

QCX  
Avro  
CF105  
R-7-0400-44  
Iss-14

FILE IN VAULT

ARROW 1 Report # 7-0400-44  
A/C 25201 Issue 14  
UNCLASSIFIED / NON-CLASSIFIED  
WEIGHT & O.C. SUMMARY  
SECRET  
NEA N.A.E. Feb. 1/58



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DATE

JAN 07 1993

Report no.: QCX - AVRO - CF105 - R-7-0400-44- Iss-14

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

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Ref. 5864/11/J  
Date February 1st, 1958  
To See Distribution  
From Mr. E.F. Burnett  
Subject ARROW 1 A/C 25201 WEIGHT & C.G. SUMMARY - Report # 7-0400-44 Iss. 14

Attached is a copy of Weight and C.G. Summary Report # 7-0400-44 Iss. 14, date February 1st, 1958 for your retention.

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

Classification cancelled / changed to: UNCLASSIFIED

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

Date: 5 Nov 1992

Signature: *B. Aubrey*

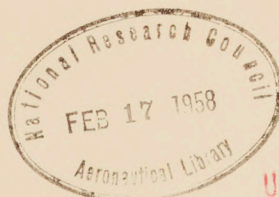
Unit / Rank / Appointment: DSI 3, Secretary CRAD HQ DRP

*E. F. Burnett*

amc.

E. F. Burnett  
Weights Supervisor

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	D. Scard	G. Eves
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52357

Date: February 1st, 1958  
Aircraft: ARROW 1, A/C 25201  
with J75 P3 Engines

Report # 7-0400-14 Iss. 14

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I N D E X

<u>Sheet # 1</u>	<u>Content</u>
1-1 to 1-5	Introductory notes and explanations of Weight Changes.
2-1 to 2-2	Weight & C.G. Summaries.
3	Horizontal C.G. Envelopes for Flight conditions with fuel proportioners used.
4-1 to 4-15	I.B.M. Detail Sheets of Weights & C.G.'s.

N.B. The C.G. Envelope for A/C 25201 with fuel sequencing has been omitted until a fully approved sequencing is established.

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Date: February 1st, 1958  
ARROW 1 A/C 25201 With  
J75 P3 Engines

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Sheet # 1-1

INTRODUCTION & WEIGHT CHANGES

The following is a Weight & C.G. Summary for the first Arrow 1 Aircraft # 25201, with J75 P3 Engines, based on the latest information available. All weight and C.G. changes are relative to Issue 13 of January 1st, 1958.

Note 1) This summary does not apply for A/C 25202 and 25203 which will have J75 P5 Engines, nor for Aircraft 25204 and 25205 which are for full Astra I trial Installations etc.

2) The statement herein is for the Aircraft complete to drawings and not necessarily in the condition to be encountered for first flight.

For early flights there may be some shortages in non-essential equipment, some flight test installations will probably be incomplete etc. (see also general note (j)). A statement for first flight will be issued later.

GENERAL:

a) Pratt & Whitney J75 P3 Engines comprise the Power Plant for Aircraft # 25201. J75 P5 Engines, which are partially redesigned versions of the P3 Engines, are to be installed on Aircraft # 25202 and subsequent Arrow 1 Aircraft. (J75 P3 Engines = 6,175 lb each; J75 P5 Engines = 5,950 lb each).

b) The Instrument Package containing Flight Instrumentation is installed, the package for Aircraft # 25201 to 25203 differing from those for Aircraft 25204 and Aircraft 25205 (Astra I Trial Installations).

A relatively detailed estimate of other proposed Flight Test Installations throughout the Aircraft has been made. These installations amount to 1,457 lb (figure partially confirmed by Actual Weights of some cable assys.)

c) Emergency lowering for the Landing Gear and additional Fire Protection to be installed in the first aircraft, are allowed for in the summary.

d) An Interim Radio and Radar System with Minneapolis-Honeywell M.H 64 Damping System is installed. Currently there is no Doppler or Tacan installation, although provisions for future installation of Doppler, which is not yet available, will be made.

e) The original design of tailcones and stinger are recorded, the redesigned versions will be recorded at a later date, when they are available for retrofit. The ensuing weight changes will be:

Tailcones	+ 139.84 lb/A/C
Stinger	= 29.72
Net Change	+ 110.12 lb/A/C

f) Pending Flight Test requirements a "Buz& Damping" System may be installed on the first Aircraft. Provisions for this installation are already included in the structural group as modifications to the Control Boxes. For the first flight the control surfaces will be unmodified, however, if the need for Dampers is proven, a modified set of control Surfaces will be made available.

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INTRODUCTION & WEIGHT CHANGES

GENERAL:

f) (Continued)

The following weight penalaties ensue:

Ailerons	+	11.68 lb/A/C
Elevators	+	11.07 lb/A/C
Rudder	+	8.78 lb
Equipment	+	123.97 lb
	+	<u>155.50 lb.</u>

g) It should be noted that due to material substitutions and concessions introduced by Planning & Production Departments there is a structural weight penalty of 203 lb to-date. This is all recorded in the structural weight breakdown. No account has been taken of variations on machinings etc. nor of shop repair schemes, since it is impossible to assess these, except where actual weights have been obtained.

h) A considerable number of Actual Weights have now been obtained. Structural weights are checking within 0.5% of estimates of sub-assemblies etc. However, equipment (excluding Engines and Gear Boxes) shows a consistant increase averaging about 11% over manufacturer's quotations or initial specification weights. Preceeding the report titles on the I.B.M. Tabulation Sheets, will be found a number varying from 0 to 100, this is the percentage of actual weight recorded within the report.

A Summary of Actual Weights obtained so far is as follows:

Structure	74.87%
Landing Gear	98.75%
Power Plant	92.97%
Flying Controls	56.18%
Equipment	23.48%

i.e. 70.52% of the Basic Weight of A/C 25201.

j) The Aircraft is ballasted such that the C.G. on a flight envelope (using fuel proportioners) does not travel aft of 31% M.A.C.

For first flight the aft restriction is 30% M.A.C., this may be achieved by installing maximum ballast in the Radar Nose, and any further ballast requirements in the Observer's cockpit.

1. STRUCTURE

WEIGHT (lb)

a) Wings:

No Weight Changes.

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INTRODUCTION & WEIGHT CHANGES

<u>1. STRUCTURE:</u>	<u>WEIGHT (lb)</u>
b) <u>Fin &amp; Rudder</u>	
No Weight Changes.	
c) <u>Front Fuselage, fwd. Sta. 255"</u>	
Navigator's Canopy - addition of insulation batting	+ 0.24
Miscellaneous Items- addition of Stainless Steel Fairings at canopy hinges	+ 1.33
<u>Front Fuselage Increase</u>	+ 1.57
d) <u>Centre Fuselage Sta. 255"-485"</u>	
Dorsal Fairings over Fuel Tanks - alterations to insu- lation etc.	- 0.90
Structure for Ram Air Turbine - deleted, currently no longer a requirement on A/C 25201	- 40.74
Electronics Bay Structure - items (eg Side Access Door) that would have been removed for R.A.T. installation now reinstated	+ 9.74
Dorsal Fairing Sta. 268"-315" - modifications to aft end, skin Al. was Mg. etc.	+ 0.82
Deflector Shield - addition rubber seal fwd. end	+ 0.16
C.F. Duct - addition of inner seal ring, .016 Al. at joint to floating duct, aerodynamic requirement	+ 0.82
<u>Centre Fuselage Decrease</u>	- 30.10
e) <u>Duct Bay Sta. 485"-591.65"</u>	
No Weight Changes	
f) <u>Engine Bay Sta. 591.65"-742.5"</u>	
No Weight Change	
g) <u>Rear Fuselage Sta. 742.5" Aft.</u>	
No Weight Change.	
h) <u>Fuselage "Marry-Up"</u>	
No Weight Change	
<u>TOTAL STRUCTURAL DECREASE</u>	<u>- 28.53</u>

2. LANDING GEAR

Main Landing Gear - Dowty quote actual weight of  
main leg assy. + 4.12

continued.

