Web Address:
http://www.jsc.nasa.gov/aiaa

AIAA
January, 1997
Houston Section

Horizons

American Institute of Aeronautics and Astronautics

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Evaporating Globules · M16 HST · WFPC2

PRC95-44c · ST ScI OPO · November 2, 1995
J. Hester and P. Scowen (AZ State Univ.), NASA

Inputs for February's Horizons due no later than January 27th

Editor's Note

- by Cynthia Collins, Horizons Editor

Whoa! Articles from left, right, and center. It's great! You all responded so well to my request. Keep it up! I love it - it's just that much better for our newsletter. And I have several suggestions that are yet to be implemented.

One thing that is new is our web address is now on the front cover, and will be with all subsequent issues of the newsletter. Check out the web page!

And I do have to apologizeto Don Probe for not including him in the list of Councilors that is on the cover. It was inadvertent, but deeply regretted.

The response for articles was really good - now all I ask is that you include your name and a short biography with your article so that I can put it in the newsletter with your article.

Don't worry about writing too much. Go ahead and explain the key points and highlights of your topic, along with your thoughts an ideas. Remember that you are writing for over a thousand people, and not all of them have experienced your topic, been to the conference or lecture, or read the book or article you are writing on. If your article needs editing, we can do it here before we publish the newsletter.

All you have to do after you have written your piece is to get it to me before the deadline. I am glad to receive mail, both standard and electronic, telephone calls, whatever. Just send it to me. You may also submit your ideas and articles to Tom Mulder, and he will see that they get to me.

If you have any further suggestions for the newsletter, be sure you get them to me before January 27th. It can be any suggestion, small or large. Is there something you would like to see in the pages of Horizons? Is there more specific news you would like reported? Get that idea to me.

Thanks again for all your input. It helps a lot - plus it gives you the newletter you want, and that is one of our main goals.

I hope you have all had a joyful and bountious holiday, and that the new year is a truly great one for you and yours.

Horizons is the monthly newsletter of the Houston Section of the American Institute of Aeronautics and Astronautics. It is created by members of the Houston Section and reproduced at the Houston Offices of Lockheed Martin. Opinions expressed herein, other than by elected Section officers, are those of the authors and do not necessarily represent the position of AIAA or of the Houston Section. Please address all correspondence to the Chairman, Tom Mulder, McDonnell Douglas/MDC2-3156.

Chairman's Corner

- by Tom Mulder, Chairman

Looking Forward in 1997

It was a joy to meet many of you for the first time at the AIAA November meeting, held at the McDonnell Douglas Tower II Facility. We were treated to fascinating presentations by John Schuessler and Dr. Linda Godwin on the construction and operational uses of NASA's Neutral Boyancy Laboratory; as well as to pizza and refreshments provided by McDonnell Douglas. My personal thanks go to NASA management for allowing the AIAA a peek at their "big pool" before it becomes operational. The Houston Section Executive Council is hoping that many of the 145 attendees will actively participate in the many AIAA activities scheduled for 1997. Two events for you to consider this Spring are the Region IV Student Paper Competition (SPC) and the Annual Technical Symposium.

This year's SPC will be held just down the street at the Ramada Inn on NASA Road 1, April 11th and 12th. The annual event provides a forum for undergraduate and graduate students from The University of Texas, Texas A&M University, and other regional schools to present results from individual and group research and design projects. Open to the public, the conference costs nothing to attend. Please contact Eric Duncan (483-7537) or Kirsty Reidy (244-7906) for more information, or to volunteer as judge of one or more technical papers.

The Houston Section Technical Symposium will be held all day on May 22nd, at the Lunar and Planetary Institute Center for Advanced Space Studies (same location as last year). This year's theme will be "Building Upon Our Lessons Learned", and all AIAA members are encouraged to attend. Please call Steve King (333-6646) with any questions you may have.

For those of you seeking a social atmosphere, interesting speaker, and complete meal at a low price, you won't want to miss the January Dinner Meeting. AIAA members and spouses will be charged just $5 each to see Mr. Richard Martin, flown in from San Diego, tell us all about the Atlas Rocket. Once again, you won't want to miss it!

Finally, the Houston Section Executive Council wishes you and your family a happy and fulfilling year in 1997!!

