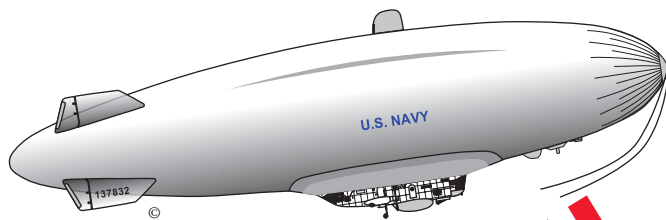
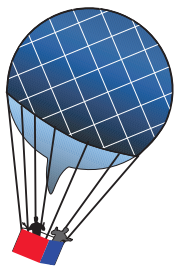


THE

NOON



BALLOON

The Official Publication of THE NAVAL AIRSHIP ASSOCIATION, INC.

No. 105

Spring 2015



JLENS DEBUT - WASHINGTON, D.C.



(Top) MZ-3A has been removed from service. Deflation began Monday, 12 JAN 15, and took two days. At press time no further information has been forthcoming. (Below) This airship training device sold on eBay for about \$1000. See “Pigeon Cote” inside. Some of the Hindenburg duraluminium support structure that survived the fire was refashioned into a series of 15 tables for collectors. One of those tables was offered for sale for \$15,000 on eBay.



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“Politics is the gentle art of getting votes from the poor and campaign funds from the rich, by promising to protect each from the other.” – Oscar Ameringer ☺

On the Cover: Showtime: JLENS makes its debut over Washington, D.C., December 2014.



THE NOON BALLOON

Newsletter of the NAA

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EDITORIAL

R. G. Van Treuren, Box 700, Edgewater, Florida 32132-0700, rgvant@juno.com

I am happy to report the NAA is off and running with our most important effort in recent years: “Airships to the Caribbean” (A2C) is now firmly scheduled to run January 28-29, 2016, at Embry-Riddle Aeronautical University in Daytona Beach, Florida. After decades of working to correct and complete LTA’s historical record, promote and celebrate its achievements, restore and display its artifacts, and holding reunions for our members, we are finally adding the next logical step. Our late member Hal Pelta had proposed the idea in the years before his passing. Hal had performed a large body of work hoping to model a southern conference along the lines of Dr. Barry Prentice’s “Airships to the Arctic” model. Instead of LTA-minded folks meeting to talk airship technology with each other, his Canadian meetings brought together potential users with potential manufacturers and investors.

This new effort was of course started by the usual gang of NAA activists stirring up more work for themselves. There is also no way this same group of overworked volunteers can make it a success without serious support from the body of NAA membership. We beg you, gentle reader, to consider joining in this effort to bring our quickly vanishing expertise face to face with a new generation. The success or failure of this effort is entirely dependent on our members coming forward to help in one fashion or another. ASAP, please contact our President to participate.

Do you remember how the Navy quietly backed away from LTA as the 1950s drew to a close? Step 1: close the training program. Without freshly trained replacements, normal duty rotation insured the operation would quickly starve for talent and expertise. In the half century since LTA has been in the chicken-or-egg paradox of no available training materials vs. the need for them, we’ve talked about translating the only modern textbook from its native German for a decade. But I am happy to report that once again a handful of activists have taken on yet more work to make that happen. As you read this we have two chapters translated and laid out for publication. Again, you can help make it happen sooner: drop me a line if you’d like to get involved.

The heartbreaking news that the Navy cannot support even a one-airship LTA effort was a rude New Year’s call to attention, making our job that much more difficult. Now that the holidays are behind us it is not easy to remember the daily struggle to get everything done before the ball dropped, etc. I will certainly never forget the near-simultaneous announcements from both NASA and DARPA about the time we were shopping for a turkey and stuffing. Both had deadlines before December 1st, hardly enough time to get a team together to compose and submit a worthy proposal. So, your Editor alone volunteered to scare up at least a token response. The NASA proposal basically asks for help; DARPA was ready for a well-detailed submission. The initial proposals are covered in this issue, while my eight-page DARPA opus may find its way into a later issue. DARPA stated they were unlikely to acknowledge entries, and to date they have kept that promise.

With taxpayers unwilling to elect politicians that will commit resources to an inspirational space program, small wonder private enterprise has stepped up to create innovative ways of reaching the upper limits of Earth’s gravity well. With us, such limited and intermittent Governmental interest - literally restrained with tethers - is discouraging. So likewise it should come as little surprise that private concerns are at least dabbling in buoyant matters. Oddly, in this “bleeding edge” arena, a sort of rivalry has developed paralleling the early days of aeroplanes trying to horn in on what had been LTA’s sole box office. Inside this issue you’ll read about Google’s efforts to distribute internet coverage via balloon. Rival Facebook has embarked on a competing effort using small “wi-fi airplanes,” evidently solar panel/battery powered, to distribute its product. (Facebook doesn’t like the planes to be called drones, and they might believe they can avoid that technologies’ brouhaha in the national airspace by conducting ops only in remote regions.) While only a sideshow to our efforts, happily the technologies developed for both can possibly ease our beloved, safe and efficient airships’ return to the skies.

– **Richard G. Van Treuren**

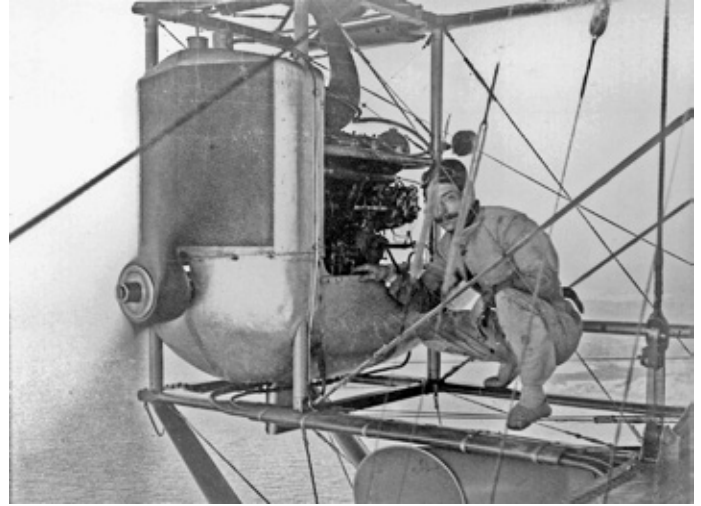
View From The Top: PRESIDENT'S MESSAGE

I hope everyone enjoyed the holidays and I look forward to a busy 2015. We have begun our planning for the 2016 Reunion/Conference which will be held in Pensacola this time. Previous reunions held there were a great success and we look forward to continuing that tradition. I am sure our agenda will be packed with interesting activities, the Naval Aviation Museum visit will be interesting as usual and, weather and schedule permitting, a Blue Angels practice demo will be a highlight of the event.

We recently polled members about our reunions and I am pleased to report that 28 responses were received, which is over a 5% return rate. Quite impressive for an informal polling. The majority of responses favored a Pensacola Reunion/Conference with Tillamook, OR; Tustin, CA; and Moffett Field, CA, receiving quite a few mentions for the next west coast event. Akron, OH, and the Goodyear facilities also received mention from a few responders. This will be factored into the next Reunion/Conference planning sessions.

Our proposed international LTA conference for January 2016 with Embry-Riddle Aeronautical University is progressing as we are in the process of lining up speakers, co-sponsors, and exhibitors. Among several new developments in LTA Lockheed-Martin have made a couple of recent announcements about LTA projects they are working on and NASA has made several announcements about LTA projects and also issued a call for papers. We are actively pursuing these and several other LTA organizations to join with us in the LTA Conference.

Organizationally, we are processing the renewals as I write this. I hope we can at least maintain our current overall number of members as well as attract new ones. I am also very encouraged with the amount of renewals that included an extra donation. As a non-profit association we depend upon renewals and Small Stores sales for our income. Our biggest expenses are The Noon Balloon and the Reunion/Conference. We have a world class magazine and I have every intention of keeping it thus. Our editor does an extraordinary job



of presenting LTA history, current events and future prospects and we receive many compliments on each issue. Our publisher does an equally outstanding job of producing an attractive magazine on a timely basis while controlling printing costs and, as far as practical, postage costs. Donations, large and small, help us maintain our low membership fee and supplement our Reunion/Conference expenses. We are most grateful for all of you who donate. There will most likely be another Executive Council meeting in late September or early October of this year. The main topics of discussion will be the 2016 LTA Conference and 2016 Reunion/Conference plans. If anyone wants to suggest an item for our agenda, please contact me or let Debbie Van Treuren know.

Later in this issue is an article from member John Kumke about his time in ZW-1. I thank John for this. I wish we could get every one of you to write a piece about your time in Navy LTA. It doesn't have to be book-length or several pages. Any recollection of a particular flight experience, a particular base, even a paragraph is OK. We need to capture these recollections. Sometimes a short story will cause someone else to join in and add to the story. Please contact our History Committee chair or Noon Balloon editor with any stories or photographs. Let's not have these stories lost to future generations, historians or researchers.

Thank you for your continued support for the Naval Airship Association.

– Fred Morin, President

TREASURER'S STRONGBOX

We have had an interesting year with the changeover to a new bookkeeping system, a new Treasurer and an expanded report system that allows us to track inventory and sales. The good/bad news about this new expanded system is that it shows us to the penny what we are spending! A quick run-down on operations:



Starting Balances:

May 18, 2014

Checking: \$5,635.43

Savings: \$23,312.00

Ending Balances:

January 20, 2015

Checking: \$10,004.79

Savings: \$20,314.65

All bills have been paid and we have a healthy bank balance.

Renewals continue to come in slowly and there are still about 100 or so members who have not yet renewed. We had to transfer funds from the Savings- \$3000 to cover our October obligations.

President Morin instituted the two-year renewal deal, this past October: A DVD was offered to anyone who wished to renew for two years. A number of our members took us up on this offer and we still have a few members who renewed for two years but did not specify which DVD they wanted.

We had quite a few donations from our members which helped fill the gap as well. The donations total was: \$2,431.00, ranging in amounts from \$5 to \$200. Thank you to all who included a little extra in their renewals! A few special donations were received from several members: Berda Allen made a donation to the Association in honor of her brother-in-law and sister-in-law, George and Dottie Allen in recognition of their 60th anniversary. Stephen Ulrich made a donation in memory of his father. We are grateful for these extra funds, which helps to keep the Association solvent.

We are also grateful for Donna Forand's work keeping Small Stores up. Her operation has generated over \$3,000 in gross sales this year. She not only brings you high quality logo wear, but hard to find airship stuff you can't get anywhere else.

– Debbie Van Treuren, NAA Treasurer

PIGEON COTE

In an ongoing discussion with the Canadian military officers studying LTA, Jeurgen Bock e-mailed, As a former advanced project development engineer, I am used to starting with all system requirements available, which I could - for the North Canadian transportation problems - only derive from Dr. Prentice's particular environment descriptions and knowledge of economical and cultural boundary conditions. There are essentially two categories required which lead consequently to two different design philosophies:

1. For heavy lift routine transportation, a hybrid airship for STOL operation represents the economically best solution,
2. For servicing scattered communities, lumber hauling and prospecting in unprepared and inaccessible territories, a motorized balloon system or some kind of a spherical airship is required.

In both systems a COH buoyancy management is superfluous and/or impractical. The Dragon Dream airship is actually based on a "pudding" and not on a technical analysis. It may sound strange that government agencies have funded this project for quite a time, but I had made a similar experience about 15 years ago with the CargoLifter project. CargoLifter claimed to carry 160 tons of payload over 15,000 km from any point to another on the globe by means of an airship. Hundreds of people, among them scientifically and technically cognizant persons, have put their money into this rhetorically perfect "vision," despite obvious arguments:

- a. On a 15,000 km non-stop haul the CargoLifter requires substantial amounts of fuel at the expense of the payload (e.g. "*Hindenburg*" ca. 50 tons of fuel!),
- b. High mountains and elevated territories are prohibitive due to the loss of lift,
- c. Climatic conditions like over deserts and high-wind areas have to be avoided,
- d. In competition with sea-going (container) transportation, the only advantage of airship transportation could be identified on the way from the dispatcher to the seaport and from the receiving seaport to the addressee, if either way was impassable for bulky cargo.

Afterwards almost everybody knew better, except a few ones who made the lack of Government funding and negative critique responsible.

HAV Airlander 10: Indeed a remarkable project created upon the ingenious concept of the late Roger Munk. I like also the air cushion landing gear especially for soft ground and/or water. The hull is a masterpiece of blimp-tailoring. While the blimp technology has been perfected over the past decades, there is still the open question about the limits of size of the pre-stressed surface, for the surface tension increases with the radius of curvature, while pressure variations affecting the surface tension up to the third power of scale, a critical aspect for inflated structures!

Large inflated structures seem to be very sensitive to extreme pressure variations, as the mishaps with numerous stationary inflated structures in high winds have shown. On the other hand, radomes with geodesic reinforcement structures have proven to be robust. This brings up again the classical argument of rigid versus nonrigid airship design! I am convinced that a rigid or semi-rigid design will be inevitable from a certain limit of scale on. Admiral Rosendahl assumed this limit to be at 30,000 cubic meters, but that was half a century ago. At any rate, the existence of such a limit should be kept in mind for future projects. In continuation of my previous mail, I'd like to answer your question regarding Prof. Apel of the Bremen University of Applied Sciences. The sad message is that there is no design department for airships. I know Uwe Apel from our former employment in the advanced project section of the Bremen space industry ERNO (now Astrium). After becoming professor in Bremen, he founded a small company among others for robotic (i.e. automated) LTA systems with part-time students and the financial support of the State of Bremen. Unfortunately this enterprise became the victim of a State austerity program before it ever could present tangible success.

