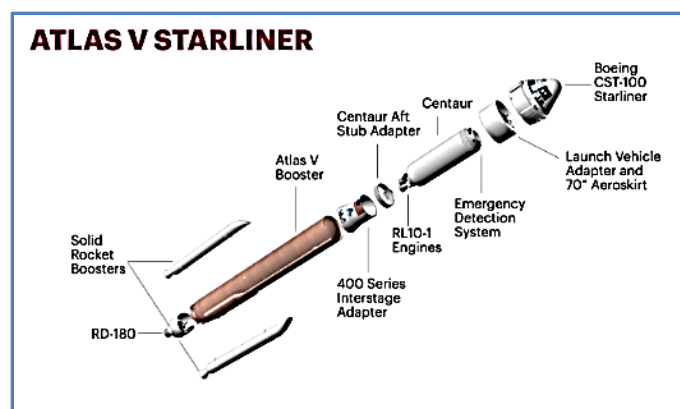
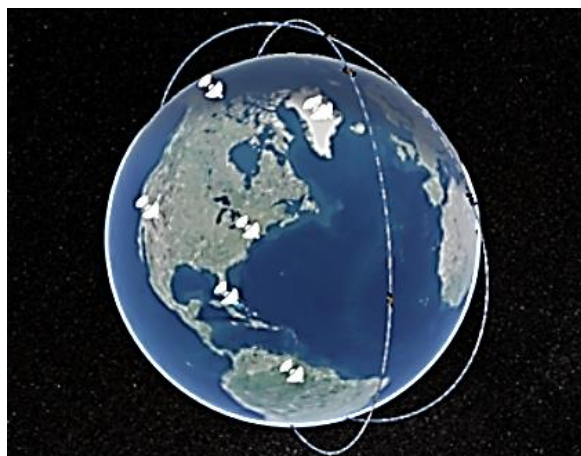


MARS STAR



MARS STAR has gone digital!!

If you currently receive a printed copy, you will continue to receive a printed copy. If you currently receive an electronic copy and wish to receive a printed copy in the future, contact Carl Kaminski at 303-726-1546 or via email at carlkcol66@gmail.com

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Special Events Planned, page 24

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

OFFICERS

President	Ken Marts	303-868-2168
President-Elect	TBD	
VP Activities	Linda Duby	303-249-1665
VP Business	Gina Curet	281-691-4200
VP Communication	Dan Ellerhorst	303-794-0750
VP Membership	Carl Kaminski	303-726-1546
Treasurer	Charlie Haupt	303-798-7113
Secretary	Al Nemes	303-908-0157
Historian POC	Barb Sande	303-887-8511
Marketing Committee	Dick Sosnay	303-972-9209

DIRECTORS

Director Chair	Roger Rieger	303-912-6217
Director	Pete Munoz	720-308-1828
Director	Bill Wise	303-771-4887
Director	Robin Zen	303-335-6443
Director	Monte Kopke	303-973-4301
Director	Daniel Crumb	303-909-0490
Director	Debbie Carr	303-503-7113
Director	Heidi Urie	303-588-6762
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Website Team	Dan Ellerhorst	303-794-0750
Volunteers	Judy Nielsen	303-905-3957

Reporting:

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
Dinner	TBD	
Golf	Sandy Mossman	303-730-8378
Hiking	Sue Janssen	303-936-8339
Photography	John Chapter (Pres)	303-986-8277

REMINDER:

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

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

IMPORTANT PHONE NUMBERS

LM Employee Service Center 1-866-562-2363

MARS Important Phone Numbers

(Be sure to have your MARS ID available)

MARS Delta Dental of CO

Individual Team (representatives) 1-877-516-6512
Ron Rueger (Account Mgr) 303-889-8616

Assured Partners of CO

MARS Delta Dental "Vision" (EyeMed)

MARS Vision Service Plan (VSP)

Jon Elmore 303-228-2206

Hudson Howard

720-510-9505

Sharla Leary

720-510-9507

Aetna/Medicare Plus

1-888-562-8111

Kaiser Advantage Plus

303-338-3800

MARS Associates

P. O. Box 1128

Littleton, CO 80160-1128

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

MARS Facebook:

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

Cover:

L: To help future developers of commercial satellite constellations plan missions and operate their systems, Lockheed Martin (NYSE: LMT) is now offering commercial licenses to its proven Horizon™ Command & Control (C2) and Compass™ Mission Planning software.: See LM News, page 21. Photo Credit: LM

R: A ULA Atlas V rocket will send astronauts to the International Space Station (ISS) aboard The Boeing Company's CST-100 Starliner capsule. The Starliner will launch on the Atlas V from Space Launch Complex-41 at Cape Canaveral Space Force Station, on Florida's Space Coast. See ULA News, page 22. Photo Credit: ULA

From the Editor's Desk

Tom Pighetti (tipighetti@q.com)

Linda Stearns (linda80120@comcast.net)

For comments or corrections, contact Linda (issue editor) or Dan Ellerhorst, V.P. of Communications.

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

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



President's Corner

By Ken Marts
(martshouse2@aol.com)

HAPPY Spring 2023. We've "sprung ahead" already this year now that we're once again in Daylight Saving Time. There are moves afoot to make this a permanent fixture of our clocks, i.e., we'll either stay on Standard time or stay on Daylight Saving Time. I believe I'm like most of you and would prefer to stay with one or the other. Maybe this will be the year we decide.

Whatever is decided, MARS Associates has a bountiful selection of activities for you to enjoy. Dick Sosnay's Marketing and Special Activities writeup provides the details. We've completed the ULA tour but due to popular demand, additional dates are being coordinated. Congratulations to the four winners at the first tour for an opportunity to view a launch live at their ULA Operations Center in Lone Tree.

Plant tours of Lockheed Martin's Waterton facility are also being organized. Train rides, operas, wine tasting, WWII Aviation Museum, Cherokee Ranch (Daniels Park), and Colorado's Wild Animal Sanctuary are all activities in the planning stages. Again, Dick Sosnay's article has the details to mark on your calendars.

Several Happy Hours are also planned with the next one scheduled for April 19 at Sportsbook Bar and Grill in Highlands Ranch. We'll also plan for a late summer or early fall Happy Hour.

Finally, we still have the Summer Luncheon Honoring Senior Members as well as the Rockies baseball game in August followed by the Annual Picnic in September and concluding with the Holiday Event in December as our regular activities.

You can find information on these activities as they mature on our new MARS Associates website. Our new website also features all the news you're used to seeing including Barb Sande's daily Happenings on the date, the In Memorium from Norma Emerson, new members, and more. Check it out for the latest from your MARS Associates team.

Also, be sure to check out our MARS Associates Facebook page for more happenings from your friends in MARS. If you haven't joined the MARS Associates Facebook page, you can send a request to Steve Sande to get added.

MARS Associates flew to the moon and back with Artemis thanks to some quick thinking by Steve Sande.

Linda Duby did another GREAT job of organizing our Spring Event and Annual meeting at Arrowhead Golf Club in March. Drinks and hors d'oeuvres (cold and hot) were available. Mr. Tory Bruno (CEO of ULA) provided an interesting discussion on the ULA experience and expected growth in the launch manifest thru 2028.

We've also added a new Director (Mr. Mickey Clemons) and believe it or not we have found a replacement for Bill Schrott, our Business VP. Ms Gina Curet will be our new Business VP keeping us honest and straight as we operate. Please welcome both Mickey and Gina to the team of MARS Associates Directors and Officers.

The core success of an organization is how well we serve our members. The main source of information for us is to hear from our members via email, Facebook, phone calls, or just catching one of the Officers or Directors at our many activities and sharing your thoughts.

In closing, I wish everyone a productive Spring and I look forward to seeing you at upcoming events.

A BIG CHANGE IS COMING!!!

MARS Email Changes Steve Sande, MARS Website Team

The new MARS website is also requiring significant changes in how our mass emails to members are handled. As a result, anyone who has agreed to receive emails from MARS or receive the MARS STAR newsletter electronically needs to confirm their subscription with our mail server.

An email is being sent out to all members on our lists that introduces the new website and discusses how to confirm your subscription. You may also receive an email from the address donotreply@dreamhost.com that contains a link — clicking that link will confirm the subscription automatically.

At MARS STAR publication time, only about a quarter of all members on our email lists have responded. To ensure that you receive all MARS emails, please confirm your subscription by responding to the email as soon as possible.

Further details can be found on the MARS Website at <https://marsretirees.org>.



Director's Notepad

By Roger Rieger

Chairperson, BoD

rrieger10731@gmail.com

Greetings everyone! Hope you continue to enjoy some of the many new activities put on by your MARS Associates club this year! It's so great to have fellow MARS members step up and volunteer to lead a club activity! Now please support their efforts and join in! Nothing is more satisfying to an organizer than having people sign up and having a good time!

Please join me in welcoming our newest Club Officer - Gina Curet! Gina has stepped forward and graciously accepted the position as our new VP of Business, replacing Bill Schrott who is retiring for the second time with MARS. If you get a chance, thank Bill for his service and welcome Gina as she steps into this essential Club responsibility. The only way our club continues to grow in the future is for new volunteers and people to step forward and volunteer their time and talents. To the many that do - THANK YOU!

for a summer event. The flyer for the event is included in this edition of the STAR and will be available on the website. The link for electronic reservations will also be available on the MARS website.

The 13th Annual Rockies Picnic and Game will be August 2. As usual, we will have a buffet picnic in the Coors Field Platte River Picnic Area under the Rockpile. Our seats are in Section 144 (3rd base side) and shaded from the sun. The reservation form—with all the details—is also in this STAR and available on the website—there is not an electronic reservation available for this event. Seats are limited to 60 so get your reservation in quickly! Contact Linda Stearns at linda80120@comcast.net with questions about this event only.

The Annual Picnic is scheduled for September 13 at Clement Park. More information and the flyer will be in the July STAR.

If you have any questions or comments about events, please contact me at lindaduby@comcast.net.

Please check the MARS website (<https://www.marsretirees.org>) and MARS Facebook page for updates on events.



Activities Updates

By Linda Duby

lindaduby@comcast.net

MARS kicked off the year with a very successful happy hour event on January 25. There were 99 members, guests, and potential members in attendance at the Platte River Bar & Grill that evening. By the time you receive this STAR, the next happy hour will have been held on April 19 at the Sportsbook Bar & Grill in Highlands Ranch. There will be more on that happy hour in the next STAR. Watch for notifications of other happy hours during the year.

March 1 was the Spring Event and Annual Meeting at Arrowhead Golf Club. MARS was very honored to have Mr. Tori Bruno, CEO of United Launch Alliance, as the guest speaker. The 96 members and guests heard a great presentation on the latest launch vehicle, the Vulcan, being developed by ULA. We did the event a bit differently this year and had a buffet of hors d'oeuvres rather than a luncheon. Everyone seemed to enjoy this casual event, the venue, and of course, the great speaker.

Up next in July is the Summer Luncheon Honoring Senior Members. All members are invited to this luncheon. It will be held on July 12 at the Manor House at Ken Caryl. The Manor House has been a great venue for MARS, especially



Business

By Gina Curet

orion43@comcast.net

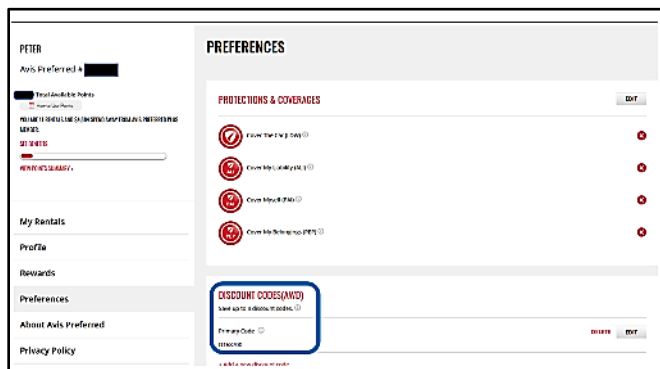
Happy Spring everyone! I hope you had a wonderful Easter with family and friends. I am your newest Officer and look forward to providing you the best information on benefits and discounts as I get up to speed on my new role. MARS greatly appreciates Bill Schrott for his years of service as VP of Business!

