

QCX
Avro
CF105

R-7-0400-3

Iss-24

FILE IN VAULT

Arrow 2
Proc 10

Report: 7-0400-34
Issue : 24

Weight Summary

Oct/58

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Report no.: QCX - AVRO - CF105 - R-7-0400-34-155-24

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de-classified

by (Name): Michel W. Drapeau

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

Date: Dec. 7, 1992

R. Auger
Signature

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AVRO AIRCRAFT LIMITED
INTER-DEPARTMENTAL MEMORANDUM

Ref: 4398/11/J
Date: 1 October, 1958
To: See Distribution
From: E.F. Burnett - Weights Supervisor
Subject: Arrow 2 Production A/C Weight and C.G. Summary Report 7-0400-34 Issue 24

Attached is a copy of Weight and C.G. Summary Report 7-0400-34 Issue 24 dated October 1, 1958, for your retention.

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

Classification *confirmed as* ~~cancelled / changed to~~: UNCLASSIFIED

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

Date: 5 Nov 1992

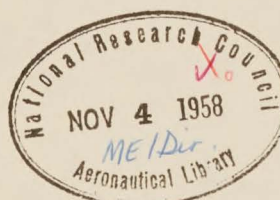
Signature: *B. Aubrey*

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

E.F. Burnett
E.F. Burnett

EFB/ag

| | | |
|------------------------|----------------|-------------------------------------|
| cc: Messrs. J.C. Floyd | D.N. Scard | C. Marshall |
| R.N. Lindley | A.R. Buley | J. Zurakowski |
| R. Marshall | F. Brame | A. Crust (6 copies for R.C.A.F.) |
| C.V. Lindow | W. Czerwinski | D. Inglis |
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I N D E X

| <u>Sheet</u> | <u>Content</u> |
|--------------|---|
| 1-1 to 1-5 | Introductory notes and explanation of Weight changes. |
| 2-1 to 2-2 | Weight & C.G. Summary |
| 3 | Horizontal C.G. Plot showing basic fixed points on flight envelope. The possible variations of C.G. with fuel used has been omitted until such time as fully approved fuel sequencing is established. |
| 4-1 to 4-15 | I.B.M. Detail sheet of Weight and C.G.'s |

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Introduction & Weight Changes

The following is a Weight and C.G. Summary of the Arrow 2 Production Aircraft serial No. 25237 and subsequent, based on the latest weight estimates available. All weight and C.G. changes are relative to issue 23 of September 1, 1958.

Early Arrow 2 aircraft will not be as this summary designates but will be Flight Test vehicles with Instrumentation. Appropriate Weight Statements for Aircraft Serial Nos. 25206 through 25236 will be issued at a later date.

General:

- a) Orenda PS13 engines comprise the Power Plant (4,500 lbs each, ref. EMS8, excluding Nose Bullet, Inlet Frame and AVRO installed accessories).

Early Arrow 2 Aircraft will be fitted with Orenda PS13 engines weight 4835 lb each excluding the above mentioned components.

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

- c) The R.C.A. Astra I Radar system is installed. The unit weights quoted herein are as received from R.C.A. in their weight statement dated June 5th, 1958. This included the Infra Red Tracker system seeker head installed in its Fin Pod location.

(Total Weight of the installed system is 3336lb, including Missile actuation and firing system).

In addition the above, Minneapolis-Honeywell MH64 Damping System is installed.

Arrow 2 Aircraft 25206 to 25208, and some later serial numbers will have the "Astra Minus" system (Navigational and Communication equipment only).

- d) Where actual weights of Arrow I parts that apply to Arrow 2 Aircraft have been obtained, these weights have been recorded in the Arrow 2 records, some weights for Arrow 2 parts have also been obtained.

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

- e) To increase the long range capabilities of the Aircraft tailcone plugs have been introduced to restrict the exhaust area. Provision for carrying these plugs, which are jettisonable, will be made on all Mk 2 A/C. The plug may be installed for any mission, but would probably be jettisoned prior to combat. It is only recorded in this report for a ferrying mission.
- f) This issue incorporates a Lucas-Rotax Electrical Power System and the Westinghouse components are deleted.

