R/C Sportflyer
April, 2002

Next Meeting at First Baptist Church of Grandview, 15th & Main – Thursday, April 4 ***@ 7:00 p.m.***

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Club Web Site: http://rcsf.freeservers.com/

Minutes of March 7, 2002 Meeting

The meeting was called to order at 7:00 PM by President, John Carnal. There were 27 members and 2 visitors present. Our visitors included Don Highstrom (recent member) and Jack Canaday, our guest speaker. Jack builds/re-builds/repairs engines of all sizes, include model engines of various sizes.
The minutes of the last meeting were approved as published in the newsletter. The treasurer's report was approved.

Training: Dennis Tschirhart - Daylight savings time starts April 7, training officially begins April 9. Instructors, please show up and help out. This is one of the best ways to support model aviation and to teach new flyers the proper procedures to make flying safer for all of us.

Jackson County Parks & Rec: Bernie Drummond - A shelter building for the mower and other equipment was discussed with the county. Also discussed the signage at the field. Specifically, we would like to have more specific indication that it is an RC facility which requires frequency control. Also, we would like to have a bulletin board and need to have the frequency board fixed. RCSF is willing to do much of the work and contribute materials if the park will give us permission. With the ice storm damage, the Parks has a major job of cutting damaged trees and hauling broken limbs, etc. We were very fortunate that none of the damaged trees interferes with flying. Jacomo wasn't as lucky.

Field Maintenance: Bob Armstrong has been working on the mower and has it in pretty good shape. It should last another year. It may need a battery since the current one doesn't hold a charge. A battery would probably cost in the range to $20 to $25.

Motion made and approved to authorize purchase of a battery for the mower from the mower fund.

Combat: First club combat meet April 20 at high noon. Combat folks, be there and ready to fight. John Carnal is working on a Kansas City area combat "league." The idea is to rotate the competition to each participating club's fields. Points would be accumulated and would have awards at the end of the season. Entry fees would finance the awards and any other costs.

Formation: Dennis Tschirhart - There is a photography student that is interested in doing a professional quality video of RC flying. Looks like this is something that will happen. The student will be able to use the video for his classes and RCSF will have all other rights.

Web Site: Scott and Gerard have the forum area up and working so messages can be posted. There are pictures from last year's fun fly, including at least one from the air. For Sale and Wanted to Buy areas available. New pictures always welcome. Web location (URL) in the heading of the newsletter. Check it out if you haven't been there already.

Fun Fly: Our fun fly is set for June 8th. Larry Smith is the chairman. He can use help. Give him a call and find out what you can do. If a lot of people each do a little, the job gets done and no one has to put in a lot of work. Larry's phone number is 816-358-2098.

Motion made and approved to buy the Dazzler Claud built for Dennis as a raffle prize at the club fun fly.

Delta Darts: We did a Delta Darts event for the church youth on Wednesday, February 27. Hans organized it. We had 14 kids, most of which were girls. It was a big hit and everyone participating had a good time. From RCSF we had John Carnal, Hans Kilz, Bernie Drummond, Joe Allen, Claud Beattie, Dennis Tschirhart, Mike Krogh and Walt Calkins. 49th Jumbo president, Susan Calvin also helped. Mike K said his daughter's Girl Scout troop is also interested in Delta Darts.

Gold Leader Club: John Carnal had completed the paperwork for Gold Leader status and had our certificate from the AMA, a plaque and pins for club members.

T-Shirts: If you ordered a T-shirt and didn't pick it up at the meeting, Dennis Tschirhart would very much appreciate your getting with him, picking up your shirt and paying him.

Atchison Antique Aircraft Fly-In. Nothing new to report on this, but if you can make it and want to help the full-sized guys out, let Walt know (phone 816-333-1899). It's Memorial Day weekend, starts Friday, May 24 and everyone goes home on Sunday the 26th. Housing is available with the Antique guys at the local college dorm and we're welcome to join them Friday night for visiting and Saturday evening for the awards dinner. We can do a static display if we have enough people and planes.

Other:

Sarah Krogh took second in the Science Olympia regional competition. This qualified her to compete at State.

Claude Beattie found a great 4" miniature table saw at Harbor Freight in Independence. It's perfect for model builders. Bryan Hill was at the meeting and looking good. He said he is recovering faster than anyone else that has had a liver transplant at the hospital in St. Louis. He was driving in 2 weeks after surgery.

Cliff Albright had a $50 check issued to the club from RCHTA (Radio Control Hobby Trade Association) as a result of the static display and electric flying we did for the church. This program is to give financial awards to AMA chartered clubs that get good publicity for model aviation.

