



Lockheed Martin Management Association Retirees Newsletter

Looking Forward Towards A Wonderful Retiree Future!

FEBRUARY 2017

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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, President – (408) 732-i2742

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

Transonic Speed

In aeronautics, transonic refers to the condition of flight in which a range of velocities of airflow exist surrounding and flowing past an air vehicle or an airfoil that are concurrently below, at, and above the speed of sound in the range of Mach 0.8 to 1.0, i.e. 965–1,236 km/h (600–768 mph) at sea level. This condition depends not only on the travel speed of the craft, but also on the temperature of the airflow in the vehicle's local environment. It is formally defined as the range of speeds between the critical Mach number, when some parts of the airflow over an air vehicle or airfoil are supersonic, and a higher speed, typically near Mach 1.2, when most of the airflow is supersonic. Between these speeds some of the airflow is

supersonic, but a significant fraction is not.



Aerodynamic condensation evidences of supersonic expansion fans around a transonic F/A-18

Most modern jet powered aircraft are engineered to operate at transonic air speeds. Transonic airspeeds see a rapid increase in drag from about Mach 0.8, and it is the fuel costs of the drag that typically limits the airspeed. Attempts to reduce wave drag can be

seen on all high-speed aircraft. Most notable is the use of swept wings, but another common form is a wasp-waist fuselage as a side effect of the Whitcomb area rule.

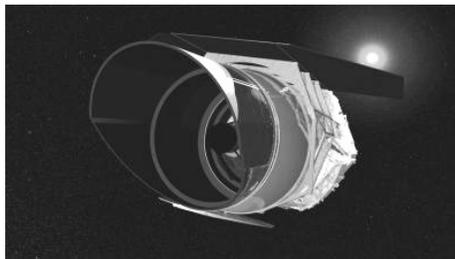
Severe instability can occur at transonic speeds. Shock waves move through the air at the speed of sound. When an object such as an aircraft also moves at the speed of sound, these shock waves build up in front of it to form a single, very large shock wave. During transonic flight, the plane must pass through this large shock wave, as well as contend with the instability caused by air moving faster than sound over parts of the wing and slower in other parts.

Transonic speeds can also occur at the tips of rotor blades of helicopters and aircraft. This puts severe, unequal stresses on the rotor blade and may lead to accidents if it occurs. It is one of the limiting factors of the size of rotors and the forward speeds of helicopters (as this speed is added to the forward-sweeping [leading] side of the rotor, possibly causing localized transonics).

Search For Dark Matter

PALO ALTO, Calif., Jan. 19, 2017 / PRNewswire/ – Lockheed Martin (NYSE: LMT) is helping NASA begin the hunt for dark energy, a mysterious force powering the universe's accelerating expansion. An instrument assembly the company is developing, if selected by NASA for production, will be the core of the primary scientific instrument aboard the Wide Field Infra-

red Survey Telescope (WFIRST), whose mission aims to uncover hundreds of millions more galaxies and reveal the physics that shapes them.



WFIRST's powerful optics will detect mysterious energy causing the universe to expand. Lockheed Martin is working on a study for the Wide-Field Optical-Mechanical Assembly, leveraging work on other deep space telescopes. (Image credit: NASA/WFIRST)

Scientists and engineers recently began work developing the Wide-Field Optical-Mechanical Assembly (WOMA) for WFIRST, NASA's newest astrophysics telescope program. WOMA comprises the major portion of scientific components on one of two instruments on the telescope. NASA chose Lockheed Martin's Advanced Technology Center (ATC) in Palo Alto to advance from an earlier study into the formulation phase. WOMA uses similar approaches to the Near Infrared Camera (NIRCam), which the ATC built as the primary optical instrument for NASA's James Webb Space Telescope.

"Lockheed Martin scientists achieved groundbreaking results with NIRCam's precision and sensitivity," said Jeff Vanden Beukel, WOMA program manager at Lockheed Martin. "There's no time to lose as we support a fast-paced schedule, and our experience with NIRCam's precision optics positions our WOMA design to be capable, producible and on budget."

Scientists and engineers are collaborating to design optical systems, mechanisms, structure, electronics and thermal control components. Similar to NIRCam, the Wide-Field Instrument on WFIRST will be a powerful optical payload. However, WFIRST will have a massive focal plane array, 200 times larger than NIRCam, to capture what some liken to panoramic images of the star field.