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| <u>Structure</u> | <u>Weight lb</u> |
|---|------------------|
| a) <u>Wings</u> | |
| Structure Aft of Rear Spar - deletion of shear plates and shear blocks | - 0.36 |
| Dorsal Fairings - incorporation of actual weights | - 1.02 |
| Rib 10 - actual weight obtained | - 0.94 |
| <u>Wing Weight Decreased</u> | <u>- 2.32</u> |
| b) <u>Fin and Rudder</u> | |
| Deletion of hinge brackets for damper | - 2.03 |
| Additional hardware and brackets | + 1.07 |
| Additional seal for L/E and dorsal fairing brackets | + 1.30 |
| <u>Fin and Rudder Weight Increase</u> | <u>+ 0.84</u> |
| c) <u>Fuselage Fwd Sta. 255 ins</u> | |
| Cockpit Formers - addition of flying controls and electrical pick up brackets | + 1.37 |
| Top Longerons F.F. - addition brackets and hardware | + 2.01 |
| Windscreen - addition fibre glass glare shield | + 1.46 |
| Pilots Canopy - addition of brackets | + 0.53 |
| Navigators Canopy - addition of hardware | + 0.21 |
| <u>Front Fuselage Increase</u> | <u>+ 5.58</u> |
| d) <u>Centre Fuselage Sta 255 - 485 ins</u> | |
| No weight change. | |
| e) <u>Duct Bay Sta 485 - 591.65 ins</u> | |
| Lower Forward Side Panels - addition of clips and hardware | + 0.44 |
| <u>Duct Bay Increase</u> | <u>+ 0.44</u> |
| f) <u>Engine Bay Sta 591.65 - 742.5 ins</u> | |
| No weight change. | |
| g) <u>Rear Fuselage Sta. 742.5 ins aft</u> | |
| Outer Skins - addition of pulley support for para. brake controls, and hardware | + 0.79 |
| Tailcones - addition of skin stiffeners | + 1.43 |
| addition of conduit and clips for electrics | + 1.98 |
| Centre Structure & Stinger - addition of seal and door lock indication | + 0.26 |
| <u>Rear Fuselage Increase</u> | <u>+ 4.46</u> |

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| h) <u>Fuselage Joints</u> | | <u>Weight lb</u> |
|--|---|------------------|
| Joint Duct Bay to Engine Bay - addition of grounding pad and hardware | + | 0.25 |
| Design change addition of heat exchanger mountings previously omitted. | + | 7.05 |
| <u>Fuselage Joints Increase</u> | + | <u>7.30</u> |
| <u>Total Structural Increase</u> | + | <u>15.80</u> |

2. Landing Gear

| | | |
|---|---|--------------|
| Main Gear - Design change heavy wheel assemblies now incorporated | + | 16.00 |
| <u>Total Landing Gear Increase</u> | + | <u>16.00</u> |

N.B. Early Arrow 2 A/C will have a heavier Main Gear (approx. + 55.0 lb/side) since existing forgings are to be used. The currently recorded weight for Arrow 2 Production A/C is 675 lb/leg (including drag stay but less wheel assemblies.

3. Power Plant & Services

P.S. 13 Engines

| | | |
|--|---|---------------|
| a) Iroquois Engine incorporated at 4,500 lb each ref. EMS8 | - | 600.00 |
| b) Structure - deletion of engine restrictor flaps | - | 2.50 |
| addition of minor brackets and hardware | + | 1.46 |
| c) Inlet Frame & Nose Bullet incorporation of Orenda estimate | - | 28.00 |
| d) Power Take-Off Gear Box Previous weight assumed identical installation as for J 75 Engines now only gear box to adapt diagonal drive shaft is required ref. Orenda. | - | 79.55 |
| e) Air Restrictor - Previously considered as an Avro supplied item and included in "Structure" now Orenda supplied. | + | 20.00 |
| f) Pneumatic Starter - Orenda quotes target weight (23.0 lb) | + | 1.00 |
| g) Anti Icing Lines) | | |
| h) Alternator Support) No previous allowances | + | 14.00 |
| j) Alternator Drive shaft) | | |
| k) Tacks Generator) Orenda quotations | + | 8.00 |
| l) L.P. high Temp Tacho.) | | |
| m) Installation Constant Speed Drives - both G.E. and Sundstrand quote 70.0 lb each. | - | 7.00 |
| n) Installation CSU Oil Lines - First production dwg. estimate | - | 1.15 |
| Accessories Gear Boxes on Fuselage - First production dwg estimate | - | 2.06 |
| Starters and Gear Boxes on Engines - see para. (d) above | | |
| <u>Total Power Plant Decrease</u> | - | <u>675.80</u> |

