

QCX
Avro
CF105
R-7-0400-34
Iss-18

FILE IN VAULT

ARROW 2 Report 7-0400-34
Prod. Issue 18
UNCLASSIFIED / NON CLASSIFIED
WEIGHT & C.G. SUMMARY
A.J. Crust UNCLASSIFIED April 1/58



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Report no.: QCX-AVRO-CF105- R-7-0400-34-ESS.18

has been ☐ downgraded to : _____

☒ de-classified

by (Name): Michel W. Drapeau

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

Date: Dec. 7, 1992

R. Auger
Signature

AVRO AIRCRAFT LIMITED
INTER-DEPARTMENTAL MEMORANDUM

UNCLASSIFIED
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Ref: 7718/11/J
Date: 1 April, 1958
To: See Distribution
From: E.F. Burnett - Weights Supervisor
Subject: ARROW 2 PRODUCTION A/C WEIGHT & C.G. SUMMARY - Report #7-0400-34 Issue 18

Attached is a copy of Weight and C.G. Summary Report # 7-0400-34 Issue 18 dated April 1st, 1958 for your retention.

This report is revised monthly and is issued complete on the 1st of each month.

Classification ^{confirmed as} ~~cancelled~~ changed to: UNCLASSIFIED
By authority of: DRDA 7/DARPT 5-8/DAS Eng 6-4-5
Date: 5 Nov 1992
Signature: Bailey
Unit / Rank / Appointment: D&IS 3, Secretary CRAD HQ DRP

E.F. Burnett
E.F. Burnett

EFB/ag

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54279

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SECRET

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Production A/C

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I N D E X

<u>Sheet</u>	<u>Content</u>
1-1 to 1-5	Introductory notes & explanation of weight changes
2	Details of wt. changes with reference to report system as listed on I.B.M. Sheets for Duct Bay Structure.
3-1 to 3-3	Wt. & C.G. Summaries
4	Horizontal C.G. plot showing basic fixed points on flight envelope. The variation of C.G. with fuel used has been omitted until such time as a fully approved fuel sequencing is estimated.
5-1 to 5-15	I.B.M. Detail sheets of Weights and C.G.'s.

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Date: April 1, 1958
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S. R. E. I
Report # 7-0400-34
Issue 18
Sheet 1-1

INTRODUCTION & WEIGHT CHANGES

The following is a Weight & C.G. Summary of the Arrow 2 Production Aircraft based on the latest weight estimates available.

All Weight & C.G. changes are relative to Issue 17 of March 1st, 1958.

The early Arrow 2 Aircraft 25206 onwards will not be as this summary designates, but will be Flight Test Aircraft with Instrumentation, 'Astra Minus' or preproduction Astra I Radar, Missile pack trials and various equipment trial installation. Appropriate weight statements for these aircraft will be issued at a later date.

GENERAL:-

- (a) Orenda PS13 Engines comprise the Power Plant (4,500 lb each, excluding Nose Bullet & Input Frame).
- (b) A package containing 4 "semi-submerged" Sparrow II missiles (432 lb each) forms the current Armament.
- (c) The R.C.A. Astra I Radar System is installed. The basis for the radar Weight & C.G. breakdown is the latest information received from R.C.A., dated Oct. 4th, 1957. (A revised weight statement is expected shortly). No Sparrow III Auxiliaries are carried in the production aircraft.

Where later weights have been received from Minneapolis - Honeywell, these have been incorporated. Allowances have also been made for the missile firing system, junction boxes and some Avro installed antennae.

The Infra red Tracker System seeker head is allowed for in its Fin Pod location (Total weight of the installed system ~~is~~ 3,281.9 lb, including missile actuation & firing systems).

In addition to the above Minneapolis-Honeywell M.H. 64 Damping System is installed.

Arrow 2 Aircraft 25206 to 25208, and some later Aircraft will have the "Astra Minus" system (Navigational & Communication equipment only).

- (d) Where actual weights of Arrow 1 parts that apply to Arrow 2 Aircraft have been obtained, these weights have been recorded in the Arrow 2 weight records.

