SECRET

Date: 8th July, 1955
Aircraft: C-105 With J75 Engines as Interim Power Plant

Report # 7-0400-05
Sheet # 001-1 Issue 16
Prepared By: E.W.H. Thompson

INTRODUCTION

This summary is a revised Weight and C.G. estimate of the C-105 Aircraft, based on the latest design information in being on 8th June, 1955. All Weight Changes and C.G. Moments are relative to Issue 15.

NOTES:

GENERAL:

(a) As in Issue 15, Pratt and Whitney J75 Engines comprise the Interim Power Plant. (6,175 lb. each.)

(b) The weight of Radio and Radar carried in this issue is 2,908 lb. The system is described as "Integrated Electronic System for C-105 Aircraft with certain deviations". The breakdown into items is given in Weight Summary Issue 14.

(c) As in Issue 15, the extended leading edge is recorded in this issue.

1. STRUCTURE:

(a) Wing:

	WEIGHT lb.
I/W F/S to M/S Structure - redesigned auxiliary spar	- 70
re-estimate of Fus. side Rib	+ 3
I/W Joints - Misc. alterations	- 24
Weight Change Decrease	- 91

Ref. 002-1

(b) Fin and Rudder

No Weight Change 0

(c) Fuselage To Station 255".

Longerons - lower longerons redesigned	- 11
Cockpit Floor - .032 " doubler and stiffeners added	+ 5
Intake Ramp - Misc. design changes	- 8
Shear Panel - Estimate to first scheme drawings (includes 6 lb. allowance transferred from Centre Fuselage)	+ 16
Misc. Changes	+ 2
Weight Change Increase	+ 4

Ref. 002-1

~~SECRET~~ NON CLASSIFIED

Date: ~~8th~~ July, 1955
Aircraft: C-105 With J75 Engines
as Interim Power Plant

Report # 7-0400-05
Sheet # 001-2 Issue 16
Prepared By: E.W.H. Thompson

INTRODUCTION

1. STRUCTURE:

	WEIGHT LB
(d) Fuselage Sta. 255" to 485"	
Duct C.F. - redesign aft attachment ring	+ 15
Skin C.F. - deletion of shear panel allowance	- 6
Former C.F. - reduction in gauges	- 70
Structure below lower longeron - misc changes	- 4
Weight Change Decrease	- 65
Ref. 002-1	
(e) Fuselage From 485" Aft.	
Duct. - Redesigned	+ 26
Longitudinal beams - redesigned	- 7
Dive Brake Accom. Structure - access panel redesign	+ 1
Weight Change Increase	+ 20
Ref. 002-2	
TOTAL STRUCTURE WEIGHT DECREASE	- 132 lb.

2. LANDING GEAR

(a) Main Undercarriage - No Weight Change	0
(b) Nose U/C Doors & fairings - Reduced skin gauge	- 5
(c) Main U/C Hydraulics No Weight Change	0
(d) Nose Undercarriage No Weight Change	0
(e) Main U/C Doors & Fairings - No Weight Change	0
(f) Nose U/C Hydraulics No Weight Change	0
Sub-Total	- 5
TOTAL LANDING GEAR WEIGHT DECREASE	- 5 lb.

3. POWER PLANT AND SERVICES

No Weight Change — 0 lb.

4. FLYING CONTROLS

No Weight Change — 0 lb.

5. EQUIPMENT

(a) Missile Pack Structure - redesign attachments		+ 4
(b) Air Conditioning:		- 5
(1) Additional rain repellant ducting	+ 4 lb.	
(2) Boiler Manufacturer's Weight	-12 lb.	
(3) Reducing valves manufacturer's weight	+ 3 lb.	
	- 5 lb.	
TOTAL EQUIPMENT WEIGHT DECREASE		- 1 lb.

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Sheet # 001-3 Issue 16
Prepared By: E.W.H. Thompson

INTRODUCTION

SUMMARY

Weight Change - Aircraft Weight Empty

Structure	- 132 lb.
Landing Gear	- 5 lb.
Power Plant & Services	0 lb.
Flying Controls	0 lb.
Equipment	- 1 lb.

