

OC  
AVRO  
Rept.  
7-0400-05  
ISS. 24

C-105 With J75  
Production Engines

Report # 7-0400-05  
ISSUE 24

WEIGHT SUMMARY & C.G. POSITION

N.A.E.

Mar. 1/56

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NONCLASSIFIED  
SECRET  
CLASSIFIED



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Report no.: QCX-AVRO-CF105- R-7-0400-05-155-24

has been ☐ downgraded to: \_\_\_\_\_

☒ de-classified

by (Name): Michel W. Drapeau

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

Date: Dec. 7, 1992

R. Auger  
Signature

Classification cancelled / changed to: UNCLASSIFIED

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

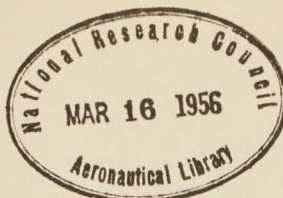
Date: 5 Nov 1992

Signature: B. Aubrey

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

SECRET

UNCLASSIFIED  
NON CLASSIFIED  
Date: March 1st, 1956  
Aircraft: C-105 With J75 Engines  
as Interim Power Plant



UNCLASSIFIED

Report # 7-0400-05  
Sheet # 001-1 Issue 24  
Prepared By: K. Griffin  
Checked By: E. Burnett

# INTRODUCTION

The following is a revised Weight and C. G. Summary for the C-105 Aircraft, based on the latest weight estimates available on February 29th, 1956. All Weight and C.G. changes are relative to Issue 23.

## GENERAL

- (a) As in Issue 23 Pratt & Whitney J75 Engines comprise the Interim Power Plant (6,175 lb. each).
- (b) A Package containing 4 Sparrow Missiles is carried. Currently the weight recorded is for "fully submerged" missiles although a "semi-submerged" scheme is also under consideration.
- (c) The Hughes MX 1179 Radar System is installed, but with a Douglas Missile Control System, as in Issue 23.
- (d) As in issues subsequent to 15, the extended O/W Leading Edge is recorded here.

## 1. STRUCTURE

## WEIGHT (lb)

### (a) Wings:

|                                                                          |   |    |
|--------------------------------------------------------------------------|---|----|
| O/W Leading Edge - skin gauge and doubler alterations                    | - | 8  |
| O/W Aileron Control Box - duplication of splice plates and R/Spar joint. | - | 48 |
| Weight Change Decrease                                                   | - | 56 |

Ref. 002-1

### (b) Fin & Rudder

No Weight Change.

### (c) Fuselage to Sta. 255"

|                                                                 |   |   |
|-----------------------------------------------------------------|---|---|
| Intake Ramp - Skin below bottom Longerons .051 was .04 Al. etc. | + | 6 |
| Weight Change Increase                                          | + | 6 |

Ref. 002-1

### (d) Fuselage Sta. 255" to 485"

|                                                                                               |   |   |
|-----------------------------------------------------------------------------------------------|---|---|
| Dorsal over Fuel Tank - increase in gauge of lower member addition of latch re-inforcing etc. | + | 4 |
| Weight Change Increase                                                                        | + | 4 |

Ref. 002-1

continued.

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Sheet # 001-2 Issue 24  
Prepared By: K. Griffin  
Checked By: E. Burnett

### INTRODUCTION

#### 1. STRUCTURE (continued)

WEIGHT (lb)

##### (e) Fuselage Sta. 485" Aft.

Duct Bay - majority of structure estimated to production drawings, changes to formers, longitudinal beams, duct etc.

+ 7

Engine Bay - Production Drawing estimates of light formers

+ 11

Rear Fuselage - Re-estimate of Nacelles skins, latches etc.

+ 8

Weight Change Increase

+ 26

Ref. 002-3

TOTAL STRUCTURE WEIGHT DECREASE

- 20

#### 2. LANDING GEAR

No Weight Change

#### 3. POWER PLANT & SERVICES

Pneumatic Starting - manufacturer's weight of Units

- 18

Engines - manufacturer's weight of constant speed drives  
re-estimate of oil system

- 40

- 15

Engine Controls & Engine Mounts minor changes

+ 3

Ref. 002-3

TOTAL POWER PLANT & SERVICES DECREASE

- 70

#### 4. FLYING CONTROLS GROUP

No Weight Change

#### 5. EQUIPMENT

Electrical Harness - re-estimate of sub-assy. wiring, clipping connectors, panels etc.

+ 43

Alternator System - manufacturer's weight of Trans.-rect.  
E.28 now absorbed in Harness (above)

+ 8

- 43

Windscreen De-misting - revision of allowance

+ 11

Oil & Hydraulic Fluid Cooling - completely re-estimated

+ 10

Ref. 002-3

TOTAL EQUIPMENT INCREASE

+ 29

#### 6. OPERATIONAL LOAD

No Weight Change.

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### INTRODUCTION

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### SUMMARY

#### Weight Change - Aircraft Weight Empty

|                        |                 |
|------------------------|-----------------|
| Structure              | - 20 lb.        |
| Power Plant & Services | - 70 lb.        |
| Equipment              | + 29 lb.        |
|                        | <u>- 61 lb.</u> |

#### Weight Change - Operational Load Less Fuel

NIL

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

##### Issue 23

45,191

##### Issue 24

45,130

- 61 lb.