On the I.B.M. sheets in this report, immediately preceeding the item title will be found a number varying from 0 to 100. This is the percentage actual Weight recorded in the relevant item.

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Aircraft ARROW 2
Production A/C

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INTRODUCTION & WEIGHT CHANGES

1. STRUCTURE

WEIGHT (lb)

a) Wings:

I/W Spars - front spar estimated to Mk. 2 prod. drgs	+	1.02
I/W Skins - addition of brackets for dorsal fairings	+	1.67
hardware - now fully detailed on drawings		
allowances made earlier based on Mk. 1 A/C	+	7.36
I/W Struct. for Main U/C - detailed est. to prod. drgs	+	2.44
I/W Struct M/S to R/S - prod. drg. ests.	=	0.13
I/W Struct F/S to M/S - redesign of refuelling door,		
no inner skin	=	0.91
redesign of shut-off valve		
operating mechanisms	+	1.75

<u>Wing Weight Increase</u>	+	<u>13.20</u>
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b) Fin & Rudder:

No weight change

c) Front Fuselage Fwd Sta 255 ins.

Crews Bulkheads - Addition of stiffeners and angles		
and increase in observers lower		
seat fitting	+	3.69
Bulkhead Sta 255 ins. - incorp. of misc. E.C.N.s		
alterations to bottom		
diaphragm & stiffeners	+	1.73
Cockpit Floor - addition of observer's foot guards		
to protect L.P. Pneumatic piping	+	0.68
Air Intakes - addition of splice straps, included		
with the joint to F.F. previously		
(see also Fuselage joints section h).	+	3.25
Stiffeners .025 Al were .020 Al	+	1.73

<u>Front Fuselage Increase</u>	+	<u>11.47</u>
--------------------------------	---	--------------

d) Centre Fuselage Sta. 255 - 485 ins

Longerons CF - Actual wt. of Mk. 1 longerons which		
is applicable to Mk. 2 A/C.	+	5.87
Bulkhead Sta 485 ins - Minor changes to drop tank		
release mtg. structure	+	0.04
Centre Fuselage Increase	+	5.91

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INTRODUCTION & WEIGHT
CHANGES

1. STRUCTURE (Cont'd)

WEIGHT (lb)

e) Duct Bay Sta 485 - 591.65 ins

This section has been entirely re-estimated to production drawings. Due to the advantages of conforming to the drawing office "call-up" system of panel sub-assemblies, for record purposes.

The entire weight reporting of this section has also changed. (for details regarding I.B.M. listing etc. see Section 2).

Resulting weight changes are as follows:-

Hydraulics access panel redesign	+	0.70
Pressure reducing doors - two new doors added	+	4.01
Side Skins D.B - cut-outs for new doors and addition of shield plates at doors	+	0.92
Miscellaneous other changes	+	0.53
<u>Duct Bay Increase</u>	+	<u>6.16</u>

f) Engine Bay Sta 591.65 - 742.5 ins

Engine Shroud - entirely estimated to prod. drgs.	+	0.06
Engine Rails & Attachs. - rail seal plates now called up with shroud hardware changes	-	0.51
	+	0.42
<u>Engine Bay Decrease</u>	-	<u>0.03</u>

g) Rear Fuselage Sta 742.5 "aft

Engine Removal Doors - Insulation from Sta 768" aft not 742.5" as previously assumed	-	4.65
Tunnel Fixed RF - Insulation now from Sta. 768" aft not from Sta. 742.5" as previously assumed, greater air flow around engines was required & temperatures in this location do not necessitate insulation, hence removal of same	-	23.84
Centre Struct. & Stinger - initial est. to prod. drgs	-	3.00
Remove. Tailcones - addition of slinging points	+	2.24
addition of drain tube & seal angles at Sta 803	+	1.98
Former Sta. 803.06 - prod drg. ests. plates added at latch datum, accurate est. of hardware etc.	+	3.04
Former Sta 808.5 - prod. drg. est. added angles at latch datum etc.	+	2.08

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INTRODUCTION & WEIGHT CHANGES

1. STRUCTURE (Cont'd)

WEIGHT (lb)

g) Rear Fuselage (Cont'd)

Remove. Tailcones - Tunnel Skins - addition of patch plates at latch stations, more accurate rivet est. etc.

