

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS



LONG ISLAND SECTION

JULY 2019

VOL. XLVIII, No. 2

Published by and for the AIAA Long Island Section,
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EVENTS CALENDAR

July 16, Lecture at Bethpage Public Library, Dave Paris, "The Earth's Moon." 7 PM.

July 17, AIAA Section Meeting, Dr. Joseph Fragola and Mr. Samuel Greenberg, in commemoration of the 50th anniversary of the Apollo 11 lunar landing. "Observations from the Apollo LM to the Shuttle and ISS, and Beyond. Lessons -- Learned and Not Learned." At Hofstra. Details on page 2.

July 30, Marcum Workplace Challenge. At Jones Beach. Details on page 3 or go to:
<https://www.marcumworkplacechallenge.com/>

The Council is planning meetings for this summer through next May and would appreciate your suggestions.

So, watch this space for news of future meetings.

Note from the Chairman

Two thirds of Americans alive today were not yet born when Neil Armstrong first set foot on the moon. Those of us who remember that day recall where we were when humans for the first time explored a celestial body other than Earth. I went to my older son's bedroom, carried him downstairs, and turned his half-closed eyes to the TV just as Armstrong stepped off the platform and settled to the surface. My son was not yet 3 then and he doesn't now remember, but he can say he saw it.

As the fiftieth anniversary of that momentous event approaches, engineers and others involved in the Apollo Program recall their contributions and the rest of us honor them and celebrate what was one of the most significant events of the twentieth century if not of all human history.

Organizations across the country are celebrating the Apollo 11 landing with a variety of events. Here on Long Island, AIAA, the Cradle of Aviation Museum, the Bethpage Library, Hofstra University, the Avram Theater in Southampton, the Vanderbilt Museum and Planetarium in Centerport, Stony Brook University, and others have already had events and are continuing celebrations through the anniversary on July 20. Please see a list of events on pages 5 and 6.

We will all closely follow NASA's progress toward the current objective of returning humans to the moon by 2024 and then to Mars by 2033. This new ambitious timetable will require both commercial and international partners and a Congress that financially buys into the program. Perhaps the American public will once again be excited by a space race to the Moon.

Thank you,

Dave Paris, 516-458-8593 davidsparis@twc.com



AIAA Joint Section Meeting
Co-sponsored by Hofstra's
School of Engineering
and Applied Science,
IISE, & IEEE(AES)
Wednesday, July 17, 2019



Dr. Joseph Fragola and
Mr. Samuel Greenberg

In commemoration of the 50th anniversary of the Apollo 11 lunar landing
“Observations from the Apollo LM to the Shuttle and ISS, and Beyond”.
"Lessons -- Learned and Not Learned"

Location: **Breslin Hall, Second Floor, Room 216**
Hofstra University South Campus
Hempstead, NY 11549

RESERVATIONS REQUESTED
RSVP BY July 15, 2019
greghomatas@msn.com
or (718) 812-2727

Time: **6:00 PM Social Time**
6:30 PM Pizza
7:00 PM Presentation

Cost for Pizza: \$7, Members and Guests
Free, for Students

We are pleased to invite you to join us in our upcoming Section meeting commemorating the Apollo 11 lunar landing. This meeting will feature a panel discussion about the above projects, what may lie ahead in various planners' future schemes. Join us and find out what it was like to be on the team for the LM, the LM vehicle versus the vehicle(s) which are envisaged for future schemes, the mission approach used with the LM versus future schemes. Also lessons learned from past missions, have NASA and the potential future private operators learned any lessons and why or why not? Is there any danger of the mistakes of the past happening again? Why is it taking so long to go back to the Moon? Will other countries send astronauts to the moon before we do? There will also be some slide presentations as well as ample time for questions, answers and discussion among the panelists.

Sam Greenberg graduated from the Bronx High School of Science and the United States Naval Academy. He was a Navy Test Pilot and reserve officer and retired with the rank of Captain. Sam served Grumman Aerospace as a Lunar Module Consulting Pilot during the Apollo program and was there from Apollo 7 through 15. Sam was at Grumman when teams from NASA, Grumman, and other contractors were working together to bring the Apollo 13 crew safely back to Earth. He is a certificated flight instructor with over 3000 instruction hours. He holds the FAA Wright Brothers Master Pilot Award.

