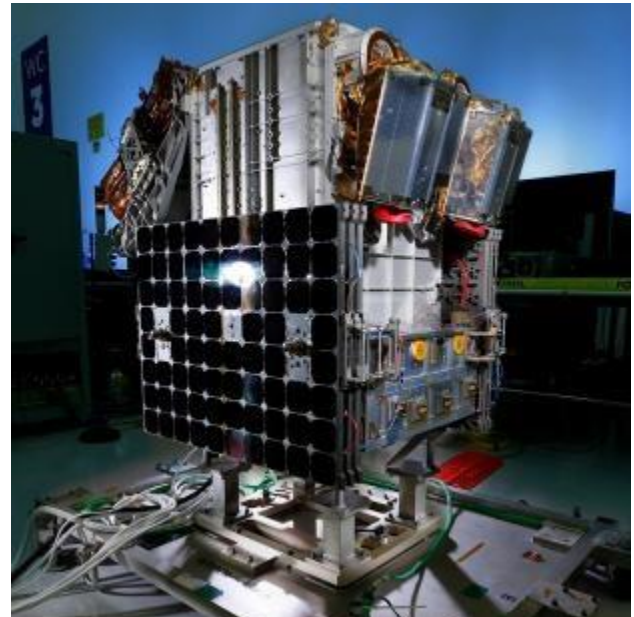


# MARS STAR



MARS Holiday Luncheon, Dec 4, 2024  
Wellshire Event Center



## **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 Jayne Brown at 303-905-9822 or via email at [jaynebrown@comcast.net](mailto:jaynebrown@comcast.net)

**Spring Event/Annual Meeting, 19 March (See Page 24)**  
**2025 MEMBERSHIP RENEWAL (DUES) NOTICE (See pg 25)**

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

**OFFICERS**

President	Ken Marts	303-868-2168
President-Elect	Jim Pennington	301-332-5971
VP Activities	Linda Duby	303-249-1665
VP Business	Gina Curet	281-691-4200
VP Communication	Dan Ellerhorst	303-263-1944
VP Membership	Jayne Brown	303-905-9822
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	Vacant	
Director	Vacant	
Director	Kathy Hetzel	303-513-0796
Director	Debbie Carr	303-503-7113
Director	Heidi Urie	303-588-6762
Director	Vacant	
Director	Vacant	

**MARS STAR**

Editor	Tom Pighetti	303-979-7933
Editor	Linda Stearns	303-797-3557
Memorials	Roy Duszynski	303-358-4750
Website Team	Dan Ellerhorst	303-263-1944
Volunteers	Judy Nielsen	303-905-3957
<b>Reporting:</b>		
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)*

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

**MARS Website:** <https://www.marsretirees.org>  
**MARS Facebook:**  
<https://www.facebook.com/groups/MARSAssociates>

**MARS Benefits and Retiree Resources**

**MARS Dental Insurance Plans**

**MARS Delta Dental of Colorado**

Individual Administrative Team – Billing and Enrollment (changes to bank account info, expired credit cards, address changes). 877-516-6512 or [Individual@ddpco.com](mailto:Individual@ddpco.com)  
Customer Experience Team - Claims and Benefit questions. 800-610-0201 or [customer\\_service@ddpco.com](mailto:customer_service@ddpco.com)

**MARS Vision Insurance Plans**

**VSP** 844-641-6718 or [www.vspdirect.com](http://www.vspdirect.com)

**DeltaVision** (links to VSP Member Services website) 800-877-7195

**MARS Hearing Aid Discounts**

**TruHearing** (offered by VSP) 877-396-7194 or [www.truhearing.com/vsp](http://www.truhearing.com/vsp)

**Amplifon Hearing Health Care** 888-486-4405 or [www.amplifonusa.com/lockheed](http://www.amplifonusa.com/lockheed)

**Assured Partners of Colorado** – for additional information on offered dental or vision plans

[Jon Elmore](mailto:Jon.Elmore) 303-228-2206 or [Hudson Howard](mailto:Hudson.Howard) 720-510-9505

**Pre-Medicare Retiree Information**

**Destination Wellbeing-Employee Service Center**

**Online.** 866-562-2363 or [lmc.lifeatworkportal.com](http://lmc.lifeatworkportal.com)

**LM Retiree Medicare Exchanges**

VIA Benefits (Administrator) 844-596-0460 or [my.viabenefits.com/LockheedMartin](http://my.viabenefits.com/LockheedMartin)

**LM Retiree Resources** – [lockheedmartin.com](http://lockheedmartin.com)

These links provide information about LM retiree health plan benefits, pension payroll, and savings plan information:

**Lockheed Martin Service Center**

**LM HealthWorks Plan** – for retirees under age 65

**VIA Benefits** – for post-65 retirees

**My Pension Payments**

**Pension Management Update** – 06/27/2022

**My Savings Plan** (Empower)

**Lockheed Martin Employee Disaster Relief Fund**

**OR** HR benefits mailbox, [benefits.hr@lmco.com](mailto:benefits.hr@lmco.com)

**Cover:**

**Left** – Welcome to the Holiday Celebration on Dec. 4 at the Wellshire Event Center (See Photos on page 32)

**Right** – TacSat, seen here fully completed at Lockheed Martin (LM), will participate in upcoming cross-domain exercises. See LM News pg. 21. (Photo by LM.)

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**From the Editor's Desk**

Dan Ellerhorst([dan.ellerhorst@gmail.com](mailto:dan.ellerhorst@gmail.com)) VP Communications  
Tom Pighetti ([tipighetti@g.com](mailto:tipighetti@g.com))  
Linda Stearns ([linda80120@comcast.net](mailto:linda80120@comcast.net))

For comments or corrections, contact Tom (issue editor) or Dan.

MARS welcomes your submissions. Submissions must be relevant to MARS, 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](mailto:martshouse2@aol.com)

With this issue we enter another calendar year and MARS Associates is now 40 years old. Looking back thru these 40 years, a lot has happened! Our membership has grown and we've changed; for the better in my opinion, as we continue to serve our members. Whether you joined for the camaraderie, annual events, special activities, medical/discount benefits, or other reasons, MARS Associates is a great value for your dollar. Each member can pat themselves on the back for their contributions in making MARS Associates what it is today. If you've served as an Officer or Director, Club President, activity lead, written an article for the STAR, volunteered at a MARS - sponsored activity, support our organization as an editor or In Memoriam, or other functions, or even attended any of our many activities, you get an extra pat on the back. An organization is only as strong as its' members and their commitment to volunteering and participating in the group. I believe our organization is strong and vibrant and we continue to bring in new younger members to keep that vibrancy alive.

The new calendar year will also bring new opportunities for our Officer and Director roster. Carl Kaminski will be stepping down as Vice President of Membership with Jayne Brown stepping up to that position. (see Carl's and Jayne's article later in this STAR). This will be Linda Duby's last year and a replacement will soon be announced to complete 2025 as the VP of Activities. Roger will be adding several Directors to replace Directors who are taking different assignments. We will also finally allow Norma Emerson to step back from her role as the In Memoriam coordinator. Roy Duzinski will be taking over for Norma. Dick Sosnay will be stepping down from Marketing after a great two years in the role and ten plus years of service to MARS Associates. Several other positions are open and may be filled in the-near-future. If you've always wondered what makes MARS Associates tick and run like a finely tuned machine, consider volunteering in our corp of Directors and Officers. Talk with any of the current Officers and Directors, step up and volunteer or explore by attending a Board meeting.

2025 continues to be an outstanding year of activities with the Marketing group finalizing plans on about 30 activities from which 8 to 10 will be selected to complete. The Marketing group will also be looking at morphing into two unique organizations. The first group will continue planning our Special Activities. The second will focus more on "Marketing" themes to include membership

growth, community outreach, and ways to better communicate and work with our members. Look for some exciting changes in this area -- we've already selected some people to aid in this endeavor (they just may not know it yet 😊).

Our Annual meeting in March has the promise of another exciting high-level speaker to present "Space at its Best! Mr. Tory Bruno is the planned speaker at this event.

I'd like to thank all my Officers for the great contributions they've given to this organization. I'd also like to thank Carl for his tireless efforts and welcome the opportunity to work with Jayne in the Membership role. Linda continues to bring us great venues and menus for our annual events and will be sorely missed. The person assuming this role has some BIG shoes to fill. Charlie Haupt continues to balance our finance sheet, Al Nemes keeps us honest with our meetings, and Dan Ellerhorst keeps our communications smooth. Gina keeps our Benefits area up to date and negotiates the best deals for MARS members. Jim Pennington is drinking from a firehose and learning the ropes for his eventual takeover of the Presidency in 2026. Al keeps our meeting notes and makes sure we abide within the constraints of the Bylaws for our organization. Thanks to Roger and the Board of Directors for providing guidance, enabling a smooth-running organization.

I'd also like to thank all the other volunteers that keep MARS Associates running. The Clubs provide an excellent opportunity for many to participate. Whether you hike, play bridge, drive a car (who doesn't?), take pictures, golf, or want to be educated by PACESETTERS speakers; MARS Associates has something for most people. The web committee has been doing a superb job in keeping us informed at [www.marsretirees.org](http://www.marsretirees.org). Consider also joining the MARS Associates Facebook page for even more updates about your organization. Our Historian provides daily "Today in History" moments on the webpage.

If you have ideas for improvement, please talk to the Officers or Directors or leave a suggestion on our website.

I hope you enjoy reading this issue of the MARS STAR and I look forward to seeing many of you at our future events. As always, reach out if you have any comments, questions, or concerns.





## Next Up

By Jim Pennington  
([jpennington101.jp@gmail.com](mailto:jpennington101.jp@gmail.com))

Happy New Year everyone! Before I start with new items, I want to thank all of those that attended 2024 Annual Holiday Celebration at the Wellshire Events Center on December 4th. It was a well-attended event and I think everyone had a great time. Special thanks as always to Linda Duby for her great planning and execution of the entire event. I was also honored to have shared a table with the two fine young Marines that were attending and received the MARS contribution to the "Toys for Tots" campaign. At the end of the event, I attempted to go to each table and introduce myself to all of those in attendance and to express my thanks for attending. Events like the Holiday Celebration, the Annual Meeting, Summer Luncheon and the Annual Picnic are great opportunities for the Officers and Directors to chat and meet all the MARS members. In the future, be sure to reach out to me and provide any feedback or recommendations on how we can make your MARS experience and membership better.

By the time the 1Q 2025 STAR edition goes out, the MARS Officers have approved the 2025 MARS Operating Budget. Part of the budget is the small, but important stipends that we provide to each of the Clubs that request it to cover some small operating expenses that they may have to operate, as per our MARS Policy Manual. Whether the Club is big or small, the MARS leadership wants to be sure that we continue our support for these groups and their participants to enhance their overall activities.

Looking into this upcoming year, I am personally looking to work on two key areas for MARS Associates with the Officers and Board of Directors. The first, continue to foster new MARS membership with Lockheed Martin and United Launch Alliance recent retirees to increase the overall membership. With the number of recent retirees from both organizations, we need to improve our outreach to those that are not current members. The second is to further advance the MARS leadership and volunteer succession planning. Both areas are key initiatives for our current MARS Officer group and will strengthen the overall organization.

So, I will end with this request or challenge to you. If you know of a retiree from either Lockheed Martin or ULA (or both) that is not a current member of MARS; ask them if they would like to join. If you would rather not, please refer their contact information to me. I would be happy to make the appropriate outreach with our membership committee, to make them welcome. If you have any

recommendations, comments, or suggestions, please send them this way.

Thank you and I look forward to a very successful 2025!



## Director's Notepad

By Roger Rieger  
Chairperson, BoD  
([rrieger10731@gmail.com](mailto:rrieger10731@gmail.com))

Welcome 2025! It hardly feels like winter is here in Colorado, wonder if it will ever snow? As we look forward to the coming year — there continues to be healthy changes and growth in your MARS leadership organization. Along with Jim stepping forward into the President-elect position, Jayne Brown has assumed the role of VP of Membership, effective the first of the year. Carl Kaminski has done a fantastic job in that position for the last 5 years and I thank Carl for all his hard work. Dick Sosnay has also completed his term as the lead of the Marketing committee and will be stepping down at the end of 2024. Please join me in thanking Dick for his leadership in this vital function which services as an incubator to develop new MARS activities for the coming years. We are actively seeking a replacement for a Leader of our Marketing activity, interested? Debbie Mues has also stepped forward to become part of the MARS editorial team-in-training and Roy Duszynski takes over as our In Memoriam coordinator. Monte Kopke also completed his term as a member of the BoD and I would like to thank Monte for his time and energy in support of the MARS organization. Changes are good and a sign of a viable and healthy organization, ensuring a continuing flow of new ideas and enthusiasm to the MARS leadership team and organization.