Book Review

"Encounter With Tiber" by Buzz Aldrin, with John Barnes.

The story involves two races, one ours, the other an alien culture named *Tiber*. The story begins in the near future, with the detection of a radio signal from the direction of the Alpha Centauri system. The decoding of the signal, aided by the crew of the International Space Station, results in a *return to the moon* mission. The purpose of the return to the moon is to recover an *encyclopedia* sent by the aliens to an expedition apparently intended to come to the Earth. The mission results in diaster, with the destruction of the alien artifact. The other part of the story, told from the point of view of the alien culture, goes into some detail about their history and the factors that lead to the expedition to Earth. The rest of the story is for the reader to discover, and is well worth the effort. Although the tale is a long one, it is very interesting, with a lot of engineering detail, and would make a great movie.

Council Votes to Subsidize Dinners

The AIAA Executive Council voted at its December meeting to help defray the cost of dinner meetings for members. Members will be charged $5.00 for dinners, as will student members and unemployed members. Non-members will continue to pay, on average, about $10.00 for a dinner meeting. This policy will continue for the remainder of this term (June 1997) and will give local members more for their dues money.

Note Our Web Address

In the interest of simplicity, the AIAA Houston Section's Web Page address has been changed to all lower case letters. The new address is:

http://www.jsc.nasa.gov/aiaa

The address has also been added to the front of the newsletter, and can be found in the upper left hand corner.

Membership News

There are two familar names on the AIAA list of distinguished lecturers: Dr. Norm Thagard, who was a member of the local chapter, and Dr. Kenneth Cox, who is a current local chapter member. Congratulations to them both!

The local chapter has two new 1997 Associate Fellows! Congratulations to Richard O. Covey and Dan E. Newbrough.

The chapter now has 165 Associate Fellows. A maximum of one Associate Fellow per every 150 voting members may be ugraded annually, (we have 800+ members - that's 5 or 6 upgrades a year).

Nomination forms are due April 15 and supporting references (3 are required) are due May 15 of each year.

AIAA Calendar

The AIAA 1996-97 Calendar is intended to encompass all Houston Section events and significant dates. This includes Executive Council meetings, which are open to interested members, and Horizons deadlines. It will also include committee meetings, Lunch & Learns and similar events if Horizons hears about them in time for inclusion. Please send pertinent details to Tom Mulder/MDC2-3156.

January

6 - Monday
Executive Council meeting. 5:00 PM, Center for Advanced Space Studies.

17 - Friday
Abstract and Abstract Submittal Form Deadline for Modeling & Simulation Technologies Conference

23 - Thursday
Monthly dinner meeting.
Gilruth Center, 5:30/6:30/7:30.

27 - Monday
Horizons inputs for February due COB.

28 - Tuesday
Lunch and Learn - "Functional Configuration Audit Conduct on the International Space Station Program - A Verification Team Perspective" - 12 Noon - 1:00 PM, 1045 Gemini, Boeing Gemini Building, Room 210

30 - Thursday
Registration Deadline for Bay Area Technical Societies' Officers' Workshop

31 - Friday
Abstract Submission Deadline for Innovations '97 Conference

February

3 - Monday
Executive Council meeting. 5:00 PM, Center for Advanced Space Studies.

6 - Thursday or
8 - Saturday
Bay area Technical Societies' Officers' Workshop, Gilruth Center, Thursday 5:30-9:30 PM, Saturday 8:00 AM - 1:00 PM

24 - Monday
Horizons inputs for March due COB.

27 - Thursday
Monthly dinner meeting.
Gilruth Center, 5:30/6:30/7:30.

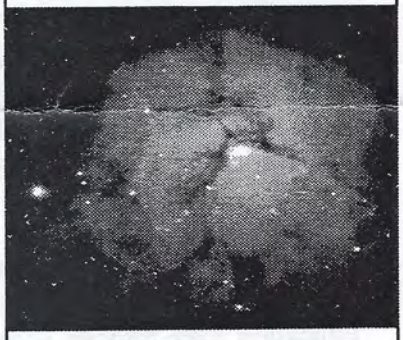
March

3 - Monday
Executive Council meeting. 5:00 PM, Center for Advanced Space Studies.

24 - Monday
Horizons inputs for April due COB.