+ 3.86

Miscellaneous other changes

+ 0.10

Rear Fuselage Decrease

- 18.19

h) Fuselage Joints

Joint Air Intakes to F. Fws - Mk. 2 prod. drgs est, splice plates now with component 55 structure (see also Fuselage Fwd Sta 255)

+ 2.89

Joint at Sta. 742.5" - Mk. 2 prod drgs estimated, seal channels were previously included with the tunnel R.F.

+ 2.12

Fuselage Joints Decrease

- 0.77

TOTAL STRUCTURAL INCREASE

+ 17.75

2. LANDING GEAR

No Weight Change

3. POWER PLANT & SERVICES

No Weight Change

4. FLYING CONTROLS GROUP

Mechanical F/Controls - elevator feel & trim unit moved fwd, until Mk. 2 drgs are available a weight change is allowed for as in Mk. 1 A/C

+ 8.21

F/Cont Hydraulics - Fuselage - addition of power boosters & all associated valves, filters etc. move elevator servos fwd etc. A weight increase similar to that entailed in Mk. 1 A/C will be made as a preliminary measure until Mk. 2 drawings become available

+ 125.55

FLYING CONTROLS INCREASE

+ 133.76

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INTRODUCTION & WEIGHT CHANGES

<u>5. EQUIPMENT GROUP</u>	<u>WEIGHT (lb)</u>
Sparrow Electrics - this item was the cable from the pack to the cockpit. Since these cables are now included with Radar fixed equip. this allowance will be deleted	- 3.14
Electrics D.B. - Inertia crash switch deleted	- 2.30
Changes to panel E28	- 5.20
Differential current protection - not required in Mk. 2 aircraft	- 9.21
Ejector Seats - gas generator on seat was previously omitted - this was not installed on seat at time of weighing of seat	+ 3.88
Utility Hydraulics EB - Actual weight of pressure regulator valve obtained 10.22 lb target wt. was 5.5. lb	+ 4.72
redesign of p.r. valve installation	+ 0.41
alterations to piping runs and other miscellaneous changes	+ 1.39
<u>EQUIPMENT GROUP DECREASE</u>	<u>9.45</u>

6. OPERATIONAL LOAD

No weight change

SUMMARY

Weight Change - Aircraft Basic Weight

Structure	+ 17.75
Flying Controls	+ 133.76
Equipment	- 9.45
	+ 142.06

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

<u>Issue 17</u>	<u>Issue 18</u>	
46,044.81	46,186.87	+ 142.06 lb

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SECTION 2

DETAILED WEIGHT CHANGES WITH REFERENCE
TO REPORT SYSTEM AS LISTED IN I.B.M.
SHEETS FOR ENGINE BAY STRUCTURE

Due to the Design Office method of "call-up" in panel sub-assys. the weight recording system has been changed to correspond.

		<u>WEIGHT (lb)</u>
Dive Brake Accomodations	} These items are no longer considered separately & these reports are now DELETED	- 36.52
Formers Lower Panel		- 74.16
Longitudinal Beams		- 66.17
Lower Panels Sides Fwd	} New reports introduced in accordance with the drawing system	+ 107.12
Lower Panels Sides Aft		+ 66.98
Lower Panel Centre Fwd		+ 23.72
Lower Panel Centre Aft		+ 25.63
Side Skins D.B. - see section 1.e.		+ 0.92
Access Panels D.B. - see section 1.e. also some changes to content of report		+ 7.01
Lower Panel Assy - now contains only items of final assy. of panels listed above		- 48.37
<u>Duct Bay Increase</u>		+ 6.16

