

QCX
Avro
CF105
R-7-0400-63
Iss-4

UNCLASSIFIED
Arrow cancellation cancelled / changed to Report: 7-0400-63
A/C 25201 & 25205 Issue: 4 AVES
By authority of
Date 25 Sept 66
CONFIDENTIAL LIGHT & C.G. SUMMARY
Unit / Rank / Appointment AVES 1 Sept 58

C O N F I D E N T I A L

AVRO AIRCRAFT LIMITED
INTER-DEPARTMENTAL MEMORANDUM

Ref: 3223/11/J
Date: 1 September, 1958
To: See Distribution
From: E.F. Burnett - Weight Supervisor
Subject: Arrow 1 - A/Cs 25204 & 25205 Weight and C.G. Summary
Report: 7-0400-63 Issue 4

Classification cancelled / Changed to UNCLASS

By authority of AVES

Date 27 Sept 58

Signature EFB

Unit / Rank / Appointment AVRS

Attached is a copy of Weight and C.G. Summary Report: 7-0400-63
Issue 4 dated September 1, 1958.

The report defines the aircraft to the completed configuration
including the fitment of full Astra. An appendix is attached
which indicates the Weight and Balance for Phase I Flight Testing
prior to fitment of full Astra.

The report will be issued monthly until the actual weight of the
Aircraft has been obtained.

E.F. Burnett *perky*
E.F. Burnett

EFB/ag

cc: Messrs.	J.C. Floyd	F. Brame	J. Zurakowski
	R.N. Lindley	W. Czerwinski	A. Crust
	C.V. Lindow	J. Lucas	(6 copies for R.C.A.F.)
	J.W. Ames	S. Kwiatkowski	D. Inglis
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	R. Marshall	C. Marshall	D. Brownridge



57218

15 855193

C O N F I D E N T I A L

Aircraft: Arrow 1
A/C 25204 & 25205
Date : 1 September, 1958

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I N D E X

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2-1 to 2-2	Weight and C.G. Summary.
3-1 to 3-4	Appendix I - 4th and 5th Aircraft prior to installation of Full Astra I trials.
4-1	Horizontal C.G. Envelope for A/C with full Astra I.
4-2	Horizontal C.G. Envelope for ballasted Aircraft.
5-1 to 5-15	I.B.M. detail sheets of Weight and C.G. for an A/C with full Astra I T.I.

Aircraft: Arrow 1
 A/C 25204 & 25205
 Date : 1 Sept/58

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 Sheet : 1-1

Introduction & Weight Changes

The following is a weight & C.G. Summary for the fourth and fifth Aircraft, serial Nos. 25204 and 25205, with J75P5 engines based on the latest information available.

All weight & C.G. changes are quoted relative to Issue 2 of August 1st, 1958.

Note:

This summary is for the Aircraft in the completed stage with full Astra I trail installations and a completed instrument Package. For a preliminary estimate of the condition of the Aircraft at first flights see Appendix I.

General:

- a) Pratt and Whitney J75 P5 Engines Comprise the Power Plant for A/C 25204 & 25205 (5,850 lb each, Pratt and Whitney's latest brochure weight with their installation kit, confirmed by P & W actual weight recorded in Engine Inspection records).
- b) A package containing Flight Instrumentation is installed. This pack will be entirely different from those for A/c's 25201 to 25203.

Final proposals are still awaited from R.C.A. as to their entire requirements for instrumentation. The Air Conditioning equipment to be installed has been evaluated at 134 lb (less water). It is felt that the current allowance of 2,000 lb will adequately cover all equipment & Cable weights, however, this is subject to future confirmation. Additional water required for Air Conditioning is recorded separately as an item of Operational Load.

For early flights full instrumentation will not be available, however, it is assumed that ballast will be installed to simulate the completed pack.

A reasonably detailed estimate of other proposed Flight Test Installations throughout the Aircraft has been made. These installations amount to 887 lb.

- c) In A/C 25201 for early flights additional emergency fire protection and additional emergency provisions for landing gear lowering were installed. These are no longer considered necessary and consequently are not to be installed on A/C's 25204 & 25205.
- d) A missile seeker is installed, mounted beneath the Aircraft, between A/C Sta. 485 and 538.7 ins, from the dive brake jack beams. Canadair has supplied information to the effect that missile seeker shall weigh 124.4 lb.
- e) There is to be a trial installation in these A/C of the full R.C.A. Astra I system, weights of which are based on R.C.A.'s statement dated June 5th, 1958, but with the following amendments:-
 1. A complete J4 compass system is added.
 2. The missile auxiliaries normally housed within, or in close proximity to, the missile pack, will not be necessary, however, one each of the Range Slaving, Angle Slaving and Optical mode units will be installed in the Instrument Pack.
 3. The miniature stable platform, amplifier assy and platform repeater will not be required.

N.B. When Astra I is first installed, the I.R. Tracker system and ARD 501 Homer system may not be available.

- Preceding 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.

- ## 1. Structure

Weight lb

- a) Wings

F/S to M/Spar Struct - strengthening of Struct in tanks #3
and #4

+ 12.00

Total Weight Increase

+ 12.00

- b) Fin & Rudder

Not weight change.

- c) Front Fuselage Fwd Sta 255 ins

Misc. ~~Items~~ - addition of foot guards to protect instruments projecting behind panels

$$+ \quad 5.03$$

Total Front Fuselage Increase

+ 5.03

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1. Structure (Cont'd) Weight lb
- d) Fuselage Aft Sta 255 ins
- No weight change.
- Total Structural Increase + 17.03
2. Landing Gear
- Main Landing Gear - Dowty supplied revised weights of modified main leg subsequent to the crash landing A/C 25201, plus allowances for current redesign in progress now + 60.10
- Total Landing Gear Increase + 60.10
3. Power Plant & Services
- Fuel System - Actual weights obtained for fuselage bag tanks, previously manufacturer's quotations were recorded + 14.90
- Total Power Plant Increase + 14.90
4. Flying Controls Group
- Mechanical F/Controls - deletion of potentiometer in rudder feel & trim system, miscellaneous amendments - 0.45
- Total Flying Controls Decrease - 0.45
5. Equipment Group
- No weight change.
6. Trapped Fuel
- No weight change
7. Operational Load
- No weight change.

Summary

Weight Change - Aircraft Basic Weight

Structure	+17.03
Landing Gear	+60.10
Power Plant	+14.90
Flying Controls	- 0.45
	<u>+91.58</u>

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

Issue 3
49,208.30

Issue 4
49,299.88

+91.58 lb

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Aircraft: Arrow 1
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Wt. & C.G. Summary Full Astra I Installed

