

FLIGHT SIMULATOR AROUND-THE-WORLD RACE

2016 Special Rules FAQ

V1.00

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These Frequently Asked Questions and Answers are intended expand pilots' understanding of the Rules. They add no extra conditions to the Rules nor do they modify any Rule they describe. They are provided for information only. It is recommended that pilots read the FAQ during preparation to avoid any last-minute questions or doubts once the Race has begun.

Summary of Legs Types: Time, Distances, Aircraft, and Restrictions

- Normal Leg: 2 hours, 750 nm. Traditional race aircraft as defined in the Rules and listed in the Appendices. The only restriction is the limited number of times a "Type" may be used.
- Jet Legs: Unlimited time with a total distance not to exceed 6200nm. A maximum of seven legs by any valid combination of Heavy and Medium civilian jet transports of which one may extend to 2,110nm and the others limited to less than 1200nm or 1,650nm, dependent on category. Minimum and maximum aircraft weights are specified.
- Special Flights: 3 Special types of Flights. The familiar Formation and Team Flights are continued but for 2016 are optional and earn time credits. A third type (Beginners Luck) is a mandatory but less strenuous set of two or three legs. Additionally, the Beginners' and Formation Flights may be designated Team Flights in which teams must complete a total of 6 Participating Pilot legs.

Warnings.

Please see the "Warning about obscure bits" at the end of this FAQ.

For Rookies.

Welcome to the 2016 running of the Around the World Race, the RTWR. For many, this is the premier team competition in flight simulation. As a serious challenge to the individual pilots' airmanship skills and to the teams' planning and organizational abilities, the RTWR aims to bring out the best in all of us. That said, it meant to be a both rewarding and enjoyable. As one grizzled veteran put it: "It's the most fun you can have with your pants on."

You will discover that this is a competitive event. The race is run round the clock, through darkness and miserable weather, to circle the globe in anywhere between three and five days. The intensity of the challenges, along with the continuous need to keep the baton moving, means that each team is under constant pressure to mobilize as many fresh pilots as they can. Even as a rookie, you will play a critical part in your team's success. If you are a veteran flight simmer and feel comfortable flying the fastest of the prop planes and/or jet liners, you should step right into the mix and start flying legs right away. If you are transitioning to racing types of aircraft, you may want to first exercise your new-found skills flying in the team events and in the ever critical role of wingman. Before too long, everything will seem natural and you can proudly take full part in the teams' baton legs. All that said, there is no substitute for practice – to acclimate yourself to getting the Duenna running, to making efficient baton handoffs, and to thinking your way to quick and safe takeoffs, climbs, cruises, descents, and landings.

Even so, as a rookie you will have one added bit of security. When you take the baton, flying with one of your teammates as a wingman, you will have the comfort of knowing that if you crash then you can transfer the baton to your wingman without any penalty. This "Rookie Mulligan" allows you to fly while knowing that your first "crash" will not hurt the team.

Finally, you may be wondering about the seemingly massive set of rules. Please understand that these have grown up over the years to handle all sorts of ambiguities and complexities that have arisen. And we have pages of extensive "FAQ" material to explain just how those ambiguities and complexities need to be handled. (Sometimes what seems to be a perfectly clear rule ends up being misinterpreted by others. And, to be fair, many participants are reading English as a second language. The subtleties of "legal" expression are a challenge for everyone and especially for you who are working in another language.)

So if you are in your first year, please ask your teammates how to proceed. They will help you pick a favorite aircraft and they will help you find racing slots where you can help the most. From an individual pilot's perspective, the real task is flying fast, clean, and safe legs. Please feel free to leave the complications of planning and rules interpretations to your teammates. Or not.

The main point is that you are most welcome to our little community.

The Setup.

Q. Why is the Duenna required?

A. We're requiring the Duenna for a number of reasons. The software has reached a level of maturity at which we are confident that instability on its part will not affect the race. We will be able to track the race's progress online if all participants use the Duenna. Finally, the Duenna allows us to keep closer tabs on race pilots, giving everyone involved in the race additional confidence that competitors aren't attempting to gain an unfair advantage.

Q. Which version of the Duenna is needed? I already have an older one?

A. You need version 2.0. The new version, updated by Eamonn Watson from Johannes Mueller's original work, manages data from FS2004, FSX (Classic), FSX (Steam Edition), and Prepar3D. It also adds a few bits of weather monitoring. FS9 pilots need only install the new Duenna v2.0. FSX (both Classic and Steam) and P3D pilots will also need to update their FSUIPC to the latest version.

Q. What about FSUIPC?

A. You should get the latest version. (You can pay for it, and support Pete Dowson's efforts. Or you can use the freeware version.) You can find the software here: <http://www.schiratti.com/dowson.html>. Please update if you have not done so recently.

1. The Prize.

The main prize goes to the overall winning team. In addition, we award two extra prizes just for the fun of it. The *Roadrunner Prize* goes to the pilot who flies the fastest normal leg. (Minimum 600nm, normal racing aircraft, speed measured by average ground speed in knots.) In addition, the pilot pair who records the most nearly perfect leg in a Formation Flight will win the *Gemini Award* to honor their skill.

Teams are asked to identify and nominate their top qualifiers in each category. The Committee will examine the records and award the honors.

Q. How do we measure average ground speed? The Duenna number is not exactly accurate on this matter.

A. Take the Direct distance and divide it by the Flight Time, both as indicated by the Duenna. [The time is the Flight Time, not the Forum clock time. We are focusing on fast flying, not on the baton handoffs.] Yes, the Duenna calculation of the "Average GS" is not exactly correct by this measure. However, the teams can sort on the Duenna calculation to identify the top contenders...and then do the correct calculations to determine the team's best performance. The numbers should be very close unless the pilot takes a very circuitous route from departure to destination.

2. Start Time.

Q. Why start at 0000 UTC?

A. This is late-afternoon thru evening in North America on Friday and with it being midnight UTC some of the European members will still be awake. A few legs and it will be Saturday morning in Europe so fresh crews should be available. The early start will allow us to finish earlier as well.

