

THE FLIGHT PLAN

The Newsletter of AIAA Albuquerque Section
The American Institute of Aeronautics and Astronautics

JANUARY 2020 SECTION MEETING: BASIC BALLOONING AND THE BALLOON FIESTA.

Neal Smith Sandia National Laboratories

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Neal Smith gave an interesting talk on ballooning. It included how he became interested in balloons, the history of hot air and gas balloons, how they are made and work, requirements to become a licensed pilot, balloon competitions, and the Albuquerque Hot Air Balloon Fiesta.



CALENDAR

Local Section Events

Thursday 20 February — Section Meeting Why high pressure injection is different.

Copper Canyon Café: 5455 Gibson Blvd, Albuquerque
5:30pm Meet and greet
5:45pm Dinner (order when ready)
6:30pm Presentation and discussion

National AIAA Events

[8th Aircraft Noise and Emissions Reduction Symposium \(ANERS\)](#)
25 FEBRUARY - 28 FEBRUARY 2020

[2020 IEEE Aerospace Conference](#)
7 MARCH - 14 MARCH 2020

[23rd AIAA International Space Planes and Hypersonic Systems
and Technologies Conference](#)
10 MARCH - 12 MARCH 2020

[Upcoming U.S. Launches](#)

Feb 15 Falcon 9 • Starlink 4
Mar 2 Falcon 9 • SpaceX CRS 20
Mar Falcon 9 • Starlink 5
Mar Falcon 9 • SAOCOM 1B
Mar 13 Atlas 5 • AEHF 6
Mar 31 Minotaur 4 • NROL-129
TBD LauncherOne • Inaugural Flight
TBD LauncherOne • ELaNa-20

January meeting:



AIAA ELECTIONS

Robert Malseed, Treasurer

Before 21 February, be sure to respond to the e-mail announcing the AIAA election, or click on this link:

<https://www.aiaa.org/vote/>

Our Albuquerque section will hold our annual officer election in April. Please consider volunteering to be one of our section officers. We have been without a Vice-Chairman and a Communications officer this year. All help will be greatly appreciated. Contact BenUrioste@gmail.com or Robert@malseed.com



AIAA Lecture (February 20th)

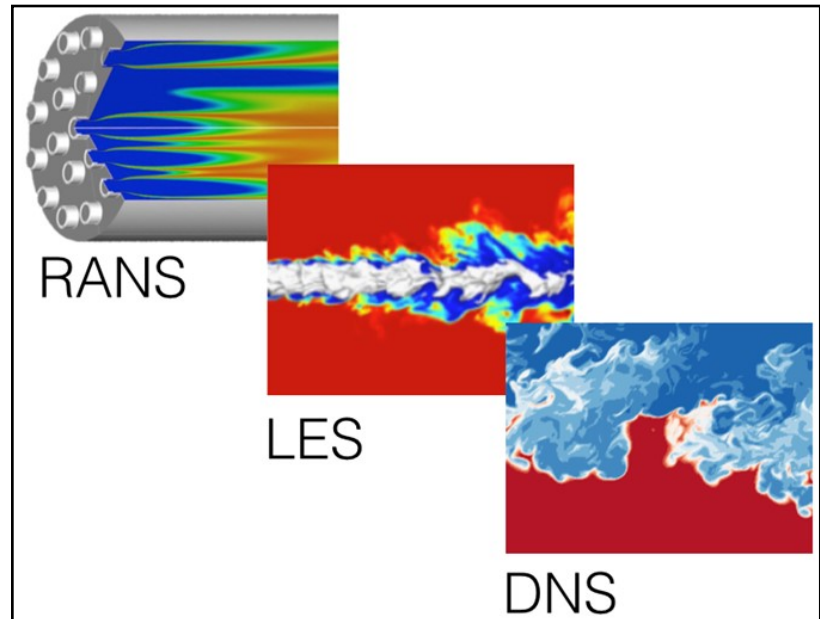


Why high pressure injection is different.

Prof. Daniel T. Banuti, University of New Mexico

Abstract:

The drive to increase performance and efficiency of propulsion and thermal energy systems has led to significantly increased operating pressures. Rocket engines, gas turbines, Diesel engines, and power cycles have reached conditions in which we no longer encounter liquids and gases, but in which the working fluids have rather reached a lesser understood supercritical state, with properties somewhere between liquids and gases. This talk gives an overview of recent findings and future challenges that will help us to understand and design future propulsion and power systems.