Look for a blast email on the upcoming **Medicare 101** classes. It is imperative to understand your future Medicare benefits as you near retirement or 65 years old.

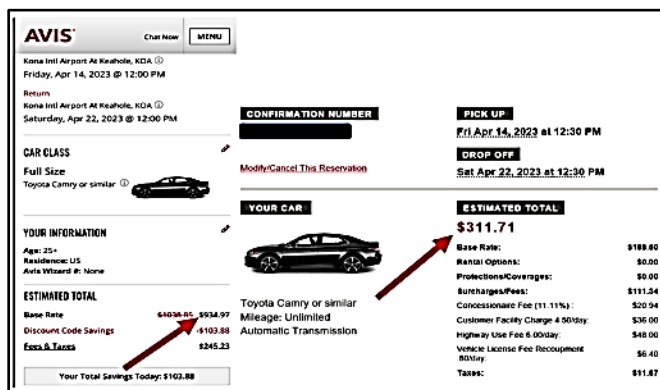
One of the many discounts that retirees receive is from Avis Rental Car. To obtain the full benefits, you must use the Lockheed Martin dedicated website for Avis. This link can be found in the LM Discount website: [Lockheed Martin | Avis Rent a Car](#). The LM-dedicated website provides additional savings above the normal discount code. Bookmark this website on your phone, tablet or computer for future use!

When on the website, if you don't have a profile, join their 'Preferred Club'. The Club provides better discounts, the ability to walk directly to your car (avoiding the counter)

and collect points towards future free day(s). It is free to join. After creating your profile, go to the 'Preferences' tab and look for the 'Discount Code' section. See the 'blue box' below, **our discount code is D168700.**



The image below represents two (2) different types of reservations. The left side is **without** the discount code at \$934.97; the right side **includes the** discount and is \$311.71 for this 8-day reservation. **This is a 67% savings from the general public!** Additionally, if you can find an 'off airport' car rental location, there is a strong potential that you will save more money as airport fees would not apply.



Happy savings...to apply to your travels! Many thanks to Pete Munoz for providing the information used for this article!

The **LM Corporate Discounts** link (<https://lmc.lifeatworkportal.com/login/>) can be found on the MARS Associates website under the Membership tab. Continue to review the benefits page as discount offers are continuously updated.



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

By the time you are reading this, we will have completed our transition to the new MARS Retirees website. Our Website Team has worked diligently to make the transition as easy and successful as possible. I hope your experience with the new website has been positive, but if you have had any difficulties or seen something you'd like changed, feel free to let me have it.

Now seems like a good time for me to give a shout out and big Thank You to the members of the Website Team. First, I'd like to acknowledge Steve Sande and Rick Gonzales who were the primary champions of upgrading our website to a new set of commercial products, with a newer look and feel, and a path to bringing more people into the maintenance of its content. They have briefed the Officers and Directors numerous times and provided important demos. Steve gave two training sessions for the new content editors. Rick and Steve have both generously given their time to provide advice and mentoring to the other members of the team. And Rick, in-particular, has quickly moved to repair every problem as it has been identified. Thank you both so much.

Jim Kummer has been very supportive during this transition period, maintaining the current site while helping to iron out issues with the new. Jim also took the training from Steve so he could continue to update content on the new website, especially as a representative of the Photography Club. Each of the other clubs has identified someone to manage new postings on the website. In-particular, Anne Chou for the Hiking Club, Bob Knickerbocker for the Golf Club, and Jim Kummer for the Photography Club are early adopters. Norma Emerson (In Memoriam), Barb Sande (Today in History) and Linda Stearns (MARS STAR) have begun postings. For completeness, I will note that all the Officers and Directors, as well as Judy Nielsen, Mike Carroll, Dave Ernst, and Mark Brown have taken the training from Steve. Thank you to everyone for your time and effort.

If you are curious about the training package, interested in learning more about WordPress, or interested in becoming a member of the Website Team, please drop me a note. The training package is readily viewable by all on the new website via the "About" drop-down menu. Just select Website Team and look for the link to the WordPress Training Presentation.

And since this is an article about MARS Communications, let me take the opportunity to remind you Facebook users to join the MARS Retirees Facebook group. This is another place that you can follow MARS activities and share items of interest with other MARS members. It is a closed group –you need to be a MARS member or potential member to gain access. There are currently 395 members in the group –check it out.



Membership Report

By Carl Kaminski

carlkcol66@gmail.com

MEMBERSHIP STATISTICS

As of April 1, 2023, there are 1,371 MARS Associates members, including 660 senior members. We have a total of 34 new members who have joined MARS for the 2023 CY.

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

Colorado

Aurora	Angilberta Abels
Centennial	Allan Cheuvront, Dennis Haase, Tim Held, Charles Pfaeffle
Colorado Springs	Dale Etchells, Gerald Rice, Maureen Rice
Denver	Michael Begley
Elizabeth	Roy & Gita Passfield
Evergreen	Robert Cappaert
Golden	Leslie Hildebrand & Michael Hewitt
Highlands Ranch	Duane & Lisa Grosskrueger, Barry & Renate Noakes
Larkspur	Eric & Karen Johnson
Littleton	Bill Bollendonk, Kathryn & Robert Chaffin, Paul Czysz, Andy Ellis, Tim & Catherine Kubik, Phil LaGreca, George Towner
Parker	John & Marjorie Sanders
Sedalia	Mark & Jamie Horacek
Thornton	Randy Wilkerson & Catherine Chen

Other States

California

Campbell Susan Grich

Florida

Cocoa Beach James & Deborah Wilson

Daytona Beach David & Marybeth Moretti

St. Petersburg Jules & Rochelle Schneider

Illinois

Effingham Marty & Karen OConnor

Maryland

Mount Airy Jay & Catherine Poland

Pennsylvania

Pottstown Peter Kozak

Texas

New Braunfels Jerry & Connie Gomez

Virginia

Manassas Matt Peters

Membership Renewal

The membership renewal cycle for 2023 started on March 1st. There was a printed copy of the renewal form contained in the January issue of the STAR. In addition, clicking on the Membership tab from the main page of the MARS Retirees website will provide access to the renewal form which can be filled out or provide the option to renew online. This will allow you to pay via credit card and save the hassle of mailing your renewal form and payment via USPS. **If you're uncertain whether you have already renewed for 2023 or have any difficulties with renewing your membership, contact Carl Kaminski directly at 303-726-1546.**

NEW MEMBERS

Do you know someone who recently retired from LM or ULA? First year membership in MARS is free for 2023. Direct them to the website for more information or have them contact one of the Officers or Directors.

Change of email address or phone number?

Given the rapidly changing environment we are all dealing with, it's more important than ever that we have current email and phone information for our members. Please remember to include the MARS membership team in your list of people to notify when you have a new phone number or email. We want to make sure all communications are timely.

In Memoriam

By Norma Emerson

emer801@msn.com

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

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

Members

Bekhit, Aida (D: May 2022)
(Survived by Kamal Bekhit)
Castle Rock, CO
<https://tinyurl.com/342ffcvb>

Bird, Charles (D: December 2022)
(Survived by Jackie Bird)
Arvada, CO
<https://tinyurl.com/y58kcjf8>

Cook, III, William "Bill" (D: January 2023)
(Survived by Joanna Cook)
Littleton, CO
<https://tinyurl.com/4r7fcsz5>

Cooke, Judith (D: November 2022)
(Survived by Bobby Cooke)
Castle Rock, CO
<https://tinyurl.com/234d9z9w>

Dunbar, Reed (D: January 2023)
Merritt Island, FL
<https://tinyurl.com/49s4c267>

Hjelm, Richard "Rick" (D: March 2023)
(Survived by Jill Hjelm)
Centennial, CO
<https://tinyurl.com/p4w4fa49>

Horak, Eugene "Gene" (D: January 2023)
(Survived by Joan Horak)
Parker, CO
<https://tinyurl.com/bdhc6vaz>

Major, Monica (D: January 2023)
(Survived by Art Major)
Peoria, AZ
<https://tinyurl.com/2febncv8>

Mangelsen, Edwin (D: January 2023)
Omaha, NE
<https://tinyurl.com/bd6cjp2a>

Marston, Karen (D: January 2023)
Littleton, CO
<https://tinyurl.com/3br7rsze>

Morris, Patricia (D: July 2022)
(Survived by Delbert "Del" Morris)
Littleton, CO
<https://tinyurl.com/3z32u9sr>

Nicholson, Rita (D: March 2023)
Littleton, CO
No obituary published

Poulette, Alex (D: November 2022)
(Survived by Sophia Poulette)
Denver, CO
<https://tinyurl.com/4839bvp4>

Warren, Gary (D: February 2023)
(Survived by Beverly Warren)
Littleton, CO
No obituary published

Young, Patricia (D: October 2022)
Las Cruces, NM
<https://tinyurl.com/3e7wh6k2>

Non-Members

Barkelew, Peggy (D: January 2023)
Littleton, CO
<https://tinyurl.com/fsku8hpz>

Byers, Carolyn (D: April 2020)
Littleton, CO
No obituary published

Foat, Chester "Chet" (D: February 2023)
(Survived by Denise Shumaker)
Parker, CO
<https://tinyurl.com/4mzb73dz>

Harris, Syble (D: March 2023)
Melbourne, FL
<https://tinyurl.com/ymb8rsyy>

Heaps, Norman (D: February 2023)
Merritt Island, FL
<https://tinyurl.com/3xanu57r>

Hodder, Marlene (D: March 2023)
Golden, CO
<https://tinyurl.com/ds56c2tx>

Mari, John (D: January 2023)
Littleton, CO
<https://tinyurl.com/4nybshcp>

Richardson, Margaret "Allie" (D: Dec 2022)
Littleton, CO
<https://tinyurl.com/bdzzkyvh>

Rose, Lawrence "Larry" (D: December 2022)
Castle Rock, CO
<https://tinyurl.com/ytntd8c3>

Tefft, Adeline (D: February 2023)
Littleton, CO
<https://tinyurl.com/yc2crerv>

Tullis, Marta (D: March 2023)
Littleton, CO
<https://tinyurl.com/3bvz29h9>

Watkins, Timothy "Tim" (D: December 2022)
(Survived by Mary Watkins)
Littleton, CO
<https://tinyurl.com/2s3nr87f>

Marketing Committee

By Richard Sosnay
(richardsosnay@gmail.com)

Our MARS Special Activities are really shaping up this year. Out of the 15 activities that we identified for this year, we decided to actually do 8 of them and put the other 7 aside until next year. In fact, we have already had a very successful first visit to the United Launch Alliance (ULA) facility here in the Denver area. The following is a brief summary of what we are planning for this year, and what we have pushed off until next year. (See the table in the photo section of this STAR)

Following is a brief description of each activity for 2023—both accomplished and planned:

ULA Plant Tour, Monday, March 6, 2023

The ULA plant Tour was led by Terry Lilly. **ULA Welcomes MARS Associates for a Tour:** Forty-one members of MARS Associates toured ULA's Denver facilities on March 6. The group was excited to learn about the new Vulcan launch vehicle and the many ULA updates. ULA Communications, Christa Bell, coordinated the tour. Ambassadors Tracy Caffrey and Matt Scorza answered many questions during the presentation and tour of the Denver Operations Support Center, Systems Integration Laboratory and "Mission Success Ave," which has photos of every ULA launch. At the completion of the tour the attendees were given cool gift bags filled with Vulcan socks, Vulcan baseball cap, and a launch tag key chain. There was a drawing in which four lucky members will return with a guest to watch a launch from the Denver Operations Support Center. Those winners are Howard Cannon, Judy Nielsen, Stephen Bravdica and Calvin Harr.

Following the ULA tour there was a Happy Hour at Halfpenny Brewing Company opened to all members. A great time shared with MARS members and friends.

Everyone said this was a great Tour of ULA! We will try to add some repeat tours in 2023.

Photos from this tour are in the Photo section in this STAR.

