



Volume 34, Issue 2
April 2018

Sponsored by LOCKHEED MARTIN

MARS STAR



MARS Activities This Quarter:

**Senior Luncheon
July 11, 2018**

MARS Associates: A Social Club for Retirees of Lockheed Martin & United Launch Alliance

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Vandenberg	Charlie Radaz	805-733-2051

CLUB CONTACTS

Bridge	Dave & Kathy Martz	303-683-9524
Dinner	Becky & Gary Englebright	303-973-4062
	Anita & Roy Kannady	303-794-9210
Golf	Don Petermann	720-984-4975
Hiking	Sue Janssen	303-936-8339
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REMINDER:

If you move, please give the membership VP a change of address. Also, if you are a snowbird, let us know when you are leaving and when you plan to return so your MARS STAR can be sent to you. It costs us 70 cents for each STAR package returned.

(Published quarterly by MARS Associates, Retirees of Lockheed Martin Corporation and United Launch Alliance, Denver, CO)

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Director	Bill Wise	303-771-4887
Director	Robin Valore	303-941-6662

IMPORTANT PHONE NUMBERS

LM Employee Service Center	1-866-562-2363
CitiStreet 401K Hotline	1-800-444-4015
Aetna Plans	1-888-562-8111
Anthem BlueAdvantage HMO	1-866-863-0484
CIGNA Point of Service (POS) (Hourly Only)	1-800-832-3211 1-800-224-6224
CIGNA Healthcare of Colorado for Seniors	303-782-9662
CitiStreet (PSP-SSP-CAP)	1-800-444-4015
Medicare Plus (Aetna)	1-888-562-8111
PacifiCare Secure Horizons	1-800-771-4347
CVS Caremark Prescription Drugs	1-888-562-3784
Vision Service Plan, Rancho Cordova, CA	1-800-877-7195
Kaiser Permanente	303-338-3800
United Dental Health	1-866-487-9301 1-855-868-4955
Delta Dental of Colorado Individual Team	1-800-610-0201 1-877-516-6512 Individual@ddpo.com
AssuredPartners of Colorado LTC/Vision/Dental	303-863-7788
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One Exchange	1-844-596-0460

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Cover:

Two artist concepts of the new Lockheed Martin F—35 Lightning II. See the Lockheed Martin (LM) article.

From the Editor's Desk

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For comments or corrections, contact Bill (issue editor) or Mike Carroll, V.P. of Communications.

MARS welcomes your submissions. Submissions must be relevant **to the MARS organization**, informative, and **appropriate for this newsletter**. No **personal dialogues or opinion pieces** will be accepted.

Please submit your article for approval **in advance** to the V. P. of Communications. Articles will be included as time / space allows.



President's Corner

By Dan Ellerhorst

(dan.ellerhorst@gmail.com)

Glad to be here.

Last month, at the Annual Meeting Luncheon, Robin Valore completed her term as President of MARS Associates and handed the reins over to me. She did an outstanding job leading the organization and I am pleased to carry on in her footsteps. We have an energetic and talented leadership team and I look forward to serving with them. At the meeting, we said farewell and thank you to our long-serving Communications team Bob and Bonnie Snodgrass, and director and former President Duane DeDuca. Robin will assume a role on the Board of Directors for another year.

We also welcomed new board members Roger Rieger and John Janczy, and Mike Carroll who is taking over as Vice President of Communications. Dick Sosnay bravely stood up to become President-Elect and my partner in crime. My heartfelt thanks to all of our new and continuing officers and directors for volunteering their time and talents, and a special thank you to those of you who "re-upped".

At the luncheon, we also recognized this year's Volunteer of the Year – Sue Janssen. Sue is the leader of our MARS Hiking Club and contributes a column to the quarterly MARS STAR. But she is being recognized for her many hours of volunteer work devoted to the restoration of historic property in Central City. Congratulations and thanks, Sue.

We were fortunate to close the meeting with a fascinating presentation by Jim Paradise, an Engineering Manager who has been with Lockheed Martin for 36 years. Jim took us on an eye-opening journey through the solar system via the products of a variety of space exploration missions, many of them critically supported by Lockheed Martin and ULA. This talk was so good and well-received that I would like to find an opportunity to encore it.

Which brings me to an important point. I would like to spend a significant portion of my future MARS STAR

columns discussing our organizational goals and the plans for achieving those goals. The leadership team has spent a lot of time thinking and talking about our demographics and how to interest new retirees in joining MARS. This has resulted in, among other things, the establishment of a standing Marketing Committee (which really is functioning more like a Strategic Planning Committee), and the issuance of a members survey.

This survey is a brief one-page questionnaire soliciting member thoughts on current and future activities, preferred means of communication, and generally what is working and what isn't. We distributed a hardcopy of this survey at the annual meeting and have started to get some feedback. We are also including a copy as a flyer in this MARS STAR mailing, we will be shortly posting it to the website, and issuing it as an e-mail to the membership. Please take time to send us your thoughts. We will provide summaries and responses in the upcoming MARS STARS.

In my mind, the major goals for this year include growing our membership through improved outreach to the newly retired, and growing the participation of our existing membership in the activities we make available. The survey is a key component in providing us the data we need to achieve both of these goals.

We will certainly continue hosting our five traditional events: Annual Meeting Luncheon, MARS Day at the Rockies, Senior Luncheon, Annual Fall Picnic, and December Holiday Celebration. We have a pretty loyal cadre of several hundred members who attend these events. But we are open to organizing new events (one-time or recurring) that might interest other members, or even entice new members. Our initial efforts in this direction include an upcoming Car Show (flyer included in this mailing) and the popular Alzheimers Presentations, organized by Sherry Vargo, hosted by Red Rocks Credit Union, and presented by the Colorado Alzheimers Association. We are open to new ideas and welcome members who would like to volunteer to help implement them.

In closing, I'd like to mention an interesting event Lucy and I recently attended. It was the Third Annual CU Boulder Aerospace Summit held this year at the Hyatt downtown. It was a short event (cocktails, hors d'oeuvres, presentations) and highlighted some accomplishments of our dynamic Colorado front-range Aerospace community. Obviously, Lockheed Martin and ULA are major players and were well represented, but many other companies, as well as academia and the government were there. We did not realize what an important role Colorado plays in the national space community – possibly the largest in the nation, considering our concentration of major aerospace

companies, research universities, and government labs and bases. It just made me think MARS Associates should somehow be a part of this! Hope to see you at an upcoming event!



President Elect

By Dick Sosnay
(richardsosnay@gmail.com)

As I start my duties as President-Elect, I can't help but feel like I am following in the footsteps of my friend, Dan Ellerhorst, from the Board of Directors (BOD), to the Chairman of the BOD, then to the President-Elect, and, in 2 years, to the President. Thanks, Dan, for showing me the way. And, following in the footsteps of several of my other friends who have taken this route to fulfill leadership roles for MARS. I am looking forward to continuing to support our MARS club and the activities that are available, and to maintaining contact with all my old friends from work.