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INTRODUCTION & WEIGHT CHANGES

	<u>WEIGHT (lb)</u>
2. <u>LANDING GEAR (Continued)</u>	
Nose Gear Door & Fairing - actual weight of Door obtained addition of aerodynamic fairing to door	+ 0.53 + 1.08
<u>TOTAL LANDING GEAR INCREASE</u>	<u>+ 5.73</u>
3. <u>POWER PLANT &amp; SERVICES</u>	
No Weight Changes	
4. <u>FLYING CONTROLS GROUP</u>	
Mechanical Controls - addition of self centring unit for elevator controls	+ 3.01
Flying Control Hydraulics Fuselage - addition of two surge damping accumulators in return lines addition of boosters to overcome friction in system plus associated values, filters and piping.	+ 13.40 + 77.06
<u>TOTAL FLYING CONTROLS INCREASE</u>	<u>+ 93.47</u>
5. <u>EQUIPMENT GROUP</u>	
Drag Chute - alteration to control mounting structure in cockpit and addition of inner race to release mechanism.	+ 0.21
Electrics F.F. - Actual Weight of Master Warning Control Box	+ 3.05
Air Conditioning System - incorporation of actual weights of engine manifolds, previously target weights used	+ 9.66
Ram Air Turbine Equipment - the system is deleted from A/C 25201 currently. Unit when tested failed to give expected output	- 91.35
Flight Test Instrumentation in Pack - revised weight estimate by Flight Test, main patch panel deleted, but increases in cables etc	+ 12.00
<u>EQUIPMENT GROUP DECREASE</u>	<u>- 66.43</u>

SUMMARY

Weight Change - Aircraft Basic Weight

Structure	- 28.53 lb
Landing Gear	+ 5.73 lb
Flying Control	+ 93.47 lb
Equipment	- 66.43 lb
	+ 4.24 lb

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

UNBALLASTED CONDITION

<u>Issue 13</u>	<u>Issue 14</u>	
47,999.68 lb	48,003.92 lb	+ 4.24 lb

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INTRODUCTION & WEIGHT CHANGES

- N. B. If Aircraft Ballasted such that the C.G. in the Flight Envelope, using correctly functioning fuel system proportioners, does not exceed 31% M.A.C., further 893 lb of ballast are necessary.

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WEIGHT & C.G. SUMMARY

DESCRIPTION	WEIGHT lb	H. ARM ins.	V. ARM ins.
STRUCTURE	18,577.44	561.74	137.53
Wings:	9,963.50	642.82	142.26
Fin & Rudder	1,025.85	754.34	209.31
Fuselage Fwd. Sta. 255"	2,646.56	181.60	128.17
Sta. 255"-485"	1,652.04	379.71	130.79
Sta. 485" 591.65"	1,001.86	533.99	104.61
Sta. 591.65-742.5"	1,433.13	661.00	107.31
Sta. 742.5" Aft.	801.79	801.03	129.06
"Marry-Up"	52.71	469.18	103.86
LANDING GEAR - RETRACTED	2,606.56	488.21	134.89
Main Landing Gear	1,963.74	539.50	141.00
Main Gear Doors & Fairings	282.34	537.60	138.37
Nose Landing Gear	333.81	170.81	99.70
Nose Gear Door & Fairing	26.67	161.77	88.25
POWER PLANT & SERVICES	11,391.81	652.82	120.34
Engines & Accessories J75 P3	12,562.29	664.92	119.78
Gear Box & Drives on Fuselage	275.54	601.39	102.98
Gear Box & Starters on Engine	286.30	589.08	105.59
Engine Controls	32.43	375.76	118.62
Engine Nose Bullets	70.58	562.75	115.07
Fire Extinguishing System	65.46	700.45	134.21
Engine Mountings	206.21	635.04	127.71
Fuel System	893.00	536.67	136.12
FLYING CONTROLS GROUP	1,946.48	665.69	138.27
Mechanical Flying Controls	944.13	684.34	148.22
Hydraulic Flying Controls	1,002.35	648.12	128.90
EQUIPMENT FIXED & REMOVABLE	9,560.67	403.77	113.54
Instruments	46.07	163.68	138.70
Probe	15.00	-38.14	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Ejector Seats	339.06	204.43	134.10
Oxygen System	26.07	240.54	156.70
Air Conditioning System	822.07	339.45	134.46
Surface Finish	100.00	591.52	140.20
Hydraulics Main System	641.97	504.41	117.78
Cockpit Insulation	14.31	187.48	132.00
Drag Chute	90.99	786.18	143.17
Electrical System	1,122.03	416.87	112.94
Low Pressure Pneumatics	54.65	433.30	129.37
Intake De-icing Boots	88.00	195.82	118.00
Canopy Actuation	64.92	221.99	154.35
Console panels	17.45	174.76	124.34
M.H.64 Damping System	99.08	450.83	140.34
Interim Radio & Radar	631.89	340.18	124.23
Instrument Pack Structure	686.80	385.81	94.68
Pack Instrumentation (A/C 25201)	3,048.00	394.00	95.00
Flight Test Installations	1,456.73	488.48	128.90
Additional Fire Protection	177.67	402.00	109.57
Emergency Landing Gear Lowering	12.91	458.83	128.60

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Date: February 1st, 1958  
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WEIGHT & C. G. SUMMARY

DESCRIPTION	WEIGHT lb	H. ARM ins.	V. ARM ins.	M.A.C. %
AIRCRAFT BASIC WEIGHT	47,082.96	557.73	127.29	
	U/C Up			
	U/C Down	559.81	123.85	
USEFUL LOAD (less fuel)	921.02	366.58	132.34	
Crew	390.00	194.00	136.50	
Engine Fire Extinguishing Fluid	25.00	730.00	129.00	
Residual Fuel	218.40	553.98	134.04	
Oxygen Charge	13.39	259.69	159.91	
Water for Air Conditioning	140.00	268.00	132.00	
Oil	134.25	608.92	115.68	
BALLAST	893.00	85.98	116.50	
Operational Weight Empty	48,896.98	545.51	127.19	30.25
	U/C Up			
	U/C Down	547.51	123.87	30.80
Maximum Internal Fuel (2,544 gals. @ 7.8 lb/gal.)	19,843.00	538.88	144.32	
A.U.W. Maximum Internal Fuel	68,739.98	543.60	132.13	29.72
	U/C Up			
	U/C Down	545.02	129.77	30.11

- N.B. 1) Aircraft Datum is considered to be 120" above an arbitrarily chosen ground line.
- 2) The above figures are for the Aircraft in the BALLASTED condition such that the aft. C.G. on the horizontal C.G. Envelope does not exceed 31% M.A.C. i.e. 303 lb on Former Sta. 68.5 and 590 lb on the Shear Panel.