This vital culture change also requires a strong group of "bench players" ready to step forward and donate their time and talents to continue our strong MARS Organization. We are actively recruiting and need members to step forward and fill the following upcoming positions:

- VP of Activities (Provide senior leadership for planning and executing major MARS events),
- Marketing Committee Chair (Lead a team in the brainstorming of new activities of interest to MARS membership. Lead the development, planning, and execution of these events). They also work with the BoD and Officers to recruit new members to the MARS organization.
- Board of Directors (We are seeking 4 new members to join the Board in 2025). These positions are in

direct support to the MARS Officers and serve as the “bench” for future Officer transition.

If you ever desire to watch the “sausage being made,” the 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 organization, 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!

If you have any questions, suggestions, or comments about the events, please contact me at [lindaduby@comcast.net](mailto:lindaduby@comcast.net).



## Business

By Gina Curet  
([orion43@comcast.net](mailto:orion43@comcast.net))

Happy New Year! 2024 went by so quickly and here we are already in 2025. It was a busy 2024 in the Business area by finding a new liability insurance broker, hosting new and different informational sessions, negotiating reduced insurance benefits, and adding a new vision plan, redesigning our benefits pages on the website, changing our tax filing from fiscal year to calendar year, performing a benefits audit and writing several “did you know” benefits articles that hopefully helped answer many of your questions.

Thanks to everyone that signed up for new benefits or made changes after the blast email by December 20<sup>th</sup> for an effective date of January 1<sup>st</sup>. It was a pleasure to speak with and help so many members with questions about benefit selections. Your benefits will always automatically renew each year if you make no changes. Please feel free to contact me to discuss benefits questions, or you can also visit [marsretirees.org](http://marsretirees.org) and select “Benefits” for more details. Just remember, you must be a current member to be eligible for MARS offered benefits.

Look for future news on upcoming informational sessions.

If you know someone that is getting ready to retire from LMC or ULA, please invite them to learn about MARS and what we have to offer. We have a lot going on and something for everyone!



## Communications

By Dan Ellerhorst  
([dan.ellerhorst@gmail.com](mailto:dan.ellerhorst@gmail.com))

Let’s make a New Year’s resolution to try to understand and improve our online security behaviors.



## Activities Updates

By Linda Duby  
([lindaduby@comcast.net](mailto:lindaduby@comcast.net))

Happy New Year! It’s hard to believe that 2025 is already here and I’m planning the events for the year.

The last event of 2024 was the annual Holiday Celebration again held at the Wellshire Event Center. There were 127 members and guests who attended. Two guests from Lockheed Martin attended and they were Laura Hopkins, Vice President of Human Resources, and Shamina Fletcher, Executive Assistant, Human Resources. Toys for Tots was represented by two Marines, SSgt. Joshua Gilbert and Cpl. Jonathan Brown. MARS made a generous donation to Toys for Tots in memory of members who passed away in 2024. The Car Club donated the funds raised at the car show to Toys for Tots. Members were very generous with toy and cash donations.

The next event scheduled for 2025 is the Spring Event and Annual Meeting on March 19. The event will be a luncheon and will include the MARS Annual Meeting Agenda. Mr. Tory Bruno, CEO of United Launch Alliance, is planning to speak at the event as-long-as his schedule permits. The event will be held at the Lone Tree Golf Club & Hotel, located at 9808 Sunningdale Boulevard, Lone Tree, Colorado 80124. This is a new venue for MARS and we are looking forward to holding the event there. The flyer for this event is included in this edition of the STAR and the electronic version is available on the MARS website under “Events.”

There will be more information available on events as we get through the planning process. Check the website and watch for blast emails about specific events.

As any of us who have active e-mail accounts can attest, junk and spam e-mails are a fact of life. Most e-mail servers have pretty good filters that route much of this annoying e-mail to our junk folders (you should look occasionally to see how much and what kinds of things get put here!). Nevertheless, we all are sometimes treated to a phishing attack or other spoofing operation that tries to get us to take a specific (often financially related) action. The advent of AI is making some of these fake e-mails seem increasingly real. Our best defense is caution and skepticism.

Some MARS members may have seen fake e-mail purportedly coming from other members or the officers or directors of MARS. You should always double check these before responding – be assured we will never solicit money or credit card information this way. We are trying to improve the security of our e-mail addresses that are exposed to the outside. Email addresses on our website are protected from scraping by automatic (bot) accesses, but humans can still copy and use them. We expose email addresses of those members that have agreed to this on our website under the Membership pulldown, and I know it has been useful to many of us. We are discussing other ways to provide access to that information without exposing the actual e-mail addresses any further.

In another example of a recent compromise on our website, our Suggestion form (on the home page) was used by someone in Russia to post what turned out to be advertisements (thanks to a little help from Google Translate!). We hope to have closed this vulnerability by requiring a Captcha action, which eliminates automatic access by bots.

All of this is just to remind ourselves that cyber security is a serious issue and requires a certain amount of attention in order for us to safely enjoy the benefits of our online existence.

In closing, let me offer a few suggestions (gleaned from various sources) of things we can all do to improve our cyber security profile:

- 1) Make sure you have some anti-virus and anti-malware software installed on all your devices.
- 2) Enable enhanced login protection (such as multi-factor authentication) on all your key online accounts.
- 3) Set up alerts to keep you informed when your credit cards and bank accounts are accessed.
- 4) Consider disabling credit checks on the three main national systems (Experian, Equifax, and TransUnion). If you are not actively seeking a credit card or a line of credit these services are not necessary and represent a potential vulnerability. It is very easy to enable and disable access for all three, usually with a single action.

- 5) Use a password manager with biometric options to create strong passwords for all of your accounts and to protect them. Modern password managers also provide many additional services for securely storing personal and credit card information and providing autofill capability.

These are just a few of the ways we can improve our security profile. If you are interested in learning more, drop me a note and we will look into setting up an informational session to talk about the cyber security world.



## Membership Report

By Carl Kaminski

[carlcol66@gmail.com](mailto:carlcol66@gmail.com)

### Adieu

I wrote my initial column in the April, 2019 issue when I took over responsibility for Membership. I have enjoyed working with my fellow officers and directors over these past 5+ years, thanks to you all for making this job a little easier. It has been a pleasure to serve you, the membership and I look forward to seeing you at future events. I leave you in the capable hands of Jayne Brown who has taken over Membership responsibilities.

### MEMBERSHIP STATISTICS

As of January 1, 2025 there are 1,261 MARS Associates members, including 595 senior members. We have a total of 98 new members who have joined MARS for the 2024 CY to date.

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

#### Colorado

Aurora	Richard & Debby Carnahan
Castle Pines	Matt & Elizabeth McClelland
Castle Rock	Steven & Pamela Engler, David & Hiemi Haines, Denise & Luke Mitchell, James & Deborah O’Kelly, Tracy & Mark Scroggins
Centennial	Twila Forbes, Jeffrey & Kathy Gillett, Lori & Don Popolillo, Mike & Sherian Thomas

Conifer Michael Bailey  
 Evergreen Carol & John Rapp  
 Golden James & Amy Martin  
 Lakewood Todd & Brenda Frauenhoff  
 Littleton Scott & Theda Brinckerhoff,  
 William Crawford & Mary Irons,  
 Ken & Val Disney, Wilbert Hall,  
 Elizabeth Porter, Anne Rackowski,  
 Daniel & Ann Reich, Paul &  
 Kathleen Roybal, Robert & Debra  
 Shiflet, Jeffrey & Sheryl Strom,  
 Greg Worthington & Sylvia Black-  
 Worthington

Parker Richard & Jeanette Lipe  
 Sedalia Richard Chandler  
 Westminster James & Arnetta Gregory

**Other States**

**California**

Rescue Diane Kirk  
 Sunnyvale Heidi Shaylor  
 Ventura Patricia & Giuseppe Quijada

**Florida**

Cape Canaveral JoAnn Stanker  
 Ocala James & Diane Easton  
 Orlando Richard Souder

**Illinois**

Lincolnwood Anita Wenner

**North Carolina**

Bolivia Lisa McMurray & Ton Goddery

**Pennsylvania**

King Of Prussia Kathryn & Thomas Harper

**Tennessee**

Tulahoma Anthony Young

**Texas**

Friendswood Robert & Kelly Hines

**NEW MEMBERS**

Do you know someone who recently retired from LM or ULA? First year membership in MARS is free for 2025. Direct them to the website for more information or have them contact one of the Officers or Directors.

**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.



**New VP-Membership**

By Jayne Brown  
[Jaynebrown@comcast.net](mailto:Jaynebrown@comcast.net)

Hello everyone! My name is Jayne Brown and I am looking forward to my new role as the Vice-President of Membership starting Jan 1, 2025. I would like to thank Carl Kaminski for all his hard work for the last 5 years in this position, I know I have some big shoes to fill! We have been working on a smooth transition so that it will be seamless for the members.

I have been asked to tell you a little bit about myself, so here goes. I started my aerospace career at Martin Marietta in Denver in 1981 as an engineering aide. Over the next eight years I worked full-time during the days and took engineering classes in the evenings. I graduated in 1989 with a Bachelor's degree in Mechanical Engineering from the University of Colorado – Denver. I have been with the company through the transition to Lockheed Martin, and then was part of the United Launch Alliance spinoff company. I left ULA in 2011 to pursue a different career and I am now retired full-time. In the 30 years that I was at Martin Marietta/Lockheed Martin/United Launch Alliance I was privileged to work with some wonderful people on multiple programs including Space Shuttle, Peacekeeper, Small Missile, Flight Telerobotic Servicer, Titan, Atlas & Delta.

In my free time, my favorite things to do are travel, golf, hike and most importantly, spend time with my three (soon to be four) grandchildren! I married my husband, Bob (also an ULA retiree) in 2003 and we are both enjoying our retirement immensely. Beautiful Colorado is our primary home, but we also enjoy spending time at our second home in Prescott, AZ. It is a lovely little town in

the Arizona mountains and, of course, we play a lot of golf there! We are both members of the MARS golf league and I would encourage anyone interested in playing more golf to sign up for the league that plays every Thursday April - October at Broken Tee Golf Club.

I'm looking forward to meeting those of you that I don't already know at MARS events throughout the year. Feel free to call or email me if you have any questions about your membership!

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## In Memoriam

By Norma Emerson  
([emer801@msn.com](mailto:emer801@msn.com))

*Please contact Roy Duszynski at [rkduszynski@msn.com](mailto:rkduszynski@msn.com) or 303-358-4750 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

Davis, Sally A. (D: 2024)  
(Survived by Harold "Al" Davis)  
Littleton, CO  
No obituary published

Gedeon, Ronald "Ron" (D: November 2024)  
(Survived by Maureen Gedeon)  
Highlands Ranch, CO  
<https://tinyurl.com/3bss75tu>

Husted, Richard "Dick" (D: November 2024)  
(Survived by Jean Husted)  
Littleton, CO  
<https://tinyurl.com/347tw6ff>

### Non-Members

Amass, Loring (D: October 2024)  
Denver, CO  
<https://tinyurl.com/yc7ehhvn>

Anderson, Bob (D: October 2024)  
(Survived by Linda Anderson)  
Broomfield, CO  
<https://tinyurl.com/22f2whs3>

Anderson, Gary (D: May 2024)  
(Survived by Charlene Anderson)  
Centennial, CO  
<https://tinyurl.com/yc3mw36f>

Bekhit, Kamal (D: May 2024)  
Castle Rock, CO  
<https://tinyurl.com/bddr2de9>

Bollendonk, William "Bill" (D: November 2024)  
Littleton, CO  
No obituary published

Buckley, James (D: April 2024)  
(Survived by Crista Stadler)  
Highlands Ranch, CO  
<https://tinyurl.com/ycxan6bx>

Chaney, Douglas (D: October 2024)  
(Survived by Cobi Chaney)  
Golden, CO  
<https://tinyurl.com/yhwb32rn>

Clas Jr, Edward (D: April 2024)  
(Survived by Paula Clas)  
Littleton, CO  
<https://tinyurl.com/mt6uutru>

Deutsch, Martin "Marty" (D: Fall 2024)  
(Survived by Judi Deutsch)  
New Providence, NJ  
No obituary published

