

# PROVING GROUNDS



## Declared Tasks & Badges: from Beginner to Diamond

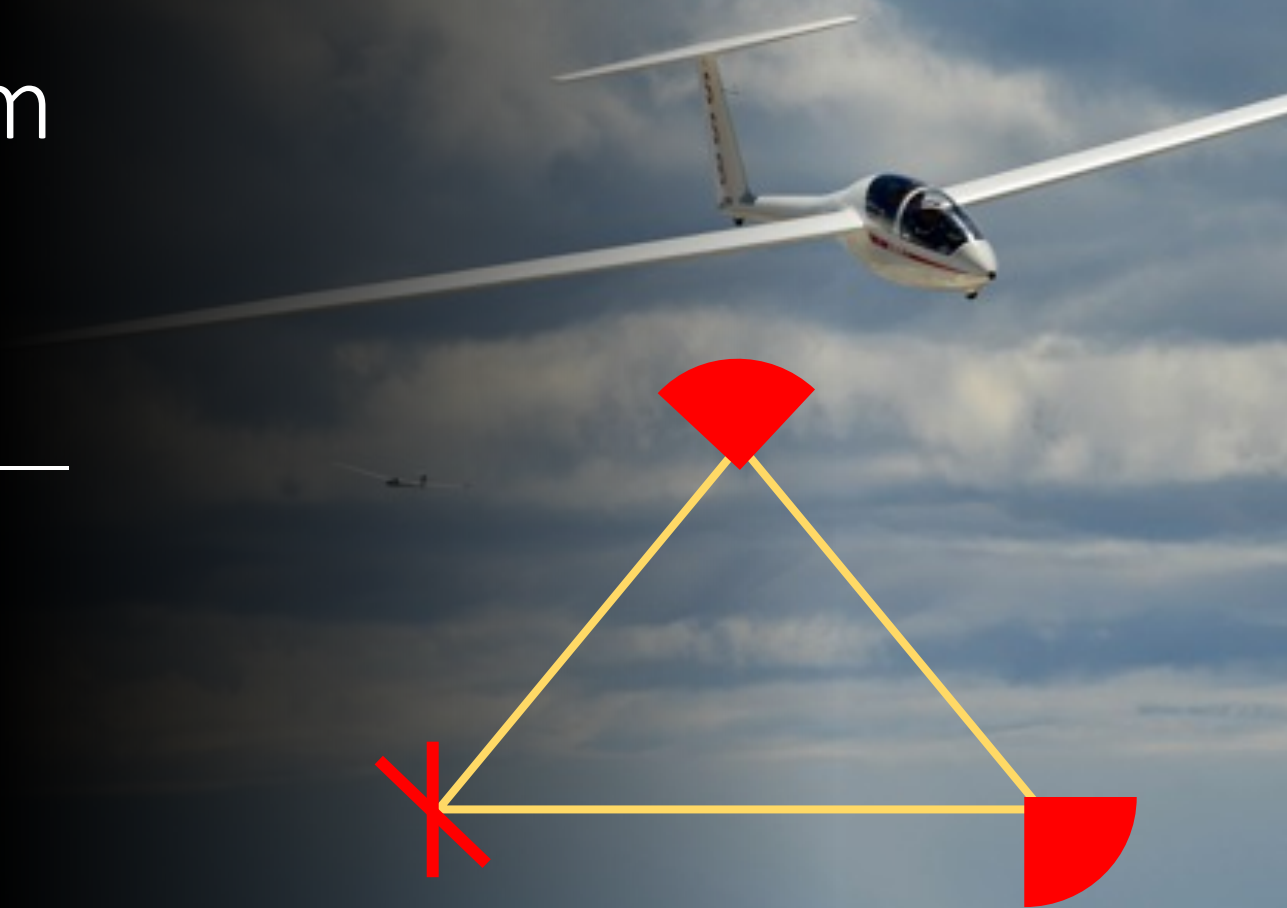
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Task Flying: What? Why? How?

Badge Tasks: Requirements? Making them Count.

Suggested Tasks for Boulder: From Beginner to Diamond.

Case Study: My first 300km triangle (aka Diamond Goal)

Safety First

Suggested Resources



Task = You (Pre-) Decide Where You Fly

# Task Myths – Debunked



## 1. “Tasks are difficult” – not true

They are exactly as difficult as **YOU** make them.

## 2. “Tasks require long flights” – not true

They are exactly as long as **YOU** make them.

## 3. “Tasks are for experts only” – not true

**YOU** can start flying tasks as soon as you are able to stay up.

# Why Fly Tasks?

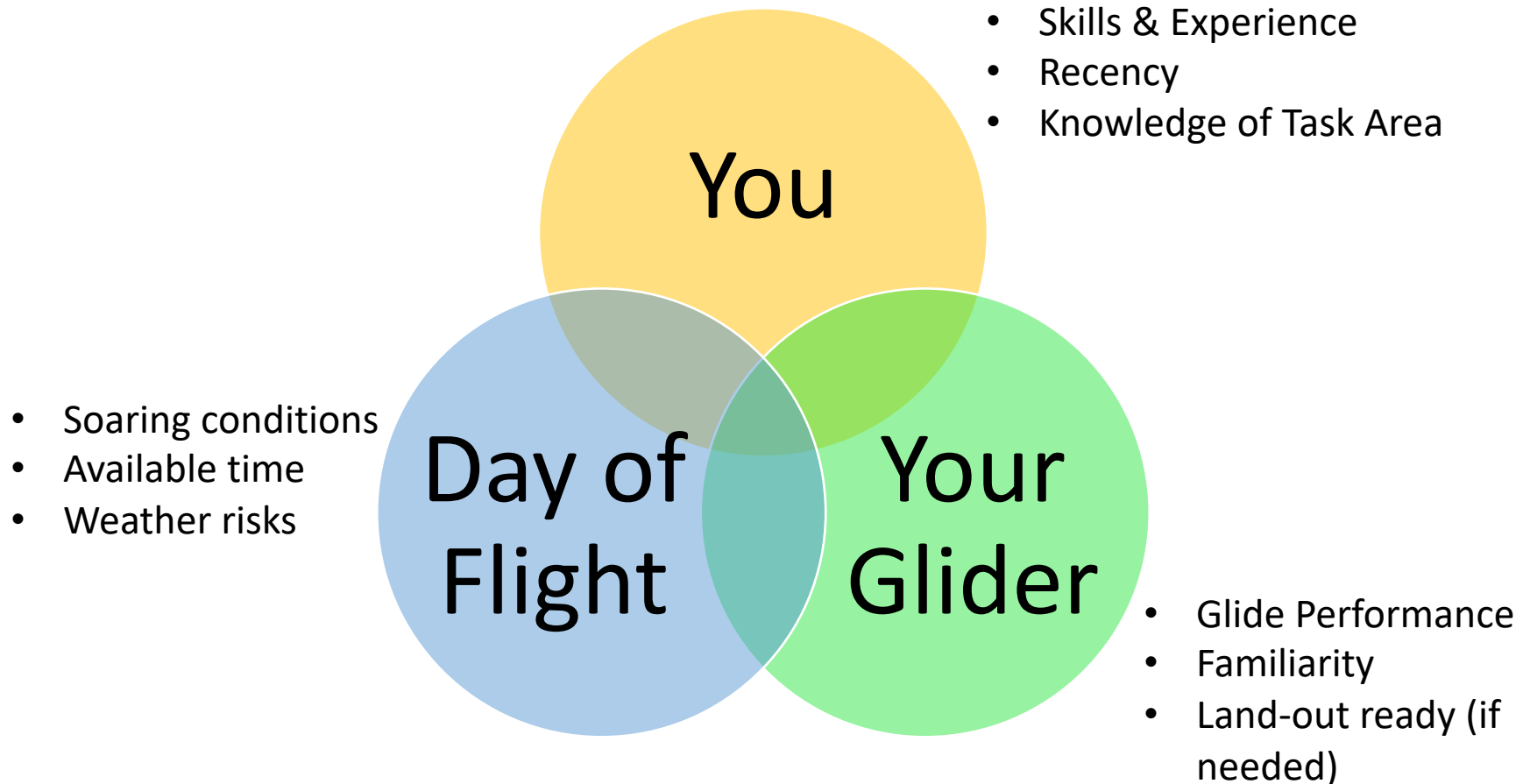
## = Why Do We Set Goals In Life?

- So That We “Don’t Wander Aimlessly About” (BC – Bob Caldwell)
- To Focus Our Minds
- To Develop Our Skills as Soaring Pilots
  - Understanding the weather forecast
  - Planning a flight (weather, timing, terrain, wind, sun angle, etc.)
  - Reading the sky / recognizing energy lines in flight
  - Learning to climb better & cruise more efficiently = fly faster and further
  - Estimating probabilities
  - Making better decisions
  - Etc...
- To Gain Confidence and Expand Our Horizon
- To Experience Accomplishment (intrinsic motivation) & Bragging Rights (extrinsic motivation)

# How To Fly A Task?

1. Set a Goal
2. Make a Plan
3. Execute the Plan - And Do It Well!

# 1. Set A Goal: What's Appropriate? Push Yourself. Know Your Limits.

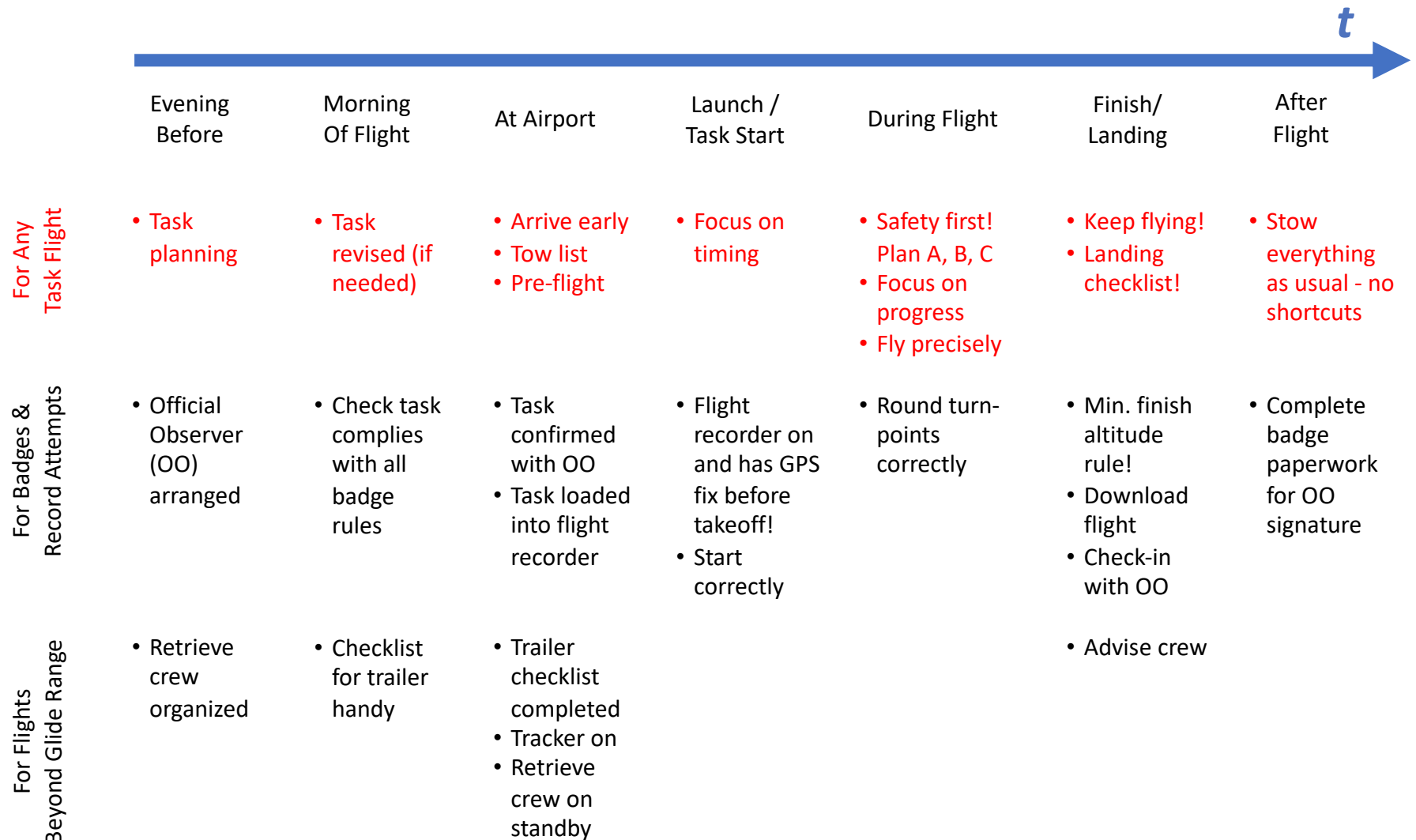


## 2. Make a Plan:

Prepare 1 day in advance; adjust the day of if needed

- a) Know Your Turf, i.e., your “Safe Task Area”
- b) Study Weather Within Your Task Area at Different Times
  - Length of soaring day (start / end)
  - Thermal heights, thermal strength, buoyancy/shear ratio, winds, OD
  - Energy lines, especially convergence (lift), and divergence (sink!)
  - Weather risks (e.g., thunderstorms, fronts, winds?)
- c) Adjust Your Goal and Plan Specific Task
  - Start location and approx. start time
  - Turn Points and estimated time at each TP (use realistic task speed)
  - Note safe land-out options on each leg and how high you need to be to get there along your route; critical decision points
  - Finish location and estimated finish time

