



# Skywriter



Monthly Newsletter of the Calgary Ultralight Flying Club

## September 2000

### From the Cockpit

by Brian Vasseur

Well it's September and we're getting back to our regular meetings again. There's been a lot of activity this summer, and some confession session stories to go along with it. I know it's embarrassing having to recount your stories in front of the group but that's not why we do them. Listening to someone explain a mishap and describe what happened to cause it is just about the best way to learn how not to make the same mistake.

On the topic of preventing accidents, Winston Brown has purchased a KR-1 recently and has been getting it, and himself, ready to fly this fall. The KR-1 is a legal ultralight according to the regulations unveiled a few years ago, but it is also a very high performance airplane. Winston is likely the first of many people to begin flying ultralights that are faster and more agile than what we've been flying up until now. Winston has accumulated a lot of ultralight hours and is also taking additional training to make sure that he has the skills to fly it safely. I've talked to Winston and he will be doing a writeup in the future detailing the training plan he's put together. My hope is that the work he is doing can be used as a model for other pilots in the club who will be in similar situations in the future.

This summer has also seen some new or upgraded airplanes back in the air. Both Bernie Kespe and Ken Johnson have rebuilt their Murphy Renegades and made some improvements. Ken put additional stringers on the fuselage to round it out, changed to the round cowling, added a new interior and installed a new Rotax to round out the package. Bernie converted his to a single seat, installed an additional fuel tank, a 690-L70 engine from 2SI and leather interior thanks to Winston Brown. Both airplanes look absolutely flawless and could easily be in a museum. There's been lots of building activity too so we can expect quite a few updates at the next meeting.

Coming up is the club's fly-in breakfast at Dave Boulton's place on Saturday, September 9<sup>th</sup>, with a rain date for Sunday. I'm looking forward to it as I've never been to Dave's place. I've heard it is a very nice place to fly into. Hopefully we also have time for another club breakfast or lunch this year before it snows so if we can pull it off you'll

hear it here first.

I talked to a Tom Charon from California this week. He's retiring and moving to Fernie in the next year and wants to take up flying ultralights. He was very impressed with ultralights in Canada and even more excited after I explained what we were doing up here. He's looking forward to getting involved and I've forwarded him some names of people to contact about flying in Fernie. It's good to hear that our club has good exposure and we can garner interest from all over.

I won't be at the next meeting and I'll leave our trusty Vice President Stu in charge, but I expect you'll all have fun anyway. See you next month. →



A Rand Robinson Engineering KR-1.

# For Sale

**Challenger II** - 1989, Rotax 503 DCDI, DFP, Bat, ASI, VSI, ALT, CHT, Tach, radio, intercom, doors, cabin heat, brakes, skis, dust covers, always hangared, air frame painted and recovered (Stits) 1996, \$19,000 Cdn. Fly away, phone 403-783-5153 Ponoka AB. E-mail: [hammondv@home.com](mailto:hammondv@home.com) (9/00)

**Murphy Renegade Spirit** - 260 TTSN, Rotax 532, 60 SMOH, always hangared, ASI, VSI, Tach, T/C, ALT, CHT, water temp, intercom, two helmets, 3-blade Ivoprop, 80mph cruise, Red & White Endura, hole covers, \$25,900. Bob Kirkby 569-9541 (7/00)

**Three Point Restraints** - A local supplier has a surplus of new heavy-duty three point harnesses. They are available in any color as long as it's YELLOW. Cost of the harness is \$50 + GST. Belts feature a military style release. Interested parties should contact Kim Skulsky, 208-2813 [skuller57@home.com](mailto:skuller57@home.com) (5/00)

**Wanted** - An ultralight for \$5000 or less, in good flying order, strut braced, and registered to the person selling the plane. Rex McCarthy 403-504-1962 (5/00)

**Beaver RX-550** - Rotax 503 dual carb, Warp Drive prop, electric start, enclosure kit, TTAF 625, TTE 105, \$9900. Victor Thiessen 403-546-4449 (4/00)