REPORT No: 7-0400-44-1A

DATE: Feb 1st 1958

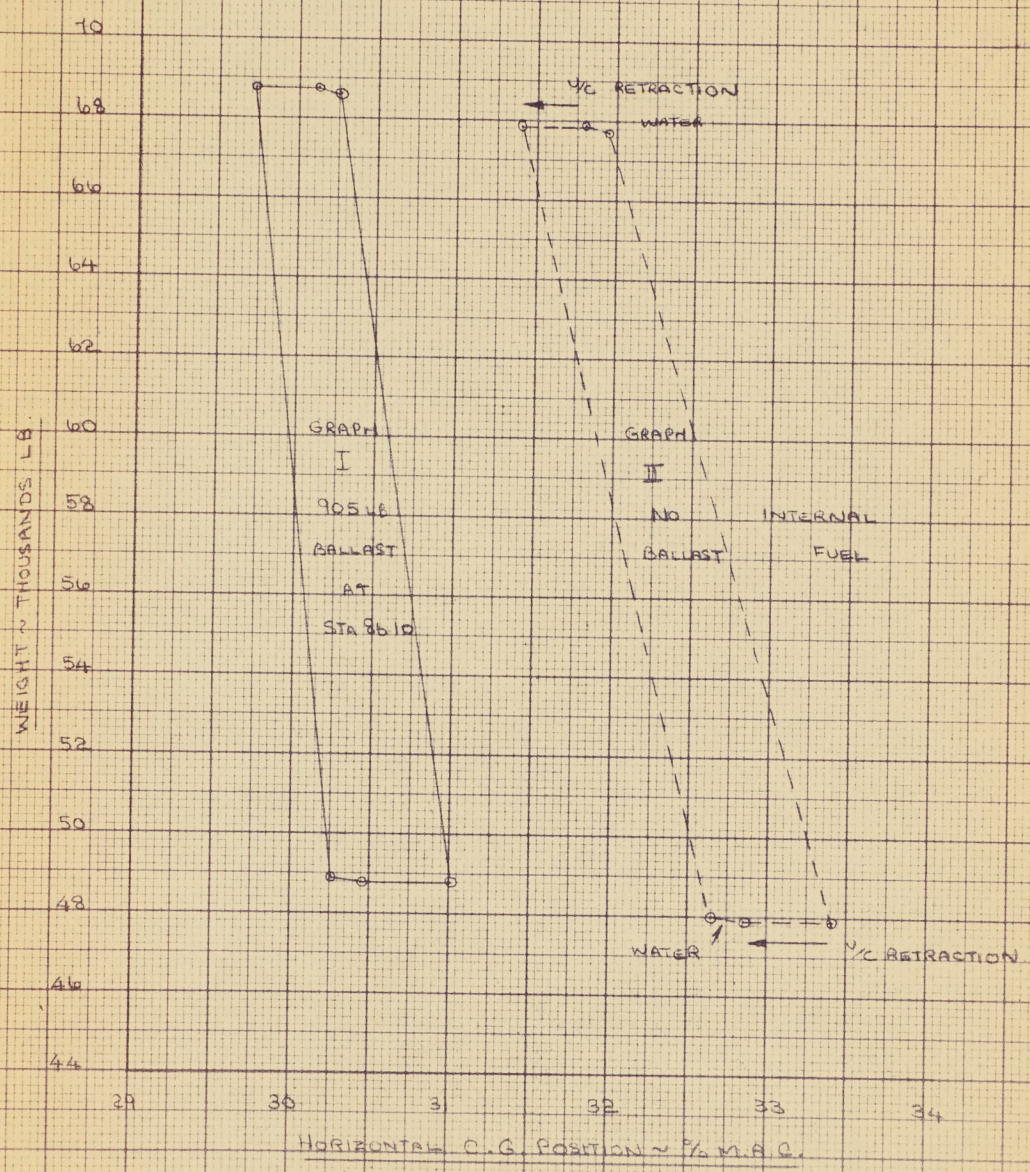
BY: Kathleen Lyell

SHEET: 3

HORIZONTAL C.G. ENVELOPE  
ARROW 1 = 1/2 25201  
NORMAL FLIGHT CONDITIONS  
FUEL SYSTEM PROPORTIONERS USED

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G9-12  
10 X 10 TO THE 35 INCH  
MADE IN CANADA



HORIZONTAL C.G. POSITION ~ % M.A.C.

**AVRO AIRCRAFT LTD.**  
MALTON, ONT.

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

PROJECT Arrow 1 A/C 25201

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. A.
TOTAL WING GROUP	1000000			
OUTER WING	1010000			
100 OUTER WING SKINS	1010001	64	9291070	
100 POSTS AND INTERCOSTALS	1010002	64	243673	
100 OUTER WING SPARS	1010003	64	3925870	
100 OUTER WING RIBS	1010004	64	1345669	
98 AILERON CONTROL BOX	1010006	64	3753077	
100 RIB 12	1010007	64	762664	
100 O W AILERON JACK FITTING	1010009	64	104672	
AILERON JOINTS AND FAIRING	1010010		329378	
BUZZ DAMP STRUC PROV O W	1010011	64	80075	
			198355	
AILERON	1020000			
100 AILERON STRUCTURE	1020001	74	3360079	
			33600	
97 ELEVATOR	1030000	82	4490075	
97 ELEVATOR MARRY UP	1030000		159773	
			46497	
INNER WING	1040000			
96 MAIN U C STRUCTURE	1040001	62	3307157	
100 FRONT SPAR I W	1040002	62	1111048	
100 MAIN SPAR I W	1040003	62	1510656	
100 FWD CENTRE SPAR I W	1040004	62	536460	
100 AFT CENTRE SPAR I W	1040005	62	366665	
100 REAR SPAR I W	1040006	62	766770	
94 I W STRUCTURE F S TO M S	1040007	62	10591849	
100 STRUCTURE MS TO R S	1040008	62	1497960	
100 STRUCTURE AFT OF REAR SPAR	1040009	62	3221271	
40 ELEVATOR CONTROL BOX	1040010	62	4283872	
25 TRANSP JOINT MARRY UP	1040011		706563	
100 INNER WING JOINTS	1040012	62	6347166	
100 SKINS M S TO R S	1040013	62	21903862	
100 STRUT PICK UP FITTINGS	1040014	62	539156	
100 RIBS 1 TO 9 INNER WING	1040016	62	5120461	
74 DORSAL FAIRING I W	1040017	62	9548	
100 RIB 10	1040018	62	1080063	
77 FUSELAGE HINGE JOINT	1040019	62	1262861	
65 TRANSPORT JOINT O W TO I W	1040020	62	1294263	
49 FUSELAGE HINGE JOINT	1040021		374052	
BUZZ DAMP STRUC PROV I W	1040022	62	55274	
74 DORSAL FAIRING C A	1040023		603357	
			664890	

