C-105 MK 2
Production A/C

Report # 7-0400-34
Issue 13 [redacted]

WEIGHT & C.G. SUMMARY

N.A.E

Nov. 1/57

(7)

AVRO AIRCRAFT LIMITED
INTER-DEPARTMENTAL MEMORANDUM [redacted]

ANALYZED

Ref. 3399/11/J
Date November 1st, 1957
To See Distribution
From Mr. E.F. Burnett
Subject ARROW MK 2 WEIGHT & C.G. SUMMARY - REPORT # 7-0400-34 Issue 13.

Attached is a copy of Weight and C.G. Summary, Report # 7-0400-34 Issue 13, dated November 1st, 1957 for your retention.

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

Classification cancelled / changed to Unclassified
By authority of AVRO Arrow Declassif. Board
Date 28 Jul 87
Signature [illegible], Co-Chairperson
Unit / Rank / Appointment DSIS 3

E.F. Burnett

amc.

E. F. Burnett
Weights Supervisor

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N. B.

The flight C.G. envelopes for the MK 2 Aircraft have been omitted until such time as a fully approved fuel sequencing is established.

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Aircraft: C-105 MK 2
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~~S E C R E T~~
Report # 7-0400-34 Iss. 13
Sheet # 1-1

INTRODUCTION & WEIGHT CHANGES

The following is a Weight and C.G. Summary of the C-105 MK 2 Production Aircraft, based on the latest weight estimates available.

All Weight and C.G. changes are relative to Issue 12 of October 1st, 1957.

GENERAL:

a) Orenda PS 13 Engines comprise the Power Plant (4,500 lb each, brochure weight, excluding Nose Bullet and Input Frame.)

b) A package containing 4 "semi-submerged" Sparrow II Missiles (432 lb each) forms the current armament concept.

c) The R.C.A. Radar 'Astra I' System is installed, Weight & C.G. breakdowns being to the latest information received from R.C.A. dated 3rd July 1957. The Sparrow III Auxiliaries, included in the breakdown, have been deleted; some AVRO installed Antennae have been added. The Infra-Red Tracker System is allowed for in its proposed location at the Fin Tip (Total Weight = 2,741.0 lb)

In addition to the above the Minneapolis-Honeywell M.H.64 Damping System is installed.

The early MK 2 A/C will have the "Astra Minus" System installed (ie Navigational & Communication equipment only).

d) A considerable number of MK 1 parts, assemblies and equipment have now been weighed. Where these weights apply to the MK 2 Aircraft, they have been recorded in the MK 2 records.

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

N.B. It should be noted that the early MK 2 Aircraft will not be as this summary designates, but will be flight test versions with instrumentation replacing the missile package etc. or for development of Astra I Radar System etc.

1. STRUCTURE: WEIGHT-lb

a) Wing:

Centre Trailing Edge I/W - elevator jack access panel and inner panel of the dished panel assy. were honeycomb structure now machinings at Production's request.	+ 17.40
Dorsal Fairings - Actual weights of MK 1 A/C fibreglass fairings	+ 4.04
WEIGHT INCREASE WING	+ 21.44

b) Fin and Rudder:

No Weight Change

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INTRODUCTION & WEIGHT CHANGES

1. STRUCTURE (Cont'd)	WEIGHT-lb
c) Front Fuselage Fwd. Sta. 255"	
Radar Nose Structure - production drawing estimates, no de-icing tank or rain repellant ducting	- 3.46
Bulkhead Sta. 120" - production drawing estimates	- 0.80
Cockpit Floor - addition of tie straps etc. to 'Marry-Up'	+ 1.49
Lower Shear Panel - peoduction drawing estimates	+ 1.66
Skins 120"-255" - production drawing estimates	+ 1.70
Weight Increase Front Fuselage	+ 0.59
d) Centre Fuselage Sta. 255"-485"	
Dorsal Fairings over Fuel Tank - production drawings estimated; deletion of Insulation and Inner Skin	- 9.59
Weight Decrease Centre Fuselage	- 9.59
e) Duct Bay - Sta. 485"-591.65"	
No Weight Change	
f) Engine Bay Sta. 591.65"-742.5"	
No Weight Change	
g) Rear Fuselage Sta. 742.5" Aft.	
Formers Fixed R.F. - production drawing estimates of 4 formers	+ 0.63
Tunnel Fixed R.F. - production drawing estimates, insulation weights increased 15% based on findings from actual weights of MK 1 A/C insulation	+ 9.82
Weight Increase Rear Fuselage	+ 10.45
h) Fuselage 'Marry-Up'	
No Weight Change.	
TOTAL STRUCTURAL INCREASE	+ 22.89
2. LANDING GEAR	
Main Undercarriage Doors - Actual Weights of MK 1 A/C Doors and Fairings, applicable to MK 2 A/C	- 9.46
TOTAL LANDING GEAR DECREASE	- 9.46

