Flying Tasks in the simulator

A MSFS 2024 native hang gliding experience

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Table of Contents

The Hang Gliding Files

The hang gliding files is a project of the NextWave Mobile Apps company. We are building tools, aircraft, models, whatever is necessary to fly hang gliders in the MSFS 2024 flight simulator.

Be as realistic as we possibly can.

But we also must leverage and bend to the environment that we are trying to do that in. This simulator gives us a great simulated Earth with complete geography, photogrammetry, weather and physics engine. It lets us explore this world as an Avatar. That Avatar happens to be an aircraft and all our interactions with this environment is as if we were this avatar. That makes it a flying simulator (as opposed to say a fishing simulator).

But a hang glider (flex wing types especially) does not fly or operate like any other aircraft other than they move the air and use aerodynamic physics to “fly”

What Is a Soaring Task?

Soaring tasks are at the heart of cross-country hang gliding. They give structure to a flight, turning an open-ended adventure into a clear, achievable challenge. If you’re new to the sport — or new to soaring simulation — the idea of a “task” may be unfamiliar. This chapter introduces the concept from the ground up, in plain language, so you can understand what a task is, why it exists, and how it fits into your flying experience.

Why Tasks Exist

In free flight, you’re not confined to a runway or a fixed route. You can go anywhere the air allows. That freedom is exhilarating — but it also makes it hard to measure progress or compare flights.

A *soaring task* solves this by defining a route that pilots attempt to complete. It provides:

- **A clear objective**
- **A shared challenge** for all pilots
- **A way to measure performance**
- **A reason to make decisions**, not just wander around the sky

Even outside of competition, tasks are a fun way to explore a site, practice navigation, and build cross-country skills and a great way to maximize fun when flying with a group.

The Basic Structure of a Task

A soaring task is made up of a series of **waypoints** that you must reach in order. These waypoints are usually represented as **cylinders** or **sectors** in the sky.

A typical task includes:

Start

Where the task officially begins. You must enter the start zone to “start the clock.”

Turnpoints

Intermediate waypoints that define the route. You must fly into each one to continue.

Goal

The final waypoint. Reaching it completes the task.

Observation Zones

Each waypoint has a shape and size — usually a cylinder with a defined radius. You don’t need to hit the exact GPS point; you only need to enter the zone.

What a Task Looks Like in the Air

Imagine a map with circles drawn around key locations. Your job is to:

- Start outside the first circle
- Glide into it to begin
- Fly toward the next circle
- Enter it
- Repeat until you reach the final circle

The THGF variometer shows all of this visually, so you always know:

- Where the next Turnpoint is
- How far away it is
- What direction to fly
- When you’ve entered the cylinder

You don’t need to memorize anything — the instruments guide you.

Why Tasks Are Perfect for New Pilots

Tasks teach essential cross-country skills in a structured, forgiving way:

- **Navigation** — following bearings and distances

- **Decision-making** — choosing when to climb or glide
- **Energy management** — staying high enough to reach the next point
- **Route planning** — reading terrain and wind
- **Goal setting** — having a clear objective

Even if you never plan to compete, tasks make every flight more meaningful.

Tasks in the MSFS 2020/2024 Simulator

Tasks and task planning are not native to the flight simulator, in fact, there is no task planning as it relates to gliding or soaring within the simulator. Some builders attempt to re-use the flight plan structure that is native to the sim and use that for task planning and scoring. This can be done but requires a lot of trade-offs and hacks to make them work. Like putting a round peg into a square hole. We opted for using the task file format used by real-world pilots and flight instruments: The XCSoar task format.

In THGF, tasks are:

- **Defined using XCSoar task files**
- **Loaded into the THGF variometer**
- **Displayed on the moving map**
- **Tracked automatically** as you fly

This means you can fly the same tasks used by real hang glider pilots around the world — or create your own.

