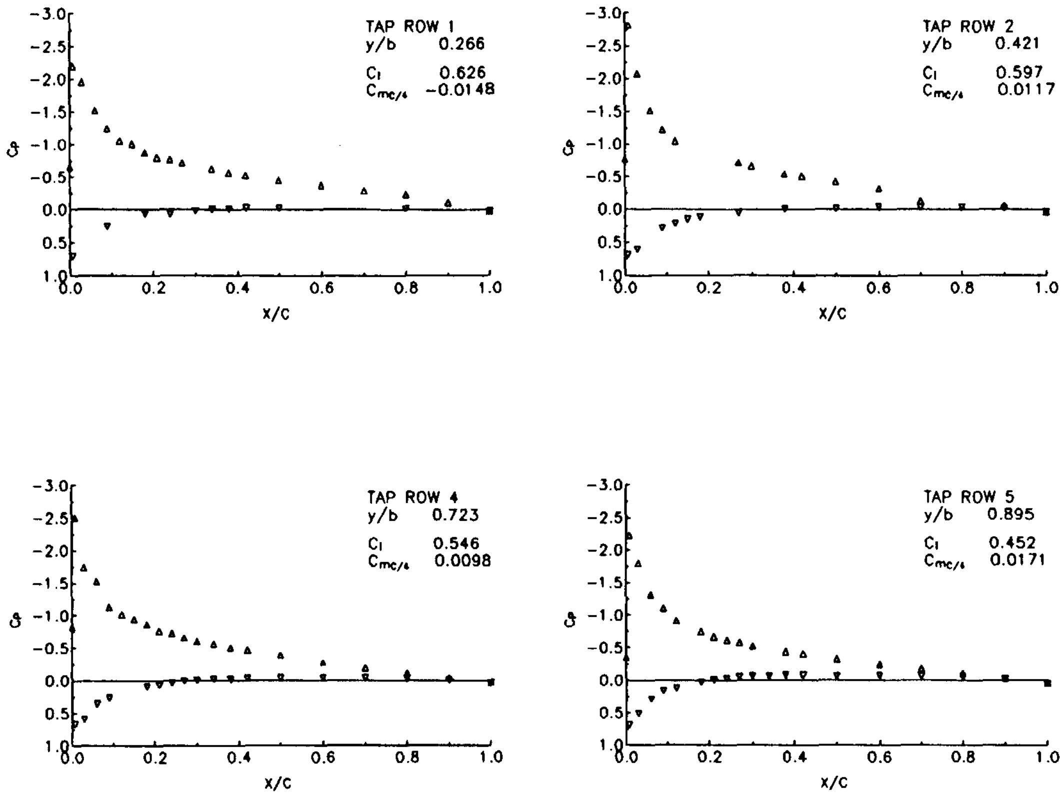
RUN NUMBER 2682

$AOA_{GEOMETRIC}$ 6°

MACH 0.13

RE 1.45×10^6



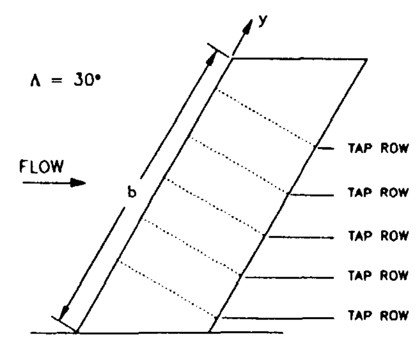


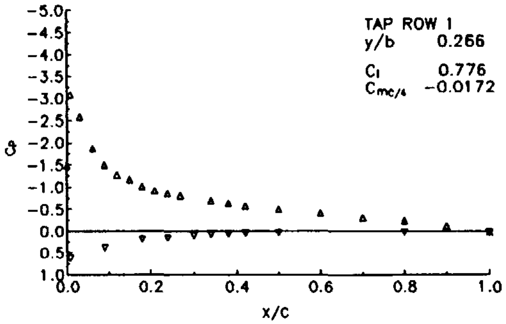
RUN NUMBER 2684

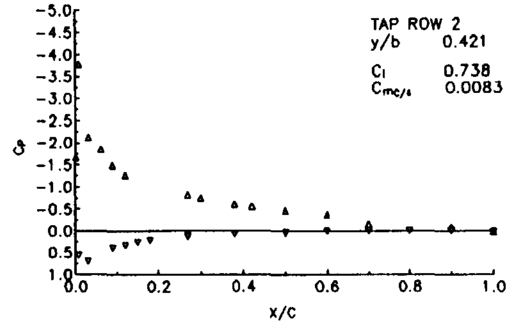
AOA$_{GEOMETRIC}$ 8°

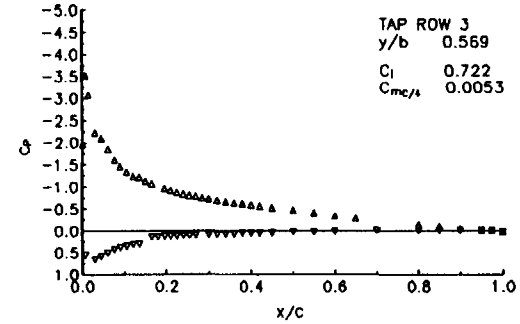
MACH 0.13

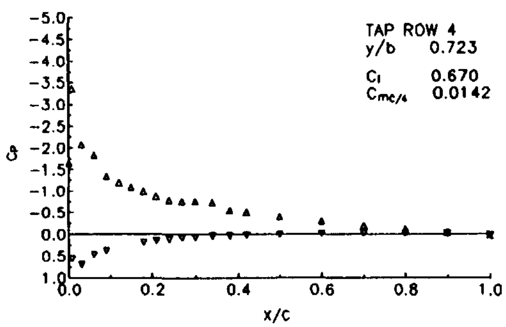
RE 1.45×10^6

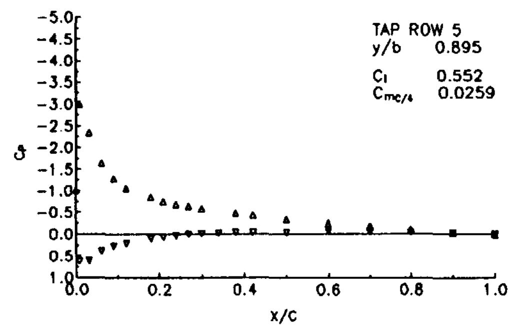










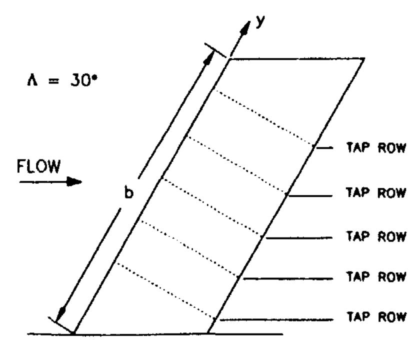


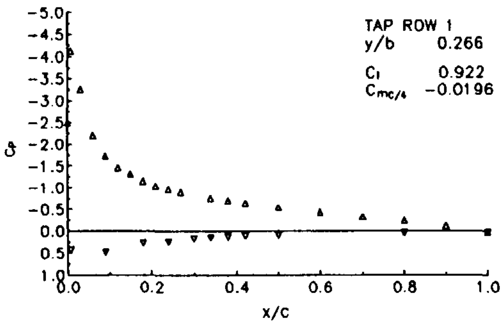
RUN NUMBER 2686

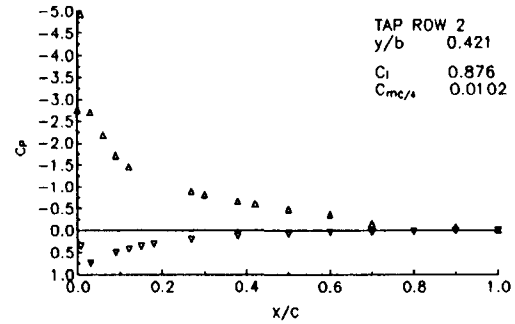
$AOA_{GEOMETRIC}$ 10°

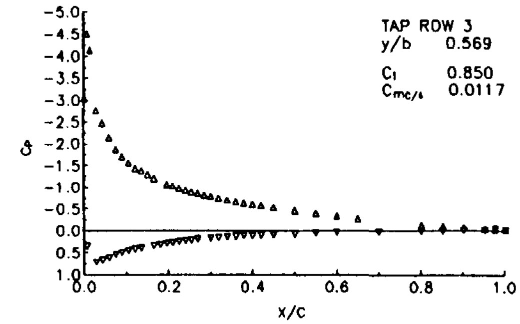
MACH 0.13

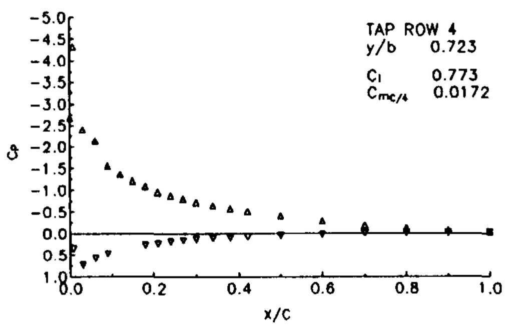
RE 1.45×10^6

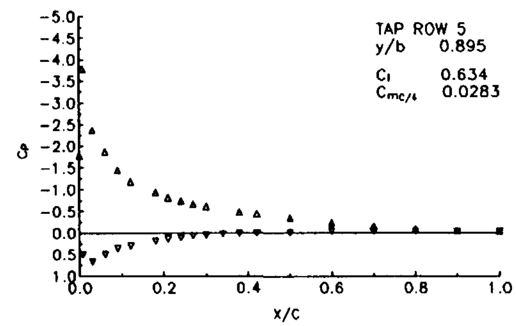










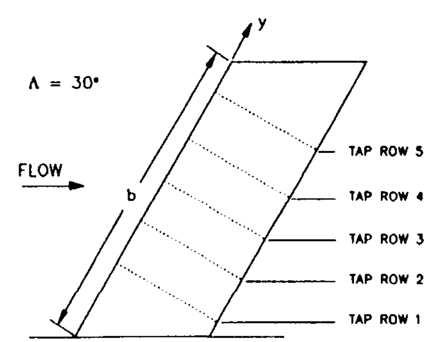


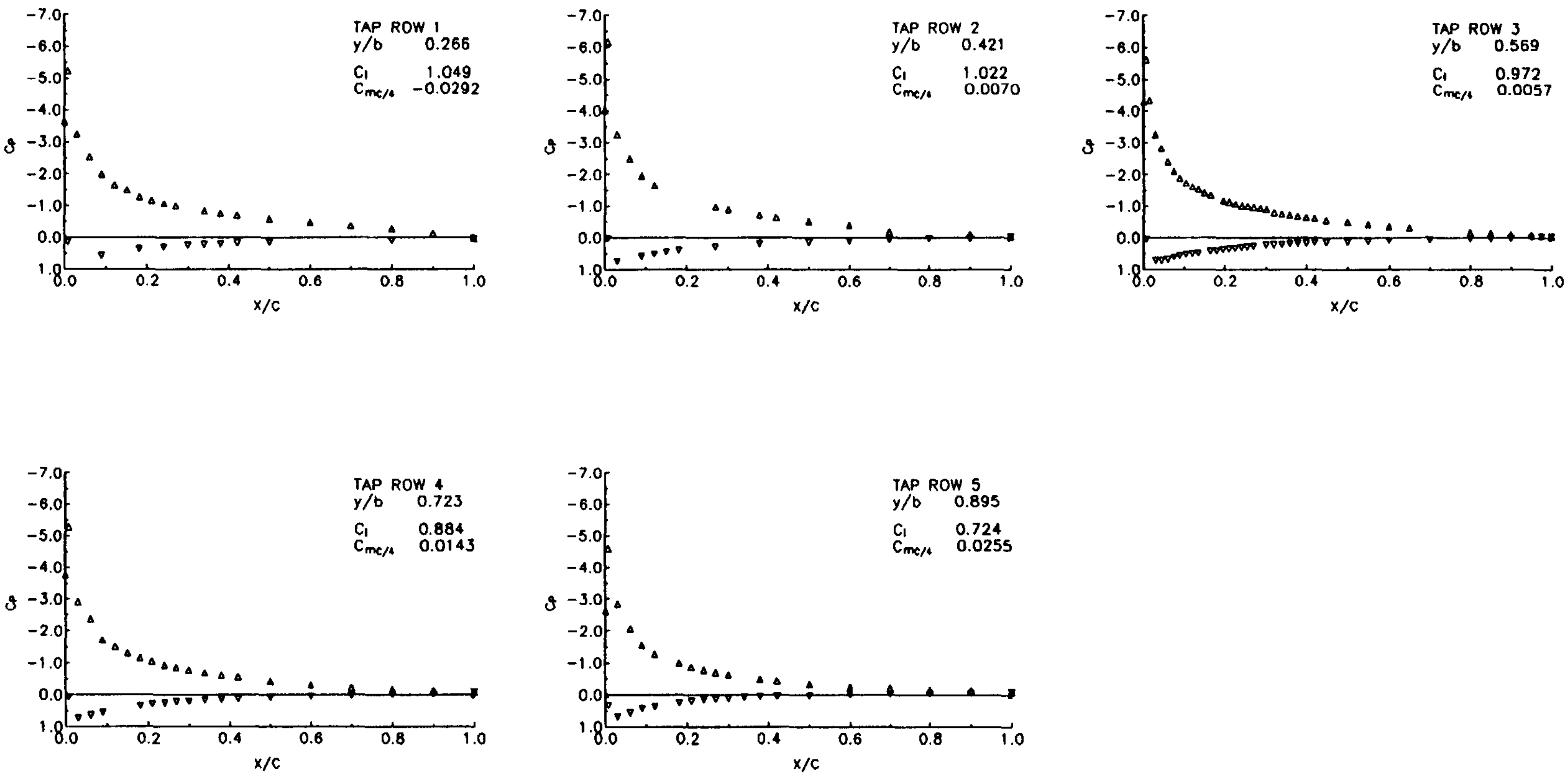
RUN NUMBER 2688

$AOA_{GEOMETRIC}$ 12°

MACH 0.13

RE 1.45×10^6



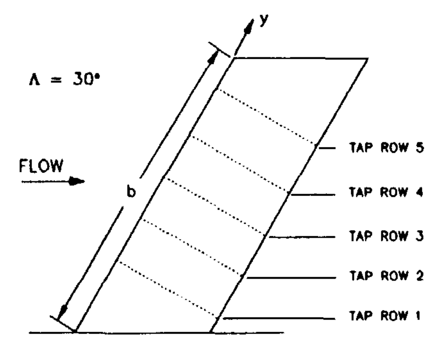


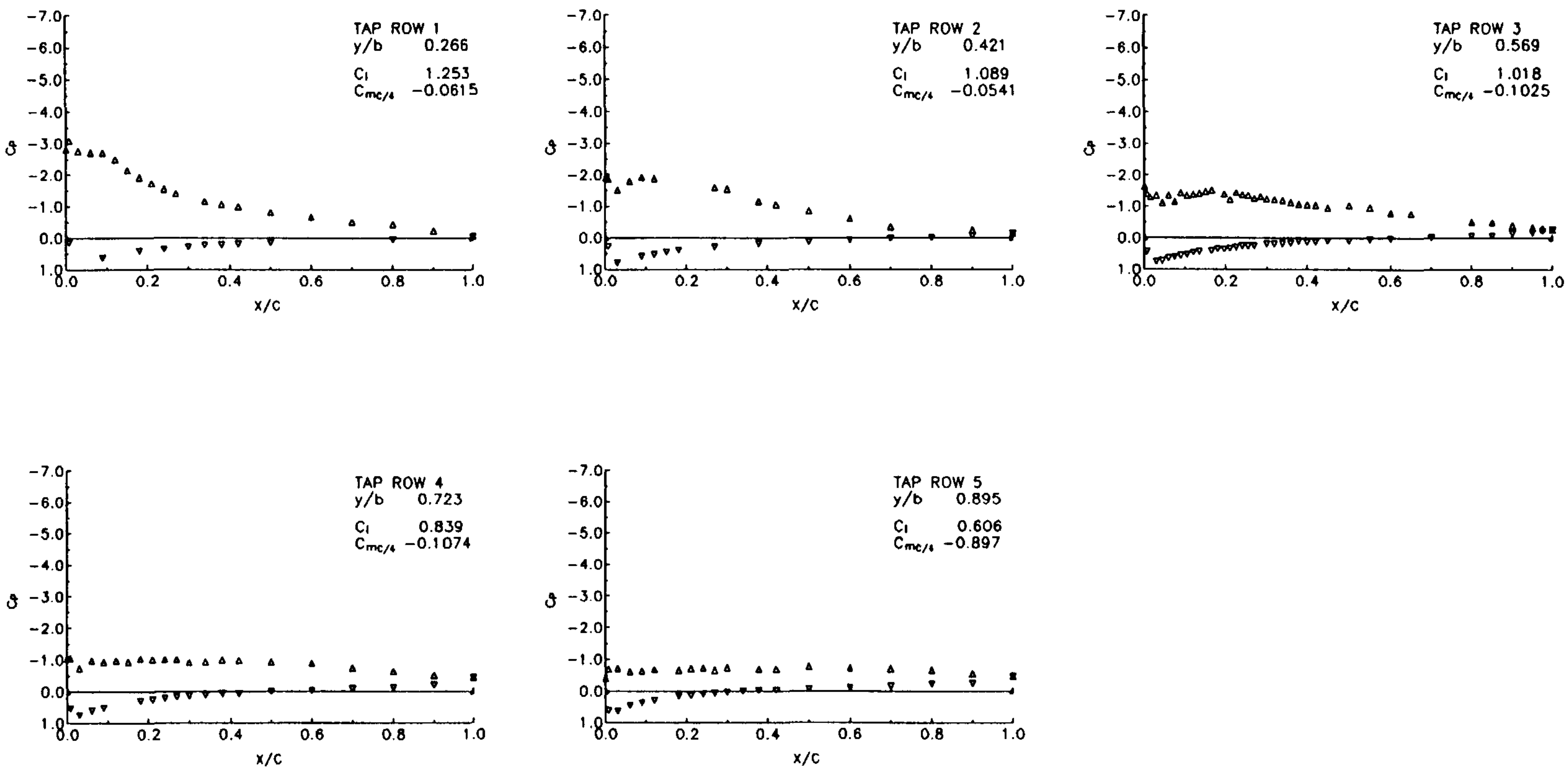
RUN NUMBER 2691

AOA$_{GEOMETRIC}$ 14°

MACH 0.13

RE 1.45×10^6



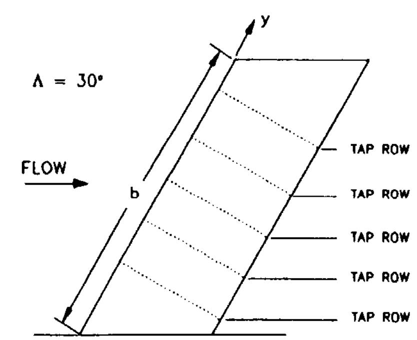


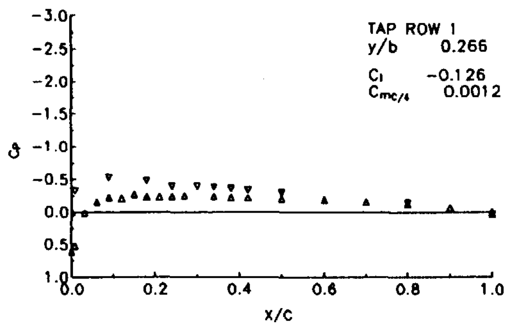
RUN NUMBER 2693

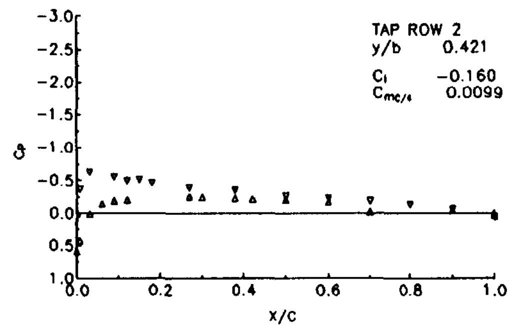
$AOA_{GEOMETRIC}$ 16°

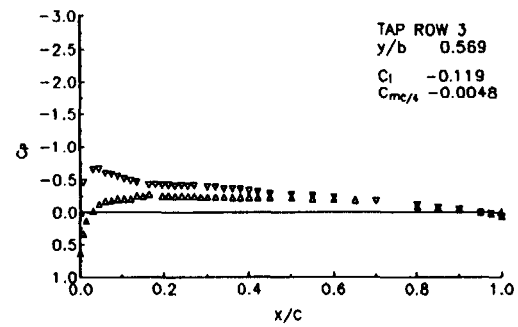
MACH 0.13

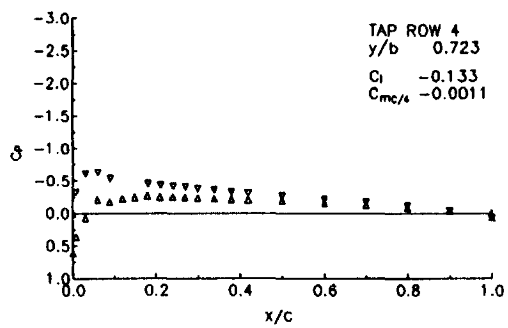
RE 1.45×10^6

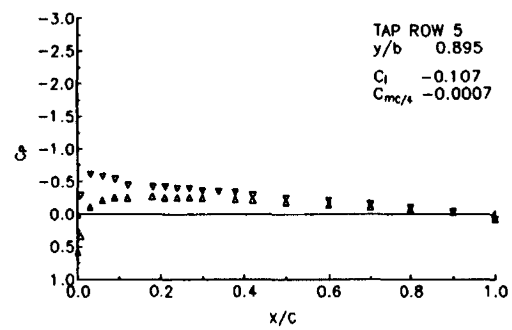










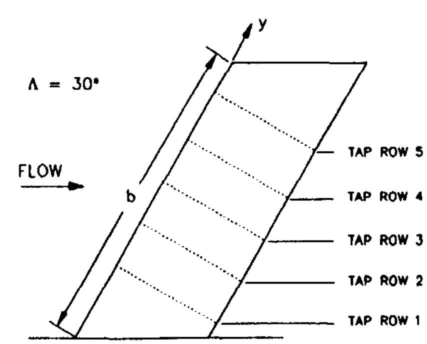


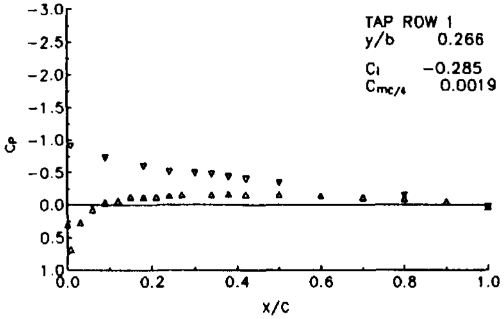
RUN NUMBER 2695

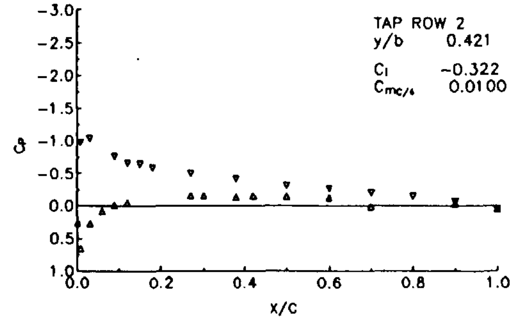
AOA$_{GEOMETRIC}$ $-2°$

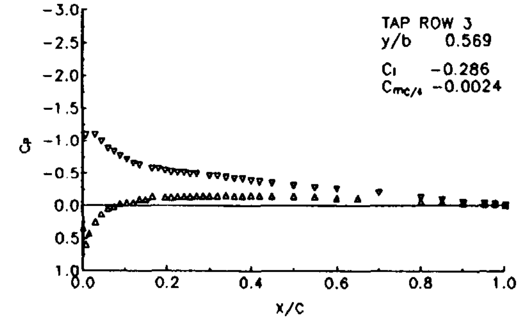
MACH 0.13

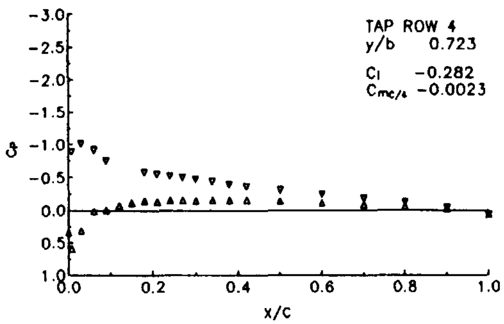
RE 1.45×10^6

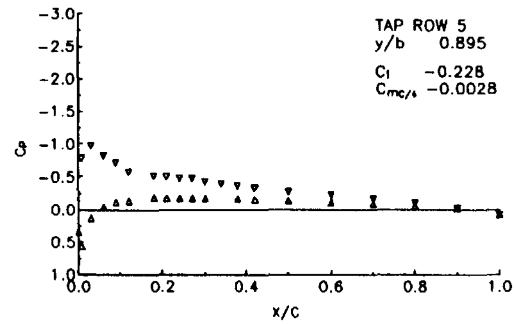










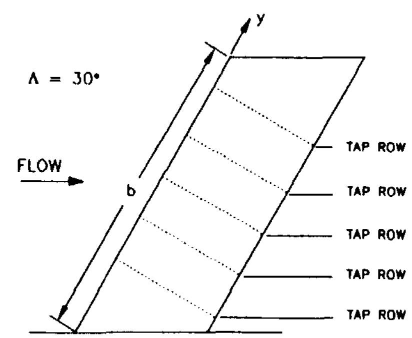


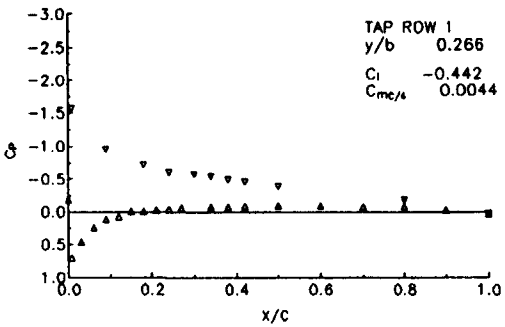
RUN NUMBER 2696

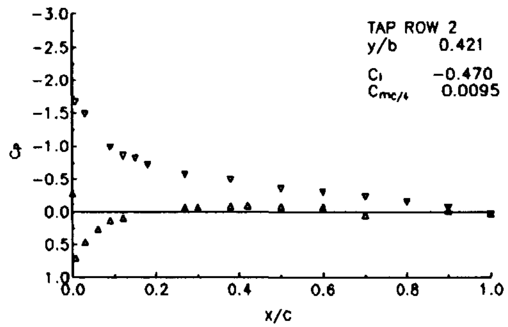
$AOA_{GEOMETRIC}$ $-4°$

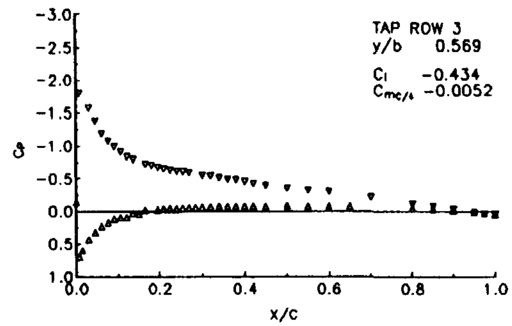
MACH 0.13

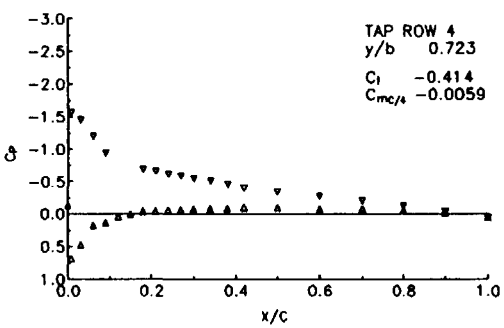
RE 1.45×10^6

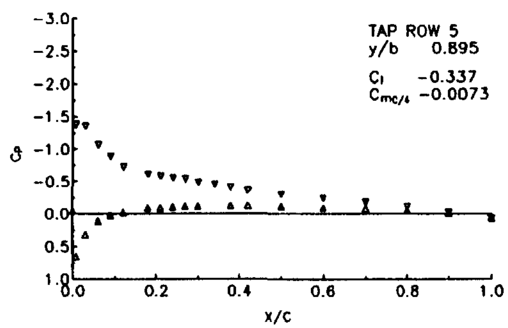










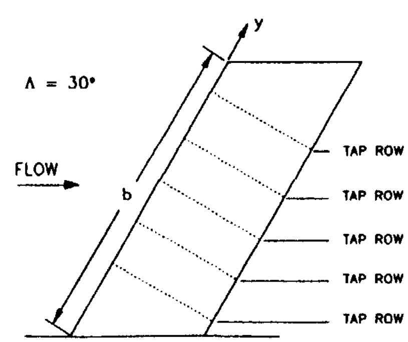


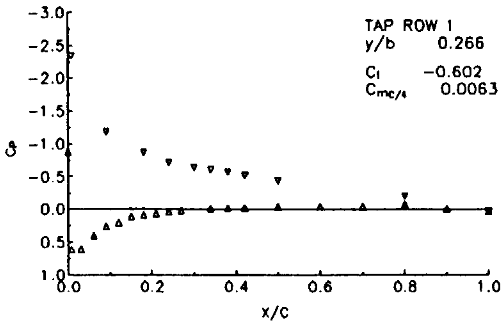
