RPP_FPGen v1.0

User’s Manual

2008-04

Table of Contents *Page:*

1. What is it and why?.....3

2. Let's generate some flight plans NOW (a Quick Guide).....4

3. Project sheet data details.....14

4. Probability Profile sheet data details.....18

5. Appendix 1: Development History.....19

1. What is it and why?

RPP_FPGen is yet another FS AI flightplans generator.
Yet another?

Well, this is THE generator, where you can design military and GA traffic plans but all the tedious job is done by the software itself. The software is designed as MS Excel application and utilizes a set of sheets, with a given data structure. You just choose a home base, set a destination list and AI aircraft list ... and run macro called FPG_Run (press Alt-F8). You get three txt files, which you manually compile using Lee Swordy's Traffic Tools (for FS9). Then you get a traffic BGL file, just where you need this.
RPP_FPGen runs on a random probability, taking into account Probability Profiles, defining flight probability for each hour of a day in a week. Almost every decision made is random but your concepts are respected.
RPP_FPGen generates flightplans both for FS2004 and FSX.

Why I attempted to design this stuff? I always missed a FP tool, both flexible, home base (local) oriented and taking decisions, where to and exactly when to take off, for a given particular aircraft, off me. I just needed a tool which would fill some regions of FS in a way I like, with those AI planes that I assigned to fly there. Yep, there already are push-one-button generators (especially those by Markus Brunner and Ben Laenen) but those fill all your FS world with traffic and/or you don't have much control over what they do.
And last but not least – a tool should generate flightplans which would satisfy military traffic designers, with all their TNGs, transitions and formation flying...

So, how the stuff works?
You input data in a project sheet (you can have many of them). Projects are BASE oriented, so you choose Home Base and guessed destinations. You set up aircraft list as well..
Flightplans are then generated. Each flightplan is WEEK.
RPP_FPGen automates ALL the tedious job with choosing destinations, choosing departure times, calculating arrival times (using The Great Circle algorithm for a leg distance computation).
RPP_FPGen is not completely foolproof so if you input a completely random data strings here or there the macro can break. Don't worry; just put a meaningful data into proper fields.
It is possible to set up a following Type of flying for each aircraft:

- STAR - all the time from the Home Base to a randomly chosen destination and back,
- TOUR - from the Home Base to the first destination, then to the second and so on, back home in the end,
- RAND - flies between randomly chosen airports (both Home Base and destinations), back home in the end (kind of random mix of STAR and TOUR).

So ... RPP_FPGen is here, I will be most satisfied if you find this useful!

Special thanks go to:

- Barry Taylor – for all the thorough Beta testing and writing the Quick Guide here,
- Gary Baker – Beta testing, some additional ideas,
- Paul of The Offshore Development Group – for all the ideas back in "FSAINV2" times (never finished predecessor of RPP_FPGen),
- Markus Brunner and Ben Laenen – for inspiring me by their products, I also used Ben's idea how to generate random aircraft registry numbers for a given country.

Rysiek Winawer
MAIW Contributor
RipPipPip =at= gmail.com

2. Let's generate some flight plans NOW (a Quick Guide)

Written by Barry Taylor

This guide is to be used in conjunction with Rysiek Winawer 'RipPipPip' RPP_FPGEN application. We will explain how to create common types of flightplans (the type MAIW – Military AI Works, use in their packages).

Three different types of plans will be demonstrated, with a walkthrough through the whole process

1) Local base TNG
2) Random TNG **and** normal flights
3) Tour type flights

The tool is able to generate all the above with ease. Please experiment and remember ALT+ F8 if you are not happy with the flightplans that have been created.

This guide is written for FS2004!

Local Base TNG
Ok first up let's create some FP that will emulate local TNG flights. The aircraft will take off from **Base A** and perform TNG's at **Base A** and then land at **Base A**

Things to bear in mind in relation to TNG'S
VFR TNGS will always land/stop on runway/take off in that order.

Not all AI aircraft fly VFR TNG's correctly. Some aircraft will not obtain the correct glide slope and will land long or short. Some aircraft will just fly off into the sunset and never be seen again!

VFR TNG's can slow down traffic at a base, as the Aircraft stops on runway and takes off again. Anything trying to land while the TNG aircraft is on runway will go missed.

VFR TNG's can have problems if the runway is not long enough. The aircraft may run off the runway on takeoff!

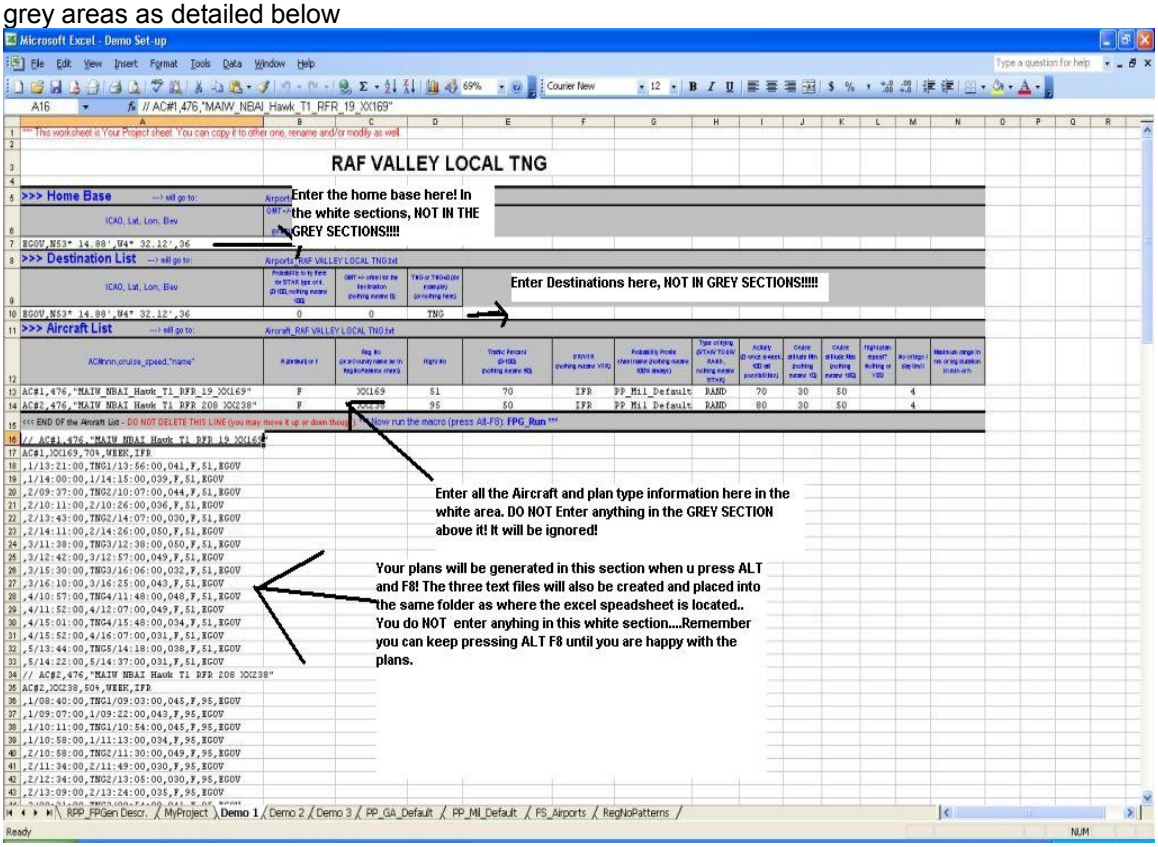
IFR TNG's will always perform a **missed** approach.
There is nothing that can be done to stop the wheels coming down! Not until Microsoft change the AI engine!

