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SUMMARY

The present study is a benchmark test to aid the development of various rotor performance codes. The study involves simultaneous blade pressure measurements and tip vortex surveys. Measurements were made for a wide range of tip Mach numbers including the transonic flow regime. The measured tip vortex strength and geometry permit effective blade loading predictions when used as input to a prescribed wake lifting surface code. It is also shown that with proper inflow and boundary layer modeling, the supercritical flow regime may be accurately predicted.

SYMBOLS

A ratio of vortex circulation to maximum blade-bound circulation

$\mathcal{R}$ aspect ratio

C_ℓ sectional lift coefficient

d radial distance from a vortex to a flow-field point

R radius of the rotor blade

r radial distance from the rotor center of rotation

V_i vortex-induced velocity

V_R residual velocity in the wake

y r/R, nondimensional radial coordinate

z axial distance from rotor

Ω rotational speed

Ψ azimuthal angle measured from the point of blade overhead passage

Ψ_v vortex age, the azimuth angle, Ψ, when vortex strikes the probe

*Presented at the Sixth European Rotorcraft and Powered Lift Aircraft Forum, September 16-19, 1980, Bristol, England.

1. INTRODUCTION

The past two decades have seen a continuing development of methods to predict rotor hover performance with increasing accuracy. These methods include lifting line (refs. 1-3), lifting surface (refs. 4-6), and finite difference (ref. 7) methods. Practically speaking, none of these methods is self-contained; they all require the specification of empirically obtained wake data (strength and geometry) in order to have a correct downwash distribution. Inevitably, the development of these codes becomes a tuning process in which it is determined just how detailed and accurate a wake description must be. This stage of code development places great reliance on the available body of experimental rotor data.

The available rotor data include a sizeable number of tests where detailed blade loading is obtained using surface pressure transducers (refs. 8-11), and more recently by laser doppler velocimetry (refs. 12-14). There is also a number of tests in which the rotor wake geometry is defined by flow visualization techniques (refs. 3 and 5) for a wide variety of blade configurations. Of the various wake studies, only Boatwright (ref. 15) and Cook (ref. 16) made detailed investigations of the wake flow structures. Cook's work is especially significant in that he was able to measure the strength of the tip vortex by a curve-fitting technique using hot-wire data. However, there seem to be no useable data in the literature in which simultaneous blade load distribution and wake measurements are made.

It is the intention of the present study to help fill this gap in the literature. This paper will describe the experimental set-up in which steady blade pressures were obtained using hub-mounted transducers and tip vortices were measured using Cook's technique. The data obtained are for unstalled flow ranging from the low subsonic to transonic conditions. It is shown herein that the measured wake geometry differs significantly from previously published low-aspect-ratio data (ref. 5). This difference is reflected in an inability to correctly predict the measured blade loading (using Summa's prescribed wake lifting surface code (ref. 6)) when this classical wake geometry is used.

2. THE EXPERIMENT

The data presented in this paper were gathered in the Army Aeromechanics Laboratory's hover test facility, a large chamber with special ducting designed to eliminate room recirculation. The rotor, situated in the center of the chamber, was mounted on a tall column containing the drive shaft (fig. 1). The rotor employed two cantilever-mounted, manually adjustable blades with half degree precone. These blades used an NACA 0012 profile and were untwisted and untapered. An aspect ratio of 6 was chosen in order to maximize Reynolds Number and available instrumentation space. The blades were grooved to accommodate 60 pressure tubes each. These tubes connect to a special cluster of three 48S8 Scanivalves (using Statham PA 856-15 transducers) driven by one SS5-48 solenoid drive mounted in the rotor hub. This arrangement permits an ample number of ports for five measurement locations — three radial locations on each blade, with one location being identical on both blades for comparison purposes. The Scanivalve stepper motor was actuated by a digital data system which acquired the data, computed the centrifugal pressure drops, and displayed the final pressure distribution. After manually adjusting the two blades, the pressure data was also used to check the equality of loadings. The pressure data at the 0.8 R radial station are compared for the two blades in figure 2. No significant differences in the loadings were seen for any operating conditions. (Additional indication of this loading equality is that no consistent difference in the two shed vortices was found.) The resulting pressure distributions for collective pitch settings of 5°, 8°, and 12° are shown in figures 3, 4, and 5. These and other pressure distributions are tabulated in appendix A. It is seen in figures 3, 4, and 5 that the inboard pressure distributions are only slightly affected by rotor speed. However, the outboard sections show considerable pressure alteration and shock development as the tip Mach number approaches near sonic values. Overall, however, the spanwise load distribution (obtained by pressure integration) is remarkably little affected by tip Mach number (fig. 6). In addition, the tip pressures were compared with those of reference 11 and are seen in figure 7 to be nearly identical.

Wake data were acquired with a traverse-mounted DISA 55P01 hot-wire probe mounted beneath the rotor. The probe was oriented with the wire being tangent to the rotor tip path. This permits measurement of the magnitude of the vortex induced velocity when the remainder of the rotor downwash is properly accounted for. It also excluded the effect of axial velocity on the induced velocity measurement. Data from the wire are acquired at various points along the tip vortex trajectories and can give both the tip vortex geometry and strength. One problem with this approach is that the vortex trajectory is not steady and the probe location (which is chosen by an on-the-spot decision as to where the number of vortex core "hits" is maximized) contains some as yet undetermined error. The resulting data stream has considerable variability. However, in order to be certain of the vortex location, the only acceptable data are those where the vortex core actually hits the probe. In the digitization process (done off-line at a reduced tape speed), the above-mentioned data system was coded to look for and accept only those data which showed the characteristic signal dip (wherein the minimum velocity is very close to the vortex translation speed) which indicates a probe-vortex strike. This turns out to be a very small percentage of the total amount of data actually recorded. A typical hot-wire trace displaying the above-mentioned variability is shown in figure 8.

3. HOT WIRE DATA ANALYSIS

The idea of the current data analysis is that a tip vortex should look like an infinite line vortex to a sufficiently close probe. Unfortunatly, the probe measures not only the velocity induced by the vortex at hand, V_i, but also that induced by the blade and the remainder of the wake system as well, V_R. The problem in analyzing the probe data is, then, how to separate this residual velocity, V_R, from the immediate vortex-induced velocity, V_i. Cook (ref. 16) handled this problem by assuming that the residual velocity was constant and given by the translation velocity of the tip vortex. He then was able to find the vortex strength by a fitting process. This strength was found to be far less than the computed maximum blade bound circulation of the single, full-scale blade used in that test. It was also found that the vortices measured were distinctly nonclassical in that they contained a large rotational region outside of the viscous core. In what follows, we shall use a process very similar to Cook's in analyzing wake data.

First consideration is given to the vortex trajectories. Figure 9 shows the axial and radial components of the vortex trajectories for a pitch setting of 8°. This figure gives data for a wide range of rotor speeds, and it is apparent that the trajectory is essentially independent of tip speed — even into the transonic regime. Figure 9 together with figure 6 suggests that the nonlinear transonic flow on the blade has little effect on the far-field induced flow as long as the local lift is not greatly altered. Also plotted on this figure is the vortex trajectory given by Kocurek's wake-fitting formula for rotors in free air. Although the axial component of the trajectory compares well with Kocurek's formula, there appears to be a greater discrepancy in the contraction than can be explained by measurement error. The vortex trajectories for pitch settings ranging from 5° to 12° are given in figure 10.

The present aim in analyzing the rotor wake is only to find the vortex strength and not a complete description of the structure. This strength will be found by fitting the wake data to the velocities obtained from an appropriate combination of inviscid, two-dimensional vortices. The velocity from one such vortex is given by

$$\frac{V_i}{\Omega R} = A \frac{(C_\ell y)_{max}}{4\pi \mathcal{R}} \frac{1}{d/R} \tag{1}$$

where the strength of the vortex is described by A, the ratio of the vortex circulation to the maximum bound circulation of the blade. (This could be determined by the pressure data because the circulation peak is not very sharp and is quite close to the tap location.) To accomplish this fitting, it is first necessary to convert the spatially dependent equation (1) into a time-dependent expression, as the vor ex data are time-based. Assuming that A is constant (which seems to be true within reasonable error bounds), the conversion to a time-dependent function is accomplished by expressing d as a function of time using the vortex trajectory data of figure 9. The next step is the determination of the residual velocity, V_R, which must be vectorially added to V_i before a comparison can be made with the probe data. We have done this in two different ways:

1) The first way to determine V_R involves very young vortices (about 50° old). For these it was assumed that V_R was given by the vortex trajectories (fig. 9). The fitting process always commenced when the vortex core hit the probe and ended when the following blade passed over; this assured the simplest possible flow field, as there would be vortices on only one side of the probe and minimal influence of vortex sheets and blade bound vorticity. Figure 11 shows some typical comparisons of probe data with the fitting expression. This figure shows the vortex velocity-time traces for pitch settings of 8° and 12°. It is seen here that the fitting curve provides a good match to the data outside of the immediate core region. Furthermore, the vortex strength is very close to the maximum blade bound circulation.

2) A second means to determine V_R was required in analyzing older vortices (about 210° old). The flow is more complex in this case, as the probe always lies between two vortices in the fitting region, and the expression for the vortex-induced velocity is correspondingly complicated. In fact, V_i for this case was determined using three vortices — one outboard of the probe and two inboard. Again, the data were fit for the time period between a probe-vortex strike and the subsequent blade passage. It was found that with V_R determined by the vortex trajectory data, it was not possible to obtain a good fit of the classical vortex expression to the wake data. Instead, we found that a better value for V_R was found by use of the minimum measured velocity between two vortices. At this point, the vortex-induced velocity is small, but not zero (due to the differing instantaneous translation velocities of the three vortices). The minimal induced velocity is calculated (assuming some value of A) and subtracted from the minimum measured intervortex velocity to obtain V_R. This task was rendered quite simple by the fact that the radial component of these velocities turns out to be very small (this was checked by calculations and measurements with a second probe). Since the two methods above do not give the same value for the residual velocity, it is clear that V_R is not a constant in this case. We assume,

however, that it changes sufficiently slowly to render the fitting process meaningful. In fact, the results thus obtained are consistent with the young vortex data. Figure 12 shows some typical comparisons of the older vortex data with the fitting expressions. This figure shows the fittings for pitch settings of 5°, 8°, and 12°. It is seen that the 8° and 12° cases show vortex strengths which match the maximum blade-bound vorticity very well. At 5° pitch, however, the strength is seen to be considerably smaller.

It seems from the above data, which are taken at a low rotor speed, that the tip vortex develops its full strength very early in life (mainly before 50°). Although there is a fair amount of variability between vortices, it is rather striking that very many vortices closely approach a classical Rankine vortex in appearance. Furthermore, the vortices (except for the 5° case) seem to contain all of the blade circulation. This vortex strength and structure differs markedly from the result obtained by Cook and probably reflects the considerable differences in blade geometries. As rotor tip speed increases (fig. 13), however, there appears to be an increasing departure from the Rankine vortex appearance. Nevertheless, the nondimensional vortex strength seems unaffected by tip speed.

4. COMPARISON OF THEORY AND EXPERIMENT

In order to integrate the present wake and loading data into a believable whole, it is necessary to be able to reproduce the blade loading computationally. We have chosen to do this using A.M.I.'s lifting surface code (ref. 6). This is a very flexible, compressible, lifting surface code which can handle either prescribed or free wakes.

Initial efforts to compute the blade loading were done using the Kocurek wake geometry (ref. 5). The resulting computed thrust coefficient was too high by about 20%. The next step was to compute the loading using the measured vortex locations and strength. Figure 14 shows a comparison of the measured and computed loading using the measured vortex parameters for a collective pitch of 8° (the trajectory is given by fig. 9 and we choose $A = 1.0$). The comparison is now considerably improved and the thrust coefficient is overpredicted by less than 5%. In view of the previously mentioned uncertainties in the vortex trajectory measurements, these computations were also performed with the entire vortex trajectory perturbed such that at $\Psi = 180°$, the axial and radial perturbations were ±0.025 R. The results derived from all possible combinations of these axial and radial changes fill the shaded area in figure 14. That the above measured and computed results are roughly centered on this shaded region indicates that for this case the measured trajectories are fairly accurate. However, the best comparison with the measured loading occurs when the vortex radial location (at $\Psi = 180°$) is increased (that is, the contraction is decreased) by 0.025 R. The identical situation was found to occur in computations of the 12° pitch cases; that is, the best comparison occurred when the radial vortex location was increased by 0.025 R over the measured value (fig. 15). For the 5° collective-pitch case, the situation was a little different in that a reasonable comparison of computation and loading data could not be made until the vortex strength was reduced to $A = 0.75$. In this case, the vorticity which would otherwise have been in the tip vortex was now included in the vortex sheet model. (For a complete description of the assumed vortex sheet model see ref. 6.) This result is consistent with the measured vortex strength and gives the comparison shown in figure 16.

The previous comparisons have been made at low tip Mach numbers. The lifting surface code used should be applicable to predict the spanwise and chordwise loading up to the onset of supercritical flow. Beyond this point, linear aerodynamics are not applicable on the blade and a more complete flow description is required. As a preliminary evaluation of the high-speed flow data, two-dimensional computations were made of the flow at the 80% radial station. This was done using Holst's full-potential code (ref. 17). In order to perform this computation, an angle of attack is required. Since the region of supersonic flow is localized (i.e., limited to the immediate vicinity of the upper blade surface), it should be possible to find the angle of attack using the linear lifting surface code. Of course, the lifting surface code requires the measured vortex location and strength as mentioned previously. With the angle of attack obtained thereby, the Holst code produced the results shown in figure 17. This figure shows two computed results — an inviscid result and one with a viscous ramp-boundary layer model (ref. 18). It is seen that a shock-boundary layer interaction model is very necessary and in this case very effective.

5. CONCLUDING REMARKS

The present study was intended as a benchmark to aid in the development of hover performance codes. The goal was to obtain simultaneous measurements of blade load distribution and tip vortex geometry and strength using fairly standard techniques. In spite of some uncertainties (due mainly to wake unsteadiness), lifting surface computations show that the present measured loads and wake measurements are generally consistent with each other.

The main conclusions from this study are:

1. The Cook vortex measurement technique seems to be quite effective for two-bladed rotors.

2. At low rotor speeds, an untwisted, untapered, double-bladed rotor produces tip vortices which can closely resemble a classical Rankine vortex. Except for the lowest pitch settings, this vortex strength closely approaches the maximum blade bound circulation. At higher tip speeds, the inner vortex structure appears increasingly nonclassical; however, the strength is unaltered.

3. It is not possible to predict the blade-spanwise-load distribution without accurate vortex location and strength data. The present measured vortex location data were significantly different (for presently unknown reasons) from the classical data in the literature. However, these measurements were indispensable to obtaining a reasonable comparison of theory and experiment.

4. For the present rotor and speed range tested, the onset of transonic flow was found to have no effect on the spanwise loading distribution and the vortex trajectories. The chordwise loading is profoundly altered by the transonic flow and can only be simulated by nonlinear aerodynamic techniques which employ a shock-boundary layer interaction model.

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APPENDIX A

TABLE 1.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 0°$ $\Omega = 1500$ rpm $M_{tip} = 0.520$

Upper surface ($-C_{p_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9423E+00	0.02	0.1511E+00	0.00	-0.6101E+00	0.01	-0.9659E-01	0.00	-0.1061E+01
0.03	0.2735E+00	0.06	0.3595E+00	0.01	-0.1223E+00	0.03	0.2108E+00	0.02	0.1027E+00
0.12	0.3687E+00	0.10	0.4147E+00	0.04	0.3983E+00	0.04	0.2595E+00	0.07	0.3774E+00
0.26	0.3247E+00	0.15	0.4147E+00	0.07	0.3774E+00	0.06	0.3158E+00	0.12	0.3774E+00
0.47	0.2149E+00	0.19	0.3977E+00	0.09	0.4073E+00	0.10	0.3824E+00	0.15	0.3890E+00
0.69	0.1197E+00	0.23	0.3850E+00	0.13	0.4222E+00	0.13	0.3901E+00	0.19	0.3657E+00
0.83	0.3910E-01	0.29	0.3680E+00	0.17	0.4282E+00	0.17	0.3901E+00	0.23	0.3332E+00
		0.33	0.3425E+00	0.21	0.4073E+00	0.21	0.3722E+00	0.29	0.2843E+00
		0.39	0.2744E+00	0.24	0.3893E+00	0.26	0.3312E+00	0.33	0.2494E+00
		0.44	0.2702E+00	0.30	0.3385E+00	0.30	0.2979E+00	0.39	0.2144E+00
		0.52	0.2234E+00	0.35	0.3265E+00	0.35	0.2646E+00	0.44	0.1982E+00
		0.61	0.1638E+00	0.42	0.2786E+00	0.42	0.2262E+00	0.50	0.1795E+00
		0.73	0.1171E+00	0.50	0.2307E+00	0.47	0.2082E+00	0.61	0.1260E+00
		0.80	0.6179E-01	0.56	0.1978E+00	0.52	0.1672E+00	0.69	0.8876E-01
				0.65	0.1470E+00	0.65	0.1032E+00	0.76	0.5385E-01
				0.74	0.8413E-01	0.73	0.6478E-01	0.90	-0.3693E-01
				0.90	-0.3556E-01	0.80	0.1868E-01		
						0.87	-0.3511E-01		
Lower surface ($-C_{p_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.2368E+00	0.00	-0.4102E+00	0.01	0.1500E+00	0.01	0.1868E-01	0.00	-0.5048E+00
0.20	0.3614E+00	0.07	0.2336E+00	0.02	0.2008E+00	0.04	0.2799E+00	0.07	0.3797E+00
0.45	0.2295E+00	0.18	0.4218E+00	0.11	0.4222E+00	0.14	0.3773E+00	0.16	0.3634E+00
0.69	0.1123E+00	0.28	0.3737E+00	0.14	0.4372E+00	0.28	0.3107E+00	0.24	0.3332E+00
0.85	0.3179E-01	0.38	0.3186E+00	0.24	0.3923E+00	0.45	0.2031E+00	0.39	0.2144E+00
		0.51	0.2416E+00	0.34	0.3325E+00	0.57	0.1339E+00	0.51	0.1609E+00
		0.57	0.1967E+00	0.37	0.1978E+00	0.69	0.7759E-01	0.63	0.1051E+00
		0.79	0.3204E-01	0.74	0.1021E+00	0.79	0.1355E-01	0.74	0.5850E-01
				0.90	-0.1761E-01	0.90	-0.6841E-01	0.85	0.7300E-02
C_L	0.0055		0.0124		0.0053		-0.0094		0.0044

TABLE 2.- LOCAL PRESSURE COEFFICIENT

$\theta_c' = 2°$ $\Omega = 1250$ rpm $M_{tip} = 0.436$

Upper surface ($-C_{P_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.1008E+01	0.02	0.2832E+00	0.00	-0.4726E+00	0.01	0.8412E-01	0.00	-0.9943E+00
0.03	0.3785E+00	0.06	0.4376E+00	0.01	0.5241E-01	0.03	0.3472E+00	0.02	0.3722E+00
0.12	0.4303E+00	0.10	0.4672E+00	0.04	0.5195E+00	0.04	0.3823E+00	0.07	0.5019E+00
0.26	0.3578E+00	0.15	0.4494E+00	0.07	0.4616E+00	0.06	0.4208E+00	0.12	0.4545E+00
0.47	0.2440E+00	0.19	0.4316E+00	0.09	0.4864E+00	0.10	0.4559E+00	0.15	0.4418E+00
0.69	0.1301E+00	0.23	0.4079E+00	0.13	0.4823E+00	0.13	0.4524E+00	0.19	0.4070E+00
0.83	0.4734E-01	0.29	0.3782E+00	0.17	0.4740E+00	0.17	0.4419E+00	0.23	0.3786E+00
		0.33	0.3604E+00	0.21	0.4451E+00	0.21	0.4138E+00	0.29	0.3185E+00
		0.39	0.2832E+00	0.24	0.4203E+00	0.26	0.3612E+00	0.33	0.2742E+00
		0.44	0.2832E+00	0.30	0.3707E+00	0.30	0.3296E+00	0.39	0.2362E+00
		0.52	0.2298E+00	0.35	0.3542E+00	0.35	0.3016E+00	0.44	0.2172E+00
		0.61	0.1705E+00	0.42	0.3170E+00	0.42	0.2490E+00	0.50	0.1983E+00
		0.73	0.1230E+00	0.50	0.2384E+00	0.47	0.2179E+00	0.61	0.1445E+00
		0.80	0.6956E-01	0.56	0.2136E+00	0.52	0.1858E+00	0.69	0.1065E+00
				0.65	0.1599E+00	0.65	0.1192E+00	0.76	0.7173E-01
				0.76	0.9375E-01	0.73	0.7710E-01	0.90	-0.2001E-01
				0.90	-0.2613E-01	0.80	0.3501E-01		
						0.87	-0.1760E-01		
Lower surface ($-C_{P_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.1922E+00	0.00	-0.5359E+00	0.01	0.6929E-02	0.01	-0.1158E+00	0.00	-0.7001E+00
0.20	0.3578E+00	0.07	0.2518E+00	0.02	0.8961E-01	0.04	0.1964E+00	0.07	0.2520E+00
0.45	0.2336E+00	0.18	0.3971E+00	0.11	0.3872E+00	0.14	0.3472E+00	0.16	0.3121E+00
0.69	0.1094E+00	0.28	0.3580E+00	0.14	0.4120E+00	0.28	0.3016E+00	0.24	0.3026E+00
0.85	0.3698E-01	0.38	0.3068E+00	0.24	0.3748E+00	0.45	0.2104E+00	0.39	0.2204E+00
		0.51	0.2350E+00	0.34	0.3294E+00	0.57	0.1402E+00	0.51	0.1635E+00
		0.57	0.1937E+00	0.57	0.1930E+00	0.69	0.8412E-01	0.63	0.1192E+00
		0.79	0.4186E-01	0.74	0.1061E+00	0.79	0.2098E-01	0.74	0.7489E-01
				0.90	-0.1373E-01	0.90	-0.5618E-01	0.85	0.2744E-01
C_L	0.0374		0.0389		0.0631		0.0346		0.0471