Speaker Bio:

Daniel Banuti just joined the faculty of mechanical engineering at UNM last year, with a focus on thermo-fluids for propulsion and energy. Before, he was a postdoc at Stanford's Center for Turbulence Research and Caltech/JPL after leaving the German Aerospace Center (DLR) in Göttingen, where he was responsible for computational fluid dynamic modeling of rocket engines and hypersonic flow control for 9 years. He obtained his MSc from RWTH Aachen University, and his PhD from the University of Stuttgart.

When: February 20, 2020 (Thursday)

COST: Pay for your own meal

Where: Copper Canyon Café, (505-266-6318)
Albuquerque NM 87108
(at Gibson and San-Pedro)

5:30 - 5:45 Meet and Greet

5:45 - 6:30 Dinner (order when ready)

6:30 ~ 7:30 Presentation & Discussion

Students: Don't forget that we offer free dinners (up to \$15) for up to six students!

[Click Here to RSVP](#)

https://docs.google.com/forms/d/1T8z2aAe_WIRsqoNVZl2iKleXjwDPPE07VXuluNhhCM/viewform

US SOUTHWEST SOARING MUSEUM

By Robert Malseed—Treasurer & Acting Newsletter Editor

Last September your acting Newsletter Editor visited the Southwest Soaring Museum. The US Southwest Soaring Museum is an aviation museum, located at 918 E US Route 66, in Moriarty, New Mexico, that focuses on the history of gliding and soaring in the western United States. The museum is an affiliate member of the Soaring Society of America.



Entrance to the museum.



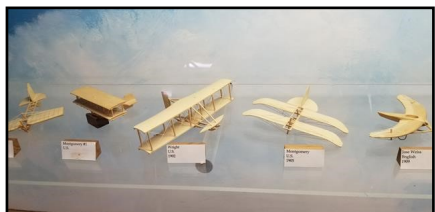
Part of the main floor.



Looking to the other end.



Models of other aircraft .



Models of old gliders.



1902 Wright Glider.



He-111Z towing a Me-321 glider.



Glider with an auxiliary engine.



Remotely piloted glider.



A pilot's license signed by Orville Wright .



More soaring aircraft.



Part of Museum store.

Many other aircraft are on display. To see a list go to the web site at: www.swsoaringmuseum.org

For soaring info see:

www.abqsoaring.org

<https://soarsundance.com>

SUPER STEM SATURDAY

By Robert Malseed—Treasurer



Once again, our Section is looking for volunteers (onsite training provided so no experience needed) to support our displays and demos at the **New Mexico Super STEM Saturday**, on 22 February at the Albuquerque Convention Center. This will be the 3rd Year that the Albuquerque Section has brought out our flight simulators, displays, and AIAA handouts to the event. The event goes from mid-morning through mid-afternoon, but you can volunteer for any portion of the day.

For those not familiar with Super STEM Saturday, this is an amazing event hosted by the Air Force Research Lab, supported by a number of local laboratories, companies, non-profits and educational organizations; and is designed to inspire the next generation of outstanding scientists and engineers. Last year, the event launched trashcans 50 feet into the air, had dueling Tesla coils with ft. long arcs of lightning, robots of all kind, a cannon that accelerates ping

Last Year

Please volunteer to help us!

For more information, or to volunteer, contact:

Elfego pinon at:

elfego.pinon@emergentspace.com

Or Ben Urioste at:

BenUrioste@gmail.com



Flight technology



Missile technology



Flying the DreamFlyer



The desktop flight simulator



We had visitors from a galaxy far, far away.

