



Newsletter

**Volume 14
Number 5
March 2000**

CALENDAR OF EVENTS 2000

- o **Saturday, March 25** -- Joint meeting with Phoenix Section at Skydive Arizona in Eloy. Learn about skydiving. Time 10:30 AM to 4 PM.
- o **Wednesday, March 29** -- Deadline for voting in AIAA national elections
- o **Saturday, April 8** -- Learn about soaring. At El Tiro Gliderport, 11:00 AM to 1:00 PM.
- o **Thursday, April 27** -- Dinner meeting. Jim Harford will talk about Soviet space program. 6PM, Plaza Hotel.
- o **Memorial Day Weekend** -- International Space Development Conference in Tucson. Co-sponsored by the Arizona AIAA sections and National Space Society (details TBA).

Skydive Arizona is located in Eloy Arizona (half-way up to Phoenix, near Casa Grande) and has grown over the years to become the world's largest parachuting center.

The Center holds a number of international records and draws participants and students from around the globe! There is also a pool and a restaurant to accomodate our lunch (no-host) with the Phoenix Section after the presentations.

The plan is to meet on the North side of town at the Cracker Barrel at 9:00 AM Saturday, March 25th. Cracker Barrel restaurant is located at the Cortaro Road exit on I-10, on the Southwest side of the freeway.

We'll leave shortly thereafter and caravan/carpool to Skydive Arizona, to meet the Phoenix section at 10:30 AM. The presentations and any short tours should conclude by 12:30 PM, at which point we'll recede to the restaurant for a nice leisurely lunch. Some folks will leave right after the talks to arrive back home before 2:00 PM.

Anyone who would like to actually try the school's wares, is free to take advantage of the 10 % discount that has been offered to AIAA members on a first tandem jump.

The last airplane goes up at 2:00 PM, but to ensure a seat (and an instructor plus parachute), it will be best to phone ahead and reserve your spot. Everyone should have had their fill of the Center no later than 4:00 PM (to get back home no later than 5:00 PM).

The discounted first tandem jump is \$126, while an observer ride is \$25 (you get to sit in the cockpit and think about the people jumping out of the back). Both can be reserved by phoning 1-800-858-5867 or 1-520-466-3753. Whether you call in advance, or sign up on the 25th, the parachuting will be arranged directly between you and Skydive Arizona (AIAA views this as your personal business).

If you'd like to come up without the caravan/carpool, the directions from Tucson are:

- o Follow I-10 Westbound towards Phoenix and take exit 208.
- o Turn right at the stop sign.
- o Go 2 miles to another stop sign and turn left (presumably HWY 84).
- o Go 4 miles and turn right on Tumbleweed Road.
- o Go 2 miles and the drop zone is on the right.

The Skydive Arizona website contains a wealth of further information at: <http://www.skydiveaz.com>

I'm really looking forward to learning something new, meeting more members from both Tucson and Phoenix, and even watching Kelly jump out of an airplane.

Next Meeting

Parachutes and Skydiving

Date March 25, 2000 (Saturday)

Time 9:00 AM

Who Skydive Arizona

Where Eloy, Arizona (carpool from the Cracker Barrel at Cortaro Road & I10)

For more information tucson_aiaa@yahoo.com
Or call Kevin Kremeyer at 882-7349

Parachutes and Skydiving, March 25
by Kevin Kremeyer

Our next adventure is going to be a joint meeting with the Phoenix Section. In addition to an interesting and educational presentation by staff from Skydive Arizona, this will be a great chance to catch up and connect with some of our colleagues from industry and academic institutions to the North. The presentations will center around the technology and aerodynamics involved in parachuting. One focus will be to compare and contrast the techniques and concerns of both sport and military jumping.

Notes from the Chair

by Kevin Kremeyer

Once again, we have a very full agenda to offer, and we're looking for your support in the form of attendance. We're still trying to gauge the general interests of our membership, and the best way for us to do this is to meet you.

Your big chance is coming on April 27th, when we'll have our first dinner meeting of the year (see below). In addition to a nice meal and an interesting presentation, we'll get a chance to hear how the UA AIAA Student Branch fared in the AIAA Student Design/Build/Fly Competition in Wichita, Kansas.

Another item on the agenda will be the **local AIAA elections for the Tucson Section**. This will be a good opportunity to nominate people and suggest future directions and activities. (Attendance will also allow you to protest when your friends nominate you for some unsavory task *wink wink*.)

