

Southeastern Space Supporter

Newsletter of HAL5 – the Huntsville Alabama L5 Society chapter of the National Space Society

Volume 8, Number 2 — March–April 1999

FIRST WORD

NSS HQ Needs Your Help!

(by Ron Lajoie, Chapters' Assembly Chair)

The recent NSS survey contained on the jacket of the January-February *Ad Astra* produced a tremendous response from NSS members. ("Thank You!" to all who submitted replies.) The results of this valuable survey will shape *Ad Astra* magazine and other aspects of the National Space Society — including chapters — for years to come.

Due to a shortage of paid labor at NSS Headquarters, however, a "representative sample" of less than 10 percent of the over 3000 survey responses has been processed. I feel this matter is too important to let just a small sample of the results (especially if they are unintentionally skewed) point NSS in a direction different from the wishes of the majority. I need your help — and I need it fast!

NSS Headquarters has shipped me the unprocessed surveys and I have until Thursday, April 8 to get the tabulated survey results back to NSS Headquarters

HAL5 Program Night

Wednesday, March 31, 1999
7 to 8:30 p.m. (with social afterwards)
Huntsville Public Library Auditorium

"MagLifter — Boosting Launch Vehicles using Magenets!"

Guest speaker will be Mr. Joe Howell, of NASA Marshall Space Flight Center.

All HAL5 and NSS members are encouraged to attend, and to bring interested friends and co-workers. Open to the public. Free admission.

— so that they can include a report in the NSS Board of Directors package. Thus, anyone who volunteers for the following assignment **MUST** complete it within **ONE** week (or less).

How You Can Help

Each survey takes about 5 minutes to process (converting responses to numbers in a Microsoft Excel spreadsheet). If you can help, please send an email message ASAP to me at hal5@advicom.net (no later than Wednesday, March 31). Include the following information in your message:

1. Your name
2. Your mailing address
3. Your daytime phone number
4. Your email address
5. Your chapter name (if applicable)
6. The number of forms desired

Forms will be sent out in lots of 10, with a minimum quantity of 50 — which is equivalent to about four hours work. The Excel spreadsheet file will be sent to

you by email (or on a PC diskette with the forms if you lack email).

When you have finished processing the forms, email the Excel spreadsheet back to hal5@advicom.net (no later than Wednesday, April 7) so that I can integrate the results into a master Excel spreadsheet to email back to NSS Headquarters. Please mail the survey forms (and the PC diskette) back to me in an pre-paid return envelope to be provided, by Friday, April 9. I will box them up and ship them back to NSS HQ.

Each volunteer who completes the task in the allotted time will receive a special letter of thanks. All individual volunteers and NSS chapters who process 200 or more survey forms will also receive special recognition at the 1999 ISDC in Houston, Texas.

Please help me to prove that NSS volunteers can work fast. If you can spare four or more hours in the span of one week, you can provide a tremendous service to the National Space Society and for the grassroots space movement. Ad Astra! ☆

Can't Attend the HAL5 Program Night? Move the Night!

HAL5 has an opportunity to change its fourth Wednesday program night slot at the Huntsville Public Library to another night. There are three open slots (plus our current one). An email was sent to every member, but so far not enough replies have been received to determine the "will" of the membership. Thus, please email your vote to hal5@advicom.net or leave a message at 256-721-1083. Here are the current vote results:

First Monday — Jeff Cameron, James Hopkins

First Thursday — T.Craig, W.Dorland, P.Ewing, P.Grodzka, C.Sawyer

Second Thursday — T.Craig (>July), W.Dorland, P.Ewing, C.Sawyer

Fourth Wednesday — (none yet for Wednesday only)

Any Day but Wednesday — Gene Young, Gladys Young

No Preference (any day incl. Wed.) — Ron Lajoie, Art Mansfield

Huntsville Alabama L5 Society

President — Greg Allison
 Day: 544-4440, Eve: 859-5538
 Vice-President — Gladys Young
 Day: 852-0561, Eve: 852-0561
 Treasurer — Ronnie Lajoie
 Day: 971-3055, Eve: 721-1083
 Secretary — Clay Sawyer
 Day: 971-6408, Eve: 539-3889
 Membership — Philomena Grodzka
 Day: 536-8638, Eve: 536-8638
 Communications — James Hopkins
 Day: 971-9362, Eve: 726-0056

Southeastern Space Supporter

Volume 8, Number 2
 March / April 1999

The *Southeastern Space Supporter* is a bimonthly publication of the Huntsville Alabama L5 Society (HAL5), a not-for-profit 501(c)(3) organization devoted to the goal of seeing everyday people living in thriving communities beyond the Earth.