# 3. Execute the Plan - Do It (Well)!





# Your First Tasks

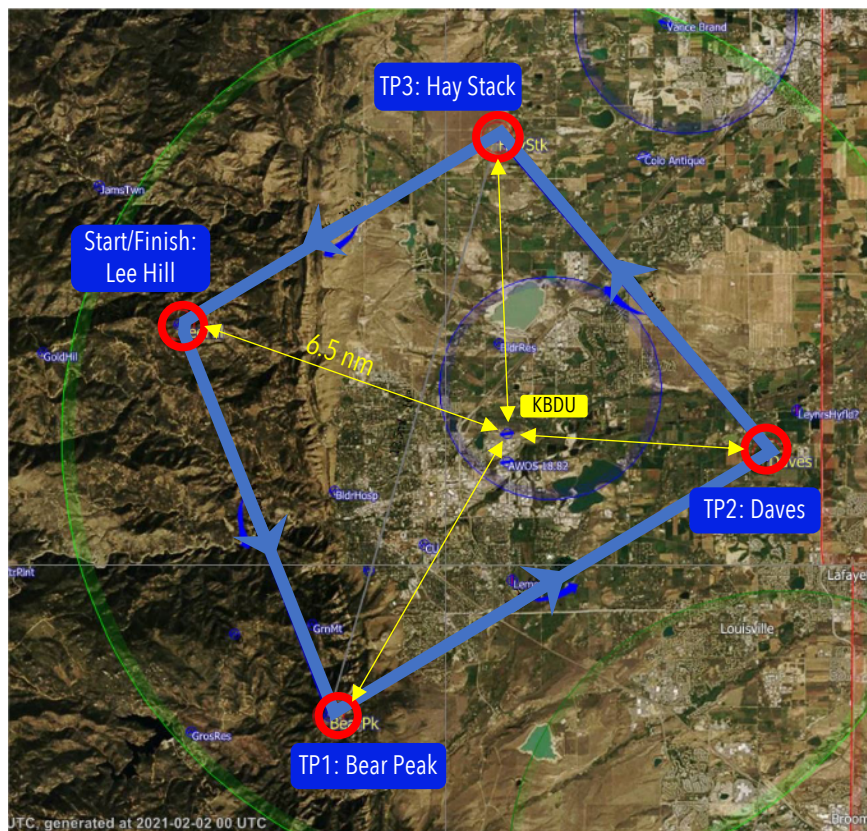
supported by:

**PROVING  
GROUNDS**

# Seven Tips For Flying Your First Tasks

- 1) Pick a **good soaring day**
- 2) Get to the airport **early**
- 3) Don't launch before conditions are good
- 4) Start task at a **"Goldilocks" altitude**
- 5) Make a **note** of your start altitude
- 6) Get high and **stay high** – less stress
- 7) Don't rely on your flight computer for safe arrival altitudes

# Task 1: Boulder Dash (1/2)



- |                    |                      |
|--------------------|----------------------|
| • Start: Lee Hill  | N40:04:20 W105:21:16 |
| • TP1: Bear Peak   | N39:57:17 W105:17:45 |
| • TP2: Dave's      | N40:02:00 W105:07:26 |
| • TP3: Hay Stack   | N40:07:42 W105:13:48 |
| • Finish: Lee Hill | N40:04:20 W105:21:16 |

Task Distance: from center of TPs: 57.3km (31nm)  
min. distance 44.8 km (24.2nm)

## Objectives:

- You can start and finish the task at any Turn Point.
- Starting at Lee Hill and going counterclockwise are recommended.
- Correctly declare a task in the Flight Recorder.
  - Set Start, Finish, and each TP as a cylinder with a 1km radius (2km diameter). No minimum and no max. altitude.
- Round all turn points correctly by flying into each cylinder.
- Use "No altitude loss" rule – make a note of your start altitude and get into the finish cylinder at start altitude or higher. If you are too low, climb back up to start altitude to finish.
- Try to stay above 9-10k ft. KBDU will always be in glide.
- Make it around the course safely.

## Why this task?

- You are never more than 12km (6.5nm) away from BDU.
- Suitable for any club glider (incl. ASK 21).

## Recommended Conditions:

- Good thermals over the prairie and lower foothills.
- Cumulus clouds will be very helpful.
- Cloud base of 12k ft or higher.

## Tactical Tips (depends on weather):

- Start at Lee Hill, fly counterclockwise, and try to climb high above the Flatirons before you head out over the prairie. (Before your flight, calculate how much altitude you would have to gain between leaving the start at Lee Hill and Bear Peak to glide all around the rest of the task and arrive back at Lee Hill above your start altitude.)
- The best time to fly the task is often mid to late afternoon when the sun has had enough time to heat up the prairie and burn off the inversion. Thermal height and strength are usually higher.

# Task 1: Boulder Dash (2/2)



## Glide Ring Chart Settings:

- Glide Ratio 17:1 (50% of best glide ratio of ASK 21)
- Minimum Arrival Altitude at KBDU: 1500 AGL
- No Wind

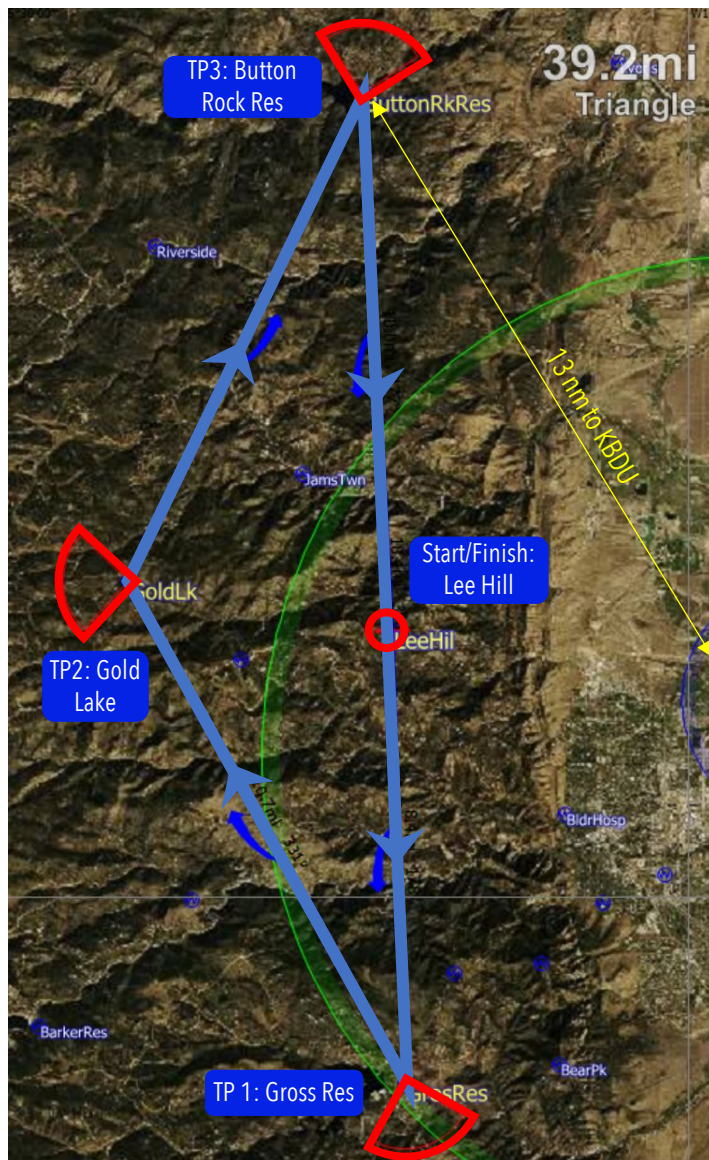
Recommended Minimum Task Altitude: 9k ft

## Safety Considerations:

- Avoid days with adverse weather conditions, e.g.:
  - Strong winds
  - Low clouds
  - Possibility of strong sink
  - Risk of thunderstorms
- Lee Hill (Start) to Bear Peak (TP1)
  - Watch for gliders and paragliders! Paragliders do not have Flarm or transponders.
  - Watch for GA traffic, especially along Boulder Canyon.
  - Stay high above terrain (recommended minimum for low hour pilots is 1000 ft above mountains)
  - Do not get trapped on the west side of the Flatirons!
- Bear Peak (TP1) to Dave's (TP2)
  - Stay clear of JeffCo Class D airspace (SFC to 8000 ft). Watch for air traffic in and out of Jeffco!
  - In Experimental Gliders (i.e., Club Disci) avoid flying above urban areas
- Near Daves (TP2)
  - You must stay clear of Denver Class B airspace (Road 287 from Longmont to the south). Class B is at 10,000 ft and above, less than 1 mile east of the turn point!
  - Watch for GA traffic near Class B airspace!
- Dave's (TP2) to Haystack (TP3)
  - Watch for GA traffic into Boulder, especially as you cross the Diagonal (road from Longmont to Boulder)
- Haystack (TP3) to Lee Hill (Finish)
  - Stay well above terrain as you approach Lee Hill
  - Watch for other air traffic (gliders, paragliders!)



# Task 2: Hill Rambler (1/2)



- Start: Lee Hill N40:04:20 W105:21:16
- TP1: Gross Reservoir Dam\* N39:57:00 W105:21:00
- TP2: Gold Lake N40:05:06 W105:26:51
- TP3: Button Rock Reservoir N40:13:00 W105:21:54
- Finish: Lee Hill N40:04:20 W105:21:16

Task Distance: 63 km (34.1 nm)

## Objectives:

- Correctly declare the task in the Flight Recorder.
  - Set Start and Finish as cylinders with 1km radius.
  - Set TP1, TP2, and TP3 as 45-degree sectors with 5km radius.
- Start and finish correctly.
- Round turn points correctly.
- Use "No altitude loss" rule – cross finish line at start altitude or higher.
- Make it around the course safely.

## Why this task?

- Get to know the foothills west of Boulder.
- Better lift over the mountains than over the prairie.
- You can keep Boulder in glide the entire time.
- Suitable for any club glider (incl. ASK 21) above 12k ft.
- Advanced pilots may want to fly this task when the weather is too weak to go XC. And see how fast they can get around – maybe taking multiple laps.

## Recommended Conditions:

- Good thermals over the foothills.
- Not well suited if strong convergence line is further west than the line between Lee Hill and Gross Reservoir.
- Mid-afternoon is often the best time for this task.

\*note the waypoint is ~0.5 km east of the dam!

