

REVOLUTION
P A R A M O T O R S

IN ASSOCIATION WITH

Paraglide Texas



2007 POWERED PARAGLIDING SEMINAR



Seminar materials provided by Bill Heaner - Revolution Paramotors (RPM) 2007

Bill Heaner - Owner of Revolution Paramotors - USA Importer Sky Paragliders



Bill has been flying hang gliders and paragliders for 10 years. He is one of the few pilots with advanced instructor ratings and tandem instructor ratings in both hang gliding and paragliding. Bill is also an administrator of instructors with the USHPA which allows Bill to appoint basic and advanced instructors under the USHPA program.

Bill began to compete in aerobatic hang gliding competitions in 1999 and in 2000 was the US National Champion in Hang Gliding Aerobatics; taking first place in the Red Bull "Wings Over Aspen," second place at the "Jackson Aero Extreme" and second place in "The Masters of Freestyle."

Bill is best known for his tireless efforts to raise the standards of instruction in the paramotoring industry to the levels within the USHPA. In 2006, Bill founded "Revolution Flight Schools" in an effort to promote a safer teaching model for paramotor instruction by integrating free-flight instruction into traditional motoring programs.

Seminar Overview

We take great pride in offering you what we believe is the best powered paraglider on the planet and best paragliders on the market...the Revolution Flat Top and Sky Paragliders. There is an incredible freedom in having a motor at your disposal and we hope that by the end of this seminar you will have had a taste of that freedom and begin to understand the advantages of this addition to your paragliding experience.

Our main concern in this seminar is your safety. We will do everything humanly possible to get you in the air, but you must always be aware that weather, equipment, your state of mind and physical ability and current skills all weigh in to our overall safety objective.

This seminar is open to anyone interested in flying with or without a motor. However, ground handling skills are always the most important determinant in your "readiness" to fly. Three days is not always enough time to get everyone in the air, but if you are serious about flying, this seminar will be the most concentrated and focused instruction money can buy. Our first step is a skills inventory and assessment. From here we will assign skill levels and work with you individually to get you closer to your first flight.

Our syllabus covers all aspects of free-flight to motorized flight. Our focus will be, in large part, directed at wing mastery. However, to keep the big picture of safety in mind, we will bring you through as much ground school as time allows. Ground school will cover the basic concepts of weather, aerodynamics, and overall pilot judgment in an effort to keep continuity.

Seminar Overview

Day One

a.m..

- Introductions
- Sign waivers (doing this ahead of time will speed up the day)
(See RPM waiver in this pack)
- Introduction to “Powered Paragliding” and goals of the seminar
- Short site analysis, debrief and assessment of weather conditions
- Demonstrations by team pilots / instructors
- Question and Answer
- Student Ground Handling Evaluation (conditions permitting)
Forward and Reverse launching practice, static balance, etc.
- Motorized and/or non-motorized launch and landing training for eligible students (conditions permitting)
- AM Review

p.m.

- Break for lunch
- Ground School (weather, risk assessment)
- Evening Ground Handling (conditions permitting)
- Motorized and/or non-motorized launch and landing training for eligible students (conditions permitting)
- PM Review

Day Two

a.m..

- Student Ground Handling Evaluation (conditions permitting)
Forward and Reverse launching practice, static balance, etc.
- Motorized and/or non-motorized launch, landing and in-flight training for eligible students (conditions permitting)
- AM Review

p.m.

- Break for lunch
- Ground School (FAR 103 History, site selection)
- Student Ground Handling (conditions permitting)
Forward and Reverse launching practice, static balance, etc.
- Motorized and/or non-motorized launch and landing training for eligible students (conditions permitting)
- PM Review

Day Three

a.m..

- Motorized and/or non-motorized launch, landing and in-flight training for eligible students (conditions permitting)
- AM Review

p.m.

- Break for lunch
- Ground School (airmanship,
- Motorized and/or non-motorized launch, landing and in-flight training for eligible students (conditions permitting)
- Spot Landing competition
- PM Review

Note to Students:

Our school uses the philosophy and pilot proficiency program adopted by the United States Hang Gliding and Paragliding Association or USHPA. We believe that this is the best scholastic and practical model for safe, skilled PG and PPG flight. Though the core of the USHGA instruction is non-powered flight, non-powered flight skills are what you will need most when your engine fails. In addition, the basics of flight on a paraglider, whether powered or un-powered, are virtually indistinguishable.

USHGA ratings from Beginner (P1) to Advanced (P4) are also offered at this seminar assuming students can demonstrate the required flight skills (see USHGA pilot proficiency checklist in this packet).

PPG Training Syllabus

Introduction

The model for this proposed syllabus is based on the voluntarily-introduced British Syllabus. This syllabus is set out in two main sections; (A) ground school and (B) Practical.

Some of these skills will be taught by a Paragliding Instructor and some by a Powered Paragliding Instructor or Trainer.

General

- A pilot under training will fly under direct instruction from the instructor at all times.
 - No student may fly under power until the required un-powered flight skill levels relating to the required tasks have been fully demonstrated to the satisfaction of the instructor.
 - A pilot under Powered Flight training will fly only either within sight of or in pre-arranged radio contact with a designated instructor unless he is performing a declared cross country task.
 - All Paragliding Skills (for the purposes of Powered Paragliding) shall be taught in accordance with guidance and regulations produced by USHGA, with the exception of the mountain flights requirements, which may be substituted by Winch Launched flights.
 - Powered Training may commence only once Un-powered Paragliding training has been completed.
 - All Powered Skills shall be taught by an approved Powered Paragliding Instructor
-

Contents

A. Groundschool

1. Equipment
Canopy, Clothing, Instruments, Power Unit
2. Weather
General Weather, Patterns and Forecasts, Local Weather, Cross Country
3. Theory
Flight Theory, Powered Paraglider Aerodynamics, Airmanship, Air Law

B. Practical

Practical

Pre-motorized Flight, Motor Unit Ground Work, Powered Flight

Syllabus

A. GROUNDSCHOOL

1. Equipment

- **Paraglider**

- Daily checks and pre-flight checks.
The student will demonstrate daily and pre-flight checks and demonstrate his knowledge of the materials and methods used in the construction of the canopy.
- Maintenance
The student will demonstrate his knowledge of the need for regular inspections and maintenance of his canopy, the harness and the emergency parachute, including required schedule for emergency parachute re-packing.

- **Clothing**

The student will demonstrate a knowledge of the need for appropriate clothing including boots, helmet, gloves, flying suit etc.

No scarves, jacket drawstrings, long hair!

- **The Power Unit**

1. Configuration

The pilot under training will demonstrate an understanding of all the component parts of the motor unit and their inter-relationships. Particular emphasis will relate to:-

- care, balancing and tracking of propellers.
- safety cages and the importance of maintaining them in good condition;
- fuel taps; ignition switches emergency engine stopping.
- spark plug and lead;
- the risk of damage to the motor unit and in particular the throttle cable during transit.
- correctly rigging the motor to the glider in accordance with the manufacturers recommendations.
- vibrations, their effects and methods of preventing its consequences.

2. **Mixing Fuel**

The pilot under training will demonstrate an understanding of:

- mixing fuel.
- different mixtures for running in and subsequent periods and the need to keep an engine time log book;
- the difference between synthetic and other oils;
- reasons why petrochemicals and paragliders don't mix.

3. **Safety**

The pilot under training will gain an understanding of:

- the need to operate safely and what can go wrong.
- ways of protecting himself and others during running in periods; an appreciation of the power generated by the propeller at full engine speed is essential;
- safety procedures associated with helpers starting the motor unit
- procedures in the event of fire.
- general fitness, eyesight, the effect of drugs, alcohol etc.

4. **Starting Procedures**

The pilot under training will gain an understanding of starting procedures, including:

- clearing the area and clear prop.
- checking the motor unit to ensure that everything is in its proper place, e.g. plug lead;
- check the fuel tank contents.
- fuel tap;
- choke (where fitted);
- pull handle etc.
- demonstrate an understanding of the warm-up of the motor for correct running.

2. Weather

1. **General Weather**

The pilot under training will demonstrate a general understanding of weather patterns, and associated wind direction and strength.

2. **Weather Patterns and forecasts**

The pilot under training will demonstrate an understanding of how weather systems affect flying conditions. An understanding of the following will be demonstrated.

- Forecasts
- Cloud recognition
- High and low pressure systems and fronts.
- Unstable weather, turbulence & gust fronts.
- Stable weather, effect on visibility and inversions.
- Stable/unstable conditions

3. **Local Weather**

The student will demonstrate an understanding of how the following affect flying conditions.

- Airflow on and around hills. catabatic flow
- Wind gradient.
- Turbulence, venturi effect and gusts
- Sea-breezes
- Thermals and cumulus cloud development
- Standing waves and their effect.

4. **Weather in XC Situations**

The student will demonstrate awareness that powered paragliders can fly in locations and maintain height where gliders are not able to do so. The need to maintain an awareness of overall wind direction and its effect in valley situations will be discussed and wind gradient in different topographical situations considered.

The student will demonstrate the ability to assess suitable flying weather.

3. Theory

1. **Theory of flight - General**

The student will demonstrate knowledge of:

- Principles of flight including drag, airflow over the wing, angle of attack, wing loading, glide angle & sink speed.
- Effect of brakes on angle of attack and speed, also trim and speedbar. The effects of flying too slowly (the stall).
- Air speed - wind speed - ground speed
- Emergency and safety procedures.

