

Tactics for Budding Cross Country Pilots



Bio

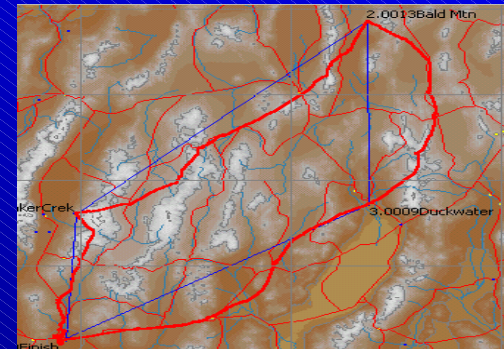
- **Started soaring in '86; private glider rating**
 - **Gliders; HP-14, Vega, ASW20, LS-8a**
 - **1000hrs total in gliders**
 - **Founded PASCO League, 1994**
- **Gold Badge, 3 Diamonds, 1000km # 265, 1995**
 - **2nd Region 11 1997, 1st Region 12 2001**

Agenda

Preparation



Flight Tactics



Ongoing Development



Part 1; Preparation

- System preparation
- Flight Training
- Physical preparation

What Glider??

- **THE BEST GLIDER YOU CAN AFFORD**
 - You are HOW you fly not WHAT you fly...
- **DON'T BE CHEAP WITH INSTRUMENTS**
 - Best possible total energy vario & audio, Good radio,
 - Computer not needed. Spend the money on more tows.
 - Handheld GPS and glide calculator ...
- **FUNCTIONAL TRAILER**
 - Reliable wiring, brakes & lights, tyres...
- **If money is an issue GET A PARTNER.**
 - Flying is what counts if you're going to get good at the game.

Developing your Competence

- Exploring local conditions..
- Staying up; building thermaling skill
- Fly in a wide variety of conditions...
- All core flying skills should become 'sub-conscious'.
- Fly locally at more than one site; site checkout.

Thermalling Skills

- Thermal entry
- Do's & don'ts of sharing a thermal
- Practice weak thermal days
- Windy days, Ridge days, Wave days
- Low save practice near the airport
- Be able to stay up all day





HOW FAR AWAY ARE THESE GLIDERS??
HOW MANY ARE IN YOUR BLIND SPOT??

SHARING COMMUNITY PROPERTY

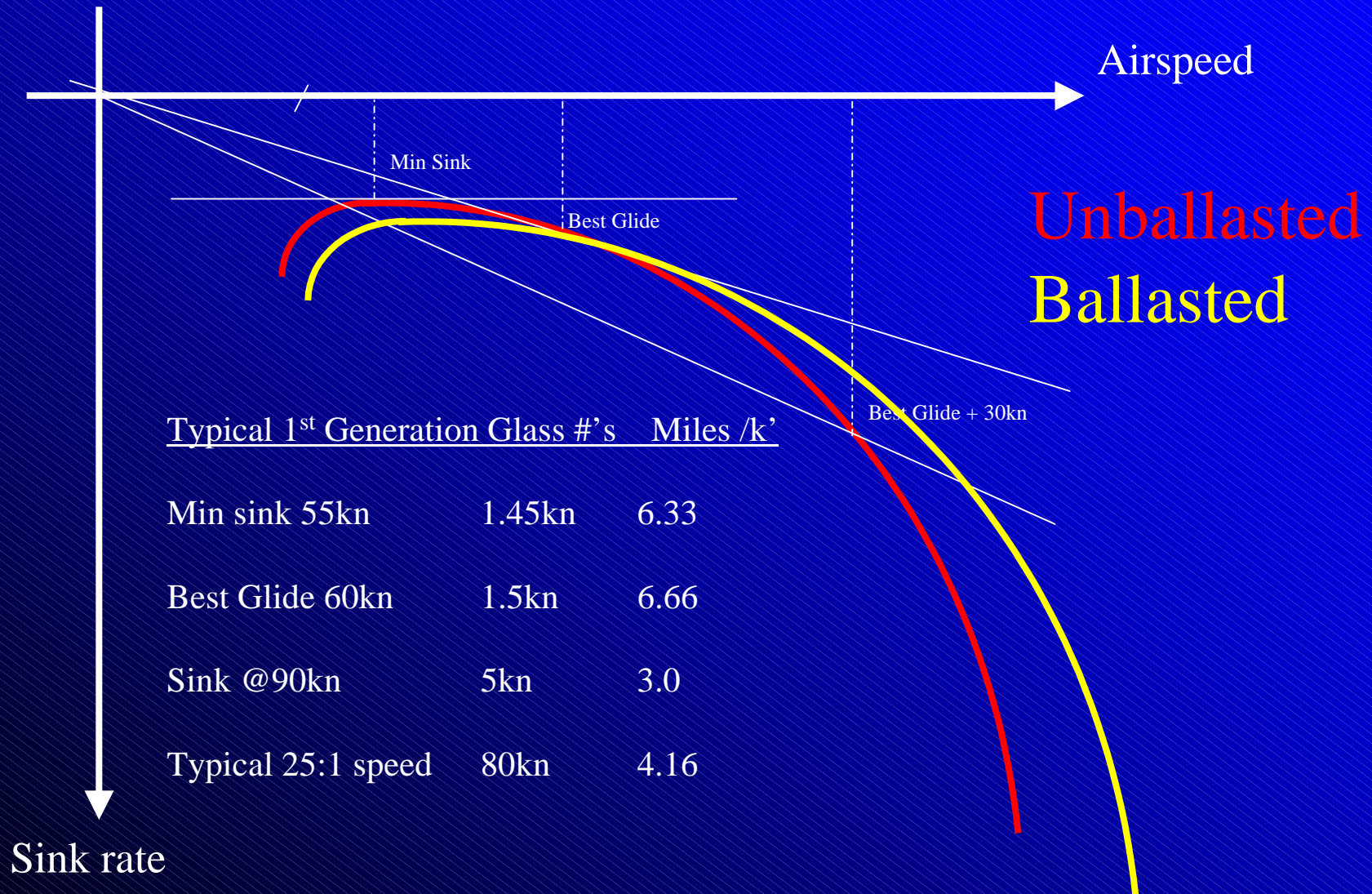
Preparation for cross-country flying

- **Map preparation;**
 - Fly with AND USE your sectional!!
- **Glide performance judgement**
 - Miles per thousand ft; at 3 key speeds
- **Off field landing practice**
 - Bronze Badge & known walked fields at first
- **Laps within gliding range of home**
 - Practice selecting fields, finding and centering lift.
- **Make early x-c attempts from a familiar home base**

