

TL 113-53/11

P / MODELS / 12

UNCLASSIFIED

A. V. ROE CANADA LIMITED,
MALTON, ONTARIO

INITIAL PROJECTS OFFICE
AIRCRAFT ENGINEERING DIVISION

N.A.E. 'SUPERSONIC' MODEL
C-105 AIRCRAFT
FULL SPAN
SCALE 1/80



Prepared by .L. J. Crowe....
Approved by .J. A. Chamberlin
Date ...November 6th, 1953...

45133

Date: 6/11/53
Issue: 1

P/Models/12

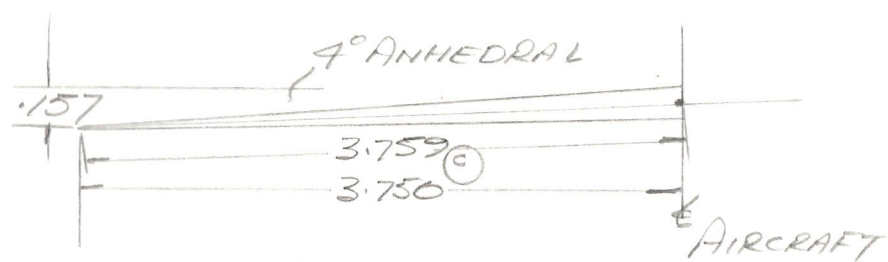
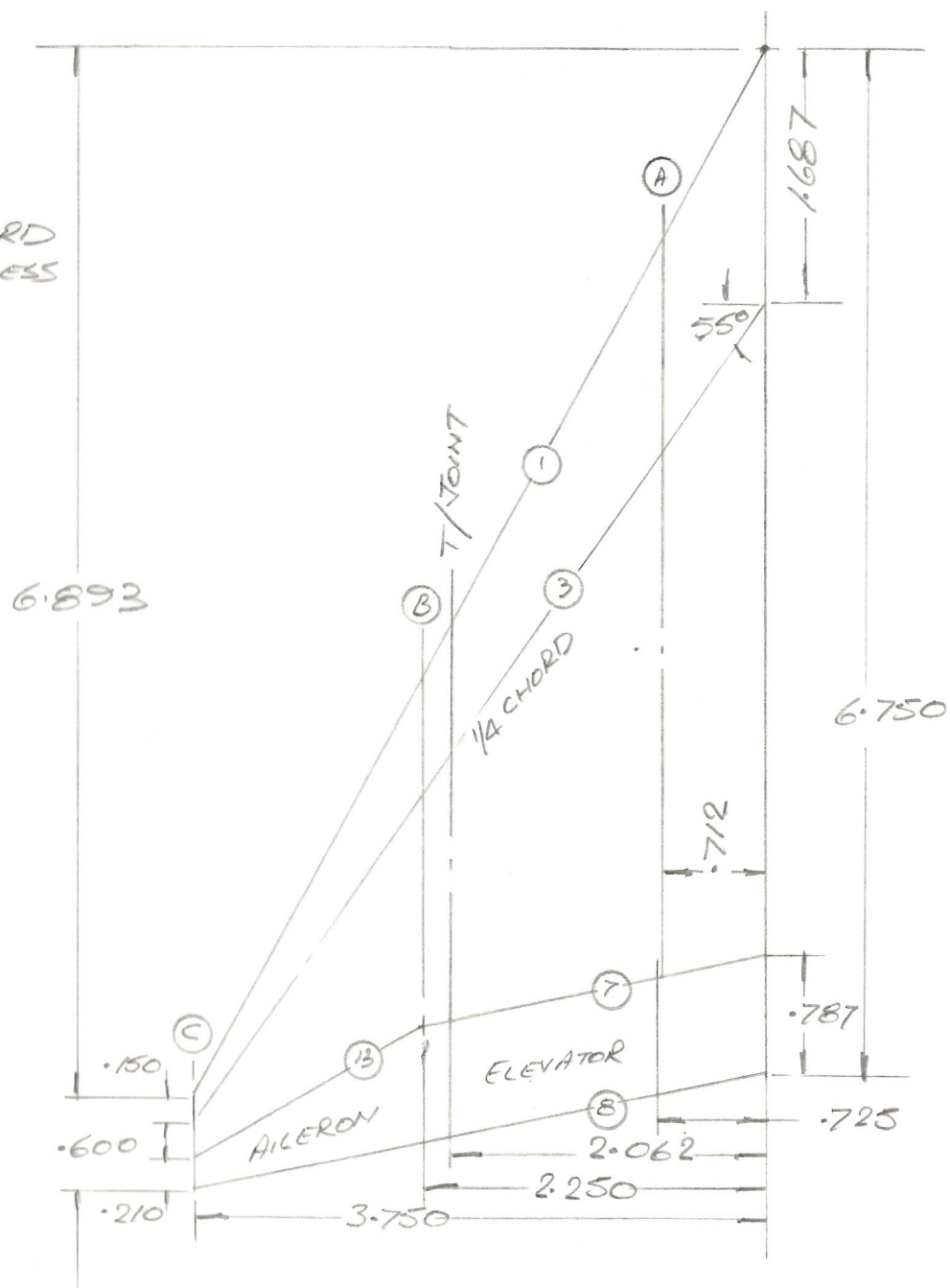
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PROJECTED CHORD
PLANE DATA UNLESS
NOTED. (C)