**Bushmaster** - 1986, 2-seat, dual-control, fully enclosed cabin, 503 Rotax, ground adj prop, 510hrs, complete with crop spraying equipment, always hangared, \$12000. Ken Giesbrecht 403-572-3294 (3/00)

**Skis & floats** - Powder coated skis for tri-gear or tail-dragger \$850, floats \$1500. Don Leonzio 250-427-2046 (3/00)

**Hanger** - One half share in indus hanger for sale, 38 ft door facing east call Ray Waller at 274 4388 or cell 540 2492 (3/00)

**Flying-Flea HM-293** - Famous MIGNET Aircraft redesigned by GRUNBERG as an Ultralight. More than 100 flying. French plans and brochure with English translation, \$110.00, mailing included. Paul PONTOIS, 1890 Rang des Chutes, STE-URSULE (Quebec) J0K 3M0 (3/00)

**Yarrow Arrow** - Enclosed heated cab, dual control side by side seating, 55 HRS TT on new 503 dual CDI dual carb, 100 CH Alpha/100 radio, alum. skis, hangared. \$13,000. Located in Lac La Biche AB. PH: 780-798-2404 FAX: 798-3011, e-mail: [rckb@telusplanet.net](mailto:rckb@telusplanet.net) (1/00)

**MiniMax** - Rotax 447, GSC Ground adjustable prop, full panel, always hangared, only 115 hours since new. \$9,500. OBO. Dale 293-3826. (12/99)

Forward ads to Bob Kirkby 569-9541.

## Ads reprinted from the St. Albert Flying Club Newsletter

**1998 Fisher Avenger** - Rotax 503, dual carb. Open/closed cockpit options. Wheels/skis. Always hangared. Asking \$9,000. Damien Belanger 939-6321.

**1986 Bushmaster II** - ultralight, high cabin, side by side seating, dual controls, heater. 130 TTSN. Rotax 503, SCSI, 120 TTE. Complete manuals, drawings, & logs. Never a trainer, only 2 pilots. Very good condition, \$16,500 OBO 780-459-0813 or e-mail [tya@compusmart.ab.ca](mailto:tya@compusmart.ab.ca)

**Maule tailwheel** - 6" pneumatic, \$100 firm. Simon 963-0737

**Hirth F-23** - used 6 hrs, 40 Hp, \$2,800.00 Dan (780) 452-2491

**Three bladed GSC prop** - 64", almost new, \$500. Contact Viv 460-8753.

**REDUCED!** 60" x 38 Culver wood prop (left hand) drilled for Rotax. \$250.00 Contact Viv Branson 460-8753.

**Hangar for rent** - \$50 per month on 2000 foot strip 2 miles north of Josephburg. Andy 780-998-7443

# Flying Events

**Sept 9** - Calgary Ultralight flying Club fly-in breakfast at Dave Boulton's strip, 8:00 am to 12:00 noon (rain date Sept. 10). Contact Bernie Kespe 255-7419.

**Sept 10** - St. Albert Flying Club fly-in breakfast, 8:00 am to 11:00 am, St. Alberta airport.

**Sept 16** - Rocky Mountain House fly-in breakfast/lunch and airshow. Contact Ken Fowler 403-845-4742.

**Sept 23-24** - Weekend fly-out to Wetaskiwin and Lacombe. Contact Carl 283-3855 or Stu 255-6998.

## Skywriter

Skywriter is the official newsletter of the Calgary Ultralight Flying Club and is published 12 times per year. Forward your articles and letters to:

**Editor:** Bob Kirkby 569-9541  
e-mail: [kirkby@telusplanet.net](mailto:kirkby@telusplanet.net)

**Assistant-editor:** Bernie Kespe (see below)

## Calgary Ultralight Flying Club

Meetings of the Calgary Ultralight Flying Club are held on the second Thursday of every month, except July and August, at 7:00 pm, at the Northeast Armoury, 1227 - 38 Avenue NE.