The simulator doesn't require you to understand the technical details of the file format. You can simply load a task and fly it. But if you want to go deeper, later chapters will show you how to create, edit, and share your own tasks.

What You'll Learn Next

Now that you understand what a soaring task *is*, the next chapters will walk you through:

- The XCSoar task file format (*in beginner-friendly terms*)
- Where to find tasks
- How to create your own tasks
- How to load tasks into the THGF variometer
- How to fly a complete task from start to finish

By the end, you'll be able to confidently plan, load, and fly tasks just like real cross-country pilots

XCSoar Task Files: What They Are and Why We Use Them

When you fly a soaring task in MSFS 2024 using THGF, the route you follow is defined by a small file called an **XCSoar task file**. These files are widely used in real-world hang gliding, paragliding, and sailplane flying. Understanding them — even at a basic level — helps you load tasks, share tasks, and create your own.

This chapter explains what XCSoar task files are, why they matter, and how they fit into the THGF ecosystem.

What Is XCSoar? (*Beginner-Friendly Explanation*)

XCSoar is an open-source flight computer used by free-flight pilots around the world. It runs on phones, tablets, dedicated instruments, and even e-ink devices. Pilots use it to:

- View Navigate cross-country flights
- Follow tasks
- Track performance
- maps, thermals, and wind
- Log flights

You don't need to install XCSoar to use THGF — but THGF adopts its **task file format** because it is the most widely recognized standard in the soaring community.

What Is an XCSoar Task File (.tsk)?

An XCSoar task file is a small XML-based file (*usually just a few kilobytes*) that describes a soaring task. It contains:

- The **task name**
- The **task type** (Race-to-Goal, Out-and-Back, etc.)
- A list of **waypoints**
- Each waypoint's **latitude, longitude, and altitude**
- The **observation zone** (cylinder radius, line, or sector)
- Start and finish rules
- Optional timing rules

In other words, a .tsk file is a **portable blueprint** of a soaring task.

You can email it, share it, upload it, or load it into THGF — and the task will look the same for every pilot.

Why THGF Uses the XCSoar Format

THGF adds soaring functionality to MSFS 2024, but it doesn't invent a new task format. Instead, it uses XCSoar files because they are:

A Real-World Standard

Pilots and competitions already use them. This means THGF tasks are compatible with real soaring tools.

Portable and Shareable

A .tsk file can be:

- Sent to a friend
- Posted online
- Included in a mission pack
- Imported into the THGF Desktop App
- Loaded directly into the THGF variometer

Simple and Reliable

The format is lightweight and easy for software to parse. You don't need to understand XML — THGF handles everything.

Future-Proof

Because XCSoar is open-source and widely adopted, the format is stable and long-lived.

What's Inside a Task File? (*Plain English*)

Here's what a typical .tsk file defines:

Task Metadata

- Name
- Description
- Task type

Waypoints

Each waypoint includes:

- A name (e.g., "Start", "TP1", "Goal")
- Latitude & longitude
- Optional altitude

Observation Zones

These define how you "tag" a waypoint. Common types include:

- **Cylinder** (most common)
- **Line** (start/finish lines)
- **Sector** (less common in hang gliding)

Rules

- Start type (enter/exit)
- Finish type
- Timing windows
- Minimum distances

THGF reads all of this and displays it on the variometer's task pages.

Where Do XCSoar Task Files Come From?

You can get .tsk files from many places:

Real-World Sources

- Hang gliding clubs
- Competition organizers
- Online XC leagues
- XCSoar community repositories

Simulator Sources

- THGF community task packs
- THGF missions
- Shared tasks from other pilots
- Your own THGF Desktop App

Create Your Own

The THGF Desktop App includes a task editor that lets you build tasks visually — no XML required.

How THGF Uses XCSoar Files in MSFS 2024

When you load a .tsk file into the THGF variometer:

- The task appears on the moving map
- Turnpoints are displayed with their cylinders
- Distances and bearings are calculated
- The vario automatically detects when you enter each zone
- The task progresses automatically
- Completion is recorded for post-flight analysis

This gives MSFS 2024 a **full cross-country task system**, just like real hang gliding instruments.

