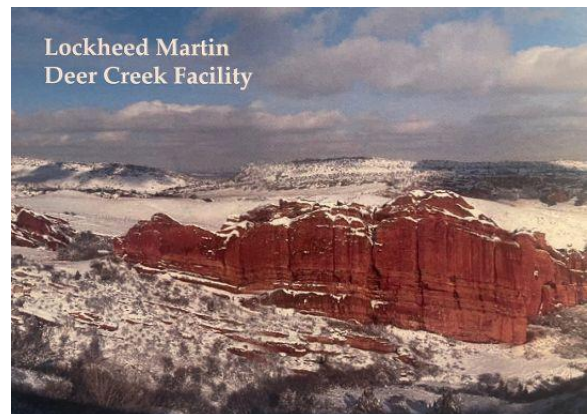


MARS STAR



MARS STAR has gone digital!!

If you currently receive a printed copy, you will continue to receive a printed copy. If you currently receive an electronic copy and wish to receive a printed copy in the future, contact Carl Kaminski at 303-726-1546 or via email at carlcol66@gmail.com

Rockies Game & Picnic, June 5, Page 33

Luncheon Honoring Seniors, June 26, Page 31

Marketing—Special Activities, Page 9

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

OFFICERS

President	Ken Marts	303-868-2168
President-Elect	TBD	
VP Activities	Linda Duby	303-249-1665
VP Business	Gina Curet	281-691-4200
VP Communication	Dan Ellerhorst	303-263-1944
VP Membership	Carl Kaminski	303-726-1546
Treasurer	Charlie Haupt	303-798-7113
Secretary	Al Nemes	303-908-0157
Historian POC	Barb Sande	303-887-8511
Marketing Committee	Dick Sosnay	303-972-9209

DIRECTORS

Director Chair	Roger Rieger	303-912-6217
Director	Pete Munoz	720-308-1828
Director	Bill Wise	303-771-4887
Director	Robin Zen	303-335-6443
Director	Monte Kopke	303-973-4301
Director	Jim Pennington	
Director	Debbie Carr	303-503-7113
Director	Heidi Urie	303-588-6762
Director	Mickey Clemons	720-470-0883

MARS STAR

Editor	Tom Pighetti	303-979-7933
Editor	Linda Stearns	303-797-3557
Memorials	Norma Emerson	303-646-1137
Website Team	Dan Ellerhorst	303-263-1944
Volunteers	Judy Nielsen	303-905-3957
<u>Reporting:</u>		
Cape Canaveral	Dick Olson	321-452-4015
Colo Springs	Doug Tomerlin	719-594-6392
Vandenberg	Eunice Souder	805-218-7605

CLUB CONTACTS

Bridge	Dave & Kathy Martz	303-683-9524
Car Club	Roger Rieger	303-912-6217
Golf	Sandy Mossman	303-730-8378
Hiking	Sue Janssen	303-936-8339
Pacesetters	Bill Wise	720-636-5823
Photography	John Chapter (Pres)	303-986-8277

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)

IMPORTANT PHONE NUMBERS

Pension related questions should be directed to: Lockheed Martin Employee Service Center (LMESC),
866-562-2363 toll-free within the U.S.
201-242-4397 from outside the U.S.
800-833-8334 for hearing impaired.

OR

HR benefits mailbox, benefits.hr@lmco.com

MARS Important Phone Numbers

(Be sure to have your MARS ID available)

MARS Delta Dental of Colorado

Individual Administrative Team: contact for Billing and Enrollment (change bank account info, update address, etc.)
877-516-6512

Individual@ddpco.com

Customer Experience Team: contact for Claims and Benefit questions
800-610-0201

customer_service@ddpco.com

Assured Partners of Colorado – For additional information dental (Delta Dental and Beta Dental, which is a Colorado only plan) or vision (VSP, which includes Exclusive Member Extras of hearing aids with Tru Hearing and EyeMed, which is part of Delta Dental at no additional cost)

[Joyce Sullivan](mailto:Joyce.Sullivan@apco.com) 303-226-0177

[Jon Elmore](mailto:Jon.Elmore@apco.com) 303-228-2206

Aetna/Medicare Plus

1-888-562-8111

Kaiser Advantage Plus

303-338-3800

MARS Associates

P. O. Box 1128

Littleton, CO 80160-1128

MARS Website: <https://www.marsretirees.org>

MARS Facebook:

<https://www.facebook.com/groups/MARSAssociates>

Cover:

Left – The final ULA Delta IV Heavy rocket, carrying the NROL-70 mission for the National Reconnaissance Office, lifts off from Space Launch Complex-37 at 12:53 p.m. EDT on April 9, 2024. Photo credit: ULA (See ULA News)

Right – The red rock cliffs as viewed from the Deer Creek Facility, CO. Eagles, hawks, and other wildlife are often seen there. Postcard Photo Credit: LM

From the Editor's Desk

Dan Ellerhorst(dan.ellerhorst@gmail.com)

Tom Pighetti (tipighetti@q.com)

Linda Stearns (linda80120@comcast.net)

For comments or corrections, contact Linda (issue editor) or Dan Ellerhorst, 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 Ken Marts
(martshouse2@aol.com)

Spring is in the air and will be upon us by the time this issue of the STAR comes out. Denver just experienced its typical March spring snow, wet and deep. Officially, it only goes down as 5 inches since the official weather station is at Denver International Airport. Many of us experienced much more than that; between 12 and 24 inches, depending on where you live. And only 3 days later, due to nature's warming sun and longer days, most of it is a distant memory. With the melting snow, seasons change and the sports scene changes. Skiing becomes golfing for many of us. Football is over and baseball is getting started. Basketball and hockey are bridging the seasons. March Madness will also be a distant memory by the time this issue is released.

2024 has seen the success of our first Happy Hour of 2024 and the Annual Meeting where Daniel Tenney (LM Space VP for Strategy and Business Development) discussed current-day Lockheed Martin programs and future plans. Look for a summary of the meeting and keynote speaker in this issue. Photos were not allowed at this event since it was held on Lockheed Martin facilities. 2024 also promises to be another busy year for our Special Activities, under the steadfast leadership of Dick Sosnay. Look for a list of these activities on our website at www.marsretirees.org; or later in this issue in Dick's writeup. Rockies baseball comes in June, a little earlier than normal and our Summer Luncheon has also been scheduled in June, also earlier than in years past.

MARS Associates is also introducing a new club: Pacesetters. Pacesetters is for those seniors still in the prime of their life, but maybe at a bit slower pace. Imagine jogging by the flowers and rather than just smelling the roses as you flash by, you inhale the aroma and enjoy it a bit longer. Bill Wise is handling the reins to get this organization started with its first planned get-together in May. Please see Bill's article later in this issue.

Dan Ellerhorst, in his article, discusses a recent change we made to our group-email capability to better communicate with our members and the amazing metrics feedback to grade ourselves on this success. We continue to make improvements in our website, Facebook page and emails to members.

Special thanks go out to Steve Sande, our Webmaster, who seamlessly implements these changes. Steve puts in a lot of hours making these changes transparent to our members.

You may also notice some upcoming changes in our Officers as new people are stepping up to help in Activities (Linda DUBY) and Membership (Carl Kaminski). These will be announced later when the changes become official.

Charlie Haupt is managing our expenditures and Al Nemes continues his "under-the-radar" task of documenting our monthly meetings and other areas needing attention.

Our VP of Business (Gina Curet) continues to exceed expectations and makes sure the Benefits page has the latest information for our members and keeps our taxes and insurance contacts up to snuff. Each STAR article, Gina has committed to informing our members of "something new and interesting" to surprise us. See her article as well.

While writing this, I'm reminded of how unique each of us are and the uniqueness we can bring to MARS Associates when we gather together. I look forward to seeing as many of you as possible in the coming year at our varied events.

In closing, please remember to renew your membership if you haven't already done so. Also, consider volunteering some of your time with MARS Associates or another of your favorite charities. Most people feel so much better when they've given a piece of themselves to someone else or other groups after volunteering.

Thank you and I hope to see you at our upcoming events!



Director's Notepad

By Roger Rieger
Chairperson, BoD
(rrieger10731@gmail.com)

Welcome to Spring! Spring is one of my favorite times of the year. I love watching nature "wake up" from winter with the promise of a great new year. To go along with this "renewal" and growth for the new year, your MARS Officers and members of the BoD are focused on succession planning to ensure continuity and continuation of our Club and the many benefits we provide to our members. Without people volunteering their time and talents, your MARS Associates Club would cease to exist.

The club is actively seeking to fill the following positions:

1. **President Elect** - 1 year term, transitioning to President (2-year term). Ken continues to do an outstanding job as President, leading the MARS organization. HOWEVER, we can't ask him to do it

forever! The President Elect supports the President through the duration of their term, then transition to the President position. This includes working with our heritage companies in support of MARS, participating in Officer and BoD meetings, interfacing with other MARS organizations, developing the annual report, and other activities as needed.

2. **Director**, member BoD (2 positions, 2-year term) - provide support to Officers, provide approvals as required by Club bylaws, transition to a potential future officer position.

Officers and BoD Meetings are held the first Wednesday of every month at the Red Rocks FCU headquarters building in Southpark. Meetings start at 9:30 and wrap up around 11am.

“New blood” is essential for the continued vitality and growth of your Club, and I ask each of you to consider sharing your talents while having fun and staying connected with fellow MARS members. Interested? Please reach out to any of the Officers or BoD members, or contact me directly, we would love to hear from you!



Activities Updates

By Linda Duby

(lindaduby@comcast.net)

MARS held a very successful happy hour at the Blue Spruce Brewing Company in Littleton/Ken Caryl on February 21. Approximately 70 members and guests enjoyed the casual evening of camaraderie and beer (at least for the beer drinkers)!

The Spring Event and Annual Meeting was held at the Lockheed Martin Deer Creek Facility on the afternoon of March 20. An appetizer buffet was served to 89 members and guests. Red Rocks Credit Union, Assured Partners, and Kaiser Permanente were represented at the event. The guest speaker was Dan Tenney, Vice President of Strategy & Business Development. Ken Marts has written an article in this issue with more information about Mr. Tenney’s speech. Everyone seemed to enjoy getting the opportunity to see the Deer Creek Facility. For many of us, it had been a long time since we had been to that facility, and it was nice to see some of the changes that had been made. The only drawback was no candid photos were allowed in the facility.

The next event is the Summer Luncheon Honoring Seniors Members. This event is open to all members, not just the Senior Members. The Officers and Directors decided to

hold this event in June rather than July this year hoping to increase the attendance. The luncheon is scheduled for June 26 at the Ken Caryl Manor House. The doors of the venue will open at 11:00 a.m. and lunch will be served at 12:00 noon. The flyer is available in this edition of the STAR (page 29) and it is also available on the MARS website.

MARS at the Rockies

By Linda Stearns

(linda80120@comcast.net)

Our annual game and picnic is earlier this year—Wednesday afternoon, June 5, with a deadline for reservations on May 20. The Rockies play against the Cincinnati Reds. We meet in the Platte River Picnic Area (under the Rockpile seating area) at 11:30 AM for a buffet picnic with fountain drinks included and a cash bar. Our game seats are in Section 146 (3rd base side) and are covered by the Club Level so we are shaded. Let me know if you need seating accommodation, have a group who want to sit together or have some other special need.

The reservation deadline (*and* cancellation deadline) is May 20 as I mail your paper game tickets to you in advance. Be certain that your correct mailing address is on the reservation form—checks are removed by the Treasurer. The reservation form is in this STAR (page 31), as well as on the MARS website and the MARS Facebook page under the Events tab. Contact me if you have any questions at the above email or at 303-797-3557.



Business

By Gina Curet

(orion43@comcast.net)

Spring has sprung and my tulips and irises are up! I love this time of year when there is new growth and everything turns green. I’m hoping the snow is gone and I can now move from skiing into the golf season and warmer travel! You all know that I manage Medicare information and benefits, benefits if you are not at Medicare age (dental, eye and hearing aids), and that I ensure the discounts are updated. But did you know that I do some other important functions for MARS?

Behind the Scenes of My Role

- Research, obtain quotes and bind insurance coverages for General Liability, Directors & Officers and Employee Liability Practices for MARS.
- Update the Board Directory (which feeds many things like the website and succession planning), organizational chart and Board member pictures.
- File the annual Colorado State Periodic Report.
- File annual IRS taxes – will be filed by the May 15th deadline.

Medicare Update

- We had 23 people attend the March 14th Understanding Medicare seminar. The seminar was great and provided current 2024 information. The audience participation was fantastic and everyone learned something!
- The 2024 Understanding Medicare presentation has been uploaded to the website. It is an A-to-Z, step-by-step process for understanding Medicare and the options that should be considered, especially when working past 65 years old.
- I encourage those who are nearing Medicare age or have questions about your current plan, to please review the four (4) resources on the website: (1) Ameriprise presentation; (2) Introduction to Medicare by Kaiser; (3) Kaiser Permanente Medicare Advantage Plans; and (4) VIA Benefits (LM's Retiree Medicare Administrator).
- Mark your calendars and sign up on the website for the 2nd Understanding Medicare Seminar on Tuesday, September 17th, 10:00-11:00 AM at Red Rocks Credit Union (8195 Southpark Lane, Littleton).

My 2024 Discount Vendor of the Quarter is...

Red Rocks Federal Credit Union!**

Discover the legacy of Red Rocks Credit Union! Founded in 1979 by Martin Marietta employees, now Lockheed Martin, we've prioritized your financial well-being for over 45 years. Explore exceptional service, competitive rates, and digital banking. Learn more at www.redrocks.org by opening an account to experience the difference in local banking.

Make your money work for you. Earn up to a 10.00% APY* with our reverse-tiered savings or a 5.05% APY* on a 14-month Certificate of Deposit with Red Rocks Credit Union for a limited time only. Visit redrocks.org/save to learn more.

Disclaimer - *APY=Annual Percentage Yield. See credit union for complete details. Membership required. Federally insured by NCUA.

**Text from Red Rocks Federal Credit Union



Annual Meeting Summary

By Ken Marts

martshouse2@aol.com

MARS Associates 2024 Spring Event/Annual Meeting was held Wednesday, March 20th, at Lockheed Martin's (LM) Deer Creek facility. It was a picture-perfect venue, although pictures were not allowed, on a weather-perfect day enjoyed by 89 attendees. Mr. Dan Tenney, LM Space VP of Strategy and Business Development provided the keynote speech and discussed LM's current organizational structure and business position. He described LM's Space position in the development cycles of existing business and new market endeavors. LM Space is structured around three lines of business: 1) Commercial Civil Space, 2) Strategic and Missile Defense Systems and 3) National Security Space. The primary customer base is NASA, NOAA, and government (military branches and various letter agencies) although growth is expected in emerging international markets including Australia, Asia, and Europe. LM Space has ~25,000 employees, with over half in Denver, Colorado.

