ASSOCIATES

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April 2021

MARS STAR

MARS STAR has gone digital!!

If you currently receive a printed copy, you will continue to receive a printed copy. If you wish to receive hard (printed) copies in the future, contact Carl Kaminski at 303-726-1546 or via email at carlcolo@centurylink.net.

MARS Activities This Quarter:

- **Have you renewed your membership? See pg. 21**
- **Luncheon Honoring Seniors See pg. 23 – July 14**
- **MARS at the Rockies See page 5**

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

OFFICERS

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CLUB CONTACTS

Bridge	Dave & Kathy Martz	303-683-9524
Car Club	Roger Rieger	303-912-6217
Dinner	Becky & Gary Englebright	303-973-4062
	Anita Kannady	303-794-9210
Golf	Bo Rodriguez	303-798-9157
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

Cover:

L: NASA's Ingenuity helicopter unlocked its rotor blades, allowing them to spin freely, on April 7, 2021, the 47th Martian day, or sol, of the mission. Scheduled first test flight is April 14, 2021. (Photo credit: NASA.org)

R: Omnispace, LLC and Lockheed Martin (NYSE: LMT), have entered into a strategic interest agreement to explore jointly developing 5G capability from space. (Photo credit: LM) See article on page 18.

From the Editor's Desk

Tom Pighetti (tjpighetti@q.com)
Linda Stearns (linda80120@comcast.net)

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

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

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

President's Corner

By Dick Sosnay
(richardsosnay@gmail.com)

As folks in Colorado have been getting vaccinated for the Coronavirus for several months now, I am hoping that most of the MARS members are getting their vaccinations. My wife and I have had ours, and we are looking forward to getting out into the world again, although starting out slowly, and I am hoping that all of you are feeling the same. With more people vaccinated and the improving COVID situation, we are planning to start up normal MARS events this year.

We held our 2021 Annual Business Meeting this year, although on ZOOM. I hope that all of you that attended felt that it was worthwhile, not only to get an overview of our last year, but to also as a look ahead to this coming year. Most of our officers, club leads, the chairman of the BOD and several other volunteers made short presentations to briefly discuss the last year, the upcoming year, and to allow new members and others to see who the MARS Association volunteers are. If you missed that meeting, the 2020 Annual Report is available on the MARS website.

Our next event is the Senior Recognition Luncheon that will be July 14 at the Manor House. More information can be found in Linda Duby's section and in the flyer in this MARS STAR. This will be the first MARS event that we have in person in over 16 months. Wow! Who would have ever thought that last March? Let's hope that it goes off as planned, and I look forward to seeing many of you there.

I also want to remind all of you who have not yet renewed your MARS membership for this year, it's that time again. If you haven't already done so, please renew and keep up your membership. You can do that on the MARS website and find more information in Carl Kaminski's section.

In the last few months, we have had 3 ZOOM seminars, including a discussion and look-back at the Titan Program, one with the Engineering Leader Development Program (ELDP) and one with the Operational Leader Development Program (OLDP). Both LDP seminars were with young leaders currently at Lockheed Martin and they provided us with a view into some of the things going on at Lockheed Martin. All the seminars were extremely interesting. Another seminar is currently being planned, but will have been completed before this issue of the MARS STAR is published. At the last ELDP interactive seminar a MARS member asked if they could hold another seminar on Artificial Intelligence and Machine Learning. The answer was yes and they recently contacted us to work with them to plan it. We are still working on a time to host the ZOOM session. Stay tuned for details. The format will be like the last seminar.

We are currently trying to organize another seminar, this one with an overview of all the Deep Space programs that were developed and flown by Lockheed Martin from the SSB here in Denver. We are currently working with some of our retirees, as well as folks still at Lockheed Martin, to try to set that up. Once we have finalized plans, we will notify everyone with the details of that seminar. If any of you have ideas for other seminars that may be interesting to many of our members, let us know and we may try to set those up. Or if you would like to lead a seminar that would be of interest to our MARS members, please let us know. That goes for both Lockheed Martin and United Launch Alliance retirees.

One of the things that the MARS officers and directors do from time to time is to have discussions with HR personnel at both Lockheed Martin and at United Launch Alliance. Among the topics we discuss are how to maintain contacts between MARS and LM and ULA, how can we supply information to prospective retirees about the MARS organization, how can LM and ULA help MARS, and how can MARS help LM and ULA. In the past, we have provided MARS volunteers several times per year to assist with LM and ULA events. From time to time, there have been discussions about how MARS members could volunteer to provide mentoring to individuals within these organizations. Our MARS members have a huge wealth of experience that we could provide. We are still in the process of trying to understand how that could be accomplished. Before we begin to have conversations in detail about mentoring, we thought it would be a good idea to see if any our members might be interested in providing mentoring. If you are interested in being a mentor, please send me an email at richardsosnay@gmail.com. This is not a commitment on your part at this time, but we are just trying to gather information on the interest of our MARS members in supporting this type of activity.

As I write this, once again, we are looking for someone to write a volunteer article for the MARS STAR. This month's STAR does not have that feature since we have not found a volunteer to prepare an article. We have previously been successful in finding MARS members to write an article describing the volunteer work they do, and to provide information about that volunteer organization. As thanks for doing that, the MARS Association provides that organization a check for $50. More importantly, it provides information about the organization and their goals to our MARS membership, and provides other retirees information about volunteer organizations that they might be interested in. If you, or someone you know, is a volunteer and would like to prepare a short article for future MARS STARs, please contact me, or any of the officers or directors, and let us know. We appreciate the volunteer work that our members do and appreciate even more the article that you could write for MARS.

As do all of you, I am looking forward to the upcoming year and hoping that life gets back to normal. I am particularly looking forward to seeing you all at our MARS events this year.

Next Up

By Ken Marts
(martshouse2@aol.com**)**

As your new President-elect, let me say how proud I am to serve in this role for a great organization moving into its 37th year. The officers, directors and members have built an organization steeped in tradition and memories for all past and future members of MARS. I look forward to working with my fellow officers and the Directors in continuing our past activities and introducing some new thoughts on growing the organization while weathering the continuing COVID-19 challenges.

A little background on myself for those that don't know me, I am a recent retiree (May 2019), and my entire career was based in Denver. Though based in Denver, I had many opportunities to travel domestically in the US (travel to 40 of the 50 states) and had several assignments in foreign countries (Canada, the UK, and Australia). All of these were in support of the programs I worked, many of which can't be discussed on these pages. These experiences have provided me an excellent opportunity to learn from, and interface with people from diverse backgrounds which I believe will help enable my role in MARS.

I became a Martin Marietta employee in December 1978. Fresh out of Colorado School of Mines with an Engineering Degree, I was ready to set the world on fire and get involved in some fun aerospace work. I quickly learned to temper the enthusiasm to avoid fire-setting but got engaged in many leading-edge technologies working with the top talent Martin Marietta and then Lockheed Martin had. No career is complete without having served programs in proposal phase, acquisition phase, and deployment phase and I was able to support efforts in all these phases.

After working over half of my career on programs and Space Systems Company, I moved on to become a Technical Fellow allowing me opportunities to work with Corporate as well as the other Business Units (Aeronautics, Missiles and Fire Control, Rotary Mission Systems including Sikorsky). These roles allowed me to experience an even wider array of the talent Lockheed Martin has and provided me with what I value most about my time with the company, lasting friendships while contributing to the important work Lockheed Martin does for our warfighters.

I enjoy working with people from all backgrounds and spent many of my last work years mentoring college graduates and seasoned engineers and professionals. It is with that enthusiasm that I welcome my role to serve MARS in the President-elect position. I encourage you to reach out (email or phone) so we can talk about your ideas of what is or is not working with MARS and your thoughts on improvements. Also, if you have an interest in becoming more involved in MARS and the "behind-the scenes action" send me your thoughts or ideas.

I'm also looking forward to working with the clubs and their ideas moving forward as we begin to put the pandemic behind us.

In closing, I'd like to float some ideas of where I would like to see us go in the future:

1) Continued engagement with the company and the employee development programs. Bill Wise has initiated these activities with ELDP and OLDP (Engineering and Operations Leadership Development Programs, respectively).
2) Continue to establish a working relationship with Human Resources for support of MARS in conjunction with 3) below.
3) Engagement with more of our retirees, i.e., how can we encourage more recent retirees to join MARS and engage in our activities and how we get the word out during the retirement process at LM.
4) And one final thought: Buzz Lightyear in *Toy Story* said "To Infinity and Beyond," maybe our new motto can be "To MARS and Beyond" and we'll see a MARS retiree on an Elon Musk manifest to the planet Mars.

Activities Updates

By Linda Duby
(lindaduby@comcast.net)

This year, due to COVID-19, MARS held its first virtual Annual Meeting. We had a good response with 50 members joining the ZOOM meeting. There was a virtual drawing for two door prizes, and they were won by Duane DelDuca and David Clair. Congratulations to both! Hopefully, next year we can get back to normal and hold a "live" annual meeting with a luncheon and a speaker.

The next event is the MARS Luncheon Honoring Senior Members. It is scheduled for **July 14, 2021,** and will be held at the **Manor House at Ken Caryl.** (Yes, we did change the date.) The doors will open at 11:00 a.m. and the lunch will be served at noon. There will be a cash bar. The flyer for the luncheon is included with this edition of the STAR and is also available on the website (page 23). We are really looking forward to this event and are hoping for a good turnout.

The Annual Picnic is scheduled for September 8, 2021, at Clement Park. We will be in the same location in the park as two years ago and are looking forward to holding this event.

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

Please check the MARS website and MARS Facebook page for updates on events.

MARS at the ROCKIES 2021

We are planning for a game and picnic this summer at Coors Field. This event is planned for Wednesday, August 18, when the Rockies play the San Diego Padres. An flyer is included on page 27. We have reserved 50 seats in section 145. As usual, these seats on the third-base side will be shaded by the Club level seating. What virus precautions are required at Coors Field in August will determine how the picnic and stadium seating will be handled.

The event is too soon after the July MARS STAR issue for the usual reservation process by return mail. Before July 1, anyone who would like to attend please send an email with your contact information *(name, telephone, email address, mailing address, names of any people in your group, and if handicap accessible seating is needed)* to Linda Stearns at linda80120@comcast.net or telephone at 303-797-3557.

As soon as we have confirmed information from the Rockies about the picnic food choices, how it will be served, and how seating and ticketing will be handled, we will contact you directly to confirm the reservations.

Linda Stearns
(linda80120@comcast.net)

Business

By William Schrott
(wmschrott@msn.com)

Along with all the directors and officers, I hope all of you are safe and healthy. Hopefully we are going to see COVID-19 become a small part of our daily lives. However, my kids have suggested that I keep wearing my mask.

I have updated the MARS website (marsretirees.org) discount page with corrections and modifications. The biggest change has been to the golf discount. It is a continuous job to keep the page current.

We are planning to have our annual picnic this year. Vendors will be invited to attend the event to provide members a chance to meet face-to-face with them. The vendors that usually attend are Red Rocks, Kaiser, Hearing Rehab Center, Delta Dental, and H. M. Brown and Associates.

It is good to see members participating in our discount programs. The most active is Delta Dental. To give you an idea of how many members participate in the programs, I summarized membership data for Delta Dental in the table below:

Mid option	100 subscribers	64 spouses	4 dependents
High option	402 subscribers	259 spouses	42 dependents

If you see other companies offering discounts that could benefit our membership, send me an email (wmschrott@msn.com) to tell me about these companies.

Membership Report

By Carl Kaminski
(carlcolo@centurylink.net)

MEMBERSHIP STATISTICS

As of April 1, 2021, there are 1,334 MARS Associates members, including 709 seniors.

Please welcome the following new members:

Colorado

Bailey	Thomas Krol
Castle Pines	Christopher Jackman
Centennial	Amy Hefestay, Steve & Susan Marxer, Randall Renken & Martha Lell
Colorado Springs	William & Cynthia Manning
Denver	Richard & Patricia Shaw
Englewood	Erik & Jacqui Lutterbie
Golden	William Kelly Jr.
Highlands Ranch	Suzanne & Ron Billinger, Edward & Payette Juraco, Mark & Dianne Yoss
Littleton	John & Debbie Adamoli, Lynn Duty, David & Bonnie Nicholas, Beth & Scott Schulze
Montrose	Neil & Sally Tice

Other States

Kansas

Shawnee Ron & Cheryl Van Laningham

Texas

Guthrie Karen & Bob White

Membership Renewal Is Still On

We are nearing the close of the membership renewal cycle for 2021. If for some reason you haven't yet renewed (I know, it happens), there is a hard copy of the renewal form included in this issue of the STAR (page 21). If you are viewing this copy of the Star online you can follow this link to renew: Online Renewal. In addition, clicking on the Membership tab from the main page of the MARS Retirees website (MARSRETIREES.ORG → MEMBERSHIP) will provide access to a form which can be downloaded, filled out and printed for mail-in. You can type directly into this form from your web browser and print it out or print the blank form and fill it in. Either approach should work. Also, you can renew directly online by selecting the red 'Renew' button under Membership Online Processing. This will allow you to pay via credit card and save the hassle of mailing your renewal form and payment via USPS. If you have any questions or you're not certain if you've already renewed, 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 2021. 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.