2. Theory of flight, Powered Paraglider

The student will demonstrate knowledge of:-

- Lift, thrust weight and drag and the effect of power on angles of attack.
- Forces in turns and the effect on stall speed.
- Climbing and diving turns.
- Reduction drives.
- Propeller theory.
- Torque effects and how these can be controlled.
- Gyroscopic forces and their effects.
- Asymmetric thrust: Causes and their associated effects.
- Understanding the trim of the motor and adjusting the thrust line for a particular weight of pilot and glider.
- Hang points - the effect of altering.
- The effect of speed systems on a powered paraglider under power on and off situations.
- The effects of weight on flying speed, stall, speed/flare and the need for weight checks.
- Understand the concept that power equals climb and Brake/Trim/Speed-bar position equals air speed.
- The effect of flying too slowly.
- Emergency and safety procedures.

▪ **Airmanship**

The pilot under training will demonstrate knowledge of:-

- Noise nuisance and congested areas.
- Emergency stopping and take-off abort.
- Emergency and safety procedures.
- Assessment of conditions for flight.
- Safe areas for onlookers.
- Dangers - powerlines, trees, water, etc.
- Turbulence and its consequences.
- Techniques for avoiding and recovering from; tucks, stalls and spins and sudden power loss.
- Flying with others - anticipation.
- Right of Way, Rules of the air.
- The emergency parachute.
- Choice of safe field including climb-out clearance, ground conditions, turbulence generators, obstructions.
- Methods of navigation. Planning a 30 km (total) flight either as an out and return flight with a pre-declared turn point or as a flight to a pre-declared goal.

▪ **Air Law**

The pilot under training will demonstrate a thorough knowledge of air law and regulations applicable to powered foot launched aircraft with specific reference to the FAR Part 103 as appropriate.

B. PRACTICAL

Practical

▪ **Pre-Motorized Flights**

Prior to flying with a motor unit the trainee will carry out the following tasks on a paraglider :

These flights must be supervised by an Instructor

- Demonstrate an effective PLF (not wearing back pack)
- Correctly carry out pre and post flight routines
- Demonstrate the ability to plan a flight and execute the plan
- Demonstrate safe airspeed control
- Complete four appropriate controlled landings in a designated area
- Consistently demonstrate clean take offs, good flares and accurate landing into wind
- Demonstrate an 'S' turn approach as well as standard aircraft approach to safe landing
- Demonstrate safe and effective turn control of the aircraft
- Demonstrate emergency collapses (Paraglider on the ground)
- Demonstrate competence at forward and reverse launching and canopy control
- Demonstrate forward launches in zero wind
- Demonstrate Reverse pull-up and launch in high winds
- Demonstrate Big Ears
- Demonstrate safety and emergency procedures.

▪ **4.2 Motor Unit - Ground Work**

- Demonstrate pre-take off control of aircraft
- Demonstrate simulated post landing control of aircraft
- Demonstrate competence at ground-running motor safely
- Demonstrate knowledge of the following:-
 - Clearing the fuel supply of bubbles
 - Clear prop
 - Kill switch and emergency engine stopping
 - Correctly carry out pre-and post flight routines
 - Demonstrate launch abort
 - Demonstrate safety and emergency procedures

Powered Flight

These flights must be directly supervised by an approved Powered Paragliding Trainer.

Flights must not be undertaken until the Pre-Motorized Flights and Motor Ground Work have been completed.

- Demonstrate consistently good launch technique with Forward and reverse pull-ups
- Three consecutive powered flights from a flat site with at least 100ft. ground clearance, with unassisted take-off runs, smooth 90 deg. left and right turns including good airspeed and throttle control and finish with stand-up power off landings including full deflation of the canopy between flights.
- Complete 3 landings within 20m of a defined spot in winds of less than 5 mph. Complete 3 landings within 20m of a defined spot in winds of more than 10 mph.
- Minimum of 10 flights logged (including full deflation and inflation of canopy between flights.
- Demonstrate the safe and effective use of big ears.
- Carry out an accurate power-off landing to the satisfaction of the Instructor from at least 500ft.
- Demonstrate an ability to fly coordinated 360 deg. turns in both directions.
- Complete a 30 km (total) flight with a pre-declared turn point or as a flight to a declared goal or a triangle.
- Display the ability to fly safety with others, maintaining a good Look Out, complying with the Rules of the Air and exhibiting good Airmanship, and demonstrate an ability to manoeuvre Powered Paragliders safely, considerately and in accordance with air traffic rules.
- Must have successfully flown paramotors or paragliders or hang gliders or power gliders or microlights as pilot in command on at least 8 separate days within the previous 9 months.
- Must have a minimum of 5 hours logged airtime as pilot in command on paragliders, powered paragliders, power gliders or hang gliders or microlight of which at least 3 hours must be on powered paragliders.
- Satisfy the Instructor that the pilot has the correct attitude to continue a flying career both safely and competently.

Minimum: Pass the USHGA P2 Theoretical Knowledge exam.

PILOT SKILLS ASSESSMENT

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Pilot Name: _____ Weight _____ Height _____ Gender _____

Glider's flown _____, _____, _____, _____

Motor's flown _____, _____, _____

Launch conditions _____

Weather Conditions _____

_____ Motor Preflight

_____ Glider Preflight

Exercises:

Rate all exercises from 1-5

Rating System

- 1 – Beginner, needs fundamental development
 - 2 – Has basic knowledge, but needs intensive practice
 - 3 – Average skill
 - 4 – Exceptional skill
 - 5 – Superior skill
-

Ground Handling

Reverse

Cross Control

Cobra

Other (Describe)

Forward

Launching

Forward Launch

Comments

1. _____
2. _____
3. _____
4. _____
5. _____

Reverse Launch

1. _____
2. _____
3. _____
4. _____
5. _____

In Flight

Launch and overall flight

Take- off (smooth and in control)

Climb-out (torque effect control)

Oscillation control

Overall glider and motor control

Basic decision making

Basic Maneuvers (on radio only)

Big Ears

Mild Asymmetric Spirals

Landings

#	controlled approach	long final into wind	flare timing	on feet	distance from spot	comments
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Comments

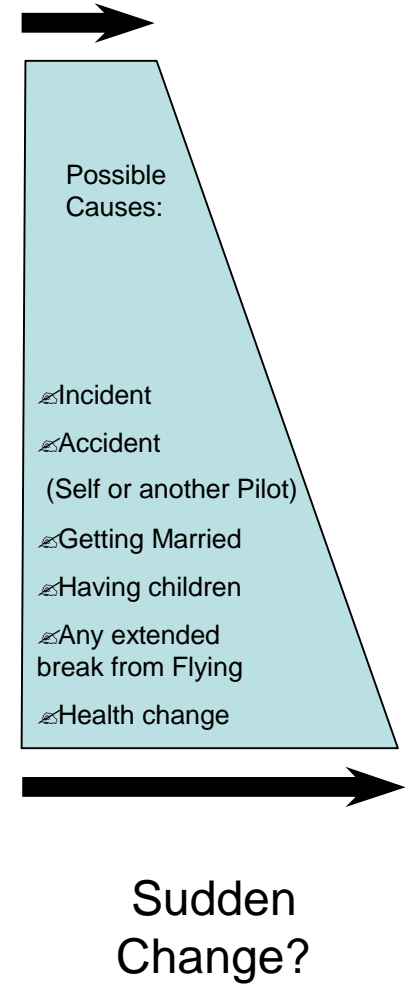
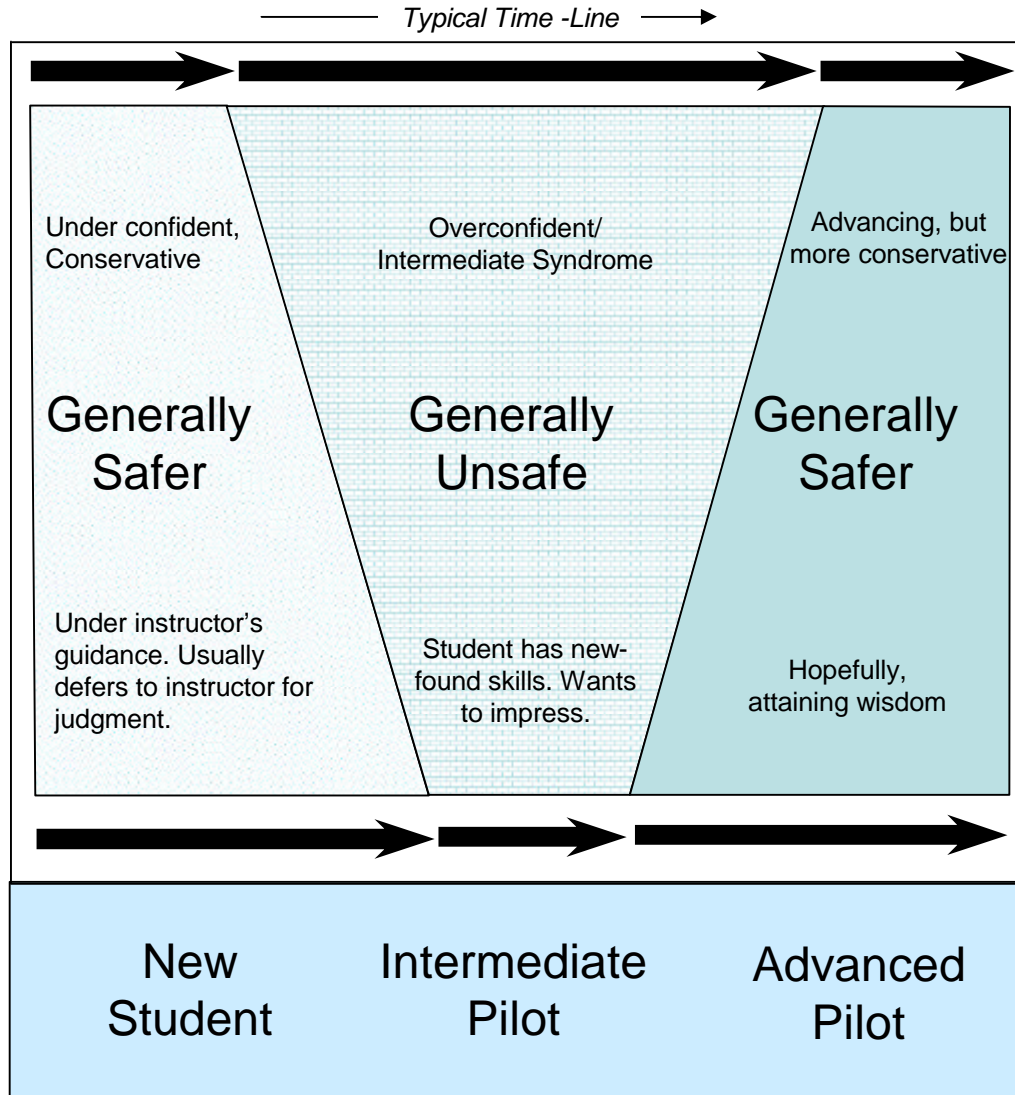
The Skills/Judgment Continuum