LM Space has experienced steady growth in its core businesses and expects growth in new sectors as it continues to increase collaboration with other LM Business Areas (Aeronautics, Missiles & Fire Control, and Rotary and Mission Systems). Digital Twins and Digital Tapestry (think Model-based engineering and "paper out-of-the-loop") are also enabling LM to stay competitive with larger heritage competitors as well as the smaller start-ups. Challenging the industry are the increased use of Firm Fixed-price contracts. LM Space has approaches to improve their efficiency to reduce costs and increase value to their customers.

Mr. Tenney's speech enthralled the crowd and he entertained questions from the audience for his remaining 30 minutes at the podium. His talk will be difficult to beat for next year's Annual Meeting and we look forward to seeing more of our members at the 2025 event.





Communications

By Dan Ellerhorst
(dan.ellerhorst@gmail.com)

We are getting smarter every day!

In my last column, I reviewed the suite of commercial software products we transitioned to for our website management, e-mail, and online payment capabilities. Almost as soon as we went to press with the last STAR, we began to discover serious issues in the reliability of the free e-mail service embedded in DreamHost. There was no visibility into which addresses were affected or why, and even the DreamHost help desk suggested we look into a commercial (not free) e-mail service.

After a bit of a trade study, we settled on Zoho Campaigns as a very cost-effective, well-reviewed product that seemed to meet all of our requirements. We did some beta testing (and just poking around on it) and discovered that it was not hard to use and provided a panoply of useful “analytics” – information about how many mails were delivered in a bulk transmission, which addresses bounced and why, how many of the mails were opened or clicked on. In the last few months, we have sent out nine “official” messages from MARS Associates. These are listed (with some of the delivery statistics) in the graphic below.

Subject	Delivered	Opened	Clicked
MARS - Wine Tasting Event <small>Sent On Mar 22, 2024 04:30 PM MST by stevensande@mac.com</small>	99.9%	52.1%	0.1%
Membership Renewal Reminder <small>Sent On Mar 22, 2024 02:50 PM PST by carlicoid@gmail.com</small>	99.9%	73%	37%
MARS PACESETTERS Initial Contact <small>Sent On Mar 09, 2024 12:06 PM MST by stevensande@mac.com</small>	98.5%	65.6%	3.1%
Understanding Medicare - Spring Session <small>Sent On Mar 05, 2024 03:34 PM MST by stevensande@mac.com</small>	98.6%	69.7%	0.1%
MARS - Tour of The Wild Animal Sanctuary <small>Sent On Mar 04, 2024 10:37 AM MST by stevensande@mac.com</small>	97.3%	69%	1.5%
MARS Associates - Colorado Railroad Museum <small>Sent On Feb 29, 2024 10:25 AM MST by stevensande@mac.com</small>	97.6%	68%	0.9%
MARS Associates 2024 Central City Opera Event <small>Sent On Feb 27, 2024 09:29 AM MST by stevensande@mac.com</small>	96.4%	71.4%	4.3%
Reminder - MARS Spring Event and Annual Meeting <small>Sent On Feb 06, 2024 11:21 AM MST by stevensande@mac.com</small>	98.7%	53.1%	4.2%
Introduction and 01/24 MARS STAR <small>Sent On Feb 02, 2024 03:19 PM MST by stevensande@mac.com</small>	90.8%	73.4%	33.7%

Most of the bulk e-mails went out to about 1280 members, so you can see that we are getting thru to almost everyone in the most recent messages we sent.

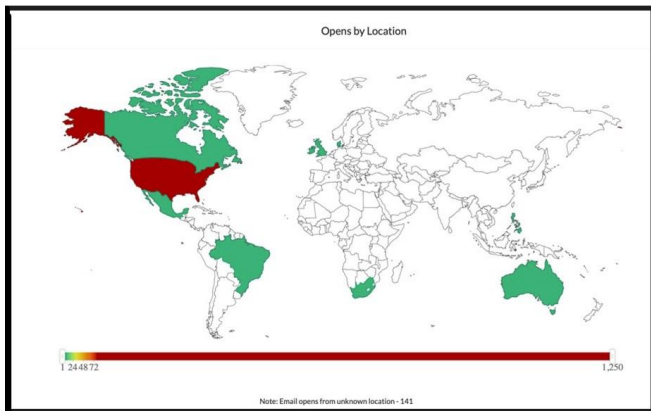
However, perfection – 100% successful delivery – has not been achieved and may never be completely within our grasp. There are two main types of “bounces”. A “hard” bounce occurs when the destination e-mail address is not recognized by the destination server. This can occur due to a typo in the address, or a changed or deleted address. These can generally be resolved one at a time through a little investigation on our part.

A “soft” bounce means that the e-mail address was valid but could not be delivered by the destination server for one reason or another. Soft bounces are described as “temporary” – there may be some embedded retries, but the server gives up after a while. The good news is that Zoho provides a report that identifies both the destination e-mail address and the reason for the delivery failure. These reasons include mailbox full, delivery time expired, protocol failures, policy related, quota issues, bad connection, and too many sessions opened. Except for the mailbox full error, there is not much you can do about the others.

Another feature of Zoho is that it is not necessary for the mail recipients to actively subscribe to receive e-mails. The software does its own validation process to ensure secure transmission of messages. As administrators, we can create, populate, and maintain the e-mail distribution lists. When we moved to Zoho, we populated the MARS Associates General Email List with the e-mail from everyone who indicated a willingness to get MARS e-mails on their membership form. You will stay on that list unless you specifically unsubscribe via the button at the bottom of each MARS e-mail.

We still have work to do to provide a more robust way for our members to control which e-mails they want to get from MARS Associates. This would include a way to resubscribe if you change your mind after unsubscribing. There is also an Update Your Preferences button at the bottom of each e-mail. It allows you to identify which “Topics” you wish to receive e-mail on. We have only used the Marketing Topic so far and all e-mails are sent under that topic. We need to prototype and set up some other topics that may be useful to members in determining their preferences for e-mail. For now, I advise you not to mess with it and wait for us to “get smarter”.

I hope that by the time I am writing my article for the July STAR, we will have discovered some new tricks and our e-mail communications will be even smoother and more user-friendly. In the meantime, I will leave you with another graphic from the Zoho Analytics – this one is a map of the world showing from which countries our e-mail was opened. Since we have few (if any) actual ex-pats in our membership, this probably represents where our members are travelling when they open the e-mail.



If you have any questions, concerns, or comments regarding e-mail or any other Communications topics, please send me a message at dan.ellerhorst@gmail.com.



Membership Report

By Carl Kaminski
carlkcol66@gmail.com

MEMBERSHIP STATISTICS

As of April 1, 2024 there are 1,311 MARS Associates members, including 624 senior members. We have a total of 30 new members who have joined MARS for the 2024 CY to date.

Please welcome the following new members who have joined this quarter:

Colorado

- Centennial Edwin & Nancy Cooper, Brian & Vickie Simpson
- Elbert James Leonard
- Evergreen Donald & Laurie Silbert
- Highlands Ranch Joe Diethorn & Shawn Hinsvark, Steve & Cathie Peterson, David & Bettelou Watson
- Lakewood Stephen Bugay
- Littleton Jay & Cynthia Breidenbach, Timothy & Kim Cyr, Christopher & Lisa Herring, Stephen & Mercedes Hurlbut, Lynn Keller, Scot & Marion Lichty, Tom & Linda Megna, Colleen & John Mitchell, Morton & Caroline Mitchell, James & Judy Olson, Lori Rauen, Richard Scott,

Rebecca & Steve Smith, Lauri & Carter Sweet, Weyman Weems

Parker Yulin & Jeanie Shen

Pine Albert Sands & Cindi Pursley

Westminster Donna & Robert Beecher

Other States

California

Pismo Beach Bruce Jurcevich

Florida

Spring Hill George & Monica Flanders

North Carolina

Hertford Thomas & Jennifer Corwin

Pennsylvania

Warrington Ronald Huegel

Membership Renewal

We are in the waning days of the 2024 membership renewal cycle. Several dues reminders have been sent via email. If you haven't renewed there are still a few days before the drop notices are mailed. You can renew online at: <https://marsretirees.org/mars-associates-membership-renewal/>

This will allow you to pay via credit card and save the hassle of mailing your renewal form and payment via USPS.

Alternatively, a pdf version of the renewal form can be accessed here: https://marsretirees.org/wp-content/uploads/2023/12/Mem_renewal_2024_online_version_rev_12_16_23_2.pdf.

You can type directly into this form from your web browser and print it out or printout the blank form and fill it in. Either approach will work.

Finally, you can mail your check for renewal to:
MARS Associates
PO Box 1128
Littleton, Co 80160-1128

If you are not certain if you have renewed for the 2024 membership year or if you have any questions contact Carl Kaminski directly at 303-726-1546.

NEW MEMBERS

Do you know someone who recently retired from LM or ULA? First year membership in MARS is free for 2024. Direct them to the website for more information or have them contact one of the Officers or Directors.

Did you know MARS Associates is charged for forwarded mail?

Please contact us with any info on changes of address. When USPS provides us with a new address for mail they have forwarded, the USPS charges MARS Associates. Please remember to include the MARS membership team in your list of people to notify when you have a new mailing address, phone number or email. We want to make sure all communications are timely.

In Memoriam

By Norma Emerson
(emer801@msn.com)

Please contact me at the above address or at 303-646-1137 with information about the passing of a member, the spouse of a member or other MM/LM retirees so they can be acknowledged in the Memoriam section.

MARS Associates expresses our deepest sympathy in the loss of your loved one and a donation will be made to a charity chosen by the Officers and Board of Directors in their memory.

Members

Allerton, Lois (D: March 2023)
(Survived by Burt Allerton)
Centennial, CO
<https://tinyurl.com/yh7vce7m>

Bennett, Paul "Rhino" (D: March 2024)
(Survived by Pamela Bennett)
Bailey, CO
<https://tinyurl.com/6pf4zfh9>

Boydstun, Betty Jane (D: February 2024)
(Survived by Dick Boydstun)
Parker, CO
<https://tinyurl.com/yc6ck8y7>

Galavotti, Betty (D: July 2021)
(Survived by Ed Galavotti)
Cheyenne, WY
<https://tinyurl.com/48w4a5h3>

Gaughen, Michael "Mike" D: (February 2024)
Santa Maria, CA
<https://tinyurl.com/3w6nnv8v>

Green, Loujuan "Lou" (D: December 2023)
(Survived by Pauline "Polly" Green)
Littleton, CO
<https://tinyurl.com/4eax4uup>

Hagedorn, Evelyn (D: January 2024)
Kailua Kona, Hawaii
No obituary published

Hellickson, Kaz (D: December 2023)
Denver, CO
No obituary published

Isaacs, John (D: January 2024)
(Survived by Nancy Isaacs)
Denver, CO
No obituary published

Jambor, Patricia (D: September 2023)
(Survived by Bruno Jambor)
Littleton, CO
<https://tinyurl.com/29zkwmb3>

Kloss, Manfred (D: June 2023)
(Survived by Jerra Goodin)
Castle Pines, CO
No obituary published

Remy, Lynn (D: No date given)
(Survived by Ron Remy)
Sedalia, CO
No obituary published

Walters, Susan (D: No date given)
(Survived by Don Crouch)
Parksville, MD
No obituary published

Westfall, Stephen (D: January 2024)
(Survived by Adele Westfall)
Centennial, CO
<https://tinyurl.com/avfuvbzf>

Non-Members

Albright, Carole (D: January 2024)
Denver, CO
<https://tinyurl.com/msb97nmt>

Ardrey, Allen (D: January 2024)
(Survived by Freda Ardrey)
Pine, CO
No obituary published

Cody, Eugene "Gene" (D: December 2023)
(Survived by Doris Cody)
Littleton, CO
<https://tinyurl.com/ntecthpc>

Crowl, Craig (D: January 2024)
 (Survived by Julie Crowl)
 Littleton, CO
<https://tinyurl.com/yxmhxnpb>

Gleason, Larry (D: February 2024)
 Cocoa, FL
<https://tinyurl.com/y22kt4pb>

Gray, Charles "Chuck" (D: December 2023)
 (Survived by Christine "Chris" Gray)
 Littleton, CO
<https://tinyurl.com/46m2ds38>

Hawkins, Rod (D: January 2024)
 (Survived by Jennifer Hawkins)
 Santa Maria, CA
<https://tinyurl.com/2nna63pw>

Lapham, William "Bill" (D: January 2024)
 (Survived by Kathy Lapham)
 Sedalia, CO
 No obituary published

Mellin, John (D: December 2023)
 Littleton, CO
<https://tinyurl.com/bdhtnp2n>

Odefey, Marvin (D: January 2024)
 (Survived by Angela Gomez)
 Johnstown, CO
<https://tinyurl.com/2p8bkuph>

Okubo, Aiko (D: February 2024)
 Arvada, CO
<https://tinyurl.com/2d5nn8e4>

Rodamer, Robert "Bob" (D: February 2024)
 Merritt Island, FL
<https://tinyurl.com/2z2ph8k7>

Williams, Bob (D: January 2024)
 (Survived by Mary Helen Williams)
 Orlando, FL
 No obituary published

Marketing Committee

By Richard Sosnay
richardsosnay@gmail.com

Plans for our MARS Special Activities for 2024 are starting to shape up nicely. The following is a summary of our activities planned for 2024.

