Arrow 2
A/C 25207

Report: 7-0400-85
Issue : 3

[illegible] C.G. SUMMARY

Jan/59

UNCLASSIFIED

AVRO AIRCRAFT LIMITED
INTER-DEPARTMENTAL MEMORANDUM

UNCLASSIFIED

Ref: 9267/11/J
Date: 1 January, 1959
To: See Distribution
From: E.F. Burnett - Weight Supervisor
Subject: Arrow 2 A/C 25207 - Weight & C.G. Summary Report 7-0400-85 Issue 3

Attached is a copy of Weight and C.G. Summary Report 7-0400-85 Issue 3 dated January 1st, 1959, covering the engine test A/C 25207.

The report defines the aircraft with full Orenda Instrumentation installed. An appendix covers early flights of the aircraft before Orenda installation are effected.

This report will be issued monthly until the actual weighing of the aircraft has been obtained.

E.F. Burnett

ag

cc: Messrs. J.C. Floyd, R.N. Lindley, C.V. Lindow, F.P. Mitchell, A.R. Buley, T. Higgins, B.C. Alford, D.N. Scard, R. Marshall, F. Brame, W. Czerwinski, J. Lucas, S. Kwiatkowski, A. Cornish, T. Roberts, D. Wade, C. Marshall, W. Potocki, A. Crust, (6 copies R.C.A.F.), D. Inglis, D. Moore, R. Cairns, F. Danby

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Introduction and Weight Changes

The following is the initial issue of a Weight & C.G. Summary for Arrow 2 A/C 25207 based on the latest information available. All changes quoted herein are relative to issue 2 of this report dated 1st, December, 1958.

Note:

This summary is for the Aircraft in the completed stage i.e. with full Orenda Instrumentation fitted, for an estimate of the Aircraft for initial flights see Appendix 1.

General:

The primary role of A/C 25207 is that of a Flight Test Vehicle for Orenda Engines Ltd., the engine installed in the right hand nacelle being heavily Instrumentated.

a) Power Plant will consist of two prototype - instrumentated PS 13 engines with weights as follows:-

1. Left Hand 5245 lb)
2. Right Hand 5346 lb) Basic engine weight 4799 lb.

The above weights are based on Orenda-Avro letter AWS/SAW, dated October 7th, 1958.

b) Landing Gear Arrow 2A Main landing gear is fitted.

c) Electrical System will consist of only one alternator and drive, consequently the constant speed drive together with piping and wiring and alternator have been removed from the R.H. Engine.

d) Partial Electronics System as defined in report 72/AIREQ/13/2-7 of October, 1958, is installed.

e) Damping System MH 64 is fitted.

f) Flight Test Instrumentation can be considered as two parts viz.

1. Orenda Equipment comprising Pressure Logger, compensators etc. in Radar Nose; Control Panels and instruments in cockpits; transducer hot-box, amplifiers oxygen bottle etc. in C.F.

2. Avro Installations consisting of structural provisions for mounting the above equipment; piping from R.H. Engine to Radar Nose; and thermo-couple, instrumentation and control wiring from forward areas to R.H. Engine disconnect at Sta. 591.65 in.

The estimated weight of the complete system is 1794 lb. It should be noted that for the initial flights the Orenda Equipment (790 lb) will not be fitted.

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g) Pack Instrumentation The weight of equipment and wiring is estimated to be 1142 lb. Assuming the empty pack weight to be 692 lb. it will be necessary to ballast the pack with 2060 lb. so that the pack complete is 3894 lb. This is necessary since the Orenda Equipment installed in the Radar Nose precludes the mounting in that area of ballast required to maintain the C.G. of the A/C within the defined limits.

h) The additional Fire Protection as installed in A/C 25206 is not required.

i) Provision for Tailcone Plugs deleted as per R.C.A.F letter S36-38-105-15.

j) Where actual weights of Arrow 1 parts that apply to Arrow 2 Aircraft have been obtained, these weights have been recorded in Arrow 2 records. Some weights of Arrow 2 Parts have also been obtained on the I.B.M. sheets contained in this report, preceeding the item will be found a number varying from 0 - 100. This is the percentage actual weight recorded in the relevant item.

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	Weight lb
1. Structure	
a) Wings — No weight change.	
b) Fin and Rudder — No weight change.	
c) Fuselage Fwd Sta. 255 ins	
Cockpit Formers re-estimated	+ 0.04
Air Intakes re-estimated	- 0.90
Total Front Fuselage Decrease	- 0.86
d) Centre Fuselage Sta 255 - 485 ins — No weight change.	
e) Duct Bay Sta. 485 - 591.65 ins	
Skins Duct Bay, Shroud beam now part of Duct Bay was previously included with Engine Shroud.	+ 1.39
Total Duct Bay Increase	+ 1.39
f) Engine Bay Sta 591.65 - 742.5 ins	
Engine Shroud incorporation of minor changes	+ 0.26
Engine Access Door incorporation of minor changes	+ 0.03
Heavy Formers increase in "V" struts	+ 0.26
Total Engine Bay Increase	+ 0.55
g) Rear Fuselage Sta 742.5 in aft	
Stinger increased due to material substitutions	+ 0.39
Remov. Engine Doors actual weights obtained	+ 2.47
Total Rear Fuselage Increase	+ 2.86
h) Fuselage Joints — No weight change	
Total Structure Increase	+ 3.94
2. Landing Gear	
Nose U/C Door re-estimated	+ 0.05
Main U/C Doors & Fairings Assign X74.4297 - Locking of Pivot Door incorporated	+ 5.21
Total Landing Gear Increase	+ 5.26
3. Power Plant & Services — No weight change.	
4. Flying Controls — No weight change.	

5. Equipment Fixed and Removable

		Weight lb
Damping System - Addition of Command Signal Converter		+ 10.00
Electrical System - Re-estimated		- 3.01
Brake Parachute - actual weight of Arrow 1 chute obtained		+ 3.70
Air Conditioning - Increase due to act. weight of heat exchanger	+ 15.86	+ 58.67
Increase due to act. weight of shut off valves	+ 0.50	
Increase due to under-estimate of flexible metal joints (CSJ 106 7,8,9)	+ 27.88	
Increase due to under-estimate of ducts	+ 3.59	
Increase due to Assign X74-4070 (Radar & Cockpit Temp. Control)	+ 8.99	
Increase due to misc changes	+ 1.85	
Total Equipment Group Increase		+ 69.36

6. Trapped Fuel No weight change.

7. Ballast

8. Useful Load No weight change.

Summary

Weight Change - Aircraft Basic Weight

Structure	+ 3.94
Landing Gear	+ 5.26
Equipment	+ 69.36
Total	+ 78.56

Weight Change - Operational Weight Empty

Issue 2	Issue 3	
47,284.40	47,362.96	+ 78.56

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Weight & C.G. Summary for Orenda Flight Testing

