

P / MODELS / 11

UNCLASSIFIED

A. V. ROE CANADA LIMITED

MALTON, ONTARIO

INITIAL PROJECTS OFFICE
AIRCRAFT ENGINEERING DIVISION

N.A.E. 'SUPERSONIC' MODEL

C-105 AIRCRAFT

REFLECTION PLANE

SCALE .02



Prepared by L. J. Crowe.....

Approved by J. A. Chamberlin..

DateNovember 6th, 1953....

45132

Date: 6/11/53
Issue: 1

P/Models/11

INDEX

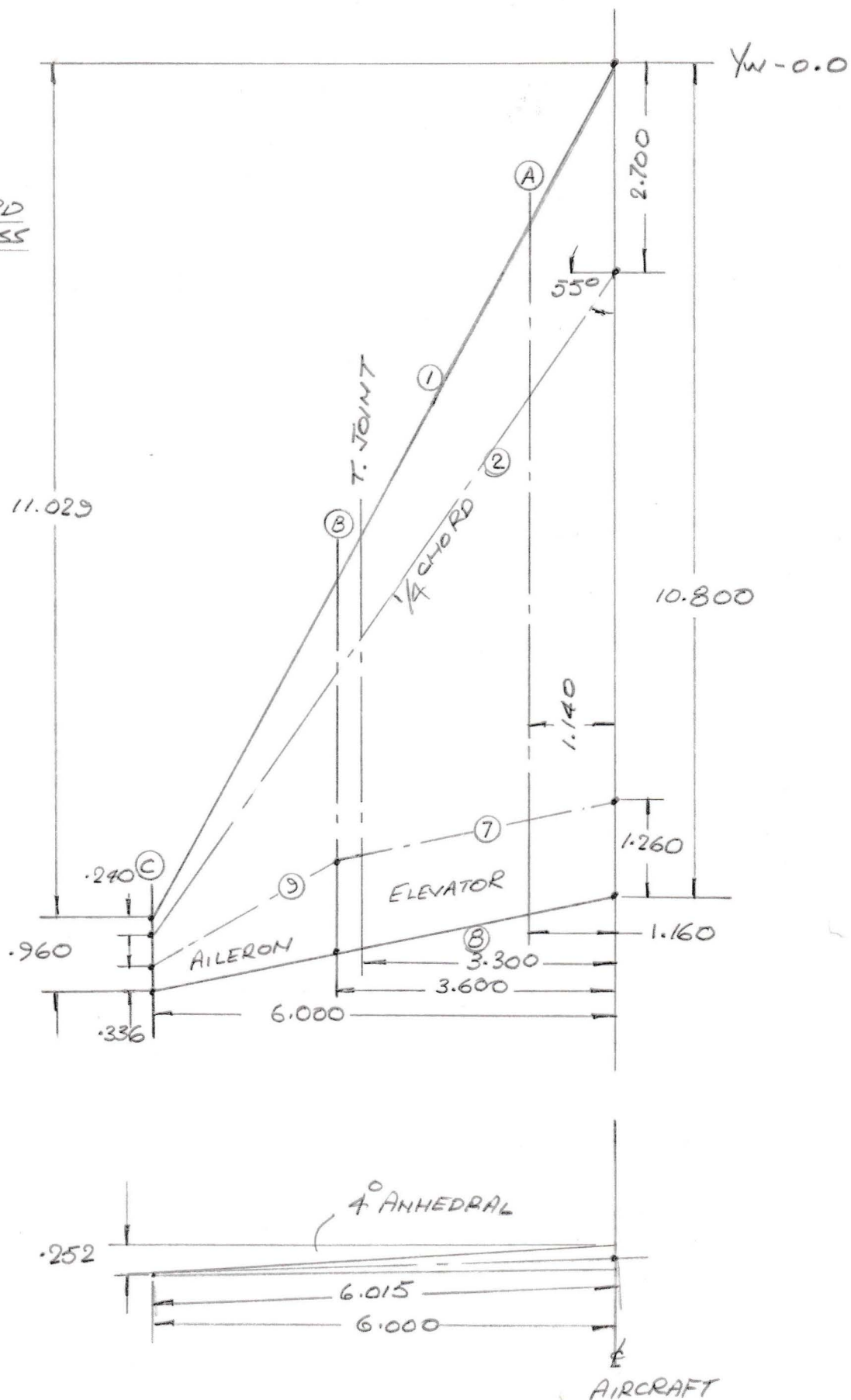
'C-105 AIRCRAFT'