VFR/IFR weekly plans (NOT DAILY) need a 2-4 minute gap between the end of the TNG leg and the flyaway to the next base. Failure to do this can cause the next take-off to not happen and thus mess up all the legs for that aircraft. Believe me we have seen this happen at MAIW.

If you have problems with aircraft performing VFR TNG's then switch Flightplans to IFR

If you are using weapons ranges waypoints (like the ones contained in the MAIW Lakenheath package) always perform IFR TNG's. As you do not want the aircraft to land onto the weapons range!!!

Always remember to enter your information into the WHITE sections of the Spreadsheet, NOT the grey areas as detailed below



DEMO 1
Local base TNG

The scenario we are going to use is that two RAF Hawks will perform weekly TNG's at their Home Base Airport (RAF Valley - EGOV)

Aircraft will be Nick Black's BAe Hawk:
MAIW_NBAI_Hawk_T1_RFR_19_XX169
MAIW_NBAI_Hawk_T1_RFR_208_XX238

It is presumed that you understand about the PP profiles. If you are serious flight planner PP profiles are important in achieving realistic flight plan times.

Creating LOCAL TNG flightplans

- Place the Excel spreadsheet into a folder on your PC. Call the folder whatever you want (let's say "RPP_FPGen_flightplans").
- Copy the "MyProject" worksheet to a new worksheet. Call it whatever you want.
- At the top of the new worksheet you can see (in black) a heading called "MyProject". Change this to whatever you want the flight plan text files to be called. In this example change the MyProject heading to RAF VALLEY LOCAL TNG
- Go to the FS_Airports tab and EDIT->FIND for EGOV. The following entry should be displayed.
  EGOV,N53* 14.88',W4* 32.12',36
- Cut and paste this entry into the Home Base section of the worksheet
- In the Destination List put in the EGOV entry from the home base into first field. As the flightplans are for TNG at the home base then both entries need to be the same (EGOV)
- In the TNG column on the EGOV row for the Destinations List, type a "TNG" in that Column. This will tell the flight plan generator that EGOV is a TNG airport. Please be careful there are no extra spaces before or after the TNG you have entered.
- In the "Probability to fly there for STAR type of fl" put 100. This means the aircraft will always fly to that location.

Next we fill out the Aircraft List section of the Flight Planner worksheet

- In the "Aircraft List" section type in the following entry on the first input field:
  AC#1,476,"MAIW_NBAI_Hawk_T1_RFR_19_XX169"

This basically says……
1) Use Aircraft Number 1 (Can be any number you want).
2) The cruise speed of this Aircraft is 476Kts (use to work out FP route timings during compile, the cruise speed can be obtained from the Aircraft.cfg file under the [Reference Speeds] heading)
3) Then we say use the aircraft/paints with the Id (as per the aircraft.cfg file) of MAIW_NBAI_Hawk_T1_RFR_19_XX169.

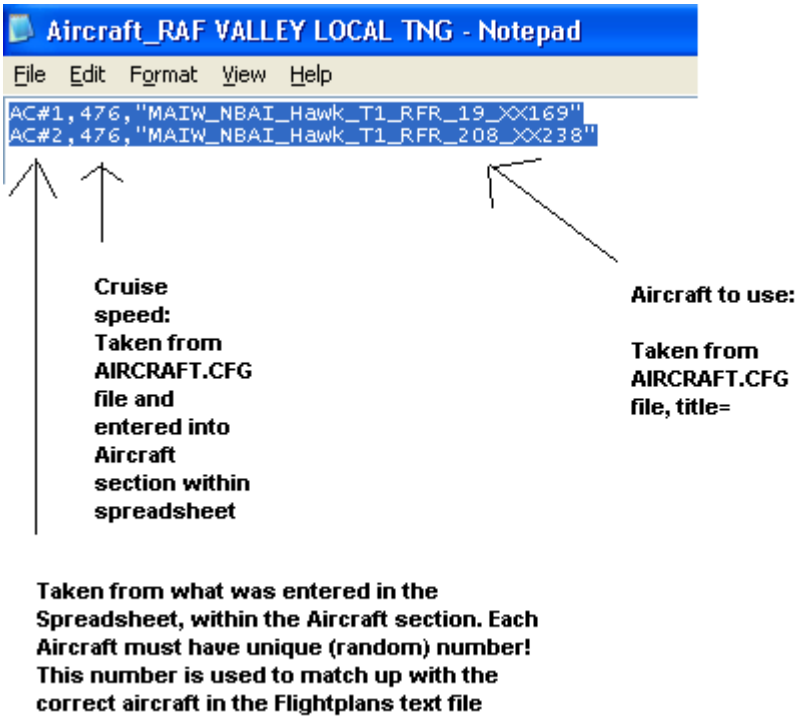
- Do the same for the next aircraft "MAIW_NBAI_Hawk_T1_RFR_208_XX238", use AC#2 as the aircraft id.
  AC#2,476,"MAIW_NBAI_Hawk_T1_RFR_208_XX238"
- In the "R (default) F" field put an "F" for both aircraft.
- In the "Reg No" fields type in the aircraft serial numbers, into each separate entry.
- For the "Flight Number" entry put "51" for AC#1 and "95" for AC#2 (Do not use the "").
- In the "Traffic Percent" Column put "70" for AC#1 and "50" for AC#2. This links to the Aircraft % option for FS2004 traffic.
- In the IFR/VFR column have them both as IFR (One can be VFR if you so desire. Just my preference, u can do VFR if you want. Remember my notes above about the difference)
- For the "Probability Profile" use PP_Mil_Default. The PP sheet has the % for aircraft usage. Please read the full guide to see how the PP sheet affects the flightplan generation process (and believe me it does!!).