LM Waterton Campus Tour



Lockheed Martin Waterton Campus

The LM Waterton Campus tour is being led by Judy Nielsen. We are planning the tour in May or June 2023. We are currently in final coordination with LM and will present details soon.

Cherokee Ranch and Castle Tour, Tuesday, May 16, 2023



Cherokee Ranch Castle

The Cherokee Ranch and Castle tour is being led by Pete Munoz. This is a one-hour guided tour. We can accommodate up to 60 people total. The group would be split up into groups of 15 for ease of maneuvering through the Castle and being able to hear the speaker. The date being offered is Tuesday, May 16th cost is \$20 per person and they will defer the \$2 processing fee per

person if we buy all tickets under one transaction. The tour will be a walk through the Castle with the history of the origin and owners and the events that have been held there throughout the year. This beautiful property is located in Daniels Park in Douglas County. We are also planning on lunch following the tour at a nearby restaurant.

Cherokee Ranch & Castle includes land that originally belonged to two separate homesteads in the late 1890s: the Flower Homestead and the Blunt Homestead. The Johnson Family moved from the East and purchased the Flower Homestead in 1924 and built the 1450s Scottish-style Castle. They sold the property to Tweet Kimball in 1954. Tweet purchased adjacent land that had been the Blunt Homestead and renamed both pieces of land Cherokee Ranch, which today includes 3,400 acres of natural beauty and wildlife. In 1996, Tweet worked with Douglas County and a citizen's group, The Douglas County Open Lands Coalition, to protect Cherokee Ranch through a Conservation Easement.

This will be a guided tour of the Ranch and Castle with the ability to walk the grounds and get some pictures. We will learn more about the origin of the Castle, the contents and about Tweet Kimball who left this gem to Douglas County. The address is 6113 Daniels Park Rd, Sedalia, CO 80135. If you would like to attend, or have any questions, please reach out to me via email at petemunoz29@gmail.com or on his cell, 720-308-1828.

More info can be found by clicking on this link or typing this address into your web browser - cherokeeranch.org

Manitou (Pikes Peak) Cog Railway, Thursday, June 08, 2023



Pikes Peak Railroad

The Manitou Pikes Peak Cog Railway tour is being led by Robin Zen. This adventure will take place on Thursday, June 8, with a train departure time of 11:40 am (recommended arrival is 1 hour prior, in order to find parking). The train adventure will take about 3 hours total, including the rides up and down, including 50 minutes at the top of Pikes Peak (please be aware that

this will be at a high altitude: 14,100 feet). Estimated return time to the Manitou station is 2:30 pm. We are working on a lunch location that can accommodate a large crowd (already 42 people have reserved seats, with others interested). We are also including the Colorado Springs retiree group! Tickets can be purchased (\$71 for reserved seats, \$58.50 for standard seats) on the website: <https://www.cograilway.com>

When you make your reservations online, please try to sit in Car 1 with the rest of the group. Space is filling up fast, so if you can't get into Car 1, then get into Car 2. Please notify Robin Zen at robinzen0615@comcast.net if you plan on attending.

The Wild Animal Sanctuary (TWAS), Wednesday, July 19, 2023

The Wild Animal Sanctuary tour is being led by Carolyn Malaby. Join fellow animal lovers on a tour of the amazing and so close sanctuary on Wednesday, July 19. The world's largest carnivore sanctuary is home to over 550 lions, tigers, bears, wolves, leopards and other animals, and you can see them all safely from the *Walk into the Wild* walkway ABOVE the animals where they don't feel threatened and don't pace as they do in zoos. This place is a treasure, and you will help feed these animals and educate people about the captive wildlife crisis with your entrance fee of just \$20 for those over 70 and \$50 if you're not yet senior enough to get the discount. The sanctuary is located just off highway 76 at the Hudson exit at 2999 County Road 53, Keenesburg, CO 80643. We plan to meet there at 9:00 am when they open to beat the heat. Be advised it's usually windy out there so prepare with long sleeves, hats and sunscreen. Food is available at the Lion's Den Café or you can bring your own lunch so you can spend all day there. Need more info? Contact Carolyn Malaby at csucarolyn@gmail.com or 303-995-7699 for details and to sign up. If you prefer, you can purchase a membership and visit for a year.



Wildlife Sanctuary Lion

**Central City Opera,
Wednesday, July 26, 2023**



Central City Opera House

The Central City Opera visit is led by Sue Janssen. We plan to see a matinee performance of *Kiss Me, Kate* at the wonderful Central City Opera house on Wednesday, July 26. *Kiss Me, Kate* is a sophisticated, romantic and delightfully hilarious opera with a sparkling Cole Porter score. Sue Janssen has purchased group tickets at a 20% discount for all those that have replied to her by the end of March, 2023. If you haven't previously purchased your tickets with Sue and are still interested in attending, contact her at 303-936-8339, or at susan.g.janssen@gmail.com to see if there are still tickets available.

**World War II Museum of Aviation,
Colorado Springs, August 2023**

The World War II Museum of Aviation is being led by Judy Nielsen. The museum is located near the Colorado Springs airport. Opened to the public in 2012, the National Museum of World War II Aviation documents the role that military aviation played in the emergence of our nation as a world power during the Second World War. Through a combination of its aircraft collection, exhibits, interactive displays, and docent-led tours, the museum tells the story of our nation's tremendous technological advancements during the War, and describes the lasting social and economic changes that were essential to the success of the Allied war effort. We are planning on a visit to the museum in August, 2023.

Wine Tasting, Fall 2023

The Wine tastings are being led by Robin Zen and Terry Lilly. For 2023, we are planning a wine tasting event to take place in late August or early September. Exact date and location is TBD, as we are trying to find a place with both wine and food. More details will be available soon! We are currently investigating two wineries, one is the Carboy winery in Littleton and another is in Commerce City.

Planned for 2024

Colorado Springs Balloon Lift-off & Glow, Labor Day 2024

Cripple Creek Train, Late Spring 2024

Distillery Tours, TBD

Georgetown Loop Railroad, Fall 2024, Includes Optional Mine tour & Gold panning

Arvada Center for the Performing Arts, TBD

Dinner Theaters, TBD (Do these still exist in Denver?).

In addition to the events being planned for 2023, we have identified a potential new activity for 2024 that we have not discussed previously: a tour of the Kansas Cosmosphere in Hutchinson, Kansas. Bill Edwards discovered this while driving through Kansas, and has identified this as a potential new activity for May 2024.

Cosmosphere – Hutchinson Kansas

By Bill Edwards

During Spring Break, I took a road trip including a stop at the Cosmosphere in Hutchinson, Kansas. I had taken my kids there when they were young and figured it was time to show it to my grandson.



Cosmosphere Entrance

The entrance has a full-up Titan II launch vehicle with a Gemini capsule.

In 1962, Cosmosphere founder Patty Carey set up a used Planetarium Projector and rented folded chairs in the Poultry Building of the Kansas State Fair Grounds. Then she created one of the first public planetariums in the Central United States. Since then, the Cosmosphere has gradually grown to over 105,000 square feet, large enough to house SR-71 tail number 17961 in its lobby. In 1998, the Cosmosphere was named one of the first affiliates of the Smithsonian Institution, formalizing a long-term relationship with the Smithsonian's National Air & Space Museum.

The Cosmosphere has the 2nd largest collection of US space memorabilia anywhere and the largest collection of Russian space memorabilia outside the former Soviet Union.



Mercury Liberty Bell 7

There are many artifacts from the United States Space Program including a Moon Rover and the Mercury Liberty Bell 7 capsule that sank after Gus Grissom got out. It was recovered in 1999, then preserved and is owned by Cosmosphere. The Gemini 10 and the Apollo 13 Crew Capsules are also on display.



Apollo Lander and Lunar Rover

Inside, the lobby was built around the SR-71 Blackbird. Along with many SR-71 artifacts, they had a flight photo of the SR-71 with the LASRE Experiment mounted on its back, a program I worked on.

The Cosmosphere has an impressive collection of World War II German Rocket displays including a V1 Flying Bomb, a V2 Rocket and an ME163 Rocket Plane engine.



SR-71 on display as the Cosmosphere Lobby was being built (Autographs by SR-71 Flight Crews)

The Soviet Union collection is very impressive. There is a flight-ready spare of the Sputnik 1 spacecraft, a Vostok capsule and the Voskhod 2 capsule (competed with the Mercury and Gemini programs). There is also a full-size replica of the Apollo-Soyuz spacecraft, a joint venture between the US and USSR.



Flight-ready backup of Soviet Sputnik



Apollo-Soyuz Spacecraft Replica

On the aircraft side, there is a NASA T-38, a replica of the Bell X-1 and the engine from the Glamorous Glennis X-1 that Chuck Yeager flew.

If you get to the Cosmosphere, try to see the presentation in the Robert Goddard Lab –a propulsion education and demonstration. A little different than we were used to from the standpoint of handling liquid oxygen and Isopropyl Alcohol but very entertaining.

The Cosmosphere recommends a minimum of 4 hours for a visit, but even if you spend only a few hours at the Kansas Cosmosphere and Space Center, it is an entertainment bargain.

Volunteers of America – Camp Postcard

By: Kevin Maccary
(maccary5@gmail.com)

Mark Twain once remarked, “Everyone complains about the weather, but nobody does anything about it.” The same can often be said about serious problems eroding our society such as the exploding crime rate and the corresponding confrontational interactions between law enforcement and citizens. Police feel like targets of political and media agendas while many citizens see cops as bullies completely oblivious to the challenges of growing up in an inner-city where gangs, drugs, and violence are poisons to hope. Unlike the weather, however, that chasm between these two groups can be bridged and those who are doing something about it volunteer in a program run by Volunteers of America- Colorado (VOA) known as Camp Postcard.

As described by VOA, “Camp POSTCARD is a free week-long summer camp designed to benefit 5th and 6th graders from the Denver/Aurora metro area who demonstrate leadership skills and might not otherwise be able to afford such an experience. The experience provides a safe

environment that stresses appropriate role models, ideals and values from the lessons of the Be Somebody curriculum. Campers learn the importance of self-respect and respect for others, teamwork, self-control, and dignity.” Counselors are recruited that will eat, sleep, teach, play, listen, and relate with groups of 3-5 campers that entire week. The secret ingredient in this program that makes it so effective in directly addressing the misunderstanding and misconceptions between cops and kids is that the counselors are police officers that volunteer their time because they care and because they also want to learn.

Having participated in eight (8) of these camps, I have witnessed the often-astonishing growth that can take place in six days. Every fun activity you would expect at camp, including horseback riding, archery, water balloon fights, hiking, campfires complete with s’mores, talent shows, and scavenger hunts are part of very full days. Throughout the week the “fun things” are blended in with deep discussions about “cowboy ethics” and activities aimed at building self-confidence and planting the seeds of hope that will help them avoid the pitfalls many kids fall into which causes despair. During one activity that involved creating a timeline for each of their lives starting at birth and continuing into the future, the comment of a 12-year-old boy left such an impression on me that it brings me back each year to Camp Postcard. His future timeline was very short, and it looked as though he blew off the assignment. One of the questions in the assignment was “What is your goal in life”. His answer was simply to live until he was 18. To hear that from a healthy 12-year-old boy was heart breaking but understandable considering the challenges in his particular situation. By the end of the week, he developed a different goal and came to realize that there are people out there that truly care and are willing to help him achieve his dreams. And many of those people wear blue uniforms.

Camp Postcard is the most exhausting volunteer activity I have ever done. And I can’t think of one that is more important. It is a week of exhilarating activities, lots of laughter, lots of tears, lots of love and facing fear. I have witnessed cops listening to kids opening up about what tortured moments they have experienced and seeing tears roll down police officers faces. Those tears are genuine and revealing. This free camp changes perceptions of both the officers and the kids and the community is richer for it. The staff from VOA is absolutely driven to ensure that every moment of this experience is positive for the campers and each year approximately 100 kids at risk return home with a message that they are part of changing the world for the better. While the weather remains unaltered, Camp Postcard and Volunteers of America - Colorado is doing something about the relationship between the police and the community and that should make everyone feel positive about the future.