TABLE 3.- LOCAL PRESSURE COEFFICIENT

$\theta'_c = 2°$ $\Omega = 1500$ rpm $M_{tip} = 0.520$

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9910E+00	0.02	0.2768E+00	0.00	-0.4878E+00	0.01	0.6212E-01	0.00	-0.1033E+01
0.03	0.3784E+00	0.06	0.4554E+00	0.01	0.3871E-01	0.03	0.3464E+00	0.02	0.3681E+00
0.12	0.4223E+00	0.10	0.4809E+00	0.04	0.5204E+00	0.04	0.3822E+00	0.07	0.5124E+00
0.26	0.3564E+00	0.15	0.4639E+00	0.07	0.4635E+00	0.06	0.4258E+00	0.12	0.4635E+00
0.47	0.2466E+00	0.19	0.4384E+00	0.09	0.4904E+00	0.10	0.4642E+00	0.15	0.4542E+00
0.69	0.1294E+00	0.23	0.4129E+00	0.13	0.4874E+00	0.13	0.4590E+00	0.19	0.4193E+00
0.83	0.4152E-01	0.29	0.3831E+00	0.17	0.4815E+00	0.17	0.4488E+00	0.23	0.3681E+00
		0.33	0.3661E+00	0.21	0.4515E+00	0.21	0.4206E+00	0.29	0.3076E+00
		0.39	0.2896E+00	0.24	0.4246E+00	0.26	0.3694E+00	0.33	0.2704E+00
		0.44	0.2938E+00	0.30	0.3708E+00	0.30	0.3361E+00	0.39	0.2355E+00
		0.52	0.2385E+00	0.35	0.3618E+00	0.35	0.2875E+00	0.44	0.2169E+00
		0.61	0.1748E+00	0.42	0.2960E+00	0.42	0.2491E+00	0.50	0.1959E+00
		0.73	0.1195E+00	0.50	0.2421E+00	0.47	0.2286E+00	0.61	0.1378E+00
		0.80	0.6848E-01	0.56	0.2092E+00	0.52	0.1850E+00	0.69	0.1005E+00
				0.65	0.1554E+00	0.65	0.1133E+00	0.76	0.6330E-01
				0.76	0.8657E-01	0.73	0.7236E-01	0.90	-0.3211E-01
				0.90	-0.3309E-01	0.80	0.2626E-01		
						0.87	-0.2752E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.1953E+00	0.00	-0.5395E+00	0.01	-0.1831E-03	0.01	-0.1223E+00	0.00	-0.7348E+00
0.20	0.3564E+00	0.07	0.1919E+00	0.02	0.8657E-01	0.0[illegible]	0.1953E+00	0.07	0.2471E+00
0.45	0.2319E+00	0.18	0.4001E+00	0.11	0.3947E+00	0.14	0.3515E+00	0.16	0.3146E+00
0.49	0.1148E+00	0.28	0.3601E+00	0.14	0.4127E+00	0.28	0.3003E+00	0.24	0.3006E+00
0.85	0.3421E-01	0.38	0.3067E+00	0.24	0.3797E+00	0.45	0.2055E+00	0.39	0.2169E+00
		0.51	0.2320E+00	0.34	0.3349E+00	0.57	0.1364E+00	0.51	0.1610E+00
		0.57	0.1906E+00	0.57	0.1913E+00	0.69	0.8004E-01	0.63	0.1122E+00
		0.79	0.3860E-01	0.74	0.1015E+00	0.79	0.1346E-01	0.74	0.6562E-01
				0.90	-0.1814E-01	0.90	-0.6593E-01	0.85	0.1676E-01
C_L	0.0374		0.0503		0.0651		0.0319		0.0481

TABLE 4.- LOCAL PRESSURE COEFFICIENT

θ_c = 2°   Ω = 1750 rpm M_{tip} = 0.607

Upper surface ($-C_{P_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.1016E+01	0.02	0.2700E+00	0.00	-0.5244E+00	0.01	0.2726E-01	0.00	-0.1069E+01
0.03	0.3740E+00	0.06	0.4506E+00	0.01	0.1545E-01	0.03	0.3373E+00	0.02	0.3579E+00
0.12	0.4232E+00	0.10	0.4797E+00	0.04	0.5301E+00	0.04	0.3790E+00	0.07	0.5364E+00
0.26	0.3575E+00	0.15	0.4635E+00	0.07	0.4726E+00	0.06	0.4287E+00	0.12	0.4727E+00
0.47	0.2316E+00	0.19	0.4442E+00	0.09	0.5002E+00	0.10	0.4804E+00	0.15	0.4690E+00
0.69	0.1221E+00	0.23	0.4152E+00	0.13	0.5002E+00	0.13	0.4764E+00	0.19	0.4253E+00
0.83	0.3456E-01	0.29	0.3861E+00	0.17	0.4979E+00	0.17	0.4665E+00	0.23	0.3506E+00
		0.33	0.3668E+00	0.21	0.4657E+00	0.21	0.4367E+00	0.29	0.3087E+00
		0.39	0.2894E+00	0.24	0.4359E+00	0.26	0.3790E+00	0.33	0.2722E+00
		0.44	0.2958E+00	0.30	0.3601E+00	0.30	0.3433E+00	0.39	0.2358E+00
		0.52	0.2378E+00	0.35	0.3578E+00	0.35	0.2817E+00	0.44	0.2157E+00
		0.61	0.1700E+00	0.42	0.2911E+00	0.42	0.2538E+00	0.50	0.1939E+00
		0.73	0.1152E+00	0.50	0.2452E+00	0.47	0.2320E+00	0.61	0.1338E+00
		0.80	0.5713E-01	0.56	0.2061E+00	0.52	0.1843E+00	0.69	0.9367E-01
				0.65	0.1510E+00	0.65	0.1087E+00	0.76	0.5540E-01
				0.76	0.7978E-01	0.73	0.6105E-01	0.90	-0.4846E-01
				0.90	-0.4428E-01	0.80	0.1136E-01		
						0.87	-0.4429E-01		
Lower surface ($-C_{P_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.1933E+00	0.00	-0.5589E+00	0.01	-0.9821E-02	0.01	-0.1417E+00	0.00	-0.7646E+00
0.20	0.3575E+00	0.07	0.1194E+00	0.02	0.7289E-01	0.04	0.1922E+00	0.07	0.2485E+00
0.45	0.2316E+00	0.18	0.4049E+00	0.11	0.3968E+00	0.14	0.3631E+00	0.16	0.3269E+00
0.69	0.1057E+00	0.28	0.3651E+00	0.14	0.4290E+00	0.28	0.3015E+00	0.24	0.3123E+00
0.85	0.2361E-01	0.33	0.3110E+00	0.24	0.3899E+00	0.45	0.2081E+00	0.39	0.2157E+00
		0.51	0.2348E+00	0.34	0.3348E+00	0.57	0.1346E+00	0.51	0.1593E+00
		0.57	0.1901E+00	0.57	0.1878E+00	0.69	0.6900E-01	0.63	0.1082E+00
		0.79	0.2597E-01	0.74	0.7127E-01	0.79	-0.5637E-03	0.74	0.5905E-01
				0.90	-0.3049E-01	0.90	-0.8404E-01	0.85	0.9850E-02
C_L	0.0352		0.0571		0.0631		0.0333		0.0496

TABLE 5.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 2°$ $\Omega = 2062$ rpm $M_{tip} = 0.723$

Upper surface ($-C_{p_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9708E+00	0.02	0.2850E+00	0.00	-0.5440E+00	0.01	0.5721E-02	0.00	-0.1083E+01
0.03	0.3983E+00	0.06	0.4826E+00	0.01	-0.1238E-01	0.03	0.3316E+00	0.02	0.3164E+00
0.12	0.4695E+00	0.10	0.5183E+00	0.04	0.5658E+00	0.04	0.3862E+00	0.07	0.6049E+00
0.26	0.4022E+00	0.15	0.5040E+00	0.07	0.5140E+00	0.06	0.4529E+00	0.12	0.5627E+00
0.47	0.2677E+00	0.19	0.4850E+00	0.09	0.5520E+00	0.10	0.5196E+00	0.15	0.5472E+00
0.69	0.1648E+00	0.23	0.4635E+00	0.13	0.5589E+00	0.13	0.5423E+00	0.19	0.4993E+00
0.83	0.6985E-01	0.29	0.4350E+00	0.17	0.5710E+00	0.17	0.5332E+00	0.23	0.4233E+00
		0.33	0.4088E+00	0.21	0.5227E+00	0.21	0.4968E+00	0.29	0.3459E+00
		0.39	0.3231E+00	0.24	0.4882E+00	0.26	0.4271E+00	0.33	0.3093E+00
		0.44	0.3231E+00	0.30	0.3898E+00	0.30	0.4044E+00	0.39	0.2671E+00
		0.52	0.2635E+00	0.35	0.3915E+00	0.35	0.3407E+00	0.44	0.2474E+00
		0.61	0.1897E+00	0.42	0.3380E+00	0.42	0.2998E+00	0.50	0.2249E+00
		0.73	0.1302E+00	0.50	0.2810E+00	0.47	0.2695E+00	0.61	0.1601E+00
		0.80	0.7307E-01	0.56	0.2396E+00	0.52	0.2179E+00	0.69	0.1179E+00
				0.65	0.1792E+00	0.65	0.1370E+00	0.76	0.7707E-01
				0.76	0.1033E+00	0.73	0.8302E-01	0.90	-0.3553E-01
				0.90	-0.3136E-01	0.80	0.2997E-01		
						0.87	-0.3066E-01		

Lower surface ($-C_{p_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.2321E+00	0.00	-0.5388E+00	0.01	-0.2965E-03	0.01	-0.1459E+00	0.00	-0.7858E+00
0.20	0.4101E+00	0.07	0.2019E+00	0.02	0.9463E-01	0.04	0.2240E+00	0.07	0.2981E+00
0.45	0.2637E+00	0.13	0.4575E+00	0.11	0.4588E+00	0.14	0.4347E+00	0.16	0.3966E+00
0.69	0.1411E+00	0.28	0.4104E+00	0.14	0.4916E+00	0.28	0.3574E+00	0.24	0.3769E+00
0.85	0.5007E-01	0.38	0.3497E+00	0.24	0.4467E+00	0.45	0.2513E+00	0.39	0.2601E+00
		0.51	0.2646E+00	0.34	0.3846E+00	0.57	0.1679E+00	0.51	0.1925E+00
		0.57	0.2187E+00	0.57	0.2224E+00	0.69	0.9818E-01	0.63	0.1348E+00
		0.79	0.4981E-01	0.74	0.1153E+00	0.79	0.2088E-01	0.74	0.8270E-01
				0.90	-0.2446E-01	0.90	-0.7007E-01	0.85	0.2499E-01
C_L	0.0370		0.0458		0.0599		0.0307		0.0447

TABLE 6.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 2°$ Ω = 2265 rpm M_{tip} = 0.794

Upper surface ($-C_{P_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9876E+00	0.02	0.2782E+00	0.00	-0.5587E+00	0.01	-0.3842E-01	0.00	-0.1113E+01
0.03	0.4000E+00	0.06	0.5042E+00	0.01	-0.2671E-01	0.03	0.3143E+00	0.02	0.2477E+00
0.12	0.4701E+00	0.10	0.5449E+00	0.04	0.5889E+00	0.04	0.3766E+00	0.07	0.6427E+00
0.26	0.4101E+00	0.15	0.5266E+00	0.07	0.5456E+00	0.06	0.4601E+00	0.12	0.6352E+00
0.47	0.2666E+00	0.19	0.5103E+00	0.09	0.5904E+00	0.10	0.5742E+00	0.15	0.6278E+00
0.69	0.1632E+00	0.23	0.4859E+00	0.13	0.6053E+00	0.13	0.6060E+00	0.19	0.5644E+00
0.83	0.6648E-01	0.29	0.4553E+00	0.17	0.6218E+00	0.17	0.6060E+00	0.23	0.4713E+00
		0.33	0.4329E+00	0.21	0.5755E+00	0.21	0.5569E+00	0.29	0.3719E+00
		0.39	0.3433E+00	0.24	0.5366E+00	0.26	0.4668E+00	0.33	0.3359E+00
		0.44	0.3433E+00	0.30	0.3842E+00	0.30	0.4336E+00	0.39	0.2924E+00
		0.52	0.2863E+00	0.35	0.4290E+00	0.35	0.3713E+00	0.44	0.2713E+00
		0.61	0.2110E+00	0.42	0.3722E+00	0.42	0.3236E+00	0.50	0.2464E+00
		0.73	0.1478E+00	0.50	0.3110E+00	0.47	0.2904E+00	0.61	0.1744E+00
				0.56	0.2662E+00	0.52	0.2321E+00	0.69	0.1272E+00
				0.65	0.1989E+00	0.65	0.1379E+00	0.76	0.8120E-01
				0.76	0.1152E+00	0.73	0.8357E-01	0.90	-0.4178E-01
				0.90	-0.2522E-01	0.80	0.2523E-01		
						0.87	-0.3709E-01		
Lower surface ($-C_{P_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.2299E+00	0.80	0.8675E-01	0.01	0.1677E-02	0.01	-0.1710E+00	0.00	-0.7970E+00
0.20	0.4134E+00	0.00	-0.5405E+00	0.02	0.9731E-01	0.04	0.2122E+00	0.07	0.3135E+00
0.45	0.2733E+00	0.07	0.2400E+00	0.11	0.4888E+00	0.14	0.4721E+00	0.16	0.4464E+00
0.69	0.1432E+00	0.18	0.5028E+00	0.14	0.5351E+00	0.28	0.3925E+00	0.24	0.4253E+00
0.85	0.5647E-01	0.28	0.4567E+00	0.24	0.4873E+00	0.45	0.2718E+00	0.37	0.2837E+00
		0.38	0.3904E+00	0.34	0.4141E+00	0.57	0.1777E+00	0.51	0.2104E+00
		0.51	0.2976E+00	0.57	0.2437E+00	0.69	0.9948E-01	0.63	0.1483E+00
		0.57	0.2449E+00	0.74	0.1257E+00	0.79	0.1594E-01	0.74	0.8865E-01
		0.79	0.5144E-01	0.90	-0.1476E-01	0.90	-0.7952E-01	0.85	0.2530E-01
C_L	0.0331		0.03[illegible]		0.0596		0.0325		0.0496

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OF POOR QUALITY

TABLE 7.- LOCAL PRESSURE COEFFICIENT

$\theta_c' = 4°$ $\Omega = 2324$ rpm $M_{tip} = 0.815$

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.1004E+01	0.02	0.2601E+00	0.00	-0.5943E+00	0.01	-0.8560E-01	0.00	-0.1147E+01
0.03	0.3986E+00	0.06	0.4977E+00	0.01	-0.5656E-01	0.03	0.2789E+00	0.02	0.2122E+00
0.12	0.4689E+00	0.10	0.5429E+00	0.04	0.5841E+00	0.04	0.3500E+00	0.07	0.6366E+00
0.26	0.4050E+00	0.15	0.5272E+00	0.07	0.5420E+00	0.06	0.4443E+00	0.12	0.6962E+00
0.47	0.2612E+00	0.19	0.5075E+00	0.09	0.5942E+00	0.10	0.5813E+00	0.15	0.6658E+00
0.69	0.1526E+00	0.23	0.4781E+00	0.13	0.6087E+00	0.13	0.6330E+00	0.19	0.5770E+00
0.83	0.5359E-01	0.29	0.4466E+00	0.17	0.6275E+00	0.17	0.6305E+00	0.23	0.4652E+00
		0.33	0.4191E+00	0.21	0.5725E+00	0.21	0.5736E+00	0.29	0.3569E+00
		0.39	0.3268E+00	0.24	0.5304E+00	0.26	0.4624E+00	0.33	0.3168E+00
		0.44	0.3268E+00	0.30	0.3507E+00	0.30	0.4211E+00	0.39	0.2682E+00
		0.52	0.2640E+00	0.35	0.4116E+00	0.35	0.3539E+00	0.44	0.2487E+00
		0.61	0.1854E+00	0.42	0.3551E+00	0.42	0.3047E+00	0.50	0.2268E+00
		0.73	0.1226E+00	0.50	0.2913E+00	0.47	0.2698E+00	0.61	0.1551E+00
		0.80	0.6369E-01	0.56	0.2493E+00	0.52	0.2130E+00	0.69	0.1101E+00
				0.65	0.1811E+00	0.65	0.1199E+00	0.76	0.6387E-01
				0.76	0.9852E-01	0.73	0.6563E-01	0.90	-0.6382E-01
				0.90	-0.4642E-01	0.80	0.6173E-02		
						0.87	-0.5975E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.2197E+00	0.00	-0.5667E+00	0.01	-0.2612E-01	0.01	-0.2006E+00	0.00	-0.8445E+00
0.20	0.4018E+00	0.07	0.2585E+00	0.02	0.8113E-01	0.04	0.1949E+00	0.07	0.2876E+00
0.45	0.2580E+00	0.18	0.4896E+00	0.11	0.4870E+00	0.14	0.4741E+00	0.16	0.4457E+00
0.69	0.1271E+00	0.28	0.4434E+00	0.14	0.5333E+00	0.28	0.3836E+00	0.24	0.4190E+00
0.85	0.3442E-01	0.38	0.3771E+00	0.24	0.4797E+00	0.45	0.2556E+00	0.39	0.2682E+00
		0.51	0.2844E+00	0.34	0.4072E+00	0.57	0.1626E+00	0.51	0.1940E+00
		0.57	0.2316E+00	0.57	0.2261E+00	0.69	0.8114E-01	0.63	0.1308E+00
		0.79	0.3759E-01	0.74	0.1130E+00	0.79	-0.1582E-02	0.74	0.7359E-01
				0.90	-0.3482E-01	0.90	-0.9852E-01	0.85	0.9143E-02
C_L	0.0408		0.0303		0.0627		0.0301		0.0500

TABLE 8.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 2°$ Ω = 2400 rpm M_{tip} = 0.830

Upper surface ($-C_{P_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.1002E+01	0.02	0.2642E+00	0.00	-0.5947E+00	0.01	-0.1028E+00	0.00	-0.1153E+01
0.03	0.3822E+00	0.06	0.4947E+00	0.01	-0.6201E-01	0.03	0.2637E+00	0.02	0.1861E+00
0.12	0.4533E+00	0.10	0.5366E+00	0.04	0.5821E+00	0.04	0.3355E+00	0.07	0.6074E+00
0.26	0.3884E+00	0.15	0.5213E+00	0.07	0.5440E+00	0.06	0.4300E+00	0.12	0.7071E+00
0.47	0.2555E+00	0.19	0.5042E+00	0.09	0.5961E+00	0.10	0.5836E+00	0.15	0.7131E+00
0.69	0.1443E+00	0.23	0.4851E+00	0.13	0.6215E+00	0.13	0.6390E+00	0.19	0.6205E+00
0.83	0.4848E-01	0.29	0.4490E+00	0.17	0.6398E+00	0.17	0.6604E+00	0.23	0.5160E+00
		0.33	0.4223E+00	0.21	0.5919E+00	0.21	0.5886E+00	0.29	0.3475E+00
		0.39	0.3366E+00	0.24	0.5510E+00	0.26	0.4703E+00	0.33	0.3238E+00
		0.44	0.3366E+00	0.30	0.3439E+00	0.30	0.4249E+00	0.39	0.2822E+00
		0.52	0.2737E+00	0.35	0.4341E+00	0.35	0.3645E+00	0.44	0.2632E+00
		0.61	0.1956E+00	0.42	0.3763E+00	0.42	0.3166E+00	0.50	0.2395E+00
		0.73	0.1327E+00	0.50	0.3115E+00	0.47	0.2813E+00	0.61	0.1659E+00
		0.80	0.6986E-01	0.56	0.2621E+00	0.52	0.2209E+00	0.69	0.1172E+00
				0.65	0.1931E+00	0.65	0.1239E+00	0.76	0.6856E-01
				0.76	0.1085E+00	0.73	0.6725E-01	0.90	-0.6082E-01
				0.90	-0.3664E-01	0.80	0.6804E-02	1	
						0.87	-0.5869E-01		
Lower surface ($-C_{P_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.2153E+00	0.00	-0.5626E+00	0.01	-0.1691E-01	0.01	-0.2023E+00	0.00	-0.8335E+00
0.20	0.4007E+00	0.07	0.2495E+00	0.02	0.8456E-01	0.04	0.1932E+00	0.07	0.2881E+00
0.45	0.2617E+00	0.18	0.4935E+00	0.11	0.4989E+00	0.14	0.4866E+00	0.16	0.4698E+00
0.69	0.1257E+00	0.28	0.4504E+00	0.14	0.5468E+00	0.28	0.3997E+00	0.24	0.4460E+00
0.85	0.3611E-01	0.38	0.3839E+00	0.24	0.4989E+00	0.45	0.2675E+00	0.39	0.2846E+00
		0.51	0.2908E+00	0.34	0.4270E+00	0.57	0.1693E+00	0.51	0.2062E+00
		0.57	0.2371E+00	0.57	0.2438E+00	0.69	0.8740E-01	0.63	0.1410E+00
		0.79	0.3974E-01	0.74	0.1240E+00	0.79	0.5047E-03	0.74	0.7924E-01
				0.90	-0.2396E-01	0.90	-0.9899E-01	0.85	0.1277E-01
C_L	0.0310		0.0327		0.0598		0.0270		0.0474

TABLE 9.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 5°$ $\Omega = 650$ rpm $M_{tip} = 0.226$

Upper surface ($-C_{p_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9597E+00	0.02	0.5239E+00	0.00	-0.1632E+00	0.01	0.4846E+00	0.00	-0.7825E+00
0.03	0.5103E+00	0.06	0.5874E+00	0.01	0.3444E+00	0.03	0.6422E+00	0.02	0.6865E+00
0.12	0.5103E+00	0.10	0.5662E+00	0.04	0.6924E+00	0.04	0.6180E+00	0.07	0.6757E+00
0.26	0.3972E+00	0.15	0.5239E+00	0.07	0.6054E+00	0.06	0.6180E+00	0.12	0.5785E+00
0.47	0.2841E+00	0.19	0.5028E+00	0.09	0.6054E+00	0.10	0.5937E+00	0.15	0.5245E+00
0.69	0.1711E+00	0.23	0.4604E+00	0.13	0.5764E+00	0.13	0.5695E+00	0.19	0.4921E+00
0.83	0.5800E-01	0.29	0.4392E+00	0.17	0.5474E+00	0.17	0.5331E+00	0.23	0.4381E+00
		0.33	0.3969E+00	0.21	0.5039E+00	0.21	0.4846E+00	0.29	0.3733E+00
		0.39	0.3333E+00	0.24	0.4749E+00	0.26	0.4240E+00	0.33	0.3193E+00
		0.44	0.3121E+00	0.30	0.4314E+00	0.30	0.3876E+00	0.39	0.2653E+00
		0.52	0.2697E+00	0.35	0.3879E+00	0.35	0.3391E+00	0.44	0.2436E+00
		0.61	0.1850E+00	0.42	0.3444E+00	0.42	0.2906E+00	0.50	0.2220E+00
		0.73	0.1427E+00	0.50	0.2719E+00	0.47	0.2542E+00	0.61	0.1681E+00
		0.80	0.1003E+00	0.56	0.2283E+00	0.52	0.2178E+00	0.69	0.1249E+00
				0.65	0.1704E+00	0.65	0.1450E+00	0.76	0.9243E-01
				0.76	0.1123E+00	0.73	0.9655E-01	0.90	-0.4781E-02
				0.90	-0.3671E-02	0.80	0.4801E-01		
						0.87	-0.4932E-03		
Lower surface ($-C_{p_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.5800E-01	0.00	-0.6622E+00	0.01	-0.1922E+00	0.01	-0.3643E+00	0.00	-0.8689E+00
0.20	0.2841E+00	0.07	-0.5224E+00	0.02	-0.7617E-01	0.04	-0.4932E-03	0.07	0.1033E+00
0.45	0.2087E+00	0.18	0.3152E+00	0.11	0.2719E+00	0.14	0.2420E+00	0.16	0.2220E+00
0.69	0.1334E+00	0.28	0.3152E+00	0.14	0.3154E+00	0.28	0.2420E+00	0.24	0.2329E+00
0.85	0.5800E-01	0.38	0.2737E+00	0.24	0.3009E+00	0.45	0.1814E+00	0.39	0.1897E+00
		0.51	0.2156E+00	0.34	0.2719E+00	0.57	0.1450E+00	0.51	0.1572E+00
		0.57	0.1749E+00	0.57	0.1849E+00	0.69	0.9655E-01	0.63	0.1249E+00
		0.79	0.2548E-01	0.74	0.1123E+00	0.79	0.3590E-01	0.74	0.1033E+00
				0.90	0.1084E-01	0.90	-0.3685E-01	0.85	0.6004E-01
C_L	0.1104		0.2067		0.1475		0.1203		0.1449