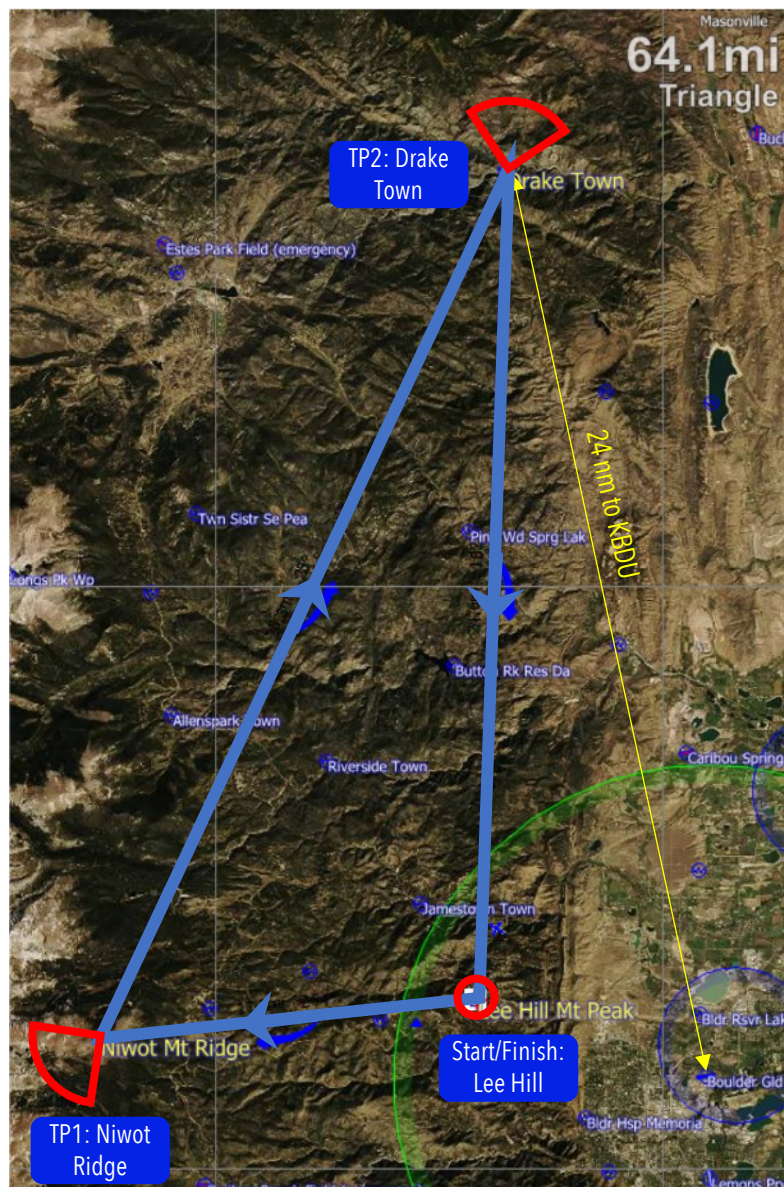
- Glide Ratio 17:1 (50% of best glide ratio of ASK 21)
- Minimum Arrival Altitude at KBDU: 1500 AGL
- No Wind

12k ft (ASK 21), 11k (Discus, DG 505)

- Avoid days with adverse weather conditions, e.g.:
  - Strong winds
  - Low clouds
  - Possibility of strong sink
  - Risk of thunderstorms
- 1<sup>st</sup> Leg to the South: avoid terrain obstacles! Don't get trapped behind the Flatirons – stay above 10k feet near Gross Reservoir (especially with the ASK 21). Bear Peak is 8,559 MSL.
- 2<sup>nd</sup> Leg towards Gold Lake: stay high as you head west! Min. safe altitude near P2P Hwy on summer day without much sink: ASK21: 12k ft. Discus: 11k ft. (Higher in adverse conditions).
- 3<sup>rd</sup> Leg towards Button Rock Res: remain high as your distance to Boulder increases and there are tall hills to the east. 12k is minimum safe altitude to round TP3 in the ASK 21. In Discus: 11k. More in adverse conditions (e.g., southerly wind). If you drop below these altitudes near Button Rock, consider heading to Longmont.



# Task 3: Niwot's Challenge (1/2)



- Start: Lee Hill N40:04:20 W105:21:16
- TP1: Niwot Mt Ridge N40:03:23 W105:33:54
- TP2: Drake Town N40:25:42 W105:20:19
- Finish: Lee Hill N40:04:20 W105:21:16

Task Distance: 103.2 km (55.7nm).

Discus or DG 505 recommended.

(Task does not qualify for Silver because you will never be 50+ km away from Boulder.)

Objectives:

- Set Start and Finish as cylinders with 1km radius.
- Set TP1 and TP2 as 45-degree sectors with 5km radius.
- Make it around the course safely.
- Observe “minimum altitude loss” rule – cross finish line not more than 1000m (3,381 ft) below start altitude.

Why this task?

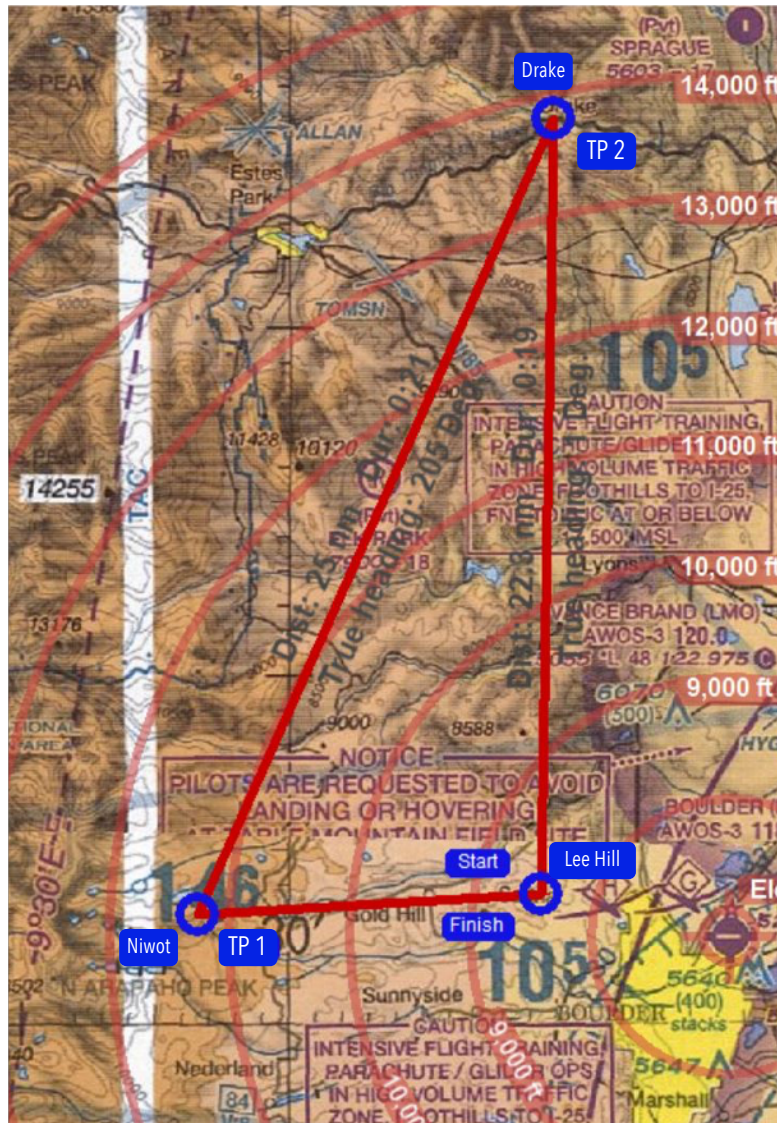
- Often aligned with good soaring conditions.
- You can keep Boulder in glide the entire time.
- There are viable land-out options to the north if you cannot stay high, e.g., Longmont, LazyW, some fields (research them).
- Task is close to the base of the hills and avoids major “terrain traps” (e.g., Estes Valley).

Recommended Conditions:

- Good thermals over the foothills, cloud bases 14k+.
- Not well-suited if there is a strong convergence line much further west than the line between Lee Hill and Drake.



# Task 3: Niwot's Challenge (2/2)



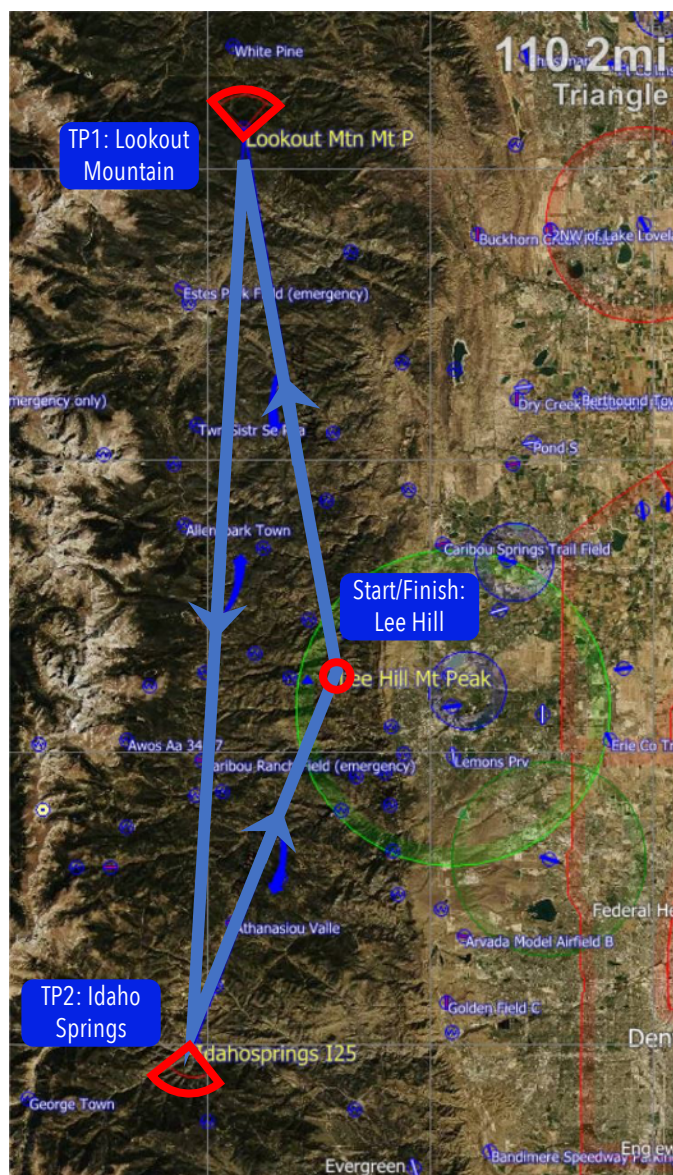
## Glide Ring Chart Settings:

- Glide Ratio 21:1 (50% of best glide ratio of Discus or DG 505)
- Minimum Arrival Altitude at KBDU: 1500 AGL
- No Wind

## Safety Considerations:

- Avoid days with adverse weather conditions.
- Stay high as you head west. Niwot Mountain is at 11,471 ft. Min. safe altitude at Niwot Ridge in Discus or DG 505 is ~12k (higher in adverse conditions).
- At Drake, beginners should stay at or above 14k to keep Boulder in glide. Longmont is in glide above 12k.
- Terrain Obstacles: don't get trapped in the Estes Valley!

# Task 4: Lookout for Silver (1/2)



- Start: Lee Hill N40:04:20 W105:21:16
- TP1: Lookout Mountain N40:32:03 W105:27:33
- TP2: Idaho Springs N39:45:05 W105:30:53
- Finish: Lee Hill N40:04:20 W105:21:16

Task Distance: 177.3 km (95.7 nm). Discus recommended.

Qualifies for **Silver Distance** but only if the release point is >50km away from Lookout Mountain! Recommendation: take a south tow if you want to be sure that the flight counts for Silver!

Objectives:

- Set Start and Finish as cylinders with 1km radius
- Set TP1 and TP2 as 45-degree sectors with 5km radius
- Make it around the course safely.
- Observe “minimum altitude loss” rule – cross finish line not more than 1000m (3,281 ft) below start altitude.

Why this task?

- Well aligned with typical good soaring conditions (convergence).
- You can keep Boulder in glide the entire time.
- There are viable land-out options to the north if you cannot stay high, e.g., Christman, Longmont, LazyW, some fields (research them!)
- You will almost inevitably achieve Silver Altitude on this flight as well – you may even achieve Gold Altitude.)

Recommended Conditions:

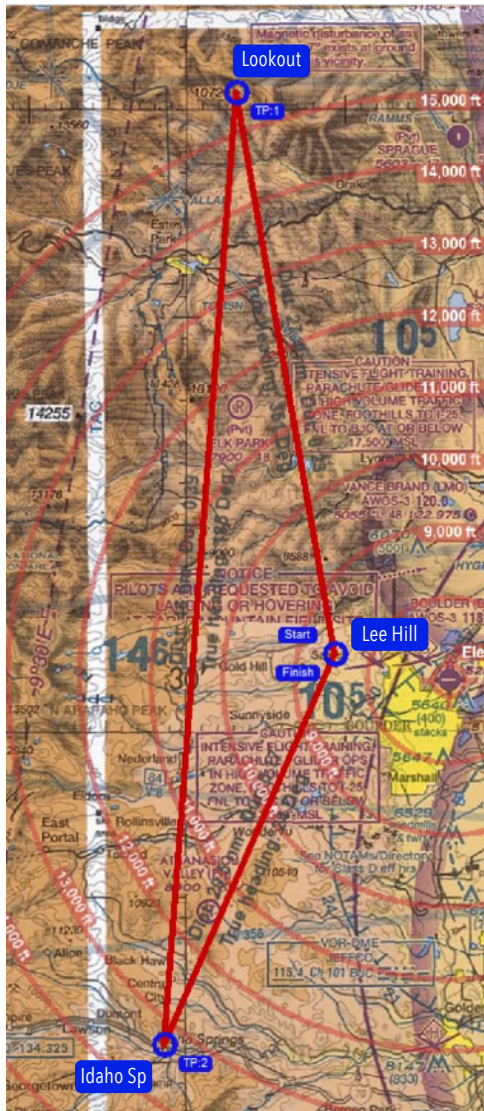
- Good thermals over the foothills, cu with high cloud bases.

