

Southeastern Space Supporter

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

Volume 9, Number 2 — March–April 2000

FIRST WORD

News that Effects HAL5

(by Ronnie Lajoie, SSS Editor)

In the past few months, there have been a lot of events that effect HAL5 in one way or another, or at least should be of interest to HAL5 members.

Thus, while we wait for news on some key future HAL5 and HALO activities, this issue will focus on the good deeds of those in other NSS chapters (Clear Lake and Middle Tennessee) and other space related organizations (AIAA, United Societies in Space, Space Frontier Foundation, and JP Aerospace). This issue will also bring you up to date on the upcoming International Space Development Conference (ISDC 2000), to be hosted Memorial Day weekend by the Tucson (Arizona) L5 Society chapter of the National Space Society.

This issue will also update you on the results of two activities discussed in the last issue: the FAA On-line Forum on Small Rockets and the ProSpace March Storm. ☆

HAL5 Program Night

Thursday, April 6, 2000

7 to 8:30 p.m. (with social afterwards)
Huntsville Public Library Auditorium

“Space Solar Power: Clean Energy from High Orbit”

Guest speaker will be Mr. Joe Howell, Team Leader of NASA Marshall Space Flight Center Advanced Projects Office.

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

PROJECT HALO NEWS

JP Aerospace’s Second Attempt to Send a Rocket into Space

(by Ronnie Lajoie, HALO member)

Well, I was all set to write an article congratulating our friendly competitor, John Powell, President of JP Aerospace. Unfortunately, I will have to settle for offering my condolences. JPA’s second attempt to reach space failed due to either a bad ignitor and/or poor uplink communications. At press time, the unfired rocket was still listed as “missing”, having landed by parachute up in the mountains near Black Rock Desert, Nevada. What follows are two articles from Space.com plus some information from the JPA Web site.

Amateur Group Hopes to Beat Launch Industry at Own Game

(by Andrew Bridges, 22 March 2000)

A group of spaceflight enthusiasts hope to break the government and industry stranglehold on the “final frontier” this weekend by becoming the first amateur organization to ever launch a rocket into space.

JP Aerospace, a 70-member group, hopes to launch a 17-pound (7.7-kilogram) rocket to an altitude of 60.6 miles (97 kilometers) on either Saturday or Sunday. Experts generally consider space to begin above 57.5 miles (92.5 kilometers).

“No totally independent group has ever ridden into space,” said John Powell, a Davis, California programmer who is president of the space group that bears his initials.

(see JP Aerospace on page 3)

NSS CHAPTER NEWS

NSS Author Wins Award

(email from author Marianne Dyson)

I just have to share this great news with my friends and fellow space enthusiasts: my book, *Space Station Science*, has won the Golden Kite Award for the best nonfiction children's book of 1999!

This award is given by the Society of Children’s Book Writers and Illustrators (www.scbwi.org) — the only children's book award given to authors and illustrators by their peers. They give four awards: one for fiction, one for nonfiction (the one I've won), one for picture book writing, and one for picture book illustrating.

I will be receiving a golden statuette at their annual conference which will be at Universal Studios in Los Angeles July 28-31 (the awards are presented at a luncheon on the 30th).

A space book has never won this award before. I’m already thinking how I can use my acceptance speech to further promote space as a motivator for children and adults alike. That is, if I don’t turn into a gibbering idiot in front of all those people! It would help to see some familiar faces in the crowd, so if any of you can make it, please come! ☆

Peter Kokh’s Lunar Interview

(email message from Peter Kokh)

I was interviewed by Space.com a couple of weeks ago about lunar lavatubes and here is the Web site:

http://www.space.com/science/solarsystem/moon_caves_000321.html

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 — Wade Dorland
Day: 551-0008, Eve: 534-2566

Membership — Philomena Grodzka
Day: 536-8638, Eve: 536-8638

Communications — Ellen Cozelos
Day: 726-6387, Eve: 883-4873

Southeastern Space Supporter

Volume 9, Number 2
March / April 2000

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://hiwaay.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: 256-461-5934
Night/Weekend phone: 256-721-1083
FAX number: 256-461-3045
Electronic mail address: hal5@hiwaay.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.

**Greg Allison and Ron Lajoie
Join USIS Board of Directors**

On February 27, at the United Societies in Space (USIS) Board of Directors meeting in Albuquerque, New Mexico, HAL5 officers Greg Allison and Ronnie Lajoie were elected to the USIS Board. They were nominated at the previous Board meeting in August of 1999, along with Carol Rosin, John Powell (of JP Aerospace), and David Schrunk.

Carol Rosin was also elected to the Board, while John Powell (being absent) is tentative, pending his acceptance. David Schrunk declined because he is already on the Board of Directors for the USIS spin-off Lunar Economic Development Authority (LEDA).

Both Greg and Ronnie had already been actively participating as members of the USIS Council of Regents for two years, reviewing and revising the draft Constitution for the Regency of United Societies in Space (ROUSIS), and helping to prepare for the ROUSIS Constitutional Convention, to be held in early August in Denver, Colorado.

The Purpose of ROUSIS

ROUSIS is a proposed "metanation" governance entity that would govern the "territory" of outer space (within the solar system) on behalf of all nations of the Earth for the next 100 years.

The United Nations 1967 Outer Space Treaty prevents any Earth nation from owning and controlling natural resources in outer space; however, the United Nations charter allows for trusteeship of a territory until its residents form their own government. ROUSIS would serve as the trustee for outer space until the year 2100, or sooner if space settlers on the Moon, Mars, and beyond are ready to form their own government(s).

During the 100 year trusteeship period, ROUSIS would promote and support the balanced economic development of space resources for the benefit of all peoples of the Earth, would protect and preserve unique natural wonders and any

discovered alien lifeforms, would foster the peaceful settlement of outer space, would protect the Earth and space settlements from hazards from outer space (e.g., asteroids), and would lay the foundation for self-governance by future space settlers by the year 2100.