Any opinions expressed in this newsletter are those of the authors or of the Editor, and, unless expressly so stated, are not necessarily those of HAL5 or the NSS.

Visit the HAL5 Web Page on Internet via:

<http://advicom.net/~hal5/>

HAL5 encourages its members to speak out on space-related issues, and welcome submissions of both fact and opinion articles of interest to HAL5 members.

Submit letters or articles to: Ronnie Lajoie
 162 Kirby Lane, Madison, AL 35757
 Day phone/message: 256-971-3055
 Night/Weekend phone: 256-721-1083
 FAX number: 256-971-3333
 Electronic mail address: hal5@advicom.net

Deadline for submittal is the last day of the following months: February, April, June, August, October, and December.

Preferred format for plain text is ASCII (text with graphics is *MS Word* or *WordPerfect*) either sent by E-mail or on a PC diskette. Also acceptable are letters and articles sent by mail or faxed; however, the more retyping required, the less likely the acceptance. HAL5 is not responsible for receipt of mailed submissions; none will be returned unless sent with a SASE. Hand-delivered diskettes will be hand-returned. No compensation is paid for submissions.

Project HALO Exhibits at “October Sky” Premiere

(by Ronnie Lajoie, Event Coordinator)

The weekend of February 20 and 21 presented an interesting opportunity for HAL5 and its Project HALO. That was the weekend that the film “October Sky” opened nationwide (following several successful sneak previews). The film “October Sky” is based on the highly acclaimed novel *Rocket Boys* by Huntsville resident Homer Hickam.

Mr. Hickam, now retired, worked as an engineer and later a manager at the NASA Marshall Space Flight Center. During his early career, he adapted his boyhood experience with amateur rocketry into professional rocket science to help Wernher von Braun design and build the giant Apollo Saturn V rocket that send the first humans to the moon.

HAL5 had invited Mr. Hickam to speak to the public at our February 24 Program Night, but he sent a reply that he already had two prior engagements locally that prevented him from speaking in public until October! He did, however, express interest in Project HALO, and we mailed him a package of information — plus an open invitation to join us when his life returns to normal.

HALO Exhibit at the Hollywood 16 Movie Theatre Complex



Gene and Gladys Young and Greg Allison talk to visitors about Project HALO.

Lacking a “famous” speaker, I arranged the next best thing — a Project HALO team presentation on the history of the Project HALO, from our first balloon event at the U.S. Space & Rocket Center on July 31, 1994 to our first attempt to launch the SL-2 rockoon on June 20, 1998. Now we needed to advertise it.

I called the manager of the Hollywood 16 movie complex, and she was more than willing to let us set up our Project HALO exhibit in the lobby for the entire weekend (Friday through Sunday). Now I need enough volunteers. Teams of two were needed because we wanted to have real SL-2 hardware on display and could not afford to have it damaged or stolen.

I chose a subset of our SL-2 Press Kit to form an SL-2 Info Kit and made copies. I also had printed 600 copies of the flyer for the Wednesday talk. All 600 flyers were passed out to movie goers. We also passed out over 200 Info Kits and other HAL5 and HALO information to the visitors who were interested enough to stop and talk with us.

Friday Night Gala Event

Friday night was especially good, since (unbeknown to us when we had arranged to exhibit at the Hollywood 16), the Huntsville Art League had “rented” the 7-10 PM showing of “October Sky” and

(see Exhibit on page 7)

STEDTRAIN Committee Helping K-12 Science and Technology Education

(by Philomena Grodzka, Chair)

The STEDTRAIN Committee of the HATS Education Directorate is a committee of the HATS Education Directorate to advocate, coordinate and promote high quality K-12 science and technology education and training programs. STEDTRAIN focuses on programs which are best performed by cooperative action between North Alabama parents, businesses, government agencies and K-12 schools.