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| 4. <u>Flying Controls Group</u> | <u>Weight lb</u> |
|--|------------------|
| Flying Controls Hydraulics I/W - Return lines now steel (CST 162) were alluminum alloy (CST 136) | |
| Pressure lines increased in wall thickness now CST 136 were CST135 + | 17.24 |
| Flying Controls Hydraulics O/W - Arrow 1 filters (steel) now fitted were Arrow 2 alluminum alloy + | 12.90 |
| Return lines now steel were) alluminum alloy) + | 1.79 |
| Pressure lines increase wall thickness) | |
| Flying Controls Hydraulics Fin - Filter element retainer now steel + | 0.59 |
| was alluminum alloy | |
| Return lines now steel pressure lines increase in wall thickness + | 1.16 |

The above changes necessitated by Stress requirements ref.
Assignment X 74.4063

Total Flying Controls Increase + 33.68

5. Equipment Fixed and Removable

| | |
|---|---------|
| Oxygen System - First production estimate. Quantity gauge duplicated in error already included in Panel E22 - Electrics | |
| Front Fuselage | - 1.24 |
| Converter actual wt. 12.33 was 16.00 (based on Arrow 1) | - 3.67 |
| Air Conditioning System - Addition of nitrogen pipe assy for I.R. seeker | + 2.34 |
| Addition of silencers in cockpit | + 9.91 |
| Utility Hyd. F/Fuselage - incorporation of equipment & piping for the Nose U/C door sequencing | + 9.76 |
| Nose U/C Door Sequencing Mechanism - this report is now cancelled see above. | - 27.00 |

The large weight decrease (-17.24 lb) in the two combined reports is due to design refinement and integration into basic utility hydraulic system. Previously an Arrow 1 "lash-up" allowance was carried.

| | |
|---|---------|
| Windscreen Demisting - First prod. estimate - deletion of cable allowance now contained in Electrics Cables - | 2.38 |
| Electric C/Fuselage - Design change addition of 3 off | + 5.46 |
| Fire detection control units & resistor to Panel E 5 | |
| Electrics Duct Bay - Decrease in Clipping | - 1.41 |
| Design change - incorporated Lucas-Rotax Power System instead of Westinghouse. | - 32.00 |
| Transformer Rectifier unit 164 lb (Mnfrs quote was 196 lbs (Mnfrs quote). | |
| Electrics Engine Bay - Design change addition of 2 off | + 3.50 |
| Current Transformers (Lucas-Rotax) | |
| Electrics Wing - First production estimate | - 0.53 |
| Electrics Rear Fuselage - addition of clipping of cables associated with tailcone plug jettison circuits. | + 0.40 |

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5. Cont'd Weight lb
Electrics Tailcone Plug Jettison - New report incorporates
equipment and wiring for
actuation and indication
circuits for the "explosive
bolts. + 8.09

Total Equipment Group 28.77

6. Trapped Fuel
No weight change.

7. Useful Load

Engine & Accessories Gear Box Oil - addition of separate oil
system for constant speed
units + 23.04

Total Useful Load Increase + 23.04

SUMMARY

Weight Change - Aircraft Basic Weight

| | |
|-----------------|----------|
| Structure | + 15.80 |
| Landing Gear | + 16.00 |
| Power Plant | = 675.80 |
| Flying Controls | + 33.68 |
| Equipment | = 28.77 |