Tips:

- If convergence is further west, move Start/Finish to Ward or to Niwot Ridge. Task distance will be 174.1 km (94 nm). You will still earn Silver.
- If you make it to Lookout Mountain, you will earn Silver even if you don’t complete the rest of the task.



# Task 4: Lookout for Silver (2/2)



## Glide Ring Chart Settings:

- Glide Ratio 21:1 (50% of best glide ratio of Discus or DG 505)
- Minimum Arrival Altitude at KBDU: 1500 AGL
- No Wind

## Safety Considerations:

- Avoid days with adverse weather conditions.
- Get high and stay high before you fly past Estes Park to round Lookout Mountain. Estes Valley is a terrain trap (higher terrain all around) with no good land-out option and a long way from the plains.
- Near Lookout Mtn try to stay above 15k to keep Boulder in glide. If you get low, know how to get to Christman (north-east of Horsetooth Res). From Lookout Mtn Christman is in glide at ~11-12k.
- Don't get trapped low to the west of Thorodin Mountain or near Black Hawk! Stay high so you can always glide out of the hills!
- Near Idaho Springs, you must ALWAYS stay above 13.5k to keep Boulder in glide. There is no other airport within reach!

# Silver: Make Sure You Get It Right!



- Start: Release >50km Away from Lookout Mtn (south of white dotted line!)
- Finish: Lookout Mtn  
(from there return to Boulder or continue anywhere)

Task Distance: 50+ km (27 nm)

Total Distance incl. back to Boulder: 108+ km (58 nm)

Tip: Brief the tow pilot that **you MUST release south of the white dotted line** (or you can just take a south tow instead.) Note that Nugget Ridge to Gold Lake (the normal tow route) is just a bit too far north (Gold Lake to Lookout Mtn is only 49.9 km!).

To earn Silver, you must be the only person in the glider. You must also pre-declare the flight (unless you land at another airport 50+ km away). See Slide 28.

Note: You will inevitably earn **Silver Altitude** on the flight as well. Your likely release altitude will be between 8-11k ft. To round Lookout Mtn within safe glide distance to Boulder you will have to climb to more than 15k ft at some point of your flight. That will satisfy the requirement of a 1000m (3,281 ft) altitude gain.

If you release below 7,500 ft, you may also be able to earn **Gold Altitude** if you can climb to 17,500 ft. The requirement for Gold Altitude is a 3000m (9,843 ft) altitude gain.

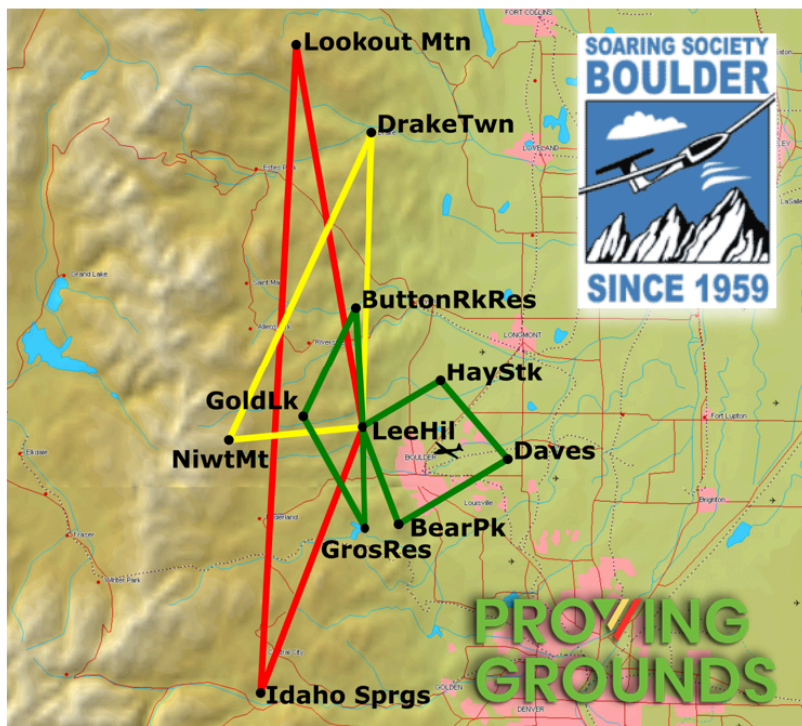
# Tasks 1-4 Will be Supported by Proving Grounds!

- After your flight, download the .igc trace, and send it attached to an email to [ssb@soaringtasks.com](mailto:ssb@soaringtasks.com). (Plus, while you're at it, consider posting your flight to OLC as well. 😊)
- Within a minute you will receive an automated email back with the outcome of your flight showing your handicapped (i.e., glider-adjusted) average speed
- Write the information on a magnetic slip (your name, glider, date, and avg. speed) and post it onto the ranking board for the task you have flown (from fastest to slowest)

## PROVING GROUNDS







Boulder Dash		Hill Rambler	Niwot's Challenge	Lookout for Silver
LeeHil	S/F	LeeHil	LeeHil	LeeHil
BearPk	TP	GrosRes	NiwtMt	Lookout Mtn
Daves	TP	GoldLk	DrakeTwn	Idaho Sprgs
HayStk	TP	ButtonRkRes		
44.8 km	Min Dist	63.0 km	103.2 km	177.3 km

#### The Rules:

Finish alt not less than start alt	Finish alt not more than 1000m below start alt
1km cylinders	1km S/F cylinder, 5km turnpoint FAI quadrants

**Boulder Dash:** Any point serves as a start and must be reached again to complete a lap.



Crew

Phone

#### Landout Checklist

S - Size  
S - Slope  
S - Stock  
L - Lines  
O - Obstacles  
W - Wind

#### Personal Checklist

Are you current?  
Task appropriate?  
Terrain traps?  
Where can you land?  
Minimum safe altitudes?  
Weather appropriate?  
Familiar with glider?  
Lookout (traffic, airspace, altitude)  
Plan A, B, C

Airport	Runway(s)	Elevation	Frequency
Longmont Vance Brand	11/29	5055' MSL	122.975
Christman (pvt)	16/34	5160' MSL	-
Ft. Collins / Loveland	15/33 06/24	5016' MSL	118.4
Erie	15/33	5119' MSL	123.0

Your flight is automatically scored by emailing your .igc trace to:  
[SSB@soaringtasks.com](mailto:SSB@soaringtasks.com)

A summary of completed tasks is immediately emailed back.

The fastest flights are recorded on slips, magnetized to the task boards, and ordered from fastest to slowest - top to bottom. Adjust the slips to maintain this ranking as required. Complete a slip with this information:

Pilot Name(s)	A/C & Reg	Date	Ranking Metric
---------------	-----------	------	----------------

For a new, faster flown task once the board is full, wipe the slowest slip clear to make it available. Complete it, and place it back on the task board in order - fastest on the top.

If the task fails the test by email, but is proven good on SeeYou, an OO can sign the slip with a validated time. Please share constructive feedback, or your experience with the platform through [soaringtasks.com](http://soaringtasks.com).

To retrieve a file including turnpoints and tasks for the club's Proving Ground, send an email to the address above with the word "task" anywhere in the subject. The club Proving Ground .cup file will be promptly delivered as an attachment to the requesting email address.

s3.3.3



Silver



Gold



Diamond



Distance Diplomas

## Badge Tasks = Tasks that Meet Specific Requirements

Note: to earn badges you must also demonstrate the completion of specific **duration** requirements (5+ hour soaring flight for Silver and Gold), and **altitude-gain** requirements (1000m for Silver, 3000m for Gold, 5000m for Diamond). These requirements can be earned on any flight (i.e., it does not have to be task flight).



# Badge Requirements (slightly simplified\*)



Silver



Gold



Diamond



Diplomas

Distance

- **Silver Distance:** 50+ km Straight Distance from Release to a Finish Point.
- The Finish Point must be >50 km away from takeoff AND release.
- Loss of height from release to finish must be <1% of the distance flown (i.e., 500m for 50km)

- **Gold Distance:** 300+ km Distance from a Start Point to a Finish Point with 0, 1, 2, or 3 Turn Points.
- Start and Finish Point may (but do not have to be) identical.
- Loss of height must be less than 1000m.

- **Diamond Goal:** 300+ km Distance from a Start Point to the Same Finish Point with 1 or 2 Turn Points. [i.e., it must be an out & return, or (any) triangle course.]
- Loss of height must be less than 1000m.
- Start and Finish must be a 1km line.

- **Diamond Distance:** 500+ km Distance from a Start Point to a Finish Point with 0, 1, 2, or 3 Turn Points.
- Start and Finish Point may (but do not have to be) identical.
- Loss of height must be less than 1000m.

- **Diplome Distance:** Distance from a Start Point to a Finish Point with 0, 1, 2, or 3 Turn Points. Start and Finish Point may (but do not have to be) identical.
- Distance diplomas are awarded in 250km increments for distances of 750km, 1000km, 1250km, etc.
- Loss of height must be less than 1000m.

Duration

- A duration flight of 5+ hours from release to landing is required for Silver and Gold Badges. (You only have to do this once.)

- No additional duration requirements.

Altitude  
Gain

- A gain of height of 1000m from a low point after release to a high point.

- A gain of height of 3000m from a low point after release to a high point.

- A gain of height of 5000m from a low point after release to a high point.

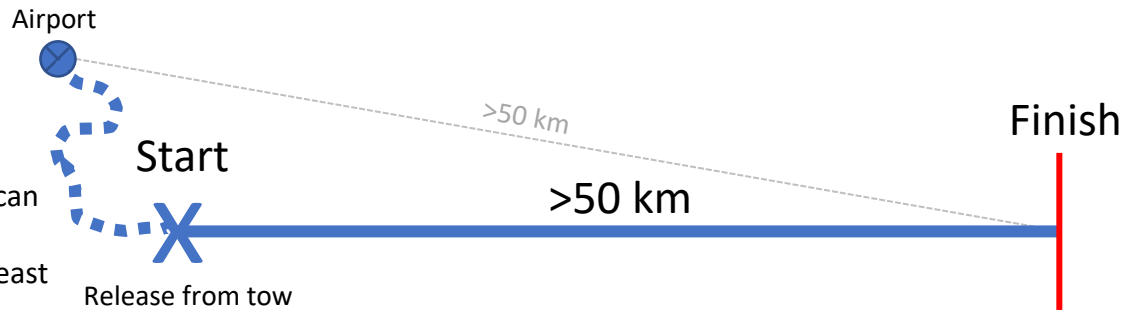
- Diplomas have no altitude gain requirements.

\*Note: the full details can be found here: [https://www.ssa.org/files/member/B&RGuide\\_OCT\\_2020.pdf](https://www.ssa.org/files/member/B&RGuide_OCT_2020.pdf)

# How To Set Up A Valid Badge Task (1/2)?

## Silver Distance Task:

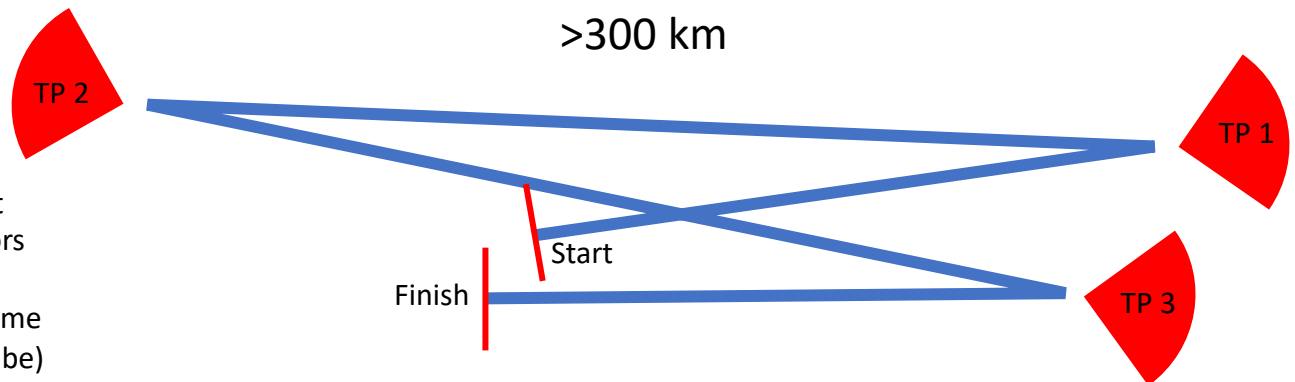
- Start Point for Silver Distance can only be the release from tow!
- The release point must be at least 50km from the Finish!
- Select a Finish Point set up as a line (1km recommended) or as a 45 degree turn sector (e.g., in case you fly back to the start).
- Finish must also be >50km away from take-off airport.