27 - Thursday
Monthly dinner meeting.
Gilruth Center, 5:30/6:30/7:30.

28 - Friday
Innovations '97,
Gilruth Center, starting at 11:30 AM



Robert's Rules?

New Robert's Rule's - *the five things you need to know to find and hold a job*. With an estimated 3.2 million high school and college students having graduated last spring, Labor Secretary Robert Reich has issued five basic rules for the newly graduated to help them find work and keep up with the workplace of the future. They are:

1. **Born to be Wired:**

Whether you work in an office or manage the crew that cleans it, you've got to be computer literate. Even truck driving or factory work requires some computer skills. If you don't have them; get them. NOW.

2. **Get an Edge, Keep It Sharp:**

Education may provide some competitive edge today, but workers need to keep honing that edge for a future payoff. Simple maxim: What you earn depends on what you learn.

3. **Ditch the Ladder, Spin the Web:**

Think of a career less as a ladder and more like a web. Webs have a center, but no top and lot of paths that connect. Forget the climb - smart workers move along webs, earning more from skills they have gained, not from seniority. Unlike ladders, webs often dissolve when their purpose is fulfilled.

4. **Networking Works:**

The best way to hone your skills and widen your web is by networking, not just swapping information about job openings. Actively connect with people throughout your industry and profession. Keep current. Information is the key to the future in any field.

5. **There is no "I" in "team":**

More and more people will work in teams. Teammates at work may know each other only by phone, fax, or Internet address. Teams will include more women and people of color than any generation in history. Learn to play all positions.

Taken from the Los Angeles Times, July 2, 1996.

Committee Report

By Edward Jablonski,
Dynacs Engineering

The AIAA Education & Professional Development Committee, Houston Section, hosted an evening presentation by Bruncha Milaszewski, the Director of Workforce Development at Lee College, this past December 2nd, at the Lockheed-Martin Complex on Nasa Road 1.

Ms. Milaszewski spoke on what will inevitably become a topic of great importance to almost all of us, that of: 'Employability in the 21st Century'. Ms. Milaszewski mentioned the changing factors of education, internationalism of markets, and modern marketplace niches and volatility.

For success today, she emphasized the importance of personal visibility, personal transferable skills, and for becoming enthusiastic about the mission of one's employer.

This free seminar, open to all, was attended by a classroom full of AIAA members and guests at the invitation of Mr Charles Halliman; he can be contacted at Information Uncover, at (713) 991-1654, for more information.

Sea-Space Symposium Overview

Report on the Sea-Space Symposium
Houston, TX
Oct. 25, 1996
by Jim Stramler

Several people from both fields presented their status, their concerns, and some of their philosophies at this symposium. What follows is a summary of my notes from the meeting. Kathy Sullivan pointed out the commonalities and mentioned that these are two of mankind's most compelling frontiers. Both endeavors are very complex problems. She stressed the importance of not just going to these remote places, but doing something useful there.

Dan Goldin discussed the many upcoming Mars missions over the next few years, eventually mentioning "the rock" from Mars in which a possible fossilized bacterium-type life was discovered. He briefly discussed the problem of sustaining a crew for years on a voyage to and from Mars. There was no quick return in the event of an emergency, and a complete recycling within the life support system had to be accomplished. ISS is intended to provide on-orbit measurements of physiological changes to the crew to better understand what effects might have to be countered.

He posed the question that Europa, one of Jupiter's moons, may be a better place for finding life with its surface covered by water and ice. He discussed the search for planets around other stars, and stated that if we could get some large interferometer-type telescopes out to Jupiter's orbit, we might be able to get the resolution to detect earth-sized planets, and possibly even detect mountain ranges and oceans on those planets.

He mentioned the declining NASA budget, and claimed that the budget is not the problem. He stated that the space program has become a luxury, that we are working to serve the American people, and we need their support. We have to spend more time communicating with non-space industry people. He stated that NASA's job was to provide technology, not to perform operations. Operations should be the job of entepreneurs. He pointed out several problems here. One is that corporate investments don't typically go beyond 3 - 5 years; what is required are research investments with a 20 year wait to expected returns. We never know how that research is going to pay off. He gave an example of how NASA research paid off in the medical field. Some doctors realized on seeing the technology that the digital CCDs used in Hubble could help find microcalcifications in the breast. This technology reduced the price of mammograms from $1000s to $100s, and put such tests within the economic reach of many more people.