- In the "Type of Flying" fields put STAR for both. Again it's important you understand what each of the option can and cannot do. The full manual explains more.
- For the "Activity" section use "70" for AC#1 and "80" for AC#2. Again refer to FULL manual for detailed instructions.
- The cruise min can be set to "030" (as they are TNG at local airport) and max can be "050" for both planes.
- In the "Number of legs/Day limit" type in "4". This will allow the planes to do two TNG's per day (one thing to bear in mind is that ½ of a full TNG leg is one leg, so a full single TNG FP entry are 2 legs).
- Now press ALT+F8 and run the macro. Your first flightplans are being generated!!!!!!
- The FP tool will generate three .txt files
  Aircraft_RAF VALLEY LOCAL TNG.txt
  Airports_RAF VALLEY LOCAL TNG.txt
  Flightplans_RAF VALLEY LOCAL TNG.txt

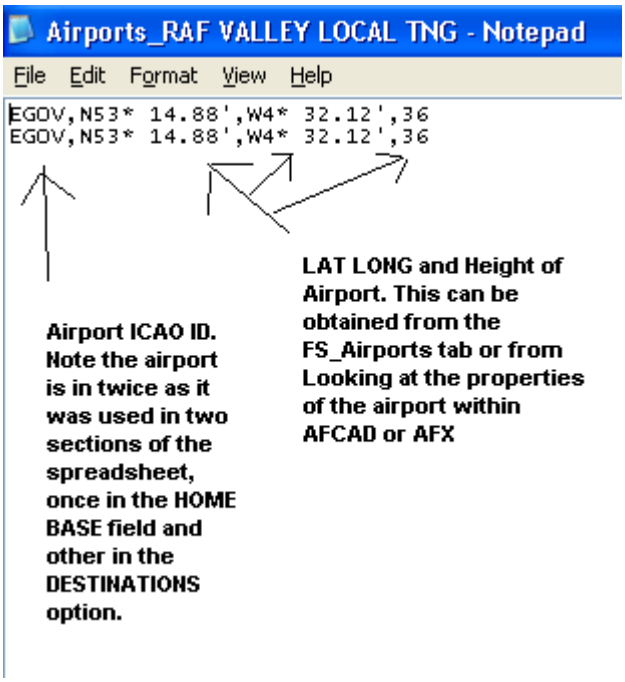
The "RAF VALLEY LOCAL TNG" tag comes from the top of the Excel spreadsheet, where we changed "My project" to "RAF VALLEY LOCAL TNG". Please ensure that when you create multiple spreadsheets that they have to have different heading for each one, or you will just overwrite them when you move to next spreadsheet and press ALT F8 to generate plans.
The AIRCRAFT text files contain the list of aircraft to use, along with speed and AC assignment number you used.
The AIRPORTS text file lists the airports the FP's will use.
The FLIGHTPLANS text file contains the actual FP.

Lets have a look at each file and go through what has been generated (note that your FP will be different to what is shown here, but the concepts are the same).

File Aircraft_RAF VALLEY LOCAL TNG.TXT :



File Airports_RAF VALLEY LOCAL TNG.TXT :



File Flightplans_RAF VALLEY LOCAL TNG.TXT :

AC#2,XX238,50%,WEEK,IFR,**1/08:40:00,TNG1/09:03:00,045**,F,95,EGOV,
1/09:07:00,1/09:22:00,043,F,95,EGOV,1/10:11:00,TNG1/10:54:00,045,F,95,EGOV,
1/10:58:00,1/11:13:00,034,F,95,EGOV,2/10:58:00,TNG2/11:30:00,049,F,95,EGOV,
2/11:34:00,2/11:49:00,030,F,95,EGOV,2/12:34:00,TNG2/13:05:00,030,F,95,EGOV,
2/13:09:00,2/13:24:00,035,F,95,EGOV,3/08:31:00,TNG3/08:54:00,041,F,95,EGOV,
3/08:58:00,3/09:13:00,039,F,95,EGOV,3/13:00:00,TNG3/13:47:00,031,F,95,EGOV,
3/13:51:00,3/14:06:00,042,F,95,EGOV,4/10:22:00,TNG4/11:01:00,039,F,95,EGOV,
4/11:05:00,4/11:20:00,032,F,95,EGOV,4/13:58:00,TNG4/14:46:00,039,F,95,EGOV,
4/14:50:00,4/15:05:00,037,F,95,EGOV,5/09:44:00,TNG5/10:04:00,035,F,95,EGOV,
5/10:08:00,5/10:23:00,038,F,95,EGOV,5/11:30:00,TNG5/12:07:00,041,F,95,EGOV,
5/12:11:00,5/12:26:00,049,F,95,**EGOV**

Above are FP's that have been generated. Let's go through them and see how they fit together. It's not complicated, and easy to read.

Just always remember to start with last airport listed and then jump to first leg at start of plan and then work forward to the last ICAO again. Highlighted above, in bold.