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WEIGHT & C.G. SUMMARY

DESCRIPTION	WEIGHT lb	H. ARM ins	V. ARM ins
STRUCTURE	19,160.90	566.72	137.31
Wings	10,035.09	643.04	142.21
Fin & Rudder	1,034.75	754.31	209.80
Fuselage - fwd Sta. 255 ins.	2,583.25	184.48	128.75
Sta. 255-485 ins	1,706.64	375.19	130.35
Sta. 485-591.65 ins.	1,157.50	538.54	105.62
Sta. 591.65 - 742.5 ins	1,574.07	659.68	110.72
Sta. 742.5" aft	1,018.76	806.59	127.44
"Marry Up"	50.84	492.48	105.69
LANDING GEAR RETRACTED	2,584.25	487.74	134.82
Main Landing Gear	1,934.94	539.49	141.00
Main Gear Doors & Fairings	287.98	538.52	138.40
Nose Landing Gear	333.81	170.81	99.70
Nose Gear Door & Fairing	27.52	162.22	88.66
POWER PLANT & SERVICES	10,800.67	671.41	121.32
Engines & Accessories PS13	9,186.78	687.95	121.16
Gear Box & Drives on Fuselage	281.84	601.70	102.49
Engine Controls	32.43	375.76	118.61
Gear Box, Starter & Drives on Engine	315.45	615.98	105.24
Engine Nose Bullet (Orenda Supplied)	70.00	587.17	116.00
Fire Extinguishing System	65.46	700.45	134.21
Engine Mountings	132.38	666.82	136.52
Fuel System	716.33	530.91	134.48
FLYING CONTROLS GROUP	1,926.56	650.93	138.14
Mechanical Flying Controls	952.74	676.42	147.63
Hydraulic Flying Controls	973.82	626.00	128.86
EQUIPMENT FIXED & REMOVABLE	8,915.73	333.14	114.22
Instruments	46.07	163.68	138.70
Probe	15.25	- 23.71	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Oxygen System	26.07	240.54	156.70
Cockpit Equipment	6.00	187.50	145.00
Ejector Seats	342.94	204.50	134.11
Air Conditioning System	856.00	333.49	134.98
Hydraulic Utility System	647.33	505.17	117.69
Cockpit Insulation	14.31	187.48	132.00

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Aircraft: ARROW 2
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WEIGHT & C.G. SUMMARY

DESCRIPTION (Cont'd)	WEIGHT lb	H. ARM	V. ARM
Drag Chute	91.07	786.68	143.19
Electrical System	1,264.02	434.54	112.85
Low Pressure Pneumatics	56.94	421.96	128.47
Surface Finish	100.00	591.52	140.20
Intake Deicing Boots	88.00	195.82	118.00
Canopy Actuation	64.92	221.99	154.35
Cabin Consoles	17.28	174.66	124.33
Radar Door Actuation	10.00	268.00	95.00
MH 64 Damping System	180.15	471.27	135.69
Radio & Radar Remov.	2,095.20	209.73	108.59
Radio & Radar Fixed	784.08	238.57	117.84
Sparrow Pack Structure	912.02	384.10	98.16
Sparrow Pack Mechanisms	553.32	372.85	99.13
Sparrow Pack Hydraulics	331.94	373.52	99.00
Sparrow Pack Electronic Remov.	185.50	331.91	100.00
Sparrow Pack Electrics & Electronic Fixed	217.11	335.24	110.00
Sparrow Pack Air Conditioning	5.21	305.50	102.50
Aircraft Basic Weight U/C Up	43,388.11	543.82	128.47
U/C Down		546.05	124.78
Useful Load (less fuel)	2,798.76	377.29	104.80
Crew	390.00	194.00	136.50
Oil	138.97	636.92	110.57
Engine Fire Extinguishing 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	259.68	159.91
Water for Air Conditioning	285.00	267.91	131.56