Weight Change - Operational Load Less Fuel

Nil.

Weight Change Operational Weight Empty - (Aircraft Less Fuel)

Issue 15	Issue 16	
43,867 lb.	43,729 lb.	= - 138 lb.

Date: 18th July, 1955
Aircraft: C-105 With [illegible]
as Interim Power Plant

Report # 7-0400-05
Sheet # 002-1 Issue 16
Prepared By: E. Burnett

WEIGHT CHANGES TO 7-0400-05 ISSUE 15

WEIGHT CHANGES

Wing:

- 66.40	I/W F/S to M/S Structure - auxiliary spar redesign	- 69.70 lb.	
	Fus. Side Rib re-estimate	+ 3.30 lb.	
		- 66.40 lb.	
- 17.02	I/W Joints - general amendments to current design now includes elevator jack mount.		
- 57.00	I/W L/Edge - flanged fairing L/E slot now part of main U/C fittings.		
+ 56.00	I/W Main U/C Structure - redesign - includes forged fairing portion of L/E slot.		
- 7.00	I/W Structure Aft R/S - elevator jack mountings integral with A/C C/L joints.		
0.00	O/W Spars - C.G. change only.		
- 91.42			

Front Fuselage (Fwd. Sta. 255")

- 10.79	Lower Longerons - redesign L.H. Side	- 2.47 lb.	
	redesign R.H. Side	- 8.32 lb.	
		- 10.79 lb.	
+ 0.39	Bulkhead 120" - misc. prod. drg. changes.		
+ 5.40	Cockpit Floor - estimate to prod. drgs. - extra stiffeners. .032 doubler added etc.		
+ 0.32	Cockpit Formers - 1st estimate to prod. drg. formers at Sta. 147, 207.93 and 214.43.		
- 7.82	Intake Ramp - Nacelle Shear Panel .04" was .051 Al.	- 7.18 lb.	
	Changes to Frame Sta. 207.9	- 1.63 lb.	
	Estimate Sta. 201.4 to prod. drgs.	+ 0.99 lb.	
		- 7.82 lb.	
+ 16.47	Shear Panel - redesigned .064 Al. was previously in CF, see CF Skin.		
+ 3.97			

Centre Fuselage - (Sta. 255" - 485")

+ 15.34	Duct. C.F. - redesign aft. attachment ring		
- 6.00	Skin C.F. - delete allowance .051 Al. shear panel		
- 3.74	Structure below lower longeron - misc. changes doors and panels		
- 38.67	Fuselage Fuel Tank - Modify access doors	- 1.09 lb.	
	Remove ties and fittings	- 37.58 lb.	
		- 38.64 lb.	
- 32.81	Formers C.F. - gauges reduced, stiffeners altered, cross ties, fittings etc. ammended and added here (see also above)		
+ 0.79	Dorsal over Fuel Tank - seal added at lower edge.		
- 65.09			

(continued)

Date: 8th July, 1956
Aircraft: C-105 With J75 Engines
in Interim Power Plant

Report # 7-0400-05
Sheet # 002-2 Issue 16
Prepared By: E. Burnett

WEIGHT CHANGES TO 7-0400-05 ISSUE 15

WEIGHT CHANGES

Aft. Fuselage (Sta. 485" Aft.)

-	6.93	Longitudinal beams - redesign, some are now forgings.	
+	25.64	Duct. D.B. - redesign fire seal	+ 4.03 lb.
		redesign Wing Attachment	+ 5.26 lb.
		redesign Joint at Sta. 485"	+ 3.85 lb.
		redesign 'I' beams etc.	+ 12.50 lb.
			+ 25.64 lb.
+	1.70	Dive Brake Accom. Structure - redesign limiter access panel	
+	20.41		

Undercarriage

-	4.79	Nose U/C Door and Fairing - prod. drgs. of Fairing - skin is now .04 was .051 Mg. - channels etc. .032 were .051 Al.
-	4.79	