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# WEIGHT CHANGES TO 7-0400-05 ISSUE 23

## WEIGHT CHANGES

### Wing:

|         |                                                                                                                   |               |
|---------|-------------------------------------------------------------------------------------------------------------------|---------------|
| - 7.39  | O/W Leading Edge - Skin I/B end to rib 3 .091 was .102 Al                                                         | - 4.59        |
|         | Doubler deleted I/B end to rib 1                                                                                  | - 7.50        |
|         | Ribs 1, 2 and 3 .081 were .064                                                                                    | + 1.65        |
|         | Fwd. ribs allowance increased                                                                                     | + 5.80        |
|         | Intercostals reduced                                                                                              | - 3.00        |
|         | .02 Al Doubler ribs 9 - 12 added                                                                                  | + 0.25        |
|         |                                                                                                                   | <u>- 7.39</u> |
| - 48.36 | O/W Aileron Control Box - Steel Splice plates and joint to R/Spar already included with Spar - thus deleted here. |               |

- 55.75

### Front Fuselage (Fwd. Sta. 255")

|        |                                                                |               |
|--------|----------------------------------------------------------------|---------------|
| + 5.70 | Intake Ramp - Production Drawing estimate of Skins & Stringers |               |
|        | Skin below bottom longeron .051 was .04 Al.                    | + 3.33        |
|        | Splice at 246" wider also .04 Al. was Mg.                      | + 1.11        |
|        | Miscellaneous Production Drawing changes                       | + 1.26        |
|        |                                                                | <u>+ 5.70</u> |

+ 5.70

### Center Fuselage (Sta. 255" - 485")

|        |                                                  |               |
|--------|--------------------------------------------------|---------------|
| + 3.66 | Dorsal over Fuel Tank - 1st estimate to drawings |               |
|        | Latch reinforcing angles added                   | + 1.94        |
|        | Lower member .036 was .025                       | + 0.72        |
|        | Skin splices added                               | + 0.31        |
|        | Miscellaneous minor changes                      | + 0.69        |
|        |                                                  | <u>+ 3.66</u> |

+ 3.66

### Aft Fuselage (Sta. 485" Aft)

|        |                                                                      |               |
|--------|----------------------------------------------------------------------|---------------|
| - 0.53 | Dive Brakes Accommodations - minor alterations to Access Doors       |               |
| + 7.44 | Longitudinal Beams D.B. - Production Drawing estimates of most beams |               |
|        | D/B Jack support - no allowance previously                           | + 3.80        |
|        | D/B Jack Beam O/B flanges included                                   | + 4.29        |
|        | I/B Beam Outer Hinge - web .064 was .051                             | + 0.32        |
|        | Misc. changes to other beams                                         | - 0.97        |
|        |                                                                      | <u>+ 7.44</u> |

Continued.

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WEIGHT CHANGES TO 7-0400-05 ISSUE 23

WEIGHT CHANGES

Aft Fuselage (Sta. 485" Aft.) (Cont'd.)

|   |       |                                                                                                                     |         |
|---|-------|---------------------------------------------------------------------------------------------------------------------|---------|
| + | 1.85  | Longerons D.B. - Production Drawing estimate of Upper Longerons                                                     |         |
|   |       | Cap I/B boom .16 was .12                                                                                            | + 0.74  |
|   |       | Joint at 485" - Alterations to Titanium plates                                                                      | + 0.70  |
|   |       | Miscellaneous changes O/B Boom etc.                                                                                 | + 0.41  |
|   |       |                                                                                                                     | + 1.85  |
| - | 22.18 | Duct D.B. - Production Drawing estimates of some items                                                              |         |
|   |       | Forged ring 558.7 flanges .15 were .30                                                                              | - 12.04 |
|   |       | Ring at 545.35 Caps reduced etc.                                                                                    | - 8.55  |
|   |       | Fwd. attachment ring Sta. 485"                                                                                      | - 1.59  |
|   |       |                                                                                                                     | - 22.18 |
| + | 4.40  | Access Panels D.B. - Forward door edge members production drawings                                                  | + 0.28  |
|   |       | Edge Members added 533.1" to 572.3"                                                                                 | + 2.00  |
|   |       | Front Engine Mounting Door - Doublers increased; Steel were Al., panel .102 was .051, reinforcing angles added etc. | + 2.12  |
|   |       |                                                                                                                     | + 4.40  |
| - | 12.03 | Longeron Top D.B. - Production Drawing estimate, frame fittings now in relevant former reports - see below          |         |
| + | 7.88  | Former Sta. 538.77 - Addition of Wing fittings see above Estimate to Production Drawings                            | + 3.12  |
|   |       |                                                                                                                     | + 4.76  |
|   |       |                                                                                                                     | + 7.88  |
| + | 20.75 | Formers D.B. - Production Drawing estimates of majority of formers.                                                 |         |
|   |       | Wing Attachment Brackets added see above                                                                            | + 9.12  |
|   |       | Formers - Minor Changes to Production Drawings                                                                      | + 5.55  |
|   |       | Redesign Heat Exchange Mounting Structure                                                                           | + 6.08  |
|   |       |                                                                                                                     | + 20.75 |
| - | 25.23 | Top Longerons E.B. - Production Drawing calls up attachment brackets with formers - see below                       |         |
| + | 5.87  | Intermediate Formers E.B. - Transfer of Wing Pick Up Fittings Production Drawing Estimate Struts at Sta. 663.65"    | + 5.31  |
|   |       |                                                                                                                     | + 0.56  |
|   |       |                                                                                                                     | + 5.87  |
| + | 9.52  | Heavy Formers E.B. - Addition of Wing Pick-Up Fittings see above                                                    |         |
| + | 21.41 | Light Formers E.B. - Production Drawing estimates of majority of formers.                                           |         |
|   |       | Transfer to Wing Pick-Up Fittings                                                                                   | + 12.37 |
|   |       | Miscellaneous Production Drawings changes                                                                           | + 9.04  |
|   |       |                                                                                                                     | + 21.41 |

Continued.