Map Preparation

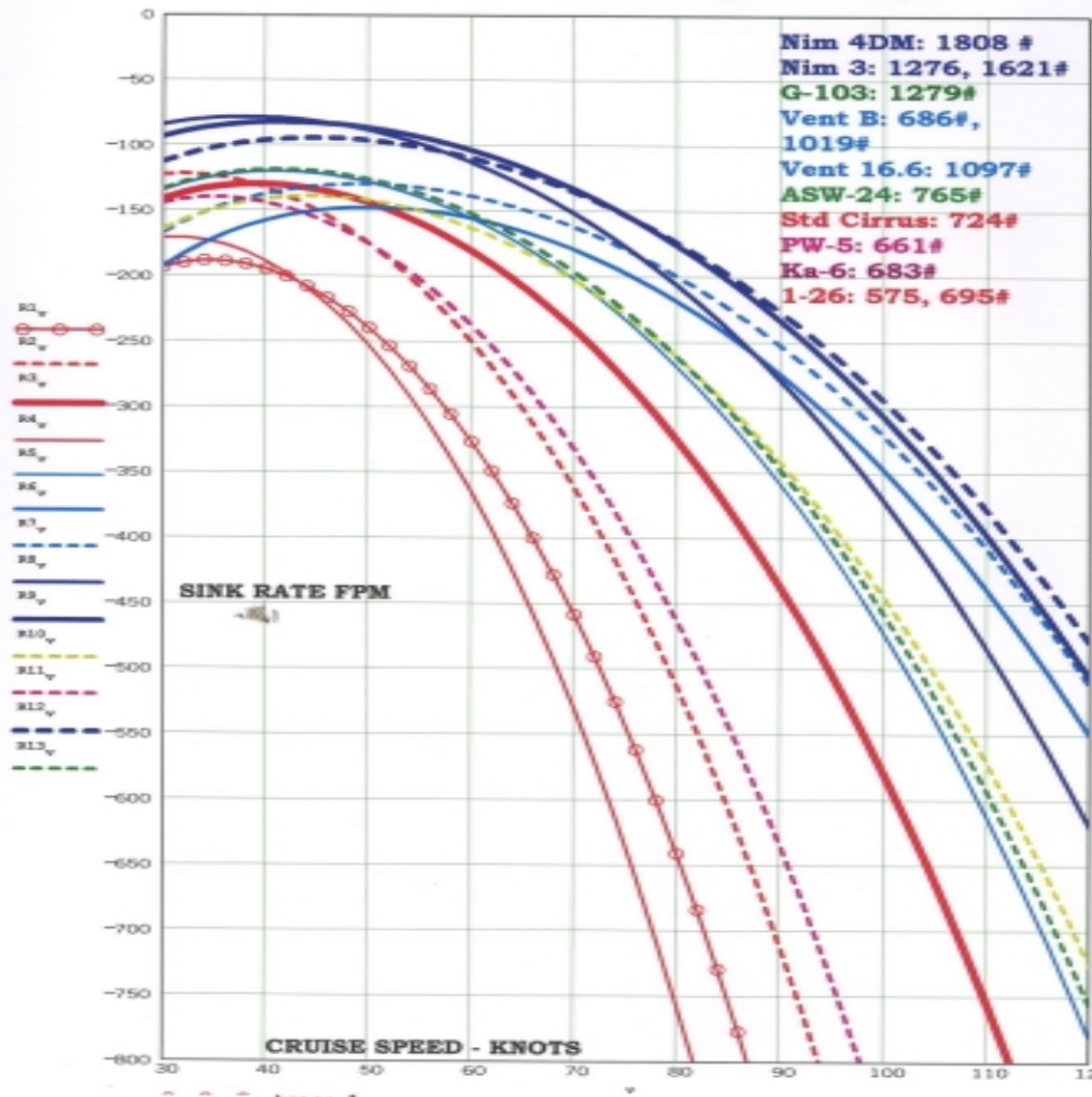


Glider Polar



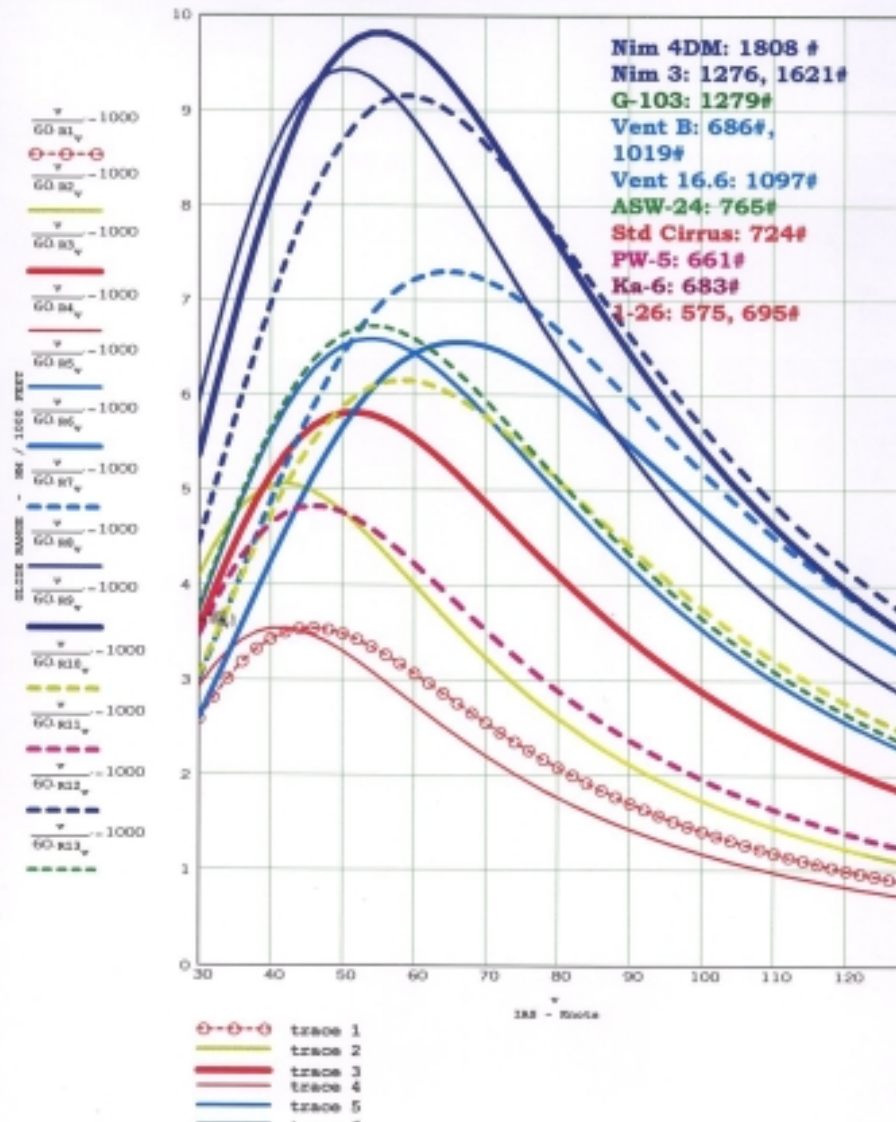
13 GLIDER POLARS FOR COMPARISON

by: CHE, 23 Feb 2002



Range
of
Glider
Polars

**GLIDING RANGE in NMI/1,000 Feet vs CRUISE SPEED
in Knots with NO WIND CONDITION** by: CHE 23 Feb 02



Polar Impact on Glider Range

Ballasted Flight

- Completely unnecessary for initial cross countries.
- Everything happens quicker and requires more pilot skill, particularly at high density altitude.
- Get plenty of time & experience in type and experienced coaching before flying ballasted.
- Factors;
 - Stall speed, turn radius, kinetic energy
 - Rope break procedures, tow pilot awareness,
 - Tow plane power & acceleration

Preparing your Glider

- All SYSTEMS & instruments RELIABLE as a fundamental equipment safety issue.
- Wear a parachute, know how to use it.
- Know emergency egress for YOUR glider.
- Assemble and pre-flight without external distractions.
 - Use a check list



Cockpit Detail

Note prayer wheel
Back-up for
glide computer;

Always
carry a sectional!

Field Landings

- First X-C flights should use fields that have been checked out from the ground. **BUT** you need to be prepared to manage a normal off airport landing in a non-planned field.
- Field landings should be practiced first. Bronze Badge!!
- Circuit proficiency, spot landings
 - Putting it where you want to put it with min. energy every time.
- Field choice; size, crops, condition..
- Density altitude !!
- Slope & Wind !!