Frank McPherson, from Kerr-McGee, pointed out that the majority of known oil reserves are in the Middle East, while the Former Soviet Union has the largest known gas reserves. At the rate of current consumption, most regions of the world will have depleted their reserves within about 10 -20 years. And consumption is increasing. He posed the concern that there would be adequate reasonably-priced oil and gas. The current pre-tax price of gasoline is about the same as basic bottled water. He stated that economics will drive the energy picture, and that the trend is toward global energy companies, which would be more service based.

Jack Golden, from BP Exploration, presented some of the problems with deepwater exploration and production. He defined deepwater as greater than about 5000 ft. depth. The large platforms used in early, shallower water exploration will not work below about 1500 ft., and energy companies have plans to go as deep as 10,000 ft. He claimed that technology is not the barrier — companies can explore and produce at those depths. The question is whether it will be economical — whether they can make a profit there. The typical investment in a deepwater well is $1 Billion.

George Mueller, from Kistler Aerospace, pointed out that many writers and others have over time

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proposed re-usable vehicles. The X34 is intended to be a partially re-usable vehicle, and the X33 is intended to lead to a fully re-usable Single Stage to Orbit (SSTO) vehicle. The technology for these modern capabilities was not available back in the 1960s and 70s when the Shuttle was being designed, but it is available today. He presented Kistler's K1 as a fully re-usable vehicle. The first and second stages would return to the launch site (the second after several orbits) and be recovered using parachutes and airbags. He indicated many of the problems they have had in getting started. They included a lack of investors willing to take the risk, the regulatory process, and range safety costs. Kistler wanted to launch from Nevada, but the problems there may drive them to look for another launch site.

Ken Mattingly, Lockheed-Martin, presented an overview of the X33 program. Phase 1, the concept development, has been completed. They are currently in Phase 2, the design and production of a flight demonstrator. This is scheduled to fly in 1999. Phase 3 would be the commercial operations. To be viable, commercial aircraft-like operations have to be achieved. The overall goal of the program is to provide affordable access to space. There are many other associated goals. These generally include the refinement of variables for the Re-usable Launch Vehicle (RLV) or SSTO. He discussed the differences in structure, fuels, engines, etc. from current vehicles. The SSTO is proposed to have a 50,000 lb. containerized payload capability to 100 naut. mi. at 28 degrees. He was convinced the X33 is the "most exciting show in town".

Doug Cooke, NASA, from the International Space Station Program Office, presented an overview of the planned space station, showing some of the hardware already built, and what the station would look like in orbit when fully assembled. He went though the first several flights in some detail.

Russ Luigs, Global Drilling, discussed some of the drilling history at sea. He mentioned the Glomar Challenger and Explorer. The Challenger was commissioned in 1968 to do deep core samples for geological research. 1972 to carry out the retrieval of heavy objects at great depths. It was later used for ocean mining of manganese nodules from 15,000 ft. in the Pacific. That program encountered political problems due to the Law of the Sea Treaty, however, and the mining activity ceased. It is now expected to become a deepwater oil drilling rig. He stressed the importance of the concept that no idea is necessarily insane. He believes we are more limited by our imaginations than by our technology.

Rich Pattarozzi, from Shell Offshore, stated that the Gulf of Mexico apparently has the equivalent of about 8 - 15 billion barrels of oil, similar to Prudhoe Bay, Alaska. He emphasized that the key questions are economic, not technical. To be economically viable, an operation must have a high production rate, it must provide a quick turnaround in the development process, and it must maintain low costs. They are producing from 2900 ft. wells today, and will be producing from 5400 ft. wells next year. To explore and produce at such depths, new technologies had to be brought forward. As they drill at still greater depths, it is possible that different technologies will have to be implemented. (His definition of deepwater is apparently different from Jack Golden's — greater than 1500 ft.) Some of the technical problems they have are the need to rely on Remotely Operated Vehicles (ROVs) and the need to use glycol or methanol to keep lines from freezing. They don't have enough experience yet to know what kind of well maintenance will be required. If the maintenance becomes too great, the operation may not be cost effective. He presented other concerns or issues. These included the sales price of oil/gas, the increasing cost of materials and services, the availability of industry resources, the feasibility of subsea operability, and the need to continue technology development. He felt that people could accomplish amazing things when given a challenge. If they could find the oil, people would find a way to produce it. You always had to ask the question "What if ...?" He noted

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that in the event of one company having a major problem such as a blowout, the industry would come together to help each other out.