Description	Weight lb	H. Arm ins	V. Arm ins
Structure	19,303.30	567.21	137.26
Wings	10,050.68	642.93	142.17
Fin & Rudder	1,030.94	754.65	209.00
Fuselage Fwd Sta. 255 ins	2,606.38	184.72	128.60
Sta. 255 - 485 ins	1,715.90	375.75	129.89
Sta. 485 - 591.65 ins	1,170.88	538.79	105.55
Sta. 591.65 - 742.5 ins	1,597.61	659.27	111.67
Sta. 742.5 in aft	1,087.73	807.83	129.06
"Marry-Up"	43.18	467.77	109.70
Landing Gear - Retracted	2,813.24	491.84	135.31
Main Landing Gear	2,158.67	539.23	141.00
Main Gear Doors & Fairings	293.19	539.39	138.30
Nose Landing Gear	333.81	170.81	99.70
Nose Gear Door & Fairing	27.57	162.25	88.68
Power Plant & Services	11,979.20	676.46	121.81
Engine Bare (PS13) (Instrumented Prototype)	9,598.00	690.47	121.21
Engine Accessories (Inlet Frame etc)	405.05	684.30	121.70
Engine Instrumentation	663.00	690.00	121.25
Engine Controls	32.32	379.90	117.49
Gear Box & Drives on Fuselage	291.87	608.57	103.28
Gear Box & Starter on Engine	76.73	601.97	113.57
Fire Extinguisher System - Basic	73.58	686.35	131.21
Engine Mountings	75.39	671.91	141.52
Fuel System	763.26	529.78	135.19
Flying Controls Group	1,965.22	655.66	138.07
Mechanical Flying Controls	958.44	677.70	147.62
Hydraulic Flying Controls	1,006.78	634.67	128.97
Equipment Fixed & Removable	9,988.68	353.21	112.22
Instruments	34.61	167.52	138.92
Probe	14.86	-34.07	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Oxygen System	21.16	259.40	156.88
Cabin Consoles	17.68	175.29	124.49
Ejector Seats	342.94	204.50	134.11
Air Conditioning System	923.04	345.07	135.66
Cockpit Insulation	14.31	187.48	132.00
Hydraulic Utility System	656.12	498.91	117.95
Mechanical Door Stops Main U/C Door	3.02	516.00	120.00
Drag Chute	96.26	786.06	143.24
Electrical System	1,138.59	415.31	112.28
Low Pressure Pneumatics	50.08	394.66	126.02
Surface Finish	100.00	572.83	139.57
In-take De-icing Boots	88.00	195.82	118.00
Canopy Actuation	63.52	209.61	154.34
MH 64 Damping System	109.08	458.82	139.39
Partial Electronics System	622.50	346.83	120.14
Instrument Pack Structure	692.00	384.84	93.56
Pack Instrumentation (+ Ballast)	3,202.00	370.99	98.00
Flight Test Installations	1,793.91	232.30	115.30
Trapped Fuel	213.80	548.26	141.79
Ballast	-	-	-

Description	Weight lb	H. Arm ins	V. Arm ins	M.A.C. %
U/C Up		548.38	127.79	
Aircraft Basic Weight	46,263.44			
U/C Down		550.69	123.98	
Useful Load (Less usable fuel)	1,099.52	368.51	131.59	
Crew	390.00	194.00	136.50	
Engine Fire Ext. Fluid	25.00	730.00	129.00	
Oil	159.13	638.98	110.86	
Residual Fuel	287.00	508.14	135.33	
Oxygen	13.39	259.68	159.91	
Water for Air Conditioning	225.00	267.91	131.56	
U/C Up		544.20	127.88	29.89
Operational Weight Empty	47,362.96			
U/C Down		546.46	124.16	30.51
Max. Int. Fuel (2455 gals @ 7.8 lb/gal)	19,146.00	542.36	144.29	
U/C Up		543.67	132.60	29.74
Gross Weight (Max. Int. Fuel)	66,508.96			
U/C Down		545.28	129.95	30.19
Max. Ext. Fuel (500 gals @ 7.8 lb/gal + drop tank)	4,242.36	520.32	60.79	
U/C Up		542.27	128.29	29.36
Max. Gross Weight (Int + Ext. Fuel)	70,751.32			
U/C Down		543.78	125.80	29.77

N.B. Aircraft Datum = 120 in. above an arbitrary chosen ground line.

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Appendix 1

Introduction

This appendix is to cover the condition of A/C 25207 for initial flights. All weight changes are quoted relative to the complete aircraft as defined in the main text of this report.

Change Applicable for Initial Flights of A/C 25207

		Weight lb
1. Structure	No Weight change.	
2. Landing Gear	No weight change.	
3. Power Plant & Services		
Engine Instrumentation	deletion of vibration slip ring, wiring and piping aft of Sta. 591.65 on R.H. Engine	- 101.00
Constant Speed Drives	on Engine R.H. C.S.U. fitted	+ 76.72
	Total Power Plant Decrease	- 24.28
4. Flying Controls Group	No weight change	
5. Equipment Fixed and Removable		
Electrics	Engine Bay R.H. Alternator Added	+ 87.00
Flight Test Installations	Orenda supplied units not installed	- 789.69
Pack Instrumentation	Telemetry and ballast plus empty pack Maintained at approx. 3900 lb by	+ 6.00
	Total Equipment Group Decrease	- 696.69
6. Trapped Fuel	No weight change	
7. Ballast		+ 872.00
8. Useful Load		
Engine & Access. Gear Box	Oil Trapped add oil for R.H. C.S.U.	+ 2.87
	Total Useful Load Increase	+ 2.87

Summary

Weight Change - Aircraft Basic Weight

Power Plant	- 24.28
Equipment	- 696.69
Ballast	+ 872.00
Total	+ 151.03

Weight Change Operational Weight Empty

Complete A/C	Early Flights	
47,513.99	47,362.96	+ 151.03 lb

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Weight & C.G. Summary for Initial Flight (Orenda Units not Installed)

