

# Skydiving™

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## USPA Board of Directors Meeting Held

The USPA Board of Directors met in Washington, D.C., for three days last October in a regular meeting to plan the organization's goals and activities for 1980. Although observers call the meeting "businesslike" and "quiet," the board made several significant decisions in the areas of competition and member benefits.

Reacting to a proposal submitted by the Zephyrhills (Fla.) Parachute Center, the board endorsed the idea of the U.S. hosting the 1981 World Championships of Relative Work. It instructed its delegate to the International Parachuting Committee, B.J. Worth, to ask the CIP to award the meet to the United States.

Although most of the details will be resolved in a contract between the parachute center and USPA, the board made it clear the meet would be planned and conducted at no cost to USPA.

The CIP meets in early 1980 and will pick the site of the meet then. Argentina has also formally expressed an interest in hosting the championships. The U.S. last hosted an official world championships in 1972 when the style and accuracy world championships were conducted in Tahlequah, Okla.

The USPA board also decided to return to Richmond, Ind., in 1980 for the U.S. National Parachuting Championships. Although several other drop zones, including Tahlequah and Space-land, Tex., had expressed an interest in hosting the meet, Richmond got the nod because it has more extensive facilities and a more comprehensive bid.

The 1980 Nationals will start with the individual events on June 25, followed by the Boogie on July 2-6 and finished by relative work competition that will last from July 7 to July 15. Aircraft will be the same as in 1979. It was felt that "sandwiching" the Boogie between the



Jumpers prepare to exit an AN-2 biplane over Southern Cross Paracenter, Downsville, Maryland.

two competitive portions will increase the number of jumpers who attend.

One major change to the rules for the Nationals is that now the judges may review the video record of a style or RW jump at the request of the competitor after the official score is posted. This "pre-protest" procedure was recommended by Judge Mike Grady after the 1979 Nationals. (At that meet, the video

*(continued on page 2)*

## California Drops Jump Laws

The state of California surprised the parachuting community last month by deciding to get out of the business of regulating the sport. Governor Brown signed a bill on September 7 that deleted the provisions of the law that authorized the state to regulate parachuting. The law goes into effect on January 1, 1980, and until that date jumpers and drop zone operators will have to continue to comply with the troublesome regulations.

California was one of the first states to begin regulating jumpers when it passed its law back in 1961. The law, amended several times in subsequent years, required that any parachute jump in California be made only into a drop zone that had been approved in advance by the Department of Transportation.

Not only did drop zone operators have to apply for a drop zone permit each year and meet a long list of requirements, but demonstration jumpers had to seek permission for each and every demo jump they made. Fees, identification cards and insurance requirements were all involved.

Although the purpose of the law was to protect the safety of the parachutists and people and property on the ground, the California Division of Aeronautics

reported to the legislature this year that it had no evidence the law was fulfilling that purpose. It also reported that deleting the law would save the state about \$10,000 a year.

A bill was introduced in March to delete the provisions of the law. It passed through the legislature relatively easily since it was endorsed by the Division of Aeronautics.

## FAA to Propose Another NPRM

The FAA expects to issue a notice of proposed rule making this month on a new Part 125 of the Federal Aviation Regulations. The rule would require operators of aircraft capable of carrying 20 or more passengers of 5,000 pounds of cargo to obtain operating certificates and adhere to stricter regulations.

The NPRM is designed to give the FAA more clout in dealing with safety violations of operators of such equipment, particularly out-of-production aircraft such as Lockheed L-18s, DC-3s and DC-4s. But, depending on the exact wording of the NPRM, the proposal could affect operators of some of the larger current production business jets.

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## Board Meeting

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tapes could not be reviewed after the official score was posted, even in the event of a protest and even if the judges themselves agreed such a review would be helpful.)

Competition-oriented jumpers endorsed the proposal strongly, feeling it will allow the video to be even more effective in helping the judges than it was in 1979.

The board is also considering eliminating a separate category for women in the individual events, and the subject will be discussed at their next meeting. The idea was prompted by the fact that Cheryl Stearns posted an overall score at the 1979 Nationals that was better than the best men's score. There is no separate category for women in relative work.

This sentence was added to the accuracy rules regarding the use of an electronic scoring pad: "If the observing judges unanimously agree that the electronic scoring device gave an erroneous score, they may grant a rejump to the affected competitor." This allows the judges to overrule the electronic pad because the devices are not 100% accurate and malfunction occasionally.

The board also approved an increase in membership dues effective March 1, 1980, to \$24 for a new one-year membership and to \$22 for a renewal. The dues were last increased in 1973.

The board also approved a new insurance plan for USPA members. It provides \$250,000 public liability and public damage insurance for each member. It also has provisions for extra coverage for demonstration jumps for an additional premium. \$55 per day is a typical figure.

The insurance package has two other optional programs, PD/PL insurance for riggers and for USPA-affiliated parachute centers and clubs. The center insurance will be available with several coverage options and premiums will be based on how many days a week the business is open. Minimum cost will be \$700 per year, while a seven-day-a-week operation would pay \$3,060.

Liability insurance for riggers will be offered only to FAA Master Riggers and to those FAA Senior Riggers who are

"actively employed" by a USPA affiliated center. Premiums have not been finalized, but they're expected to be \$95 to \$125 a year.

Liability insurance for parachute centers (and for clubs that in effect operate as centers) has not been available in the U.S. for some time, and the success of the USPA staff in securing the coverage is a significant accomplishment.

Responding to recommendations by the USPA Safety and Training Committee, the board considered the current interest in making parachute jumps off "fixed objects" — cliffs, bridges and so forth. On one hand, the group didn't want to condemn an activity without adequate information, nor did it want to recommend its members participate in something that might be dangerous, illegal, or both. Input was provided by two members of the board who have jumped off El Capitan in Yosemite National Park.

In the end, the USPA adopted this position:

"USPA considers jumps using parachutes from fixed objects such as cliffs, buildings and bridges to be stunts, much like those done for the movie industry. We recognized that the risks can be somewhat minimized, but such jumping may be significantly more dangerous than parachute jumps made from an aircraft in flight in accordance with the USPA Basic Safety Regulations.

"This stunt activity is relatively new, and input from those who have made such jumps has convinced the USPA Board of Directors that the activity cannot be endorsed at this time."

Other actions by the board included adopting a budget for 1980 and reports on a myriad of projects currently underway. The board will meet again in Salt Lake City in April, 1980.



These two photos provide a striking illustration of how "miniturized" equipment has become in the past few years. Mike Kessler on the left models a 1971 Security Piggyback containing a Security Thunderbow and 26' Lopo. Ron Johnson is wearing a new Relative Workshop Wonderhog II with a Para-Flite Cruisair and Advanced Air Preserve III.



## Collegiate Nationals Set for Arizona

Tony Frost of B&F Enterprises has announced that the 1979 National Collegiate Parachuting Championships will be held at his company's center in Marana, Ariz., during the last week of December.

The drop zone is located at Marana Air Park about 90 miles from Phoenix and 20 miles from Tucson. It has a 100-foot pea gravel target, several large paved runways, indoor and outdoor packing areas and a hotel located on the airport. Marana has been the site of both the U.S. National Championships and the National Collegiate Parachuting Championships.

Frost told *Skydiving* that the weather should feature "absolute blue skies," with daily highs in the 70s and nightly lows in the 30s. He said there is about a 4% chance of rain during the entire month of December.

Frost also said Marana offers the country's only skydiving hostel where a jumper can pay as little as \$7 a night for a clean bed and a hot shower. Camping is also permitted on the airport.

Single-engine Cessnas and Twin Beeches will be used as jump aircraft. December 27th has been set aside for official practice, followed by three days of competition. December 31 will be used to complete the competition of weather prevents the completion of the meet by the 30th.

The meet is sponsored by the National Collegiate Parachuting League of the USPA. Fulltime undergraduate and graduate students are eligible to enter, providing they meet certain age, number of jumps and time in sport requirements. There are three events — style, accuracy and 4-way relative work — in several classes based on experience.

A complete set of the rules and more information may be obtained from the NCPL, 806th 15 Street NW, Suite 444, Washington, DC 20005. The drop zone's address and telephone is Marana Airpark, Marana, AZ 85238, (602) 682-4441.



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Parachuting's Newsmagazine

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# Raeford DZ Prepares for S&A Visitors

Gene Paul Thacker, operator of the Raeford Parachute Center in North Carolina — a drop zone widely known for the style and accuracy competitors that train there — reports that several top American competitors are no longer training. He also said a large number of foreign jumpers are coming to the U.S. in the next several months to sharpen their skills, as 1980 is the year of a World Style and Accuracy Championship.

Thacker has received over 70 applications from individual competitors from all over the world. Most jumpers in-

dicating the desire to spend several weeks of intensive training at Raeford.

But there doesn't seem to be the same enthusiasm from some of the top-notch American style and accuracy competitors. Thacker noted the absence of Mark Limond, Roy Hatch, Jimmy Hayhurst and Dennis Wise at the 1979 U.S. Nationals, and says they "aren't even practicing." He attributes this decline to the U.S. Team leadership at the 1978 world meet, which he said was "so bad it discouraged a lot of top-level competitors from pursuing it further." Blaming himself as well as several others

for the problem, he's not sure what it will take to remedy the situation.

Thacker doesn't see a slackening of interest among the general ranks of style and accuracy enthusiasts, however. The Carolina Parachute Council held five regional meets this year, and each one was well attended. The competitions conducted by the council enjoy a reputation for being well run; this year they featured video judging and electronic scoring pads.

The parachute center itself is doing well. Its Lockheed 10E, lost to an engine fire on the ground several months ago,

has been sold to the Wings and Wheels Museum of Orlando, Fla., where it will be on display after a major restoration. This aircraft, similar in appearance to but slightly larger than a Twin Beech, was the sister ship of the one flown by Amelia Earhart. It has been replaced by a Twin Beech for the relative workers, with Raeford's fleet of Cessnas used primarily for students and individual competitors. Thacker reports that "a lot of jumping happens at Raeford."

The center also has a ground-to-air video, built by Bob Howard and Larry Riddle from nearby Winston-Salem. The unit was used to judge style during the 1979 nationals, and is a free service offered to students, competitors and relative workers.

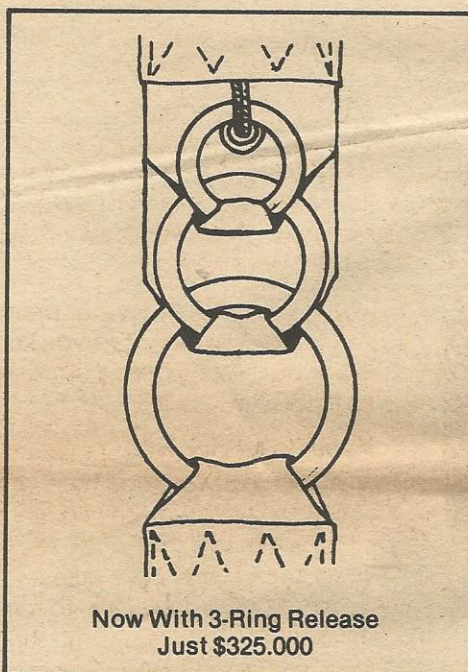
Four 4-way teams are currently training at Raeford to take advantage of the video system and other facilities.

Raeford is located near Ft. Bragg army base and the city of Fayetteville.

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## Buena Vista DZ Opens in Colorado

Colorado now has five drop zones with the opening of the Buena Vista DZ in early September. Operated by Bill Cabot and Jay Bird, the new DZ is open every other week, using a turbocharged Cessna 206 leased from a Denver pilot. Located in the mountains of Colorado, the drop zone has fine scenery, but jumping is essentially limited to 7,500' AGL altitudes: the DZ is 8,000 feet above sea level and even turbocharged aircraft begin to run out of climbing ability above 16,000 MSL.

Buena Vista becomes the country's second highest drop zone as it is 1,000 feet higher than Steamboat Springs but 950 lower than Crested Butte, two other high altitude jump centers. The two Denver-area centers, Longmont and Littleton are also pretty high — 5,000 MSL.

Because jumping at Buena Vista is not scheduled for every weekend, visitors should call the managers at (303) 395-8536 before traveling.