After a successful Annual Meeting this year, we are looking forward to getting back the results of the survey that was handed out at that meeting. We are anxious to get feedback from our members, including both the good and the not-so-good things that the organization has been doing, but more importantly looking for your suggestions as to how we can improve the organization, and add any new activities that our members are interested in. If you did not get the chance to fill out a survey at the meeting, don't worry, we are going to make this survey available to as many members as we can, including in this month's MARS Star mail-out, a separate email to members, and putting it onto our MARS website. Your feedback is important to help us guide the direction of MARS in the coming years. As you can tell from discussions at the annual meeting, and from reading other columns in this month's STAR, I hope that the message is getting out to all our members, that we need your help in trying to improve what our club can do.

I have started contacting the MARS clubs to coordinate with them, to help learn my roles as the President-Elect, and to see if there was anything that I could do to help them. I've been attending functions with both the dinner club and the hiking club for years, and have thoroughly

enjoyed those activities. I am also planning to attend at least one of the photography club meetings, to see what else I can learn. I am not a golfer or bridge player, but from talking to my friends that do golf and play bridge, I know that all those attending always have fun at those events.

As I look back at my time as chairman of the BOD, I would like to thank the members of the BOD for their help, and relate that I have enjoyed our endeavors to look for new volunteers to fill the openings for officers and BOD members. I would also like to welcome Mike Carroll into his new role as VP Communications, and to welcome Roger Rieger and John Janczy as new members of the BOD. And congratulations to Don Purkey for taking over as chairman of the BOD. I know you will have fun, Don.



By Don Purkey
(don.purkey@comcast.net)

Director's Notepad

We have made a few changes in our leadership structure as announced at the Annual meeting. Your Board of Directors now consists of myself, Robin Valore, Bill Wise, Carl Kaminski, John Janczy, Al Nemes and Roger Rieger. This is an outstanding team of directors to support and work with the MARS officers going forward.

Personally, this is my first opportunity to provide input to the STAR as chairperson of the Board of Directors. I have been on the Board for a short while as a director and as a participant in the golf league. Most of my MARS activities have been performed with knowledgeable guidance from many people and I am excited about this new position.

A priority for this year is to continue the succession planning program with an emphasis on filling the vacant Secretary position and recruiting other MARS members for the leadership activity. If you are interested in the Secretary position or may be

interested in joining the leadership team, please contact me or any of the directors and we will answer any questions you may have in that regard.

The Board is also reviewing job descriptions for future implementation to support the succession planning activity. These descriptions will provide an overview of tasks associated with the different leadership assignments for directors and officers. Maintaining a consistent flow of leaders is very important to the organization to ensure membership growth and interest.



Activities Updates

By Linda Duby
(lindaduby@comcast.net)

The Annual Meeting was held at Pinehurst Country Club on March 7 with 121 attendees. Pinehurst did a great job – the food was excellent as was the service. The speaker from Lockheed Martin was Jim Paradise, Engineering Manager, who gave a great, informative presentation that everyone seemed to enjoy. Also, at the meeting were nine representatives from the vendors that provide services for our members. Pictures from the Annual Meeting are in this edition of the STAR and are posted on the MARS website.

The next event will be the Senior Luncheon on July 11, 2018, which will be held at the Manor House at Ken Caryl. There will be more information on the flyer that will be mailed in mid-May for our senior members.

The Rockies Game & Picnic will be on August 8, 2018. The Rockies will be playing the Pittsburgh Pirates. The flyer is included in this mailing.

The Annual Picnic will be on September 12, 2018. Look for the flyer in the July STAR.



Business

By Sherry Vargo
(shervargo@comcast.net)

Greetings and Happy Spring! I hope you were able to attend the March MARS Annual Meeting Luncheon which was fabulous. In addition to the great luncheon we had representatives from all of our vendors there to answer questions, give out information and free goodies. We had representatives from Kaiser, Aetna, Red Rocks, Assured Partners, Delta Dental, Long Term Care, Hearing Rehab Center and Perfect Time Tours. The vendors will also be at the MARS Annual Picnic in September.

The three **Alzheimer's presentations** provided by MARS Associates and sponsored by the Red Rocks Credit Union were a great success. The first session was "Know the 10 Signs", the second was "Memory Loss, Dementia & Alzheimer's" and the last was "Healthy Living for Your Brain and current Research". I received a lot of great compliments on these presentations by the Colorado Alzheimer's Association. If there is enough interest, I might be able to repeat these presentations. Please email me if you would like to see them offered again.

We have added a few vendors to our website in the last few months. The first one is [US Recognition](#) that is available to take your orders for MARS shirts and hats. Go to "New Vendor for MARS shirts & hats" on the MARS website main page and click on the link to place your orders. Orders take about two weeks.

[Red Rocks Federal Credit Union](#) is offering a "Special" for MARS Members. On the MARS website click on "Senior Fare Goods & Services" and go to the MARS discount page. Click on Red Rocks Federal Credit Union to learn more about receiving \$100 when you open a new checking account.

[Perfect Time Tours](#) is a vendor that offers travel for active adults. They offer one-day tours and 2-to 5-day trips. Some of the trips this year are the 3-day trip to

Crested Butte & Gunnison in July and a 5-day trip to the Colorado Wine & Balloon tour in September. A few of the one-day trips are Terry Bison Ranch & Cheyenne Botanical Gardens in June and Museum of CO Prisons & Alferd Packer Dining in September. MARS members get a **10% discount** in addition to the 5% discount given for early registration for trips. Check out Perfect Time Tours on the discount page of the MARS website to see all the trips.

Please check out the MARS website to see the latest discounts and specials. Email me if you have any questions about any the MARS discounts or benefit programs. Your feedback on any of our vendors' products or services are important to me so feel free to email me at shervargo@comcast.net.

Membership Report

By Linda Stearns

(linda80120@comcast.net)



In case you are wondering, that number next to your name on your MARS STAR address label is your membership number. If you sign up for any benefits or apply for any discounts available to our members, that number is important to know.

We get questions from time to time about our membership, so I thought a few random facts might be of interest.

- We have two members whose membership number is below 100 and 35 members who retired before MARS Associates was organized in 1985. They are undoubtedly original members of MARS Associates!
- We have 67 members whose membership number is below 1000—issued before the year 2000.
- The latest membership number issued so far is 4551.

MEMBERSHIP STATISTICS

MARS Associates' active membership, as of March 31, 2018, is 1,448 which includes 805 seniors. On March 1, 2018, 45 members achieved Senior status. To date, 1,046 have renewed their membership. Reminder letters were mailed in early April to those who have not renewed for 2018-2019 yet.