Skills/Ability

- ✍ Muscle Memory
- ✍ Reflex
- ✍ Intuition
- ✍ Coordination
- ✍ Reaction Time
- ✍ Strength

Judgment (Knowledge)

- ✍ Decision Making
- ✍ Aerodynamics
- ✍ Mechanical Turbulence
- ✍ Specific Weather
- ✍ General Weather
- ✍ Equipment
- ✍ Etc.



Hypothetical Risk Analysis Matrix

What is "Acceptable Risk?"

	NO CONSEQUENCES	SKINNED KNEE	BRUISED BODY PART	BROKEN BONE	BROKEN BONES	HEAD INJURY	LOSS A LIMB OR EYE	PARAPLEGIC OR BLINDED	QUADRIPLÉGIC	VEGETABLE	DEATH
IMPOSSIBLE	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ALMOST NO CHANCE OF HAPPENING	0.1	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
EXTREMELY RARE	0.2	0.02	0.04	0.06	0.08	0.1	0.12	0.14	0.16	0.18	0.2
VERY RARE, BUT KNOWN TO HAPPEN	0.3	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27	0.3
HAPPENS ON OCCASION	0.4	0.04	0.08	0.12	0.16	0.2	0.24	0.28	0.32	0.36	0.4
YOU WILL SEE IT HAPPEN	0.5	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5
MORE COMMON THAN NOT	0.6	0.06	0.12	0.18	0.24	0.3	0.36	0.42	0.48	0.54	0.6
VERY RISKY BEHAVIOR	0.7	0.07	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.63	0.7
EXTREMELY RISKY BEHAVIOR	0.8	0.08	0.16	0.24	0.32	0.4	0.48	0.56	0.64	0.72	0.8
MOST PROBABLY WILL HAPPEN	0.9	0.09	0.18	0.27	0.36	0.45	0.54	0.63	0.72	0.81	0.9
SURE THING	1.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0

Know Your Number!

0.0	Impossible / No Consequences
.01 - .09	Most Commonly Accepted Risk
0.1 - 0.12	Everyday athletes who take calculated risks for competitions or personal experience
0.13 - .0.18	Everyday athletes who take uncommon calculated risks for competitions or personal experience
0.19 - 0.36	Extreme Sports e.g. Motorcycle Freestyle, Ski Racing, Bull Riding, etc.
.037 - 0.9	Those who take inordinate risk with frequent serious personal injury and death
1.0	Suicidal

Collapsible Truth

By: Bill Heaner
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Paragliding deflations have become a big topic of discussion on internet forums. I think it is useful to offer some perspective on this wildly misunderstood topic.

It's my opinion that the goal of internet based discussions should not be for instruction...especially when it comes to topics like catastrophic deflations near the ground. Please understand that when those of us who teach this stuff see it battled out on the internet, we usually stay away. I was kindly asked if I would offer my perspective...here it is without really telling you how or how not to do something. For that you will have to come to us and do it over the water.

Internet discussions get tricky because the variables of the discussion don't get flushed out properly and the perspective needed by those interpreting is not complete. Inevitably, difficult forum type discussions pop up from time to time without the proper context and, to an extent, take place in reverse. This is one of them.

First of all...

Believe it or not, there are ways to not take random, major deflations, but you gotta be down with really understanding what causes them...the sad reality, is that many, many pilots don't get the proper instruction or continuing education and will experience problem deflations for all the wrong reasons...most all are preventable and many times the results are tragic.

Things that go bump in the day that should make you worry:

1. Flying through mechanical turbulence from buildings, trees, mountains, other gliders, etc.
2. Flying in natural turbulence, i.e. unstable conditions outside of your skills and experience (gusty winds, thermic)
3. Radical, pilot induced symmetric and asymmetric angle of attack changes (e.g. motor induced, towing without proper instruction or experienced tow operator or those practicing maneuvers without proper instruction)
4. Flying the wrong equipment – using it in the wrong way (ie. tricky speed systems)
5. Not having a firm grasp of adequate and appropriate brake pressure during every moment of your flight.

So now, you know my opinion that talking about what to do in a catastrophic deflation on an internet forum is the wrong conversation. Talking about why they happen, how to avoid them and finally how to prepare for said deflations is where all of the really good educators in our sport go. All this BEFORE you encounter scenarios that would deliver you major pain and/or expense.

Big Point #1

I would say that ANY active pilot that has ANY chance of taking a catastrophic deflation without knowing why or exactly what to do before and after it happens needs an intervention...please call me or anyone on our team so we can sort this out properly together. You will be amazed (after only a couple of days over the water) at how much you will really understand this topic at a reflexive level. You can even try out all the suggestions you hear about for yourself and truly find out what works the best. Want to throw your reserve? Yea, you can do that too. And yes, they really work. Don't fly with a reserve? Start now.

Big Point #2

The only way to thrive and possibly save yourself from injury or death in paragliding is to get into the mind set of attaining "mastery" of your wing and then truly understanding your exposure. This begins with great instruction and a real commitment to persistent and consistent practice on the techniques that improve your mastery.

Misconception (motor pilots): "I don't plan on free flight so I don't need to know about this subject."

Truth: There is no such thing as free flight or motor flight...get it out of your head. Start talking and thinking about "wing mastery", then fly with a motor, without a motor, kite, tow, ridge soar, thermal...go for a complete understanding of your wing...really, a complete understanding...no really, a complete understanding. Don't settle for living in Pleasantville...explore your world. It will make you a SAFER, BETTER, HAPPIER MORE CONFIDENT PILOT – I promise. Not only that, but you will become a resource to those around you.

Big Point #3

Mediocrity plagues our sport. This is a mystery to me. I would understand if you were flipping a coin for a lunch spot, but not aviation.

Accurately and actively understanding and managing risk should be at the top of your list. Mediocrity won't get you there.

Biggest Point #4

Don't try out the instruction you read on the internet for things like "how to get out of an 80% collapse at 30 feet from the ground." Talk about these big ticket items with your instructor. If you don't get that he/she really understands this stuff well enough then find someone who does. Come see me (not a sales pitch...really) or anyone you can find that does over the water safety training. In addition, also seek out seminars that deal with flying in unstable air, advanced ground handling, etc.

Keep learning, question everything you read/hear...remember, wing mastery and accurately managing risk and exposure are your goals.

AFNOR vs DHV

This is a very brief comparison of the two popular certification tests found on most Paragliders.

AFNOR is a standard run by the French Standards Institute.

DHV (Deutscher Hangegleiter Verband- in Germany) issues tested canopies with a Gutesiegel if they pass.

ACPUL (Association des Constructeurs de Parapente Ultra Legers) is a manufacturers' association based in Europe.

Both organizations have a load test and flying tests. Load test of 8 times the maximum flying weight to ensure the canopy is strong enough.

AFNOR's flying test has 3 grades and a tandem/dual category. AFNOR has 17 flying tests. All canopies tested under AFNOR have to pass only the tests for the intended category. This means competition canopies will not be tested for spin, asymmetric stall, etc...(please see the comparison table).

These categories are:

1. Standard: suitable for beginners and advanced pilots (ACPUL 12As)
2. Performance: suitable for advanced pilots (ACPUL 11As and 1B or 1C)
3. Competition: suitable for advanced/competition pilots.

DHV Gutesiegel's flying test has three main categories: 1, 2 and 3. There are also two overlaps categories: ½ and 2/3. DHV Gutesiegel has 13 flying tests. All canopies tested under DHV must PASS ALL the test regardless of the intended market.