For many of our youth, this represents their first camp experience. This popular and successful Volunteers of America program has proven to be an important opportunity to build strong, positive adult/youth relationships and valuable life skills that serve the campers, their families, and their communities.

To learn more about the many amazing programs sponsored by Volunteers of America Colorado, from early childhood through senior services, including Meals on Wheels, visit their website at <https://www.voacolorado.org>. Treat yourself to a meaningful opportunity to become part of the team and part of the solution!

Historian Corner

By Barb Sande

barbsande@comcast.net

Program Profile

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

ANNOUNCEMENT: Starting 2023, I will be exploring the Skylab missions for their 50th anniversary. I am calling all retired folks who worked on Skylab to consider writing a short story, anecdote or technical problem that they were involved with during the development of Skylab (include short biographical details). Please submit these written stories to me by July 31, 2023 through email (see above). They can be an email text or a short attached document (MS Word or Pages is fine) and pictures are also welcome if you have some. These stories will be included in a write-up later in 2023 that summarizes the Skylab initiative. Written stories only, please! I have no plans to do a roundtable or accept oral stories on a phone call.

Planned Articles:

Skylab Part I: History of a Space Station Concept; Skylab is Born

Skylab Part II: Technical Features of the Skylab Design; Integration, Test and Launch of Skylab I, Crew Selection and Training

Skylab Part III: Skylab 2 – First Crew and Repairs

Skylab Part IV: Skylab 3 – Second Crew, Memories from Martin Marietta Retirees

Skylab Part V: Skylab 4 – Third Crew, Demise of Skylab

Skylab Part I: History of a Space Station Concept

Introduction

In the last three-plus years, I have spent time researching and writing the stories of the Apollo missions from Apollo 7 through Apollo 17, interspersed with the occasional article about other space missions for significant milestone anniversaries and some museum overviews. The Apollo

missions to the moon and the precursor Gemini missions were enormous undertakings, requiring most of the budget at NASA in the 1960's and overshadowing other space efforts. Although the ideas of orbiting space stations were common to speculations and early studies about space exploration in the 1950's and early 1960's, the commitment to Apollo put those ideas on the backburner, at least as far as NASA was concerned.

As I did research for supporting documentation for these profiles on Skylab, I was extremely fortunate to stumble across an on-line archive of a fantastic NASA book about Skylab that was published in 1981 and is contained in their history library (see link at the end of this article). A lot of the details in these articles will come from this NASA book (SP-4208 Living and Working in Space: A History of Skylab). I also found some other resources that will be useful in the future parts of the series. I will include personal written stories from former Martin Marietta/LM employees (see announcement) later this year in this multi-part series.

Apollo was very exciting, daring and mostly successful, after the tragedy of Apollo 1 and the near-miss of Apollo 13. But once it was underway, the public quickly wearied of it and NASA knew that the missions could not continue indefinitely due to budgets, after many of the scientific and exploratory milestones were achieved. Well before the Gemini and Apollo missions even left the ground, NASA received relatively modest budgets from Congress to contract out for space station and other explorations ideas. In this article, I have summarized the excellent information in the NASA book SP-4208 about the road to Skylab, as well as some supporting information from NASA document SP-4011: Skylab, A Chronology.

Visionary Ideas

Ideas about space exploration and space stations pre-dated the NASA years by over a decade. In the NASA Skylab Chronology (SP-4011), some of these are explored. In 1948, a paper was presented by H.E. Ross of the British Interplanetary Society (I was a member of this group for many years) describing a manned satellite station in Earth orbit that would serve as a laboratory. Public interest in space was awakening during this time and Willy Ley published "The Conquest of Space" in 1949. The first symposium on Space Flight was held in 1951 at the Hayden Planetarium in New York City; contributors included Wernher von Braun, Willy Ley and Fred Whipple. Topics included manned orbiting space stations and observatories. The famed writer Arthur C. Clarke published "The Exploration of Space" in 1951 and argued the case for space stations and orbiting satellite systems.

Walt Disney jumped into the picture in 1955, with a three-part series on the Disneyland television show about space exploration, working with Willy Ley and Wernher von Braun as some of the technical advisors. This series was enormously popular and brought many ideas to the public,

including space stations, trips to the moon, and the exploration of Mars.



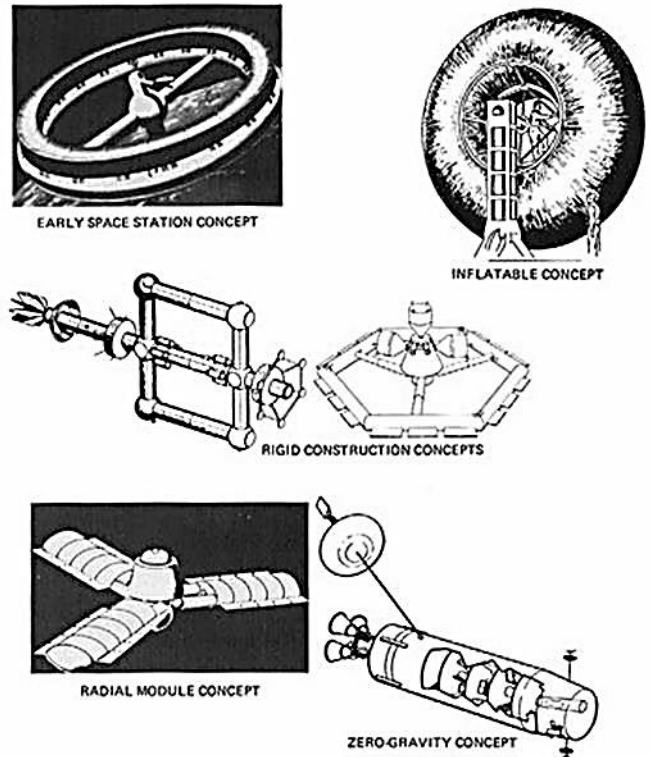
Walt Disney and Wernher von Braun
(Photo Credit: NASA)

In the late 1950's, many more orbiting station studies were sponsored and in 1959, NASA Deputy Administrator Hugh Dryden and DeMarquis Wyatt, assistant to the Director of Space Flight Development, described the long-term objectives of the nascent space program: A multimanned orbiting space station; a permanently manned orbiting laboratory; unmanned lunar probes; manned lunar orbital, lunar landing and interplanetary flights.

Early Studies and Concepts

So how did Skylab develop? Langley Research Center took the lead in space-station studies in the early 1960's, looking at various sizes and options, including a 1400-cubic-meter station with up to 36 crewmembers that would rotate to create an artificial gravity environment. The first efforts were summarized at a symposium in 1962 and similar studies were underway at the new Manned Space Center (MSC) in Houston; MSC wanted the station to be a base for manned flights to Mars.

By mid-1963, NASA had clearly defined rationale for an earth-orbiting laboratory. The station would help determine if humans could live and work for extended periods of time in space (beyond the anticipated mission durations for Gemini and Apollo). The stations would be used as a base for interplanetary flight and would also have obvious uses in the conduct of scientific research.



Early Space Station Concepts
(Credit: NASA)

These objectives did not dictate a specific design and NASA began looking at small, medium and large-scale solutions. North American Rockwell (prime contractor for Apollo) was tasked with looking at an Extended Apollo design using a modified Apollo command module with and without a laboratory extension. Other options were also studied, including a large concept known as Project Olympus, out of the MSC in Houston. As part of this concept, in 1963, MSC contracted with Douglas Aircraft Company to study a zero-gravity station and with Lockheed to evaluate a rotating station. These concepts would require a Saturn V booster, a hangar to enclose a 12-man ferry craft and a 24-man crew.

With budget cuts looming in 1965 and the potential for excess Saturn launch vehicles, testimony before Congress spoke of a gradual evolution from Apollo-Saturn hardware to more advanced applications. But at this time, a competitor to the eventual Skylab project appeared within the USAF.

Military Role in Space

Early attempts at a military role in space were ceded to a civilian project to promote the peaceful uses of space. Although Congress added \$86 million to the Air Force budget for the Dyna-Soar program (manned space glider), Secretary of Defense Robert McNamara, under the Kennedy administration, refused to spend the money. By 1962, the USAF was well behind NASA in space budget requests. However, the Cuban missile crisis and the

advancing Soviet capabilities with the Vostok program changed McNamara's thinking and concepts were being talked about for a "Blue Gemini" program. McNamara wanted all manned programs to be under the DoD, but NASA rebuffed this bid for control. Both agencies agreed to coordinate long-term plans for near-Earth missions.

In 1963, McNamara terminated the Dyna-Soar program and transferred part of the funds to a new project, the Manned Orbiting Laboratory (MOL). The USAF planned to use proven technologies, like the Titan IIIC launch vehicle and the Gemini spacecraft, with only the orbiting laboratory being a new concept. The competing ideas were causing some concerns for budget allocations, but work progressed on MOL, which was also planned to have a clandestine purpose with reconnaissance capabilities. The program was intended for launch from Vandenberg Air Force Base. MOL was approved by President Johnson in 1965, but any Air Force program would take second place until Apollo was successful.



Artist's Conception of MOL
(Public Domain)

Apollo Applications

In 1964, President Johnson wanted NASA to provide their detailed plans for spaceflight after Apollo, with a primary concern being the impact of the end of the Apollo mission work on the 400,000 member workforce. To minimize the down-time, as many Apollo tasks were nearing completion even as the Gemini program was just getting underway, the follow-on program would have to start work as early as 1966. The Apollo Applications Program (AAP) was born out of these concerns, with the approach looking at extensions of Apollo technologies.

The AAP planning guide issued in 1965 assigned integration tasks to the centers in line with the Apollo duties: Houston (Manned Spacecraft Center - MSC) was given spacecraft responsibilities and Huntsville (Marshall Spaceflight Center- MSFC) the launch vehicle. In addition, the responsibilities for follow-on opportunities for the Lunar Module shifted to Marshall Spaceflight Center, causing political turbulence between the various Centers.

Huntsville quickly seized on this opportunity, opening an Experiments and Applications office in late 1965.

Payload integration was among the first items requiring a solution. In May, 1966, MSFC awarded parallel one-year, \$1 million dollar contracts to Lockheed and to the Martin Marietta Company in Denver. Martin Marietta became involved in more detailed planning of a spent-stage mission, while Lockheed enhanced their studies of the Apollo telescope mount missions. Another agreement, called the Lake Logan agreement, was signed by the three manned spaceflight centers (KSC, MSC, MSFC) that reaffirmed MSC roles for flight operations, astronauts, and the Apollo command module, while MSFC would be responsible for the mission module (eventual orbital laboratory).

The Johnson administration was facing huge budget pressures, with the escalation of the war in Vietnam and the programs of the Great Society. However, the AAP received \$454 million in the FY 1968 budget for NASA (lower than requested, but still representing a formal commitment to post-Apollo manned programs). NASA headquarters began the task of defining the programs to the media and they expected to initiate seven major projects: The airlock and workshop, the telescope mount, a lunar mapping and survey system, Apollo modifications for long-duration flights, a lunar shelter based on the lunar module, experiment payloads, and an Apollo land-landing capability. The next two years represented a different reality for the aspirations of AAP.

Within the hectic framework of the Gemini, Apollo and AAP programs (not to mention MOL), the scientific community was advocating for much more scientific research in space, considering Apollo to be more of an engineering demonstration and not real science. Because of these entreaties, science became more of a priority on some of the Gemini missions and the "J" series of Apollo missions and the AAP was looked to as a platform for more serious scientific observations. There were also plans to carry solar telescopes on a modified lunar module in what was referred to as AAP flights 1 through 4. Planning for those missions was underway, with timeframes being developed in 1967 and 1968, but these were considered unrealistic based on delays for the solar telescope so the first mission was targeted for 1969. The AAP programs were intended to fill the gaps during the Apollo missions to the moon and keep the manned presence in space at a brisk rhythm.