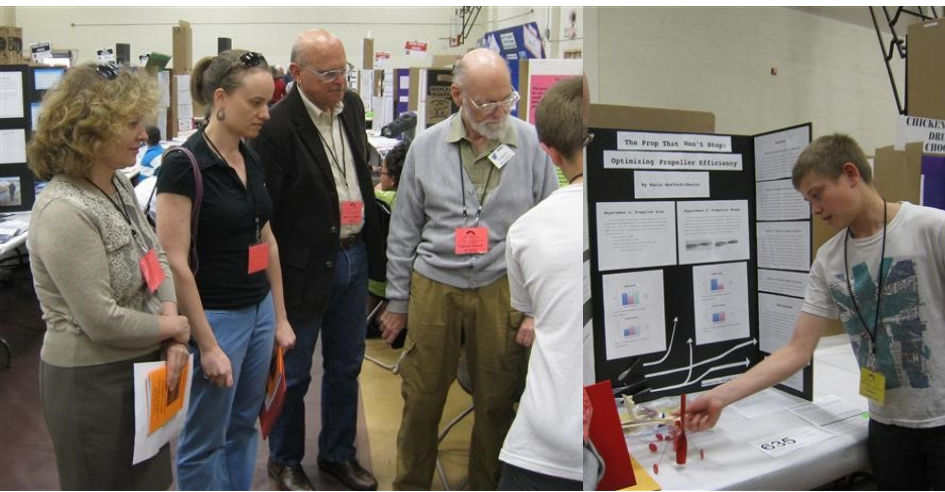
SCIENCE FAIR — JUDGES NEEDED

By Robert Malseed—Treasurer

This year's Central New Mexico Science and Engineering Research Challenge (Science Fair) will be judged on Friday 27 March at the Manuel Lujan Exhibit Complex in Expo NM. (State Fair Grounds) Our section will choose four individual projects (usually 2 junior and 2 senior) for our annual awards. The winners will each receive a certificate and \$100 check, a 1-year student membership in AIAA, and an invitation to our May awards meeting where they, along with one guest and teacher, will be our guests for dinner.

If you can help with the judging, please contact our Treasurer, Robert Malseed, (Robert@malseed.com) for details. He won't be in town for judging this year, so we need YOU.

This is a rewarding experience. Here are some scenes from the past. Interviewing our winners in 2013.



Svetlana, Lori, Stev, and Robert listen to Mario Morford-Oberst (8th grade) explain his



Ethan Santangelo (12th grade) & his nanosatellite project.



Robert, Stev, and Mike talk with Josh Ludwigsen (10th grade) about pressurized glove



Gianina Revels (7th grade) & her glider project.

DISCOVER STEM DAY

By Robert Malseed—Treasurer

On Saturday, 8 February, our section participated in the Discover STEM Day activities at the National Museum of Nuclear Science and History. The Discover STEM Day is the last day in a week-long series of events hosted by the museum. Each day students from the underserved 4th-8th grade classes across Albuquerque and beyond visit the museum to spark their interest in the fields of science, technology, engineering, and mathematics through hands-on activities and interaction with the region's leading science and engineering professionals.

Our display was visited by many children, students, and parents. We had many giveaway items that included information about aeronautics & astronautics and AIAA, as well as rulers, pencils, frisbees, and stickers. Seven members of our section were there. Ben and Erin helped visitors to fly our DreamFlyer. Linda and Andrea handed out the giveaways and stamped visitors' passports. Elfego used software to show visitors information about the many artificial satellites orbiting Earth. Terry helped young pilots to fly using our desktop flight simulator. Robert explained various aspects of air-launched missile technology.

The DreamFlyer



Desktop Simulator



Satellite Technology



Missile Technology



Giveaway items



CALL FOR SCHOLARSHIP APPLICATIONS

By DR. Stephen Seiffert—AIAA Albuquerque Section Honors & Awards Chair

The Albuquerque AIAA Section has an established annual scholarship, this year's is for \$1000, awarded in May of 2020. Undergraduates or graduate students enrolled in the University of NM, the NM Institute of Mining and Technology, NM Highlands University, and Northern NM College are eligible for application. The **application deadline is April 10**. A winner announcement will be posted on or about May 1 and presentation of the award is at the annual AIAA Awards Banquet held in mid-May in Albuquerque.

Undergraduate applicants must have completed at least 60 hours in a degree-granting curriculum by the end of the semester of application. Graduate students must be admitted to a degree program.

Students from all applicable schools should check for the announcement, application instructions and deadlines, and forms and instructions posted on the **UNM School of Engineering website the last week of January:** www.soe.unm.edu/scholarship/.

