NARCON 2014
Biographies of Presenters
and
Technical Session Descriptions

(Alphabetical by presenter)

Additional updates soon.

Arthur H. (Trip) Barber III

Trip Barber has been a sport rocket flier and a member of the National Association of Rocketry (NAR) since 1963. He has flown in six World Championships as a member of the U.S. rocketry team and over 30 U.S. National Championships. He developed the current version of the Safety Codes which govern the hobby's safety practices. He was a co-founder of the Team America Rocketry Challenge (the world's largest rocket contest) in 2003, and has run the rocketry part of that national student competition each year since. He was the eighth President of the NAR 2008-2012, after fourteen years of service as its Vice President and National Events Committee Chairman.

Trip graduated from the Massachusetts Institute of Technology with a Bachelor of Science degree in Aeronautics and Astronautics and received a Master of Science in Electrical Engineering (with distinction) and an additional subspecialty in weapons system engineering from the U.S. Naval Postgraduate School. He served on active duty in the Navy for over twenty-eight years after graduating from MIT, retiring as a Captain in 2002. His assignments included service at sea in a variety of duties on destroyers including command of USS DEYO (DD 989). He also commanded Naval Station Norfolk, the world's largest naval base. He is currently employed as a Senior Executive Service civilian on the Navy headquarters staff in the Pentagon, running the Navy's principal operations analysis organization.

Session: **International Rocketry Competition**

Every two years the NAR sponsors a Junior and a Senior team, totaling about 30 members, who travel to Europe for a week to compete against teams of the best competition model rocketeers from over 20 other nations in the World Spacemodeling Championships (WSMC). This international competition, sponsored by the Federation Aeronatutique Internationale (FAI), is run by very different rules and requires totally different rocket designs compared to what we fly in the US. The levels of craftsmanship and competition are very high and the ceremonies and prestige of the event are very similar to the Olympics. This session will cover the experience of competing as a national team in the WSMC, and the technology and designs of the models that are competitive under FAI rules.

John Beans

John Beans is the Founder of Jolly Logic. John's love of flying things and product design led him to start his own company to make fun and easy-to-use electronics such as AltimeterOne and AltimeterTwo.

Session: **New Developments in Rocket Electronics**

In this talk, John will discuss some of the products we can look forward to over the next year, and the technologies that are making them possible. Included in his talk will be a walkthrough of the new AltimeterThree, including demonstrations of its integration with Apple iOS and Google Android devices. John will share his thoughts on how wireless technology and networking will continue to shape what we put in our rockets and how we fly them.

Randy Boadway

Randy Boadway is the Sections Activity Chairman for the NAR, owner of eRockets, and a 40-year rocketry activist.

Session: **Open forum for existing NAR section leaders and those interested in forming a new section**.

The discussion will be led by Randy Boadway and will include important topics like How to organize sections, motivate sections, serve your membership and grow your section.

Discussion will lead into how to form a new section and what the NAR can do to help.

Rick Boyette
aka "Rocket Rick"

NAR #31375 - 1980
President, Florida Spacemodeling Association, West Palm Beach - 1986
Occupation: Structural Engineering Consultant, Pratt & Whitney Facilities
NAR Level 3 Certification Committee
Interests include scale modeling, scratchbuilding, plastic model conversion, NAR competition, technical writing, etc.

Session: **"Quasiglass" and other High-Power Rocket Construction Techniques**

Joe Bussenger

Joe Bussenger graduated from Florida Tech in 2013 with a B.S. in aerospace engineering and communications. Joe is pursuing a master's degree at Florida Tech in systems engineering while also holding a full time position as a mission operations engineer at Space Exploration Technologies (SpaceX), Cape Canaveral. Joe has interned with SpaceX for the last two years before being full time hired in February of 2014.