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WEIGHT CHANGES TO 7-0400-05 ISSUE 23

WEIGHT CHANGES

Aft Fuselage (Cont'd.)

|       |       |                                                                  |        |
|-------|-------|------------------------------------------------------------------|--------|
| -     | 0.85  | Longerons - fixed R.F. - Upper I/B Longerons .20" thick was .23" |        |
| +     | 8.47  | Nacells - Removable R.F. - more accurate estimate of O/Skin      | - 2.51 |
|       |       | Inner Skins - gauge changes                                      | + 2.17 |
|       |       | Insulation fasteners added.                                      | + 0.88 |
|       |       | T/Edge reinforced plate narrower                                 | - 0.40 |
|       |       | Latches - first detailed estimate to                             |        |
|       |       | drawings - some design change                                    | + 8.33 |
|       |       |                                                                  | + 8.47 |
| <hr/> |       |                                                                  |        |
| +     | 26.77 |                                                                  |        |

Power Plant & Services

|       |       |                                                                 |         |
|-------|-------|-----------------------------------------------------------------|---------|
| -     | 0.88  | Engine Mounts - Centre fitting R.E.M. sleeve titanium was Steel | - 3.00  |
|       |       | Addition of rail guides                                         | + 2.12  |
|       |       |                                                                 | - 0.88  |
| -     | 18.00 | Pneumatic Starting - Manufacturer's Weight of Unit 21.5 lb.     |         |
|       |       | each, 30.5 lb was previously allowed.                           |         |
| +     | 4.09  | Engine Controls - Addition of tension regulator Sta. 495"       | + 4.25  |
|       |       | General re-estimate of System                                   | - 0.16  |
|       |       |                                                                 | + 4.09  |
| -     | 55.50 | Engines - Manufacturer's Weight of constant speed drives        | - 40.00 |
|       |       | Re-estimate of Oil System (see also oil                         |         |
|       |       | and Hydraulic Fluid Cooling.)                                   | - 15.50 |
|       |       |                                                                 | - 55.50 |
| <hr/> |       |                                                                 |         |
| -     | 70.29 |                                                                 |         |

Equipment - Fixed & Removable

|       |       |                                                                  |         |
|-------|-------|------------------------------------------------------------------|---------|
| +     | 43.00 | Electrical Harness - re-estimate of clipping weight              | + 6.71  |
|       |       | re-estimate of panels                                            | - 1.40  |
|       |       | re-estimate of connectors                                        | + 4.50  |
|       |       | Sub-assy. wiring re-estimate                                     | + 33.19 |
|       |       |                                                                  | + 43.00 |
| -     | 35.00 | Alternator System - Trans.-rect. manufacturer's weight           | + 8.00  |
|       |       | Delete main Power Box E.28                                       |         |
|       |       | now in harness report                                            | - 43.00 |
|       |       |                                                                  | - 35.00 |
| +     | 10.90 | Windscreen De-misting - revised allowance, previously was 10 lb. |         |
| +     | 10.20 | Oil & Hydraulic Fluid Cooling - completely re-estimated, fuller  |         |
|       |       | information now available.                                       |         |
| <hr/> |       |                                                                  |         |
| +     | 29.10 |                                                                  |         |

- 60.81 TOTAL WEIGHT CHANGES

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Date: March 1st, 1956  
 Aircraft: C-105 With J75 Engines  
 as Interim Power Plant

Report # 7-0400-05  
 Sheet # 003-1 Issue 24  
 Prepared By: J. Murphy  
 Checked By: E. Burnett

## WEIGHT AND C.G. SUMMARY

| REF<br>No. | DESCRIPTION                         | WEIGHT<br>lb. | H. ARM<br>ins. | V. ARM<br>ins. |
|------------|-------------------------------------|---------------|----------------|----------------|
|            | STRUCTURE                           | 16,953.37     | 564.84         | 141.06         |
| 1000000    | Wing                                | 9,580.53      | 641.21         | 146.93         |
| 2000000    | Fin & Rudder                        | 912.02        | 756.74         | 211.22         |
| 3000000    | Fuselage Structure Fwd. 255"        | 2,155.47      | 185.81         | 130.06         |
|            | 255" to 485"                        | 1,543.66      | 369.71         | 131.46         |
|            | Aft. 485"                           | 2,761.69      | 641.42         | 111.49         |
| 4000000    | UNDERCARRIAGE - Up Position         | 2,868.35      | 483.63         | 133.67         |
| 4010100    | Main Undercarriage                  | 1,839.60      | 540.47         | 141.00         |
| 4010200    | Main U/C Doors and 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                 | 105.48        | 211.35         | 105.92         |
| 5000000    | POWER PLANT & SERVICES              | 13,900.89     | 654.98         | 118.67         |
| 5010000    | Engines J.75                        | 12,647.50     | 663.66         | 117.87         |
| 5020000    | Gear Box & Drive                    | 150.00        | 606.00         | 94.66          |
| 5030000    | Engine Controls                     | 29.19         | 377.46         | 118.91         |
| 5040000    | Pneumatic Starting System           | 52.00         | 610.00         | 94.75          |
| 5050000    | Engine De-Icing                     | 69.35         | 565.60         | 115.95         |
| 5060000    | Fire Extinguishing System           | 64.27         | 700.07         | 123.00         |
| 5070000    | Engine Mountings & Brackets         | 217.08        | 642.67         | 124.97         |
| 5080000    | Fuel System                         | 671.50        | 526.79         | 138.78         |
| 6000000    | FLYING CONTROLS GROUP               | 1,711.76      | 647.68         | 139.59         |
| 6010000    | Mechanical Flying Controls          | 784.89        | 671.88         | 145.39         |
| 6030000    | Flying Controls Electronics         | 108.00        | 222.33         | 131.43         |
| 6000000    | Flying Controls Hydraulics          | 818.87        | 680.58         | 135.10         |
|            | EQUIPMENT - FIXED & REMOVABLE       | 7,173.56      | 317.13         | 111.80         |
| 7010000    | Instruments                         | 53.30         | 153.98         | 140.27         |
| 7010003    | Probe                               | 23.00         | - 9.74         | 108.00         |
| 7020000    | Cockpit Pressure Sealing            | 5.00          | 186.00         | 130.00         |
| 7030000    | Oxygen System                       | 46.12         | 220.36         | 138.15         |
| 7040000    | Air Conditioning System             | 644.11        | 323.13         | 133.68         |
| 7050000    | Hydraulics Main System              | 215.66        | 591.04         | 117.46         |
| 7060000    | Fin Pitot System                    | 12.30         | 596.69         | 198.16         |
| 7070000    | Cabin Insulation                    | 11.91         | 179.24         | 130.00         |
| 7080000    | Brake Parachute                     | 69.69         | 784.88         | 131.17         |
| 7090000    | Electrical System                   | 857.69        | 415.46         | 117.22         |
| 7100000    | Low Pressure Pneumatics             | 16.60         | 217.17         | 133.41         |
| 7110000    | Oil & Hydraulic Fluid Cooling       | 130.00        | 573.07         | 102.64         |
| 7120000    | Intake De-Icing                     | 101.72        | 210.14         | 118.95         |
| 7000000    | Radio & Radar Fixed, Power Supplies | 937.41        | 220.85         | 110.58         |
| 7130000    | Radome Anti-icing                   | 16.80         | 62.42          | 124.84         |
| 7160000    | Canopy Actuation                    | 46.80         | 223.54         | 154.60         |
| 7150000    | Cabin Consoles                      | 20.65         | 177.37         | 125.23         |
| 7180000    | Radar Door Actuation                | 10.00         | 268.00         | 95.00          |