**President:** Brian Vasseur 226-5281  
e-mail: [vasseurb@cadvision.com](mailto:vasseurb@cadvision.com)

**Vice-President:** Stu Simpson 255-6998  
e-mail: [simpsonst@cadvision.com](mailto:simpsonst@cadvision.com)

**Secretary:** Bernie Kespe 255-7419  
e-mail: [kespeb@cadvision.com](mailto:kespeb@cadvision.com)

**Treasurer:** Carl Forman 283-3855  
e-mail: [formanc@cadvision.com](mailto:formanc@cadvision.com)

**Director:** Dan Mitchell 238-4254  
e-mail: [mitchell@cadvision.com](mailto:mitchell@cadvision.com)

**Past President:** Wilf Stark 935-4248  
e-mail: [wstark@compuserve.com](mailto:wstark@compuserve.com)

Visit the CUFC web site:  
[www.cadvision.com/cufc/](http://www.cadvision.com/cufc/)

# The CUFC's First Fall Fly-Out

Some CUFC members are planning a Fall Fly-Out for mid-September, and the wives are very much invited.

Here's the plan: We leave from Kirkby Field at 0830 on Saturday, September 23rd with the destination being Wetaskiwin. We'll stop at a field along the way for fuel; some place like Carstairs-Bishell, Olds-Didsbury, or Innisfail.

Then it's on to Wetaskiwin where we can tour the aviation museum, or whatever else tickles our fancy. We overnight there and then fly on to Lacombe the next morning. Lacombe has someone at the airport each Sunday morning with a box of doughnuts for anyone flying into the airport. They're looking forward to our visit.

We then head home, stopping for gas along the way if necessary.

We've also contacted the St. Albert Flying Club whose members are interested in flying down to meet us either at Wetaskiwin or Lacombe that weekend.


You don't even need a plane to come along on this one. There will be quite a contingent of ground crewers, including a number of wives who've already said they'll be coming along.

Organizers Carl Foreman and Stu Simpson need to know as soon as possible who's coming. Call Carl at 283-3855 or Stu at 255-6998 so we can add you to the list.

We hope trips like this can become a regular occurrence, happening two or three times per year, to interesting destinations for a pleasant weekend of flying and visiting. →

## For Sale by Owner

Complete set of Encyclopedia Britannica. 45 volumes. Excellent condition. \$1,000 or best offer. No longer needed. Got married last weekend. Wife knows everything!



**936-5767**

*Located at  
Indus-Winter  
Aire-Park*

**Dealers for  
Easy Flyer  
T.E.A.M. mini-MAX**  
Build and fly this  
popular kit for only  
\$6500.00

**Merlin**

- Flight Training
- Ground School
- Intro Flights \$25.00
- Gift Certificates
- Rentals (Block time)

## Stripes

*An economical way of adding coloured striped trim to your aeroplane - by Ed D'Antoni*

Tiring of painting stripes on my Avid I went in search of 1 ½" stripes. The going rate is \$1.00 per foot. Since I was using 4 colors for a length of about 90 feet, this was going to cost me almost \$400.00. My quest for a better way revealed the standard width of Vinyl used by sign shops is 24 inches. I had the bright idea of having a sign shop simply cut a 6 ft. length into 16 - 1 ½" strips.

I called a few shops and non of them really wanted to do this. The shop that tried to sell me \$1.00 per foot strips in 100 foot rolls offered to cut up the 24 inch stock for \$40.00 per 6 foot length. In my search for a better price I found "Agency Sign Group". Hal Tagg of Agency provided me with 4 sheets cut into 1 ½" strips for a total of only \$68.00. For an Extra \$10.00 he threw in a 24" by 6 foot length of Black that I can use for lettering. Hal also provides next day courier service at his cost.

The next time you are considering stripes on your aircraft give Hal a call. Calgary 203-3245, 1-800-727-2685 or email <mailto:htagg@home.com> →

## CUFC Fly-in Breakfast

Date: Sep 9 (rain date Sep 10)  
Place: Dave Boulton's strip  
Time: 0800 to 1200

Fly in and enjoy pancakes and sausages supplied by Guy Christie and Dave's marvelous muffins.

