

Arrow 2  
A/C 25206

Report: 7-0400-82  
Issue: 2

~~CONFIDENTIAL~~  
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~~NOT CLASSIFIED~~

C.G. Smith 59

1 Oct/58



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JAN 07 1993

Report no.: QCX - AVRO - CF105- R-7-0400-82-135-2

has been  downgraded to: \_\_\_\_\_  
 de-classified

by (Name): Michel W. Drapeau

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

Date: Dec. 7, 1992

R. Angu  
Signature

AVRO AIRCRAFT LIMITED  
INTER-DEPARTMENTAL MEMORANDUM

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Ref: 4399/11/J  
Date: 1 October, 1958  
To: See Distribution  
From: E.F. Burnett - Weight Supervisor  
Subject: Arrow 2 - A/C 25206 Weight and C.G. Summary Report: 7-0400-82 Issue 2

Attached is a copy of Weight and C.G. Summary, Report: 7-0400-82 Issue 2 for your retention.

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

Classification cancelled / changed to: UNCLASSIFIED

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

Date: 5 Nov 1992

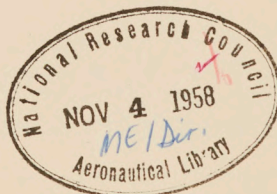
Signature: Bailey

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

E.F. Burnett  
E.F. Burnett

EFB/ag

cc: Messrs. J.C. Floyd R. Marshall C. Marshall  
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T. Higgins S. Kwiatkowski D. Inglis  
B.C. Alford A. Cornish D. Moore  
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D. Wade R. Brownridge



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I N D E X

<u>Sheet</u>	<u>Content</u>
1-1 to 1-4	Introductory notes and explanations of weight changes relative to Mk 2 A/C 26206 defined in Weight Report 7-0400-82 Issue 1.
2-1 to 2-2	Weight & C.G. Summary
3-1	Horizontal C.G. Plot showing basic fixed points on flight envelope for ballasted Aircraft. The possible variations of C.G. with fuel used have been omitted until such time as a fully approved fuel sequencing is established.
4-1 to 4-15	I.B.M. detail sheets of Weights and C.G.'s

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### Introduction & Weight Changes

The following is a Weight and C.G. Summary for Arrow 2 Aircraft No. 25206, based on the latest weight estimates available. All Weight and C.G. changes are relative to issue 1, of this report, dated September 1st, 1958.

#### Note:

1. This summary is for the Aircraft as at first flight. Future changes eg possible fitment of Weapons Pack etc. will be dealt with as Flight Test Statements at the applicable time, if required.
2. This statement is applicable to Aircraft 25206 only.

#### General:

a) Orenda PS 13 Engines comprise the Power Plant. These will be early production versions, weight 4835 lb each, ref. Orenda Engines Ltd. letter AWS/SAW dated August 21, 1958.

b) An Instrument package containing Flight Test Instrumentation is installed.

Only a preliminary estimate of the contents of the pack is yet available, however the pack will be weighed separately prior to flight and ballasted if necessary, to compensate for equipment shortages.

A reasonably detailed estimate of other Flight Test Installations throughout the Aircraft has been made, these amount to 517 lb.

c) "Partial Astra" is fitted in this and some other early Mk 2 Aircraft. This comprises Navigational and Communication equipment only.

Minneapolis-Honeywell MH 64 Damping System is also installed.

d) For early flights of A/C 25206 additional emergency fire extinguishing equipment will be installed.

e) Where actual weights of Arrow 1 parts that apply to Arrow 2 Aircraft have been obtained, these weights have been recorded in the Arrow 2 records. Some weights of Arrow 2 parts have also been obtained.

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

To increase the long range capabilities of the Aircraft tailcone plugs have been introduced to restrict the exhaust area. Provision for carrying these plugs, which are jettisonable, will be made on all Mk 2 A/C. The plug may be installed for any mission, but would probably be jettisoned prior to combat. It is only recorded in this report for a ferrying mission.

f) This issue incorporates a Lucas-Rotax Electrical Power System and the Westinghouse components have been deleted.

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<u>1. Structure</u>	<u>Weight lb</u>
<u>a) Wings</u>	
Structure Aft. of Rear Spar - deletion of shear plates and shear blocks	- 0.36
Dorsal Fairings - incorporation of actual weights	- 1.02
Rib 10 - Actual weight obtained	- 0.94
<u>Wing Weight Decrease</u>	<u>- 2.32</u>
<u>b) Fin and Rudder</u>	
- deletion of hinge bracket for damper	- 2.03
additional hardware and brackets	+ 1.07
addition seal for L/E & dorsal fairing brackets	+ 1.13
<u>Fin and Rudder Weight Increase</u>	<u>+ 0.34</u>
<u>c) Fuselage Fwd Sta 255 ins</u>	
Cockpit Formers - addition of flying controls and electrical pick up brackets.	+ 1.37
Top Longerons F.F. - addition brackets and hardware	+ 2.01
Windscreen - addition fibre glass glare shield	+ 1.46
Pilots Canopy - addition of brackets	+ 0.53
Navigators Canopy - addition of hardware	+ 0.21
<u>Front Fuselage Increase</u>	<u>+ 5.58</u>
<u>d) Centre Fuselage Sta 255 - 485 ins</u>	
No weight change.	
<u>e) Duct Bay Sta 485 - 591.65 ins</u>	
Lower Forward Side Panels - addition of clips and hardware	+ 0.44
Centre Panel Fwd - relative to Prod. A/C access door not hinged deletion of fuel vent	- 1.05
<u>Duct Bay Decrease</u>	<u>- 0.61</u>
<u>f) Engine Bay Sta 591.65 - 742.5 ins</u>	
No weight change.	
<u>g) Rear Fuselage Sta 742.5 in aft</u>	
Outer Skins - addition of pulley support for para. brake controls and hardware	+ 0.79
Tailcones - addition of skin stiffeners	+ 1.43
addition of conduit and clips for electrics	+ 1.98
Centre Struct & Stinger - addition of seal and door lock indication	+ 0.26
<u>Rear Fuselage Increase</u>	<u>+ 4.46</u>
<u>h) Fuselage Joints</u>	
Joint Duct Bay to Engine Bay - addition of grounding pad & hardware	+ 0.25
Design change addition of heat exchanger mountings previously omitted	+ 7.05
<u>Fuselage Joints Increase</u>	<u>+ 7.30</u>
<u>Total Structural Increase</u>	<u>+ 11.75</u>

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<u>2. Landing Gear</u>	<u>Weight lb</u>
Main Gear - Design change heavy wheel assemblies now incorporated	+ 16.00
<u>Total Landing Gear Increase</u>	<u>+ 16.00</u>

