



# Huntsville Alabama L5 Society

Founded 1983. *Ad Astra per Ardua - "To the Stars by Our Own Hands"*

Space advocacy, education outreach and technology development



## 2016 HUNTSVILLE ALABAMA L5 SOCIETY (HAL5) ANNUAL REPORT TO THE MEMBERSHIP

Founded in 1983, Huntsville Alabama L5 Society (HAL5) is a not-for-profit 501(c)(3) educational organization that advocates exploration and settlement of space. Like our parent organization, the National Space Society (NSS), we are a mix of enthusiasts of all walks of life who share the belief that space development will improve our world in the areas of education, energy, environment, new resources, and ultimately room for humanity to grow. This is a highlight of our activities for 2016.

### MONTHLY PROGRAMS

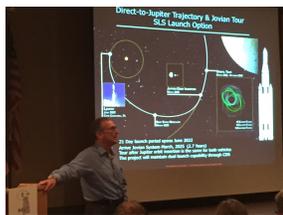
HAL5 holds free public lectures and membership meetings on the first Thursday of every month at the Huntsville-Madison County Main Public Library. For special events, a different day and/or location are used. Below is a summary of our 2016 monthly programs. A listing of our monthly programs since 1994 can be found at our website, [www.HAL5.org](http://www.HAL5.org).



**January:** Todd May, Acting Director NASA Marshall Space Flight Center (MSFC) [now Center Director] on *"The Next Chapter of Human Space Exploration."*

**February:** Annual membership meeting on state of HAL5 and NSS, and upcoming activities.

**March:** Dr. Qiang Hu, UAH, on *"Space Weather: Past, Present and the Future"*. **March Special Program.** Barry Goldstein, Manager Europa Project, Jet Propulsion Laboratory, on NASA's Europa mission and how the NASA Space Launch System (SLS) can significantly reduce the trip time.



**April:** Naomi Fisher, local science fiction art collector, showcased her collection and presented *"Dreams Made Real - Science Fiction Art as Shaping Force on Technology, Science, and Space Exploration."*

**May:** Mitzi Adams, MSFC Solar Scientist on *"The Sun"* and information about the upcoming Mercury transit and the 2017 Great American Eclipse.

**August:** Greg Allison, HAL5 founder, on *"The Power Grid Defense Case: To Enable Settlement of Space"* and preview of our inaugural Alabama Power Grid Defense Conference.

**September:** Robert Barbré of Jacobs Engineering, NASA MSFC, on *"Orion vs. Poseidon: Understanding How NASA's Crew Capsule Survives Nature's Fury."*

**October:** Joint HAL5 and U.S. Space and Rocket Center (USRRC), *Pass the Torch* program on *"Flying the SR-71 Blackbird"* with Lt. Col. Ed Yeilding, USAF, Retired.

**November:** Russell Bazemore of Volatile Analysis Corporation on *"Chemistry of Odor"*.

**December:** Dr. Jason Casibry (Univ. Alabama Huntsville (UAH))

on the *"Making of the First Real Impulse Engine: Progress on Deuterium Fusion Experiments at UAH."*

### OUTREACH AND SPECIAL EVENTS

#### Challenger 30<sup>th</sup> Anniversary Commemoration Wall

January 28<sup>th</sup>, 2016 marked the 30th anniversary of the Space Shuttle *Challenger* accident. A moment that reminded us of the dangerous nature of spaceflight. To commemorate the event, HAL5 and Huntsville's *Challenger* Elementary School collaborated on a commemoration wall honoring all 10 Space Shuttle *Challenger* missions. The idea was inspired by the Space Shuttle Missions whiteboards located in the Launch Control Center at NASA Kennedy Space Center (KSC) that were drawn by the astronauts' family members to capture their thoughts prior to their launch. To connect the children to each mission and their astronauts, the nine successful *Challenger* missions' whiteboards were drawn by the Pre-K to 5th grader, and the faculty did the *Challenger* STS-51-F mission. HAL5 pulled together a group of engineers and scientists, and each described the individual mission highlights and the various "firsts" to the students.



*Challenger Elementary School's Space Shuttle Challenger Accident 30<sup>th</sup> Anniversary Remembrance Wall. Image Credit: Josh Treen*

Over 600 kids, family, friends and guests showed up for the unveiling of the commemoration wall on the accident's 30<sup>th</sup> anniversary. Mr. Todd May, MSFC Center Director was the keynote speaker, and the event featured the chorus from Challenger Middle School, and a quick 'one liner' summary about each mission from each class. A video from Michael Ciannilli, Manager of the NASA's *Apollo-Challenger-Columbia* Lessons Learned Center at KSC, introduced the school to the NASA KSC whiteboards. For more information about the commemoration wall, see [www.ChallengerElementaryPTA.com](http://www.ChallengerElementaryPTA.com) or in the Summer 2016 issue of the NSS *Ad Astra* Magazine.

#### 2016 Panoply Arts Festival

For the third consecutive year, HAL5 was selected to participate at the annual Panoply Arts Festival's Science, Technology, Engineering, Art and Math (STEAM) Interactive tent. HAL5 hosted the Lava Layers activities where kids make their own Lava Layers in plastic test tubes using oil and color water to learn about the principals of liquid density and polarity. HAL5 and Panoply volunteers helped the kids to make over 2000 slightly messy, but fun, Lava Layers test tubes!