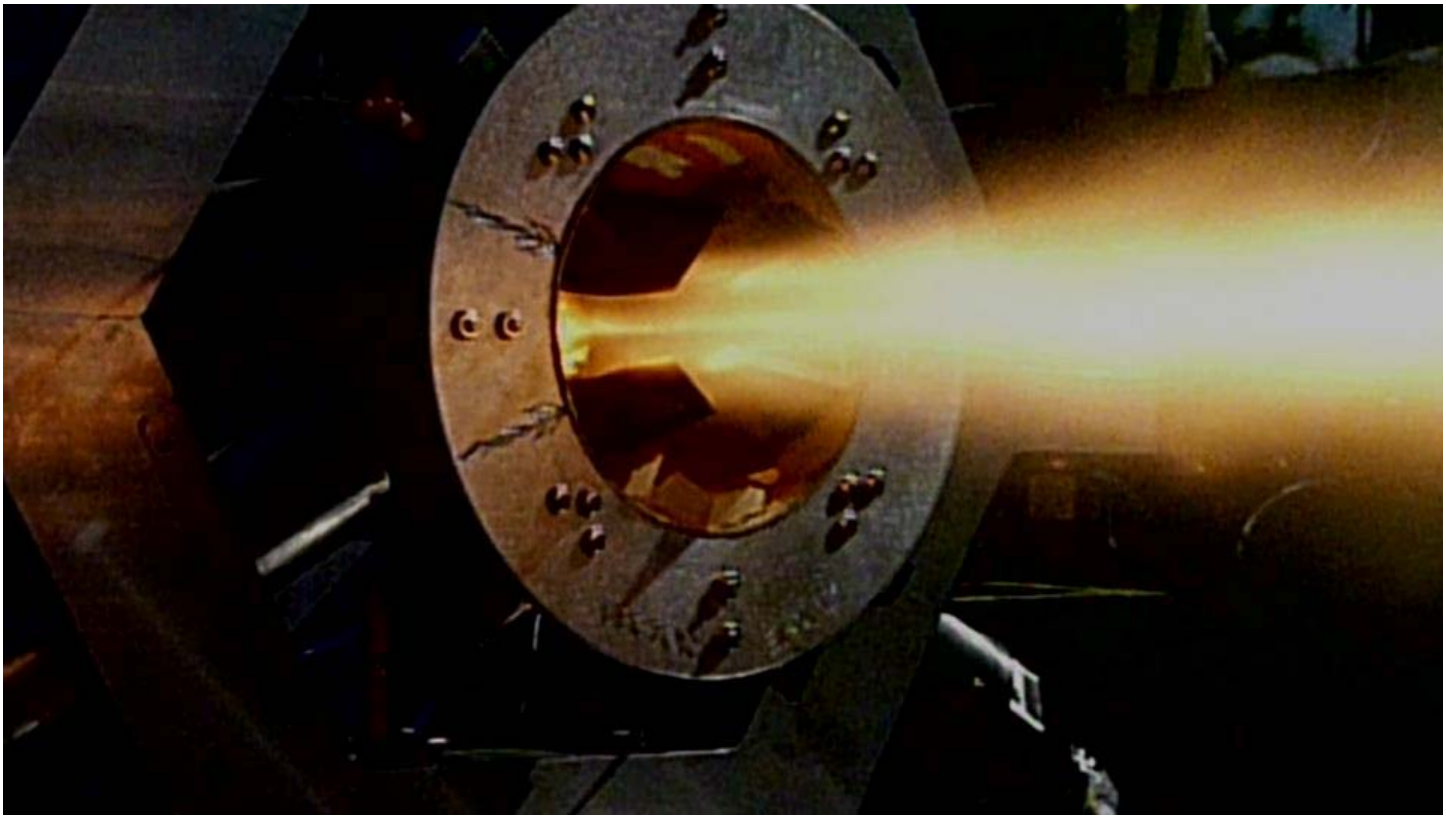
Joe was president of the Student Rocket Society and AIAA for three years at Florida Tech. Joe also served as vice president and active player on Florida Tech's ice hockey team and continues to coach the team today.

Session: **Florida Tech's Pathfinder Approach to Rocket Design, Flight, and Advanced Propulsion Testing**

Pathfinder, the notation used to describe a piece of hardware or mission that leads the way — this is exactly what Florida Tech's rocket program achieves. Florida Tech has a rich history in various programs and vehicles spanning all altitudes and mission profiles. Florida Tech's latest project being the *Centurion* program which is a student design, built, tested, and flown rocket to achieve over 100,000 feet in altitude. Set to fly sometime this year, the *Centurion* rocket is a culmination of several hardware projects coming together into one core flight. A major piece of developmental hardware included the thrust vector control system which was an early requirement in the design phase. A team of undergraduate juniors began development of an advanced closed loop thrust vectoring system utilizing guide vanes in the propulsion system nozzle. This system would be completely automated and self-contained in the rocket's internal avionics package. The system utilizes both accelerometer and gyro based measurements to feed a state machine information for outputs to a titanium gear driven servo mechanism system to turn four vanes inside of the plume.