For info contact Bernie at 255-7419

## Last Minute Ad

For Sale: Hirth 2706 engine. 65HP, dual Bing 54 carbs, dual ignition, electric starter, 3.66 gearbox, 2 complete exhaust systems (1 side mount, 1 straight mount). Freshly broken in (6 hours) and ready to go! Very strong engine. Must sell, have purchased a new engine. Asking \$4000 obo. Pictures available. Call 519-448-4816 or email at: [tpage@sentex.ca](mailto:tpage@sentex.ca)

## Understanding Cordless-Tool Batteries

by Gary M. Katz

Three months ago, I carried a boxful of one-year-old 14.4v batteries into my local tool dealer's service center. The service technician tested the batteries and confirmed what I knew: Those batteries would no longer take a charge. He couldn't tell me why they lasted for just a year, which only added to the aggravation of buying six new batteries for \$60 each.

The batteries in my old 9.6v tools lasted for years, driving thousands of screws. However, I've noticed that 12v, 14.4v and 18v batteries degrade faster. After about one year, they don't deliver their original run time or torque, regardless of the claimed amp-hour rating. (Amp-hour is the industry's standard measurement of the electricity that a battery can, store and release on demand.) Other carpenters had similar complaints.

To learn what was going on, I spoke with representatives from Makita, DeWalt, Porter-Cable, Bosch, Milwaukee and Hitachi, as well as Sanyo and Panasonic, which manufacture most cordless-tool batteries. The manufacturers confirmed what I suspected: Higher-voltage batteries have shorter lives. Manufacturers estimate battery life along these lines: 1,000 to 1,300 charges for a 9.6v battery; 800 to 1000 charges for a 12v battery; 650 to 800 charges for a 14.4v battery; and 500 to 800 charges for an 18v battery.

Battery life isn't wholly dependent on voltage ratings, though. How a battery is used also affects its life. What follows is a summary of my conversations with the manufacturers.

### Heat is a battery's worst enemy

My crews use today's high-voltage cordless tools for harder tasks than the light, occasional duty we expected of 9.6v tools. Now, cordless tools run large spade bits, hole saws, auger bits, 6-in. circular saws and even reciprocating saws. High-voltage cordless tools are often our primary tools for tasks that two years ago would have required a corded tool. Unfortunately, cutting and other high-torque applications result in a fast discharge rate. This is bad.

**Challenger**

**Puddle Jumper  
Floats**

**Just PLANE Fun<sup>TM</sup>**  
**ULTRALIGHTS INC.**  
SERVING BRITISH COLUMBIA



**Bruce Tillen**  
3200 Mt. Royal Drive  
Cranbrook, BC V1C 5R8  
www.just-plane-fun.com

**Jo-Anne Rutherford**  
Tel: 250-426-0049  
Fax: 250-426-0941  
email: bruce@just-plane-fun.com

Because of the internal resistance of battery cells, fast discharges create more heat. Heat degrades the material within cells that stores and releases electricity.

All cordless-tool batteries, regardless of total voltage, are packages of individual 1.2v battery cells. There are eight cells in a 9.6v battery, 12 in a 14.4v battery and 15 in an 18v battery. Higher-voltage batteries are more vulnerable to heat than 9.6v batteries because with more cells joined to gather, higher-voltage batteries have less surface area per cell to disperse heat. So not only do we use higher-voltage batteries in ways that create more heat, but also because of these batteries' construction, they are less able to dissipate that heat than are 9.6v batteries.

### New battery technology isn't necessarily better

Nickel-cadmium (Ni-Cd) batteries are the standard. They powered all cordless tools until about one year ago when nickel-metal hydride (Ni-Mh) batteries were introduced as an environmentally friendly alternative. Worn out Ni-Cd batteries are a hazardous waste and must be recycled. Ni-Mh batteries are still free from that mandate.

Ni-Mh batteries also have a higher amp-hour potential than Ni-Cds, potentially as high as 3 amp-hours for a standard cell. The current ceiling for the Ni-Cds used in cordless tools is about 2.2.

