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SUBSONIC WIND-TUNNEL TESTS ON A SERIES OF BOMBLETS WITH CANTED FINS [R]

by

D. L. I. Kirkpatrick

P. L. Appleton Jones

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SUBSONIC WIND-TUNNEL TESTS ON A SERIES OF BOMBLETS WITH CANTED FINS

by

D. L. I. Kirkpatrick
P. L. Appleton Jones

SUMMARY

This Report describes wind-tunnel tests to measure the aerodynamic characteristics of a series of 48 bomblets with planar, canted and curved cruciform rectangular fins. Analysis of the results shows how the force and moment characteristics of a bomblet are affected by its length, its nose shape and the size and cant angle of its fins.

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1 INTRODUCTION

One requirement of a cluster weapon is that, for certain targets, it should be capable of dispersing its bomblets in a pattern covering a large area of ground. One method of obtaining a suitable pattern is to eject the bomblets from their parent container, but with this method pattern sizes are limited by the ejection force available and the forces required for large patterns are difficult to achieve in practice.

This difficulty can be avoided by using bomblets which are self-dispersing because of their aerodynamic characteristics. Several such bomblets are considered in Ref.1 and a brief theoretical study of possible ground pattern sizes for the canted fin bomblet (see Fig.1a) has been presented in Ref.2. The aerodynamic characteristics of this bomblet configuration were defined in terms of the normal force, drag and rolling moment coefficients, obtained from the data in Refs.3 and 4, and it was found, ignoring the effects of lateral forces and initial disturbances, that satisfactory ground patterns could be obtained.

Having thus shown that bomblets with canted fins could yield satisfactory ground patterns, it was decided to measure the aerodynamic characteristics of some representative bomblet shapes in a low-speed wind-tunnel in order to provide data for a more detailed study of bomblet motions. This Report describes the wind-tunnel tests and presents an analysis of the experimental results.

2 EXPERIMENTAL EQUIPMENT AND PROCEDURE

2.1 Bomblets

Fig.2 shows the 2 bodies, 2 noses and 11 tails which combined to form the different configurations, 4 of which had no fins. Fig.3 shows some of these bomblet configurations mounted in the wind-tunnel.

Each of the two wooden cylindrical bodies was combined with the ogival nose, whose radius of curvature equalled the body diameter, or with the bluff nose to make the four bomblets listed below:

Overall length/diameter ratio	5	3	5	3
Nose shape	bluff	bluff	ogival	ogival

Each of the bomblets was tested with each of the tails shown in Fig.1b; it should be noted that curved fin configurations B and C include the same tail (shown in Fig.2) at different angles of roll. Each tail was made of a hollow metal cylinder which fitted over the rear of the body being tested and fins of

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metal plate 1.5 mm (0.06 in) thick which were welded to the cylinder in mutually perpendicular planes. All the fins had the same chord which was equal to $\frac{3}{4}$ of the body diameter.

The tails tested (Figs.1b and 2) consisted of:

(a) A set of 4 tails with straight cruciform fins of gross span 2.5 (body diameter). One pair of opposite fins was canted at 0, 2.5, 5 and 10 deg to the axial line.

(b) A set of 4 similar tails with fins whose gross span was 1.5 (body diameter).

(c) A set of 2 tails with uncanted, curved cruciform fins which yielded 3 fin configurations. Each of these fins had a radius of curvature equal to half the body diameter and a surface area equal to one of the fins in set (a). The span of one of the curved fin tails was 2.364 (body diameter) and the tips and roots of each pair of fins were coplanar.

(d) A tail with no fins. The results obtained with this tail were used as a datum when calculating the effect of fins on bomblet performance.

2.2 Force-measuring equipment

The design of the six-component strain-gauge balance used in this experiment was similar to those used in the 8 ft by 6 ft transonic wind-tunnel at R.A.E., Farnborough. In the design the strength and sensitivity of the balance were determined by the expected magnitude of the aerodynamic forces and moments on the bomblet; these forces and moments were estimated using an empirical method presented by Brebner in Ref.5.

The balance was machined from a solid steel bar and 12 matched pairs of Constantan foil gauges were used to form the bridges to measure the three forces and three moments on the balance. Calibration showed that the relations between the balance readings and the applied forces and moments were linear over the expected range and that the first-order interactions were small.

The signals from the six strain-gauges bridges were measured by automatic self-balancing units[6] and the results were punched on to ICL computer cards.

2.3 Experimental procedure

Each of the 48 bomblet configurations was mounted on the support rig[7] in the 4 ft by 3 ft low-turbulence wind-tunnel at R.A.E., Farnborough. The aerodynamic forces and moments on the bomblet were measured at angles of pitch, θ, spaced at 5 degree intervals from -10 to +25 deg and also at 28 or 29 deg, and at angles of roll, ϕ, spaced at 22.5 deg intervals from 0 to 90 deg. The tests were made at a wind speed of 73 m/sec (240 ft/sec), this being the maximum speed which the wind-tunnel could attain with a bomblet mounted at a large angle of pitch. No attempt was made to influence the transition of the boundary layer on the bomblet since the Reynolds number of a bomblet in flight is expected to be of the same order as that in the wind-tunnel. In the wind-tunnel tests the Reynolds number based on body diameter was equal to 3.84×10^5.

Fig.3 shows that, in the tests using the shorter body, part of the strain-gauge balance protruded from the rear of the bomblet. Since the diameter of that part of the balance was only half that of the body and was always immersed in a region of stalled flow, it was considered that the effect of the balance on the bomblet characteristics and the effect of the wake flow on the balance measurements would be small, and certainly not large enough to justify the design and manufacture of a specially-short six-component balance for this bomblet configuration.

3 CALCULATION OF RESULTS

The measured results were processed by the DEUCE computer at R.A.E., Bedford which calculated the measured forces and moments using the balance calibration matrix and non-dimensionalised them with respect to qS and qSd respectively, where q is the free stream dynamic pressure, d is the diameter of the bomblet and $S = \pi d^2/4$ is its cross-sectional area. The computer programme[8] yielded the corrected angles of pitch and roll, the force and moment coefficients C_X, C_Y, C_Z, C_ℓ, C_m and C_n in and about rotating body axes (see Fig.4), the lift and drag coefficients C_L and C_D which act in the XZ plane normal to and along the free stream direction and the angles of incidence and sideslip as defined by Kettle[8]. The corrections which should be applied to the force and moment coefficients to allow for the effect of the presence of the wind-tunnel walls were calculated using conventional methods[9] and were found to be negligibly small. The nominal values of the support rig pitch and roll angles, θ and ϕ, set during the tests were corrected for the deflection

under load of the sting and balance; these corrections were calculated from the measured forces and moments and the balance deflection characteristics obtained during the calibration.

For convenience of analysis (see section 4.3.1) the computed results were then processed by the ICL 1907 computer at R.A.E., Farnborough which calculated the values of the aerodynamic forces and moments in and about non-rotating body axes, i.e. the values of C_X , $\bar{C}_Y$, $\bar{C}_Z$, C_ℓ , $\bar{C}_m$ and $\bar{C}_n$ (see Fig.4). These forces and moments are presented in the tables.

When the results had been calculated it became apparent that, because of the relative size of the yawing and rolling moments, there was appreciable interaction between these two components. When the yawing moment was large, the value of the rolling moment was obtained as the small difference between two large numbers. Consequently only those values of rolling moment which were calculated when the yawing moment was negligible, i.e. when θ or ϕ equals zero, should be accepted as reliable.

During the experiment it was observed that when bomblets with large fins were set at large angles of pitch, $\theta > 15$ deg, and at moderate angles of roll, 22.5 deg $\leqslant \phi \leqslant$ 67.5 deg , the strain-gauge balance readings fluctuated considerably, probably due to unsteady interactions between the fins and the vortices shed from the body. While the measured value of any component was generally taken at a reasonably mean of the fluctuating reading, the results obtained in such conditions must be accepted only with reservations.

In the cases when the zero drift of the strain-gauge balance readings was appreciable (see tables) it was assumed when calculating the results that the zero drift varied linearly with time.

4 DISCUSSION AND ANALYSIS

4.1 Preface

During the tests described above, the aerodynamic forces and moments on each of 48 bomblet configurations were measured with the bomblet set at 45 different combinations of the pitch angle θ and the roll angle ϕ , giving a total of over 13000 data points. We believe that the presentation of such a large mass of data would serve to confuse rather than enlighten the reader. Accordingly we have analysed the experimental data and present in this Report only the results of our analysis, together with a few of the measured force and moment characteristics to illustrate the discussion. All the experimental

results are presented in the tables for the benefit of those intending alternative analyses.

For ease of comparison, many of the figures in this Report include data relating to several different body/nose/tail combinations so the chosen system of symbols must be kept firmly in mind when studying the figures. In this system:

(a) The size and type of the fins is indicated by the colour of the symbols; black, red, green and blue symbols represent bomblets without fins, with small straight fins, with large straight fins and with curved fins respectively.

(b) The length of the bomblet is indicated by the size of the symbols; large and small symbols represent bomblets whose ℓ/d ratios are 5 and 3 respectively.

(c) The shape of the bomblet nose is indicated by the shape of the symbols; round and square symbols represent bomblets with ogival and bluff noses respectively.

(d) Bomblets with straight uncanted fins are represented by symbols containing a dot and those with curved uncanted fins in the A , B and C configurations (see Fig.1b) are represented by symbols containing a /, + and × respectively.

(e) Bomblets having one pair of opposite fins set at cant angles of 0, 2.5, 5 and 10 deg are represented by the symbols Θ , H , ∀ and X respectively.

For ease of reference, a table of symbols has been printed on a fold-out sheet at the back of this Report.

4.2 Bomblets without fins

The normal force and pitching moment characteristics of the four bomblets without fins were plotted in Fig.5. At low angles of pitch the normal force characteristics are virtually linear and are not significantly affected either by the overall length/diameter ratio of the bomblet or by the shape of its nose. At larger angles, however, the slopes of the normal force characteristics increase with pitch and this increase may be attributed to flow separations from the upper surface of each bomblet, possibly accompanied by the formation of vortices[10]. The magnitude of the normal force

increment induced by the flow separation appears to depend on the length and nose shape of the bomblet.

Fig.5 also shows the variation, with the angle of pitch, of the position of the point of action of the normal force on each of these four bomblets. At low angles of pitch the bluff-nosed bomblets are more stable than those with ogival noses but the difference decreases with increasing pitch.

The values of $\partial C_z/\partial\theta$ and X_{cp}/ℓ calculated at $\theta = 5$ deg were plotted in Fig.6 and compared with the results of earlier tests[11,12] and with the empirical performance curves presented by Hills[3]. The present results are in close agreement with those obtained previously. When using these results to estimate the performance of other bomblets, it must be remembered that the position of the centre of pressure of a short bluff-nosed bomblet is significantly affected[11] by the value of the nose corner radius/body diameter ratio. This ratio was approximately equal to 0.005 for the bluff nose used in this experiment.

The axial force coefficients of the bomblets without fins were plotted against the angle of pitch in Fig.11; at $\theta = 0$ the values of C_X are very close to those predicted empirically by Hoerner[13]. At zero pitch the values of C_X for the long bomblets are slightly smaller, numerically, than those for the short bomblets whose fineness ratio (ℓ/d) is small. As the modulus of the pitch angle $|\theta|$ increases from zero the value of C_X becomes larger, as in other tests[11], by an amount which is slightly greater for bomblets with bluff noses than for those with ogival noses.

4.3 Bomblets with uncanted fins

4.3.1 Method of analysis

The characteristics of the finned bomblets may conveniently be considered in terms of the parameters (see Fig.4)

$$\bar{C}_Z = C_Z \cos\phi + C_Y \sin\phi \quad ,$$

and

$$\bar{C}_m = C_m \cos\phi - C_n \sin\phi \quad .$$

With the bomblet at a given pitch angle θ and a given roll angle ϕ, the incidences, α_1 and α_2, of the two pairs of fins in mutually perpendicular planes are given by the expressions

$$\alpha_1 = \tan^{-1}\left(\frac{U \sin\theta \cos\phi}{U \cos\theta}\right) \simeq \theta \cos\phi \quad ,$$

and

$$\alpha_2 = \tan^{-1}\left(\frac{U \sin\theta \sin\phi}{U \cos\theta}\right) \simeq \theta \sin\phi \quad .$$

The normal force coefficient C_N of each fin is a function of the incidence of that fin and therefore

$$\bar{C}_Z = [\bar{C}_z]_b - 2 \cos\phi \, C_N(\alpha_1) - 2 \sin\phi \, C_N(\alpha_2) \quad ,$$

where the subscript b denotes forces on a bomblet without fins. If the aerodynamic characteristics of each fin were linear and $\partial C_N/\partial\alpha$ was constant then the normal force on each fin would be

$$C_N(\alpha_1) = \frac{\partial C_N}{\partial\alpha} \theta \cos\phi$$

and

$$C_N(\alpha_2) = \frac{\partial C_N}{\partial\alpha} \theta \cos\phi \quad ;$$

so the force $\bar{C}_Z$ on a finned bomblet would be

$$\bar{C}_Z = [\bar{C}_Z]_b - 2[\cos^2\phi + \sin^2\phi] \, \theta \frac{\partial C_N}{\partial\alpha}$$

and $\bar{C}_Z$, and similarly $\bar{C}_m$, would be independent of ϕ. To investigate the dependence of $\bar{C}_Z = C_Z \cos\phi + C_Y \sin\phi$ on ϕ, the values of $\bar{C}_Z$ were calculated from the experimental values of C_Z and C_Y which were measured over a range of values of θ and ϕ for all the bomblet configurations tested; some typical sets of results were plotted in Fig.7

Before studying these results, it is useful to discuss briefly the aerodynamic characteristics which may be expected of rectangular low-aspect-ratio fins. The normal force characteristic of such a fin at low incidence should be almost linear but a normal force component, which increases non-linearly with incidence, will probably be induced by the tip vortex resulting from flow separation at the outer edge of the fin. At a moderate incidence, generally about 10 deg, the fin should stall due to flow separation at the leading edge but if the fin aspect ratio is small the stall may be inhibited by the presence of the tip vortex.

The experimental results in Fig.7 show that the value of $\bar{C}_Z$ for the bomblet with small fins increases smoothly with the angle of pitch, suggesting that the small fins do not stall within the range of pitch of this experiment. However the larger fins, either straight or curved, appear to stall when their incidence is about 10 deg and, since the angle of pitch θ at which the fin incidence exceeds 10 deg is dependent on roll angle, the value of $\bar{C}_Z$ when $\theta > 10$ deg is appreciably affected by variation of the roll angle ϕ. When the fins are not stalled, i.e. when $\theta < 10$ deg for large fins and $\theta < 25$ deg for small fins, the value of $\bar{C}_Z$ is virtually independent of ϕ because the non-linearity of the fin normal force characteristic and the variation with ϕ of the fin/body interference are small.

To simplify the subsequent analysis of the performance of different fins, it was assumed that $\bar{C}_Z$ was independent of ϕ and equal to the value measured when $\phi = 0$ or $\pi/2$. The effects of ϕ on fin performance, i.e. on the value of $(\Delta\bar{C}_Z)_f = \bar{C}_Z - [C_Z]_b$, are significant only on large fins when they are stalled so, since the incidence of the bomblet fins in steady trimmed flight is unlikely to exceed the stalling incidence, it is reasonable to make the simplifying assumption that $\bar{C}_Z$ is independent of ϕ.

In the preceding paragraphs the parameters

$$\bar{C}_Y = -C_Z \sin\phi + C_Y \cos\phi$$

and

$$\bar{C}_n = C_m \sin\phi + C_n \cos\phi$$

have been ignored. This force and moment are the result of fin/fin and fin/body interference and the test results showed that they are generally very

small, only a few per cent of the corresponding values of $\bar{C}_Z$ and $\bar{C}_m$. Some typical values of $\bar{C}_Y$ were plotted in Fig.8 which shows that the magnitude of $\bar{C}_Y$ tends to increase with the size of the fins and the angle of pitch and is dependent on the angle of roll ϕ, being largest when $\phi = 22.5$ or 67.5 deg. Since $\bar{C}_Y$ is generally small and is appreciable only in cases, i.e. for long bodies at large angles of pitch, when the measured results are least reliable (see section 3) the parameters $\bar{C}_Y$ and $\bar{C}_n$ will be neglected in the analysis below.

4.3.2 Effect of fins on bomblet characteristics

The effect of fins of different size and shape on the $\bar{C}_Z$ characteristics of the various bomblets was obtained by calculating,

$$(\Delta\bar{C}_Z)_f = \bar{C}_Z - [\bar{C}_Z]_b$$

and plotting the value of $(\Delta\bar{C}_Z)_f$ against the angle of pitch θ. Fig.9 shows that the large fins stall at a pitch angle of about 10 deg but that the small fins do not appear to stall below a pitch angle of 25 deg, though it is possible that at least part of the fin stalls and the effects are obscured by the effects of the tip vortices. The values of the slope $\partial/\partial\theta\ (\Delta\bar{C}_Z)_f$ at small values of θ were calculated and tabulated below; the table shows that $\partial/\partial\theta\ (\Delta\bar{C}_Z)_f \simeq -1.5\ \{(b/d)^2 - 1\}$

Fin	$\frac{b}{d}$	$1.5\left\{\left(\frac{b}{d}\right)^2 - 1\right\}$	$\frac{\partial}{\partial\theta}(\Delta\bar{C}_Z)_f$
Small straight	1.5	1.9	-2.2
Large straight	2.5	7.9	-7.8
Large curved	2.36	6.9	-6.7

At angles of pitch greater than 10 deg the values of $(\Delta\bar{C}_Z)_f$ for the large fins on the bluff-nosed bomblet appear to be higher than the values for the same fins on the ogival-nosed bomblets. But when the flow round the fins was not stalled, the performance of both the large and small fins was independent of bomblet length and nose shape.

The position $(X_{cp}/\ell)_f$ of the centre of pressure of the force $(\Delta\bar{C}_Z)_f$ due to the fins was calculated at various values of θ for each of the bomblet configurations tested. Some of the results were plotted in

Fig.10 which shows that for all the bomblets $(X_{cp}/\ell)_f$ lies quite close to the quarter-chord point of the fins and moves slowly rearward with increasing pitch. For the longer bomblets $(X_{cp}/\ell)_f$ appears to be slightly nearer the leading edge of the fin than $(X_{cp}/\ell)_f$ for the shorter bomblets at the same angle of pitch, but the position of the centre of pressure of the force $(\Delta\bar{C}_Z)_f$ appears to be virtually independent of fin size, fin curvature or bomblet nose shape.

The values of the axial force coefficient C_X were plotted in Fig.11, which shows that adding fins to a bomblet at zero pitch increases the modulus of the axial force on it, i.e. C_X becomes more negative, by an amount which is roughly proportional to the total fin area. As the angle of pitch of each bomblet increased from zero, the modulus of the axial force on it increased at a rate which was dependent on the size of the fins. Some exploratory measurements of the distribution of the static pressure p across the base of some of the bomblets indicated that the presence of the fins had an appreciable effect on the static pressure distribution, especially for bomblets with large fins at large angles of pitch. Thus the effect on the C_X characteristic of a bomblet of adding fins to it can be attributed primarily to the effect of the fins on the bomblet base pressure distribution.

The rolling moment coefficients measured at $\phi = 0$ for the bomblets with large or small straight fins were all very small (see tables). For the bomblets with curved fins however, the results plotted in Fig.12 show that when $\theta > 10$ deg there is an appreciable positive rolling moment on the bomblets fitted with fins A or C, and an equal and opposite rolling moment on those fitted with fin B. The size of the rolling moment, which occurs because the curved fins whose windward side is convex stall at rather lower incidence than those whose windward side is concave, appears not to be significantly affected by the length or nose shape of the bomblet. It should be remembered that the values of the rolling moment coefficient measured at zero roll, $\phi = 0$, are not generally representative of the rolling moment at other angles of roll. Further tests to investigate the effect of roll angle on rolling moment have been made and the results will be presented in a later report.

4.4 Bomblets with canted fins

4.4.1 Method of analysis

The effect of the canted fins on the aerodynamic characteristics of a bomblet must be analysed in a manner different from that outlined in

section 4.3.1 because the cant angle of a pair of fins has an appreciable effect only on the C_Z , C_m and C_X characteristics. It is therefore convenient in this section to ignore the parameters $\bar{C}_Z$, $\bar{C}_m$ etc. and to consider the effects of the fin cant angle δ in terms of the increments

$$(\Delta C_Z)_\delta = C_Z - (C_Z)_{\delta=0} ,$$

$$(\Delta C_m)_\delta = C_m - (C_m)_{\delta=0}$$

and

$$(\Delta C_X)_\delta = C_x - (C_X)_{\delta=0}$$

since these increments are independent of roll angle when the fin aerodynamic characteristics are linear. For design purposes, the forces on a bomblet with canted fins can be calculated from the expressions

$$C_Z = \{[\bar{C}_Z]_b + (\Delta\bar{C}_Z)_f\} \cos\phi + (\Delta C_Z)_\delta$$

$$C_Y = \{[\bar{C}_Z]_b + (\Delta\bar{C}_Z)_f\} \sin\phi$$

and

$$C_X = [C_X]_b + (\Delta C_X)_f + (\Delta C_X)_\delta .$$

4.4.2 Effect of fin cant on bomblet characteristics

The values of C_Z measured on each bomblet configuration with the fins set at different cant angles were plotted against θ for various values of ϕ , and it was found that $(\Delta C_Z)_\delta$ was virtually independent of θ and ϕ , as shown by the typical sets of results plotted in Figs.13 and 14, provided that the flow round the fins was not stalled. The values of $(\Delta C_Z)_\delta$ at $\theta = 0$ for all the bomblet configurations were plotted in Fig.15 which shows that $(\Delta C_Z)_\delta$ is directly proportional to the cant angle δ and that $\partial/\partial\delta\ (\Delta C_Z)_\delta$ for the large fins is considerably greater than for the small fins. Figs.13 and 14 show that at $\phi = 0$ the force increment due to the canted fins was equal to zero, i.e. $C_Z = [C_Z]_b$ when the bomblet was set at an angle of pitch θ_o which is smaller than the fin cant angle δ ; the difference

between δ and θ_o is caused by fin/body interference. Fig.14 shows no evidence of the small canted fins stalling within the range of pitch of this experiment but Fig.13 suggests that when the magnitude of the angle $(\theta \cos \phi - \theta_o)$ is greater than the stalling angle of the large fins (approximately 10 deg) the canted fins are stalled.

Although the effects of fin cant on the measured normal force and pitching moment characteristics were small, especially for the smaller fins, it was possible to calculate the position of the centre of pressure of the increment $(\Delta C_Z)_\delta$ with useful accuracy. For the short body $(X_{cp}/\ell)_\delta$ was found to equal 0.8 for all bomblet configurations and cant angles; for the long body the calculated values were more scattered and $0.77 < (X_{cp}/\ell)_\delta < 0.9$. These positions are not very different from the corresponding position of $(X_{cp}/\ell)_f$ (see Fig.10).

It was expected that the effect $(\Delta C_X)_\delta$ of fin cant on the axial force coefficient when the canted fins were not stalled would be directly proportional to the product of the normal force on the canted fins and the sine of the cant angle, i.e. $(\Delta C_X)_\delta$ would be porportional to $\delta(\theta \cos \phi - \theta_o)$, and that when the canted fins were stalled $(\Delta C_X)_\delta$ would be constant. The values plotted in Fig.16 show that the variations of C_X with cant angle, pitch and roll are similar to the expected variations.

The rolling moment coefficients measured at $\phi = 0$ were not affected by changing the cant angle of the large or the small straight fins, as was expected because of their symmetry.

5 CONCLUDING REMARKS

Analysis of the experimental results presented in this Report has shown how the aerodynamic force and moment characteristics of the bomblets tested were affected by their length, their nose shape and the size and shape of their fins. The force and moment increments due to the bomblet fins were found to be primarily dependent on the size and shape of the fins themselves and were not significantly affected by the length of the bomblet or the shape of its nose. But, because the aerodynamic characteristics of a bomblet without fins were dependent on the length and nose shape of the bomblet, the stability of finned bomblets and the trimmed lift of bomblets with canted fins were appreciably affected by bomblet length and nose shape.

To supplement the results in this Report, further tests to investigate in detail the aerodynamic rolling moment characteristics of finned bomblets have been made and will be presented in a later report.

Tables

The force and moment coefficients tabulated below are in and about non-rotating body axes, as defined in section 3; the pitching and yawing moments are about axes which pass through the point $X/\ell = 0.50$ on the bomblet axis.

Because of the limited versatility of the teleprinter output from the ICL 1907 computer,

$\bar{C}_Y$ is printed as C_Y

$\bar{C}_Z$ is printed as C_Z

C_ℓ is printed as C_L

$\bar{C}_m$ is printed as C_M

$\bar{C}_n$ is printed as C_N

in all the tables below.

Wind tunnel tests on canted fin bomblets - R.A.E. 3ft×4ft tunnel results (Run.2)

RUN NUMBER=2 LONG BODY, ROUND NOSE, LARGE TAIL
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	C2	CM	COEFFICIENTS CX	CY	CN	CL
NR	266	-10.09	0.00	1.65	1.938	-0.272	0.043	-0.112	0.008
NR	267	-10.09	21.49	1.61	1.899	-0.252	-0.025	0.087	0.002
NR	268	-10.11	45.00	1.60	1.853	-0.223	0.034	-0.010	0.017
NR	269	-10.13	67.50	1.61	1.824	-0.238	0.116	-0.151	0.030
NR	270	-10.15	90.09	1.62	1.890	-0.250	0.097	-0.069	0.015
NR	275	-5.04	-0.01	0.79	0.804	-0.237	0.015	-0.037	-0.014
NR	274	-5.05	22.69	0.75	0.819	-0.231	-0.022	0.054	-0.002
NR	273	-5.06	44.09	0.70	0.740	-0.231	0.007	0.034	0.008
NR	272	-5.08	67.69	0.70	0.732	-0.231	0.054	-0.019	0.015
NR	271	-5.10	90.08	0.73	0.755	-0.236	0.049	0.012	0.007
NR	276	0.00	-0.01	-0.05	-0.049	-0.246	0.020	-0.024	-0.021
NR	277	0.00	21.49	-0.04	-0.043	-0.243	0.008	-0.008	-0.008
NR	278	-0.01	44.09	-0.08	-0.039	-0.239	-0.005	0.032	0.002
NR	279	-0.03	67.49	-0.09	-0.071	-0.243	0.015	0.046	0.011
NR	280	-0.05	89.99	-0.09	-0.080	-0.248	0.020	0.064	0.012
NR	285	5.05	-0.02	-0.90	-1.010	-0.244	-0.002	0.040	-0.031
NR	284	5.04	22.48	-0.88	-0.940	-0.243	0.022	-0.020	-0.019
NR	283	5.03	44.08	-0.85	-0.883	-0.242	-0.006	0.058	-0.011
NR	282	5.02	66.48	-0.90	-0.977	-0.243	-0.056	0.182	0.004
NR	281	5.01	89.99	-0.96	-1.104	-0.250	-0.010	0.121	0.010
NR	286	10.08	-0.03	-1.68	-1.977	-0.268	0.009	0.055	-0.057
NR	287	10.09	22.46	-1.68	-1.933	-0.257	0.042	-0.072	-0.050
NR	288	10.08	46.97	-1.71	-1.931	-0.244	-0.038	0.116	-0.020
NR	289	10.07	67.49	-1.71	-1.958	-0.272	-0.103	0.309	0.009
NR	290	10.05	89.99	-1.75	-2.073	-0.297	-0.060	0.200	0.010
NR	295	15.12	-1.03	-2.07	-2.100	-0.309	-0.023	0.100	-0.046
NR	294	15.12	22.46	-2.11	-2.147	-0.287	-0.072	0.122	-0.059
NR	2R3	15.13	43.R4	-2.46	-2.829	-0.240	-0.075	0.173	-0.068
NR	292	15.10	67.50	-2.18	-2.232	-0.284	-0.014	0.141	0.029
NR	291	15.08	89.99	-2.14	-2.179	-0.323	-0.070	0.205	0.021
NR	296	20.15	-1.03	-2.51	-2.241	-0.318	-0.030	0.104	-0.055
NR	297	20.14	22.46	-2.43	-2.156	-0.318	-0.124	0.239	-0.090
NR	298	20.14	43.85	-2.97	-3.270	-0.258	-0.191	0.380	-0.215
NR	299	20.13	67.56	-2.46	-2.167	-0.342	-0.109	0.304	0.127
NR	300	20.12	89.99	-2.56	-2.324	-0.332	-0.100	0.218	0.013
NR	304	25.18	-1.04	-2.92	-2.244	-0.407	-0.023	0.088	-0.060
NR	303	25.17	22.51	-2.78	-2.095	-0.406	-0.517	0.998	0.023
NR	302	25.15	67.44	-2.82	-2.229	-0.390	0.564	-0.683	-0.076
NR	301	25.15	89.99	-2.93	-2.500	-0.433	-0.111	0.228	0.010
NR	305	29.21	-1.05	-3.46	-2.674	-0.404	-0.014	0.102	-0.078
NR	306	29.19	22.53	-3.12	-2.279	-0.375	-0.583	1.146	0.056
NR	307	29.18	67.40	-3.17	-2.472	-0.375	0.499	-0.973	-0.152
NR	308	29.17	89.99	-3.16	-2.340	-0.421	-0.151	0.285	0.011
NR	309	-0.05	89.99	-0.08	-0.129	-0.243	0.010	0.111	0.021

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT×4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	C2	CM	COEFFICIENTS CX	CY	CN	CL
NR	265	0.00	-0.01	-0.05	-0.049	-0.241	0.013	-0.024	-0.016
NR	310	0.00	-1.01	-0.04	0.006	-0.241	0.027	-0.003	-0.012

T.R.69267

(Run.3)

RUN NUMBER=3 LONG BODY, ROUND NOSE, LARGE TAIL
CANT ANGLE= 2.5 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	314	-10.09	0.02	1.78	2.251	-0.336	0.092	-0.134	0.034
NR	315	-10.10	22.51	1.77	2.234	-0.316	-0.036	0.166	0.022
NR	316	-10.11	45.00	1.78	2.169	-0.277	-0.063	0.228	0.027
NR	317	-10.13	67.51	1.70	2.035	-0.273	-0.036	0.195	0.040
NR	318	-10.15	90.00	1.65	1.945	-0.288	-0.070	0.250	0.034
NR	324	-5.05	0.00	1.02	1.331	-0.281	0.062	-0.095	-0.003
NR	323	-5.05	22.50	0.97	1.256	-0.276	-0.058	0.172	0.010
NR	322	-5.07	45.00	0.90	1.057	-0.265	-0.107	0.305	0.017
NR	321	-5.08	67.50	0.82	0.948	-0.261	-0.092	0.273	0.030
NR	320	-5.10	90.00	0.79	0.866	-0.236	-0.100	0.388	0.028
NR	325	0.00	0.00	0.11	0.242	-0.261	0.047	-0.078	-0.003
NR	326	-0.01	22.50	0.09	0.227	-0.254	-0.021	0.098	0.012
NR	327	-0.02	45.00	0.07	0.168	-0.265	-0.091	0.205	0.022
NR	328	-0.03	67.50	0.01	0.073	-0.265	-0.127	0.293	0.028
NR	329	-0.05	90.00	-0.05	-0.052	-0.263	-0.140	0.340	0.032
NR	334	5.04	-0.01	-0.69	-0.618	-0.233	0.033	-0.040	-0.021
NR	333	5.04	22.49	-0.69	-0.591	-0.233	-0.031	0.073	-0.007
NR	332	5.03	44.99	-0.72	-0.634	-0.242	-0.116	0.265	0.012
NR	331	5.02	67.50	-0.83	-0.849	-0.255	-0.183	0.427	0.029
NR	330	5.00	90.00	-0.93	-1.066	-0.270	-0.170	0.605	0.032
NR	339	10.09	-0.01	-1.57	-1.664	-0.234	-0.002	0.034	-0.022
NR	340	10.08	22.48	-1.57	-1.634	-0.222	-0.025	0.064	-0.016
NR	341	10.08	44.98	-1.59	-1.628	-0.215	-0.145	0.365	-0.012
NR	342	10.07	67.49	-1.65	-1.826	-0.263	-0.251	0.613	0.020
NR	343	10.05	89.99	-1.71	-2.011	-0.297	-0.200	0.475	0.010
NR	348	15.12	-0.01	-2.08	-2.095	-0.260	-0.028	0.097	-0.010
NR	347	15.12	22.49	-2.11	-2.135	-0.228	-0.106	0.196	-0.002
NR	346	15.12	44.96	-2.38	-2.639	-0.190	-0.178	0.625	-0.057
NR	345	15.10	67.47	-2.11	-2.117	-0.230	-0.138	0.385	-0.018
NR	344	15.08	89.98	-2.11	-2.150	-0.319	-0.201	0.462	-0.006
NR	349	20.15	-0.02	-2.49	-2.195	-0.268	-0.038	0.100	-0.030
NR	350	20.14	22.48	-2.50	-2.220	-0.236	-0.203	0.380	-0.028
NR	351	20.16	44.86	-2.91	-3.174	-0.179	-0.120	0.296	-0.207
NR	352	20.13	67.50	-2.50	-2.237	-0.278	-0.128	0.287	0.035
NR	353	20.12	89.98	-2.57	-2.320	-0.333	-0.241	0.303	0.005
NR	358	25.18	-0.01	-2.92	-2.305	-0.335	-0.108	0.216	-0.023
NR	357	25.17	22.51	-2.72	-2.004	-0.340	-0.493	0.902	0.035
NR	356	25.18	44.70	-3.34	-3.686	-0.168	0.052	-0.162	-0.469
NR	355	25.16	66.43	-2.84	-2.247	-0.341	0.233	-0.444	-0.082
NR	354	25.15	89.97	-2.97	-2.357	-0.414	-0.162	0.317	-0.024
NR	359	29.21	-0.04	-3.43	-2.697	-0.345	-0.041	0.085	-0.059
NR	360	29.19	22.54	-3.11	-2.243	-0.336	-0.629	1.163	0.080
NR	361	29.22	45.22	-3.81	-3.606	-0.101	-0.537	1.075	0.378
NR	362	29.18	67.39	-3.19	-2.476	-0.319	0.396	-0.815	-0.150

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS = R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	363	29.19	89.96	-3.52	-2.820	-0.420	-0.162	0.276	-0.034
NR	313	0.00	0.00	0.10	0.234	-0.256	0.040	-0.053	-0.003
NR	335	0.00	0.00	0.11	0.235	-0.260	0.040	-0.083	-0.004
NR	338	0.00	0.00	0.10	0.249	-0.256	0.046	-0.062	-0.005
NR	364	0.00	0.00	0.11	0.234	-0.256	0.041	-0.085	-0.007

T.R.69267

(Run.4)

RUN NUMBER=4 LONG BODY, ROUND NOSE, LARGE TAIL
CANT ANGLE= 5.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	368	-10.09	0.03	1.84	2.409	-0.414	0.053	-0.087	0.047
NR	369	-10.10	22.51	1.82	2.362	-0.404	-0.127	0.358	0.021
NR	370	-10.12	45.01	1.88	2.473	-0.370	-0.252	0.671	0.045
NR	370	-10.11	45.01	1.89	2.970	-0.570	-0.259	1.152	0.045
NR	371	-10.13	67.52	1.77	2.180	-0.532	-0.329	0.776	0.056
NR	372	-10.15	90.01	1.61	1.847	-0.317	-0.310	0.763	0.049
NR	377	-5.06	0.02	1.30	1.913	-0.360	0.044	-0.079	0.027
NR	376	-5.06	22.52	1.23	1.805	-0.349	-0.176	0.426	0.044
NR	375	-5.07	45.01	1.09	1.492	-0.529	-0.325	0.761	0.044
NR	374	-5.09	67.51	0.92	1.118	-0.309	-0.377	0.870	0.041
NR	373	-5.10	90.00	0.76	0.801	-0.295	-0.370	0.845	0.038
NR	378	-0.02	0.01	0.38	0.756	-0.290	0.009	-0.012	0.013
NR	379	-0.02	22.51	0.32	0.684	-0.294	-0.157	0.333	0.030
NR	380	-0.02	45.01	0.22	0.502	-0.293	-0.289	0.608	0.043
NR	381	-0.04	67.51	0.07	0.215	-0.297	-0.370	0.806	0.052
NR	382	-0.05	90.01	-0.09	-0.117	-0.297	-0.400	0.884	0.054
NR	387	5.03	0.01	-0.44	-0.082	-0.245	0.001	0.033	0.009
NR	386	5.03	22.51	-0.47	-0.145	-0.243	-0.150	0.357	0.027
NR	385	5.02	45.01	-0.59	-0.357	-0.256	-0.306	0.670	0.042
NR	384	4.97	67.52	-0.20	-0.697	-0.279	-0.158	0.865	0.067
NR	383	5.01	90.02	-0.95	-1.115	-0.299	-0.420	0.925	0.060
NR	392	10.08	0.00	-1.31	-1.121	-0.195	-0.020	0.050	0.002
NR	393	10.07	22.50	-1.31	-1.100	-0.193	-0.158	0.318	0.018
NR	394	10.07	45.01	-1.40	-1.288	-0.235	-0.411	0.865	0.032
NR	395	10.06	67.52	-1.57	-1.694	-0.292	-0.500	1.061	0.057
NR	396	10.05	90.01	-1.72	-2.012	-0.336	-0.460	0.964	0.050
NR	401	15.11	-1.03	-1.99	-1.928	-0.196	-0.015	0.070	-0.045
NR	400	15.11	22.46	-2.06	-2.003	-0.164	-0.135	0.267	-0.051
NR	399	15.12	45.00	-2.20	-2.234	-0.185	-0.420	0.896	0.018
NR	398	15.10	67.50	-2.06	-1.977	-0.284	-0.429	0.916	0.037
NR	397	15.08	90.00	-2.11	-2.110	-0.363	-0.450	0.913	0.032
NR	402	20.14	-1.02	-2.43	-2.108	-0.195	-0.033	0.100	-0.039
NR	403	20.14	22.47	-2.48	-2.196	-0.167	-0.273	0.496	-0.041
NR	404	20.15	45.02	-2.79	-2.783	-0.115	-0.270	0.614	0.050
NR	405	20.13	67.52	-2.48	-2.172	-0.253	-0.379	0.790	0.058
NR	406	20.11	89.97	-2.41	-2.008	-0.447	-0.321	0.607	-0.010
NR	407	20.11	89.98	-2.41	-2.009	-0.451	-0.331	0.607	-0.009
NR	412	25.18	-1.03	-2.91	-2.288	-0.231	-0.061	0.123	-0.043
NR	411	25.17	22.47	-2.77	-2.124	-0.218	-0.363	0.628	-0.043
NR	410	25.19	45.09	-3.37	-3.321	-0.047	-0.229	0.490	0.161
NR	409	25.15	67.48	-2.76	-2.086	-0.311	-0.096	0.259	-0.009
NR	408	25.14	90.00	-2.74	-2.006	-0.464	-0.300	0.583	0.027
NR	413	29.21	-1.04	-3.37	-2.542	-0.262	-0.010	0.049	-0.071
NR	414	29.19	22.54	-3.10	-2.207	-0.267	-0.740	1.397	0.084

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	415	29.21	44.94	-3.72	-3.621	0.028	-0.029	0.046	-0.071
NR	416	29.21	44.96	-3.72	-3.610	0.033	-0.048	0.056	-0.051
NR	417	29.18	67.45	-3.10	-2.284	-0.294	0.089	-0.154	-0.059
NR	418	29.16	90.01	-3.11	-2.263	-0.451	-0.219	0.433	0.044
NR	367	-0.01	0.01	0.35	0.731	-0.295	0.009	-0.012	0.013
NR	388	-0.02	0.01	0.37	0.763	-0.290	0.015	-0.005	0.019
NR	391	-0.02	0.01	0.38	0.763	-0.295	0.010	-0.020	0.018
NR	419	-0.02	0.01	0.38	0.763	-0.295	0.009	-0.013	0.018

(Run.5)

RUN NUMBER=5 LONG BODY, ROUND NOSE, LARGE TAIL
CANT ANGLE=10.0 CG POSITION 30.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	423	-10.09	0.02	1.82	2.330	-0.332	0.068	-0.134	0.032
NR	424	-10.10	22.31	1.81	2.340	-0.317	-0.144	0.330	0.031
NR	425	-10.12	44.99	1.91	2.313	-0.313	-0.372	0.837	0.009
NR	426	-10.14	67.31	1.97	2.390	-0.494	-0.744	1.618	0.044
NR	427	-10.15	89.98	1.62	1.880	-0.430	-0.819	1.731	0.008
NR	432	-5.08	0.01	1.63	2.627	-0.332	0.062	-0.140	0.018
NR	431	-5.08	22.31	1.37	2.323	-0.322	-0.301	0.638	0.028
NR	430	-5.09	45.00	1.40	2.141	-0.306	-0.613	1.322	0.032
NR	429	-5.09	67.49	1.11	1.330	-0.467	-0.808	1.720	0.019
NR	428	-5.10	89.98	0.76	0.810	-0.423	-0.890	1.853	0.005
NR	443	-0.04	0.00	0.89	1.740	-0.423	0.029	-0.069	-0.004
NR	448	-0.04	0.00	0.89	1.731	-0.423	0.042	-0.083	-0.002
NR	433	-0.04	0.00	0.89	1.748	-0.483	0.035	-0.069	-0.007
NR	434	-0.04	22.30	0.81	1.626	-0.422	-0.344	0.634	0.009
NR	435	-0.04	44.80	0.61	1.260	-0.421	-0.636	1.232	0.021
NR	436	-0.05	67.50	0.30	0.651	-0.430	-0.830	1.709	0.032
NR	437	-0.05	90.00	-0.06	-0.052	-0.435	-0.920	1.276	0.033
NR	442	5.01	0.00	-0.02	0.639	-0.314	0.026	-0.052	-0.006
NR	441	5.01	22.30	-0.08	0.580	-0.317	-0.294	0.363	0.018
NR	440	5.01	45.01	-0.25	0.260	-0.340	-0.590	1.154	0.037
NR	439	5.01	67.31	-0.56	-0.303	-0.378	-0.827	1.650	0.031
NR	438	5.00	90.02	-0.91	-0.995	-0.427	-0.920	1.899	0.060
NR	449	10.05	-0.01	-0.81	-0.169	-0.213	0.019	-0.023	-0.013
NR	450	10.03	22.30	-0.83	-0.238	-0.233	-0.313	0.607	0.010
NR	431	10.06	45.01	-1.08	-0.699	-0.284	-0.687	1.367	0.037
NR	432	10.06	67.31	-1.39	-1.343	-0.361	-0.867	1.727	0.054
NR	433	10.05	90.00	-1.65	-1.873	-0.430	-0.920	1.836	0.039
NR	459	15.10	-0.03	-1.73	-1.348	-0.118	-0.004	0.030	-0.042
NR	438	15.10	22.48	-1.73	-1.308	-0.103	-0.294	0.385	-0.013
NR	457	15.10	45.00	-1.88	-1.593	-0.200	-0.763	1.372	0.019
NR	436	15.09	67.49	-1.86	-1.654	-0.333	-0.759	1.316	0.008
NR	455	15.07	89.94	-1.88	-1.698	-0.322	-0.742	1.457	-0.066
NR	454	15.07	89.94	-1.88	-1.698	-0.322	-0.732	1.463	-0.064
NR	460	20.14	-0.02	-2.32	-1.873	-0.102	-0.017	0.070	-0.036
NR	461	20.14	22.44	-2.43	-2.099	-0.040	-0.251	0.463	-0.089
NR	462	20.14	44.97	-2.52	-2.256	-0.095	-0.602	1.263	-0.026
NR	463	20.14	44.96	-2.53	-2.289	-0.091	-0.590	1.231	-0.047
NR	464	20.12	67.51	-2.33	-1.882	-0.283	-0.726	1.439	0.054
NR	465	20.10	89.97	-2.25	-1.719	-0.375	-0.611	1.191	-0.013
NR	471	25.17	-0.03	-2.84	-2.154	-0.073	-0.074	0.157	-0.043
NR	470	25.17	22.36	-2.80	-2.173	-0.055	-0.484	0.878	-0.048
NR	469	25.18	45.06	-3.03	-2.646	0.011	-0.584	1.196	0.121
NR	468	25.18	45.06	-3.05	-2.632	0.011	-0.573	1.200	0.120
NR	467	25.11	67.49	-2.11	-1.933	-0.283	-0.224	0.922	0.003
NR	466	25.13	90.01	-2.65	-1.874	-0.543	-0.570	1.108	0.043

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS = R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	478	28.96	0.00	1.04	1.734	0.102	0.029	-0.076	-0.007
NR	472	29.21	-0.05	-3.32	-2.469	-0.080	-0.034	0.081	-0.074
NR	473	29.20	22.48	-3.21	-2.476	-0.017	-0.540	1.010	-0.016
NR	474	29.21	44.98	-3.56	-3.149	0.112	-0.351	0.686	-0.019
NR	475	29.21	44.98	-3.57	-3.188	0.112	-0.372	0.716	-0.009
NR	476	29.18	67.44	-3.04	-2.151	-0.289	-0.168	0.339	-0.068
NR	477	29.16	90.01	-3.12	-2.265	-0.519	-0.439	0.890	0.054
NR	422	-0.04	0.00	0.88	1.732	-0.418	0.023	-0.068	-0.007
NR	479	-0.04	0.00	0.89	1.724	-0.483	0.029	-0.076	-0.007

T.R.69267

(Run.19)

RUN NUMBER=19 LONG BODY, SQUARE NOSE, LARGE TAIL
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1408	-10.09	0.01	1.72	2.225	-0.952	0.079	-0.094	0.011
NR	1409	-10.09	0.01	1.73	2.223	-0.952	0.080	-0.102	0.011
NR	1410	-10.09	22.49	1.67	2.090	-0.932	-0.027	0.168	0.003
NR	1411	-10.09	22.49	1.67	2.087	-0.932	-0.027	0.176	0.004
NR	1412	-10.11	44.99	1.58	1.886	-0.908	0.056	0.024	0.019
NR	1413	-10.11	45.00	1.58	1.886	-0.908	0.055	0.047	0.023
NR	1414	-10.13	67.50	1.64	1.980	-0.919	0.181	-0.190	0.045
NR	1415	-10.13	67.50	1.63	1.983	-0.919	0.179	-0.183	0.045
NR	1416	-10.13	89.99	1.70	2.096	-0.939	0.120	-0.028	0.027
NR	1417	-10.13	89.99	1.69	2.096	-0.939	0.120	-0.055	0.024
NR	1425	-5.04	-0.01	0.80	1.060	-0.904	0.046	-0.043	-0.010
NR	1423	-5.04	22.49	0.77	1.020	-0.898	0.034	0.009	-0.003
NR	1424	-5.04	22.49	0.77	1.008	-0.898	0.033	0.021	-0.001
NR	1422	-5.06	44.99	0.75	0.948	-0.903	0.043	0.046	0.014
NR	1420	-5.08	67.30	0.75	0.924	-0.903	0.060	0.047	0.030
NR	1421	-5.08	67.49	0.76	0.929	-0.898	0.058	0.036	0.024
NR	1418	-5.10	89.99	0.75	0.919	-0.903	0.080	0.056	0.022
NR	1419	-5.10	89.99	0.75	0.919	-0.908	0.080	0.056	0.019
NR	1426	0.00	-0.01	-0.06	-0.050	-0.884	0.038	-0.025	-0.016
NR	1427	0.00	22.49	-0.08	-0.043	-0.882	0.020	0.034	0.005
NR	1428	-0.01	44.99	-0.09	-0.079	-0.881	0.019	0.079	0.018
NR	1429	-0.03	67.49	-0.11	-0.122	-0.881	0.029	0.116	0.027
NR	1430	-0.05	89.99	-0.11	-0.182	-0.886	0.040	0.116	0.024
NR	1439	5.05	-0.01	-0.92	-1.135	-0.908	0.022	0.052	-0.021
NR	1440	5.05	-0.02	-0.92	-1.143	-0.908	0.023	0.025	-0.027
NR	1437	5.04	22.38	-0.90	-1.109	-0.906	0.015	0.048	-0.021
NR	1438	5.04	22.38	-0.92	-1.120	-0.906	0.012	0.052	-0.019
NR	1435	5.03	44.98	-0.91	-1.081	-0.909	-0.000	0.124	0.003
NR	1436	5.03	44.98	-0.91	-1.083	-0.909	-0.005	0.135	0.000
NR	1433	5.02	67.49	-0.95	-1.184	-0.908	-0.014	0.185	0.028
NR	1434	5.02	67.49	-0.95	-1.182	-0.913	-0.014	0.192	0.028
NR	1431	5.00	89.99	-0.99	-1.285	-0.918	0.010	0.159	0.016
NR	1432	5.00	89.98	-0.99	-1.284	-0.918	0.010	0.174	0.014
NR	1441	10.09	-0.02	-1.80	-2.228	-0.933	-0.014	0.116	-0.038
NR	1442	10.09	-0.02	-1.79	-2.236	-0.933	-0.019	0.100	-0.037
NR	1443	10.09	22.46	-1.76	-2.135	-0.936	0.053	-0.067	-0.044
NR	1444	10.09	22.47	-1.77	-2.125	-0.931	0.048	-0.071	-0.034
NR	1445	10.08	44.98	-1.73	-1.981	-0.919	-0.034	0.149	-0.009
NR	1446	10.08	44.98	-1.73	-1.981	-0.919	-0.034	0.139	-0.010
NR	1447	10.07	67.49	-1.81	-2.181	-0.941	-0.124	0.413	0.025
NR	1448	10.07	67.50	-1.82	-2.171	-0.941	-0.126	0.399	0.028
NR	1449	10.05	89.99	-1.87	-2.571	-0.965	-0.030	0.225	0.020
NR	1450	10.05	89.99	-1.88	-2.555	-0.961	-0.040	0.233	0.016
NR	1456	15.13	-0.03	-2.30	-2.352	-0.995	-0.030	0.094	-0.045
NR	1457	15.13	-0.03	-2.30	-2.344	-0.993	-0.036	0.103	-0.045
NR	1458	15.13	22.53	-2.41	-2.506	-0.962	-0.047	0.136	0.067
NR	1459	15.13	22.53	-2.41	-2.506	-0.962	-0.053	0.136	0.069