I thought the Symposium was well worth attending. I have a greater appreciation for some of the common problems faced by the two industries. If a sharing of technologies and ideas can be accomplished, it will only help both parties.

A proceedings will be published.

To obtain a copy, send a check for $5 to:
Craig Mullen
c/o Oceaneering Advanced Technologies Group
501 Prince George's Blvd.
Upper Marlboro, MD 20772.

Committee Report

By Edward Jablonski,
Dynacs Engineering

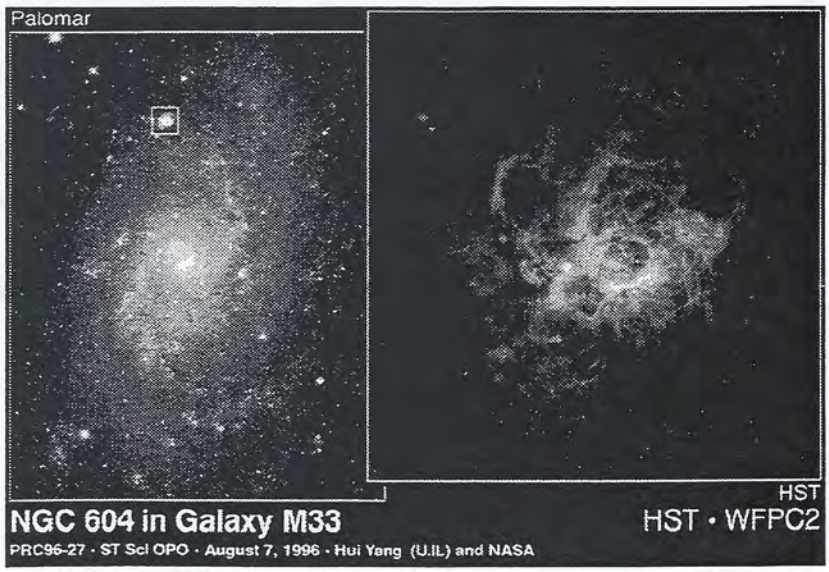
The AIAA History and Heritage Technical Committee, Houston Section, presented a brown-bag Lunch-n-Learn by Dr. David Talent of Lockheed-Martin this past Wednesday, November 6, 1996. The topic was "A Partial History of Orbital Debris, or Expectations for Growth From A Simplified Model."

Dr. Talent's Ph.D. is through the department of Space Physics and Astronomy at Rice University, and his professional career has encompassed many aspects of micrometeoroid and orbital debris research.

He presented an informative and interesting story on the changing nature of the space environment, and he illustrated this very important issue by using several real and amusing 'down-to-Earth' examples!

Dr. Talent emphasized two points: one, that various separate 'strata' of orbits around the Earth are undergoing related, but different, changes, and two: that the current relative total increase in orbital debris mass should not be thought of as a difficult problem, but as just another design factor to be understood and weighed accordingly.

This event was received very favorably by approximately 30 AIAA members and guests at the Johnson Space Center, Building 4 South, who are no doubt all looking forward to his next presentation.



Call For Papers - Modeling & Simulation Technologies Conference

The "Modeling & Simulation Technologies Conference"
being held in
New Orleans, Louisiana
on August 11-13, 1997
is calling for papers.

This international conference is sponsored annually by the AIAA and offers a very unique, rewarding and educational experience for everyone who attends and participates.

Attendee's
at the conference include those involved in numerous aspects of civil and military aerospace simulation. Interested parties are to submit a 500 - 1000 word abstract and accompanying AIAA Abstract Submittal Form by January 17, 1997.

Please contact
Steve King/Lockheed Martin
at (281) 333-6646
or king@etap.jsc.nasa.gov
for further details regarding this call for papers.