January 27, 1967 and its Aftermath

On January 27, 1967, Apollo 204 (later designated Apollo 1) astronauts Gus Grissom, Ed White and Roger Chaffee perished in a fire during a routine plugs-out test at Canaveral. The Apollo and AAP programs were immediately thrown into chaos. Redesign of the Apollo Command Module was required and AAP was put on the "back burner" at MSC. In fact, the budget for AAP was pared to \$300 million later in 1967 and even further

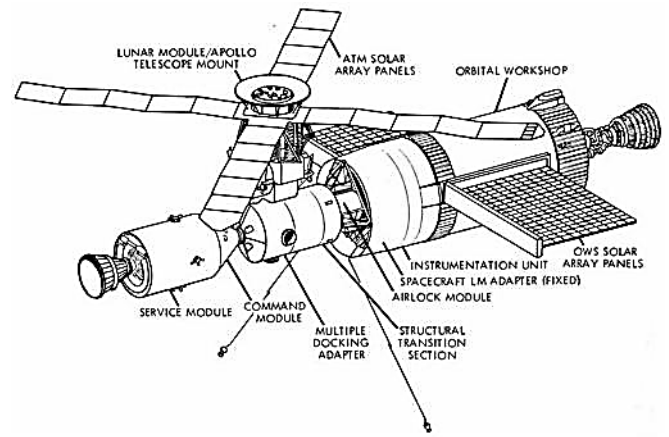
reduced as the FY 1968 budgets allocated funds to the Office of Tracking and Data Acquisition. This ruled out any concurrent AAP and Apollo missions, even if hardware was available.

Work continued on the AAP 1A mission, however. Initially slated to be a lunar mapping and survey system, that intended mission was scrapped for an earth resources mission. Here is an excerpt on this mission and the role that Martin Marietta was involved with from the Skylab history resource (Martin Marietta received another contract for Payload Integration in January 1968):

Mission planning was under way in Houston and at the Denver plant of Martin Marietta, the payload integration contractor. On 25 August [1967] MSC published preliminary designs of an experiment carrier that would fit into the spacecraft-lunar module adapter, between the service module and the S-IVB. This module would provide a shirtsleeve atmosphere and enough room for one man to operate the instruments. Martin engineers worked out a flight plan providing six passes over the U.S. each day at an altitude of 260 kilometers in an orbit inclined 50° to the equator.

Apart from its scientific content, the AAP office also valued mission 1A for its training potential. NASA had a tradition of progressively increasing the complexity of missions. Starting AAP with a relatively simple flight would allow attention to be focused first on management and operating relationships. AAP 1A would give Martin Marietta the chance to work with principal investigators and Apollo contractors as well as NASA centers. And if NASA switched to a new contractor for modifying and refurbishing the spacecraft, that firm would find 1A a good training ground.

The folks at Martin Marietta worked hard on the planning and had a meeting in Denver in mid-December 1967 to review the experiments carrier. Then the mission was abruptly terminated just after this review, but fortunately the earth resources experiments were resurrected on Skylab. Sadly, the AAP entered into periods of tighter and tighter budgets and many plans were scuttled. The program began the new fiscal year on July 1, 1968 under conditions of real austerity and work was done on a day-to-day basis. Many ideas, like a cluster workshop concept, were eliminated. The program was whittled down to a dry (instead of a re-used wet tank) S-IVB workshop with only three manned missions. The battle over "wet" versus "dry" is a long story, but the dry concept, requiring a Saturn V launch vehicle to lift the workshop, won out because of safety considerations. Saturn 1B vehicles would be used for the crew.



Cluster Concept presented in 1968
(Credit: NASA)

MOL is Cancelled; Apollo 11 Success

Life at Martin Marietta in Denver became more dismal in 1969, when President Nixon ordered budget reductions for Defense spending and the MOL program was canceled on June 7, 1969, after much of the development was complete and the technology had even been demonstrated on a single Titan IIIM flight. Astronauts had been selected for the program and the launch site at VAFB (SLC-6) was nearing completion. Many elements of the program were behind schedule and over budget, however, and alternatives to the reconnaissance mission of MOL were being developed in the classified spacecraft world. The military competitor to a NASA orbital station was now gone. Given the chaos at NASA and the AAP programs, MOL would have been the first manned space station for the United States if it had continued. However, as noted in the next section, the role for Martin Marietta in the emergent Skylab program became crucial to the jobs at Waterton.

On July 20, 1969, Apollo 11 successfully landed on the moon, fulfilling the goal established by President Kennedy. Things were now moving beyond the original goals of the AAP.

Skylab is Born

In February, 1970, Skylab was the name given to the first space-station concept and it moved out of Apollo's shadow. AAP was now in the dustbin of history. The original integrated plan in 1969 had these major milestones identified:

1972 – Earth-orbital operations with a workshop launched by a Saturn V. Start of post-Apollo lunar exploration.

1974 – Suborbital test flights of a "low cost" Shuttle and launch of a second Saturn V workshop.

1975 – Initial space station operations and orbital Shuttle flights.

1976 – Lunar orbit station and full Shuttle operations

1980s/1990s – Bases in Earth orbit and on the lunar surface and a manned expedition to Mars.

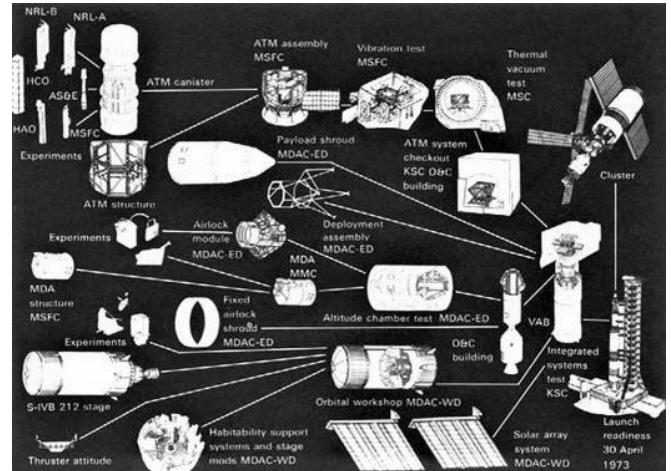
Well, that future didn't happen quite as envisioned by George Mueller. The FY 1971 budget fell far short of these lofty goals and a NASA budget that was only three-quarters of the requested \$4.5 billion target was approved. The impact of that reduction meant stoppage of Saturn V production, cancellation of Apollo 20, delay of the initial workshop flight, and postponement of Apollo 18 and 19. After renaming AAP as Skylab, a name that was promptly accepted within and outside of NASA, budget woes led to the cancellation of two more Apollo missions, with the program targeted to end by June, 1972. This led to the resignation of NASA administrator Thomas Paine.

The second Skylab concept also went under the axe. The developing first Skylab also ran into numerous issues, particularly in the area of interface control between elements. In dribs and dribs over the previous few years, contracts had been awarded for various elements of the orbiting workshop, with the emphasis shifting as the dry lab concept won out. Thousands of interfaces on Skylab required close supervision to ensure compatible connections. MSFC, with the support of Martin Marietta, scheduled and tracked interface control documents, but the system often bogged down and was ineffective. The change management process was also a beast and concerns were coming up about the problem of the eventual re-entry of Skylab.

The emphasis shifted to habitability and the experiments that should be planned (medical and scientific). Design reviews and testing milestones were scheduled and completed. And in early 1969, as the integration tasks were reduced as various AAP concepts fell by the wayside, a new contract was issued to Martin Marietta which added the following tasks and gave the company the responsibility for the multiple docking adapter build (excerpted from SP-4208):

Early in 1969, Marshall redefined Martin Marietta's duties in Apollo Applications and definitized the firm's letter contract. Under the new arrangement Martin would conduct specific engineering studies in support of integration decisions made by the NASA centers: electrical power and thermal analyses, experiment compatibility studies, coordination of test plans, and mission planning. In addition, the contractor would assist NASA by keeping track of configuration changes, updating the interface specifications and interface control documents, and maintaining the document repository at Huntsville. Assignment of the multiple docking adapter to Martin Marietta's Denver Division was both logical and helpful to the company. Completing the adapter was fundamentally a job of integration, which was Martin's acknowledged task; but as long as the company had no hardware

responsibilities, its relation to the other prime contractors had been somewhat ill-defined. While the integration contractor had provided much necessary information, it was NASA and the prime contractors who had made the integration decisions. The docking adapter, which connected to all the other cluster modules, put Martin on an equal footing with the other major contractors.



Movement and assembly of hardware for Skylab
(PM 7200-135)

[The abbreviations in this photograph are defined as follows: AS&E, American Science & Engineering; ATM, Apollo telescope mount, HAO, High Altitude Observatory; HCO, Harvard College Observatory; KSC, Kennedy Space Center, MDA multiple docking adapter; MDAC-ED, McDonnell Douglas Astronautics Eastern Div.; MDAC-WD, Western Div.; MMC, Martin Marietta Corp., MSC Manned Spacecraft Center; MSFC, Marshall Space Flight Center, NRL, Naval Research Laboratory; O&C, Operations & Checkout Bldg.; VAB, Vehicle Assembly Bldg.]

Skylab was coming together and our heritage companies Martin Marietta and General Electric had prominent roles! Lockheed also was involved in early studies, but did not have a key role in the final Skylab program, nor did RCA Space Systems or General Dynamics Space Systems.

Here's a brief list of awards to Martin Marietta and General Electric. A complete listing is available in both the SP-4208 and SP-4011 documents.

JSC (Johnson Space Center) oversight:

Martin Marietta – Payload and experiments integration and spacecraft support (\$105.4 million)

General Electric – Automatic checkout equipment reliability and quality assurance system engineering (\$29.7 million)

HQ (Headquarters) oversight:

Martin Marietta – Program support (\$11.1 million)

MSFC (Marshall Space Flight Center) oversight:

Martin Marietta – Payload integration and multiple docking adapter assembly (\$215.5 million)
General Electric – Electrical support equipment and logistics support (\$25.0 million)
General Electrical – Launch vehicle ground support equipment (\$12.6 million)

KSC (Kennedy Space Center) oversight:

Martin Marietta – Multiple docking adapter support (\$7.2 million)

Resources and Links:

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

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

SP-4011 Skylab: A Chronology

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

Wikipedia Article about Skylab

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

Skylab Program Description

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

Next Edition

Skylab Part II will include an overview of the workshop design features, integration and test, contractor roles, experiments selected, crew development and training, and the launch of Skylab 1 on May 14, 1973.

Barb Sande, MARS STAR and MARS Facebook Page Historian. Contact me at barbsande@comcast.net or 303-887-8511 or find MARS Associates on Facebook.

Bridge Club

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

The Bridge Club is growing and going well in 2023. All MARS members and their guests are welcome to join us. It is social, not tournament bridge, with light conversation while we play, and everyone seems to like it that way. We play on the **3rd Friday of each month at the Buck Community Recreation Center in Littleton from 10 AM to 2 PM.** The next quarter, we are scheduled to play on 21 April, 21 July, & 18 August 2023.

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 increased on 1 January to \$2.00 for in-District and \$3.00 for out-of-District. There is also a small fee to the club

(which helps with supplies and the year-end Holiday party).

Come and join us by calling at least a week ahead to reserve a place at the tables.

This quarter we welcomed our newest players, **Roman & Libby Matherne**. There is still room for more players, as the room will accommodate 8 tables.

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

If you want to join us for bridge, or have any questions, please contact any of the following Bridge Club Officers:

Presidents:

Dave & Kathy Martz, 303-683-9524

Vice-President:

Bill Kacena, 303-973-2685

The 1st Quarter 2023 winners are as follows:

20 January (4 tables)

1st – Dave & Kathy Martz

2nd – Sandy Mossman & Tammy Maccalous

3rd – Bill Kacena & Bill Pereboom

4th – Betty Hirst & Wayne Jackson

17 February (4 tables)

1st – Bill & Mavis Kacena

2nd – Dave & Kathy Martz

3rd – Betty Hirst & Wayne Jackson

4th – Ernie & Cecile Berliner

17 March (4 tables)

1st – Betty Hirst & Wayne Jackson

2nd Tied – Ed & Laurie Bock &

Bill & Mavis Kacena

4th – Dave & Kathy Martz

Car Club

By Roger Rieger
(rieger10731@gmail.com)
303-912-6217

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

Welcome to spring time! Along with warmer weather and drier roads – hopefully with some of winter debris swept up – come longer days for taking an evening drive! I hope you've taken your baby out of slumber from the garage, polished her up, and taken an inaugural springtime drive!