What You Don’t Need to Worry About

New pilots often ask:

“Do I need to understand XML to use XCSoar files?”

Absolutely not.

THGF handles all parsing and validation. You can treat .tsk files like any other document:

- Download
- Load
- Fly

That’s it.

What’s Coming Next

Now that you know what XCSoar task files are and why THGF uses them, the next chapter will cover:

- Where to get tasks
- How to create your own
- How to load them into the THGF variometer

This will prepare you for the full end-to-end example task later in the guide.

Finding, Creating, and Managing XCSoar Tasks

Now that you know what a soaring task is and how XCSoar task files work, the next step is learning how to **get tasks into your simulator**. Whether you want to download tasks, create your own, or share them with other pilots, this chapter walks you through the entire process.

The goal is simple: By the end of this chapter, you’ll know exactly where tasks come from, how to make them, and how to organize them for use in THGF.

Where to Find XCSoar Tasks

XCSoar tasks are widely used in real-world soaring, which means there are many places to find them. You don’t need to build your own task from scratch — unless you want to.

Real-World Sources (see appendix)

These are excellent if you want authentic, proven routes:

- Hang gliding and paragliding clubs
- Competition organizers

- National XC leagues
- Online repositories maintained by XCSoar users
- Event task archives (e.g., comps, festivals, meets)

These tasks often reflect real terrain challenges and popular XC routes.

Simulator-Friendly Sources (see appendix)

THGF pilots also share tasks specifically designed for MSFS 2024:

- THGF community task packs
- THGF mission bundles
- Shared tasks from other pilots
- Online forums and Discord groups

These tasks are often optimized for the simulator's terrain, weather, and launch sites.

Creating Your Own Tasks

If you want full control over your route, the **THGF Desktop App** is the easiest and most reliable way to create tasks. See the THGF desktop app documentation for further information.

Why Use the THGF Desktop App?

- No XML editing
- Visual map-based interface
- Guaranteed compatibility with THGF
- Built-in validation
- Easy export to the correct folder

It's designed specifically for hang gliding and for MSFS 2024, so you don't have to worry about formatting or file structure.

What You Can Do in the Task Editor

- Choose a launch site
- Add start, turnpoints, and goal
- Adjust cylinder sizes
- Preview the task on a map
- Save as a .tsk file
- Export directly to your THGF work directory

This is the recommended method for beginners and experienced pilots alike.

Editing Existing Tasks

Sometimes you want to tweak a task rather than build one from scratch.

You can:

- Change cylinder sizes
- Move turnpoints
- Rename the task
- Adjust start or finish types
- Add or remove waypoints

The THGF Desktop App can open existing .tsk files, allowing you to modify them safely without breaking the format.

Organizing Your Task Files

As you collect more tasks, it helps to keep them organized.

Suggested Folder Structure

You might create folders such as:

- **/Tasks/Local Sites**
- **/Tasks/Competitions**
- **/Tasks/Training Routes**
- **/Tasks/Community Packs**
- **/Tasks/Personal Creations**

This makes it easy to find what you need later. Using the THGF desktop app simplifies this as all task files that it knows can be searched directly no matter what directory they are in.

Sharing Tasks with Other Pilots

Because XCSoar tasks are simple text files, sharing them is easy:

- Email
- Cloud storage
- Discord
- Forums
- THGF community packs

Sharing tasks is a great way to challenge friends or create group flights.

Tips for New Pilots Choosing Their First Tasks

If you’re just starting out, look for tasks that are:

- **Short** (10–20 km)
- **Simple** (2–3 turnpoints)
- **Low terrain complexity**
- **Near your favorite launch site**
- **With generous cylinder sizes** (400–1000 m)

This helps you learn navigation and task flow without overwhelming you.