3. Power Plant and Services  
P.S. 13 Engines

a) Iroquois Engine - incorporated at 4835 lb each	+ 70.00
b) Structure - deletion of engine restrictor flaps	- 2.50
addition of minor brackets and hardware	+ 1.46
c) Inlet Frame & Nose Bullet - incorporation of Orenda estimate	- 28.00
d) Power Take-off Gear Box - previous weight assumed identical installation as for J75 engines - now only gear box to adapt diagonal drive shaft is required ref. Orenda.	- 79.55
e) Air Restrictor - Previously considered as an Avro Supplied item and included in Struct - now Orenda supplied.	+ 20.00
f) Pneumatic Starter - Orenda quotes target weight (23.0 lb)	+ 1.00
g) Anti-Icing Lines )	
h) Alternator Support ) No previous allowance	+ 14.00
j) Alternator Drive Shaft )	
k) Tacho. Generator ) Orenda Quotations	+ 8.00
l) L.P. High Temp. Tacho. )	
m) Installation Constant Speed Drives - both G.E. and Sundstrand quote 70.0 lb each.	- 7.00
n) Installation C.S.U. Oil Lines - first prod. dwg estimate	- 1.15
Accessories Gear Boxes on Fuselage - first prod. dwg. estimate	- 2.06
Starters and Gear Boxes on Engines see para. (d) above.	
<u>Total Power Plant Decrease</u>	<u>- 5.80</u>

4. Flying Controls Group

Flying Controls Hyd. I/W - return lines now steel (CST 162) were alluminum alloy (CST 136) Pressure lines increased in wall thickness now CST 136 were CST 135.	+ 17.24
Flying Controls Hyd. O/W - Arrow 1 filters (steel) now fitted were Arrow 2 alluminum alloy.	+ 12.90
Return lines now steel were allum. alloy)	+ 1.70
Pressure lines increase wall thickness )	
Flying Cont. Hyd. Fin - filter element retainer now steel was al. alloy + return lines now steel pressure lines increase in wall thickness	+ 0.59
	+ 1.16
The above changes necessitated by Stress requirements ref. Assignment X 74.4063.	
<u>Total Flying Controls Increase</u>	<u>+ 33.68</u>

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5. Equipment Fixed and Removable

Weight lb

Oxygen System - first prod. estimate. Quantity gauge duplicated is error already included in Panel E22 Electrics Front Fuselage - 1.24  
 Converter act. wt. 12.33 was based on Arrow 1 part (16,00) - 3.67  
 Air Conditioning System - addition of cockpit silencers + 9.91  
 Utility Hyd. Front Fuse. - incorporation of equip. & piping of the Nose U/C Door Sequencing + 9.76  
 Nose U/C Door Sequencing Mech - this report is now cancelled see above - 27.00

The large weight decrease (-17.24 lb) in the two combined report is due to design refinements and integration into basic Utility Hydraulic System. Previously an Arrow 1 "Lash-up" allowance was carried.

Windscreen Demisting - first prod. estimate - deletion of cable allowance now contained in Electrics Cables - 2.38  
 Electrics Centre Fus. - design change addition of 3 off Fire Detection Controls Units and resistor to Panel E 5 + 5.46  
 Elect. Duct Bay - Decrease in clipping - 1.41  
 Design change - incorporated Lucas-Rotax Power system instead of Westinghouse Transformer - 32.00  
 Rectifier Unit 164 lb (mfr. quote) was 196 lb (mfr. quote).  
 Elect. Eng. Bay - design change addition of 2 off current transformer (Lucas-Rotax) + 3.50  
 Electrics Wing - first production estimate - 0.53  
 Electrics Rear Fus. - addition of clipping for cables associated with tailcone plug jettison circuits + 0.40  
 Elect Tailcone Plug Jettison - new report incorporates equipment and wiring for actuation and indication circuits for the explosive bolts

Total Equipment Group - 31.11

6. Tapped Fuel No weight change.

7. Useful Load

Eng. & Acces. Gear Box Oil - addition of separate oil sys. for constant + 23.04 units

Total Useful Load Increase + 23.04

SUMMARY

Weight Change - Aircraft Basic Weight

Structure	+ 14.75
Landing Gear	+ 16.00
Power Plant	- 5.80
Flying Controls	+ 33.68
Equipment	- 31.11
Total	+ 27.52 lbs

Weight Change Operational Weight Empty Operational Load Increase 23.04 lb

Issue 1  
 45,585.20

Issue 2  
 45,756.76

+ 171.56 lb

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Weight & C.G. Summary

Description	Weight lb	H. Arm ins	V. Arm ins
Structure	19,216.10	566.50	137.24
Wings	10,038.79	642.93	142.18
Fin and Rudder	1,030.94	754.65	209.00
Fuselage Fwd Sta 255 ins	2,604.20	184.54	128.61
Sta 255 - 485 ins	1,715.13	375.74	129.90
Sta 485 - 591.65 ins	1,159.63	538.46	105.66
Sta 591.65 - 742.5 ins	1,576.20	659.72	110.61
Sta 742.5 in aft	1,041.27	806.98	129.18
"Marry-Up"	49.94	483.56	107.06
Landing Gear - Retracted	2,807.98	491.66	135.31
Main Landing Gear	2,158.67	539.23	141.00
Main Gear Doors & Fairings	287.98	538.52	138.40
Main Landing Gear	333.81	170.81	99.70
Nose Gear Door & Fairing	27.52	162.22	88.66
Power Plant & Services	11,540.92	675.41	121.79
Engines Bare PS 13	9,670.00	690.47	121.21
Engine Accessories (Inlet Frame etc)	388.05	683.99	121.73
Engine Instrumentation (Orenda supplied)	100.00	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	146.45	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	1,965.94	652.84	138.24
Mechanical Flying Controls	958.44	677.70	117.62
Hydraulic Flying Controls	1,007.50	629.19	129.32
Equipment Fixed and Removable	7,539.63	397.82	111.56
Instruments	34.61	167.52	138.92
Probe	15.25	-23.71	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Oxygen System	21.16	259.40	156.88
Cabin Consoles	17.28	174.66	124.33
Ejector Seats	342.94	204.50	134.11
Air Conditioning System	874.00	339.80	135.32
Cockpit Insulation	14.31	187.48	132.00
Hydraulic Utility System	641.33	498.85	118.15
Mechanical Door Stops Main U/C Doors	3.02	516.00	120.00
Anti-skid controls system	37.68	480.00	113.97
Drag Chute	91.07	786.68	143.19
Electrical System	1,235.29	433.94	113.07
Low Pressure Pneumatics	50.08	394.66	126.02
Surface Finish	100.00	591.52	140.20
Intake De-icing Boots	88.00	195.82	118.00
Canopy Actuation	64.92	221.99	154.35
MH 64 Damping System	99.08	450.83	140.34
Partial Astra System	689.00	343.65	118.32
Instrument Pack Structure	692.00	384.86	93.56
Pack Instrumentation	1,726.00	393.40	95.00
Flight Test Installations	517.00	499.27	130.44
Additional Fire Protection	180.61	398.87	108.63