Please welcome the following new or reinstated (*) members:

Colorado

Arvada	Susan & Chris Cagle
Cañon City	Ron & Diane Dudley
Castle Rock	Matthew & Diane Hannigan Curt & Kelly Miller
Centennial	Stuart & Sara Mark
Colorado Springs	Frank & Melinda De Lalla William & Brenda Glasford Pamela & Greg Hinchman
Como	Patrick & Beverly Bushaw
Denver	James & Martha Hockensmith
Elizabeth	Mary & Michael Gesin
Falcon	Richard & Ruth Bernal
Fort Collins	Robert & Phyllis Moser
Golden	Gary & Iriini Moreland
Highlands Ranch	David & Rhonda Ernst Eric & Cindy Gorges
Littleton	Michael & Krispin Andersen Stephen & Laura Cook James & Linda Cronin John Davis & Kelli Whitehall Herman & Lori De Vliegheer Monte Kopke Shannon Maginn Brian Martin Mark & Anita Melichar Brad & Sherry Nickle Elizabeth & Davis Oliver Marilyn & Terril Powell Michael & René Watson
Lone Tree	James & Becky Fairchild
Morrison	Daniel Brown
Parker	Scott & Deborah Bakemeyer Maree & Kenneth Lazzaro
Westminster	Jim Sturek
Westcliffe	Thomas & Mary Mowery Donald & Susan Palmer

Other States

GEORGIA

Canton James & Diana Morris

MARYLAND

Silver Spring Evelyn Hagedorn *

NORTH CAROLINA

Waynesville William Kaddy
& Pamela Peterson

PENNSYLVANIA

Friendsville Donald Priebe

Membership Privacy

The MARS Associates policy for member privacy is this: With a very few exceptions, (noted below) we do not provide your name, address, telephone number or email address to anyone (even other MARS Associates members) without your specific permission. If anyone requests your contact information, our policy is to contact YOU, provide you the information about the individual asking, and let you initiate contact yourself if you so choose. We do not sell or share any of your information to any third party. Your email address is only posted on the website with your permission—as described in the Webmaster’s column.

The exceptions are few. Per our bylaws and policy manual,

- Current officers and members of the Board of Directors receive an annual roster which includes current Member and Spouse or Significant Other names, addresses, telephone numbers, email addresses and membership numbers.
- Club presidents and activity coordinators receive a similar annual list of those who have indicated an interest in that club or activity.
- New Member and *In Memoriam* notices in the MARS STAR and on the website only show the residence city.

The club’s webmaster, Jim Kummer, has described elsewhere in this issue how we work to protect the internet privacy of our members.

MARS Membership Unit

MARS membership is defined in the policy manual as a family unit consisting of the retiree and spouse (or significant other), although the membership card and mailing data are in the retiree’s name. In the event the retiree dies, the spouse becomes the member in his/her own name and may remain a MARS member by continuing to pay the annual dues.

Senior membership status (age 75 and above as of March 1) is based on the retiree’s date of birth, even for

the surviving spouse member. ***Change of Address, email address or phone number?***

Please remember to include the MARS membership team in your list of people to notify when you move. The U.S. Postal Service may not forward standard mail and MARS is charged for all returned mail and address change notices from USPS.

“Snow Bunnies” remember to let us know when you will travel to your seasonal residence! Where your STARS are mailed depends on you keeping us informed—standard mail is not forwarded for temporary address changes. Thanks!

In Memoriam Data

Please contact Bev Baugher (bevbaugher@earthlink.net) with any information regarding the passing of a member or their spouse. We want to make sure their passing is acknowledged in the ***In Memoriam*** section of the STAR.

Linda Stearns, VP, Membership
MARS Associates
P.O. Box 1128, Littleton, CO, 80160-1128
Phone 303-797-3557; or email
linda80120@comcast.net

MARS Associates in Memoriam

By Beverly Baugher
(bevbaugher@earthlink.net)

Please contact me at the above e-mail address or at 303-978-0371 with information about the passing of a member, the spouse of a member or other MM/LM/ULA retirees so they can be acknowledged in the In Memoriam section. Thank you.

Members

Audi, David “Dave” J. (D: November 2017)
(Survived by Carolyn Audi)
Highlands Ranch, CO
No obituary published.

Cloud, Peggy “Peg” J. (D: February 2018)
(Survived by Lyle Cloud)
Littleton, CO
<https://tinyurl.com/ycoa8kkp>

Eyer, Robert “Bob” B., Sr. (D: October 2017)
(Survived by Mary “Betty” E. Eyer)
Englewood, CO

No obituary published.

Fox, Dennis "Foxy" R. (D: March 2018)
Lakewood, CO
<https://tinyurl.com/y7rhdxpu>

Kess, Joan H. (D: February 2018)
(Survived by Michael "Mike" G. Kess)
Lakewood, CO
No obituary published.

Ilgén, Paul R. (D: March 2018)
Castle Rock, CO
<https://tinyurl.com/y96py9a7>

Maginn, Richard J. (D: December 2017)
(Survived by Madeliene Maginn)
Denver, CO
<https://tinyurl.com/y7dutnkd>

Stanton, Paul W. (D: March 2018)
(Survived by Marie Stanton)
Danville, CA
<https://tinyurl.com/yc4tmprsv>

Taigman, Joan B. (D: February 2018)
Littleton, CO
<https://tinyurl.com/yc2x4dz6>

Van Beek, William "Bill" M. (D: March 2018)
(Survived by Ida Van Beek)
Surprise, AZ
No obituary published.

Vehlewald, Donald "Don" W. (D: April 2017)
(Survived by Linda Vehlewald)
Lakewood, CO
No obituary published.

Wagner, Dorothy E. (D: January 2018)
Conifer, CO
<https://tinyurl.com/y94zjja8>

Non-Members

Fitzkee, Leon C. (D: November 2017)
Littleton, CO
<https://tinyurl.com/ybnuqczv>

Glover, Robert "Bob" (D: February 2018)
(Survived by Jeannie Glover)
Englewood, CO
No obituary published.

Hurt, Caleb "K" Brown (D: February 2018)
Naples, FL and Vail, CO

<https://tinyurl.com/y96x4wpb>

Natterman, Jack J. (D: February 2018)
(Survived by Betty Jo Natterman)
Lakewood, CO
<https://tinyurl.com/y8jnfduv>

Payne, Kenneth "Ken" R. (D: January 2018)
(Survived by Debbie Payne)
Castle Rock, CO
<https://tinyurl.com/y9e8w2uo>

Historian's Corner

Ray Ziehm (POC)
(rzandmm@comcast.net)

PEPP PROGRAM SUMMARY

BY

Raymond Ziehm

Some seemingly small actions have had outstanding effects on the Denver Division's growth in the space systems field. One program, the Planetary Entry Parachute Program (PEPP), in particular, exhibits how much more important some things turned out to be than originally recognized. One October day in 1966, I was assigned to a recently won minor spacecraft program from NASA Langley Research Center. The system was to be built in the Denver Second Floor Factory, with engineering located in the factory mezzanine near the top of the stairs. The program was to have two separate phases, one for several rocket launched parachute tests for the Viking Mars Lander mission, and the other for some balloon launched parachute tests. I learned I was to be the lead engineer for the balloon launched segment, whatever it was to be.

