

QCX
Avro
CF105
R-7-0400-34
Iss-14

FILE IN VAULT

ARROW 2 Report # 7-0400-34
Prod. A/C Issue 11

UNCLASSIFIED
NON CLASSIFIED
WEIGHT & C.G. SUMMARY

N.A.E
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Dec. 1/57

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DATE
JAN. 9, 1993
Dec. 7, 1992

Report no.: QCX - AVRO - CF105- R-7-0400-34-ISS-14

has been ☐ downgraded to : _____
☒ de-classified

by (Name): Michel W. Drapeau

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

Date: Dec. 7, 1992

R. Drapeau
Signature

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Ref. 4451/11/J
Date: December 1st, 1957
To See Distribution
From Mr. E. F. Burnett
Subject ARROW 2 PRODUCTION A/C WEIGHT & C.G. SUMMARY - Report # 7-0400-34 Iss. 14

Attached is a copy of Weight and C.G. Summary Report # 7-0400-34 Issue 14, dated December 1st, 1957 for your retention.

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

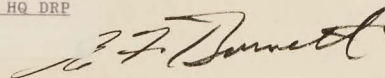
Classification cancelled / changed to: UNCLASSIFIED

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

Date: 5 Nov 1992

Signature: B. Aubrey

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



amc.

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50962

Date: December 1st, 1957
ARROW 1 A/C 25201 with
J75 P3 Engines.

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I N D E X

<u>Sheet #</u>	<u>Content</u>
1-1 to 1-5	Introductory notes and explanations of Weight Changes.
2-1 to 2-2	Weight & C.G. Summaries.
3	Horizontal C.G. Envelopes for Flight conditions with fuel proportioners used.
4-1 to 4-15	I.B.M. Detail Sheets of Weights & C.G.'s.
<u>N. B.</u>	The C.G. Envelopes for A/C 25201 with fuel sequencing has been omitted until a fully approved sequencing is established.

Date: December 1st, 1957
ARROW 1 A/C 25201 With
J75 P3 Engines

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Report # 7-0400-44 Iss. 12
Sheet # 1-1
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INTRODUCTION & WEIGHT CHANGES

The following is a Weight and C.G. Summary for the first Arrow 1 Aircraft # 25201, with J75 P3 Engines, based on the latest information currently available. All Weight and C.G. changes are relative to Issue 11 of November 1st, 1957.

- Note: 1) This Summary does not apply for Aircraft 25202 & 25203 which will have J75 P5 Engines, nor for Aircraft 25204 & 25205 which are for full Astra I trial installations etc.
- 2) The statement herein is for the Aircraft complete to drawings and not necessarily in the condition encountered for first flight.

For early flights there may be some shortages in non-essential equipment, some flight test installations will probably be incomplete etc. A Statement for first flight will be issued later.

GENERAL:

- a) Pratt & Whitney J75 P3 Engines comprise the Power Plant for the first Aircraft. J75 P5 Engines, which are partially redesigned versions of the P3 Engines, are to be installed on Aircraft 25202 and subsequent MK 1 Aircraft.
(J75 P3 Engines = 6,175 lb each; J75 P5 Engines = 5,950 lb each).
- b) An Instrument Package containing Flight Instructions is installed, this also varies, the package for Aircraft 25201 to Aircraft 25203 differing from those for Aircraft 25204 and Aircraft 25205 (Astra I Trial Installations.)
- A relatively detailed estimate of other proposed Flight Test Installations throughout the Aircraft has been made. These installation amount to 1,398 lb. (figure partially confirmed by actual weights of cable assys.).
- c) Emergency lowering for the Undercarriages and additional fire protection, to be installed in the first Aircraft, are allowed for in the summary. There is no provision to jettison any or all of the Instrument Package in an emergency.
- d) An Interim Radio & Radar System, with Minneapolis-Honeywell M.H.64 Damping is installed. Currently there is no Doppler or Tacan installation, although provisions for future installation of Doppler, which is not yet available will be made.
- e) The original design of tailcones and stinger are recorded, the redesigned versions will be recorded at a later date, when they are available for retrofit. The ensuing weight changes will be:-
- | | |
|------------|----------------|
| Tailcones | + 127.3 lb/A/C |
| Stinger | = 29.7 lb |
| Net Change | + 97.6 lb/A/C. |

Date: December 1st, 1957
ARROW 1 A/C 25201 with
J75 P3 Engines.

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INTRODUCTION & WEIGHT CHANGES

GENERAL:

- f) Pending Flight Test requirements a "Buzz Damping" System may be installed on the first Aircraft. Provisions for this installation are already included in the structural group as modifications to the Control Boxes. For the first flight the control surfaces will be unmodified, however, if the need for Dampers is proven, a modified set of Control Surfaces will be made available.

The following weight penalties ensue:

Ailerons	+	11.68 lb/A/C
Elevators	+	11.07 lb A/C
Rudder	+	8.78 lb A/C
Equipment	+	123.97 lb
	+	155.50 lb

- g) It should be noted that due to material substitutions and concessions introduced by Planning & Production Departments there is a structural weight penalty of 203 lb to-date. This is all recorded in the structural weight breakdown. No account has been taken of variations on machinings etc. nor of shop repair schemes, since it is impossible to assess these, except where actual weights have been obtained.
- h) A considerable number of Actual Weights have now been obtained. Structural weights are checking within 0.5% of estimates on sub-assemblies etc. However, equipment (excluding Engines and Gear Boxes) shows a constant increase averaging about 11% over manufacturer's quotations or initial specification weights. Preceding the report titles on the I.B.M. Tabulation Sheets, will be found a number varying from 0 to 100, this is the percentage of actual weight recorded within the report.

A Summary of Actual Weights obtained so far is as follows:

Structure	=	74.81%
Landing Gear	=	97.86%
Power Plant	=	92.97%
Flying Controls	=	59.13%
Equipment	=	23.22%

i.e. 70.51% of the Basic Weight of the first Aircraft.

- j) The Aircraft is ballasted such that the C.G. on a flight envelope (using fuel proportioners) does not travel Aft of 31% M.A.C.

For first flight the Aft restriction is 30% M.A.C., this may be achieved by installing maximum ballast.