Total = 639.09

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

Operational Load Increase 23.04 lb

Issue 23

47,261.94

Issue 24

46,645.89

-616.05 lb

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Wt. & C.G. Summary Full Astra Installed

| Description | Weight lb | H. Arm ins | V. Arm ins |
|--------------------------------------|--------------|---------------|---------------|
| Structure | 19,227.90 | 566.61 | 137.31 |
| Wings | 10,038.79 | 642.93 | 142.18 |
| Fin and Rudder | 1,041.69 | 754.71 | 209.51 |
| Fuselage Fwd Sta. 255 ins | 2,604.20 | 184.54 | 128.61 |
| Sta. 255 - 485 ins | 1,715.13 | 375.75 | 129.90 |
| Sta. 485 - 591.65 ins | 1,160.68 | 538.42 | 105.64 |
| Sta. 591.65 - 742.5 ins | 1,576.20 | 659.72 | 110.61 |
| Sta. 742.5 in aft | 1,041.27 | 806.98 | 129.18 |
| "Marry - Up" | 49.94 | 483.56 | 107.06 |
| Landing Gear - Retracted | 2,697.98 | 489.31 | 135.08 |
| Main Landing Gear | 2,048.67 | 538.68 | 141.00 |
| Main Gear Doors & Fairings | 287.98 | 538.52 | 138.40 |
| Nose Landing Gear | 333.81 | 170.81 | 99.70 |
| Nose Gear Door & Fairing | 27.52 | 162.22 | 88.66 |
| Power Plant & Services | 10,770.92 | 671.51 | 121.74 |
| Engines Bare PS 13 | 9,000.00 | 689.94 | 121.25 |
| Engine Accessories (Inlet Frame etc) | 388.05 | 617.84 | 118.34 |
| Engine Controls | 32.32 | 379.90 | 117.49 |
| Gear Boxes & Drives on Fuselage | 291.87 | 608.57 | 103.28 |
| Gear Boxes & Starters on Engine | 146.45 | 601.97 | 113.57 |
| Fire Extinguisher System | 73.58 | 686.35 | 131.21 |
| Engine Mountings | 75.39 | 671.91 | 141.52 |
| Fuel System | 763.26 | 529.78 | 135.19 |
| Flying Controls Group | 1,965.94 | 652.84 | 138.24 |
| Mechanical Flying Controls | 958.44 | 677.70 | 147.62 |
| Hydraulic Flying Controls | 1,007.50 | 629.19 | 129.32 |
| Equipment Fixed & Removable | 9,081.96 | 331.58 | 114.33 |
| Instruments | 34.61 | 167.52 | 138.92 |
| Probe | 15.25 | 23.71 | 108.00 |
| Cockpit Pressure Sealing | 5.00 | 186.00 | 130.00 |
| Cabin Consoles | 17.28 | 174.66 | 124.33 |
| Oxygen System | 21.16 | 259.40 | 156.88 |
| Cockpit Equipment | 6.00 | 187.50 | 145.00 |
| Ejector Seats | 342.94 | 204.50 | 134.11 |
| Air Conditioning System | 888.56 | 345.34 | 136.28 |
| Cockpit Insulation | 14.31 | 187.48 | 132.00 |
| Hydraulics Utilities System | 641.33 | 498.85 | 118.15 |
| Mech. Door Stops Main U/C Doors | 3.02 | 516.00 | 120.00 |
| Anti Skid Controls System | 37.68 | 480.00 | 113.97 |
| Drag Chute | 91.07 | 786.68 | 143.19 |
| Electrical System | 1,235.29 | 433.94 | 113.07 |
| Low Pressure Pneumatics | 50.08 | 394.66 | 126.02 |
| Surface Finish | 100.00 | 591.52 | 140.20 |
| Intake De-icing Boots | 88.00 | 195.82 | 118.00 |
| Canopy Actuation | 64.92 | 221.99 | 154.35 |
| Radar Door Actuation | 10.00 | 268.00 | 95.00 |
| Radio & Radar Removable | 2,110.48 | 212.15 | 108.76 |
| Radio & Radar Fixed | 880.04 | 216.54 | 114.59 |
| MH 64 Damping System | 186.42 | 462.33 | 134.70 |
| Sparrow Pack Structure | 906.31 | 383.90 | 98.72 |