3. Routing Requirements.

Q. What is this latitude requirement?

A. The team records the latitudes of their most northern stop and their most southern stop. If the absolute difference is at least 60 degrees latitude, they will have satisfied the requirement. Note that a 60 degree difference may be more or less northern or southern in its extreme anchors. Note also that the special restrictions limit landings to between 80° N and 60° S.

Q. What does airspace denied mean? What constitutes the airspace of a country? What about landing in the country?

A. Race aircraft may not cross the airspace of, nor land in, these nations for any reason. For RTWR purposes, the restricted airspace is defined by the boundaries of a nation's main landmass plus any explicitly designated offshore islands. Small islands and overseas territories and departments do not count for the airspace. Pilots should give these national boundaries a wide 10-20 mile margin because maps can be imprecise. In addition to the airspace, pilots may not land at airports in the nation *nor* in any of the nation's outlying islands. Any race aircraft which crosses the boundaries of, or lands in, those nations may not score a completed race leg or wildcard leg. Should both the baton carrier and the wingman violate the restrictions, the leg should be abandoned and restarted at the airport of the last successful baton landing.

For practical reasons, the rule is slightly different for airspace restrictions and landings. We cannot precisely monitor overflights of small outlying islands while we can surely identify landing at airports on those islands. The weaker "no landings" restriction also applies to both the mainland as well as the offshore islands. (Our not enforcing the prohibition on overflying small islands is due to our inability to track such overflights with precision. The landings are recorded so that we can enforce a landing restriction.) For example, Iran's Kharg and Kish Islands are offshore and we cannot truly know whether an aircraft flies over the islands and we don't want to penalize teams who inadvertently fly over an island chain. However, both the pilot and the race marshals can know with certainty if the pilot lands at Kharg Island's airport OIBQ.

Finally, we shall make every effort to ascertain whether a leg has violated prohibited airspace. The standard will be a direct great circle path between the departure and destination airports. If there is additional evidence that the flight made a wide berth of the restricted airspace, we shall take that into account. (The online tracking might help.) The bottom line is to leave a goodly margin of error when you are flying near

a restricted airspace. Those Iranian interceptors may not be willing to give you the benefit of the doubt. And we hear the food is terrible.

Q. I still have a few sceneries from previous RTWR races, ones that were released by the Executive Committed for that year's events. May I use those addons (with extra night lighting and parking slots) in this year's race.

A. No. Please take care to disable those no longer valid sceneries.

4. Jet Aircraft

Q. The leg requirements where jet aircraft may be used are quite different and less specific than in the past. Does that mean they can be used like any other type of aircraft?

A. No. Except for the inclusion of the AlphaSim F-80 in the Thoroughbred category, the only jets allowed in 2016 are the Civilian Transport (Medium) and (Heavy) groups and are generally only those listed in the Appendix B. Each group comes with specific minimum/maximum leg lengths and there is a combined total distance. This allows teams to plan in a flexible manner while constraining the amount of race distance that can be flown by jets. While it will perhaps take a bit more work by the planners to maximize these provisions, it could also allow for some creative plans.

Q. The use of jets in 2016 is limited to a White List. That means that many excellent simulations will not be available for use in the race. Is that right?

A. Yes. The White List is an important restriction. Not all interesting aircraft are eligible. Plenty are. There are a few extras that have been included as a group but not listed (the Embraer/Bombardier/BAC "Regional Jets"). There are several models of these available but, as their performance is not vastly different nor at the high end of the spectrum, we have left the selection open. It is possible these may be investigated further if they show promise.

Q. Which models/simulations of these sponsored commercial transport jets are legal for the 2015 RTWR?

A. Only those models in the Whitelist (Appendix B) are allowed except for a generic inclusion in Category 2 (Medium) of certain Regional Jet types with lower performance. We include a large number of transport jets here, but not every possible jet is available. In addition, we limit you to well-known modelers who, in our experience, are likely to get the flight dynamics close to correct. (Happily, with these popular commercial transports we find fewer "optimistic" flight models than for other categories of aircraft.) Other considerations include the comparison of the simulated Mmo/Vne with the FAA Type Certification numbers, the actual performance of the aircraft, and the competitive balance in the full racing fleet.

Q. I'm skeptical of the performance when I fly these jets. Can I "fix" them so they fly better?

A. No.

The Duenna text file records the aircraft's Mmo and Vne. During the race, authentications that show higher values than those marked in the White List will cause the flight to be ruled invalid and require that it must be re-flown. Additionally, the team will incur a major (30) minute punitive penalty. Note that if your aircraft does not have an entry for Mmo and Vne, then it is illegal. Further, take special care that when you install your aircraft, or any paints or conversions, you check that the flight dynamics are not altered. There exist some "repaints" that will actually change the flight parameters. These are illegal.

We realize that mistakes will happen during the long race. But for these relatively few but critical jet legs, pilots and teams are responsible for strictly following these unambiguous speed-limiting restrictions.

Q. The Jet White list seems to eliminate some high quality aircraft. Why?

A. A note of courtesy here. We do NOT mean to imply that any modeler not listed in our White List is somehow inferior to those that are listed. We are working from common but imperfect knowledge. If you know of a superb modeler of jets who is not on the list, please let us know. We shall adjust accordingly – probably in the future.

Q. I understand that the sponsored jets are civilian commercial transports and that their military equivalents are not allowed. What about a normal civilian sponsored transport jet painted with a military livery? Say a DC-10 portrayed in the colors of a USAF KC-10?

A. The spirit of the RTWR says "yes" but we shall have to say "no." We are worried that we will confuse the matter if we allow military paints. (It is easy to imagine someone who sees a military aircraft in the race might want to install a similar military aircraft—one which might not rely on the civilian flight model.) It will be safer if we keep things simple: civilian transport jets with civilian liveries in 2016.

