

# THE NOON



# BALLOON



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The Official Newsletter of THE NAVAL AIRSHIP ASSOCIATION, INC.

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No. 82

Summer 2009

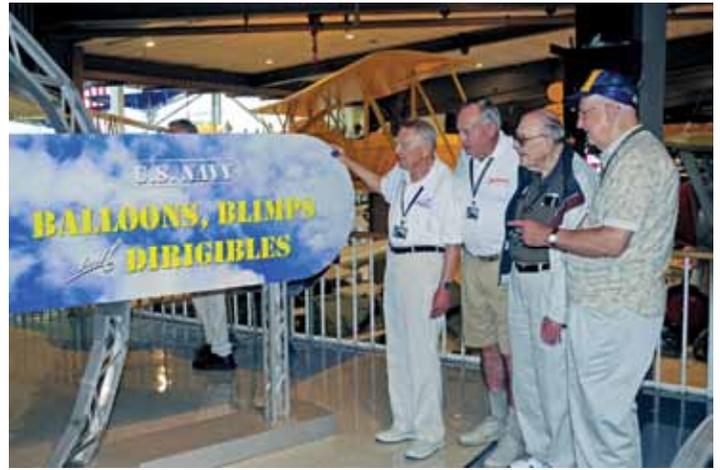
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# Reunion Wrap Up Issue



NAA Chairmen and Officers: back row left to right, Vice President, Fred Morin; Technical Committee Chair, Norm Mayer; Noon Balloon Editor, Richard Van Treuren; Front row, President Herm Spahr and Secretary-Treasurer Peter Brouwer.



Norm Mayer, Ross Wood and Bob Forand at the entrance to the Navy LTA exhibits at the National Museum of Naval Aviation at Pensacola Naval Air Station.



Debbie Van Treuren, Donna Forand, Lorraine Madden and Fred Morin.



Naval Airship Association reunion attendees in front of the L-8 car.



More attendees at the L-8 car.



Jerry and Joan Bess are greeted at the check-in desk by reunion co-chairmen Mort Eckhouse and Joe Hajcak.

*Thanks to Herm Spahr, Ross Wood, Richard Van Treuren, and David Smith for the use of there photos.*

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**ISSUE # 82**

**SUMMER 2009**

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On the Covers of TNB #82: Reunion 2009

## Lending a helping hand to Navy LTA



After the 2007 Lakehurst NAA reunion Fred Morin of Norwell, MA came aboard as our associations membership director. Fred has had a life long interest in Naval aviation having lived all his life in the shadow of NAS South Weymouth. For many years Fred worked as a supportive citizen on committees in efforts to support the the Navy's continued use and utilization of South Weymouth. Freds's efforts in regards to lending a hand to the Naval Airship Association as membership chairman has resulted in a great membership brochure which we have been distributing to naval history buffs as well as veteran organization. Fred is looking for other ways to "get the word out" about the NAA organization. He is open to any suggestions.

At the recent NAA reunion in Pensacola Fred answered the call and stepped up to become the organizations new Vice President, with a main emphasis on membership. Thanks Fred for "Lending a Hand" to Navy LTA.

All material contained in this newsletter represents the views of its authors and does not necessarily represent the official position of the Naval Airship Association, Inc., nor its officers or members.



*Above: Deborah Van Treuren checks out the balloon display at Sun-n'-Fun 2009. She was invited to talk LTA at the 2010 event for which she will receive technical assistance from our committees.*

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## EDITORIAL

R. G. Van Treuren, rgvant@juno.com  
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Trying to squeeze ten Space Shuttle flights into these final two years 2009-2010 was almost incompatible with our Reunion, but at least my ultimate tar-baby book is finished. We are now proceeding on the final chapter of our video history series, "The Early Days," and chasing the dream of "ZRS The Movie." Several members ordered the book and most of those have offered comments.

**Bob Forand** e-mailed, "I have read and absorbed the book, "Airships vs. Subs." Gosh!! GOOD WORK! How did you ever do it? There is a lot of good stuff in it. My hat is off to you. A most comprehensive, fact-based story of LTA operation in WWII. Also the parallel history of subs and LTA. A "must have" book for anyone who has participated in WWII LTA activities. It was very revealing as to what was going on in the WWII battle of Atlantic anti-submarine warfare. As a typical K-ship pilot in a squadron, I carried out orders as they were given to me, flew missions and reported results. Other pilots told of their missions along with incoming pilots coming from other squadrons. However, we never knew the whole picture, as to what was going on. On VE Day, I was waiting to board a ship in NY to take me to a new squadron in Great Britain. We were never told where it was located in GB. This book reveals it all. Your book is most informative." Another gushed, "It's not a book, it's an encyclopedia!"

**Tom Cuthbert** e-mailed, "I am slowly reading your "Airships vs. Submarines" book, a marvelous work; my sincere congratulations. I have written three electrical engineering books totaling 1,500 pages, so I know the tremendous effort you have expended. Your readers appreciate that very much!"

**Laurie Soffe** e-mailed from New Zealand, "Have spent the last couple of days ignoring other chores to read through "Airships vs. Submarines" - a vast repository of knowledge indeed. Don't know how you found the time to write it and put it together on top of your other workload. I learned a lot of new information about US airship operations thanks to it. Many of the photos I hadn't seen before either. There is enough information included to form the basis of other extensive essays as well, such as documenting to chequered safety record of service aeroplanes and naval vessels. And the actual performance records of surface escort vessels - as compared to the airships."

New member **Robert Feuillo** e-mailed from France, "I am flabbergasted by the amount of work that you have put in your book 'Airships vs. Submarines.' The US Navy

Airship community has such a rich history that it looks as an endless source of events and pictures."

Others offered discussion at the Reunion; we had a most interesting round table with **Joe Konk**, **Bob Forand**, **Lou Prost** and **Bob Ashford** on the outrage of the K-14 case. Others phoned about the book. **Jim Shock**, author of five definitive LTA books himself, called to express his surprise that anyone could have located so much stuff. Indeed. For a project that started out as an article - how many combats between subs and airships could there have been, really? - and evolved into a decade-long struggle of applied time and fortune, I take great pleasure in hearing from the few who still care that the published combat record of the airship in two world wars had been badly distorted by classification and prejudice.

### New Guns On U-Boats Hamper Work of Blimps, Knox Declares

BY CARL SCRIVENER

The navy's coastal patrol blimps from South Weymouth and other Atlantic seaboard bases face a vastly increased danger in powerful deck guns which have been installed in Nazi submarines. Secretary of the Navy Frank Knox revealed today in Boston.

#### Avoid Active Areas

The peril of the new deck guns on the Nazi subs has not necessarily curtailed the use of the lighter than aircraft on coastal patrol, but has made it "unwise to use them in regions where there are a lot of subs," Secretary Knox said.

He indicated that the blimps are no longer used in "active areas", because of the danger of being shot into the sea by the Nazi deck guns.

We no more declared "victory" and started binding when the first vital tidbit previously unknown came our way via Bob Forand (above, showing what was *clearly* the case without being admitted in the published record). So much for the nay-sayers who insist senior leadership always gave the ASW blimps an even chance. Ω

- R. G. Van Treuren

## View From The Top: PRESIDENT'S MESSAGE

By all accounts the 15th bi-annual reunion of the NAA was a success. A welcoming letter from the Honorable Michael C. Wiggins, Mayor, City of Pensacola, was received and read at the reception. It was placed in the Ready Room for all to read.

The day-long activity at the National Naval Aviation Museum was a grand experience. Most marveled at the quality of aircraft restoration and the expansion of exhibits, especially the LTA portion. Despite the low hanging scattered clouds, everyone enjoyed the Blue Angels flight demonstration and some elected to return the following day for a second performance when the clouds were higher.



Despite the low attendance at the General Business Meeting, a quorum was present and important issues were discussed. The meeting was opened with the Pledge of Allegiance led by George Allen. In addition to the normal procedure of approving past minutes and the Treasurer's report - an election of officers was held. Mort Eckhouse read a Report from the Nominating Committee, Chaired by Walter D. Ashe, nominating (photo above, L to R) Fred R. Morin as Vice President, and reelection of myself as President and Peter F. Brouwer as Secretary/Treasurer. There were no nominations from the floor and the election was unanimously approved. I am pleased to welcome Fred to the team - he has done an outstanding job as Chairman of the Membership Committee and will continue to do so. I can depend on Pete to continue his excellent performance and I will do all I can to earn the trust and confidence of the Membership.

The proposed changes in the By-laws submitted by Bob Ashford and approved by the Executive Council Sept 1, 2008, were reviewed. The proposal had been submitted to the Membership in Noon Balloon #79, returning the positions of Secretary and the Treasurer to the original combined office of Secretary-Treasurer. In addition, the changed name of the National Naval Aviation Museum (NNAM) was inserted. The proposal was approved and the By-laws amended without dissent.

George Allen performed his traditional MC at our annual banquet. Mort Eckhouse introduced Robert L. Rasmussen, Director of the NNAM, as our guest speaker. He told about the recently mussel-encrusted SBD aircraft recovered from the depths of Lake Michigan after 70 years, which will be restored. He also spoke about the privately funded proposal to recover an F9C SparrowHawk aircraft from the wreckage of the USS *Macon*, located in the Pacific Ocean off Point Sur. This effort was halted by the intervention of environmentalists who claimed certain regulatory procedures had not been followed. Rasmussen was presented a check by Bob Ashford on behalf of the NAA, which was quickly acknowledged.

Dear Herm:

I want to thank you and your organization for the generous gift to the museum Wednesday evening. Your support is very much appreciated.

I have deposited your \$7,500 with the Museum Foundation where it will be held exclusively for Museum Program use. I will apply it to the LTA exhibit wherever possible and anything not used for this will be a help in upgrading our PB4Y-2.

I really enjoyed our banquet dinner together and I greatly admire your organization. I wish fighter pilots could match your enthusiasm.

Thanks again!

Sincerely, "Bob"

Bob Ashford was given an appropriately engraved gavel on behalf of the Membership for his leadership as Past Commander and his continuing service on the Executive Council.

George Allen closed the meeting at 2100 hours, as scheduled. It was unfortunate that time did not permit George, and his associate MC, Warren Winchester, to conduct a planned audience participation event. Thanks to both for their efforts.

The next reunion is tentatively planned for the fall of 2010. A Planning Committee will be formed to select a proposed site. Ω - Herm Spahr

### THE NOON BALLOON

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Publisher: **David R. Smith**

[www.gyzep.com](http://www.gyzep.com)

(This is the New Team's "dozenth" Issue!)

## TREASURER'S STRONGBOX

We hope you are all enjoying summer! Our reunion was enjoyed by all. Our thanks to **George Allen** for 18 years of service to Small Stores. **Ford Ross** will serve as the new Small Stores chairman.



The LTA exhibit at the National Naval Air Museum is outstanding! Your donations to the museum have allowed the creation of this display. (Above photo) Past-President Bob Ashford (right) presented a check for \$7,500 to the museum's CAPT Bob Rasmussen at the banquet dinner.

## WELCOME TO OUR NEWEST MEMBERS

Barry B. Harshaw – Malvern PA	Alan Ram
– Elizabeth City NC	
G. Wick Elderkin – Portsmouth NH	Frank
Petrucci – Beverly Hills FL	
Joseph M. Garrido – Key West FL	Donald
R. Rogers – Overland Park KS	
Elliot P. Sheffield – Tupelo MS	Bob
Fleischman – Ft. Lauderdale FL	
Peter G. Cotton – Hugo MN	Ronald
E. Ekstrom – York PA	
Adrian P. Cervantes – D.F. Coyoacan Mexico	James L.
Brown – Fredonia WI	
Owen D. Werth – Alpena MI	Harry
V. Werth – Alpena MI	
Brant K. Werth – Alpena MI	John T.
Moore – Irving TX	
Claude Makin – Lake Forest CA	Edward
E. Miller – Cape Coral FL	
Robert Feuillooy – Versailles France	Curt J.
Westergard – Falls Church VA	
Melissa A. Miller – Blairstown NJ	

(Reinstated member)

Edward Clark – Green Cove Springs FL

## DONATIONS

Leonard B. Pouliot	Rosemary Sheehy – H
Jack I. Freedman	Agnes R, Paskow – H
John H. Spangler	Rose Lesslie – H
Lou Prost	Gusti Simmons – H
Stephen J. Ulrich	A. Jean Minnick – H
Warren E. Savant	Nancy Tull – H
Charles S. Sapp	Jean F. Wheeler – H
Stanley C. Owen	Ida Mae Burk – H
Robert W. Keene	Berda F. Allen – H
Sharon H. Troxell	Robin Lee – H
Edmund Kasner	Margaret C. Hennigan – H
Harvey M. Gladstone	Gloria Molander – H
Patience Walters – H	Eleanor A. Mizvesky – H
Nancy R. Klein – H	Myra P. Jennison – H
Fran Mayfield – H	Pat S. Seal – H
C. Belle Bell – H	Helen Pearman – H
Dorothy A. Dannecker – H	Jeanne V. Punderson – H
Pauline Nevin – H	

In Memory of the family of William H. Clarke: Donation from Mary Clarke (wife) of Auburn, CA; Gary Clarke (son) of Roseville, CA; Jean Clarke (daughter) of Lincoln, CA.

In memory of the family of Herbert "Herb" Biedebach: Donation from John K. and Jean C. Loecher, Sun City West, AZ, friends of Herb. Also, James and Elizabeth Earnest of Huntsville, AL, friends.

In memory of the family of Donald Elwood Smith: Donation from wife, Joan M. Fry Smith, Pasadena, CA.

In memory of CAPT George Watson: Donation from wife, Clytic Watson of Wilmington, DE. William is buried at Annapolis, MD.

- Peter F. Brouwer Secretary/Treasurer

## PIGEON COTE

*Our Treasurer reported,* “The reunion registration letter marked for **C.R. ‘Mac’ McCune** of Akron came back to us as not deliverable. (C.R. was paid up to the year 2017 in our records.) **‘Ren’ Brown** of Akron followed up, “After spending Friday afternoon sleuthing Bob’s home and talking with neighbors and searching my personal records, I am now looking at a four-year-old obituary: C.R. “Bob” McCune, 75, died on December 28, 2004. A 1997 file documents Bob donating to the LTA Society a number of framed photos from his father’s office at Goodyear. “Whitie” McCune was a Superintendent over the Balloon Room and associated fabric products made by Goodyear. This included airship envelopes, barrage balloons, life rafts, decoys of trucks, tanks, artillery guns. gas masks, etc. Whitie probably worked at Goodyear in the 1920s thru the ‘40s. Bob’s home is for sale. His son lives close by ~~ Robert McCune, 127 Samoa Drive, Akron, OH 44319 330-645-6308.” Ω

**“Red” Layton** *e-mailed,* “In 1952, when I was visiting Vought Aircraft in Dallas, I met the Administrative Officer, John Dale Pye Hodap. When he learned that I was a Lighter-Than-Air pilot, he told me the following story:

In 1935, Hodap was the Paymaster at Moffett Field and just prior to the *Macon’s* last flight he was visited by the mess boy, Edquiba, who gave him an envelope and asked that he keep it until Edquiba returned from the flight. After the crash, in which Edquiba was one of the two fatalities, Hodap opened the envelope and discovered that it contained eleven 1 thousand dollar bills. Remember, this was at a time when a Mess boy made \$21 a month. After some investigation, Hodap discovered that Edquiba had a wife in the Philippines and the money was forwarded to her. \$11,000 to a widow in the Philippines in 1935 must have given her the status of a millionaire! In other *Macon* trivia, I have met over 60 of the *Macon’s* crew. **Wilmer Conover** ([her last] elevatorman) was my Commanding Officer in ZP-2 Detachment 2 at Key West. Monty Rowe was the Structures Officer in that Squadron. When I was in training, Malak was the Leading Chief at Lakehurst, Leo Gentile was Power Plants instructor in the LTA pilot school, Bosun Buckley was the Station Fire Marshall, and Bill Baker was in the Overhaul Department (he later did engineering work on the Heli-Stat).” Ω

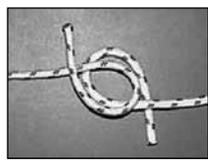
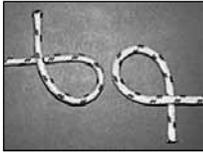


*No one wrote in about having known either Ginger or Greenwald in this photo. You...?*

**Herm Spahr** *e-mailed Doug McFadden,* “Looking back, it is my observation that airships were doomed regardless of any outstanding performance. My book will give you further insight ... To answer your question: During the “test” period we maintained slightly less than 100% on station coverage. Understand, the challenge was made for the worst possible weather period of the year: January, February and March at NAS Lakehurst, NJ. In response to my question we were told the “test was to be performed under war-time conditions - up to but not including the loss of airships or life.” Under those circumstances I launched an airship under gale conditions which was heavily coated with ice and in danger of deflation. The only solution was to get the ship over warmer ocean water where the ice might melt. During the “Whole Gale” [*exercise*] our airships were the ONLY aircraft to maintain station. Records will show that NO aircraft (military or civilian) flew anywhere along the east coast for a period of five days. Furthermore, the ENTIRE fleet left station and steamed down wind for comfort. My book reports that in an earlier ASW operation using ZP2 K-ships from Airship Squadron THREE, The COMASDEVFORLANT sent a message quote: “The completion of Phase 2 of my Op-Ord 19-59 marks another page in our book of knowledge of antisubmarine warfare. We need not wait for the results of a final evaluation to know that your operational performance, often under extreme adverse weather conditions, over a long period of time was most outstanding. Sincere ‘well done’ to you and all who made this performance possible. ...” The above was reflected in my fitness report.” Ω

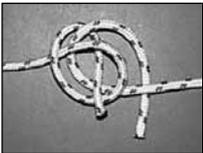
**John Fahey** has been working to correct a local deficiency in WWII history, and **Herm Spahr** responded in that message stream: “It seems regrettable to me that the historic roll of airships during WWII should be deliberately left out of the Virginia Beach public display honoring those who defended our country so valiantly. Several times I have heard scurrilous remarks made about ADM Rosendahl and similar comments about LTA in general were widespread, as I’m sure you know. This situation brings to mind a letter I received from **John Kane** lamenting about the Naval Aviation hierarchy - which he listed as the “Top Guns” at the top and a descending order of other aviation units with VO/VCS, MATS, and LTA at the very bottom. I agree with much of what Captain Kane wrote, however this attitude is an unforgivable disservice to many who served their country honorably and well. With Fahey’s help I am hopeful we can persuade the City of Virginia Beach to correct their oversight.” Ω

**Mark Lutz** found this on the internet: “Zeppelin Bend or Rosendahl’s Bend: This was Lieutenant Commander Charles Rosendahl’s preferred bend for mooring the zeppelin that he commanded, which is where the name of this bend comes from. Make a loop

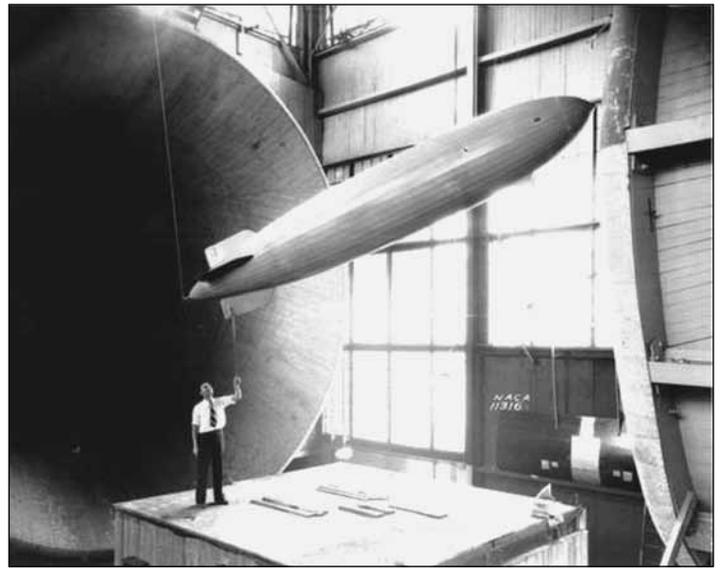
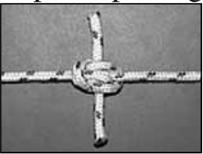


in the end of rope which is coming in from the left, making sure that the end curves upward and crosses over on top of the main part of the rope. The end of rope coming in from the right should

form a loop with the end curving down and crossing behind the main part of the rope (picture 1). Notice that the two loops are not mirror-images of each other, and notice that the end of rope coming in from the right does not pass through the loop on the left. Place the loop on the left on top of the loop on the right (picture 2), then bring the end of rope on the left through the center of the knot from behind (picture 3), then bring the end of rope on the right through the center of the knot from the front (picture 4). Notice in picture 4 that the two ends of rope are passing through the center of the knot from different directions (one from behind and one from the front). Dress and set the knot (picture 5).” Ω

