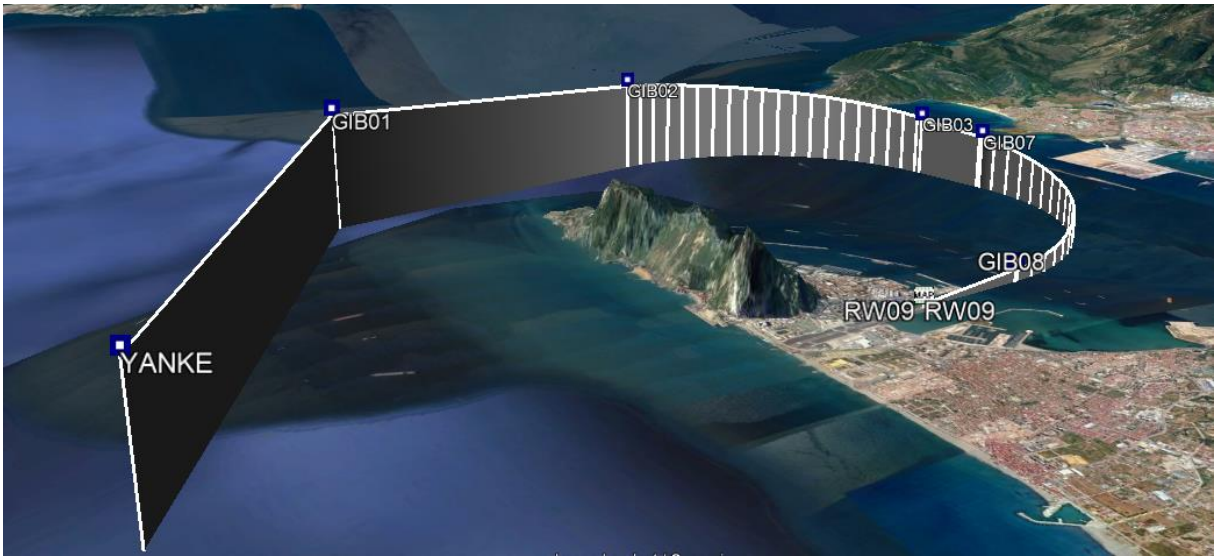
Design of a complex procedure with RF legs.



For a RNAV Visual…

I want to land runway 09 at GIB (Gibraltar, LXGB) coming from the north…

Difficult because of the rock…

I plot the runway, and one of the actual terminal waypoints:

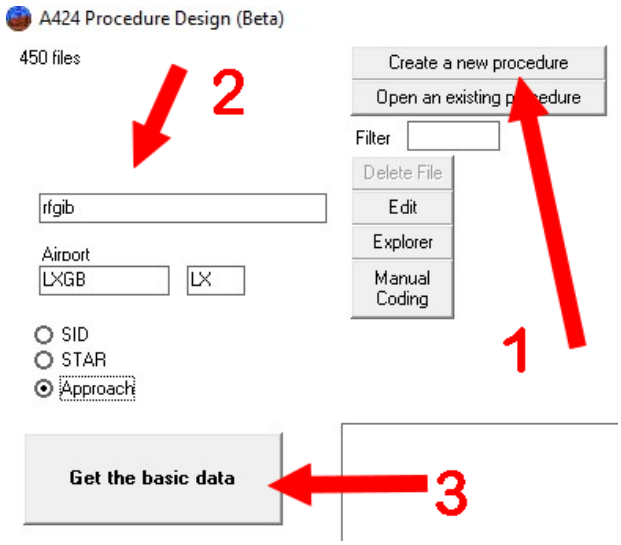
I will arrive via “YANKE” turning right and rolling in the middle of the bay to the final.

First, we show the module “Procedure Design” (button in the “Manual coding” module) and we ask for a new procedure named RFGIB at LXGB.

With no via and starting at YANKE.

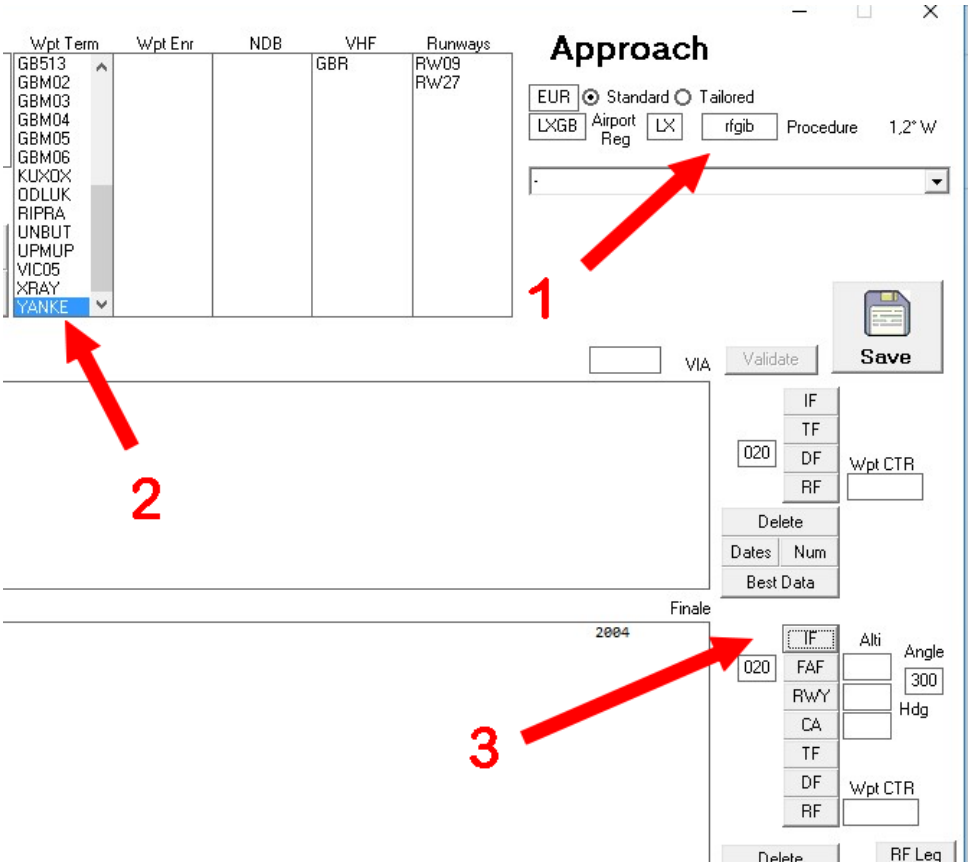
Starting by creating the file:

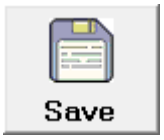
First, we create the file…. By filling the airport name and the procedure type you want…