The ROUSIS Constitution

Any new government entity requires a constitution, and ROUSIS would be no different. A draft of the ROUSIS constitution was created several years ago and has since been through many reviews and updates. The latest version was presented at the USIS Countdown Conference #2, held one day prior to the USIS Board of Directors meeting.

The draft Constitution is now nearing completion, and Ron Lajoie has taken the reigns from USIS President Declan O'Donnell. Ronnie will clean up any inconsistencies in the text and prepare a new draft for mass review by the entire world. The next draft will be published on the USIS Web site after April 3:

<http://www.usis.org/>

The primary version will be maintained in English, but for review purposes will also be made available in French, German, Spanish, and Italian (as crude translations courtesy Ronnie's *Power Translator* software). Comments will be due by May 7. A new draft will then be prepared and then be made publicly available on June 5, with comments due by July 10. The final draft will then be prepared and released on July 31.

The Constitutional Convention

The ROUSIS Constitutional Convention will be held on August 4 at the Denver University College of Law. 500 to 600 convention delegates are expected to attend and vote for or against the proposed ROUSIS Constitution. If approved, the delegates will then elect the leaders of the 3 branches of government: Executive, Legislative, Judicial.

Each HAL5 member is encouraged to review the draft ROUSIS Constitution and to consider serving as a delegate. ☆

(JP Aerospace, continued from page 1)

The JP Aerospace effort will use a three-tiered stack made up of a dozen weather balloons to hoist the launch platform to an altitude of 19 miles (30 kilometers) above the Black Rock Desert in Northern Nevada.

[Editor's Note: the graphic at right was taken from JPA's Web site. This was the setup for their first attempt. No graphic was available for their second.]

Lifting off at dawn on Saturday — Sunday if the weather does not cooperate — the balloons will take 90 minutes to reach altitude.

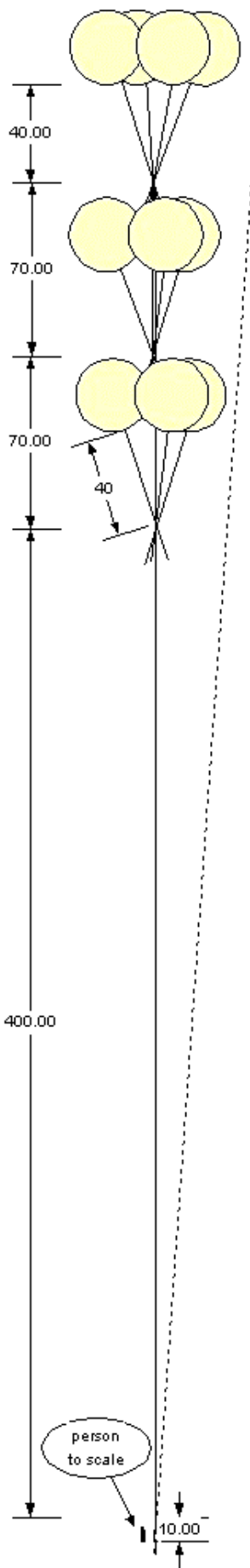
At that point, the 7.3-foot (2.2-meter) rocket will be ignited and zoom upward, reaching a velocity of Mach 3.5 after a speedy five-second burn. A video camera is mounted on a boom. "The rest is just coast," Powell said of the rocket effort that has been seven years in the making. "It just moves."

At peak altitude, the rocket will deploy a parachute and float back to Earth. GPS receivers will track the rocket and verify the altitude it reaches.

During a previous attempt in May 1999, JP Aerospace succeeded in launching a rocket to nearly 14 miles (22 kilometers) from a 5-mile (8-kilometer) high balloon-raised platform.

And yet another attempt, already slated for July, could win JP Aerospace a hefty prize as well as further prestige. The Space Frontier Foundation, a Nyack, New York-based organization that advocates the settlement of space, is offering a \$250,000 prize to the first amateur group that can launch a 4.4-pound (2-kilogram) payload to 124 miles (200 kilometers).

James George, the group's executive director, said JP Aerospace might well capture the money before the CATS — that's "Cheap Access To Space" — contest ends on November 8. "We're hoping they will be the ones to break the barrier and win the prize," George said.



Glitches Mar Amateur Space Shot

(by Andrew Bridges, 28 March 2000)

A series of glitches prevented a band of spaceflight enthusiasts from becoming the first amateurs to successfully launch a rocket into space, but the project leader vows to return to flight this summer.

JP Aerospace, a 70-member amateur rocketry group, had hoped to launch a 17-pound (32-kilogram) rocket to an altitude of 60.6 miles (97 kilometers) over the weekend. Had it succeeded, it would have been the first amateur effort to ever launch a rocket into space.

"It didn't go," said John Powell, the group's president and founder, in a telephone interview late Monday as he returned home to California from Nevada's Black Rock Desert.

The JP Aerospace team planned to have a three-tiered stack of weather balloons ferry its launch platform to an altitude of 19 miles (30 kilometers), at which point the rocket would ignite and zoom upward at a peak velocity of Mach 3.5.

However, the launch was scrubbed because of a series of problems encountered early Saturday when the platform had reached an altitude of just 11.7 miles (18.8 kilometers).

Powell said the team could not maintain a satellite lock on the rocket and was plagued with an "iffy" command system. The team called off the attempt and then commanded several pyrotechnical devices to fire, separating the rocket from its balloon-supported platform.

The rocket then parachuted back to Earth, but still had not been recovered as of late Monday, and is apparently lost in some mountains. "It's on this peak," Powell explained.

Powell said a gust of wind that had swept the rocket package upward seconds after launch from the ground likely damaged the system's electronics. "It must have been about a 2-G shock to the platform," Powell estimated.

During a previous attempt on May 1999, JP Aerospace succeeded in launching a rocket to nearly 14 miles (22 kilometers) from a 5-mile (8-kilometer) high balloon-raised platform.

Powell said JP Aerospace will attempt another flight in July. It is among a clutch of groups completing for the CATS — that’s “Cheap Access To Space” — prize sponsored by the Space Frontier Foundation and the Foundation for the International Non-governmental Development of Space.