Show & Tell:

Mike had a Twin Air that Claude had built for him. Another excellent job. It has 2 Thunder Tiger .25s. If I recall correctly, this one won the model of the month award.

Dennis Tschirhart had a Four-Start 120. He had clipped 1 wing bay off each wing and added 1 inch to the rudder. It's got a 150 in it.

Steve Lambert had the Morris Sudokoy (sorry if I spelled that wrong - Walt) Claude had built for him. It's ready to go and has a .60 in it.

Bob Armstrong brought his Storch again for us to see. Just about done. He promised to bring it again when it's finished

Raffle Prize: John Sincox donated the PKO electric J-3 back to the club (thanks John) to be raffled again. Steve Lambert won it.

The meeting was adjourned at 7:35

Jack Canaday, veteran small engine pro from the gocart racing world (among others), gave an excellent talk on the care and feeding of gas engines available to model builders. For those interested in him tuning or repairing any of the popular gas model engines, he is located at 125 Maple Street, Lathrop, Missouri 64465. His phone number is 816-528-3937, hours are 8 to 5.

Calendar of Events – Models

Apr 4	RCSF Club Meeting - First Baptist Church of Grandview
Apr 20	RCSF Club Combat meet - Stamm Field, high noon
Apr 27	Milford RCer's, Milford Lake, KS (www.geocities.com/milfordrc)
Apr 27	49th Jumbo Fun-Fly, Jacomo, open to all sizes
May 2	RCSF Club Meeting - First Baptist Church of Grandview
May 17-19	Milford RCer's Heli Fly, Milford Lake, KS (www.geocities.com/milfordrc)
May 25-26	Jefferson City Fun-Fly (?)
Jun 4	RCSF Club Meeting - Stamm Field
Jun 8	RCSF Fun-Fly
July 20	KCRC Summer Fly-in
Sept 14	KCRC War Bird Fly-in
Sept 28	RCSF Club BBQ & Fun-Fly

Calendar of Events – Full Scale

May 24-26	Antique Aircraft Fly-In, Atchison KS - RCSF participation
July 23-29	"Oshkosh" - Annual EAA bash, Oshkosh ,Wisconsin - www.airventure.org

Aug 17-18 Air Show - KC Downtown Airport

Something a little different from Flight Journal, via the internet. Neat site, check it out - Walt.

The Myth of Stealth, from Flight Journal, December 1998 Issue, by Rear Admiral Paul Gillcrist, U.S. Navy (Ret.)

By any measure, the introduction of stealth into U.S. tactical air-strike forces represents a quantum increase in combat effectiveness and surgical-strike capabilities. However, such unprecedented success as that achieved during the Gulf War brings with it certain dangers. The principal danger is the conviction in the minds of many of this country's decision-makers that stealth renders us invincible. In that regard, stealth is greatly misunderstood by the U.S. taxpayer, and its effectiveness is deliberately overstated by too many government officials—civilian and military—who know better.

The general public should know what stealth really is; but more important, they should know what it is not! To explain what it is not, we must dispel the six myths that surround it:

Stealth is purely a phenomenon associated with radar signature.
Stealth is a new phenomenon.
Stealth cannot be countered.
Stealth carries no penalties.
Stealth makes platforms invisible to radar.
Stealth is passive.

More than radar signature

Is radar signature the only aspect of a platform's observability to which stealth techniques can be applied? No, it may be the most important, but it is still only one aspect. All aspects must be addressed if real stealth is to be achieved. There are other aspects of the observability spectrum that are terribly important as well; they include infrared, acoustic, optical, magnetic, electromagnetic and probably others that include fluid wake effects.

• Infrared. Objects passing through a fluid medium generate heat, by virtue of the medium passing over the object's surfaces. This heating is detectable. For an airplane, surface heating occurs in the 8- to 12-micron range of the infrared spectrum. Thus, an existing infrared search-and-track system (IRST) designed for installation in a fighter-interceptor could detect a high-altitude, supersonic bomber at a distance of several hundred miles.

Platforms that develop propulsion through internal-combustion power plants generate heat that causes their engine and exhaust systems to be detectable in the 3- to 5-micron range. For over 30 years, airborne IRST systems in fighter airplanes have been able to detect another fighter in afterburner at distances of more than 30 miles. IRST systems that operate in the 8- to 12-micron range have enormous potential, especially in the detection of air platforms. When the 8- to 12-micron technology has matured, it may well render moot most other aspects of observability.