Fitzner, Kirk (D: September 2024)  
(Survived by Carolyn Fitzner)  
Highlands Ranch, CO  
<https://tinyurl.com/pm64j3vc>

Gossanyi, Jules (D: October 2024)  
Littleton, CO  
<https://tinyurl.com/bdcmndfy>

Head, Ray (D: November 2024)  
Littleton, CO  
No obituary published

Jankowski, Scott (D: November 2024)  
(Survived by Wimala Jankowski)  
Littleton, CO  
<https://tinyurl.com/43668n94>

Larson, Christopher "Chris" (D: December 2024)  
(Survived by Lisa Larson)  
Castle Rock, CO  
<https://tinyurl.com/2s3rwpf7>

Lederle, George (D: June 2024)  
(Survived by Jane Lederle)  
Boulder, CO  
<https://tinyurl.com/469jcd68>



McGarr, Max (D: November 2024)  
 (Survived by Tonda McGarr)  
 Gilbert, AZ  
<https://tinyurl.com/58n8vm53>

Modahl, Alf (D: December 2024)  
 Longmont, CO  
<https://tinyurl.com/254b2ne5>

Osborn, Larry (D: December 2024)  
 (Survived by Cheryl Osborn)  
 Littleton, CO  
<https://tinyurl.com/w5s2j7mc>

Park. Loman (D: September 2024)  
 (Survived by Pat Park)  
 Littleton, CO  
 No obituary published

Quiram. Leonard "Lee" (D: October 2024)  
 (Survived by Barbara Quiram)  
 Bryan, TX  
<https://tinyurl.com/ms6zbnbd>

Reitz, Marilyn (D: September 2024)  
 (Survived by William Reitz)  
 Littleton, CO  
<https://tinyurl.com/yamnvae2>

Rutledge, Larry (D: October 2024)  
 (Survived by Carolyn Rutledge)  
 Fleming, CO  
<https://tinyurl.com/mr35hkh4>

Serold, Marie (D: November 2024)  
 Highlands Ranch, CO  
<https://tinyurl.com/bdfr9s4>

Stalnaker, Elmer (D: January 2024)  
 (Survived by Scottia Lynn Stalnaker)  
 Colorado Springs, CO  
<https://tinyurl.com/4er9f54p>

Stephens, Marvin (D: May 2024)  
 Littleton, CO  
 No obituary published

Terwilliger, Lee (D: December 2023)  
 (Survived by Cathryn Terwilliger)  
 Evergreen, CO  
<https://tinyurl.com/5cp2a5e6>

Unks, John (D: September 2024)  
 (Survived by Kathi Unks)  
 Castle Rock, CO  
<https://tinyurl.com/yeh3jkd5>

Vest, Myrna (D: October 2024)  
 (Survived by Keith Vest)  
 Littleton, CO  
<https://tinyurl.com/5bvxdpcr>

Wells, Emilie (D: July 2024)  
 Denver, CO  
<https://tinyurl.com/bysjwxnm>

Woodward, John "Stew" (D: September 2024)  
 (Survived by Nancy Woodward)  
 Denver, CO  
<https://tinyurl.com/44s4eedx>

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## Marketing Committee

By Richard Sosnay  
[richardsosnay@gmail.com](mailto:richardsosnay@gmail.com)

The 2024 MARS Special Activities concluded with a great year. The following is a summary of all our activities completed for 2024.

<b>2024 Special Activities – Completed</b>		
<b>Activity (Attendees) [When]</b>	<b>Cost *Lead*</b>	<b>Comments</b>
Wine Tasting (41) [Tues, Apr 23]	\$25 /person *Terry Lilly*	Will schedule another in Aug/Sept
CO Railroad Museum (19) [Tues, Apr 30]	\$11 /person *Robin Zen*	Followed by lunch at Yard House
The Wild Animal Sanctuary (27) [Tues, May 14]	\$20-\$50 /person *Carolyn Malaby*	
ULA Tour (21) [Tues, May 21]	Free *Terry Lilly *	Followed by Happy Hour at Max Taps
State Capitol/ History Museum (27) [Tues, June 11]	\$14 /person *Kathy Hetzel*	Lunch at History Museum
Central City Opera (29) [Weds, July 24]	\$89.60, \$74.40, \$56.80, \$24.80 *Sue Janssen*	
LM Plant Tour (25) [Weds, Aug 28]	Free *Judy Nielsen*	
Denver Mint Tour (28) [Thurs, Sep 19]	Free *Robin Zen*	Lunch at Pint Pub
State Capitol/ History Museum Tour #2 (26) [Tues, Sep 24]	\$26 /person *Kathy Hetzel*	Lunch at History Museum
Glenwood Springs Train Trip (24) [Oct 9 – 11]	\$108 /person *Ralph Pacheco*	
Highlands Ranch Mansion (42) [Tues, Oct 15]	Free *Carolyn Malaby*	Followed by Lunch

Wine Tasting #2 (25) [Thurs, Oct 17]	\$30 /person *Terry Lilly*	
(Total Attendees 334)		

The **Wine Tasting** (Apr 23), **Colorado Railroad Museum Tour** (Apr 30), **The Wild Animal Sanctuary** (May 14), **ULA Tour** (May 21), and **State Capitol/History Museum** (Jun 11) were discussed in the July 2024 MARS STAR.

The **Central City Opera** (Jul 24), **LM Waterton Plant Tour** (Aug 28), **Denver Mint Tour** (Sep 19), and **State Capitol/History Museum Tour #2** (Sep 24) were discussed in the October 2024 MARS STAR.

### Glenwood Springs Train Tour

In October a group of 23 passengers (MARS Retirees) embarked on an Amtrak Train trip to Glenwood Springs, CO. This trip was led by Ralph Pacheco.

We started with a Meet and Greet (Sept 24) at the Farmhouse Restaurant where most everyone got acquainted with each other before the trip.

On Oct 9, 2024 Wednesday morning, we boarded the Amtrak train at Denver Union Station at 8:46 AM. Passing through Denver and heading west, the train climbed into the foothills south of Boulder. Everyone enjoyed the scenery as the train climbed up to the historic Moffat Tunnel, where it passed under the Continental Divide and came out at the Winter Park Ski Area. The train then followed both the Fraser and Colorado Rivers through stunning forests, the aspen trees aglow with their golden brilliance, and then entered the rugged Glenwood Canyon and arrived in Glenwood Springs around 3:00 PM. After arrival in Glenwood Springs until Friday morning (Oct. 11), members were free to explore Glenwood Springs and surrounding attractions at their leisure.

On Thursday evening a delicious group dinner was enjoyed by everyone at "Tequilas Mexican Restaurant" thanks to our gracious host Gustavo Soltero.

We arrived back in Denver at about 3:00pm, tired but an enjoyable trip overall.

Our thanks to: Amtrak, Antlers Hotel, High Mountain Taxi, and Tequilas Mexican Restaurant for all their help in making it a wonderful experience.

### Comments from passengers:

Ed & Ruth Rodriguez -- "Thank you for all your effort in making our trip to Glenwood Springs such a wonderful experience. We appreciate your hard work and dedication to make this trip successful".

Rick & Diana Martinac -- "Just wanted to thank you for setting up the Train Trip to Glenwood. We had always wanted to take the train and with your expert help, it is now off our bucket list. We might want to take a trip like that every year for something different. We so appreciate your volunteering to get that trip set up for all of us."

Ron & Maureen Gedeon -- "Thanks for all the work you did for our trip -- We had a great time. I am sorry we didn't stay for pictures, but our daughter was waiting for us in the station. Thank you, Ralph. God bless you and keep you well".

(See Pictures on page 30)

### Highlands Ranch Mansion Tour

A group of 42 MARS members toured the wonderful Highlands Ranch Mansion was led by Carolyn Malaby. Almost 60 signed up originally, but life happened, and our number was reduced somewhat. The mansion is open for FREE tours and well worth a visit. We were divided into 4 smaller groups, led by knowledgeable docents, through the beautiful home to some of Denver's 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. The mansion reopened its doors after being unoccupied for more than 30 years (with limited use) in 2012 with a \$6 million renovation. Samuel Long built a modest farmhouse in 1891 (with that date still visible over the door) that has since been expanded several times. The mansion welcomes thousands of visitors each year and hosts weddings and special events managed by the Highlands Ranch Metro District. Check their website for the calendar of when they are open for free tours. After the tour, a smaller group went to the nearby Lazy Dog restaurant for a satisfying lunch. A fun fall outing.

(See Pictures on page 31)

### Wine Tasting #2

This activity was coordinated by Terry Lilly in conjunction with Wine2Wine and M2 Confections. We had 28 members and guests of MARS Associates participate in the wine and chocolate pairing Tuesday, October 22. The pairing included Coconut Chai Caramel and Winemaker White; Black Tea/Palisade Apricot Caramel and Chenin Blanc; Dark Chocolate and Chilean Carmenerene; Mexican Chocolate and Diablo Rojo. Following the tasting, each attendee received a full glass of any wine on the menu.

Water2Wine (located in the Oakbrook Shopping Center on County Line Road, near Broadway) offers over 40 different wines for tasting. This is a fully operating winery where all their wines are blended, oaked and fermented onsite. They start with grapes sourced from vineyards around the world.

Terry provided a nice assortment of fruit, cheese, and crackers.

Thank you to everyone who joined this tasting and pairing adventure!

(See Pictures on page 23)

As you can see, we had some wonderful activities planned for 2024. We have started doing some planning for 2025 and have a potential list of about 20 activities planned, as shown below.

<b>Potential 2025 Special Activities</b>		
<b>Activity</b>	<b>Lead</b>	<b>Interest in 2024</b>
LM Plant Tour	Judy Nielsen	<b>15</b>
ULA Plant Tour	Terry Lilly	7
Kansas Cosmosphere	Bill Edwards	13
AFA Planetarium & AFA Tour	Doug Tomerlin	21
The Wild Animal Sanctuary	Carolyn Malaby	7
Central City Opera	Sue Janssen	12
Glenwood Springs Train Trip	Ralph Pacheco	14
Wine Tasting	Terry Lilly	10
Col Spgs Balloon Lift-off & Glow		13
Cripple Creek Train		15
Georgetown Loop Railroad		13
Arvada Cntr for Prfrmng Arts		7
QUEBEC 01 Missile Alert Facility (Last remaining Peacekeeper Site)		20
Molly Brown House Museum		12
Buffalo Bill Museum & Grave		4
Denver Botanic Gardens		3
Forney Museum of Transportation		8
Coors Brewery Tour		5
Distillery Tours		5
AMC Theater Rental for Group Movie		2
Denver Walking Tour		5

Also shown in the table is a summary of interest expressed during brief surveys at our 2024 Picnic and 2024 Holiday Celebration. For these to occur, we need a volunteer to lead each of the events. Potential leaders are indicated in the table.

I will be stepping down as the Marketing Committee Chair. If you are interested in this fun position, or in leading any of the trips, please let any of the officers or directors know.

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## **Volunteer Efforts**

### **MARS VOLUNTEER ACTIVITIES - 2024**

Below is a recap of the activities our MARS members volunteered for in 2024:

**Young Minds at Work on April 25.**

**Bike-to-Work Day on June 26.**

**The Waterton Auto Show on August 22**

**Waterton Campus Tour on August 28.**

**The LM Space Fun Run on October 4.**

**Junior Achievement Finance Park on October 2.**

**Operation Santa Claus Fundraiser at LM's Deer Creek Facility, Waterton Campus, and United Launch Alliance the week of November 18.**

As you can see, there are many opportunities you, our MARS members, can become involved in.

*If you are interested in volunteering for upcoming events, please send your name, cell phone and email address to Judy Nielsen at [jniel129@gmail.com](mailto:jniel129@gmail.com).* Volunteering helps keep us physically healthy and mentally fit, and we believe provides joy and comradeship with former colleagues.

We look forward to the opportunity to support many of these activities again in 2025.

**A sincere thanks to all MARS volunteers!**

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## **Historian Corner**

By Barb Sande

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Correction from the last article on Mercury-Atlas flights 7 through 9: I referred to Gordon Cooper's flight as the "last of an American to be in orbit by himself". A sharp-eyed reader commented on this, because there were definitely solo-orbital aspects to the Apollo program. The statement is better made that Gordon Cooper's flight on MA-9 was the last time an American was launched into space by himself.