Panoche Landing Strip

A great example of a known walked field easily visited from the home airport



07 Jul 99

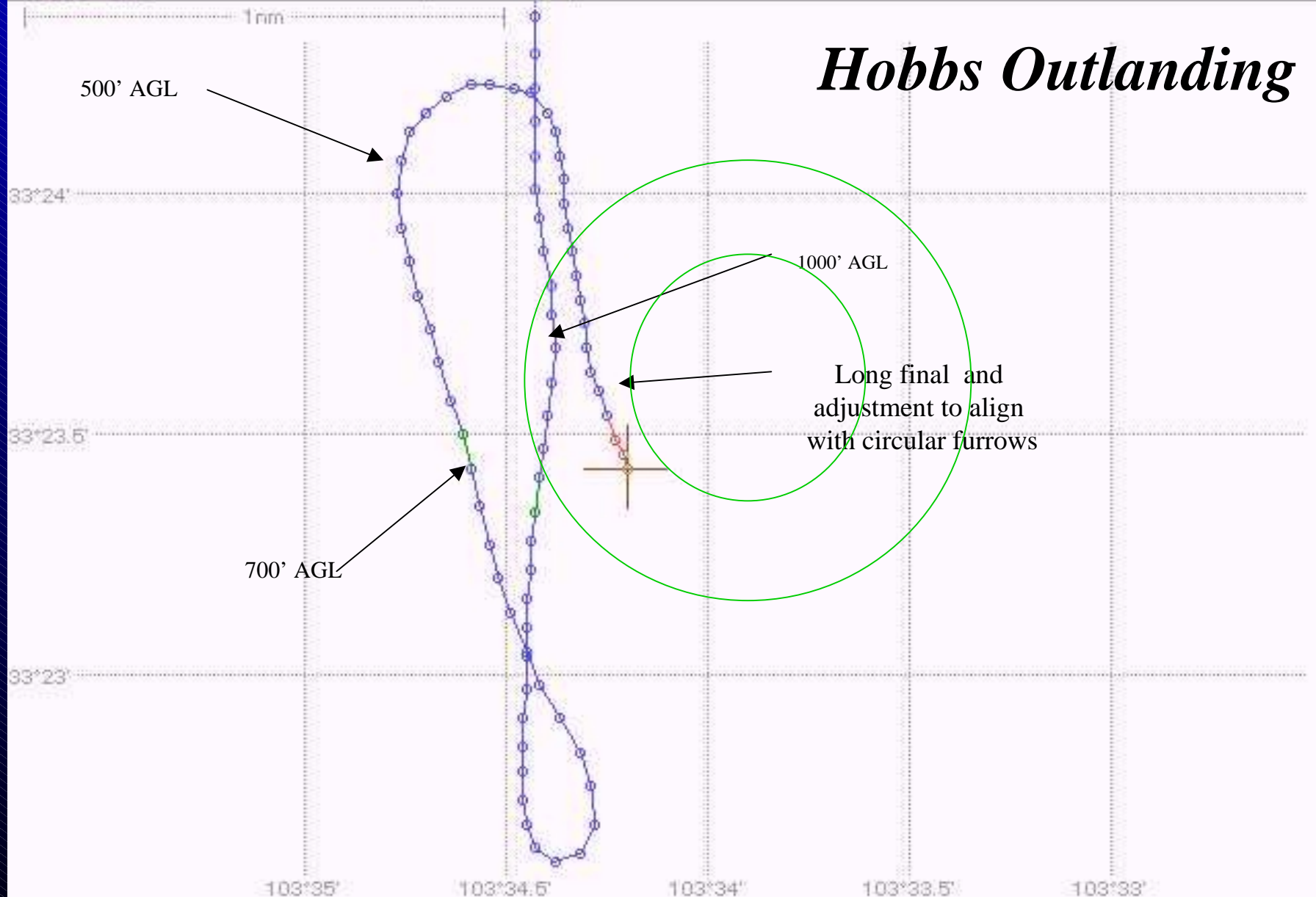
16:52:14

33°23.430'N 103°34.200'W Altitude: 3832ft GPS Alt: 4242ft

On Task Engine on



Track: 154° Gspd: 40kt Vspd: -2.1kt



Hobbs Outlanding

Physiological factors

- Altitude & oxygen
- Dehydration
- Low hassle pee facilities
- Food
- Sunstroke
- Sleep
- Fitness



Ground Support.

- Crew car
- Trailer
- Crew training and relationship
 - Responsive & knowledgeable
 - Be respectful
- Support equipment
- Flying without a crew
- Mobile phones



Part 2; The flight....

- Overall approach
- Decision priorities
- Locating Lift
- Turnpoints
- Tactics
- Weather

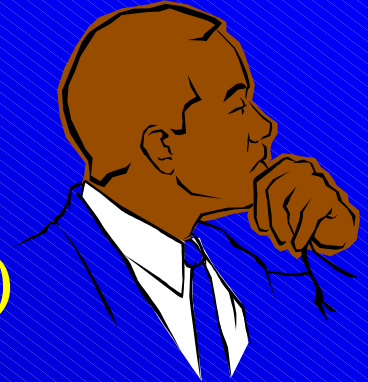
The Positive Control Check

- Do this a minimum of once before each flight.
- Doing this check carefully immediately prior to takeoff maximises the chances of the check being effective.
- Sign YOUR OWN wing tape.



Mental Preparation for Flight

- Study the area. Plan the task.
- Mark on your map (with site mentor)
 - Winds aloft
 - Good landing strips (use as local cone centres)
 - Hot spots (not to be relied upon)
 - Critical passes, altitudes,
 - Access points to a clear final glide.
- THINK about wind, sun, where lift will be.



Task Planning Spreadsheet

Turnpoint			Latitude		Longitude		Heading			Distance		Task Leg	
#	Ident	Name	degs	mins	degs	mins	TC	MC	Bisect	Km	SMi	NMi	Percent
1	36	CARSON CITY A/P	39	11.49000	119	44.14000	--	--	--	--	--	--	--
2	192	WESTGARD JUNCTION	37	17.00000	118	9.00000	146	131	131	253.36	157.43	136.71	50.00
3	36	CARSON CITY A/P	39	11.49000	119	44.14000	327	312		253.36	157.43	136.71	50.00
4													
5													
6													
7													
8													
9													
10													
Task Distance										506.73	314.87	273.43	
										KmH	MPH	Knots	
Task Duration (hours)													
Pilot/Task: Peter Deane, 300km 28% TRIANGLE								Glider:			Date:		
Turnpoint			Latitude		Longitude		Heading			Distance		Task Leg	
#	Ident	Name	degs	mins	degs	mins	TC	MC	Bisect	Km	SMi	NMi	Percent
1	36	CARSON CITY A/P	39	11.49000	119	44.14000	--	--	--	--	--	--	--
2	128	NORTH MONO LAKE	38	6.20000	119	3.23333	154	138	344	134.71	83.70	72.69	38.85
3	159	SCHURZ DRY LAKE	38	56.45000	118	31.50000	26	11	50	103.87	64.54	56.05	29.96
4	36	CARSON CITY A/P	39	11.49000	119	44.14000	285	270		108.17	67.22	58.37	31.20
5													
6													
7													
8													
9													
10													
Task Distance										346.75	215.46	187.10	
										KmH	MPH	Knots	
Task Duration (hours)													

Overall Approach to First Cross Country Flights

- Be conservative;
 - you can reduce minimums with more experience
- Get high , stay high
 - Conserve large amount of time and distance to find your next source of lift
- Start with Cu days before progressing to blue days

The Order of Precedence

- Have a well defined and clear sense of priorities.
 - The pilot
 - The glider
 - The flight

(record, badge or contest)

Decisions with Margin

- Planning ahead is critical
- Leave yourself options for;
 - sources of lift
 - landing sites
- TIME is the critical variable (lift cycles)
- Reduce flying workload and focus on decisions
- If you land out, you're out of options; **KEEP FLYING** as long as it is safe to do so.