C.G. Envelopes showing fuel sequencing have currently been omitted until a fully approved sequencing is established.

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ARROW 1 A/C 25201 with
J75 P3 Engines

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INTRODUCTION & WEIGHT CHANGES

1. STRUCTURE

WEIGHT (lb)

a) Wings:

No Weight Change.

b) Fin & Rudder

No Weight Change.

c) Fuselage Fwd. Sta. 255"

Radome - actual weight of complete assy.	+ 3.72
Crews' Bulkheads - addition of miscellaneous equip- ment.	+ 0.78
Additional Stiffeners	+ 2.01
Upper Shear Panel - miscellaneous minor changes	+ 0.02
<u>Weight Increase Front Fuselage</u>	<u>+ 6.53</u>

d) Centre Fuselage Sta. 255"-485"

No Weight Change.

e) Duct Bay Sta. 485"-591.65"

No Weight Change.

f) Engine Bay Sta. 591.65" - 742.5"

No Weight Change.

g) Rear Fuselage Sta. 742.5" Aft.

Skin fixed R.F. - Cover plate added to upper skin for M.H.64 Damping Cables	+ 0.21
<u>Weight Increase Rear Fuselage</u>	<u>+ 0.21</u>

h) Fuselage "Marry-Up"

No Weight Change.

TOTAL STRUCTURAL INCREASE

+ 6.74

2. LANDING GEAR

No Weight Change

3. POWER PLANT & SERVICES

Engine Nose Bullet - actual weight obtained

- 0.43
continued.

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ARROW 1, A/C 25201 with
J75 P3 Engines

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INTRODUCTION & WEIGHT CHANGES

<u>3. POWER PLANT & SERVICES (Continued)</u>		<u>WEIGHT (lb)</u>
Gear Boxes and Starter on Engine - addition of reinforcing can to constant speed drive unit on A/C 25201 only		+ 26.65
<u>TOTAL POWER PLANT GROUP INCREASE</u>		<u>+ 26.22</u>
<u>4. FLYING CONTROLS GROUP</u>		
Mechanical Controls - extensive actual weighing of components carried out		- 7.92
<u>TOTAL FLYING CONTROLS DECREASE</u>		<u>- 7.92</u>
<u>5. EQUIPMENT GROUP</u>		
Oxygen System - new type converter installed		- 2.00
Alterations to piping, addition of flexible hose etc.		+ 4.48
Low Pressure Pneumatics - addition of small flexible hoses		+ 0.26
De-icing Boots - first quotation of weights received from Messrs. Goodyear manufacturers of same		+ 36.16
Ram Air Turbine - Dowty supplied actual Weight of swivel assembly		+ 0.94
Interim Radio & Radar - deletion of Ice Detector and noise filter, since radome de-icing is no longer a requirement		- 3.72
Flight Test Installations - addition of piping for Bristol "Sniffers"		+ 16.43
Emergency Fire Protection - redesign of bottle mountings, whereas previously the pack members were utilized now a complete frame is mounted from fuselage		+ 23.50
<u>TOTAL EQUIPMENT INCREASE</u>		<u>+ 76.05</u>

SUMMARY:

Weight Change - Aircraft Basic Weight

Structure	+ 6.74 lb
Power Plant	+ 26.22 lb
Flying Controls	- 7.92 lb
Equipment	+ 76.05 lb
	<u>+ 101.09 lb</u>

continued.

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ARROW 1, A/C 25201 with
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INTRODUCTION & WEIGHT CHANGES

SUMMARY (Continued)

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

Issue 11

47,837.01 lb

Issue 12

47,938.10 lb

+ 101.09 lb

N.B. If Aircraft Ballasted such that the C.G. in the flight envelope, using fuel system proportioners, does not exceed 31% M.A.C., a further 929 lb of ballast are necessary.

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Aircraft: ARROW 1
A/C 25201

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WEIGHT & C.G. SUMMARY

DESCRIPTION	WEIGHT lb	H. ARM ins.	H. ARM ins.
STRUCTURE	18,592.53	561.52	137.47
Wings	9,963.50	642.82	142.26
Fin & Rudder	1,025.85	754.34	209.31
Fuselage: Fwd. Sta. 255"	2,634.95	181.57	128.15
Sta. 255"-485"	1,682.14	377.80	130.20
Sta. 485"-591.65"	998.59	534.01	104.59
Sta. 591.65"-742.5"	1,433.13	661.00	107.31
Sta. 742.5" Aft.	801.79	801.03	129.06
'Marry-Up'	52.58	468.91	103.89
LANDING GEAR - RETRACTED	2,600.31	488.39	134.91
Main Landing Gear	1,959.62	539.48	141.00
Main Gear Doors & Fairings	282.34	537.60	138.37
Nose Landing Gear	333.81	170.81	99.70
Nose Gear Door & Fairings	24.54	162.24	88.23
POWER PLANT & SERVICES	14,391.81	652.82	120.34
Engines & Accessories J75 P3	12,562.29	664.92	119.78
Gear Box & Drives on Fuselage	275.54	601.39	102.98
Gear Box & Starters on Engines	286.30	589.08	105.59
Engine Controls	32.43	375.76	118.62
Engine Nose Bullets	70.58	562.75	115.07
Fire Extinguishing System	65.46	700.45	134.21
Engine Mountings	206.21	635.04	127.71
Fuel System	893.00	536.67	136.12
FLYING CONTROLS GROUP	1,849.26	685.38	139.56
Mechanical Flying Controls	941.12	686.14	148.31
Hydraulic Flying Controls	908.14	684.60	130.50
EQUIPMENT FIXED AND REMOVABLE	9,583.23	403.51	113.49
Instruments	46.07	163.68	138.70
Probe	15.00	38.14	108.00
Cockpit Pressure Sealing	5.00	186.00	130.00
Ejector Seats	339.06	204.43	134.10
Oxygen System	26.07	240.54	156.70
Air Conditioning System	812.41	335.87	134.32
Surface Finish	100.00	591.52	140.20
Hydraulics Main System	639.97	504.37	117.71
Cockpit Insulation	14.31	187.48	132.00
Drag Parachute	90.78	786.65	143.16
Electrical System	1,118.98	417.54	112.96
Low Pressure Pneumatics	54.65	433.30	129.37
Intake De-icing Boots	88.00	195.82	118.00
Canopy Actuation	64.92	221.99	154.35
Console Panels	17.45	174.76	124.34
M.H.64 Damping System	99.08	450.83	140.34
Interim Radio & Radar	631.89	340.18	124.23
Instrument Pack Structure	686.80	385.81	94.68
Pack Instrumentation (A/C 25201)	3,036.00	395.45	95.00
Flight Test Installations	1,414.86	491.73	129.66
Additional Fire Protection	177.67	402.00	109.57
Emergency Landing Gear Lowering	12.91	458.83	128.60
Ram Air Turbine Equipment	91.35	336.08	104.74