Mark your calendars! We will have our 2023 Car Club kick off meeting **Tuesday, 2 May, 3pm** at Prost Biergarten, 53 Centennial Blvd, Highlands Ranch. We will discuss potential club activities for 2023 and socializing over a cold *bier*! Please come out if you are interested in being part of the club! Also, weather permitting, we will resume meeting at the Cornerstone Cars and Coffee which is held the first Saturday of each month, beginning Saturday, May 6. This is an informal Club get together to enjoy some camaraderie and check out some cool cars.

Stay in touch with the Car Club through our MARS Car Club Facebook page, MARS Associates website link, or by contacting either Dave or myself to get added to our email distribution. There is nothing special you need to do to join the MARS Car Club: all it takes is to be a MARS member in good standing, and a desire to have fun! If you are interested in joining the club, please drop either Dave or myself an email, we'd love to have you!

Golf League



Sandy Mossman
(smoss5592@gmail.com)

Welcome to spring golf!

Our 2023 golf league season begins Thursday, April 13th at Broken Tee Golf Course. Our Kick-off meeting was held on Thursday, March 9th, at Wyatt's at Broken Tee. Many returning and new members attended for the in-person meeting. We started the meeting by reviewing the successes of the 2022 golf season and progressed through new USGA rules. Charts from the meeting are posted on the MARS website under the Club/Golf tab.

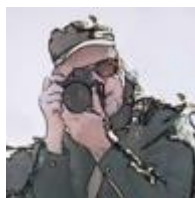
Our officers for the 2023 season are:
Sandy Mossman – President
Lisa Cox – Vice President
Don Johnson – Secretary/Treasurer
Tom Ripper – Handicap Chair

Bob Knickerbocker did a fine job of organizing the meeting and slide presentation so that each of the presenters could address their portion. A constructive discussion by many in attendance followed. A summary of the Golf Genius system which our league uses to manage our golf schedules and record our golf scores into the Golf Handicap Information Network (GHIN) was presented by Tom Ripper.

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

If you are interested in learning more about the golf league and would like to join, I encourage you to log on to our MARS website: <https://www.marsretirees.org> and click on "Golf" under the Club tab. Contact any of our officers for assistance. MARS Associate members including spouse or significant other are encouraged to join.

Come join us! Slots in the MARS golf league are still available this season!



Photography Club

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

Our April 2023 Photo-Club meeting will be held using the virtual *Zoom.com* format that we have been using because of the covid pandemic. We do not meet June, July and August as this is our summer vacation break.

In January and February, 2023 the meeting programs were from a National Geographic Master of Photography on DVD. January was *Broaden Your View* by Cory Richards; February was *Show What No One Has Shown*, by Stephen Alvarez. Becky Englebright gave our March program titled *Southern Colorado Vacation Spots*. The program was a compilation of wonderful images of several trips through Southern Colorado with themed music.

Our meetings also include a monthly member competition. The winners' images, which also include Second, Third and Honorable Mentions, are posted on the MARS Retiree website. Judges vary monthly and include club members. The first-place member images for January, February and March are shown below.

First Place January 2023: BJ Anthony's puffed up and brilliantly colored finch on a snowy winter day.



Finch On A Snowy Day
BJ Anthony

First Place February 2023: Jim Kummer 's inquisitive kestrel.



Little Kestrel
Jim Kummer

First Place March 2023: Tom Frickell 's study in motion featuring his granddaughter in action on the left.



Girl's Basketball
Tom Frickell

Please check our MARS Retirees Website (<https://marsretirees.org>) for the latest updates to the Photo-Club meetings. We always encourage new members to join our club.

Thanks, and regards, John Chapter and Jim Kummer

Colorado Springs Lockheed Martin Retiree Group News

By Doug Tomerlin
(dougincs@aol.com)

The Colorado Springs Lockheed Martin Retiree Group held a luncheon on April 6, 2023 at the Golden Corral in Colorado Springs.

We were sad to hear that three Colorado Springs Lockheed Martin retirees passed away since the last newsletter. Our deepest condolences go to their family and friends.

- Thomas Warner passed away Dec. 17, 2022
- Dave Stevens, passed away Dec. 26, 2023
- Robert "Bob" Cooke, passed away Jan. 20, 2023

We welcome the following retirees, who joined the Colorado Springs Lockheed Martin Retiree Group since the last newsletter:

- Jim Diefenbach
- Jim Foster
- Mark Whitcomb
- Gary Munda

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

Cape Canaveral News

By Dick Olson
(olsons5145@aol.com)

Luncheons February 2023

Our regular bunch showed up this month. Present were Wendell McDaniels, Don Bollinger, Abe Smith, Bob Matschner, Ken Webb, Lynn Johnson, Roger Wright, Laverne Jones, Sylvia Sansing and Cecil Snipes. Lynn said she had called Bob Williams and he is 95 years old and going strong. Did determine that Reed Dunbar was badged to the Cape at one point. Valentine's Day coming up so be sure to remember your better half and stay on their good side.

March 2023

A real light turnout this month. Present were Don Bollinger, Abe Smith, Ken Webb, Roger Wright, Lynn Johnson and Bob Matschner. The conversation was pretty much about where each of us had been stationed during our MMC careers which included Denver, Vandenburg, Titan I and Titan II hard sites, Orlando, White Sands and of course the Cape. Cecil Snipes mailed me an update on Butch and Leatha Ford. Butch is home recovering from surgery he had in January and Leatha had to be placed in a nursing facility and probably will not be returning home due to the amount of care she requires. Visited with Bob Rodamer -- he is having good days and bad. He has been under treatment for kidney cancer for the last several months. He is still self-sufficient, driving, and keeping up with his fruit trees and yard. This past week he decided to stop chemo treatments to improve his quality of life. Our thoughts and prayers go with Butch, Leatha and Bob. Don't forget to be wearing the green in a couple of weeks.

April 2023 -- Turnout was what I think is the new norm. Present were Wendell McDaniels, Abe Smith, Lynn Johnson and her husband Paul, Jerry Teague, Bob Matschner and Lavern Jones who brought along Larry Johnson who also worked in Materiel.

A couple guys, Gary Larkam and Dave Caperaletti, who worked Atlas and Delta joined us. They are looking for a retirement group that meets regularly and we invited them to our group. They may have both worked for ULA.

Heard from Jeff Gorham who said he plans to be down this way in May and hopes to join us next month.

Wish everyone a Happy Easter,

Recent Obituaries

George Spinney, 74, died Dec 24th after some illness. He was hired as a scheduler when he retired from the AF.

Reed Dunbar, 97, passed away on 19 January. Reed worked the Titan program in Denver and transferred to the Cape where he retired and spent the last 20 years or so in this area.

Norm Heap, 94, passed away on 15 February. Norm worked in the Finance Department.

Martin Marietta Retiree's Club (Vandenberg News)

By Eunice Souder
(yorkiegal38@yahoo.com)

We are meeting the fourth Thursday of the month now at the Mission Club in Vandenberg Village. We still have a few long time members of our MMRC group including

Bud Gurney and Charlie Radaz who are our "oldies but goodies."

Bud had been our president for a long time, and entertained us with a couple of jokes, the pledge of allegiance and a prayer. Charlie always found us great speakers.

We have now invited any contractors and their spouses from VAFB to join us. We are just a social club now, but it is great to get together.

Our contacts are myself:

Eunice Souder, Yorkiegal38@yahoo.com,
phone 805-218-7605, and

Peggy Isaac, Peggy.isaac@comcast.net,
phone 805-757-9102

Lockheed Martin (LM) News

Lockheed Martin Launches Commercial Ground Control Software For Satellite Constellations

*Company Commercializes Horizon™ and Compass™
Command and Control and Mission Planning Software
Designed to Support Constellations of Any Size*

WASHINGTON, D.C., March 14, 2023 – To help future developers of commercial satellite constellations plan missions and operate their systems, Lockheed Martin (NYSE: LMT) is now offering commercial licenses to its proven Horizon™ Command & Control (C2) and Compass™ Mission Planning software.

Horizon and Compass leverage an integrated and scalable modular architecture designed to meet specific customer needs. They provide mission critical capability for small, medium or large constellations, which includes orbit management, autonomous operations and formation flying.

Lockheed Martin has used versions of the Horizon and Compass software in more than 50 spacecraft, performing government, research and commercial space missions.

"As more commercial companies start exploring services and capabilities from orbit, Lockheed Martin's mission planning and command and control expertise is helpful to the developing space economy," said Paul Koether, program director at Lockheed Martin Space. "Compass and Horizon offer the flexibility to meet a variety of constellation requirements, benefitting user companies in such a way that they can focus on providing services to

their customer versus managing the complexities of flying their satellites."

Horizon: Flexible Mission Management

Horizon is an extensible, cloud-enabled C2 jump-start kit built on industry and telemetry standards. It has been designed for customer flexibility, as its capabilities are extendable to any satellite bus and adaptable to any mission planner. It also includes a semi to full autonomous operations mode to enable "lights out" operations for periods where direct human engagement is not necessary.

- Key Horizon features include commanding, telemetry processing, storage and analytics, scheduled execution and intuitive user displays.

Compass: Making the Most of On-Orbit Time

Compass is a modularized, microservice-based software tool suite that enables customers to efficiently develop and deploy satellite bus, payload and communications mission planning. Its out-of-the-box, cloud-native, mission-adaptable, data-driven configuration uses mission-tailored automation to plan the most efficient missions. This helps customers maximize use of their space vehicles to make best use of satellite available time overhead and minimize on-orbit fuel usage.

- Key Compass features include dashboard visualization, orbit management, feasibility assessment, downlink scheduling, altitude control, payload scheduling, rules-based planning and contact planning.

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For additional information about commercial licenses for Lockheed Martin's Compass and Horizon software, contact: space-product-lines.fc-space@lmco.com or visit our [website](#).

Lockheed Martin Selected As Preferred Bidder For JP9102

DENVER and CANBERRA, Australia, April 3, 2023 /PRNewswire/ -- Lockheed Martin (NYSE: LMT) welcomes today's announcement that it has been selected by the Commonwealth of Australia as the preferred bidder for Project JP9102, the Australian Defence Satellite Communications System.

The multi-billion dollar JP9102 project will provide the Australian Defence Force (ADF) with a sovereign military satellite communications (MILSATCOM) system defined by its extensibility, agility and resilience.

"We are proud to be selected as the preferred bidder to deliver this critical capability to the Australian Defence Force," said Warren McDonald, Chief Executive, Lockheed Martin Australia and New Zealand. "This capability will provide the Australian Defence Force with robust connectivity and reliable information when and where

they need it, and by extension, contribute further to the growth and development of Australia's defence and space industries."

Lockheed Martin will leverage its deep experience in space-based mission solutions and resilient satellite communications networks for its JP9102 offer.

"We are excited to work with the Australian Defence Force and Australian industry to develop a robust solution for JP9102," said Robert Lightfoot, Executive Vice President for Lockheed Martin Space. "We are bringing to bear all of Lockheed Martin's companywide capabilities as well as our commitment to supporting allied nations to provide an operationally proven system that meets mission needs in terms of coverage, capacity, resilience and extensibility of the constellation."

McDonald added that a significant amount of the content for Lockheed Martin's proposed JP9102 solution will be via Australian small and medium enterprises and that the company is committed to knowledge sharing and technology transfer.

Lockheed Martin has assembled a diverse team of Australian companies including Inovor Technologies, EM Solutions, AV-Comm, Linfox, Shoal Group, Ronson Gears, Calytrix Technologies, Conscia, Clearbox Systems, DXC and Blacktree Technology to deliver ground and control segments and beyond for JP9102.

Lockheed Martin has also partnered with the Victorian Government to establish Victoria as the engineering and technical hub for the company's JP9102 solution, an investment that will create more than 200 advanced space industry jobs in the state.