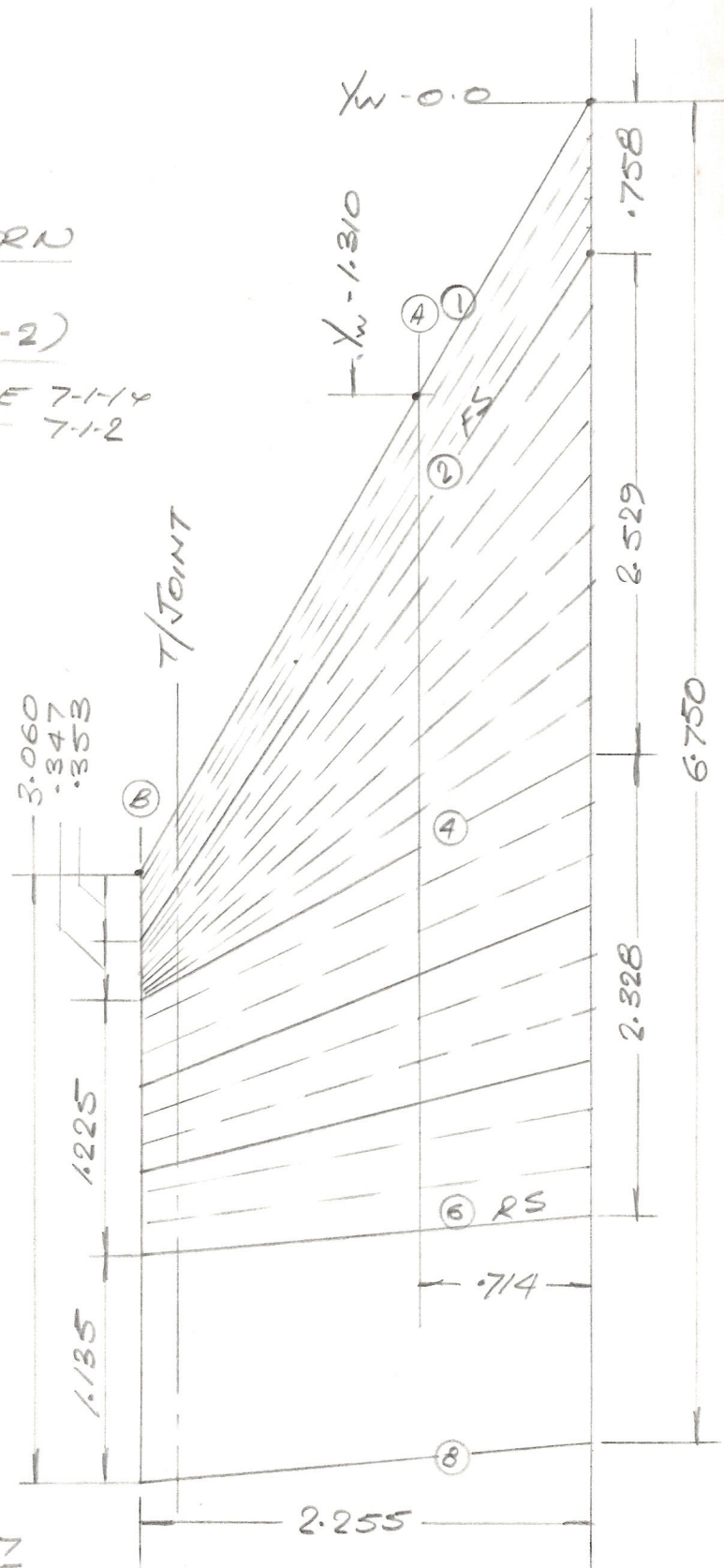
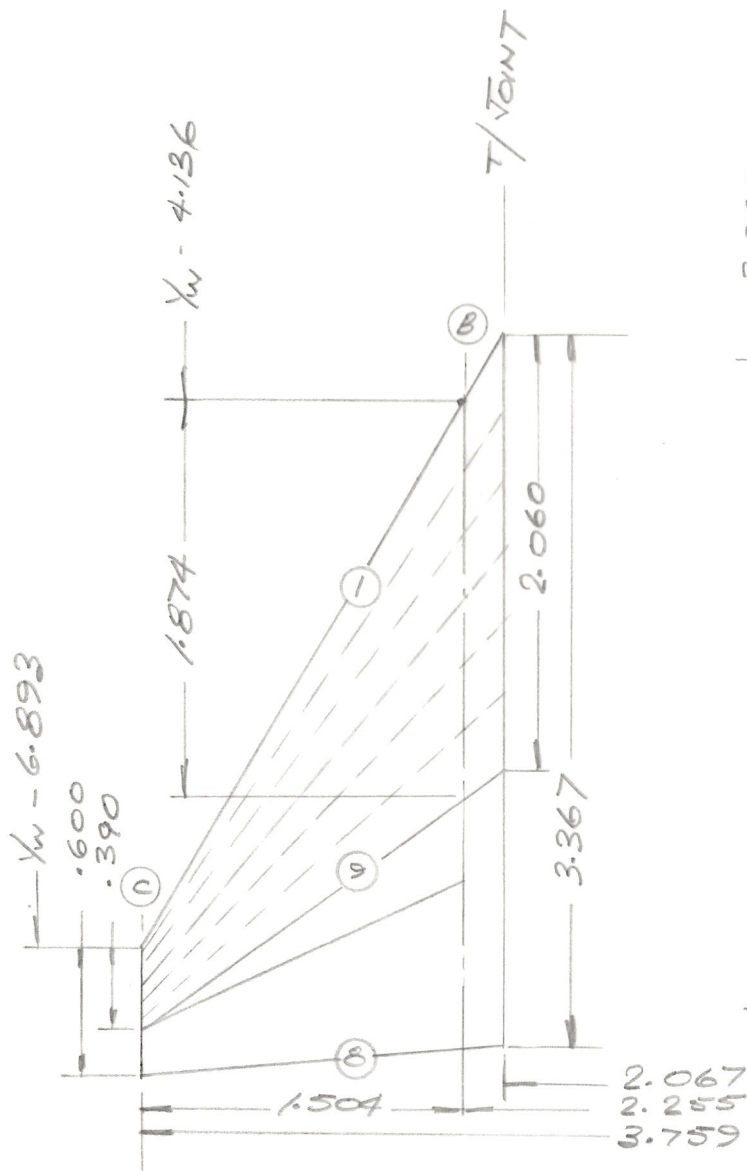
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 ISSUE 2