Planned 2024 Special Activities		
Activity (Lead) [Participants]	Cost	When
Wine Tasting (Terry Lilly) [32]	\$25 per person	Tues, Apr 23
Colorado Railroad Museum (Robin Zen) [28]	\$11 per person	Tues, Apr 30
The Wild Animal Sanctuary (Carolyn Malaby) [40]	\$20 – \$50 Per person	Tues, May 14
State Capitol/History Museum (Kathy Hetzel) [30]	\$14 per person	Tues, Jun 11
Central City Opera (Sue Janssen) [29]	Dep on Seating	Weds, Jul 24
ULA Plant Tour (Terry Lilly)	Free	May
LM Plant Tour (Judy Nielsen)	Free	
Denver Mint Tour (Robin Zen)	TBD	Sept
Highlands Ranch Mansion (Carolyn Malaby)	TBD	Sept or Oct
Kansas Cosmosphere (Bill Edwards)	TBD	Aug or Sept
State Capitol/History Museum (Kathy Hetzel)	TBD	Late Sept
Glenwood Springs Train Trip (TBD)	TBD	Fall
Air Force Acad Planetarium & AFA Tour. Lunch after. (Doug Tomerlin)	TBD	Early to Mid-Summer
[Total 159]		

As soon as each activity's details are finalized, we send out a blast email to all MARS members who have opted to read emails describing the event, giving the dates and times, and telling you how to sign up for the activity. You can also find out about these activities by checking on our MARS Website. Make sure you contact the activity lead if you are interested in participating. Following is a brief description of each activity for 2024:

Wine Tasting

We will start our activities with a wine tasting at Water2Wine, led by Terry Lilly on Tuesday, April 23. The tasting will include six wines, along with appetizers. This event will have been completed by the time that you get the April MARS STAR, so you can read all about it in the next MARS STAR. Hopefully, you have read about this tour in the blast email that was sent out to everybody, and you noticed it on our MARS website and were able to sign up and attend.

Colorado Railroad Museum Tour

Our next event will be new for this year and will include a tour of the Colorado Railroad Museum in Golden on Tuesday, April 30, led by Robin Zen. The museum is a collection of trains and exhibits including both real and model railroad items. You may enjoy touring dozens of historic locomotives, passenger, and freight cars, dating from the 1880s to the 1980s. You can step aboard several to experience these artifacts close-up, including a Railway Post Office, an 1880s Caboose, and a Kitchen Car which once prepared meals for hard-working railroad crews assigned to jobs at remote locations. You can also ride a train and visit Denver HO Model Railroad Club and the Denver Garden Railway Society's outdoor garden railroad. The tour will start at 1:30PM, and we are planning to go somewhere afterwards for drinks and snacks. Drink and snack details have not been finalized at the time of writing this article, but you will be able to read about it also in the next MARS STAR.

The Wild Animal Sanctuary

Our next event will be a return trip to the Wild Animal Sanctuary in Keenesburg on Tuesday, May 14, led by Carolyn Malaby. We will meet at the Welcome Center at 9:00 AM, and after the introduction, we will be free to explore this amazing place at our own pace. We will enjoy a tour of the world's largest carnivore sanctuary, home to over 550 lions, tigers, bears, wolves, leopards and other animals, and you can see them all safely from their Walk into the Wild walkway ABOVE them where they don't feel threatened and don't pace like they do in zoos. Those that went last year had a fun time, but this year we are trying it a little earlier in the year so that it may not be quite as hot as last year.

State Capitol/History Museum

We will then have another new activity for this year. That will be a visit to our State Capitol and a tour of the History Colorado Museum, on Tuesday, June 11, led by Kathy Hetzl. We will meet at the state capitol at 10:45 for an 11am 30-minute guided tour. We will then enjoy lunch (at our own expense), either as a group at the café in the History Colorado Museum, or on your own if you prefer, before exploring the History Colorado Museum for the rest of the afternoon. The Colorado State Capitol Building, located at 200 East Colfax Avenue in Denver, is the home of the Colorado General Assembly and the offices of the Governor of Colorado, Lieutenant Governor of Colorado, and the Colorado State Treasurer. The History Colorado Museum has many permanent exhibits about the Sand Creek Massacre, 10th Mountain Division, history of the Ute tribe, as well as a new exhibit featuring the photography of John Fielder. You are free to wander at your leisure. This has proved to be a popular activity and has filled up at once. Therefore, we are scheduling another return visit to the State Capitol/History Colorado Museum in late September.

Central City Opera

Our next event will be a return to the Central City Opera on Wednesday, July 24, led by Sue Janssen. This year, we will see *The Pirates of Penzance*, a comedic operetta with swashbuckling adventures and harmonious hijinks. It is a wonderful experience to drive up through our foothills in the middle of summer to visit this old mining town with its historic opera, grab lunch, see a wonderful operetta, and enjoy the ambience of Central City. Come early, and roam around this old west city and enjoy lunch.

ULA Tour

The ULA tour will again be led by Terry Lilly. We have a tentative date of Tuesday, May 21. We will enjoy a guided tour of the ULA Denver Facilities including the Denver Operations Support Center, Systems Integration Laboratory and "Mission Success Ave," which has photos of every ULA launch. And we will get the latest status on the new Vulcan launch vehicle and other ULA activities.

LM Waterton Plant Tour

The LM Waterton Campus tour will again be led by Judy Nielsen. We are in the process of finalizing details with Lockheed Martin and will let you know the details as soon as we have them. We will enjoy a guided tour of the Waterton Campus and see the changes since you retired. The group will enjoy a bus ride through the campus with stops and tours of several buildings. This is always a popular tour, and we are limited to the number of people that can be accommodated by Lockheed Martin.

Denver Mint Tour

The Denver Mint tour will be led by Robin Zen. The Denver Mint Tour is only one of two available in the US and lasts about 30 minutes. A Denver Mint employee (& armed police guards) will guide visitors through a few areas showcasing historical machinery previously used to craft coins. All the while you can watch today's coins being stamped through glass windows on the floor below. Also included is a fascinating historical lesson on currency. We are currently planning on sometime around September.

Highlands Ranch Mansion tour

The Highlands Ranch Mansion Tour will be led by Carolyn Malaby. This historic mansion has been home to some of Denver's more notable families including cattle barons, oil tycoons, prominent Denver socialites, as well as political and business leaders who have helped create the Colorado we know today. Discover spacious landscaped grounds, expansive vistas, picturesque architectural details, and a deep connection to our western heritage. We are currently planning on a time frame of September or October.

Kansas Cosmosphere Tour

The visit to the Kansas Cosmosphere is being led by Bill Edwards. The Cosmosphere has the 2nd largest collection of US space memorabilia anywhere and the largest collection of Russian space memorabilia outside the former Soviet Union. There are many artifacts from the US Space Program (a Moon Rover, the Mercury Liberty Bell 7, the Gemini 10, and the Apollo 13 Crew Capsules). It has an impressive collection of World War II German Rocket displays (V1 Flying Bomb, a V2 Rocket and an ME163 Rocket Plane engine). The USSR collection is very impressive (flight-ready spare of the Sputnik 1 spacecraft, a Vostok capsule, the Voskhod 2 capsule and a full-size replica of the Apollo-Soyuz spacecraft). We are currently planning sometime in August or September.

Glenwood Springs Train Tour

We are now looking for a new lead for this activity. Hopefully, one of our members will step up and volunteer to lead this fun activity. This trip will take a train ride on Amtrack's California Zephyr through the Rocky Mountains to Glenwood Springs. The train goes through the Moffat tunnel and then follows the Colorado River. We'll stay 2 nights at a hotel in Glenwood so that you can spend 2 evenings and a full day enjoying the sights and activities in Glenwood Springs, including the world-famous hot springs, the adventure park, and the shopping and dining opportunities. We would like to do this in autumn, so that we can enjoy the aspen trees turning gold as we ride through the Rocky Mountains. If we cannot find a new lead for this activity, we will add it to our list of potential activities for 2025.

Colorado Springs Activity

Doug Tomerlin, who leads the Lockheed Martin Colorado Springs Retiree group and a MARS member, has volunteered to lead an activity in Colorado Springs this summer. The activity will include a visit to the Air Force Academy Planetarium and a tour of the Air Force Academy. For those interested, depending on the number of attendees, we will reserve seating for lunch afterwards at a restaurant near the Academy. The timeframe we are looking at is early to mid-summer. We will provide you with the details when they are set up.

As you can see, we have some wonderful activities planned for this year. Look for more information on our web site, in MARS mass mailers, in future editions of the MARS STAR, and on our MARS Facebook page. If you are interested in attending any of these activities, please let the activity leaders know. If you are interested in leading the Glenwood Springs Train Trip that is now looking for a leader, or if you have any other great ideas for new activities, please let me know. I hope to see you at some of the great activities.

THE HAVERN SCHOOL SCIENCE FAIR

By Dennis Casey
(dennismontaguecasey@msn.com)

The Havern School is a small school (approximately 85 students) for children aged 5 - 14 with learning disabilities, located in Denver, near Hampden and Wadsworth Boulevard. The school has a science fair each year, for which Lockheed Martin employees and retirees act as volunteer judges.



This year, MARS Associates members Dennis Casey, Ken Marts, Pete Munoz and Al Nemes had an opportunity of a lifetime to judge the science experiments of these students.



The students at Havern School are a special group of students striving to be the best they can with many of life's challenges. In the midst of this, they seek to learn about the world around them while expanding their knowledge of science. They work as a class, a team, or individually, seeking to understand the "why" things happen and "why" things act the way they do.



Designing tests to determine what happens when an egg explodes in a microwave, or how to design the best containers for eggs to be dropped from buildings, or what are the best mascara/fingernail polish removers; the students push the limits of their known science. In total, over 30 science projects were judged.



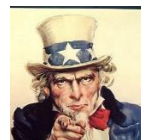
In addition to the experiments mentioned above, there were projects to examine bacteria growth from samples collected in classrooms, what materials make the best electromagnets, and a novel approach to determining the amount of iron in various breakfast cereals.



Perhaps next year, other MARS Associate members can join in this life changing experience. Contact Dennis Casey for more information on this year's judging or next year's opportunity to participate.

Volunteer Activities

By Judy Nielsen
jniel129@gmail.com



If you serve your community, we'd like to hear from you. As Uncle Sam used to say – WE WANT YOU!

Each quarter, we would like to highlight a volunteer and their organization in the MARS STAR. If you are interested in sharing your volunteering experience(s), please send your write-up to Judy Nielsen, MARS Volunteer Activity Coordinator, at jniel129@gmail.com. Not only will this provide recognition for the good work being done, but it will also encourage others and will provide information for those looking for volunteer opportunities. Additionally, we will donate \$50 to that volunteer's charity/organization.

There are other volunteer activities you can become involved in within MARS, so please contact Judy Nielsen, or any officer/director to find out more.

Happy Volunteering!

Historian Corner

By Barb Sande
barbsande@comcast.net

Program Profile

This issue continues a multi-part series on the Skylab orbiting laboratory and the crewed missions for their 50th anniversaries.

Planned Articles:

- Skylab Part I: History of a Space Station Concept; Skylab is Born – COMPLETE, in 2023 Q2 MARS STAR
- Skylab Part II: Mission Objectives and Plan, Technical Features of the Skylab Design; Integration and Test, Launch of Skylab 1; Skylab Anomalies – COMPLETE, in 2023 Q3 MARS STAR
- Skylab Part III: Skylab 2 – Skylab Anomaly Resolution; Crew Selection and Training, First Crew; Skylab 2 Launch, Workshop Repairs and First Mission – COMPLETE, in 2023 Q4 MARS STAR
- Skylab Part IV: Skylab Memories – Memories from Martin Marietta Retirees – COMPLETE, in 2024 Q1 MARS STAR
- Skylab Part V: Skylab 3 – SMEAT, Station keeping between Crews, Second Crew, Experiments – **IN THIS ISSUE**

Corrections to Part IV:

Please refer to this corrected biography for Paul Taylor (two dates were incorrect):

*I hired on with MMC in June, 1959 from the Air Force at Lowry AFB. I was in a support group here in Denver that supported a Titan I training group at Vandenberg. In 1965 I was laid off with about 6000 other employees and got a job working for the Burroughs Corp. From there I went to Scientific Computer Systems in LA in 1967. In 1971, MMC offered me a position in their Training department and I was assigned to Skylab (see story above). From that program I went on to the Viking Program and taught classes on the operational uses of Viking for a year. I was laid off in **1975**. In **1978**, I was rehired to teach a computer systems course on PACE, the new computerized Launch Control and Checkout System for Titan. From there I worked various programs and a lot of proposals and retired while in Defense Systems in 1991. Paul Taylor can be contacted at amricsfolks@earthlink.net.*

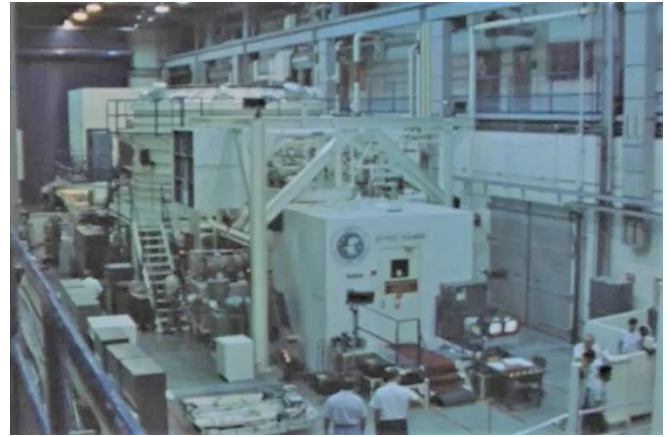
Please note this addition to the second paragraph of Phil Carney's remembrances: *I was assigned to the Flight Mechanics Section and placed under the terrific mentorship of Dick McCullough (Fantastic guy, maybe 5'5", stocky rugby player in his off time). Martin Marietta had two Systems Engineering groups supporting Skylab at the time. One supported NASA Houston Johnson Space Center (JSC and the other supported NASA Huntsville Marshall Space Flight Center (MSFC). The Flight Mechanics group, and Dick McCullough, was acting in a support role to the company's JSC Systems Engineering Group.*

Introduction to Part V

I hope everyone enjoyed the delightful stories in the last article from folks who worked on the Skylab program. I thought they were wonderful and I'm glad the memories have been captured for posterity.

In this article, I will describe the station-keeping process for the unmanned Skylab workshop between missions and capture the highlights of the Skylab 3 mission. However, I will begin with a short section describing the Skylab Medical Experiment Altitude Test (SMEAT). This crucial ground test of the Skylab systems was performed in 1972 and was overlooked in my previous articles because of the depth of information available on Skylab. At the end of the article, there will be short biographies of the three Skylab 3 astronauts and the 3 SMEAT astronauts.

Skylab Medical Experiment Altitude Test (SMEAT)



Altitude Chamber for the SMEAT Photo Credit: NASA

On September 20, 2022, NASA released a 50-year commemorative article about the SMEAT, which was a 56-day simulation in an altitude chamber at the Manned Spacecraft Center in Houston that started on July 26, 1972 and finished on September 20, 1972. The SMEAT served to obtain baseline medical data on the crew and test some of the hardware and experiment procedures that were planned for the orbital workshop, prior to its launch in April 1973.

