C-105 MK 2 Report # R-7-0400-34
Production A/C Issue 6

WEIGHT SUMMARY & C.G. POSITION

N.A.E. UNCLASSIFIED April 1/57

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Report no.: QCX - AVRO - CF105 - R-7-0400-34-Iss.6

has been ☐ downgraded to : _____

☒ de-classified

by (Name): Michel W. Drapeau

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

Date: Dec. 7, 1992

R. Drapeau
Signature

Classification ~~cancelled / changed to:~~ confirmed as UNCLASSSIFIED

By authority of: DRDA 7/DARFT 5-8/DAS Eng 6-4-5

Date: 5 Nov 1992

Signature: B. Aubrey

Unit / Rank / Appointment: DSIS 3, Secretary CRAD HQ DRP

Date: April 1st, 1957
Aircraft C-105 MK 2

Report # 7-0400-34 Issue 6
Sheet # 1-1
Prepared By: K. Griffin
Checked By: E. Burnett

INTRODUCTION

The following is a Weight & C. G. Summary of the C-105 MK 2 Production Aircraft. Of necessity some of the figures quoted herein are only of a preliminary nature, especially some systems e.g. Air Conditioning and Fuel System which are being extensively redesigned and about which there is as yet very little information available.

Information has been based on the MK 1 Aircraft with relevant changes made sometimes to scheme drawings for MK 2 or to verbal information. Where no details are available, allowances have been retained as in the MK 1 Aircraft.

GENERAL

a) Orenda PS 13 Engines comprise the Power Plant (4,500 lb each).

b) A package containing 4 "semi-submerged" Sparrow II Missiles (432 lb each) is currently carried.

c) The R.C.A. Radar Astra I System is installed - Weight & C.G. location being to the latest breakdown received from them, dated Jan. 11th, 1957. However, the Sparrow III auxiliaries and the Infra-red Tracker System included in the above breakdown have been deleted and some AVRO installed antennae added (Total Weight = 2,614.5 lb)

N.B. It should be noted that the first MK 2 Aircraft will probably not be as this summary designates, but will be a Flight Test version with Instrumentation replacing the Missile Package etc.

1. STRUCTURE:

a) Wing:

	WEIGHT (lb)
I/Wing complete - Actual Weights of spars, rib # 10 etc.	- 9
Miscellaneous other changes to MK 1 drawings	+ 6
Ailerons - Actual Weight of Mk 1 Ailerons not modified for "buzz damper" installation	- 13
Aileron Control Box - some actual weights some re-estimates	- 7
O/Wing - miscellaneous changes etc, actual weights of F/Spar and C/A/Spar	- 9
Weight Change Decrease Ref. 2-1	- 32

b) Fin & Rudder:

No weight change, although actual weight of MK 1 Rudder unmodified for "Buzz Dampers" is recorded.

c) Fuselage Fwd. Sta. 255"

Miscellaneous changes to re-issues of MK 1 production drawings of Formers, Bulkheads, Longerons etc	+ 12
Air Intakes - Redesigned Ramp now estimated to MK 1 production drawings many design changes since early scheme drawing estimate was made.	+ 26
Weight Change Increase Ref. 2-2	+ 38

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INTRODUCTION

WEIGHT CHANGES	WEIGHT (lb)
1. STRUCTURE (cont'd.)	
d) Centre Fuselage Sta. 255"-485"	
Equipment Bay Structure - redesigned for MK 2 A/C	+ 11
Miscellaneous production drawing changes to MK 1 A/C	- 2
Weight Change Increase Ref. 2-2	+ 9
e) Duct Bay Sta. 485"-591.65"	
No Weight Change	
f) Engine Bay Sta. 591.65"-742.5"	
Heavy Formers - deletion of Engine Rail Mounting Brackets as carried in MK 1 A/C	- 23
Service Access Doors - redesigned Aft of Sta. 664.43	- 6
Structure at Engine Doors - redesign of false door structure	+ 6
Weight Change Decrease Ref. 2-2	- 23
g) Rear Fuselage Aft Sta. 742.5"	
No Weight Change	
There is no definite scheme yet for the Tail Cone and Stinger structure. The weight currently recorded is as for the MK 1 in Titanium, allowances having been made for the increased length of the Tail Cones, but no other account taken of lines changing or design alterations.	
TOTAL STRUCTURAL WEIGHT CHANGE	- 8
2. LANDING GEAR	
No Weight Change	
3. POWER PLANT & SERVICES	
No Weight Change	
4. FLYING CONTROLS	
No Weight Change	