## Waight Wins MEPA Circuit

Dave Waight of Lemoyne, Penn., is the 1979 Mid-Eastern Parachute Association Accuracy Champion. Finishing first over a field of 35 competitors in a three-meet circuit, Waight earned a certificate for a Para-Flite canopy of his choice.

The final meet, held in Maytown, Penn., on October 6-7, saw jumpers fighting 20 mph winds in their attempts to land on the disc. "There were better accuracy jumpers than me at that meet — I just handled the winds better," explained Waight.

## Corrections & Clarifications

GQ Security Parachutes manufactures hang gliding parachutes that are distributed by Flight Designs, Inc., of Salinas, Calif. Issue #4 of *Skydiving* incorrectly identified the distributor.

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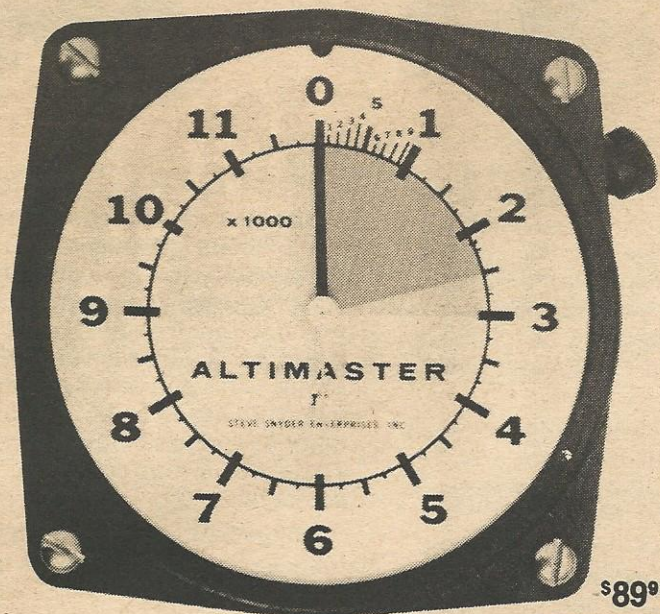
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# CPI Picks Student Tandem from Strong Enterprises

A spokesman for the Connecticut Parachutists, Inc., an active club that runs a drop zone near Ellington, Conn., reported that the club has decided to buy "16 to 18" Student Tandem harness/containers from Strong Enterprises. The club evaluated that rig and the Jump Shack's Model T student rig as it wanted to replace its present novice equipment with modern gear.

A deciding factor, according to the club officer who talked with *Skydiving*, was the "universal handle" incorporated into the Student Tandem's design. Pulling the first cuts away the main risers and then extracts the reserve ripcord

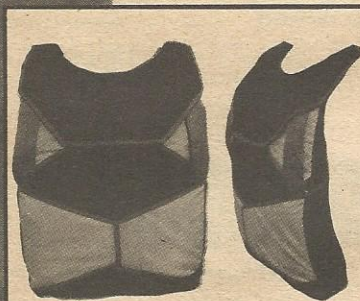
pins. This means that the jumper has the same response — pulling one handle — regardless of the type of malfunction. With the Model T, the jumper must activate the canopy release system independently of the reserve ripcord if a breakaway is desired. The CPI spokesman felt the simpler operation of the Student Tandem overrode the concern that the design is somewhat more radical and unproven than that of the Model T.

"We were more concerned with what the student would do to screw up. We became convinced that there was a greater chance of a novice 'pulling the



A front and rear view of the Strong Enterprises Student Tandem. The main container is filled with a static-lined 35' T-10 military surplus canopy. The breakaway/reserve ripcord handle is located on the jumper's left main lift web, while a dummy ripcord handle has been put in the main ripcord pocket on the jumper's right.

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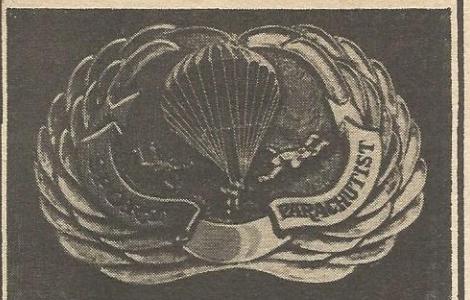
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RON URTON

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*B. J. Worth*  
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Mirror Image,  
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Champions  
in the  
8-way event.



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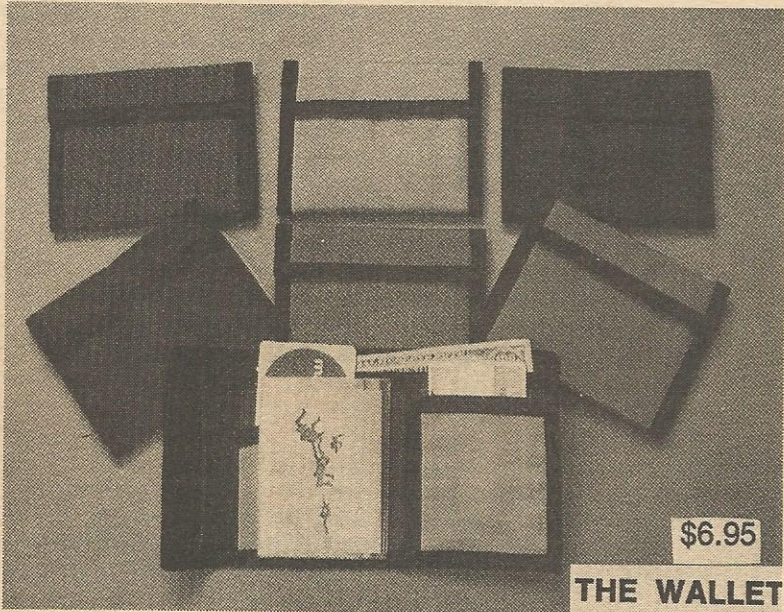
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8/Skydiving, October 27, 1979

**Django Enterprises "Pegasus" Described**



CHARLES J. BURNETT

Django Enterprises, a company owned by Mike Furry of Atlanta, is offering a 7-cell canopy it calls the Pegasus. At about 220 square feet, the canopy is larger than a "mid-size" canopy such as the Para-Flite Cruisair or the GQ Security Unit (both about 200 sq. ft.) but smaller than the Para-Flite Strato-Cloud and Pioneer Viking (at about 230 sq. ft. each). Dimensions are about 10.5 x 21 feet. Weight with risers and bag is 8½ lbs., and packed volume is reported to be "considerably smaller" than the Para-Flite Strato-Flyer, a lightweight 5-cell canopy. Furry expects an additional reduction in weight and bulk as he's beginning to use F-111 fabric from George Harris Corporation.

Furry estimates the glide angle of the Pegasus to be 4.2 to 1, since he reported his canopy will outglide a Unit with the same forward speed. (Most jumpers learn to doubt a manufacturer's claims of exceptional forward speed and glide until they have had an opportunity to jump the canopy themselves. Performance figures are difficult to measure exactly.)

The company also said the canopy is "very good for accuracy because it is very stable in the sink." Openings and landings are also said to be very soft.

The 220-sq. ft. model of the Pegasus used to be called the Pegasus Pony to differentiate it from a 268-foot model the company used to make.

A Pegasus has a suggested retail price of \$670, with 3-ring risers as standard. Current production rates are about 2-3 canopies per week, and Furry estimates a delivery time of three weeks. The company's address is 64 Long Island Place NW, Atlanta, GA 30328.

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# "Upside Down" Meet Held in Wisconsin

After being exposed to the idea during a trip through Idaho, Barb and Dave Callantine returned to their drop zone in East Troy, Wisc., and organized the Midwest's first upside-down parachute meet on September 15 and 16. The East Troy Skyknights Parachute Club hosted the event, which was run from a cargo-door Twin Beech.

The rules of the meet were simple but unique: A team would exit and build a regular maneuver, such as an accordion, and earn one point. Then the formation would separate, each member would turn upside-down, and the team would attempt to rebuild the formation by having each jumper fly in upside-down. Each jumper that docked would

score a point, so building two formations — the first one and the same formation upside-down — would earn a team five points.

The Callantines entered a similar meet in Idaho. Barb reported that "we were very inexperienced, but going upside-down after each formation made the meet more unpredictable and fun."

Three rounds were run. The What's Up? team won with a total of 19 points. The team consisted of Jamie Garard, Wes Colker, Scott Belasco and "Charlie." Dago's Job was second with 14 points — Mike Tomassini, Diana Phillipie, Jim Grigus, and Bob Mushinsky. I Don't Know — Zee Kampsted, Dave Trebilco, Bill Watson, and Clyde

Brumfield — was third with 13 points. Fourth place went to Mike Starck, Don Nord, Pierce Smith and Bruce Carter who formed a team called Not Yet and scored 10 points.

The meet was over late Saturday afternoon. Some 16 people — jumpers, pilots and friends — then spent much of the night earning Mile High Club wings.

Jamie Garard reported that the meet allowed inexperienced jumpers to compete on equal footing with more experienced skydivers. Everyone enjoyed it, as it was both challenging and fun.

Plans are being made to host the meet again next year.

## Big Sky Films Readies Movie on Mirror Image

"Rainbow Magic," a new 16mm film produced by Big Sky Films of Whitefish, Mont., may soon be available. Camera-man and Co-Producer Rande DeLuca reported that negotiations are currently in progress for rights to the contemporary music used to score the 12-minute film. If negotiations fall through, the film will be rescored and then made available for purchase or rental. Price of the movie, to date seen only at the Nationals, will be \$250.

The movie shows practice dives made by the Mirror Image 8-man team before the Nationals this year. The team won their event at both the Nationals and the world meet last August.

## 8-Stacks Built in Canada & England

Tom Courbat, the administrator of the CRW award program, reports that several big canopy stacks have been built recently.

The first 8-stack in Canada was built on August 26. Participants, in order from the top of the stack included Larry Schroeder, Brian Lacey, Dave Evans, Russell Cork, Chuck Earl, Vic Borghese, Rick Kotanko and Allan Miller.

Jumpers in England built the first 8-stack there on September 16. Names of the jumpers are not yet available.

Courbat also reported that 51 jumpers have earned their CCS award by docking 8th or later on a stack while over 170 jumpers have received the CCR award by participating in a stack that built to eight or larger.

## Kellner Logs 5000

Don Kellner of Drums, Penn., recently made his 5,000th jump at the Hazelton, Penn., drop zone he operates. Kellner has been jumping since the mid-1960s, makes many jumps at his DZ and during local exhibitions, but "seldom comes out of the woodwork" to mingle with other jumpers at big events, according to one Pennsylvania skydiver.


## Robinson Jumps from Building

Stuntman Dar Robinson parachuted off the CN Tower in Toronto on September 21 as a stunt for the film "Highpoint" which is being shot in that city. He freefell for about six seconds before opening his round reserve for an uneventful landing.



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*Skydiving, October 27, 1979/9*

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# CPI Meet Combined Style, Accuracy & RW

Connecticut Parachutists, Inc., hosted what it called "The Total Awareness Meet" on the weekend of September 15 and 16 at its drop zone near Ellington.

The competition featured a unique event that combined relative work, style and accuracy — all on the same jump. This event consisted of three rounds. Round one was called a left series by the hosts and went like this:

Each team was formed by two jumpers. After an "anything goes" exit, a 2-man star was built. The 2-man broke and each jumper performed a left turn, followed by another star. The star

was broken again so each member could execute a right turn, then back to the 2-man, then a backloop, and back to the star again.

A complete series, then, required the building of four 2-man stars and the performance of two turns and a back loop. The jumps were performed from 7,500 feet, with the judges' stopwatches starting at the initiation of the first turn after the first backloop and stopping when the fourth star was built. Maximum working time was 25 seconds.

The jump wasn't over, however, as each jumper then made an accuracy approach for the disc.

Although the meet was planned as

"backyard fun competition," according to a spokesman for the club, some competitors traveled from as far away as California. There were some protests, too, as apparently the hosts didn't foresee all the possible problems with running the new event. Still, the meet was considered "very challenging and very successful."

The club also conducted a novice and an intermediate accuracy event for those jumpers who were relatively inexperienced.

In all, ten teams entered the master category of the new event, with seven teams in the advanced class and 47 in individual accuracy.