STEDTRAIN originally was the brainchild of the North Alabama Chapter of the World Future Society. Under WFS auspices, two STEDTRAIN Conferences were held; the first in 1995 and the second in 1996. Thereafter the activities and the conferences expanded beyond the resources of the WFS chapter. HATS was thus approached to adopt STEDTRAIN as its own. The WFS chapter, however, retains an active role in the Committee.

The activities of STEDTRAIN include:

- Information conferences on "best classroom practices"
- Yearly Seed Grants to K-12 schools
- Home Page on the Internet
- Computer Resource Center Designs and fund-raising
- Promotion of Hands-On-Science-Project (HASP) and Science Fairs
- Other Activities Which fulfill the mission of STEDTRAIN

For further information on support, aid and volunteer work for the STEDTRAIN Committee, contact Philomena Grodzka at 256-536-8638 or e-mail: faratech@advicom.net

Further information can be found on the STEDTRAIN Net Page at:

<http://www.hats.org/stedtr.shtml> ☆

"Huntsville Geek" Returns Home to Teach HALO Lesson

(by Clay Sawyer, HAL5 member)

Columbus, Georgia has always been my hometown. This is true despite the fact that I moved around quite a bit in my time (I was born and was proudly raised as an "Army Brat," disappointed everyone and became a "Navy Squid," redeemed myself and became an "Auburn Tiger", and finally confused everyone by becoming a "Huntsville Geek").

As it turns out, my nephew, Matthew Westcott, attends Calvary Christian School way down there in Columbus, Georgia. His science teacher, Miranda Osborne, wanted me to come down and speak to her combined classes about HAL5 and the High Altitude Lift Off (HALO) project. Realizing that the kids were 12 and 13 year olds, I instantly wondered how I, an avowed geek who only knows how to talk to another geek, could ever keep their attention. Well, I was told not to worry and just go do it.

So I called her up and we decided that I would come down and teach on January 25. I worked for a month to come up with a 45 minute lesson that a kid would like. Fortunately, everyone in HAL5 pitched in and loaned me pictures, video, hardware, and ideas. Slowly but surely, everything began to come together.

A Warm Welcome

When I showed up, the kids put me to ease by being real helpful and carrying stuff into the auditorium from my car. My sister, Lydia Westcott, and Matthew helped put a package of "stuff" together (including some small posters to hand out to the kids that the NASA travel office had generously given) for each of the kids. I got everything set up and waited patiently for the class to start.

When Miranda turned the class over to me, I decided to just dive in. I talked about HAL5 and HALO as well as other public educational things we do. I showed the Sky Launch 2 (SL-2) payload that Gene Young and I spent so many

hard hours building and a small solid engine core from a hybrid rocket that Tim Pickens let me borrow. I also showed the HALO slide presentation that Bill Brown donated to HAL5.

Kids Like the Video the Best

The kids definitely enjoyed all of that, but when I started showing a video with scenes from a HAL5 balloon flight leaving from the grounds of the old airport, they started to get excited. When the scene shifted to the same balloon flight from 100,000 feet, they were so interested, I began to wonder if they were really the 12 and 13 year olds that they were.

Suddenly, the video scene shifted to an early HAL5 series of test fires of progressively larger engines. They could barely contain their excitement and when they saw the full up engine test fire, I thought that they were all going to instantly become rocket scientists on the spot. The pace of the video was slowed a bit showing the HAL5 team proudly holding up the Ground Launch 1 (GL-1) rocket in the Von Braun pose just prior to the launch. The excitement returned when they saw GL-1 liftoff rapidly into the sky.

When I put this video together earlier, I could not resist showing some footage of dolphins that were swimming and jumping along when we went out to sea to launch the SL-2 rocket in the Gulf of Mexico. I also could not resist showing a pelican that was at first resting peacefully on the bow until it decided to fly off literally into the sunset.