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INTRODUCTION & WEIGHT CHANGES

3. POWER PLANT & SERVICES	WEIGHT-lb
No Weight Change	

4. FLYING CONTROLS GROUP	
No Weight Change	

5. EQUIPMENT GROUP	
Radome De-icing - system deleted, being no longer a requirement	- 8.88
Cabin Consoles - production drawing estimates, Navigator's panels	- 0.07
Ejector Seats - The redesigned Martin-Baker seat was weighed and the weight agreed with manufacturer's quotation	
Redesign of installation and emergency O_2 System	- 0.36
Crew's personal parachutes are packed in the seat and remain with the seat, consequently they have been removed from Operational Load and included with Equipment Group. Parachute allowance was 20 lb each now actual weight is 27.5 lb each	+ 55.00
TOTAL EQUIPMENT GROUP INCREASE	+ 45.69

6. OPERATIONAL LOAD	
Crew Members - Allowance for personal parachute deleted, see Ejector Seats in Equipment Group	- 40.00
Alcohol for De-icing - Deleted, no longer a requirement	- 22.00
TOTAL OPERATIONAL LOAD LOAD DECREASE	- 62.00

SUMMARY

Weight Change - Aircraft Basic Weight

Structure	+ 22.69 lb
Landing Gear	- 9.46 lb
Equipment	+ 45.69 lb
	+ 59.12 lb

Weight Change - Operational Load (less fuel)

Crew	- 40.00 lb
Alcohol	- 22.00 lb
	- 62.00 lb

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

Issue 12	Issue 13	
45,161.06 lb	45,158.18 lb	= -2.88 lb.

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WEIGHT & C.G. SUMMARY

DESCRIPTION	WEIGHT lb	H. ARM ins.	V. ARM ins.
STRUCTURE	18,919.00	564.74	137.40
Wings	10,025.17	642.80	142.25
Fin & Rudder	1,024.00	754.25	209.28
Fuselage - fwd. Sta. 255"	2,574.35	182.98	128.36
Sta. 255"-485"	1,680.51	374.73	130.00
Sta. 485"-591.65"	1,119.27	538.29	105.42
Sta. 591.65"-742.5"	1,550.20	661.04	110.51
Sta. 742.5" Aft.	893.17	800.75	129.21
"Marry-Up"	52.33	467.60	103.84
UNDERCARRIAGE - RETRACTED	2,542.31	487.09	134.78
Main Undercarriages	1,901.62	539.31	141.00
Main U/C Doors & Fairings	282.34	537.60	138.37
Nose Undercarriage	333.81	170.80	99.70
Nose U/C Door & Fairing	24.54	162.24	88.23
POWER PLANT & SERVICES	10,800.67	671.41	121.32
Engines & Accessories PS 13	9,186.78	687.95	121.16
Gear Box & Drives on Fuselage	281.84	601.70	102.49
Engine Controls	32.43	375.76	118.61
Gear Box, Starter & Drives on Engine	315.45	615.98	105.24
Engine Nose Bullet (Orenda supplied)	70.00	587.17	116.00
Fire Extinguishing System	65.46	700.45	134.21
Engine Mountings	132.38	666.82	136.52
Fuel System	716.33	530.91	134.48
FLYING CONTROLS GROUP	1,791.00	685.52	140.59
Mechanical Flying Controls	946.48	687.84	148.61
Hydraulic Flying Controls	844.52	682.91	131.61
EQUIPMENT FIXED AND REMOVABLE	8,316.44	336.42	114.25
Instruments	46.07	163.68	138.70
Probe	15.00	-38.14	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Oxygen System	23.59	253.72	156.43
Ejector Seats	339.06	204.43	134.10
Air Conditioning System	856.00	333.49	134.98
Hydraulic Main System	638.81	504.18	117.70
Cabin Insulation	14.31	187.48	132.00
Brake Parachute	90.78	786.64	143.16
Electrical System	1,259.16	432.22	112.68
Low Pressure Pneumatics	56.94	421.96	128.47
Surface Finish	100.00	591.52	140.20
Intake De-icing Boots	51.84	197.02	118.00
Canopy Actuation	64.92	221.99	154.35
Cabin Consoles	17.38	174.63	124.32
Radar Door Actuation	10.00	268.00	95.00
M.H. 64 Damping System	139.13	449.26	135.57
Radio & Radar Removable	1,907.50	205.72	111.19
Radio & Radar Fixed	631.00	233.27	115.71
Sparrow Pack Structure	870.70	389.60	96.00
Sparrow Pack Mechanisms	582.57	379.30	99.04
Sparrow Pack Hydraulics	331.94	373.52	99.00
Sparrow Pack Electronics	198.00	327.96	100.00
Sparrow Pack Electrics	64.10	362.29	95.00
Sparrow Pack Air Conditioning	2.64	309.93	104.15