1. DHV 1: suitable for beginners and advanced pilots
2. DHV 2: suitable for advanced pilots
3. DHV 3: suitable for advanced/competition pilots

Test	DHV Gutesiegel	AFNOR Standard	AFNOR Performance	AFNOR Competition
Take Off/Inflation	yes	yes	yes	yes
Landing	yes	yes	yes	yes
Straight Line Flight	yes	yes	yes	yes
As above with trimmers	yes	yes	yes	yes
Pitch Stability	yes	yes	yes	no
Deep Stall with Brakes	yes	yes	yes	yes
B-line stall, fast release	yes	yes	yes	yes
B-line stall, slow release	yes	yes	yes	no
Handling in turns	yes	yes	yes	yes
Sharp turns	yes	yes	yes	yes
Wing Over/Turn Reversal	yes	yes	yes	yes
Asymmetric Tuck	yes	yes	yes	yes
Asymmetric Tuck held in	no	yes	yes	yes
Spin	yes	yes	yes	no
Asymmetric Stall	yes	yes	yes	no
Symmetric Tuck	yes	yes	yes	no
Spiral Dive	yes	yes	yes	yes
Full Stall Symmetric Recovery	yes	no	no	no
As Above Asymmetric Recovery	yes	no	no	no
Abnormal Incidents	yes	no	no	no

PART 103-ULTRALIGHT VEHICLES

Subpart A-General Sec.

- 103.1 Applicability.
- 103.3 Inspection requirements.
- 103.5 Waivers.
- 103.7 Certification and registration.

Subpart B-Operating Rules

- 103.9 Hazardous operations.
- 103.11 Daylight operations.
- 103.13 Operation near aircraft; right-of-way rules.
- 103.15 Operations over congested areas.
- 103.17 Operations in certain airspace.
- 103.19 Operations in prohibited or restricted areas.
- 103.20 Flight Restrictions in the Proximity of Certain Areas Designated by Notice to Airmen.
- 103.21 Visual reference with the surface.
- 103.23 Flight visibility and cloud clearance requirements.

Authority: Secs. 307, 313(a), 601(a), 602, and 603, Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354(a), 1421(a), 1422, and 1423); sec. 6(c), Department of Transportation Act (49 U.S.C. 1655(c)).
Source: Docket No. 21631, 47 FR 38776, Sept. 2, 1982, unless otherwise noted.

Subpart A-General

- 103.1 Applicability.

This part prescribes rules governing the operation of ultralight vehicles in the United States. For the purposes of this part, an ultralight vehicle is a vehicle that:

- (a) Is used or intended to be used for manned operation in the air by a single occupant;
- (b) Is used or intended to be used for recreation or sport purposes only;
- (c) Does not have any U.S. or foreign airworthiness certificate; and (d) If unpowered, weighs less than 155 pounds; or
- (e) If powered:
 - (1) Weighs less than 254 pounds empty weight, excluding floats and safety devices which are intended for deployment in a potentially catastrophic situation;
 - (2) Has a fuel capacity not exceeding 5 U.S. gallons;
 - (3) Is not capable of more than 55 knots calibrated airspeed at full power in level flight; and
 - (4) Has a power-off stall speed which does not exceed 24 knots calibrated airspeed.

- 103.3 Inspection requirements.

- (a) Any person operating an ultralight vehicle under this part shall, upon request, allow the Administrator, or his designee, to inspect the vehicle to determine the applicability of this part.
- (b) The pilot or operator of an ultralight vehicle must, upon request of the Administrator, furnish satisfactory evidence that the vehicle is subject only to the provisions of this part.

- 103.5 Waivers.

No person may conduct operations that require a deviation from this part except under a written waiver issued by the Administrator.

- 103.7 Certification and registration.

(a) Notwithstanding any other section pertaining to certification of aircraft or their parts or equipment, ultralight vehicles and their component parts and equipment are not required to meet the airworthiness certification standards specified for aircraft or to have certificates of airworthiness.

(b) Notwithstanding any other section pertaining to airman certification, operators of ultralight vehicles are not required to meet any aeronautical knowledge, age, or experience requirements to operate those vehicles or to have airman or medical certificates.

(c) Notwithstanding any other section pertaining to registration and marking of aircraft, ultralight vehicles are not required to be registered or to bear markings of any type.

Subpart B-Operating Rules

103.9 Hazardous operations.

(a) No person may operate any ultralight vehicle in a manner that creates a hazard to other persons or property.

(b) No person may allow an object to be dropped from an ultralight vehicle if such action creates a hazard to other persons or property.

103.11 Daylight operations.

(a) No person may operate an ultralight vehicle except between the hours of sunrise and sunset.

(b) Notwithstanding paragraph (a) of this section, ultralight vehicles may be operated during the twilight periods 30 minutes before official sunrise and 30 minutes after official sunset or, in Alaska, during the period of civil twilight as defined in the Air Almanac, if:

(1) The vehicle is equipped with an operating anti-collision light visible for at least 3 statute miles; and

(2) All operations are conducted in uncontrolled airspace.

103.13 Operation near aircraft; right-of-way rules.

(a) Each person operating an ultralight vehicle shall maintain vigilance so as to see and avoid aircraft and shall yield the right-of-way to all aircraft.

(b) No person may operate an ultralight vehicle in a manner that creates a collision hazard with respect to any aircraft.

(c) Powered ultralights shall yield the right-of-way to unpowered ultralights.

103.15 Operations over congested areas.

No person may operate an ultralight vehicle over any congested area of a city, town, or settlement, or over any open air assembly of persons.

103.17 Operations in certain airspace.

No person may operate an ultralight vehicle within Class A, Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport unless that person has prior authorization from the ATC facility having jurisdiction over that airspace.

103.19 Operations in prohibited or restricted areas.

No person may operate an ultralight vehicle in prohibited or restricted areas unless that person has permission from the using or controlling agency, as appropriate.

103.20 Flight Restrictions in the Proximity of Certain Areas Designated by Notice to Airmen.

No person may operate an ultralight vehicle in areas designated in a Notice to Airmen under 91.141 or 91.143 of this chapter, unless authorized by ATC.

103.21 Visual reference with the surface.

No person may operate an ultralight vehicle except by visual reference with the surface.

103.23 Flight visibility and cloud clearance requirements.

No person may operate an ultralight vehicle when the flight visibility or distance from clouds is less than that in the table found below. All operations in Class A, Class B, Class C, and Class D airspace or Class E airspace designated for an airport must receive prior ATC authorization as required in 103.17 of this part.

Airspace	Flight Visibility	Distance from clouds
Class A	Not Applicable	Not Applicable
Class B	3 statute miles	Clear of Clouds
Class C	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
Class D	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
Class E: Less than 10,000 feet MSL	3 statute miles	500 feet below 1,000 feet above 2,000 feet horizontal
Class E: At or above 10,000 feet MSL	5 statute miles	1,000 feet below 1,000 feet above 1 statute mile horizontal
Class G: 1,200 feet or less above the surface (regardless of MSL altitude)	1 statute mile	Clear of clouds
Class G: More than 1,200 feet above the surface but less than 10,000 feet MSL	1 statute mile	500 feet below 1,000 feet above 2,000 feet horizontal
Class G: More than 1,200 feet above the surface and at or above 10,000 feet MSL	5 statute miles	1,000 feet below 1,000 feet above 1 stat. mile horizontal

I HAVE READ FAR PART 103 AND AGREE TO FOLLOWING THE OPERATING RULES AND RESTRICTIONS SET FORTH IN FAR PART 103 WHILE FLYING REVOLUTION PARAMOTORS AND/OR SKY PARAGLIDERS.

SIGNED _____

PRINT NAME _____

DATE _____

A History Lesson

The following article is a reprint from Hang Gliding Magazine, September 2001. This is the golden knowledge of where we came from, how we came to fly through self-governance and how we could lose this privilege if we continue to break the more than fair rules under which we fly.

Proposed FAA "Sport Pilot" Certification by Joe Gregor

By the time you read this article an FAA notice of proposed rulemaking memorandum (NPRM) describing new Sport Pilot certification requirements will likely have been released for public comment. We will have 90 days to digest this information and respond before the government decides if, when, and how to implement the new rule. While the draft rule would impact the hang gliding community only peripherally, it lays the groundwork for sweeping changes in the way hang gliding may be regulated in the future. In this article I will briefly summarize the Sport Pilot rule as currently drafted, including my take on the potential implications for the sport of hang gliding. I will begin by briefly outlining the genesis of our current regulatory situation, from the publication of FAA Advisory Circular 60-10 in 1974 to FAR Part 103 as it stands today, making use of direct quotations from FAA source documents to highlight the government's thinking. Put in historical perspective, it becomes clear why the current regulations evolved as they did and where I believe the FAA plans to take us in the future with the new proposed Sport Pilot rule. It behooves all who currently enjoy the present state of lightly regulated foot launched free flight to pay close attention to that which follows.

ADVISORY CIRCULAR 60-10

In 1974 the FAA published an Advisory Circular [AC No. 60-10, 5/16/74] outlining their position regarding the operation of "hang gliders" and the sport of "sky-sailing." In it the FAA outlined a suggested set of parameters that practitioners of the sport should follow to avoid future regulatory action. These included: 1) Limiting altitude to 500 feet AGL and below. 2) Restricting operations to areas outside of controlled airspace, restricted, and prohibited areas, to include uncontrolled (non-towered) airports. 3) Remaining at least 100 feet away from, and never to overfly at any altitude, any buildings, populated places, or assemblages of persons.

Manufacturers and clubs were encouraged to develop procedures and standards for quality control, safety, and training. The FAA cautioned that it would take steps to "observe the growth and safety status of this activity as it progresses and to continually assess the need for FAA involvement."

THE GENESIS OF FAR PART 103

Eight years later the rapid growth of ultralight activity within the U.S. prompted the FAA to propose limited regulation of both powered and unpowered ultralight aircraft. The result was FAR Part 103 [effective 10/4/82]. The purpose of this regulation was to "achieve an acceptable level of air safety by reducing potential conflict with other airspace users and to provide protection to persons and property on the ground." The FAA left responsibility for pilot certification, vehicle certification, and vehicle registration to the ultralight community with a warning that positive action was expected to address these issues to the government's satisfaction: "Should this approach fail to meet FAA safety objectives, further regulatory action may be necessary."