Future Rocket Scientists of America

The kids had a lot of questions to ask until finally we had to end the class. They all showed their sincere appreciation as they left. Guess what? I have since heard that several of the kids have taken up model rocketry!

I want to say a big, huge thanks to all who contributed to make the class a success! ☆

Huntsville Alabama L5 Society (HAL5)

your local chapter of the

National Space Society

presents



MagLifter: Boosting Launch Vehicles with Magnets

a free public presentation by

Mr. Joe T. Howell

**Deputy Director, Adv. Systems & Technology Office,
NASA Marshall Space Flight Center**

Wednesday, March 31, 1999

7:00 pm to 8:30 pm at the

Huntsville/Madison County Public Library

The public is invited. Admission is **FREE**. A social at Shoney's will follow the meeting.

For more information: call Ronnie Lajoie at 971-3055 (day) or 721-1083 (evenings).

For information on HAL5, please visit our Web Site at: <http://advicom.net/~hal5/>

HAL5 CALENDAR OF MEETINGS AND EVENTS

March 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
21	22 Martin Luther King, Jr. Day	23	24 ●① HAL5 Program Night Delayed	25 HAL5 & Project HALO Meeting Noon at Ponds	26	27
28 Palm Sunday	29	30	31 □ HAL5 Program "MagLifter" 7 pm at Library	March HAL5 Program Night "MagLifter: Boosting Launch Vehicles w. Magnets" by Joe Howell of NASA Marshall Space Flight Center 7-9 PM, Wed., March 31, at Huntsville Public Library		

April 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 HAL5 & Project HALO Meeting Noon at Ponds	2 Good Friday	3
4 Easter Daylight Saving Time Begins	5 AIAA Space Propul. Conf. Tom Bevill Ctr	6 AIAA Space Propul. Conf. Tom Bevill Ctr	7 AIAA Space Propul. Conf. Tom Bevill Ctr	8 ①☞ HAL5 & Project HALO Meeting Noon at Ponds	9	10
11	12 Yuri Gagarin, first person in orbit, 1961	13	14	15 ⊞ ASA Program "TBD" 7 pm at Library	16	17
18	19	20	21 Secretaries Day	22 ●① ASME Program "Venture-Star" 6 pm, RSA Club	23 Lyrid meteors	24
25	26	27	28 HAL5 Program "TBD" 7 pm at Library	29 HAL5 & Project HALO Meeting Noon at Ponds	30 Arbor Day □	May 1

May 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2	6	4 Eta Aquarid meteors (thru May 6)	5 Alan Shepard, first American in space, 1961	6 HAL5 & Project HALO Meeting Noon at Ponds	7	8 ①☞
9 Mother's Day	10	11	12	13 HAL5 & Project HALO Meeting Noon at Ponds	14	15 ⊞ Armed Forces Day
16	17	18 TABES 1999 & POY Awards 9a - 5p at VBC	19 TABES 1999 and exhibit 9a - 5p at VBC	20 HAL5 & Project HALO Meeting Noon at Ponds	21 ●①	22
23	24	25	26 HAL5 Program "TBD" 7 pm at Library	27 HAL5 & Project HALO Meeting Noon at Ponds	28 1999 ISDC 9 am - 5 pm Houston, TX	29 □ 1999 ISDC 9 am - 5 pm Houston, TX

Attending the Roton Rollout

(by Wade Dorland, HAL5 member)

On March 1, 1999, the Rotary Rocket Company rolled out the first flight prototype of its ROTON reusable launcher. Rotary Rocket conducted the unveiling of its manned reusable concept with much fanfare at their assembly plant on the Mojave Airport, Mojave, California. Under a bright desert sun and mild temperatures, a crowd of between one and two thousand people heard the speeches, endured the wind, and saw the 64-foot high full-scale vehicle at its initial display to the public and press.

Tom Clancy was a big draw for the crowd. He told the media representatives and audience that the event was a significant milestone on the path to commercial space development and heralded the start of the passage from one era — high-priced government financed space exploitation — to a new era of low-cost commercial space access. Yes, he's an investor in Rotary Rocket and a one of the board of directors.