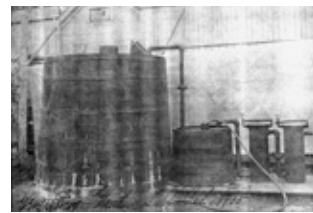
The only organization in which free R&D activities could be promoted was (and still is) the DGLR (German Aerospace Association) which operates entirely on a non-profit honorary basis; in other words, a bunch who do plenty of work for nothing! I became the chairman of the LTA Section in 1993 for a period of eight years. Professor Apel holds the present chair. He fully supports my activities and assigns interested students to LTA-related tasks. Especially a rather numerous airship model construction and model rallies have emerged ever since, demonstrating from time to time also. interesting configurations. The LTA Section managed to organize

annual workshops with a broad spectrum of papers. Unfortunately a broad majority lived in the nostalgia of the zeppelin area and could not be converted into modern R&D on the basis of present-day system requirements. I apologize for not having better news. Regards... Ω

Pam McRae wrote, "I am writing with the sad news of my Dad, William H. Smith's passing on January 14, 2015. He truly enjoyed The Noon Balloon and told us that one of the best days of his life was spent at the last reunion in Newport, Rhode Island, this past spring, as he was able to visit and go inside of the K-28 that had been restored at the New England Air Museum. He was thrilled by this." Pam included photos of Bill (also see "Black Blimp") on his birthday aboard a Lightship. Ω



New member Roy Mize kindly allowed Ed. to review his very mature manuscript, "Thomas Scott Baldwin: Grand Old Man of Early Aviation." Roy's research is extensive, his composition well paced, and the work will make an excellent book covering little-known early LTA territory. In Ed.'s e-mail discussions with Roy, the famous subject of Baldwin's failure to launch at St. Louis came up. Ed.: "I'd also heard he had not planned on the higher elevation's lack of S.F. sea level lift." Following this discussion Ed. wonders how much attention was paid to the lift gas purity for the show. We have a poor image of one of Baldwin's California hydrogen generators (below). Of course, Baldwin did



not have it with him. The literature explains St. Louis Fair organizers had promised the airship competitors free lifting gas, but there are no published images of gas generators there. One might suspect they simply piped in hydrogen-rich citi-gas. Horace Wild's account published in *Popular Science* magazine complained that the supplied gas was "none too good," so wherever it came from, we can assume it was contaminated. So with the higher St. Louis elevation, and the sour gas, Baldwin putting on a few pounds must have been the last straw. His *California Arrow* eventually lifted off - with skinny young balloonist Roy Knabenshue at its helm. Ω

Member George Diemer called attention to a somewhat familiar looking control panel on eBay: “The seller says the K-ship cockpit training device was from the estate of Thomas Huf, who died with his wife while flying his 1944 Cessna T-50 Bobcat on Labor Day 2013, around Lenox, PA, which is about 100 miles south of Syracuse, NY, on Route 81. That would explain how the item ended up in Syracuse. Mr. Huf was attending a convention of the Antique Airplane Association in Iowa, according to the Scranton Times-Tribune. The crash occurred Labor Day in the woods near the Huf’s home and private landing strip in Kingsley, but the site was not discovered until the next Sunday, by the Pennsylvania Civil Air Patrol. Elaine Huf, who owned a pink Aeronca L-16A which she had acquired from the CAP, was a member of the Naval Airship Association, having joined in 2012, according to the Noon Balloon, Spring 2012. I did not find any Huf’s in the current membership roster of NAA, I assume because the membership lapsed. Mr. Huf apparently was a flight instructor, so a blimp training device would not have been out of place in his collection... Russ Magnuson at NEAM remembers the Huf’s visiting the museum and the K-28 restoration several years ago. He remembered because of Elaine’s pink airplane.” Ω



Member Evan Mathis passed away last year. His daughter sent along two photos for his notice (See “Black Blimp”). This photo is from his Pensacola days, following his graduation from the U.S. Naval Academy. Ω



Immediate Past History Chair Al Robbins e-mailed about the last issue, “Interesting pieces by Pelta, and by Professor Prentice. Perhaps

Barry might be willing to expand on Pelta’s comments. I did appreciate the charitable British review of Nickoli/Carichner’s Volume II - even though the hybrid airship is still an untested theory, which should be tested. I was somewhat surprised that there was no mention of why it was desirable to be able to fly at 20,000 feet, or how they might safely control a hybrid when flying in a gusty cross-wind. Both Geometry and Physics still apply in the real-world. Interesting, thought-provoking articles by both Professor Layton and Jürgen Bock. Professor Layton neglected to reference BATTLEBAGS, or the famous specification of Feb 1915: Small airship; Maximum speed 50 mph; Eight hours endurance; Two man crew; 160 pounds of bombs; WT set; AND “capable of being flown by young midshipmen with small-boat training.” The juxtaposition with Jürgen’s paper gives pause. It had never occurred to me, but all of Britain’s large non-rigids employed an Astra-Torres type, tri-lobed envelope/suspension system. The Italian’s large airships were all semi-rigids, but with drastically different structural approaches. We never adequately tested either multi-lobes or semi-rigids. It’s a shame that the Navy ignored the Durand Committee’s Prewar recommendations to build and test airships of various types and sizes.

Jürgen appears to accept the wind tunnel expert’s simplification: “wind is a constant velocity, well-collimated force consistently aligned with the airship’s primary axis.” Unfortunately both lift and drag are non-linear functions even at small angles of attack. (And that presupposes that a lightly loaded circular wing is capable of maintaining its shape with a shifting center of pressure; unlike the solid wooden or metal models tested in wind-tunnels). The ability to minimize undesired roll effects under real world conditions has yet to be demonstrated, even in conventional airships, at maximum or modest speeds, or under various loading conditions.

Jürgen mentions using Natural Gas, but appears to prefer Hydrogen. (Still an infant technology.) We must not ignore Methane as an alternative gaseous fuel. (Even Indian farmers have successfully separated and use “Natural gas” for heating, lighting, and as a motor fuel.) Methane is widely available, cheap, and doesn’t require a refinery. Gravity separates it from heavier gases (oxygen, nitrogen, carbon monoxide and carbon dioxide: simple driers capture the water vapor prior to compression and storage). Perhaps most importantly, the supporting technology, engines, components, support equipment, DoT regulations, procedures, and technical training have all been developed over the past two decades. In a bow to the radical environmentalist, Methane is a two-fer:

1. It would reduce methane escape into the atmosphere – a most potent “Greenhouse gas,” and
2. it would reduce the requirement to transport and store expensive gasoline, kerosene and diesel fuel to remote sites. For the LTA community it could eliminate nearly 10 pounds of fuel weight for every gallon of liquid fuel which it replaces.

I’m guessing that his reference to “Lilienthal -control” was to a C.G. shifting device. A lightly loaded high angle of attack aircraft, such as the experimental “Flying Pancake” would have been the most hated, and dangerous aircraft on a flight deck. Ling and his numerous companies went on to build lots of highly successful aircraft, but we still haven’t been able to produce a viable fast-slow wing system.” Ω

Alastair Reid also observed, “I recall a lenticular model design at Cardington in the 1970s that had trouble with stability (something to do with the Munk Moment I believe). Eventually they had to put a tail on it. Similar stability problems hit Mario Roldan who went near vertical in his Spacial MLA 32 B lenticular airship as soon as he applied power - see photo [above]. A measure of stability was restored when the engine failed. He too ended up adding a tail surface. Interesting! Sounds like the Parseval system where he used a moving gondola suspension to counter the unwanted pitching moment



caused by his low thrust line. Another aspect has to be design efficiency though. On the Skyships we were worried about not just every gram, but every milligram, of anything that went on the ship, in both the design and assembly stages. The thickness of the carpet, the thickness of the paint, the thickness of the wiring insulation, the weight of an electric motor vs. the work it produced. All we ever heard was “Weight weight weight.” From an aerostatic point of view the lenticular design is inefficient. You have an aerostatically efficient core surrounded by a very, very inefficient ring of waste. At the edges there is far too much structure and not enough lift. To make a practical design you would end up cutting off the edges and then moving the greatest diameter according to the ‘Golden Rule’ and you end up with something like the elegant Parseval PL 19. From an aerodynamic point of view it is about drag. A subtle change to the tail of the Skyship reduced the drag by 1%, but increased the speed by 5 kts and reduced the fuel consumption. The edges of a lenticular design can attract quite an aerodynamic penalty. I am not by any means suggesting that it won’t work, just that you won’t be able to make any money with this sort of design. Ω

Jürgen responded, “This depends on the operational scenario; e.g. a helicopter is not an economical carrier, but if circumstance dictates it, you have no other choice than to apply this type of operationally highly flexible and adaptable aircraft. The scenario of an efficient hybrid is e.g. Northern Canada with STOL and potential VTOL and substantial cargo requirements. It’s amazing how many details and subjects have changed in the past 10 years. Small airships are generally too small to be an economical transport system. Zeppelin’s first efficient transport airships had 14,000 cubic meters volume (DELAG passenger flights before WW1). There is to my knowledge no airship of that size in the air today. The ZNT, too, is obviously below the line to be profitable. My concept is based on controlled shifting of an internal suspended gondola inside the hull to get the c.g. in a compatible position with the aerodynamic center (“Lilienthal control”). In theory the pitching moment can be balanced, but the critics insist that even then the configuration remains to be unstable according to the flight mechanics of common aircraft. However, they did not include the stabilizing meta-center (the pendulum c.g. and buoyancy center) into their calculations, which is characteristic for airships and submarines and is a dominant stabilizing term.” Ω

Larry and Judy Gallagher as Mr. & Mrs. Claus.

Larry passed last quarter (See Black Blimp last issue) but is featured in John Kumke's memoir later in this issue. Ross Wood wanted everyone to remember the Gallaghers' community service, which Ross detailed in Noon Balloon following the Tucson Reunion. Ω



In the new effort to translate the German LTA textbook, we can report the Prof. Donald "Red" Layton has agreed to co-author a new chapter on LTA ASW with Ed. Alastair Reid, former Cold War ASW pilot turned Skyship pilot/engineer, sent this photo of himself in his machine on ASW patrol in the North Atlantic, saying



he is looking forward to reading that new chapter. He also sent a chapter of the Schutte-Lanz book he recently translated as a reference in the discussion about airship practicality/profitability. "I don't agree with the diagram

8.1.2 - the certification line (Zulassung) is far too close to first flight. There are no routine airships, no routine airship certifications, no established airship industry to support certification programmes in the same way as aeroplanes. Off the top of my head it was two one-half years for the [Skyship] SK 500 and four years for the SK 600, which was 70% compatible with the already certified SK 500. The financing gap this produces, needs to be recognized if realistic advances are to be made. LTA can only get going with achievable realities to improve its investment reputation." Responding, Jürgen Bock e-mailed. "It is amazing how much this corporation has done in the line of scientific engineering development work. Schuette practically introduced the theoretically and experimentally developed streamline form, while Count Z. insisted on the cigar shaped form for practical reasons (serial production, hangar accommodation etc.). Zeppelin had the better business promotion, thus Schuettes' airship endeavors faded in the Twenties. I live near Oldenburg where Schuette lived the last years of his life. Professor Gert Reich of the University Oldenburg is the present contact w.r.t. Schütte-Lanz.

I hope to have streamlined the Russian/German text in a satisfactory way. I stumbled over the cursory statement that the deadweight goes with the square of linear scale. For a critical check just take the example of a non-rigid hull: the hoop tension is proportional to the linear scale, the hull must be reinforced accordingly and the weight goes up to the third power of scale. To make things worse, the additional barometric pressure increases also with scale, thus approaching the fourth power. When estimating the deadweight of airships as a function of volume, I plotted the data of all known types at that time on log paper and got the rule-of-thumbs which turned out to be useful for first estimates: $\text{deadweight} = \text{volume}^{0.9}$ (i.e. far away from $\text{volume}^{(2/3)}$ many people still believe in). Charlie Mills reported that for larger airships such as the ZPG-2, it was assumed that stronger fabric will alleviate the weight of the hull. The two-ply hull was, indeed, strong enough, but the gas permeability caused "to practically pump helium into the atmosphere. We never needed helium purification." When I met Wüllenkemper the first time in 1969, he boasted that his hull fabric weighs only 180 g/m². To get the hull gas-tight he ended up with a three-ply envelope of approximately 600 g/m²! Officially he sold the three-ply as an extra safety feature of his ships. Ω

Richard Foss, author, journalist (topics include spaceflight, alien movies), lecturer, and food historian (see www.richardfoss.com) asked what the food was like on WW2 K-ships while on patrol. Several members responded, including Ed.: "The galley of a typical WWII K-ship has been restored aboard the K-28 by the volunteers at New England Air Museum.



The above photo of the K-28 on patrol off N.C. you see the coffee pot mount is empty; since the equipment was constantly evolving during and after WWII, the galley configuration certainly changed even before the extensive ZP3K modification, ZP3K-47 restored and displayed at NMNA Pensacola. As to the menu, egg-based breakfast is obvious (Gordon's book mentions in northern winters the eggs sometimes froze since heating was poor). My interviews with WWII vets ran the range of the chow being pretty good to downright bland, one specifically taking issue with the narration in the video, saying he wasn't fond of cold cuts they had. I am sure the masting location had a lot to do with the food quality, remote Brazilian outposts not equaling master hangar-equipped bases with large messing facilities. Now would be a good time to interview our precious few remaining WWII vets about their in-flight cuisine. Eric is nearby a town with Jim Plumber, whose "cruise book" has a photo of what appears to be a crock of beans being prepared in the galley. (He lent me that for the video.) Jim's in the roster with a few others who would certainly remember their meals aboard K-ships."

John Craggs of NEAM referred to his fellow NEAM volunteer, "A lot of the equipment in K-28 is due to the sleuthing efforts of George Diemer, who is a magician sleuth and a great worker!" George offered, "Hello Mr. Foss, while doing research for the New England Air Museum's restoration of a K-ship gondola, I found some additional information. TradeWinds magazine, April 1942 "On U-Boat Patrol," reports that after 7am 'The smell of frying bacon drifts through the control car. The engineering chief has the electric stove and electric coffee percolator working.' And later, 'Grilled steak for luncheon with potato chips and string beans.' On the middle page there is a photo captioned 'eating, with light but nourishing meals served from a Lilliputian galley.' The little galley on the K-ships had three electric appliances, according to the K-ship Descriptive Specs and the Maintenance Manual. These were not custom-designed items, but commercially available appliances which could be found in home kitchens. The original coffee maker was a Manning-Bowman model 494, the hot plate was a General Electric or Landers-Frary Clark Universal E994, and the cook pot was an Everhot Roasterette model 740. The specified equipment varied between production blocks of the K-ships, and then almost certainly varied from that after the blimps were in service, as Mr. Van Treuren mentioned. For instance, later K-ships had two hot plates and no roasterette.

Electricity was precious on the K-ships, so there was a control box that allowed the cook to apply power to only one appliance at a time. The photo shows three appliances and the control box. The Model 494 coffee pot is missing from its bracket, and a different Manning-Bowman model is sitting on the counter. Notice how close the hot coffee and frying food is to the back of the radar & MAD operator's neck. We have all four of the above-mentioned appliances in our K-28 blimp car restoration at the New England Air Museum. I hope you can come visit the Museum some time. Regards, George."

Mr. Foss responded, "This is more information than I have been able to find on this topic in years - thank you! I wish I had found your organization earlier. I'll post your website information on my site at airfoodhistory.com when I post today. Thank you so much for looking this up for me." Ω

Best, Richard Foss

SHORE ESTABLISHMENTS

TILLAMOOK



The Naval Air Station Tillamook Museum experienced a smooth transition. The Port of Tillamook Bay is now officially operating the Museum (as of January 1, 2015). While our focus remains on preservation and interpretation of this magnificent hangar (Hangar B) and the former Naval Air Station of which it was a part, we are also working diligently on creating and expanding the museum's unique and varied exhibits. This will allow us to offer something to everyone! At present, the museum has over 15 aircraft, a Theatre, Exhibit Hall (with rare wartime and aviation themed artifacts dating from WW I to the present), and of course, the awe inspiring experience of the Hangar itself (one of the largest wooden structures in the world). In short, the fact that we are operating as a museum from the last WW II dirigible Hangar (that the public has access to) is not lost on us. We have a responsibility to preserve and protect this historical wonder and share it with others. - Christian Gurling

LAKEHURST

The MZ-3A airship has been removed from service and deflated (below) for storage. At press time no further information was available. Ω



MOFFETT

Google leases NASA's Silicon Valley airfield
(compiled from internet reports)

Google had previously signed a deal to develop a new office complex on 42 acres at Moffett Field. But last year, the company halted those plans, possibly to await an agreement to manage the entire facility. With dreams of an increased footprint in space, NASA is cutting back on its Earthly properties. The agency said it will lease its Moffett Field airbase in Silicon Valley to a shell company owned by Google. The tech giant will pay \$1.16 billion over the course of a 60-year lease, according to NASA. Under the latest deal, Planetary Ventures LLC, Google's real estate arm, is expected to pump \$200 million in improvements to the property, including refurbishing a hangar and creating a facility for the public to "explore the site's legacy." Planetary Ventures plans to renovate three massive hangars and use them for projects involving aviation, space exploration and robotics. Planetary Ventures will use the hangars for "research, development, assembly and testing in the areas of space exploration, aviation, rover/robotics and other emerging technologies." Google founders Larry Page and Sergey Brin have a well-known interest in aviation and space. The company has recently acquired several smaller firms that are working on satellite technology and robotics.

NASA plans to continue operating its Ames Research Center on the former Navy site. Google will take over operations at the runways and hangars, including a massive structure that was built to house dirigible-style Navy airships in the 1930s.