Note: for Silver Distance only, the Finish Point can be ANY point and does not have to be a finish line. However, since a finish line is required for some other badge tasks, it is good practice to set your finish point up as a finish line. Also be mindful of the loss of height rule!

## Gold Distance Task:

- Minimum distance: 300 km
- Select Start Point
- Select up to 3 turn points; set them as 45 degree turn sectors
- Select Finish Point
- Start and Finish can be the same point (but they don't have to be)

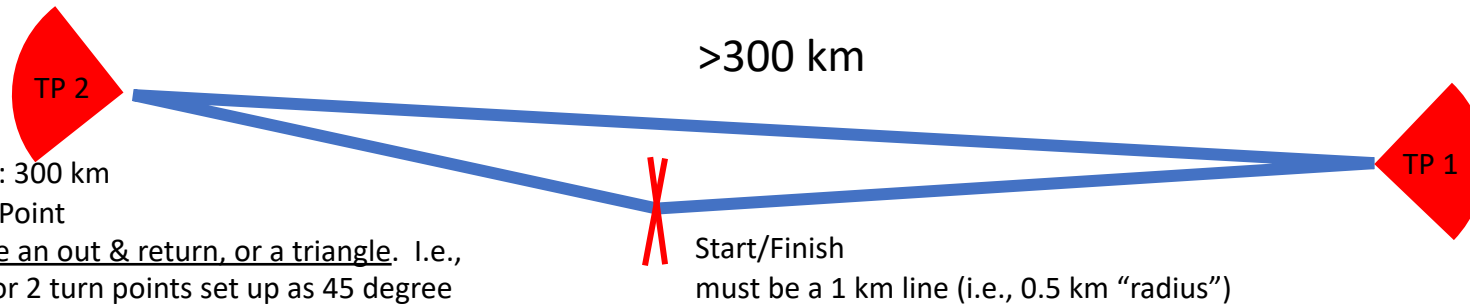


A task with 3TPs set up like above is easiest because it helps you stay close to home. You can easily complete a Gold Distance task in Boulder and never leave glide range!

# How To Set Up A Valid Badge Task (2/2)?

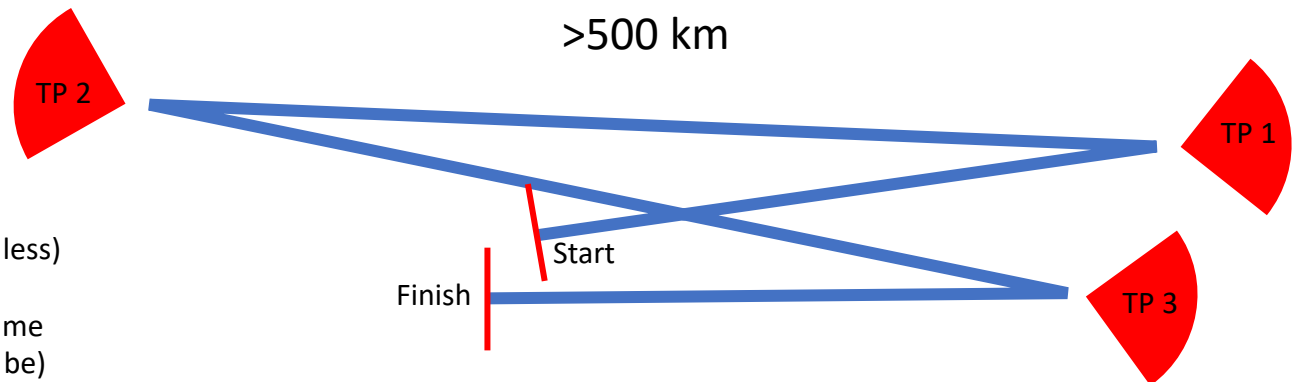
## Diamond Goal:

- Minimum distance: 300 km
- Select Start/Finish Point
- The course must be an out & return, or a triangle. I.e., you must select 1 or 2 turn points set up as 45 degree “observation zones” (no size limit). There are no specific requirements for the geometry of the triangle (e.g., it does not have to be an “FAI triangle”)
- It must be a “Closed Course”, i.e., the Finish Point must be the same as the Start Point
- For “Goal” flights the Start/Finish must be a 1km line, i.e., 0.5km “radius”



## Diamond Distance:

- Minimum distance: 500 km
- Select Start Point
- Select up to 3 turn points (or less)
- Select Finish Point
- Start and Finish can be the same point (but they don't have to be)



## Diploma Tasks:

- Same requirements as Diamond Distance, just longer (>750km, >1000 km, >1250 km, etc.)

# Tips For Designing Your Own Tasks

- **Pick a start point where the soaring is good.**
  - You can “hang out” in start area until conditions look good on course.
- **Align your task with expected “energy lines.”**
  - E.g., in Boulder, make use of the typical convergence line (and avoid divergence areas).
  - Pay close attention to how far west it is likely to be.
  - Define custom turn points as needed.
- **Make the task fit the day and stay clear of any expected bad weather.**
  - Go to areas with expected OD first.
- **Pick accessible turn points.**
  - Avoid major mountain peaks or areas with weak conditions.
- **Plan the hardest part of your route** for the best time of the day.
  - E.g., an upwind leg far away from home.
- Set the **last turn point** not too far away from home – ideally within glide range.
- Do not plan the **last leg** into a headwind. A tailwind is best.
- Your **finish point** does not have to be the airport, but home should be in easy reach.

# How To Record Your Badge Flight?



- You must declare your task in an approved IGC flight recorder with current calibration.
  - LX Nav S100 (in DG 505 and in both Disci) is a fully approved flight recorder (FR) for badges and records.
  - Oudie IGC is also a fully approved FR for badges and records. An Oudie 2 is valid for OLC submissions but is not approved for badges or records!
  - The calibration of the FR must be less than 5 years old. (If expired, a new calibration must occur within 2 months after your flight.)
  - The task must be declared in the FR before your flight!
  - Practice task declarations prior to your first badge flight! If you power down your FR after setting the task, learn how to do so correctly so the programming won't be lost!
  - Start Point (0.5km "radius" line), Finish Point (0.5km "radius" line), and 45 degree turn point observation zones must be correctly set!
  - Your name should be set as the pilot name in the FR.
  - Glider polar, pilot weight, water ballast (if any), arrival altitude, and MC should be set correctly so the FR provides correct glide calculations. (Not required for badge rules but for your safety!)
  - The FR must be powered up with a GPS fix before your take-off roll begins!
  - If you use more than one flight recorder, each flight recorder should have the same task loaded. (SSA may ask you to send traces from all flight recorders used and the tasks must match.)
  - Know how to download your trace after the flight. You will need to email it to the SSA with your badge application, worksheet, and FR calibration.
  - A bigger moving map screen is very helpful for navigation but not required.

# Badge Flights Require An OO – an “Official Observer”

- Many club members qualify to be your OO
  - OO must be an SSA member
  - Must hold a “B” Badge or higher (i.e., anyone with a Silver Badge is qualified)
  - Must be familiar with the Sporting Code (i.e., [this document](#))
- Serving as an OO is easy – if you make it so
  - Make sure your OO has the full details of your flight declaration before your flight. (I hand them a sheet of paper with my task declaration or I send them a text or email, making sure that they have my task – start, finish, and turn points – in hand before I take off.)
  - Make sure you do the paperwork. It’s not hard. Your OO will be happy to assist if you are willing to do the work.
- Note that for all badge flights you must be the only person in the glider (no passengers, no other pilots).
  - Silver distance should also be flown without guidance from another pilot.

# Badge Paperwork – Quick and Easy

- To apply for a badge, send an email to [badgeandrecords@ssa.org](mailto:badgeandrecords@ssa.org) (currently: Rollin Hasness) with the following four attachments (the first three in .pdf format):
  - The [badge application](#) that you and your OO must sign. It also includes the name of your OO and their SSA Membership number.
  - The [badge and record worksheet](#). It is also signed by you and the Official Observer and it must have a date and time from BEFORE you took off. (In practice, your OO may be happy to sign this document after your flight if he or she had the full details of your flight (start, finish, and turn-points) in hand before.)
  - A sheet showing the most recent **calibration** data of your flight recorder (less than 5 years old).
  - The **.igc trace** from your flight recorder. Make sure you attach the trace directly taken from the flight recorder and not one that you download from the OLC site (it would not be valid!)
- Badge applications must be sent within 6 months of the flight – much sooner for record applications. You will normally receive a response within a few days.

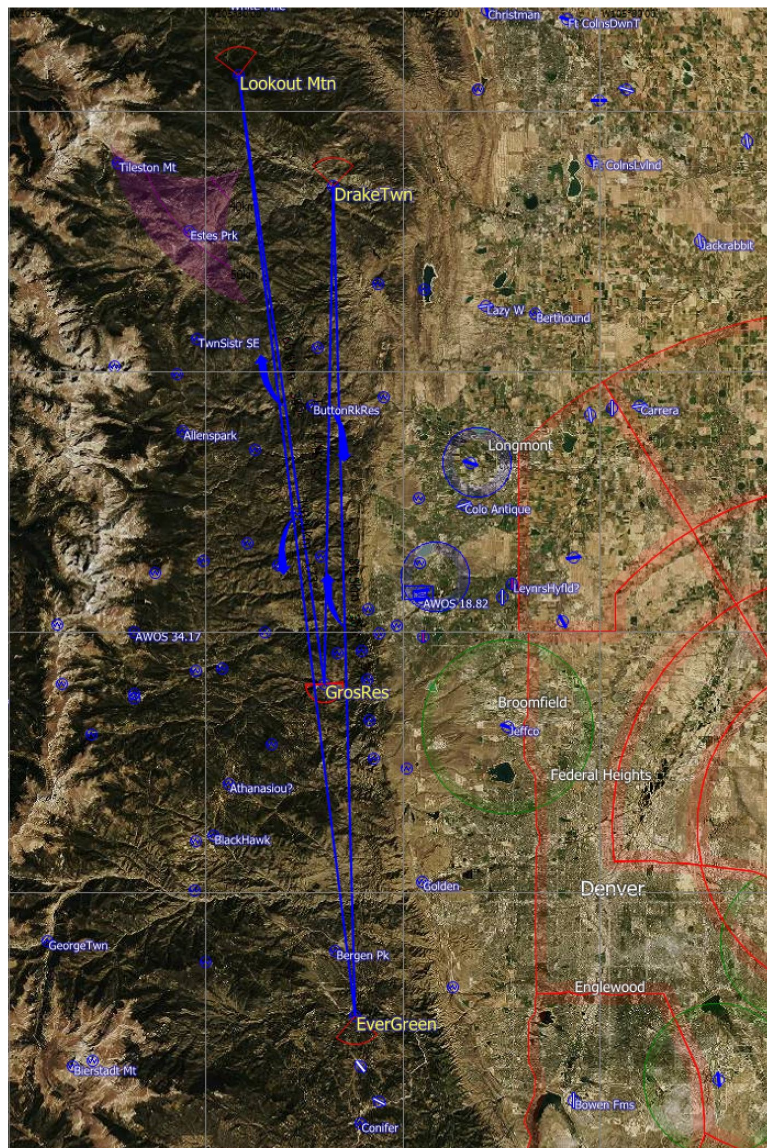


# Sample Boulder Badge Tasks

Recommendation:

Design Your Own Based on the Conditions of the Day

# Task 5: Gold in Glide (Gold Distance)



- Start: Gross Reservoir\* N39:57:00 W105:21:00
- TP1: Lookout Mountain N40:32:03 W105:27:33
- TP2: Evergreen N39:37:54 W105:18:37
- TP3: Drake Town N40:25:42 W105:20:19
- Finish: Gross Reservoir N39:57:00 W105:21:00

Task Distance: 308.2 km (166.4 nm)

Why this task?

- You can achieve Gold Distance and stay within glide distance of Boulder!
- Often well-aligned with convergence (on some days a more westerly route may be needed)
- Start at GrossRes keeps Boulder in glide after start
- Viable land-out options to the north (e.g., Longmont, LazyW, Christman); southern TP can be within glide range of Boulder
- Discus recommended

Recommended conditions:

- Good thermals marked by cumulus
- High cloud bases (16k+ for Discus and DG505)
- No OD, no thunderstorms, light winds
- Convergence can be an asset (if aligned)

\*note the waypoint is east of the dam!