What's the downside? Ni-Mh batteries haven't yet reached their full amp-hour potential. But more important, Ni-Mh batteri-

es also have a higher internal resistance than Ni-Cds. This internal resistance makes the battery discharge faster and generate

heat doing so, reducing both run time and cycle life. Additionally, Ni-Mh batteries are extremely sensitive to temperature changes; heat easily damages the cells. Several tool manufacturers explain that Ni-Mh batteries are not as "robust" as Ni-Cds. In fact, some manufacturers expect only 500 charge-discharge cycles from a 14.4v Ni-Mh battery (compared with 650 to 800 cycles for an Ni-Cd battery).

### New chargers may extend battery life

Ironically, the power that restores a battery can also degrade it because charging a battery also heats it. Cordless-tool manufacturers all agree on this. They are all making efforts to reduce charging-generated heat, thereby maximizing cycle life.

Professional-grade chargers operate in stages, first sensing the initial temperature of a battery. If the battery is too hot to be charged, the charger waits for the battery to cool off. The fast charge then takes anywhere from 30 minutes to an hour, after which the battery is near its full capacity. Because charging a battery that's too cold also can damage it, Porter-Cable's chargers also sense if a battery is too cold. If it is, the charger slowly ramps up for several minutes before going into the fast-

*(continued on page 5)*

charge stage.

Professional-grade chargers sense when a battery is near full charge and shut down to minimize heat buildup. However, each cell may not get a full charge. Each cell takes a fast charge differently, and chargers shut down before they damage those cells that reach capacity soonest. After the fast charge, one cell may be at 98% capacity and another at only 85%.

According to the instructions supplied with DeWalt and Porter-Cable tools, their chargers follow the fast charge with an equalization, or topping-off, stage that balances the cells. A trickle charge that makes up for the power the battery would ordinarily lose through nonuse is last. Other manufacturers say their trickle charge equalizes the cells. Leaving batteries to trickle-charge, even for days at a time, won't hurt them.

#### **Full discharge kills weak cells**

Heat may be a battery's worst enemy, but unequally charged cells also reduce cycle life, run time and torque. With each succeeding fast charge, the weakest cell slips farther and farther from its full-charge potential.

Weakened cells become prone to the irreversible damage of reversed polarity, called reversal, which is comparable to short-circuiting. Reversal is caused by using a battery until it no longer operates at all. The weakest cells drain first. While the stronger cells continue to operate the tool, the weakest cells are emptied of power. When a fully drained cell is called on to produce power it no longer has, reverse polarity occurs. Cells that have been forced into reversal will never again take a charge. The result is that a freshly charged 12-cell battery might operate on only 11 cells. Reversals mean shorter run time, less torque and faster degradation of the remaining cells.

DeWalt suggests that a battery's run time and its cycle life can be increased (by up to 30%) with proper care. Because DeWalt believes that maintaining cell balance is crucial to long-lived batteries, the company advises that after a maximum of ten charge-discharge cycles, a battery should be left in

the charger for about six hours to ensure complete cell equalization. Leaving batteries in the charger overnight once a week is even better. Other manufacturers weren't as forthcoming as was DeWalt, but my conclusion is that the same advice applies to any battery whose charger has a topping-off stage.

#### **Batteries have no significant memory**

If your charger doesn't have a topping-off stage, there are still steps you can take to extend battery life. Batteries should not be left in heat or cold, or operated or charged while extremely hot or cold. Batteries will not usually take a full charge at other than room temperature. Batteries like room temperature. Operated there, they run most effectively, take the most complete charge and have their longest run time and cycle life. Try not to use cordless tools continuously, and let them cool down between applications.

Finally, no matter what contradictory advice you may have heard, never fully discharge a battery. For years, carpenters have passed along the myth that batteries have memories, and if not fully discharged, they won't fully charge. I've even seen carpenters tape a drill's trigger down to extract every last electron from a battery. This action reverses cells and makes your batteries die young. Use the battery only until you notice a power loss that affects performance, and then recharge the battery. →

*Gary M. Katz is a carpenter and writer in Reseda, CA.*

---

## **Canadian Ultralights Can Now Fly South**

by Ed D'Antoni

Thanks to the efforts of Claude Roy, a member of a group of Canadian Challenger Pilots, some Canadian Ultralights can now fly into the United States. Mr. Roy's request for permission for a group of Challenger pilots to fly to Air Venture 2000 resulted in an agreement between the Canadian and U.S. Governments that allows Canadian ultralights to fly into U.S.

airspace by obtaining a "blanket" Special Flight Authorization. This authorization is automatic upon filling out a document, available on the Internet, and having it in one's possession as you fly in the U.S.