G. A. - Side Elevation	1-
G. A. - Plan Elevation	2-
Aerodynamic Data	3-
Pressure Taps	4-
Fuselage	5-
Canopy	6-
Wing	7-
Nacelle	8-
Vertical Tail	9-
Elevators	10-
Ailerons	11-
Rudder	12-
Dive Brakes	13-
Wing - Nacelle Fillet	14-
Fin - Fuselage Fillet	15-
External Stores	16-

WING DATA
C105 AIRCRAFT

P/Models/11 7.01

PROJECTED CHORD
PLANE DATA UNLESS
NOTED (C)



7/12/53
ISSUE 2.

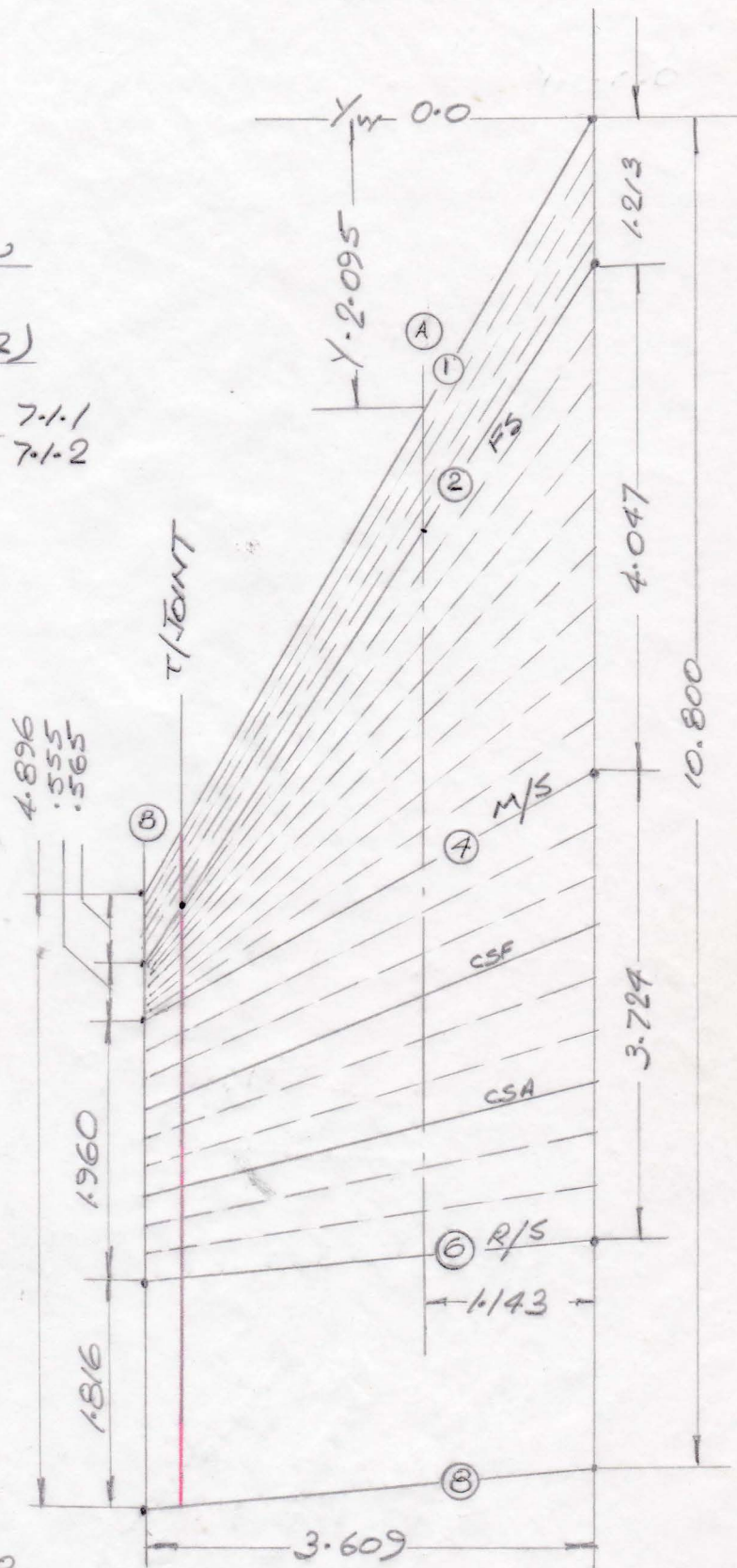
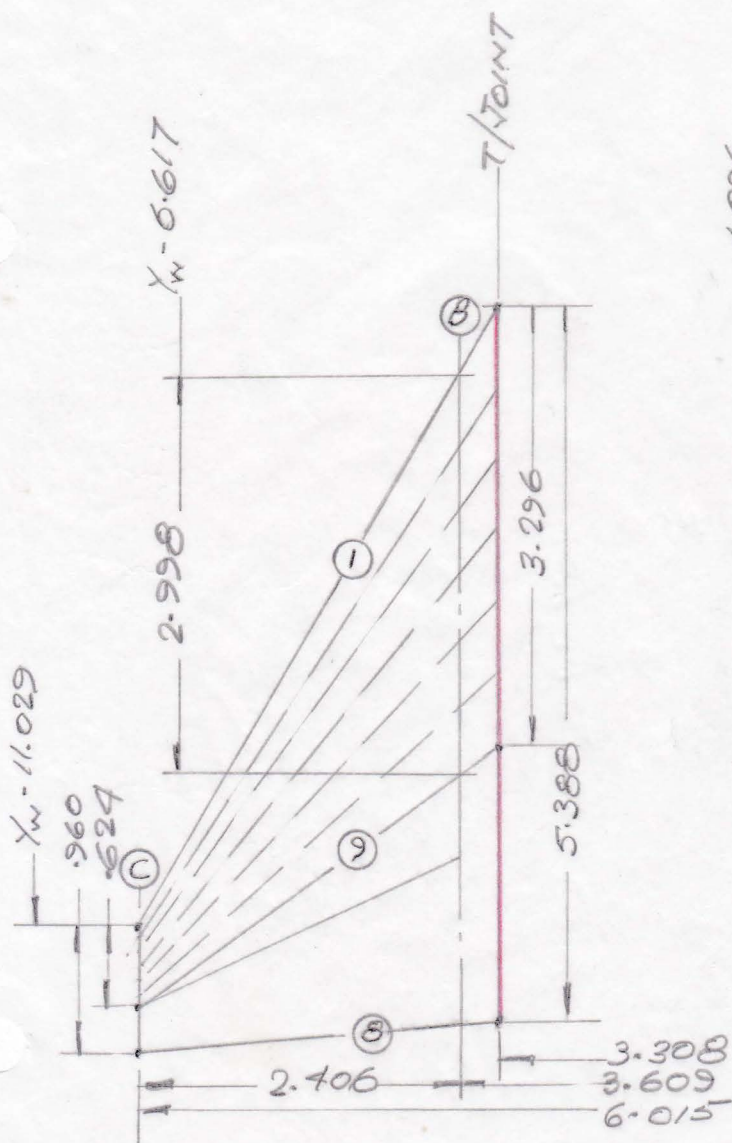
WING DATA
C-105 AIRCRAFT

