THE LEADING EDGE

The Newsletter of the Northern Illinois Rocketry Association *July/August 2008*

50 YEARS IN FLIGHT

NARAM

50

THE PLAINS, VA

1958 - 2008

THE LEADING EDGE

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The Leading Edge is published bi-monthly for members of the Northern Illinois Rocketry Association (NIRA) NAR Section#117
Dedicated to the idea that rocketry is fun!

Contributors this issue;

Articles	Adam Elliot
	Tony Lentini
Photographs	Rick Gaff, Marty Schrader
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-T Minus One-

Launch Windows

NIRA Club Launches

Sep 21	East Branch Forest Preserve
Oct 5	CHAOS 4 Regional Meet East Branch Forest Preserve
	See details on Page 10
Oct 19	East Branch Forest Preserve

Meeting Calendar

NIRA ***We are now back to our schedule of first Friday of the month.***

Sept 5	Monthly meeting Helen Plum Library
Oct 3	Monthly meeting Helen Plum Library
Nov 7	Monthly meeting Helen Plum Library

A proposed new event unveiled for NARAM 51!

‘Z’ Human Payload Altitude

Model Of The Month

July Winners

In Junior **Joey Charaska** showed up with a rocket he built for A streamer duration. It was a little worse for wear, but he had it there.

Tony Lentini won Adult with his scratch built, fully scale **Tintin Moon Rocket** Once again, Tony provided plenty of scale documentation to back up a really fine model.

August Winners

Youth was captured once again by **Katie Mitchell** (with a *little* help from her dad) displaying her **Danger Zone**.

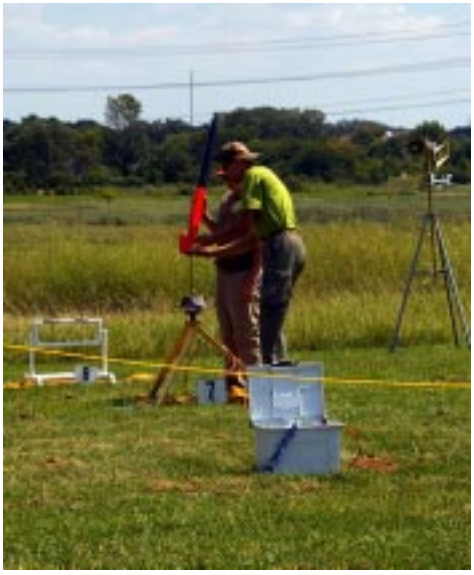
The Adult winner was **Marty Schrader**, who used a very untraditional approach with his rear engine, pod ejecting **Songbird** boost glider. This rocket has no moving parts on the airframe. Instead, the engine tube is mounted off camber in the ejecting pod to counteract the pitch-up properties of the horizontal stabilizer.

July Scout Launch

August Scout Launch

July Club Launch

August Club Launch



NARAM 50

Random Photos By Rick Gaff

Learning Curve IV
or 'How to launch an egg in 5 minutes.'

Learning Curve IV was the latest in our line of educational contest launches held at the April launch. To simplify the operation and be true to the theme of Learning Curve, we only had one event this time around. This was an official NAR sanctioned Sectional Meet.

B Eggloft Duration is as simple as launching a totally enclosed egg on a B class motor and keeping it in the air as long as possible.

Four brave contestants attempted flights and as many qualified and earned points in their overall NAR standings for the year. There are several models available off the shelf in kit or RTF form that are robust and easy to load and fly. But they have the disadvantage of being under performing when very simple models can be made to work better. At NIRACon '08 Adam Elliott gave a presentation on such models and has plans available for this contest (the Curisin' Chicken).

In Eggloft Duration your score and rank is determined by your best single flight as opposed to being the sum of your flights like most other duration events. Family men Jon and Marc flew their stock Estes Eggscalibers for two qualifying flights each. Adam and Don flew their Cruisin' Chicken models. Don flew his bright yellow model with a brand new and large Aerospace Speciality Products parachute for a beautiful 28 second flight on his second attempt.

This contest was a total success if you judge by the number of disqualifications, which were zero this time around. A big congratulation to all on this one!

Hopefully this is the start of a long tradition of success for these modelers. We hope to see more contestants next time when we host Learning Curve V at the July launch!

Learning Curve IV Meet Results

B Eggloft Duration (19)	Div.	Flight 1	Flight 2	Best	Points
A & C Division					
1. Don Kennedy	C	23	28	28	190
2. Adam Elliott	C	17	—	17	114
3. Jon Mitchell	A	9	12	12	76
4. Marc Mitchell	C	5	8	8	38

CHAOS-4

OCTOBER 5TH
Regional Meet.
East Branch Forest Preserve

1/4 A Altitude
1/2 A Boost Glider Duration
A Helicopter Duration
A Rocket Glider Duration
B SuperRoc Duration

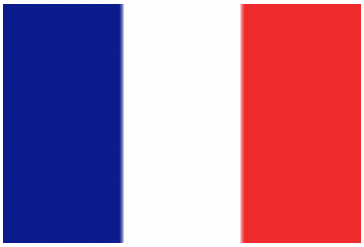
Special CHAOS-4 Offer from JonRocket!