The tests were to determine the inflation and drag performance of Viking Program parachute candidates to be deployed at high velocity into the low density Mars atmosphere. The rocket launched tests would carry a simulated lander payload and were to be launched from the White Sands Missile Test Range to 120,000 feet in altitude where earth's atmospheric density was representative of the Mars atmosphere.

The balloon launched test articles were to be carried by a helium filled balloon to the same altitude. The parachute was to be deployed into the

aerodynamic instability zone behind a 15-foot diameter 120-degree conic aeroshell, representative of the planned Mars Lander vehicle entering at high velocity. After dropping from the balloon, the vehicle would use 16 small rocket motors to accelerate the aeroshell/payload assembly to a transonic velocity. The aeroshell contained a simulated payload that housed the test parachute to be mortared out from the aeroshell, and to inflate and pull the payload from the aeroshell.

When I arrived on the program, my friend Ed Nelson, a structural designer, was already there looking at a package of drawings. I learned that we were to use engineering that Langley Research Center had previously created; and that they had already built and flight tested several rocket and one balloon launched tests in 1966 that had only partial success. Our job was to build and fly four successful units.

of 30 degrees from vertical to avoid hitting the balloon when the rockets fired.

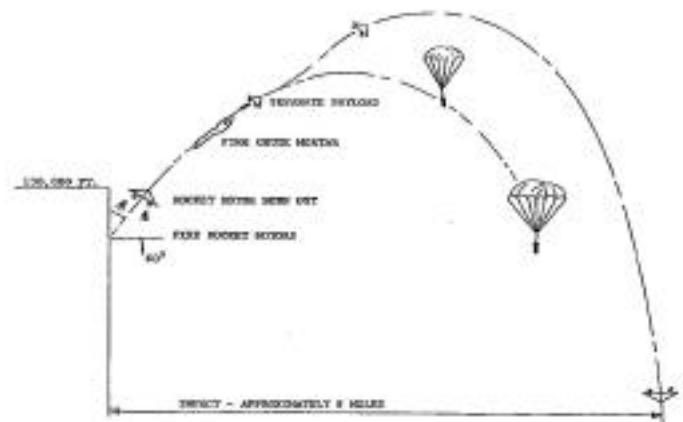


Figure 2. Mission Flight Plan

Ed and I organized the drawings and built a simple drawing tree, and it quickly became evident that there was not nearly enough engineering to build the system. Since the NASA vehicle was built in a laboratory environment, the engineering was not kept completely current. Many drawings were redlined showing how the first vehicle was actually built, and others were wrong or missing altogether.

The contract schedule required us to build and fly the four vehicles in a ten-month period, an almost unachievable task. The schedule criticality was due to the wind profile from the balloon launch site near Roswell to the White Sands Test Range. The winds in that area blow essentially from east to west during the summer, but about Labor Day they abruptly change and blow from west to east, eliminating any possibility to make the balloon flight from the Roswell launch site. Missing this opportunity would have almost a year impact on the Viking Mars Lander Program schedule.

At this time, the PEPP program was under great pressure, focused firmly on the rocket launches, and I could not get Larry Golding, our program manager, to sit down together and go over the balloon launch engineering situation. I called people in the various engineering disciplines to look over the engineering with me and scope out what had to

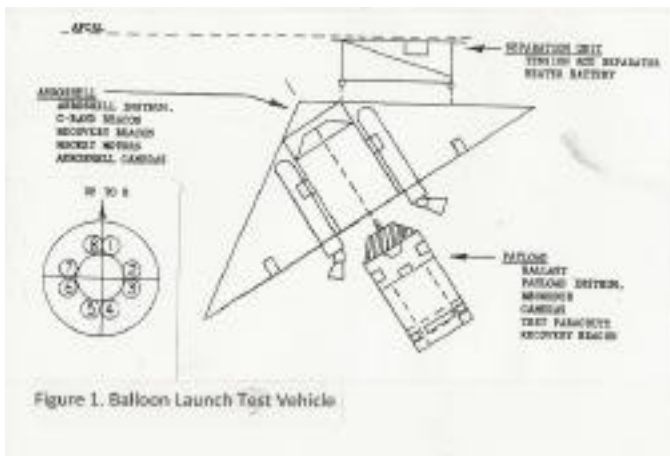


Figure 1. Balloon Launch Test Vehicle

The aeroshell/payload assembly was to be launched from the recently closed Walker Air Force Base near Roswell, New Mexico, and rise to the test altitude during its trip to the White Sands Test Range where the powered flight and parachute deployment would take place. After arrival at the range and the aeroshell/payload was released from the balloon, the rockets fired four seconds later to accelerate the vehicle to the desired velocity. At rocket burn-out, a mortar was to be fired to deploy the chute that would then separate the payload from the aeroshell. The aeroshell was mounted at an angle

be done. They agreed that we were in trouble. So, as a result, the following Monday morning I moved about ten engineers onto the program and they started to work. When Larry returned a few days later from one of the rocket launches at White Sands, he looked around, saw all the new people, and went into his office. Shortly thereafter the secretary said he wanted to see me. I thought, "I'm fired".

The design group came to my support and Larry made the decision to keep all the people on board and even to bring in some others needed in specific technical areas. The customer had their people working right there with us and we eventually developed an especially good rapport.

After a few weeks, the customer asked us if we could find a way to reach a peak altitude of about 160,000 feet, with a deployment velocity in the order of Mach 1.6 at 132,000 feet altitude. This was significantly above the altitude and velocity provided by the sixteen small solid rocket motors in the original design so it was clear we had to replace them with more or larger rockets. Since development of a rocket motor was normally a three to four year program, our only path was to find an existing motor. I looked at the Solid Rocket Motor Handbook and determined that the only motor that might fit into the vehicle and provide the necessary impulse, happened to be the Titan Staging Rocket, built by United Technology Corporation. This is a 5400 lb. thrust solid propellant motor with a burn time of 2.8 seconds. It is approximately five feet long with a body diameter of about 8 inches.

However, there is no way you can order rocket motors and have them built in time for use in a ten-month program. The situation looked bleak. I called my friend Sid Tolbert in the Propulsion Section and told him my story, and he agreed that the Titan motor was the only choice, but availability in the short time frame was certainly problematic. Sid came back the next day and said, "Have I got news for you". He found that the Titan Program had a significant number of these motors that would soon reach the end of their shelf life and therefore become unusable, and that we could transfer them to our program. Wow, we dodged that bullet. Just a quick look at the problem indicated we would need at least six or eight of

these motors on each vehicle, but when our flight analyst, Richard Moog, got on board and included the aerodynamic effects and the penalty of a nozzle cant angle adapter, later incorporated, he said it would take eight.