P/11026LS/11 7.02

TANGENCY LINE
= 62.5% LOCAL CHORD

RULED SURFACE PATTERN
GENERATORS STRAIGHT
LINE SECTIONS (SEE 7-2)

FOR SPAR FUNCTIONS SEE 7-1.1
7-1.2



7-12-53
ISSUE 2

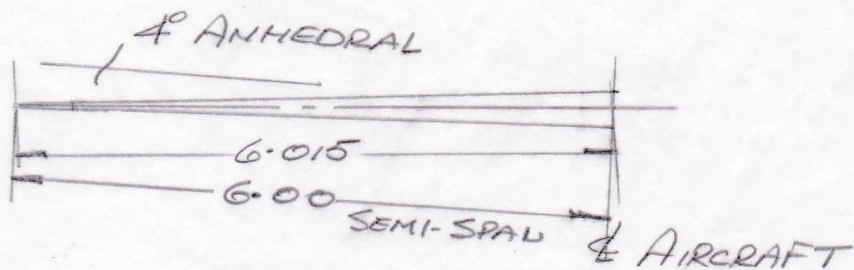
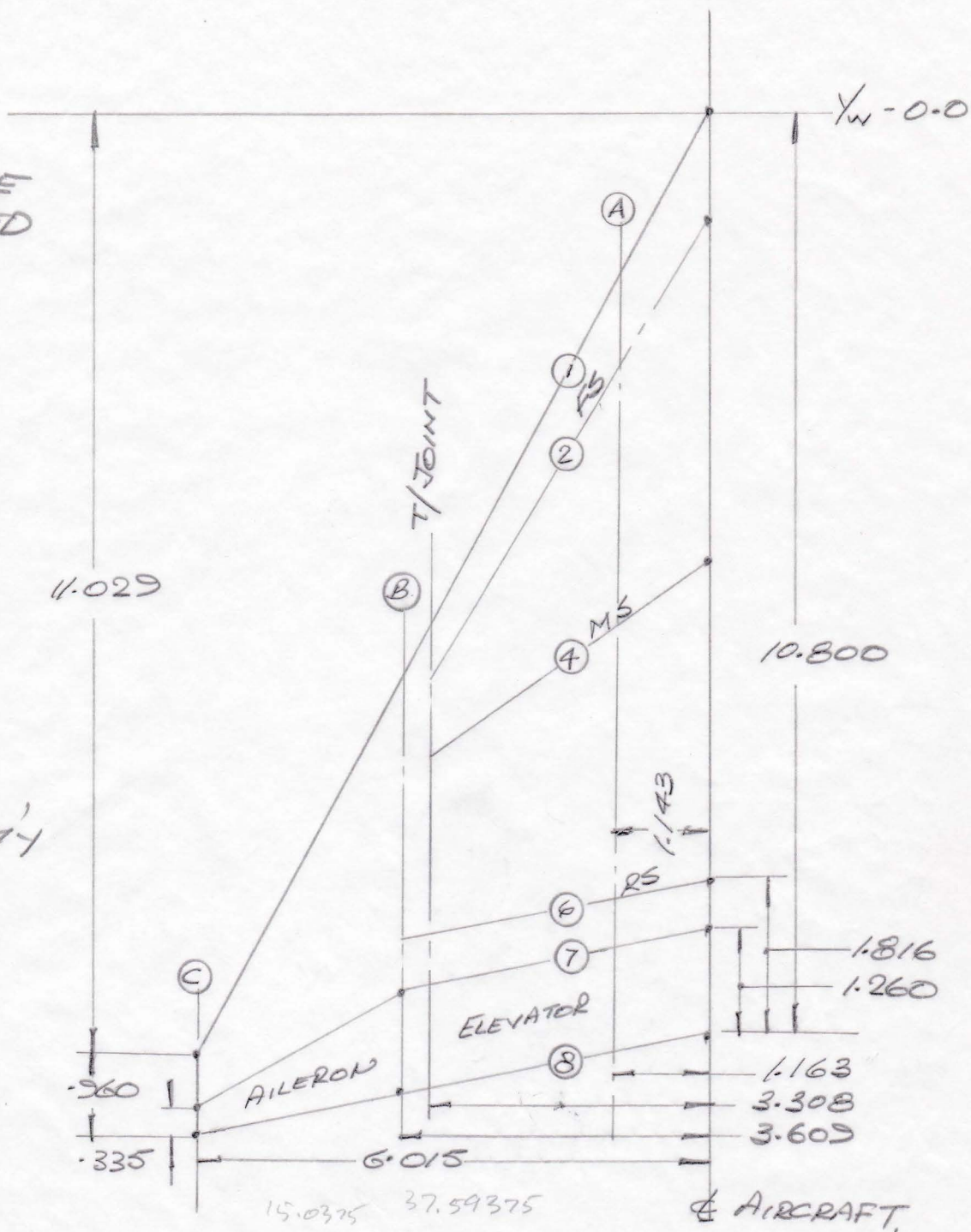
WING DATA
C-105 AIRCRAFT.

P/Models/11

7-03

CHORD PLANE
UNLESS NOTED

SPAR GEOM'y
SEE 7-14.