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WEIGHT AND C.G. SUMMARY

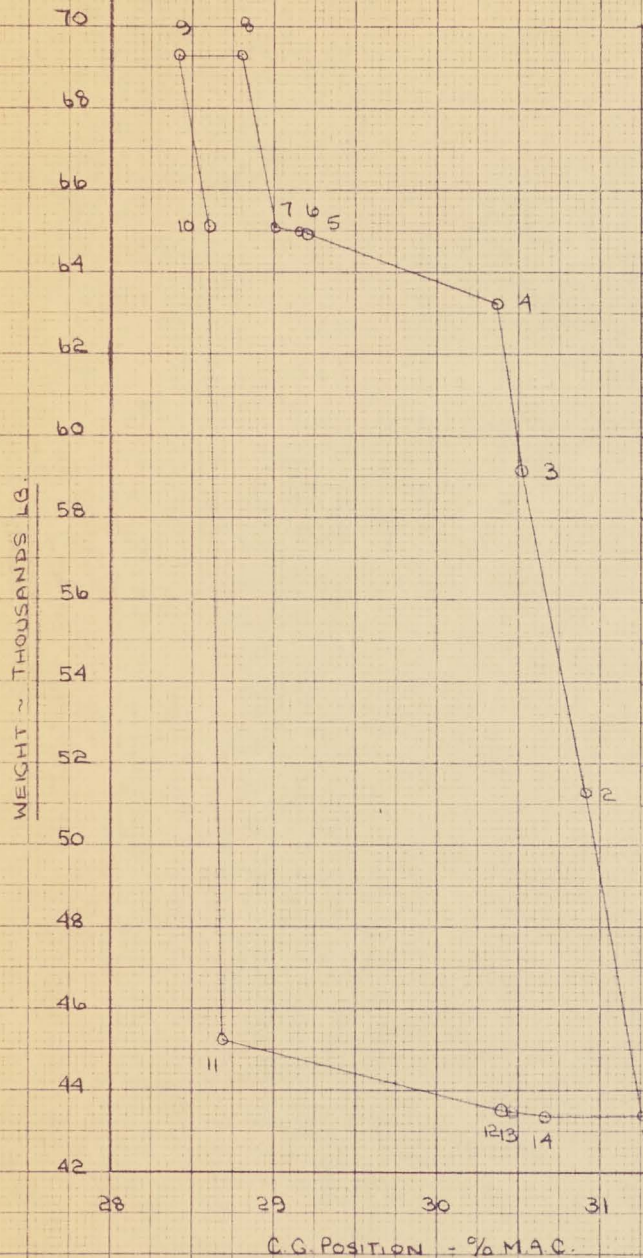
| REF.<br>No.                                     | DESCRIPTION                                                                          | WEIGHT<br>lb.       | H. ARM<br>ins.   | V. ARM<br>ins.   | C.G. POSITION<br>% M.A.C. |
|-------------------------------------------------|--------------------------------------------------------------------------------------|---------------------|------------------|------------------|---------------------------|
| <u>Equipment (Fixed &amp; Remov.) (Cont'd.)</u> |                                                                                      |                     |                  |                  |                           |
| 8010100                                         | Ejector Seats                                                                        | 186.00              | 201.10           | 136.25           |                           |
| 8010200                                         | Emergency Provisions                                                                 | 16.95               | 166.01           | 130.65           |                           |
| 8020000                                         | Radar Removable                                                                      | 1,124.70            | 140.94           | 113.19           |                           |
| 8000000                                         | Radio Removable & I.F.F.                                                             | 247.90              | 291.13           | 112.19           |                           |
| 8050100                                         | Sparrow Pack Structure                                                               | 1,424.10            | 375.42           | 96.81            |                           |
| 8050200                                         | Sparrow Pack Mechanisms                                                              | 399.50              | 353.32           | 100.22           |                           |
| 8050300                                         | Sparrow Pack Hydraulics                                                              | 505.65              | 409.15           | 98.84            |                           |
| 8050400                                         | Sparrow Pack Electronics                                                             | 50.00               | 436.15           | 103.20           |                           |
|                                                 | AIRCRAFT WEIGHT EMPTY                                                                | 42,607.93           | 550.40           | 128.27           |                           |
| 9000000                                         | USEFUL LOAD                                                                          | 18,321.87           | 516.66           | 137.47           |                           |
| 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                                                                        | 218.40              | 553.98           | 134.04           |                           |
| 9090000                                         | Fuel For Combat Mission                                                              | 15,800.00           | 539.20           | 142.28           |                           |
| 9030000                                         | Missiles (Armament)                                                                  | 1,728.00            | 385.76           | 94.27            |                           |
| 9040000                                         | Oxygen Charge                                                                        | 13.39               | 259.69           | 159.91           |                           |
|                                                 | U/C Up<br>Normal Combat Mission                                                      | 60,929.80           | 540.25           | 131.04           | 28.80                     |
|                                                 | U/C Down                                                                             |                     | 541.79           | 128.95           | 29.22                     |
|                                                 | Half Combat Mission<br>Fuel 1,013 gal. @ 8.7 lb/gal.                                 | 7,900.00            | 540.80           | 139.55           |                           |
|                                                 | U/C Up<br>Combat Weight (Half Combat<br>Mission Fuel)                                | 53,029.80           | 540.64           | 128.96           | 28.91                     |
|                                                 | U/C Down                                                                             |                     | 542.41           | 126.55           | 29.40                     |
|                                                 | U/C Up<br>Operational Weight Empty                                                   | 45,129.80           | 540.62           | 127.10           | 28.90                     |
|                                                 | U/C Down                                                                             |                     | 542.70           | 124.27           | 29.48                     |
|                                                 | U/C Up<br>Operations Weight Empty<br>(Less Missiles)                                 | 43,401.80           | 546.79           | 128.41           | 30.60                     |
|                                                 | U/C Down                                                                             |                     | 548.95           | 125.47           | 31.20                     |
|                                                 | Maximum Internal Fuel<br>2,544 gal. @ 7.8 lb/gal.<br>Water (Air Conditioning System) | 19,843.00<br>125.00 | 538.88<br>268.00 | 144.32<br>132.00 |                           |
|                                                 | U/C Up<br>A.U.W. Max Internal Fuel                                                   | 65,097.80           | 539.57           | 132.36           | 28.61                     |
|                                                 | U/C Down                                                                             |                     | 541.01           | 130.40           | 29.01                     |
|                                                 | Max. External Fuel 500 gal.<br>@ 7.8 lb/gal. and Drop Tank                           | 4,210.00            | 528.88           | 62.00            |                           |
|                                                 | U/C Up<br>A.U.W. Maximum Internal and<br>External Fuel                               | 69,307.80           | 538.92           | 128.09           | 28.43                     |
|                                                 | U/C Down                                                                             |                     | 540.27           | 126.25           | 28.81                     |