RUN NUMBER 2697

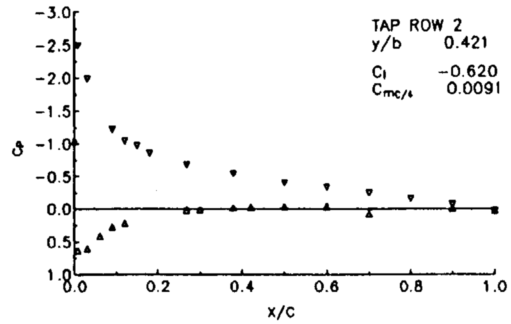
$AOA_{GEOMETRIC}$ $-6°$

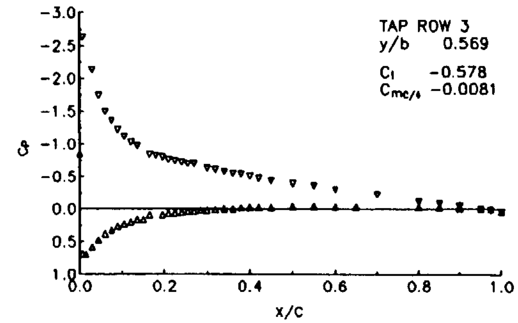
MACH 0.13

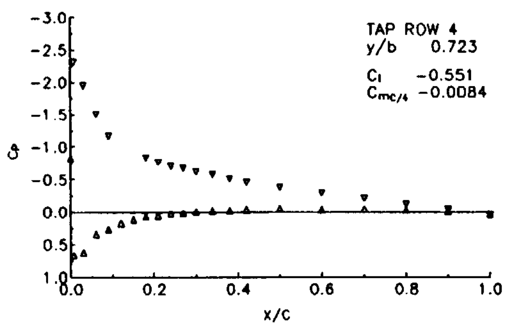
RE 1.45×10^6

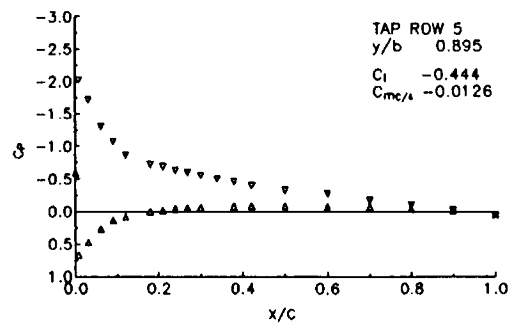










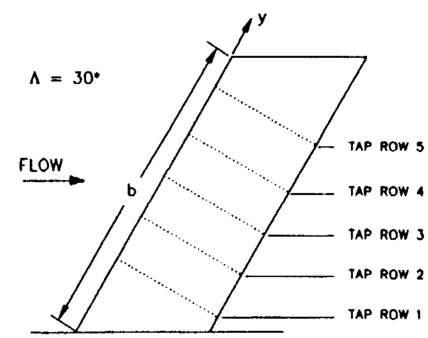


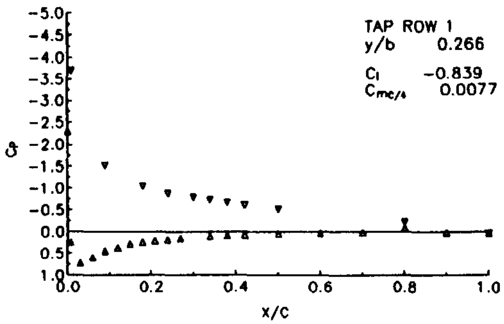
RUN NUMBER 2698

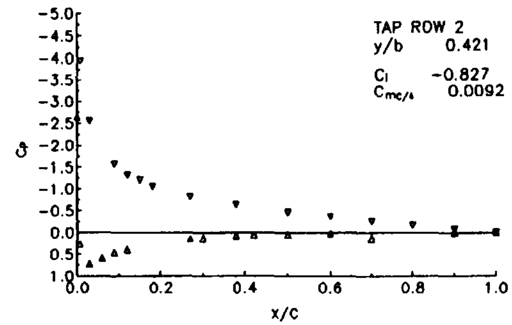
$AOA_{GEOMETRIC}$ $-8°$

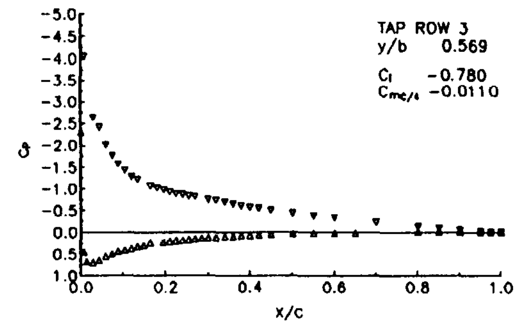
MACH 0.13

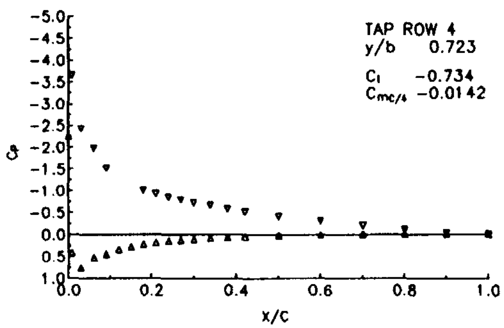
RE 1.45×10^6

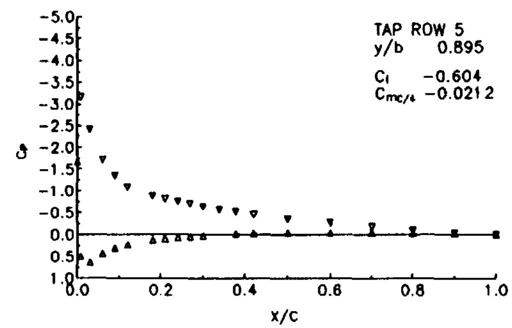










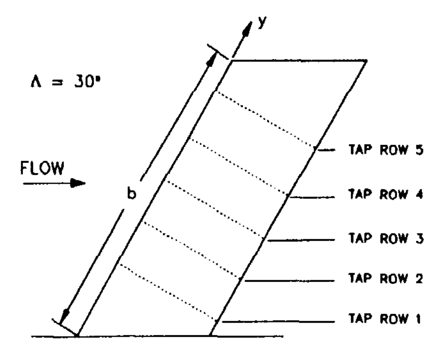


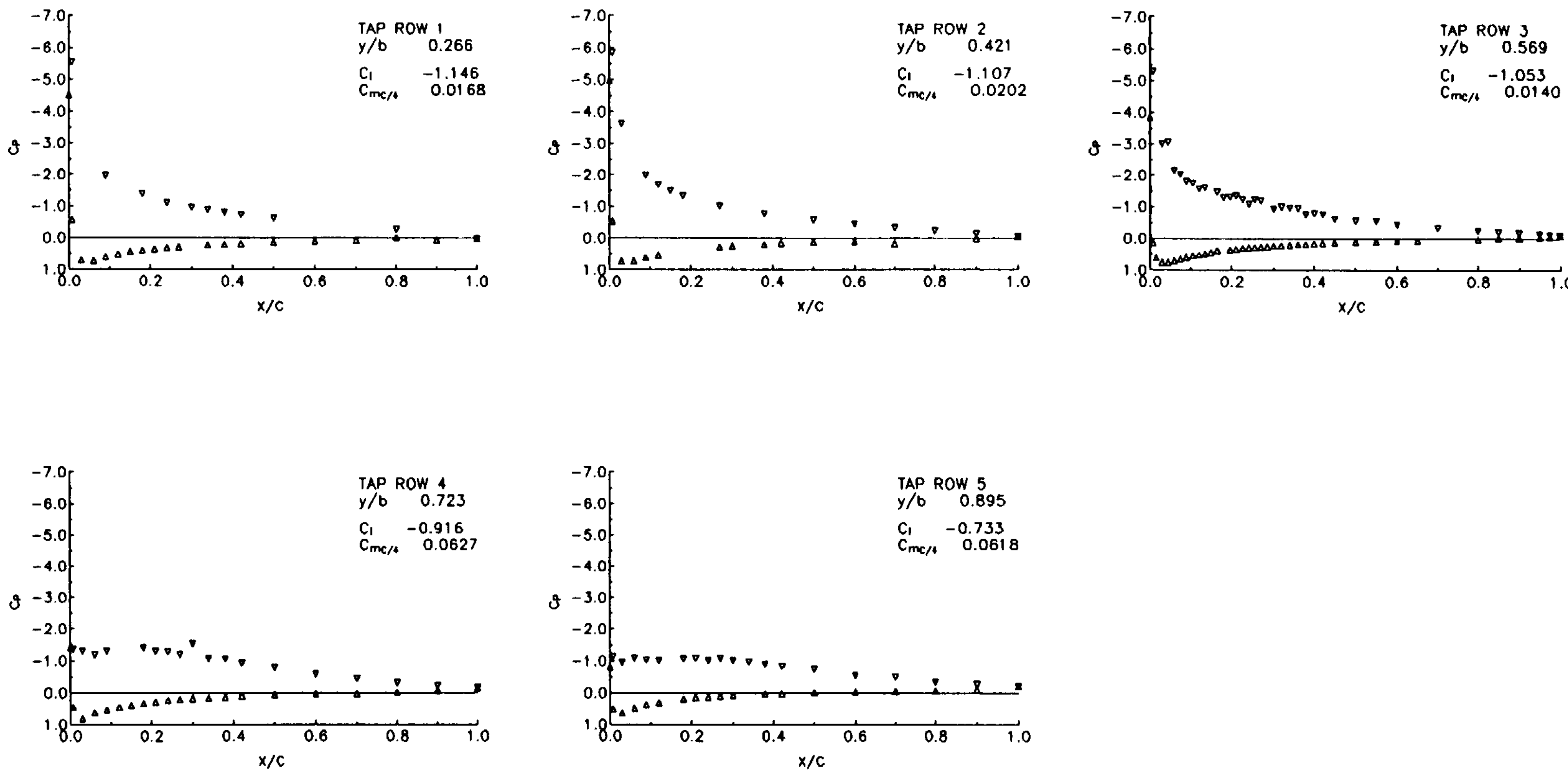
RUN NUMBER 2699

$AOA_{GEOMETRIC}$ $-11.18°$

MACH 0.13

RE 1.45×10^6



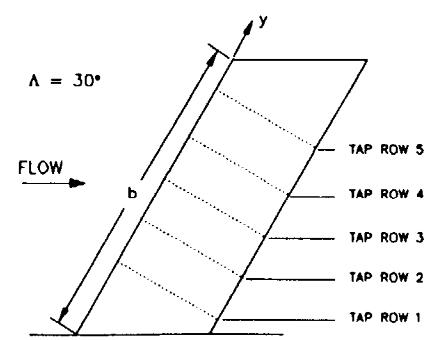


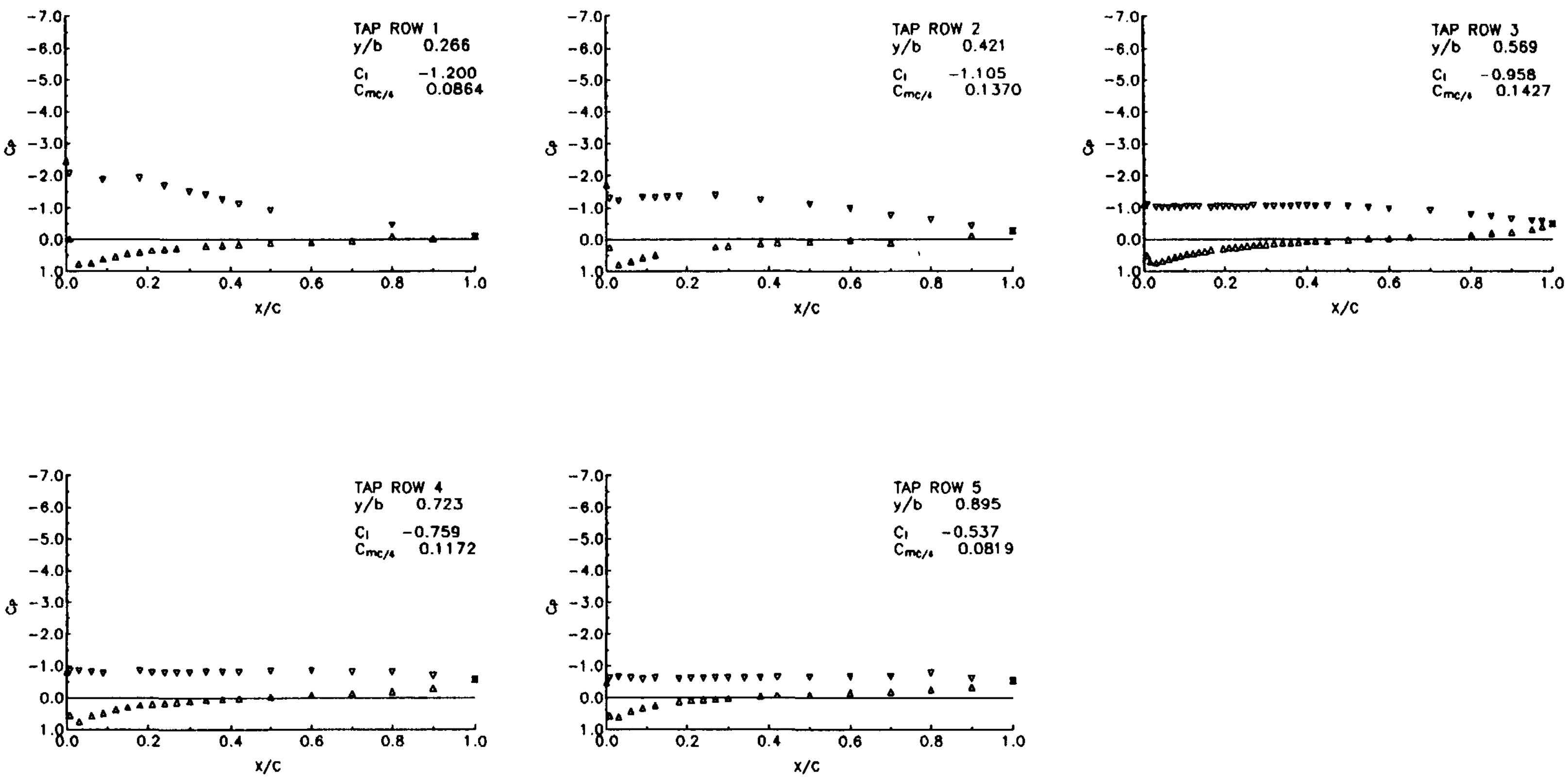
RUN NUMBER 2701

$AOA_{GEOMETRIC}$ $-14.58°$

MACH 0.13

RE 1.45×10^6



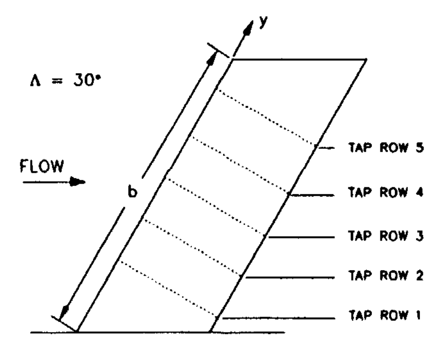


RUN NUMBER 2702

$AOA_{GEOMETRIC}$ $-14.89°$

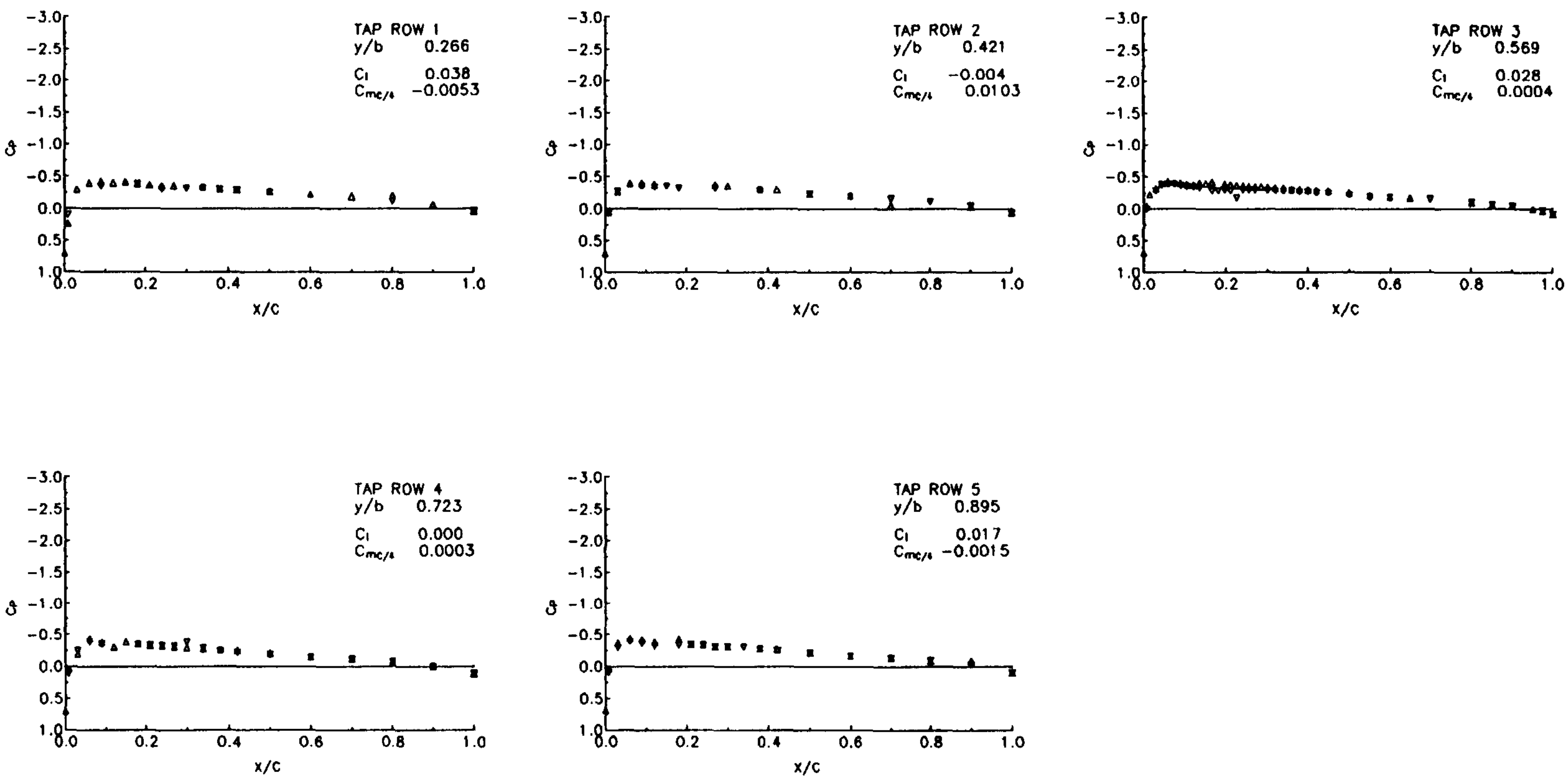
MACH 0.13

RE 1.45×10^6



RUNS 2703 - 2732

30 DEGREE SWEEP WING, CLEAN & SMOOTH

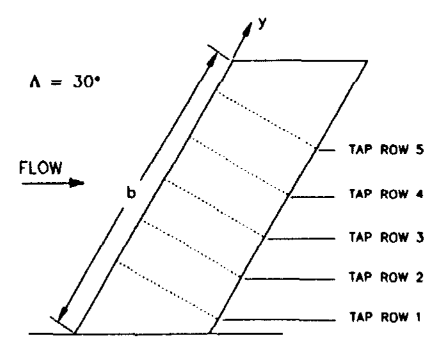


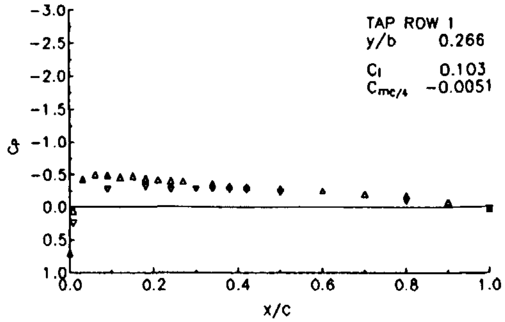
RUN NUMBER 2703

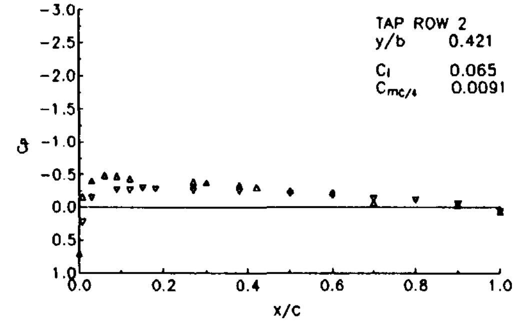
AOA$_{GEOMETRIC}$ 0°

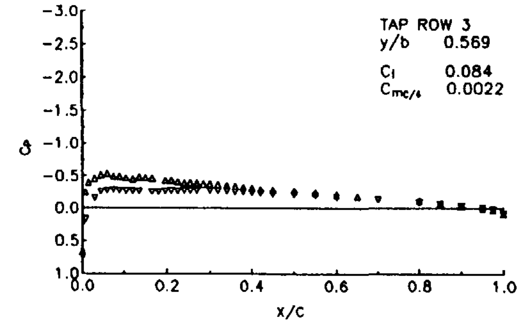
MACH 0.13

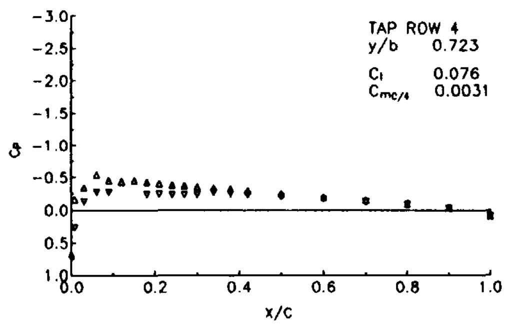
RE 1.5×10^6

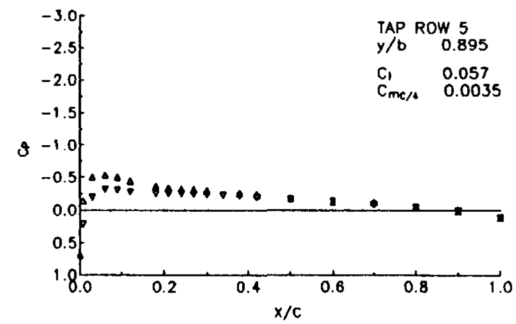










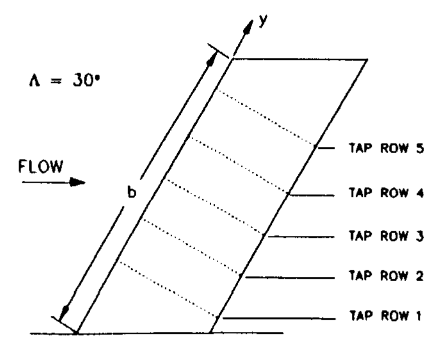


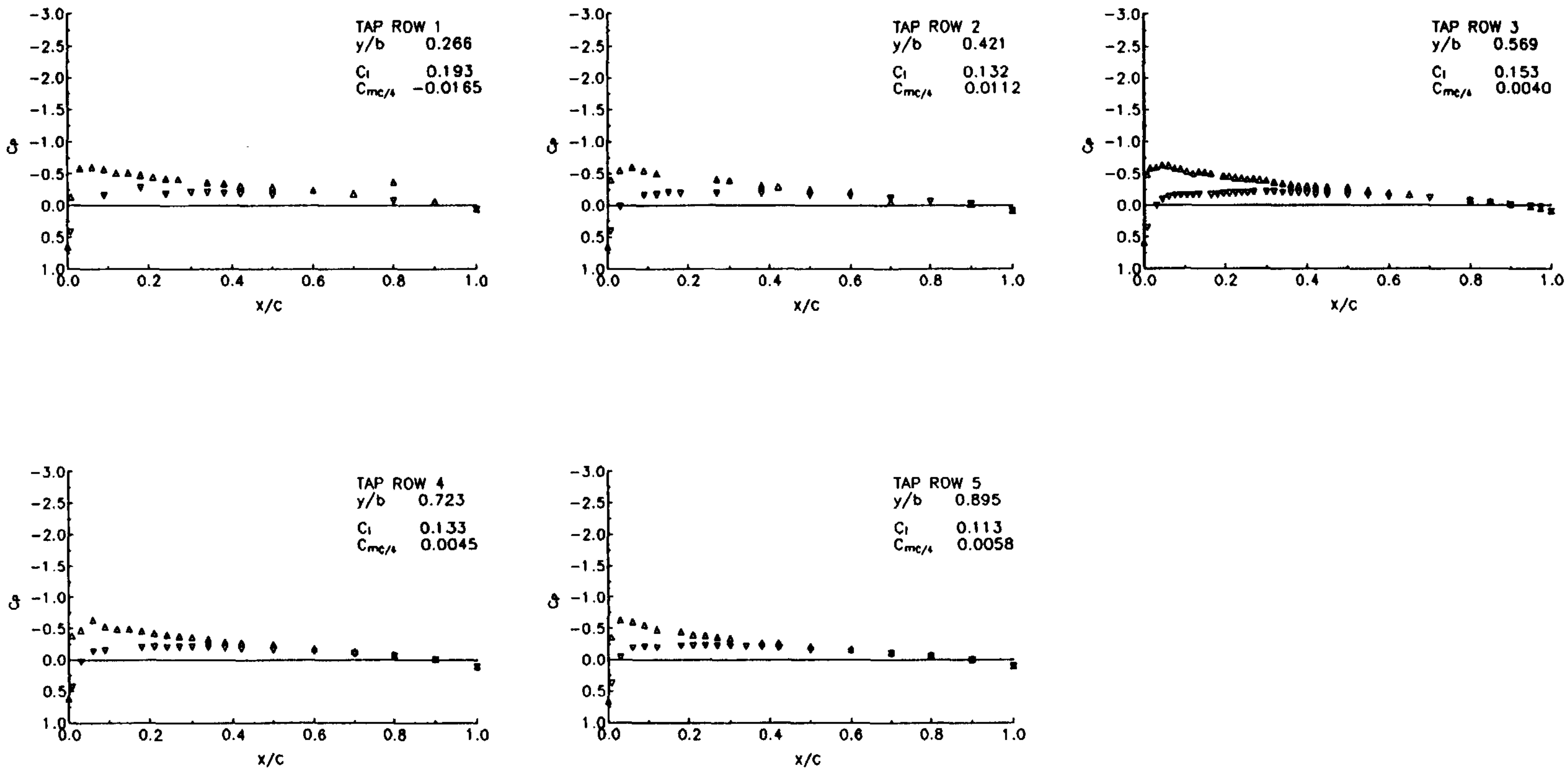
RUN NUMBER 2704

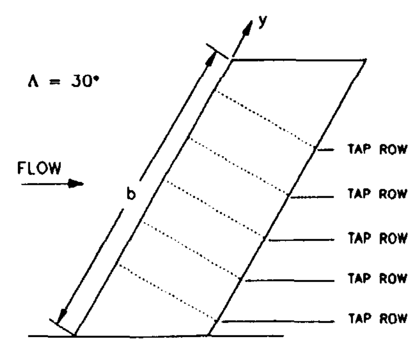
$AOA_{GEOMETRIC}$ 1°

MACH 0.13

RE 1.5×10^6





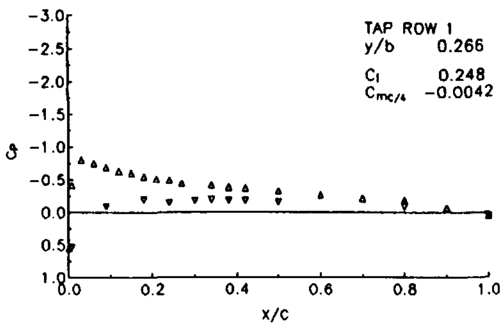


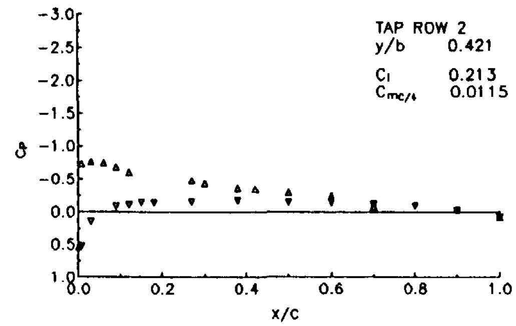
RUN NUMBER 2705

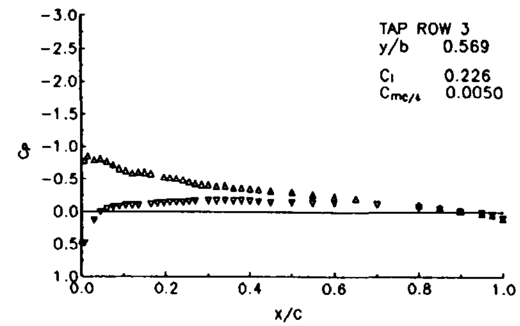
$AOA_{GEOMETRIC}$ 2°

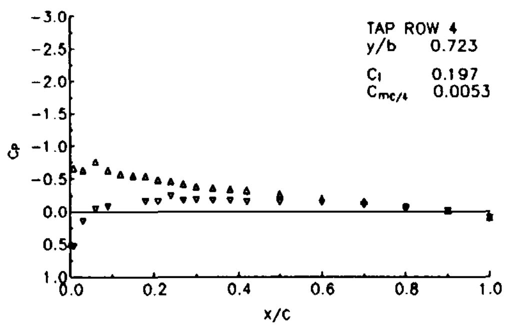
MACH 0.13

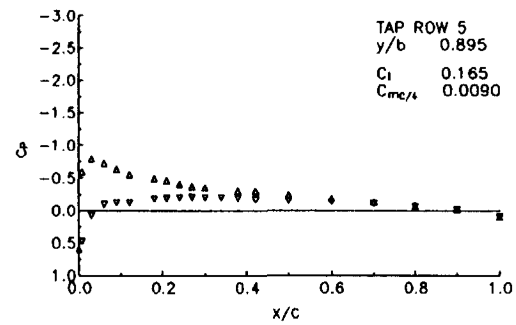
RE 1.5×10^6









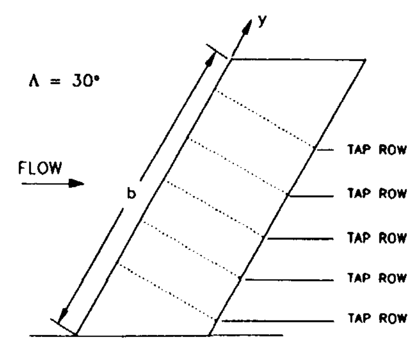


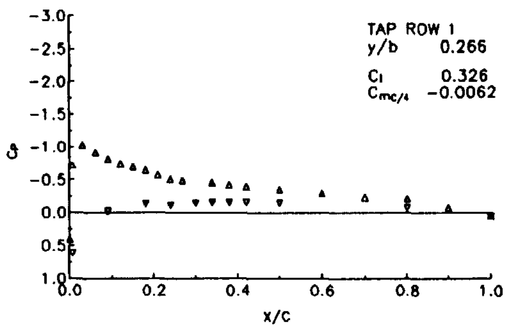
RUN NUMBER 2706

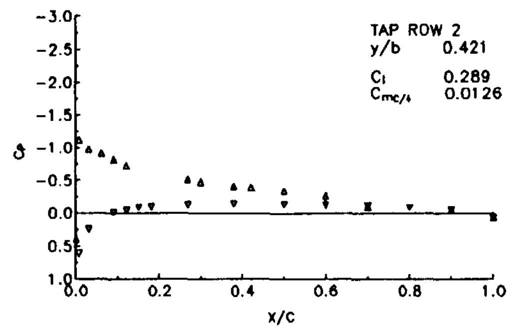
$AOA_{GEOMETRIC}$ 3°

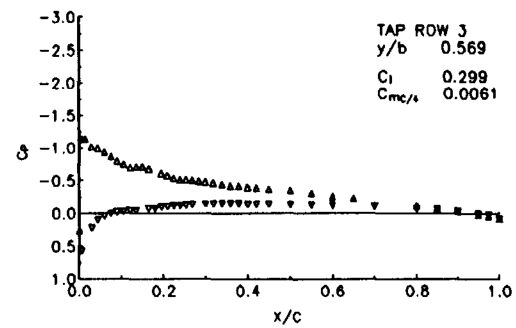