Points of contact regarding the scholarship include:

UNM: Dr. Svetlana Poroseva poroseva@unm.edu
Honors & Awards Chair: Dr. Stephen Seiffert seiffert@flash.net

“THE LAST FULL MEASURE”

By Robert Malseed—Treasurer

The movie of this title (which is excerpted from President Lincoln's Gettysburg Address) tells the story of Airman First Class William Pitsenbarger. He was posthumously awarded the Air Force Cross for his actions on 11 April 1966 that saved dozens of soldier's lives at the expense of his own. After 34 years the medal was upgraded to the Medal of Honor and was presented to his parents on 8 December 2000. The story is not only of his heroic actions in the jungle of Vietnam, but of the efforts of many people to see that these actions were properly recognized by the award of the Medal of Honor.

A battalion of Viet Cong surrounded 134 soldiers from the First Infantry Division in the thick jungle. Due to the rapidly increasing casualties and injuries, the only way to evacuate the wounded from the dense battle zone was with the U.S. Air Force HH-43 helicopters. Pitsenbarger volunteered to be lowered to the ground to help despite being under fire. Pitsenbarger rescued Soldiers on several trips. When it came time to return to the helicopter, he chose to remain and help the troops. While on the ground, he helped deliver ammunition and give aid to the surviving Soldiers under fire. During the battle, he was mortally wounded. He was 21. The movie conveys this story in flashbacks as a fictional DoD investigator is doing the research and interviewing survivors of the action in order to upgrade the medal.

Airman Pitsenbarger was an Air Force Pararescueman (Parajumper, “PJ”). Kirtland AFB is home to some pararescue training.

In a tour of the school facilities several years ago, my wife and I saw William Pitsenbarger's Medal of Honor on display. We highly recommend the movie if you have not already seen it.



Pararescueman “PJ” William Pitsenbarger

THIS MONTH IN AIR & SPACE HISTORY

90 Years Ago – 1930

February 18: Pluto discovered by Clyde W. Tombaugh of the Lowell Observatory, Flagstaff Arizona.

75 Years Ago - 1945

February 20: White Sands Proving Grounds established in New Mexico. During February - X-1 construction contracts placed with Bell Aircraft Corp, by the Army Air Force.

During February: Arthur C. Clarke wrote a letter to the editor published in Wireless World on geostationary communication satellites.

55 Years Ago - 1965

February 3: OSO 2 (Orbiting Solar Observatory) launched aboard a Delta launch vehicle, Cape Canaveral, Fla.

February 16: Saturn (SA-9) orbited Pegasus-1, first micrometeoroid satellite, 9:37 a.m., EST, Cape Canaveral, Fla.

February 17: Ranger 8 launched on Atlas-Agena B launch vehicle, 12:07 pm., EST, Cape Canaveral, Fla.

50 Years Ago - 1970

February 3: SERT 2 (Space Electric Rocket Test) launched on a Thor-Agena from Vandenberg AFB.

February 11: Japan becomes the fourth space power after it launches the satellite Ohsumi into orbit from Uchinoura Space Center, Japan. Ohsumi was launched on a Japanese Lambda 4-S booster at 04:25:00 UTC.

45 Years Ago - 1975

February 6: SMS 2 (Synchronous Meteorological Satellite) launched on a Delta at 5:04 p.m., EST, Cape Canaveral, Fla.

40 Years Ago – 1980

February 9: NavStar 5 or GPS 1-5 launched at 3:08 p.m., EST, on an Atlas F from Vandenberg AFB. Part of Global Positioning System (GPS). The GPS was developed by the US Department of Defense to provide all-weather round-the-clock navigation capabilities for military ground, sea, and air forces.

February 14: Solar Maximum Mission (SMM) launched 10:57 a.m., EST, on a Delta from Cape Canaveral, Fla. First satellite to study the Sun in detail.

30 Years Ago - 1990

February 9: Galileo probe to Jupiter given Venus flyby for gravity-assist boost.

February 28: STS-36 (Space Shuttle Atlantis) launched from KSC at 2:50 a.m., EST. Deployed Department of Defense payload shortly after achieving orbit. Crew: John O. Creighton, John H. Casper, David C. Hilmers, Richard M. Mullane, and Pierre J. Thuot. Landed at Edwards Air Force Base (EAFB), CA at 10:08 a.m. PST on March 4. Mission Duration: 4 days, 10 hours, and 19 minutes.