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WEIGHT & C.G. SUMMARY

DESCRIPTION		WEIGHT lb	H. ARM ins.	V. ARM ins.	M.A.C. %
AIRCRAFT BASIC WEIGHT		42,369.42	547.56	128.73	
USEFUL LOAD (less fuel)		2,788.76	377.69	104.73	
Crew		390.00	194.00	136.50	
Oil		138.97	636.92	110.57	
Engine Fire Extinguisher Fluid		25.00	730.00	129.00	
Residual Fuel		218.40	553.98	134.04	
Missiles		1,728.00	389.29	88.30	
Oxygen Charge		13.39	259.68	159.91	
Water for Air Conditioning		275.00	268.00	131.75	
Operational Weight Empty	U/C Up	45,158.18	537.07	127.25	27.92
	U/C Down		539.19	123.75	28.51
Operational Weight Empty Less Missiles	U/C Up	43,430.18	542.95	128.80	29.54
	U/C Down		545.15	125.16	30.15
Normal Combat Mission Fuel * (2,044 gals. @ 7.8 lb/gal)		15,940.00	542.03	142.30	
Normal Combat Weight	U/C Up	61,098.18	538.36	131.18	28.28
	U/C Down		539.93	128.59	28.71
Half Combat Mission Fuel * (1,022 gals. @ 7.8 lb/gal.)		7,970.00	543.18	139.55	
Combat Weight (Half Mission Fuel)	U/C Up	53,128.18	537.99	129.10	28.18
	U/C Down		539.79	126.12	28.67
Maximum Internal Fuel (2,492 gals. @ 7.8 lb/gal.)		19,438.00	541.85	144.16	
A.U.W. Maximum Internal Fuel	U/C Up	64,596.18	538.51	132.34	28.32
	U/C Down		539.99	129.89	28.73
Maximum External Fuel (500 gals. @ 7.8 lb/gal. + Drop Tank)		4,248.00	521.84	60.67	
A.U.W. Maximum Internal and External Fuel	U/C Up	68,844.18	537.48	127.92	28.04
	U/C Down		538.87	125.62	28.42

N.B. 1) New figures are being prepared by Aerodynamics for Mission fuel in accordance with latest PS 13 data, but these are not yet available. Fuel C.G.'s used here are as if proportioners were installed. Until a fuel sequencing can be established these C.G.'s will be recorded for partial fuel conditions.

2) Aircraft Datum = 120" above an arbitrarily chosen ground line.

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL C
COMPONE

PROJECT C-105 MK 2 Production A/C

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
	TOTAL WING GROUP	1000000			
	OUTER WING	1010000			
100	OUTER WING SKINS	101000164		929107	0
100	POSTS AND INTERCOSTALS	101000264		24367	3
100	OUTER WING SPARS	101000364		39258	7 0
100	OUTER WING RIBS	101000464		13456	6 9
18	AILERON CONTROL BOX	101000664		37920	7 7
100	RIB 12	101000764		7626	6 4
100	O W AILERON JACK FITTING	101000964		1046	7 2
	AILERON JOINTS AND FAIRING	101001000		329	3 7 8
				19794 5	
	AILERON	1020000			
100	AILERON STRUCTURE	102000174		3360	0 7 9
				3360 0	
97	ELEVATOR MARRY UP	103000000		1597	7 3
97	ELEVATOR	103000082		4490	0 7 5
				4649 7	
	INNER WING	1040000			
79	MAIN U C STRUCTURE	104000162		3307	1 5 7
27	FRONT SPAR I W	104000262		1111	0 4 8
27	MAIN SPAR I W	104000362		1463	9 5 6
27	FWD CENTRE SPAR I W	104000462		424	5 6 0
27	AFT CENTRE SPAR I W	104000562		338	6 6 5
27	REAR SPAR	104000662		766	7 7 0
32	I W STRUCTURE F S TO M S	104000762		1059	1 8 4 9
	I W STRUCTURE M S TO R S	104000862		149	7 9 6 0
	STRUCT AFT OF REAR SPAR	104000962		333	7 9 7 1
11	ELEVATORCONTROLBOX I W	104001062		427	1 7 7 2
25	TRANSP JOINT MARRY UP	104001100		70	6 5 6 3
74	CENTRE LINE JOINTS	104001262		586	4 3 6 6
	INNER WING SKINS	104001362		2242	0 4 6 2
	STRUT PICK UP FITTINGS	104001462		118	1 8 6 1
31	RIBS 1 TO 9 INNER WING	104001662		512	0 4 6 1
74	DORSAL FAIRINGS I W	104001762			9 5 4 8
100	RIB 10	104001862		108	0 0 6 3
	FUSELAGE HINGE JOINT I W	104001962		138	1 2 6 2
25	TRANSP JOINT	104002062		129	4 2 6 3
	FUSELAGE HINGE JOINT	104002100		37	4 0 5 2
74	DORSAL FAIRINGS C A	104002300		60	3 3 5 7
				671467	

IGHT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

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SHEET 1- 15 Incl.