MACH 0.13

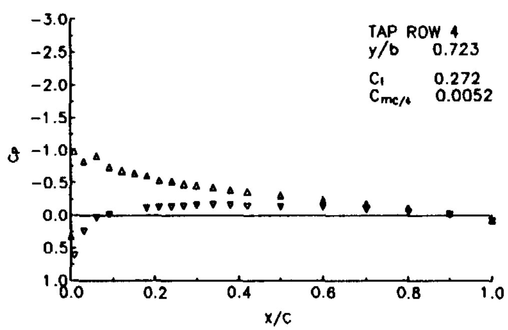
RE 1.49×10^6

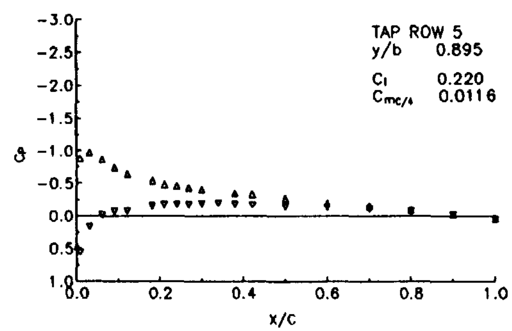










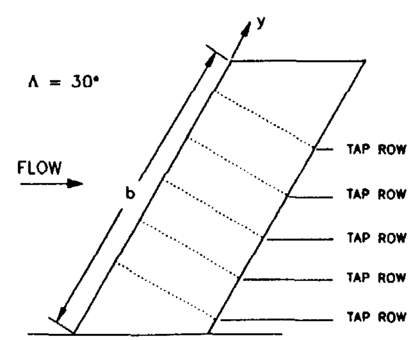


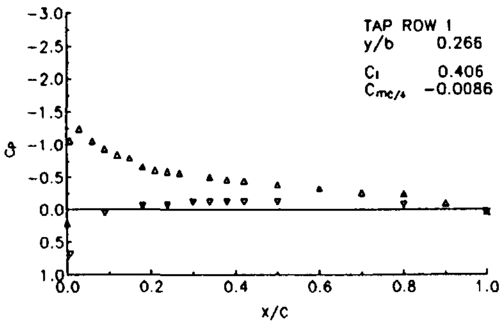
RUN NUMBER 2707

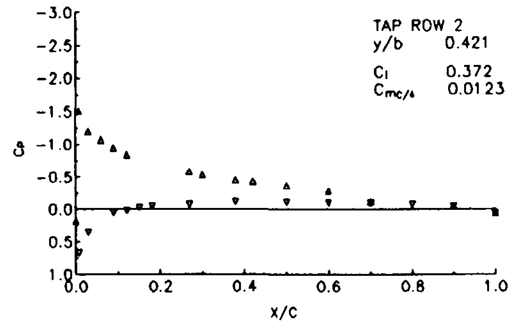
$AOA_{GEOMETRIC}$ 4°

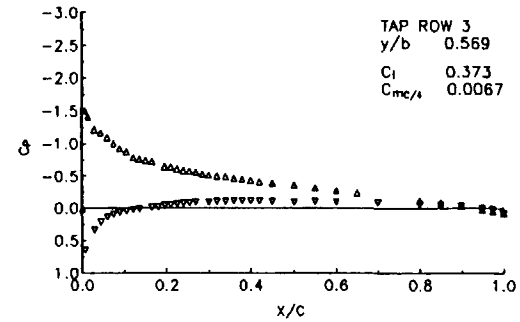
MACH 0.13

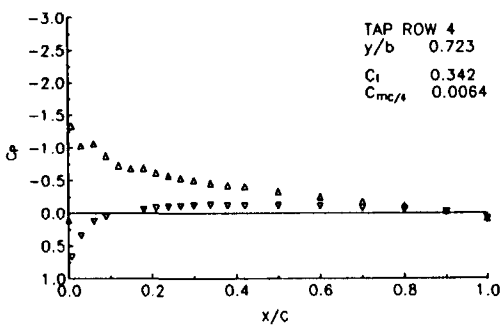
RE 1.49×10^6

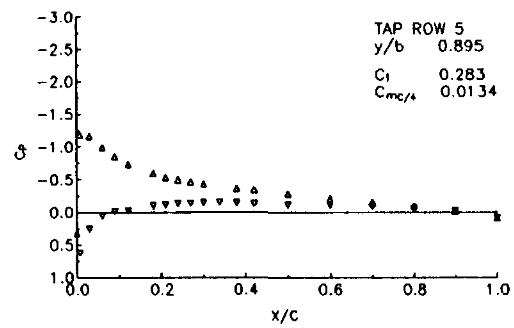










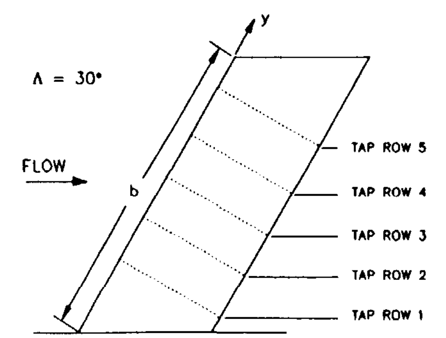


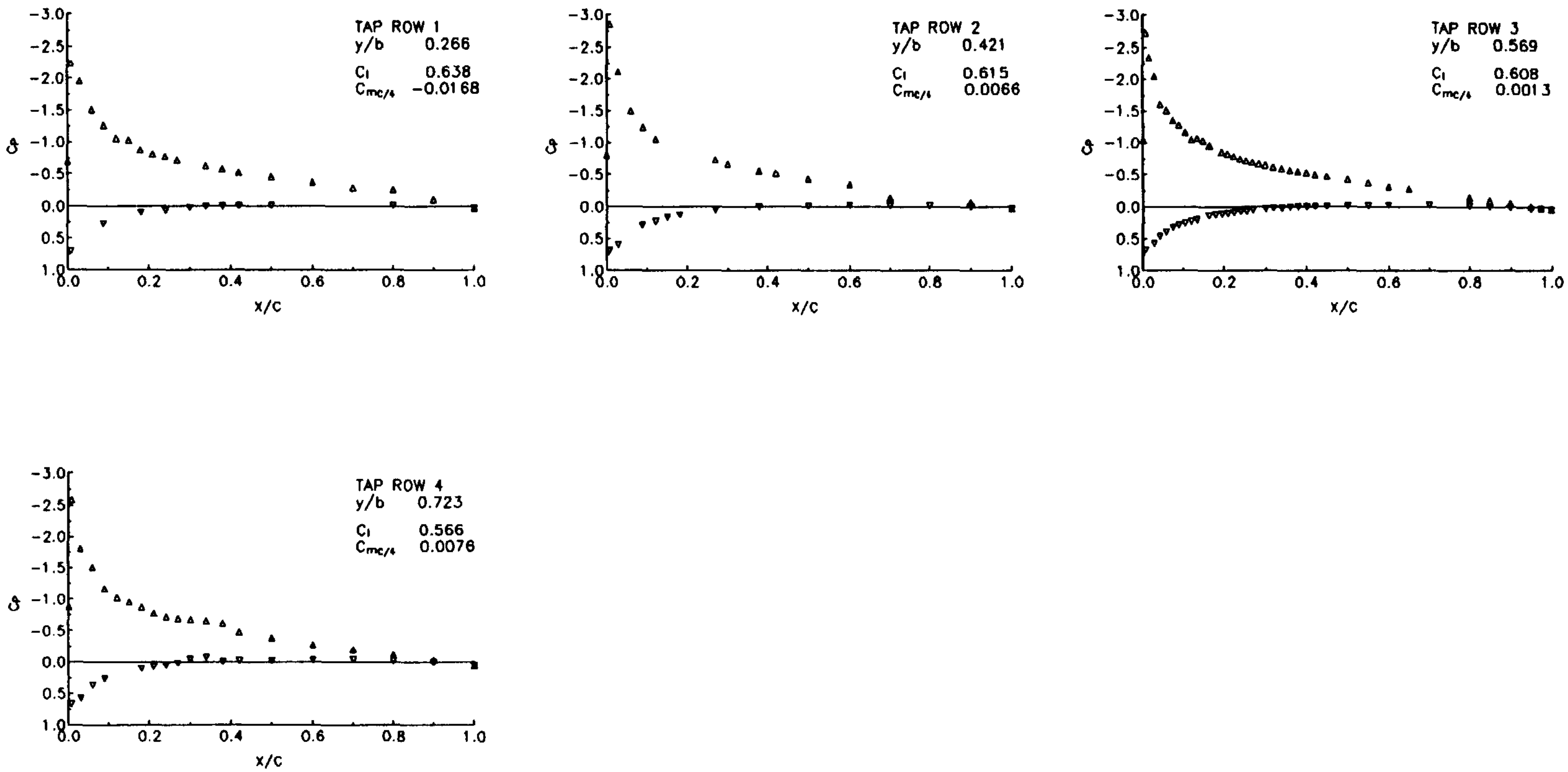
RUN NUMBER 2708

AOA$_{GEOMETRIC}$ 5°

MACH 0.13

RE 1.48×10^6



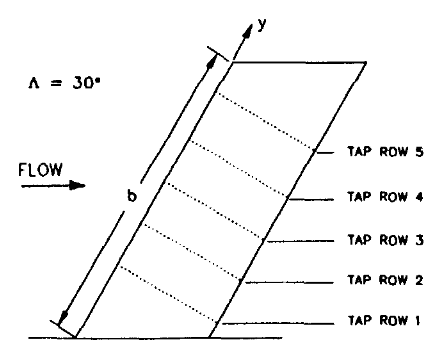


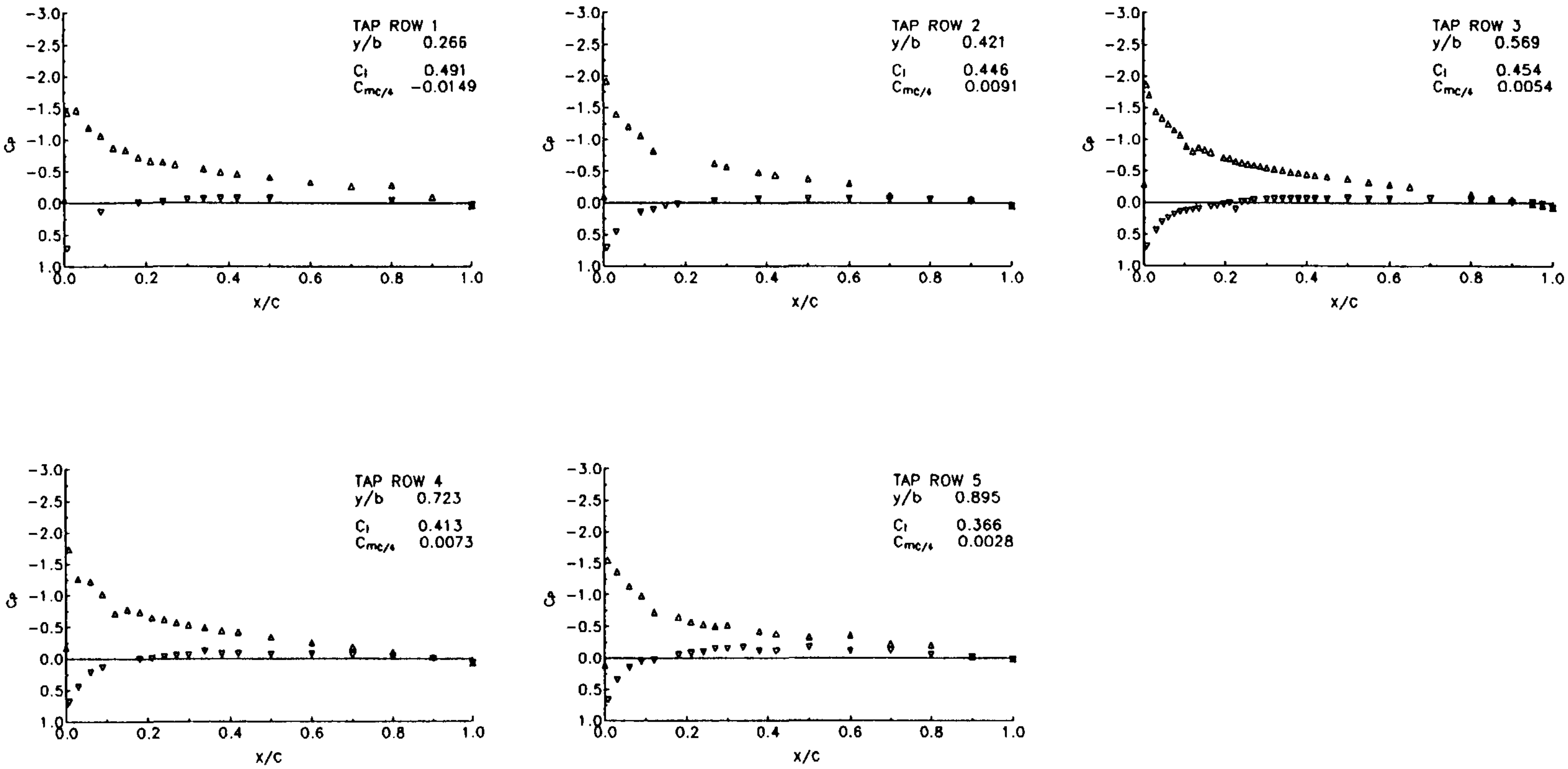
RUN NUMBER 2711

$AOA_{GEOMETRIC}$ 8°

MACH 0.13

RE 1.47×10^6



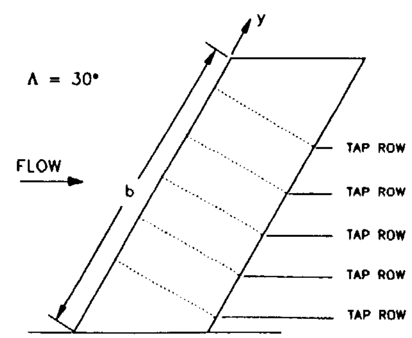


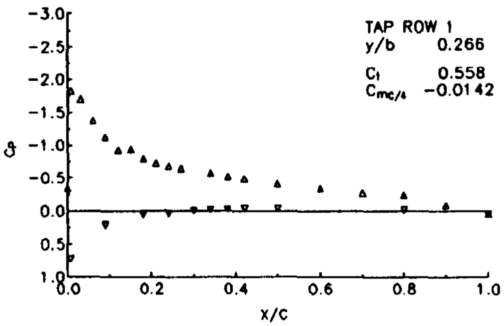
RUN NUMBER 2709

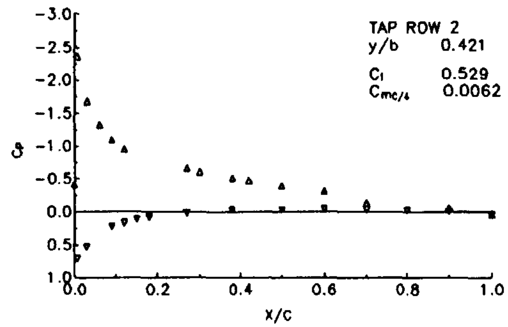
$AOA_{GEOMETRIC}$ 6°

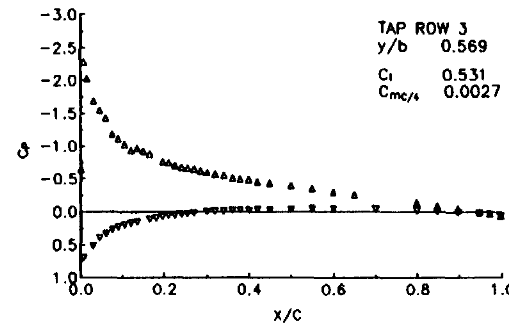
MACH 0.13

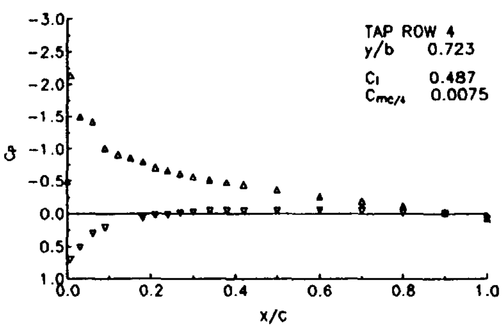
RE 1.48×10^6

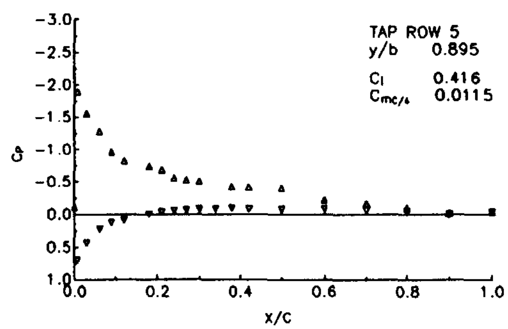










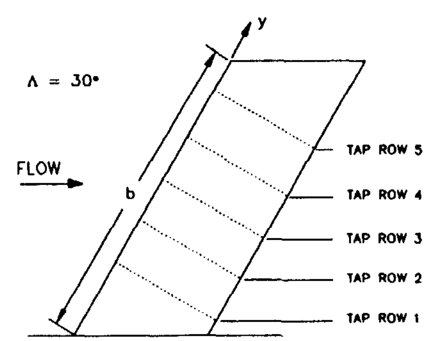


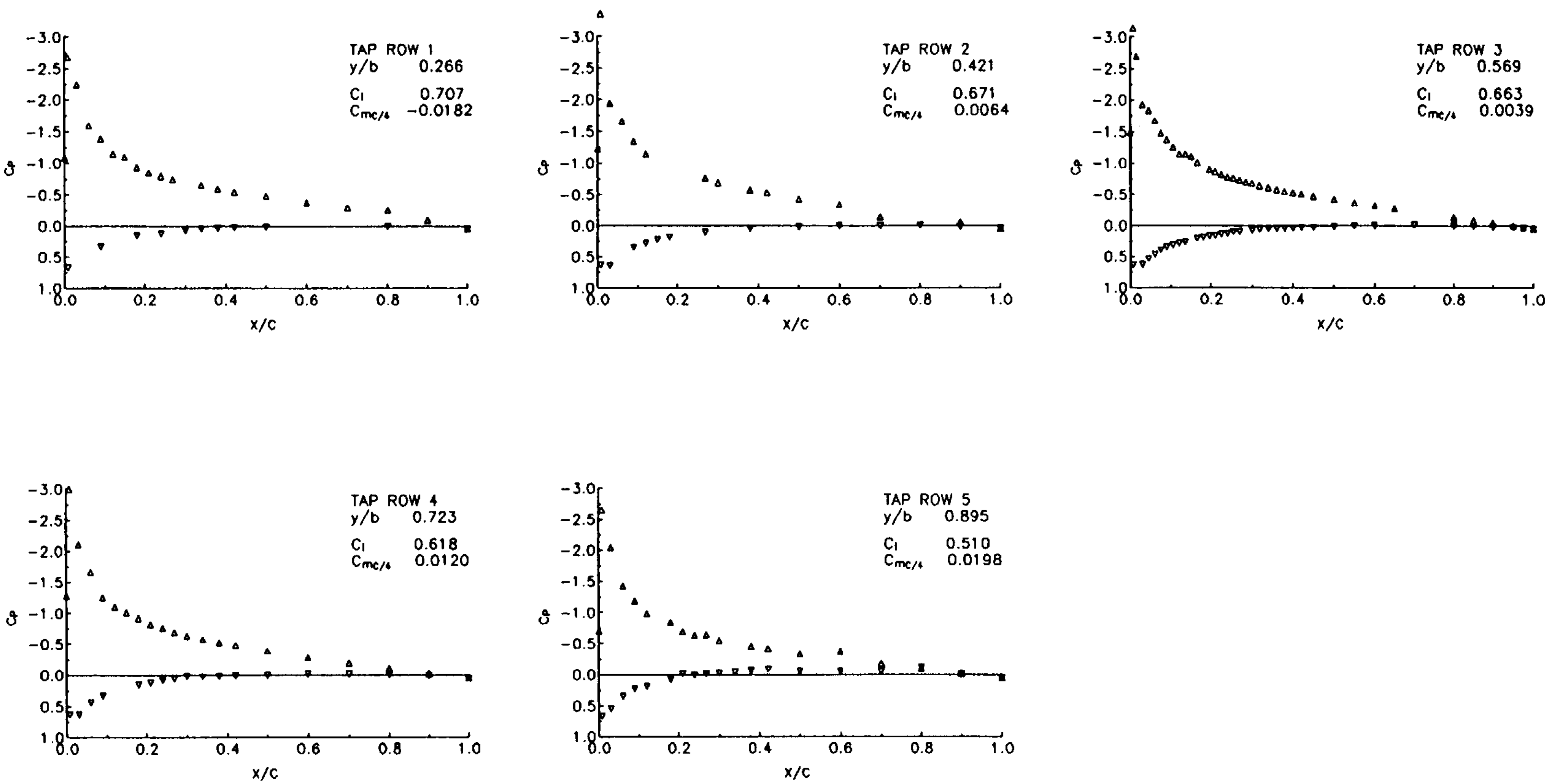
RUN NUMBER 2710

$AOA_{GEOMETRIC}$ 7°

MACH 0.13

RE 1.48×10^6



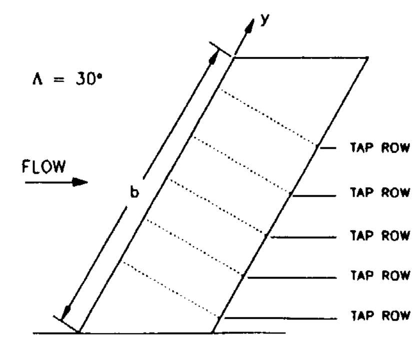


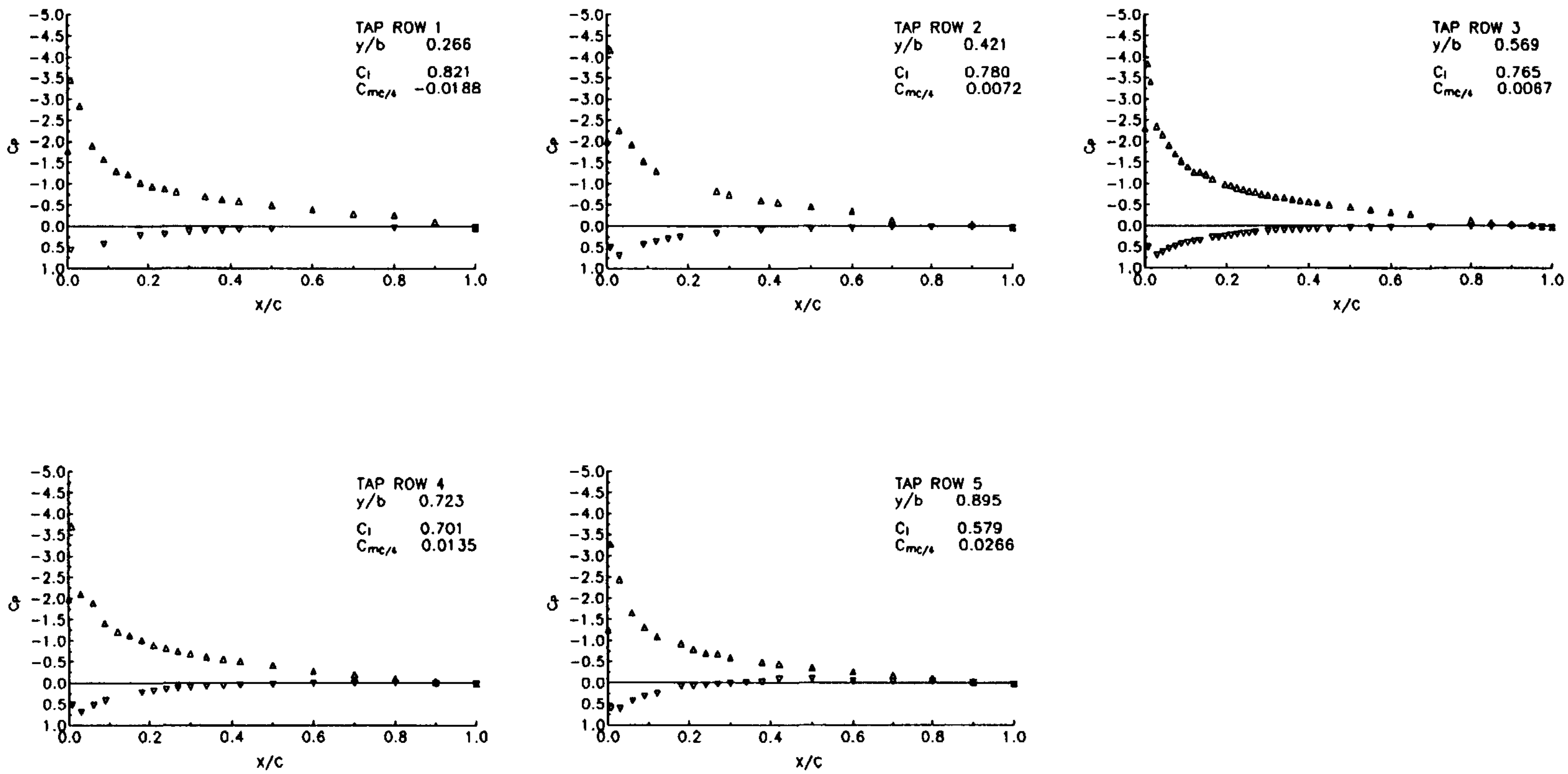
RUN NUMBER 2712

$AOA_{GEOMETRIC}$ 9°

MACH 0.13

RE 1.47×10^6



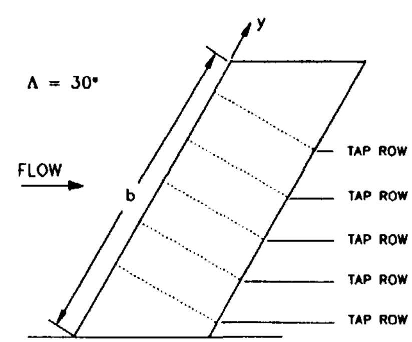


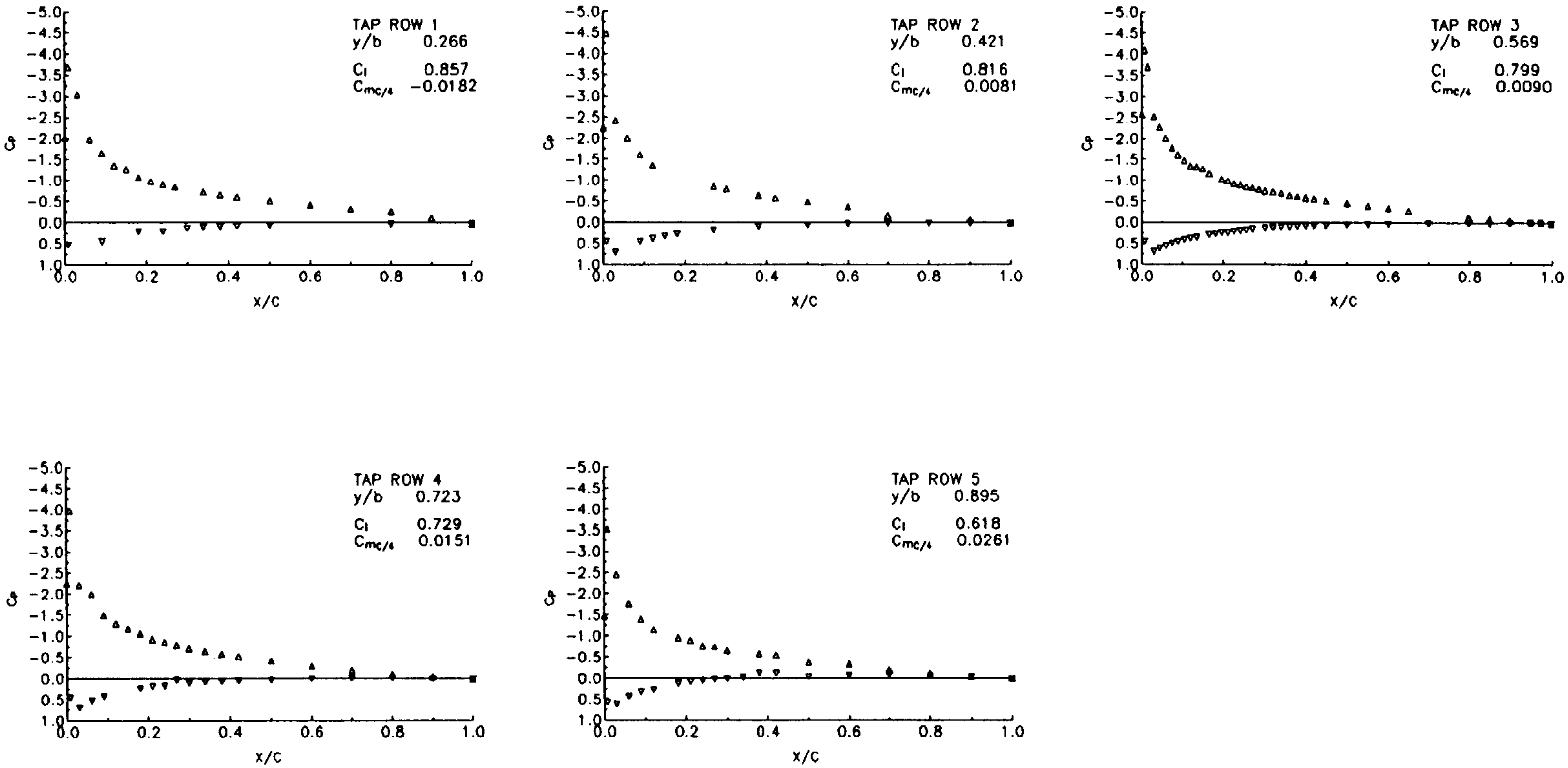
RUN NUMBER 2713

$AOA_{GEOMETRIC}$ 10°

MACH 0.13

RE 1.47×10^6



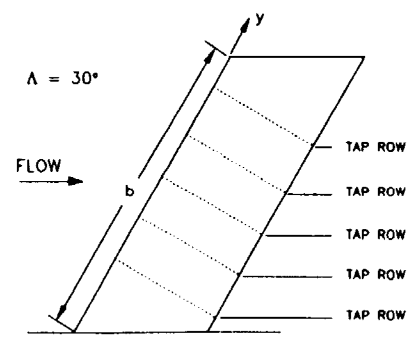


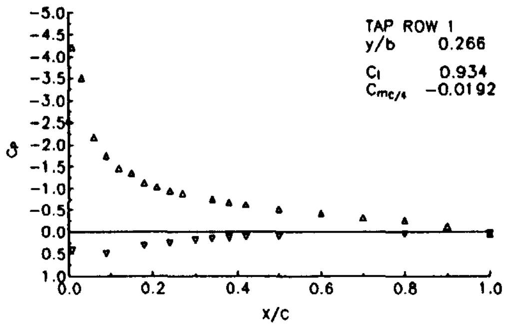
RUN NUMBER 2714

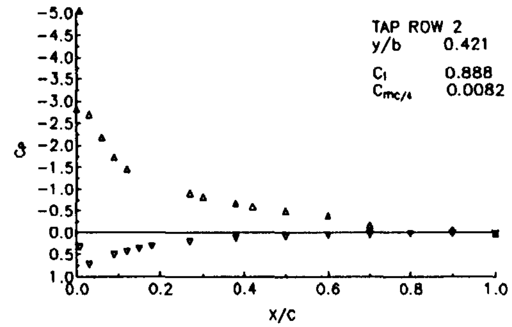
$AOA_{GEOMETRIC}$ 11°

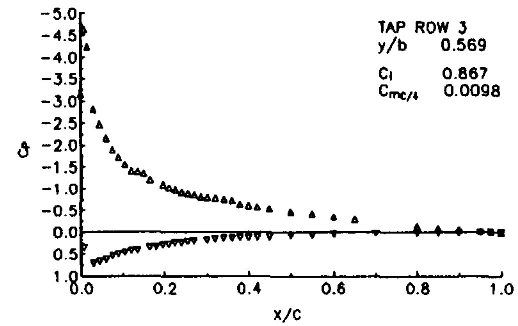
MACH 0.13

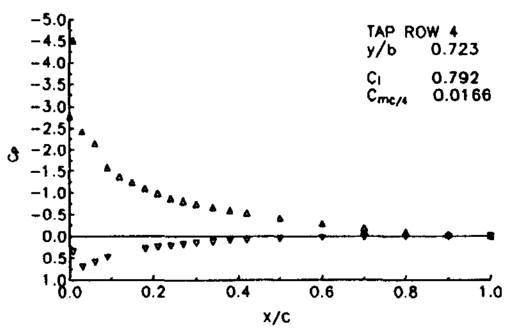
RE 1.46×10^6

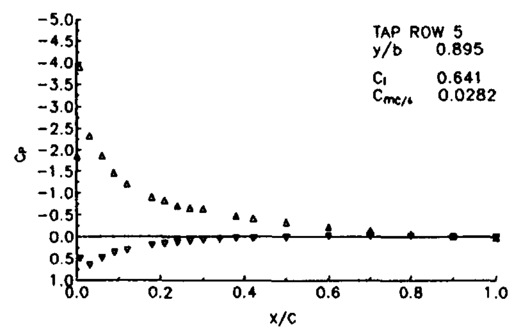










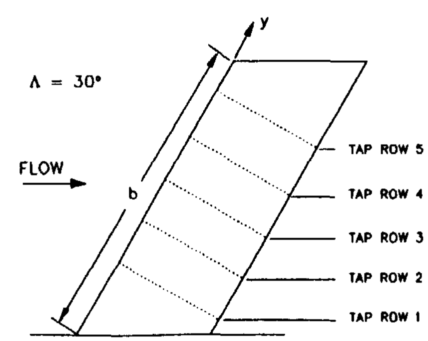


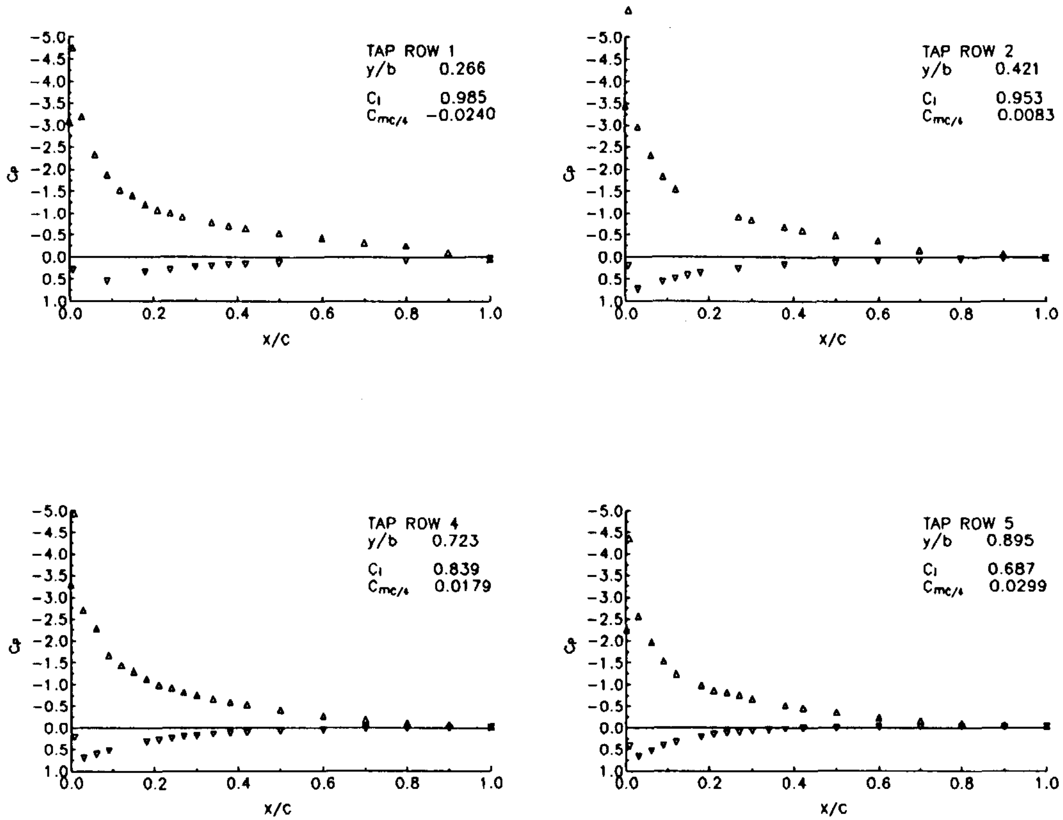
RUN NUMBER 2715

$AOA_{GEOMETRIC}$ 12°

MACH 0.13

RE 1.46×10^6



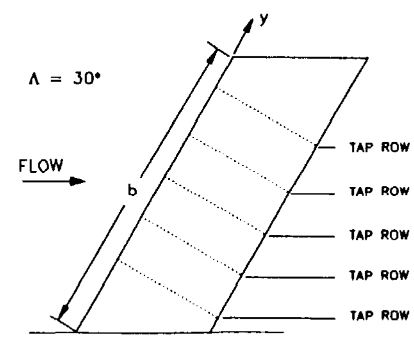


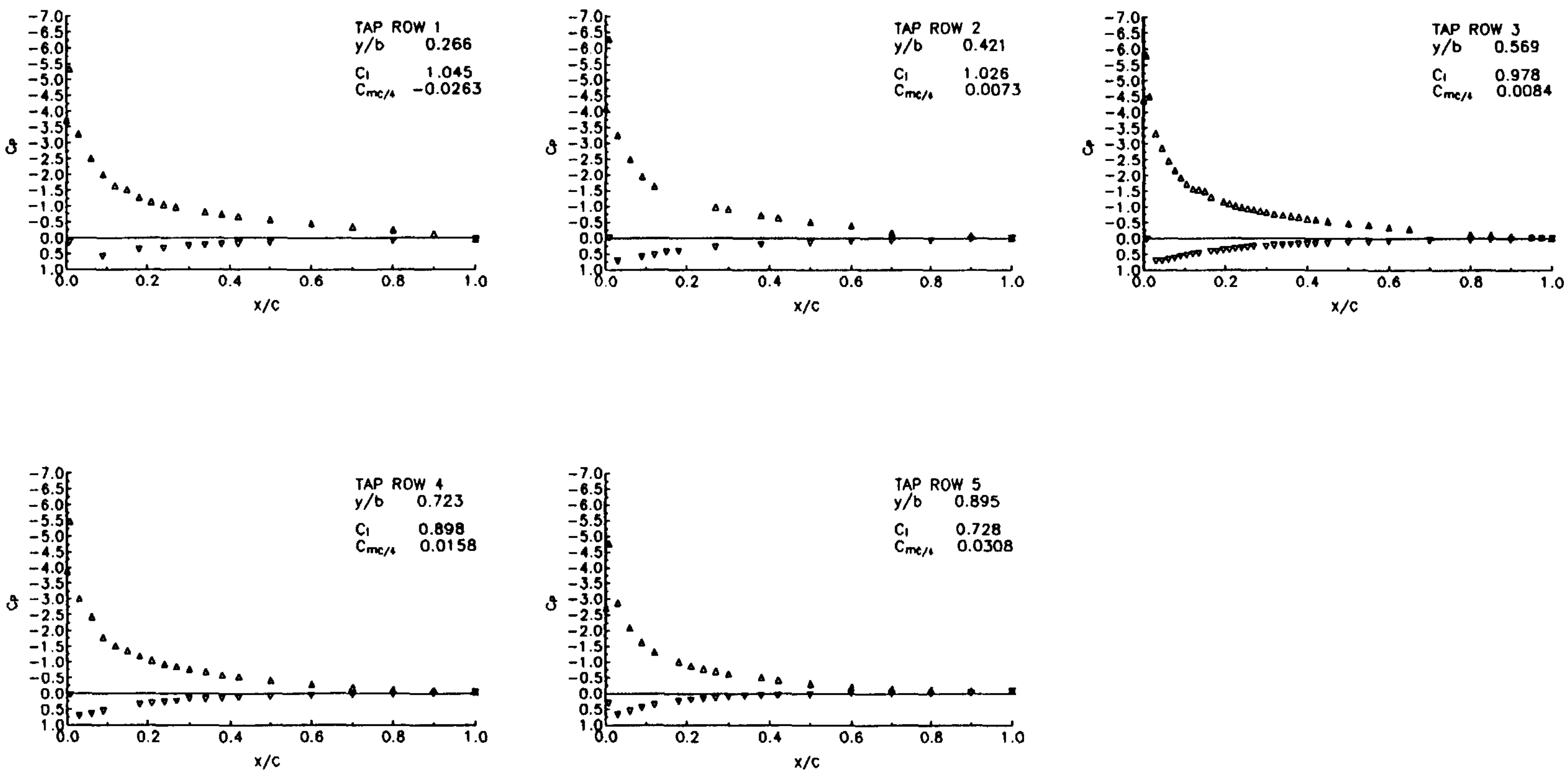