First off you can see the AC#2 at the start. This tells the AI engine that for the FP's numbered AC#2 in the FLIGHTPLANS_ RAF VALLEY LOCAL TNG.TXT file use the entry in the AIRCRAFT_ RAF VALLEY LOCAL TNG.TXT numbered AC#2.

Next is the Aircraft serial, this will be displayed in Traffic Explorer or when viewing the aircraft from an external view.

Next is the AI traffic % sign. This is used in conjunction with the AI Traffic % slider. If the AI Traffic % slider in FS2004 is less than 50% this aircraft will not show up within the FS

Next is the type of plan "WEEK" A week plan always has a day entry before the time of the leg, such as 1/01:55

0= Sunday (FS2004, there is a difference for FSX, see Probability Profiles info)
1= Monday
2= Tuesday
3= Wednesday
4= Thursday
5= Friday
6= Saturday

Next is the type of Flightplan, IFR or VFR,

Next is the first leg of the flightplan, remember to always start from last Airport in the plan and then jump to this point. So for the first leg of this plan it reads:

EGOV (this is from last LEG don't forget)
1/08:40:00,TNG1/09:03:00,045,F,95,EGOV,
1/09:07:00,1/09:22:00,043,F,95,EGOV

At 08:40 on Monday (1) take off from EGOV (RAF VALLEY) and do TNG at RAF VALLEY until 09:03, At 09:03 head back to RAF Valley and land by 09:22,
Fly at a height of "045" for the first leg and "043" for the second leg.
Use callsign number "95" for first leg and "95" for second leg.

Simple!

The next leg would read:

EGOV,1/10:11:00,TNG1/10:54:00,045,F,95,EGOV,1/10:58:00,1/11:13:00,034,F,95,EGOV
Take off from EGOV (as that is where the last leg landed!) at 10:11(am, the FP use 2hr clock system),
Do TNG at RAF VALLEY until 10:54,
Head back to RAF VALLEY at 10:58,
Land by 11:13 back at RAF VALLEY,
Height is 045 for first leg and 034 for second leg (in 1000 ft, so 4,500 and 3,400 ft),
Use callsign number "95" for both legs. The F in the plan tells the AI engine to use the "95" number with the callsign from the AIRCRAFT.CFG file entry. If we used an "R" instead it will read out whatever is after the AC# section of the FP (in this case it would have been XX238).

- Go to your work folder (let's say "RPP_FPGen_flightplans") and your three raw text files will be in there waiting for you. All you will need to do then is compile them with TTOOLS and drop the .BGL file into the "Program Files\Microsoft Games\Flight Simulator 9\Scenery\World\scenery" folder.

DEMO 2
Random TNG and normal flights

The next type of Flight plan we are going to do will incorporate TNG'S and normal landings. One thing to always remember, if you want to do waypoint weapons range TNG's then they always should be IFR.

- Create a new worksheet (copy the one you made in the steps above), call it whatever you want.
- At the top of the worksheet you can see (in black) a heading called "MyProject". Change this to whatever you want the flight plan text files to be called. In this example change the MyProject heading to RAF VALLEY HAWKS RANDOM.
- Go to the FS_Airports tab and put EGOV as HOME BASE.
- In the Destination List put in the following list of airports and other information:

ICAO, Lat, Lon, Elev	Probability to fly there for STAR type of fl. (0-100, nothing means 100)	GMT +/- offset for the Destination (nothing means 0)	TNG or TNG40 (for example) (or nothing here)
EGQK,N57* 38.96',W3* 33.63',20	100	0	
EGQK,N57* 38.96',W3* 33.63',20	100	0	TNG
EGOQ,N53* 15.53',W4* 22.38',200	100	0	TNG
EGXC,N53* 5.58',W0* 9.96',23	100	0	
EGXC,N53* 5.58',W0* 9.96',23	100	0	TNG
EGVN,N51* 44.99',W1* 35.01',289	100	0	
EGVN,N51* 44.99',W1* 35.01',289	100	0	TNG
EGQK,N57* 38.96',W3* 33.63',20	100	0	
EGQK,N57* 38.96',W3* 33.63',20	100	0	TNG

You will notice that some airports are in twice. This is to allow the FP generator to do TNG and normal landing missions to the same airport. As an example, EGQK the FP tool will plan TNG missions along with normal landing type of flightplans to EGQK. Also note I have not put in any TNG's at RAF VALLEY into this plan. If you want to do that all you need to do is add EGOV as a TNG destination. You do not need to enter the GMT offset, this will be calculated by the FP tool. Also the sequence the airports are in makes no difference for STAR FP's (for RAND it makes some difference, when randomly switched to TOUR type).

- In the "Probability to fly there for STAR type of fl" put 100. This means the aircraft will always fly to that location.
- Next we fill out the Aircraft List section of the Flight Planner worksheet.
- In the "Aircraft List" section type in the following entry on the first input field.
  AC#1,476,"MAIW_NBAI_Hawk_T1_RFR_19_XX169"
- Do the same for aircraft "MAIW_NBAI_Hawk_T1_RFR_208_XX238, use AC#2 as the aircraft id.
  AC#2,476,"MAIW_NBAI_Hawk_T1_RFR_208_XX238"
- In the "R (default) F" field put an "F" for both aircraft.
- In the "Reg No" fields type in the aircraft serial numbers, into each separate entry.
- For the "Flight Number" entry put "51" for AC#1 and "95" for AC#2 (Do not use the "„).
- In the "Traffic Percent" Colum put "70" for AC#1 and "50" for AC#2. This links to the Aircraft % option for FS2004 traffic.
- In the IFR/VFR column have them both as IFR (One can be VFR if you so desire. Just my preference, you can do VFR if you want. Remember my notes above about the difference).