TABLE 10.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 5°$ $\Omega = 1250$ rpm $M_{tip} = 0.433$

Upper surface ($-C_{p_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9467E+00	0.02	0.4849E+00	0.00	-0.2270E+00	0.01	0.4569E+00	0.00	-0.8672E+00
0.03	0.5042E+00	0.06	0.5567E+00	0.01	0.3191E+00	0.03	0.6444E+00	0.02	0.7181E+00
0.12	0.4833E+00	0.10	0.5627E+00	0.04	0.6859E+00	0.04	0.6267E+00	0.07	0.6799E+00
0.26	0.3894E+00	0.15	0.5148E+00	0.07	0.5858E+00	0.06	0.6232E+00	0.12	0.5682E+00
0.47	0.2641E+00	0.19	0.4909E+00	0.09	0.5984E+00	0.10	0.5949E+00	0.15	0.5268E+00
0.69	0.1388E+00	0.23	0.4550E+00	0.13	0.5608E+00	0.13	0.5666E+00	0.19	0.4693E+00
0.83	0.4490E-01	0.29	0.4190E+00	0.17	0.5400E+00	0.17	0.5383E+00	0.23	0.4024E+00
		0.33	0.3891E+00	0.21	0.5025E+00	0.21	0.4923E+00	0.29	0.3322E+00
		0.39	0.3113E+00	0.24	0.4650E+00	0.26	0.4251E+00	0.33	0.2971E+00
		0.44	0.2933E+00	0.30	0.3983E+00	0.30	0.3791E+00	0.39	0.2556E+00
		0.52	0.2395E+00	0.35	0.3607E+00	0.35	0.3190E+00	0.44	0.2365E+00
		0.61	0.1736E+00	0.42	0.3149E+00	0.42	0.2836E+00	0.50	0.2078E+00
		0.73	0.1257E+00	0.50	0.2565E+00	0.47	0.2553E+00	0.61	0.1504E+00
		0.80	0.6586E-01	0.56	0.2190E+00	0.52	0.2058E+00	0.69	0.1089E+00
				0.65	0.1606E+00	0.65	0.1245E+00	0.76	0.7062E-01
				0.76	0.8561E-01	0.73	0.8202E-01	0.90	-0.2507E-01
				0.90	-0.3528E-01	0.80	0.3251E-01		
						0.87	-0.2055E-01		
Lower surface ($-C_{p_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.6577E-01	0.00	-0.6884E+00	0.01	-0.2104E+00	0.01	-0.3813E+00	0.00	-0.9214E+00
0.20	0.2954E+00	0.07	0.8122E-01	0.02	-0.9781E-01	0.04	-0.9944E-02	0.07	0.7062E-01
0.45	0.2014E+00	0.18	0.3123E+00	0.11	0.2649E+00	0.14	0.2306E+00	0.16	0.2110E+00
0.69	0.9708E-01	0.28	0.3011E+00	0.14	0.3066E+00	0.28	0.2341E+00	0.24	0.2301E+00
0.85	0.3446E-01	0.38	0.2588E+00	0.24	0.2982E+00	0.45	0.1775E+00	0.39	0.1823E+00
		0.51	0.1996E+00	0.34	0.2690E+00	0.57	0.1139E+00	0.51	0.1440E+00
		0.57	0.1638E+00	0.57	0.1648E+00	0.69	0.6788E-01	0.63	0.9933E-01
		0.79	0.3248E-01	0.74	0.8144E-01	0.79	0.1482E-01	0.74	0.6103E-01
				0.90	-0.2278E-01	0.90	-0.5238E-01	0.85	0.2596E-01
C_L	0.1028		0.1246		0.1539		0.1183		0.1500

TABLE 11.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 5°$ $\Omega = 1500$ rpm $M_{tip} = 0.520$

Upper surface ($-C_{P_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9525E+00	0.02	0.4891E+00	0.00	-0.2583E+00	0.01	[illegible]	[illegible]	0.9091E+00
0.03	0.5258E+00	0.06	0.5788E+00	0.01	0.2945E+00	0.03	0.6577E+00	[illegible]	[illegible]
0.12	0.4964E+00	0.10	0.5745E+00	0.04	0.6971E+00	[illegible]	0.6319E+00	[illegible]	[illegible]
0.26	0.4081E+00	0.15	0.5318E+00	0.07	0.5979E+00	0.06	0.6397E+00	[illegible]	[illegible]
0.47	0.2537E+00	0.19	0.4977E+00	0.09	0.6009E+00	0.10	0.6191E+00	[illegible]	[illegible]
0.69	0.1433E+00	0.23	0.4720E+00	0.13	0.5709E+00	0.13	0.5856E+00	[illegible]	[illegible]
0.83	0.5509E-01	0.29	0.4379E+00	0.17	0.5499E+00	0.17	[illegible]	0.23	[illegible]
		0.33	0.4080E+00	0.21	0.5078E+00	0.21	0.5033E+00	0.29	[illegible]
		0.39	0.3012E+00	0.24	0.4687E+00	0.26	0.4288E+00	0.33	[illegible]
		0.44	0.3055E+00	0.30	0.3766E+00	0.30	0.3876E+00	0.39	[illegible]
		0.52	0.2500E+00	0.35	0.3606E+00	0.35	0.3233E+00	0.44	0.2336E+00
		0.61	0.1817E+00	0.42	0.3155E+00	0.42	0.2847E+00	0.50	0.2078E+00
		0.73	0.1262E+00	0.50	0.2584E+00	0.47	0.2539E+00	0.61	0.1471E+00
		0.80	0.6638E-01	0.56	0.2194E+00	0.52	0.2024E+00	0.69	0.1050E+00
				0.65	0.1623E+00	0.65	0.1202E+00	0.76	0.6530E-01
				0.76	0.8417E-01	0.73	0.7901E-01	0.90	-0.3752E-01
				0.90	-0.4201E-01	0.80	0.2757E-01		
						0.87	-0.2901E-01		

Lower surface ($-C_{P_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.7716E-01	0.00	-0.6937E+00	0.01	-0.2133E+00	0.01	-0.3891E+00	0.00	-0.9302E+00
0.20	0.3125E+00	0.07	0.3403E-01	0.02	-0.9309E-01	0.04	-0.5865E-02	0.07	0.8166E-01
0.45	0.2095E+00	0.18	0.3235E+00	0.11	0.2735E+00	0.14	0.2410E+00	0.16	0.2265E+00
0.69	0.9922E-01	0.28	0.3075E+00	0.14	0.3155E+00	0.28	0.2385E+00	0.24	0.2359E+00
0.85	0.3303E-01	0.38	0.2656E+00	0.24	0.3065E+00	0.45	0.1742E+00	0.39	0.1821E+00
		0.51	0.2069E+00	0.34	0.2765E+00	0.57	0.1124E+00	0.51	0.1424E+00
		0.57	0.1678E+00	0.57	0.1503E+00	0.69	0.6357E-01	0.63	0.9101E-01
		0.79	0.2421E-01	0.74	0.7817E-01	0.79	0.9565E-02	0.74	0.5596E-01
				0.90	-0.2699E-01	0.90	-0.6245E-01	0.85	0.1623E-01
C_L	0.1022		0.1343		0.1524		0.1188		0.1519

TABLE 12.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 5°$ $\Omega = 1750$ rpm $M_{tip} = 0.607$

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9550E+00	0.02	0.4841E+00	0.00	-0.3041E+00	0.01	0.3985E+00	0.00	-0.9688E+00
0.03	0.5130E+00	0.06	0.5683E+00	0.01	0.2658E+00	0.03	0.6421E+00	0.02	0.6765E+00
0.12	0.5075E+00	0.10	0.5748E+00	0.04	0.7135E+00	0.04	0.6461E+00	0.07	0.7315E+00
0.26	0.3975E+00	0.15	0.5392E+00	0.07	0.6051E+00	0.06	0.6561E+00	0.12	0.6125E+00
0.47	0.2546E+00	0.19	0.5068E+00	0.09	0.6143E+00	0.10	0.6441E+00	0.15	0.5759E+00
0.69	0.1446E+00	0.23	0.4776E+00	0.13	0.5866E+00	0.13	0.6141E+00	0.19	0.4972E+00
0.83	0.4563E-01	0.29	0.4420E+00	0.17	0.5797E+00	0.17	0.5802E+00	0.23	0.3910E+00
		0.33	0.3999E+00	0.21	0.5266E+00	0.21	0.5243E+00	0.29	0.3416E+00
		0.39	0.3092E+00	0.24	0.4804E+00	0.26	0.4345E+00	0.33	0.3069E+00
		0.44	0.3156E+00	0.30	0.3489E+00	0.30	0.3965E+00	0.39	0.2593E+00
		0.52	0.2541E+00	0.35	0.3743E+00	0.35	0.3367E+00	0.44	0.2337E+00
		0.61	0.1828E+00	0.42	0.3189E+00	0.42	0.2888E+00	0.50	0.2099E+00
		0.73	0.1245E+00	0.50	0.2612E+00	0.47	0.2568E+00	0.61	0.1458E+00
		0.80	0.6621E-01	0.56	0.2197E+00	0.52	0.2049E+00	0.69	0.1184E+00
				0.65	0.1620E+00	0.65	0.1191E+00	0.76	0.6162E-01
				0.76	0.7663E-01	0.73	0.7716E-01	0.90	-0.4819E-01
				0.90	-0.5489E-01	0.80	0.1528E-01		
						0.87	-0.4261E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.9412E-01	0.00	-0.6983E+00	0.01	-0.2164E+00	0.01	-0.4019E+00	0.00	-0.9541E+00
0.20	0.3095E+00	0.07	0.1245E-01	0.02	-0.9874E-01	0.04	-0.1467E-01	0.07	0.8907E-01
0.45	0.2051E+00	0.18	0.3360E+00	0.11	0.2843E+00	0.14	0.2508E+00	0.16	0.2355E+00
0.69	0.1006E+00	0.28	0.3147E+00	0.14	0.3305E+00	0.28	0.2508E+00	0.24	0.2483E+00
0.85	0.2914E-01	0.38	0.2664E+00	0.24	0.3166E+00	0.45	0.1770E+00	0.39	0.1897E+00
		0.51	0.1987E+00	0.34	0.2820E+00	0.57	0.1131E+00	0.51	0.1403E+00
		0.57	0.1603E+00	0.57	0.1505E+00	0.69	0.6119E-01	0.63	0.9273E-01
		0.79	0.1911E-01	0.74	0.7202E-01	0.79	0.3297E-02	0.74	0.5247E-01
				0.90	-0.3643E-01	0.90	-0.7455E-01	0.85	0.1220E-01
C_L	0.1009		0.1395		0.1180		0.1539		0.1542

TABLE 13.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 5°$ $\Omega = 2067$ rpm $M_{tip} = 0.723$

Upper surface ($-C_{P_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.7913E+00	0.02	0.3137E+00	0.00	-0.4364E+00	0.01	0.1622E+00	0.00	-0.1084E+01
0.03	0.3418E+00	0.06	0.4235E+00	0.01	0.9971E-01	0.03	0.4695E+00	0.02	0.4617E+00
0.12	0.3312E+00	0.10	0.4214E+00	0.04	0.5822E+00	0.04	0.4821E+00	0.07	0.6616E+00
0.26	0.2534E+00	0.15	0.3934E+00	0.07	0.4845E+00	0.06	0.5226E+00	0.12	0.5140E+00
0.47	0.1155E+00	0.19	0.3675E+00	0.09	0.4986E+00	0.10	0.5421E+00	0.15	0.4630E+00
0.69	0.1291E-01	0.23	0.3396E+00	0.13	0.4750E+00	0.13	0.5072E+00	0.19	0.3781E+00
0.83	-0.7196E-01	0.29	0.3008E+00	0.17	0.4703E+00	0.17	0.4681E+00	0.23	0.2801E+00
		0.33	0.2620E+00	0.21	0.4230E+00	0.21	0.4108E+00	0.29	0.2200E+00
		0.39	0.1716E+00	0.24	0.3788E+00	0.26	0.3117E+00	0.33	0.1795E+00
		0.44	0.1759E+00	0.30	0.2227E+00	0.30	0.2754E+00	0.39	0.1350E+00
		0.52	0.1221E+00	0.35	0.2763E+00	0.35	0.2097E+00	0.44	0.1128E+00
		0.61	0.5315E-01	0.42	0.2195E+00	0.42	0.1664E+00	0.50	0.8931E-01
		0.73	-0.4991E-02	0.50	0.1596E+00	0.47	0.1329E+00	0.61	0.2137E-01
		0.80	-0.5883E-01	0.56	0.1107E+00	0.52	0.7841E-01	0.69	-0.2175E-01
				0.65	0.5556E-01	0.65	-0.8185E-02	0.76	-0.6356E-01
				0.76	-0.2486E-01	0.73	-0.5707E-01	0.90	-0.1759E+00
				0.90	-0.1542E+00	0.80	-0.1115E+00		
						0.87	-0.1716E+00		
Lower surface ($-C_{P_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.4367E-01	0.00	-0.7587E+00	0.01	-0.3024E+00	0.01	-0.5054E+00	0.00	-0.1024E+01
0.20	0.1685E+00	0.07	-0.3193E-01	0.02	-0.1873E+00	0.04	-0.1255E+00	0.07	-0.1913E-01
0.45	0.7656E-01	0.18	0.2439E+00	0.11	0.1912E+00	0.14	0.1455E+00	0.16	0.1442E+00
0.69	-0.2599E-01	0.28	0.2074E+00	0.14	0.2337E+00	0.28	0.1399E+00	0.24	0.1481E+00
0.85	-0.9317E-01	0.38	0.1659E+00	0.24	0.2180E+00	0.45	0.6444E-01	0.39	0.7755E-01
		0.51	0.1080E+00	0.34	0.1849E+00	0.57	-0.6789E-02	0.51	0.1222E-01
		0.57	0.6329E-01	0.57	0.6187E-01	0.69	-0.5707E-01	0.63	-0.2436E-01
		0.79	-0.1009E+00	0.74	-0.2328E-01	0.79	-0.1199E+00	0.74	-0.6617E-01
				0.90	-0.1289E+00	0.90	-0.1967E+00	0.85	-0.1093E+00
C_L	0.0900		0.101[illegible]		0.1426		0.1043		0.1417

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TABLE 14.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 5°$ $\Omega = 2268$ rpm $M_{tip} = 0.794$

Upper surface ($-C_{P_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9823E+00	0.02	0.4667E+00	0.00	-0.4247E+00	0.01	0.2092E+00	0.00	-0.1132E+01
0.03	0.5239E+00	0.06	0.6130E+00	0.01	0.1685E+00	0.03	0.5953E+00	0.02	0.4951E+00
0.12	0.5206E+00	0.10	0.6274E+00	0.04	0.7784E+00	0.04	0.6331E+00	0.07	0.8996E+00
0.26	0.4264E+00	0.15	0.5862E+00	0.07	0.6859E+00	0.06	0.7020E+00	0.12	0.8882E+00
0.47	0.2718E+00	0.19	0.5491E+00	0.09	0.7162E+00	0.10	0.8384E+00	0.15	0.8324E+00
0.69	0.1541E+00	0.23	0.5182E+00	0.13	0.7010E+00	0.13	0.8032E+00	0.19	0.5344E+00
0.83	0.5660E-01	0.29	0.4667E+00	0.17	0.7101E+00	0.17	0.7519E+00	0.23	0.4178E+00
		0.33	0.4214E+00	0.21	0.6373E+00	0.21	0.6574E+00	0.29	0.3721E+00
		0.39	0.3307E+00	0.24	0.5812E+00	0.26	0.4873E+00	0.33	0.3303E+00
		0.44	0.3369E+00	0.30	0.3840E+00	0.30	0.4495E+00	0.39	0.2808E+00
		0.52	0.2709E+00	0.35	0.4431E+00	0.35	0.3780E+00	0.44	0.2605E+00
		0.61	0.1885E+00	0.42	0.3794E+00	0.42	0.3240E+00	0.50	0.2326E+00
		0.73	0.1225E+00	0.50	0.3066E+00	0.47	0.2861E+00	0.61	0.1578E+00
		0.80	0.5660E-01	0.56	0.2580E+00	0.52	0.2213E+00	0.69	0.1058E+00
				0.65	0.1867E+00	0.65	0.1187E+00	0.76	[illegible]
				0.76	0.9417E-01	0.73	0.6203E-01	0.90	-0.7294E-01
				0.90	-0.4996E-01	0.80	-0.7556E-04		
						0.87	-0.6623E-01		

Lower surface ($-C_{P_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.9358E-01	0.00	-0.7203E+00	0.01	-0.2047E+00	0.01	-0.4267E+00	0.00	-0.1007E+01
0.20	0.3356E+00	0.07	0.8983E-01	0.02	-0.8030E-01	0.04	-0.5476E-02	0.07	0.1097E+00
0.45	0.2247E+00	0.18	0.3945E+00	0.11	0.3597E+00	0.14	0.3253E+00	0.16	0.3290E+00
0.69	0.1104E+00	0.28	0.3576E+00	0.14	0.4128E+00	0.28	0.3213E+00	0.24	0.3354E+00
0.85	0.3306E-01	0.38	0.3059E+00	0.24	0.3991E+00	0.45	0.2159E+00	0.39	0.2390E+00
		0.51	0.2334E+00	0.34	0.3536E+00	0.57	0.1376E+00	0.51	0.1591E+00
		0.57	0.1884E+00	0.57	0.2019E+00	0.69	0.7283E-01	0.63	0.1135E+00
		0.79	0.2306E-01	0.74	0.9569E-01	0.79	-0.2776E-02	0.74	0.6147E-01
				0.90	-0.3782E-01	0.90	-0.9458E-01	0.85	0.6948E-02
C_L	0.1015		0.1198		0.1313		0.1173		0.1563

TABLE 15.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 5°$ $\Omega = 2330$ rpm $M_{tip} = 0.815$

Upper surface ($-C_{P_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9690E+00	0.02	0.4756E+00	0.00	-0.3921E+00	0.01	0.1726E+00	0.00	-0.1131E+01
0.03	0.5379E+00	0.06	0.6176E+00	0.01	0.1829E+00	0.03	0.5751E+00	0.02	0.4436E+00
0.12	0.52[illegible]9E+00	0.10	0.6491E+00	0.04	0.8044E+00	0.04	0.6075E+00	0.07	0.8651E+00
0.26	0.4[illegible]7E+00	0.15	0.6077E+00	0.07	0.7185E+00	0.06	0.6777E+00	0.12	0.9323E+00
0.47	0.2782E+00	0.19	0.5663E+00	0.09	0.7578E+00	0.10	0.8594E+00	0.15	0.9311E+00
0.69	0.1596E+00	0.23	0.5427E+00	0.13	0.7491E+00	0.13	0.8685E+00	0.19	0.7930E+00
0.83	0.6022E-01	0.29	0.4934E+00	0.17	0.7389E+00	0.17	0.8438E+00	0.23	0.4351E+00
		0.33	0.4421E+00	0.21	0.6617E+00	0.21	0.7231E+00	0.29	0.3581E+00
		0.39	0.3475E+00	0.24	0.6108E+00	0.26	0.4569E+00	0.33	0.3275E+00
		0.44	0.3514E+00	0.30	0.3677E+00	0.30	0.4492E+00	0.39	0.2872E+00
		0.52	0.2824E+00	0.35	0.4725E+00	0.35	0.3829E+00	0.44	0.2677E+00
		0.61	0.2016E+00	0.42	0.3968E+00	0.42	0.3297E+00	0.50	0.2457E+00
		0.73	0.1345E+00	0.50	0.3153E+00	0.47	0.2921E+00	0.61	0.1675E+00
		0.80	0.6948E-01	0.56	0.2600E+00	0.52	0.2271E+00	0.69	0.1150E+00
				0.65	0.1843E+00	0.65	0.1216E+00	0.76	0.6486E-01
				0.76	0.9407E-01	0.73	0.6486E-01	0.90	-0.6831E-01
				0.90	-0.4421E-01	0.80	0.3837E-02		
						0.87	-0.6627E-01		

Lower surface ($-C_{P_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	0.8587E-01	0.00	-0.7093E+00	0.01	-0.1999E+00	0.01	-0.4[illegible]3E+00	0.00	-0.1010E+01
0.20	0.3456E+00	0.07	0.1275E+00	0.02	-0.8496E-01	0.04	-0.2654E-02	0.07	0.1064E+00
0.45	0.2302E+00	0.18	0.4190E+00	0.11	0.3706E+00	[illegible]	0.3362E+00	0.15	0.3434E+00
0.69	0.1115E+00	0.28	0.3967E+00	0.14	0.4405E+00	[illegible]	0.3349E+00	0.24	0.3556E+00
0.85	0.3457E-01	0.38	0.3410E+00	0.24	0.4274E+00	[illegible]	0.2258E+00	0.39	0.2555E+00
		0.51	0.2631E+00	0.34	0.3721E+00	0.57	0.1466E+00	0.51	0.1712E+00
		0.57	0.2123E+00	0.57	0.2192E+00	0.69	0.7784E-01	0.63	0.124[illegible]E+00
		0.79	0.2602E-01	0.74	0.1188E+00	0.79	0.1241E-02	0.74	0.7097E-01
				0.90	-0.2092E-01	0.90	-0.9354E-01	0.85	0.1721E-01
C_L	0.1024		0.1130		0.1554		0.1115		0.1571

TABLE 16.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 650$ rpm $M_{tip} = 0.225$