	REFERENCE NO.	COMP. NO.	WEIGHT	H. ARM	V. ARM	H. MOMENT	V. MOMENT
	1000000						
	1010000						
	101000164		92910706	46	13597	65637199	126329
S	101000264		2436732	07	13410	1783323	326668
	101000364		39258701	18	13636	27526924	5353221
	101000464		13456695	06	13650	9352727	1836744
	101000664		37920774	09	13508	29353493	5122234
	101000764		7626648	73	13832	4947215	1054828
ING.	101000964		1046727	91	13670	761394	142988
IRING	101001000		3293787	26	13224	2592447	435466
			197945			141954722	26905122
	1020000						
	102000174		33600792	13	13556	26615568	4554816
			33600			26615568	4554816
	1030000000		1597738	10	14260	1178746	227732
	1030000082		44900755	23	14260	33909827	6402740
			46497			35088573	6630472
	1040000						
	104000162		33071577	57	13983	19100817	4624318
	104000262		11110484	28	14260	5380351	1584286
	104000362		14639565	70	14280	8281282	2090449
	104000462		4245604	17	14317	2564702	607757
	104000562		3386654	94	14446	2217627	489142
	104000662		7667703	74	14420	5395575	1105581
M S	104000762		10591849929		14405	52883798	15257488
R S	104000862		1497960	64	14572	9131798	2182740
AR	104000962		3337971	947	14894	24015189	4971468
W	104001062		4271772	500	14327	30969825	6120065
	104001100		7065636	21	13876	4494824	980339
	104001262		5864366	143	15062	38788239	8832809
	104001362		22420462	440	14472	139992978	32446803
S	104001462		1181861	500	14577	7268070	1722710
G	104001662		5120461	287	14499	31381395	7424068
	104001762		954828	0	16150	45866	15343
	104001862		1080063	683	13835	6877764	1494180
I W	104001962		1381262	104	13790	8577804	1904675
	104002062		1294263	071	13710	8162649	1774348
	104002100		374052	796	14309	1974570	535157
	104002300		603357	025	16034	3440318	967331
			671467			410945441	97131057

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MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
LEADING EDGE INNER WING	105000062		22138	46
			22138	
LEADING EDGE O W	106000065		30870	63
			30870	

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
12 FIN	201000083		851707	4
12 FIN TO WING MARRY UP	2010002		48306	8
			90000	
95 RUDDER	202000084		124008	1
			12400	

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
	TOTAL FUSELAGE GROUP	3000000			
	FUSELAGE BASIC STRUCTURE	3010000			
	RADOME	3010001	51	17815	
	RADAR NOSE STRUCTURE C A	3010002		2631	2
	RADAR NOSE STRUCTURE R N	3010003	51	16835	
	SKIN F F	3010004	52	8264	1
	SKIN C F	3010005	54	22043	3
	SKIN D B	3010006	56	6135	5
	SKIN E B	3010007	58	16489	6
4	FORMERS F F	3010011	52	10531	1
	FORMERS C F	3010012	54	28749	3
6	FORMERS D B	3010013	56	7331	5
8	LIGHT FORMERS E B	3010014	58	11041	6
8	HEAVY FORMERS E B	3010015	58	19858	6
	LOWER LONGERONS F F	3010016	52	6846	1
	INNER LONGERON E B	3010017	58	7184	6
	BOTTOM LONGERONS E B	3010018	58	6919	6
	TOP LONGERONS E B	3010019	58	638	6
	LOWER SHEAR PANEL	3010020	52	3154	2
	TOP WING LONGERONS D B	3010021	56	498	5
	LONGERONS C F	3010022	52	53	2
	LONGERONS C F	3010023	54	13813	4
	LONGERONS F D B	3010024	54	1258	4
	LONGERONS A D B	3010025	56	8595	5
	ELECTRONICS BAY STRUCTURE	3010026	54	4523	2
32	LONGITUDINAL BEAMS D B	3010027	56	6617	5
	RADAR ACCESS DOOR C F	3010028	54	2108	2
72	MAIN FRAME AT STN 538 77	3010029	56	5980	5
	DIVE BRAKE ACCOMMODATIONS	3010030	56	3668	5
20	TOP LONGERONS F F	3010031	52	18571	1
	DUCT C F	3010032	54	31552	3
	FLOATING DUCT D B	3010033	56	43215	5
23	CANOPY ARCHES	3010034	52	8233	2
	ACCESS PANELS	3010036	56	3258	5
66	NOSE U C SUPPORT STRUCTURE	3010037	52	3343	2
3	CREW BULKHEADS	3010038	52	12272	2
	EQUIPMENT BAY STRUCTURE	3010039	54	7111	2
59	WINDSCREEN	3010041	52	12933	1
	SERV ACCESS DOORS AND PNLS	3010042	58	5929	6
	DORSAL FAIRING FWD	3010044	54	2727	2
	INTERMEDIATE FORMERS	3010045	58	4606	7
	ENGINE ACCESS DOORS E B	3010046	58	10735	6
	SEALING MISSILE BAY	3010047	54	697	3
	MISCELLANEOUS ITEMS C F	3010048	54	392	3
	ARMAMENT BAY ROOF	3010049	54	12522	3
	BULKHEAD AT STA 120	3010050	52	2980	1
	BULKHEAD AT STA 255	3010051	52	10742	2
	BULKHEAD STA 485	3010052	54	12351	4
	ENGINE TUNNEL E B	3010054	58	6131	6
	FUSELAGE FUELTANK	3010055	54	20960	3