Local officials praised Google's promise to restore the historic structure known as Hangar One, which is a San Francisco Bay Area landmark. U.S. Rep. Anna Eshoo, D-Palo Alto, called the lease agreement "a major win for our region." Google already has a separate lease for another portion of the former air base, where it wants to build a second campus. Located on 1,000 acres in southern end of San Francisco Bay, the Moffett lease is expected to save NASA approximately \$6.3 million annually in "maintenance and operation costs," the agency said. Page and Brin have also used the Moffett runways for their collection of private jets, under another lease arrangement that's been criticized by some watchdog groups who say NASA gave the executives a sweetheart deal. Ω

AKRON

Mike Dougherty, Assistant Chief Pilot of Goodyear's new airship talks to the Banquet attendees about the development of the new airship and his experiences flying it. *Photo: Eric Brothers*



On November 15, 2014, The Lighter-Than-Air Society held its 62nd Annual Banquet and Fundraiser. Michael Dougherty, Assistant Chief Pilot for *Wingfoot One*, Goodyear's new Zeppelin NT was the featured speaker. During his presentation he explained the process that Zeppelin Luftschifftechnik and Goodyear went through to modify Zeppelin's N07-100 airship to fit Goodyear's requirements. Modifications addressed the need to be able to provide live aerial TV coverage of sports events. Additionally the Goodyear airship was redesigned to address the different weather conditions encountered in the United States versus Europe. Further enhancements were suggested while Dougherty and others trained in Friedrichshafen, where they obtained their Zeppelin NT certifications. Dougherty was also certified as a flight instructor for the airship. He went on to the difference in handling between the the new airship and the traditional Goodyear blimps.

During the banquet, the P. Rendall "Ren" Brown Lifetime Achievement Award was presented to Joan Reisig. She was recognized for her long career at Goodyear's blimp operations, where she worked with engineers and pilots on the original design of the Goodyear GZ-22 airship. After the initial construction and test flights, she worked on the extensive drawing revisions that covered the many changes and additions to the airship over the years. The award was presented by Carol Ault, daughter of Ren Brown, who could not attend the banquet.



Joan Reisig accepts the P. Rendall "Ren" Brown Lifetime Achievement Award, while Carol Ault (left) who presented the award looks on.

Photo: Eric Brothers

The Lighter-Than-Air Society also presented an LTAS Achievement Award to the Goodyear Tire & Rubber Co. and Zeppelin Luftschifftechnik Airship Team, recognizing the work on the new airship which was completed successfully.



Several attendees examine some of the items included in the silent auction. *Photo: Eric Brothers*

The Silent Auction held at the banquet raised close to \$4,000 for the Society. Auction items included a flight for two passengers on the new airship, a tour for four people of the Akron Airdock, several golf packages and a series of L-T-A related memorabilia and collectibles. There was also a large display of artifacts from the LTAS collection as well as items that several private collectors brought for the occasion. As has been customary, eight University of Akron School of Engineering students attended the banquet.

Art Paulson explains one of the items on display at the banquet to students from the School of Engineering at the University of Akron.

Photo: Eric Brothers



On January 23rd Goodyear announced that the construction of the second Zeppelin airship has started at the Wingfoot Lake Blimp Base. During the first part of the construction and assembly *Wingfoot One* will remain in Akron. Towards the end of the year, when the new airship is inflated, *Wingfoot One* will move to its new home at the Pompano Beach, Florida, blimp base. Ω

Left to right: Mike Dougherty, Brad Crombie and Ed Ogden.

Photo: David Smith.



– Alvero Bellon

NASA is considering a stratospheric airship challenge to incentivize the demonstration of a long-duration scientific platform for both Earth and space sciences. In 2013, a Keck Institute study (Airships: A New Horizon for Science) demonstrated significant interest in airships as a science platform from the academic community and possible industrial partners. The final study report can be found at <http://kiss.caltech.edu/study/airship/final-report.pdf>. There are few opportunities for space missions in astronomy and Earth science. Airships (powered, maneuverable, lighter-than-air vehicles that can navigate a designated course) could offer significant gains in observational persistence over local and regional areas, sky and ground coverage, data downlink capability, payload flexibility, and over existing suborbital options at competitive prices. We seek to spur a demonstration of the capability for sustained airship flights as astronomy and Earth Science platforms in a way that is complementary with broad industry interests.

This 20-20-20 Airship Challenge is currently contemplated as a two-tiered challenge that could provide opportunities to evaluate a wide range of innovative methods to launch an airship into the stratosphere, maintain altitude, and station-keep for a defined period of time. This challenge would seek to engage the aerospace industry, educational institutions, and amateurs to provide solutions. The Challenge is considering a total prize purse ranging from \$1 to \$1.5 million dollars, which would be split into multiple prize awards for successful demonstrations of a stratospheric airship that could accomplish the following tasks: Reach a minimum altitude of 20 km. Maintain the altitude for 20 hours (200 hours for Tier 2 competition). Remain within a 5 km diameter station area (and navigate between two designated points for Tier 2). Successfully return the 20 kg payload (200 kg for Tier 2 competition) and payload data. Show Airship scalability for longer duration flights with larger payloads through a scalability review.

The competition could take place over the next three to four years. Comments must be submitted in electronic form no later than 5:00 pm Eastern Time on December 1, 2014, to Mr. Sam Ortega. Please use 2020 Challenge on the Subject line.

To explore and expedite the possible development of potential benefits, DARPA has issued a Request for Information (RFI) (<http://go.usa.gov/AWpm>) seeking technical, security and business insights addressing the feasibility and potential value of an ability to launch and recover multiple small unmanned air systems from one or more types of existing large manned aircraft... These complementary traits suggest potential benefits in a blended approach—one in which larger aircraft would carry, launch and recover multiple small UAS. The new RFI invites short (eight pages or less) responses that must address three primary areas:

- System-level technologies and concepts that would enable low-cost reusable small UAS platforms and airborne launch and recovery systems that would require minimal modification of existing large aircraft types.

- Potentially high-payoff operational concepts and mission applications for distributed airborne capabilities and architectures, as well as relative capability and affordability compared to conventional approaches (e.g., monolithic aircraft and payloads or missile-based approaches).

- Proposed plans for achieving full-system flight demonstrations within four years, to assist in planning for a potential future DARPA program. Responses are due November 26, 2014, to DARPA-SN-15-06@darpa.mil by 4:00 PM Eastern Time. All correspondence and questions regarding this announcement and how to respond should be sent to DARPA-SN-15-06@darpa.mil.

Your Editor became aware of both the NASA and DARPA requests only a few days before deadlines. Filling out the NASA questionnaire, Editor stated he would post notice in NOON BALLOON asking NAA members to submit their ideas to promote the proposal. Members are urged to participate. (The Centennial Challenges Team thanked Ed.) To DARPA, Editor submitted an eight-page illustrated proposal outlining how and why one of today's hybrid airships (Lockheed, HAV) was a natural flying dronel/ RPV carrier. The DARPA procedure stated it was unlikely DARPA would respond acknowledging submissions; to date, they have kept that word. NOON BALLOON may have room to print Ed.'s DARPA proposal in the fall issue (107) devoted to the Flying Carriers. Do you have any ideas? Ω

Under pressure, Lockheed opens up about secret weapons unit By Andrea Shalal, Reuters

Lockheed Martin Corp., the Pentagon's No. 1 weapons supplier, has rarely felt the need to blow its horn about its secrecy-shrouded crown jewel - until now.



"Skunk Works," Lockheed's business for developing weapons outside the company's main chain of command, has published a glossy brochure with a 10-point "Skunk Works 2015" agenda focused on keeping costs down, working closely with government, and building prototypes. Its officials are meeting in small groups with all 3,300 employees, or "Skunks" as they are known, to underscore the importance of staying competitive.

Over the past year Skunk Works has invited a few journalists to its most secure facilities, including Palmdale, a site in the high desert 60 miles (100 km) from Los Angeles, where new products range from next-generation unmanned systems to a hypersonic aircraft twice as fast as its Blackbird SR-71 spy plane that could fly cross-country in just over an hour. Most of the 100 buildings and 3 million square feet of floor space at the site are off-limits, and photography and audio recordings are strictly forbidden, but a tour last month offered a glimpse of some projects. In one building, Lockheed is using the world's largest gantry machine and 3-D printing to build aircraft. Across campus, Lockheed has a giant airship that could deliver cargo to remote areas, and a compact nuclear fusion reactor that could revolutionize power generation.

The decision to go public with Skunk Works, albeit modestly, reflects the unprecedented pressures Lockheed faces from tight budgets, nimble smaller competitors and shareholders who prefer dividends and share buybacks to long-term projects. Bucking an industry trend, Lockheed is boosting internal R&D spending by 5 percent this year after a 13 percent increase to \$697 million in 2013, its highest percentage of sales ever, CEO Marillyn Hewson told analysts in October. She said the rate would rise again in 2015. Ω



Trial: Rousson went for a practice run in Roquebrune-Cap-Martin, southeastern France

Innovative or a load of hot air? French adventurer tests out 'aerosail' ahead of planned Mediterranean crossing
By John Hutchinson for MailOnline

Is it a bird? Is it a plane? No, it's Frenchman Stephane Rousson's 'aerosail' above the sea.

Rousson and his partners' ambition is to create an innovative, efficient, and silent maritime vehicle, only using the wind as means of propulsion.

By the end of October, the adventurer and researcher hopes to have crossed the Mediterranean, from Nice to Calvi on the island of Corsica.



Here's hoping: Rousson was in relaxed mood above the waters.

Aerosail unique principle of flight allows the user to pilot, like a sailboat, an airship linked by a cable to a stabilized keel, called the Seaglider. The cable acts as the mast and the airship as the sail. Ω

Not As Loony As It Sounds: Google's "impossible" plan to beam Internet from solar-powered balloons is actually working By Will Oremus (Slate) (excerpt)



Above: Google's balloons are becoming a familiar sight in the skies over the Southern Hemisphere. Photo courtesy Andrea Swenson Dunlap/Google

Of all the efforts to bring those people online, Google's "Project Loon" sounds like the most far-fetched. At the secretive Google X labs, it's a moonshot among moonshots. But it just might be working. When the search company announced in June 2013 that it was building "Wi-Fi balloons" to blanket the world's poor, remote, and rural regions with Internet beamed down from the skies, expert reaction ranged from skeptical to dismissive—with good reason. The plans called for Google to put hundreds of solar-powered balloons in the air simultaneously, each coordinating its movements in an intricate dance to provide continuous service even as unpredictable, high-speed winds buffeted them about the stratosphere.

How Google has come this far is a study in the power of perseverance—and the power of a company whose resources, leeway, and technological ambitions have few rivals in the annals of global capitalism. On the first try, the balloon burst not long after liftoff, the nylon fabric overmatched by the 100,000 pounds [sic] of pressure within. The same happened on the second try, and the third—and the next 50 after that. The team kept tweaking the fabric and reinforcing it with more Kevlar-like ropes, but the balloons kept bursting until they got the length of the ropes exactly right. (They had to be shorter than the fabric to relieve the pressure, but not too much shorter.) "We knew it was hard to make a super-pressure balloon," Cassidy recalls. "We didn't think it

would take us 61 attempts until we succeeded." Even then, the success was short-lived. Instead of bursting, the balloon slowly leaked helium, bringing it down after just a day or two in flight. "Even a millimeter-sized hole will bring a balloon like this down in a couple days," Cassidy says. "And that's what happened to the next 40 or 50 balloons we made."

"Absolutely impossible," declared [NAA member] Per Lindstrand, a Swedish aeronautical engineer and perhaps the world's best-known balloonist, in an early *Wired* article about the project. "Just talk to anybody in the scientific community." Specifically, he poked holes in Google's claim that it could build balloons durable enough to remain aloft for more than 100 days—nearly twice the duration achieved by state-of-the-art NASA balloons. "Even three weeks is very rare," Lindstrand scoffed. And yet, as you read this, some 75 Google balloons are airborne, hovering somewhere over the far reaches of the Southern Hemisphere, automatically adjusting their altitudes according to complex algorithms in order to catch wind currents that will keep them on course. By next year, Google believes it will be able to create a continuous, 50-mile-wide ring of Internet service around the globe. And by 2016, Project Loon director Mike Cassidy anticipates the first customers in rural South America, Southern Africa, or Oceania will be able to sign up for cellular LTE service provided by Google balloons.

The balloons rise more than 60,000 feet above the Earth's surface, putting them far beyond the reach of the highest-flying planes—and atmospheric storm systems. Google's solution [to drift] is to keep large fleets of balloons aloft at all times, with some following in others' wakes. That way, just as one balloon is about to drift out of range of a given location, the next one is entering the zone, keeping the connection alive.

If Project Loon succeeds, Google's project will soon face a new set of questions—one that its doubters never thought it would have to ask. Questions like: Will it be profitable? And: Should countries trust Google with their stratospheric airspace? In a June follow-up with *Wired*, Google X's Astro Teller called Project Loon "the poster child for Google X." Ω

SHORT LINES



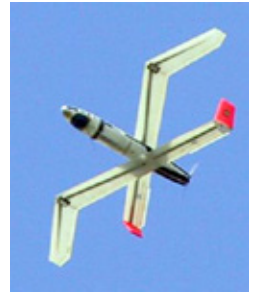
Retired General Punished For Using His Influence To Keep Blue Devil Airship Project Alive Aviation Week (11/13, Butler) reported that the U.S. Air Force has barred retired U.S. Air Force Lt. Gen. David Deptula “from conducting business with the government until early 2016” because Air Force General Counsel investigators discovered that he broke post-employment rules. Specifically, Deptula continued to push officials and use his influence to keep the Blue Devil 2 airship project alive after being told to stop sending communications. Deptula is now appealing the decision, saying he only did what was “in the best interests of the United States.” Ω

RX1E Electric Aircraft Expected To Be Certified This Year China Daily (11/14, Zhao) reports that Yang Fengtian of the Chinese Academy of Engineering said that the RX1E, China’s “first domestically developed electric aircraft,” is expected to be certified by the Civil Aviation Administration of China this year, which would make the country “a technology leader in this field.” Following certification, Yang predicts that it will take three years for developers to produce 100 planes/year. Ω

Scientists Launch Spider Experiment On 20-Day Balloon Flight The New York Times (1/2, Overbye, Subscription Publication) reported that scientists led by a team from Caltech and Princeton recently launched the Suborbital Polarimeter for Inflation, Dust and the Epoch of Reionization (Spider) experiment “on a balloon in Antarctica.” The “sister experiment” to the Bicep collaborative, Spider aims to observe “faint curlicues in the polarization of” the cosmic microwave background in order to “distinguish dust from primordial space-time ripples.” It’s now in the midst of a 20-day flight that was originally supposed to take place last year, but was delayed by the government shutdown. Ω

Navy Launches UAV from Submerged Submarine

The U.S. Naval Research Laboratory (NRL) with funding from SwampWorks at the Office of Naval Research (ONR) and the DoD Rapid Reaction Technology Office (DoD/RRTO) demonstrated the launch of an all-electric, fuel cell-powered, unmanned aerial system (UAS) from a submerged submarine.