WING DATA
 C-105 AIRCRAFT

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

FOR SPAR FUNCTIONS SEE 7-1-14
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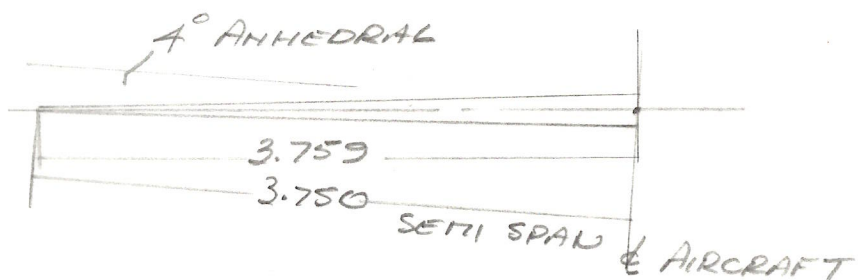
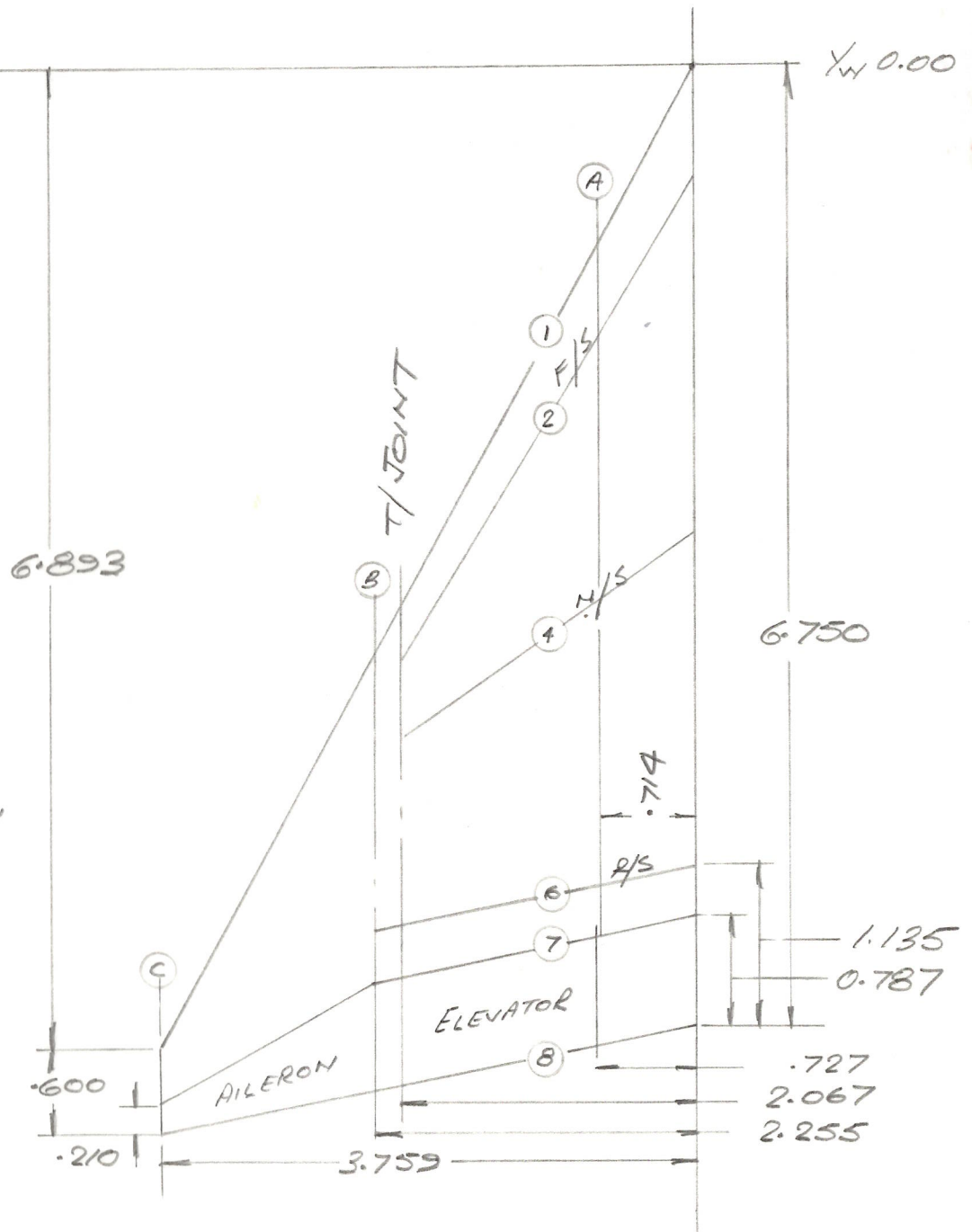
7-12-53
ISSUE 2

WING DATA
C105 AIRCRAFT.