Date: December 1st, 1957
Aircraft: ARROW 1
A/C 25201

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WEIGHT & C.G. SUMMARY

<u>DESCRIPTION</u>		<u>WEIGHT</u> <u>lb</u>	<u>H. ARM</u> <u>ins.</u>	<u>V. ARM</u> <u>ins.</u>	<u>M.A.C.</u> <u>%</u>
AIRCRAFT BASIC WEIGHT	U/C Up	47,017.14	558.09	127.28	
	U/C Down		560.17	123.83	
USEFUL LOAD (less fuel)		921.02	366.58	132.34	
Crew		390.00	194.00	136.50	
Engine Fire Extinguisher Fluid		25.00	730.00	129.00	
Residual Fuel		218.40	553.98	134.04	
Oxygen Charge		13.39	259.69	159.91	
Water For Air Conditioning		140.00	268.00	132.00	
Oil		134.23	608.92	115.68	
BALLAST		929.00	86.33	116.50	
Operational Weight Empty	U/C Up	48,867.16	545.51	127.17	30.25
	U/C Down		547.51	123.85	30.80
Maximum Internal Fuel (2,544 gals. @ 7.8 lb/gal.)		19,843.00	538.88	144.32	
A.U.W. Maximum Internal Fuel	U/C Up	68,710.16	543.60	132.12	29.72
	U/C Down		545.02	129.76	30.11

- N.B. 1) Aircraft Datum is considered to be 120" above an arbitrarily chosen ground line.
- 2) The above figures are for the Aircraft in the BALLASTED condition such that the Aft C.G. on the horizontal C.G. Envelope does not exceed 31% M.A.C. i.e. 303 lb on Former Sta. 68.5" and 626 lb on the Shear Panel.

DATE: Dec 1st 1957

BY: Kathleen Goffin

SHEET: 3

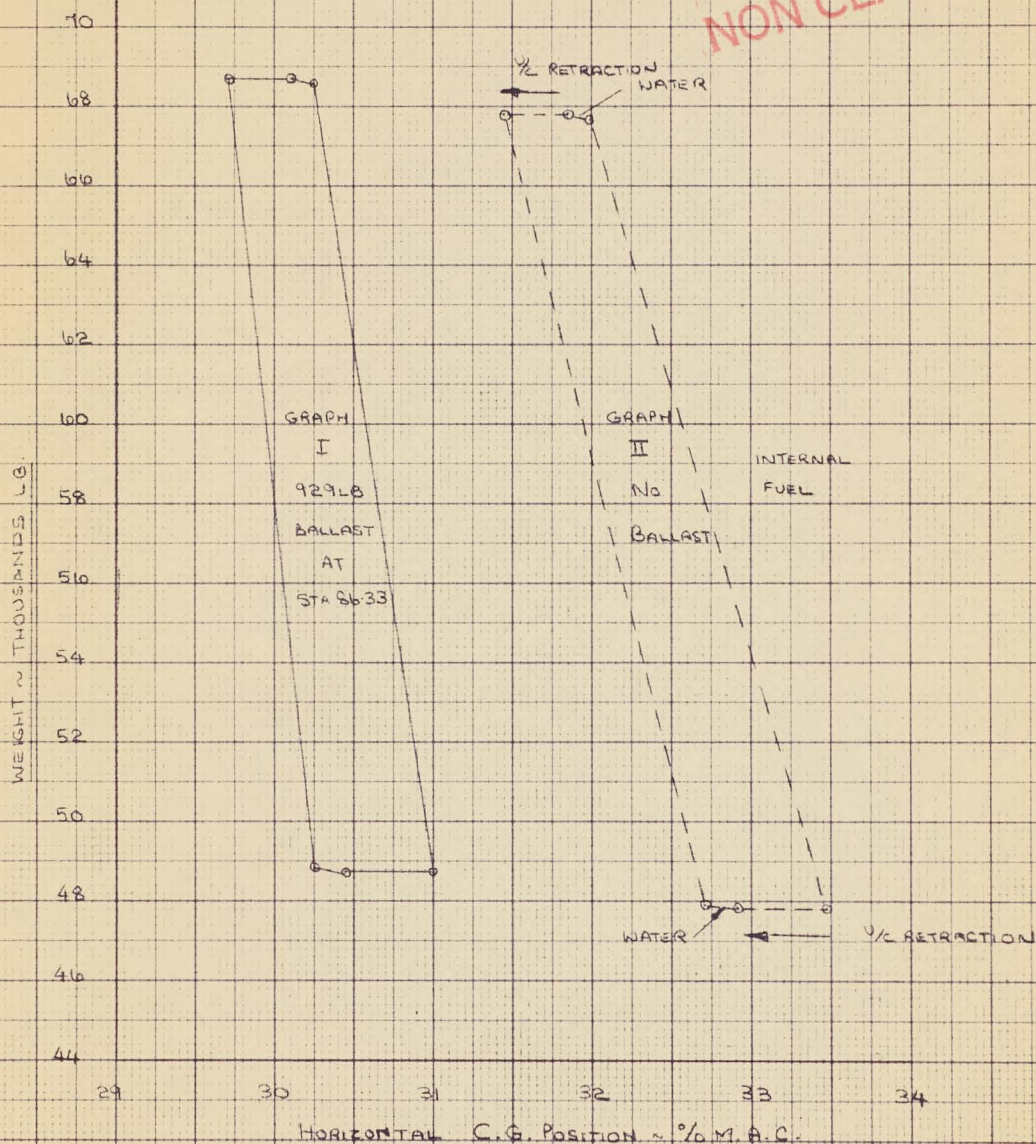
HORIZONTAL C.G. ENVELOPE

ARROW I A/N 25201

NORMAL FLIGHT CONDITIONS

FUEL SYSTEM PROPORTIONERS USED

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ARROW 2 Production A/C

TOTAL WING GROUP

1000000

	OUTER WING	1010000	
100	OUTER WING SKINS	101000164	929107064
100	POSTS AND INTERCOSTALS	101000264	24367320
100	OUTER WING SPARS	101000364	392587011
100	OUTER WING RIBS	101000464	134566950
18	AILERON CONTROL BOX	101000664	379207740
100	RIB 12	101000764	76266481
100	O W AILERON JACK FITTING	101000964	10467271
	AILERON JOINTS AND FAIRING	1010010	32937871

