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Date Iss'd: December 1955
Aircraft: C-105 with J75 Engines
as Interim Power Plant

Report # 7-0400-05
Sheet # 001-11 Issue 21
Prepared By: K. Griffin
Checked By: E. Burnett

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 November 30th, 1955. All Weight and C.G. changes are relative to Issue 20.

GENERAL:

- (a) As in Issue 20 Pratt & Whitney J75 Engines comprise the interim Power Plant (6,175 lb each).
- (b) The weight of Radio & 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 issues subsequent to 15, the extended leading edge is recorded here.

1. STRUCTURE

WEIGHT (lb).

(a) Wing:

Wing Fairings - Addition of fairings at Aileron links	+ 17
I/W Leading Edge - Redesign O/B end rib.	- 10
I/W Structure aft R/Spar - Redesign beams 1-6	+ 26
Honeycomb panel added to skins	- 17
Redesign Engine Mounting Brackets	+ 21
Miscellaneous changes	+ 2
I/W M/Spar to R/Spar Struct. - Addition of Access Panels	+ 3
O/W Leading Edge - Initial calcs. on extended L/Edge	+ 37
Weight Change Increase	+ 79

Ref. 002-1

(b) Fin and Rudder:

No Weight Change 0

(c) Fuselage to Sta. 255"

Miscellaneous minor changes, mainly on production drawings to Intake Ramp, F.F. Formers, Cockpit Floor etc.	- 8
Weight Change Decrease	- 8

Ref. 002-1

(d) Fuselage Sta. 255" to 485"

Radar Access Door - redesign of door	+ 4
Misc. minor changes on production drawings to Equip. Bay Struct., Top Inner Longerons, Formers etc.	+ 4
Weight Change Increase	+ 8

Ref. 002-1

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Date: 1st December 1955
Aircraft: C-119B 175 Engines
as Interim Power Plant

Report # 7-0400-05
Sheet # 001-2 Issue 21
Prepared By: K. Griffin
Checked By: E. Burnett

INTRODUCTION

1. <u>STRUCTURE</u> (Continued)	WEIGHT (lb)
(e) <u>Fuselage - Sta. 485" Aft.</u>	
Engine Tunnel E.B. - Complete redesign of Shroud. Cooling System etc.	+ 43
Increased insulation allowance	+ 30
Afterburner Cooling E.B. - System now deleted	- 21
Heavy Formers E.B. - 1st estimate to redesign	- 15
Longerons E.B. - 1st estimate to redesign	+ 15
Fixed R.F. Sta. 742.5 - 803" - Misc. changes to Tunnel, Access Doors, Longerons etc.	- 6
Nacelles Remov. R.F. - Increase in O/Skin gauges etc.	+ 6
Weight Change Increase	+ 53
<u>TOTAL STRUCTURE WEIGHT INCREASE</u>	<u>+ 132</u>
2. <u>LANDING GEAR</u>	
(a) Nose Undercarriage - Increase in manufacturer's Weights of parts supplied by Jarry	+ 20
(b) Main Undercarriage - Alterations To Goodyear estimates of wheel, brake & tyre Weights	+ 14
<u>TOTAL LANDING GEAR INCREASE</u>	<u>+ 34</u>
3. <u>POWER PLANT & SERVICES</u>	
Engines - Engine C.G. moved aft 0.36" Addition of Oil filler and pressure switch Redesign of Fire Can	+ 4 + 38
<u>TOTAL POWER PLANT & SERVICES INCREASE</u>	<u>+ 42</u>
4. <u>FLYING CONTROLS GROUP</u>	
No Weight Change.	
5. <u>EQUIPMENT</u>	
Brake Parachute - minor alterations only Some C.G. Changes made to Electrical Items	+ 2
<u>TOTAL EQUIPMENT INCREASE</u>	<u>+ 2</u>
6. <u>OPERATIONAL LOAD</u>	
No Weight Change.	