The FAA has determined that manpower and budgetary resources required to process, complete, issue and the keeping and maintaining of records exceed the safety benefits realized through a complicated administrative process. They therefore came up with the following simplified process.

The FAA will allow Canadian registered ultralights and advanced ultralights into the U.S. under the condition the pilot holds a Canadian Private Pilot Permit Recreational — Aeroplane or higher rating. A Canadian Pilot Permit Ultralight — Aeroplane endorsed with a flight instructor rating and with a two-hour cross-country flight time logged with an endorsement from an authorized flight instructor also makes the aircraft eligible for flight in the United States. A basic Pilot Permit, Ultralight without the appropriate endorsements is not acceptable since the minimum experience required to obtain them is less than any U.S. pilot license or certificate. The appropriate paperwork can be obtained from:

[www.faa.gov.avr/afs/afs800/formtext.htm](http://www.faa.gov.avr/afs/afs800/formtext.htm)

This special flight authorization is limited to 180 days. The following restrictions apply: Day VFR. No passengers in a Basic Canadian Ultralight, (although legal in Canada, two pilots are not allowed in a basic ultralight in the US).

All flights shall be conducted to avoid areas of heavy air traffic and to avoid flights over cities, towns, villages and congested areas where the flights might cause hazardous exposure to persons or property except when otherwise directed by Air Traffic Control, or in the event of an emergency. Persons may not be carried for reward or hire. Any person carried as a passenger in the U.S. must be advised of the content of the special authorization and the airworthiness of the aircraft. OK guys and gals go out and get your RPP and Stu Simpson's 2001 adventure can take us into the Excited States! →

## Batteries for Portable Aircraft Equipment

by Ed D'Antoni

Portable self-powered Nav/Com radios, GPS and Digital Compasses are some of the equipment commonly used by ultralight and small aircraft flyers. Most, if not all use common AA batteries (pencells). The battery choices are standard carbon zinc and alkali or rechargeable. When choosing standard batteries, choose name brand alkali such as Eveready, Kodak or Duracell. These alkali cells have a capacity of 2000 milliamp hours (mah). The common rechargeable are alkali, nickel cadmium (NiCad), Nickel Metal Hydride (NiMH), and Lithium Ion.

Rechargeable Alkali cells have a capacity of 2000 mah and are available in packages of 8 or 12, complete with rapid charger for \$20 to \$30. These cells have no memory and are great for GPS, scanners and other low current draw applications. Portable radio transmitters can draw up to 7 amps. My experience with rechargeable alkali cells has shown they cannot provide these high amperage outputs for more than a few seconds, therefore I recommend they not be used in transmitting equipment.

The standard Nickel Cadmium cell has a capacity of 500 mah; they are available in higher capacities. NiCads can produce currents of several amps on a continuous basis. If inadvertently shorted they can produce currents high enough to melt most metals. Typically NiCads are priced at \$2 to \$4 per cell; they are rugged, readily charged and have been the standard rechargeable battery for decades. Fairly recent on the market is the Nickel Metal Hydride battery. Normal capacities seem to be 1100, 1600 and 1800 mah. The first NiMH batteries on the market required special charging techniques. Many of today's cells can be charged with the same equipment used to charge NiCad batteries. They typically sell in the \$4.00 range. Lithium Ion cells are not available in AA size, however they can provide the high currents



## Light Engine Service Ltd.

AUTHORIZED  
**ROTAX**  
REPAIR CENTRE

DEALERS FOR  
**Titan Tornado**  
**Challenger**

For Rotech Research Canada Ltd.