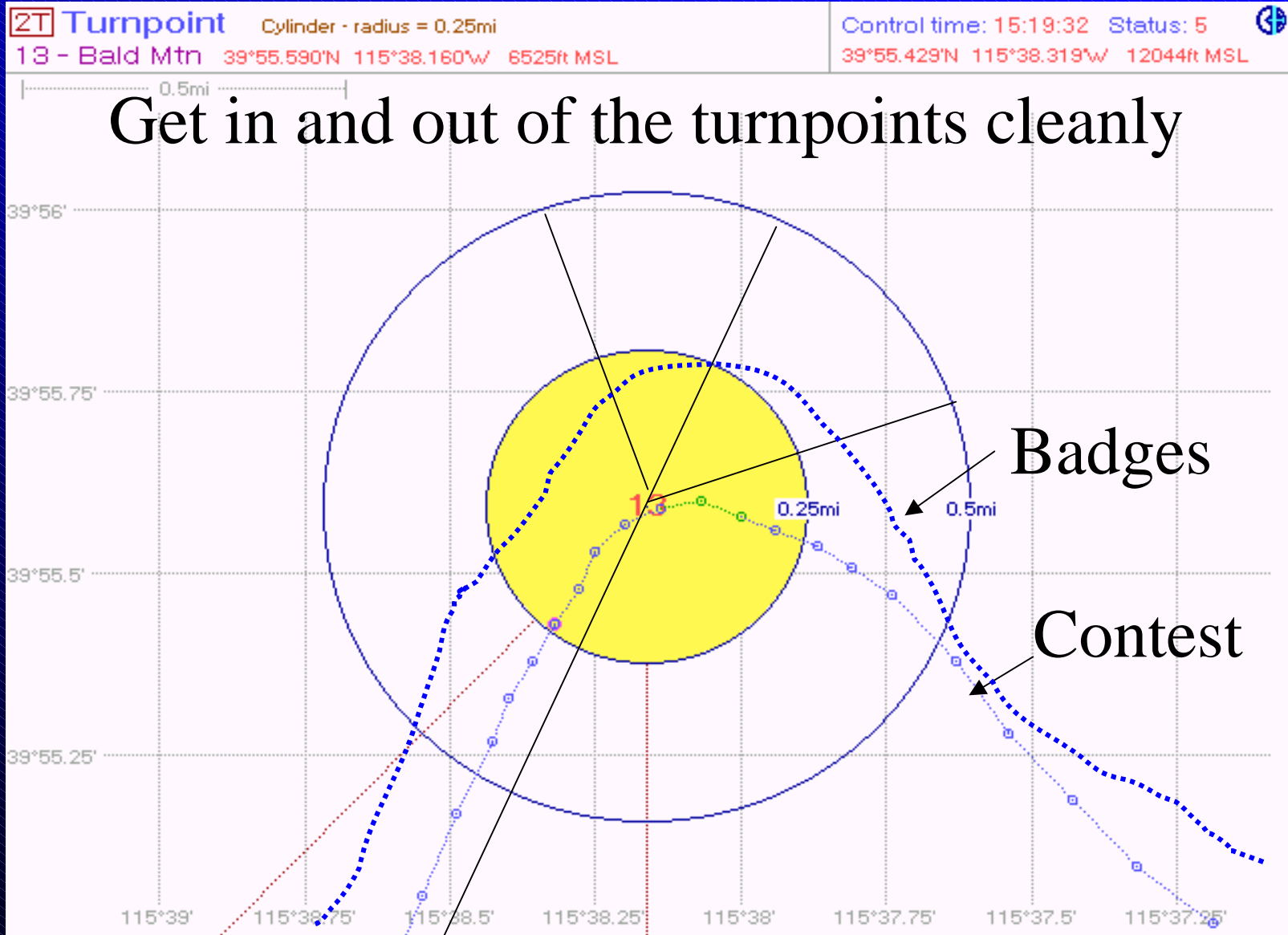
Locating Lift

- Locating lift is a safety issue
- Wind, sun, terrain, clouds & other gliders.
- When high use the clouds
- When low use the terrain
- Thermal separation proportional to height
- Thermals not evenly spaced out
- Mountain terrain means
 - a whole bunch of extra safety factors

Why 3 speeds?

- Best Glide (55-60kn; ship dependent)
 - ...stretch glide... miles per thousand
- Best glide +15kn (10kn non-glass)
 - ...inter-thermal.. ... miles per thousand
 - ...equivalent to low MacReady setting
- Best glide + 30kn (20kn non-glass)
 - ...sink... ... miles per thousand- sink loss
- Carry a prayer wheel....
- Avoid computers initially.
- Develop an intuitive sense of;
 - Glider glide angles/attitudes at key speeds

Turnpoints



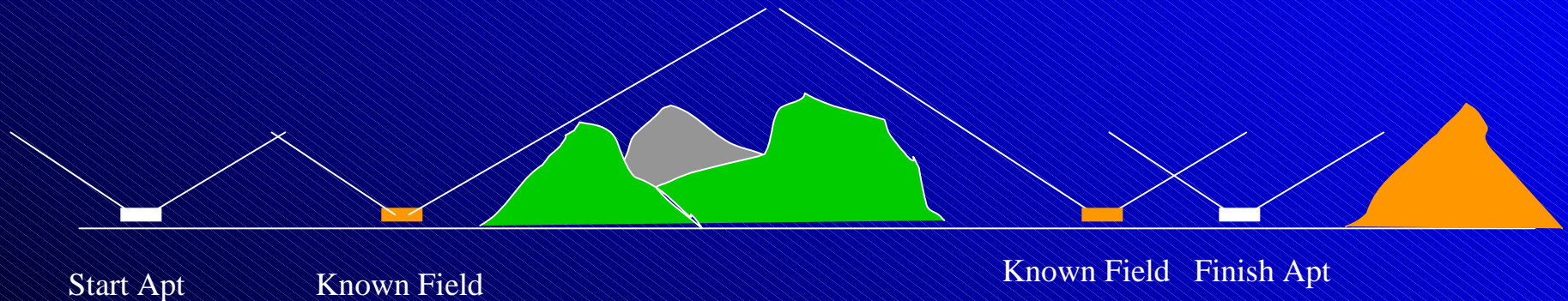
First X-C Flight Tactics

- Initial attempts on good reliable days.
 - Cu's, high bases, long days, moderate wind
- Planning the day
 - Soaring index, expected lift,
 - Plan 2/3rds Macready achieved x-c speed
- Get High, Stay High.....Why?
 - More time & range between thermals
 - More time to make decisions, evaluate conditions
 - The aim is to COMPLETE the task.
 - Reduces pilot stress in first flights
 - Make low (flight) risk decisions on first flights
- Fly the weather you see and experience; not the forecast.

Field Hopping

25:1 glide ratio for sink & wind margin (glass)
(dependent on glider & conditions)

Plan glide over mtns or through passes



- Get low in the vicinity of your field and stop going XC. You are now local soaring. Begin to study the field for wind direction, slope, texture, drainage, power lines, sprinklers, fences, obstructions, and trailer access.