The two foundations are offering a \$250,000 prize to the first amateur group that can launch a 4.4-pound (2-kilogram) payload to 124 miles (200 kilometers). James George, the Space Frontier Foundation’s executive director, said he expects one of the groups to capture the prize before the contest ends on November 8. ☆

Details from JPA Web site

[Editor’s Note: this information applies to the first attempt, but is probably similar to the systems used for the second.]

Overview: At dawn a train of 12 helium balloons will lift a rocket launch platform from the desert in Northern Nevada. During the climb the platform is in constant communications with the mission control. It is also visually inspected with a live video downlink. At 100,000 feet the final system checks are performed and the rocket is launched.

The rocket climbs at over mach 3 into space (57.5 miles). The rocket tracks GPS satellites and continuously transmits its location. At peak altitude, 60.6 miles, the rocket deploys a parachute, and descends to Earth.

The balloons are released and the platform descends to Earth by parachute. JPA airborne and ground recovery teams locate both the platform and rocket.

Sequence of events

Final system checklists begin: 3:00am
 Balloon Fill begin: 3:00am
 Balloon/Platform Launch: 7:00am
 Platform arrives at 100 kft: 8:40am
 Rocket is launched: 8:45am
 Rocket reaches space: 8:48am
 Rocket lands back on Earth: 9:33am

Vehicle Specifications

Rocket:

Length: 88 inches
 Diameter: 3 inches
 Weight: 17 lbs
 Nose cone: Carbon Fiber
 Airframe: Phenolic (Paper/epoxy)
 Fins (4): Plywood & Kevlar
 Max. Velocity: Mach 3.5

Length: 96 inches
 Width: 10 inches
 Material: Foam board
 Weight: 20 pounds

Systems:

- Live Video Downlink
- GPS Tracking
- Seven flight computers
- Full two way telemetry/control
- Radio Beacon
- Parachute
- Autonomous backup system
- Three flight termination systems

Balloons:

12 research weather balloons, ten pounds of lift each. Length from bottom of the launch platform to the top of the balloon stack: 610 feet

“Third Time’s a Charm”

Thus far, JPA’s two attempts at reaching space have roughly paralleled Project HALO. During both group’s first attempt, the rocket was successfully launched from the balloon, but at a lower altitude than planned. During both group’s second attempt, both suffered from balloon launch mishaps that led to mission aborts.

If Tim Pickens is right and “Third time’s a charm” then JPA may yet succeed in July. Unfortunately for HAL5’s Project HALO, the HALO SL-2 rocket will not be ready by July, since the key team members are busy making a larger rocket for the spin-off company HARC to compete for the CATS-Prize by the November deadline. Greg Allison is seeking other people (such as SEDS



JPA team members test a new launch technique during a test flight to 15,000 feet on January 30.

Rocket Motor:

Length: 26 inches
 Weight: 9.75 pounds
 Burn Time: 5 seconds

Launch Platform:

students) to work on the HALO system while the previous team members work on the CATS rocket. Once the HARC CATS rocket is launched, the original team will return to refly the HALO SL-2 rocket. ☆

MARS NEWS

Mars Program Assessment Outlines Route to Success

(NASA Press Release, 28 March 2000)

An in-depth review of NASA's Mars exploration program, released today, found significant flaws in formulation and execution led to the failures of recent missions, and provides recommendations for future exploration of Mars.

<http://www.nasa.gov/newsinfo/marsreports.html>

NASA Administrator Daniel S. Goldin appointed Thomas Young, a seasoned space-industry executive, to independently assess current and future Mars programs. The Mars Program Independent Assessment Team (MPIAT) started work on January 7, 2000, and delivered its final report to the Agency in mid-March.

"I congratulate Tom Young and his team for a superb report," Goldin said today. "They have rigorously scrutinized both successful and unsuccessful missions, shining a searchlight into every corner of the incredibly complex endeavor of deep space exploration. He and his team have delivered an extraordinary report and I thank them on behalf of NASA and the American people."

"Speaking for the team, I would like to express my appreciation for the spirit of cooperation that we enjoyed at NASA Headquarters, the Jet Propulsion Laboratory and at Lockheed Martin," Young said. "The managers, scientists and engineers we spoke with were candid and frank in their presentations and in their answers to our questions. Everyone worked toward the same goal: finding ways to make the Mars program successful."

"One of the things we kept in mind during the course of our review is that in the conduct of space missions, you get only one strike, not three. Even if thousands of functions are carried out flawlessly, just one mistake can be cata-

strophic to a mission," Young said. "Our review confirmed that mistakes can be prevented by applying experienced oversight, sufficient testing, and independent analysis."

The team's charter was to review and analyze successes and failures of recent missions to determine why some succeeded and some failed; examine the relationship between and among NASA Headquarters, the Jet Propulsion Laboratory (JPL), the California Institute of Technology and industry partners; assess the involvement of scientists; identify lessons learned from successes and failures; review the Mars Surveyor Program to assure lessons learned are utilized; oversee Mars Polar Lander and Deep Space 2 failure reviews; and evaluate the risk management process.

The report concluded the most probable cause of the failure was the generation of spurious signals when the lander legs were deployed during descent. The spurious signals gave a false indication that the spacecraft had landed, resulting in a premature shutdown of the engines and the destruction of the lander when it crashed on Mars.

Without any entry, descent and landing telemetry data, there is no way to know whether the lander reached the terminal descent propulsion phase. If it did reach this phase, it is almost certain that premature engine shutdown occurred, the report concluded.

NASA's Office of Space Science will develop an integrated strategic response to the findings and recommendations of the report. NASA Chief Engineer W. Brian Keegan also will coordinate an integrated Agency response to the recent reviews of NASA program management practices.

In addition, today, Dr. Edward Weiler, the Associate Administrator for Space Science, announced the cancellation of the planned Mars 2001 lander awaiting his approval of a new overall Mars "architecture" plan.