## **Program Profile**

This history profile begins a multi-part series about the manned Gemini program. The current plan is to have the following parts to the series (this may be modified as the series progresses):

1. Creation of Project Gemini, Program Obstacles and Issues, Overview of Major Program Elements – First Quarter 2025 – **In this Issue**
2. LC-19, Unmanned Gemini 1 & 2, Crew Training, Gemini 3 (first manned mission) - Second Quarter 2025



could lead to the first launch in 18 months. Titan II's maiden ICBM flight was still in the future, but the Air Force had provided much of the funding and resources for the development of the vehicle and even man-rated upgrades were already identified because of the USAF Dyna-Soar (lifting body) program requirements.

Another element pursued by Chamberlin for the program would be to have an orbital vehicle capable of rendezvous and docking with the manned spacecraft. Rendezvous was probably the most important requirement that had to be demonstrated before Apollo got off the ground, since lunar orbit rendezvous and docking with two smaller spacecraft (lander, orbiter) was the preferred plan for Apollo by 1961. Chamberlin approached Lockheed Missiles and Space Company in August 1961 to discuss using their Agena D upper stage as this solution for the yet-to-be named interim program. The Agena would be launched by an Atlas vehicle, the improved SLV-3; this capability with that upper stage had already been demonstrated with numerous successful unmanned missions for NASA with an Atlas LV-3.

On December 7, 1961, NASA STG Lead Bob Gilruth landed in Houston, where the new Manned Spacecraft Center (later named the Johnson Space Center) was being built in nearby Clearwater. His purpose for visiting was to address the Houston Chamber of Commerce. His first announcement at that event was that the first manned orbital flight of Project Mercury, with astronaut John Glenn, was postponed until February, 1962. His second announcement was that NASA had approved the new Mark II program as a crucial interim step between Project Mercury and sending astronauts to land on the moon. Major contracts were in the works with McDonnell Aircraft, Martin Marietta, Lockheed Missiles and Space, and General Dynamics Convair Division. The renamed Gemini program was formally announced to the public on January 3, 1962. Gemini was chosen as the name because each mission would have two astronauts. Gemini is the third zodiacal constellation with the twin stars (Castor and Pollux; here is the official program logo (Image Credit: NASA):



Contracts were in work, with the first one being a new contract to McDonnell Aircraft for the spacecraft. The Mark II concept had been in work for months, so this was merely formalizing the program intent; their expanded contract was inked before the end of December, 1961.

The launch vehicles and Agena were a different story, as they were managed through the Air Force. NASA and the DoD drafted agreements that the Air Force would act as a contractor to provide the Titan II and Atlas/Agena vehicles. This role was assigned to the Space Systems Division in Los Angeles. With the Atlas, there was also an interim step to continue procuring vehicles from SSD through Marshall Space Flight Center, as NASA was already using Atlas vehicles for Mercury. Other agreements with the DoD were put in place for recovery efforts and astronaut selection.

By March 1962, all contracts were in place. Several modifications would be required to the Titan II (beyond the man-rated enhancements proposed for Dyna-Soar), but the Atlas would essentially be "off the shelf" and the Agena would only require a few upgrades to the Bell engines. Interestingly, the Titan II's for Gemini were planned to be built in Baltimore, as the Waterton factory in Colorado was extremely busy with ICBM builds and anticipated start-ups of the Titan III program (and this option kept the Baltimore facility open). Bastian Hello was the Martin Gemini program manager, reporting to Albert Hall. For the Titan II, SSD put Aerojet General, General Electric and Burroughs on separate contracts for the Titan liquid rocket engines, the radio guidance system (the ICBM used an inertial system), and the ground computers and guidance equation development.

## Program Obstacles and Issues

The Gemini Program Office was established at the Manned Spacecraft Center (initially in a nearby building as construction was still in work) headed by Jim Chamberlin and development began on each element and on subcontractor selections. Things proceeded smoothly for a while, but delays and unforeseen issues eventually led to serious cost overruns on almost every element and a budget crisis struck NASA in late 1962. Rather than bore you with the dollar figures and cost breakdowns and details, suffice to say that the Gemini program underwent a serious reprogramming effort to trim costs and mission scope and the budget crisis was apparently resolved, at least for the time being (other unintended consequences of some of the cuts were not addressed at that time, like concerns for product quality).

Another new threat emerged to the program in early 1963: An Air Force program named "Blue Gemini" was under consideration (this later became the Manned Orbiting Laboratory initiative) and there was pressure to

merge the two programs coming from as high as the Secretary of Defense, Robert McNamara. Some higher echelon NASA managers were also intrigued by a possible merger of efforts. A NASA/DoD agreement on January 21, 1963 led to the Gemini program being left to NASA, but the pressure was still on to combine these programs down the road.

As the Gemini program matured, at least two of the major elements became pacing items, requiring urgent mitigation: The Martin Titan II booster (for a variety of reasons) and the North American Aviation paraglider landing system. In March 1963 the cost figures for the program (now estimated at over \$1 billion) caused shock for NASA administrators and Jim Chamberlin was removed from program management and replaced by acting Program Manager Charles Matthews. The program flight schedule was also revamped to require two unmanned flights instead of one because of concerns for the booster, delaying the first manned mission until 1964.

The program entered what could be called the "dark days" in mid-1963, with many issues threatening schedule and mission success. The Titan II element was definitely the tall-pole (biggest obstacle), but the Agena upper stage and Gemini spacecraft also encountered surprising difficulties. By this point in the program, the paraglider landing concept was nearing its end of viability after a series of failures and delays, but was still kept alive for a time.

The Titan II ICBM test program at this time had multiple issues and failures and getting the Ballistic Systems Division (BSD) to work with the Space Systems Division of the USAF and resolve those issues for Gemini was a constant battle. The biggest concern was the problem of the longitudinal instability, known as Pogo (like a pogo stick action). This oscillation imparted g-loads along the vehicle structure that would exceed safe limits for the crew and was caused by a regenerative feedback interaction between the propulsion system and the structure. The earliest Titan ICBMs had pogo oscillations as high as +/- 5.0 g, although later flights had reduced g-loads, but it was a fact that every Titan II that had flown had the oscillations at some level. NASA set a limit for the Titan GLV (Gemini Launch Vehicle) of 0.25 +/- g, which had not been met on any Titan II ICBM flight. The BSD was not concerned about Pogo for their test flights or possible operations so they were reluctant to make major changes. In the meantime, the BSD had halted test flights temporarily because of concerns for other Titan II problems so that led to delays for the Gemini program.

The other Titan issues involved a concern for combustion instability for the Stage II engines and a general concern for quality of workmanship at Aerojet General. The combustion instability problem had not occurred in flight

but ground tests had discovered that the initial engine firing pulse could trigger uneven burning in the combustion chambers. Although Aerojet General determined that the statistical probability of a serious flight problem was low, NASA described this as a dynamic instability that had to be fixed before the first flight. As far as the general concern for workmanship, ten of the full or partial failures to date on the Titan II ICBM test program could be traced to small defects like a clogged injector, a failed-weld or a broken line.

Top-ranking MSC officials found many questionable practices in design, manufacturing, and quality control when they visited the Aerojet General Sacramento plant. SSD agreed that engines could be improved through various process enhancements and they also finally agreed on a mechanical fuel accumulator and oxidizer standpipe modifications to address the Pogo concern; this agreement was in part because the Manned Orbiting Laboratory program was kicking into high gear and the USAF did not want the same concerns for their enhanced Gemini system, which would fly on a Titan IIIC. However, NASA management considered for a time a third unmanned flight to validate the booster before allowing a manned mission (this was planned and canceled) and some in the upper echelon were even thinking of canceling Titan altogether and using a Saturn I launch vehicle.

The Gemini spacecraft had three issues to deal with in late 1963: Fuel cell design, the propulsion system, and the escape system. The fuel cells were hoped to be the solution for longer-term missions, but test failures, design changes and production techniques at General Electric combined to delay the program and changes to battery systems were initiated for early missions. The thruster designs by Rocketdyne Division of North American ran into issues during steady-state firing tests, with ablative coating depletion and burn-throughs. The thrusters could not meet the minimum firing times required and NASA was contemplating tripling the requirement, so this was a major concern. The escape system, using ejection seats instead of an escape tower, ran into difficulties and delays with parts procurement and successful testing of the escape seats in a sled system.

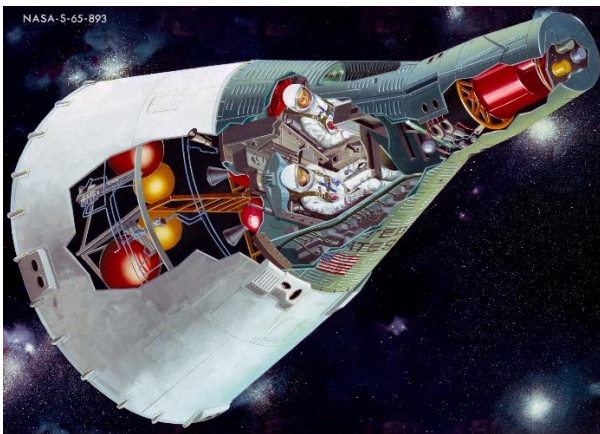
Agena problems were tied to the major design changes to the primary and secondary propulsion systems in the Bell 8247 engine built by Bell Aerosystems Company in Buffalo, New York. Agena was not intended to be used until the fifth flight of Gemini, but development was still behind schedule even for that milestone. SSD incorporated some changes into the Agena D for DoD missions that were needed for Gemini, so that was a small help, although NASA accused SSD of having insufficient oversight into Lockheed processes and subcontractor

management (these concerns sound so familiar, don't they?).

Well, we all know that the program eventually had success, so some of the obstacles were indeed overcome as 1963 ended (the budget was another story). Titan II missile N-25 flew on November 1, 1963 with the oxidizer standpipes and the fuel accumulators installed and with increased fuel pressurization. The measured Pogo was +/- 0.11 g, the lowest ever seen and well below the NASA requirement of +/- 0.25g. The fix worked and was demonstrated again on additional Titan II ICBM flights. Confidence was restored in the Titan GLV with multiple ICBM test successes in a row. Temperature conditioning of the start cartridges for the Stage II engine helped mitigate the combustion instability concern and new injectors were designed for later Gemini missions. The program decided to cancel the paraglider landing system and returned to the water landing concept for all missions. The problems with the Gemini spacecraft fuel cells, thrusters and escape system were mostly resolved. The Agena propulsion systems were still a factor for schedule, so the first mission for that system was deferred until after Gemini V, allowing for the cancellation of one Atlas booster.

Attention now turned to the first unmanned launch in 1964. My next article will have more on LC-19, the launch of Gemini 1 & Gemini 2, Crew selection/training and Gemini 3 (the first manned mission). - yes, I will have to be judicious in my details to keep this shorter than War and Peace! In the meantime, here is an overview of the main program elements:

## Final Program Elements – *Gemini Spacecraft*



**NASA Drawing of the Proposed Gemini Spacecraft  
(Image Credit: NASA)**

The Gemini spacecraft, built by McDonnell Aircraft Company in St. Louis, Missouri, was much more than just an upgraded Mercury spacecraft. The chief designer was Jim Chamberlin and he had a lot of consulting help from

Astronaut Gus Grissom. Gus, at 5'6", was the model for the interior seating, which had to be revamped in 1963 when 14 of the 16 astronauts would not fit in the "Gusmobile", as his Mercury compatriots dubbed the design effort. However, his keen eye for comfort and convenience for a fighter pilot helped shape this spacecraft into something that was far superior to Mercury. The company received a contract to build twelve capsules total plus training simulators.

The Gemini spacecraft was 18 feet 5 inches long and 10 feet wide, with a launch weight varying from 7,100 to 8,350 pounds, as compared to the Maxime Faget-designed Mercury at 10.8 feet long and 6.0 feet wide; with the launch escape system added, the overall Mercury length was increased to 25.9 feet. With 100 cubic feet of habitable volume, the Mercury capsule was just large enough for a single crew member. The heaviest spacecraft, Mercury-Atlas 9, weighed 3,000 pounds fully loaded.

