

Harpoon Air Mission Planning Form 5 Instructions v1.6b 06JUL2026

General

The Harpoon editable .pdf forms are designed to aid you in organizing the information needed to play *Harpoon* without having to constantly refer back to the Annexes and rulebooks during play. While they take some time to set up, once they are completed, they can be saved and reused as needed.

Local Use

Many browsers do not allow you to fill out editable .pdfs directly. Instead, you must download the form to your own computer and modify it there. Usually there is a “download” option on the browser .pdf display, or you can right-click on the link and use the “save as” or “save link as”. Once you have saved the form locally, the ubiquitous Adobe Acrobat Reader should work fine. Also, make sure that your security software does not disable scripts, or the forms will not work correctly.

Prefilled Examples

To demonstrate the use of the forms, we have filled them with examples from the various Harpoon Annexes. Just overwrite this information with what you need for your games.

Calculations

Most of the fields on the form are “information only.” However, entering data in some fields will cause other information to be calculated and filled according to the Harpoon V rules, so you don’t need to remember all of the details.

Using Tab to traverse the form - committing the changes

While entering information that is used in calculations, it will occasionally seem that what you enter does not have an immediate effect. Sometimes this happens because the form does not register the changed data (called “committing the change”). It will not invoke any associated code unless you move to another field after you have finished entering the information (called “changing focus”). The easiest way to ensure that you change focus and your information is “committed” to use the “tab” key to move to the next field. Selecting a different field with the mouse will also work. This is especially important in the Air Mission Planning Form.

Air Mission Planning Form (Harpoon V/CAS Form 5)

This form is used to calculate fuel usage for Air Missions. You can enter mission profiles for two aircraft types on one page. It implements the rules in section 4.7 (Aircraft Endurance) of Harpoon V. The Air Mission Planning can be used for both Harpoon and Command at Sea.

Calculations

With a few exceptions almost every field on this form is involved in a calculation in some way, as it uses speed, throttle settings, and altitude to calculate fuel use. Please remember the advice about tabbing through the form in the introduction, to make sure that your changes take effect before you move on to the next field.

Using Tab to traverse the form - committing the changes

While entering information that is used in calculations, it will occasionally seem that what you entered does not have an immediate effect. This is especially noticeable in the Air Mission Planning form, because it does not register the changed data (called "committing the change") and invoke the associated code unless you move to another field (called "changing focus"). Just entering the information and hitting return will often not do anything. The easiest way to ensure that you change focus and your information is "committed" is to use the TAB key to move to the next field. Selecting a different field with the mouse (but not a button, for some unknown reason) will also work.

Unfortunately, this is a function of how .pdf forms are implemented. As long as you move from field to field using the TAB key, you should get the expected results.

Note also that the note about this that appears at the top of the form should not appear when you print the form.

General Information

The top part of each section of the form contains information about the aircraft itself and its initial configuration. The fields are:

- Aircraft Name/Designation - self-explanatory, but for information only.
- Mission - choose a mission type. This is for information only.
- Mission ID This is for information only.

Max Payload, Initial Load, Load Status

These fields describe the maximum weight of ordnance and equipment that can be carried by the aircraft (see the Air Mission Form). Both are expressed in kilograms (kg). Max Payload can be found in the Aircraft Data Annex B entry for the aircraft. The initial load must be determined by adding up the hang weights of the ordnance and equipment found in the various Annexes. Note that if you use our Form 2 (Air Mission Form) to describe the aircraft; it will add up the hang weights of the various pieces of equipment, and you can just enter that total into the Initial Load field here. The Max and Initial loads are used to calculate the Initial Load Status. Load status can have one of three values:

- "Norm" - Normal/unloaded - no effect on speed or range.
- "Full" - 50% or greater load - speed restricted to mach 1, range decreased by 25%

You can change the load as the mission progresses, and this status will be recalculated.

Cruise Range and Add(itional) Rng expressed in nautical miles (nmi). The initial cruise range and additional range from available drop tanks, conformal fuel tanks, etc. are found in Annex B. Only Cruise Range is required, but the Cruise and additional ranges are added together to get the total initial range.

Ordnance Loadout-for information only

Formation Size - If the aircraft is part of a formation, enter the total number of aircraft here. Note that formations are no longer used in Harpoon, but are used in CAS. For 0, just put in a 0 in formation size.

Engine Type - from Annex B.

The type of engine affects the fuel used at various speeds and throttle settings, whether the plane can use afterburner, and whether a propeller plane must use full military power at high altitude.