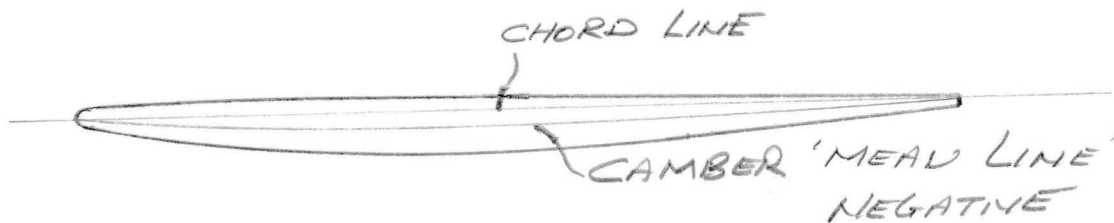


7-12-53
ISSUE 1.

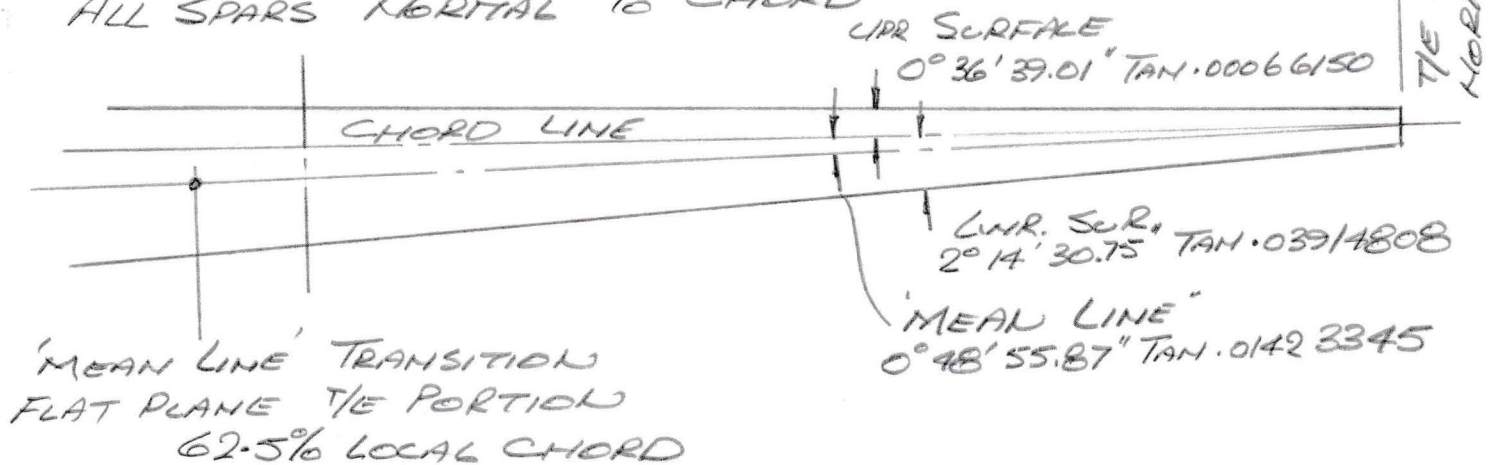
WING DATA
C-105 AIRCRAFT

P/170DELS/11 7-06
NACA 0003 SERIES
-MODIFIED,

CAMBER DESCRIPTION



ALL SPARS NORMAL TO CHORD



Date: 6/11/53
Issue: 1

P/Models/11

7-1-013

17.2916667

WING DATA

C-105 AIRCRAFT

DIRECTRIX 'A'

CODE	Y_R	Z_R UPR.	Z_R LWR.
	0 0.00	0.00	0.00
	1 0.011	0.014	0.016
	2 0.033	0.023	0.027
	3 0.066	0.031	0.038
	4 0.109	0.047	0.066
	5 0.227	0.055	0.085
	6 0.532	0.062	0.108
	7 0.721	0.066	0.126
F/S	8 1.008	0.068	0.146
	9 1.144	0.069	0.155
	10 1.434	0.070	0.169
	11 1.725	0.070	0.181
	12 2.016	0.070	0.190
	13 2.307	0.069	0.196
	14 2.597	0.068	0.200
	15 2.888	0.067	0.201
	16 3.179	0.066	0.200
	17 3.469	0.065	0.198
	18 3.760	0.063	0.194
	19 3.949	0.061	0.191 — MS
	20 4.238	0.059	0.185
	21 4.578	0.055	0.176
	22 4.884	0.052	0.166
	23 5.258	0.048	0.153
	24 5.532	0.045	0.142
	25 5.768	0.043	0.133
	26 6.108	0.039	0.119
	27 6.448	0.035	0.106
	28 6.788	0.032	0.093
R/S	29 7.115	0.028	0.080
(1)	30 7.670	0.022	0.058
(2)	31 7.670	-	0.018
(3)	32 8.9304	0.009	0.009

