QCX
Avro
CF105
R-7-0400-64
Iss-1

FILE IN VAULT

ARROW 1
A/C 25203

Report 7-0400-64
Issue 1

WEIGHT & C.G. SUMMARY

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May 1/58

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Report no.: QCX-AVRO-CF105-R-7-0400-64-Iss.1

has been ☐ downgraded to :

☒ de-classified

by (Name): Michel W. Drapeau

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

Date: Dec. 7, 1992

R. Ruge
Signature

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AVRO AIRCRAFT LIMITED
INTER-DEPARTMENTAL MEMORANDUM

Ref: 8541/11/J
Date: 1 May, 1958
To: See Distribution
From: E.F. Burnett - Weight Supervisor
Subject: ARROW 1 A/C 25202 and 25203 - Weight and Balance

Attached is a copy of Weight and C.G. Summary, Report 7-0400-64 Issue 1 dated May 1, 1958, for your retention.

This report supercedes Report 7-0400-44 Weight and C.G. Summary ARROW 1 #25201 which is now covered by "Weight Statements for Flight Test".

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

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SECRET

Aircraft: ARROW 1
A/C 25202 & 25203
Date: 1 May, 1958

Report: 7-0400-64
Issue : 1-1

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2-1 to 2-2	Wt and C.G. Summary
3	Horizontal C.G. Envelopes for Flight conditions with fuel proportioners used.
4-1 to 4-15	I.B.M. Detail sheets of Weight and C.G.s

N.B.

Work has been cancelled on the fuel C.G. management system for Arrow 1 aircraft due to the satisfactory functioning of the proportioners.

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Aircraft: ARROW 1
A/C 25202 & 25203
Date: 1 May, 1958

Report: 7-0400-64
Issue : 1
Sheet : 1-1

INTRODUCTION & WEIGHT CHANGES

The following is a weight & C.G. summary for the second and third Arrow I Aircraft Nos. 25202 and 25203, with J75 P5 Engines, based on the latest information available. All weight and C.G. changes are quoted relative to 7-0400-44 Issue 16 of April 1st, 1958, which was the last similar summary issued for A/C 25201.

NOTE:

1) This summary will not apply for A/C 25204 and 25205 which are to be used for full Astra I Trial installations.

2) After Phase I of the flight test programme A/C 25203 will be fitted with a weapons pack trial installation, in lieu of the instrument package installed here.

3) In this summary the Aircraft is ballasted such that the aft C.G. shall not exceed 31% M.A.C. - which is the theoretical aft limit.

GENERAL:

a) Pratt & Whitney J75 P5 Engines comprise the Power Plant for A/C's 25202 and 25203. (5850 lb each, Pratt & Whitneys latest brochure weight with their installation kit, confirmed by P & W actual weight recorded in engine inspection records).

b) The Instrument Package containing Flight Instrumentation is installed. The Packages for A/C's 25201 to 25203 differ from those for A/Cs 25204 and 25205.

The weight recorded here is Flight Test Department's estimate of cable and instruments. An actual weight will be obtained as soon as a complete pack is available.

A relatively detailed estimate of other proposed Flight Test Installations throughout the Aircraft has been made. These installations amount to 1457 lb (figure partially confirmed by actual weights of some cable assys).

c) In A/C 25201 Emergency Fire Protection, landing gear lowering etc were installed. These are no longer necessary in A/Cs 25202 and 25203 and have been deleted from the weight records.

d) An Interim Radio & Radar System with Minneapolis-Honeywell MH64 Damping System is installed. Currently there is no Doppler or Tacan installation, though space provision for future installation of Doppler, which is not yet available, is made.

e) The Mk 1A Tailcones and Stinger are fitted.

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GENERAL: (Cont'd)

f) On A/C 25202, the set of control surfaces modified structurally for "buzz damper" installation are fitted. The control boxes are already modified for all Mk. 1 A/C. If it is decided to fit a trial installation of the "buzz damper" system there will be the following additional wt to A/C 25202....