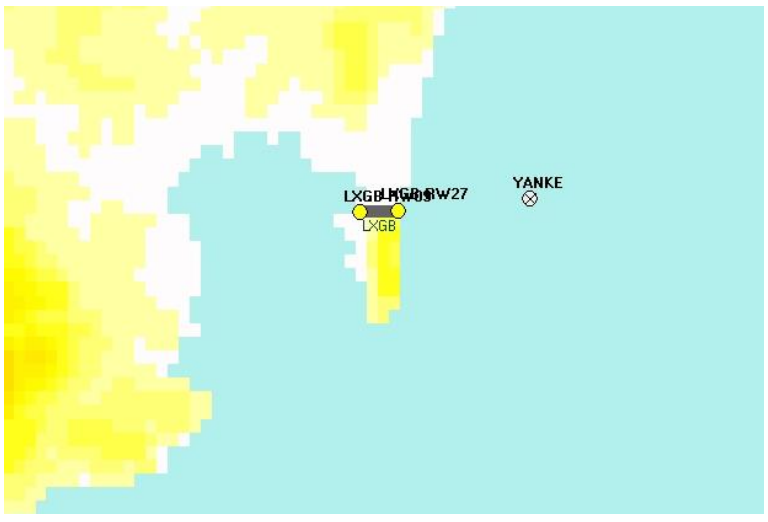


Then…

- Put a name in the module (RFGIB, in my example)
- Select Yanke waypoint in the Term waypoint list (if this point was not existing it was possible to create one (button “Add Waypoint” or to select an enroute wpt, or a navaid.)
- Select “IF” in the finale zone.



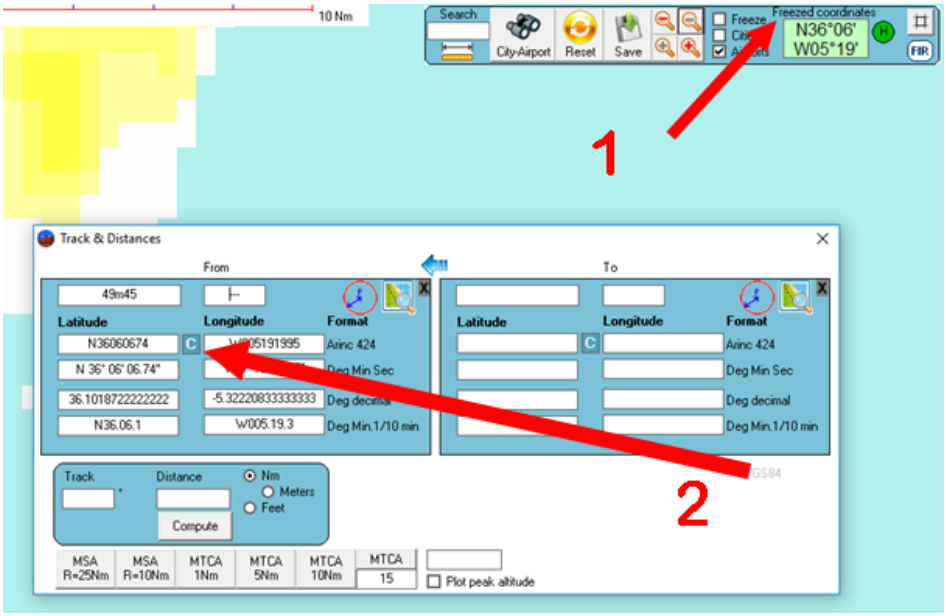
The first line is done, you can Save it. 



Many ways to create or re use your waypoints, I will create them roughly, it will be easy after to relocate them.

So I imagine my waypoints, plotting with the mouse, when I see a good place I press “Maj” or “Caps” and still pressing I go to the menu with the coordinates of my point:

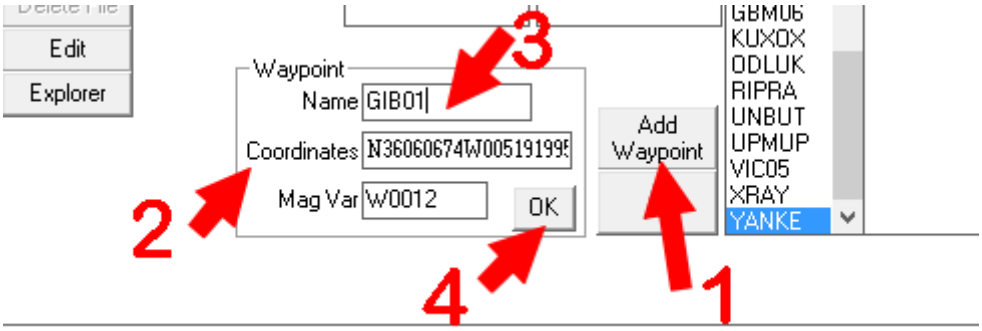
Because Caps is down, the coordinates are locked, I click on the label and this module will show:



This waypoint can be stored in our A424 module….

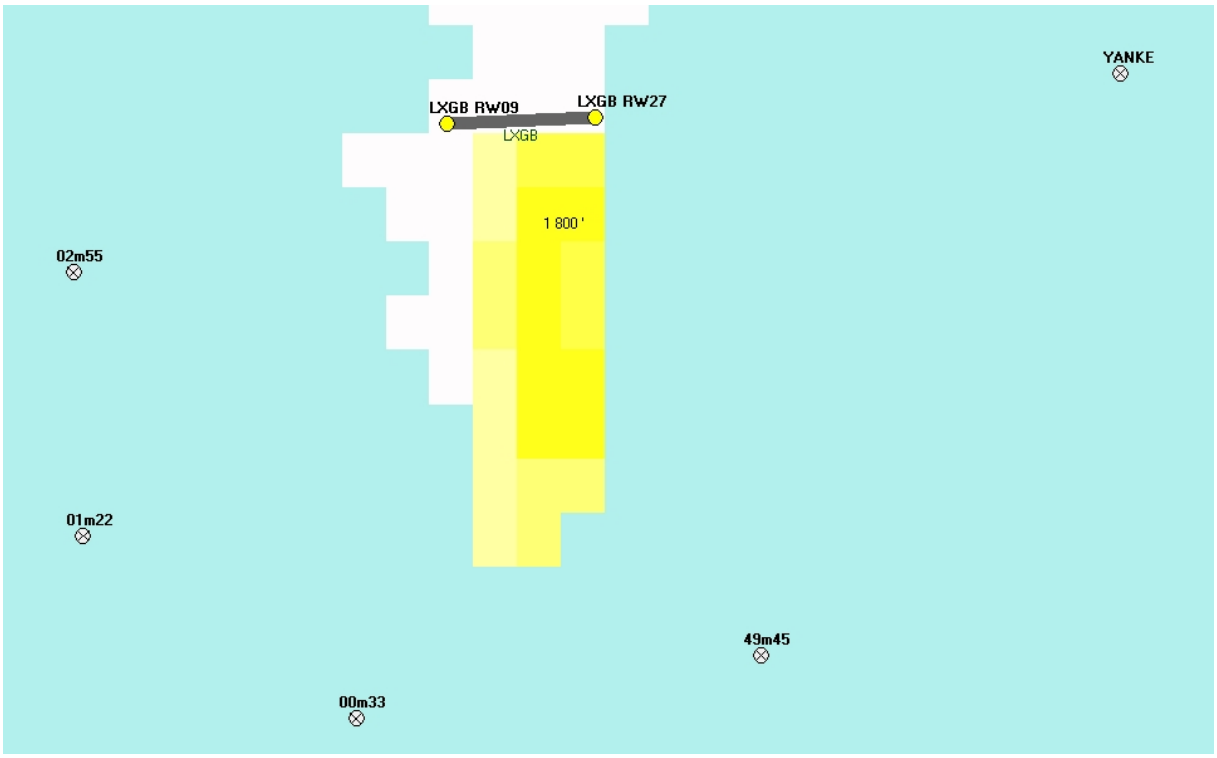
Press on the “C” in the middle of the coordinates in the previous module.