Weiler also will make management changes in the Mars Exploration Program at NASA Headquarters and work with the California Institute of Technology to institute effective change at JPL, clearly articulating lines of authority, clarifying roles and improving communication between all organizations involved.

In that regard, Weiler today appointed Scott Hubbard as the Mars Program Director at NASA Headquarters. Hubbard is now Associate Director for Astrobiology and Space Programs, NASA Ames Research Center, Moffett Field, CA.

The MPIAT report findings included:

- Mars exploration is an important national goal that should continue.
- Deep space exploration is inherently challenging, but the risks are manageable and acceptable.
- NASA, the Jet Propulsion Laboratory (JPL), and U.S. industry have the unique capabilities required to conduct successful planetary and deep space missions.
- NASA's "faster, better, cheaper" approach, properly applied, should be continued as an effective means of guiding program implementation.
- There were significant flaws in the formulation and execution of the Mars program, but all of the problems uncovered are correctable in a timely manner to allow a comprehensive Mars exploration program to continue successfully.

The MPIAT report found common characteristics among both successful and unsuccessful missions:

- Experienced project management or mentoring is essential.
- Project management must be responsible and accountable for all aspects of mission success.
- Unique constraints of deep space missions demand adequate margins.
- Appropriate application of institutional expertise is critical for mission success.

- A thorough test and verification program is essential for mission success.
- Effective risk identification and management are critical to assure successful missions.
- Institutional management must be accountable for policies and procedures that assure a high level of success.
- Institutional management must assure project implementation consistent with required policies and procedures.
- Telemetry coverage of critical events is necessary for analysis and ability to incorporate information in follow-on projects.
- If not ready, do not launch.

On Report of Mars Program Independent Assessment Team

(NSS Press Release, 29 March 2000)

The National Space Society welcomes the rigorous report released yesterday by the Mars Program Independent Assessment Team and believes that it will serve to refocus the U.S. Mars exploration program. "While it is a report critical of NASA and contractor management of the Mars Climate Orbiter and Polar Lander missions, it also points towards a wide range of changes that need to be made," said NSS Executive Director Pat Dasch.

Dasch said that a complete review of the 'faster, better, cheaper' mission management philosophy was needed and a stronger oversight and execution of planetary exploration clearly is called for by the report. "A much needed emphasis on coordination of scientific goals into a focused program strategy will result from this review," said Dasch. "That is a crucial step if robotic missions are to fulfill the dual roles of delivering valuable scientific data on the history of life on Mars and acting as useful precursors to the eventual human exploration of Mars," Dasch added.

The National Space Society has called on both the Clinton administration and

the U.S. Congress to fund NASA research and development and space science programs with greater resources. Following the loss of the Mars Polar Lander last December, the NSS called for a renewed national commitment to planetary exploration, with greater resources allocated in the space agency's annual budget.

"We hope that this report's emphasis on fully funding these crucial missions will be heard on Capitol Hill," Dasch said. "This report helps to define the performance limits of the 'faster, better, cheaper' approach and demonstrates that we should not attempt to do space exploration on the cheap," she added.

NASA has indicated that Mars exploration will receive increased funding for the next 10 years, a proposal which the NSS will support. "After all, this is a decade-long program," Dasch explained. The NSS also hailed the renewed NASA commitment to search for past or current life on Mars. "That should clearly be our focus as we plan future sample return and other robotic missions."

"Clearly defined goals, better management and engineering oversight, and a strong, sustained commitment will all make for a better and more robust space program for the 21st century," Dasch said. ☆

Middle Tennessee Chapter Helps Tennessee Space Week

(email from President Chuck Schlemm)

On February 24th, during Tennessee Space Education Week, as a representative of NSS and the Middle Tennessee Space Society, I made presentations to 400 Stuart Burns Elementary School children on space sciences, space travel, and future space development potentials. I did a presentation to each of the six grades from K to 5.

I showed them slides of America's space program from Mercury to the ISS. I talked about are travels to the moon, life in zero-G, missions to Mars and how big are solar system really is. I used their

Earth globe, a 6" red ball for Mars and a baseball for the Moon to talk about sizes, distances and travel times in space. I used a specially chosen potato to show them what our NEAR spacecraft had found when it reached the asteroid EROS a few days earlier.

I used a model Shuttle to talk about our transportation system today. I used a remote control half scale Sojourner Rover to talk about our previous and future missions to Mars. I used a model Delta Clipper DCX to discuss near future spacecraft possibilities and a Tinker toy / Kinex model of a manned Mars Orbiter/Lander to talk about how they could start making their own designs of space ships and may be become one of the first humans on Mars.

The students always are very interested and ask many questions that I use to explain many different topics. It is very easy to talk to a group that is so enthusiastic and full of curiosity.

These shows were well received by the students and teachers alike. I received many praises and thank yous for coming and one class wrote thank you letters with pictures of space. I was invited back to make similar presentations again next year which we will plan to do.


I urge all NSS members to get active and try out a public presentation. The more people we can get enthused about space development the better chance we have of quickening the pace. I would be happy to talk with anyone wanting more information about my slides, props, or other aspects of these presentations. I have used similar materials for recent displays at our local science museum and technical college, and in the past at air shows, and malls. ☆

Mars Newsletters Available

Because HAL5 was unable to pass Mars newsletters out at a local movie theatre, we still have enough copies for every member of HAL5. Newsletters will be available at our Program Nights ☆

HAL5 CALENDAR OF MEETINGS AND EVENTS


March 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
19 	20	21	22	23 HAL5 & Project HALO Meeting 12p, Gold. Corral	24	25 Titan discovered 1655
26	27	28 Asteroid Pallas discovered 1802	29 Mariner 10 flybys Mercury 1974	30 HAL5 & Project HALO Meeting 12p, Gold. Corral	31	