Dr. Fragola has over 50 years of experience in the aerospace, offshore oil, and nuclear industries. He has worked for Grumman on the Apollo program on LM Applications, and as a Principal Scientist and Vice President at SAIC and Valador, Inc. Dr. Fragola was the Principal Investigator of the 1995 Space Shuttle Risk Assessment. He has been one of the pioneers of the concept of Risk Based Design. He is an AIAA Associate Fellow.

Directions: Breslin Hall is on the South Campus of Hofstra University in Hempstead. For directions and campus map: <http://www.hofstra.edu/directions>



Engineers Joint Committee of Long Island

Invites members & guests of affiliated societies / associations and Engineering Firms to join EJCLI at Jones Beach (Parking Field 5) - Tuesday July 30, 2019 at 7pm
(For best experience it is suggested you arrive by 5pm.)



MARCUM WORKPLACE CHALLENGE

The Marcum Workplace Challenge is Long Island's largest corporate run-walk (3.5 mile) for charity as well as the region's largest office picnic. EJCLI will provide tent, tables, chairs, t-shirts, & food / refreshments.

**Tuesday,
July 30, 2019 7PM
Jones Beach**

**On the Road to
\$1 Million for our
Beneficiaries in
our 14th year**

Beneficiaries:

- Long Island Children's Museum
- Children's Medical Fund of NY
- Long Island Cares, Inc. - The Harry Chapin Food Bank
- The Nassau County Society for the Prevention of Cruelty to Animals



To register for this event go to www.marcumworkplacechallenge.com/registration & select EJCLI (Engineers Joint Committee of Long Island)
Entry Fees (per team member):
\$24 (early registration through June 1)
\$28 (June 2 - July 26 midnight),
\$35 (July 27 through July 30)
For more information on this event:
www.marcumworkplacechallenge.com
Questions regarding joining the EJCLI team contact Tom Fiorella at tfior9651@msn.com

JUNE MEETING REPORT

The Long Island Section's annual dinner meeting was held at Borrelli's Restaurant in East Meadow on June 6. Our featured speaker, AIAA Distinguished Lecturer, Dr. Mike Gruntman spoke about "The Road to Space. The First Thousand Years." Mike is Professor and Chair of the Astronautics Department at the University of Southern California.



Before the lecture, Section Treasurer Col. W. Glenn Mackey presented the winners of the Long Island Section Essay Contests with their awards. Then the first-place winners read their essays to the audience. This year, there was an exact tie for first place based on the scores of 6 judges. Lucas Beltran Erdos Fernandez of PS 276 Battery Park City School in Manhattan submitted the best 7th Grade essay and also won the AIAA Region 1 Essay Contest. Lucas' grandfather, AIAA Associate Fellow Dr. John Erdos alerted Lucas to the Essay Contest after seeing an announcement in the FLIER. Erin Alvarez of the Wisdom Lane Middle School in Levittown submitted the best 8th Grade essay.

Dr. Gruntman traced the fascinating history of early rocketry and subsequent developments that led to the beginnings of the space age. The first recorded rockets appeared in Asia, where ingredients for black powder were commonly found. The ancient Greeks had observed the action/reaction law but did not understand it and saw no practical use for it. The Chinese were using gunpowder and rockets by 1045 CE, and military solid rocket fire-arrows against Mongol troops in 1232 CE. They looked like firecrackers attached to bamboo arrows. They were small, inaccurate, and had range only up to 400 yards. In roughly the same time period, the Indians were using much larger rockets, but the records do not establish which country was first. Although the Greeks and Byzantines had explosives a few hundred years earlier, there is no record of them applying the knowledge to rockets. Rocket technology must have spread from Asia because the French Army met rocket-propelled devices at Damietta during the seventh crusade in 1249. In 1379, rockets first appeared in European warfare. In 1399, at a battle in India, a Sultan's forces included men on 125 armor-covered elephants hurling grenades, fireworks and rockets. Rockets had advantages over artillery: they were much lighter, and the absence of recoil allowed them to be launched from small boats.