Text book 25:1 Final Glide

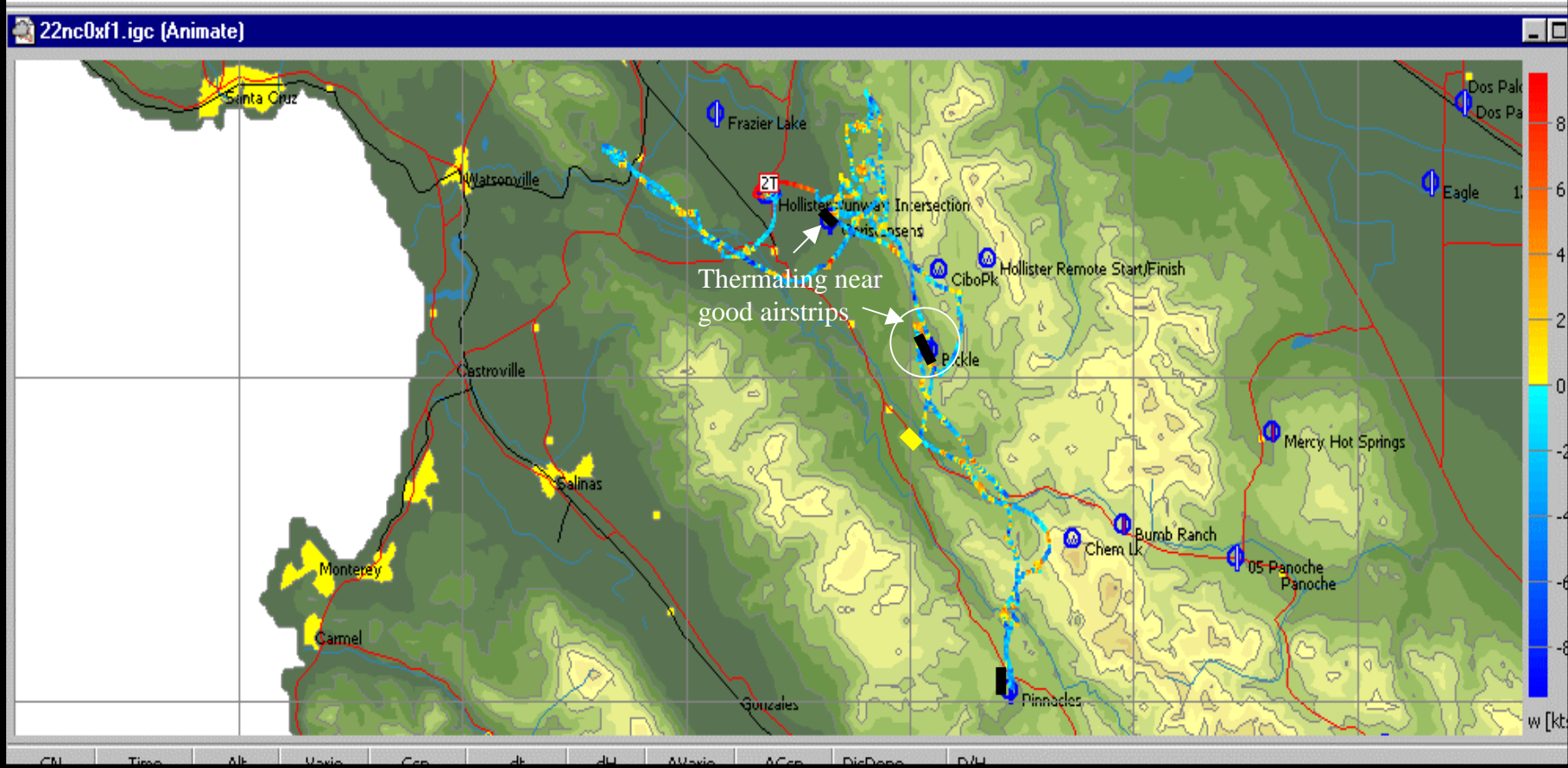
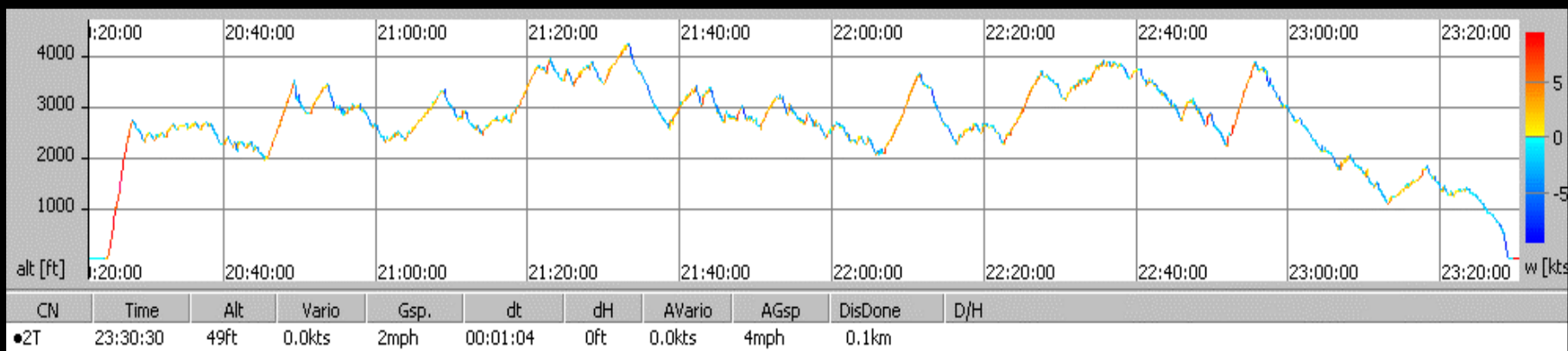


Risk-free Cross Country flights Do Not Exist

- Mother Nature never cooperates totally.
- You can and should pick the most benign days for first attempts.
- You should expect to face challenges to get round even on the easiest days.
- Center those challenges around a known strip or airfield at first. Manage your risk.

A low altitude, low distance cross country example

- Hollister flight; Feb 2002
 - Weak-ish day (2-4kn)
 - Wind ; approx 13kn , NNW
 - Low-ish cloud bases
 - Fairly challenging conditions.
 - Required care near bottom of lift band due to wind torn lift and orographic effects
 - Lead-in to cloud reading and glide judgement



