



2014 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.

We had a very busy 2014 as we continued our long running monthly public lectures and education outreach activities. We co-hosted two special U.S. Space and Rocket Center (USSRC) *Pass the Torch* lecture events celebrating Frederick Ordway's contribution to *2001: A Space Odyssey*, and the 45th Anniversary of the Apollo 11 Moon landing. HAL5 ran the Panoply Art Festival's first Interactive Arts Testing Station, and participated in Lowe Mill's first ever STEAM (Science, Technology, Engineering, Art and Math) Fest. We continued our High Altitude Lift-Off (HALO) amateur rocketry project, co-sponsored the Third Tennessee Valley Interstellar Workshop (TVIW) Symposium, and partnered with the Huntsville Region Chapter of the International Council on Systems Engineering for a tour of the United Launch Alliance rocket plant in Decatur. Last but not least, we were awarded the NSS Chapter Excellence Award for Education Outreach for 2013!

Administrative Activities

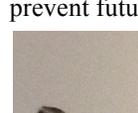
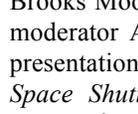
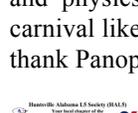
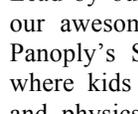
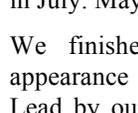
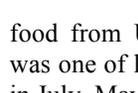
The HAL5 Executive Committee met every month to review society business and to plan events. Monthly program and special event announcements are posted on our website, on Facebook, on various local event calendars and sent via our e-mail list. Paid members received special invitations to special events and social activities. HAL5 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. We ended 2014 with 63 paid members.

Last year, HAL5 announced the reestablishment of the HAL5 Board of Advisors and Greg Allison as the Chairman of the Board. We are pleased to announce the following Board of Advisors: Jan Bijvoet, Ed Buckbee, Dave Christensen, Ed Kiker, and Gordon Woodcock.

Monthly Programs, Outreach, and Special Events

HAL5 holds public lectures or membership meetings on the first Thursday of every month at the Huntsville–Madison County Main Public Library Auditorium with a social afterward. We are very grateful for our on-going partnership with USSRC and NASA Marshall Space Flight Center (MSFC).

We started off 2014 with our annual membership meeting to discuss the state of HAL5 and NSS, upcoming special events, and to solicit inputs on future lectures and activities. In February, Mr. Paul Wieland, P.E. consultant, author, and former NASA engineer discussed current ideas, status,



and future of in-space manufacturing. In March, Mr. Ben Donahue, R&D principal investigator at Boeing gave us a mission overview of NASA's Space Launch System (SLS).

In April, HAL5 welcomed back a long time friend, Mr. Fredrick I. Ordway III, for a special talk and book signing on the *Making and Subsequent Acclaim for the Film 2001: A Space Odyssey* for which Fred was the science advisor. HAL5 and USSRC co-hosted this event as part of the USSRC *Pass the Torch* lecture series. Afterward, a group of us sat with Fred outside under the Saturn V enjoying some good German food from USSRC's Biergarten and talked about space. This was one of last the public talks that Fred gave before his passing in July. May he rest in peace.

We finished up April with our first appearance at the Panoply Arts Festival. Lead by our President and supported by our awesome volunteers, HAL5 ran the Panoply's STEAM Interactive Arts Testing Station where kids discovered and learned about basic aerodynamics and physics with Color Comets and Creative Catapults in a carnival like game play atmosphere designed and built by us. We thank Panoply for giving us this unique opportunity.



In May, HAL5 members and veteran Antarctic Meteorite hunters, Dr. Barbara Cohen and Dr. Robert Coker of NASA MSFC talked about their recent trip to Antarctica *In Search for Meteorites* as part of the Antarctic Search for Meteorites (ANSMET) group. That's one trip a lot of us would love to take! In June, Mr. John R. London, Nanosatellite Technology Manager, U.S. Army SMDC, gave a talk on *Small, Low Cost Satellites for the U.S. Army*.

To celebrate the 45th Anniversary of the Apollo 11 Moon Landing, HAL5 partnered up with USSRC for another special *Pass the Torch* lecture series. The first half of the event featured a distinguished panel discussion with space personalities, Dr. Chuck Lundquist, Brooks Moore, Kenny Mitchell, Ed Buckbee, Alex McCool and moderator Astronaut Don Thomas. The second half featured a presentation by Don on *The Day a Woodpecker Attacked the Space Shuttle [STS-70]*. Don discussed what NASA did to prevent future woodpecker attacks, and what the all Ohioan crew



accomplished on STS-70. Book signing of Don's recently released book *Orbit of Discovery* took place after the talk. Special thanks to our own Jackie Dannenberg in leading the event planning.