From concept to fleet demonstration, this idea took less than six years to produce results at significant cost savings. (Photo: NAVSEA-AUTEC)

The XFC is a fully autonomous, all electric fuel cell powered folding wing UAS with an endurance of greater than six hours. The non-hybridized power plant supports the propulsion system and payload for flight endurance. Operating under support of the Los Angeles class USS Providence (SSN 719) and the Naval Undersea Warfare Center-Newport Division (NUWC-NPT), the NRL developed XFC UAS—experimental Fuel Cell Unmanned Aerial System—was fired from the submarine’s torpedo tube using a ‘Sea Robin’ launch vehicle system. The Sea Robin launch was designed to fit within an empty Tomahawk launch canister (TLC) used for launching Tomahawk cruise missiles already familiar to submarine sailors. The folding wing UAS autonomously deploys its X-wing airfoil and after achieving a marginal altitude, assumes horizontal flight configuration. “This six-year effort represents the best in collaboration of a Navy laboratory and industry to produce a technology that meets the needs of the special operations community,” said Dr. Warren Schultz, program developer and manager, NRL. The successful submerged launch of a remotely deployed UAS offers a pathway to providing mission-critical intelligence, surveillance and reconnaissance (ISR) capabilities to the U.S. Navy’s sub force. Ω





Aeros Corp. Airship Would Have World's Largest Cargo Capacity Business Insider (12/5, Barnard) reported that Aeros Corp. has developed a massive helium airship "longer than two football fields and about as tall as an 18-story building," with a cargo capacity of "more than 1 million cubic feet, and it can transport as much as 250 tons (compared to about 150 tons for an Airbus A380, the world's largest jetliner)." The article noted that one prototype received FAA certification in August of last year Ω

NASA Launches COSI On Possible 100-Day Balloon Flight Nature (12/29, Witze) reported that on Sunday, NASA's "most ambitious scientific balloon ever" successfully launched from a site close to McMurdo Station in Antarctica, "the biggest test yet of a 'super-pressure' design" that could allow the balloon carrying the Compton Spectrometer and Imager (COSI) to stay aloft for over 100 days. NASA's previous record is 55 days. While the balloon has flown before, this is the first time that it is carrying a "major science" experiment. Debora Fairbrother, head of NASA's Balloon Program Office, said that because of the expected duration, NASA needed to get permission from several countries in case it flew over their borders. NASA hopes to recover the telescope by bringing the balloon down over land. Fairbrother said, "If we have to terminate over water, it's lost." Ω

NASA Developing Biodegradable UAV Popular Science (11/13, Atherton) reported that researchers at NASA Ames Research Center in California have developed a biodegradable UAV called the "bio-drone" to solve the problem of amateur pilots crashing their non-biodegradable UAVs into delicate ecosystems. "The bio-drone's body is made of mycelium, a fungal mass specifically grown into this shape" by a New York-based

company called Evocative Design, and is "harder than people might expect from mushroom fibers," according to the article. Although the UAV's body and circuits are biodegradable, its motors, battery, and rotors "were borrowed from a commercially-made quadcopter." Ω

Hybrid-Electric Aircraft Makes Test Flight Over Britain RT (RUS) (12/29) reported that "a hybrid-electric aircraft" developed by Cambridge University engineers with the support of Boeing completed its first test flight in Britain. The article noted that the plane benefits from several new technologies, including the capacity to recharge batteries during a flight. However, the plane is not ready for commercial flights, and is considered to be a "test bed to evaluate different technologies." Ω

U.S. Navy Begins Competition For MQ-4C Sense And Avoid Radar Technology Flightglobal (11/4, Trimble) reported that the U.S. Naval Air Systems Command has begun a competition to build new sense and avoid radar technology "to help the unmanned Northrop Grumman MQ-4C Triton detect other aircraft and avoid collisions." Flightglobal pointed out that the request "comes a year after the Navy canceled development of an Exelis-designed sense and avoid system for the MQ-4C," and now seeks "radar with less ambitious performance requirements." Flightglobal detailed several of the Navy's expectations for the radar. Ω

JAXA To Fly Electric Aircraft in February The Yomiuri Shimbun (JPN) (1/4) reported that in February, JAXA will make the first manned flight of its "next-generation electric aircraft," which has been in development since 2004. Test flights are expected to continue into March. JAXA said that the goal is to show that Japan does have the technology for electric aircraft, which the agency noted has only been tested in the U.S. and Europe so far. Ω

Spruce Goose in Bankruptcy Bloomberg News (12/12, Milford, McCarty) reported that historic aviation museum Evergreen Vintage Aircraft Inc., filed for bankruptcy in Portland, Oregon, without giving a reason for the filing. The company listed more than \$50 million in assets, including Howard Hughes wood Spruce Goose airplane, and more than \$100 million in liabilities. Ω

COVER STORY



U.S. Air Force Col. William Pitts stands in front of an aerostat that is part of a new U.S. military cruise-missile defense system during a media preview on Dec. 17, 2014, in Middle River, Md.

JLENS Aerostats Debut Over Washington DC (Compiled from Media Reports)

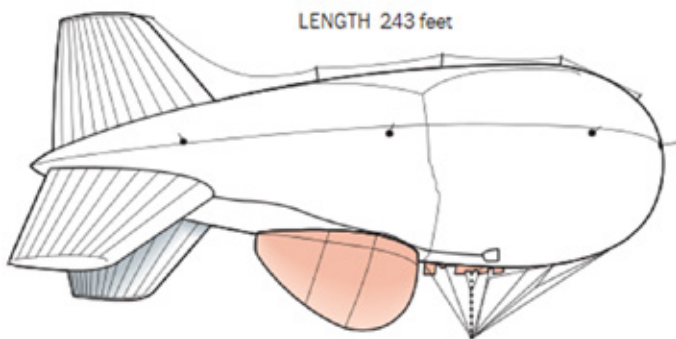
The U.S. Army launched two aerostats above the Aberdeen Proving Ground in Maryland as part of a three-year test of the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) System, a “blimp-like drone-hunting airship” developed by Raytheon whose goal is “to help the military detect and destroy cruise missiles speeding toward the nation’s capital or other major East Coast cities.” The effort is to protect the Washington, DC, area from cruise missiles and other possible air attacks. Officials said the aerostats “will almost double the reach of current ground radar detection.”

When fully deployed next spring, the system will feature two, unmanned, helium-filled aerostats, tethered to concrete pads four miles apart. They’ll float at an altitude of 10,000 feet, about one-third as high as a commercial airliner’s cruising altitude. One will continuously scan in a circle from upstate New York to North Carolina’s Outer Banks, and as far west as central Ohio. The other will carry precision radar to help the military on the ground to pinpoint targets. “We can defeat cruise missiles but we have limited capability to detect. And so, with an elevated sensor, such as JLENS, and the ability to look out over the horizon, now we have the ability to detect and to enable our systems to defeat cruise missiles,” said Maj. Gen. Glen Bramhall, commander of the 263rd Army Air and Missile Defense.

Built by Raytheon Co. of Waltham, Massachusetts, and TCOM L.P. of Columbia, Maryland, has cost the government about \$2.8 billion so far. Congress approved another \$43.3 million last week for the first year of the test. Proponents say JLENS will save money in the long run by reducing the need for surveillance by conventional aircraft. “The analysis we’ve done says it’s about five to seven times less than operating a fleet of aircraft to cover the same area over the same time period,” said Douglas Burgess, Raytheon’s JLENS program director. “JLENS demonstrated its capability against cruise missiles when it enabled Patriot and Standard Missile-6 intercepts of cruise-missile surrogates during separate tests. JLENS also completed two developmental tests and demonstrated its ability to stay aloft for long durations,” the company wrote in a press release.

The danger posed by unmanned drones over Washington, D.C., has been a concern since 9/11. Drones near airports are a growing problem. A recently-released report from the United Kingdom Airport Proximity Board details an incident this summer where a small drone flew within 20 feet of an Airbus A320 passenger aircraft landing at Heathrow International Airport. A simple \$40 drone, easily obtainable via mail-order or even 3D printing can bring down a passenger jet, military craft or a helicopter. The Federal Aviation Administration and the Transportation Security Administration made it illegal to fly model planes within 10 miles of Reagan National Airport. But as Zeke Miller reports for TIME, the prospect of actually getting caught flying your drone over Washington, D.C., is “doubtful, unless you upload the video to the Internet, crash spectacularly, or get way too close to a really sensitive area like the White House.” David Rocah of the American Civil Liberties Union in Maryland said that there are privacy concerns.

“A recent demonstration proved that operators can observe surface moving targets — including a terrorist role-player planting an improvised explosive device... Despite heavy smoke from recent, naturally-occurring forest fires, an MTS-B electro-optical/infrared (EO/IR) sensor mounted on a JLENS surveillance aerostat tracked numerous targets with the IR sensor,” the release reads. The military will conduct tests over Aberdeen Proving Grounds for the next three years. Ω



LENGTH 243 feet

Official name: JLENS, short for Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System. A high-powered video and infrared sensor (called an MTS-B) was mounted on the aerostat system for a test in Utah that was announced in 2013. It was able to follow vehicles "dozens of miles away" as well as collect video of a test participant planting a fake roadside bomb. The Army says it has "no current plans" to use this sensor in the Aberdeen test.

Data are sent through high-speed fiber optic cables in the tethers. Aerostats can also communicate by radio links.

Each aerostat is tethered to a mooring station and structures that contain controls, communication and data-processing systems powered by generator or commercial electricity. The setup can be transported by truck, plane or boat.

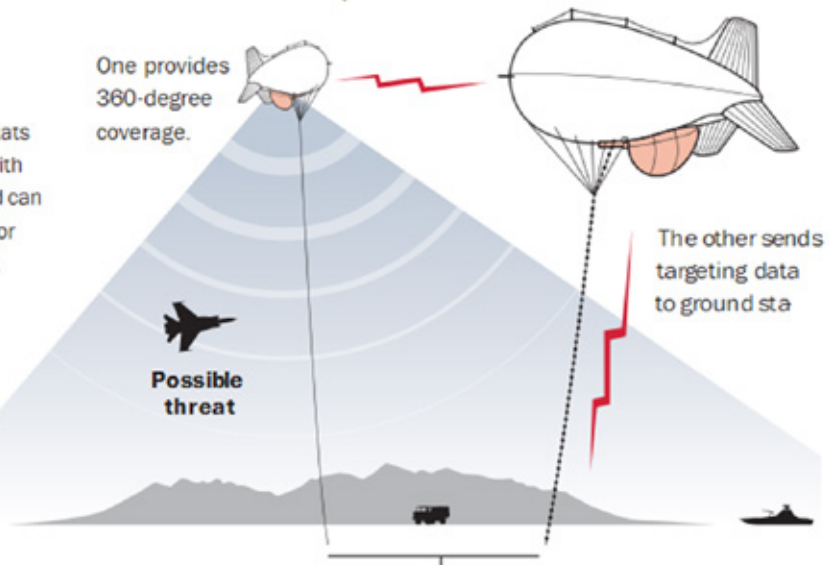
The aerostats are filled with helium and can stay aloft for 30 days at a time.

How they work

Two aircraft, or "aerostats," will float at an altitude of about 10,000 feet. The pair, called an "orbit," will work in tandem to detect missiles and other objects within their range. One aerostat detects threats using low-frequency, long-range radar. The other uses higher frequency radar to track threats and provides targeting data that could be used to intercept them.

One provides 360-degree coverage.

The other sends targeting data to ground sta



The pair will be moored roughly **two miles apart** above Aberdeen Proving Ground, land owned by the U.S. Army.

Surveillance range



Radar can detect aircraft within a **340-mile radius** or an area of about 363,000 miles.



Vehicles on the ground can be detected within a **140-mile radius**, an area of 62,000 miles.

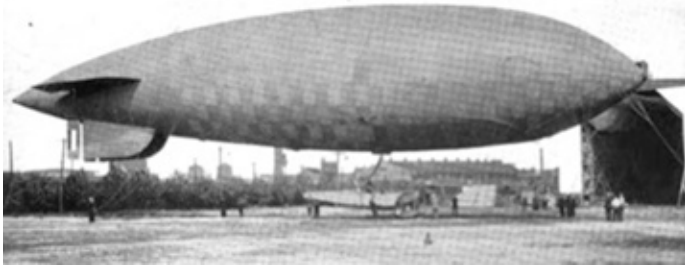


Communications and control, data and signal processing station

Mobile mooring station

HISTORY

Following up his astonishing B-ship history article last issue, Roy Manstan located two pieces that show the White City amusement park shed that had been modified (and protective inner tarp-equipped) for B-ship erection, the only structure in the country then capable of the work. Note also the men's rare images. The upper images are from FLYING magazine, Oct. 1917; lower, from AERIAL AGE. Ω



Goodrich Dirigible Passes Naval Test

The Navy Department announced on September 22 its acceptance from the B. F. Goodrich Company of the first of two Coast Patrol type dirigibles which have been built under the personal direction of Mr. Henri Jullist, the noted pioneer French aeronautic engineer.

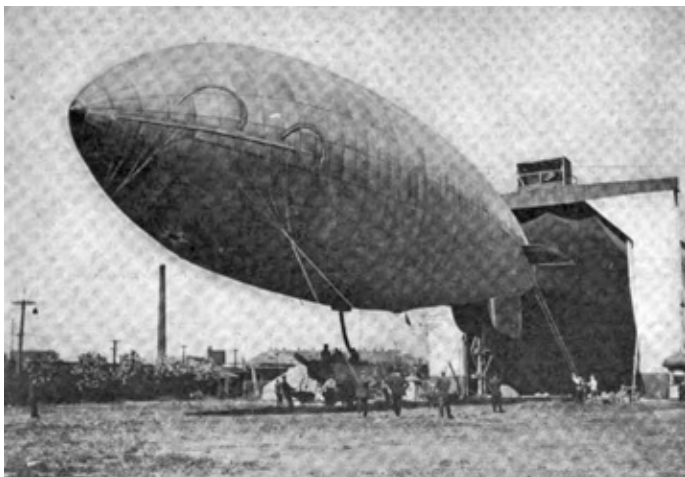
The airship was piloted by the veteran American dirigible pilot on constructor Mr. Roy Knabenshue.

One of the tests lasted eight hours, during which the airship cruised in the moonlight and for eight hour the critics stood in the chill night air, sometimes conversing in low tones but for the most part remaining silent with eyes glued to the sky.

At times the airship was at a height of 6,000 feet. The tests having been passed successfully the airship was accepted.



Right: Mr. Henry Julliot, French pioneer airship builder; left: Roy Knabenshue, veteran American airship builder pilot.



Readers will recall we are researching the mystery of the U-185 attack; in review, their log entry (in a new translation by CAPT Jerry Mason) reads:

30.03.43 (DN 7581) Caribbean off Guantanamo

16.00 Numerous distant light detonations heard. (Suspect target shooting of the coastal batteries.)

19.15 At periscope depth to observe. In so doing 2 aircraft bombs, 4 depth charges from an airship.

20.00 Moved off.

History Committee Chairman Mark Lutz has isolated some parameters in search for the airship that made the above attack on the U-185 March 30, 1943. "I'm thinking this was a ZP-51 airship; perhaps the K-24? ZP-51 was operating airships from GITMO March 1943. ZP-51: 5 March 1943 Detachment ONE placed in operation, NAS Guantanamo Bay, Cuba. Meanwhile, Blimpron-21 Chronology says they established advance base at Gtmo 25 April 1943, first flight 26 April 1943; I think this means Blimpron-21 took over from ZP-51? But, on 29-30-31 March 1943, NAS GITMO airship(s) belonged to ZP-51, not ZP-21, I believe. From the ZP-51 history narrative:

26 March 1943: K-24, Pilot Lt J.D. Lautaret, covering convoy rendezvous, 5 miles from Gtmo bay: got strong MAD contacts at 0730 Q.

Surface craft called in by K-24. Flares dropped on further MAD contacts by K-24. 0805 Q, PC boat, called in by K-24, gets its own contact and drops depth charge pattern - no apparent results. K-24 spends 13 more hours searching; then ordered to return to base (presumably NAS Gtmo).

Sadly, nothing on 29-30-31 March - next entry is 3 April; discusses training plans regarding possibly dropping depth charges in salvo in hopes of getting more positive results. Maybe it's NOT such a needle-in-the-haystack search: Lt J.D. Lautaret's logbook, if available, would seem to be the first place to look - maybe flying airship K-24.