Gaseous Pillars · M16 HST · WFPC2

PRC95-44a · ST ScI OPO · November 2, 1995
J. Hester and P. Scowen (AZ State Univ.), NASA

Embryonic Stars Emerge from Interstellar "EGGs"

"Eerie, dramatic new pictures from NASA's Hubble Space Telescope show newborn stars emerging from "eggs" — not the barnyard variety — but rather dense, compact pockets of interstellar gas called evaporating gaseous globules (EGGs).

Hubble found the "EGGs," appropriately enough, in the Eagle nebula, a nearby star-forming region 7,000 light-years away in the constellation Serpens."

For a long time astronomers have speculated about what processes control the sizes of stars — about why stars are the sizes that they are," said Jeff Hester of Arizona State University, Tempe, AZ. "Now in M16 we seem to be watching at least one such process at work right in front of our eyes."

Striking pictures taken by Hester and co-investigators with Hubble's Wide Field and Planetary Camera 2 (WFPC2) resolve the EGGs at the tip of finger-like features protruding from monstrous columns of cold gas and dust in the Eagle nebula (also called M16 — 16th object in the Messier catalog). The columns — dubbed "elephant trunks" — protrude from the wall of a vast cloud of molecular hydrogen, like stalagmites rising above the floor of a cavern.

Inside the gaseous towers, which are light-years long, the interstellar gas is dense enough to collapse under its own weight, forming young stars that continue to grow as they accumulate more and more mass from their surroundings. Hubble gives a clear look at what happens as a torrent of ultraviolet light from nearby young, hot stars heats the gas along the surface of the pillars, "boiling it away" into interstellar space — a process called "photoevaporation."

"The Hubble pictures show photoevaporating gas as ghostly streamers flowing away from the columns. But not all of the gas boils off at the same rate. The EGGs, which are denser than their surroundings, are left behind after the gas around them is gone." "It's a bit like a wind storm in the desert," said Hester. "As the wind blows away the lighter sand, heavier rocks buried in the sand are uncovered. But in M16, instead of rocks, the ultraviolet light is uncovering the denser egg-like globules of gas that surround stars that were forming inside the gigantic gas columns."

Some EGGs appear as nothing but tiny bumps on the surface of the columns. Others have been uncovered more completely, and now resemble"fingers" of gas protruding from the larger cloud. (The fingers are gas that has been protected from photoevaporation by the shadows of the EGGs).

Some EGGs have pinched off completely from the larger column from which they emerged, and now look like teardrops in space. By stringing together these pictures of EGGs caught at different stages of being uncovered, Hester and his colleagues from the Wide Field and Planetary Camera Investigation Definition Team are getting an unprecedented look at what stars and their surroundings look like before they are truly stars.

"This is the first time that we have actually seen the process of forming stars being uncovered by photoevaporation," Hester emphasized. "In some ways it seems more like archaeology than astronomy. The ultraviolet light from nearby stars does the digging for us, and we study what is unearthed."

"In a few cases we can see the stars in the EGGs directly in the WFPC2 images," says Hester. "As soon as the star in an EGG is exposed, the object looks something like an ice cream cone, with a newly uncovered star playing the role of the cherry on top."

Ultimately, photoevaporation inhibits the further growth of the embyronic stars by dispersing the cloud of gas they were "feeding" from. "We believe that the stars in M16 were continuing to grow as more and more gas fell onto them, right up until the moment that they were cut off from that surrounding material by photoevaporation," said Hester.

This process is markedly different from the process that governs the sizes of stars forming in isolation. Some astronomers believe that, left to its own devices, a star will continue to grow until it nears the point where nuclear fusion begins in its interior. When this happens, the star begins to blow a strong "wind" that clears away the residual material.

Hubble has imaged this process in detail in so-called Herbig-Haro objects. Hester also speculated that photoevaporation might actually inhibit the formation of planets around such stars. "It is not at all clear from the new data that the stars in M16 have reached the point where they have formed the disks that go on to become solar systems," said Hester, "and if these disks haven't formed yet, they never will."

Hester plans to use Hubble's high resolution to probe other nearby star-forming regions to look for similar structures. "Discoveries about the nature of the M16 EGGs might lead astronomers to rethink some of their ideas about the environments of stars forming in other regions, such as the Orion Nebula," he predicted.