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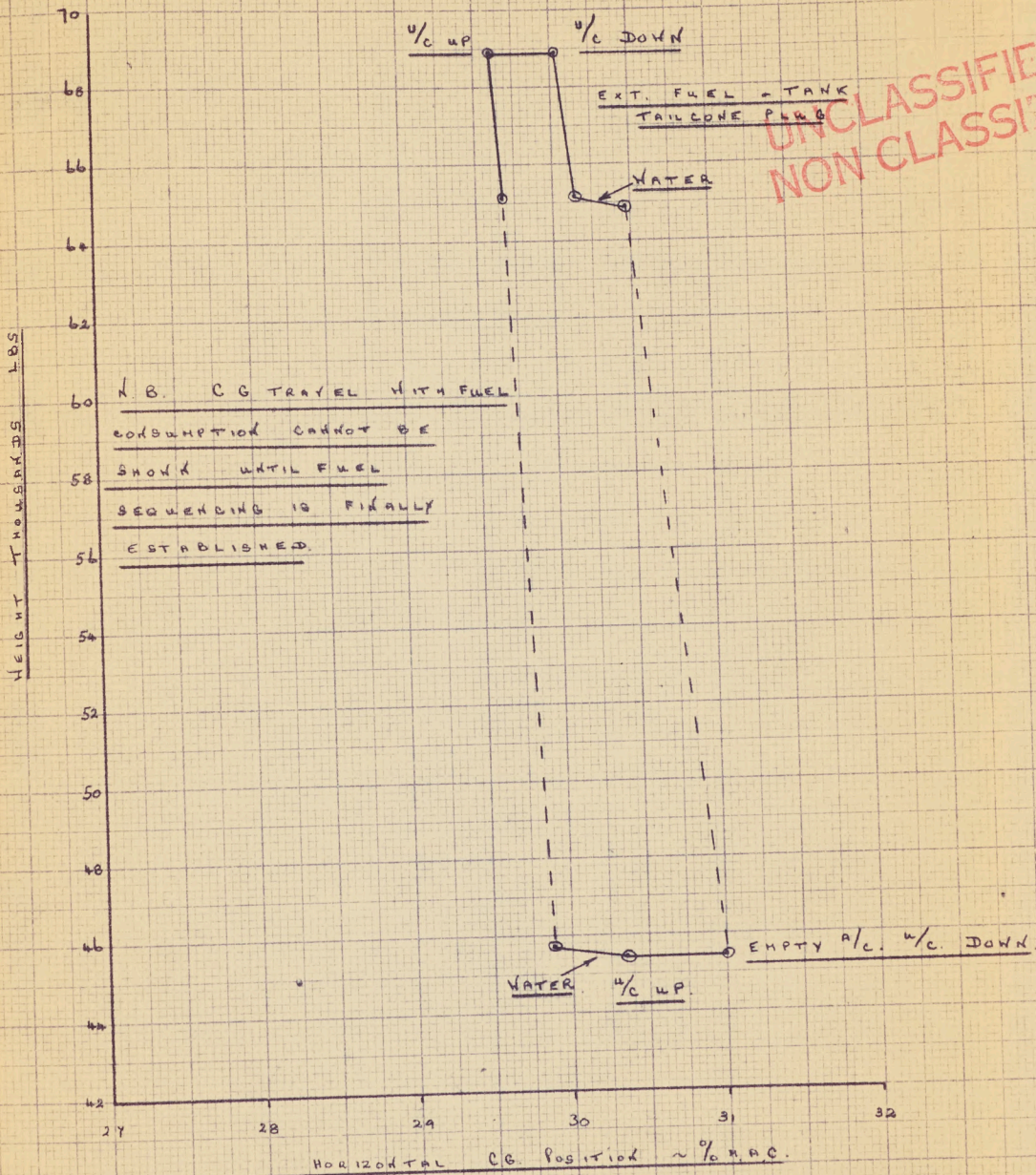
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Description	Weight lb	H. Arm ins	V. Arm ins	MAC %
Trapped Fuel	213.80	548.26	141.79	
Aircraft Basic Weight	43,284.37	565.13	129.11	
U/C Up				
U/C Down		567.60	125.05	
Useful Load (Less usable fuel)	875.39	316.60	130.30	
Crew	390.00	194.00	136.50	
Engine Fire Ext. Fluid	25.00	730.00	129.00	
Oil	162.00	638.31	110.89	
Oxygen	13.39	259.68	159.91	
Water for Air Conditioning	285.00	267.91	131.56	
BALLAST	1,597.00	100.00	111.00	
Operational Weight Empty	45,756.76	544.14	128.61	29.87
U/C Down		546.48	124.76	30.52
Max. Internal Fuel (2491 gals @ 7.8 lb/gal)	19,433.00	541.85	144.16	
U/C Up		543.46	133.25	29.68
Gross Weight (Max. Int. Fuel)	65,189.76	545.10	130.54	30.14
U/C Down		520.32	60.79	
Max External Fuel (500 gal. @ 7.8 lb/gal + drop tank)	4,242.36	857.07	128.60	
Tailcones Plugs	252.00	543.18	128.82	29.61
U/C Up		543.18	128.82	29.61
Max. Gross Weight (Int. +Ext Fuel)	69,684.12	544.72	126.29	30.03
U/C Down				

- N.B.
1. Aircraft datum = 120 in above arbitrarily chosen ground line.
  2. Aircraft is ballasted with 1597 lbs at H.A. = 100 in, such that the aft C.G. on a typical flight envelope, excluding any effects of fuel sequencing (see note on sheet 3) does not exceed 31% M.A.C.

HORIZONTAL CG PLOT OF FIXED POINTS ON ACROW 2 A/C 25206  
FLIGHT ENVELOPE

A/C WITH 1597 LB BALLAST AT STN. 100 IN.