JonRocket is offering a special deal to support CHAOS-4.
The **CHAOS-4 Competition Pack** includes:
(1) FlisKits Rose-a-Roc (A Helicopter Duration)
(1) Edmonds Tinee (A Rocket Glider)
(1) Edmonds Deltie (1/2A Boost Glider)
(1) Semroc Thunderbee (1/4A Altitude)
(1) Participant Entry Pass to compete in the event
Plus an assortment of four BT5 and four BT20 body tubes, six couplers, two nose cones, one BT5-20 transition, launch lugs, and a sheet of balsa fin stock. With all this you can construct your very own B SuperRoc model!
You do not need to be a member of NIRA to purchase this pack. NIRA encourages all who purchase to come and compete on Sunday, Oct. 5th!
JonRocket.com price: $49.95.
Go to http://www.jonrocket.com/chaos4.html to order yours.

East

vs.

West



TU-144 'Charger' vs. Concorde

In the sixties the world of aircraft transportation turned to the idea of the SST or Super Sonic Transport for commercial air travel. The only three serious contenders were the United States, the Soviet Union, and a British and French collaborative effort. The United States dropped out of the race when the Boeing Corporation determined that their prototype aircraft was economically impractical when compared to other airplanes in production, leaving only the Tupelev design bureau and the Aérospatiale and British Aircraft Corporations to forge on.

The two designs which went into production were the Concorde and the Tupelev TU-144, known to NATO as the Charger, and knicknamed by some in the west as the 'Concordski'.

The similarities in design are immediately apparent at a casual glance. Some in the west have accused the Soviet Union of industrial espionage, which was not unheard of at the time. The Soviets contended that since form follows function, and both aircraft were designed along similar requirements, it was only natural that both craft should share similar characteristics such as size and general shape.

Upon closer examination the actual differences between the two craft are that the TU-144 has a 'double delta' wing with straight leading edges. The Concorde's wing is roughly the same shape, but the wing leading edges are smooth and forms a curved arc shape.

Another difference is in the cockpit and nose configuration. Both craft have nose cones which drop down to allow the pilot a better view of the runway, and then pivot back up to form a more streamlined shape necessary for supersonic flight. However the nose of the TU-144 obstructs the cockpit's forward view in the up position, and extra windows are installed in the nose forming a kind of double paned window arrangement. Concorde's cockpit is situated above the nose rather than directly in line, and so does not obstruct the pilot's forward view in the up position.

Lastly because of aerodynamic constraints, the TU-144 was fitted with forward canards to aid in flight control.

Both aircraft faced similar problems in fuel economy, small passenger cabins, and the problem that the planes could not be flown at supersonic speeds near populated areas because of the inevitable sonic boom. As a result, very few of either aircraft were ever manufactured, and the entire SST project turned out to be financially disapointing. The Soviet Union ceased operating commercial flights in 1978, and the crash of a Concorde in 2000 led to the ultimate cancellation of operations by both British Airways and Air France in 2003.

The remaining TU-144's and Concordes are scattered around the world on display in various aircraft museums

The Tupolev Tu-144 (NATO reporting name: Charger) was the first supersonic transport aircraft (SST), constructed under the direction of the Soviet Tupolev design bureau headed by Alexei Tupolev.

Some western observers and popular news media nicknamed the plane Concordski (sometimes Konkordski), as the Tu-144 was similar in shape to Concorde, even though it was a very different aircraft. A prototype first flew on 31 December 1968 near Moscow, two months before Concorde. The Tu-144 first broke the sound barrier on 5 June 1969, and on 15 July 1969 it became the first commercial transport to exceed Mach 2, and was at the time the fastest commercial airliner.

The aircraft had two major crashes, and never sold commercially outside Russia. Additionally it was unsuccessful at finding a market within the Soviet Union.

The Soviets published the concept of the Tu-144 in an article in the January 1962 issue of the magazine Technology of the Air Transport. The air ministry started development of the Tu-144 on 26 July 1963, following approval by the Council of Ministers 10 days earlier. The plan called for five flying prototypes to be built in four years. The first aircraft was to be ready in 1966.