Roger Ponce de Leon and Jack Ronalter, forming a team called "Cheap Thrills" won the master class. Tim Harrington and Josh Wolfe of "Buzz Brains" were first in the advanced class. Dave Sorenson out-steered and out-ran everyone in the novice hit-and-run event, while Bob Burger was first in intermediate accuracy, Chriss Cataldo was first in the advanced class and Tom Grindle was tops in masters.

The "style/relative work" event, as the club called it, was the idea of Jim Mowrey and Bill Beaudreau.

## SAFE Symposium Set

Elek Puskas, president of Para-Flite, Inc., and George Harris, president of George Harris Corporation, will present papers at the SAFE Symposium in Las Vegas this December. Puskas' paper, titled "Development of the First Ram-Air Emergency Parachute for Personnel Applications," deals with his company's effort to design and perfect the Safety-Flyer reserve, at present the sport's only TSOed ram-air reserve.

Harris will present a paper on the "Evolution of Synthetic Parachute Fabric; 1941-1979." Harris supplies much of the fabric used to manufacture sport parachutes, including the F-111 fabric that is widely used on the newest lightweight ram-air canopies.

The SAFE Symposium is a five-day affair sponsored by the SAFE Association. The organization's primary objectives is to stimulate research and development in the fields of safety, survival and support. It concerns itself with parachutes, life rafts, motor vehicle safety, restraint systems, crash and fire rescue and life support systems. Dates of the symposium are December 2-6.

## CALENDAR

**November 17-21: RW Training Camp, Perris Valley Parachute Center, Perris, Calif.** Pat Works will teach his method of RW instruction using video, seminars, and freefall classes. FMI: RWU, 1656 Beechwood Ave., Fullerton, CA 92635.

**November 17-25: Zhills Turkey Boogie, Zephyrhills, Fla.** FMI: Jim Hooper, Zhills Parachute Center, P.O. Box 1101, Zephyrhills, Fla. 33599. (813)782-2918.

**November 17-25: Turkey Day Boogie, Pope Valley Calif.** FMI: Pope Valley Parachute Center, P.O. Box 166, Pope Valley, CA 92567. (707) 965-3400.

**December 2-6: SAFE Symposium, Las Vegas, Nev.** FMI: SAFE, P.O. Box 631, Canoga Park, CA 91303. (213) 340-3961.

**December 22 — January 2, DeLand Christmas Boogie, DeLand, Fla.** DC-3, Cessna, showers, warm weather, clean airport, good vibes. FMI: DeLand Air Sports, P.O. Box 1657, DeLand, Fla. 32720. (904) 734-5867.

**December 22 — January 6: Christmas and New Year's Boogie, Pope Valley, Calif.** FMI: Pope Valley Parachute Center, P.O. Box 166, Pope Valley, CA 94567. (707) 965-3400.

*Readers are encouraged to supply information for calendar listings. Information on upcoming events should be supplied as far in advance as possible to Box 189, Deltona, Fla. 32725.*

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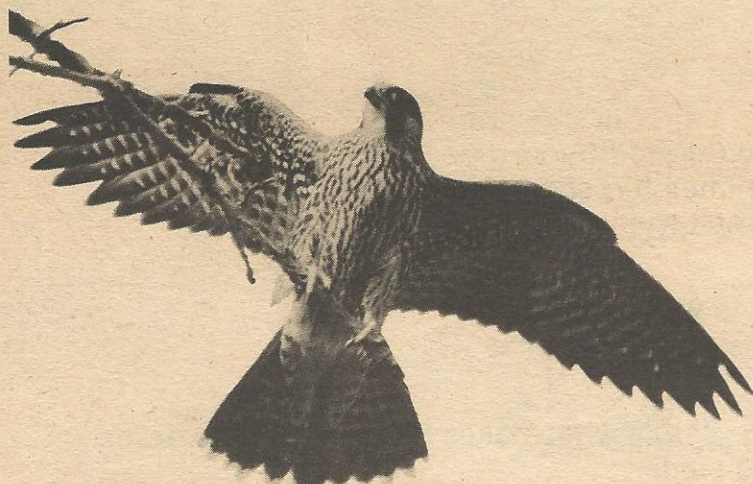


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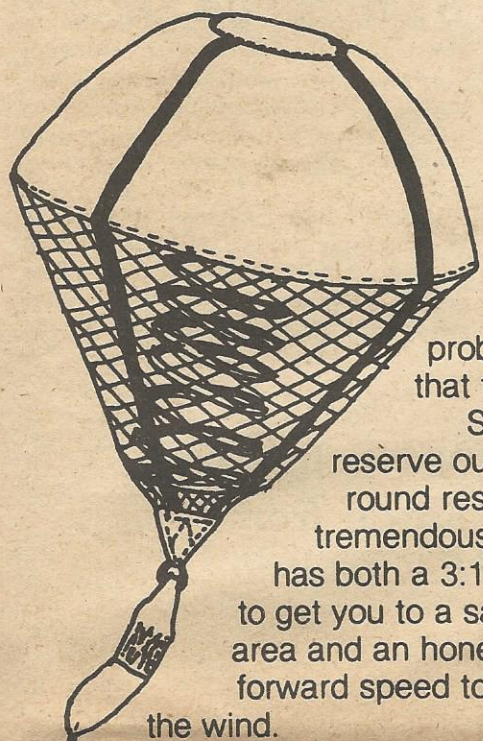
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You might not know, however, about the Safety-Flyer's unique free bag deployment system, a feature which lets this reserve deploy with unprecedented reliability. The Safety-Flyer, in fact, can open even if the pilot chute snags on the jumper or his gear — something that no round can do.

## The Need for a Bag

Our tests and jumper surveys revealed that the Strato-Flyer main opened more reliably from a bag than if it was free packed. Since the Safety-Flyer is derived from the Strato-Flyer design, our engineers decided to keep the bag deployment.

## "Free Bag" Explained

"Free bag" means that the bag, bridle and pilot chute are not attached to the canopy. These items do their jobs during deployment and then separate from the canopy before it inflates. Since they're gone, it's impossible for them to tangle with the canopy while it inflates and begins flying.

## The Safety-Flyer's Components

The bag, bridle and pilot chute were all specially designed for the Safety-Flyer. The Hog Dog<sup>®</sup> pilot chute has a powerful spring and large mesh to help it get off your back and inflated quickly. The bridle is 13' long and made from 2" cotton tape. The bag is lightweight nylon, loose fitting with a pocket for stowing the lines. (High speed films revealed that a pocket deployed the lines better than rubber bands.)

## How It Works

During a normal deployment the pilot chute, bag and bridle function just as you would expect, except that they separate from the canopy after the lines extend. The result is a nice, fast, staged deployment.

The unique bridle becomes important if something goes wrong and the pilot chute snags during deployment. This could happen if you're tumbling, or if you can't breakaway from a streamering main, or if you're wearing a camera or a smoke bracket.

In such a situation, the extra-long bridle deploys into the airstream. It creates enough drag (because of its width) to lift the bagged canopy out of the container, unstow the lines, and pull the bag off the canopy — *even with the pilot chute still hung up on the jumper*. The canopy can then inflate.

Again, no other reserve can open under these circumstances.

## Why We Know It Works

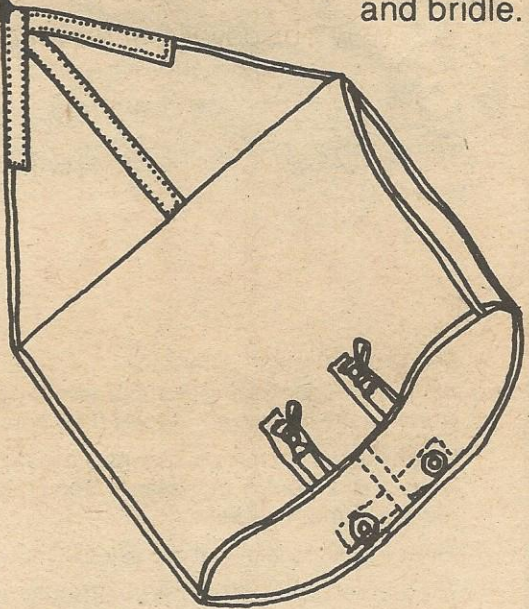
Para-Flite made test drop after test drop with intentionally horse-shoed pilot chutes to test this system. Many of you saw the films of a few of these drops last year at the Nationals.

## That's Not All

The free bag is only *one* feature of the Safety-Flyer. We applied similar efforts to perfect the other components of this reserve: the lines, the slider, the brake locks and the canopy itself.

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Skydiving, October 27, 1979

# Six More Arrested for Jumping off El Capitan

Five jumpers and a non-jumping companion were arrested at Yosemite National Park in California on September 27 as three of them got ready to jump off El Capitan. John Noak, Springfield, Ill., Jeff Fisher, Redondo Beach, Calif., Robin Heid, Denver, Colo., Jim Wallace, Costa Mesa, Calif., Mike Burt, Costa Mesa, and Larry McKee, Downey, Calif., were all charged with "unlawful delivery by air without prior written permission of the superintendent."

Acting on the tip of an informant, two rangers went up the mountain the night before, disguised as mountain climbers, to keep an eye on Noak,

Fisher, Heid and Wallace, who also hiked up the back side of El Capitan on Tuesday, September 26. Later that evening the Park Service helicopter lifted additional uniformed rangers up the hill. In the valley, 3,000 feet below, other rangers kept Burt and McKee under surveillance.

The next morning, after Noak, Fisher and Heid had donned their parachute gear, about a dozen rangers jumped from behind the rocks, shouting, "Alright, boys, the game's over — you're coming with us." One ranger then walked toward the trio to prevent them from jumping.

At that point, Heid dodged the ranger and moved to within 10 feet of the edge of the cliff, too close for the ranger to follow. After checking with Wallace to make sure the camera was running, Heid told the rangers goodbye, turned, and ran off the cliff. He was apprehended in the valley along with Burt and McKee.

The six were held in the Yosemite jail without bail or visitors for more than 24 hours before they were released. According to one of the prisoners, they were strip-searched, one was refused medical attention, and one jumper was harassed verbally by several rangers. When released, they were informed that all their skydiving and photographic equipment was being held "as evidence" and could not be returned at that time. Fisher, who owns several 16mm movie cameras, was threatened with a felony charge of stealing federal property since the cameras were military surplus.

With the exception of Noak, the group is scheduled to appear in court on October 15 to answer the charges. Noak, who pleaded no contest to the charges, will be sentenced separately on October 26.

This incident is the latest round in the battle between the Park Service and skydivers, a feud that has lasted over a year and a half. The jumpers contend the jumps are not harmful or dangerous, and that they are not illegal, for there are no regulations prohibiting parachuting into a National Park, according to Robin Heid. The Park Service, however, is bound and determined to prevent cliff jumping and are using whatever methods they have at their disposal to accomplish that.

Jim Winkler, called a "spokesman for the cliff jumpers" by several California newspapers, points out that although the Park Service wants to prevent jumping off the cliff because it is "dangerous and foolhardy," permits hanggliding from the cliff and rock climbing up its face.

Chief Ranger Charles Wendt of Yosemite was quoted "At what point do we cease to have a national park where people come to look at the natural scenery and at what point do we become a granite circus?"