And on “Add Waypoint” in the procedure design module…



GIB01 will be in your file (when saved), ready to be use for what any !

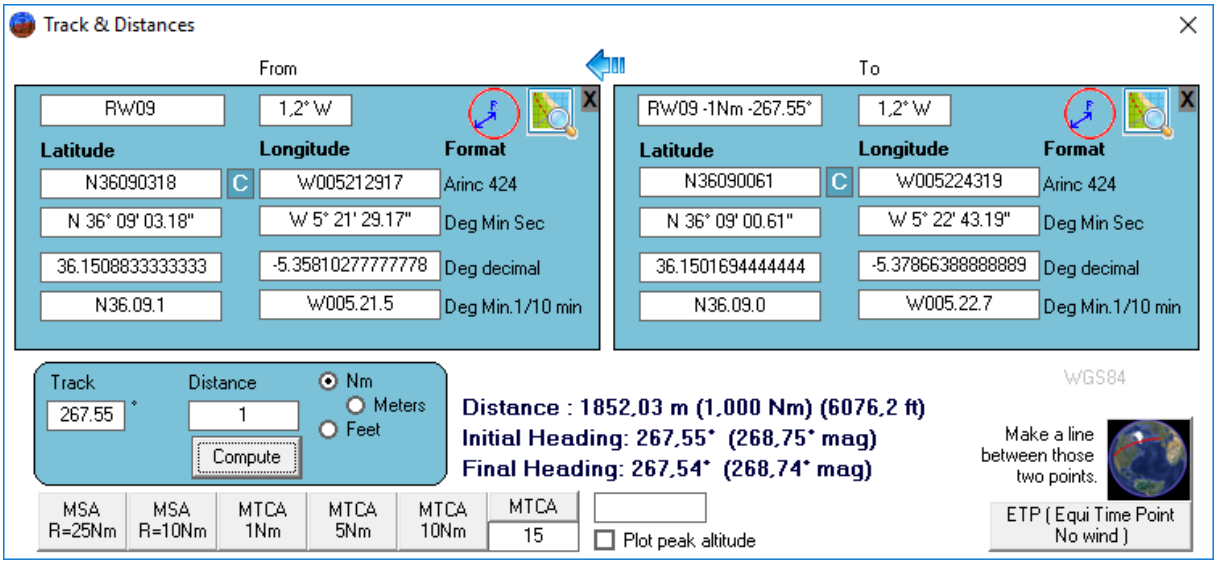
I’m going on with other waypoints… GIB02/03/04…

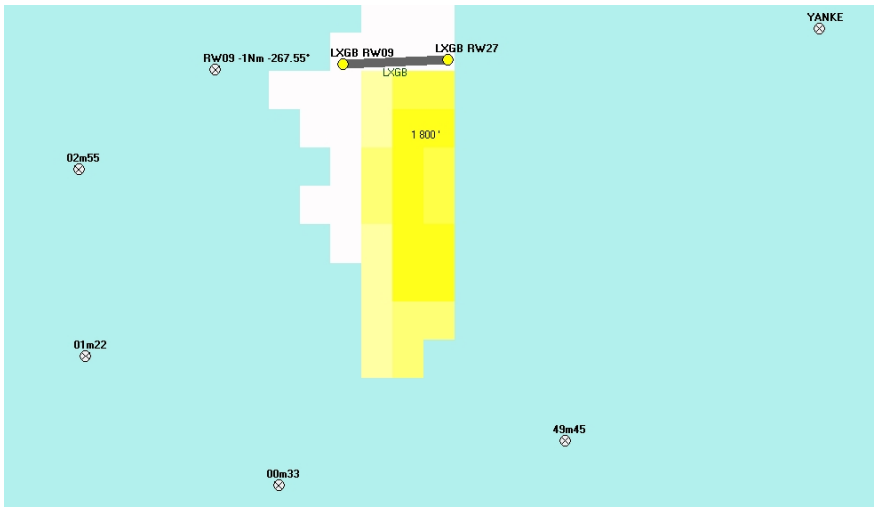


(the module give a temporary name to the points with minutes and seconds of time you create them, that help to put them in the correct order after…)

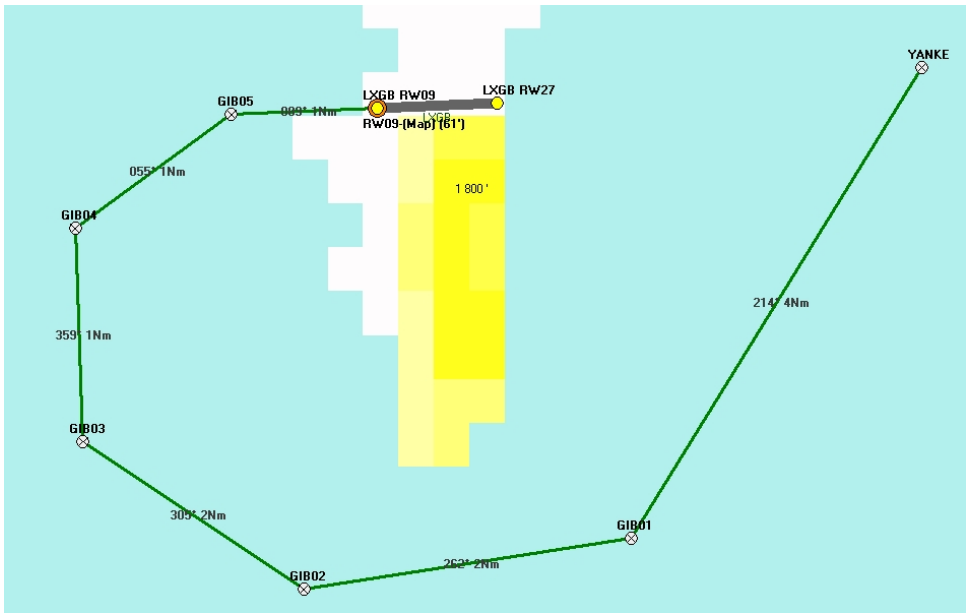
The last point will be in the runway axis, at 1Nm