All the speakers (5) one way or another echoed this theme. The FAA Associate Administrator for Commercial Space, Patricia Smith, spoke on how the agency was helping smooth the way for Rotary Rocket to get the first license for private launch and reentry. She highlighted the recent congressional action that provided the statutory authority for this license.

But the real star of the show (complete with musical fanfare and smoke, but no fireworks) was the ROTON ATP (that stands for Atmospheric Test Vehicle). This vehicle incorporates multiple innovations in launch vehicle engineering and is the only one of several under development to have

reached the test prototype stage of development. The ROTON name appropriately signifies two of these innovations: the unique single-stage rocket configuration for ascent propulsion and the helicopter-like rotating blades for descent velocity

control.

NSS was there; a booth in the exhibit space and the presence of one HAL5 member, Wade Dorland, represented us. He came as a direct result of the HAL5 December 1998 program on ROTON that was presented by former Huntsvillian, Dan DeLong. Dan is now the lead Rotary Rocket engineer for propulsion. Wade reports that the experience was exhilarating and thought provoking. The sight of the ATP coming through the hangar doors was exciting and instantly brought the crowd to its feet. The press photographers — there were a lot of them — went wild. It was magnificent with its fresh paint gleaming in the bright sunlight. You can see the vehicle for your self in Wade's photograph near by.

This vehicle will be used for descent trajectory testing from 10,000 feet altitude to touch down. Accordingly, the carbon epoxy structure will only be loaded to a weight that is consistent with the vehicle mass for this portion of the mission. The blade tip rockets will work overtime though because some extra hydrogen peroxide propellant will be used to lift the ATP to the test altitude to begin the descent operations. The air controls, steering rocket controls, touchdown mechanisms, and pilots will all get tested. The functional version ascent rocket system will not be installed in the ATP, only dynamic mass simulators.

In his pre rollout remarks, Gary Hudson, President of Rotary Rocket, mentioned that the next milestone in his development program is a flight test to low earth orbit, possibly in 18 months. If he does it this quickly, it will be a major engineering and management achievement. We will be watching with high interest for his progress in achieving ROTON orbital flight. ☆



(Exhibit, continued from page 2)

turned it into a major gala event. Reporters from WAAY 31 and WAFF 48 were on hand and reported the event live, especially when guest of honor Homer Hickam made his entrance.

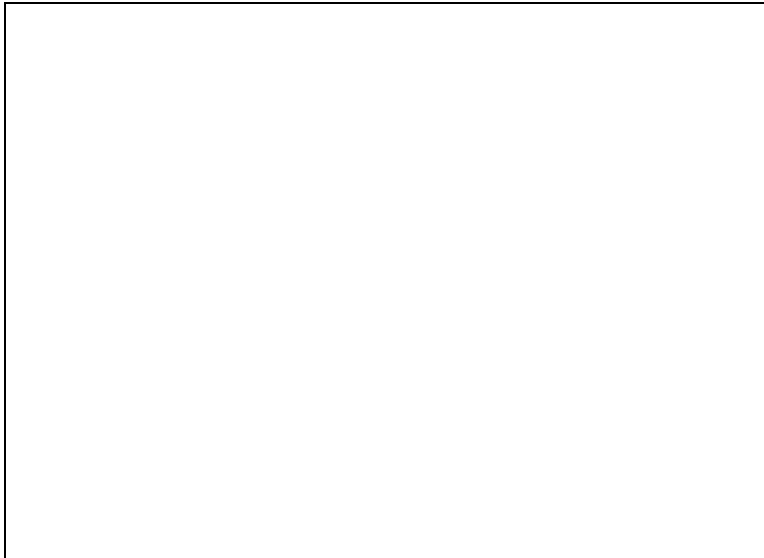
HAL5 and "HAL" Night

HAL5 members Gene and Gladys Young (who had done the initial 12:30-4:30p shift and later returned to help with the end of the 4:30-8:30p shift), Greg Allison, Peter Ewing, and myself were busy handing out flyers and Info Kits while the well-dressed HAL guests gathered in the lobby and waited in line to enter the movie theater. Many approached us thinking were we part of the event, and we helpfully pointed them in the right direction. Gladys even handed a flyer to Homer Hickam, before she realized who it was. He accepted it with thanks! Good going Gladys!