April 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
April HAL5 Program Night "Space Solar Power: Clean Energy from High Orbit" by Mr. Joe T. Howell, Team Leader of NASA Marshall Space Flight Center Advanced Projects Office 7-9 PM, Thursday, April 6, at Huntsville Public Library Auditorium, 915 Monroe Street, Huntsville, AL						1
2 Daylight Savings Time Begins	3	4	5	6 HAL5 Program "Space Solar" 7-9 pm, Library	7 Great Moon Buggy Race Rocket Center	8 Great Moon Buggy Race Rocket Center
9	10	11	12	13 HAL5 & Project HALO Meeting 12p, Gold. Corral	14	15 NASFA Meeting 6-8 pm Madison City Hall
16 Palm Sunday	17 Patriot's Day	18 	19 Passover Begins	20 HAL5 & Project HALO Meeting 12p, Gold. Corral	21 Good Friday	22
23 Easter Sunday	24 Hubble Launched 1990	25	26 Secretaries' Day	27 HAL5 & Project HALO Meeting 12p, Gold. Corral	28 Panology 2000 Big Spring Park	29 Panology 2000 Big Spring Park

May 2000

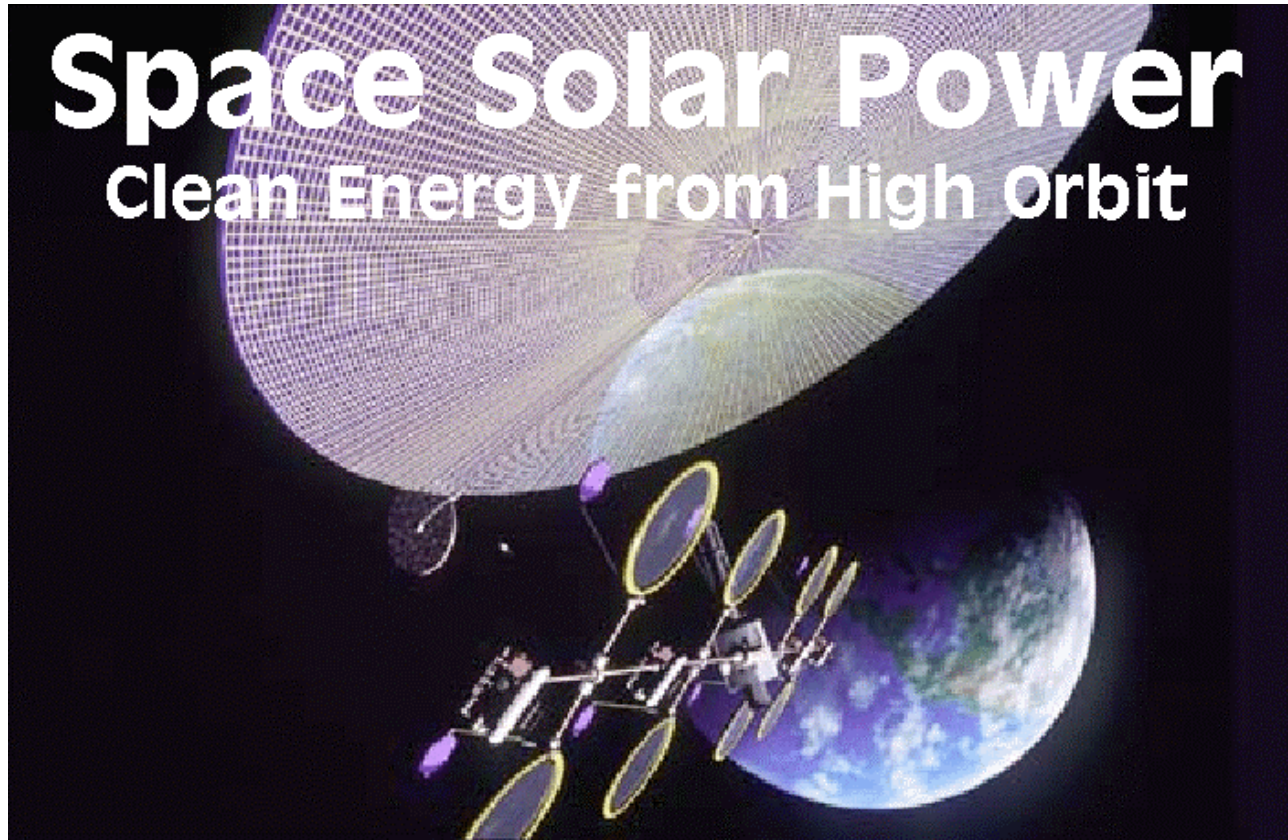
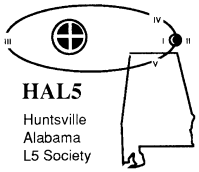
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
April 30 Panology 2000 Big Spring Park	1 May Day	2 Holocaust Remembrance Day	3	4 HAL5 Program "TBD" 7-9 pm, Library	5	6 VBAS hosts Astronomy Day Von Braun Obs.
7	8	9	10	11 HAL5 & Project HALO Meeting 12p, Gold. Corral	12	13 NASFA Meeting 6-8 pm Madison City Hall
14 Mother's Day	15	16	17	18  HAL5 & Project HALO Meeting 12p, Gold. Corral	19	20 Armed Forces Day
21	22	23	24	25 HAL5 & Project HALO Meeting 12p, Gold. Corral	26 ISDC 2000 Tucson, AZ	27 ISDC 2000 Tucson, AZ

Huntsville Alabama L5 Society (HAL5)

your local chapter of the

National Space Society

presents



a free public presentation by

Mr. Joe T. Howell

Team Leader, NASA Marshall Advanced Projects Office

Thursday, April 6, 2000

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 256-461-5934 or email: hal5@hiwaay.net

MORE HALO NEWS

Results of FAA On-Line Public Forum on Small Rockets

(by Ronnie Lajoie, HALO Member)

Between February 28 and March 10, the FAA conducted an on-line public forum on small rockets, as announced in the last issue of the HAL5 newsletter.