Description	Weight lb	H. Arm ins	V. Arm ins
Structure	19,303.30	567.21	137.26
Wings	10,050.68	642.93	142.17
Fin and Rudder	1,030.94	754.65	209.00
Fuselage Fwd. Sta. 255 ins	2,606.38	184.72	128.60
Sta. 255 - 485 ins	1,715.90	375.75	129.89
Sta. 485 - 591.65 ins	1,170.88	538.79	105.55
Sta. 591.65 - 742.5 ins	1,597.61	659.27	111.67
Sta. 742.5 in Aft	1,087.73	807.83	129.06
"Marry-Up"	43.18	467.77	109.70
Landing Gear - Retracted	2,813.24	491.84	135.31
Main Landing Gear	2, 158.67	539.23	141.00
Main Gear Doors & Fairings	293.19	539.39	138.30
Nose Landing Gear	333.81	170.81	99.70
Nose Gear Door & Fairing	27.57	162.25	88.68
Power Plant & Services	11,954.92	675.87	121.75
Engine Pare (PS13) (Instrumentated Prototype)	9,598.00	690.47	121.21
Engine Accessories (Inlet Frame Etc.)	405.05	684.30	121.70
Engine Instrumentation	562.00	690.00	121.25
Engine Controls	32.32	379.90	117.49
Gear Box & Drives on Fuselage	291.87	608.57	103.28
Gear Box & Starter on Engine	153.45	601.97	113.57
Fire Extinguisher System - Basic	73.58	686.35	131.21
Engine Mountings	75.39	671.91	141.52
Fuel System	763.26	529.78	135.19
Flying Controls Group	1,965.22	655.66	138.07
Mechanical Flying Control	958.44	677.70	147.52
Hydraulics Flying Control	1,006.78	634.67	128.62
Equipment Fixed and Removable	9,291.99	384.00	111.79
Instruments	34.61	167.52	138.92
Probe	14.86	-34.07	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Oxygen System	21.16	259.40	156.88
Cabin Consoles	17.68	175.29	124.49
Ejector Seats	342.94	204.50	134.11
Air Conditioning System	923.04	245.07	135.66
Cockpit Insulation	14.31	187.48	132.00
Hydraulic Utility System	656.12	498.91	117.95
Mechanical Door Stops Main U/C Door	3.02	516.00	120.00
Drag Chute	96.26	786.06	143.24
Electrical System	1,225.59	427.44	112.54
Low Pressure Pneumatics	50.08	394.66	126.02
Surface Finish	100.00	572.83	139.57
Intake De-icing Boots	88.00	195.82	118.00
Canopy Actuation	63.52	209.61	154.34
MH 64 Damping System	109.08	458.82	139.39
Partial Electronics System	622.50	346.83	120.14
Instrument Pack Structure	692.00	384.84	93.56
Pack Instrumentation (+ ballast)	3,208.00	389.50	98.00
Flight Test Installations	1,004.22	342.73	113.53
Trapped Fuel	213.80	548.26	141.79
Ballast	872.00	100.00	114.00

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Description	Weight lb	H. Arm ins	V. Arm ins	M.A.C. %
U/C Up		548.83	127.67	
Aircraft Basic Weight	46,414.47			
U/C Down		551.13	123.88	
Useful Load (Less usable fuel)	1,102.39	369.12	131.54	
Crew	390.00	194.00	136.50	
Engine Fire Ext. Fluid	25.00	730.00	129.00	
Oil	162.00	638.31	110.89	
Residual Fuel	287.00	508.14	135.33	
Oxygen	13.39	259.68	159.91	
Water for Air Conditioning	225.00	267.91	131.56	
U/C Up		544.66	127.76	30.02
Operational Weight Empty	47,516.86			
U/C Down		546.91	124.06	30.64
Max. Int. Fuel (2455 gals. @ 7.8 lb/gal)	19,146.00	542.36	144.29	
U/C Up		544.00	132.51	29.83
Gross Weight (Max. Int. Fuel)	66,662.86			
U/C Down		545.60	129.87	30.27
Max. Ext. Fuel (500 gal @ 7.8 lb/gal + drop tank)	4,242.36	520.32	60.79	
U/C Up		542.58	128.22	29.44
Max. Gross Weight (Int. + Ext. Fuel)	70,905.22			
U/C Down		544.09	125.74	29.85

N.B. 1. Aircraft Datum = 120 ins. above an arbitrarily chosen ground line.

2. Aircraft is ballasted with 872 lb. at H.A. = 100 ins. such that the aft C.G. on a typical Flight Envelope, excluding any effects of fuel sequencing (see note on sheet 4-2) does not exceed 31% M.A.C.