- For the "Probability Profile" use PP_Mil_Default. The PP sheet has the % for aircraft usage. Please read the full guide to see how the PP sheet affects the flightplan generation process (and believe me it does!!).
- In the "Type of Flying" fields put RAND for AC#1 and STAR for AC#2.
- Let me explain the difference. For a STAR type of FP the Aircraft will always return to its "HOME BASE" at the end of the day. For a RAND (short for random) the FP tool will "decide" where the aircraft finishes the leg. So if you want the aircraft to return to home base at end of day then use STAR, otherwise let the FP tool decide and use RAND!
- For the "Activity" section use "100" for both AC#1 and AC#2. This will allow the FP tool to use all time/date options. Again please refer to FULL manual for detailed instructions.
- The cruise min can be set anywhere between "170" and "230". Have to go up high as need to clear any mountains (one of the locations on the list is Kinloss in Scotland, not sure how high the hills are up there!)
- In the "Number of legs/Day limit" type in "4". This will allow the planes to do two legs per day (one thing to bear in mind is that ½ of a full TNG leg is one leg, so a full single TNG FP entry are 2 legs).
- Now press ALT+F8 and run the macro. Your first flightplans are being generated!!!!!!
- Go to your work folder (let's say "RPP_FPGen_flightplans") and your three raw text files will be in there waiting for you. All you will need to do then is compile them with TTOOLS and drop the .BGL file into the "Program Files\Microsoft Games\Flight Simulator 9\Scenery\World\scenery" folder.

DEMO 3
Tour type flights

The last demo is to show how preplanned TOURS can be done. The scenario is we have two RAF Hawks who are performing a weekly "Hop" around Europe. We want the two aircraft to do the following route over the course of that week:-

EGOV -> EBFS (Florennes Belgium, Monday)
EBFS -> ETNJ (Jever AB Germany, Tuesday)
ETNJ -> EHEH (Eindhoven Netherlands, Wednesday)
EHEH -> EGVA (RAF Fairford UK, Thursday)
EGVA -> EGOV (RAF Valley UK, Friday)

- Create a new worksheet (copy the one you made in the steps above) call it anything you want.
- At the top of the worksheet you can see (in black) a heading called "MyProject". Change this to whatever you want the flight plan text files to be called. In this example change the MyProject heading to RAF VALLEY TOUR.
- Put EGOV as "HOME BASE" Airport.
- In the Destination List put in the following list of airports and other information:

ICAO, Lat, Lon, Elev	Probability to fly there for STAR type of fl. (0-100, nothing means 100)	GMT +/- offset for the Destination (nothing means 0)	TNG or TNG40 (for example) (or nothing here)
EBFS,N50* 14.60',E4* 38.73',932	100	0	
ETNJ,N53* 32.00',E7* 53.32',23	100	1	
EHEH,N51* 27.05',E5* 22.52',72	100	0	
EGVA,N51* 40.93',W1* 47.40',285	100	0	

Ensure you enter the destinations **in the order you want the aircraft to visit them in**. Note you do not need to enter the GMT offset, this will be calculated by the FP tool.

- In the "Probability to fly there for STAR type of fl" put 100. This means the aircraft will always fly to that location.
- Next we fill out the Aircraft List section of the Flight Planner worksheet.
- In the "Aircraft List" section type in the following entry on the first input field:
  AC#1,476,"MAIW_NBAI_Hawk_T1_RFR_19_XX169"
- Do the same for aircraft "MAIW_NBAI_Hawk_T1_RFR_208_XX238, use AC#2 as the aircraft id.
  AC#2,476,"MAIW_NBAI_Hawk_T1_RFR_208_XX238"
- In the "R (default) F" field put an 'F" for both aircraft.
- In the "Reg No" fields type in the aircraft serial numbers, into each separate entries
- For the "Flight Number" entry put "51" for AC#1 and "95" for AC#2 (Do not use the ")
- In the "Traffic Percent" Column put "70" for AC#1 and "50" for AC#2. This links to the Aircraft % option for FS2004 traffic.
- In the IFR/VFR column have them both as IFR (One can be VFR if you so desire). Remember my notes above about the difference.
- For the "Probability Profile" use PP_Mil_Default. The PP sheet has the % for aircraft usage. Please read the full guide to see how the PP sheet affects the flightplan generation process (and believe me it does!!).
- In the "Type of Flying" fields put TOUR for AC#1 and AC#2.

The TOUR function tells the FP tool to create FP's using a list of destination airports and in the sequence in which they are entered within the Destination List fields. As an example if you have an aircraft that performs the following weekly flightplan:

Luke AFB –> Langley AFB -> RAF Mildenhall -> Ramstein AB -> RAF Mildenhall -> Langley AFB -> Luke AFB

For Home Base you would enter:-

KLUF (Luke AFB)

Then you would enter into the destinations list:-

KLFI (LangleyAFB)
EGUN (RAF Mildenhall)
ETAR (Ramstein AB)
EGUN (RAF Mildenhall)
KLFI (Langley AFB)

Note that you do not need KLUF in the destinations list, as after the last leg (KLFI) it will fly to the Home Base Location.

- For the "Activity" section use 100 for both AC#1 and AC#2. This will allow the FP tool to use all time/date options. Again please refer to FULL manual for detailed instructions.
- The cruise min can be set anywhere between 210 and 230. Of course you can put in any height you want! I'd recommend between 210 – 290 for AC#1 and 195 – 250 for AC#2 (for reasons that will be discussed below).
- In the "Number of legs/Day limit" type in "1". We want the aircraft to move to one base per day so one leg a day will do this for us. Also I know you are thinking to yourself "How did Barry get the aircraft to start on Monday?" Easy! We used to PP Profile sheet and made Sunday all "0", so the first day to use is Monday. The PP Profile sheet is an important tool in your FP creation, so always consider the effect it will have when the FP's are created.
- For this FP we want the aircraft to do exactly the same route, on the "Flight Plan Repeat" field we want to say "YES" for AC#2. The tool will then create two identical FPs. A little tip here , if you use the "Flight Plan Repeat" option then have the Cruise min-max set to different heights for every plane. If the planes spawn at the same height then can merge into one another. By a simple height change this effect will be minimized and your FP will look all the better for it.
- Now press ALT+F8 and run the macro. Your first flightplans are being generated!!!!!!
- Go to your work folder (let's say "RPP_FPGen_flightplans") and your three raw text files will be in there waiting for you. All you will need to do then is compile them with TTOOLS and drop the .BGL file into the "Program Files\Microsoft Games\Flight Simulator 9\Scenery\World\scenery" folder.