Equipment (Fixed and Removable)

+	3.38	Missile Pack Structue - redesign front and rear attachments	
-	4.85	Air Conditioning - Boiler - manufacturers Wt.	- 11.50 lb.
		Inc. in reduc. valves	+ 3.00 lb.
		Int. rain repellant ducting	+ 3.65 lb.
			- 4.85 lb.
-	1.47		

- 138.39 TOTAL WEIGHT CHANGE

Date: 8th July 1958
Aircraft: C-103 With J 75 Engines as Interim Power Plant

Report # 7-0400-05
Sheet # 003-1 Issue 16
Prepared By: J. Murphy
Checked By: E. Burnett

WEIGHT AND C. G. SUMMARY

REF No.	DESCRIPTION	WEIGHT lb.	H. ARM ins.	V. ARM ins.
	STRUCTURE	16,930.94	567.67	139.16
1000000	Wing	9,679.65	641.35	143.23
2000000	Fin and Rudder	911.57	756.76	211.28
3000000	Fuselage Structure Fwd. 255"	2,125.70	187.11	129.41
	255" to 485"	1,474.15	371.05	132.40
	Aft. 485"	2,739.87	645.52	112.00
4000000	UNDERCARRIAGE - Up Position	2,758.28	483.17	134.75
4010100	Main Undercarriage	1,776.00	539.49	140.00
4010200	Main U/C Doors & Fairings	272.64	540.50	151.50
4010300	Main U/C Hydraulics	279.84	535.01	137.75
4020100	Nose Wheel Undercarriage	284.34	165.18	100.04
4020200	Nose U/C Door & Fairing	26.51	163.25	89.24
4020300	Nose U/C Hydraulics	118.95	220.34	103.95
5000000	POWER PLANT AND SERVICES	13,776.78	657.47	119.11
5010000	Engines	12,453.00	666.84	117.85
5020000	Gear Box and Drive	150.00	606.00	94.66
5030000	Engine Controls	25.10	356.68	119.39
5040000	Pneumatic Starting System	70.00	610.00	94.75
5050000	Engine De-icing	65.75	564.53	114.37
5060000	Fire Extinguisher System	90.00	610.65	129.00
5070000	Engine Mountings and Brackets	221.11	645.29	132.67
5080000	Fuel System	701.82	536.24	143.92
6000000	FLYING CONTROLS GROUP	1,738.26	652.07	140.52
6010000	Mechanical Flying Controls	773.43	679.76	145.88
6030000	Flying Controls Electronics	108.00	222.33	131.43
6000000	Flying Controls Hydraulics	856.83	681.24	136.83
	EQUIPMENT (FIXED AND REMOVABLE)	6,711.57	310.97	114.66
7010000	Instruments	57.30	146.41	137.04
7010003	Probe	15.00	-18.00	108.00
7030000	Oxygen System	46.12	220.36	138.15
7040000	Air Conditioning System	624.95	326.22	134.63
7050000	Hydraulics Main System	215.66	591.04	117.41
7060000	Armament Provisions	26.47	333.74	103.14
7080000	Brake Parachute	68.03	801.18	126.23
7090000	Electrical System	968.41	433.16	119.52
7100000	Low Pressure Pneumatics	17.07	230.70	135.79
7110000	Oil & Hydraulic Fluid Cooling	119.80	567.91	104.22
7120000	Intake De-icing	50.60	204.55	113.76
7000000	Radio & Radar Fixed, Power Supplies	921.10	220.05	111.00
7160000	Canopy Actuation	47.00	223.43	156.83
7170000	Cabin Consoles	20.85	177.01	125.38
7180000	Radar Door Actuation	10.00	268.00	95.00
7190000	Radome Anti-Icing	16.80	66.35	124.40
7200000	Cabin Installation	11.91	179.24	130.00

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Date: 8th July, 1955
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Report # 7-0400-05
Sheet # 003-2 Issue 16
Prepared By: J. Murphy
Checked By: E. Burnett