REPORT Y-0400-85-3

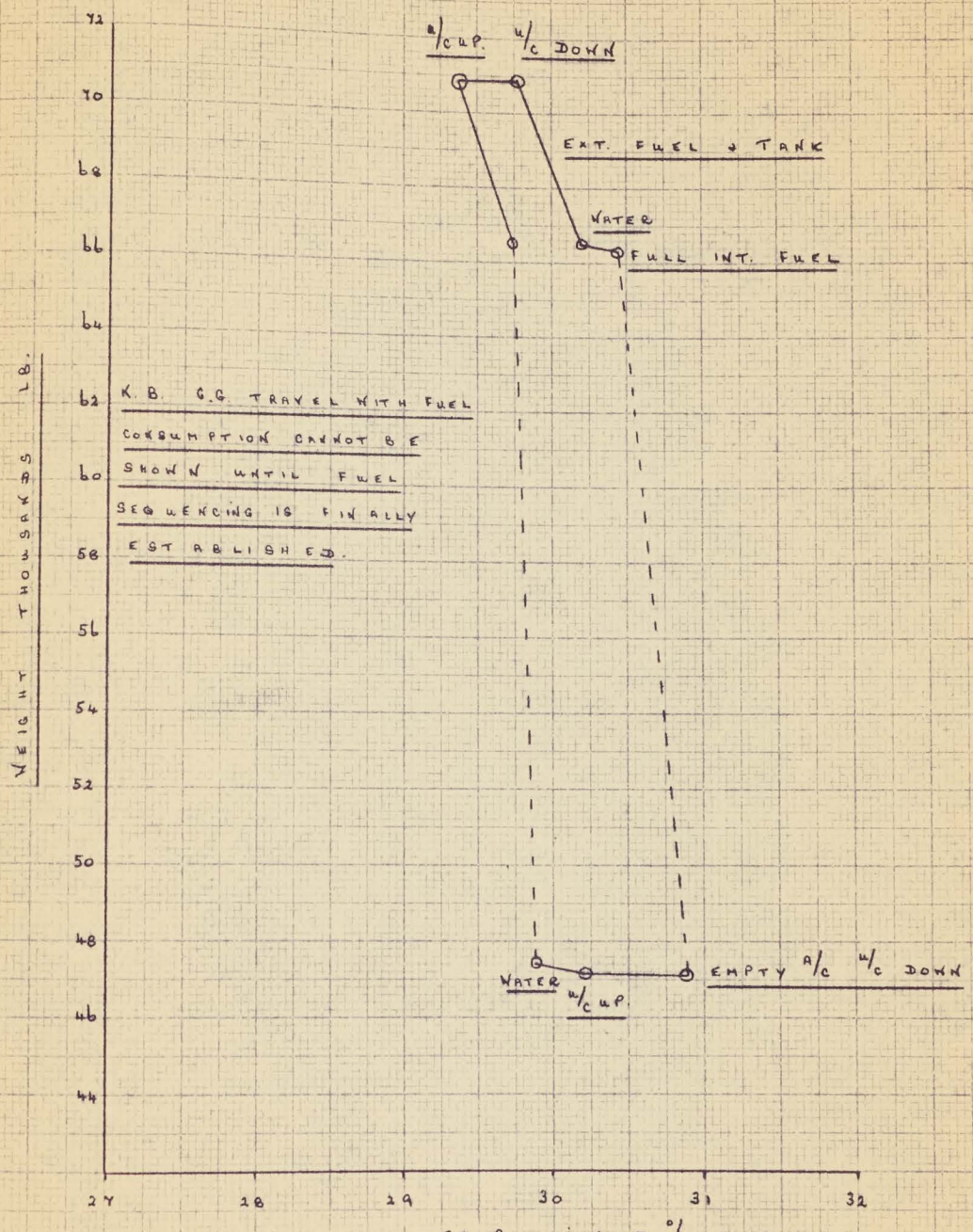
DATE JAN. 1st 1959

SHEET 4-1

BY [illegible] French

HORIZONTAL PLOT OF FIXED POINTS ON ARROW 2 A/C 25207 FLIGHT ENVELOPE

A/C IN COMPLETED STATE FOR ORENDA FLIGHT TESTING



AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

PROJECT Arrow 2 A/C 25207 1 Jan/58

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. A
TOTAL WING GROUP 25207	1000000				
OUTER WING	1010000				
100 OUTER WING SKINS	1010001	64	92910	706461	35
100 POSTS AND INTERCOSTALS	1010002	64	24367	32071	34
100 OUTER WING SPARS	1010003	64	39258	706081	38
100 OUTER WING RIBS	1010004	64	13456	695061	36
18 AILERON CONTROL BOX	1010006	64	37920	774091	35
100 RIB 12	1010007	64	7626	648731	38
100 O W AILERON JACK FITTING	1010009	64	1046	727911	36
AILERON JOINTS AND FAIRING	1010010		3293	787261	32
			197945		
100 AILERON	1020000	74	33600	792131	35
			33600		
20 ELEVATOR	1030000	82	44638	756181	42
20 ELEVATOR MARRY UP	1030001		1597	738101	42
			46235		
INNER WING	1040000				
81 MAIN U C STRUCTURE	1040001	62	33217	577481	39
95 INNER WING SPARS	1040002	62	41917	579021	43
61 I W STRUCTURE F S TO M S	1040007	62	108539	498461	43
17 I W STRUCTURE M S TO R S	1040008	62	15001	608681	45
30 CENTRE TRAILING EDGE	1040009	62	31898	720411	48
40 ELEVATOR CONTROL BOX	1040010	62	43398	724721	43
25 TRANSP JOINT MARRY UP	1040011		7065	636211	38
61 CENTRE LINE JOINTS	1040012	62	58264	662331	50
91 INNER WING SKINS	1040013	62	228048	626891	44
63 STRUC PICK UP FITTINGS	1040014	62	12316	616541	45
62 RIBS 1 TO 9	1040016	62	48516	611331	48
DORSAL FAIRING I W	1040017	62	1134	827016	1
100 RIB 10	1040018	62	10706	636831	38
49 FUSELAGE HINGE JOINT I W	1040019	62	12628	616881	37
25 TRANSP JOINT	1040020	62	12942	630711	33
49 FUSELAGE HINGE JOINT	1040021		3935	532341	4
DORSAL FAIRING C A	1040023		5913	567401	55
SHUT OFF VALVE OPERAT MECH	1040024	62	513	549651	4
62 LEADING EDGE I W	1040025	62	21489	468301	4
			696418		
LEADING EDGE O W	1050000	65	30870	630131	3
			30870		

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. AR
FIN AND RUDDER GROUP	2000000				
FIN	2010000	83	85517	75003	211
FIN TO WING MARRY UP	2010001		4943	68510	153
			90460		
94 RUDDER	2020000	84	12634	81316	213
			12634		

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V
	TOTAL FUSELAGE GROUP	3000000				
	RADAR NOSE STRUCTURE	3010000				
	RADOME	3010001	51	15958	3992	1
22	RADAR NOSE STRUCTURE C A	3010002		270	120001	
22	RADAR NOSE STRUCTURE R N	3010003	51	16449	95321	
				32677		
	FRONT FUSELAGE STRUCTURE	3020000				
	SKIN F F	3020001	52	8264	19296	1
	COCKPIT FORMERS	3020002	52	10728	18257	1
	LOWER LONGERONS F F	3020003	52	6837	18460	
31	TOP LONGERONS F F	3020004	52	18947	19430	1
66	NOSE U C SUPPORT STRUCT	3020005	52	3343	21049	
	CREW BULKHEADS	3020006	52	13224	20528	1
	BULKHEAD STA 120	3020007	52	3110	12000	1
	BULKHEAD STA 255	3020008	52	10921	25500	1
	COCKPIT FLOOR	3020009	52	5881	17695	1
	SHEAR PANEL BELOW NAV ARCH	3020010	52	2057	25706	1
3	MISC STRUCTURE F F	3020011	52	1600	18821	1
	LOWER SHEAR PANEL	3020012	52	3141	23423	
22	CANOPY ARCHES	3020013	52	8553	22594	1
58	WIND SCREEN	3020014	52	13285	13828	1
				109891		
	CENTRE FUSELAGE STRUCTURE	3030000				
	SKIN C F	3030001	54	22112	36736	1
	FORMERS C F	3030002	54	28749	37520	1
5	BULKHEAD STA 485	3030003	54	12815	48500	1
66	LONGERONS C F	3030004	54	14453	41038	1
	STR BELOW LOWER LONGERONS	3030005	54	4887	27466	
	RADAR ACCESS DOOR	3030006	54	2418	27908	
	FWD DORSAL FAIRING	3030008	54	2969	28927	1
	DEFLECTOR SHIELD	3030009	54	2045	33739	1
	DORSAL OVER FUEL TANK	3030010	54	4185	41268	1
	PACK MTG STRUCTURE	3030011	54	2280	29289	1
	SEALING MISSILE BAY	3030012	54	559	29616	1
	MISC ITEMS C F	3030013	54	1216	37000	1
	ARAMENT BAY ROOF	3030014	54	12432	38370	1
	FUSELAGE FUEL TANK	3030015	54	22644	39454	1
	DUCT C F	3030016	54	31867	35898	1
	EQUIPMENT BAY STRUCTURE	3030017	54	5959	28506	1
				171590		
	DUCT BAY STRUCTURE	3040000				

GHT 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						
	3010000						
	3010001	51	15958	3992	11070	637043	176651
A	3010002		2701	12000	11200	32400	30240
N	3010003	51	16449	9532	11321	1567919	1862191
			32677			2237362	3658982
RE	3020000						
	3020001	52	8264	19296	12301	1594621	1016555
	3020002	52	10728	18257	12024	1958611	1289935
	3020003	52	6837	18460	9045	1262110	618407
	3020004	52	18947	19430	14763	3681402	2797146
T	3020005	52	3343	21049	9186	703668	307088
	3020006	52	13224	20528	12377	2714623	1636734
	3020007	52	3110	12000	11477	373200	356935
	3020008	52	10921	25500	11927	2784855	1302548
	3020009	52	5881	17695	11569	1040643	680373
ARCH	3020010	52	2057	25706	15352	528772	315791
	3020011	52	1600	18821	12072	301136	193152
	3020012	52	3141	23423	8900	735716	279549
	3020013	52	8553	22594	16023	1932465	1370447
	3020014	52	13285	13828	15000	1837050	1992750
			109891			21448872	14157410
URE	3030000						
	3030001	54	22112	36736	14420	8123064	3188550
	3030002	54	28749	37520	13317	10786625	3828504
	3030003	54	12815	48500	10337	6215275	1324687
	3030004	54	14453	41038	12144	5931222	1755172
ONS	3030005	54	4887	27466	9322	1342263	455566
	3030006	54	2418	27908	9016	674815	218007
	3030008	54	2969	28927	16400	858843	486916
	3030009	54	2045	33739	16400	689963	335380
	3030010	54	4185	41268	14208	1727066	594605
	3030011	54	2280	29289	10280	667789	234384
	3030012	54	559	29616	11074	165553	61904
	3030013	54	1216	37000	12500	449920	152000
	3030014	54	12432	38370	11428	4770158	1420729
	3030015	54	22644	39454	14535	8933964	3291305
	3030016	54	31867	35898	12969	11439616	4132831
RE	3030017	54	5959	28506	13549	1698673	807385
			171590			64474809	22287925
	3040000						