The thrust vector control system also known as Vector Bravo (military term for the most accurate trajectory achievable) was tested on Florida Tech's six degree of freedom thrust stand. The unique

architecture of Florida Tech's thrust stand is that it can output axial thrust curves, pitch and yaw thrust curves, and roll torque. The thrust stand's sensitive piezoelectric sensors are operated at a sampling rate of 3,000 hz, allowing precise data to be drawn indicating propulsive performance.
For Vector Bravo, a pre-determined command timeline was fed into the system to simulate a real rocket flight where both major and minor corrections in trajectory are made. The system then fired for six seconds and exercised twelve different movements. With the accuracy of the thrust stand instrumentation, the group was able to determine the response time between command issuance and resultant thrust displacement. This testing allows for the system to be qualified for flight applications and use on the *Centurion* rocket.



Austin Coffey

Austin Coffey is a student at Embry-Riddle Aeronautical University and a member of the team that won the AIAA Commercial Space Launch design competition last year.

Session: **AIAA Commercial Space Launch Design Competition – Launch Vehicle Design**

Embry-Riddle Aeronautical University Students

Team Curimba Bios

Beket Tulegenov: Beket, born in the U.S.S.R, is graduating with a BS in Aerospace Engineering from ERAU this year. He is interested in space exploration and new technologies.

Bharvi Chhaya: Born in India, Bharvi went to high school in Tanzania and is now attending ERAU in pursuit of her ambitions. She has participated in many projects including MEERS and project *Curimba*.

Chris Mimms: Chris is studying Aerospace Engineering at ERAU, with a concentration in Astronautics. While attending ERAU, Chris has participated in many projects including the IEEE competitions and project *Curimba*.

Jeffery Patton: Born in Pennsylvania, Jeffery Patton has loved space from a young age and continues to pursue his interests at Embry Riddle Aeronautical University.

Session: **The *Curimba* Mission – Controlled De-orbit of Spent Upper Stages**

The *Curimba* mission is to design, build, launch, and operate a low cost system to safely perform the controlled deorbit of a spent upper stage rocket from low Earth orbit. The presentation will explain our mission design process and the motivations behind a mission of this type. We will also showcase the current progress of our research and design.

Amanda Gillespie

Amanda Gillespie currently works for Science Applications International Corporation (SAIC) as a Solutions Architect in the Logistics and Supply Chain Service Line. In this capacity Amanda is providing solutions to multiple teams and government customers regarding approaches to reliability engineering, quality control, quality assurance, and logistics.

Prior to becoming a Solutions Architect, Amanda worked for SAIC at NASA Kennedy Space Center (KSC) as a Reliability Engineer. At KSC, Amanda has performed reliability engineering on various NASA projects, including, Space Launch System (SLS), Multipurpose Crew Vehicle (MPCV), Ground Systems Development and Operations (GSDO), RESOLVE, and ISS Plant Habitat. She developed a detailed and thorough process for evaluating the availability of systems. This process won the Best Paper Award at the International Reliability and Maintainability Symposium (RAMS) in 2012. At KSC, Amanda also developed sampling plans, per ANSI/ASQ Z1.4, to address the risk to the Shuttle launch process due to errors made in the Quality Assurance (QA) verification plans.

Prior to joining SAIC, Amanda was involved in the optimization of the Eastern Range (ER) Range Safety Display's (RSD) Kalman filter performance by utilizing Statistical Process Control (SPC) techniques to model ER instrumentation calibration random errors.

Amanda is a member of the ASQ Reliability and Statistics Societies, AIAA, and Society of Reliability Engineers (SRE). Amanda received her ASQ Certified Reliability Engineer (CRE) in January 2011. Amanda was also selected as the Society of Women Engineer's (SWE) Technical Achievement of the Year in 2012.