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WEIGHT & C.G. SUMMARY

DESCRIPTION	WEIGHT lb	H. ARM	V. ARM	% M.A.C.
U/C Up Operational Wt. Empty	46,186.87	533.74	127.04	27.00
U/C Down		535.84	123.58	27.58
U/C Up Op. Wt. Empty Less Missiles	44,458.87	539.35	128.55	28.55
U/C Down		541.53	124.95	29.15
Normal Combat Mission Fuel* (2,265 gals at 7.8 lb/gal)	17,670.00	-	-	
Normal Combat Weight *	63,856.87			
Half Combat Mission Fuel * (1,133 gals at 7.8 lb/gal)	8,835.00			
Combat Wt (half mission Fuel)*	55,021.87			
Max Internal Fuel (2492 gals at 7.8 lb/gal)	19,438.00	541.85	144.16	
U/C Up A.U.W. Max Int. Fuel	65,624.87	536.14	132.11	27.67
U/C Down		537.62	129.67	28.07
Max. External Fuel (500 gal @ 7.8 lb/gal + drop tank)	4,248.00	521.84	60.67	
U/C Up A.U.W. Max. Int. & Ext. Fuel	69,872.87	535.27	127.77	27.43
U/C Down		536.66	125.48	27.81

N.B.

- 1) Aircraft Datum = 120 ins above an arbitrarily chosen ground line
- 2) * Fuel weights in accordance with latest data issued by Aerodynamics dated November 19th, 1957. Centres of gravity have temporarily been omitted until a fuel sequencing system is finally established.

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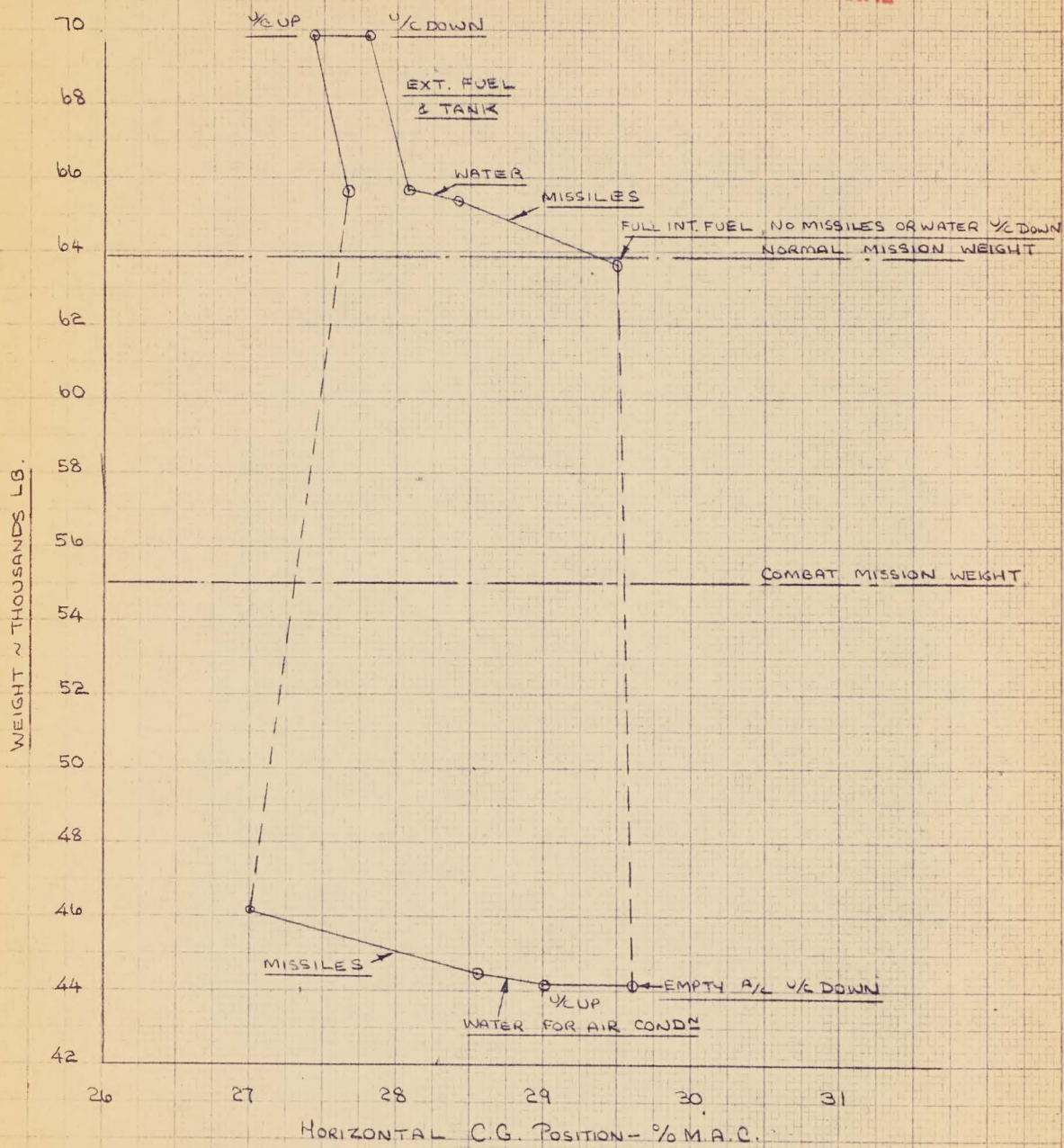
BY: Kathleen Lytle