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INTRODUCTION

5. EQUIPMENT GROUP

	WEIGHT (lb)
Radio & Radar Fixed - deletion of Radar Homer Antennae	- 10
Radio & Radar Removable - deletion of I.R. Tracker System & J2 Compass flux valve.	- 56
Electrics - Fire detection Wire added in Engine Bay	+ 7
Probe - re-estimated, this may be further redesigned	+ 4
Low Pressure Pneumatics - Piping changes etc.	+ 3
TOTAL EQUIPMENT DECREASE Ref. 2-3	- 52

6. OPERATIONAL LOAD

No Weight Change

SUMMARY

Weight Change - Aircraft Weight Empty

Structure	- 8 lb
Equipment	- 52 lb
	- 60 lb

Weight Change - Operational Weight Empty (A/C less Fuel)

Issue 5	Issue 6		
44,185	44,125	=	- 60 lb

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WEIGHT CHANGES TO I.B.M. TABULATED DETAILS OF MARCH 1st, 1957.

WEIGHT CHANGE			WEIGHT (lb)	
Wing:				
-	6.23	I/W Spars - Actual Weight of Main Spar	-	3.50
		Actual Weight of machinings of Rear Spar etc.	-	3.80
		F/Spar I/B End design change	+	1.25
		Miscellaneous items	-	0.18
			-	6.23
-	2.44	Rib # 10 - Actual Weight obtained		
+	5.70	Skins M/S to R/S - amendments to MK 1 drawings bracketry and hardware		
-	0.40	Dorsal Fairing I/W - MK 1 production drawing estimates		
-	12.66	Ailerons - Actual Weight obtained of MK 1 Aileron, unmodified for "buzz damper" installations		
+	1.60	Rib # 12 - Miscellaneous design changes to hardware etc.		
-	0.57	O/W Posts & Intercostals - completely checked and re-estimated.		
-	6.74	Aileron Control Box - Actual Weights of hinge spar and Ribs # 2,5,6A and 8	-	3.59
		Addition of nut plates to ribs	+	1.95
		Control box to O/W joint hardware was overestimated	-	4.53
		Miscellaneous changes	-	0.57
			-	6.74
-	10.35	O/W Spars - Actual Weight of Front Spar	-	3.38
		Actual Weight of Centre Spar Aft	-	6.38
		Miscellaneous changes to drawings	-	0.59
			-	10.35
-	32.09			
Fin & Rudder				
	0.00	Rudder - Actual Weight obtained of MK 1 Rudder unmodified for buzz damper installations.		
	0.00			
Fuselage Fwd. Sta. 255"				
+	0.80	Canopy Arches - minor design changes based on MK 1 drawings		
+	0.55	Lower Longerons - minor desgin changes based on MK 1 drawings		
+	0.11	Bulkhead Sta. 255" - MK 1 production drawing changes		
+	1.92	Bulkhead Sta. 120" - MK 1 alterations for mounting radome - This will probably change further when MK 2 details become available.		
+	1.48	Pilot's & Navigator's Bulkheads - MK 1 production drawing changes		

continued.

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WEIGHT CHANGES TO I.B.M. TABULATED DETAILS OF MARCH 1st, 1957.

WEIGHT CHANGES			WEIGHT (lb)	
Fuselage Fwd. Sta. 255" (Cont'd)				
+	26.36	Intake Ramp - First estimate to production drawings of MK 1 redesigned Intake Ramp, MK 2 Intake Ramp will weigh approx. the same as MK 1 differences are only minor weightwise.		
+	6.89	Formers F.F. - Formers Sta. 188.4 and 194.9 strengthened, Stress requirement associated with redesigned ramp	+	4.38
		Miscellaneous bracketry changes as MK 1	+	2.51
			+	6.89
+	38.11			
Centre Fuselage Sta. 255" - 485"				
+	0.89	Miscellaneous Items C.F. - Alterations to hardware etc. as MK 1		
-	2.92	Missile Pack Mounting Structure - re-estimate to current design.		
+	0.27	Armament Bay Roof - Addition of clips etc. for pack pick-ups.		
+	10.95	Equipment Bay Structure - Redesign Access Panel	+	0.36
		Redesign Mounting Tray	+	10.59
			+	10.95
+	9.19			
Engine Bay Sta. 591.65" - 742.5"				
-	23.18	Heavy Formers E.B. - Deletion of Engine Rail brackets and mounting structure as carried for MK 1 A/C		
-	3.18	Service Access Doors - completely redesigned aft of Sta. 644.43 (2.62 lb included here that was previously with Light Formers I/B of Inner Longerons)		
-	18.34	Light Formers - Lower Formers 596.4 - 692.45 part of false door structure (see below)	-	15.72
		I/B of Inner Longeron Stas. 702, 707 and 712	-	2.62
			-	18.34
-	5.56	Outer Skins - relocation of pressure vents, not part of false door structure.		
-	37.60	Engine Access Doors - surround structure removed (see below) report now contains only Doors # 1 &.2.		
+	65.42	Structure at Engine Doors - 58.88 lb transferred to this new report from above items. Actual increase recorded here of + 6.54 lb to false door structure.		
-	22.44			