197945

	AILERON	1020000	
100	AILERON STRUCTURE	102000174	33600792

33600

97	ELEVATOR MARRY UP	1030000	1597738
97	ELEVATOR	103000082	44900755

46497

	INNER WING	1040000	
79	MAIN U C STRUCTURE	104000162	33071577
27	FRONT SPAR I W	104000262	11110484
27	MAIN SPAR I W	104000362	14639565
27	FWD CENTRE SPAR I W	104000462	4245604
27	AFT CENTRE SPAR I W	104000562	3386654
27	REAR SPAR	104000662	7667703
	I W STRUCTURE F S TO M S	104000762	107171499
	I W STRUCTURE M S TO R S	104000862	14979609
	STRUCT AFT OF REAR SPAR	104000962	31639720
11	ELEVATOR CONTROL BOX I W	104001062	42717725
25	TRANSP JOINT MARRY UP	1040011	7065636
36	CENTRE LINE JOINTS	104001262	59069662
	INNER WING SKINS	104001362	224204624
	STRUT PICK UP FITTINGS	104001462	11818615
31	RIBS 1 TO 9 INNER WING	104001662	51204612
74	DORSAL FAIRINGS I W	104001762	95482
100	RIB 10	104001862	10800636
	FUSELAGE HINGE JOINT I W	104001962	13812621
25	TRANSP JOINT	104002062	12942630
	FUSELAGE HINGE JOINT	1040021	3740527
74	DORSAL FAIRINGS C A	1040023	6033570

671406

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1000000

1010000

1010000164	929107064613597	65637199	12632973
1010000264	24367320713410	1783323	326666
1010000364	392587011813636	27526924	5353221
1010000464	134566950613650	9352727	1836744
1010000664	379207740913508	29353493	5122234
1010000764	76266487313832	4947215	1054828
1010000964	10467279113670	761394	142988
10100010	32937872613224	2592447	435466

197945

141954722

26905122

1020000

1020000174	336007921313556	26615568	4554816
	33600	26615568	4554816

1030000

1030000082	15977381014260	1178746	227732
	449007552314260	33909827	6402740
	46497	35088573	6630472

1040000

1040000162	330715775713983	19100817	4624318
1040000262	111104842814260	5380351	1584286
1040000362	146395657014280	8281282	2090449
1040000462	42456041714317	2564702	607757
1040000562	33866549414446	2217627	489142
1040000662	76677037414420	5395575	1105581
1040000762	1071714990114406	53479401	15439054
1040000862	149796096414572	9131798	2182740
1040000962	316397204114887	22793052	4710098
1040001062	427177250014327	30969825	6120065
10400011	70656362113876	4494824	980339
1040001262	590696624615029	39130850	8877480
1040001362	2242046244014472	139992978	32446803
1040001462	118186150014577	7268070	1722710
1040001662	512046128714499	31381395	7424068
1040001762	954828016150	45866	15343
1040001862	108006368313835	6877764	1494180
1040001962	138126210413790	8577804	1904675
1040002062	129426307113710	8162649	1774348
10400021	37405279614309	1974570	535157
10400023	60335702516034	3440318	967331

671406

410661518

97095924

LEADING EDGE INNER WING

105000062

22138468

22138

LEADING EDGE O W

106000065

30870630

30870

105000062	221384684114423	10369661	3192964
	22138	10369661	3192964
106000065	308706301313561	19452113	4186281
	30870	19452113	4186281

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12 FIN
12 FIN TO WING MARRY UP

201000083 85170749
2010002 4830685

90000

95 RUDDER

202000084 12400813

12400

01000083	851707495721170	63840877	18030489
010002	48306853815355	3310385	741647

90000	67151262	18772136
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02000084	124008132521438	10084300	2658312
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12400	10084300	2658312
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TOTAL FUSELAGE GROUP

3000000

	FUSELAGE BASIC STRUCTURE	30100000	
	RADOME	301000151	17815 37
	RADAR NOSE STRUCTURE C A	30100002	263120
	RADAR NOSE STRUCTURE R N	301000351	16835 95
	SKIN F F	301000452	8864192
	SKIN C F	301000554	22043367
	SKIN D B	301000656	6135534
	SKIN E B	301000758	16489669
4	FORMERS F F	301001152	10531183
	FORMERS C F	301001254	28749375
6	FORMERS D B	301001356	7331535
8	LIGHT FORMERS E B	301001458	11041667
8	HEAVY FORMERS E B	301001558	19858660
	LOWER LONGERONS F F	301001652	6772184
	INNER LONGERON E B	301001758	7164652
	BOTTOM LONGERONS E B	301001858	6919658
	TOP LONGERONS E B	301001958	638666
	LOWER SHEAR PANEL	301002052	3154234
	TOP WING LONGERONS D B	301002156	498538
	LONGERONS C F	301002252	53252
	LONGERONS C F	301002354	13813411
	LONGERONS F D B	301002454	1258487
	LONGERONS A D B	301002556	8595529
	ELECTRONICS BAY STRUCTURE	301002654	4523274
32	LONGITUDINAL BEAMS D B	301002756	6617520
	RADAR ACCESS DOOR C F	301002854	2106274
72	MAIN FRAME AT STN 538 77	301002956	5980538
	DIVE BRAKE ACCOMMODATIONS	301003056	3668503
37	TOP LONGERON F F	301003152	18648194
	DUCT C F	301003254	31552358
	FLOATING DUCT D B	301003356	43215552
23	CANOPY ARCHES	301003452	8153226
	ACCESS PANELS	301003656	3258533
66	NOSE U C SUPPORT STRUCTURE	301003752	3343210
3	CREW BULKHEADS	301003852	12272205
	EQUIPMENT BAY STRUCTURE	301003954	5968285
59	WINDSCREEN	301004152	12933138
	SERV ACCESS DOORS AND PHLS	301004258	5929668
	DORSAL FAIRING FWD	301004454	2945289
	INTERMEDIATE FORMERS	301004558	4606729
	ENGINE ACCESS DOORS E B	301004658	10735646
	SEALING MISSILE BAY	301004754	559296
	MISCELLANEOUS ITEMS C F	301004854	374370
	ARMAMENT BAY ROOF	301004954	12418383
	BULKHEAD AT STA 120	301005052	2980120
	BULKHEAD AT STA 255	301005152	10742255
8	BULKHEAD STA 485	301005254	12626485
	ENGINE TUNNEL E B	301005458	61318656
	FUSELAGE FUEL TANK	301005554	22290394
	COCKPIT FLOOR	301005652	5741176