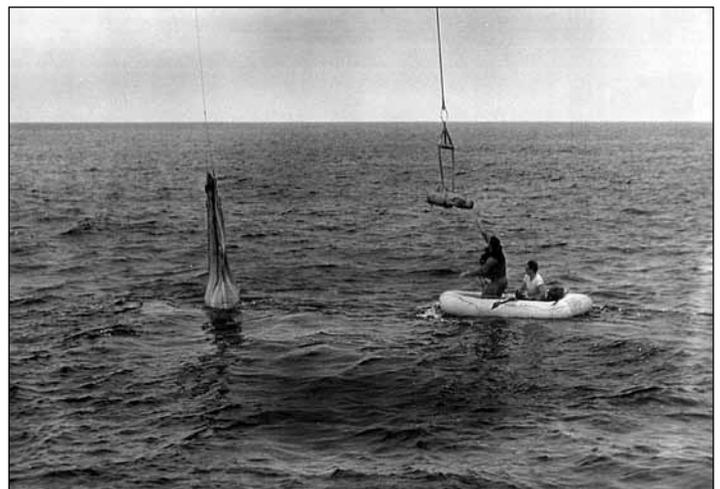


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**Laurie Soffe** wrote, “Much appreciate the fin book. [“USS Akron and USS Macon: An Engineering History of Fin Design” - new photo of ZRS model in the Langley wind tunnel, above] **Jeff Cook** has done a very good job of bringing all the factors involved in the design and analysis out into the open in one location. The relative merits of cruciform vs. no cruciform construction will probably go on forever though. (I tend to belong to the pro-cruciform group - got to keep the pot stirred!) Work is progressing fairly slowly on Herman Van Dyk’s book, but will be getting stuck into it in earnest shortly when a couple of other chores are gotten rid of. I suspect it will be third quarter before it is out realistically. Am also investigating a few other titles - reprints of old out-of-print material in very short runs which I have copies of. Some balloon orientated, but mostly airships. Will keep you posted on developments when there is some tangible news.” Ω

**Mr. David Buell** of California donated a pile of photos from ZP-32. Some were dated; for example, this air-sea rescue demonstration is given as OCT 44. Note ballast bag.



**Walt Ashe** called saying he agreed with **Gordon Vaeth** that Ed Harrison was indeed ADM Rosendahl's "Lieutenant X" electronics genius so instrumental in the installation of avionics in early WWII airships. Walt remembered Harrison had made Captain and he had seen Harrison at Pt. Mugu (CA) years ago. That's the Pacific Missile Test Center. Anyone know how we could get in touch with Harrison? Is he still with us? Ω

**Jim Kissick** traded a copy of his most interesting book for the Editor's and wrote, "Just wanted to pass the word that my autobio is to be published by a company in Bradenton. [See "Media Watch"] I am to be the promotional agent for it. It is the story (factuality plus pictures) of a Florida kid who was a civilian for 8 days out of high school in 1942 before wearing a white hat. Your [ZRS] "SBD-Z1" photo got my attention because I lost my innocence to aviation in the back seat of a SBD (incidentally, yours is [based upon] a 1, 2, 3, or 4.... the last ones, SBD-5s no longer had the telescope bomb sight). Commissioned in 1948, I retired in 1967 as one of fewer than 100 quad-qualified pilots - back into dive bombers (plus many other props), all early jet fighters, blimps and ASW Helos. Everyplace I went, the unusual seemed to happen to me, the most memorable in ZP-2. One whole chapter is LTA. For me there will be no profit, just to get out an extremely unusual military career. The VA asked for a copy of the original draft several years ago, and put in the congressional library in Washington." Ω

Once again we are happy to recall a story from the POOPY BAG BALLONET by Harry Titus: "Bob Wilson, barrister, thinks that if LTA had had a "32-Knot" Burke, a Marc Mitscher or some other of the war heroes, we, too, would have LTA history up in lights. He recommends that anyone having rosters of their squadrons to submit a copy--I suppose, to me. Bob was a well-travelled warrior: Lakehurst, Class 15; ZP 12, 32, 11, 24, 22, 42, 15 and 33. In addition, the usually TDYs. One, Naval Justice class at Pt. Hueneme. Is that why you became a lawyer, Bob? Bob sent a great story on the civilian spotters used during the first years of the war. In the story, PBYs, PBMs and civilian aircraft were given credit for stopping the U-boats but never praise for us Blimpers. We were not mentioned in the story. It seems that a spotter reported a blimp as "one submarine flying high." Another spotter reported a P-38 as "two planes with their arms around each other."

Carl Nancken sent quite a few sheets from US Naval Aviation 1910 - 1970, NAVAIR 00\_80P-1. It is a voluminous pub and it took lots of time and effort just to copy what he did. Some of the happenings: 16 DEC 1938, the first of 135 K-ships were delivered to Lakehurst (K-2); 2 JAN 1942, the first organized LTA unit, AirPatGrp 1 and ZP-12, formed at Lakehurst; the use of sonobuoys was demonstrated by the K-5 and S-20 on 7 MAR 1942; on 18 MAY 1942 a ZPN was ordered (825,000 cu.ft.). The ZP2N-1 (ZPG-2) made its first flight with 975,000 cu.ft. A total of 17 were procured On 25 MAY 1954, Henry Eppes landed a ZPG-2 airship at Key West after a 200.1- hour flight. Henry received the DFC and Harmon International Trophy for Aeronauts; Charlie Mills also received the Harmon Trophy for flying a ZPG in an ice-accreting experiment unparalleled in LTA history. In spite of heavy airship icing, propeller icing, severe vibration and flying ice particles, Charlie landed under instrument conditions (GCA) in a manner that retained a maximum amount of ice for analysis; during the period 14-24 JAN 1957, the ZW-1 airships maintained continuous radar patrol 200 miles out over the North Atlantic through some of the worst storms experienced there in years; 1 MAR 1960, a ZPG-3W (ZW-1) was on station 49.3 hours with 58 hours air time; on 31 AUG 1962, Walt Ashe, pilot, made the last Navy LTA flight. That ended a 45-year LTA saga that began with the DN-1, the Navy's first airship.

How about the Italian fighter, Primo Carnero piloting a Navy airship! No, he was just a visitor sitting in one at Venice, Italy, according to Frank Budner. Frank tells me that he was the pilot of the K-82 which spotted those survivors of the Cuban ship, La Libertad. Frank directed the USS *Natchez* to their position. In the last issue [of *PBB*], I told of Fred Mitschke's beer-making exploits. Well, he sent me the nicest gift. It was a beer mug engraved with his beer's name and logo: Mitschkebrau Bier. Fred says: "To some, life is a vail O' tears--to the rest of us good guys, it's a trail O' beers." If I have but one trip left in me, it'll be up to see Fred and sample his schnapps. (Yes, I know that's not really beer.) Ω

[Harry reported, sadly, that Fred passed away before he could make the trip.]

**Tom Cuthbert** e-mailed, "Great NB81! The layout has really been superb in the last several issues. Thanks for including my carrier-landing article. I attach a small jpg composite of two small Navy photos I found at the bottom of my family picture archive and scanned. The notations on the back are: ZP2K type airship aboard aircraft carrier (CVE) and ZP2K airship taking off of Escort class aircraft carrier. Note helicopter in



background, acting as plane guard. Also note at the lower right the two sailors having abandoned the short lines are running for cover! I imagine that some on the bridge also were beginning to sweat.

My wife and I were in Monterey, CA on vacation last week. Our friends in Sunnyvale who bought our Cessna 310 airplane

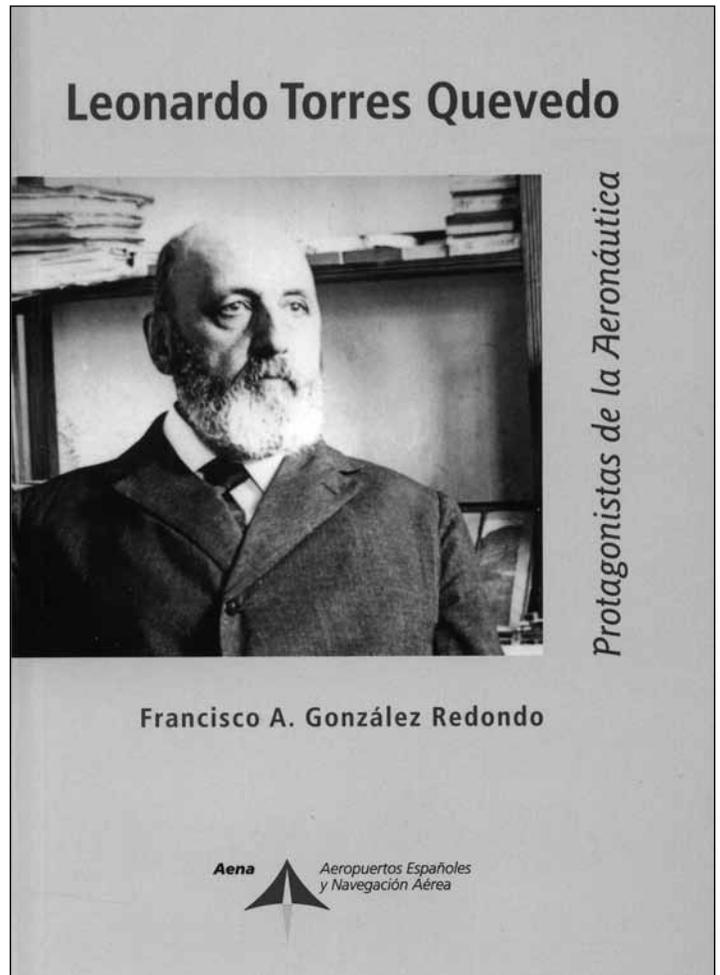


secretly arranged for all of us to ride in the NT airship on the occasion of my 81st birthday. Poor weather changed our plans to a tour of the Moffett

Hangar 2 April 9, 2009. It had been 53 years since I was last in a hangar of that design, and it was a thrill to go back into my old environment. You can also see my seven-minute tour movie conducted by Airship Venture hostess Janice Martinson on my web gallery at: <http://gallery.me.com/trcepep/100359>. Seeing the LTA new technology was also very impressive. After the Botswana NT loss, my uneducated guess is that the NT ships will always be vulnerable to severe kiting damage due to that aft landing wheel and the mass of the extreme tail engine. Any impact while moored should put a severe bending moment on the aft envelope. The ZPK design resulted in the moored impact to maybe crunch the wheel and perhaps car, but at least the resulting force was transmitted to the middle of the envelope all around the extensive upper car perimeter." Ω

Spanish member Francisco A. González Redondo e-mailed, "Buenas tardes! Just two more lines to inform you that our exhibition "Leonardo Torres Quevedo: los

dirigibles" can be visited at Bilbao's Airport (Northern Spain) during April and May. You can see photos at [http://www.torresquevedo.org/LTQ10/index.php?title=AENA\\_Aeropuerto\\_de\\_Loiu\\_-\\_2009](http://www.torresquevedo.org/LTQ10/index.php?title=AENA_Aeropuerto_de_Loiu_-_2009) and download the new free catalogue from <http://www.torresquevedo.org/LTQ10/images/2009LoiuExpoAENA.pdf> (See *Francisco's piece in "History Committee"*) Ω



**Bob Forand** e-mailed, Page 383 of "Airships vs. Submarines" a picture of the Big E coming through the canal. I brought back from Chorrera 4 photos that we took of the Big E and the battle ship USS *Washington* going through the canal. ... We flew the K-116 on Oct 27th to Jamaica and on Oct 28th we headed on to Richmond. On the way a fuel line let go on the port engine, and we had to secure that engine. Our headway was cut down considerably and Richmond notified us that we should land at Key West. We then got a mechanic to volunteer to go out on the outrigger and correct the problem. He had a rope tied to him and we slowed the ship down and circled to the left while he made the repairs to the gas line. We were able to make Richmond by dusk, as they had no facilities for a night landing. We were also asked to ferry the ship on to Weeksville the next day but the crew wanted to head home to the various corners of the country by train. **Jim Shock's** "U.S. NAVY AIRSHIPS" lists the K-116 as the last airship to return from all the southern bases." Ω

**Marc Frattasio** e-mailed, "NAA member **John C. Yaney** is in the advanced stages of putting a book together about the Naval Air Development Unit or "NADU". If you can help, contact John Yaney directly via e-mail at jyaney7@comcast.net or at 81 West Street, Whitman, MA 02382." Ω

**Al Robbins** attended the AIAA LTA TC Symposium concurrent with our NAA Reunion in Florida. He answered a survey and e-mailed them, "The community has never validated any scaling hypotheses regarding airships since Santos-Dumont won his first prize. Wind tunnels provide a teaser capability...performance under constant temperature, constant velocity, uniform pressure, laminar flow conditions. The most highly publicized hybrid airships will respond to three disparate forces: Buoyancy (function of pressure, temperature, volume and quantity of gases involved); Aerodynamic lift and drag (shape, orientation, velocity and air density); and Air Cushion Landing System (cushion shape, area, volume, elasticity, gap area, cushion pressure, blower/fan characteristics, inertia and compressibility effects.) N.B. All air-handling systems exhibit hysteresis - time and forcing functions are critical. Perhaps someone could present a paper on the Flying Wind Tunnels, which were instrumental in VSTOL aircraft development in the late 50's through the end of Navy LTA. There are still one or two Hovercraft builders and operators in existence. It would be most useful to tap one of them for a session on the state-of-the-art cushion systems. For the large ships we used the Power Spectral Density tables for the Pierson-Moskovitz model (various sea-states of the mid-Atlantic). Don't know what, if anything, they used to model the English Channel, for the incremental improvements to the SR-N4 skirt system. Perhaps someone could present a paper on lift system performance improvements since 1980.

What happened to our Whale-watcher? Where are the Meteorologists? If LTA is going to rely on aerodynamic lift, we need to be able to measure wind better than 16 points of the compass.

Seems like a high endurance aircraft operating in the near-earth mixing zone should be capable of providing extremely useful data to the weather community. The airports should want airships to be around, and reporting. It would be helpful to learn what is being done to enable international operations, legalizing entering-leaving a country other than through established Customs Offices at established Ports of Entry. I'd hoped that CARGOLIFTER

would help establish procedures (also hoped they'd get a European Certification program).

Mr. Watanabe presented an outstanding paper on commercial airship operations with the NT-07. It's a shame that the German and American operators weren't there. It would be extremely interesting to hear a panel discussion on similarities and peculiarities of operations under three different regulatory and economic systems.

Every now and then a blind hog finds an acorn. Per Lindstrand presented us several:

The Spanish have accumulated a couple thousand flight hours on the ship he sold them several years ago. They are presently operating it from a commercial airfield coexisting with HTA operations. They supposedly find it extremely effective in detecting small wild-fires, permitting rapid extinguishment by a single fire-fighting aircraft. (Wonder if they've discovered how to get credit for CO2 avoidance?) He didn't indicate whether they had ever discussed buying a second ship. He expects to receive Type Certification on his new/improved ship this year. (Presumably this will include an approved flight manual, approved maintenance manual, and a viable training syllabus for both line-of-sight and remote operators.) A monumental advance for unmanned airships. Ω

**CP Hall** e-mailed, "I write to bring to your attention two items in the latest issue of AIR & SPACE Smithsonian magazine, June / July 2009.

The first item is an article by Dan Vergano. "Fear Of Floating - What caused sensible England to see a Zeppelin behind every cloud?" This is an essay about newspaper reports of Zeppelins over the British Isles in the first decade of the 20th century. It is not a matter with which I am familiar so I cannot comment as to the accuracy of his commentary. I note that his brief description of the naval arms race between UK and Germany seems flawed in the specifics.

The second item is an advertisement for a new book, LIGHTER THAN AIR – An Illustrated History of Balloons and Airships, by Tom D. Crouch. The book is offered by The Johns Hopkins University Press, 1-800-537-5487, www.press.jhu.edu." Ω

## **SHORE ESTABLISHMENTS: LAKEHURST**

We were [recently] told that deflation of the Navy MZ-3A airship, tentatively scheduled for June 20th, is now on “hold” at least temporarily. This is the only information I have at this time. It has been quite a drama of yes-no-maybe for the last two years.

I hosted a visit at Lakehurst on April 29th by Dr. Horst Schirmer, a 77-year-old semi-retired urologist from Johns Hopkins University Medical Center in Baltimore, MD. Dr. Schirmer’s father, Dip. Ing. Max Schirmer, was an aerodynamics engineer with Luftschiffbau-Zeppelin (LZ) from 1922-1945 and worked with the wind tunnel, propeller, and water recovery design on Zeppelins LZ-126 thru LZ-131 before switching to HTA and (later) V-2 rocket work during the war. Horst flew on the LZ-127 and LZ-129 as a small child with his parents on brief flights as company guests. He attended school with Knut Eckener’s children and the other children of LZ employees, Dr. Durr was a frequent guest in the home and Luftschiffkapitan Hans Flemming was his Godfather.

We spent an enjoyable four hours together, touring the Navy MZ-3A blimp in Hangar #6, visiting the *HINDENBURG* crash site on the field and touring the historic artifact displays of the Navy Lakehurst Historical Society in historic Hangar #1. As his father had lived until 1985, he had many opportunities to discuss the various aspects of the Zeppelin era with him. Among the details he confirmed were that Dr. Eckener was adamant that the *HINDENBURG* accident would not have occurred if he had been aboard as he never would have attempted a “high” landing under the prevailing weather conditions and very few people in Friedrichshafen ever believed sabotage to be the likely cause of the disaster. As was told to me years ago by F. Willy von Meister, Eckener was so furious when he went through all the pertinent weather records, barograph tracings, etc. at the Lakehurst Aerological Department that he was too upset to speak to Max Pruss personally and did not visit him in the hospital for weeks. For even though Eckener would later complain that the deceased Ernst Lehmann probably influenced Pruss’ landing decisions, it was still Pruss’ ultimate responsibility for the ship as Commanding Officer.