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1460	15.13	44.98	-2.61	-2.849	-0.930	-0.070	0.195	-0.013
NR	1461	15.13	44.97	-2.61	-2.843	-0.930	-0.070	0.202	-0.015
NR	1462	15.11	67.42	-2.45	-2.617	-0.944	-0.067	0.242	-0.088
NR	1463	15.11	67.42	-2.46	-2.621	-0.944	-0.060	0.252	-0.089
NR	1464	15.09	90.00	-2.37	-2.468	-1.008	-0.050	0.192	0.041
NR	1465	15.09	90.00	-2.37	-2.476	-1.008	-0.050	0.192	0.041
NR	1473	20.18	22.57	-3.00	-2.523	-1.015	-0.303	0.547	0.133
NR	1474	20.17	0.07	-2.89	-2.395	-1.034	-0.045	0.100	-0.050
NR	1472	20.18	22.57	-3.01	-2.530	-1.025	-0.300	0.543	0.137
NR	1470	20.19	45.00	-3.36	-3.241	-0.949	-0.182	0.399	0.029
NR	1471	20.19	45.01	-3.37	-3.258	-0.949	-0.191	0.405	0.038
NR	1468	20.16	67.39	-3.06	-2.681	-1.009	0.059	-0.080	-0.150
NR	1469	20.16	67.39	-3.04	-2.670	-1.009	0.064	-0.077	-0.153
NR	1466	20.14	90.01	-2.97	-2.506	-1.048	-0.099	0.151	0.056
NR	1467	20.14	90.01	-2.97	-2.505	-1.053	-0.089	0.189	0.048
NR	1475	25.22	0.06	-3.63	-2.646	-1.080	-0.043	0.063	-0.073
NR	1476	25.22	0.06	-3.63	-2.662	-1.075	-0.050	0.072	-0.061
NR	1477	25.23	22.65	-3.74	-2.740	-1.086	-0.535	0.937	0.252
NR	1478	25.23	22.64	-3.75	-2.732	-1.091	-0.539	0.898	0.240
NR	1479	25.24	45.00	-4.09	-3.507	-0.942	-0.276	0.404	0.017
NR	1480	25.24	44.99	-4.11	-3.535	-0.942	-0.267	0.410	0.013
NR	1481	25.21	67.29	-3.79	-2.900	-1.092	0.256	-0.306	-0.317
NR	1482	25.21	67.29	-3.80	-2.924	-1.092	0.232	-0.336	-0.313
NR	1483	25.20	89.99	-3.72	-2.773	-1.091	-0.121	0.191	0.017
NR	1484	25.20	90.02	-3.72	-2.766	-1.086	-0.129	0.136	0.061
NR	1407	0.00	-0.01	-0.06	-0.058	-0.889	0.038	-0.025	-0.014
NR	1451	0.00	-0.01	-0.07	-0.050	-0.884	0.032	-0.041	-0.010
NR	1452	0.00	-0.01	-0.07	-0.058	-0.889	0.032	-0.033	-0.009
NR	1455	0.00	-0.01	-0.07	-0.058	-0.884	0.019	-0.032	-0.016
NR	1485	0.00	-0.01	-0.06	-0.065	-0.879	0.001	-0.015	-0.016
NR	1486	0.00	-0.01	-0.06	-0.057	-0.874	0.001	-0.015	-0.014

(Run.32)

RUN NUMBER=32 LONG BODY, SQUARE NOSE, LARGE TAIL
CANT ANGLE= 2.5 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2265	-10.09	0.12	1.92	2.633	-1.007	0.077	-0.159	0.033
NR	2266	-10.10	0.12	1.92	2.610	-1.002	0.077	-0.175	0.031
NR	2267	-10.10	22.51	1.85	2.494	-0.987	-0.091	0.235	0.037
NR	2268	-10.10	22.51	1.85	2.488	-0.982	-0.091	0.232	0.037
NR	2269	-10.11	45.01	1.72	2.224	-0.948	-0.088	0.264	0.047
NR	2270	-10.13	67.51	1.69	2.194	-0.944	-0.015	0.147	0.052
NR	2271	-10.15	90.00	1.70	2.205	-0.955	-0.040	0.262	0.037
NR	2276	-5.05	0.10	1.00	1.445	-0.929	0.045	-0.110	0.000
NR	2275	-5.05	22.49	0.97	1.383	-0.923	-0.043	0.101	0.004
NR	2274	-5.06	45.00	0.88	1.241	-0.918	-0.078	0.217	0.025
NR	2273	-5.08	67.00	0.82	1.131	-0.918	-0.066	0.265	0.042
NR	2272	-5.10	90.00	0.77	1.020	-0.913	-0.070	0.315	0.036
NR	2277	0.00	0.10	0.08	0.202	-0.894	0.032	-0.068	-0.007
NR	2278	-0.01	22.50	0.06	0.192	-0.893	-0.041	0.085	0.010
NR	2279	-0.02	45.00	0.01	0.125	-0.892	-0.090	0.233	0.027
NR	2280	-0.03	67.49	-0.06	0.030	-0.886	-0.110	0.325	0.028
NR	2281	-0.03	67.50	-0.05	0.009	-0.891	-0.108	0.318	0.034
NR	2282	-0.05	90.00	-0.10	-0.122	-0.891	-0.100	0.367	0.040
NR	2288	5.04	-0.01	-0.73	-0.804	-0.899	0.013	-0.012	-0.019
NR	2287	5.04	22.48	-0.74	-0.800	-0.902	-0.074	0.147	-0.014
NR	2285	5.03	45.00	-0.79	-0.850	-0.905	-0.139	0.305	0.022
NR	2286	5.03	45.00	-0.79	-0.839	-0.905	-0.143	0.316	0.022
NR	2284	5.02	67.51	-0.90	-1.056	-0.918	-0.145	0.405	0.054
NR	2283	5.00	90.01	-0.98	-1.233	-0.923	-0.130	0.410	0.050
NR	2289	10.04	-0.01	-0.71	-0.795	-0.802	0.013	-0.012	-0.024
NR	2290	10.09	-0.01	-1.63	-1.891	-0.909	-0.009	0.046	-0.022
NR	2291	10.09	-0.01	-1.63	-1.898	-0.909	-0.010	0.062	-0.024
NR	2292	10.08	22.47	-1.61	-1.788	-0.897	-0.009	0.037	-0.026
NR	2293	10.08	22.47	-1.61	-1.809	-0.897	-0.016	0.028	-0.028
NR	2294	10.08	44.99	-1.60	-1.720	-0.894	-0.159	0.390	0.005
NR	2295	10.08	44.99	-1.60	-1.720	-0.894	-0.171	0.390	0.009
NR	2296	10.07	67.51	-1.75	-2.047	-0.927	-0.268	0.663	0.049
NR	2297	10.07	67.50	-1.75	-2.047	-0.927	-0.271	0.664	0.040
NR	2298	10.05	89.99	-1.87	-2.327	-0.961	-0.170	0.485	0.031
NR	2299	10.05	90.00	-1.87	-2.327	-0.956	-0.170	0.493	0.034
NR	2308	15.13	0.00	-2.30	-2.406	-0.945	-0.024	0.110	-0.004
NR	2309	15.13	0.00	-2.30	-2.406	-0.945	-0.030	0.102	-0.006
NR	2306	15.13	22.55	-2.36	-2.440	-0.913	-0.086	0.163	0.092
NR	2307	15.13	22.55	-2.36	-2.449	-0.923	-0.087	0.167	0.094
NR	2304	15.13	44.97	-2.47	-2.605	-0.896	-0.198	0.410	-0.015
NR	2305	15.13	44.98	-2.47	-2.616	-0.900	-0.198	0.410	-0.008
NR	2302	15.11	67.40	-2.40	-2.497	-0.964	-0.186	0.458	-0.122
NR	2303	15.11	67.41	-2.39	-2.495	-0.964	-0.204	0.423	-0.113
NR	2300	15.09	89.99	-2.35	-2.431	-1.008	-0.200	0.436	0.023
NR	2301	15.09	89.99	-2.35	-2.439	-1.008	-0.190	0.444	0.020
NR	2310	20.17	-0.01	-2.87	-2.395	-0.989	-0.036	0.094	-0.012

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT+4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2311	20.17	-0.01	-2.89	-2.410	-0.994	-0.049	0.103	-0.010
NR	2312	20.18	22.60	-3.04	-2.594	-0.956	-0.266	0.490	0.175
NR	2313	20.18	22.60	-3.04	-2.625	-0.956	-0.267	0.504	0.181
NR	2314	20.18	44.94	-3.27	-3.100	-0.911	-0.117	0.177	-0.076
NR	2315	20.18	44.93	-3.25	-3.109	-0.906	-0.128	0.178	-0.082
NR	2316	20.16	67.37	-3.00	-2.591	-1.014	-0.049	0.046	-0.171
NR	2317	20.16	67.38	-2.99	-2.552	-1.000	-0.055	0.113	-0.166
NR	2318	20.14	90.00	-2.96	-2.477	-1.049	-0.230	0.403	0.039
NR	2319	20.14	90.01	-2.96	-2.478	-1.049	-0.229	0.379	0.049
NR	2320	25.20	89.99	-3.72	-2.770	-1.086	-0.211	0.403	0.025
NR	2264	0.00	0.10	0.09	0.195	-0.889	0.025	-0.060	-0.003
NR	2321	0.00	0.00	0.08	0.203	-0.899	0.027	-0.036	-0.006
NR	2322	0.00	0.00	0.09	0.218	-0.889	0.027	-0.045	-0.001

(Run.33)

RUN NUMBER=33 LONG BODY, SQUARE NOSE, LARGE TAIL
CANT ANGLE= 5.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2326	-10.10	0.03	2.02	2.824	-1.093	0.044	-0.109	0.042
NR	2327	-10.10	0.03	2.02	2.831	-1.090	0.038	-0.117	0.041
NR	2328	-10.10	22.36	2.00	2.832	-1.070	-0.153	0.388	0.111
NR	2329	-10.10	22.36	2.00	2.829	-1.070	-0.153	0.396	0.117
NR	2330	-10.12	45.03	1.92	2.391	-1.031	-0.302	0.689	0.074
NR	2331	-10.12	43.03	1.91	2.381	-1.026	-0.299	0.679	0.073
NR	2334	-10.15	90.00	1.66	2.106	-0.979	-0.280	0.891	0.031
NR	2344	-5.06	0.02	1.31	2.021	-0.997	0.038	-0.080	0.027
NR	2345	-5.06	0.02	1.31	2.021	-0.993	0.026	-0.088	0.028
NR	2342	-3.06	22.30	1.22	1.879	-0.987	-0.188	0.368	0.015
NR	2343	-3.06	22.30	1.22	1.890	-0.987	-0.194	0.364	0.020
NR	2340	-3.07	45.10	1.05	1.569	-0.987	-0.309	0.632	0.027
NR	2341	-3.07	43.10	1.05	1.568	-0.967	-0.314	0.633	0.023
NR	2338	-5.08	67.50	0.88	1.238	-0.937	-0.329	0.734	0.031
NR	2339	-5.08	67.50	0.87	1.238	-0.937	-0.331	0.734	0.031
NR	2336	-3.10	89.98	0.72	0.932	-0.938	-0.300	0.719	0.012
NR	2337	-3.10	89.99	0.72	0.932	-0.938	-0.290	0.727	0.018
NR	2346	-0.01	0.01	0.31	0.629	-0.924	0.010	-0.036	0.009
NR	2347	-0.02	22.31	0.27	0.581	-0.927	-0.153	0.283	0.031
NR	2348	-0.02	45.01	0.15	0.416	-0.928	-0.283	0.548	0.042
NR	2349	-0.04	67.31	0.02	0.132	-0.925	-0.339	0.729	0.036
NR	2330	-0.03	90.01	-0.14	-0.149	-0.930	-0.330	0.802	0.039
NR	2358	3.03	0.00	-0.43	-0.298	-0.914	-0.023	0.014	0.001
NR	2339	3.03	0.00	-0.43	-0.298	-0.914	-0.022	-0.002	0.000
NR	2336	3.03	22.30	-0.51	-0.348	-0.921	-0.206	0.378	0.016
NR	2357	3.03	22.50	-0.31	-0.345	-0.916	-0.211	0.371	0.014
NR	2335	3.02	45.01	-0.64	-0.345	-0.929	-0.329	0.638	0.046
NR	2353	3.01	67.53	-0.83	-0.908	-0.933	-0.378	0.830	0.084
NR	2354	5.01	67.53	-0.83	-0.914	-0.938	-0.378	0.815	0.082
NR	2351	3.00	90.03	-1.00	-1.242	-0.952	-0.369	0.867	0.088
NR	2352	3.00	90.03	-1.00	-1.242	-0.952	-0.369	0.867	0.081
NR	2360	10.08	0.00	-1.34	-1.308	-0.880	-0.045	0.062	-0.003
NR	2361	10.08	0.00	-1.34	-1.316	-0.875	-0.031	0.033	-0.006
NR	2362	10.07	22.49	-1.33	-1.235	-0.877	-0.173	0.318	0.000
NR	2363	10.07	22.49	-1.33	-1.235	-0.877	-0.173	0.318	-0.003
NR	2364	10.07	45.01	-1.45	-1.371	-0.909	-0.429	0.867	0.032
NR	2365	10.07	45.01	-1.43	-1.371	-0.904	-0.433	0.836	0.030
NR	2366	10.07	67.32	-1.70	-1.904	-0.936	-0.510	1.101	0.070
NR	2367	10.07	67.32	-1.71	-1.906	-0.961	-0.313	1.101	0.069
NR	2368	10.06	90.02	-1.90	-2.321	-1.003	-0.409	0.941	0.071
NR	2369	10.06	90.03	-1.91	-2.322	-1.003	-0.419	0.926	0.081

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E. 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2378	13.12	-0.02	-2.17	-2.162	-0.877	-0.072	0.094	-0.040
NR	2379	13.12	-0.02	-2.17	-2.162	-0.882	-0.063	0.077	-0.041
NR	2376	15.12	22.49	-2.23	-2.162	-0.850	-0.141	0.189	-0.009
NR	2377	15.12	22.49	-2.22	-2.138	-0.843	-0.143	0.182	-0.009
NR	2374	13.12	43.00	-2.32	-2.210	-0.881	-0.466	0.893	0.024
NR	2375	15.12	43.00	-2.31	-2.203	-0.886	-0.462	0.890	0.027
NR	2372	13.11	67.44	-2.36	-2.330	-0.983	-0.481	0.983	-0.069
NR	2373	15.11	67.43	-2.36	-2.330	-0.983	-0.473	0.985	-0.073
NR	2370	15.09	90.02	-2.37	-2.401	-1.037	-0.449	0.925	0.068
NR	2371	13.09	90.01	-2.37	-2.393	-1.032	-0.440	0.916	0.063
NR	2380	20.17	-0.03	-2.84	-2.340	-0.926	-0.096	0.081	-0.047
NR	2381	20.17	-0.03	-2.84	-2.353	-0.916	-0.093	0.073	-0.048
NR	2382	20.17	22.36	-2.98	-2.514	-0.873	-0.281	0.463	0.117
NR	2383	20.17	22.37	-2.98	-2.514	-0.878	-0.292	0.463	0.128
NR	2384	20.18	44.92	-3.19	-2.801	-0.862	-0.363	0.373	-0.100
NR	2385	20.18	44.92	-3.18	-2.780	-0.862	-0.359	0.372	-0.107
NR	2386	20.16	67.42	-2.97	-2.463	-1.014	-0.369	0.710	-0.103
NR	2387	20.16	67.43	-2.97	-2.473	-1.009	-0.379	0.706	-0.088
NR	2388	20.14	90.03	-2.99	-2.383	-1.103	-0.468	0.834	0.081
NR	2389	20.14	90.01	-2.99	-2.384	-1.103	-0.469	0.881	0.039
NR	2325	-0.01	0.01	0.31	0.629	-0.923	0.015	-0.027	0.019
NR	2390	-0.01	0.10	0.32	0.638	-0.934	-0.043	-0.023	0.006

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

(Run.16)

RUN NUMBER=16 LONG BODY, SQUARE NOSE, LARGE TAIL
CANT ANGLE=10.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OR.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1218	-10.10	0.02	1.96	2.705	-1.213	0.063	-0.124	0.028
NR	1218	-10.09	0.02	1.96	2.935	-1.215	0.065	-0.128	0.028
NR	1219	-10.10	0.02	1.96	2.690	-1.215	0.062	-0.108	0.027
NR	1220	-10.10	22.56	1.98	2.792	-1.198	-0.103	0.336	0.121
NR	1221	-10.10	22.56	1.98	2.798	-1.205	-0.108	0.321	0.118
NR	1222	-10.13	45.08	2.08	2.913	-1.179	-0.401	0.988	0.155
NR	1223	-10.13	45.08	2.08	2.913	-1.178	-0.397	0.967	0.162
NR	1224	-10.14	67.48	1.94	2.609	-1.135	-0.648	1.425	0.009
NR	1225	-10.14	67.48	1.94	2.618	-1.138	-0.659	1.433	0.009
NR	1226	-10.15	89.94	1.66	2.096	-1.077	-0.688	1.470	-0.054
NR	1227	-10.15	89.94	1.66	2.088	-1.077	-0.688	1.470	-0.054
NR	1235	-5.08	0.01	1.73	2.901	-1.140	0.081	-0.152	0.017
NR	1236	-5.08	0.01	1.73	2.901	-1.140	0.075	-0.152	0.017
NR	1237	-5.08	0.01	1.73	2.901	-1.140	0.075	-0.152	0.015
NR	1233	-5.08	22.49	1.63	2.721	-1.145	-0.312	0.656	0.004
NR	1234	-5.08	22.49	1.63	2.706	-1.145	-0.303	0.650	0.002
NR	1231	-5.09	44.97	1.37	2.176	-1.115	-0.597	1.257	-0.018
NR	1232	-5.09	44.97	1.36	2.171	-1.110	-0.602	1.251	-0.015
NR	1230	-5.09	67.45	1.03	1.519	-1.080	-0.719	1.482	-0.039
NR	1228	-5.10	89.93	0.74	0.943	-1.031	-0.699	1.468	-0.067
NR	1229	-5.10	89.94	0.74	0.943	-1.051	-0.699	1.476	-0.065
NR	1238	-0.03	-0.01	0.70	1.361	-1.027	0.047	-0.095	-0.009
NR	1239	-0.03	22.50	0.64	1.275	-1.086	-0.260	0.504	0.015
NR	1240	-0.04	45.00	0.48	0.975	-1.085	-0.524	1.010	0.031
NR	1241	-0.04	67.51	0.21	0.492	-1.029	-0.683	1.372	0.045
NR	1242	-0.05	90.01	-0.09	-0.087	-1.034	-0.740	1.534	0.050
NR	1251	5.01	-0.01	-0.08	0.379	-0.978	0.032	-0.056	-0.010
NR	1249	5.01	22.50	-0.16	0.288	-0.981	-0.304	0.569	0.017
NR	1250	5.01	22.50	-0.15	0.300	-0.981	-0.308	0.581	0.017
NR	1247	5.01	45.02	-0.34	-0.029	-0.998	-0.553	1.089	0.058
NR	1248	5.01	45.02	-0.35	-0.034	-0.998	-0.558	1.095	0.056
NR	1245	5.01	67.55	-0.65	-0.584	-1.018	-0.680	1.411	0.117
NR	1246	5.00	67.55	-0.65	-0.587	-1.017	-0.680	1.404	0.110
NR	1243	5.00	90.06	-0.93	-1.150	-1.051	-0.729	1.558	0.141
NR	1244	5.00	90.06	-0.93	-1.150	-1.051	-0.719	1.566	0.136
NR	1256	10.06	-0.01	-0.89	-0.396	-0.900	-0.007	-0.002	-0.022
NR	1257	10.06	-0.01	-0.89	-0.389	-0.900	-0.007	-0.018	-0.018
NR	1258	10.06	22.49	-0.93	-0.431	-0.917	-0.317	0.633	-0.003
NR	1259	10.06	22.49	-0.93	-0.433	-0.917	-0.321	0.616	0.001
NR	1260	10.06	45.02	-1.15	-0.827	-0.963	-0.669	1.369	0.058
NR	1261	10.06	45.02	-1.15	-0.821	-0.963	-0.669	1.364	0.058
NR	1262	10.06	67.54	-1.51	-1.574	-1.023	-0.799	1.694	0.095
NR	1262	10.06	67.54	-1.51	-1.484	-1.025	-0.798	1.905	0.095
NR	1263	10.06	67.53	-1.52	-1.579	-1.080	-0.801	1.705	0.092
NR	1264	10.05	90.05	-1.81	-2.194	-1.095	-0.768	1.700	0.117
NR	1265	10.05	90.05	-1.81	-2.195	-1.089	-0.768	1.686	0.120
NR	1274	15.11	-0.02	-1.86	-1.448	-0.809	-0.025	0.048	-0.028

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OR.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1275	15.11	-0.02	-1.86	-1.456	-0.809	-0.024	0.048	-0.033
NR	1272	15.11	22.59	-1.85	-1.368	-0.826	-0.267	0.508	0.000
NR	1273	15.11	22.49	-1.85	-1.360	-0.821	-0.265	0.515	0.000
NR	1270	15.11	45.01	-2.02	-1.617	-0.915	-0.757	1.548	0.048
NR	1271	15.11	45.00	-2.01	-1.621	-0.915	-0.749	1.542	0.031
NR	1268	15.10	67.42	-2.17	-2.031	-1.045	-0.752	1.551	-0.088
NR	1269	15.10	67.43	-2.17	-2.026	-1.043	-0.751	1.564	-0.086
NR	1266	15.09	90.01	-2.24	-2.216	-1.141	-0.780	1.612	0.054
NR	1267	15.09	90.01	-2.26	-2.232	-1.151	-0.790	1.628	0.053
NR	1276	20.16	-0.03	-2.72	-2.089	-0.805	-0.038	0.050	-0.042
NR	1277	20.16	-0.03	-2.72	-2.089	-0.803	-0.050	0.035	-0.041
NR	1278	20.16	22.51	-2.74	-2.064	-0.766	-0.263	0.457	0.029
NR	1279	20.16	22.52	-2.75	-2.058	-0.766	-0.259	0.442	0.039
NR	1280	20.15	67.42	-2.80	-2.175	-1.058	-0.635	1.246	-0.102
NR	1281	20.15	67.42	-2.80	-2.153	-1.059	-0.632	1.235	-0.103
NR	1282	20.13	90.04	-2.81	-2.184	-1.207	-0.768	1.473	0.100
NR	1283	20.13	90.04	-2.81	-2.183	-1.207	-0.768	1.496	0.102
NR	1217	-0.03	0.00	0.69	1.353	-1.022	0.033	-0.079	0.000
NR	1217	-0.03	0.00	0.69	1.422	-1.022	0.033	-0.080	0.000
NR	1252	-0.03	0.00	0.70	1.369	-1.027	0.040	-0.095	0.001
NR	1255	-0.03	0.00	0.69	1.368	-1.017	0.028	-0.087	-0.003
NR	1284	-0.03	0.00	0.69	1.376	-1.017	0.034	-0.087	-0.002

T.R.69267

(Run 6)

RUN NUMBER=6 LONG BODY, ROUND NOSE, SMALL TAIL
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 260. FPS RE= 0.386 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	484	-10.05	0.00	0.74	0.120	-0.209	0.018	0.006	0.003
NR	485	-10.05	22.50	0.68	0.070	-0.212	-0.027	0.127	0.017
NR	486	-10.06	45.00	0.65	-0.011	-0.210	0.025	0.047	0.029
NR	487	-10.08	67.50	0.66	0.000	-0.210	0.091	-0.028	0.038
NR	488	-10.10	90.00	0.70	0.024	-0.208	0.070	0.030	0.037
NR	493	-5.02	0.10	0.32	-0.016	-0.203	-0.008	0.041	0.000
NR	492	-5.03	22.60	0.30	-0.029	-0.201	-0.017	0.060	0.013
NR	491	-5.04	45.00	0.28	-0.056	-0.200	0.021	0.045	0.026
NR	490	-5.05	67.50	0.27	-0.076	-0.199	0.059	0.018	0.035
NR	489	-5.07	90.00	0.30	-0.075	-0.206	0.060	0.042	0.040
NR	494	0.00	0.10	-0.03	0.009	-0.191	-0.016	0.040	0.000
NR	495	0.00	22.50	-0.07	-0.012	-0.195	-0.014	0.038	0.017
NR	496	-0.01	45.00	-0.08	-0.034	-0.194	0.000	0.062	0.030
NR	497	-0.03	67.50	-0.09	-0.063	-0.194	0.026	0.036	0.039
NR	498	-0.04	90.00	-0.08	-0.070	-0.204	0.040	0.029	0.034
NR	503	5.03	0.00	-0.39	-0.011	-0.209	-0.004	0.008	-0.003
NR	502	5.02	22.60	-0.39	-0.003	-0.209	-0.008	0.016	0.013
NR	501	5.01	45.00	-0.40	0.007	-0.213	-0.004	0.040	0.027
NR	500	5.00	67.50	-0.42	-0.040	-0.217	0.000	0.068	0.035
NR	499	4.98	90.00	-0.43	-0.072	-0.218	0.030	0.030	0.034
NR	529	10.05	-0.01	-0.77	-0.129	-0.206	-0.007	0.018	-0.009
NR	530	10.05	22.50	-0.76	-0.073	-0.213	0.016	-0.040	0.010
NR	531	10.04	45.00	-0.74	-0.043	-0.222	-0.023	0.044	0.027
NR	532	10.03	67.50	-0.78	-0.126	-0.222	-0.064	0.135	0.032
NR	533	10.01	90.00	-0.83	-0.219	-0.222	-0.010	0.036	0.034
NR	538	15.08	-0.01	-1.25	-0.414	-0.218	-0.019	0.046	-0.015
NR	537	15.08	22.50	-1.21	-0.308	-0.206	0.065	-0.109	0.008
NR	536	15.07	45.00	-1.17	-0.223	-0.213	-0.034	0.067	0.021
NR	535	15.06	67.49	-1.22	-0.324	-0.217	-0.125	0.235	0.027
NR	534	15.05	90.00	-1.31	-0.482	-0.222	-0.030	0.076	0.035
NR	539	20.12	-0.01	-1.79	-0.770	-0.210	-0.031	0.076	-0.022
NR	540	20.11	22.50	-1.65	-0.523	-0.201	0.102	-0.205	0.022
NR	541	20.10	44.99	-1.63	-0.499	-0.196	-0.043	0.056	0.009
NR	542	20.09	67.48	-1.64	-0.313	-0.196	-0.192	0.307	0.006
NR	543	20.08	89.99	-1.83	-0.819	-0.220	-0.050	0.070	0.026
NR	548	25.15	-0.02	-2.33	-1.111	-0.191	-0.031	0.089	-0.036
NR	547	25.14	22.58	-2.03	-0.370	-0.269	-0.106	0.112	0.140
NR	546	25.13	44.99	-2.11	-0.754	-0.186	-0.046	0.044	0.018
NR	545	25.12	67.40	-2.00	-0.577	-0.271	0.013	-0.043	-0.125
NR	544	25.11	90.00	-2.07	-0.688	-0.192	-0.080	0.092	0.044
NR	549	29.18	-0.08	-2.67	-1.188	-0.196	0.109	-0.138	-0.127
NR	550	29.16	22.60	-2.37	-0.763	-0.264	-0.162	0.208	0.177
NR	551	29.16	44.99	-2.39	-0.783	-0.186	-0.062	0.075	0.010
NR	552	29.14	67.38	-2.35	-0.799	-0.241	0.017	-0.052	-0.166

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	553	29.13	89.97	-2.33	-0.735	-0.212	-0.041	0.024	-0.00E
NR	483	0.00	0.00	-0.03	0.015	-0.196	-0.001	0.032	0.001
NR	504	0.00	0.00	-0.04	0.007	-0.196	-0.020	0.025	0.001
NR	528	0.00	0.00	-0.01	0.023	-0.191	-0.013	0.024	-0.001
NR	554	0.00	0.00	-0.02	0.007	-0.201	-0.007	0.032	0.001

T.R.69267

(Run.31)

RUN NUMBER=31 LONG BODY, ROUND NOSE, SMALL TAIL
CANT ANGLE= 2.5 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2213	-10.05	0.00	0.81	0.476	-0.204	0.014	-0.040	0.003
NR	2214	-10.05	22.50	0.76	0.184	-0.202	-0.056	0.121	0.017
NR	2215	-10.06	45.00	0.67	0.068	-0.210	-0.018	0.103	0.032
NR	2216	-10.08	67.50	0.67	0.035	-0.205	0.049	0.034	0.037
NR	2217	-10.10	90.00	0.70	0.041	-0.200	0.060	0.069	0.038
NR	2222	-5.02	0.00	0.37	0.064	-0.188	-0.003	-0.001	-0.003
NR	2221	-5.03	22.50	0.34	0.044	-0.197	-0.006	0.045	0.012
NR	2220	-5.04	45.00	0.31	0.001	-0.195	0.009	0.076	0.030
NR	2219	-5.05	67.50	0.29	-0.039	-0.195	0.034	0.069	0.038
NR	2218	-5.07	90.00	0.30	-0.059	-0.195	0.040	0.073	0.041
NR	2223	0.00	0.00	-0.01	0.022	-0.182	0.000	-0.008	-0.005
NR	2224	0.00	22.50	-0.04	0.014	-0.181	-0.013	0.016	0.012
NR	2225	-0.01	45.00	-0.05	0.001	-0.180	0.004	0.049	0.026
NR	2226	-0.03	67.50	-0.06	-0.026	-0.179	0.009	0.058	0.036
NR	2227	-0.05	90.00	-0.06	-0.053	-0.184	0.030	0.067	0.039
NR	2232	5.02	-0.01	-0.34	0.068	-0.200	0.023	-0.018	-0.009
NR	2231	5.02	22.49	-0.34	0.068	-0.199	0.008	0.008	0.002
NR	2230	5.01	45.00	-0.36	0.058	-0.193	-0.011	0.076	0.024
NR	2229	5.00	67.50	-0.40	-0.002	-0.198	-0.013	0.094	0.035
NR	2228	4.98	90.00	-0.42	-0.063	-0.203	0.020	0.069	0.037
NR	2233	10.05	-0.01	-0.72	-0.020	-0.198	0.012	-0.001	-0.011
NR	2234	10.05	22.49	-0.71	0.020	-0.203	0.015	-0.021	0.007
NR	2235	10.04	45.00	-0.71	0.031	-0.208	-0.042	0.079	0.022
NR	2236	10.02	67.50	-0.76	-0.064	-0.207	-0.077	0.177	0.033
NR	2237	10.01	90.00	-0.81	-0.186	-0.212	-0.020	0.090	0.036
NR	2242	15.08	-0.01	-1.19	-0.281	-0.199	-0.005	0.012	-0.016
NR	2241	15.08	22.49	-1.15	-0.177	-0.194	0.056	-0.119	0.002
NR	2240	15.07	45.00	-1.11	-0.105	-0.193	-0.051	0.124	0.023
NR	2239	15.06	67.50	-1.19	-0.244	-0.193	-0.135	0.294	0.033
NR	2238	15.04	90.00	-1.29	-0.448	-0.213	-0.050	0.129	0.036
NR	2243	20.11	-0.01	-1.72	-0.629	-0.181	-0.016	0.034	-0.023
NR	2244	20.11	22.50	-1.59	-0.402	-0.167	0.093	-0.192	0.011
NR	2245	20.10	44.99	-1.57	-0.352	-0.162	-0.054	0.106	0.008
NR	2246	20.09	67.49	-1.62	-0.440	-0.186	-0.207	0.376	0.015
NR	2247	20.08	90.00	-1.83	-0.802	-0.210	-0.070	0.155	0.031
NR	2254	25.15	-0.02	-2.28	-0.975	-0.142	-0.017	0.063	-0.035
NR	2252	25.13	22.56	-1.96	-0.463	-0.201	-0.011	-0.032	0.107
NR	2253	25.13	22.56	-1.96	-0.463	-0.206	-0.011	-0.032	0.109
NR	2251	25.13	44.98	-2.00	-0.600	-0.147	-0.079	0.123	0.001
NR	2249	25.12	67.41	-1.97	-0.502	-0.246	-0.028	0.069	-0.113
NR	2250	25.12	67.41	-1.97	-0.505	-0.251	-0.031	0.063	-0.113
NR	2248	25.12	89.99	-2.37	-1.108	-0.195	-0.110	0.196	0.022
NR	2255	29.18	-0.08	-2.62	-1.001	-0.167	0.110	-0.134	-0.133
NR	2256	29.16	22.59	-2.30	-0.619	-0.225	-0.122	0.184	0.164

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2257	29.15	44.98	-2.30	-0.663	-0.152	-0.080	0.143	-0.012
NR	2258	29.14	67.38	-2.29	-0.681	-0.256	0.021	-0.027	-0.163
NR	2259	29.13	89.95	-2.40	-0.826	-0.202	-0.012	0.041	-0.046
NR	2260	29.13	89.95	-2.34	-0.823	-0.202	-0.022	0.018	-0.042
NR	2212	0.00	0.00	-0.01	0.030	-0.187	0.001	-0.024	-0.003
NR	2261	0.00	0.10	-0.01	0.053	-0.187	0.010	-0.009	0.002

(Run.28)

RUN NUMBER=28 LONG BODY, ROUND NOSE, SMALL TAIL,
CANT ANGLE= 5.0 CG POSITION 50.00%
V= 240. FPS RE= 0.584 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2059	-10.05	0.00	0.89	0.404	-0.229	0.008	-0.006	0.006
NR	2060	-10.06	22.50	0.82	0.517	-0.227	-0.082	0.191	0.016
NR	2061	-10.06	45.00	0.72	0.508	-0.255	-0.072	0.580	0.027
NR	2061	-10.06	45.00	0.72	0.142	-0.255	-0.075	0.220	0.027
NR	2062	-10.08	67.50	0.68	0.040	-0.224	0.001	0.126	0.052
NR	2065	-10.10	90.00	0.68	0.017	-0.210	0.010	0.126	0.055
NR	2064	-5.08	90.00	0.56	-0.079	-0.199	-0.000	0.121	0.035
NR	2065	-5.06	67.50	0.57	-0.029	-0.199	-0.019	0.144	0.032
NR	2066	-5.04	45.00	0.41	0.050	-0.200	-0.042	0.166	0.026
NR	2067	-5.05	22.50	0.47	0.157	-0.201	-0.045	0.152	0.015
NR	2068	-5.05	0.10	0.51	0.202	-0.198	0.001	0.021	0.000
NR	2069	0.00	0.10	0.04	0.110	-0.206	-0.002	0.014	-0.002
NR	2070	0.00	22.50	0.01	0.095	-0.210	-0.052	0.072	0.015
NR	2071	-0.01	45.00	-0.01	0.042	-0.209	-0.058	0.111	0.024
NR	2072	-0.03	67.50	-0.04	-0.009	-0.209	-0.057	0.158	0.032
NR	2073	-0.05	90.00	-0.06	-0.068	-0.209	-0.020	0.131	0.035
NR	2078	5.02	-0.01	-0.29	0.147	-0.219	0.010	0.005	-0.010
NR	2077	5.02	22.50	-0.30	0.154	-0.218	-0.029	0.068	0.011
NR	2076	5.01	45.00	-0.34	0.098	-0.218	-0.055	0.138	0.026
NR	2075	5.00	67.50	-0.39	0.001	-0.222	-0.055	0.162	0.034
NR	2074	4.98	90.00	-0.42	-0.078	-0.227	-0.040	0.155	0.037
NR	2079	10.05	-0.01	-0.67	0.098	-0.208	-0.006	0.014	-0.010
NR	2080	10.04	22.50	-0.66	0.122	-0.218	-0.020	0.045	0.011
NR	2081	10.04	45.00	-0.68	0.082	-0.252	-0.091	0.174	0.025
NR	2082	10.05	67.50	-0.77	-0.072	-0.252	-0.112	0.241	0.035
NR	2083	10.01	90.00	-0.85	-0.211	-0.242	-0.060	0.154	0.035
NR	2088	15.08	0.09	-1.12	-0.159	-0.204	-0.017	0.026	-0.014
NR	2087	15.07	22.50	-1.07	-0.041	-0.209	0.016	-0.056	0.008
NR	2086	15.06	45.00	-1.08	-0.042	-0.218	-0.129	0.245	0.024
NR	2085	15.06	67.50	-1.20	-0.267	-0.222	-0.205	0.566	0.051
NR	2084	15.05	90.00	-1.52	-0.497	-0.242	-0.080	0.186	0.039
NR	2089	20.11	0.09	-1.64	-0.471	-0.166	-0.028	0.055	-0.017
NR	2090	20.10	22.51	-1.55	-0.264	-0.167	0.086	-0.181	0.028
NR	2091	20.10	44.99	-1.54	-0.279	-0.186	-0.114	0.190	0.014
NR	2092	20.09	67.48	-1.65	-0.446	-0.210	-0.284	0.509	0.002
NR	2095	20.08	90.00	-1.85	-0.842	-0.254	-0.120	0.197	0.051
NR	2102	25.15	-0.02	-2.22	-0.857	-0.152	-0.075	0.095	-0.026
NR	2103	25.13	22.55	-1.94	-0.558	-0.182	0.058	-0.122	0.101
NR	2104	25.15	44.99	-2.00	-0.489	-0.152	-0.145	0.255	0.005
NR	2095	25.12	67.40	-1.98	-0.474	-0.281	-0.077	0.156	-0.127
NR	2105	25.12	67.40	-1.98	-0.469	-0.266	-0.068	0.150	-0.126
NR	2094	25.12	89.99	-2.40	-1.157	-0.215	-0.140	0.250	0.018
NR	2106	25.12	89.99	-2.40	-1.164	-0.215	-0.120	0.252	0.025
NR	2112	29.18	-0.05	-2.66	-1.089	-0.087	-0.078	0.116	-0.045

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 5FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2111	29.16	22.60	-2.28	-0.478	-0.210	-0.165	0.207	0.172
NR	2110	29.15	44.96	-2.50	-0.592	-0.155	-0.127	0.226	-0.041
NR	2109	29.14	67.38	-2.35	-0.667	-0.246	-0.052	0.112	-0.164
NR	2107	29.15	89.97	-2.58	-0.792	-0.207	-0.071	0.105	-0.006
NR	2108	29.15	89.98	-2.59	-0.792	-0.212	-0.071	0.118	-0.005
NR	2057	0.01	0.00	0.00	0.692	0.000	0.000	-0.011	0.001
NR	2058	0.00	0.00	0.05	0.109	-0.211	-0.006	0.014	-0.001
NR	2096	0.00	0.00	0.04	0.110	-0.206	-0.006	0.014	0.001
NR	2101	0.00	0.00	0.05	0.102	-0.206	-0.015	0.015	0.001
NR	2113	0.00	0.00	0.05	0.117	-0.206	-0.001	0.022	0.005
NR	2114	0.00	0.00	0.05	0.117	-0.206	-0.001	0.030	0.005

(Run.7)

RUN NUMBER=7 LONG BODY, ROUND NOSE, SMALL TAIL
CANT ANGLE=10.0 CG POSITION 50.00%
V= 240. FPS RE= 0.396 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	558	-10.06	0.00	1.05	0.723	-0.278	0.042	-0.069	0.007
NR	559	-10.06	22.50	0.98	0.633	-0.288	-0.106	0.343	0.018
NR	560	-10.07	45.00	0.86	0.614	-0.284	-0.137	0.402	0.029
NR	561	-10.08	67.50	0.75	0.176	-0.289	-0.123	0.339	0.030
NR	562	-10.10	89.99	0.69	0.066	-0.239	-0.090	0.323	0.030
NR	567	-5.08	0.00	0.56	0.461	-0.242	0.031	-0.040	0.000
NR	566	-5.04	22.50	0.53	0.383	-0.261	-0.039	0.170	0.013
NR	565	-5.04	45.00	0.44	0.348	-0.249	-0.134	0.302	0.024
NR	564	-5.06	67.50	0.36	0.068	-0.244	-0.120	0.333	0.031
NR	563	-5.07	89.99	0.31	-0.062	-0.234	-0.130	0.319	0.032
NR	568	-0.01	0.00	0.14	0.263	-0.231	0.026	-0.014	-0.001
NR	569	-0.01	22.30	0.11	0.258	-0.230	-0.046	0.110	0.018
NR	570	-0.02	45.00	0.08	0.190	-0.246	-0.094	0.308	0.028
NR	571	-0.03	67.50	0.02	0.091	-0.238	-0.120	0.364	0.038
NR	572	-0.03	90.00	-0.03	-0.023	-0.238	-0.140	0.330	0.037
NR	577	5.02	0.00	-0.20	0.382	-0.224	0.023	-0.014	-0.003
NR	576	5.02	22.30	-0.28	0.273	-0.238	-0.032	0.088	0.016
NR	575	5.01	45.00	-0.25	0.212	-0.228	-0.086	0.191	0.036
NR	574	4.99	67.50	-0.21	0.103	-0.232	-0.130	0.378	0.041
NR	573	4.98	90.00	-0.38	-0.009	-0.242	-0.140	0.313	0.043
NR	578	10.04	0.00	-0.53	0.313	-0.213	0.020	-0.014	-0.007
NR	579	10.04	22.50	-0.53	0.320	-0.223	-0.030	0.079	0.019
NR	580	10.08	45.00	-0.58	0.238	-0.222	-0.118	0.242	0.036
NR	581	10.02	67.30	-0.71	0.055	-0.232	-0.175	0.331	0.043
NR	582	10.01	90.00	-0.81	-0.142	-0.242	-0.130	0.336	0.043
NR	587	15.07	-0.01	-0.98	0.197	-0.194	-0.045	-0.036	-0.009
NR	588	15.07	22.50	-0.94	0.253	-0.184	-0.019	-0.009	0.019
NR	589	15.06	45.00	-0.99	0.166	-0.208	-0.185	0.332	0.082
NR	590	15.05	67.50	-1.15	-0.131	-0.233	-0.248	0.476	0.042
NR	591	15.05	90.00	-1.29	-0.413	-0.242	-0.160	0.330	0.048
NR	596	20.11	-0.01	-1.31	-0.158	-0.187	-0.069	0.013	-0.028
NR	595	20.10	22.50	-1.38	0.063	-0.138	0.034	-0.139	0.016
NR	594	20.09	45.00	-1.40	0.020	-0.167	-0.209	0.335	0.028
NR	593	20.09	67.49	-1.37	-0.293	-0.208	-0.335	0.613	0.021
NR	592	20.08	90.00	-1.81	-0.768	-0.233	-0.210	0.384	0.043
NR	597	25.14	-0.02	-2.06	-0.314	-0.078	-0.072	0.098	-0.033
NR	598	25.13	22.50	-1.80	-0.164	-0.094	0.033	-0.130	0.017
NR	599	25.12	44.99	-1.83	-0.205	-0.128	-0.205	0.303	0.008
NR	600	25.11	67.42	-1.92	-0.833	-0.247	-0.214	0.350	-0.094
NR	601	25.11	89.91	-2.19	-0.742	-0.320	-0.063	0.086	-0.106
NR	606	29.18	-0.03	-2.37	-0.824	-0.039	-0.137	0.090	-0.031
NR	605	29.15	22.55	-2.15	-0.227	-0.134	-0.033	-0.173	0.095
NR	604	29.15	44.96	-2.19	-0.310	-0.114	-0.215	0.258	-0.082
NR	603	29.14	67.40	-2.30	-0.501	-0.262	-0.132	0.194	-0.156

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLIZTE = R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	602	29.13	89.91	-2.41	-0.779	-0.256	-0.074	0.050	-0.106
NR	557	-0.01	0.00	0.13	0.290	-0.236	0.014	-0.021	0.000
NR	583	-0.01	0.00	0.13	0.290	-0.246	-0.004	-0.086	-0.001
NR	586	0.00	0.00	0.15	0.308	-0.231	0.008	-0.013	0.002
NR	607	0.00	0.00	0.10	0.396	-0.251	-0.059	-0.058	-0.003

T.R.69267

(Run.9)

RUN NUMBER=9 LONG BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	700	-10.05	0.00	0.79	0.344	-0.887	0.019	-0.006	0.003
NR	701	-10.05	22.50	0.73	0.252	-0.899	-0.023	0.134	0.025
NR	702	-10.06	45.00	0.66	0.138	-0.903	0.037	0.052	0.039
NR	703	-10.08	67.50	0.71	0.176	-0.898	0.120	-0.062	0.043
NR	704	-10.11	90.00	0.76	0.244	-0.898	0.100	0.029	0.045
NR	709	-5.02	0.00	0.55	0.170	-0.876	0.015	-0.003	0.001
NR	708	-5.02	22.50	0.33	0.140	-0.879	0.009	0.055	0.017
NR	707	-5.04	45.00	0.29	0.110	-0.875	0.054	0.035	0.039
NR	706	-5.06	67.50	0.30	0.096	-0.877	0.059	0.043	0.049
NR	705	-5.07	90.00	0.31	0.096	-0.878	0.070	0.050	0.047
NR	710	0.00	0.00	-0.02	-0.016	-0.850	0.012	0.000	-0.002
NR	711	0.00	22.50	-0.05	-0.019	-0.843	0.011	0.040	0.022
NR	712	-0.01	45.00	-0.06	-0.044	-0.847	0.007	0.066	0.037
NR	713	-0.03	67.50	-0.07	-0.067	-0.851	0.027	0.070	0.043
NR	714	-0.05	90.00	-0.05	-0.105	-0.851	0.040	0.065	0.046
NR	719	5.02	0.00	-0.40	-0.188	-0.887	0.002	0.019	-0.002
NR	718	5.02	22.50	-0.40	-0.185	-0.891	0.006	0.024	0.016
NR	717	5.01	45.00	-0.39	-0.155	-0.890	0.004	0.054	0.055
NR	716	4.99	67.50	-0.41	-0.214	-0.894	0.012	0.095	0.049
NR	715	4.98	90.00	-0.42	-0.259	-0.899	0.030	0.062	0.048
NR	720	10.05	0.00	-0.85	-0.557	-0.915	-0.008	0.021	-0.004
NR	721	10.05	22.50	-0.81	-0.277	-0.920	0.054	-0.074	0.017
NR	722	10.04	45.00	-0.77	-0.201	-0.934	0.004	0.051	0.035
NR	723	10.02	67.50	-0.82	-0.293	-0.933	-0.057	0.184	0.044
NR	724	10.01	90.10	-0.88	-0.426	-0.933	0.002	0.085	0.049
NR	729	15.09	0.10	-1.40	-0.559	-0.935	-0.058	0.052	-0.003
NR	730	15.09	0.10	-1.40	-0.559	-0.930	-0.058	0.052	-0.003
NR	731	15.09	22.50	-1.54	-0.410	-0.940	0.066	-0.160	0.020
NR	732	15.09	22.50	-1.33	-0.423	-0.935	0.097	-0.167	0.015
NR	733	15.07	45.00	-1.27	-0.286	-0.944	-0.009	0.038	0.031
NR	734	15.07	45.00	-1.27	-0.286	-0.944	-0.002	0.058	0.029
NR	735	15.06	67.50	-1.36	-0.411	-0.944	-0.121	0.281	0.044
NR	736	15.06	67.50	-1.53	-0.417	-0.949	-0.131	0.267	0.041
NR	737	15.05	90.10	-1.43	-0.615	-0.944	-0.048	0.099	0.052
NR	738	15.05	90.10	-1.43	-0.615	-0.944	-0.038	0.098	0.048
NR	747	20.14	-0.01	-2.05	-0.741	-0.971	-0.065	0.055	-0.015
NR	748	20.14	-0.01	-2.05	-0.741	-0.971	-0.065	0.055	-0.015
NR	745	20.15	22.50	-1.96	-0.570	-0.982	0.088	-0.210	0.016
NR	746	20.15	22.60	-1.95	-0.570	-0.982	0.075	-0.211	0.026
NR	743	20.12	44.99	-1.88	-0.394	-0.962	-0.038	0.035	0.023
NR	744	20.12	45.00	-1.88	-0.394	-0.962	-0.051	0.055	0.032
NR	741	20.11	67.50	-1.94	-0.515	-0.981	-0.209	0.319	0.041
NR	742	20.11	67.49	-1.94	-0.515	-0.961	-0.209	0.319	0.052
NR	759	20.10	90.11	-2.08	-0.755	-0.971	-0.106	0.114	0.059
NR	760	20.10	90.10	-2.08	-0.755	-0.971	-0.106	0.089	0.044