The return; Panoche Pass Rd

Altitude 2700' MSL

Pk East of Hollister

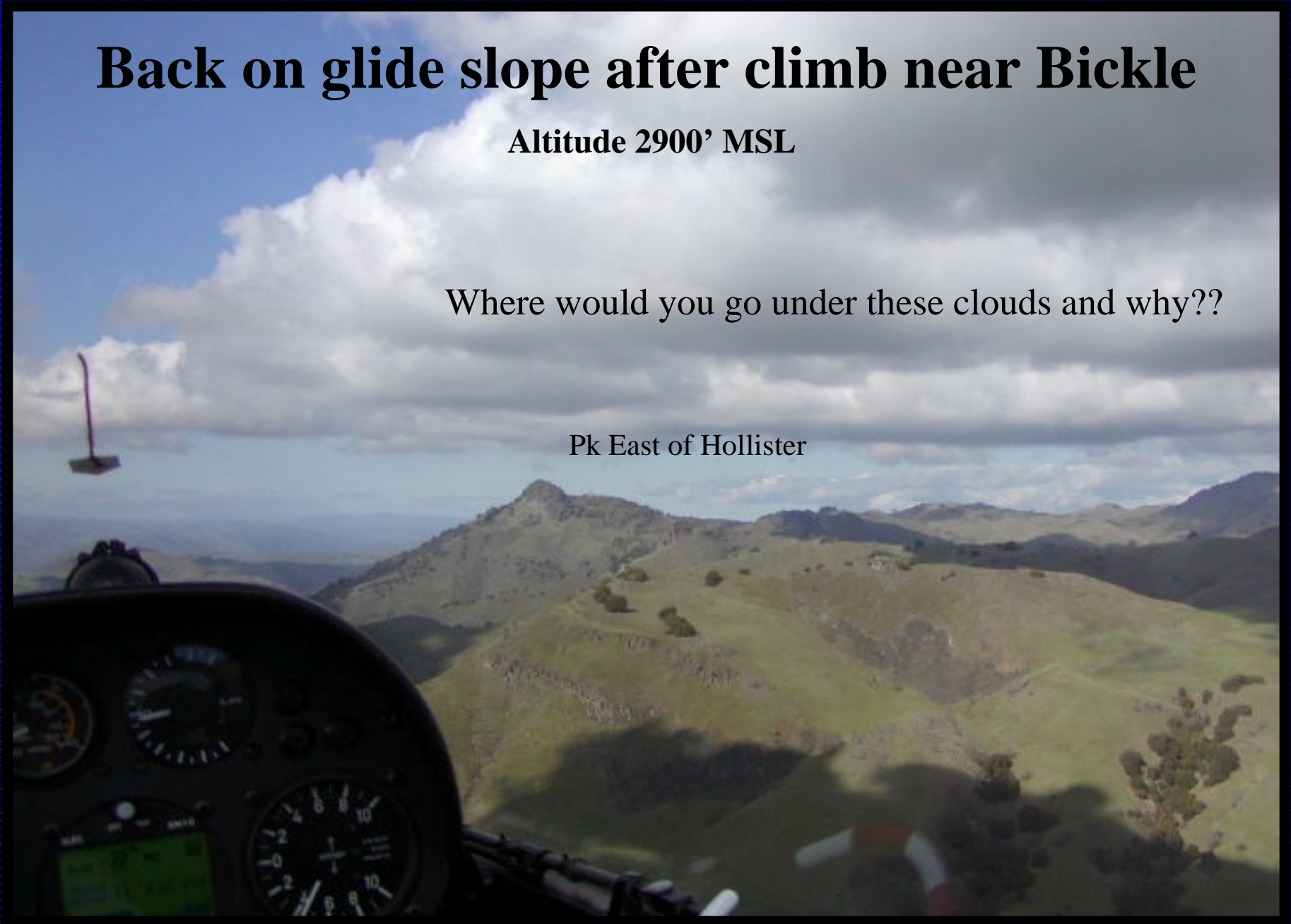


Back on glide slope after climb near Bickle

Altitude 2900' MSL

Where would you go under these clouds and why??