MARS Associates

In Memoriam

By Norma Emerson
emer801@msn.com

Please contact me at the above e-mail 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 In 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

Berger, Ronald J. "Ron" (D: January 2021)
(Survived by Annette Berger)
Lakewood, CO
https://tinyurl.com/y5qeswah

Bunting, Jackie (D: November 2020)
(Survived by Jane Bunting)
Bozeman, Montana
https://tinyurl.com/m39ay6b3

Coppock, Shirley (D: December 2020)
Englewood, CO
https://tinyurl.com/p8khhz1j

Lima, Vincent (D: November 2020)
(Survived by Carole Lima)
Lakeside, CA
https://tinyurl.com/y7nwq6ec

Lukens, Samuel "Sam" (D: March 2021)
(Survived by Patricia Lukens)
Highlands Ranch, CO
https://tinyurl.com/26h3jwse

Mussato, Frank (D: February 2021)
(Survived by Elisabeth Mussato)
Highlands Ranch, CO
No obituary published

Nolan, Paul (D: December 2020)
(Survived by Nora Nolan)
Sun City, AZ
No obituary published

Simon, Elvis (D: January 2021)
Golden, CO
https://tinyurl.com/y552sy3o

Steele, Ardie (D: December 2020)
(Survived by David Steele)
Arvada, CO
https://tinyurl.com/141vj1yh

Non-Members

De Moraes, Elizabeth "Bim" (D: January 2021)
(Survived by Carlos De Moraes)
Greenwood Village, CO
https://tinyurl.com/y6kq7quh

Eckert, Dwight (D: December 2020)
Littleton, CO
No obituary published

Gaenicke, Albert Peter (D: December 2020)
Titusville, FL
https://tinyurl.com/y3lrjh58

Gaenicke, Elaine (D: April 2020)
Titusville, FL
https://tinyurl.com/y52l4oft

Hershey, Richard "Dick" (D: January 2021)
Littleton, CO
https://tinyurl.com/y487493y

Ivey, James "Jim" (D: February 2021)
(Survived by Deborah Ivey)
Las Cruces, NM
No obituary published

Jacobs, James Andrew (D: February 2021)
Burlington, IA
https://tinyurl.com/n3sjt2hs

Karnincic, Peter (D: February 2021)
(Survived by Jessica Karnincic)
Colorado Springs, CO
https://tinyurl.com/9rtjrv98

Prudhomme, Robert (D: February 2021)
Denver, CO
https://tinyurl.com/6pbyrz85

Rasser, Thomas "Tom" (D: December 2020)
(Survived by Nancy Rasser)
Littleton, CO
https://tinyurl.com/y951399x

Ray, Howard (D: February 2021)
(Survived by Mary Ray)
Colorado Springs, CO
https://tinyurl.com/yvufphty

Rose, Judy "JJ" (D: January 2021)
(Survived by Larry Rose)
Littleton, CO
No obituary published

Scherer, H. Paul (D: September 2020)
(Survived by Nancy Scherer)
Wheat Ridge, CO
https://tinyurl.com/bf6nmwvp

Sjostrom, Joan (D: January 2021)
Castle Rock, CO
https://tinyurl.com/wk7y9pz4

Smith, Owen Bland "OB" (D: March 2021)
Littleton, CO
https://tinyurl.com/242ry2uz

Verrastro, Dominic (D: January 2021)
(Survived by Bobbie Verrastro)
Virginia Beach, VA
https://tinyurl.com/yuf5cklg

The MARS Associates Website

By Jim Kummer
(jkummer@comcast.net)

Recently I watched on Netflix the limited series ***The Queen's Gambit*** (7 one-hour episodes). Despite its mature content, it was very entertaining. Another chess-related offering on Netflix is a two-hour movie, ***Searching for Bobby Fisher***. Decades ago I used to play chess at work, during lunch. The Netflix series reminded me how much I enjoyed the game. If anyone is interested, you can play against the computer for free at www.chess.com/play/computer. The game is stimulating and educational. We don't have a Chess Club at MARS Associates, but if anyone wishes to pursue starting one, they might find some interest.

You can read about all of the MARS clubs here in the STAR and on the MARS website. Note that we have had two new clubs start in the last few years - the Hiking Club and the Car Club. Perhaps a Chess Club could be next. The MARS Policy Manual, beginning on page 11, describes the process for forming a special interest club for MARS Associates members.

Many events and club activities are on hold during the COVID-19 pandemic. The MARS website provides members of the latest club status and event planning. We list a monthly Site of the Month for the enjoyment of our members. Below are the most recent for the past quarter.

Mar – Virtual Museum Tours
Best-free-virtual-tours-of-museums-in-the-world
Feb – Landing on Mars this Month is NASA's Perseverance Rover
Jan – Interesting and Intellectually Stimulating Kueez Entertainment Photographs

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

Historian Corner

By Barb Sande
barbsande@comcast.net

Program Profile

This issue profiles the third successful lunar landing mission (Apollo 14), which in early 2021 celebrated its 50th anniversary, and also examines the first mission of Apollo 14 Commander Alan Shepard on the first US manned spaceflight in May 1961.

Apollo 14 Mission Overview

Launched: 01/31/1971 21:03:02 UTC LC-39A, KSC
Splashdown: 02/09/1971 21:05:00 UTC, Southern Pacific, USS *New Orleans* recovery ship
Saturn V AS-509 Launch Vehicle
CSM (Command/Service Module) Call Sign: *Kitty Hawk* (CSM-110)
LM (Lunar Module) Call Sign: *Antares* (LM-8)
Crew: Commander Alan B. Shepard, Jr, LM Pilot Edgar D. Mitchell, CM Pilot Stuart A. Roosa
34 lunar orbits
Landing site: Fra Mauro Crater and Highlands (intended site for Apollo 13) – 3.54 degrees S, 17.47 degrees W lunar coordinates
Last "H" mission (Specific site, maximum two-day stay)
Connection to Lockheed Martin/ULA: The contributions of our heritage companies to the Apollo program were listed in the MARS STAR article about Apollo 11 in 2019

Apollo 14 Crew: CM Pilot Stuart Roosa, Commander Alan Shepard, LM Pilot Edgar Mitchell

Project Mercury and Freedom 7

The National Aeronautics and Space Administration (NASA) was established on October 7, 1958 and Project Mercury was announced on December 17, 1958. These actions were in response to the Soviet Union and their launch of Sputnik on October 4, 1957. More than 500 test pilots were evaluated to find candidates for Project Mercury and 110 emerged from this initial evaluation; the candidates had to be younger than 40, possess a bachelor's degree or equivalent, and be less that 5'11" in height. The 110 candidates were split into three groups, with the most promising being in the first 35 (including Shepard). A briefing at the Pentagon described Project Mercury and asked for volunteers for the program; Shepard discussed this with fellow naval aviators Jim Lovell, Pete Conrad, and Wally Schirra and they all decided to volunteer, risking their established military careers.

The down-select process continued, with a pool of 32 candidates undergoing the grueling medical and psychological tests at the Lovelace Clinic in Albuquerque (depicted with great humor in the classic book and film "The Right Stuff") and at the Wright Aerospace Medical Laboratory. Although only six final candidates were desired, NASA Director Bob Gilruth could not make a decision, so seven were chosen (Shepard, John Glenn, Wally Schirra, Deke Slayton, Gus Grissom, Scott Carpenter and Gordon Cooper). Shepard was informed of his selection on April 1, 1959. The Mercury Seven, as they were dubbed by the media, were introduced to the public in Washington, then traveled to Cape Canaveral to watch the launch of an Atlas SM-65D, similar in configuration to the orbital launch vehicle being developed. That launch failed spectacularly, exploding a few minutes after liftoff (see the mission events in the MARS STAR historian column for 2019 Quarter 2 – May 18, 1959). Shepard was quoted as saying, "Well, I'm glad they got that out of the way".

The competition for the first Mercury flight among the seven astronauts was intense, but Shepard won the battle and was selected to be the first American into space on January 19, 1961. Delays in the program led to the very disappointing news on April 12, 1961 that the Russians had triumphed again, successfully sending Cosmonaut Yuri Gagarin into one orbit of Earth. The Atlas vehicle was also not ready for manned orbital flights, so a decision was made to use the Redstone for suborbital missions. After more delays, at last on May 5, 1961, Shepard entered his Mercury 7 capsule (Mercury-Redstone 3 Mission), dubbed Freedom 7, at 5:15 am ET. Annoying little problems kept delaying the launch, but it finally lifted off from LC-5 at Cape Canaveral at 9:34 am ET, with an estimated 45 million television viewers tuned in to see this historical event. The Mercury capsule was designed to allow manual control by the astronaut during certain portions of flight, so Shepard attempted orientation changes during ascent. Freedom 7 reached a suborbital altitude of 116.5 miles and a maximum velocity of 5,180 mph and splashed down 15 minutes and 22 seconds after liftoff in the Atlantic Ocean.

Mercury/Redstone 3 (Freedom 7) Launch with Alan Shephard, May 5, 1961 (LC-5)

Americans had now touched space, although briefly, and Shepard was a national hero, receiving ticker tape parades, the Distinguished Service Medal and the Distinguished Flying Cross. President John F. Kennedy addressed a joint session of Congress on May 25, 1961, with the following goals set forward (from the JFK library archives):

> "First, I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish. We propose to accelerate the development of the appropriate lunar space craft. We propose to develop alternate liquid and solid fuel boosters, much larger than any now being developed, until certain which is superior. We propose additional funds for other engine development and for unmanned explorations — explorations which are particularly important for one purpose which ths nation will never overlook: the survival of the man who first makes this daring flight. But in a very real sense, it will not be one man going to the moon — if we make this judgement affirmatively, it will be an entire nation. For all of us must work to put him there."

The US had 15 minutes in space and the goal has been set to reach the moon with manned crews in less than ten years! It was galvanizing and created a shared purpose for the nascent NASA organization. Shepard supported the remaining Mercury missions as a CAPCOM and backup pilot and was designated to fly on Mercury-Atlas 10, a three-day orbital mission, but that mission was canceled in anticipation of moving to the Gemini program. Shepard was then selected to command the first crewed Gemini mission with Thomas Stafford, but in 1963 Shepard began getting episodes of extreme dizziness, nausea and severe tinnitus in his left ear. He finally reported the situation to Deke Slayton, Director of Flight Operations, and was diagnosed by NASA doctors with Meniere's disease; he also had treatable glaucoma and a benign tumor on his thyroid that was excised. These conditions removed him from flight status and Gus Grissom and John Young flew the Gemini 3 mission.

In November 1963, Shepard became the Chief of the Astronaut Office and was responsible for astronaut training, coordinating mission planning and spacecraft design and overseeing the selection of the Group 5 astronauts in 1966 (including Roosa and Mitchell). He also invested in local banks and bought a partnership in a ranch outside of Weatherford, Texas, starting his journey towards a nice personal fortune. Shepard gained a notoriety during this time for being "difficult" to work with; his secretary had two photos of him ("Smiling Al" and "Icy Commander") that were used on his office door to advise visitors of his temperament that day.

In 1968, Shepard found out from Tom Stafford about an experimental surgery that was being done by an otologist in Los Angeles to cure Meniere's disease. He arranged to have the surgery performed (checking into the hospital under a pseudonym) and it was a success, allowing Shepard to be reinstated to flight status on May 7, 1969. Being Chief Astronaut obviously had its perks, and Shepard, working with Slayton, was assigned to command the Apollo 13 mission in 1970, replacing Gordon Cooper, who never flew again. Shepard asked for Jim McDivitt to be his LM pilot, but McDivitt, who had commanded Apollo 9, balked at the request, suggesting that Shepard did not have adequate training to be an Apollo mission commander. Stuart Roosa was assigned as the CM pilot and another rookie, Edgar Mitchell, was designated the LM pilot.