Here are some of the upgrades and design features that were incorporated in the Gemini spacecraft - NOTE: This list comes from the Wikipedia article about Gemini; this article was more accessible for finding details of the various components than the NASA book (information scattered across many pages):

1. Retrorockets, electrical power, propulsion systems, oxygen and water were located in a detachable Adapter Module behind the Reentry Module which would burn up on reentry. Commodities were upscaled to support longer duration missions.
2. A major design improvement in Gemini was to locate all internal spacecraft systems in modular components, which could be independently tested and replaced, when necessary, without removing or disturbing other already tested components. The components featured solid-state electronics.
3. Gemini's emergency launch escape system did not use an escape tower powered by a solid-fuel rocket, but instead used aircraft-style ejection seats. The tower was heavy and complicated, and NASA engineers reasoned that they could do away with it as the Titan II's hypergolic propellants would burn immediately on contact. A Titan II booster explosion had a smaller blast effect and flame than on the cryogenically fueled Atlas and Saturn. Ejection seats were sufficient to separate the astronauts from a malfunctioning launch vehicle. At higher altitudes, where the ejection seats could not be used, the astronauts would return to Earth inside the spacecraft, which would separate from the launch vehicle.
4. Gemini was the first astronaut-carrying spacecraft to include an onboard computer, the Gemini On-Board Guidance Computer, to facilitate management and

control of mission maneuvers. This was built by IBM Federal Systems Division. The Gemini Guidance Computer weighed 58.98 pounds and its core memory had 4096 addresses, each containing a 39-bit word composed of three 13-bit "syllables".

5. Gemini used in-flight radar and an artificial horizon; similar to those used in the aviation industry. Like Mercury, Gemini used a joystick to give the astronauts manual control of yaw, pitch, and roll. Gemini added control of the spacecraft's translation (forward, backward, up, down, and sideways) with a pair of T-shaped handles (one for each crew member). Translation control enabled rendezvous and docking and crew control of the flight path. The same controller types were also used in the Apollo spacecraft.
6. Gemini was equipped with an Orbital Attitude and Maneuvering System (OAMS), containing sixteen thrusters for translation control in all three perpendicular axes (forward/backward, left/right, up/down), in addition to attitude control (pitch, yaw, and roll angle orientation). Translation control allowed changing orbital inclination and altitude, necessary to perform space rendezvous with other craft, and docking with the Agena Target Vehicle (ATV), with its own rocket engine which could be used to perform greater orbit changes.
7. Early short-duration missions had their electrical power supplied by batteries; later endurance missions used the first fuel cells in crewed spacecraft.

## Final Program Elements – *Titan II Gemini Launch Vehicle*

As noted earlier in this article, the Titan II was derived from the Titan II ICBM, but with major changes and upgrades. Again, this overview was easier to capture from the Wikipedia article about the Titan II GLV, as they have a composite overview.



**Composite Image of all Titan GLV Launches (Photo Credit: NASA)**

The Titan II GLV, manufactured by Martin Marietta in Baltimore, was a two-stage liquid propellant rocket using hypergolic (ignites upon contact) fuel (Aerozine 50) and

oxidizer (Nitrogen Tetroxide). The vehicle was 109 feet tall and 10 feet wide and could carry 7,900 pounds of payload to LEO (Low Earth Orbit). Twelve vehicles were contracted for to be built for the program and twelve vehicles flew. The designated launch pad was LC-19 at Canaveral Air Force Station (a short overview of LC-19 will be in the next write-up). Engines were provided by Aerojet General:

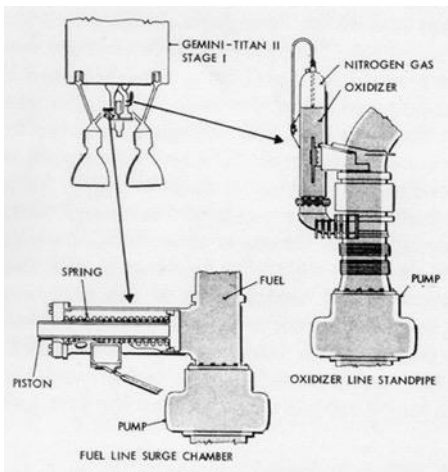
- First stage - One LR87-AJ-7 with two combustion chambers and turbopumps with a maximum thrust of 430,000 lbf (pound-feet) and a specific impulse (efficiency) of 258 seconds. This stage would burn for 156 seconds.
- Second stage - One LR91-AJ-7 with two combustion chambers and turbopumps with a maximum thrust of 100,000 lbf and a specific impulse of 300 seconds. This stage would burn for 180 seconds.

Aerojet General, as noted earlier in the article, underwent significant process improvements to ensure a quality product. Here are the major changes that were necessary for the man-rating of Titan II; these were retrieved from Wikipedia.

1. A "Gemini Malfunction Detection System" was installed to inform the crew of the rocket's status, and improve response in an emergency.
2. Redundant systems were installed to reduce the chances of launch failures.
3. The inertial guidance system was replaced by a lighter-weight ground-radio guidance system.
4. The avionics truss in the second stage was modified slightly
5. To help guard against the possibility of a guidance malfunction causing the engine nozzles to gimbal hard right or left, an extra backup guidance system was added.
6. The second stage propellant tanks were lengthened for longer burn time and unnecessary vernier engines and retrorockets were removed. Because the second stage engine had had issues with combustion instability, it was equipped with baffled injectors (phased in later in the program).
7. The first stage was loaded with 13,000 pounds (5.9 t) more propellant than the Titan ICBM although the storage tank size remained unchanged.
8. Modifications were made to the tracking, electrical and hydraulics systems in the interest of improved reliability.
9. The propellants were chilled to slightly improve vehicle performance. This allowed for more mass to be accommodated.
10. First stage engine thrust was reduced slightly to cut down on vibration and G loads.



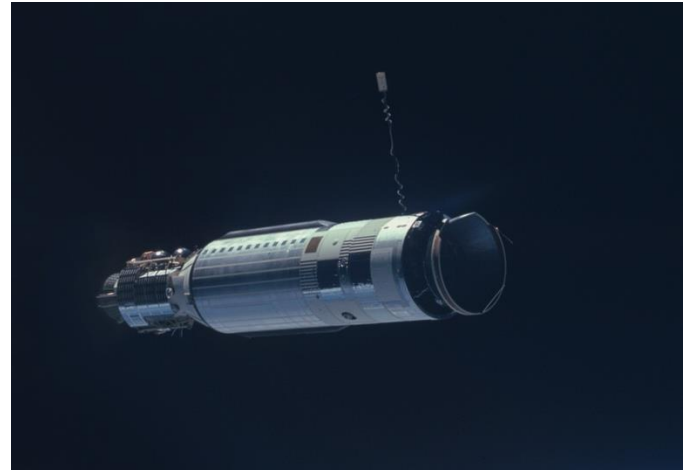
11. First stage engine burn would go until propellant depletion unlike Titan ICBMs which were designed to cut off when propellant flow/pressure and engine thrust started dropping as the tanks emptied. This was to prevent the possibility of a malfunctioning pressure sensor triggering an abort condition. Also, running until depletion would slightly boost the Titan's capacity for payload.
12. The primary changes made to resolve pogo were adding vertical surge suppression oxidizer standpipes, increasing the pressure in the propellant tanks, and adding a mechanical piston accumulator to the fuel suction side.
13. A high degree of quality workmanship was stressed as well as more thorough testing of components and improved handling procedures compared with Titans designed for uncrewed flights.



***Titan Propulsion System Pogo Modifications***  
(Image Credit: NASA)

## **Final Program Elements – Agena Target Vehicle or ATV (Modified Agena D)**

Manufactured by Lockheed Aircraft, this modified Agena D upper stage used a targeting and docking adapter built by McDonnell Aircraft, ensuring it would mate with the Gemini spacecraft. The ATV would fly on a standardized Atlas SLV-3 launch vehicle from LC-14 at Cape Canaveral Air Force Station. Seven ATVs were built for the Gemini program in Sunnyvale, California.



***Lockheed ATV, Gemini VIII Mission*** (Photo Credit: NASA)

The ATV was 26 feet long and 5 feet in diameter with a set of modified GATV engines (Bell 8247 or designated the XLR81-BA-13 by the USAF). The engines used the same hypergolic propellants as the Titan. The Agena also flew a suite of Avionics packages (guidance, instrumentation, electrical, control systems, tracking). The modified engines would allow for multiple restarts. This was made possible by replacing the start-up cartridges for two metallic bellows on the oxidizer and fuel tank, which could supply enough pressure for start-up. Once the turbopump reached its peak power, the outlet pressure was used to refill those bellows, and thus it recharged itself. The engine was rated for 15 restarts. As will be noted in future profiles in this series, the Agena was found to be problematic on several missions.

## **Conclusion, Next Article**

Since the Atlas SLV-3 was a standardized launch vehicle, it will not be profiled here. I also have elected to not go into details about the North American Aviation paraglider landing system, which did not make the final system stack.

The next part of this series planned for the second quarter of 2025 will try and compress lots of information about LC-19, Gemini 1, Gemini 2, Crew selection/training and Gemini 3 into one (hopefully succinct) article.

## **Resources and Links:**

### **On the Shoulders of Titans: A History of Project Gemini**

<https://ntrs.nasa.gov/citations/19780012208>

### **Project Gemini: A Chronology**

<https://www.nasa.gov/history/SP-4002/contents.htm>

### **Project Gemini (NASA Overview)**

<https://www.nasa.gov/gemini/>

**Wikipedia Article about Project Gemini**  
[https://en.wikipedia.org/wiki/Project\\_Gemini](https://en.wikipedia.org/wiki/Project_Gemini)

**Wikipedia Article about Titan II GLV**  
[https://en.wikipedia.org/wiki/Titan\\_II\\_GLV](https://en.wikipedia.org/wiki/Titan_II_GLV)

**Wikipedia Article about Agena Target Vehicle**  
[https://en.wikipedia.org/wiki/Agena\\_target\\_vehicle](https://en.wikipedia.org/wiki/Agena_target_vehicle)

**NASA Experience with Pogo in Human Spaceflight Vehicles, Dr. Curtis E. Larsen**  
<https://ntrs.nasa.gov/api/citations/20080018689/download/20080018689.pdf>

Barb Sande, MARS STAR and MARS Facebook Page Historian. Contact me at [barbsande@comcast.net](mailto:barbsande@comcast.net).

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## **Pacesetters Club**

By Bill Wise  
[wisewj@aol.com](mailto:wisewj@aol.com)

PACESETTER'S first year was terrific! We had pretty good attendance and very educational information sessions. The camaraderie and interaction exceeded expectation. Just ask an attendee.

We are all set for a great 2025 with super topics that you have asked for and speakers that are well qualified. Mark your calendars now, so you don't miss any of the opportunities.

Goals for 2025 are 1) Better communications, including with some that are not seniors but are very interested in attending our sessions, 2) Make our meetings more robust and interesting including handouts when possible, and 3) Improve our harvesting of the valuable group interaction comments.

Please keep your feedback coming. Give Bill Wise a call (720 636 5823).

Let's hear it for a great 2025 for PACESETTERS!

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## **Bridge Club**

By Dave & Kathy Martz  
[martz20@comcast.net](mailto:martz20@comcast.net)

The Bridge Club is open to all MARS members and their guests. We play social, not tournament bridge, with light conversation while we play, as that's what most prefer. We play on the **3<sup>rd</sup> 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 24 January, 21 February, & 21 March 2025.

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 is \$2.00 for in-South Suburban 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 will be sent to Bridge Club members about the play that month. We ask that you respond to the email to reserve a place at the tables or to let us know you're not available. There is always room for more players, as the room will accommodate 6 tables. Check out the MARS website under "Clubs/Bridge Club" for more details.

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

Presidents:  
Dave & Kathy Martz, 303-229-1331  
Vice-President:  
Bill Kacena, 303-973-2685

The 4th Quarter 2024 winners are as follows:

**18 October (4 tables)**  
1<sup>st</sup> – Bill & Mavis Kacena  
2<sup>nd</sup> – Betty Hirst & Sandy Mossman  
3<sup>rd</sup> – Bart & Diane Wright  
4<sup>th</sup> – Ernie & Cecile Berliner

**15 November (5 tables)**  
N/S 1<sup>st</sup> – Curt & Phyllis Brudos  
N/S 2<sup>nd</sup> – Dave & Kathy Martz  
E/W 1<sup>st</sup> – Bill & Mavis Kacena  
E/W 2<sup>nd</sup> – Bart & Diane Wright

**20 December (6 tables)**  
N/S 1<sup>st</sup> – Ernie & Cecile Berliner  
N/S 2<sup>nd</sup> – Dave & Kathy Martz  
E/W 1<sup>st</sup> – Bill & Mavis Kacena  
E/W 2<sup>nd</sup> – Betty Hirst & Wayne Jackson

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## **Car Club**

By Roger Rieger  
[rrieger10731@gmail.com](mailto:rrieger10731@gmail.com)  
303-912-6217

Dave Ernst  
([Dave.Ernst.157@gmail.com](mailto:Dave.Ernst.157@gmail.com))  
(303)-588-2747

Hope you had a great 2024 car year! Now that winter has finally arrived, the car has been put away for the season. Occasionally when the weather warms up above 50 degrees she may come out for a quick spin around the block, enough to get the oil warmed up and the tires round again.