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	1000000						
	1010000						
	1010001	64	929.10	706.46	135.97	656.37	126.32
LS	1010002	64	24.36	732.07	134.10	178.33	32.66
	1010003	64	392.58	701.18	136.36	275.26	53.53
	1010004	64	134.56	695.06	136.50	93.52	18.36
	1010006	64	375.30	774.09	135.08	290.51	50.69
	1010007	64	76.26	648.73	138.32	49.47	10.54
TING	1010009	64	10.46	727.91	136.70	7.61	1.42
AIRING	1010010		32.93	787.26	132.24	25.92	4.35
O W	1010011	64	8.00	758.28	136.80	6.06	1.09
			1983.55			1422.59	269.61
	1020000						
	1020001	74	336.00	792.13	135.56	266.15	45.54
			336.00			266.15	45.54
	1030000	82	449.00	755.23	142.60	339.09	64.02
	1030000		15.97	738.10	142.60	11.78	2.27
			464.97			350.88	66.30
	1040000						
	1040001	62	330.71	577.57	139.83	191.00	46.24
	1040002	62	111.10	484.28	142.60	53.80	15.84
	1040003	62	151.06	565.70	142.80	85.45	21.57
	1040004	62	53.64	600.98	144.15	32.23	7.73
	1040005	62	36.66	654.92	144.50	24.00	5.29
	1040006	62	76.67	703.74	144.20	53.95	11.05
M S	1040007	62	1059.18	499.29	144.05	528.83	152.57
	1040008	62	149.79	609.64	145.72	91.31	21.82
R SPAR	1040009	62	322.12	718.29	150.20	231.37	48.38
	1040010	62	428.38	724.70	143.28	310.44	61.37
	1040011		70.65	636.21	138.76	44.94	9.80
	1040012	62	634.71	662.22	150.46	420.31	95.49
	1040013	62	2190.38	624.46	144.64	1367.80	316.81
GS	1040014	62	53.91	567.66	143.30	30.60	7.72
NG	1040016	62	512.04	612.87	144.99	313.81	74.24
	1040017	62		954.82	161.50	45.86	15.34
	1040018	62	108.00	636.83	138.35	68.77	14.94
	1040019	62	126.28	616.81	138.11	77.89	17.44
T O I W	1040020	62	129.42	630.71	137.10	81.62	17.74
	1040021		37.40	527.96	143.09	19.74	5.35
I W	1040022	62	5.52	741.50	142.00	4.09	0.78
	1040023		60.33	570.25	160.34	34.40	9.67
			6648.90			4066.92	962.07







WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. \_\_\_\_\_

SHEET \_\_\_\_\_

UNCLASSIFIED / NON CLASSIFIÉ

	REFERENCE NO.				COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT		V. MOMENT	
FIN	2010000	083			85170	74957	21170	63840877	18030489			
	2010001	83			18580300	22342		148555	41333			
	2010002				4830	68538	15355	3310385	741647			
					90185			67299817	18813469			
	2020000	84			12400	81325	21438	10084300	2658312			
					12400			10084300	2658312			

PROJECT \_\_\_\_\_

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H.
TOTAL FUSELAGE GROUP		3000000			
FUSELAGE BASIC STRUCTURE		3010000			
100	RADOME	3010001	51	181.00	3
100	RADAR NOSE ACCESS DOORS	3010002	51	80.08	9
	NOSE STRUCTURE FWD STA 120	3010003	51	121.88	9
	SKIN F F	3010004	52	110.54	19
88	SKIN C F	3010005	54	211.82	37
	SKIN D B	3010006	56	59.37	53
3	SKIN E B	3010007	58	177.25	66
4	FORMERS F F	3010011	52	106.64	18
100	FORMERS C F	3010012	54	278.24	37
	FORMERS D B	3010013	56	74.91	53
	LIGHT FORMERS E B	3010014	58	135.01	66
72	HEAVY FORMERS E B	3010015	58	218.90	66
	LOWER LONGERONS F F	3010016	52	68.46	18
	LONGITUDINAL MEMBERS E B	3010017	58	110.67	0
75	LOWER LONGERON E B	3010018	58	68.42	65
	TOP LONGERONS E B	3010019	58	6.38	66
	LOWER SHEAR PANEL F F	3010020	52	29.40	23
	TOP WING LONGERONS D B	3010021	56	4.98	53
	LONGERONS C F	3010022	52	53.25	
	LONGERONS C F	3010023	54	138.13	41
43	LONGERONS F D B	3010024	54	12.58	48
43	LONGERONS A D B	3010025	56	86.55	52
	ELECTRONICS BAY STRUCTURE	3010026	54	35.70	27
59	LONGITUDINAL BEAMS D B	3010027	56	65.70	52
	RADAR ACCESS DOORS C F	3010028	54	21.38	27
72	MAIN FRAME AT STN 538 77	3010029	56	59.80	53
	DIVE BRAKE ACCOM STRUCTURE	3010030	56	36.34	50
48	TOP LONGERONS F F	3010031	52	188.66	19
100	DUCT C F	3010032	54	333.68	37
97	DUCT D B	3010033	56	316.33	54
22	CANOPY ARCHES	3010034	52	84.61	22
4	ACCESS PANEL STIFFENERS	3010036	56	39.54	54
66	NOSE U C SUPPORT STRUCTURE	3010037	52	33.43	21
3	CREW BULKHEADS	3010038	52	127.18	20
51	EQUIPMENT BAY STRUCTURE	3010039	54	61.50	28
86	WINDSCREEN	3010041	52	130.03	13
33	SERVICE ACCESS DOORS	3010042	58	67.04	66
	TORSION BOX E B	3010043	58	60.42	61
	DORSAL FAIRING AIR OUTLET	3010044	54	21.43	29
66	INTERMEDIATE FORMERS	3010045	58	51.54	69
	ENGINE ACCESS DOORS	3010046	58	146.59	62
	SEALING MISSILE BAY	3010047	54	6.97	32
100	MISCELLANEOUS ITEM C F	3010048	54	3.92	37
98	ARMAMENT BAY ROOF	3010049	54	132.16	38
	BULKHEAD AT STA 120	3010050	52	30.60	12
	BULKHEAD AT STA 255	3010051	52	104.29	25
100	BULKHEAD AT STA 485	3010052	54	112.45	48
13	ENGINE TUNNEL	3010054	58	475.72	66