Unfortunately for me, that time around my birthday of March 2 was extremely busy for me — and not because I was too busy eating cake and ice cream and talking on the phone with my family (though that did occur). At the start of the on-line forum on February 28, Greg and I had just returned from a trip to Albuquerque, New Mexico (see page 2) to attend the USIS Countdown Conference #2. Our heads were still spinning with thoughts of discussions on creating a Constitution to govern space for the next 100 years.

Back at work, I was immediately swept up to help prepare for a two-day meeting with “The Customer” to be held the next week. Then, my previous manager insisted that I finish moving out of my old cubicle ASAP. Plus, I still had to finish the HAL5 annual chapter report! Plus, we had a HAL5 Program Night!

Suffice it to say that with all that happening simultaneously, my brain was bound to let a few things slip by. Unfortunately, one was the HAL5 table to setup at the premiere of the new movie “Mission to Mars”. The other was the FAA on-line forum — until the deadline had already expired.

Those That Did Not Participate

On the negative side, no team member of Project HALO participated in the forum, despite the announcement. This was primarily due to the fact that most of the key HALO members are very busy working on the CATS-Prize rocket for the HALO spin-off company HARC — even though it was the CATS-Prize contest that spurred the FAA to develop regulations for small rockets that now need to be reviewed and revised.

In fact, it seems that most, if not all, of the CATS-Prize competitors did not participate in the on-line forum, either due to the need to work on their rocket entries or out of concern of giving away some proprietary information. What is even more strange is that David Anderman, CATS-Prize spokesperson for the Space Frontier Foundation (SFF), did not participate — even though he clearly was not busy making rocket parts (though he may have been busy reviewing competitor applications or performing other tasks for the SFF).

The absence of the CATS-Prize officials and competitors drew the attention of Bruce E. Kelly, President of the Tripoli Rocketry Association (TRA), the largest amateur rocketry group in the world:

“It should be telling to the FAA and the people in this forum that the person(s) involved in the CATS organization have not, so far as I have seen, been participants in this discussion. (Have they been here but just not identified themselves?) The ‘rotten egg’ was laid and left for the rest of us to deal with.”

Those That Did Participate

It would have been pretty sorry and embarrassing if the FAA went through all the trouble to let the world evaluate its small rocket regulations — and no one cared. Fortunately, that was not the case. All told, by the end of the two-week period, the FAA had collected 140 pages of comments.

I went through all 140 pages on March 24, the last day that written comments were allowed to be emailed. Even though it was quite late by the time I finished reviewing and copying pages from that large document, I was still determined to submit a written comment or two. Unfortunately, I could not connect to the Web site that the on-line forum Web page directed me too. If you would like to examine the comments in detail yourself, visit the forum site at:

<http://ast.faa.gov/publicforum/>

So who did participate? Obviously, the person in charge of the forum, Randy

Repcheck of the FAA (though not as much as I thought he would be). One key commenter was David Hall, an engineer with the Weapons Design and Analysis Branch of the Naval Air Warfare Center. Another government official was William R. Claybaugh II of NASA, who has served as an active observer at many large amateur rocket launches.

One of the few people from the corporate world was Jeff Greason, President of XCOR Aerospace. Another was Timothy B. Bendel of Lockheed-Martin, though not as an official company representative.

Other participants included James E. Whedbee, Randall Clague, Kenneth Clark McGoffin, Jerry Larson, Jerry Irvine, Mark K. Spute, and Sherwood S. Stolt. I could not determine any of their affiliations from their comments. Perhaps someone reading this may recognize a name or two.

In the amateur rocketry world, in addition to Kelly of TRA, was Michael Wallis of the Experimental Rocket Propulsion Society (ERPS), and Mark B. Bundick of the National Association of Rocketry (NAR). In fact, participants seemed to be primarily made up of people from TRA and NAR, members of which have been accidentally caught in the middle of new FAA regulations due to the CATS-Prize contest — and they are not happy about it! In fact, in addition to Kelly’s comments, there were many comments of dismay by rocket hobbyists about having their fun hobby suddenly turned into major work.

What the Comments Did Not Discuss

Keep in mind that written comments were allowed after the public forum, and those comments were not made publicly available (to my knowledge). Thus, I can only write from my evaluation of the 140 pages of forum comments.

There were no instances of the following HALO-related words in the entire 140-page transcript: rockoon, HAL5, HALO, NSS, Allison, or Lajoie. There was also

no instances of the following CATS-related words in the entire transcript: HARC, Anderman, Powell; and just one side comment on JPA. Thus, the good news is that forum participants were not directly addressing HAL5 or our Project HALO and we were not there to respond — that could have been very bad for us!

Comments on Rockoons

There were discussions, however, on balloon-launched rockets — they just did not use the word “rockoon”. The worse one (for us) was made by David Hall: “For (balloon launched) rockets possessing a total impulse greater than 160 N*sec, I believe licensing should be required.”

Since one pound-force is 4.448 Newton, 160 N-sec translates to 36 lb-sec — as in 9 pounds of thrust for just 4 seconds. That is ridiculously small! That is a single G-motor, at the lower end of the TRA class rockets. No one agreed nor disagreed with Mr. Hall’s suggestion.

On the opposite end of the scale, Jeff Greason wrote: “Balloon launch does not make rockets more hazardous, as long as the operating limits on both the rocket and the air-launching platform are obeyed.”

When James Whedbee asked “What does the NFPA safety code say about launches taking place from airborne launch platforms (either aircraft or balloon)?”, Randall Clague replied “Neither NFPA 1122 nor NFPA 1127 says anything about airborne launches.”

Comments on Maximum Altitude

The discussion that started focusing on the main reason for balloon-launch, the higher altitude that rockoons can reach, and discussion about what type of rocket needs to be licensed veered toward the maximum altitude it can reach.

When Randall Clague stated that “a light-license is appropriate for rockets weighing over 100 pounds, or capable of reaching 100,000 feet” he ignited a hail of comments.

“rocketresearchinstwest” shot back with “Who said anything about 100,000 ft as being a threshold for light license? So far, several rockets have been flown above that altitude no problemo! RRS launched at Black Rock 250,000 feet no problem. RRI Smoke Creek 112,000 ft back in 1979 and 100K+ at Smoke Creek in 1982. ... No license, just FAA waiver. Why are we so hung up on licensing ourselves out of existence??”

James Whedbee then confused the matter with “... If these altitudes are so easily attainable, imagine if you will placing the same rocket on a high-altitude weather balloon which is already 20-30 miles AMSL? Without the drag of the lower atmosphere, would any of these rockets endanger LEO satellites? ...”

He later added: “First, ground-based launches reaching this altitude require very energetic launch vehicles; accordingly ... the light ... license is needed. Second, if these launch vehicles are originating from airborne/balloon-based launch platforms, some are going to be significantly higher than 100,000’ AMSL from the word go. Because of this, the rocket/launch vehicle ... is capable of reaching altitudes nobody would debate are ‘outer space.’ Because of the potential ... for collision with LEO satellites, I feel this class of launch also [falls under] the ‘light’ ... license.”

James Whedbee submitted the most comments on balloon-launched rockets; unfortunately, many of his comments and suggestions would add more burden to Project HALO. For example: “I’ll start with the simpler one first: user fees. ... For waivers accompanying light license applications to cover developmental launches, I can see fees up to \$1,000. ... The other issue I would address is to permit ‘light license’ applications for launches from a variety of platforms, i.e., high-altitude weather balloons, aircraft, etc....”

That Darn 15 Second Limit

The biggest concern of HALO, HARC, and apparently most of the rocketry

community is the 15 second total burntime limit for a non-licensed rocket. Since the limit on total impulse is a whopping 200,000 lb-sec, that means the most powerful rocket could have an average thrust of 13,333 pounds!

By comparison, the HALO SL-1 rocket had an average thrust of 400 lb over 10 seconds for a total impulse of 4000 lb-s (4700 with tailoff). The larger HALO SL-2 rocket has an average thrust of 713 lb over 18 seconds for a total impulse of 12,800 lb-s (13,800 with tailoff). Thus, even though the total impulse of HALO SL-2 is more than 14 times smaller than the limit, we will have to apply for a full launch license because its burn time exceeds the 15 second limit.

Since many TRA member rockets also exceed this short burn time, TRA was able to get a special waiver from the FAA — for TRA members only — to increase the burn time up to 60 seconds. That brings the maximum average thrust down to a more reasonable 3,333 lb.

Project HALO and the CATS-Prize contest do not fall under that waiver, thus the 15-second limit still applies.

No one likes this limit. For example, Jerry Irvine wrote: “The area where the system is truly broken is the ‘mid-size’ rockets that meet some of the criteria recently added by AST for ‘sub-orbital’ rockets. For example one of the criteria is 15 seconds burn time. Many HPR class rockets used to have burning times between 15 and 30 seconds and now that requires an extensive and burdensome permit process which even well funded groups have difficulty completing ...”

Mark B. Bundick wrote hopefully the definitive argument against the 15 second limit: “The NAR believes that the current FAA regulation subjecting all rockets, regardless of size, with a total motor burn time of 15 or more seconds to CSLA licensing should be eliminated. Every rocket performance characteristic which has any bearing on public safety — size, energy, altitude, or velocity — depends largely on the power (total impulse) of the motor, not

on its burn time. There are hobby rockets as small as one pound today that use motors exceeding 15 seconds of burn time. Mandating a short burn time such as 15 seconds actually reduces public safety by forcing the use of higher-thrust, shorter burn time motors which drive rockets to higher velocities. These higher velocities reduce rocket structural reliability and force the use of higher-strength structures with greater ballistic coefficients."

With comments such as these, there is a good chance that the 15-second total burn time limit will either be increased or deleted since the limit on total impulse still applies. If so, HALO SL-2 may yet fly again — sans one or more man-years of effort to produce the same pile of paperwork that aerospace giants are currently required to create. ☆

Lunar Conference in July

(SFF Press Release, 27 March 2000)

The Space Frontier Foundation (SFF) and the Foundation for the International Non-Governmental Development of Space, (FINDS) announced today that their Second Annual Lunar Development Conference will be held July 20th - 21st, 2000 at Caesar's Palace in Las Vegas. Conference co-sponsors are the Space Studies Institute, the Moon Society, and the National Space Society.

"The first human outposts on the Moon may well be established in the next decade," said Greg Bennett, conference chairperson, and a Vice-President at Bigelow Aerospace. "The Lunar Development Conference will set the stage for the planning and implementation of those efforts."

"The Moon is the closest world to us, yet it has been over 30 years since humans first walked on its surface," said Rick Tumlinson, SFF President. "The new millennium is the perfect time for us to create a fresh partnership between the government and the private sector, to open the Moon and the rest of the Near Frontier to the people of Earth. It's time to put a human face on the Moon." ☆

Private Space Station Resupply

(ProSpace Press Release, 27 March 2000)

<http://www.prospace.org/>

ProSpace would like to enlist your immediate support and assistance in helping to secure vital funding for NASA's new "Alternative Access" Program. Please read on as I am going to ask you to take some specific actions that will help us in this important endeavor.

ProSpace has strongly advocated requiring NASA to use commercial providers to service a portion of the multi-billion dollar ISS resupply mission market. In fact, NASA was directed by the Commercial Space Act of 1998 to use commercial providers wherever possible. We are therefore gratified that President Clinton's FY01 budget request for the agency includes \$40 million for "Alternative Access" funding.

According to NASA, these funds are intended "to enable NASA to establish and use alternative means of access to space to the International Space Station." What does this mean to the United States? First, by using multiple providers NASA will be assured of an uninterrupted supply line to the International Space Station. Should one class of vehicle be grounded for any period of time (as the shuttle was by wiring problems last year), NASA can simply turn to another method of providing vital supplies to the station crew.

And, by opening ISS re-supply to other vehicles, NASA is providing a major market segment that will make investment in new space transportation systems more attractive to private investors. That will increase domestic launch capacity and significantly reduce costs, saving the government hundreds of millions of dollars - each and every year! In addition, these new systems will help us to recapture a greater share of the international launch market that we have lost over the past twenty years.