Description	Wt. lb	H. Arm	V. Arm
Structure	18,802.42	564.28	137.47
Wings	10,014.20	642.99	142.22
Fin & Rudder	1,038.94	754.52	209.77
Fuselage Fwd Sta. 255 ins	2,631.72	184.17	128.31
Sta. 255 - 485 ins	1,686.53	379.30	130.44
Sta. 485 - 591.65 ins	1,018.71	533.73	104.38
Sta. 591.65 ins - 743.5 ins	1,437.47	660.98	107.30
Sta. 743.5 ins aft.	920.54	807.74	128.96
"Marry-Up"	54.31	462.81	104.25
Landing Gear - Retracted	2,722.52	490.11	135.13
Main Landing Gear	2,078.67	539.30	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	27.70	162.60	88.70
Power Plant & Services	13,789.32	652.23	120.39
Engines & Accessories J75P5	11,913.81	665.32	119.78
Gear Box & Drives on Fuselage	276.70	603.71	103.24
Gear Box & Starters on Engine	286.80	589.18	105.54
Engine Controls	33.35	375.79	118.49
Engine Nose Bullets	75.61	562.62	115.11
Fire Extinguishing System	65.53	700.45	134.21
Engine Mountings	206.21	635.04	127.71
Fuel System	931.31	536.18	135.75
Flying Controls Group	2,152.80	624.73	134.87
Mechanical Flying Controls	953.00	675.98	147.65
Hydraulic Flying Controls	1,199.80	584.03	124.71
Equipment - Fixed & Removable	10,465.00	349.06	111.21
Instruments	49.09	159.10	136.11
Probe	15.25	23.71	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	853.20	338.84	130.01
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	56.31	423.31	127.57
Electrical System	1,131.18	414.71	112.90
Intake De-icing Boots	88.00	195.82	118.00
Canopy Actuation	65.86	222.01	154.36
Hydraulics Utilities System	654.93	503.19	117.65
Sequencing of U/C Doors	66.89	354.66	116.36
Instrument Pack Structure	686.80	385.81	94.68
Pack Instrumentation	2,000.00	394.00	95.00
Flight Test Installations	886.78	468.12	118.21
MH64 Damping System	184.72	461.22	135.05
Radio & Radar Fixed	892.15	220.66	114.93
Radio & Radar Removable	2,067.58	206.59	109.54
Missile Seeker	167.00	519.29	50.64
Cabin Consoles	23.62	100.23	125.05

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Description	Wt. lb	H. Arm	V. Arm	% M.A.C.
Trapped Fuel	238.20	553.66	141.42	
U/C Up		541.16	126.65	
Aircraft Basic Weight	48,170.26			
U/C Down		543.30	123.11	
Useful Load (less fuel)	1,129.62	365.75	128.26	
Crew	390.00	194.00	136.50	
Engine Fire Extinguisher Fluid	25.00	730.00	129.00	
Residual Fuel	287.00	508.14	135.33	
Oxygen Charge	13.39	259.69	159.91	
Water for Air Conditioning	280.00	315.00	114.00	
Oil	134.23	608.92	115.68	
U/C Up		537.14	126.69	27.94
Operational Weight Empty	49,299.88			
U/C Down		539.23	123.23	28.52
Max. Internal Fuel (2468 gals at 7.8 lb/gal)	19,253.00	540.80	144.09	
U/C Up		538.17	131.58	28.23
Gross Weight (Max Int. Fuel)	68,552.88			
U/C Down		539.67	129.09	28.64

N.B. Aircraft Datum = 120" above an arbitrarily chosen ground line.

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A/C 25204 & 25205
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Appendix 1

Introduction:-

This appendix is to cover the condition of A/C 25204 & 25205 prior to the installation of full Astra I.

All weight changes will be quoted relative to the completed aircraft as defined in the main text of this report.

Changes Applicable to Early Phases of A/C 25204 & 25205 Weight lb

1. Structure

Fin Structure for IR tracker - not installed initially	- 10.75
Radome - longer radome fitted as A/C 25201, full electrical properties unnecessary	+ 21.42
<u>Total Structural Increase</u>	<u>+ 10.67</u>

2. Landing Gear No weight change

3. Power Plant Group No weight change

4. Flying Controls No weight change.

5. Equipment

Interim Radio & Radar - This will be installed initially until Astra 1 units become available	+ 648.68
Radio & Radar Remov. - Full Astra I units will not be installed	-2067.58
Radio & Radar Fixed - The wiring & racks etc for complete Astra 1 will not be installed	- 892.15
Missile Seeker - This will not be installed	- 167.00
Probe - Mk 2 A/C probe is replaced by Mk 1 since Mk1 radome is fitted	- 0.25
MH64 Damping System - delete cable allowance - now in Interim Radio and Radar weight	- 85.64
Instrumentation in Pack - full instrumentation will not be available initially, but it is assumed that the pack will be ballasted to simulate the complete condition, the weight of the pack - with water for Air Conditioning will be maintained by	+ 140.00

<u>Total Equipment Decrease</u>	<u>-2423.94</u>
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6. Trapped Fuel No weight change.

7. Operational Load

Water for Air Cond'n - since an incomplete pack will probably be fitted initially the Air Cond'n equipment may not be installed. Thus the wt. of water in the second boiler will be simulated by ballast (see Equip. Group)	- 140.00
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<u>Operational Load</u>	<u>- 140.00</u>
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SUMMARY

Weight Change - Aircraft Basic Weight

Structure	10.67
Equipment	<u>-2423.94</u>
	<u>-21143.27</u>
Ballast	+1011.00
<u>Op. Load - Water</u>	<u>- 140.00</u>

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

BALLASTED Condition

Complete A/C

Early A/C

49,299.88

47,757.61

-1542.27 lb

Aircraft: Arrow 1
A/C 25204 & 25205
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C O N F I D E N T I A L

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Wt. & C.G. Summary A/C Prior to Astra I Inst

Description	Wt. lb	H. Arm	V. Arm
Structure	18,813.09	563.55	137.37
Wings	10,014.20	642.99	142.22
Fin & Rudder	1,028.19	754.46	209.25
Fuselage Fwd Sta 255 ins	2,653.14	182.87	128.15
Sta 255 - 485 ins	1,686.53	379.30	130.44
Sta 485 ins - 591.65 ins	1,018.71	533.73	104.38
Sta 591.65 - 742.5 ins	1,437.47	660.98	107.30
Sta 742.5 ins aft	920.54	807.74	128.96
"Marry-Up"	54.31	462.81	104.25
Landing Gear - Retracted	2,722.52	490.11	135.13
Main Landing Gear	2,078.67	539.30	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	27.70	162.60	88.70
Power Plant & Services	13,789.32	652.23	120.39
Engines & Accessories J75P5	11,913.81	665.32	119.78
Gear Box & Drives on Fuselage	276.70	603.71	103.24
Gear Box & Starter on Engines	286.80	589.18	105.54
Engine Controls	33.35	375.79	118.49
Engine Nose Bullets	75.61	562.62	115.11
Fire Extinguisher System	65.53	700.45	134.21
Engine Mountings	206.21	635.04	127.71
Fuel System	931.31	536.18	135.75
Flying Controls Group	2,152.80	624.73	134.87
Mechanical Flying Controls	953.00	675.98	147.65
Hydraulic Flying Controls	1,199.80	584.03	124.71
Equipment Fixed & Removable	8,041.06	394.57	113.05
Instruments	49.09	159.10	136.11
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	853.20	338.84	130.01
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	56.31	423.31	127.57
Electrical System	1,313.18	444.71	112.90
Intake De-icing Boots	88.00	195.82	118.00
Canopy Consoles	23.62	180.23	125.05
Hydraulics Utilities System	654.93	503.19	117.65
Landing Gear Door Sequencing	66.89	345.66	116.36
Instrument Pack Structure	686.80	385.81	94.68
Pack Instrumentation (Probably ballasted)	2,140.00	391.50	95.00
Flight Test Installations	886.78	468.12	118.21
MH64 Damping System	99.08	450.83	140.34
Interim Radio & Radar	648.68	342.30	124.04

C O N F I D E N T I A L

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Description	Wt. lb	H. Arm	V. Arm	%M.A.C.
Trapped Fuel	238.20	553.66	111.42	
U/C Up		559.04	127.75	
Aircraft Basic Weight	45,756.99			
U/C Down		561.29	124.02	
Useful Load	985.62	366.28	132.83	
Crew	390.00	194.00	136.50	
Engine Fire Extinguisher Fluid	25.00	730.00	129.00	
Residual Fuel	287.00	508.14	135.33	
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	11,011.00	100.29	113.65	
U/C Up		545.33	127.56	30.20
Operational Weight Empty	47,757.61			
U/C Down		547.48	123.99	30.79
Max Internal Fuel (2468 gals at 7.8 lb/gal)	19,253.00	540.80	114.09	
U/C Up		544.03	132.31	29.84
Gross Weight (Max. Int. Fuel)	67,010.61			
U/C Down		545.56	129.77	30.26

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. i.e. 1,011 lb distributed on the Shear Panel & Slide rail mounting brackets between Stas. 67.5 & 96.25 ins. Currently provision is only made for approx. 900 lb of ballast at these locations.