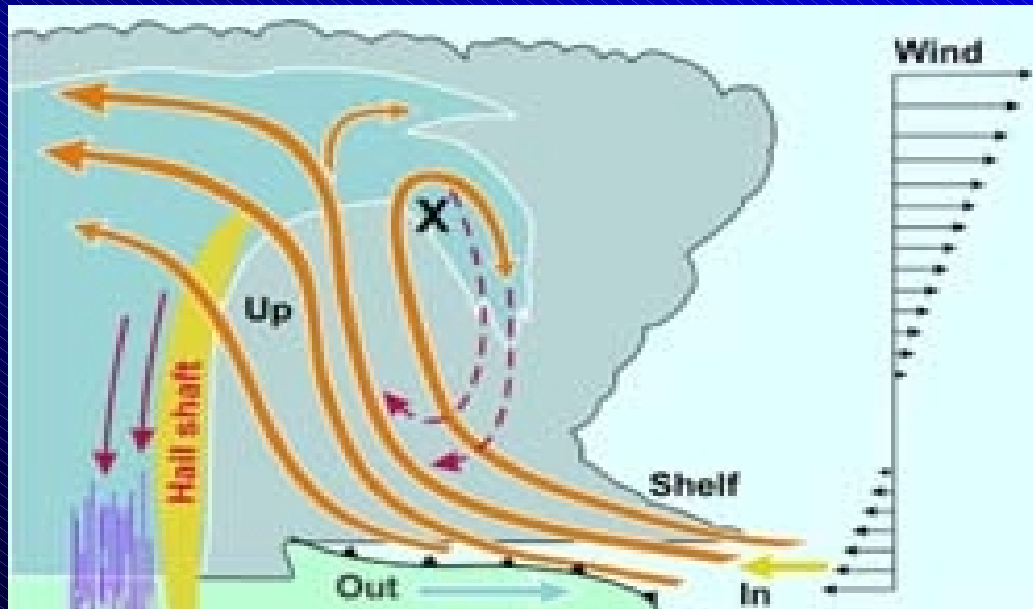
Pk East of Hollister



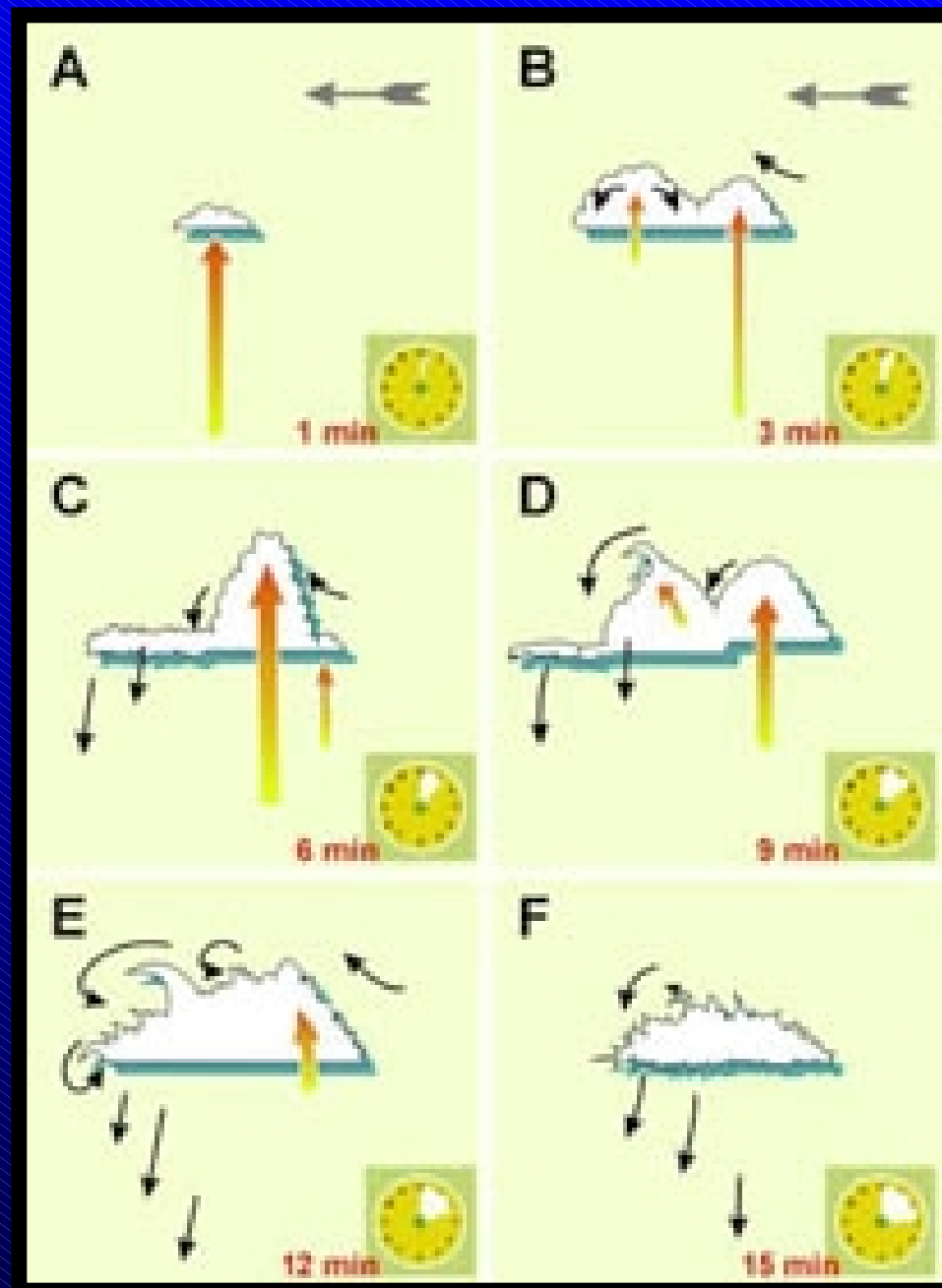
Back at the Ranch



Flying Clouds



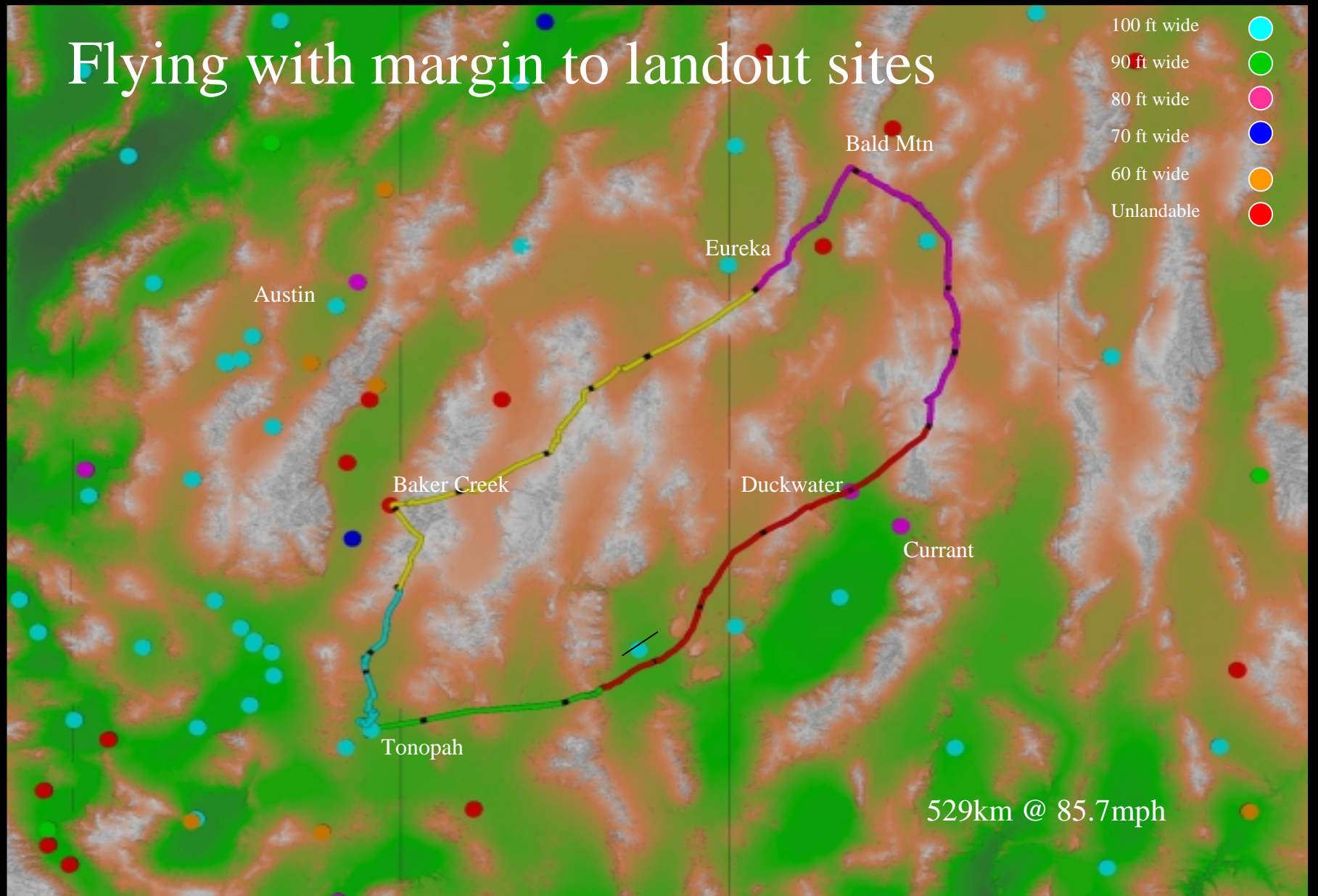
Cloud Lifecycle



A High Altitude Big Distance Example

- Tonopah 2001 Regionals; Great Basin terrain
- Std class , 530km quadrilateral
- 85.7 mph, 6.6kn average lift, 23% circling
- Overdeveloped day, difficult last leg.
- Required awareness of on-course landing opportunities!!

Flying with margin to landout sites



Flying in the Blue

- Thermals don't rise high enough to reach dew point, or too dry, too hot
- Blue days can be more reliable than Cu days.
- Thermals are not evenly distributed
- Lines of lift, lines of sink
- Hot spots; canyons, wind & sun, sunny ridges
- Stick to the high ground

Soaring Learning Curve

Achievement



THERE WILL
BE PLATEAU'S!!

Major transitions

- Licence to first cross country
- Silver to gold distance
- Gold to diamond distance
- Contest transition

Critical growth issues

- Breaking down psychological barriers
- Developing judgement
- Growing confidence in decision making ability
 - (knowledge & experience)
- Flying safe & efficient

Skill Development Process

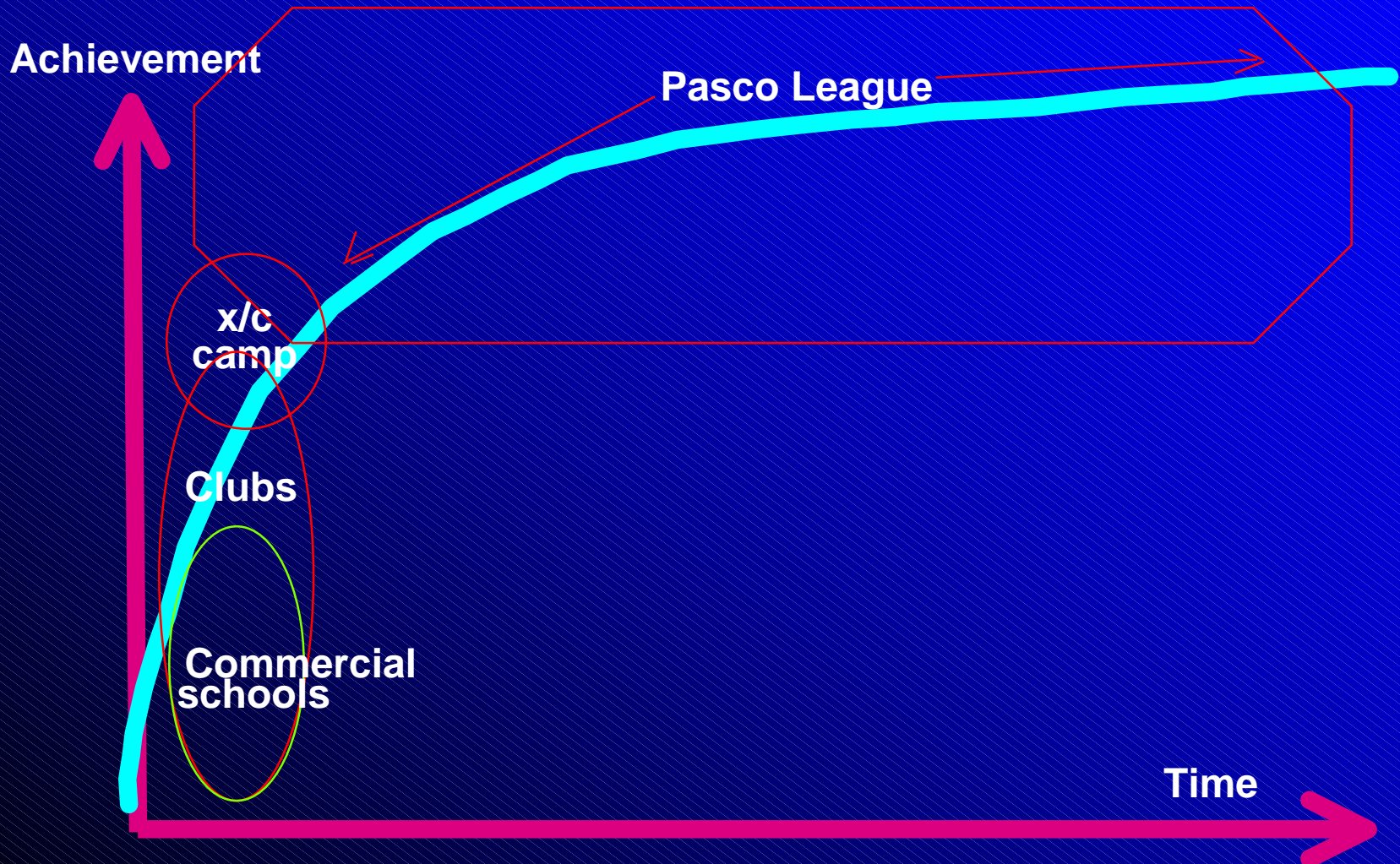
Review key decisions carefully after the flight