P/Models 112 7.03

CHORD PLANE
UNLESS NOTED

SPAR GEOMY
SEE 7-14



Date: 6/1/54
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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	2.068
		Sin .3779 3258	Y _w 0.00	3.791
		Cos .4787 3428	Z _w 0.00	0.00
2	Front Spar 58° 50' 43.10"	Cotan .6045 41278	X _w 0.00	2.068
		Sin .3557 7362	Y _w .758	4.178
		Cos .5173 5046	Z _w 0.00	0.00
4	Main Spar 34° 28' 6.59"	Tan .6864 71706	X _w 0.00	2.068
		Cos .3244 3757	Y _w 3.288	4.707
		Sin .5659 5300	Z _w 0.00	0.00
5-A	Centre Spar 'Fwd'	Tan .5235 36245	X _w 0.00	2.068
		Cos .3859 0522	Y _w 4.063	5.146
		Sin .4638 6628	Z _w 0.00	0.00
5-B	Centre Spar 'Aft'	Tan .3606 00783	X _w 0.00	2.068
		Cos .9407 0715	Y _w 4.839	5.585
		Sin .3388 0346	Z _w 0.00	0.00
6	Rear Spar	Parallel to trailing edge	X _w 0.00	2.255 B
			Y _w 5.615	6.061 B
			Z _w 0.00	0.00
7	Elevator Hinge	" "	X _w 0.00	2.255 B
			Y _w 5.963	6.408 B
			Z _w 0.00	0.00
8	Trailing Edge 11° 10' 52.51"	Tan .1976 65322	X _w 0.00	2.255 B
		Cos .9810 1365	Y _w 6.750	7.196 B
		Sin .1939 1336	Z _w 0.00	0.00

KEY Angles represent sweep

A This T/E value (0.787") constant to X_w = 2.255" (elevator tip)
B These values taken at elevator tip (Directrix 'B')
X_w Spanwise value
Y_w Chordwise value
Z_w Vertical value

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7-1-014

WING DATA

C-105 AIRCRAFT

DIRECTRIX 'B'

CODE	Y _R	Z _R UPR.	Z _R LWR.
	0.00	0.00	0.00
	0.004	0.005	0.005
	0.023	0.010	0.013
	0.070	0.015	0.022
	0.116	0.018	0.029
	0.186	0.021	0.037
	0.256	0.022	0.043
F/S	0.353	0.023	0.050
	0.369	0.023	0.051
	0.404	0.023	0.053
	0.438	0.024	0.055
	0.472	0.024	0.057
	0.506	0.024	0.058
	0.541	0.024	0.060
	0.575	0.024	0.061
	0.609	0.024	0.062
	0.643	0.024	0.063
	0.678	0.024	0.064
	0.700	0.024	0.065
	0.812	0.024	0.067
	0.943	0.024	0.069
	1.075	0.023	0.069
	1.207	0.023	0.068
	1.313	0.023	0.067
	1.404	0.022	0.065
	1.532	0.021	0.063
	1.667	0.020	0.059
	1.799	0.019	0.055
R/S	1.925	0.018	0.050
(1)	2.272	0.014	0.036
(2)	2.272	-	0.011
(3)	3.060	0.006	0.006

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

Date: 6/11/53
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WING DATA

C-105 AIRCRAFT

1/30 SCALE,
AREA RULED
SECTION MODEL

4R x 3.75 FOR

1/8 SCALE,
= $30\% \times \frac{3.5}{3} \times 3.75$

= $30\% \times 4.375$

DIRECTRIX 'A'

CODE	Y _R	Z _R UPR.	Z _R LWR.
	0.00	0.00	0.00
	1 0.188	0.023	0.027
	2 0.111	0.052	0.063
	3 0.332	0.079	0.110
	4 0.554	0.092	0.142
	5 0.886	0.104	0.180
	6 1.219	0.110	0.210
F/S	7 1.680	0.114	0.244
	8 1.906	0.115	0.258
	9 2.391	0.116	0.282
	10 2.875	0.117	0.302
	11 3.360	0.116	0.317
	12 3.844	0.115	0.327
	13 4.329	0.114	0.333
	14 4.813	0.112	0.335
	15 5.298	0.110	0.333
	16 5.782	0.108	0.330
	17 6.267	0.105	0.323
	18 6.582	0.102	0.318
	19 7.063	0.097	0.308
	20 7.630	0.092	0.293
	21 8.140	0.087	0.277
	22 8.763	0.080	0.254
	23 9.220	0.075	0.237
	24 9.613	0.071	0.221
	25 10.180	0.065	0.199
	26 10.747	0.059	0.177
	27 11.313	0.053	0.155
R/S	28 11.858	0.047	0.133
(1)	29 12.784	0.037	0.097
(2)	30 12.784	-	0.030
(3)	31 14.884	0.015	0.015

- (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
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7-1-015

WING DATA

C-105 AIRCRAFT

DIRECTRIX 'C'

CODE	Y _R	Z _R UPR.	Z _R LWR.
	0.00	0.00	0.00
	0.002	0.002	0.002
	0.010	0.003	0.004
	0.021	0.004	0.006
	0.039	0.004	0.008
	0.063	0.005	0.010
F/S	0.073	0.005	0.011
	0.086	0.005	0.011
	0.108	0.005	0.012
	0.129	0.005	0.013
	0.150	0.005	0.014
	0.170	0.005	0.014
	0.173	0.005	0.014
	0.190	0.005	0.014
	0.208	0.005	0.014
	0.227	0.005	0.014
	0.244	0.005	0.014
	0.262	0.005	0.014
	0.278	0.005	0.014
	0.294	0.005	0.013
	0.298	0.005	0.013
	0.310	0.005	0.013
	0.325	0.005	0.013
	0.340	0.005	0.012
	0.355	0.005	0.012
	0.369	0.005	0.011
	0.383	0.005	0.011
(14)	0.390	0.005	0.011
(2)	0.390	-	0.003
(3)	0.600	0.002	0.002

- (14) Aileron spar $\bar{x}$ 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.