Inaugural Alabama Power Grid Defense Conference. "Save the Grid. Save the Future"

When it became apparent to HAL5 that lack of power grid security was a major obstacle to space settlement we formed the Alabama Power Grid Defense Committee. We held a conference

on the subject in September with approximately 80 attendees and speakers from around the U.S. We have grown the committee post conference and are now talking a number of actions with the aim of getting Alabama and the Tennessee Valley Authority to harden their grids. For more information, visit: [www.PowerGridDefense.org](http://www.PowerGridDefense.org).

Make-and-Launch Paper Air Rockets Columbia Elementary

HAL5 returned to Columbia Elementary School in Madison in March for their space week and held a paper air rocket activity with the sixth graders. Day one was the rocket manufacturing day where the kids were encouraged to explore different fin shapes and placements. Day two was launch day.

Astronomy Day

HAL5 participated in the annual VBAS Astronomy Day. Along with our handout materials, and *Pin the Payload on the International Space Station* game, one of our members brought in a handmade paper NASA SLS rocket for display. An estimated 150 kids partook in our "Make-and-Launch" paper air rockets activity. Chick-Fil-A on University Drive donated 100 kid's meal coupons, and Bruegger's Bagels donated food for the VBAS staff.

2016 Alabama Regional Future City Competition

HAL5 supported the 2016 Alabama Regional Future City Competition held at USSRC. HAL5 judges looked at the 20 or so entries and asked the youngsters questions about outer space applications of their designs for the HAL5's \$300 "Best Future City Supporting Space Economy" special award.

Summer Cookout and Christmas Party

The summer cookout was held at Ed Kiker's residence. There was great food and conversations. In addition, Ed gave a tour of his large backyard that included a small farm and a hut made from tree branches. In appreciation, Josh Brock was presented with a cake and gift to recognize his service to HAL5 as our Publicity Chair before he moved to Virginia to pursue a Doctorate degree. The Christmas party was held at Robert Bijvoet's residence. Robert was on the piano and keyboard, and later in the evening Bill Brown offered his talent at the piano.

Project HALO

Project HALO is open to HAL5 members and meets once a week. We took a few months off from our usual activity by working on a supersonic paint ball gun in anticipation for an upcoming education outreach. Unfortunately, we never broke the sound barrier in "air" but managed to get it just a bit shy of 1000 feet/second. The activity was put back on hold as we re-focus on the hybrid rocket activities, and manufactured more of 1" nitrous/coal dust HPTP hybrid motors for future testing.

On September 10, Project HALO's Sky Launch-2 (SL-2) rocket flew again after almost 20 years in storage. Well. Almost. To decorate our friends' Straight to Ale Brewery's Campus 805

location, we reassembled our SL-2 hybrid rocket and hung it above the main entrance. Information posters and other space hardware, including the SL-2 avionics canister will be on display there in 2017. For more information about SL-2, please see our website.



**ADMINISTRATIVE**

The HAL5 Executive Committee met every month to review society business. Event announcements are posted on our website, on Facebook, on various local event calendars, sent out via our email list and on WLRH public radio when possible. Paid members received special invitations to special events and social activities. Our regular membership dues are \$16 per year, and \$8 for students and senior citizens. New member dues are prorated based on the month of joining. The dues allow us to support our various outreach hands-on activities and projects, competitions, membership gatherings and monthly programs. Project HALO support is a separate donation item from the regular membership dues. We ended 2016 with 56 paid members.

Financial

The HAL5 bank accounts had a net increase of \$144 in 2016 to \$6,707; however, from a Net Worth perspective, we are up \$608. Total income was \$9,541, while total expenses were \$8,933. The inaugural Power Grid Defense Conference was by far our biggest activity in 2016, bringing in \$7650 in income and donations, while total expenses were \$7,607; leaving a net of \$44. Programming activities was our next largest expense, at \$522. Educational outreach was only \$171 as the \$350 prize money for the 2016 Future City Contest was paid in 2015, and we were paid back our \$253 in Panoply-related expenses. Project HALO had \$289 in expenses, excluding donations of a new vacuum pump and rocket hardware. Administrative and recruitment totaled \$428, and donated flowers for Herman Pickens funeral was \$131.

Income		Expenses	
Dues	\$636	Programs	\$522
Donations	\$3425	Administrative/Donation	\$559
Awards	\$100	Events	\$7391
Events	\$5380	Project HALO	\$289
		Education	\$171
<b>Total</b>	<b>\$9541</b>	<b>Total</b>	<b>\$8933</b>

Farewell...

This year we're sad to report that we lost two long time HAL5 members and supporters: Aloysius (Al) I. Reisz, Jr., 78, of Toney, passed away July 21, 2016. Evelyn Sabino, 81, of Huntsville, passed away December 19, 2016.

2016 HAL5 Officers

President: Yohon Lo	Vice President: Robert Bijvoet
Treasurer: Ronnie Lajoie	Secretary: David Newsome
Membership: Robin Scott	Education: David Hewitt
Publicity: Josh Brock	

In closing, we thank you for your continued support, and welcome your feedback on how to better serve our community.