Supplementary information was provided, describing the government's line of reasoning for adopting this regulation. It began by observing how technology had advanced to the point that "many hang gliding vehicles no longer fall within the scope envisioned by Advisory Circular No. 60-10." We had outgrown the hands-off approach. Those of us who thought we were not on the radar screen will be interested to know that as far back

as 1982 the FAA was cognizant of the fact that we could exceed 10,000 feet AGL and achieve distances of over 100 miles! The FAA was paying attention, and we did a creditable job of shooting ourselves in the foot as they watched: "The operations of these vehicles are now a significant factor in aviation safety. The vehicles are routinely operated, without authorization, into regulated airspace, such as airport traffic areas (now known as Class D), terminal control areas (Class B/C), positive control areas (Class A), prohibited and restricted areas. Many operations have also taken place over congested areas and spectators and into adverse weather conditions... The midair collision potential presented by unauthorized operations is contrary to the FAA responsibility of ensuring the safety of all airspace operation including air carrier aircraft."

In addition, it was pointed out that: "Current hang glider publications have carried a number of articles describing hang glider operations that violate Part 91 regulations as well as the recommendations of Advisory Circular 60-10. Those descriptions have included operation near and into clouds, low-altitude operations over open-air assemblies of persons, and flights in close proximity to airports with large concentrations of airline and general aviation aircraft operations. Those potentially hazardous operations created the requirement for Federal regulatory limitations on hang gliders."

We did it, we announced it proudly to the world, and the FAA responded. To "deter flights which present a serious danger to aircraft and to provide a basis for necessary enforcement action" the FAA published an NPRM on July 27, 1981 to "include both powered and unpowered hang gliders under the generic term ultralights." After the appropriate comment period, that NPRM formed the basis for FAR Part 103, made effective just over one year later.

The USHGA objected to the inclusion of hang gliders with powered ultralights. While acknowledging the success of USHGA's efforts to promote safety within the hang gliding community, the FAA defended its position, stating that "the basic rationale for issuance of this rule is the safety of all users of the national airspace, not just the ultralight operators." This theme is raised and again, and serves to underscore the reason why we came under regulation at this time and why we may well expect increased regulation in the future.

While intent on maintaining safety for all users of the national airspace system, the FAA was not interested in eliminating ultralight activity altogether. Liberal limits on top airspeed, stall speed, fuel capacity, and empty weight were set to ensure that the aircraft falling under Part 103 maintained the flight characteristics commonly associated with ultralights, while at the same time enabling most ultralight aircraft that existed at the time to continue operating without burdensome regulation. Specific consideration was given to maintaining waiverability for ultralight operations so that two-place trainers and aerotowing operations could be continued, largely due to the perceived safety-enhancing aspects of these operations. The FAA emphasized the "sport" aspect of ultralight operations *flight conducted by informed participants fully cognizant of the dangers and risking only themselves and their own personal property* as justification for not requiring airman certification and aircraft registration. It was recognized that the economic impact of licensing and aircraft certification requirements could have a devastating effect on the community. The FAA's intent was to provide safety for all with a minimal amount of regulation.

However, it was "emphasized that the individual ultralight operator's support and compliance with national self-regulation programs is essential to the FAA's continued policy of allowing industry self-regulation in these areas." The FAA would continue to monitor safety and compliance trends and "take additional regulatory actions to preclude degradation of safety to the general public while allowing maximum freedom for ultralight operations." The community was being served notice. Ultralights would be allowed as much freedom as the government considered prudent, but the safety of all users of the national airspace system would be paramount. Ultralight aircraft were to avoid "areas where significant operations of aircraft are occurring so as to minimize the risk of midair collisions." Such operations may only be conducted safely if all pilots, are

aware of the presence of other aircraft, and this is one reason why ultralight operations within controlled airspace (Class A, B, C, D, or E for an airport) require prior authorization from the controlling agency. In 1993 this rule was beefed up by an amendment to Far Part 103.17 (Amendment 103-4, effective 9/16/93) prohibiting operation within the lateral limits of the surface area for Class E designated for an airport.

Commentators responding to the NPRM voiced concern over ultralight operations at uncontrolled (non-towered) airports, as well. The FAA sidestepped this issue, pointing out that the large number of variables associated with individual airports in this class would make it difficult to develop workable Federal standards uniformly applicable across the nation. Instead, "The FAA has concluded that such operations could be handled much more efficiently by airport managers developing local procedures in concert with the ultralight community." A clarification was later published in the FAA Aviation News, stating that the lateral limits restriction does not apply to those airports surrounded by a ghostly Magenta Class E airspace designation.

Some commentators proposed that hang gliders be permitted to operate in or near clouds, since to restrict such activity would eliminate their ability to vie for long-distance and high-altitude records. We need to do better than this next time around, folks. The ostensible goal of the proposed change was to ensure the safety of the flying public. Enabling record attempts for ultralight pilots was obviously not a primary FAA concern. Their response, predictably enough, was to uphold the same cloud clearance standards for hang gliders and ultralights as for any other type of aircraft plying the skies: "The cloud clearance requirements serve as a practical buffer to reduce the possibility of having aircraft exit the clouds on an unalterable collision course." Most scheduled airline operations, commuter, corporate, and Military aircraft fly en route on IFR flight plans, regardless of the prevailing weather conditions. They are cleared to fly through the clouds legally. The FAA did not want us or any other uncontrolled, untrackable VFR aircraft presenting an unexpected and potentially unavoidable obstacle to those aircraft.

In summary, the rapid growth of hang gliding and ultralight activity in the 1970's prompted the FAA to publish an advisory circular. By 1982, near-miss reports, complaints from the general and civil aviation community, and a perceived disregard for the rules prompted the FAA to propose further regulation. The result was FAR Part 103. This regulation made it clear that ultralight pilots, both powered and unpowered, were required to observe certain basic rules of VFR flight operations, and to avoid activities that could endanger the lives and property of others. Additional restrictions, such as remaining outside the lateral boundaries of airport-controlled airspace, and not overflying large concentrations of people, were imposed due to the unproven nature of ultralight aircraft and the unknown quality of ultralight pilots. That was then. Now, nearly 20 years later, the FAA has issued another NPRM that could affect the hang gliding community.

THE "SPORT PILOT" PROPOSED RULE

In 1988 the USUA (U.S. Ultralight Association) petitioned the FAA to amend FAR Part 103, asking them to expand the definition of an ultralight vehicle to include two-place and overweight "fat" ultralights. In response the FAA set machinery in motion that led to the new Sport Pilot proposed rule.

The FAA had been working on initiatives to shore up the health of general aviation in the U.S. A new class of air-man certificate, the "Recreational Pilot," was established in 1989 as a result of these efforts. This new class of airman certificate was intended to provide a simple, low-cost avenue of entry for prospective pilots. The new initiative met with extremely limited success. Meanwhile, the legal industry had discovered a new source of revenue, devastating the U.S. general-aviation (GA) manufacturing base in the process. Piper was the only company still producing GA aircraft, and they were considering plans to exit the business. In 1992, in an effort to reverse this trend, the FAA created a new, simplified, "primary category" process for securing type, production, and airworthiness certification of new aircraft types. The problem was ultimately addressed by tort reform.

But the machinery remained in place - a tool with no use. At the same time, it was noted that, "Over the years... public misconception of the actual scope of Part 103 has led some well-intentioned people to begin operating in a way that is technically outside of that scope." In Other words, ultralight pilots were still busting the rules.

In 1991 the FAA formed a working group to consider changes to Part 103 in response the USUA petition. The Aviation Rulemaking Advisory Committee (ARAC was composed of representatives from the experimental, light, and general aviation communities. Ultralight aircraft owners and operators had minority representation on a committee formed to consider changes to a regulation that allegedly was only to affect ultralight aircraft. It quickly became dear that the FAA had an agenda, and after some FAA guidance the ARAC eventually issued the following recommendations: 1) Part 103 should remain intact and unmodified. 2) The "primary category" aircraft requirements could be used to address the certification of two-place and "fat" ultralights. 3) The FAA should establish a new "Sport Pilot" airman certificate modeled on the (currently unpopular) recreational pilot certificate, but modified to address the "unique training and operational requirements of the types of small, slow, single and two-place aircraft that would be certificated under the 'Primary category.

This, of course, was precisely what the FAA wanted to hear. Rather than rewarding pilots operating outside the scope of Part 103 with a relaxation of restrictions, the recommendation was to create a new class of FAA-certified pilots. The existing base of "fat" and two-place ultralight pilots would provide the "interest" required to make the proposal a success this time around. The collection of waivers to Part 103 (like the USHGA towing exemption) could be eliminated and rolled into the new regulation, saving the FAA time and money. The proposal is in the public interest)because it would improve safety by providing more instructors in type who would be validated through recognized procedures. It would enhance the use of certificated vehicles in additional classes and types and would expand annual condition inspections that would improve safety. The proposal would also expand the number of certified pilots, thus increasing the benefits and uses of the national airspace system. This proposal would provide reasonable and required training, airman certification, and promote compliance with general operating rules... for persons operating light, slow, unique aircraft."

