# Montauk to Manhattan

## Long Island & Metro NY Chapter 86 - eNewsletter

## In This Issue | February 2010



## February Meeting Announcement

*Topic:* **Glenn Curtiss - American Aviation Pioneer**
**(Founder of the Curtiss Aeroplane and Motor Company, now part of Curtiss-Wright Corporation)**

*Speaker:* *David Paris, Chairman, AIAA Long Island Section*
*Date:* ~~Thursday, February 11~~, **Friday, February 19, 2010** *Rescheduled*
*Time:* 6:00pm -Networking/Refreshments(Pizza), 7:00pm -Presentation
*Place:* Bethpage Public Library, 47 Powell Avenue, Bethpage, NY 11714
*Dinner Fee:* $5, Members and Guests, Free for Students

***Reservations: Required :*** *RSVP by Thursday, Feb. 18, 2010 - Phone / E-mail your reservation to Gerry Yurchison at* ***Gerry.yurchison@ngc.com*** *or (516) 346-7340 Please indicate: Name, Organization/Company, Day Time Phone, Member Affiliation (AIAA, IIE, or SME)*

The impact of Glenn Curtiss' contributions to early aviation has endured to the present. After the Wright Brothers historic flight, many adventurers took to the skies in contraptions of every description. Innovators added numerous refinements. Prominent in both areas, Glenn Curtiss' early record setting flights and many design concepts kept the United States in the forefront of aviation in the years immediately following the first flight. However, when WWI started, the US had no military aircraft designs that could compete with the French, British and Germans. American pilots flew British and French aircraft into combat, but trained in the Curtiss Jenny, the only American aircraft involved in the war effort. At that time, Curtiss was the largest aircraft manufacturer in the United States. This presentation will review Glenn Curtiss' pre-aviation history, his early record-breaking flights, his innovations, the patent infringement law suit by the Wright Brothers, and his aviation legacy.

***About the Speaker:*** Dave grew up in Queens, graduated from Brooklyn Technical High School and earned BS and MS degrees in Aeronautics and Astronautics from New York University with a concentration in aerodynamics. He is now retired after spending a career developing and applying computational fluid dynamics methods to turbomachinery components including nacelles, compressors, turbines, fans, combustors and pumps. Dave worked at Republic Aviation, GASL, Pratt and Whitney Aircraft, Northern Research and Engineering, and Concepts NREC. He was a project engineer, managed software customer support, managed a group of design software developers, and retired as Director of Software Sales and Marketing. He returned to New York in 2003 after having been away for over 30 years. He has been a private pilot, Planning and Zoning Commission member, cub and boy scout leader, soccer coach, Civil Air Patrol leader, and amateur actor.
Dave has been active in AIAA since 1975 and has served as chairman of the Connecticut, New England and Long Island Sections. He has also been a member of ASME, having served on the Turbomachinery Committee. His interest in Glenn Curtiss was sparked by the Cradle of Aviation Museum's first annual induction into its Long Island Hall of Fame.

Directions: to Bethpage Public Library: The library is west of Route 135 in Bethpage. Take Route 135 to Exit 8, then West on Powell Ave. for about 0.25 miles. The library is on the south side of the street. Park across Powell Ave., opposite the library.

### Long Island Metro NY Chapter 86 *Events Calendar*

**Friday, Feb. 19, 2010**

*Topic:* Glenn Curtiss - American Aviation Pioneer - *See details on this page*

**Mon., March 22, 2010**

*Topic:* Tour of Cox & Co., (tentative)
*Time:* 5:30 PM

### 2010 IIE Northeast Regional Conference

March 26 – 28, 2010
The Pennsylvania State University
Details: www.ie.psu.edu

### Professional Events Calendar

**APICS**
**Tuesday, March 9, 2010**
*Topic:* Green Sourcing Can Yield Big Savings
5:30 PM Networking, 6:15 PM Dinner
7:15 PM President's Welcome & Announcements, 7:30 PM Presentation
at Panama Hatties - 872 Jericho Turnpike, Huntington Station, NY
*Details: www.apicsnyc-li.org or 631-266-2621*

**ENGINEERS WEEK CELEBRATION**
Sponsored by THE METROPOLITAN ENGINEERING SOCIETIES COUNCIL
***Wednesday, February 10, 2010***
Registration: 5:30pm, Light Buffet: 6pm
at Polytechnic Institute of NYU, Dibner Library, Brooklyn, NY 11201
Keynote Speaker: Charles J. Camarda, Ph. D., NASA Space Shuttle Aeronaut
Sr. Advisor for Innovation for the Office of Chief Engineer at NASA

# President's Message

On January 21 the Chapter joined AIAA and SME for a presentation on two new business jets that are being manufactured by Gulfstream. Although the topic was not one of our usual, I found the presentation to be quite interesting. If you missed it please read Carolyn Chen's detailed review below.