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WEIGHT AND C. OF G BY FUNCTIONAL GROUP  
COMPONENT

PROJECT Arrow 2

DESCRIPTION		REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM
TOTAL WING GROUP		1000000				
OUTER WING		1010000				
100	OUTER WING SKINS	10100001	64	92910	70646	13597
100	POSTS AND INTERCOSTALS	10100002	64	2436	73207	13410
100	OUTER WING SPARS	10100003	64	39258	70608	13579
100	OUTER WING RIBS	10100004	64	13456	69506	13650
18	AILERON CONTROL BOX	10100006	64	37920	77409	13508
100	RIB 12	10100007	64	7626	64873	13832
100	O W AILERON JACK FITTING	10100009	64	1046	72791	13670
	AILERON JOINTS AND FAIRING	1010010		3293	78726	13224
				197945		
100	AILERON	10200007	74	33600	79213	13556
				33600		
20	ELEVATOR	10300008	82	44638	75618	14260
20	ELEVATOR MARRY UP	10300001		15977	73810	14260
				46235		
INNER WING		1040000				
70	MAIN UC STRUCTURE	10400001	62	33315	57743	13983
16	INNER WING SPARS	10400002	62	41112	58060	14318
5	I W STRUCTURE F S TO M S	10400007	62	109730	49924	14391
	I W STRUCTURE M S TO R S	10400008	62	15130	60868	14563
	STRUCT AFT OF REAR SPAR	10400009	62	31603	72041	14887
40	ELEVATOR CONTROL BOX I W	1040010	62	42838	72470	14328
25	TRANSP JOINT MARRY UP	1040011		7065	63621	13876
38	CENTRE LINE JOINTS	1040012	62	59083	66241	15030
	INNER WING SKINS	1040013	62	25107	62727	14463
17	STRUT PICK UP FITTINGS	1040014	62	12740	61711	14584
8	RIBS 1 TO 9 INNER WING	1040016	62	48618	61173	14513
	DORSAL FAIRING I W	1040017	62	1134	48270	16150
100	RIB 10	1040018	62	10706	63683	13835
49	FUSELAGE HINGE JOINT I W	1040019	62	12628	61688	13790
25	TRANSP JOINT	1040020	62	12942	63071	13710
49	FUSELAGE HINGE JOINT	1040021		3935	53234	14364
	DORSAL FAIRING C A	1040023		5913	56740	15963
	SHUT OFF VALVE OPERAT MECH	1040024	62	5135	4965	14180
	LEADING EDGE I W	1040025	62	22138	46841	14423
				695229		
	LEADING EDGE O W	10500006	65	30870	63013	13561
				30870		

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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SHEET 4 to 15

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	1000000						
						UNCLASSIFIED NON CLASSIFIED	
	1010000						
ALS	101000164		92910	70646	13597	65637199	12632973
	101000264		2436	73207	13410	1783323	326668
	101000364		39258	70608	13579	27719289	5330844
	101000464		13456	69506	13650	9352727	1836744
	101000664		37920	77409	13508	29353493	5122234
TTING	101000764		7626	64873	13832	4947215	1054828
FAIRING	101000964		1046	72791	13670	761394	142988
	1010010		3293	78726	13224	2592447	435466
			197945			142147087	26882745
	102000074		33600	79213	13556	26615568	4554816
			33600			26615568	4554816
	103000082		44638	75618	14260	33754363	6365379
	1030001		1597	73810	14260	1178746	227732
			46235			34933109	6593111
	1040000						
	104000162		33315	57743	13983	19237080	4658436
	104000262		41112	58060	14318	23869627	5886416
OMS	104000762		109730	49924	14391	54781605	15791244
ORS	104000862		15130	60868	14563	9209328	2203382
SPAR	104000962		31603	72041	14887	22767117	4704739
X I W	104001062		42838	72470	14328	31044699	6137829
UP	1040011		7065	63621	13876	4494824	980339
	104001262		59083	66241	15030	39137170	8880175
	104001362		225107	62727	14469	141202868	32570732
NGS	104001462		12740	61711	14584	7861981	1858002
ING	104001662		48618	61173	14513	29741089	7055930
	104001762		113	48270	16150	54545	18250
	104001862		10706	63683	13835	6817902	1481175
T I W	104001962		12628	61688	13790	7789961	1741401
	104002062		12942	63071	13710	8162649	1774348
T	1040021		3935	53234	14364	2094758	565223
	1040023		5913	56740	15963	3355036	943892
AT MECH	104002462		513	54965	14180	281970	72743
	104002562		22138	46841	14423	10369661	3192964
			695229			422273870	100517220
	105000065		30870	63013	13561	19452113	4186281
			30870			19452113	4186281



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
2000000						
201000083		8551775003	21150		64140318	18086846
2010001		494368510	15356		3386449	759047
		90460			67526765	18845893
202000084		1263481316	21374		10273463	2700391
		12634			10273463	2700391

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MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

PROJECT \_\_\_\_\_

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM
TOTAL FUSELAGE GROUP	3000000				
RADAR NOSE STRUCTURE	3010000				
RADOME	3010001	51	15958	3992	1107
RADAR NOSE STRUCTURE C A	3010002		270	12000	1120
RADAR NOSE STRUCTURE R N	3010003	51	17032	9583	1132
			33260		
FRONT FUSELAGE STRUCTURE	3020000				
SKIN F F	3020001	52	8264	19296	1230
COCKPIT FORMERS	3020002	52	10563	18259	1204
LOWER LONGERONS F F	3020003	52	6837	18460	904
31 TOP LONGERONS F F	3020004	52	18947	19430	1476
66 NOSE U C SUPPORT STRUCT	3020005	52	3343	21049	918
CREW BULKHEADS	3020006	52	13063	20558	1238
BULKHEAD STA 120	3020007	52	3110	12000	1147
BULKHEAD STA 255	3020008	52	10921	25500	1192
COCKPIT FLOOR	3020009	52	5881	17695	1156
SHEAR PANEL BELOW NAV ARCH	3020010	52	2026	25697	1535
5 MISC STRUCTURE F F	3020011	52	1066	18455	1243
LOWER SHEAR PANEL	3020012	52	3141	23423	890
22 CANOPY ARCHES	3020013	52	8553	22594	1602
58 WIND SCREEN	3020014	52	13285	13828	1500
			109000		
CENTRE FUSELAGE STRUCTURE	3030000				
SKIN C F	3030001	54	22112	36736	1442
FORMERS C F	3030002	54	28749	37520	1331
5 BULKHEAD STA 485	3030003	54	12815	48500	1033
66 LONGERONS C F	3030004	54	14453	41038	1214
STR BELOW LOWER LONGERONS	3030005	54	4836	27455	929
RADAR ACCESS DOOR	3030006	54	2418	27908	901
FWD DORSAL FAIRING	3030008	54	2969	28927	1640
DEFLECTOR SHIELD	3030009	54	2045	33739	1640
DORSAL OVER FUEL TANK	3030010	54	4138	41310	1420
PACK MTG STRUCTURE	3030011	54	2280	29289	1028
SEALING MISSILE BAY	3030012	54	559	29616	1107
MISC ITEMS C F	3030013	54	1216	37000	1250
ARAMENT BAY ROOF	3030014	54	12432	38370	1142
FUSELAGE FUEL TANK	3030015	54	22665	39429	1453
DUCT C F	3030016	54	31867	35898	1296
EQUIPMENT BAY STRUCTURE	3030017	54	5959	28506	1354
			171513		
DUCT BAY STRUCTURE	3040000				