Dr. Mike Gruntman, Lucas,
Dr. John Erdos

Mike reviewed the rocketry improvements developed by innovators starting in the early 1800's. William Congreve developed a family of rockets for the British army and navy which were used in an attack against Boulogne in 1806 and to burn Copenhagen in 1807. These still used side guide sticks but weighed up to 300 pounds. In August 1814, the British used rockets to win the Battle of Bladensburg which enabled them to enter Washington and burn the Capitol and the White House. The next month, the rocket bombardment of Fort McHenry inspired Francis Scott Key to write the poem which became our National Anthem. By 1815, a major innovation employed a base plate with exhaust holes around a socket for a center guide stick. These rockets could be launched from tubes. The U.S. experimented with rockets and used them in the Mexican War in 1846, as did the Mexicans. A British inventor, William Hale, devised a method to stabilize rockets by spinning them and thus dispensed with the guide stick. Rocket technology proliferated with Russia and Great Britain using them in colonial wars until 1900. However, advances in military artillery starting in the mid-19th century rendered rockets less valuable in warfare. Mike then discussed Robert Goddard, who developed the first liquid rocket in 1926 and the contributions of Hermann Oberth. Goddard was ridiculed by the New York Times in 1920 for believing that rockets could operate in a vacuum. Werner von Braun led the development of the 180-mile range V-2 for the WWII Nazi regime. At the same time, Theodore von Karman's group in the USA developed solid and liquid rockets. The Space Age started with the USSR launch of Sputnik in October 1957, the US launch of Explorer-1 in January 1958 and Vanguard-1 in March 1958. Over the next decades, other nations followed, and the Space Age was born.

Lecture material was drawn from Mike's award-winning AIAA-published book, *Blazing the Trail, The Early History of Spacecraft and Rocketry*. IISE and IEEE(AESS) joined us as co-sponsors of this meeting.

50th Anniversary of the Apollo 11 Lunar Landing Local Events

AIAA Section Meeting

July 17, Dr. Joseph Fragola and Mr. Samuel Greenberg, in commemoration of the 50th anniversary of the Apollo 11 lunar landing. "Observations from the Apollo LM to the Shuttle and ISS, and Beyond". "Lessons -- Learned and Not Learned." At Hofstra. Details on page 2.

Bethpage Public Library

July 16, Tuesday, 7:00 PM, Lecture, Dave Paris, "The Earth's Moon." When ancient people looked up at the night sky, the moon was the brightest object they saw. Through the ages, people created myths, wrote poems and stories, and made movies about the moon and their desire to go there and explore. This presentation will cover some history of the moon in literature, what facts we know about the moon, theories about the formation of the moon, and—on the 50th anniversary of the first lunar landing—past, current and possible future exploration missions to the moon. Free admission.

July 17, Wednesday, 2:00 PM, Film: Apollo 13 (1995), This Hollywood drama is based on the events of the Apollo 13 lunar mission. Astronauts Jim Lovell (Tom Hanks), Fred Haise (Bill Paxton) and Jack Swigert (Kevin Bacon) find everything going according to plan after leaving Earth's orbit. However, when an oxygen tank explodes, the scheduled moon landing is called off. Subsequent tensions within the crew and numerous technical problems threaten both the astronauts' survival and their safe return to Earth. Rated: PG; 140 minutes.

July 18, Thursday, 2:00 PM, Film: Apollo 11, A cinematic event 50 years in the making, Apollo 11 features never before seen large format footage of the mission to land on the moon led by Commander Neil Armstrong and pilots Buzz Aldrin and Michael Collins. A journey that should only be experienced on the big screen. Starring: Buzz Aldrin, Neil Armstrong, Johnny Carson, Michael Collins. Rated: G, 94 minutes

July 18, Thursday, 6:00 PM, Grumman Aircraft History of the Lunar Module. Guest speaker Lois Lovisolo explains how Bethpage made its mark in history. Employed by the Grumman History Center as Librarian and Historian for 18 years, Lois presents the history of the lunar module including the contract award, manufacturing, and its astounding success.

July 18, Thursday, 7:30 PM, Lecture and Telescope Sky Observation. Larry Gerstman shares his personal photos and memories as he recaps moon missions, including the latest mounted by Israel. As a bonus, weather permitting, Larry will take the group outside after his talk to view the night sky through his large telescope. For Adults and children.

July 19, Friday, 10:30 AM - 11:15 AM, 3-2-1 Blast Off! STEAM With A Time for Kids. For Ages 2 – 5 years with caregiver. A special program combining science, technology, engineering, arts and math. Open to residents in SD #21 ONLY. Please bring your Bethpage Public Library Card to register.

July 19, Friday, 2:00 PM & 7:30 PM, Film, First Man. The riveting story of NASA's mission to land a man on the moon, focusing on Neil Armstrong (Ryan Gosling) and the years 1961-1969. A visceral, first-person account, based on the book by James R. Hansen, the movie explores the sacrifices and the cost—on Armstrong and on the nation—of one of the most dangerous missions in history. Rated: PG-13 (for some thematic content involving peril, and brief strong language); 141 minutes

July 19, Friday, 2:00 PM, Planets & Moons Workshop with Mad Science!