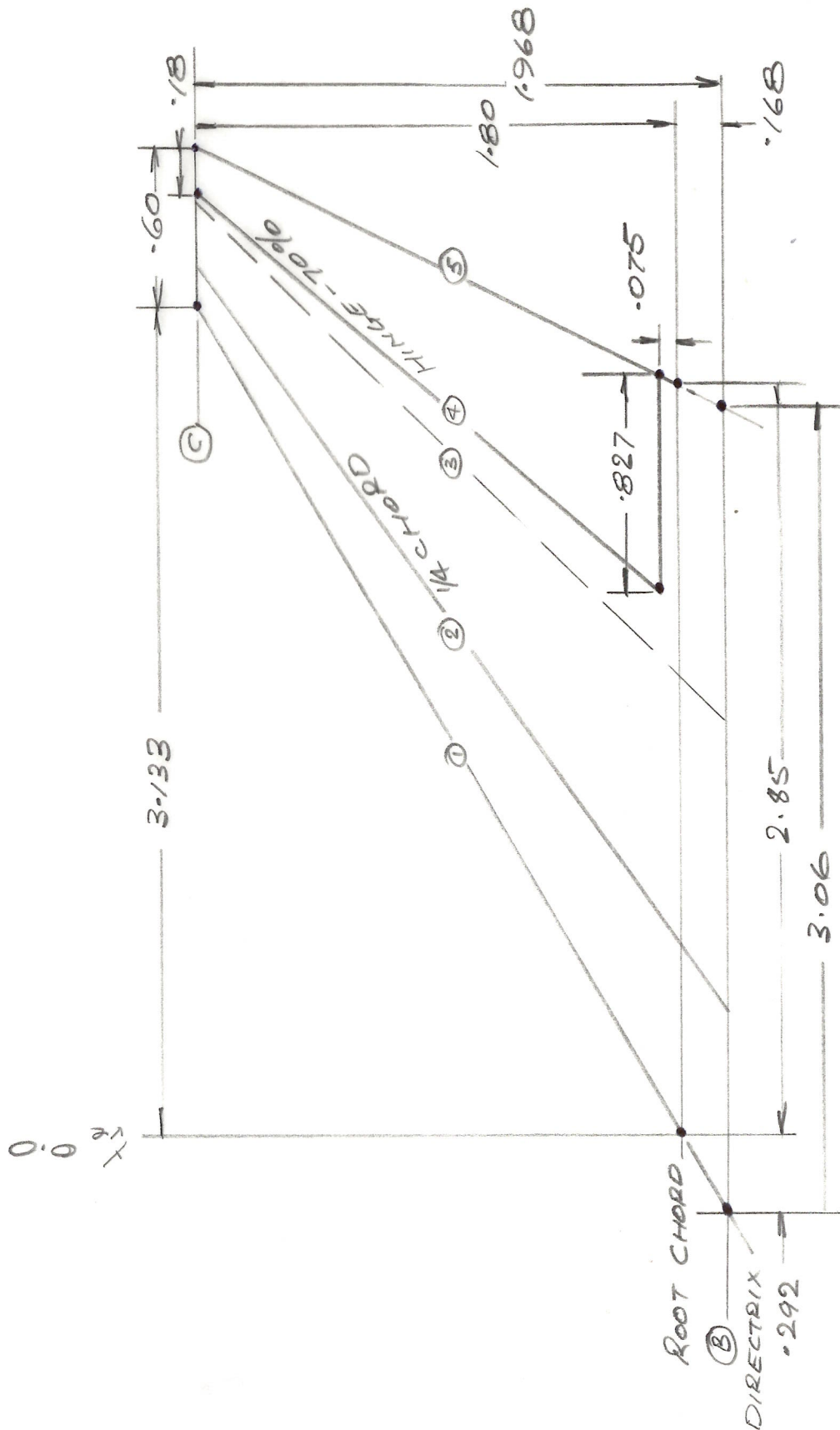
The camber 'Mean Line' is not sensitive to position and follows a normal conical pattern from root to tip. Its 'm' value remains constant at .321220 percent and its flat plane tangency at .625 percent of the local chord.