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BY : Kathleen Gygler

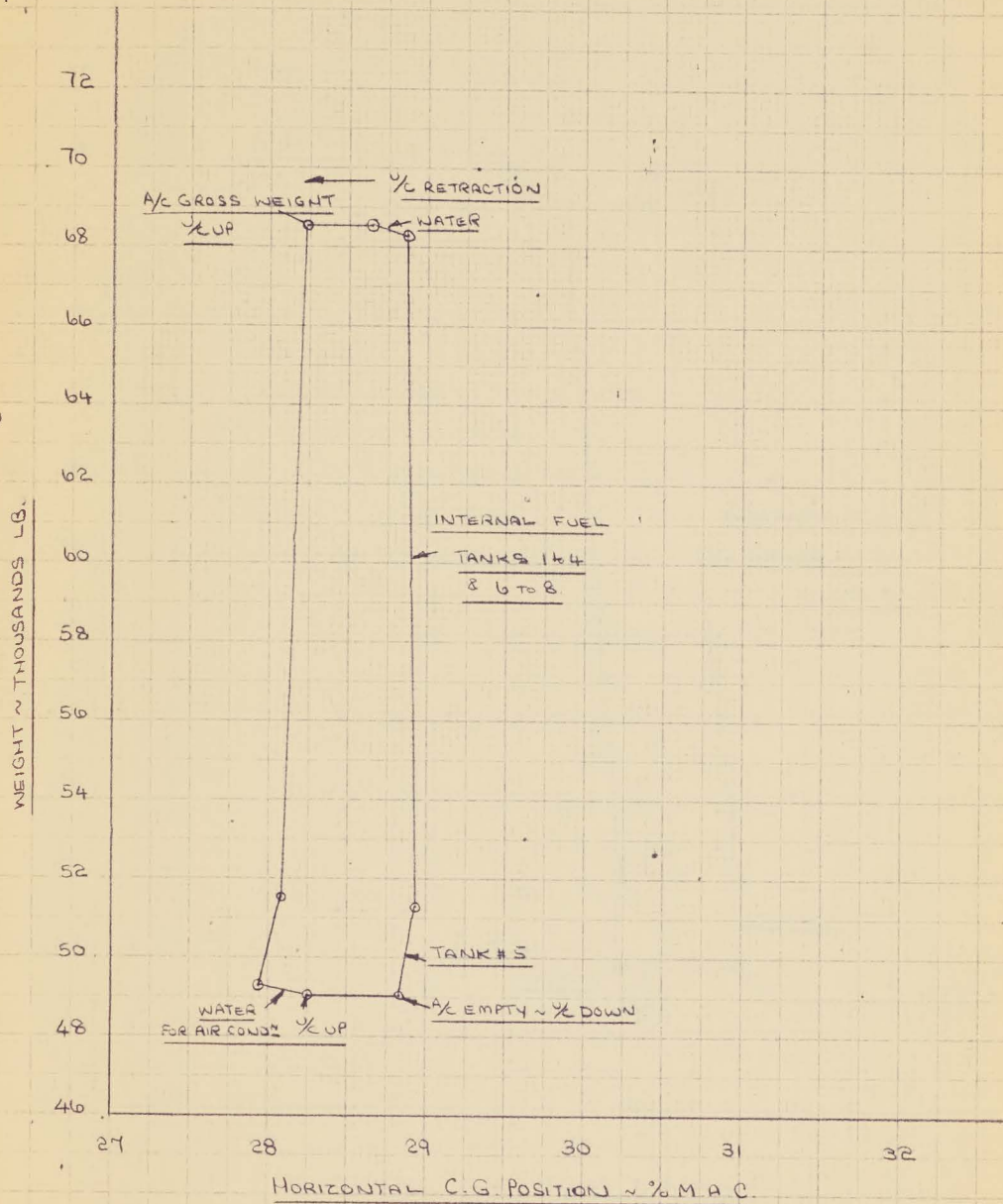
HORIZONTAL C.G. ENVELOPE

ARROW I ~ A/C 25204 & 25205

NORMAL FLIGHT CONDITIONS

FUEL PROPORTIONERS USED

A/C WITH FULL ASTRA I TRIAL INSTALLATIONS



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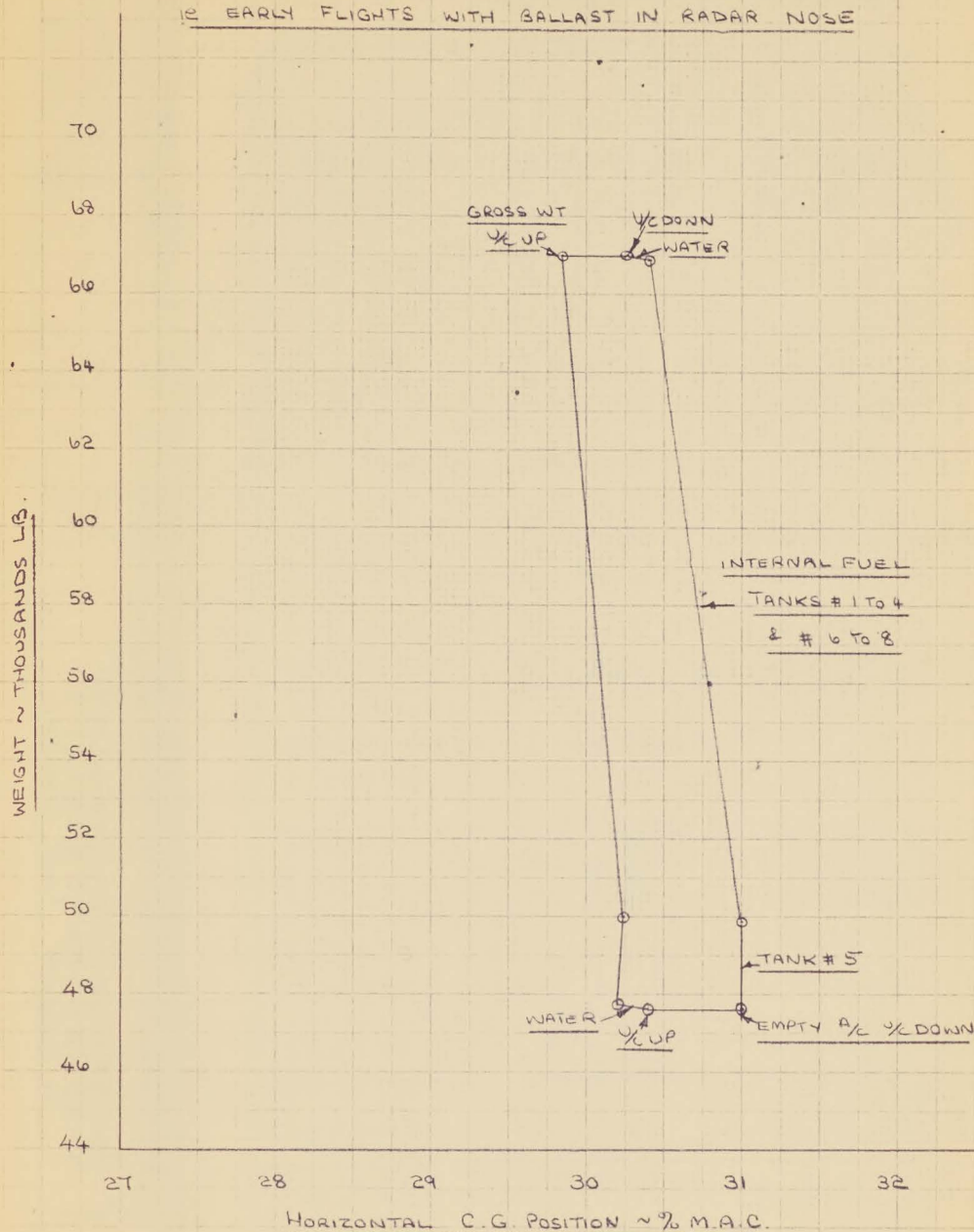
HORIZONTAL C.G. ENVELOPE
ARROW I ~ 1/2 25204 & 25205
NORMAL FLIGHT CONDITIONS
FUEL PROPORTIONERS USED