Easy with the module after selecting THR27 then THR09, switching the THR 09 with the blue arrow and ask a computation in the same axis of 1Nm:





We can see the trajectory by linking all waypoints together with simple TF legs:



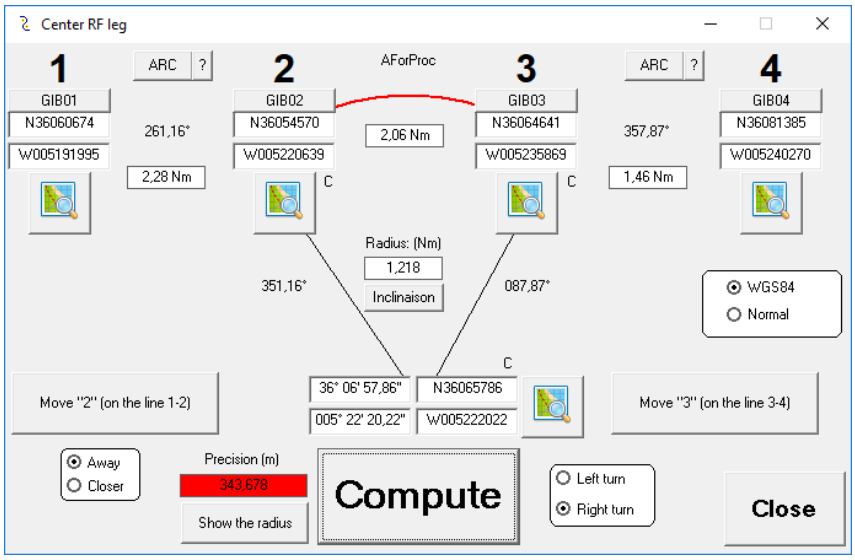
(Select GIB01, then TF, GIB02, then TF, GIB03, etc.)

We see that we should code 2 RF legs, between GIB02 and GIB03 then GIB04 and GIB05…

Let's use the module for RF legs center determination.

RF leg addition

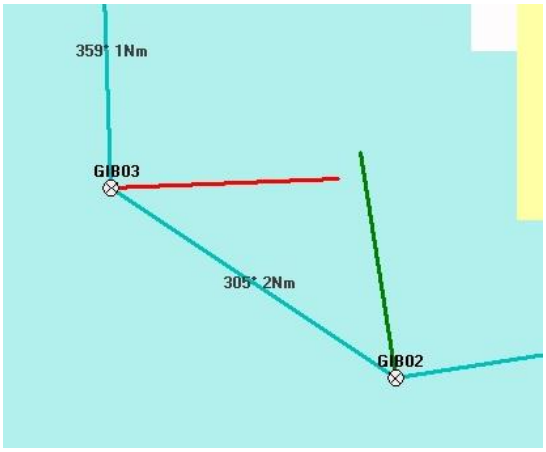
You select all the waypoints one by one and click on import 1, import 2, import3 and import 4.



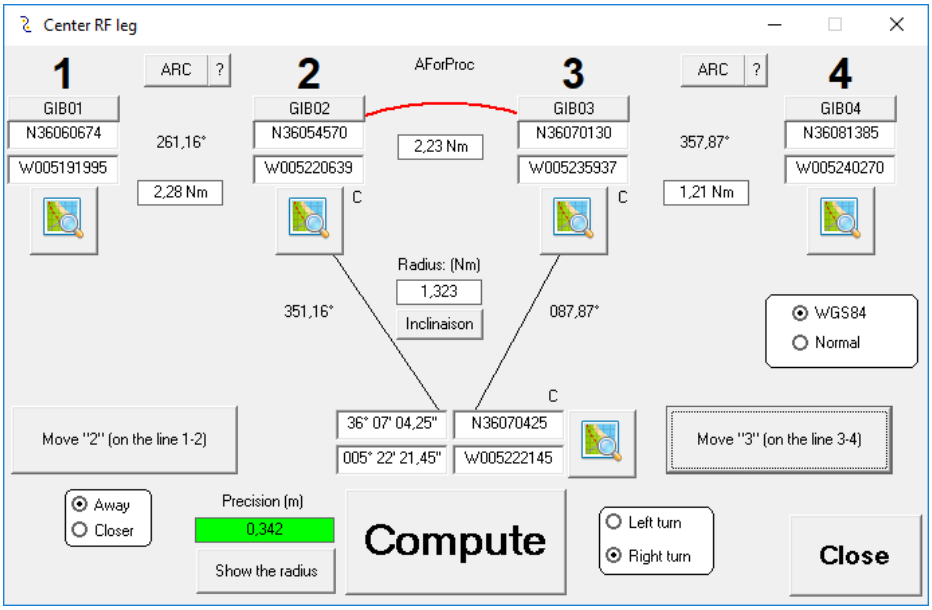
When done you confirm the turn direction (to the right) and click “Compute”

The precision is too poor, 343m, we will adjust this.

Click on “show the radius” and we see that we can move GIB03 to the north, or GIB02 to the west. To keep the higher radius I will prefer move GIB03 to the north:

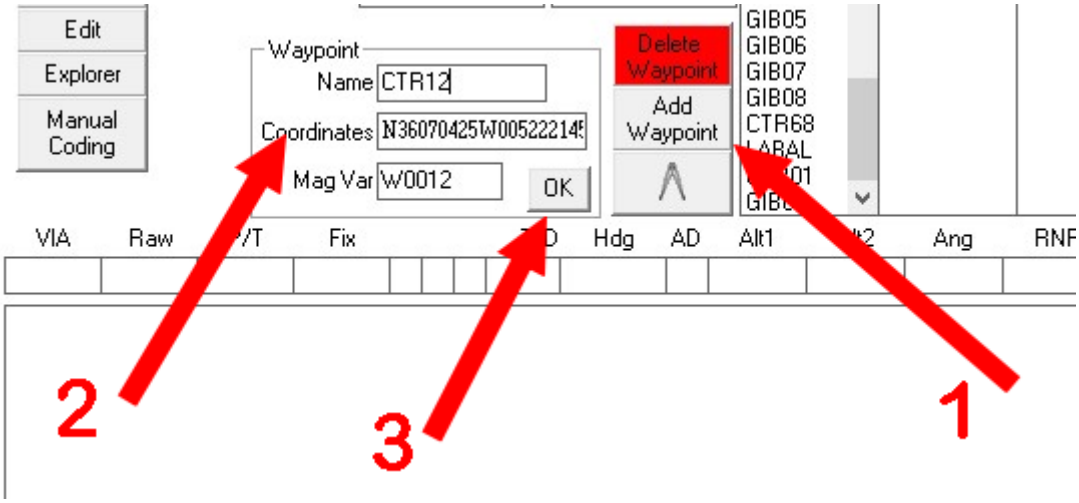


Click on “Move 3 on the line 3-4” until nothing moves and the label is green, and the error of only 34 centimeters (A424 coordinates cannot give better precision with 1/100 seconds in the coordinates)