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	749	25.18	-0.02	-2.68	-0.768	-1.045	-0.044	0.028	-0.027
NR	750	25.18	-0.02	-2.68	-0.783	-1.035	-0.056	0.029	-0.029
NR	751	25.18	22.53	-2.62	-0.647	-1.051	-0.003	-0.094	0.066
NR	752	25.18	22.53	-2.62	-0.648	-1.051	-0.008	-0.093	0.066
NR	753	25.17	45.00	-2.57	-0.562	-1.027	-0.069	0.042	0.027
NR	754	25.17	45.00	-2.57	-0.562	-1.027	-0.069	0.042	0.028
NR	755	25.16	67.45	-2.61	-0.655	-1.052	-0.172	0.190	-0.054
NR	756	25.16	67.45	-2.60	-0.640	-1.042	-0.161	0.176	-0.057
NR	757	25.15	89.99	-2.72	-0.765	-1.052	-0.120	0.057	0.053
NR	758	25.15	89.99	-2.70	-0.765	-1.061	-0.100	0.056	0.057
NR	699	0.00	0.00	-0.04	-0.002	-0.840	0.000	-0.008	0.000
NR	725	0.00	0.10	-0.05	-0.009	-0.845	0.010	-0.001	0.005
NR	728	0.00	0.10	-0.05	-0.009	-0.845	0.004	-0.016	0.003
NR	759	0.00	0.00	-0.05	-0.001	-0.854	0.000	0.000	0.003

(Run.30&30.1)

RUN NUMBER=30 LONG BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 2.5 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	ATTITUDE PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2169	-10.05	0.01	0.85	0.492	-0.902	0.033	-0.041	0.009
NR	2169	-10.05	0.01	0.86	0.723	-0.902	0.033	-0.045	0.009
NR	2170	-10.05	22.50	0.78	0.400	-0.899	-0.056	0.167	0.026
NR	2170	-10.05	22.50	0.78	0.613	-0.899	-0.056	0.252	0.026
NR	2171	-10.06	45.00	0.70	0.250	-0.903	-0.004	0.138	0.042
NR	2172	-10.08	67.50	0.70	0.222	-0.898	0.082	0.028	0.049
NR	2173	-10.10	90.00	0.76	0.261	-0.898	0.080	0.099	0.053
NR	2178	-5.02	0.00	0.38	0.279	-0.871	0.022	-0.021	0.002
NR	2177	-5.02	22.50	0.34	0.246	-0.869	-0.004	0.061	0.018
NR	2176	-5.04	45.00	0.31	0.166	-0.873	0.013	0.097	0.038
NR	2175	-5.05	67.50	0.30	0.117	-0.872	0.047	0.094	0.053
NR	2174	-5.07	90.00	0.31	0.105	-0.873	0.050	0.128	0.055
NR	2179	0.00	0.00	-0.02	0.052	-0.840	0.013	-0.025	0.001
NR	2180	0.00	22.50	-0.03	0.048	-0.838	-0.001	0.041	0.023
NR	2181	-0.01	45.00	-0.06	0.017	-0.837	0.001	0.092	0.039
NR	2182	-0.03	67.50	-0.06	-0.039	-0.837	0.006	0.117	0.046
NR	2183	-0.05	90.00	-0.07	-0.089	-0.842	0.020	0.135	0.048
NR	2189	5.02	-0.01	-0.36	-0.102	-0.882	0.016	-0.007	-0.024
NR	2188	5.02	22.49	-0.37	-0.079	-0.871	-0.005	0.049	0.010
NR	2187	5.01	45.00	-0.38	-0.087	-0.875	-0.014	0.108	0.038
NR	2186	4.99	67.50	-0.41	-0.171	-0.879	-0.008	0.153	0.049
NR	2185	5.00	64.60	-0.41	-0.178	-0.884	0.036	0.153	0.048
NR	2184	4.98	90.00	-0.43	-0.241	-0.884	0.020	0.131	0.048
NR	2190	10.05	-0.01	-0.78	-0.216	-0.901	-0.007	0.011	-0.009
NR	2191	10.05	22.50	-0.76	-0.151	-0.905	0.021	-0.049	0.013
NR	2192	10.04	45.00	-0.75	-0.110	-0.914	-0.033	0.116	0.031
NR	2193	10.02	67.50	-0.82	-0.244	-0.913	-0.089	0.240	0.043
NR	2194	10.01	90.00	-0.88	-0.394	-0.918	-0.010	0.130	0.048
NR	2203	15.09	-0.01	-1.31	-0.412	-0.916	-0.018	0.014	-0.012
NR	2204	15.09	-0.01	-1.31	-0.420	-0.916	-0.012	0.006	-0.017
NR	2201	15.08	22.50	-1.26	-0.284	-0.916	0.056	-0.136	0.014
NR	2202	15.08	22.50	-1.27	-0.284	-0.916	0.051	-0.136	0.015
NR	2199	15.07	45.00	-1.23	-0.179	-0.935	-0.066	0.132	0.035
NR	2200	15.07	45.00	-1.22	-0.163	-0.935	-0.074	0.137	0.040
NR	2197	15.06	67.50	-1.31	-0.361	-0.934	-0.165	0.354	0.047
NR	2198	15.06	67.50	-1.31	-0.361	-0.934	-0.165	0.354	0.044
NR	2195	15.05	90.00	-1.43	-0.582	-0.934	-0.060	0.161	0.054
NR	2196	15.05	90.00	-1.43	-0.582	-0.934	-0.070	0.161	0.046
NR	2205	20.13	-0.01	-1.97	-0.584	-0.932	-0.055	0.027	-0.013
NR	2206	20.13	0.00	-1.97	-0.576	-0.932	-0.069	0.051	-0.007
NR	2207	20.13	22.49	-1.89	-0.414	-0.943	0.064	-0.201	0.009
NR	2208	20.13	22.50	-1.89	-0.404	-0.943	0.058	-0.204	0.014
NR	2168	0.00	0.00	-0.01	0.060	-0.840	0.013	-0.026	-0.001
NR	2209	0.00	0.00	0.00	0.045	-0.845	0.019	-0.026	0.003
NR	2210	0.00	0.00	0.00	0.023	0.000	0.000	0.000	0.005

RUN NUMBER=30.1 LONG BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 2.5 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	ATTITUDE PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3523	20.13	-0.01	-1.97	-0.562	-0.937	-0.018	0.008	-0.013
NR	3524	20.13	-0.01	-1.97	-0.546	-0.932	-0.024	0.016	-0.016
NR	3525	20.13	22.50	-1.88	-0.384	-0.943	0.098	-0.191	0.011
NR	3526	20.13	22.49	-1.88	-0.387	-0.948	0.098	-0.183	0.007
NR	3527	20.12	45.00	-1.82	-0.275	-0.962	-0.062	0.136	0.027
NR	3528	20.12	45.00	-1.81	-0.275	-0.962	-0.074	0.125	0.027
NR	3529	20.11	67.49	-1.92	-0.465	-0.972	-0.234	0.434	0.034
NR	3530	20.11	67.49	-1.92	-0.474	-0.967	-0.234	0.413	0.031
NR	3531	20.10	90.00	-2.07	-0.743	-0.971	-0.130	0.193	0.047
NR	3532	20.10	90.00	-2.07	-0.727	-0.971	-0.160	0.217	0.050
NR	3541	25.18	-0.02	-2.65	-0.643	-0.996	-0.135	0.007	-0.036
NR	3542	25.18	-0.02	-2.65	-0.667	-0.991	-0.061	0.004	-0.030
NR	3539	25.18	22.52	-2.58	-0.514	-0.982	-0.032	-0.092	0.042
NR	3540	25.18	22.51	-2.58	-0.505	-0.982	-0.004	-0.113	0.040
NR	3538	25.17	44.99	-2.53	-0.472	-0.988	-0.128	0.131	0.018
NR	3535	25.16	67.45	-2.59	-0.592	-1.027	-0.188	0.324	-0.033
NR	3536	25.16	67.46	-2.59	-0.575	-1.027	-0.220	0.326	-0.030
NR	3533	25.15	90.00	-2.70	-0.778	-1.047	-0.170	0.190	0.038
NR	3534	25.15	89.99	-2.70	-0.786	-1.047	-0.160	0.174	0.029
NR	3543	28.20	-0.03	-2.99	-0.810	-1.031	-0.051	-0.059	-0.041
NR	3544	28.20	-0.03	-3.00	-0.803	-1.027	-0.050	-0.091	-0.042
NR	3545	28.20	22.52	-2.95	-0.644	-1.017	-0.032	-0.101	0.052
NR	3546	28.20	22.52	-2.95	-0.651	-1.018	-0.059	-0.102	0.052
NR	3547	28.19	44.98	-2.86	-0.561	-0.999	-0.163	0.120	0.001
NR	3548	28.19	44.98	-2.87	-0.572	-0.999	-0.167	0.098	-0.005
NR	3549	28.19	67.44	-2.97	-0.735	-1.048	-0.160	0.202	-0.054
NR	3550	28.19	67.44	-2.96	-0.728	-1.048	-0.178	0.217	-0.059
NR	3551	28.18	89.99	-3.07	-0.887	-1.067	-0.131	0.146	0.035
NR	3552	28.18	89.99	-3.08	-0.895	-1.072	-0.161	0.193	0.032
NR	3553	0.00	0.00	0.00	0.053	-0.845	0.007	-0.017	-0.001

(Run.30.A)

RUN NUMBER=30.A LONG BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 2.5 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	COEFFICIENTS CZ	CM	CX	CY	CN	CL
NR	2395	10.05	0.09	-0.78	-0.215	-0.901	-0.002	0.019	-0.009
NR	2396	10.05	0.09	-0.77	-0.207	-0.896	-0.002	0.019	-0.009
NR	2397	10.05	22.50	-0.76	-0.145	-0.900	0.026	-0.022	0.014
NR	2398	10.05	22.50	-0.76	-0.159	-0.900	0.026	-0.028	0.017
NR	2399	10.04	45.00	-0.75	-0.110	-0.914	-0.040	0.139	0.032
NR	2400	10.04	45.00	-0.74	-0.110	-0.909	-0.047	0.139	0.032
NR	2401	10.02	67.50	-0.81	-0.266	-0.913	-0.087	0.267	0.044
NR	2402	10.02	67.50	-0.81	-0.259	-0.913	-0.086	0.264	0.042
NR	2403	10.01	90.10	-0.88	-0.425	-0.913	-0.018	0.138	0.048
NR	2404	10.01	90.10	-0.88	-0.410	-0.913	-0.018	0.122	0.047
NR	2413	15.09	-0.01	-1.32	-0.405	-0.906	-0.012	0.022	-0.011
NR	2414	15.09	-0.01	-1.32	-0.397	-0.901	-0.025	0.023	-0.013
NR	2411	15.08	22.50	-1.26	-0.289	-0.911	0.056	-0.121	0.014
NR	2412	15.08	22.49	-1.26	-0.272	-0.911	0.056	-0.122	0.009
NR	2409	15.07	45.00	-1.23	-0.190	-0.930	-0.067	0.155	0.035
NR	2410	15.07	45.00	-1.23	-0.185	-0.925	-0.066	0.149	0.028
NR	2407	15.06	67.50	-1.32	-0.377	-0.929	-0.168	0.361	0.043
NR	2408	15.06	67.50	-1.32	-0.379	-0.934	-0.170	0.354	0.044
NR	2405	15.05	90.10	-1.43	-0.606	-0.934	-0.067	0.138	0.047
NR	2406	15.05	90.10	-1.43	-0.598	-0.934	-0.057	0.153	0.047
NR	2415	20.13	-0.01	-1.97	-0.584	-0.932	-0.031	0.033	-0.017
NR	2416	20.13	-0.01	-1.97	-0.584	-0.927	-0.031	0.033	-0.020
NR	2417	20.13	22.49	-1.88	-0.416	-0.943	0.107	-0.195	0.002
NR	2418	20.13	22.50	-1.88	-0.405	-0.933	0.086	-0.181	0.015
NR	2419	20.12	44.99	-1.82	-0.303	-0.952	-0.078	0.099	0.020
NR	2420	20.12	45.00	-1.83	-0.286	-0.952	-0.075	0.115	0.030
NR	2421	20.11	67.50	-1.92	-0.474	-0.967	-0.234	0.412	0.039
NR	2422	20.11	67.50	-1.93	-0.465	-0.962	-0.236	0.417	0.035
NR	2423	20.10	90.00	-2.08	-0.744	-0.962	-0.130	0.162	0.054
NR	2424	20.10	90.00	-2.09	-0.736	-0.962	-0.130	0.185	0.050
NR	2394	0.00	0.10	0.00	0.046	-0.840	0.011	-0.009	-0.002
NR	2425	0.00	0.00	-0.01	0.038	-0.840	0.006	-0.009	0.000

(Run.29)

RUN NUMBER=29 LONG BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 5.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2118	-10.05	0.01	0.93	0.635	-0.911	0.008	-0.018	0.015
NR	2119	-10.05	0.01	0.93	0.643	-0.916	0.014	-0.002	0.017
NR	2120	-10.06	22.51	0.85	0.525	-0.914	-0.098	0.235	0.028
NR	2121	-10.06	22.51	0.85	0.522	-0.914	-0.098	0.242	0.029
NR	2122	-10.06	45.01	0.74	0.313	-0.913	-0.051	0.233	0.043
NR	2123	-10.06	45.00	0.74	0.318	-0.908	-0.051	0.249	0.040
NR	2124	-10.08	67.50	0.72	0.218	-0.902	0.038	0.099	0.040
NR	2125	-10.08	67.50	0.72	0.228	-0.902	0.039	0.103	0.038
NR	2126	-10.11	90.00	0.77	0.231	-0.898	0.020	0.156	0.048
NR	2127	-10.11	90.00	0.77	0.231	-0.898	0.020	0.148	0.048
NR	2132	-5.03	0.00	0.46	0.360	-0.886	0.034	0.017	0.004
NR	2131	-5.03	22.50	0.40	0.324	-0.874	-0.016	0.124	0.023
NR	2130	-5.04	45.00	0.36	0.213	-0.878	-0.025	0.163	0.039
NR	2129	-5.06	67.50	0.33	0.135	-0.877	0.006	0.174	0.050
NR	2128	-5.08	90.00	0.32	0.082	-0.877	0.010	0.169	0.050
NR	2133	0.00	0.00	0.03	0.078	-0.854	0.025	0.005	0.001
NR	2134	0.00	22.50	0.01	0.067	-0.853	-0.006	0.082	0.021
NR	2135	-0.02	45.00	-0.01	0.074	-0.852	-0.026	0.143	0.038
NR	2136	-0.03	67.50	-0.05	-0.042	-0.851	-0.033	0.171	0.045
NR	2137	-0.05	90.00	-0.07	-0.112	-0.851	-0.030	0.176	0.051
NR	2142	5.02	0.00	-0.31	-0.030	-0.882	-0.004	0.024	-0.003
NR	2141	5.02	22.50	-0.32	-0.043	-0.886	-0.024	0.090	0.015
NR	2140	5.01	45.00	-0.35	-0.080	-0.885	-0.043	0.159	0.034
NR	2139	4.99	67.50	-0.40	-0.167	-0.889	-0.036	0.203	0.051
NR	2138	4.98	90.00	-0.44	-0.266	-0.894	-0.020	0.180	0.054
NR	2143	10.05	0.00	-0.74	-0.113	-0.906	-0.026	0.026	-0.003
NR	2144	10.05	22.50	-0.72	-0.061	-0.910	-0.010	0.021	0.021
NR	2145	10.04	45.00	-0.73	-0.071	-0.919	-0.082	0.200	0.042
NR	2146	10.02	67.50	-0.81	-0.259	-0.923	-0.143	0.325	0.048
NR	2147	10.01	90.00	-0.92	-0.435	-0.923	-0.070	0.187	0.054
NR	2152	15.09	0.00	-1.27	-0.295	-0.911	-0.055	0.022	-0.007
NR	2151	15.08	22.50	-1.22	-0.169	-0.921	-0.010	-0.080	0.020
NR	2150	15.07	45.00	-1.22	-0.129	-0.944	-0.144	0.228	0.040
NR	2149	15.06	67.50	-1.35	-0.386	-0.949	-0.212	0.425	0.050
NR	2148	15.05	90.00	-1.46	-0.623	-0.948	-0.110	0.203	0.054
NR	2153	20.13	0.00	-1.91	-0.435	-0.913	-0.118	0.051	-0.002
NR	2154	20.13	0.00	-1.91	-0.435	-0.918	-0.111	0.051	-0.004
NR	2155	20.12	22.50	-1.84	-0.281	-0.933	0.050	-0.131	0.018
NR	2156	20.12	22.50	-1.84	-0.275	-0.933	0.035	-0.145	0.018
NR	2158	20.12	45.00	-1.81	-0.220	-0.952	-0.128	0.182	0.038
NR	2157	20.12	45.00	-1.81	-0.225	-0.957	-0.112	0.198	0.039
NR	2159	20.11	67.50	-1.96	-0.475	-0.976	-0.281	0.499	0.038
NR	2160	20.11	67.49	-1.96	-0.474	-0.972	-0.281	0.481	0.029
NR	2161	20.11	67.50	-1.96	-0.460	-0.972	-0.283	0.493	0.036
NR	2162	20.10	90.00	-2.12	-0.769	-0.971	-0.180	0.250	0.051
NR	2163	20.10	90.01	-2.12	-0.776	-0.971	-0.580	0.277	0.062

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2117	-10.00	0.00	0.03	0.092	-1.023	-0.006	-0.001	0.003
NR	2165	0.00	0.00	0.02	0.093	-0.845	-0.031	0.000	0.005

T.R.69267

(Run.29.1)

RUN NUMBER=29.1 LONG BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 3.0 CG POSITION 30.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3338	20.13	-0.01	-1.91	-0.433	-0.922	-0.049	0.040	-0.010
NR	3339	20.13	-0.01	-1.91	-0.433	-0.923	-0.049	0.032	-0.017
NR	3360	20.12	22.30	-1.81	-0.233	-0.938	0.039	-0.112	0.014
NR	3361	20.12	22.30	-1.82	-0.263	-0.943	0.020	-0.088	0.021
NR	3362	20.12	43.00	-1.80	-0.202	-0.962	-0.127	0.233	0.031
NR	3363	20.11	43.00	-1.79	-0.208	-0.962	-0.117	0.223	0.028
NR	3364	20.11	67.49	-1.93	-0.488	-0.976	-0.270	0.304	0.028
NR	3365	20.11	67.49	-1.93	-0.483	-0.981	-0.281	0.512	0.031
NR	3366	20.10	90.01	-2.09	-0.784	-0.981	-0.210	0.244	0.037
NR	3367	20.10	90.01	-2.09	-0.773	-0.981	-0.220	0.267	0.057
NR	3376	23.18	-0.01	-2.61	-0.610	-0.971	-0.061	0.027	-0.023
NR	3377	23.18	-0.01	-2.60	-0.603	-0.967	-0.060	0.003	-0.024
NR	3374	23.17	22.30	-2.33	-0.464	-0.963	-0.033	-0.088	0.018
NR	3375	23.17	22.31	-2.33	-0.463	-0.938	-0.029	-0.090	0.028
NR	3372	23.16	44.99	-2.46	-0.363	-0.983	-0.174	0.212	0.020
NR	3373	23.17	44.99	-2.47	-0.386	-0.988	-0.184	0.223	0.022
NR	3370	25.16	67.46	-2.39	-0.382	-1.042	-0.253	0.432	-0.031
NR	3371	23.16	67.46	-2.60	-0.388	-1.042	-0.267	0.418	-0.023
NR	3368	23.15	90.00	-2.72	-0.826	-1.036	-0.180	0.215	0.043
NR	3369	25.15	90.00	-2.73	-0.819	-1.061	-0.190	0.223	0.037
NR	3378	28.20	-0.02	-2.93	-0.722	-1.002	-0.032	0.004	-0.033
NR	3379	28.20	-0.02	-2.93	-0.722	-0.997	-0.032	-0.004	-0.030
NR	3380	28.20	22.32	-2.91	-0.391	-0.993	-0.033	-0.062	0.048
NR	3381	28.20	22.32	-2.91	-0.373	-0.978	-0.032	-0.089	0.046
NR	3382	28.19	44.98	-2.84	-0.489	-0.994	-0.179	0.168	-0.003
NR	3383	28.19	44.98	-2.83	-0.466	-0.994	-0.198	0.223	-0.006
NR	3384	28.19	67.45	-2.96	-0.723	-1.038	-0.243	0.328	-0.048
NR	3585	28.19	67.44	-2.97	-0.737	-1.033	-0.239	0.300	-0.030
NR	3386	28.18	90.00	-3.09	-0.911	-1.072	-0.140	0.216	0.041
NR	3537	0.00	0.00	0.02	0.078	-0.834	-0.006	0.007	0.000

T.R.69267

(Run.8)

RUN NUMBER=8 LONG BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE=10.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	COEFFICIENTS CZ	CM	CX	CY	CN	CL
NR	613	-10.06	0.00	1.10	0.911	-0.971	0.049	-0.072	0.005
NR	614	-10.06	22.50	1.02	0.804	-0.973	-0.114	0.282	0.017
NR	615	-10.07	44.99	0.87	0.329	-0.967	-0.144	0.383	0.022
NR	616	-10.09	67.49	0.77	0.328	-0.942	-0.069	0.293	0.021
NR	617	-10.10	89.99	0.75	0.248	-0.927	-0.060	0.274	0.032
NR	622	-5.03	0.00	0.57	0.603	-0.910	0.023	-0.042	-0.003
NR	621	-5.03	22.49	0.33	0.543	-0.914	-0.062	0.151	0.008
NR	620	-5.04	44.99	0.43	0.371	-0.915	-0.105	0.283	0.020
NR	619	-5.06	67.49	0.36	0.226	-0.907	-0.100	0.324	0.034
NR	618	-5.07	89.99	0.32	0.108	-0.902	-0.070	0.310	0.034
NR	623	0.00	0.00	0.10	0.212	-0.869	0.014	-0.020	-0.005
NR	624	-0.01	22.50	0.07	0.206	-0.873	-0.036	0.094	0.016
NR	625	-0.02	43.00	0.03	0.142	-0.872	-0.071	0.190	0.032
NR	626	-0.03	67.50	-0.01	0.043	-0.871	-0.081	0.263	0.044
NR	627	-0.03	90.00	-0.05	-0.070	-0.871	-0.080	0.292	0.046
NR	632	5.02	0.00	-0.24	0.103	-0.902	0.011	-0.018	-0.004
NR	631	5.01	22.30	-0.26	0.080	-0.906	-0.043	0.102	0.014
NR	630	5.00	45.00	-0.29	0.033	-0.910	-0.078	0.202	0.033
NR	629	4.99	67.30	-0.36	-0.080	-0.909	-0.095	0.383	0.051
NR	628	4.98	90.00	-0.42	-0.215	-0.914	-0.090	0.320	0.057
NR	633	10.04	0.00	-0.60	0.108	-0.920	0.007	-0.003	-0.007
NR	634	10.04	22.50	-0.60	0.129	-0.923	-0.031	0.060	0.020
NR	635	10.03	45.00	-0.64	0.071	-0.934	-0.113	0.269	0.041
NR	636	10.02	66.50	-0.75	-0.128	-0.938	-0.174	0.411	0.048
NR	637	10.01	90.00	-0.86	-0.337	-0.943	-0.130	0.334	0.056
NR	656	15.08	-0.01	-1.10	0.036	-0.921	-0.004	0.015	-0.013
NR	657	15.08	-0.01	-1.10	0.036	-0.921	0.002	0.014	-0.018
NR	658	15.07	22.50	-1.05	0.119	-0.930	0.009	0.004	0.014
NR	659	15.07	22.50	-1.03	0.118	-0.933	-0.003	0.003	0.023
NR	660	15.07	45.00	-1.08	0.066	-0.939	-0.170	0.336	0.040
NR	661	15.07	43.00	-1.08	0.066	-0.954	-0.170	0.356	0.040
NR	662	15.06	67.50	-1.24	-0.266	-0.963	-0.275	0.570	0.048
NR	663	15.06	67.50	-1.25	-0.267	-0.968	-0.278	0.571	0.050
NR	664	15.05	90.01	-1.39	-0.568	-0.968	-0.200	0.375	0.059
NR	665	15.05	90.00	-1.39	-0.568	-0.963	-0.190	0.374	0.055
NR	674	20.12	0.09	-1.75	-0.120	-0.913	-0.034	0.034	-0.021
NR	675	20.12	0.09	-1.75	-0.120	-0.913	-0.035	0.050	-0.015
NR	672	20.12	22.50	-1.68	0.004	-0.923	0.015	-0.080	0.022
NR	673	20.12	22.50	-1.67	0.004	-0.924	0.011	-0.080	0.010
NR	670	20.11	45.00	-1.63	0.020	-0.967	-0.184	0.342	0.037
NR	671	20.11	45.00	-1.66	0.019	-0.967	-0.199	0.343	0.039
NR	668	20.11	67.49	-1.85	-0.341	-0.991	-0.356	0.638	0.034
NR	669	20.11	67.50	-1.85	-0.341	-0.991	-0.335	0.638	0.039
NR	666	20.10	90.01	-2.04	-0.714	-0.996	-0.300	0.439	0.064
NR	667	20.10	90.00	-2.04	-0.706	-0.996	-0.290	0.438	0.054

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	COEFFICIENTS CZ	CM	CX	CY	CN	CL
NR	676	25.17	0.09	-2.50	-0.381	-0.912	-0.068	0.110	-0.011
NR	677	25.17	0.09	-2.50	-0.381	-0.917	-0.049	0.093	-0.010
NR	678	25.17	22.49	-2.42	-0.249	-0.919	0.001	-0.033	0.007
NR	679	25.17	22.50	-2.41	-0.244	-0.919	-0.007	-0.024	0.017
NR	680	25.16	45.01	-2.36	-0.160	-0.973	-0.207	0.273	0.043
NR	681	25.16	45.01	-2.36	-0.160	-0.973	-0.211	0.273	0.045
NR	682	25.16	67.46	-2.52	-0.435	-1.042	-0.343	0.463	-0.024
NR	683	25.16	67.46	-2.52	-0.432	-1.047	-0.343	0.473	-0.019
NR	684	25.15	89.99	-2.69	-0.760	-1.046	-0.240	0.270	0.029
NR	685	25.15	89.99	-2.69	-0.760	-1.066	-0.240	0.270	0.025
NR	694	20.21	-0.01	-2.98	-0.331	-0.946	-0.037	0.080	-0.016
NR	695	29.21	-0.01	-2.98	-0.331	-0.946	-0.043	0.080	-0.012
NR	692	20.20	22.49	-2.91	-0.429	-0.924	-0.031	-0.102	0.003
NR	693	29.20	22.30	-2.91	-0.429	-0.929	-0.041	-0.101	0.010
NR	690	29.20	44.98	-2.84	-0.312	-0.964	-0.184	0.161	0.004
NR	691	29.19	44.99	-2.84	-0.313	-0.939	-0.207	0.163	0.021
NR	688	29.19	67.45	-3.02	-0.632	-1.037	-0.281	0.271	-0.041
NR	689	29.19	67.45	-3.02	-0.632	-1.057	-0.278	0.271	-0.042
NR	686	29.19	90.00	-3.16	-0.919	-1.086	-0.220	0.013	0.042
NR	687	29.18	90.00	-3.15	-0.924	-1.086	-0.220	0.005	0.036
NR	611	0.00	0.00	0.10	0.204	-0.874	0.014	-0.036	-0.003
NR	638	0.00	0.00	0.09	0.227	-0.874	0.014	-0.028	0.003
NR	655	0.00	0.00	0.10	0.212	-0.874	0.026	-0.013	-0.003
NR	696	0.00	0.00	0.09	0.227	-0.874	0.014	-0.020	0.003

(Run.10)

RUN NUMBER=10 SHORT BODY, ROUND NOSE, LARGE TAIL
CANT ANGLE= 0.0 CB POSITION 50.00%
V= 240, FPS RE= 0.584 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	763	-10.13	-0.01	1.72	1.046	-0.293	0.057	0.009	-0.021
NR	764	-10.13	22.48	1.68	0.962	-0.278	-0.014	0.146	0.009
NR	765	-10.15	44.99	1.68	0.906	-0.259	0.053	0.075	0.046
NR	766	-10.16	67.49	1.66	0.869	-0.271	0.114	0.003	0.075
NR	767	-10.16	89.99	1.68	0.676	-0.280	0.070	0.061	0.076
NR	772	-5.06	-0.01	0.85	0.443	-0.272	0.056	-0.026	-0.018
NR	771	-5.07	22.59	0.82	0.391	-0.263	0.007	0.058	0.016
NR	770	-5.08	44.09	0.79	0.335	-0.260	0.022	0.071	0.046
NR	769	-5.10	67.49	0.78	0.311	-0.259	0.053	0.071	0.069
NR	768	-5.12	89.99	0.80	0.293	-0.263	0.020	0.102	0.073
NR	773	0.00	-0.01	-0.02	-0.028	-0.265	0.055	-0.040	-0.015
NR	774	0.00	22.49	-0.02	-0.030	-0.265	0.023	0.021	0.023
NR	775	-0.01	44.09	-0.04	-0.062	-0.261	0.005	0.069	0.054
NR	776	-0.05	67.49	-0.05	-0.095	-0.266	-0.008	0.101	0.073
NR	777	-0.05	89.99	-0.06	-0.134	-0.265	-0.020	0.129	0.081
NR	782	5.07	-0.01	-0.89	-0.509	-0.278	0.056	-0.027	-0.018
NR	781	5.06	22.49	-0.86	-0.462	-0.263	0.037	-0.020	0.021
NR	780	5.05	44.99	-0.83	-0.437	-0.258	-0.025	0.075	0.046
NR	779	5.04	67.49	-0.88	-0.514	-0.268	-0.073	0.146	0.068
NR	778	5.03	89.99	-0.95	-0.598	-0.275	-0.060	0.165	0.075
NR	783	10.13	-0.01	-1.71	-1.051	-0.291	0.017	-0.029	-0.017
NR	784	10.12	22.48	-1.70	-1.008	-0.275	0.022	-0.087	0.008
NR	785	10.12	44.99	-1.71	-1.000	-0.259	-0.058	0.094	0.045
NR	786	10.11	67.49	-1.72	-1.050	-0.284	-0.160	0.261	0.074
NR	787	10.09	89.99	-1.77	-1.156	-0.290	-0.120	0.207	0.072
NR	793	15.15	-0.02	-1.94	-1.005	-0.326	0.013	0.002	-0.034
NR	794	15.16	22.45	-2.07	-1.138	-0.294	-0.115	0.086	-0.041
NR	795	15.17	45.09	-2.38	-1.452	-0.246	-0.070	0.111	0.217
NR	796	15.14	67.62	-2.08	-1.168	-0.306	-0.002	0.112	0.285
NR	797	15.12	90.10	-2.00	-1.140	-0.331	-0.117	0.192	0.252
NR	804	20.17	0.08	-2.17	-0.979	-0.366	0.065	-0.071	0.133
NR	805	20.17	0.08	-2.16	-0.984	-0.368	0.059	-0.065	0.152
NR	803	20.17	22.49	-2.26	-1.060	-0.366	0.004	-0.051	0.013
NR	801	20.20	45.27	-2.67	-1.532	-0.308	0.087	-0.099	0.508
NR	802	20.20	45.12	-2.78	-1.641	-0.250	-0.013	0.002	0.261
NR	800	20.16	67.71	-2.28	-1.105	-0.384	-0.212	0.272	0.419
NR	798	20.14	90.08	-2.18	-1.038	-0.384	-0.037	0.105	0.210
NR	799	20.14	90.07	-2.19	-1.045	-0.389	-0.027	0.096	0.207
NR	806	25.19	0.08	-2.44	-1.005	-0.461	-0.022	-0.025	0.159
NR	807	25.20	22.59	-2.56	-1.089	-0.372	-0.332	0.271	0.184
NR	808	25.24	45.27	-3.15	-1.773	-0.236	0.047	-0.070	0.494
NR	809	25.24	45.27	-3.15	-1.778	-0.236	0.042	-0.066	0.496
NR	810	25.18	67.59	-2.52	-1.061	-0.390	0.162	-0.078	0.225
NR	811	25.16	90.10	-2.45	-1.052	-0.455	-0.166	0.218	0.247

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	817	28.22	0.09	-2.73	-1.123	-0.443	-0.031	0.006	0.145
NR	816	28.22	22.62	-2.77	-1.164	-0.354	-0.463	0.406	0.225
NR	815	28.26	45.21	-3.34	-1.836	-0.180	0.062	-0.098	0.401
NR	814	28.26	45.21	-3.36	-1.839	-0.180	0.049	-0.072	0.402
NR	813	28.20	67.57	-2.72	-1.131	-0.363	0.217	-0.117	0.192
NR	812	28.19	90.10	-2.73	-1.182	-0.445	-0.195	0.246	0.253
NR	762	0.00	-0.01	-0.01	0.014	-0.260	0.054	-0.009	-0.022
NR	788	0.00	-0.01	-0.03	-0.015	-0.265	0.043	-0.021	-0.013
NR	792	0.00	-0.02	-0.01	0.252	-0.265	0.060	-0.002	-0.030
NR	792	0.00	-0.02	-0.01	0.021	-0.263	0.060	0.002	-0.030
NR	818	0.00	0.09	-0.03	-0.007	-0.255	0.049	-0.012	0.155

(Run.26)

RUN NUMBER=26 SHORT BODY, ROUND NOSE, LARGE TAIL
CANT ANGLE= 2.5 CG POSITION 50.00%
V= 240. FPS RE= 0.584 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1907	-10.13	0.01	1.85	1.220	-0.366	0.086	0.010	0.009
NR	1908	-10.16	22.48	1.86	1.139	-0.346	-0.094	0.217	0.010
NR	1909	-10.16	44.99	1.85	1.085	-0.325	-0.085	0.236	0.045
NR	1910	-10.17	67.50	1.76	0.935	-0.320	-0.084	0.195	0.078
NR	1911	-10.19	90.00	1.70	0.899	-0.315	-0.120	0.256	0.084
NR	1916	-5.08	-0.01	1.07	0.677	-0.321	0.069	-0.008	-0.018
NR	1913	-3.08	22.39	1.02	0.397	-0.317	-0.095	0.148	0.018
NR	1914	-5.09	44.99	0.94	0.492	-0.305	-0.117	0.219	0.045
NR	1913	-5.10	67.49	0.88	0.402	-0.295	-0.122	0.222	0.069
NR	1912	-3.12	89.99	0.83	0.312	-0.293	-0.190	0.256	0.079
NR	1917	-0.01	-0.01	0.14	0.121	-0.285	0.096	-0.017	-0.009
NR	1918	-0.01	22.50	0.12	0.092	-0.285	-0.039	0.098	0.028
NR	1919	-0.02	45.00	0.08	0.059	-0.281	-0.105	0.171	0.039
NR	1920	-0.03	67.30	0.02	-0.037	-0.285	-0.141	0.221	0.079
NR	1921	-0.03	90.00	-0.05	-0.135	-0.285	-0.190	0.263	0.087
NR	1926	5.03	-0.01	-0.68	-0.294	-0.265	0.095	-0.039	-0.015
NR	1925	3.05	22.49	-0.67	-0.287	-0.265	-0.022	0.038	0.026
NR	1924	5.04	45.00	-0.71	-0.331	-0.265	-0.141	0.195	0.057
NR	1923	3.03	67.50	-0.82	-0.475	-0.277	-0.221	0.283	0.080
NR	1922	3.03	89.99	-0.93	-0.608	-0.287	-0.220	0.290	0.085
NR	1927	10.12	0.00	-1.58	-0.880	-0.252	0.023	-0.028	-0.006
NR	1928	10.11	22.49	-1.33	-0.827	-0.248	-0.020	0.005	0.019
NR	1929	10.11	44.99	-1.37	-0.855	-0.245	-0.199	0.250	0.044
NR	1930	10.10	67.50	-1.63	-0.992	-0.289	-0.303	0.383	0.084
NR	1931	10.09	89.99	-1.75	-1.147	-0.314	-0.270	0.331	0.076
NR	1936	13.13	0.01	-1.97	-1.032	-0.282	-0.017	-0.007	0.012
NR	1935	15.16	22.49	-2.13	-1.175	-0.255	-0.166	0.111	0.017
NR	1934	15.17	45.01	-2.30	-1.346	-0.217	-0.194	0.245	0.087
NR	1933	15.13	67.49	-2.01	-1.101	-0.302	-0.164	0.276	0.038
NR	1932	15.12	89.96	-1.98	-1.104	-0.346	-0.251	0.322	0.032
NR	1937	20.18	0.02	-2.23	-1.031	-0.319	-0.111	0.061	0.035
NR	1938	20.18	0.02	-2.23	-1.031	-0.314	-0.117	0.068	0.037
NR	1939	20.17	22.39	-2.24	-1.022	-0.322	-0.095	0.007	-0.134
NR	1940	20.17	22.38	-2.24	-1.022	-0.317	-0.033	0.007	-0.139
NR	1941	20.19	45.17	-2.62	-1.448	-0.230	-0.085	0.113	0.333
NR	1942	20.19	45.17	-2.62	-1.436	-0.245	-0.083	0.114	0.336
NR	1943	20.15	67.60	-2.21	-1.032	-0.369	-0.371	0.431	0.244
NR	1944	20.15	67.60	-2.21	-1.034	-0.369	-0.383	0.464	0.240
NR	1945	20.14	89.94	-2.19	-1.032	-0.419	-0.042	0.124	-0.013
NR	1946	20.14	89.93	-2.20	-1.051	-0.415	-0.043	0.124	-0.020

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E. 5FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1935	25.19	0.01	-2.41	-0.935	-0.398	-0.125	0.071	0.010
NR	1936	25.19	0.01	-2.41	-0.943	-0.398	-0.113	0.059	0.008
NR	1933	25.20	22.49	-2.33	-1.044	-0.324	-0.397	0.341	0.019
NR	1954	25.20	22.49	-2.33	-1.036	-0.324	-0.397	0.366	0.019
NR	1951	25.24	45.17	-3.13	-1.733	-0.183	-0.062	0.057	0.333
NR	1932	25.24	45.16	-3.14	-1.745	-0.188	-0.060	0.043	0.329
NR	1949	25.18	67.47	-2.48	-1.031	-0.381	0.032	0.073	0.033
NR	1930	25.18	67.47	-2.48	-1.020	-0.381	0.032	0.078	0.033
NR	1947	25.16	89.98	-2.47	-1.073	-0.465	-0.231	0.282	0.036
NR	1948	25.17	89.98	-2.48	-1.079	-0.465	-0.231	0.290	0.056
NR	1937	29.22	0.00	-2.79	-1.120	-0.400	-0.055	0.004	-0.007
NR	1958	29.22	0.00	-2.78	-1.110	-0.405	-0.033	0.004	-0.006
NR	1959	29.23	22.53	-2.81	-1.138	-0.312	-0.372	0.493	0.083
NR	1960	29.23	22.53	-2.81	-1.131	-0.312	-0.582	0.509	0.083
NR	1961	29.26	45.09	-3.44	-1.863	-0.108	-0.013	-0.013	0.218
NR	1962	29.26	45.09	-3.45	-1.867	-0.105	-0.017	-0.009	0.208
NR	1963	29.21	67.45	-2.77	-1.128	-0.351	0.129	-0.035	-0.015
NR	1964	29.20	89.98	-2.87	-1.281	-0.435	-0.861	0.386	0.050
NR	1906	-0.01	-0.01	0.16	0.166	-0.275	0.053	0.007	-0.018
NR	1965	-0.01	0.00	0.15	0.147	-0.280	0.062	-0.024	-0.004

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

(Run.23)

RUN NUMBER=25 SHORT BODY, ROUND NOSE, LARGE TAIL
CANT ANGLE= 5.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1738	-10.14	0.00	1.88	1.258	-0.460	0.045	0.028	0.004
NR	1739	-10.14	22.60	1.89	1.250	-0.450	-0.115	0.283	0.058
NR	1740	-10.17	44.99	1.98	1.227	-0.411	-0.500	0.451	0.044
NR	1740	-10.16	44.99	1.98	1.724	-0.411	-0.500	0.955	0.045
NR	1741	-10.18	67.51	1.83	1.030	-0.379	-0.412	0.515	0.095
NR	1742	-10.18	90.00	1.66	0.856	-0.554	-0.400	0.498	0.094
NR	1747	-5.10	0.01	1.37	0.978	-0.405	0.055	-0.008	0.012
NR	1746	-5.10	22.51	1.31	0.896	-0.401	-0.205	0.295	0.046
NR	1745	-5.10	45.10	1.17	0.710	-0.385	-0.371	0.465	0.070
NR	1744	-5.11	67.50	0.99	0.488	-0.347	-0.455	0.513	0.085
NR	1745	-5.12	90.00	0.80	0.288	-0.322	-0.440	0.529	0.095
NR	1748	-0.03	0.00	0.45	0.359	-0.329	0.055	-0.001	0.007
NR	1749	-0.05	22.51	0.58	0.512	-0.527	-0.170	0.206	0.046
NR	1750	-0.04	45.01	0.28	0.201	-0.326	-0.332	0.368	0.079
NR	1751	-0.04	67.51	0.11	0.034	-0.534	-0.450	0.489	0.097
NR	1752	-0.04	90.01	-0.07	-0.160	-0.354	-0.490	0.535	0.107
NR	1757	5.03	0.01	-0.58	-0.031	-0.273	0.021	-0.012	0.011
NR	1756	5.03	22.51	-0.42	-0.065	-0.278	-0.169	0.178	0.050
NR	1755	5.03	45.11	-0.54	-0.195	-0.287	-0.356	0.375	0.080
NR	1754	5.03	67.51	-0.75	-0.419	-0.307	-0.472	0.499	0.102
NR	1755	5.03	90.01	-0.95	-0.624	-0.556	-0.520	0.552	0.109
NR	1758	10.10	0.01	-1.28	-0.579	-0.208	0.007	-0.011	0.010
NR	1759	10.10	22.51	-1.28	-0.557	-0.219	-0.185	0.170	0.055
NR	1760	10.10	45.11	-1.58	-0.682	-0.255	-0.473	0.511	0.082
NR	1761	10.10	67.52	-1.57	-0.927	-0.509	-0.562	0.605	0.116
NR	1762	10.09	90.01	-1.77	-1.175	-0.553	-0.560	0.591	0.111
NR	1767	15.15	0.07	-1.97	-1.037	-0.199	0.015	-0.016	-0.047
NR	1766	15.15	22.48	-2.04	-1.061	-0.167	-0.205	0.181	0.008
NR	1765	15.15	45.04	-2.09	-1.118	-0.208	-0.458	0.509	0.132
NR	1764	15.13	67.52	-1.94	-1.039	-0.316	-0.447	0.540	0.110
NR	1763	15.11	89.99	-1.96	-1.101	-0.390	-0.530	0.565	0.065
NR	1768	20.18	0.09	-2.26	-1.049	-0.226	-0.029	0.002	-0.015
NR	1769	20.17	22.55	-2.25	-1.015	-0.220	-0.144	0.098	-0.204
NR	1770	20.17	22.56	-2.24	-1.017	-0.215	-0.150	0.104	-0.199
NR	1771	20.18	45.21	-2.37	-1.155	-0.250	-0.576	0.418	0.410
NR	1772	20.15	67.62	-2.10	-0.929	-0.584	-0.659	0.694	0.284
NR	1773	20.13	89.98	-2.14	-1.011	-0.458	-0.361	0.398	0.060
NR	1774	20.13	89.98	-2.14	-1.003	-0.458	-0.381	0.418	0.060
NR	1779	25.20	-0.03	-2.47	-0.990	-0.270	0.085	-0.104	-0.051
NR	1780	25.20	-0.03	-2.47	-0.998	-0.265	0.059	-0.086	-0.043
NR	1778	25.21	22.40	-2.61	-1.156	-0.201	-0.193	0.142	-0.156
NR	1777	25.22	45.22	-2.94	-1.502	-0.139	-0.368	0.576	0.422
NR	1776	25.18	67.51	-2.42	-0.969	-0.381	-0.287	0.579	0.099
NR	1775	25.16	90.02	-2.42	-1.040	-0.504	-0.489	0.511	0.124

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 5FT+4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1781	29.21	-0.01	-2.66	-0.994	-0.341	-0.029	-0.007	-0.020
NR	1782	29.22	22.51	-2.74	-1.071	-0.233	-0.555	0.489	0.045
NR	1783	29.26	45.17	-3.55	-1.741	-0.044	-0.284	0.272	0.329
NR	1784	29.21	67.49	-2.74	-1.094	-0.521	-0.149	0.260	0.058
NR	1785	29.19	90.03	-2.77	-1.199	-0.499	-0.449	0.490	0.127
NR	1737	-0.03	0.00	0.45	0.594	-0.519	0.033	0.015	0.000
NR	1757	-0.03	0.00	0.45	0.625	-0.519	0.055	0.011	0.000
NR	1786	-0.05	0.01	0.44	0.584	-0.524	0.027	0.015	0.014

(Run.11)

RUN NUMBER=11 SHORT BODY, ROUND NOSE, LARGE TAIL
CANT ANGLS=10.0 C6 POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	C2	CM	COEFFICIENTS CR	CY	CN	CL
NR	857	-10.13	0.00	1.81	1.164	-0.572	0.062	0.027	-0.002
NR	858	-10.13	0.00	1.82	1.174	-0.577	0.074	0.014	0.000
NR	859	-10.14	22.48	1.86	1.193	-0.568	-0.153	0.299	-0.003
NR	860	-10.14	22.47	1.86	1.182	-0.566	-0.164	0.307	-0.010
NR	861	-10.17	44.95	1.99	1.286	-0.534	-0.413	0.578	-0.023
NR	862	-10.17	44.95	1.99	1.275	-0.556	-0.413	0.578	-0.024
NR	863	-10.19	67.48	1.98	1.216	-0.527	-0.868	0.996	0.048
NR	864	-10.18	89.98	1.64	0.843	-0.437	-0.919	0.972	0.051
NR	869	-5.12	0.00	1.73	1.386	-0.582	0.044	0.000	0.000
NR	868	-5.12	22.49	1.66	1.281	-0.574	-0.368	0.465	0.023
NR	867	-5.12	44.99	1.46	1.032	-0.546	-0.706	0.818	0.042
NR	866	-5.12	67.48	1.15	0.676	-0.310	-0.920	1.003	0.058
NR	865	-5.11	89.98	0.77	0.263	-0.463	-0.990	1.033	0.057
NR	870	-0.07	-0.01	0.98	0.883	-0.458	0.021	-0.004	-0.017
NR	871	-0.07	22.49	0.89	0.809	-0.436	-0.366	0.401	0.022
NR	872	-0.06	44.99	0.67	0.578	-0.469	-0.720	0.735	0.051
NR	873	-0.05	67.49	0.31	0.237	-0.472	-0.954	0.972	0.074
NR	874	-0.04	89.99	-0.09	-0.156	-0.477	-1.030	1.067	0.084
NR	879	5.00	0.08	0.04	0.316	-0.342	0.008	0.003	0.126
NR	878	5.00	22.38	-0.03	0.241	-0.367	-0.342	0.329	0.171
NR	877	5.01	45.08	-0.21	0.084	-0.371	-0.676	0.643	0.204
NR	876	5.02	67.38	-0.56	-0.247	-0.418	-0.935	0.909	0.222
NR	875	5.03	90.00	-0.94	-0.604	-0.474	-1.070	1.088	0.098
NR	880	10.06	0.08	-0.75	-0.064	-0.238	-0.004	0.000	0.127
NR	881	10.06	22.58	-0.80	-0.129	-0.236	-0.371	0.341	0.171
NR	882	10.07	45.09	-1.07	-0.414	-0.309	-0.768	0.749	0.207
NR	883	10.08	67.39	-1.41	-0.790	-0.383	-0.969	0.953	0.236
NR	884	10.09	90.09	-1.75	-1.138	-0.466	-1.057	1.064	0.243
NR	890	15.13	-0.01	-1.64	-0.604	-0.106	-0.003	0.033	-0.022
NR	891	15.13	22.50	-1.64	-0.603	-0.133	-0.403	0.427	0.029
NR	892	15.13	45.02	-1.77	-0.817	-0.228	-0.860	0.929	0.094
NR	893	15.12	67.48	-1.79	-0.931	-0.371	-0.639	0.907	0.056
NR	894	15.12	67.49	-1.79	-0.931	-0.371	-0.839	0.907	0.061
NR	895	15.10	89.96	-1.81	-1.000	-0.532	-0.921	0.950	0.016
NR	896	15.10	89.95	-1.80	-0.993	-0.532	-0.912	0.940	0.013
NR	905	20.17	-0.01	-2.14	-0.923	-0.113	-0.049	0.037	-0.014
NR	906	20.17	-0.01	-2.14	-0.925	-0.118	-0.043	0.032	-0.012
NR	903	20.19	22.43	-2.43	-1.187	-0.049	-0.809	0.788	-0.074
NR	904	20.18	22.44	-2.28	-1.030	-0.053	-0.385	0.352	-0.067
NR	901	20.17	45.11	-2.31	-1.080	-0.123	-0.749	0.828	0.243
NR	902	20.17	45.11	-2.31	-1.095	-0.128	-0.753	0.822	0.241
NR	899	20.15	67.51	-2.09	-0.939	-0.355	-0.693	0.752	0.094
NR	900	20.15	67.51	-2.08	-0.924	-0.335	-0.689	0.755	0.096
NR	897	20.13	89.99	-2.06	-0.974	-0.531	-0.790	0.802	0.070
NR	898	20.13	89.99	-2.08	-0.992	-0.551	-0.790	0.802	0.070

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL REBULTS.