DATE : Sept 1st 1958

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BY : Kathleen Gynffue

A/C PRIOR TO INSTALLATION OF ASTRA I
12 EARLY FLIGHTS WITH BALLAST IN RADAR NOSE



AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL GROUP
COMPONENT

PROJECT _____

DESCRIPTION		REFERENCE NO.			COMP. NO.	WEIGHT	H. AF
TOTAL WING GROUP		1	0	0	0	0	0
OUTER WING		1	0	1	0	0	0
100	OUTER WING SKINS	1	0	1	0	0	0
100	POSTS AND INTERCOSTALS	1	0	1	0	0	0
100	OUTER WING SPARS	1	0	1	0	0	0
100	OUTER WING RIBS	1	0	1	0	0	0
98	AILERON CONTROL BOX	1	0	1	0	0	0
100	RIB 12	1	0	1	0	0	0
100	O W AILERON JACK FITTING	1	0	1	0	0	0
	AILERON JOINTS AND FAIRING	1	0	1	0	0	0
	BUZZ DAMP STRUC PROV O W	1	0	1	0	0	0
						198355	
96 AILERON		1	0	2	0	0	0
						35380	
						35380	
94 ELEVATOR		1	0	3	0	0	0
94	ELEVATOR MARRY UP	1	0	3	0	0	0
						1597738	
						45336755	
						46933	
INNER WING		1	0	4	0	0	0
96	MAIN U C STRUCTURE	1	0	4	0	0	0
100	FRONT SPAR I W	1	0	4	0	0	0
100	MAIN SPAR I W	1	0	4	0	0	0
100	FWD CENTRE SPAR I W	1	0	4	0	0	0
100	AFT CENTRE SPAR I W	1	0	4	0	0	0
100	REAR SPAR I W	1	0	4	0	0	0
99	I W STRUCTURE F S TO M S	1	0	4	0	0	0
100	STRUCTURE MS TO R S	1	0	4	0	0	0
100	STRUCTURE AFT OF REAR SPAR	1	0	4	0	0	0
40	ELEVATOR CONTROL BOX	1	0	4	0	0	0
25	TRANSP JOINT MARRY UP	1	0	4	0	0	0
100	INNER WING JOINTS	1	0	4	0	0	0
100	INNER WING SKINS	1	0	4	0	0	0
100	STRUT PICK UP FITTINGS	1	0	4	0	0	0
100	RIBS 1 TO 9 INNER WING	1	0	4	0	0	0
74	DORSAL FAIRING I W	1	0	4	0	0	0
100	RIB 10	1	0	4	0	0	0
77	WING TO FUS JOINT I W	1	0	4	0	0	0
65	TRANSPORT JOINT O W TO I W	1	0	4	0	0	0
77	WING TO FUS JOINT C A	1	0	4	0	0	0
	BUZZ DAMP STRUC PROV I W	1	0	4	0	0	0
74	DORSAL FAIRING C A	1	0	4	0	0	0
						667744	

WGT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	1000000						
	1010000						
	1010001	64	92910	70646	13597	65637199	12632973
	1010002	64	2436	73207	13410	1783323	326668
	1010003	64	39258	70608	13579	27719289	5330844
	1010004	64	13456	69506	13650	9352727	1836744
	1010006	64	37530	77409	13508	29051598	5069552
	1010007	64	7626	64873	13832	4947215	1054828
NG	1010009	64	1046	72791	13670	761394	142988
RING	1010010		3293	78726	13224	2592447	435466
W	1010011	64	800	75828	13680	606624	109440
			198355			142451816	26939503
	1020000	74	35380	79190	13561	28017422	4797882
			35380			28017422	4797882
	1030000		1597	73810	14260	1178746	227732
	1030001	82	45336	75523	14260	34239107	6464914
			46933			35417853	6692646
	1040000						
	1040001	62	33071	57757	13983	19100817	4624318
	1040002	62	11110	48428	14260	5380351	1584286
	1040003	62	15106	56570	14280	8545464	2157137
	1040004	62	5364	60098	14415	3223657	773221
	1040005	62	3666	65492	14450	2400937	529737
	1040006	62	7667	70374	14420	5395575	1105581
S	1040007	62	108579	49954	14389	54239554	15623432
	1040008	62	14979	60964	14572	9131798	2182740
SPAR	1040009	62	32212	71829	15020	23137557	4838242
	1040010	62	42838	72470	14328	31044699	6137829
	1040011		7065	63621	13876	4494824	980339
	1040012	62	63471	66222	15046	42031766	9549847
	1040013	62	219153	62458	14463	136878581	31696098
	1040014	62	5391	56766	14330	3060255	772530
	1040016	62	51204	61287	14499	31381395	7424068
	1040017	62	9548	280	16150	45866	15343
	1040018	62	10800	63683	13835	6877764	1494180
	1040019	62	12628	61681	13811	7789077	1744053
I W	1040020	62	12942	63071	13710	8162649	1774348
	1040021		3818	52984	14301	2022929	546012
W	1040022	62	552	74150	14200	409308	78384
	1040023		6033	57025	16034	3440318	967331
			667744			408195141	96599056

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT_____

[illegible]

HEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

REFERENCE NO.				COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
1050000	62				22138	46841	14423	10369661	3192964
					22138			10369661	3192964
1060000	65				30870	63013	13561	19452113	4186281
					30870			19452113	4186281

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENTS

PROJECT_____

[illegible]

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET.