Several of us hardy Car Club souls were able to get out for the December Cars and Coffee in Lone Tree, always a good time with many interesting cars and car stories to see and tell. Looking forward to 2025 and warmer weather!

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 2025!



## Golf League

Sandy Mossman  
([smoss5592@gmail.com](mailto:smoss5592@gmail.com))

Happy New Year to all! May the New Year bring you many happy moments on the golf course.

It is hard to believe the 2025 MARS Golf League season is just around the corner. Each year, we attempt to increase our golf league membership by encouraging MARS Associate members - both men and women - to join. In 2024 we added several new men and women members and want to continue the trend in 2025. Last year's membership was 61 players of which 12 were women.

Our golf league invites you to participate in our spring/summer/fall 18-hole golf league which plays on Thursday mornings, April through October. Our league play is exclusively at Englewood's Broken Tee Golf Course with first tee time between 7:30 and 9:00, depending on the time of the year. Our primary purpose as a club is to realize a pleasurable golfing experience by promoting social interaction and friendly competition using the certified USGA handicap system. Tentatively, this year's kick-off meeting is March 6th, 10:30 AM at Wyatt's at Broken Tee (2101 W. Oxford Ave). Check the MARS

calendar in the next few weeks to verify the date. We encourage you to attend this meeting as we will review our league's order of business, the rules of golf imposed by the USGA and basically how the league 'works.' However, if you cannot attend the kickoff meeting, please, contact Lisa Cox or myself for more information and/or to sign up.

Lisa Cox - [lisajcox@earthlink.net](mailto:lisajcox@earthlink.net)  
Sandy Mossman - [smoss5592@gmail.com](mailto:smoss5592@gmail.com)

Broken Tee Golf Course is an 18-hole championship course with some tight fairways and some small lakes to challenge the average golfer. It offers affordable golf rates (for 18 holes: golfers age 62+ \$32 green fee, under 62 \$40 green fee), which is hard to beat in the region. If you choose to ride, golf carts are \$22 per player. The great thing about our league, is that there aren't any up-front green fees; you only pay when you play. There is a one-time yearly league fee of \$80, though. Come join us this season for fun and exercise!

If you have any questions regarding our golf league, please feel free to view our MARS website: [www.marsretirees.org](http://www.marsretirees.org) and click on "Golf" under the "Clubs" tab or contact me if you like at: (303)730-8378.

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## Hiking Club

By Sue Janssen ([susan.g.janssen@gmail.com](mailto:susan.g.janssen@gmail.com))

Happy New Year! Perhaps a hike or two is part of your exercise plan for 2025. We need volunteers to organize hikes in 2025. If you wish to join the MARS Hiking Club, contact Sue Janssen at [susan.g.janssen@gmail.com](mailto:susan.g.janssen@gmail.com) who will add you to the club distribution list. Please provide your email address, home phone and cell phone for the roster. The schedule of hikes is posted on the MARS website (<http://www.marsretirees.org/>). Even if you have never gone snowshoeing or hiking you are welcome to join in the fun.



## Photography Club

By John Chapter  
[johnchapter@msn.com](mailto: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. Last year, we had our holiday luncheon at Cafe Jordano.

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 can 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 is posted on the club's webpage, on the MARS website, [www.marsretirees.org](http://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](mailto:jkummer@comcast.net).

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## Colorado Springs Lockheed Martin Retiree Group News

By Doug Tomerlin  
([dougincs@aol.com](mailto:dougincs@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.

If you would like more information about the Colorado Springs Lockheed Martin Retiree Group, luncheons and other activities, please contact Doug Tomerlin at [dougincs@aol.com](mailto:dougincs@aol.com).

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## Cape Canaveral News

By Dick Olson  
([olson5145@aol.com](mailto:olson5145@aol.com))

### Luncheons

**October 2024** – Much better turnout than usual. Present were Ken Webb, Roger Wright, Lavern Jones, Silvia Sansing, Larry Johnson, Cecil Snipes, Alison Kallsen, Bob Matschner, Don Bollinger, Kelly and Dan DeFazio, Cathy Klein and Wendell McDaniels escorted by his grandson and great granddaughter.

Cathy reported that her mother had recently passed. Our condolences to Cathy and her family.

Alison provided details for Dale Kallsen's funeral arrangements. Dale worked as a Payload Integration Engineer starting in 1988 and retiring in 2011. Services will take place on Wednesday, November 13th at 1:00 PM at Cape Canaveral National Cemetery -- followed by a celebration of life at River Rocks Restaurant, 6485 South US 1, Rockledge, FL from 2:30 to 4:30 PM.

Heard from Bill Reinhold and he and Diane have moved to Tenn. and did not have any major damage due to hurricane Helene.

Columbus Day is coming up this month and don't forget to stock up on candy for Halloween. Get prepared to vote.

**November 2024** – Fair turnout this month. Present were Abe Smith, Cathy Klein, Roger Wright, Don Bollinger, Dan and Kelly DeFazio, Bob Matschner, Cecil Snipes, Alison Kallsen and Judy Biancone who I believe made her first appearance.

Cecil reported that Butch Ford was at home under hospice care and is in serious condition.

Dale Kallsen's services will be on Nov. 13th at Cape Canaveral National Cemetery at 1:00 pm followed by a celebration of life at River Rocks restaurant.

Lynn and Paul Johnson have moved to the assisted living facility on the south side of Crockett Rd on Merritt Island. They would appreciate visitors.

Hope everyone survived Halloween and are preparing for a Thanksgiving feast. See you next month.

**December 2024** -- Present for the last luncheon of 2024 were Abe Smith, Sylvia Sansing, Larry Johnson, Lavern Jones, Cecil Snipes, Dan and Kelly DeFazio and Lynn Johnson along with husband Paul, son Scott and Scott's wife Ada.

Lavern reported that Wendell McDaniels called her and said he wasn't up to attending but wished everyone well.

Roland "Butch" Ford's services will be at the Cape Canaveral National Cemetery on Jan. 7th at 2:00 PM.

**January 2025** -- Kind of a light turnout this month; people must still be recuperating from their New Years eve parties. Present were Lavern Jones, Larry Johnson, Roger Wright, Ken Webb, Dan and Kelly DeDazio, Bob Matschner, and someone we haven't seen for ages, Ray Caldwell who will be 94 on the 21st of this month.

Roger reported that Lynn Johnson has fallen and cracked her pelvis. She is undergoing treatment and therapy at the nursing home across from the Post Office on Merritt Island which is right across the street where her and Paul have an assisted-living apartment. Roger says she would welcome company.

Want to remind folks that Butch Ford's services are on the 7th at 2:00 at Canaveral National Cemetery, line A, with post-service lunch at Shilo's on US 1 in Titusville.

Have a Happy New Year!

## **Recent Obituaries**

**Darrell Holloway**, 67, passed away Wednesday November 20, 2024. Darrell had been combating Pancreatic cancer for over a year. Darrell was a part of the SRMU crew, returning to the Shuttle program in 2004. He later worked with Boeing on the STS Booster.

**Roland "Butch" Ford** passed away November 23, 2024. Butch worked Titan while in the Air Force and joined Martin upon his retirement. He worked in T&FS and then a short stint in the Test Conductors office, returned to Operations and, then ran the SRM checkout group.

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## **Lockheed Martin (LM) News**

### **Lockheed Martin's Newest Technology Demo for Space Connectivity Is Ready for Launch**

The company's self-funded Tactical Satellite to demonstrate cross-linked communications and sensing capabilities vital to the future of space

**Littleton, Colo., December 9, 2024** – Lockheed Martin's [NYSE: LMT] newest technology demonstration, called the [Tactical Satellite \(TacSat\)](#), is complete and ready for launch in 2025 aboard a Firefly Aerospace Alpha rocket.

TacSat is an intelligence, surveillance and reconnaissance spacecraft with a mission to prove specialized sensing and communications capabilities on orbit. The satellite will participate in exercises next year that highlight cross-domain kill-web connectivity, enabling timely execution of tactical space missions.

"This area of focus is especially important to the future of space as it becomes a more contested environment," said Paul Koether, director of tactical space at Lockheed Martin. "We're thrilled to be one step closer to displaying

game-changing communications and sensing in the ultimate high ground."

### **What's On Board?**

In an increasingly complex battlespace, infrared sensing can be a decisive edge providing more complete situational awareness for allied forces.

TacSat will host a proven Lockheed Martin infrared sensor on board that brings previously developed technology to space for the first time. This sensor produces high quality imagery and it can interface with federated Battle Management Command & Control (BMC2) combat systems to provide joint forces with a comprehensive view of threats.

The satellite will also feature Lockheed Martin's first [5G.MIL®](#) payload on orbit. This provides cellular-like networking for military space assets, making satellite constellations more resilient. It also helps enable seamless connectivity with tools in the air, at sea and on land.

The power of proliferated connection and influx of actionable data this technology brings will strengthen our customers' ability to stay ahead of threats on the horizon.

### **The Bigger Picture**

Space-enhanced Combined Joint All-Domain Command and Control (CJADC2) will enable the global connection of our nation and allies' military assets. Once operational on orbit, TacSat will be available for customer exercises, including learning endeavors related to Find, Fix, Track, Target, Engage, Assess (F2T2EA) missions.

Having successfully completed rigorous environmental testing earlier this summer, TacSat has completed its final checkouts at Lockheed Martin's Littleton, Colorado, campus. Next up on its road to launch, the satellite will ship out to its launch site in California for final processing ahead of liftoff in 2025.

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## **United Launch Alliance (ULA) News**

### **ULA eyes annual mods to turn rocket stage into space interceptor**

By [Courtney Albon](#) Dec 13, 2024

The United Launch Alliance, a longtime government spacelift provider, has an incremental plan to upgrade its Centaur V upper stage to fly long-duration space missions.



ULA's Vulcan rocket is powered by a Centaur V upper stage, which the company wants to upgrade over time to fly long-duration missions. (United Launch Alliance)

The Centaur V powers the company's new Vulcan rocket, which is [on the verge of being certified to fly national security missions](#). The upper stage of a rocket is used to propel a payload further into space after the initial booster has separated. The Centaur V was designed to be more than twice as powerful as its predecessor and to remain in orbit for as long as 12 hours.

ULA CEO Tory Bruno told reporters Thursday the company's [longer-term vision is for the Centaur V](#) to eventually be able to remain in space for days or longer. The fast-moving vehicle would be highly maneuverable and could be used to relocate satellites or for counterspace missions.

In a Dec. 4 Medium post, [Bruno fleshed out his concept](#) for the Centaur V to function as an in-space mobility platform, or a "Greyhound." In one scenario, he described the system loitering in orbit, ready to thwart an adversary's attempts to target a Space Force asset.

"That becomes a very powerful deterrent," he said Thursday on the sidelines of the Space Force Association's Spacepower Conference in Orlando, Fla.

The company has an incremental plan to get to this "lightning fast, long range, lethal if necessary" Centaur V through regular upgrades to the existing system. The modifications would happen annually, or perhaps on a more frequent cadence, and then validated on flights of its Vulcan rocket.

"There are several things that, as you put them all there, they incrementally extend that life and capability," Bruno said. "And at the end of all of that you have the ultimate objective for duration that we intend to have."

ULA's plan for its Centaur V is shaped by several variables. The company's largest competitor, Elon Musk's SpaceX, has the highest annual launch rate and has embraced new concepts for reusability and rocket cargo transport [via its behemoth Starship rocket](#). Concepts like upper stage mobility could expand ULA's portfolio.

It's also informed by a changing threat environment in space — one that Space Force officials have said [requires mobile satellites and spacecraft](#) that bring more thrust and can potentially be refueled in orbit. These maneuvering vehicles could be used to observe potential adversary activity and respond if needed.

The head of U.S. Space Command, Gen. Stephen Whiting, reiterated that message Wednesday, telling reporters the service needs a system that can maneuver through space without fuel constraints.