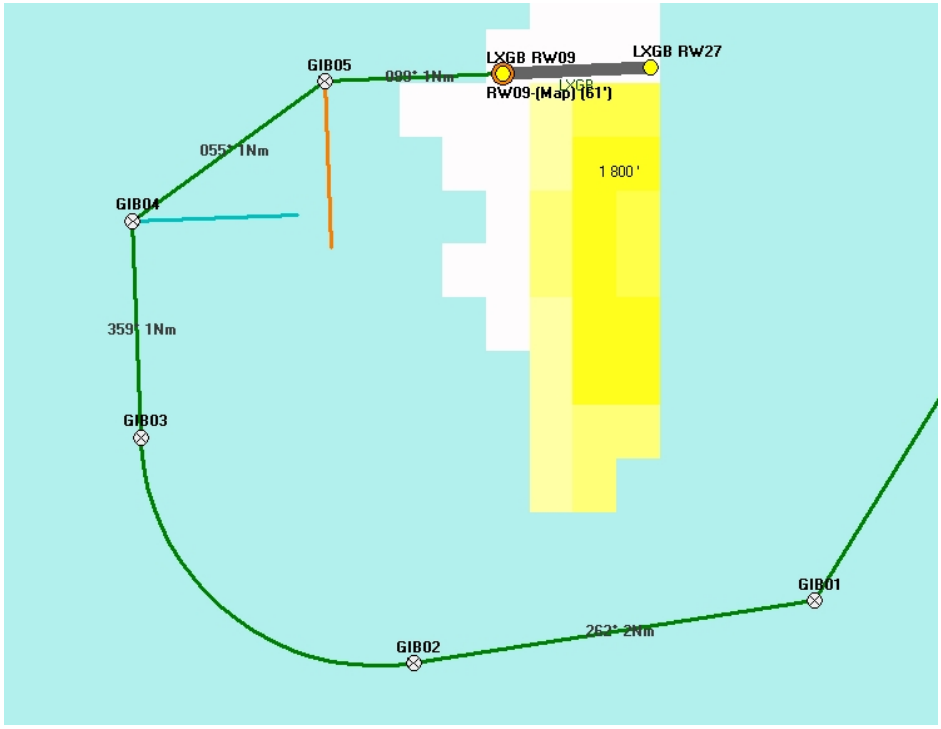
So we have our RF leg center, with “C” we copy its coordinates.

Then we create the waypoint of this RF center.



And because we moved GIB03, you have to copy new coordinates and delete + create a new GIB03, or you can create some other temporary waypoints for your tests.

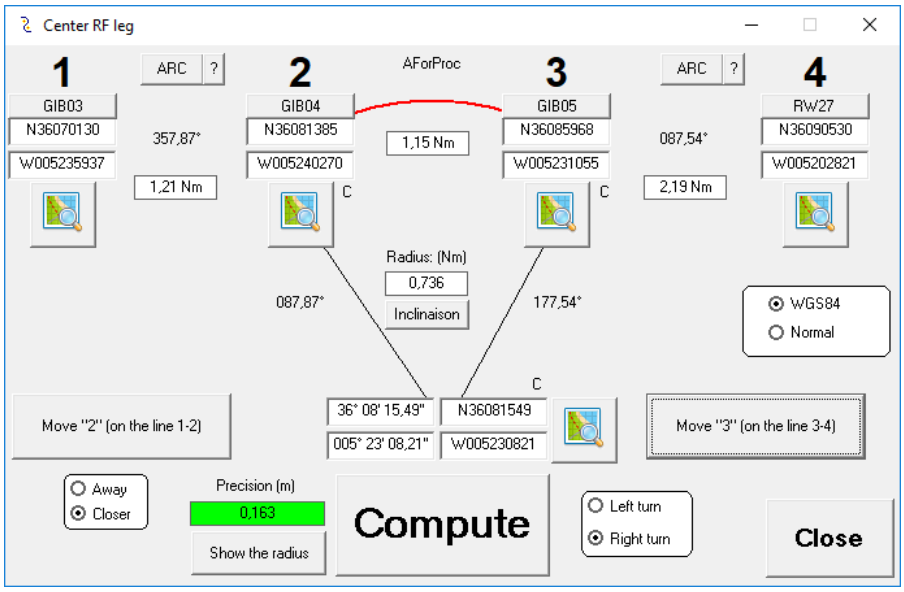
Same action to do for the last RF leg



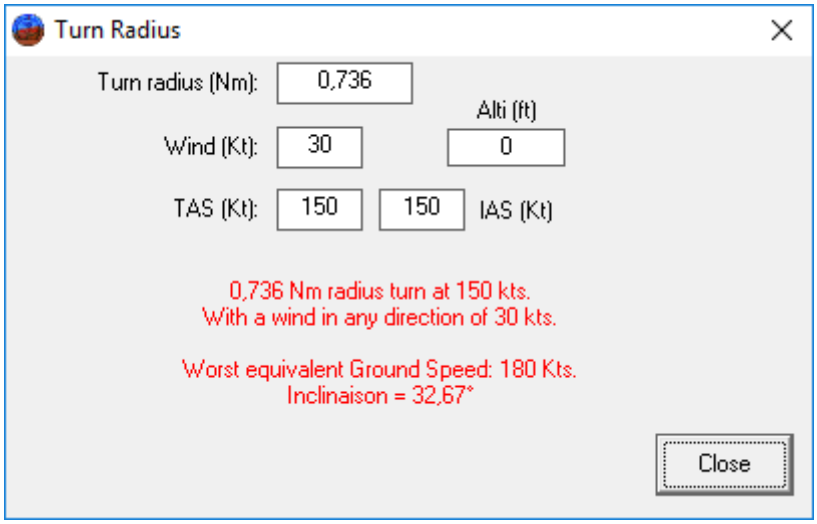
Here we see that we can move GIB05 to the west, or GIB04 to the south… that's the solution which enlarge the radius, but GIB05 to the west will give some lenth to the DFROP (Distance to final approach roll-out point)