• Acoustic. This has been pursued in the field of antisubmarine warfare for over 50 years. Submarines generate acoustic noise with their screws, by their passage through the water and by the sound of their equipment and crews. In the Vietnam War, the U.S. developed and deployed an acoustically stealthy airplane. It was called the "QT-2" (for "quiet airplane"). Even today's drone aircraft employ acoustic stealth.

• Magnetic/electromagnetic. Surface ships and submarines possess enormous magnetic fields because they are made up of thousands of tons of ferrous metal (steel). They also generate an electromagnetic field because of the power-generating machinery on board. These fields are minimized by a process known as "degaussing." For over forty years, antisubmarine aircraft have been targeting submerged submarines by using magnetic anomaly detectors (MAD).

• Wake effects. Submariners have known for years that subs' wakes generate turbulence that can be detected, often for hours after they have passed by. Work in this area has been going on for over 25 years and is still highly classified. However, the same laws of physics apply to airplanes, which also leave a telltale "wake" in the atmosphere.

• Optical. This has been with us ever since spear-throwers discovered the operational benefits of hiding behind trees. Ships wore camouflage paint schemes as early as WW I. It was only in recent years that the pro-active use of lights mounted on and in the airframe could reduce the effects of contrast in tactical airplanes. Using lights in this way had the effect of decreasing the optical detectability of aircraft, since their detectability was directly related to the contrasts in their optical signature against their background. Not surprisingly, F-117s were painted black because they were intended to be deployed exclusively at night.

Much more could be said about the above mentioned aspects, but the point is made. Stealth is not limited to radar.

The optical aspect of observability was saved until last because it is so important. More airplanes have been shot down by enemy gunners using their optical signature than by any other means. That fact will probably not change in the foreseeable future. If this is true, optical stealth should get major emphasis in the design and development of future tactical airplanes.

Stealth is not new

Camouflage is optical stealth in its crudest form. Camouflage has been used in warfare as far back as history has been recorded. The hulls of WW I combat vessels were painted with various shades of camouflage gray to make them hard to see. Airplanes were camouflaged to achieve the same end, but with enemy gunners both in the air and on the ground, the paint schemes had to be a little more sophisticated. Since the sky and the ground have two distinct backgrounds, camouflaging aircraft is more difficult. The principles, however, are the same. The camouflage must make the object blend with the background—just as in nature's classic example of the chameleon.

In WW II, the Luftwaffe put radar-absorbing carbon material in the leading edge of one of its bomber's wings to make acquisition by British radar more difficult. Still later, the U-2 was developed as a stealthy airplane as were the B-1B bomber and the SR-71 reconnaissance airplane. So stealth is not new; not by a long shot—not even radar stealth.

Can stealth be countered?

Yes. Several countries are already hard at work developing counter-stealth technology. Of course, the simplest way to counter radar stealth is to decrease the frequency and thereby increase the wavelength of radar. Regardless of the size of an airplane, it will act as a dipole antenna to a certain radar frequency whose wavelength is a multiple of the airplane's natural radar return. That is why the F-117s were clearly visible to the air-search radar of an old British destroyer on patrol in the Persian Gulf.

The same principle applies to the highly touted B-2 bomber. The laws of physics apply, despite ballyhoo and public relations "smoke and mirrors." The question of designing a search radar with a variable frequency and a spectrum-survey capability has been considered. Unfortunately, such equipment is very expensive to buy as well as labor-intensive to operate. The cost to configure/reconfigure an entire class of ships or model of aircraft would be prohibitive for most users. In the final analysis, all stealth really does is reduce detection range.

Penalties

Are there penalties associated with the use of stealth? Of course there are, and they are enormous!

Most of the penalties fall in the aircraft-performance category. For example, external stores on stealth aircraft had to be eliminated almost entirely. Fuel tanks and weapons suspended from the bottom of the airplane acted like radar corner reflectors; therefore, all weapons and extra fuel had to be carried internally. This had an enormous effect on the design of the airplane and on its "natural" radar signature, and it also produced drag polars that substantially reduced an airframe's maximum speed as well as its ability to turn and to accelerate. During the weapons-release phase, the F-117 has to open its weapons-bay doors. While in this configuration, however briefly, the F-117's radar signature (and, therefore, its vulnerability) increases dramatically. This is one of the most significant penalties of stealth.

Stealth design efforts

• Acoustic. Sound suppression of air vehicles is most concerned with quieting the power plant. In the case of propeller-driven drones, the effort involves a quiet propeller design and muting the exhaust system. In the case of jet-powered aircraft, the effort focuses on exhaust-gas noise suppression. Sound suppression in submarines is done through external anechoic coatings and by shock-mounting noisy internal equipment such as generators.