In addition to dark energy research, WOMA will also use microlensing to complete the census of known exoplanets. Microlensing takes advantage of brief distortions in space to reveal new planets around distant stars, and WFIRST's wide field of view will allow scientists to monitor 200 million stars every 15 minutes for more than a year. When NASA launches WFIRST, it will work in concert with other observatories to jointly research new places and forces in our universe.

NASA plans to select a winning design next year for production, and WFIRST is expected to launch in the mid-2020s.

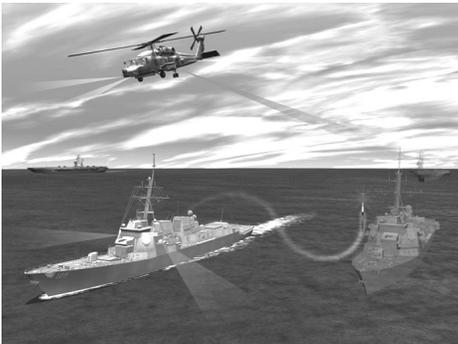
Advanced Off-Board Electronic Warfare Active Mission Payload System

SYRACUSE, N.Y., JAN. 12, 2017 – Lockheed Martin [NYSE: LMT] will build on its 45-year legacy of integrated electronic warfare system success under a newly awarded U.S. Navy development contract to provide MH-60 helicopters with enhanced electronic warfare surveillance and countermeasure capabilities against anti-ship missile (ASM) threats.

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Lockheed Martin's Advanced Off-Board Electronic Warfare (AOEW) Active Mission Payload (AMP) AN/ALQ-248 system, is a self-contained EW pod hosted by an MH-60R or MH-60S, which provides the Navy advanced ASM detec-



Lockheed Martin's Advanced Off-Board Electronic Warfare (AOEW) Active Mission Payload (AMP) AN/ALQ-248 system, a pod hosted on an MH-60R or MH-60S, will enhance the way the U.S. Navy detects and responds to anti-ship missile threats.

tion and response capabilities.

The AOEW program builds on Lockheed Martin's legacy of proven electronic warfare solutions. The AOEW AMP AN/ALQ-248 can work independently or with the ship's onboard electronic surveillance sensor, SEWIP Block 2 AN/SLQ-32(V)6, to detect an incoming missile and then evaluate where it is going. AOEW then uses radio frequency countermeasure techniques to deter the missile.

"Every day ships across the world are facing a variety of evolving threats," said Joe Ottaviano, electronic warfare program director. "Our Advanced Off-Board Electronic Warfare AMP AN/ALQ-248 system will help create a coordinated attack against these threats, to keep our warfighters safe by control-

ling the electromagnetic spectrum and disrupting adversaries."

Under this contract, if all options are exercised, Lockheed Martin will deliver up to 18 AOEW AMP AN/ALQ-248 pods to the U.S. Navy.

The AOEW program leverages expertise across Lockheed Martin. Manufacturing of the AOEW AN/ALQ-248 systems in Syracuse, N.Y., is slated to begin in early 2019 to meet the program's 2021 initial operational capability goal. The Owego, N.Y., team will integrate the system onto the MH-60 helicopters, which are built by Sikorsky.

LMMAR Bridge

Jan 3 - Individual Duplicate - 1st Place - Gary Bea, 2nd Place - Roger Abegg, and 3rd Place (tie) Chuck Schmidt, Angie Schynert, and Dave Topka.

Jan 17 - Individual Duplicate - 1st Place Roger Abegg, 2nd Place - Dave Topka, and 3rd Place - (tie) Dave Himmelblau and Chuck Schmidt.

Jan 24 - Pairs Duplicate - 1st Place - Gary Bea & Chuck Schmidt and 2nd Place - Dave Himmelblau and Dave Topka.

Star One Credit Union Workshops

Workshops are free to members and non-members.

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

Top 10 Reasons to Open an IRA!

Explore with us the top 10 reasons to open an Individual Retirement plan and learn how to use IRAs in conjunc-

tion with an employer plan. We will also cover how to protect employer plan assets using IRAs. You'll find this seminar beneficial if you wish to maximize your retirement pool of assets, are looking towards retirement or are considering changing careers.