BY: Kathleen Griffin

DATE: March 1st 55

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

**UNCLASSIFIED**  
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| CONDITION | COMBAT MISSION FUEL | NORMAL MISSION FUEL | MAX INTERNAL FUEL | EXT FUEL TANKS | MISSILES | DEICING FLUID | WATER | 1/2 UP | 1/2 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 ie 31% MAC.  
96 LB BALLAST MUST BE  
 INSTALLED AT STA 120 INS

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**AVRO AIRCRAFT LTD.**

MALTON, ONT.

**WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT**

 PROJECT C-105

|    | DESCRIPTION                | REFERENCE NO. | COMP. NO. | WEIGHT   | H |
|----|----------------------------|---------------|-----------|----------|---|
|    | TOTAL WING GROUP           | 1000000       |           |          |   |
|    |                            |               |           |          |   |
|    | OUTER WING                 | 1010000       |           |          |   |
| 14 | SKIN O W                   | 1010001       | 64        | 7980068  |   |
| 14 | STRINGERS AND POSTS O W    | 1010002       | 64        | 1252069  |   |
| 14 | SPARS O W                  | 1010003       | 64        | 3978470  |   |
| 14 | RIBS O W                   | 1010004       | 64        | 1333469  |   |
| 14 | AILERON CONTROL BOX O W    | 1010006       | 64        | 4286477  |   |
| 3  | WING JOINTS O W            | 1010007       | 64        | 1165064  |   |
| 16 | FAIRINGS AT AILERON LINKS  | 1010008       | 64        | 87878    |   |
|    |                            |               |           | 200830   |   |
|    | AILERON                    | 1020000       |           |          |   |
| 17 | AILERON STRUCTURE          | 1020001       | 74        | 3338479  |   |
| 17 | AILERON MARRY UP ITEMS     | 1020002       |           | 88678    |   |
| 16 | FAIRINGS AT AILERON LINKS  | 1020003       | 74        | 80278    |   |
|    |                            |               |           | 35072    |   |
| 20 | ELEVATOR STRUCTURE         | 1030000       | 82        | 4356773  |   |
|    |                            |               |           | 43567    |   |
|    | INNER WING                 | 1040000       |           |          |   |
| 12 | MAIN U C STRUCTURE         | 1040001       | 62        | 2345855  |   |
| 12 | FRONT SPAR I W             | 1040002       | 62        | 1800043  |   |
| 12 | MAIN SPAR I W              | 1040003       | 62        | 1580056  |   |
| 12 | FWD CENTRE SPAR I W        | 1040004       | 62        | 562660   |   |
| 12 | AFT CENTRE SPAR I W        | 1040005       | 62        | 401463   |   |
| 12 | REAR SPAR I W              | 1040006       | 62        | 900070   |   |
| 12 | I W STRUCTURE F S TO M S   | 1040007       | 62        | 8913048  |   |
| 12 | I W STRUCTURE M S TO R S   | 1040008       | 62        | 27399862 |   |
| 12 | STRUCTURE AFT OF REAR SPAR | 1040009       | 62        | 3215272  |   |
| 12 | ELEVATOR CONTROL BOX I W   | 1040010       | 62        | 4223372  |   |
| 16 | FAIRINGS MARRY UP          | 1040011       |           | 927062   |   |
| 12 | WING JOINTS I W            | 1040012       | 62        | 10025964 |   |
|    |                            |               |           | 622940   |   |
| 12 | LEADING EDGE I W           | 1050000       | 63        | 2823043  |   |
|    |                            |               |           | 28230    |   |
| 14 | LEADING EDGE O W           | 1060000       | 65        | 2741464  |   |
|    |                            |               |           | 27414    |   |