What's Coming Next

Now that you know how to find, create, and manage tasks, the next chapter will show you how to **load a task into the THGF variometer** and prepare for flight.

This is where everything comes together — you'll see how the simulator reads the task, displays it, and guides you through it.

Loading Tasks into the THGF Variometer

Once you have an XCSoar task file, the next step is getting it into the simulator so you can fly it. The THGF variometer is designed to make this process simple and reliable, even for pilots who have never used a soaring instrument before. This chapter walks you through the entire workflow — from placing the file in the correct folder to selecting and reviewing the task in-sim.

Where the THGF Variometer Looks for Tasks

The THGF variometer reads XCSoar .tsk files from a specific **work directory** inside your MSFS 2024 installation. Any valid task file placed in this folder will automatically appear in the Vario's task list.

THGF Work Directory

If you're using the THGF Desktop App, it can export tasks directly into this folder for you. If you download or create a task manually, simply copy the .tsk file into this directory.

See the **Appendix B** for details about finding and using this directory.

Preparing Your Task File

Before launching MSFS 2024, make sure:

- The file has the **.tsk** extension
- The file is placed in the **work** folder
- The file name is clear and recognizable (e.g., "Stanwell_3TP.tsk")

You can keep as many tasks in the folder as you like — the vario will list them all.

Starting Your Flight

To load a task, begin a flight in MSFS 2024 with any THGF hang glider. Once the cockpit loads and the THGF variometer is active, you're ready to proceed.

Opening the Task Menu on the Variometer

On the THGF variometer:

- Open the **XC TASK** page
- The vario will display a list of all .tsk files found in the work directory

Each entry shows the task name exactly as defined inside the file.

Selecting a Task

Highlight the task you want to fly and press **Load**.

The variometer will:

- Parse the XCSoar file
- Validate the task structure
- Load all turnpoints
- Display the task on the moving map
- Activate the first waypoint (usually the start cylinder)

If the file is invalid or corrupted, the vario will show an error message. If the file loads successfully, you're ready to review the task.

Reviewing the Task in the Vario

After loading, open the **Waypoints Details** page. Here you'll find:

Task Overview

- Task name
- Task type
- Total distance
- Number of turnpoints

Turnpoint List

Each waypoint shows:

- Name
- Radius

- Distance from previous waypoint

Map View

You can go back and forth between the map view and detail pages using the buttons on the variometer. **See the variometer documentation for more details.**

The moving map displays:

- Your glider
- The task line
- All cylinders
- Distances and bearings

This is your in-sim briefing — a quick way to understand the route before you start flying.

Confirming the Start Type

Before launching, check the **Start Gate** information:

- **Start Cylinder** (most common)
- **Start Line**
- **Exit Start** (start inside, exit to begin)

The vario clearly displays the start type so you know exactly how the task begins.

When the Task Becomes Active

The task becomes active as soon as you load it. However, the **start timer does not begin** until you correctly enter the start zone.

The vario will:

- Show distance and bearing to the start
- Display the start cylinder on the map
- Announce when you enter the start zone
- Begin timing automatically

This ensures you always know when the task officially begins.

Troubleshooting Common Issues

The task doesn’t appear in the list

- Check that the file ends with .tsk
- Confirm it’s in the correct **work** folder

- Make sure the file isn't inside a subfolder
- Verify the file isn't zipped or renamed incorrectly

The task loads but looks wrong

- The file may contain unsupported features
- A waypoint may be missing coordinates
- The task may use a sector type not yet implemented

The task loads but the map looks empty

- You may be far from the first Turnpoint
- Zoom out on the moving map
- Check that the task is active

What's Coming Next

Now that you know how to load a task into the THGF variometer, the next chapter will guide you through **flying a complete example task** — from start gate to goal.

This is where the real fun begins

Example Task: Full End-to-End Flight Walkthrough

This chapter brings everything together. You'll fly a complete soaring task from start to finish using the THGF variometer inside MSFS 2024. If you've never flown a task before, this is the perfect introduction — practical, step-by-step, and designed to build confidence.