3. Project sheet data details

Here is an example project sheet (a step, when you input data):

*** This worksheet is Your Project sheet. You can copy it to other one, rename and/or modify as well.

MyProject

>>> Home Base --> will go to:	Airports_MyProject.txt
ICAO, Lat, Lon, Elev	GMT +/- offset for the Base (or will be calculated)
EPBC,N52* 16.15',E20* 54.43',348	1

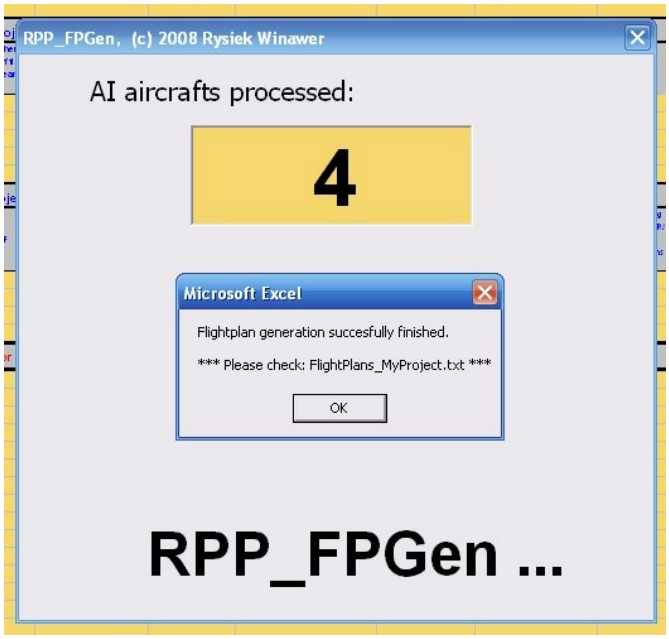
>>> Destination List --> will go to:	Airports_MyProject.txt		
ICAO, Lat, Lon, Elev	Probability to fly there for STAR type of fl. (0-100, nothing means 100)	GMT +/- offset for the Destination (nothing means 0)	TNG or TNG40 (for example) (or nothing here)
EPMO,N52* 27.06',E20* 39.03',341	50	1	
EPSO,N52* 11.91',E20* 17.56',256	100	1	
EPT ,N52* 32.00',E20* 41.00',200	100	1	TNG20
EPDE,N51* 33.08',E21* 53.61',387	20	1	
EPSC,N53* 35.08',E14* 54.13',151	80	1	

>>> Aircraft List --> will go to:	Aircraft_MyProject.txt							
AC#nnn,cruise_speed,"name"	R (default) or F	Reg No (or a Country name as in RegNoPatterns sheet)	Flight No	Traffic Percent (0-100) (nothing means 50)	IFR/VFR (nothing means VFR)	Probability Profile sheet name (nothing means 100% always)	Type of flying (STAR/ TOUR/ RAND, nothing means STAR)	Activity (0 -once a week, 100 -all possibilities)
AC#1,115,"Cessna Skyhawk 172SP Paint1 SP-FMV"	R	SP-SHX	0	100	VFR	PP_GA_Default	STAR	80
AC#2,115,"Cessna Skyhawk 172SP SP-KCM"	R	SP-AHE	0	50	IFR	PP_GA_Default	STAR	20
AC#3,115,"Cessna Skylane 182S SP-FTB"	R	Poland	0	100	VFR	PP_Mil_Default	RAND	100
AC#4,340,"MAIW_HTAI_C130H_BRS_1_1GT_2466"	F	N749KE	1234	50	IFR	PP_Mil_Default	RAND	60

<<< END OF the Aircraft List - DO NOT DELETE THIS LINE (you may move it up or down though). *** Now run the macro (press Alt-F8): FPG_Run ***

You can modify project name ("MyProject") and Home Base data. You can modify (alter, add, delete) rows for Destination List (AP List) and Aircraft List (AC List).

Here is the information that you see when you press Alt-F8 and run macro FPG_Run:



Here is the same example project sheet (after the generation process is finished):

*** This worksheet is Your Project sheet. You can copy it to other one, rename and/or modify as well.

MyProject

>>> Home Base ---> will go to: Airports_MyProject.txt

ICAO, Lat, Lon, Elev	GMT +/- offset for the Base (or will be calculated)
EPBC,N52* 16.15',E20* 54.43',348	1

>>> Destination List ---> will go to: Airports_MyProject.txt

ICAO, Lat, Lon, Elev	Probability for fly there for STAR type of fl. (0-100, nothing means 100)	GMT +/- offset for the Destination (nothing means 0)	TNG or TNG40 (for example) (or nothing here)
EPMO,N52* 27.06',E20* 39.03',341	50	1	
EPSO,N52* 11.91',E20* 17.56',256	100	1	
EPT ,N52* 32.00',E20* 41.00',200	100	1	TNG20
EPDE,N51* 33.08',E21* 53.61',387	20	1	
EPSC,N53* 35.08',E14* 54.13',151	80	1	

>>> Aircraft List ---> will go to: Aircraft_MyProject.txt

AC#nnn,cruise_speed,"name"	R (default) or F	Reg No (or a Country name as in RegNoPatterns sheet)	Flight No	Traffic Percent (0-100) (nothing means 50)	IFR/VFR (nothing means VFR)	Probability Profile sheet name (nothing means 100% always)	Type of flying (STAR/ TOUR/ RAND, nothing means STAR)	Activity (0 -once a week, 100 - all possibilities)
AC#1,115,"Cessna Skyhawk 172SP Paint1 SP-FMV"	R	SP-SHX	0	100	VFR	PP_GA_Default	STAR	80
AC#2,115,"Cessna Skyhawk 172SP SP-KCM"	R	SP-AHE	0	50	IFR	PP_GA_Default	STAR	20
AC#3,115,"Cessna Skylane 182S SP-FTB"	R	SP-RUH	0	100	VFR	PP_Mil_Default	RAND	100
AC#4,340,"MAIW_HTAI_C130H_BRS_1_1GT_2466"	F	N749KE	1234	50	IFR	PP_Mil_Default	RAND	60