As another example of the priority placed on workforce development, Lockheed Martin Australia recently launched a space-focused education program with STEM Punks, a STEM education initiative to educate, upskill and inspire Australia's future workforce.

About Lockheed Martin Headquartered in Bethesda, Maryland, Lockheed Martin Corporation is a global security and aerospace company that employs approximately 116,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

Please follow [@LMNews](#) on Twitter for the latest announcements and news across the corporation, [@LMSpace](#) to learn more about the latest technologies, missions and people driving the future of space.

About Lockheed Martin Australia Headquartered in Canberra, Lockheed Martin Australia is a wholly-owned

subsidiary of Lockheed Martin Corporation. The company employs more than 1,200 people in Australia working on a wide range of major programs spanning the aerospace, defence and civil sectors.

United Launch Alliance (ULA) News

COMMERCIAL CREW

ULA is bringing human spaceflight back to American soil with the launch of The Boeing Company's Starliner spacecraft. We are proud to be entrusted with such an important mission and to be returning to the Atlas rocket's human spaceflight heritage dating back more than 50 years.

John Glenn became the first U.S. astronaut to orbit the Earth after being launched on a heritage Atlas LV-3B rocket from Cape Canaveral, Florida, in 1962. We are proud to continue this heritage as we prepare to launch the Atlas V Starliner.

A ULA Atlas V rocket will send astronauts to the International Space Station (ISS) aboard The Boeing Company's CST-100 Starliner capsule. The Starliner will launch on the Atlas V from Space Launch Complex-41 at Cape Canaveral Space Force Station, on Florida's Space Coast.

NASA Astronauts Sunita Williams and Barry "Butch" Wilmore, will launch aboard the Atlas V Starliner on the Crew Flight Test (CFT) mission. Astronauts Scott Tingle and Mike Fincke will serve as the CST-100 Starliner-1 spacecraft commander and pilot, respectively. Astronaut

Jeanette Epps is assigned as a mission specialist on Starliner-1.

Safety is a critical part of the ULA decision-making process, and we fully understand the responsibility and honor of launching American astronauts. ULA has performed a tremendous amount of work in conjunction with Boeing and NASA to ensure our designs provide the highest level of safety to the crew.

CONFIGURATION

The Atlas V Starliner builds on ULA's solid history of success and incorporates new technologies designed for crew safety.

Dual Engine Centaur: For CST-100 Starliner missions, the Centaur upper stage will fly with two RL10A-4-2 engines, offering more thrust to accommodate the Starliner. It also helps shape the ascent trajectory to the Space Station.

Launch Vehicle Adapter (LVA) and Aeroskirt: The launch vehicle adapter (LVA) provides the structural attachment of the Starliner capsule to the Atlas V rocket. The LVA uses a truss structure and metallic ring to attach the spacecraft to the Centaur upper stage. ULA also designed a 70-inch-long aeroskirt to extend the Starliner aerodynamic surface, which enhances the aerodynamic characteristics, stability, and loads of the Atlas V for the unique crewed configuration.

Emergency Detection System (EDS): This system monitors various launch vehicle parameters to determine the health of the rocket, and provides a capability to take action by signaling an abort command so the Starliner can escape if necessary.

SPECIAL EVENTS PLANNED FOR 2023
For detailed information about these planned activities,
see the Marketing Committee Report on page 8.

SPECIAL EVENT PLANNING		
Event	When	Comments
Special Activities Accomplished in 2023		
ULA Plant Tour	Monday, March 06, 2023	Great Tour of ULA, Will try to add some more tours in 2023
Special Activities Planned for 2023		
LM Waterton Campus Tour	Spring 2023	
Cherokee Ranch and Castle	Tuesday, May 16, 2023	Lunch planned afterwards
Manitou (Pikes Peak) Railway	Thursday, June 08, 2023	Lunch planned afterwards
The Wildlife Animal Sanctuary	Wednesday, July 19, 2023	
Central City Opera	Wednesday, July 26, 2023	
WWII Museum of Aviation	August 2023	Lunch planned afterwards
Wine Tasting	Fall 2023	
Special Activities Moved to 2024		
Colorado Springs Balloon Lift-off & Glow	Labor Day 2024	
Cripple Creek Train	Late Spring 2024	
Distillery Tours	TBD	
Georgetown Loop Railroad	Fall 2024	Includes Optional Mine tour & Gold panning
Arvada Center for the Performing Arts	TBD	
Dinner Theaters	TBD	Do these still exist in Denver?
Kansas Cosmosphere	TBD	New!

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 [outlook disappoints](#) as supply, labor squeezes persist (Reuters)

Lockheed Martin declares [first quarter 2023 dividend](#) (Company news release)

Lockheed Martin [CEO expects robust orders](#) in 2023 (Bloomberg News video)

At mobile phone show, Lockheed Martin's [CEO makes his pitch for partners](#) (Washington Technology)

[China sanctions Lockheed Martin](#), Raytheon over Taiwan arms sales (Reuters)

U.S. defense [industry unprepared for a China fight](#), says report (Defense News)

Lagging arms production makes [Pentagon wary of further industry consolidation](#) (The Wall Street Journal)

Defense [giants are hungry](#) for space companies (Space News)

Lockheed Martin spinoff to operate [lunar communications, navigation service](#) (Aviation Week Network)
Lockheed Martin may build [UK satellite facility](#), Telegraph says (Bloomberg News)
Norway's Loke [buys UK deep-sea mining firm](#) from Lockheed Martin (Reuters)
Defense giant Lockheed Martin eyes [new opportunities in wildfire fighting](#) (Forbes)
Hanwah, Lockheed Martin invest in [anti-drone technology](#) (United Press International)
Lockheed Martin [backs megawatt-class electric propulsion](#) developer H3X (FutureFlight)
Lockheed Martin's venture arms [invests in sheet metal maker](#) (Washington Technology)
U.S., India [partnership targets arms](#), AI to compete with China (Reuters)
Parent company of Connecticut-based [Sikorsky to cut 600 jobs](#) (CT Insider)
[Deal for better wages, lower insurance costs](#) to impact nearly 4,000 Lockheed Martin employees (Marietta Daily Journal / Yahoo! News)
Lockheed Martin announces [new acting senior vice president of government affairs](#) (Market Screener)
Lockheed Martin, Viasat [executives named to presidential advisory board](#) (Space News)

HYPERSONICS NEWS

U.S. [Air Force drops Lockheed Martin hypersonic missile](#) after failed tests (Defense News)
Air Force [won't buy hypersonic missiles](#) in 2024, official says (Defense One)
Hypersonic ship-killer: U.S. Navy taps [Lockheed Martin, Raytheon to begin developing HALO](#) missile (Breaking Defense)
U.S. Navy awards Lockheed Martin [\\$1.2 billion contract for hypersonic missiles](#) (Defense News)
U.S. [Navy budgets \\$3.61 billion](#) for 64 boost-glide missiles (Aviation Week Network)
Navy's [hypersonic launcher is headed to flight testing](#) next year (Defense News)
Hypersonic scramjet missile [HAWC successfully tested](#) for last time (Air & Space Forces Magazine)

5G.MIL NEWS

Pentagon kicks off [5G competition](#) to upgrade base communications (Defense News)

SPACE SYSTEMS NEWS

Lockheed Martin's [plan to "Ignite" space innovation](#) (Breaking Defense)
[Orion back at Kennedy Space Center](#) so NASA can dissect Artemis 1 mission (Orlando Sentinel)
[No major issues found](#) with Artemis 1 mission (Space News)
NASA [advisers raise concerns about Artemis](#) safety and workforce (Space News)
NASA declares [unlatched Lucy solar array](#) good enough (Aviation Week Network)
NASA investigates veteran Mars orbiter to solve a [missing fuel mystery](#) (Space.com)
NASA prepping for [September arrival of OSIRIS-Rex asteroid sample](#) (Space.com)
NASA [asteroid sample return mission](#) to land on U.S. postage stamp (Space.com)
Lockheed Martin to launch [first demo of new mid-sized bus](#) (Space News)
Lockheed Martin completes [delivery of 10th GPS 3](#) satellite (Space News)
Space Force [pauses GPS satellite orders](#) due to excess inventory (Space News)
Lockheed Martin eyes [international customers](#) for GPS augmentation systems (Space News)
Space Force wants to [trim missile warning satellite program](#) (C4ISRNet)
U.S. Space Force crafting [new schedule for GPS ground system](#) (Defense News)
Raytheon selects [Lockheed Martin bus](#) for U.S. Space Force missile-tracking satellite (Space News)
Space Force [not buying large satellites](#) for the foreseeable future (Space News)
Satellite [manufacturers continue to diversify](#) (Space News)
Terran Orbital, in which Lockheed Martin has a stake, wins [\\$2.4 billion contract](#) to build 300 low-Earth orbit comms satellites (Aviation Week Network)
Terran Orbital expands [satellite production facilities](#) (Space News)
Lockheed Martin wins [\\$474 million Trident II missile deal](#) from U.S., UK (The Defense Post)

[Hubble Space Telescope faces threat](#) from SpaceX and other companies' satellites (The New York Times)

Lockheed Martin Astrotech unit, SpaceX share [NASA payload processing contract](#) work up to \$100 million (Bloomberg News)

United Launch Alliance announces May [launch of first Vulcan rocket](#) (Space News)

SpaceX [Falcon 9 launches Lockheed Martin-built GPS 3](#) satellite for U.S. Space Force (Space News)

Space Force to change how it buys [national security launches](#) (Space News)

Space [launch firms seek to balance](#) government, commercial client needs (Defense News)

SpaceX aims to [increase launches](#) as rivals prep new rockets (The Wall Street Journal)

First [ABL Space Systems launch fails](#) (Space News)

Industry squabbles on [need for novel space regulation](#) as White House deliberates; ULA CEO calls for regulation, enforcement (Breaking Defense)

Space [launches should withstand Chinese challenge](#), Pentagon mandate says (The Wall Street Journal)

AERONAUTICS NEWS

No test pilot needed as [AI flies tactical aircraft for the first time](#), Lockheed Martin says (United Press International)

U.S. Air Force plans [self-flying F-16](#) to test drone wingmen tech (Defense News)

Lockheed Martin [resumes F-35 acceptance flights](#) with engine vibration fix in hand (Defense News)

[Pentagon resumes acceptance of F-35s](#) from Lockheed Martin following months-long pause (Breaking Defense)

Technical [fault identified](#) after F-35B crash (Aviation Week Network)

Lockheed Martin's F-35 has [fewer unfixed defects](#) as key test approaches (Bloomberg News)

Pentagon says only [half of its F-35 jet fleet is mission-ready](#) (Bloomberg News)

F-35 undergoes first [test flight with TR-3 hardware, software upgrades](#) (Defense News)

Flight testing paces [delivery of next F-35 upgrade](#) (Aviation Week Network)

F-35 [upgrades slip to 2024](#), drawing lawmaker's ire (Defense News)

Opinion: The F-35 is at the [center of hard and soft power](#) (Aviation Week Network)

[Will the F-35 ever become the primary fighter](#) it was supposed to be? (Stars & Stripes)

[F-35 sales rise](#) as Russian invasion grinds on (Defense One)

Canada finalizes agreement to [buy 88 U.S. F-35 fighter jets](#) (The Associated Press)

Singapore to order [eight additional F-35Bs](#) (FlightGlobal)

Lockheed Martin hopes to deliver [more F-35s to Australia](#) (Reuters)

Spain planning [phased fighter acquisition](#) (Aviation Week Network)

U.S. tried to [woo India away from Russia with display of F-35s](#), bombers (Reuters)

[U-2](#), Cold War flashpoint, comes out of the shadows for Chinese balloon (The Wall Street Journal)

F-22 makes [first air-to-air strike](#) in takedown of Chinese balloon (Military.com)

Advanced [F-16 version makes first flight](#), Lockheed Martin says (Defense One)

Ukraine will now [push for F-16 fighter jets](#), government adviser says (The Hill)

[Biden rejects supplying F-16s](#) to Ukraine (Aviation Week Network)