Despite the similarity of the Tu-144 to the Franco-British supersonic aircraft, there were significant differences in the control, navigation and engine systems. The Tu-144 was in some ways a more technologically advanced aircraft, but in areas such as range, aerodynamic sophistication, braking and engine control, it lagged behind Concorde. While Concorde utilized an electronic engine control package from Lucas, Tupolev was not permitted to purchase it for the Tu-144 as it could also be used on military planes. Concorde's designers used the aircraft's fuel as a coolant for air conditioning the cabin and hydraulics (see Concorde for details); Tupolev installed additional equipment on the Tu-144 to accomplish this, which increased the airliner's weight. One important consequence was that, while Concorde could supercruise, that is, maintain supersonic flight without using afterburners, the Tu-144 could not. Later work on the Tu-144S, however, resolved this shortcoming.

At the Paris Air Show on 3 June 1973, the development programme suffered a severe blow when the first Tu-144S production aircraft (reg 77102) crashed. While in the air, it undertook a violent downwards manoeuvre. Trying to pull out of the subsequent dive, the plane broke up and crashed, destroying 15 houses and killing all six on board and eight on the ground.

It is known that Aeroflot still continued to fly the Tu-144D after the official end of service, with some additional non-scheduled flights through the 1980s. One report showed that it was used on a flight from the Crimea to Kiev in 1987

A total of 16 airworthy Tu-144s were built: the prototype Tu-144 reg 68001, a pre-production Tu-144S reg 77101, nine production Tu-144S reg 77102 – 110, and five Tu-144D reg 77111 – 115. A 17th Tu-144 (reg 77116) was never completed. There was also at least one ground test airframe for static testing in parallel with the prototype 68001 development.

The Tu-144S model had Kuznetsov NK-144 turbofan engines and could not cruise at Mach 2 without the afterburner on: a maximum cruising speed of Mach 1.6 was possible on "dry" power (afterburner off). The later Tu-144D model featured more powerful Kolesov RD-36-51 turbojet engines with much better fuel efficiency (particularly during supercruise where it was comparable to Concorde's Olympus's, not requiring afterburner) and longer range up to ~6200 km. Plans for an aircraft with 7000+km range were never implemented.[8]

Along with early Tu-134s, the Tu-144 was one of the last commercial airplanes with a braking parachute.

Although its last commercial passenger flight was in 1978, production of the Tu-144 did not cease until six years later, in 1984, when construction of the partially complete Tu-144D reg 77116 airframe was stopped. During the 1980s the last two production aircraft to fly were used for airborne laboratory testing, including research into ozone depletion at high altitudes.

The only Tu-144 on display outside the former Soviet Union was acquired by the Auto & Technikmuseum Sinsheim in Germany, where it was shipped — not flown — in 2001 and where it now stands, in its original Aeroflot livery, on display next to an Air France Concorde.

Copied from Wikipedia

The Aérospatiale-BAC Concorde was a supersonic passenger airliner or supersonic transport (SST). It was a product of an Anglo-French government treaty, combining the manufacturing efforts of Aérospatiale and British Aircraft Corporation. With only 20 aircraft ultimately built, the costly development phase represented a substantial economic loss. Additionally, Air France and British Airways were subsidised by their governments to buy the aircraft. The Concorde was the more successful of the only two supersonic airliners to have ever operated commercially, the Tupolev Tu-144 being the other. The Tu-144 had a higher maximum speed, but required more fuel and had less range than Concorde.

First flown in 1969, Concorde service commenced in 1976 and continued for 27 years. It flew regular transatlantic flights from London Heathrow (British Airways) and Paris Charles de Gaulle (Air France) to New York JFK and Washington Dulles, flying these routes at record speeds, in under half the time of other airliners. Concorde also set many other records, including the official FAI "Westbound Around The World" and "Eastbound Around the World" world air speed records. As a result of the type's only crash on 25 July 2000, world economic effects arising from the 9/11 attacks, and other factors, operations ceased on 24 October 2003. The last "retirement" flight occurred on 26 November that year.

In the late 1950s, the United Kingdom, France, United States and Soviet Union were considering developing supersonic transport. Britain's Bristol Aeroplane Company and France's Sud Aviation were both working on designs, called the Type 233 and Super-Caravelle, respectively. Both were largely funded by their respective governments.[5] The British design was for a thin-winged delta shape (which owed much to work by Dietrich Küchemann) for a transatlantic-ranged aircraft for about 100 people, while the French were intending to build a medium-range aircraft.

Construction of two prototypes began in February 1965: 001, built by Aerospatiale at Toulouse, and 002, by BAC at Filton, Bristol. Concorde 001 made its first test flight from Toulouse on 2 March 1969 and first went supersonic on 1 October. The first UK-built Concorde flew from Filton to RAF Fairford on 9 April 1969, piloted by André Turcat.[8] As the flight programme progressed, 001 embarked on a sales and demonstration tour on 4 September 1971. Concorde 002 followed suit on 2 June 1972 with a tour of the Middle and Far East. Concorde 002 made the first visit to the United States in 1973, landing at the new Dallas/Fort Worth Regional Airport to mark that airport's opening.