Event is Full

A 21st Century Scholar school credit offering for children in grades 4 and 5. Students must register at the Bethpage Public Library. Students experiment using models to understand relative size and distance of objects in our solar system. Build and take home Kepler’s Cube™, a fun and educational 3-D solar system puzzle! Open to residents in SD #21 ONLY. Please bring your Bethpage Public Library Card to register.



July 19, Friday, 5:00 PM, Up, Up & Away! Live Show with Mad Science!

Inclusive Live Show (Loud noise alert), For Grades K – 6. Enjoy an action-packed show while learning the properties of air pressure. Lots of audience participation and lunar surprises! Open to residents in SD #21 ONLY. Please bring your Bethpage Public Library Card to register.

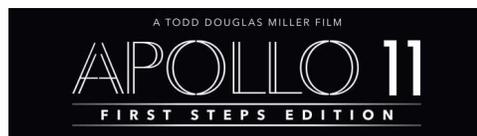
Cradle of Aviation Museum

Apollo Moon Fest

Saturday, July 20, 2019, 9:30 am-5:00 pm

Apollo at 50 Countdown Celebration

Saturday, July 20, 2019, 7:00 pm - 11:00 pm



Apollo 11 on Giant Screens now showing

Cradle Event details on pages 10 to 12 of this FLIER

Avram Theater, Southampton

The Apollo 11 Lunar Landing: A 50th Anniversary Celebration

Saturday, July 20 1 – 6 PM

Vanderbilt Museum and Planetarium, 180 Little Neck Rd., Centerport, NY

Capcom Go! Moon Landing Anniversary Show

Friday, July 19, 4 – 5 PM

Saturday, July 20, 2 – 3 PM

Stony Brook University, 39 Tuckahoe Rd., Southampton, NY

The Apollo 11 Lunar Landing: A 50th Anniversary Celebration

Saturday, July 20 1 – 6 PM

For additional Long Island events, enter in your browser: [apollo 11 50th anniversary events on Long Island](#)



American Airpower Museum
1230 New Highway, Farmingdale, New York,
11735
At the northeast corner of Republic Airport

Usually Open Thursday to Sunday 10:30 AM to 4:00 PM
 Closed Monday, Tuesday, Wednesday

Phone: 631-293-6398

Check website for weekend events.

<http://americanairpowermuseum.com/>



75TH ANNIVERSARY D-DAY HISTORIC FLIGHT EXPERIENCE
JULY 20TH 2019



THE WACO UPF-7 BI-PLANE FLIGHT EXPERIENCE



THE AT-6 "TEXAN" WARBIRD FLIGHT EXPERIENCE



Come to the AAM to see the P-51D Mustang acquired in 2018 and many other aircraft.

To book your flight please call: (516) 531-3950

Spring/Summer Hours (April 1 – October 31)	
Monday - Friday	10:00am - 5:00pm
Saturday, Sunday & Holidays	10:00am - 6:00pm
Year-Round	
Early Morning Tours For more information and to purchase tickets https://www.intrepidmuseum.org/guided-tours	9:00am
The line to the submarine <i>Growler</i> and exhibition may close early. Final Entry and Last Ticket sold one hour prior to closing.	

CALENDAR OF EVENTS

Saturdays and Sundays

One Giant Leap: The 50th Anniversary of Apollo 11
Presentation is 20 minutes and free with admission to the Museum.

Hear the historic events leading up to the Apollo XI mission; the mission that took man from Earth to the Moon! Learn about the powerful rockets, technologies and of the men and women, who helped America's Astronauts take that historic first step. Presentation is 20 minutes and free with admission to the Museum. *Check at the Information Desk, location and schedule subject to change.*

FRIDAY, JULY 19 Free Fridays

Attend an outdoor screening of the film *First Man* or take in educator-led pop-up planetarium shows that run throughout the evening. Celebrate the Apollo missions with Dr. Noah Petro who will share images from NASA's Lunar Reconnaissance Orbiter at the Museum's Astronomy Night. Space for the film screening and planetarium shows are limited; seating is first come, first served

FRIDAY, JULY 19 AND SATURDAY, JULY 20

Pop-Up Installation *Earthrise: A 50 Year Contemplation*

Meet members of the Space Enabled research group from MIT's Media Lab to celebrate the original Earthrise photo taken during the Apollo 8 mission in December 1968. Free with Museum admission.