Biden administration to ask Congress to approve [F-16 sale to Turkey](#) (The Wall Street Journal)

Senators want to [block Turkey F-16 sale](#) until NATO expansion succeeds (Defense News)

Turkey [F-16 sale in congressional limbo](#) amid Lockheed Martin backlog (Defense News)

Lockheed Martin [delivers first F-16 Block 70 fighter](#) to Bahrain (Breaking Defense)

Jordan inks deal for [12 Block 70 F-16s](#) from Lockheed Martin (Breaking Defense)

NASA eyes [2023 first flight for X-59](#), as supersonic projects face heat (FlightGlobal)

[Air Force slashes "bridge tanker" buy](#), sets deadline for clean-sheet aerial refueler (Defense One)

U.S. Air Force wants [next-gen tanker](#) flying by 2040 (Breaking Defense)

[U-2 spy plane](#) joins Hill Air Force Base museum (FOX 13 News, Salt Lake City)

MISSILES AND FIRE CONTROL NEWS

Australia to buy [U.S.-made HIMARS](#) in boost to defense systems (Military.com)
U.S. clears [Poland to buy HIMARS, ATACMS](#), ammunition worth \$10 billion (Defense News)
U.S. State Department approves [sale of HIMARS to Netherlands](#) (Defense News)
Rheinmetall eyes [HIMARS production in Germany](#) (Reuters)
Lockheed Martin's [HIMARS plant gearing up to meet demand](#) after Ukraine success (Reuters)
Why it's [hard to double GMLRS production](#) (Defense One)
U.S. troops test [THAAD missile defense system's remote control](#) during South Korea drill (Stars & Stripes)
The Army's new [Javelin G-model remains under investigation](#) after 2022 failed test (Breaking Defense)
U.S. State Department okays [potential Javelin anti-tank missile sales to UK](#) (Reuters)
U.S. approves [possible sale of Javelin missiles to Australia](#) (Reuters / Yahoo Finance)
Lockheed Martin conducts [Spike NLOS test](#) from Apache helicopter (Army Technology)
Raytheon jumps back into U.S. Army's [Precision Strike Missile competition](#) (Defense News)

ROTARY AND MISSION SYSTEMS NEWS

Sikorsky [protest challenges U.S. Army's FLRAA timeline](#) (Aviation Week Network)
Connecticut delegation frustrated by [Army's lack of answers](#) on Sikorsky contract (Hartford Courant)
U.S. Army's new helicopter engine hit with another delay, [impacting FARA competition](#) (Defense News)
Sikorsky [pushes back S-92A+](#) market entry, shelves S-92B plans (Aviation Week Network)
Sikorsky, GE team up on [hybrid-electric VTOL demonstrator](#) (Aviation Week Network)
Sikorsky, Leonardo study X2 for [Italian high-speed mission](#) (Aviation Week Network)
Sikorsky delivers [5,000th medium-lift helicopter](#) to U.S. (The Defense Post)
Australia to spend \$2 billion on [40 U.S. Black Hawk choppers](#) (Reuters)
Kaman to [discontinue K-MAX production](#) (Vertical Magazine)
Lockheed Martin floats [laser weapon for future littoral combat ship](#) upgrade package (Breaking Defense)
Navy eyeing [littoral combat ships as "mothership" for unmanned platforms](#), SecNav tells lawmakers (Breaking Defense)
The [short life of the new USS Little Rock](#): Design flaws, setbacks lead to decommissioning (The Buffalo News)
The Pentagon saw a [warship boondoggle](#); Congress saw jobs (The New York Times)
Navy applies [lessons from costly shipbuilding flaws](#) (The Associated Press/Defense News)
Freedom-class [littoral combat ship USS Marinette delivered](#) to Navy (U.S. Naval Institute News)
How the U.S. Navy is creating the ["nirvana of one combat system"](#) (Defense News)



Wildlife Sanctuary Tiger



Wildlife Sanctuary Wolf

ULA TOUR, MARCH 6, 2023



ULA Tour, March 2023



ULA Tour, March 2023



Lunch After ULA Tour, March 2023



Libations After ULA Tour, March 2023



Lunch After ULA Tour, March 2023



Terry Lilly, Judy Nielsen, Rick Gonzales,
Karen Paulson, Lucy Ellerhorst, Carolyn Malaby
Lunch After ULA Tour, March 2023



2023 MARS Summer Luncheon Honoring Senior Members

The Officers and Board of Directors of MARS Associates are pleased to invite you, your spouse/companion, and guest to the annual MARS Summer Luncheon Honoring Senior Members. The luncheon is scheduled for Wednesday, July 12, 2023, at the **Manor House at Ken Caryl, 1 Manor House Road, Littleton, Colorado 80127** (for map, Ctrl+click on this link: <https://goo.gl/maps/uL4kiegQcodew9tSg>). The doors will be opened at 11:00 a.m. and lunch will be served at 12:00 noon. A **CASH BAR** will be available prior to the luncheon.

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

The cost for members and one guest is \$35.00 per person. The cost for additional guests or non-members is \$50.00 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 below by **July 1, 2023**. To make an electronic reservation, please use (Ctrl+Click) the link below:

<https://marsretirees.org/2023-mars-summer-luncheon-honoring-senior-members/>

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

Reservations must be received by Saturday, July 1, 2023

If you make a reservation and later find you cannot attend, please notify Linda Duby at 303-249-1665 or lindaduby@comcast.net; or Charlie Haupt at 303-725-7595 or qcrfccoach@gmail.com; or Carl Kaminski at 303-726-1546 or carlkc66@gmail.com no later than **Saturday, July 1, 2023** to receive a refund.

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

----- Reservation Form for Check Payment (*detach here*) -----

2023 SENIOR LUNCHEON, July 12, 2023 (*please print clearly*)

Member _____ Salmon _____ Steak _____

One Spouse/Companion/Guest _____ Salmon _____ Steak _____

Other Guests _____ Salmon _____ Steak _____
(Add sheet for additional guest names)

Member Phone No. _____

Member e-mail address _____

Member/Spouse/Companion/Guest @ \$35.00 per person = \$ _____

Other guests @ \$50.00 per person = \$ _____

TOTAL ENCLOSED \$ _____ Check # _____

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13th Annual Rockies Picnic & Game - August 2, 2023

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

Colorado Rockies vs. San Diego Padres

*The buffet picnic includes all-beef hot dogs & brats, chips, coleslaw,
BBQ pulled chicken on kaiser roll, chocolate chip cookies,
unlimited fountain drinks (nonalcoholic) & beer/wine cash bar.*

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

Prices are \$43 each for a MARS member and spouse or one companion
and \$51 each for additional non-MARS member guests.

Coors Field — Outfield Box Section 144

Tickets are Limited (60 maximum)

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

NO LATER THAN Monday, July 17, 2023!

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

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

**If you are subsequently unable to attend, contact Linda Stearns (303-797-3557 or
linda80120@comcast.net) or Linda Duby (303-249-1665 or lindaduby@comcast.net)**

NO LATER THAN Monday, July 17, 2023, to receive a refund.

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

Ball Game and Picnic @ Coors Field — Wednesday — 8/2/2023

Member: _____ Spouse or One Companion /guest: _____

Non-member(s) guests: _____

Member & Companion/guest @ \$43 each: _____ Non-MARS Guests @ \$51 each: _____

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

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

*Address: _____ Amount of Check: \$ _____

City/State/Zip: _____ Check Number: _____

Telephone Number: _____ Check Date: _____

Special Seating Request: _____

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

**** PRINT CLEARLY! Tickets will be mailed on July 21, 2023, to this address.***



Tickets and field info will be mailed to address on reservation form in advance of the game.
Access to Picnic Area opens at 11:30. Picnic Area closes shortly after game starts.

**ANNUAL MEETING, MARCH 1, 2023
ARROWHEAD GOLF CLUB**



MARS Associates Annual Meeting
Arrowhead Golf Club
March 1, 2023



Mr. Tory Bruno, CEO
United Launch Associates



Pam & Doug Korbel



Lisa Cox & Debbie Carr



Steve Skladnek & Mike Carroll



Roger Chamberlain & Bill Schrott



Shari & Daniel Crumb



Claire & Jeff Wead



Connie & Ray Treadaway



Gary & Kathy Hetzel



Dan & Lucy Ellerhorst



Sharon & Calvin Harr



Barb & Steve Sande



Dan Ellerhorst & Bob Knickerbocker

Schedule Addendum (See last page)

NOTES:

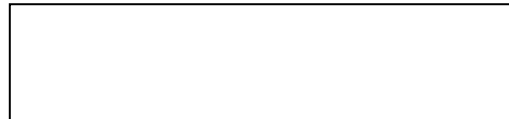
1. BOD meets as required
 2. Officers/Directors meet 1st Wednesday of every month at 09:30 am.
 3. Bridge Club meets 3rd Friday of every month at 10:00 am at Buck Recreation Center.
 4. Car Club meets 1st Sat of every month, and as noted on their website.
 5. Dinner Club The Dinner Club is currently looking for leaders to step forward to help plan future events
 6. Golf club meets every Thursday from April through Oct of each year.
 7. Hiking Club: Outings on 3rd Wednesday of the month. Check website for Point of Contact for each hike.
 8. Photo Club meets 2nd Thursday every month (except Jun, Jul & Aug) at 1:00 pm on Zoom
 9. Web Committee normally meets on last Tuesday of month, prior to BOD/Officer mtg, at a designated restaurant or by Zoom.
 10. Marketing Committee meets on a monthly basis as determined by members with guests invited (Typically last Wednesday)
 - *11. 2023 Happy Hour Dates and Locations are tentative; MARS website will have details when available
 12. 2023 Summer Event and Senior Recognition Luncheon - July 12, 2023 at Ken Caryl Manor House
 13. 2023 Rockies Game - Aug 2, 2023
 14. 2023 Annual Picnic -Sep 13, 2023 at Clement Park
 15. 2023 Holiday Celebration - Dec 6, 2023 at Wellshire Events Center
 16. Spring Event and Annual Meeting 2024 TBD
 17. See MARS website (<https://marsretirees.org>) for additional information on our Special Activities
- Please review dates and times and notify Ken Marts (martshouse2@aol.com) if you have any changes or additions.



MARS ASSOCIATES
P.O. Box 1128
LITTLETON, CO 80160-1128

PRESORTED STANDARD
US POSTAGE
PAID
LITTLETON, CO
PERMIT NO. 245

' ADDRESS SERVICE REQUESTED



DATE: April 2023 Rev 1												
EVENT/MONTH											2024	
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Officers/Directors	5	3	7	5	1	6	4	1	5	3	7	6
Bridge Club	21	19	16	21	18	15	19	17	21	19	15	15
Car Club	1	6	3	1	5	2	7	4	2	6	3	2
Dinner Club	-	-	-	-	-	-	-	-	-	-	-	-
Golf Club	Thur	Thur	Thur	Thur	Thu	Thu	Thu	-	-	-	-	-
Hiking Club	19	17	21	19	16	20	18	15	20	17	21	20
Photo Club	13	11	-	-	-	14	12	9	14	11	8	14
Website Team	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Marketing Committee	26	24	28	26	30	27	25	29	TBD	TBD	TBD	TBD
MARS Events												
Happy Hour	19				TBD			TBD (8)				
Summer Luncheon Honoring Senior Members				12								
Annual Rockies Game					2							
Annual Picnic						13						
Holiday Celebration									6			
Spring Event and Annual Meeting												TBD
MARS Special Activities NOTE 17												
Aetna Medicare Presentation		TBD				TBD						
New DreamHost Platform GoLive	10											
ULA Plant Tour												
Cherokee Ranch and Castle		16										
LM Plant Tour		TBD	TBD									
Manitou Pikes Peak Railway			8									
Central City Opera				26								
Wild Animal Sanctuary				19								
WWII Museum of Aviation					TBD							
Wine Tasting						TBD	TBD					
MARS STAR Schedule												
Items due for MARS STAR												
STAR Input to Editor	6			6			5			TBD		
STAR Repro. Deadline	17			17			16			TBD		
STAR Mailing	26			26			25			TBD		