Also, might be looking for the records of the K-17, the first airship assigned to ZP-51 (K-17's first flight from Trinidad was 17 Feb 1943). Does anyone have a logbook with a page of records of flights from ZP-51 in March 1943?" Ω



ZP-911 crew flying a borrowed K-Ship at NAS Squantum (USN/Peter Mersky).

ZP-911: New England's One And Only Naval Air Reserve Blimp Patrol Squadron

By Marc J. Frattasio, AW1 USNR (Ret.)

On November 1, 1945, the Navy established the Naval Air Reserve Training Command headquartered at NAS Glenview, Illinois. The purpose of the NARTC was to help preserve the tremendous investment in training and experience that had been provided to and acquired by the thousands of pilots, aircrewmen, mechanics, and other aviation personnel who had signed up to serve in the Navy for the duration of the Second World War and who were at that time being released back into civilian life.

The Navy did not have a reserve training program in place for demobilized aviation personnel when the First World War ended in 1918. By the time a primitive reserve aviation training program was established in 1923, for many veterans the relevant skills had atrophied and interest in military service had waned. The Navy had learned from this experience and was determined not to repeat the mistakes of the First World War when the Second World War ended. As early as the summer of 1945, even before the Japanese surrendered, the Navy had drawn up plans for an organized postwar reserve training program.

Thus, the Naval Air Reserve Training Command was established in conjunction with the postwar demobilization effort. A total of 21 reserve naval air stations and Naval Air Reserve Training Units

(NARTUs) on regular Navy naval air stations were established near major population centers around the country. Aviation personnel departing for civilian life were strongly encouraged to continue their affiliation with the Navy on a part-time basis by joining the Naval Air Reserve.

Reserve blimp patrol squadrons were included in the Naval Air Reserve Training Command's immediate postwar plans. The first of these, ZP-51 (later redesignated ZP-751) was commissioned at NAS Lakehurst, New Jersey, in June 1946. NAS Lakehurst served as the headquarters of the Navy's lighter-than-air (LTA) establishment. Thus, it made a lot of sense to establish the first reserve ZP squadron at this base.

NAS South Weymouth, located about 13 miles southeast of the important port city of Boston, Massachusetts, had been a blimp base during the Second World War, hosting both blimp patrol squadron ZP-11 and a detachment of blimp utility squadron ZJ-1 (ZJ-1-1) headquartered at Key West, Florida. On August 9, 1945, just a few days before the Japanese surrendered to the Allies, NAS South Weymouth was downgraded from a naval air station to a naval air facility. LTA operations came to an end at NAF South Weymouth by late September or early October 1945 and the last remaining blimps there were ferried to NAS Lakehurst.



ZP-911 chief petty officers at NAS Lakehurst for annual training sometime during the 1950s. Domenic Fucile collection.

Despite the fact that the Navy was no longer operating blimps from NAF South Weymouth, a group of veterans who had served on the base during the war formed a standby reserve unit during the summer of 1946 in anticipation that the Naval Air Reserve Training

Command would eventually commission a reserve ZP squadron there too. NAF South Weymouth's standby reserve unit was an informal organization intended to give its members, who drilled without pay, something to do until an actual reserve ZP squadron was formed.

The officers and enlisted men of this unit normally conducted their monthly drill weekends at NAF South Weymouth's bachelor officer's quarters (BOQ), which since the war ended had been underutilized for its intended purpose. Sometimes the enlisted men helped NAF South Weymouth's drastically reduced ship's company maintain the Type 2 mobile mooring masts and other LTA related equipment leftover from the war that were being stored on the base. During 1947 and 1948 they also helped ground-handle the Douglas Leigh Sky Advertising Company blimps that operated from NAF South Weymouth. These were former Navy K-ships that had been sold as war surplus and converted into flying advertising billboards.

The standby reserve unit was reclassified as a volunteer reserve unit in 1947. On June 30, 1949, NAF South Weymouth was decommissioned, put into caretaker status, and redesignated a naval auxiliary landing facility. A few days before this happened, on June 25th, the volunteer reserve unit was transferred to nearby NAS Quantum. Soon after it arrived there, the volunteer reserve unit was reformed into an associated volunteer unit (aviation) designated AVUA-4. It is worth noting that while it was at NAF South Weymouth, the standby reserve unit/volunteer reserve unit does not appear to have had formal naval unit designation.

On January 28, 1950, AVUA-4 was converted into a reserve blimp patrol squadron designated ZP-911. Thus, the original expectation of the members of AVUA-4 and its predecessors was finally fulfilled, albeit at NAS Quantum instead of NAS South Weymouth.

NAS Quantum, which was located on the Dorchester Bay waterfront just south of Boston in Quincy, Massachusetts, was the Naval Air Reserve Training Command base serving the New England area at that time. NAS Quantum's reserve air wing, to which all the Naval Air Reserve squadrons on the base belonged to like the squadrons in an aircraft carrier's carrier air wing, was Reserve Air Wing 91



Aerial view of NAS Quantum looking eastwards in 1953. US Navy / National Archives

(RAW-91). All the Naval Air Reserve squadrons at NAS Quantum had the reserve air wing's number (91) followed by a sequence number (1, 2, 3, etc.) as part of their unit designations. Thus, ZP-911's unit designation indicated that it was the first ZP squadron in RAW 91.

ZP-911's mission was to train reservists to operate and maintain WWII-vintage K-type blimps. The squadron was very small by present-day Naval Air Reserve squadron standards and was composed entirely of part-time reservists. As was the case in those days, training and administrative support was provided by full-time stationkeepers who were assigned directly to the base and not to the squadron itself. The full-time stationkeepers handled most of the squadron's paperwork, served as instructors, mentors, and supervisors, and generally filled in wherever there were gaps in skills or manpower.

A K-ship required literally dozens of men grasping rope lines and handholds to handle it on the ground when it was not secured to a mooring mast during launching and landing operations. Since there were not enough people in ZP-911 to do this on their own, reservists from other units and stationkeepers from nearly every department on the base were rounded up and pressed into service as ground handlers whenever the squadron was launching or landing a blimp.

For the most part ZP-911 was more like a modern squadron augmentation unit (SAU) rather than a reserve force squadron (RESFORON). In the event of a war or other national emergency, ZP-911 would most likely not have been mobilized as a unit since it was

not sized or structured to function as a self-supporting blimp patrol squadron and would have required a substantial infusion of trained personnel in order to do so. Instead, ZP-911 would have been dissolved and its personnel sent off to serve as replacements for regular Navy blimp patrol squadrons.

ZP-911 adopted a squadron insignia that featured a dog wearing an old-fashioned leather flying helmet with goggles bounding over the ocean towards a submarine periscope while a blimp hovered in the background. (See inside cover) The insignia was circular in shape and had no scrolls at the top or bottom for the squadron's unit designation or motto. From a design perspective, it had more in common with Navy squadron insignia from WWII than with present day insignia.

The New England weather can be extremely harsh during the late fall, winter, and early spring months and NAS Squantum did not have a hangar large enough to put a blimp indoors. There were, however, two Type 2 mobile mooring masts at NAS Squantum. These had been put there during the Second World War to support emergency landings or detached operations by blimps from NAS South Weymouth. There is no evidence that any blimps used the mobile mooring masts at NAS Squantum during the war, but ZP-911 made good use of them in the early 1950s.



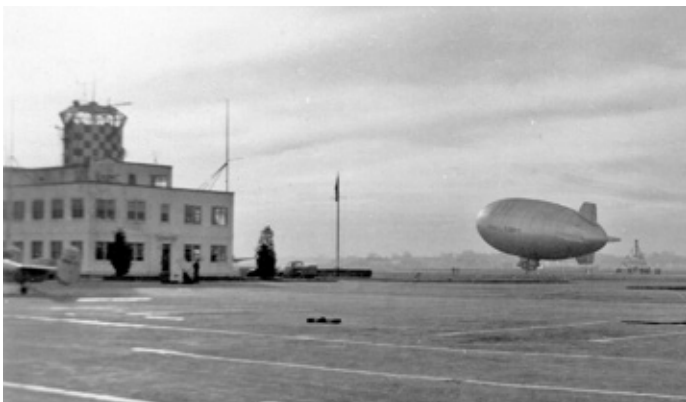
Douglas R4D Skytrain assigned to the reserve aircraft pool at NAS Squantum during the early 1950s. This was the type of aircraft that was used to fly ZP-911 blimp crews to NAS Lakehurst and back so they could borrow a blimp for their drill weekends. In later years, after the squadron moved from NAS Squantum to NAS South Weymouth, an R4D was used for this purpose. Francis MacIntire photo.

So, how did a blimp squadron manage to operate on a base that had no blimps? The answer is, ZP-911 borrowed them from elsewhere whenever it needed them. If the weather report for the area between Massachusetts and New Jersey was favorable over the next few days, on the Friday night before each ZP-911 drill weekend a complete blimp crew was flown from NAS Squantum to NAS Lakehurst on board a Douglas R4D Skytrain flown by personnel from reserve transport squadron VR-911 or VR-912. Both flight crews, blimp and transport, were composed primarily of part-time reservists augmented as required by full-time stationkeepers.

Early Saturday morning, the reserve blimp crew would check out a K-ship assigned to the NARTU at NAS Lakehurst and fly it to NAS Squantum. Arriving sometime in the afternoon, the blimp would spend Saturday night on the ground at NAS Squantum secured to one of the mobile mooring masts. A different ZP-911 crew would then fly it back to NAS Lakehurst on Sunday. Upon their arrival at NAS Lakehurst, the ZP-911 personnel would return home again on board a reserve R4D. Thus, on ZP-911's drill weekends practical flying experience was also provided to VR-911 or VR-912 personnel, a win-win for everyone involved in this somewhat complicated operation.

On a typical drill weekend ZP-911 flight crew personnel were able to exercise their flying skills and basic aircrew duties during the ferry flights from/to NAS Lakehurst and on flights that were performed in the local area on Saturday afternoons. Ground support personnel got hands-on experience in launching, recovering, and ground handling the borrowed blimp. They also serviced it and performed basic maintenance while it was moored on the ground. A continuous pressure watch was maintained whenever the blimp was moored on the ground to ensure that enough air was pumped into or vented from the ballonnet to maintain proper pressure as the helium inside the gas-bag expanded or contracted due to temperature fluctuations. In all of these tasks, the part-time reservists were supervised and assisted by full-time stationkeepers with LTA experience who were assigned to the base.

ZP-911 personnel were mobilized for a contiguous two-week period on active duty every summer for annual training. Since hosting a borrowed blimp at NAS Squantum for a full two weeks could be problematic, the members of ZP-911 normally went to NAS Lakehurst as a group for what was termed an “annual training cruise.” While at NAS Lakehurst, the ZP-911 personnel, who were often accompanied by a few full-time stationkeepers from NAS Squantum, had access to one or more K-ships for as long as they were there. In addition, maintenance personnel gained practical experience by working at the LTA Overhaul and Repair (O&R) facility at NAS Lakehurst.



ZP-911 crew practicing “touch and goes” at NAS Squantum sometime during the early 1950s. Jim Angley photo.

While on annual training, ZP-911 crews frequently participated in anti-submarine warfare training exercises with regular Navy and reserve ships and submarines. ZP-911 crews also took blimps on cross-country flights to other bases such as NAS Glynco, Georgia, and NAS Weeksville, North Carolina.

On November 8, 1950, just a few months after ZP-911 was formed, the Navy announced that it was going to close NAS Squantum and transfer all its Navy and Marine Corps reserve units to South Weymouth. NAS Squantum was located only four miles away from the Boston Airport (modern day Logan International Airport), which caused concerns about the possibility of a mid-air collision between a civilian airliner and a reserve aircraft. NAS Squantum’s runways were too short for normal operations with jet aircraft and there was no more land available along the periphery of the base to extend them. NALF South Weymouth, which was closed at that time, was far enough away from the

Boston Airport to minimize airspace conflicts and there was enough land there to build runways that were at least minimally suitable for routine operations with contemporary jets. Plans were drawn up to upgrade certain facilities at NALF South Weymouth and then reopen the base as a reserve naval air station. Among the many improvements made at South Weymouth during the 1951-1953 timeframe were three new paved runways. NAS South Weymouth was originally built with only a cinder-surfaced turf landing field for blimps during WWII. However, the conventional aircraft that would be transferred from NAS Squantum, and the jets that would be based there in the future, required paved runways. To clear the way for two of the new runways, Runway 17/35 and Runway 08/26, LTA Hangar Two, mainly of wood construction, was sacrificed for the runways.

In preparation for the move, ZP-911 flew a borrowed K-ship up from NAS Lakehurst to NALF South Weymouth on a Saturday in April 1953. This took place nine months before the base was officially reopened and while work was still progressing on the new runways. The blimp spent Saturday night docked inside LTA Hangar One and then returned to NAS Lakehurst on Sunday.

On December 4, 1953, NAS South Weymouth was officially recommissioned as a Naval Air Reserve Training Command naval air station. The final reserve drill weekend at NAS Squantum was held on Saturday and Sunday December 19th and 20th, 1953. ZP-911 and the other Navy and Marine Corps reserve units that had been based at NAS Squantum moved to NAS South Weymouth in time for the drill weekends scheduled for January 1954.

When the Naval Air Reserve relocated to NAS South Weymouth, the base had a special purpose hangar, LTA Hangar One, which was a gigantic structure, 960 feet long, 337 feet wide, and 192 feet high. Covering about eight acres under its arched roof, LTA Hangar One was one of the largest structures in the world without an internal framework when it was completed in November 1942.

The Navy had originally intended to assign one K-ship to the reserve aircraft pool at NAS South Weymouth for

exclusive use by ZP-911. However, there was a regular Navy command at the reopened NAS South Weymouth at that time that also operated blimps. This was the Naval Air Development Unit, known as “NADU” for short, which provided naval aircraft to flight test military research and development projects associated with the MIT Lincoln Laboratory and other defense contractors.

NADU’s primary mission was to flight test the naval aviation related components of the Semi-Automatic Ground Environment (SAGE) integrated air defense system. Due to the perceived threat of nuclear attack by long-range bombers from the Soviet Union, SAGE was a top national priority. Goodyear ZPG-2-type blimps were intended to provide seaward early-warning radar coverage for the SAGE system. For testing purposes, NADU operated as many as three ZPG-2s simultaneously from NAS South Weymouth. The ZPG-2s were much larger than the older K-ships, and consequently took up more space in LTA Hangar One. Soon after NAS South Weymouth was reopened, the Navy decided that there wasn’t enough room in LTA Hangar One to house a K-ship for ZP-911 in consideration of NADU’s current and potential requirements. Thus, ZP-911 had to continue to borrow K-ships from the NARTU at NAS Lakehurst to support its monthly drill weekends after it moved from NAS Squantum to NAS South Weymouth.

In the summer of 1954 ZP-911 personnel went on a two-week annual training cruise to NAS Lakehurst, their first one after moving to NAS South Weymouth. While there, ZP-911 crews took three K-ships to Leeward Point Field at Guantanamo Bay, Cuba. This was the first time that ZP-911 personnel ever left the continental United States for annual training. While in Cuba, the ZP-911 crews participated in anti-submarine training exercises in the Caribbean Sea.

On Friday August 2, 1957, ZP-911 personnel went to NAS Lakehurst for a two-week annual training cruise. The next day, two ZP-911 crews flew two K-ships down to NAS Glynco, Georgia. Like NAS Lakehurst, NAS Glynco was one of the last naval bases to have active facilities for operating and maintaining blimps. The two ZP-911 crews spent a total of 12 days operating from NAS Glynco.