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WEIGHT CHANGES TO I.B.M. TABULATED DETAILS OF MARCH 1st, 1957

WEIGHT CHANGES			WEIGHT (lb)	
Joints Fuselage				
+	0.41	Joint F.F. to C.F. - Straps .04 were .032 Al. due to skin dimpling difficulties (based on MK 1 drawings.		
+	0.41			
Equipment Fixed and Removable.				
-	10.00	Radio & Radar Fixed - deletion of 4 Radar homer antennae		
-	55.00	Radio & Radar Removable - Deletion of I.R. Tracker system.		
+	7.18	Electrics E.B. Installation of Fire Detection Wiring in the Duct Bay and Engine Bay.		
-	1.30	J2 Compass - delete flux valve.		
+	10.29	Low Pressure Pneumatics - piping for machmeter, altimeters rate of climb indicator and pitots added (see below) based on MK 1 drawings.		
-	4.50	Probe - Low Pressure Pneumatics included above	-	8.00
		Probe and sensor re-estimated to scheme drawings	+	3.50
			-	4.50
-	53.33			
-	60.15	TOTAL WEIGHT CHANGES		

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WEIGHT AND C.G. SUMMARY

DESCRIPTION	WEIGHT lb.	H. ARM ins.	V. ARM ins.
STRUCTURE	18,270.98	564.48	137.62
Wing	9,929.95	642.65	142.18
Fin & Rudder	1,020.70	754.06	209.27
Fuselage fwd. Sta. 255"	2,453.74	186.64	128.79
Sta. 255"-485"	1,681.78	379.07	129.47
Sta. 485"-591.65	949.54	533.12	103.76
Sta. 591.65"-742.5	1,490.70	661.10	109.12
Sta. 742.5 Aft.	691.99	795.69	128.15
Marry-Up	52.58	468.91	103.89
UNDERCARRIAGE - Retracted	2,554.33	487.53	134.52
Main Undercarriage	1,901.62	539.31	141.00
Main U/C Doors & Fairings	294.36	539.29	136.01
Nose Undercarriage	333.81	170.80	99.70
Nose U/C Door & Fairing	24.54	162.24	88.23
POWER PLANT & SERVICES	10,774.34	673.94	121.51
Engines & Accessories PS 13	9,090.12	690.98	121.17
Gear Box & Drives on Fuselage	281.84	601.70	102.49
Engine Controls	32.43	375.76	118.61
Gear Box, Starter & Drive on Engine	315.45	609.12	105.24
Engine Nose Bullet	70.00	587.17	116.00
Fire Extinguisher System	70.46	702.44	134.83
Engine Mountings	156.53	666.00	136.69
Fuel System	757.51	543.10	135.69
FLYING CONTROLS GROUP	1,793.94	686.84	140.05
Mechanical Flying Controls	942.92	688.24	148.66
Hydraulic Flying Controls	851.02	685.29	130.52
EQUIPMENT FIXED & REMOVABLE	7,895.45	326.76	111.78
Instruments	46.07	163.68	138.70
Probe	18.50	-40.00	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Oxygen System	43.44	227.71	142.18
Air Conditioning System	897.00	331.77	133.38
Hydraulic Main System	597.49	498.76	116.66
Cabin Insulation	11.91	179.24	130.00
Brake Parachute	62.38	769.41	143.24
Electrical System	1,224.03	428.64	112.65
Low Pressure Pneumatics	49.30	444.29	125.94
Surface Finish	100.00	591.52	140.20
Intake De-icing Boots	51.84	197.02	118.00
Radome Anti-icing	8.88	51.49	125.00
Canopy Actuation	62.05	222.11	154.47
Cabin Consoles	17.45	174.76	124.34
Radar Door Actuation	10.00	268.00	95.00
Ejector Seats	186.00	201.10	136.25
Radio & Radar removable	1,850.50	178.50	104.46
Radio & Radar fixed	621.00	234.04	116.15
Sparrow Pack Structure	850.00	390.84	96.00
Sparrow Pack Mechanisms	625.32	376.67	99.22

continued.