Adjustments

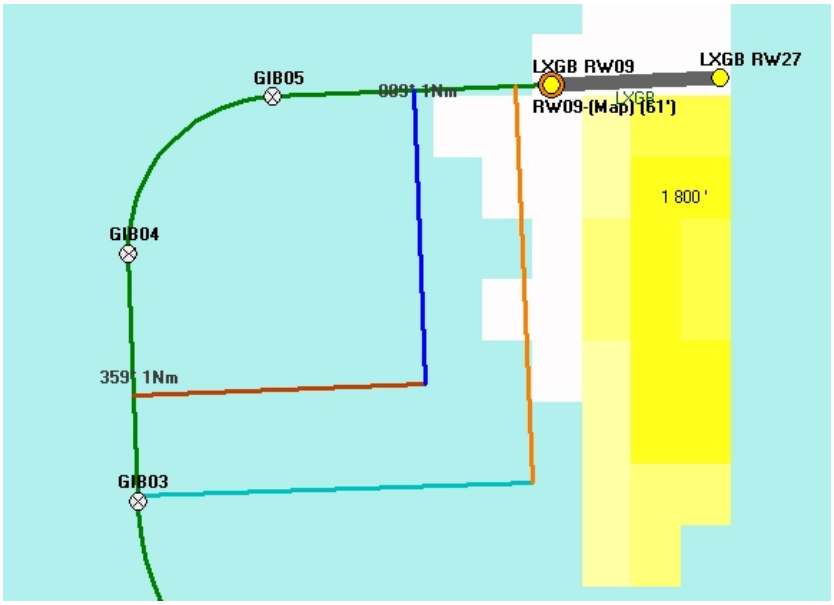
I prefer a longer finale to stabilize…



The finale is now 2.19 nm long…. but the radius is only 0.736 Nm, we can check the inclination …. Certainly too sharp:



We retry by only moving GIB04 to the south, the turn is wide but the final too short, so we make a mix and we check with the button “show the radius”

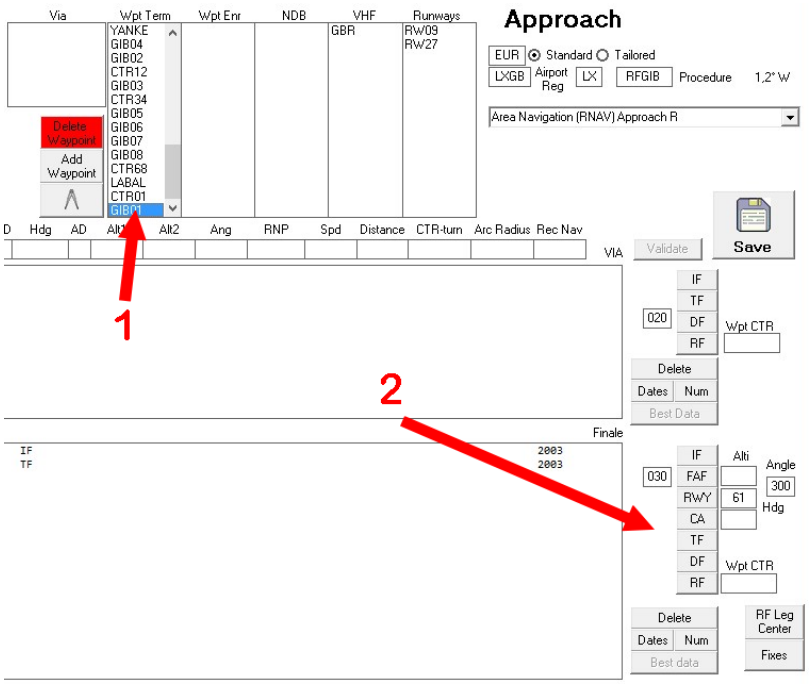


Like this should be OK,

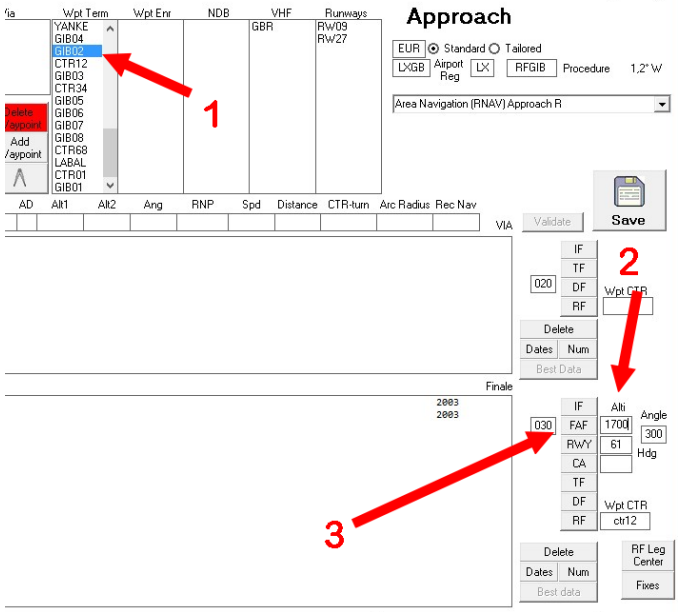
Making the coding, and testing it.

Starting back from our first IF:

Select the next fixe (in any list) and press TF (or any other path terminator)

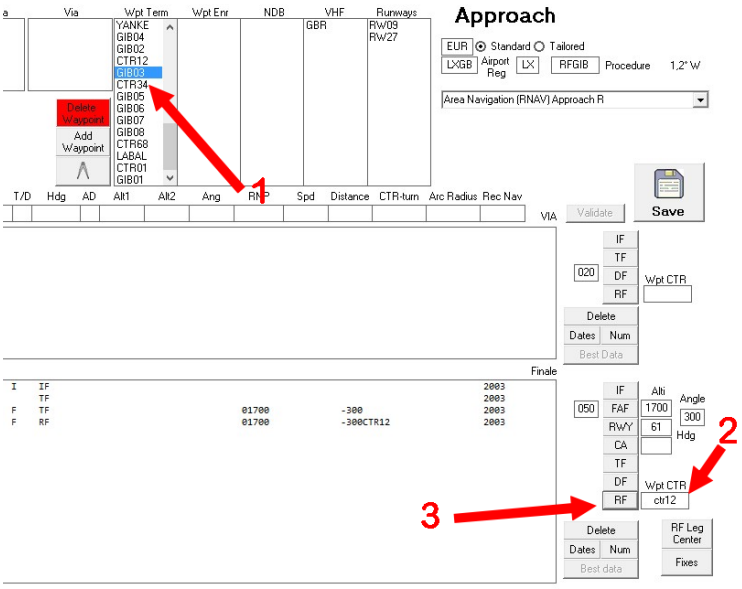


Next line is the TF leg to the FAF GIB02. Select GIB02 and push on “FAF” (you can insert at this moment the intercept altitude at the FAF, here = 1700’)



Next is the first RF leg, from GIB02 to GIB03, The center is the fix CTR12.