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30000000

30100000			
3010000151	17815	3737111032	665747
30100002	26312000011200		31560
3010000351	16835	959011328	1614477
3010000452	82641929612301		1594621
3010000554	220433672714417		8095733
3010000656	61355347611175		3280753
3010000758	164895690511036	11031965	
3010001152	105311833012018	1930332	
3010001254	287493752013317	10786625	
3010001356	73315353111441	3924358	
3010001458	110416673411662	7368101	
3010001558	198586606710922	13119585	
3010001652	677218493	9045	
3010001758	718465234	9213	
3010001858	691965825	9779	
3010001958	6386660513911	424940	
3010002052	315423427	8900	
3010002156	4965389913550	268417	
3010002252	532529515250	13406	
3010002354	1381341111212289	5678801	
3010002454	12584871710700	612860	
3010002556	859552923	9761	
3010002654	452327443	9164	
3010002756	661752001	9130	
3010002854	210827448	8976	
3010002956	59805387710383	3221845	
3010003056	366850390	9298	
3010003152	186481942714750	3622747	
3010003254	315523583912969	11307921	
3010003356	432155526411717	23882338	
3010003452	81532269816041	1850568	
3010003556	325853375	9673	
3010003752	334321049	9186	
3010003852	122722058912284	2526682	
3010003954	59882851013540	1707179	
3010004152	129331381515008	1786694	
3010004258	592966837	9255	
3010004454	29452892016400	3962766	
3010004558	46067294711213	851694	
3010004658	1073864644	9044	
3010004754	5592961611074	3359939	
3010004854	3743700012500	6939533	
3010004954	124183836412193	165553	
301005052	29801200011511	138380	
301005152	107422550011980	4764042	
301005254	126264850010346	357600	
301005458	613186567412016	2739210	
301005554	222903945914516	6123610	
301005652	57411769311575	40269983	
		8795411	
		1015755	
			1965351
			29456
			1907069
			1016555
			3177939
			685586
			1819726
			1265616
			3828504
			838740
			1287601
			2168891
			612527
			661862
			676609
			88752
			280706
			67479
			8083
			1697480
			134606
			838958
			414488
			604132
			189214
			620903
			341051
			2750580
			4091979
			5063502
			1307823
			315146
			307088
			1507492
			810775
			1940985
			548729
			482980
			516471
			970873
			61904
			46750
			1514127
			343028
			1286892
			1306286
			7367971
			3235616
			664521

DORSAL OVER FUEL TANK	301006154	4138413
DEFLECTOR SHIELD	301006254	2045337
SHEAR PANEL BELOW NAV ARCH	301006352	2074257
PACK MOUNTING STRUCTURE	301006454	2470292
ENG ACCESS DOORS FIXED R F	301006559	9326773
TUNNEL FIXED R F	301006659	13054771
SKIN AND INTERCOSTAL R F	301006759	5256772
FAIRING UNDER RUDDER R F	301006859	2767782
FORMERS FIXED R F	301006959	10744780
LONGERONS C BEAM FIXED R F	301007059	2690771
REMOVABLE NACELLES R F	301007159	34815822
CNTR STRUC STING REMOV R F	301007259	10794834
MISC ITEMS STRUCTURE E B	301007358	912864
MTG BRKTS SIDE PANEL D B	301007556	190518
FORMERS LOWER PANEL D B	301007656	7416544
LOWER PANEL D B	301007756	5054554
JOINT F F TO C F	3010078	655255
JOINT AIR INTAKES TO F F	3010079	952220
JOINT C F TO D B	3010080	500485
JOINT D B TO E B	3010081	2508584
FUS JOINT AT STA 742 50	3010082	418742
DROP TANK MTG STRUCT D B	301008356	1133585
STRUCT AT ENG ACCESS DOORS	301008558	6537640
MISC STRUCTURE F F	301008652	552187
ENG RAILS ATTACHM TO FORM	301008758	2854687

659813

96 DIVE BRAKES	302000072	11150508
96 DIVE BRAKES C A	3020001	406487

11556

AIR INTAKES	3030000
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AIR INTAKES	303010055	75502210
		75502

PILOTS AND NAVIG CANOPIES	3040000
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76 PILOTS CANOPY	304010053	24081176
		24081

NAVIGATORS CANOPY	304020053	16650232
		16650

UNCLASSIFIED
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301006154	41384131014206	1709408	357844
301006254	20453373916400	689963	399818
301006352	20742570215350	533059	318359
301006454	24702923410308	722080	254608
301006559	932677366 9867	7215153	920196
301006659	130547718013177	10075077	1720126
301006759	52567723113643	4059261	717076
301006859	27677822315590	2164430	431375
301006959	107447803713647	8384295	1466234
301007059	26907712012688	2074528	341307
301007159	348158228212900	28646478	4491135
301007259	107948341213644	9003491	1472733
301007358	9126640110278	605577	93735
301007556	1905186613066	98545	24825
301007656	741654432 9015	4036677	668552
301007756	505455457 8790	2802797	444247
3010078	8552550012000	218025	102600
3010079	9522200012000	209440	114240
3010080	50048500 9800	242500	49000
3010081	250858478 9150	1466628	229482
3010082	4187425011500	310365	48070
301008356	113358576 8848	663666	100248
301008558	653764089 9261	4189498	605392
301008652	5521875011500	103500	63480
301008758	28546874111362	1961868	324271