RUN NUMBER 2716

AOA$_{GEOMETRIC}$ 13°

MACH 0.13

RE 1.46×10^{6}



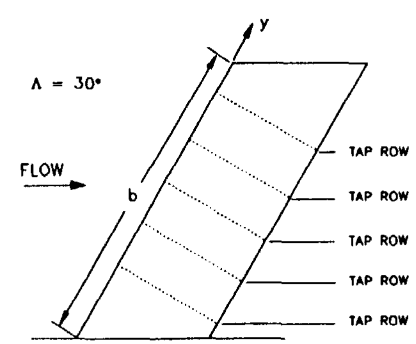


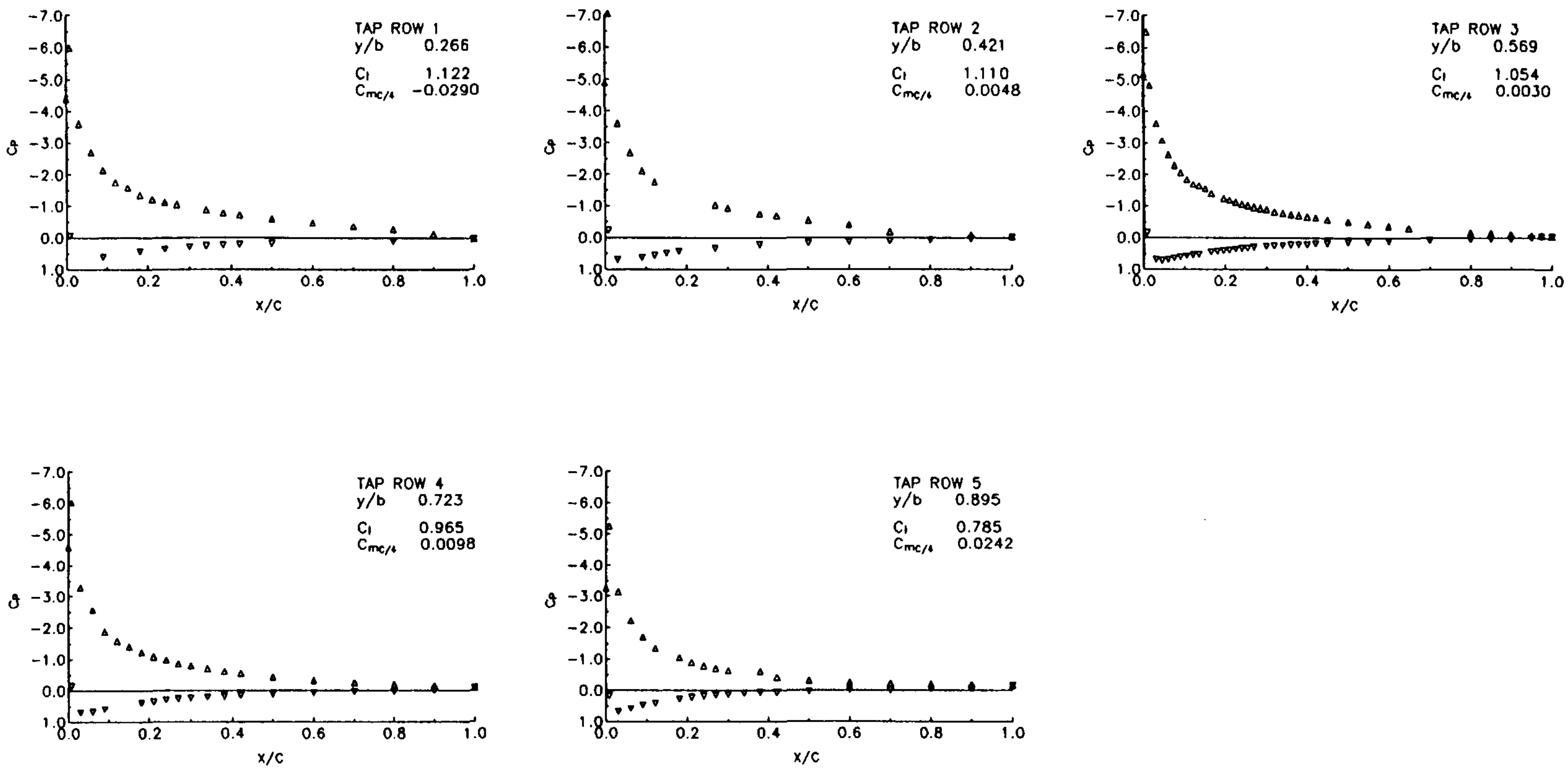
RUN NUMBER 2717

$AOA_{GEOMETRIC}$ 14°

MACH 0.13

RE 1.45×10^6



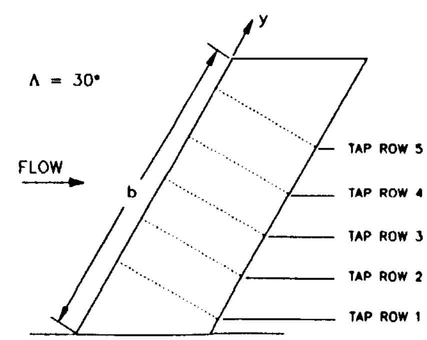


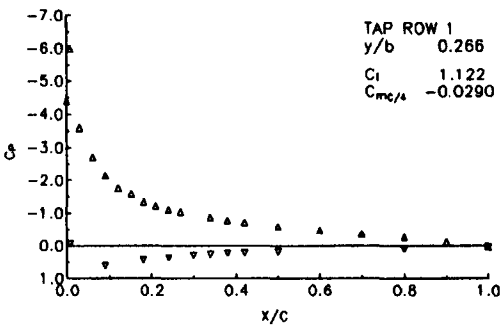
RUN NUMBER 2718

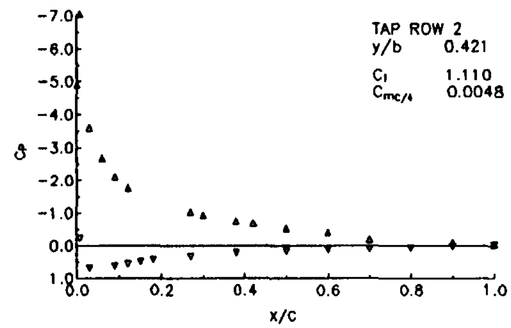
$AOA_{GEOMETRIC}$ 15°

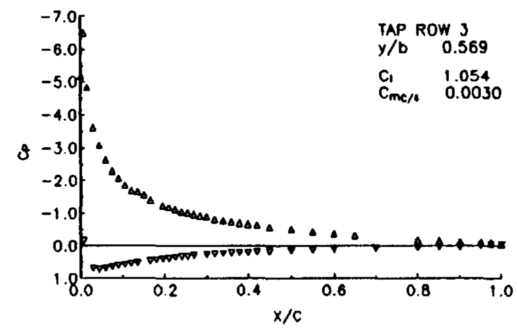
MACH 0.13

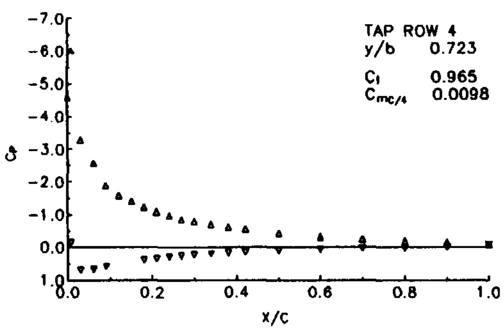
RE 1.44×10^6

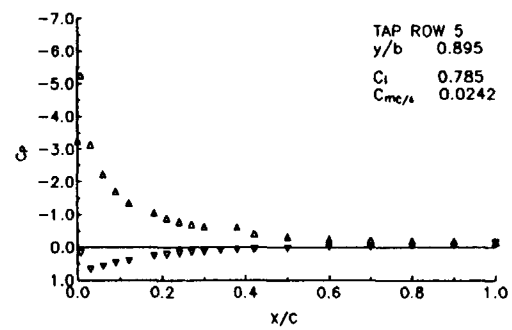










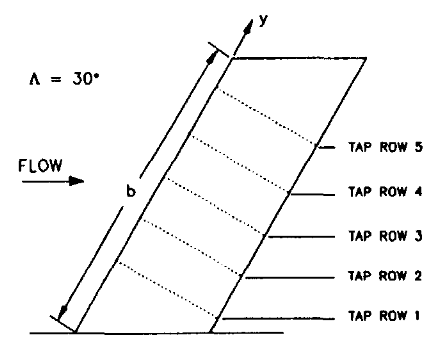


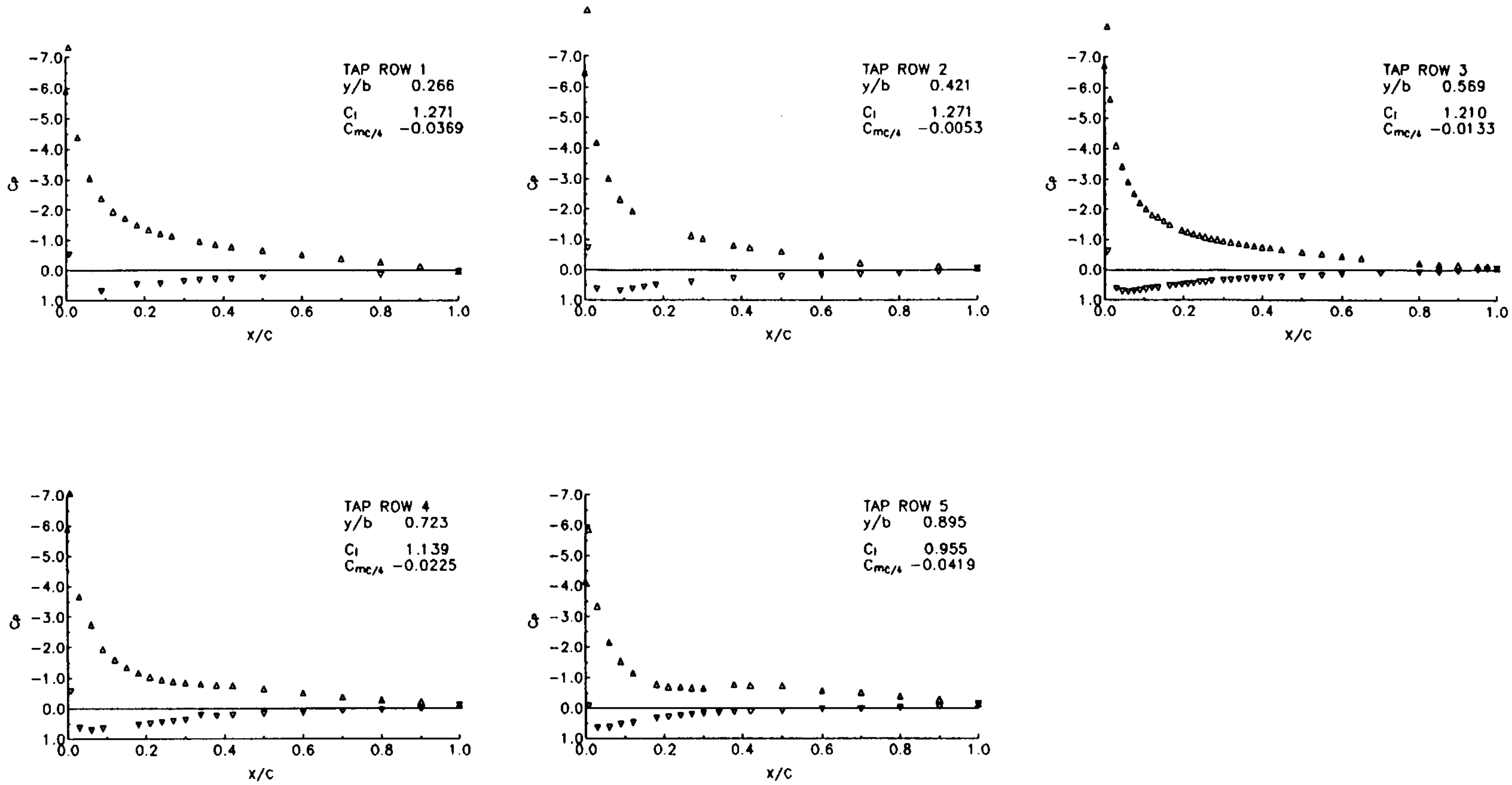
RUN NUMBER 2719

$AOA_{GEOMETRIC}$ 16°

MACH 0.13

RE 1.44×10^6



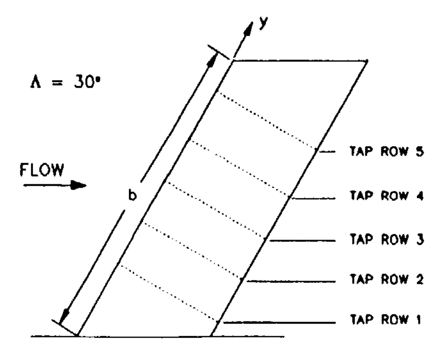


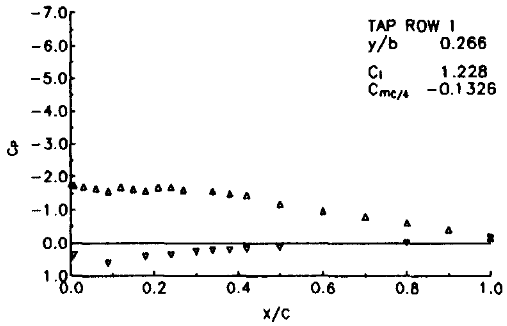
RUN NUMBER 2720

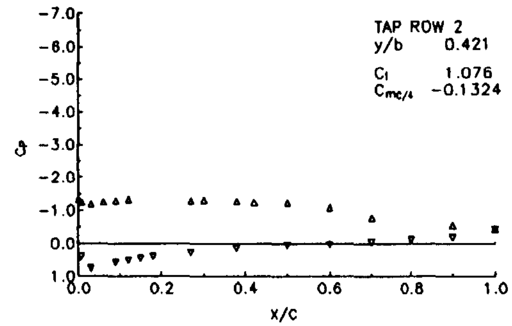
$AOA_{GEOMETRIC}$ 17°

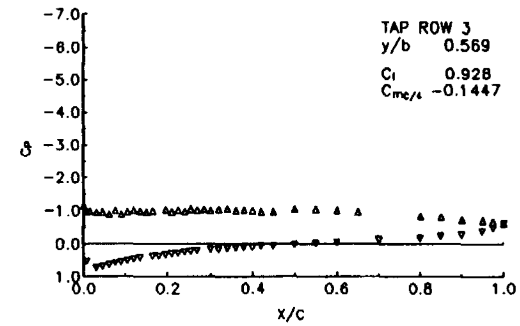
MACH 0.13

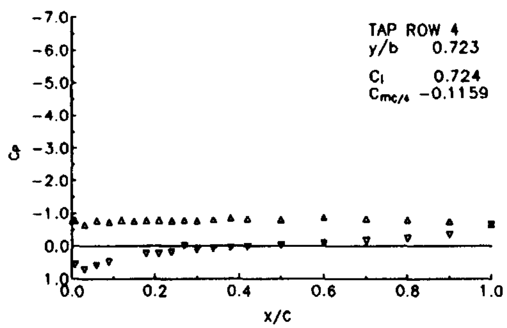
RE 1.43×10^6

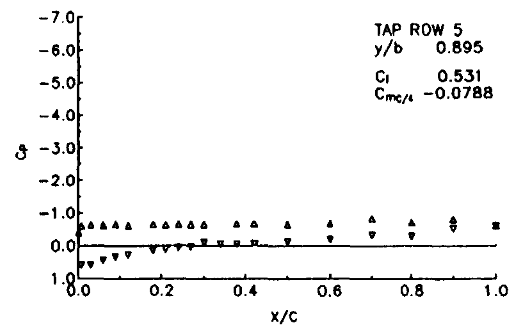










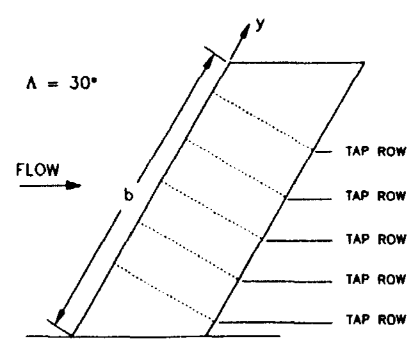


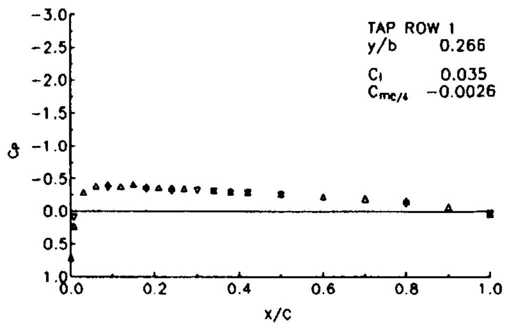
RUN NUMBER 2721

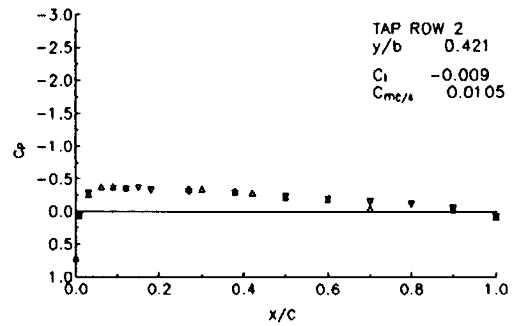
$AOA_{GEOMETRIC}$ 18°

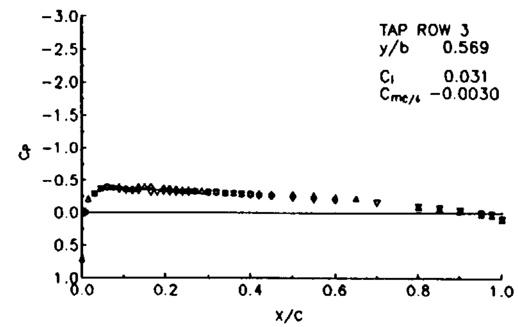
MACH 0.13

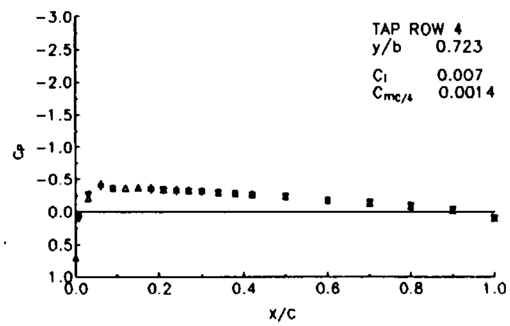
RE 1.37×10^6

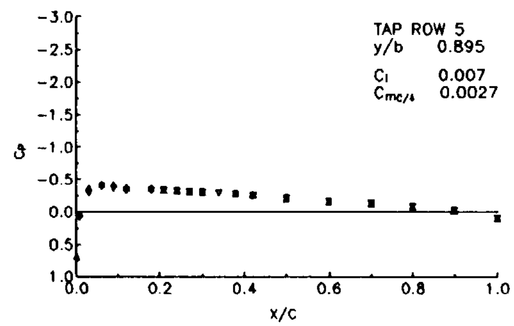










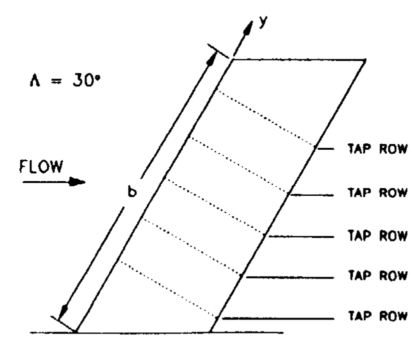


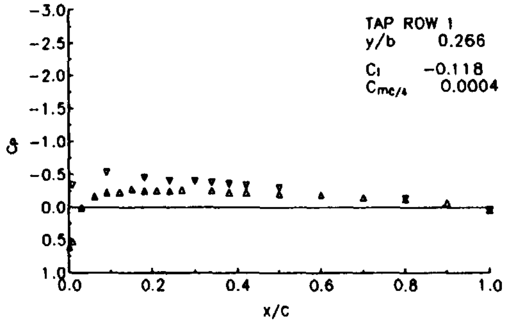
RUN NUMBER 2723

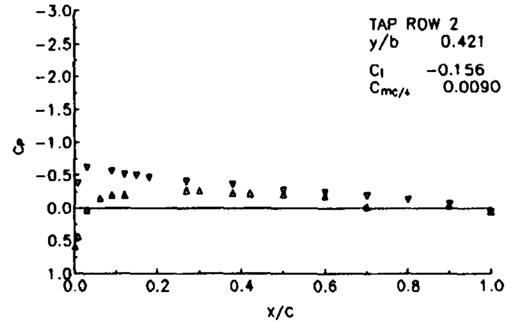
$AOA_{GEOMETRIC}$ 0°

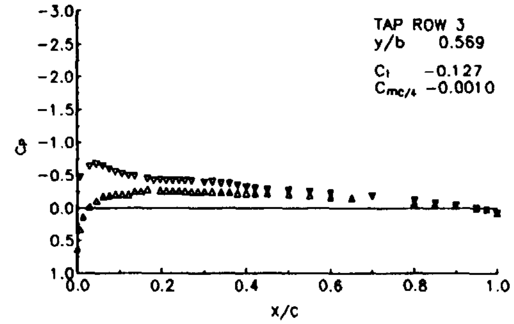
MACH 0.13

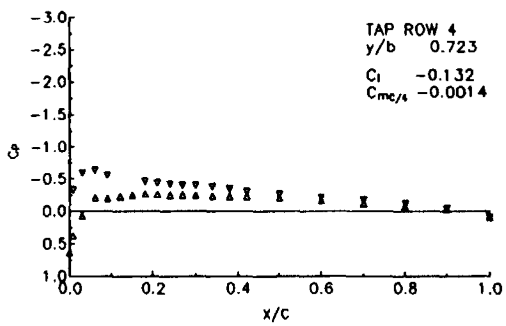
RE 1.48×10^6

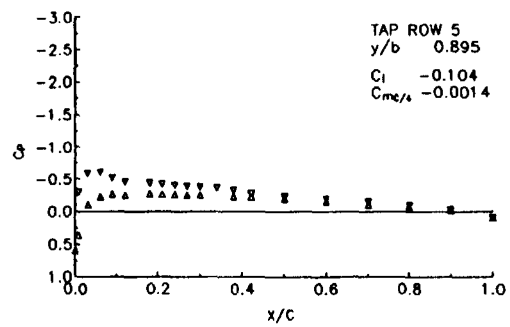










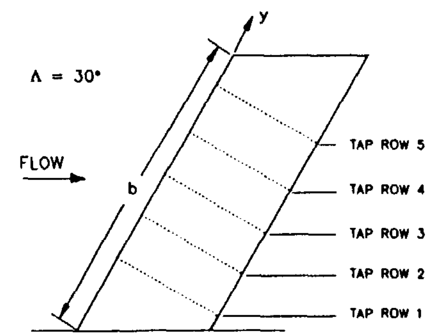


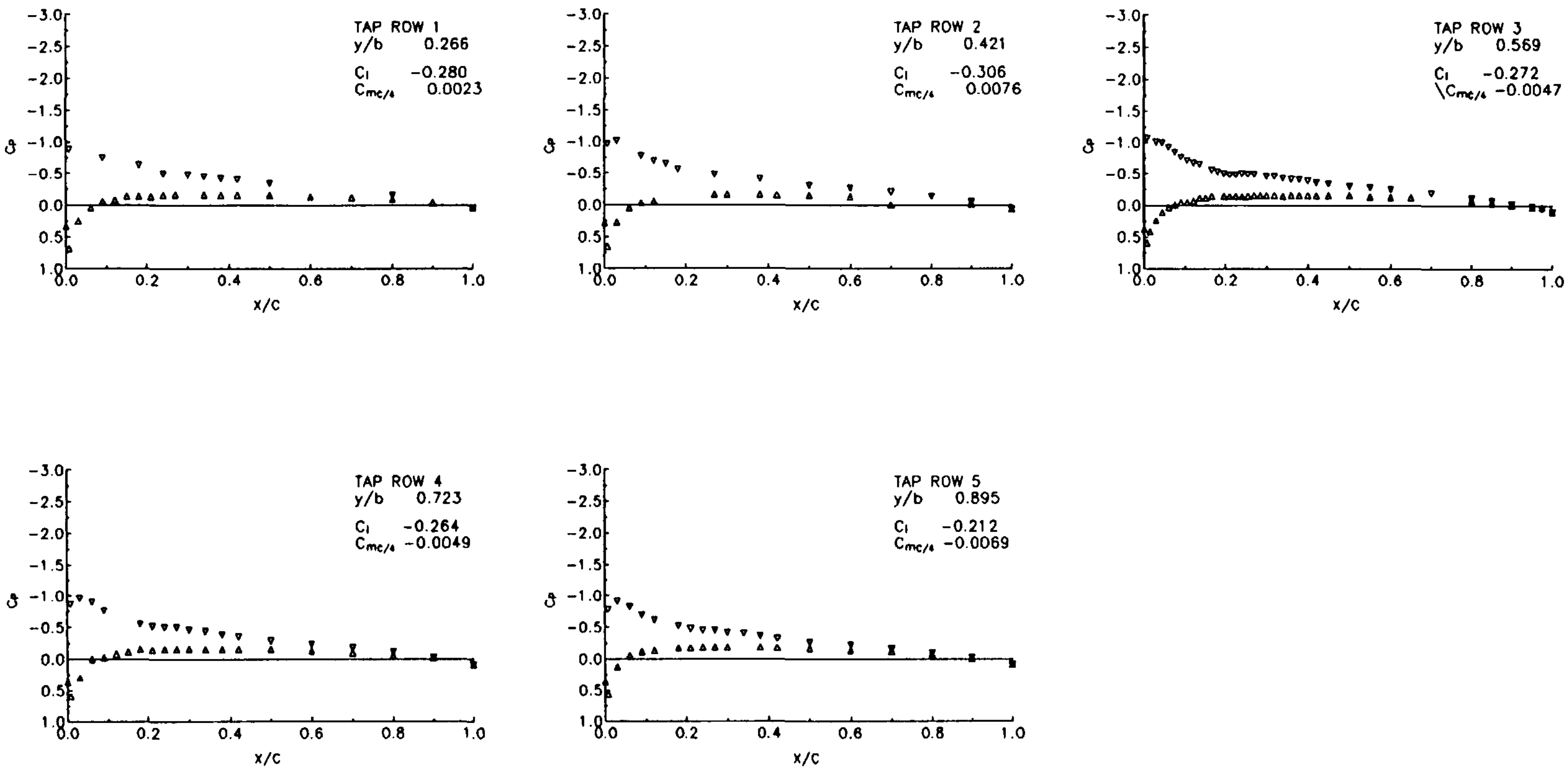
RUN NUMBER 2724

$AOA_{GEOMETRIC}$ $-2°$

MACH 0.13

RE 1.46×10^6



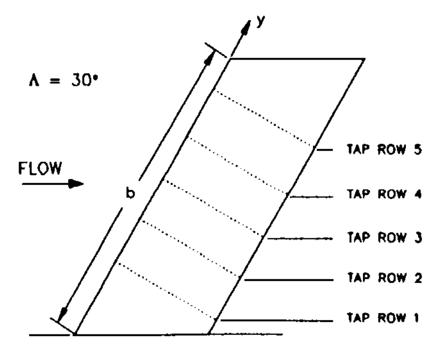


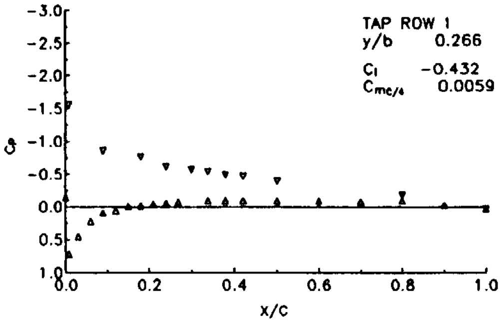
RUN NUMBER 2725

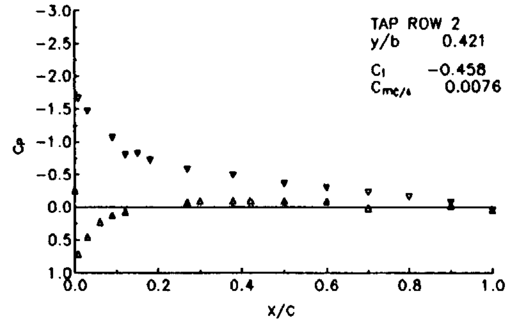
AOA$_{GEOMETRIC}$ $-4°$

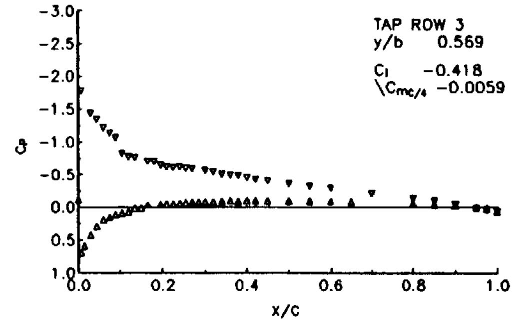
MACH 0.13

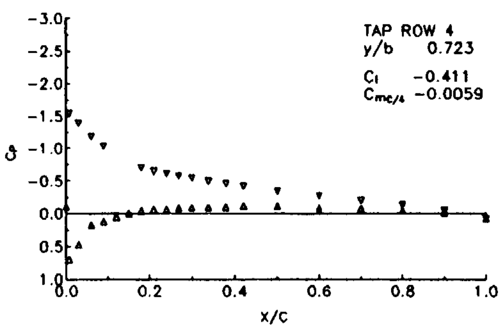
RE 1.47×10^6