[illegible]

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT _____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
	TOTAL FUSELAGE GROUP	30000000			
	FUSELAGE BASIC STRUCTURE	30100000			
	RADOME	30100001	51	15958	
	RADAR NOSE STRUCTURE C A	30100002		2701	
	RADAR NOSE STRUCTURE R N	30100003	51	17032	
	SKIN F F	30100004	52	11054	
88	SKIN C F	30100005	54	21263	
	SKIN D B	30100006	56	59375	
3	SKIN E B	30100007	58	17725	
4	FORMERS F F	30100011	52	10761	
100	FORMERS C F	30100012	54	27824	
	FORMERS D B	30100013	56	74915	
	LIGHT FORMERS E B	30100014	58	13501	
72	HEAVY FORMERS E B	30100015	58	21890	
	LOWER LONGERONS F F	30100016	52	6969	
	LONGITUDINAL MEMBERS E B	30100017	58	11067	
75	LOWER LONGERON E B	30100018	58	6842	
	TOP LONGERONS E B	30100019	58	6386	
	LOWER SHEAR PANEL F F	30100020	52	2952	
	TOP WING LONGERONS D B	30100021	56	4985	
66	LONGERONS C F	30100023	54	14453	
43	LONGERONS F D B	30100024	54	12584	
43	LONGERONS A D B	30100025	56	8655	
	ELECTRONICS BAY STRUCTURE	30100026	54	4361	
	LONGITUDINAL BEAMS D B	30100027	56	7378	
	RADAR ACCESS DOOR C F	30100028	54	2479	
72	MAIN FRAME AT STN 538 77	30100029	56	5980	
	DIVE BRAKE ACCOMMODATIONS	30100030	56	3620	
48	TOP LONGERONS F F	30100031	52	19253	
100	DUCT C F	30100032	54	33475	
97	DUCT D B	30100033	56	31663	
22	CANOPY ARCH	30100034	52	8659	
4	ACCESS PANELS D B	30100036	56	3964	
66	NOSE U C SUPPORT STRUCTURE	30100037	52	3343	
3	CREWS BULKHEADS	30100038	52	1332	
	EQUIPMENT BAY STRUCTURE	30100039	54	6550	
86	WINDSCREEN	30100041	52	13057	
33	SERVICE ACCESS DOORS	30100042	58	6704	
	TORSION BOX E B	30100043	58	6046	
	DORSAL FAIRING AIR OUTLET	30100044	54	2143	
66	INTERMEDIATE FORMERS	30100045	58	5154	
3	ENGINE ACCESS DOORS	30100046	58	1473	
	SEALING MISSILE BAY	30100047	54	7433	
100	MISCELLANEOUS ITEM C F	30100048	54	3923	
97	ARMAMENT BAY ROOF	30100049	54	13494	
	BULKHEAD STA 120	30100050	52	3185	
	BULKHEAD STA 255	30100051	52	1054	
100	BULKHEAD STA 485	30100052	54	11254	
	ENGINE TUNNEL	30100054	58	4792	
100	INTEGRAL FUS FUEL TANK CF	30100055	54	2116	

WGT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET

		REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
		3000000						
RE		3010000						
A N		3010000151		15958	3992	11070	637043	1766551
		30100002		270	12000	11200	32400	30240
		3010000351		17032	9583	11325	1632177	1928874
		3010000452		11054	19058	12024	2106671	1329133
		3010000554		21263	37670	14300	8009772	3040609
		3010000656		5937	53413	11157	3171130	662391
		3010000758		17725	66945	10996	11866001	1949041
		3010001152		10761	18292	12033	1968402	1294871
		3010001254		27824	37482	13306	10428992	3702261
		3010001356		7491	53710	11316	4023416	847682
		3010001458		13501	66827	11119	9022313	1501176
		3010001558		21890	66217	10984	14494901	2404398
B		3010001652		6969	18483	9044	1288080	630276
		3010001758		1106	70853	9611	783634	106298
		3010001858		6842	65810	9781	4502720	669216
		3010001958		638	66605	13911	424940	88752
		3010002052		2952	23414	8900	691181	262728
		3010002156		498	53899	13550	268417	67479
		3010002354		14453	41038	12144	5931222	1755172
		3010002454		1258	48717	10700	612860	134606
URE		3010002556		8655	52931	9759	4581178	844641
		3010002654		4361	27376	9300	1193867	405573
		3010002756		7378	52041	9113	3839585	672357
		3010002854		2479	27382	9020	678800	223606
77 ONS		3010002956		5980	53877	10383	3221845	620903
		3010003056		3620	50328	9339	1821874	338072
		3010003152		19253	19308	14763	3717369	2842320
		3010003254		33475	37249	12917	12469103	4323966
		3010003356		31663	54471	11812	17247153	3740034
		3010003452		8659	22804	16053	1974598	1390029
TURE		3010003656		3964	54013	10340	2141075	409878
		3010003752		3343	21049	9186	703668	307088
E		3010003852		13327	20641	12274	2750826	1635756
		3010003954		6550	28368	13624	1858104	892372
		3010004152		13057	13814	15006	1803694	1959333
		3010004258		6704	66397	9189	4451255	616031
LET		3010004358		6046	61926	9058	3744046	547647
		3010004454		2143	29245	16400	626720	351452
		3010004558		5154	69289	10257	3571155	528646
		3010004658		14739	62867	8874	9265967	1307939
		3010004754		743	31991	10964	237693	81463
		3010004854		392	37000	12500	145040	49000
		3010004954		13494	38408	1434	5182776	193504
		3010005052		3185	12000	11430	382200	364046
		3010005152		10548	25500	12043	2689740	1270296
		3010005254		11254	48500	10530	5458190	1185046
CF		3010005458		47926	66524	11574	31882292	5546955
		3010005554		21168	39722	14553	8408353	3080579

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENTS

PROJECT _____

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H.
	COCKPIT FLOOR	301005652		6160	17
	CENTRE BEAM 697 28 717 36	301005958		557	71
	DORSAL OVER FUEL TANK	301006154		5007	41
	SHIELD EXHAUST DEFLECTOR	301006254		1981	33
	SHEAR PANEL BELOW NAV ARCH	301006352		2115	25
33	PACK MOUNTING STRUCTURE	301006454		2119	29
88	ENG ACCESS DOORS R F	301006559		8457	77
99	TUNNEL FIXED R F	301006659		10403	77
100	SKIN AND STIFFENERS R F	301006759		5143	77
100	FAIRING UNDER RUDDER R F	301006859		2616	78
100	FORMERS FIXED R F	301006959		9001	77
100	LONGERONS C BEAM FIXED R F	301007059		2799	77
100	TAILCONES	301007159		44800	83
	CNTR STRUCT STING REM R F	301007259		8835	83
	MISCELLANEOUS ITEMS E B	301007358		919	66
	MTG BRKTS SIDE PANEL D B	301007556		243	52
	FORMERS LOWER PANEL D B	301007656		7640	54
	LOWER PANEL D B	301007756		5348	55
	JOINT F F TO C F	3010078		855	25
	JOINT AIR INTAKES TO F F	3010079		1092	22
	JOINT C F TO D B	3010080		520	48
	JOINT D B TO E B	3010081		2521	58
	FUS JOINT AT STA 742 50	3010082		443	74
	MISCELLANEOUS ITEMS F F	301008652		1699	18
				6459	55
	DIVE BRAKES	302000072		11790	50
	DIVE BRAKES C A	3020001		406	48
				121	96
	AIR INTAKES	3030000			
	7 AIR INTAKES	303010055		77248	21
				77248	
	PILOTS AND NAVIG CANOPIES	3040000			
	76 PILOTS CANOPY	304010053		24208	17
				24208	
	100 NAVIGATORS CANOPY	304020053		15321	23
				15321	

HEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
7 36	301005652		6160	17636	11561	1086378	712158
	301005958		557	71367	11524	397514	64189
	301006154		5007	41403	14202	2073048	711094
	301006254		1981	33428	16400	662209	324884
	301006352		2115	25699	15352	543534	324695
	301006454		2119	29285	10309	620549	218448
OR ARCH E	301006559		8457	77280	9910	6535570	838089
	301006659		10403	77168	13059	8027787	1358528
	301006759		5143	77149	13796	3967773	709528
	301006859		2616	78134	15379	2043985	402315
	301006959		9001	77929	13652	7014389	1228817
	301007059		2799	77170	12570	2159988	351834
F F R F	301007159		44800	83168	12877	37259264	5768896
	301007259		88358	31551	13729	7346744	1212957
	301007358		919	66400	10284	610216	94510
	301007556		243	52514	13145	127609	31942
	301007656		7640	54472	9006	4161661	688058
	301007756		5348	55246	8800	2954556	470624
B B	3010078		855	25500	12000	218025	102600
	3010079		1092	22000	12000	240240	131040
	3010080		520	48500	9800	252200	50960
	3010081		2521	58475	9150	1474155	230672
	3010082		443	74250	11500	328928	50945
	301008652		1699	18924	12571	321519	213581
O F			645955			308372279	76191650
	302000072		11790	50884	9049	5999224	1066877
	3020001		406	48794	9374	198104	38058
			12196			6197328	1104935
3030000							
303010055			77248	21079	11868	16283106	9167793
			77248			16283106	9167793
IES 3040000							
304010053			24208	17686	15915	4281427	3852703
			24208			4281427	3852703
304020053			15321	23277	16223	3566269	2485526
			15321			3566269	2485526

WEIGHT AND C. OF G BY FUNCTIONAL
COMPOUN.

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
UNDERCARRIAGE UP POSITION	4000000			
MAIN UNDERCARRIAGE GROUP	4010000			
MAIN UNDERCARRIAGE	4010100	92	2078675	
89 MAIN U C DOORS FAIRINGS	4010200	62	282345	
NOSE UNDERCARRIAGE GROUP	4020000			
100 NOSE UNDERCARRIAGE	4020100	91	333811	
42 NOSE U C DOOR AND FAIRING	4020200	52	277016	
91 ENGINE ANTI ICEING	5030000			
FIRE EXT SYSTEM	5040000			
FIRE EXTING SYSTEM B	5040001			
FIRE EXTING SYSTEM L	5040002			
ENGINE MTGS AND BRACKETS	5070000			
ENGINE MTGS ACCESSORIES	5070001			
ENGINE MTGS ACCESSORIES	5070002			
ENGINE MTGS ACCESSORIES	5070003			

WIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET_____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
TON	4000000						
UP	4010000						
	401010092		207867	53930	14100	112102673	29309247
			207867			112102673	29309247
S	401020062		28234	53760	13837	15178598	3906739
			28234			15178598	3906739
UP	4020000						
	402010091		33381	17080	9970	5701475	3328086
			33381			5701475	3328086
ING	402020052		2770	16260	8870	450402	245699
			2770			450402	245699

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

PROJECT _____

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H.
ENGINE GROUP		5000000			
ENGINE J 75		5010000		118757866	
J 75 ENGINE SERV ACCESS		5010100		380362	
ACC GEAR BOXES ON FUS D B		5020001	56	444557	
ACC GEAR BOXES ON FUS E B		5020002	58	2322560	
ENGINE CONTROLS		5030000		27670	
35 ENGINE CONTROLS F F		5030001	52	155816	
35 ENGINE CONTROLS C F		5030002	54	11726	
35 ENGINE CONTROLS E B		5030004	58	94663	
35 ENGINE CONTROLS I W		5030005	62	68949	
35 ENGINE CONTROLS ENG		5030006		2564	
83 GEARBOX AND STARTER ON ENG		5040000		3335	
91 ENGINE ANTI ICING		5050000		2868058	
FIRE EXT SYSTEM		5060000		28680	
FIRE EXTING SYSTEM D B		5060002	56	756156	
FIRE EXTING SYSTEM E B		5060003	58	7561	
ENGINE MTGS AND BRACKETS		5070000		14655	
64 ENG MOUNTING AND BRKTS		5070001		640770	
ENGINE MTGS ACCESSORIES		5070002		6553	
ENGINE MTGS ACCESSORIES CA		5070003			
64 ENG MOUNTING AND BRKTS		5070001		1465362	
ENGINE MTGS ACCESSORIES		5070002		520266	
ENGINE MTGS ACCESSORIES CA		5070003		76664	
				20621	

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	5000000						
	5010000		1187578	66543	11983	790250029	142307472
			1187578			790250029	142307472
S	5010100		3803	62941	10354	2393646	393763
			3803			2393646	393763
D B	5020001	56	4445	57866	9765	2572144	434054
E B	5020002	58	23225	60850	10431	14132413	2422600
			27670			16704557	2856654
	5030000						
	5030001	52	1558	16668	12431	259687	193675
	5030002	54	1172	6800	11800	31356	13806
	5030004	58	9466	3787	10081	603425	95366
	5030005	62	6894	9745	13137	342743	90514
	5030006		2564	137	10000	16034	2500
			3335			1253245	395861
ENG	5040000		28680	58918	10554	16897682	3026887
			28680			16897682	3026887
	5050000		7561	56269	11511	4254499	870347
			7561			4254499	870347
	5060000						
	5060002	56	1465	5318	13749	80764	20074
	5060003	58	6407	70381	13414	4509311	859435
			6553			4590075	879509
T S	5070000						
	5070001		14653	62504	12935	9158711	1895366
S	5070002		5202	66213	12248	3444400	637141
S CA	5070003		766	64236	13192	492048	101051
			20621			13095159	2633558

PROJECT

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

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RIGHT AND C. OF G BY

FUNCTIONAL GROUP COMPONENT

REPORT NO.

SHEET

REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
5080000						
5080001	54	14973	40619	14161	6081883	2120327
5080002	56	17382	53418	11311	9285117	1966078
5080003	58	4025	66918	12500	2693450	503125
5080004	62	54349	55715	14413	30280545	7833321
5080005		1648	68563	8916	1129918	146936
5080006		754	61525	9658	463899	72821
		93131			49934812	12642608

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT_____

[illegible]

HEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	6000000						
	6010000						
	6010001	52	10992	16269	11434	1788288	1256825
	6010002	54	12134	40097	11790	486377	143013
	6010005	83	12443	78819	22157	9807448	2756996
	6010006	62	39672	71857	14385	28507109	5706817
	6010007	64	30317	77057	13563	23361371	4111895
	6010008		66370	984	14338	470624	95061
			95300			64421217	14070607
	6020000						
LICS	6020001	56	36185	6342	10468	2038454	378732
DB	6020002	58	45384	65157	11020	29570853	5001317
EB	6020003	59	48758	75	10824	36420	5196
RF	6020004	62	27475	70357	14721	19330586	4044595
IW	6020005	64	13086	74031	13587	9687697	1777995
OW	6020006	83	55647	6036	20808	4230643	1157757
FIN	6020008	51	3500	11309	10513	395815	367955
RN	6020009	52	18423	20376	10200	3753870	1879146
FF	6020010	54	2882	35670	11132	1028009	320824
CF			119980			70072347	14933517