• Infrared. For air vehicles, IR emanations in the 3- to 5-micron range are suppressed by using cooling air and shrouding around hot parts of the machine (usually the power plant). In submarines, IR emanations come principally from fluid efflux, either from related-related operations or jettisoned ship-related products such as garbage and human waste.

• Magnetic stealth. Can only be achieved through degaussing that requires dedicated ship time on a dedicated range. The effects are not always as permanent as intended, and there is no simple fix once the ship is “in the field.” In aircraft, the problem doesn’t exist simply because of the limitations of magnetic measuring detectors. If the hunter got close enough to a target aircraft to detect its magnetic emanations, the aircraft would be well inside the detection range of other sensors and also the hunter’s own minimum weapons envelope.

• Optical. Aside from what we know about camouflage, the most promising optical stealth technology is that dealing with the elimination of contrast by the use of lighting. In the latter stages of the Vietnam War, serious efforts were made to

enhance the combat effectiveness of U.S. tactical aircraft through the medium of optical stealth. The classic example was a ground test conducted at Miramar, California, in which a Phantom II was configured with a series of strategically located white lights. The test showed rather dramatically that when contrast is reduced, so is the optical signature. For a number of reasons, follow-up tests to this initial development effort were never pursued; however, the results of tests conducted a few years ago showed great promise. The drawback of optical stealth is the same proximity problem that faces the magnetic
detectors.

• Fluid wake effects. For both aircraft and submarines, the phenomenon of fluid wake effects represents an aspect of observability that could have serious implications. Unfortunately, (or fortunately, depending on whether one is the hunter or the hunted), it represents an enormous technological challenge and is also shrouded in secrecy.

Invisible? Only temporarily

An expression from WW II antisubmarine warfare refers to a "flaming datum." This is the location of a burning ship that has been struck by a submarine weapon. The counterattack against the offending submarine uses as a "datum" the location of the burning ship and the time of the attack. Knowing the submarine's speed and the range of its torpedoes well defines the search area. Most of the more than 700 German U-boats sunk in WW II were destroyed after the flaming datum had been established.

When the F-117 opens its weapons bays, it automatically increases its radar signature. The bays are open only for a short time, but it's long enough for enemy radar to get a lock on the fighter's position and allow the enemy to take countermeasures.

The moment the F-117 opens its weapons-bay doors is the modern-day equivalent of the flaming datum. Once seen, however briefly, the F-117's presence has been announced. Air defenses, knowing the F-117's speed limitations, can quickly mount a counterstrategy that, given modern weapons systems, can find it and destroy it.

When a B-2 is flying a low-altitude mission, it can be shot down by a well-placed round from any jet aircraft of the Korean War era or later.

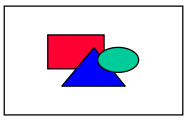
Low altitude isn't the cure

First designed purely for high-altitude operation, the B-2 bomber was modified to operate at lower altitudes. The resulting increase in structural weight and the added weight incurred by the addition of gust-load-alleviation systems has produced a tactical airplane that is ridiculously vulnerable. The B-2's maximum speed at sea level, for example, is so low that virtually any tactical airplane (of Korean War vintage or later) can easily run it into the ground.

Modern tactical aviators have always thought there was a haven at extremely low altitudes and high speeds. When in trouble, it was worthwhile to head for the tall grass during egress from a highly defended target area. Regardless of weapons and platforms, a target going 700 knots at 50 feet off the ground is difficult to shoot down. In the highly touted B-2, we now have a tactical airplane that costs over two billion dollars and is "dead meat" once it has been detected at low altitude. A burst of 20-millimeter gunfire from a Korean War F-86, for example, cannot be affected one iota by all of the multimillion-dollar electronic and electro-optical countermeasures that the B-2 carries. The B-2 is probably the most technology-intensive aircraft ever built. It certainly does not, however, possess the important ingredients of all successful tactical aircraft: survivability and graceful degradation of battle-damaged weapons systems. From a cost-effectiveness standpoint, one should ask what the relative merits might be to have the same interdiction mission attempted by a careful mix of more conventional, less expensive aircraft, including the low-flying, low-tech A-6s of the Persian Gulf War. That is, if we still had any—but that's yet another story.