5. Special Aircraft Requirements for the 2016 Race.

Q. Why an explicit White List?

A. In response to participants' requests, we are limiting choices so that pilots can concentrate on flying rather than on scouring the libraries seeking an edge from some marginal flight model. The White List includes the race aircraft that have been popular over the years. We infrequently add a few more.

Q. What about port-overs, from FS2004 to FSX? Are they eligible? Under what conditions?

A. Straightforward port-overs from FS2004 to FSX are governed by the same rulings that apply to the original model. For example: porting the FS2004 A2A P-51H is legal, it is implicitly on the "White List," and it is treated as a thoroughbred.

But note well. You may not make "corrections" to the FS9 flight dynamics (in the airfile or the aircraft.cfg) to fit FSX. When you fly a FS2004-native aircraft in FSX you must fly it with exactly the same flight dynamics parameters that were modeled into the original FS2004 simulation. If necessary, read this last sentence again.

Further, you may not fly "port-overs/corrections/updates" by Mark Rooks or Bob Chicilo or any other author who often alters the flight dynamics. (These "port-overs/corrections/updates" have their proper place in our hobby. But they are not suitable for RTWR use.) Any alterations to the flight dynamics parameters will make the aircraft illegal and invalidate any legs completed in the aircraft (and earn a serious penalty if the illegal usage seems intentional).

The only exception, and this is a minor exception, is that you may alter the starter torque (normalized_starter_torque=xx) slightly upward to allow you to start the FS9 engines in FSX and idle friction (idle_rpm_friction_scalar=xx) slightly downward to keep the engines running. But these changes should not affect the performance of the aircraft in any measurable way. (If it does, then the alteration is illegal.)

Q. There are several Hornets on the list. And in different places with different restrictions. What is going on?

A. We are happy to have two quality simulations of the DH.103 Hornet, the older AlphaSim payware Hornet for FS2004 and the newer Rob Richardson freeware Hornet for FSX. The AlphaSim version is now freeware.

The FS9 AlphaSim/Virtavia DH.103 Hornet is the now familiar aircraft, a favorite during many previous races. The older simulation includes several versions of the Hornet under the same flight dynamics. All visual cues aside, this is a single model for RTWR purposes. It falls under the thoroughbred category.

In 2010, Rob Richardson produced an excellent FSX-native DH.103 Hornet. For our race, it will require special attention—team members should be sure that their teammates are careful about this. First, the original flight dynamics are not suitable for the RTWR. Happily, colleagues from SOH (Larry, Tom, and Dave—we use the "SOH Group" name designation) produced a flight model that is suitable. To be eligible, the Richardson DH.103 Hornet must use the SOH flight model. Call it the RR-SOH Hornet. The corrected flight dynamics package is available here:

http://www.fsrtwtrace.com/files/SOH_Hornet_and_Sea_Hornet_Modifications.zip and here:
http://www.sim-outhouse.com/sohforums/local_links.php?action=jump&catid=4&id=3564

Second, the specific aircraft model matters. There is a distinction between the (RAF) Hornet F.1 and the (FAA) Sea Hornet F.20 and NF.21, on the one hand, and the (RAF) Hornet F.3 on the other. The RAF Hornet F.3 does not have external tanks modeled. Although it is technically possible to do so, when flying the Rob Richardson Hornet F.3, pilots may not use the external tank capacity. (Note that the Duenna records the fuel on takeoff and landing. Usage of the external tanks for the Hornet F.3 will invalidate any completed leg.) In practical RTWR terms, this means that pilots should probably choose the F.1 Hornet and not the F.3 Hornet. (Please check to be sure about not only the type but also the model of Hornet that you are flying.)

We make this extra effort to allow teams to use this splendid freeware FSX-native aircraft that is rather good for RTWR flying. The DH.103 Hornet F.1 is very competitive in the "normal racers" category. It represents a much needed freeware addition to the native-FSX racing stable.

We ask teams to take special care to comply with these restrictions. In particular, pilots flying a Hornet should take the time to announce that they are flying either the "Alpha Hornet" or the "RR-SOH Hornet F.1" or the "RR-SOH Sea Hornet F.20" or the "RR-SOH Hornet F.3." If there is any ambiguity, we will assume that the pilot is flying the "Alpha Hornet" and count the leg against the "thoroughbred" limit. (Neither the Executive Committee nor the community of fellow competitors have time to investigate every usage of the aircraft. It is the responsibility of the pilot, and team, to make the proper announcement while the pilot holds the baton.) If you have a teammate who is casual about these sorts of things, please work to be sure that he is in compliance with the rules.

Finally, and this is confusing, the Rob Richardson Hornet F.1 has a default paint that depicts the Prototype Sea Hornet F.20. This appropriately uses the F.1 flight dynamics—the prototype did not have the folding wings and de-rated engines of the active duty F.20. You may legally fly this "aircraft" as an F.1 aircraft because it represents nothing more than an alternative texture.

If all this extra effort is not worth your while, please do not fly the Rob Richardson FSX Hornet.

Q. The David Hanvey-Peter Forster Sea Fury (v2.3) is eligible. How do I use the version with external tanks?

A. Please consult with your veteran teammates. You will need to make two edits to your aircraft.cfg file to enable the external tanks and point to the correct airfile. Normally such edits are prohibited—so please work with your knowledgeable teammates to understand what is legal and what is not.

Note that this aircraft will not port to FSX. (Its model was designed for FS2002. It is legal for race usage, but not a practicable choice for FSX pilots.)

Q. The Flying Stations Hawker Sea Fury requires the updated airfile. Why? Where can I get it?

A. The author has corrected the airfile to reflect proper operation of the supercharger at different altitudes. (The older one had a glitch that produced unrealistic high speeds.) The required airfile is available here: http://www.fsrtwrace.com/files/Flying_Stations_Sea_Fury_Corrected_Flight_Model.zip.