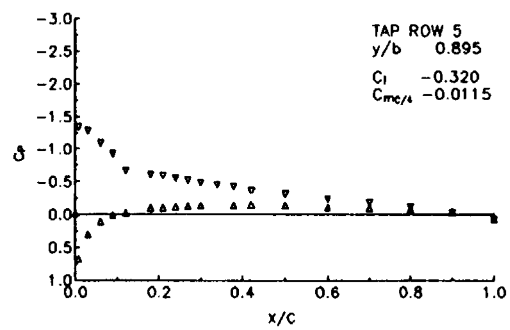










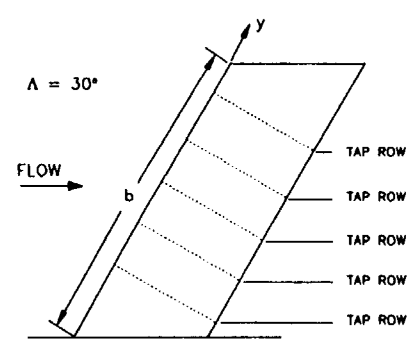


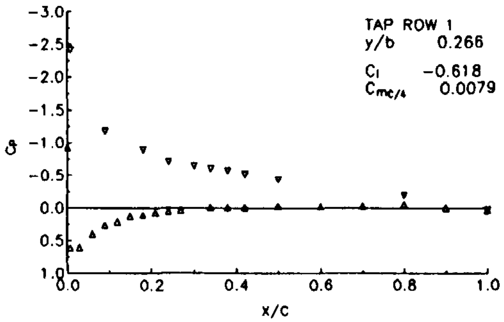
RUN NUMBER 2726

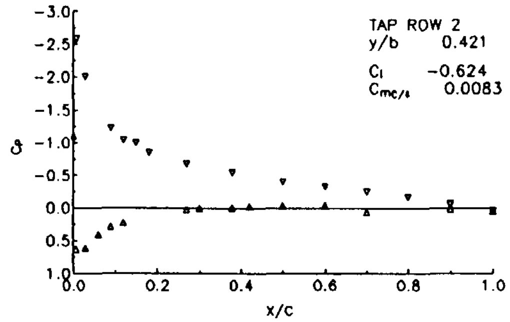
$AOA_{GEOMETRIC}$ $-6°$

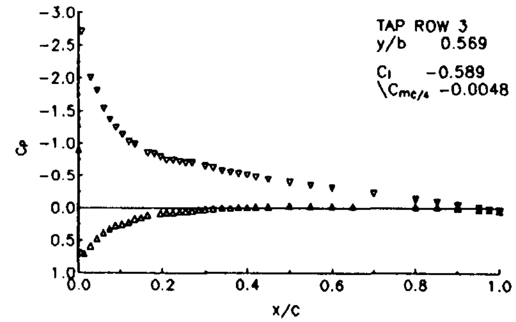
MACH 0.13

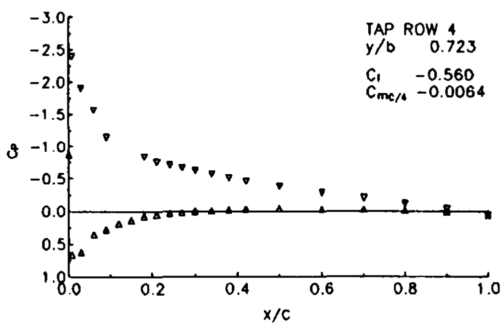
RE 1.47×10^{6}

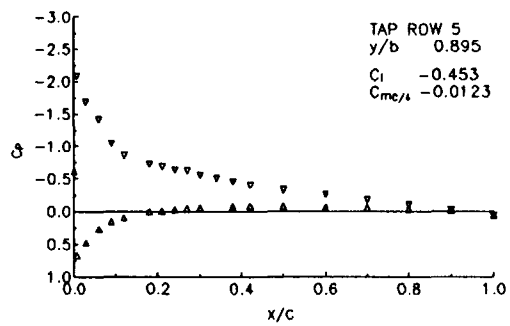










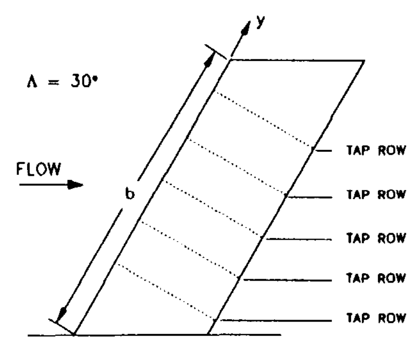


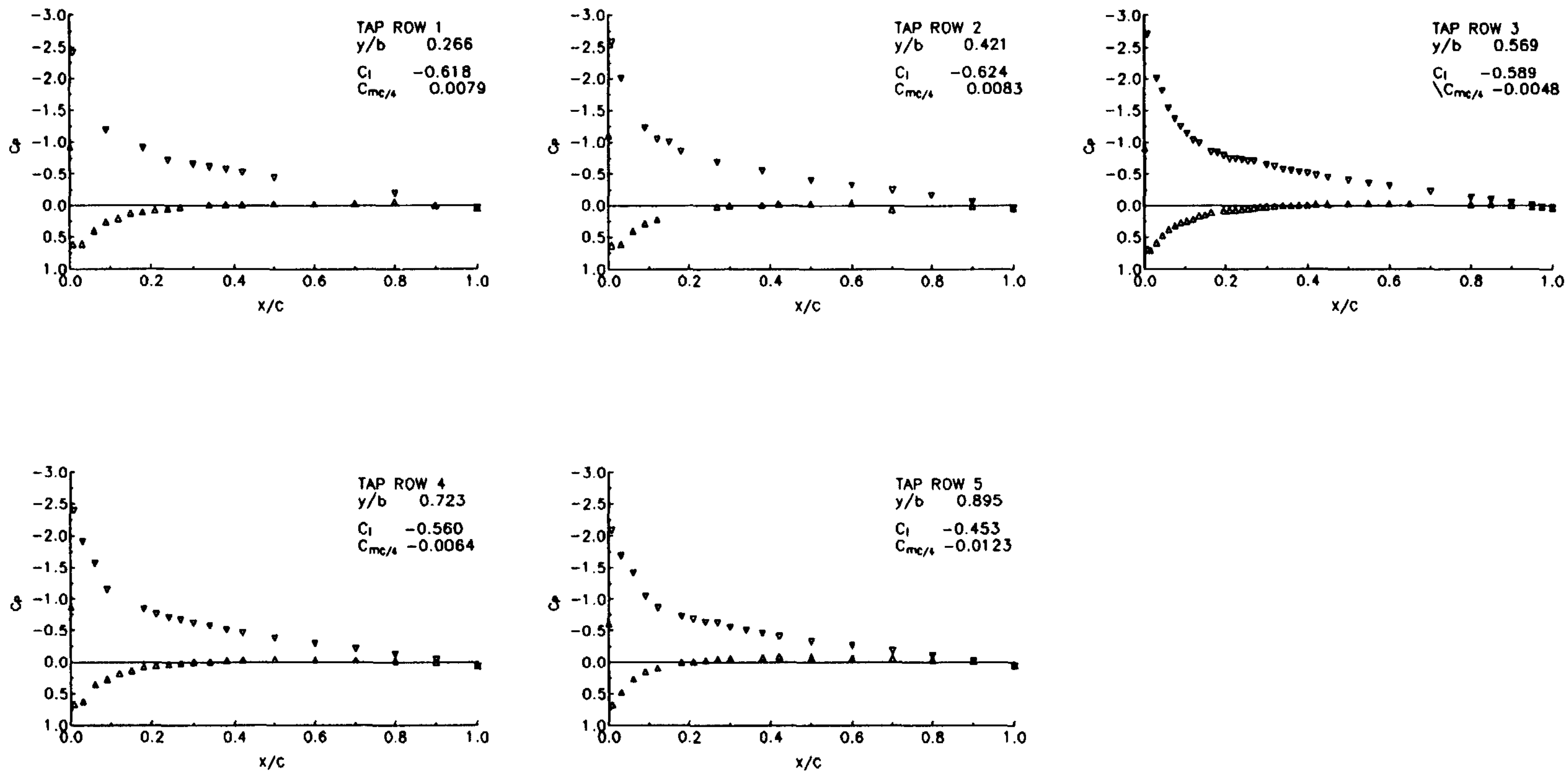
RUN NUMBER 2727

$AOA_{GEOMETRIC}$ −8.16°

MACH 0.13

RE 1.47×10^6



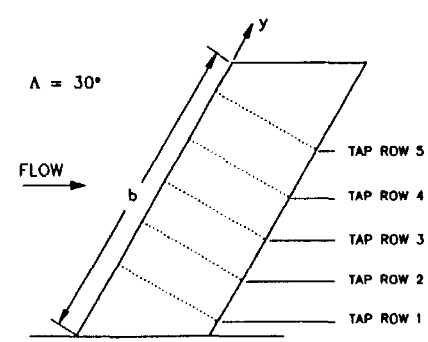


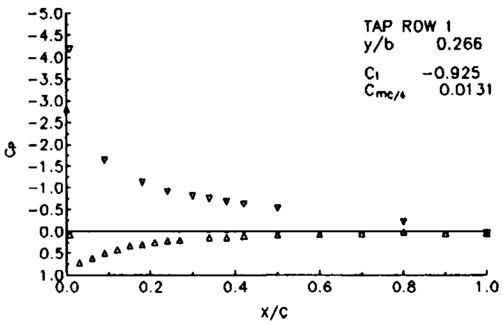
RUN NUMBER 2728

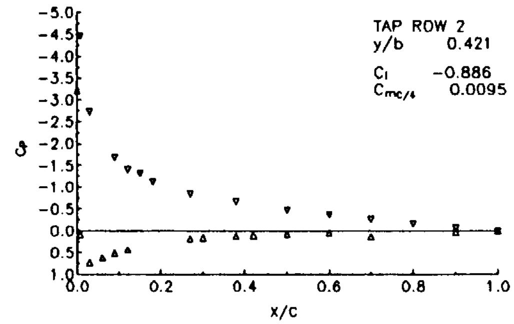
$AOA_{GEOMETRIC}$ $-10°$

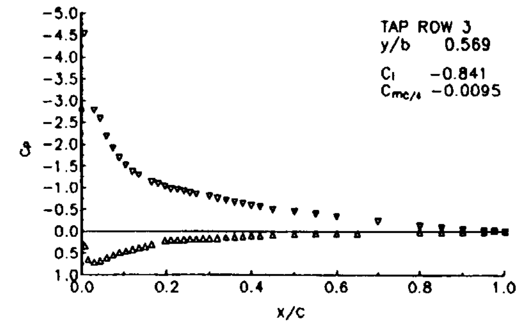
MACH 0.13

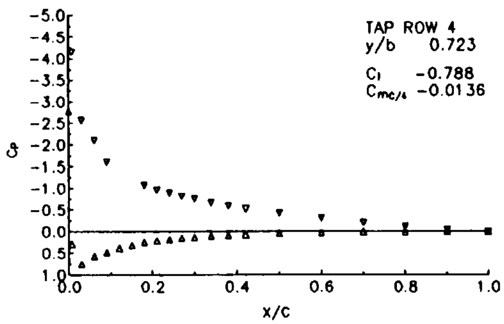
RE 1.47×10^6

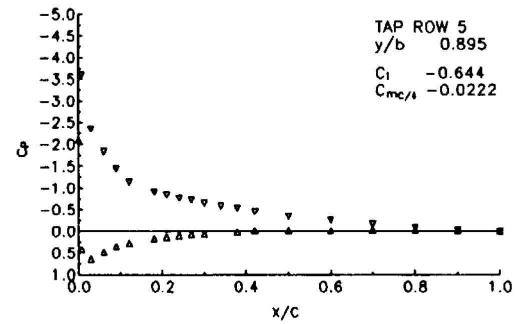










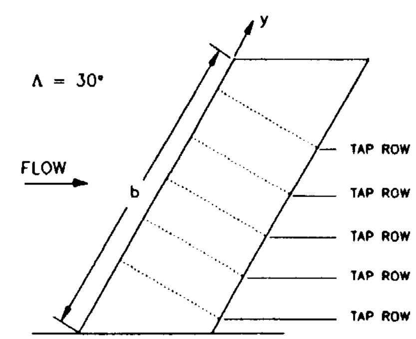


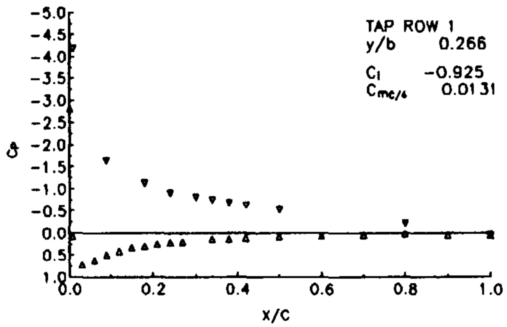
RUN NUMBER 2729

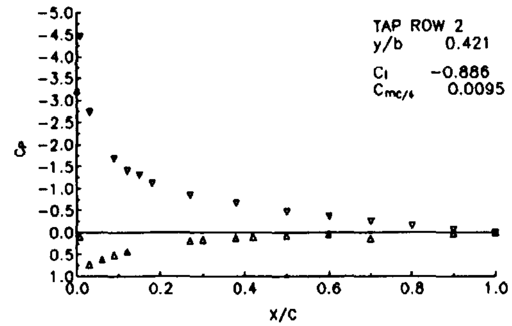
$AOA_{GEOMETRIC}$ $-12.05°$

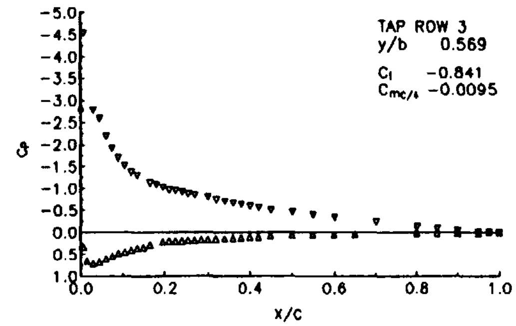
MACH 0.13

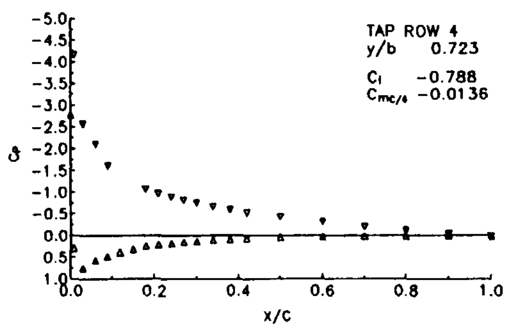
RE 1.46×10^6

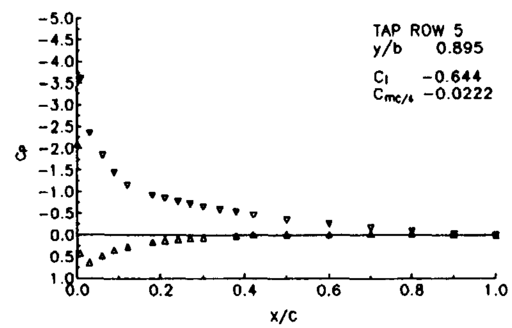










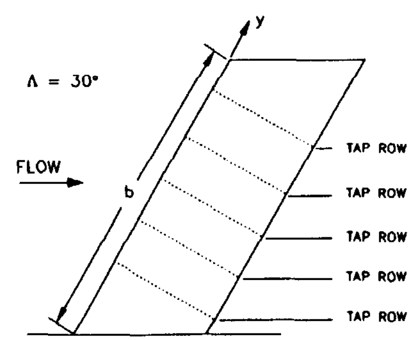


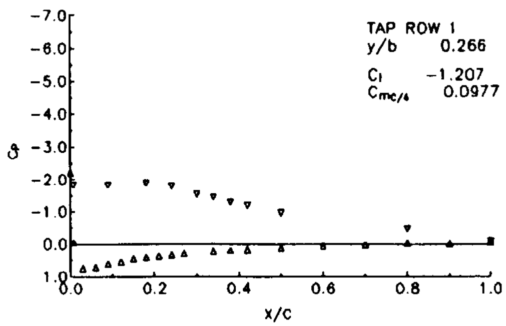
RUN NUMBER 2730

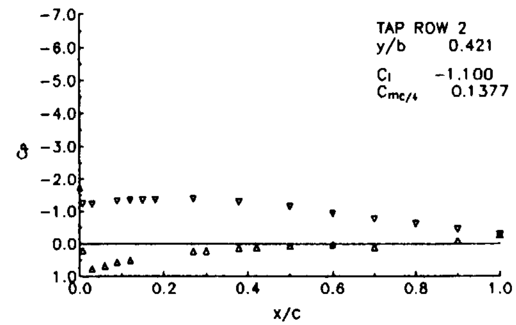
$AOA_{GEOMETRIC}$ $-13.97°$

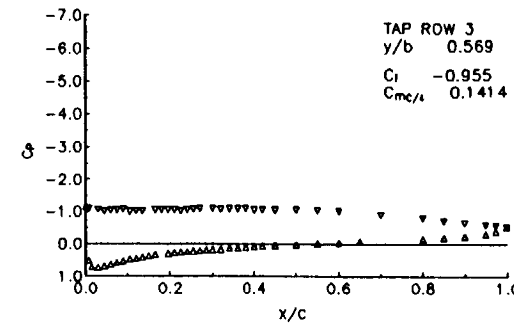
MACH 0.13

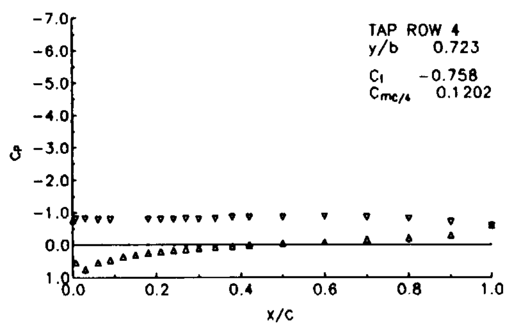
RE 1.46×10^6

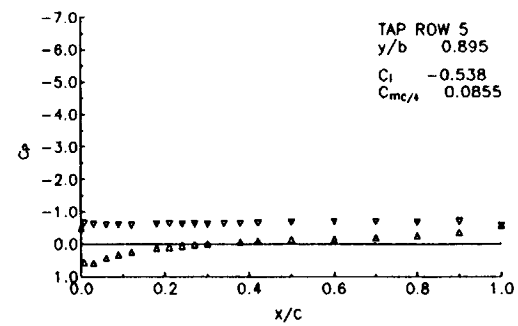










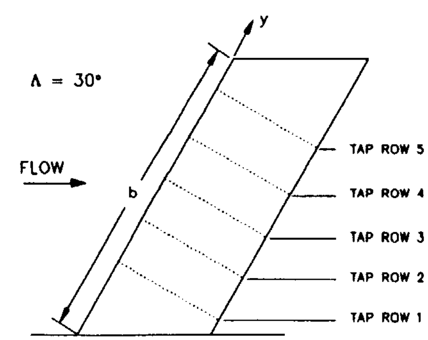


RUN NUMBER 2732

AOA GEOMETRIC −17.11°

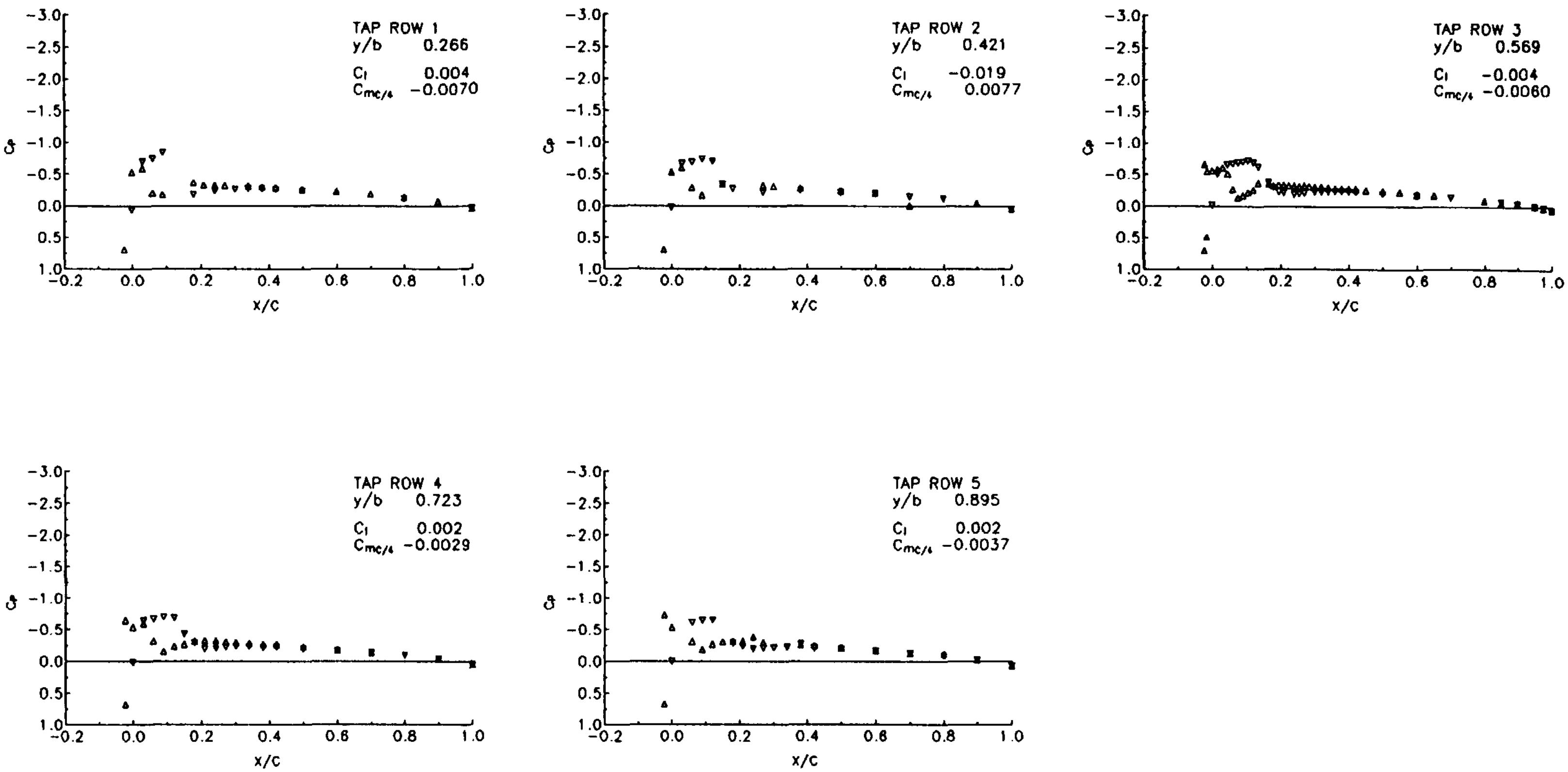
MACH 0.13

RE 1.41×10^6



RUNS 2744 - 2775

30 DEGREE SWEEP WING, 5 MINUTE GLAZE ICE, SMOOTH

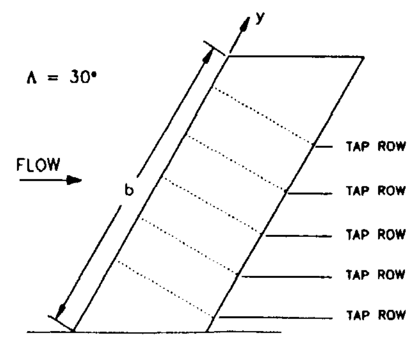


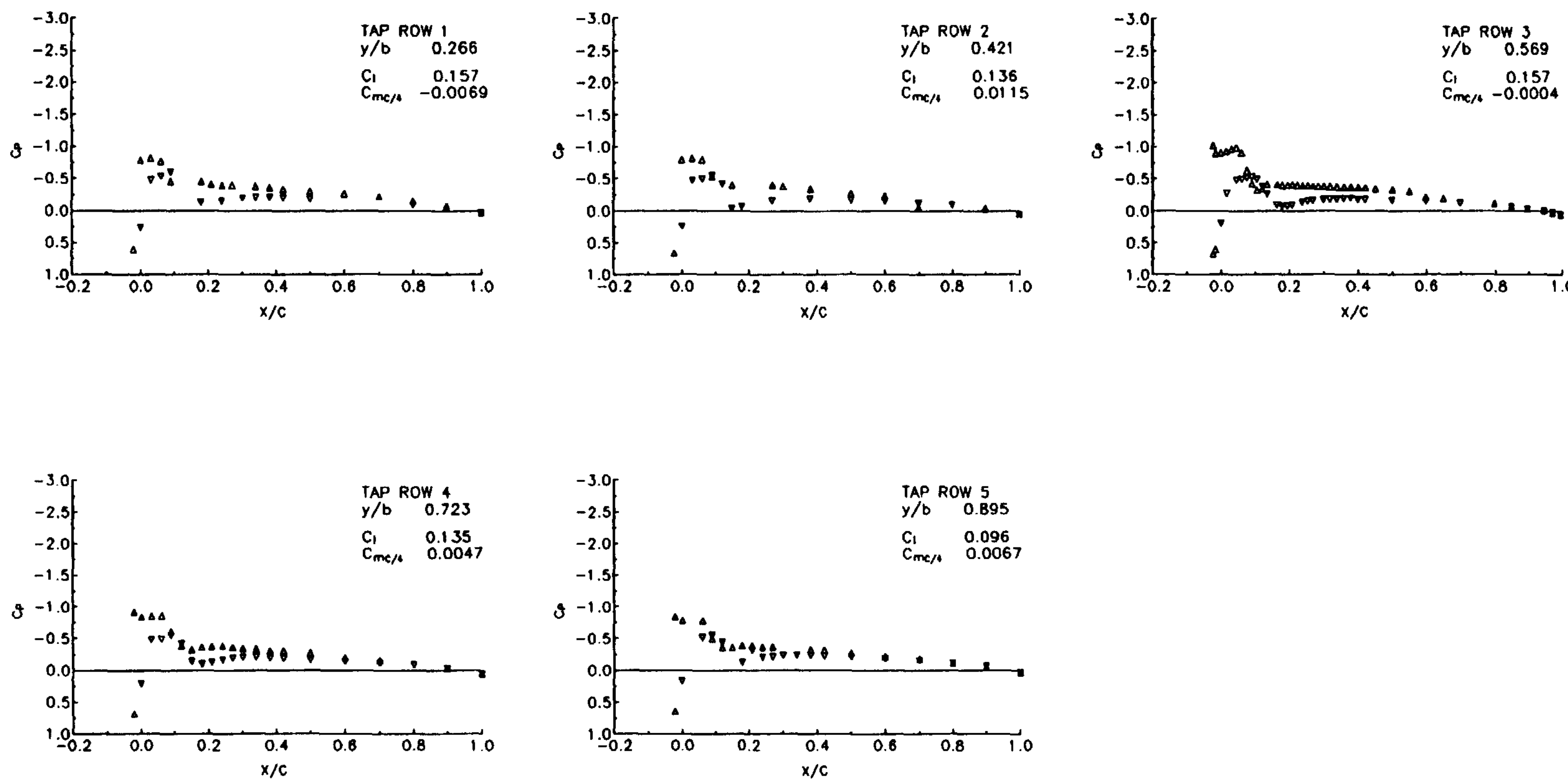
RUN NUMBER 2744

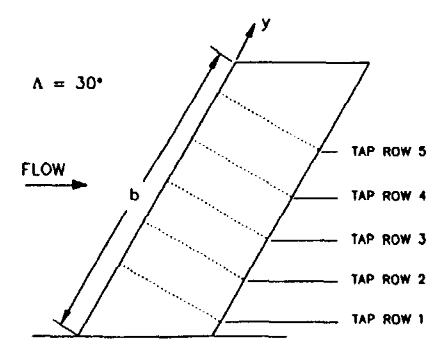
$AOA_{GEOMETRIC}$ 0°

MACH 0.13

RE 1.48×10^6





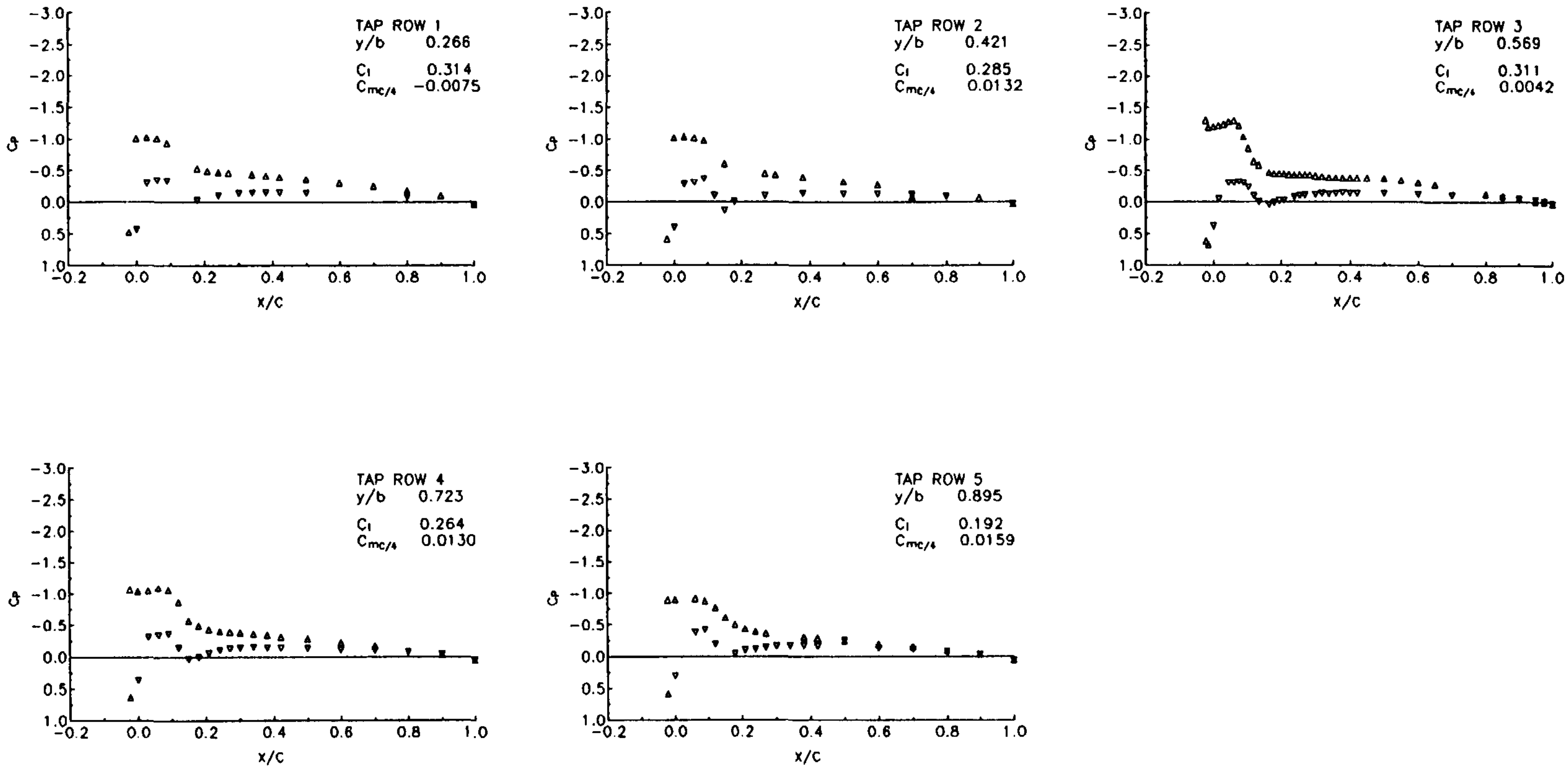


RUN NUMBER 2748

$AOA_{GEOMETRIC}$ 2°

MACH 0.13

RE 1.52×10^6

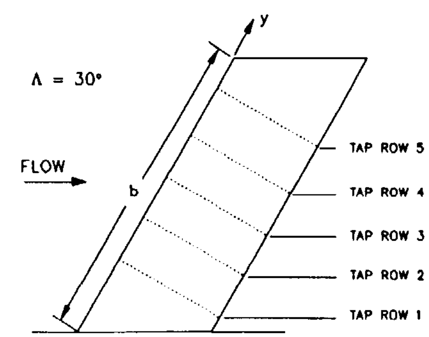