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						
RE	3010000						
	301000151		17815	3737	11032	665747	1965351
A	3010002		2631	20000	11200	31560	29456
N	301000351		16835	9590	11328	1614477	1907069
	3010004 52		8264	19296	12301	1594621	1016555
	301000554		22043	36727	14417	8095733	3177939
	3010006 56		6135	53476	11175	3280753	685586
	301000758		16489	66905	11036	11031965	1819726
	3010011 52		10531	18330	12018	1930332	1265616
	301001254		28749	37520	13317	10786625	3828504
	3010013 56		7331	53531	11441	3924358	838740
	301001458		11041	66734	11662	7368101	1287601
	3010015 58		19858	66067	10922	13119585	2168891
	301001652		6846	18430	9044	1261718	619152
	3010017 58		7184	65234	9213	4686411	661862
	3010018 58		6919	65825	9779	4554432	676609
	3010019 58		638	66605	13911	424940	88752
	301002052		3154	23427	8900	738888	280706
	3010021 56		498	53899	13550	268417	67479
	301002252			53295	15250	13406	8083
	3010023 54		13813	41112	12289	5678801	1697480
	301002454		1258	48717	10700	612860	134606
	3010025 56		8595	52923	9761	4548732	838958
URE	301002654		4523	27443	9164	1241247	414488
	3010027 56		6617	52001	9130	3440906	604132
	301002854		2108	27448	8976	578604	189214
77	3010029 56		5980	53877	10383	3221845	620903
ONS	301003056		3662	50390	9298	1848305	341051
	3010031 52		18571	19286	14750	3581603	2739223
	301003254		31552	35839	12969	11307921	4091979
	3010033 56		43215	55264	11717	23882338	5063502
	301003452		8233	22768	16053	1874489	1321643
	3010036 56		3258	53375	9673	1738958	315146
TURE	301003752		3343	21049	9186	703668	307088
	3010038 52		12272	20589	12284	2526682	1507492
E	301003954		7111	28363	13518	2016893	961265
	3010041 52		12933	13815	15008	1786694	1940985
PNLS	301004258		5929	66837	9255	3962766	548729
	3010044 54		2727	29126	16400	794266	447228
	301004558		4606	72947	11213	3359939	516471
B	3010046 58		10735	64644	9044	6939533	970873
	301004754		697	32148	10900	224072	75973
F	3010048 54		392	37000	12500	145040	49000
	301004954		12522	38325	11427	4799057	1430889
	3010050 52		2980	12000	11511	357600	343028
	301005152		10742	25500	11980	2739210	1286892
	3010052 54		12351	48500	10396	5990235	1284010
	301005458		6131	85674	12016	40269983	7367971
	3010055 54		20960	39311	14506	8239586	3040458

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

PROJECT

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
	COCKPIT FLOOR	301005652		5741	17
	DORSAL OVER FUEL TANK	301006154		4138	41
	DEFLECTOR SHIELD	301006254		2000	33
	SHEAR PANEL BELOW NAV ARCH	301006352		2074	25
	PACK MOUNTING STRUCTURE	301006454		2365	29
	ENG ACCESS DOORS FIXED R F	301006559		9326	77
	TUNNEL FIXED R F	301006659		13054	77
	SKIN AND INTERCOSTAL R F	301006759		5256	77
	FAIRING UNDER RUDDER R F	301006859		2638	78
	FORMERS FIXED R F	301006959		10744	78
	LONGERONS C BEAM FIXED R F	301007059		2690	77
	REMOVABLE NACELLES R F	301007159		34815	82
	CNTR STRUC STING REMOV R F	301007259		10794	83
	MISC ITEMS STRUCTURE F B	301007358		9126	66
	MTG BRKTS SIDE PANEL D B	301007556		2135	52
	FORMERS LOWER PANEL D B	301007656		7416	54
	LOWER PANEL D B	301007756		5054	55
	JOINT F F TO C F	301007 8		8552	25
	JOINT AIR INTAKES TO F F	301007 9		9522	22
	JOINT C F TO D B	301008 0		500	48
	JOINT D B TO E B	301008 1		2508	58
	FUS JOINT AT STA 742 50	301008 2		418	74
	DROP TANK MTG STRUCT D B	301008356		1133	58
	STRUCT AT ENG ACCESS DOORS	301008558		6537	64
	MISC STRUCTURE F F	301008652		552	18
	ENG RAILS ATTACHM TO FORM	301008758		2854	68
				659194	
96	DIVE BRAKES	302000072		11150	50
96	DIVE BRAKES C A	302000 1		406	48
				11556	
	AIR INTAKES	303000 0			
	AIR INTAKES	303010055		75502	21
				75502	
	PILOTS AND NAVIG CANOPIES	304000 0			
76	PILOTS CANOPY	304010053		24081	17
				24081	
	NAVIGATORS CANOPY	304020053		16650	21
				16650	