	OR.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	907	25.20	-0.02	-2.58	-1.095	-0.088	-0.035	0.002	-0.027
NR	908	25.20	22.39	-2.59	-1.107	-0.059	-0.406	0.321	-0.146
NR	909	25.20	22.39	-2.58	-1.092	-0.059	-0.415	0.333	-0.149
NR	910	25.20	45.22	-2.63	-1.157	-0.115	-0.817	0.815	0.416
NR	911	25.20	45.22	-2.63	-1.151	-0.115	-0.817	0.621	0.416
NR	912	25.17	67.33	-2.36	-0.929	-0.357	-0.704	0.752	0.125
NR	913	25.17	67.53	-2.35	-0.924	-0.362	-0.702	0.750	0.127
NR	914	25.16	90.03	-2.42	-1.052	-0.578	-0.809	0.809	0.126
NR	922	29.18	-0.01	-2.10	-0.379	-0.116	-0.049	0.013	-0.023
NR	923	29.18	-0.02	-2.09	-0.369	-0.106	-0.049	0.012	-0.026
NR	920	29.18	22.44	-2.10	-0.389	-0.072	-0.728	0.666	-0.065
NR	921	29.18	22.43	-2.10	-0.395	-0.072	-0.719	0.656	-0.076
NR	918	29.21	45.18	-2.57	-0.890	0.004	-1.266	1.259	0.353
NR	919	29.21	45.18	-2.58	-0.907	0.004	-1.263	1.251	0.349
NR	916	29.20	67.30	-2.67	-1.041	-0.301	-0.509	0.605	0.078
NR	917	29.18	67.30	-2.37	-0.737	-0.302	-1.187	1.285	0.075
NR	915	29.19	90.03	-2.76	-1.222	-0.523	-0.709	0.718	0.135
NR	856	-0.07	-0.02	0.99	0.912	-0.453	0.032	0.048	-0.031
NR	885	-0.07	0.08	0.97	0.883	-0.462	0.015	0.010	0.124
NR	886	0.00	0.09	-0.01	-0.011	0.000	-0.005	0.004	0.140
NR	889	-0.07	-0.02	0.99	0.927	-0.453	0.019	0.062	-0.026
NR	925	-0.12	-0.01	1.71	1.659	-0.458	0.026	0.022	-0.011
NR	926	-0.05	0.00	0.73	0.766	-0.001	0.006	0.002	0.004

T.R.69267

(Run.13)

RUN NUMBER=13 SHORT BODY, SQUARE NOSE, LARGE TAIL
CANT ANGLE= 0.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1029	-10.13	-0.02	1.87	1.346	-0.938	0.089	-0.002	-0.026
NR	1030	-10.14	22.48	1.79	1.179	-0.938	0.030	0.136	0.010
NR	1031	-10.13	44.99	1.73	1.050	-0.929	0.092	0.071	0.045
NR	1032	-10.17	67.49	1.78	1.094	-0.937	0.143	-0.013	0.073
NR	1033	-10.20	89.99	1.84	1.141	-0.951	0.100	0.048	0.080
NR	1038	-5.07	-0.01	0.93	0.677	-0.919	0.082	-0.064	-0.021
NR	1037	-5.07	22.59	0.89	0.627	-0.915	0.047	0.023	0.017
NR	1036	-5.08	44.99	0.87	0.570	-0.913	0.080	0.051	0.046
NR	1035	-5.10	67.49	0.88	0.556	-0.916	0.032	0.077	0.068
NR	1034	-5.12	89.99	0.90	0.534	-0.911	0.040	0.106	0.078
NR	1039	0.00	-0.01	-0.04	-0.056	-0.903	0.074	-0.076	-0.017
NR	1040	0.00	22.49	-0.03	-0.033	-0.901	0.082	-0.006	0.024
NR	1041	-0.01	44.99	-0.03	-0.067	-0.893	0.029	0.047	0.052
NR	1042	-0.03	67.49	-0.04	-0.109	-0.899	0.016	0.087	0.077
NR	1043	-0.05	89.99	-0.05	-0.146	-0.899	-0.010	0.131	0.084
NR	1048	5.07	-0.01	-0.97	-0.723	-0.917	0.054	-0.059	-0.013
NR	1047	5.06	22.49	-0.93	-0.693	-0.916	0.044	-0.001	0.019
NR	1046	5.05	44.99	-0.91	-0.674	-0.906	-0.001	0.081	0.052
NR	1045	5.04	67.49	-0.93	-0.769	-0.916	-0.047	0.135	0.069
NR	1044	5.03	89.99	-0.99	-0.824	-0.921	-0.050	0.163	0.076
NR	1049	10.14	-0.01	-1.85	-1.297	-0.951	0.027	-0.021	-0.022
NR	1030	10.93	22.48	-1.79	-1.202	-0.933	0.048	-0.036	0.009
NR	1051	10.12	44.99	-1.75	-1.131	-0.919	-0.036	0.110	0.050
NR	1052	10.11	67.49	-1.81	-1.286	-0.934	-0.113	0.241	0.080
NR	1053	10.10	89.99	-1.88	-1.414	-0.954	-0.090	0.201	0.074
NR	1058	15.16	0.08	-2.15	-1.224	-1.022	0.025	0.006	-0.028
NR	1039	15.17	22.50	-2.31	-1.366	-0.980	-0.107	0.106	0.044
NR	1060	15.17	22.51	-2.31	-1.367	-0.975	-0.107	0.103	0.046
NR	1061	15.19	44.98	-2.59	-1.612	-0.913	-0.069	0.172	0.040
NR	1062	15.15	67.48	-2.28	-1.427	-0.987	-0.016	0.197	0.054
NR	1063	15.15	67.48	-2.28	-1.426	-0.992	-0.016	0.179	0.052
NR	1064	15.13	90.00	-2.19	-1.391	-1.027	-0.130	0.220	0.089
NR	1073	20.19	0.00	-2.46	-1.098	-1.134	-0.040	0.017	-0.006
NR	1074	20.19	-0.01	-2.46	-1.099	-1.129	-0.039	0.016	-0.020
NR	1071	20.20	22.50	-2.62	-1.226	-1.044	-0.281	0.230	0.032
NR	1072	20.20	22.50	-2.63	-1.238	-1.039	-0.283	0.232	0.036
NR	1069	20.24	44.98	-3.20	-1.839	-0.928	-0.034	0.077	0.036
NR	1070	20.24	44.98	-3.21	-1.857	-0.928	-0.031	0.080	0.025
NR	1067	20.18	67.31	-2.58	-1.232	-1.062	0.026	0.090	0.106
NR	1068	20.18	67.50	-2.59	-1.264	-1.062	0.042	0.072	0.087
NR	1065	20.16	90.00	-2.49	-1.229	-1.141	-0.180	0.247	0.090
NR	1066	20.16	90.00	-2.49	-1.230	-1.141	-0.180	0.232	0.095
NR	1075	25.23	-0.01	-2.94	-1.203	-1.174	-0.031	0.003	-0.010
NR	1076	25.23	-0.01	-2.93	-1.198	-1.179	-0.051	0.021	-0.020
NR	1077	25.24	22.56	-3.05	-1.280	-1.120	-0.536	0.461	0.136

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANT80 FIN BOMBLETS - R.A.E 3FT+4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1078	25.24	22.36	-3.03	-1.290	-1.115	-0.548	0.489	0.133
NR	1079	25.28	44.96	-3.65	-1.914	-0.932	0.010	-0.008	0.000
NR	1080	25.28	44.96	-3.64	-1.909	-0.922	-0.008	-0.003	0.003
NR	1081	25.22	67.44	-2.98	-1.277	-1.140	0.288	-0.193	-0.023
NR	1082	25.22	67.44	-2.99	-1.276	-1.144	0.285	-0.193	-0.018
NR	1083	25.20	90.00	-2.94	-1.286	-1.180	-0.200	0.253	0.090
NR	1084	25.20	90.00	-2.94	-1.294	-1.180	-0.200	0.245	0.092
NR	1094	29.26	-0.01	-3.25	-1.304	-1.163	-0.048	0.018	-0.021
NR	1095	29.26	-0.01	-3.26	-1.315	-1.163	-0.054	0.013	-0.022
NR	1092	29.27	22.61	-3.39	-1.403	-1.106	-0.672	0.353	0.217
NR	1093	29.27	22.61	-3.38	-1.400	-1.106	-0.670	0.348	0.217
NR	1090	29.30	44.97	-3.89	-1.961	-0.913	-0.020	0.029	0.016
NR	1091	29.30	44.96	-3.89	-1.936	-0.928	-0.020	0.001	0.000
NR	1088	29.25	67.40	-3.30	-1.396	-1.131	0.349	-0.254	-0.087
NR	1089	29.25	67.40	-3.31	-1.388	-1.126	0.356	-0.260	-0.079
NR	1086	29.23	90.00	-3.26	-1.396	-1.166	-0.200	0.264	0.090
NR	1087	20.23	90.00	-3.24	-1.384	-1.171	-0.200	0.272	0.081
NR	1028	0.00	-0.02	-0.01	0.029	-0.893	0.092	-0.036	-0.027
NR	1034	0.00	-0.01	-0.02	-0.029	-0.898	0.068	-0.070	-0.012
NR	1057	0.00	0.08	0.00	0.039	-0.893	0.090	-0.054	-0.025
NR	1096	0.00	-0.01	-0.03	-0.008	-0.896	0.068	-0.062	-0.010

T.R.69267

(Run.27) Part.1

RUN NUMBER=27 SHORT BODY, SQUARE NOSE, LARGE TAIL
CANT ANGLE= 2.5 CG POSITION 30.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1976	-10.14	0.00	2.01	1.474	-1.027	0.096	-0.057	0.002
NR	1977	-10.14	0.00	2.00	1.456	-1.027	0.096	-0.063	0.000
NR	1978	-10.15	22.50	1.96	1.358	-0.998	-0.031	0.149	0.032
NR	1979	-10.15	22.30	1.96	1.351	-0.998	-0.031	0.147	0.030
NR	1980	-10.16	44.99	1.89	1.203	-0.974	-0.068	0.152	0.060
NR	1981	-10.18	67.49	1.84	1.193	-0.972	-0.027	0.104	0.074
NR	1982	-10.20	89.99	1.85	1.206	-0.976	-0.050	0.155	0.077
NR	1987	-5.08	-0.01	1.15	0.863	-0.949	0.090	-0.088	-0.013
NR	1986	-5.08	22.49	1.09	0.800	-0.949	-0.017	0.069	0.023
NR	1985	-5.09	45.09	1.01	0.708	-0.937	-0.062	0.130	0.056
NR	1984	-5.11	67.49	0.96	0.654	-0.940	-0.067	0.139	0.079
NR	1983	-5.13	89.99	0.94	0.606	-0.930	-0.090	0.185	0.083
NR	1988	-0.01	0.00	0.11	0.082	-0.909	0.076	-0.003	-0.003
NR	1989	-0.01	22.30	0.11	0.079	-0.911	-0.006	0.031	0.039
NR	1990	-0.02	45.00	0.09	0.060	-0.914	-0.068	0.137	0.071
NR	1991	-0.04	67.50	0.03	-0.039	-0.908	-0.127	0.220	0.094
NR	1992	-0.05	90.00	-0.06	-0.132	-0.913	-0.160	0.262	0.101
NR	1997	5.06	0.09	-0.78	-0.574	-0.917	0.036	-0.053	-0.014
NR	1996	5.05	22.50	-0.79	-0.580	-0.907	-0.049	0.080	0.036
NR	1995	5.05	45.01	-0.82	-0.616	-0.906	-0.108	0.181	0.078
NR	1994	5.04	67.51	-0.91	-0.733	-0.921	-0.160	0.253	0.108
NR	1993	5.03	90.01	-0.99	-0.840	-0.926	-0.170	0.271	0.118
NR	1998	10.12	0.09	-1.69	-1.133	-0.917	0.023	-0.026	-0.013
NR	1999	10.12	22.49	-1.62	-1.048	-0.913	-0.026	0.036	0.021
NR	2000	10.11	45.00	-1.64	-1.037	-0.919	-0.169	0.243	0.070
NR	2001	10.11	67.51	-1.78	-1.266	-0.936	-0.237	0.361	0.109
NR	2002	10.10	90.01	-1.88	-1.442	-0.944	-0.210	0.294	0.113
NR	2015	15.16	0.00	-2.17	-1.251	-0.977	0.003	0.044	0.004
NR	2016	15.16	0.00	-2.16	-1.242	-0.977	0.004	0.027	0.003
NR	2017	15.17	22.53	-2.30	-1.352	-0.940	-0.132	0.140	0.088
NR	2018	15.17	22.33	-2.30	-1.352	-0.940	-0.132	0.140	0.083
NR	2019	15.18	44.99	-2.47	-1.494	-0.898	-0.206	0.316	0.045
NR	2020	15.18	44.99	-2.47	-1.493	-0.898	-0.209	0.326	0.047
NR	2021	15.15	67.47	-2.23	-1.378	-0.992	-0.133	0.314	0.043
NR	2022	15.15	67.47	-2.24	-1.383	-0.987	-0.138	0.315	0.046
NR	2023	15.13	89.99	-2.18	-1.410	-1.036	-0.220	0.329	0.084
NR	2024	15.13	89.99	-2.18	-1.402	-1.036	-0.240	0.341	0.083
NR	2033	20.20	0.01	-2.56	-1.193	-1.030	-0.079	0.063	0.021
NR	2034	20.20	0.01	-2.55	-1.184	-1.050	-0.078	0.056	0.020
NR	2031	20.21	22.52	-2.70	-1.308	-0.975	-0.300	0.262	0.062
NR	2032	20.21	22.52	-2.70	-1.308	-0.975	-0.300	0.262	0.064

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

(Run.27) Part.2

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2029	20.23	45.02	-3.11	-1.740	-0.889	-0.010	0.090	-0.057
NR	2030	20.23	45.02	-3.12	-1.744	-0.889	-0.011	0.080	-0.058
NR	2027	20.18	67.47	-2.58	-1.263	-1.047	0.002	0.109	0.037
NR	2028	20.18	67.47	-2.58	-1.261	-1.047	0.011	0.115	0.038
NR	2025	20.16	89.99	-2.49	-1.253	-1.146	-0.210	0.286	0.074
NR	2026	20.16	89.99	-2.48	-1.239	-1.151	-0.210	0.278	0.080
NR	2035	25.23	0.01	-2.97	-1.220	-1.120	-0.087	0.052	0.022
NR	2036	25.23	0.01	-2.96	-1.218	-1.125	-0.093	0.058	0.010
NR	2037	25.24	22.58	-3.11	-1.325	-1.052	-0.620	0.578	0.164
NR	2038	25.24	22.58	-3.09	-1.314	-1.047	-0.618	0.577	0.168
NR	2039	25.28	44.91	-3.64	-1.903	-0.878	0.040	-0.047	-0.082
NR	2040	25.28	44.91	-3.65	-1.907	-0.873	0.052	-0.044	-0.088
NR	2041	25.22	67.43	-2.99	-1.300	-1.120	0.206	-0.113	-0.025
NR	2042	25.22	67.44	-2.99	-1.305	-1.120	0.197	-0.100	-0.019
NR	2043	25.20	90.00	-2.96	-1.323	-1.199	-0.250	0.289	0.094
NR	2044	25.20	89.99	-2.95	-1.314	-1.190	-0.241	0.315	0.077
NR	2053	29.26	0.01	-3.26	-1.284	-1.119	-0.090	0.067	0.012
NR	2054	29.26	0.00	-3.25	-1.289	-1.119	-0.091	0.067	0.004
NR	2051	29.27	22.63	-3.39	-1.409	-1.079	-0.736	0.448	0.238
NR	2052	29.27	22.63	-3.39	-1.420	-1.070	-0.736	0.642	0.238
NR	2050	29.30	44.92	-3.89	-1.968	-0.864	0.075	-0.053	-0.070
NR	2047	29.25	67.40	-3.29	-1.400	-1.101	0.268	-0.171	-0.083
NR	2048	29.25	67.40	-3.29	-1.400	-1.101	0.268	-0.171	-0.076
NR	2049	29.30	44.92	-3.89	-1.973	-0.859	0.075	-0.058	-0.077
NR	2045	29.23	89.99	-3.26	-1.428	-1.171	-0.261	0.319	0.073
NR	2046	29.23	90.00	-3.28	-1.430	-1.176	-0.260	0.319	0.079
NR	2003	-0.01	10.00	0.12	0.093	-0.907	0.031	-0.011	0.017
NR	2004	-0.01	10.00	0.12	0.100	-0.907	0.031	-0.002	0.017
NR	2005	-0.01	10.00	0.11	0.082	-0.907	0.027	-0.006	0.013
NR	2006	-0.01	10.00	0.12	0.102	-0.912	0.037	-0.008	0.016
NR	2007	-0.01	10.00	0.12	0.094	-0.912	0.037	-0.009	0.014
NR	2008	0.00	10.00	-0.01	-0.014	0.001	0.003	0.022	0.021
NR	2009	0.00	10.00	-0.01	-0.014	0.001	0.003	0.022	0.017
NR	2010	0.00	10.00	-0.01	-0.013	0.001	0.009	0.024	0.018
NR	2011	0.00	10.00	-0.01	-0.013	0.001	0.009	0.016	0.019
NR	1971	-0.01	0.09	0.14	0.136	-0.908	0.079	-0.066	-0.011
NR	1972	-0.01	-0.01	0.12	0.115	-0.908	0.063	-0.057	-0.012
NR	1973	-0.01	0.09	0.13	0.118	-0.908	0.073	-0.068	-0.013
NR	1974	-0.01	-0.01	0.12	0.100	-0.908	0.069	-0.071	-0.011
NR	1975	-0.14	0.00	1.99	1.463	-0.861	0.090	-0.051	0.000
NR	2014	-0.01	-0.01	0.14	0.168	-0.918	0.105	-0.061	-0.016
NR	2055	-0.01	0.00	0.13	0.157	-0.913	0.087	-0.066	-0.001

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

(Run.22)

RUN NUMBER=22 SHORT BODY, SQUARE NOSE, LARGE TAIL
CANT ANGLE= 3.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1660	-10.15	0.00	2.06	1.557	-1.111	0.083	0.003	0.003
NR	1661	-10.15	0.00	2.06	1.573	-1.116	0.083	-0.005	0.007
NR	1662	-10.16	22.54	2.11	1.567	-1.091	-0.080	0.296	0.104
NR	1662	-10.16	22.54	2.11	1.346	-1.091	-0.080	0.288	0.104
NR	1663	-10.16	22.54	2.11	1.546	-1.091	-0.080	0.288	0.103
NR	1664	-10.17	44.99	2.06	1.377	-1.048	-0.236	0.439	0.059
NR	1665	-10.17	44.99	2.06	1.372	-1.048	-0.260	0.432	0.059
NR	1666	-10.18	67.47	1.88	1.201	-1.016	-0.282	0.403	0.036
NR	1667	-10.18	67.47	1.88	1.207	-1.021	-0.280	0.402	0.036
NR	1668	-10.19	89.96	1.82	1.147	-1.000	-0.269	0.396	0.032
NR	1669	-10.19	89.96	1.82	1.146	-1.000	-0.259	0.371	0.035
NR	1674	-3.10	0.00	1.43	1.177	-1.018	0.067	-0.032	0.003
NR	1673	-3.10	22.49	1.34	1.063	-1.014	-0.145	0.229	0.026
NR	1672	-3.10	44.98	1.18	0.869	-0.992	-0.275	0.383	0.038
NR	1671	-3.11	67.47	1.03	0.693	-0.975	-0.311	0.430	0.043
NR	1671	-3.11	67.47	1.03	0.703	-0.975	-0.311	0.451	0.045
NR	1670	-3.12	89.97	0.90	0.555	-0.960	-0.300	0.409	0.048
NR	1675	-0.02	0.00	0.34	0.296	-0.933	0.059	-0.060	-0.002
NR	1676	-0.03	22.30	0.32	0.279	-0.936	-0.112	0.131	0.044
NR	1677	-0.03	43.01	0.24	0.181	-0.934	-0.254	0.323	0.080
NR	1678	-0.04	67.51	0.11	0.018	-0.943	-0.346	0.427	0.103
NR	1679	-0.05	90.01	-0.06	-0.167	-0.943	-0.400	0.494	0.113
NR	1684	3.04	0.00	-0.50	-0.302	-0.923	0.044	-0.033	0.006
NR	1683	3.04	22.31	-0.35	-0.339	-0.922	-0.147	0.188	0.039
NR	1682	3.04	45.02	-0.66	-0.475	-0.926	-0.283	0.345	0.100
NR	1681	3.03	67.53	-0.85	-0.689	-0.940	-0.363	0.432	0.135
NR	1680	3.03	90.04	-0.99	-0.833	-0.965	-0.389	0.481	0.159
NR	1685	10.10	0.01	-1.39	-0.801	-0.878	0.018	-0.013	0.011
NR	1686	10.10	22.51	-1.33	-0.734	-0.889	-0.164	0.200	0.054
NR	1687	10.10	45.03	-1.45	-0.864	-0.909	-0.402	0.494	0.115
NR	1688	10.10	67.54	-1.71	-1.217	-0.953	-0.449	0.568	0.156
NR	1689	10.10	90.05	-1.88	-1.442	-0.998	-0.438	0.529	0.179
NR	1694	13.16	-0.02	-2.11	-1.191	-0.894	0.018	-0.004	-0.034
NR	1695	13.16	-0.02	-2.10	-1.189	-0.889	0.011	0.004	-0.031
NR	1696	13.16	22.49	-2.16	-1.200	-0.847	-0.132	0.166	0.018
NR	1696	13.16	22.49	-2.16	-1.136	-0.847	-0.152	0.191	0.018
NR	1697	13.16	22.49	-2.16	-1.200	-0.842	-0.132	0.166	0.015
NR	1698	13.17	45.01	-2.28	-1.294	-0.869	-0.456	0.575	0.085
NR	1699	13.17	45.01	-2.28	-1.294	-0.864	-0.456	0.573	0.088
NR	1700	13.14	67.52	-2.13	-1.298	-0.992	-0.372	0.332	0.118
NR	1701	13.14	67.31	-2.13	-1.298	-0.992	-0.372	0.532	0.108
NR	1702	13.13	90.04	-2.17	-1.363	-1.071	-0.478	0.547	0.139
NR	1703	13.13	90.04	-2.17	-1.363	-1.066	-0.478	0.347	0.133
NR	1712	20.20	0.00	-2.35	-1.177	-0.942	-0.046	-0.009	0.001
NR	1713	20.20	0.00	-2.55	-1.184	-0.942	-0.040	0.001	-0.003
NR	1710	20.21	22.50	-2.70	-1.303	-0.877	-0.313	0.276	0.043

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS = R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1711	20.21	22.51	-2.70	-1.304	-0.877	-0.320	0.257	0.047
NR	1708	20.22	44.97	-2.92	-1.529	-0.840	-0.253	0.362	0.013
NR	1709	20.22	44.96	-2.93	-1.321	-0.840	-0.262	0.354	0.005
NR	1706	20.18	67.52	-2.54	-1.204	-1.033	-0.271	0.392	0.114
NR	1707	20.18	67.32	-2.53	-1.203	-1.033	-0.280	0.394	0.116
NR	1704	20.16	90.04	-2.45	-1.199	-1.185	-0.468	0.505	0.152
NR	1705	20.16	90.04	-2.46	-1.198	-1.183	-0.468	0.497	0.133
NR	1714	23.24	0.00	-2.99	-1.234	-1.012	-0.062	0.010	-0.006
NR	1715	25.24	0.00	-2.99	-1.225	-1.012	-0.062	0.001	0.001
NR	1716	23.24	22.56	-3.08	-1.304	-0.944	-0.530	0.458	0.134
NR	1717	23.24	22.36	-3.08	-1.293	-0.939	-0.531	0.472	0.136
NR	1718	25.27	44.92	-3.52	-1.740	-0.819	-0.101	0.134	-0.071
NR	1719	25.27	44.92	-3.30	-1.738	-0.814	-0.111	0.131	-0.067
NR	1720	25.22	67.48	-2.98	-1.252	-1.100	-0.011	0.099	0.034
NR	1721	25.22	67.48	-2.98	-1.239	-1.096	-0.034	0.140	0.049
NR	1722	23.20	90.04	-2.93	-1.265	-1.224	-0.438	0.483	0.136
NR	1723	23.20	90.04	-2.94	-1.288	-1.219	-0.448	0.501	0.136
NR	1732	29.26	0.00	-3.21	-1.225	-1.031	-0.059	0.010	-0.004
NR	1733	29.26	-0.01	-3.20	-1.222	-1.031	-0.066	0.023	-0.008
NR	1730	29.27	22.61	-3.34	-1.339	-1.085	-0.717	0.613	0.221
NR	1731	29.27	22.61	-3.33	-1.361	-1.103	-0.729	0.629	0.212
NR	1728	29.29	44.99	-3.78	-1.838	-0.790	-0.036	0.058	-0.123
NR	1729	29.29	44.99	-3.79	-1.822	-0.813	-0.029	0.049	-0.120
NR	1726	29.25	67.45	-3.30	-1.363	-1.087	0.037	0.063	-0.006
NR	1727	29.23	67.45	-3.30	-1.363	-1.082	0.049	0.031	-0.007
NR	1724	29.23	90.04	-3.23	-1.374	-1.203	-0.448	0.489	0.156
NR	1725	29.23	90.04	-3.23	-1.382	-1.203	-0.448	0.489	0.158
NR	1639	-0.02	-0.01	0.36	0.363	-0.933	0.077	-0.053	-0.013
NR	1690	-0.02	0.00	0.34	0.311	-0.933	0.058	-0.059	0.008
NR	1693	-0.03	-0.01	0.37	0.388	-0.928	0.089	-0.068	-0.012
NR	1734	-0.02	0.00	0.34	0.334	-0.938	0.052	-0.054	0.008

(Run.12) Part.1

RUN NUMBER=12 SHORT BODY, SQUARE NOSE, LARGE TAIL
CANT ANGLE=10.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	929	-10.14	0.02	1.93	1.377	-1.243	0.105	-0.044	0.034
NR	930	-10.14	0.03	1.92	1.374	-1.243	0.117	-0.055	0.048
NR	931	-10.15	22.56	2.04	1.429	-1.218	0.007	0.163	0.133
NR	932	-10.15	22.56	2.04	1.426	-1.213	-0.007	0.167	0.128
NR	933	-10.18	45.05	2.19	1.500	-1.185	-0.386	0.577	0.156
NR	934	-10.18	45.05	2.19	1.500	-1.180	-0.386	0.577	0.158
NR	935	-10.18	67.43	1.95	1.298	-1.124	-0.639	0.756	-0.025
NR	936	-10.18	67.43	1.96	1.307	-1.124	-0.637	0.744	-0.032
NR	937	-10.19	89.90	1.76	1.129	-1.065	-0.627	0.719	-0.059
NR	938	-10.19	89.91	1.76	1.121	-1.065	-0.627	0.720	-0.057
NR	946	-5.13	0.00	1.89	1.642	-1.180	0.047	-0.035	0.001
NR	947	-5.13	0.00	1.89	1.641	-1.180	0.047	-0.035	0.004
NR	944	-5.13	22.49	1.75	1.480	-1.162	-0.340	0.441	0.013
NR	945	-5.13	22.49	1.75	1.472	-1.162	-0.340	0.438	0.017
NR	942	-5.12	44.96	1.46	1.158	-1.125	-0.616	0.715	-0.002
NR	943	-5.12	44.96	1.46	1.153	-1.120	-0.616	0.710	-0.003
NR	941	-5.12	67.43	1.12	0.809	-1.074	-0.691	0.774	-0.028
NR	939	-5.12	89.92	0.86	0.550	-1.029	-0.689	0.770	-0.030
NR	940	-5.12	89.92	0.86	0.550	-1.034	-0.689	0.770	-0.032
NR	969	-0.05	-0.01	0.73	0.682	-1.007	0.044	-0.044	-0.022
NR	970	0.00	0.00	-0.01	-0.010	0.000	-0.006	0.006	0.003
NR	972	-0.05	-0.02	0.77	0.746	-1.012	0.075	-0.053	-0.038
NR	948	-0.05	-0.01	0.73	0.651	-1.006	0.045	-0.069	-0.023
NR	949	-0.05	22.49	0.67	0.593	-1.010	-0.275	0.278	0.024
NR	950	-0.05	44.99	0.47	0.397	-1.004	-0.551	0.557	0.059
NR	951	-0.05	67.50	0.23	0.153	-1.017	-0.716	0.762	0.092
NR	952	-0.05	90.00	-0.07	-0.157	-1.026	-0.800	0.867	0.099
NR	957	5.01	0.00	-0.15	-0.018	-0.962	0.017	-0.019	-0.008
NR	956	5.01	22.61	-0.23	-0.098	-0.966	-0.312	0.321	0.058
NR	955	5.02	45.03	-0.44	-0.287	-0.970	-0.551	0.578	0.117
NR	954	5.03	67.56	-0.74	-0.588	-0.994	-0.674	0.743	0.183
NR	953	5.03	90.07	-1.00	-0.852	-1.038	-0.739	0.817	0.218
NR	958	10.07	0.00	-0.89	-0.340	-0.898	-0.002	0.001	-0.008
NR	959	10.07	0.00	-0.89	-0.340	-0.699	-0.001	-0.008	-0.007
NR	960	10.07	22.51	-0.92	-0.371	-0.909	-0.364	0.380	0.047
NR	961	10.07	22.51	-0.92	-0.378	-0.909	-0.364	0.377	0.050
NR	962	10.08	45.03	-1.21	-0.653	-0.944	-0.683	0.746	0.120
NR	963	10.08	45.03	-1.21	-0.653	-0.944	-0.683	0.746	0.123
NR	964	10.10	67.56	-1.62	-1.132	-0.963	-0.743	0.835	0.187
NR	965	10.10	67.55	-1.62	-1.133	-0.998	-0.746	0.828	0.179
NR	966	10.10	90.09	-1.85	-1.410	-1.076	-0.767	0.851	0.242
NR	967	10.10	90.09	-1.86	-1.422	-1.081	-0.767	0.851	0.239
NR	973	15.14	-0.01	-1.80	-0.849	-0.801	0.008	0.007	-0.017
NR	974	15.14	-0.02	-1.80	-0.857	-0.801	0.008	0.006	-0.026
NR	989	15.14	-0.01	-1.82	-0.909	-0.806	-0.009	-0.023	-0.020
NR	990	15.14	-0.01	-1.81	-0.892	-0.801	-0.008	-0.032	-0.018
NR	975	15.13	22.50	-1.74	-0.779	-0.828	-0.351	0.365	0.035

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

(Run.12) Part.2

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	976	15.13	22.30	-1.74	-0.777	-0.828	-0.331	0.365	0.030
NR	987	15.13	22.60	-1.76	-0.807	-0.828	-0.332	0.321	0.037
NR	988	13.13	22.60	-1.73	-0.798	-0.828	-0.336	0.325	0.038
NR	977	13.14	45.01	-1.98	-1.031	-0.899	-0.809	0.893	0.088
NR	978	13.14	45.01	-1.98	-1.031	-0.899	-0.809	0.893	0.088
NR	985	13.13	45.02	-2.00	-1.032	-0.904	-0.806	0.870	0.097
NR	986	15.15	45.02	-1.99	-1.027	-0.904	-0.801	0.865	0.095
NR	979	13.14	67.51	-2.03	-1.220	-1.031	-0.683	0.783	0.109
NR	980	15.14	67.51	-2.03	-1.220	-1.036	-0.683	0.783	0.109
NR	983	15.14	67.52	-2.03	-1.208	-1.031	-0.673	0.767	0.114
NR	984	15.14	67.51	-2.03	-1.211	-1.031	-0.676	0.760	0.112
NR	981	13.12	90.07	-2.10	-1.301	-1.159	-0.807	0.839	0.202
NR	982	15.12	90.06	-2.11	-1.306	-1.149	-0.808	0.848	0.199
NR	992	20.19	-0.01	-2.39	-1.089	-1.040	-0.026	-0.027	-0.012
NR	993	20.19	0.00	-2.39	-1.089	-1.040	-0.026	-0.036	-0.004
NR	994	20.20	22.48	-2.33	-1.173	-0.930	-0.323	0.260	-0.002
NR	995	20.20	22.48	-2.34	-1.169	-0.930	-0.321	0.256	-0.002
NR	996	20.20	44.98	-2.65	-1.260	-1.032	-0.672	0.734	0.036
NR	997	20.20	44.98	-2.63	-1.267	-1.037	-0.668	0.740	0.028
NR	998	20.17	67.30	-2.43	-1.117	-1.259	-0.310	0.369	0.084
NR	999	20.17	67.30	-2.43	-1.116	-1.263	-0.499	0.357	0.087
NR	1000	20.13	90.06	-2.41	-1.158	-1.455	-0.767	0.768	0.190
NR	1001	20.15	90.06	-2.13	-1.020	-1.321	-0.768	0.739	0.171
NR	1011	23.23	-0.01	-2.93	-1.180	-0.860	-0.056	-0.013	-0.018
NR	1012	23.23	0.00	-2.94	-1.206	-0.860	-0.055	-0.014	0.000
NR	1009	23.24	22.63	-3.06	-1.279	-0.782	-0.307	0.421	0.087
NR	1010	25.24	22.63	-3.06	-1.293	-0.782	-0.307	0.415	0.089
NR	1007	23.26	44.93	-3.27	-1.492	-0.770	-0.443	0.476	-0.047
NR	1008	24.77	44.93	-3.26	-1.485	-0.773	-0.452	0.485	-0.046
NR	1005	25.22	67.48	-2.93	-1.222	-1.091	-0.306	0.383	0.045
NR	1006	23.22	67.48	-2.93	-1.220	-1.086	-0.295	0.373	0.054
NR	1002	23.20	90.07	-2.87	-1.235	-1.297	-0.716	0.708	0.209
NR	1003	23.20	90.07	-2.87	-1.240	-1.287	-0.726	0.725	0.211
NR	1004	23.20	90.07	-2.87	-1.235	-1.297	-1.706	0.706	0.206
NR	1013	29.25	0.00	-3.17	-1.185	-0.901	-0.076	0.011	0.004
NR	1014	29.25	0.00	-3.17	-1.184	-1.020	-0.076	0.011	-0.005
NR	1015	29.26	22.61	-3.01	-1.138	-0.948	-0.841	0.666	0.212
NR	1016	29.26	22.60	-3.29	-1.262	-0.948	-0.745	0.627	0.203
NR	1017	29.08	44.88	-3.59	-1.618	-0.862	-0.278	0.307	-0.137
NR	1018	28.73	44.89	-3.61	-1.629	-0.874	-0.276	0.306	-0.123
NR	1019	29.25	67.47	-3.24	-1.323	-1.194	-0.185	0.294	0.020
NR	1020	29.25	67.46	-3.14	-1.272	-1.184	-0.448	0.426	0.011
NR	1021	29.23	90.08	-3.16	-1.353	-1.405	-0.676	0.710	0.208
NR	1022	29.23	90.08	-3.18	-1.363	-1.400	-0.666	0.692	0.221
NR	928	-0.05	-0.02	0.74	0.692	-1.007	0.050	-0.050	-0.026
NR	1023	-0.05	-0.01	0.76	0.719	-1.012	0.043	-0.062	-0.021

(Run.14)

RUN NUMBER=14 SHORT BODY, ROUND NOSE, SMALL TAIL
CANT ANGLE= 0.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1100	-10.06	-0.01	0.73	0.091	-0.237	0.023	0.042	-0.014
NR	1101	-10.06	22.49	0.67	0.018	-0.243	-0.004	0.115	0.021
NR	1102	-10.07	44.99	0.64	-0.054	-0.243	0.031	0.113	0.031
NR	1103	-10.09	67.49	0.63	-0.083	-0.243	0.075	0.082	0.072
NR	1104	-10.11	89.99	0.67	-0.104	-0.243	0.070	0.089	0.076
NR	1109	-5.03	0.00	0.31	-0.013	-0.234	0.014	0.014	-0.006
NR	1108	-5.03	22.50	0.29	-0.050	-0.231	0.011	0.063	0.028
NR	1107	-5.04	45.00	0.27	-0.089	-0.229	0.030	0.077	0.033
NR	1106	-5.05	67.49	0.27	-0.129	-0.233	0.046	0.080	0.073
NR	1105	-5.07	89.99	0.28	-0.163	-0.232	0.050	0.088	0.078
NR	1110	0.00	0.00	-0.03	-0.015	-0.221	0.012	0.003	-0.002
NR	1111	0.00	22.50	-0.05	-0.042	-0.219	0.005	0.055	0.031
NR	1112	-0.01	45.00	-0.05	-0.080	-0.217	0.007	0.083	0.057
NR	1113	-0.03	67.50	-0.06	-0.110	-0.221	0.031	0.069	0.077
NR	1114	-0.04	0.00	-0.04	0.069	-0.221	-0.052	0.135	0.083
NR	1119	5.03	0.00	-0.35	-0.001	-0.227	0.015	-0.003	-0.004
NR	1118	5.03	22.50	-0.36	-0.017	-0.226	0.017	0.024	0.033
NR	1117	5.02	45.00	-0.37	-0.043	-0.225	0.016	0.062	0.062
NR	1116	5.00	67.50	-0.38	-0.084	-0.230	0.005	0.082	0.079
NR	1115	4.98	80.00	-0.38	-0.111	-0.235	-0.046	0.096	0.086
NR	1120	10.06	0.00	-0.74	-0.078	-0.236	0.006	-0.001	-0.002
NR	1121	0.06	21.50	0.54	1.075	-0.234	-0.483	0.458	0.030
NR	1122	10.05	45.00	-0.70	-0.064	-0.234	-0.010	0.077	0.060
NR	1123	10.03	67.50	-0.74	-0.129	-0.239	-0.036	0.114	0.080
NR	1124	10.02	90.00	-0.77	-0.190	-0.239	0.000	0.083	0.085
NR	1129	15.10	0.00	-1.17	-0.161	-0.202	0.007	0.024	-0.006
NR	1130	15.09	22.49	-1.12	-0.142	-0.218	0.039	0.036	0.022
NR	1131	15.08	45.00	-1.08	-0.141	-0.228	-0.029	0.126	0.054
NR	1132	15.07	67.50	-1.14	-0.248	-0.214	-0.103	0.212	0.077
NR	1133	15.06	90.10	-1.20	-0.349	-0.205	-0.048	0.159	0.079
NR	1138	20.13	0.10	-1.60	-0.317	-0.202	-0.001	0.005	-0.004
NR	1137	20.12	22.50	-1.53	-0.270	-0.223	0.043	0.010	0.025
NR	1136	20.11	45.00	-1.50	-0.281	-0.225	-0.042	0.117	0.052
NR	1135	20.11	67.50	-1.53	-0.359	-0.226	-0.132	0.211	0.070
NR	1134	20.10	90.10	-1.62	-0.483	-0.197	-0.057	0.149	0.080
NR	1139	25.15	0.10	-1.83	-0.326	-0.268	-0.009	0.001	-0.006
NR	1140	25.15	22.54	-1.88	-0.350	-0.241	-0.022	0.007	0.103
NR	1141	25.15	45.00	-1.91	-0.421	-0.224	-0.054	0.108	0.035
NR	1142	25.14	67.45	-1.88	-0.426	-0.246	-0.088	0.204	-0.006
NR	1143	25.12	90.00	-1.84	-0.449	-0.280	-0.080	0.151	0.079
NR	1148	29.17	-0.01	-2.08	-0.408	-0.301	0.037	-0.051	-0.015
NR	1147	29.18	22.55	-2.16	-0.464	-0.246	-0.066	0.034	0.117
NR	1146	29.17	44.98	-2.17	-0.477	-0.200	-0.064	0.111	0.028
NR	1145	29.16	67.43	-2.14	-0.506	-0.256	-0.000	0.119	-0.035

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1144	29.14	90.00	-2.08	-0.518	-0.310	-0.060	0.127	0.076
NR	1099	0.00	-0.01	-0.00	0.047	-0.221	0.023	0.023	-0.011
NR	1125	0.00	0.00	-0.02	-0.005	-0.216	0.011	0.012	0.001
NR	1128	0.00	-0.01	0.01	0.065	-0.211	0.017	0.038	-0.009
NR	1149	0.00	0.00	-0.01	0.021	-0.216	0.005	0.026	0.003

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

N&LT
NALT EE
NALT 26

T.R.69267

(Run.25)

RUN NUMBER=23 SHORT BODY, ROUND NOSE, SMALL TAIL
CANT ANGLE= 2.5 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1858	-10.06	-0.01	0.82	0.173	-0.247	0.036	0.022	-0.011
NR	1859	-10.06	22.49	0.76	0.099	-0.248	-0.042	0.147	0.021
NR	1860	-10.07	45.00	0.70	0.001	-0.280	-0.010	0.140	0.055
NR	1861	-10.09	67.50	0.68	-0.039	-0.243	0.022	0.123	0.077
NR	1862	-10.11	90.00	0.69	-0.092	-0.248	0.010	0.127	0.079
NR	1867	-5.03	0.00	0.37	0.033	-0.234	0.033	-0.003	-0.004
NR	1866	-5.03	22.30	0.35	-0.002	-0.236	0.006	0.070	0.030
NR	1865	-5.04	45.00	0.32	-0.053	-0.239	-0.004	0.106	0.059
NR	1864	-5.06	67.30	0.30	-0.118	-0.237	0.014	0.096	0.078
NR	1863	-5.07	90.00	0.30	-0.164	-0.232	0.010	0.106	0.084
NR	1868	0.00	0.00	0.01	0.003	-0.216	0.024	-0.009	-0.006
NR	1869	0.00	22.30	-0.00	-0.009	-0.219	-0.002	0.046	0.031
NR	1870	-0.01	43.00	-0.02	-0.047	-0.217	-0.009	0.086	0.062
NR	1871	-0.03	67.30	-0.03	-0.084	-0.221	-0.013	0.097	0.082
NR	1872	-0.04	90.00	-0.03	-0.109	-0.221	-0.010	0.113	0.090
NR	1877	5.03	0.00	-0.30	0.033	-0.227	0.029	-0.043	-0.003
NR	1876	5.02	22.30	-0.30	0.026	-0.226	0.001	0.018	0.031
NR	1875	5.01	43.00	-0.32	-0.002	-0.225	-0.011	0.062	0.060
NR	1874	5.00	67.50	-0.35	-0.031	-0.225	-0.026	0.086	0.078
NR	1873	4.99	90.00	-0.37	-0.103	-0.223	-0.010	0.091	0.090
NR	1878	10.06	0.00	-0.68	-0.016	-0.229	0.007	-0.034	-0.004
NR	1879	10.03	22.30	-0.66	0.002	-0.229	-0.009	0.014	0.029
NR	1880	10.04	45.00	-0.67	-0.022	-0.229	-0.064	0.088	0.037
NR	1881	10.03	67.30	-0.73	-0.093	-0.239	-0.093	0.140	0.079
NR	1882	10.02	90.00	-0.77	-0.155	-0.239	-0.050	0.111	0.085
NR	1887	15.09	0.00	-1.11	-0.134	-0.205	0.003	-0.036	-0.005
NR	1886	15.09	22.49	-1.06	-0.107	-0.213	0.004	-0.006	0.020
NR	1885	15.08	45.10	-1.04	-0.086	-0.229	-0.093	0.114	0.059
NR	1884	15.07	67.30	-1.14	-0.200	-0.220	-0.127	0.163	0.080
NR	1883	15.06	90.00	-1.21	-0.289	-0.213	-0.070	0.117	0.083
NR	1888	20.13	0.00	-1.55	-0.305	-0.178	-0.006	-0.039	-0.006
NR	1889	20.12	22.49	-1.48	-0.248	-0.204	0.025	-0.036	0.020
NR	1890	20.11	45.00	-1.46	-0.228	-0.221	-0.071	0.069	0.053
NR	1891	20.11	67.30	-1.53	-0.319	-0.222	-0.170	0.196	0.074
NR	1892	20.10	90.00	-1.64	-0.429	-0.222	-0.100	0.136	0.078
NR	1897	25.16	-0.01	-1.86	-0.358	-0.219	0.003	-0.053	-0.009
NR	1896	25.15	22.33	-1.83	-0.314	-0.217	-0.028	-0.011	0.072
NR	1895	25.15	44.99	-1.86	-0.353	-0.210	-0.110	0.110	0.044
NR	1894	25.14	67.46	-1.86	-0.356	-0.236	-0.177	0.232	0.001
NR	1893	25.12	90.00	-1.87	-0.439	-0.266	-0.120	0.137	0.084
NR	1898	29.18	0.00	-2.11	-0.432	-0.228	-0.018	-0.033	-0.003
NR	1899	29.18	22.54	-2.13	-0.423	-0.197	-0.049	-0.013	0.101
NR	1900	29.17	44.97	-2.13	-0.414	-0.183	-0.109	0.112	0.008
NR	1901	29.16	67.45	-2.14	-0.489	-0.246	-0.175	0.231	-0.018

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1902	29.15	89.99	-2.15	-0.545	-0.296	-0.040	0.083	0.039
NR	1857	0.00	-0.01	0.03	0.054	-0.211	0.036	0.003	-0.009
NR	1903	0.00	0.00	0.01	0.019	-0.216	0.018	-0.003	0.003