Some of the reasons to open an IRA:

- Maximize key differences associated with Individual Retirement plans
- Use an IRA with your employer plan to increase retirement dollars
- Utilize an IRA to protect employer plan assets
- Take advantage of the federal government's IRA savings incentives

Date: February 22, 2017

Time: 5:30pm - 7:30pm

Location: Administration Building

Address: 1306 Bordeaux Drive, Sunnyvale, CA

How to Prepare, Pay and Stay in College

In this workshop, we will explore the value of learning all options to prepare and finance your college career. You will discover the need to prepare for college while still in high school. The workshop will suggest tools to find the right college for you and your budget. We will also cover how to find, qualify, and apply for financial aid and scholarships.

Date: March 8, 2017

Time: 5:30pm - 7:00pm

Location: WebEx

Financial Literacy for Recent Graduates

Graduating from college with student debt can seem overwhelming, but if

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you set up a successful loan repayment plan, graduation will be a joyous time. In this workshop, we will cover the need to create a budget, be realistic about needs vs. wants, and first steps after you walk across the stage at graduation. We will also cover different aspects of your current student loans and student consolidations loan options.

Date: March 9, 2017

Time: 5:30pm - 7:00pm

Location: WebEx

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

Date: March 15, 2017

Time: 6:00pm - 7:30pm

Location: Stevens Creek Branch

Address: 3136 Stevens Creek Blvd., San Jose, CA

Protected Communications Low Cost Terminal

REDONDO BEACH, Calif., Feb. 9, 2017 – The Low Cost Terminal (LCT), designed to offer truly affordable and mobile access to the Advanced Extremely High Frequency (AEHF) protected communications system, was successfully integrated and tested with

the engineering model AEHF payload, which functions identically to the satellites on orbit.

This milestone verifies the hardware and software design and demonstrates the ability of the LCT to communicate the AEHF waveform, as well as its readiness for over-the-air-testing with an on-orbit satellite. The terminal development team includes Northrop Grumman Corporation (NYSE: NOC), Lockheed Martin (NYSE: LMT) and Comtech Telecommunications Corp. (NASDAQ: CMTL).

An industry-funded initiative, LCT is being developed to fill the current need for affordable terminals that provide tactical users with mobile and protected access to the AEHF system. The integration and test program was conducted at Northrop Grumman’s Redondo Beach facility using the engineering model AEHF payload. The test program established the ability of the LCT to connect and establish a secure communications channel, and pass data with the AEHF system.

“This key accomplishment demonstrates that a protected connectivity can be affordably extended to tactical users in the near term,” said Cyrus Dhalla, vice president, communication systems, Northrop Grumman Aerospace Systems. “AEHF is an available on-orbit system that can satisfy the warfighting need for assured tactical communications in contested and anti-access/area denial environments.”

“AEHF is the nation’s and our allies’ protected satellite communications system, providing national leaders and commanders with an assured commu-

nications link worldwide,” said Iris Bombelyn, vice president, Protected Communications, Lockheed Martin Space Systems. “With the successful test of the Low Cost Terminal, we are one step closer to demonstrating a capability to expand the number of users who can benefit from this critical resource—the ability to receive and transmit timely, critical information in contested, congested and hostile environments.”

The LCT is currently being developed in three variants: airborne, ground comm-on-the-move and rapidly deployable fixed terminal designs. Each variant is smaller in size and weight than current generation terminals, making them a better fit for tactical applications, while offering significant cost savings over current terminals.

The LCT program will continue testing over the next few months, including a demonstration with an AEHF satellite on orbit. LCTs are projected to be available in 2018, provided testing and proper certifications are completed.



A Lockheed Martin technician inspects part of an AEHF satellite as it prepares to enter active service in support of United States military forces. (Image courtesy of Lockheed Martin).



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

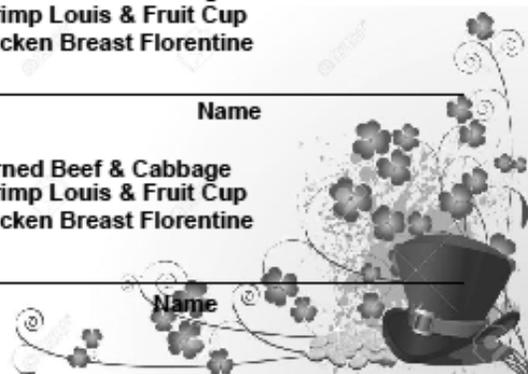
 Name

- 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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FEBRUARY 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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