Session: **Reliability Engineering: Consideration to Ensure Mission Success**

The presentation will describe the challenges, techniques, tools and processes in implementing a sound reliability engineering plan. The terms Reliability, Maintainability, and Availability (RMA) will be defined and their relation to each other will be discussed. Tools and techniques for Reliability Block Diagram Analysis (RBDA), Weibull Analysis, Failure Modes and Effects Analysis (FMEA), and Fault Tree Analysis (FTA) will be identified, and examples of how reliability engineering improved the overall mission success will be provided. This presentation will provide an understanding of the importance of reliability engineering in mission success.

Dr. Roy F. Houchin II

Dr. Roy F. Houchin II joined the faculty of the Air War College in 2006 following his retirement from active duty with the Air Force. He has taught previously at the School of Advanced Airpower Studies, Air Command and Staff College and in the Department of History at the US Air Force Academy. While on active duty, Dr. Houchin served as Director of Operations and Chief, Combat Operations, 607th Combat Operations Squadron, Osan, South Korea. He also held various air battle management assignments in the Tactical Air Command, Air Force Space Command, Air Combat Command and HQ USAF. He is the author of *US Hypersonic Research and Development: The Rise and Fall of Dyna-Soar, 1944-1963*, Taylor and Francis Publishing, 2006, several chapters in edited works and numerous articles in professional journals. He is an Associate Editor of *Quest: The History of Spaceflight Quarterly*. Dr. Houchin holds a B.A. and M.A. from Western Kentucky University, and a Ph.D. from Auburn University. His areas of interest and expertise are history of technology and military history (particularly space and World War I), as well as airpower history, theory and doctrine.

Session: **Africa Outreach – Paying Forward Internationally**

Paying forward is all about making a difference in the lives of those we have an opportunity to meet. The magical appeal of rocketry provides us with many ways to engage new friends... from the techniques of building a small single stage low power rocket to the wonder of launching a multi-stage dual-deploy high power masterpiece, we can share the benefits and camaraderie of our sport with others.

Africa Outreach is a presentation about paying forward internationally. It's about having the opportunity to spread the word about the rewards of rocketry to eastern and southern Africa...And, for those who seek the opportunity, a challenge to spread the word to other parts of the world.

Robert Koenn

Robert Koenn became a space and rocketry buff at about 14 years of age. He started a high school rocketry club in Tarpon Springs, Florida and also started the Tampa Area Rocketry Association in Pinellas County at that time. After high school he attended FTU/UCF and obtained an aerospace engineering degree. While at FTU he worked for NASA in the co-operative education program and supported the ASTP mission.

After graduation he returned to NASA in 1979 full time and worked the entire Space Shuttle program in various engineering positions until his retirement in 2011. During his tenure at NASA he supported STS-1 from the firing room the night before launch and at the Edwards/Dryden landing site. For the final Shuttle mission, STS-135, he was the primary mechanisms engineer in the firing room for launch as well as supporting the landing on the KSC Shuttle runway.

During the mid-80s he relocated to Vandenberg AFB to prepare SLC-6 for launching Space Shuttles. During his two years there he supported installation and testing of the pad environmental control systems until the Challenger accident caused VAFB shuttle ops to be terminated.

Robert has flown model rockets seriously from 1967 to the present and was C Division National Champion in 1980. He has formed or been a member of four Florida model rocketry clubs and sections over the years and still participates in sport rocketry. During these years he has served as contest director for numerous Florida area contests as well as attending numerous NARAMs around the country and helping to organize and run two Florida NARAMs. Robert continues to engage in the rocketry hobby although not as actively as in the past and also continues his interest in the space program.

Sessions: **Florida Model Rocket History**

Space Legends Luncheon

Gabriel Lapilli

Gabriel Lapilli is a PhD student in Mechanical Engineering, got his Master's degree in Aerospace Engineering at Florida Tech in 2011 specialized in Aerodynamics and Fluid Dynamics. A few years of hands-on industry experience in machine design and controls gave him the experience to tackle projects as a Research Engineer in the Aerospace and Advanced Propulsion laboratory as well as the Dynamics and Mechatronics laboratory at Florida Tech. Currently working on Slosh science development onboard the ISS in conjunction with NASA KSC, NASA AMES Research Center and MIT, as well as developing a test bed to study the dynamics of upper stage propellant tanks.

Session: **Liquid Sloshing Behavior in Microgravity with Application to Rocket and Spacecraft Propulsion Systems**

In order to build the next generation of spacecraft and rockets, an improved understand of how liquids behave in a microgravity environment is needed. Since liquid propellants make up a majority of the mass of a space vehicle, their motion within the propellant tanks can cause perturbations or shifts in the vehicle's trajectory. Additionally, most vehicle propellant tanks have a vent system that relieves the pressure generated by propellant boil-off at various points during the mission. When these vents are opened it is important to only vent gasses and not vent liquids.

Left: ***US Crew Member Mike Hopkins prepared to conduct experiments using the Slosh Experiment onboard the International Space Station***

The Slosh experiment was launched onboard a Cygnus capsule. It is designed to operate in the ISS and acquire long duration data to improve the computational models that simulate the mentioned conditions. The data is used by engineers on earth to validate and improve the CFD prediction models, improving the design of the next generation of space vehicles as well as the safety of the current missions. The SSE is scheduled to perform at least two more Science sessions in the coming months, using two different tanks with different fill levels, 40% and 20% fluid fraction.

Above: ***The Slosh Experiment undergoes pre-flight testing at the NASA Marshall Space Flight Center***

Marc "Moose" Lavigne

Marc 'Moose' Lavigne was introduced to the model rocket hobby in 1968 by way of his south Florida school shop class. Growing up during the heydays of the Apollo program, the hobby rapidly took hold and he joined the local Broward County club (BCMRA). In this club he participated in local and regional competitions leading him to NARAM's 15, 16, 17, and many years later 25 and 50.

After relocating to southern California, he discovered the Lucerne test range (the legendary Lucerne Dry Lake) and with it higher-powered modelling, rapidly expanding his payload projects. Moose experimented with various photographic, cinematic and electronic payloads during the 80's. He served on the Tripoli board of directors for the years 1989-1991.

Relocating again in 1989 to Cape Canaveral by job transfer, he joined the McDonnell Douglas Delta launch team where he became immersed in full scale rocketry for the next 18 years and had the unique opportunity to provide live launch commentary between 1999 thru 2007. Moose is currently a systems engineer employed by the Qinetiq Corporation under a NASA contract providing engineering support to NASA unmanned launch vehicle (Atlas V, Delta II, Pegasus, Antares, Falcon 9) programs.

Session: **Rapid Disassembly Just Outside the Blockhouse**

What happens when a Delta II rocket explodes right over your head, raining flaming chunks atop the blockhouse you're in, it starts to fill with smoke, and your communication with the outside world goes away. An insider's view of the Delta II / GPS NAVSTAR IIR-1failure of 17 January 1997, featuring rare photos of the event.

Session: **Florida Model Rocket History**

Hans “Chris” Michielssen

Chris started building and flying Model Rockets in 1969 during the pinnacle of the Space Race.

His models have been built for Centuri, Quest, Apogee, Dr. Zooch, Semroc, MPC/AVI, Starlight and DFR Technologies.

Chris runs Odd’l Rockets and the *Model Rocket Building* blog.

Session: **Low-Power Rocketry How-to Construction Tips and Techniques**

Today he'll pass on modeling techniques learned over 45 years of experience, concentrating on trouble areas. Everything from body tube seam filling, white undercoats for home print decals, smooth shroud forming and super shrouds, effective paint color schemes, lots of D.I.Y. and the best (and sometimes cheapest) tools for rocket construction.

Finished models will be displayed.

Mike Myrick

Mike Myrick (NAR 18845) is a longtime rocketeer who had the good fortune to spend his career at Kennedy Space Center in support of the Space Shuttle, International Space Station and Orion/SLS programs. He became the proud owner of a Replicator I last year and is also experimenting with a Kinect-based 3D scanner. His present project is a 1/70 Saturn IB incorporating printed 3D elements.

Session: **Maker Session / 3-D Printing workshop**

An introduction to 3D printing for modelers who are interested in doing prints of their own. We'll discuss the basic workflow for creating and printing a 3D object, and tips to improve print quality. A print demonstration using a Makerbot Replicator I will be followed by an opportunity to go hands-on with a 3D model as it is prepared for printing.

Session: **Florida Model Rocket History**

Brian Nicklas

Brian Nicklas is part of the archives reference team at the National Air and Space Museum, Washington, D.C.

American Missiles: The Complete Smithsonian Field Guide had its genesis in the Herbert S. Desind Photo Collection, a resource of more than 110,000 images catalogued at the National Air and Space Museum. The late Mr. Desind (aka Mr. Cineroc), a long-time science teacher and model rocketeer, collected these voluminous files over several decades. Brian's work in cataloging and archiving the collection resulted in his drive to consolidate the material into a useful reference work.

American Missiles offers an excellent overview U.S. missile design over the last fifty years in a readily accessible and useful format for scale modelers and rocketeers of all interests.

Session: **American Missiles: The Complete Smithsonian Field Guide**

Wes Oleszewski

Wes Oleszewski is the owner and operator of Dr. Zooch Rockets. Aside from running his model rocket company, Wes is also a professional writer and cartoonist with 15 titles currently in publication. He also draws the Klyde Morris cartoon strip found twice weekly on the Aero-News Network. At this time he is composing a six book series for Kindle and print titled “Growing up with Spaceflight.” This series is an outsider’s point of view as told by the author who actually did grow up with America’s space program. The series is set to be released beginning in 2014.

Wes has a 1987 Bachelor’s Degree in Aeronautical Science from the Embry-Riddle Aeronautical University in Daytona Beach. He is a former airline captain and corporate pilot and holds an Airline Transport Pilot’s certificate. He is married and has two children and resides in the Washington DC area.

Session: **Growing up with Spaceflight**

Some people were on the inside of the American space program, hands-on, up-close and fully involved in the exciting era when man first left the earth for outer space— but the rest of us slobs had to watch it on TV.

The “Growing up with Spaceflight” presentation will involve the fun and sometimes humorous aspects of those of us who were space-buffs, yet relegated to watching the program from the outside. No doubt most of us can relate to those days of fuzzy black and white TV images from the Cape, captured from out of the airwaves by tinfoil-wrapped rabbit ear antennas and presented on one of the three networks. Between missions we rode our bicycles to the local hobby store and spent the money that we earned mowing lawns on bagged rockets kits and hands full of B6-4 engines. With one hand holding the kits to the handlebars and a pocket full of engines we rode back home and proceeded to build our own space program. We launched missions that Cronkite, McGee and Bergman would never cover. Of course those massive engineering efforts normally ended up on a power line or eaten by a neighbor’s tree, but that was a key component of growing up with spaceflight.

A trip back to those days is what the “Growing up with Spaceflight” presentation is all about. Join us as we all take some time to be a kid again and look back at a time when we launched US astronauts from US soil aboard US rockets.

Trey Pietras

Trey Pietras is a senior in aerospace engineering at Embry-Riddle Aeronautical University, graduating this May. He has worked on hybrid rockets and liquid rockets for two years each. He currently serves as the president of Experimental Rocket Propulsion Labs, an entirely student-taught and student-run organization at Embry-Riddle. In addition, he is the project lead for *Icarus*, an Embry-Riddle student-built rocket set to travel to one hundred kilometers.

Session: **Project Icarus**

The Embry-Riddle Aeronautical University student-built rocket set to travel to one hundred kilometers.

Jules Schneider

Mr. Schneider is the Senior Manager, *Orion MPCV* Assembly, Integration, & Production for Lockheed Martin Space Systems Company, responsible for all of the final assembly and integration of the Orion Spacecraft and associated flight test articles at the Kennedy Space Center that are part of the Lockheed Martin Orion contract. Mr. Schneider has 30 years in Aerospace production, operations and engineering, 28 with Lockheed Martin Space Systems Company.

Current position is Assembly, Integration & Production Sr. Manager Jules has been in his current position since award of the Orion contract to LM in September of 2006. Jules was the one of the principle proposal authors of the Assembly, Integration and Production section of the Orion proposal.

Prior to his Orion proposal assignment, Jules was Sr. Manager in charge of the Falcon Small Launch Vehicle demonstration system development, reporting to M. Robert Simms, Director and Program Manager for the LM Falcon program. In this capacity, Jules was responsible for the design, development, production, flight test & evaluation of Lockheed Martin's two stage Falcon demonstration system launch vehicle. This task includes the development of a new hybrid main propulsion system as well as development of multiple other propulsion & avionics subsystem elements. The Falcon program is part of the Air Force's pursuit of an Operationally Responsive Spacelift capability.

Prior to this, Jules was the Program Manager for a $10M program to implement the world's largest Self Reacting Friction Stir Welding capability at NASA's Michoud Assembly Facility (MAF) in New Orleans, LA. This program was part of the National Center for Advanced Manufacturing (NCAM) located at MAF.

Jules was designated to be the LM Michoud lead for the Orbital Space Plane Structures and Mechanisms and was integrally involved in the OSP proposal effort.

Jules previously served as the Crew Return Vehicle (CRV) Structures and Mechanisms subsystem lead for LM. In this capacity Jules also served as the primary interface for LM with the NASA JSC X-38 technology demonstration team with respect to structures and mechanisms.

Jules was the IPT lead for the development of the metal LH2 tank for NASA's X-33 program. This program was introduced after the failure of the composite LH2 tanks during testing at MSFC. Jules was also the principle engineer for several of the X-33 LO2 tank structural elements.

Jules was the LM Engineering IPT lead for the Integration, Assembly & Check-out of the Kistler two

stage reusable launch vehicle as well as the design lead for the vehicle's second stage LO2 tank.

Prior to that, Jules spent 10 years in Production Operations in various assignments ranging from project engineer for large tooling programs to production integration lead on proposals.

Jules earned a B.S. degree in Mechanical Engineering from the University of New Orleans in 1984.

Session: **Orion Multi-Purpose Crew Vehicle Processing at KSC for the EM-1 and EFT-1 missions**

Sean Stapf

Sean Stapf currently owns and operates “SECorp”; a small consulting company performing physics analysis. Sean is also employed as a civilian engineer for the Air Force, supporting issues of Range Safety for rocket launches at Cape Canaveral and Kennedy Space Center. Prior to these two efforts, Sean was employed for 14 years as a civilian engineer for the Navy, performing physics calculations on rockets, ejection seats, weapons, aircraft, EOD equipment, and various other energetic devices.

Session: **Examples of a “Full Pre-Flight Analysis” on a Rocket**

A presentation of the various physics analyses which can be performed to assess a rocket’s performance; Trajectory, Dynamics, Mechanics, Structures, Thermal, and Fluid Analysis.

Matt M. Steele

Mr. Steele is Director of Strategy and Business Development for Vehicle Integration Services at ATK Space Systems. He pursues opportunities for ATK's Vehicle Integration Services business, including the Lockheed Martin/ATK Athena launch vehicle, Dnepr Launch Vehicle, and other suborbital and launch vehicles.

Prior to joining ATK, as manager of Business Development for Orbital Sciences Corporation (Chandler, AZ), Mr. Steele led winning proposals for the Air Force's Responsive Small Spacelift competition. Mr. Steele also acted as the Lead Propulsion Engineer for Orbital's Pegasus, Taurus, Minotaur, Hyper-X X43A, and Ground-Based Missile Defense Orbital Boost Vehicle (GMD OBV) launch vehicles. Mr. Steele oversaw the development of the successful development and test of the GMD OBV Stage 1 booster in an accelerated 10 month program. He led the Orbital/ATK team in the Hyper-X X-43A Return to Flight effort, and sat on the launch console for six Pegasus missions.

Mr. Steele was the Thiokol Corporation (now ATK) Mk-70 program manager, and the associate program manager for SLAT, MK-36, MK-72 and Castor IV/Atlas IIAS solid rocket motors. As a program engineer for Hercules Aerospace (now ATK), he developed and tested complex composite space structures used on TDRS and Galileo satellites. Prior to that, Mr. Steele was a Captain in the US Army, overseeing Pershing Ia and Pershing II maintenance in Heilbronn, Germany, and Fort Sill, Oklahoma.

Mr. Steele cofounded North Coast Rocketry, a hobby model rocket company that designed, developed, manufactured and marketed high performance rocket motors and models for consumers. In 1995, the North Coast Rocketry products were licensed to Estes Industries, where Matt went to serve as Marketing Manager. Matt has designed over 100 different model rocket kits for Estes, Quest, HobbyLab and North Coast Rocketry.

Matt has been a member of:

- Five US International Teams, winning two individual bronze and two gold, two silver and one bronze team medals
- Eight NAR National Championship teams
- Nine NAR Section Champions

Matt has also served as a NAR Trustee (9 years), National Contest Board Chairman, and Contest Director for two NAR Annual Meets (NARAM-30 and NARAM-48).