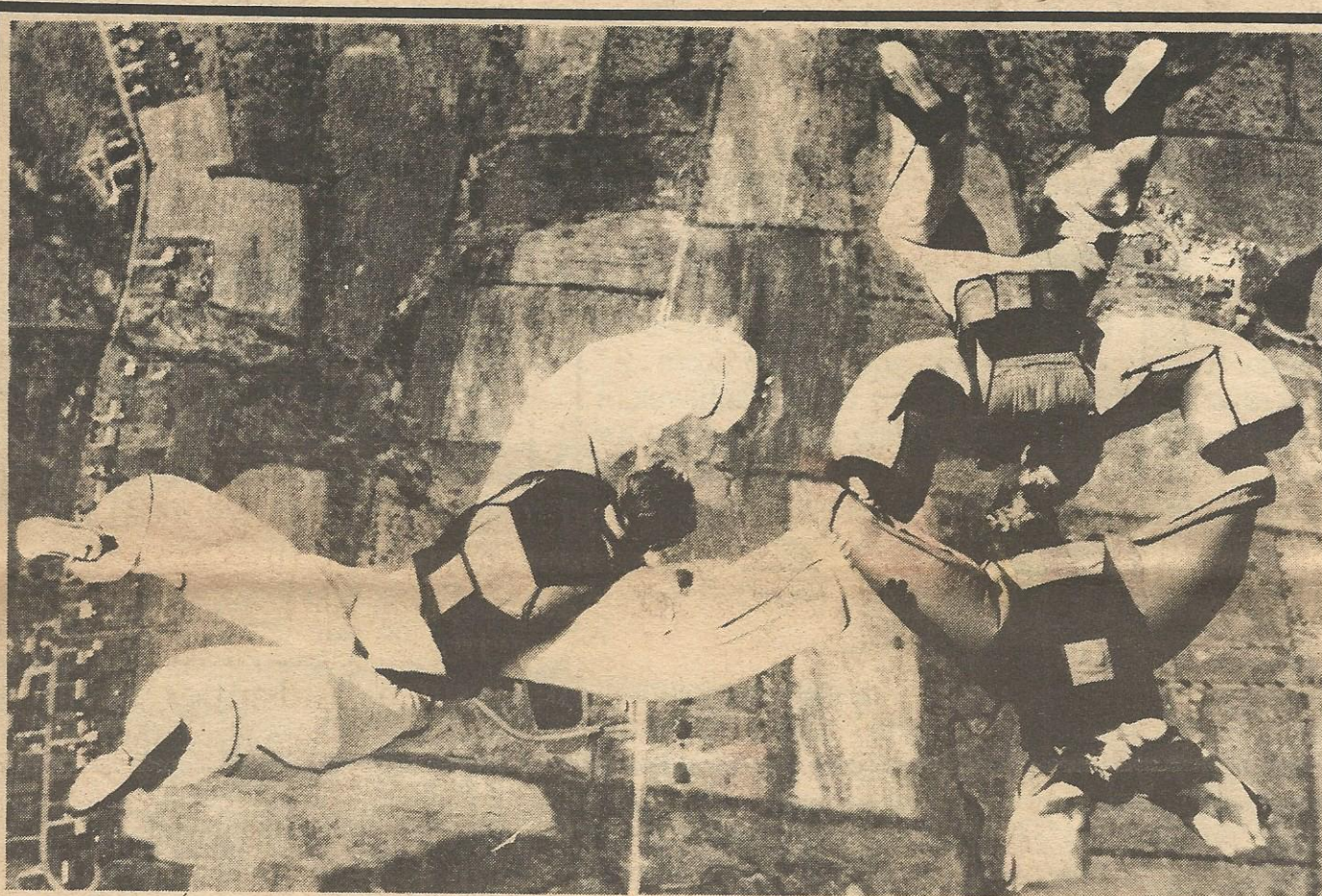
## Night RW Jump Made from El Capitan

The first night jumps off Yosemite's El Capitan cliff took place during the first week of October, when B.J. Worth and Colan Kendrick went off hand in hand one morning about 3 a.m.

Worth said that he and two companions began the hike up the back side of El Capitan the same night and, unburdened by sleeping bags or other non-jump gear, made the trip in four hours, even though they got lost in the forest for an hour. After resting for a while and enjoying the bright moonlight, Worth and Kendrick took the plunge.

"I was scared stiff until we went over the edge," said Worth. "The first two seconds went very smoothly. Then I started to go head down, and when Colan reached over to grab my other arm, he went over on his back. We had enough of that after about four seconds, so we separated and tracked away." The pair landed in El Capitan meadow without incident.

The next morning at 7 a.m., Englishman Mike Boys went over the edge, much to the delight of the dozen or so climbers on the face of El Capitan at the time. "The climbers started yelling so loud we could hear it down in the valley," said Worth. "They were really turned on by the jump."



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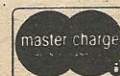
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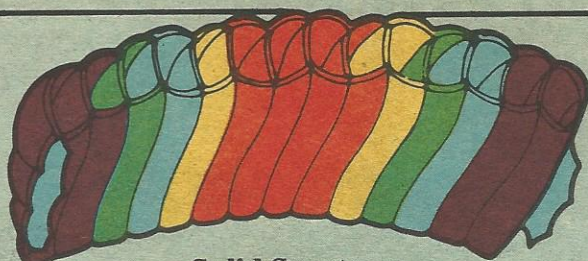
At 230 sq. ft., it is still the performance standard. The lightweight material allows it to fit in the smallest container and it weighs in at 11½ pounds. Larger stabilizers add even more control to the undisputed world champion.

P.A.I. has both the Strato Cloud™ Lite and Cruisair in stock now in the colors shown and in solid colors, white, black, red, gold or blue.

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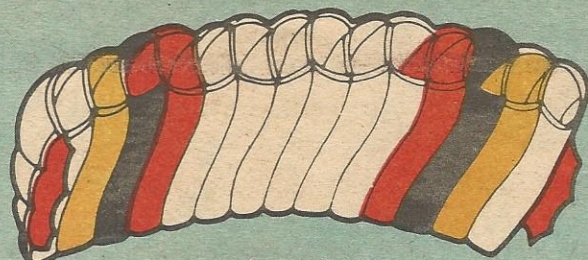
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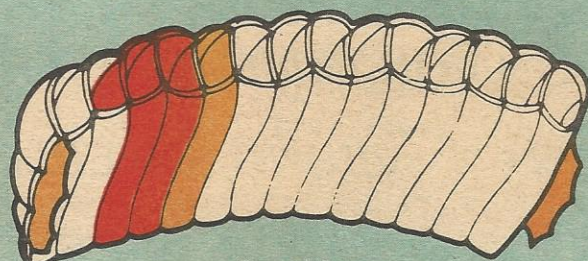
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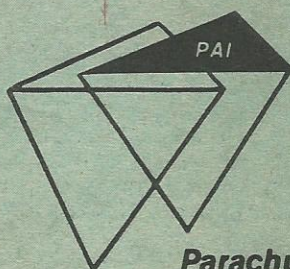
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# Canopy Relative Work for Beginners

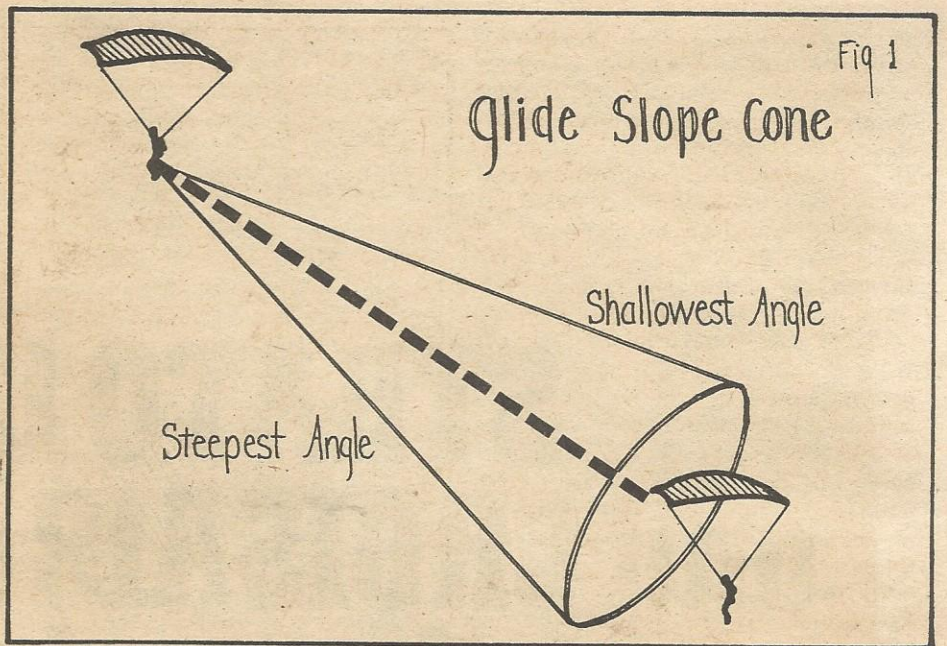
by Robin Heid, CCS 34

In issue #4 of *Skydiving*, the "circle pin" method of doing CRW hook-ups was discussed and outlined. This issue's column will be devoted to the more advanced "floating pin" method.

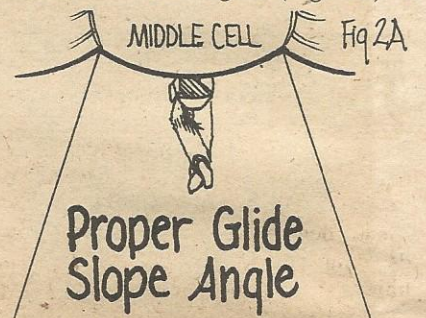
In many ways, the floating pin is easier than the circle method. The angles of intersection are simpler and there's no need to be yelling corrections back and forth. However, because a missed approach can result in entanglement more easily than a missed circle approach, the floating pin is recommended only for people with some CRW experience already or those working with an experienced canopy relative worker.

The concept is simple. Jumper #1 sets up on a straight flight path and applies a small amount of brakes. Jumper #2 then sets up slightly behind and slightly below #1 — a 45 degree angle is a good rule of thumb to start with (Fig. 1). The leading edge of #2's canopy should be centered on #1's backpack (Fig. 2A). Centering your canopy on the target jumper's back puts you in the middle of the glide slope needed to make a clean dock. That way, if you end up a couple of feet high or low at docking, your target will still be able to reach the canopy.

When Jumper #2 is set up in the proper position, he begins applying brakes.

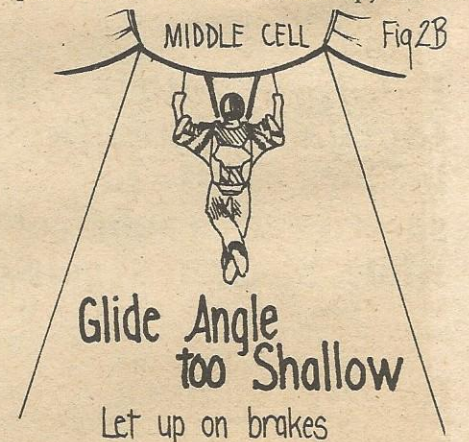


The amount will depend on the canopies both jumpers are flying. As you rise toward the target, keep your leading edge centered in Jumper #1's back. If you begin to see his head and risers, you're rising too fast or flying too slow. The solution — let up on your brakes until the leading edge comes down to back level again (Fig. 2B). If



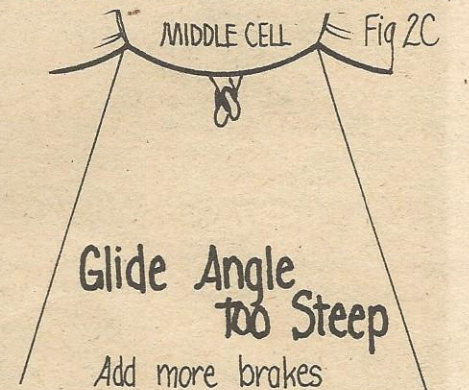
the legs disappear and only the feet are in view, add more brakes, because you're outflying the target and not rising on him quickly enough (Fig. 2C).

While Jumper #2 is making his approach, #1 should be sitting quietly in his harness. He should NOT be looking around for #2 — this will cause his flight path to be erratic and his canopy to rock



from side to side, making a difficult target for #2 to dock on. Jumper #1 should sit with legs crossed, the appropriate amount of brakes on, and look for #2 with his peripheral vision only.

When #2 gets within 10 feet or so, he can warn #1 verbally that he's about to dock. Then, as soon as he makes con-



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tact, he should let up on his toggles to prevent his canopy from continuing to rise and possibly enveloping #1. At the same time, Jumper #1 should release his toggles, grip the canopy with both hands, find the middle cell, and place his feet behind the A-lines of the middle cell. (See the last issue for details.)

The floating pin technique will probably take several attempts to do correctly, for glide angles are more critical and have smaller margins for error. However, once you learn it, the floating pin is far superior to the circle method for getting quick, smooth docks.