<<< END OF the Aircraft List - DO NOT DELETE THIS LINE (you may move it up or down though). *** Now run the macro (press Alt-F8): FPG_Run ***

```
// AC#1,115,"Cessna Skyhawk 172SP Paint1 SP-FMV"
AC#1,SP-SHX,100%,WEEK,VFR
,0/04:29:00,TNG0/04:55:00,071,R,0,EPT
,0/04:59:00,0/05:23:00,095,R,0,EPBC
,0/08:03:00,0/08:30:00,021,R,0,EPSO
,0/10:58:00,0/11:25:00,041,R,0,EPBC
,0/20:52:00,0/21:19:00,078,R,0,EPSO
,1/08:12:00,1/08:39:00,081,R,0,EPBC
,1/09:51:00,1/10:18:00,069,R,0,EPSO
,1/13:06:00,1/13:33:00,068,R,0,EPBC
,1/14:28:00,1/14:55:00,075,R,0,EPSO
,1/20:25:00,1/20:52:00,034,R,0,EPBC
,1/21:52:00,TNG1/22:24:00,072,R,0,EPT
,1/22:28:00,1/22:52:00,088,R,0,EPBC
,2/03:26:00,2/03:53:00,024,R,0,EPSO
,2/07:58:00,2/08:25:00,098,R,0,EPBC
,2/09:30:00,2/09:53:00,090,R,0,EPMO
,2/13:48:00,2/14:11:00,073,R,0,EPBC
,3/06:41:00,3/07:04:00,057,R,0,EPMO
,3/10:42:00,3/11:05:00,060,R,0,EPBC
,3/15:22:00,TNG3/15:54:00,036,R,0,EPT
,3/15:58:00,3/16:22:00,023,R,0,EPBC
,3/17:21:00,TNG3/17:51:00,051,R,0,EPT
,3/17:55:00,3/18:19:00,073,R,0,EPBC
,4/05:22:00,4/06:07:00,028,R,0,EPDE
,4/09:49:00,4/10:34:00,056,R,0,EPBC
,4/11:22:00,4/11:49:00,029,R,0,EPSO
,4/14:19:00,4/14:46:00,096,R,0,EPBC
,4/15:33:00,TNG4/16:01:00,032,R,0,EPT
,4/16:05:00,4/16:29:00,097,R,0,EPBC
,5/07:30:00,5/07:53:00,093,R,0,EPMO
,5/10:37:00,5/11:00:00,088,R,0,EPBC
,5/13:10:00,5/13:37:00,088,R,0,EPSO
,5/16:27:00,5/16:54:00,090,R,0,EPBC
```

As you see, something has changed now:

- Names for a three traffic TXT files are updated (well, they would if you would change "MyProject" to something else): Aircraft_MyProject.txt, Airports_MyProject.txt (as well as Flightplans_MyProject.txt).
- A random registry number was generated for AC#3 - "SP-RUH", where there was a country name given ("Poland").
- Flightplans are generated (and three TXT files were saved to the folder, just where RPP_FPGen.xls resides). You can compile them now using Traffic Tools by Lee Swordy (FS9).

Additional info:

- To break the macro (in case it goes into infinite loop): press CTRL+BREAK(on Pause button)
- A sheet called FS_Airports is just for you convenience and gather all of FS2004 airports. You may use your own airports (for example "waypoints") providing that you then have AFCAD for them in FS.
- You may have as many project sheets and Probability Profile sheets as you like (in MS Excel limits).
- You may have as many destinations and aircrafts on a project sheet as you like (in MS Excel limits).
- You may freely run macro FPG_Run multiple times. Everytime you'll get a new set of flightplans, both below "<<< END OF the Aircraft List" and in 3 traffic TXT files.
- You don't like newly generated flightplan? Why not to try again … each time you get a different one!

Project sheet data details

Column name	Description
Project	
MyProject	The name of your project. You can change it to something else. Remember: this name is also given to the three traffic files
Home Base	
ICAO, Lat, Lon, Elev	Home Base data (data format just like in Airports_MyProject.txt file, refer to "FS_Airports" sheet as well).
GMT +/- offset for the Base (or will be calculated)	GMT offset (we need this as Probability Profiles are for local time and flightplans are in GMT). You may input the offset or it will be (roughly) calculated.
Destination List	
ICAO, Lat, Lon, Elev	Similar format as for Home Base.
Probability to fly there for STAR type of fl. (0-100, nothing means 100)	Probability to fly there for STAR type of flight (refer to "Type of flying" column in AC (aircraft) List below).
GMT +/- offset for the Destination (nothing means 0)	GMT offset – same meaning as for Home Base GMT offset.
TNG (or nothing here)	When you put "TNG" code here then the airport is treated as TNG only (no full landing, AC flies away to another, non-TNG destination, within 4 minutes after TNG "ends"). You may use same ICAO in another row however, without "TNG".
Aircraft List	
AC#nnn,cruise_speed,"name"	Aircraft data (data format just like in Aircraft_MyProject.txt file).
R (default) or F	R – registry number, F – flight number for every leg of flightplan generated for this AC.
Reg No (or a Country name as in RegNoPatterns sheet)	Put an AC registry number here. You may benefit from an automatic registry number generator here: you just put a country name here (exactly same name as in "RegNoPatterns" sheet) and a random RegNo will be generated for you (after you run the macro).
Flight No	Put a flight number here (you need a FlightNo when you put "F" in "R (default) or F" column above and plan to use callsigns in your project).
Traffic Percent (0-100) (nothing means 50)	Traffic percent (refer to Traffic Tools readme).
IFR/VFR (nothing means VFR)	IFR or VFR type of flight for a given AC (refer to Traffic Tools readme).
Probability Profile sheet name (nothing means 100% always)	Probability Profile sheet name is a name of PP you assign for this aircraft (refer to Probability Profile description later on).
Type of flying (STAR/ TOUR/ RAND, nothing means STAR)	Type of flying: • STAR - all the time from the Home Base to a randomly chosen destination and back. • TOUR - from the Home Base to the first destination, then to the second and so on, back home in the end. • RAND - legs between randomly chosen airports (both Home Base and destinations), back home in the end.
Activity (0 -once a week, 100 -all possibilities)	A probability that AC will indeed fly a given flightplan leg, at the just allotted departure time. If random decision is "NO", then a next possible departure time is allotted.
Cruise altitude Min (nothing means 10)	Cruise altitude minimum level.
Cruise altitude Max (nothing means 150)	Cruise altitude maximum level (actual altitude for a given leg is randomly chosen from the min-max bracket).