While we did speak with a reporter and cameraman from WAAY 31 during their setup, we were not able to get any air time, probably because they wanted to focus on the gala event and hopefully not because they thought we were trying to steal the attention (never our intention since we were there independently). Our display was used as a backdrop, however, when a WAFF 48 reporter was doing a spot. We don't know if it was a practice or was actually aired though. We did meet the local correspondent for the Birmingham News, who promised to attend the Wednesday program.

Later that night, Bill Brown and his friend Violet took the first hour of the 8:30p-12:30a shift while I got dinner. I returned and stayed with their relief Philomena Grodzka until 10:30p, when we decided to pack up for the night.

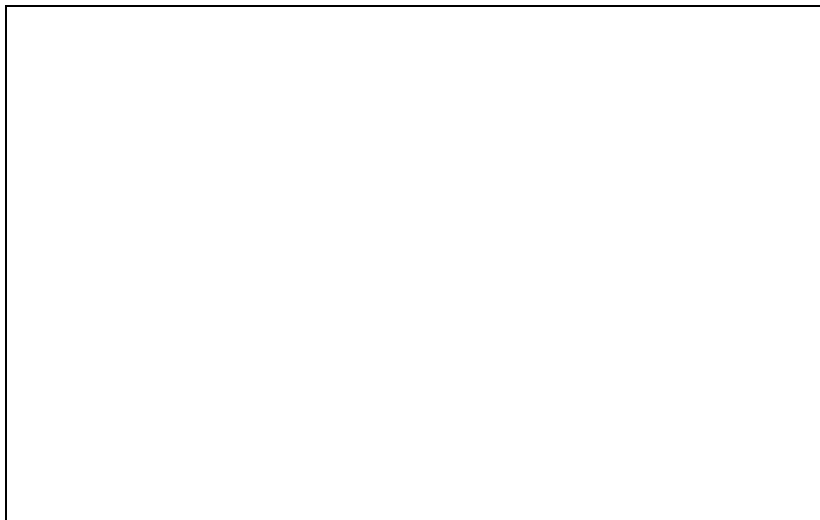
We did see several former HAL5 members that night, including Larry Larsen and Douglas Childs. We invited both to renew their memberships.



James Hopkins tells interested visitors about Project HALO.

Saturday and Sunday

On Saturday, I had help from Mark Wells for the 12:30-4:30p shift. Wade Dorland then took the 4:30-8:30p shift with eventual help from James Hopkins,



Event Coordinator Ron Lajoie poses with the Project HALO exhibit.

who stayed with me from 8:30-10:30p. The crowds were less than Friday, but still large enough that I had to get 100 more flyers copied for Sunday.

On Sunday, new member Jeff Cameron joined me for the 12:30-4:30p shift. Despite email appeals and several phone calls the previous nights, I had no one signed up for the 4:30-8:30p shift. I was about to take the exhibit down when Gene and Gladys Young showed up to take yet a third shift.

I would like to thank the folks who helped me with this event: Peter Ewing, Greg Allison, Bill Brown, friend Violet, Philomena Grodzka, Mark Wells, Wade Dorland, James Hopkins, Jeff Cameron, and especially Gene and Gladys Young — without whom I would never had survived the weekend. Thank you all for your volunteer time!

HALO Program Night

With all the event planning and work shifts, in between a work crunch, I never had time to advertise the Wednesday program outside of the 600 flyers and a quick Email to every HAL5 member. I was not concerned, however, since I fully expected 10 percent of the 600 flyer takers to show.

Thus, on Wednesday, HAL5 went all out in its biggest program night since the 1993 ISDC. We set up the HALO exhibit with lots of rocket parts. And guess how many non-HAL5 members showed? SIX! We did sign up one new member, Corey Smith, but otherwise, the evening was a bust. Most disappointing. ☆

HAL5 Membership Report

The following is a list of the current paid membership of HAL5, which includes 26 renewals and 5 new members, for a total of 31 (which is slightly ahead of previous years at this time). Since all memberships expired at the end of last year, more renewals are expected to come in. Also shown are 2 renewed subscribers to our newsletter. Welcome to all our new and renewed members and subscribers!