The privileges to be enjoyed by the holder of a basic Sport Pilot certificate, would be essentially the same as those now enjoyed under Part 103. Restrictions on the performance and capability of aircraft that could be flown by a Sport Pilot certificate holder would be relaxed to an increased empty weight (to a 1,200 pound maximum), an increased stall speed of 39 kcas, and the ability to fly two-place aircraft. This expansion of privileges would come at a price, however. Pilots would be required to obtain and maintain FAA certification. A registered "light sport aircraft" would require certification and annual inspection by FAA certified technicians.

But the government could not impose a new class of pilot certificate without providing for the required infrastructure. A new cadre of instructors, examiners, inspectors, and maintainers would be required to deliver the necessary training and oversight. The skills and interest simply did not exist among the current FAA certified ticket holders. In the past, this had been the showstopper in any effort to regulate the ultralight community. The FAA believes that is has finally engineered a solution to this problem.

An extensive study of ultralight activity collected by Air Transport Canada led the conclusion "that ultralight activity is as safe or safer than general aviation." In fact, it was found that general aviation pilots flying ultralight aircraft experienced a significantly higher accident rate than trained ultralight-only pilots! The solution, then, was to utilize the resources of the ultralight community itself This would be accomplished by grandfathering current USUA, EAA, and ASC recognized instructors. A written test and proof of experience would allow them to obtain the FAA certification required to provide the needed services.

To solve the problem of administering such diverse aircraft types, the ARAC proposed that the FAA set up a Flight Standards Review Board (FSRB) to review applications for

new Sport Pilot certificate classes and ratings. Applicants would petition the FAA to create a new Class of certificate (a flex-wing hang glider class, for example). The FSRB would review the application and, if approved, a notice would be published in the Federal Register to inform the public and collect comments. After reconsideration, and taking public comment into account, a final decision on the application would be made through administrative action. Aircraft manufacturers would be tasked with creating, ensuring, and maintaining standards. This would cover the type generation and approval problem. Maintenance and inspection would be addressed by further tasking aircraft manufacturers to provide the required certification training for mechanics and inspectors. Owners would be permitted to maintain their own aircraft, but annual inspections by FAA-certified technicians would be required.

The ARAC's draft NPRM specified that, "This proposal would include the towing of gliders or unpowered ultralights as a Sport Pilot privilege... The U.S. Hang Gliding Association has extensive experience in this arena... The safety record of these operations has been extremely good... " But lest we get too comfortable, the committee noted that, "To preserve this safety record, the activity does require operational guidelines similar to those implemented by the USHGA, and provision is made for the FSRB to establish those... the FSRB could easily adjust the criteria as necessary through administrative action to correct any unforeseen problems to preserve safety."

THE FAA RESPONSE

In February 2001, after receiving the ARAC recommendation, the FAA delivered a briefing on the Sport Pilot initiative to the ultralight community in Illinois. It is evident from this briefing and conversations with ARAC members that, even with strong guidance from the FAA, the ARAC recommendations fell short of obtaining the correct answer. In the FAA briefing, "grandfathering" of current ultralight pilots and instructors has been replaced with a "transition period" during which pilots may continue to operate while working toward their Sport Pilot ratings. Candidates would be required to take written tests, a "Practical test" (read check ride) and potentially additional FAA-certified training to obtain their Sport Pilot rating. Credit for previous ultralight training could be granted only if the new pilot ratings were obtained within a certain time limit. The original ARAC recommendation that towing be permitted has apparently been dropped. The FAA briefing slide describing the privileges afforded to a Sport Pilot specifically states, "May not tow any object." When USHGA asked about this restriction, a senior FAA official indicated that it was because towing is a commercial activity. Of course, not all towing is commercial (much of it is conducted in a non-profit club environment), but this change in particular could adversely affect the hang gliding community. The FAA is under pressure to eliminate waivers and exemptions to its rules wherever possible. These devices were originally intended to address short-term, non-recurring problems. Exemptions are supposed to be incorporated into permanent regulation if the need persists, and be eliminated if not. Indeed, an important motivation for creating the Sport Pilot rating was to eliminate the profusion of Part 103 exemptions. If the Sport Pilot NPRM comes out with a prohibition against towing, and the FAA moves to eliminate all Part 103 waivers and exemptions, many of our flight parks may be dealt a crippling blow.

WHAT LIES AHEAD

The intent of the Sport Pilot proposed rule appears to be threefold: 1) to rejuvenate general aviation by providing easier entry to prospective pilots, 2) to improve the safety of the national airspace system by getting a better handle on the ultralight community, and 3) to normalize Part 103 by reducing or eliminating the exemptions to that rule. Pilots who choose to certify themselves and their aircraft may fly under this rule and log their flight time. This time could be applied to meet the requirements for higher ratings. The FAA hopes that the Sport Pilot certificate will become an entry point for pilots who will later move up the pipeline to obtain their private, commercial, and ATP certificates. The FAA believes that this effort will lead to "the rebirth of general aviation." The increased training and oversight would serve to make ultralight pilots and their aircraft

safer and more reliable.

To understand what this may mean to the hang gliding community we need to ask the question, Why Sport Pilot? Why not simply amend Part 103, as petitioned, to permit heavy and two-place ultralights to legally operate under the rule? This would have involved considerably less time, money, and effort. Instead, an ARAC was formed and steered into recommending a multi-year development effort to create a new class of airman certification that would provide an upgrade path for those ultralight pilots whose aircraft do not currently qualify under Part 103. Since the majority of modern ultralights fall into this category, most ultralight owners will be expected to apply. Once these pilots have a viable option to Operate legally, there will be little excuse for further bending of the Part 103 rules. The Sport Pilot proposal is engineered to transition the majority of ultralight pilots from Part 103 to a conventional pilot certificate, and to transition modern ultralight aircraft from unproven, unregistered designs to proven, certified, inspected, and regulated designs.

Part 103 itself is slated to remain unchanged under this proposal. Hang glider pilots may continue to foot-launch their aircraft as before. But what about the future? As performance and pilot skill levels continue to improve, will we someday find ourselves in the same position as the powered ultralight community is today? As proposed, hang glider pilots could be eligible to obtain a Sport Pilot certificate, purchase new, certified hang glider designs, and operate under the new rule as FAA-certified pilots. Few will feel that there is any advantage in doing so, but if this rule proves successful, and if the FAA perceives a significant benefit to the safety of the national airspaces system, the next NPRM may be one proposing the dissolution of Part 103. The argument then will be that existing hang glider pilots could easily transition to operation under the successful Sport Pilot rule. Costs will go up as manufacturers and instructors pass on the expense of certification to the customer. Given the economics of the sport, many if not most hang glider manufacturers in the U.S. could be expected to go bankrupt in the attempt, as has at least one ultralight manufacturer who attempted to make use of the new "primary category aircraft" rule to produce an FAA-certified design.

The current NPRM is due early this fall and may be viewed at <http://www.faa.gov/avr/arm/proc.htm> when issued. Read it carefully. It is likely that the FAA NPRM will differ in significant details from the draft form described in this article. This rule may represent a very real near-term threat to our flight parks, which are instrumental in the growth of our sport by providing both safety in training and flying options for those living far from suitable mountain launch sites. Beyond this, a successful Sport Pilot initiative may represent a long-term threat to the economic health of our manufacturing and training base. Hang gliding has reached a critical phase, and what future exists for the sport may hinge on how we act today and how we fly tomorrow. I urge everyone to scrutinize this issue closely and make our opinions known.

ABOUT THE AUTHOR

Joe Gregor is an ex-USAF Senior Pilot with 3, 000 hours total time in E-3 AWACS, Lear 35, Rockwell Sabreliner, T-38, and T-37 aircraft. He currently enjoys flying a Wills Wing Fusion.

Sidebar: The USHGA And The Sport Pilot NPRM By Bill Bryden

Joe Gregor has presented a good overview of the evolution of Part 103 and associated rulemaking activity, including the Aviation Rulemaking Advisory Committee (ARAC) that has been working over the past decade with the FAA to address issues concerning ultralight vehicles that have evolved beyond the limits of Part 103.

The USHGA has been intimately involved in this process since the creation of the Part 103 ARAC task force about 10 years ago. Dennis Pagen, Mike Meier and Bill Bryden have

been the USHGA representatives during this unreasonably protracted process, and the USHGA Board of Directors has been regularly briefed and kept apprised of the process and its status. For many years the status of the FAA rules, or FARs, was nebulous and there was no apparent end to the process during this time. That situation changed this year.

As mentioned in the companion article, we expect the FAA to issue a Notice of Proposed Rule Making (NPRM) some time early this fall (possibly by the time you read this). We have been briefed by the FAA generally about the proposed rule's content, but until they actually issue the NPRM we do not know the specific details. Until then, no one can be sure about the ramifications of the possible rules, and most people in the ultralight industry are holding their breath about the release of the NPRM.

There is a groundswell of support already brewing for this NPRM. We are remaining guarded until we see the specifics, at which time we can determine if the proposed rules will be helpful, harmful, or a non-issue when it comes to our flight operations. As we currently understand them, I can't say that they will be helpful. I can say that if the new environment created by these rules (without modification from their present form) compromises our ability to renew our current Part 103 exemptions and seek additional exemptions, these rules may be quite harmful to our sports.