WEIGHT AND C. OF G BY

FUNCTIONAL GROUP COMPONENT

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	3000000						
TURE	30100000						
	30100001	51	18100	3796	11037	687076	1997697
ORS	30100002	51	8008	9509	11450	761481	916916
TA 120	30100003	51	12188	9473	11401	1154569	1389554
	30100004	52	11054	19058	12024	2106671	1329133
	30100005	54	21182	37673	14300	7979895	3029026
	30100006	56	5937	53413	11157	3171130	662391
	30100007	58	17725	66945	10996	11866001	1949041
	30100011	52	10664	18304	12026	1951939	1282453
	30100012	54	27824	37482	13306	10428992	3702261
	30100013	56	7491	53710	11316	4023416	847682
	30100014	58	13501	66827	11119	9022313	1501176
	30100015	58	21890	66217	10984	14494901	2404398
	30100016	52	6846	18430	9044	1261718	619152
E B	30100017	58	1106	70853	9611	783634	106298
	30100018	58	6842	65810	9781	4502720	669216
	30100019	58	638	66605	13911	424940	88752
F	30100020	52	2940	23414	8900	688372	261660
B	30100021	56	498	53899	13550	268417	67479
	30100022	52	532	5295	15250	13406	8083
	30100023	54	138	13411	12289	5678801	1697480
	30100024	54	1258	48717	10700	6128660	134606
	30100025	56	865	552931	9759	4581178	844641
CTURE	30100026	54	3570	27359	9197	976716	328333
B	30100027	56	6570	52007	9125	3416860	599513
F	30100028	54	2138	27410	8974	586026	191864
B 77	30100029	56	5980	53877	10383	3221845	620903
CTURE	30100030	56	3634	50399	9299	1831500	337926
	30100031	52	188	6619292	14763	3639629	2785188
	30100032	54	333	6837286	12917	12441592	4310145
	30100033	56	316	3354471	11811	17230811	3736174
	30100034	52	84	6122844	16055	1932831	1358414
ERS	30100036	56	39	5454018	10350	2135872	409239
CTURE	30100037	52	33	4321049	9186	703668	307088
	30100038	52	127	1820619	12289	2622324	1562915
URE	30100039	54	61	5028360	13752	1744140	845748
	30100041	52	130	0313814	15008	1796234	1951490
	30100042	58	67	0466397	9189	4451255	616031
	30100043	58	60	4261926	9058	3741569	547284
UTLET	30100044	54	21	4329245	16400	626720	351452
	30100045	58	51	5469289	10257	3571155	528646
	30100046	58	146	5962851	8873	9213328	1300693
	30100047	54	6	9732148	10900	224072	75973
F	30100048	54	3	9237000	12500	145040	49000
	30100049	54	13	21638438	11427	5079966	1510192
	30100050	52	30	6012000	12280	367200	375768
	30100051	52	10	42925500	12027	2659395	1254296
	30100052	54	11	24548500	10530	5453825	1184099
	30100054	58	47	57266529	11581	31649176	5509313

AVRO AIRCRAFT LTD.  
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WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT \_\_\_\_\_

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
INTEGRAL FUS FUEL TANK	301005554		2035939	
COCKPIT FLOOR	301005652		598317	
CENTRE BEAM 697 28 717 36	301005958		55771	
DORSAL OVER FUEL TANK	301006154		500741	
SHIELD EXHAUST DEFLECTOR	301006254		198133	
SHEAR PANEL BELOW NAV ARCH	301006352		211525	
33 PACK MOUNTING STRUCTURE	301006454		211929	
88 ENG ACCESS DOORS R F	301006559		845777	
99 TUNNEL FIXED R F	301006659		1040377	
100 SKIN AND STIFFENERS R F	301006759		514377	
100 FAIRING UNDER RUDDER R F	301006859		261678	
100 FORMERS FIXED R F	301006959		900177	
100 LONGERONS C BEAM FIXED R F	301007059		279977	
100 TAILCONES	301007159		3000082	
100 CNTR STRUC STING REMOV R F	301007259		1176083	
MISCELLANEOUS ITEMS E B	301007358		92366	
MTG BRKTS SIDE PANEL D B	301007556		24352	
FORMERS LOWER PANEL D B	301007656		764054	
LOWER PANEL D B	301007756		513755	
JOINT F F TO C F	3010078		85525	
JOINT AIR INTAKES TO F F	3010079		95222	
JOINT C F TO D B	3010080		50048	
100 JOINT D B TO E B	3010081		252158	
FUS JOINT AT STA 742 50	3010082		44374	
7 MISCELLANEOUS ITEMS F F	301008652		71119	
95 ROSE D C DOOR AND FAIRING			631139	
96 DIVE BRAKES	302000072		1115050	
96 DIVE BRAKES C A	3020001		40648	
			11556	
AIR INTAKES	3030000			
7 AIR INTAKES	303010055		7658521	
			76585	
PILOTS AND NAVIG CANOPIES	3040000			
76 PILOTS CANOPY	304010053		2420817	
			24208	
100 NAVIGATORS CANOPY	304020053		1532123	
			15321	

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	REFERENCE NO.				COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT		V. MOMENT	
ANK	3010055	54			203.59	393.39	145.36	80090.27		29593.84		
	3010056	52			59.83	176.84	115.69	10580.34		6921.73		
717 36	3010059	58			5.57	713.67	115.24	3975.14		641.89		
K	3010061	54			50.07	414.03	142.02	20730.48		7110.94		
CTOR	3010062	54			19.81	334.28	164.00	6622.09		3248.84		
V ARCH	3010063	52			21.15	256.99	153.52	5435.34		3246.95		
URE	3010064	54			21.19	292.85	103.09	6205.49		2184.48		
	3010065	59			84.57	772.80	99.10	65355.70		8380.89		
	3010066	59			104.03	771.68	130.59	80277.87		13585.28		
R F	3010067	59			51.43	771.49	137.96	39677.73		7095.28		
R F	3010068	59			26.16	781.34	153.79	20439.85		4023.15		
	3010069	59			90.01	779.29	136.52	70143.89		12288.17		
ED R F	3010070	59			27.99	771.70	125.70	21599.88		3518.34		
	3010071	59			300.00	821.54	128.68	246462.00		38604.00		
OV R F	3010072	59			117.60	835.85	135.86	98295.96		15977.14		
E B	3010073	58			9.23	663.94	102.85	6128.17		949.31		
D B	3010075	56			2.43	525.14	131.45	1276.09		319.42		
U B	3010076	56			76.40	544.72	90.06	41616.61		6880.58		
	3010077	56			51.37	554.12	87.90	28465.14		4515.42		
	3010078				8.55	255.00	120.00	2180.25		1026.00		
F F	3010079				9.52	220.00	120.00	2094.40		1142.40		
	3010080				5.00	485.00	98.00	2425.00		490.00		
	3010081				25.21	584.75	91.50	14741.55		2306.72		
50	3010082				4.43	742.50	115.00	3289.28		509.45		
F F	3010086	52			7.11	190.67	121.54	1355.66		864.15		
					6311.39			2958735.97		756992.19		
	3020000	72			111.50	508.46	90.62	56693.29		10104.13		
	3020001				4.06	487.94	93.74	1981.04		380.58		
					115.56			58674.33		10484.71		
	3030000											
	3030100	55			765.85	210.65	118.60	161326.30		90829.81		
					765.85			161326.30		90829.81		
	3040000											
	3040100	53			242.08	176.86	159.15	42814.27		38527.03		
					242.08			42814.27		38527.03		
	3040200	53			153.21	232.77	162.23	35662.69		24855.26		
					153.21			35662.69		24855.26		

AVRO AIRCRAFT LTD.  
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WEIGHT AND C. OF G BY FUNCTIONAL  
COMPONE

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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
UNDEICARRIAGE UP POSITION	4000000			
MAIN UNDERCARRIAGE GROUP	4010000			
100 MAIN UNDERCARRIAGE	4010100	92	19637453	
			196374	
89 MAIN U C DOORS FAIRINGS	4010200	62	2823453	
			28234	
NOSE UNDERCARRIAGE GROUP	4020000			
100 NOSE UNDERCARRIAGE	4020100	91	3338117	
			33381	
95 NOSE U C DOOR AND FAIRING	4020200	52	266716	
			2667	
91 ENGINE ANTI ICING			70	
			70	
55 FIRE EXT SYSTEM				
ENGINE MTS AND BRACKETS				
FUEL SYSTEM				