* * * * * *The Space Telescope Science Institute is operated by the Association of Universities for Research in Astronomy, Inc. (AURA), for NASA, under contract with the Goddard Space Flight Center, Greenbelt, MD. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency (ESA).

AIAA Systems Engineering Technical Committee

Presents a "Lunch and Learn"

"Functional Configuration Audit Conduct on the International Space Station Program - A Verification Team Perspective"

Tuesday, January 28, 1997, 12 noon to 1 pm
1045 Gemini (Boeing Gemini building), Room 210

The ISS program has struggled to find ways to conduct a robust program while being constrained by fiscal funding limits. One of the areas that has deviated from the traditional approach is in the area of FCA conduct - the acceptance of ISS hardware toward meeting program requirements. This is a "Lunch and Learn" to inform the technical community of the innovative approach adopted by the ISS program, and to educate ISS team members on the process. Rich Townsend, of Boeing North American, has verification and compliance experience on a variety of programs. Mr. Townsend has recently completed a series of these reviews, and will present to the audience his experiences and lessons learned regarding the ISS approach.

AIAA members and other interested parties are welcome.

For more information, contact Greg Deiter at 283-4209, John Vollmer at 244-7968 , or Edward Jablonski at 283-4294 .

INNOVATIONS '97

Organized by
The Clear Lake Council Of Technical Societies
in cooperation with CLCTS member organizations

FRIDAY, MARCH 28th, 1997
at
Gilruth Center, NASA/Johnson Space Center

Registration
11:30-12:00 Noon
LUNCHEON
12:00- 1:00 PM
PROGRAM
1:00 PM
PLENARY SESSION
1:45 PM
A - TECHNICAL SESSIONS
Parallel Sessions organized by Member Organizations
3:30 PM
B - TECHNICAL SESSIONS
Parallel Sessions organized by Member Organizations
5:00 PM
RECEPTION
Hosted by Local Aerospace Companies

INDIVIDUAL SESSIONS OF *INNOVATIONS'97* ARE ORGANIZED BY MEMBER ORGANIZATIONS OF CLCTS. Each session will consist of four papers.

Deadline for submission of Abstracts is Friday January 31st 1997.
COST: $12.00 registration (includes lunch)

Please submit your abstracts to your society officers- AIAA (Tom Mulder 244-4428), ASQC (Chris Hazelton 280-7313), CASS (David Black 486-2180), IEEE (Cliff Mason 335-6897), ISA (Bill Weber 332-2825), ISSA/TGCC (Roger Schermerhorn 282-3909), INCOSE (Jonette Stecklein 244-7146), SCS (Tony Sava 335-4173), SIA (Ernie Hillje 333-3627), SSQ (David Walker 333-3703), TSPE (Michell Falgout 688-4541 X 107) .

For any additional information on the conference, please contact Dr. Zafar Taqvi at 281-212-9275 (E-Mail: Z.TAQVI@ieee.org) or conference General Chairman, Hank Williams at 281-244-8183 (E-Mail: HLWillian@ssf4.jsc.nasa.gov)

INNOVATIONS '97 IS SPONSORED
BY
THE JAIPCC EXECUTIVE BOARD

BAY AREA TECHNICAL SOCIETIES' OFFICERS' WORKSHOP

Clear Lake Council of Technical Societies is planning an *interactive workshop* for all the officers of its member organizations. The workshop will focus on the operational aspects of 'How' and 'What' involved in the successful running of a volunteer professional society organization. Logistic, financial and cultural aspects of the organization will be discussed.

WHAT: The workshop will cover Membership Building, Financial Self-Support, Society Membership Activities and their planning, and related areas

WHO should attend: Current and prospective officers of the societies

WHEN: Thursday February 6th, 1997, 5:30-9:30 PM (or Saturday, February 8th, 1997 , 8:00 AM-1:00 PM)

WHERE: Gilruth Recreation Center, NASA/JSC (Location subject to change)

COST: $12.00 per person. Includes working lunch (or dinner) and workshop support handouts

DEADLINE for Registration: January 30th, 1997

CONTACTS:	Andy Lindberg	281-532-4450
	Dr. Zafar Taqvi	281-212-9275

WORKSHOP IS LIMITED TO FIRST THIRTY ATTENDEES

Member Organizations are urged to support the workshop and avail this opportunity to learn through interaction with other Bay Area professional Societies.

AIAA
Houston Section
P.O. Box 57524
Webster, TX 77598

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AIAA

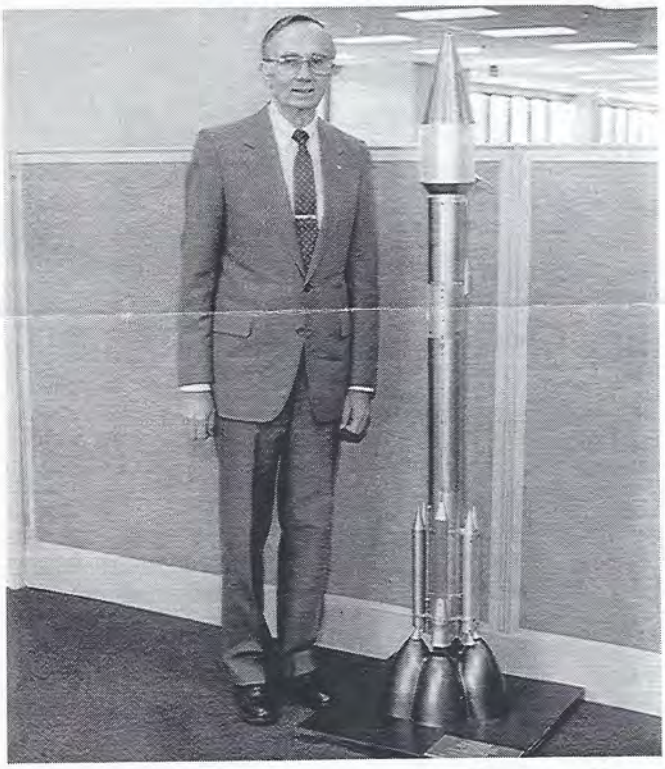
TOM MULDER
CHAIRMAN 1996-97

American Institute of Aeronautics and Astronautics
HOUSTON SECTION P.O. BOX 57524 WEBSTER, TEXAS 77598

Thursday, January 23, 1997

THE ATLAS ROCKET- IT JUST KEEPS GOING AND GOING AND GOING.....

RICHARD E. MARTIN
General Dynamics (retired), AIAA Fellow



PROGRAM

This presentation will summarize the history of the venerable Atlas rocket vehicle from the conceptual design ideas of Project MX-774 (1946-48) through the first American ICBM of the 50's and early 60's to the recent commercial Atlas modernization program which has arguably made Atlas the most technologically advanced space launch vehicle in the world today. The many projects and versions which have now produced over 520 flights will be summarized. Mr. Martin is well suited to present this history as he was continually involved with Atlas as the first dynamicist assigned to the small predesign team in 1951 through retiring as the GD Space Systems Division senior technical staff member in 1994.
Some of the specifics to be covered are: the unique "steel balloon" tanks conceived by Karel Bossart in 1946 which are shown to still be the most weigh-efficient tanks ever flown, some of the excitement and drama of selecting Atlas as the first ICBM and of the first flights, Atlas 10B - the first vehicle to be placed in orbit, Atlas Mercury - putting the first American in orbit, Centaur - the Atlas upper stage and first hydrogen fueled rocket, the subsystem hardware and software changes that make the Atlas of today an advanced technology vehicle.

DINNER MEETING

5:15	Open Bar (Beer & Wine only)
5:30	Dinner
6:30	Social
7:00	Presentation / Close Bar

Entree: BAKED CHICKEN

MEMBERS	$ 5.00
NONMEMBERS	$10.00
STUDENTS/YOUNG MEMBERS	$ 5.00
UNEMPLOYED MEMBERS	$ 5.00

ROBERT R. GILRUTH RECREATION CENTER
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CALL ONE OF THE ABOVE FOR RESERVATIONS.
NOTE: RESERVATION DEADLINE IS THURSDAY, JANUARY 16 COB.
ANY CANCELLATIONS ARE REQUIRED PRIOR TO DEADLINE. NO-SHOWS WILL BE BILLED.
ALL ARE WELCOME
DINNER RESERVATIONS ARE NOT REQUIRED FOR ATTENDING THE SOCIAL & PROGRAM ONLY.