4-1-53
ISSUE 3

VERTICAL TAIL
C-105 AIRCRAFT

P/1700ELS/12

9-01

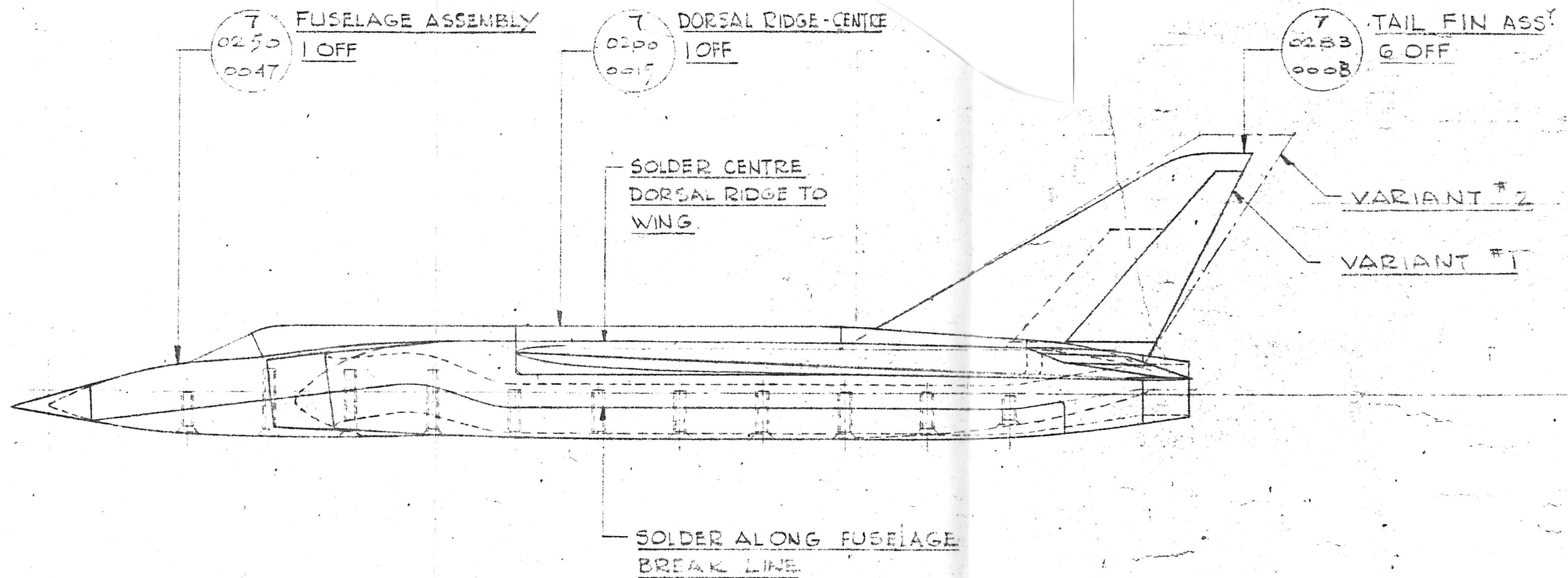


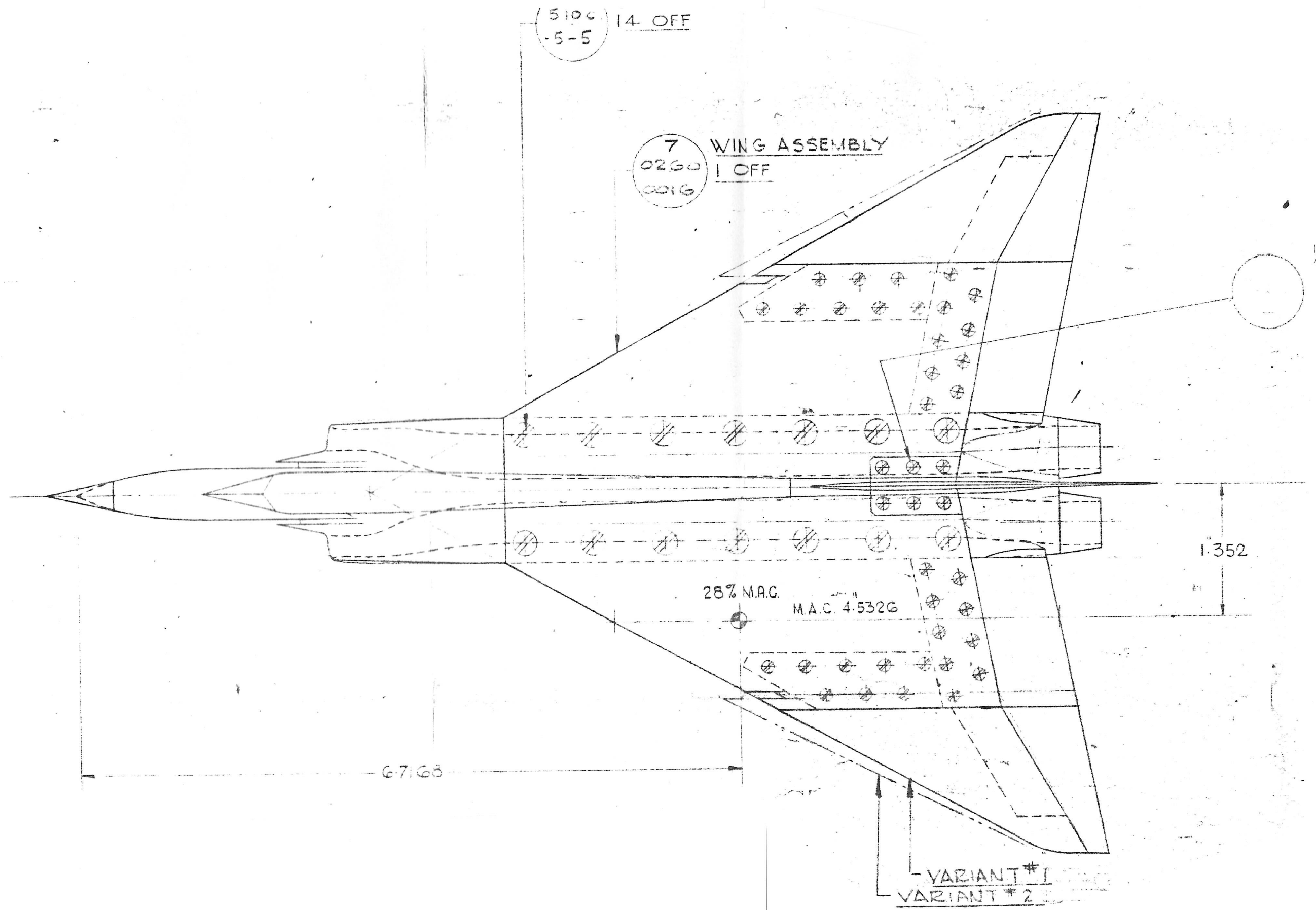
REFERENCE DRAWINGS		DESCRIPTION	TARGET WEIGHT	
DWG. No.	DESCRIPTION		LB.	
		G.A. 1/80 SCALE SUPERSONIC MODEL N.R.C.	SCALE	
			FULL	
		A.V. ROE CANADA LTD. MALTON ONTARIO	FINISH TO DWG.	
			LIMITS UNLESS NOTED	
			C 105	7-0200-0013
			TYPE/MARK	SHOWN ON DRAWING
			DRAWING NUMBER	
			7-0200-0006	