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
	301005652		5741	17693	11575	1015755	664521
	301006154		4138	41310	14206	1709408	587844
	301006254		2000	33710	16400	674200	328000
ARCH	301006352		2074	25702	15350	533059	318359
E	301006454		2365	29226	10254	691195	242507
R F	301006559		9326	77366	9867	7215153	920196
	301006659		13054	77180	13177	10075077	1720126
F	301006759		5256	77231	13643	4059261	717076
F	301006859		2638	78178	15590	2062336	411264
	301006959		10744	78037	13647	8384295	1466234
R F	301007059		2690	77120	12688	2074528	341307
	301007159		34815	82282	12900	28646478	4491135
R F	301007259		10794	83412	13644	9003491	1472733
B	301007358		912	66401	10278	605577	93735
B	301007556		213	52402	13330	111616	28393
B	301007656		7416	54432	9015	4036677	668552
	301007756		5054	55457	8790	2802797	444247
	3010078		855	25500	12000	218025	102600
F	3010079		952	22000	12000	209440	114240
	3010080		500	48500	9800	242500	49000
	3010081		2508	58478	9150	1466628	229482
50	3010082		418	74250	11500	310365	48070
B	301008356		1133	58576	8848	663666	108248
OORS	301008558		6537	64089	9261	4189498	605392
	301008652		552	18750	11500	103500	63480
FORM	301008758		2854	68741	11362	1961868	324271
			659194			316870295	79397366
	302000072		11150	50846	9062	5669329	1010413
	3020001		406	48794	9374	198104	38058
			11556			5867433	1048471
	3030000						
	303010055		75502	21076	11828	15912802	8930377
			75502			15912802	8930377
IES	3040000						
	304010053		24081	17678	15913	4257039	3832010
			24081			4257039	3832010
	304020053		16650	23200	16200	3862800	2697300
			16650			3862800	2697300

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
	UNDERCARRIAGE UP POSITION	4000000			
	MAIN UNDERCARRIAGE GROUP	4010000			
	MAIN UNDERCARRIAGE	401010092		1901625	
				190162	
89	MAIN U C DOORS FAIRINGS	401020062		282345	
				28234	
	NOSE UNDERCARRIAGE GROUP	4020000			
100	NOSE UNDERCARRIAGE	402010091		333811	
				33381	
	NOSE U C DOOR AND FAIRING	402020052		24541	
				2454	

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WEIGHT AND C. OF G BY FUNCTIONAL C COMPONEN

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
ENGINE GROUP	5000000			
PS 13 ENGINES	5010000		91722868	
			917228	
PS 13 ENGINES SERV ACCESS	5010100		14506 3	
			1450	
ACC GEAR BOX ON FUS D B	502000156		45245 7	
ACC GEAR BOX ON FUS E B	502000258		236606 0	
			28184	
ENGINE CONTROLS	5030000			
ENGINE CONTROLS F F	503000152		14581 6	
ENGINE CONTROLS C F	503000254		2643 0	
ENGINE CONTROLS D B	503000356		508 4 9	
ENGINE CONTROLS E B	503000458		1013 6 3	
			3243	
STARTER AND ENG GEAR BOX	5040000		31545 6 1	
			31545	
ENGINE ANTI ICING	5050000		7000 5 8	
			7000	
FIRE EXT SYSTEM	5060000			
55 ENG FIRE EXT SYSTEM ENG	506000158		6400 7 0	
55 ENG FIRE EXT SYSTEM D B	506000256		146 5 5	
			6546	
ENGINE MTGS AND BRACKETS	5070000			
ENGINE MOUNTS	5070001		842 1 6 7	
ENGINE MTG ACCESSORIES	5070002		481 7 6 4	
			13238	
FUEL SYSTEM	5080000			

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WEIGHT AND C. OF G BY FUNCTIONAL C COMPONEN

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
19 FUEL SYSTEM C F	5080001	54	10713	40
20 FUEL SYSTEM D B	5080002	56	14955	54
FUEL SYSTEM E B	5080003	58	685	64
28 FUEL SYSTEM I W	5080004	62	43900	55
FUEL SYSTEM ENG	5080005		626	65
FUEL SYSTEM C A	5080006		754	61
			71633	