George Mueller, at NASA headquarters, turned down the crew assignment because he felt they were too inexperienced for the third mission. Jim Lovell, assigned to be commander of Apollo 14, agreed to swap missions with Shepard and he took on the Apollo 13 mission, with Shepard and his crew now being assigned to the fourth "H" mission Apollo 14. The "Apollo 13" movie incorrectly attributes this decision to a flare-up of Shepard's ear problem; the real reason was the inexperience of the crew, as the surgery prevented any future problems with Shepard's Meniere's disease. Of course, as discussed in the last two MARS STAR articles, the Apollo 13 mission was a "successful failure", and the Apollo 14 mission was delayed until 1971 so that the various corrective actions could be incorporated on the stacked systems. The post-Apollo 14 biographical information for Alan Shepard is included at the end of the Apollo 14 mission overview, along with short biographies for Roosa and Mitchell. Their launch vehicle was finally stacked and rolled to pad 39A at KSC on November 9, 1970.

Apollo 14 Mission Overview

Apollo 14 launched on January 31, 1971 at 21:03:02 UTC, after a weather delay of 40 minutes. This was the first weather delay in the history of Apollo launches and it was due to tighter launch criteria following the lightning strikes on Apollo 12 during ascent. Before Apollo 14 could launch, numerous corrective actions and improvements were incorporated, many in the Command and Service Modules due to the Apollo 13 tank explosion to provide more wiring harness protections and redundancies. Other modifications would support the longer lunar exploration goals and correct the pogo oscillation problem noted on Stage II of the Saturn V for Apollo 13. The astronauts not only had their regular training, but Shepard and Roosa had to oversee the implementation of the corrective actions. The landing site was also changed to Fra Mauro from the Littrow crater (Fra Mauro was the original landing destination for Apollo 13). This change required more geology training; apparently, geology was not a favorite subject for Shepard and Mitchell, as the training was considered rather

ineffective, although the landing site was considered crucial for selenologists.

The crew was also required to limit contact with other personnel and families for 21 days before the launch to avoid another last-minute crew changeout due to communicable disease exposure.

Heading to the Moon and A Docking Problem

After launch, the ascent and Earth orbit entry were nominal. Because of the later launch in the window, the mission would now be on a faster trajectory to the moon, making up time in flight. Because of this change, the mission timers were put ahead by 40 minutes and 3 seconds so that later events would take place at the times scheduled in the flight plan.

After the Translunar Injection (TLI) burn, the CSM separated from the S-IVB state of the Saturn V. Roosa performed the transposition maneuver to turn the CSM around to dock with the LM before the entire spacecraft separated from the stage. Roosa was aiming for a record on the least amount of fuel required for the docking. Alas, it was not to be, as he and the rest of the crew spent almost three hours trying to get the docking mechanism to activate.

The crew and Mission Control discussed options, including a possible EVA. Failure to dock the two spacecraft would abort the mission and likely end the Apollo program. Gene Cernan (backup crew commander) communicated an idea to Roosa to try the docking again with the docking probe retracted, using it as an alignment device to allow for very close approach of the vehicles using thrusters and hoping that the contact would trigger the docking latches. This finally worked (the sixth docking try) and the crew and controllers on the ground were thrilled to hear the rapid-fire sounds of the hard latching between the LM and CSM. The LM was extracted, and the SIV-B stage continued on its collision course with the moon, impacting three days later and setting off the Apollo 12 seismometer for over three hours. Analysis of the docking problem continued during the flight.

On February 4 at 81:56:40.70 elapsed mission time, the Service Propulsion Engine (SPS) on the SM fired for 370.8 seconds, putting Apollo 14 into a lunar orbit of 169 nautical miles by 58.1 nautical miles. This was later lowered to an orbit of 58.8 nautical miles by 9.1 nautical miles. The lower orbit was done to increase the amount of "hover time" during descent for LM *Antares*, as the Fra Mauro terrain was considered the roughest area yet for a landing and maneuvers during landing were likely.

Antares Separation and Two Serious Problems

Shepard and Mitchell separated from *Kitty Hawk* very early on February 5, 1971, and started their trajectory in *Antares* towards descent and landing. After separation, the LM computer began getting an ABORT signal from a faulty switch. Extensive communications and trouble-shooting with the ground resulted in a theory that there was a solder ball loose in the switch, floating in and out and causing the intermittent condition and closing the circuit (tapping on the adjacent panel would make the intermittent condition go away temporarily). At the time this first occurred, it was not a true abort concern, but it could become significant after the descent engine fired, as the LM computer would believe the signal was real and initiate an auto-abort, causing the LM ascent stage to separate from the descent stage and climb back into orbit. Mission Control teams and software engineers at the Massachusetts Institute of Technology (creators of the LM and CM guidance computer programs) jumped into action to find a workaround.

The guidance gurus at MIT/Draper Labs came up with a software "hack" to bypass the spurious abort signal. Testing revealed traps and unintended consequences that also had to be mitigated. Time was of the essence, as *Antares* was rapidly nearing the descent engine burn interface point. Mitchell had to hurriedly enter some numeric commands in the LM computer interface before the descent engine fired and then more commands (rapidly) after the firing. The hack required the system to ignore the abort signal during more than one upcoming critical routine (on descent and again on ascent; a real abort condition would be done manually)—gutsy and creative stuff done on the fly!

Shepard and Mitchell are now descending towards Fra Mauro and the second major problem occurs: The LM landing radar failed to lock automatically onto the lunar surface, depriving the LM computer of critical altitude and vertical descent speed indications. The astronauts cycled the breaker for the radar and fortunately reacquired a signal at 22,000 feet above the surface (mission rules required an abort if the radar was out at 10,000 feet, although Shepard probably would have tried to land anyway). With the radar data, the veteran naval pilot steered *Antares* to the most precise landing of the six missions that landed on the moon. Official landing time was 09:18:11 UTC on February 5.

Antares Surface Operations at Fra Mauro

Nearly five hours after landing, Shepard emerged from *Antares* on the first EVA at 14:42 UTC. He stated "And it's been a long way, but we're here" for his first words on the surface. CAPCOM Bruce McCandless answered back "Not bad for an old man." Mitchell followed Shepard onto the surface shortly afterwards and spent his first steps worrying about getting back onto the ladder.

The Apollo 14 crew had a new piece of equipment called the Mobile Equipment Transporter or MET (it looked like a fancy golf cart). This was the only mission to use this equipment, as the Apollo 15-17 missions had rovers for moving away from the landing site. The astronauts spent EVA-1 planting the flag, deploying the ALSEP (Apollo Lunar Surface Experiments Package) and collecting nearby samples. The ALSEP on this mission had passive and active

seismic experiments (using depth charges; not all charges functioned as intended), ion detectors, and charged particle experiments, as well as the Laser Ranging Retro-Reflector and the Lunar Portable Magnetometer. The astronauts were glad to have the new Buddy Secondary Life Support System that would allow them to share cooling water if one of their PLSS (Primary Life Support Systems) should fail; the crew also had water packs in their helmets providing drinking water during their time on the surface. The first EVA lasted 4 hours, 47 minutes and 50 seconds.

LM Pilot Ed Mitchell poses with the US flag at Fra Mauro, February 5, 1971, First EVA

The second EVA began on February 6 at 131:17:05 elapsed mission time. Both astronauts set out with the MET to reach the rim of the nearby Cone Crater. The terrain was surprising uneven, with undulating ridges. Shepard and Mitchell were off-camera during this jaunt, which became an ordeal as they topped ridges expecting to see the crater only to see more rolling terrain in front of them. Landmarks from orbital photos were hard to distinguish on the surface. Mission Control became concerned for the length of the EVA and for their obvious physical exertions (high heart and respiration rates). They were told to abandon the journey to Cone Crater and gather samples and return to the LM, traversing to two more sites, F and G; it appears from Lunar Reconnaissance Orbiter photos many years later that they were within 65 feet of the Cone crater rim (the tracks of the MET could be seen from orbit).

Once they were back in the vicinity of the LM and within view of the television camera, Shepard performed a stunt he had been planning for several years. He modified the contingency sample tool, attached a Wilson six-iron golf club handle and pulled two golf balls out of a utility pocket on his EVA suit. He used an awkward one-hand form to connect with the golf balls, sending them "miles and miles and miles"; enhanced footage years later showed they landed 24 yards and 40 yards from the "tee". The club handle was brought back and donated to the USGA Museum in New Jersey. The only photo of the actual golf drives was from television footage. The geologists on Earth were not happy with the golf game, given the poor results from the sample scavenging that Shepard and Mitchell did on the flank of Cone Crater (considered a crucial target for exploration). As the reader might recall, both astronauts were not good students during their geology classes and that translated to their attitudes during the mission. They did collect a total of 94 pounds of lunar samples, most of them being breccias (fragments of older rocks); it is estimated that the basalts from these breccias were formed over 4 billion years ago. One rock, Big Bertha, weighed almost 20 pounds and it was theorized that it was an Earth meteorite because of the granite and quartz content. Based on age determinations of the zircon in Big Bertha, this terrestrial rock is thought to also be over 4 billion years old, making it the oldest known Earth rock (and found on the moon!). Shepard and Mitchell closed out EVA #2 (total time 4 hours, 34 minutes, 41 seconds) and prepared for liftoff from the lunar surface.

During the two days *Antares* was on the surface, CM pilot Stuart Roosa performed the most extensive orbital analyses of the lunar surface to date, examining the Descartes Highlands for the Apollo 16 mission. Roosa was able to see *Antares* and its shadow on the surface and sunlight glinting off the ALSEP. At 18:48:42 UTC on February 6, 1971, the upper stage engine of *Antares* fired and docking with *Kitty Hawk* took place one hour and 47 minutes later (no docking concerns). Once the crew, equipment and samples transferred back to the CM, the LM was jettisoned and impacted the moon, setting off the passive seismometers left by Apollo 12 and 14.

Detailed Image of Antares (LM) on the surface at Fra Mauro - the uneven terrain and hazards are apparent in this photo.

Nominal Return to Earth

A 350-second trans-Earth injection burn took place at 01:39:04 UTC on February 7 (during the 34th lunar orbit).

Tests were performed on the return flight on low and high oxygen flow rates in the CM, as in-flight EVAs were planned on Apollo 15 and later. During his rest periods on the return voyage, Mitchell conducted ESP experiments without NASA's knowledge, attempting to send mental images of cards to four people on Earth. Two of the four "recipients" got 51 out of 200 correct, with random chance being 40 out of 200.

Kitty Hawk splashed down in the south Pacific Ocean on February 9, 1971 at 21:05 UTC, approximately 900 miles from American Samoa. The crew was isolated in the Mobile Quarantine Facility on the USS New Orleans and transferred by flights to the Lunar Receiving Laboratory in Houston. The Apollo 14 crew was the last quarantined after the mission. An interesting aside: Roosa worked in forestry in his youth and took several hundred tree seeds with him on the flight (this was sanctioned). These were germinated and distributed around the world as commemorative Moon trees; many of these trees are still alive in various locations, including near NASA facilities.

Alan Shepard after Apollo 14

Shepard returned to his position as Chief of the Astronaut Office after Apollo 14. In July 1971, President Nixon appointed him as a delegate to the United Nations General Assembly (he served in this role three months). He was also promoted to Rear Admiral. He retired from NASA and the Navy on July 31, 1974. Shepard spent his post-NASA days doting on his daughters and grandchildren and traveling with Louise. He served on the boards of many corporations, had an umbrella corporation for several business enterprises (Seven Fourteen Enterprises) and made a personal fortune in banking and real estate. Shepard was active in charitable organizations like Rotary and Kiwanis, was a fellow of the American Astronautical Society and the Society of American Experimental Test Pilots and helped create the Mercury 7 Foundation that provided scholarships to science and engineering students. He published a book (*Moon Shot: The Inside Story of America's Race to the Moon*), which is one of the references for this article. In 1996, he was diagnosed with chronic lymphocytic leukemia and passed away on July 21, 1998 in Pebble Beach, California; he was the second moonwalker to pass away (the first, Jim Irwin, will be discussed in the profile on Apollo 15 scheduled for later this year in the MARS STAR). Sadly, Shephard's widow Louise passed away from a heart attack shortly afterwards on August 25, 1998 and they were cremated together. Shepard received many awards and honors, including the Congressional Space Medal of Honor and memberships in Aviation, Space and Astronaut Halls of Fame. He had roads and buildings named after him in New Hampshire, Cocoa Beach, and other locations. On May 4, 2011, the USPS issued a first-class stamp in Shepard's honor, the first to depict a specific astronaut. "Smilin' Al" was a true space legend and was the only Mercury astronaut to walk on the Moon.