25 Years Ago – 1995

February 3: STS-63 (Space Shuttle Discovery) launched from KSC at 12:22 a.m. EST. MIR space station rendezvous flyby. Crew: James D. Wetherbee, Eileen M. Collins, C. Michael Foale, Janice E. Voss, Bernard A. Harris, Jr., and cosmonaut Vladimir Titov (Russia). Landed at KSC at 6:51 a.m. EST on February 11. Mission Duration: 8 days, 6 hours, 29 minutes, 35 seconds.

THIS MONTH IN AIR & SPACE HISTORY

20 Years Ago – 2000

February 11: STS-99 (Space Shuttle Endeavour) launched from KSC at 12:43 p.m. EST. Shuttle Radar Topography Mission (SRTM). Crew: Kevin R. Kregel, Dominic L. Pudwill Gorie, Janet L. Kavandi, Janice E. Voss, Mamoru Mohri (Japan), and Gerhard P. J. Thiele (Germany). Landed at KSC at 6:23 p.m. EST on February 22. Mission Duration: 11 days, 5 hours, and 39 minutes.

February 14: NEAR Asteroid Eros Orbit Insertion -- The Near Earth Asteroid Rendezvous - Shoemaker (NEAR Shoemaker), renamed in honor of Gene Shoemaker, was designed to study the near Earth asteroid Eros from close orbit over a period of a year.

10 Years Ago – 2010

February 3: STS-130 (Space Shuttle Endeavour) launched from KSC at 4:14 a.m. EST. Delivered a third connecting module - the Tranquility node - to the ISS and a sevenwindowed cupola to be used as a control room for robotics. Crew: George Zamka, Terry Virts, Kathryn Hire, Nicholas Patrick, Robert Behnken and Stephen Robinson. Landed at KSC at 10:20 p.m. EST on Feb. 21, Mission Duration: 13 days, 18 hours, 6 minutes.

February 11: SDO, the Solar Dynamics Observatory, launched from Cape Canaveral on an Atlas 5 at 15:23 UTC. SDO observes the Sun from a 28.5° inclination geosynchronous orbit allowing continuous contact with a ground station at White Sands, NM. Data from the SDO instruments will support the development of improved space weather forecast models.

February 17: President Barack Obama, accompanied by members of Congress and middle school pupils, talked from the Roosevelt Room of the White House to astronauts on the International Space Station (ISS).

5 Years Ago – 2015

February 15: The Deep Space Climate Observatory, or DSCOVR, stationed at Lagrange point 1 (or L1), approximately one million miles from Earth, observes and provides advanced warning of particles and magnetic fields emitted by the sun (known as the solar wind) which can affect power grids, communications systems, and satellites close to Earth. Launched at 23:03:00 UTC by a Falcon 9 from Cape Canaveral, United States.

IMAGE OF THE MONTH

Virgin Galactic Spaceship



This photo released by Virgin Galactic Wednesday, Jan. 8, 2020, shows Virgin Galactic's next passenger spaceship standing on its landing gear in what is known as a weight-on-wheels test, in a hangar at the company's Mojave Air & Space Port in Mojave, Calif. Continuing work on the new ship includes connecting flight control and other integrated systems. The company anticipates commercial flights this year at Spaceport America in southern New Mexico. (Thomas Storesund/Virgin Galactic via AP)

PARTING THOUGHTS

"The most important thing we can do is inspire young minds and to advance the kind of science, math and technology education that will help youngsters take us to the next phase of space travel."

— John Glenn

SECTION INFORMATION

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Vice-Chair	
Secretary	Dr. Terry Caipen
Treasurer	Mr. Robert Malseed
Publications (Acting)	Mr. Robert Malseed
Young Professionals	Dr. Brian Robbins
Membership	Ms. Erin Pettyjohn
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STEM K-12	Dr. Elfego Pinon III
UNM Student Advisor	Dr. Svetlana Poroseva



AIAA Albuquerque Section
American Institute of Aeronautics & Astronautics
PO BOX 20818
Albuquerque, NM 87154-0818

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AIAA MISSION AND VISION STATEMENT

AIAA's mission is to inspire and advance the future of aerospace for the benefit of humanity. AIAA's vision is to be the voice of the aerospace profession through innovation, technical excellence, and global leadership.