Radar signatures

B-52 bomber: 60 square meters



B-1A bomber: 6 square meters

B-1B bomber: 0.6 square meters

B-2 Stealth bomber: less than 0.06 square meters

An airplane's stealth can be measured by how much radar energy it reflects. Known as "radar cross-section" (RCS), this measurement is determined by the plane's size, shape and material composition. These drawings show how the RCS, measured in square meters, has been progressively reduced through four generations of American bombers.

Passive or active stealth

A few words need to be said about the passive aspect of stealth technology: it is not just passive. Unfortunately, the active aspect of stealth is still shrouded in secrecy—especially as it relates to the B-2 program. Suffice it to say that incoming radar energy is "modified" in such a way as to tell the source of the radar that there is no target.

Summary

As tactical aviation approaches its first century, aircraft designers will have to weigh the relative merits and the tradeoffs involved in striking the proper balance between stealth and aircraft performance. The tradeoffs probably won't be exactly the same for unmanned systems, such as a stealthy Tomahawk missile or a reconnaissance drone. Infrared detection systems in the 8- to 12-micron range seem to offer the greatest promise at this juncture. Technology in the development of new theater air-defense systems is advancing in parallel with stealth technology. There is no technical reason to suspect that either will jump substantially ahead of the other.

As a bottom line, it is probably safe to say that there is no such thing as an invisible airplane. And if it isn't invisible, it certainly ought to be equipped to fight its way into and out of a highly defended target area.

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Lastly, Cliff Albright suggested the following article to be a regular standby about this time of year. This is a good reference for all of us out there in the out-of-doors flying, especially if you ever have to get into the tall grass. Thanks, Cliff.

Pick that Tick

Learn how to remove this bloodsucking parasite before trouble begins

(From October 2001 *Field & Stream)*

When you see a tick attached to your skin, your first reaction - to get it off - is understandable. However, it's important to know how to dislodge a tick safely to minimize the risk of contracting Lyme disease and other tick-borne illnesses.

Small and Stubborn

A tick has three active life stages: larva, nymph and adult. The black-legged tick (*Ixodes scapularis*), also known as the deer tick, and the Western black-legged tick are capable of transmitting Lyme disease bacteria to humans during the nymphal and adult stages. (The deer tick also transmits the pathogen that causes human granulocytic ehrlichiosis and babesoisis, other tick-related diseases contracted by humans.) At the nymphal stage, these ticks are no larger than the point of a pencil tip. The female adult grows to about the size of a sesame seed, yet can swell 10-fold in size when fully engorged, says Dr. Kirby C. Stafford III, chief entomologist at the Connecticut Agricultural Experiment Station. The nymphs and adult females, he says, are the main transmitters of Lyme disease.

The height of tick season is during the warm-weather months. Ticks live in shrubs, grassy areas and open fields, and attach to humans and animals during close contact. They lodge themselves by inserting their mouthparts into the skin surface, secreting a cement like substance into the wound to provide a firm attachment.

Remove ASAP

If you discover a tick on you, remove it promptly. Don't panic, because not all ticks are infected with diseases. Also, the probability of contracting a tick-borne disease, such as Lyme, is greatly reduced if the tick is dislodged within the first 24 to 48 hours.

Use a pair of very fine-point tweezers (also know as jeweler's forceps), which are available at drugstores and medical or veterinarian supply companies. The tick may appear embedded in the skin, but only it's mouthparts penetrate the skin's surface. Insert the tweezer tips under the tick's body from the side and grasp its mouthparts or head at the skin surface. Gently pull the tick straight out, making sure that all the parts are removed. Then clean the bite with antiseptic.

Although there are a variety of tick-removal devices or the market, Dr. Stafford says, "many of the devices are designed for larger species, like the dog tick. I have found that a pair of fine-point tweezers is still your best bet."

Do *not* crush, twist or burn the tick with a match, or smother it with petroleum jelly, as you may have learned in the past. These procedures, according to Dr. Stafford, are not very effective and increase the chances of disease transmission. If you do not have tweezers available, use a tissue or leaf to grasp the tick with our fingertips and provide a barrier against the tick's body fluids if it should burst.

If the tick is engorged, or if you think you've been infected, have the tick tested by your local health department. Place the tick in a vial and insert a damp cloth or add alcohol to preserve it. Note the location and the date when the bite occurred, where the tick attached itself on the body, and your present health condition. Call your doctor to determine if any treatment is required. Watch for 30 days for any signs of infection such as an expanding red rash, flu-like symptoms, and joint pain.

Precautions

During tick season, take steps to guard against becoming a host. Travel on cleared, well-populated trails; wear long-sleeved shirts and long pants in light colors (which make it easier to spot ticks); apply effective tick repellents periodically; and check your skin and clothing often.