Be assured that we have been and continue to be intimately involved in this process, and are acutely concerned about the implications of the potential rules when it comes to aerotow operations, two-place training, and hang gliding and paragliding in general. We will scrutinize the details when they are released, and are already formulating plans to conference with other ultralight groups in order to compare notes and coordinate our responses to the proposed rules. If and when a full-blown letter-writing campaign by our members is needed, we will certainly let you know. We will communicate this through notices in our magazines and on our website, and by e-mail to various people to get the word out. Once the proposed rules are issued we will only have 90 days to analyze them, coordinate with other aviation groups, inform our membership of the USHGA's position, and encourage our members to submit comments to the FAA by the deadline. We will provide our membership with information about what we feel are the key issues to be addressed in response to the NPRM, along with the most effective arguments that can be made for the changes we would request be made.

Having participated in the process and knowing what the FAA has been willing to say so far in their Sport Pilot briefings this spring and summer, I can say that the proposed new rules will certainly go far beyond the United States Ultralight Association's (USUA's) original request for some modest modifications of Part 103, which would provide for increased weight and speed, more fuel, and some provision for two-place operations. It was obvious to us that the representatives from the FAA had some agenda in mind concerning what they generally wanted the ARAC process to recommend and not recommend. The FAA insisted that representatives from the lighter end of general aviation be involved in the ARAC process. Often, people with an exclusive interest in ultralights were a minority at these meetings. In addition, the ultralight community became concerned that if we strongly recommended that Part 103 be changed (thus opening the door to 103 modifications, and given the legal climate and pressures for breathing life back into general aviation), the FAA and/or DOT might significantly erode the freedoms we do have under Part 103. That is why no changes to Part 103 were ultimately recommended by the ARAC to the FAA.

The USHGA has been intimately involved in the ARAC process, and influenced the proposed rules as much as possible. For example, we got the ARAC proposal to specifically recommend permitting towing. However, the FAA has indicated in their briefings that the proposed rules will prohibit towing of any object. Once the FAA goes behind closed doors to draft their proposed rules, there is little we or anyone can do to affect the resulting NPRM. This is called the *ex parte* phase of the rulemaking process, and the agency is legally prohibited from discussing details of the rules with anyone outside the government. This is why we are all awaiting the specifics when the NPRM is

released for comment.

During the drafting of ARAC recommendations, the USUA, the Popular Rotorcraft Association (PRA) and the USHGA all issued minority or dissenting opinions about the ARAC recommendations, and these were required to be included in the draft document. The USUA basically stated that the ARAC recommendations went far beyond what they had requested (for example, they weren't asking for a new rule that would cover planes weighing up to 1,200 pounds or that could fly 150 miles per hour), and were not appropriate for the demonstrated needs in their original request. PRA had similar concerns, and questioned the safety merits of this rule concerning aircraft with much higher energy (weight and speed).

USHGA stated that the recommendations would not work for our sports, because the economics of certificating low cost, low-volume, aerotug-type vehicles and two-place gliders (hang gliders or paragliders) would be cost prohibitive, and the industry would and could not comply with FAA Primary Category certification requirements (upon which the whole Sport Pilot concept originally hinged on the aircraft side of the equation). Therefore, the new rules would not alleviate our need for Part 103 exemptions. To the extent that the new rules would restrict our ability to secure those exemptions in the future (the FAA has indicated that they want to eliminate as many exemptions as possible), our sports could be significantly harmed by the new rules. The opinions were seen by reviewers within the FAA, and we made these points to those on the ARAC committee from the general aviation world who were pushing hard for the Sport Pilot proposals. The minority opinions were negotiated out of the final ARAC recommendations, but the points had been made.

I think that our issue concerning the prohibitive cost of certificating aircraft under Primary Category rules, the fact that only one model of sport plane has ever been certificated under these rules (and this manufacturer filed for bankruptcy protection), and stronger fiscal pressures, all helped the FAA grasp the notion that they needed to drastically rethink the certification of aircraft from what ARAC recommended, otherwise, the Sport Pilot certificate would end up like the FAA Recreational Pilot certificate, created a dozen years ago, and end up being a mostly useless license. The original Sport Pilot proposal was predicated upon flying Primary Category-certified aircraft, and there basically aren't any, or likely to be many, so what good would the license be? Their recent briefings propose a whole new aircraft certification method that appears to be less costly for manufacturers to comply with. They are also proposing a new category of experimental aircraft to grandfather all the overweight ultralights currently flying, but until the final wording is released and carefully analyzed, we won't know the likely certification economics.

We suspect that, with modification, the proposed rules might be quite useful in bringing some of our aerotowing operations that employ heavy ultralight tugs into a more legal operational status. However, we are concerned that the rules may offer no benefit for two-place operations, and if the mere existence of these new rules compromises obtaining exemptions, we could be significantly harmed by them if enacted in their alleged current form. As soon as possible we'll communicate our conclusions and request your support as we engage these possible new Federal Aviation Regulations.

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I, _____
(Print Your Full Name [and company name if applicable])

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Hereby agree as follows:

(1.) I acknowledge that “Powered Paragliding Flight Activities”, as used in this document, includes all activities of any nature whatsoever that occur at any flight center, whether designated as a flight center or not, that is utilized by the referenced parties hereto, and includes any activities performed in conjunction with, or use of, equipment manufactured, demonstrated or sold by REVOLUTION FLIGHT SCHOOLS, which shall include Non-Powered Paragliding Flight Activities. [_____]
initial

(2.) Even though Powered and Non-Powered Paragliding Flight Activities are advertised and are believed to be one of the safest forms of flight today in the opinion of REVOLUTION FLIGHT SCHOOLS, I understand and acknowledge that both Powered and Non-Powered Paragliding Flight Activities have inherent dangers that no amount of care, caution, instruction or expertise can totally eliminate and I expressly and voluntarily assume all risk of death or personal injury sustained while participating in Powered and Non-Powered Paragliding Flight Activities, including the risk of negligence and misfeasance and malfeasance on the part of the Released Parties hereinafter described; or hidden, latent or obvious defects at the flight center(s) or in the equipment or aircraft used, rented, sold or purchased. [_____] *initial*

Please write in long hand the above underlined portion of paragraph (2.):

(3.) In this regard, I hereby forever RELEASE AND DISCHARGE REVOLUTION FLIGHT SCHOOLS, Revolution Paramotors, Sky Paragliders, and all their officers, directors, agents, employees, instructors, pilots, dealers and sub-dealers, all powered and non-powered paraglider instructors, advisors and ground personnel, the owners of the aircraft and land utilized for both Powered and Non-Powered Paragliding Flight Activities, their agents, employees and servants, (hereinafter collectively referred to as "Released Parties") from any and all liabilities, claims, demands or causes of action that I may hereafter have for injuries (including death) or damages arising out of my participation in Powered and Non-Powered Paragliding Flight Activities, including, but not limited to, losses CAUSED BY THE PASSIVE OR ACTIVE NEGLIGENCE OF THE RELEASED PARTIES or hidden, latent, or obvious defects at the Flight Center(s) or in the equipment or aircraft used, rented, sold or purchased. [____] *initial*

(4.) I further release and discharge the Released Parties insofar as it is possible to do so under applicable law, of any duty of care whatsoever toward me. This release and discharge from duty includes a release from liability for conduct, actions and activities that I do not foresee or anticipate at this time. This release from liability and discharge from duty is intended to be as full and complete a release from liability and discharge from duty as it is possible to make under the applicable laws and is intended to be binding upon not only myself, but also upon my estate, heirs, distributes, devisees and assigns. [____] *initial*

(5.) I further agree that I WILL NOT SUE OR MAKE A CLAIM against the Released Parties for damages or other losses sustained as a result of my participation in Powered and/or Non-Powered Paragliding Flight Activities. [____] *initial*

I also agree to INDEMNIFY AND HOLD THE RELEASED PARTIES HARMLESS from all claims, judgments and costs including attorney's fees, incurred in connection with any action brought as a result of my participation in Powered and Non-Powered Paragliding Flight Activities, including but not limited to losses CAUSED BY THE PASSIVE OR ACTIVE NEGLIGENCE OF THE RELEASED PARTIES; or hidden, latent, or obvious defects of the Flight Center(s) used or in the equipment or aircraft used, rented, sold or purchased. [____]

(6.) I have been advised and recognize that my Powered or Non-Powered Paragliding Flight Activities may not be covered by any PERSONAL accident or general liability insurance policy issued to me or to the Released Parties and that even if the Released Parties have or obtain insurance coverage, this release is intended to deny me any benefits under such policy or policies. I hereby also acknowledge that REVOLUTION FLIGHT SCHOOLS does not have any insurance coverage whatsoever that will benefit me. [____] *initial*

(7.) I understand that because of the many unavoidable and unprecedented dangers involved in Powered and/or Non-Powered Paragliding Flight Activities, the Released Parties are making no warranty of any kind, express or implied, concerning any and all equipment, aircraft, or facilities or instructions provided by the Released Parties. Powered and Non-Powered Paragliding Flight Activities can be dangerous and associated equipment such as PARACHUTES, PARAGLIDERS

AND ENGINES DO NOT ALWAYS WORK OR PERFORM the way that they are expected to function. [_____] *initial*

(8.) I understand that the Powered and Non-Powered Paragliders provided by or sold by the Released Parties are provided without any warranty that they are fit to use for any purpose whatsoever. They are provided without any warranty of merchantability or airworthiness. The approval for use of any equipment by the Released Parties is not a warranty that the equipment is suitable for any purpose, but merely an opinion by them. I understand these disclaimers and I accept them. [_____] *initial*