Skylab 3 Mission Preparations and Launch

The crew assigned to Skylab 3 included one space veteran and two rookies. Alan Bean, who walked on the moon on the Apollo 12 mission, was designated the Commander. Owen Garriott, formerly an electrical engineering instructor at Stanford University, was assigned the role of Scientist-pilot. Jack Lousma, the pilot, had previously been a communicator (CAPCOM) in Mission Control during the Apollo 13 mission. The assigned backup crew members were Vance Brand, William Lenoir and Don Lind. All three primary astronauts are profiled in short biographies at the end of this article.

The crew (primary and backup) trained extensively for the mission and also had special training for the second parasol repair for the thermal system, which would be installed over the first system that was deployed by the crew of Skylab 2. The pole shield for the improved parasol was already on-board the orbital workshop. The intent of Mission Control was to have the crew stay for 59 days.

At 11:10 GMT on July 28, 1973, Skylab 3 launched from LC-39B at Kennedy Space Center. The mission utilized Saturn 1B SA-207 and Command/Service Module (CSM) 117, a block II CSM modified for the Skylab mission parameters. Ascent was uneventful. Accompanying the crew was a six-pack of new rate gyroscopes, cables, an improved thermal parasol, the experiment film, food for a three-day mission extension, replacement components

for some of the experiments, and two data tape recorders. Also on-board were two Mummichog minnows and 50 minnow eggs, six pocket mice, 720 fruit fly pupae, and two common Cross spiders named Arabella and Anita.

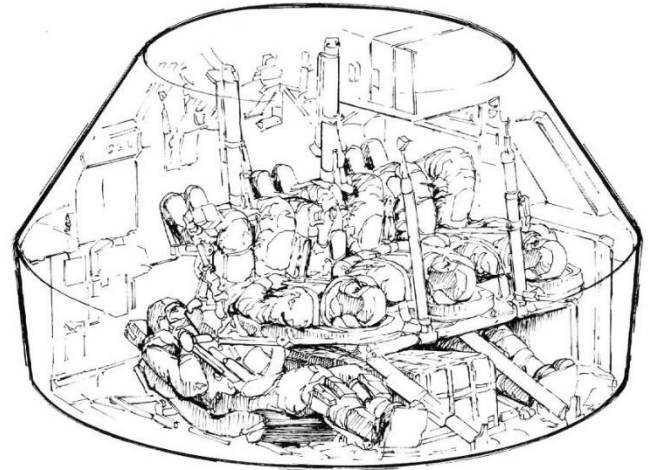
Eight hours after launch, the CSM and its crew approached Skylab and Lousma called out "Here's our home in the sky." The workshop had external flashing lights on-board and was visible from as far away as 390 miles. A propellant leak developed in one of the Service Module's reaction control system thruster squads as they got nearer to Skylab. The crew was able to safely dock, but troubleshooting continued for a few days; another thruster quad developed a leak, creating concerns with Mission Control. For the first time, another Apollo spacecraft was rolled out to LC-39 in case a rescue was needed (Skylab could have two CSMs docked at the same time), but Mission Control eventually determined that the CSM could be safely maneuvered at the end of the full 59 days on-board with only two thruster quads.



Launch of Skylab 3. Photo Credit: NASA

An aside about the Skylab Rescue capability: This contingency event, which never flew, would use a two-person crew in a CSM that had been modified to carry back five astronauts. The backup rescue crew designated for Skylab 3 (and Skylab 4) was Vance Brand and Don Lind. There was also a standard CSM rescue concept that was in place for Skylab 2. The formal mission requirements for Skylab Rescue were initially released on May 17, 1972. Interestingly, the rescue concept had been

dropped during early development, but was revived after the movie "Marooned" came out in 1969 [I highly recommend a viewing of this movie, which includes a Titan IIIC launch vehicle with a lifting body that is used to try and rescue the astronauts who are stranded after leaving an orbital workstation. It has an all-star cast, including Gregory Peck, David Janssen, Gene Hackman, and Richard Crenna and was adapted from a book by Martin Caiden].



**Rescue CSM Concept Image Credit: NASA
*Space Sickness, Another Solar Shield is Deployed***

After docking, the crew began unloading their supplies. Even before docking at Skylab, Lousma began experiencing symptoms of space sickness. He took an anti-motion-sickness pill, which helped, but he became sick again after his first meal on-board. As might be expected when you hear someone else retching (sorry, it's true), Bean and Garriott also became space sick. Activities were slowed by this ailment during the first three days, but by the end of the fifth day the crew was back to normal and had regained strength.

On August 6, 1973, Garriott and Lousma performed an EVA that lasted six hours and 31 minutes, setting a new world record at that time for a spacewalk (the time on several moonwalks was longer). This record was broken by the Skylab 4 crew. The longest single spacewalk to date (as of March, 2024) was done by James Voss and Susan Helms on STS-102 in March 2001, a total of 8 hours and 56 minutes doing work at ISS.

During this EVA, the astronauts loaded film cartridges in the solar observatory telescopes, installed panels to measure micrometeoroid impacts and inspected the command and service module thrusters. Their primary task was to erect a new solar shield over the existing parasol. In the last article about Skylab in the MARS Star Q1 2024 edition, Stan Hightower had a detailed story about the parasol (deployed on Skylab 2) and the second solar shield concept that was deployed on Skylab 3, so I ask readers to go back and read that great story, which

includes a picture of the Skylab 3 installation. Here is a photo of Jack Lousma during that long EVA:



**Skylab 3 Pilot Jack Lousma during first EVA.
Photo Credit: NASA**

Crew Settles in; EREP Results

The crew settled into a routine after the EVA. The workshop was in excellent condition and all systems were functioning. As they adjusted to the zero-G environment, they found that they could work long hours without fatigue. The power load as the mission began was about 3900 watts, considerably less than the 5500 watts that were available. As scientific observations increased, the load also increased but the crew and Mission Control were able to adjust the sharing of power between the two on-board power systems and relied on voltage regulation for flexibility.

One of the principal activities was the execution of the Earth Resources Experiment Program or EREP. Harkening back to the last article about Skylab, Greg Bollendonk submitted a story from his father Bill about the Martin Marietta-built EREP, which was mounted in the docking adapter. The EREP used a variety of scientific instruments to record earth observation data in the visible, infrared and microwave spectral regions. Here is a list of those sensors:

1. Multispectral Photographic Camera system: Six 70 mm bore-sighted cameras in color, black & white and infrared ranges (color and black white).
2. Earth Terrain Camera: Single 127-mm camera using color, black & white, and infrared films (color).
3. Infrared Spectrometer: Filter-wheel spectrometer with a 1-sec scan rate and a 16-mm camera that recorded Earth scenes. This was crew pointed manually. The data were recorded on magnetic tape.
4. Multispectral Scanner: 13-channel mechanical scanner, with data recorded on magnetic tape.
5. Microwave systems K-band, Radiometer / Scatterometer / Altimeter: 3-sensor facility using single 1.1 m pointing parabolic antenna. Data recorded on

magnetic tape; the system contained active and passive sensors.

6. L-Band Radiometer: Single sensor with a fixed antenna and passive sensors.

Skylab was oriented during a conventional EREP pass to point the sensors normal (perpendicular) to the Earth surfaces. During Skylab 3, 48 EREP passes were performed, resulting in 13,429 photograph frames and 93,600 feet of magnetic tape. The Earth survey data covered most of the United States and parts of 33 other countries.

The first four instruments were used to survey crop lands, watersheds, forest areas, geological formations, and cultural features in selected areas; data from these instruments could measure moisture content of soil, the health of vegetation, insect infestation areas, land use, and population distribution.

The Multispectral Camera employed high-precision lenses to record unique and new data about the Earth, including distributions of forests, crop areas and urban zones. Scientists were able to utilize data in these general areas from the EREP:

1. Land use and cartography
2. Agriculture, range and forestry
3. Geology and hydrology
4. Oceans and Atmospheres.

The EREP greatly supplemented the data available from the Earth Resources Technology Satellite (renamed Landsat 1), which was launched on July 23, 1972. The crew was also fortunate to view Hurricane Ellen and recorded data using the EREP.



Example of Image from EREP. Photo Credit: NASA

For those readers who love to lose themselves in the technical details, please refer to the nearly 400-page *Skylab EREP Investigations Summary*, NASA SP-399, Washington DC: USGPO, 1978, which is available online at <https://history.nasa.gov/SP-399/sp399.htm>

New Findings from Solar Observations

During Skylab 3, the astronauts obtained 77,600 telescopic images of the Sun's corona in the X-ray, ultraviolet and visible-light portions of the spectrum. They spent more than 300 hours on these observations, looking at the sun at different angles including through the Earth's atmosphere.

Although the sun was supposed to be in the quiet portion of its 11-year cycle, the crew was fortunate to see a lot of activity. They observed or had significant data and photographs of around 100 solar flares. The studies of the corona proved the existence of coronal holes, which are places in the Sun's corona that are cooler and more rarified than the rest of the solar atmosphere. Other observations found that solar bright spots, discovered by Skylab, occur all over the sun and not just in equatorial regions.

The crew worked effectively with the Naval Research Laboratory personnel on the ground and with professional astronomers who were on call during the entire mission. This allowed for real-time updated observation plans that enhanced the scientific results.

The crew also brought up the S150 X-ray experiment to look for soft galactic x-rays. Data was recorded on a tape recorder and sent to ground crews. The instrument detected 40-100 angstrom photons from those galactic x-rays.



Scientist-Pilot Owen Garriott at the Apollo Telescope Mount Console. Photo Credit: NASA

Life Process Studies

The stars of the life process studies were the common Cross spiders named Arabella and Anita. A high school science student suggested an experiment to see how these spiders would spin their webs in space. Arabella was tested first – she initially had difficulty spinning her web, but when she became accustomed to the zero-g environment, she spun webs closely resembling those on Earth. Her sister Anita was not tested until she was acclimated and her webs were normal almost immediately. There were some minor differences – the webs were finer than normal Earth webs and had some variation in thickness. Sadly, Anita and Arabella both died later in the mission, probably due to dehydration. Later flight experiments with spiders found that using a light source helped the animal figure out how to weave a normal web almost immediately in zero-g environments.



Arabella weaves a web on Skylab 3. Photo Credit: NASA

The minnow experiments were very intriguing. The group brought on board as minnows first swam in tight loops, then resumed a normal swimming pattern. The minnow eggs that hatched on board swam exactly as they did on Earth right after hatching. Unfortunately, the pocket mice and fruit flies died because of a power outage 30 hours after launch, so those experiments were not performed.

The humans were subjected to a series of medical experiments, with medical tests every three days. Their bodies were changing, but not as rapidly as the first crew because they did more exercising each day. The space environment seemed to work as a stimulant and all three crew members put in long hours conducting scientific experiments and only sleeping 6-7 hours a night. Humans were found to have the capability to endure long-duration spaceflights.

Rate Gyroscope Replacement

During the first mission, problems with the rate gyroscopes were encountered, including overheating and abnormal drift rates. The second crew brought a six-pack of Gyros as a precaution and Mission Control made the decision to "go" for full replacement, which would require

an interim EVA (there would, course, be an EVA near the end of the mission to retrieve film canisters).

On August 24, 1973, Garriott and Lousma left the workshop and made their way to the location of the rate gyroscopes while Bean remained inside to monitor their activities. The replacement was challenging, requiring disconnecting three cable connectors and the rate gyroscope selector box, then remaking the four connections. As this involved disconnecting the guidance system's main cable, it was vital that everything be accomplished successfully. Fortunately, the task was accomplished without incident with special tools that had been provided. The EVA lasted four hours and 30 minutes.

Successful Completion, a Funny Stunt and the Return of Skylab 3

The crew more than met the expectations of the daily planners, even with the early delays from space sickness. Communications were superb between crew and the ground. Garriott used these frequent communications to pull a fast one on Mission Control. This is an excerpt from SP-400 on this unexpected voice from space:

But the ground crews were not prepared when, during the mission, a soft, unquestionably female voice called from space: "Hello, Houston, this is Skylab. Are you reading me down there?"

There was an understandably long silence from Mission Control. "Hello, Houston, are you reading Skylab?" the voice called again. No mistake about it. It was clearly a woman's voice.

After another long pause, Mission Control replied, hesitantly, "Skylab, this is Houston. I heard you all right, but I had a little difficulty recognizing your voice. Who have we got on the line here?" "Houston, Roger. I haven't talked with you for a while. Is that you down there, Bob? This is Helen here in Skylab. The boys hadn't had a home-cooked meal in so long, I thought I'd just bring one up. Over."

By this time, a crowd had gathered in Mission Control. Not quite sure what was going on, the controller replied: "Roger, Skylab. I think somebody has got to be pulling my leg. Helen, is that really you? Where are you?"

"Just a few orbits ago we were looking down on the forest fires in California. You know, the smoke sure does cover a lot of territory. And, oh, Bob, the sunrises are just beautiful. "Suddenly the feminine voice changed moods. "Oh, oh, I have to cut off now," she said. "I see the boys are floating up toward the command module, and I'm not supposed to be talking to you. See you later, Bob."

Still somewhat shaken by the event, the controller muttered, "Bye, bye," as the Skylab crew roared with

laughter. Garriott had taped his wife's voice earlier and played it back at an opportune moment.

The final EVA was performed on September 22, 1973 to retrieve the film canisters and was done by Bean and Lousma. That EVA lasted 2 hours and 45 minutes.

The crew bade farewell to Skylab and splashed down in the Pacific Ocean at 22:20 UTC on September 25, 1973. The USS New Orleans recovered the crew and the command module and plans were already underway for Skylab 4. The Command Module for Skylab 3 is currently on display at the Visitor's Center at the NASA Glenn Research Center near Cleveland, Ohio.



**L to R: Owen Garriott, Jack Lousma, Alan Bean.
Photo Credit: NASA**

Crew Biographies Skylab 3

Alan Bean

Alan L. Bean was born on March 15, 1932 in Wheeler, Texas. He enlisted in the US Naval Reserve after high school graduation in 1949 and received a BS in Aeronautical Engineering from the University of Texas. In 1955 he was commissioned as an ensign and attended flight training, flying a variety of aircraft and attending the Naval Test Pilot school at NAS Patuxent River, Maryland. He also took art classes at St. Mary's College of Maryland. He logged more than 7,000 hours of flying time.