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
	3000000						
	3010000						
	3010001	51	15958	3992	11070	637043	1766551
C A	3010002		270	12000	11200	32400	30240
R N	3010003	51	17032	9583	11325	1632177	1928874
			33260			2301620	3725665
	3020000						
	3020001	52	8264	19296	12301	1594621	1016555
	3020002	52	10563	18259	12043	1928698	1272102
	3020003	52	6837	18460	9045	1262110	618407
	3020004	52	18947	19430	14763	3681402	2797146
R U C T	3020005	52	33432	1049	9186	703668	307088
	3020006	52	130632	20558	12385	2685492	1617853
	3020007	52	3110	12000	11477	373200	356935
	3020008	52	10921	25500	11927	2784855	1302548
	3020009	52	5881	17695	11569	1040643	680373
V A R C H	3020010	52	20262	25697	15352	520621	311032
	3020011	52	1066	18455	12434	196730	132546
	3020012	52	31412	3423	8900	735716	279549
	3020013	52	85532	2594	16023	1932465	1370447
	3020014	52	13285	13828	15000	1837050	1992750
			109000			21277271	14055331
	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
G E R O N S	3030005	54	48362	7455	9298	1327724	449651
	3030006	54	24182	7908	9016	674815	218007
	3030008	54	29692	28927	16400	858843	486916
	3030009	54	20453	3739	16400	689963	335380
N K	3030010	54	41384	1310	14206	1709408	587844
	3030011	54	22802	29289	10280	667789	234384
	3030012	54	5592	29616	11074	165553	61904
	3030013	54	12163	37000	12500	449920	152000
	3030014	54	12432	38370	11428	4770158	1420729
	3030015	54	22665	39429	14539	8936583	3295264
	3030016	54	31867	35898	12969	11439616	4132831
T U R E	3030017	54	59592	28506	13549	1698673	807385
			171513			64445231	22279208
	3040000						

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PROJECT \_\_\_\_\_

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM
	SKIN D B	3040001	56	6227	53483	1122
5	FORMERS D B	3040002	56	7335	53530	1143
	TOP LONGERONS	3040003	56	498	53899	1355
	MTG BRKTS SIDE PANEL	3040004	56	190	51866	1306
	LOWER LONGERONS	3040005	56	10301	52236	991
72	MAIN FRAME STA 538 77	3040006	56	5980	53877	1038
	ACCESS PANELS	3040007	56	3874	52818	997
	LOWER PANEL ASSY	3040008	56	217	54557	890
	DROP TANK MTG STRUCTURE	3040009	56	841	58554	884
20	LOWER SIDE PANELS FWD	3040010	56	10756	50854	926
	LOWER CENTRE PANEL FWD	3040011	56	2686	51389	889
	LOWER SIDE PANELS AFT	3040012	56	6698	56934	886
	LOWER CENTRE PANEL AFT	3040013	56	2609	56600	879
	FLOATING DUCT D B	3040014	56	4555	55363	1171
				103767		
	ENGINE BAY	3050000				
100	TOP LONGERONS	3050001	58	674	66778	1392
84	BOTTOM LONGERONS	3050002	58	8432	65911	997
	ENGINE ACCESS DOORS	3050003	58	13604	64040	905
	ENGINE TUNNEL	3050004	58	61324	65622	1211
71	ENG RAILS ATTACH TO FORM	3050005	58	2906	68763	1136
	PANELS AT ENG ACCESS DOORS	3050006	58	11117	65021	925
	BOTTOM CTR PANEL FWD	3050007	58	4610	61780	891
	BOTTOM CTR PANEL CENTRE	3050008	58	4120	67078	923
	BOTTOM CTR PANEL AFT	3050009	58	7666	72063	955
5	SIDE PANEL FRONT	3050010	58	8605	61609	1169
5	SIDE PANEL CENTRE	3050011	58	7474	67063	1192
32	SIDE PANEL AFT	3050012	58	7453	72146	1218
41	HEAVY FORMERS	3050013	58	19635	66058	1096
				157620		
	REAR FUSELAGE	3060000				
	OUTER SKINS FIXED	3060001	59	5658	77270	1370
	FORMERS FIXED R F	3060002	59	10509	77990	1373
	LONGERONS FIXED R F	3060003	59	2519	77159	1281
	TUNNEL FIXED R F	3060004	59	10994	77552	1321
	ENGINE ACCESS DOORS R F	3060005	59	9023	77505	985
	FAIRING UNDER RUDDER FIXED	3060006	59	2839	78214	1559
	REMOV TAILCONES	3060007	59	5165	82605	1278
	CENTRE STRUC AND STING REM	3060008	59	10935	83325	1391
				104127		
	DIVE BRAKES	3070001	72	11790	50884	904
	D B JOINT TO FUSELAGE	3070002		406	48794	937
				12196		

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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	6227	53483	11227	3330386	699105
	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
URE	30400009	56	841	58554	8847	492439	74403
D	3040010	56	10756	50854	9269	5469856	996974
WD	3040011	56	2686	51389	8892	1380309	238839
T	3040012	56	6698	56934	8863	3813439	593644
FT	3040013	56	2609	56600	8794	1476694	229435
	3040014	56	45555	55363	11713	25220615	5335857
			103767			56244359	11147467
	3050000						
	3050001	58	674	66778	13921	450084	93828
	3050002	58	8432	65911	9971	5557616	840755
	3050003	58	13604	64040	9057	8712002	1232114
	3050004	58	61324	65622	12110	40242035	7426336
FORM	3050005	58	2906	68763	11364	1998253	330238
DOORS	3050006	58	11117	65021	9254	7228385	1028767
	3050007	58	4610	61780	8915	2848058	410982
TRE	3050008	58	4120	67078	9239	2763614	380647
	3050009	58	7666	72063	9554	5524350	732410
	3050010	58	8605	61609	11693	5301454	1006183
	3050011	58	7474	67063	11922	5012289	891050
	3050012	58	7453	72146	12188	5377041	908372
	3050013	58	19635	66058	10967	12970488	2153370
			157620			103985669	17435052
	3060000						
	3060001	59	5658	77270	13708	4371937	775599
	3060002	59	10509	77990	13734	8195969	1443306
	3060003	59	2519	77159	12810	1943635	322684
	3060004	59	10994	77552	13214	8526067	1452747
R F	3060005	59	9023	77505	9859	6993276	889578
FIXED	3060006	59	2839	78214	15590	2220495	442600
	3060007	59	5165	82605	12785	42665483	6603453
NG REM	3060008	59	10935	83325	13910	9111569	1521059
			104127			84028451	13451026
	3070001	72	11790	50884	9049	5999224	1066877
E	3070002		406	48794	9374	198104	38058
			12196			6197328	1104935

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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. AR
AIR INTAKES	3080001	55	7703921132118		
			77039		
FUSELAGE JOINTS	3090000				
JOINT AIR INTAKES TO F F	3090001		66322000120		
JOINT F F TO C F	3090002		102825711122		
JOINT D B TO C F	3090003		42847940115		
JOINT D B TO E B	3090004		14465895491		
JOINT AT STA 742 50	3090005		72474250115		
JOINT D B TO E B DUCT BAY	3090006	56	7055795090		
			4994		
CANOPIES	3100000				
28 PILOTS CANOPY	3100001	53	2448417693159		
NAVIGATORS CANOPY	3100002	53	1663723248162		
			41121		