Put CTR12 in the text box, select the fix GIB03 and click on “RF”

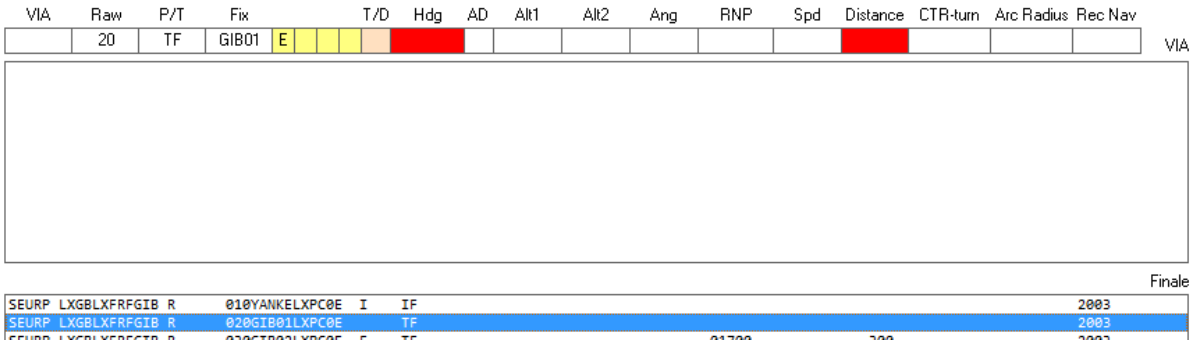


Continue in the same way until the threshold.

```
SEURP LXGBLXFRFGIB R      010YANKELXPC0E  I    IF                                                    2003
SEURP LXGBLXFRFGIB R      020GIB01LXPC0E       TF                                                    2003
SEURP LXGBLXFRFGIB R      030GIB02LXPC0E  F    TF                          01700          -300       2003
SEURP LXGBLXFRFGIB R      040GIB03LXPC0E  F    RF                          01700          -300CTR12  2003
SEURP LXGBLXFRFGIB R      050GIB06LXPC0E       TF                                         -300       2003
SEURP LXGBLXFRFGIB R      060GIB08LXPC0E  F    RF                          01700          -300CTR68  2003
SEURP LXGBLXFRFGIB R      070RW09 LXPG0GY M    TF                          00061          -300       2003
```

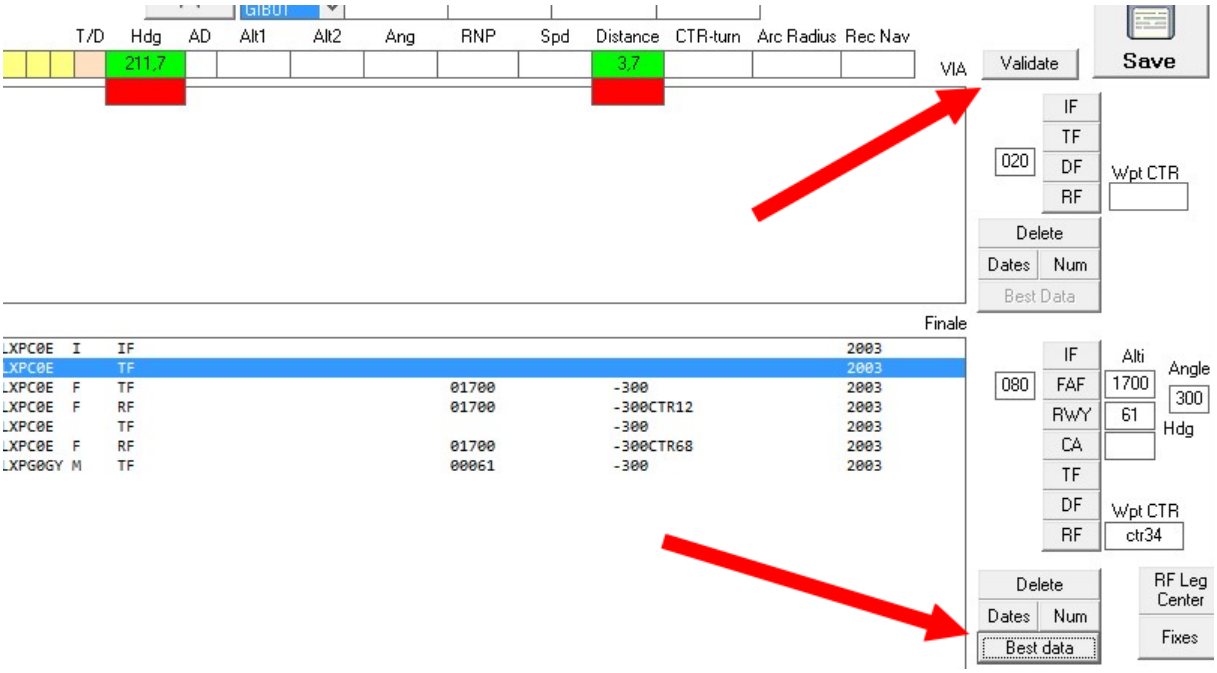
Auto completion of mandatory datas

When you select a line, it can happen that a box above turn red…



That mean that some mandatory data are false or missing.

Click simply on the button “Best data” near the list



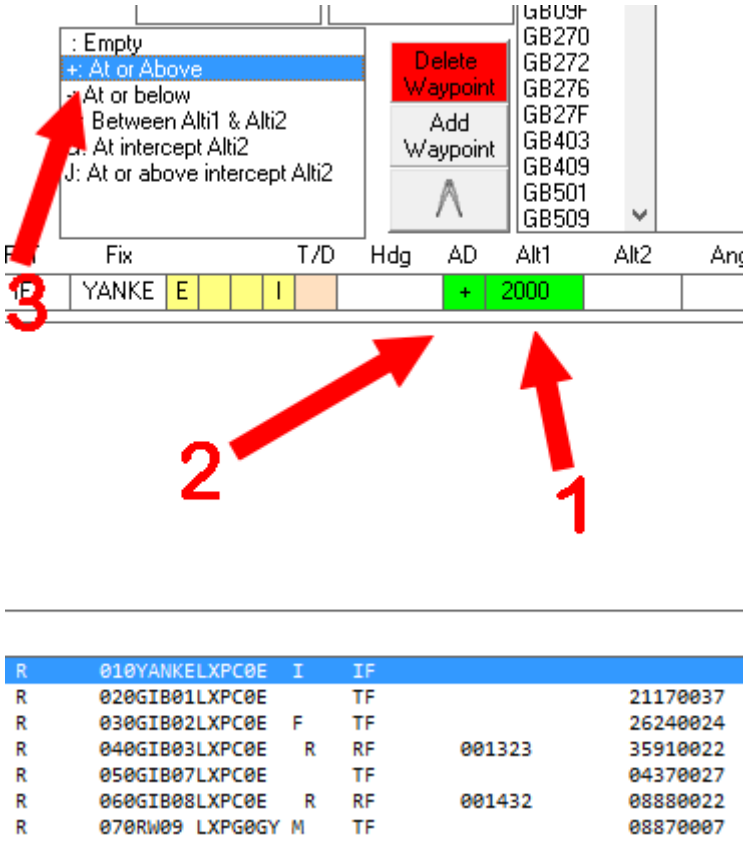
And after validation, click on “Validate”

And so on for each lines.

Things can be adjusted for each data in every lines.

Speed limit, path angle, RNP, etc.