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Date: 15, December 1966
Aircraft: C-105 With J75 Engines
as Interim Power Plant

Report # 7-0400-05
Sheet # 001-3 Issue 21
Prepared By: K. Griffin
Checked By: E. Burnett

INTRODUCTION

SUMMARY

Weight Change - Aircraft Weight Empty

Structure	+ 132 lb.
Landing Gear	+ 34 lb.
Power Plant & Services	+ 42 lb.
Equipment	+ 2 lb.
	<u>+ 210 lb.</u>

Weight Change Operational Load Less Fuel

Nil.

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

Issue 20

43,663

Issue 21

43,873 = + 210 lb.

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Date: 1st December 1975
Aircraft: C-105 With J75 Engines
as Interim Power Plant

Report # 7-0400-05
Sheet # 002-1 Issue 21
Prepared By: K. Griffin
Checked By: E. Burnett

WEIGHT CHANGES TO 7-0400-05 ISSUE 20

WEIGHT CHANGES

- 10.00	I/W Spars - deletion of Engine Mount Supports from R/Spars now with beams in T/Edge Structure.	
+ 42.32	Structure aft of R/Spar - Beams 1 & 2 redesigned for Engine Mountings.	
	Beams 3,4,5 & 6 redesigned	+ 22.32
	Engine Mounting Brackets added	+ 3.78
	Skins redesigned - Honeycomb panel added	+ 31.34
	Miscellaneous Items	- 16.78
		+ 1.66
		+ 42.32
- 10.00	I/W Leading Edge - O/B End Forged Rib replaced by 2 ribs.	
+ 2.87	I/W M/Spar to R/Spar Struct. - Addition of Access Doors in the top skin panel.	
+ 16.80	Wing Fairings - Addition of Fairings at Aileron linkages.	
+ 37.32	O/W Leading Edge - 1st Estimate to scheme drawings.	
+ 79.31		

Front Fuselage (Fwd. Sta. 255".)

+ 1.42	Cockpit Floor - addition of Centre Stiffeners.	
+ 2.75	Bulkhead Sta. 120 ins. - Alteration to Production Drawings to accommodate Longerons attachments.	
- 2.10	Formers F.F. - Alteration to Former 201.44 for Longerons Allowance for corner brackets at 237.5 & 245 was 1.5 lb each - brackets only .15 lb each	+ 0.60
		- 2.70
		- 2.10
- 9.92	Intake Ramp - De-icing equipment. Access Door added.	+ 3.77
	Prod. Drawings on ribs # 15, 16, 20 & 21	- 6.95
	Prod. Drawing estimate Former 214.4"	- 6.74
		- 9.92
- 7.85		

Centre Fuselage (Sta. 255" - 485")

+ 3.97	Radar Access Door - redesign - 'step' removed, O/Skin etc. .032 Al. was Mg.	
- 18.97	Longerons C.F. - Top Inner Longerons removed in accordance with Prod. Drawing call-up - extrusion now in Equip. Bay Struct. also cross beams, corner fittings with frames etc.	
+ 20.63	Equip. Bay Structure - Access Panel estimate to Prod. Drawings	+ 0.29
	Beams at 268 & 303.5" from Longerons Report	+ 3.16
	Side Skin lower extrusion replaces .032 Angle	+ 1.46
	Addition of Longerons and fittings	+ 15.72
		+ 20.63
+ 1.63	Formers C.F. - Miscellaneous Production Drawing changes	
+ 0.92	Structure below Lower Longerons - Prod. Drawing estimate side	
	Access Doors, edge and lower members .04 were .032 Al.etc.	
+ 8.18		

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Da. 11 Dec 1955
Aircraft: C-105 With J-75 Engines
as Interim Power Plant

Report # 7-0400-05
Sheet # 002-2 Issue 21
Prepared By: K. Griffin
Checked By: E. Burnett

WEIGHT CHANGES TO 7-0400-05 Issue 20

WEIGHT CHANGES

Aft. Fuselage (Sta. 485" Aft.)