Call: 780-452-4664

e-mail:  
lighteng@telusplanet.net

- Aircraft Sales - Service
- Rotax Engine Sales - Service - Parts
- Engine Test Stand Service
- Engine/Flight Instruments - Radios
- Propellers - Spinners - Accessories

12624 - 124 Street, Edmonton, AB T5L 0N7

required for radio transmitters and if available in AA would have a capacity of 2000 mah. Since each cell produces 3 volts, half the number of cells would be required per pack. Since most aviation equipment uses AA cells it will be a while before they become common in our applications.

Rechargeable batteries cannot always be safely used as a replacement for regular carbon zinc or alkali batteries. Watch for equipment warning labels that state "do not use rechargeable batteries". Rechargeable such as NiCads have a very low internal resistance. This internal resistance is sometimes factored into equipment design, low internal resistance power supplies can result in high currents damaging sensitive components.

The real advantage of alkali batteries is their high capacity and long shelf life. I recently removed the working Duracell powering the digital clock in my aircraft. The cell I removed was stamped "Install before 1982", this cell has been going strong for 20 years. Most radio manufacturers sell an "alkali battery case" for their equipment. It is a good idea to purchase one of these units, install fresh alkali cells and keep the pack in your flight bag in case you inadvertently end up ready for a flight only to find out your batteries are dead because you left your Radio on overnight. After a year or so I remove these alkali batteries and replace them with new ones. I use the

removed batteries in my GPS.

NiCad and NiMH cells self discharge. NiCad and NiMH powered equipment that has been sitting for over one month should be recharged before using. The reason being that each cell has a different storage discharge rate thus a different residual capacity. To produce the desired voltage, cells are placed in series. A one-cell pack is 1.2 volts; 2 cells, 2.4 volts; 10 cells, 12 volts etc.

When discharging a partially charged pack, once the voltage of the lowest capacity cell goes to zero, it will be reverse charge. This reverse charging causes irreversible crystal growth between it's anode and cathode, effectively shorting the cell. All new battery packs should be charged fully before using, even if the pack is labeled "cells fully charged".

This year a battery retailer at EAA Arlington was selling every imaginable battery pack and cell. For only \$38.00 I picked up a 1600mah Nickel Metal Hydride Icom replacement rechargeable pack. It accommodated a standard cigarette lighter charge plug and had a built in automatic charging regulator. This same retailer was selling NiMH 1200 mah cells for \$2.00 US and 1600 mah cells for \$3.00.

Different cells have different voltages  
(Continued on page 7)

*Batteries - continued from page 6*

and discharge rates. Alkali batteries have a nominal voltage of 1.5 volts per cell while the NiCad nominal voltage is 1.2 volts per cell. This is why you often see one piece of equipment with two different battery holders. Typically 8 alkali AA's (12 volts) or 10 NiCads (12 volts). The alkali discharge curve is fairly straight with the voltage dropping steadily down from 1.5 volts as energy is consumed. On the other hand NiCad cell voltage stays above 1.1 volt until virtually all of the battery capacity is exhausted, the voltage then drops rapidly.

Safety - Stack cells in a tube, or tape them together and place them in a plastic bags. Don't even think about putting one NiCad cell in your pocket. Eventually you will end up with some loose change competing a circuit and burning a hole in your leg or some other vital organ. Always charge with an approved charger, never mix different capacity cells in one battery box. Questions can be addressed to [dantoni@nucleus.com](mailto:dantoni@nucleus.com) →



*A CF-18 and an AWACS during NATO war games - submitted by Alan Botting*

**Strip of the month:**

---

An aeroplane is safest in the hangar,  
but that's not what it was meant for.

- Bob Kirkby

---

Avflash published quite a good review article on using a Palm Pilot as an aviation device. The link to it is:

<http://www.avweb.com/articles/palms/>

- Bob Kooyman

---



*AJ Flying Ranch, Nanton, AB (facing NW) - runway has been paved since this picture.*

*Coordinates: N 50 - 27 - 32 W 113 - 45 - 46 Rwy: 06/26*

*Operated by: J. Hugill; (403) 395-3959*

# Complacency The Great Satan

by Carl Forman

One of my bigger concerns with flying an ultralight airplane is the lack of recurrent training. With no instructor looking over my shoulder from time to time, it's easy to become complacent. Flying is a safe hobby but it has some heavy penalties for those of us who commit errors. One of the best ways to avoid big mistakes is to not tolerate little ones.