On February we will join AIAA again. If you are an aviation history enthusiast the topic may be of interest. At the very least please join us for the opportunity to network with the members of AIAA.

Because the January meeting was held at the Engineering building of Hofstra University, Bob Schroter and I had the opportunity of having a brief discussion with Professor Richard Puerzer, who is the Chairman of the Department of Engineering. The professor, who's background is in Industrial Engineering, indicated that Hofstra is in the process of expanding the Engineering programs at Hofstra and a number of students are currently enrolled in the Industrial Engineering curriculum. Bob and I offered to provide support for the IE program and aid in the reactivation of the IIE student chapter. It is our plan to conduct some IIE Chapter monthly meetings at Hofstra with topics that will be of interest to both professional members and students. We also discussed inviting student to participate on one of the facility tours.

This year Engineers Week takes place from February 14-20. Events that take place around the country will help to bring recognition to the profession and at the same time introduce young folks to the diverse field. At the official engineers week website www.eweek,org the profession is described as the following: "Engineers use their imagination and analytical skills to invent, design, and build things that matter. They are team players with independent minds who turn ideas into reality. By dreaming up creative and practical solutions, engineers are changing the world all the time." Please see what you can do to let others know what Engineers can and do accomplish.

Chapter 86 President

*Tom Fiorella*

# Review of the January Meeting

*By Carolyn Chen*

The January meeting was hosted by AIAA and the guest speaker was Mr. Travis Karp, Sr. Sales Engineer of Gulfstream Aerospace. His job is to take the engineering developed by Gulfstream and convey the technical capabilities to potential customers. He has to be an expert on the Gulfstream aircraft as well as understand what their competition is capable of. He is particularly well qualified to present the program updates for two new corporate aircrafts, models G250 and G650. Gulfstream develops its products, meets key customer requirements in the areas of speed and performance, cabin environment, safety and reliability.

Gulfstream's history has roots on Long Island. The First flight of the Grumman Gulfstream aircraft took place on August 14, 1958 in Bethpage. The aircraft embodies the Grumman design philosophy which spawned their nickname, "Grumman Iron Works". The designs built in structural integrity, safety and performance. "Gulfstream" was chosen as the model name because it conveys the characteristics of the Atlantic Ocean currents bearing the name: Reliability, confidence and power. Gulfstream strives to provide safety and security, reliability and exceptional quality, and unmatched product support.

Commercial aircraft production was relocated from Bethpage to Savanna, GA. General Dynamics acquired Gulfstream in 1999. This General Dynamics Aerospace division sets the world standard in Business aviation. The total product line models are G150, G200, G250, G350, G450, G500, G550, and G650. To put the capabilities in perspective, the G150 travels 2,950 nautical miles at Mach 0.75, and the future G650 travels 7,000 nm at Mach 0.85.

Private corporate jets are not just a luxury, in a sense they must provide an office-in-the sky for executives who work all the time. Clients conduct meetings and work en route so the aircraft must provide for comfort and in-flight productivity. Business jets must have Performance Operational flexibility because they may not be using large commercial airport facilities. In other words, with the nature of their destinations, they cannot rely on availability of ground support and equipment.

The smaller of the two new aircrafts is the G250. It can carry 4 passengers and a crew of 2. Its high speed wing design and two Honeywell HTF7250G engines enable it to have the longest range at fastest cruise speed in the super mid-size business jet category. It costs approximately 22 million dollars. (Continued on next page)

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The cabin is designed for comfort and productivity. It has the largest cabin volume in the super mid-size class at 935 cu. Ft. and the longest length at 25 ft. 10 in. There is 17%-35% more floor area depending on the layout choice. Clients can choose from 3 general floor plans. The G250 has the largest bag compartment of its class, designed to permit in-flight access to the baggage compartment. The cross section of plane has a 6 ft. 1 in. maximum height. The total storage area measures 154 cu. ft., with additional internal storage areas measuring 34 cu ft. The water system has a 10 gallon conformal tank pressurized by electric pumps. The system has hot water capability, water level indicators and a vacuum waste system. There is 100 % fresh air, and a low cabin altitude of 7000 ft cabin altitude at FL450.