Figure 1 Review your task flight plan

We will be using the **Front Range Out And Back.tsk** file for our example. This task is meant to be flown from the Mount Zion (Lookout) flying site in Golden, Colorado. The site launch is very near to the start cylinder. We will be flying south to the world famous music venue: Red Rocks Amphitheater. From there we turn north and fly back past launch again towards Boulder. We are only going to go as far north as Hwy 72, just past Rocky Flats (they make Nuclear Bombs there). We then turn for goal which is on the top North Table Mountain, which is also in Golden, Colorado. We can land on top or even in the Lookout landing area.

Our example task is intentionally simple:

Type	Name	Distance	Radius
Cylinder	**Moun54**	**Start**	1000 ft.
Cylinder	**Moun55**	4.65 miles	1000 ft.
Cylinder	**Moun56**	14.81 miles	1000 ft.
Cylinder	**Moun57**	7.33 miles (**GOAL**)	1000 ft.

This is a classic beginner-friendly Race-to-Goal task.

Step 1 — Build or Find a Task

You can use any .tsk file, but for this walkthrough we assume you have a simple 4-turnpoint task created using: Front Range Out-n-Back.tsk

- The **THGF Desktop App:** will come with this task
- A **downloaded XCSoar task:** you can download this task from our website
- A **community task pack:** individuals can create shareable tasks for a site.

The important part is that the task is saved as a **.tsk** file.

If you're creating it yourself, the **THGF Desktop App makes it easy**:

1. **Choose your site**: Mt. Zion (Lookout) in Golden, Colorado
2. Add start, turnpoints, and goal
3. Set cylinder sizes
4. Save as .tsk

This task comes with the app, so you can just review it and see the details or even change it. Once you have the file, you're ready to load it into the simulator. See **Appendix B** for your local directory information or just use the app to export it there for you.

Step 2 — Load the Task into the Variometer

Place the .tsk file into the **THGF Work Directory** (see **Appendix B** for the exact path).

Then:

1. Launch MSFS 2024
2. Start a flight with any THGF hang glider category (**defines the work directory!**). Your glider CATEGORY selection must match the directory name where you put your task.
3. Open the **XC TASK** page on the variometer
4. Choose your task from the list

The vario will load the task and display waypoints (*as shown above*):

- Turnpoint list
- Distances
- Cylinder sizes
- Start/finish rules

You are now ready to fly.

Step 3 — Review the Task Plan

Before launching, take a moment to review the task. Get familiar with the waypoint names and the general layout of the task. Remember, things will look completely different once you are at altitude and busy flying. Teleport your glider to the

site (anywhere), but you may need to move around and find a good, clear spot that gives you clear access to see the vario. Just like real life.

Waypoint Details Page

This page is where you can review the data for the task.

Shows:

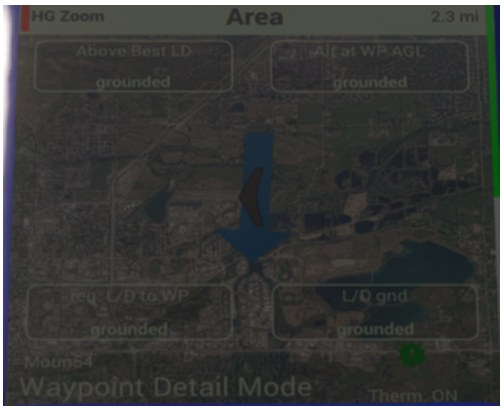
- Task name
- Total distance
- Number of turnpoints
- Task type

Turnpoint List

Tasks can have as few as 2 turnpoints up to 10 or more. Review the list of the turnpoints and what types they are as that is important to your strategy later.

Moving Map

You can then visualize the task by switching to the Moving Map page. It can show you only the current Waypoint (start is the default), or the entire course line.