**MALTON, ONT.**

## FUNCTIONAL COMPONENT

PROJECT C-105

[illegible]





# WGT AND C. OF G BY FUNCTIONAL GROUP COMPONENT

REPORT NO. 7-0400-05 Issue 24

March 1/56

SHEET 004-3

|      | REFERENCE NO. | COMP. NO. | WEIGHT | H. ARM | V. ARM   | H. MOMENT | V. MOMENT |
|------|---------------|-----------|--------|--------|----------|-----------|-----------|
|      | 30000000      |           |        |        |          |           |           |
| RE   | 30100000      |           |        |        |          |           |           |
|      | 3010000151    |           | 7819   | 4232   | 11045    | 330900    | 863609    |
|      | 3010000251    |           | 8340   | 9488   | 11451    | 791299    | 955013    |
|      | 3010000351    |           | 9349   | 9295   | 11568    | 868990    | 1081492   |
|      | 3010000452    |           | 6741   | 1928   | 011535   | 1299665   | 777574    |
|      | 3010000554    |           | 13059  | 3705   | 014240   | 4838360   | 1859602   |
|      | 3010000656    |           | 8317   | 5383   | 210373   | 4477207   | 862722    |
|      | 3010000758    |           | 1163   | 9671   | 5210911  | 7815821   | 1269931   |
|      | 3010000852    |           | 1280   | 1856   | 911800   | 237683    | 151040    |
|      | 3010000954    |           | 5173   | 3658   | 214162   | 1892387   | 732600    |
|      | 3010001056    |           | 5005   | 5058   | 210015   | 252910    | 50075     |
|      | 3010001152    |           | 8785   | 1809   | 412120   | 1589558   | 1064742   |
|      | 3010001254    |           | 2744   | 1374   | 3813295  | 10273362  | 3648281   |
|      | 3010001356    |           | 1445   | 6538   | 9510154  | 7791061   | 1467862   |
|      | 3010001458    |           | 1280   | 4666   | 4811173  | 8533610   | 1430591   |
|      | 3010001558    |           | 1675   | 7661   | 2811038  | 11081069  | 1849638   |
|      | 3010001652    |           | 5311   | 1834   | 78622    | 974409    | 457914    |
| B    | 3010001758    |           | 4197   | 1169   | 9581     | 298198    | 40144     |
|      | 3010001858    |           | 7580   | 6500   | 99750    | 4927682   | 739050    |
|      | 3010001958    |           | 6316   | 6619   | 13900    | 420366    | 87709     |
|      | 3010002156    |           | 6875   | 2417   | 13259    | 360105    | 91089     |
|      | 3010002252    |           | 5325   | 2955   | 15250    | 13406     | 8083      |
|      | 3010002354    |           | 1425   | 1411   | 1112211  | 5858729   | 1740190   |
|      | 3010002456    |           | 4774   | 8074   | 10700    | 229313    | 51039     |
|      | 3010002556    |           | 9366   | 5254   | 09879    | 4920896   | 925267    |
| RON  | 3010002654    |           | 4053   | 2740   | 79232    | 1110806   | 374173    |
|      | 3010002756    |           | 5752   | 5160   | 39152    | 2968205   | 526423    |
|      | 3010002854    |           | 2310   | 2740   | 68970    | 633079    | 207207    |
| 77   | 3010002956    |           | 5966   | 5387   | 7710389  | 3214302   | 619808    |
| TURE | 3010003056    |           | 3599   | 5039   | 59303    | 1813716   | 334815    |
|      | 3010003152    |           | 1442   | 5191   | 2714750  | 2759070   | 2127688   |
|      | 3010003254    |           | 3351   | 2372   | 5612919  | 12485231  | 4329415   |
|      | 3010003356    |           | 2542   | 1540   | 5311831  | 13740813  | 3007559   |
|      | 3010003452    |           | 5806   | 2178   | 715992   | 1264953   | 928496    |
|      | 3010003552    |           | 1598   | 2609   | 516272   | 416990    | 260027    |
|      | 3010003656    |           | 3419   | 5364   | 79766    | 1834191   | 333900    |
| TURE | 3010003752    |           | 3459   | 2098   | 39131    | 725802    | 315841    |
|      | 3010003852    |           | 1113   | 3920   | 52612303 | 2286391   | 1370431   |
|      | 3010003954    |           | 5803   | 2883   | 3813707  | 1644454   | 795417    |
|      | 3010004051    |           | 1515   | 1135   | 615014   | 172043    | 227462    |
|      | 3010004152    |           | 1152   | 4141   | 3115014  | 1628456   | 1730213   |
| PNLS | 3010004258    |           | 4363   | 6674   | 09424    | 2911866   | 411169    |
|      | 3010004358    |           | 3000   | 6179   | 79100    | 1853910   | 273000    |
| LET  | 3010004454    |           | 2110   | 2929   | 616407   | 618146    | 346188    |
| B    | 3010004558    |           | 4048   | 6953   | 010648   | 2814574   | 431031    |
|      | 3010004658    |           | 7467   | 6276   | 48746    | 4686588   | 653064    |
|      | 3010004754    |           | 6182   | 2940   | 011151   | 181692    | 68913     |
|      | 3010004854    |           | 1553   | 3361   | 413118   | 522025    | 203723    |
|      | 3010004954    |           | 1282   | 5384   | 2011429  | 4927365   | 1465769   |

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**AVRO AIRCRAFT LTD.**

MALTON, ONT.

## WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

 PROJECT C-105

| DESCRIPTION              |                           | REFERENCE NO. | COMP. NO. | WEIGHT   |
|--------------------------|---------------------------|---------------|-----------|----------|
| ENGINE GROUP             |                           | 50000000      |           |          |
|                          |                           |               |           |          |
| 41                       | ENGINES J 75              | 50100000      |           | 12647506 |
|                          |                           |               |           | 1264750  |
|                          |                           |               |           |          |
| 49                       | GEAR BOX AND DRIVE        | 50200000      |           | 150006   |
|                          |                           |               |           | 15000    |
|                          |                           |               |           |          |
| ENGINE CONTROLS          |                           | 50300000      |           |          |
| 47                       | ENGINE CONTROLS F F       | 5030000152    |           | 12701    |
| 47                       | ENGINE CONTROLS C F       | 5030000254    |           | 2653     |
| 47                       | ENGINE CONTROLS D B       | 5030000356    |           | 5075     |
| 47                       | ENGINE CONTROLS E B       | 5030000458    |           | 8776     |
|                          |                           |               |           | 2919     |
|                          |                           |               |           |          |
| 43                       | PNEUMATIC STARTING SYSTEM | 50400000      |           | 52006    |
|                          |                           |               |           | 5200     |
|                          |                           |               |           |          |
| 66                       | ENGINE ANTI 2CING         | 50500000      |           | 69355    |
|                          |                           |               |           | 6935     |
|                          |                           |               |           |          |
| FIRE EXT SYSTEM          |                           | 50600000      |           |          |
| 64                       | FIRE EXT SYSTEM           | 50600001      |           | 64277    |
|                          |                           |               |           | 6427     |
|                          |                           |               |           |          |
| ENGINE MTGS AND BRACKETS |                           | 50700000      |           |          |
| 42                       | ENGINE MTGS AND BRACKETS  | 50700001      |           | 207486   |
| 42                       | ENGINE MTGS AND BRACKETS  | 5070000259    |           | 9607     |
|                          |                           |               |           | 21708    |
|                          |                           |               |           |          |
| FUEL SYSTEM              |                           | 50800000      |           |          |
| 54                       | FUEL SYSTEM C F           | 5080000154    |           | 106993   |
| 54                       | FUEL SYSTEM D B           | 5080000256    |           | 85835    |
| 54                       | FUEL SYSTEM E B           | 5080000358    |           | 45186    |
| 54                       | FUEL SYSTEM I W           | 5080000462    |           | 433505   |
|                          |                           |               |           | 67150    |
|                          |                           |               |           |          |
|                          |                           |               |           |          |
|                          |                           |               |           |          |



















**AVRO AIRCRAFT LTD.**  
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**WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT**

PROJECT C-105

| DESCRIPTION |                            | REFERENCE NO. | COMP. NO. | WEIGHT |
|-------------|----------------------------|---------------|-----------|--------|
|             | L P PNEUMATICS             | 71000000      |           |        |
| 58          | L P PNEUMATICS F F         | 71000001      | 52        | 1522   |
| 58          | L P PNEUMATICS C F         | 71000002      | 54        | 138    |
|             |                            |               |           | 1660   |
|             | OIL AND HYD FLD COOLING    | 71100000      |           |        |
| 57          | OIL AND HYD FLD COOLING DB | 71100001      | 56        | 10282  |
| 57          | OIL AND HYD FLD COOLING EB | 71100002      | 58        | 2718   |
|             |                            |               |           | 13000  |
| 52          | INTAKE DEICING             | 71200000      | 52        | 10172  |
|             |                            |               |           | 10172  |
| 65          | RADOME ANTIICING           | 71300000      | 51        | 1680   |
|             |                            |               |           | 1680   |
|             | RADIO AND RADAR FIXED      | 71400000      |           |        |
| 61          | RADIO AND RADAR R N        | 71400001      | 51        | 25231  |
| 61          | RADIO AND RADAR F F        | 71400002      | 52        | 16688  |
| 61          | RADIO AND RADAR C F        | 71400003      | 54        | 13263  |
| 61          | RADIO AND RADAR D B        | 71400004      | 56        | 1970   |
| 61          | RADIO AND RADAR F I N      | 71400005      | 83        | 3179   |
| 61          | RADIO AND RADAR I W        | 71400006      | 62        | 510    |
|             |                            |               |           | 60841  |
|             | RADAR POWER SUPPLIES       | 71500000      |           |        |
| 61          | RADAR POWER SUPPLIES R N   | 71500001      | 51        | 7700   |
| 61          | RADAR POWER SUPPLIES F F   | 71500002      | 52        | 19500  |
| 61          | RADAR POWER SUPPLIES C F   | 71500003      | 54        | 5700   |
|             |                            |               |           | 32900  |
| 60          | CANOPY ACTUATION           | 71600000      | 52        | 4680   |
|             |                            |               |           | 4680   |
| 3           | CABIN CONSOLES             | 71700000      | 52        | 2065   |
|             |                            |               |           | 2065   |
| 60          | RADAR DOOR ACTUATION       | 71800000      | 54        | 1000   |
|             |                            |               |           | 1000   |



# AVRO AIRCRAFT LTD.

MALTON, ONT.