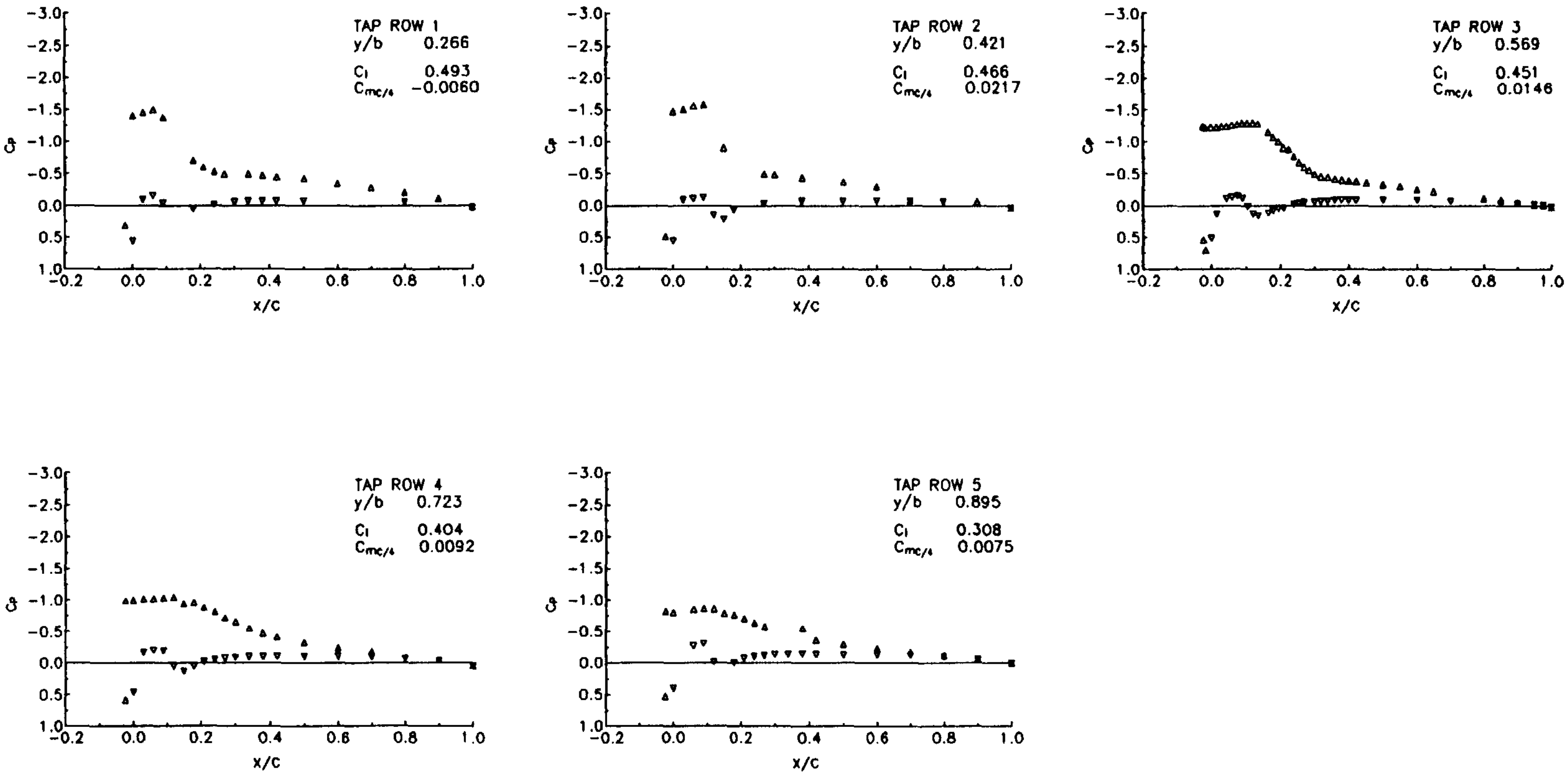
RUN NUMBER 2750

$AOA_{GEOMETRIC}$ 4°

MACH 0.13

RE 1.52×10^{6}



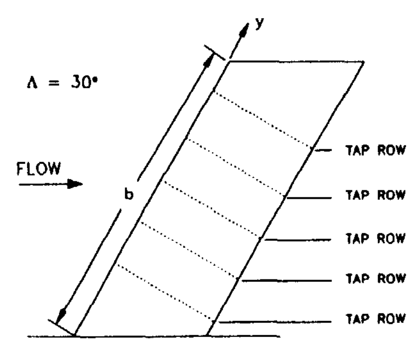


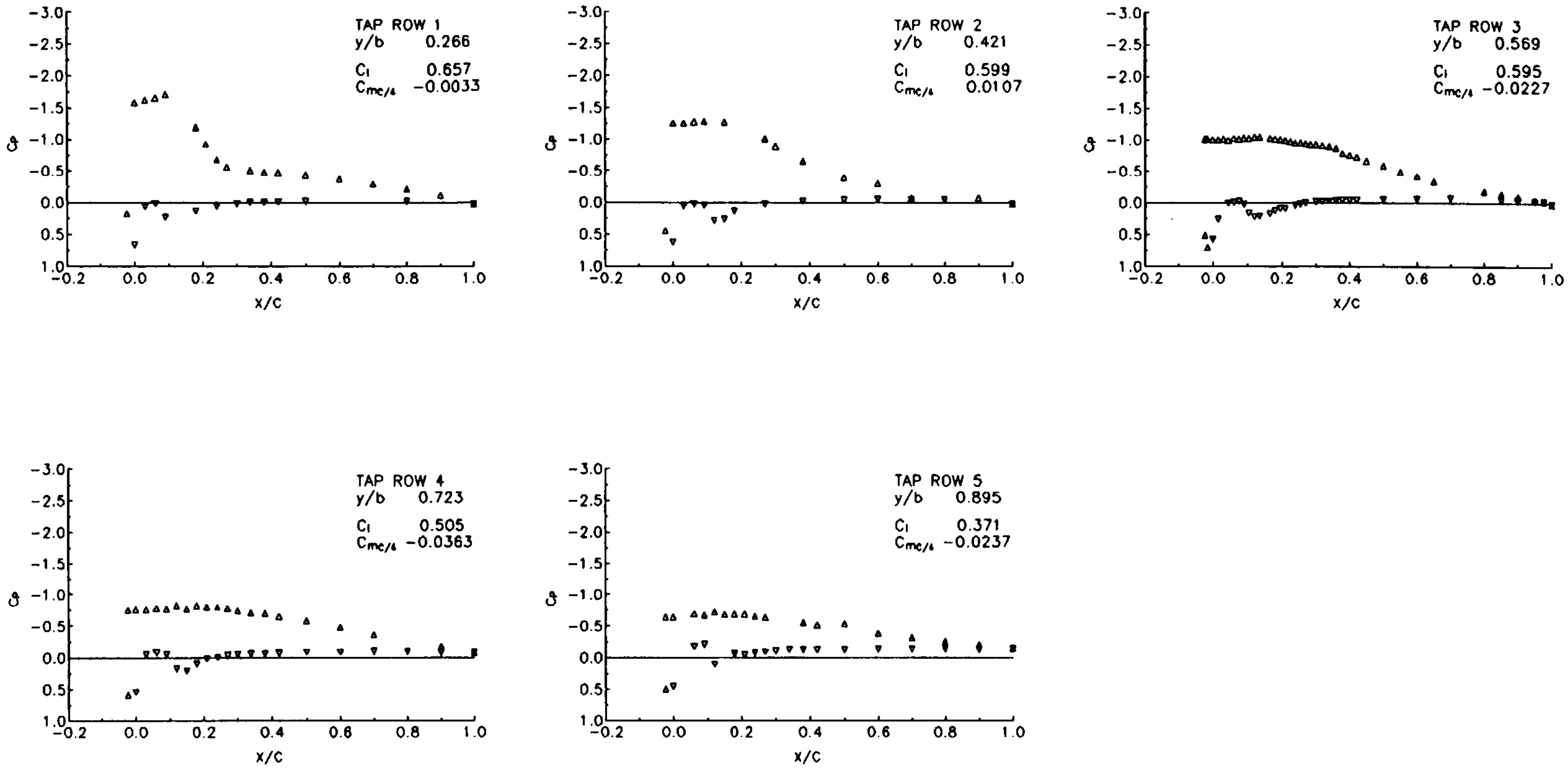
RUN NUMBER 2752

$AOA_{GEOMETRIC}$ 6°

MACH 0.13

RE 1.52×10^6



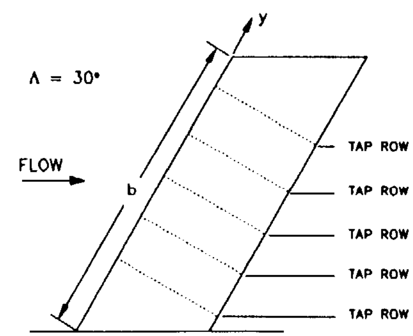


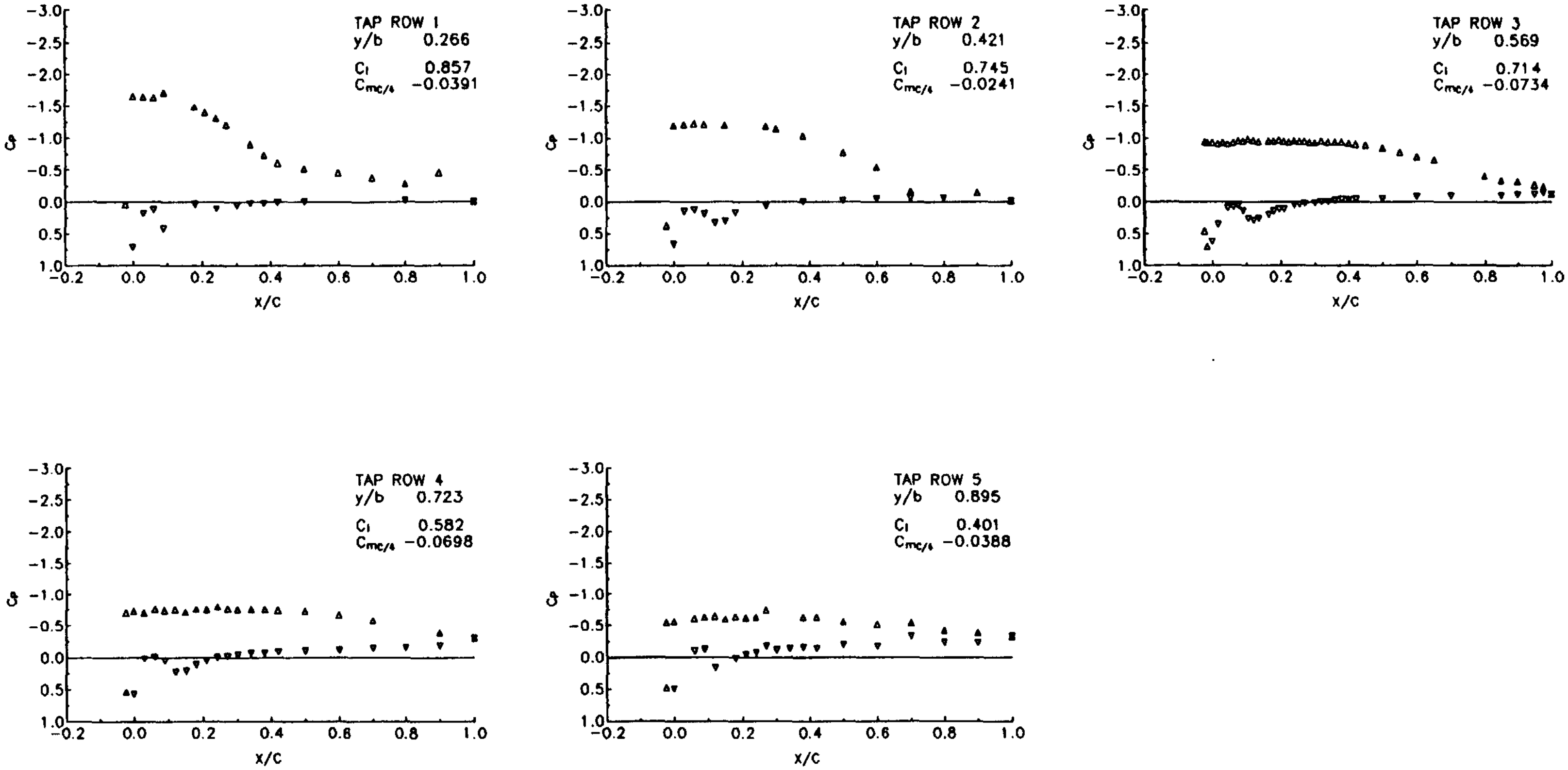
RUN NUMBER 2754

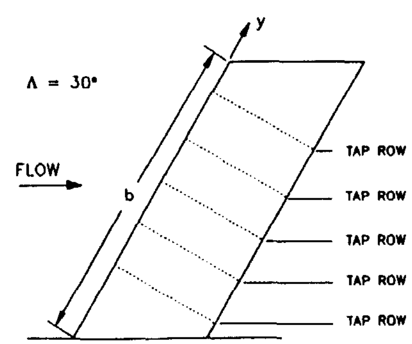
AOA$_{\text{GEOMETRIC}}$ 8°

MACH 0.13

RE 1.51×10^6





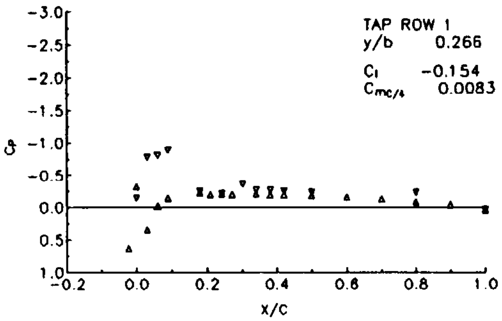


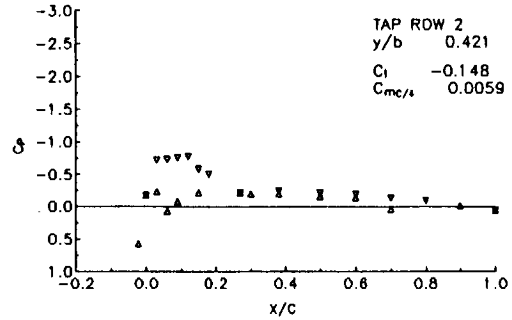
RUN NUMBER 2756

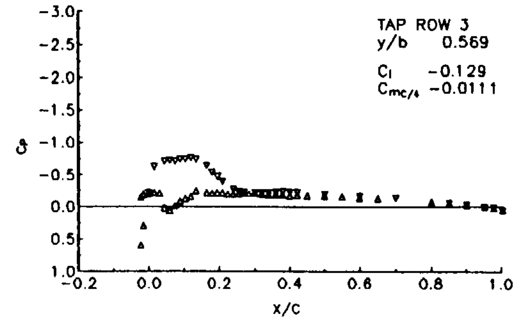
$AOA_{GEOMETRIC}$ 10°

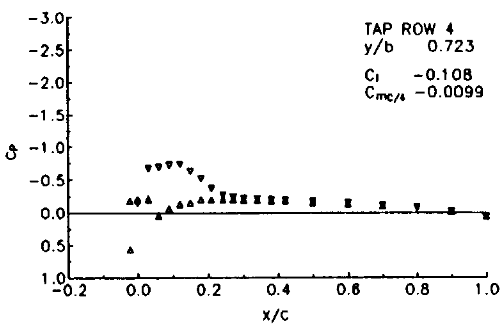
MACH 0.13

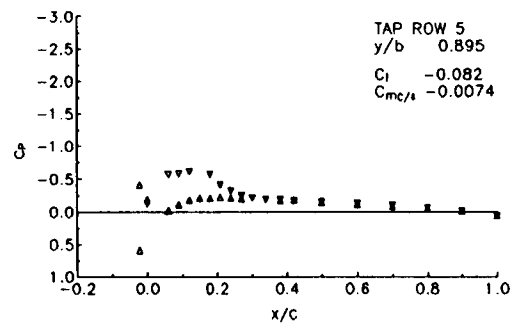
RE 1.48×10^6









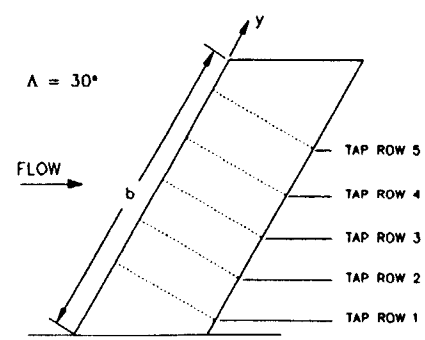


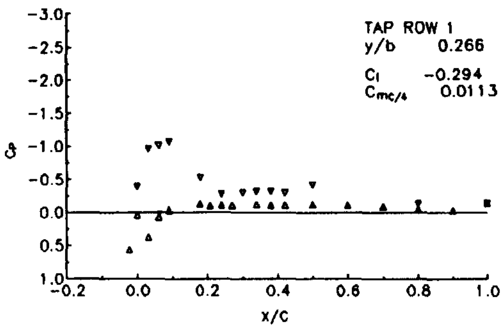
RUN NUMBER 2764

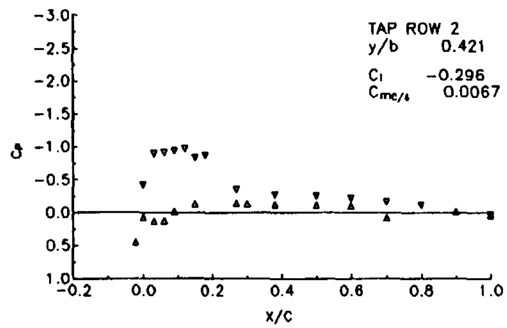
$AOA_{GEOMETRIC}$ $-2°$

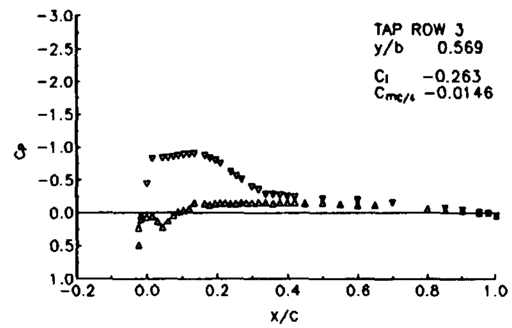
MACH 0.13

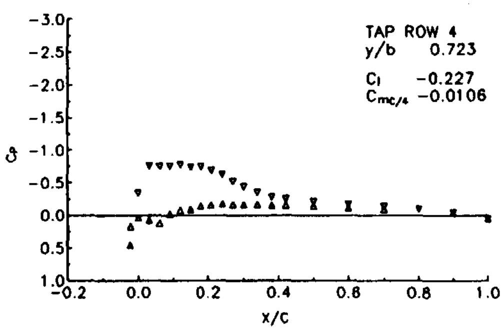
RE 1.67×10^6

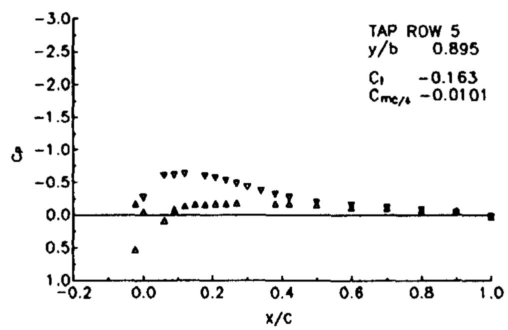










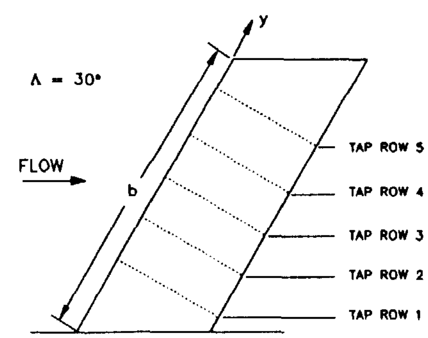


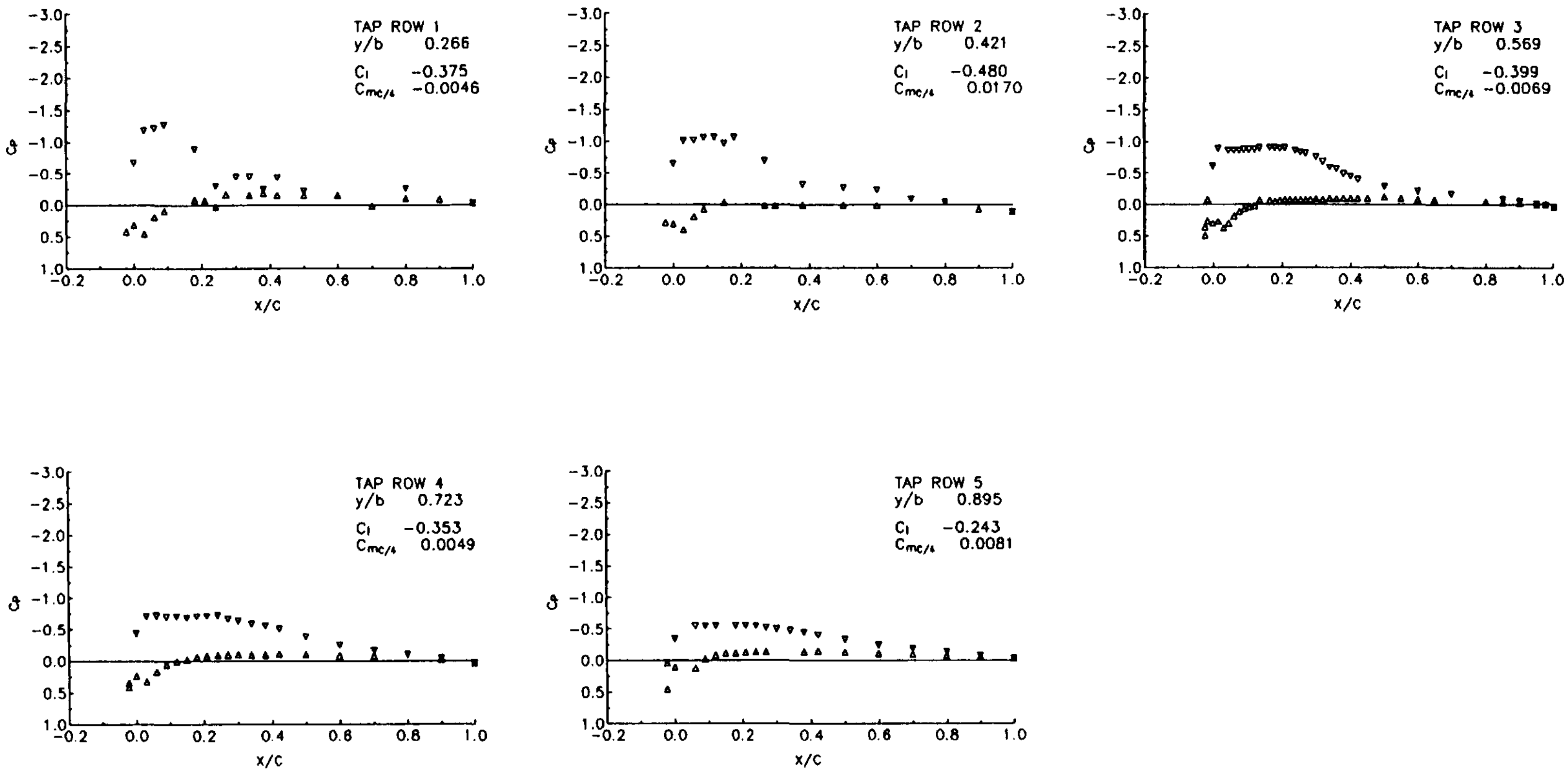
RUN NUMBER 2766

$AOA_{GEOMETRIC}$ −4°

MACH 0.13

RE 1.66×10^6



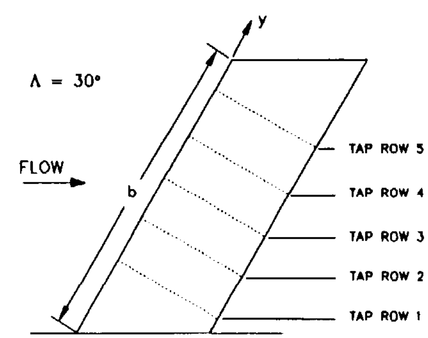


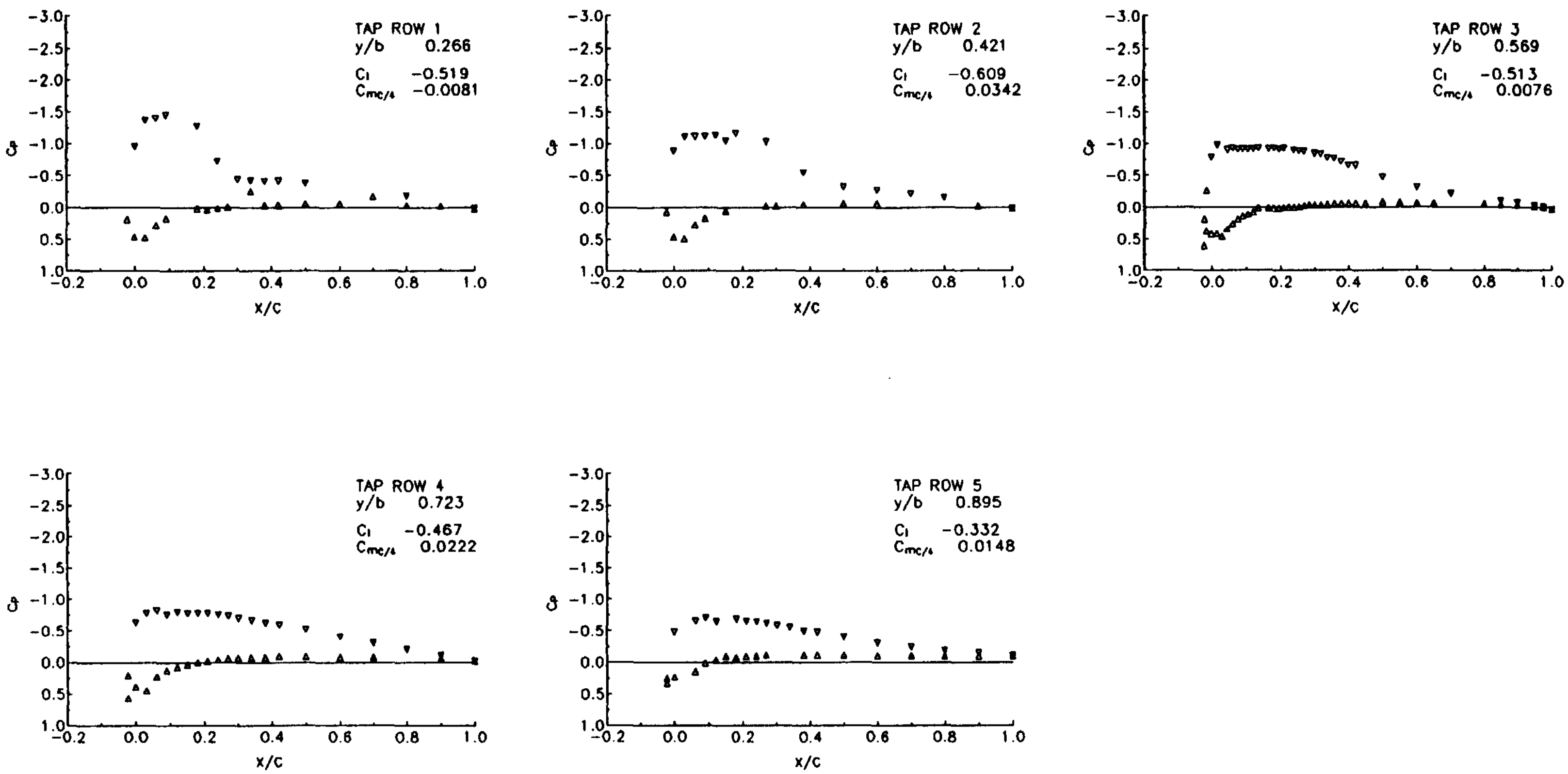
RUN NUMBER 2768

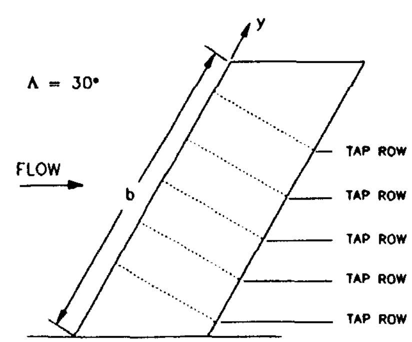
$AOA_{GEOMETRIC}$ -6°

MACH 0.13

RE 1.65×10^{6}





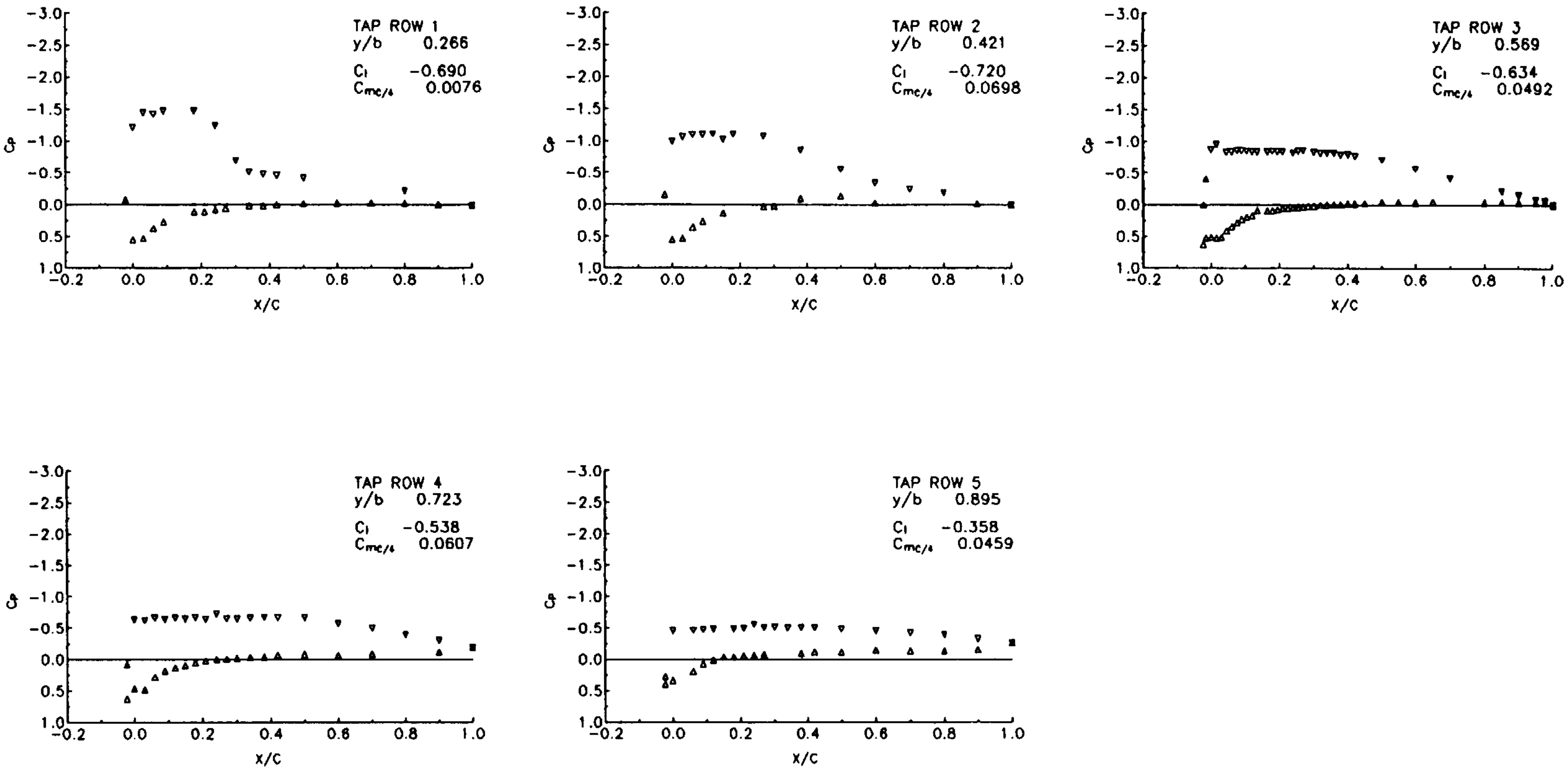


RUN NUMBER 2770

$AOA_{GEOMETRIC}$ −8°

MACH 0.13

RE 1.64×10^6

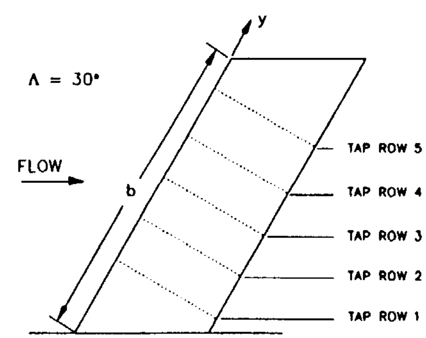


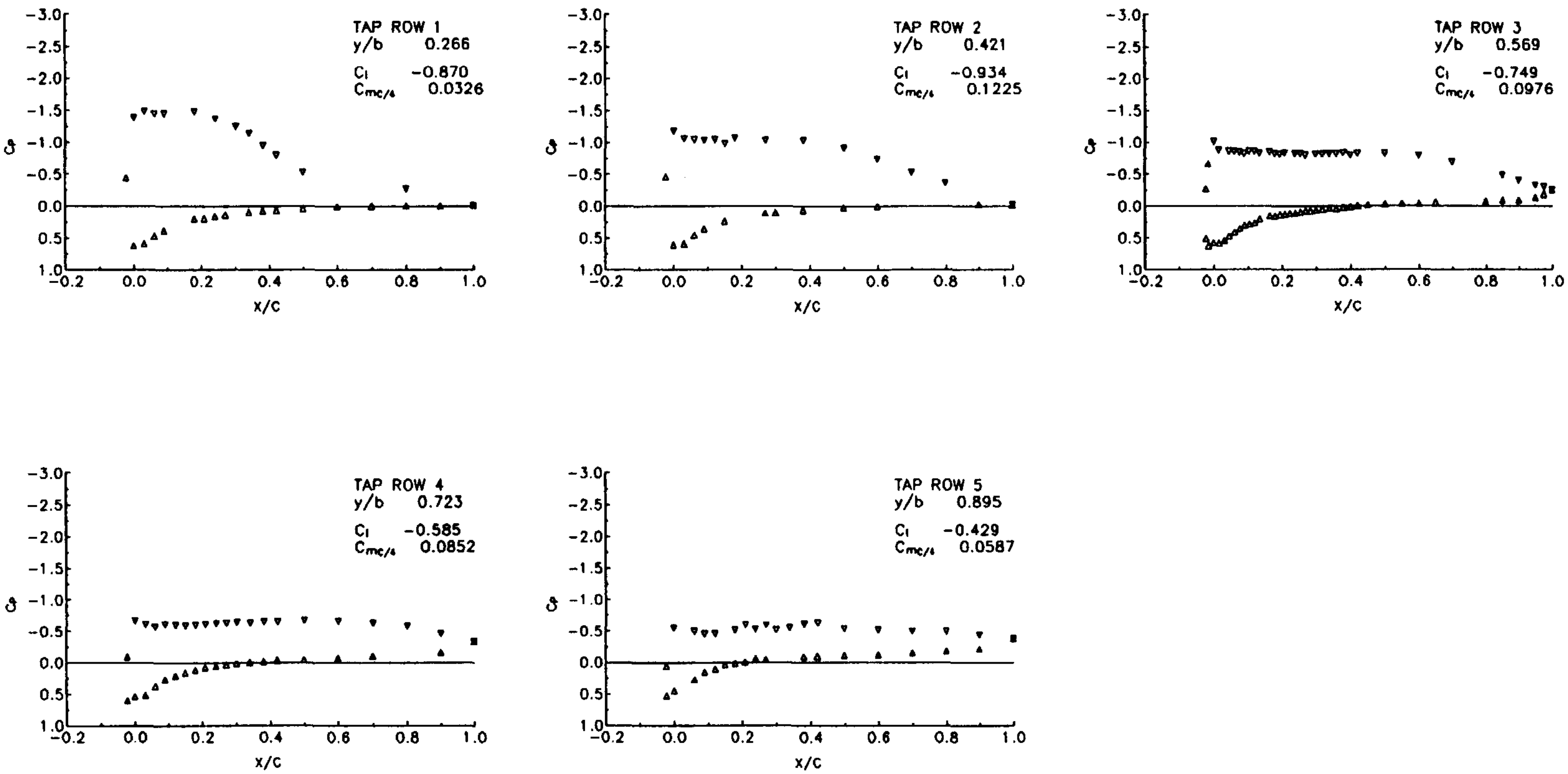
RUN NUMBER 2772

$\text{AOA}_{\text{GEOMETRIC}}$ $-10.05°$

MACH 0.13

RE 1.64×10^6



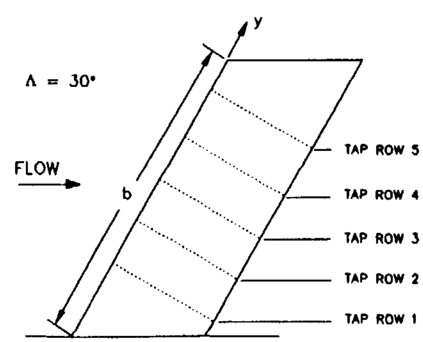


RUN NUMBER 2775

$AOA_{GEOMETRIC}$ $-12.96°$

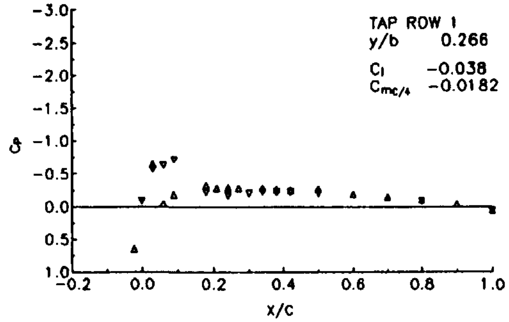
MACH 0.13

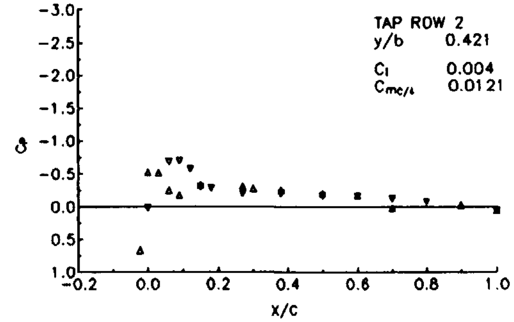
RE 1.62×10^6

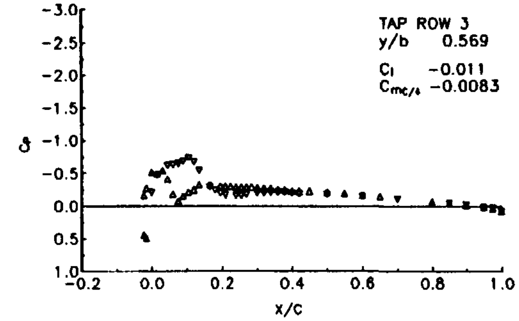


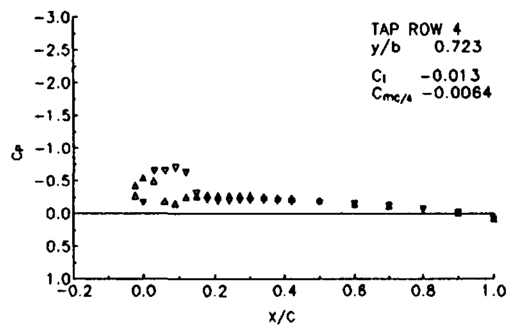
RUNS 2790 - 2825

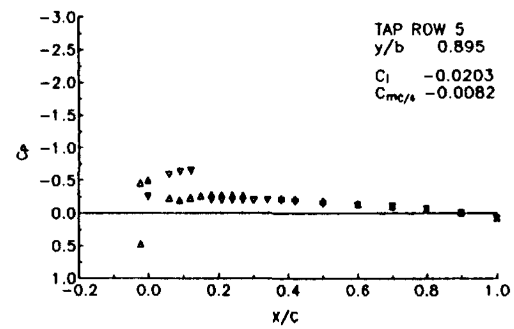
30 DEGREE SWEEP WING, 5 MINUTE GLAZE ICE, 50 GRIT ROUGHNESS (K/C = 0.001)