C

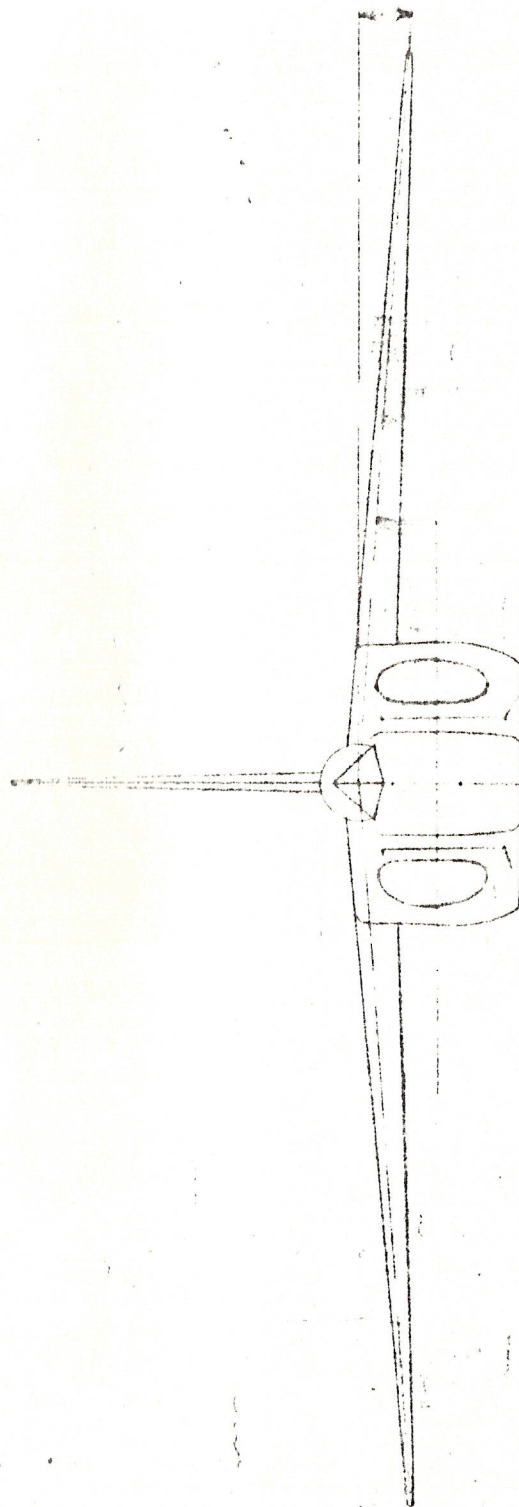
B

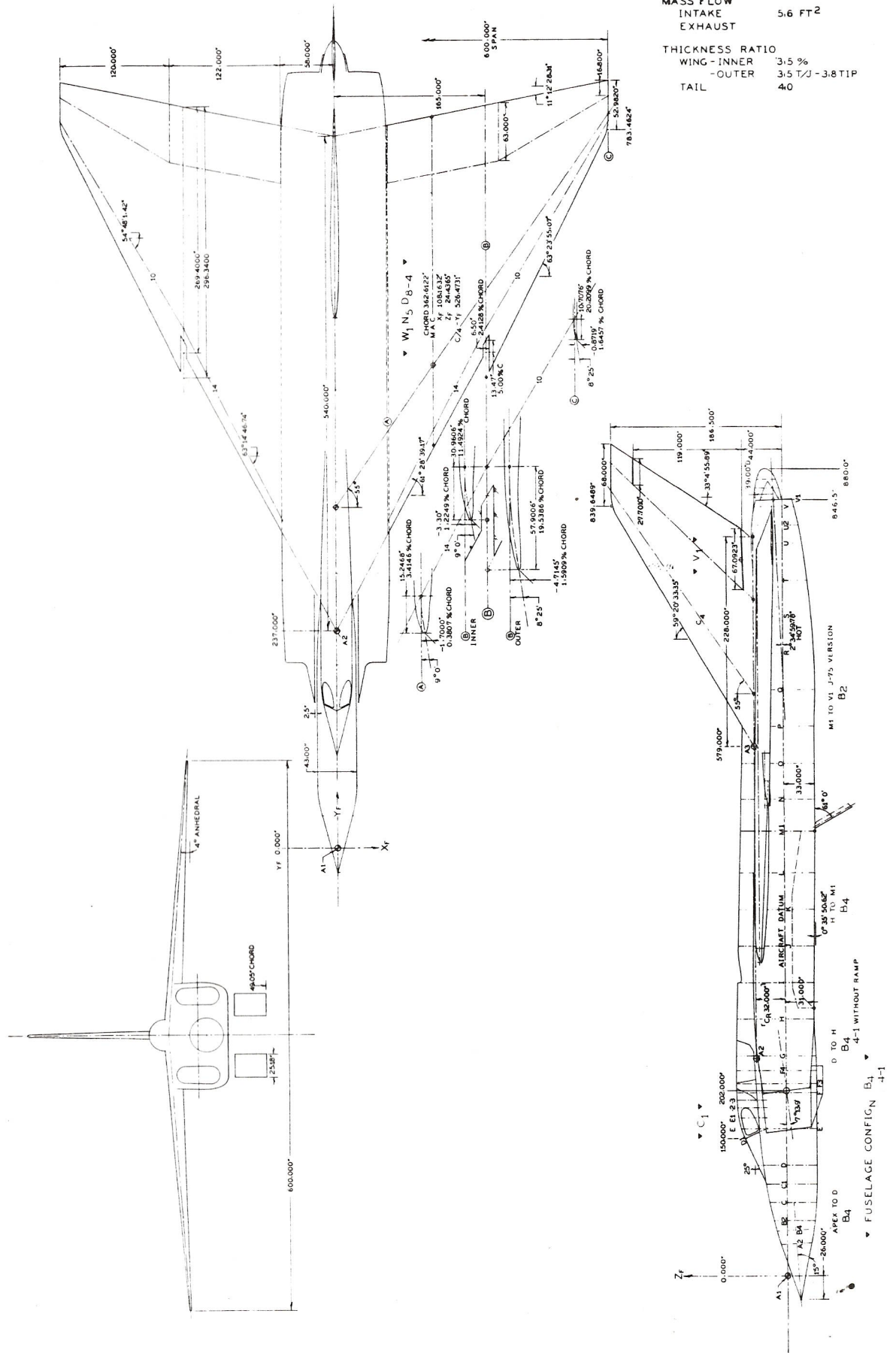
A

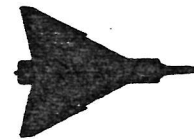




4° ANHEDRAL



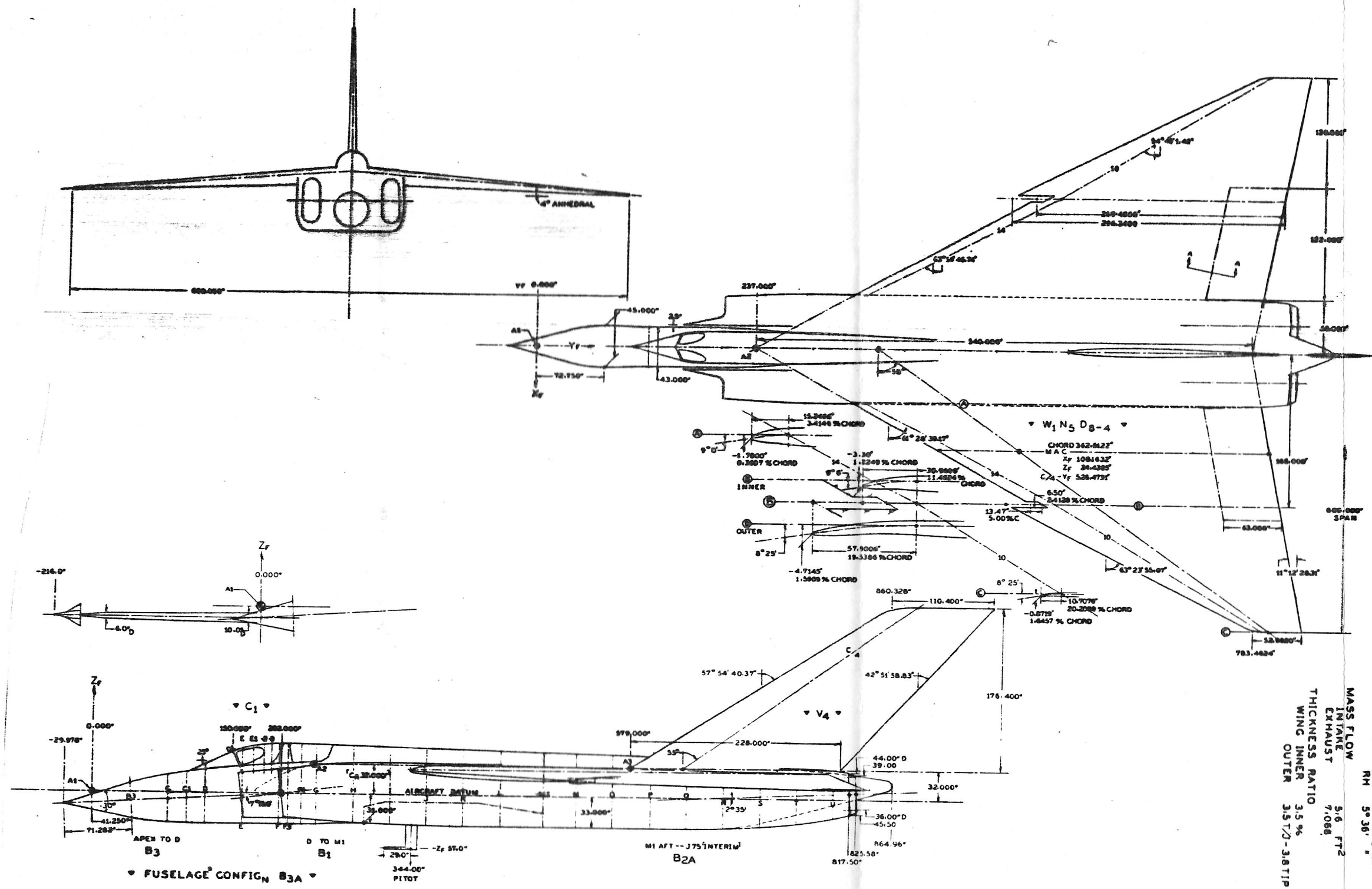




MODEL PROGRAM
C-105
FREE FLIGHT MODEL No 6
AIRCRAFT

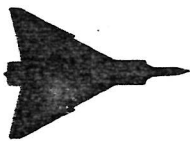
P/GEOM/32 4

UNCLASSIFIED



DRAG MODEL No 2
FIRING DATE MAY 9-56
CONFIGURATION BAC1 W1N5D8-4
ELEVATOR LH 5°47' DWN
RH 5°36' "

MASS FLOW
INLET 5.6 FT²
EXHAUST 7.008
THICKNESS RATIO
WING INNER 3.5 %
OUTER 3.570-3.871P



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MODEL PROGRAM
C-105 AIRCRAFT
SERIES 3B AIRCRAFT

FLGWN

P/GEOM/32