# Task 5: Gold in Glide (Gold Distance)



## Glide Ring Chart Settings:

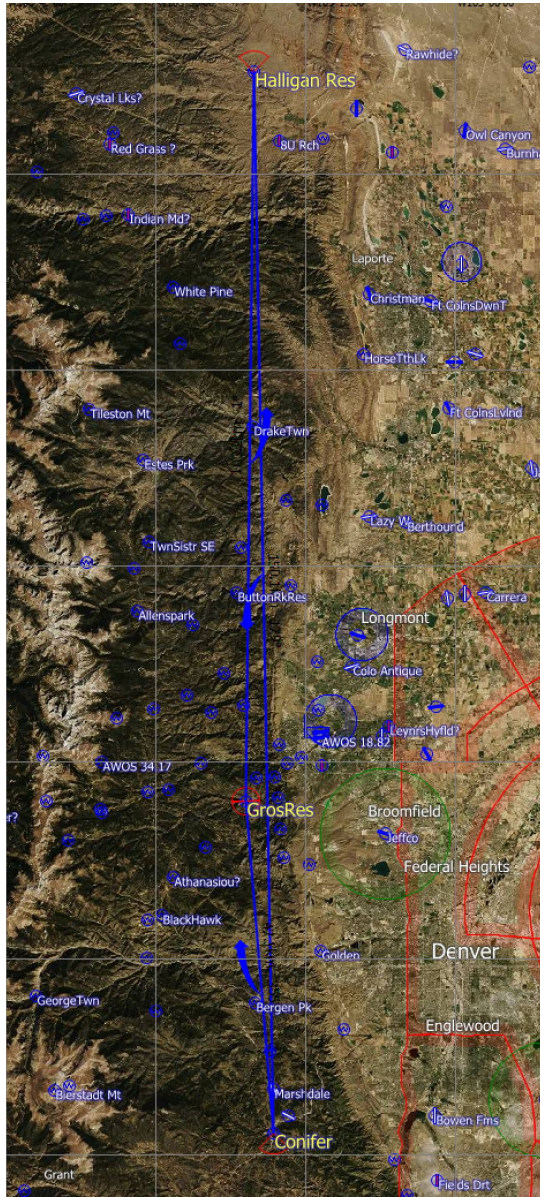
- Glide Ratio 21:1 (50% of best glide ratio of Discus or DG 505)
- Minimum Arrival Altitude at KBDU: 1500 AGL
- No Wind

## Safety Considerations:

- Avoid days with adverse weather conditions.
- Same altitude considerations as for prior tasks.
- Avoid terrain traps: Estes Valley, west of Thorodin Mtn, Black Hawk
- There are no good land-out options on the southern leg!  
Always keep Boulder in glide. Near Evergreen, Boulder is in glide at 14k even at a glide ratio of only 21:1.



# Task 6: Front Range Diamond Goal



- Start: Gross Reservoir\* N39:57:00 W105:21:00
- TP1: Halligan Reservoir N40:52:46 W105:20:13
- TP2: Conifer N39:31:40 W105:18:12
- Finish: Gross Reservoir N39:57:00 W105:21:00

Task Distance: 300.4 km (162.2 nm)

## Why this task?

- Often well-aligned with convergence (on some days a more westerly route may be needed, especially over the Poudre – make your own TP further west if needed!)
- Start at GrossRes keeps Boulder in glide after start
- Longer leg is to the north b/c of better landout options (e.g., Longmont, LazyW, Christman, Owl Canyon, Laramie)
- Southern TP can be within glide range of Boulder (Conifer to Boulder is 58 km)
- If you manage to stay high you might not ever get outside of glide range (but a final glide from Halligan Res is a big stretch, even if starting at 17.5k). Discuss recommended.

## Recommended conditions:

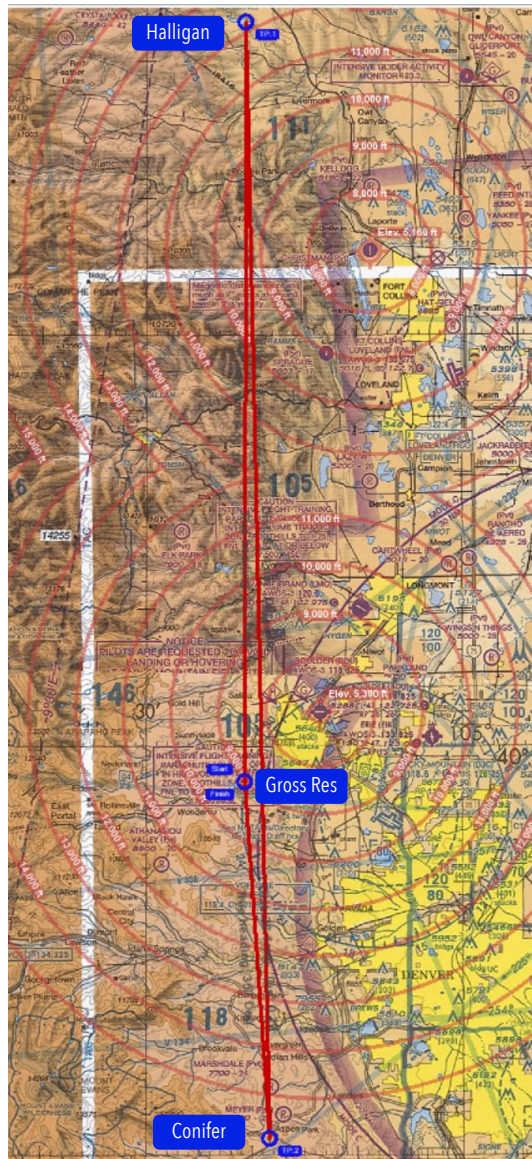
- Good thermals marked by cumulus
- High cloud bases (17k+ for Discus)
- No OD, no thunderstorms, light winds
- Convergence can be a major asset (if aligned)

## Essential Badge Tip:

- You must use a 1km start and finish line (“radius” 0.5km) and 45 degree turn sectors – otherwise your flight will NOT count for Diamond Goal!

\*note the waypoint is east of the dam!

# Task 6: Front Range Diamond Goal



## Glide Ring Chart Settings:

- Glide Ratio 21:1 (50% of best glide ratio of Discus or DG 505)
- Minimum Arrival Altitude at KBDU: 1500 AGL
- No Wind

## Safety Considerations:

- Avoid days with adverse weather conditions.
- Avoid terrain traps: Estes Valley, Poudre, West of Thorodin Mtn, Black Hawk. Always watch the terrain to the east so you can clear it safely!
- **On the northern leg** you will be outside safe glide range to Boulder if you're flying a club glider! However, you can keep Christman in glide if you always stay above 12k. You must know how to get there if needed.
- The further west you fly, the further the "escape route" to the plains. In this case you must stay much higher to remain in glide of Christman! Keep this in mind in case you plan a more westerly northern turn point to align with the convergence!
- Note: Christman is private and fenced in. Best to have a tow pilot on standby to get you if you land there.
- There is often a different airmass over the Poudre. Make sure conditions work before continuing north.
- Westerly winds tend to get stronger at the northern edge.
- **On the southern leg** you must stay high and keep Boulder in glide – there are no good landout places! Near Conifer, Boulder is in glide at 16k at a glide ratio of 21:1. (If you can achieve 27:1 you can still reach Boulder from Conifer if you're above 14k – usually realistic in the Discus or DG 505 unless there is a wind from the north or strong sink.) If you get low, there are some (rather poor) fields near Golden and Arvada. Research them so you know how to find them quickly if needed!



## Task 6: Front Range Diamond Goal (Case Study)

---

June 23, 2018

Glider:

- Discus CS - N23SG
- No water ballast

My experience at the time:

- 242 flights in gliders
- 168 total hours in gliders
- 8 flights > 5 hours

Recency (prior 90 days):

- 15 flights
- 50 hours
- 4 flights > 5 hours





# Goal: 300km pre-declared triangle – Appropriate?

## Recency (prior 90 days):

- 15 flights
- 50 hours
- 4 flights > 5 hours

## Experience at the time of flight:

- 242 flights in gliders
- 168 total hours in gliders
- 8 flights > 5 hours

## Knowledge of Task Area:

- Airports & Fields (ground visits)
- Terrain Obstacles (map study)
- Lift lines (analyzed other OLC flights)



## Next Slide

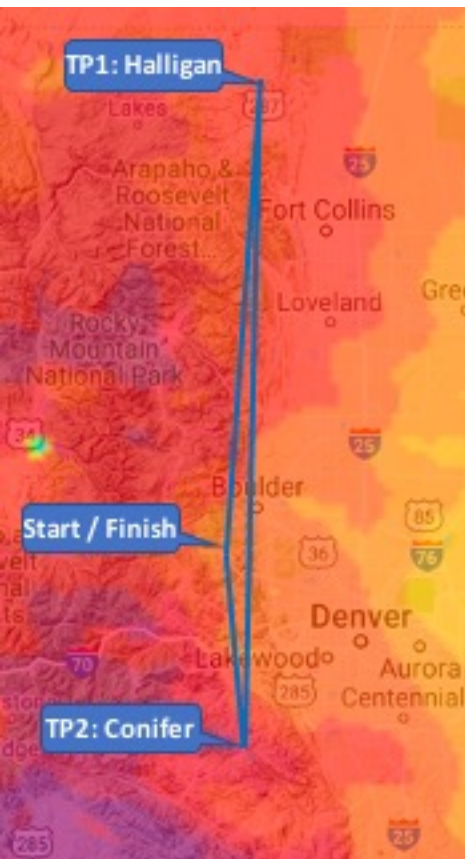
- Soaring conditions
- Available time
- Weather risks

## SSB's Discus CS N23SG

- Performance 42:1
- Familiarity: 18 prior flights & 40 hours in this glider
- Land-out ready: yes (XC checkout)

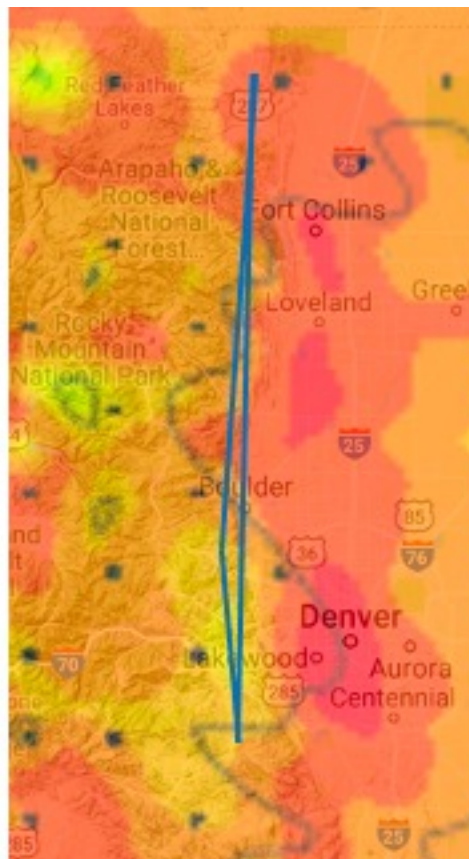
# Weather Forecast for June 23, 2018 @ 2:30 pm MDT