The subsequent use of graphite on the lacing cords on the fabric of the LZ-130 as well as some addition of bronze powder to the “dope” was considered sufficient safeguard for complete bonding of the covering with the metal frame. There was no consideration given to re-working of the gas valve arrangement. Considering the change in the electrostatic differences between the ship and the ground after the landing ropes had a chance to get wet from the falling rain and differences in the ship’s electrical potential due to variations in engine settings (electrical charges usually leaving the ship in flight through the water vapor in the exhaust gases) we agreed we would speak in detail further. Among other projects his father worked on, Horst detailed his Father’s considerable involvement in engineering (and re-engineering) the airplane hook-on “trapeze” with which Ernst Udet had only partial success during experiments in the Spring of 1937. (Like American Navy pilots who learned the art before him, Udet had some trouble with the “boundary layer” around the airship hull as he approached the trapeze. The fact that the German trapeze was relatively “short” exacerbated this problem.) Max Schirmer

considered the water-recovery units for the LZ-130 among his proudest achievements, for their efficiency, ease of maintenance and the “turbofan” interior cooling fan which actually pushed a “thrust” out the rear of the engine car and compensated for the horsepower “robbed” by the backpressure of the condenser units. Despite the addition of water recovery apparatus (about 11,000 pounds of it) the LZ-130 was equally as fast as the LZ-129. Horst brought along some excellent diagrams of girder samples of different classes of German airships, together with ample notes pertaining to how disappointed the LZ design staff was when they looked over the designs of the R-100, R-101 and American USS *Akron* and USS *Macon*, all of which they felt were “inferior” if not outright “un-airworthy” compared to their own work. (No surprise there!) Our very fine afternoon coming to a conclusion over lunch and beer at a local restaurant, Dr. Schirmer agreed that he would like to drive up next week on May 6 for the Annual *Hindenburg* Commemorative Ceremony at the crash site. On parting, I felt like I had known this man for years after just a few hours. We shook hands and hugged like old friends. Am very much looking forward to spending some additional time with him and I remind anybody who is interested who is within travelling distance to Lakehurst that it might be worth the visit as well.



NAES LAKEHURST color guard marks 50th Anniversary of the loss of ZPG-2 #135448 as Captain Phil Beachy, USN, looks on. (left)

With rain falling and a last-minute decision to move the ceremony from outdoors into

historic Hangar #1, the Naval Air Engineering Station, Lakehurst and Navy Lakehurst Historical Society hosted approximately 40 guests to commemorate the 50th Anniversary of the loss of ZPG-2 # 135448, which crashed into the side of Hangar #3 while making an early-morning radar approach following a patrol May 14, 1959. Many of the crew were severely injured and took hours to be safely extricated from the wreckage piled onto the roof of the hangar. One officer aboard, Lieutenant (j.g.) David Lloyd was killed. LT Lloyd, a resident of nearby Pinehurst Estates, was married with two young children. He was buried with full military honors in Arlington National Cemetery. The ceremony included remarks by NAES Lakehurst Commanding Officer Captain Philip Beachy, invocation by the Base Chaplain, a color guard and the playing of “taps.” Special guest of honor was Mr. Robert Stefanski (above) of Middletown, NJ who was a 20-year old electronics tech aboard the “448” on that fateful morning. Still able to fit with ease into his old “ZP-3” flight jacket, Mr. Stefanski told several stories of his days in LTA and ZP-3. He credited his Navy training as a young man for allowing him to be incredibly lucky (he also survived the crash of P2V) and enabling him to go on to be a successful businessman and family man after leaving the service.



- Rick Zitarosa , NLHS, NAA Ω

## MOFFETT FIELD



*The word 'UP' is 78 ft. across; over 700 decal sheets totaling about 5,000 sq. ft.; required four techs four days to apply the Airborne Grafix sheets. Airship Ventures photos.*

Decorated with its first-ever film-promotion ad, *Eureka* will make the first-ever passenger flights between San Francisco and Los Angeles by a new Zeppelin. *Eureka* will allow passengers to enjoy spectacular views of California's coastline and Central Valley as they sail in comfort 1,000 feet above the sights. Weather permitting, departure was scheduled for May 20 with a return on May 26. In addition to a week of California Airship Cruises and Los Angeles Airship Tours, Airship Ventures will continue to offer scenic flights above the San Francisco and Monterey Bay Areas.



The next BRAC meeting will be held on 11 JUN 09. NASA has offered to finance the covering of the hangar in exchange for the Navy financing all the remaining environmental fixing left on the base. I hope that the forthcoming BRAC meeting next month will address that proposal. If the Navy agrees, it will be big news. I'll be getting the agenda for that meeting by the end of this month and it may have the proposal on it. Ω

**Ben DeBolt, Member,  
NASA & Moffett Field Historical Society**

## NEWS FROM FRIEDRICHSHAFEN

Submitted by Sig Geist



*Airship "Italia" at mast on Spitsbergen*

*"66°30' NORD – Airships over the Arctic"*  
Temporary exhibition in the Zeppelin Museum Friedrichshafen from 19th June until 20th September 2009.

What did Roald Amundsen and Umberto Nobile experience in 1926 on the first flight of an airship over the North Pole? Why did the Italian airship *Italia* crash? What role did the Soviet icebreaker *Krassin* play in the rescue? What research did LZ-127 *Graf Zeppelin* carry out on its famous Arctic flight? What was the significance of these research results and findings for the present day?

You will find the answers to these questions in the exhibition. It is about adventure in the "endless" ice and daring explorers in their airships, flying boats, balloons and icebreakers; as well as about the pioneer period of climate research and weather observation. A book will be published to accompany the exhibition and a varied supporting program will be on offer. Ω



*Icebreaker "Malygin" meets LZ-127*

Press release and photos courtesy of Zeppelin Museum Friedrichshafen.

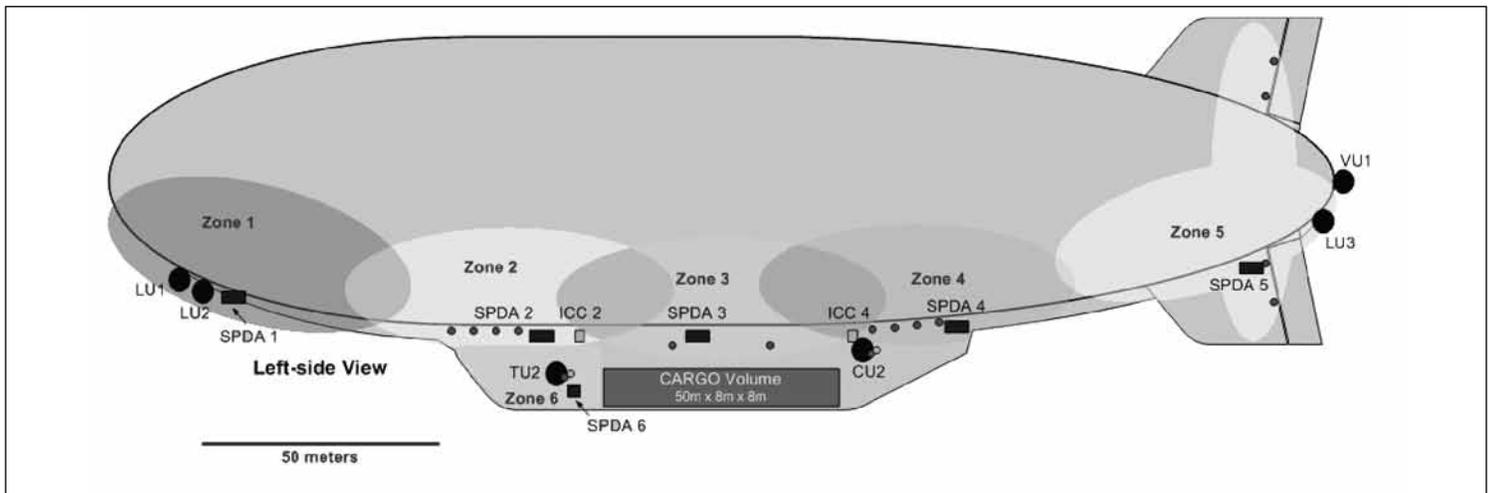
## Technical Committee

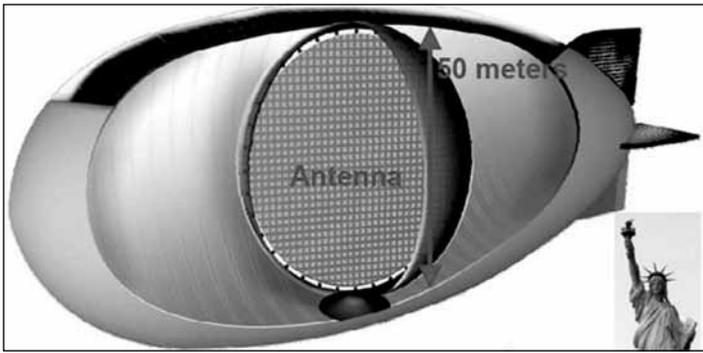
With the possibility the prototype radar-carrying High Altitude Airship flying before you read this, Ed. thought it useful to tap into some cc'ed e-mails for our readers. (Below, ZPG-5W and ZS2G-1.)



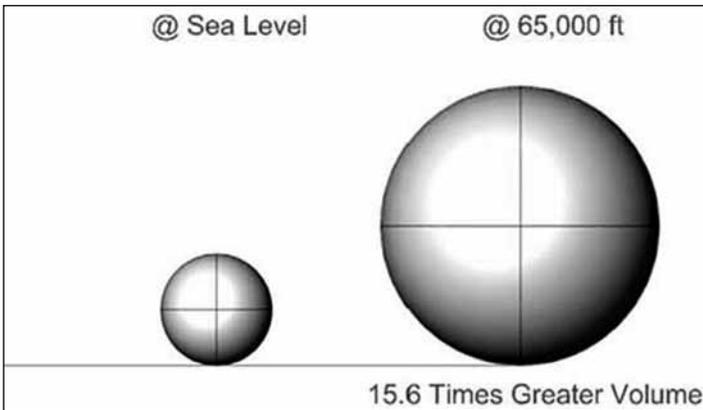
Member **Chris Severns** corresponded with **Al Robbins** concerning the former's paper on airship electrical systems. Chris had worked on the Cargolifter (electrical zone graphic, below) and just authored a paper on proposed A/S electrical systems. Al wrote, "The first airships I worked on were the ZPG-2s, I never got to even clamber aboard any of the earlier ships. The ZPG-2s had essentially the same avionics suite as the P2V-5s. We had two Nan-ships at NADU, one was outfitted with the AN/APS-20A, the other with the AN/APS-20B. They were both built by GE, and operated on the same frequency, but that was about the only thing they had in common. The number was kept to confuse Congress. My ship, the SNOWBIRD, was subsequently outfitted with the AN/APS-70 (XN-1), one of the competing low frequency radars (It lost the competition; I think that GE was the winning contractor. The system went

into the ZPG-3Ws, and possibly the ZPG-2 and -2 1/2. No fixed wing aircraft were large enough to carry the large antenna that was suspended from the top of the envelope.) They'd already stopped flying the 3Ws when I was ordered to report to ZW-1. The 3W was the first to come equipped with an internal auxiliary power unit. On the earlier ships, we had to chase the ship and hang the APU from an attachment point in front of the nose-wheel, and service the thing repeatedly whenever the ship was moored outside. This was one of the nastiest tasks in LTA; I was always amazed that more sailors weren't seriously injured during this evolution. The ZPG-2Ws and the ZPG-3Ws also carried a height-finder radar, with the antenna mounted in the prominent radome on top of the envelope. It was a variant of the Philco AN/APS-45 used in the RC-121 (AEW Constellations); don't remember it's nomenclature. The ships all used 28VDC and 3-phase AC (I think we used Delta not Wye wiring). Even while the Nan-ships were being introduced LTA was the orphan cousin. We got the huge radar because nothing else could carry it. (My wave-guide was specially reamed 5-inch copper tubing; I had to pressurize it prior to and throughout each flight from a large bottle of Sulfur Hexafluoride. Also had to get down in the radome and check to make sure that the gas was seeping out of each of the dipole antennas. I hated that damned rubber trampoline, particularly when we were swinging at the mast.) The propellers were originally designed for the B-17, our cockamamy gear-boxes were unique to the ZPG-2 and ZPG-2W (the 3W engines weren't inside the car) and so was the towed sonar. Virtually everything else was either already in the Navy supply system or was commercial off-the-shelf equipment (our teletype and Collins Single-sideband radio). (When they wanted to conserve fuel, they'd open the housing on the engine we'd been using, and our electrician would adjust the generator so that it wouldn't fall off the line at the low RPM.) We had some real problems with antennas; no decent ground planes in a fabric ship; but again no one else was interested." Ω





**C.P. Hall** sent a clipping from the *Chicago Tribune* about ISIS, (left) and observed, “It will be inflated with helium and fly at 65,000 feet... If a World War I Zeppelin flying at 20,000 ft. returned to base with less than half of the hydrogen with which it started the mission, how under-inflated, how large a ballonnet to be displaced, how much lifting gas will be valved off, to get a 21st century airship with radar and solar panels built to gov’t specs to 65,000 ft?... It will have a ‘light, thick skin.’ The prototype will be 1/3 production size; therefore it will be deficient enough that the project can be called off if politically expedient....”



I have the business card of an Army officer who spoke to the LTA Society’s annual meeting about the Army’s interest in LTA. Now the Air Force is interested in LTA. The Navy owns a stored blimp at Lakehurst and flies a rented blimp in Florida. I wish I could be more enthusiastic but I wonder how much of this is either expanding or defending turf instead of serious development/ Are we right back in the 1920’s when it was more important to stymie Billy Mitchell than it was to develop airships?” Ω

AVIATION WEEK reports: “Lockheed Martin hopes a demonstration flight this summer will lift the concept of high-altitude airships as persistent surveillance platforms off the drawing board and into the stratosphere. Unmanned airships are attracting attention because of their capability to stay aloft for weeks, even months, at altitudes that

greatly extend sensor and communications coverage. The company is planning to fly a subscale airship—the High-Altitude Long Endurance Demonstrator (HALE-D) in August.

HALE-D is one of several high-altitude concept demonstrations being funded by the U.S. Army’s Space and Missile Defense Command (SMDC). Others include the AeroVironment Global Observer, Aurora Flight Sciences Orion and Qinetiq Zephyr unmanned air vehicles and the Southwest Research Institute HiSentinel50 airship. An Army Science Board 2008 summer study concluded medium- and high-altitude untethered airships and unmanned aircraft offered the highest value as platforms for persistent communications, surveillance and reconnaissance. Factors cited included time on station and flying-hour costs.

Lockheed Martin has been working on its High Altitude Airship (HAA) for several years... the plan [is] to build a subscale vehicle to demonstrate the technical feasibility and military utility of an unmanned, untethered, solar-powered airship. Instead of a vehicle able to fly for up to a month at 60,000 ft. carrying a 500-lb. payload, HALE-D is designed to fly for at least two weeks carrying a 50-lb. payload...sufficient to demonstrate stratospheric station-keeping through a continuous diurnal cycle. HALE-D will be 270 ft. long and 70 ft. in diameter, with a hull volume of 500,000 cu. ft., making it about twice the size of the Goodyear blimp and slightly larger than Lockheed Martin’s [largest] tethered aerostat. The regenerative power system is spacecraft-derived for reliability, with thin-film solar arrays on top of the hull feeding 15-kw. of power to the propulsion system and payload and recharging a 40-kwh. bank of lithium-ion batteries. Partitioned solar arrays and multiple parallel batteries provide redundancy. The vehicle management system includes redundant communications, GPS/INS navigation and flight control computers, which have backup batteries. Propulsion is provided by two independent 2-kw. motors... [The full scale airship is to have four motor prop units.] HALE-D will be built in the Akron Airdock... The SMDC-provided payload is expected to be a communications package and camera. HALE-D has a cruise speed of 20 kt. at 60,000 ft., which should allow the airship to maintain station in the expected winds. HALE-D is a step toward SMDC’s vision of an operational HAA carrying a 2,000-lb., 15-kw. payload at 65,000 ft. for more than 30 days. Ω



L-M graphic

## **Spy blimp: Air Force Planning Giant Airship**

“Unmanned radar system offers big surveillance edge”

By Julian E. Barnes, Washington Bureau

“The next Air Force spy craft is likely to be a giant, unmanned dirigible that can remain aloft at high altitudes, keeping an unblinking watch on vehicles, planes and even people. The dirigible is the brainchild of the Air Force and the Pentagon’s research arm, which together will spend \$400 million to develop a prototype that could pave the way for a fleet of spy airships... The plans represent the final stage of work to develop a giant airborne radar system capable of providing ground operators with intricate detail over vast expanses, even if the dirigible is hundreds of miles from its target. The project reflects a recent shift in Pentagon planning and spending priorities under Defense Secretary Robert Gates, who has urged the military services to improve intelligence and surveillance operations while cutting high-tech weaponry costs.

However, it marks the return to a form of flight that has stirred anxiety and doubt ever since the deadly 1937 disaster involving the *Hindenburg*. In Iraq, the military has used less sophisticated tethered blimps called aerostats to conduct surveillance. Unlike other surveillance platforms, the proposed airship will stay aloft for 10 years and provide constant watch, Air Force officials said. “It is absolutely revolutionary,” said Werner Dahm, chief scientist for the Air Force. “It is a cross between a satellite and a Global Hawk [spy plane.]” The airship will fly at 65,000 feet, or 12 miles, beyond the range of any hand-held missile and safe from most fighter planes. At that height, it would be nearly impossible to see. But the dirigible could be vulnerable to some surface-to-air missiles and would be unable to maneuver out of the way. Nonetheless, the

airship’s range will allow it to operate at distant edges of any military theater, likely out of the range of many missiles. The airship would provide the military a much better understanding of an adversary’s movements, habits and tactics, officials said. The ability to constantly monitor small movements in a wide area — like the Afghanistan-Pakistan border, for example — will dramatically improve military intelligence, officials said. “It is constant surveillance, uninterrupted,” Dahm said. “To be able to observe over a long period of time, you get a much better understanding of how an adversary operates. When you only have a short-time view—whether it is a few hours or a few days—that is not enough to put the picture together.” The dirigible will be filled with helium and powered by an innovative system that uses solar panels to recharge hydrogen fuel cells. Military officials said those underlying technologies, including a very light hull and low-power transmitters, were crucial to making the project work. “The things we had to do here were not trivial, they were revolutionary,” said Jan Walker, a spokeswoman for the Defense Advanced Research Projects Agency. The final version of the airship will be about 450 feet long. However, the prototype will be only one-third that size. The craft is known to military planners as ISIS, or Integrated Sensor Is the Structure, referring to the radar system built into the structure of the craft. The ISIS has a hull made of a lightweight, thick skin. Zeppelins — like the Hindenburg — have a rigid external structure. Blimps are not rigid, and are given their shape from the pressure of the helium gas. According to military, the ISIS is closer to a blimp than a zeppelin, but officials most frequently call it an airship. Airship, like dirigible, is a broader term. The Air Force has signed an agreement to develop a demonstration dirigible along with the defense research agency. Due to be finished by 2014, the Air Force will begin to use the prototype after an initial three-month testing period. The military has not yet designated a contractor. Earlier work was done by Northrop Grumman in Redondo Beach, Calif., as well as Baltimore and other locations, and by Lockheed Martin in Palmdale, Calif., Akron and Denver. The Air Force’s intelligence, surveillance and reconnaissance - or ISR - abilities have improved dramatically in the last five years with the expanded use of Predators and other drones. Although drones can linger over an area for a long time, they do not watch constantly. The radar system is what gives the new airship its value to military planners. The radar would allow the military to see farther or with more detail.

“Being able to observe threats with a very large radar in the sky, we have the ability to see things much better,” Dahm said. “Being able to watch those things, understand what is happening, is really the game-changing piece here.” Ω

*(Ed. suspects there is some confusion between the older, more mature HAA & newer ISIS. U.S. Senator Tom Coburn, M.D. (R-OK) released the oversight report "2008: Worst Waste of the Year." Examples of waste in 2008 include: \$3.2 million on a blimp the Pentagon does not want." Is that ISIS or HAA, one wonders?)* 4 MAY 09 AVIATION WEEK & SPACE TECHNOLOGY reported, "Lockheed Wins Darpa Airship: Lockheed Martin will build a prototype high-flying radar-equipped airship for the U.S. Defense Advanced Research Projects Agency and Air Force under a contract worth almost \$400 million. Northrop Grumman was the losing bidder. Scheduled to fly in Fiscal 2013, the unmanned airship will have Raytheon X- & UHF-band active electronically- scanned arrays built into its structure." Ω *Meanwhile:*

### Gates Wants New ISR Airships for Afghanistan

By Jason Sherman

Defense Secretary Robert Gates has approved a new rapid acquisition effort to deploy to Afghanistan unmanned airships capable of remaining aloft for three consecutive weeks, according to defense officials. The move is part of an initiative to experiment with new types of aircraft that give commanders more of what they say is their No. 1 need -- additional intelligence, surveillance and reconnaissance capability. The previously unreported project to field a Long Endurance Multi-payload Vehicle (LEMV) hybrid airship is funded in the Pentagon's fiscal year 2010 budget request at the behest of Gates' ISR Task Force, which hopes to launch an operational combat airship in Central Asia as soon as 2011, according to defense officials. "The Department of Defense supports the development of lighter-than-air technology for ISR use," Ed Loxterkamp, head of acquisition for the ISR Task Force, told InsideDefense.com today through a spokesman. "We believe the long endurance they can provide will help mitigate the drain on our ISR resources, both fiscal and manpower. We would expect to demonstrate this capability within 18 months of receiving authority to proceed." The Army, which will lead the LEMV project, is already laying the groundwork.