Edgar D. Mitchell Biography

Mitchell was born on September 17, 1930 in Hereford, Texas. He considered Artesia, New Mexico, to be his hometown. He first learned to fly at the age of 13 and was active in the Boy Scouts. Mitchell received a B.S. degree in Industrial Management from the Carnegie Institute of Technology and entered the U.S. Navy after graduation in 1952. He earned a second bachelor's degree in Aeronautics from the US Naval Postgraduate School and also earned a Doctorate in Science degree in Astronautics from MIT in 1964. He married Louise Randall in 1951 and they had two children; his relationships became "complicated" and he had an affair with a Playboy model (Sheilah Ledbetter) while married to his second wife Anita Rettig. He adopted Rettig's three children and had another child with Ledbetter, whom he married in 1989.

During his naval career, he completed flight training, transitioned to carrier-based jet aircraft and served aboard two aircraft carriers. He qualified as a research pilot and then served as Chief, Project Management Division for the Navy for the Manned Orbiting Laboratory from 1964 to 1965 (remember that, Titan folks?). He was certified as a test pilot by the Air Force Aerospace Research Pilot School and was an instructor in advanced mathematics and navigation theory. He accumulated 5000 hours flight time during these years in the Navy.

Mitchell was selected in 1966 as part of NASA's fifth astronaut group. He was assigned to the support crew for Apollo 9, then designated as backup LM pilot for Apollo 10, putting him on the rotation for prime crew of Apollo 13. As noted in the earlier parts of Shepard's biography, the Apollo 13 crew was reassigned to Apollo 14. During the Apollo 13 crisis, he was part of the Mission Operations team and received the Presidential Medal of Freedom for his efforts. He served as LM pilot on Apollo 14 and took many photos that were considered superb examples from the Apollo gallery.

After Apollo 14, Mitchell pursued his interests in paranormal phenomena and ecology after retiring from NASA and the Navy in 1972. He became the founding chairman of the Institute of Noetic Sciences in Palo Alto, California and the Mind Science Institute in Los Angeles (linked to surreptitious activity with the CIA). Mitchell founded more research companies in Florida, where he moved in 1975. He passed away on February 5, 2016 in West Palm Beach, Florida (on the eve of the 45th anniversary of his lunar landing).

Stuart A. Roosa Biography

Roosa was born on August 16, 1933 in Durango, Colorado and grew up in Claremore, Oklahoma. He graduated with a BS in Aeronautical Engineering in 1960 from the University of Colorado Boulder (GO BUFFS! – my alma mater, too). He worked as a smokejumper for the US Forest Service in 1953 and was a graduate of the Aviation Cadet Program at Williams Air Force Base, Arizona, where he received his

flight training commission from the USAF. He flew a number of different aircraft and was selected as an experimental test pilot at Edwards Air Force Base. He logged 5,500 hours of flying time in the Air Force.

Roosa was selected in the Astronaut Class of 1966 (Group Five). He was the CAPCOM during the Apollo 1 fire on January 27, 1967 and was on the support crew for Apollo 9. He was assigned to the Apollo 13, then Apollo 14 primary crew. After returning, he served as backup CM pilot for Apollos 16 and 17 and was assigned to the Space Shuttle Program until his retirement as a Colonel in the Air Force in 1976. Roosa worked in several industries after leaving NASA and became owner and president of Gulf Coast Coors in 1981. Roosa was married to his wife Joan (nee Barrett) for thirty-seven years and they had three children. He passed away on December 12, 1994 of pancreatitis; his wife passed away in 2007.

References for Apollo 14 article

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On This Date in History

This section has milestones retrieved from publicly available information for LM, ULA and heritage programs from 10 to 60 years ago (2011, 2001, 1991, 1981, 1971, 1961). Delta launches prior to the formation of ULA, unless it included an LM or heritage company payload or upper stage, are not listed. No classified programs are identified, even if the program is now considered unclassified, with the exception of the Discoverer program (Corona). The events reflect milestone activity in the quarter previous to the release of the MARS STAR — where appropriate, key press releases are also included; significant milestones are in bold. The list is not intended to be all-inclusive due to historical record inaccuracies.

Events in January (10 to 60 years ago)

- **01/20/2011: USA-224 launched by ULA Delta IV-Heavy, SLC-6, VAFB; First Delta-IV Heavy at VAFB**
- 01/30/2001: LM GPS IIR-7 launched by Delta II 7925-9.5, SLC-17A, CCAFS
- NO EVENTS IN JANUARY 1991
- NO EVENTS IN JANUARY 1981
- 01/21/1971: Classified program launched by MM Titan III(23)B, SLC-4W, VAFB
- 01/26/1971: Intelsat IVB F-2 launched by GD Atlas SLV-3C, Centaur-D, LC-36A, CCAFS
- **01/31/1971: Apollo 14 launched by Saturn V SA-509, LC-39A, KSC; third crewed lunar landing, program profile this issue**
- 01/06/1961: MM MGM-31 Pershing 1 launched, LC-30, CCAFS; **FAILURE**
- 01/10/1961: Lockheed UGM-27 Polaris A1 launched, USS *Robert E. Lee*, ETR; **FAILURE**
- 01/14/1961: Lockheed UGM-37 Polaris A1 launched, USS *Robert E. Lee*, ETR; **FAILURE**
- 01/20/1961: MM HGM-25A Titan I launched, LC-19, CCAFS; **FAILURE**
- 01/23/1961: GD SM-65D Atlas launched, LC-12, CCAFS
- 01/24/1961: GD SM-65E Atlas launched, LC-13, CCAFS; **FAILURE**
- 01/26/1961: MM MGM-31 Pershing 1 launched, LC-30A, CCAFS
- *01/31/1961: Mercury-Redstone 2 launched, LC-5, CCAFS with Ham the Chimp (historic event of interest)*
- 01/31/1961: Samos 2 launched by GD Atlas LV-3A Lockheed Agena-A, Point Arguello LC-1-1, California

Events in February (10 to 60 years ago)

- **02/10/2011: Lockheed Martin Press Release: Lockheed Martin Ships out First Orion Spacecraft**
- **02/15/2011: Lockheed Martin Press Release: Lockheed Martin and NASA Perform Spectacular Fly-by of Comet Tempel 1 (Stardust – NExT)**
- **02/24/2011: STS-133 (Discovery) launched, LC-39A, KSC; 6 crewmembers, ISS logistics, last launch of Discovery**
- 02/07/2001: STS-98 (Atlantis) launched, LC-39A, KSC; 5 crewmembers, ISS assemblies
- 02/27/2001: LM Milstar 2 launched by LM Titan TIVB/Centaur (401), SLC-40, CCAFS
- NO EVENTS IN FEBRUARY 1991
- 02/04/1981: MM MGM-31A Pershing (3 missiles), LC-16, CCAFS
- 02/17/1981: MM MGM-31A Pershing (3 missiles), LC-16, CCAFS
- 02/21/1981: Comstar D4 launched by GD Atlas SLV-3D, Centaur-D1AR, LC-36A, CCAFS
- 02/28/1981: Classified program launched by MM Titan III (24B), SLC-4W, VAFB – *This was the first launch for your historian on the Titan program after being hired in January, 1981!*
- 02/17/1971: Classified program launched by Thorad SLV-2H Lockheed Agena-D, SLC-3W, VAFB; **FAILURE** Booster engine
- 02/10/1961: MM HGM-25A Titan I launched, LC-20, CCAFS
- 02/16/1961: MM MGM-31 Pershing 1 launched, LC-30, CCAFS

- 02/17/1961: Discoverer 20 launched by Thor DM-21 Lockheed Agena-B, LC-75-3-4, VAFB; **FAILURE** spacecraft
- 02/18/1961: Discoverer 21 launched by Thor DM-21 Lockheed Agena-B, LC-75-3-5, VAFB
- **02/21/1961: Mercury-Atlas 2 launched by GD Atlas LV-3B, LC-14, CCAFS**
- 02/14/1961: GD SM-65E Atlas launched, LC-13, CCAFS

Events in March (10 to 60 years ago)

- 03/05/2011: X-37B/USA-226 launched by ULA Atlas V 501, SLC-41, CCAFS
- **03/22/2011: Lockheed Martin Press Release: First Lockheed Martin Built Milstar-II Spacecraft Marks 10 Years in Service**
- 03/08/2001: STS-102 (Discovery) launched, LC-39B, KSC; 7 crewmembers, Leonardo ISS module
- **03/08/1991: USA-69 launched by MM Titan TIVA (403A), SLC-4E, VAFB; First Titan IV launch at VAFB**
- 03/19/1991: Lockheed UGM-96 Trident C-4 launched (two), WTR Submarine (not identified)
- 03/16/1981: DSP F-9 launched by Titan III(23)C, LC-40, CCAFS
- 03/24/1971: Classified program launched by Thorad SLV-2H, Lockheed Agena A, SLC-3W, VAFB
- 03/01/1961: Lockheed UGM-37 Polaris A2 launched, USNS Observation Island, ETR
- 03/02/1961: MM MGM-31 Pershing 1 launched, LC-30A, CCAFS
- 03/03/1961: MM HGM-25A Titan I launched, LC-20, CCAFS; **FAILURE**
- 03/09/1961: Lockheed UGM-27 Polaris A2 launched, USNS Observation Island, ETR
- 03/14/1961: GD SM-65E Atlas launched, LC-13, CCAFS; **FAILURE**
- 03/15/1961: Lockheed UGM-27 Polaris A2 launched, LC-29A, CCAFS
- 03/16/1961: MM MGM-31 Pershing 1 launched, LC-30A, CCAFS
- 03/23/1961: Two Lockheed UGM-27 Polaris A1 launched, USS *Theodore Roosevelt*, ETR; **FAILURES**
- 03/23/1961:Two Lockheed UGM-27 Polaris A1 launched, USS *Theodore Roosevelt*, ETR
- 03/25/1961: GD SM-65E Atlas launched, LC-13, CCAFS; **FAILURE**
- 03/28/1961: MM HGM-25A Titan I launched, LC-19, CCAFS
- 03/30/1961: Discoverer 22 launched by Thor DM-21 Lockheed Agena-B, LC-75-3-4, VAFB; **FAILURE** booster
- 03/31/1961: MM HGM-25A Titan I launched, LC-20, CCAFS; **FAILURE**

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Next Edition

Check back in the next MARS STAR for the story of the first Shuttle launch, STS-1 (Columbia), which has its 40th anniversary in April 2021. Later this year, the Apollo 15 mission will be profiled using my personal memories of seeing the launch in 1971 and later meeting Astronaut Jim Irwin while I was in college. The History on the Road stories are suspended at this time due to the difficulty in traveling and visiting museums.

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)

MARS Bridge is currently suspended but we hope to be back soon. We hear from secondhand sources that the Buck Center has opened its doors to another large bridge group, but we do not yet have that approval. We will contact the Bridge Players on our list as soon as we get an official word from the Buck Center staff.

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

Presidents:
Dave & Kathy Martz, 303-683-9524
Vice-President:
Bill Kacena, 303-973-2685
Secretary:
Theodore Bornhoeft, 303-933-9730

Looking forward to playing bridge again soon!

Car Club

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

Carol Lovelace
cyberbear51@comcast.net
303-358-7459

Springtime is finally here! And with the vaccine rollout proceeding, the club is getting ready to restart! Carol has pulled together a club newsletter, with another one coming out in April, highlighting club members Eric and Cindy Georges and their experiences running a drag racer at Bandimere. The newsletter is a means to keep in contact

with club members as we begin the restart of club activities, please watch for it!

The club also has a Facebook page. I encourage club members, as well as all MARS members, to please post a picture of your ride or of any car road trips you have been able to get in, on our page as we all come out of our COVID-forced hibernation.

The club invites all car enthusiasts to become members, meet other like-minded people, and enjoy / share our love for the automobile. Be safe out there and I look forward to seeing you on the open road! For more information about the Car Club, contact Roger Rieger (rrieger10731@gmail.com) or Carol Lovelace (cyberbear51@comcast.net).

Dinner Club

By Becky and Gary Englebright
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303-263-6457 (Becky), and
Anita Kannady
(anitakannady@yahoo.com)
303-794-9210

For this year, the plan is to start looking for restaurants to book that have a large separate room that we can use for our events or an outdoor patio that we can utilize. Details will be coming in future emails and posted on the MARS website as plans are finalized. We do have an event scheduled for May 24, 2021, at the Outback. Look for the flyer on page 25 in this issue.

A big thank you to everyone for their patience and understanding with all of the changes that we needed to make last year. If you're reading this and have not been getting any update email from us, it is probably because we don't have an email address for you. If you would like to be added to our email list, you can call or email us your address. See our contact information above. Any email information sent to us will be kept in confidence.