Bean was selected by NASA as part of Astronaut Group 3 in 1963. He was a backup pilot for Gemini 10 but had difficulty securing an early Apollo flight assignment. The death of astronaut Clifton Williams in an air crash opened up a backup role on Apollo 9 and he was later assigned as the Lunar Module pilot for Apollo 12 (he had worked with Pete Conrad at the NAS). After Apollo 12, he became spacecraft commander of Skylab 3 (see this article) and was the backup commander for the Apollo Soyuz Test Project. He retired from the Navy in 1975 and from NASA in 1981. He devoted his time after retirement to painting

and had an exhibition of his moon paintings at the Smithsonian Air and Space Museum in 2009.

Bean married Sue Ragsdale in 1955 and they had a son and a daughter. They were divorced and he later married his second wife Leslie. He passed away at the age of 86 on May 26, 2108 after a sudden onset illness. He is interred in Arlington National Cemetery. He has received many honors and awards and was elected to the US Astronaut Hall of Fame in 1997.

Owen Garriott

Owen Kay Garriott was born in Enid, Oklahoma on November 22, 1930. He received a BS in Electrical Engineering from the University of Oklahoma in 1953 and a Master of Science and Ph.D. in Electrical Engineering from Stanford University (1957, 1960). He was an electronics officer in the Navy from 1953 to 1956, then worked as a professor of Electrical Engineering at Stanford University, contributing to more than 45 scientific papers.

In 1965, Garriott was one of six scientist-astronauts selected by NASA. He completed a one-year flight training program as part of this selection, receiving qualification as a jet aircraft pilot. His first spaceflight was the Skylab 3 mission (this article). His second spaceflight was aboard STS-9 (Spacelab-1) in 1983 on OV *Columbia*. He operated the first amateur radio station in space, making the first space-based radio contact on December 1, 1983. Garriott also served as a NASA fellow in the Space Station Project office.

Garriott left NASA in 1986 and held a variety of consulting positions and board memberships; he was the VP of Space Programs at Teledyne Brown Engineering from 1988 until 1993. He formed a public philanthropic Family Foundation to finance adventure travel for himself and members of his family.

Garriott married Helen Mary Walker in 1952. They had four children (three sons and one daughter). He and Helen were divorced and he later married Evelyn Garriott. His son Richard was launched as a space tourist on Soyuz TMA-13 to ISS in 2008; Owen Garriott was in mission control at Baikonur for this launch. He also co-wrote a book with Joseph Kerwin (Skylab 2) called "Homesteading Space" about the Skylab program. Owen Garriott died on April 15, 2019 at his home in Huntsville, Alabama. He received many honors and awards and was elected to the US Astronaut Hall of Fame in 1997.

Jack Lousma

Jack L. Lousma was born in Grand Rapids, Michigan on February 29, 1936. He received a BS in Aeronautical Engineering from the University of Michigan in 1959 and a MS degree from the Naval Postgraduate School in 1965. Lousma became a US Marine Corps officer and received

his aviator wings in 1960, logging 7,000 hours of flight time in a variety of aircraft.

Lousma was selected by NASA in Astronaut Group 5 in April 1966. He served as a member of the astronaut support crews for the Apollo 9, 10 and 13 missions and was on-station as CAPCOM to receive the "Houston, we've had a problem" message from Apollo 13. He was assigned to the Skylab 3 mission after Apollo 20 was canceled (he was on the prime crew). He served as the backup docking pilot for the Apollo-Soyuz Test Project. Lousma also commanded the third test flight of Space Shuttle, STS-3, from March 22 to March 30 1982 (with Gordon Fullerton). This mission had the "opportunity" to land at White Sands, New Mexico because of weather problems at VAFB (the only shuttle mission to land at that facility). They found white sand in Columbia for a long time after that landing.

Lousma retired from NASA and the USMC in 1983 and entered politics. He ran as a Republican for the US Senate election in Michigan in 1984, losing to incumbent Carl Levin. He joined Diamond General Corporation in Ann Arbor, Michigan and gives lectures on his experiences in space and is involved in high school technology businesses. Lousma married Gratia Kay in 1945 and they have four children. He and his wife moved to Texas in September 2013. He has many honors and was inducted into the Astronaut Hall of Fame in 1997.

Crew Biographies SMEAT



**L to R: Bob Crippen, William Thornton, Bo Bobko
Photo Credit: NASA**

Robert Crippen

Robert L. Crippen was born on September 11, 1937 in Beaumont, Texas. He majored in Aerospace Engineering at the University of Texas and was a naval aviator and Air Force Test Pilot. In 1966, he was selected as an astronaut for the Manned Orbiting Laboratory Program.

When MOL was canceled in 1969, Crippen was selected by NASA as part of Astronaut Group 7. He supported Skylab 2, 3 & 4 and participated in the 56-day Skylab Medical Experiment Altitude Test. He also served as CAPCOM for the Apollo-Soyuz Test Project. He was a T-38 chase pilot during the Approach and Landing Tests for the Space Shuttle program.

Crippen was the pilot of STS-1 (Columbia) and was the commander of three other shuttle missions (STS-7, STS-41-C and STS-41-G). He served as deputy director of flight crew operations for VAFB Shuttle operations and was named the commander of STS-62-A that would have launched from SLC-6 at VAFB. He served on the STS-51-L Mishap Review Board, then was stationed at KSC and NASA headquarters, serving as the Director of the Space Shuttle Program.

After leaving NASA, Crippen was a Vice President of Lockheed Martin Information Systems and became President of Thiokol Propulsion from 1996 to 2001. He married Virginia Hill in 1959 and they had three daughters; they were later divorced and Crippen married Pandora Puckett. He has many honors and awards and was inducted into the Astronaut Hall of Fame in 2001.

Karol Bobko

Karl J. "Bo" Bobko was born December 23, 1937 in Queens, New York. He received a BS degree from the US Air Force Academy in 1959 and a MS degree in Aerospace Engineering from the University of Southern California. He logged over 6,600 flight hours as a pilot for the USAF and was assigned to the MOL program in 1966.

After MOL was canceled, Bobko was selected by NASA in Astronaut Group 7. He participated in the SMEAT simulation and was a support crew member for the Apollo-Soyuz Test Project. He also served as a CAPCOM and chase pilot during the Shuttle Approach and Landing tests. Bobko was the pilot on STS-6, the maiden flight of Challenger and was the commander on STS-51-D and STS-51-J (maiden flight of Atlantis).

After retirement from NASA and the USAF, Bobko joined the firm of Booz Allen Hamilton and later worked for SPACEHAB, Inc. and SAIC. He was married to F. Dianne Welsh and had a daughter and son. Bobko passed away on August 17, 2023. He has many honors and awards and was elected to the US Astronaut Hall of Fame in 2011.

William Thornton

William E. Thornton was born in Faison, North Carolina on April 14, 1929. He received a BS degree in Physics from the University of North Carolina and a doctorate of in medicine from UNC in 1963. He completed ROTC training in the Air Force and served in a variety of roles until he went to medical school, then returned to active duty and

became a flight surgeon, while logging over 2500 hours of flying time.

Thornton was selected as a scientist-astronaut by NASA in 1967. He was the third participant in the SMEAT simulation and was on the support crew for the Skylab 2, 3 & 4 missions. He performed physiological investigations for the Space Shuttle program and holds more than 60 patents. Thornton participated as a scientist-astronaut specialist on the STS-8 and STS-51-B missions.

Thornton retired from NASA in 1994 and was a professor of medicine at the University of Texas in Galveston and the University of Houston. He was married to Elizabeth Fowler and they had two sons. Thornton passed away at his Texas home on January 11, 2021. He had many special honors and awards, with several in medical research.

Additional resources and links:

SP-400 Skylab, Our First Space Station

<https://history.nasa.gov/SP-400/contents.htm>

SP-4208 Living and Working in Space: A History of Skylab

<https://history.nasa.gov/SP-4208/ch12.htm>

SP-4011 Skylab: A Chronology

<https://history.nasa.gov/SP-4011/part3a.htm>

SP-701: Skylab, A Guidebook

<https://history.nasa.gov/EP-107/contents.htm>

Wikipedia Article about Skylab

<https://en.wikipedia.org/wiki/Skylab>

Wikipedia Article about SMEAT

https://en.wikipedia.org/wiki/Skylab_Medical_Experiment_Altitude_Test

NASA Article About SMEAT for the 50th anniversary:

<https://www.nasa.gov/history/50-years-ago-56-day-skylab-medical-experiment-altitude-test-ends-successfully/>

Skylab Program Description

<https://ntrs.nasa.gov/api/citations/20160013588/downloads/20160013588.pdf>

Next Edition

Skylab Part VI – Skylab 4 launch and workshop activities, overview of experiments, crew biographies, potential Skylab rescue missions, demise of Skylab.

Looking ahead: After the last Skylab article, I will summarize the Mercury-Atlas 7, 8 and 9 missions, then will begin a multi-part series about the Gemini program.

Barb Sande, MARS STAR and MARS Facebook Page Historian. Contact me at barbsande@comcast.net.

NEW: Pacesetters Club

By Bill Wise
(wisewj@aol.com)

Pacesetters, a new club for our seniors and their spouses, has been officially recognized by our MARS officers!

The primary purpose of Pacesetters is as a social club for MARS Associates senior members (75+) to share life experiences, camaraderie, meals, books, etc., via email, Zoom-like calls, and periodic lunch/supper gatherings. There are no dues above your MARS Associates membership. Already, 35 seniors have responded that they would like to join this new club and are enthusiastic about it.

The first get-together/kickoff is being organized for the last of April or first of May depending on availability. The **Landsdowne Arms**, located at **9352 Dorchester St.** in **Highlands Ranch**, has agreed to host luncheon get-togethers. Separate tickets for individual orders will be provided. The plan is for diverse, informative presentations/discussions that YOU would suggest, but most of all wonderful camaraderie.

The Pacesetters President or designee shall preside at social gatherings or phone calls as appropriate. The President shall have general supervision of the affairs of the Club and shall perform other duties as authorized through the Bylaws or directed by the membership.

If you are 75+ and have not joined PACESETTERS yet to enjoy the camaraderie of your retired senior friends, please call Bill Wise at 720-636-5823 or email wisewj@aol.com.

REMEMBER: CARPE DIEM!

Bridge Club

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

The Bridge Club is going well in 2024. All MARS members and their guests are welcome to join us. It is social, not tournament bridge, with light conversation while we play, and everyone seems to like it that way. We play on the **3rd Friday of each month at the Buck Community**

Recreation Center in Littleton from 10 AM to 2 PM.

There is no fee to join the Bridge Club. The next quarter, we are scheduled to play on 19 April, 17 May, & 21 June 2024.

You'll need to pack a lunch, as we stop midday to eat and then resume playing. The club provides the cards and all required items for the games. The fee for the Buck Center remains at \$2.00 for in-District and \$3.00 for out-of-District. There is also a small fee to the club (which helps with supplies and the year-end Holiday party).

Contact us to be added to the email list. Each month, an email is sent to Bridge Club members about play that month. We ask that you respond to the email to reserve a place at the tables. There is always room for more players, as the room will accommodate 6 tables. You can also check out the MARS website under "Clubs/Bridge Club", for more details.

This quarter we welcomed our newest players, **Jeff & Lynn Schnackel**. Sad to say, two of our members, **George & MJ Eger**, moved out of state to be closer to their family.

We have couples, as well as singles, playing. If you're a single, invite a friend to be your partner. Your partner does not need to be a member of MARS to play.

If you want to join us for bridge, or 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

The 1st Quarter 2024 winners are as follows:

19 January (5 tables)

N/S 1st – George & MJ Eger

N/S 2nd – Mike Davis & Mary Stirling

E/W 1st – Bill Kacena & Betty Hirst

E/W 2nd – Sandy Mossman & Tammy Maccalous

16 February (3 1/2 tables)

1st – Betty Hirst & Sandy Mossman tied with Ernie & Cecile Berliner

3rd – Bill Kacena & Jan Ugale tied with Bart & Diane Wright

15 March (cancelled due to pi day snow)

Car Club

By Roger Rieger
(rrieger10731@gmail.com)
303-912-6217

Dave Ernst
(Dave.Ernst.157@gmail.com)
(303)-588-2747

Spring is here! Finally, the weather is getting warmer, the snow has (hopefully) quit for this season, and the street sweepers can get out and clean up all the gravel and junk that's all over the roads just waiting to star your windshield or paint chip the front end of your car!

With the arrival of driving season, the Car Club will have its annual kick-off meeting on Monday, 13 May, at 4pm. Fellow club members Beth and Neil King have graciously volunteered to host the kick-off at their new car condo - Titan Luxury Car Condo's, 9774 Titan Ct #4027 in Littleton, CO 80125. We will be discussing and setting up events for the coming year so bring your ideas! Please bring a chair for yourself, as well as a snack/appetizer to share, I'll bring the liquid refreshments! And if the weather is nice - please bring your sweet rides!

If you have not yet joined the club - please do! Owning a unique car or motorcycle is not a requirement, just a love of all things transportation. We have a club link on the MARS website, as well as a Club Facebook page where you will find club pictures, interesting links to other events in the Denver Metro area, as well as announcements for upcoming Car Club events. Look forward to seeing you out on the road in 2024!



Golf League

Sandy Mossman
(smoss5592@gmail.com)

Welcome to spring golf!

Our 2024 golf league season began Thursday, April 4th at Broken Tee Golf Course. It was a beautiful spring day and many golfers participated. It was a great season kick-off!

An especially exciting bit of news from Broken Tee is the occurrence of two bald eagles who have chosen to make Broken Tee their temporary home and nest on Hole 13, adding a touch of wildlife wonder to our rounds. The nest is situated in the trees on the left side, near where the two lakes create a choke point in the fairway. Because of

this, the most difficult hole on the course (Par 5) has now been changed to a temporary Par 3. It was a hoot to see the eagle's nest and we're hoping to see the eagles and offspring soon.



Our kick-off meeting was held on Thursday, March 7th, at Wyatt's at Broken Tee. Many returning and new members attended the in-person meeting. We started the meeting by reviewing the successes of the 2023 golf season and

progressed through new USGA rules. Charts from the meeting are posted on the MARS website under the Club/Golf tab. Anyone interested in joining the league can go look at the charts.

Our officers for the 2024 season are:

Sandy Mossman – President
Lisa Cox – Vice President
Don Johnson – Secretary/Treasurer
Tom Ripper – Handicap Chair

Bob Knickerbocker did a fine job of organizing the meeting and slide presentation so that each of the presenters could address their portion. A constructive discussion by many in attendance followed. After a heated debate, a temporary, local rule was invoked to allow slightly nudging the ball out of a divot in the fairway at least until the course is in better shape.