WEIGHT AND C.G. SUMMARY

REF. No.	Description	WEIGHT lb	H. ARM ins.	V. ARM ins.	C.G. POSITIO % M.A.C.
	Equipment (Fixed & Remov.) Cont'd				
7210000	Cockpit Pressure Sealing	20.00	186.01	130.00	
8010100	Ejector Seats	204.00	200.10	136.25	
8010200	Emergency Provision	16.95	166.01	130.65	
8020000	Radar Removable	1,259.70	141.75	114.53	
8000000	Radio Removable and I.F.F.	276.20	284.51	123.98	
8050100	Missile Pack Structure	676.17	385.26	95.61	
8050200	Missile Pack Mechanisms	410.48	373.88	102.86	
8050300	Missile Pack Hydraulics	293.00	366.29	101.00	
8050400	Missile Pack Electronics	318.00	389.15	101.22	
	AIRCRAFT WEIGHT EMPTY	41,915.83	554.02	128.41	
9000000	USEFUL LOAD	17,692.67	522.11	140.37	
9010000	Crew	430.00	194.00	136.50	
9020000	Oil	85.08	611.71	135.00	
9050000	Alcohol for Radome De-Icing	22.00	93.00	138.00	
9070000	Residual Fuel	219.80	536.70	135.07	
9090000	Fuel For Combat Mission	15,880.00	539.20	143.50	
9030000	Missiles Armament	1,042.40	399.12	95.60	
9040000	Oxygen Charge	13.39	259.69	159.91	
	Normal Combat Mission U/C Up	59,608.50	544.55	131.96	29.99
	Normal Combat Mission U/C Down		546.08	129.88	30.41
	Half Combat Mission Fuel 1011 @ 7.85 lb/gal.	7,940.00	540.85	139.60	
	Combat Weight (Half Combat Mission Fuel) U/C Up	51,668.50	545.62	129.59	30.28
	Combat Weight (Half Combat Mission Fuel) U/C Down		547.38	127.19	30.76
	Operational Weight Empty U/C Up	43,728.50	546.49	127.77	30.52
	Operational Weight Empty U/C Down		548.57	124.93	31.09
	Operational Weight Empty (Less Missiles) U/C Up	42,686.10	550.09	128.56	31.51
	Operational Weight Empty (Less Missiles) U/C Down		552.23	125.65	32.10
	Maximum Internal Fuel 2,544 gal. @ 7.85 lb/gal.	19,970.00	538.88	144.33	
	Water (Air-Conditioning System)	125.00	268.00	95.00	
	A.U.W. Max. Internal Fuel U/C Up	63,823.50	543.56	132.89	29.71
	A.U.W. Max. Internal Fuel U/C Down		544.99	130.94	30.11
	Max. External Fuel, 539 gal. @ 7.85 lb/gal and Drop Tank	4,235.00	528.90	62.00	
	A.U.W. Max. Internal & External Fuel U/C Up.	68,058.50	542.65	128.48	29.46
	A.U.W. Max. Internal & External Fuel U/C Down		543.99	126.66	29.83