## WEIGHT AND C. OF G BY FUNCTIONAL COMPON

PROJECT C-105

| DESCRIPTION               |                          | REFERENCE NO. | COMP. NO. | WEIGHT |
|---------------------------|--------------------------|---------------|-----------|--------|
| REMOVABLE EQUIPMENT GROUP |                          | 8000000       |           |        |
|                           |                          |               |           |        |
| 69                        | EJECTOR SEATS            | 8010100       | 52        | 18600  |
|                           |                          |               |           | 18600  |
| 107                       | EMERGENCY PROVISIONS     | 8010201       | 52        | 1145   |
| 133                       | SIGNAL PISTOL CARTRIDGES | 8010202       | 52        | 200    |
| 132                       | HAND FIRE EXT FLUID      | 8010203       | 52        | 350    |
|                           |                          |               |           | 1695   |
|                           |                          |               |           |        |
| RADAR REMOV GROUP         |                          | 8020000       |           |        |
|                           |                          |               |           |        |
| RADAR REMOVABLE           |                          | 8020100       |           |        |
| 61                        | RADAR REMOVABLE R N      | 8020101       | 51        | 81896  |
| 61                        | RADAR REMOVABLE F F      | 8020102       | 52        | 7864   |
| 61                        | RADAR REMOVABLE C F      | 8020103       | 54        | 1480   |
| 61                        | RADAR REMOVABLE D B      | 8020104       | 56        | 950    |
|                           |                          |               |           | 92190  |
|                           |                          |               |           |        |
| FLARE OUT ALTIMETER       |                          | 8020200       |           |        |
| 61                        | FLARE OUT ALTIMETER FF   | 8020201       | 52        | 50     |
| 61                        | FLARE OUT ALTIMETER CF   | 8020202       | 54        | 1500   |
|                           |                          |               |           | 1550   |
| 61                        | ELECT MISSILE CONTROL    | 8020400       | 54        | 4800   |
|                           |                          |               |           | 4800   |
| 61                        | DATA LINK                | 8020500       | 54        | 6800   |
|                           |                          |               |           | 6800   |
| 61                        | OMNI DME                 | 8020600       | 54        | 7000   |
|                           |                          |               |           | 7000   |
| 61                        | J2 COMPASS O W           | 8020700       | 64        | 130    |
|                           |                          |               |           | 130    |
| RADIO REMOV GROUP         |                          | 8030000       |           |        |
|                           |                          |               |           |        |
|                           |                          |               |           |        |
|                           |                          |               |           |        |



MALTON, ONT.

## COMPONENTS

PROJECT C-105

| DESCRIPTION |                          |  |  | REFERENCE NO. | COMP. NO. | WEIGHT  |
|-------------|--------------------------|--|--|---------------|-----------|---------|
|             | RADIO REMOV              |  |  | 8030100       |           |         |
| 61          | RADIO REMOVABLE F F      |  |  | 803010152     |           | 3001    |
| 61          | RADIO REMOVABLE C F      |  |  | 803010254     |           | 45002   |
|             |                          |  |  |               |           | 4800    |
|             | INTERPHONE SYSTEM        |  |  | 8030200       |           |         |
| 61          | INTERPHONE SYSTEM F F    |  |  | 803020152     |           | 10701   |
| 61          | INTERPHONE SYSTEM C F    |  |  | 803020254     |           | 4302    |
|             |                          |  |  |               |           | 1500    |
|             | RADIO COMPASS ARN6       |  |  | 8030300       |           |         |
| 61          | RADIO COMPASS ARN6 F F   |  |  | 803030152     |           | 8951    |
| 61          | RADIO COMPASS ARN6 C F   |  |  | 803030254     |           | 54252   |
| 61          | RADIO COMPASS ARN6 D B   |  |  | 803030356     |           | 2005    |
|             |                          |  |  |               |           | 6520    |
|             | IFF                      |  |  | 8040000       |           |         |
| 61          | IFF R H                  |  |  | 804000151     |           | 6000    |
| 61          | IFF D B                  |  |  | 804000254     |           | 52705   |
| 61          | IFF F H                  |  |  | 804000383     |           | 7006    |
|             |                          |  |  |               |           | 11970   |
|             | SPARROW PACK             |  |  | 8050000       |           |         |
|             |                          |  |  |               |           |         |
| 110         | SPARROW PACK STRUCTURE   |  |  | 805010054     |           | 1424103 |
|             |                          |  |  |               |           | 142410  |
| 110         | SPARROW PACK MECHANISMS  |  |  | 805020054     |           | 399503  |
|             |                          |  |  |               |           | 39950   |
| 110         | SPARROW PACK HYDRAULICS  |  |  | 805030054     |           | 505654  |
|             |                          |  |  |               |           | 50565   |
| 110         | SPARROW PACK ELECTRONICS |  |  | 805040054     |           | 50004   |
|             |                          |  |  |               |           | 5000    |
|             |                          |  |  |               |           |         |
|             |                          |  |  |               |           |         |
|             |                          |  |  |               |           |         |
|             |                          |  |  |               |           |         |
|             |                          |  |  |               |           |         |



**MALTON, ONT.**

## COMPON

PROJECT C-105

| DESCRIPTION      |                            | REFERENCE NO. | COMP. NO. | WEIGHT  |
|------------------|----------------------------|---------------|-----------|---------|
| OPERATIONAL LOAD |                            | 90000000      |           |         |
| 99               | CREW MEMBERS               | 9010000052    |           | 430000  |
|                  |                            |               |           | 430000  |
|                  | ENGINE OIL                 | 90200000      |           |         |
| 120              | ENGINE OIL USABLE          | 90200001      |           | 54146   |
| 75               | ENGINE OIL TRAPPED         | 90200002      |           | 30946   |
|                  |                            |               |           | 8508    |
| 129              | SPARROW MISSILES           | 9030000054    |           | 1728000 |
|                  |                            |               |           | 172800  |
|                  | OXYGEN CHARGE              | 90400000      |           |         |
| 128              | OXYGEN CHARGE F F          | 9040000152    |           | 722     |
| 128              | OXYGEN CHARGE C F          | 9040000254    |           | 12672   |
|                  |                            |               |           | 1339    |
| 125              | ALCOHOL FOR RADOME DEICING | 9050000051    |           | 2200    |
|                  |                            |               |           | 2200    |
| 132              | ENGINE FIRE EXT FLUID      | 90600000      |           | 25000   |
|                  |                            |               |           | 2500    |
|                  | RESIDUAL FUEL              | 90700000      |           |         |
| 74               | RESIDUAL FUEL C F          | 9070000154    |           | 46800   |
| 74               | RESIDUAL FUEL I W          | 9070000262    |           | 171600  |
|                  |                            |               |           | 21840   |