High Cloudbases  
15-18k



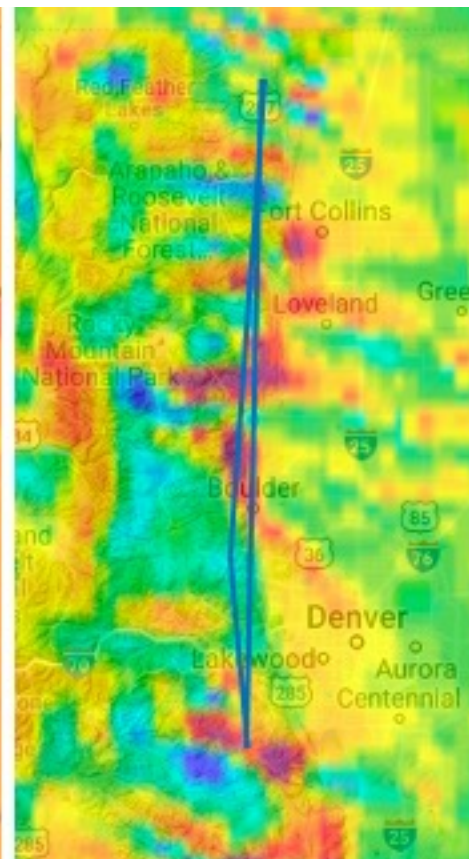
Thermal Height

Good Thermals  
5-7 kts



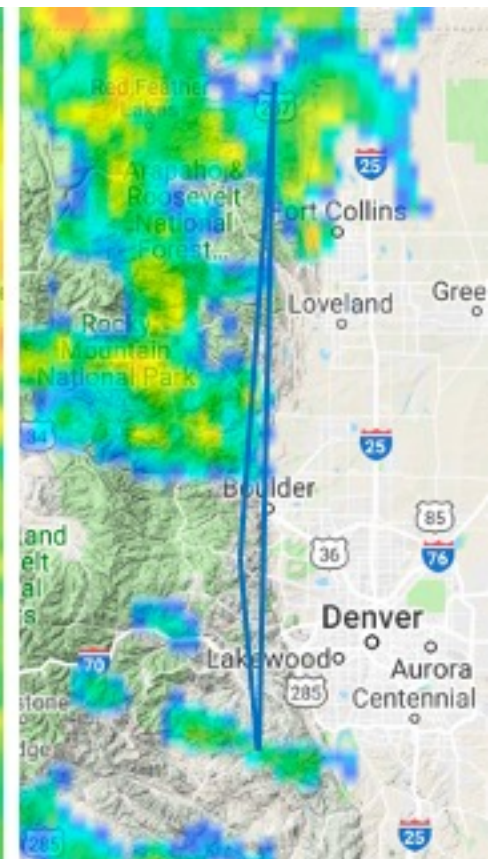
Thermal Strength

Convergence  
(but not very organized)



Convergence

Low Risk of OD



Overdevelopment

shortly after rounding Halligan Res (TP 1)  
heading south



Nicely marked  
convergence

The lift is below the clouds  
with the higher cloud bases  
and just to the west of the low-  
hanging “curtain clouds”

north-east of Estes Park  
heading south

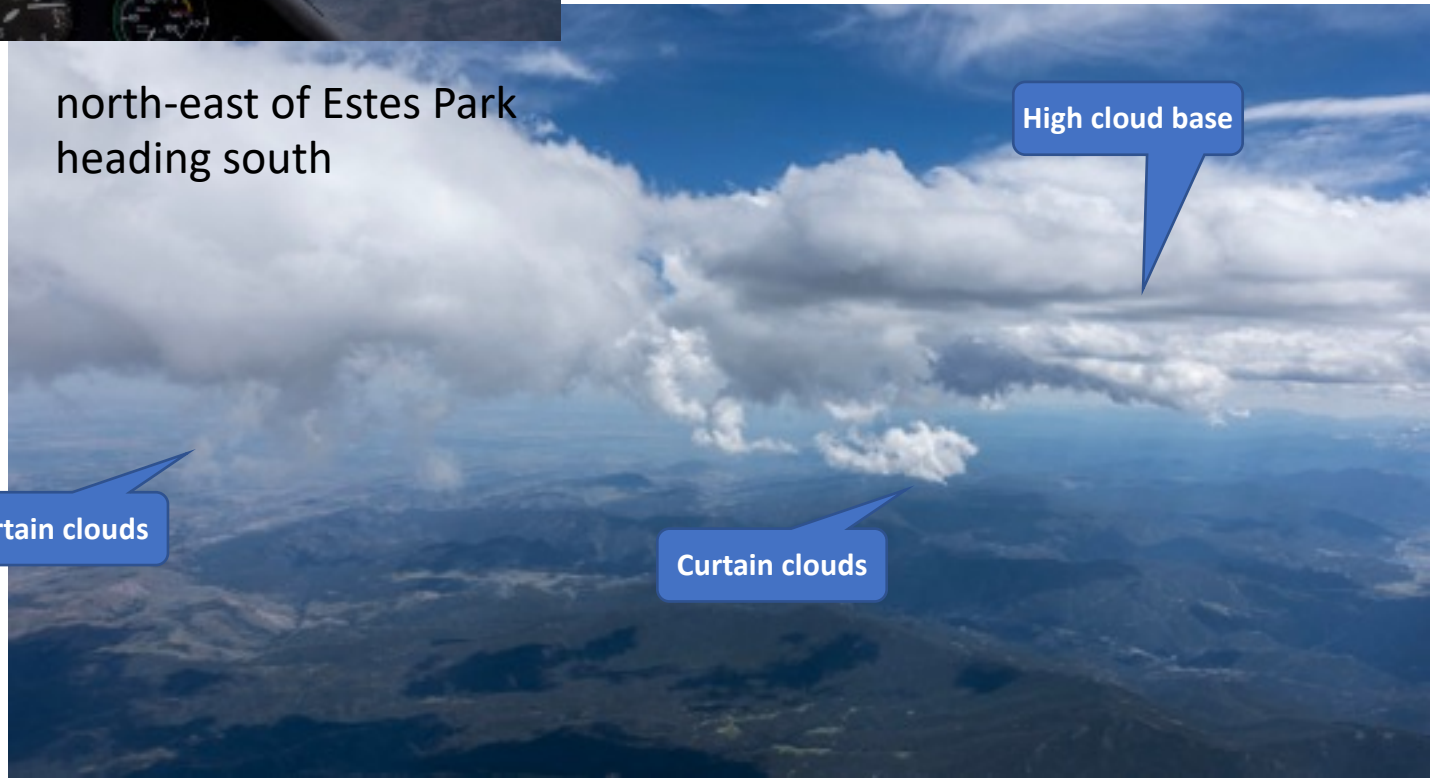
Curtain clouds

High cloud base

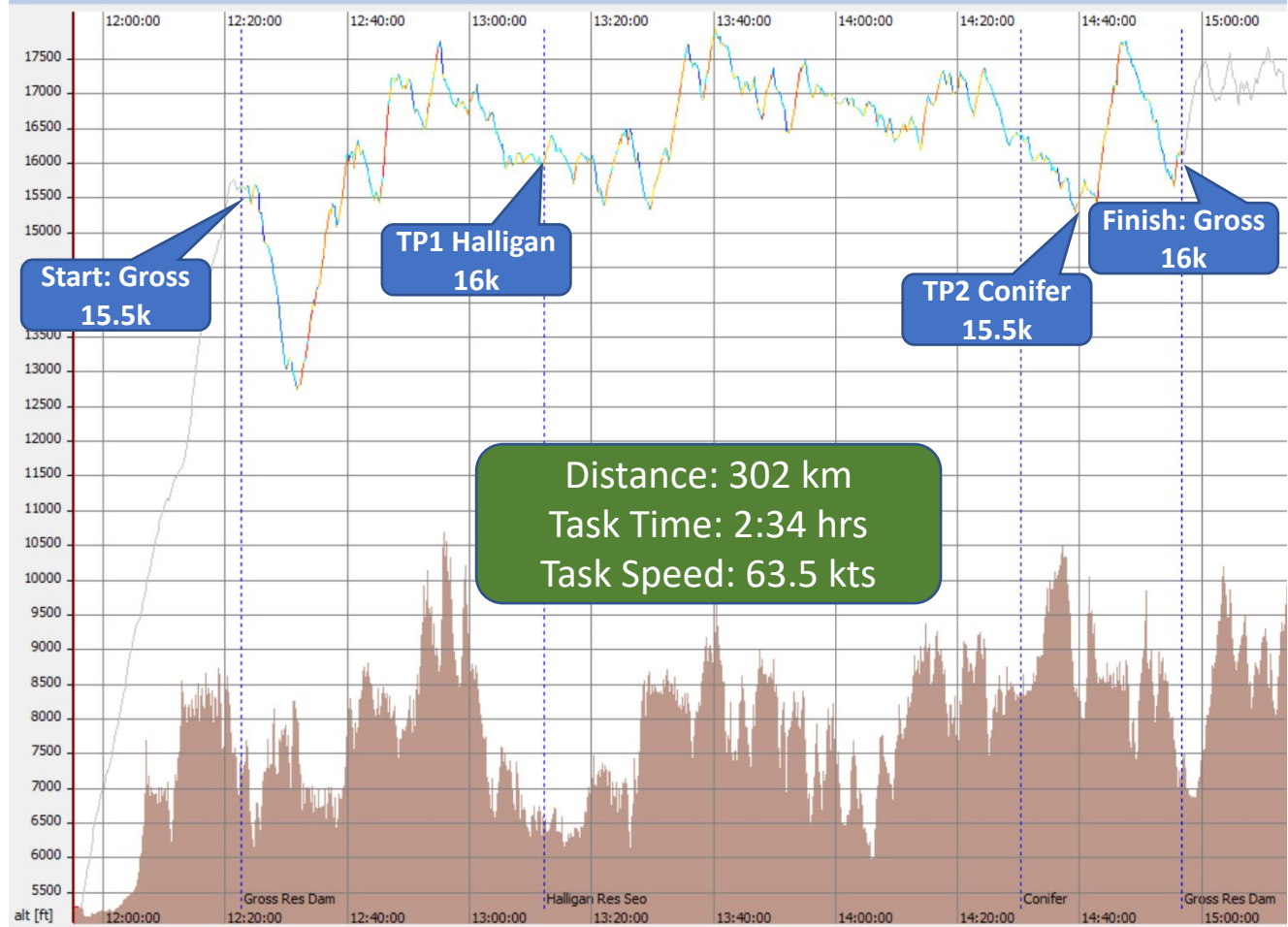
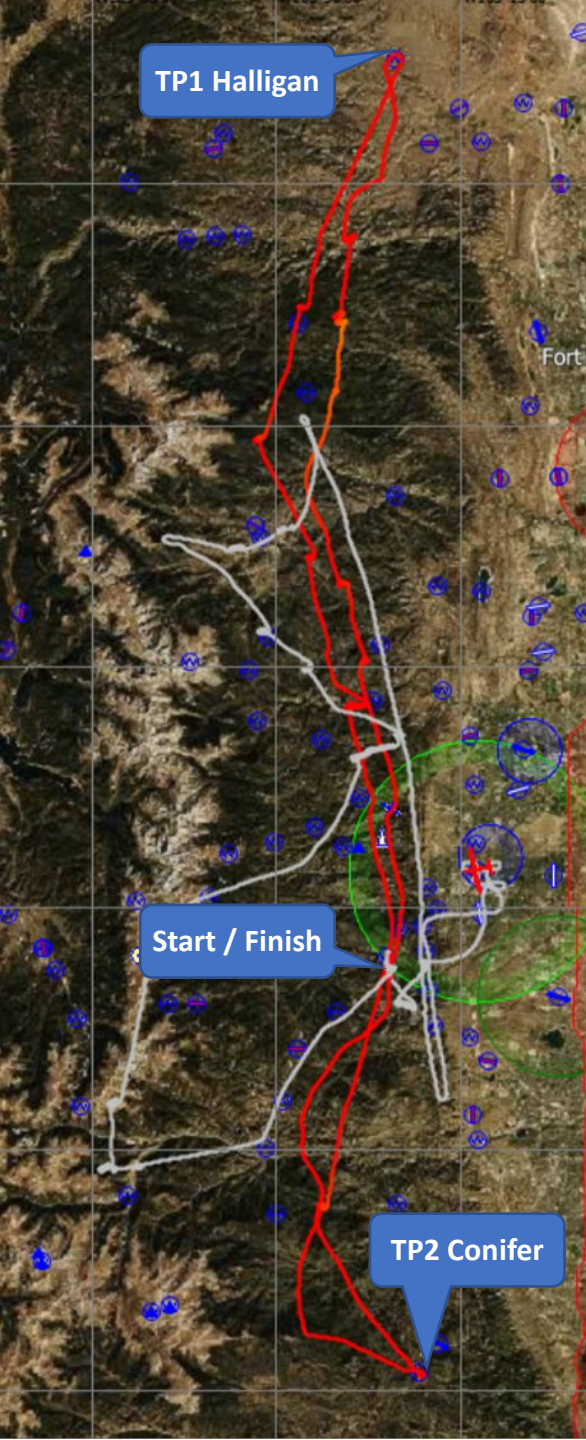
Curtain clouds

Remember the Cloud Clearance Rules  
above 10k feet in Class E or G:

- 1000 ft below (or above)
- 1 sm horizontal distance







### Declared Task - Triangle - (302.2km) [302.2pts]

Declaration is valid.