On Thursday, August 15th, with the end of their annual training cruise approaching, the two crews departed NAS Glynco to take their blimps back to NAS Lakehurst. Just before midnight, one of the blimps (the K-85) flew into a thunderstorm over Pamlico Sound, North Carolina. A strong gust of wind threw a wire radio antenna into the blimp’s starboard propeller. The antenna sliced off a propeller blade, which was then catapulted into the blimp’s rubberized fabric gas-bag. The blimp rapidly began to deflate and lose controllability. The pilots skillfully ditched it in a section of Pamlico Sound midway between the North Carolina coast and the Outer Banks.



Blimp that ZP-911 crew ditched off the coast of North Carolina the day after the crash. AP Wirephoto.

All nine crewmen successfully escaped from the blimp’s car before it sank. They boarded two rubber life rafts, seven men in one and two in the other. The blimp went down fast and soon only the forward section of its gasbag was visible above the water.

The radio operator had managed to transmit an “SOS” before the blimp went into the water. His message was received by the crew of an Air Force North American B-25 Mitchell bomber that was in the general area. The bomber crew relayed the SOS to the Joint Search and Rescue Operations Headquarters, which made plans to dispatch SAR aircraft into the area after sunrise on the 16th. However, before this could happen, the blimp crewmen were rescued by a passing fishing boat.



ZP-911 with K-Ship at NAS South Weymouth on a drill weekend Saturday during April 1953. Richard Carlisle photo, Gert Carlisle collection.

By the late 1950s the Navy had decided to close down the LTA program. As one of the first steps towards this objective, all the reserve blimp patrol squadrons were eliminated by the end of 1958. ZP-911 was decommissioned at NAS South Weymouth during October 1958, with little, if any, fanfare.

Three new ASW-related Naval Air Reserve squadrons were formed at NAS South Weymouth in October 1958, these being patrol squadron VP-914 flying Lockheed P2V-6M and P2V-5F Neptunes and carrier anti-submarine squadrons VS-915 and VS-916 flying Grumman S2F-1 Trackers. Many former ZP-911 personnel were transferred into the three new squadrons at the time they were commissioned, with many former enlisted blimp crewmen subsequently becoming radio, radar, ECM, MAD, and sonobuoy operators, as well as observers on board Neptunes and Trackers. No former ZP-911 blimp pilot appears to have made the transition to flying heavier-than-air aircraft at NAS South Weymouth. Those men who chose to continue their reserve careers post ZP-911 appear to have been slotted into desk jobs in various units on the base. Ω



ZP-911 personnel at NAS Lakehurst for annual training sometime during the 1950s. Ralph Hadlock photo.

My ZW-1 Experience By John Kumke AMS-2



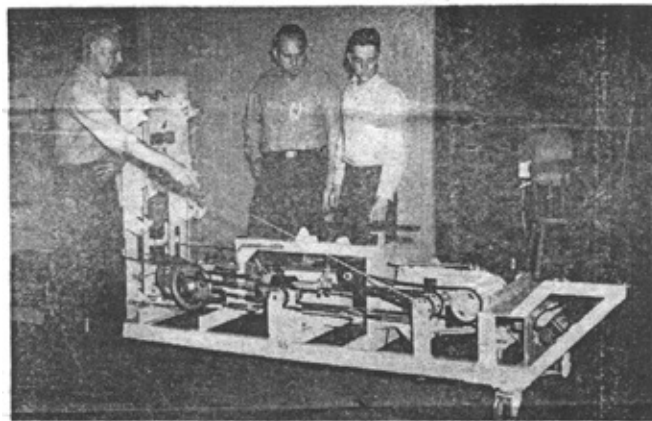
This is my experience as an enlisted man in the U.S. Navy and specifically my time with Airship Early Warning Squadron One, ZW-1 at Lakehurst, New Jersey. I was an Aviation Metal Smith (AMS) rate, but in

addition to the airframes part, we also worked on the hydraulics. I received orders to report to ZW-1 in June of 1958. I was an Airman when I reported, 18 years old, fresh out of the Navy Aviation Metal Smith schools then located at Norman, Oklahoma, and Millington, Tennessee. Since I was low on the totem pole I was assigned to duties such as the tool crib and cleanup in the shop. Cleaning the airships was probably a step up because it gave me a chance to go aboard. When we cleaned airships we usually had a bucket of solvent and some rags. We would wipe down the floors and also the struts to prevent the seals from deteriorating. There was a special polish for the Plexiglas windows that was supposed to keep them from crazing (get little cracks). In July and August of 1958 I attended the Fleet Airship Maintenance School at Lakehurst. The school was run by a Warrant Officer, Leo Gentile. The instructors were Chief and First Class Petty Officers. I attended the Airframes Course section for Aviation Metal Smith. This section covered the airship fabric, the rigging tensioning, structural parts, hydraulics, the winch, constant speed drives, controls and water ballast systems. It was very comprehensive. Disassembling and reassembling a variable displacement hydraulic pump was an interesting and challenging task. In addition to the airframes course the school also had courses in engineering, and electrical. The courses covered all of the maintenance procedures for the ZPG-2 and ZPG-2W airships. In addition to the formal training various practical problems were set up in the classroom on

repair procedures. Also during the evening instructors gave us lectures for in rate training. Overall it was a pretty good school and packed a lot of information in a relatively short time. The August 23, 1958, issue of Navy Times had an article about the school and included a picture of myself, another student, and an instructor at a mockup of the in-flight control systems.

AUGUST 23, 1958

NAVY TIMES #1



INTERNAL workings of the control system in the ZPG-2 and ZPG-2W airship is shown a pair of students by an instructor (left) at the Fleet Airship Maintenance Training School at Lakehurst Naval Air Station, N.J. The school has just marked its first year of existence.

Blimp School Marks First Anniversary

LAKEHURST, N.J.—The only school of its kind, the Fleet Airship Maintenance Training School at the Naval Air Station here, has just marked its first birthday.

Run by officer-in-charge CWO Leo Gentile, who flew in the old rigid airship Akron, the school has received a "well done" from Capt Alfred L. Cope, skipper of Fleet Airship Wing 1, who supervises the school.

In its first year the school turned out seven classes. Each course lasts about six weeks and there are seven enlisted instructors teaching them.

ON REPORTING here students get a short course in theory of flight, basic airship design and construction, pressure watch duties and procedures, ground-handling procedures, safety precautions and emergencies.

Courses in maintenance procedures for the ZPG-2, ZPG-2W and ZSG-1 craft are divided into three parts.

The engineering course for aviation machinist's mates involves

training in power plants, propellers, fuel systems, ballast systems, transmission systems, ignition systems and heaters.

The airframes course, for aviation metalmiths, covers airship fabric, rigging, tensioning, structural parts, hydraulics, winches, constant speed drives, controls and water ballast systems.

The electrical course, taken by aviation electricians, includes training in operation and maintenance of complicated AC and DC electrical systems.

IN ADDITION various practical problems are set up in the classroom to teach the students correct repair procedures. During the evening instructors are giving men lectures for in-rate training. This is a voluntary program by the teachers.

Looking to the future, the school is already setting up courses of instruction on the ZPG-3W, the largest non-rigid airship ever built which will soon be added to the fleet.

John is at extreme right in this NAVY TIMES article's photo.

By this time I had made Third Class Petty Officer, AMS-3. Somewhere along the line I had my first ride in a boatswain's chair. I think of the boatswain's chair simply as a board that we sat on with the rope to a pulley on a metal rail near the ceiling. A couple of men would pull you up and along the rail so you could do bag inspection or necessary repairs. We were young and it was no big deal. I also learned how to use the tension meter to test the cables that supported the ruddervators. For that we would use the big extendable ladders on iron wheels which could be kind of shaky. But again, being young, we pretty much just walked up on them and walked down. Probably not the smartest thing but I don't ever remember anyone falling. I also went inside the ballonets to check for helium leaks. There was a

big Helium Sniffer machine that would be rolled up to the airship. We had to take off our shoes and take the Sniffer line probe inside the ballonnet. There was an access port in the ballonnet and you would tie it off after you entered. The bottom of the ballonnet had a huge net so that you were not actually stepping on the balloon material. You moved around the inside of the ballonnet until you felt that all parts/sections had been covered. While you were doing this you talked to the crew outside to see if there was a change in your voice. If you started to sound like Mickey Mouse you had to get out because there was likely a serious helium leak. That never happened to me. In the meantime I did airframes and hydraulic repairs that were assigned to me.

Flight Crew: Around December of 1958 or January 1959, one of the shop chiefs called me aside and asked me what I wanted to do the rest of my assignment. He said that he had talked to the instructors at the airship maintenance school and they gave me good recommendations. Then he said that he was going to assign me to a flight crew. Who was I to argue? More pay! I was assigned Combat Air Crew 102.

(Below: CAC 102 stands for inspection. John has snapped to in the first row, closest to the camera; the late Larry Gallagher is at extreme right.)

On my first flight one of the older Chief Petty Officers was with me. We went through our part of the pre-flight check and everything was ok. He told me about my in-flight duties which were to maintain anything related to airframes and hydraulics and to my surprise, cooking. My next flight was with the rigger that I was replacing. He showed me how to do an in-flight water pickup. When we were out on station and using fuel we had to have a way to compensate for the lost weight. That is where the water pickup came into play. The rigger did one pickup and then told me to do it. This is the method he used. As the airship was moving slowly forward, lower the bag into the water. As soon as it picked up a little water winch it in enough to clear the surface and then let it swing forward underneath the airship. Then drop it back into the water and let it fill. By that time the airship had caught up with the bag which was now submerged and full of water. That is the way he taught me and that is the method I used throughout my time as a crew member. It worked every time. The night pickups were probably the most challenging. Another crew member held an Aldus lamp to give some light. Night pickups seemed to go better if the ocean surface had some waves because on dead calm nights sometimes you didn't really know where the surface was until the bag hit the water. There were two sizes of bags. As I remember one was about 60 gallons



and the other smaller bag around 30 gallons. I can tell you this, when picking up water with the large bag it would make the backend of the airship shudder when we pulled that bag out of the water. You're talking about pulling about 500 pounds of water out of the ocean. That was one powerful winch. If the bag was swinging when you brought it up you had to wait until it stopped before winching it up through the clamshell doors. The doors had Plexiglas windows which would crack if the bag banged against them.



The galley (above, with Larry Gallagher [L] and me) was small but efficiently laid out. There was an electric stove with a huge roaster, two surface burners, a small refrigerator and storage compartments. It served the purpose. On that first flight I remember the chief showed me how to cook a roast with vegetables in the roaster. It turned out pretty good and with mashed potatoes and green beans made a decent meal. I think we also made a salad. The crew seemed to like it. Breakfast was usually some kind of eggs, bacon or sausage and of course coffee. Coffee was always available. The galley had what was supposed to be freshwater storage under a bench seat. But that proved difficult to keep clean so drinking water was brought aboard in separate containers. Personally I did not care for the cooking duties but it went with the territory. I just felt that I joined the Navy to work on aircraft and not to cook. In December of 1959 I advanced to Second Class Petty Officer, AMS-2. Crew 102 was a terrific aircrew. I don't think we ever had to abort a flight because of equipment failure. I do remember that on a couple of occasions we went out and relieved a crew on station because they had equipment problems, usually radar or engine. Every one of the crew members, officers and enlisted, got along well. At least

as far as I knew. Some of the members that I remember were Bob Keiser, Dennis Lee, Jim Yarnell, and Larry Gallagher. Ross Wood would pilot sometimes but was not a regular crew member. I also was on several flights that provided air traffic control for NASA rocket launches from Wallops Island. These were always night flights. At one point we had red ball caps with CAC 102 in yellow. One of the officers passed them out. Crew 102 was the only crew that had them and as I remember we were only supposed to wear them in the hangar or on flights. I guess they were not official Navy issue but they sure did look neat. I only remember two flights that had issues that concerned my area. On one flight a crew member came up to the galley and told me we were getting ready to go back to base and the nose gear would not go down. He said they had tried the manual crank and no luck. I remembered a solenoid in the nose gear compartment. When I went down below they already had the floor access removed and were giving a kick to the tire to try to get it to fall. I told them about a solenoid and that I would have to get down on top of the nose gear to reach it. They tied a rope around my waist and I got down in the wheel well and reached forward and pushed the solenoid button. The gear dropped with a swish and locked with a bang. Success! I was looking at an open wheel well and ocean water until they helped pull me up into the car. That incident took place shortly after I was assigned to the crew and more or less was my proving moment. The other incident took place while we were on station during a thunderstorm. I was sitting up in the galley when all of a sudden there was a loud bang. If I had to describe it, it was like I was inside a 50-gallon drum and someone beat on it with a sledgehammer. I went down to the cockpit and found out we had been struck by lightning. The IT guys said that sparks flew from the knobs on their equipment. I did a walk-through of the car and did not see any damage. Then I went into the access tunnel for the top dome. Climbing the ladder with a flashlight I could see several sections that had small holes from the lightening. The holes looked like they had been cut with a cutting torch. There was also a small hole on the top. I patched what I could reach with duct tape. The lightening also blew all of the static dischargers off the ruddervators. I was surprised that we continued to stay out on station but we did. I think this was one of the 2Ws and I don't think it flew again

after that. I remember well the day that the 3W crashed off the New Jersey coast. The “assemble all hands” horn blasted in the hangar and as we were going to the assembly I asked First Class Cagney if he knew what this was all about. He said he thought the 3W had gone down into the ocean. He was worried. I couldn’t believe that the blimp would go down as quickly as it did. As we know now 18 crewmen perished in that wreck. I don’t think we ever resumed a normal flying pattern after that incident. I also remember the evening that one of ZP-3 airships crashed into the roof of Hangar One around 2:30 AM. We had been out on station and landed just ahead of them. It was an extremely foggy night. I was in the aft station during landing approach and the lights on the ground were blurry. I was thankful when we were down safely and secured to the mast. I did not know at the time that ZP-3 had a ship on station also. I heard about the crash while in the hangar after debarking.

After these two incidents I think the airship program pretty much shut down. There were a few flights but I don’t remember if we officially went out “on station” any more. I went with the crew to Quonset Point Naval Air Station to go through the flight crew training there. I think we flew down in our Beechcraft. It was an interesting landing as the runway came right out in the water. It included a class showing how your eyes adjust from light to complete darkness, the Dilbert Dunker and parachute harness release. The Dilbert Dunker was part of an airplane cockpit on incline rails that extended into the swimming pool. You would get into the “cockpit” seat and secure the safety harness. Then it would slide down the rails into the water and flip upside down. You had to unbuckle the harness and swim to the surface. For the parachute harness you were buckled into a harness that had a cable attached to it on your backside. There was a winch on the other end of the pool and you were dragged backward through the water and had to get out of the harness before you hit the other end of the pool. I think everyone did ok on all of that. I also went to Bermuda as part of the landing crew when one of our airships flew down there. We flew down in our R4D and Bob Keiser was the pilot. I was part of the landing crew and as I remember the airship had a rough flight because of heavy winds.