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WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V.
	SKIN D B	30400015	56	6366	553560	11
5	FORMERS D B	30400025	56	7335	553530	11
	TOP LONGERONS	30400035	56	498	538992	1
	MTG BRKTS SIDE PANEL	30400045	56	190	518661	1
	LOWER LONGERONS	30400055	56	10301	522362	
72	MAIN FRAME STA 538 77	30400065	56	5980	538771	10
	ACCESS PANELS	30400075	56	3874	528182	
	LOWER PANEL ASSY	30400085	56	217	545577	
	DROP TANK MTG STRUCTURE	30400095	56	841	585542	
20	LOWER SIDE PANELS FWD	30400105	56	10756	508542	
	LOWER CENTRE PANEL FWD	30400115	56	2686	513898	
16	LOWER SIDE PANELS AFT	30400125	56	6990	567900	
	LOWER CENTRE PANEL AFT	30400135	56	2609	566000	
60	FLOATING DUCT D B	30400145	56	45627	553701	11
	HEAT EXCHANGER MTG	30400155	56	705	579509	
				104975		
	ENGINE BAY	30500000				
100	TOP LONGERONS	30500015	58	6746	677881	1
84	BOTTOM LONGERONS E B	30500025	58	8464	659091	1
	ENGINE ACCESS DOORS	30500035	58	13494	638782	
	ENGINE TUNNEL	30500045	58	63135	655521	12
71	ENG RAILS ATTACH TO FORM	30500055	58	2906	687631	1
	PANELS AT ENG ACCESS DOORS	30500065	58	11272	649962	
	BOTTOM CTR PANEL FWD	30500075	58	4727	617542	
	BOTTOM CTR PANEL CENTRE	30500085	58	4168	670852	
	BOTTOM CTR PANEL AFT	30500095	58	7719	721162	
5	SIDE PANEL FWD	30500105	58	8597	616091	1
5	SIDE PANEL CENTRE	30500115	58	7481	670631	1
32	SIDE PANEL AFT	30500125	58	7463	721461	12
41	HEAVY FORMERS	30500135	58	19661	660511	1
				159761		
	REAR FUSELAGE	30600000				
	OUTER SKINS FIXED	30600015	59	5658	772701	1
	FORMERS FIXED R F	30600025	59	10509	779901	1
	LONGERONS FIXED R F	30600035	59	2519	771592	12
	TUNNEL FIXED R F	30600045	59	10994	775521	1
85	ENGINE ACCESS DOORS R F	30600055	59	9270	775000	
29	FAIRING UNDER RUDDER FIXED	30600065	59	2901	782761	1
	REMOV TAILCONES	30600075	59	55948	826371	12
	CENTRE STRUC AND STING REM	30600085	59	10974	833231	1
				108773		
97	DIVE BRAKES	30700015	72	11691	508841	
97	DIVE BRAKES C A	30700025		422	487971	
				12113		

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REPORT NO.

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	30400001	56	6366	53560	11243	3409630	715729
	30400002	56	7335	53530	11438	3926426	838977
	30400003	56	498	53899	13550	268417	67479
	30400004	56	190	51866	13066	98545	24825
	30400005	56	10301	52236	9914	5380830	1021241
	30400006	56	5980	53877	10383	3221845	620903
	30400007	56	3874	52818	9976	2046169	386470
	30400008	56	217	54557	8901	118389	19315
E	30400009	56	841	58554	8847	492439	74403
	30400010	56	10756	50854	9269	5469856	996974
	30400011	56	2686	51389	8892	1380309	238839
	30400012	56	6990	56790	8860	3969621	619314
	30400013	56	2609	56600	8794	1476694	229435
	30400014	56	45627	55370	11712	25263670	5343834
	30400015	56	705	57950	9080	408548	64014
			104975			56931388	11261752
	30500000						
	30500001	58	674	66778	13921	450054	93828
	30500002	58	8464	65909	11446	5578538	968789
	30500003	58	13494	63878	9050	8619697	1221207
	30500004	58	63135	65552	12158	41386255	7675953
RM	30500005	58	2906	68763	11364	1998253	330238
OORS	30500006	58	11272	64996	9253	7326349	1042998
	30500007	58	4727	61754	8919	2919112	421601
E	30500008	58	4168	67085	9247	2796103	385415
	30500009	58	7719	72116	9554	5566634	737473
	30500010	58	8597	61609	11693	5296526	1005247
	30500011	58	7481	67063	11922	5016983	891885
	30500012	58	7463	72146	12188	5384256	909590
	30500013	58	19661	66051	10968	12986287	2156418
			159761			105325077	17840642
	30600000						
	30600001	59	5658	77270	13708	4371937	775599
	30600002	59	10509	77990	13734	8195969	1443306
	30600003	59	2519	77159	12810	1943635	322684
	30600004	59	10994	77552	13214	8526067	1452747
E	30600005	59	9270	77500	9856	7184250	913651
IXED	30600006	59	2901	78276	15586	2270787	452150
	30600007	59	55948	82637	12781	4623374 9	7150714
REM	30600008	59	10974	83323	13916	9143866	1527142
			108773			87870260	14037993
	30700001	72	11691	50884	9049	5948848	1057919
	30700002		422	48797	9360	205923	39499
			12113			6154771	1097418

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PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM
5 AIR INTAKES	3080001	55	76949	21129	1182
			76949		
FUSELAGE JOINTS	3090000				
JOINT AIR INTAKES TO F F	3090001		663	22000	1200
JOINT F F TO C F	3090002		1036	25706	1225
JOINT D B TO C F	3090003		428	47940	1159
JOINT D B TO E B	3090004		1467	58957	915
JOINT AT STA 742 50	3090005		724	74250	1150
			4318		
CANOPIES	3100000				
28 PILOTS CANOPY	3100001	53	24484	17693	1591
NAVIGATORS CANOPY	3100002	53	16637	23248	1625
			41121		

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	3080001 55		76949	21129	11828	16258554	9101528
			76949			16258554	9101528
	3090000						
F F	3090001		663	22000	12000	145860	79560
	3090002		1036	25706	12250	266314	126910
	3090003		428	47940	11590	205183	49605
	3090004		1467	58957	9157	864899	134333
	3090005		724	74250	11500	537570	83260
			4318			2019826	473668
	3100000						
	3100001 53		24484	17693	15915	4331954	3896629
	3100002 53		16637	23248	16256	3867770	2704511
			41121			8199724	6601140

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PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. A
	UNDERCARRIAGE UP POSITION	4000000				
	MAIN UNDERCARRIAGE GROUP	4010000				
	MAIN UNDERCARRIAGE	401010092		215867	539231	4
				215867		
78	MAIN U C DOORS FAIRINGS	4010200		29319	539391	3
				29319		
	NOSE UNDERCARRIAGE GROUP	4020000				
100	NOSE UNDERCARRIAGE	402010091		33381	170809	9
				33381		
	NOSE U C DOOR AND FAIRING	402020052		2757	16225	8
				2757		