There are drawbacks to the floating pin method. Canopies must be reasonably compatible and positions may be dictated by canopy type or jumper weight. Strato-Clouds rise nicely on Strato-Flyers, but the inverse is not usually true. And a heavy jumper on the same canopy may not have sufficient "float power" to dock on a lightweight jumper. There are trim devices on the market that make this task easier, but good planning is still important. Be sure the aggressor will have enough float power to make the dock.

### Docking on Stacks

If you can do a floating pin, you can dock on a stack. It's true. Docking eighth on a stack is no more difficult than doing a floating base/pin. There are just a few more things to be aware of.

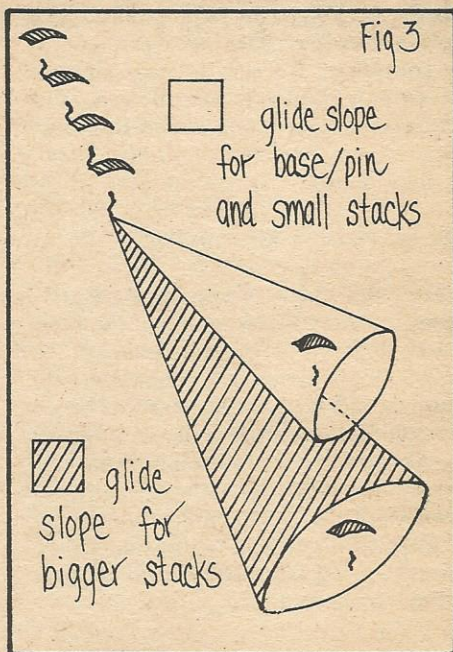
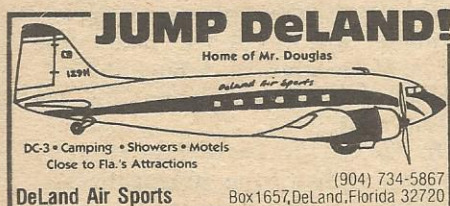
First of all, after it builds to about four canopies, a stack's forward speed begins to diminish and its downward speed begins to increase. In terms of docking, this means your approach will have to be much steeper in order to match the rate of the stack and achieve a smooth dock (Fig. 3). The major mistake made in docking on the bigger stacks is *making too shallow of an approach*. By approaching a slow-flying, fast-descending stack at a shallow angle, you must let up on your brakes to keep from floating past it. This causes your canopy to fly faster horizontally,

## Canopy Entanglement Results in Fatality

Gregory Perlinski, 27, was killed on September 16 when he pulled his reserve too low after becoming entangled with another jumper's canopy during a CRW attempt. The accident occurred at the drop zone at Tecumseh, Mich.

According to a newspaper account of the accident, Perlinski and Larry Fetter were attempting a hook up after an 8-way jump from 9,500 feet. One newspaper said they encountered turbulence and became entangled and started to spin and descend rapidly. About 20 seconds later — at 300' — Fetter managed to get clear and pull his reserve for a safe landing.

Perlinski did not entangle himself and pull his reserve until about 150 feet, and he impacted during line stretch. Perlinski, who had loged about 800 jumps, died in a hospital a short time later. He was a fulltime employee of the Jump Shack, a parachute equipment manufacturer and dealer.



creating an unacceptably high closing speed on the stack. When a canopy with a high horizontal speed hits a stack, it folds around the bottom jumper on the stack, creating a potentially hazardous situation.

Float power is not critically important for jumpers closing late on stacks. Because of a stack's high rate of descent, a canopy with too much float may not be able to dock without tremendous effort and skill on the part of the pilot. Trim tabs can remedy this situation, too, by providing jumpers with more versatility than their canopy is normally capable of.

The floating pin is the key to building stacks or doing any other CRW formation. Learn it well and the rest will come easily. Take your time, though. Go slowly until you get the hang of it. After that, do it slowly anyway — it's safer that way and it looks so much nicer.

*Next time: Planning and building stacks and planes.*

## Jacksonville Boogie

Good weather, a smooth running DC-3 and plenty of jumpers were the right ingredients for a good boogie at Jacksonville, Ill., over the weekend of September 8 and 9.

Dave and Helen Sickler of Skytrain, Inc., provided the DC-3 from Texas and DZ Operator Bob Cogswell hosted the event.

The weather cooperated beautifully on both days, and several fine jumps were recorded. One was a 15-way lateral wedge, or "swedge" that sequenced into a conventional facing wedge. (In a swedge, the jumpers are oriented sideways; everyone has a side shot.)

Another rousing jump was a 16-diamond that was built at sunset on Sunday.

Cogswell plans to conduct another boogie next September at Jacksonville.

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# From the Loft

This column is written by Bob Stroud, a Master Parachute Rigger and DPRE from Edmond, Okla., who has extensive sport parachute rigging — and jumping — experience. Bob will be happy to answer your equipment and rigging questions. Address them to Bob Stroud, c/o Skydiving, P.O. Box 189, Deltona, Fla. 32725.

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gers certificates. Salaries are equally broad — from about \$4 per hour up to \$19,000 per year.

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On the other hand, if you're looking for a rigger, contact me. This referral service works both ways.

## Packing Racers, SSTs and Pop-Tops

Riggers should be careful when

mating the Velcro on Pop-Top and SST containers where the risers run out of the container. It's easy to trap some of the canopy between the Velcro. I've seen several reserves damaged this way.

## On Starlite Tandems

The pilot chute of the Strong Enterprises Starlite Tandem must be positioned properly when it is packed. As the packing instructions state, the pilot chute should be positioned as far down (towards the main container) as possible. The pilot chute shouldn't be packed directly beneath the locking loops as it can work itself off-center underneath the flaps. If it gets too far off to one side it won't spring from the container very well when the pins are pulled.

## Rigging Tools: The T-Bar

Riggers usually have a variety of what seem to be unusual tools in their kits. Although most of these tools were designed years ago, some are brand new and were developed in response to some of the modern gear that has been around only a short time.

The right tool can be so helpful. Not only can it make the job easier, it can also make the job safer by subjecting the parachute to less wear and tear during a packing or repair procedure.

One tool that is fairly common these days but was developed only within the

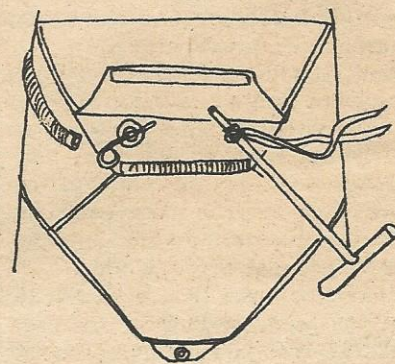


last few years is the T-bar. It is extremely helpful in closing a tight reserve container that is fitted with fabric locking loops.

Using a T-bar is simple. Thread the pull-up cord through the hole or slot at the end of the shaft and begin twisting the handle, rolling the pull-up cord around the end like spaghetti on a fork. This soon begins to exert a lot of force on the locking loop and the grommet it passes through (it pulls the locking up while simultaneously pushing the grommet down). Once the locking loop is up through the grommet, it's ready to be pinned.

But the rigger has to use the tool correctly. Unless he's careful, he can damage the grommet, break the locking loop or end up with a pack job that takes well over 22 lbs. on the ripcord to extract the pins. So the T-bar should not be used to make a big canopy fit into a small container, or so forth. It's simply a help in taking much of the muscle out of closing some reserve containers.

If you've never used a T-bar, be sure to be supervised by a rigger who has, before you begin using it to close reserves.



Building a T-bar is simple. I built mine out of a piece of 1/2" steel rod that is about 12" long. A 6" handle is welded across one end. I also knurled about 1" of the rod very lightly about 3" up from the end to give the pull-up cord better purchase on the otherwise smooth rod.

Finally, drill at 1/4-3/8" hole in the middle of the knurling through the rod, smoothing the edges so it won't fray the pull-up cord.

Or, you can save yourself the effort by buying a T-bar from practically any parachute equipment dealer.

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# Evaluation of the Safety-Flyer Reserve

The following is a lengthy evaluation by Troy Loney of the Para-Flite Safety-Flyer ram-air reserve. It was released in December, 1978, after Loney had conducted a series of tests on the then-new parachute for the USPA Safety and Training Committee. The report is followed by detailed accounts of the test jumps that were made for the evaluation.

Loney is the owner of the Centaurus Corporation, a company that produces the Centaurus tandem rig.

## Introduction

Since the introduction of ram-air parachutes in the late sixties, there has been a tremendous evolution of both parachute technology and the attitude of jumpers toward that technology. From that beginning, when a few jumpers tolerated unpleasant openings and unusual handling characteristics for the reward of high-performance flight, the canopies have become efficient, highly reliable machines that are flown by virtually every experienced skydiver.

It is only natural that this highly-evolved technology should receive application in a reserve system. The malfunction rate of properly packed squares is known to be low; they exhibit no inherent malfunction mode, such as the "Mae West" to which round canopies are susceptible; and their performance is vastly superior to that of a round canopy, an appealing prospect in many emergency situations.

The subject of this test report, the Para-Flite, Inc. Safety-Flyer, is such a sophisticated reserve system.

Because of the extensive test programs conducted by Para-Flite during the development of the Safety-Flyer, and the known characteristics of ram-air canopies in general, it would be non-productive to attempt an exhaustive investigation of all performance characteristics of the ram-air reserve. The malfunction rate of properly packed squares is so low, for example, that literally hundreds if not thousands of test drops would be necessary before malfunctions would be likely to occur. In other areas, experience with common technologies can be carried over and directly applied to the Safety-Flyer system; an example is the use in hand-deployed main canopies of a turn of bridle through an elastic loop, which holds the bag in place until pilot chute inflation and essentially eliminates bag locks.

Because of the extensive application of proven technology in the Safety-Flyer system, this investigator limited testing to those areas most likely to directly affect the average user of the reserve. A series of tests were conducted to discover the behavior of the system in a variety of malfunction situations, with live subjects. This was felt to be the best way to provide useful information on the performance of the reserve.

The tests performed include break-aways from both fully inflated and intentionally malfunctioned canopies, with reserve deployment following immediately in a variety of body positions. They also include several deployments from both subterminal and terminal freefall, in both stable and unstable attitudes. Two attempts were made to investigate the horseshoed-pilot chute opening configuration of the reserve,

but because of the difficulty of designing and carrying out a test which is both effective and safe, this aspect of the investigation was temporarily suspended.

Experienced jumpers (500+ jumps) with several hundred jumps on ram-air canopies were used as test subjects, and in most cases experienced jumpers were present in the air to act as observers. The responses and observations of the jumpers are of course somewhat subjective, but the remarkable uniformity of the responses is testimony to their validity.

The tests were conducted in Colorado, at field elevators ranging from 5400 to 5700 feet MSL. It should be noted that both openings and landings are harder at this altitude than at sea level.

**Opening Brakes.** The opening brakes are held by a daisy-chained lanyard, similar to that used on a four-line release. Brake release is accomplished by pulling on the lanyard, and all test jumpers reported no problems with release. The transition from the opening configuration to full flight is smooth, with no surging.

**Handling Characteristics.** All of the jumpers were impressed with the handling characteristics and stability of the reserve. The forward speed of the canopy was comparable to that of a Strato-Flyer, despite the fact that the canopy in full flight has the tail pulled down to approximately 10% brake level; the forward speed is probably due to the lack of a trailing pilot chute, which is a source of drag on the canopy and therefore acts to reduce the lift-to-drag ratio.

The canopy was remarkably stable in turbulence. One jumper reported a slight tendency for the canopy to turn one direction in turbulent conditions.

Steering is accomplished with the rear risers, and therefore the control forces are higher than is the case with the Strato-Flyer, which has separate control lines. The control pressures were not

significantly higher than those found on a 26-foot lopo equipped with a four-line release modification. One of the test jumpers felt that, in the event of a long canopy ride, control with the front risers would be less tiring, since turns would be accomplished much more quickly. This idea was not tested.

The length of the reserve riser is critical for good control and flares. The minimum length recommended by Para-Flite, 15 inches, seemed to this investigator to be too short. During these experiments, three different riser lengths were tested. The initial set, about 22 inches long, gave good control and excellent flares, but the connector links were just at the limit of reach. The second set, about 15 inches long, would not allow excessively fast turns, but neither would they allow decent flares. The third set, a little more than 18 inches long, seemed to be a good compromise.