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

HALT
HALT EE
HALT 26

T.R.69267

(Run.20)

RUN NUMBER=20 SHORT BODY, ROUND NOSE, SMALL TAIL
CANT ANGLE= 5.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	C2	CM	COEFFICIENTS CX	CY	CN	CL
NR	1491	-10.07	22.49	0.82	0.149	-0.263	-0.085	0.197	0.019
NR	1492	-10.07	44.99	0.71	0.019	-0.260	-0.078	0.211	0.069
NR	1493	-10.09	67.49	0.68	-0.062	-0.248	-0.033	0.180	0.070
NR	1494	-10.10	89.99	0.67	-0.110	-0.243	-0.020	0.142	0.076
NR	1499	-5.03	0.00	0.44	0.097	-0.249	0.009	0.028	-0.002
NR	1498	-5.04	22.30	0.39	0.043	-0.246	-0.046	0.124	0.029
NR	1497	-5.04	45.00	0.35	-0.021	-0.244	-0.063	0.173	0.055
NR	1496	-5.06	67.30	0.30	-0.104	-0.237	-0.039	0.155	0.076
NR	1495	-5.07	90.00	0.27	-0.168	-0.232	-0.040	0.157	0.081
NR	1300	0.00	0.00	0.03	0.066	-0.231	0.000	0.016	-0.001
NR	1501	-0.01	22.50	0.02	0.008	-0.229	-0.036	0.089	0.034
NR	1502	-0.01	45.00	0.00	-0.019	-0.227	-0.053	0.128	0.063
NR	1503	-0.03	67.50	-0.03	-0.089	-0.226	-0.057	0.153	0.080
NR	1504	-0.04	90.00	-0.06	-0.147	-0.231	-0.030	0.146	0.086
NR	1509	5.02	0.00	-0.23	0.079	-0.227	-0.008	0.011	-0.003
NR	1508	5.02	22.40	-0.27	0.057	-0.226	-0.027	0.054	0.036
NR	1507	5.01	45.00	-0.30	0.015	-0.230	-0.059	0.116	0.064
NR	1506	5.00	67.50	-0.35	-0.052	-0.233	-0.037	0.121	0.082
NR	1505	4.99	90.00	-0.39	-0.129	-0.233	-0.070	0.152	0.090
NR	1310	10.05	0.00	-0.60	0.067	-0.229	0.007	-0.010	0.001
NR	1511	10.05	22.30	-0.59	0.076	-0.234	-0.034	0.072	0.035
NR	1512	10.04	45.00	-0.63	0.004	-0.239	-0.107	0.161	0.061
NR	1513	10.03	67.50	-0.71	-0.098	-0.239	-0.132	0.195	0.081
NR	1514	10.02	90.10	-0.78	-0.188	-0.249	-0.099	0.176	0.088
NR	1519	15.09	0.00	-1.01	-0.012	-0.193	0.009	0.014	-0.003
NR	1520	15.08	22.30	-0.96	0.007	-0.213	-0.018	0.090	0.030
NR	1521	15.07	45.01	-1.00	-0.061	-0.224	-0.133	0.233	0.069
NR	1522	15.07	67.30	-1.13	-0.234	-0.219	-0.174	0.251	0.083
NR	1523	15.06	90.00	-1.22	-0.360	-0.220	-0.120	0.193	0.084
NR	1528	20.12	0.00	-1.45	-0.194	-0.153	0.000	-0.013	-0.003
NR	1527	20.11	22.49	-1.38	-0.137	-0.189	-0.015	0.055	0.024
NR	1526	20.11	45.10	-1.42	-0.199	-0.206	-0.136	0.225	0.067
NR	1525	20.11	67.50	-1.54	-0.352	-0.212	-0.215	0.273	0.077
NR	1524	20.10	90.00	-1.64	-0.501	-0.217	-0.130	0.200	0.086
NR	1529	25.16	0.00	-1.88	-0.378	-0.141	-0.006	-0.021	0.004
NR	1530	25.16	0.00	-1.88	-0.377	-0.141	-0.010	-0.016	0.004
NR	1331	25.13	22.30	-1.77	-0.275	-0.168	-0.046	0.059	0.034
NR	1532	25.15	22.50	-1.77	-0.283	-0.173	-0.046	0.040	0.028
NR	1533	25.14	44.99	-1.80	-0.326	-0.205	-0.158	0.167	0.042
NR	1534	25.14	67.45	-1.86	-0.397	-0.241	-0.207	0.276	-0.007
NR	1335	25.12	90.00	-1.88	-0.494	-0.273	-0.140	0.182	0.086
NR	1541	29.17	-0.01	-2.03	-0.357	-0.174	0.013	-0.043	-0.011
NR	1540	29.17	22.55	-2.08	-0.395	-0.178	-0.116	0.064	0.106
NR	1539	29.17	45.06	-2.07	-0.383	-0.161	-0.148	0.183	-0.012

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMELETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	C2	CM	COEFFICIENTS CX	CY	CN	CL
NR	1338	29.16	67.43	-2.10	-0.461	-0.236	-0.092	0.203	-0.037
NR	1336	29.15	90.00	-2.11	-0.560	-0.305	-0.070	0.114	0.078
NR	1515	0.00	0.00	0.06	0.062	-0.226	0.006	0.010	0.003
NR	1518	0.00	0.00	0.07	0.088	-0.221	0.017	0.038	-0.004
NR	1542	0.00	0.00	0.05	0.067	-0.221	0.005	0.026	0.005

(Run.17)

RUN NUMBER=17 SHORT BODY, ROUND NOSE, SMALL TAIL
CANT ANGLE=10.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1288	-10.08	-0.01	1.07	0.394	-0.516	0.032	0.042	-0.014
NR	1289	-10.08	22.49	0.99	0.294	-0.517	-0.115	0.224	0.017
NR	1290	-10.08	44.99	0.87	0.149	-0.309	-0.178	0.309	0.045
NR	1291	-10.09	67.49	0.75	-0.013	-0.292	-0.155	0.291	0.062
NR	1292	-10.11	89.99	0.69	-0.107	-0.267	-0.140	0.258	0.068
NR	1297	-5.04	0.00	0.59	0.257	-0.298	0.016	0.058	-0.008
NR	1296	-5.05	22.49	0.54	0.170	-0.290	-0.091	0.179	0.024
NR	1295	-5.05	44.99	0.45	0.061	-0.288	-0.145	0.247	0.049
NR	1294	-5.06	67.49	0.57	-0.063	-0.277	-0.151	0.266	0.067
NR	1295	-5.07	89.99	0.29	-0.162	-0.267	-0.140	0.238	0.073
NR	1298	-0.01	0.00	0.16	0.127	-0.260	0.019	0.021	-0.008
NR	1299	-0.01	22.49	0.15	0.085	-0.258	-0.061	0.118	0.025
NR	1300	-0.02	45.00	0.08	0.029	-0.257	-0.115	0.182	0.056
NR	1301	-0.03	67.50	0.02	-0.057	-0.256	-0.145	0.217	0.074
NR	1302	-0.04	90.00	-0.05	-0.151	-0.260	-0.150	0.226	0.082
NR	1307	5.02	0.00	-0.18	0.120	-0.247	0.016	0.005	-0.004
NR	1306	5.01	22.50	-0.20	0.092	-0.246	-0.047	0.078	0.030
NR	1305	5.01	45.00	-0.25	0.032	-0.245	-0.104	0.148	0.058
NR	1304	5.00	67.50	-0.51	-0.047	-0.254	-0.149	0.197	0.076
NR	1305	4.99	90.00	-0.58	-0.141	-0.264	-0.170	0.233	0.088
NR	1308	10.04	0.00	-0.50	0.131	-0.239	0.002	-0.005	-0.006
NR	1309	10.04	22.50	-0.51	0.119	-0.244	-0.058	0.082	0.030
NR	1310	10.04	45.00	-0.58	0.050	-0.244	-0.141	0.169	0.058
NR	1311	10.04	67.50	-0.68	-0.082	-0.255	-0.183	0.222	0.079
NR	1312	10.02	90.00	-0.77	-0.189	-0.275	-0.190	0.224	0.083
NR	1317	15.07	-0.01	-0.84	0.093	-0.215	-0.013	-0.002	-0.008
NR	1316	15.07	22.50	-0.85	0.082	-0.228	-0.083	0.079	0.024
NR	1315	15.07	45.00	-0.93	-0.005	-0.234	-0.218	0.237	0.063
NR	1314	15.07	67.50	-1.09	-0.192	-0.229	-0.236	0.253	0.082
NR	1313	15.06	90.00	-1.19	-0.311	-0.249	-0.220	0.249	0.085
NR	1518	20.11	-0.01	-1.02	0.085	-0.163	-0.017	-0.004	-0.008
NR	1519	20.10	22.49	-1.22	-0.011	-0.258	-0.070	0.070	0.021
NR	1320	20.10	45.00	-1.27	-0.080	-0.402	-0.257	0.261	0.065
NR	1321	20.10	67.50	-1.46	-0.281	-0.270	-0.302	0.520	0.078
NR	1322	20.10	90.00	-1.55	-0.315	-0.290	-0.250	0.276	0.060
NR	1327	25.15	0.00	-1.72	-0.213	-0.118	-0.015	-0.019	-0.007
NR	1326	25.14	22.49	-1.63	-0.147	-0.145	-0.091	0.097	0.014
NR	1325	25.13	45.00	-1.68	-0.215	-0.195	-0.270	0.266	0.052
NR	1324	25.00	67.45	-1.78	-0.322	-0.257	-0.250	0.292	-0.009
NR	1325	25.12	89.68	-1.78	-0.400	-0.515	-0.111	0.159	0.043
NR	1328	29.17	0.00	-2.03	-0.350	-0.091	-0.024	-0.020	0.004
NR	1329	29.16	22.50	-1.95	-0.275	-0.232	-0.104	0.105	0.012
NR	1331	29.14	67.44	-2.03	-0.415	-0.388	-0.137	0.214	-0.054
NR	1332	29.14	90.00	-2.01	-0.484	-0.461	-0.390	0.505	0.067

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS = R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1287	-0.01	-0.01	0.17	0.155	-0.255	0.018	0.046	-0.014
NR	1333	-0.01	0.00	0.17	0.390	-0.255	0.000	0.028	0.000
NR	1335	-0.01	0.00	0.17	0.160	-0.255	0.000	0.052	0.000

T.R.69267

(Run.15)

RUN NUMBER=15 SHORT BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 0.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1153	-10.06	-0.01	0.81	0.316	-0.930	0.048	0.031	-0.016
NR	1154	-10.06	22.49	0.74	0.224	-0.931	0.014	0.107	0.016
NR	1155	-10.07	44.99	0.70	0.143	-0.928	0.052	0.108	0.052
NR	1156	-10.09	67.50	0.73	0.109	-0.931	0.097	0.081	0.081
NR	1157	-10.11	89.99	0.78	0.118	-0.930	0.080	0.087	0.081
NR	1162	-5.08	0.09	1.11	0.970	-0.868	0.042	-0.010	-0.009
NR	1161	-5.08	22.59	1.04	0.863	-0.890	-0.241	0.326	0.025
NR	1160	-5.04	45.00	0.35	0.128	-0.892	0.037	0.090	0.061
NR	1159	-5.06	67.50	0.36	0.100	-0.891	0.050	0.102	0.083
NR	1158	-5.08	89.99	0.38	0.062	-0.895	0.060	0.094	0.087
NR	1163	-0.05	0.10	0.70	0.713	-0.865	0.034	-0.027	-0.005
NR	1164	-0.05	22.50	0.65	0.657	-0.856	-0.254	0.330	0.034
NR	1165	-0.05	45.00	0.49	0.463	-0.866	-0.487	0.612	0.064
NR	1166	-0.05	67.50	0.25	0.173	-0.864	-0.634	0.787	0.085
NR	1167	-0.05	90.00	-0.03	-0.152	-0.864	-0.690	0.862	0.093
NR	1172	4.98	0.00	0.32	0.519	-0.896	0.027	-0.015	-0.002
NR	1171	4.98	22.50	0.27	0.454	-0.894	-0.266	0.334	0.029
NR	1170	4.98	45.00	0.10	0.251	-0.893	-0.493	0.612	0.062
NR	1169	4.98	67.50	-0.15	-0.035	-0.892	-0.645	0.796	0.089
NR	1168	4.99	90.00	-0.42	-0.364	-0.897	-0.710	0.866	0.089
NR	1173	10.01	0.00	-0.08	0.469	-0.937	0.011	-0.005	-0.002
NR	1174	10.01	22.50	-0.10	0.437	-0.936	-0.247	0.314	0.029
NR	1175	10.01	45.00	-0.23	0.271	-0.926	-0.510	0.629	0.066
NR	1176	10.02	67.50	-0.51	-0.064	-0.926	-0.698	0.839	0.092
NR	1177	10.02	90.00	-0.82	-0.424	-0.935	-0.730	0.872	0.092
NR	1182	15.10	-0.01	-1.27	-0.350	-0.966	0.007	0.009	-0.017
NR	1183	15.09	22.49	-1.19	-0.300	-0.974	0.049	0.013	0.013
NR	1184	15.08	44.99	-1.15	-0.302	-0.975	-0.019	0.099	0.055
NR	1185	15.07	67.50	-1.21	-0.395	-0.975	-0.091	0.191	0.084
NR	1186	15.06	89.99	-1.28	-0.493	-0.976	-0.030	0.130	0.079
NR	1192	20.15	-0.01	-1.79	-0.440	-1.007	-0.021	-0.017	-0.009
NR	1193	20.15	0.00	-1.79	-0.440	-1.007	-0.021	-0.009	-0.007
NR	1190	20.14	22.49	-1.68	-0.337	-1.009	0.067	-0.054	0.024
NR	1191	20.14	22.49	-1.69	-0.346	-1.009	0.060	-0.033	0.021
NR	1189	20.13	45.00	-1.64	-0.327	-1.001	-0.038	0.075	0.057
NR	1188	20.12	67.49	-1.68	-0.401	-1.008	-0.156	0.211	0.075
NR	1187	20.11	89.99	-1.78	-0.550	-1.008	-0.060	0.114	0.082
NR	1194	25.18	0.00	-2.16	-0.434	-1.063	-0.024	-0.029	-0.004
NR	1195	25.18	0.00	-2.16	-0.434	-1.063	-0.024	-0.029	-0.004
NR	1196	25.17	22.53	-2.13	-0.395	-1.052	0.042	-0.084	0.090
NR	1197	25.18	22.53	-2.13	-0.383	-1.047	0.025	-0.077	0.087
NR	1198	25.17	44.99	-2.14	-0.441	-1.021	-0.063	0.080	0.046
NR	1199	25.17	44.99	-2.14	-0.426	-1.021	-0.073	0.080	0.049
NR	1200	25.16	67.45	-2.11	-0.414	-1.057	-0.150	0.212	0.006
NR	1201	25.16	67.45	-2.11	-0.424	-1.052	-0.150	0.209	0.005

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1202	25.15	90.00	-2.17	-0.541	-1.072	-0.060	0.107	0.085
NR	1203	25.15	90.00	-2.18	-0.537	-1.077	-0.060	0.114	0.086
NR	1212	29.21	0.10	-2.46	-0.500	-1.077	-0.032	0.010	-0.001
NR	1213	29.20	0.10	-2.46	-0.514	-1.077	-0.031	-0.007	-0.002
NR	1210	29.20	22.57	-2.43	-0.475	-1.062	-0.078	0.002	0.143
NR	1211	29.20	22.57	-2.42	-0.462	-1.062	-0.072	-0.009	0.141
NR	1208	29.19	44.98	-2.39	-0.459	-1.011	-0.074	0.100	0.028
NR	1209	29.19	44.98	-2.39	-0.459	-1.011	-0.074	0.089	0.029
NR	1206	29.19	67.43	-2.41	-0.520	-1.067	-0.072	0.133	-0.043
NR	1207	29.18	67.43	-2.38	-0.498	-1.072	-0.060	0.125	-0.040
NR	1204	29.17	90.00	-2.46	-0.594	-1.073	-0.080	0.131	0.083
NR	1205	29.17	90.00	-2.46	-0.612	-1.078	-0.080	0.138	0.087
NR	1152	0.00	-0.01	0.01	0.049	-0.859	0.061	-0.032	-0.016
NR	1178	-0.05	0.00	0.71	0.736	-0.860	0.031	-0.024	0.003
NR	1181	0.00	-0.01	0.01	0.049	-0.859	0.049	-0.027	-0.020
NR	1214	0.00	0.10	-0.01	0.004	-0.859	0.017	-0.018	-0.001

(Run.24)

RUN NUMBER=24 SHORT BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 2.5 CG POSITION 50.00%
V= 240. FPS RE= 0.584 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1791	-10.07	-0.01	0.89	0.386	-0.944	0.049	0.022	-0.012
NR	1792	-10.07	22.49	0.83	0.291	-0.941	-0.014	0.126	0.023
NR	1793	-10.07	45.00	0.74	0.165	-0.942	0.004	0.152	0.062
NR	1794	-10.09	67.30	0.74	0.127	-0.936	0.048	0.120	0.089
NR	1795	-10.11	90.00	0.77	0.120	-0.930	0.030	0.150	0.096
NR	1800	-5.05	0.00	0.43	0.240	-0.897	0.040	-0.030	-0.002
NR	1799	-5.05	22.30	0.40	0.219	-0.889	0.027	0.048	0.033
NR	1798	-5.05	45.10	0.37	0.160	-0.892	0.019	0.090	0.067
NR	1797	-5.06	67.50	0.36	0.109	-0.891	0.020	0.116	0.091
NR	1796	-5.08	90.00	0.36	0.060	-0.895	0.020	0.154	0.100
NR	1801	0.00	0.00	0.01	-0.006	-0.864	0.031	-0.052	-0.003
NR	1802	0.00	22.30	0.00	-0.016	-0.867	0.003	0.035	0.058
NR	1803	-0.01	45.00	-0.02	-0.039	-0.865	-0.006	0.106	0.072
NR	1804	-0.05	67.50	-0.03	-0.115	-0.864	-0.001	0.128	0.095
NR	1805	-0.05	90.00	-0.04	-0.166	-0.864	0.000	0.137	0.098
NR	1810	5.05	0.00	-0.33	-0.165	-0.895	0.022	-0.026	-0.001
NR	1809	5.02	22.30	-0.37	-0.196	-0.893	-0.002	0.047	0.035
NR	1808	5.01	45.00	-0.39	-0.246	-0.887	-0.003	0.093	0.069
NR	1807	5.00	67.50	-0.41	-0.507	-0.892	0.002	0.121	0.097
NR	1806	4.99	90.00	-0.42	-0.355	-0.902	0.000	0.127	0.094
NR	1811	10.06	0.00	-0.72	-0.206	-0.951	0.012	-0.015	-0.001
NR	1812	10.05	22.49	-0.71	-0.185	-0.926	-0.014	0.068	0.028
NR	1813	10.04	45.10	-0.71	-0.210	-0.923	-0.040	0.145	0.069
NR	1814	10.03	67.50	-0.77	-0.320	-0.935	-0.060	0.178	0.092
NR	1815	10.02	90.00	-0.81	-0.403	-0.940	-0.030	0.159	0.095
NR	1821	15.10	0.00	-1.19	-0.243	-0.939	0.007	0.017	-0.006
NR	1822	15.09	22.49	-1.14	-0.214	-0.944	0.026	0.049	0.019
NR	1823	15.08	45.00	-1.10	-0.221	-0.933	-0.078	0.187	0.067
NR	1824	15.07	67.50	-1.20	-0.568	-0.956	-0.119	0.235	0.092
NR	1825	15.06	90.00	-1.28	-0.501	-0.961	-0.030	0.174	0.096
NR	1852	20.14	0.00	-1.72	-0.557	-0.965	-0.022	0.013	0.002
NR	1853	20.14	0.00	-1.43	-0.250	-0.958	-0.013	0.000	-0.001
NR	1830	20.13	22.49	-1.62	-0.261	-0.963	0.040	0.012	0.024
NR	1831	20.13	22.49	-1.61	-0.257	-0.960	0.035	0.009	0.020
NR	1829	20.12	45.10	-1.59	-0.288	-0.967	-0.091	0.147	0.068
NR	1828	20.12	67.51	-1.68	-0.400	-0.988	-0.185	0.255	0.094
NR	1826	20.11	90.00	-1.77	-0.539	-0.998	-0.090	0.152	0.093
NR	1827	20.11	90.00	-1.78	-0.537	-0.998	-0.090	0.152	0.093
NR	1834	25.18	0.00	-2.12	-0.577	-1.054	-0.012	-0.033	0.001
NR	1835	25.18	0.00	-2.11	-0.375	-1.054	-0.012	-0.025	0.005
NR	1836	25.17	22.53	-2.07	-0.517	-1.008	0.050	-0.061	0.081
NR	1837	25.17	22.54	-2.07	-0.318	-1.008	0.040	-0.056	0.091
NR	1838	25.17	45.00	-2.09	-0.370	-0.991	-0.100	0.129	0.053
NR	1839	25.17	43.00	-2.10	-0.385	-0.991	-0.104	0.125	0.058
NR	1840	25.16	67.47	-2.09	-0.402	-1.057	-0.207	0.257	0.030

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1841	25.16	67.47	-2.10	-0.404	-1.037	-0.209	0.267	0.028
NR	1842	25.15	90.01	-2.17	-0.525	-1.072	-0.100	0.139	0.103
NR	1843	25.13	90.01	-2.17	-0.517	-1.067	-0.100	0.140	0.104
NR	1852	29.20	0.01	-2.41	-0.448	-1.048	-0.021	-0.020	0.015
NR	1853	29.20	0.01	-2.41	-0.440	-1.048	-0.022	-0.011	0.010
NR	1830	29.20	22.56	-2.36	-0.402	-1.149	-0.050	-0.063	0.157
NR	1831	29.20	22.56	-2.37	-0.586	-1.022	-0.048	-0.027	0.132
NR	1848	29.19	44.97	-2.36	-0.426	-0.996	-0.137	0.148	0.016
NR	1849	29.19	44.97	-2.32	-0.409	-1.017	-0.133	0.155	0.014
NR	1846	29.18	67.44	-2.36	-0.461	-1.058	-0.126	0.187	-0.017
NR	1847	29.18	67.44	-2.56	-0.460	-1.062	-0.124	0.171	-0.022
NR	1844	29.17	90.01	-2.45	-0.390	-1.068	-0.100	0.136	0.100
NR	1845	29.17	90.01	-2.45	-0.598	-1.078	-0.100	0.152	0.107
NR	1790	0.00	-0.01	0.04	0.080	-0.834	0.036	-0.034	-0.013
NR	1817	0.00	0.00	0.01	0.019	-0.854	0.024	-0.017	0.002
NR	1820	0.00	-0.01	0.03	0.077	-0.854	0.049	-0.019	-0.010
NR	1834	0.00	0.00	0.01	0.034	-0.839	0.024	-0.018	0.004

T.R.69267

(Run.21)

RUN NUMBER=21 SHORT BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE= 5.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1547	-10.07	-0.01	0.95	0.434	-0.959	0.007	0.049	-0.021
NR	1548	-10.07	22.48	0.86	0.339	-0.931	-0.071	0.183	0.010
NR	1549	-10.08	44.89	0.75	0.207	-0.943	-0.067	0.219	0.046
NR	1550	-10.09	67.49	0.72	0.130	-0.938	0.007	0.160	0.071
NR	1551	-10.11	89.99	0.74	0.899	-0.930	0.020	0.148	0.074
NR	1552	-10.11	89.98	0.74	0.103	-0.930	0.020	0.132	0.071
NR	1557	-5.04	0.09	0.48	0.292	-0.902	0.014	-0.013	-0.013
NR	1556	-5.04	22.39	0.43	0.243	-0.899	-0.023	0.083	0.018
NR	1555	-5.05	44.99	0.38	0.174	-0.897	-0.029	0.124	0.051
NR	1554	-5.06	67.49	0.35	0.109	-0.896	0.004	0.127	0.073
NR	1553	-5.08	89.99	0.34	0.038	-0.896	0.020	0.127	0.077
NR	1538	0.00	0.09	0.02	-0.003	-0.864	0.011	-0.028	-0.010
NR	1559	0.00	22.49	-0.01	-0.024	-0.882	-0.018	0.053	0.028
NR	1560	-0.01	44.99	-0.02	-0.057	-0.865	-0.032	0.111	0.059
NR	1561	-0.03	67.49	-0.04	-0.112	-0.869	-0.029	0.133	0.078
NR	1562	-0.04	89.99	-0.06	-0.150	-0.869	-0.020	0.158	0.085
NR	1567	5.02	0.00	-0.31	-0.143	-0.900	0.022	-0.034	-0.003
NR	1566	5.02	22.49	-0.34	-0.181	-0.894	-0.028	0.058	0.028
NR	1565	5.01	45.00	-0.39	-0.248	-0.892	-0.036	0.104	0.063
NR	1564	5.00	67.30	-0.43	-0.320	-0.897	-0.026	0.132	0.086
NR	1563	4.99	89.99	-0.44	-0.357	-0.907	-0.020	0.140	0.089
NR	1568	10.05	-0.01	-0.68	-0.171	-0.931	0.001	-0.026	-0.009
NR	1569	10.05	22.49	-0.67	-0.164	-0.931	-0.043	0.072	0.022
NR	1570	10.04	45.00	-0.69	-0.202	-0.930	-0.085	0.153	0.064
NR	1571	10.04	67.50	-0.79	-0.317	-0.933	-0.099	0.202	0.091
NR	1572	10.02	90.00	-0.84	-0.410	-0.943	-0.030	0.156	0.093
NR	1577	15.09	0.00	-1.13	-0.237	-0.939	-0.027	-0.012	-0.008
NR	1576	15.09	22.49	-1.08	-0.193	-0.943	-0.021	0.022	0.020
NR	1575	15.08	45.00	-1.11	-0.228	-0.953	-0.136	0.173	0.068
NR	1574	15.08	67.50	-1.23	-0.361	-0.966	-0.153	0.214	0.094
NR	1573	15.07	90.00	-1.30	-0.470	-0.971	-0.070	0.147	0.093
NR	1578	20.14	0.00	-1.66	-0.314	-0.949	-0.031	-0.031	-0.007
NR	1579	20.13	22.49	-1.56	-0.228	-0.935	0.003	-0.005	0.017
NR	1580	20.12	43.00	-1.58	-0.257	-0.972	-0.136	0.143	0.067
NR	1581	20.12	67.50	-1.69	-0.380	-0.998	-0.213	0.258	0.088
NR	1582	20.11	90.00	-1.81	-0.527	-1.008	-0.100	0.147	0.094
NR	1589	25.18	0.00	-2.11	-0.374	-1.003	-0.036	-0.025	0.002
NR	1590	25.18	0.00	-2.11	-0.367	-1.000	-0.029	-0.040	0.003
NR	1587	25.17	22.50	-2.06	-0.308	-0.974	0.000	-0.019	0.042
NR	1588	25.17	22.51	-2.05	-0.315	-0.978	0.002	-0.036	0.046
NR	1585	25.16	44.99	-2.04	-0.320	-0.991	-0.164	0.162	0.047
NR	1586	25.16	44.89	-2.04	-0.320	-0.991	-0.164	0.162	0.048
NR	1584	25.16	67.46	-2.10	-0.393	-1.052	-0.244	0.320	0.014
NR	1583	25.15	90.01	-2.18	-0.520	-1.077	-0.110	0.181	0.102

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANT80 FIN BOMBLETS = R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1591	29.20	0.00	-2.40	-0.430	-1.023	-0.020	-0.037	0.001
NR	1592	29.20	0.01	-2.39	-0.420	-1.018	-0.021	-0.036	0.009
NR	1593	29.20	22.35	-2.34	-0.366	-0.998	-0.000	-0.071	0.120
NR	1594	29.19	22.55	-2.33	-0.367	-1.003	0.002	-0.079	0.112
NR	1595	29.19	44.96	-2.30	-0.345	-0.987	-0.130	0.181	-0.004
NR	1596	29.19	44.96	-2.30	-0.354	-0.987	-0.134	0.181	-0.004
NR	1597	29.18	67.44	-2.34	-0.444	-1.072	-0.084	0.171	-0.024
NR	1598	29.18	67.44	-2.34	-0.438	-1.072	-0.117	0.201	-0.023
NR	1599	29.17	90.01	-2.44	-0.592	-1.083	-0.120	0.188	0.108
NR	1600	29.17	90.02	-2.45	-0.580	-1.088	-0.139	0.213	0.111
NR	1546	0.00	-0.01	0.06	0.092	-0.854	0.032	-0.034	-0.020
NR	1601	0.00	0.00	0.04	0.071	-0.884	0.019	-0.028	0.002

T.R.69267

(Run.18)

RUN NUMBER=18 SHORT BODY, SQUARE NOSE, SMALL TAIL
CANT ANGLE=10.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1338	-10.08	0.00	1.10	0.538	-1.019	0.008	0.033	-0.002
NR	1339	-10.08	22.49	0.99	0.419	-1.010	-0.130	0.207	0.023
NR	1340	-10.08	44.99	0.83	0.265	-0.982	-0.160	0.271	0.055
NR	1341	-10.09	67.49	0.75	0.157	-0.965	-0.101	0.230	0.068
NR	1342	-10.11	89.99	0.73	0.117	-0.940	-0.050	0.189	0.076
NR	1347	-5.04	0.00	0.61	0.379	-0.932	0.006	-0.018	-0.005
NR	1346	-5.04	22.49	0.55	0.335	-0.929	-0.085	0.114	0.024
NR	1345	-5.05	44.99	0.44	0.241	-0.912	-0.116	0.191	0.054
NR	1344	-5.06	67.49	0.38	0.157	-0.906	-0.104	0.221	0.072
NR	1343	-5.08	89.99	0.33	0.071	-0.905	-0.060	0.208	0.084
NR	1348	-0.01	0.00	0.10	0.056	-0.869	0.014	-0.046	-0.005
NR	1350	-0.01	22.50	0.07	0.042	-0.867	-0.044	0.065	0.040
NR	1351	-0.02	45.00	0.04	-0.007	-0.870	-0.076	0.139	0.067
NR	1352	-0.03	67.50	-0.01	-0.078	-0.869	-0.082	0.177	0.090
NR	1353	-0.04	90.00	-0.05	-0.144	-0.874	-0.090	0.206	0.097
NR	1358	5.02	0.00	-0.24	-0.081	-0.910	0.011	-0.022	-0.004
NR	1357	5.02	22.49	-0.27	-0.130	-0.903	-0.054	0.087	0.028
NR	1356	5.01	45.00	-0.32	-0.197	-0.902	-0.083	0.147	0.065
NR	1355	5.00	67.51	-0.39	-0.268	-0.907	-0.074	0.167	0.099
NR	1354	4.99	90.01	-0.43	-0.344	-0.921	-0.090	0.204	0.106
NR	1359	10.04	-0.01	-0.53	-0.040	-0.936	0.002	-0.011	-0.008
NR	1364	10.04	-0.01	-0.54	-0.041	-0.936	0.013	0.010	-0.012
NR	1365	10.04	22.49	-0.55	-0.069	-0.936	-0.067	0.128	0.021
NR	1366	10.04	45.00	-0.62	-0.151	-0.935	-0.136	0.233	0.061
NR	1367	10.03	67.50	-0.74	-0.300	-0.945	-0.132	0.251	0.095
NR	1368	10.02	90.00	-0.80	-0.396	-0.965	-0.130	0.247	0.098
NR	1373	15.08	0.00	-0.95	-0.075	-0.939	-0.002	-0.013	-0.006
NR	1372	15.07	22.49	-0.92	-0.047	-0.945	-0.069	0.087	0.027
NR	1371	15.07	45.00	-0.99	-0.125	-0.965	-0.210	0.263	0.068
NR	1370	15.07	67.50	-1.16	-0.324	-0.966	-0.222	0.292	0.094
NR	1369	15.06	90.00	-1.26	-0.449	-0.990	-0.160	0.247	0.102
NR	1374	20.12	-0.01	-1.47	-0.135	-0.929	0.001	-0.040	-0.015
NR	1375	20.12	-0.01	-1.47	-0.142	-0.929	0.001	-0.040	-0.012
NR	1376	20.12	22.49	-1.39	-0.088	-0.936	-0.023	0.029	0.022
NR	1377	20.12	22.49	-1.40	-0.087	-0.936	-0.029	0.027	0.016
NR	1378	20.11	45.01	-1.44	-0.140	-0.967	-0.227	0.249	0.076
NR	1379	20.11	67.50	-1.62	-0.332	-0.998	-0.294	0.333	0.089
NR	1380	20.11	90.00	-1.76	-0.492	-1.023	-0.190	0.232	0.099
NR	1381	20.11	90.01	-1.76	-0.493	-1.023	-0.190	0.224	0.101
NR	1390	25.17	-0.01	-2.02	-0.282	-0.921	0.002	-0.048	-0.014
NR	1392	25.17	-0.01	-2.02	-0.312	-0.926	-0.004	-0.041	-0.016
NR	1388	25.16	22.49	-1.90	-0.190	-0.924	-0.006	0.002	0.020
NR	1389	25.16	22.49	-1.90	-0.176	-0.924	-0.005	0.007	0.015
NR	1386	25.15	45.00	-1.90	-0.204	-0.977	-0.250	0.245	0.060
NR	1387	25.15	45.00	-1.91	-0.200	-0.977	-0.243	0.249	0.062

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	1384	25.15	67.45	-2.03	-0.335	-1.067	-0.225	0.282	0.002
NR	1385	25.15	67.45	-2.03	-0.344	-1.062	-0.225	0.303	0.006
NR	1382	25.14	90.01	-2.13	-0.494	-1.087	-0.200	0.250	0.102
NR	1383	25.14	90.01	-2.13	-0.478	-1.092	-0.190	0.232	0.101
NR	1393	29.19	0.00	-2.30	-0.343	-0.964	-0.020	-0.021	0.005
NR	1394	29.19	0.00	-2.30	-0.350	-0.969	-0.020	-0.021	0.002
NR	1395	29.19	22.50	-2.22	-0.301	-0.924	0.022	-0.034	0.037
NR	1396	29.19	22.51	-2.22	-0.298	-0.924	0.024	-0.059	0.044
NR	1397	29.18	44.97	-2.20	-0.283	-0.962	-0.194	0.224	0.003
NR	1398	29.18	44.97	-2.19	-0.274	-0.937	-0.208	0.209	0.004
NR	1399	29.17	67.44	-2.28	-0.409	-1.077	-0.156	0.215	-0.013
NR	1400	29.18	67.44	-2.29	-0.411	-1.072	-0.161	0.225	-0.012
NR	1401	29.17	90.01	-2.42	-0.590	-1.097	-0.190	0.244	0.101
NR	1402	29.17	90.01	-2.42	-0.574	-1.092	-0.190	0.244	0.102
NR	1337	-0.01	0.00	0.12	0.115	-0.869	0.014	-0.015	-0.005
NR	1360	-0.01	0.00	0.12	0.130	-0.874	0.026	-0.026	-0.001
NR	1363	-0.01	-0.01	0.13	0.150	-0.874	0.050	-0.020	-0.018
NR	1404	-0.01	0.00	0.12	0.115	-0.869	0.025	-0.017	0.001

(Run.34-37)

RUN NUMBER=34 SHORT BODY, ROUND NOSE, NO FINS
CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2521	-10.03	-0.01	0.38	-0.200	-0.244	0.032	0.032	-0.009
NR	2522	-5.02	0.10	0.18	-0.101	-0.218	0.019	0.032	0.158
NR	2523	0.00	0.10	-0.02	0.011	-0.191	0.018	0.020	0.159
NR	2524	5.02	0.10	-0.21	0.135	-0.218	0.017	-0.000	0.160
NR	2525	10.04	0.10	-0.37	0.265	-0.246	0.016	0.005	0.158
NR	2526	15.05	0.10	-0.54	0.580	-0.265	0.003	-0.002	0.160
NR	2527	20.07	0.10	-0.70	0.479	-0.276	0.002	-0.013	0.162
NR	2528	25.09	0.10	-0.88	0.531	-0.275	-0.005	-0.009	0.160
NR	2529	29.10	0.10	-1.03	0.568	-0.250	-0.012	-0.020	0.161
NR	2520	0.00	-0.01	0.01	0.057	-0.191	0.024	0.014	-0.013
NR	2530	0.00	0.10	-0.02	-0.005	-0.196	0.000	0.023	0.165

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

RUN NUMBER=35 SHORT BODY, SQUARE NOSE, NO FINS
CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2534	-10.03	-0.01	0.39	-0.029	-0.932	0.020	0.050	-0.011
NR	2535	-5.02	-0.01	0.21	0.107	-0.891	0.019	0.022	-0.010
NR	2536	0.00	0.00	0.00	0.051	-0.849	0.018	0.015	-0.007
NR	2537	5.02	0.00	-0.22	-0.043	-0.891	0.022	0.014	-0.008
NR	2538	10.04	-0.01	-0.40	0.072	-0.939	-0.035	0.052	-0.009
NR	2539	15.05	0.00	-0.58	0.274	-0.992	0.025	-0.016	-0.003
NR	2540	20.08	0.00	-0.88	0.411	-1.023	-0.014	-0.007	-0.004
NR	2541	20.08	0.00	-0.88	0.396	-1.028	-0.014	-0.007	-0.006
NR	2542	25.11	-0.01	-1.21	0.466	-1.056	-0.016	-0.028	-0.008
NR	2543	25.11	0.00	-1.21	0.459	-1.056	-0.010	-0.026	-0.008
NR	2544	29.13	0.00	-1.43	0.437	-1.046	-0.019	-0.015	-0.008
NR	2545	29.13	0.00	-1.43	0.452	-1.051	-0.006	-0.026	-0.007
NR	2546	0.00	0.00	-0.01	0.020	-0.849	0.018	-0.011	0.001

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

RUN NUMBER=36 LONG BODY, SQUARE NOSE, NO FINS
CG POSITION 50.00%
V= 240. FPS RE= 0.584 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2551	-10.03	0.00	0.45	-0.295	-0.898	0.022	0.012	-0.001
NR	2552	-5.02	0.00	0.22	-0.044	-0.862	0.008	0.000	-0.001
NR	2553	0.00	0.00	-0.02	0.050	-0.850	0.012	-0.001	-0.005
NR	2554	5.02	0.00	-0.25	0.110	-0.881	0.016	-0.005	-0.001
NR	2555	10.04	0.00	-0.49	0.551	-0.928	0.008	-0.014	-0.004
NR	2556	15.07	0.00	-0.79	0.619	-0.977	0.000	-0.019	-0.004
NR	2557	15.07	0.00	-0.79	0.605	-0.977	-0.024	-0.035	-0.006
NR	2558	20.10	-0.01	-1.23	0.872	-1.022	-0.042	-0.005	-0.009
NR	2559	20.10	-0.01	-1.25	0.864	-1.027	-0.047	-0.029	-0.012
NR	2560	25.14	-0.01	-1.79	0.969	-1.060	-0.048	-0.142	-0.013
NR	2561	25.14	-0.01	-1.78	0.972	-1.060	-0.064	-0.030	-0.014
NR	2563	28.17	-0.01	-2.09	0.969	-1.055	-0.042	-0.063	-0.015
NR	2564	28.17	-0.01	-2.08	0.978	-1.048	-0.043	-0.025	-0.013
NR	2550	0.00	0.00	-0.02	0.022	-0.835	0.012	-0.009	-0.002
NR	2565	0.00	0.00	-0.02	0.050	-0.855	0.050	0.006	0.001

RUN NUMBER=37 LONG BODY, ROUND NOSE, NO FINS
CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2569	-10.03	0.00	0.39	-0.551	-0.196	0.015	0.016	-0.001
NR	2570	-5.02	0.00	0.19	-0.260	-0.184	0.007	0.012	-0.003
NR	2571	0.00	0.00	-0.01	0.015	-0.167	0.000	0.000	-0.003
NR	2572	5.02	0.00	-0.23	0.288	-0.194	0.011	-0.021	0.000
NR	2573	10.04	0.00	-0.42	0.569	-0.221	0.009	-0.026	-0.002
NR	2574	15.06	0.00	-0.65	0.763	-0.255	0.013	-0.050	-0.002
NR	2575	20.08	0.00	-0.95	0.869	-0.226	0.023	-0.040	-0.004
NR	2576	25.11	0.00	-1.50	0.940	-0.201	0.033	-0.058	-0.004
NR	2577	29.13	0.00	-1.61	0.960	-0.159	0.050	-0.066	-0.007
NR	2568	0.00	0.00	-0.01	0.025	-0.167	0.000	0.008	-0.001
NR	2578	0.00	0.00	-0.02	0.057	-0.167	0.018	0.006	0.001

(Run.40)

RUN NUMBER=40 LONO BODY, ROUNO NOSE, CURVED TAIL A
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2582	-10.08	0.05	1.49	1.632	-0.274	8.052	-0.122	0.042
NR	2583	-10.08	0.03	1.49	1.640	-0.274	0.058	-0.123	0.042
NR	2584	-10.08	22.52	1.45	1.576	-0.245	-0.001	0.043	0.057
NR	2585	-10.10	45.03	1.43	1.503	-0.235	0.059	-0.049	0.076
NR	2586	-10.12	67.52	1.45	1.501	-0.255	0.103	-0.126	0.070
NR	2587	-10.14	90.01	1.45	1.470	-0.260	0.090	-0.048	0.059
NR	2592	-5.04	0.02	0.70	0.725	-0.255	0.038	-0.061	0.055
NR	2591	-5.04	22.52	0.67	0.673	-0.245	0.019	-0.008	0.054
NR	2590	-5.05	45.02	0.63	0.597	-0.244	0.045	0.002	0.067
NR	2589	-5.07	67.52	0.62	0.573	-0.244	0.063	-0.026	0.076
NR	2588	-5.09	90.01	0.64	0.577	-0.249	0.070	-0.018	0.068
NR	2593	0.00	0.02	-0.06	-0.033	-0.255	-0.021	0.041	0.027
NR	2594	0.00	22.52	-0.09	-0.060	-0.254	-0.029	0.071	0.045
NR	2595	-0.01	45.02	-0.11	-0.100	-0.253	-0.013	0.098	0.058
NR	2596	-0.03	67.52	-0.12	-0.141	-0.253	-0.006	0.102	0.068
NR	2597	-0.05	90.11	-0.13	-0.186	-0.253	0.010	0.089	0.067
NR	2602	5.05	0.01	-0.83	-0.844	-0.265	-0.049	0.111	0.015
NR	2601	5.04	22.51	-0.84	-0.846	-0.263	-0.046	0.118	0.037
NR	2600	5.03	45.01	-0.84	-0.828	-0.262	-0.050	0.160	0.054
NR	2599	5.02	67.52	-0.86	-0.879	-0.262	-0.052	0.207	0.066
NR	2598	5.00	90.11	-0.89	-0.955	-0.262	-0.028	0.153	0.064
NR	2603	10.09	0.00	-1.56	-1.668	-0.285	-0.056	0.140	0.004
NR	2604	10.08	22.50	-1.57	-1.661	-0.264	-0.023	0.074	0.019
NR	2605	10.08	45.00	-1.61	-1.689	-0.262	-0.081	0.217	0.035
NR	2606	10.06	67.51	-1.62	-1.740	-0.285	-0.096	0.307	0.054
NR	2607	10.05	90.01	-1.63	-1.786	-0.290	-0.050	0.192	0.054
NR	2615	15.11	0.06	-1.97	-1.788	-0.321	-0.139	0.256	0.103
NR	2616	15.11	0.06	-1.97	-1.788	-0.326	-0.146	0.272	0.104
NR	2613	15.12	22.54	-2.15	-2.155	-0.270	-0.094	0.165	0.080
NR	2614	15.12	22.54	-2.14	-2.133	-0.270	-0.091	0.173	0.083
NR	2612	15.12	45.03	-2.29	-2.412	-0.253	-0.056	0.165	0.082
NR	2610	15.10	67.50	-2.09	-2.040	-0.298	-0.011	0.119	0.046
NR	2611	15.10	67.51	-2.09	-2.032	-0.303	-0.010	0.115	0.051
NR	2608	15.08	90.06	-2.04	-1.960	-0.332	-0.098	0.290	0.144
NR	2609	15.08	90.06	-2.04	-1.944	-0.352	-0.108	0.290	0.147
NR	2617	20.14	0.10	-2.36	-1.828	-0.384	-0.255	0.484	0.166
NR	2618	20.14	0.10	-2.37	-1.884	-0.365	-0.247	0.429	0.157
NR	2619	20.15	22.64	-2.49	-2.084	-0.342	-0.494	0.944	0.244
NR	2620	20.15	22.64	-2.49	-2.106	-0.352	-0.504	0.960	0.248
NR	2621	20.15	45.10	-2.85	-2.886	-0.253	-0.032	0.134	0.191
NR	2622	20.15	45.10	-2.85	-2.891	-0.255	-0.032	0.129	0.193
NR	2623	20.12	67.58	-2.43	-2.049	-0.338	-0.107	0.288	0.175
NR	2624	20.12	67.58	-2.43	-2.047	-0.342	-0.107	0.271	0.173
NR	2625	20.11	90.07	-2.47	-2.104	-0.348	-0.097	0.232	0.153
NR	2626	20.11	90.07	-2.47	-2.105	-0.343	-0.097	0.217	0.151

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2635	25.17	0.08	-2.77	-1.944	-0.417	-0.199	0.364	0.135
NR	2636	25.17	0.08	-2.78	-1.959	-0.412	-0.199	0.372	0.137
NR	2633	25.17	22.62	-2.69	-1.883	-0.424	-0.483	0.930	0.206
NR	2634	25.17	22.62	-2.68	-1.877	-0.424	-0.487	0.941	0.208
NR	2631	25.19	45.34	-3.26	-2.958	-0.317	-0.481	1.081	0.589
NR	2632	25.19	45.34	-3.26	-2.963	-0.307	-0.481	1.054	0.581
NR	2629	25.16	67.57	-2.90	-2.363	-0.336	-0.061	0.177	0.155
NR	2630	25.16	67.57	-2.89	-2.359	-0.345	-0.059	0.167	0.151
NR	2627	25.14	90.08	-2.80	-1.994	-0.425	-0.136	0.279	0.179
NR	2628	25.14	90.09	-2.80	-1.978	-0.426	-0.136	0.286	0.180
NR	2581	0.00	0.02	-0.05	-0.032	-0.255	-0.028	0.042	0.028
NR	2638	0.00	0.02	-0.06	-0.033	-0.255	-0.021	0.033	0.031

T.R.69267

(Run.41)