Buzz Damping Equipment + 124 lb

This weight report incorporates the modified surfaces as on A/C 25202, however, if A/C 25203 does not have a "buzz damper" installation then the following changes ensue:-

Elevators	- 11.07 lb/ A/C
Ailerons	- 11.68 lb/A/C
Rudder	- 8.78 lb
	- 31.53 lb

When the split control surfaces are introduced this will entail a further weight increase, however, details of these ammendments to the design are not yet available.

g) Due to material substitutions and concessions introduced by Planning and Production Departments, there is a structural weight penalty of 72 lb approx. 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) Several weighings of A/C 25201 have been made and the results obtained show good agreement with the estimated weights for that aircraft. However, at no time has it yet been possible to obtain a dry weight of the complete aircraft.

A considerable number of actual weights of parts and components have been obtained. Structural weights have checked within 0.5% of estimates of sub-assemblies etc. Equipment (most of which is now actual weight) has shown a consistant increase averaging about 11% over manufacturer's quotations or initial specification weights (excluding Engines and Gear Boxes) . Preceeding the report titles on the I.B.M. Tabulation sheets, will be found a number varying form 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	72.33%
Landing Gear	98.75%
Power Plant	5.06%
Flying Controls	53.85%
Equipment	24.90%

i.e. 43.54% of the Basic Weight of A/C 25201

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GENERAL: (Cont'd)

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.

k) No further work is being proceeded with on the fuel management system for Arrow I Aircraft. The fuel proportioners are functioning satisfactorily and it is not considered necessary to fit the fuel sequencing system.

1. STRUCTURE — WEIGHT (lb)

a) Wings

Elevator - the control surfaces modified structurally for fitment of buzz dampers are installed The elevators are to be split in the near future, but as details are not yet known, no weight allowance has yet been made.	+ 11.07
Ailerons - modified for 'buzz damper' as elevators	+ 11.68
Wing Weight Change *	+ 22.75

b) Fin & Rudder

Rudder - the rudder modified for "buzz damper" installations is fitted	+ 8.78
Fin Group Weight Increase *	+ 8.78

* These weight changes will not apply to A/C 25203, see General note (f) in the introduction.

c) Fuselage Fwd Sta 255"

No weight change

d) Centre Fuselage Sta 255" - 485"

No weight change

e) Duct Bay Sta 485" - 591.65"

No weight change

f) Engine Bay Sta 591.65" - 742.5"

Engine Tunnel - redesign of rear engine mtg access door	+ 0.41
Engine Bay Increase	+ 0.41

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1. STRUCTURE (Cont'd) — WEIGHT (lb)

g) Rear Fuselage aft Sta 742.5"

Tailcones - Mk. 1A tailcones in N155 fitted, these replace the shorter tailcones on A/C 25201 (originally designed in titanium now steel)	+ 139.84
Centre Structure & Stinger - Mk. 1A design fitted	- 29.63
Rear Fuselage Increase	+ 110.21
Total Structural Increase	+ 142.15

2. LANDING GEAR

No weight change

3. POWER PLANT & SERVICES

Engines - J75 P5 engines replace the P3 engines that were installed in A/C 25201 (5850 lb each whereas P3 Engines were 6,175 lb each)	- 650.00
Act. wt. of engine can, etc.	- 1.29
Engine Nose Bullet - actual weights of P5 bullets obtained - these are partially redesigned	+ 5.03
Engine Service Accessories - minor changes to oil breather pipes, engine oil fillet etc.	+ 2.81
Engine Controls - Misc. minor changes to tension regulator mtgs. etc.	+ 0.92
Engine Gear Boxes & Starters - Production drawing ests. made for constant speed drive can	- 0.32
Total power Plant Group Decrease	- 642.85

4. FLYING CONTROLS GROUP

Flying Control Hydraulics - all production drawings for Arrow 1 now estimated various design changes etc contributer to the weight change (which also applies to A/C 25201)	- 6.98
Total Flying Controls Decrease	- 6.98