On the mast: I also was trained on all of the mast duties for the ZPG-2W and ZPG-3W. Landing the big NAN airships in calm weather usually went according to plan. The plan was pretty much get the airship down on the mat, secure the long lines and bring it under control, hook up the mules and secure it to the mooring mast. Throw in some wind, rain, fog and night time and things can get problematic in a hurry. Being part of the landing crew could involve running out to grab one of the ropes and handing it off to the winch man on the mule, tending the winch on the mast or being the top man. It depended on if you had been checked out on the specific duty and if you were selected. There were usually several men in the landing party that were qualified on the duties. Winch duties involved making sure the winch motor gas tank was full and warming up the engine. The engines could be a little temperamental in cold weather. You did not want the engine to die in the middle of the landing operation. Tending the winch involved paying attention to the Ground Control Officer who relayed how many wraps (turn of the rope), to put around the winch drum. If he held up two fingers you put two wraps on the winch drum. Since the rope went up through the center pipe of the mast and out the top it would gradually pull the blimp to the mast

so that it could be locked in and secured. The top man climbed up to the top of the mast (about 60 feet high) before the blimp landed which meant you “rode” on top while the tractor pulled the mast into position. I can tell you that the platform on top was not very big but you did have a safety belt that you clipped to the mast. When the nose nestled into the top cone you pushed the handle down to lock the lugs and gave the “locked in” sign to the Ground Control Officer. Two thumbs swinging out to in. Being the top man during windy landings were the worst. But windy landings were also challenging for the whole ground crew and the pilots. The blimp, once down on the mat would move forward, back and to both sides, sometime rather quickly. So the ground crew had to be mindful of the props. The mules were forever trying to move with the movements of the blimp depending if it was moving toward them or away. Since one mule was on each side one was always moving away while the other was moving toward, all the while letting out winch line or winching it in to try to keep just the right amount of tension on to get the beast under control. It’s a good thing the mules had four-wheel steering. Being on top during a windy landing had its share of thrills also. I was qualified on the 2W and 3W masts. I did not mind going up on top but any landing at night involving wind, fog or rain put a little extra spin on it and I had my share of those. On windy nights you would virtually be nose to nose with the blimp and no matter how slow it approached it would seem too fast. You could hear the prop pitch and engine RPMs change as the pilots brought it under control. You could see the mules jockeying for position, moving in and out, back and forth, slack winch line on one side, tight winch line on the other side and the Ground Control Officer, like an orchestra conductor, controlling it all through signals from the light wand in each hand. When the blimp settled down as much as was possible it slowly was pulled into the mast top coupling by the winch. When the nose cone was in the coupling I would push the locking handle down. It had to be completely down to make a secure lock. Only then could I signal the ground officer that it was locked in. Then I could unhook my safety belt and climb down the ladder. Looking back I can understand how a successful landing required everyone to do their part individually yet together. The ground control officer was “the man” and controlled all aspects of the landing operation. On the windy landings I fully appreciate the skill and expertise of our pilots

since I viewed their skills whenever I was a crew member aboard and as a landing crew member, on the ground, the winch or on top of the mast. They had to work the yoke, adjust the throttles and the prop pitch. I tip my hat to these guys; they were always up to the task.

I also went on a free balloon ride. As I remember it Commander Bob Kaiser and some of the other officers had made arrangements to take our free balloon out. Up until then I was unaware that we even had a free balloon. It was a big silver balloon with U. S. Navy on the side in black letters. The basket was pretty big and heavy duty wicker with sand bags hanging from the sides. I think I was the last one to get in the basket. Other than Commander Kaiser I don’t remember who was in the basket. Not long into the flight commander Kaiser’s hat blew off and floated away. It was a black beret style that had flag pins of countries where he had assignments and he really hated to lose that hat. One thing I remember about being on that ride is how quiet it was. We passed over a lady walking back to her farm house after getting the mail from the mailbox and could clearly hear her comment, “huh, just bills.” I don’t think she knew we were overhead. We eventually landed in a farm field and the chase truck came and loaded everything for the trip back to base. That was my one and only ride in a free balloon.

What a pleasant surprise it was that the 2012 NAA reunion in Tucson included a tour of the airship car in which crew 102 had flown. That brought back a lot of memories. It is December 2014 as I finish this writing. There are not many of the “old guys” left who actually flew in the ZPG-2W and ZPG-3W airships. At one time or another I would guess that I flew in every ZPG-2W and ZPG-3W that ZW-1 had during my time in the squadron. I spent 28 months in the Airframes Division (Riggers Shop), of ZW-1. Of that, 21 months were as Airship Flight Rigger in Crew 102 and I had 1,428 flight hours. I left ZW-1 in October of 1960.

I am thankful that I had the opportunity to experience it firsthand. I am thankful for those who showed me the ropes along the way. Although the airships are no longer out over the Atlantic on patrol I can attest that they did the job they were sent to do and as had been said before, “they were dependable.”

To ZW-1, thanks for the memories. Ω

MEDIA WATCH

Principles Of Aerostatics: The Theory Of Lighter-Than-Air Flight By John A. Taylor
Reviewed by C.P. Hall II

The first part of this volume that grabs one's attention is on page xv under the heading "About the Author." His career began as flight test engineer with Hawker Siddeley working on the performance testing of the Harrier. He became overseas technical representative to the U. S. Navy regarding Harrier, eventually resulting in immigration. He joined the U.S. Navy's Airship Program in 1986 and is involved in flight testing the "YEZ-2A airship." "He holds a Bachelor of Science in Aeronautics and Astronautics from the University of Southampton in UK, and a Master of Science in Systems Management from Florida Institute of Technology, USA." In short, he is an erudite individual whose career has allowed a great deal of hands-on, practical application in his areas of expertise.

The book has all of the components of a college text book concerning theoretical mathematics. It begins with the basics, proceeds to explain what requires calculation, and continues with formulae, examples, and reference tables. If this is something that you want, and there are scholars who will want this, then this is the book for you. If you are looking for operational anecdotes from a man who "... gained flying experience on a number of airship types", you will be disappointed! Personally, someday, I may apply a formula found in this volume to attempt to determine what the effect was upon the hydrogen inflating R.101 when it dove from 1,500 ft. to approximately 500 ft. on 5 OCT 30. That is my excuse! Does the potential buyer of PRINCIPLES OF AEROSTATICS have a similar problem to examine?

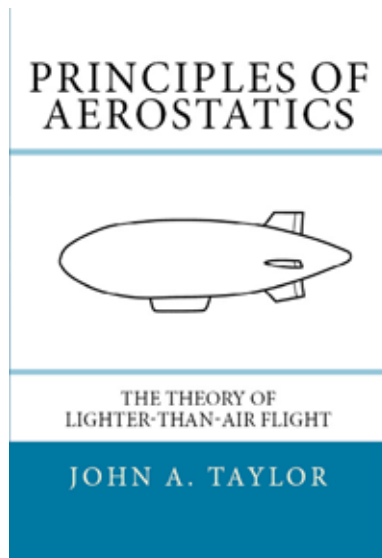
I did do somewhat more reference work that I might do for most reviews. I confirmed two perceived shortcomings in PRINCIPLES OF AEROSTATICS.

There seems to be no mention of one phenomenon which was described as early as 1920 by Major G.H. Scott in his paper "Airship Piloting" as published in The Journal of the Royal Aeronautical Society. A rigid

airship is almost always flown 'in trim' (balanced fore and aft, neither bow, nor stern 'heavy'). When flown overall 'heavy', one might expect a tendency to descend, however, as Harold Dick observes, "When flown statically heavy, the ship always tends to nose up and climb, while when light, she puts her nose down and tries to descend. The reason is that with the hull acting as an airfoil, and meeting the air stream at an angle, the center of pressure on the hull moves forward, creating a pitching movement, either upward or downward. The heavy ship in trim will always tend to nose up and climb, and requires down elevator, the amount depending on the amount of heaviness." Major Scott offered more detail than Dick. Scott touched upon a good deal of the specific, applicable detail found in PRINCIPLES OF AEROSTATICS. Scott found this phenomenon important enough to discuss it in his lecture. Apparently he added an appendix on topic to his paper when printed in The Journal. This counter-intuitive phenomenon deserves inclusion and explanation in PRINCIPLES OF AEROSTATICS.

My second objection is found in Chapter 7, Static Lift Concepts. On pages 75-6 there are two sub-headings: "Compressed air or lifting gas storage" and "Liquefied lifting gas storage." Simply stated, the concept is that a ship arriving 'light' and in need of landing, instead of valving helium, could draw it off and store it, either by compressing it, or liquefying it. The ship lands, cargo is loaded, more lift is needed; the stored helium is released back into the gas container(s) displacing more air and providing increased static lift. I submit that the concepts are plausible but impractical in practice. How large would a ship have to be in order to carry the weight of compressor(s) or super cooling equipment, storage containers as well as a payload? If it is that large what would the capacity of the compressor(s) or cooling unit need to be in order to meaningfully affect the lift of the craft in a reasonable time? Taylor alludes to practical problems himself. Why include these impractical proposals at all?

The press release states, "The mathematical processes can (be) followed by a reader with an understanding of high school algebra." One reviewer suggested the need of "a hand held scientific calculator." The truth lies within



those parameters. Someday a lighter-than-aircraft may be built that is so large that sensors and computer software are required to evaluate static lift, minute-to-minute. PRINCIPLES OF AEROSTATICS may well be the basic reference that guides the programmer(s) who create that software.

References:

- AIRSHIP TRAINING compiled by Richard Van Treuren, Atlantis Productions (2004)
- GRAF ZEPPELIN & HINDENBURG by H. Dick & D. Robinson, Smithsonian Institution Press (1985)
- AIRSHIP PILOTING by Major G. H. Scott, C.B.E., A.F.C. as published in The Journal of the Royal Aeronautical Society, February 1921.
- DIRIGIBLE, The Journal of The Airship Heritage Trust, #73, Autumn 2014. Ω

Ed. notes the Smithsonian Channel's Series "Apocalypse: World War I" breaks with typical TV convention (and budgets) by using historic footage, colorized, rather than "talking heads." While too broad to include details of individual technologies, a surprising reference to Zeppelins as scouts (vs. bombers) was featured in Episode 1. While no footage of Zeps on the Eastern Front is known to exist, the producers used snippets of pre-war passenger ships and shadows (actually LZ-126) in a respectable, not-too-inaccurate few-second blurb amid carefully colorized authentic historical footage. Ω

Vox.com lists a story about W.L. Richardson, the man considered the inventor of naval aerial photography. "Richardson once had to escape from an exploding (!) zeppelin in the sky."

(sic) "Richardson survived the 1925 crash of the USS Shenandoah. He clung to the wreck until it hit the ground, when his ankle was caught by a wire and he was dragged underneath it. Fourteen crew members died, but Richardson survived. In January of that same year, he and his longtime partner [had] climbed to a freezing post on the dirigible [USS] Los Angeles to take photos of a solar eclipse. 8,000 feet up, he snapped photos even though his face was freezing." (Was it still filled with hydrogen? ☺) Ω



Ben Franklin's Balloons NOVA (TV Show)

Reviewed by C.P. Hall II

This should be a fascinating blend of two stories: the history of man's first flight; and a modern recreation of

those early experiments. These first flights were based upon experiments with balloons which took place in France in the period just after the American Revolution. Benjamin Franklin was in France, was present at several early experiments and wrote letters, describing what he observed, which still survive, upon which much of this history is based; ergo the title, "Ben Franklin's Balloons."

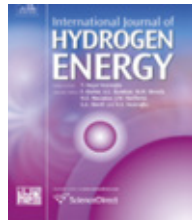
The recreation is the project of Guillaume Montgolfier, descendant of the pioneering brothers of that name; Jean-Claude Ragaru, historian; and Mercedes Taravillo, balloon builder. Their initial goal is to recreate the balloon that carried the first two aviators using the same methods and materials as the Montgolfier brothers in 1783. The story of their attempts and difficulties is quite interesting to follow. The record of how the first balloons were made is extensive but incomplete. They came to realize that the original experiment, a paper-lined cloth balloon above an open fire, was quite dangerous in several ways! Compromises were made and described in some detail as the project progressed. In the end their craft was of modern materials, with a propane burner, decorated in the original manner both as to pigments and application. The history continues with the first hydrogen-filled balloons, culminating with a recreation of the first free balloon flight across the English Channel.

I was disappointed with the program. I am hard-pressed to put my finger on why? It may not have been lavishly funded but the budget seems to have been quite adequate; the production values are good. The historical characters and the modern participants are interesting enough, especially in the first half. Perhaps it is just that the "first" of anything can be quite pioneering and yet, rather unspectacular. The King of France, Louis XVI, witnessed an experimental flight with animals on board and wants to see this marvelous experiment; but is fearful that any loss of life might reflect badly on him!? The first balloon to carry a man is lavishly decorated to pander to the King who, in the end, has the experiment moved from Versailles so a mishap will not draw criticism to Le Roi, Louis!? The flight itself was short in distance and duration but without mishap. Similarly, the first powered flight by the Wright brothers lasted but a few second over a distance less than the wing span of airplanes built within the next 50 years. It too was without mishap. These examples were "Firsts" and, each in its way, "One small step for man; one giant leap for mankind." That should be enough? Ω

Hindenburg: Exploring The Truth by Dr. A. Bain Blue Note Publications, Softcover.

Reviewed by C.E. Thomas, Past Pres., H2Gen Innovations, Inc., for the *Int'l Journal of Hydrogen Energy*

Dr. Bain has provided a unique and essential service to the hydrogen/fuel cell community. Those of us in the engineering profession who believe that hydrogen-powered fuel cell electric vehicles (FCEVs) are the best option for a future sustainable transportation system can write detailed computer programs to demonstrate that fuel cell electric vehicles will reduce greenhouse gas emissions, oil consumption and local air pollution more than any other alternative vehicle such as battery electric vehicles, natural gas vehicles, plug-in hybrid electric vehicles, etc. But consumers might still be inhibited from buying FCEVs if they have an inherent fear of hydrogen, whether due to the association of hydrogen with hydrogen bombs or the catastrophic destruction of the *Hindenburg* dirigible at Lakehurst, New Jersey, in May of 1937. Refuting the hydrogen bomb connection is trivial, since a hydrogen bomb requires two ingredients that will never be present on a passenger vehicle: an atomic bomb and the heavy isotopes of hydrogen, tritium and deuterium, but the *Hindenburg* disaster has no such easy explanation. So future car buyers might still be inhibited from purchasing an FCEV based on lingering doubts about hydrogen's role in the *Hindenburg* disaster.



This is where Dr. Bain's multi-decade exhaustive investigation of the *Hindenburg* tragedy is so valuable to the future of the world's best option for a clean, sustainable transportation system. Dr. Bain's investigation began when he saw a simplistic plaque at NASM in Washington, D.C., that stated that "hydrogen caused" the *Hindenburg* accident. Dr. Bain was in a unique position to refute this indictment of hydrogen as the "cause" of the *Hindenburg* disaster. As a scientist with many decades of experience at NASA, he knew that hydrogen cannot "cause" a fire by itself, since it lacks two essential ingredients for a fire: oxygen and an ignition source. So he began visiting several dozen individuals who were either at Lakehurst on that fateful day or were involved with the design and manufacture of the dirigible. He also began collecting bits and pieces

of the *Hindenburg* and had them analyzed in various NASA laboratories. Dr. Bain's latest book summarizes all of his findings in his long, multi-decade investigation of the *Hindenburg* disaster. He also addresses several critics of his analysis on the *Hindenburg* accident. But he does so in his characteristic gentlemanly and courteous manner. One critic stated in his assessment of Dr. Bain's publications that Bain claimed that hydrogen played no role in the *Hindenburg* failure. But this is not true, even in his first book "The Freedom Element: Living with Hydrogen" published in 2004, Dr. Bain stated that "there was a lot of energy created in a short period of time before hydrogen as a fuel got into the act" and later, "hydrogen is then released and mixed with air; some of it ignites adding to the fireball." Despite this critics' grossly inaccurate description of Bain's publications, Dr. Bain does not try to refute the faulty arguments by the critic, but instead states that this particular critic's analysis is "a fine work of effort."

Hydrogen has all the characteristics of an environmentally sustainable motor vehicle fuel: it produces no air pollution or greenhouse gas emissions when burned in a fuel cell that essentially converts hydrogen to clean electricity; it can be produced locally from many sources eliminating the need to import energy from unstable regions of the world to power our transportation system, and the cost to produce hydrogen for a fuel cell electric vehicle (FCEV) is less per mile of vehicle travel than the cost to produce gasoline or diesel fuel for a conventional car. So Dr. Bain's exhaustive analysis of the *Hindenburg* catastrophe is needed to assure future FCEV drivers that their cars will be as safe if not safer than conventional gasoline-powered cars ... Thank you Dr. Bain!