RUN NUMBER=41 LONG BODY, SQUARE NOSE, CURVED TAIL 4
CANT ANGLE= 0.0 DEG. CG POSITION 30.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2642	-10.08	0.03	1.34	1.857	-0.950	0.055	-0.117	0.047
NR	2643	-10.08	0.05	1.54	1.849	-0.930	0.054	-0.125	0.044
NR	2644	-10.08	22.32	1.48	1.745	-0.930	-0.017	0.043	0.051
NR	2645	-10.08	22.82	1.47	1.722	-0.930	-0.015	0.093	0.050
NR	2646	-10.10	45.02	1.40	1.371	-0.920	0.066	-0.076	0.070
NR	2647	-10.10	45.02	1.40	1.366	-0.920	0.066	-0.070	0.070
NR	2649	-10.12	67.52	1.42	1.660	-0.936	0.156	-0.197	0.079
NR	2650	-10.14	90.01	1.46	1.688	-0.941	0.100	-0.064	0.064
NR	2636	-3.04	0.00	0.72	0.886	-0.918	0.023	-0.094	0.021
NR	2655	-3.04	22.50	0.67	0.858	-0.914	0.029	-0.052	0.029
NR	2654	-5.03	45.02	0.65	0.790	-0.914	0.059	-0.006	0.056
NR	2653	-5.07	67.32	0.65	0.763	-0.914	0.055	0.002	0.071
NR	2652	-5.08	90.00	0.64	0.753	-0.916	0.070	-0.002	0.061
NR	2657	0.00	0.00	-0.06	-0.036	-0.896	-0.029	0.086	0.009
NR	2658	0.00	22.51	-0.09	-0.075	-0.897	-0.029	0.070	0.028
NR	2659	-0.01	43.01	-0.11	-0.111	-0.901	-0.025	0.105	0.041
NR	2660	-0.03	67.51	-0.12	-0.164	-0.901	-0.017	0.116	0.030
NR	2661	-0.03	90.00	-0.12	-0.214	-0.901	-0.010	0.110	0.032
NR	2666	5.04	0.10	-0.85	-0.976	-0.926	-0.065	0.156	0.002
NR	2665	5.04	22.50	-0.84	-0.977	-0.929	-0.070	0.166	0.013
NR	2664	5.03	43.00	-0.84	-0.972	-0.933	-0.063	0.204	0.036
NR	2663	3.00	67.30	-0.88	-1.065	-0.937	-0.049	0.214	0.058
NR	2662	5.00	90.00	-0.90	-1.156	-0.937	-0.040	0.172	0.051
NR	2667	10.09	0.10	-1.64	-1.893	-0.965	-0.075	0.130	0.005
NR	2668	10.09	22.50	-1.65	-1.816	-0.948	-0.053	0.070	0.009
NR	2669	10.08	43.00	-1.61	-1.732	-0.931	-0.097	0.264	0.033
NR	2670	10.06	67.51	-1.66	-1.907	-0.969	-0.158	0.401	0.049
NR	2671	10.03	90.01	-1.71	-2.036	-0.979	-0.060	0.203	0.056
NR	2680	13.12	0.08	-2.18	-2.069	-1.029	-0.161	0.508	0.123
NR	2681	15.12	0.08	-2.17	-2.086	-1.029	-0.161	0.308	0.128
NR	2678	15.13	22.60	-2.32	-2.285	-0.988	-0.108	0.198	0.179
NR	2679	15.13	22.60	-2.31	-2.273	-0.995	-0.107	0.219	0.178
NR	2676	15.13	43.00	-2.42	-2.471	-0.961	-0.101	0.225	0.032
NR	2677	13.12	43.00	-2.40	-2.466	-0.961	-0.107	0.250	0.037
NR	2674	15.11	67.47	-2.50	-2.317	-1.010	-0.088	0.242	-0.016
NR	2675	15.11	67.47	-2.31	-2.518	-1.018	-0.095	0.260	-0.016
NR	2672	15.09	90.07	-2.26	-2.249	-1.033	-0.127	0.271	0.165
NR	2673	15.09	90.07	-2.26	-2.249	-1.039	-0.127	0.271	0.163
NR	2682	20.17	0.11	-2.79	-2.152	-1.072	-0.230	0.567	0.175
NR	2683	20.17	0.10	-2.77	-2.151	-1.081	-0.231	0.407	0.161
NR	2684	20.18	22.72	-2.93	-2.348	-1.095	-0.408	0.812	0.370

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E. 5FT+6FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2685	20.18	22.72	-2.93	-2.342	-1.093	-0.407	0.797	0.381
NR	2686	20.18	44.97	-3.19	-2.951	-0.980	0.103	-0.193	-0.026
NR	2687	20.18	44.97	-3.18	-2.936	-0.980	0.083	-0.199	-0.023
NR	2688	20.16	67.49	-2.96	-2.526	-1.044	-0.122	0.250	0.016
NR	2689	20.16	67.30	-2.97	-2.346	-1.059	-0.158	0.223	0.033
NR	2690	20.13	90.10	-2.85	-2.260	-1.093	-0.195	0.299	0.203
NR	2691	20.13	90.09	-2.84	-2.243	-1.089	-0.196	0.291	0.196
NR	2700	25.22	0.10	-3.52	-2.403	-1.107	-0.185	0.275	0.162
NR	2701	25.22	0.10	-3.52	-2.395	-1.107	-0.191	0.337	0.168
NR	2698	25.23	22.78	-3.69	-2.511	-1.138	-0.540	0.944	0.480
NR	2699	25.23	22.78	-3.69	-2.556	-1.145	-0.540	0.935	0.470
NR	2696	25.23	43.10	-3.88	-3.053	-1.006	-0.149	0.241	0.194
NR	2697	25.23	43.10	-3.86	-3.022	-1.011	-0.132	0.261	0.189
NR	2694	25.21	67.46	-3.78	-2.925	-1.081	-0.031	-0.009	-0.036
NR	2695	25.21	67.45	-3.76	-2.888	-1.061	-0.055	0.054	-0.030
NR	2692	25.19	90.11	-3.59	-2.332	-1.115	-0.215	0.322	0.227
NR	2693	25.19	90.11	-3.60	-2.532	-1.118	-0.205	0.350	0.217
NR	2641	0.00	0.01	-0.07	-0.057	-0.896	-0.059	0.019	0.015
NR	2702	0.00	0.01	-0.07	-0.069	-0.899	-0.020	0.018	0.019

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WAIT
WALT FE
WALT 26

T.R.69267

(Run.42)

RUN NUMBER=42 SHORT BODY, SQUARE NOSE, CURVED TAIL A
CANT ANGLE= 0.0 CG POSITION 50.00%
V= 240. FPS RE= 0.584 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2706	-10.12	45.01	1.27	0.834	-0.965	-1.079	0.775	0.014
NR	2707	-10.12	67.50	1.20	0.669	-0.958	-1.039	0.723	0.042
NR	2708	-10.14	90.01	1.20	0.624	-0.949	-0.980	0.620	0.095
NR	2709	-10.16	112.52	1.25	0.670	-0.962	-0.971	0.598	0.140
NR	2710	-10.19	135.02	1.29	0.679	-0.961	-1.053	0.664	0.145
NR	2715	-5.06	0.00	0.81	0.586	-0.951	0.104	-0.064	0.007
NR	2714	-5.06	22.50	0.78	0.535	-0.928	0.096	0.008	0.050
NR	2713	-5.08	45.00	0.77	0.500	-0.930	0.110	0.016	0.089
NR	2712	-5.10	67.51	0.80	0.482	-0.938	0.102	0.043	0.120
NR	2711	-5.12	90.00	0.82	0.463	-0.938	0.110	0.041	0.124
NR	2716	0.00	0.00	-0.05	-0.059	-0.918	0.061	-0.047	0.000
NR	2717	0.00	22.50	-0.05	-0.061	-0.916	0.041	0.019	0.047
NR	2718	-0.01	45.00	-0.05	-0.089	-0.919	0.030	0.074	0.085
NR	2719	-0.05	67.50	-0.06	-0.137	-0.913	0.018	0.112	0.113
NR	2720	-0.05	90.00	-0.06	-0.166	-0.915	0.020	0.109	0.118
NR	2725	5.06	0.11	-0.89	-0.648	-0.934	-0.002	0.005	0.014
NR	2724	5.06	22.50	-0.87	-0.651	-0.929	-0.019	0.075	0.051
NR	2723	5.05	45.00	-0.86	-0.652	-0.923	-0.038	0.138	0.086
NR	2722	5.05	67.50	-0.89	-0.727	-0.928	-0.065	0.187	0.113
NR	2721	5.02	90.00	-0.92	-0.795	-0.935	-0.070	0.191	0.117
NR	2726	10.12	0.12	-1.68	-1.157	-0.971	-0.026	0.018	0.026
NR	2727	10.12	22.50	-1.63	-1.054	-0.957	-0.040	0.049	0.042
NR	2728	10.11	45.00	-1.60	-1.014	-0.948	-0.102	0.179	0.087
NR	2729	10.09	67.51	-1.64	-1.154	-0.958	-0.156	0.252	0.125
NR	2730	10.08	90.01	-1.70	-1.245	-0.973	-0.120	0.208	0.150
NR	2738	15.16	0.10	-2.07	-1.182	-1.039	-0.117	0.090	0.157
NR	2739	15.16	0.09	-2.08	-1.191	-1.059	-0.118	0.090	0.151
NR	2736	15.17	22.56	-2.33	-1.389	-0.972	-0.076	0.054	0.135
NR	2737	15.17	22.55	-2.51	-1.389	-0.977	-0.068	0.041	0.125
NR	2734	15.17	45.12	-2.55	-1.589	-0.944	-0.112	0.189	0.119
NR	2735	15.17	45.12	-2.35	-1.577	-0.944	-0.112	0.200	0.116
NR	2732	15.14	67.55	-2.11	-1.241	-1.013	-0.058	0.184	0.155
NR	2733	15.14	67.53	-2.11	-1.244	-1.015	-0.058	0.177	0.153
NR	2731	15.12	90.11	-2.08	-1.269	-1.038	-0.206	0.275	0.287
NR	2740	20.19	0.10	-2.44	-1.094	-1.118	-0.120	0.070	0.167
NR	2741	20.19	0.11	-2.44	-1.094	-1.114	-0.126	0.077	0.174
NR	2742	20.21	22.67	-2.66	-1.263	-1.048	-0.454	0.415	0.318
NR	2743	20.21	22.68	-2.67	-1.264	-1.048	-0.450	0.407	0.329
NR	2744	20.22	44.99	-2.95	-1.576	-0.976	0.190	-0.116	0.056
NR	2745	20.22	44.98	-2.93	-1.562	-0.976	0.176	-0.091	0.055
NR	2746	20.17	67.61	-2.50	-1.202	-1.076	-0.153	0.251	0.286
NR	2747	20.17	67.61	-2.50	-1.195	-1.071	-0.144	0.265	0.277
NR	2748	20.15	90.12	-2.46	-1.187	-1.121	-0.255	0.294	0.303
NR	2749	20.15	90.11	-2.46	-1.179	-1.116	-0.245	0.284	0.299
NR	2758	25.23	0.12	-2.87	-1.126	-1.186	-0.154	0.099	0.197

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 5FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2759	25.23	0.12	-2.87	-1.141	-1.186	-0.147	0.084	0.195
NR	2756	25.24	22.71	-5.08	-1.510	-1.083	-0.526	0.464	0.592
NR	2757	25.24	22.72	-3.09	-1.312	-1.078	-0.527	0.461	0.397
NR	2754	25.26	45.02	-3.45	-1.716	-0.967	0.275	-0.209	0.111
NR	2755	25.26	45.02	-3.45	-1.706	-0.967	0.273	-0.198	0.104
NR	2752	25.22	67.57	-3.00	-1.502	-1.127	0.026	0.089	0.214
NR	2753	25.22	67.58	-3.00	-1.309	-1.127	0.027	0.076	0.224
NR	2750	25.19	90.12	-2.85	-1.204	-1.186	-0.264	0.304	0.308
NR	2751	25.19	90.12	-2.85	-1.210	-1.181	-0.264	0.315	0.306
NR	2760	29.26	0.15	-5.19	-1.258	-1.188	-0.120	0.068	0.208
NR	2761	29.26	0.13	-5.19	-1.256	-1.188	-0.126	0.075	0.208
NR	2762	29.27	22.78	-5.43	-1.446	-1.071	-0.608	0.502	0.503
NR	2763	29.27	22.78	-3.45	-1.465	-1.066	-0.624	0.555	0.498
NR	2764	29.28	45.08	-3.68	-1.753	-0.961	0.259	-0.186	0.206
NR	2765	29.28	45.08	-5.68	-1.765	-0.956	0.259	-0.185	0.201
NR	2766	29.25	67.54	-3.54	-1.423	-1.126	0.179	-0.055	0.164
NR	2767	29.25	67.54	-3.34	-1.444	-1.121	0.177	-0.063	0.159
NR	2768	29.22	90.14	-3.17	-1.345	-1.180	-0.252	0.314	0.529
NR	2769	29.22	90.14	-5.17	-1.328	-1.175	-0.242	0.519	0.550
NR	2705	0.00	-0.01	-0.02	0.010	-0.913	0.079	-0.058	-0.009
NR	2770	0.00	0.00	-0.05	-0.021	-0.918	0.048	-0.034	0.005

T.R.69267

(Run.43)

RUN NUMBER=45 SHORT BODY, ROUND NOSE, CURVED TAIL A
& CANT ANGLE= 0.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2774	-10.11	0.01	1.56	0.912	-0.505	0.085	-0.012	0.011
NR	2775	-10.12	22.51	1.50	0.807	-0.300	0.041	0.068	0.055
NR	2776	-10.13	45.01	1.50	0.761	-0.296	0.097	-0.000	0.093
NR	2777	-10.15	67.52	1.48	0.742	-0.309	0.149	-0.065	0.125
NR	2778	-10.18	90.01	1.50	0.753	-0.313	0.100	-0.012	0.127
NR	2783	-5.06	0.02	0.74	0.567	-0.293	0.084	-0.048	0.050
NR	2782	-5.06	22.52	0.72	0.553	-0.294	0.058	0.009	0.072
NR	2781	-5.07	45.02	0.70	0.298	-0.296	0.065	0.005	0.105
NR	2780	-5.09	67.52	0.70	0.281	-0.295	0.073	0.000	0.128
NR	2779	-5.11	90.02	0.71	0.271	-0.294	0.060	0.010	0.129
NR	2784	0.00	0.02	-0.03	-0.023	-0.289	0.055	-0.023	0.028
NR	2786	0.00	22.52	-0.05	-0.047	-0.287	0.029	0.005	0.074
NR	2787	-0.01	45.02	-0.06	-0.073	-0.286	0.011	0.026	0.104
NR	2788	-0.05	67.52	-0.07	-0.087	-0.290	0.003	0.025	0.128
NR	2789	-0.05	90.02	-0.08	-0.095	-0.290	0.000	0.027	0.156
NR	2794	5.06	0.02	-0.80	-0.426	-0.291	0.029	-0.020	0.028
NR	2793	5.06	22.52	-0.78	-0.412	-0.286	0.014	-0.005	0.073
NR	2792	5.04	45.02	-0.78	-0.391	-0.280	-0.030	0.039	0.109
NR	2791	5.03	67.52	-0.81	-0.423	-0.290	-0.063	0.070	0.126
NR	2790	5.01	90.02	-0.84	-0.462	-0.290	-0.050	0.065	0.129
NR	2795	10.12	0.01	-1.56	-0.884	-0.503	0.016	-0.015	0.024
NR	2796	10.11	22.51	-1.54	-0.847	-0.289	0.024	-0.032	0.061
NR	2797	10.11	45.01	-1.56	-0.857	-0.280	-0.075	0.086	0.091
NR	2798	10.09	67.51	-1.58	-0.893	-0.296	-0.124	0.159	0.116
NR	2799	10.08	90.01	-1.61	-0.952	-0.306	-0.100	0.097	0.120
NR	2804	15.14	0.07	-1.84	-0.882	-0.532	-0.049	0.058	0.110
NR	2806	15.15	45.05	-2.15	-1.169	-0.251	-0.060	0.123	0.158
NR	2807	15.12	67.56	-1.85	-0.924	-0.321	-0.029	0.124	0.188
NR	2808	15.12	67.56	-1.85	-0.920	-0.326	-0.038	0.154	0.197
NR	2809	15.10	90.08	-1.89	-0.998	-0.551	-0.167	0.194	0.227
NR	2810	15.10	90.08	-1.88	-0.989	-0.531	-0.167	0.194	0.250
NR	2818	20.17	0.15	-2.16	-0.945	-0.388	-0.340	0.275	0.245
NR	2819	20.17	0.15	-2.16	-0.937	-0.388	-0.339	0.274	0.242
NR	2816	20.16	22.50	-2.05	-0.821	-0.580	-0.086	0.079	0.045
NR	2817	20.16	22.51	-2.05	-0.810	-0.580	-0.085	0.075	0.048
NR	2815	20.18	45.18	-2.39	-1.191	-0.517	0.021	-0.012	0.560
NR	2815	20.14	67.65	-2.10	-0.919	-0.383	-0.290	0.350	0.530
NR	2814	20.14	67.65	-2.10	-0.922	-0.383	-0.292	0.360	0.332
NR	2811	20.13	90.16	-2.20	-1.046	-0.378	-0.444	0.456	0.558
NR	2812	20.15	90.16	-2.20	-1.038	-0.383	-0.454	0.447	0.364
NR	2820	25.19	0.10	-2.37	-0.903	-0.430	0.058	-0.076	0.162
NR	2821	25.19	0.10	-2.37	-0.903	-0.430	0.058	-0.076	0.165
NR	2822	25.19	22.59	-2.39	-0.913	-0.570	-0.306	0.272	0.179
NR	2823	25.19	22.59	-2.39	-0.912	-0.370	-0.312	0.271	0.177
NR	2824	25.22	45.22	-2.91	-1.487	-0.214	-0.030	0.017	0.421

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 5FT+4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2825	25.18	67.62	-2.58	-1.115	-0.349	-0.165	0.208	0.285
NR	2826	25.18	67.62	-2.58	-1.110	-0.354	-0.163	0.216	0.281
NR	2827	25.15	90.11	-2.36	-0.927	-0.453	-0.125	0.126	0.266
NR	2828	25.15	90.11	-2.56	-0.922	-0.458	-0.125	0.126	0.267
NR	2835	29.22	0.15	-2.73	-1.092	-0.432	0.006	-0.048	0.205
NR	2832	29.22	22.64	-2.70	-1.055	-0.554	-0.457	0.590	0.269
NR	2831	29.24	45.13	-3.09	-1.465	-0.222	0.341	-0.308	0.284
NR	2830	29.21	67.59	-2.87	-1.232	-0.553	0.027	0.026	0.226
NR	2829	29.18	90.13	-2.70	-1.088	-0.418	-0.154	0.124	0.505
NR	2800	0.00	0.02	-0.04	-0.055	-0.289	0.047	-0.025	0.031
NR	2803	0.00	0.02	-0.03	0.016	-0.284	0.040	0.006	0.026
NR	2834	0.00	0.02	-0.04	-0.018	-0.284	0.047	-0.017	0.031

(Run.44)

RUN NUMBER=44 SHORT BODY, ROUND NOSE, CURVED TAIL B
CANT ANGLE= 0.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2838	-10.12	0.00	1.57	0.900	-0.305	0.188	-0.079	0.001
NR	2839	-10.12	22.50	1.60	0.865	-0.305	0.120	0.014	0.045
NR	2840	-10.14	44.99	1.62	0.830	-0.306	0.090	0.020	0.061
NR	2841	-10.16	67.48	1.58	0.798	-0.314	0.049	-0.002	0.069
NR	2842	-10.18	89.98	1.55	0.790	-0.323	-0.009	0.055	0.077
NR	2847	-5.06	0.00	0.76	0.358	-0.297	0.140	-0.082	-0.007
NR	2846	-5.06	22.49	0.78	0.358	-0.299	0.096	-0.026	0.032
NR	2845	-5.08	45.00	0.78	0.352	-0.301	0.074	0.003	0.066
NR	2844	-5.10	67.49	0.78	0.340	-0.299	0.042	0.018	0.086
NR	2843	-5.12	89.99	0.76	0.314	-0.299	0.010	0.038	0.088
NR	2848	0.00	-0.01	-0.02	-0.021	-0.299	0.098	-0.077	-0.009
NR	2849	0.00	22.50	-0.02	-0.025	-0.297	0.068	-0.033	0.033
NR	2850	-0.02	45.00	-0.01	-0.030	-0.296	0.045	-0.014	0.066
NR	2851	-0.03	67.50	-0.01	-0.035	-0.295	0.027	0.011	0.089
NR	2852	-0.05	90.00	-0.02	-0.039	-0.295	0.000	0.027	0.097
NR	2857	5.06	0.00	-0.79	-0.408	-0.301	0.055	-0.071	-0.006
NR	2856	5.06	22.50	-0.78	-0.389	-0.300	0.048	-0.066	0.032
NR	2855	5.04	44.99	-0.79	-0.376	-0.290	0.032	-0.026	0.065
NR	2854	5.03	67.49	-0.79	-0.385	-0.290	0.008	0.022	0.085
NR	2853	5.01	89.99	-0.78	-0.395	-0.295	-0.000	0.029	0.091
NR	2858	10.12	0.00	-1.58	-0.905	-0.315	-0.019	-0.024	0.008
NR	2859	10.12	22.51	-1.60	-0.880	-0.304	0.010	-0.067	0.050
NR	2860	10.11	44.99	-1.63	-0.874	-0.295	0.000	-0.010	0.058
NR	2861	10.09	67.48	-1.59	-0.860	-0.301	-0.020	0.050	0.062
NR	2862	10.07	89.98	-1.58	-0.887	-0.306	0.009	0.014	0.073
NR	2871	15.14	-0.07	-1.81	-0.884	-0.357	0.005	-0.053	-0.106
NR	2872	15.14	-0.07	-1.81	-0.876	-0.357	0.005	-0.053	-0.110
NR	2869	15.13	22.36	-1.73	-0.772	-0.383	0.086	-0.140	-0.198
NR	2870	15.13	22.36	-1.73	-0.765	-0.383	0.086	-0.137	-0.196
NR	2867	15.15	45.02	-2.16	-1.185	-0.281	0.008	-0.042	0.105
NR	2868	15.15	45.02	-2.16	-1.177	-0.286	0.008	-0.036	0.103
NR	2865	15.11	67.63	-1.79	-0.796	-0.365	-0.087	0.107	0.308
NR	2866	15.11	67.63	-1.78	-0.792	-0.365	-0.096	0.116	0.303
NR	2863	15.10	90.05	-1.85	-0.908	-0.346	-0.028	0.058	0.185
NR	2864	15.10	90.05	-1.86	-0.913	-0.346	-0.038	0.068	0.185
NR	2873	20.17	-0.13	-2.13	-0.946	-0.407	0.273	-0.304	-0.209
NR	2874	20.17	-0.13	-2.13	-0.946	-0.407	0.267	-0.306	-0.209
NR	2875	20.17	22.33	-2.20	-1.000	-0.370	0.194	-0.281	-0.236
NR	2876	20.17	22.33	-2.20	-0.995	-0.370	0.179	-0.265	-0.233
NR	2877	20.18	45.01	-2.43	-1.227	-0.259	-0.027	-0.004	0.082
NR	2878	20.18	45.01	-2.43	-1.222	-0.254	-0.027	0.001	0.089
NR	2879	20.15	67.62	-2.14	-0.904	-0.378	-0.126	0.162	0.294
NR	2880	20.15	67.62	-2.13	-0.900	-0.378	-0.121	0.161	0.289
NR	2881	20.13	90.12	-2.14	-0.932	-0.403	-0.326	0.321	0.291
NR	2882	20.13	90.12	-2.14	-0.932	-0.398	-0.326	0.321	0.287

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2888	25.19	-0.06	-2.34	-0.873	-0.446	-0.060	-0.028	-0.100
NR	2887	25.19	22.44	-2.41	-0.908	-0.366	-0.313	0.210	-0.058
NR	2886	25.20	45.09	-2.59	-1.121	-0.254	-0.025	-0.015	0.209
NR	2885	25.18	67.57	-2.46	-0.952	-0.349	0.033	0.027	0.205
NR	2883	25.15	90.05	-2.37	-0.899	-0.438	-0.098	0.135	0.182
NR	2884	25.15	90.05	-2.37	-0.899	-0.438	-0.098	0.142	0.182
NR	2889	29.22	-0.06	-2.67	-1.024	-0.433	-0.120	0.005	-0.094
NR	2890	29.22	22.47	-2.66	-0.983	-0.325	-0.346	0.249	-0.021
NR	2891	29.22	44.46	-2.81	-1.162	-0.189	0.123	-0.137	-0.003
NR	2892	29.22	44.46	-2.83	-1.175	-0.194	0.113	-0.138	0.006
NR	2893	29.22	44.47	-2.83	-1.175	-0.194	0.133	-0.152	0.013
NR	2894	29.20	67.53	-2.69	-1.007	-0.319	0.154	-0.081	0.132
NR	2895	29.18	90.05	-2.71	-1.080	-0.423	-0.038	0.125	0.171
NR	2837	0.00	-0.01	-0.01	0.036	-0.284	0.091	-0.031	-0.018
NR	2896	0.00	0.00	-0.03	0.016	-0.284	0.079	-0.042	0.000

(Run.45)

RUN NUMBER=45 SHORT BODY, SQUARE NOSE, CURVED TAIL &
CANT ANGLE= 0.0 CG POSITION 50.00%
V= 240, FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2900	-10.12	-0.01	1.68	1.144	-0.963	0.184	-0.085	-0.009
NR	2901	-10.13	22.49	1.66	1.046	-0.968	0.137	0.026	0.030
NR	2902	-10.15	44.99	1.66	0.942	-0.969	0.107	0.044	0.073
NR	2903	-10.17	67.50	1.65	0.950	-0.972	0.089	0.039	0.106
NR	2904	-10.19	89.99	1.68	0.990	-0.976	0.030	0.104	0.105
NR	2909	-5.06	0.10	0.84	0.601	-0.936	0.151	-0.113	-0.004
NR	2907	-5.08	45.00	0.86	0.543	-0.939	0.095	0.021	0.076
NR	2906	-5.10	67.50	0.87	0.537	-0.943	0.047	0.085	0.103
NR	2905	-5.12	89.99	0.86	0.500	-0.943	0.010	0.121	0.100
NR	2910	0.00	0.09	-0.02	-0.029	-0.913	0.090	-0.086	-0.011
NR	2911	0.00	22.49	-0.02	-0.041	-0.916	0.071	-0.022	0.036
NR	2912	-0.02	44.99	-0.03	-0.068	-0.914	0.057	0.042	0.074
NR	2913	-0.04	67.49	-0.02	-0.093	-0.918	0.046	0.083	0.102
NR	2914	-0.06	89.99	-0.01	-0.116	-0.918	0.020	0.116	0.109
NR	2919	5.06	0.09	-0.89	-0.657	-0.939	0.016	-0.030	-0.009
NR	2918	5.06	22.49	-0.89	-0.651	-0.943	0.016	0.010	0.028
NR	2917	5.05	44.99	-0.89	-0.650	-0.938	0.041	0.037	0.066
NR	2916	5.03	67.49	-0.89	-0.701	-0.947	0.053	0.070	0.091
NR	2915	5.01	89.99	-0.87	-0.741	-0.938	0.050	0.083	0.099
NR	2920	10.12	0.09	-1.68	-1.115	-0.971	-0.032	0.016	-0.010
NR	2921	10.12	22.49	-1.66	-1.056	-0.972	-0.002	0.004	0.027
NR	2922	10.11	44.99	-1.67	-1.033	-0.962	0.016	0.061	0.068
NR	2923	10.10	67.49	-1.66	-1.104	-0.963	0.028	0.102	0.099
NR	2924	10.08	89.98	-1.67	-1.199	-0.968	0.039	0.082	0.091
NR	2933	15.15	-0.09	-2.02	-1.130	-1.054	0.041	-0.082	-0.151
NR	2934	15.15	-0.08	-2.03	-1.133	-1.054	0.034	-0.084	-0.138
NR	2931	15.16	22.48	-2.15	-1.196	-1.007	-0.140	0.080	0.017
NR	2932	15.16	22.48	-2.15	-1.188	-1.007	-0.145	0.090	0.018
NR	2929	15.17	45.10	-2.39	-1.404	-0.954	0.001	0.044	0.078
NR	2930	15.17	45.10	-2.39	-1.391	-0.954	-0.006	0.057	0.079
NR	2927	15.14	67.52	-2.13	-1.212	-1.008	0.115	0.046	0.137
NR	2928	15.14	67.52	-2.13	-1.214	-1.008	0.113	0.038	0.136
NR	2925	15.11	90.07	-2.05	-1.234	-1.038	-0.037	0.146	0.231
NR	2926	15.11	90.08	-2.05	-1.242	-1.043	-0.027	0.129	0.238
NR	2935	20.19	-0.08	-2.37	-1.015	-1.134	0.007	-0.088	-0.133
NR	2936	20.19	-0.08	-2.38	-1.032	-1.134	-0.012	-0.059	-0.138
NR	2937	20.19	22.41	-2.41	-1.020	-1.088	-0.078	-0.015	-0.102
NR	2938	20.19	22.41	-2.41	-1.013	-1.236	-0.088	-0.006	-0.099
NR	2939	20.21	44.99	-2.83	-1.412	-0.992	0.029	-0.002	0.069
NR	2940	20.21	44.97	-2.84	-1.416	-1.140	0.090	-0.060	0.024
NR	2941	20.21	44.96	-2.63	-1.322	-1.135	-0.131	0.063	0.021
NR	2942	20.17	67.57	-2.44	-1.074	-1.144	0.054	0.079	0.224
NR	2943	20.17	67.57	-2.43	-1.071	-1.140	0.059	0.068	0.217
NR	2944	20.15	90.07	-2.41	-1.126	-1.116	-0.067	0.177	0.234
NR	2945	20.15	90.07	-2.43	-1.138	-1.116	-0.067	0.169	0.228

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2954	25.22	-0.05	-2.77	-1.039	-1.202	-0.120	0.021	-0.090
NR	2955	25.22	-0.06	-2.77	-1.032	-1.197	-0.113	0.023	-0.096
NR	2952	25.23	22.50	-2.88	-1.085	-1.127	-0.372	0.274	0.045
NR	2953	25.23	22.50	-2.88	-1.083	-1.127	-0.366	0.267	0.038
NR	2950	25.25	45.11	-3.24	-1.447	-0.997	-0.036	0.043	0.088
NR	2951	25.25	45.10	-3.23	-1.441	-1.002	-0.039	0.040	0.083
NR	2948	25.21	67.50	-2.86	-1.096	-1.127	0.243	-0.112	0.100
NR	2949	25.21	67.50	-2.86	-1.102	-1.127	0.245	-0.101	0.098
NR	2946	25.19	90.05	-2.80	-1.149	-1.177	0.002	0.122	0.193
NR	2947	25.19	90.05	-2.81	-1.155	-1.177	0.012	0.104	0.196
NR	2956	29.25	-0.06	-3.13	-1.189	-1.199	-0.100	0.012	-0.096
NR	2957	29.25	-0.06	-3.13	-1.174	-1.194	-0.099	0.003	-0.106
NR	2958	29.25	-0.07	-3.13	-1.189	-1.194	-0.113	0.033	-0.111
NR	2959	29.26	22.57	-3.20	-1.181	-1.116	-0.515	0.386	0.158
NR	2960	29.26	22.57	-3.21	-1.207	-1.121	-0.517	0.382	0.146
NR	2961	29.27	45.00	-3.47	-1.486	-0.981	-0.046	0.049	0.068
NR	2962	29.27	45.00	-3.47	-1.501	-0.976	-0.035	0.038	0.072
NR	2963	29.24	67.44	-3.15	-1.201	-1.121	0.325	-0.207	-0.008
NR	2964	29.24	67.43	-3.16	-1.210	-1.126	0.332	-0.214	-0.013
NR	2965	29.22	90.05	-3.16	-1.301	-1.166	-0.027	0.157	0.185
NR	2966	29.22	90.05	-3.16	-1.308	-1.171	-0.037	0.183	0.181
NR	2967	0.00	0.00	-0.04	-0.010	-0.908	0.074	-0.069	-0.007

(Run.46)

RUN NUMBER=46 LONG BODY, SQUARE NOSE, CURVED TAIL B
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	2971	-10.08	90.02	0.12	0.209	-0.950	-1.560	1.863	0.027
NR	2972	-10.09	112.51	0.06	0.016	-0.940	-1.538	1.816	0.039
NR	2973	-10.09	112.51	0.06	0.019	-0.940	-1.541	1.810	0.037
NR	2974	-10.10	135.01	0.08	0.044	-0.940	-1.509	1.714	0.050
NR	2975	-10.10	135.01	0.07	0.054	-0.935	-1.513	1.715	0.041
NR	2976	-10.13	157.50	0.12	0.133	-0.941	-1.545	1.786	0.044
NR	2977	-10.13	157.50	0.12	0.125	-0.941	-1.545	1.789	0.043
NR	2978	-10.15	179.99	0.06	-0.019	-0.951	-1.579	1.847	0.031
NR	2979	-10.15	179.99	0.06	-0.019	-0.951	-1.579	1.847	0.024
NR	2984	-5.04	0.11	0.72	0.885	-0.915	0.069	-0.134	0.010
NR	2983	-5.04	22.50	0.72	0.906	-0.914	0.071	-0.087	0.015
NR	2982	-5.06	45.00	0.73	0.904	-0.909	0.080	-0.046	0.034
NR	2981	-5.08	67.50	0.73	0.896	-0.914	0.055	-0.004	0.044
NR	2980	-5.10	89.99	0.74	0.888	-0.920	0.030	0.051	0.025
NR	2985	0.00	0.10	-0.07	-0.051	-0.894	0.030	-0.056	-0.007
NR	2986	0.00	22.50	-0.07	-0.034	-0.893	0.030	-0.012	0.010
NR	2987	-0.01	45.00	-0.08	-0.061	-0.892	0.018	0.038	0.026
NR	2988	-0.03	67.50	-0.08	-0.089	-0.896	0.019	0.064	0.035
NR	2989	-0.05	89.99	-0.08	-0.125	-0.896	0.020	0.083	0.035
NR	2996	5.04	-0.01	-0.83	-0.985	-0.927	-0.001	-0.001	-0.009
NR	2995	5.04	22.48	-0.85	-0.981	-0.925	-0.003	0.025	-0.012
NR	2994	5.03	44.99	-0.85	-0.962	-0.924	0.001	0.056	0.007
NR	2992	5.01	67.49	-0.86	-1.000	-0.928	0.013	0.074	0.028
NR	2993	5.01	67.49	-0.86	-1.005	-0.928	0.013	0.061	0.027
NR	2990	4.99	89.98	-0.87	-1.048	-0.933	0.030	0.074	0.018
NR	2991	4.99	89.98	-0.86	-1.040	-0.938	0.020	0.059	0.014
NR	2997	10.09	-0.01	-1.65	-1.889	-0.965	-0.048	0.095	-0.020
NR	2998	10.09	-0.01	-1.64	-1.888	-0.965	-0.048	0.103	-0.018
NR	2999	10.09	22.49	-1.65	-1.846	-0.958	0.018	-0.029	-0.001
NR	3000	10.09	22.49	-1.65	-1.843	-0.958	0.019	-0.037	-0.006
NR	3001	10.08	44.98	-1.62	-1.730	-0.952	0.002	0.058	-0.002
NR	3002	10.08	44.98	-1.62	-1.764	-0.957	0.002	0.037	0.000
NR	3003	10.06	67.48	-1.64	-1.846	-0.965	-0.043	0.194	0.007
NR	3004	10.06	67.48	-1.65	-1.846	-0.960	-0.046	0.194	0.010
NR	3005	10.04	89.99	-1.67	-1.947	-0.975	0.020	0.074	0.020
NR	3006	10.04	89.98	-1.67	-1.938	-0.975	0.009	0.090	0.005
NR	3015	15.12	-0.07	-2.21	-2.222	-1.031	-0.046	0.071	-0.110
NR	3016	15.12	-0.07	-2.20	-2.191	-1.036	-0.039	0.054	-0.121
NR	3013	15.12	22.51	-2.24	-2.147	-1.018	-0.095	0.116	0.026
NR	3014	15.13	22.51	-2.25	-2.182	-1.013	-0.092	0.119	0.028
NR	3011	15.13	44.98	-2.40	-2.426	-0.982	-0.026	0.065	-0.002
NR	3012	15.13	44.98	-2.40	-2.426	-0.982	-0.026	0.075	0.001
NR	3009	15.10	67.45	-2.24	-2.178	-1.006	0.021	0.051	-0.037
NR	3010	15.10	67.46	-2.26	-2.188	-1.001	0.017	0.030	-0.032
NR	3007	15.08	90.04	-2.23	-2.202	-1.030	-0.018	0.112	0.104
NR	3008	15.08	90.04	-2.23	-2.203	-1.030	-0.018	0.120	0.106

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3017	20.16	-0.10	-2.75	-2.177	-1.093	-0.017	-0.026	-0.156
NR	3018	20.17	-0.10	-2.76	-2.178	-1.088	-0.017	-0.042	-0.157
NR	3019	20.17	22.49	-2.80	-2.149	-1.062	-0.091	0.065	-0.008
NR	3020	20.17	22.49	-2.82	-2.215	-1.061	-0.087	0.125	0.002
NR	3021	20.17	45.02	-3.05	-2.607	-1.029	-0.197	0.413	0.064
NR	3022	20.17	45.02	-3.04	-2.580	-1.024	-0.210	0.406	0.063
NR	3023	20.15	67.47	-2.85	-2.264	-1.055	-0.014	0.015	-0.008
NR	3025	20.15	67.47	-2.86	-2.328	-1.045	-0.029	0.010	-0.009
NR	3026	20.13	90.08	-2.81	-2.203	-1.089	-0.106	0.164	0.167
NR	3027	20.13	90.07	-2.80	-2.211	-1.089	-0.117	0.187	0.161
NR	3038	25.22	-0.11	-3.51	-2.464	-1.119	-0.007	-0.046	-0.182
NR	3039	25.22	-0.11	-3.51	-2.479	-1.124	-0.006	-0.061	-0.172
NR	3035	25.22	22.58	-3.54	-2.334	-1.135	-0.430	0.688	0.148
NR	3036	25.22	22.58	-3.52	-2.344	-1.140	-0.427	0.649	0.143
NR	3037	25.22	22.58	-3.53	-2.363	-1.135	-0.420	0.718	0.151
NR	3032	25.22	45.00	-3.74	-2.778	-1.031	-0.151	0.285	0.032
NR	3033	25.22	45.00	-3.73	-2.784	-1.036	-0.161	0.313	0.035
NR	3034	25.22	45.00	-3.73	-2.778	-1.036	-0.165	0.274	0.030
NR	3030	25.20	67.39	-3.57	-2.515	-1.102	0.162	-0.377	-0.135
NR	3031	25.20	67.38	-3.56	-2.508	-1.112	0.162	-0.439	-0.159
NR	3028	25.19	90.06	-3.54	-2.458	-1.111	-0.126	0.226	0.144
NR	3029	25.19	90.07	-3.55	-2.459	-1.111	-0.126	0.188	0.161
NR	3040	29.25	-0.11	-4.10	-2.812	-1.132	0.013	-0.081	-0.188
NR	3041	29.25	-0.12	-4.10	-2.835	-1.132	0.007	-0.119	-0.196
NR	3042	29.28	22.61	-4.07	-1.155	-1.177	-0.529	1.357	0.191
NR	3043	29.27	22.61	-4.06	-1.182	-1.162	-0.539	1.364	0.200
NR	3044	29.27	44.98	-4.20	-1.857	-1.015	-0.104	1.182	-0.007
NR	3045	29.24	44.99	-3.77	-1.844	-1.014	0.343	1.174	0.014
NR	3046	29.25	67.31	-4.04	-2.114	-1.160	0.284	0.704	-0.271
NR	3047	29.25	67.33	-4.04	-2.132	-1.155	0.262	0.704	-0.245
NR	3048	29.23	90.05	-4.10	-2.809	-1.133	-0.096	1.787	0.122
NR	3049	29.23	90.05	-4.10	-2.785	-1.133	-0.126	1.781	0.126
NR	2970	0.00	-0.01	-0.07	-0.058	-0.899	0.033	-0.064	-0.009
NR	3050	0.02	0.00	-0.05	1.487	-0.903	0.033	-0.066	-0.003

T.R.69267

(Run.47)

RUN NUMBER=47 LONG BODY, ROUND NOSE, CURVED TAIL B
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3055	-10.08	0.03	1.49	1.631	-0.269	0.098	-0.194	0.043
NR	3056	-10.09	22.53	1.53	1.689	-0.259	0.033	-0.027	0.065
NR	3057	-10.11	45.04	1.56	1.695	-0.255	0.006	0.017	0.090
NR	3058	-10.13	67.53	1.56	1.683	-0.260	-0.004	0.029	0.087
NR	3059	-10.15	90.12	1.53	1.631	-0.275	-0.083	0.151	0.079
NR	3064	-5.04	0.01	0.71	0.736	-0.255	0.058	-0.087	0.010
NR	3063	-5.04	22.51	0.73	0.760	-0.256	0.023	-0.012	0.027
NR	3062	-5.06	45.00	0.74	0.736	-0.252	0.021	0.019	0.038
NR	3061	-5.08	67.50	0.75	0.739	-0.258	-0.003	0.022	0.044
NR	3060	-5.10	90.10	0.74	0.730	-0.263	-0.041	0.087	0.040
NR	3065	0.00	0.00	-0.06	-0.040	-0.255	0.020	-0.033	-0.006
NR	3066	0.00	22.49	-0.05	-0.043	-0.261	0.009	-0.013	-0.004
NR	3067	-0.01	44.98	-0.04	-0.054	-0.258	-0.002	0.013	0.000
NR	3068	-0.03	67.48	-0.05	-0.066	-0.259	-0.020	0.037	0.000
NR	3069	-0.05	89.97	-0.05	-0.082	-0.269	-0.030	0.049	-0.003
NR	3074	5.05	-0.01	-0.82	-0.837	-0.265	0.008	-0.013	-0.019
NR	3073	5.04	22.47	-0.82	-0.832	-0.267	0.027	-0.043	-0.027
NR	3072	5.03	44.96	-0.81	-0.801	-0.263	0.009	-0.000	-0.038
NR	3071	5.01	67.45	-0.81	-0.832	-0.274	-0.023	0.055	-0.045
NR	3070	5.00	89.94	-0.83	-0.860	-0.275	-0.011	0.023	-0.050
NR	3075	10.09	-0.01	-1.57	-1.672	-0.291	-0.045	0.088	-0.023
NR	3076	10.08	22.46	-1.60	-1.713	-0.283	0.008	-0.026	-0.051
NR	3077	10.08	44.93	-1.62	-1.745	-0.275	0.005	0.005	-0.083
NR	3078	10.06	67.41	-1.59	-1.713	-0.291	-0.021	0.045	-0.100
NR	3089	15.11	-0.06	-2.01	-1.943	-0.323	-0.074	0.111	-0.091
NR	3090	15.11	-0.05	-2.01	-1.959	-0.323	-0.075	0.118	-0.088
NR	3087	15.11	22.42	-2.00	-1.913	-0.315	-0.119	0.170	-0.108
NR	3088	15.11	22.43	-2.00	-1.903	-0.315	-0.118	0.166	-0.106
NR	3085	15.11	44.89	-2.21	-2.336	-0.283	-0.019	0.007	-0.150
NR	3086	15.11	44.89	-2.21	-2.331	-0.283	-0.019	0.002	-0.152
NR	3083	15.09	67.44	-2.03	-1.955	-0.313	0.109	-0.182	-0.067
NR	3084	15.09	67.43	-2.03	-1.963	-0.313	0.109	-0.178	-0.074
NR	3081	15.07	89.96	-1.99	-1.898	-0.343	0.019	-0.028	-0.018
NR	3082	15.07	89.96	-2.00	-1.907	-0.343	0.009	-0.036	-0.025
NR	3091	20.14	-0.08	-2.39	-2.010	-0.357	-0.066	0.118	-0.138
NR	3092	20.14	-0.08	-2.39	-2.034	-0.357	-0.060	0.126	-0.138
NR	3093	20.14	22.30	-2.43	-2.187	-0.386	0.354	-0.775	-0.313
NR	3094	20.14	44.95	-2.57	-2.393	-0.287	-0.136	0.275	-0.056
NR	3095	20.14	44.94	-2.57	-2.393	-0.287	-0.136	0.275	-0.062
NR	3096	20.12	67.58	-2.43	-2.090	-0.376	-0.268	0.635	0.171
NR	3097	20.12	67.58	-2.43	-2.091	-0.376	-0.279	0.635	0.171
NR	3098	20.10	90.05	-2.30	-1.829	-0.420	-0.218	0.457	0.126
NR	3099	20.10	90.05	-2.30	-1.829	-0.424	-0.218	0.472	0.130
NR	3108	25.17	-0.11	-2.67	-1.885	-0.433	-0.045	0.049	-0.177
NR	3109	25.17	-0.11	-2.67	-1.901	-0.434	-0.040	0.072	-0.175

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3106	25.16	22.41	-2.63	-1.883	-0.396	-0.246	0.424	-0.127
NR	3107	25.16	22.41	-2.64	-1.883	-0.401	-0.252	0.424	-0.127
NR	3104	25.17	44.98	-2.94	-2.509	-0.260	-0.031	0.059	-0.169
NR	3105	25.17	44.98	-2.94	-2.531	-0.260	-0.055	0.071	-0.162
NR	3102	25.15	67.47	-2.71	-1.983	-0.372	0.263	-0.486	-0.011
NR	3103	25.15	67.47	-2.71	-1.987	-0.372	0.272	-0.477	-0.008
NR	3100	25.14	90.01	-2.74	-1.949	-0.426	-0.010	0.068	0.053
NR	3101	25.14	90.01	-2.74	-1.933	-0.426	-0.020	0.061	0.054
NR	3110	29.20	-0.11	-3.16	-2.220	-0.437	-0.107	0.166	-0.177
NR	3111	29.20	-0.11	-3.16	-2.220	-0.438	-0.107	0.174	-0.176
NR	3112	29.19	22.43	-2.97	-2.016	-0.430	-0.484	0.886	-0.098
NR	3113	29.20	44.82	-3.36	-2.842	-0.225	-0.006	-0.013	-0.263
NR	3114	29.20	44.83	-3.36	-2.848	-0.220	-0.009	-0.030	-0.254
NR	3115	29.17	67.43	-2.99	-2.056	-0.394	0.491	-0.942	-0.079
NR	3116	29.16	89.98	-2.98	-2.035	-0.430	0.229	-0.391	0.009
NR	3054	0.00	0.00	-0.06	-0.048	-0.255	0.014	-0.033	-0.004
NR	3117	0.00	0.00	-0.06	-0.040	-0.260	0.026	-0.034	-0.004

(Run.48)

RUN NUMBER=48 LONG BODY, ROUND NOSE, CURVED TAIL C
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3121	-10.08	0.00	1.55	1.723	-0.284	-0.024	0.014	0.005
NR	3122	-10.08	22.50	1.49	1.636	-0.274	-0.080	0.172	0.011
NR	3123	-10.10	45.00	1.45	1.549	-0.235	0.011	0.051	0.038
NR	3124	-10.12	67.51	1.45	1.525	-0.260	0.124	-0.155	0.064
NR	3125	-10.14	90.01	1.48	1.567	-0.275	0.120	-0.106	0.059
NR	3130	-5.04	0.10	0.76	0.806	-0.265	0.010	-0.020	0.000
NR	3129	-5.04	22.50	0.68	0.733	-0.255	-0.046	0.036	0.014
NR	3128	-5.06	45.00	0.69	0.671	-0.254	0.011	0.039	0.030
NR	3127	-5.08	67.50	0.68	0.653	-0.249	0.031	0.017	0.039
NR	3126	-5.10	89.99	0.69	0.667	-0.255	0.030	0.020	0.035
NR	3131	0.00	0.10	-0.01	0.021	-0.260	0.055	-0.051	-0.004
NR	3132	0.00	22.50	-0.02	-0.003	-0.259	0.001	0.014	0.009
NR	3133	-0.01	45.00	-0.03	-0.014	-0.254	-0.006	0.055	0.023
NR	3134	-0.03	67.50	-0.05	-0.056	-0.253	-0.023	0.091	0.033
NR	3135	-0.05	89.99	-0.07	-0.095	-0.258	-0.030	0.095	0.035
NR	3140	5.04	-0.01	-0.79	-0.814	-0.260	0.038	-0.029	-0.023
NR	3139	5.04	22.49	-0.76	-0.752	-0.259	0.020	-0.011	-0.004
NR	3138	5.03	45.09	-0.77	-0.726	-0.253	-0.031	0.088	0.019
NR	3137	5.01	67.50	-0.80	-0.792	-0.267	-0.073	0.180	0.033
NR	3136	5.00	90.00	-0.86	-0.905	-0.267	-0.080	0.172	0.040
NR	3141	10.08	-0.02	-1.53	-1.648	-0.281	0.069	-0.081	-0.037
NR	3142	10.08	22.47	-1.50	-1.577	-0.269	0.081	-0.138	-0.029
NR	3144	10.07	44.99	-1.50	-1.513	-0.233	-0.041	0.104	0.008
NR	3146	10.06	67.50	-1.53	-1.612	-0.271	-0.170	0.357	0.045
NR	3148	10.04	90.00	-1.60	-1.735	-0.291	-0.150	0.295	0.048
NR	3191	15.11	0.02	-1.98	-1.850	-0.313	0.058	-0.063	0.034
NR	3192	15.11	0.02	-1.98	-1.858	-0.313	0.052	-0.062	0.034
NR	3193	15.12	22.50	-2.11	-2.139	-0.271	0.069	-0.136	0.021
NR	3194	15.12	22.50	-2.11	-2.139	-0.271	0.069	-0.136	0.020
NR	3195	15.12	44.98	-2.28	-2.428	-0.205	-0.035	0.105	-0.004
NR	3196	15.10	67.47	-2.16	-2.256	-0.272	-0.215	0.459	-0.006
NR	3197	15.10	67.47	-2.16	-2.256	-0.268	-0.215	0.459	-0.006
NR	3198	15.08	89.95	-2.03	-1.968	-0.318	-0.172	0.282	-0.044
NR	3199	15.08	89.95	-2.04	-1.991	-0.318	-0.182	0.306	-0.031
NR	3207	20.14	0.10	-2.33	-1.781	-0.399	-0.243	0.483	0.170
NR	3208	20.14	0.10	-2.32	-1.765	-0.404	-0.237	0.498	0.171
NR	3205	20.14	22.57	-2.48	-2.166	-0.285	-0.135	0.252	0.125
NR	3206	20.14	22.57	-2.48	-2.156	-0.285	-0.135	0.247	0.123
NR	3204	20.16	44.97	-3.00	-3.256	-0.149	-0.072	0.178	-0.012
NR	3202	20.13	67.41	-2.53	-2.311	-0.279	-0.047	0.077	-0.114
NR	3203	20.13	67.41	-2.53	-2.300	-0.284	-0.045	0.080	-0.111
NR	3200	20.10	89.86	-2.37	-1.941	-0.408	0.094	-0.289	-0.195
NR	3201	20.10	89.86	-2.37	-1.965	-0.403	0.084	-0.273	-0.190
NR	3209	25.17	0.05	-2.75	-1.893	-0.408	-0.051	0.173	0.085
NR	3210	25.17	0.05	-2.74	-1.885	-0.408	-0.050	0.157	0.085