Ceiling in meters (m) from Annex B

The ceiling of the aircraft determines which speeds need to be entered. For example, if the ceiling of the aircraft is below "High", throttle speeds do not need to be entered for high altitude. The heights of the various altitude bands can be found in the "Altitude Bands" table in chapter 4 of the *Harpoon V* rules. Note that for fuel calculations, aircraft and missiles in NOE and Very Low flight are in the Low altitude band and the "Real High" band is only used by missiles.

Once you enter the ceiling and engine type, the speeds for the available altitudes and throttle settings are opened for entry. These speeds are the maximum speed (in knots) for the throttle settings. If you move slower than the limit of given throttle setting, the fuel use will be calculated as if you were moving at the throttle setting speed. For example, if you have a Cruise speed of 460 kt but move at 400 kt, your fuel use will be calculated as if you were moving at 460 knots.

Mission Profile

The mission is performed as a series of up to 10 "Legs", each of which can have different speed, altitude, and fuel usages. The profile starts with no legs and the "Add New Leg" button available. Pressing this button will add a leg, which will open the required fields for entry and also show a "Calc" button. You must finish a leg by using the Calc button before you start a new one. Also, once you start adding legs, all of the information at the top of the form used in calculations is locked. While you can unlock this information by deleting all of the legs, this will lose any leg information you have entered, it is best to get the top part of the form correct before you start entering legs.

- A "Move" leg requires Speed and Length. The time will be calculated by how far you go.
- A "Loiter" leg requires time (in hours). The plane is assumed not to move and will Loiter and orbit in place, using fuel at 80% of the cruise rate. CAP missions use Loiter to stay on station.
- A "Refuel" leg requires Speed, Distance, and Range Added. It uses 0 Range, as it is assumed that the tanker is supplying all needs. You can put in a distance of 0 if a refueling CAP aircraft does not leave station. You cannot add range that would exceed the maximum range of the plane (internal range + additional range). Also, planes are assumed to be full of fuel when they start, so the first leg cannot be a "refuel" leg.

In most situations, you can change the Load for the leg. Do this first, as it may affect maximum speeds available.

"In Form" determines whether the formation size will affect fuel use for this leg (a check means Yes). Ignore this for Harpoon, but it is relevant for Command at Sea.

Certain fields are calculated as you enter data for the leg. For example, the throttle setting is derived from your altitude and speed.

When you are done entering the required data, press the "Calc" button. This will calculate fuel used and remaining and close the leg. If your fuel remaining drops below 0, the fuel remaining will be displayed in red with parentheses around it, indicating that you need to change something to have a valid profile. The rate that fuel is used is affected by the engine type, throttle setting, altitude band, load, formation. This calculation incorporates the relevant modifiers in the *Harpoon* and *CAS* rules. We think we got them all, but if you find an error or have a question, let us know.

Once a leg is created you can "Edit" or "Del"(ete) it. Changes in "fuel remaining" made in an early leg will propagate to later legs. If you enter a leg by mistake, just finish the calculation and delete it. There is also an option to clear out all of the leg information.

The Example

The examples on the included Mission Planning Form gives some ideas on how to use the form. While the numbers used in the calculations start with exact values, there can be a reasonable amount of "educated guesswork" as well. When you plan a mission, you want to leave some reserve for the unexpected, so you don't need to calculate everything exactly. For your missions, clear out all the legs and enter your information.

The sample form shows two missions. The first is for hypothetical Jet aircraft in Harpoon. The second is for a strike in Command at Sea. Clear these out for your own missions using the "Clear Mission" buttons.

Jet Strike (H5)

The first group of jet aircraft fly fully loaded 200 miles out, drop the bombs (load goes to 0) and then fly back. Normally cruising at medium altitude on the outgoing leg would use 200 nmi of range, but the extra load increases this to 267.

During the first leg they cruise out to 200 nmi at medium altitude.

Propellor Strike (CAS)

A carrier launches a big formation of 30 strike aircraft (admittedly with an unrealistic max range for demonstration purposes). Note that according to the CAS rules, this strike loses range for forming up and landing. This range is subtracted from the nominal max range before the legs begin.

The first leg shows what happens when the formation flies with a full load in formation. Note that the mileage used (which is a measure of fuel use) is much more than the 200 miles that is actually travelled.

The second leg shows that they have dropped enough load to become "normally" loaded. The formation uses more miles, but not as much as a full load.

The third leg has them go to full military power for an attack run. Note that the miles used jumps because FMP costs more fuel than cruise, but drops because the formation breaks.

In the last leg they fly home out of formation without their load. The fuel used equals the miles flown.