SHEET: 4

DATE: April 1st 1958

HORIZONTAL C.G. PLOT OF
FIXED POINTS ON ARROW 2
FLIGHT ENVELOPE.

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AVRO AIRCRAFT LTD.

MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPON

PROJECT Arrow 2 Production A/C

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
TOTAL WING GROUP	1000000			
OUTER WING	1010000			
100 OUTER WING SKINS	1010001	64	929107	
100 POSTS AND INTERCOSTALS	1010002	64	24367	
100 OUTER WING SPARS	1010003	64	392587	
100 OUTER WING RIBS	1010004	64	134566	
18 AILERON CONTROL BOX	1010006	64	379207	
100 RIB 12	1010007	64	76266	
100 O W AILERON JACK FITTING	1010009	64	10467	
AILERON JOINTS AND FAIRING	1010010		32937	
			197945	
AILERON	1020000			
100 AILERON STRUCTURE	1020001	74	336007	
			33600	
ELEVATOR	1030000	82	449007	
97 ELEVATOR MARRY UP	1030001		15977	
			46497	
INNER WING	1040000			
70 MAIN UC STRUCTURE	1040001	62	333155	
16 INNER WING SPARS	1040002	62	411125	
5 I W STRUCTURE F S TO M S	1040007	62	1080554	
I W STRUCTURE M S TO R S	1040008	62	149666	
STRUCT AFT OF REAR SPAR	1040009	62	316397	
40 ELEVATOR CONTROL BOX I W	1040010	62	428387	
25 TRANSP JOINT MARRY UP	1040011		70656	
36 CENTRE LINE JOINTS	1040012	62	590698	
INNER WING SKINS	1040013	62	2251076	
17 STRUT PICK UP FITTINGS	1040014	62	127406	
8 RIBS 1 TO 9 INNER WING	1040016	62	486186	
74 DORSAL FAIRINGS I W	1040017	62	954	
RIB 10	1040018	62	108006	
FUSELAGE HINGE JOINT I W	1040019	62	138126	
25 TRANSP JOINT	1040020	62	129426	
FUSELAGE HINGE JOINT	1040021		37405	
74 DORSAL FAIRINGS C A	1040023		60335	
SHUT OFF VALVE OPERAT MECH	1040024	62	5135	
LEADING EDGE I W	1040025	62	221384	
			694597	
LEADING EDGE O W	1050000	65	308706	
			30870	

WEIGHT AND C. OF G BY FUNCTIONAL COMPON

PROJECT _____

[illegible]

AVRO AIRCRAFT LTD.
MALTON, ONT.