Upper surface ($-C_{p_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.7732E+00	0.02	0.9645E+00	0.00	0.4135E+00	0.01	0.1161E+01	0.00	-0.4686E+00
0.03	0.8436E+00	0.06	0.8406E+00	0.01	0.9084E+00	0.03	0.1125E+01	0.02	0.1059E+01
0.12	0.6599E+00	0.10	0.7580E+00	0.04	0.1022E+01	0.04	0.1019E+01	0.07	0.8590E+00
0.26	0.5129E+00	0.15	0.6754E+00	0.07	0.8377E+00	0.06	0.9480E+00	0.12	0.7009E+00
0.47	0.3292E+00	0.19	0.6341E+00	0.09	0.8094E+00	0.10	0.8179E+00	0.15	0.6377E+00
0.69	0.2189E+00	0.23	0.5928E+00	0.13	0.7246E+00	0.13	0.7469E+00	0.19	0.5640E+00
0.83	0.1037E+00	0.27	0.5308E+00	0.17	0.6690E+00	0.17	0.6878E+00	0.23	0.4797E+00
		0.33	0.4895E+00	0.21	0.6256E+00	0.21	0.6168E+00	0.29	0.3954E+00
		0.39	0.3862E+00	0.24	0.6115E+00	0.26	0.5104E+00	0.33	0.3533E+00
		0.44	0.3656E+00	0.30	0.5266E+00	0.30	0.4631E+00	0.39	0.3111E+00
		0.52	0.3243E+00	0.35	0.4559E+00	0.35	0.3921E+00	0.44	0.2900E+00
		0.61	0.2623E+00	0.42	0.3569E+00	0.42	0.3448E+00	0.50	0.2584E+00
		0.73	0.2623E+00	0.50	0.3003E+00	0.47	0.3093E+00	0.61	0.1952E+00
		0.80	0.1177E+00	0.56	0.2862E+00	0.52	0.2620E+00	0.69	0.1531E+00
				0.65	0.2720E+00	0.65	0.1674E+00	0.76	0.1215E+00
				0.76	0.1306E+00	0.73	0.1201E+00	0.90	0.2663E-01
				0.90	-0.1083E-01	0.80	0.7278E-01		
						0.87	0.2545E-01		
Lower surface ($-C_{p_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.7504E-01	0.00	-0.8323E+00	0.01	-0.5340E+00	0.01	-0.6842E+00	0.00	-0.9532E+00
0.20	0.2189E+00	0.07	-0.5502E+00	0.02	-0.3644E+00	0.04	-0.2821E+00	0.07	-0.6819E-01
0.45	0.2189E+00	0.18	0.1888E+00	0.11	0.8818E-01	0.14	0.8460E-01	0.16	0.1320E+00
0.69	0.1454E+00	0.28	0.2087E+00	0.14	0.1448E+00	0.28	0.1556E+00	0.24	0.1531E+00
0.85	0.1454E+00	0.38	0.1920E+00	0.24	0.1730E+00	0.45	0.1437E+00	0.39	0.1531E+00
		0.51	0.1694E+00	0.34	0.1872E+00	0.57	0.1201E+00	0.51	0.1320E+00
		0.57	0.1425E+00	0.57	0.1306E+00	0.69	0.9642E-01	0.63	0.1109E+00
		0.79	0.4355E-01	0.74	0.8818E-01	0.79	0.4912E-01	0.74	0.8986E-01
				0.90	-0.1083E-01	0.90	-0.2184E-01	0.85	0.5827E-01
C_L	0.20[illegible]1		0.3485		0.2561		0.2904		0.2999

TABLE 17.- LOCAL PRESSURE COEFFICIENT

θ_c = 8° Ω = 1250 rpm M_{tip} = 0.439

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.8538E+00	0.02	0.9420E+00	0.00	0.3750E+00	0.01	0.1174E+01	0.00	-0.5796E+00
0.03	0.8568E+00	0.06	0.8719E+00	0.01	0.9164E+00	0.03	0.1184E+01	0.02	0.1116E+01
0.12	0.6735E+00	0.10	0.7667E+00	0.04	0.1091E+01	0.04	0.1081E+01	0.07	0.9072E+00
0.26	0.5207E+00	0.15	0.6908E+00	0.07	0.8797E+00	0.06	0.1005E+01	0.12	0.7171E+00
0.47	0.3375E+00	0.19	0.6324E+00	0.09	0.8553E+00	0.10	0.8665E+00	0.15	0.6391E+00
0.69	0.1949E+00	0.23	0.5856E+00	0.13	0.7617E+00	0.13	0.7871E+00	0.19	0.5550E+00
0.83	0.9314E-01	0.29	0.5097E+00	0.17	0.7169E+00	0.17	0.7180E+00	0.23	0.4615E+00
		0.33	0.4805E+00	0.21	0.6477E+00	0.21	0.6282E+00	0.29	0.4085E+00
		0.39	0.3812E+00	0.24	0.5785E+00	0.26	0.5418E+00	0.33	0.3649E+00
		0.44	0.3753E+00	0.30	0.4849E+00	0.30	0.5072E+00	0.39	0.3150E+00
		0.52	0.3052E+00	0.35	0.4483E+00	0.35	0.4209E+00	0.44	0.2869E+00
		0.61	0.2234E+00	0.42	0.3831E+00	0.42	0.3690E+00	0.50	0.2589E+00
		0.73	0.1592E+00	0.50	0.3180E+00	0.47	0.3310E+00	0.61	0.1903E+00
		0.80	0.1007E+00	0.56	0.2651E+00	0.52	0.2723E+00	0.69	0.1467E+00
				0.65	0.2000E+00	0.65	0.1755E+00	0.76	0.1093E+00
				0.76	0.1145E+00	0.73	0.1272E+00	0.90	0.9534E-02
				0.90	-0.1576E-01	0.80	0.7190E-01		
						0.87	0.1316E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.9014E-01	0.00	-0.8808E+00	0.01	-0.5408E+00	0.01	-0.7158E+00	0.00	-0.1016E+01
0.20	0.2357E+00	0.07	-0.2523E-01	0.02	-0.3780E+00	0.04	-0.2771E+00	0.07	-0.6215E-01
0.45	0.1949E+00	0.18	0.2003E+00	0.11	0.9415E-01	0.14	0.1064E+00	0.16	0.1404E+00
0.69	0.1033E+00	0.28	0.2168E+00	0.14	0.1593E+00	0.28	0.1721E+00	0.24	0.1623E+00
0.85	0.4220E-01	0.38	0.1939E+00	0.24	0.1959E+00	0.45	0.1514E+00	0.39	0.1467E+00
		0.51	0.1618E+00	0.34	0.1959E+00	0.57	0.1237E+00	0.51	0.1217E+00
		0.57	0.1305E+00	0.57	0.1306E+00	0.69	0.8917E-01	0.63	0.9992E-01
		0.79	0.1539E-01	0.74	0.6158E-01	0.79	0.2698E-01	0.74	0.5628E-01
				0.90	-0.2390E-01	0.90	-0.3521E-01	0.85	0.2823E-01
C_L	.2345		.2815		.2886		.3143		.2683

TABLE 18.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 1500$ rpm $M_{tip} = 0.526$

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
Upper surface ($-C_{P_U}$)									
0.00	-0.8487E+00	0.02	0.8662E+00	0.00	0.3029E+00	0.01	0.1158E+01	0.00	-0.6622E+00
0.03	0.8519E+00	0.06	0.8286E+00	0.01	0.9105E+00	0.03	0.1173E+01	0.02	0.1125E+01
0.12	0.6510E+00	0.10	0.7578E+00	0.04	0.1113E+01	0.04	0.1098E+01	0.07	0.9144E+00
0.26	0.5075E+00	0.15	0.6702E+00	0.07	0.8694E+00	0.06	0.1022E+01	0.12	0.7110E+00
0.47	0.3209E+00	0.19	0.6119E+00	0.09	0.8518E+00	0.10	0.8766E+00	0.15	0.6287E+00
0.69	0.1846E+00	0.23	0.5493E+00	0.13	0.7549E+00	0.13	0.7887E+00	0.19	0.5442E+00
0.83	0.8413E-01	0.29	0.4910E+00	0.17	0.7109E+00	0.17	0.7163E+00	0.23	0.4460E+00
		0.33	0.4576E+00	0.21	0.6287E+00	0.21	0.6228E+00	0.29	0.3888E+00
		0.39	0.3617E+00	0.24	0.5729E+00	0.26	0.5222E+00	0.33	0.3431E+00
		0.44	0.3534E+00	0.30	0.4556E+00	0.30	0.4896E+00	0.39	0.2906E+00
		0.52	0.2825E+00	0.35	0.4585E+00	0.35	0.4066E+00	0.44	0.2609E+00
		0.61	0.2033E+00	0.42	0.3675E+00	0.42	0.3538E+00	0.50	0.2312E+00
		0.73	0.1324E+00	0.50	0.3088E+00	0.47	0.3111E+00	0.61	0.1741E+00
		0.80	0.6990E-01	0.56	0.2618E+00	0.52	0.2533E+00	0.69	0.1215E+00
				0.65	0.1855E+00	0.65	0.1603E+00	0.76	0.8265E-01
				0.76	0.1034E+00	0.73	0.1075E+00	0.90	-0.2017E-01
				0.90	-0.3458E-01	0.80	0.5218E-01		
						0.87	-0.1066E-01		
Lower surface ($-C_{P_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.9526E-01	0.00	-0.8889E+00	0.01	-0.5394E+00	0.01	-0.7145E+00	0.00	-0.1035E+01
0.20	0.2133E+00	0.07	-0.4557E-01	0.02	-0.3897E+00	0.04	-0.2947E+00	0.07	-0.8643E-01
0.45	0.1631E+00	0.18	0.1978E+00	0.11	0.9749E-01	0.14	0.1025E+00	0.16	0.1261E+00
0.69	0.8413E-01	0.28	0.2096E+00	0.14	0.1709E+00	0.28	0.1728E+00	0.24	0.1603E+00
0.85	0.3389E-01	0.38	0.1834E+00	0.24	0.2061E+00	0.45	0.1502E+00	0.39	0.1398E+00
		0.51	0.1468E+00	0.34	0.2031E+00	0.57	0.1201E+00	0.51	0.1101E+00
		0.57	0.1179E+00	0.57	0.1298E+00	0.69	0.7732E-01	0.63	0.7580E-01
		0.79	0.1181E-01	0.74	0.6520E-01	0.79	0.2453E-01	0.74	0.4838E-01
				0.90	-0.2578E-01	0.90	-0.4082E-01	0.85	0.1182E-01
C_L	0.2409		0.2638		0.2633		0.2760		0.3052

TABLE 19.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 1750$ rpm $M_{tip} = 0.612$

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.8669E+00	0.02	0.9219E+00	0.00	0.2259E+00	0.01	0.1135E+01	0.00	-0.7592E+00
0.03	0.8388E+00	0.06	0.8428E+00	0.01	0.8639E+00	0.03	0.1250E+01	0.02	0.1122E+01
0.12	0.6618E+00	0.10	0.7637E+00	0.04	0.1134E+01	0.04	0.1119E+01	0.07	0.9732E+00
0.26	0.4955E+00	0.15	0.6720E+00	0.07	0.8977E+00	0.06	0.1057E+01	0.12	0.7584E+00
0.47	0.3185E+00	0.19	0.6088E+00	0.09	0.8796E+00	0.10	0.9220E+00	0.15	0.6457E+00
0.69	0.1791E+00	0.23	0.5487E+00	0.13	0.7827E+00	0.13	0.8322E+00	0.19	0.5687E+00
0.83	0.7717E-01	0.29	0.5012E+00	0.17	0.7331E+00	0.17	0.7386E+00	0.23	0.4614E+00
		0.33	0.4696E+00	0.21	0.6587E+00	0.21	0.6508E+00	0.29	0.3987E+00
		0.39	0.3715E+00	0.24	0.5911E+00	0.26	0.5493E+00	0.33	0.3504E+00
		0.44	0.3557E+00	0.30	0.4423E+00	0.30	0.5044E+00	0.39	0.2931E+00
		0.52	0.2830E+00	0.35	0.4491E+00	0.35	0.4205E+00	0.44	0.2663E+00
		0.61	0.2039E+00	0.42	0.3814E+00	0.42	0.3561E+00	0.50	0.2376E+00
		0.73	0.1280E+00	0.50	0.3071E+00	0.47	0.3171E+00	0.61	0.1678E+00
		0.80	0.6791E-01	0.56	0.2552E+00	0.52	0.2566E+00	0.69	0.1213E+00
				0.65	0.1808E+00	0.65	0.1552E+00	0.76	0.8015E-01
				0.76	0.9290E-01	0.73	0.9860E-01	0.90	-0.2723E-01
				0.90	-0.4010E-01	0.80	0.3811E-01		
						0.87	-0.2238E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.1052E+00	0.00	-0.8999E+00	0.01	-0.5451E+00	0.01	-0.7267E+00	0.00	-0.1067E+01
0.20	0.2113E+00	0.07	-0.8079E-01	0.02	-0.3828E+00	0.04	-0.2936E+00	0.07	-0.8808E-01
0.45	0.1737E+00	0.18	0.2021E+00	0.11	0.9515E-01	0.14	0.1103E+00	0.16	0.1392E+00
0.69	0.7717E-01	0.28	0.2170E+00	0.14	0.1673E+00	0.28	0.1884E+00	0.24	0.1750E+00
0.85	0.2889E-01	0.38	0.1897E+00	0.24	0.2124E+00	0.45	0.1591E+00	0.39	0.1464E+00
		0.51	0.1515E+00	0.34	0.2011E+00	0.57	0.1201E+00	0.51	0.1159E+00
		0.57	0.1204E+00	0.57	0.1200E+00	0.69	0.6348E-01	0.63	0.7299E-01
		0.79	0.6016E-02	0.74	0.5232E-01	0.79	0.1080E-01	0.74	0.3541E-01
				0.90	-0.3785E-01	0.90	-0.5555E-01	0.85	0.6775E-02
C_L	0.2374		0.2728		0.2690		0.2835		0.3125

TABLE 4 .- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 2050$ rpm $M_{tip} = 0.727$

Upper surface ($-C_{p_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.6502E+00	0.02	0.9462E+00	0.00	0.1269E+00	0.01	0.9837E+00	0.00	-0.8971E+00
0.03	0.8784E+00	0.06	0.8917E+00	0.01	0.8249E+00	0.03	0.1353E+01	0.02	0.1005E+01
0.12	0.6899E+00	0.10	0.8230E+00	0.04	0.1246E+01	0.04	0.1300E+01	0.07	0.1233E+01
0.26	0.5248E+00	0.15	0.7307E+00	0.07	0.9830E+00	0.06	0.1219E+01	0.12	0.8789E+00
0.47	0.3480E+00	0.19	0.6502E+00	0.09	0.9469E+00	0.10	0.1077E+01	0.15	0.6583E+00
0.69	0.2105E+00	0.23	0.5886E+00	0.13	0.8627E+00	0.13	0.9338E+00	0.19	0.6035E+00
0.83	0.1005E+00	0.29	0.5436E+00	0.17	0.8025E+00	0.17	0.8053E+00	0.23	0.4897E+00
		0.33	0.4915E+00	0.21	0.7166E+00	0.21	0.7071E+00	0.29	0.4195E+00
		0.39	0.3873E+00	0.24	0.6444E+00	0.26	0.5831E+00	0.33	0.3661E+00
		0.44	0.3779E+00	0.30	0.4982E+00	0.30	0.5363E+00	0.39	0.3113E+00
		0.52	0.3021E+00	0.35	0.4896E+00	0.35	0.4456E+00	0.44	0.2818E+00
		0.61	0.2192E+00	0.42	0.4088E+00	0.42	0.3821E+00	0.50	0.2565E+00
		0.73	0.1387E+00	0.50	0.3332E+00	0.47	0.3353E+00	0.61	0.1820E+00
		0.80	0.7238E-01	0.56	0.2730E+00	0.52	0.2733E+00	0.69	0.1328E+00
				0.65	0.1957E+00	0.65	0.1645E+00	0.76	0.8926E-01
				0.76	0.1029E+00	0.73	0.1040E+00	0.90	-0.3299E-01
				0.90	-0.4670E-01	0.80	0.4354E-01		
						0.87	-0.2599E-01		

Lower surface ($-C_{p_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.6451E-01	0.00	-0.9080E+00	0.01	-0.5332E+00	0.01	-0.7152E+00	0.00	-0.1088E+01
0.20	0.2537E+00	0.07	0.2741E-01	0.02	-0.3785E+00	0.04	-0.2784E+00	0.07	-0.6530E-01
0.45	0.1909E+00	0.18	0.2303E+00	0.11	0.1304E+00	0.14	0.1478E+00	0.16	0.1806E+00
0.69	0.1044E+00	0.28	0.2526E+00	0.14	0.2026E+00	0.28	0.2204E+00	0.24	0.2101E+00
0.85	0.5335E-01	0.38	0.2210E+00	0.24	0.2349E+00	0.45	0.1826E+00	0.39	0.1679E+00
		0.51	0.1768E+00	0.34	0.2266E+00	0.57	0.1297E+00	0.51	0.1244E+00
		0.57	0.1459E+00	0.57	0.1286E+00	0.69	0.7074E-01	0.63	0.8083E-01
		0.79	0.3246E-01	0.74	0.6332E-01	0.79	0.1935E-01	0.74	0.4570E-01
				0.90	-0.4498E-01	0.90	-0.5773E-01	0.85	0.1057E-01
C_L	0.2377		0.252[illegible]		0.27[illegible]5		0.2789		0.3242

TABLE 21.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 2250$ rpm $M_{tip} = 0.794$

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.8199E+00	0.02	0.9529E+00	0.00	0.3636E-01	0.01	0.7550E+00	0.00	-0.9710E+00
0.03	0.8680E+00	0.06	0.9408E+00	0.01	0.7244E+00	0.03	0.1149E+01	0.02	0.7742E+00
0.12	0.6889E+00	0.10	0.8597E+00	0.04	0.1308E+01	0.04	0.1214E+01	0.07	0.1155E+01
0.26	0.5364E+00	0.15	0.7644E+00	0.07	0.1065E+01	0.06	0.1207E+01	0.12	0.1185E+01
0.47	0.3706E+00	0.19	0.6853E+00	0.09	0.1055E+01	0.10	0.1263E+01	0.15	0.1112E+01
0.69	0.2180E+00	0.23	0.6347E+00	0.13	0.9463E+00	0.13	0.1274E+01	0.19	0.9540E+00
0.83	0.1086E+00	0.29	0.5637E+00	0.17	0.9061E+00	0.17	0.1154[illegible]+01	0.23	0.5459E+00
		0.33	0.5232E+00	0.21	0.7750E+00	0.21	0.9349E+00	0.29	0.3599E+00
		0.39	0.4198E+00	0.24	0.6857E+00	0.26	0.511[illegible]+00	0.33	0.3376E+00
		0.44	0.4056E+00	0.30	0.4876E+00	0.30	0.4931E+00	0.39	0.3090E+00
		0.52	0.3346E+00	0.35	0.5114E+00	0.35	0.4322E+00	0.44	0.2941E+00
		0.61	0.2414E+00	0.42	0.4310E+00	0.42	0.3820E+00	0.50	0.2718E+00
		0.73	0.1623E+00	0.50	0.3461E+00	0.47	0.3410E+00	0.61	0.1937E+00
		0.80	0.8932E-01	0.56	0.2836E+00	0.52	0.2762E+00	0.69	0.1465E+00
				0.65	0.2032E+00	0.65	0.1650E+00	0.76	0.1007E+00
				0.76	0.1049E+00	0.73	0.1042E+00	0.90	-0.2586E-01
				0.90	-0.4704E-01	0.80	0.4070E-01		
						0.87	-0.3206E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.6052E-01	0.00	-0.8818E+00	0.01	-0.5191E+00	0.01	-0.6987E+00	0.00	-0.1086E+01
0.20	0.2744E+00	0.07	0.1994E-03	0.02	-0.3642E+00	0.04	-0.2583E+00	0.07	-0.4322E-01
0.45	0.2280E+00	0.18	0.2426E+00	0.11	0.1525E+00	0.14	0.1743E+00	0.16	0.2160E+00
0.69	0.1185E+00	0.28	0.2694E+00	0.14	0.2315E+00	0.28	0.[illegible]576E+00	0.24	0.2569E+00
0.85	0.6549E-01	0.38	0.2328E+00	0.24	0.2761E+00	0.45	0.[illegible]193E+00	0.39	0.2110E+00
		0.51	0.1816E+00	0.34	0.2627E+00	0.57	0.[illegible]545E+00	0.51	0.1614E+00
		0.57	0.1521E+00	0.57	0.1644E+00	0.69	0.1015E+00	0.63	0.1205E+00
		0.79	0.4372E-01	0.74	0.8104E-01	0.79	0.3541E-01	0.74	0.7089E-01
				0.90	-0.3065E-01	0.90	-0.4528E 01	0.85	0.2996E-01
C_L	0.2275		0.2768		0.2751		0.2937		0.3250

TABLE 22.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 2300$ rpm $M_{tip} = 0.813$

Upper surface ($-C_{P_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.8955E+00	0.02	0.9608E+00	0.00	-0.7624E-02	0.01	0.6796E+00	0.00	-0.1012E+01
0.03	0.8837E+00	0.06	0.9253E+00	0.01	0.6666E+00	0.03	0.1101E+01	0.02	0.7084E+00
0.12	0.6977E+00	0.10	0.8702E+00	0.04	0.1299E+01	0.04	0.1151E+01	0.07	0.1096E+01
0.26	0.5374E+00	0.15	0.7757E+00	0.07	0.1066E+01	0.06	0.1134E+01	0.12	0.1159E+01
0.47	0.3547E+00	0.19	0.6949E+00	0.09	0.1073E+01	0.10	0.1222E+01	0.15	0.1128E+01
0.69	0.2073E+00	0.23	0.6378E+00	0.13	0.9659E+00	0.13	0.1265E+01	0.19	0.1081E+01
0.83	0.9827E-01	0.29	0.5787E+00	0.17	0.9078E+00	0.17	0.1213E+01	0.23	0.7657E+00
		0.33	0.5314E+00	0.21	0.7814E+00	0.21	0.1152E+01	0.29	0.3466E+00
		0.39	0.4231E+00	0.24	0.6884E+00	0.26	0.4931E+00	0.33	0.3003E+00
		0.44	0.4034E+00	0.30	0.4806E+00	0.30	0.4517E+00	0.39	0.2820E+00
		0.52	0.3207E+00	0.35	0.5068E+00	0.35	0.3973E+00	0.44	0.2735E+00
		0.61	0.2320E+00	0.42	0.4225E+00	0.42	0.3532E+00	0.50	0.2503E+00
		0.73	0.1434E+00	0.50	0.3280E+00	0.47	0.3170E+00	0.61	0.1821E+00
		0.80	0.7642E-01	0.56	0.2714E+00	0.52	0.2522E+00	0.69	0.1273E+00
				0.65	0.1842E+00	0.65	0.1460E+00	0.76	0.8221E-01
				0.76	0.8682E-01	0.73	0.7991E-01	0.90	-0.4084E-01
				0.90	-0.6284E-01	0.80	0.1903E-01		
						0.87	-0.4962E-01		

Lower surface ($-C_{P_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.8446E-01	0.00	-0.9104E+00	0.01	-0.5307E+00	0.01	-0.7102E+00	0.00	-0.1113E+01
0.20	0.2746E+00	0.07	-0.1443E-01	0.02	-0.3796E+00	0.04	-0.2737E+00	0.07	-0.5667E-01
0.45	0.2041E+00	0.18	0.2508E+00	0.11	0.1435E+00	0.14	0.1809E+00	0.16	0.2284E+00
0.69	0.1015E+00	0.28	0.2619E+00	0.14	0.2234E+00	0.28	0.2690E+00	0.24	0.2711E+00
0.85	0.4056E-01	0.38	0.2272E+00	0.24	0.2815E+00	0.45	0.2276E+00	0.39	0.2223E+00
		0.51	0.1785E+00	0.34	0.2685E+00	0.57	0.1486E+00	0.51	0.1626E+00
		0.57	0.1465E+00	0.57	0.1537E+00	0.69	0.9157E-01	0.63	0.1115E+00
		0.79	0.2894E-01	0.74	0.7229E-01	0.79	0.2551E-01	0.74	0.6394E-01
				0.90	-0.4395E-01	0.90	-0.5739E-01	0.85	0.2130E-01
C_L	0.2385		0.2818		0.2712		0.2903		0.3145

TABLE 23.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 2350$ rpm $M_{tip} = 0.827$