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
SITION	4000000						
GROUP	4010000						
	401010092		215867	53923	14100	116401962	30437247
			215867			116401962	30437247
INGS	4010200		29319	53939	13830	15814375	4054818
			29319			15814375	4054818
GROUP	4020000						
	402010091		33381	17080	9970	5701475	3328086
			33381			5701475	3328086
AIRING	402020052		2757	16225	8868	447323	244491
			2757			447323	244491

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PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. A
	ENGINE GROUP	5000000				
	PS 13 ENGINES	5010000		1000000	690231	2
	ENGINE INSTRUMENTATION	5010001		66300	690001	2
	PS 13 ENGINES	5010002		305	658531	0
				1066605		
	ACC GEAR BOX ON FUS D B	5020001	56	367	657768	9
	ACC GEAR BOX ON FUS E B	5020002	58	235	336129	510
	ACC GEAR BOX ON FUS C A	5020003		800	61550	9
	ACC GEAR BOX ON FUS I W	5020004	62	1178	613701	3
				29187		
	ENGINE CONTROLS	5030000				
	ENGINE CONTROLS F F	5030001	52	1576	167231	2
	ENGINE CONTROLS C F	5030002	54	109	264441	1
	ENGINE CONTROLS E B	5030004	58	889	66633	9
	ENGINE CONTROLS I W	5030005	62	658	521421	2
				3232		
	CONST SPEED DRIVE ON ENG	5040001		767	360197	11
				7673		
	FIRE EXT SYSTEM	5060000				
	ENG FIRE EXT SYSTEM E B	5060001	58	598	571074	13
	ENG FIRE EXT SYSTEM D B	5060002	56	123	156856	11
	ENG FIRE EXT SYSTEM ENG	5060003		14	267960	9
				7358		
	ENGINE MTGS AND BRACKETS	5070000				
	ENGINE MOUNTS	5070001		753	967191	14
				7539		
	FUEL SYSTEM	5080000				
17	FUEL SYSTEM C F	5080001	54	1128	039995	14
18	FUEL SYSTEM D B	5080002	56	157	355373	810
4	FUEL SYSTEM E B	5080003	58	183	661392	11
39	FUEL SYSTEM I W	5080004	62	472	805543	214
	FUEL SYSTEM C A	5080005		19	568630	9
				76326		

EIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	5000000						
	5010000		1000000	69023	12123	69023000	12123000
ON	5010001		66300	69000	12125	4574700	803875
	5010002		305	65853	10306	200852	31433
			1066605			73617785	12930308
B	5020001	56	3676	57768	9442	212355	34708
E B	5020002	58	23533	61395	10307	1442455	242554
C A	5020003		800	61550	9700	49240	7760
W	5020004	62	1178	61370	13950	72176	16433
			29187			1776226	3014565
	5030000						
	5030001	52	1576	16723	12368	26355	19492
	5030002	54	10926	4411	800	2882	1286
	5030004	58	889	6663	3 9904	59236	8804
	5030005	62	658	52142	12751	34309	8390
			3232			122783	37973
ENG	5040001		7673	60197	11359	461891	87157
			7673			461891	87157
	5060000						
E B	5060001	58	5985	71074	13583	425377	81294
B	5060002	56	1231	56856	11237	69989	13832
ENG	5060003		142	67960	9970	9650	1415
			7358			505017	96542
KETS	5070000						
	5070001		7539	67191	14152	506552	106691
			7539			506552	106691
	5080000						
	5080001	54	11280	39995	14090	451143	158935
	5080002	56	15735	53738	10957	845567	172408
	5080003	58	1836	61392	11024	112715	20240
	5080004	62	47280	55432	14346	2620825	678278
	5080005		195	68630	9920	13382	1934
			76326			4043634	10317970

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PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. AR
	FLYING CONTROLS GROUP	6000000				
	MECHANICAL CONTROLS	6010000				
60	MECHANICAL CONTROLS F F	6010001	52	10694	16454	114
	MECHANICAL CONTROLS C F	6010002	54	1290	39654	117
70	MECHANICAL CONTROLS FIN	6010005	83	12443	78819	221
71	MECHANICAL CONTROLS I W	6010006	62	40234	71800	143
80	MECHANICAL CONTROLS O W	6010007	64	30520	77053	135
	MECHANICAL CONTROLS C A	6010008		6637	70984	143
				95844		
	FLYING CONTROLS HYDRAULICS	6020000				
6	FLYING CONTROLS HYDR D B	6020001	56	3299	55757	109
6	FLYING CONTROLS HYDR F B	6020002	58	396	73647	55110
6	FLYING CONTROLS HYDR R F	6020003	59		34754	40108
73	FLYING CONT HYDRAULICS I W	6020004	62	2798	87036	9147
66	FLYING CONT HYDRAULICS O W	6020005	64	1317	07403	4135
72	FLYING CONT HYDRAULICS FIN	6020006	83	582	07598	8207
6	FLYING CONTROLS HYDR F F	6020008	52	771	31771	6105
6	FLYING CONTROLS HYDR C F	6020009	54	298	13717	5108
				100678		

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
	60000000						
	60100000						
F	6010001	52	10694	16454	11411	1759591	1220292
F	6010002	54	1290	39654	11727	511537	151278
IN	6010005	83	12443	78819	22157	9807448	2756996
W	6010006	62	40234	71800	14382	2888812	578654
W	6010007	64	30520	77053	13561	2351657	413881
A	6010008		663	70984	14338	47062	9506
			95844			64953788	14148898
ULICS	60200000						
D B	6020001	56	3299	55757	10910	1839423	359921
F B	6020002	58	39673	64755	11001	2569025	436442
R F	6020003	59	34	75440	10814	2565	367
S I W	6020004	62	27988	70369	14716	1969487	411871
S O W	6020005	64	13170	74034	13586	975027	178927
S FIN	6020006	83	582	07598	82076	442250	120834
F F	6020008	52	771	31771	61058	136643	81619
C F	6020009	54	298	13717	51087	110818	32430
			100678			63897602	12984856

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PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. AR
	FIXED EQUIPMENT GROUP	7000000				
	INSTRUMENTS	7010000				
	INSTRUMENTS	70100015	2	326	116430	139
	NAVIG TABLE AND STOWAGE	70100045	2	200	22000	130
				3461		
	COCKPIT SEALING	70200005	2	500	18600	130
				500		
	OXYGEN SYSTEM	7030000				
	OXYGEN SYSTEM	70300015	2	2116	25940	156
				2116		
	AIR CONDITIONING SYSTEM	7040000				
28	AIRCONDITIONING F F	70400015	2	11239	21908	119
28	AIRCONDITIONING C F	70400025	4	5484	28852	135
28	AIRCONDITIONING D B	70400035	6	706	51474	122
28	AIRCONDITIONING C A	7040005		2394	35077	143
28	AIRCONDITIONING ENG	7040006		1503	67100	140
28	AIRCONDITIONING I W	70400076	2	71	52247	157
				92304		
	HYDRAULICS MAIN SYSTEM	7050000				
28	UTILITY HYDRAULICS F F	70500015	2	9602	20241	108
3	UTILITY HYDRAULICS C F	70500025	4	506	84277	103
19	UTILITY HYDRAULICS D B	70500035	6	2233	25497	109
67	UTILITY HYDRAULICS E B	70500045	8	1107	56074	111
30	UTILITY HYDRAULICS I W	70500056	2	1444	15524	142
28	UTILITY HYDR NOSE U C	70500069	1	114	18860	93
30	UTILITY HYDR MAIN U C	70500079	2	2980	54325	141
				65612		
	MUC DOOR STOPS	70600005	6	302	51600	120
				302		
	CABIN INSULATION	70700005	2	1431	18748	132
				1431		