In an April 22 notice to industry formally announcing the Pentagon's interest in a lighter-than-air ISR vehicle for Afghanistan, Army Space and Missile Defense Command said the technical objectives for the LEMV include an unmanned air vehicle capable of being controlled through an existing Defense Department ground station; three-week flight endurance; and the ability to carry a 2,500-pound package of sensors. It must also be able to operate at 20,000 foot altitude and hold a fixed position in the sky. "The LEMV will be utilized to provide persistent

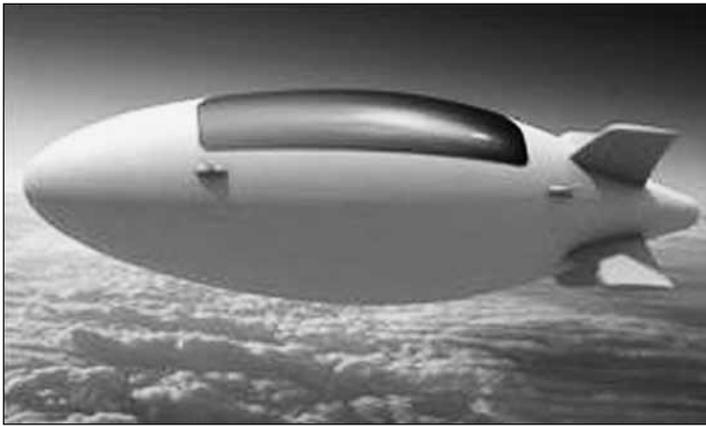
intelligence, surveillance and reconnaissance support in multiple environments, including combat areas," according to the Army notice. The Army LEMV notice is not a request for proposals. Instead, it is intended to allow the Pentagon to get a feel by early next month for which companies might be in a position to field a LEMV hybrid airship. Accordingly, interested parties are required by May 7 to provide a white paper "discussing their ability to meet the stated requirements." "Potential offerors are highly encouraged to submit innovative technology or unique abilities that can potentially improve mission performance, mitigate risk, reduce cost or expedite schedule," according to the statement.

The project will be conducted as a rapid- acquisition effort. The Pentagon hopes to wrap up developmental and operational testing in no more than a year and a half, according to the statement. On April 6, Gates announced plans to add \$2 billion to the Pentagon's FY-10 base budget for ISR support to fighting forces, including funding to back efforts that might supplement the Defense Department's current inventory of fixed-wing manned and unmanned aircraft. "We will initiate and [conduct] research and development on a number of ISR enhancements and experimental platforms optimized for today's battlefield," the defense secretary said April 6. Deploying an unmanned, untethered lighter-than-air vehicle to Afghanistan would mark a new chapter in the U.S. military's long history with airships, which typically use helium to stay aloft. Airships can remain in the air for considerably longer periods than fixed-wing aircraft and cost considerably less per hour to operate than a manned aircraft, defense officials say. They also are far less expensive than satellites. The Army operates the Rapid Aerostat Initial Development system in Iraq and Afghanistan. RAID is tethered to the ground and equipped with a suite of sensors to provide a persistent overhead view at large bases. The Pentagon is also developing the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System, an airship to detect cruise missiles. Other airship projects include the Defense Advanced Research Projects Agency's ISIS program, which is focused on the development of a stratospheric airship that can hang high in the sky for years; and efforts to develop an airship capable of hauling cargo. The Marine Corps last week issued an RFP in a bid to hire a commercial firm to provide the services of an unmanned aircraft -- which could be an airship -- to deliver cargo to units dispersed across Afghanistan (Defense Alert, April 21). Sources in industry and government say funding for the LEMV program could be as much as \$125 million in FY-10." Ω

## DARPA/USAF ISIS Spearheads Pentagon Airship

Interest: "Persistence Pays Off"

Aviation Week & Space Technology 18 MAY 09 Cover Item [Rare!] by Graham Warwick Washington.



Powered by solar arrays and fuel cells, the ISIS unmanned stratospheric airship would carry X- and UHF-band air and ground surveillance radars. Credit: LOCKHEED MARTIN

Increasing demand for persistent surveillance is driving renewed interest in airships, with their use by U.S. forces in Afghanistan likely in the near term and research underway to exploit their advantages and overcome the disadvantages in the longer term.

While the U.S. Army wants a proto-type hybrid airship with three-week endurance for deployment within 18 months, the Defense Advanced Research Projects Agency (Darpa) and U.S. Air Force have awarded Lockheed Martin a \$400-million contract for a radar-equipped airship demonstrator with year-long endurance, to fly in late 2012. The one-third-scale demonstrator to be built under Darpa's Integrated Sensor Is Structure (ISIS) program would prove out envelope, sensor and power system technology for a much larger operational airship carrying a football-field-sized radar array to 70,000 ft. and staying on station for 10 years, providing air and ground surveillance out to 600 km. (375 mi.). Such a beast is still years in the future, but the Pentagon's interest in airships is more immediate. Extremely long persistence, measured in days or weeks, "was needed in-theater last year," says Dyke Weatherington, deputy director of the Defense Dept.'s UAS Task Force.

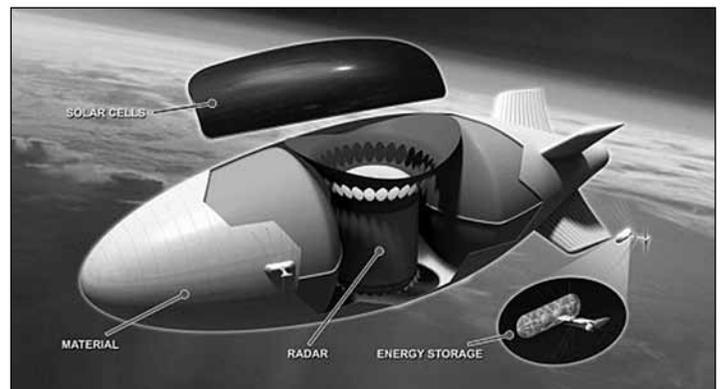
Lighter-than-air vehicles have limitations, he says, but are more mature than ultra-long-endurance unmanned aircraft like the solar-powered Qinetiq Zephyr and hydrogen-fueled AeroVironment Global Observer, which are being demonstrated with Pentagon funding. Airships are not a panacea, Weatherington says, but can provide persistent surveillance of a single location, such as Baghdad or Kabul. There are already several tethered aerostats in-theater providing fixed-site surveillance. "The tether is a weak link, but they are very low-cost to operate," he says.

"Our success with aerostats is a good indication of what could be," says Ron Browning, airship business development director for Lockheed. "An aerostat provides

30 days on station. Extrapolating from that to an airship flying higher on a "virtual tether" is not that big a leap."

Lockheed's Akron, Ohio, plant is building a subscale demonstrator for the High-Altitude Airship (HAA), which was picked up by the Army after being dropped by the Missile Defense Agency. Expected to fly in August, the HALE-D (high-altitude long-endurance demonstrator) is designed to carry a 50-lb. payload to 60,000 ft. for at least 15 days (AW&ST Apr. 16, p. 46). But the near-term interest for Afghanistan is in a vehicle carrying a 2,500-lb. payload to 20,000 ft. The Army's Long Endurance Multi-Payload Vehicle (LEMV) request for information in late April specified a hybrid airship—one that combines buoyancy, aerodynamic lift and thrust vectoring for easier control and handling.

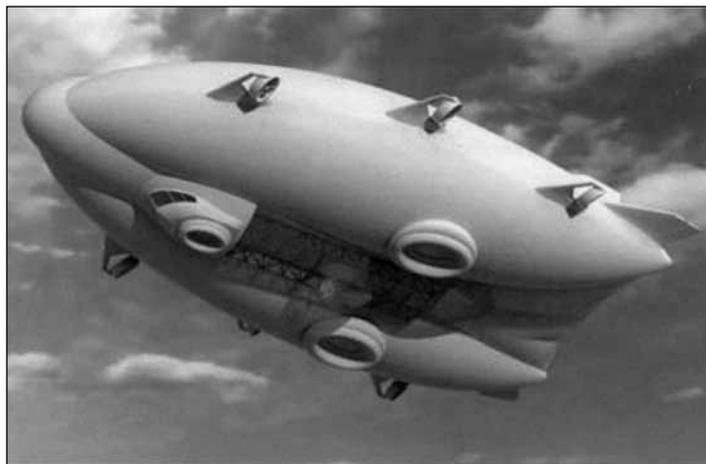
LEMV has superseded a planned Fiscal 2009 technology demonstration called Persius that was to use Lockheed's hybrid unmanned air vehicle (HUAV), a development of the P-791 prototype flown by the Skunk Works in early 2006 and revealed exclusively by Aviation Week & Space Technology (AW&ST Feb. 6, 2006, p. 24). Lockheed says it plans to bid for LEMV, as does Hybrid Air Vehicles, a U.K. company that acquired the technology developed by Airship Industries and Advanced Technologies Group. Sales and marketing director Gordon Taylor says the company has demonstrated a subscale unmanned hybrid airship to the Pentagon. Browning says LEMV will fill the gap between aerostats and stratospheric airships. While pure airships can be optimized for long endurance at high altitude—months for HAA and years for ISIS—hybrid airships are better at lower altitudes. "As you come down to a denser atmosphere you diverge from a pure airship," he says. While unmanned operation has unlocked the airship's potential for persistence, the problem with lighter-than-air craft has always been their poor controllability at low speed, which makes launch and recovery difficult. ISIS aims to overcome this in part by treating the airship like a satellite, and not recovering it for reuse. Station-keeping at 70,000 ft. for 10 or more years, an operational ISIS would detect and track small cruise missiles and unmanned aircraft out to 600 km., soldiers on foot and vehicles under foliage out to 300 km., using a massive dual-band active electronically scanned array (AESA) radar built into the airship's structure. (Con't next page)



Tracking performance drives the radar's size, and in turn the scale of the airship. "The sensor is sized to track targets reliably, with long persistence," says Darpa program manager Tim Clark. The objective airship would be close to 1,000 ft. long, with 6,000 sq. meters (about 65,000 sq. ft.) of radar array. The one-third-scale demonstrator will be 450 ft. long, with a 500-sq. meter array built by Raytheon. Key technologies are lightweight hull material, radar apertures and power systems. During the first two phases of ISIS, hull weight has been reduced from 400 grams/sq. meter (1.3 oz./sq. ft.) for traditional woven material to less than 100 grams/sq. meter for a laminate, and life has been increased from a year to more than 20 years. "We have plenty of margin," he says.

Radar aperture weight has been reduced from 20 kg./sq. meter to 1.8 kg./sq. meter using cellphone technology for the lightweight transmit/receive modules, which operate at such low power that no cooling is needed and the radar must stay on to keep the array warm. "The design scales to almost any size," says Mike Wechsberg, director, radio-frequency system programs at Raytheon. The solar-regenerative power system uses fuel cells instead of batteries—solar power breaking stored water into hydrogen and oxygen during the day, the fuel cells generating electricity by recombining them into water at night. The full-size airship will need 50 kw. of power. "Most of the power needs are set by worst-case station-keeping demands. We have excess power when winds are low," says Eric Hofstatter, Lockheed's ISIS program manager. The objective is to stay within 100 km. of the desired location. "Solar arrays and batteries are okay for a short time. For significant persistence, from one to ten years, we need to get out of batteries," says Clark. The demonstrator will use modified automotive fuel cells, but because there is not much oxygen in the stratosphere, the system must recapture all the reactants to minimize losses and extend operating life. The demonstrator radar—100 sq. meters of X- and UHF-band array plus another 400 sq. meters of UHF band—is attached to a vertical cylinder inside the vehicle that is an integral part of the airship envelope. Called the "pill" because of its rounded ends, the cylinder is more highly pressurized than the rest of the airship and provides a relatively firm mounting for the flexible array.

The original plan was to attach the arrays to the airship's surface, but mounting them around the pill provides 360 deg. coverage with fewer T/R modules while providing a stiffer mounting and protecting the electronics from the external environment at 65,000 ft. The demonstrator will have 100,000 modules in the X-band array, compared with 7 million in the objective system. Because the arrays themselves are flexible, and attached to flexible envelope material, a key challenge of ISIS is calibration and compensation—the ability to know where each array



*Pentagon plans to demonstrate the Persius hybrid airship have morphed into a possible near-term deployment to Afghanistan. Photo Credit: U.S. DEFENSE DEPT.*

element is so beams can be formed and maintained. "The elements are in constant change relative to each other, and we need to know where they are," Clark adds.

The X- and UHF-band radars will operate almost independently, and can be subdivided into multiple subarrays and radar beams. "If we don't need full sensitivity, we can divide into four different functions at the same time, in both X-band and UHF," Wechsberg says. The radar can be restructured in milliseconds from a long thin array for ground moving target indication to a unitary array for air surveillance, according to Clark. Radar performance will not be validated until the array is built and tested. "We will learn during flight testing how to use the radar. We don't know exactly all of its potential," says Wechsberg. "Darpa is leading because there is still risk," Clark says, adding that manufacturing readiness is also an issue, because so much is needed to build just one full-size airship. The ISIS demonstrator will launch from Lockheed's Akron airship hangar in late 2012 and fly to the Florida Keys, an area rich in air, ground and surface targets with benign weather at 65,000 ft., where Darpa plans to operate the airship for 90 days, collecting data on instrumented and other targets. The Air Force will then take over and operate the vehicle for up to a year from its launch, looking at other potential applications.

"ISIS provides air and ground surveillance with persistence. It fits well with our layered sensing approach," says Mark Longbrake, Air Force Research Laboratory program manager. Clark says the Air Force completed classified survivability studies before investing in ISIS, but the big draw is its low operating cost once launched. "The southern no-fly zone [over Iraq] costs \$1 billion. ISIS would cost less than \$50 million a year." Low-cost persistence is the major advantage of airships to the Pentagon. "We are likely to see more investment in demonstrating lighter-than-air technology, as we evaluate what mission capabilities they support," says Weatherington. Ω

AIAA LTA TC Symposium and (preliminary)  
Slate Aircraft Corporation report by **Al Robbins**

Forty full-pay, fifty-two total people signed up for the LTA section of the AIAA Symposium in Seattle. Per Lindstrand presented an update paper on his unmanned airships (both the one that the Spanish have been operating for several years and the new/improved variant that BAE has licensed and which he will manufacture). He received the LTA TC's medal at the Awards Dinner which was held in the Seattle Air and Space Museum.

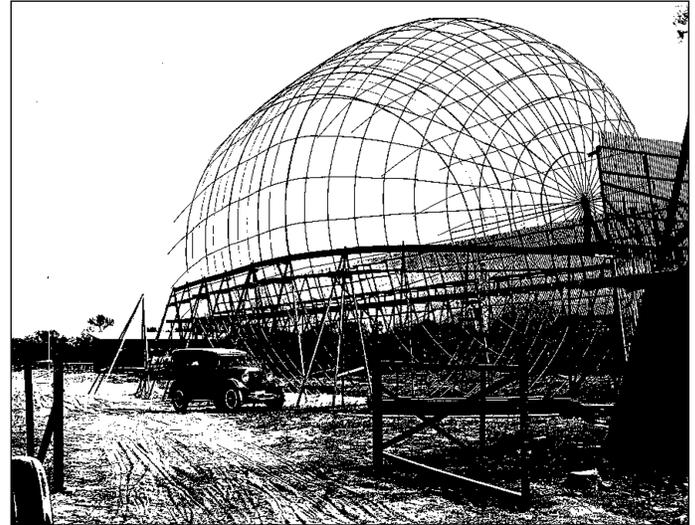
A number of papers listed in the Final Program were either canceled or presented (read) as a courtesy, since the authors had to cancel for one reason or another. (Ron Hochstettler read three of Professor Pant's papers. His fourth paper, scheduled for my session never got here.) Al Elkins withdrew his paper as a result of a panicky telephone call from his Patent Attorney. Mike Smith was there from Aerostar, but he signed up for the Balloon Session, primarily because they feel that the FAA isn't going to permit unmanned airship operations in the foreseeable future.

Mr. **Hiroyuki Watanabe**, the president of Nippon Airship Corporation (still a single NT-07 operation) presented a very interesting paper and a short video of his NT-07 operations in Japan. We had all become well acquainted by the end of the Symposium. He told us that his grandfather had been one of Japan's first naval aviators in the early 20s, and that he'd died when his plane crashed shortly before his only son, Watanabe's father, was born.

Nearly 100 people crowded the room for the paper I presented on Wednesday morning, on the world's first and only monocoque airship. It was a rush; we were limited to 25 minutes so we had to eliminate a number of the Slate's best photos.

Thomas Benton Slate was born December 3, 1880, the second child of 14 born to Nathaniel Porter Slate and Alice (Clark) Slate. Mr. Slate, (or Captain Tom as he was referred to after moving to California), made his fortune licensing his many inventions involving the manufacture and use of Dry Ice, solidified carbon dioxide. I'd known that Captain Tom hadn't completed high school; I found out last week that his last formal education was the fifth grade. Outstanding testimony for home-schooling and continuing education! (More than half of the Navy's first 2000 naval aviators had at least one year of college before they entered flight

training.) It's possible that he'd seen one of the three rigid airships (R-34's short visit to Long Island, the USS *Shenandoah*, or the USS *Los Angeles*). He neither kept an inventor's log or a diary. However, he clearly understood the limitations and weaknesses of the Zeppelin-type construction, and proceeded to design and build a unique all-metal airship employing a true monocoque hull, optimized boundary layer control and a turbine powered Coanda Effect propulsion system, years before the terms were introduced. Pretty amazing stuff for a man that had never even gone up in a balloon, let alone a blimp or airplane.



Slate lost his fortune, and control of his several patents, while trying to manufacture and introduce the world's first commercial, all-metal airship. [*Above, first attempt when city fathers assured Slate he could build outside without fear of weather... said to be Dreamworks' site today. Ed.*] My paper was prepared with Thomas Slate, Thomas Benton Slate's first-born, and Robert Slate, one of many nephews. Robert recently retired from Budweiser, and immediately accepted a job as a world-traveling trouble-shooter so his self-assigned task of cataloging and digitizing the family files regarding the Corporation have been somewhat delayed.

The *CITY OF GLENDALE* was intended as a proof-of-concept vehicle, a test-bed to demonstrate several of Thomas B's inventions, which he firmly believed would permit construction of a full-sized ship capable of carrying hundreds of passengers in transcontinental service. The little, 330,000 cubic foot, *CITY OF GLENDALE* was expected to operate with a crew of 5, and carry 40 passengers a couple of thousand miles.

This was a challenging mystery of “Intellectual Property”. All we have located to date are the patents, as issued, contemporary accounts, and a large collection of family documents. For example, his first patent application was granted, in part. The rejected portion was resubmitted, and again part was patented, with some of the residual being refiled and a patent granted on it. Unless we can locate his original patent applications, there is no way to determine what else he might have included in any or all of these applications. Equally intriguing, Captain Tom assigned his Turbine patent to the Slate Aircraft Corporation, even though there is nothing in the patent to indicate it is intended for use in an airship, nor anything in the other patents specifically referring to the use of turbines. These intriguing discrepancies (between what is disclosed and what is claimed in the patents. The ship he planned to build, and the ship as supposedly built) continue to wet our appetites.