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3211	25.17	22.57	-2.84	-2.248	-0.308	-0.140	0.292	0.138
NR	3212	25.17	22.58	-2.84	-2.246	-0.308	-0.156	0.328	0.142
NR	3213	25.20	45.15	-3.50	-3.566	-0.159	-0.487	0.984	0.274
NR	3214	25.20	45.16	-3.50	-3.567	-0.159	-0.487	1.017	0.282
NR	3215	25.16	67.37	-3.03	-2.671	-0.282	0.058	-0.175	-0.179
NR	3216	25.16	67.36	-3.03	-2.659	-0.287	0.058	-0.205	-0.185
NR	3217	25.14	89.91	-2.76	-1.954	-0.431	-0.164	0.177	-0.105
NR	3218	25.14	89.91	-2.76	-1.946	-0.431	-0.164	0.192	-0.102
NR	3227	29.20	0.02	-3.20	-2.163	-0.418	0.157	-0.239	0.027
NR	3225	29.20	22.61	-3.21	-2.486	-0.325	-0.411	0.780	0.193
NR	3226	29.20	22.61	-3.21	-2.483	-0.330	-0.405	0.773	0.193
NR	3222	29.21	44.86	-3.59	-3.392	-0.177	-0.107	0.126	-0.201
NR	3223	29.21	44.86	-3.60	-3.397	-0.177	-0.100	0.121	-0.196
NR	3224	29.21	44.87	-3.61	-3.426	-0.167	-0.114	0.171	-0.178
NR	3220	29.19	67.34	-3.34	-2.814	-0.306	0.178	-0.446	-0.234
NR	3221	29.19	67.34	-3.35	-2.807	-0.301	0.162	-0.407	-0.230
NR	3219	29.16	89.93	-3.04	-2.042	-0.416	-0.384	0.566	-0.073
NR	3120	0.00	0.00	-0.01	0.006	-0.255	0.026	-0.033	-0.004
NR	3150	0.00	0.00	-0.02	0.006	-0.255	0.025	-0.025	-0.002
NR	3190	0.00	0.00	-0.03	0.005	-0.255	0.026	-0.033	-0.006
NR	3228	0.00	0.00	-0.02	0.006	-0.260	0.026	-0.033	-0.004

T.R.69267

(Run.49)

RUN NUMBER=49 LONG BODY, SQUARE NOSE, CURVED TAIL C
CANT ANGLE= 0.0 DEG. CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3232	-10.08	0.00	1.61	1.946	-0.960	0.009	-0.031	0.007
NR	3233	-10.09	22.50	1.54	1.818	-0.944	-0.053	0.178	0.013
NR	3234	-10.10	45.01	1.47	1.657	-0.920	0.039	0.027	0.041
NR	3235	-10.10	45.01	1.46	1.657	-0.920	0.035	0.027	0.041
NR	3236	-10.12	67.52	1.50	1.713	-0.931	0.164	-0.179	0.068
NR	3237	-10.12	67.52	1.50	1.710	-0.931	0.164	-0.185	0.068
NR	3238	-10.15	90.01	1.55	1.804	-0.946	0.120	-0.060	0.059
NR	3239	-10.15	90.01	1.55	1.804	-0.946	0.120	-0.076	0.057
NR	3244	-5.04	0.10	0.76	0.951	-0.920	0.010	-0.021	-0.003
NR	3243	-5.04	22.49	0.72	0.890	-0.919	0.009	0.021	0.003
NR	3242	-5.06	45.00	0.68	0.836	-0.919	0.029	0.037	0.033
NR	3241	-5.08	67.51	0.68	0.823	-0.919	0.056	0.036	0.050
NR	3240	-5.10	90.00	0.70	0.838	-0.919	0.060	0.027	0.045
NR	3245	0.00	0.10	-0.05	-0.018	-0.894	0.024	-0.041	-0.006
NR	3246	0.00	22.50	-0.04	-0.013	-0.893	0.002	0.023	0.012
NR	3247	-0.01	45.00	-0.06	-0.043	-0.892	-0.004	0.077	0.027
NR	3248	-0.03	67.50	-0.07	-0.092	-0.896	-0.007	0.118	0.037
NR	3249	-0.05	90.00	-0.08	-0.148	-0.901	-0.020	0.139	0.036
NR	3257	5.04	-0.02	-0.80	-0.946	-0.922	0.057	-0.036	-0.025
NR	3258	5.04	-0.02	-0.80	-0.946	-0.927	0.050	-0.036	-0.025
NR	3256	5.04	22.48	-0.78	-0.894	-0.920	0.025	0.039	-0.010
NR	3254	5.03	44.99	-0.76	-0.865	-0.924	-0.013	0.125	0.021
NR	3255	5.03	44.99	-0.77	-0.859	-0.924	-0.017	0.131	0.021
NR	3252	5.01	67.50	-0.80	-0.956	-0.923	-0.040	0.210	0.047
NR	3253	5.01	67.50	-0.81	-0.950	-0.928	-0.045	0.207	0.048
NR	3250	4.99	90.00	-0.86	-1.085	-0.937	-0.060	0.218	0.047
NR	3251	4.99	90.00	-0.86	-1.077	-0.932	-0.070	0.218	0.045
NR	3259	10.09	-0.02	-1.62	-1.860	-0.966	0.060	-0.021	-0.038
NR	3260	10.09	-0.02	-1.62	-1.852	-0.966	0.055	-0.037	-0.036
NR	3261	10.08	22.47	-1.57	-1.753	-0.954	0.105	-0.135	-0.032
NR	3262	10.08	22.47	-1.57	-1.754	-0.949	0.099	-0.134	-0.025
NR	3263	10.07	44.99	-1.54	-1.649	-0.932	-0.023	0.145	0.007
NR	3264	10.07	44.99	-1.54	-1.655	-0.932	-0.027	0.140	0.009
NR	3265	10.06	67.51	-1.59	-1.794	-0.960	-0.149	0.412	0.051
NR	3266	10.06	67.51	-1.59	-1.784	-0.955	-0.149	0.415	0.049
NR	3267	10.04	90.00	-1.67	-1.983	-0.974	-0.110	0.288	0.048
NR	3268	10.04	90.00	-1.67	-1.975	-0.974	-0.110	0.296	0.047
NR	3277	15.12	0.13	-2.20	-2.130	-1.020	0.024	0.019	0.046
NR	3278	15.12	0.13	-2.19	-2.130	-1.020	0.024	0.019	0.045
NR	3275	15.13	22.56	-2.31	-2.330	-0.989	0.059	-0.093	0.108
NR	3276	15.13	22.56	-2.31	-2.351	-0.989	0.065	-0.102	0.110
NR	3273	15.12	44.99	-2.33	-2.379	-0.927	-0.058	0.152	0.010
NR	3274	15.12	44.99	-2.33	-2.384	-0.932	-0.058	0.136	0.006
NR	3271	15.11	67.42	-2.32	-2.417	-0.990	-0.218	0.462	-0.087
NR	3272	15.11	67.43	-2.34	-2.428	-0.990	-0.214	0.476	-0.076
NR	3269	15.08	89.94	-2.22	-2.233	-1.030	-0.132	0.214	-0.050
NR	3270	15.08	89.94	-2.23	-2.257	-1.030	-0.132	0.222	-0.050

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3279	20.17	0.16	-2.78	-2.137	-1.072	-0.077	0.127	0.100
NR	3280	20.17	0.17	-2.77	-2.137	-1.072	-0.077	0.119	0.111
NR	3281	20.18	22.66	-2.99	-2.497	-1.050	-0.133	0.513	0.272
NR	3282	20.18	22.66	-2.99	-2.481	-1.050	-0.148	0.294	0.282
NR	3283	20.18	44.99	-3.19	-2.984	-0.935	-0.083	0.194	0.014
NR	3284	20.18	44.98	-3.19	-3.005	-0.925	-0.090	0.174	0.002
NR	3285	20.16	67.31	-2.98	-2.609	-1.039	-0.052	0.022	-0.275
NR	3286	20.16	67.31	-2.98	-2.627	-1.039	-0.055	0.005	-0.273
NR	3287	20.13	89.91	-2.82	-2.261	-1.084	-0.114	0.095	-0.100
NR	3288	20.13	89.91	-2.82	-2.261	-1.089	-0.114	0.087	-0.104
NR	3297	25.22	0.04	-3.50	-2.392	-1.103	-0.090	0.063	0.071
NR	3298	25.22	0.05	-3.50	-2.405	-1.103	-0.079	0.118	0.081
NR	3295	25.23	22.70	-3.79	-2.782	-1.056	-0.294	0.502	0.346
NR	3296	25.23	22.70	-3.79	-2.819	-1.061	-0.273	0.487	0.340
NR	3293	25.23	45.08	-3.90	-3.161	-0.936	-0.288	0.624	0.157
NR	3294	25.23	45.07	-3.89	-3.161	-0.936	-0.310	0.559	0.145
NR	3291	25.21	67.25	-3.78	-3.026	-1.056	-0.002	-0.192	-0.379
NR	3292	25.21	67.25	-3.78	-2.967	-1.057	0.008	-0.117	-0.378
NR	3289	25.19	89.92	-3.56	-2.507	-1.121	-0.175	0.197	-0.094
NR	3290	25.19	89.92	-3.56	-2.516	-1.106	-0.175	0.152	-0.096
NR	3299	28.24	0.04	-3.94	-2.701	-1.119	-0.064	0.106	0.068
NR	3300	28.25	0.04	-3.95	-2.663	-1.109	-0.071	0.122	0.072
NR	3301	28.26	22.73	-4.22	-3.061	-1.056	-0.327	0.536	0.383
NR	3302	28.26	22.72	-4.23	-3.129	-1.056	-0.324	0.518	0.375
NR	3303	28.26	45.05	-4.30	-3.320	-0.962	-0.331	0.654	0.109
NR	3304	28.26	45.05	-4.29	-3.347	-0.967	-0.327	0.596	0.106
NR	3305	28.24	67.22	-4.21	-3.254	-1.057	-0.010	-0.212	-0.415
NR	3306	28.24	67.23	-4.23	-3.306	-1.057	-0.018	-0.189	-0.411
NR	3307	28.22	90.02	-4.02	-2.790	-1.126	-0.139	0.168	-0.092
NR	3308	28.22	90.02	-4.03	-2.831	-1.126	-0.159	0.147	-0.085
NR	3238	0.00	0.00	-0.03	-0.010	-0.899	0.026	-0.049	-0.003
NR	3309	0.00	0.10	-0.03	0.006	-0.899	0.010	-0.016	0.000

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

HALT
HALT EE
HALT 26

T.R.69267

(Run.50)

RUN NUMBER=50 SHORT BODY, SQUARE NOSE, CURVED TAIL C
E CANT ANGLE= 0.0 CG POSITION 50.00%
V= 240. FPS RE= 0.384 MILLION

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTE CX	CY	CN	CL
NR	3314	-10.12	0.09	1.66	1.138	-0.949	-0.016	0.063	-0.016
NR	3315	-10.12	22.48	1.54	0.989	-0.934	-0.018	0.152	0.020
NR	3316	-10.13	45.00	1.46	0.839	-0.925	0.102	0.052	0.085
NR	3317	-10.16	67.51	1.55	0.896	-0.932	0.218	-0.067	0.124
NR	3318	-10.19	90.01	1.65	0.964	-0.957	0.220	-0.038	0.126
NR	3323	-5.06	0.09	0.81	0.585	-0.927	0.004	-0.002	-0.015
NR	3322	-5.06	22.50	0.74	0.529	-0.918	0.019	0.038	0.041
NR	3321	-5.07	45.00	0.71	0.468	-0.915	0.083	0.037	0.085
NR	3320	-5.10	67.50	0.75	0.461	-0.918	0.137	0.012	0.115
NR	3319	-5.12	90.00	0.81	0.473	-0.923	0.140	0.025	0.125
NR	3324	0.00	0.09	-0.07	-0.079	-0.913	0.047	-0.049	-0.009
NR	3325	0.00	22.50	-0.07	-0.072	-0.911	0.043	0.013	0.042
NR	3326	-0.01	45.00	-0.07	-0.097	-0.914	0.045	0.042	0.081
NR	3327	-0.03	67.50	-0.07	-0.128	-0.913	0.048	0.075	0.109
NR	3328	-0.03	90.00	-0.05	-0.144	-0.918	0.040	0.096	0.114
NR	3333	5.07	-0.01	-0.92	-0.671	-0.939	0.084	-0.066	-0.015
NR	3332	5.06	22.49	-0.87	-0.647	-0.924	0.066	-0.022	0.029
NR	3331	5.04	44.99	-0.83	-0.637	-0.918	0.031	0.056	0.068
NR	3330	5.03	67.50	-0.86	-0.685	-0.928	-0.030	0.129	0.103
NR	3329	5.02	89.99	-0.90	-0.764	-0.938	-0.050	0.162	0.110
NR	3334	10.13	-0.01	-1.72	-1.155	-0.976	0.095	-0.084	-0.010
NR	3335	10.12	22.48	-1.64	-1.069	-0.957	0.101	-0.074	0.018
NR	3336	10.11	44.99	-1.58	-1.006	-0.938	0.001	0.073	0.069
NR	3337	10.10	67.50	-1.65	-1.123	-0.953	-0.097	0.219	0.111
NR	3338	10.08	89.99	-1.69	-1.215	-0.968	-0.110	0.204	0.109
NR	3343	15.16	0.08	-2.09	-1.146	-1.048	-0.010	0.066	0.134
NR	3344	15.16	0.08	-2.09	-1.154	-1.048	-0.003	0.059	0.128
NR	3345	15.17	22.55	-2.28	-1.345	-0.981	0.068	-0.037	0.123
NR	3346	15.17	22.55	-2.28	-1.344	-0.981	0.069	-0.037	0.120
NR	3347	15.17	44.99	-2.35	-1.386	-0.939	-0.031	0.126	0.068
NR	3348	15.15	67.45	-2.24	-1.392	-0.994	-0.108	0.269	0.028
NR	3349	15.15	67.45	-2.23	-1.385	-0.989	-0.105	0.267	0.021
NR	3350	15.11	89.91	-2.04	-1.248	-1.049	-0.093	0.188	-0.036
NR	3351	15.11	89.91	-2.04	-1.248	-1.053	-0.093	0.181	-0.039
NR	3359	20.20	0.08	-2.49	-1.060	-1.118	-0.012	0.028	0.135
NR	3357	20.21	22.62	-2.69	-1.303	-1.048	-0.217	0.210	0.247
NR	3358	20.21	22.62	-2.69	-1.278	-1.058	-0.217	0.210	0.246
NR	3356	20.23	45.00	-3.10	-1.719	-0.928	-0.059	0.130	0.072
NR	3354	20.18	67.39	-2.58	-1.270	-1.072	0.075	0.053	-0.075
NR	3355	20.18	67.39	-2.59	-1.285	-1.067	0.082	0.057	-0.077
NR	3352	20.15	89.92	-2.39	-1.125	-1.126	-0.123	0.180	-0.012
NR	3353	20.15	89.93	-2.39	-1.117	-1.126	-0.133	0.189	-0.007
NR	3360	25.23	0.06	-2.88	-1.104	-1.175	0.071	-0.047	0.096
NR	3361	25.23	0.06	-2.89	-1.091	-1.175	0.071	-0.047	0.103
NR	3362	25.25	22.65	-3.22	-1.413	-1.072	-0.359	0.348	0.293

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETS - R.A.E 3FT*4FT TUNNEL RESULTS.

	OP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3363	25.28	22.65	-3.22	-1.428	-1.077	-0.359	0.342	0.294
NR	3364	25.27	44.83	-3.53	-1.753	-0.963	0.283	-0.202	-0.196
NR	3365	25.27	44.84	-3.54	-1.777	-0.953	0.285	-0.193	-0.182
NR	3366	25.27	44.84	-3.53	-1.787	-0.963	0.284	-0.246	-0.183
NR	3367	25.22	67.36	-3.08	-1.391	-1.118	0.147	-0.080	-0.135
NR	3368	25.22	67.36	-3.06	-1.361	-1.118	0.152	-0.054	-0.130
NR	3369	25.19	89.95	-2.79	-1.147	-1.197	-0.232	0.269	0.033
NR	3370	25.19	89.94	-2.78	-1.139	-1.192	-0.233	0.292	0.005
NR	3379	29.26	0.06	-3.22	-1.264	-1.197	0.044	-0.022	0.091
NR	3380	29.26	0.06	-3.19	-1.235	-1.197	0.044	-0.022	0.096
NR	3377	29.28	22.69	-3.57	-1.608	-1.081	-0.539	0.448	0.353
NR	3378	29.28	22.69	-3.57	-1.629	-1.081	-0.539	0.439	0.353
NR	3375	29.29	44.99	-3.80	-1.851	-0.967	-0.013	0.027	0.052
NR	3376	29.29	44.99	-3.80	-1.855	-0.977	-0.024	0.033	0.060
NR	3373	29.26	67.33	-3.45	-1.572	-1.107	0.250	-0.144	-0.180
NR	3374	29.26	67.33	-3.45	-1.560	-1.107	0.250	-0.158	-0.185
NR	3371	29.22	89.95	-3.13	-1.287	-1.196	-0.223	0.263	0.030
NR	3372	29.22	89.95	-3.13	-1.279	-1.186	-0.213	0.268	0.021
NR	3313	0.00	0.09	-0.04	0.006	-0.908	0.059	-0.038	-0.016
NR	3339	0.00	0.00	-0.07	-0.056	-0.913	0.061	-0.063	-0.001
NR	3342	0.00	-0.01	-0.05	0.002	-0.908	0.073	-0.032	-0.015
NR	3381	0.01	0.00	-0.07	-0.026	-0.913	0.055	-0.049	-0.002

(Run.51)

RUN NUMBER=51 SHORT BODY, ROUND NOSE, CURVED TAIL C
& CANT ANGLE= 0.0 CG POSITION 30.00%
V= 240. FPS RE= 0.384 MILLION

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3385	-10.11	-0.02	1.36	0.889	-0.291	-0.004	0.048	-0.039
NR	3386	-10.12	22.48	1.48	0.787	-0.281	-0.040	0.146	0.002
NR	3387	-10.13	44.99	1.46	0.717	-0.267	0.074	0.041	0.061
NR	3388	-10.15	67.51	1.46	0.706	-0.289	0.204	-0.108	0.108
NR	3389	-10.18	90.01	1.53	0.753	-0.298	0.180	-0.070	0.112
NR	3394	-5.05	-0.01	0.73	0.349	-0.288	0.035	-0.019	-0.014
NR	3393	-3.06	22.49	0.69	0.294	-0.284	0.045	0.027	0.028
NR	3392	-5.07	44.99	0.66	0.256	-0.281	0.085	0.003	0.065
NR	3391	-5.09	67.50	0.69	0.264	-0.283	0.103	-0.016	0.090
NR	3390	-5.12	90.00	0.73	0.274	-0.284	0.090	-0.005	0.098
NR	3395	0.00	-0.01	-0.06	-0.046	-0.289	0.060	-0.022	-0.009
NR	3396	0.00	22.30	-0.06	-0.056	-0.287	0.040	0.001	0.034
NR	3397	-0.01	43.00	-0.03	-0.061	-0.291	0.032	0.022	0.069
NR	5398	-0.05	67.50	-0.06	-0.073	-0.290	0.031	0.014	0.090
NR	3399	-0.05	90.00	-0.03	-0.078	-0.290	0.020	0.014	0.100
NR	3406	5.06	-0.01	-0.84	-0.444	-0.296	0.090	-0.060	-0.010
NR	3404	5.06	22.49	-0.79	-0.392	-0.295	0.077	-0.052	0.031
NR	3403	3.04	44.99	-0.76	-0.369	-0.283	0.019	0.010	0.063
NR	3401	5.05	67.50	-0.79	-0.403	-0.290	-0.033	0.037	0.089
NR	3400	5.01	90.00	-0.83	-0.457	-0.290	-0.040	0.047	0.100
NR	3407	10.12	-0.01	-1.61	-0.912	-0.313	0.121	-0.089	-0.022
NR	3408	10.11	22.48	-1.54	-0.855	-0.299	0.131	-0.130	0.011
NR	3409	10.10	45.00	-1.53	-0.819	-0.280	-0.001	0.015	0.065
NR	3410	10.09	67.51	-1.33	-0.843	-0.296	-0.137	0.162	0.115
NR	3412	10.08	90.01	-1.61	-0.926	-0.306	-0.120	0.118	0.114
NR	3428	15.14	0.16	-1.88	-0.946	-0.336	0.032	-0.024	0.096
NR	3430	15.14	0.16	-1.88	-0.946	-0.556	0.032	-0.024	0.094
NR	3424	15.16	22.49	-2.10	-1.181	-0.309	0.094	-0.150	0.029
NR	3426	15.16	22.30	-2.10	-1.173	-0.309	0.100	-0.134	0.031
NR	3422	15.16	45.00	-2.24	-1.270	-0.262	-0.044	0.059	0.067
NR	3418	15.13	67.49	-2.05	-1.111	-0.312	-0.156	0.174	0.084
NR	3420	15.13	67.49	-2.06	-1.119	-0.312	-0.161	0.185	0.074
NR	3414	13.10	89.93	-1.86	-0.917	-0.331	-0.122	0.091	-0.010
NR	3416	13.10	89.93	-1.87	-0.922	-0.351	-0.132	0.102	-0.006
NR	3432	20.17	0.22	-1.91	-0.849	-0.609	-0.266	0.231	0.193
NR	3434	20.17	0.22	-2.17	-0.970	-0.461	-0.271	0.236	0.200
NR	3436	20.17	22.51	-2.18	-0.988	-0.360	0.033	-0.073	0.057
NR	3438	20.17	22.30	-2.13	-0.962	-0.370	0.041	-0.073	0.042
NR	3440	20.21	45.01	-2.91	-1.751	-0.230	-0.053	0.048	0.083
NR	3442	20.14	67.51	-2.10	-0.909	-0.388	-0.253	0.239	0.109
NR	3444	20.14	67.32	-2.09	-0.901	-0.388	-0.248	0.240	0.116
NR	3446	20.15	89.87	-2.19	-0.992	-0.399	0.133	-0.148	-0.110
NR	3436	25.19	0.06	-2.38	-0.913	-0.430	-0.030	0.038	0.100
NR	3438	25.19	0.06	-2.38	-0.920	-0.435	-0.030	0.038	0.097
NR	3454	25.20	22.53	-2.53	-1.098	-0.559	0.005	-0.029	0.086

R=RESULTS IN ROLLING BODY AXES.
NR=RESULTS IN NON-ROLLING BODY AXES.

WIND TUNNEL TESTS ON CANTED FIN BOMBLETR - R.A.E 3FT*4FT TUNNEL RESULTS.

	DP.NO.	ATTITUDE THETA	PHI	CZ	CM	COEFFICIENTS CX	CY	CN	CL
NR	3452	25.23	45.15	-3.01	-1.614	-0.259	0.067	-0.099	0.504
NR	3450	25.18	67.46	-2.31	-1.071	-0.374	-0.176	0.164	0.026
NR	3448	25.15	89.94	-2.40	-0.933	-0.434	-0.183	0.113	-0.004
NR	3460	29.22	0.04	-2.73	-1.084	-0.437	0.128	-0.096	0.059
NR	3462	29.23	22.59	-2.83	-1.206	-0.368	-0.264	0.204	0.186
NR	3464	29.25	44.77	-3.29	-1.746	-0.170	-0.032	0.063	-0.311
NR	3466	29.25	44.78	-3.29	-1.741	-0.166	-0.032	0.068	-0.302
NR	3468	29.21	67.40	-2.82	-1.210	-0.383	-0.003	0.010	-0.074
NR	3470	29.19	89.95	-2.74	-1.101	-0.418	-0.242	0.136	0.013
NR	3384	0.00	-0.01	-0.04	0.013	-0.284	0.060	-0.015	-0.017
NR	3472	0.01	0.00	-0.07	-0.026	-0.284	0.042	-0.012	-0.003

SYMBOLS

b	fin span	
d	body diameter	
C_ℓ	rolling moment coefficient	non-dimensionalized with respect to qSd
C_m	pitching moment coefficient	non-dimensionalized with respect to qSd
C_n	yawing moment coefficient	non-dimensionalized with respect to qSd
C_D	drag coefficient (see section 3)	non-dimensionalized with respect to qS
C_L	lift coefficient (see section 3)	non-dimensionalized with respect to qS
C_N	fin normal force coefficient	non-dimensionalized with respect to qS
C_X	axial force coefficient	non-dimensionalized with respect to qS
C_Y	side force coefficient	non-dimensionalized with respect to qS
C_Z	normal force coefficient	non-dimensionalized with respect to qS
$\bar{C}_m$	$C_m \cos\phi - C_n \sin\phi$	
$\bar{C}_n$	$C_m \sin\phi + C_n \cos\phi$	
$\bar{C}_Y$	$-C_Z \sin\phi + C_Y \cos\phi$	
$\bar{C}_Z$	$C_Z \cos\phi + C_Y \sin\phi$	
ℓ	body length	
p	static pressure on the base of a bomblet	
q	dynamic pressure of free stream	
S	$\pi d^2/4$	
U	free stream velocity	
X	distance measured rearwards from nose	
α	fin incidence	
δ	fin cant	
θ	pitch angle	
ϕ	roll angle	

List of subscripts

b	due to body alone
f	due to fin
δ	due to fin cant

REFERENCES

No.	Author	Title, etc.
1	F. J. Tanner	Some aerodynamic methods of scattering numbers of small bombs and trials proposals for demonstrating the effectiveness of the methods. R.A.E. Technical Memorandum WE 1146 (1964)
2	P. L. Appleton Jones	A study of the use of bomblets with canted fins in cluster weapons. R.A.E. Technical Report 65216 (1965)
3	R. Hills	The aerodynamics of armaments, turrets and external stores. R.A.E. Technical Note Aero 2255 (1953)
4	M. A. Morrison R. Hills	Wind-tunnel tests on bombs; a collection of data on drag. R.A.E. Technical Note Aero 1304 (1943)
5	G. G. Brebner	An empirical estimation method for the subsonic normal force and centre of pressure on low-aspect-ratio guided weapon shapes. R.A.E. Technical Memorandum Aero 963 (1966)
6	J. R. Cole S. A. Mitchell	Some notes on the self-balancing units currently in use with resistance strain gauge balances in the R.A.E. 8ft × 6ft and 2ft × 1½ft transonic tunnels. R.A.E. Technical Memorandum Aero 837 (1964)
7	D. J. Kettle	Description of the pitch roll support rig installation designed for sting mounted models in the R.A.E. 4ft × 3ft low-turbulence tunnel. R.A.E. Technical Note Aero 2977 (1964)
8	D. J. Kettle	Notes on a DEUCE programme for processing the results of force and moment tests on sting mounted models in low speed tunnels. R.A.E. Technical Memorandum Aero 886 (1965)

REFERENCES (Contd.)

No.	Author	Title, etc.
9	R. C. Pankhurst D. W. Holder	Wind-tunnel technique, Chapter 8. Pitman's Press, London (1948)
10	R. L. Maltby D. H. Peckham	Low speed flow studies of the vortex patterns above inclined slender bodies using a new smoke technique. R.A.E. Technical Note Aero 2482 (A.R.C. 19541), (1956)
11	William C. Hayes William P. Henderson	Some effects of nose bluntness and fineness ratio on the static longitudinal aerodynamic characteristics of bodies of revolution at subsonic speeds. NASA TN D 650, February 1961
12	J. Leith Potter Norman M. Shapiro William D. Murphree	Normal force distributions on right circular cylinders in subsonic and supersonic flows. U.S.A. Ordnance Missile Labs. Report 2R4F, December 1954
13	S. F. Hoerner	Fluid dynamic drag, p.313 Published by the author

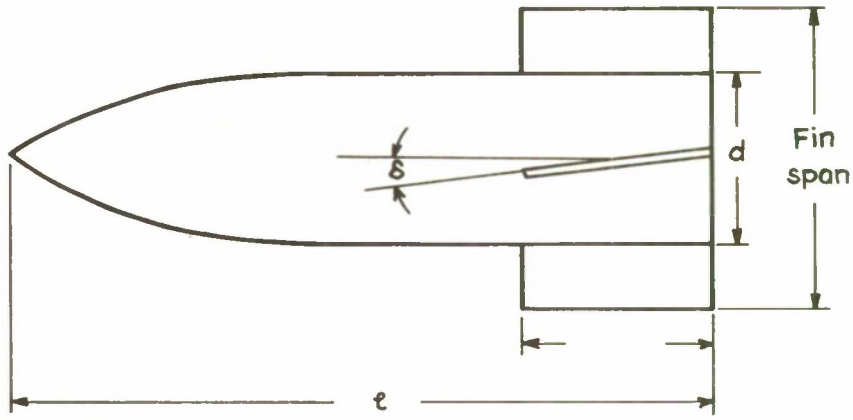

Fig. 1a Bomblet with canted fins

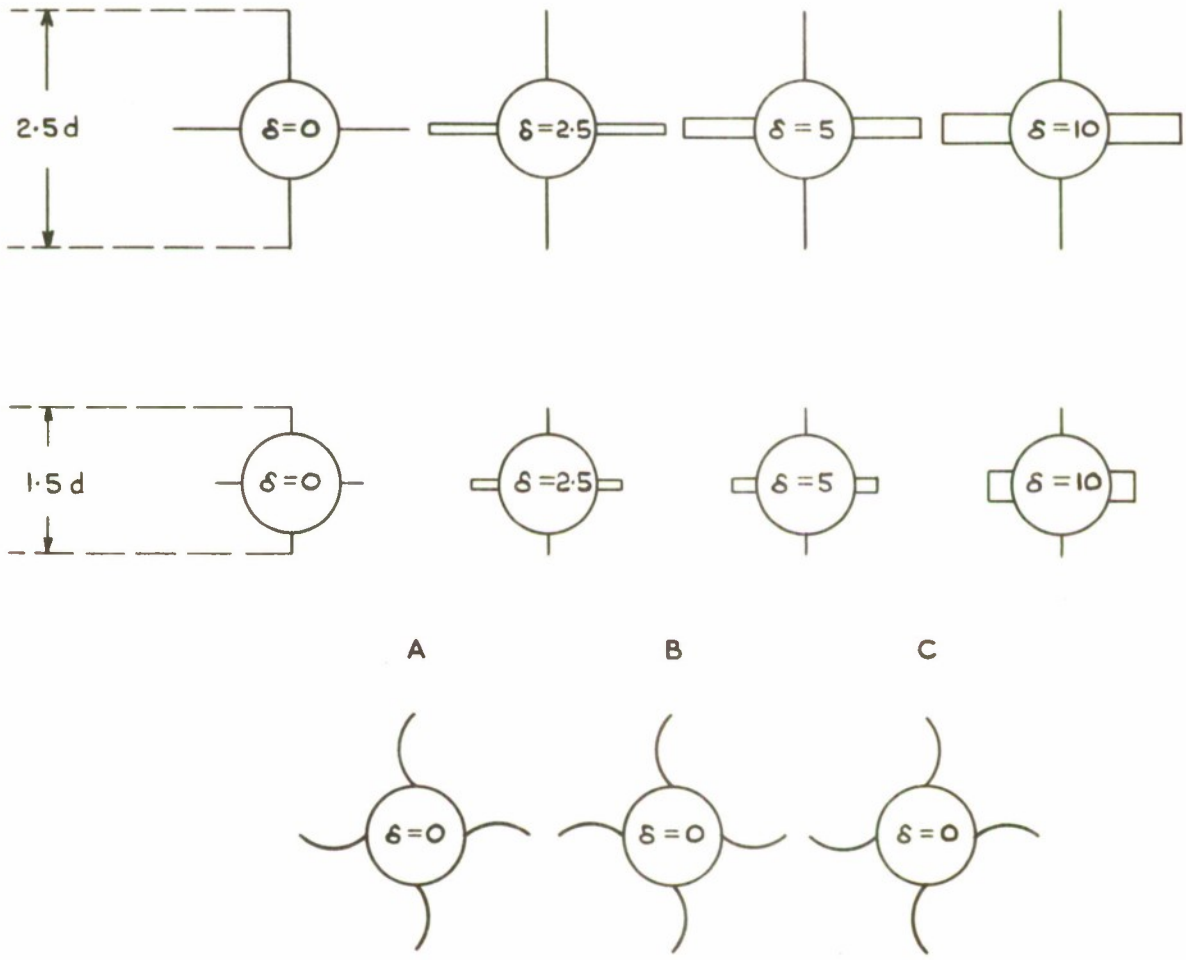

Fig. 1b Fin configurations (viewed from the nose)

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Fig.2

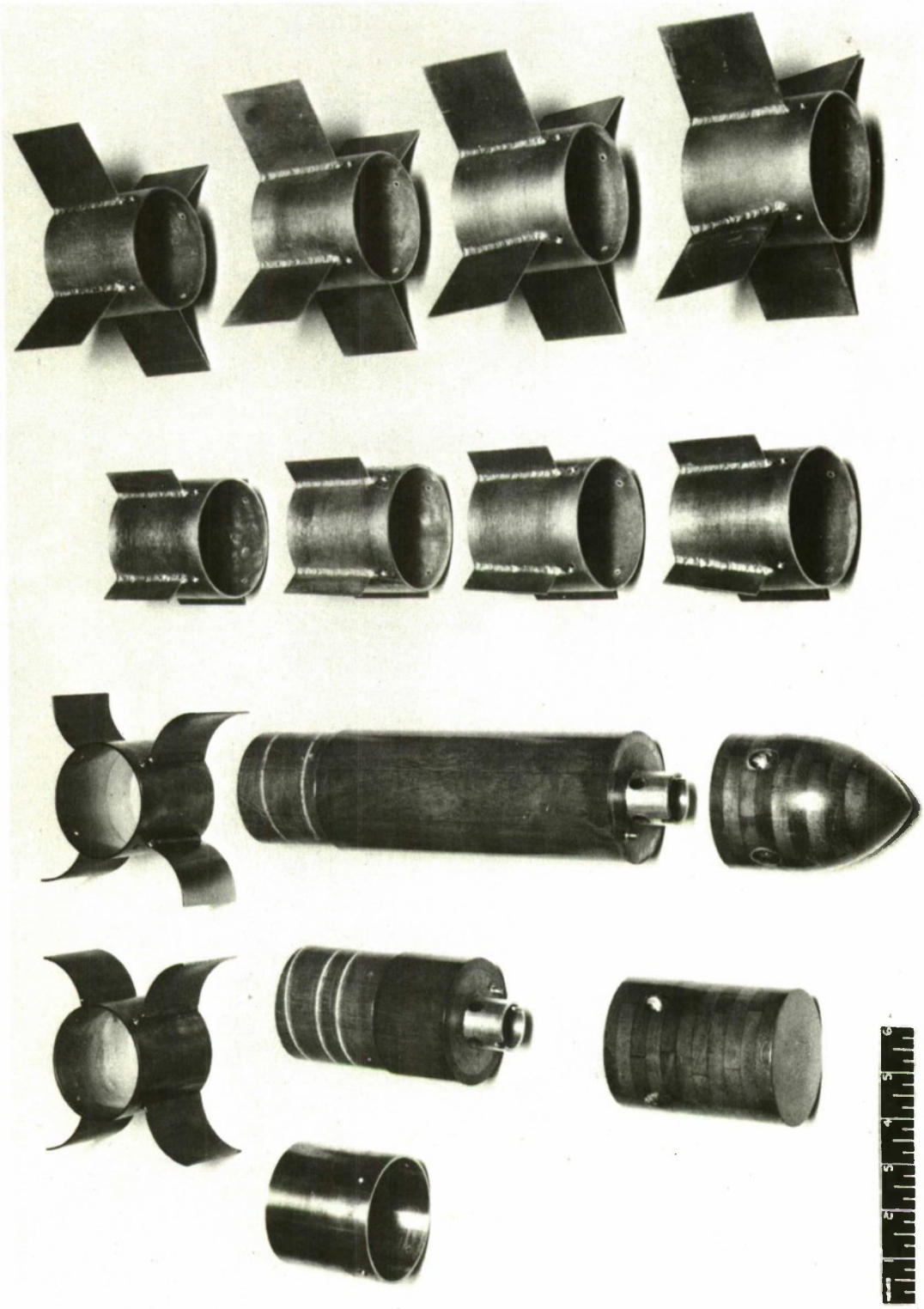

Fig.2. Bomblet components

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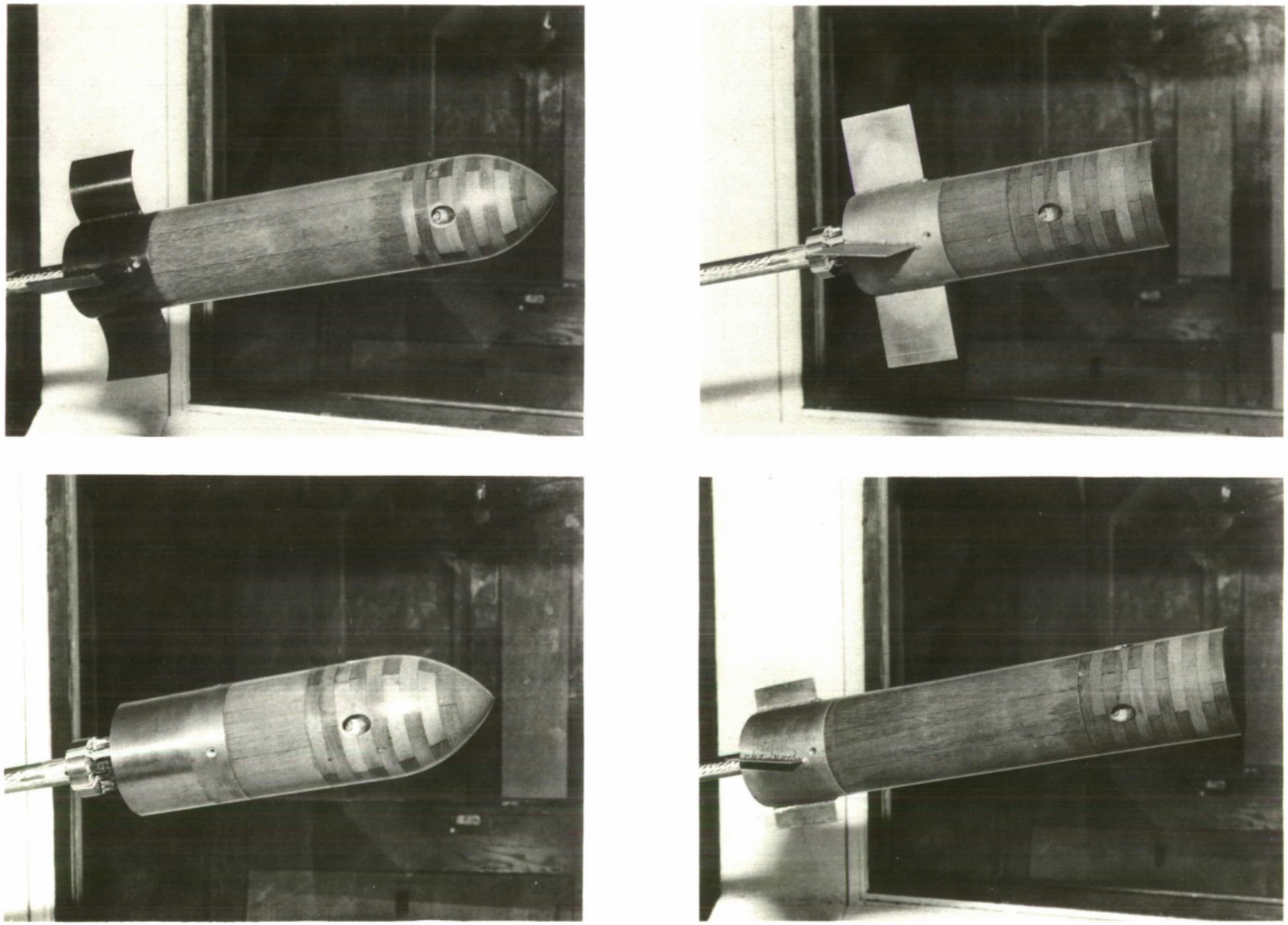

Fig.3. Bomblets mounted in the wind-tunnel. (Tail-retaining screws not fitted)

Fig.3

Fig. 4

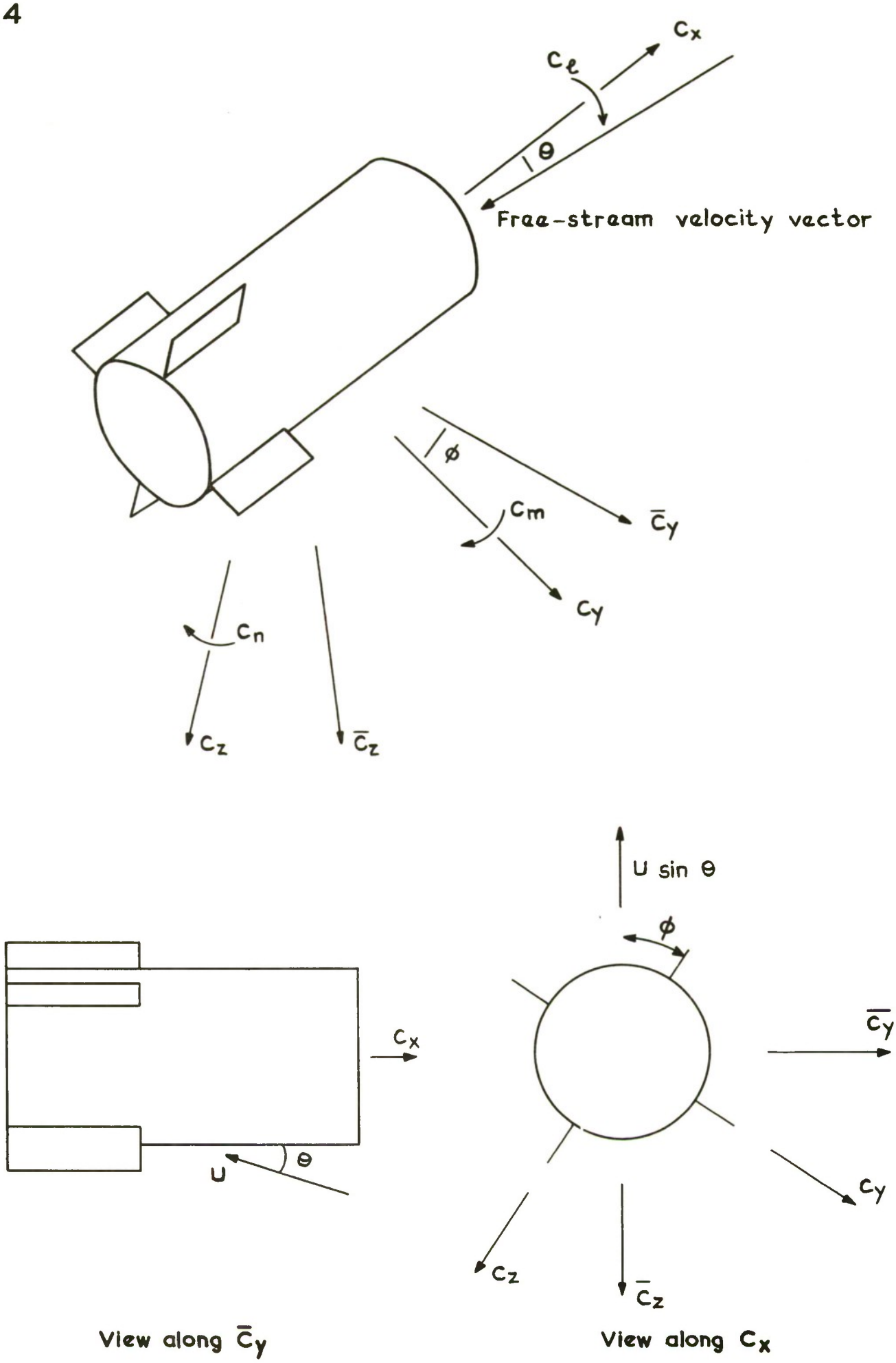

Fig. 4 Axis system (not to scale)

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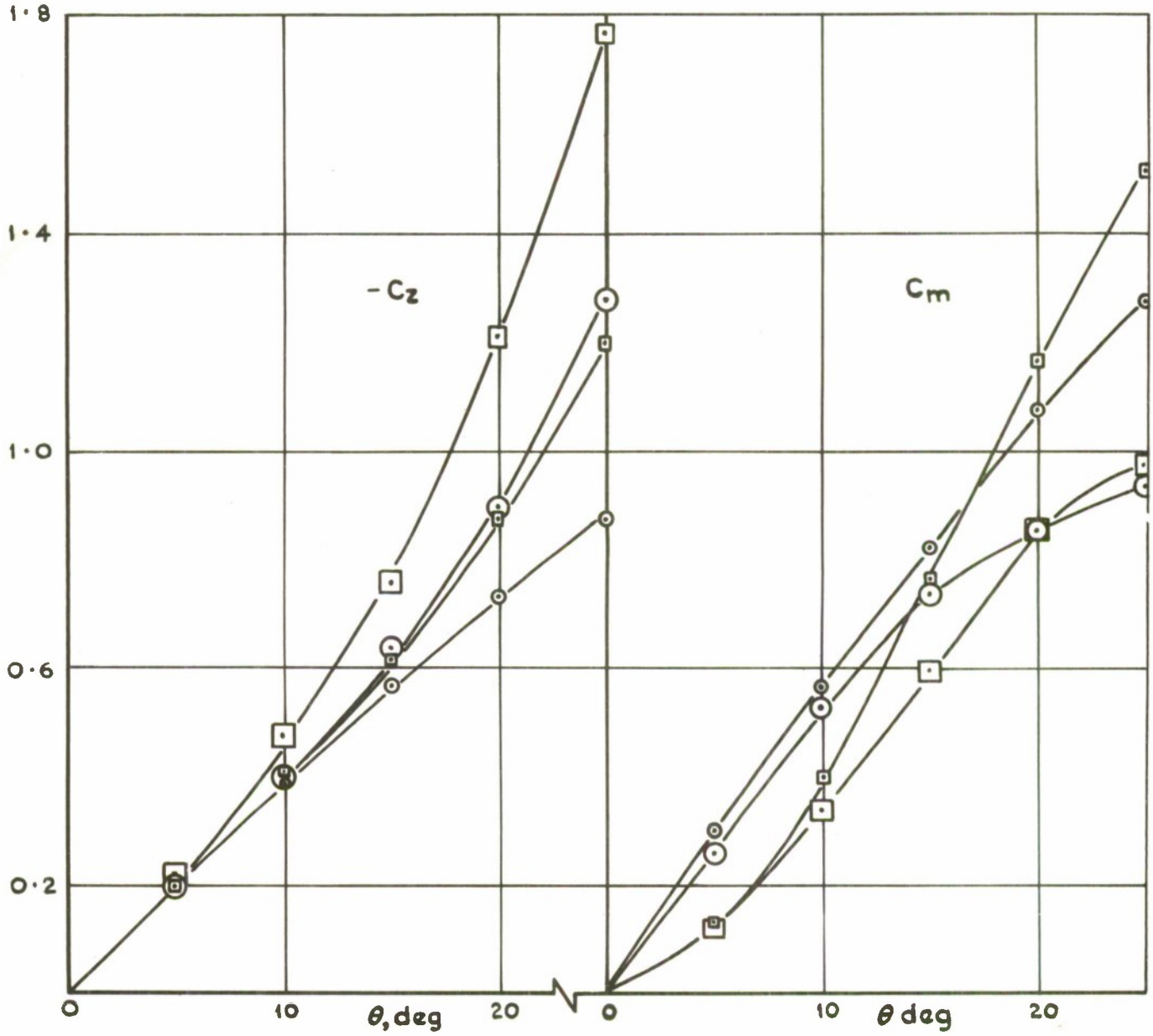