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DESCRIPTION	REFERENCE NO.				COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT		V. MOMENT		
SECTION	4	0	0	0	0								
GROUP	4	0	1	0	0								
	4	0	1	0	1	0	0	9	2	1	9	6	3
						1	9	6	3	7	4	5	3
						1	9	6	3	7	4	5	3
INGS	4	0	1	0	2	0	0	6	2	1	5	1	7
						2	8	2	3	4	5	3	7
						2	8	2	3	4	5	3	7
GROUP	4	0	2	0	0	0							
	4	0	2	0	1	0	0	9	1	3	3	2	
						3	3	3	1	1	7	0	
						3	3	3	1	1	7	0	
RING	4	0	2	0	2	0	0	5	2	4	3	1	
						2	6	6	7	1	6	1	
						2	6	6	7	1	6	1	

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PROJECT \_\_\_\_\_

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H.
	ENGINE GROUP	5000000			
	FUEL SYSTEM				
	FUEL SYSTEM				
99	ENGINE J 75	5010000		125270766	
				1252707	
	J 75 ENGINE SERV ACCESS	5010100		352263	
				3522	
68	ACC GEAR BOXES ON FUS D B	5020001	56	452457	
68	ACC GEAR BOXES ON FUS E B	5020002	58	2303060	
				27554	
	ENGINE CONTROLS	5030000			
36	ENGINE CONTROLS F F	5030001	52	145816	
36	ENGINE CONTROLS C F	5030002	54	26430	
36	ENGINE CONTROLS D B	5030003	56	50849	
36	ENGINE CONTROLS E B	5030004	58	101363	
				3243	
83	GEARBOX AND STARTER ON ENG	5040000		2863058	
				28630	
91	ENGINE ANTI ICING	5050000		705856	
				7058	
	FIRE EXT SYSTEM	5060000			
55	FIRE EXT SYSTEM D B	5060002	56	14655	
55	FIRE EXT SYSTEM E B	5060003	58	640070	
				6546	
	ENGINE MTGS AND BRACKETS	5070000			
64	ENG MOUNTING AND BRKTS	5070001		1465362	
	ENGINE MTGS ACCESSORIES	5070002		520266	
	ENGINE MTGS ACCESSORIES CA	5070003		76664	
				20621	
	FUEL SYSTEM	5080000			

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	5000000						
	5010000		1252707	66502	11983	833075209	150111880
			1252707			833075209	150111880
ESS	5010100		3522	63097	10341	2222276	364210
			3522			2222276	364210
S D B	5020001	56	4524	57875	9607	2618265	434621
S E B	5020002	58	23030	60584	10434	13952495	2402950
			27554			16570760	2837571
	5030000						
	5030001	52	1458	16129	12476	235161	181900
	5030002	54	2643	30813	11798	81346	31147
	5030003	56	508	49991	13459	253954	68372
	5030004	58	1013	63982	10194	648138	103265
			3243			1218599	384684
ON ENG	5040000		28630	58908	10559	16865360	3023042
			28630			16865360	3023042
	5050000		7058	56275	11507	3971890	812164
			7058			3971890	812164
	5060000						
	5060002	56	146	55318	13749	80764	20074
	5060003	58	6400	70381	13414	4504384	858496
			6546			4585148	878570
KETS	5070000						
TS	5070001		14653	62504	12935	9158711	1895366
ES	5070002		5202	66213	12248	3444400	637141
ES CA	5070003		766	64236	13192	492048	101051
			20621			13095159	2633558
	5080000						

**AVRO AIRCRAFT LTD.**  
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DESCRIPTION	REFERENCE NO.			COMP. NO.	WEIGHT	H. A
23 FUEL SYSTEM C F GROUP	5080001	54			1347440	
27 FUEL SYSTEM D B	5080002	56			1685753	
17 FUEL SYSTEM E B	5080003	58			359266	
49 FUEL SYSTEM I W	5080004	62			5399755	
FUEL SYSTEM ENG	5080005				62665	
FUEL SYSTEM C A	5080006				75461	
MECHANICAL CONTROLS P F						
MECHANICAL CONTROLS C F					89300	
MECHANICAL CONTROLS FIN						
MECHANICAL CONTROLS I W						
MECHANICAL CONTROLS D B						
MECHANICAL CONTROLS C A						
FLYING CONTROLS HYDRAULICS						
17 FLYING CONT HYDRAULICS P F						
17 FLYING CONT HYDRAULICS C F						
17 FLYING CONT HYDRAULICS I W						
77 FLYING CONT HYDRAULICS D B						
75 FLYING CONT HYDRAULICS C A						
49 FLYING CONT HYDRAULICS ENG						
17 FLYING CONT HYDRAULICS FIN						
17 FLYING CONT HYDRAULICS GROUP						
17 FLYING CONT HYDRAULICS						
					1002	

# WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
5080001	54	13474	40781	14045	5494832	1892423
5080002	56	16857	53575	11233	9031138	1893547
5080003	58	3592	66531	12549	2389794	450760
5080004	62	53997	55804	14420	30132486	7786367
5080005		626	65901	9594	412540	60058
5080006		754	61525	9658	463899	72821
		89300			47924689	12155976



PROJECT \_\_\_\_\_

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H. A.
FLYING CONTROLS GROUP		6000000			
MECHANICAL CONTROLS		6010000			
69	MECHANICAL CONTROLS F F	6010001	52	95.58	16
	MECHANICAL CONTROLS C F	6010002	54	9.39	39
70	MECHANICAL CONTROLS FIN	6010005	83	124.23	78
70	MECHANICAL CONTROLS I W	6010006	62	406.10	71
46	MECHANICAL CONTROLS O W	6010007	64	302.37	77
	MECHANICAL CONTROLS C A	6010008		6.46	70
				944.13	
FLYING CONTROLS HYDRAULICS		6020000			
17	FLYING CONT HYDRAULICS D B	6020001	56	23.91	57
17	FLYING CONT HYDRAULICS E B	6020002	58	44.96	65
17	FLYING CONT HYDRAULICS R F	6020003	59	48.75	58
77	FLYING CONT HYDRAULICS I W	6020004	62	274.44	70
72	FLYING CONT HYDRAULICS O W	6020005	64	120.80	74
59	FLYING CONT HYDRAULICS FIN	6020006	83	55.97	76
17	FLYING CONT HYDRAULICS C A	6020007		44.11	30
17	FLYING CONT HYDRAULICS R N	6020008	51	32.95	11
				1002.35	
HYDRAULICS MAIN SYSTEM		7050000			
31	UTILITY HYDRAULICS C F	7050001	54		
26	UTILITY HYDRAULICS I R	7050002	55		
38	UTILITY HYDRAULICS O W	7050003	66		
25	EMERGENCY LOWERING W U C	7050004	68		
25	EMERGENCY LOWERING W U C	7050005	69		
CABLE INSULATION		7070000			
CABLE PARTS		7080000			