(Above) The happy day photo, commemorating laying in the final longitudinal strake, inside his new all-aluminum hangar. Last of roughly 200 heat-treated, stretched, shaped and crimped thin aluminum strips, drilled and riveted with four rivets to equally thin cylindrical bands spaced at 18-inch intervals. Subsequently the envelope was pressure tested, then filled with illuminating gas so that it could be floated into the front shed for mating with the gondola. Pretty impressive for what was essentially a family effort (for the first few years, the work force



(Left to right: Mr. Hiroyuki Watanabe, Al Robbins, Neal, Thomas C. Slate, and Robert Slate with still-working original model of *City Of Glendale*.)

consisted principally of Tom and a few brothers, nephews, and in-laws). Even more impressive when you consider that the DC-1 was years in the future, and the first metal airplanes were just appearing on the horizon. He imported his aluminum from Germany.

Luckily, we’d gotten permission to insert an ad hoc presentation by Tom and Robert Slate in Thursday’s final LTA session which I chaired (both Dr. Pant’s and the Italian papers had been withdrawn). I introduced my co-authors (Tom, the 11-year-old stowaway when the *CITY* was first floated in 1929 [below left], got an enthusiastic round of applause) and invited any and all to attend the Thursday afternoon session in which Thomas Slate and Robert Slate would demonstrate a working model of the *CITY OF GLENDALE*, run a short video (of period Movietone News) of movie clips of the ship, and show a number of additional photos from the 1925-1930 construction period. Thirty people attended that and we were still going strong when the AIAA and Hotel staff pulled the plug on us at exactly 5 o’clock. I’d made arrangements for Tom to join the AIAA (as a retired member), probably the only 91-year-old retired Methodist minister in the organization. We also passed out copies of the original Slate Airship Corporation advertising Tri-fold. Notice the model in the photograph; not visible is the 1920’s suitcase under the table. Tom’s father, Thomas Benton Slate had modified the suitcase to hold his model so that it was readily portable. The beam assembled like an old fishing pole. The drive-belt looked like it had come from a period dentist’s office, and the motor was adjustably mounted on the opposite end to balance the assembly. A truly ingenious training device, and it still works with its noisy eighty-year old electric motor. We were all surprised when we turned it on. The nose rotor started turning at high speed and the ship started to back up. It only backed for a second or two, before it stopped and began to rotate briskly in a counter-clockwise direction.



Session	AIAA LTA TC Paper Title	Author
ADS-1	Airships as Launch and Retrieve Platforms for UAS Operations	Connors, Michael
5-LTA-1	What Does an Airship Offer That Will Increase My Profit	Gibbens, Roy
5-LTA-1	Research and Development on Cycloidal Propellers for Airships	Nozoki, Sekiguchi, Matsuuchi, Onda, Murakami and Sano
9-LTA-2	High-Altitude LTA Airship Efforts at the U.S. Army SMDC/ARSTRAT	Lee, Smith and Androulakakis
9-LTA-2	Reinforcement of an Opening for High Strength Envelope Material Zylon	Nakadate, Maekawa, Shibasaki and Kitada
9-LTA-2	Design, Fabrication and Operation of Low Cost Remotely Controlled Airship	Gawale, Raina and Pant IIT & Jahagirdar
13-BLN-2	Refinements to the Aerodynamic Modeling of an Ascending Balloon	Smith, Scott, and Marsh
21-LTA-3	Can Modern Transport Airships Change the World	Prentice, Ashcroft & Hochstetler
21-LTA-3	Giant Rigid Airship and the Restoration Technique	Watanabe, Hiroyuki
21-LTA-3	Monocoque Airship Experience: Lessons Forgotten	Robbins, Slate, Slate
21-LTA-3	Low-Cost Trans-River Aerial Ferry	Banerjee, Raina and Pant
25-LTA-4	On-going UAV R&D at JAXA: With Emphasis on LTA Flight Control	Kohno, Nakadate and Okuvama
25-LTA-4	Conceptual Design of an Airship Using Knowledge-Based Engineering	Joshi, Raina and Pant
25-LTA-4	Dynamics Modeling for an Unmanned, Unstable, Finless Airship	Peddiraju, Liesk and Nahon
29-LTA-5	Kathmann Multi-Use Airship	Kathmann, K.
29-LTA-5	Increased Fuel Economy From Powered Aerodynamics and Aerodynamic Pressure Thrust	Birkenstock, David
29-LTA-5	Reflections on the Preliminary Electrical Power System Design for a Large Transportation Airship	Severns
33-LTA-6	Unmanned Surveillance Airship	Lindstrand
45-LTA-7	Design, Analysis, and Patterning of Inflated Lifting Body Form LTA Vehicle Hulls	Brooke & Bown

Ω

Ed. Note: The AIAA LTA Tech Committee held a tele-con equipped meeting, elected **Curt Westergard** their new chairman and later went to Seattle for their symposium. Curt immediately joined NAA.

## Short Lines



Lightship Group's night-sign-equipped A-170 was contracted by VW-China to promote the launching of a home-grown car, the *Lavida*. Ed.'s sister-in-law Mary Pelzer Markovich spotted it and sent her photo (below). Oddly enough, a second lightship contracted in China, advertizing for Goodyear, is the smaller G-60+ model which is powered by highly modified VW engines. Ω



MISTRAL Engines (above) exhibited their rotaries at AERO Friedrichshafen 2009 in Hall 5, stand 401 and Euravia in Cannes. They will also exhibit at Ebace in Geneva, EAA Airventure in Oshkosh, and MAKS in Moscow. Ω

Congressman Ron Paul’s plan to fend off pirates includes – almost – airships! (Ed. from internet)

A little-known congressional power could help the federal government keep the Somali pirates in check — and possibly do it for a discount price. Rep. Ron Paul (R-Texas) and a growing number of national security experts are calling on Congress to consider using letters of marque and reprisal, a power written into the Constitution that allows the United States to hire private citizens to keep international waters safe. Used heavily during the Revolution and the War of 1812, letters of marque serve as official warrants from the government, allowing privateers to seize or destroy enemies, their loot and their vessels in exchange for bounty money. According to Senate historians, Congress hasn’t issued a letter of marquee since the War of 1812, but the Confederate States of America issued them during the Civil War to deliver supplies behind enemy lines. There are also some indications that a letter was granted to a flying band of armed civilians during World War II to operate the Resolute, a Goodyear blimp used to patrol the ocean for enemy submarines, but the issuance isn’t apparent in the Congressional Record.” [Members of Paul’s staff, through publisher **Dave Smith**, contacted member author **James Shock** for info. Pre-war Resolute photo below via **Laurie Soffe**.)



“If we have 100 American wanna-be Rambos patrolling the seas, it’s probably a good way of getting the job done,” said Competitive Enterprise Institute senior fellow and security expert Eli Lehrer. “Right now we have a Navy designed mostly to fight other navies. The weapons we have are all excellent, but they may not be the best ones to fight these kinds of pirates...These pirates don’t really have treasure chests, and their money is tied up in Swiss bank accounts. Congress would probably have to attach sizable bounties to people...The only cost under letters of marque would be some sort of bounty for the pirates.” University of Oregon economics professor Bill Harbaugh argues the setup could potentially work better than some of the United States’ relationships with modern-day security contractors. Ω



L to R: President of the Piemonte Region, Mercedes Bresso; Piemonte Region Industry and Energy Head of Department, Andrea Bairati; Vice Chancellor of the University “Politecnico di Torino”, Marco Gilli; The General Manager of Environment Park, Alessandro Battaglini; former astronaut and test pilot, Maurizio Cheli; project manager Paolo Pari.

**SKYSPARK:** An Eco-Friendly Record Aircraft (Italy) The goal of the SkySpark project is to design and build a complete “ecological” aircraft in order to set a world record. All systems will be entirely electrically powered. On Wednesday, the 28th of January 2009, the official launch press conference was held in front of a large audience and the aircraft was exhibited in the conference room. Goal is to set a world speed record for a high performance, electrically powered light aircraft during the World Air Games (initial computations set 300 Km/h as an attainable figure). Record to be homologated by the World Air Sports Federation. (FAI). Ω

**The AeroCentric Federation** was established in January 2007 with the goal of advancing technologies necessary to develop a high altitude system capability for the nation. The Federation vision is to design incrementally progressive testing capabilities for intelligence, reconnaissance, surveillance, remote sensing and communications that will solve the nation’s critical need for persistent presence. The national federation of testing capabilities includes laboratory testing at partner facilities; field testing at various altitudes with the AeroCentric Federation aerostat; environmental simulation testing with atmospheric chambers; and full-fidelity testing with short-term stratospheric flights using balloons, Unmanned Aerial Vehicles (UAVs) or airships. We are now able to look to the future. In 2008 and beyond we are growing other enabling subsystems for HALE operations including the following:

High-efficiency photovoltaics; ultra light, incredibly strong fabrics; control stations for efficient tactical operations; advanced fuel cells; miniaturized payloads; high speed network communications; operational doctrine growth. Ω

Reuters reports: Spider silk is already tougher and lighter than steel, and now scientists have made it three times stronger by adding small amounts of metal. “It could make very strong thread for surgical operations,” researcher Seung-Mo Lee of the Max Planck Institute of Microstructure Physics in Halle, Germany. Lee and colleagues, who published their findings in the journal *Science*, found that adding zinc, titanium or aluminum to a length of spider silk made it more resistant to breaking or deforming. They used a process called atomic layer deposition, which not only coated spider dragline silks with metal but also caused some metal ions to penetrate the fibers and react with their protein structure. The technique may be useful for manufacturing super-tough textiles and high-tech medical materials, including artificial bones and tendons. Lee said he next wanted to try adding other materials, including artificial polymers like Teflon. The idea was inspired by studies showing traces of metals in the toughest parts of some insect body parts. The jaws of leaf-cutter ants and locusts, for example, both contain high levels of zinc, making them particularly stiff and hard. Ω



(left) Was the Shuttlesworth Aircraft Plant ahead of its time?

Nanotechnology Used To Extract Cellulose For Airplane Construction. (Internet) Dave Demerjian wrote, “Researchers in Canada have unveiled plans for a factory

that will use nanotechnology to extract cellulose from wood and use it to form composite materials for airplanes.”

Jim Dangerfield, president of FP Innovations, the company that designed the factory, says “the process allows the extraction of cellulose particles just 200 nanometers long and 20 nanometers wide, and the factory will be able to produce as much as a ton of them each day.” These fibers, “combined with other materials... are tough enough to form a new generation of composite materials.” Typical NanoCrystalline Cellulose crystallites are 200 nm long and 10 nm wide. Ω

Aerospace Testing International reports the use of gases for leak detection is overtaking older methods like bubble soap. “Helium is far superior in leak testing on vacuum systems, but has a number of limitations when testing under atmospheric pressure. Of primary concern are the high background levels of helium that remain in the test area. In these situations, diluted hydrogen is recommended as a tracer gas as it has a fantastic ability to quickly dissipate from the test area... The extremely high molecular viscosity of hydrogen makes it spread very quickly once inside the test object, and consequently it can easily penetrate a leak. At the conclusion of testing, it is easy to ventilate the gas away from the test area and get back to the very low 0.5ppm natural background level of hydrogen in air... The hydrogen method is now being used in the aviation industry. Current customers are Airbus, Lufthansa, Bombardier, Saab, US Air National Guard, and the French Armee se l’Air, in addition to a great number of component suppliers.” Ω

#### Lightweight Tanks for Storing Liquid Natural Gas:

Single-walled, jacketed aluminum tanks have been conceived for storing liquefied natural gas (LNG) in LNG-fueled motor vehicles. Heretofore, double-wall steel tanks with vacuum between the inner and outer walls have been used for storing LNG. In comparison with the vacuum-insulated steel tanks, the jacketed aluminum tanks weigh less and can be manufactured at lower cost. Costs of using the jacketed aluminum tanks are further reduced in that there is no need for the vacuum pumps heretofore needed to maintain vacuum in the vacuum-insulated tanks. The single-walled, jacketed aluminum tanks are members of the class of composite overwrapped pressure vessels; that is, they comprise basically, seamless aluminum tank liners overwrapped in composite (matrix/fiber) materials. On each such tank, the composite overwrap is further encapsulated in a layer of insulating foam, which, in turn, is coated with a flexible sealant that protects the foam against abrasion, ultraviolet light, and other adverse environmental phenomena. The aluminum tank liner can be a common, commercially available aluminum tank liner that is already certified by the United States Department of Transportation for use at pressure up to 3,000 psi (~20.7 MPa). The composite-material overwrap can be made by winding high-strength-carbon-fiber/poly (phenylene benzobisoxazole)- fiber hybrid filaments with an epoxy matrix material. (Con’t)

The insulating layer can be made by spraying polyurethane foam, waiting for the foam to cure to rigidity, then machining the foam to final size and shape. The protective outer layer can be formed by brush application of a ductile epoxy or spray application of a truck-bed-liner material. If the tank liner is a pressure vessel then the tank can be used to store a high-pressure gaseous fuel. Moreover, in the case of storage of LNG, the high-pressure capability of the tank helps to conserve stored fuel by reducing the need to vent gas to relieve pressure as heat leaks into the tank, causing slow vaporization of the LNG. This work was done by Tom DeLay of Marshall Space Flight Center. Ω

### Inventor gives himself the hook at Skyhook

By Markus Ermisch, Sun Media



Aircraft inventor Pete Jess has resigned as CEO of SkyHook International Inc., the Calgary company that has partnered with Boeing to develop and build a heavy-lift [hybrid LTA] rotorcraft. Linda Conti, SkyHook's vice-president of finance and administration, said Jess "has just felt the need to step away so that others

that are more in a fundraising capacity can take on the day-to-day operations." Conti said Jess stepped aside voluntarily and he is no longer involved with SkyHook. She said she can't reveal if Jess still has a financial stake in the company. Several years ago, Jess came up with the idea to build an aircraft that combines elements of a blimp with those of a helicopter. Last year, Jess and Boeing held a joint press conference in Calgary to announce the American aircraft maker would design and build the rotorcraft, dubbed the JHL-40. SkyHook would foot the bill. Conti said funding for the current phase of development is in place but declined to say what the total cost of the project is, or how much it would cost to see the JHL-40 to completion. As a private company, SkyHook does not have to reveal financial data. Boeing spokesman Chris Haddox said the design and engineering is completed and the next phase is to find suppliers for the components. The first JHL-40 is scheduled to roll off the assembly line in 2012. Ω

## MEDIA WATCH

**A Flyer's Dash** by CDR James Kissic, USN (Ret)

Reviewed by C.P. Hall



This is a rather attractive autobiography of a navy flier who served during the unique period that it was possible for a man in his position to fly blimps, helicopters, jets and prop-driven aircraft in the course of a single career. Jim's primary focus is the flying aspect of his career thus it is long on flying stories of several sorts. The book is written in the third person which means the author never says, "I did this . . ." instead the passage reads, "Jim did this . . ." Once one adjusts his mindset to this author's perspective, "Dash" becomes an interesting, easy-going read. Although long on flying stories and though I am but passing familiar with naval aviation jargon, Jim only lost me once as he relived his multiple, airborne experiences. Jim's naval career contains several components common to most military careers. Related to this aspect, there are several passages in this book that one reads at his or her peril. For example, as a safety measure, when reading chapter 3, page 7, cross your legs as soon as you see the name Monty and keep them so. If you were ever in any military service, you knew a "Monty." You will laugh, you will cry, you will find yourself chortling again later in the day. You will thank me for this warning.

There are disappointments. Chapter 7 begins with several pieces of LTA mis-information and bogus anecdotes. The reader is left wondering why. Is Jim trying to reveal "black shoe navy" attitudes toward LTA? Is he trying to be funny? Is this an example of something else? Jim admits being drawn to LTA based upon interest in anti-submarine warfare and, post-WWII, LTA had the broadest selection of equipment for sub hunting. Unfortunately, his big LTA flying anecdote demonstrates Rosendahl/Van Treuren's thesis, "Airplanes have accidents while airships suffer disasters".

The story of this book's title is interesting. It is noted that a headstone invariably contains two dates, the birth year and the death year with a "dash" in the middle. The dates mark the beginning and the end; what one did in the "dash" is what is important. In all this is an enjoyable, entertaining story of A FLYER'S "DASH". Ω



**Les Dirigeables de la Marine Française (1915-1937)** By Robert Feuilloy. ARDHAN (Association pour la Recherche de Documentation sur l'Histoire de l'Aéronautique Navale), Paris, 2009

Reviewed by Francisco A. González Redondo

A new 'monument' is being erected on the History of Airships. It has the form of a book (a big 495+24 pp hard-cover book). Its 'sculptor' is Capitaine de Vaisseau Robert Feuilloy, Secrétaire Général of the Association pour la Recherche de Documentation sur l'Histoire de l'Aéronautique Navale (France). Under the general heading of The Airships of the French Navy, Mr. Feuilloy divides his contribution into three parts. In Part I, the author undertakes a complete study on the life and fate of every single airship in service with the Marine Française from 1915 to 1937: from British 'SS' 'SSZ' and 'Coastal', to French 'Astra-Torres', 'Chalais Meudon', 'Clement-Bayard' and 'Zodiac', without forgetting about German 'Zeppelins', all of them illustrated with several photos. In Part II, he describes all Airship Stations, their sheds, their personnel, the distribution among them of those airships formerly described, accompanied by more photos, drawings and maps. Finally, Part III is devoted to the Personnel in charge of the airships and their Stations, with more photos, certificates, etc. The book ends up with 24 full-colour pp with watercolours by Rochefort's Air Station pilot René Delhumeau, and drawings of selected sheds and airships by Philippe Nicodeme. In short, we have the long-awaited definitive story on the French Navy's airships. Ω

"Road & Track" magazine Test: [Zeppelin NT N704LZ Eureka](#): Variable lift technology that pushes the envelope. By Douglas Kott (Excerpt of magazine art.)  
 "...the first Zeppelin to fly in U.S. airspace since the Hindenburg tragedy of 1937 emerges into the strong

sunshine of a late winter day. Brian Hall, the boyish-looking president and founder of Airship Ventures, beams like a proud parent. As well he should; with the grit of an Olympic hurdler, he and his wife Alexandra have cleared multiple obstacles from the FAA, DOT and EPA to bring the German-built Zeppelin NT07 and its Mercedes-Benz mast truck to the San Francisco Bay area, at one point employing 14 attorneys to help slash through the red tape... Made of a synthetic, multi-layer poly-urethane-coated fabric — quite literally, the stuff of space suits — the envelope contains 296,643 cu. ft. of helium and air. That's roughly the interior volume of two dozen 1500-sq.-ft. homes, or 1.46 times the volume of the Goodyear blimp *Columbia* we tested in our April 1972 issue... Three triangulated, tubular-aluminum longerons run the length of the envelope, interconnected with carbon-fiber trusses and braced with Aramid cable rigging. Additionally, there's a carbon-fiber "dogbone" truss between the two side engines that contains their fuel tanks. Amazingly, this structural leviathan is Tinker Bell-petite on the scales; at 2200 lb., the airship's skeleton weighs less than a Miata... The two side engine pods, each containing a 200-bhp 5.9-liter Lycoming flat-4 engine, can swivel from horizontal up through 120 degrees and provide up- or down-thrust, depending on how the reversible-pitch props are configured. At the tail is a third Lycoming that mounts transversely, splitting its power between a "lateral thruster" prop (which acts like a helicopter's tail rotor for yaw control) and the rear prop that provides forward thrust in cruise flight, yet can be swiveled downward 120 degrees at anything below 35 knots to provide pitch control in landing configuration. Above about 20 knots, the fly-by-wire control surfaces on the fins have their say and become the primary means of directional control.... The airship's precise directional control allows for as few as three ground-crew members, where it's not uncommon to have as many as 15 for a blimp... without any helium, the entire vessel weighs about 8.9 tons, which works out to roughly 3.1 Cadillac Escalades... When fully inflated with onboard electric fans, the ballonets comprise 26.2 percent of the pressure envelope's volume (the ratio customizable from the factory!)... for its annual inspection, *Eureka* is hung from the hangar ceiling, all the helium is removed (it's put through a scrubber to remove impurities and reused later) and the pressure envelope is allowed to vent for a few days. Only then is it safe to enter, through an aperture on the underside called "the belly button." A "helium dive," a repair or inspection with helium in place "requires respirators similar to those a firefighter would use," says Kilkerr... Performance testing complete, we were able to relax a little, and enjoy views of Moffett Field in a magically stable, smooth, quiet craft where every seat's a window seat. *Eureka* brings back the romance of aviation, slow and unrushed..." Ω