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	3080001	55	77039	21132	11827	16279881	9111403
			77039			16279881	9111403
	3090000						
F F	3090001		66322000	12000		145860	79560
	3090002		102825711	12250		264309	125930
	3090003		42847940	11590		205183	49605
	3090004		144658954	9150		852475	132309
	3090005		72474250	11500		537570	83260
T BAY	3090006	56	70557950	9080		408548	64014
			4994			2413945	534678
	3100000						
	3100001	53	24484	17693	15915	4331954	3896629
	3100002	53	1663723248	16256		3867770	2704511
			41121			8199724	6601140





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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. AR
ENGINE GROUP	5000000				
PS 13 ENGINES	5010000		1005500	69023	121
ENGINE INSTRUMENTATION	5010001		100000	69000	121
PS 13 ENGINES C A	5010002		305	65853	103
			10158.05		
ACC GEAR BOX ON FUS D B	5020001	56	3676	57768	94
ACC GEAR BOX ON FUS E B	5020002	58	23533	61295	103
ACC GEAR BOX ON FUS C A	5020003		800	61550	97
ACC GEAR BOX ON FUS I W	5020004	62	1178	61270	139
			29187		
ENGINE CONTROLS	5030000				
ENGINE CONTROLS F F	5030001	52	1576	16723	123
ENGINE CONTROLS C F	5030002	54	109	26444	118
ENGINE CONTROLS E R	5030004	58	889	66633	99
ENGINE CONTROLS I W	5030005	62	658	52142	127
			3232		
STARTER AND GEARBOX	5040000				
STARTER AND GEARBOX ENG	5040001		14645	60197	113
			14645		
FIRE EXT SYSTEM	5060000				
ENG FIRE EXT SYSTEM E B	5060001	58	5985	71074	135
ENG FIRE EXT SYSTEM D B	5060002	56	1231	56856	112
ENG FIRE EXT SYSTEM ENG	5060003		142	67960	99
			7358		
ENGINE MTGS AND BRACKETS	5070000				
ENGINE MOUNTS	5070001		7539	67191	141
			7539		
FUEL SYSTEM	5080000				
17 FUEL SYSTEM C F	5080001	54	11280	39995	140
18 FUEL SYSTEM D B	5080002	56	15735	53738	109
4 FUEL SYSTEM E B	5080003	58	1836	61392	110
39 FUEL SYSTEM I W	5080004	62	47280	55432	143

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	5000000						
						UNCLASSIFIED NON CLASSIFIE	
	5010000		1005500	69023	12123	694026265	121896765
ION	5010001		10000	69000	12125	6900000	1212500
	5010002		305	65853	10306	200852	31433
			1015805			701127117	123140698
D B	5020001	56	3676	57768	9442	2123552	347088
E B	5020002	58	23533	61295	10307	14424552	2425546
C A	5020003		800	61550	9700	492400	77600
I W	5020004	62	1178	61270	13950	721761	164331
			29187			17762265	3014565
	5030000						
	5030001	52	1576	16723	12368	263554	194920
	5030002	54	109	26444	11800	28824	12862
	5030004	58	889	66633	9904	592367	88047
	5030005	62	658	52142	12751	343094	83902
			3232			1227839	379731
	5040000						
ENG	5040001		14645	60197	11357	8815851	1663233
			14645			8815851	1663233
	5060000						
E B	5060001	58	5985	71074	13583	4253779	812943
D B	5060002	56	1231	56856	11237	699897	138327
ENG	5060003		142	67960	9970	96503	14157
			7358			5050179	965427
	5070000						
CKETS	5070001		7539	67191	14152	5065529	1066919
			7539			5065529	1066919
	5080000						
	5080001	54	11280	39995	14090	4511436	1589352
	5080002	56	15735	53738	10957	8455674	1724084
	5080003	58	1836	61392	11024	1127157	202401
	5080004	62	47280	55432	14346	26208250	6782789



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REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
5080005		19568630		9920	133829	19344
		76326			40436346	10317970

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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. A
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		663	70984	143
			95844		
FLYING CONTROLS HYDRAULICS	6020000				
FLYING CONT HYDRAULICS D B	6020001	56	3184	56630	101
FLYING CONT HYDRAULICS E B	6020002	58	39853	64788	111
FLYING CONT HYDRAULICS R F	6020003	59	48	75875	108
73 FLYING CONT HYDRAULICS I W	6020004	62	27988	70369	147
66 FLYING CONT HYDRAULICS O W	6020005	64	13170	74034	138
63 FLYING CONT HYDRAULICS FIN	6020006	83	5581	76008	207
FLYING CONT HYDRAULICS R N	6020007	51	3500	11309	105
FLYING CONT HYDRAULICS F F	6020008	52	5506	16928	110
FLYING CONT HYDRAULICS C F	6020009	54	1920	37329	110
			100750		

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
UP	6000000						
						UNCLASSIFIED NON CLASSIFIE	
	6010000						
F F	6010001	52	10694	16454	11411	1759591	1220292
C F	6010002	54	1290	39654	11727	511537	151278
FIN	6010005	83	12443	78819	22157	9807448	2756996
I W	6010006	62	40234	71800	14382	28888012	5786454
O W	6010007	64	30520	77053	13561	23516576	4138817
C A	6010008		663	70984	14338	470624	95061
			95844			64953788	14148898
RAULICS	6020000						
ICS D B	6020001	56	3184	56630	10114	1803099	322030
ICS E B	6020002	58	39853	64788	11161	25819962	4447993
ICS R F	6020003	59	48	75875	10824	36420	5196
ICS I W	6020004	62	27988	70369	14716	19694876	4118714
ICS O W	6020005	64	13170	74034	13586	9750278	1789276
ICS FIN	6020006	83	5581	76008	20795	4242006	1160569
ICS R N	6020007	51	3500	11309	10513	395815	367955
ICS F F	6020008	52	5506	16928	11000	932056	605660
ICS C F	6020009	54	1920	37329	11000	716717	211200
			100750			63391229	13028593