**WEIGHT AND C. OF G BY FUNCTIONAL
COMPON**

PROJECT _____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	
	TOTAL FUSELAGE GROUP	3000000			
	RADAR NOSE STRUCTURE	3010000			
	RADOME	3010001	51	15944	
	RADAR NOSE STRUCTURE C A	3010002		2631	
	RADAR NOSE STRUCTURE R N	3010003	51	16999	
				33206	
	FRONT FUSELAGE STRUCTURE	3020000			
	SKIN F F	3020001	52	82641	
	FRONT FUSELAGE FORMERS	3020002	52	102611	
	LOWER LONGERONS F F	3020003	52	67721	
38	TOP LONGERONS F F	3020004	52	187461	
66	NOSE U C SUPPORT STRUCT	3020005	52	33432	
	CREW BULKHEADS	3020006	52	126092	
	BULKHEAD STA 120	3020007	52	29801	
	BULKHEAD STA 255	3020008	52	109542	
	COCKPIT FLOOR	3020009	52	58641	
	SHEAT PANEL BELOW NAV ARCH	3020010	52	20012	
	MISC STRUCTURE F F	3020011	52	5521	
	LOWER SHEAR PANEL	3020012	52	31362	
	CANOPY ARCHES	3020013	52	86632	
	WINDSCREEN	3020014	52	129331	
				107078	
	CENTRE FUSELAGE STRUCTURE	3030000			
	SKIN C F	3030001	54	220433	
	FORMERS C F	3030002	54	287493	
5	BULKHEAD STA 485	3030003	54	127404	
66	LONGERONS C F	3030004	54	144534	
	ELECTRONICS BAY STRUCTURE	3030005	54	50482	
	RADAR ACCESS DOOR	3030006	54	26302	
	AIRCOND BAY STRUCTURE	3030007	54	60052	
	FWD DORSAL FAIRING	3030008	54	29692	
	DEFLECTOR SHIELD	3030009	54	20453	
	DORSAL OVER FUEL TANK	3030010	54	41384	
	PACK MTG STRUCTURE	3030011	54	24702	
	SEALING MISSILE BAY	3030012	54	5592	
	MISC ITEMS C F	3030013	54	3743	
	ARMAMENT BAY ROOF	3030014	54	124183	
	INTEGRAL FUS FUEL TANK	3030015	54	225243	
	DUCT C F	3030016	54	315523	
				170717	
	DUCT BAY STRUCTURE	3040000			

WEIGHT AND C. OF G BY FUNCTIONAL
COMPON

PROJECT_____

[illegible]

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY

**FUNCTIONAL
COMPONENT**

PROJECT _____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
ENGINE GROUP	5000000		
PS 13 ENGINES	5010000		917228
			917228
PS 13 ENGINES SERV ACCESS	5010100		1450
			1450
ACC GEAR BOX ON FUS D B	502000156		45245
ACC GEAR BOX ON FUS E B	502000258		23660
			28184
ENGINE CONTROLS	5030000		
ENGINE CONTROLS F F	503000152		14581
ENGINE CONTROLS C F	503000254		2641
ENGINE CONTROLS D B	503000356		5084
ENGINE CONTROLS E B	503000458		10136
			3243
STARTER AND ENG GEAR BOX	5040000		31545
			31545
ENGINE ANTI ICING	5050000		70005
			7000
FIRE EXT SYSTEM	5060000		
55 ENG FIRE EXT SYSTEM ENG	506000158		64007
55 ENG FIRE EXT SYSTEM D B	506000256		1465
			6546
ENGINE MTGS AND BRACKETS	5070000		
ENGINE MOUNTS	5070001		84216
ENGINE MTG ACCESSORIES	5070002		48176
			13238
FUEL SYSTEM	5080000		

WEIGHT AND C. OF G BY FUNCTIONAL
COMPON

PROJECT _____

[illegible]

WEIGHT AND C. OF G BY FUNCTIONAL COMPO

DESCRIPTION				REFERENCE NO.	COMP. NO.	WEIGHT	
FLYING CONTROLS GROUP				6000000			
MECHANICAL CONTROLS				6010000			
49	MECHANICAL	CONTROLS	F F	6010000152		109321	
	MECHANICAL	CONTROLS	C F	6010000254		12283	
70	MECHANICAL	CONTROLS	FIN	6010000583		124237	
72	MECHANICAL	CONTROLS	I W	6010000662		398087	
46	MECHANICAL	CONTROLS	O W	6010000764		302377	
	MECHANICAL	CONTROLS	C A	60100008		6467	
						95274	
FLYING CONTROLS HYDRAULICS				6020000			
	FLYING	CONT	HYDRAULICS D B	6020000156		31845	
	FLYING	CONT	HYDRAULICS E B	6020000258		398536	
	FLYING	CONT	HYDRAULICS R F	6020000359		487	
80	FLYING	CONT	HYDRAULICS I W	6020000462		262647	
74	FLYING	CONT	HYDRAULICS O W	6020000564		117017	
60	FLYING	CONT	HYDRAULICS FIN	6020000683		54067	
	FLYING	CONT	HYDRAULICS R N	6020000751		35001	
	FLYING	CONT	HYDRAULICS F F	6020000852		55061	
	FLYING	CONT	HYDRAULICS C F	6020000954		19203	
						97362	