### M Resort blimp pilot one of a kind

by Jennifer Robison, Las Vegas Gaming Wire

You're watching Terry Dillard, one of just 56 certified blimp pilots in the world, steering one of just 3 of the planet's airships with video screens on the side. As Dillard likes to point out, Earth houses more space shuttle pilots than it claims blimp captains. And, for that matter, the United States has as many space shuttles as it has video-screened airships. As chief pilot for the Lightship Group, a Florida blimp-operating contractor with 12 airships, Dillard is 4 months into a 2-year assignment flying the M Resort's promotional ship over the Southwest United States to pump the hotel-casino, which opened March 1. Dillard, who has roughly 13,000 hours of blimp flight time, has flown airships across North America from north to south at least three times. In addition to flying over Las Vegas, Dillard is taking the M blimp to San Diego, Phoenix and San Francisco, taking to the air for 30 hours a week in the evenings. Dillard got his start in 1974, flying hot air balloons over Walt Disney World and SeaWorld in Orlando, Fla. He's flown blimps since 1991... Ω

### M Resort blimp grounded after last Vegas flight...

By Justin M. Bowen

The 178-foot-long M Resort advertisement was a fixture in the Las Vegas sky long before the property opened. It had one main goal: help to draw the crowds that have kept the resort busy since opening night. But resort officials said Monday that the M Lightship won't be back in the Vegas sky. It took its final flight March 31 and headed back to the Lightship Group headquarters in Orlando, Fla., on Friday, after M Resort chairman and CEO, Anthony Marnell III, decided not to renew the blimp's contract. It travels at an average speed of 32 mph, burning 15 gallons of fuel per hour at a cost of \$4 a gallon. The M Lightship traveled in five- or six-hour spurts before switching pilots and going up again. Cruising altitude is anywhere from 100 to more than 1,000 feet, depending on what's below, Dillard said. The Federal Aviation Administration requires an airship to travel at least 1,000 feet high when it's over people, Dillard said, but it can hover at 100 feet in the open desert... Aside from not flying in winds exceeding 18 mph, Dillard also doesn't fly in precipitation Ω

For its 17 MAR 09 show KQED had sent a team to the Eureka's debut. A program was made featuring historical footage Editor had supplied to MBARI and their historical footage as well. The show had far fewer new errors and misconceptions than the German-made show mentioned next (we are planning a review for next issue) but its lack of budget was reflected in its missing anything but previously used, royalty-free public-domain footage. Thanks to VADM Rosendahl for his "History of the Rigid Airship" commissioned film, it has made TV producers one hell of a lot of money over the years! A summary of the KQED show,

with its familiar historical footage, can be downloaded at: <http://www.kqed.org/quest/television/zeppelins-resurrected> Ω

**"Red" Layton** offered these comments about the German *Macon* show aired on *Nat'l Geo*: "Some things bothered me because I knew more than they were showing. If I had been a casual viewer, I would have rated the show higher. I found several instances where they took two events and merged them into one. My understanding as to how MBARI got involved (based on conversations with "Scroggie" Wiley, son of CDR Herbert Wiley) does not jibe with MBARI knocking on the fisherman's door.

In the program, they talked a couple of times about five airplanes on the USS *Akron* and the weight problem that that caused. It is my understanding that they could only store three airplanes due to braces restricting the hangar area, which Calvin Bolster redesigned for the *Macon*. I thought that the simulated scenes (particularly the breaking up of the tail) were well done. One of the high points in the show was the picture of a small boy lifting one of the triangular beams from the hangar floor. I was born in a suburb of Akron (Cuyahoga Falls) and my father took me to see both the *Akron* and *Macon* being built. I remember (and have told the story many times) of picking up a beam. I visited the *Akron* just before my 9th birthday and the *Macon* just before I was 11. It was not me in the picture, but it could have been."

*Ed. has finally seen the show and suggests Professor Layton is being too kind. The well-built bridge set – for which we provided plans and wanted to save – was not well-served by the goofy costumes given the actors working in it. The excellent animation of Macon was not equaled by the lack of homework in the script. The general gloom - 'it was almost as long as the Titanic!' – was only surpassed by the rather astonishing production value of having an actor react to the narration(!). At least they got William Clarke's interview before it was too late. Meanwhile...*



*Old news by the time you read this, Disney/Pixar has been showing clips of their new film "UP!" that not only has some LTA content, but it appears to feature a MACON-like flying carrier with hook-on airplanes. The clips suggest it might be commanded by the main character's adversary. Ω*

## History Committee

### Some Remarks on

### Astra-Torres Airships in the U.S. Navy

by Francisco A. González Redondo

The *Astra-Torres* type of auto-rigid trilobe airship was manufactured by the French *Société Astra*, following the system patented by the Spanish engineer Leonardo Torres Quevedo in Spain in 1906, and the following year in France and UK. After trials with a small 950 m<sup>3</sup> model in Spain (1908) and France (1909), the experimental 1,600 m<sup>3</sup> *Astra-Torres #1* carried its first successful flights in Issy-les-Moulineaux (Paris) in March 1911. But it was the handing over of the 8,000 m<sup>3</sup> *Astra-Torres XIV (the HMA no.3)* to the Royal Navy Air Service, RNAS) in July 1913 which meant international recognition for the system, with this ship beating the world speed record for an airship, registering 83.2 km/h during the reception trials, a speed which reached 124 km/h with the wind in its favour. So, the orders kept coming, and in December 1914 the RNAS would receive the 11,327 m<sup>3</sup> *Astra Torres XIX (HMA no. 8)* and the 3,960 m<sup>3</sup> *Astra Torres XVII (HMA no. 10)*.

In 1912 the French Army had ordered the 23,000 m<sup>3</sup> *Astra-Torres XV* (later renamed the *Pilatre de Rozier*), which had similar dimensions to those of the German *Zeppelins* and could reach speeds of around 100 km/h. And between 1914 and 1916, *Astra* would deliver to the Army: 14,000 m<sup>3</sup> *Pilatre de Rozier II*, 14,000 m<sup>3</sup> *Alsace*, and 16,000 m<sup>3</sup> *La Flandre*.

The contract signed by Leonardo Torres Quevedo and *Astra* meant very important royalties for the Spanish inventor: 3 Francs per m<sup>3</sup>. This condition changed during World War I, so that after 1916 Torres would get only 1.5 Francs per m<sup>3</sup> for the new series ordered by the French Navy: the 5,200 m<sup>3</sup> *AT-1* to *AT-4*, the 6,700 m<sup>3</sup> *AT-5* to *AT-9*, the 8,300 m<sup>3</sup> *AT-10* to *AT-17*, and the 9,600 m<sup>3</sup> *AT-18* and *AT-19*. In any case, after the Armistice, the Spanish engineer got back the original conditions, earning 32,100 Francs with the 10,700 m<sup>3</sup> *Astra-Torres* airship sold to Japan in 1922.

When the U.S.A. entered the first world war in 1917, their airship pilots trained in England with the *North Sea 7* (a British non-rigid also built on the basis of Torres' trifoil system) and in France (at Rochefort-sur-Mer base) with the *AT-1*. *AT-1* was sent to Paimboeuf centre on 31 January 1918, and was transferred to the U.S. Navy on 1 March 1918, the date when Paimboeuf was designated U.S. Naval Air Station. One month after

being inflated for the first time at Issy-les-Moulineaux, on 30 August 1918 the new *AT-13* flew from Saint-Cyr to Paimboeuf and was also assigned to the U.S. Navy. The career of *AT-1* and *AT-13* with the American Navy is well known. But some doubts still exist as to what happened to other *Astra-Torres* airships ordered before the end of the War, namely, *AT-17* and *AT-18*.

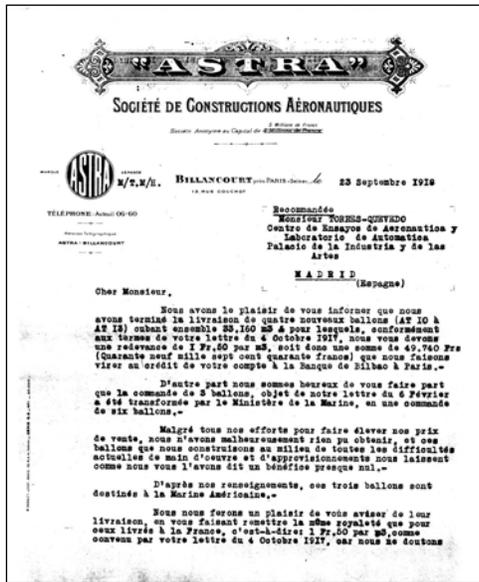
In his now classical book U.S. Navy Airships (1992, 2001 and 2008), **James Shock** writes (p. 48) that *AT-13* was deflated at Paimboeuf on 16 December 1918 and shipped to the United States on 26 January 1919. He also says that *AT-17* was still at the factory at Armistice time, and that, apparently completed in December 1918, it was delivered to the Navy and shipped to the United States, where it was transferred to the Army on 22 October 1919. On the other hand, Mr. Shock writes that *AT-18* was also at the Factory at the Armistice, so that the order for this aerostat was consequently cancelled by the Navy.

In his magnificent book *Les dirigeables de la Marine Française*, published in February 2009 by ARNHAN (France), Robert Feuillooy puts together a huge amount of data on every airship used by the French Navy. The author tells us (p. 97) that the construction of *AT-17* finished on 31 July 1918, although it was not inflated until mid-November, being stored from November 1918 to December 1925 and never transferred to the U.S. Navy. Mr. Feuillooy also considers (p. 100) that *AT-18* was also being manufactured for the U.S. Navy as early as 31 July 1918, although its first flight did not take place in Saint-Cyr until 3 February 1920. Several trials were undertaken from February to 20 May 1920, when it suffered an accident and got destroyed at Saint-Bonnet-le Coureau (Loire). On the other hand (p. 102), the first flight of *AT-19* took place in August 1920, being officially delivered to the French Navy on 8 October 1920.

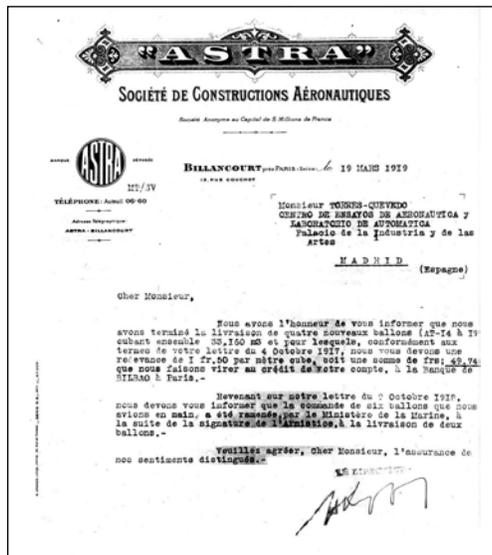
As a complement to these authoritative (although not coincident) references, the recourse to a third documentary source can be considered in order to bring more light as to what really happened to *AT-17* and *AT-18*. This new source is the correspondence between the *Société Astra* and Leonardo Torres Quevedo, that is, between the French company that manufactured those airships and the inventor of the system.

In a letter from 23 September 1918 (Figure 1), *Astra's* General Manager Henry Kapferer informs Torres Quevedo that the delivering of four *Astra-Torres* airships (*AT-10* to *AT-13*) to the French Navy had been completed, and the inventor got paid the corresponding royalties: 49,740 Frs (= 8,290 m<sup>3</sup> x 4 = 33,160 m<sup>3</sup> x

1.5 Frs/m3). In this same letter Kapferer also informs the Spanish engineer that *Astra* had got orders for three new *AT*'s for the U.S. Navy and another three for the French Navy.

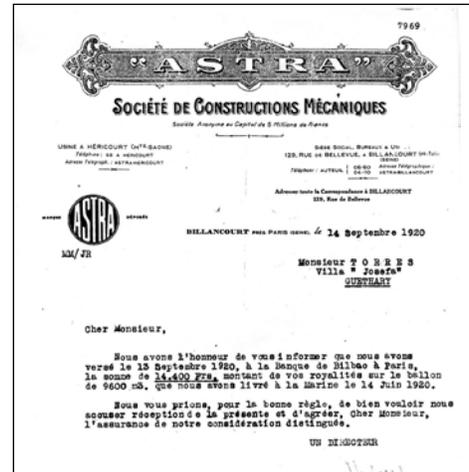


But the War ended on 11 November 1918, and all countries involved had to reorganize their fleets. In a second letter from 19 March 1919 (Figure 2) Torres Quevedo was informed of the delivering of four new airships, *AT-14* to *AT-17*, and got paid the corresponding royalties: 49,740 Frs (= 33,160 m<sup>3</sup> x 1.5 Frs/m<sup>3</sup>).



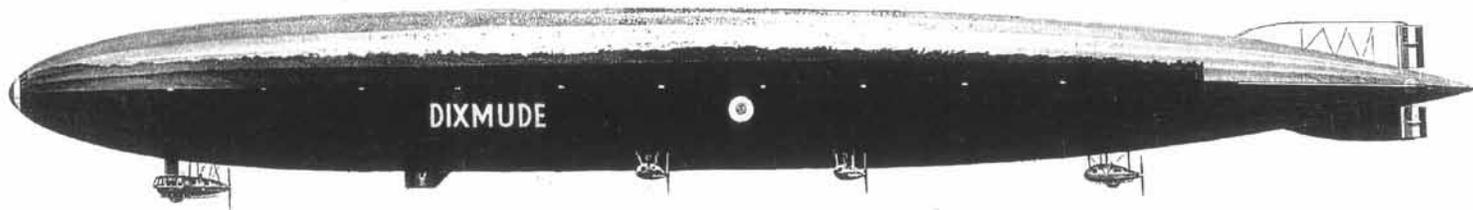
Kapferer also tells the inventor that after the Armistice the number of six new units ordered had been reduced by the Ministry of Marine to only two units, *AT-18* and *AT-19*, while nothing is said about the possibility of any of them being transferred to US Navy.

In a third letter from 14 September 1920 (Figure 3) Torres Quevedo was informed that on 14 June 1920 a new airship was delivered to the French Navy, and got paid 14.400 Francs (= 9,600 m<sup>3</sup> x 1.5 Frs/m<sup>3</sup>). This airship has to be *AT-18*, which was never transferred to the U.S. Navy. If we follow the records of the French Navy (as Mr. Feuillo documents), the Navy had to pay *Astra* for it unavoidably although the airship had got destroyed in May. Clearly enough, the payment shown in this letter could not be for 9,600 m<sup>3</sup> *AT-19*, because its reception trials did not take place until October 1920.



As final remarks I would like to make two suggestions: 1) run and get Robert Feuillo's superb book if you want to learn most of what is known about French Naval Airships; 2) enter [www.torresquevedo.org](http://www.torresquevedo.org) if you want to learn more about Leonardo Torres Quevedo's contribution to the History of Airships. Ω

*This issue's period will also encompass July, the 90th Anniversary of British R-34's Atlantic crossing. Little noted in the media, various accounts in the literature discuss the story. However, Laurie Soffe has published the most accurate and complete history - digitizing the actual ship's log of the trip as recorded by Maitland himself. Copies of his hardbound "Log of the R-34" are available from your editor or publisher's website or you can contact Laurie through the roster. Meanwhile there has been no reader input on the K-14 and K-72 cases. Furthermore, Herman Van Dyk reports few participants in his recognition contest run in last issue. Nonetheless, winners will be named on schedule next issue. Is there anything we can do for our members' apparent lack of interest in LTA history? Ω*



## Dixmude & the French Airship Disaster

by Herman Van Dyk

On Nov. 11, 1918, when WW1 came to an end, Germany still had 13 airships at its disposal. The Treaty of Versailles stipulated that all German war material, such as: airplanes, airships and hangars be turned over to the victorious allies. Ships of the German High Seas Fleet had to steam to the Royal Navy Base at Scapa Flow, where they anchored. Several months later, in protest to conditions of the Treaty of Versailles, the defiant German sailors opened all the sea cocks of their ships and let them sink to the bottom of the Scapa Flow.

On June 23rd, 1919, some airship crews followed the lead of their sea-borne comrades and cut the cables from the airships that had been suspended from the roofs of their hangars and let them crash on the hangar floors. Only 7 airships escaped destruction. Among the survivors were the LZ113 and LZ114, two of the Zeppelin design type "x" of only 3 that had been manufactured. The first one, LZ112, had made its maiden flight on June 7, 1918; 5 weeks later on August 5, 1918, it was shot down in flames by a British fighter over the British coast. In order to obtain the maximum possible altitude, the type "X" airships were constructed so lightweight that they had to be handled with extreme care and should not be flown in bad weather or even at low altitudes. Before completing the LZ114, it was decided to remove one of the 2 engines in the rear engine car and lengthen the hull by 49 ft. (15 m) to insert an extra gasbag, thereby increasing overall length to 743 ft. (226 m). The Allies had decided to award the LZ113 to England. The LZ114, together with the small passenger ship LZ121 *Nordstern*, went to France and the LZ120 *Bodensee* to Italy. The LZ120 and LZ121 had been constructed after the war from left-over parts and materials. The Zeppelin company protested and argued that the LZ114 had never been accepted by the German Navy and, therefore, along with the small passenger ships were still private property of the Zeppelin company and not subject to any conditions posed by the Armistice commission. Regardless, the commission decided that the airships had to be given up in retaliation for the Navy airships that had been sabotaged. So, the *Bodensee* went to the Italian airship base at Vigba di Vale where it was re-named *Esperia*. The *Nordstern* was flown to the French Army Airship Base at Maubeuge and was renamed the *Mediterranee*.

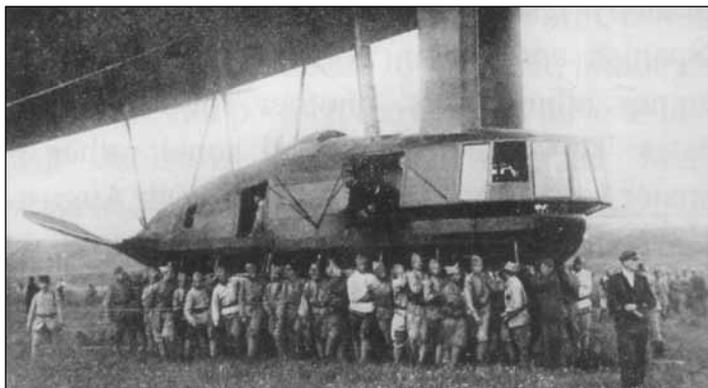
The LZ114 made its first flight under command of the well-known Dr. Hugo Eckener on July 9, 1920. A few days later, on July 13, it was flown to Maubeuge by Capt. Anton

Heinen, who was the test pilot of Zeppelin. Immediately after arrival at Maubeuge, the airship was named *Dixmude*. (*Dixmude* is the French spelling of the Dutch or Flemish word "Diksmuide;" it is the name of a small Belgian town in Flanders. There, Belgian and French forces were able to stop the advancing German Army and prevent them from breaking through to the Atlantic coast. The town was completely destroyed; victory had come at a terrible cost of 55,000 Belgian and French soldiers, not including the enormous civilian casualties.) Maubeuge was an Army Airship Base, so the *Dixmude*, being a Navy ship, was not entirely welcome there; besides, the hangars were too small for an airship the size of the *Dixmude*.

