N.A.E. LOW SPEED MODEL
C-105 AIRCRAFT

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Report no.: QCX-AVRO-CF105- P-Models-14

has been ☐ downgraded to : _____

☒ de-classified

by (Name): Michel W. Drapeau

(Dept.): A/DND Coordinator, Access to Information

Date: Dec. 7, 1992

R. Augu
Signature

P/Models/14

UNCLASSIFIED

A. V. ROE CANADA LIMITED

MALTON, ONTARIO

ANALYZED

INITIAL PROJECTS OFFICE

AIRCRAFT ENGINEERING DIVISION

N.A.E. 'LOW SPEED' MODEL

FULL SPAN

SCALE .07

Classification cancelled / changed to: UNCLASSSIFIED
By authority of: DRDA 7/DARFT 5-8/DAS Eng 6-4-5
Date: 5 Nov 1992
Signature: Baubrey
Unit / Rank / Appointment: DSIS 3, Secretary CRAD HQ DRP

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

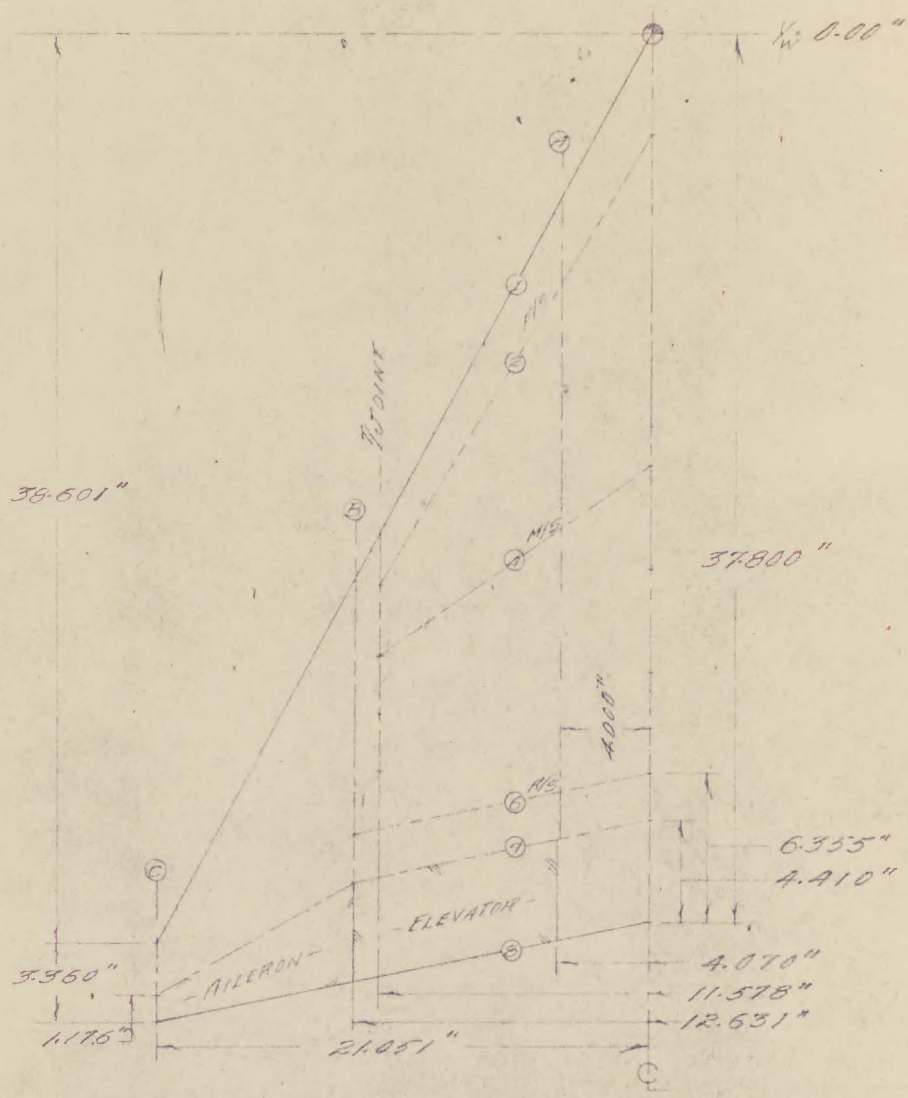
Date: 6/11/53 P/Models/14
Issue: 1

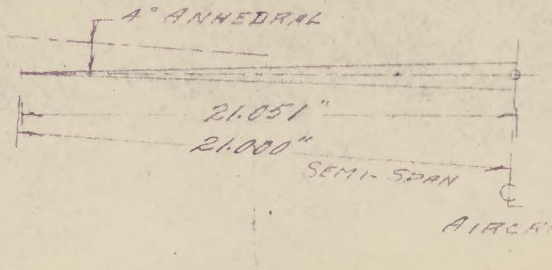
INDEX

'C-105 AIRCRAFT'