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WEIGHT & C.G. SUMMARY

DESCRIPTION		WEIGHT lb.	H. ARM ins.	V. ARM ins.	M.A.C. %
Equipment (Fixed & Removable)(Cont'd.)					
Sparrow Pack Hydraulics		350.19	368.83	99.00	
Sparrow Pack Electronics		143.00	332.00	100.00	
Sparrow Pack Electrics		64.10	362.29	95.00	
AIRCRAFT WEIGHT EMPTY		41,289.04	548.14	128.39	
USEFUL LOAD		18,615.76	516.37	136.67	
Crew		430.00	194.00	136.50	
Oil		138.97	636.92	110.57	
Alcohol		22.00	93.00	138.00	
Engine Fire Extinguisher Fluid		25.00	730.00	129.00	
Residual Fuel		218.40	553.98	134.04	
Missiles		1,728.00	389.29	88.30	
Oxygen Charge		13.39	259.69	159.91	
Water For Air Conditioning		260.00	268.00	132.00	
Fuel for Combat Mission		15,780.00	542.05	142.30	
Normal Combat Mission	U/C Up	59,904.80	538.27	130.96	28.25
	U/C Down		539.87	128.32	28.69
Half Combat Mission Fuel (1,011.5 gal. @ 7.8 lb/gal.)		7,890.00	543.20	139.55	
Combat Weight (Half Combat Mission Fuel)	U/C Up	52,014.80	537.87	128.83	28.14
	U/C Down		539.71	125.78	28.65
Operational Weight Empty	U/C Up	44,124.80	536.92	126.91	27.88
	U/C Down		539.09	123.32	28.48
Operational Weight Empty Less Missiles	U/C Up	42,396.80	542.94	128.48	29.54
	U/C Down		545.20	124.75	30.16
Max. Internal Fuel (2,492 gals. @ 7.8 lb/gal)		19,438.00	541.85	144.16	
A.U.W. Max. Internal Fuel	U/C Up	63,562.80	538.43	132.19	28.30
	U/C Down		539.93	129.69	28.71
Max. External Fuel (500 gal. @ 7.8 lb/gal. + Drop Tank)		4,226.00	522.34	60.64	
A.U.W. Max. Internal and External Fuel	U/C Up	67,788.80	537.43	127.73	28.02
	U/C Down		538.83	125.39	28.41

N.B. 1) Aircraft Datum = 120" above arbitrarily chosen ground line.
2) Revised fuel tank capacities in Centre Fuselage tanks for MK 2 Aircraft are now incorporated.

REPORT NO: T-0400-34-16

BY: Kathleen Lyffyn

DATE: April 15th 1957

SHEET: 4-1

C105 MK2 PRODUCTION AIRCRAFT
HORIZONTAL C.G. ENVELOPE FOR A/C FLIGHT CONDITIONS

USING FUEL SEQUENCING ORDER AS SUPPLIED TO MINNEAPOLIS HONEYWELL (HS AVRO SPEC. E503)

ALTERNATE SEQUENCING UNTIL NECESSITY OF DAMPING SYSTEM PROVEN.