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
P	6000000						
	6010000						
F F	60100001	52	9558	16322	11510	1560057	1100126
C F	60100002	54	939	39132	11765	367449	110473
FIN	60100005	83	12423	78817	22159	9791436	2752813
I W	60100006	62	40610	71732	14375	29130365	5837688
O W	60100007	64	30237	77068	13562	23303051	4100742
C A	60100008		646	70982	14338	458544	92623
			94413			64610902	13994465
AULICS	6020000						
CS D B	60200001	56	2391	157395	9691	1372314	231712
CS E B	60200002	58	44969	65226	11095	29331480	4989311
CS R F	60200003	59	48	75875	10824	36420	5196
CS I W	60200004	62	27444	70359	14721	19309324	4040031
CS O W	60200005	64	12080	74061	13580	8946569	1640464
CS FIN	60200006	83	5597	76013	20796	4254448	1163952
CS C A	60200007		4411	30447	11217	1343017	494782
CS R N	60200008	51	3295	11235	10784	370193	355333
			100235			64963765	12920781

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DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H. A.
FIXED EQUIPMENT GROUP		7000000			
INSTRUMENTS		7010000			
INSTRUMENTS F F		7010001	52	4407	16
NAVIG TABLE AND STOWAGE		7010004	52	2002	22
				4607	
COCKPIT PRESSURE SEALING		7020000	52	500	18
				500	
OXYGEN SYSTEM		7030000			
OXYGEN SYSTEM		7030001	52	2607	24
				2607	
AIR CONDITIONING SYSTEM		7040000			
54	AIRCONDITIONING F F	7040001	52	3549	178
54	AIRCONDITIONING C F	7040002	54	4721	229
54	AIRCONDITIONING D B	7040003	56	1148	51
54	AIRCONDITIONING C A	7040005		2736	397
54	AIRCONDITIONING ENG	7040006		2855	640
54	AIRCONDITIONING I W	7040007	62	805	515
				82207	
HYDRAULICS MAIN SYSTEM		7050000			
32	UTILITY HYDRAULICS F F	7050001	52	8418	200
31	UTILITY HYDRAULICS C F	7050002	54	4272	434
20	UTILITY HYDRAULICS D B	7050003	56	2733	855
66	UTILUTY HYDRAULICS E B	7050004	58	7353	606
24	ITILITY HYDRAULICS I W	7050005	62	1351	1553
32	UTILITY HYDR NOSE U C	7050006	91	325	190
24	UTILITY HYDR MAIN U C	7050007	92	2980	543
28	EMERGENCY LOWERING M U C	7050008	62	853	584
35	EMERGENCY LOWERING N U C	7050009	52	438	214
				65488	
CABIE INSULATION		7070000	52	1431	187
				1431	
BRAKE PARACHUTE		7080000			

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. \_\_\_\_\_

UNCLASSIFIED / NON CLASSIFIÉ

SHEET \_\_\_\_\_

	REFERENCE NO.	COMP. No.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
P	7000000						
	7010000						
	7010001	52	4407	16112	13909	710056	612970
AGE	7010004	52	200	22000	13000	44000	26000
			4607			754056	638970
LING	7020000	52	500	18600	13000	93000	65000
			500			93000	65000
	7030000						
	7030001	52	2607	24054	15670	627088	408517
			2607			627088	408517
TEM	7040000						
	7040001	52	3549	17813	11118	632183	394578
	7040002	54	47212	29489	13515	13922347	6380702
	7040003	56	11485	16401	12503	592827	143534
	7040005		27363	39792	13613	10888285	3724925
	7040006		28556	40171	13900	1827685	396845
	7040007	62	805	1500	15950	41200	12760
			82207			27904527	11053344
EM	7050000						
F	7050001	52	8418	20043	10871	1687220	915121
F	7050002	54	4272	43480	10431	1857466	445612
B	7050003	56	27338	55692	11077	15225079	3028230
B	7050004	58	7353	60637	10857	4458639	798315
W	7050005	62	13511	55304	14234	7472123	1923156
C	7050006	91	325	19033	9521	61857	30943
C	7050007	92	2980	54325	14100	1618885	420180
U C	7050008	62	853	58436	14188	498459	121024
U C	7050009	52	438	21435	10275	93885	45005
			65488			32973613	7727586
	7070000	52	1431	18748	13200	268284	188892
			1431			268284	188892
	7080000						

AVRO AIRCRAFT LTD.  
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT \_\_\_\_\_

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H. A
	BRAKE PARACHUTE F F	70800001	52	462	168
	BRAKE PARACHUTE R F	70800005	59	851	3822
	BRAKE PARACHUTE I W	70800006	62	124	62
				9099	
	ELECTRICAL SYSTEM	70900000			
33	ELECTRICAL WIRING R N	70900001	51	129	92
33	ELECTRICAL WIRING F F	70900002	52	2966	199
33	ELECTRICAL WIRING C F	70900003	54	1304	418
33	ELECTRICAL WIRING A I	70900004	55	1274	219
33	ELECTRICAL WIRING D B	70900005	56	6515	533
33	ELECTRICAL WIRING E B	70900006	58		64595
33	ELECTRICAL WIRING I W	70900008	62	8909	541
33	ELECTRICAL WIRING FIN	70900009	83	352	797
33	ELECTRICAL WIRING NUC	70900010	91	330	186
33	ELECTRICAL WIRING ENG	70900011		2002	585
33	ELECTRICAL WIRING C A	70900012		1374	6334
66	ELECTRICS F F	70900013	52	1589	1156
26	ELECTRICS C F	70900014	54	7596	448
85	ELECTRICS E B	70900015	58	670	679
85	ELECTRICS ENG	70900016		1163	2562
85	ELECTRICS C A	70900017		718	613
	ELECTRICS FIN	70900018	83		83895
	ELECTRICS I W	70900019	62	233	620
	ELECTRICS CAW	70900020		112	629
	ELECTRICS MUC	70900021	92		74516
19	ELECTRICS A I	70900022	55	530	3220
93	ELECTRICS D B	70900023	56	271	32518
	ELECTRICS R F	70900024	59		136802
	WINDSCREEN DEMISTING	70900025	52	2929	198
				112203	
	L P PNEUMATICS	71000000			
26	L P PNEUMATICS F F	71000001	52	2060	194
18	L P PNEUMATICS C F	71000002	54	671	334
	L P PNEUMATICS D B	71000003	56	444	552
	L P PNEUMATICS E B	71000004	58	1526	656
	L P PNEUMATICS FIN	71000005	83	640	758
	L P PNEUMATICS R N	71000006	51	124	74
				5465	
	INTAKE DE ICING	71200000	55	8800	195
				8800	
5	RADIO RADAR INT SYST R N	71500001	51	1872	99
5	RADIO RADAR INT SYST F F	71500002	52	9699	192