These rocket motors were mounted around the payload body, a central tube structure that contained the test parachute. While their shape lent itself well, one problem still existed in that these rockets fired essentially straight back in line with their geocentric axis, to where the parachute was to be deployed.

We wanted the chute to be deployed right at rocket burnout to minimize the loss of velocity due to aero drag, so some provision to avoid damaging the chute was required since solid motors often tend to spew additional flames at shutdown. Noting that the rocket motor nozzles were bolted directly onto the rocket motor case, I asked the UTC engineers if it was possible to build some sort of cant adapters to be installed between the motor case and the existing nozzles in order to reorient them and direct the motor exhaust away from the deploying parachute. The supplier said "sure", and built, test fired, and delivered enough units for the program in record time considering the complexity of the issue.

A quick look at the likely center of gravity of the vehicle with the new rockets indicated a cant angle of about twenty five degrees might be needed, however this angle was later established at 29 degrees by Dick Moog.

Since the spacecraft had no active attitude stabilization mechanism, it would be unstable until the vehicle developed sufficient velocity during rocket burn to achieve aerodynamic stability. To accomplish this, the rocket thrust vectors had to be carefully controlled to maintain a stable flight during the early portion of the rocket burn. Film data from the NASA flight showed that significant attitude deviation during rocket motor burn was close to disaster. We developed a plan to match all motors with propellant grains from the same propellant batch to be located opposite each other around the vehicle. Also, since UTC had accurate knowledge of the exact propellant weight in each motor, motors with essentially equal propellant weights were matched to opposite positions.

"It's not the handling of difficult hands that makes the winning player. There aren't enough of them. It's the ability to avoid messing up the easy ones."

-S. J. Simon

This quarter MARS Bridge Club has lost a beloved friend, Paul Stanton. Paul and his wife, Marie moved to California for health reasons. In March, we received word that Paul had passed. Our thoughts and prayers are with Marie.

Come join us at our monthly get together! All MARS members and their guests are welcome. We play on the **3rd Friday of each month at the Buck Community Recreation Center (Littleton) from 10 AM to 2 PM** (pack your lunch). The club provides the cards and all requirements for the games as well as coffee, tea, and hot water, for your enjoyment. There is a small fee to the Buck Center as well as a small fee to the club (which helps with supplies and the year-end party in December).

We have couples, as well as singles, playing. If you don't have a bridge partner, the club can assist in finding one for you, but you need to let us know in advance.

If you have any questions, please contact any of the following Bridge Club Officers:

Presidents:

Dave & Kathy Martz, 303-683-9524

Vice-President:

Bill Kacena, 303-973-2685

Secretary:

Theodore Bornhoeft, 303-933-9730

The 1st Quarter 2018 winners are as follows:

January 19 (3 ½ tables)

1st – Loman & Pat Park

2nd – Ernie & Cecile Berliner

3rd – Ed & Laurie Bock

February 16 (4 1/2 tables)

N/S 1st – Theodore Bornhoeft & IM Lockmart

2nd – Ed & Laurie Bock

E/W 1st – Leo Johnson & Joni Rosenberger

2nd – Bill & Mavis Kacena

March 16 (3 tables)

1st – Dave & Kathy Martz

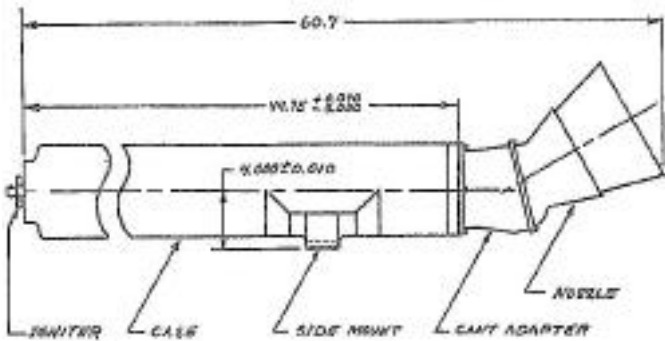


Figure 3. The Modified Solid Rocket Motor

A tool was then designed to fit into each rocket exhaust nozzle as the best representation of the thrust vector centerline such that the nozzle and cant adapter could be aligned perfectly on each motor at assembly. No one had ever seen such a tool, but it really did the trick. We then forced the center of gravity of the vehicle to the geometric center line on the dynamic balancing machine at Sandia Corporation in Albuquerque.

One part of the program was especially challenging since we had no one with significant parachute design experience. We worked with the two major parachute builders in the country and began to get a feel for what to do. We could not locate any stress data or methodology for a parachute and determined that possibly no credible analysis had ever had been done by anyone. Our aerodynamicists and stress engineers did it to the customer's extreme pleasure. The flight data to be collected were primarily from three film cameras, accelerometers, gyros, and a tensiometer in the parachute bridle, and to be stored on a tape recorder.

(To be continued in the July STAR issue.)

Bridge Club

By Dave & Kathy Martz
(martz20@comcast.net)

2nd – Ed & Laurie Bock
3rd – Trudy White & Jay Kimose
4th – Bart & Diane Wright



Can you come out and PLAY?.....Golf this is!!

All are welcome!! You don't have to play like Phil Mickelson or Michelle Wie...in fact no one is even close in our league!!



The MARS Golf League is looking forward to another great season in 2018. We had our annual kickoff meeting March 1 and elected:

Don Petermann - President
Vice President - Bo Rodriguez
Tom Cooke - Secretary Treasurer
Tom Ripper - Handicap Chair
The schedulers will be; Bob Bowe, Duane DelDuca, and John Flemming.

Thanks guys for volunteering!

We will be playing all rounds at Broken Tee Golf Course plus using the "Gold (Men) & Red (Women) tees," again this year.

We are encouraged that we have about 14 new men and women members this year! Everyone who likes to play golf regardless of skill level, is encouraged to join us for fun, good companionship and exercise. Play will be every Thursday starting April 5 and goes through October 25th. You can play as often as you like, there is no commitment to play every week of the season.

Please go to MARS web site: <http://www.marsretirees.org/> and click on "Golf" for all the details on our league. Also please feel free to contact any one of the officers or schedulers for more information. Phone numbers and email addresses are on our golf web site.

Old member or new, young or not so young, we look forward to you joining us for some great fun!

Don Petermann
(720) 984-4975
Donnarlen3@gmail.com
Golf League President

Bo Rodriguez
(303)798-9157
boandpat@comcast.net
Golf League Vice Pres.

Kathy Rieger
(303) 870-6915 (cell)
Korieger@gmail.com
Membership Committee

Bob Knickerbocker
(303) 550-1408 (cell)
knick@ftml.net
Membership Committee

Dinner Club

By Becky and Gary Englebright
(Englebright@Earthlink.Net)
and
Anita and Roy Kannady
(AnitaKannady@Yahoo.Com)

We have scheduled the 3rd quarter monthly outings for MARS members. Thus far attendance is steady and hopefully will continue to be so in 2018. We still had room for a few more reservations for most venues. Please remember, some venues have attendance limits thus we need your reservation sooner than later if you wish to attend.