Friday, July 19: 1:00pm to 3:00pm and 5:00pm to 7:15pm

Saturday, July 20: 11:00am to 1:00pm and 2:00pm to 3:00pm

SATURDAY, JULY 20

Intrepid Presents: To the Moon with the Upright Citizens Brigade Touring Company

Celebrate the 50th anniversary of the Apollo 11 moon landing beneath the space shuttle *Enterprise* with a night of comedy, history and science with the **Upright Citizens Brigade Touring Co. featuring Lauren Adams, former astronaut Mike Massimino, and NASA's Noah Petro**, deputy project scientist for the Lunar Reconnaissance Orbiter. **General admission: \$15 | Museum members: \$10**

SATURDAY, JULY 20, 1:15PM AND 3:00PM

Giant Leaps Planetarium Show

This planetarium show will enable visitors to journey through the small steps that resulted in humanity's giant leap to the moon. Audiences will travel alongside astronauts on the Mercury, Gemini and Apollo missions to discover the techniques and technology that NASA had to invent and perfect before attempting a trip to the moon. Free with Museum admission. Space is limited; seating is first come, first served.

SATURDAY, JULY 20

Early Morning Opening

Celebrate the 50th anniversary of the moon landing s with an early morning opening for children with autism and their families. Commemorate this historic event with a tour and hands-on activities.

WEDNESDAY, JULY 24

Intrepid After Hours

Intrepid After Hours invites military veterans and service members to experience the Museum at night. Enjoy the Museum without the crowds, then join peers for conversation, exploration, a celebration of the 50th anniversary of Apollo 11 and a catered dinner.

For information about other Intrepid events:

<https://www.intrepidmuseum.org/PublicEventsCalendar.aspx>

Cradle of Aviation Museum 

Charles Lindbergh Boulevard Garden City, NY 11530

Visit the Cradle with your children and grandchildren, explore their world-class aerospace history exhibits, talk to their knowledgeable docents, join in their events, watch a first run movie in their wide screen domed theatre, or enjoy an exciting show in the immersive, all-digital, JetBlue Sky Theater Planetarium. The Cradle currently features planetarium and Domed Theatre shows including: Dream Big: Engineering Our World; Journey to Space with Patrick Stewart; Space News & Asteroid: Mission Extreme; Backyard Wilderness; One World One Sky: Big Bird's Adventure; Apollo 11, First Steps.

Also, check the website for dates and times for the Interactive Educator-Led Space Lab Programs including: Current Night Sky; Junior Jetsetters; Solar System Tour; Train Like an Astronaut/Asteroids; To The Moon. Space labs are held on Saturdays, Sundays, holidays and school breaks at noon and weekday mornings.

Usual Hours: Open 9:30-5:00, Tuesday through Sunday and Mondays that fall on holidays and school breaks.

**Celebrate Long Island's Significant Contribution
and Role in Landing Man on the Moon**

Did you know that Long Island was one of the most important regions in the country involved in the success of landing man on the moon? From 1961 to 1972, Grumman employees, designed,



assembled and tested the Apollo Lunar Modules that successfully landed 12 men on the moon between 1969-1972.

In all, Grumman built ten Lunar Modules, seven of which went into space and three that remain here on earth. One is at the Kennedy Space Center, one at the Smithsonian Museum and the third is here at the Cradle of Aviation Museum. Long Island and Grumman's role in the Apollo program is the focus of the Cradle of Aviation Museum's celebration, "Countdown to Apollo at 50".

Program Highlights

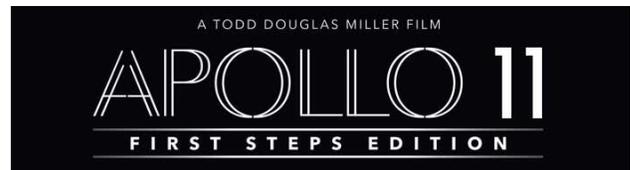
- New Exhibit - Space: A Journey to Our Future through August 2019
- Museum Visits from Astronauts, Scientists and Aerospace Professionals
- Live Astronomy Shows for all ages in our Full Dome Planetarium
- Film Screenings with special guests
- School Competitions and Contests
- Space Summer Camps
- Fun Contests for Kids

Our latest exhibit, Space: A Journey to Our Future, combined with our space gallery featuring the Lunar Module and extensive Apollo artifact collection, is all part of our Countdown to Apollo at 50 multi-year celebration!