The bottom line is that we're hoping to meet as many of you as possible, and to see that there's interest and support lurking beneath all of those busy schedules out there. Non-members may also attend, so if you know of anyone who might like the presentation, or who would like to start getting connected to the local and national aerospace industry, please don't hesitate to bring them along.

Our numbers are looking good, and with your help, we're hoping to really foster a strong community here in Tucson, linked tightly to the national market. This is of great benefit to everyone involved.

Read on, and join in the activities!

An Evening of Russian Space History

by Jerry Felmley

Our next dinner meeting will feature Jim Harford, Executive Director Emeritus of AIAA, who will discuss Russian space activities. Jim will have 35mm slides of numerous facilities he's visited and Russian engineers and scientists he's interviewed during the writing of his biography of Sergel Pavlovich Korolev.

Korolev -- How One Man Masterminded the Soviet Drive to Beat America to the Moon is the only English language biography of this remarkable space pioneer.

Hardbound copies will be available at our meeting for purchase and signing by Harford. Jim and his wife, Millie, will be in Tucson for only a brief period so he's offered to conduct pre-arrival interviews by telephone for any interested media or professional groups.

Please contact Jerry Felmley for local help in coordinating interviews at (520)529-0865 or e-mail: JJCatalyst@webtv.net)

Subject: **An Evening of Russian Space History**

Speaker: Jim Harford

Date: 27 April

Time: 6:00 PM

Location: Plaza Hotel

RSVP: Kevin Kremeyer at 882-7349 or
tucson_aiaa@yahoo.com

Prices: \$15 - students w/ RSVP

\$20 - members & 1 guest w/ RSVP

\$25 - non-members and anyone w/out RSVP

Tucson Section Officer Roster 1999-2000

Chair: Kevin Kremeyer
Secretary/Treasurer: Kelly Sinnock
Membership: Rina Shivashankara
Webmaster: Robert Wagoner
UA Faculty Advisor: Larry Scott
Education Chair: Rajka Corder
Military Liaison: Ed Palanek
Newsletter Editor: Frank Manning
Support Staff: Jason Blauert

Web site: <http://www.aiaa.org/sections/ts/>

AIAA National Elections

by Guy Bluford
Chair, 2000 Elections Committee

Dear AIAA Voting Member:

It is your privilege and responsibility as a voting member of AIAA to select the Institute's leadership.

You should have received an election booklet along with your February issue of Aerospace America. This booklet contains a statement of goals and biographical information for each candidate. More importantly, your ballot is located on the back cover.

I urge you to review the qualifications of each candidate, and select the candidates who share your vision and goals. Your voice is important as AIAA continues its evolution into a truly global aerospace network in the 21st century.

Please VOTE!

Ballots must arrive at AIAA by 29 March 2000.

To protect the privacy of your vote, you may only vote by mail. You may not vote by e-mail or website.

If you have not received a ballot please call customer service at 1-800-639-AIAA or 703-264-7500; e-mail custserv@aiaa.org

Please note -- the office of Region VI Director most concerns the Tucson Section. You might consider voting based on who you believe will continue to support us with special help and attention while we bring our Section back to life.

-- Kevin Kremeyer

AIAA Design/Build/Fly Competition

by Frank Manning

The AIAA Student Design/Build/Fly Competition is coming up April 15-16, which is less than a month away. AIAA student members at the University of Arizona have formed a team and have put a great deal of work into this year's entry.

The annual competition, held this year in Wichita, Kansas, is based on electric-powered unmanned airplanes that are required to fly a specified cargo and mission profile. Last weekend the UA team took delivery of the all-important motors, gearboxes and flight batteries.

This will probably be the last Section newsletter that comes out before the event, so we'd like to wish the UA students the best of luck at the competition.

F-117A and SR-71 Presentations

by Rina Shivashankara

Mr. Robert Loschke was the lead engineer for the flight control systems on the Have Blue stealth technology demonstrator aircraft, and on the F-117A, the world's first operational stealth aircraft. He was until recently part of an elite few with detailed knowledge of this state-of-the-art aircraft.



Robert Loschke

During his presentation on 18 February 2000 at Davis-Monthan Air Force Base, he discussed everything from the conceptual design foundations to the production of this revolutionary aircraft. Loschke mentioned the appropriateness of the talk being on DMAFB since during the development of the F-117A, Skunkworks "borrowed" parts from other aircraft without the knowledge of either the public or most people on the base.

Also, due to the highly classified nature of the program, Lockheed could not use NASA wind tunnels for testing the design. One result of this was the development of a new test protocol in which a huge slingshot device was developed and used to "throw" a model off of a dock into a military cargo net. The flying model was videotaped using high-speed photography, and the stability of the vehicle was determined. This ingenious solution illustrates how one of many obstacles was overcome throughout the aircraft's development.