During this time a young, capable and ambitious Navy officer had been given command of the new airship. Lieutenant de Vaisseau Jean du Plessis de Grenedan, son of an old, well-known French aristocratic family, living in the North-Western part of France. On August 11, 1920, with a crew of 40, the *Dixmude* left Maubeuge and set course for Paris and next to her new base at Cuers-Pierrefeu near the Navy base of Toulon at the Riviera. There, two new large hangars were available. After the *Dixmude* was properly laid up in her hangar, the hydrogen was released and a long period of crew training began. Handbooks had to be translated and studied and experience gained by flying the small *Mediterranee*. It took a year before LT. Cdr. du Plessis was satisfied that his crew was up to speed.

Preparations to inflate the gasbags were made, only to discover that they had become porous. By that time they were three or four years old and had to be replaced before any flights could be made. Du Plessis wanted to order the new gasbags from the original manufacturer, the "Berliner Ballonfabrik" (Berlin Balloon Co.), but his superiors did not want the business to go to their former enemy. They insisted that the new gas cells be made by Societe Astra. This company, however, did not have the knowledge and experience to produce the quality materials required to make the gasbags for the *Dixmude*. It was not until July 6, 1923, almost two years later, that they were delivered. A close inspection after inflation revealed many hairline cracks in the material, but it was clear to du Plessis; either accept the gas cells as delivered or have the *Dixmude* scrapped, along with his dream to develop a regular airship service between France and her colonies in Africa. During the time the *Dixmude* was laid up at Cuers, the opportunity was taken to relocate the engines, so that a separate passenger cabin could be installed. It was suspended below the keel between the forward engine pods and the control cabin. It seated 10 passengers. Design details are in question; it seems that

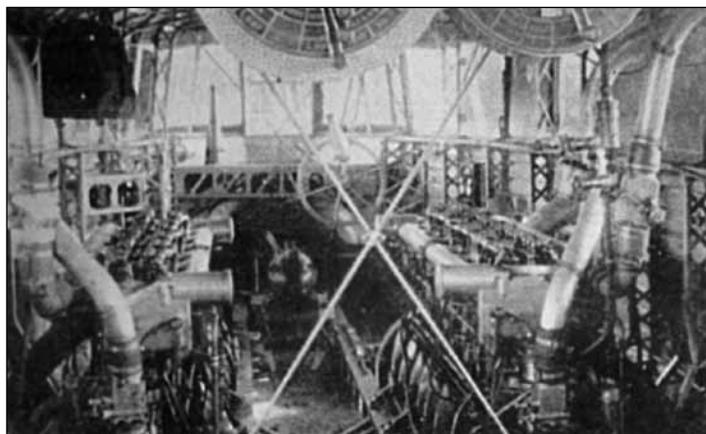
no detailed photographs have survived. The only views known are those taken when the entire airship was on a picture, showing the passenger cabin at a very small scale. The lower half of the airship; the flanks of the envelope and even the new passenger cabin were all covered with the black paint that the Germans had applied to make the airship less visible in the beam of searchlights. On the 1st and 2nd days of August, 1923, the *Dixmude* made its first test flights with the new gas-bags, followed by a series of familiarization flights of increasingly longer duration over France and the Western part of the Mediterranean. On Sept. 30, the *Dixmude* set a new endurance record by staying airborne for 118 hours, 41 minutes. (The previous record was held by the British for their flight across the Atlantic with the R 34.) Greatly impressed by the successful flights, the Ministry of the Navy decided to commission the *Dixmude* as an active unit of the Marine Nationale. Lt. Cdr. du Plessis was ordered to execute some scouting missions for the French Mediterranean Fleet off the African coast near Bizerta from 21 to 24 Nov. 1923. At noon on Nov. 21, the *Dixmude* was pulled out of her hangar and set course for Bizerta.



Despite continuous rain and hail storms, the *Dixmude* managed to join the fleet for a short period of time, but performing any scouting missions had turned into a fight for life with the violent storms. The five-year-old outer cover had become porous and the driving rain leaked through the cover and collected at the bottom of the hull. An inch of water covered the floors of the different cabins and in some places in the fins stood eight inches of water. Slits had to be cut into the outer cover near the keel, fins and cabin floors to drain the water. Severe turbulence lifted the ship to great altitudes, but moments later forced it down again, requiring the release of ballast. Water had shorted the electric control panel and the entire ship was in the dark. Frequent engine breakdowns had to be repaired by the light of fading flashlights. Several times the radio aerial had to be reeled in because of thunderstorms. Du Plessis had no idea of their position, until at 7 am on Nov. 24 a familiar landmark was spotted through a hole in the clouds. It was at a distance of 20 miles from Cuers. Yet, it took 3 hours, 30 minutes before the *Dixmude* was in the hands of the ground crew and the crew of the airship, soaking wet, cold, hungry and exhausted finally could get some rest. On 18th Dec. 1923, the *Dixmude* left Cuers-Pierrefeu, crossed the Mediterranean to Bizerta and headed South, across the Sahara Desert to an oasis, In-

Salah, where she dropped a mailbag. Next, she turned North to Biskra and then West, apparently to return via the Spanish islands Ibiza and Majorca, to her home base. After having travelled west for 150 miles, (250 km), she must have run into strong head winds and decided to turn 180 degrees and fly across the Gulf of Gabes to Sicily, and from there take an easterly course to Cuers. On Dec. 21, at 2 a.m., the radio station at Bizerta received a radio message from du Plessis, reporting that they were fighting atrocious storms, they had sick and injured men and that they had nearly run out of fuel. Several minutes later, another radio message reported that they were entering a severe thunderstorm and had to reel in the antenna. It was the last message ever received from the *Dixmude*. She was lost with her entire crew of 40 and 10 passengers. (All passengers were officers of the Naval Airship Service).

A period of uncertainty followed. Warships from Spain, Italy and France searched the seas, including the French vessel *Escaut* that was equipped with an observation balloon. Airplanes cruised over North Africa, cavalry and camel patrols searched the Sahara. Wild rumors hit the airwaves and newspapers printed headlines in many different languages. Then, on Dec. 29, two fishermen from Sciacca, Sicily, had difficulties hauling in their nets. They had found the lifeless body of a man, unrecognizable, but documents found in his pocket identified him as Lieutenant de Vaisseau Jean du Plessis de Grenadan, commander of the *Dixmude*. All of his limbs appeared to have been broken.



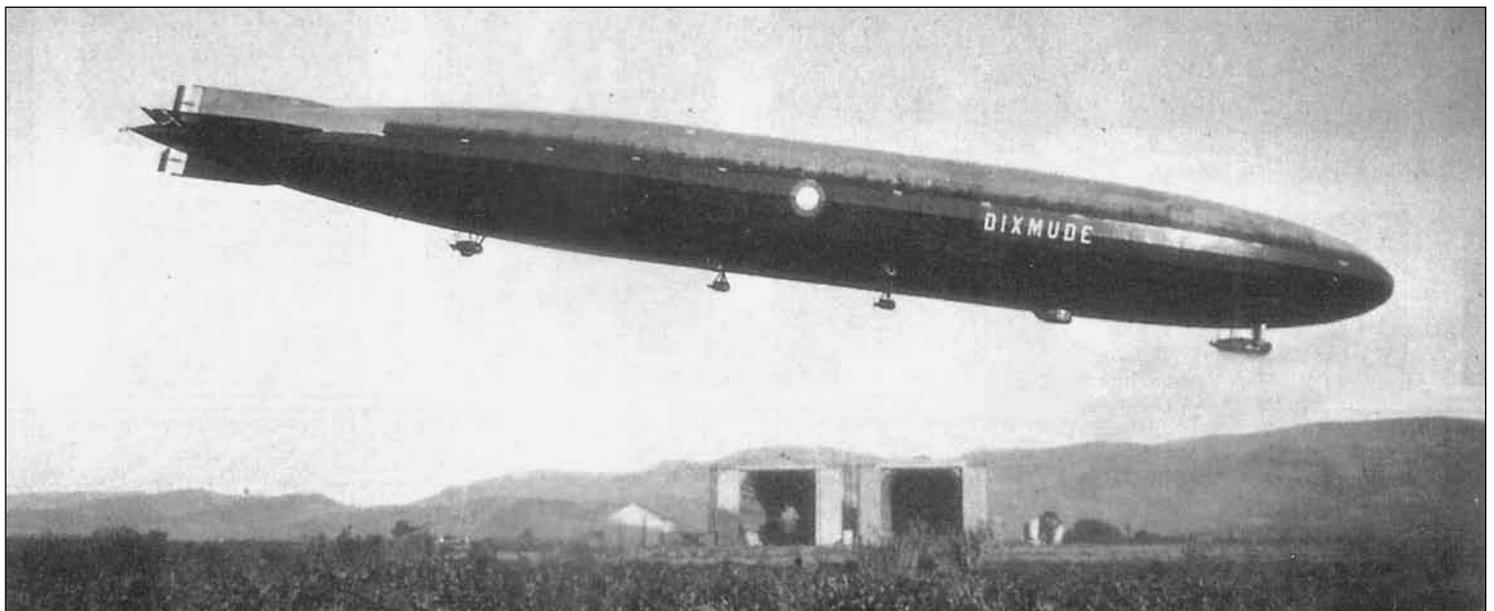
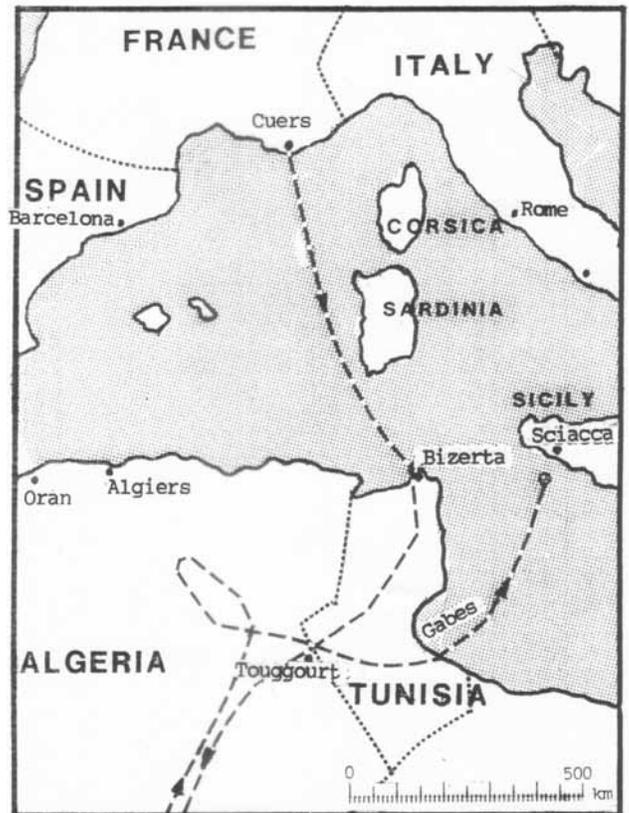
After this news had spread around, several people from the area around Sciacca came forward to report that they had seen a flash of light over the water at 2:30 a.m. on Dec. 23. Two days later, small charred remains were found on the sea near Sciacca and Palermo and were identified, by experts, to have come from the airship. Also, on Dec. 31, the Ministry of the Navy announced that an investigation commission would be appointed to establish any possible responsibility. On Jan. 2, 1924, the body of Lt. Cdr. du Plessis was taken from Naples, Italy, to Toulon by the French cruiser *Strasbourg*. Funeral services on Jan. 5 were attended by tens of thousands of mourners. During the following days, more debris was found, including a scorched fuel tank. On Jan. 7, 1924, it was reported that a medical examination of the body of the commander of the *Dixmude*, had shown that he had died before his body had hit the water. On Jan. 23, a French destroyer found

part of another fuel tank and a human hand. The investigation commission released its first report on Feb. 28, stating that the most plausible cause of the disaster had been a lightning bolt striking the airship at an altitude of 5000 - 6000 m, (20,000 ft.). The committee stated that no one could be held responsible. Despite the fact that the *Dixmude* should only have been flown during calm weather and at great altitudes!

Newspapers and magazines paid tribute to the crewman and passengers who perished with the airship under such terrible circumstances. Then, on Feb. 20, it was reported that the total number of victims was 52, two more than previously mentioned. Nothing was said about the discrepancy. The French concluded that a lightning bolt had ignited the hydrogen, but the world's foremost expert, Dr. Hugo Eckener did not agree. He wrote that it is very likely that an airship, flying through a thunderstorm, could be hit by lightning, but that it is very unlikely that a thunderbolt will ignite the hydrogen of a rigid airship, unless it has been released moments before, either by mistake or because of over-pressure in the gasbags. The metal frame of a rigid airship acts as a "cage of Faraday". During his career, his airships were hit numerous times, but the damage, if any, was limited to the fusing of some parts of the radio equipment. Dr. Eckener reminded the French that they had been warned that the "x" class Zeppelins had not been designed for the purposes the French had been using it for. He explained that it was specifically designed to carry heavy bomb loads at great altitudes to enemy targets. Its construction was so light that it had to be handled with great care and flown at an altitude of approximately 24,000 ft., (8000 m). Dr. Eckener also noted that the frequent engine failures that the *Dixmude* had suffered, were most likely caused by running the engines for longer periods of time than the 24 hours recommended by the manufacturer Maybach. One or two day durations were plenty of time for operational flights, but the engines were also very lightly built and not designed to run for 4 or 5 days. After 48 hours running, the main

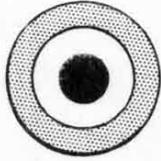
babbitt metal crankshaft bearings had to be replaced.

This required that the engines be taken apart, a task that could not be performed in the air. Eckener believed that the *Dixmude* had suffered a structural failure in the turbulent air of a thunderstorm at less than 6,000 ft. (2000 m); altitude led to an explosion of a fuel tank and ignited the hydrogen, or the ignition of the hydrogen leading to the explosion of the fuel. The explosion of the fuel and/or the impact of the cabins on the surface of the sea wounded the crew. The *Dixmude* with the 52 deceased was the world's worst airship disaster until the Akron went down with 73 crewmembers killed on April 4, 1933. A most beautiful monument, honoring the crew of the *Dixmude* was erected at Place Jean Jaures, close to Cuers-Pierrefeu. Ω

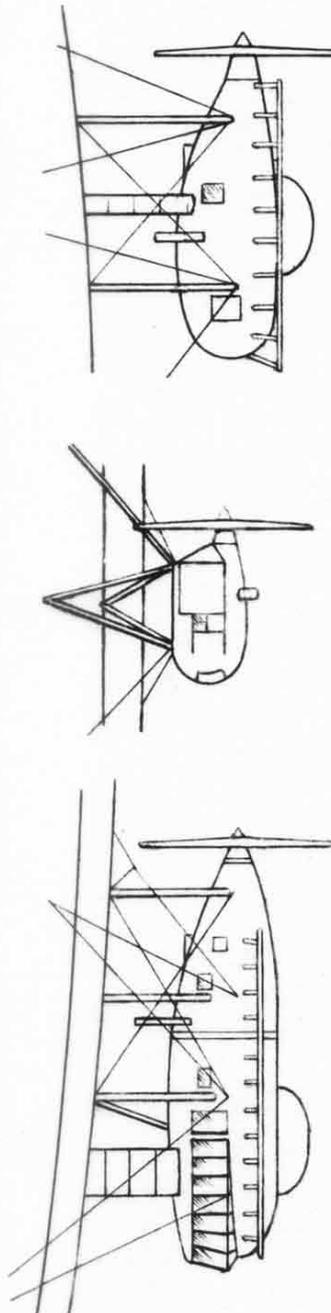
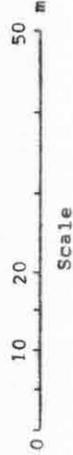
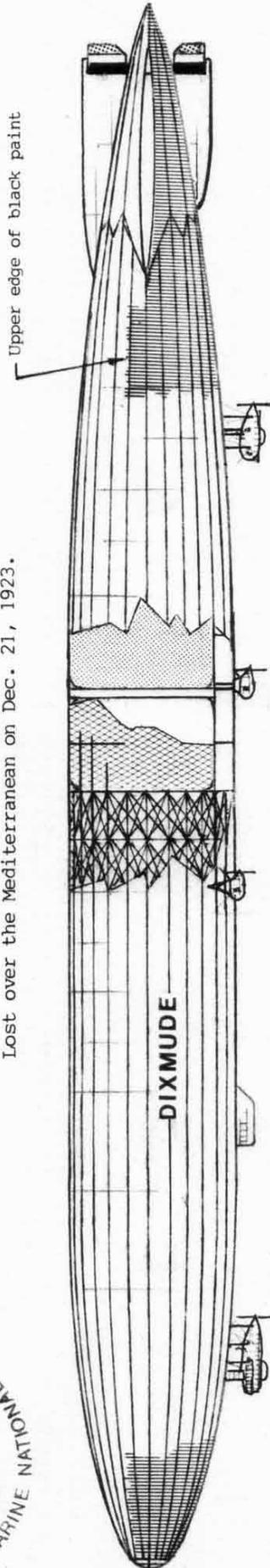




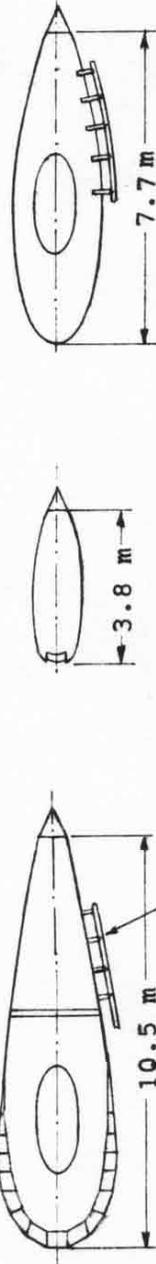
# ZEPPELIN LZ 114, L 72, DIXMUDE



First flight at Löwenthal on July 9, 1920.  
 Delivered to France on July 13, 1920.  
 Lost over the Mediterranean on Dec. 21, 1923.



Design details of the windows of the passenger cabin are in question.



Zepplin; type X; LZ114; L72; Dixmude	
Length :	743 ft , 226 m
Diameter :	78.5 ft , 24 m
Volume :	2,418,700 cu ft , 68,500 m <sup>3</sup>
Speed :	72.7 mph , 117 kmh
Empty wt. :	62,900 lb , 30 tons
Payload :	112,700 lb , 55 tons
Engines :	Maybach Mb IVa, 6x245 hp
Gas cells :	16



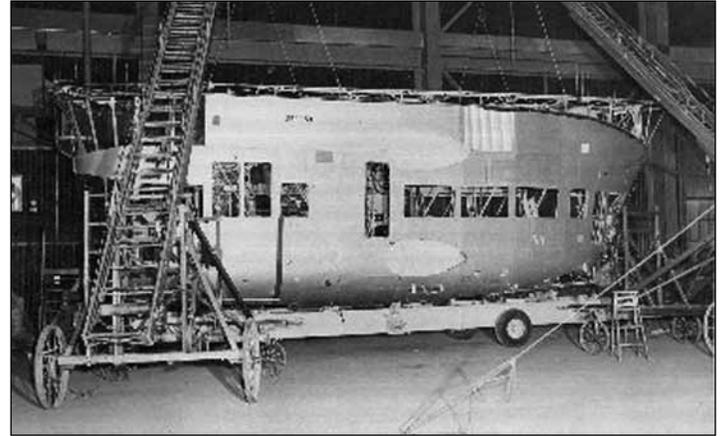
While dry snow was never much a problem, the effects of *wet* snow on airships have presented a thorny issue since the earliest days of winter LTA operations. When flying, an airship could alter course or altitude and try to avoid the worst of it; when “moored out” it was best to seek shelter of a hangar and, if that option was not available, take to the air and head someplace where it was not snowing. If not possible to get into a hangar or into the air due to wind, mechanical difficulties or other reasons, then the options could break down to:

- a) **Get the snow off the ship somehow to lighten the load on the envelope, rigging, fins and landing gear.**
- b) **Watch the airship collapse on the mast.**



A battle of men vs. the elements would often ensue. With the older, smaller ships, ropes or CARGO NETS were sometimes hoisted over the top of the ship by intrepid riggers and then pulled fore-and-aft along the top of the envelope by teams of men with ropes running alongside. Riggers would also go topside with long-handled brooms to push heavy snow accumulations off the upper surfaces of the tail and the horizontal fins. (Note: The ZPG ships with the “X” fins had a nasty habit of collecting snow in the “V” area between the top fins.) By the 1950’s, Lakehurst O&R (Overhaul and Repair Department) had devised special “snow removal masts” using surplus tractor-drawn mobile mooring masts fitted with high-pressure nozzles to direct water against ice/snow on top of an airship envelope using a fire pumper. Judicious use of high-pressure water saved several airships on numerous occasions.