Here I want to add an altitude at the IAF (YANKE)



When the data requested is a code, clicking in the box will show a list, where you can choose. (here in Altitude description, I select “+”)

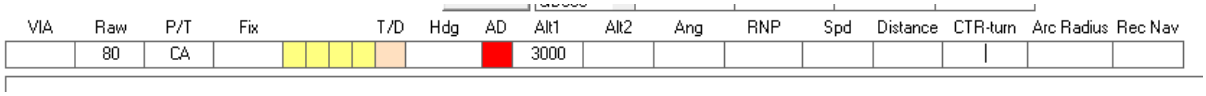
The box turn in green until you validate your change, with the button Validate on the right.

To finalize our job, just insert a missed approach…

To be sure it will be at the end, verify the count number is greater than the row number :

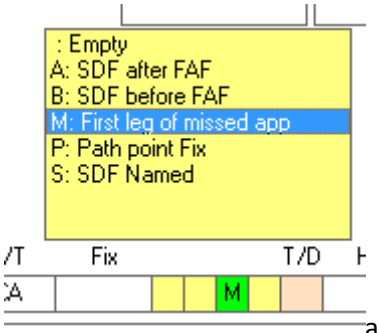
(the runway THR is row 70, so OK for #80.

Insert 3000 (feet) and click on “CA”…



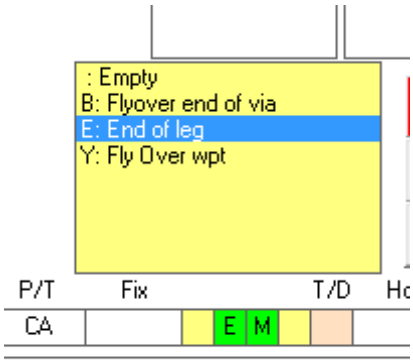
The Altitude description turns red, because it is mandatory to code a CA with a “+”

We have also to indicate that it is the beginning of the missed approach. Click in the 3rd yellow box:



and select “first leg of a missed approach”

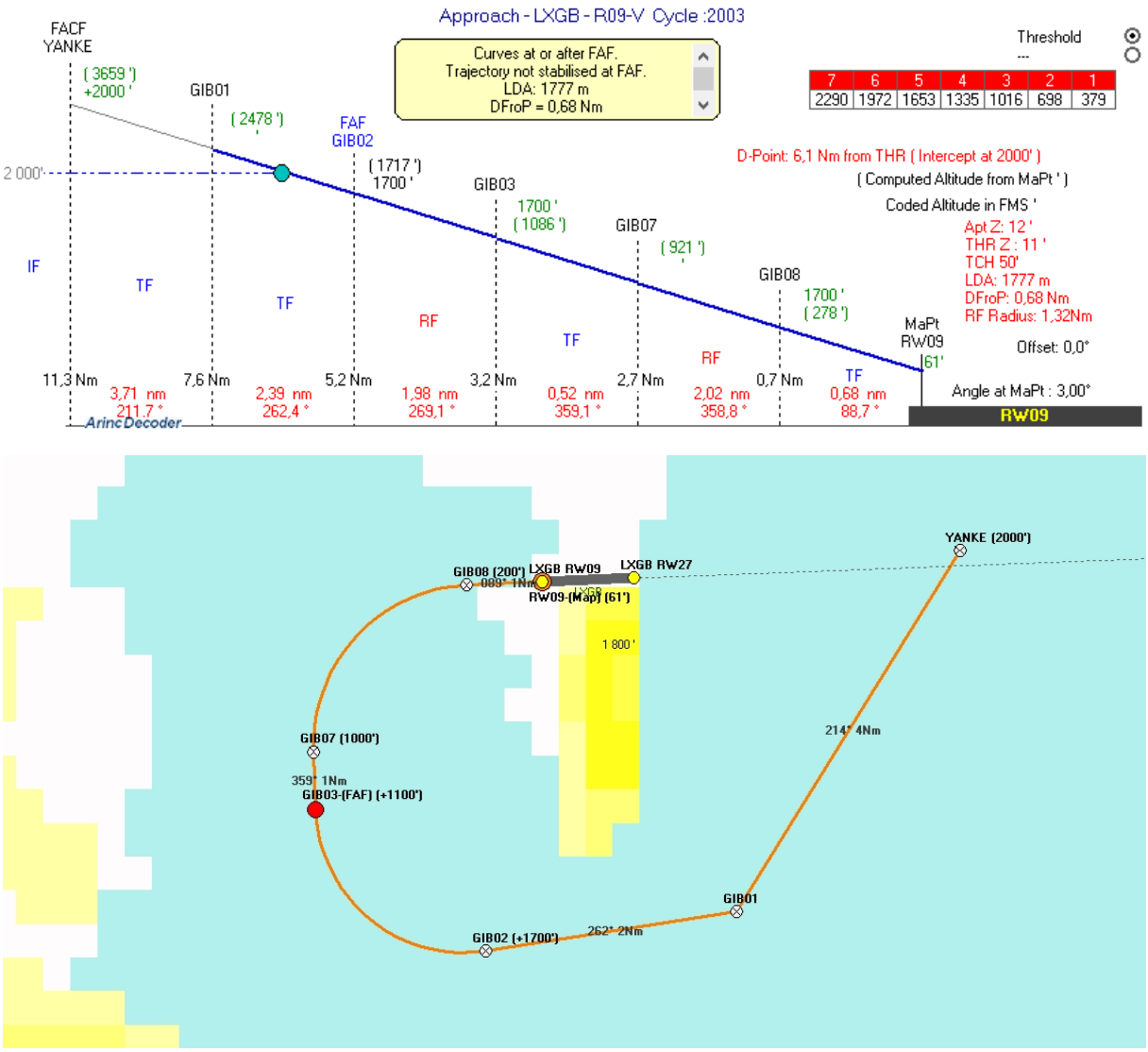
In the 2nd box we can insert that it’s the last segment.



Then validate and Save.

Approach - LXGB - R09-V **Gibraltar** **Mag Var : 01.2° W (Apt)** **Cycle :2003**

Via	Seq	Pt	Fix	Typ	TD F/O	TD	Mag Crs		Alt 1	Alt 2	Vert Angle	RNP	Speed Limit	Distance Time		CTR RF Leg	Radius (Nm)		Updte
	10	IF	YANKE	FACF				+	2000										2003
	20	TF	GIB01				211,7°							3,7 Nm					2003
	30	TF	GIB02	FAF			262,4°		1700		-3,00°			2,4 Nm					2003
	40	RF	GIB03			R	359,1°		1700		-3,00°			2,2 Nm		CTR12	1,3		2003
	50	TF	GIB07				43,7°				-3,00°			2,7 Nm					2003
	60	RF	GIB08			R	88,8°		1700		-3,00°			2,2 Nm		CTR68	1,4		2003
	70	TF	RW09	MaPt	FO		88,7°		61		-3,00°			0,7 Nm					2003
	80	CA		Go.Arr				+	3000										2003



Should be awesome to fly it in real: