



Lockheed Martin Management Association Retirees Newsletter

Looking Forward Towards A Wonderful Retiree Future!

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MARCH 2017

Needed: Staff Help

LMMAR needs volunteers to help keep LMMAR going. We have several vacancies on the Board and we particularly need a secretary and a newsletter editor. If you think you can help please contact:

Norm Dhom, Membership Chair – (408) 732-2742

Jerry Vaughan, Treasurer – (408) 985-2708

Your Story We need your input. Have you done anything exciting lately? Do you have any news that might be of interest



to our members? Your story and photo is welcome! Email it to:
jerry.allan.vaughan@gmailcom

Sunshine If a member knows of anyone ill or grieving, please send an email to Karen Stayrook at: karenstayrook@comcast.net or call (408) 622-5539

Supersonic Travel

Seen in  MOBILE MAG

NASA's X-Planes were the most creative experimental aircraft to be developed. Decades were spent researching and testing these pioneering aircraft that were used to test out sciences like breaking the sound barrier and flying at high altitudes. NASA now plans to bring back that program, with a few goals in mind like a supersonic electric plane or breaking the sound barrier without the extremely loud sonic booms. When NASA began developing its daringly experimental X-planes during the Cold War, it was with a focus on high-altitude, high-speed flight with missile and reconnaissance technologies. As the world has changed, so have the space agency's priorities, and when it announced the

"New Aviation Horizons" (NAH) series of X-planes, the aim was not military capabilities but eco-friendly abilities. New Aviation Horizons is the centerpiece of the Environmentally Responsible Aviation (ERA) project, which aims to develop technologies that allow the aviation industry to fly more people at longer distances while using less fuel and producing fewer emissions and noise. It is a challenge that NASA believes will inspire "a new revolutionary era of aviation" unlike anything seen since the dawn of the airplane by the Wright brothers. NASA's scientists claim that by 2050, new aircraft could be using half as much fuel, emitting 75 per cent less pollutants, and making 12 per cent of the noise of present planes. All that could save airlines \$250 billion between 2025 and 2050. The first NAH X-plane,

the battery-powered X-57 Maxwell, is due to appear in 2017. An experiment in the distribution of propulsion, its 14 electric motors will be integrated into the long, thin wings, powering a large propeller at each tip for use when cruising, and 12 across the leading edges for take-off and landings. Whereas in conventional aircraft the greatest fuel efficiency is obtained by flying below top speed, electric propulsion allows pilots to cruise both efficiently and quickly, reducing energy by up to 40 per cent.

NASA plans to build five X-planes between now and 2026 and explore more propulsion possibilities, software



The N+2 Supersonic concept, pictured above, laid the foundation for NASA's Quiet Supersonic Technology (QueSST) X-plane program.

systems and new composite materials. These new materials will reduce weight, and therefore fuel efficiencies, and also allow for radical new shapes. Wings will have very high aspect ratios (long and thin) and fuselages will be completely transformed, as the new materials can withstand high pressure without the need for rounded shapes. One of the planes is likely to have a

body integrated with its wings, so that it resembles a huge blade. Such shapes and materials are likely to feature in the QueSST (Quiet Supersonic Technology) jet, perhaps the most attention-grabbing of the mooted planes. The QueSST, being developed with Lockheed Martin, is intended to be a new, "low-boom" supersonic craft that could eventually fill the gap left by Concorde. Its engineers will seek to replace the severe sound-pollutant sonic boom with a soft thump, or "supersonic click" that would mean it could attain its top speeds over land, rather than having to wait until it was over the sea.

Lockheed Martin's X-Plane Test

PALMDALE, California, Feb. 24, 2017 – Supersonic passenger airplanes are another step closer to reality as NASA and Lockheed Martin begin the first high-speed wind tunnel tests for the Quiet Supersonic Technology (QueSST) X-plane preliminary design at NASA's Glenn Research Center in Cleveland.

The agency is testing a nine percent scale model of Lockheed Martin's X-plane design in Glenn's 8' x 6' Supersonic Wind Tunnel. During the next eight weeks, engineers will expose the model to wind speeds ranging from approximately 150 to 950 mph (Mach 0.3 to Mach 1.6) to understand the aerodynamics of the X-plane design as well as aspects of the propulsion system. NASA expects the QueSST X-plane to pave the way for supersonic flight over land in the not too distant future.

"We'll be measuring the lift, drag and

side forces on the model at different angles to verify that it performs as



Mechanical technician Dan Pitts prepares the model for wind tunnel testing. Credit: NASA

expected," said aerospace engineer Ray Castner, who leads propulsion testing for NASA's QueSST effort. "We also want make sure the air flows smoothly into the engine under all operating conditions."

The Glenn wind tunnel is uniquely suited for the test because of its size and ability to create a wide range of wind speeds.

"We need to see how the design performs from just after takeoff, up to cruising at supersonic speed, back to the start of the landing approach," said David Stark, the facility manager. "The 8' x 6' supersonic wind tunnel allows us to test that sweet spot range of speeds all in one wind tunnel."

Recent research has shown it is possible for a supersonic airplane to be shaped in such a way that the shock waves it forms when flying faster than the speed of sound can generate a sound at ground level so quiet it will hardly will be noticed by the public, if

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at all.

“Our unique aircraft design is shaped to separate the shocks and expansions associated with supersonic flight, dramatically reducing the aircraft’s loudness,” said Peter Iosifidis, QueSST program manager at Lockheed Martin Skunk Works. “Our design reduces the airplane’s noise signature to more of a ‘heartbeat’ instead of the traditional sonic boom that’s associated with current supersonic aircraft in flight today.”

According to Dave Richwine, NASA’s QueSST preliminary design project manager, “This test is an important step along the path to the development of an X-plane that will be a key capability for the collection of community response data required to change the rules for supersonic overland flight.”

NASA awarded Lockheed Martin a contract in February 2016 for the preliminary design of a supersonic X-plane flight demonstrator. This design phase has matured the details of the aircraft shape, performance and flight systems. Wind tunnel testing and analysis is expected to continue until mid-2017. Assuming funding is approved, the agency expects to compete and award another contract for the final design, fabrication, and testing of the low-boom flight demonstration aircraft.

The QueSST design is one of a series of X-planes envisioned in NASA’s New Aviation Horizons (NAH) initiative, which aims to reduce fuel use, emissions and noise through innovations in

aircraft design that depart from the conventional tube-and-wing aircraft shape. The design and build phases for the NAH aircraft will be staggered over several years with the low boom flight demonstrator starting its flight campaign around 2020, with other NAH X-planes following in subsequent years, depending on funding.

Sunnyvale FBM Employees Moving

SUNNYVALE, Calif., Feb. 23

Lockheed Martin today announced plans to relocate the Fleet Ballistic Missile (FBM) program within its Space Systems business area to collocate employees in facilities with common skills and resource requirements. These moves, which are enabled by government approval, are expected to deliver substantial cost savings while centralizing mission expertise in key locations.

Over the next eight years, the company plans to move approximately 650 positions from its Space Systems facility in Sunnyvale, California, to other Lockheed Martin locations in the U.S. Sites in Florida and Colorado, which have complementary facilities and employee skill sets, are under consideration to receive the positions. Most employees will be offered the opportunity to retain their current positions and relocate to the receiving facility.

“We value the deep expertise of our employees, and we’re working diligently to shape a transition that leverages the knowledge of this team,” said Rick Ambrose, executive vice president, Lockheed Martin Space

Systems. “Reshaping our Fleet Ballistic Missile program will help us take full advantage of our engineering and manufacturing facilities and centralize key skills, saving costs for the Navy on this critical national security program.”

The relocating positions are FBM program jobs, as well as functional and program management support roles. The company will be working closely with its Navy customer to ensure a smooth transition as people, facilities and equipment move in phases over an eight-year period.

“As our business evolves, we’re adapting to ensure we deliver the innovation, affordability and performance our customers demand,” said Mathew Joyce, vice president and general manager of Strategic and Missile Defense Systems for Lockheed Martin. “We’ve laid out a long-term strategy that will achieve that evolution and position us for the future, while offering our employees time to plan and prepare for the transition.”

Star One Credit Union Workshops

Workshops are free to members and non-members.

RSVPs are Required. Please call (408) 543-5127, visit a Branch, or register online at www.starone.org.

Building a Better Budget

A budget is the most powerful tool available for establishing financial control. After identifying short-, mid-, and long-term goals, participants learn how to design realistic spending plans to live within their means and savings plans to reach their goals. Within that

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framework, we discuss different options available for getting out of debt, staying out of debt, and maintaining motivation.

March 15, 2017, 6:00pm - 7:30pm
Stevens Creek Branch
3136 Stevens Creek Blvd, San Jose

Age Well, Plan Well

Learn about scams, estate planning and other helpful ways to prepare for future needs. Special Guest Speakers.

April 29, 2017, 9:00am - 11:00am
Administration Building
1306 Bordeaux Drive, Sunnyvale

Home Buying Workshop

If you are planning to buy your first home or are experienced in home buying and looking for tips, this is the event for you to attend. A real estate agent, appraiser, and title insurance company representative will all be available to provide tips and answer questions.

May 18, 2017, 6:00pm - 8:00pm
Stevens Creek Branch
3136 Stevens Creek Blvd, San Jose

Tidal Energy

PENTLAND FIRTH, Scotland, Feb. 23, 2017 /PRNewswire/ – Atlantis Resources Limited has deployed the first AR1500 tidal energy turbine with new Lockheed Martin (NYSE:LMT) technology off the coast of Scotland. The installation is the latest development in the MeyGen project designed to harness the motion of the tides to provide clean, sustainable, predictable power

for up to 175,000 homes in Scotland.

Under contract and in partnership with Atlantis, Lockheed Martin designed the 1.5 megawatt AR1500 turbine. In addition to system design,



Lockheed Martin developed, manufactured and delivered two innovative subsystems, the Yaw Drive System (YDS) and the Variable Pitch System (VPS). The two elements enable the turbine to rotate autonomously around its base, so it always faces into the tidal flow. The pitch angle of the turbine blades also adjusts to optimize the power generation in a given tidal stream.

Installation and connection of the AR1500 was completed with record-breaking efficiency in less than 60 minutes, representing a significant time reduction compared to most similar systems. The operation marks the first time a tidal turbine has been installed and connected to the shore instantaneously.

"Tidal turbines must be highly reliable and resilient to withstand and operate within the tough environment of a sea floor," said Frank Armijo, vice president of Lockheed Martin Energy.

"These design requirements are similar to the reliability and durability needs of many of our aerospace programs. With innovations in advanced

manufacturing and materials, and experiences gained in the design and production of undersea systems, space projects and aeronautics, we're now helping to make tidal energy more reliable and effective."

Tidal energy is produced by the surge of ocean water during the rise and fall of tides. Submerged rotors harness the power of the ocean currents to drive generators, which in turn produce electricity.

The MeyGen project is currently the largest planned tidal energy project in the world. The site, in the Pentland Firth, just 2 kilometers from Scotland's northeast tip, covers some of the fastest flowing waters in the United Kingdom. Atlantis has a goal to deploy nearly 270 turbines to generate about 400 MW of energy, enough to power 175,000 homes.

In 2013, Lockheed Martin and Atlantis entered into a teaming partnership to develop technology, components and projects in the tidal power sector on a global basis, beginning with the AR1500.

Lockheed Martin Energy is a line of business within Lockheed Martin that delivers comprehensive solutions across the energy industry to include demand-response solutions, energy efficiency, energy storage, nuclear systems, tidal energy technologies and bioenergy generation.



LMMAR LUNCHEON
 Come party with the Leprechaun's and don't forget the wearing of the Green



Lads & Lassies

March 17, 2017

MICHAEL'S AT SHORELINE
 2960 N. SHORELINE BLVD.
 MOUNTAIN VIEW, CA 94043

Entertainment

11:15 AM. SOCIAL - NO HOST BAR

12:00 P.M. LUNCH

Entrée Choices:

- (1) Corned Beef & Cabbage
- (2) Shrimp Louis & Fruit Cup
- (3) Chicken Breast Florentine (Stuffed/W Spinach & Cheese)
- (4) Vegetarian dish upon request only

All Entrees Served With Bread, & Salad (Fresh Greens)

Regular or Decaf Coffee, Tea

Dessert: Crème de Menthe Sundae

12:45 P.M. "Harker JV Dance Team"



Rachelle Haun & Harker Academy Present:
"HARKER JV DANCE TEAM"

RSVP BY March 13, 2017

Make check payable to LMMAR and mail to:

LMMAR

P.O.BOX 2117

SANTA CLARA, CA 95055-2117

\$26 PER PERSON



For information or refunds, call Lucille Wilson 408.225.9566 or Gay Morgan 408.243.2233

Cancellations not accepted after Monday prior to the Friday luncheon

Please do not leave messages on answering machine.

Please count on the following to attend the Friday, 17th of March luncheon:

- 1. Corned Beef & Cabbage
- 2. Shrimp Louis & Fruit Cup
- 3. Chicken Breast Florentine

 Name

- 1. Corned Beef & Cabbage
- 2. Shrimp Louis & Fruit Cup
- 3. Chicken Breast Florentine

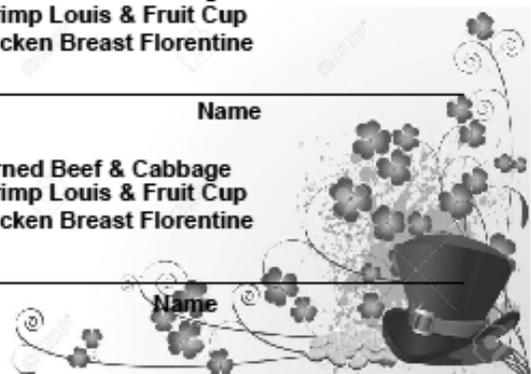
 Name

- 1. Corned Beef & Cabbage
- 2. Shrimp Louis & Fruit Cup
- 3. Chicken Breast Florentine

 Name

- 1. Corned Beef & Cabbage
- 2. Shrimp Louis & Fruit Cup
- 3. Chicken Breast Florentine

 Name



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MARCH 2017

Activity Calendar

- **LMMAR Executive Board Meeting.** First Monday of each month unless holiday conflict, then second Monday. 9:30 a.m. Star One Administration Building, 1306 Bordeaux Dr.— Members are welcome to attend. Call Norm Dhom to arrange attendance — (408) 732-2742.
- **LMMAR Newsletter Mailing Session.** Volunteers needed. Second Thursday of each month. 9:30 a.m. Star One Administration Building, 1306 Bordeaux Dr. — Call Norm Dhom to arrange attendance — (408) 732-2742.
- **LMMAR Bridge Card Players.** Join the fun! Every Tuesday and Thursday, 11:30 a.m. at the Willow Park Condominiums located at the NE corner of Moffet Blvd. and Middlefield Road in Mountain View. Entrance is from Moffet Blvd. Contact Dave Himmelblau, 'phone No. 650 968-1121.
- **Lockheed Martin Blood Bank Drive.** Second Wednesday of each month. 8:00 a.m.– 3:00 p.m. Bldg. 163. LMMAR Contact Norm Dhom (408) 732-2742.
- **LMMAR Saint Patrick's Day Luncheon** March 17, 2017. at Michael's at Shoreline. For further information, please contact Lucille Wilson at 408-225-9566 or Gay Morgan at 408-243-2233
- **Lockheed Martin Retirees Investment Group (LMRIG).** Meets last Thursday of each month, 1:00-3:00 p.m. Meet at Mitchell Park Library, 3700 Middlefield, Palo Alto Midtown Room – on the right, past the library entrance. Dues are \$2. Contact Don Kinell (650) 948-1520 or Martin Abelow (408) 253-6924.

For your financial needs, please contact Star One Credit Union at www.starone.org or (866) 543-5202 toll free.

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