5. EQUIPMENT GROUP

Emergency Fire Protection - not required for A/C 25202 etc.	- 174.78
Emergency Lowering Main Landing Gear - not required	- 8.53
Emergency Lowering Nose Landing Gear - not required	- 4.38
Total Equipment Decrease	- 187.69

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Aircraft: ARROW 1
A/C 25202 & 25203
Date: 1 May, 1958

Report: 7-0400-64
Issue : 1
Sheet : 1-5

SUMMARY

Weight Change - Aircraft Basic Weight

Structure	+ 142.15
Power Plant	- 642.85
Flying Controls	- 6.98
Equipment	- 187.69
	- 695.37

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

UNBALLASTED CONDITION

7-0400-44-16	7-0400-64-1	
48,225.15	47,529.78	- 695.37 lb

N.B.

There is also a reduction in the theoretical ballast required. A/C 25201 (ref. report 7-0400-44-16), required 815 lb ballast to limit the calculated aft C.G. to 31% M.A.C.

A/C 25202 requires only 794 lb. Hence there is a further reduction in the ballasted Operational Wt. empty of 815 - 794 lb = 21 lb.

∴ Ballasted O.W.E. of A/C 25202 is 716.37 lb. lighter than ballasted O.W.E. of A/C 25201.

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Aircraft: ARROW 1
A/C 25202
Date: 1 May, 1958

Report: 74-0400-64
Issue : 1
Sheet : 2-1

DESCRIPTION	WEIGHT lb	H. ARM ins	V. ARM ins
STRUCTURE	18,784.31	563.47	137.46
Wings	10,003.01	643.11	142.25
Fin & Rudder	1,034.63	754.84	209.36
Fuselage Fwd Sta 255"	2,661.52	181.74	128.18
Sta 255" - 485"	1,670.36	380.23	130.70
Sta 485" - 591.65"	1,010.63	533.81	104.49
Sta 591.65" - 742.5"	1,437.47	660.98	107.30
Sta 742.5" aft	912.38	807.53	128.96
"Marry-Up"	54.31	462.81	104.25
LANDING GEAR -RETRACTED	2,609.23	488.30	134.90
Main Landing Gear	1,966.41	539.55	141.01
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	13,770.66	652.46	120.35
Engines & Accessories J75 P5	11,913.81	665.32	119.78
Gear Box & Drives on Fuselage	276.70	603.71	103.24
Gear Box & Starter on Engine	286.80	589.18	105.54
Engine Controls	33.35	375.79	118.49
Engine Nose Bullets	75.61	562.69	115.11
Fire Extinguishing System	65.53	700.45	134.21
Engine Mountings	206.21	635.04	127.71
Fuel System	912.65	537.27	135.48
FLYING CONTROLS GROUP	2,007.17	652.13	137.12
Mechanical Flying Controls	952.63	675.92	147.59
Hydraulic Flying Controls	1,054.54	630.64	127.67
EQUIPMENT FIXED & REMOVALBE	9,437.39	402.95	113.56
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	342.94	204.50	134.11
Oxygen System	22.40	252.82	156.03
Air Conditioning System	822.07	339.45	134.46
Surface Finish	100.00	591.52	140.20
Cockpit Insulation	14.31	187.48	132.00
Drag Chute	90.99	786.18	143.17
Low Pressure Pneumatics	54.65	433.30	129.37
Electrical System	1,126.18	415.86	112.91
Intake De-Icing Boots	88.00	195.82	118.00
Canopy Actuation	65.86	222.01	154.36
Console Panels	17.45	174.76	124.34
MH64 Damping	99.08	450.83	140.34
Interim Radio & Radar	647.34	341.86	124.39
Hydraulics Utilities System	654.93	503.19	117.65
Nose U/C Door Actuation (wheel extended)	33.59	202.56	97.89
Instrument Pack Structure	686.80	385.81	94.68
Pack Instrumentation	3,048.00	394.00	95.00
Flight Test Installations	1,456.73	488.48	128.90

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Aircraft: ARROW 1
A/C 25202
Date: 1 May, 1958