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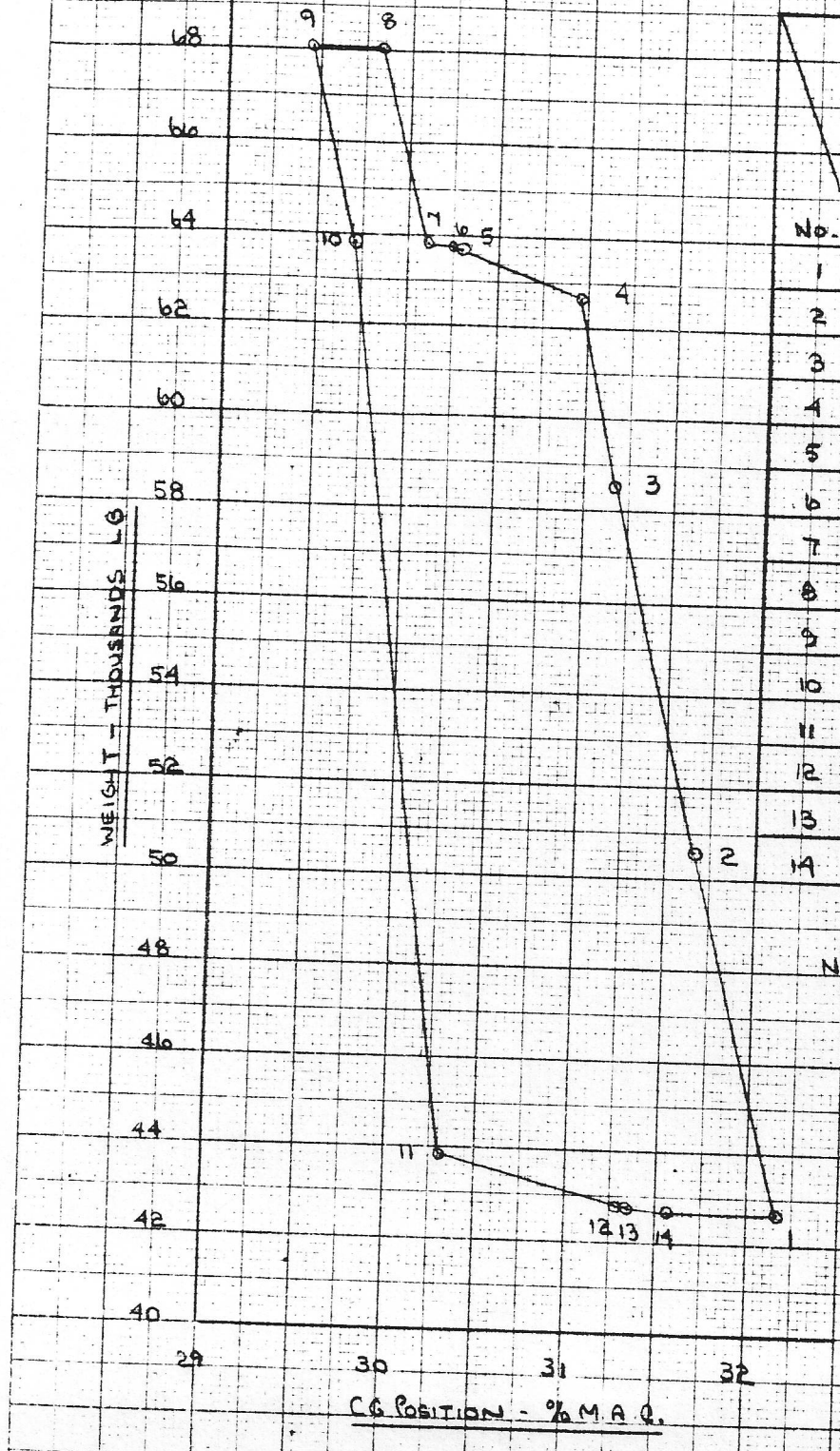
REPORT : 7-0400-05 ISSUE 16

BY : Kathleen Griffin

DATE : July 5 1955

C105. A/C C.G. ENVELOPE FOR A/C FLIGHT CONDITIONS WITH J75 ENGINES (A25)



No.	CONDITIONS	COMBAT MISSION FUEL	NORMAL MISSION FUEL	MAX. INTERNAL FUEL	EXT. FUEL & TANK	MISSILES	DEICING FLUID	WATER	½ UP	½ DOWN
1										*
2	*									*
3		*								*
4			*							*
5			*			*				*.
6			*			*	*			*.
7			*			*	*	*		*
8			*	*	*	*	*	*		
9			*	*	*	*	*	*		
10			*		*	*	*	*		
11					*	*	*	*		
12						*	*	*		
13								*	*	
14									*	

N.B. IN ORDER TO BRING POINT (1) TO THE AFT LIMIT IE 31% M.A.C. 420 LB BALLAST MUST BE ADDED AT STA 120 INS.