Q. There are several listed versions of the Grumman F7F Tigercat. Why so many? Which ones are the correct ones.?

A. The older AlphaSim F7F-3N model has been allowed for several years with a Tom Falley-modified airfile. This is retained as is the 2013 release by Milton Shupe of his model for FS9 (and port-able to FSX) which was listed as a Work-In-Progress and found wide acceptance. In 2015 Milton released a new model for FS9 with some significant changes and coincidentally Gordon Madison released an FSX-native version of the same model. Both these have new flight dynamics which vary from the earlier models (and are slightly faster). As they are also very popular and allow a FSX-native model it was decided to approve them for 2016 in their original form. Note that an updated flight model for the FSX version, with limited release on SOH is NOT approved. The F7F-3 is the only sub-type approved for simplicity (the -1 and -3N are slower anyway).

Q. Why the limitation on the amount of use of the aircraft?

A. Part of the essence of the race is equality. It is easy to understand that any significantly-fast aircraft would become the *de rigueur* choice of teams. Each year there seems to be one or two new models which have a performance advantage but are desirable for reasons which encourage us to allow them. Again, we wish to constrain but not eliminate the role of these very fast aircraft in the race. Teams will fly about 30 traditional legs in the race, of which nearly a third may be in thoroughbreds. Of the remainder, it is beneficial to 'share the wealth' among the many excellent models that fit into the "Normal" category. Veteran racers will appreciate the push toward variety

Q. Do all legs flown count for the frequency of use restriction?

A. Yes. As this is a team-based event, the limitations are use-per-team.

Q. How about an aborted flight, does that count? A wingman flight?

A. The key here is "baton leg" – which is defined by a takeoff, en route flight, and a successful landing while delivering the baton. The wingman flight does not matter here unless the wingman flight is substituted for the original lead pilot's flight and thus becomes an official "baton leg."

Q. Are all repaints of eligible normal aircraft automatically legal?

A. As far as we can tell, yes. Sometimes a repainter will provide a visual impression of a slightly different model. This is not a problem as long as the flight dynamics are correct. The aforementioned DH.103 Hornet has repaints of the prototypes, of which no 10 were in regular service. Flying those "paints" is fine because they merely decorate the legal model. Similarly, John Terrell has a nice "Gulfhawk" repaint of the Alpha Bleu Ciel Bearcat. It is fine, despite the fact that the "Gulfhawk" Bearcat was technically a different aircraft of which 10 were not in service. CR-1 use repaints to depict slightly different Do-335 models. They are legal. Our intent of allowing repaints is that you can enjoy your favorite visual representation while flying your perfectly legal race eligible aircraft. Please do not take advantage of this ruling by sneaking in a different flight model under the claim of flying a mere repaint.

The only exception is that for the sponsored civilian transport jets you are limited to civilian liveries. (No military liveries for the civilian jets. This is just a matter of race rules' practicalities.)

Q. The White List indicates that otherwise-eligible realistically modeled aircraft with a maximum speed of less than 350kts are legal. Is that at level flight?

A. Yes. The speed limit here is 350kts true airspeed (350 KTAS) measured while in level flight at critical altitude (under MSFS "Clear Weather" which approximates ISA). For turboprops, for which there is no critical altitude, the relevant altitude is that which maximizes true airspeed. This provision means to allow usage of a large number of slower aircraft (including four-engined transports) that have their place in the race but are not competitive as "racers".

6. Normal Legs.

Note the discussion about aircraft identification is placed in the Special Rules and in the General Rules. For the moment, take this dual message as a signal that you want to identify clearly your aircraft.

Q. Why do we have to announce the aircraft type and model and modeler? In years past this has been an unobserved formality.

A. This year we have two special restrictions on aircraft. First, the aircraft must be on the "White List" of eligible aircraft. You must fly an aircraft that is on this list—and announce that you are doing so. Second, we have restrictions on the usage of aircraft. When you announce your aircraft type and model and modeler, you are also announcing the status of that aircraft as well. Finally, we have a very specific distinction involving different simulations of the DH.103 Hornet—which require knowing the type, model, and modeler. The title of the aircraft, as retrieved by the Duenna, does not identify the actual aircraft. Thus, you are required to announce the type, model, and modeler.

For example, "RedGreen has the baton flying the WBS P-51D," has a different meaning than "Moses03 is flying the A2A P-51H." The latter counts against the thoroughbred leg limit. Obviously, "flying the Mustang" will not do the job. Other examples include: "salt_air has the baton flying the FS2004 default DC-3," or "apollosmith is flying the dcc P-38M," or "buzzbee flying the FlightOne B727-200."Please make the announcement in good faith—typing the extra word or two is not much extra effort. A repeated failure to identify the aircraft will quickly lead to penalties.

Q. What if I forget. Can I add that information later? Is that a documentation penalty?

A. Good form suggests identifying type, model, and modeler on takeoff. If you forget, you may post that information at any time within an hour after you release the baton. (Your teammates may help out by posting the information while you are flying.) If you forget entirely, you are subject to a documentation penalty. If you need constant reminding to identify your aircraft, you may find yourself penalized for an inability to provide timely documentation—all this at the discretion of the Racing Committee. It is your responsibility as race pilot to inform the race monitors about your aircraft. (They do not have the time to conduct an investigation of every leg.)

Q. How good does the aircraft "declaration" need to be?

A. Good enough. From your declaration, an observer must be able to tell immediately that you are flying a legal aircraft. That said, the purpose here is not to create a "gotcha" opportunity. A good faith effort will in most cases suffice as long as you are willing to work with the race monitors to get it right. If you are unwilling to provide the information, then expect a penalty. The purpose is to make everything clear to all concerned.

7. Jet Operations.

Q. The jet legs impose weight restrictions on the aircraft used. How does that work?

A. As in the real world, we place the transport jets in weight-based categories to provide some definition. While not exactly parallel to their full-scale counterparts, this provides some clarity when select-

ing/limiting the performance and use of these types. In addition, the rules list the models and their category. (You can check your takeoff weight in the aircraft/fuel menu in MSFS. The takeoff weight includes the empty weight plus fuel and payload.) You may not overload the aircraft. If you have any questions, ask.