The restaurants scheduled, thus far for 2018 are as follows:

- July 17 – Hickory House BBQ (10335 S Parker Rd, Parker, CO 80134)
- August 20 – Cinzetti's (Northglenn)
- September 19 Outback Steak House (S. Wadsworth & W. Cross Drive)

We continue to explore the restaurant scene looking for new and interesting places to have lunch. If you have a suggestion for a new venue, please let us know, by email by or by phone (**please leave a message** if we are not home).

We have scheduled restaurants each month with the goal of keeping our costs in check, recognizing that increases are likely. In addition, we will continue to strive to provide luncheon opportunities that are on the lower end of the scale to help balance the cost. Remember, the luncheon prices include the tax and a 20% tip.

You better cut the pizza in four pieces because I'm not hungry enough to eat six. Yogi Berra

Golf League

By Don Petermann
(donnarlen3@gmail.com)

Photography Club

By John Chapter

johnchapter@msn.com

303-986-8277



Background

Every Photo Club meeting has a program by a club member or an outside presenter that is often on travel or photography education. We also have a friendly photography print competition. The selected images, First, Second and Third, as well as, one or two Honorable Mentions, are presented on the **MARS Retirees-Photography Section webpage**. We encourage you to look at our club page that includes upcoming programs as well as meeting competition winners.

When and Where We Meet

The Photography Club meets at the *Littleton Bemis Library*, located at 6014 S. Datura Street, in Littleton Colorado, usually on the second Thursday of the month, from 1:00pm to 3:30pm. The Bemis library is located several blocks south of Littleton Boulevard on Datura Street.

Meeting Highlights

Presentations

During the last quarter our club meeting *presentations* emphasized educational photographic topics. The program for *January 2018* was a *DVD presentation* that featured a National Geographic photographer. Our *February 2018* meeting program had our club members present five of their own images for group discussions. We enjoy seeing each other's images that often encourages and affects our own photography.

Our *March 2018 Meeting* presentation was by John Chapter who presented an updated slide show on his 1980 trip to India to see a *Solar Total Eclipse from Goa which is located on the West Coast of India*. John recently digitized this presentation from his original film slides. The following image was from a ride that he took up to *Amer Palace* in Jaipur, *India*. Interestingly, today

there are no more elephant trips to the *Amer Palace* as some people have complained that they were concerned about the elephants.



Competitions

Please check out several months of our **Photo Competition Winners** shown on the *Photography Club Section* of the *MARS Retirees* web site.

An unusual image that highlighted the last competitions was a colorful flower caught with a large moth in flight by Tom Frickell.



"Hummingbird Moth"
Tom Frickell

You Can Become a Photography Club Member

You can become a member of the *MARS Photography Club* by just stopping by one of our meetings. We would love to have you be a part of our club. Club membership is fun and there are no requirements. If you have any questions or comments, please contact *John Chapter*, our club President at johnchapter@msn.com.

Don't miss our next two meetings: April 12, 2018 is *BJ Anthony*, "[From the Mistress to the Lighthouse: a Maine Adventure](#)", and May 10, 2018, *Maris Biela*, "[A View from the Street: Modern India](#)"

Hiking Club

By Sue Janssen

(susan.g.janssen@gmail.com)

Eight members of the hiking club sought out fresh snow in Summit County for the January hike. The skies were clear and the winds calm as the group walked along the Spruce Creek trail near Breckenridge. The trail winds through the forest to a clearing with a great view of Pacific Peak and Mount Helen. We turned onto the Wheeler Trail for a short distance to the Spruce Creek 4WD road and headed downhill back to our vehicles. We regrouped and refreshed at the Breckenridge Brewery for a tasty lunch and libation.



A great view of Pacific Peak in the Ten Mile Range!
Left to right: Sue Janssen, Jill Demchak, Ken Ruiz,
Rich Hjelm, Val Gregory, Sharon and Gerry Boisvert.
Photo by Lenny Demchak.

Tom and Sue Pawlowski organized an urban hike in March. We set a record for the most members participating in a hike! Twenty-three members – YES, one-third of our roster – strolled along a segment of the Highline Canal trail. As one of the longest (over 71 miles) continuous urban trails in the country, the Canal originates at Waterton Canyon in Douglas County and runs to Green Valley Ranch in Northeast Denver, falling within one mile of more than 350,000 residents. Starting at Millikin Park, we walked a 4-mile loop around deKoevend Park, a wildlife refuge and a large section of open space populated only by horses. The area is surprisingly rural even though it's in the middle of the city, and has beautiful views of the Rockies. Lunch at the View House in downtown

Littleton was tasty. It was a wonderful day and a good time was had by all.



The hiking club takes a pause on the footbridge over Big Dry Creek. Hikers included: Ellen & Pat Albert, Pam Alstott, Linda & Bob Berry, Elaine & Hal Feldman, Glenn Gibson, Val Gregory, Chris Hall, Jim Harbison, Sue & Lee Janssen, Pat & Joe McDermott, Girish & Vibha Patel, Sue & Tom Pawlowski, Dick Sosnay, Becky & Dan Tennesen, and Sherry Vargo. Photo by Sue Janssen.

Spring is a great time to get outdoors and hike a few miles. If you wish to join the MARS Hiking Club, contact Sue Janssen at susan.g.janssen@gmail.com who will add you to the club distribution list. Please provide your email address, home phone and cell phone for the roster. The schedule of hikes is posted on the MARS website (<http://www.marsretirees.org/>). Even if you have never gone snowshoeing or hiking you are welcome to join in the fun.

Happy trails!

The MARS Associates Website

By Jim Kummer

(jkummer@comcast.net)

Every now and then you may receive an email, from someone you know, that has nothing in the body except a link to a website, or starts with something like "you'll love this". You are strongly discouraged from clicking on this link. All too frequently, someone's web mail will get hijacked, and their address book harvested. Messages containing offensive links will be sent to everybody in that address book. Such an offensive link may be nothing more than an unwanted advertisement. Or, it may be a repository of a virus, ransomware, or other malicious code that could infect your computer. The link may appear to have a harmless name, but that too can

be disguised. You should delete the message without clicking on any link.

The more exposure your email address receives on the internet, the more likely you could be targeted for SPAM delivery or account hijacking. There are ruthless individuals on the internet who troll the world wide web for email addresses they can harvest for their malicious uses. This trolling is done by software agents ("bots") that can scan thousands of websites per second. Any text string of the form "characters@web_domain" is fair game to them.