While not all future automobile buyers will have the patience and/or technical ability to digest Dr. Bain's exhaustive tome, his book should become the backbone of any future analysis of the safety of hydrogen as an automobile fuel. I would highly recommend Bain's book to all future students and decision-makers in the fields of energy and the environment, as well as any of the public at large that might be concerned about the safety of hydrogen as a motor fuel. Ω

Ed. note: Dr. Bain's new book is also reviewed in the current issue of Hydrogen Newsletter.

The Historians' Letters (Part VI)

By Roy D. Schickedanz

With Dr. Topping's January 4, 1967, letter in hand, I decided to look up Klaus Pruss, the son of the senior Captain aboard the *Hindenburg* when it crashed at Lakehurst Naval Air Station on May 6, 1937. Klaus was living in Frankfurt-am-Main. Gilbert Williams of Winchester, Virginia, was my traveling buddy and I headed via German train for Frankfurt. After asking a number of people on the street where 28 Kepler Strasser, being quite surprised being answered in excellent English. I remember very little of the interview and visit other than his living quarters were quite tight. Klaus asked if I knew what I sitting in. Looking quite surprised why I was being asked such a question in the first place, he then had me turn around and look up on the wall behind the chair, showing a black & white photograph of the furniture and interior of *Graf Zeppelin II* (LZ-130). The chair I was sitting in was one of those light-weight chairs from the LZ-130, the sister ship of the *Hindenburg* he had in his small study of his apartment.

Another surprise, given to me were additional names of people I could look up: General Stahl of 4 Moser Strasser, Darmstadt where I was based, and Hans Ladwig of the Naval L-53 zeppelin living in New Isenburg outside of Frankfurt. The L-53 was the last zeppelin shot down in World War I. General Stahl was associated with Army zeppelins; the living authority still living. He would be the first person that I would visit after Klaus Pruss.

On November 29, 1968, I had the pleasure of interviewing Howard Heinz, then mayor of Carlinville, Illinois, where I was going to Blackburn College. The interview took place at his Furniture store located at 208 West Main off the town square. Howard Heinz flew non-rigid airships during the Second World War. His training began with him going to University of Iowa for pre-flight school in March 1943. He indicated, that United States Navy had interrogated German submarine captains and crew and found out they were quite scared of airships. They tried to stay clear of convoys which had airship protection. Thus, the Navy initiated a crash program for having airships.

Howard Heinz along with Gordon Bell and three others out of a class 1,200 had a choice of either LTA or HTA training. Deciding on LTA, Howard Heinz went to Moffett Field for three months and then to Lakehurst for three months. On December 7, 1943, Howard Heinz received his commission and was then assigned to ZP-31 at Richmond, Florida. He was assigned to Elizabeth City, North Carolina, from June 1944 to June 1945.

An average patrol flight started out early in the morning around three or four o'clock. The airship was checked, then they were briefed by a Naval Intelligence officer concerning suspected activities in their patrol area.



They usually took off with the K-ship from 5,000 to 6,000 pounds heavy. This was the lift factor. Helium purity was constantly checked, being maintained at 95% at all times. For extremely long flights, a day patrol off the coast, airships were taken off at 3,000 to 5,000 pounds heavy. The crew would climb aboard the airship while it was still in the hangar. The airship was at this time attached to a tripod which was pulled out of the hangar by a tractor. Because the airship was heavy, they flew the K-ship down the runway like airplane. They flew in all types of weather, rain and fog, taking off at 0530 that morning and flying until 1600 to 1700 hours.

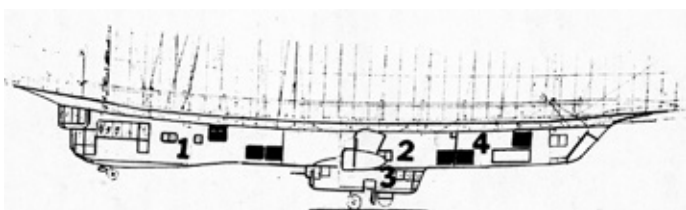
Howard Heinz remembered several crashes. One in particular, either August or September 1943, when an airship took off from Lakehurst, contained two or three new pilots and a senior service pilot on a training flight. The airship flew out to the coast, where they then flew along the coast. Meanwhile, another airship took off for wartime patrol for the same coast. Both airships collided over the Atlantic. Several accidents happened during ferrying flights returning from Brazil to the States for maintenance.



The airships carried standard radio equipment like any other aircraft.



Howard Heinz did indicate he did fly the M-class airship. However, after acquiring the needed 45 points, he left the service.



The Acoustic Torpedo

MIT developed the acoustic torpedo which was a highly secret weapon at the time. These were first given to the Navy's TPB squadrons, being a highly fragile weapon system. The torpedo was later turned over to LTA operations. The torpedo sought out the enemy using sound.

Effectiveness of LTA Operations

As for the effectiveness of LTA, there was no question in my mind about that even from the psychological point of view. It was in fact the best vehicle in ASW.

(To Be Continued) Ω

READY ROOM

16-18 April 2015 Friedrichshafen, Germany

In partnership with the (U.K.'s) Airship Association the DGLR will hold the 10th Biennial International Airship Convention and Exhibition at Aero Friedrichshafen. The reception on Thursday the 16th will be held in the Zeppelin hangar, surrounded by NT-07 airships. A program comprising two full days of papers with a model airship regatta will follow. Ω

22-26 June 2015 Dallas, Texas 22nd AIAA LTA Systems Tech Conference (part of Aviation 2015)

LTA topics will be explored by TC members. Ω

28-29 January 2016 Daytona Beach, Florida

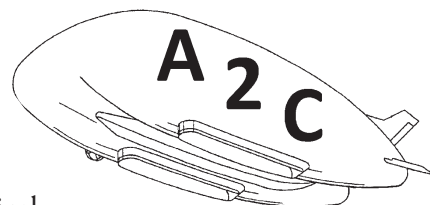
"Airships to the Caribbean" Conference

The Naval Airship

Association is organizing an international conference hosted by Embry-Riddle Aeronautical

University. Long overlooked

LTA technology provides excellent opportunities for investment of capital, energy, thought, and technological talent. A two-day, multi-level technology conference bringing together knowledgeable, involved airship professionals, potential customers, public officials, decision makers, investment sources, the media, students and members of the public is the ideal way to bring all that together. Military uses, the most prevalent application historically, are today all too often subject to arbitrary and short-sighted financial and political decisions. Expanding and applying the proper, creative use of LTA vehicles in many practical, and especially non-military areas, is a timely use of these unique and valuable modes of transport, especially in situations in which risk to humans is a factor. Airships hold major promise for transport in many areas of the globe's vast unexplored oceans, or impenetrable areas of rain forest or tundra, which are also without runway, road or rail infrastructure. We look forward to working together with you to make this a success. For more information please contact Frederick R. Morin, President, Naval Airship Association, at frmorin@verizon.net or call 508-746-7679. Ω



BLACK BLIMP

Grant B. Southward passed 31 DEC 14. "GB" was in the original ZP-11 squadron at the commissioning of NAS So. Weymouth. He was also the first person on the scene of the K-14 crash and help lead rescue craft to the wreckage and partook in early recovery efforts. He later went on to serve in Brazil. After the Navy he was a sports writer and covered the Boston Red Sox extensively. His wife Sheila died early last year and his only son had died in the mid 1990s. Ω



John M. Warden, 91, passed 4 May 14. He had been a Lieutenant, USN. Ω



Evan Thomas Mathis, Jr. 88, passed 20 DEC 14. A class of 1947 USNA graduate, after flight training in Pensacola, FL, Mathis qualified as a carrier pilot. He served with the Atlantic, Pacific, and Mediterranean fleets. He also served as a blimp pilot.

He is survived by his wife of 64 years, Nell McGehee; two daughters, and grandchildren. Ω

Donald Mauer passed 27 MAR 14. Mauer had served in ZW-1. Ω

Henry J. Applegate, 70, passed 3 NOV 14. Retired as Fire Chief from NAEC-NAWC Lakehurst, NJ, Applegate had served in the Army and retired from the Air National Guard. "Hank" was very active in the NLHS.



He is survived by his wife of 48 years, Mary Ellen; a son, daughter and grandchildren. Ω



Wilmer (Mike) Coulter, 90, passed 2 NOV 14. Coulter served in LTA during WWII. He is survived by his wife, Betty; two sons, a daughter, grand and great-grandchildren. Ω

Andrew N. Goumas, 90, passed 20 JAN 15. "Andy" served at Lakehurst during WWII and held membership in NAA and LTAS. He is survived by a son, daughter, and many nieces and nephews. Ω



William A. Wright, 78, passed 25 NOV 14. Ω

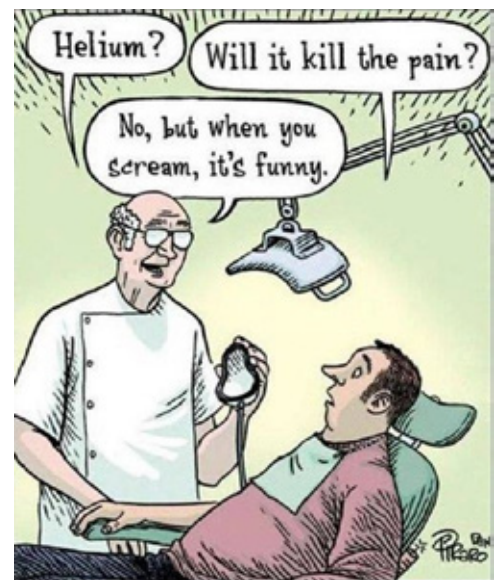
W. W. Linkenhoker passed 26 OCT 14. He had been a Lieutenant in ZP-2. Ω



William H. Smith, 94, passed 14 JAN 15. Smith graduated from Free Academy in Rome, NY, and following Pearl Harbor enlisted in the Navy. At Lakehurst for LTA School, he served as AMM 2 (Aviation Mechanic) aboard blimps.

They patrolled the New England coast from Nova Scotia to Long Island; in 1944 his crew was assigned to Brazil where they patrolled the Northern coast. Following the war Bill graduated from Northeastern University in Boston and was employed as a mechanical engineer in the Aircraft Engine Dept. at General Electric. He is survived by a son, a daughter, grandchildren, and great grandchildren. Ω

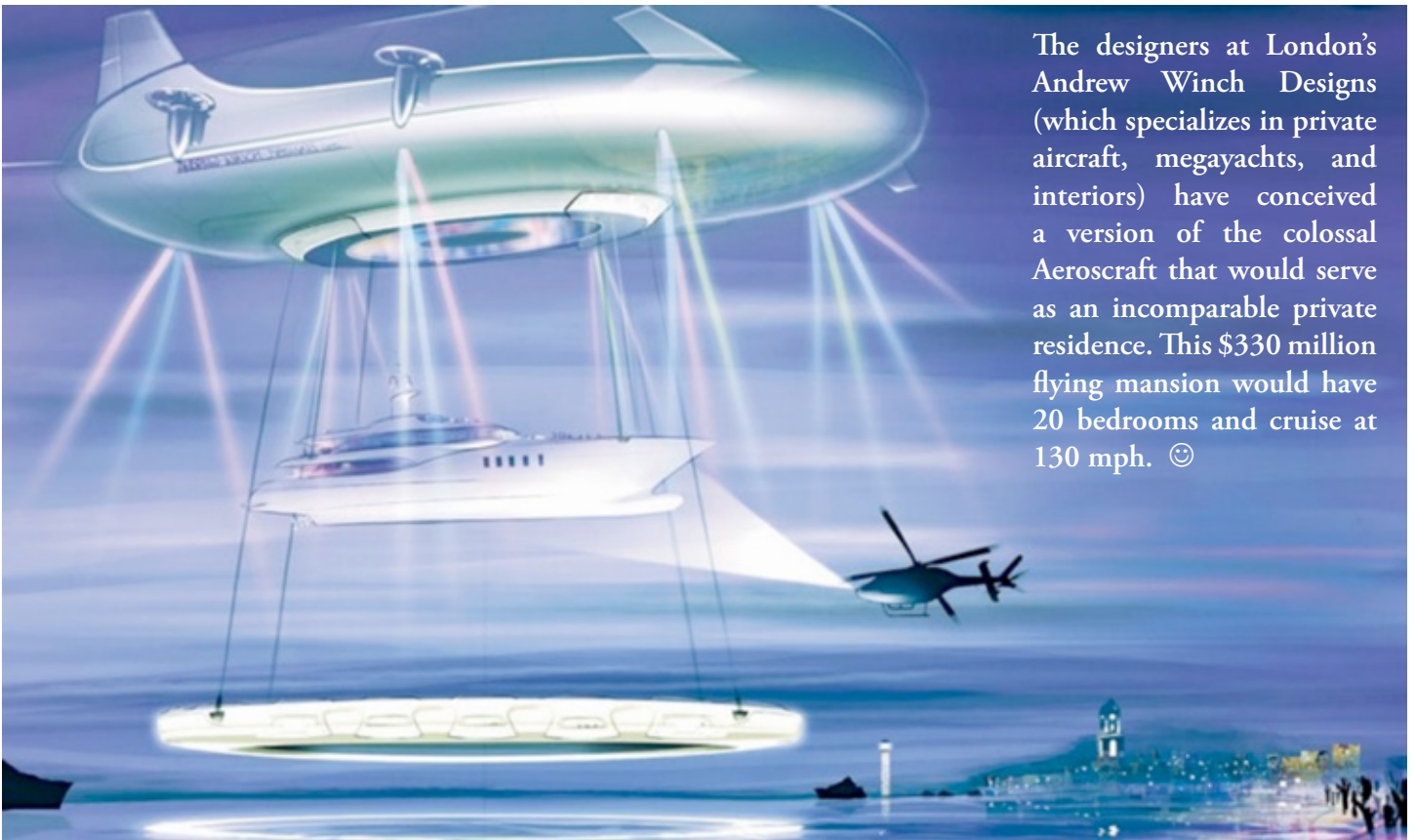
LIGHTER SIDE



Never put both feet in your mouth at the same time, because then you won't have a leg to stand on. ☺

Since it's the early worm that gets eaten by the bird, sleep late. Remember, the second mouse gets the cheese.





The designers at London's Andrew Winch Designs (which specializes in private aircraft, megayachts, and interiors) have conceived a version of the colossal Aeroscraft that would serve as an incomparable private residence. This \$330 million flying mansion would have 20 bedrooms and cruise at 130 mph. 😊



(Left) NASA recently unveiled a mission called the High Altitude Venus Operational Concept, or HAVOC. At about 30 miles up in the atmosphere of Venus, the temperature is roughly 160 degrees Fahrenheit, a fraction of the surface temperature, and the atmospheric pressure is comparable to Earth's at sea level — an ideal place to set up a city of helium-filled, solar-powered airships. To do this, the team would first encase the airship inside a protective shell that would enter the atmosphere at 16,000 miles per hour. Venus is closer to the sun than Mars, which means it receives 240% more sunlight, which is a lot of energy to feed those solar-powered airships. The technology and materials NASA would need to implement the mission are already available, or nearly so. Up in the clouds above its scorching surface, Venus is “probably the most Earth-like environment that's out there,” Chris Jones of NASA says. The mission is called the High Altitude Venus Operational Concept, or HAVOC. 😊



Over the Winter, work is proceeding on the assembly and construction of The Goodyear NT-101, serial number 07, Zeppelin type semi-rigid airship in the Wing Lake hangar. The first of Goodyear's Zeppelins, serial number 06, can be seen in the background and continues to fly from this Ohio hangar.