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REPORT NO. _____

SHEET _____

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
P	7000000						
	7010000						
	701000152		3261	16430	13947	535782	454812
AGE	701000452		200	22000	13000	44000	26000
			3461			579782	480812
	702000052		500	18600	13000	93000	65000
			500			93000	65000
	7030000						
	703000152		2116	25940	15688	548890	331958
			2116			548890	331958
TEM	7040000						
	704000152		11239	21908	11931	2462240	1340925
	704000254		54842	28852	13572	1582301 4	744315 6
	704000356		706	51474	12263	363406	86577
	70400005		23943	50776	14326	12157298	3430074
	70400006		1503	67100	14000	1008513	210420
	704000762		71	52247	15728	37095	111167
			92304			31851566	12522319
EM	7050000						
F	705000152		9602	20241	10816	1943541	1038552
F	705000254		5068	42772	10325	2167685	523271
B	705000356		22332	54978	10984	12277687	2452947
B	705000458		11075	60747	11152	6727730	1235084
W	705000562		14441	55240	14254	7977208	2058420
C	705000691		114	18860	9320	21500	10625
C	705000792		2980	54325	14100	1618885	420180
			65612			32734236	7739079
	706000056		302	51600	12000	155832	36240
			302			155832	36240
	707000052		1431	18748	13200	268284	188892
			1431			268284	188892

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PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V.
	BRAKE PARACHUTE	7080000				
83	BRAKE PARACHUTE F F	7080000152		479	15664	12
83	BRAKE PARACHUTE R F	7080000559		9018	82187	14
83	BRAKE PARACHUTE I W	7080000662		129	61969	14
				9626		
	ELECTRICAL SYSTEM	7090000				
	ELECTRICAL WIRING R N	7090000151		129	9285	12
	ELECTRICAL WIRING F F	7090000252		2966	19977	11
	ELECTRICAL WIRING C F	7090000354		2354	39703	11
	ELECTRICAL WIRING A I	7090000455		1274	21984	12
	ELECTRICAL WIRING D B	7090000556		9015	52769	9
	ELECTRICAL WIRING E B	7090000658		64	59500	9
	ELECTRICAL WIRING I W	7090000862		9236	53995	13
	ELECTRICAL WIRING FIN	7090000983		352	79754	30
	ELECTRICAL WIRING NUC	7090001091		330	18600	9
	ELECTRICAL WIRING ENG	709000111		2002	60683	10
	ELECTRICAL WIRING C A	709000112		13746	33473	11
	ELECTRICS F F	7090001352		16429	15547	10
	ELECTRICS C F	7090001454		8636	45193	10
	ELECTRICS E B	7090001558		1117	61545	10
	ELECTRICS ENG	709000116		8854	58666	11
	ELECTRICS C A	709000117		802	61350	11
	ELECTRICS FIN	7090001883		44	89050	28
	ELECTRICS I W	7090001962		2275	62053	14
	ELECTRICS CAW	709000120		120	67488	13
	ELECTRICS MUC	7090002192		74	51600	13
	ELECTRICS A I	7090002255		4906	22092	13
	ELECTRICS D B	7090002356		25468	51847	10
	ELECTRICS R F	7090002459		176	80759	11
	WINDSCREEN DEMISTING	7090002552		3490	19954	10
				113859		
	L P PNEUMATICS	7100000				
	L P PNEUMATICS F F	7100000152		1993	19586	12
	L P PNEUMATICS C F	7100000254		796	32397	11
	L P PNEUMATICS FIN	7100000583		414	74966	25
	L P PNEUMATICS R N	7100000651		199	7067	9
	L P PNEUMATICS ENG	710000081		1403	63897	9
	L P PNEUMATICS I W	7100000962		203	52880	15
				5008		
	INTAKE DE ICING	7120000055		8800	19582	11
				8800		
60	CANOPY ACTUATION	7160000052		6352	20961	15
				6352		

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
	7080000						
	70800001	52	479	15664	12903	75031	61805
	70800005	59	9018	82187	14401	7411624	1298682
	70800006	62	129	61969	14200	79940	18318
			9626			75666595	1378805
	7090000						
N	70900001	51	129	9285	12000	11978	15480
F	70900002	52	2966	19977	11200	592518	332192
F	70900003	54	2354	39703	11000	934609	258940
I	70900004	55	1274	21984	12000	280076	152880
B	70900005	56	9015	52769	9921	4757125	894378
B	70900006	58	64	59500	9200	38080	5888
W	70900008	62	9236	53995	13900	4986978	1283804
N	70900009	83	3527	97543	30000	280734	105600
C	70900010	91	3301	8600	9800	61380	32340
G	7090011		20026	0683	10000	1214874	200200
A	7090012		13746	33473	11234	4601199	1544226
	70900013	52	16429	15547	10538	2554217	1731288
	70900014	54	8636	45193	10767	3902867	929838
	70900015	58	1117	61545	10765	687458	120245
	7090016		8854	58666	11602	5194288	1027241
	7090017		802	61350	11591	492027	92960
	70900188	3	44	89050	28840	39182	12690
	70900196	2	2275	62053	14500	1411706	329875
	7090020		120	67488	13661	80986	16393
	70900219	2	74	51600	13700	38184	10138
	70900225	5	4906	22092	13988	1083834	686251
	70900235	6	25468	51847	10244	13204394	2608942
	70900245	9	1768	07591	11687	142136	20569
	70900255	2	3490	19954	10638	696395	371266
			113859			47287225	12783624
	7100000						
	71000001	52	1993	19586	12209	390349	243325
	71000002	54	796	32397	11610	257880	92416
	71000005	83	414	74966	25234	310359	104469
	71000006	51	199	7067	9261	14063	18429
	7100008		1403	63897	9987	896475	140118
	71000009	62	203	52880	15930	107346	32338
			5008			1976472	631095
	712000055		8800	19582	11800	1723216	1038400
			8800			1723216	1038400
	716000052		6352	20961	15434	1331443	980368
			6352			1331443	980368