AVRO AIRCRAFT LTD.
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**WEIGHT AND C. OF G BY FUNCTIONAL
COMPON**

PROJECT _____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
FIXED EQUIPMENT GROUP	7000000			
INSTRUMENTS	7010000			
INSTRUMENTS F F	7010001	52	470913	
NAVIG TABLE AND STOWAGE	7010004	52	20022	
			4909	
COCKPIT PRESSURE SEALING	7020000	52	50018	
			500	
OXYGEN SYSTEM	7030000			
58 OXYGEN SYSTEM	7030001	52	224025	
			2240	
AIR CONDITIONING SYSTEM	7040000			
AIR CONDITIONING F F	7040001	52	455818	
AIR CONDITIONING C F	7040002	54	4759929	
AIR CONDITIONING D B	7040003	56	215951	
AIR CONDITIONING C A	7040005		2806939	
AIR CONDITIONING ENG	7040006		285564	
AIR CONDITIONING I W	7040007	62	8051	
			85320	
HYDRAULICS MAIN SYSTEM	7050000			
32 UTILITY HYDRAULICS F F	7050001	52	898120	
29 UTILITY HYDRAULICS C F	7050002	54	457844	
20 UTILITY HYDRAULICS D B	7050003	56	2733855	
74 UTILITY HYDRAULICS E B	7050004	58	789260	
24 UTILITY HYDRAULICS I W	7050005	62	1351155	
32 UTILITY HYDR NOSE U C	7050006	91	21318	
24 UTILITY HYDR MAIN U C	7050007	92	298054	
NUC AND MUC DOOR SEQ MECH	7050010		668934	
			72182	
CABIN INSULATION	7070000	52	143118	
			1431	
BRAKE PARACHUTE	7080000			
BRAKE PARACHUTE F F	7080001	52	46216	

WGT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO.

SHEET.

SHEET									
REFERENCE NO.				COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	7000000								
	7010000								
	7010001	52			4709	15651	13637	737006	642166
E	7010004	52			2002	20000	13000	44000	26000
					4909			781006	668166
NG	7020000	52			500	18600	13000	93000	65000
					500			93000	65000
	7030000								
	7030001	52			2240	25282	15603	566317	349507
					2240			566317	349507
M	7040000								
	7040001	52			4558	18260	10634	832291	484698
	7040002	54			47599	29442	13499	14014098	6425389
	7040003	56			2159	51690	12474	1115987	269314
	7040005				28069	39471	13687	11079115	3841804
	7040006				2855	64017	13900	1827685	396845
	7040007	62			80	51500	15950	41200	12760
					85320			28910376	11430810
	7050000								
	7050001	52			8981	20071	10926	1802577	981264
	7050002	54			4578	44016	10399	2015052	476066
	7050003	56			27338	55692	11077	15225079	3028230
	7050004	58			7892	60587	10861	4781526	857150
	7050005	62			13511	55304	14234	7472123	1923156
	7050006	91			213	18863	9318	40178	19847
	7050007	92			2980	54325	14100	1618885	420180
ECH	7050010				6689	34566	11636	2312120	778332
					72182			35267540	8484225
	7070000	52			1431	18748	13200	268284	188892
					1431			268284	188892
	7080000								
	7080001	52			462	16895	12875	78055	59483

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

PROJECT _____

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H.
BRAKE PARACHUTE R F		70800005	59	851382	
BRAKE PARACHUTE I W		70800006	62	12462	
				9099	
ELECTRICAL SYSTEM		70900000			
33 ELECTRICAL WIRING R N		70900001	51	129	9
33 ELECTRICAL WIRING F F		70900002	52	2966	19
33 ELECTRICAL WIRING C F		70900003	54	1304	41
33 ELECTRICAL WIRING A I		70900004	55	1274	21
33 ELECTRICAL WIRING D B		70900005	56	6515	53
33 ELECTRICAL WIRING E B		70900006	58	6459	
33 ELECTRICAL WIRING I W		70900008	62	8909	54
33 ELECTRICAL WIRING FIN		70900009	83	3527	9
33 ELECTRICAL WIRING NUC		70900010	91	3301	8
33 ELECTRICAL WIRING ENG		70900011		2002	58
33 ELECTRICAL WIRING C A		70900012		1374	63
65 ELECTRICS F F		70900013	52	1677	15
26 ELECTRICS C F		70900014	54	7596	44
85 ELECTRICS E B		70900015	58	6706	7
85 ELECTRICS ENG		70900016		1163	25
85 ELECTRICS C A		70900017		7186	1
ELECTRICS FIN		70900018	83	8389	
ELECTRICS I W		70900019	62	2336	62
ELECTRICS CAW		70900020		1126	2
ELECTRICS MUC		70900021	92	7451	
19 ELECTRICS A I		70900022	55	5303	22
93 ELECTRICS D B		70900023	56	2713	25
ELECTRICS R F		70900024	59	1368	0
62 WINDSCREEN DEMISTING		70900025	52	2964	19
				1131	18
L P PNEUMATICS		71000000			
L P PNEUMATICS F F		71000001	52	1836	19
L P PNEUMATICS C F		71000002	54	4212	29
L P PNEUMATICS D B		71000003	56	2575	55
L P PNEUMATICS E B		71000004	58	1526	65
L P PNEUMATICS FIN		71000005	83	6407	5
L P PNEUMATICS R N		71000006	51	200	7
L P PNEUMATICS C A		71000007		7513	4
				5631	
INTAKE DE ICING		71200000	55	8800	19
				8800	
RADAR FIXED GROUP		71400000			
RADIO AND RADAR FIXED R N		71400001	51	24160	9

IGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
7080000559		8513	82210	14392	6998537	1225191
7080000662		1246	2022	14500	76907	17980
		9099			7153499	1302654
70900000						
7090000151		129	9285	12000	11978	15480
7090000252		2966	19977	11200	592518	332192
7090000354		13044	1878	11000	546089	143440
7090000455		12742	1984	12000	280076	152880
7090000556		6515	53375	9200	3477381	599380
7090000658		645	9500	9200	38080	5888
7090000862		8909	54111	13900	4820749	1238351
7090000983		352	79754	30000	280734	105600
709001091		330	18600	9800	61380	32340
7090011		2002	58583	10000	1172832	200200
7090012		13746	33473	11234	4601199	1544226
709001352		16771	15582	11097	2613257	1861078
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		838	9550	28840	74327	23937
709001962		2336	62053	14500	1449558	338720
7090020		1126	2946	13561	70500	15188
709002192		745	1600	13700	38184	10138
709002255		5303	22076	13833	1170690	733564
709002356		27132	51861	10254	14070927	2782115
709002459		1368	0200	11360	109072	15450
709002552		2964	19896	9981	589717	295837
		113118			46913340	12769972
71000000						
7100000152		1836	19487	12684	357781	232878
7100000254		4212	9264	10316	123201	43430
7100000356		257	55930	8965	143740	23040
7100000458		1526	65650	9737	1001819	148587
7100000583		640	75818	25515	485235	163296
7100000651		200	7067	9261	14134	18522
71000007		751	34320	11797	257743	88595
		5631			2383653	718348
7120000055		8800	19582	11800	1723216	1038400
		8800			1723216	1038400
R N 71400000						
7140000151		24160	9040	10000	2184064	2416000