+ 73.12	Engine Tunnel E.B. - redesign shroud .02 Al. & .018 Titanium was .016 Titanium	- 18.02
	Addition of Access Seals	+ 5.46
	Redesign of Beams	+ 24.66
	Insulation - previously inadequate allowance for foil	+ 30.00
	Firewall added	+ 21.34
	Restrictor added	+ 13.00
	Alteration to cooling valve system	- 3.32
		+ 73.12
- 21.35	Afterburner Cooling System - now deleted, see also above.	
- 15.44	Heavy Formers E.B. - 1st estimate to current design, an allowance made previously.	
	Former Sta. 591.65"	- 5.40
	Former Sta. 644.43"	- 2.73
	Former Sta. 697.28"	- 1.11
	Former Sta. 742.50"	- 6.20
		- 15.44
+ 15.58	Lower Longeron E.B. - 1st estimate to redesigned longeron with steel splices added at 591.65".	
+ 1.85	Fairing under Rudder R.F. - 1st estimate to scheme drawing.	
+ 5.59	Longerons Fixed R.F. - redesign, addition of Kink members etc.	
- 9.40	Engine Tunnel Fixed R.F. - redesign insulation (5 lb/cu.ft was 10 lb/cu. ft) inadequate allowance previously made for foil	- 0.57
	Deletion of Tunnel Stiffeners	- 21.44
	Tunnel .02 was .016 Titanium	+ 9.71
	Flexible joint added at 742.5"	+ 2.90
		- 9.40
+ 6.22	Nacelles Remov. R.F. - 1st Estimate of Former Sta. 803"	+ 2.98
	O/Skin partly .015 and .012 Titanium	+ 1.29
	Insulation redesign	+ 1.95
		+ 6.22
- 3.98	Engine Access Doors R.F. - Redesigned O/Skin .04 Mg. was Al. Inner Skin .02 was .016 Titanium, stiffeners deleted. etc.	
+ 52.19		

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as Interim Power Plant

Report # 7-0400-05
Sheet # 002-3 Issue 21
Prepared By: K. Griffin
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WEIGHT CHANGES TO 7-0400-05 ISSUE 20

WEIGHT CHANGES

Undercarriage

+ 20.47	Nose Undercarriage - Increase in Weight of Jarry Items: Wheels & tyres now manufactured by Dunlop but quoted weights unchanged from previous allowance.	
+ 14.00	Main Undercarriage - Alterations in Goodyear Weights Wheel & Brake Assys. + 7 lb each Tubeless Tyres - 3.5 lb each	+ 28.00 - 14.00 <hr/> + 14.00
<hr/> + 34.47		

Power Plant & Services

+ 42.00	Engines - Engine C.G. moved aft by 0.36". Oil filler and pressure switch added. 1st estimate of redesigned fire-can.	+ 3.72 + 38.28 <hr/> + 42.00
<hr/> + 42.00		

Equipment - Fixed & Removable

- 0.20	Cabin Consoles - estimate Pilot's L.H. & R.H. Panels to Prod. Drawings.	
0	Electrics Undercarriage - C.G. changes only.	
0	Alternator System - C. G. changes only.	
+ 1.66	Brake Parachute - general revisions of estimates of release assy. etc.	
<hr/> + 1.46		

<hr/> <hr/> + 209.76	<u>TOTAL WEIGHT CHANGES</u>
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Date: 15 December 1955
Aircraft: C-105 With J75 Engines
as Interim Power Plant