Of course, sometimes things just didn’t go right, as witness these photos (above) of ZPG-2 BuNo 126718 temporarily assigned to the NADU (Naval Air Development Unit) at South Weymouth, MA on April 11, 1958. Heavily weighted with an early spring wet snow and unable to get the ship lightened and cleared in time, the proud 1-million cubic foot giant rolled over, fell on her side and collapsed. The envelope rip cord did the rest. Normally, such an incident would not spell the end for a ship, as a non-rigid could be repaired and re-erected with a new or reworked bag in a few weeks if necessary, but by this time the Navy had already started commencing its drawdown of LTA forces and at this stage of the game a ship with such damage would often be set aside and sometimes scavenged for spares. Ω



Navy blimp K-59/ZSG3-59 being readied at Lakehurst for shipment to California, September 1951. In the photo above, the car is weighed and set on a steel cradle for packing. (Note the Peter Pirsch 65-foot hand-cranked maintenance ladder in foreground.) U.S. Navy blimp K-59 was manufactured by Goodyear Aircraft Corp. in 1943 and had started her career patrolling the West Coast in search of Japanese submarines in World War II. She was credited with making the first air-sea rescue by airship when she dropped a life raft and plucked the injured crew of a Grumman Avenger from rough seas after the airplane ditched due to engine failure. Put into “mothballs” around the time of V-J Day, K-59 ended up at the Naval Air Station, Lakehurst, NJ, where she was eventually upgraded and returned to service with the onset of the Cold War and the start of the Korean Conflict in 1950. The “new and improved” K-59 was damaged and deflated when her tail hit the door of Lakehurst Hangar #6 in August of 1951, but a change of scenery awaited the old warrior. K-59’s packed components were loaded aboard trucks in Lakehurst Hangar #1 in the shadow of two fully-inflated sister K-ships. (Rt.)



Traveling at a snail's pace to Point Pleasant, K-59 is shown heading north along Ocean Avenue in Point Pleasant Beach to be loaded aboard a barge in the Manasquan Inlet (Manasquan Inlet Pavilion seen in photo, far right.) Photos from the Claude Edelhauser Collection at the NLHS.



The Naval Air Reserve Training Unit ("Weekend Warriors") at Santa Ana, California had been activated and airships were needed on the West Coast. Since K-59 was already upgraded and modernized and "in pieces" following her accident, the Lakehurst Overhaul and Repair (O&R) Department prepared her for quick shipment west. At this stage, with former World War II Navy blimp facilities inactive or converted to other uses, it was determined easier to send the K-59 out in "kit" form rather than fly her there. Packed for shipping, K-59's components were loaded by crane onto "lowboy" trailers at Lakehurst and came down what is now Route 70 to Route 88 and down along Ocean Avenue in Point Pleasant Beach at a snail's pace with police escort to be hoisted by another crane onto a barge waiting in the Manasquan Inlet. The boxes containing the blimp's car and fins were so tall that men had to ride alongside and along the top to guard against fouling telephone and power lines. The barge was towed to Brooklyn, NY where the K-59 was loaded aboard a ship and taken via the Panama Canal to California, where she was re-erected by Lakehurst O&R personnel sent ahead to Santa Ana. The sturdy old K-59 survived

another six years in the hands of the "Weekend Warriors" before she was finally deflated and dismantled as obsolete. Before and since, airships have been flown to California, or got packed and shipped by railroad cars, but K-59 travelled by truck, barge and freighter.....surely one of the most unusual ways a blimp ever got sent anywhere! Ω



In 1986, when Goodyear Aerospace was going after the Navy YEZ-2A airship contract (and some complained that what they were offering was simply a souped-up 1958 model ZPG-3W at 1986 prices) the company chairman brushed aside talk of companies such as Westinghouse Airship Industries (WAI) by memorably proclaiming "GOODYEAR IS AIRSHIPS AND AIRSHIPS IS GOODYEAR!" The subsequent award of the YEZ contract to WAI and the eventual spinoff of Goodyear Aerospace into Loral and (later) Lockheed Martin certainly changed the "traditional" LTA landscape, but for the 45 years that the Navy had operated airships previously there certainly were very few other

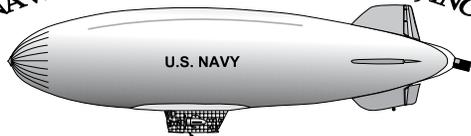
players in the game. While Goodyear may have "lost" money on projects like the Akron and Macon, they "made" money on most of their other LTA contracts.....and they were very adept at providing service and keeping a close contractor/client relationship with their best LTA customer.



Goodyear technical team poses at Lakehurst, March 1952 with old 1934-vintage Twin Coach model Goodyear blimp ground support bus. Photo courtesy of long-time Goodyear airship employee, Lighter-Than-Air Society historian and NLHS Honorary Life Member P. Rendall "Ren" Brown (back row far right, with fedora.)

The bus may have been old, but you can bet they had good tires (note spare mounted on roof.) Witness the above photo of a Goodyear Aircraft technical service team dispatched to NAS Lakehurst in February/March, 1952 for three weeks of trouble-shooting work alongside Navy and civilian LTA personnel at the Overhaul and Repair (O&R) Department. Possibly it was for work on ZP2K/3K conversions and upgrades, or the numerous teething troubles experienced by the giant new "Nan" ship N-1/ZPG-1. Whatever it was, they traveled a 16-hour (pre interstate highway system) trip from Akron in an old Goodyear blimp ops ground support bus, a 1934 vintage custom-built Twin Coach model. Affectionately known as "The Showcase," this bus had "barnstormed" with the Goodyear blimp fleet in the 1930's and retired from airship support work at the beginning of World War II but still kept around Wingfoot Lake for utility service. A precursor to the big tour buses Goodyear still uses today, this bus was originally fitted with bunks, lavatory, PA system, a crew chief desk with portable weather bureau, VHF radio, auxiliary ballonet blower and retractable short top mast with auxiliary outriggers for "belly mooring." The Goodyear people stayed in the Americana Hotel in Toms River, NJ, where a "property of the Americana Hotel" wooden coat hanger caught the fancy of Foreman P. Rendall "Ren" Brown.) Some 55 years later the historic coat hanger and this photo commemorating the occasion of its "acquisition" made their way into the Historic Artifacts Collection of the Navy Lakehurst Historical Society courtesy of our good friend and NLHS Honorary Life Member "Ren" Brown. Thanks for sharing the memories, Ren!

Rick Zitarosa, NLHS, NAA Ω



**MEMBERSHIP COMMITTEE UPDATE**

A wonderful time was had at the 2009 Reunion in Pensacola. It was great to see so many members in attendance, renewing friendships and enjoying the events. It was also great to hear all the stories and airship experiences. I appreciate the many members who took the time to offer suggestions on ways to attract new members. Ideas ranged from placing ads in veteran's magazines, and aviation enthusiast's magazine, putting new or recent issues of The Noon Balloon in school and public libraries to wearing your NAA hat and jacket patch as much as possible. All the suggestions will be considered and many will be implemented in due course.

We are still interested in publications that could provide us with additional exposure to not only former blimp crew members, but also airship enthusiasts and aviation historians and researchers. We can consider an ad such as we have placed in the Journal of Military History or some other sort of publicity. Free publicity is also welcomed. If you have an interesting story or participated in an historic event, we can help you prepare a short article or press release. Contact the membership or history committees. If anyone has any suggestions of potential publications where we can promote the NAA, please let us know. Please keep looking for other outlets where we can display NAA brochures and contact me with your thoughts. We will do the follow up work and any mailings necessary. Our goal is to target veterans' organizations, military history groups, aviation historical societies and those types of groups that cater to aviation enthusiasts and researchers.

Finally, we welcome Donna J. Forand as a member of our Membership Committee. Donna is the daughter of member Bob Forand and frequent attendee at the NAA Reunions. Donna brings an infectious enthusiasm and knowledge of airships and the NAA to the committee. We are also talking to a couple of people in the midwest and on the west coast about helping us. If you would like to help the membership committee, or know someone who would, please contact us.

- Fred Morin, Chairman Ω

**Richard McComb** kindly digitized a pile of his late father's photos and donated his copy of a ZSG-4 ("4K") manual. Following his sending along the citation "right", we are again reminded even non-classified rescues were not always recorded in the published histories. Also to the right is the senior Richard McComb in a still-discernable snapshot from more than half-century and a hemisphere away. Ω



THE SECRETARY OF THE NAVY  
WASHINGTON

The President of the United States takes pleasure in presenting the AIR MEDAL to

LIEUTENANT RICHARD LOWELL McCOMB  
UNITED STATES NAVAL RESERVE

for service as set forth in the following

CITATION:

"For meritorious achievement in aerial flight as Flight Captain and Pilot of a Naval non-rigid Airship on the night of July 19, 1945, when he located and rescued survivors of a crashed DC-78 on a remote part of the Brazilian coast line. In the face of extremely difficult conditions, Lieutenant (then Lieutenant, Junior Grade,) McComb made two landings and take offs in a highly constricted area under conditions of total darkness and without the benefit of a landing party and succeeded in effecting the rescue of two Army officers without damage to the airship. By his airmanship and courage, he accomplished the first night rescue made by a non-rigid airship, and his conduct throughout upheld the highest traditions of the United States Naval Service."

For the President,

Secretary of the Navy

**Richard Lowell McComb**, 88, passed 29 MAR 09. He was a Lt. Commander in the U.S. Navy. He received an Air Medallion in the Navy for first air sea rescue at night in Brazil during WWII (above). Richard is survived by his son, Richard F. McComb of Carmel; step-son, daughter, sister and brother. Richard was preceded in death by his wife, Virginia (Kidd) McComb, in 1999; and daughter, Teresa Irwin, in 1996. Ω



**Conrad Lee Shuster**, 75, passed 18 FEB 09. He was stationed at Weeksville, NC with ZP-4 and retired from the Navy as an ADAN in Sept. 1952 on a medical discharge. He had just recently joined the NAA. He was preceded in death by his wife, Phyllis. He is survived by a daughter and grandchildren. The family wishes to acknowledge the special care provided by the doctors and nurses of the Wright Patterson Air Force Base Medical Center. Shuster's grandson Christopher L. Mabry will retain his NAA membership. Ω



## Ready Room

The 2009 **Albuquerque International Balloon Fiesta** is to be held October 3 - 11, 2009. Ω



**John Loras Bisenius** passed 1 FEB 09. John is survived by his wife, Virginia and daughter, Jeanne Mullen. Ω

**Joseph Franklin Smith**, 86, passed 30 APR 09. Smith enlisted in the U.S. Navy in 1942, attending flight training in Michigan, Iowa, California, New Jersey and North Carolina where he qualified as an airship pilot. He was stationed with ZP-14 in North Africa and the Med. Following the war, he returned to the U.S. and was a pilot and flight instructor until the airship squadrons were phased out in 1960. He finished his 28-year Naval career in the Philippines, Pensacola, FL and Key West, FL where he retired. Smith is survived by his wife of 61 years, Marilyn (Dencer) Smith; sons, grandchildren and great-grandchildren. Ω



**David J. Laurel**, 87, passed 5 APR 2009. Enlisted USN 1942, retired as AFMCM 1972. Member NAA. Always very proud of his LTA service; always considered LTA a very unique experience. Survived by sons, Roger D. (Walnut Creek, CA) & Larry P. (Oakford, PA.). Preceded in death by his wife, Louise T. Laurel (2002). Ω

**Oris J. Fry** passed 24 April 2009. Ω

**Stuart Wahlberg** passed 7 March 2009. Ω

### Airships to the Arctic V:

#### **Approaching the Tipping Point**

Wednesday October 7 - 9, 2009

The Coast Plaza Hotel & Conference Centre, Calgary, Alberta, Canada

Organizers: ISO Polar Airships and The Van Horne Institute.

Cost: Early Bird C\$495 + 5% GST

Regular C\$595 + 5% GST

(Registration includes all meals and conference banquet)

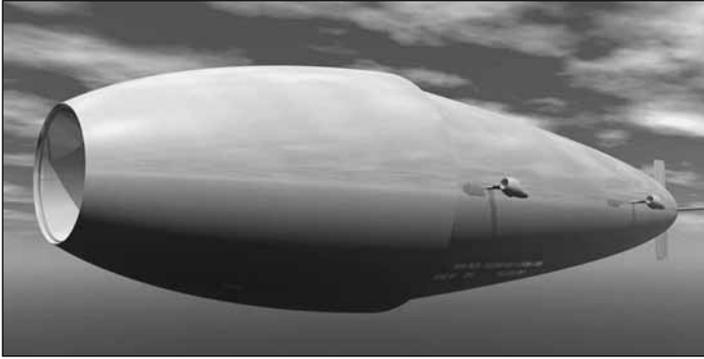
Website: <http://www.airshiptohearctic.com/>

The 5th Airships to the Arctic is a business conference focusing on effective use of airships in the northern latitudes. The conference will examine the demand for transportation in northern Canada and provide an update on the supply of airship technology worldwide and potential deployment opportunities to respond to the northern challenges.

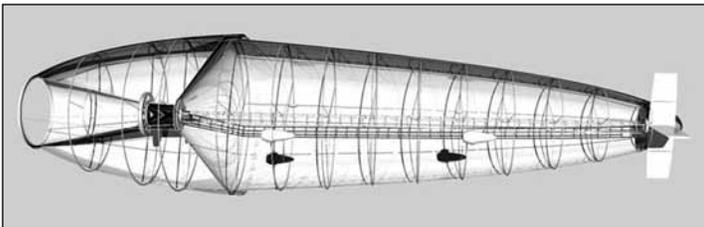
One hundred years of technological change has created the opportunity to build large, robust airships that could deliver cargo to the most inhospitable corners of the earth. At the present time, over 16 teams are working in 8 different countries with actual airships and aerostats. The development of a cargo airship is inevitable, and the race is on to find the dominant design. The economic tipping point is in sight; it just needs a final push for a commercial transport airship industry to become a reality.

Consider attending if you are in the oil and gas, construction, transportation, or logistics Industries and are interested in innovative freight movement solutions. Consider attending if you are involved in airship developments, or a supplier to the airship industry, and wish to obtain a first-hand measure of the pent-up demand. Ω

## Lighter Side of LTA



Frank Germano, accredited aerospace engineer, has designed a revolutionary airship system that incorporates Viktor Schauberger's and Nikola Tesla's pioneering engineering concepts. At the frontal section of the craft is an air intake plenum (the large opening), which draws in atmospheric air through a spiral vortex-generating cone. The air is accelerated via a Tesla bladeless disk air pump system. This accelerated and pressurized air is forced out through an outer ring of slits located along the side of the craft (think of a fish's gills), and the de-oxygenated, pressurized, velocitized air forms vortices along the outside hull of the airship. As per Viktor Schauberger, this reduces friction and creates a "slip" effect as the craft travels through the air. A high degree of mobility is also afforded, and the craft is first pulled into a frontal vacuum, into the vortex, and additionally, "squeezed" through the air, compliments of the greater pressure exerted by the expelled air traveling aft along the hull of the craft.



Additional outboard pods, fitted with smaller electric drive BDP propulsion systems are installed in several location around the craft to afford a high degree of directional control and provide vectored thrust stability in any weather conditions. This craft will also generate additional power internally, simply by its own movement through the air. The airship will use a Tesla-based wind turbine/pump or hydro-BDT, for regenerative air-braking and for additional on-demand electrical power. The Hydro-BDT, which is formed by attaching the rotating horizontal disk-pack to a vertical axis shaft that is mounted to the external frame on bearings, allowing the disk and shaft full rotation. Shutters are designed into the opening of the disk-pack that can open perpendicular to the horizontal disk or can close to a position parallel to and even to the surface of the disk. As the airship travels forward through the air, particularly during the crafts' decent, the force of the incoming airflow drives the Tesla-type BDT's... ☺



For two months in the Spring of 2009, "Carl Fredricksen's LazyBoy" (top, actually a sophisticated composite) will become a real-world flying armchair, attached to a beautiful cluster of giant balloons! Partnered with a team of FAA-certified balloon pilots, the Cluster Balloon LazyBoy will host aeronauts on tethered flight operations in 20 U.S. cities on a whirlwind tour of the country leading up to the film's launch.

The armchair flights will consist of a five-story tall cluster of colorful balloons carefully attached to the gondola, allowing Media VIP aeronauts to ascend to tethered altitudes above the city and experience the world of lighter-than-air flight in a very unique way! All events have FAA commercial- and gas-rated pilots, and even the on-camera spokespeople will have specific LTA training. Great for the world of ballooning! ☺





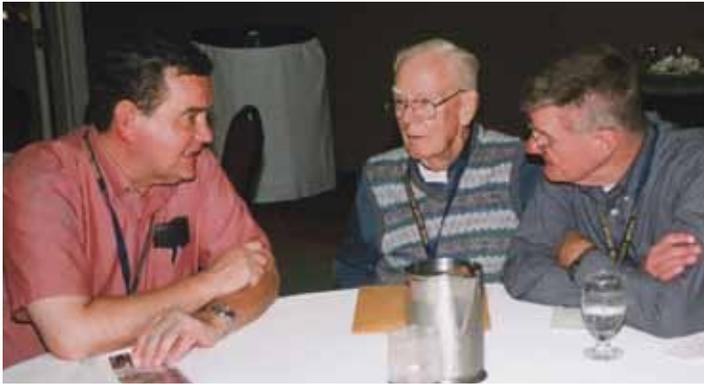
Irene and Don Shorts



Past President Bob and Phyllis Ashford



Sharon Ott and Mary Weithaus



Fred Morin discusses K-28 car restoration with Russ Magnuson and John Craggs from the New England Air Museum



Ernie Anderson enjoys the table conversation during a "Ready Room" social time.



Bob Forand, far right, and friends discuss "Ready Room" photo notebooks.



Charlotte Winchester, Bo Watwood and Peter Brouwer.



Attendees at Monday night's Welcome Aboard Reception.



Restored L-8 car in the LTA exhibit.



NAA members had flight line bleacher seats at the Tuesday Blue Angels air show.



Blue Angels Diamond Formation, plus two solos, pass overhead during Tuesday's air show.



"Airship Ring" entrance to the Pensacola LTA display.



With their reunion work complete, co-chairmen Joe Hajcak and Mort Eckhouse relax before the closing banquet.



2009-2010 NAA officers - Fred Morin, Vice President; Herm Spahr, President; Peter Brouwer, Secretary-Treasurer



NAA past president, present at our 2009 reunion left to right, Bob Ashford, Lou Prost, Norm Mayer and George Allan.