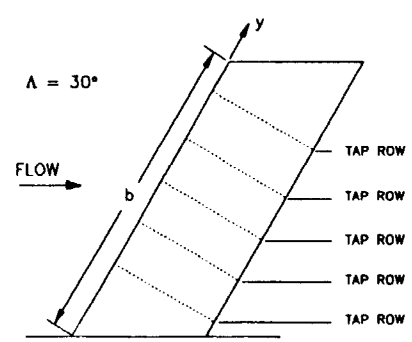


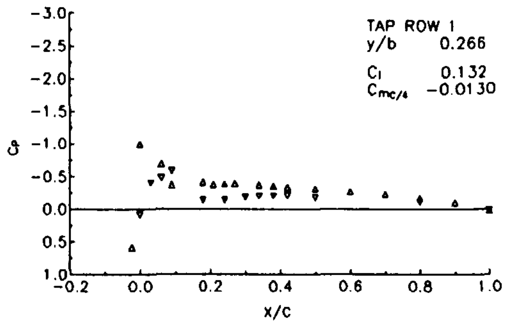
RUN NUMBER 2790

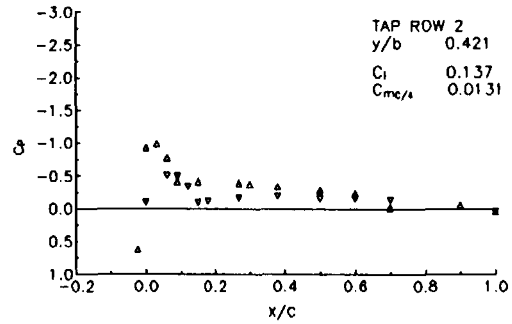
$AOA_{GEOMETRIC}$ 0°

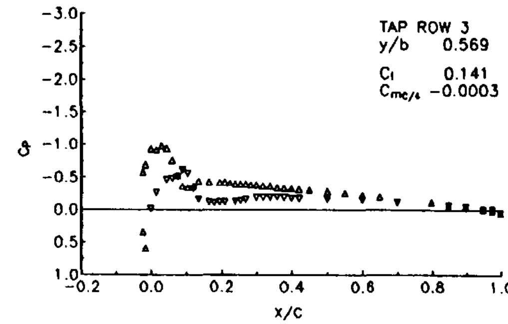
MACH 0.13

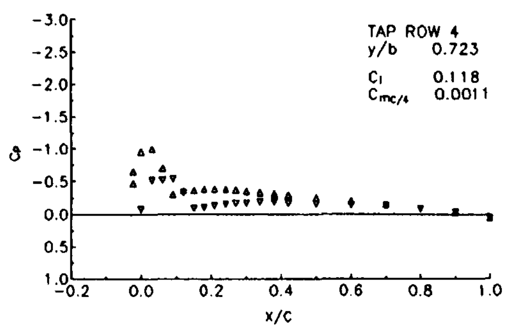
RE 1.43×10^6

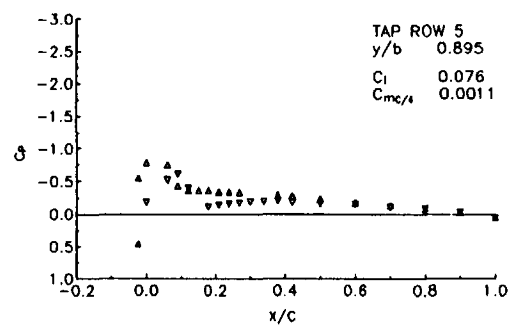










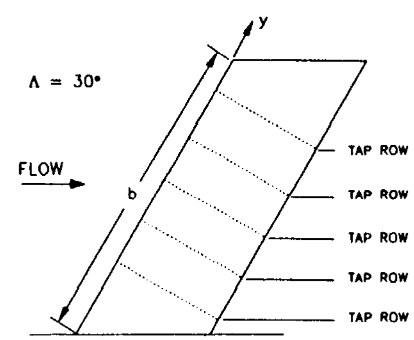


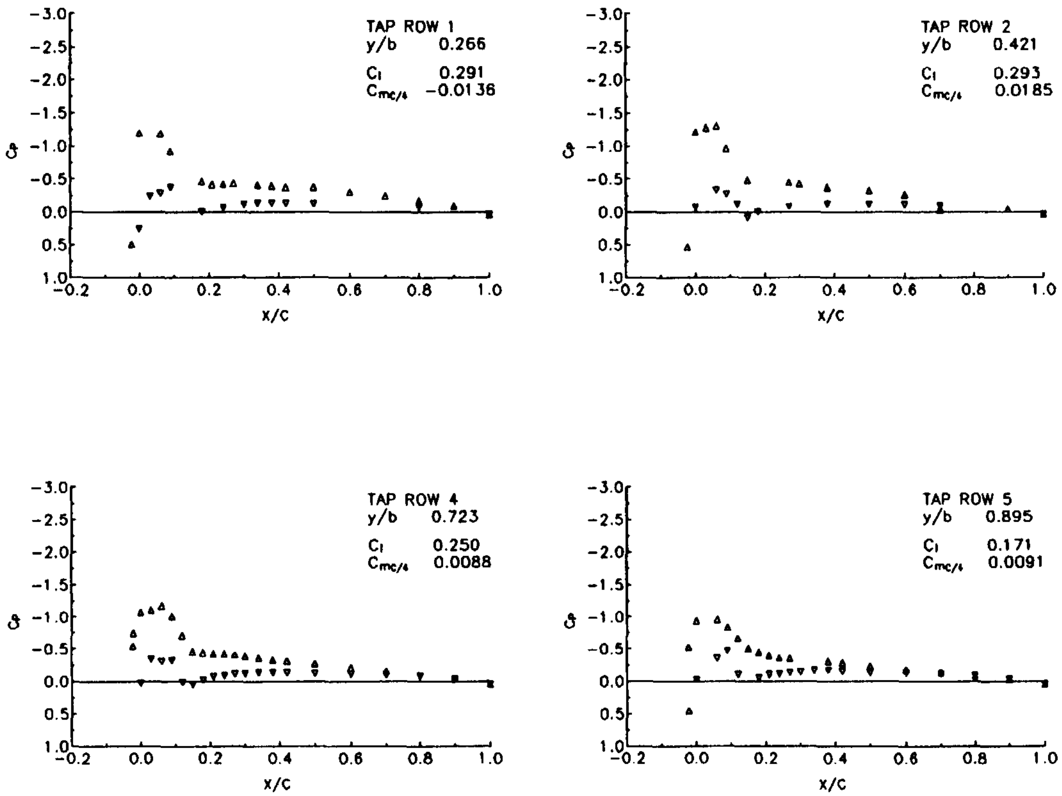
RUN NUMBER 2792

$AOA_{GEOMETRIC}$ 2°

MACH 0.13

RE 1.40×10^6



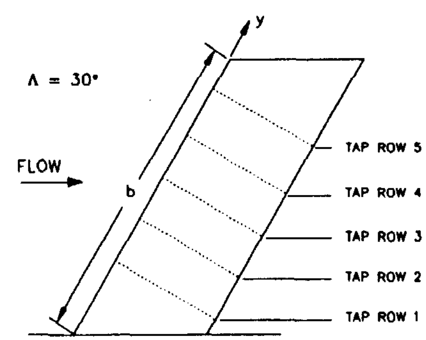


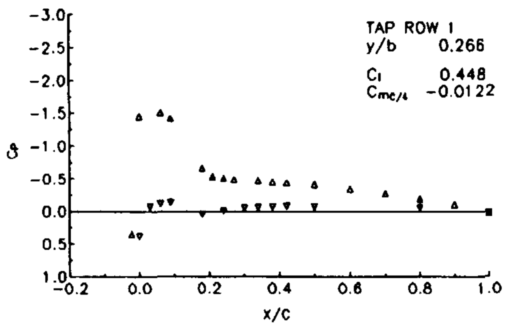
RUN NUMBER 2794

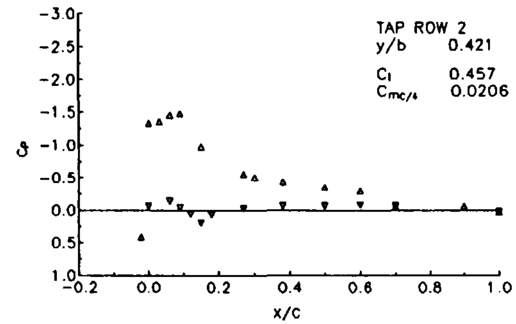
$AOA_{GEOMETRIC}$ 4°

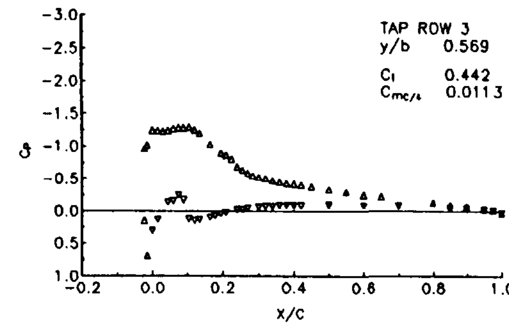
MACH 0.13

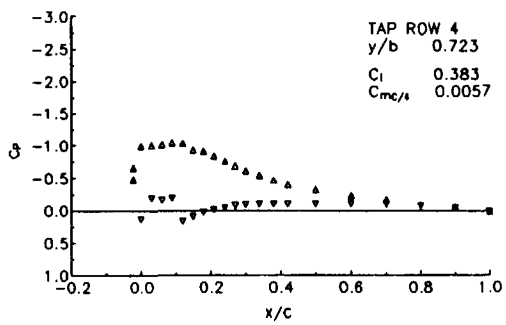
RE 1.42×10^6

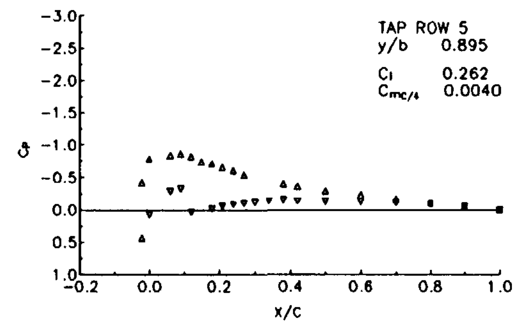










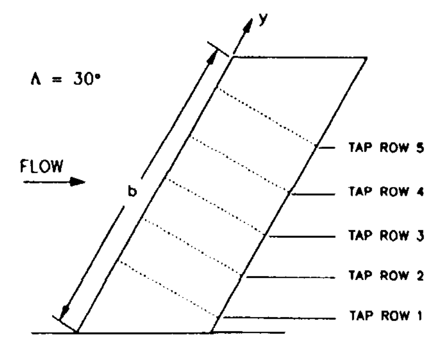


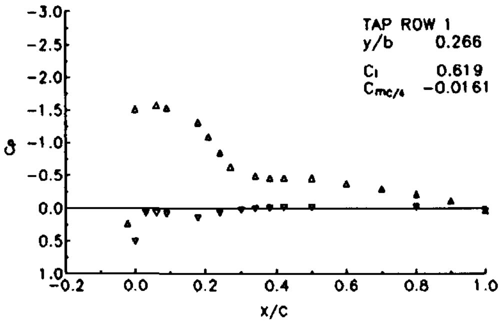
RUN NUMBER 2796

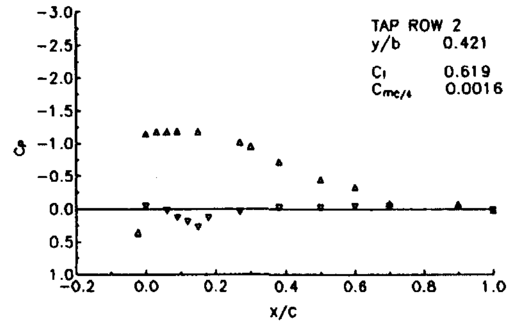
$AOA_{GEOMETRIC}$ 6°

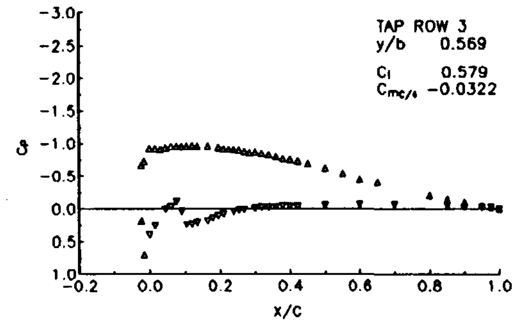
MACH 0.13

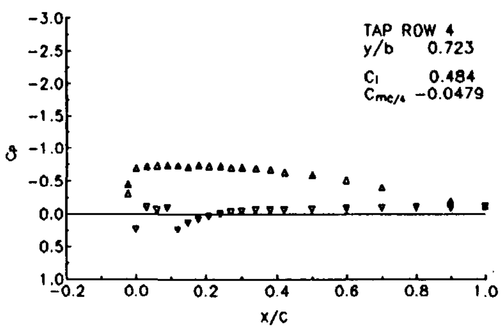
RE 1.40×10^6

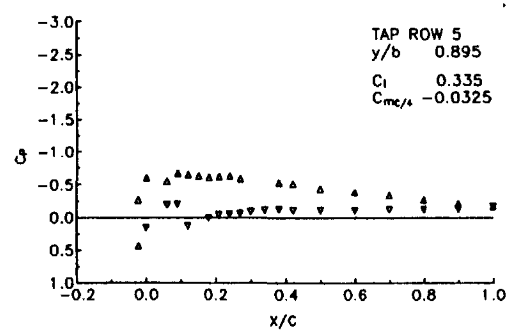










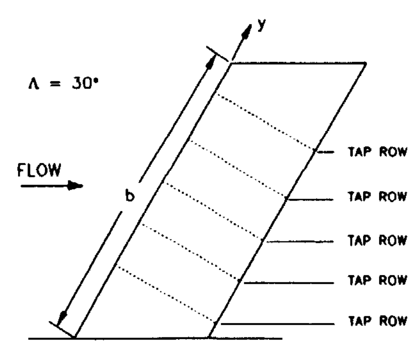


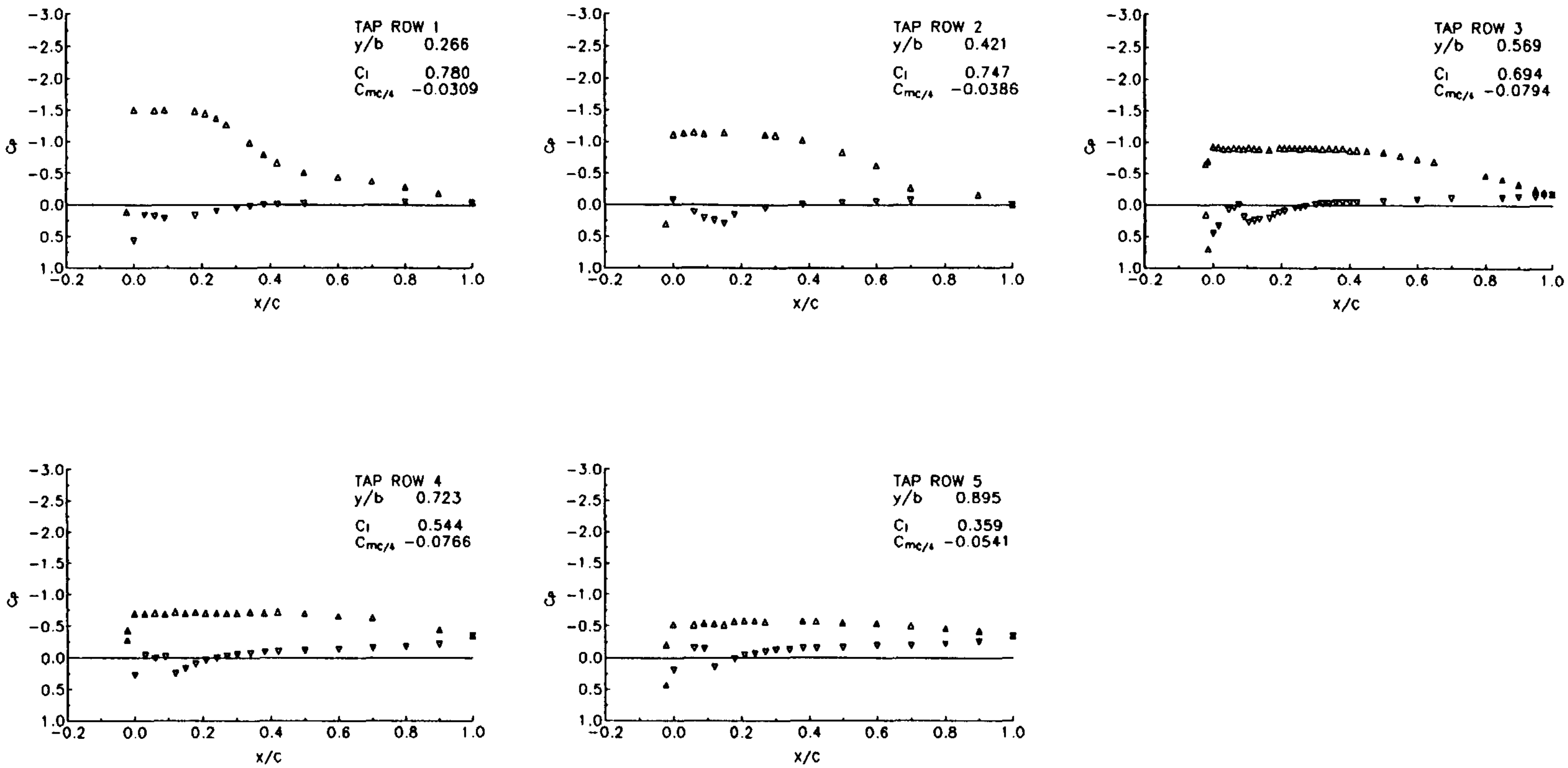
RUN NUMBER 2798

$AOA_{GEOMETRIC}$ 8°

MACH 0.13

RE 1.40×10^6



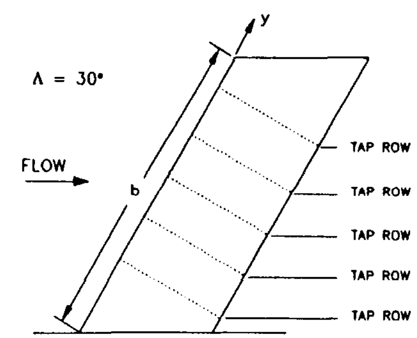


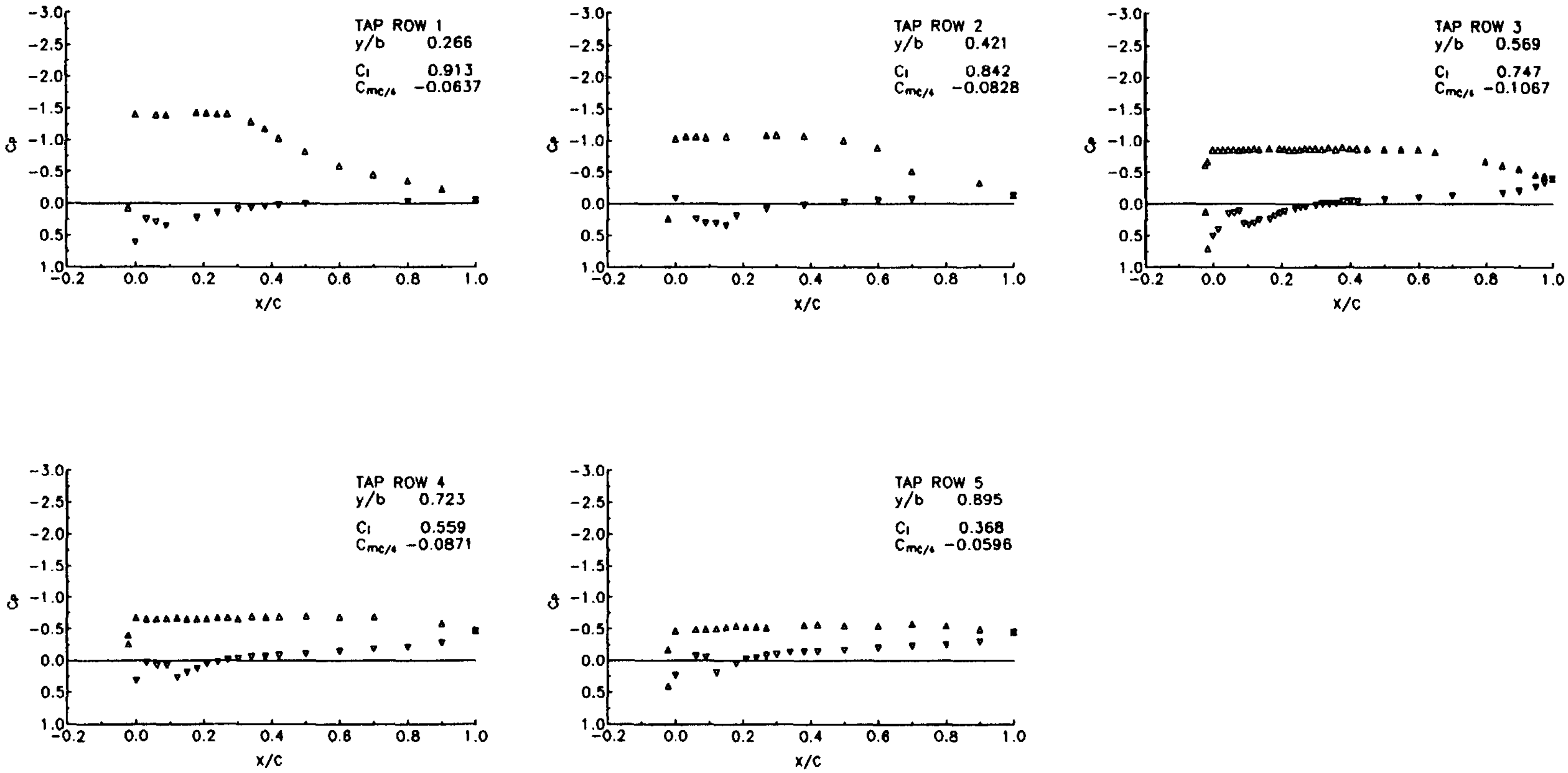
RUN NUMBER 2800

AOAGEOMETRIC 10°

MACH 0.13

RE 1.40×10^6



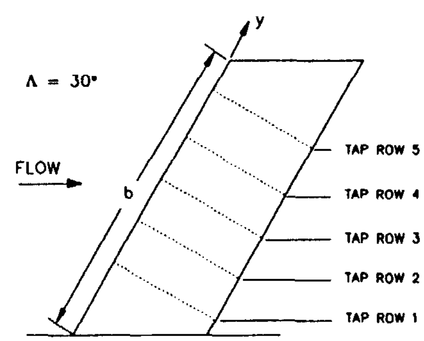


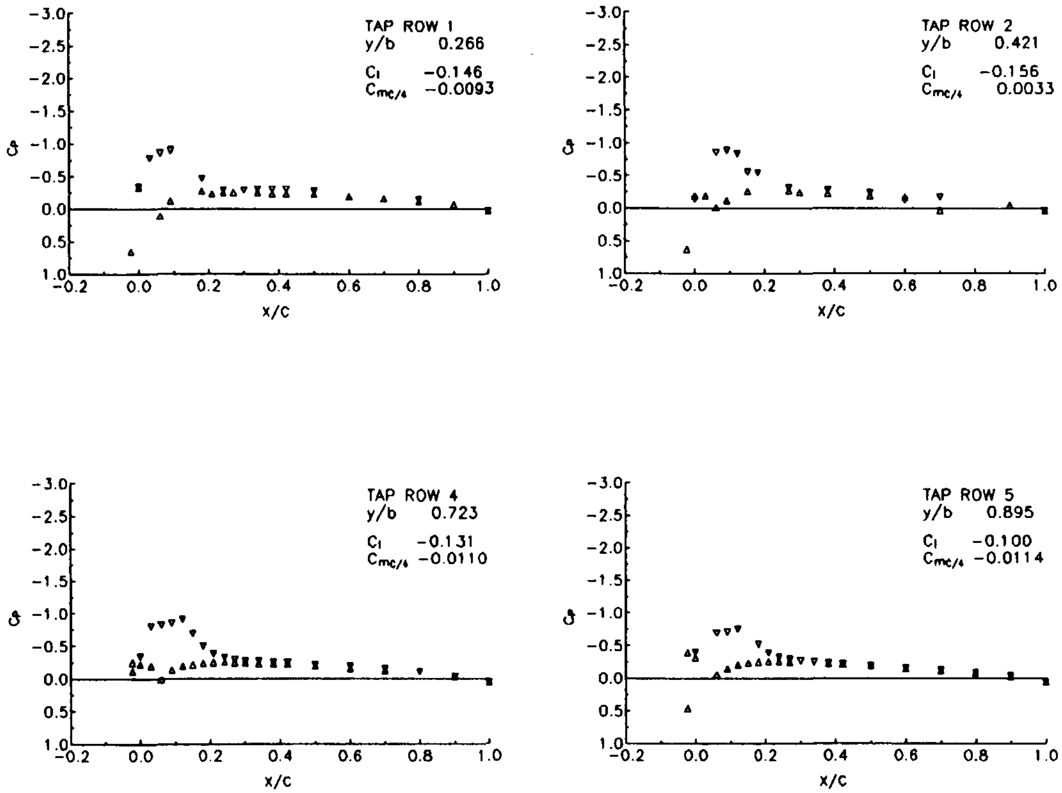
RUN NUMBER 2802

$AOA_{GEOMETRIC}$ 12°

MACH 0.13

RE 1.36×10^6



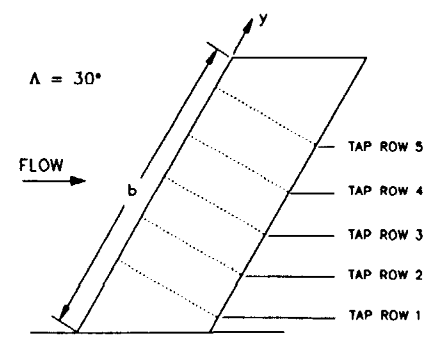


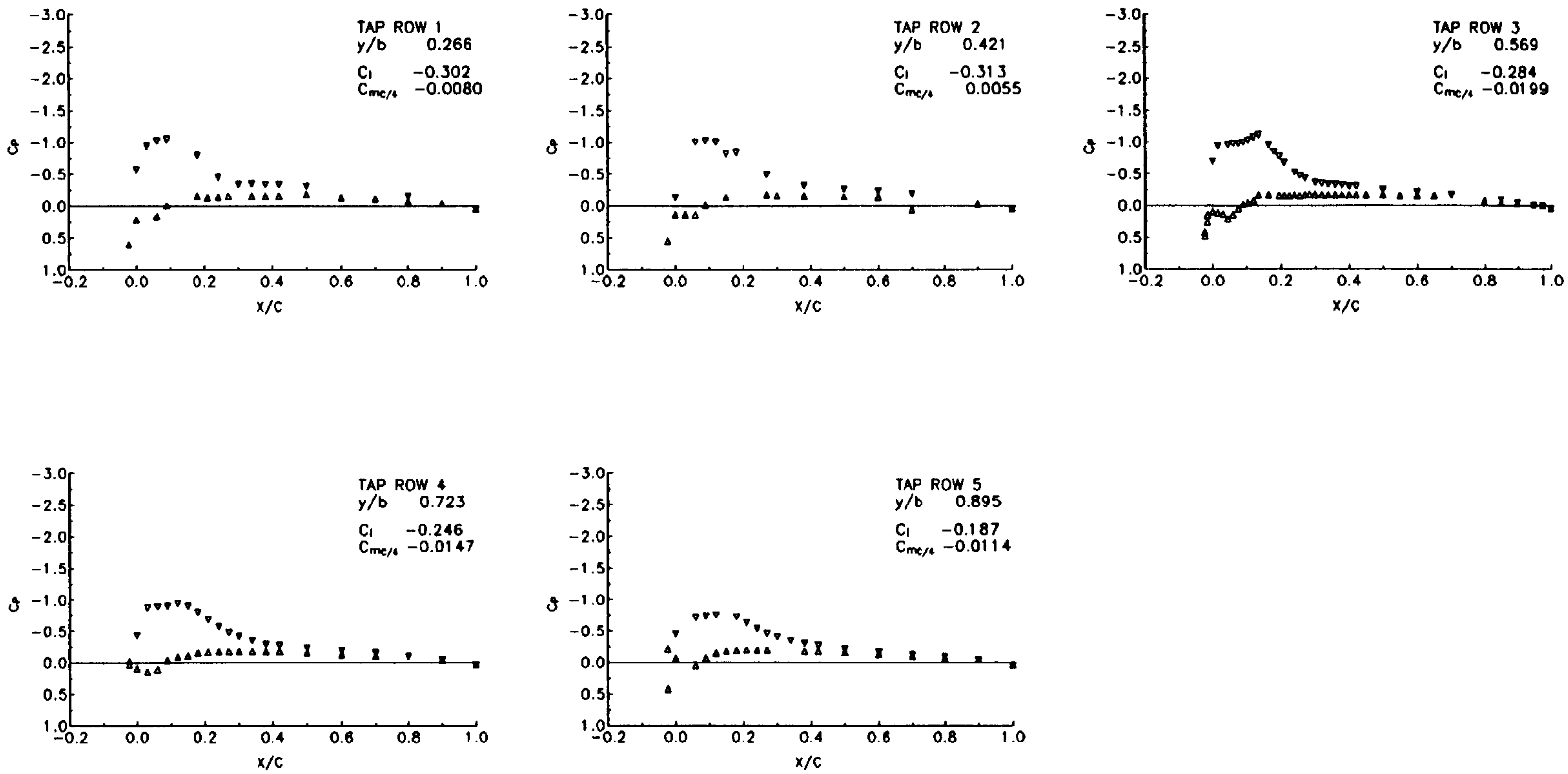
RUN NUMBER 2814

$AOA_{GEOMETRIC}$ $-2°$

MACH 0.13

RE 1.41×10^{6}



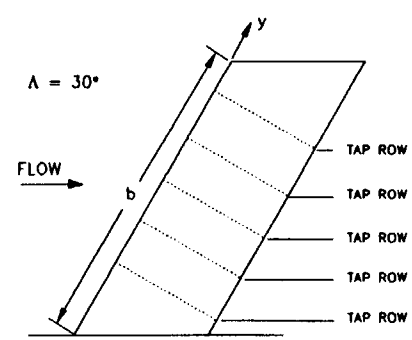


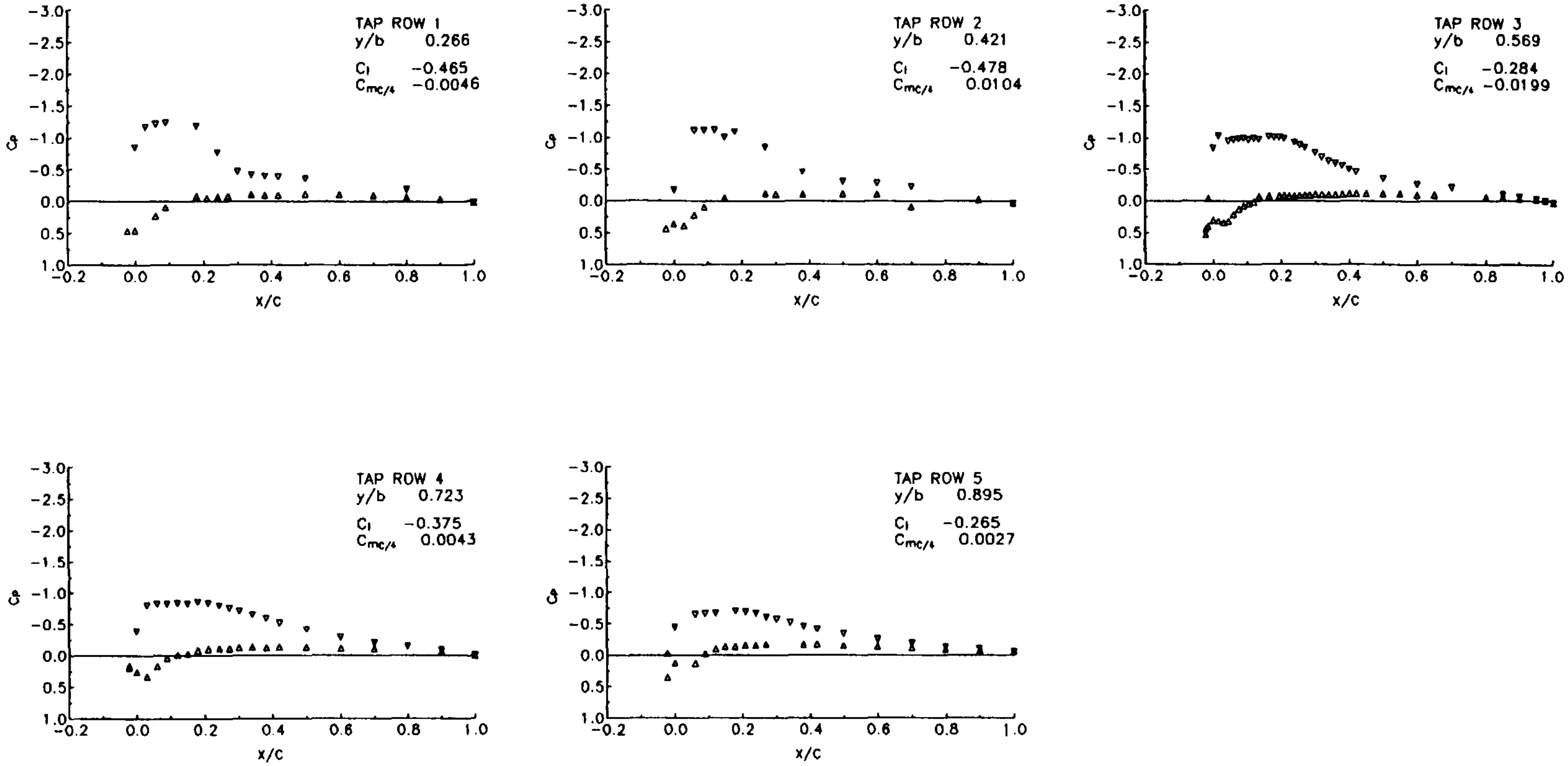
RUN NUMBER 2816

$AOA_{GEOMETRIC}$ −4°

MACH 0.13

RE 1.41×10^6



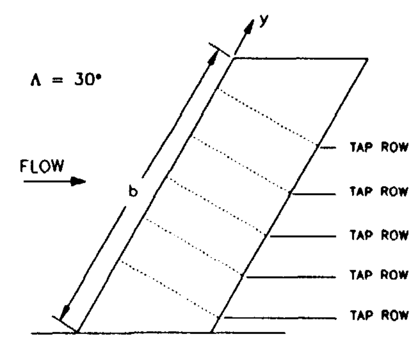


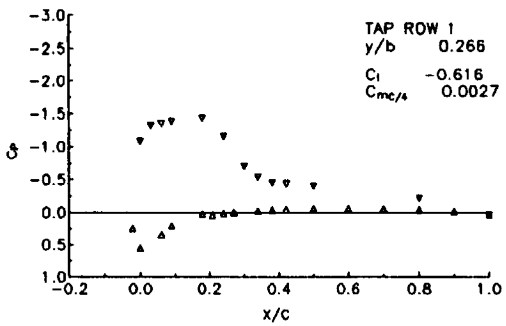
RUN NUMBER 2819

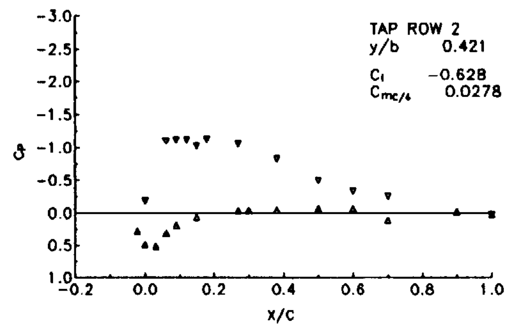
AOA$_{GEOMETRIC}$ $-6°$

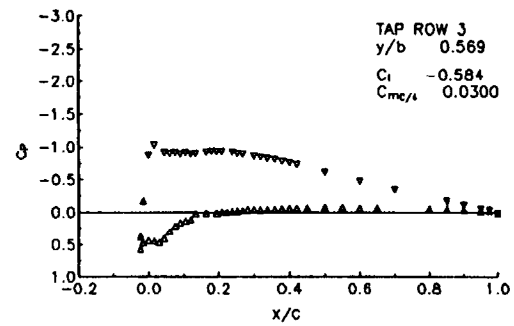
MACH 0.13

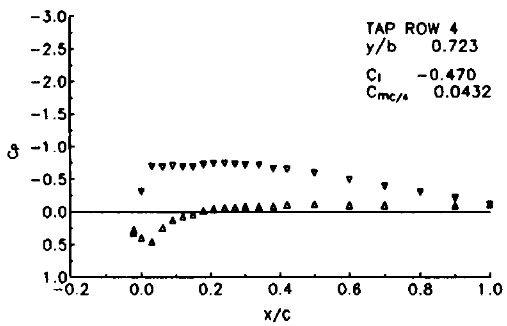
RE 1.40×10^6

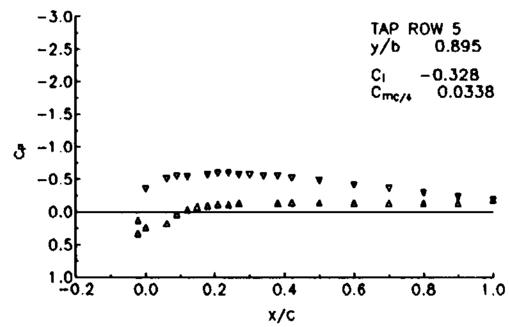










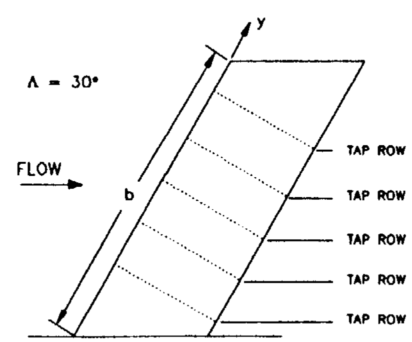


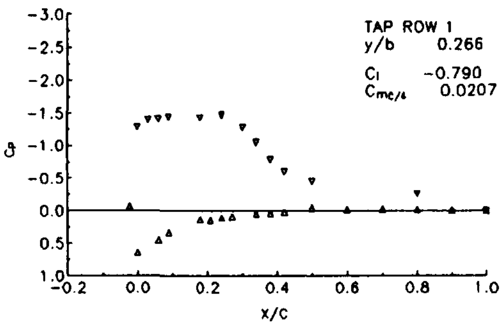
RUN NUMBER 2821

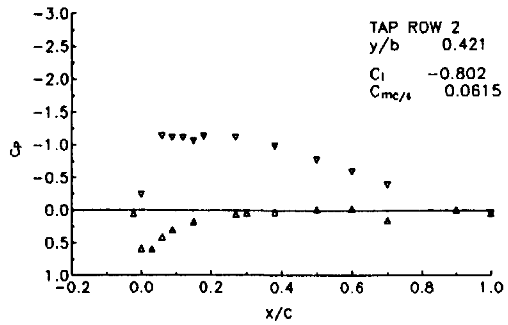
$AOA_{GEOMETRIC}$ −8°

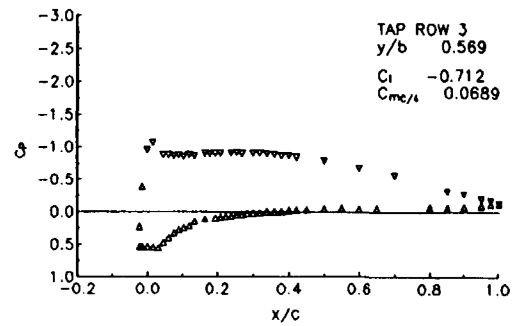
MACH 0.13

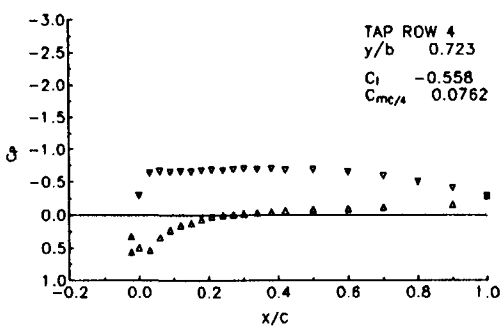
RE 1.39×10^6

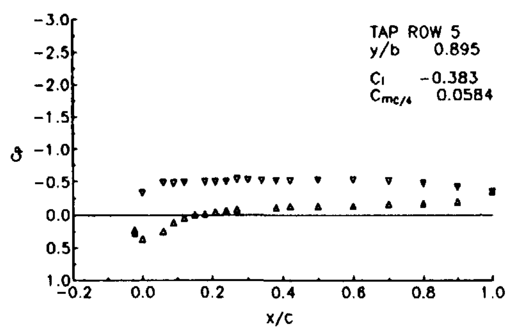










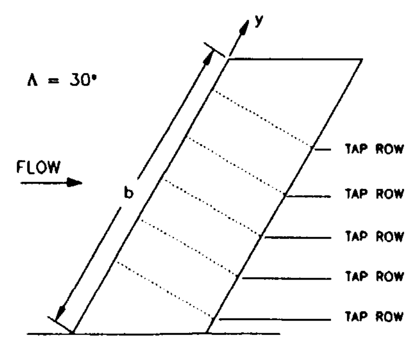


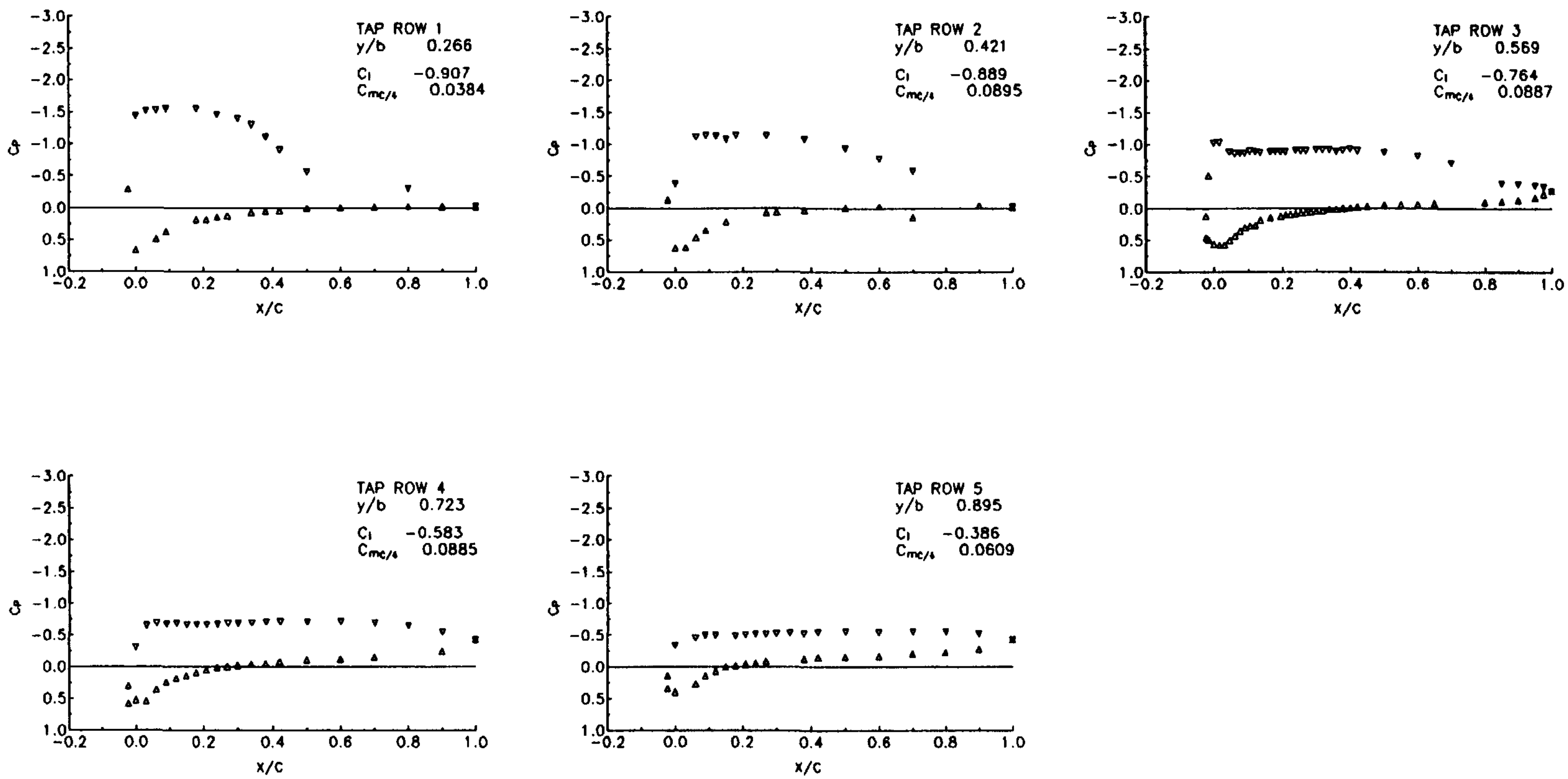
RUN NUMBER 2823

$AOA_{GEOMETRIC}$ $-10°$

MACH 0.13

RE 1.39×10^6



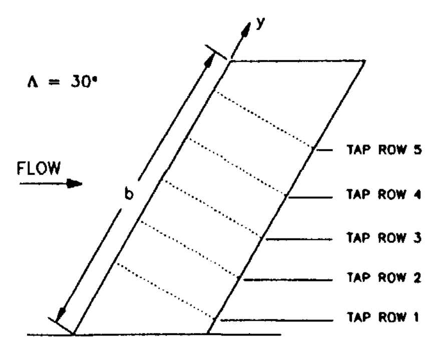


RUN NUMBER 2825

$AOA_{GEOMETRIC}$ $-12.13°$

MACH 0.13

RE 1.38×10^6



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APPENDIX A

I. FILES ON THIS DISK

This disk contains....

```
README.DOC............This file: contains a description of
                      1.  The the files on this disk
                      2.  How to extract the data files from the *.ZIP files
                          using PKUNZIP.EXE
                      3.  Format conventions for the data files

PKUNZIP.EXE...........A file decompression utility to "explode" the data files
                      contained in the files PRESSDAT.ZIP, WAKEDAT.ZIP
                      RUNSUM.ZIP, and COORDS.ZIP

PRESSDAT.ZIP..........A compressed file containing all the reduced data for the
                      rectangular and swept wing pressure measurements

WAKEDAT.ZIP...........A compressed file containing all the reduced data for the
                      rectangular wing wake probe measurements

RUNSUM.ZIP............A compressed file containing RUNSUM.DOC, a run summary of
                      all the test runs made.

COORDS.ZIP............A compressed file containing the coordinates of the taps
                      for each configuration tested.  The files contained in
                      this zip file are....

                             1. CLNSTR.TAP - tap coordinates for the clean,
                                             straight wing.
                             2. CLNSWP.TAP - tap coordinates for the clean,
                                             swept wing.