**Landings.** In general, landings of the Safety-Flyer seemed to be better (i.e., softer) than landings under comparable conditions on the Strato-Flyer, given risers longer than about 18 inches. The soft landings were credited to the rear-riser flare, a technique that is known to make almost any ram-air canopy land softer.

During this series of tests, only one

landing from the tests with long (18 inches or more) risers was considered hard, and that one was on Test 5, with 20-25 mile per hour winds and moderate turbulence. Landings with shorter risers were uniformly harder, some of them being distinctively uncomfortable.

Of the four test jumpers, two regularly jumped Strato-Flyers as main canopies, while the other two jumped a Strato-Star and a Strato-Cloud. It was the uniform consensus of the test jumpers that the Safety-Flyer's landings were more than acceptable for a reserve parachute.

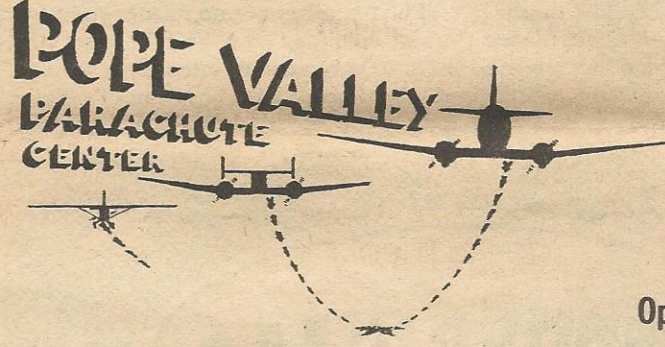
**Malfunctions/Damage.** There were no malfunctions of the Safety-Flyer during these tests. There was damage upon opening to two sets of lines on the canopy during one jump (Test 5), caused by impact of the slider grommets on the lines at the connector link. While this damage was sufficient to require replacement of the lines, it did not cause the lines to break, and would not have contributed to a malfunction of the canopy.

Some of the grommets in the slider were also damaged, by impact on the connector links. Both the damage to the grommets and the damage to the lines was eliminated by using appropriate slider stops at the links.

## Test Results: Summary

What follows is a summary of the eleven test jumps made on the Safety-Flyer. The notes on the individual tests appear in Appendix I, Test Results.

(please turn the page)



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(continued from the previous page)

**Openings.** Descriptions of the opening shock ranged from "moderate" to "brisk," with a comparison often being made to the opening of a freepacked Para-Flite Strato-Star. With one exception, the opening shock was not felt to be uncomfortable; in the instance when it was, Test 8, the jumper was in a head-down attitude before and during deployment, a situation which is known to produce uncomfortably hard openings with all parachutes.

The opening shock did not seem to this investigator to vary markedly at the different speeds at which the canopy was tested; indeed, the very low speed openings following intentional break-aways were often firmer than the terminal openings. This seems to be due to the fact that, at low speed, there is very little relative wind for the slider to work against, so the opening is not retarded. The openings are uniformly fast, as contrasted to the openings of a round canopy.

In all cases the canopy opened in the direction the jumper was facing, with no surges, dives, or turns. There was one instance of partial end-cell closure, on an otherwise undistinguished jump (Test 7); the end-cell closure cleared immediately, of its own accord. In three other cases, there were slight opening irregularities: on Tests 8 and 11, line twist occurred, and on Test 5, the canopy oscillated once front-to-back; in each instance, the jumper's body position was less than ideal.

On Test 5, the jumper was on his back, head-down relative to the aircraft, on a clear-and-pull. The oscillation was not severe, and was attributed to the high angle between the relative wind and the vertical plane: the canopy opened and stalled. On Test 8, when

line twist occurred, the jumper was head-down and the reserve bridle was entangled with a lanyard connecting the reserve pilotchute and the reserve ripcord; this opening was nonstandard in most aspects. And on Test 11, when line twists again occurred, the jumper was in a slight spin, head-and-shoulder-high. In one other case, Test 9, the jumper was less than stable but there was no opening problem.

In none of these instances was the opening irregular enough to cause concern; the oscillation stopped at once, the end-cell closure cleared by itself, and the line twists were easily cured by the jumper with a minimum of trouble.

### Conclusions and Recommendations

This investigator was well impressed with the Safety-Flyer system as a whole. In this series of tests, the performance of the reserve (with the reservations noted) was excellent.

From the text, experiences, and a long acquaintance with the Strato-Flyer main canopy, this investigator feels that the canopy will open straight and fully inflated, with no loss of control, provided that the jumper is more-or-less face to earth. In the case of non-ideal or even out-of-control deployments, there may be some initial flight irregularities, but these seem to be transient. The rapidity of the reserve opening (observers regularly estimated a vertical distance of around one hundred feet between cutaway and complete reserve inflation) would seem to allow distance for the irregularities to subside, even in the event of a low-altitude reserve opening.

The openings are no harder than terminal openings on a 26-foot lopo, and seem to vary little in intensity regardless of the speed of the jumper. Some jumpers in the investigator's local area,



Bob Gray of the Relative Workshop prepares to land a Safety-Flyer after a test jump over DeLand, FL.

including the investigator, have adopted the reserve packing method for their Strato-Flyer mains.

The reserve opens with roughly 75-80% brakes. In this range, its forward speed is comparable to that of a modified 26-foot lopo, while its descent rate is somewhat lower. If the jumper, unconscious or too low to release the brakes, were to land the canopy in its opening configuration, the landing should be no more severe than the landing under a modified 26-foot lopo. The canopy handles easily in its opening-brakes configuration, much more so than a lopo with a four-line release modification. Care must be taken not to attempt a flare from the braked configuration, though; a high rate of descent will result.

Control forces on the rear risers are stiff, but not unacceptably high. This is

only cause for concern when the canopy is opened at high altitude (in which case the jumper's arms will probably be tired if he spends most of the time actively controlling the canopy) or if the jumper is very weak. It should be noted that the four-line release modification on 26-foot lopos is subject to the same criticism.

The canopy is sensitive to extreme control movements, as is the case with all squares. In the absence of experience with square canopies, a jumper could easily injure himself by executing too low a maneuver with this reserve. This investigator feels that the requirement of 25 square jumps, established by Para-Flite as a minimum experience level for Safety-Flyer jumpers, should be considered a *low* minimum requirement. Also, practice with rear-riser control and landing flares is essential,

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preferably with a Strato-Flyer.

The length of the reserve risers is extremely important for adequate flares and has significant influence on the ease of control in general. The minimum length of 15 inches set by Para-Flite was felt to be too short; an 18-inch minimum seemed to be more reasonable, from these tests.

The only damage to the system experienced during these tests was to the grommets in the slider, as they struck the connector links during opening and to the lines which were between them and the links. While this damage would not cause any major problems with the canopy's performance (it occurs after opening, and so cannot interfere with canopy inflation), it does necessitate repair to the system following the jump, and in the case of a completely-cut line there could be some interference with canopy control. It is recommended that some sort of slider stop be incorporated into the system at the connector links; this investigator found that a large rubber washer with a very small central hole worked well.

A cautionary statement is also necessary in regard to the container staging system: while Para-Flite has set an upper limit of six to eight pounds on the force required to remove the bridle's "needle fold" from the elastic loop, they have set no lower limit. From the performance of the system under the circumstance of a plotchute hesitation (see Test 4), it is apparent that such a lower limit is needed. In the event that the force required to operate the staging system were to be less than the weight of the pilot chute (i.e., about one pound), it is possible that the bridle would pull the "needle fold" from the elastic loop instead of lifting the pilotchute out of the burble.

This investigator strongly recommends that a lower limit of around three pounds be placed on the operating force for the staging system.

*The following appendix contains the results of the various live test jumps conducted by Loney and his fellow investigators.*

#### Appendix I: Test Results

##### Test One:

##### Intentional Breakaway

**Description:** The test jumper did an intentional cutaway from an open canopy, from 3200 feet; the reserve ripcord was pulled immediately following cutaway.

**Results:** The canopy opened very quickly; it was not timed, but the time was estimated by the jumper at less than two seconds. The canopy opened straight, with no surges or turns; both end cells were fully open. The slider was all the way down, against the connector links.

The canopy was easy to steer, when steering was done from grips at the connector links. Attempts to steer the canopy with grips lower on the rear

risers were less effective. The flare was easy, with a soft stand-up.

A nearby observer (under canopy) reported that there was no visible hesitation in the system during deployment; canopy opening followed its extraction from the bag so rapidly that it could not be clearly observed. This was confirmed by a ground observer, watching through binoculars.

**Damage:** Upon examination on the ground, some damage was found on the grommets in the slider, especially those on the front line groups; the damage was judged to result from the forceful impact of the grommets on the connector links.

**Changes/Repairs:** The damaged grommets were sanded smooth.

##### Test Two:

##### Terminal Opening

**Description:** The test jumper exited at 3500 feet, did a ten-second delay in a head-down attitude, and pulled im-

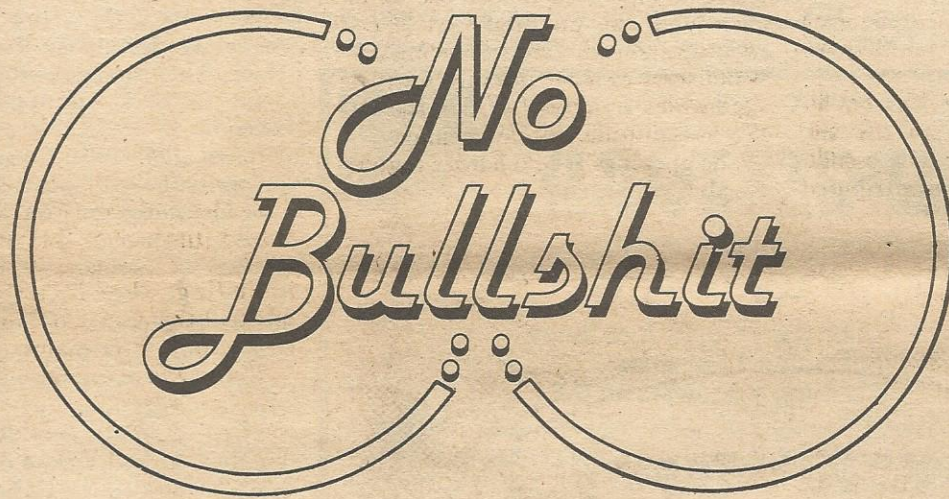
mediately upon return to a flat and stable position.

**Results:** The opening was very fast, coinciding with full arm extension from the ripcord pull. In spite of the rapidity of the opening, it was only about as hard as a freepacked Strato-Star opening, in the estimation of the jumper (who had experienced about 100 freepacked openings); not painful, but abrupt. The slider came down to the connector links.

The brake release worked smoothly, and the canopy handled well again; control was fine enough that the jumper caught the bag and pilotchute on the way down. The landing was again a soft standup; the jumper felt the flare to be more effective than on the Strato-Flyer, his usual canopy.

**Damage:** The slider grommets were again damaged by the connector links.

**Changes/Repairs:** Para-Flite was contacted which recommended either the installation of washers at the con-



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(continued from the previous page)

necter links, or taping of the links. Following sanding the grommets, the connector links were all taped with duct tape.

### Test Three:

#### Subterminal Opening

**Description:** The test jumper did a 3-second delay from 2500 feet, following an exit from the aircraft at 90 mph IAS.

**Results:** The test jumper reported the canopy to be well-behaved and easy to handle, and compared the opening to a free packed Strato-Star opening. A second jumper exited the aircraft immediately behind the first to watch the jump from freefall. He observed a fast, smooth opening, with no noticeable hesitations in any part of the system.

### Test Four:

#### Subterminal Opening

**Description:** The test jumper did a nine-second delay from 3300 feet; a second jumper exited at the same time, and was in the immediate vicinity (within 10-15 feet) to observe the opening.

**Results:** From the observer's position (to one side, slightly behind the test jumper) the following sequence was seen: the test jumper was wearing a tandem system with no canopy in the main container, and a chest-mounted reserve, which caused him to be top-heavy and to fall in a head-down attitude; he was wearing a large RW jumpsuit, and spread his arms wide, ex-

posing maximum wing area, to keep level. The pilot chute jumped from the container, clearing the jumper's back by three to four feet, before it was upended violently by the large burble; it then fell onto the jumper's back, and remained there, upside down. The bridle deployed immediately, and upon full extension it lifted the pilot chute from the jumper's back, and into the much smaller burble high above him. The pilot chute then inflated, and the opening sequence continued. The elastic loop in the container appeared to hold the bridle until the pilot chute began to exert drag.