659813 317350537 79593917

302000072	1115050846 9062	5669329	1010413
3020001	40648794 9374	198104	38058
	11556	5867433	1048471

3030000

303010055	755022107611828	15912802	8930377
	75502	15912802	8930377

3040000

304010053	240811767815913	4257039	3832010
	24081	4257039	3832010
304020053	166502320016200	3862800	2697300
	16650	3862800	2697300

UNDERCARRIAGE UP POSITION 4000000

MAIN UNDERCARRIAGE GROUP 4010000

MAIN UNDERCARRIAGE 401010092 1901625393
190162

89 MAIN U C DOORS FAIRINGS 401020062 282345376
28234

NOSE UNDERCARRIAGE GROUP 4020000

100 NOSE UNDERCARRIAGE 402010091 333811708
33381

NOSE U C DOOR AND FAIRING 402020052 24541622
2454

0000000

0100000

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NON CLASSIFIED

01010092 1901625393114100 102556268 26812842

190162 102556268 26812842

01020062 282345376013837 15178598 3906739

28234 15178598 3906739

0200000

02010091 3338117060 9970 5701475 3328086

33381 5701475 3328086

02020052 245416224 8823 398137 216516

2454 398137 216516

ENGINE GROUP	5000000	
PS 13 ENGINES	5010000	917228688
		917228
PS 13 ENGINES SERV ACCESS	5010100	1450638
		1450
ACC GEAR BOX ON FUS D B	502000156	4524578
ACC GEAR BOX ON FUS E B	502000258	23660606
		28184
ENGINE CONTROLS	5030000	
ENGINE CONTROLS F F	503000152	1458161
ENGINE CONTROLS C F	503000254	264308
ENGINE CONTROLS D B	503000356	508499
ENGINE CONTROLS E B	503000458	1013639
		3243
STARTER AND ENG GEAR BOX	5040000	31545615
		31545
ENGINE ANTI ICING	5050000	7000587
		7000
FIRE EXT SYSTEM	5060000	
55 ENG FIRE EXT SYSTEM ENG	506000158	6400703
55 ENG FIRE EXT SYSTEM D B	506000256	146553
		6546
ENGINE MTGS AND BRACKETS	5070000	
ENGINE MOUNTS	5070001	8421678
ENGINE MTG ACCESSORIES	5070002	4817646
		13238
FUEL SYSTEM	5080000	
19 FUEL SYSTEM C F	508000154	10713401

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50000000

5010000 9172286880312119 631080381 111158861

917228 631080381 111158861

5010100 14506381910390 925376 150655

1450 925376 150655

502000156 452457875 9607 2618265 434621

502000258 236606060910372 14340089 2454015

28184 16958354 2688636

5030000

503000152 14581612912476 235161 181900

503000254 2643081311789 81346 31123

503000356 5084999113459 253954 68372

503000458 10136398210194 648138 103265

3243 1218599 384660

5040000 315456159810524 19431089 3319796

31545 19431089 3319796

5050000 70005871711600 4110190 812000

7000 4110190 812000

5060000

506000158 64007038113414 4504384 858496

506000256 1465531813749 80764 20074

6546 4585148 878570

5070000

5070001 84216783414106 5712301 1187866

5070002 48176466912857 3115106 619322

13238 8827407 1807188

5080000

508000154 107134011114010 4297091 1500891

20 FUEL SYSTEM D B
FUEL SYSTEM E B
28 FUEL SYSTEM I W
FUEL SYSTEM ENG
FUEL SYSTEM C A

508000256
508000358
508000462
5080005
5080006

14955540
685644
43900554
626659
754615

71633

5080000256	149555407010558	8086169	1578949
5080000358	6856441412612	441236	86392
5080000462	439005542114428	24329819	6333892
50800005	62665901 9594	412540	60058
50800006	75461525 9658	463899	72821

71633

38030754 9633003

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FLYING CONTROLS GROUP

6000000

	MECHANICAL CONTROLS		6010000	
68	MECHANICAL CONTROLS F F		601000152	9523164
	MECHANICAL CONTROLS C F		601000254	954389
70	MECHANICAL CONTROLS F IN		601000583	12423788
70	MECHANICAL CONTROLS I W		601000662	40670717
46	MECHANICAL CONTROLS O W		601000764	30237770
	MECHANICAL CONTROLS C A		6010008	646709

94453

	FLYING CONTROLS HYDRAULICS		6020000	
	FLYING CONT HYDRAULICS D B		602000156	2332574
37	FLYING CONT HYDRAULICS E B		602000258	39076647
	FLYING CONT HYDRAULICS R F		602000359	48758
80	HYDRAULICS FLYING CONT I W		602000462	26114703
75	HYDRAULICS FLYING CONT O W		602000564	11551740
61	FLYING CONT HYDRAULICS F IN		602000683	5331761

84452

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60000000

60100000

6010000152	95231649911530	1571200	10980002
6010000254	9543894811764	371564	112229
6010000583	124237861722159	9791436	2752813
6010000662	406707173714376	29175438	5846719
6010000764	302377706813562	23303051	4100742
60100008	6467098214338	458544	92623

94453

64671233

14003128

60200000

6020000156	233257442 9668	1339547	225458
6020000258	390766478411143	25314996	4354239
6020000359	487587510824	36420	5196
6020000462	261147032814737	18365454	3848420
6020000564	115517407413577	8556288	1568279
6020000683	53317616520875	4060356	1112846