FUNCTIONAL COMPON

[illegible]

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT _____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
REMOVABLE EQUIPMENT GROUP	8000000		
94 EJECTOR SEATS	801010052		342942
			34294
RADAR REMOVABLE	8020100		
RADAR REMOVABLE R N	802010151		103930
RADAR REMOVABLE F F	802010252		209101
RADAR REMOVABLE C F	802010354		607702
RADAR REMOVABLE D B	802010456		75505
RADAR REMOVABLE F I N	802010583		35007
RADAR REMOVABLE C A	8020106		82305
RADAR REMOVABLE E B	802010758		45007
RADAR REMOVABLE I W	802010862		1304
			209520
DAMPING SYSTEM	8030000		
DAMPING SYSTEM F F	803010152		7841
DAMPING SYSTEM C F	803010254		23031
DAMPING SYSTEM E B	803010358		3696
DAMPING SYSTEM I W	803010462		60705
DAMPING SYSTEM O W	803010564		957
DAMPING SYSTEM R N	803010651		287
DAMPING SYSTEM C A	9030107		81074
			18015
SPARROW PACK	8050000		
MISSILE PACK STRUCTURE	805010094		91202
			91202
SPARROW PACK MECHANISMS	805020094		55332
			55332
SPARROW PACK HYDRAULICS	805030094		33194
			33194
SP PACK ELECTRONICS FIXED	805040094		21711
			21711

FUNCTIONAL COMPON

PROJECT_____

[illegible]

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
OPERATIONAL LOAD	9000000		
CREW MEMBERS	9010000	52	39000
			39000
ENGINE OIL	9020000		
ENGINE OIL DRAINABLE	9020001		92900
ENGINE OIL TRAPPED ENG	9020002		17736
ENGINE OIL TRAPPED D B	9020003	56	19255
ENGINE OIL TRAPPED E B	9020004	58	9095
			13897
SPARROW MISSILES	9030000	94	172800
			172800
OXYGEN CHARGE	9040000		
OXYGEN CHARGE F F	9040001	52	722
OXYGEN CHARGE C F	9040002	54	12672
			1339
ENGINE FIRE EXT FLUID	9060000		25007
			2500
RESIDUAL FUEL	9070000		
RESIDUAL FUEL C F	9070001	54	46803
RESIDUAL FUEL I W	9070002	62	17160
			21840
WATER FOR AIR CONDITIONING	9100000	54	260002
UNUSABLE WATER FOR AIRCOND	9100001	54	25002
			28500

GHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

UNCLASSIFIED / NON CLASSIFIED

SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	90000000						
	90100000	52	39000	19400	13650	7566000	5323500
			39000			7566000	5323500
	90200000						
	90200001		9290	65225	11390	6059403	1058131
	90200002		1773	63676	11640	1128975	206377
	90200003	56	1925	58084	9555	1118117	183934
	90200004	58	909	59928	9704	544746	88209
			13897			8851241	1536651
	90300000	94	172800	38929	8830	67269312	15258240
			172800			67269312	15258240
	90400000						
	90400001	52	722	20493	13200	14755	9504
	90400002	54	1267	26280	16150	332968	204621
			1339			347723	214125
	90600000		2500	73000	12900	1825000	322500
			2500			1825000	322500
	90700000						
	90700001	54	4680	39424	12300	1845043	575640
	90700002	62	17160	59755	13705	10253958	2351778
			21840			12099001	2927418
NING	91000000	54	26000	26800	13200	6968000	3432000
COND	91000001	54	2500	26700	12700	667500	317500
			28500			7635500	3749500