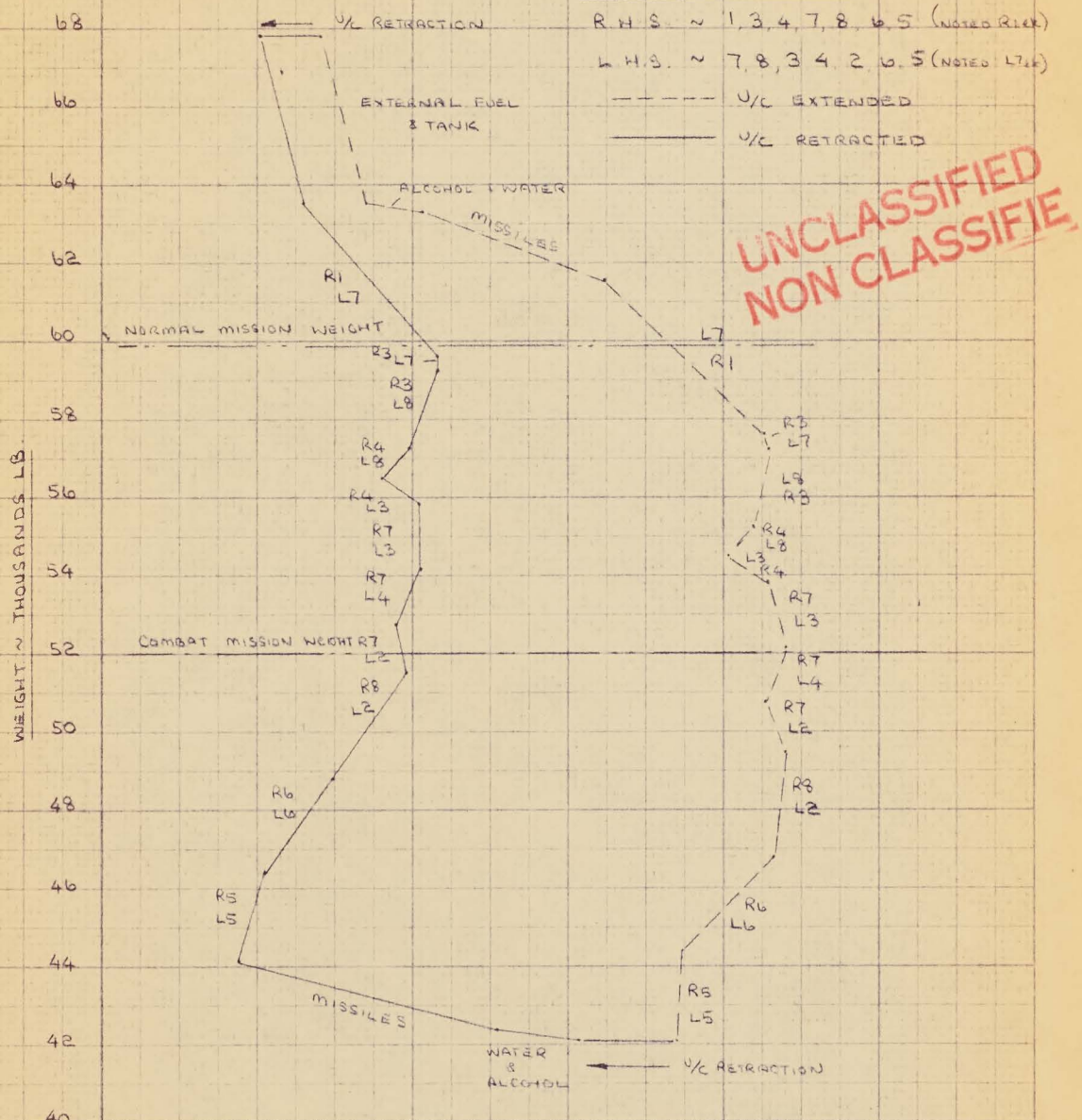
SEQUENCING ORDER

R.H.S. ~ 1, 3, 4, 7, 8, 6, 5 (NOTED R1-R8)

L.H.S. ~ 7, 8, 3, 4, 2, 6, 5 (NOTED L7-L2)