Report # 7-0400-05
Sheet # 003-1 Issue 21
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	16,962.15	564.36	138.63
1000000	Wing	9,621.97	642.21	142.36
2000000	Fin and Rudder	912.02	756.74	211.22
3000000	Fuselage Structure Fwd. 255"	2,191.71	182.11	129.83
	255" to 485"	1,641.83	377.01	129.94
	Aft. 485"	2,594.62	649.49	112.20
4000000	UNDERCARRIAGE - Up Position	2,881.82	482.73	133.46
4010100	Main Undercarriage	1,839.60	540.47	141.00
4010200	Main U/C Doors & Fairings	287.32	539.21	136.40
4010300	Main U/C Hydraulics	295.56	535.95	135.20
4020100	Nose Wheel Undercarriage	314.47	168.91	99.82
4020200	Nose U/C Doors & Fairings	25.92	163.71	89.22
4020300	Nose U/C Hydraulics	118.95	220.34	103.95
5000000	POWER PLANT & SERVICES	13,930.58	654.29	118.77
5010000	Engines J75	12,689.00	662.56	117.87
5020000	Gear Box & 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 Extinguishing System	64.27	700.07	123.00
5070000	Engine Mountings & Brackets	221.11	645.29	132.67
5080000	Fuel System	645.35	526.86	139.92
6000000	FLYING CONTROLS GROUP	1,723.76	646.81	139.24
6010000	Mechanical Flying Controls	784.89	671.88	145.39
6030000	Flying Controls Electronics	108.00	222.33	131.43
6000000	Flying Controls Hydraulics	830.87	678.31	134.44
	EQUIPMENT FIXED & REMOVABLE	6,536.54	304.60	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	Hydraulic Main System	215.66	591.04	117.41
7080000	Brake Parachute	69.69	784.88	131.17
7090000	Electrical System	767.74	416.24	119.43
7100000	Low Pressure Pneumatics	16.60	217.17	133.41
7110000	Oil & Hydraulic Fluid Cooling	119.80	567.91	104.22
7120000	Intake De-Icing	101.72	210.14	118.95
7000000	Radio & Radar Fixed, Power Supplies	921.10	220.05	111.00
7160000	Canopy Actuation	47.00	223.43	156.83
7170000	Cabin Consoles	20.65	177.37	125.23
7180000	Radar Door Actuation	10.00	268.00	95.00
7190000	Radome - Anti-Icing	16.80	66.35	124.40
7200000	Cabin Insulation	11.91	179.24	130.00
7210000	Cockpit Pressure Sealing	20.00	186.01	130.00

S E C R E T

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Date: 1st December, 1955

Aircraft: C-100 With 2 Engines

Report # 7-0400-05

Sheet # 003-2 Issue 21

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. POSITION % M.A.C.
	<u>Equipment (Fixed & Remov.) (Cont'd)</u>				
8010100	Ejector Seats	204.00	200.10	136.25	
8010200	Emergency Provisions	16.95	166.01	130.65	
8020000	Radar Removable	1,259.70	143.20	114.53	
8000000	Radio Removable & 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	42,034.85	551.55	127.99	
9000000	USEFUL LOAD	17,165.67	521.91	138.96	
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	
9060000	Engine Fire Extinguisher Fluid	25.00	730.00	129.00	
9070000	Residual Fuel	219.80	536.70	135.07	
9090000	Fuel For Combat Mission	15,328.00	539.25	142.06	
9030000	Missiles (Armament)	1,042.40	399.12	95.60	
9040000	Oxygen Charge	13.39	259.69	159.91	
	U/C Up Normal Combat Mission	59,200.52	542.96	131.17	29.55
	U/C Down		544.54	129.01	29.98
	Half Combat Mission Fuel 981 @ 7.8 lb/gal.	7,664.00	540.92	139.53	
	U/C Up Combat Weight (Half Combat Mission Fuel)	51,536.52	543.76	129.18	29.77
	U/C Down		545.58	126.70	30.27
	U/C Up Operational Weight Empty	43,872.52	544.26	127.37	29.91
	U/C Down		546.40	124.46	30.50
	U/C Up Operational Weight Empty (Less Missiles)	42,830.12	547.79	128.14	30.88
	U/C Down		549.98	125.16	31.48
	Maximum Internal Fuel 2,544 gal. @ 7.8 lb/gal. Water (Air-Conditioning System)	19,843.00 125.00	538.88 268.00	144.32 95.00	
	U/C Up A.U.W. Max. Internal Fuel	63,840.52	542.05	132.58	29.30
	U/C Down		543.52	130.58	29.70
	Max. External Fuel, 500 gal. @ 7.8 lb/gal. and Drop Tank	4,210.00	528.88	62.00	
	U/C Up A.U.W. Max. Internal and External Fuel	68,050.52	541.24	128.21	29.07
	U/C Down		542.62	126.34	29.45