84452

57673061

11114438

FIXED EQUIPMENT GROUP

7000000

INSTRUMENTS

7010000

INSTRUMENTS

701000152

4407161

NAVIG TABLE AND STOWAGE

701000452

200220

4607

COCKPIT SEALING

702000052

500186

500

OXYGEN SYSTEM

7030000

OXYGEN SYSTEM

703000152

2607240

2607

AIR CONDITIONING SYSTEM

7040000

AIRCONDITIONING SYST F F

704000152

12321224

AIRCONDITIONING SYST C F

704000254

57523292

AIRCONDITIONING SYST D B

704000356

2074514

AIRCONDITIONING SYST C A

7040005

12366565

AIRCONDITIONING SYST ENG

7040006

1255670

AIRCONDITIONING SYST I W

704000762

61517

85600

HYDRAULICS MAIN SYSTEM

7050000

14 UTILITY HYDRAULICS F F

705000152

8415200

31 UTILITY HYDRAULICS C F

705000254

4272434

20 UTILITY HYDRAULICS D B

705000356

27338556

21 UTILITY HYDRAULICS E B

705000458

7240606

23 UTILITY HYDRAULICS I W

705000562

13311553

14 UTILITY HYDR NOSE U C

705000691

325190

23 UTILITY HYDR MAIN U C

705000792

2980543

63881

CABIN INSULATION

707000052

1431187

1431

BRAKE PARACHUTE

7080000

BRAKE PARACHUTE F F

708000152

455169

BRAKE PARACHUTE R F

708000559

8528822

BRAKE PARACHUTE I W

708000662

124620

9107

UNCLASSIFIED
NON CLASSIFIE

000000

010000

01000152	44071611213909	710056	612970
01000452	2002200013000	44000	26000
	4607	754056	638970

02000052

5001860013000	93000	65000
500	93000	65000

030000

03000152	26072405415670	627088	408517
	2607	627088	408517

040000

04000152	123212246011998	2767297	1478274
04000254	575232929013798	16848487	7937024
04000356	20745141712569	1066389	260681
040005	123665654513703	6992355	1694513
040006	12556700013900	840850	174445
04000762	615177915751	31585	9608
	85600	28546963	11554545

050000

05000152	84152001610853	1684346	913280
05000254	42724348010431	1857466	445612
05000356	273385569211077	15225079	3028230
05000458	72406064710852	4390843	785685
05000562	133115536014235	7368970	1894821
05000691	32519033 9521	61857	30943
05000792	29805432514100	1618885	420180
	63881	32207446	7518751

07000052

14311874813200	268284	188892
1431	268284	188892

080000

08000152	4551691312869	76954	58554
08000559	85288220514394	7010442	1227520
08000662	1246202214500	76907	17980
	9107	7164303	1304054

ELECTRICAL SYSTEM		7090000	
ELECTRICAL WIRING R N		709000151	139 92
ELECTRICAL WIRING F F		709000252	2966199
ELECTRICAL WIRING C F		709000354	2354397
ELECTRICAL WIRING A I		709000455	1274219
ELECTRICAL WIRING D B		709000556	9015527
ELECTRICAL WIRING E B		709000658	64595
ELECTRICAL WIRING I W		709000862	8909541
ELECTRICAL WIRING FIN		709000983	352797
ELECTRICAL WIRING NUC		709001091	330186
ELECTRICAL WIRING ENG		7090011	2002606
ELECTRICAL WIRING C A		7090012	13746334
ELECTRICS F F		709001352	15248154
ELECTRICS C F		709001454	8709454
ELECTRICS E B		709001558	670679
ELECTRICS ENG		7090016	17632589
ELECTRICS C A		7090017	718613
ELECTRICS FIN		709001883	83895
ELECTRICS I W		709001962	2336620
ELECTRICS CAW		7090020	112629
ELECTRICS MUC		709002192	74516
ELECTRICS A I		709002255	5090220
ELECTRICS D B		709002356	30089518
ELECTRICS R F		709002459	136802
WINDSCREEN DEMISTING		709002552	3564198
SPARROW ELECTRICS F F		709002652	254182
SPARROW ELECTRICS C F		709002754	60273

125916

24	L P PNEUMATICS		7100000	
18	L P PNEUMATICS F F		710000152	2255191
	L P PNEUMATICS C F		710000254	671334
	L P PNEUMATICS D B		710000356	418555
	L P PNEUMATICS E B		710000458	1526656
	L P PNEUMATICS FIN		710000583	640758
	L P PNEUMATICS R N		710000651	124 74
	L P PNEUMATICS S P		710000794	60298

5694

INTAKE DE ICING		712000055	8800195
			8800

RADIO AND RADAR FIXED		7140000	
RADIO AND RADAR FIXED R N		714000151	16500 97
RADIO AND RADAR FIXED F F		714000252	5000181
RADIO AND RADAR C F		714000354	19000267
RADIO AND RADAR FIXED D B		714000456	1800512
RADIO AND RADAR FIXED FIN		714000583	3200761
RADIO AND RADAR FIXED C A		7140006	17600213

63100

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0900000			
090000151	129 928512000	11978	15481
090000252	29661997711200	592518	332192
090000354	23543970311000	934609	258940
090000455	12742198412000	280076	152880
090000556	901552769 9921	4757125	894378
090000658	6459500 9200	38080	5888
090000862	89095411113900	4820749	1238351
090000983	3527975430000	280734	105600
09001091	33018600 9800	61380	32340
090011	20026068310000	1214874	200200
090012	137463347311234	4601199	1544226
09001352	152481546411095	2357951	1691766
09001454	87094541510760	3955192	937088
09001558	6706794411597	455225	77700
090016	176325891911516	10368598	2030501
090017	7186135012000	440493	86160
09001883	838955028840	74327	23937
09001962	23366205314500	1449558	338720
090020	1126294613561	70500	15188
09002192	745160013700	38184	10138
09002255	50902205913832	1122803	704049
09002356	300895183210258	15595730	3086530
09002459	1368020011360	109072	15450
09002552	356419898 9980	709165	355687
09002652	2541824211255	46335	28588
09002754	602730011255	16380	6753
	125916	54422835	14188730

1000000			
100000152	22551915812353	432013	278560
100000254	6713343111033	224322	74031
100000356	4185554511592	232178	48455
100000458	152665650 9737	1001819	148587
100000583	6407581825515	485235	163296
100000651	124 7431 9955	9214	12344
100000794	602980010400	17880	6240
	5694	2402661	731513

12000055	88001958211800	1723216	1038400
	8800	1723216	1038400

1400000			
140000151	16500 975510000	1609575	1650000
140000252	50001816012000	908000	600000
140000354	190002678210042	5088580	1907980
140000456	18005120010000	921600	180000
140000583	32007618024600	2437760	787200
1400006	176002132912364	3753904	2176064
	63100	14719419	7301244