Q. Is there any limit on how we combine the jet legs, as long as the total is less than 6200nm?

A. Not really. You may spread the 6200nm over your seven legs in any way that suits your strategy – keeping in mind the minimum distances and the 2,110nm, 1200nm and 1,650nm leg maximums. You could do three 1,650nm legs and one 1250nm leg or any other combination. You need not fly seven legs nor fly a total of 6200nm. These are strategic options.

Q. Is there any strategic advantage of the jet legs?

A. They are fast, of course. But in addition to speed, these legs have a special strategic value of allowing longer legs than normal. This feature may be especially helpful in traversing empty seas or sparsely populated regions where there are only unlighted airports or no airports at all.

Q. The jet legs this year are restricted by an overall total limit of 6200nm. The maximum leg is 2,110nm, some are limited to 1200nm and no other leg may exceed 1,650nm. How are these distances calculated?

A. Distance is officially measured by the MSFS flight planning facility in your simulator. In most cases, any good flight planner will give a good approximation of the distance in your legs. For the total, you merely add up the legs. If a leg is very close to 2,110nm or 1,650nm or if the total is very close to 6200nm, then you must use the official MSFS flight planning facility to do the calculations.(Getting a precise reading can be time consuming.)

Q. How do I use the MSFS Flight Planner as a precise Measurement Tool?

A. Note that the MSFS flight planner will give different distances between airports – distances that vary by the placement of the aircraft at the airport and the current runway. When the differences matter, then follow this procedure. Using the MSFS Flight Planner, plot a flight plan that includes the relevant airports as intermediate points. Then display and/or print the Navlog – which will show the distance between the airports. For example, you want the distance between airports A and B. Generate an MSFS flightplan from X-A-B-Z, where X and Z are the arbitrary departure and destination airports. The navigation log (Navlog) will give the intermediate waypoint distances, including that between airports A and B. The distance is given in tenths of a nautical mile. Retain the precision in tenths. We do not round down, we do not round up.

For example, the limits of a single jet leg, or the total of the jet legs, are set as a mathematical expression. A "longest leg" of 2,110.0 is fine but 2,110.1 is over the limit. A total of 6200.0 is fine but 6200.1 is too much. No rounding.

9. Special Flights

Q. There seems to be a change here this year. What are these Special Flights?

A. In past years there have been a variety of required or optional legs provided to give some variety or to introduce special challenges to a small part of the race. In 2016 these have been grouped together for clarity as they all differ from the traditional “normal race legs”. The Team and Formation Flights should be familiar content; the “Beginners Luck” component is added in 2016 to provide a bit of ‘stress relief’ for rookie pilots.

Q. Do teams have to fly every one of these special aircraft legs?

A. No. The Team and Formation Flights are options which allow Teams to earn time credits that might offset penalties they have, or may later incur. The Beginners Luck component is two or three mandatory legs which can provide Rookie pilots time with the baton in a less-stressful flight environment. Note that none of these MUST be flown by a Rookie but this is encouraged as a learning tool.

Q. The rule isn't very precise regarding the type of aircraft allowed for the Beginners Luck portion. No White List?

A. No White List. The specific limitations restrict these legs to a "general aviation" category of aircraft but as there are many models and only 200nm to be flown, it is thought that Teams should be able to find viable, abundant choices that will fit the rule. Be advised that the maximum speed criteria will be watched closely and investigated if someone seems too fast. A model of John Travolta's B720 will not pass muster.

Details on the Specific Beginners Luck Legs.

The rules and limits are simple: a minimum distance for each leg of 50nm; a maximum distance per leg of 120nm; and a total required of 200nm – but the total distance can certainly be greater depending on the airports selected. A Maximum Airspeed (Vne) of 200Kts as established in the aircraft .cfg/.air files. That's it.

As stated, these are ideal flights to let a Rookie 'gently earn his baton wings' as long as he's not sent off into a hurricane, but if, for example a team is entirely a bunch of veterans, that's OK as long as the 200 mile distance is completed in the specified category of aircraft.

Q. After declaring the Formation Flight by taking the baton and declaring wingman, one of the pilots experiences a quick computer failure or forgets to arm the Duenna, may the pilots "reset" by returning to the starting point, declaring a reset, and recommencing the leg? This is an option in a normal leg – is it also an option in a Formation Flight?

A. No. Once both pilots declare for the Formation Flight the clock begins and the Duennas mark the pilots' legs. If either pilot resets, then the Formation Flight is automatically transformed into a normal leg. The pilots should proceed as normal, with the baton pilot having the option to transfer the baton to the wingman if necessary. The Formation Flight part of the leg is terminated once either pilot resets. Before commencing on a Formation Flight, both pilots should double-check their setup and be certain that they are ready to go.

Q. If the lead pilot crashes, can the wingman take the baton and complete the leg? If the wingman crashes, can another pilot become wing?

A. If the lead pilot enacts the Wingman Transfer rule, the Formation Flight is automatically terminated and the leg becomes a normal leg. The normal rules and penalties apply. If the wingman crashes, then again the lead would terminate the Formation Flight and follow the normal leg rules.

Q. What if I do not crash but instead have a computer failure? How about a technical error? What if I forget to start the Duenna?

A. Sorry, a pilot error crash and a computer failure are equivalent here. Equally, a leg that is ruled invalid due to a consequential setup error will also forfeit the FF opportunity. The same applies for a failure to use the Duenna...or a Duenna crash. Both pilots must satisfactorily complete and document their legs to earn a score. (If you cannot use the Duenna, do not take on the optional Formation Flight.)

Q. Is there a penalty for failure to complete a Formation Flight?

A. The team scores the best three of their five opportunities.

Q. Sometimes the weather will make things very difficult. Can the team cancel the Formation Flight and try another time?

A. Once declared, the Formation Flight is active and subject to failure. If things look dicey before the leg, you might choose to postpone the FF opportunity until a later time.

Q. In a Formation Flight, the baton may not advance on the next leg until both pilots have posted their landings. Do both pilots have to post their authentications before the baton advances?