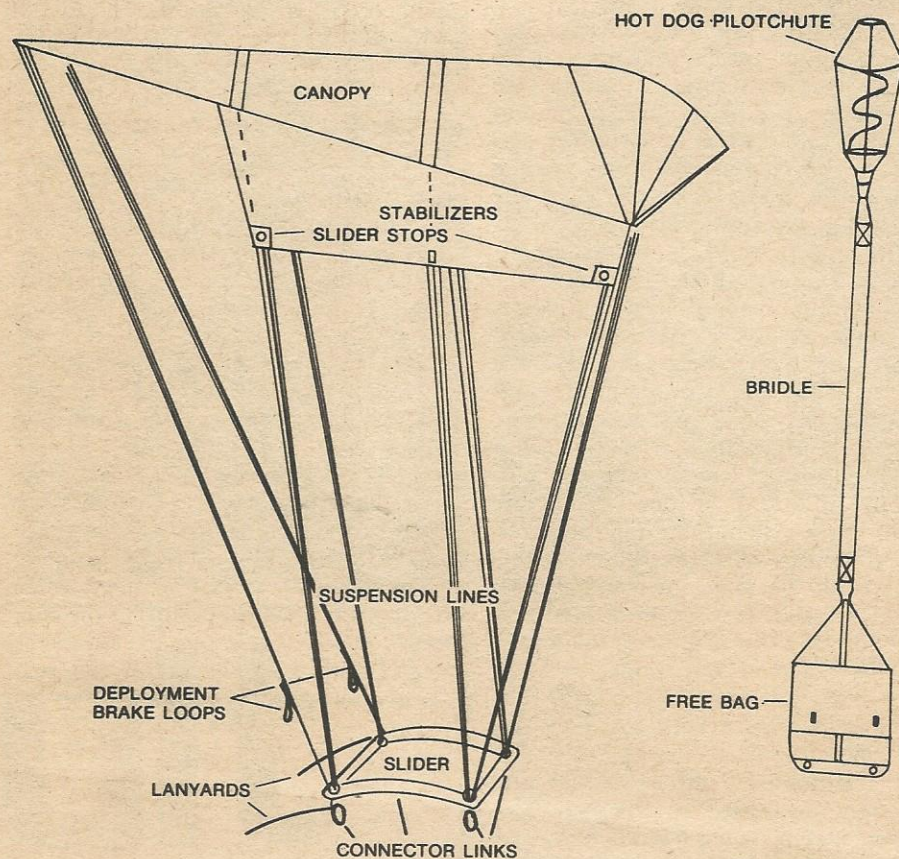
In the opinion of the observer, the bridle closure system acted to prevent the premature release of the bag. The effect of bridle extension was to lift the pilot chute, instead of pulling the "needle fold" of bridle from the elastic loop.

The test jumper reported the near-terminal opening (following the one-to-two second hesitation) to be about the same as his Strato-Flyer usually gave him. He was extremely impressed with the response and general handling of the canopy; he felt the canopy to be faster than his Strato-Flyer in full flight, possibly because of the lack of pilot chute drag.

### Test Five:

#### Subterminal Opening, Unstable

**Description:** The test jumper exited the aircraft at 70 mph IAS, at 3800 feet; he crossed his legs as he cleared the door, so that he rolled onto his back,



A schematic diagram of the Para-Flite Safety Flyer reserve.

head-down relative to the aircraft, and pulled immediately.

**Results:** Opening shock was moderate, about like that of a Strato-Flyer. The canopy oscillated once from front to back on opening, but not severely. It was stable and completely inflated thereafter. No surging or partial deflation was noted. The oscillation was attributed by the jumper to the canopy opening in a more-or-less horizontal manner due to the relative wind, and then regaining equilibrium in a vertical plane; he reported a similar effect with a 26-foot lopo on another test jump, under essentially identical circumstances.

Ground winds were 20-25 mph on landing, with moderate turbulence; the canopy handled the turbulence well, at about 20% brakes. The landing was hard, possibly due to cross-wind eddies and down-drafts (the landing site was in the wind shadow of a group of hills).

**Damage:** Upon inspection, it was found that the outside A-B line on the right front riser had a broken strand at the point where it went around the connector link. The inside C-D line (next to the connector link barrel) on the right rear riser had a partially broken strand, also at the link. The damage was at-

tributed to a cutting/mashing action on the part of the slider grommet against the connector link, upon opening. The slider grommet was dented somewhat, and the duct tape on the connector links was cut and frayed. The confinement of damage to one side of the canopy may have been due to the jumper's body position, left-side high in the relative wind. No other damage was found.

**Changes/Repairs:** The damaged lines were replaced with factory parts. The duct tape was removed from all connector links, and a factory set of tubular slider stops was placed on the front links; on the rear links, rubber washers were installed.

### Test Six:

#### Intentional Breakaway

**Description:** The test jumper did an intentional cutaway from about 3000 feet, from an open canopy. He pulled the reserve ripcord after a delay of approximately two to three seconds. An observer was under canopy, above and to the side by about 50 feet at the time of cutaway.

**Results:** The reserve opened cleanly and very straight, both from the viewpoint of the test jumper and that of the observer. The test jumper reported the



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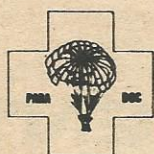
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opening shock to be about equivalent to the main opening (a 26-foot lopo, bagged, on a five-second delay from an 80 mph IAS exit). He was impressed with the stability of the canopy and with its handling, even under the turbulent conditions resulting from thermal activity.

**Changes/Repairs:** The 22-inch risers which had been initially installed on the canopy were removed, and replaced with a shorter set, measuring about 14½-inches.

### Test Seven:

#### Intentional Breakaway

**Description:** The test jumper did an intentional cutaway from about 3000 feet; the cutaway was performed with a single-point release, and the reserve ripcord was pulled at the same time.

**Results:** The opening was fast, with a little end-cell closure that cleared immediately. The slider came down to about one foot above the connector links. The vertical distance required for reserve opening was estimated at one hundred feet.

The test jumper reported difficulty getting good response from the canopy with the short (14½-inch) risers used. The slider was in contact with the jumper's head on turns, and during the flare it was almost at shoulder level, interfering seriously with control.

### Test Eight:

#### Intentional Horseshoe

**Description:** The test jumper did an intentional cutaway with simultaneous reserve release from 6500 feet. The reserve ripcord handle was attached to a lanyard, which was sewn to the edge of the pilot chute cap, so that the jumper could simulate a horseshoe by holding onto the ripcord handle. The intent of this test was to check the time required from cutaway of a slow malfunction to reserve opening from bridle drag alone.

**Results:** Following reserve ripcord pull, the pilot chute was dragged upside down and the bridle extended fully. The pilot chute, attached off center as it was to the reserve handle, began to rotate and wound the lanyard up in the bridle. The bridle's drag was at this point on the lanyard, not on the elastic staging loop which held the bag in place, so deployment did not proceed further.

After about five seconds with no reserve opening, the jumper attempted to pull the handle forward to increase drag on the bridle, and to see what was

happening to the bridle. This pull released the bridle from the elastic loop and brought the apex of the bag onto the jumper's shoulder. At this point the jumper threw the ripcord handle away, so that the pilot chute was no longer horseshoed. Due to the entanglement between bridle and lanyard, the pilot chute was held upside down; the drag of the system in this configuration, however, was enough to complete deployment of the reserve canopy.



An experimental Safety-Flyer deployment bag that has grommets for through-the-bag locking loops. The idea was rejected after evaluation.

Opening shock was severe, due to the jumper's body position (head-down and left side high), and some line twist resulted. The canopy was stable, though, and did not dive or otherwise react abnormally.

It is the opinion of the investigator that his experiment was not well designed, and did not test the horseshoe-opening capacity of the system as intended. It was not until the pilot chute entanglement was released that drag on the bridle affected the reserve bag. Note, however, that the drag on the upside down, uninflated pilot chute and bridle was enough to deploy the bag.

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### Test Nine:

#### Intentional Breakaway

**Description:** The test jumper did an intentional cutaway at 4000 feet from an induced spinning malfunction (a square canopy with one brake off, and an end-cell closure), deploying the reserve while still in a side-high feet-to-earth attitude. A considerable amount of momentum from the induced spin was still present upon reserve deployment.

**Results:** The opening was uneventful, despite the less-than-optimum body position. The opening was brisk, with the slider grommets being forced past the washers onto the rear connector links.

The landing was hard; the test jumper attributed this to the short risers and consequent lack of flare, as well as the tiring chore of steering the canopy with such short (and therefore unresponsive) risers from 3500 feet.

### Test Ten:

#### Intentional Breakaway

**Description:** The test jumper did an intentional cutaway from an induced bag lock, at terminal velocity, deploying the reserve within three to four seconds after release.

**Results:** There was a momentary pilot chute hesitation, attributed again to the large burble generated by the test jumper, who was attempting to stay flat despite the unbalanced weight of the reserve on his shoulders. The opening shock was brisk, but not painful, and the canopy was fully inflated and straight on opening.

The landing was again hard, as a result of an incomplete flare due to the shortness of the risers. It was the jumper's opinion that there was no way to successfully flare the canopy with

such short risers, and that he had no desire to try further.

**Changes/Repairs:** The 14½-inch risers were replaced with a longer set, measuring 18½-inches.

### Test Eleven: Canopy Transfer

**Description:** The test jumper attempted to deploy a horseshoed reserve pilot chute behind a Strato-Flyer in full flight. The pilot chute was attached at its base to a lanyard, to which was attached the closing pin on the reserve; a pull on that lanyard would open the reserve, and allow the jumper to tow the pilot chute. In the event of a failure of the reserve to deploy due to insufficient speed, the pilot chute could be easily released so that a normal deployment would follow.

**Results:** As the jumper pulled the lanyard and drew the pilot chute into his left hand, the bridle followed and entangled with the left riser of the main canopy. When the jumper freed the bridle, he accidentally released one side of the main canopy (the release handle on the single-point release system had a too-short cable on one side; the jumper was aware of this, but jumped the system anyway). He then was forced to cut away from the resulting violently spinning malfunction, still holding onto the reserve pilot chute; as the second riser released, he threw the reserve pilot chute over his shoulder, and the reserve deployed as he was in a side-high, feet-to-earth position. The jumper estimated that he rotated half to three-quarters of a turn during deployment.

The reserve opened immediately, with no abnormalities except for a full twist in the lines. Control of the canopy was definitely improved with the longer risers, and the increased flare led to a gentle standup landing, despite the low winds (three to five mph).

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Number 5. Safety-Flyer Evaluation; USPA Board Meeting; CPI Selects Strong Student Tandem; CRW for Beginners — Part 2; Django Pegasus Canopy; California Repeals Parachuting Regulations; Night RW off El Capitan.

# EDITORIAL... LETTERS.....

## One Opinion of USPA

The USPA is alive and well, and perhaps alive at your own drop zone. Most of us who attended the association's board of directors meeting in Washington, D.C., last week left with the impression that the organization has its house in order and is trying its level best to do all the things it tries to do. And it seems to be accomplishing many of its goals.

The organization's leaders are aware of the continuously changing nature of our sport. And although at times they seemed to be a bit preoccupied with filling the association's treasury at the expense of its members, and although occasionally the wants of the parachute industry received more attention than the collective needs of individual jumpers, it would be unfair to say anything but good about the intentions of the board and the staff.

The USPA is still active in practically every aspect of parachuting. It runs competitions, certifies instructors and judges, issues licenses and awards, administers a comprehensive insurance program, lobbies before our government, sets standards for training and jumping and publishes a magazine. That's not bad for an organization with a paid staff of about ten (backed by hundreds, if not thousands, of volunteers in the field) and a budget of about \$600,000.

In fact, USPA sometimes over-extends itself by trying to be all things to the sport. Spreading its resources too thin results in disappointing programs and failure.