29 CANOPY ACTUATION

716000052

6492221

6492

CABIN CONSOLES

717000052

1738174

1738

RADAR DOOR ACTUATION

718000054

1000268

1000

SURFACE FINISH F F

719000152

363187

SURFACE FINISH CANOPY

719000253

64202

SURFACE FINISH C F

719000354

1400371

SURFACE FINISH 2NTAKES

719000455

408227

SURFACE FINISH D B

719000556

377538

SURFACE FINISH E B

719000658

443667

SURFACE FINISH R F

719000759

648803

SURFACE FINISH I W

719000862

3151601

SURFACE FINISH O W

719000964

1067706

SURFACE FINISH O W L EDGE

719001065

319639

SURFACE FINISH AILERON

719001174

353791

SURFACE FINISH ELEVATOR

719001282

566755

SURFACE FINISH FIN

719001383

639746

SURFACE FINISH RUDDER

719001484

202812

10000

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716000052	64922219915435	1441159	1002040
	6492	1441159	1002040
717000052	17381746312432	303507	216068
	1738	303507	216068
718000054	100026800 9500	268000	95000
	1000	268000	95000
7190000152	3631874412200	68041	44286
7190000253	642021815900	12940	10176
7190000354	14003719712455	520758	174370
7190000455	4082279812020	93016	49042
7190000556	3775382811200	202932	42224
7190000658	4436670111200	295485	49616
7190000759	6488036213175	520746	85374
7190000862	31516014414400	1895137	453744
7190000964	10677065013590	753836	145005
7190001065	3196394813526	203994	43148
7190001174	3537919013556	279541	47853
7190001282	5667552314260	427460	80712
7190001383	6397466320837	477097	133148
7190001484	2028127921431	164184	43291
	10000	5915167	1401989

REMOVABLE EQUIPMENT GROUP 8000000

77 EJECTOR SEATS 801010052 33906204
33906

RADAR REMOVABLE 8020100
RADIO AND RADAR REM R N 802010151 96070 90
RADIO AND RADAR REM F F 802010252 19910185
RADIO AND RADAR REM C F 802010354 58020271
RADIO AND RADAR REM D B 802010456 5750513
RADIO AND RADAR REM F N 802010583 7000850
RADIO AND RADAR REM C A 8020106 4000552
190750

DAMPING SYSTEM 8030000

DAMPING SYSTEM F F 803010152 784172
DAMPING SYSTEM C F 803010254 2303322
DAMPING SYSTEM E B 803010358 369632
DAMPING SYSTEM I W 803010462 6070537
DAMPING SYSTEM O W 803010564 95748
DAMPING SYSTEM R N 803010651 287 73
DAMPING SYSTEM C A 8030107 8107496
18015

SPARROW PACK 8050000

SPARROW PACK STRUCTURE 805010094 89019381
89019

SPARROW PACK MECHANISMS 805020094 58257379
58257

SPARROW PACK HYDRAULICS 805030094 33194373
33194

SPARROW PACK ELECTRONICS 805040094 19800327
19800

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01010052	339062044313410	6931404	4546795
	33906	6931404	4546795

020100			
02010151	96070 905210100	8696256	9703070
02010252	199101853412000	3690119	2389200
02010354	580202712510122	15737925	5872784
02010456	57505138810000	2954810	5750000
02010583	70008500029000	5950000	2030000
020106	40005529816000	2211920	640000
	190750	39241030	21210054

030000

03010152	7841720112047	134856	94448
03010254	23033221310949	741865	252155
03010358	3696324213432	233363	49564
03010462	60705378115720	3264507	954204
03010564	957485514000	71112	13300
03010651	287 7350 9340	21095	26806
030107	81074962513000	4023099	1053910
	18015	8489897	2444387

050000

05010094	8901938167 9760	33975882	8688254
	89019	33975882	8688254
05020094	5825737930 9904	22096880	5769773
	58257	22096880	5769773
05030094	3319437352 9900	12398623	3286206
	33194	12398623	3286206
05040094	198003279610000	6493608	1980000
	19800	6493608	1980000

SPARROW PACK ELECTRICS

805050094

641036

6410

MISSILE AIRCONDITIONING

807000094

52130

521

UNCLASSIFIED
NON CLASSIFIE

05050094	641036229 9500	2322279	608950
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6410		2322279	608950
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07000094	5213055010250	159166	53403
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521		159166	53403
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OPERATIONAL LOAD

9000000

CREW MEMBERS

901000052

39000194

39000

ENGINE OIL

9020000

ENGINE OIL DRAINABLE

9020001

9290652

ENGINE OIL TRAPPED ENG

9020002

1773636

ENGINE OIL TRAPPED D B

902000356

1925500

ENGINE OIL TRAPPED E B

902000458

909599

13897

SPARROW MISSILES

903000094

172800389

172800

OXYGEN CHARGE

9040000

OXYGEN CHARGE F F

904000152

72204

OXYGEN CHARGE C F

904000254

1267262

1339

ENGINE FIRE EXT FLUID

9060000

2500730

2500

RESIDUAL FUEL

9070000

RESIDUAL FUEL C F

907000154

4680394

RESIDUAL FUEL I W

907000262

17160597

21840

WATER FOR AIR CONDITIONING

910000054

26000268

UNUSABLE WATER FOR AIRCOND

910000154

1500267

27500

UNCLASSIFIED
NON CLASSIFIED

000000

01000052	390001940013650	7566000	5323500
	39000	7566000	5323500

020000			
020001	92906522511390	6059403	1058131
020002	17736367611640	1128975	206377
02000356	192558084 9555	1118117	183934
02000458	90959928 9704	544746	88209
	13897	8851241	1536651

03000094	17280038929 8830	67269312	15258240
	172800	67269312	15258240

040000			
04000152	722049313200	14755	9504
04000254	12672628016150	332968	204621
	1339	347723	214125

060000	25007300012900	1825000	322500
	2500	1825000	322500

070000			
07000154	46803942412300	1845043	575640
07000262	171605975513705	10253958	2351778
	21840	12099001	2927418

10000054	260002680013200	6968000	3432000
10000154	15002670012700	400500	190500
	27500	7368500	3622500