FL is Flight Level, which "is a standard nominal altitude of an aircraft, in hundreds of feet. This altitude is calculated from the International standard pressure datum of 1013.25 hPa (29.92 inHg), the average sea-level pressure, and therefore is not necessarily the same as the aircraft's true altitude either above mean sea level or above ground level." (Wikipedia). Higher altitudes increase heart rate. A lower cabin altitude is less stressful on the body. Travelers are less apt to feel "drained" at the end of a flight, if they are subjected to lower altitudes. This can be extremely important for a business traveler who works every waking minute or is expected to go right to a meeting once the plane lands.

Gulfstream has high standards for cockpit controls, safety and reliability. The G250 has the most advanced flight deck in its class, the PlaneView250™ Flight Deck. PlaneView250™ is a Cockpit resource management philosophy that ensures improved situational awareness and safety by using advanced graphics and synoptics. There are highly interactive controls and interfaces. The Gulfstream product line shares the common vision design for Cockpit Resource Management (CRM), so that pilots can easily adapt to the next generation plane. In that way, the Gulfstream products are designed for growth and future technologies and can meet changes in regulatory requirements.

The standard features of PlaneView250™ include a new standby Multifunction controller. There are dual Gulfstream signature cursor control devices (CCD) which are a pistol grips mounted on a side panel. The grip is ergonomically designed, for mouse-like control. During turbulence, it is difficult to grasp, target and manage controls, so the pistol grip design is easier to control than punching buttons. There are two PlaneBook computer tablets which contain the flight manuals, checklists, equipment manuals, Jeppenssen Charts (charts of all the airports they might pass by), and a dual auto throttle system. Another standard safety feature is the Automatic Descent Mode (ADM). In the event of rapid decompression, ADM manages the flight allowing the pilot to do other things. The aircraft will orbit at 15K feet to give the pilot a chance to recover. The G250 has a rating of RNP 0.3, which is a certification of required navigation performance. The PlaneView250™ has universal worldwide graphical weather monitoring. With the capability of monitoring by radar way ahead of the area, the pilot can navigate around trouble spots and make decisions early.

There are several optional technology systems. EVSII -Enhanced Vision System improves situational awareness in reduced visibility situations such as fog, haze, night flying and smoke. This enables approaches in reduced visibility, bringing the aircraft down to 100 ft. above ground. Other options are the HUDII - Head up Display and SV - Synthetic Vision. SV is a primary flight display with a database of information that can project a 3D color image of terrain, obstacles and runways. This extra technology can provide better safety benefits through increased awareness, supplementing safety benefits of the EVS. The Intercontinental Package provides enhanced capability and redundancy for oceanic and remote area operations. These options can greatly enhance the safety flying into very small airports.

The numerous safety features and backup systems are based on the design philosophy of providing highly redundant simple flight control systems. The Lateral controls include independent roll control systems, manually powered ailerons with geared tabs, pilot actuated disconnect, and fly-by-wire spoiler system. If there is a mechanical failure, the pilot can fly in roll mode.

The new G250 Brake system has an autobraking feature. This reduces pilot workload as well as brake wear. The Autobraking improves passenger comfort as the lurching forward is minimized. The other G250 systems include ice protection, oxygen system, standard 120 minutes for cockpit voice recorder with Flight data recorder (FDR)
Performance summary of the G250:

- Longest range at fastest cruising speed better fuel efficiency
- Excellent takeoff and landing performance
- High cruse altitudes
- Excellent climb performance

This model has improved maintainability and availability. Major maintenance is performed every 500 hours, as defined by the Maintenance Review Board (MRB).
(Continued on next page)

**Chapter 86 Membership Information**

Long Island & Metro NY Chapter
Current Active Membership = 130

About IIE Founded in 1948, IIE is the premier society dedicated to serving the professional needs of industrial engineers and all individuals involved with improving quality and productivity. IIE has over 15,000 members and more than 280 chapters worldwide.

Who benefits from membership? There are hundreds of job titles given to people, who manage, design, install, or maintain integrated systems of people, machinery, and information. No matter what your job title, if you are the person called upon for solutions when there is an issue that requires your attention, you belong in IIE.

To become a member of IIE call
1 800 494 0460
or log onto to
www.iienet.org & click on Join IIE

**IIE Board & Regional Elections**

Polls are now open. The deadline for submitting votes is midnight Feb. 5, 2010

Professional IIE members will be emailed an electronic password, called an e-signature, Dec. 15, along with instructions for casting an electronic ballot.

Also included will be biographical information for all candidates, along with the lineup of regional vice president nominees.