Date/Time: 6/23/2018 11:55:13 AM

Type: Triangle - (302.2km) [302.2pts]

Task distance: 187.8mi

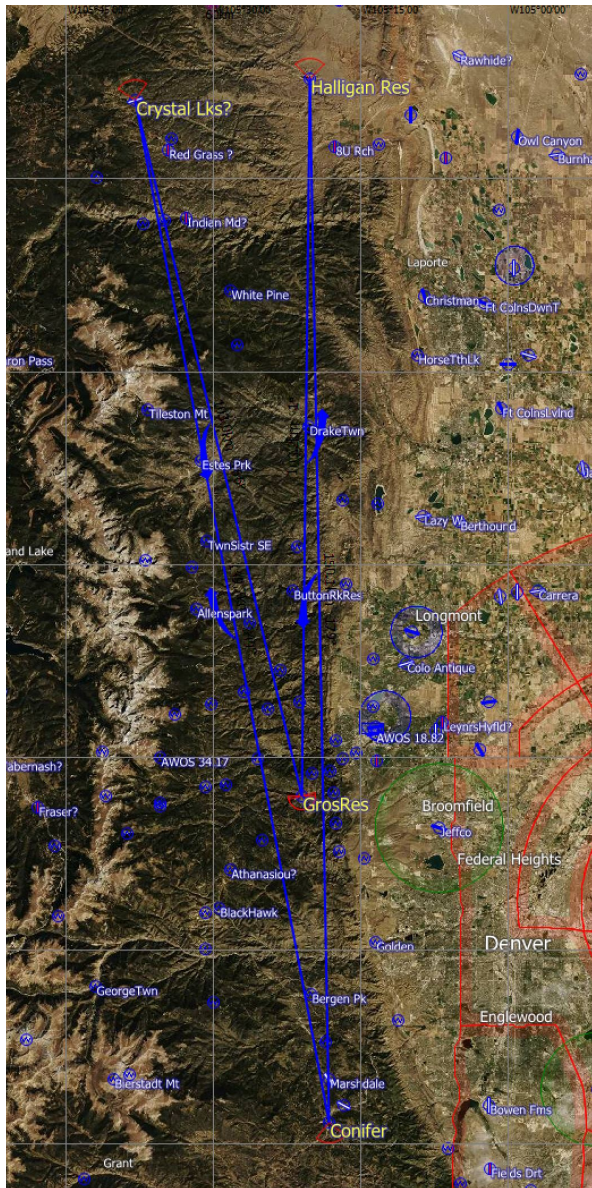
Points:	Latitude/Longitude	Dis.	Alt.	Time	Duration	Speed	Wind	WindComp
1) Gross Res Dam	N39°57'00" W105°21'00"	---	15658ft	12:22:35	---	---	---	---
2) Halligan Res Seo	N40°52'46" W105°20'13"	64.1mi	16055ft	13:12:20	00:49:45	67.17kts	269°/15kts	1kts
3) Conifer	N39°31'10" W105°18'24"	93.8mi	16413ft	14:30:21	01:18:01	62.68kts	270°/14kts	0kts
4) Gross Res Dam	N39°57'00" W105°21'00"	29.8mi	16222ft	14:56:42	00:26:21	58.91kts	282°/13kts	-4kts

All reached turn points rounded ok. Task completed.

Distance: 187.8mi, Duration: 02:34:07, Speed: 63.49kts



# Task 7: Front Range Diamond Distance



- Start: Gross Reservoir N39:57:00 W105:21:00
- TP1: Halligan Reservoir N40:52:46 W105:20:13
- TP2: Conifer N39:31:40 W105:18:12
- TP3: Crystal Lakes N40:51:06 W105:37:59
- Finish: Gross Reservoir N39:57:00 W105:21:00

Task Distance: 505.9 km (273.1 nm)

## Why this task?

- To demonstrate that it is possible to achieve Diamond Distance without having to cross the Divide and stay largely within glide range of Boulder the entire time. This may be the easiest and fastest way to achieve Diamond Distance.
- However: by the time you are ready for this flight, you may want to plan a more interesting route to the west of the Divide rather than just going up and down the Front Range.

## Tips:

- Completing Diamond Distance in a Discus will probably take you 5-7 hours. (Pilot relief system!)
- Only good (and long) days will work. Start early so you have the full soaring day available.
- You will want to adjust the task based on the weather forecast. Pay particular attention to the position of the convergence and the timing of any potential over-development.
- It may be late in the day before you get to the last turn point. This is when you want to be especially careful to keep safe landing options in glide as you might need them.

## Safety Considerations:

- Same as for Front Range Diamond (Goal)

# Roadmap to Success

	Recommended Experience	Critical Skills Progression	Glider	Always
1: Boulder Dash	Private Pilot Glider 2-3 flights > 1 hour	Ability to thermal and maintain situational awareness (traffic!)	Any club glider incl ASK 21	True recency (not just “current per club rules”)
2: Hill Rambler	Task 1 completed 2-3 foothill flights > 2 hours	You can reliably “stay up” on a good soaring day	Any club glider incl ASK 21. DG 505 or Discus recommended	Familiarity with glider and avionics
3: Niwot’s Challenge	Task 2 completed ~5 flights > 2-3 hours	You are confident in moving from thermal to thermal, centering	DG 505 or Discus recommended	No adverse weather conditions
4: Lookout for Silver	Task 3 completed 5-10 flights >2-3 hours	You can “get high and stay high”. You can read the sky.	Discus recommended	Know your margins  Good flight preparation
5: Gold in Glide	Task 4 completed 5-hour flight	You can detect and follow energy lines (convergence!)	Discus recommended Relief system in place!	<a href="#">Know your turf</a> (where you can land; how high you must be; where you are likely to find lift/sink)
6: Front Range Diamond (Goal)	Task 5 completed	Judge weather development; land-out ready	Discus recommended	
7: Front Range Diamond (Distance)	Task 6 completed	Good avg. speed; use entire soaring day	Discus recommended	GPS tracker

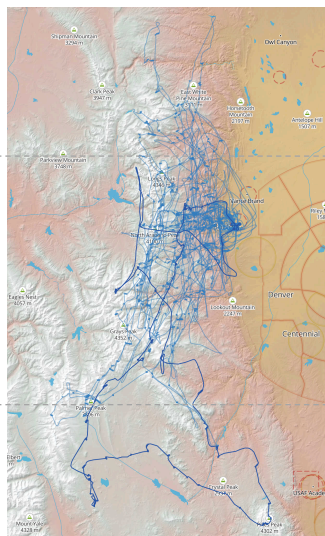




# My Own Progression from 2017-2020

2017

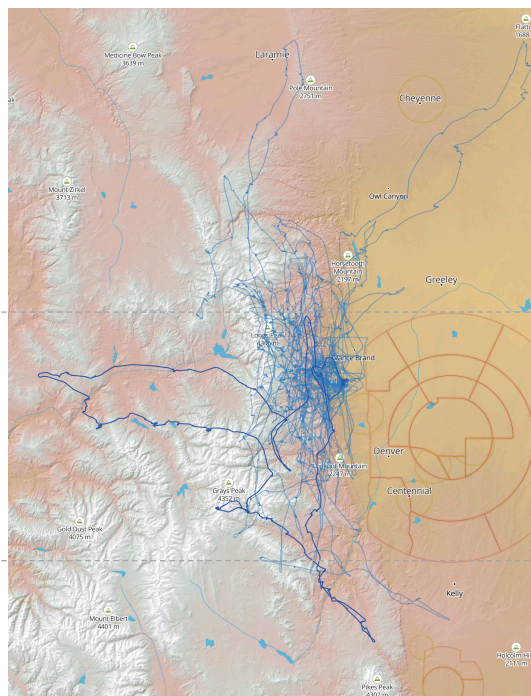
- Re-started to fly gliders after a 25-year break
- Prior experience (1983-87)
  - 46 hours
  - 131 flights
  - all flights in wooden school gliders
  - 14 flights > 1 hour
  - longest flight: 3:28 hrs
- 73 hours in 2017
  - First flights in glass ships (LS4, DG 1001, ASK 21, DG 505, Discus CS)
  - 18 flights > 1 hour
  - 5 flights > 5 hours
  - **Silver Distance**
  - **First XC flights**
- 119 hours by end of 2017 (221 flights)



2018

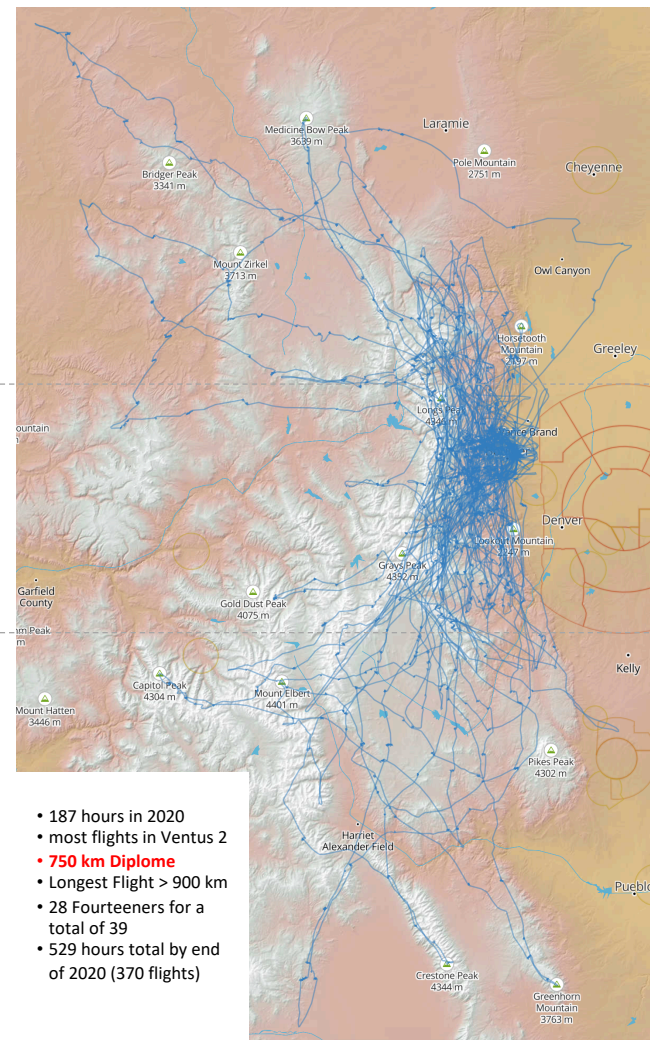
- 102 hours in 2018
- most flights in Discus CS
- first participation in OLC
- **Gold Badge**
- **Diamond Goal**
- First flights into South Park
- 11 Fourteeners
- 221 hours total by end of 2018 (281 flights)

2019



- 121 hours in 2019
- most flights in Discus CS
- **Diamond Distance (500 km pre-declared)**
- First flights across the Continental Divide
- First flights into Wyoming
- Soaring Camp in Nephi
- 342 hours total by end of 2019 (320 flights)

2020



- 187 hours in 2020
- most flights in Ventus 2
- **750 km Diplome**
- Longest Flight > 900 km
- 28 Fourteeners for a total of 39
- 529 hours total by end of 2020 (370 flights)

# Safety



- **You** know your skills, experience, and recency. Start there.
- Set personal safety **margins**. E.g., min. arrival altitude. Glide ratio for glide calculation. Min thermaling height above terrain, etc.
- Know your **equipment**: glider, avionics, trailer (for XC). Recency matters.
- Study your **task area**: where you can land; how high you must be; where to look for lift. I.e., Know your turf!
- Pick a suitable day for your task, or a suitable task for the day. You can fly tasks on weak days. **Task and day must match**.
- Push yourself but always fly within your limits.
- Don't get carried away by your goal – stick to your safety margins and **always** keep a safe landing option within glide.

# Closing Thoughts

- Task flying is the best way to improve your soaring. Start with small tasks and push yourself. **You** decide.
- Be prepared: Know your self. Your glider. Your turf. Match task and day.
- Boulder rocks: you can earn all your badges without really having to go (much) beyond glide range.
- SSB's equipment, especially the Disci, are ideally suited for badge flying.
- Always put safety first.
- Get going! What are you waiting for?

# Suggested Resources

## Books

- The Soaring Engine – G Dale
- Advanced Soaring Made Easy – Bernard Eckey
- One Glider Pilot's First Hundred Hours – Joe Karam

## Badge Paperwork

- [Forms](#)
- [SSA Badge Guide](#)
- [US Badge Database](#)

## Safety

- [Soaring Risks and Risk Mitigation](#)

## Tools

- [Tutorial on how to use Skysight for Task Planning](#)

## Local Flight Preparation

- [Boulder Task Area Map](#)
- [Flight Preparation Links](#)

## Local Blog Posts

- [Do You Know Your Turf?](#)
- [When 13k is too low](#)
- [Climbing into the Boulder Convergence](#)
- [Diamond Goal in 2 hours 34 min](#)
- [Across the Divide – Diamond Distance](#)
- [Seven Failed 750km Attempts](#)

What tasks will **you** fly in 2021?