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DESCRIPTION	WEIGHT lb	H. ARM ins	V. ARM ins	M.A.C %
Aircraft Basic Weight U/C Up	46,608.76	556.87	127.41	
Aircraft Basic Weight U/C Down		558.97	123.94	
USEFUL LOAD (less fuel)	921.02	366.58	132.34	
Crew	390.00	194.00	136.50	
Engine Fire Extinguisher 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	134.23	608.92	115.68	
BALLAST	794.00	84.86	116.50	
Operationsl Wt Empty U/C Up	48,323.78	545.49	127.32	30.24
Operationsl Wt Empty U/C Down		547.51	123.98	30.80
Max. Internal Fuel (2508 gals at 7.8 lb/gal)	19,562.00	540.99	144.09	
Gross Weight (Max. int. fuel) U/C Up	67,885.78	544.19	132.15	29.89
Gross Weight (Max. int. fuel) U/C Down		545.63	129.77	30.28

N.B.

1) Aircraft Datum = 120 ins 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, using fuel proportioners, does not exceed 31% M.A.C. ie 303 lb on Former Sta. 68.5 and 491 lb on the Shear Panel.

These figures are theoretical requirements only and are not to be confused with full nose ballast normally installed (1,397 lb total).

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REPORT NO: T-0400-64 ISSUE 1
DATE: MAY 1ST 1958
SHEET: 3
BY: Kathleen Griffin

HORIZONTAL C.G. ENVELOPE
ARROW I - A/C 25202 & 25203
NORMAL FLIGHT CONDITIONS
FUEL PROPORTIONERS USED

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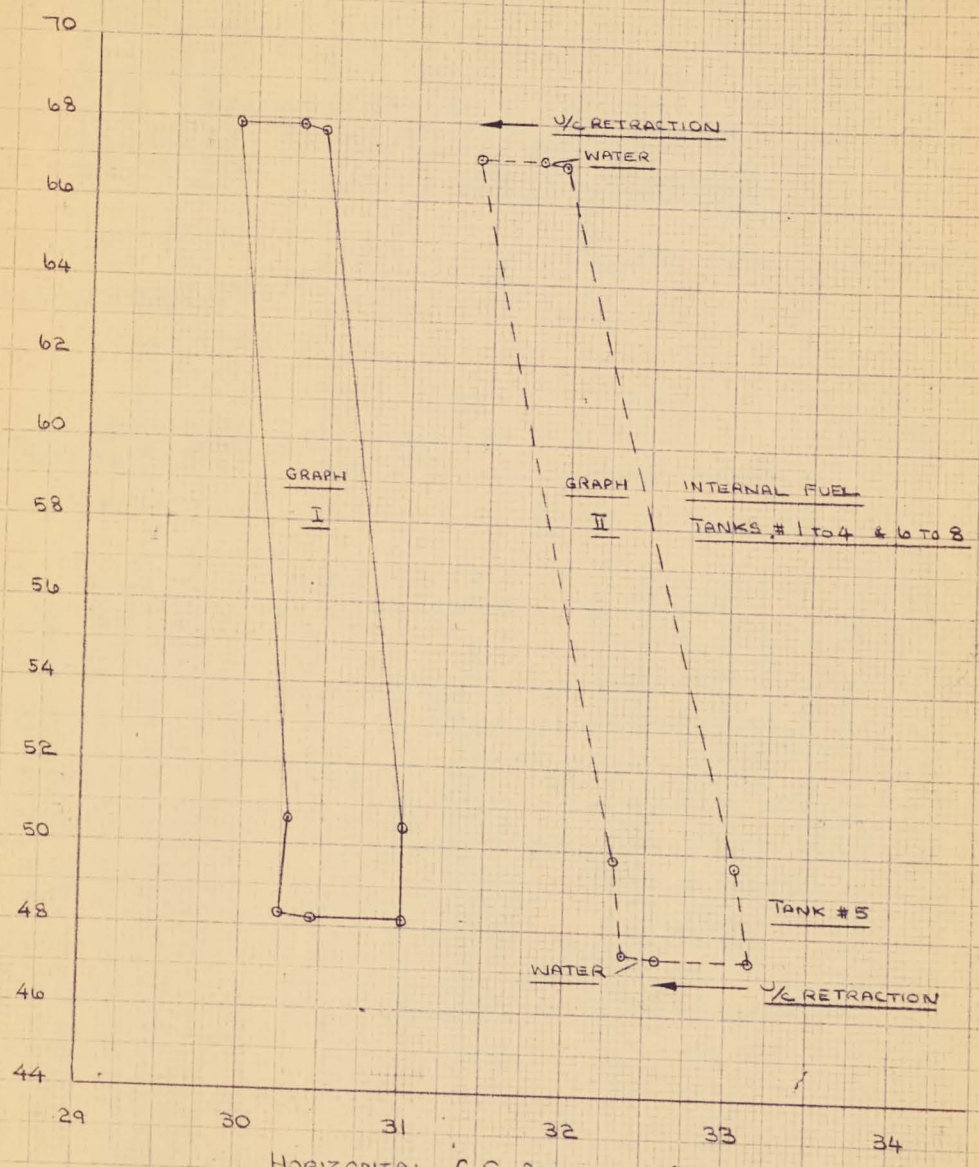
GRAPH I ~ A/C BALLASTED SUCH THAT AFT CG. DOES NOT EXCEED 31% M.A.C.
GRAPH II ~ NO BALLAST