"We need some kind of capability to be maneuverable in the space domain and not be confined to only operating with the fuel, the propellant we were launched with," he said on the sidelines of the Space Force Association's Spacepower Conference in Orlando, Fla. "We want to operate until the mission is finished, not until the fuel we were launched with runs out."

Bruno said on Medium that he views a capability like what ULA is mapping out for Centaur V as key to the Space Force's strategy for defending against aggression from China and Russia. While much of the service's focus has been on making sure its architecture — the satellites and ground systems it relies on to provide space capabilities to other military users — is resilient against adversary attacks, he suggested that only addresses one piece of the problem.

"The ability to take a few punches and keep on communicating and watching is necessary, but insufficient," Bruno said. "Resiliency alone will not stop or limit an attack."

Mobility, he said, needs to be part of the equation.

"I don't mean the ability to move the assets we are trying to protect," he wrote. "That is useful and a part of resiliency. I mean a squadron of lightning fast, long range, lethal interceptors."

About [Courtney Albon](#)

Courtney Albon is C4ISRNET's space and emerging technology reporter. She has covered the U.S. military since 2012, with a focus on the Air Force and Space Force. She has reported on some of the

Defense Department's most significant acquisition, budget and policy challenges.

## Wine Tasting #2



MARS Group 1 enjoying wine and Snacks



MARS Group 2 enjoying wine and Snacks



MARS Group 3 enjoying wine and Snacks



MARS Group 4 enjoying wine and Snacks

# *MARS 2025 SPRING EVENT & ANNUAL MEETING*

The Officers and Board of Directors of MARS Associates are pleased to invite you and your spouse/companion to the **MARS Spring Event & Annual Meeting** on **Wednesday, March 19, 2025** at the Lone Tree Golf Club & Hotel located at 9808 Sunningdale Boulevard, Lone Tree, Colorado 80124. For a map to the facility, please ctrl+click on this link: <https://?q=lone+tree+golf+club+and+hotel&atb=v315-1&iaxm=maps>

Doors to the event will open at **11:00 a.m.** and the luncheon will be served at **12:00 noon**. The speaker scheduled this year is Mr. Tory Bruno, CEO and President of United Launch Alliance. The event will also include the MARS Annual Meeting Agenda.

Menu choices are: **Stuffed Avocado with Chicken Salad** – chicken salad, half avocado, mixed greens, cherry tomato, hardboiled egg, cucumber, fruit; **Caprese Chicken Pasta** – 6 oz. chicken, penne pasta, mozzarella cheese, basil, tomatoes, olive oil garlic sauce; and **French Dip sandwich** with House chips and cup of fruit with side of au jus. Dessert, coffee, and iced tea will be included. There will be a cash bar. If you have special dietary needs, please contact Linda Duby at 303-249-1665 or [lindaduby@comcast.net](mailto:lindaduby@comcast.net) with the details. The cost for members and one guest is \$20.00 per person. The cost for additional guests or non-members is \$35.00 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 on the form by **March 3, 2025**. Or, you can make your reservation by using the STRIPE link below:

**STRIPE (ctrl+click):** <https://marsretirees.org/mars-2025-spring-event-annual-meeting/>

If you make a reservation and later find you cannot attend, please notify, Linda Duby at 303-249-1665 or [lindaduby@comcast.net](mailto:lindaduby@comcast.net), or Charlie Haupt at 303-725-7595 or [qcrfccoach@gmail.com](mailto:qcrfccoach@gmail.com) or Jayne Brown at 303-905-9822 or [jaynebrown@comcast.net](mailto:jaynebrown@comcast.net). no **later than March 3, 2025** to receive a refund. Admission is by reservation only.

-----Detach Here-----

## 2025 MARS Spring Event and Annual Meeting Reservation Form **Please Print Clearly.**

**Mail to: MARS Associates, PO Box 1128, Littleton, CO 80160-1128**

Member: _____	Chicken _____	Caprese _____	French _____
	Salad _____	Pasta _____	Dip _____
One Spouse/Companion/Guest: _____	Chicken _____	Caprese _____	French _____
	Salad _____	Pasta _____	Dip _____
Other Guests: _____	Chicken _____	Caprese _____	French _____
	Salad _____	Pasta _____	Dip _____

Member: \_\_\_\_\_

One Spouse/Companion/Guest: \_\_\_\_\_

Other Guests: \_\_\_\_\_  
(Add sheet for additional guest names)

Member Phone No. \_\_\_\_\_

Member e-mail address \_\_\_\_\_

Member/Spouse/Companion/Guest \_\_\_ @ \$20.00/person = \$ \_\_\_\_\_

Other Guest \_\_\_ @ \$35.00/person = \$ \_\_\_\_\_

TOTAL ENCLOSED \$ \_\_\_\_\_ Check # \_\_\_\_\_





# MARS ASSOCIATES

## 2025 MEMBERSHIP RENEWAL (DUES) NOTICE

It is time for **all** regular and senior members to renew your membership for the year March 1, 2025 — February 28, 2026, regardless of which month you joined MARS Associates.

Please complete the Membership Renewal Form below and mail with a check or money order made out to "**MARS ASSOCIATES**" in the amount shown below, to be received not later than March 31, 2025.

Members whose dues are not paid as of March 31, 2025, will be notified, and will be dropped from membership if dues remain unpaid. Membership expiration is determined by Membership Database records. Members who have been dropped will not be eligible for MARS clubs or member discounts for activities or benefits after March 31.

**Retain your current membership card—cards are not reissued annually.** More information about MARS is on the back of this page. If you have questions, contact the Membership Vice President, Jayne Brown, at [jaynebrown@comcast.net](mailto:jaynebrown@comcast.net) or 303-905-9822.

**Please complete all the blanks** – The treasurer separates checks from the form upon receipt!

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

### Membership Renewal Form

Mail to: **MARS ASSOCIATES, PO Box 1128, Littleton, CO 80160-1128**

(New members must complete and submit the New Members MARS Membership Application form found on the website <https://marsretirees.org/mars-associates-new-member-application/> or contact Jayne Brown at [jaynebrown@comcast.net](mailto:jaynebrown@comcast.net))

#### Membership dues for FY2025 are as follows:

**(Please check appropriate box.)**

- Current Regular Member residing in Colorado **all or part** of the year. \$25.00 ·
- Current Regular Member residing full-time outside Colorado. \$15.00 ·
- Current Senior Member whether residing in Colorado or out of state, whose retiree-member birthdate is earlier than March 1, 1950. \$15.00 ·

Check # \_\_\_\_\_ Check Date \_\_\_\_\_

Name(s) \_\_\_\_\_  
First MI Last Nickname

Spouse (or significant other) \_\_\_\_\_  
First MI Last Nickname

Address \_\_\_\_\_ Apt/Unit \_\_\_\_\_

City/State \_\_\_\_\_ Zip \_\_\_\_\_ Zip ext. \_\_\_\_\_

Phone \_\_\_\_\_ Email Address \_\_\_\_\_

Spouse Email Address (Optional) \_\_\_\_\_

Do you want your email address listed on the MARS website? YES · NO ·

Do you want to receive special notices from MARS by email? YES · NO ·

Are you interested in volunteering in support of MARS? YES · NO ·

If you volunteer for another organization, let us know where: \_\_\_\_\_

### Snowbirds:

If you receive printed copies of the MARS STAR, please notify the Membership Vice President by telephone, email or "snail mail" when you know your travel dates to your alternate address AND what that address is.

MARS STARS are mailed by Standard (Bulk) Mail to keep the cost of mailing low—every rejected or forwarded MARS STAR incurs an additional postage cost to MARS Associates.

## Membership

- **Low annual membership dues** - \$25.00 in-Colorado, \$15.00 out of Colorado and seniors ( $\geq 75$  years of age); includes you and your spouse or significant other
- **Dental, Vision** at very reasonable rates
- **Vendor Discounts** – visit our website (<http://www.marsretirees.org>)
- **Social Events** – annual picnic, happy hours, luncheons, Rockies games, etc.
- **MARS STAR Quarterly Newsletter** – information on past and current events relating to the organization as well as Corporate, LMSSC and ULA happenings
- **Informational & Educational Presentations** – periodic seminars on topics of interest (e.g. Medicare 101)
- **Connectivity with other retirement associations throughout the corporation**

### Volunteer Opportunities

- **Community Service & Event Support** – help your community and/or the companies with the MARS team, for example, the Fun Run, Health Fair, Community Support Programs
- **MARS Support** – Web Committee, In Memoriam, Event Photographer
- **MARS Leadership** – Board of Directors and Officer positions of leadership, maximum of two 2-year terms (see the Bylaws and Policy Manual posted on the MARS website)

### Current Club Activities

- **Bridge Club** – lively party bridge, singles welcome
- **Car Club** - Invites all car enthusiasts to become members, meet other like-minded people, and enjoy and share our love for the automobile.
- **Golf League** – a handicap league open to men and women that plays weekly games throughout the summer with a tournament in September and a banquet in the Fall
- **Hiking Club** – planned hikes for various levels of ability
- **Photography Club** – monthly meetings at Littleton Bemis Library (*except June, July, August*), photo-related presentations and programs – including travelogues, photo contests, help with equipment and photography; open to everyone.
- **Pacesetters** - provide a social club for MARS Associates senior members (75+) to share life experiences, camaraderie, meals, books, etc. via email interactions, "Zoom" like calls, and periodic lunch gatherings.
- **Special Interests** – You are encouraged to start a club for your special interest. There is something for everyone to enjoy and all activities are open to all members. Come check us out on our website at <http://www.marsretirees.org> for more information.

MARS ASSOCIATES IS A REGISTERED 501(c) (7) SOCIAL AND RECREATION CLUB

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## 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

Lockheed Martin (LM) feels [financial pinch](#) from F-35 upgrade, contract delays (Defense News)  
 LM [shares slide](#) on F-35 headwinds despite lifting profit and sales forecast (Reuters)  
 LM [director Jeh Johnson resigns](#) (Investing.com)  
 Corporations are chugging ahead on deals to [offload pension liabilities](#); lawsuits aren't slowing them down (Pensions & Investments)  
 LM issues [\\$1 billion in senior notes](#) (Investing.com)  
 Second Trump presidency could mean [harder line with defense industry](#) (Defense News)  
 Elon [Musk versus LM?](#) Say it ain't so (Barron's via MSN)  
 "Fake News": LM slams report that Trump will scrap company's F-35 over DEI (Fort Worth Star-Telegram)  
 Elon Musk [shoots down LM](#), other F-35 contractors (Investor's Business Daily)  
 LM [braces for new administration](#) as Musk targets F-35 (Defense One)  
 Video / LM [CEO responds to Elon Musk's](#) criticism of F-35 program (CNBC)  
 Rahm Emanuel says U.S. [defense firms cause bigger risks](#) than China (Bloomberg)  
[China sanctions LM](#), Raytheon, eight others over Taiwan arms sales (The Defense Post)  
 LM [stock is downgraded](#). It's about China, the F-35 and air dominance (Barron's)  
 Will military tech firms [unseat LM?](#) (Forbes)  
 Opinion / [New aerospace and defense entrants](#) spark change (Aviation Week Network)  
 LM forms [subsidiary to help defense companies adopt AI](#) (Reuters)  
 LM teams with Iceye to advance [AI-enabled targeting](#) (Space News)  
 LM [completes acquisition](#) of smallsat manufacturer Terran Orbital (Space News)  
 Phoenix Semiconductor secures [LM investment](#) (ExecutiveBiz)  
 Undersea [drone startup fetches \\$16 million](#) to aid hiring, manufacturing push (Washington Technology)  
 LM-backed [solid-state battery startup](#) ION Storage secures \$10 million (CityBiz)  
 Video / Commercial space transformers – Chris Moran, [LM Ventures](#) (Space News)  
 Maria Demaree named LM SVP, CIO in [series of exec moves](#) (GovConWire.com)  
 LM signs on for six more years as [title sponsor of Armed Forces Bowl](#) (Fort Worth Magazine)

## HYPERSONICS NEWS

DTS to build [common hypersonic glide bodies](#) for U.S. hypersonic strike weapons is \$670.5 million contract (Military-Aerospace Electronics)  
 Pentagon announces [hypersonic testing pact](#) with UK, Australia (Defense News)

## 5G.MIL NEWS

LM to [launch 5G demonstration](#) on Firefly rocket (Space News)