Each season our league has thirty weekly events from April through October, weather permitting. The nice thing about our league is that there aren't any up-front green fee costs like some other leagues. You pay only when you play, so vacations or personal needs don't necessarily conflict with league play. Players simply indicate on the Golf Genius system the league dates that they are not available. Members are required to give our schedulers advance notice if they are scheduled to play but need to cancel out of an upcoming event per our golf league bylaws.

If you are interested in learning more about the golf league and would like to join, I encourage you to log on to our MARS website, www.marsretirees.org, and click on "Golf" under the Club tab. Contact anyone of our officers for assistance. MARS Associate members including spouse or significant other are encouraged to join. Come join us! Slots in the MARS golf league are still available this season!



Photography Club

By John Chapter
johnchapter@msn.com
303-986-8277

The Mars Photo Club meets January, February, March, April, May, September, October, and November. We do not meet in June, July and August as many club members take this time for summer travel. In December we have a holiday luncheon at a local restaurant.

We meet on the second Thursday of each month. The meetings are at 1 pm, either via ZOOM, or in-person at the Columbine Library. Members have the opportunity

to discuss cameras and photographic techniques. At the meeting we have a presentation, often given by one of the members. Following the presentation, we have a competition of photos submitted by the members.

The schedule and location of each meeting are posted on the club's webpage, on the MARS website, www.marsretirees.org. Also posted there are the photo results of each month's competition. Interested MARS members are encouraged to visit the club's webpage and consider attending the meetings. For more information, you may contact the club secretary, Jim Kummer, via email at jkummer@comcast.net.

Colorado Springs Lockheed Martin Retiree Group News

By Doug Tomerlin
douginc@aol.com

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

Luncheons are held twice a year with other activities to allow retirees to stay in contact with each other. The Colorado Springs Lockheed Martin Retiree Group is in the process of planning a luncheon for mid to late April in Colorado Springs. An outing to the Air Force Academy to include a special event at the Air Force Academy Planetarium is currently in the early planning stages for this summer. This will be a combined outing for both the Colorado Springs Retiree Group and for the MARS Associates retirees.

If you would like more information about the Colorado Springs Lockheed Martin Retiree Group, luncheons and other activities, please contact Doug Tomerlin at douginc@aol.com.

Cape Canaveral News

By Dick Olson
olson5145@aol.com

Luncheons

February 2024 – A really small turnout this month. May be the first Thursday snuck up on people. Present were Abe Smith, Bob Matschner. and Don Bollinger.

Wendell McDaniels was out due to therapy and Lavern Jones called in sick.

Update on Bob Rodamer. He is in hospice care at Cape Canaveral Hospital and is not up to having visitors. Our thoughts and prayers go out to him and his family.

March 2024 -- Another normal light turnout. Present were regulars Abe Smith, Larry Johnson, Lavern Jones, Roger Wright and Lynn Johnson.

Discussed the great turnout for Bob Rodamer's burial ceremony. There were around 75 people attending a very touching military service.

Do not have any details on services for Larry Gleason at this time.

April 2024 – Much better turnout this month and even some new blood. Dan and Kelly DeFazio joined us for the first time and Alison Kallsen was here from England. Wendell McDaniels, who we missed for the past few months, made the scene and Cecil Snipes was Alison's chauffeur and along with regulars Abe Smith, Bob Matschner, Don Bollinger, Roger Wright, Lynn Johnson, Ken Webb, Lavern Jones, Larry Johnson, and Sylvia Sansing who drove down in her Vette rounded out the slate. New people and new topics of conversation make for a nice lunch.

Discussed the fact that [deleted by editor] The Florida Today newspaper no longer publishes death notices. If anyone knows of a current source for this information, please let me know and in any case pass on the info if you hear of the passing of any of our Titan Team members.

ULA is trying to get the last Delta Heavy off the ground and is scheduled for next week. End of an era and it looks like SpaceX will take over pad 37 for their Heavy Falcon.

Enjoy the spring weather and will see you next month.

Recent Obituaries

Robert Williams, Bob passed away on Jan. 18th. Bob worked in Human Resources during his long career with Martin and so we will miss yet another Cape Titan Team member.

Robert Rodamer (Bob), 87, passed away on 3 February. We have lost another Cape Titan Team member and a dear friend. I first met Bob in 1967 when I started coming to the Cape to support launches.

Larry Gleason, 97, passed away on 27 February. Larry was an early member of the Titan Team transferring to the Cape from Baltimore to work on the Titan I program in the Quality department and worked the Titan I, II, III and I believe the Titan IV programs before retiring.

Lockheed Martin (LM) News

AI-Driven Autonomy Revolutionizing Aircraft Inspections

MARCH 28, 2024

AAIR is poised to transform the visual inspection process by leveraging cutting-edge AI technology to enhance safety for maintainers while modernizing inspection methods, and driving down costs, without compromising quality.

AI Advantage

Ensuring the safety and integrity of aircraft is paramount in aviation maintenance. Traditional manual inspections often pose risks to personnel and can be time-consuming and costly. AAIR, the Autonomous AI-enabled Inspector, is a revolutionary solution developed by our Skunk Works® Autonomy & Artificial Intelligence team. AAIR is poised to transform the visual inspection process by leveraging cutting-edge AI technology to enhance safety for maintainers while modernizing inspection methods, and driving down costs, without compromising quality. This initiative is part of our broader commitment to utilizing AI and machine learning (AI/ML) to improve capabilities, having so far incorporated these advanced technologies into more than 1,000 projects and programs across the company.

AAIR represents a significant leap forward in inspection capabilities, reducing the need for manual inspection processes, minimizing the risk of human error or injury, enhancing overall efficiency, and delivering actionable insights with repeatable accuracy.



Drone inspection of a C-130J using AAIR.

Photo credit: LM

Real World Applications

At the core of AAIR's capabilities lie its platform-agnostic AI algorithms, that ensure versatility and adaptability

across various operational environments. AAIR is portable, allowing everything required for scans to fit into a lightweight backpack, facilitating quick setup and operation even in austere environments. This unprecedented convenience extends AAIR's reach beyond products manufactured by us, enabling seamless inspection of a diverse array of military and commercial assets.

The benefits of AAIR extend outside military applications, making it an invaluable asset for commercial aviation and other industries. By enhancing safety standards and reducing maintenance time, AAIR can help organizations maximize operational efficiency while minimizing costs. Whether it's detecting paint issues on a commercial airliner or identifying corrosion on a military aircraft, AAIR delivers actionable insights that ensure compliance with quality standards. It uses DoD-approved UAV technology that meets rigorous security standards, making it suitable for operation in military airspace, enhancing mission readiness and performance.

We are currently conducting a pilot at our Marietta facility, where AAIR is being used to inspect C-130 aircraft for surface defects as they exit the production facility, allowing for a streamlined inspection process, reduced inspection time and costs, all while maintaining the highest quality standards.

Limitless Possibilities

AAIR has the potential to revolutionize visual inspections and set new standards for safety, efficiency, and reliability.

"AAIR represents a paradigm shift in how we approach aircraft maintenance. By harnessing the power of AI and autonomy, we're not just improving efficiency; we're empowering our customers to achieve new levels of operational excellence and safety." Larry Weixel, Skunk Works® Digital Transformation Portfolio Manager

Our significant investments in AI/ML technologies, continuous innovation, and collaboration with industry partners allow for enhanced capabilities to give customers a strategic advantage through actionable intelligence, and to stay Ahead of Ready on and off the field.

From Arctic Ice Mapping to Wildfire Prediction, Climate Monitoring Saves Lives

JANUARY 30, 2024

Extreme weather events are becoming increasingly prolific. The National Oceanic and Atmospheric Administration (NOAA) has reported record ocean temperatures that have resulted in hurricanes with an increased intensity. Wildfires have devastated areas of

land previously not impacted. In the first three months of 2023 alone, [California experienced](#) "12 separate atmospheric river events that came back-to-back, resulting in widespread flooding, mudslides and record snowfall amounts in the mountains."

With that said, it's clear we need to better detect and predict these events and seek actionable intelligence that helps save lives when severe weather events occur.

Where We Are and Where We're Going

Meteorologists need to accurately measure and interpret weather observation data, and the climate intelligence industry is moving toward a future where industry can make this data more synthesized and actionable.

"It all starts with the data. And the need for the right data," said Jagdeep Shergill, director, Geo Weather Satellites, at Lockheed Martin. "We have powerful satellites in orbit, but the focus really is turning the data we gather from them into action."

Through the use of responsible artificial intelligence (AI) and machine learning (ML) practices, Lockheed Martin is synthesizing very large volumes of data with the potential to generate actionable insights that would otherwise not be available.

Take [NOAA's 4D Earth and Space Observing Digital Twin](#), for example. Lockheed Martin is partnering with NVIDIA on the prototype, a digital model that ingests, analyzes, and displays data from five Earth system domains:

- Atmosphere
- Ocean
- Cryosphere
- Land and hydrology
- Space weather

The Digital Twin can:

- process live of incoming weather data;
- apply artificial intelligence (AI) and machine learning (ML) algorithms to analyze the data;
- and display current global environmental conditions from satellites, ground-based observations and output from weather forecasting models

AI and ML innovations can be leveraged to help solve an array of climate-related queries, from Arctic ice sheet mapping and precision agriculture to sea-level measurements and even wildfires.

"The ability to help first responders, scientists and businesses make more informed decisions about where to focus their limited resources is game changing," said Dr. Mike Gauthier, senior manager for Climate and Earth Science at Lockheed Martin. "Converting streams of data

into actionable intelligence enables us as a global society to better prepare for burgeoning climate challenges.”

Moving Toward Next-Gen Solutions

Presently, NOAA’s [GOES-R satellite series](#) – designed and built by Lockheed Martin – is a quantum leap forward in observational data. The series has provided forecasters in the U.S. and western hemisphere with sharper, more defined images of severe storms, hurricanes, wildfires and other weather hazards.



The three, soon to be four, weather satellites, utilize instruments, such as the [Geostationary Lightning Mapper \(GLM\)](#) and the [Solar Ultraviolet Imager \(SUVI\)](#) that provide advanced imagery and atmospheric measurements, real-time mapping of lightning activity and persistent monitoring of solar activity and space weather. With the last GOES satellite in the series – GOES-U – scheduled to launch this spring, NOAA is looking at the next-generation of these weather satellites to be even more effective.

After conducting extensive research into future environmental scenarios and societal needs, NOAA identified the need for Geostationary Extended Observations ([GeoXO](#)) – the next stage in NOAA’s satellite series – that will focus on Earth-pointing instruments to include hyperspectral sounding, atmospheric composition and ocean color observations. NOAA [expects](#) GeoXO will begin operating in the early 2030s as the GOES-R series nears the end of its lifespan.

The Time to Act is Now

The increased intensity of adverse weather events is only predicted to become more extreme, wreaking greater havoc on populations if not prepared. Proactive, rather than reactive, measurements are the key to preparedness, security and resilience.

United Launch Alliance (ULA) News ***Marking the End of an Era, United Launch Alliance Successfully Launches Final Delta IV Heavy Rocket***

**Cape Canaveral Space Force Station, Fla.,
(April 9, 2024)**

The Delta program, spanning 60 years, came to a close with the launch of the final Delta IV Heavy rocket by United Launch Alliance (ULA) on April 9 at 12:53 p.m. EDT from Space Launch Complex-37 at Cape Canaveral Space Force Station, Florida. The rocket, carrying the NROL-70 mission for the National Reconnaissance Office, marks the end of the Delta era and initiates the future of heavy lift on ULA’s next generation Vulcan rocket.

“Thank you to our teammates past and present for their dedication to these critical national security missions,” said Gary Wentz, ULA vice president of Government and Commercial Programs. “The Delta IV Heavy rocket was a workhorse for the NRO, launching 12 missions delivering critical national security payloads. The NROL-70 mission marked our 35th successful launch with the NRO and we look forward to continuing our partnership launching future national security space missions.”

“The Delta rocket played a pivotal role in the evolution of space flight since the 1960s,” said Tory Bruno, ULA’s president and CEO. “This final Delta mission signals ULA’s evolution to the new Vulcan rocket, providing even higher performance than our three-core Delta IV Heavy rocket in a single-core rocket to launch heavy-class missions for the nation. We will continue to deliver our superior reliability and unprecedented orbital precision for all our customers across the national security, civil and commercial markets.”

ULA’s next launch is the Crew Flight Test (CFT) mission for Boeing’s CST-100 Starliner spacecraft as part of NASA’s Commercial Crew program. The launch is planned for no earlier than May 6, 2024.

ATLAS V TO LAUNCH STARLINER CFT

A United Launch Alliance (ULA) Atlas V rocket will launch Boeing’s Crew Space Transportation (CST)-100 Starliner spacecraft with two NASA astronauts, Barry “Butch” Wilmore and Sunita (Suni) Williams on the Crew Flight Test (CFT). Following separation from Atlas V, Starliner engines will burn taking it the rest of the way to orbit and on to the International Space Station. CFT is ULA’s first human launch. Liftoff will occur from Space Launch Complex-41 at Cape Canaveral Space Force Station, Florida.

Launch Date and Time: NET May 6, 2024

MISSION OVERVIEW

A United Launch Alliance (ULA) Atlas V rocket will launch Boeing's Crew Space Transportation (CST)-100 Starliner spacecraft with two NASA astronauts on the Crew Flight Test (CFT). Following separation from Atlas V, Starliner engines will burn taking it the rest of the way to orbit and on to the International Space Station. CFT is ULA's first human launch. Liftoff will occur from Space Launch Complex-41 at Cape Canaveral Space Force Station, Florida.

CFT is the final test to demonstrate the full end-of-end capabilities of the Starliner system to deliver crews to and from the space station as part of NASA's Commercial Crew Program. The unique Atlas configuration for Starliner includes a dual-engine Centaur upper stage to deliver the performance needed to shape the trajectory for crew safety; a launch vehicle adapter that structurally attaches the Starliner to the Atlas V rocket for ascent; a 70-inch-long (1.8-m) aeroshield to enhance the aerodynamic

characteristics, stability and loads of the Atlas V; and an Emergency Detection System that provides an extra layer of safety for astronauts riding the reliable Atlas V. The Atlas V Starliner launch countdown features a four-hour planned, built-in hold at the T-minus 4-minute mark. This allows the rocket to be fueled and placed in a quiescent state before boarding of the astronauts into the spacecraft.