These trips led to orders for over 70 aircraft, but a combination of factors led to a sudden number of order cancellations: the 1973 oil crisis, acute financial difficulties of many airlines, a spectacular Paris Le Bourget air show crash of the competing Soviet Tupolev Tu-144, and environmental concerns such as the sonic boom, takeoff-noise and pollution. Only Air France and British Airways (the successor to BOAC) took up their orders, with the two governments taking a cut of any profits made. In the case of BA, 80% of the profit was kept by the government until 1984, while the cost of buying the aircraft was covered by a state loan.

The United States cancelled its supersonic transport (SST) programme in 1971. Two designs had been submitted; the Lockheed L-2000, looking like a scaled-up Concorde, lost out to the Boeing 2707, which was intended to be faster, to carry 300 passengers and feature a swing-wing design. Other countries, such as India and Malaysia, ruled out Concorde supersonic overflights due to noise concerns.

Concorde was an ogival delta-winged ("OG delta wing") aircraft with four Olympus engines based on those originally developed for the Avro Vulcan strategic bomber. The engines were jointly built by Rolls-Royce and SNECMA. Concorde was the first civil airliner to have an analogue fly-by-wire flight control system. It also employed a trademark droop snoot lowering nose section for visibility on approach.

On 25 July 2000, Air France Flight 4590, registration F-BTSC, crashed in Gonesse, France, killing all 100 passengers and nine crew on board the flight, and four people on the ground. It was the only fatal incident involving the type.

Normal commercial operations resumed on 7 November 2001 by BA and AF (aircraft G-BOAE and F-BTSD), with service to New York JFK, where passengers were welcomed by then-mayor Rudy Giuliani.

On 10 April 2003, Air France and British Airways simultaneously announced that they would retire Concorde later that year. They cited low passenger numbers following the 25 July 2000 crash, the slump in air travel following 9/11 and rising maintenance costs.

Copied from Wikipedia

Team Paratrooper Rendezvous!
Or
Joe and Katie collide at NIRA launch

It was all Jonathan's idea. For some time now he's been talking about a fun event that's easy to host and involves something unusual in rocketry, two racketeers working independently as a team.

Team Paratrooper Rendezvous involves launching your favorite action figure into the sky and recovering it on its own parachute. Remember the Estes Bail-Out? It's the same thing really. The trusty figure must start its flight totally enclosed but then separate completely from the parent vehicle on the way down. The longer he stays up, the better the score. That's the first part.

Now your teammate then does the same with his own model and figure, hoping to land as closely as possible to your figure. The distance between the two is measured. The sum of your flight times is divided by the distance and voila! You have your score.

On an extremely windy day eight people signed up for the random drawing of teams. Adam Elliott and Don Kennedy went up first. Don's figure didn't separate completely from the model, causing a DQ for both of them. Adam did attempt to fly but got stuck on the pad in a day of bad luck for that team.

Jonathan Charbonneau and Marc Mitchell were up next. Jonathan's bright fluorescent figure separated from its parachute causing it to fall freely, resulting in a DQ for the team. It wasn't much of a big deal really since Marc's figure landed close by while the other figure landed well away.

Tom V. and Jon Mitchell both qualified with flights of 35 and 73 seconds each, but Jon's figure went nearly a mile away across the river and near the orchard making the distance immeasurable resulting in a qualification with a score of zero.

Joe Charaska and Katie Mitchell each had simple but qualified flights of 15 and 11 seconds each for a total of 26 seconds. Their distance, thankfully, was a nice 41.10 meters! This gave them the only positive score of the day with 0.633.

Then, just as we were finishing, the wind died down.

Congrats to all who participated and all who participate next time. We definitely hope to do this again in the future.

Team Paratrooper Rendezvous standings:

All The News That Fits To Print
Hubble Space Telescope Finds
Men From Venus, Women From Mars

PASADENA, CA—Astrophysicists and self-help authors alike expressed shock Friday when new data from the Hubble Space Telescope indicated that, contrary to prior belief, men are from Venus and women are from Mars. "Ever since Copernicus' *Third Universal Law On Why Men Can't Cry*, scientists have believed the opposite, that men are from Mars and women are from Venus," Chief NASA Engineer Stanley Fordham said. Hubble data clearly indicates that Venus features an inhospitable atmosphere that does not easily express its emotions and tends to hog the remote control when watching TV. New spectrographic photographs of the Mars surface, on the other hand, shows a sharing planet, open with its emotions and very nurturing.

Reprinted from 'The Onion'