                             3. ICESTR.TAP - tap coordinates for the iced,
                                             straight wing.
                             4. ICESWP.TAP - tap coordinates for the iced,
                                             swept wing.
```

II. USING PKUNZIP

To extract the data files on this disk, copy PKUNZIP.EXE and the *.ZIP file that you wish to decompress onto the disk and subdirectory where you wish the data files to reside. Then type at the command line...

```
PKUNZIP [DATA FILE] *.*
```

Where [DATA FILE] is either PRESSDAT or WAKEDAT (without its extension). The data files will then be "exploded" into that subdirectory.

III. FILE FORMATS

```
***********FILE FORMAT FOR THE "HIS??CP.OUT" PRESSURE FILES********************

LINE1 (A5) 'BEGIN'

{NOTE: THE FOLLOWING LINES REPEAT FOR EACH RUN NUMBER IN THIS FILE}

LINE2 (I6) RUNNUM      -THE RUN NUMBER OF THIS RUN
LINE3 (I4) IDUM        -DUMMY INTEGER

DO I=1,6               -REPEAT THE FOLLOWING FOR TAP ROWS 1 THROUGH 6

LINE4 (A10) ROW        -TAP ROW TO WHICH THE FOLLOWING PRESSURES BELONG
LINE5 (I5) NUMTAPS     -THE NUMBER OF ACTIVE TAPS IN THIS ROW
LINE6 (A45) TITLES     -TITLES FOR THE FOLLOWING DATA
```

```
DO J=1,NUMTAPS

LINEJ (I6,3F10.4,2X,2I1) ITAP(I,J),XC(I,J),YC(I,J),CP(I,J),IPOS(I,J),IROW(I,J)

          ITAP         -THE NUMBER IF THIS TAP
          XC           -THE CHORDWISE POSITION OF THIS TAP NONDIMENSIONALIZED
                        BY THE CHORD
          YC           -THE THICKNESS POSITION OF THIS TAP NONDIMENSIONALIZED
                        BY THE CHORD
          CP           -THE PRESSURE COEFFICIENT MEASURED AT THIS TAP
          IPOS         -POSITION OF THIS TAP: 1=UPPER SURFACE 2=LOWER SURFACE
                        3=TRAILING EDGE
          IROW         -TAP ROW TO WHICH THIS TAP BELONGS

END DO
END DO

{END REPEAT FOR EACH RUN NUMBER}


************FILE FORMAT FOR "HIS??WAK.OUT" WAKE PROBE DATA FILES****************

LINE1 (A5) 'BEGIN'

{NOTE: THE FOLLOWING LINES REPEAT FOR EACH RUN NUMBER IN THIS FILE}

LINE2 (I6) RUNNUM      -THE RUN NUMBER OF THIS RUN
LINE3 (F10.3) AOA      -THE GEOMETRIC ANGLE OF ATTACK OF THE WING
LINE4 (I5) NUMPTS      -THE NUMBER OF WAKE PRESSURE POINTS IN THIS RUN
LINE5 (A45) TITLE      -TITLES FOR THE FOLLOWING DATA

DO I = 1,NUMPTS

LINEI (I5,3F10.3) NWAKPT,POS(I),QTUN(I),QWAK(I)

          NWAKPT       -NUMBER OF THIS WAKE POINT
          POS          -POSITION OF THIS WAKE POINT
          QTUN         -DYNAMIC PRESSURE OF THE TUNNEL WHEN THIS POINT WAS TAKEN
          QWAK         -DYNAMIC PRESSURE MEASURED IN THE WAKE AT THIS POINT

END DO

{END REPEAT FOR EACH RUN NUMBER}


********************FILE FORMAT FOR THE COORDINATE FILES**********************

LINE 1 '    x upper     y upper     z upper     x lower     y lower     z lower'

DO I = 1,5

LINE 2 (A7,I5)'tap row',TAPROW     - THE TAP ROW FOR THE FOLLOWING COORDINATES
LINE 3 (I5) NUMROWS                - NUMBER OF ROWS OF DATA TO FOLLOW

DO J = 1,NUMROWS

LINE 4 (5(F10.4,','),F10.4) XUPPER,YUPPER,ZUPPER,XLOWER,YLOWER,ZLOWER

                                   - COORDINATES OF THE PRESSURE TAPS

END DO

END DO
```

REPORT DOCUMENTATION PAGE

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12b. DISTRIBUTION CODE

13. ABSTRACT ***(Maximum 200 words)***

Two semispan wings, one with a rectangular planform and one with 30 degrees of leading edge sweep were tested. Both had a NACA 0012 airfoil section, and both were tested clean and with simulated glaze ice shapes on their leading edges. Several surface roughness were tested. Each model geometry is documented and each surface roughness is explained. Aerodynamic performance of the wing in the form of sectional lift and integrated three-dimensional lift is documented through pressure measurements obtained from rows of surface pressure taps placed at five span locations on the wing. For the rectangular wing, sectional drag near the midspan is obtained from wake total pressure profiles. The data is presented in tabular and graphical form and is also available on computer disk.

14. SUBJECT TERMS
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15. NUMBER OF PAGES
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