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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM
FIXED EQUIPMENT GROUP	7000000			
INSTRUMENTS	7010000			
INSTRUMENTS	7010001	52	3261	16430
NAVIG TABLE AND STOWAGE	7010004	52	200	22000
			3461	
COCKPIT SEALING	7020000	52	500	18600
			500	
OXYGEN SYSTEM	7030000			
OXYGEN SYSTEM	7030001	52	2116	25940
			2116	
AIR CONDITIONING SYSTEM	7040000			
AIRCONDITIONING F F	7040001	52	4106	17798
AIRCONDITIONING C F	7040002	54	52410	28838
AIRCONDITIONING D B	7040003	56	1034	51762
AIRCONDITIONING C A	7040005		28326	43447
AIRCONDITIONING ENG	7040006		1453	67100
AIRCONDITIONING I W	7040007	62	71	52247
			87400	
HYDRAULICS MAIN SYSTEM	7050000			
28 UTILITY HYDRAULICS F F	7050001	52	9602	20241
4 UTILITY HYDRAULICS C F	7050002	54	4362	43003
19 UTIL&TY HYDRAULICS D B	7050003	56	21795	54920
68 UTILITY HYDRAULICS E B	7050004	58	10839	60754
30 UTILITY HYDRAULICS I W	7050005	62	14441	55240
28 UTILITY HYDR NOSE H C	7050006	91	114	18860
30 UTILITY HYDR MAIN H C	7050007	92	2980	54325
ANTI SKID SYSTEM C F	7050008	54	3134	47200
ANTI SKID SYSTEM MUC	7050009	92	634	51500
			67901	
MUC DOOR STOPS	7060000	56	302	51600
			302	
CABIN INSULATION	7070000	52	1431	18748
			1431	

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
UP	7000000						
	7010000						
	7010001	52	3261	16430	13947	535782	454812
WAGE	7010004	52	200	22000	13000	44000	26000
			3461			579782	480812
	7020000	52	500	18600	13000	93000	65000
			500			93000	65000
	7030000						
	7030001	52	2116	25940	15688	548890	331958
			2116			548890	331958
STEM	7040000						
	7040001	52	4106	17798	11308	730786	464306
	7040002	54	52410	28838	13567	15113996	7110465
	7040003	56	1034	51762	12492	535219	129167
	7040005		28326	43447	13798	12306797	3908421
	7040006		1453	67100	14000	974963	203420
	7040007	62	715	2247	15728	37095	11167
			87400			29698856	11826946
STEM	7050000						
F	7050001	52	9602	20241	10816	1943541	1038552
F	7050002	54	4362	43003	10395	1875791	453430
C	7050003	56	21795	54920	10950	11969814	2386553
B	7050004	58	10839	60754	11157	6585126	1209307
I	7050005	62	14441	55240	14254	7977208	2058420
W	7050006	91	114	18860	9320	21500	10625
C	7050007	92	2980	54325	14100	1618885	420180
C	7050008	54	3134	47200	10800	1479248	338472
C	7050009	92	634	51500	14000	326510	88760
			67901			33797623	8004299
	7060000	56	302	51600	12000	155832	36240
			302			155832	36240
	7070000	52	1431	18748	13200	268284	188892
			1431			268284	188892

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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. AR
BRAKE PARACHUTE	70800000				
BRAKE PARACHUTE F F	70800001	52	455	16913	128
BRAKE PARACHUTE R F	70800003	59	8528	82205	143
BRAKE PARACHUTE I W	70800006	62	1246	2022	145
			9107		
ELECTRICAL SYSTEM	70900000				
ELECTRICAL WIRING R N	70900001	51	129	9285	120
ELECTRICAL WIRING F F	70900002	52	2966	19977	112
ELECTRICAL WIRING C F	70900003	54	2354	39703	110
ELECTRICAL WIRING A I	70900004	55	1274	21984	120
ELECTRICAL WIRING D B	70900005	56	9015	52769	99
ELECTRICAL WIRING E B	70900006	58	64	59500	92
ELECTRICAL WIRING I W	70900008	62	9236	53995	139
ELECTRICAL WIRING FIN	70900009	63	352	79754	300
ELECTRICAL WIRING NUC	70900010	91	330	18600	98
ELECTRICAL WIRING ENG	70900011		2002	60683	100
ELECTRICAL WIRING C A	70900012		13746	33473	112
ELECTRICS F F	70900013	52	15240	15765	113
ELECTRICS C F	70900014	54	7877	45178	101
ELECTRICS E B	70900015	58	1020	64774	114
ELECTRICS ENG	70900016		18772	58913	115
ELECTRICS C A	70900017		7186	1350	120
ELECTRICS FIN	70900018	83	4489	050	288
ELECTRICS I W	70900019	62	2275	62053	145
ELECTRICS CAW	70900020		1206	7488	136
ELECTRICS MUC	70900021	92	745	1600	137
20 ELECTRICS A I	70900022	55	4900	22079	139
ELECTRICS D B	70900023	56	2671	05173	102
ELECTRICS R F	70900024	59	1768	0759	116
55 WINDSCREEN DEMISTING	70900025	52	3326	19965	106
ELECTRICS TAILC PLUG JETT	70900026		809	55200	110
			123529		
L P PNEUMATICS	71000000				
L P PNEUMATICS F F	71000001	52	1993	19586	122
L P PNEUMATICS C F	71000002	54	796	32397	116
L P PNEUMATICS FIN	71000003	63	4147	4966	252
L P PNEUMATICS R N	71000004	51	199	7067	92
L P PNEUMATICS ENG	71000008		1403	63897	99
L P PNEUMATICS I W	71000009	62	2035	2880	159
			5008		
INTAKE DE ICING	71200000	55	8800	19582	118
			8800		
29 CANOPY ACTUATION	71600000	52	6492	22199	154
			6492		

# 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
	70800000						
	70800001	52	455	169	13	76954	58554
	70800005	59	85288	2205	14394	7010442	1227520
	70800006	62	12462	2022	14500	76907	17980
			9107			7164303	1304054
	70900000						
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
U	70900009	63	352	79754	30000	280734	105600
C	70900010	91	330	18600	9800	61380	32340
N	70900011		2002	60683	10000	1214874	200200
G	70900012		13746	33473	11234	4601199	1544226
A	70900013	52	15240	15765	11308	2402586	1723339
	70900014	54	7877	45178	10188	3558671	802509
	70900015	58	1020	64774	11465	660695	116943
	70900016		18772	58913	11521	11059148	2162722
	70900017		718	61350	12000	440493	86160
	70900018	83	448	9050	28840	39182	12690
	70900019	62	2275	62053	14500	1411706	329875
	70900020		1206	7488	13661	80986	16393
	70900021	92	74	51600	13700	38184	10138
	70900022	55	4900	22079	13954	1081871	683746
	70900023	56	26710	51734	10235	13818151	2733769
	70900024	59	176	80759	11687	142136	20569
G	70900025	52	3326	19965	10638	664036	353820
G	70900026		809	55200	11000	446568	88990
			123529			53603964	13967591
	71000000						
	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
	71000008		1403	63897	9987	896475	140118
	71000009	62	203	52880	15930	107346	32338
			5008			1976472	631095
	71200000	55	8800	19582	11800	1723216	1038400
			8800			1723216	1038400
	71600000	52	6492	22199	15435	1441159	1002040
			6492			1441159	1002040