A. No. The authentications may follow in the usual timely manner. You are right, however, that the baton may not be advanced until *both* the lead and the wingman have landed and posted that they are down safely. If the baton is passed prematurely, the Formation Flight fails. For this reason, a formation flight might take a few minutes longer than a normal baton leg. (This is true for the final leg as well. When the team wants the final leg to be a Formation Flight, that leg and thus the team's circumnavigation does not conclude until both pilots have landed and posted.)

Q. Do we use the Duenna "Flight Time" or "Baton Time?"

A. Flight Time is used to calculate the quality of the Formation Flight.

Q. What if I forget to use the Duenna's "Auto-arm" feature?

A. You will have to certify the takeoff and landing times, and thus the exact duration of the flight. This information lies in the Duenna's logfile. You should declare your mistake and show all the information in your thread. (You will want to show both your logfile and your partner's logfile. You may ask your teammates for help here.) As long as the Duenna record is complete, and there are no irregularities, all should be well. Repeated failure to use the "Auto-arm" feature will attract a skeptical eye and possible committee action, including voiding the Formation Flight.

Q. Can the pilots cheat to create a false impression of equal flight durations?

A. It is possible to compare the flight durations directly by examining the detailed Duenna flight logs. Those logs show the exact time that each flight took off and landed. Any instance of a team's artificially manipulating the results—such as delaying the Duenna "landing" report or "taxiing" to keep the Duenna alive—will forfeit the Formation Flight *and incur a severe deterrence penalty*. Such actions will be considered an intentional violation of the rules and a breach of the mutual trust that makes the race so enjoyable. (The lead pilot may legitimately delay his landing by circling over the destination airfield until his wing arrives. He may not land and keep the Duenna running until the wing has landed in order to claim a simultaneous arrival.)

Q. The Rules say that a Heavy Jet leg flown as a Formation Flight scores double the bonus. Why?

A. Because the Committee thinks that a Team willing and able to get two very large jets airborne and safely down within a 3-minute window is deserving of some extra credit, particularly with the anticipated large audience.

Q. In the Team Flights, Teams can score only three Participating Pilot legs in any one event. Doesn't this mean that each team has to fly multiple Team Flights?

A. To score the maximum six Participating Pilot legs, yes. You can fly two Team Flights with each scoring three Participating Pilot legs or three flights with each scoring two Participating Pilot legs. Even more might be required in the event that a baton or wingman crash reduces the number of Participating Pilots on any attempt.. Remember, a wingman counts as a Participating Pilot as long as he does not hold the baton.

Q. How many Participating Pilots should our team fly in any event?

A. You can score a maximum of three in any Team Flight event. However, whenever possible you should fly more than that number because you may experience a failure by one or more of the participants.

Q. Why does the team need a total of three pilots (a baton carrier, a wingman, and at least one participating pilot) to designate the event a Team Flight? After all, the team might need only one more Participating Pilot leg to complete the requirement and the wingman should count as a "participating pilot?"

A. This requirement marks the event as a "team" event rather than the normal baton-pilot-plus-wingman combination. It also provides a bit of security in case the wingman is needed to carry the baton.

More General Matters concerning Team Flights.

Q. Lots of rules here. What is going on?

A. These are simple affairs in practice. A baton pilot takes a chosen aircraft and flies, for example, 600nm. Other members of the team take aircraft in the same category and fly alongside. Hence it is called a Team Flight.

Q. The Team Flight requirement is fulfilled by participating pilots. What about the baton holder? What about the wingman?

A. The baton holder earns no team flight credit. The wingman counts as a participating pilot as long as he does not carry the baton during the event. (Note that the wingman will want to satisfy the baton pilot's aircraft restrictions just in case he has to take the baton.)

Q. The requirement that the participating pilots land within 20 minutes before or after the baton carrier is new. What is going on here?

A. The slower participating pilots have some pressure to keep up with the lead pilot. The fastest have a reason to stick close to the lead pilot. All in all, some teamwork is required here. The 20 minute time window is a weak version of the "Formation Flight" exercise – applied to the larger team framework. (In this case, we allow a landed lead pilot to delay "posting his landing" to wait until his teammates arrive. Such a tactic is definitely NOT allowed in the Formation Flights. Of course, delaying a landing announcement means delaying the baton transfer as well.)

Q. The timing rule says that participating pilots must land and post no more than 20/30 minutes after the lead pilot. What about authentication? That can sometimes take a long time?

A. As long as you land and make the appropriate arrival post, you are within the 20/30 minute window. But you must authenticate properly within an hour of your posting. Even if three pilots have already landed, you might want to land, post, and authenticate just in case one of those pilots has a bad Duenna. (Participating pilots may land before the baton—though they may not take off before the lead pilot claims the baton.)

Note that the authentication for each participating pilot's flight need include only the Duenna's textfile. (The textfile is sufficient and takes less bandwidth than the map. Everyone is flying the same route.)

Q. The baton holder may release the baton to the next leg's pilot who may take off. My landing as a participating pilot and my authenticating that flight doesn't affect the progress of the baton does it?

A. Right. Your role as participating pilot does not affect the progress of the baton.

Q. What happens if lightning strikes and both lead and wingman crash?

A. No problem. The current baton holder may restart the leg or abort the leg as per the normal rules. If the leg is eventually completed (by someone with the baton – lead or wing) to the same destination in an eligible aircraft, then all the participating pilots' authenticated legs will count. This is true even if those legs were completed before the successful pilot took off. If one of the scoring pilots subsequently carries the baton (in relief of the initial baton pilot), his scoring leg is voided. The team may substitute another valid

leg in its place. (Note that the baton carrier aircraft is sometimes more circumscribed than the participating pilots' aircraft.) *The participating pilots' 20/30 minute landing window restriction, before and after the baton pilot's landing, is waived in the case of both the pilot and wingman's crashing.*

Q. So can any participating pilot who completed the flight "carry the baton" retroactively for the team flight if both the lead and wingman crash?