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| Description | Weight lb | H. Arm ins | V. Arm ins | M.A.C. % |
|--|--------------|---------------|---------------|-------------|
| Sparrow Pack Mechanisms | 557.32 | 372.64 | 99.11 | |
| Sparrow Pack Hydraulics | 369.70 | 378.00 | 104.00 | |
| Sparrow Pack Elec. & Electronics Fixed | 188.73 | 336.09 | 110.00 | |
| Sparrow Pack Air Conditioning | 5.21 | 305.50 | 102.50 | |
| Sparrow Pack L.P. Pneumatics | 24.45 | 386.92 | 103.50 | |
| Sparrow Pack Electronics Removable | 186.80 | 326.19 | 100.00 | |
| Trapped Fuel | 213.80 | 548.26 | 141.79 | |
| U/C Up | | 542.78 | 128.67 | |
| Aircraft Basic Weight | 43,958.50 | | | |
| U/C Down | | 545.13 | 124.79 | |
| Useful Load (less usable fuel) | 2,687.39 | 365.65 | 101.90 | |
| Crew | 390.00 | 194.00 | 186.50 | |
| Engine Fire Ext. Fluid | 25.00 | 730.00 | 129.00 | |
| Oil | 162.00 | 638.31 | 110.89 | |
| Oxygen Charge | 13.39 | 259.69 | 159.91 | |
| Water for Air Conditioning | 285.00 | 267.91 | 131.56 | |
| Missiles | 1,728.00 | 289.29 | 88.30 | |
| Missile Coccoons | 84.00 | 390.40 | 85.80 | |
| U/C Up | | 532.57 | 127.13 | 26.68 |
| Operational Weight Empty | 46,645.89 | | | |
| U/C Down | | 534.79 | 123.47 | 27.29 |
| Normal Combat Mission Fuel ϕ (200 Nav. miles 2267 gals @ 7.8 lb/gal) | 17,684.00 | | | |
| Normal Gross Weight | 64,329.89 | | | |
| Half Combat Mission Fuel (1134 gal @ 7.8 lbs/gal) | 8,842.00 | | | |
| Combat Weight ($\frac{1}{2}$ mission fuel) | 55,487.89 | | | |
| Max. Int. Fuel (2491 gal @ 7.8 lb/gal) | 19,433.00 | 541.85 | 114.16 | |
| U/C Up | | 535.30 | 132.14 | 27.43 |
| Gross Weight (Max. Int. Fuel) | 66,078.89 | | | |
| U/C Down | | 536.87 | 129.55 | 27.87 |
| Max. External Fuel (500 gal. @ 7.8 lb/gal + drop tank) | 4,242.36 | 520.32 | 60.79 | |
| Tailcone Plugs * | 252.00 | 857.07 | 128.60 | |
| U/C Up | | 535.55 | 127.84 | 27.50 |
| Max. Gross Wt. (Internal + Ext. Fuel) | 70,573.25 | | | |
| U/C Down | | 537.01 | 125.42 | 27.90 |

* Ref. Note e) in Introduction

ϕ Fuel weights in accordance with latest data issued by Performance group dated February 17, 1958 issue 13. Centres of Gravity have temporarily been omitted until a fuel sequencing system is finally established.