(9.) I understand that because of the nature of Powered and Non-Powered Paragliding Flight Activities, it is impossible for anyone to determine with any degree of certainty that I have been properly trained to participate in this sport or that I have fully grasped and comprehended the instructions presented to me. Furthermore, it is impossible for anyone to predict how I or others will react under the conditions and stresses that are inherent in Powered and Non-Powered Paragliding Flight Activities. For that reason I understand that there is no warranty whatsoever as to the adequacy of training provided to me by the Released Parties and I understand that after my training I WILL BE THE SOLE JUDGE as to whether or not I am ready to fly solo. Furthermore, this judgment will be based upon my own evaluation of the training I have received, and, should I choose to fly solo upon the completion of my training, it will only be because I believe that I have been adequately trained and that I can safely perform Powered and Non-Powered Paraglider solo flights and cope with the conditions and stresses of Powered and Non-Powered Paraglider Flights. By signing this agreement I hereby inform the Released Parties of this. [_____] *initial*

(10.) I acknowledge and agree that no one course, instructor or book can teach me everything there is to know about flying a powered or non-powered paraglider and that I only expect to learn from instruction provided by the Released Parties, should I complete their ENTIRE training course, the BASIC SKILLS and knowledge necessary so that I can fly and practice flying on my own without direct flight instructor supervision. I acknowledge and agree that upon completion of their ENTIRE training course I will still have more to learn and hereby acknowledge and agree that before I will use a Powered or Non-Powered Paraglider unit unsupervised, I will obtain at least a P2 or “Novice Rating” or its equivalent issued by the United States Hang Gliding Association (USHGA) and that the Released Parties are hereby authorized to accept my word that I have such a rating or will obtain one prior to any unsupervised flight activity on my part. I further acknowledge and agree that I will NEVER fly a Powered or Non-Powered Paraglider solo, unsupervised, until I have completed an ENTIRE training class and obtained at least a Class 1 paragliding license or its equivalent. [_____] *initial*

I also acknowledge and agree that I will not allow anyone else, including my family, friends and acquaintances, to use or operate my equipment unless they are also qualified to use or operate same and hold at least a P2 or “Novice Rating” or its equivalent issued by USHGA. Lastly, I agree that I will not sell, give, or trade my equipment to someone who is not so qualified or licensed unless said person promises, in writing, to obtain said rating prior to flying solo with my equipment. [_____] *initial*

(11.) I specifically agree that I have inspected the land facilities, equipment, aircraft and/or Powered and Non-Powered Paragliders at the Flight Center(s) that will be used by me and that their suitability for use has been determined SOLELY AND ULTIMATELY BY ME. I acknowledge that virtually all Flight Centers and/or land facilities contain such dangerous objects as trees, fences, power lines, hills, streams, buildings, rocks, vehicles, hidden holes, uneven terrain, clods of dirt, poisonous snakes, dangerous animals/birds, and many other natural and manmade objects that can cause injury

to me during flight and/or upon landing. Furthermore, I understand that if I fly in the vicinity of other flying aircraft, or in the vicinity of an active aircraft runway, and that if I land or take-off near a taxiing aircraft my Paraglider may be struck by the aircraft or by the turbulence created by the aircraft both in the air and on the ground and I assume the risk of injury or death should such happen. I also understand that even under the best conditions, take-offs and landings can be an extremely dangerous activity and injuries or death can occur. Based upon my independent evaluation of all of the risks, I REAFFIRM MY ASSUMPTION OF THE POSSIBLE EXTREME RISKS AND DANGERS SET OUT ABOVE. [_____] *initial*

Furthermore, I understand and acknowledge that whenever an aircraft, of any type, relies upon air to remain stable and airborne it is subject to sudden and sometimes unforeseeable changes in air currents which, if severe enough, may result in the death or injury of the pilot regardless of the pilot's skill level. I REAFFIRM MY ASSUMPTION OF THIS POSSIBLE EXTREME RISK AND DANGER AS WELL. [_____] *initial*

(12.) I understand that Powered and Non-Powered Paragliding Flight Activities involve TRAVEL IN THREE DIMENSIONS and that such activities are subject to MISHAPS, INJURY OR POSSIBLY EVEN DEATH; therefore I again reaffirm my voluntary assumption of all of the risks of engaging in Powered and Non-Powered Paragliding Flight Activities and I again forever release and discharge, insofar as it is possible to do so under the law, the Released Parties in this agreement from any duty of care whatsoever to me. [_____] *initial*

(13.) I hereby certify that I have consulted MY OWN PHYSICIAN to determine whether or not I am physically fit and able to participate in Powered and Non-Powered Paragliding Flight Activities and that I hereby certify that I do not suffer from any physical infirmity or chronic illness, including hearing problems or vision problems, which would affect my ability to engage in both Powered and Non-Powered Paragliding Flight Activities. I have informed my physician that Powered Paragliding involves wearing a motor unit on my back like a backpack, which unit may weigh up to ninety five (95) pounds. I further certify that within the last twelve (12) hours prior to every flight I will not take any regular medications or consume any alcoholic beverages or drugs. I also acknowledge that it is against Federal, State and Flight Center rules and regulation to take either alcohol or drugs before engaging in Powered or Non-Powered Paragliding Flight Activities. [_____] *initial*

(14.) As part of the consideration for my being allowed to utilize the facilities of the various flight centers or land facilities or services of the various flight trainers and to participate in Powered and Non-Powered Paragliding Flight Activities, I PROMISE NOT TO SUE any of the Released Parties for any cause of action whatsoever. FURTHERMORE, I realize that the damages to the Released Parties for my breach of this promise are uncertain and difficult to establish and that in the event I breach this promise, I agree that the LIQUIDATED DAMAGES THAT I WILL BE LIABLE TO PAY TO EACH OF THE RELEASED PARTIES NAMED IN ANY LAWSUIT I MAY BRING IS FORTY THOUSAND DOLLARS (\$40,000.00) for each named defendant. [_____] *initial*

(15.) I agree that the amount of \$40,000.00 as described in paragraph number 14 above is not a penalty, but is rather an estimate of uncertain damages. I further agree that this provision for liquidated damages shall apply to any action in which I am required to indemnify the Released Parties, such as a wrongful death action brought by my heirs or estate representatives. These liquidated damages shall be due and payable immediately upon the filing of any lawsuit or demand for arbitration and irrespective of the outcome. [_____] *initial*

(16.) I certify that considering my life style and the manner in which I am supporting my dependents, I have made adequate provisions for my spouse, if any, my children, if any, my heirs, if any, and all other persons dependent upon me so that in the event of my death or serious disability, suffered as a result of my Powered (or Non-Powered) Paragliding Flight Activities, they will be adequately cared for. [_____] *initial*

(17.) I further agree that in the event that I, or my estate representative(s), or any other person or party, have a claim whatsoever against any of the Released Parties arising out of my Powered and Non-Powered Paragliding Flight Activities, including a claim for personal injuries or wrongful death, that it must and will be brought in an appropriate court in the State of Utah, County of Salt Lake, and that the trial will be without a jury. I further agree that the filing of a lawsuit against any one or more of the Released Parties will cause the liquidated damages specified in Paragraph number 14 above to be immediately due and payable. [_____] *initial*

(18.) It is further specifically agreed by me that venue and jurisdiction of any action arising out of any matter which is NOT the subject of this document shall be in an appropriate court in the State of Utah, County of Salt Lake, and that same shall also be before a judge only, trial by jury being specifically waived by me. [_____] *initial*

(19.) I agree that in any matter wherein the terms of this agreement must be interpreted according to law, that the law that the deciding body must look to will be the law of the State of Utah, except for its conflict of law provisions. [_____] *initial*

(20.) I agree that no one has to engage in POWERED AND NON-POWERED PARAGLIDING FLIGHT ACTIVITIES, and that I do so for my own personal reasons and not because of any pressure from anyone other than myself. [_____] *initial*

(21.) This agreement and release is intended to be a continuing agreement and release and shall remain in effect at any and all times that I am engaged in Powered and Non-Powered Paragliding Flight Activities whether here or at any other location. [_____] *initial*

(22.) It is specifically agreed that should any arbitration panel or court decide that any of the clauses contained within this agreement are invalid or against public policy that the remaining clauses and terms shall be valid and remain in full force and effect to the fullest extent allowed by law, and that the clause(s) struck down by said panel or court shall remain in effect to the fullest extent permitted by law. [_____] *initial*

(23.) I specifically agree and acknowledge that this Agreement sets forth the entire agreement between me and the Released Parties and that all prior representations, promises, statements, claims, warranties, advertisements or other information given to me by the Released Parties, their agents, officers, servants or independent contractors, both oral and written, are hereby merged into this Agreement and that this Agreement shall hereby fully express the intention of the parties and control the relationship between same, and that the Released Parties shall not be liable or bound in any manner by express or implied warranties, guaranties, statements or representations pertaining to said prior representations, promises, statements, claims, warranties, advertisements or other information given to me by them unless set forth in this Agreement. [_____] *initial*

I HAVE CAREFULLY READ THIS AGREEMENT AND RELEASE OF LIABILITY. I FULLY UNDERSTAND ITS CONTENTS AND SIGN IT OF MY OWN FREE WILL. I UNDERSTAND THAT BY SIGNING THIS AGREEMENT I HAVE FOREVER GIVEN UP IMPORTANT LEGAL RIGHTS.

I FURTHER UNDERSTAND AND ACKNOWLEDGE THAT ULTIMATE RESPONSIBILITY FOR MY OWN SAFETY SHALL ALWAYS REMAIN WITH ME, THE PILOT!

Printed Name: _____

Signature: _____

Date: _____

(Married participants are highly encouraged to have their spouse read and sign this agreement as the witness.)

Printed Witness Name: _____

Witness Signature: _____

Date: _____