We want to encourage anyone who is interested to join us for any of the luncheons. Please send us an email so that you can be added to our mailing list.
Our first hike of 2021 was a nice stroll along a loop trail in South Valley Park. Many of you have driven by this area BEFORE it was a JeffCo Park and admired the sandstone formations from the windows of LM's Deer Creek Facility.

Golf League

By Bo Rodriguez
(boandpat@comcast.net)

As we venture into the 2021 MARS golf league season, we are still confronted to some degree with the impact of the COVID-19 virus. Broken Tee Golf Course says they are looking forward to our 2021 golf league season starting on schedule on April 1st. Some of the health precautions are still in effect such as the flag poles will remain in the cups, no drinking water on the course and no golf ball washers on the course. Broken Tee will allow two golfers to a cart if requested, green fees can be paid at the time of play and club house has increased its capacity. The driving range and putting greens are in full use.

Our MARS golf league held a virtual Kick-off meeting on Thursday, March 11th, which was reasonably attended using the ZOOM system. We started the meeting by summarizing the successes of the 2020 golf season.
Our officers for the 2021 season are:
Bo Rodriguez – President
Don Johnson – Vice President
Tom Cooke – Secretary/Treasurer
Tom Ripper – Handicap Chair

Bob Knickerbocker did a fine job of orchestrating the overall virtual slide presentation so that each of the presenters could address their segment to our members. Tom Ripper covered the use of Golf Genius, the system our league uses to manage our weekly player golf schedules as well as golf score entries into the Golf Handicap Information Network (GHIN). If you are interested to learn more about the golf league slide presentation, I encourage you to log on to our MARS website: www.marsretirees.org and click on "Golf."

For MARS Associates members including spouse or significant other who are interested in joining our golf league this year we welcome you. The nice thing about our league is that there aren't any up-front green fees costs like some other leagues. We have a *pay-only-when-you-play* policy, 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. Come join us! Slots in the MARS golf league are still available this season!

Hiking Club

By Sue Janssen
(susan.g.janssen@gmail.com)

Spring has sprung, the grass has ris'; I wonder where the hikers is? Wow, this has been a dry spell for the hiking club. But with the advent of spring and COVID vaccines, the club is getting back in the groove.

You WERE here. Ken Marts, Val Gregory and Lee Janssen point out the Deer Creek Facility across the valley.

The easy, rolling trail winds through the sandstone outcrops where eagles and hawks nest. It is usually busy, but the four of us had the place to ourselves, thanks to the snow. Sunday's snowstorm left a nice blanket and the foggy morning dampened sound. So relaxing to take a leisurely walk and enjoy nature while in the company of friends.

Val Gregory, Lee Janssen and Ken Marts model their facemasks. Val knitted her custom Colorado flag mask.

Time to get outside and get some fresh air! If you wish to join the MARS Hiking Club, contact Sue Janssen at susan.g.janssen@gmail.com who will add you to the club distribution list. Please provide your email address, home phone and cell phone for the roster. The schedule of hikes is posted on the MARS website (https://www.marsretirees.org/). Even if you have never gone snowshoeing or hiking you are welcome to join in the fun.

Happy trails!

Photography Club

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

Even though many of us are being vaccinated for COVID-19, the pandemic is not going away anytime soon. Therefore, we will continue to meet virtually, using the ZOOM program as we have done since September 2020.

We completed all our planned programs starting with the January 2021 presentation by John Chapter that covered his trip to the US Southwest about the Cliff Dwellers of Arizona. February 2021 was an unusual presentation by Maris Biela on the 2010 Earthquake in Haiti. The March 2021 presentation was by Becky Englebright that showed her images of Peru with many unusual images of the Inca Ruins of Machu Picchu that we all enjoyed.

Our upcoming April 8, 2021, ZOOM program is by Sue Janssen entitled "Three Weekends in Japan" at 1:00pm. Members and potential members can email Jim Kummer (jkummer@comcast.net) and ask him for a ZOOM invitation.

Our May 13, 2021 program has not been scheduled yet. Please check the MARS Retirees web page, (https://marsretirees.org) Photography Club for the latest schedule. Also remember that we will not meet June, July and August as people are often on vacation.

It is easy to join our club and we hope that new retirees will continue to join. The Photo Club is free to all MARS retirees and our monthly virtual meetings will continue. We will use email to maintain group contact with members.

Even though things will not be back to normal schedule for a while, we have many exciting programs to look forward to which you can be a part of via ZOOM.

Colorado Springs Lockheed Martin Retiree Group News

By Doug Tomerlin
(dougincs@aol.com)

The Colorado Springs Lockheed Martin Retiree Group is an organization for retirees from any Lockheed Martin division. However, a large percent of our members live in the Colorado Springs area and have retired from divisions located in Colorado Springs. Retirees from heritage companies Philco, Philco-Ford, Ford Aerospace, and Loral are also welcome to join the group. There are no fees to belong to the group. Luncheons are usually held twice a year to allow retirees to stay in contact with each other. In additional, information about deaths, services, and other pertinent information is disseminated via email.

Our retiree group has not sponsored any group activities since the last newsletter, due to the COVID-19 pandemic. We are hoping that we will be able to have a luncheon soon after it is safe to do so. If you would like more information about the group or the luncheons, please contact Doug Tomerlin at dougincs@aol.com.

We were all deeply saddened by the passing away in February of fellow retirees Howard Ray and Pete Karnincic. Both Howard and Pete were long time employees of heritage Ford Aerospace and Lockheed Martin.

Cape Canaveral News

By Dick Olson
(Olsons5145@aol.com)

Luncheons

April 2021 -- Well we had our first luncheon since last August and had a few brave souls turn up. Present were: Don Bollinger, Bill Masterson, Abe Smith, Ken Hawes, Ken Webb, Roger Wright, and Larry Gleason. It was fun to catch up and the main topics of discussion were "what have you been up to the past year?" and "how bad was your reaction to the COVID vaccination?" The answers were "mostly nothing" and "not bad" to "minor discomfort."

This is not an April Fool's joke: We plan on resuming the luncheons. Hope to see a few more folks in May. Have a happy Easter.

Recent Obituaries

Sidney Warren, 91, passed from a heart attack on 10 January. Sid was a long-time Titan Team member who worked in Finance and Estimating throughout his Martin career.

Betty Guthrie, 87, passed away on 14 January. She worked for Cliff Gurr in Engineering back in the 60s.

Howard Shaffer, 86, passed away on 27 January. Howard was a payload coordinator on the Commercial Titan Program.

Gordon Newman, 92, passed away on Sunday evening, 7 February. Gordon worked in the MRL building and, I believe, in the Finance group.

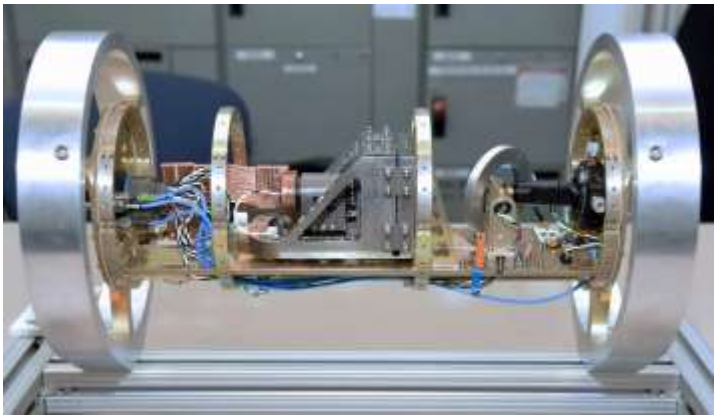
Lockheed Martin (LM) News

Tech That's Cool as [Dark] Ice

For more than 30 years Lockheed Martin has been a leader in bringing positioning, navigation and timing (PNT) technology to the world. We're perhaps best known for our work supporting the U.S. Air Force's Global Positioning System (GPS).

But we're not resting on our experience – we're constantly thinking of new technologies to serve that PNT mission.
One of the ways we're working to augment GPS and evolve PNT is through a new technology we're developing, a quantum magnetometer called Dark Ice.

Current GPS users get navigational assistance from a GPS receiver that triangulates their location through a series of radiofrequency signals beamed from the GPS satellite constellation. Our Dark Ice technology in development uses magnetic sensing as an alternative means of determining your location without the use of satellite signals.



A Marvelous Magnetometer

Mike DiMario and his Dark Ice team have been sailing in uncharted scientific waters the past five years.

They've developed a prototype called Dark Ice – a magnetometer that uses a synthetic diamond to measure the direction and strength of nearly imperceptible magnetic field anomalies. They then overlay that data with known maps of Earth's magnetic field to tell you precisely where you are.

Special quantum-level properties of the synthetic diamond and trapped particles in its material structure, result in the hyper-sensitive detection of magnetic field waves.

"The real advantage of this quantum-based technology is its ability to produce a true magnetic field vector, while at the same time having a very large dynamic range and bandwidth. All packaged in a very small size," Mike explained.

Doing What No One's Done Before

When asked what it's been like to develop this complex, ultra-cutting-edge technology before anyone else, Mike said:
"It was like peeling an onion – with each new layer removed, the team advanced. We had no idea of the expected outcome, other than what system modeling, the laws of physics and good engineering could predict."

He elaborated, remarking that, "The real world is not very forgiving. There was always something we could not have predicted or even thought of. The challenge was managing through that and keeping the team motivated and moving forward."

And move forward, they are. The Dark Ice Team continues to improve magnetic navigation using this quantum technology. On top of developing this navigational capability, they've also demonstrated Dark Ice can harness Earth's magnetic field to both transmit communications across barriers intended to block all traditional signals, and track moving vehicles in real-time.

That's a first-ever moment for this kind of technology.

What Lies Ahead

"This project was designed for times when extenuating circumstances might prohibit your use of traditional GPS signals, and you need something that is un-jammable, passive, and always available. The Earth's magnetic field meets this description if we can adequately sense and make use of it," Mike added.

Now that they continue to prove this capability – looking ahead, Dark Ice could very well have limitless implications for the future of magnetic sensing.

With its powerful sensing capabilities and small, 1-foot-long size, we could eventually see Dark Ice used as the most reliable way to do things like identify hard-to-find watercraft in search and rescue missions and be deployed on various aircraft on the battlefield. Navigation, search, and communications – all in one compact sensor.

It's just one more way Lockheed Martin is ensuring that the PNT mission continues to evolve to meet future needs.

Lockheed Martin and Omnispace Explore Space-Based 5G Global Network

5G satellite hybrid connectivity would bolster terrestrial mobility

LITTLETON, Colo. and TYSONS, Va., March 23, 2021 /PRNewswire/ -- Omnispace, LLC and Lockheed Martin (NYSE: LMT), have entered into a strategic interest agreement to explore jointly developing 5G capability from space. The proposed global 5G standards-based non-terrestrial network (NTN) would offer commercial, enterprise and government devices ubiquitous communications worldwide. This type of network has the potential to redefine mobile communications, benefiting users requiring true mobility, regardless of environment or location.

Omnispace's vision is 'one global network' that will combine the reach of a non-geostationary orbit satellite constellation with the capacity of the world's leading mobile wireless carrier networks. This 5G NTN will leverage the company's priority 2 GHz S-band spectrum rights and employ 3GPP standards to enable direct-to-device connectivity and interoperability. In collaboration with Lockheed Martin, this hybrid 5G network would provide the coverage and capacity to support essential applications requiring seamless, reliable, global communications.

"Omnispace is fully committed to the vision of creating a new global communications platform that powers 5G connectivity directly to mobile devices from space," said Ram Viswanathan, president and CEO for Omnispace. "We welcome Lockheed Martin's holistic approach to complex systems and deep expertise in satellite technology and government markets, along with their commitment to creating innovative communication solutions."

Seamless, global 5G connectivity has a wide range of civil and commercial applications. It also brings the coverage

and capacity to support defense, government and military use, including mobile joint all-domain interoperable communications.

"We share a common vision with Omnispace of a space-based 5G global network that would enable users to seamlessly transition between satellite and terrestrial networks — eliminating the need for multiple devices on multiple networks," said Rick Ambrose, executive vice president of Lockheed Martin Space. "Ultimately, it's about empowering end users with low latency connections that work anywhere. This step forward has the potential to upend space-based mobility."

Through a shared vision to redefine mobile communications for the 21st century, Omnispace and Lockheed Martin are collaborating to deliver a potential global 5G from space solution. This would be the first truly dual-use 5G platform for commercial and government missions.