Flight plan repeat? Nothing or YES	If "YES" then the flightplan for this AC is an exact copy of the flightplan of its predecessor (flight levels are different). To be used for a formation flying.
No of legs / day limit	Number of legs per day limit. You can limit here how many times (maximum) the AC will take off per a 24-hour day.
Maximum range in nm or leg duration in min or h	You may put here a range or leg duration limit for this AC, for example: "100nm" or "45min" or "2h" will work.

4. Probability Profile sheet data details

Here is an example Probability Profile sheet (you can have as many PP sheets as you need):

*** This worksheet is one of your Probability Profile sheets. You can copy it to other one, rename and/or modify as well - providing that you will change the name just near aircraft(s) on Project sheet if you want use it.
*** DO NOT change the sheet structure, however.

Probability Profile - GA Default

Probability of departure in a given day of the week and hour (local time)

Day numbers:
FS2004: 0 = Sunday, 1 = Monday, 2 = Tuesday, 3 = Wednesday, 4 = Thursday, 5 = Friday, 6 = Saturday
FSX: 6 = Sunday, 0 = Monday, 1 = Tuesday, 2 = Wednesday, 3 = Thursday, 4 = Friday, 5 = Saturday

	HOURS (local time)																							
DAY No	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
0	5	5	5	5	10	20	50	80	90	90	100	100	90	80	80	70	50	50	40	20	5	5	5	5
1	10	10	10	10	20	20	30	50	60	60	60	60	50	50	60	60	50	40	30	20	10	10	10	10
2	10	10	10	10	20	20	30	50	60	60	60	60	50	50	60	60	50	40	30	20	10	10	10	10
3	10	10	10	10	20	20	30	50	60	60	60	60	50	50	60	60	50	40	30	20	10	10	10	10
4	10	10	10	10	20	20	30	50	60	60	60	60	50	50	60	60	50	40	30	20	10	10	10	10
5	10	10	10	10	20	20	30	50	60	60	60	60	50	50	60	60	50	40	30	20	10	10	10	10
6	5	5	5	5	20	50	70	100	100	100	100	100	100	100	90	90	80	70	40	10	5	5	5	5

This worksheet is one of your Probability Profile sheets. You can copy it to other one, rename and/or modify as well - providing that you will change the name just near aircraft(s) on Project sheet if you want use it.

The PP contains is pretty self-explanatory. You may change any cell (inside Day/HOURS area) to the value that would fit best in your project.
You may attach a different Probability Profile to each aircraft (gets 100% every day if omitted) or you may use the same – it is up to you.

5. Appendix 1: Development History

Version 1.0 - *2008.04.18*
- A first version released to the public.

Version 1.0 RC2a - *2008.03.16 - 29*
- * "TNG" code can be now extended to something like that: "TNG40",
  where 40 is 40min time period, for TNG itself (AP List).
- * "Maximum range in nm or leg duration in min or h" column added (in AC List).
- * "TOUR" algorithm corrected.

Version 1.0 RC1 - *2008.03.07*
- A floating screen during a calculation stop enhancement implemented.
- A counter window added.
- Some additional column descriptions added.

Version 0.9b - *2008.03.03*
- Strung-together TNG blockade - implemented.
- Empty destination and AC lines do not cause macro break now.
- Last leg issue cleared.

Version 0.8 - *2008.02.29*
- A change in a functionality: now there is just a TNG (works as former TNGAWAY code) and means: do a TNG here and always fly away within 4 min. rule.
  If you need to make AI land here for good as well then add such an airport again to the list, now without TNG code.

Version 0.7a - *2008.02.27*
- The last leg TNG not allowed check - done.
- Multiple FP repeat when answered YES in "Flight plan repeat?" column for an aircraft (Reg No, Flight No (Callsign) and Cruise altitude may differ).
- Number of legs per day limit may be input into the "No of legs / day limit" column for an aircraft.

Version 0.6 - *2008.02.12*
- Flight plan leg proper Excel font formatting, when you use a sheet a few times (Courier New, 12pts)
- Now Aircraft...txt and Airports...txt are generated as well as FlightPlans...txt file.

Version 0.5a - *2008.02.09*
- Flight plan leg times have seconds now as well (just ":00"), to allow fine manual tuning.
- Cleaning of old leg track in a sheet implemented.
- A quick fix - it is now allowed for 500 Legs, not 200 as before [2008.02.11].

Version 0.4 - 2008.02.07
- Separate columns for Reg No and Flight No in the Aircraft List.
- Reg No auto-generating after a country name is put in RegNo column field, instead of actual Reg No (and the macro was run). For all you random, local GA traffic fans :)
  Please use only valid country names from Country name list in "RegNoPatterns" sheet.

Version 0.3 - 2008.02.05
- Just a maintenance release, correcting "the Sunday departure" bug both in algorithm and added 06-07 & 16-17 hour column in Probability Profiles.

Version 0.2 - 2008.02.03
- "TNGAWAY" code in pair of "TNG", for use in a destination list. If set to "TNGAWAY" then an aircraft will be actually, unconditionally sent away after TNG is finished, within 4 min period.

"TNG" will work as is - an airplane will land for a longer time OR fly away at once, depending on random factor. Whether to fly back to the Home Base or to the next destination depends on STAR or TOUR code near airport list.

- A small random factor involved in calculating first departure time, when both Probability Profile and Activity of the aircraft are set to 100
  (will prevent from having same departure times when 100% and 100% are set for every aircraft on the list). Preventing to have them all departing in Sunday at 0/00:00.
- A new column: "R" (default) or a string "1234" (or other), allow for using '...,F,1234,..." for callsign enabling.
- Time zone (GMT delta) automatic fill up for a Home Base and destination ICAOs, calculated in a simple manner on an airport Longitude.

Version 0.1 - 2008.01.31

- The first release.
- Probability Profiles implemented.
- TNG implemented.
- STAR, TOUR and RAND type of flying implemented.