

Instructions for Use

MOD Form 702G(RC-135W) – RC-135W Weight and Balance Chart C

1. **General.** MOD Form 702G(RC-135W) is to be used to record all weight and moment changes caused by the removal or fitment, whether for flight, Maintenance or access, of all equipment weighing greater than 1lbs or otherwise dictated by Technical Instruction. A complete list of fitted components is available from the Automated Weight and Balance System (AWBS) 'Chart A' provided by Big Safari and maintained by RAF Waddington CAWR. Items not included in Chart A, but fitted or removed must still be recorded.
 2. In addition, it is to be used to record the combined weight any time a modification adds or removes equipment from the Aircraft's basic weight that is not inventoried as an item on the Chart A (ie modification changes such as structure, systems, or wiring changes, repairs, painting, or TCTO modifications). This is in order to determine when an Aircraft weigh is required.
 3. RC-135W Aircraft are to remain within predefined limits for Weight and Balance as prescribed in the USAF Technical Order (TO) 1C-135-5-1. This platform uses Current Operational Weight and Basic Aircraft Index (BAI), which when entered into the onboard Flight Management System, determine Centre of Gravity, which is expressed as "Percentage of Mean Aerodynamic Chord" (%MAC).
 4. **CoG Limits.** The defined limits for CoG from RTS are between 18 and 30 %MAC (841.8 - 853.9 Long Arm) for a fuelled Aircraft at Take Off.
 5. Only personnel holding MAMP-E511 (RC-135W) (Authority to calculate and record changes in weight and moment) may amend MOD Forms 702G(RC-135W).
- ### Raising and Controlling Forms
6. **Insertion and Removal.** MOD Forms 702G(RC-135W) are to be inserted into, and removed from, the MOD Form 700C iaw the instructions for controlled forms on MOD Form 799/1. Sheet numbers are to run from 001 to 999.
 7. **Raising new forms.** The 51 Squadron Documentation Controller or other authorized personnel are responsible for raising a new MOD Form 702G(RC-135W) when either:
 - a. An Aircraft is delivered from the manufacturer.
 - b. An Aircraft is returned from Programmed Depot Maintenance (PDM).
 - c. The Aircraft has been weighed.
 - d. An in-use form is completed.
 8. To raise a new form, an authorized individual is to complete **Line 1** as follows:
 - a. **Column (b)** enter the date
 - b. Delete as applicable either 'AWBS Database Baseline' or 'Brought Forward Figures', dependent on reason for raising.
 - c. From the previous MOD Form 702G(RC-135W) **Column (h)**, enter the 'Combined Weight Change' in **Column (h)**. (Zero post PDM or Aircraft weigh).
 - d. **Columns (i) to (m)**, enter the 'Current Operating Weight', 'Basic Long Arm', 'Basic Moment', 'BAI' and '%MAC' from the AWBS Chart C or the 'Brought Forward Figure' from the previous sheet.
 - e. **Column (n)** enter their surname.
 9. **Weight and Balance changes. Lines 2 – 40** are to be completed for subsequent additions and removals of items that affect Weight and Balance by authorized persons. When changes are requested by Technical Instruction or TCTO the changes to data for **Columns (f) and (g)** should be provided. They can be calculated using the formula at **Table 1, Line 1**, providing the actual weight of the item and fuselage station of installation is provided as a minimum. Should these figures not be provided, the Airseeker Delivery Team are to be contacted for assistance.
 10. **Weight and Balance update.** Once satisfied that the correct figures are provided, authorized personnel are to complete the next available line as follows :
 - a. **Column (b)** enter the date .
 - b. **Column (c)** enter the SNOW.
 - c. **Column (d)** enter a description of the item being fitted/removed.
 - d. **Column (e)** enter the AWBS Chart A reference. For Non-Chart A items/modifications or Non-Chart A QRC items (ie those without a Chart A reference) enter the text NI (Not Inventoried), Mods or NCA QRC. (NCA QRC identifies a Non-Chart A weight change that is not permanent to the basic airframe).
 - e. **Column (f)** enter the Weight Change, remembering this should be positive for additional equipment and negative for removal.
 - f. **Column (g)** enter the Long Moment Change, positive for addition, negative for removal. Calculate using the formula at **Table 1, Line 1** if unknown.

g. **Column (h)** enter the Combined Weight Change only for items or modifications that change the basic weight of the airframe which are identified as 'Non-Chart A' in column (e). This shall be calculated adding the new weight recorded in column (f) to the last 'Non-Chart A' weight recorded in **Column (h)** (see **Notes 1, 2, and 3**).