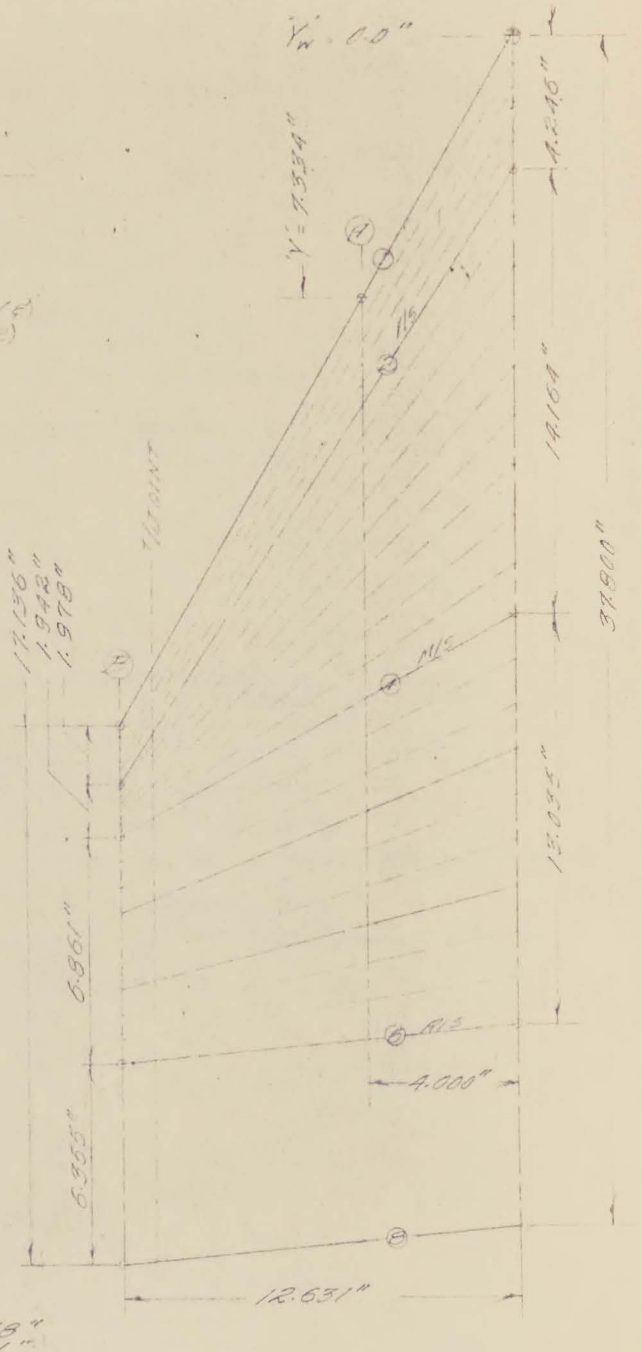
CHORD PLANE
UNLESS NOTED

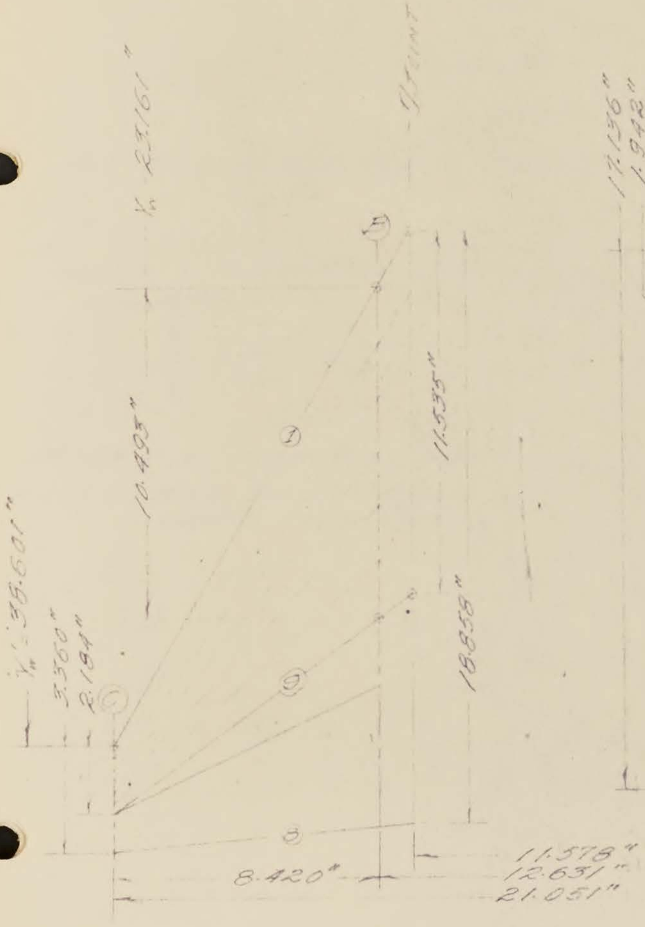
SPAR GEOMY
SEE 7-14





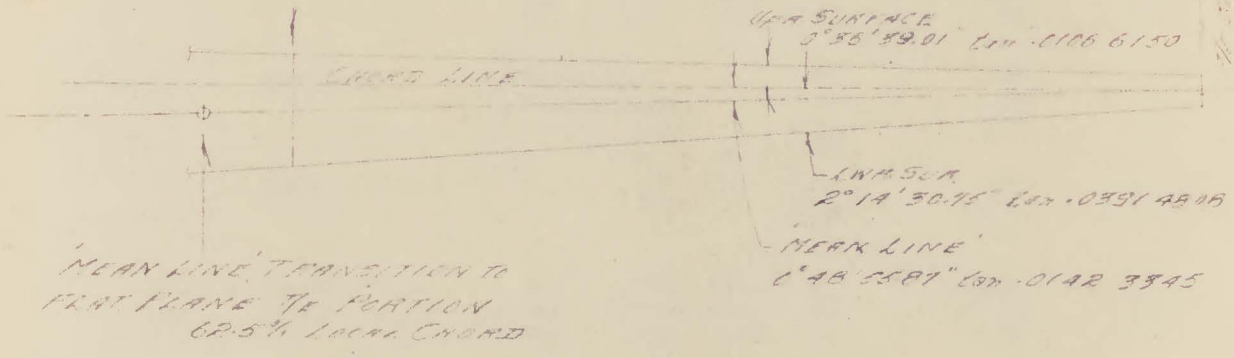
RULED SURFACE PATTERN
GENERATORS - STRAIGHT
LINE SECTIONS (SEE 7-2)
FOR SPAR FUNCTIONS SEE (7-1-1)
(7-1-2)





CAMBER DESCRIPTION

ALL SLOPES NORMAL TO CHORD



WING DATA

'C-105 AIRCRAFT'

CHORD PLANE DATA

MAIN WING

NO.	DESCRIPTION	TRIG. FUNCTION				COORDINATE DATA ROOT	COORDINATE DATA T/JOINT
1	Leading Edge 61° 23' 38.29"	Cotan	.5453	54289	X_w	0.00	11.578
		Sin	.8779	3258	Y_w	0.00	21.231
		Cos	.4787	8423	Z_w	0.00	0.00
2	Front Spar 58° 50' 43.10"	Cotan	.6045	41278	X_w	0.00	11.578
		Sin	.8557	7362	Y_w	4.246	23.398