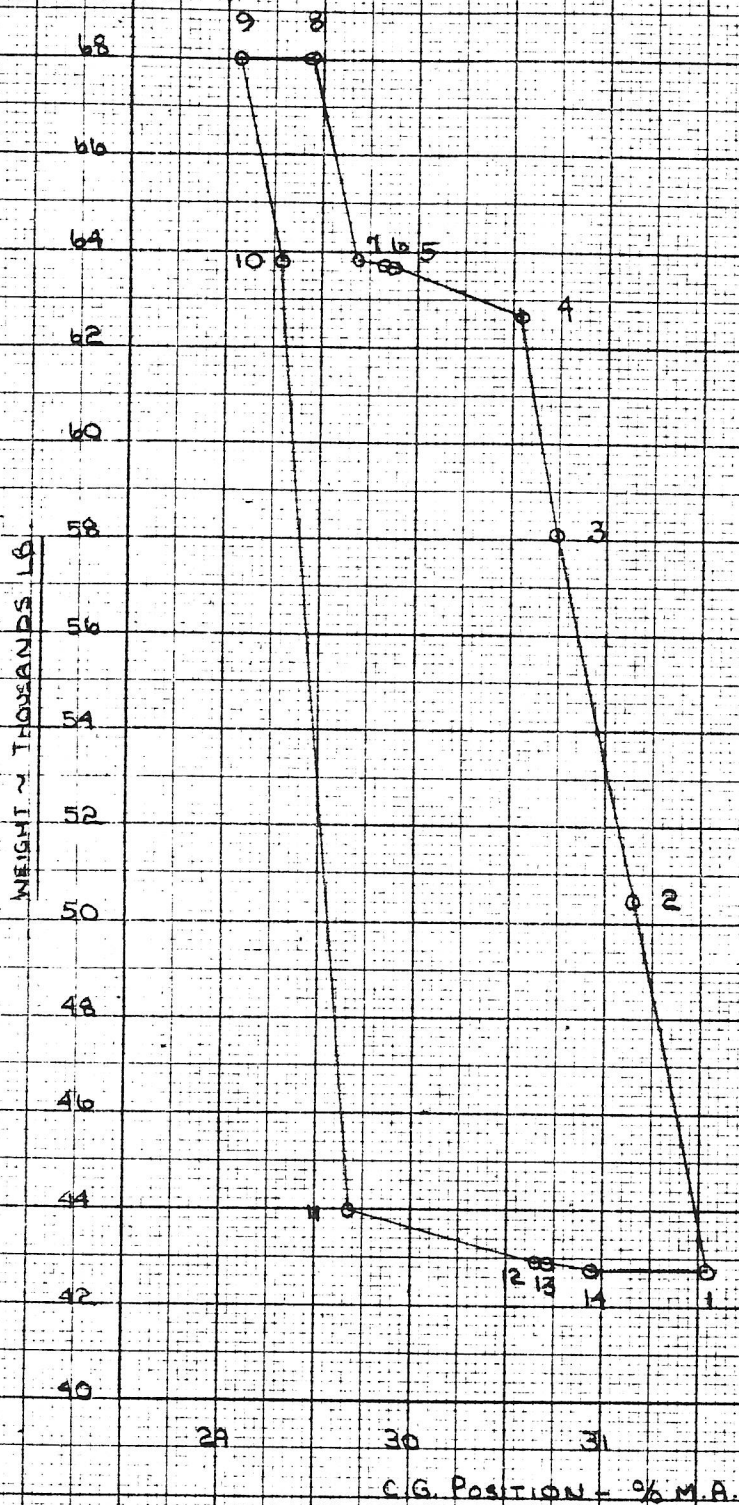
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REPORT No: T-0400-05 ISSUE 21

Robert Giffen

Nov 30 1965

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



CONDITION	COMBAT MISSION	NORMAL MISSION	MAX. INTERNAL FUEL	EXT. FUEL & TANK	MISSILES	DEICING FLUID	WATER	W/C UP	W/C DOWN
No									
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 (21.5%)
194 LB BALLAST MUST BE
INSTALLED AT STA 120 IN.

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