F-117A

U.S. Air Force Photo

From the enthusiasm in his talk, the pride and excitement he felt from sharing his work with us was very evident. Since a good portion of the audience were young engineers, he told us that he wishes each of us has the opportunity to work on a project as innovative, as challenging, and most of all as fun as developing the F-117A was for him.

The next day, Mr. Loschke enlightened us again by speaking at the Pima Air and Space Museum in coordination with the museum's SR-71 Symposium. Pilots and other personnel close to the incredible aircraft gave panel discussions throughout the day and visitors to the museum were able to look into the aircraft's open cockpits.

Mr. Loschke spoke to a handful of Tucson AIAA members in the afternoon about his experience with the design of the SR-71 Blackbird. During the development of the SR-71, Loschke was just a junior engineer trying to learn the ropes. He commented on how lucky he feels to have been on the project at that time.

The senior engineers were eager to share the innovative designs used on the SR-71, but were unable to tell anyone outside the group due to the secrecy of the program. As a result, Loschke learned an enormous amount from his more experienced co-workers. Later in the development, he played a pivotal role in the design of the spiked inlets.



SR-71 at Pima Air & Space Museum

He discussed some of the ideas they tried, and why they chose the particular, and peculiar, design. He explained that the materials were thermally, mechanically, and electrically matched in order to reduce the radar cross section of the vehicle.

Another interesting fact Loschke mentioned was that 3 different interchangeable noses were designed in order to be able to fulfill the desired mission. (One of these noses is located outside the Challenger Center classroom at PASM. The upper skin was replaced with Plexiglas so visitors can see some of the internal equipment including the flush mounted radar antenna.)

Finally, he explained the automated action that was developed in order to prevent the aircraft from yawing out of control when tremendous drag developed after one of the engines choked. This severe yaw rate caused the pilot to hit his head on the cockpit wall. Former SR-71 pilot Col. Tom Pugh, one of PASM's panelists, described it as like "being hit in the head by a baseball bat." These are just a few of the many details Mr. Loschke mentioned in his talk.



SR-71 Cockpit

The ingenuity and detail that went into the design of the SR-71 and F-117A are unimaginable. Not only did we get the opportunity to learn more about two extraordinary aircraft, but we attended two of the most fascinating and informative presentations. Mr. Loschke was an excellent speaker and definitely deserves the title of "distinguished lecturer".

We were encouraged to see some new faces at these talks and found some new members as well. Any feedback about the talks is appreciated, especially concerning the topics and times/dates of the talks. Please send your comments to Tuscon_AIAA@yahoo.com or P.O. Box 90772, Tucson, AZ 85752

Gliders/Soaring, April 8th

by Kevin Kremeyer

If you haven't had enough new aeronautical exposure from the skydiving presentations, we have a completely different set of talks lined up for April 8th. Our host and benefactor is Bill Rogers of the Tucson Soaring Club, and the outing will be held at the El Tiro gliderport.

Members of the Club will talk to us about atmospheric effects contributing to the art of gliding/soaring, while other presentations will address state-of-the-art technology and design contributing to extremely strong, light-weight materials and minimal drag.

After we break from the discussions, we'll be able to look at the embodiment of this technology in some of the newest gliders available.

During this time, the Soaring Club has made available as many as 10 rides for anyone seriously interested in the sport. These will be at a cost of \$50 each (limit 10) and will, once again, be strictly between you and the Soaring Club, with no involvement of the AIAA.

The plan here is to meet at 11:00 AM at the Avra Valley Airport (now called the Marana Northwest Regional Airport). From there we'll carpool/caravan to the El Tiro Gliderport to arrive by 11:30 AM.

To get to the airport:

- Head toward Phoenix on I-10.
- Exit #242 onto Avra Valley Road going west.
- The airport will be on your right. We'll meet in the Skyrider restaurant parking lot.
- We'll form the caravan here, and we will then:
- Continue west on Avra Valley Road.
- Turn right (north) at Trico Road.
- Turn left (west) at El Tiro Road.
- Continue straight to the gliderport (the road eventually becomes dirt).

The talks will start at noon, and we'll break around 1 PM to look at the gliders. At this point, anyone interested in the sport can sign up to try their hand at soaring.

It might be nice to also bring a lunch and some cool drinks to enjoy while we kick back and watch some of our members get towed up into the air.



American Institute of Aeronautics and Astronautics

Tucson Section

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