A native of Ohio, Mr. Steele received a Bachelor of Science in Physics from the Kent State University and a Master of Business Administration in Technology Management from the University of Phoenix.

Session: **Future Launch Vehicles**

A technical discussion of the variety of space launch vehicles expected to be flown in the next 10 years or so. From near term launchers (SLS, Falcon 9H & 9R, Minotaur VI, Super Strypi) to longer term vehicles (Blue Origin, Reusable Booster System, Angara, Ariane 6), each will be described in a manner that should make a Future Scale modeler drool.

Tim Van Milligan

Tim Van Milligan is the owner of Apogee Components and has been flying rockets since around 1976. He is an Aeronautical Engineer, having graduated from Embry-Riddle Aeronautical University located just 70 miles north of Cocoa Beach in Daytona Beach, Florida. After college, he worked as a Launch Operations Engineer on the *Delta II* program here at Cape Canaveral.

Tim then moved to Colorado and worked for Estes Industries from 1991 to 1994 as a rocket designer. In 1994, after being laid off, he wrote the book “Model Rocket Design and Construction” and also took over Apogee Components. He has been operating Apogee ever since. His approach to rocketry is to educate newer hobbyists in the science that makes rocketry work. His web site at www.ApogeeRockets.com has over 350 newsletters and 150 videos on how to make your rockets fly better and higher.

Session: **RockSim Basics**

If you've never used the RockSim software to design your rockets and to pick the perfect rocket engine, then this workshop is for you. It will cover all the basics of RockSim, like running simple simulations, creating simple designs, optimizing a design for different weather conditions, and how to make unique creations using the pod feature. Come discover the most popular rocket design and simulation software in the hobby.

Mark Wise

Mark Wise flew his first model rocket, a Centuri Moonraker, in 1973. After a decade in and out of the hobby, he joined the NAR in 1983. He competed in local and regional competition as a member of CMAR until school and work pulled him away from rocketry, then became a BAR in 1999 with the help of his young son. He has been active in the hobby since then, and earned his Level 1 certification at NARAM-52.

Mark moved to the Washington, DC area in 2005, where became a member of NARHAMS. He has served as the club's Section Advisor since 2008, and was elected to the NAR board in 2012. With Trip Barber, he co-edited the 2013 edition of the NAR Section Guidebook (https://sites.google.com/site/xnarsection/home). He served as a Queue Manager at NARAM-49, Vendor Coordinator at NARAM-50, and R&D Judge at NARAM-50, 53, 54, and 55.

Mark holds degrees from the University of Minnesota and the National Intelligence University. He works as a senior training instructor for the Department of Defense, and serves as a Senior Chief Petty Officer in the Navy Reserve.

Session: **NAR Research & Development Competition — How-To Panel**

A facilitated discussion (definitely not a lecture) about R&D - how to compete, some suggested do's and dont's, possible research topics, and whatever else can fit into a one-hour session.

Stand-by Presenters

These sessions will be available to fill in for any last-minute cancellations or updates.

Arthur H. (Trip) Barber III

Session: **Competition Boost-Gliders**

Frank Panek

Frank Panek is a member of the Blue Ridge Rocketeers (BRR) in West Virginia and a member of both NOVAAR and NARHAMS. He is the Deputy Commander for Cadets in the Martinsburg Composite Squadron of the Civil Air Patrol.

Session: **Aerospace Education, Rocketry and Reaching for MARS**

The Civil Air Patrol's MARS program helps builds aerospace leaders for tomorrow. CAP promotes and supports aerospace/STEM education, both for its own members and the general public. These programs help prepare youth (12-20) and adults to meet the challenges of a sophisticated, global aerospace society and understand its related issues. The program is multifaceted and includes a Model Rocketry Program that progresses from the history of rocketry and its pioneers to the physics of impulse and thrust. Students build and fly single and two-stage models and are encouraged to participate in the Team America Rocketry Challenge. Do you want to know more about this program? Do you think you have rocketry skills to offer? Come join us for a presentation and discussion.

Matt M. Steele

Session: **LDRS-1 through -5**

Take a trip down memory lane as we revisit the first five 'Large and Dangerous Rocketships" launches, where high power rocketry transitioned from "outlaw" status to mainstream. The presentation will feature photos and stories from the first meets, where the rockets grew from "G" power to "L" power in five short years.