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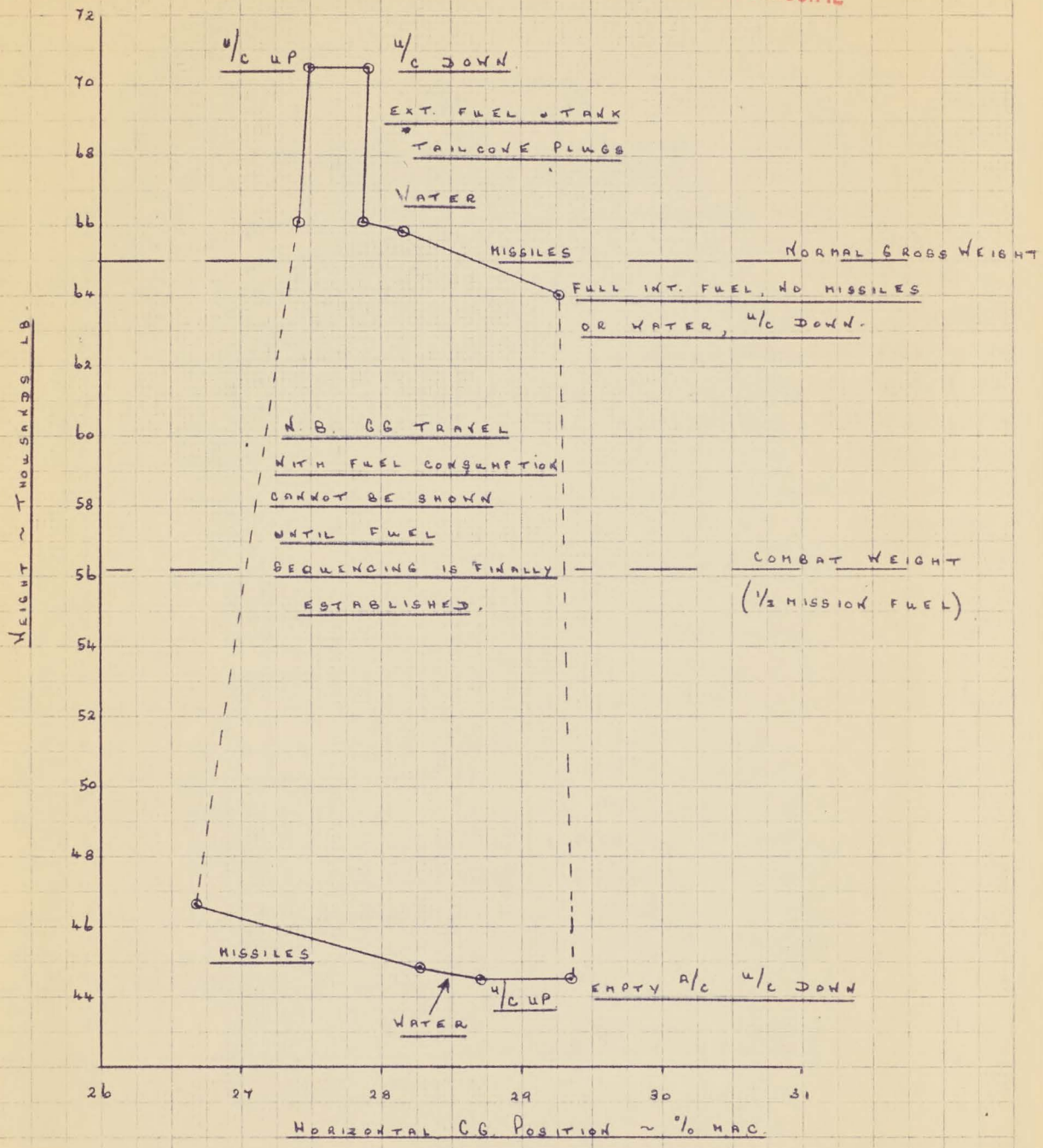
DATE Oct. 1st 1958

SHEET 3

BY P. E. J. J. J.

HORIZONTAL C.G. PLOT OF
FIXED POINTS ON ARROW 2
FLIGHT ENVELOPE

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K&E 10X10 TO THE 1/2 INCH 350-12

WEIGHT AND C. OF G BY FUNCTIONAL COMPO

PROJECT_____

[illegible]

AVRO AIRCRAFT LTD.
MALTON, ONT.