Upper surface ($-C_{p_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.8645E+00	0.02	0.9554E+00	0.00	-0.4141E-01	0.01	0.6381E+00	0.00	-0.1040E+01
0.03	0.8584E+00	0.06	0.9458E+00	0.01	0.6381E+00	0.03	0.1055E+01	0.02	0.6539E+00
0.12	0.6756E+00	0.10	0.8598E+00	0.04	0.1289E+01	0.04	0.1094E+01	0.07	0.1053E+01
0.26	0.5176E+00	0.15	0.7623E+00	0.07	0.1128E+01	0.06	0.1094E+01	0.12	0.1115E+01
0.47	0.3595E+00	0.19	0.6820E+00	0.09	0.1095E+01	0.10	0.1194E+01	0.15	0.1147E+01
0.69	0.2046E+00	0.23	0.6361E+00	0.13	0.1026E+01	0.13	0.1228E+01	0.19	0.1093E+01
0.83	0.9611E-01	0.29	0.5768E+00	0.17	0.9708E+00	0.17	0.1251E+01	0.23	0.9917E+00
		0.33	0.5252E+00	0.21	0.7910E+00	0.21	0.1191E+01	0.29	0.3602E+00
		0.39	0.4104E+00	0.24	0.6919E+00	0.26	0.6419E+00	0.33	0.2719E+00
		0.44	0.4009E+00	0.30	0.4881E+00	0.30	0.4216E+00	0.39	0.2588E+00
		0.52	0.3167E+00	0.35	0.5150E+00	0.35	0.3533E+00	0.44	0.2635E+00
		0.61	0.2211E+00	0.42	0.4314E+00	0.42	0.3305E+00	0.50	0.2444E+00
		0.73	0.1389E+00	0.50	0.3352E+00	0.47	0.3064E+00	0.61	0.1728E+00
		0.80	0.6814E-01	0.56	0.2700E+00	0.52	0.2431E+00	0.69	0.1239E+00
				0.65	0.1879E+00	0.65	0.1393E+00	0.76	0.7612E-01
				0.76	0.8459E-01	0.73	0.7604E-01	0.90	-0.5399E-01
				0.90	-0.6972E-01	0.80	0.8951E-02		
						0.87	-0.6194E-01		
Lower surface ($-C_{p_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.8053E-01	0.00	-0.9243E+00	0.01	-0.5284E+00	0.01	-0.7290E+00	0.00	-0.1134E+01
0.20	0.2573E+00	0.07	-0.2758E-01	0.02	-0.3812E+00	0.04	-0.2784E+00	0.07	-0.7667E-01
0.45	0.1953E+00	0.18	0.2443E+00	0.11	0.1483E+00	0.14	0.1659E+00	0.16	0.2170E+00
0.69	0.9611E-01	0.28	0.2641E+00	0.14	0.2346E+00	0.28	0.2634E+00	0.24	0.2683E+00
0.85	0.4343E-01	0.38	0.2266E+00	0.24	0.2785E+00	0.45	0.2153E+00	0.39	0.2074E+00
		0.51	0.1741E+00	0.34	0.2672E+00	0.57	0.1406E+00	0.51	0.1525E+00
		0.57	0.1413E+00	0.57	0.1483E+00	0.69	0.8237E-01	0.63	0.1036E+00
		0.79	0.2093E-01	0.74	0.6477E-01	0.79	0.1528E-01	0.74	0.5344E-01
				0.90	-0.5274E-01	0.90	-0.7080E-01	0.85	0.9276E-02
C_L	0.2372		0.2803		0.2812		0.3008		0.3194

TABLE 24.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 2400$ rpm $M_{tip} = 0.845$

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.9013E+00	0.02	0.9542E+00	0.00	-0.7883E-01	0.01	0.5568E+00	0.00	-0.1063E+01
0.03	0.8542E+00	0.06	0.9542E+00	0.01	0.5877E+00	0.03	0.9660E+00	0.02	0.6031E+00
0.12	0.6781E+00	0.10	0.8765E+00	0.04	0.1250E+01	0.04	0.1024E+01	0.07	0.9653E+00
0.26	0.5168E+00	0.15	0.7821E+00	0.07	0.1118E+01	0.06	0.1040E+01	0.12	0.1074E+01
0.47	0.3407E+00	0.19	0.6859E+00	0.09	0.1110E+01	0.10	0.1125E+01	0.15	0.1150E+01
0.69	0.1974E+00	0.23	0.6378E+00	0.13	0.1070E+01	0.13	0.1193E+01	0.19	0.1089E+01
0.83	0.8392E-01	0.29	0.5749E+00	0.17	0.1017E+01	0.17	0.1242E+01	0.23	0.1058E+01
		0.33	0.5231E+00	0.21	0.8186E+00	0.21	0.1208E+01	0.29	0.6124E+00
		0.39	0.4121E+00	0.24	0.6881E+00	0.26	0.9758E+00	0.33	0.3141E+00
		0.44	0.3955E+00	0.30	0.4723E+00	0.30	0.5925E+00	0.39	0.2314E+00
		0.52	0.3215E+00	0.35	0.5025E+00	0.35	0.3398E+00	0.44	0.2372E+00
		0.61	0.2234E+00	0.42	0.4146E+00	0.42	0.2905E+00	0.50	0.2302E+00
		0.73	0.1365E+00	0.50	0.3211E+00	0.47	0.2708E+00	0.61	0.1650E+00
		0.80	0.6989E-01	0.56	0.2565E+00	0.52	0.2215E+00	0.69	0.1218E+00
				0.65	0.1768E+00	0.65	0.1254E+00	0.76	0.7524E-01
				0.76	0.7648E-01	0.73	0.6620E-01	0.90	-0.5061E-01
				0.90	-0.7470E-01	0.80	0.3339E-02		
						0.87	-0.6199E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.1012E+00	0.00	-0.8995E+00	0.01	-0.5282E+00	0.01	-0.7214E+00	0.00	-0.1133E+01
0.20	0.2660E+00	0.07	-0.3739E-01	0.02	-0.3674E+00	0.04	-0.2641E+00	0.07	-0.6575E-01
0.45	0.1914E+00	0.18	0.2518E+00	0.11	0.1548E+00	0.14	0.1796E+00	0.16	0.2395E+00
0.69	0.9288E-01	0.28	0.2605E+00	0.14	0.2318E+00	0.28	0.2819E+00	0.24	0.2955E+00
0.85	0.3316E-01	0.38	0.2191E+00	0.24	0.2909E+00	0.45	0.2301E+00	0.39	0.2314E+00
		0.51	0.1612E+00	0.34	0.2785E+00	0.57	0.1537E+00	0.51	0.1708E+00
		0.57	0.1320E+00	0.57	0.1521E+00	0.69	0.9208E-01	0.63	0.1172E+00
		0.79	0.2471E-01	0.74	0.6961E-01	0.79	0.2429E-01	0.74	0.6825E-01
				0.90	-0.5409E-01	0.90	-0.6322E-01	0.85	0.1931E-01
C_L	0.2330		0.2851		0.2715		0.2901		0.3126

TABLE 25.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 2500$ rpm $M_{tip} = 0.877$

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
Upper surface ($-C_{P_U}$)									
0.00	-0.9138E+00	0.02	0.9416E+00	0.00	-0.1853E+00	0.01	0.4445E+00	0.00	-0.1092E+01
0.03	0.8691E+00	0.06	0.9399E+00	0.01	0.4832E+00	0.03	0.8531E+00	0.02	0.4984E+00
0.12	0.7173E+00	0.10	0.9083E+00	0.04	0.1152E+01	0.04	0.9171E+00	0.07	0.8911E+00
0.26	0.5317E+00	0.15	0.8169E+00	0.07	0.1091E+01	0.06	0.9325E+00	0.12	0.9721E+00
0.47	0.3517E+00	0.19	0.7256E+00	0.09	0.1095E+01	0.10	0.1046E+01	0.15	0.1062E+01
0.69	0.2055E+00	0.23	0.6448E+00	0.13	0.1166E+01	0.13	0.1108E+01	0.19	0.1090E+01
0.83	0.8736E-01	0.29	0.5834E+00	0.17	0.1170E+01	0.17	0.1166E+01	0.23	0.1028E+01
		0.33	0.5307E+00	0.21	0.1061E+01	0.21	0.1208E+01	0.29	0.9676E+00
		0.39	0.4183E+00	0.24	0.7839E+00	0.26	0.1172F+01	0.33	0.6605E+00
		0.44	0.3937E+00	0.30	0.4320E+00	0.30	0.1076E+01	0.39	0.2239E+00
		0.52	0.3235E+00	0.35	0.4990E+00	0.35	0.5771E+00	0.44	0.1947E+00
		0.61	0.2251E+00	0.42	0.4162E+00	0.42	0.2751E+00	0.50	0.1902E+00
		0.73	0.1338E+00	0.50	0.3230E+00	0.47	0.2111E+00	0.61	0.1474E+00
		0.80	0.6530E-01	0.56	0.2586E+00	0.52	0.1673E+00	0.69	0.1103E+00
				0.65	0.1746E+00	0.65	0.9980E-01	0.76	0.6527E-01
				0.76	0.7476E-01	0.73	0.5006E-01	0.90	-0.6074E-01
				0.90	-0.8021E-01	0.80	-0.6794E-02		
						0.87	-0.7194E-01		
Lower surface ($-C_{P_L}$)									
x/c	**r/R = 0.5**	**x/c**	**r/R = 0.68**	**x/c**	**r/R = 0.80**	**x/c**	**r/R = 0.89**	**x/c**	**r/R = 0.96**
0.04	-0.5606E-01	0.00	-0.9269E+00	0.01	-0.5175E+00	0.01	-0.7021E+00	0.00	-0.1141E+01
0.20	0.2758E+00	0.07	-0.2059E-01	0.02	-0.3691E+00	0.04	-0.2745E+00	0.07	-0.8774E-[illegible]
0.45	0.2195E+00	0.18	0.2523E+00	0.11	0.1601E+00	0.14	0.1886E+00	0.16	0.2487E+00
0.69	0.9861E-01	0.28	0.2804E+00	0.14	0.2534E+00	0.28	0.3035E+00	0.24	0.3263E+00
0.85	0.3674E-01	0.38	0.2335E+00	0.24	0.3020E+00	0.45	0.2514E+00	0.39	0.2588E+00
		0.51	0.1679E+00	0.34	0.2862E+00	0.57	0.1543E+00	0.51	0.1755E+00
		0.57	0.1364E+00	0.57	0.1601E+00	0.69	0.9980E-01	0.63	0.1227E+00
		0.79	0.2036E-01	0.74	0.6557E-01	0.79	0.2163E-01	0.74	0.6640E-01
				0.90	-0.6445E-01	0.90	-0.7312E-01	0.85	0.1127E-01
C_L	0.2298		0.2842		0.2736		0.2989		0.3175

TABLE 26.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 8°$ $\Omega = 2540$ rpm $M_{tip} = 0.890$

Upper surface ($-C_{P_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.8720E+00	0.02	0.9271E+00	0.00	-0.1737E+00	0.01	0.3857E+00	0.00	-0.1106E+01
0.03	0.8425E+00	0.06	0.9651E+00	0.01	0.4835E+00	0.03	0.7715E+00	0.02	0.4563E+00
0.12	0.6824E+00	0.[illegible]	0.9254E+00	0.04	0.1123E+01	0.04	0.8440E+00	0.07	0.8523E+00
0.26	0.5145E+00	0.15	0.8322E+00	0.07	0.1083E+01	0.06	0.8463E+00	0.12	0.9468E+00
0.47	0.3436E+00	0.19	0.7511E+00	0.09	0.1079E+01	0.10	0.9749E+00	0.15	0.1037E+01
0.69	0.1892E+00	0.23	0.6648E+00	0.13	0.1169E+01	0.13	0.1040E+01	0.19	0.1067E+01
0.83	0.8171E-01	0.29	0.5974E+00	0.17	0.1226E+01	0.17	0.1099E+01	0.23	0.1030E+01
		0.33	0.5491E+00	0.21	0.1129E+01	0.21	0.1144E+01	0.29	0.1004E+01
		0.39	0.4352E+00	0.24	0.9751E+00	0.26	0.1170E+01	0.33	0.7878E+00
		0.44	0.4162E+00	0.30	0.4382E+00	0.30	0.1126E+01	0.39	0.4963E+00
		0.52	0.3333E+00	0.35	0.5288E+00	0.35	0.8417E+00	0.44	0.1948E+00
		0.61	0.2350E+00	0.42	0.4318E+00	0.42	0.3226E+00	0.50	0.1659E+00
		0.73	0.1469E+00	0.50	0.3309E+00	0.47	0.1764E+00	0.61	0.1348E+00
		0.80	0.7444E-01	0.56	0.2623E+00	0.52	0.1238E+00	0.69	0.1036E+00
				0.65	0.1834E+00	0.65	0.6887E-01	0.76	0.6136E-01
				0.76	0.7729E-01	0.73	0.2094E-01	0.90	-0.6657E-01
				0.90	-0.7407E-01	0.80	-0.3634E-01		
						0.87	-0.9831E-01		

Lower surface ($-C_{P_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.8366E-01	0.00	-0.8991E+00	0.01	-0.4816E+00	0.01	-0.6969E+00	0.00	-0.1124E+01
0.20	0.2333E+00	0.07	-0.1075E+00	0.02	-0.3315E+00	0.04	-0.2725E+00	0.07	-0.7213E-01
0.45	0.1865E+00	0.18	0.3769E+00	0.11	0.1924E+00	0.14	0.1776E+00	0.16	0.2616E+00
0.69	0.9274E-01	0.26	0.3785E+00	0.14	0.2959E+00	0.28	0.2992E+00	0.24	0.3573E+00
0.85	0.2935E-01	0.38	0.3121E+00	0.24	0.3270E+00	0.45	0.2454E+00	0.39	0.2838E+00
		0.51	0.2192E+00	0.34	0.3231E+00	0.57	0.1437E+00	0.51	0.1926E+00
		0.57	0.1750E+00	0.57	0.1769E+00	0.69	0.7940E-01	0.63	0.1326E+00
		0.79	0.1270E-01	0.74	0.9540E-01	0.79	0.2237E-02	0.74	0.7359E-01
				0.90	-0.313[illegible]E-01	0.90	-0.8778E-01	0.85	0.1797E-01
C_L	0.2380		0.264[illegible]		0.2719		0.2884		0.3149

TABLE 27.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 12°$ $\Omega = 650$ rpm $M_{tip} = 0.226$

Upper surface ($-C_{p_U}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.4815E+00	0.02	0.1701E+01	0.00	0.1585E+01	0.01	0.2115E+01	0.00	0.1833E+00
0.03	0.1328E+01	0.06	0.1235E+01	0.01	0.1991E+01	0.03	0.1764E+01	0.02	0.1642E+01
0.12	0.8754E+00	0.10	0.1045E+01	0.04	0.1614E+01	0.04	0.1558E+01	0.07	0.1166E+01
0.26	0.5739E+00	0.15	0.8539E+00	0.07	0.1367E+01	0.06	0.1388E+01	0.12	0.8206E+00
0.47	0.3854E+00	0.19	0.7693E+00	0.09	0.1150E+01	0.10	0.1048E+01	0.15	0.7450E+00
0.69	0.1970E+00	0.23	0.6845E+00	0.13	0.9904E+00	0.13	0.9390E+00	0.19	0.6369E+00
0.83	0.8388E-01	0.29	0.5998E+00	0.17	0.9034E+00	0.17	0.8420E+00	0.23	0.5505E+00
		0.33	0.5574E+00	0.21	0.8019E+00	0.21	0.7207E+00	0.29	0.4641E+00
		0.39	0.4515E+00	0.24	0.7148E+00	0.26	0.5995E+00	0.33	0.3993E+00
		0.44	0.4091E+00	0.30	0.5988E+00	0.30	0.5388E+00	0.39	0.3453E+00
		0.52	0.3456E+00	0.35	0.5408E+00	0.35	0.4539E+00	0.44	0.3129E+00
		0.61	0.2397E+00	0.42	0.4538E+00	0.42	0.3933E+00	0.50	0.2913E+00
		0.73	0.1550E+00	0.50	0.3668E+00	0.47	0.3448E+00	0.61	0.2157E+00
		0.80	0.9143E-01	0.56	0.3088E+00	0.52	0.2841E+00	0.69	0.1833E+00
				0.65	0.2363E+00	0.65	0.1750E+00	0.76	0.1400E+00
				0.76	0.1347E+00	0.73	0.1143E+00	0.90	0.4281E-01
				0.90	0.4230E-02	0.80	0.6586E-01		
						0.87	0.5212E-02		
Lower surface ($-C_{p_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.4061E+00	0.00	-0.9464E+00	0.01	-0.8514E+00	0.01	-0.9407E+00	0.00	-0.9726E+00
0.20	0.4620E-01	0.07	-0.8891E+00	0.02	-0.6774E+00	0.04	-0.5769E+00	0.07	-0.2921E+00
0.45	0.8388E-01	0.18	0.2844E-01	0.11	-0.1408E+00	0.14	-0.1282E+00	0.16	-0.1121E-01
0.69	0.4620E-01	0.28	0.8827E-01	0.14	-0.3928E-01	0.28	0.2946E-01	0.24	0.6444E-01
0.85	0.8518E-02	0.38	0.8827E-01	0.24	0.4774E-01	0.45	0.5371E-01	0.39	0.6444E-01
		0.51	0.8827E-01	0.34	0.9125E-01	0.57	0.4160E-01	0.51	0.6444E-01
		0.57	0.7309E-01	0.57	0.9125E-01	0.69	0.2946E-01	0.63	0.6444E-01
		0.79	0.1729E-01	0.74	0.7674E-01	0.79	0.5212E-02	0.74	0.4281E-01
				0.90	0.1873E-01	0.90	-0.3120E-01	0.85	0.2120E-01
C_L	0.4269		0.5440		0.4138		0.4882		0.4958

TABLE 28.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 12°$ $\Omega = 1250$ rpm $M_{tip} = 0.433$

Upper surface ($-C_{P_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.3253E+00	0.02	0.1726E+01	0.00	0.1529E+01	0.01	0.2208E+01	0.00	0.3207E-01
0.03	0.1366E+01	0.06	0.1337E+01	0.01	0.2004E+01	0.03	0.1854E+01	0.02	0.1720E+01
0.12	0.8542E+00	0.10	0.1032E+01	0.04	0.1683E+01	0.04	0.1642E+01	0.07	0.1193E+01
0.26	0.5933E+00	0.15	0.8700E+00	0.07	0.1320E+01	0.06	0.1409E+01	0.12	0.8616E+00
0.47	0.3741E+00	0.19	0.7981E+00	0.09	0.1158E+01	0.10	0.1090E+01	0.15	0.7754E+00
0.69	0.2175E+00	0.23	0.7203E+00	0.13	0.9952E+00	0.13	0.9771E+00	0.19	0.6637E+00
0.83	0.1026E+00	0.29	0.6365E+00	0.17	0.9285E+00	0.17	0.8639E+00	0.23	0.5617E+00
		0.33	0.5826E+00	0.21	0.8242E+00	0.21	0.7507E+00	0.29	0.4723E+00
		0.39	0.4689E+00	0.24	0.7367E+00	0.26	0.6198E+00	0.33	0.4117E+00
		0.44	0.4389E+00	0.30	0.6074E+00	0.30	0.5597E+00	0.39	0.3575E+00
		0.52	0.3551E+00	0.35	0.5449E+00	0.35	0.4677E+00	0.44	0.3256E+00
		0.61	0.2593E+00	0.42	0.4615E+00	0.42	0.3970E+00	0.50	0.2937E+00
		0.73	0.1635E+00	0.50	0.3740E+00	0.47	0.3474E+00	0.61	0.2267E+00
		0.8[illegible]	0.9769E-01	0.56	0.3114E+00	0.52	0.2838E+00	0.69	0.1788E+00
				0.65	0.2239E+00	0.65	0.1776E+00	0.76	0.1437E+00
				0.76	0.1280E+00	0.73	0.1104E+00	0.90	0.3207E-01
				0.90	-0.1375E-01	0.80	0.5735E-01		
						0.87	-0.6327E-02		

Lower surface ($-C_{P_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.3775E+00	0.00	-0.9440E+00	0.01	-0.8518E+00	0.01	-0.9438E+00	0.00	-0.1021E+01
0.20	0.8177E-01	0.07	-0.7343E+00	0.02	-0.7058E+00	0.04	-0.5900E+00	0.07	-0.2902E+00
0.45	0.7136E-01	0.18	0.2111E-01	0.11	-0.1430E+00	0.14	-0.1195E+00	0.16	0.1599E-03
0.69	0.5047E-01	0.28	0.8312E-01	0.14	-0.4711E-01	0.28	0.2905E-01	0.24	0.6078E-01
0.85	0.1914E-01	0.38	0.9017E-01	0.24	0.4462E-01	0.45	0.5382E-01	0.39	0.7673E-01
		0.51	0.1000E+00	0.34	0.8630E-01	0.57	0.4320E-01	0.51	0.7035E-01
		0.57	0.7854E-01	0.57	0.8213E-01	0.69	0.2551E-01	0.63	0.6078E-01
		0.79	-0.4495E-03	0.74	0.5712E-01	0.79	-0.2789E-02	0.74	0.4802E-01
				0.90	-0.9588E-02	0.90	-0.4524E-01	0.85	0.2568E-01
C_L	0.4253		0.5455		0.4226		0.5023		0.5090

TABLE 29.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 12°$ $\Omega = 1500$ rpm $M_{tip} = 0.520$

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.4666E+00	0.02	0.1769E+01	0.00	0.1389E+01	0.01	0.2225E+01	0.00	-0.1533E+00
0.03	0.1350E+01	0.06	0.1337E+01	0.01	0.2011E+01	0.03	0.1905E+01	0.02	0.1797E+01
0.12	0.8722E+00	0.10	0.1025E+01	0.04	0.1735E+01	0.04	0.1707E+01	0.07	0.1217E+01
0.26	0.5926E+00	0.15	0.8803E+00	0.07	0.1281E+01	0.06	0.1437E+01	0.12	0.8709E+00
0.47	0.3793E+00	0.19	0.8076E+00	0.09	0.1182E+01	0.10	0.1103E+01	0.15	0.7844E+00
0.69	0.2175E+00	0.23	0.7350E+00	0.13	0.1022E+01	0.13	0.9919E+00	0.19	0.6675E+00
0.83	0.9979E-01	0.29	0.6453E+00	0.17	0.9320E+00	0.17	0.8761E+00	0.23	0.5646E+00
		0.33	0.5855E+00	0.21	0.8268E+00	0.21	0.7551E+00	0.29	0.4757E+00
		0.39	0.4745E+00	0.24	0.7336E+00	0.26	0.6213E+00	0.33	0.4196E+00
		0.44	0.4403E+00	0.30	0.5984E+00	0.30	0.5596E+00	0.39	0.3611E+00
		0.52	0.3506E+00	0.35	0.5503E+00	0.35	0.4721E+00	0.44	0.3214E+00
		0.61	0.2609E+00	0.42	0.4631E+00	0.42	0.4000E+00	0.50	0.2886E+00
		0.73	0.1669E+00	0.50	0.3669E+00	0.47	0.[illegible]434E+00	0.61	0.2185E+00
		0.80	0.9856E-01	0.56	0.3038E+00	0.52	0.2765E+00	0.69	0.1740E+00
				0.65	0.2226E+00	0.65	0.1633E+00	0.76	0.1343E+00
				0.76	0.1204E+00	0.73	0.1015E+00	0.90	0.1737E-01
				0.90	-0.2986E-01	0.80	0.4231E-01		
						0.87	-0.2203E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.3857E+00	0.00	-0.9779E+00	0.01	-0.8475E+00	0.01	-0.9510E+00	0.00	-0.1056E+01
0.20	0.5564E-01	0.07	-0.7081E+00	0.02	-0.6972E+00	0.04	-0.5804E+00	0.07	-0.2796E+00
0.45	0.9979E-01	0.18	0.2800E-01	0.11	-0.1471E+00	0.14	-0.1147E+00	0.16	0.5677E-02
0.69	0.5564E-01	0.28	0.8432E-01	0.14	-0.4189E-01	0.28	0.2429E-01	0.24	0.5245E-01
0.85	0.1151E-01	0.38	0.8432E-01	0.24	0.5731E-01	0.45	0.6290E-01	0.39	0.8285E-01
		0.51	0.8432E-01	0.34	0.1054E+00	0.57	0.5260E-01	0.51	0.8051E-01
		0.57	0.6571E-01	0.57	0.9338E-01	0.69	0.3201E-01	0.63	0.6648E-01
		0.79	-0.2638E-02	0.74	0.5731E-01	0.79	-0.4014E-02	0.74	0.4309E-01
				0.90	-0.1783E-01	0.90	-0.5291E-01	0.[illegible]5	0.1269E-01
c_L	0.4260		0.5521		0.4247		0.4949		0.5049