Cradle of Aviation Museum Events

Program Highlights

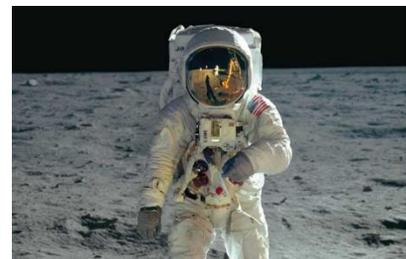
Apollo 11 on Giant Screens now showing



Apollo at 50 Moon Fest

Saturday, July 20, 2019, 9:30 am-5:00 pm

Tickets \$20 Adults; \$15 Kids/Senior (Kids 2-12)



A fun, family-friendly festival includes

> COMMUNITY COUNTDOWN TO LUNAR LANDING

Join in a Community Countdown at 4:17 pm to collectively watch, re-experience, and honor as a community, the historic "The Eagle has Landed" Lunar Module landing on the moon.

> ASTRONAUT ENCOUNTERS

Meet Space Shuttle Astronauts Bill Shepherd (Babylon) and Charlie Carmada (Ozone Park), both from Long Island, and Bob Cenker.

> MOON BUGGY RACES

Traverse a lunar obstacle course driving an electric lunar rover. (kids)

> VIRTUAL REALITY

Explore the inside and outside of the Apollo 11 up close and personal with Microsoft's Mixed Reality and the Microsoft HoloLens technology.

> APOLLO 11 FIRST STEPS in IMAX

Experience a free showing of the new highly-acclaimed documentary, Apollo 11 First Steps Edition in our immersive Dome Theater. Playing hourly.

> SOLAR TELESCOPES

Explore the sun with a special purpose solar telescope. (Weather permitting)

> LAUNCH ROCKETS

Build, decorate, then launch a water bottle rocket.

> ROBOTICS DEMONSTRATIONS

View and interact with student-built robotics from the First Lego League.

> VISITS FROM THE UNIVERSE

The not-for-profit, NY Avengers Cosplay Group is assembling at the Cradle to celebrate the American heroes who contributed to the successful lunar landing.

> ALL INCLUSIVE ADMISSION

Includes admission to all museum exhibits and Apollo 11 IMAX film.

The museum opens at 9:30 am. Family activities from 12:00 - 4:00 pm. The Moon landing countdown begins at 4:00 pm.

Apollo at 50 Countdown Celebration

Saturday, July 20, 2019, 7:00 pm - 11:00 pm

Celebrate Long Island's Role in the Success of the Apollo Program

Share your stories and learn about Long Island's contributions to advancements in space and celebrate your Long Island pride. A dinner ticket automatically gives you admission to Apollo Moon Fest events during the day.

Program includes

> Lively Champagne Dinner

> 1960s Music and Dancing

> Photo-Op in Re-created 60s Living Room

> Museum Galleries Open

> Shuttle Astronaut Encounters

> Community Countdown and Screening of Armstrong's First Steps

Tickets: \$125 per person

Grumman Retirees and Museum Members, please call Reservations for discounted tickets at 516-572-4066 (Monday-Friday, 10:00 am-4:00 pm)

Proceeds to Benefit Museum Education and Preservation Programs.

Apollo on Exhibit at the Cradle of Aviation Museum

- **Apollo Artifact & Space Exhibit**

See the largest Apollo artifact collection currently on display anywhere paired with our Space: A Journey to Our Future Exhibit

- **Grumman Lunar Module LM-13**

The 13th and final Lunar Module was never flown and is on permanent display in our Space Gallery.

- **Grumman Lunar Module Simulator**

See the simulator that all of the Moonwalkers trained on.

- **Rockwell Command Module 002**

The Command Module (CM) was the control center for the Apollo spacecraft and provided the living and workspace for the three-man crew.

Apollo History and Learning

- **The Lunar Module**

A National Historic Mechanical Engineering Landmark

- **Long Island on the Moon**

By Thomas J. Kelly, Father of the Lunar Module

- **Leroy Grumman Facts**

Biographical data about Leroy Grumman

- **IEEE Engineering and Technology History Wiki**

This is a resource page for primary source materials (e.g. oral histories, first-hand histories, milestones, etc.) related to commemorating human space travel, the Saturn and Apollo Projects, and the Lunar landings of 1969.