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WEIGHT AND C. OF G BY FUNCTIONA COMPO

PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
	TOTAL WING GROUP	1000000		
	OUTER FING	1010000		
100	OUTER FING SKINS	1010001	64	92910
100	POSTS AND INTERCOSTALS	1010002	64	2436
100	OUTER WING SPARS	1010003	64	39258
100	OUTER WING RIBS	1010004	64	13456
98	AILERON CONTROL BOX	1010006	64	37530
100	RIB 12	1010007	64	7626
100	O W AILERON JACK FITTING	1010009	64	1046
	AILERON JOINTS AND FAIRING	1010010		3293
	BUZZ DAMP STRUC PROV O W	1010011	64	800
				198355
96	AILERON	1020000	74	35380
				35380
95	ELEVATFR	1030000	82	46007
95	ELEVATOR MARRY UP	1030001		1597
				47604
	INNER WING	1040000		
96	MAIN U C STRUCTURE	1040001	62	33071
100	FRONT SPAR I W	1040002	62	11110
100	MAIN SPAR I W	1040003	62	15106
100	FWD CENTRE SPAR I W	1040004	62	5364
100	AFT CENTRE SPAR I W	1040005	62	3666
100	REAR SPAR I W	1040006	62	7667
100	I W STRUCTURE F S TO M S	1040007	62	106904
100	STRUCTURE MS TO R S	1040008	62	14979
100	STRUCTURE AFT OF REAR SPAR	1040009	62	32212
40	ELEVATOR CONTROL BOX	1040010	62	42838
25	TRANSP JOINT MARRY UP	1040011		7065
100	INNER WING JOINTS	1040012	62	63471
100	SKINS M S TO R S	1040013	62	219038
100	STRUT PICK UP FITTINGS	1040014	62	5391
100	RIBS 1 TO 9 INNER WING	1040016	62	51204
74	DORSAL FAIRING I W	1040017	62	954
100	RIB 10	1040018	62	10800
77	WING TO FUS JOINT I W	1040019	62	12628
65	TRANSPORT JOINT O W TO I W	1040020	62	12942
77	WING TO FUS JOINT C A	1040021		3818
	BUZZ DAMP STRUC PROV I W	1040022	62	552
74	DORSAL FAIRING C A	1040023		6033
				65954

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
FIN AND RUDDER GROUP	2000000			
100 FIN	201000083		851707	
BUZZ DAMP STRUC PROV FIN	201000183		1858	
12 FIN TO WING MARRY UP	2010002		48306	
			90185	
93 RUDDER	202000084		132788	
			13278	

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WEIGHT AND C. OF G BY FUNCTIONAL COMPON

PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
	TOTAL FUSELAGE GROUP	3000000			
	FUSELAGE BASIC STRUCTURE	3010000			
100	RADOME	3010001	51	18100	
100	RADAR NOSE ACCESS DOORS	3010002	51	8008	
	NOSE STRUCTURE FWD STA 120	3010003	51	12207	
	SKIN F F	3010004	52	11054	1
88	SKIN C F	3010005	54	21263	3
	SKIN D B	3010006	56	5937	5
3	SKIN E B	3010007	58	17725	6
	FORMERS F F	3010011	52	10717	1
100	FORMERS C F	3010012	54	27824	3
	FORMERS D B	3010013	56	7491	5
	LIGHT FORMERS E B	3010014	58	13501	6
72	HEAVY FORMERS E B	3010015	58	21890	6
	LOWER CONGERONS F F	3010016	52	6969	1
	LONGITUDINAL MEMBERS E B	3010017	58	1106	7
75	LOWER LONGERON E B	3010018	58	6842	6
	TOP LONGERONS E B	3010019	58	638	6
	LOWER SHEAR PANEL F F	3010020	52	2952	2
	TOP WING LONGERONS D B	3010021	56	498	5
66	LONGERONS C F	3010023	54	14453	4
43	LONGERONS F D B	3010024	54	1258	4
43	LONGERONS A D B	3010025	56	8655	5
	ELECTRONICS BAY STRUCTURE	3010026	54	3570	2
59	LONGITUDINAL BEAMS D B	3010027	56	6570	5
	RADAR ACCESS DOOR C F	3010028	54	2160	2
72	MAIN FIAME AT STN 538 77	3010029	56	5980	5
	DIVE BRAKE ACCOMMODATIONS	3010030	56	3620	5
48	TOP LOEGERONS F F	3010031	52	19253	1
100	DUCT C F	3010032	54	33475	3
97	DUCT D B	3010033	56	31663	5
22	CANOPY ARCH	3010034	52	8659	2
4	ACCESS PANELS D B	3010036	56	3964	5
66	NOSE U C SUPPORT STRUCTURE	3010037	52	3343	2
3	CREW BULKHEADS	3010038	52	12903	2
51	EQUIPMENT BAY STRUCTURE	3010039	54	6211	2
86	WINDSCIEEN	3010041	52	13057	1
33	SERVICE ACCESS DOORS	3010042	58	6704	6
	TORSIOE BOX E B	3010043	58	6046	6
	DORSAL FAIRING AIR OUTLET	3010044	54	2143	2
66	INTERMEDIATE FORMERS	3010045	58	5154	6
3	ENGINE ACCESS DOORS	3010046	58	14739	6
	SEALING MISSILE BAY	3010047	54	743	3
100	MISCELCANEOUS ITEM C F	3010048	54	392	3
98	ARMAMEET BAY ROOF	3010049	54	13326	3
	BULKHEAD AT STA 120	3010050	52	3144	1
	BULKHEAD STA 255	3010051	52	10473	2
100	BULKHEAD STA 485	3010052	54	11254	4
	ENGINE TUNNEL	3010054	58	47926	6
100	INTEGRAL FUS FUEL TANK CF	3010055	54	21168	3

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WEIGHT AND C. OF G BY FUNCTIONAL COMPON

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	
UNDERCARRIAGE UP POSITION	4000000			
MAIN UNDERCARRIAGE GROUP	4010000			
100 MAIN UNDERCARRIAGE	401010092		196641	5
			196641	
89 MAIN U C DOORS FAIRINGS	401020062	.	28234	5
			28234	
NOSE UNDERCARRIAGE GROUP	4020000			
100 NOSE UEDERCARRIAGE	402010091		33381	1
			33381	
95 NOSE U C DOOR AND FAIRING	402020052		2667	1
			2667	