In short, "Alternative Access" is the probably the most cost-effective NASA initiative in many years. This single

budget line may do more to open the space frontier than any other endeavor currently under consideration.

ProSpace heartily endorses the goals of the "alternative access" program. However, the president's budget request does not go far enough.

Congress should increase the funding for "Alternative Access" to a level that will promote the development of a variety of new ISS-capable vehicles wholly within the private sector. Expending additional funds under this line item will demonstrate to the capital markets a firm commitment that a substantial portion of the lucrative ISS resupply market will be available to competitive space transportation systems as they become available.

During this year's March Storm, ProSpace members visited 225 House and Senate offices with a call to double "Alternative Access" funding to \$80 million. Initial discussions on these numbers will begin soon within the VA-HUD Appropriations Subcommittee in the Senate, which has responsibility for the NASA budget.

So, what can you do to help secure the increase to \$80 million for Alternative Access? If your Senator is a member of the VA-HUD Appropriations Subcommittee, please call or fax them as soon as possible to register your support for increasing the Alternative Access funding level to \$80 million for FY 2001.

Richard C. Shelby (Alabama)

Tel: (202) 224-5744

Fax: (202) 224-3416

Sample fax letters for you to use in either case are included below for your convenience. Just copy it into your word processor and fill in the appropriate names.

It is vital that you take action right away. Because this is an election year, Congress is working hard to complete work on appropriations bills as soon as possible. Time is short, so a regular letter will take too much time. **Don't delay. Call or fax your senator today!** ☆

HAL5 Membership Report

The following is a list of the current paid membership of HAL5, which includes 23 renewals and 3 new members, for a total of 26 (which is similar to 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 3 renewed subscribers to our newsletter. Welcome to all our new and renewed members and subscribers!

- William Adams, Jr. (R)
- Gregory Allison (President,D)
- William Axenroth (R)
- Jan Bijvoet (P,D)
- Bill Brown (R)
- Cary, Fran Bruton (R)
- Thomas Craig (R)
- Wade Dorland (Secretary)
- R. Perrin Ehlinger (N)
- Peter Ewing (R)
- Ernest Gilmer, Jr. (R)
- Gloria Gorman (N)
- Philomena Grodzka (Members)
- Amy Herring (R)
- Bryan Jones (R)
- Ronnie Lajoie (Treasurer,D)
- Ilmar Luik (R)
- Art, Doris Mansfield (R)
- Phillip May (P)
- Jon Mekuto (R)
- Steven Mosher (N)
- Charles Paludan (P)
- Herman, Chris Pickens (R)
- Bruce Randolph (R)
- Janis Tirey (R)
- Clayton Sawyer, Jr. (R)
- Michael Skinner (R)
- Gene, Gladys Young (R,Vice-Pres)

- Butler High School (S)
- Huntsville Public Library (S)
- Sparkman High School (S)

Upcoming Events of Interest to HAL5 Members

Tue., Apr. 4 to Mon., Apr. 24 **“Odyssey: Images in Space”**, Huntsville Art League gallery at the Parkway City Mall; no charge; questions: 256-534-3860

Thu., Apr. 6 — 7:00 - 8:30 PM **HAL5 Program on “Space Solar Power”** by Mr. Joe Howell, NASA MSFC Advanced Projects Office, at Huntsville Public Library, 915 Monroe Ave.; free; questions: 256-461-5934

Fri., Apr. 7 and Sat., Apr. 8 **AIAA and NASA host “The 7th Annual Great Moonbuggy Race”**, at U.S. Space and Rocket Center, Huntsville; info: Dan Ellis, NASA/MSFC Education Programs, 256-544-2319

Fri., Apr. 28 to Sun., Apr. 30 **“Panoply Festival of the Arts”** at Big Spring International Park; no charge, donations accepted; 256-519-ARTS.

Thu., May 4 — 7:00 - 8:30 PM **HAL5 Program on “TBD”** by TBD, at Huntsville Public Library, 915 Monroe Ave.; free; questions: 256-461-5934

Sat., May 6 — 2-5 and 7-10 PM **VBAS hosts “Astronomy Day”** at the Von Braun Observatory on Monte Sano; info: Dennis Culver, Secretary, at 650-5479

Fri., May 26 to Mon., May 29 **2000 International Space Development Conference (ISDC)**, in Houston, Texas; \$65 fee; questions: 256-461-5934

Tue., May 30 to Thu., June 1 **Technical And Business Exhibition/Symposium (TABES 2000)** at the Von Braun Center; 9:00 am until 9:00 PM; free

Tue., May 30 — 7:00 - 9:00 PM **HATS Professional of the Year Awards Dinner** at the Von Braun Center; about \$15; questions: 256-837-4347

- (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 Philip May, Herman & Chris Pickens, and Janis Tirey.

HAL5 also welcomes its new members, including Perrin Ehlinger, Gloria Gorman, and Steven Mosher. Perrin lives in Huntsville, while Gloria and Steven are “family” members in Rhode Island. Thank you all very much!

HAL5 gratefully thanks the many members who included a donation with their membership. Ronnie Lajoie joined as Supporter members and included a donation to Project HALO as well. Ernest Gilmer, Charles Paludan, and Bill Axenroth donated to HAL5. Amy Herring, Peter Ewing, Jan Bijvoet, and Richard Richardson donated to Project HALO. Art Mansfield joined the NSS, and Herman Pickens renewed. Greg Allison, Tom Craig, and Ronnie Lajoie also donated newsletter subscriptions. Thank you all very much! Ad Astra! ☆

Special Announcement

HAL5 April Program Night

**“Space Solar Power:
Clean Energy from High Orbit”**

Thursday, April 6, 7–9 pm

Huntsville Alabama L5 Society
 PMB 168, 1019 Old Monrovia Road
 Huntsville, AL 35806
 ADDRESS CORRECTION REQUESTED

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