Complete Course View (ROUTE button)	Waypoint Detail View (WP button)
	

You can go directly to the moving map page by clicking the ROUTE or WP button

Shows:

- Your glider
- The task line or arrow pointing to first task
- All cylinders (**ROUTE button**) or just the current waypoint (**WP button**)
- Terrain and wind overlays (if enabled)

Strategy Tips for Beginners

- Identify where you expect to climb
- Note terrain features that may generate lift
- Check wind direction — it affects your start and final glide
- **Plan safe landing fields** along the route

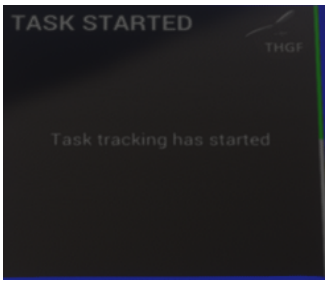
This is your pre-flight briefing.

Step 4 — Understanding the Start Gate

The start gate defines how the task begins. In our example, it's a **Start Cylinder**. There are a lot of different strategies about starting, but the simplest (*and best*) is to Get as High as you can before attempting the start. Plan on whether you want to try and lead from the front or follow.

Figure 2 Heading towards the start

How a Start Cylinder Works



- You can begin **outside** the cylinder or **inside** the cylinder.
- When ready, glide **into** the cylinder (or **out of** the cylinder).
- The vario announces **START once the start has been achieved**
- The task timer begins!

Start Cylinder Rules

Some start cylinders can have some pre-defined rules and if they do, you should understand them. Don't worry, most start cylinders are very basic

- **Start Time**. Some starts cannot be started until after a fixed time. You will be penalized if you start too soon. These starts tend to be used to keep all the pilots in a group.
- **Start Altitude**. Some start cylinders define a maximum height. You can't be higher than that when attempting to start. This again keeps pilots in close contact and a more even start for pilots that launched last. The early launchers may have a height advantage.

Why This Matters

Starting too low or too early can make the rest of the task harder. Most pilots climb near the start, wait for a good line (cloud development or wind line) or based on the required start time, then enter the cylinder with enough altitude to reach the first Turnpoint comfortably.

The Vario Helps You

- Shows distance to the start
- Displays the cylinder on the map
- Announces when you enter the zone (**visually**)
- Starts timing automatically
- If necessary, it will also help you time your start.

Once the start is triggered, Turnpoint 1 becomes active.

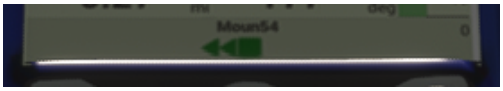
Step 5 — Navigating Turnpoints

Each Turnpoint is usually a **cylinder** you must enter, and you must do so in the proper order.

You need to navigate using information about bearing to waypoint, its altitude, and size. If you used the THGF application to push the task to the variometer you will also see in-simulator POI markers for each turnpoints. You will not see them if

you manually installed the task file.\

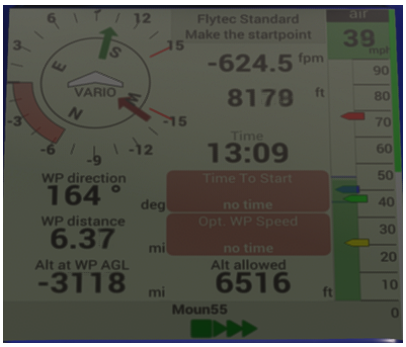
How to Navigate to a Turnpoint



These are the different tools in the variometer you can use to navigate to the current waypoint.

- The waypoint direction tool on the main vario page
- The waypoint direction arrow on the main vario page compass

- The waypoint direction arrow on the moving map page or the cylinder (waypoint mode only)



- Using the waypoint bearing/distance/Altitude data fields in the custom data field section.