WEIGHT AND C. OF G BY FUNCTIONAL COMPONENT

PROJECT _____

| | DESCRIPTION | REFERENCE NO. | COMP. NO. | WEIGHT | H |
|-----|----------------------------|---------------|-----------|--------|---|
| | SKIN D B | 30400001 | 56 | 62275 | |
| 5 | FORMERS D B | 30400002 | 56 | 73355 | |
| | TOP LONGERONS | 30400003 | 56 | 4985 | |
| | MTG BRKTS SIDE PANEL | 30400004 | 56 | 1905 | |
| | LOWER LONGERONS | 30400005 | 56 | 103015 | |
| 72 | MAIN FRAME STA 538 77 | 30400006 | 56 | 59805 | |
| | ACCESS PANELS | 30400007 | 56 | 38745 | |
| | LOWER PANEL ASSY | 30400008 | 56 | 2175 | |
| | DROP TANK MTG STRUCTURE | 30400009 | 56 | 8415 | |
| 20 | LOWER SIDE PANELS FWD | 30400010 | 56 | 107565 | |
| | LOWER CENTRE PANEL FWD | 30400011 | 56 | 27915 | |
| | LOWER SIDE PANELS AFT | 30400012 | 56 | 66985 | |
| | LOWER CENTRE PANEL AFT | 30400013 | 56 | 26095 | |
| | FLOATING DUCT D B | 30400014 | 56 | 455555 | |
| | | | | 103872 | |
| | ENGINE BAY | 30500000 | | | |
| 100 | TOP LONGERONS | 30500001 | 58 | 6746 | |
| 84 | BOTTOM LONGERONS | 30500002 | 58 | 84326 | |
| | ENGINE ACCESS DOORS | 30500003 | 58 | 136046 | |
| | ENGINE TUNNEL | 30500004 | 58 | 613246 | |
| 71 | ENG RAILS ATTACH TO FORM | 30500005 | 58 | 29066 | |
| | PANELS AT ENG ACCESS DOORS | 30500006 | 58 | 111176 | |
| | BOTTOM CTR PANEL FWD | 30500007 | 58 | 46106 | |
| | BOTTOM CTR PANEL CENTRE | 30500008 | 58 | 41206 | |
| | BOTTOM CTR PANEL AFT | 30500009 | 58 | 76667 | |
| 5 | SIDE PANEL FRONT | 30500010 | 58 | 86056 | |
| 5 | SIDE PANEL CENTRE | 30500011 | 58 | 74746 | |
| 32 | SIDE PANEL AFT | 30500012 | 58 | 74537 | |
| 41 | HEAVY FORMERS | 30500013 | 58 | 196356 | |
| | | | | 157620 | |
| | REAR FUSELAGE | 30600000 | | | |
| | OUTER SKINS FIXED | 30600001 | 59 | 56587 | |
| | FORMERS FIXED R F | 30600002 | 59 | 105097 | |
| | LONGERONS FIXED R F | 30600003 | 59 | 25197 | |
| | TUNNEL FIXED R F | 30600004 | 59 | 109947 | |
| | ENGINE ACCESS DOORS R F | 30600005 | 59 | 90237 | |
| | FAIRING UNDER RUDDER FIXED | 30600006 | 59 | 28397 | |
| | REMOV TAILCONES | 30600007 | 59 | 516508 | |
| | CENTRE STRUC AND STING REM | 30600008 | 59 | 109358 | |
| | | | | 104127 | |
| | DIVE BRAKES | 30700001 | 72 | 117905 | |
| | D B JOINT TO FUSELAGE | 30700002 | | 4064 | |
| | | | | 12196 | |

WEIGHT AND C. OF G BY FUNCTIONAL COMPO

| DESCRIPTION | | | REFERENCE NO. | COMP. NO. | WEIGHT |
|----------------------------|------------------------------|--|---------------|-----------|--------|
| FLYING CONTROLS GROUP | | | 6000000 | | |
| MECHANICAL CONTROLS | | | 6010000 | | |
| 60 | MECHANICAL CONTROLS F F | | 60100001 | 52 | 10694 |
| | MECHANICAL CONTROLS C F | | 60100002 | 54 | 1290 |
| 70 | MECHANICAL CONTROLS F I N | | 60100005 | 83 | 12443 |
| 71 | MECHANICAL CONTROLS I W | | 60100006 | 62 | 40234 |
| 80 | MECHANICAL CONTROLS O W | | 60100007 | 64 | 30520 |
| | MECHANICAL CONTROLS C A | | 60100008 | | 663 |
| | | | | | 95844 |
| FLYING CONTROLS HYDRAULICS | | | 6020000 | | |
| | FLYING CONT HYDRAULICS D B | | 60200001 | 56 | 31845 |
| | FLYING CONT HYDRAULICS E B | | 60200002 | 58 | 39853 |
| | FLYING CONT HYDRAULICS R F | | 60200003 | 59 | 487 |
| 73 | FLYING CONT HYDRAULICS I W | | 60200004 | 62 | 27982 |
| 66 | FLYING CONT HYDRAULICS O W | | 60200005 | 64 | 13170 |
| 63 | FLYING CONT HYDRAULICS F I N | | 60200006 | 83 | 55817 |
| | FLYING CONT HYDRAULICS R N | | 60200007 | 51 | 35001 |
| | FLYING CONT HYDRAULICS F F | | 60200008 | 52 | 55061 |
| | FLYING CONT HYDRAULICS C F | | 60200009 | 54 | 19203 |
| | | | | | 100750 |