The website committee takes steps to guard against such address harvesting. With members' approval, we post emails on the MARS website, but not as plain text, which is easily detected. Instead, pages of email addresses are posted as pictures. These images of email addresses are much more difficult to harvest, making it much less likely, considering how exceptionally easier plain text can be searched. We make this effort of protecting members' email addresses for their peace of mind and ours.

In many email messages and websites, you can click on an email address or website to originate an email message or open a website. On our www.marsretirees.org website, only those email addresses and websites displayed in blue and underlined will do this. You must copy the information into your email carrier or internet browser if the address is not blue and underlined. This is also for your protection.

You are encouraged to access the MARS website, www.marsretirees.org, where you will find excellent information resources for MARS members. Here are the websites of the month from the last quarter.

Jan – Our Nation, in Numbers - USA Facts.org

Feb – Many interesting items and topics at mentalfloss.com

Mar – Visit irs.gov/newsroom/tax-reform for the new tax provisions

Your website committee members welcome your suggestions for improvement, and for proposed websites of the month. Email them to me at jkummer@comcast.net. Your website committee members are: Duane "Smitty" Smetana, Bob Knickerbocker, Linda Stearns, Paul Bingham, and Jim Kummer (Webmaster).

Colorado Springs Lockheed Martin Retiree Group News

By Doug Tomerlin
(douginc@comcast.net)

The Colorado Springs Lockheed Martin Retiree Group is an organization for retirees from any Lockheed Martin division. However, a large percentage of our members live in the Colorado Springs area and have retired from divisions located in Colorado Springs. Retirees from heritage companies Philco, Philco-Ford, Ford Aerospace, and Loral are also welcome to join the group. There are no fees to join.

Luncheons are held twice a year, including an annual barbeque and other activities to allow retirees to stay in contact with each other. In addition, information about deaths, services, and other pertinent information is disseminated via email.

Our retiree group has not sponsored any group activities since the last newsletter. Our next group activity is our barbeque, which is tentatively planned for May, 2018, at the Lockheed Martin Federal Drive Facility in Colorado Springs. If you would like more information about the group or the luncheons, please contact Doug Tomerlin at douginc@comcast.net.

We are all deeply saddened by the passing away of fellow retirees and spouses:

- Ed Swierc
- Lowell Skabo
- Rich Neely
- Pete Karnincic's wife Patricia

Cape Canaveral News

By Dick Olson
(Olsons5145@aol.com)

Luncheons

February- Had a pretty good turnout for lunch even though I was really late sending out a reminder. Regulars attending were Herbie Pugh, Don Anderson, Dave Kintigh, Frank Indihar, Jerry Moskovitz, Bill Masterson, Abe Smith, Danny ,Walt Starky, Tom Savage, Jimmy Weddle, Cecil Snipes

and Dick Hinshaw. A couple guys we haven't seen for ages showed up: Don Flemming from Tucson/Denver and Joe Delancey from Titusville. They both go way back to the Mace Program days in White Sands and it was fun to listen to them talk about the old days and the guys they worked with back then. A lot of those guys ended up at the Cape.

Dick Hinshaw mentioned that he may be moving to Georgia so they can be nearer to his daughter and granddaughter. I can understand that but we will miss him at the lunches.

March- Had a great turnout for our retiree's luncheon today. In attendance were regulars Wendell McDaniels, Ken Hawes, Bob Anderson, Roger Wright, Abe Smith, Jerry Teague, Bill Rhode, Hal Castleton, Dave Kintigh, Jerry Moskovitz, Frank Indihar, Don Anderson, Dick Hinshaw, Cecil Snipes, Danny Molina, Tom Savage, and Bob Matschner. Some we haven't seen for a while were Roger Schmidt and Roger Barickman. Tom Savage invited Titan Team member Gary Jones and his electrical crew of ex Titan guys Donny Postin, Stan Treble, and Virgil Jones. Also, a first time attendee was Alan Ostendorp who was a MCDAC rep for the Titan payload fairing.

Need to clear up a misunderstanding. I had forwarded an e-mail from former Martin employee Sandra Waitkus in which she informed us that she was suffering from Parkinson's disease. Some people thought I was describing my health. I am fine, but I'm sure Sandy would love to hear from those people that worked with her. Her number is 321-453-3491. Give her a call.

Martin Marietta Retiree's Club (Vandenberg News)

By Charlie Radaz
(fcmjradaz@aol.com)

As planned, our January 25th meeting was held at Pea Soup Andersen's in Buellton with 27 attendees. Our speaker was Beverly Wilson, CPA who spoke to us about income tax changes.

We met on 22 February at the Lompoc Embassy Suites and enjoyed an update on the extensive

Allan Hancock College training facility for Fire, Environmental Health And Safety Emergency Medical Services located in Lompoc. The speaker was Frank Ortiz, Director and retired Santa Maria Fire Chief. We had 27 attendees.

On March 29th we met in Old Town Orcutt at Rooney's Irish Pub with 30 attendees. Our speaker was Linda Gadbois, Director of the Santa Maria Wisdom Center, an adult health day care facility. The 50-50 drawing paid one prize of \$29.00 to a lucky member.

We were very sad to learn of the passing of Ed Patrick, a key Martin Marietta Vandenberg Operations engineer that worked all Titan Programs.

Our April meeting will again be at Rooney's Irish Pub in Old Town Orcutt on the 26th. The speaker will be Dennis Bebee (retired Air Force Col.) giving a historical presentation on the history of the WWII U.S. Army Jeep! He owns one and we hope that he has it at the meeting.

The Club normally meets the last Thursday of each month at noon. All former employees, their spouses and associate contractors are welcome to attend, visit and share informal stories.

Please call Eunice Souder (805) 218-7605 for the location and reservations.

Lockheed Martin (LM) News

The F-35 Is Now on North Korea's Doorstep

South Korea celebrated the rollout of its first Lockheed Martin F-35 Joint Strike Fighter as the North Korean threat looms in the background.

Heightened tensions continue on the Korean peninsula after the North Korean leader Kim Jong-un made a surprise visit to Beijing ahead of a potential summit with the United States.

While the F-35 will not be operational with the Republic of Korea Air Force for some time to come, the addition of the new stealth fighter will help to enhance South Korea's security against a hostile North.

"Today is a truly meaningful day as we celebrate the roll-out of ROKAF's first F-35A, the world's best fighter jet, which will secure the sovereign airspace of the Republic of Korea," Song Young-moo, the Republic of Korea's Minister of Defense, said in a previously recorded message. "The deployment of the F-35 will serve as momentum to enhance the combined operations of the ROK-U.S. Air Forces, and advance ROKAF's support capabilities for ground operations."

Aside from its stealth and sensors, one the F-35's major selling points is its interoperability with U.S. forces. If tensions on the Korean peninsula spillover into open warfare, South Korea and the United States will have to work hand in glove to defeat Pyongyang.