About Omnispace, LLC
Headquartered in the Washington D.C. area, and founded by veteran telecommunications and satellite industry executives, Omnispace is redefining mobile connectivity for the 21st century. By leveraging 5G technologies, the company is combining the global footprint of a non-geostationary satellite constellation with the mobile networks of the world's leading telecom companies to bring an interoperable "one network" connectivity to users and IoT devices anywhere on the globe.
SOURCE Lockheed Martin

United Launch Alliance News

DELTA IV HEAVY TO LAUNCH NROL-82

- **Rocket:** Delta IV Heavy
- **Mission:** NROL-82
- **Launch Date and Time:** NET April 26, 2021
- **Launch Location:** Space Launch Complex-6, Vandenberg Air Force Base, California

Mission Information: A United Launch Alliance (ULA) Delta IV Heavy rocket will launch the NROL-82 mission for the National Reconnaissance Office (NRO). Liftoff will occur from Space Launch Complex-6 at Vandenberg Air Force Base, California.

Launch Notes: This will be the 143rd mission for United Launch Alliance, our 90th mission in support of U.S. national security and the 31st for the NRO. It will be the 386th Delta launch since 1960, the 13th Delta IV Heavy and the 9th Heavy for the NRO.

Launch Updates: To keep up to speed with updates to the launch countdown, dial the ULA launch hotline at 1-877-852-4321 or join the conversation at www.facebook.com/ulalaunch, twitter.com/ulalaunch and instagram.com/ulalaunch; hashtags #DeltaIVHeavy #NROL82

Go Delta! Go NROL-82!

United Launch Alliance Modifies Launch Pad and Facilities in Advance of First Vulcan Centaur Launch This Year

Team Test Drives New Launch Platform from Processing Facility to Pad

Cape Canaveral Space Force Station, Fla. (Feb. 2, 2021) – United Launch Alliance (ULA) has modified Space Launch Complex-41 and the processing facilities in support of Vulcan Centaur's inaugural launch later this year. The multi-year project to prepare for the larger and more capable launch vehicle culminated in the new mobile launch platform being rolled to the launch pad for final testing.

"Reaching this major milestone required years of hard work and dedication by the entire team to ensure we completed the massive amount of work needed to get the launch pad and facilities ready for a Vulcan Centaur launch," said Tory Bruno, ULA's president and CEO. "I am so proud of the team and we are very excited as we count down to Vulcan Centaur's first flight carrying an extremely cool mission to the moon for our customer Astrobotic."

At Space Launch Complex-41, numerous modifications include:

- Added Vulcan Centaur 300,000 gallon liquid natural gas (LNG) storage area and removed the Titan catch basin
- Expanded the Acoustic Suppression Water System by installing 28-inch pipes and adding larger water tanks
- Installed new 100,000 gallon Centaur liquid hydrogen (LH2) and 60,000 gallon liquid oxygen (LO2) storage areas

Modifications also have been made to the Vertical Integration Facility (VIF), where rockets are stacked and tested prior to being rolled to the launch pad. These modifications will enable the VIF to handle the 12-foot-diameter Atlas V with up to five Solid Rocket Boosters (SRBs) and the 18-foot-diameter Vulcan Centaur rockets with up to six SRBs.

"These modifications were challenging as we needed to complete all of the work at the pad without impacting our customers' flying Atlas V missions," said Mark Peller, Vulcan program manager. "We were able to complete this critical work with no impact to our Atlas manifest. To our knowledge, ULA has the first dual-use facilities and launch pad capable of supporting two different launch vehicles, while providing greater flexibility leading up to the first Vulcan Centaur launch and a smooth transition from Atlas to Vulcan Centaur afterward."

In support of Atlas V and Vulcan Centaur rockets launching from the same pad, ULA partnered with Hensel Phelps to build a new mobile launch platform. The Vulcan Launch

Platform (VLP) successfully completed its first trip to the launch pad and will remain there for additional testing and checkout.

The VLP stands 183 feet tall and weighs 1.3 million pounds. It is outfitted with the equipment and umbilicals needed to supply Vulcan Centaur with LNG propellant and liquid oxygen to the first stage, liquid oxygen and liquid hydrogen to the Centaur upper stage, conditioned air to customer spacecraft and rocket compartments, electronics, power lines and command-and-control cabling.

Vulcan Centaur is ULA's next-generation, innovative new launch vehicle that provides higher performance and greater affordability while continuing to deliver unmatched reliability. In 2020, ULA's Vulcan Centaur was competitively selected by the U.S. Space Force as the best value launch provider for 60 percent of the launches occurring through 2027. Vulcan Centaur is on track for a first launch later this year.

With more than a century of combined heritage, ULA is the nation's most experienced and reliable launch service provider. ULA has successfully delivered more than 140 missions to orbit that aid meteorologists in tracking severe weather, unlock the mysteries of our solar system, provide critical capabilities for troops in the field, deliver cutting-edge commercial services and enable GPS navigation.

MARS ASSOCIATES

2021 MEMBERSHIP RENEWAL (DUES) NOTICE

It is time for **all** regular and senior members to renew your membership for the year March 1, 2021 — February 28, 2022, regardless of which month you joined MARS Associates.

Please complete the **Membership Renewal Form** below, cut at the dashed line and mail it to:
MARS ASSOCIATES, PO Box 1128, Littleton, CO 80160-1128

with a check or money order made out to "**MARS ASSOCIATES**" in the amount shown below, to be received not later than March 31, 2021.

Members whose dues are not paid as of March 31, 2021, will be notified and will be dropped from membership if dues remain unpaid. Membership expiration is determined by Membership Database records. Members who have been dropped will not be eligible for MARS clubs or member discounts for activities or benefits after March 31.

Retain your current membership card–cards are not reissued annually. Your membership number is included on the address label of your MARS STAR mailing. More information about MARS is on the back of this page. If you have questions, contact the Membership Vice President, Carl Kaminski, at **CARLCOLO@CENTURYLINK.NET** or 303-726-1546.

Please complete all the blanks — The treasurer separates checks from forms upon receipt!

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Membership Renewal Form

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

(New members must complete and submit the New Members MARS Membership Application form found on the website (MARSRETIREES.ORG → MEMBERSHIP) or contact Carl at CARLCOLO@CENTURYLINK.NET.)

Membership dues for FY2021 are as follows: **(Please check appropriate box.)**

Current Regular Member residing in Colorado **all or part** of the year.	$15.00 ☐
Current Regular Member residing full-time outside Colorado.	$10.00 ☐
Current Senior Member (or surviving spouse) whether residing in Colorado or out of state, whose retiree-member birth date is earlier than March 1, 1946.	$10.00 ☐

Check # _____Check Date_____

Please confirm your membership information — remember to enclose your check!

Name(s) _____

Spouse (or significant other) _____

Address _____ Apt/Unit _____

City/State _____ Zip _____ Zip ext._____

Phone _____-_____-_____ Email Address _____

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

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

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

If you volunteer with any organization, please tell us who it is: _____

Snowbirds:

Please notify the Membership Vice President by telephone, email or "snail mail" when you know your travel dates to your alternate address AND what that address is.

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

Membership

- **Low annual membership dues** - $15.00 in-Colorado, $10.00 out-of-Colorado and seniors (≥ 75 years of age); includes you and your spouse or significant other
- **Dental, Vision** at very reasonable rates
- **Vendor Discounts** – visit our website (http://www.marsretirees.org)
- **Social Events** – annual picnic, happy hours, luncheons, Rockies games, etc.
- **MARS STAR Quarterly Newsletter** – information on past and current events relating to the organization as well as Corporate, LMSSC and ULA happenings
- **Informational & Educational Presentations** – periodic seminars on topics of interest (e.g., Medicare 101)
- **Connectivity with other retirement associations throughout the corporation**

Volunteer Opportunities

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

Current Club Activities

- **Bridge Club** – lively party bridge, singles welcome
- **Car Club** - Invites all car enthusiasts to become members, meet other like-minded people, and enjoy and share our love for the automobile.
- **Dinner Club** – private lunches, brunches and dinners at attractive and reasonably priced local restaurants in the *Denver Metro* area
- **Golf League** – a handicap league open to men and women that plays weekly games throughout the summer with a tournament in September and a banquet in the Fall
- **Hiking Club** – planned hikes for various levels of ability
- **Photography Club** – monthly meetings at Littleton Bemis Library (*except June*, *July*, *August*), photo-related presentations and programs – including travelogues, photo contests, help with equipment and photography; open to everyone.
- **Special Interests** – You are encouraged to start a club for your special interest

There is something for everyone to enjoy and all activities are open to all members. Come check us out on our website at http://www.marsretirees.org for more information. MARS ASSOCIATES IS A REGISTERED 501(c) (7) SOCIAL AND RECREATION CLUB

2021 MARS 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 Luncheon Honoring Senior Members. The luncheon is scheduled for Wednesday, July 14, 2021 at the **Manor House at Ken Caryl, 1 Manor House Road, Littleton, Colorado 80127.** The doors will be opened at 11:00 a.m. and lunch will be served at 12:00 noon.

The menu choices will be grilled salmon with quinoa, garden vegetables, garden greens and citrus vinaigrette; or, grilled flat iron steak with garlic mashed potatoes and asparagus. Lunch will include a variety of breads 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.

A **CASH BAR** will be available prior to the luncheon. (Cash only, no credit cards, please.)

The cost **to members, spouse/companions will be $26.00 per person and for non-members $35.00 per person**. The price includes taxes and gratuities. **There are two payment options**. If you wish to pay electronically, **please go to the MARS website for the link to STRIPE for the luncheon**. OR, if you wish to pay by check, please complete the form at the bottom of this sheet, detach it along the dotted line, and mail it with your check (**made payable to MARS Associates**) to the address below:

MARS Associates, P.O. Box 1128, Littleton, CO 80128-1128

Reservations must be received by Friday, July 2, 2021

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 rugreferee@q.com no later than **Friday, July 2, 2021** 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)* ----------

2021 SENIOR LUNCHEON, July 14, 2021 *(please print clearly)*

Member _____ _____ Salmon _____ Steak

One Spouse/Companion/Guest _____ _____ Salmon _____ Steak

Other Guests _____ _____ Salmon _____ Steak

(Add sheet for additional guest names)

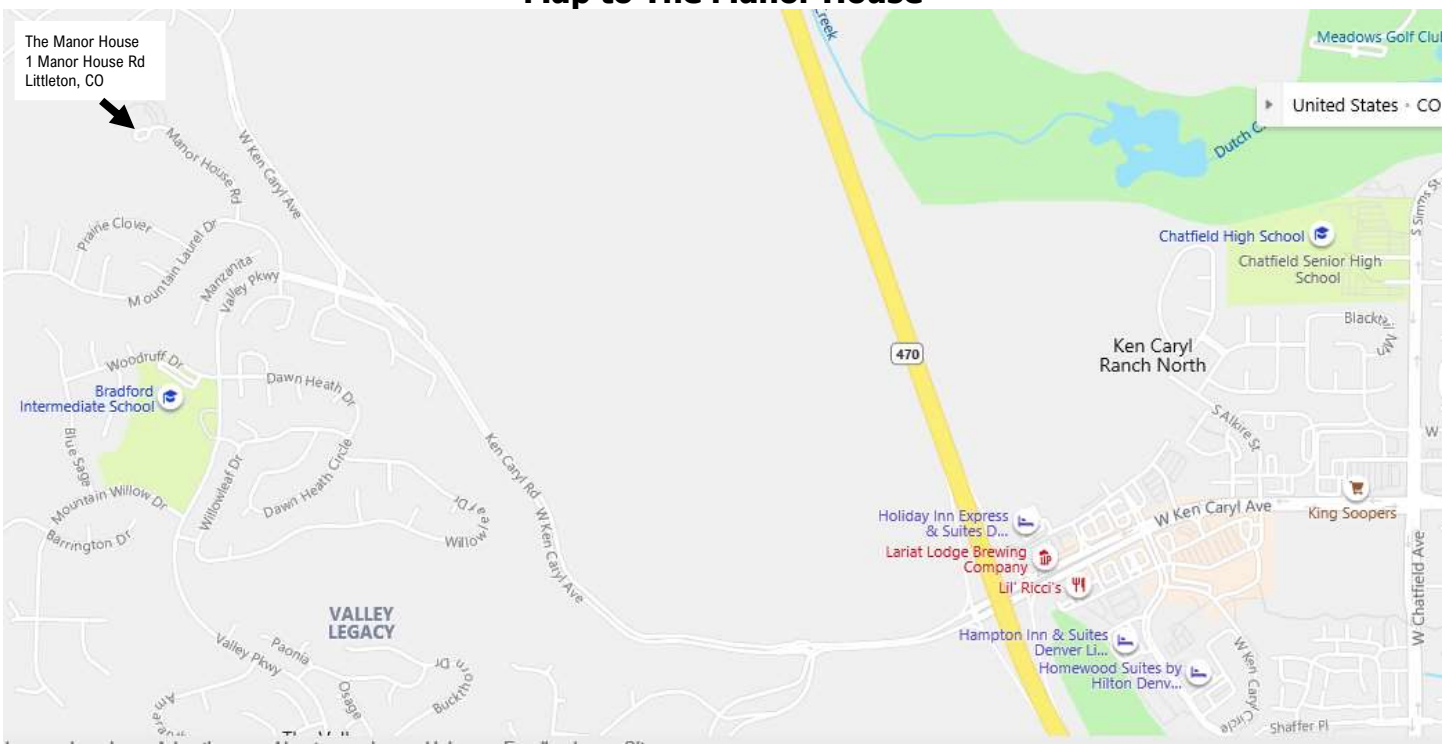
Member Phone No. _____

Member e-mail address _____

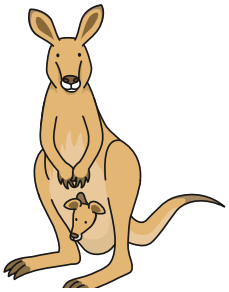
Member/Spouse/Companion/Guest @ $26.00 = $ _____ Other guests @ $35.00 = $ _____