Wrapping up July, our summer pot-luck picnic was held at our Secretary Ed Kiker's residence. As always, we had a great turn out, great conversations and lots of food.

With Mars on everybody's mind, local author, futurist and NASA technologist, Mr. Les Johnson, gave a talk about *Mars – Are we ever Going to get there* at our August meeting. The talk also tied in his newest book, titled *Rescue Mode*, he co-authored with Ben Bova.



In September, due to a scheduling miscommunication with our planned speaker, we held an impromptu membership meeting, and Ed Kiker also gave a short talk about Lunar settlement ideas. To celebrate World Space Week, Mr. Al Reisz, Apollo Engineer, gave a talk about *Engineering the Saturn V* at our October program. Al discussed the various engineering breakthroughs that came out of the development, presented presented world events that resulted in American astronauts exploring the moon, and detailed some of their discoveries.



HAL5 returned to Monte Sano State Park to participate in the annual Von Braun Astronomical Society (VBAS) Astronomy Day. Along with our handout materials, we also brought the *Pin the Payload on the International Space Station (ISS)* game and our suitcase hybrid rocket demo. An estimated 100 kids partook in the "make and launch paper air rockets." We also gave out Chick-Fil-A coupons, courtesy of Chick-Fil-A on Whitesburg Drive, to the kids that participated.

Education Outreach
Several outreach events took place in 2014 in addition to Astronomy Day. In April, HAL5 spoke to Horizon Middle School about the ISS and played the *Pin the Payload on the ISS* game; and returned to Columbia Elementary School to make and launch paper air rockets. In October, HAL5 brought hand out materials and the hybrid rocket suitcase to the Huntsville Area Rocketry Association's Blast-Off Day.

Project HALO

Project HALO is open to HAL5 members and meets once a week. After a slow couple of years, we are slowly ramping up our work on a tube launch rocket. Initial design has been completed. This past year we saw building and test various proof of concept articles like composite overwrapped tube and staging mechanisms, and improved our aluminum can melting and re-casting process. We continued to work with the Tamke-Allen Observatory, operated by Roane State Community College in Tennessee, in designing and building part of the future Project HALO rocket avionics. 2014 saw their first and second balloon launch testing their GPS and telemetry system (see below).



In November, Dr. Vladimir Florinski, UAH Department of Space Science and CSPAR, gave a talk about *Voyager's First year in Interstellar Space*. Dr. Florinski discussed how scientists learn about the heliosphere from 35 years old technologies and what we expect to learn over the next 10 years until the probes runs out of power.



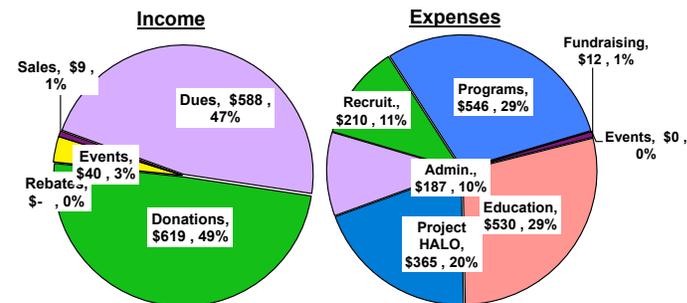
To celebrate the NASA launch of Orion's first flight test, Exploration Flight Test-1, we held a double feature on the history of the Space Shuttle. Heather Smith (USSRC) began the talk based on materials from her book *Bold They Rise: The Space Shuttle Early Years, 1972-1986*, co-authored with David Hitt. Heather shared insights from the personal experiences of the astronauts, engineers, and scientists who made it happen from the days of research and design through the accomplishments of the program to the tragic Challenger accident. Scott Phillips, who worked on all of the Space Shuttle External Tanks, touched upon materials from his book *Remove before Flight* and took us through the remainder of the Shuttle Program and how the legacy of the Space Shuttle kept the flame of inspiration burning.



We wrapped up 2014 with our annual Christmas party at the home of our Vice President, Robert Bijvoet.

Financial

The HAL5 bank account had a net decrease of \$593 in 2014 to \$6,275. Total income was \$1,256, while total expenses were \$1,849. Project HALO activity was only \$365 due to slow year. Educational outreach was higher at \$530 due to increased activity and \$300 approved for a HAL5 special award for the 2015 Future City design competition. Other programming, events, and social activities resulted in \$546 in expenses. Administrative, recruitment, and fundraising totaled \$409.



2014 HAL5 Officers (July 2014 to June 2015)

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| 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 any and all feedback on how to better serve you and our community. See you at our next gathering!

Ad Astra Per Ardua!