To make sure that IIE has your correct email address, go to www.iienet.org, select manage your membership.

The following is a brief overview of the GS250 Development and Certification achievements. The G250 has been in development for over 5 years. Flight tests and Certification have been accomplished with 3 planes and over 1300 hrs of testing, subject to the CAAI certification program with FAA & EASA (an EU organization) validation requirements. Final certification is expected in 2011, with entry into service that same year.

The aircraft was put through the rigors of Gulfstream's R&D Acoustic test facility, to study methods of keeping sounds from getting into the plane The integrated test facility runs simulations of all kinds of events since the engineering lab is equipped with avionics and hardware. The lab also has a cabin mockup which is important for getting customer feedback.

The second aircraft program discussed in the meeting was the Gulfstream G650. This will become the largest business jet in the product line. The G650 can transport eight passengers and a crew of four on nonstop legs of 7,000 nautical miles. The G650 is a new design utilizing advanced, proven technology that has been tested extensively. The G650 program has 5 test planes. It will be the fastest civil aircraft, capable of flying 5000 nm at Mach 0.90, and high cruise altitudes of 41,000 to 55,000 feet. It has the lowest cabin altitude (<5000 ft) for its class, which means passengers can be in air for over 14 hours and not feel affected by jet lag. This model has improved leg room with longer seat and window pitch. The structural integrity allows for newer, larger cabin windows.

The G650 is designed with the most advanced cockpit and systems available, as described in the G250 section: PlaneView® II, EVS II and SV-PPD. Fly-by-wire technology allows pilots to transmit control inputs to flight control surfaces electronically rather than mechanically. This system has a 3 axis digital system, 2 flight control computers, and 4 channels. Fly-by-wire has the following benefits: enhanced flight quality handles independent of weight, center of gravity, providing superior flight envelope protection (speed and angle of attack, stall protection at low speed, and buffet protection at high Mach). For safety, the backup flight control system has full capability, exceeding certification requirements. The redundant power systems include dedicated backup batteries for the flight control computers and Electric backup hydrostatic actuators (EBHAs).

The G650 is powered by the new Rolls Royce BR725 engine, which carries all new certifications. The BR725 has higher thrust, better fuel efficiency, quieter operation and less emissions. The design for reliability permits longer maintenance intervals which enable the craft to be in service for 10,000 hours before requiring an overhaul. Gulfstream produces this aircraft with state of the art manufacturing technology in a new facility that features advanced automation and increased use of composites. One example is the bonded fuselage skin panels which has a higher quality skin surface. This composite technology improves strength to weight ratio.

Travis commented that when shopping for an aircraft, the typical customer does not like technology that they are unfamiliar with. This means that Gulfstream is not going to go crazy with a cockpit emulating a science fiction movie. They build redundancy and reliability into the designs. The G650 achieved a 50% reduction of parts from the G550 model through the use of industry standard and common parts.

The G650 is upgraded from the G550 in many ways. The cabin is 14 inches wider than the G550. It has 28% more cabin volume and 30% more floor area. There is a longer seating area, more accessible cabin, and larger main entry door. Gulfstream has trademarked their Cabin Essential™ design guidelines. Cabin systems are not required to meet design or safety requirements as a safety system. Therefore GS is establishing standards for cabin design reliability. One example: the plane seat monitor doesn't work. That doesn't impact flight safety, but it is a customer satisfaction issue.

For more information on all of the Gulfstream business jet products, specifications and technology overviews, visit www.gulfstream.com or call 1-800-810-4853


(l to r) Travis Karp, Sr. Sales Engineer of Gulfstream Aerospace & John Rockensies, AIAA


## Job Opportunities

**Local job positions that may be of interest to IIE members are posted on the Chapter's website at www.iienet.org/long_island**
(See the Chapter's Careers Page for details)
Current Job Posting includes:

**INDUSTRIAL ENGINEER**
JOB DESCRIPTION
A dental/medical manufacturing company located in Melville NY is current seeking an Industrial Engineer to support the company's electro-mechanical assembly, electronic and metal working departments. Strong organizational skills and the ability to communicate effectively are a must. An ideal candidate would have experience in process flow, logistics, Lean manufacturing, work cells, and 5S.

RESPONSIBILITIES INCLUDE:
- Time study
- Production line layout
- Process improvement
- Labor routings
- Maintenance of the manufacturing software data base
- Facilities layout
- Plant engineering
- Building systems

Company: **Air Techniques, Inc.**
Send resume to Susan Bauerlein
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**Engineers Week**
**February 14-20**