		Cos	.5173	5046	Z_w	0.00	0.00
4	Main Spar 34° 28' 6.59"	Tan	.6864	71706	X_w	0.00	11.578
		Cos	.8244	3757	Y_w	18.410	26.358
		Sin	.5659	5300	Z_w	0.00	0.00
5-A	Centre Spar 'Fwd'	Tan	.5235	36245	X_w	0.00	11.578
		Cos	.8859	0522	Y_w	22.755	28.817
		Sin	.4638	6628	Z_w	0.00	0.00
5-B	Centre Spar 'Aft'	Tan	.3606	00783	X_w	0.00	11.578
		Cos	.9407	0715	Y_w	27.100	31.275
		Sin	.3388	0346	Z_w	0.00	0.00
6	Rear Spar	Parallel to trailing edge			X_w	0.00	12.631 B
					Y_w	31.445	33.942 B
					Z_w	0.00	0.00
7	Elevator Hinge	"		"	X_w	0.00	12.631 B
					A Y_w	33.390	35.887 B
					Z_w	0.00	0.00
8	Trailing Edge 11° 10' 52.51"	Tan	.1976	65322	X_w	0.00	12.631 B
		Cos	.9810	1865	Y_w	37.800	40.297 B
		Sin	.1939	1336	Z_w	0.00	0.00