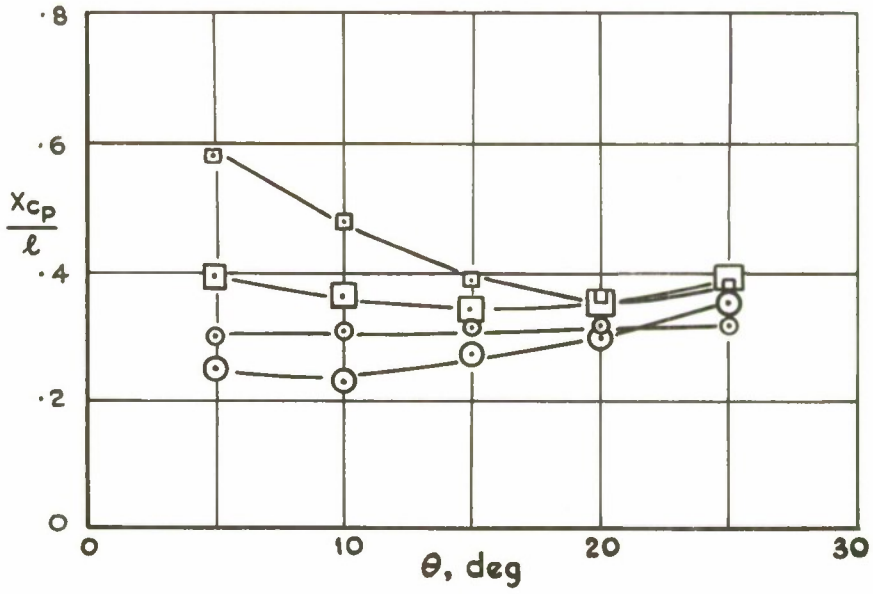

Fig. 5 Normal force and pitching moment characteristics of bomblets without fins

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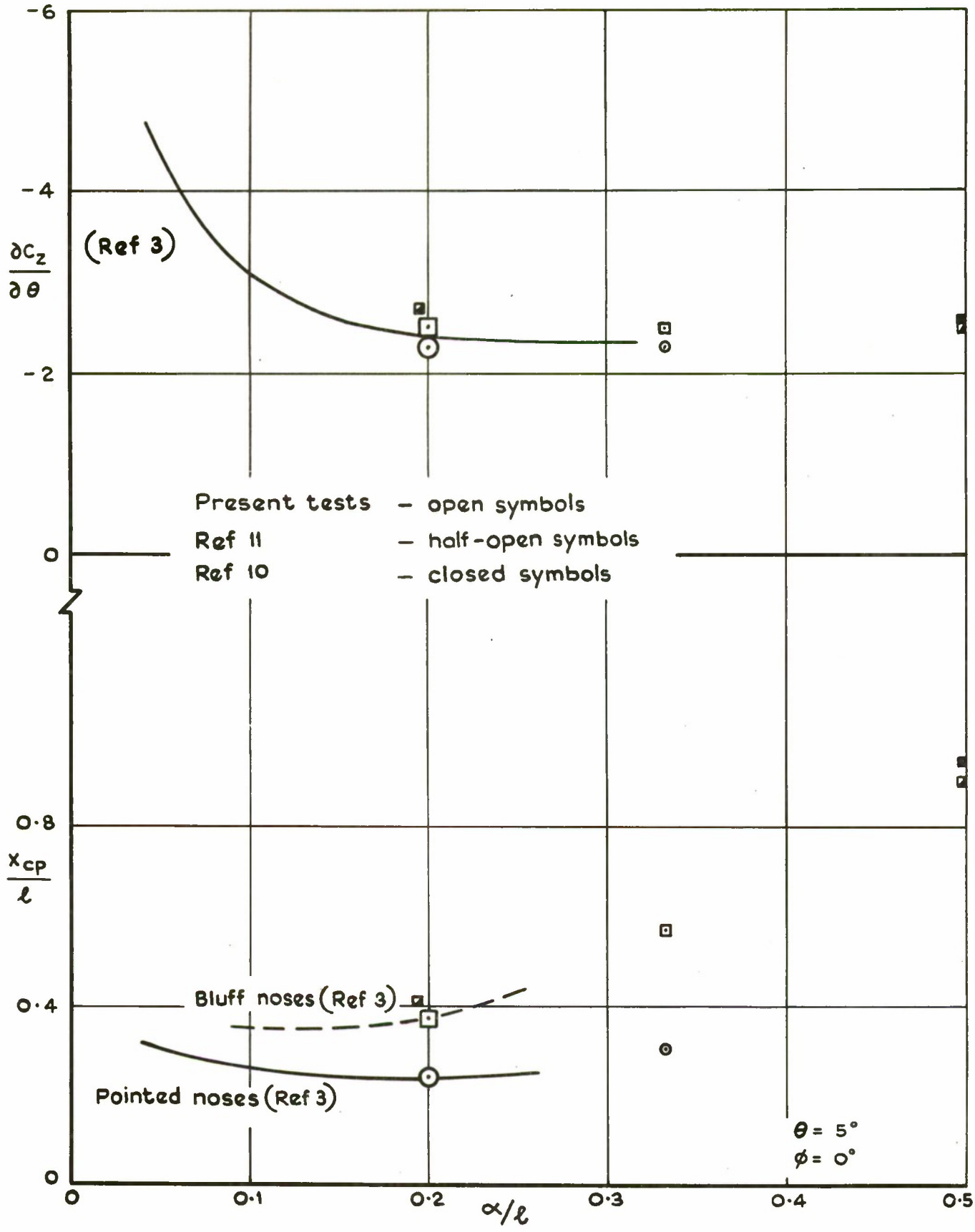

Fig.6 Characteristics of bomblets without fins

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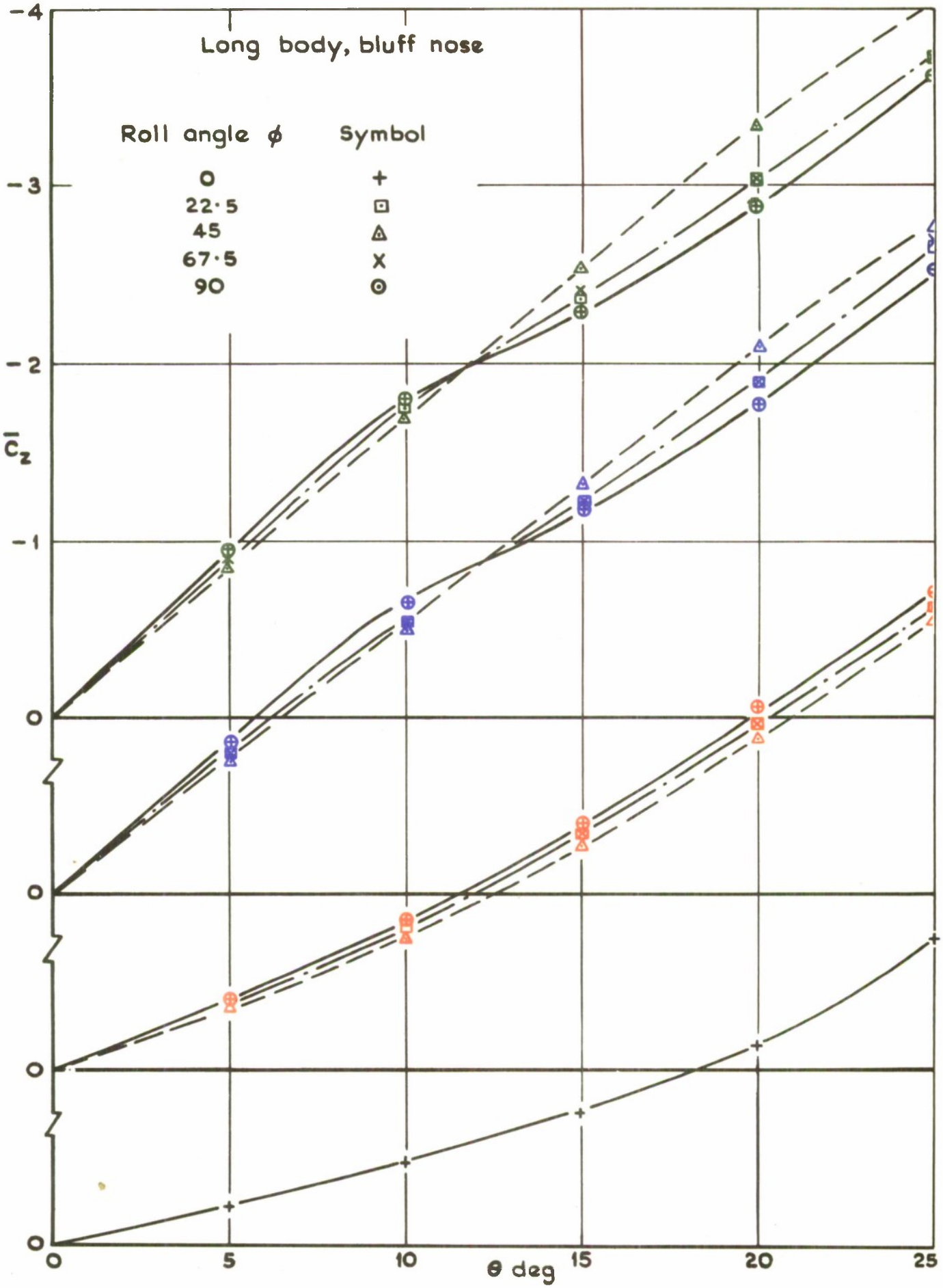

Fig.7 Variation of $\bar{C}_z$ with θ and ϕ

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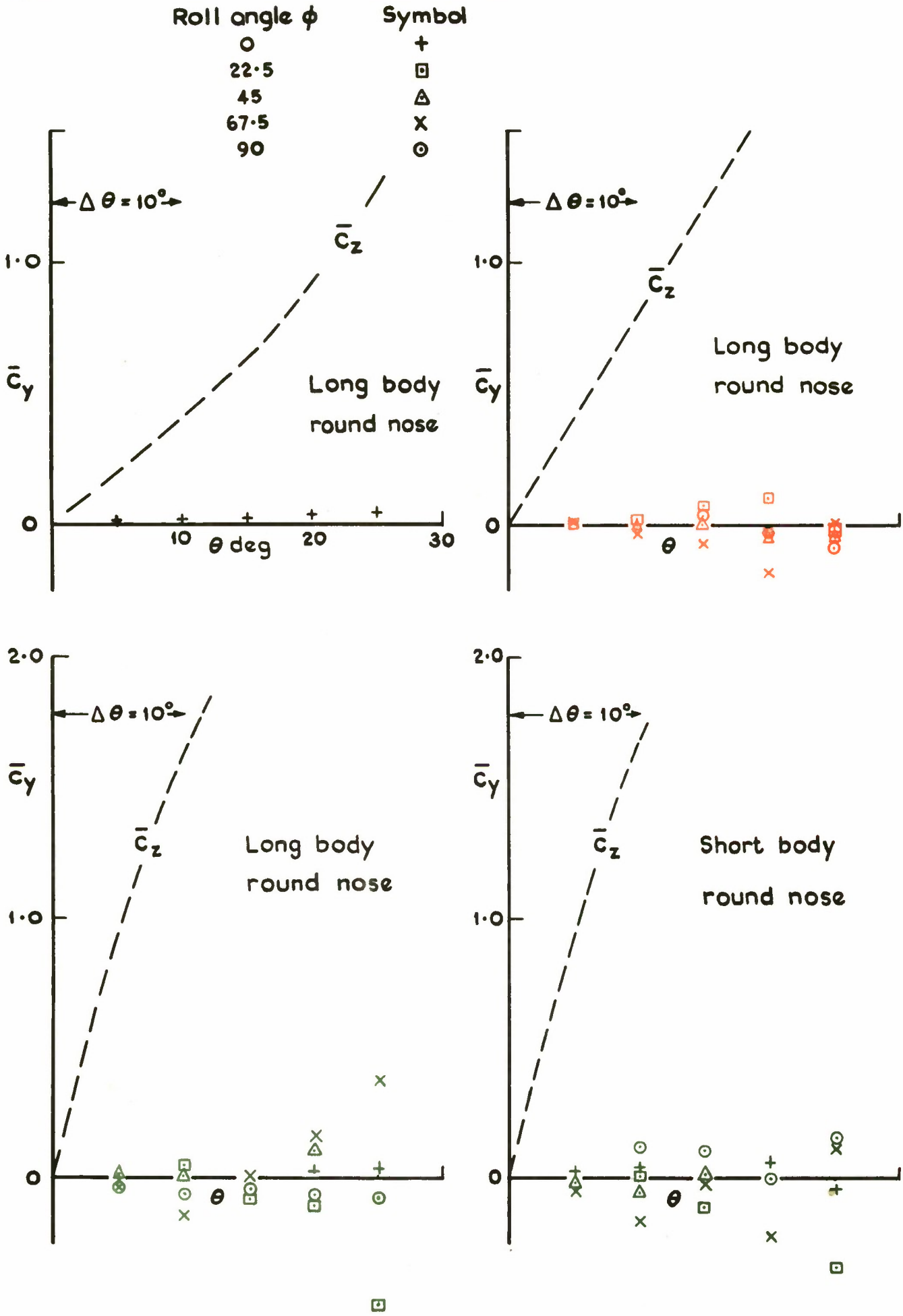

Fig.8 Variation of $\bar{C}_y$ with θ and ϕ

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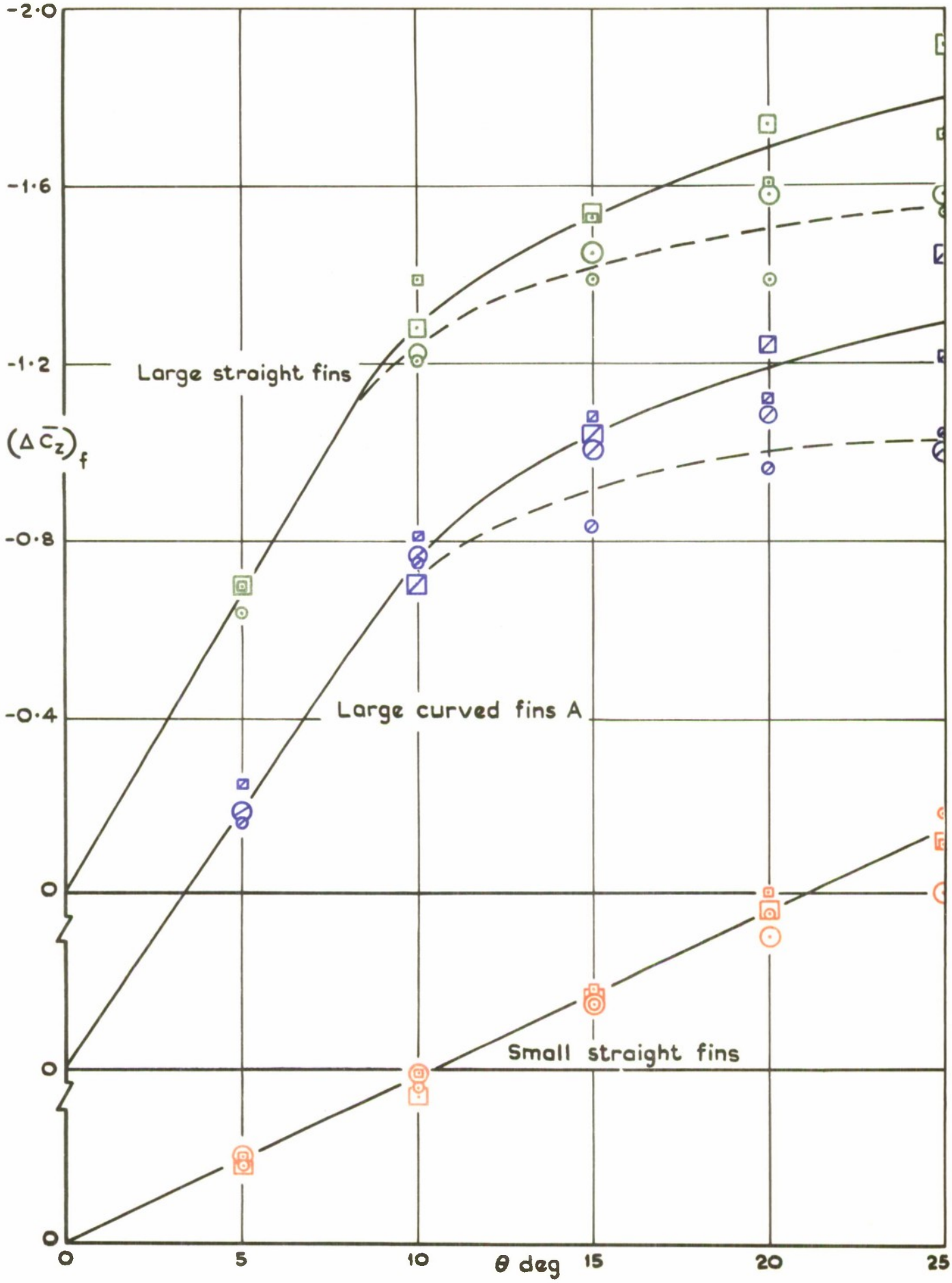

Fig.9 $\bar{C}_z$ increment due to fins

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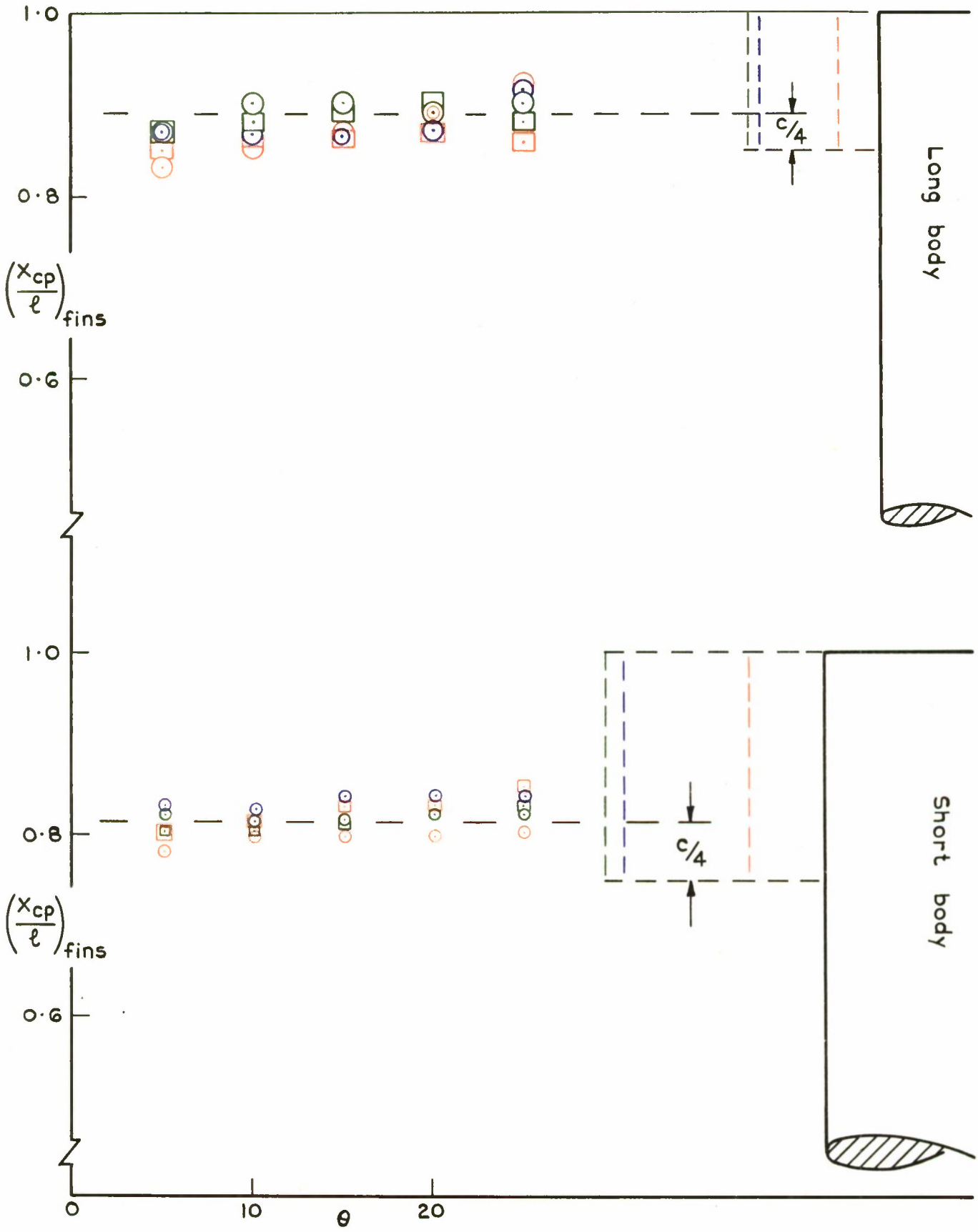

Fig.10 Variation with θ of the point of action of the force on the fins

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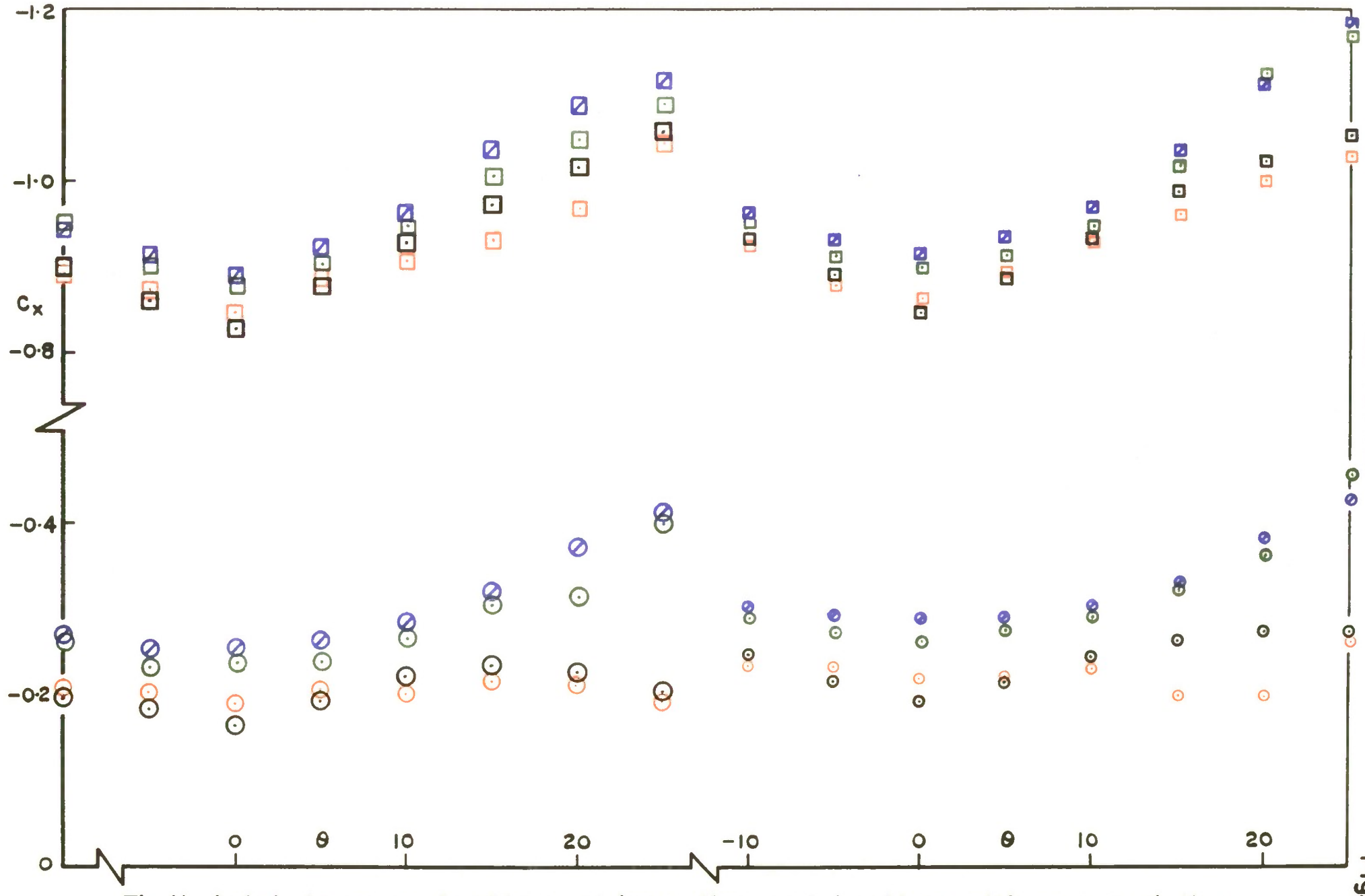

Fig.11 Axial force on bomblets without fins and bomblets with uncanted fins

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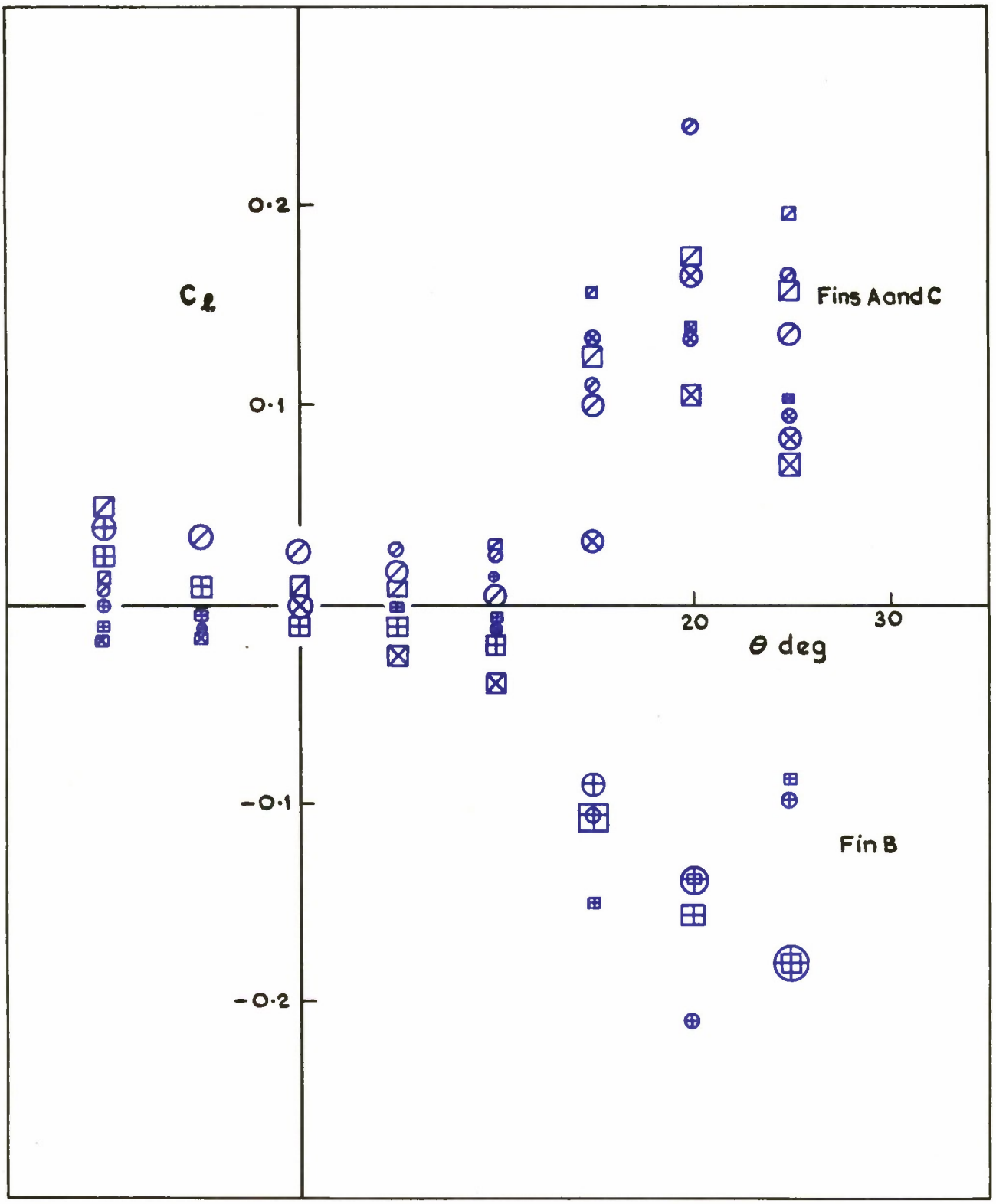

Fig. 12 Rolling moment characteristics of bomblets with curved fins ($\phi = 0$)

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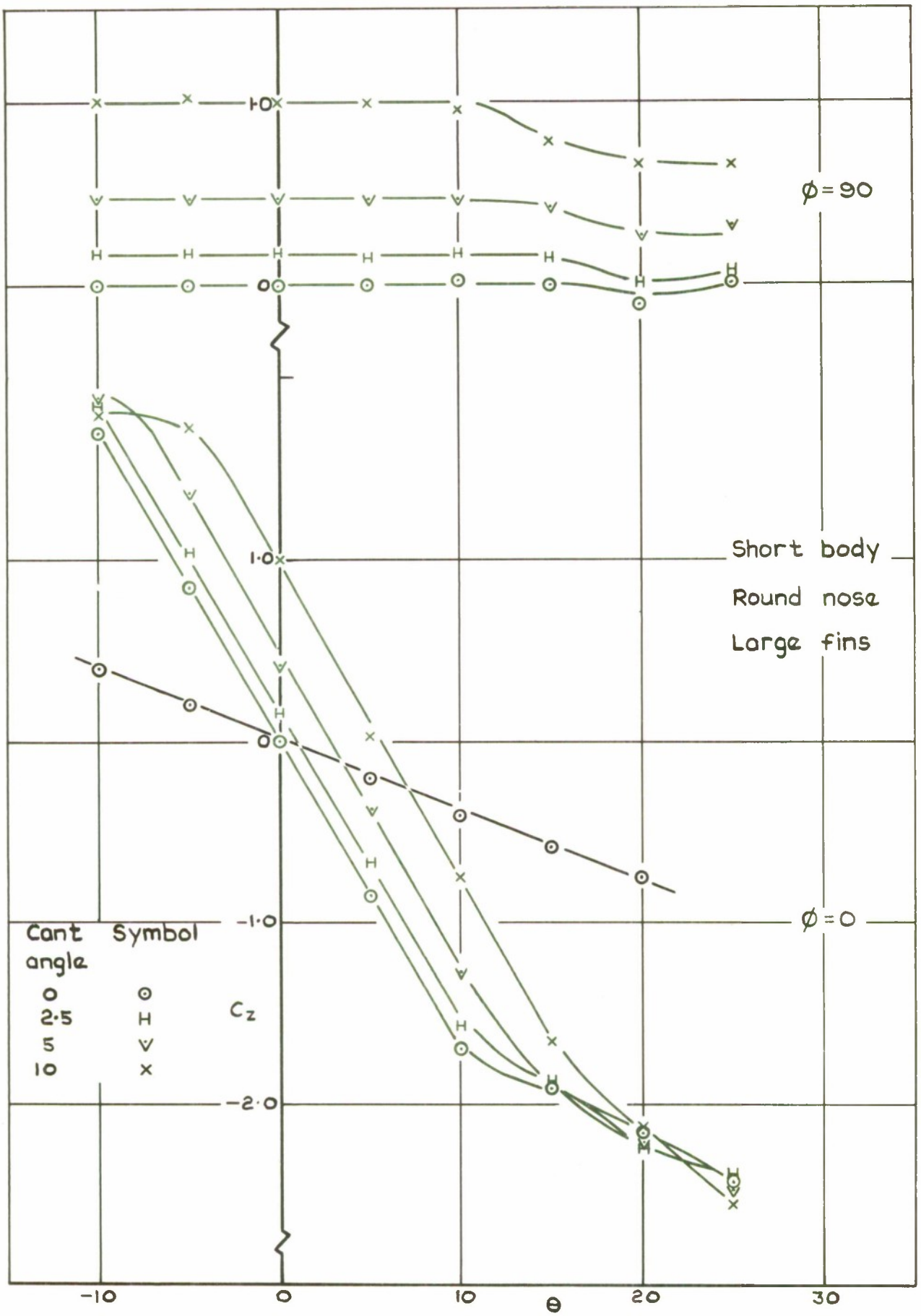

Fig. 13 Variation of C_z with θ at $\phi = 0$ and $\phi = 90^\circ$

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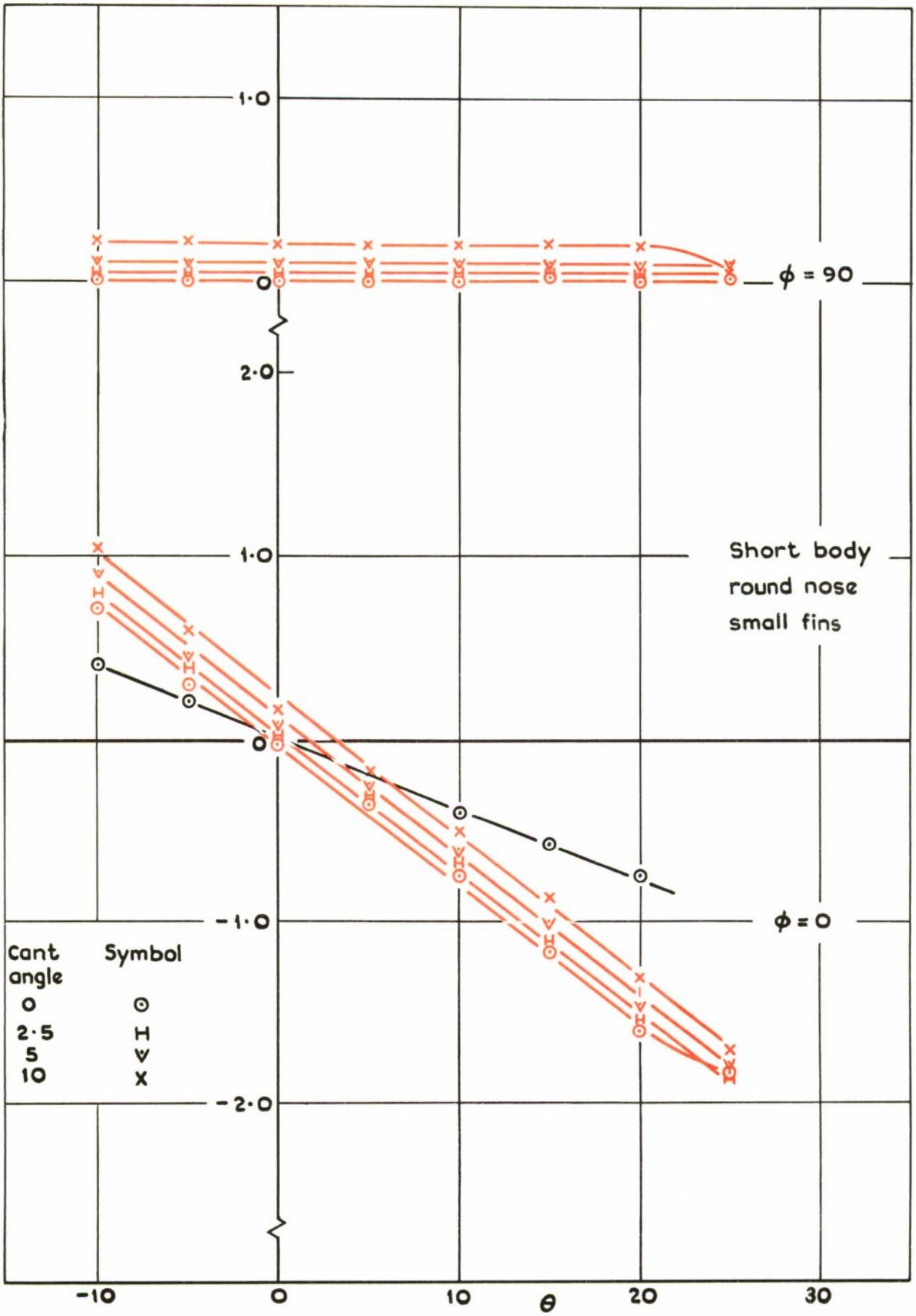

Fig.14 Variation of C_z with θ at $\phi = 0$ and $\phi = 90°$

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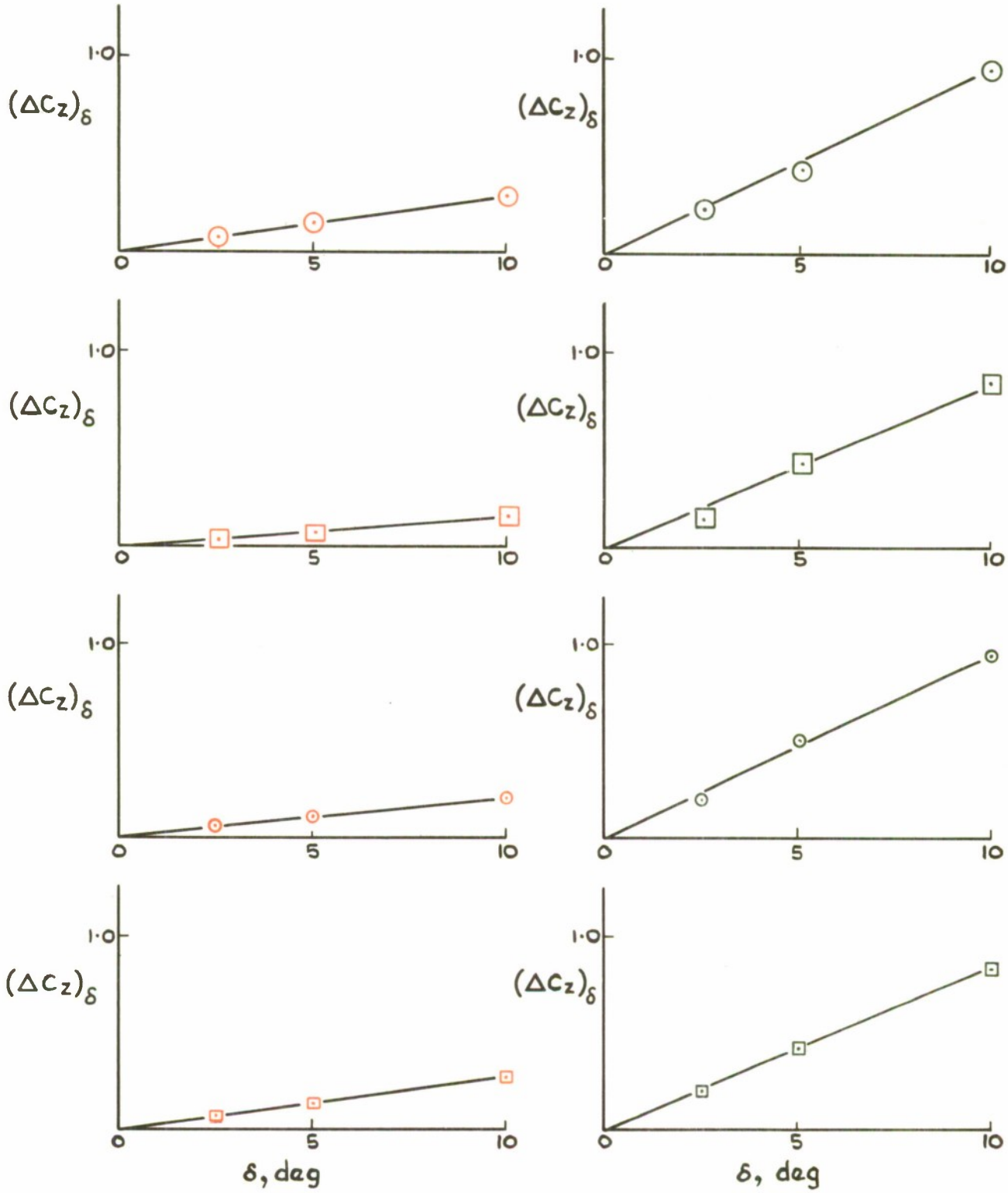

Fig. 15 Variation of $(\Delta C_z)_\delta$ with cant angle $(\theta = 0)$

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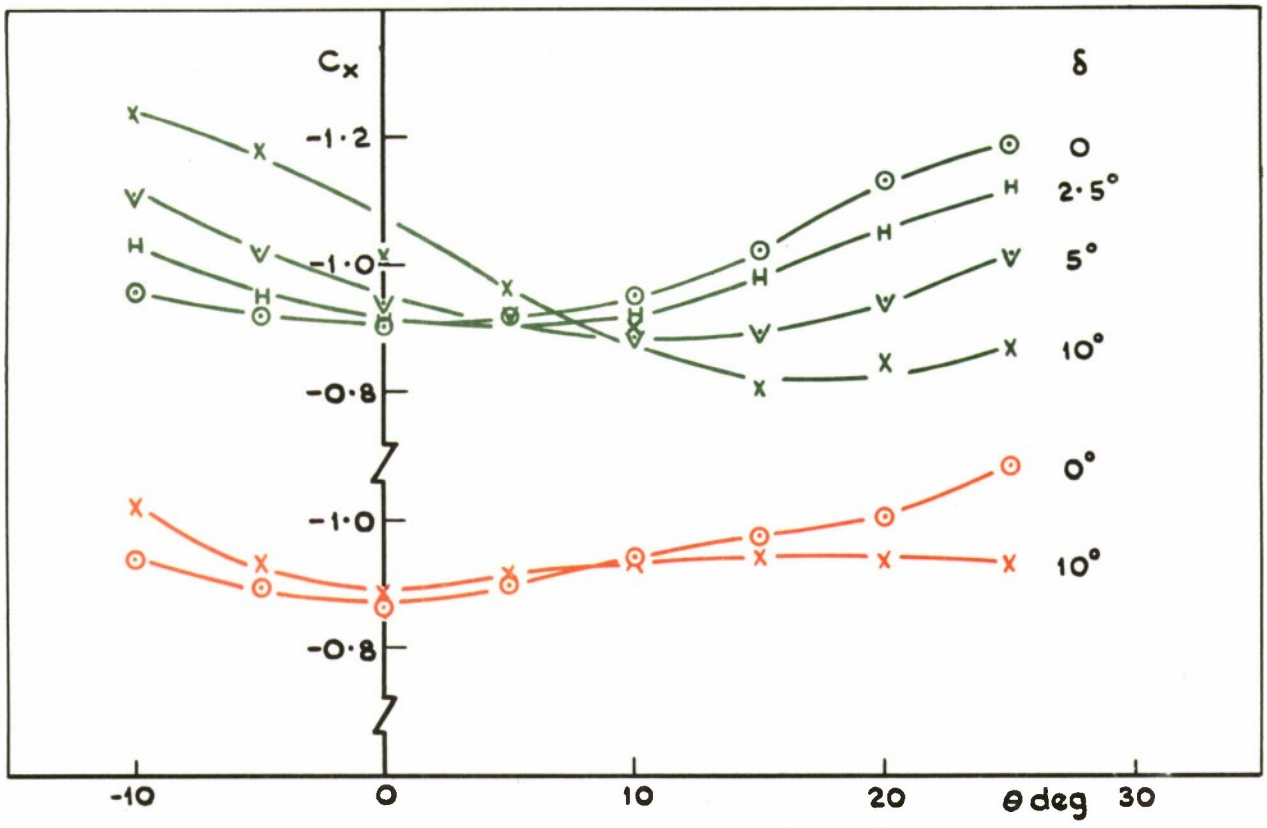
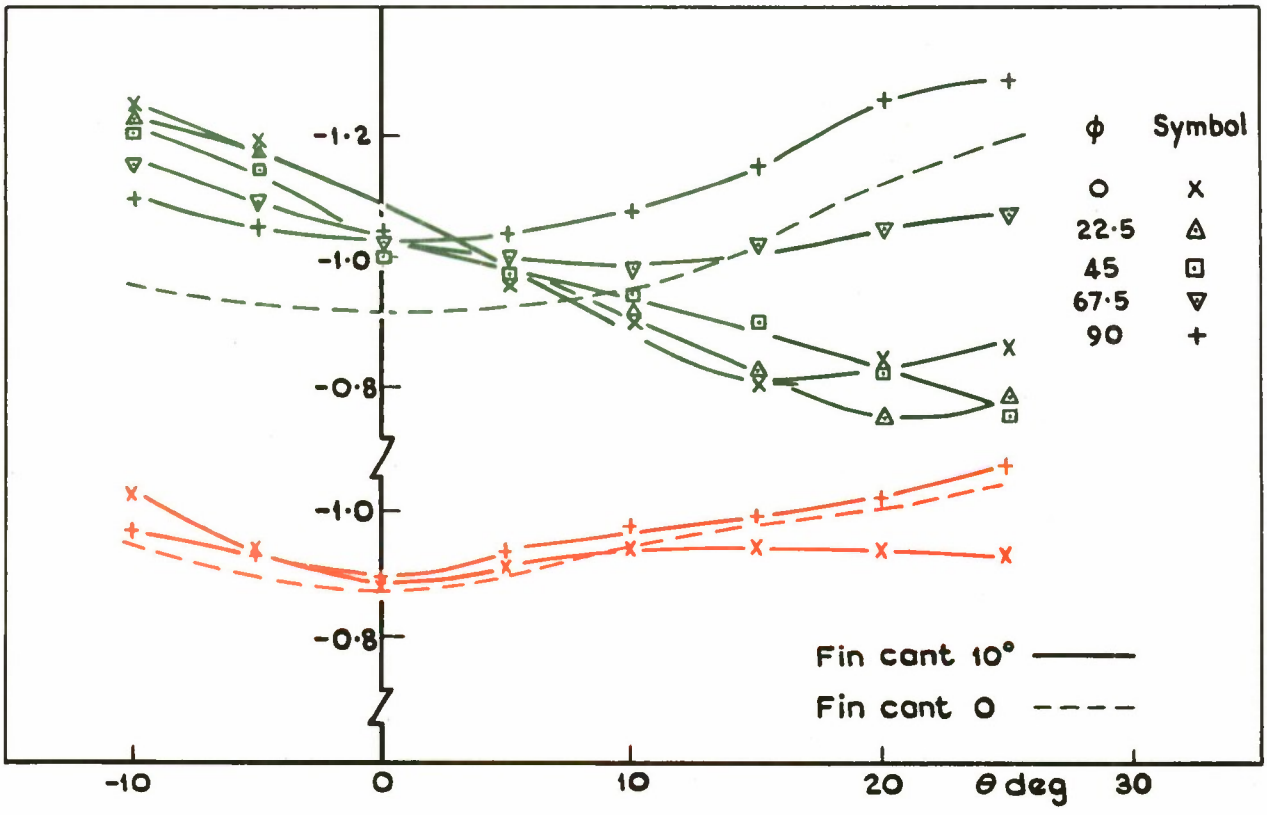


a Effect of cant angle ($\phi = 0$)



b Effect of roll angle

Fig.16a&b Axial force characteristics of a short bluff-nosed bomblet with canted fins

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System of symbols

Bomblet configuration	Symbol
No fins	black
Small straight fins	red
Large straight fins	green
Curved fins	blue
Bluff noses	square
Ogival noses	round
Length/diameter ratio = 5	large
Length/diameter ratio = 3	small
Straight fins	.
Curved fins A	/
Curved fins B	+
Curved fins C	×

Bomblets with canted fins

Fins canted at zero deg	0
Fins canted at 2.5 deg	H
Fins canted at 5.0 deg	V
Fins canted at 10 deg	X

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December 1969 533.6.013.153

This Report describes wind-tunnel tests to measure the aerodynamic characteristics of a series of 48 bomblets with planar, canted and curved cruciform rectangular fins. Analysis of the results shows how the force and moment characteristics of a bomblet are affected by its length, its nose shape and the size and cant angle of its fins.

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