Figure 3 Waypoint data page example

Inside the cylinder

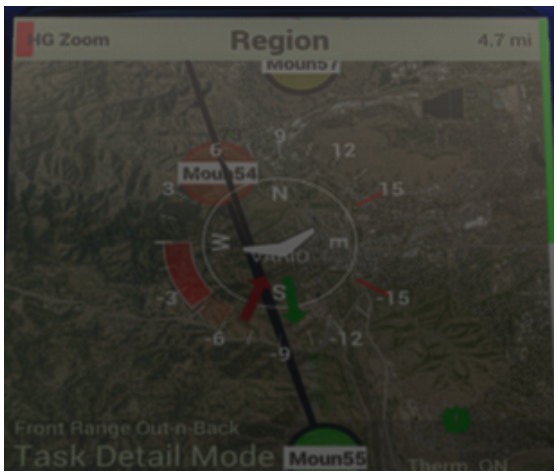
The cylinder (or sector) will change color when you either enter or exit the active area. It will also change color once the Turnpoint has been tagged.****

Fig

ure 4 Waypoint Moving Map example

Waypoint Moving Map Navigation

You can also navigate between Turnpoints by using the Moving Map modes.

Complete Course View (ROUTE button)	Waypoint Detail View (WP button)
	
In this mode, the complete course line can be viewed. The glider icon indicates where you are relative to the course.	The waypoint mode does not show the course line. If the current zoom level does not show the actual Turnpoint, you will see a **BLUE** arrow that points to the waypoint and a **RED** arrow that indicates the current wind direction.

How to Tag a Turnpoint

You need to “tag” a Turnpoint so that you can continue the task to the next waypoint. This is just simply meeting the location/height requirements of the current waypoint.

1. Fly toward the cylinder
2. Watch the Vario's distance countdown: See data fields.
3. Enter the cylinder (or cross the line)
4. The vario announces **TURNPOINT REACHED**
5. The next Turnpoint becomes active. You will see the vario respond accordingly.

What the Vario Shows

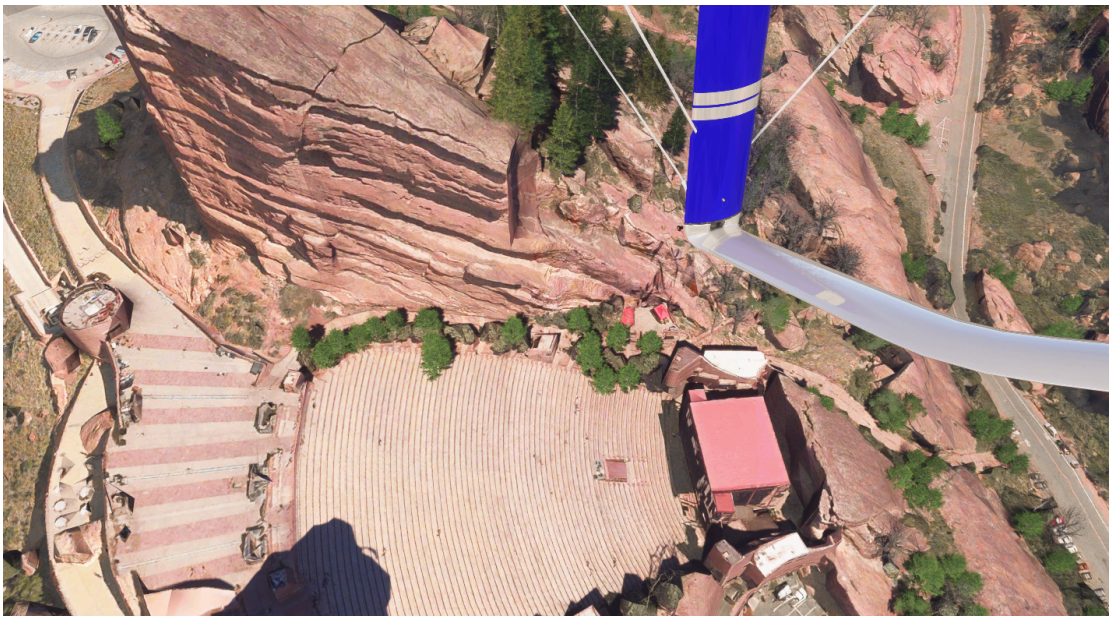
- Bearing to the next Turnpoint
- Distance remaining
- Required glide ratio
- Wind-adjusted track
- Cylinder boundaries on the map