## SPACE SYSTEMS NEWS

Australia [kills \\$5.3 billion military space program](#) with LM (Breaking Defense)  
 Space Force new GPS satellites are running [months behind schedule](#) (Bloomberg News via MSN)  
 LM [challenges narrative](#) on GPS vulnerability (Space News)  
 LM unveils [solar power array](#) for Artemis program (Space News)  
 NASA finds, but does not disclose, root cause of [Orion heat shield erosion](#) (Space News)  
 NASA further [delays next Artemis missions](#) (Space News)

[Powering national security space](#) with nuclear (Aviation Week Network)  
LM's [new mid-size satellite platform](#) closer to launch (Space News)  
NASA assessing options for [faster, cheaper Mars sample return](#) (Aviation Week Network)  
How [NASA's Lunar Trailblazer](#) could decipher the Moon's icy secrets (Lake County News)  
NASA delays decision on [Chandra and Hubble cuts](#) (Space News)  
Retired military weather [satellite breaks up](#) (Space News)  
Biden administration eases [restrictions on space-related exports](#) to allies (Reuters)  
The U.S. military's new [multi-orbit approach](#) to missile warning (Aviation Week Network)  
Vulcan SRB anomaly [still under investigation](#) (Space News)  
ULA eyes annual mods to [turn rocket stage into space interceptor](#) (Defense News)  
Space Force adjusts timeline as Vulcan's national security [launches slip to 2025](#) (Space News)  
To rival SpaceX's Starship, ULA eyes [Vulcan rocket upgrade](#) (Reuters)  
Elon Musk's SpaceX, already a leader in satellites, [gets into the spy game](#) (The New York Times)  
SpaceX [domination of U.S. launch contracts](#) is poised to grow (The Washington Post)  
SpaceX wins new launches; U.S. Space Force continues to [press for competition](#) (Air & Space Forces Magazine)  
Space Force's [effort to bring in new launch providers](#) hasn't worked yet; officials aren't surprised (Defense One)  
LM calls on 1,200 goats to help [mitigate wildfire risk at Littleton campus](#) (The Denver Gazette)

## AERONAUTICS NEWS

Defense bill would [cut F-35 purchases](#) in 2025, delay deliveries (Defense News)  
DoD, LM [agree on price for next 145 F-35s](#) (Air & Space Forces Magazine)  
LM [ups pace of F-35 deliveries](#) to new high to start clearing backlog (Air & Space Forces Magazine)  
LM [topped F-35 delivery range](#) in 2024 (Aviation Week Network)  
F-35 fighter jet, world's costliest weapons program, [failed to hit readiness marks for 6 years](#), watchdog finds (Military.com)  
The [heat turns up on F-35](#) performance and upgrade plans (Aviation Week Network)  
Marine Corps F-35C was [used in combat for first time](#) to strike Houthis, military confirms (Military.com)  
Marines score [aviation firsts](#) with F-35 squadron, drone test and more (Military Times)  
Marines still targeting 2030 for [Hornet replacement](#), despite F-35 delays (Defense One)  
LM lobbies for larger [UK F-35 buy](#) (Aviation Week Network)  
RAF, LM achieve [breakthrough in interoperability](#) (UK Defence Journal)  
The Pentagon's F-35 office has no idea [what an F-35 looks like](#) (Military.com)  
LM working on tech to [integrate F-35 with CCAs](#) (Air & Space Forces Magazine)  
Eyeing future CCA missions, Navy teams with LM, General Atomics to test [new drone control system](#) (Breaking Defense)  
LM CEO hints at [lower-cost CCA approach](#) (Aviation Week Network)  
Top U.S. Air Force general [refutes LM's CCA claim](#) (Aviation Week Network)  
Skunk Works [uncrewed NGAS concept](#) gets new attention (Air & Space Forces Magazine)  
Kendall: [USAF can't afford](#) next-gen fighter, tanker and wingman drones all at once (Air & Space Forces Magazine)  
Outgoing U.S. Air Force leaders [defer sixth-generation fighter decision](#) to Trump administration (FlightGlobal)  
U.S. Navy carves independent path for [future fighter design](#) (Aviation Week Network)  
LM flies [first Bulgarian F-16](#) Block 70 (Aviation Week Network)  
LM starts production of [first U.S. Navy E-130J](#) TACAMO aircraft (The Defense Post)  
[Sweden selects C-390](#) in new defense pact (Aviation Week Network)  
New-generation aircraft in development for [aerial firefighting](#) mission (Aviation Week Network)  
NASA's X-59 "quiet" supersonic jet [test fires engine](#) for first time (Space.com)

## MISSILES AND FIRE CONTROL NEWS

LM [increases weapon system production](#) (The Defense Post)  
LM to produce [650 PAC-3 missiles annually](#) (The Defense Post)  
Northrop Grumman aims to [double GMLRS rocket-motor output](#) (Defense One)  
U.S. Army unit in Poland the first to field [new rocket system](#) (Defense News)  
Pentagon allows U.S. defense [contractors to repair weapons in Ukraine](#) (Stars & Stripes)  
[What are ATACMS](#), the U.S. missile that may be used against Russia? (The New York Times)  
New Ukraine aid package to include [HIMARS ammo](#) (Defense One)  
Finland serves as field showcase for U.S. [Army's upgraded rocket system](#) (Stars & Stripes)  
U.S. Army fires [Precision Strike Missile](#) in salvo shot for first time (Defense News)

Army eyes [autonomous missile launcher](#) and 1,000-kilometer strikes (Defense News)  
Air Force asks LM for air-to-surface weapons with [satellite navigation and infrared seeker](#) (Military-Aerospace Electronics)  
Raytheon, LM win full [production of Javelin panels](#) for U.S., Baltic states (The Defense Post)  
Sales of anti-armor missiles [projected to slow](#) (Defense News)  
[Patriot missile knocks out threat target](#) in test with new radar (Defense News)  
U.S. Army quits plan for [next-gen Patriot missile](#) replacement (Defense News)  
Industry looking for [what's next after Army's cancellation](#) of next-gen Patriot interceptor (Breaking Defense)  
Fearing China's hypersonic weapons, U.S. Navy seeks to [arm ships with Patriot missiles](#) (The Economic Times)  
U.S. military to [deploy anti-missile system to Israel](#) to bolster defenses against possible Iran attack (CBS News)  
Estonia mulls [additional HIMARS buy](#), while talking with LM competitors (Breaking Defense)  
LM set to provide [Sniper pods](#) for Polish FA-50s (FlightGlobal)  
LM to develop [next-gen radar warning receiver](#) for Apache fleet (The Defense Post)  
LM unveils [advanced manufacturing technology center](#) (Aerospace Manufacturing)  
LM launches [virtual parts catalog](#) ModSTAR for AI-wielding digital engineers (Breaking Defense)

## ROTARY AND MISSION SYSTEMS NEWS

LM anticipating Sentinel A4 [full-rate production](#) contract in coming months (Breaking Defense)  
LM to [enhance U.S. Navy Mark 48 torpedo](#) in \$245 million deal (The Defense Post)  
LM [successfully demos Navy combat system](#) on hardware destined for ICS (Breaking Defense)  
MDA conducts first-ever [ballistic missile intercept test from Guam](#) (Defense News)  
U.S. Navy's [missile defense site in Poland](#) functions like a destroyer on land (Stars & Stripes)  
South Korea commissions its first [next-generation Aegis destroyer](#) (Defense News)  
Report to Congress on [Aegis Ballistic Missile Defense](#) (U.S. Naval Institute News)  
Canada inks C\$1.85 billion deal with LM for [Halifax-class frigate support](#) (Breaking Defense)  
Japan to get U.S. Navy's LM-made EW system in [first international sale](#) (Breaking Defense)  
LM [shrinks F-35 simulator](#) to squeeze more units into secure facilities (Breaking Defense)  
LM secures two-year extension for [UK tactical trainer](#) (UK Defence Journal)  
["LCS is back"](#) with firepower upgrades including new missile launchers, says SecNav Del Toro (U.S. Naval Institute News)  
New Navy ship [USS Nantucket commissioned](#) while "stern to stern" with oldest Navy ship (Stars & Stripes)  
Poland accepts [final two S-70i helicopters](#) from LM (The Defense Post)  
Greece purchases [35 UH-60M Black Hawk helicopters](#) from LM (Vertical Magazine)  
DARPA funds Sikorsky to [install autonomy](#) on U.S. Army UH-60M (Aviation Week Network)  
UK confirms [single tender](#) for New Medium Helicopter "competition" (Army Technology)  
U.S. offers Viper, Black Hawk [helicopters to Slovakia](#) in revised pitch (Defense News)

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## Glenwood Springs Train Trip



Amtrak conductor, Ralph Pacheco, Judy Sullivan



MARS Group Picture



David Farin



Steve Carr, Debbie Carr



Maureen Gedeon, Ron Gedeon



Pete Gyza, Jan Gyza



Louise Vail, Terry Graeber



Ed Rodriguez, Ruth Rodriguez



Sylvia Dinges, Mary Kimmett



Dean Harder, Judy Harder

## Highlands Ranch Mansion

\*\*\*\*\*



The Highlands Ranch Mansion



MARS Group Picture at Highlands Ranch Mansion



MARS Group on Patio



View from Mansion



Happy Holidays MARS Associates !

MARS Holiday Luncheon, Dec 4, 2024  
Wellshire Event Center



Roger Rieger, Ken Marts with  
Cpl Jonathan Brown, Staff Sgt Joshua Gilbert  
Toys for Tots Representatives



Mike & Janet Carroll  
Betty & Jim Johnston



Mollie Christensen, Laurie Makloski  
Ken Disney, Shannon Maginn



Dick Sosnay, Sharon & Cal Harr



Karen Paulson, Terry Lilly, Gina Curet, Livie Grogan,  
Carolyn Malaby, Carol Lovelace, Judy Nielsen





Bryan & Amy Bachman



Linda & Bob Berry



Pawn Wille-Axelson & Steve Axelson  
Shar Petty, Beth Worthington, Rusty Adinolf



Gerry & Sharon Boisvert



Debbie & John Adamoli



Sandie & John Bradford



Gene & Peggy Dionne



Lucy & Dan Ellerhorst



Nels & Tess Freeman



Cindy & Eric Georges



Cheryl & John Grace



Linda & Clare Haag



Charlie & Glenda Haupt



Bill & Lois Heppler



Leo Johnson & Joni Rosenberg



Moon Luckow & Sandy Thimmig



Kathy & Gary Hetzel



Marion & Woody Norman



Judy Sullivan & Ralph Pacheco



Liz Porter, Jane Mattson



Eileene & Charles Pippenger



Julie Tarpley, Deb Morton



Marilynn & Al Nemes



Steve & Barb Sande



Don & Lori Schade



Heidi Urie, Twila Forbes

Happy New Year!!

Schedule Addendum (See lastpage)

NOTES:

1. Board of Directors has their meetings, as required
2. Officers/Directors meet 1st Wednesday every month at 09:30 am. Zoom mtg usage 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: No planned Hikes at this time
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. PACESETTERS Club meets the 2nd Wednesday of each month at Landsdowne Arms
10. 2025 Picnic Sep 10, 2025 at Clement Park 11AM (Second Wednesday in September)

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Please review dates & times -- notify Jim Pennington (jpennington101.jp@gmail.com) if you have any changes or additions.

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

PRESORTED STANDARD  
 US POSTAGE  
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 LITTLETON, CO  
 PERMIT NO. 245

' ADDRESS SERVICE REQUESTED



DATE: January 2025												
EVENT/MONTH	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Officers/Directors	8	5	5	2	7	4	2	6	3	1	5	2
Bridge Club	17	21	21	18	16	20	18	15	19	17	21	19
Car Club	4	1	1	5	3	7	5	2	6	4	1	6
Golf Club	-	-	-	Thur	Thur	Thur	Thur	Thur	Thur	-	-	-
Hiking Club	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open
PaceSetters Club	15	19	-	16	14	11	16	13	17	TBD	17	TBD
Photo Club	9	13	13	10	8	12	10	14	11	9	13	11
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	28	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
<b>MARS Events</b>												
Happy Hour				TBD				TBD				
Spring Event / Annual Meeting			19									
Summer Picnic						25						
Annual Rockies Game							TBD					
2025 Annual Picnic									10			
Holiday Celebration												3
<b>MARS Special Activities NOTE 8</b>												
Open												
Open												
Open												
Open												
Open												
<b>MARS STAR Schedule</b>												
Items due for MARS STAR												
STAR Input to Editor	9			10			10			9		
STAR Repro. Deadline	20			21			21			20		
STAR Mailing	29			30			30			29		