- - - - - U/C EXTENDED

——— U/C RETRACTED



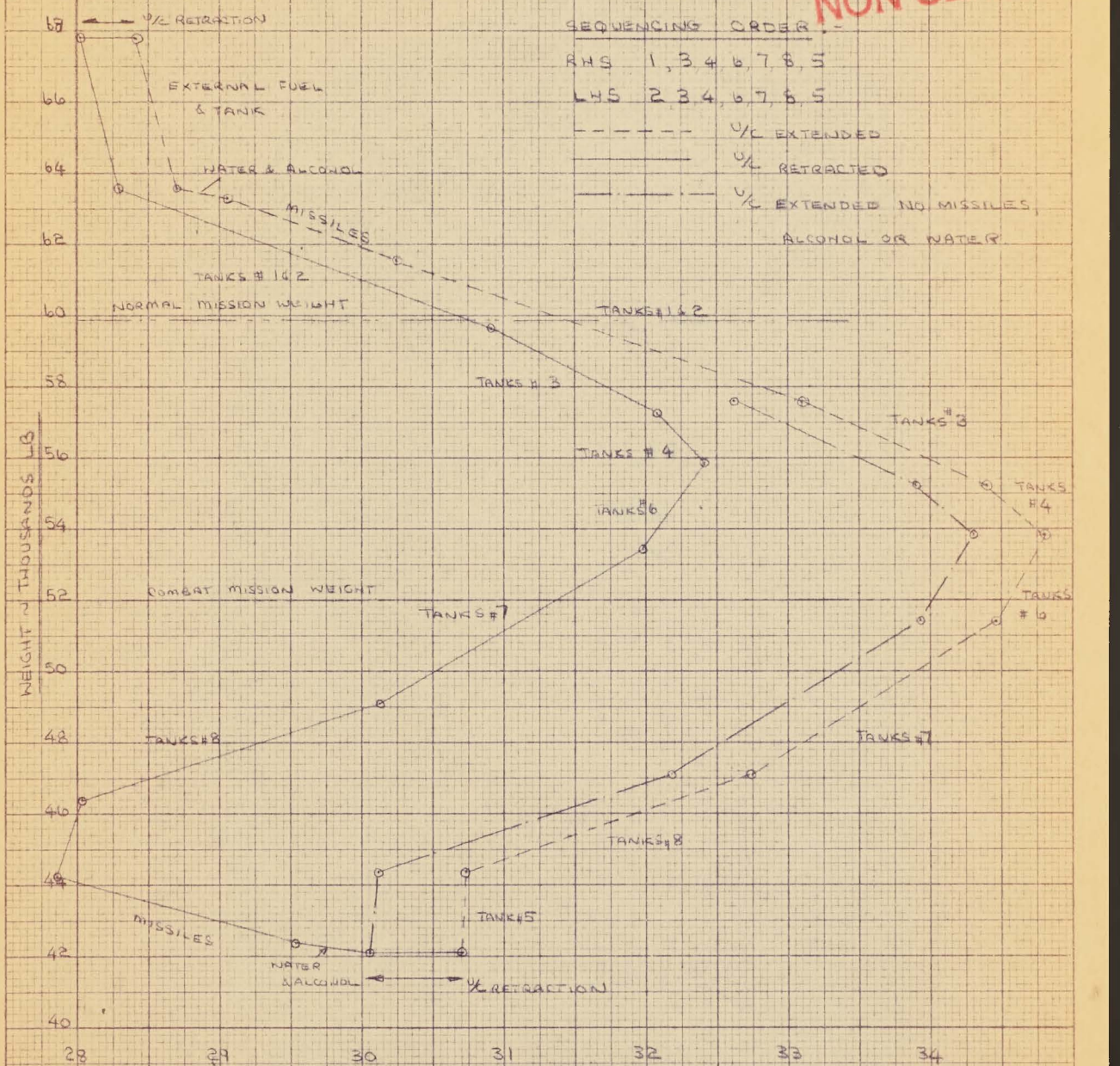
REPORT No. Z-0400-34-8

BY: Kaufman, Griffon

DATE: April 15th 1957

SHEET: 4-2

C105 MK2 PRODUCTION AIRCRAFT
HORIZONTAL C.G. ENVELOPE FOR A/C FLIGHT CONDITIONS
USING FUEL SEQUENCING ALTERNATE AS SUPPLIED TO MINNEAPOLIS HONEYWELL (Ref AIRO SPEC E503)
TO ACHIEVE REQUIRED 34% MAC AT COMBAT.



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WEIGHT AND C. OF G BY FUNCTIONAL COMPONI

PROJECT C-105 MK 2

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
	TOTAL WING GROUP	1000000		
	OUTER WING	1010000		
14	OUTER WING SKINS	10100016	4	92889
	POSTS AND INTERCOSTALS	10100036	4	24367
	OUTER WING SPARS	10100036	4	39258
14	OUTER WING RIBS	10100046	4	13456
	AILERON CONTROL BOX	10100066	4	37920
	RIB 12	10100076	4	7626
14	O W AILERON JACK FITTING	10100096	4	1046
14	AILERON JOINTS AND FAIRING	1010010		3293
				197924
	AILERON	1020000		
	AILERON STRUCTURE	10200017	4	33600
				33600
20	ELEVATOR MARRY UP	1030000		1597
20	ELEVATOR	10300008	2	44900
				46497
	INNER WING	1040000		
	MAIN U C STRUCTURE	10400016	2	33823
	FRONT SPAR I W	1040002	62	11110
	MAIN SPAR I W	1040003	62	15106
	FWD CENTRE SPAR I W	1040004	62	5364
	AFT CENTRE SPAR I W	1040005	62	3666
	REAR SPAR I W	1040006	62	7667
	I W STRUCTURE F S TO M S	10400076	2	104185
	I W STRUCTURE M S TO R S	1040008	62	14979
12	STRUCTURE AFT OF REAR SPAR	10400096	2	31984
12	ELEVATORCONTROLBOX I W	1040010	62	42717
16	TRANSPORT JOINT MARRY UP	1040011		7065
	CENTRE LINE JOINTS	10400126	2	60556
	INNER WING SKINS	10400136	2	218550
	STRUT PICK UP FITTINGS I W	1040014	62	5422
	RIBS 1 TO 9 INNER WING	10400166	2	52596
	DORSAL FAIRING	1040017	62	954
	RIB 10	1040018	62	10800
	FUSELAGE HINGE JOINT I W	1040019	62	13812
16	TRANSPORT JOINT	10400206	2	13100
	FUSELAGE HINGE JOINT	104002	1	3740
	DORSAL FAIRINGS I W	104002	3	5629
				661966