TABLE 30.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 12°$ $\Omega = 1750$ rpm $M_{tip} = 0.610$

Upper surface ($-C_{P_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.4714E+00	0.02	0.1800E+01	0.00	0.1266E+01	0.01	0.2241E+01	0.00	-0.3209E+00
0.03	0.1421E+01	0.06	0.1369E+01	0.01	0.2033E+01	0.03	0.2127E+01	0.02	0.1907E+01
0.12	0.8598E+00	0.10	0.1094E+01	0.04	0.1827E+[illegible]	0.04	0.1977E+01	0.07	0.1326E+01
0.26	0.6068E+00	0.15	0.9085E+00	0.07	0.1342E+0[illegible]	0.0[illegible]	0.1611E+01	0.12	0.8839E+00
0.47	0.3922E+00	0.19	0.8242E+00	0.09	0.1224E+01	0.10	0.1153E+01	0.15	0.8032E+00
0.69	0.2217E+00	0.23	0.7334E+00	0.13	0.1069E+01	0.13	0.1017E+01	0.19	0.6785E+00
0.83	0.8967E-01	0.29	0.6556E+00	0.17	0.9861E+00	0.17	0.9008E+00	0.23	0.5667E+00
		0.33	0.5810E+00	0.21	0.8544E+00	0.21	0.7768E+00	0.29	0.4658E+00
		0.39	0.46[illegible]5E+00	0.24	0.7504E+00	0.26	0.6228E+00	0.33	0.4126E+00
		0.44	0.4350E+00	0.30	0.5609E+00	0.30	0.5529E+00	0.39	0.3539E+00
		0.52	0.3605E+00	0.35	0.5655E+00	0.35	0.4649E+00	0.44	0.3191E+00
		0.61	0.2664E+00	0.42	0.4754E+00	0.42	0.3949E+00	0.50	0.2879E+00
		0.73	0.1659E+00	0.50	0.3737E+00	0.47	0.3339E+00	0.61	0.2201E+00
		0.80	0.1010E+00	0.56	0.3136E+00	0.52	0.2689E+00	0.69	0.1724E+00
				0.65	0.2212E+00	0.65	0.1589E+00	0.76	0.1339E+00
				0.76	0.1172E+00	0.73	0.9292E-01	0.90	0.1100E-01
				0.90	-0.2835E-01	0.80	0.2693E-01		
						0.87	-0.3906E-01		

Lower surface ($-C_{P_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.3724E+00	0.00	-0.9950E+00	0.01	-0.8556E+00	0.01	-0.9729E+00	0.00	-0.1104E+01
0.20	0.6766E-01	0.07	-0.4314E+00	0.02	-0.6985E+00	0.04	-0.5970E+00	0.07	-0.3008E+00
0.45	0.8416E-01	0.18	0.5412E-01	0.11	-0.1439E+00	0.14	-0.1210E+00	0.16	0.1828E-02
0.69	0.4565E-01	0.28	0.1030E+00	0.14	0.3990E-01	0.28	0.2893E-01	0.24	0.6235E-01
0.85	0.1264E-01	0.38	0.1017E+00	0.24	0.6871E-01	0.45	0.5693E-01	0.39	0.8252E-01
		0.51	0.9992E-01	0.34	0.1057E+00	0.57	0.3693E-01	0.51	0.6785E-01
		0.57	0.7635E-01	0.57	0.8257E-01	0.69	0.1293E-01	0.63	0.4768E-01
		0.79	-0.1028E-01	0.74	0.4791E-01	0.79	-0.2106E-01	0.74	0.2567E-01
				0.90	-0.1[illegible]48E-01	0.90	-0.6905E-01	0.85	0.5497E-02
C_L	0.4358		0.5226		0.4434		0.5091		0.5245

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TABLE 31.- LOCAL PRESSURE COEFFICIENT

$\theta_c = 12°$ $\Omega = 2074$ rpm $M_{tip} = 0.723$

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
Upper surface ($-C_{P_U}$)									
0.00	-0.5056E+00	0.02	0.1855E+01	0.00	0.9539E+00	0.01	0.1652E+01	0.00	-0.6069E+00
0.03	0.1350E+01	0.06	0.1439E+01	0.01	0.1719E+01	0.03	0.1899E+01	0.02	0.1472E+01
0.12	0.8879E+00	0.10	0.1113E+01	0.04	0.2178E+01	0.04	0.1955E+01	0.07	0.1707E+01
0.26	0.6274E+00	0.15	0.9518E+00	0.07	0.1783E+01	0.06	0.1946E+01	0.12	0.1548E+01
0.47	0.3905E+00	0.19	0.8662E+00	0.09	0.1288E+01	0.10	0.1773E+01	0.15	0.8345E+00
0.69	0.2247E+00	0.23	0.7688E+00	0.13	0.1118E+01	0.13	0.1349E+01	0.19	0.6529E+00
0.83	0.1063E+00	0.29	0.6903E+00	0.17	0.1033E+01	0.17	0.8414E+00	0.23	0.5459E+00
		0.33	0.6119E+00	0.21	0.9039E+00	0.21	0.7127E+00	0.29	0.4601E+00
		0.39	0.4978E+00	0.24	0.7935E+00	0.26	0.5945E+00	0.33	0.4150E+00
		0.44	0.4669E+00	0.30	0.5780E+00	0.30	0.5354E+00	0.39	0.3545E+00
		0.52	0.3551E+00	0.35	0.5780E+00	0.35	0.4536E+00	0.44	0.3362E+00
		0.61	0.2696E+00	0.42	0.5021E+00	0.42	0.3763E+00	0.50	0.3038E+00
		0.73	0.1650E+00	0.50	0.3952E+00	0.47	0.3369E+00	0.61	0.2334E+00
		0.80	0.8651E-01	0.56	0.3262E+00	0.52	0.2687E+00	0.69	0.1870E+00
				0.65	0.2331E+00	0.65	0.1536E+00	0.76	0.1448E+00
				0.76	0.1227E+00	0.73	0.8540E-01	0.90	0.1808E-01
				0.90	-0.2900E-01	0.80	0.2176E-01		
						0.87	-0.4793E-01		
Lower surface ($-C_{P_L}$)									
x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.3437E+00	0.00	-0.9690E+00	0.01	-0.8101E+00	0.01	-0.9252E+00	0.00	-0.1109E+01
0.20	0.9050E-01	0.07	-0.4553E+00	0.02	-0.6567E+00	0.04	-0.5570E+00	0.07	-0.2649E+00
0.45	0.8655E-01	0.18	0.6403E-01	0.11	-0.9280E-01	0.14	-0.7975E-01	0.16	0.4905E-01
0.69	0.5497E-01	0.28	0.1379E+00	0.14	0.3765E-02	0.28	0.6722E-01	0.24	0.1124E+00
0.85	0.1549E-01	0.38	0.1342E+00	0.24	0.1055E+00	0.45	0.8540E-01	0.39	0.1180E+00
		0.51	0.1289E+00	0.34	0.1383E+00	0.57	0.5510E-01	0.51	0.9409E-01
		0.57	0.1005E+00	0.57	0.1227E+00	0.69	0.3843E-01	0.63	0.8002E-01
		0.79	-0.4117E-02	0.74	0.7791E-01	0.79	-0.9446E-03	0.74	0.5186E-01
				0.90	-0.1003E-01	0.90	-0.[illegible]6E-01	0.85	0.2090E-01
C_L	0.4300		0.5243		0.4450		0.5075		0.5169

TABLE 12.- LOCAL PRESSURE COEFFICIENT

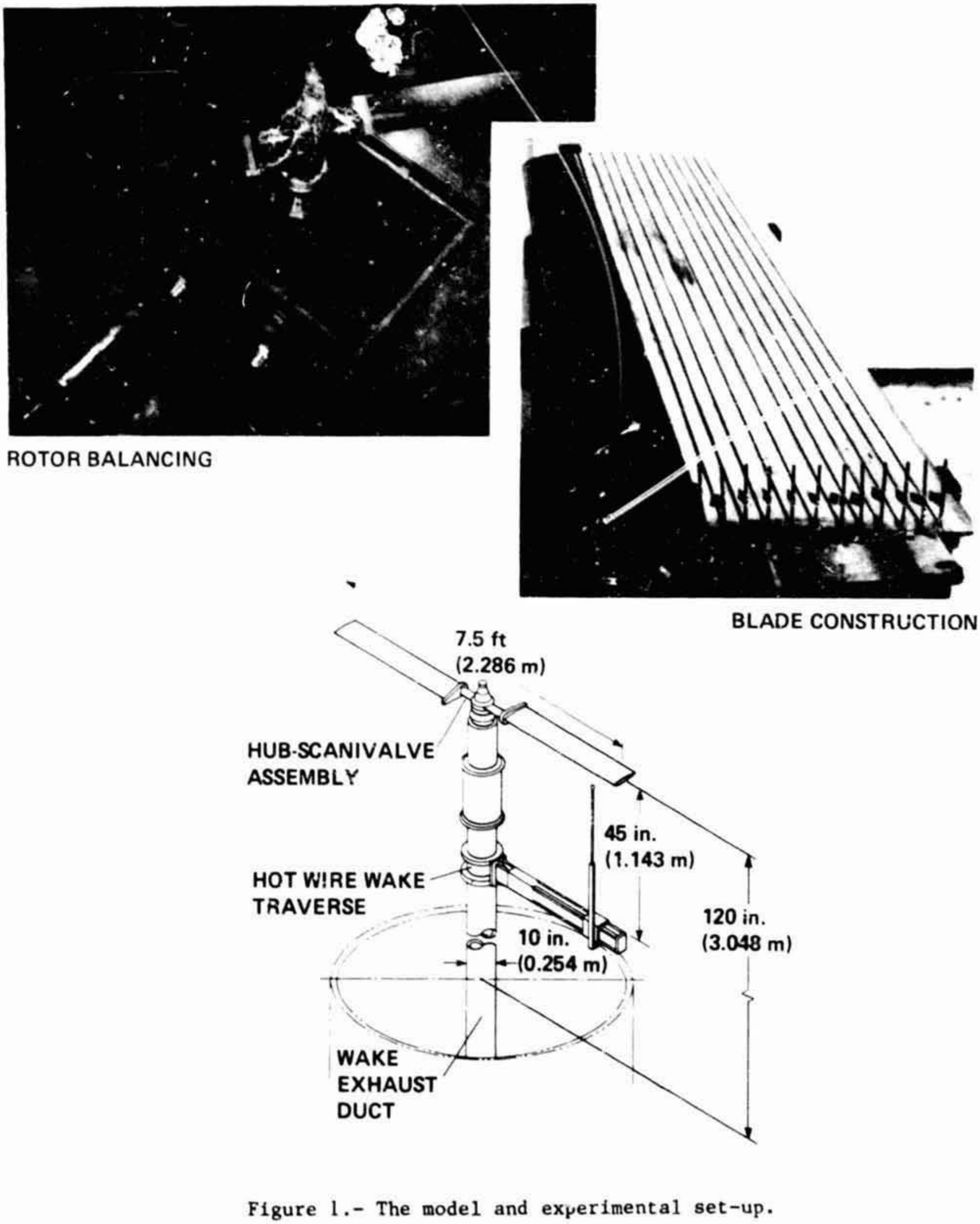
$\theta_c = 12°$ $\Omega = 2280$ rpm $M_{tip} = 0.794$

Upper surface ($-C_{p_U}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.00	-0.5503E+00	0.02	0.1827E+01	0.00	0.6255E+00	0.01	0.1235E+01	0.00	-0.7727E+00
0.03	0.1320E+01	0.06	0.1489E+01	0.01	0.1327E+01	0.03	0.1491E+01	0.02	0.1127E+01
0.12	0.8333E+00	0.10	0.1113E+01	0.04	0.1918E+01	0.04	0.1548E+01	0.07	0.1422E+01
0.26	0.5899E+00	0.15	0.9436E+00	0.07	0.1923E+01	0.06	0.1577E+01	0.12	0.1390E+01
0.47	0.3732E+00	0.19	0.8456E+00	0.09	0.1846E+01	0.10	0.1612E+01	0.15	0.1377E+01
0.69	0.1965E+00	0.23	0.7660E+00	0.13	0.1369E+01	0.13	0.1537E+01	0.19	0.1102E+01
0.83	0.7317E-01	0.29	0.6700E+00	0.17	0.1013E+01	0.17	0.1487E+01	0.23	0.8172E+00
		0.33	0.5965E+00	0.21	0.8627E+00	0.21	0.1126E+01	0.29	0.4902E+00
		0.39	0.4782E+00	0.24	-0.7666E+00	0.26	0.6918E+00	0.33	0.3800E+00
		0.44	0.4435E+00	0.30	0.4964E+00	0.30	0.5356E+00	0.39	0.3211E+00
		0.52	0.3618E+00	0.35	0.5594E+00	0.35	0.3981E+00	0.44	0.2973E+00
		0.61	0.2516E+00	0.42	0.4663E+00	0.42	0.3234E+00	0.50	0.2647E+00
		0.73	0.1516E+00	0.50	0.3492E+00	0.47	0.2740E+00	0.61	0.2008E+00
		0.80	0.8216E-01	0.56	0.2922E+00	0.52	0.2972E+00	0.69	0.1544E+00
				0.65	0.1946E+00	0.65	0.1058E+00	0.76	0.1169E+00
				0.76	0.9250E-01	0.73	0.4169E-01	0.90	-0.2168E-02
				0.90	-0.5163E-01	0.80	-0.1171E-01		
						0.87	-0.6510E-01		

Lower surface ($-C_{p_L}$)

x/c	r/R = 0.5	x/c	r/R = 0.68	x/c	r/R = 0.80	x/c	r/R = 0.89	x/c	r/R = 0.96
0.04	-0.3836E+00	0.00	-0.1020E+01	0.01	-0.8113E+00	0.01	-0.9395E+00	0.00	-0.1171E+01
0.20	0.7651E-01	0.07	-0.4405E+00	0.02	-0.6402E+00	0.04	-0.5297E+00	0.07	-0.2415E+00
0.45	0.8651E-01	0.18	0.4963E-01	0.11	-0.1057E+00	0.14	-0.7712E-01	0.16	0.6048E-01
0.69	0.2650E-01	0.28	0.1054E+00	0.14	0.6921E-02	0.28	0.6973E-01	0.24	0.1231E+00
0.85	-0.3509E-02	0.38	0.1030E+00	0.24	0.1000E+00	0.45	0.8842E-01	0.39	0.1269E+00
		0.51	0.9960E-01	0.34	0.1420E+00	0.57	0.6172E-01	0.51	0.1043E+00
		0.57	0.7244E-01	0.57	0.1090E+00	0.69	0.2701E-01	0.63	0.7300E-01
		0.79	-0.2732E-01	0.74	0.5496E-01	0.79	-0.1971E-01	0.74	0.3417E-01
				0.90	-0.3012E-01	0.90	-0.7578E-01	0.85	0.5351E-02
C_L	0.4169		0.5328		0.4360		0.5032		0.5090



ROTOR BALANCING

BLADE CONSTRUCTION

Figure 1.- The model and experimental set-up.

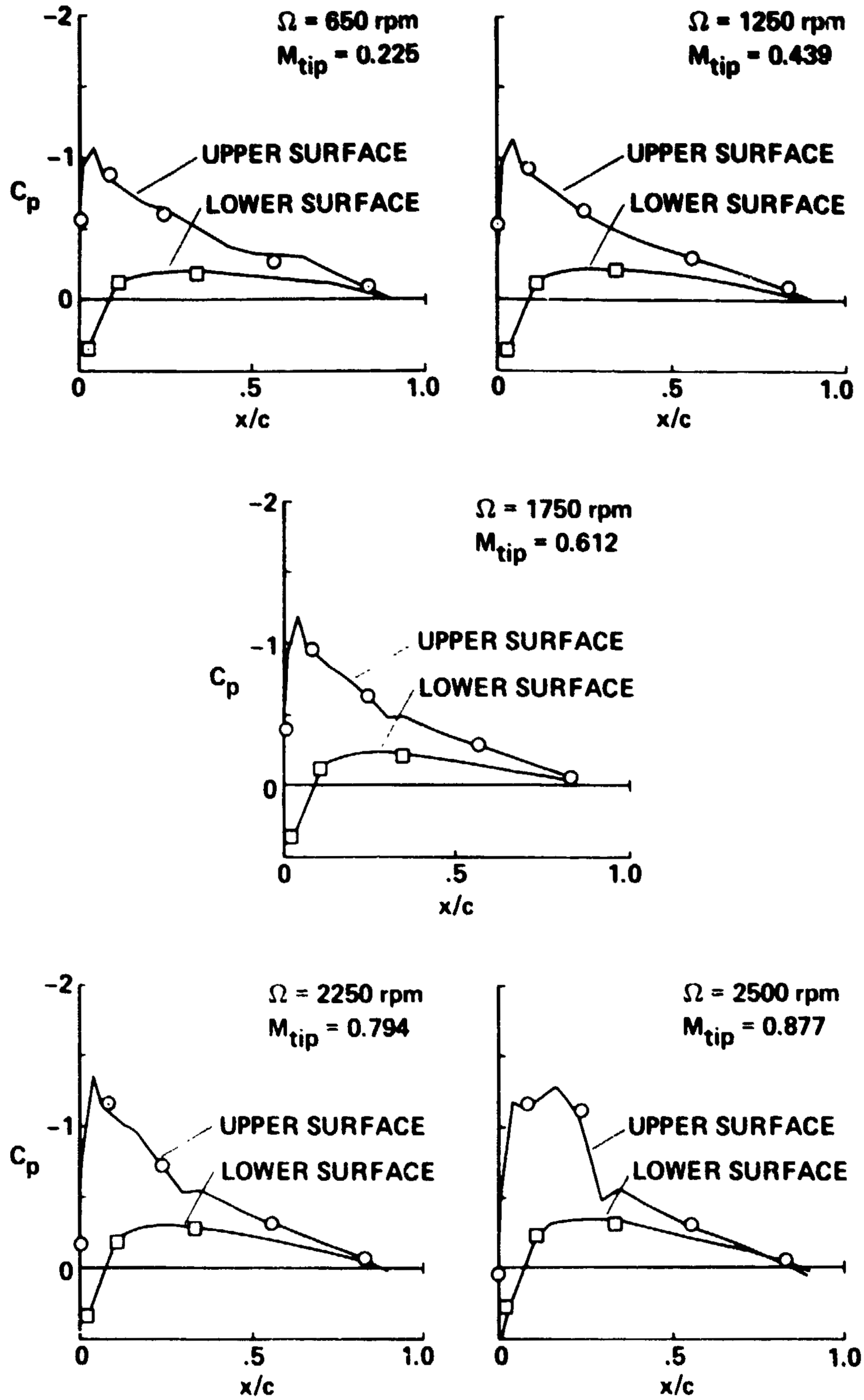


Figure 2.- Comparison of measured pressure distributions at r/8 = 0.8 from each blade; collective pitch θ_c = 8° (solid line = right blade, open symbol = left blade).

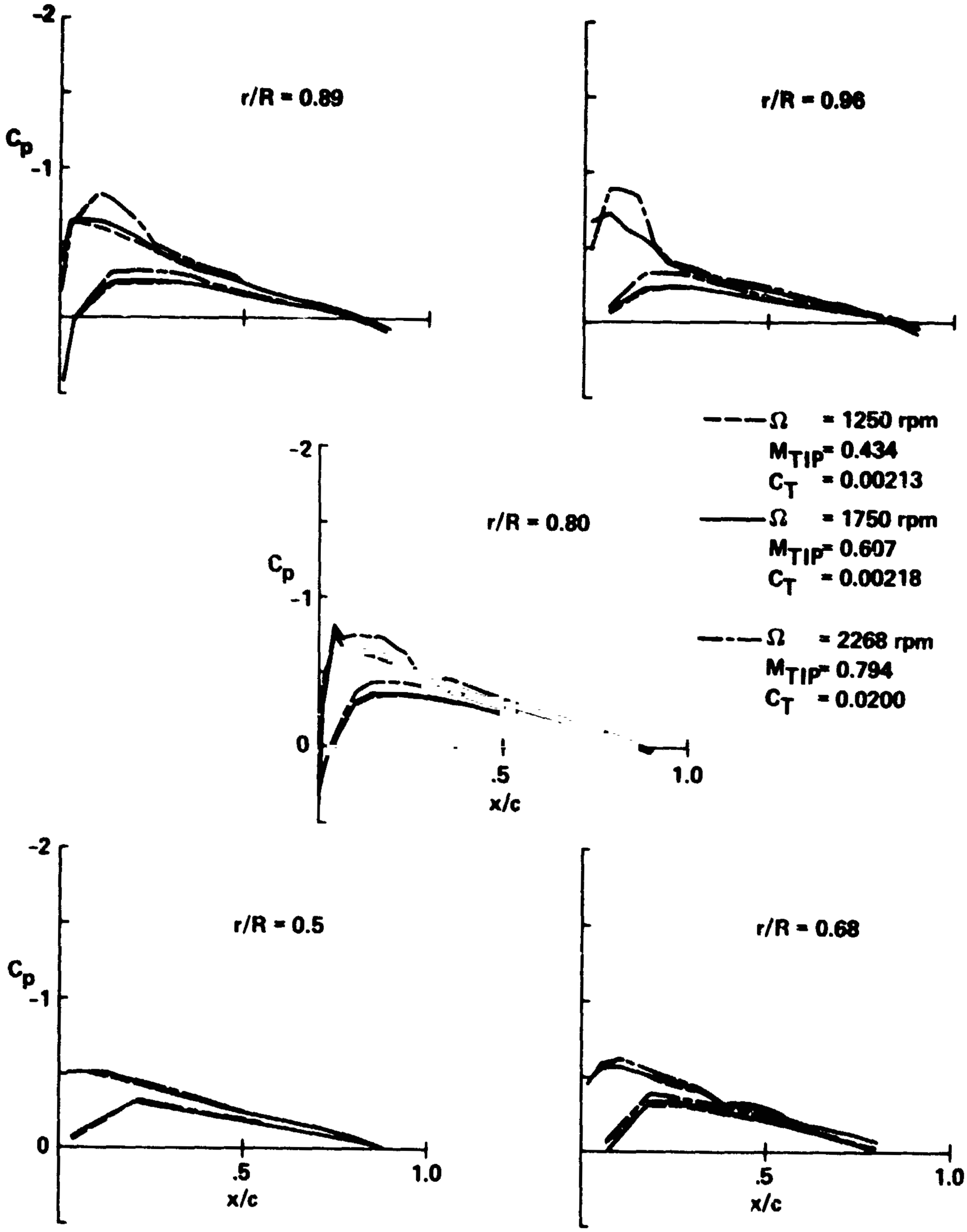


Figure 3.- Measured pressure distributions; collective pitch $\theta_c = 5°$.