Notes:

1. Column (h) entries are categorized as any permanent change to the basic airframe that are not inventoried/captured as Chart A items. Examples of such entries are changes to structures, systems, wiring, repairs, paint application and TCTO modifications. QRC items that are not inventoried on Chart A are **not** categorized as a permanent change to the basic airframe and are **only** to be included in **Column (f)**, **not Column (h)**.

2. The 'Combined Weight Change' in **Column (h)** is an incremental running total of all weight changes in **Column (f)** identified in **Column (e)** as 'Non-Chart A'. For example, 250 lbs added and 251 lbs removed are combined to give a total of 501 lbs.

3. Aircraft must be weighed, iaw TO 1C-135-5-1, any time:

a) Modifications, identified in **Column (e)** as Not Inventoried, Mods results in an increase/reduction of greater than 250 lbs in column (f).

b) The combined running total of the weight change removed and added by one or more Non-Chart A entries in **Column (h)** exceed 500 lbs (see **Note 2**). This includes the combined minor weight changes due to Non-Chart A/Inventory/Modifications embodied over a period of time since the last Aircraft weigh.

An Aircraft MOD Form 707A entry shall be raised detailing the requirement for an Aircraft weigh when either of the limits detailed at a) or b) are reached. CAWR shall be informed that a weigh is required and for their information, the Airseeker TSG notified via email.

h. **Column (i)** enter the Current Operating Weight. (Current Operating Weight = (f) + previous line (i) total).

i. **Column (j)** enter the Basic Long Arm. (Calculate using the formula at **Table 1, Line 2**).

j. **Column (k)** enter the Basic Moment. (Basic Moment = (g) + previous line total).

k. **Column (l)** enter the BAI. (Calculate using the formula at **Table 1, Line 3**).

l. **Column (m)** enter the % MAC. (Calculate using the formula at **Table 1, Line 4**).

m. **Column (n)** enter their surname.

135W) should be submitted to CAWR for confirmation of changes and update of AWBS on the following occasions:

a. On completion of PDM.

b. At any time a modification adds or removes 250 lbs.

c. When the Combined Weight total exceeds 500 lbs (see **Paragraph 10 g, Notes 2 and 3**).

d. Annually, as required by RAF Waddington Mil CAM.

e. Whenever the recorded Weight, BAI or CoG is suspect.

f. Prior to PDM: when RAF Waddington CAWR should prepare an AWBS file for inclusion in the Aircraft Document Set.

Table 1

		Description	Formula
1	Longitudinal Moment	An item's weight, multiplied by its position in the Aircraft and divided by 1000 to give a true indication of how it affects the overall moment of the Aircraft.	$\text{Long Moment} = \frac{\text{Weight} \times \text{Long Arm}}{1000}$
2	Basic Long Arm	The point about which the Aircraft pivots from the fixed datum.	$\text{Basic Long Arm (j)} = \frac{\text{Basic Moment (k)}}{\text{Current Operating Weight (i)}} \times 1000$
3	Basic Aircraft Index	The calculated Centre of Gravity of an Aircraft at its basic weight. This is expressed as an index value.	$\text{BAI} = 40 - \left(\frac{\text{Basic Weight} \times (846.68 - \text{Long Arm})}{200000} \right)$
4	% MAC	Centre of Gravity expressed as a percentage of the Mean Aerodynamic Chord (%MAC).	$\% \text{MAC} = \left(\frac{\text{Basic Long Arm} - 786.2}{241.9} \right) \times 100$