TOTAL ENCLOSED $ _____ Check # _____

Map to The Manor House

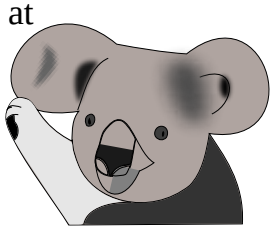


Lunch on Monday, May 24th, 2021



Join your fellow MARS Associates for a wonderful lunch at

Outback Steakhouse



8601 W. Cross Dr., Littleton, CO 80123
(see map on back)
303-932-0315
Lunch will be served at Noon.
Featuring a salad, choice of entrée with one side item, dessert and non-alcoholic beverages.
Cash bar will be available. (Tax and gratuity included.)
Seating is LIMITED to ~40 (depending on Public Health rules at the time)
$22/person

If we have reached the seating limit prior to receiving your reservation, we will contact you about putting you on a waiting list.

Please complete the form shown below and mail it, along with your check, payable to **MARS Associates Dinner Club** by **May 14th, 2021** to

Becky and Gary Englebright
7855 S. Vance Ct.
Littleton, CO 80128
303-941-3167 or 303-263-6457
englebright@me.com

If you need to cancel, please let us know no later than May 16th to receive a refund.

Lunch at Outback Steakhouse on Monday, May 24th, 2021

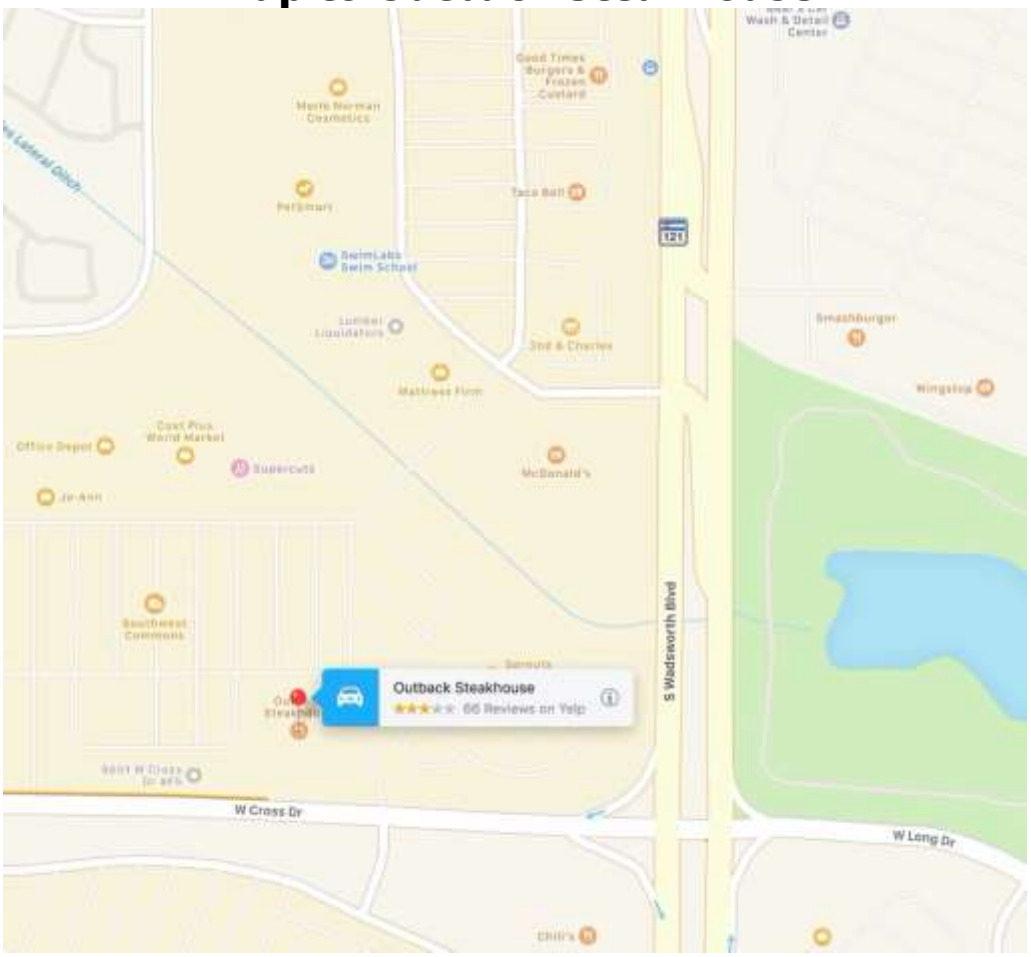
Name(s): _____ Number of Attendees: _____
Address: _____ Amount of Check: $_____
City/State/Zip: _____ Check Number: _____
Phone Number: _____ Date: _____
Email: _____

- ☐ **Sirloin & Shrimp (GF)**
- ☐ **Grilled Salmon (GF)**
- ☐ **Chicken on the Barbie (GF)**
- ☐ **½ Rack Baby Back Ribs**
- ☐ **Chicken & Shrimp Pasta**

Also choose 1 dessert:

- ☐ **Ice Cream Sundae**
- ☐ **Carrot Cake**
- ☐ **Cheesecake**

Map to Outback Steakhouse



Rockies Picnic & Game
August 18, 2021

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

Details of the picnic and seating are still pending
due to uncertainty about status of virus restrictions in August
regarding serving food and gathering in groups.

Prices are $35 *each* for a MARS member and spouse *or* one companion
and $48 each for other non-MARS member guests.

Colorado Rockies vs. San Diego Padres

Coors Field — Outfield Box Section 145

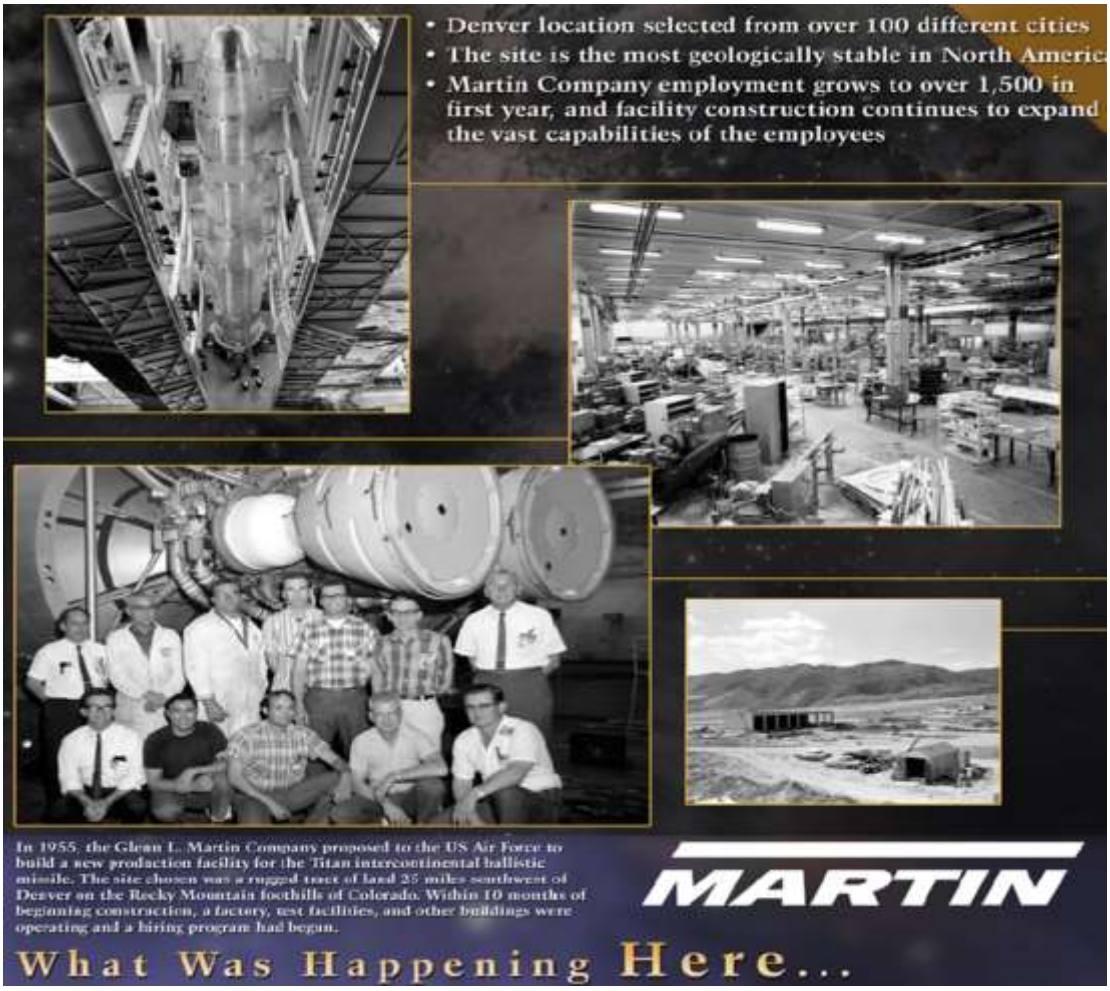
Tickets are Limited (50 maximum)
Requests to sit with a specific person or for handicap seating
(Include a list of persons in group) need to be received with your reservation!

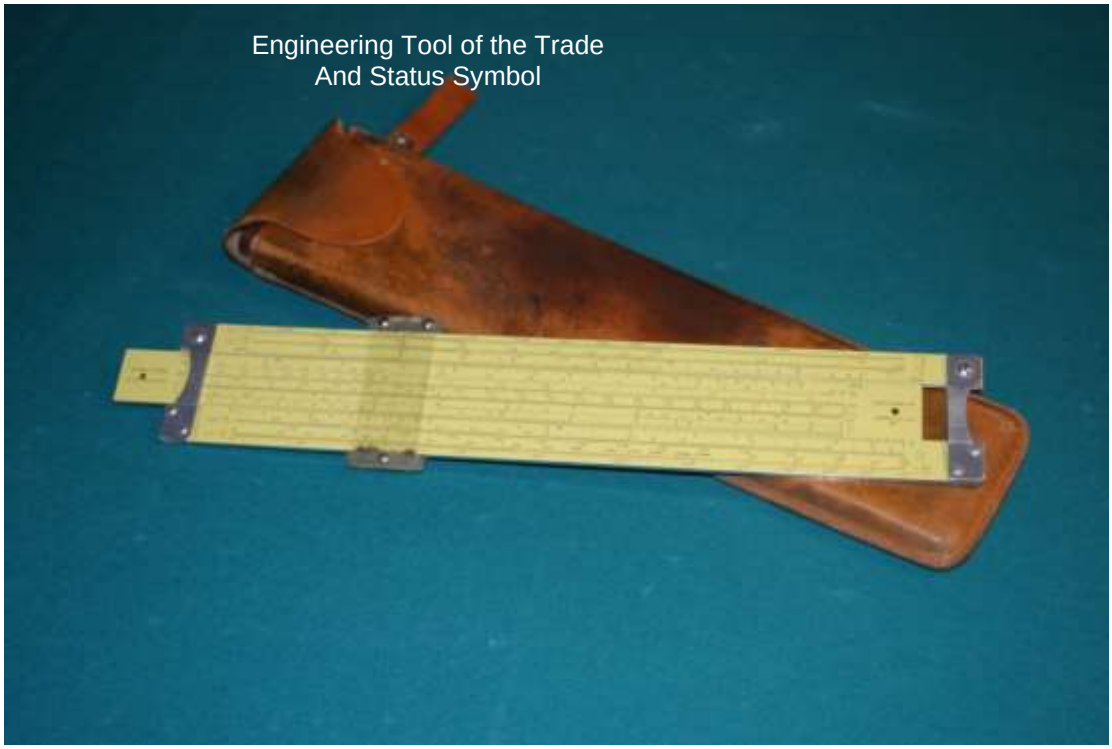
Please send an email Linda Stearns at linda80120@comcast.net
or call at 303-797-3557
NO LATER THAN JULY 1
to indicate interest in this event.
Include your name, telephone number, email address,
mailing address, along with the number of people in your group.
Confirmed details will be provided to those who have
shown interest, and the reservation process will take place at that time.
See MORE information in the MARS STAR.