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
5080001	54	10713	40111	14010	4297091	1500891
5080002	56	14955	54070	10558	8086169	1578949
5080003	58	685	64414	12612	441236	86392
5080004	62	43900	55421	14428	24329819	6333892
5080005		626	65901	9594	412540	60058
5080006		754	61525	9658	463899	72821
		71633			38030754	9633003

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
	6000000						
	6010000						
F	601000152		87591580711543			1384535	1011051
F	601000254		8853392011526			300192	102005
B	601000356		3504869911880			170447	41580
IN	601000583		12688787812217 6			9995733	2813691
W	601000662		40884717511437 5			29334679	5877075
W	601000764		30436770751356 1			23458547	4127426
A	6010008		6467098214338			458544	92623
			94648			65102677	14065451
ULICS	6020000						
S D B	602000156		2332574428668			1339547	225458
S E B	602000258		39076647841114 3			25314996	4354239
S R F	602000359		4875875108 24			36420	5196
T I W	602000462		26114703281473 7			18365454	3848420
T O W	602000564		11551740741357 7			8556288	1568279
S FIN	602000683		5331761652087 5			4060356	1112846
			84452			57673061	11114438

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
	FIXED EQUIPMENT GROUP	7000000			
	INSTRUMENTS	7010000			
	INSTRUMENTS	701000152		440716	
	NAVIG TABLE AND STOWAGE	701000452		20022	
				4607	
	COCKPIT SEALING	702000052		50018	
				500	
	OXYGEN SYSTEM	7030000			
	OXYGEN SYSTEM	703000152		235925	
				2359	
	AIR CONDITIONING SYSTEM	7040000			
	AIRCONDITIONING SYST F F	704000152		1232122	
	AIRCONDITIONING SYST C F	704000254		5752329	
	AIRCONDITIONING SYST D B	704000356		207451	
	AIRCONDITIONING SYST C A	7040005		1236656	
	AIRCONDITIONING SYST ENG	7040006		125567	
	AIRCONDITIONING SYST I W	704000762		6151	
				85600	
	HYDRAULICS MAIN SYSTEM	7050000			
14	UTILITY HYDRAULICS F F	705000152		841520	
31	UTILITY HYDRAULICS C F	705000254		427247	
20	UTILITY HYDRAULICS D B	705000356		2733855	
21	UTILITY HYDRAULICS E B	705000458		724060	
23	UTILITY HYDRAULICS I W	705000562		1331155	
14	UTILITY HYDR NOSE U C	705000691		32519	
23	UTILITY HYDR MAIN U C	705000792		298054	
				63881	
	CABIN INSULATION	707000052		143118	
				1431	
	BRAKE PARACHUTE	7080000			
	BRAKE PARACHUTE F F	708000152		45516	
	BRAKE PARACHUTE R F	708000559		84998	

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT_____

	DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
	BRAKE PARACHUTE I W	708000662		1246	62
				9078	
	ELECTRICAL SYSTEM	7090000			
	ELECTRICAL WIRING R N	709000151		129	9
	ELECTRICAL WIRING F F	709000252		29661	19
	ELECTRICAL WIRING C F	709000354		23543	39
	ELECTRICAL WIRING A I	709000455		12742	21
	ELECTRICAL WIRING D B	709000556		90155	52
	ELECTRICAL WIRING E B	709000658		645	59
	ELECTRICAL WIRING I W	709000862		8909	54
	ELECTRICAL WIRING FIN	709000983		3527	79
	ELECTRICAL WIRING NUC	709001091		3301	18
	ELECTRICAL WIRING ENG	7090011		2002	60
	ELECTRICAL WIRING C A	7090012		13746	33
	ELECTRICS F F	709001352		15248	15
	ELECTRICS C F	709001454		8709	45
	ELECTRICS E B	709001558		670	67
	ELECTRICS ENG	7090016		17632	58
	ELECTRICS C A	7090017		7186	1
	ELECTRICS FIN	709001883		83	89
	ELECTRICS I W	709001962		2336	62
	ELECTRICS CAW	7090020		112	62
	ELECTRICS MUC	709002192		74	51
	ELECTRICS A I	709002255		5090	22
	ELECTRICS D B	709002356		30089	51
	ELECTRICS R F	709002459		136	80
	WINDSCREEN DEMISTING	709002552		3564	19
	SPARROW ELECTRICS F F	709002652		254	18
	SPARROW ELECTRICS C F	709002754		60	27
				125916	
	L P PNEUMATICS	7100000			
24	L P PNEUMATICS F F	710000152		2255	19
18	L P PNEUMATICS C F	710000254		671	3
	L P PNEUMATICS D B	710000356		418	55
	L P PNEUMATICS E B	710000458		1526	65
	L P PNEUMATICS FIN	710000583		640	75
	L P PNEUMATICS R N	710000651		124	
	L P PNEUMATICS A P	710000794		602	9
				5694	
	INTAKE DEICING	712000055		5184	19
				5184	
	RADIO AND RADAR FIXED	7140000			