On a recent Sunday I flew to A.J. Ranch, near Caley with five other ultralights. The weather was perfect, the sight of all the Dragonflies in the air at the same time was inspiring, and our radio chatter and hangar talk was exuberant. Life doesn't get much better.

After the return to Chestemere-Kirkby Field the rest of the guys hung around in the new pilot's lounge for a coke and a post mortem. Finally we all disbursed. I still had a few air miles to spend that day and decided to go visit the Indus crowd, about ten miles south.

I did a quick walk around, started the engine, climbed aboard, and adjusted the headset, helmet and safety harness. I have a preflight check list that I committed to memory years ago. I usually do it twice, once before taxiing and a second time during taxiing. Today was no exception. I make a point of not doing it robotically and to make sure I think about every item. In due course my Minimax and I were ready for the short flight and we accelerated down the runway for the short but pleasant hop to visit Indus.

After a half-hour visit at Indus it was time to head back home and call it a day. I again attended to all the procedures for a safe flight and before long I was zooming down runway 10, followed by a left-hand turn-out for Chestemere-Kirkby.

I was about three miles into the ten mile trip when I glanced down to the top of my

wings to check my fuel tanks. To my complete surprise, I couldn't see a single drop of fuel. I have a lexan cover over the tanks so in theory I can see how full the tanks are. In reality, the system doesn't work all that well.

The first thing I did was to execute a turn. The sloshing gasoline should make itself visible. When I banked the airplane, I still didn't see a bit of gas. I did notice a drop or two on my fuel cap and began to wonder if my fuel had somehow been sucked out of the tanks through a defective fuel cap. I had six miles to fly and my alternate (Indus) was four miles behind me. I elected to carry on to home base.

Since I started using my open canopy, my airspeed indicator reads quite high and I compensate on landing by approaching at higher speed to have a good safety margin. In this case I also wanted to stay high so I could glide to the runway if the engine quit. As a consequence, I came over the threshold of runway 08 about twenty-five feet in the air with my airspeed equal to that of a space shuttle on final.

There was some doubt in my mind as to whether or not I could get stopped in the thousand feet available. I didn't want to go around and risk running out of gas so I elected to stay the course and land. I kept flying lower and lower. Finally, I forced the main gear to come in contact with the ground about half way down the runway.

I was still moving really fast and the end of the runway was coming at me at an alarming rate of speed. Perhaps a little braking action would help out. Gently squeezing the brakes led to a tail-high attitude and a great view of the ground immediately in front of my nose, as well as the rapidly approaching end of the runway, now about 250 feet away. I let go of the brakes and felt the tail start to settle. Feeling an urgent need to get the tail down and resume braking, I

pulled back on the stick a little. At this point my Minimax unfortunately demonstrated its ability to utilize ground effect and took off.

I rarely use four letter words but this was definitely an "Oh, poop!" moment. I managed to force the airplane back onto the ground with about 50 feet of runway left. I then commenced heavy breaking.

I ended up running off the end of the runway by about six feet. Once I was sure no damage was done, I had a concern that most pilots will understand. I hoped that no one had witnessed my landing.

I later analyzed why I'd gotten myself into such a predicament and realized I'd made a number of errors. For instance I chose to use runway 08 after a left-hand circuit, while I simply could have used runway 34, a 2000 foot runway with a straight-in approach and only a five mile per hour crosswind.

The biggest single lesson I learned is that I must visually inspect my fuel supply before every flight. My preflight included a check for "fuel sufficient and on the right tank". I made the assumption that all was well by deducting the 110 miles I had flown from my 200 mile range. In other words, I'd inadvertently cut short an important preflight procedure. I had become complacent.

One final comment. When I did get out of the airplane and checked the fuel tanks, they were half full. →



Carl taking off in his MiniMax