A. No. The participating pilot would have to abandon his successful leg, and restart from the origin airport and complete the leg as baton pilot in an appropriate aircraft.

Q. How do we handle the Duenna's inquiry about Baton Holder or Wingman?

A. The Baton Holder (Lead Pilot) and Wingman check the box appropriately. The remaining "participating pilots" do use the Duenna tracking facility but do *not* check the "Baton holder" box. They should post their authentications on the forum.

Q. Why the Team Flight summary? Who posts this and when?

A. The race needs real time scoring: the summary will allow everyone to know each team's standing. The baton pilot (or any substitute) posts the summary indicating the participating pilot credits earned during this event—taking care to check the authentications. Then he should provide the total cumulative participating pilot credits earned in all the Team Flights that have been completed thus far.

Q. After the final Team Flight, the team should publish an overall Team Flight summary that identifies the date and time of each individual Team Flight and its results. The team then calculates, reports, and enters into the bank account any penalty incurred. What if the team never actually uses a "final Team Flight"—say it holds off until the end to see if it needs to use another Team Flight?

A. That is fine. Upon completion of the team's circumnavigation, it may then post the "Overall Team Flight Summary" and enter the proper credits (if any) into the team bank. As long as everyone is open and transparent, then we shall be fine. No "gotcha" mentality here.

Q. It says that Team Flights and Formation Flights may be combined. How the heck can you do that?

A. This may seem complicated but is actually simple as long as attention is paid to the details. Let's say there are a whole bunch of pilots hanging about and a couple want to fly a Formation leg. They set up to do so, make their plans and declare in their initial post "on a Formation Flight". The rest decide to fly along for moral support and to watch the precision flying so they convince the baton pilot to also include "and on a Team Flight". Each Participating pilot posts that he is flying the Team Flight. Let's assume that all land safely: The Baton and wingman comply with the rules for posting and scoring the Formation component and once everyone else has landed, the Team component is calculated and scored (as a separate entry in the Bank). Obviously, both sets of rules have to be met to score credits for both.

11. The Consecutive Pilot Rule in 2016.

Q. Why does the (only) pilot need to wait 5 minutes before taking the baton for the second consecutive leg? Why not just take a 5 minute penalty and takeoff?

A. We do not know if there is a second pilot who will be able to take the baton – one who might arrive in a short while. The 5 minute wait assures that a true emergency exists.

Q. Why only once for the 5 minute wait?

A. This provision is not meant to be a strategic option used routinely. One of the very core features of the race is the team framework with short legs and frequent baton handoffs. Under the normal rules, the team would have to wait indefinitely until a second pilot became available. This change allows for one-time

emergency relief. If your team uses the emergency provision, you should be on your toes for the rest of the race.

Q. Then...why have an option of further usage, albeit with a 30 minute wait?

A. We want to minimize the chances of a complete disaster. Imagine a team with a very limited pilot roster. In the middle of the night, the scheduled pilot cannot fly (say a rush to the hospital), then the baton would sit idle until someone else showed up. That could be two hours. The 30 minute wait is roughly equivalent to a 30 minute wingman transfer penalty with the missing pilot transferring the baton to the just-landed pilot-of-record pilot.

Q. So a pilot-of-record can fly wingman in the next leg! That is new.

A. Yes and yes. In the early days of the Race, it was helpful to spread the pilot assignments to encourage participation. The need for this restriction has largely disappeared. However, note that *no pilot may be pilot-of-record for more than two (2) consecutive legs*. So if the previous pilot-of-record, now flying wing, is forced to take the baton...the next leg will need a new pilot.

12. Artificial Vision and Artificial Landing Aids in 2016.

Q. I understand that I cannot use third-party addons for "artificial" or "unrealistic" landing aids. But what about artificial vision gauges that replicate advanced systems that are now available?

A. These are not suitable for the Race and are thus prohibited. For this year at least, we judge these devices to artificially eliminate some of the challenges involved in our event. In the future, artificial vision might become commonplace and our stance might change. Note that generating "artificial night vision" by ad hoc fiddling your monitor setting to "turn night into day" is similarly prohibited.

Q. What is this about Glenn Copeland's "Satellite Assisted Landing System" being disallowed?

A. That is the case. This is a clever gauge that effectively allows an ILS approach to dirt strips. Very nice, but not suitable to the RTW Race.

13. New Pilots.

Q. If I'm a new pilot and take the baton, what happens if I crash or my computer dies?

A. You simply execute a "wingman transfer" to move the baton to your wingman. Normally, this move would cost the team 30 minutes. But, as a new pilot, you get a "mulligan" so that the transfer is free. (You can do this only once.) Simply declare "rookie mulligan" and all will be well.

Q. Who is a new pilot?

A. If this is your first year in the RTWR, you are a new pilot. If you have flown before but are returning after an absence (3 years), then you qualify as a "new" pilot. If your case is ambiguous, please declare your "new pilot" status before you fly your first leg.

Q. What is the intent here? Can this feature be used strategically by the teams?

A. The goal here is to give new pilots a little margin of error during their first year. The RTWR can be a demanding event. Any pilot, even grizzled old veterans, will be nervous on taking the baton. We hope to make the first year pilots' experience a little less worrisome. (Teams will likely pair a rookie pilot with a veteran wingman.)

We expect that teams will keep this goal in mind when they give new pilots an opportunity to fly for the first time. Attempts to take advantage of this provision would not be in the spirit of the race.

15. Weather.

Q. What happens if the MSFS weather engine breaks down?

A. Two things can happen. First, you may have a temporary glitch in your own internet connection. Sometimes this can trigger an error message that MSFS cannot generate the weather. You should simply finish your leg while handling the annoying error messages. (You might want to cut the leg short or abort if you find the problem bothersome.)

Alternatively, the entire system may fail: Jeppesen has occasionally gone down. Check with your teammates to see if they are all experiencing a failure. Look for an immediate reaction from the Executive Committee. In all likelihood, the entire race will be asked to switch to one of the default weather schemes: Fair Weather. (Not Clear Weather.) When Jeppesen comes back up, teams will quickly switch back to the standard race settings: Real-world weather (updated every 15 minutes).