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	708000152		462	16895	12875	78055	59483
	708000559		8513	82210	14392	6998537	1225191
	708000662		1246	2022	14500	76907	17980
			9099			7153499	1302654
	7090000						
	709000151		129	9285	12000	11978	15480
	709000252		2966	19977	11200	592518	332192
N	709000354		1304	41878	11000	546089	143440
F	709000455		1274	21984	12000	280076	152880
F	709000556		6515	53375	9200	3477381	599380
B	709000658		64	59500	9200	38080	5888
B	709000862		8909	54111	13900	4820749	1238351
W	709000983		352	79754	30000	280734	105600
N	709001091		330	18600	9800	61380	32340
C	7090011		2002	58583	10000	1172832	200200
G	7090012		13746	33473	11234	4601199	1544226
A	709001352		15891	15611	11114	2480744	1766126
	709001454		7596	44897	10870	3410376	825685
	709001558		670	67944	11597	455225	77700
	7090016		11632	56207	11472	6537998	1334423
	7090017		718	61350	12000	440493	86160
	709001883		83	89550	28840	74327	23937
	709001962		2336	62053	14500	1449558	338720
	7090020		112	62946	13561	70500	15188
	709002192		74	51600	13700	38184	10138
	709002255		5303	22076	13833	1170690	733564
	709002356		27132	51861	10254	14070927	2782115
	709002459		136	80200	11360	109072	15450
	709002552		2929	19898	9980	582812	292314
			112203			46773922	12671497
	7100000						
	710000152		2060	19474	12434	401164	256140
	710000254		671	33431	11033	224322	74031
	710000356		444	55296	11859	245514	52654
	710000458		1526	65650	9737	1001819	148587
	710000583		640	75818	25515	485235	163296
	710000651		124	7431	9955	9214	12344
			5465			2367268	707052
	712000055		8800	19582	11800	1723216	1038400
			8800			1723216	1038400
	715000151		1872	9909	9034	185496	169116
R N	715000252		9699	19242	12007	1866282	1164559
F F							

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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT		H. A.
5 RADIO RADAR INT SYST C F	715000354		22501	274	
5 RADIO RADAR INT SYST I W	715000562		4927	57	
5 RADIO RADAR INT SYST O W	715000664		1049	748	
5 RADIO RADAR INT SYST FIN	715000783		3380	761	
5 RADIO RADAR INT SYST C A	7150008		19748	358	
5 RADIO RADAR INT SYST D B	715000959			13745	
			63189		
29 CANOPY ACTUATION	716000052		6492	221	
			6492		
CABIN CONSOLES	717000052		1745	174	
			1745		
SURFACE FINISH F F	719000152		363	187	
SURFACE FINISH CANOPY	719000253			64202	
SURFACE FINISH C F	719000354		1400	371	
SURFACE FINISH INTAKES	719000455		408	227	
SURFACE FINISH D B	719000556		377	538	
SURFACE FINISH E B	719000658		443	667	
SURFACE FINISH R F	719000759		648	803	
SURFACE FINISH I W	719000862		315	1601	
SURFACE FINISH O W	719000964		106	7706	
SURFACE FINISH O W L EDGE	719001065		319	639	
SURFACE FINISH AILERON	719001174		353	791	
SURFACE FINISH ELEVATOR	719001282		566	755	
SURFACE FINISH FIN	719001383		639	746	
SURFACE FINISH RUDDER	719001484		202	812	
			10000		
FLIGHT TEST INSTALLATION	7200000		1456	7348	
			1456	73	

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
C F	715000354		22501	27490	10297	6185525	2316928
I W	715000562		4927	57215	15695	2818983	773293
O W	715000664		1049	74642	13720	782995	143923
FIN	715000783		3380	76179	25195	2574850	851591
C A	7150008		19748	35812	15397	7072154	3040600
D B	715000959		13	74550	15800	9692	2054
			63189			21495977	8462064
	716000052		6492	22199	15435	1441159	1002040
			6492			1441159	1002040
	717000052		1745	17476	12434	304956	216973
			1745			304956	216973
	7190000152		363	18744	12200	68041	44286
Y	719000253		642	20218	15900	12940	10176
	719000354		1400	37197	12455	520758	174370
ES	719000455		408	22798	12020	93016	49042
	719000556		377	53828	11200	202932	42224
	719000658		443	66701	11200	295485	49616
	719000759		648	80362	13175	520746	85374
	719000862		315	160144	14400	1895137	453744
	719000964		106	770650	13590	753836	145005
EDGE	719001065		319	63948	13526	203994	43148
ON	719001174		353	79190	13556	279541	47853
TOR	719001282		566	75523	14260	427460	80712
	719001383		639	74663	20837	477097	133148
R	719001484		202	81279	21431	164184	43291
			10000			5915167	1401989
TION	7200000		145673	48848	12890	71158347	18777250
			145673			71158347	18777250

PROJECT \_\_\_\_\_

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
REMOVABLE EQUIPMENT GROUP	8000000			
77 EJECTOR SEATS	801010052		3390620	
			33906	
RADAI REMOV GROUP	8020000			
DAMPING SYSTEM	8030000			
DAMPING SYSTEM F F	803010152		78417	
DAMPING SYSTEM C F	803010254		230332	
DAMPING SYSTEM E B	803010358		36963	
DAMPING SYSTEM I W	803010462		607052	
DAMPING SYSTEM O W	803010564		9574	
DAMPING SYSTEM R N	803010651		2877	
			9908	
98 INSTIUMENT PACK	805080054		6868038	
			68680	
INSTIUMENTATION	805090054		30480039	
			304800	
FIRE PREVENT FIRST A C CF	805100054		1637938	
FIRE PREVENT FIRST A C DB	805100156		80654	
FIRE PREVENT FIRST A C EB	805100258		58262	
			17767	

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GROUP	REFERENCE NO.		COMP. NO.	WEIGHT		H. ARM	V. ARM	H. MOMENT		V. MOMENT	
	8000000										
	8010100	52		33906	20443	13410		6931404		4546795	
				33906				6931404		4546795	
	8020000										
	8030000										
	8030101	52		784	1720	1120	47	134856		94448	
	8030102	54		2303	3221	3109	49	741865		252155	
	8030103	58		369	6324	2134	32	233363		49564	
	8030104	62		6070	5278	1157	20	3203807		954204	
	8030105	64		95	7485	5140	00	71112		13300	
	8030106	51		287	7350	9340		21095		26806	
				9908				4406098		1390477	
	8050800	54		68680	38581	9468		26497431		6502622	
				68680				26497431		6502622	
	8050900	54		304800	39400	9500		120091200		28956000	
				304800				120091200		28956000	
C CF	8051000	54		16379	38680	10750		6335397		1760743	
C DB	8051001	56		806	5494	0128	83	442816		103837	
C EB	8051002	58		582	6263	4140	95	364530		82033	
				17767				7142743		1946613	



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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	9000000						
	9010000	52	39000	19400	13650	7566000	5323500
			39000			7566000	5323500
	9020000						
	9020001		8816	61246	12186	5399447	1074318
	9020002		1773	62676	11640	1111245	206377
NG	9020003	56	1925	58084	9555	1118117	183934
B	9020004	58	909	59928	9704	544746	88209
			13423			8173555	1552838
	9040000						
	9040001	52		7220493	13200	14755	9504
	9040002	54	1267	26280	16150	332968	204621
			1339			347723	214125
	9060000		2500	73000	12900	1825000	322500
			2500			1825000	322500
	9070000						
	9070001	54	4680	39424	12300	1845043	575640
	9070002	62	17160	59755	13705	10253958	2351778
			21840			12099001	2927418
IONING	9100000	54	12500	26800	13200	3350000	1650000
IRCOND	9100001	54	1500	26700	12700	400500	190500
			14000			3750500	1840500

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