- View all results as an opportunity to improve.
- Remember key lessons during flights.
- *Work on a training plan;*
- *Keep a positive attitude*
- *Having FUN is vital; Value the Journey*

Ongoing Practice

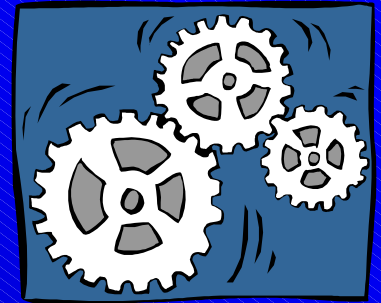
- Mountain X-C Camp
 - Mountain soaring judgement basics
 - Best weeks early training you'll ever spend.
- Badge Flights
 - Planning, field scouting, weather watching
- PASCO League weekends
 - An environment for developing x-c skills
 - Different sites & conditions
 - A measured environment and comparison with peers.

How Soaring Infrastructure Supports the Learning Curve



Successful Motivation Choices

- Focus on process
 - Badge results are a journey not a destination
 - Results are relative to your prior standards.
- Don't Ruminate;
 - Here lies the path to misery. Be kind to yourself.
 - The glass must always be half full
- Set meaningful goals
 - Learn from others success as well as your own.
 - Fly with the best people you can and observe



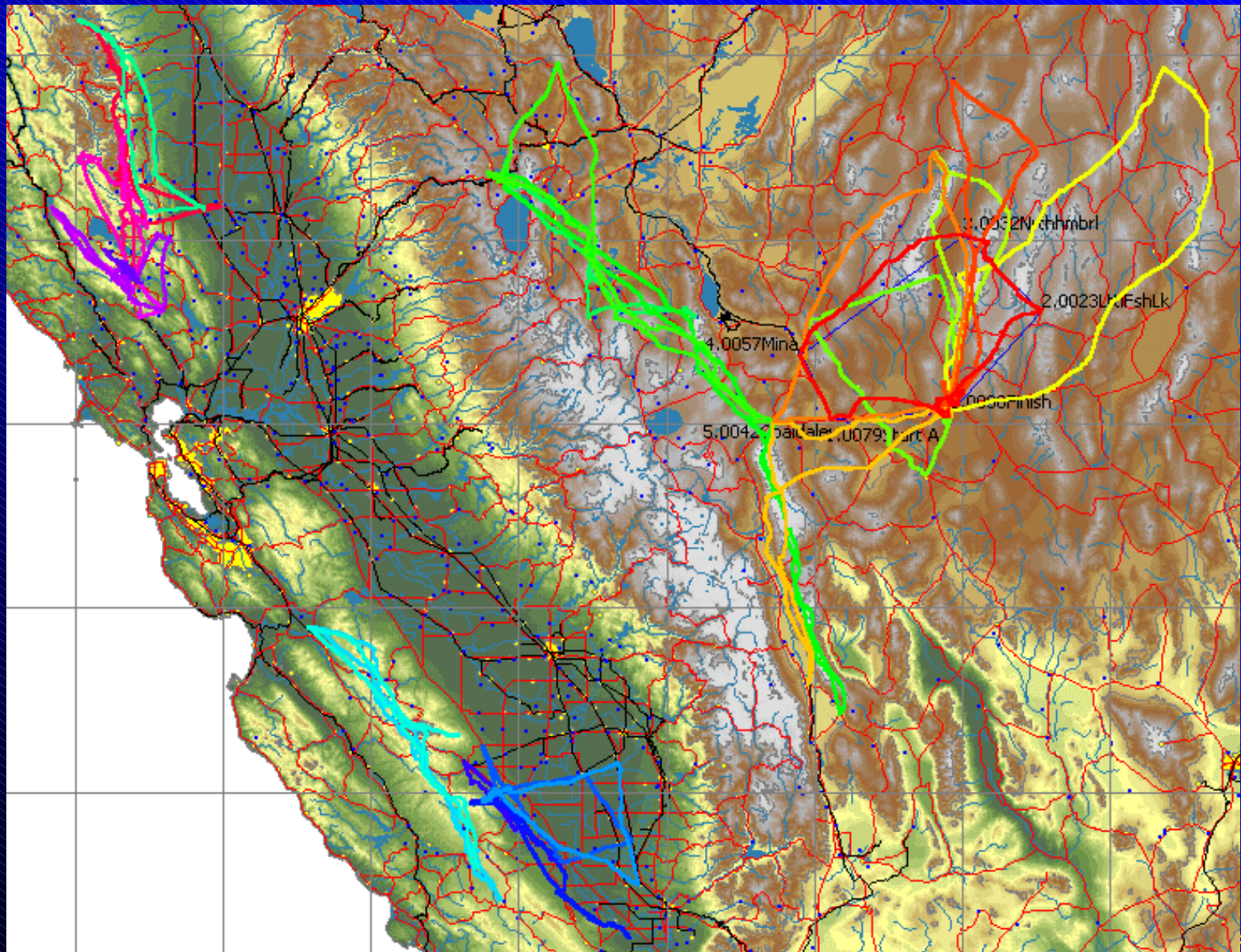
Mentors

- Very helpful for guidance, tips, local experience, general approach.
- A Mentor relationship is only possible for those who have demonstrated personal commitment to improvement in the sport.
- What a mentor is;
 - Someone who's done it.
 - Someone who takes an interest in your progress
 - Someone who helps guide you because they want to help.
- What a mentor isn't
 - Someone to give it all to you on a plate.
 - Someone to blame if it 'doesn't work out'.

Finding and keeping a Mentor

- Be prepared to take on your particular goal
 - Machine, practice, basic skills
- Share your difficulties and challenges with experienced, open minded pilots.
 - Post flight discussions, key perspectives, basic approaches to flight (not basic flight mechanics...)
- Discussions immediately before flight will distract them from their own preparations
- Mentors won't hold your hand; they will help you with 'nuggets'

Fly as many sites as possible



That's all Folks!!