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WEIGHT AND C. OF G BY FUNCTIONAL G COMPONEN

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H. A
RADIO AND RADAR FIXED R N	714000151		16500	9
RADIO AND RADAR FIXED F F	714000252		5000	181
RADIO AND RADAR C F	714000354		19000	267
RADIO AND RADAR FIXED D B	714000456		18000	512
RADIO AND RADAR FIXED FIN	714000583		32000	761
RADIO AND RADAR FIXED C A	714000 6		17600	21
			63100	
29 CANOPY ACTUATION	716000052		6492	221
			6492	
CABIN CONSOLES	717000052		1738	174
			1738	
RADAR DOOR ACTUATION	718000054		1000	268
			1000	
SURFACE FINISH F F	719000152		36318	7
SURFACE FINISH CANOPY	719000253		6420	2
SURFACE FINISH C F	719000354		14003	71
SURFACE FINISH 2NTAKES	719000455		4082	27
SURFACE FINISH D B	719000556		37753	8
SURFACE FINISH E B	719000658		4436	67
SURFACE FINISH R F	719000759		6488	0
SURFACE FINISH I W	719000862		31516	01
SURFACE FINISH O W	719000964		10677	06
SURFACE FINISH O W L EDGE	719001065		3196	39
SURFACE FINISH AILERON	719001174		35379	1
SURFACE FINISH ELEVATOR	719001282		5667	55
SURFACE FINISH FIN	719001383		6397	46
SURFACE FINISH RUDDER	719001484		2028	12
			10000	

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WEIGHT AND C. OF G BY FUNCTIONAL C COMPONEN

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H.
REMOVABLE EQUIPMENT GROUP	8000000			
77 EJECTOR SEATS	8010100	52	33906	20
			33906	
RADAR REMOVABLE	8020100			
RADIO AND RADAR REM R N	802010151		96070	9
RADIO AND RADAR REM F F	802010252		199101	18
RADIO AND RADAR REM C F	802010354		58020	27
RADIO AND RADAR REM D B	802010456		57505	51
RADIO AND RADAR REM FIN	802010583		70008	5
RADIO AND RADAR REM C A	8020106		40005	5
			190750	
DAMPING SYSTEM	8030000			
DAMPING SYSTEM F F	803010152		6351	6
DAMPING SYSTEM C F	803010254		21803	1
DAMPING SYSTEM E B	803010358		3696	3
DAMPING SYSTEM I W	803010462		58005	2
DAMPING SYSTEM O W	803010564		957	4
DAMPING SYSTEM R N	803010651		52	0 8
DAMPING SYSTEM C A	8030107		43144	8
			13913	
SPARROW PACK	8050000			
SPARROW PACK STRUCTURE	805010094		87070	38
			87070	
SPARROW PACK MECHANISMS	805020094		58257	37
			58257	
SPARROW PACK HYDRAULICS	805030094		33194	37
			33194	
SPARROW PACK ELECTRONICS	805040094		19800	32
			19800	

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WEIGHT AND C. OF G BY FUNCTIONAL COMPONE

PROJECT

DESCRIPTION	REFERENCE NO.	COMP. NO.	WEIGHT	H
OPERATIONAL LOAD	9000000			
CREW MEMBERS	901000052		39000	19
			39000	
ENGINE OIL	9020000			
ENGINE OIL DRAINABLE	9020001		92906	5
ENGINE OIL TRAPPED ENG	9020002		17736	1
ENGINE OIL TRAPPED D B	902000356		19255	8
ENGINE OIL TRAPPED E B	902000458		9095	9
			13897	
SPARROW MISSILES	903000054		172800	38
			172800	
OXYGEN CHARGE	9040000			
OXYGEN CHARGE F F	904000152		722	0
OXYGEN CHARGE C F	904000254		12672	2
			1339	
ENGINE FIRE EXT FLUID	9060000		25007	1
			2500	
RESIDUAL FUEL	9070000			
RESIDUAL FUEL C F	907000154		46803	
RESIDUAL FUEL I W	907000262		171605	
			21840	
WATER FOR AIR CONDITIONING	910000054		26002	2
UNUSABLE WATER FOR AIRCOND	910000154		1500	2
			27500	

Classification cancelled / ch
By authority of AVRO A
Date 28 Jul 87
Signature
Unit / Rank / Appointment

Classification cancelled / changed to Unclassified
By authority of AVRO Arrow Declassif. Board
Date 28 Jul 87
Signature B Dudeney, Co-Chairperson
Unit / Rank / Appointment DSIS 3