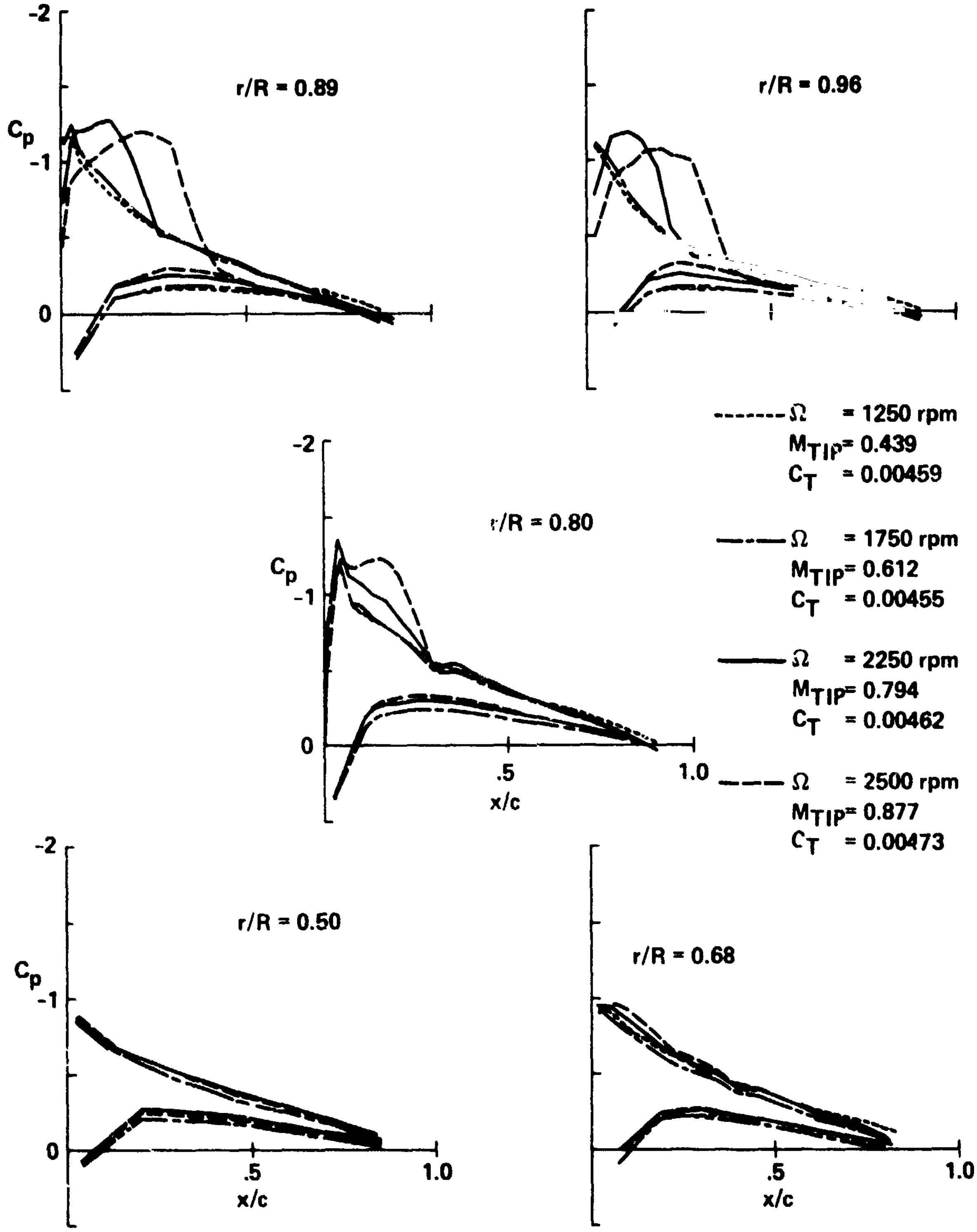


Figure 4.- Measured pressure distributions; collective pitch $\theta_c = 8°$.

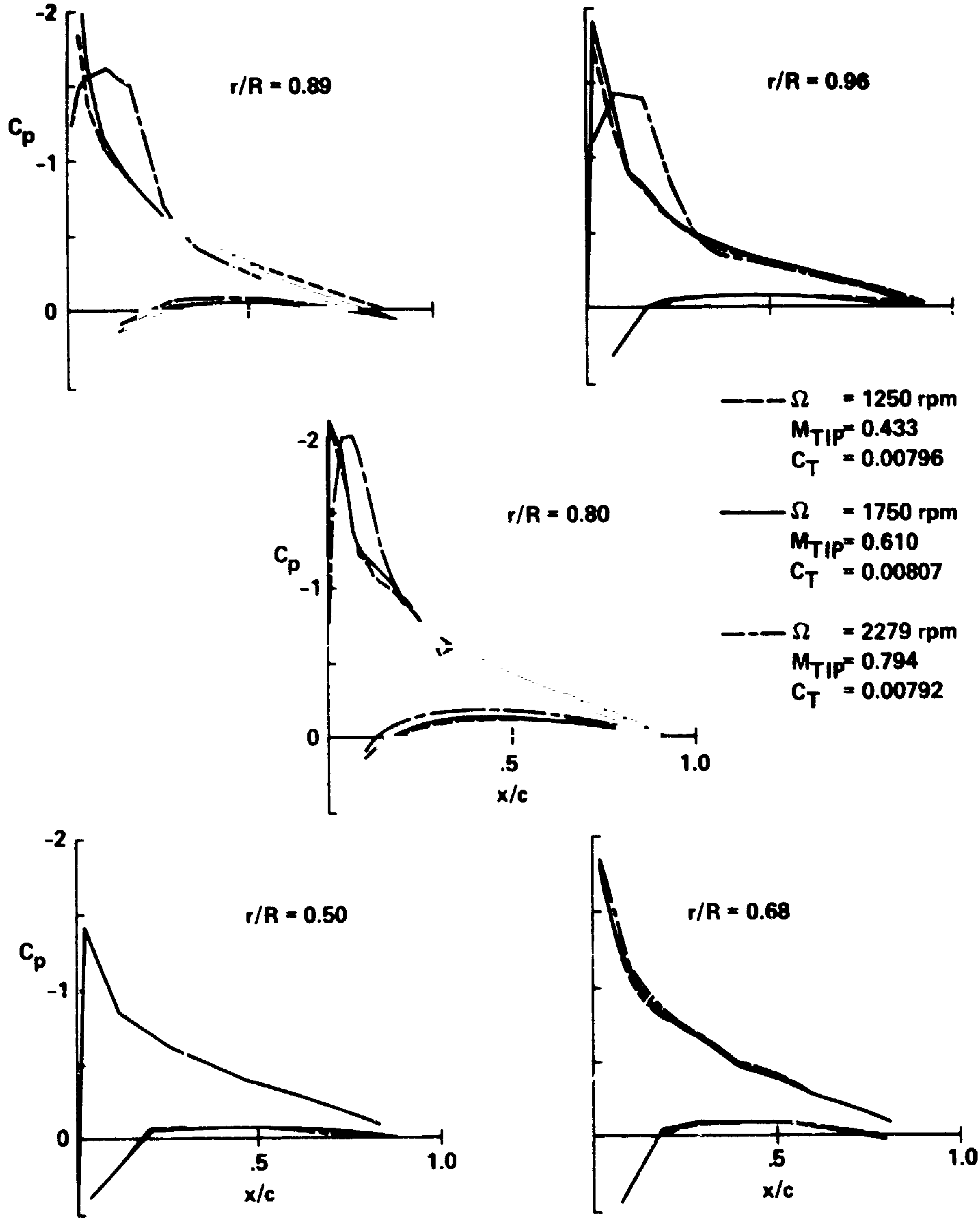


Figure 5.- Measured pressure distributions; collective pitch $\theta_c = 12°$.

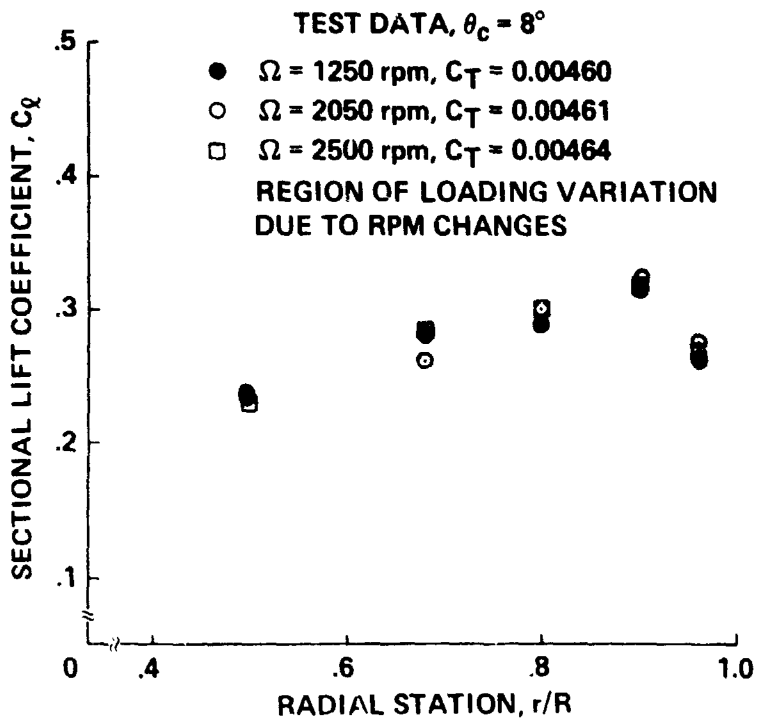


Figure 6.- Effect of rotor speed on blade span loading.

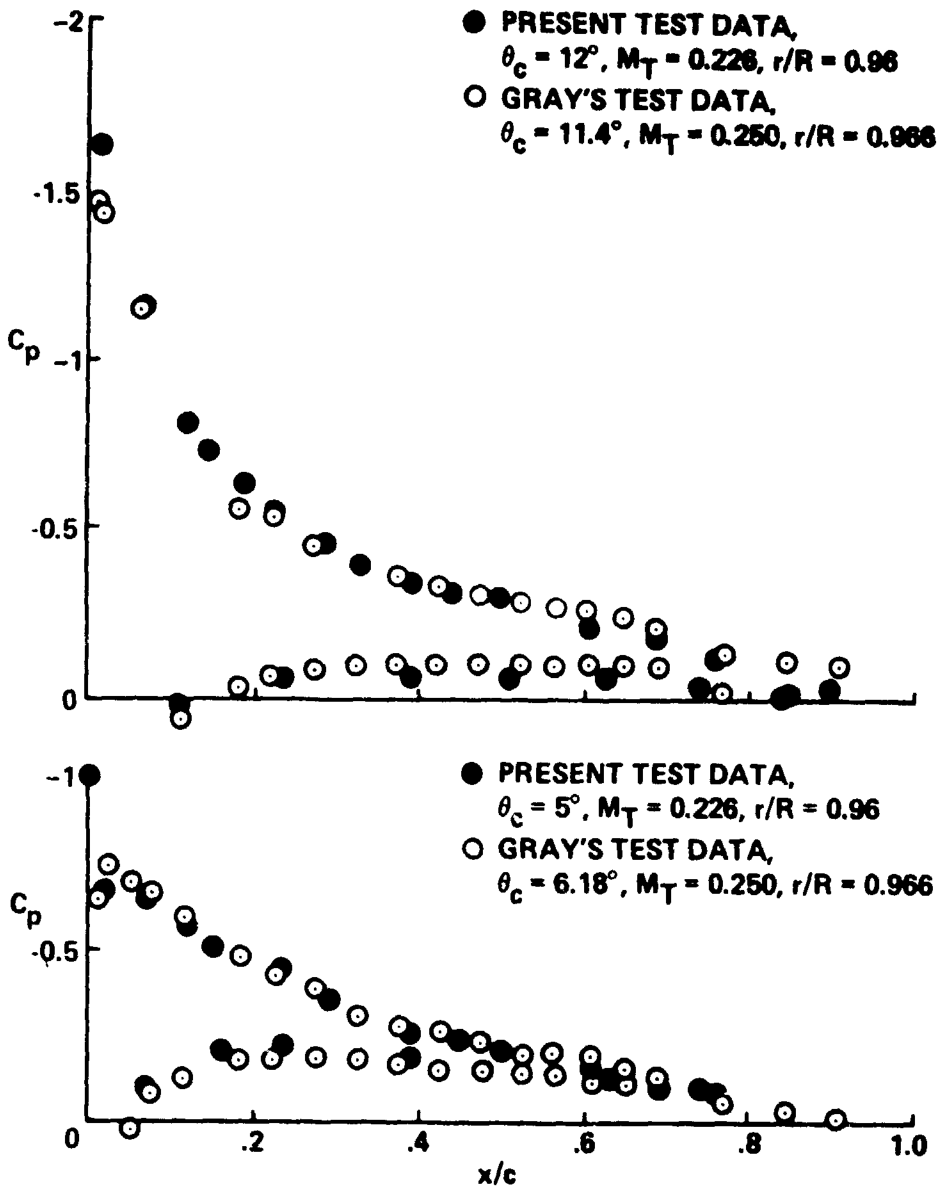


Figure 7.- Comparison of present results with single blade tip loading data.

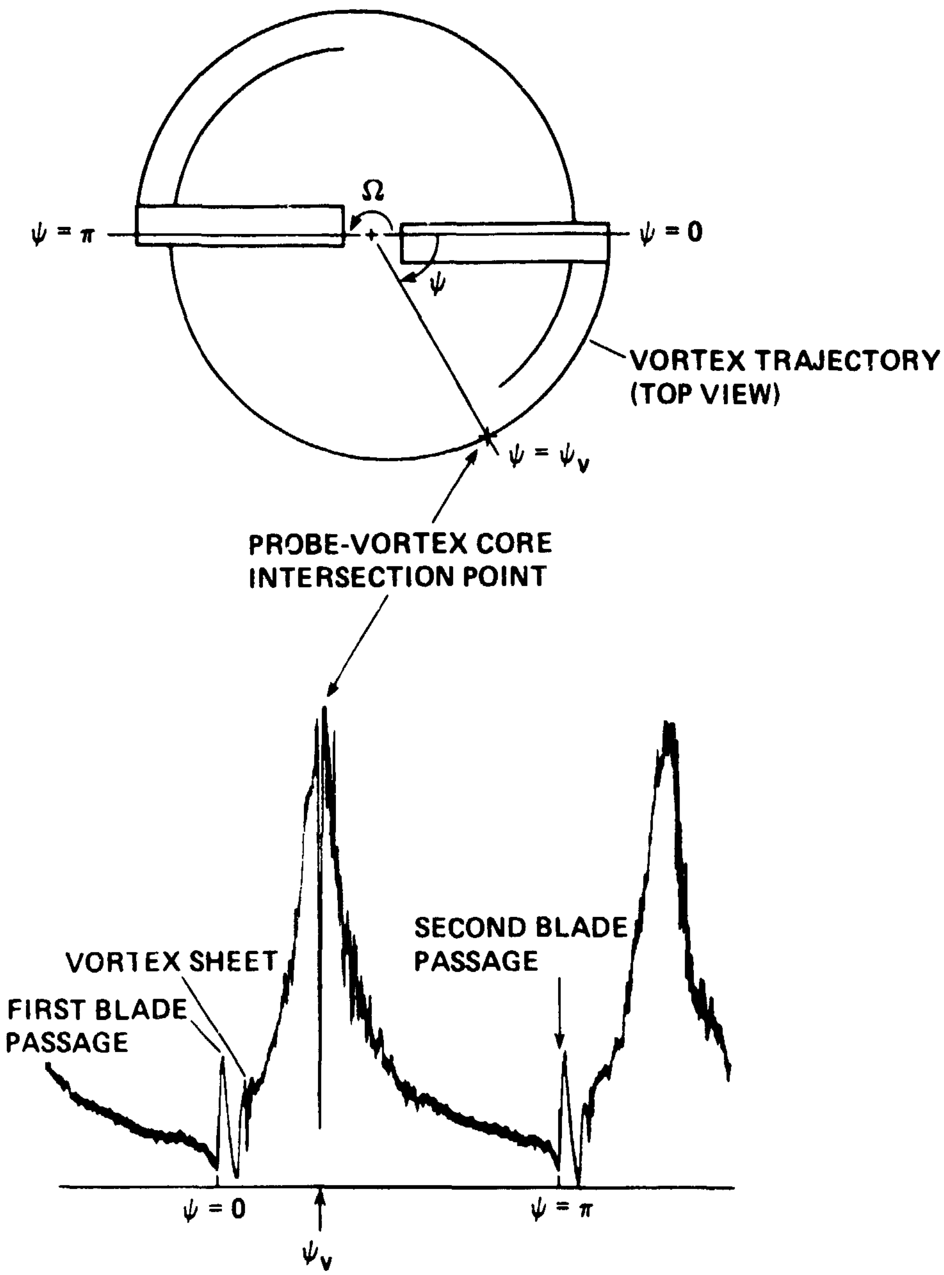


Figure 8.- Typical wake probe data.

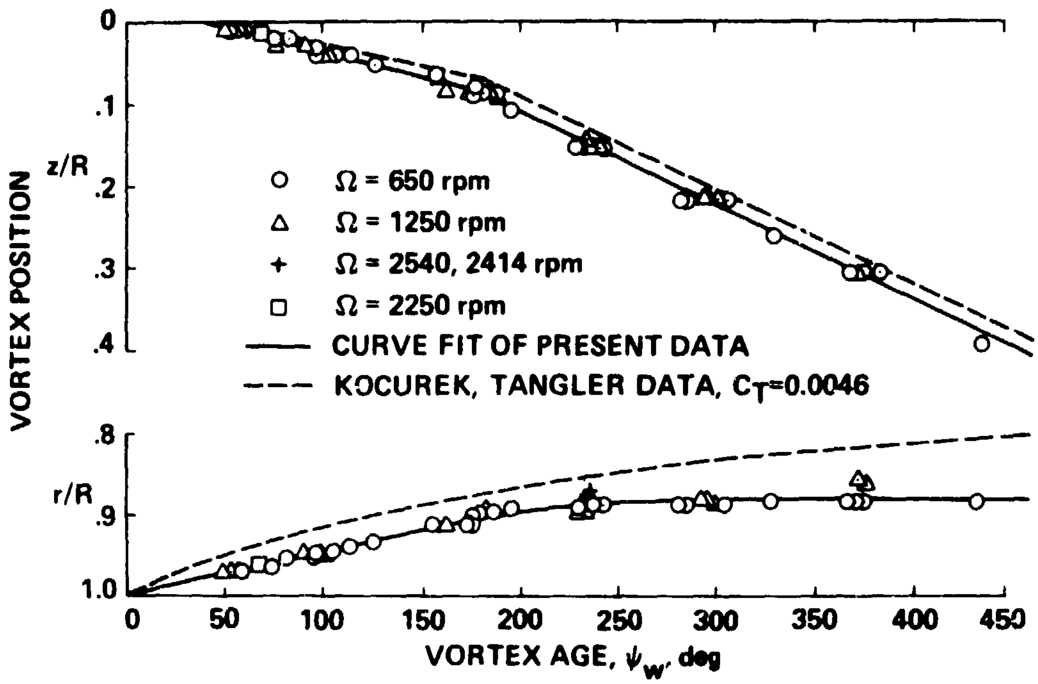


Figure 9.- Wake geometry measurements for various rotor speeds and comparison with classical data; collective pitch $\theta_c = 8°$.

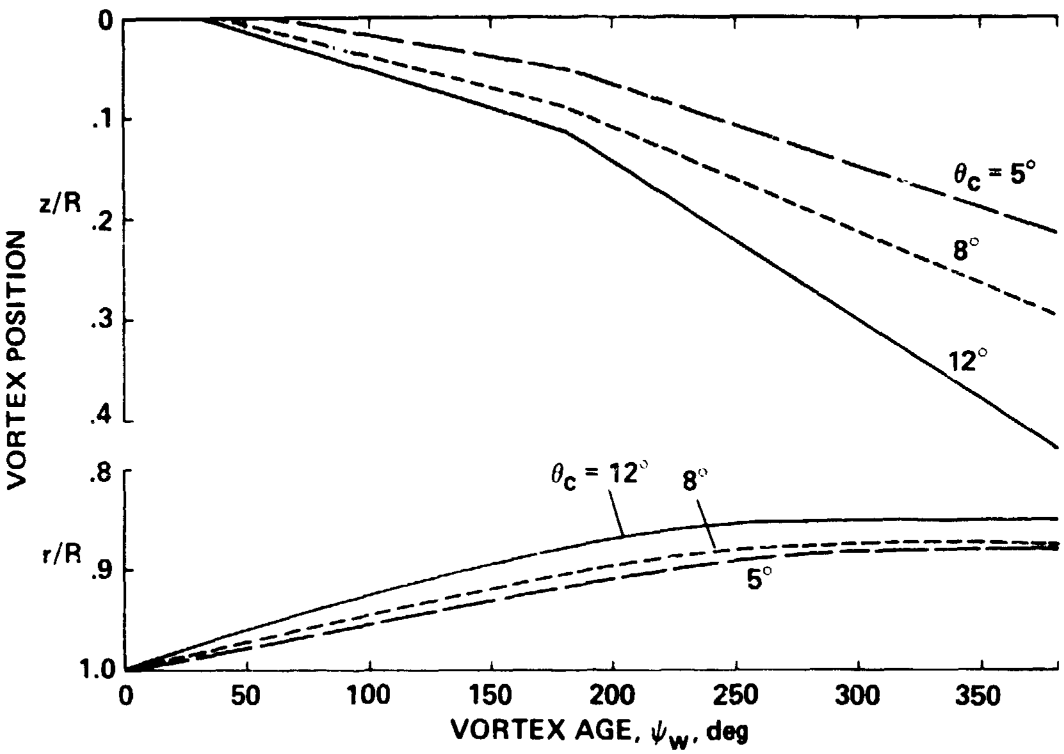


Figure 10.- Wake geometry for various pitch settings.