- (1) Elevator Spar
- (2) Mean line location
- (3) Trailing edge depth taken normal to mean line
R/S to 3 flat plane area

Date: 6/11/53
Issue: 1

P/Models/11

7-1-014

6.25

7.2916667

WING DATA

C-105 AIRCRAFT

DIRECTRIX 'B'

CODE	Y _R	Z _R UPR.	Z _R LWR.
	0.00	0.00	0.00
	0.006	0.008	0.008
	0.037	0.017	0.021
	0.112	0.025	0.036
	0.186	0.029	0.046
	0.298	0.033	0.059
	0.410	0.035	0.069
F/S	0.565	0.037	0.080
	0.591	0.037	0.081
	0.646	0.038	0.085
	0.701	0.038	0.088
	0.755	0.038	0.091
	0.810	0.038	0.093
	0.865	0.038	0.096
	0.920	0.038	0.098
	0.975	0.038	0.100
	1.030	0.038	0.101
	1.084	0.038	0.103
	1.120	0.038	0.104
	1.299	0.038	0.108
	1.510	0.038	0.110
	1.720	0.037	0.110
	1.931	0.037	0.109
	2.100	0.036	0.107
	2.246	0.035	0.105
	2.451	0.034	0.100
	2.667	0.032	0.095
	2.878	0.030	0.088
R/S	3.080	0.028	0.080
(1)	3.636	0.022	0.058
(2)	3.636	-	0.018
(3)	4.896	0.009	0.009

- (1) Elevator spar
(2) Mean line location
(3) Trailing edge depth taken normal to mean line
R/S to 3 flat plane area

Date: 6/11/53
Issue: 1

F/Models/11

7-1-015

WING DATA
C-105 AIRCRAFT

FOR 1/8 SCALE
MULTIPLY BY 6.25
CNACA 00008-62.7

DIRECTRIX 'C'

CODE	Y_R	Z_R UPR.	Z_R LWR.
	0 0.00	0.00	0.00
	1 0.003	0.003	0.003
	2 0.015	0.005	0.006
	3 0.033	0.006	0.009
	4 0.063	0.007	0.012
	5 0.101	0.008	0.016
F/S	6 0.117	0.008	0.017
	7 0.137	0.008	0.018
	8 0.173	0.008	0.020
	9 0.207	0.009	0.021
	10 0.240	0.009	0.022
	11 0.272	0.009	0.022
	12 0.277	0.009	0.023
	13 0.303	0.009	0.023
	14 0.333	0.009	0.023
	15 0.363	0.009	0.023
	16 0.391	0.009	0.023
	17 0.418	0.008	0.022
	18 0.445	0.008	0.022
	19 0.471	0.008	0.022
	20 0.477	0.008	0.021
	21 0.496	0.008	0.021
	22 0.521	0.008	0.020
	23 0.544	0.008	0.020
	24 0.568	0.008	0.019
	25 0.590	0.008	0.018
	26 0.612	0.008	0.017
(14) AILERON	27 0.624	0.007	0.017
(2)	28 0.624	-	0.005
(3)	29 0.960	0.004	0.004

- (14) Aileron spar $\neq$ point of tangency (O/W flat plane)
(2) Mean line location
(3) Trailing edge depth taken normal to mean line
(14) to (3) flat plane area

WING DATA

'C-105 AIRCRAFT'

DESCRIPTION

The profile of the 'wing' and 'vertical tail' do not follow the usual conical pattern having the leading and trailing edge a generator of a single cone. Wing percent lines will therefore, not be straight unless they coincide with the generatrix pattern of the local 'ruled surface'.

The wing will contain 2 separate compatible groups of 'ruled surfaces' terminating at the transport joint. These groups are generated from a pattern of 3 directrix curves located spanwise at wing chord stations 'A - B & C'. This does not imply that the directrix at station 'B' generates a common profile at the transport joint, since the outer wing profile is generated from second directrix at 'C' different in profile to the main panel directrix at 'A'. This results in a slight discontinuity at the transport joint.