Q. What if my addon weather engine turns out to fail on me.

A. You will have to live with the consequences. Please test your setup before the Race begins. If something happens that necessitates that you abandon your weather engine, please appeal to the Racing Committee (and the Duty Officer). If there is no competitive advantage, they might allow you to switch to the default FS9/FSX weather engine. If you are flying P3D, they may allow you to switch to another addon weather engine. This is a matter of fairness not only to you and your team but also to your competitors. If a weather engine simply fails (say their server goes down), then the Racing Committee will take immediate action to enable the Race to go forward.

16. The Bank

Q. What bonus opportunities exist?

A. In 2016, there are penalties and credits. Penalties are incurred as defined in the rules or may be added by the Race Committee for other infractions. To gain a bit of relief, Teams may undertake certain flights that can earn time credits that are banked against the penalties. This is somewhat tactical in nature as any unused credits (greater than penalties incurred) are nullified at the end of the race.

Q. Who does the accounting work here? The pilot will be busy after landing and may forget to make all the entries.

A. The book keeping is the team's responsibility. Teams may assign duties among their members to make sure everything is in good order. For example, teams may want to appoint a "Banker" to take responsibility here. Or they may form a "Banking Committee." The intent is for everyone to keep current public records so that everyone else knows where we all stand. You can see why this is so important.

Q. What information do I have to enter into the Bank?

A. Provide the team name, the nature of the credit/penalty, the minutes and the details.

Q. What happens if we make an honest mistake in our accounting? After all, we are dumb pilots.

A. There is no penalty. If you make a good faith effort in posting, then you may make corrections without a problem. It is vital that you keep your accounts current – hence the one hour rule on posting time. (If you miss the timing once, you can appeal to the Committee and expect leniency. If you miss your posting time more often, you might expect to pay a price.) Normally, once a record has stood for 24 hours it will

not be subject to revisions for any reason. (That is, we do not anticipate reexamining the books from previous days. We do not want to change the race standings upon discovering an ancient accounting error. Check your work.)

Q. The Bank is open to all. Why don't I just enter a bunch of withdrawals in the other teams' accounts? No one will ever know that I am responsible.

A. Are you angling for a career in finance? While nothing is proof against a determined effort, please note that we now have a password protection system to remind you of your better self. :-)

18. Communications.

Q. Why have a separate NOTAMS Forum and a NOTAMS section on the website?

A. The NOTAMS Forum is intended for a quick notification. The Duty Officer or Race Master or Appeals Board member can immediately post decisions and warnings and so forth. It may take a few hours for the quick notifications to get put into clear formal language and then posted on the NOTAMS page on the website. This system mixes the need for speedy notification with the need to get the language and format right in the more permanent record.

Q. The Duty Officer forum is the main way to contact the Duty Officer. That means that anything that I say will become visible to all. How can I complain about the other teams if they know what I am saying?

A. You obviously want to be thoughtful about how your words will be perceived. "Say, Team xx's leg seems a bit fast. I don't understand," is much better than, "That Team xx is full of cheaters. Look at what they're trying to get away with." We are all grownups here. Just be careful to reread what you write to be sure that everyone will understand the intent behind your words.

Q. I want to communicate privately with the Duty Officer. What can I do?

A. Most routine matters can be handled by the Duty Office in open public discourse. That is the right way to conduct professional discussions. If you have something that is very sensitive, then you want to ask the Duty Officer to escalate. He may ask that you establish an "off site" email contact, or he may choose to raise the issue with the Race Master who will contact you directly. (This may not happen right away. But if it is a truly sensitive matter, then we don't want to act hastily in any case.) As a last resort, you can contact the Executive Committee via rtwrace@gmail.com but you will understand that that email will not be under constant monitoring.

Warning about obscure bits.

Here is a list of some of the rules that may be obscure but may be important. We want to avoid "gotchas" in the rules interpretations.

- *Continental Requirement.* The 2016 RTWR requires only one (1) full stop landing on each of the continental landmasses. (But be sure that you do pick an airport directly on the landmass.)
- *The North-South latitude requirement* is easy to understand. And it is easy to forget. Please double-check that you have met this requirement of your team's race routing.
- *Required Airports.* It is absolutely essential that your team hits the minimum number of required airports distributed properly. If there is any confusion at all, ask.
- A *Team Flight Declaration* requires at least three pilots: a baton-carrier, a wingman, and one participating pilot. (This means that, absent a wingman transfer, a Team Flight is likely to score two participating pilot legs.)
- *Required Special Legs.* Each team is required to complete either two or three legs in a general aviation aircraft with a maximum speed of 200Kts or less to a total distance of 200nm. You cannot skip the baton pilot legs. Augmenting these legs with Team Flights is optional.
- *Hidden Overspeed.* (General Rules 6.g.) A flight with over 90 seconds of "overspeed" as marked by the Duenna is an invalid leg. This provision compensates for FSX not counting max_mach time in its overspeed time. FS2004 pilots will probably have already crashed by this time but FSX pilots should check their Duennas to be sure that a seemingly valid leg accords with the amount of time in overspeed.
- *Repaints* of legal racing aircraft are fine. As long as the aircraft paint does not alter the flight dynamics at all, then it is ok. The only exception is that military paints for civilian commercial transport aircraft are disallowed. (We shall not penalize a first inadvertent use. But will strongly monitor further instances.)
- *Official Distances Measurement* employs the FS Flight Planner of the pilot's simulator. The distances are given in tenths of a nautical mile and we keep that level of precision in our calculations. There is no rounding. "Less than", "equal to", and "more than" are ordinary mathematical relationships without ambiguity.
- *Duenna v2.0 Required.* Just a reminder that you are to use the new Duenna v2.00 in its latest release. This means that you also need to update your version of FSUIPC. FSX and P3D pilots will need to be sure to do this before the race.