- William Adams, Jr. (R)
- Gregory Allison (President,D)
- John & Lorraine Barnum (P,D)
- Jan Bijvoet (P,D)
- John Bossard (R,D)
- Bill Brown (R)
- Jeffery Cameron (N,D)
- Regan Carlile (P,D)
- Todd Cayton (R)
- Thomas Craig (R)
- Vincent Dauro (R,D)
- Wade Dorland (R)
- Ernest Gilmer, Jr. (R)
- Philomena Grodzka (Members)
- Melanie Hazelrig (R,D)
- James Hopkins (Comm.,D)
- Ron & Elizabeth Howard (N,D)
- Gregory Keith (R)
- Ronnie Lajoie (Treasurer,D)
- Ilmar Luik (R)
- Art & Doris Mansfield (N)
- Timothy McKechnie (R)
- Allen Meece (R,D)
- Jon Mekuto (N)
- Steven Newman (R)
- Charles Paludan (P)
- Charles Schlemm (R,D)
- Corry Lee Smith (N)
- Mark & Judy Wells (R)
- Alfred Wright (R)

Upcoming Events of Interest to HAL5 Members

- Wed., Mar. 31 — **HAL5 Program on “MagLifter — Boosting Launch Vehicles using Magnets”** by Joe Howell, at Huntsville Public Library, 915 Monroe Ave.; free; questions: 256-971-3055
- Sun., April 4 to Wed., April 7 **NASA/AIAA Advanced Space Propulsion Workshop**, at the UAH Tom Bevill Center, Sparkman Drive, Huntsville; free; questions: Dr. Chris Barret at 256-544-7118.
- Wed., Apr. 28 — **HAL5 Program on “TBD”** by TBD, at Huntsville Public Library, 915 Monroe Ave.; free; questions: 256-971-3055
- Tue., May 18 to Wed., May 19 **Technical And Business Exhibition/Symposium (TABES '99)**, at the Von Braun Center; free; questions: 256-837-4347
- Tue., May 18 — **HATS Professional of the Year Awards Dinner** at the Von Braun Center; about \$15; questions: 256-837-4347
- Thu., May 27 to Mon., May 31 **1999 International Space Development Conference (ISDC)**, in Houston, Texas; \$85 fee; questions: 256-971-3055
- Fri., July 16 to Sun., July 18 Possible **HAL5** hosting of a **Southeast Space Development Conference**, in Huntsville; \$TBD fee; questions: 859-5538

- Gene & Gladys Young (R,Vice-Pres)
- Huntsville Public Library (S)
- Sparkman High School (S)
- (N) - New Member
- (R) - Renewed Member
- (P) - Past Member
- (S) - Newsletter Subscriber
- (D) - Included a Donation

HAL5 welcomes back its previous members and also past members John & Lorraine Barnum, Jan Bijvoet, Regan Carlile, and Charles Paludan.

HAL5 also welcomes its new members, including Jeffery Cameron, Ron and Elizabeth Howard, Art and Doris Mansfield, Jon Mekuto, and Corry Lee

Smith. Jeff, Art, and Corry have all expressed interest in working on Project HALO. Thank you all very much!

HAL5 gratefully thanks the many members who included a donation with their membership. Ronnie Lajoie and Allen Meece joined as Supporter members and both included donations to Project HALO. Jan Bijvoet, James Hopkins and Ron Howard donated to HAL5. John Barnum, John Bossard, Regan Carlile, Jeffery Cameron, Vince Dauro, Melanie Hazelrig, James Hopkins, and Chuck Schlemm gave generously to Project HALO. Greg Allison and Ronnie Lajoie also donated newsletter subscriptions. Thank you all very much! Ad Astra! ☆

Special Announcement

**HAL5 March Program Night on
“MagLifter — Boosting Launch
Vehicles using Magnets”
Wednesday, March 31, 7–9 pm**

Huntsville Alabama L5 Society
1019-A Old Monrovia Rd, Suite 168
Huntsville, AL 35806
ADDRESS CORRECTION REQUESTED

Place
First Class
Stamp
Here