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
ENGINE GROUP	5000000			
ENGINE J 75	5010000		1187578	66
			1187578	
J 75 ENGINE SERV ACCESS	5010100		3803	62
			3803	
ACC GEAR BOXES ON FUS D B	502000156		4445	57
ACC GEAR BOXES ON FUS E B	502000258		2322	56
			27670	
ENGINE CONTROLS	5030000			
35 ENGINE CONTROLS F F	503000152		1558	16
35 ENGINE CONTROLS C F	503000254		117	26
35 ENGINE CONTROLS E B	503000458		946	63
35 ENGINE CONTROLS I W	503000562		689	49
35 ENGINE CONTROLS ENG	5030006		25	64
			3335	
83 GEARBOX AND STARTER ON ENG	5040000		2868	58
			28680	
91 ENGINE ANTI ICING	5050000		756	156
			7561	
FIRE EGT SYSTEM	5060000			
FIRE EXTING SYSTEM D B	506000256		146	55
FIRE EXTING SYSTEM E B	506000358		640	70
			6553	
ENGINE MTGS AND BRACKETS	5070000			
64 ENG MOUNTING AND BRKTS	5070001		146	536 2
ENGINE MTGS ACCESSORIES	5070002		52	026 6
ENGINE MTGS ACCESSORIES CA	5070003		76	66 4
			20621	

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WEIGHT AND C. OF G BY FUNCTIONAL COMPON

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
FUEL SYSTEM	5080000			
23 FUEL SYSTEM C F	5080001	54	13483	4
29 FUEL SYSTEM D B	5080002	56	17382	5
16 FUEL SYSTEM E B	5080003	58	3649	6
49 FUEL SYSTEM I W	5080004	62	54349	5
FUEL SYSTEM ENG	5080005		1648	6
FUEL SYSTEM C A	5080006		754	6
			91265	

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO.

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SHEET

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
P	6000000						
	6010000						
F F	601000152		10996	16316	11391	1794107	1252554
C F	601000254		1213	40097	11790	486377	143013
F IN	601000583		12423	78817	22159	9791436	2752813
I W	601000662		39748	71845	14386	28556951	5718147
O W	601000764		30237	77068	13562	23303051	4100742
C A	6010008		646	70982	14338	458544	92623
			95263			64390466	14059892
AULICS	6020000						
CS D B	602000156		3243	56610	10123	1835862	328289
CS E B	602000258		45023	65129	11005	29323030	4954781
CS R F	602000359		48	75875	10824	36420	5196
CS I W	602000462		27475	70357	14721	19330586	4044595
CS O W	602000564		13086	74031	13587	9687697	1777995
CS FIN	602000683		5564	76036	20808	4230643	1157757
CS R N	602000851		3500	11309	10513	395815	367955
CS F F	602000952		5595	16926	11000	947010	615450
CS C F	602001054		1920	37329	11000	716717	211200
			105454			66503780	13463218

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
REMOVABLE EQUIPMENT GROUP	8000000			
94 EJECTOR SEATS	801010052		34294	20
			34294	
RADAR REMOV GROUP	9020000			
DAMPING SYSTEM	8030000			
DAMPING SYSTEM F F	803010152		78	417
DAMPING SYSTEM C F	803010254		230	332
DAMPING SYSTEM E B	903010358		36	963
DAMPING SYSTEM I W	803010462		607	052
DAMPING SYSTEM O W	803010564		95	74
DAMPING SYSTEM R N	803010651		287	7
			9908	
98 INSTRUMENT PACK	805080054		68680	38
			68680	
INSTRUMENTATION	805090054		304800	39
			304800	

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
GROUP	8000000						
	8010100	52	34294	20450	13411	7013123	4599168
			34294			7013123	4599168
	9020000						
	8030000						
	803010152		78	41720	11204	7 134856	94448
	803010254		23033	22131	0949	741865	252155
	903010358		3696	3242	13432	233363	49564
	803010462		6070	5278	11572	0 3203807	954204
	803010564		95	74855	14000	71112	13300
	803010651		287	7350	9340	21095	26806
			9908			4406098	1390477
	805080054		6868	0385	81 9468	26497431	6502622
			68680			26497431	6502622
	805090054		304800	3940	0 9500	120091200	28956000
			304800			120091200	28956000