Beginner Tips

- You don't need to hit the center — just touch the cylinder
- Don't cut too close in strong wind
- Be sure you see the notification that you have made the Turnpoint. Do not assume!
- Plan climbs before each Turnpoint
- Use terrain and clouds to find lift

Repeat this process for Turnpoint 1, 2, and 3, etc.

Step 6 — Landing Short (*If It Happens*)



Not every flight reaches goal — especially when learning. You still score points! You get distance credit for all the Turnpoints you have made as well as the additional distance along the course towards the current Turnpoint.

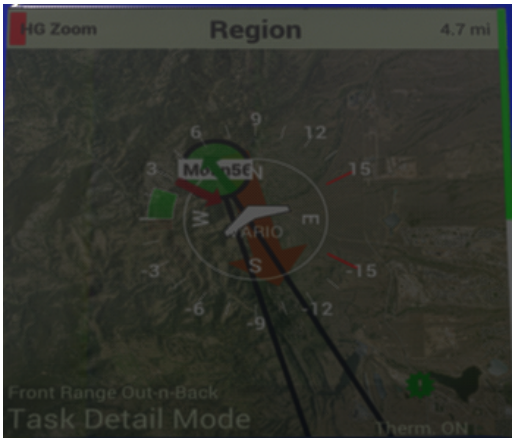
Figure 5First Turnpoint: Red Rocks Amphitheater

If you land out:

- The vario automatically stops task progression
- Your partial distance is recorded
- You can review your flight afterward ***IGC record is created automatically**
- You can retry the task anytime and as many times as you like.

Landing out is normal in cross-country flying. It’s part of the learning process.

Getting that last Turnpoint



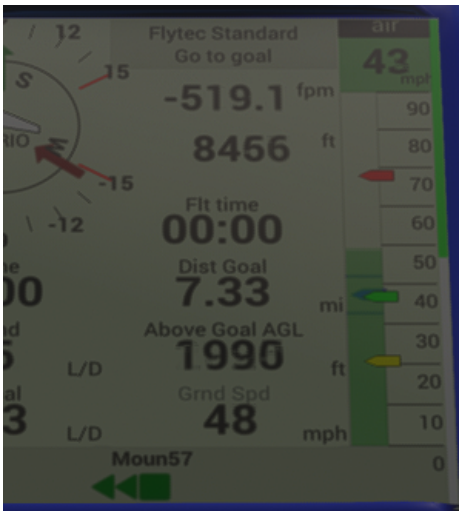
But more likely, you will continue course until you reach your last Turnpoint.

Here we see that we are closing in on the last Turnpoint before we turn for the goal.

Step 7 — Going on Final Glide

After tagging the last Turnpoint, the final leg begins. The goal here is to cross the goal line with minimal altitude. Not so low as to be dangerous, but not so high that you could have flown faster or left your last thermal lower. It is a very fine calculation.

For this information we should switch our main vario page into goal mode:



le Indicators

ows:

red glide ratio: This is the required L/D to just make the distance.

t above/below glide: Shows your altitude in reference to the glide slope.

adjusted arrival altitude: expected altitude at goal

ce to goal: how far you must fly to get to the goal

ly Final Glide

until you have a safe arrival margin

e an efficient line

unnecessary detours

or your arrival altitude closely

rio shows **Arrival +100 m** or more, you're generally safe to go.

— Reaching the Goal Gate

s when you enter the **Goal Cylinder (or cross the goal line)**.