CFT bridges the history of Atlas with today's rocket. The first orbital spaceflights of American astronauts in the 1960s were launched in Project Mercury by Atlas rockets from Cape Canaveral. That legacy continues with Atlas V launching crews from U.S. soil.

For more information on the launch vehicle, go to: <https://www.ulalaunch.com/missions/next-launch/atlas-v-starliner-cft>

Go Atlas! Go Centaur! Go Starliner!

IN THE NEWS

Compiled by Pete Harrigan

The following news headlines are drawn from open-source publications, as noted parenthetically. Click on the hyperlink to access the full article. Please note that some links may not work for all readers. Some sites may require a paid subscription or a login for free access. Other paywall sites may limit the number of free articles you are able to access each month.

CORPORATE NEWS

No more "must wins": Defense firms growing warier of [fixed-price deals](#) (Defense News)
Why defense [contractors are saying no](#) to their biggest customer (The Wall Street Journal)
U.S. [weapons exports up 50%](#) in 2023 as Washington challenges Russia, China (Politico)
[Poland's president meets Lockheed Martin CEO](#) about further investment in military weapons (The Associated Press)
[Supplier bottlenecks](#) threaten U.S. Navy effort to grow arms stockpiles (Defense News)
Defense firm Lockheed Martin [forecasts dour 2024 profit](#) on supply chain woes (Reuters)
Lockheed Martin [space segment leads company in growth](#) in 2023 (Via Satellite)
Lockheed Martin [shares decline](#) on risk of new delays to F-35 fighters (Bloomberg News)
[Fewer F-35 orders](#) push Lockheed Martin stock lower (Barron's)
U.S. political "chaos" shuts Pentagon contractors out of [military stocks boom](#) (Financial Times)
Lockheed Martin to [cut 1% of its jobs](#) in cost-cutting push (CNBC)
Lockheed Martin pays \$414 million in [pension lump sums](#) (Pensions & Investments)
Lockheed Martin [sued over pension buyouts](#) (Pensions & Investments)
AT&T, Lockheed Martin suits mark [first real test for pension transfers](#) (Bloomberg Law)
AT&T, Lockheed Martin pension buyout [suits face hurdles](#), legal experts say (Pensions & Investments)
[Cyber management details](#) emerge under SEC rules (The Wall Street Journal)
[Tax credit sought by defense industry](#) stuck in Senate limbo (Defense News)
Lockheed Martin declares [first quarter 2024 dividend](#) (Company news release)
Lockheed Martin offers to [buy Terran Orbital](#) for \$606 million (Aviation Week Network)
[Terran Orbital adopts "poison pill"](#) amid buyout interest from Lockheed Martin (Market Watch)
[Terran Orbital "looking at everything"](#) after Lockheed Martin takeover bid (CNBC)
Terran Orbital [escapes delisting](#), continues "strategic review" (Aviation Week Network)

Opinion: Five blockbuster [aerospace mergers that never happened](#) (Aviation Week Network)
Lockheed Martin Ventures [invests in Helicity Space](#), fusion engine startup (Space News)
Lockheed Martin [invests in weather tech company](#) (Aviation International News)
Elve raises \$15 million to speed up manufacturing of [millimeter-wave amplifiers](#) (Space News)
Firestorm Labs nets \$12.5 million in [initial seed funding](#) for 3D printing drone production (Washington Technology)
[Research in graphene](#) shows new potential for its use in chips (The Wall Street Journal)
This Lockheed Martin [researcher's work on UAVs saves lives](#) (IEEE Spectrum)
\$10,000 to \$40,000 [scholarships available to STEM majors](#) (WDTV, Bridgeport, WV)
Orlando's Lockheed Martin [leading the way in aerospace technology](#) (Orlando Magazine)
Companies that dropped degree requirements are [mostly hiring college grads](#) (Bloomberg News)
[Decades of contamination](#) continues to plague underserved Tallevast community (Sarasota Herald-Tribune)
The \$65 million [perk for CEOs](#): Personal use of the corporate jet has soared (The Wall Street Journal)
How Lockheed Martin, CNN and Yale became [fashion brands in Korea](#) (The Korea Herald)

HYPERSONICS NEWS

Air Force budget backs Raytheon hypersonic missile, [no funds for Lockheed Martin](#) ARRW (Defense News)
[Air Force looks to reusable hypersonics](#) as ARRW ends and HACM gears up for testing (Air & Space Forces Magazine)
USAF conducts [final test of Lockheed Martin's hypersonic missile](#) (Defense News)
Silicon Valley's next mission: Help the U.S. [catch China and Russia in hypersonic weapons](#) (The Wall Street Journal)

SPACE SYSTEMS NEWS

Lockheed Martin eyes [growth in satellite business](#) through partnerships (Space News)
Space Development Agency awards contracts worth \$2.5 billion for [missile tracking satellites](#) (Space News)
Lockheed Martin, Boeing win contracts to [design U.S. military narrowband communications satellites](#) (Space News)
UK selects Lockheed Martin, Rhea Group to [develop ground systems](#) for military constellation (Space News)
NASA studying [issues with Orion hatch](#) design (Space News)
NASA, Lockheed Martin [working to resolve Artemis II Orion issues](#), deliver spacecraft around summer's end (NASASpaceFlight.com)
Missile warning [payload delay](#) could push back 2025 launch plans (C4ISRNet)
[Trident missile test failure](#) raises questions about UK's nuclear deterrent (The Guardian)
Lockheed Martin secures [Trident integration](#) amidst UK nuclear test mishap (Naval Technology)
Lockheed Martin's new Pony Express 2 [satellites feature AI, will demonstrate new technology](#) (Colorado Springs Gazette)
Lockheed Martin prepares to launch [military mesh networks](#) into space (Aviation Week Network)
Lockheed Martin CubeSats successfully validate essential maneuvers [for on-orbit servicing](#) (Aerotech News)
Lockheed Martin ramping up [small satellite production](#) (Space News)
Lockheed Martin readies next tech demo of [space-based JADC2 capabilities](#) (Defense Scoop)
Video / Lockheed Martin is [accelerating tech readiness in space](#) (Air & Space Forces Magazine)
Space Force may launch [GPS demonstration satellites](#) to test new tech (C4ISRNet)
Space Force eyes [smaller, cheaper GPS satellites](#) to augment constellation (Space News)
Software problem blamed for [Firefly Alpha mishap](#) (Space News)
Lockheed Martin sends NOAA's [newest weather satellite](#) to Florida for launch preparations (Via Satellite)
[Innovative AI collaboration](#) between Lockheed Martin and NVIDIA aids NOAA weather forecasting (Space Daily)
NASA finally frees lid of asteroid [Bennu sample capsule](#) after battling stuck fasteners (Space.com)
[OSIRIS-Rex team honored](#) as a Grand Laureate at Aviation Week's 66th annual awards (Aviation Week Network)
Vulcan rocket [nails first flight test](#) for NSSL certification (Aviation Week Network)
Vulcan launch demonstrates [new solid rocket boosters](#) (Space News)
Vulcan rocket's debut brings long-awaited [challenge to SpaceX](#) dominance (Reuters)
Bruno trumpets [transformation of ULA](#) after Vulcan launch (Space News)
Opinion / [How the U.S. replaced Russia's RD-180 engine](#), strengthening competition (Defense News)
Jeff Bezos' [Blue Origin is frustrating one of its closest partners](#) with rocket engine delays (Business Insider / AOL)
Space Force top buyer [keenly watching ULA and Blue Origin](#): "They need to scale" (Space News)
Launch providers look for [competitive advantages](#) in era of transition (Space News)
NRO expects even [lower National Security Space Launch costs](#) starting in FY25 (Breaking Defense)
As crippled [Peregrine moon lander burns up](#) in Earth's atmosphere, Astrobiotic "excited for the next adventure" (Space.com)

AERONAUTICS NEWS

NASA unveils [X-59 quiet supersonic aircraft](#), plans summer flight (Aviation Week Network)

See what's fueling the [return of supersonic passenger flights](#) (The Washington Post)
Five firms selected to build the Air Force's fleet of [autonomous Collaborative Combat Aircraft](#) (Air & Space Forces Magazine)
The Pentagon's plan for [more ambitious, affordable jet fighters](#): AI pilots (The Wall Street Journal)
U.S. Navy budget details [T-45 replacement plan](#) (Aviation Week Network)
F-35 clears long-delayed [full-rate production milestone](#) (Aviation Week Network)
Potential F-35 cuts in 2025 won't be made up by FMS, [may drive costs higher](#) (Air & Space Forces Magazine)
F-35 upgrade delays prompt U.S. Air Force to [scale back jet purchases](#) (Defense News)
Software delays [extend F-35 delivery hiatus](#) deep into second year (Aviation Week Network)
[TR-3 software delay](#) could force DoD to combat-code F-35s (Aviation Week Network)
Seeking to [make F-35a ready for war](#), maintainers think outside the box (Defense News)
Pentagon hopes for quick [waiver to restart halted F-35 deliveries](#) (The Hill via AOL)
USAF Secretary Kendall says F-35 [delivery hold is "hurting" the Air Force](#) (Air & Space Forces Magazine)
As the heat rises with F-35 upgrades, inside Collins's bet on a [new cooling system](#) (Breaking Defense)
It's official: The [F-35 will not get a new engine](#) anytime soon (Breaking Defense)
F-35A Lightning [cleared to fly in lightning](#) for first time in 4 years (Defense News)
F-35A officially [certified to carry nuclear bomb](#) (Breaking Defense)
Commentary / Now is [not the time to go weak on the F-35](#) (Air & Space Forces Magazine)
Lockheed Martin to [cut 200 jobs at Fort Worth F-35 assembly plant](#) (Fort Worth Report)
Lockheed Martin completes assembly of [1,000th F-35](#) (FlightGlobal)
Lockheed Martin evaluating impact of Dutch court ruling [barring Amsterdam from exporting F-35 parts](#) to Israel (The Times of Israel)
Lockheed Martin to [integrate AGM-88G](#) anti-radiation missiles on F-35s (The Defense Post)
Finland approves construction of [Patria's F-35 assembly facility](#) (Defense News)
[UK expects "short term" delays](#) in F-35 deliveries (Defense News)
F-35 delivery [delays frustrate European air force upgrade plans](#) (Defense News)
Denmark prepares for [F-35 fighter jet delivery delays](#) (Bloomberg News)
[Singapore to buy eight F-35As](#), expanding fleet to 20 (Breaking Defense)
U.S. approved [sale of F-16 jets to Turkey, F-35s to Greece](#) (The Associated Press / Defense News)
Lockheed Martin delivers [Slovakia's first two F-16s](#) (The Defense Post)
[Turkey F-16 sale to proceed](#) after Senate vote (Defense News)
Podcast / [Lessons from F-16's origins](#) 50 years ago (Aviation Week Network)
Timeline: [50 years of the F-16](#) (Aviation Week Network)
Lockheed Martin [presses forward with F-16](#) ambitions (FlightGlobal)
[F-22 retirement in 2030 unlikely](#) as U.S. Air Force looks to spend \$7.8 billion on it before then (Air & Space Forces Magazine)
Boeing expands [drone exams](#) to Lockheed C-5 with eye on broader fleet (Defense News)
Lockheed Martin, Airbus fight it out for [multi-billion Indian aircraft deal](#) (The Eurasian Times)
C-390 sales [raise stakes for C-130J](#) dominance (Aviation Week Network)
Lockheed Martin sets middle of the year for [C-130J India partner selection](#) (Aviation Week Network)
Video / FOX Business takes [exclusive look inside Lockheed Martin](#) (FOX Business)
Georgia Senate commemorates the [70th anniversary of the Lockheed Martin C-130](#) (Cobb County Courier)
South Korea to start mass production of [KF-21 fighter jet](#) (Defense News)
Podcast / Check 6 revisits: [Birth of the Blackbird](#), YF-12 reveal and what may be next (Aviation Week Network)
USAF certifying [F-117s to receive fuel from KC-46s](#) (Aviation Week Network)

MISSILES AND FIRE CONTROL NEWS

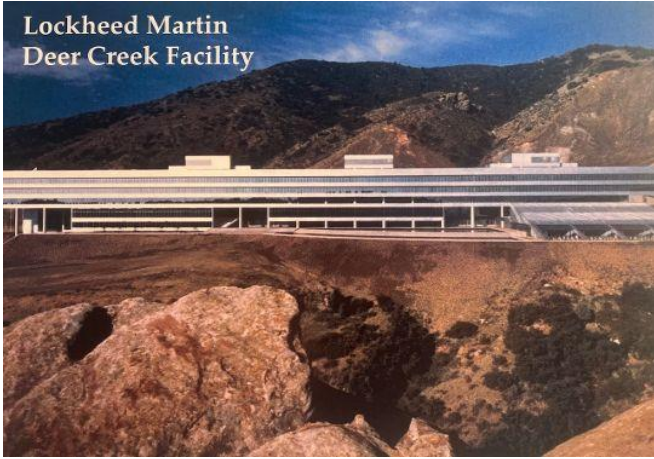
Lockheed Martin on track to [increase production of weapon systems](#) (Reuters)
[JSC Chair Gen. CQ Brown visits Lockheed Martin plant](#) with lawmakers to press Ukraine case (Federal Times)
Giving [ATACMS to Ukraine](#) no longer as risky, says Joint Chiefs chairman (Defense One)
[Leader of NATO](#) visits Pike County's Lockheed Martin facility (Troy Messenger)
Lockheed Martin to test [Patriot and Aegis integration](#) in live-fire test (Defense News)
[Navy shoots four LRASMs](#) in "graduation exercise" as Air Force ramps up multiyear buy (Air & Space Forces Magazine)
Netherlands signs [\\$908 million JASSM-ER deal](#) with U.S. (The Defense Post)
Lockheed Martin's extended range [GMLRS rockets double range](#) in test fire (Army Technology)
"Never been done": [Army to convert Patriot, GMLRS contracts](#) into multi-year deals (Breaking Defense)
Lockheed Martin to [produce more JAGM, Hellfire missiles](#) under \$483 million deal (The Defense Post)
Lockheed Martin awarded \$219 million [Precision Strike Missile contract](#) (The Defense Post)
Bahrain receives [first PAC-3 Missile Segment Enhancement shipment](#) from Lockheed Martin (Breaking Defense)
Saudi Arabia to [manufacture parts](#) of Lockheed Martin missile defense system (Reuters)