(One current problem with USPA, I think, is that it doesn't do a very good job of selling itself to members and potential members. Many jumpers don't really know what the USPA does or what it plans to do.)

The USPA does many things that need to be done to help the sport, things that most of us individuals don't have the time or inclination to accomplish. It deserves our careful but faithful support.

— MFT

## A Manufacturer Responds

I would like to respond to the editorial in the Aug. 8 (Vol. 1, Number 3) issue of *Skydiving*, but first I would like to commend you on your efforts to provide this sport with such a well-needed vehicle for the timely dissemination of news about the various aspects of our sport.

I think that you have accurately recognized the need for safer and more comfortable student equipment. But I also think that your assessment of the controversy in schools of thought is inaccurate and therefore unfair.

One manufacturer is advancing a system that relies upon an unproven, and as you have pointed out, disputable because, even though it is currently in vogue in some circles, it violates some basic principles that we have already learned.

However the system that The Jump Shack is offering relies upon a proven method that has been in use in the field for a good number of years (direct bag, Stevens cutaway, AOD). We are not relying on field tests or an industry forum to let us know if this is a viable system.

I don't think that it is being cynical to realize that such a forum would not provide any dependable conclusions. The record speaks for itself, we have already seen a large segment of the industry go charging off in the popular direction only to find out, after a few years of accident statistics became available, that it was the wrong direction (and some never find out).

Our system uses the space-age reliability of the triple redundancy method (as required by NASA). The static line jumper is taught, in the event of a malfunction, to cutaway and pull the reserve ripcord, if he fails to pull after cutting away, the departing main automatically pulls the reserve. If he fails to do anything the AOD activates the reserve. This is the same basic

method that is in use at drop zones everywhere.

The sport is entering into a new era in which better training equipment is just the beginning. The Jump Shack is doing what it can to help with this advancement.

Michael L. Johnston  
President  
The Jump Shack, Inc.  
Farmington Hills, MI

## So Does Another

I have been reading the exchange of letters concerning quality of canopies in your September 29 issue on page 22.

Knowing Elek Puskas as well as I do and being thoroughly familiar with the length to which Para-Flite goes to assure quality and the amount of testing that they do before releasing a new product for sale to the parachuting consumer, I feel compelled to add my comments to Elek's.

For the general information of the parachuting community and all the self-styled experts who are always willing to offer criticism but very seldom constructive criticism of any manufacturer's gear, I would like to offer the following:

The Parachute Equipment Industry Association (PEIA) has a technical committee; the purpose of this committee is to insure that equipment being sold to the parachuting community is safe. I might add that Mr. Puskas is the chairman of the technical committee currently. Former chairmen of the committee are Hank Ascitutto of Para Innovators and Alan Levinson of GQ Security Parachutes. Past and present members of this committee include skydivers who design, engineer, produce and sell the best skydiving gear that the world has ever seen.

The Technical Committee, headed by Puskas, has just completed approximately nine months of work writing AS8015 which sets forth the stipulations and specifications for air items to be covered under TSO C23c. The dedication of the members of this committee will provide even safer gear in the future.

Let any who are in doubt about the motives or the qualifications of any person mentioned in this letter take a more responsible attitude to the high degree of regard held by all above with respect to the safety of each and every member of the parachuting community.

Parachuting is and always has been a matter of confidence in your equipment, your instructor, and yourself. Those of us who have been around since the early 1950's believe in that part of the U.S. military riggers creed that says, "I will constantly bear in mind that, until men grow wings, their parachutes must be dependable." Let any who do not believe that take up the hula hoop.

Alan M. Levinson  
President  
GQ Security Parachutes, Inc.  
San Leandro, Calif.

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**STRATO-STARS** three. One R&J Mini Top Secret Container. 28' unmodified canopy, like new. **NO REASONABLE CASH OFFER REFUSED.** (916) 241-2930. P.O. Box 542, Redding, CA 96001. (5)

**WE WANT YOUR OLD PC.** We'll pay \$125 for a PC in good condition. 42" shortline in max. accepted. RWPCs and Jumbo PCs worth more. No Papillons. CPI, PO Box 953, Manchester, CT 106040. (1)

**ORDER NOW!** SST Racers, hand deploy, 3 ring, standard colors: \$300. Similar discounts on mains. Kent Bell, (509) 946-7429. (11)

**ALTIMASTER ALTIMETER:** \$50. Frap Hat: \$45. Strong all black jumpsuit, small: \$10. Nikon 55mm Macro Lens: \$150. 1536H Spartan Village, East Lansing, MI 48823. (4)

**COMPLETE RIG.** Multi-colored Wonderhog II with 5-cell Para-Foil and white 24' 4-line release reserve, Zoo toggles. Wonderhog is new and foil and reserve air are in excellent condition: \$650. (301) 721-2494. Karen. Leave message. (4)

**252 PARA-FOIL LITE,** two available. Brand new. Stinger and Monarch patterns. \$650 each. The RW Shop, (603) 673-5867. (6)

**PIONEER STRAIGHT-LEG JUMPSUITS.** Red, white and blue pattern. All sizes. \$50 each. The RW Shop, (603) 673-5867. (6)

**CLASSIFLYER,** red, gold and orange, 170 jumps, great condition: \$260. Ray Phillips, Box 3078, Mt. Home AFB, Idaho, (208) 832-6785. (6)

**STRATO-STAR,** red and gold, excellent condition: \$200. Altimaster II, jumped three times: \$50 (904) 374-8155. (6)

**1965 MK I PARACOMMANDER, RW&B,** \$175. Pilot's Rig, 28' C-9 in B-12, 4-line release: \$150. (612) 781-0143. (6)

**PARA-PLANE,** blue and white, with tape removed, includes modified 3-pin container: \$275, or best offer. Black and red 3-pin container that will accept PC, with matchin Pop-Top and 24' reserve: \$120. Solid red one-piece jumpsuit: \$35. \$400 buys everything. All gear included ripcords and is in good condition. Nick Matthews, 931 2nd Street, Charleston, IL 61920. (6)

**UNITS—** New. Four available, \$650 each. New Racer, 3 Ring, P.O.P., \$340. Zoo toggles, trim tabs, altimeter mounts, etc., available at LOW prices. P.S. Enterprises, 10014 Buffalo Ave., Niagara Falls, NY 14304. (716) 283-3607 (nites). (4)

**LOOKING FOR NEW GEAR?** Call us after you've called the rest: we will deal! P.S. Enterprises. 10014 Buffalo Ave., Niagara Falls, NY 14304. (716) 283-3607 (nites). (4)

**VIDEO TAPES OF THE 61-WAY BUILT AT THE SKYVAN BOOGIE.** Freefall and ground coverage, an excellent look at the world's best. This tape is a great promotional tool. Approx. 15 minutes in length. \$85 to Divers, Ltd., 1704 Swinborne Ave., Crofton, MD 21114. Please specify format: Betamax, 3/4", VHS, etc. (1)

**MUST SELL:** New SST RACER, blue and white, Pig/Flyer size, std. harness, asking \$300 or best offer. **WONDERHOG 2,** red and blue, double shorty, womens harness, excellent condition, \$225 or best offer. Contact Cheryl at Sky Supplies (904) 734-9641. (3)

**MK I PC,** California Church Window pattern, with short sleeve and pilot chute, 120 jumps. Stylemaster harness and containers, black with red trim. 24' reserve with 4-line release. \$375 complete. Also Strato-Star, gold and black, sliderized, shortlined, soft toggles, a nice older canopy: \$300. Dan Cosgrove, 845 Griggs SE, Grand Rapids, MI 49507. (616) 241-2232. (5)

**MINI SYSTEM, R/B,** main and reserve harness/containers. American Papillon, red, black, gold. No rips, patches or burns, only 70 jumps. Sleeve, pilot chute and risers, ready to jump: \$250. William Delaney, 42 Cooper Lane, Levittown, NY 11756. (212) PE1-8395 (5)

**DO YOU NEED A FREEFALL CAMERA-MAN?** I am available for your private and commercial projects, worldwide. Contact Chris Wentzel, 1704 Swinburne Ave., Crofton, MD 21114. (301) 721-2687. (1)

**FRENCH PAP.** Multi Color with risers, sleeve and pilot, 75 jumps. Sage green Mini System. Both \$250. Penny Adams, 641 Cameron Way, Modesto, CA 95351 (209) 527-2086. (5)

**STRATO-STAR,** gold and black, 100 jumps, excellent condition. Asking \$325. Mike (904) 789-4212.

**STRATO-FLYER,** white and yellow, brand new, still in factory carton, never even packed, asking \$350. **STRATO-STAR,** red, orange and black, also brand new and never jumped, asking \$400. Cathy Collingwood, (305) 391-8728 or (714) 270-2493. (1)

**STRATO-STAR.** White and blue, 400 jumps, good condition: opens and flies well. \$275. P.O. Box 883, DeLand, FL 32720. (1)

**STRATO-STAR.** Red & Black, 125 jumps, excellent condition. Greenstar harness and container. Pop Top with 26' conical. All for only \$500 ready to jump. (515) 279-3078, ask for Bruce newell. (5)

**STARLITE TANDEM,** custom-made for small girl—good for a short person. With Strato-Star and 26' Navy conical: \$500 complete. Call Sandy or Allen after 5 p.m. at (904) 775-2042. (1)

**CAMERA MOUNTS.** Convertable 35mm SLR mount. Horizontal or vertical format. Complete super 8 kits. Mount on your helmet. Bill Sutton, 695 N. Lincoln, Wilmington, OH 45177. (513) 382-0681. (7)

**PARA-PLANE CLOUD,** modified, O/W/B, Hot Dog, blue Guardian conventional rig, R-3s, matching Mini-system reserve, 4-line release: \$450. John Musgrave, 4615 Gardendale #1402, San Antonio, TX 78240. (512) 699-9142. (4)

**1978 WONDERHOG I,** Star sized, red with black trim, \$300. 26 ft. Security Lopo: \$100. MKIII Para-Commander, Merry Widow, with NAA conventional Mini-System and extra: \$250. Call (812) 422-1507. (4)

**STRATO-STAR,** Blue with two gold stripes, excellent condition, strap and Zoo toggles included: \$350. (716) 283-3607 (nites). (4)

**Complete Rig; Wonderhog,** black spectrum Strato Cloud, red Joe Smith reserve, all in good shape. \$950. Call (301) 896-3259 after 5 p.m. (4)

## Employment

**HELP WANTED.** Experienced USPA-rated instructor with riggers certificate and first class student equipment needed to recruit, train and jumpmaster students at central Florida drop zone. Send resume and description of equipment to DeLand Air Sports, P.O. Box 1657, DeLand, FL 32720. (6)

## Drop Zones

**PALATKA PARACENTER.** Twin Beech, two Cessna 182s. Tuesday through Sunday, dawn to dusk. Master and Senior riggers, I/E and memorable parties. Hot skydives in the warm sun. FFI: Norm Ross, (904) 325-9381. Altitude South, Inc., Box 188J, Kay Larkin Airport, Palatka, FL 32077. (1)

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# Cruisair™

**SUPERB PERFORMANCE  
FROM OPENING  
TO LANDING.**

**JUMP,  
AFTER JUMP,  
AFTER JUMP.**

The Cruisair is a pretty impressive mid-size canopy. It opens cleanly. It flies fast with a flat glide angle. It lands you so softly that you'll think it's bigger than it actually is. Yet it packs very small.

Although we designed the Cruisair to fly well and pack small, we're also careful to build durability into every one we make. The result: this canopy flies straight, even after hundreds of jumps. Your Cruisair will hold up and be ready for your next jump.

(We believe a canopy is an investment, not something you'd buy on the spur of the moment. We want you to get your money's worth, to be completely happy with your Cruisair, no matter how much you jump it.)

So the Cruisair is unique because it is designed for long life as well as great performance.

One jump on a Cruisair will show you what we mean when we say this canopy provides excellent performance from opening to landing.

And it's good to know you can expect to enjoy that same reliable and thrilling performance for hundreds of jumps after the first one.

You may have heard of the slogan "Para-Flite makes it right!" We've built thousands of unbeatable ram-airs for over ten years. The Cruisair is a canopy that's made right—so it will treat you right.

The Cruisair was the choice of the 1979 U.S. RW Parachute Team.



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