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT C-105 MK 2

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
12 LEADING EDGE INNER WING	10500000	62	22136
			22136
14 LEADING EDGE O W	10600000	65	30870
			30870

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PROJECT C-105 MK 2

WEIGHT AND C. OF G BY FUNCTIONAL COMPON

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
	TOTAL FUSELAGE GROUP	3000000		
	FUSELAGE BASIC STRUCTURE	3010000		
3	RADOME	3010000151		9540
3	RADAR NOSE STRUCTURE	3010000351		18000
3	SKIN F F	3010000452		8094
4	SKIN C F	3010000554		21048
5	SKIN D B	3010000656		5880
	SKIN E B	3010000758		16489
	FORMERS F F	3010001152		10531
4	FORMERS C F	3010001254		27786
5	FORMER D B	3010001356		7457
	LIGHT FORMERS E B	3010001458		10370
	HEAVY FORMERS E B	3010001558		18658
	LOWER LONGERONS F F	3010001652		6846
	INNER LONGERON E B	3010001758		7184
	LONGERON E B	3010001858		6905
5	TOP LONGERONS E B	3010001958		638
3	LOWER SHEAR PANEL F F	3010002052		2958
5	TOP WING LONGERONS D B	3010002156		687
3	LONGERONS C F	3010002252		53
3	LONGERONS C F	3010002354		13813
5	LONGERONS D B	3010002556		10569
4	ELECTRONICS BAY STRUCTURE	3010002654		4523
5	LONGITUDINAL BEAMS D B	3010002756		6342
4	RADAR ACCESS DOOR C F	3010002854		2108
5	MAIN FRAME AT STN 538 77	3010002956		5966
5	DIVE BRAKE ACCOM STRUCTURE	3010003056		3634
3	COCKPIT DECKING	3010003152		17982
4	DUCT C F	3010003254		33286
5	DUCT D B	3010003356		25500
	CANOPY ARCHES	3010003452		8535
5	ACCESS PANEL STIFFNERS	3010003656		3865
3	NOSE U C SUPPORT STRUCTURE	3010003752		2868
	CREW BULKHEADS	3010003852		12272
	EQUIPMENT BAY STRUCTURE	3010003954		7111
3	WINDSCREEN	3010004152		12754
	SERV ACCESS DOORS AND PNLS	3010004258		6087
4	DORSAL FAIRING AIR OUTLET	3010004454		2061
	INTERMEDIATE FORMERS E B	3010004558		4873
	ENGINE ACCESS DOORS E B	3010004658		11900
4	SEALING MISSILE BAY	3010004754		697
	MISCELLANEOUS ITEMS C F	3010004854		392
	ARMAMENT BAY ROOF	3010004954		13216
	BULKHEAD AT STA 120	3010005052		3060
	BULKHEAD AT STA 255	3010005152		10429
54	BULKHEAD STA 485	3010005254		12351
5	ENG TUNNEL E B	3010005458		55031
4	INTEGRAL FUS FUEL TANK	3010005554		20359
3	COCKPIT FLOOR	3010005652		5743
4	DORSAL OVER FUEL TANK	3010006154		5097

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WEIGHT AND C. OF G BY FUNCTIONAL COMPON

PROJECT C-105 MK 2

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
4	SHIELD EXHAUST DEFLECTOR	30100624		1965
3	SHEAR PANEL BELOW NAV ARCH	30100635	2	2074
	PACK MOUNTING STRUCTURE	30100645	4	2365
6	ENG ACCESS DOORS R F	30100655	9	8794
6	TUNNEL FIXED R F	30100665	9	11788
6	SKIN AND INTERCOSTAL R F	30100675	9	5155
	FAIRING UNDER RUDDER R F	30100685	9	2606
	FORMERS FIXED R F	30100695	9	9290
	LONGERONS C BEAM FIXED R F	30100705	9	2799
	NACELLES REMOVABLE R F	30100715	9	19500
	CNTR STRUC STING REMOV R F	30100725	9	9267
5	MISC ITEMS STRUCTURE E B	30100735	8	912
5	MTG BRKTS SIDE PANEL D B	30100755	6	213
5	FORMERS LOWER PANEL D B	30100765	6	7606
	LOWER PANEL D B	30100775	6	5054
	JOINT F F TO C F	3010078		855
	JOINT AIR INTAKES TO F F	3010079		952
	JOINT C F TO D B	3010080		500
	JOINT D B TO E B	3010081		2508
	FUSE JOINT AT STA 742 50	3010082		443
5	DROP TANK MTG STRUCT D B	30100835	6	853
	STRUCT AT ENG ACCESS DOORS	30100855	8	6542
51	ENG RAILS ATTACHM TO FORM	30100845	8	3481
				607370
9	DIVE BRAKES	30200007	2	11328
				11328
	AIR INTAKES	3030000		
	AIR INTAKES	30301005	5	75828
				75828
	PILOTS AND NAVIG CANOPIES	3040000		
3	PILOTS CANOPY	30401005	3	23725
				23725
3	NAVIGATORS CANOPY	30402005	3	13782
				13782

GHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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SHEET 5-8

REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
5080001	54	121144	402253	141887	48728657	17186113
5080002	56	142105	37109	10984	7632191	1560826
5080003	58	46386	56504	12071	3042714	559853
5080004	62	44187	57024	14443	25197195	6381928
5080005		602	657	04	395538	57744
		75751			41140495	102789 64

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPON

PROJECT C-105 MK 2

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
FLYING CONTROLS GROUP	6000000		
MECHANICAL CONTROLS	6010000		
MECHANICAL CONTROLS F F	6010001	52	8651
MECHANICAL CONTROLS C F	6010002	54	685
MECHANICAL CONTROLS D B	6010003	56	350
MECHANICAL CONTROLS FIN	6010005	83	12688
MECHANICAL CONTROLS I W	6010006	62	4056
MECHANICAL CONTROLS O W	6010007	64	3018
MECHANICAL CONTROLS C A	6010008		646
			94292
FLYING CONTROLS HYDRAULICS	6020000		
FLYING CONT HYDRAULICS D B	6020001	56	2592
FLYING CONT HYDRAULICS E B	6020002	58	4089
FLYING CONT HYDRAULICS R F	6020003	59	46
			43537
FLYING CONT HYDRAULICS I W	6050000	62	24086
			24086
FLYING CONT HYDRAULICS O W	6060000	64	12181
			12181
FLYING CONT HYDRAULICS FIN	6070000	83	5298
			5298

GHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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SHEET 5-10

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	7000000						
	7010000						
	7010001	52	4407	16112	13909	710056	612970
E	7010004	52	200	22000	13000	44000	26000
			4607			754056	638970
NG	7020000	52	500	18600	13000	93000	65000
			500			93000	65000
	7030000						
	7030001	52	2279	19625	12578	447254	286653
	7030002	54	2065	26242	16027	541897	330958
			4344			989151	617611
M	7040000						
F F	7040001	52	13193	22361	11950	2950087	1576564
C F	7040002	54	6305	8301	20137	50	18993070
D B	7040003	56	6763	5318	31195	0	35967660
E B	7040004	58	6686	6311	13600	42196010	9092960
			89700			29759524	11964514
	7050000						
	7050001	52	8415	20016	10853	1684346	913280
	7050002	54	4162	43384	10420	1805642	433680
	7050003	56	23316	55198	10686	12869966	2491548
	7050004	58	7240	60647	10852	4390843	785685
	7050005	62	1331	15536	14235	7368970	1894821
	7050006	91	32	51903	9521	61857	30943
	7050007	92	2980	54325	14100	1618885	420180
			59749			29800509	6970137
	7070000	52	1191	17924	13000	213475	154830
			1191			213475	154830
	7080000						
	7080001	52	455	16913	12869	76954	58554
	7080005	59	5659	82094	14437	4645699	816990
	7080006	62	124	62022	14500	76907	17980
			6238			4799560	893524

GHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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SHEET 5-15

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	9000000						
						UNCLASSIFIED	
						NON CLASSIFIED	
	9010000052		430001940013650			83420000	58695000
			43000			83420000	58695000
	9020000						
	9020001		92906582511390			60594030	10581310
	9020002		17736367611640			11289750	2063770
	902000356		1925580849555			11181170	1839340
	902000458		90959928 9704			5447460	882090
			13897			88512410	15366510
	9030000054		172800 38929 8830			67269312	15258240
			172800			67269312	15258240
	9040000						
	904000152		722049313200			147550	9504
	904000254		1267262800161500			3329680	2046210
			1339			3477230	2141250
CING	9050000051		2200 9300 13800			2046000	3036000
			2200			2046000	3036000
	9060000		2500 73000 12900			18250000	3225000
			2500			18250000	3225000
	9070000						
	907000154		4680 3942 4123000			18450430	5756400
	907000262		171605977551370500			102539580	23517780
			21840			120990010	29274180
NING	9100000054		26000 26800 13200			6968000	34320000
			26000			6968000	34320000