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

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V
CABIN CONSOLES	71700052		1768	17529	1
			1768		
SURFACE FINISH R W	71900151		246	8720	1
SURFACE FINISH F F	71900252		363	18744	1
SURFACE FINISH CANOPY	71900353		64	20218	1
SURFACE FINISH C F	71900454		928	36356	1
SURFACE FINISH INTAKES	71900555		408	22798	1
SURFACE FINISH D B	71900656		349	54064	1
SURFACE FINISH E B	71900758		443	66701	1
SURFACE FINISH R F	71900859		402	77722	1
SURFACE FINISH I W	71900962		3151	60144	1
SURFACE FINISH O W	71901064		1067	70650	1
SURFACE FINISH O W L EDGE	71901165		319	63948	1
SURFACE FINISH DIVE BRAKES	71901272		28	50884	
SURFACE FINISH AILERON	71901374		353	79190	1
SURFACE FINISH ELEVATOR	71901482		566	75523	1
SURFACE FINISH FIN	71901583		639	74663	2
SURFACE FINISH RUDDER	71901684		202	81279	2
SURFACE FINISH ARM PACK	71901794		472	38850	
			10000		
FLIGHT TEST INSTALLATION	7200000		179391	23230	1
			179391		

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
	71700052		1768	17529	12449	309913	220098
			1768			309913	220098
	71900151		246	8720	11264	21451	27709
	71900252		363	18744	12200	68041	44286
Y	71900353		64	20218	15900	12940	10176
	71900454		928	36356	13907	337384	129057
ES	71900555		408	22798	12020	93016	49042
	71900656		349	54064	11373	188683	39692
	71900758		443	66701	11200	295485	49616	
	71900859		402	77722	12770	312442	51335
	71900962		3151	60144	14400	1895137	453744
	71901064		1067	70650	13590	753836	145005
EDGE	71901165		319	63948	13526	203994	43148
BRAKES	71901272		28	50884	9048	14248	2533
RON	71901374		353	79190	13556	279541	47853
ATOR	71901482		566	75523	14260	427460	80712
	71901583		639	74663	20837	477097	133148
ER	71901684		202	81279	21431	164184	43291
PACK	71901794		472	38850	9600	183372	45312
			10000			5728311	1395659
ATION	72000000		179391	23230	11530	4167252 9	20683782
			179391			4167252 9	20683782

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

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V
REMOVABLE EQUIPMENT GROUP	8000000				
94 EJECTOR SEATS	8010100	52	34294	204501	
			34294		
RADIO RADAR PART ELECT R N	8020101	51	118	10510	
RADIO RADAR PART ELECT F F	8020102	52	13446	181641	
RADIO RADAR PART ELECT C F	8020103	54	22394	26968	
RADIO RADAR PART ELECT D B	8020104	56	3694	516811	
RADIO RADAR PART ELECT FIN	8020105	83	3249	761792	
RADIO RADAR PART ELECT C A	8020106		15505	405341	
RADIO RADAR PART ELECT I W	8020108	62	2795	588361	
RADIO RADAR PART ELECT O W	8020109	64	1049	746421	
			62250		
DAMPING SYSTEM F F	8030101	52	784	172011	
DAMPING SYSTEM C F	8030102	54	2303	322131	
DAMPING SYSTEM E B	8030103	58	369	63242	1
DAMPING SYSTEM I W	8030104	62	6070	537811	
DAMPING SYSTEM O W	8030105	64	95	748551	
DAMPING SYSTEM R N	8030106	51	287	7350	
DAMPING SYSTEM D B	8030108	56	1000	538001	
			10908		
INSTRUMENTATION	8050900	94	320200	37099	
			320200		
INSTRUMENT PACK STRUCTURE	8051000	54	69200	38486	
			69200		

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						
	8010100	52	34294	20450	13411	7013123	4599168
			34294			7013123	4599168
ECT R N	8020101	51	118	10510	9197	12402	10852
ECT F F	8020102	52	13446	18164	11679	2442331	1570358
ECT C F	8020103	54	22394	26968	9650	6039214	2161021
ECT D G	8020104	56	3694	51681	11453	1909096	423074
ECT FIN	8020105	83	3249	76179	25195	2475056	818586
ECT C A	8020106		15505	40534	12377	6284797	1919054
ECT I W	8020108	62	2795	58836	15445	1644466	431688
ECT O W	8020109	64	1049	74642	13720	782995	143923
			62250			21590357	7478556
	8030101	52	784	17201	12047	1348656	94448
	8030102	54	2303	32213	10949	7418665	2521555
	8030103	58	369	63242	13432	2333363	49564
	8030104	62	6070	53781	15720	3264507	954204
	8030105	64	95	74855	14000	71112	13300
	8030106	51	287	7350	9340	21095	26806
	8030108	56	1000	53800	13000	5380000	1300000
			10908			5004798	1520477
	8050900	94	320200	37099	9800	11879099 8	3137960 0
			320200			11879099 8	3137960 0
UCTURE	8051000	54	69200	38486	9356	2663231 2	647435 2
			69200			2663231 2	647435 2

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WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

PROJECT_____

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V.
OPERATIONAL LOAD	9000000				
CREW MEMBERS	901000052		39000	194001	1
			39000		
ENGINE OIL	9020000				
ENGINE OIL DRAINABLE ENG	9020001		9290	640001	1
ENGINE OIL DRAINABLE E B	902000258		4110	65640	9
ENGINE OIL TRAPPED D B	902000356		753	58176	9
ENGINE OIL TRAPPED E B	902000458		1760	61736	10
			15913		
OXYGEN CHARGE	9050000				
OXYGEN CHARGE F F	905000152		72	20493	13
OXYGEN CHARGE C F	905000254		1267	26280	16
			1339		
ENGINE FIRE EXT FLUID	9060000		2500	73000	12
			2500		
RESIDUAL FUEL C F	907000154		5700	39263	12
RESIDUAL FUEL I W	907000262		23000	53676	13
			28700		
TRAPPED FUEL	9080000				
TRAPPED FUEL C F	908000154		2430	41426	13
TRAPPED FUEL D B	908000256		690	49400	13
TRAPPED FUEL I W	908000362		18260	56814	14
			21380		
WATER FOR AIR CONDITIONING	910000054		20000	26800	13
UNUSABLE WATER FOR AIRCOND	910000154		2500	26700	12
			22500		

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
	9000000						
	9010000	52	39000	19400	13650	75660000	5323500
			39000			75660000	5323500
	9020000						
E ENG	9020001		9290	64000	11940	59456000	11092260
E E B	9020002	58	4110	65640	9769	26978040	4015069
O B	9020003	56	753	58176	9677	4380650	728681
E B	9020004	58	1760	61736	10261	10865536	1805940
			15913			101680230	17641940
	9050000						
	9050001	52	72	20493	13200	1475536	95040
	9050002	54	1267	26280	16150	33296760	20462100
			1339			34772296	21412540
ID	9060000		2500	73000	12900	18250000	3225000
			2500			18250000	3225000
	9070001	54	5700	39263	12360	22379910	7045200
	9070002	62	23000	53676	13824	123454800	31795200
			28700			145834710	38840400
	9080000						
	9080001	54	2430	41426	13106	10066524	3184758
	9080002	56	690	49400	13350	3408600	921150
	9080003	62	18260	56814	14353	103742364	26208588
			21380			117217488	30314496
TIONING	9100000	54	20000	26800	13200	53600000	26400000
AIRCOND	9100001	54	2500	26700	12700	6675000	3175000
			22500			60275000	29575000