"This is a major step forward for our F-35 enterprise and our ROKAF partners as we deliver Korea's first F-35, the first of six F-35 aircraft that will be delivered this year," Vice Adm. Mat Winter, F-35 program executive officer, said. "The F-35A is a game-changing capability that will enable the South Korean Forces to operate side-by-side with our U.S. forces in protecting your nation's homeland. I extend my personal congratulations to the combined government and industry team in achieving this milestone."

Lockheed Martin is understandably proud of delivering jets to another customer after the F-35's long and troubled developmental period.

"We are proud to support the Republic of Korea with the unrivalled fifth generation F-35," Marillyn Hewson, Lockheed Martin chairman, president and chief executive officer, said. "We know that it will be a symbol of strength reminding us all that when we partner together, our nations are safer, our people are more secure, and our future is brighter."

According to Lockheed Martin, the rollout ceremony was attended by more than 450 guests, including five members of the Republic of Korea National Assembly Defense Committee, as well as Suh, Choo-suk, vice minister of National Defense; and Lt. Gen. Lee, Seong-yong, vice chief of staff of the ROKAF.

Initially, South Korea's first F-35s will be delivered to Luke Air Force Base in Arizona to train ROKAF

personnel to operate and maintain the new jet. Operational F-35s will arrive in South Korea in 2019 where the aircraft will be based at Cheongju. South Korea is expected to buy 40 F-35A aircraft acquired through the U.S. government's Foreign Military Sales program. However, there is a good chance that South Korea will buy additional F-35s when time comes to recapitalize Seoul's large F-16 Fighting Falcon fleet.

Dave Majumdar is the defense editor for The National Interest. You can follow him on Twitter: @davemajumdar.

United Launch Alliance News

Cape Canaveral Air Force Station, Fla., (March 1, 2018) – A United Launch Alliance (ULA) Atlas V rocket carrying the GOES-S mission for NASA and NOAA lifted off from Space Launch Complex-41 on March 1 at 5:02 p.m. EST. GOES-S is the second satellite in the Geostationary Operational Environmental Satellite (GOES)-R series of satellites, which have played a vital role in weather forecasting, storm tracking and meteorological research. ULA's current and heritage Atlas and Delta rockets have launched every GOES satellite, first launching in 1975.

"Thank you to our partners at NASA and NOAA for the outstanding teamwork, as we delivered this next-generation satellite to orbit," said Gary Wentz, ULA vice president of Government and Commercial Programs. "We are proud to serve as the ultimate launch provider, continuing our dedication to 100 percent mission success."

GOES-S will be operated from a vantage point 22,300 miles above Earth to cover the western United States, Alaska and Hawaii, providing unprecedented advancements in the clarity and timeliness of observations over the region. It will work in tandem with the GOES-R satellite that was successfully launched by an Atlas V rocket on Nov. 19, 2016. The next-generation GOES-R series scans the Earth five times faster at four times the image resolution, with triple the number of data channels than previous GOES satellites for more reliable

forecasts.

This mission was launched aboard an Atlas V Evolved Expendable Launch Vehicle (EELV) 541 configuration, which includes a 5-meter payload fairing. The Atlas booster for this mission was powered by the RD AMROSS RD-180 engine. Aerojet Rocketdyne provided the four AJ-60A solid rocket boosters and the RL10C-1 engine for the Centaur upper stage.

This is the 76th launch of the Atlas V rocket, ULA's 3rd launch in 2018 and the 126th successful launch since the company was formed in December 2006.

ULA's next launch is the AFSPC-11 mission for the U.S. Air Force on an Atlas V rocket from Space Launch Complex-41 at Cape Canaveral Air Force

Station,

Florida.

With more than a century of combined heritage, United Launch Alliance is the nation's most experienced and reliable launch service provider. ULA has successfully delivered more than 125 satellites to orbit that aid meteorologists in tracking severe weather, unlock the mysteries of our solar system, provide critical capabilities for troops in the field and enable personal device-based GPS navigation

For more information on ULA, visit the ULA website at www.ulalaunch.com, or call the ULA Launch Hotline at 1-877-ULA-4321 (852-4321). Join the conversation at www.facebook.com/ulalaunch, twitter.com/ulalaunch and [instagram.com/ulalaunch](https://www.instagram.com/ulalaunch).

MARS ASSOCIATES EVENT SCHEDULE

DATE: April 2018

EVENT/MONTH	2018									2019		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Board of Directors		2		3		5		7		2		6
Officers	4	2	6	3	1	5	3	7	4	2	6	6
Bridge	20	18	15	20	17	21	19	16	21	18	15	15
Dinner	17	16	12	17	20	19	TBD	14	-	TBD	TBD	TBD
Golf	Thu r	Thu r	Thu r	Thur	Thur	Thur	Thur	-	-	-	-	-
Hiking Club	18	16	20	18	15	19	17	21	19	16	20	20
Photo	12	10	-	-	-	13	11	8	13	10	14	14
Web Committee	3	1	5	2	7/31	4	2	6	3	1	5	5
Annual Meeting												TBD
Senior Luncheon				11								
CO Rockies Game					8							
Annual Picnic						12						
Holiday Celebration									5			
Items due for MARS STAR												
STAR Input to Editor	2			3		24				2		
STAR Flyers Due to Comms	11			11			3			9		
STAR Repro. Deadline	16			16			8			14		
STAR Mailing	25			25			17			23		

1. BOD meets the first Wednesday of every other month at **The Egg & I, Highlands Ranch** at 09:30 am.
2. Officers meet the first Wednesday of every month at **The Egg & I, Highlands Ranch** at 09:30 am.
3. Bridge Club meets the third Friday of every month at 10:00 am at Buck Recreation Center.
4. Dinner Club (All events are lunch unless otherwise noted):
 Apr 17 - Red Lobster (Wadsworth); May 16 - Maggiano's (Englewood); Jun 12 - Garden Terrace@Hilton Inverness
 Jul 17 - Hickory House BBQ (Parker); Aug 20 - Cinzetti's (Northglenn); Sept 19 - Outback Steakhouse (Off Wadsworth)
 Oct - TBD; Nov 14th - Angelo's Taverna (Littleton); Dec - None
5. Photo Club meets the second Thursday of every month (except June, July & August) at 1:00 pm at the Bemis Public Library in Littleton.
6. Golf meets every Thursday from April through Oct of each year.
7. Hiking Club: Outings on third Wednesday of the month. Check the website for place and time.
8. Web Committee meets at Noon at Sweet Tomatoes on West Bowles, Littleton, on Tuesday prior to BOD/Officer mtg
9. **2018** MARS Senior Luncheon - July 11
10. **2018** MARS Day at the Rockies - August 8
11. **2018** Annual Picnic - September 12 - Clement Park
12. **2018** Holiday Celebration - December 5 - Pinehurst Country Club
13. **2019** Annual Meeting - TBD

Please review dates and times and notify Dick Sosnay (richardsosnay@gmail.com) if you have any changes or additions.