The directrix at chord 'C' (tip) is a basic N.A.C.A. .0003-63.7 section having its maximum thickness value (m) at .365 percent of the local chord. At chord 'B' the 'm' value has been factored to .3400 percent of the local chord. At chord 'A' the 'm' value has been factored to .321220 percent of the local chord.

The main panel extends from the aircraft centre line to the transport joint and is made up of 4 separate ruled surfaces. The directrix at chord 'A' & 'B' follow a profile as shown on sheet 7-1-03 to 011. Ruled section -1-2- will have as outer generators the wing leading edge and the front spar. Ruled section -2-4- will have as outer generators the front spar and main spar. Ruled section -4-6- will have as outer generators the main spar and rear spar. Spars -5- being generators of ruled section -4-6-. Ruled section -6-8- will have as outer generators the rear spar and trailing edge and will be flat in profile with a plane angle of $1^{\circ} 25'$ (tan .0248 9975) about the mean line.

The outer panel extends from the transport joint centre line to the tip and is made up of 2 separate ruled surfaces. The directrix at chord 'B' & 'C' follow a profile as shown on sheet 7-1-03 to 011 inclusive. Ruled section -1-9- will have as outer generators the wing leading edge and the flat plane tangent line. The spar arrangement will then coincide with the generating pattern. Ruled surface -9-8- will have as outer generators the flat plane tangent line and the trailing edge, and being flat the generators are not sensitive to any pattern.

Since all three section airfoils are different, it follows that no two generators are parallel or intersecting - hence a warped surface.

The camber 'Mean Line' is not sensitive to position and follows a normal conical pattern from root to tip. Its 'm' value remains constant at .321220 percent and its flat plane tangency at .625 percent of the local chord.

Date: 7/1/54
Issue: 2

P/Modles/11

7-1-1

WING DATA

'C-105 AIRCRAFT'

CHORD PLANE DATA

MAIN WING

NO.	DESCRIPTION	TRIG. FUNCTION	COORDINATE DATA	
			ROOT	T/JOINT
1	Leading Edge 61° 23' 38.29"	Cotan .5453 54289	X _w	0.00 3.308
		Sin .8779 3258	Y _w	0.00 6.066
		Cos .4787 8428	Z _w	0.00 0.00
2	Front Spar 58° 50' 43.10"	Cotan .6045 41278	X _w	0.00 3.308
		Sin .8557 7362	Y _w	1.213 6.685
		Cos .5173 5046	Z _w	0.00 0.00
4	Main Spar 34° 28' 6.59"	Tan .6864 71706	X _w	0.00 3.308
		Cos .8244 3757	Y _w	5.260 7.531
		Sin .5659 5300	Z _w	0.00 0.00
5-A	Centre Spar 'Fwd'	Tan .5235 36245	X _w	0.00 3.308
		Cos .8859 0522	Y _w	6.501 8.233
		Sin .4638 6628	Z _w	0.00 0.00
5-B	Centre Spar 'Aft'	Tan .3606 00783	X _w	0.00 3.308
		Cos .9407 0715	Y _w	7.743 8.936
		Sin .3338 0346	Z _w	0.00 0.00
6	Rear Spar	Parallel to trailing edge	X _w	0.00 3.609 B
			Y _w	8.984 9.698 B
			Z _w	0.00 0.00
7	Elevator Hinge	" "	X _w	0.00 3.609B
			A Y _w	9.540 10.253 B
			Z _w	0.00 0.00
8	Trailing Edge 11° 10' 52.51"	Tan .1976 65322	X _w	0.00 3.609 B
		Cos .9810 1865	Y _w	10.800 11.513 B
		Sin .1939 1336	Z _w	0.00 0.00

KEY Angles represent sweep

A This T/E Value (1.260") constant to X_w = 3.609" (elevator tip)

B These values taken at elevator tip (Directrix 'B')

X_w Spanwise value

Y_w Chordwise value

Z_w Vertical value

4-1-53
ISSUE 3

VERTICAL TAIL
C-105 AIRCRAFT
(ORIGINAL MODEL)

P/11 MODELS/11 9.01

NACA 0004