KEY Angles represent sweep

A This T/E value (4.410") constant to X_w = 12.631" (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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UNCLASSIFIED / NON CLASSIFIÉ

WING DATA

C-105 AIRCRAFT

DIRECTRIX 'A'

CODE	Y_R	Z_R UPR.	Z_R LWR.
	0.00	0.00	0.00
	0.040	0.049	0.056
	0.233	0.108	0.133
	0.698	0.165	0.231
	1.163	0.194	0.299
	1.861	0.218	0.378
	2.559	0.231	0.441
F/S	3.528	0.240	0.512
	4.003	0.242	0.541
	5.021	0.244	0.593
	6.038	0.245	0.635
	7.056	0.244	0.666
	8.073	0.242	0.687
	9.090	0.240	0.700
	10.108	0.236	0.703
	11.125	0.232	0.700
	12.143	0.226	0.693
	13.160	0.220	0.679
	13.822	0.214	0.668
	14.833	0.205	0.647
	16.023	0.193	0.615
	17.094	0.182	0.581
	18.403	0.169	0.534
	19.362	0.158	0.497
	20.188	0.149	0.465
	21.378	0.137	0.418
	22.568	0.124	0.372
	23.758	0.111	0.325
R/S	24.902	0.099	0.280
(1)	26.846	0.078	0.204
(2)	26.846	-	0.063
(3)	31.256	0.031	0.031

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

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WING DATA

C-105 AIRCRAFT

DIRECTRIX 'B'

CODE	Y_R	Z_R UPR.	Z_R LWR.
	0.00	0.00	0.00
	0.022	0.027	0.029
	0.130	0.058	0.072
	0.391	0.087	0.125
	0.652	0.102	0.162
	1.044	0.115	0.206
	1.435	0.124	0.240
F/S	1.978	0.130	0.279
	2.068	0.130	0.285
	2.260	0.131	0.296
	2.452	0.132	0.307
	2.644	0.133	0.317
	2.836	0.134	0.326
	3.028	0.134	0.334
	3.219	0.134	0.342
	3.411	0.134	0.349
	3.603	0.134	0.355
	3.795	0.134	0.360
	3.920	0.134	0.364
	4.546	0.134	0.377
	5.283	0.132	0.385
	6.020	0.130	0.385
	6.757	0.128	0.381
	7.351	0.126	0.374
	7.862	0.123	0.367
	8.578	0.120	0.351
	9.336	0.113	0.331
	10.073	0.106	0.307
R/S	10.781	0.099	0.280
(1)	12.726	0.078	0.204
(2)	12.726	-	0.063
(3)	17.136	0.031	0.031

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

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WING DATA

C-105 AIRCRAFT

DIRECTRIX 'C'

CODE	Y_R	Z_R UPR.	Z_R LWR.
	0.00	0.00	0.00
	0.011	0.009	0.010
	0.054	0.016	0.021
	0.117	0.021	0.032
	0.219	0.024	0.044
	0.352	0.027	0.055
F/S	0.410	0.028	0.059
	0.481	0.029	0.063
	0.605	0.030	0.069
	0.725	0.030	0.073
	0.841	0.030	0.077
	0.953	0.030	0.079
	0.971	0.030	0.079
	1.062	0.030	0.080
	1.167	0.030	0.080
	1.269	0.030	0.080
	1.368	0.030	0.079
	1.465	0.030	0.078
	1.558	0.029	0.077
	1.649	0.029	0.076
	1.669	0.029	0.075
	1.737	0.029	0.074
	1.822	0.028	0.071
	1.906	0.028	0.069
	1.987	0.027	0.066
	2.066	0.027	0.064
	2.142	0.026	0.061
(14)	2.184	0.026	0.059
(2)	2.184	-	0.017
(3)	3.360	0.013	0.013

(14) Aileron spar ℄ 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

Date:
Issue: 3

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° 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: 4-1-53

ISSUE: 3

VERTICAL TAIL
C-105 AIRCRAFT