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WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM
CABIN CONSOLES	7170000	52	1728	17466	124
			1728		
SURFACE FINISH F F	7190000	152	363	18744	1220
SURFACE FINISH CANOPY	7190000	253	64	20218	1590
SURFACE FINISH C F	7190000	354	1400	37197	1245
SURFACE FINISH 2NTAKES	7190000	455	408	22798	1207
SURFACE FINISH D B	7190000	556	377	53828	1120
SURFACE FINISH E B	7190000	658	443	66701	1120
SURFACE FINISH R F	7190000	759	648	80362	1317
SURFACE FINISH I W	7190000	862	3151	60144	1440
SURFACE FINISH O W	7190000	964	1067	70650	1359
SURFACE FINISH O W L EDGE	7190000	1065	3196	63948	1359
SURFACE FINISH AILERON	7190000	1174	353	79190	1359
SURFACE FINISH ELEVATOR	7190000	1282	566	75523	1428
SURFACE FINISH FIN	7190000	1383	639	74663	2081
SURFACE FINISH RUDDER	7190000	1484	202	81279	2141
			10000		
FLIGHT TEST INSTALLATION	7200000		51700	49927	1304
			51700		

# WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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

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	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	717000052		1728	17466	12433	301812	214842
			1728			301812	214842
	719000152		363	18744	12200	68044	44286
RY	719000253		64	20218	15900	12940	10176
	719000354		1400	37197	12455	520758	174370
KES	719000455		408	22798	12020	93016	49042
	719000556		377	53828	11200	202932	42224
	719000658		443	66701	11200	295485	49616
	719000759		648	80362	13175	520746	85374
	719000862		315	160144	14400	1895137	453744
L EDGE	719000964		1067	70650	13590	753836	145005
RON	719001065		319	63948	13526	203994	43148
ATOR	719001174		353	79190	13556	279541	47853
	719001282		566	75523	14260	427460	80712
	719001383		639	74663	20837	477097	133148
ER	719001484		202	81279	21431	164184	43291
			10000			5915167	1401989
	7200000		51700	49927	13044	25812259	6743748
			51700			25812259	6743748

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WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

PROJECT \_\_\_\_\_

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. A
REMOVABLE EQUIPMENT GROUP	8000000				
94 EJECTOR SEATS	801010052		34294	20450	13
			34294		
RADIO RADAR PART ASTRA R N	802010151		168	10687	93
RADIO RADAR PART ASTRA F F	802010252		13986	18004	116
RADIO RADAR PART ASTRA C F	802010354		27244	27238	96
RADIO RADAR PART ASTRA D B	802010456		4904	51662	114
RADIO RADAR PART ASTRA FIN	802010583		3249	76179	251
RADIO RADAR PART ASTRA C A	8020106		15505	40534	121
RADIO RADAR PART ASTRA I W	802010862		2795	58836	154
RADIO RADAR PART ASTRA O W	802010964		1049	74642	137
			68900		
DAMPING SYSTEM F F	803010152		784	17201	120
DAMPING SYSTEM C F	803010254		2303	32213	109
DAMPING SYSTEM E B	803010358		369	63242	134
DAMPING SYSTEM I W	803010462		6070	53781	157
DAMPING SYSTEM O W	803010564		95	74855	140
DAMPING SYSTEM R N	803010651		287	7350	93
			9908		
INSTRUMENTATION	805090094		172600	39340	95
			172600		
INSTRUMENT PACK STRUCTURE	805100054		69200	38486	93
			69200		
ADDITIONAL FIRE PROTECTION	8090000		18061	39887	108
			18061		

EIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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

SHEET \_\_\_\_\_

GROUP	REFERENCE NO.	COMP. No.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	8000000						
	801010052		34294	20450	13411	7013123	4599168
			34294			7013123	4599168
A R N	802010151		168	10687	9197	17954	15451
A F F	802010252		13986	18004	11679	2518039	1633425
A C F	802010354		27244	27238	9648	7420721	2628501
A D B	802010456		49045	1662	11453	2533504	561655
A F I N	802010583		3249	76179	25195	2475056	818586
A C A	8020106		15505	40534	12377	6284797	1919054
A I W	802010862		2795	58836	15445	1644466	431688
A O W	802010964		1049	74642	13720	782995	143923
			68900			23677532	8152283
	803010152		784	17201	12047	134856	94448
	803010254		2303	32213	10949	741865	252155
	803010358		369	63242	13432	233303	49564
	803010462		6070	53781	15720	3264507	954204
	803010564		95	74855	14000	71112	13300
	803010651		287	7350	9340	21095	26806
			9908			4466798	1390477
	805090094		172600	39340	9500	67900840	16397000
			172600			67900840	16397000
TURE	805100054		69200	38486	9356	26632312	6474352
			69200			26632312	6474352
CTION	8090000		18061	39887	10863	7203991	1961966
			18061			7203991	1961966

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WEIGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

PROJECT \_\_\_\_\_

DESCRIPTION	REFERENCE NO.	COMP. No.	WEIGHT	H. ARM	V. ARM
OPERATIONAL LOAD	9000000				
CREW MEMBERS	9010000	52	39000	19400	1365
			39000		
ENGINE OIL	9020000				
ENGINE OIL DRAINABLE ENG	9020001		9290	64000	1194
ENGINE OIL DRAINABLE E B	9020002	58	4110	65640	976
ENGINE OIL TRAPPED D B	9020003	56	753	58176	967
ENGINE OIL TRAPPED E B	9020004	58	2047	61512	1039
			16200		
OXYGEN CHARGE	9050000				
OXYGEN CHARGE F F	9050001	52		7220	4931320
OXYGEN CHARGE C F	9050002	54	1267	26280	1615
			1339		
ENGINE FIRE EXT FLUID	9060000		2500	73000	1290
			2500		
TRAPPED FUEL	9080000				
TRAPPED FUEL C F	9080001	54	2430	41426	1310
TRAPPED FUEL D B	9080002	56	690	49400	1335
TRAPPED FUEL I W	9080003	62	18260	56814	1435
			21380		
WATER FOR AIR CONDITIONING	9100000	54	26000	26800	1320
UNUSABLE WATER FOR AIRCOND	9100001	54	2500	26700	1270
			28500		

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	7566000	5323500
			39000			7566000	5323500
	9020000						
ING	9020001		9290	64000	11940	5945600	1109226
E B	9020002	58	4110	65640	9769	2697804	401506
B	9020003	56	753	58176	9677	438065	72868
B	9020004	58	2047	61512	10398	1259151	212847
			16200			10340620	1796447
	9050000						
	9050001	52		7220493	13200	14755	9504
	9050002	54	1267	26280	16150	332968	204621
			1339			347723	214125
	9060000						
			2500	73000	12900	1825000	322500
			2500			1825000	322500
	9080000						
	9080001	54	2430	41426	13106	1006652	318476
	9080002	56	690	49400	13350	340860	92115
	9080003	62	18260	56814	14353	10374236	2620858
			21380			11721748	3031449
IONING	9100000	54	26000	26800	13200	6968000	3432000
IRCOND	9100001	54	2500	26700	12700	667500	317500
			28500			7635500	3749500

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