Walking Through Waterton
"A Step Back in Time"
Special Edition
for
MARS ASSOCIATES

(Part I)

1956 - 1960


• Denver location selected from over 100 different cities
• The site is the most geologically stable in North Americ
• Martin Company employment grows to over 1,500 in first year, and facility construction continues to expand the vast capabilities of the employees
In 1955, the Glenn L. Martin Company proposed to the US Air Force to build a new production facility for the Titan intercontinental ballistic missile. The site chosen was a rugged tract of land 25 miles southwest of Denver on the Rocky Mountain foothills of Colorado. Within 10 months of beginning construction, a factory, test facilities, and other buildings were operating and a hiring program had begun.
MARTIN
What Was Happening Here...


Engineering Tool of the Trade
And Status Symbol

Which Beauty Will Become Miss Titan?

These lovely Martin Co. girls will compete Saturday for the title of Miss Titan at the company's beauty pageant which will highlight the big family picnic. The picnic, will run from 11 a.m. to 7 p.m. at Lakeside Amusement park. The contest is slated at 3:30 p.m.

Seated in the front row, from left, are: Nancy Sweeney, typist, Denver; Jonnie Thielen, secretary, 1195 Littleton blvd.; Patricia Hatley, steno, Aurora; Darene Jacobsen, secretary, Denver; and Kay Allen, typist, 3865 S. Ogden st.

In the back, from left: Kay Christiansen, secretary, 2403 S. Lincoln st.; Shirley Smosk, associate engineer, Denver; Shirley Bain, senior clerk, 2145 S. High st.; Cynthia Adams, steno, Denver; and Phyllis Merchant, accounting clerk, 5820 S. Bannock st.

Preliminary judging was held at Littleton high school last week for 23 beauties. Among the judges were Mrs. Harry A. Noren, 5355 Bison st., Bow-Mar, president Denver Symphony Guild; Martin P. Miller, Arapahoe county district attorney; J. Earl "Curly" Schlupp, director of recreation in Denver; and Donna Mans, chief stewardess for Frontier airlines.

Wednesday, Feb. 19, 1958, Denver 1, Colo.—ROCKY MOUNTAIN NEWS—77

Drinking Cola Costs Martin Engineer Job

A senior engineer at the Martin Co. near Denver disclosed Tuesday that he had been ordered to quit his job if he continued to drink cola at his desk.

Set to leave because of his between-meals thirst is Richard P. Woolley of 2915 S. Hudson st.

Woolley, a physicist and 1949 graduate of Colorado University, said he intends to leave his job, which includes specialized testing on the Titan intercontinental missile.

OLD RULE

Martin officials said the no-coffee-break rule — or any other drinking or eating between meals —has been in effect at Martin plants for "as many years as we can remember."

Several other scientists at the plant were reported to have said they intended to seek other employment because of the rule. The matter, they said, was brought to a head with Woolley's case.

Woolley said he told his superiors he would abide by the rule until he completed a "particular job I'm working on. But I intend to leave right after that.

"I couldn't agree to follow a silly rule like that indefinitely."

Woolley said the cola he was caught drinking was in a thermos jug.

A Martin spokesman conceded there are no vending machines of any type at the plant.

CAFETERIA OPEN

"But," said the spokesman, "we keep the cafeteria open until 8:30 every morning for those who want breakfast or coffee. I don't think the no-drinking or coffee-break is a strict rule.

"There are a lot of problems involved with a coffee-break, and the company apparently decided that they would have a policy against the breaks. It's the company's prerogative."

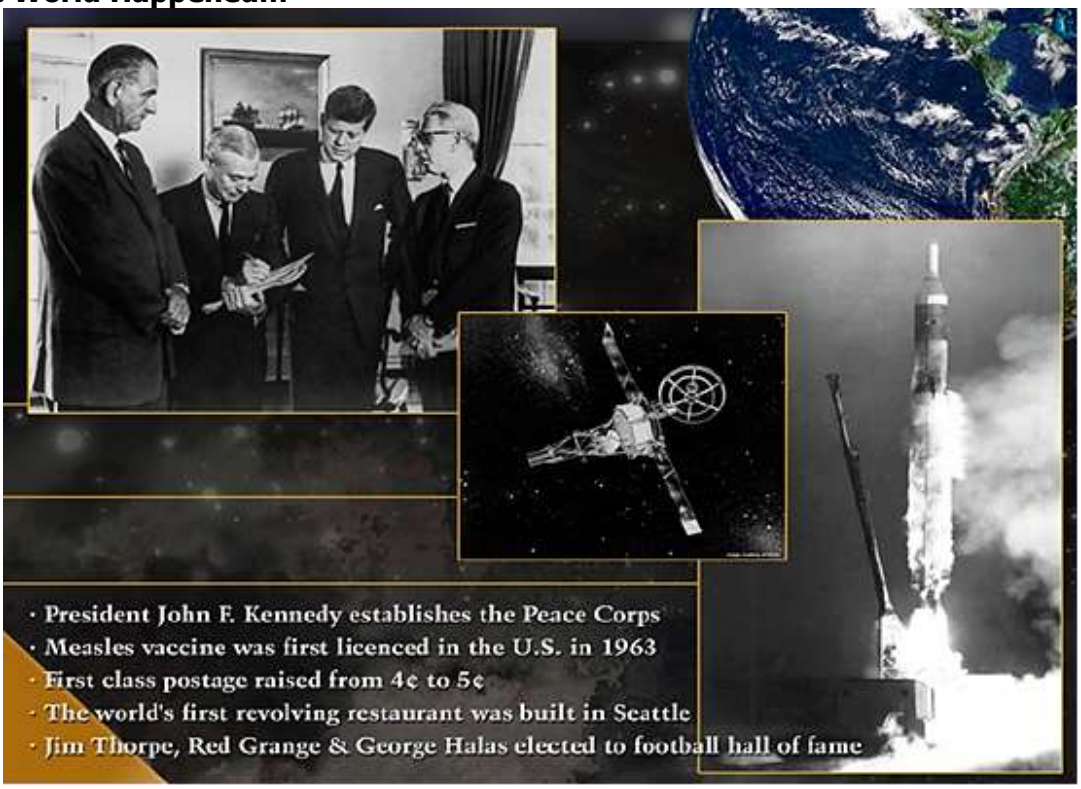
Woolley said he had no complaints about his firing.

"Any company has the right to set its own policy. I knew what the rule was, and I didn't obey it. There was nothing personal in their action against me.

"I think it's a silly rule, but I have no legitimate complaint."

1961 - 1963

What In The World Happened...



What Was Happening HERE ...

- On October 10, 1961 the Martin Company and American Marietta merge, making it one of the biggest of its day wth nearly $45 milion in earnings
- Martin Marietta employs over 13,000, with a hiring rate of 7 people per day for 5 years
- Titan I at full production

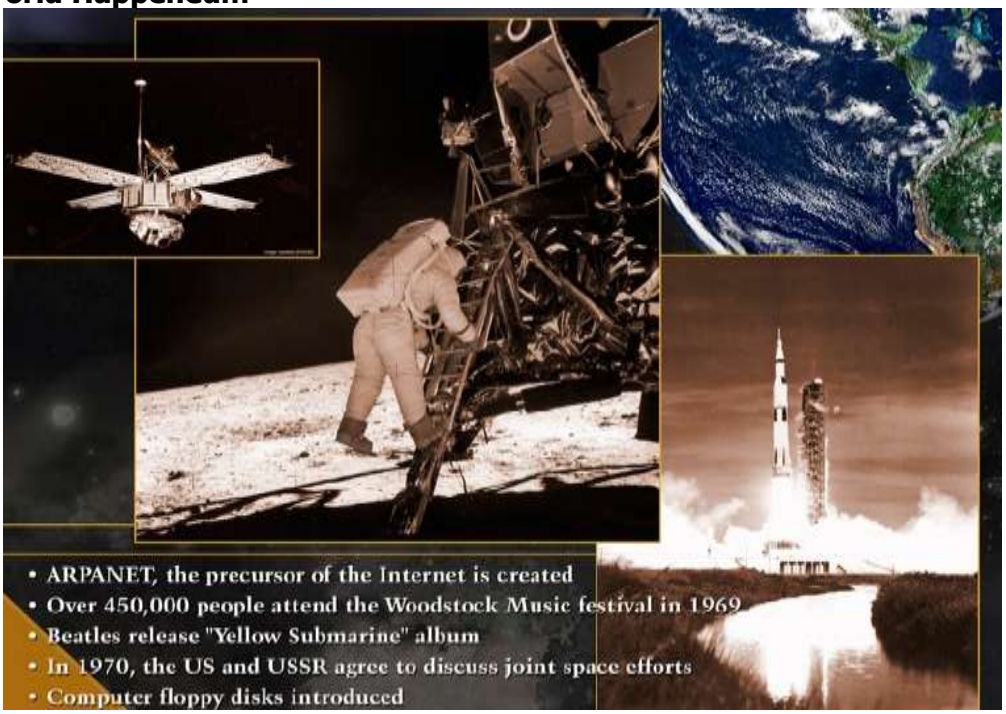
1964 - 1968

What In The World Happened…

What Was Happening HERE…

1969 -1970

What In The World Happened…



What Was Happening HERE…

MARS STAR has gone digital!!

If you currently receive a printed copy you will continue to receive a printed copy. If you wish to receive hard (printed) copies in the future, contact Carl Kaminski at 303-726-1546 or via email at carlcolo@centurylink.net.

Schedule Addendum (See last page)

1. BOD meets as required.
2. Officers/Directors meet 1st Wednesday of every month on Zoom at 09:30 am.
3. Bridge Club meets 3rd Friday of every month at 10:00 am at Buck Recreation Center.
4. Dinner Club (All events are lunch unless otherwise noted): May 24, Outback, 8601 W. Cross Dr., Littleton, CO
5. Golf Club meets every Thursday from April through Oct of each year.
6. Hiking Club: Outings on 3rd Wednesday of the month. Check website for Point of Contact for each hike.
7. Photo Club meets 2nd Thursday every month (except Jun, Jul & Aug) at 1:00 pm on Zoom
8. Web Committee meets on or before the Tuesday prior to BOD/Officer mtg on Zoom or email.
9. **2021** Senior Recognition Luncheon - Jul 14 at Ken Caryl Manor House
10. **2021** MARS Day at the Rockies - Aug 18
11. **2021** Annual Picnic - Sept 8 at Clement Park
12. **2021** Holiday Celebration - Dec 1 at Wellshire Inn
13. **2022** Annual Meeting - TBD Date and Location

Please review dates and times and notify Ken Marts (martshouse2@aol.com) if you have any changes or additions.

ASSOCIATES
P.O. Box 1128
LITTLETON, CO 80160

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

DATE: April 2021

MARS ASSOCIATES EVENT SCHEDULE

EVENT/MONTH	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2022 Jan	Feb	Mar
Officers/Directors	7	5	2	7	4	1	6	3	11/30	5	2	2
Bridge Club	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Dinner Club	TBD	24	TBD	TBD	TBD	TBD	TBD	TBD	-	TBD	TBD	TBD
Golf Club	Thur	Thur	Thur	Thur	Thur	Thur	Thur	-	-	-	-	-
Hiking Club	21	19	16	21	18	15	20	17	15	19	16	16
Photo Club	8	13	-	-	-	9	14	11	9	13	10	10
Web Committee	6	4	1	6	3	8/31	5	2	11/29	4	1	1
MARS Events												
Happy Hour												
Senior Recognition Luncheon				14								
CO Rockies Game					18							
Annual Picnic						8						
Holiday Celebration									1			
Annual Meeting												TBD
MARS STAR Schedule												
Items due for MARS STAR												
STAR Flyers Due to Comms	5			5			4			TBD		
STAR Input to Editor	6			6			5			TBD		
STAR Repro. Deadline	19			19			18			TBD		
STAR Mailing	28			28			27			TBD		