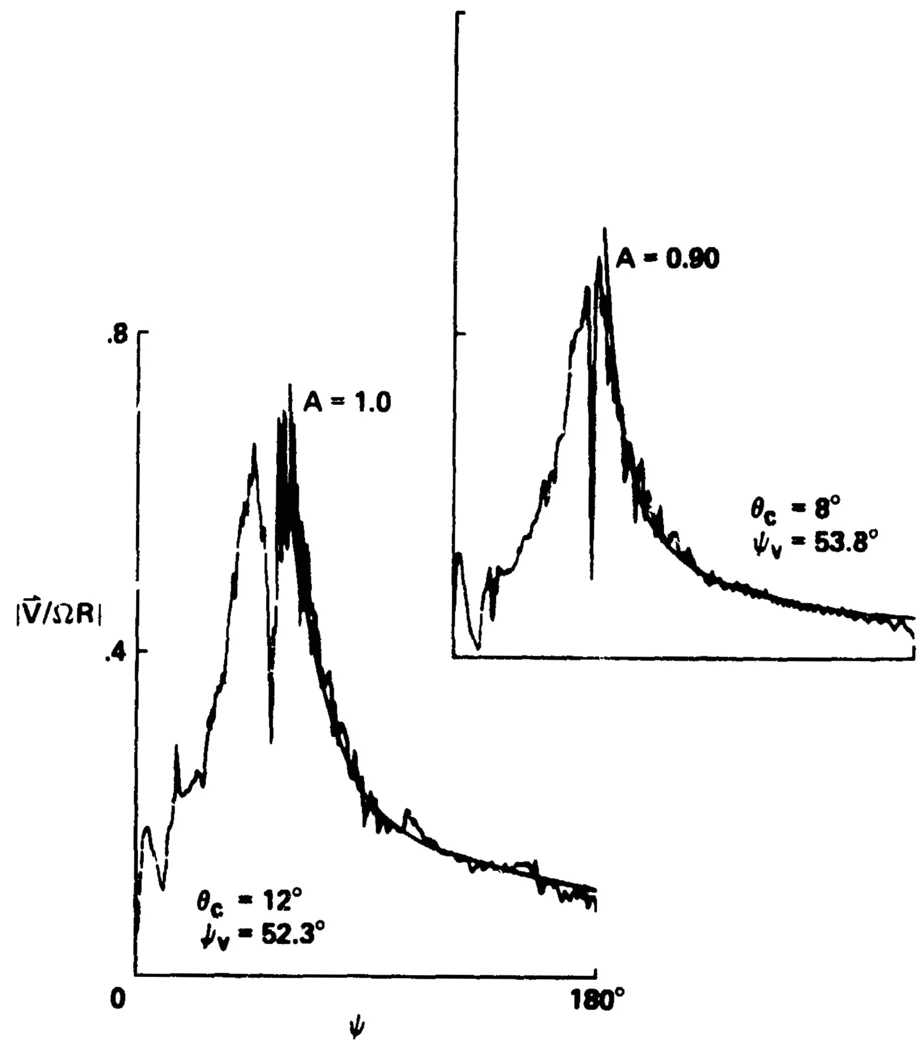


Figure 11.- Typical ·ortex velocity-time trace and 1/R curve fit for various pitch se.tings; vortex age = 50° (nominal), Ω = 1250 rpm.

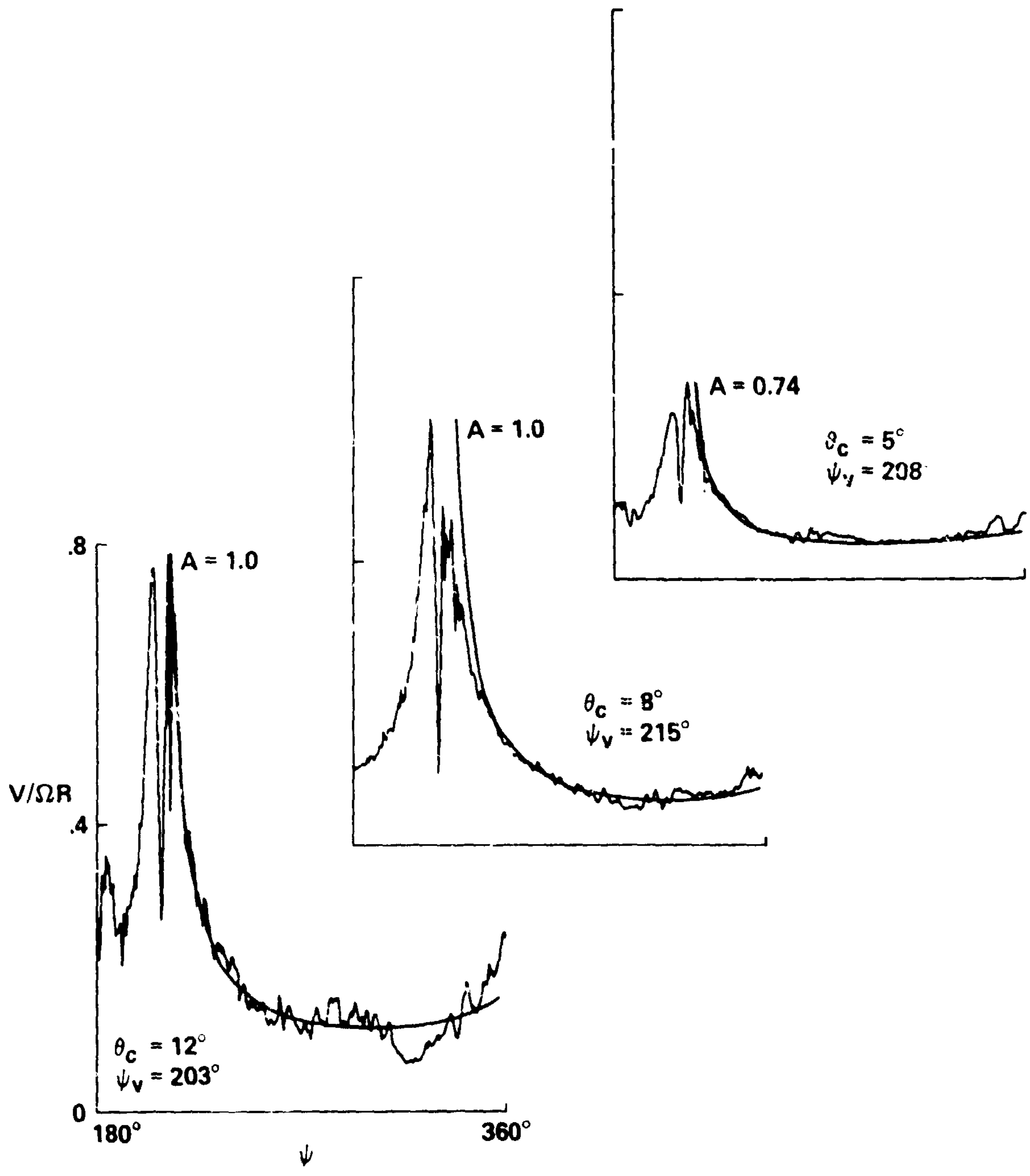


Figure 12.- Typical vortex velocity-time trace and 1/R curve fit for various pitch settings; vortex age = 200° (nominal), Ω = 1250 rpm.

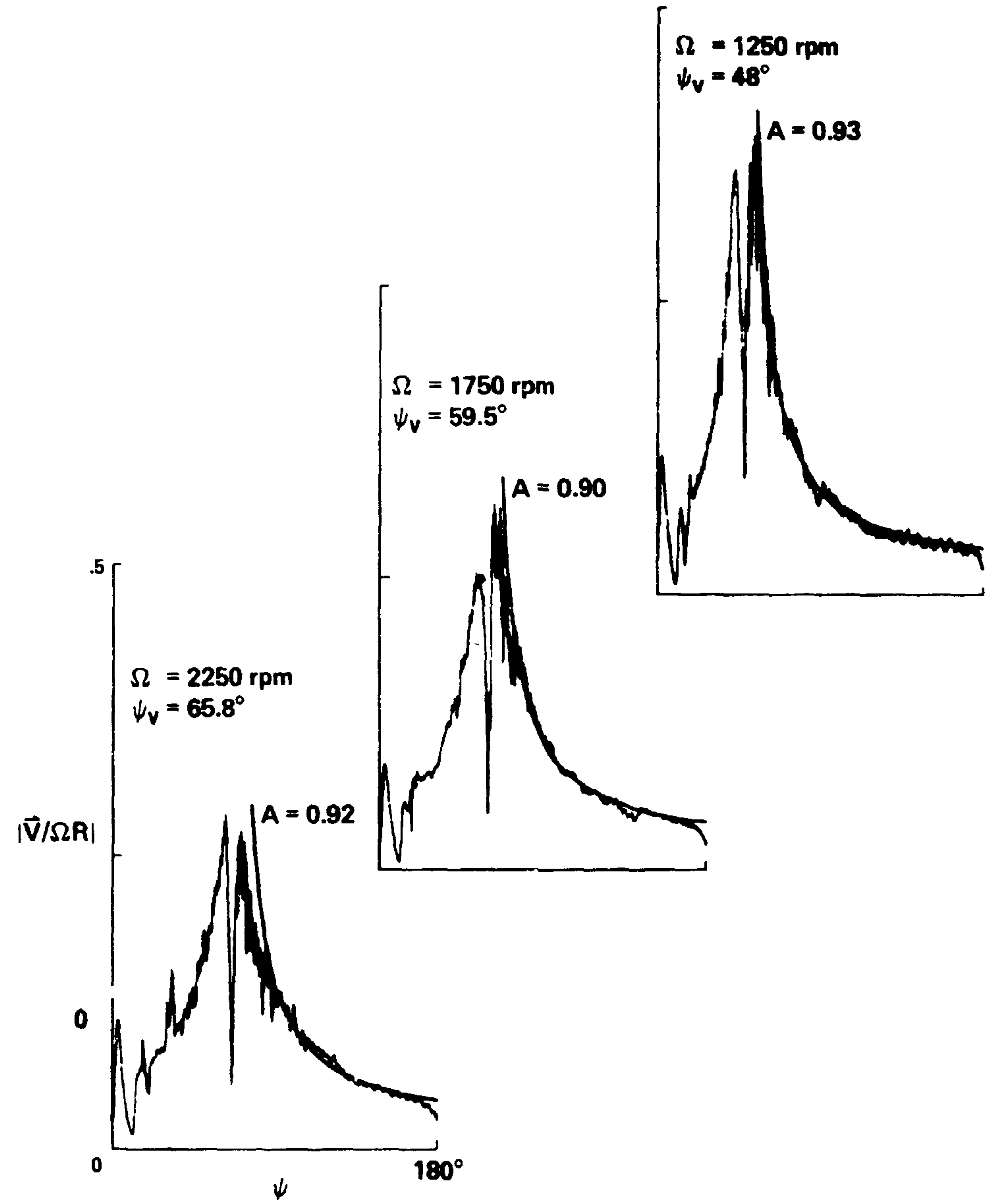


Figure 13. Typical velocity-time trace and 1/R curve fit for various rotor speeds; collective pitch $\theta_c = 8°$, vortex age $\psi_v \doteq 50°\text{-}65°$.

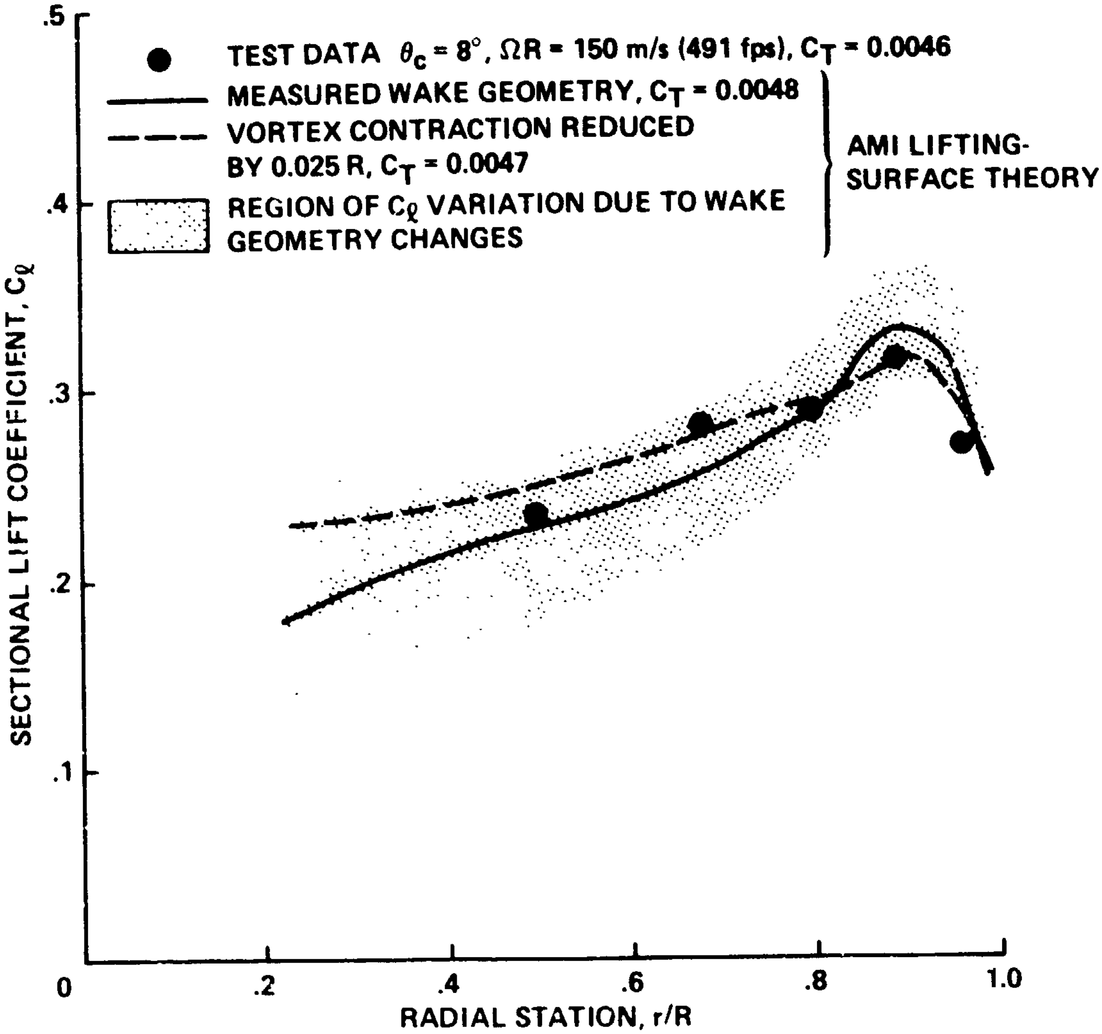


Figure 14.- Effect of vortex position on loading computation.

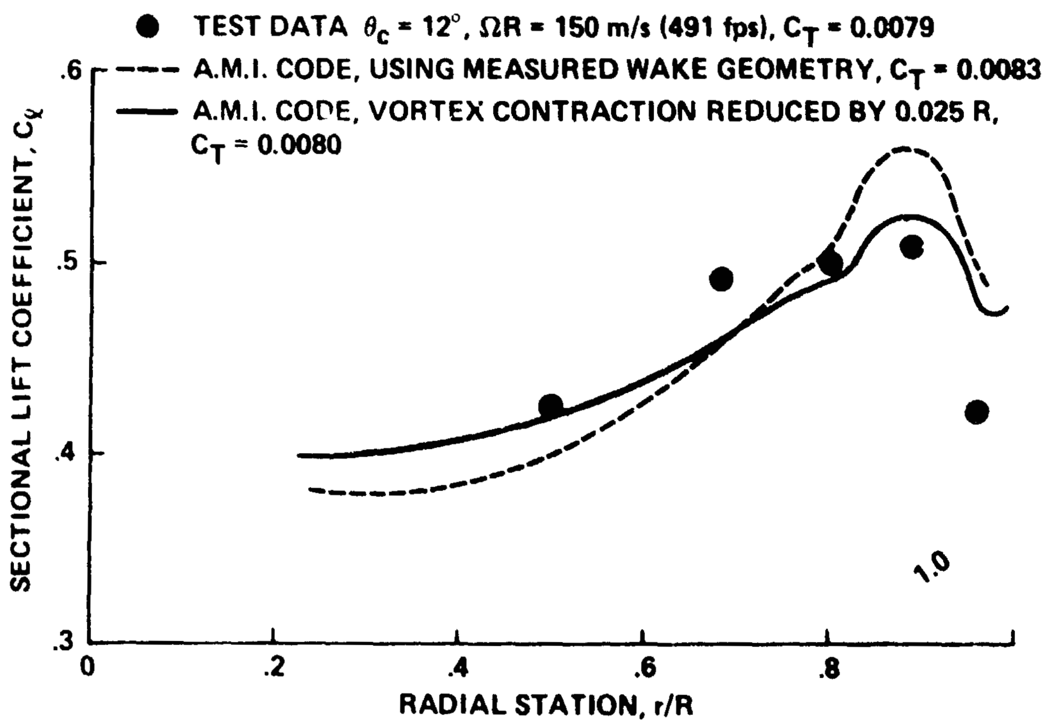


Figure 15.- Comparison of measured and computed loading.

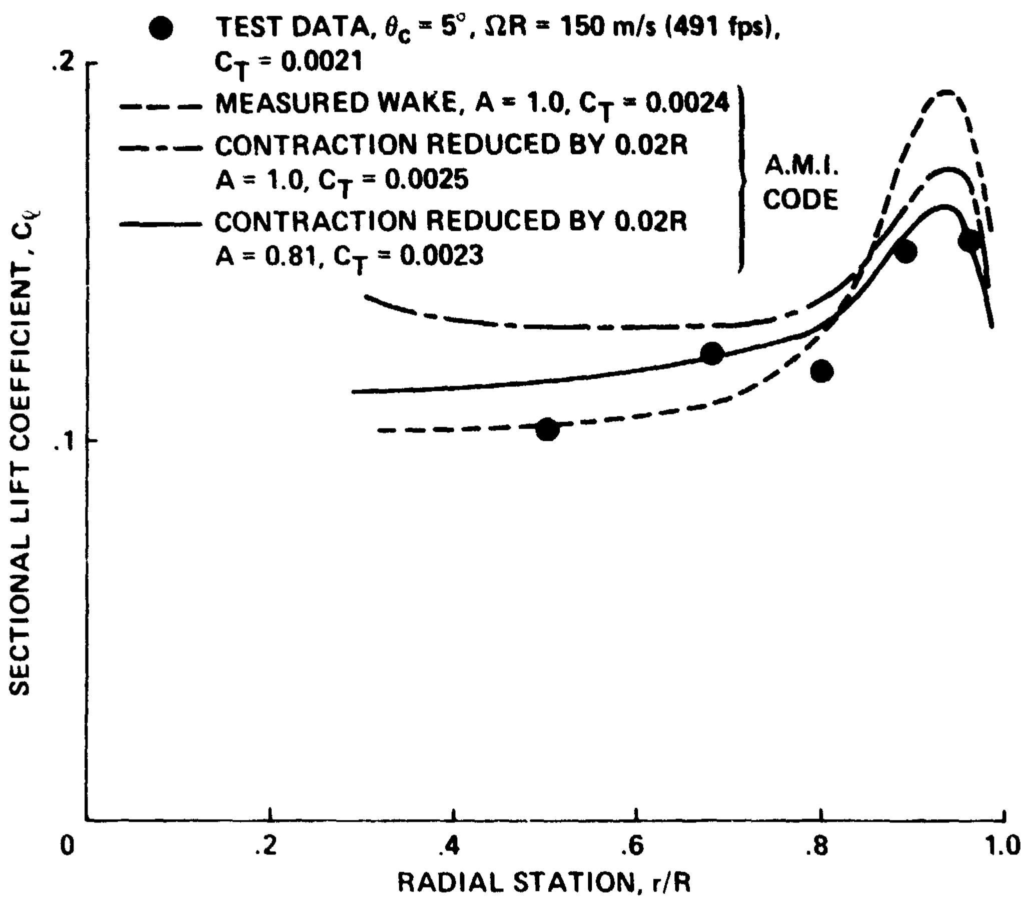


Figure 16.- Comparison of measured and computed loading.

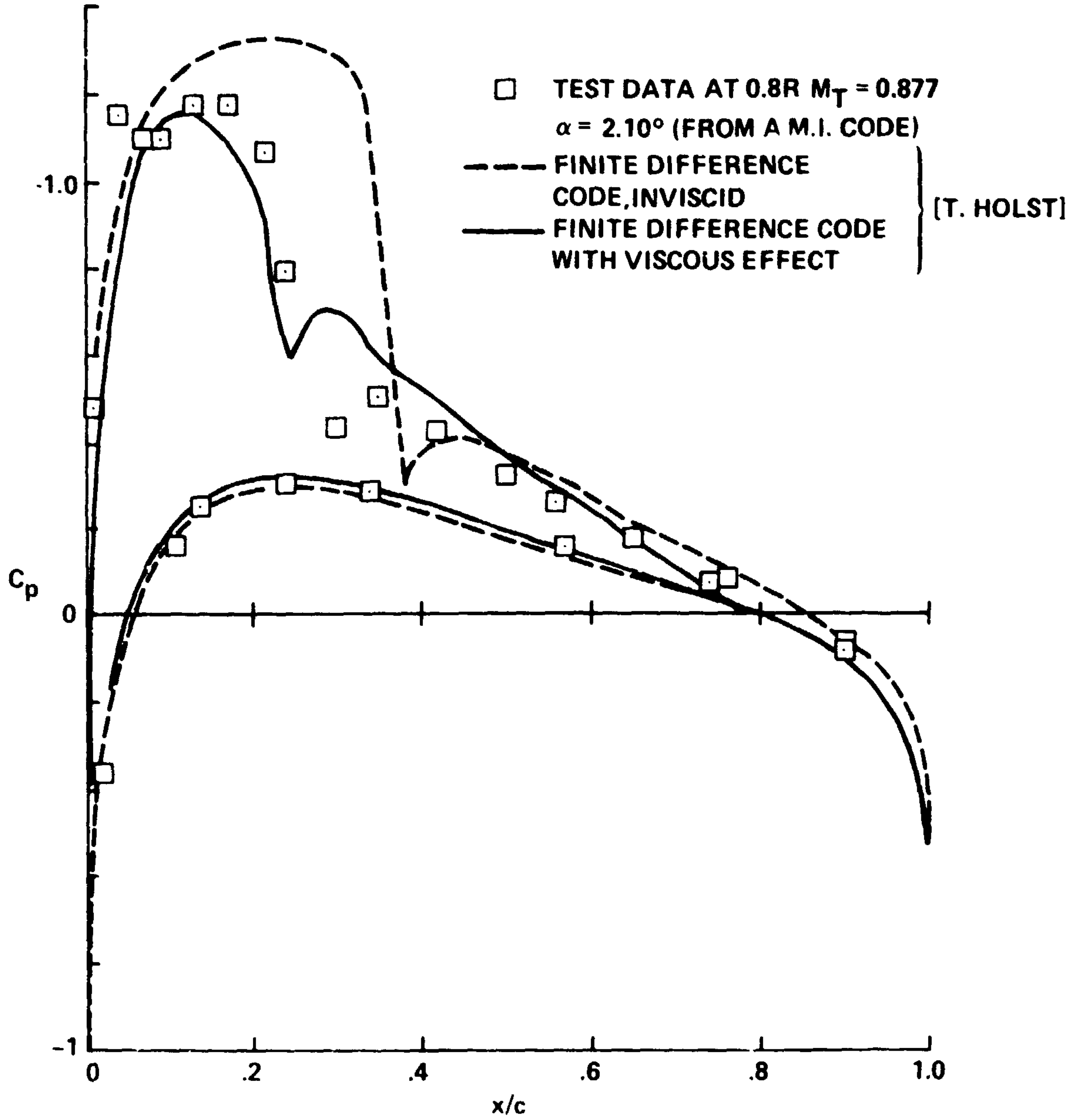


Figure 17.- Comparison of measured and computed chordwise pressure distribution.