Australia signs [missile manufacturing pact](#) with Lockheed Martin (Bloomberg News / Hindustan Times)
Navy seeking to rapidly prototype [new air-launched standoff missile](#) (Breaking Defense)
U.S. [missile defense interceptor competition](#) enters critical design phase (Defense News)
Lockheed Martin reaches [next-gen interceptor milestone](#) ahead of schedule (The Defense Post)
Lockheed Martin, Rafael to vie for U.S. Army's [second cruise missile interceptor](#) (The Defense Post)
Industry feedback to drive [cruise missile interceptor competition](#) timeline, Army says (Breaking Defense)
U.S. approves possible [Javelin sale to Kosovo](#) amid tensions with Serbia (Defense News)
U.S. to help Taiwan conduct [maintenance for Patriot missiles](#) (Taiwan News)
Directed energy weapons need [full Pentagon commitment](#), industry says (Defense News)
The U.S. Air Force's dream of [mounting a laser weapon on an AC-130J](#) gunship is dead (Military.com)
Amid Red Sea clashes, Navy leaders ask: [Where are our ship lasers?](#) (Navy Times)

ROTARY AND MISSION SYSTEMS NEWS

U.S. Navy making [Aegis updates](#), training changes based on Houthi attacks (Defense News)
[Aegis Ashore Poland](#) enters maintenance period ahead of NATO acceptance (Defense News)
Poland to buy [Lockheed Martin missile launchers](#) for navy (Reuters)
Lockheed Martin, Navantia extend [naval combat systems partnership](#) (The Defense Post)
USAF taps Lockheed Martin to develop [adversary radar training system](#) (The Defense Post)
Lockheed Martin nets USAF contract for [3 more 3DELRR radars](#) (Air Force Technology)
Lockheed Martin [APY-9 radar sets new benchmark](#) for Advanced Hawkeye (Naval Technology)
Norway exercises option for [additional TPY-4 radars](#) (Janes)
Malaysia installs Lockheed Martin's [long-range radar](#) in Labuan (Janes)
Lockheed Martin simulator prototype [gets rid of projectors](#) (National Defense Magazine)
Lockheed Martin and Red 6 unveil [next-gen augmented reality](#) integration for TF-50 training (Air Force Magazine)
In huge blow for Sikorsky, [Army scraps armed scout helicopter](#) program (Connecticut Insider)
U.S. Army spent billions on a [new helicopter that will now never fly](#) (Defense News)
[Army was right to kill](#) multibillion-dollar helo program, analysts say (Defense News)
Opinion / What U.S. Army FARA cancellation means for [U.S. industry](#) (Aviation Week Network)
Army delivers [some good news for Sikorsky](#) following blow with request for more Black Hawk helicopters (Connecticut Insider)
Army to fund [Black Hawk upgrades](#) using funds from canceled helicopter (Defense News)
Sikorsky has [new plans for an aircraft](#): Hybrid-electric, tilt-rotor configuration (Hartford Courant)
Lockheed Martin to lead latest [NATO Next Generation Rotorcraft Capability study](#) (FlightGlobal)
Industry to receive invitation to tender notices for [UK New Medium Helicopter program](#) (Army Technology)
Lockheed Martin pitches [autonomous Black Hawk helicopter](#) from Sikorsky (Darien Times)
Lockheed Martin Australia wins [Black Hawk sustainment contract](#) (Australian Defence Magazine)
U.S. to [sell 35 Black Hawk helicopters to Greece](#) in \$1.2 billion defense deal (FOX News)
U.S. green-lights \$500 million [sale of 8 Black Hawks](#) to Croatia (Aviation Week Network)
Lockheed Martin and local partner open [MRO center for Black Hawk in Romania](#) (Romania Insider)
Lockheed Martin unveils [aircraft mods for Norway](#) in \$150 million deal (Naval Technology)
Lockheed Martin continues to [integrate combat systems on LCS](#) warships (Naval Technology)
Greece closer than ever to [procure LCS from the U.S.](#) (Naval News)
Four companies, contenders for [major unmanned ship program](#), pass engine reliability testing (Breaking Defense)

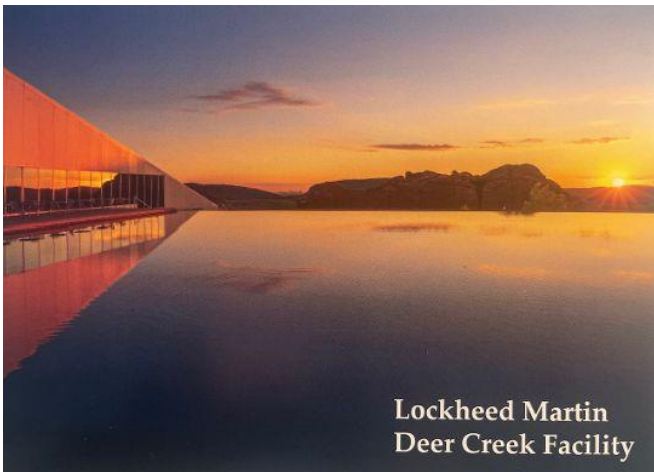
Photography is not permitted on LM property—so below are postcard photos of the Deer Creek Facility provided at the Spring Event/Annual Meeting. Unless otherwise noted, Photo Credits LM.



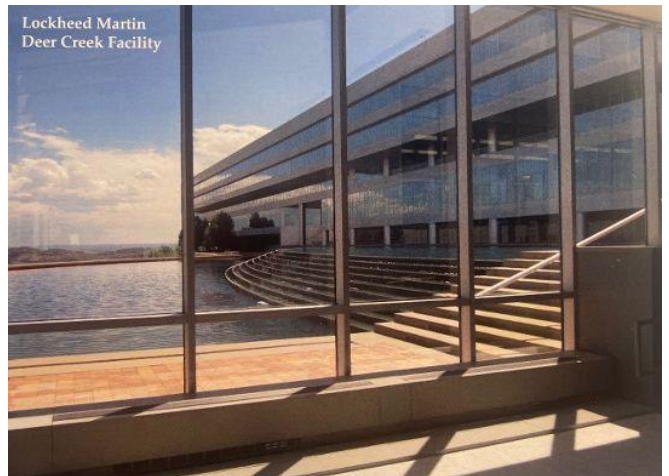
Lockheed Martin
Deer Creek Facility



Approaching the Entry Gate (Credit: Dan Ellerhorst)



Lockheed Martin
Deer Creek Facility



Lockheed Martin
Deer Creek Facility



Individual Access Badges (Credit: Dan Ellerhorst)



2024 MARS Summer Luncheon Honoring Senior Members

The Officers and Board of Directors of MARS Associates are pleased to invite you, your spouse/companion, and guest to the annual MARS Summer Luncheon Honoring Senior Members. The luncheon is scheduled for Wednesday, **June 26, 2024** at the **Manor House at Ken Caryl, 1 Manor House Road, Littleton, Colorado 80127** (for map, Ctrl+click on this link: <https://goo.gl/maps/uL4kiegQcodew9tSg>). The doors will be opened at 11:00 a.m. and lunch will be served at 12:00 noon. A **CASH BAR** will be available prior to the luncheon.

The menu choices will be White Wine Poached Salmon, finished with lemon caper cream, rice pilaf and grilled asparagus; or, Grilled Flat Iron Steak finished with Manor House Steak Sauce, horseradish mashed potatoes, and roasted root vegetables. Lunch will include rolls and butter, beverages, coffee, tea, and dessert. Please specify your choice of entrée(s) when you make your reservation. If you have special dietary needs, please contact Linda Duby at 303-249-1665 with the details.

The cost for members and one guest is \$36.00 per person. The cost for additional guests or non-members is \$48.00 per person. These prices include taxes and gratuities. Please specify your choice of entrée(s) on the reservation form below and mail it with your check (made payable to **MARS Associates**) to the address below by **June 13, 2024**. To make an electronic reservation, please use the Stripe link below:

STRIPE (Ctrl+Click): <https://marsretirees.org/2024/03/24/2024-mars-summer-luncheon-honoring-senior-members/>

MARS Associates, P.O. Box 1128, Littleton, CO 80160-1128

Reservations must be received by Thursday, June 13, 2024

If you make a reservation and later find you cannot attend, please notify Linda Duby at 303-249-1665 or lindaduby@comcast.net; or Charlie Haupt at 303-725-7595 or qcrfcoach@gmail.com; or Carl Kaminski at 303-726-1546 or carlkc66@gmail.com no later than Thursday, June 13, 2024 to receive a refund.

Space is limited to 150 members/guests therefore reservations will be on a first come, first serve basis. **Once capacity is filled, all checks received thereafter will be returned.**

----- Reservation Form for Check Payment (*detach here*) -----
2024 SUMMER LUNCHEON, June 26, 2024 (*please print clearly*)

Member _____ Salmon _____ Steak _____

One Spouse/Companion/Guest _____ Salmon _____ Steak _____

Other Guests _____ Salmon _____ Steak _____

(Add sheet for additional guest names)

Member Phone No. _____

Member e-mail address _____

Member/Spouse/Companion/Guest @ \$36.00 per person = \$ _____

Other guests @ \$48.00 per person = \$ _____

TOTAL ENCLOSED \$ _____ Check # _____

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14th Annual Rockies Picnic & Game - June 5, 2024



Join your fellow MARS Associates for a Picnic (11:30 AM) & Rockies game (1:10 PM)

Colorado Rockies vs. Cincinnati Reds

The buffet picnic includes all-beef hot dogs & Italian sausages, chips, Southwestern corn & bean salad, BBQ pulled chicken on kaiser roll, chocolate chunk cookies, unlimited fountain drinks (nonalcoholic) & beer/wine cash bar.

*** Vegetarian pattie (ordered in advance) available. ***

Prices are \$45 each for a MARS member and spouse or one companion and \$53 each for other non-MARS member guests.

Coors Field — Outfield Box Section 146

Tickets are Limited (60 maximum)

Requests to sit with a specific person or for handicap seating need to be included on your reservation

NO LATER THAN Monday, May 20, 2024!

Please complete the form below, and mail it along with your check payable to "MARS Associates" to

MARS Associates (Rockies) * P. O. Box 1128 * Littleton, CO 80160-1128

If you are subsequently unable to attend, contact Linda Stearns (303-797-3557 or linda80120@comcast.net) or Lisa Cox (303-808-4479 or lisajcox@earthlink.net)

NO LATER THAN Monday, May 20, 2024, to receive a refund.

----- CUT AT DASHED LINE -----

Ball Game and Picnic @ Coors Field – Wednesday – 6/5/2024

Member: _____ Spouse or One Companion /guest: _____

Non-member(s) guests: _____

(Attach a list of group and non-members' names for name tags)

Member & Companion/guest x \$45 each: _____ Non-MARS Guests @ x \$53 each: _____

*** Vegetarian pattie (1 per person) - number requested: _____ ***

*Address: _____ Amount of Check: \$ _____

City/State/Zip: _____ Check Number: _____

Telephone Number: _____ Check Date: _____

Special Seating Request: _____

Mail to: MARS Associates (Rockies) * P. O. Box 1128 * Littleton, CO 80160-1128

*** PRINT CLEARLY! Tickets will be mailed by May 28, 2024, to this address.**

Coors Field

Platte-River-Picnic-Area

(under the Rockpile)



Use Gate A & E entrance or Rockpile exit gate for picnic access & elevator

Schedule Addendum (See last page)

NOTES:

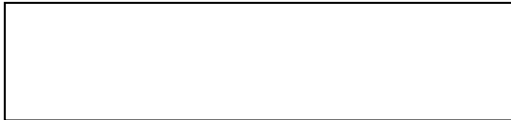
1. BOD meets as required
 2. Officers/Directors meet 1st Wednesday every month at 09:30 am. Zoom mtgs may be used at discretion of Officers
 3. Bridge Club meets 3rd Friday of every month at 10:00 am at Buck Recreation Center.
 4. Car Club meets 1st Sat of every month, and as noted on their website.
 5. Golf Club meets every Thursday from April through Oct of each year.
 6. Hiking Club: Outings on 3rd Wednesday of the month. Check website for Point of Contact for each hike.
 7. Photo Club meets 2nd Thursday every month (except Jun, Jul & Aug) at 1:00 pm on Zoom
 8. Marketing Comm. meets monthly and encourages interested members to call in and participate (contact Dick Sosnay if interested)
 - *9. 2024 Happy Hour Dates and Locations are tentative; MARS website will have details when available**
 10. 2024 Rockies Game & Picnic, June 5, 11:30AM, Coors Field
 11. 2024 Summer Event June 26 at Ken Caryl Manor House 11AM
 12. 2024 Picnic Sep 11, at Clement Park 11AM
 13. 2024 Holiday Celebration Dec 4 at Wellshire Event Center 11 AM
 - 14. See MARS website (<https://marsretirees.org>) for additional information on our Special Activities**
 - 15. Medicare 101 Mar 21 is at 1PM and Sep 12 at 10AM at Red Rocks 8195 Southpark Lane Littleton, CO**
 16. 2024 Special Activities are subject to change
- Please review dates and times and notify Ken Marts (martshouse2@aol.com) if you have any changes or additions.



MARS ASSOCIATES
 P.O. Box 1125
 LITTLETON, CO 80160-1125

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DATE: May 2024												
EVENT/MONTH	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Officers/Directors	3	1*	4	3	7*	4	2	6	3	8	5	5
Bridge Club	19	17	21	19	16	20	18	15	20	17	21	21
Car Club	6	13	1	6	3	7	5	2	7	4	1	1
Golf Club	Thur	Thur	Thur	Thur	Thur	Thur	Thur	-	-	-	-	-
Hiking Club	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open
Photo Club	11	9				12	10	14	12	9	13	13
Website Team	as-needed	as-needed	as-needed	as-needed	as-needed	as-needed	as-needed	as-needed	as-needed	as-needed	as-needed	as-needed
Marketing Committee	24	29	26	31	28	25	30	27	TBD	TBD	TBD	TBD
MARS Events												
Happy Hour					TBD		TBD				TBD	
Summer Luncheon Honoring Senior Members			26									
Annual Rockies Game			5									
2024 Annual Picnic						11						
Holiday Celebration									4			
Meeting												TBD
MARS Special Activities NOTES 8, 15, and 16												
Medicare 101						17						
Wine Tasting	23											
Colorado Railroad Museum	30											
Colorado Wildlife Sanctuary		14										
Capital Tour/History Museum			11									
Central City Opera				24								
MARS STAR Schedule												
Items due for MARS STAR												
STAR Input to Editor	4			11			10			TBD		
STAR Repro. Deadline	15			22			21			TBD		
STAR Mailing	24			31			30			TBD		