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT
RADIO AND RADAR FIXED F F	7140000252		2290118
RADIO AND RADAR FIXED C F	7140000354		1525527
RADIO AND RADAR FIXED D B	7140000456		193153
RADIO AND RADAR FIXED FIN	7140000583		320076
RADIO AND RADAR FIXED C A	71400006		1954022
RADIO AND RADAR FIXED I W	7140000762		222854
			89215
37 CANOPY ACTUATION	7160000052		658622
			6586
CABIN CONSOLES	7170000052		236218
			2362
SURFACE FINISH F F	7190000152		36318
SURFACE FINISH CANOPY	7190000253		6420
SURFACE FINISH C F	7190000354		140037
SURFACE FINISH INTAKES	7190000455		40822
SURFACE FINISH D B	7190000556		37753
SURFACE FINISH E B	7190000658		44366
SURFACE FINISH R F	7190000759		64880
SURFACE FINISH I W	7190000862		315160
SURFACE FINISH O W	7190000964		106770
SURFACE FINISH O W L EDGE	7190001065		31963
SURFACE FINISHAILERON	7190001174		35379
SURFACE FINISH ELEVATOR	7190001282		56675
SURFACE FINISH FIN	7190001383		63974
SURFACE FINISH RUDDER	7190001484		20281
			10000
FLIGHT TEST INSTALLATIONS	72000000		8867846
			88678

WGT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
F F	71400002	52	22901	18696	11224	4281571	2570408
C F	71400003	54	15255	27593	9885	4209312	1507957
D B	71400004	56	1931	53205	14000	1027389	270340
F IN	71400005	83	3200	76180	24600	2437760	787200
C A	71400006		19540	22161	12000	4330259	2344800
I W	71400007	62	2228	54570	16000	1215820	356480
			89215			19686175	10253185
	71600000	52	6586	22201	15436	1462158	1016615
			6586			1462158	1016615
	71700000	52	2362	18023	12505	425703	295368
			2362			425703	295368
	71900001	52	363	18744	12200	68041	44286
	71900002	53	642	20218	15900	12940	10176
	71900003	54	1400	37197	12455	520758	174370
	71900004	55	4082	2798	12020	93016	49042
	71900005	56	377	53828	11200	202932	42224
	71900006	58	443	66701	11200	295485	49616
	71900007	59	648	80362	13175	520746	85374
	71900008	62	315	160144	14400	1895137	453744
	71900009	64	106	770650	13590	753836	145005
EDGE	71900010	65	319	63948	13526	203994	43148
	71900011	74	353	79190	13556	279541	47853
	71900012	82	566	75523	14260	427460	80712
	71900013	83	639	74663	20837	477097	133148
	71900014	84	202	81279	21431	164184	43291
			10000			5915167	1401989
IONS	72000000		88678	46812	11821	41511945	10482626
			88678			41511945	10482626

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WEIGHT AND C. OF G BY FUNCTIONAL
COMPONENT

PROJECT _____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
REMOVABLE EQUIPMENT GROUP	8000000			
94 EJECTOR SEATS	801010052		3429420	
			34294	
RADAR REMOV GROUP	8020000			
RADIO AND RADAR REMOV R N	802010151	1	101895	9
RADIO AND RADAR REMOV F F	802010252		2090518	
RADIO AND RADAR REMOV C F	802010354		6769527	
RADIO AND RADAR REMOV D B	802010456		141049	
RADIO AND RADAR REMOV F I N	802010583		370074	
RADIO AND RADAR REMOV C A	8020106		383355	
RADIO AND RADAR REMOV E B	802010758		640073	
RADIO AND RADAR REMOV I W	802010862		92047	
			206758	
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		607053	
DAMPING SYSTEM O W	803010564		9574	
DAMPING SYSTEM R N	803010651		2877	
DAMPING SYSTEM C A	8030107		856447	
			18472	
98 INSTRUMENT PACK	805080094		6868038	
			68680	
INSTRUMENTATION	805090094		20000039	
			200000	
MISSILE SEEKER AND INST	8060000		1670051	
			16700	

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
GROUP	8000000						
	801010052		34294	20450	13411	7013123	4599168
			34294			7013123	4599168
	8020000						
R N	802010151	1	101895	9017	10100	9187872	10291395
F F	802010252		20905	18663	12438	3901500	2600164
C F	802010354		67695	27954	10484	18923460	7097144
D B	802010456		1410	49718	10000	701024	141000
F I N	802010583		3700	74757	25900	2766009	958300
C A	8020106		3833	55288	16000	2119189	613280
E B	802010758		6400	73050	12500	4675200	800000
I W	802010862		920	47802	15933	439778	146584
			206758			42714032	22647867
	8030000						
	803010152		784	17201	12047	134856	94448
	803010254		2303	32213	10949	741865	252155
	803010358		3696	3242	13432	233363	49564
	803010462		6070	53781	15720	3264507	954204
	803010564		957	4855	14000	71112	13300
	803010651		287	7350	9340	21095	26806
	8030107		8564	47972	12893	4108322	1104157
			18472			8575120	2494634
	805080094		68680	38581	9468	26497431	6502622
			68680			26497431	6502622
	805090094		200000	39400	9500	78800000	19000000
			200000			78800000	19000000
T	8060000		16700	51929	5064	8672143	845688
			16700			8672143	845688

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENTS

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
OPERATIONAL LOAD	9000000			
CREW MEMBERS	9010000	52	39000	19
			39000	
ENGINE OIL	9020000			
ENGINE OIL USABLE	9020001		88166	1
ENGINE OIL TRAPPED ENG	9020002		17736	2
ENGINE OIL TRAPPED D B	9020003	56	19255	8
ENGINE OIL TRAPPED E B	9020004	58	90959	
			13423	
OXYGEN CHARGE	9040000			
OXYGEN CHARGE F F	9040001	52	7220	
OXYGEN CHARGE C F	9040002	54	12672	6
			1339	
100 ENGINE FIRE EXT FLUID	9060000		25007	3
			2500	
RESIDUAL FUEL	9070000			
RESIDUAL FUEL C F	9070001	54	57003	9
RESIDUAL FUEL D B	9070002	62	23000	5
			28700	
TRAPPED FUEL	9080000			
TRAPPED FUEL C F	9080001	54	24304	1
TRAPPED FUEL D B	9080002	56	69049	
TRAPPED FUEL I W	9080003	62	20700	5
			23820	
WATER FOR AIRCONDITIONING	9100000			
WATER FOR AIRCOND C F	9100001	54	12500	2
WATER FOR AIRCOND APF	9100002	94	12500	3
UNUSABLE WATER AIRCOND C F	9100003	54	15002	6
UNUSABLE WATER AIRCOND APF	9100004	94	15003	6
			28000	

EIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. _____

SHEET _____

	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		88166	1246	12186	5399447	1074318
G	9020002		17736	2676	11640	1111245	206377
B	9020003	56	19255	8084	9555	1118117	183934
B	9020004	58	90959	928	9704	544746	88209
			13423			8173555	1552838
	9040000						
	9040001	52	72204	93	13200	14755	9504
	9040002	54	12672	6280	16150	332968	204621
			1339			347723	214125
	9060000		2500	73000	12900	1825000	322500
			2500			1825000	322500
	9070000						
	9070001	54	5700	39263	12360	2237991	704520
	9070002	62	23000	53676	60344	12345480	13879120
			28700			14583471	14583640
	9080000						
	9080001	54	24304	1426	13106	1006652	318476
	9080002	56	69049	400	13350	340860	92115
	9080003	62	20700	57201	14290	11840607	2958030
			23820			13188119	3368621
N I N G	9100000						
	9100001	54	12500	26800	13200	3350000	1650000
	9100002	94	12500	36200	10100	4525000	1262500
D C F	9100003	54	1500	26800	12700	402000	190500
D A P F	9100004	94	1500	36200	10100	543000	151500
			28000			8820000	3254500

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