



Loran Lines

January 2007

Newsletter of the International Loran Association

Volume 2007-1

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Important news!

There's important news throughout this issue of Loran Lines!

ILA President Langhorne Bond updates members on major progress for Loran. An excerpt:

"... LORAN was the subject of intense debate in the Appropriations Committee and even on the floor of the Senate! I am pleased to report that overwhelming support for LORAN emerged from both Democrats and Republicans and the Congress finally placed full funding for LORAN operations in the DHS budget. This strong Congressional support is a big boost to the continuation of LORAN in the US.

Full text is on page 4. ■

UK to acquire eLoran backup for Satellite navigation systems

Trinity House, the organization which provides marine aids to navigation in England, Wales, the Channel Islands and Gibraltar, recently issued a general request or tender for bids from industry to provide an enhanced Loran (eLoran) system at a site considered suitable to provide adequate Loran coverage of the United Kingdom. This task would include the installation and commissioning of a Loran transmitter to be provided by the General Lighthouse Authority (GLA)

GLA has been conducting extensive investigations into the use of eLoran as a basic aid to navigation and has now expressed its intention to extend this

(Continued on page 3)

DOT, DHS requests public comments on future of Loran

In a notice appearing in the January 8 issue of the Federal Register, the Department of Transportation (DOT), in coordination with the Department of Homeland Security (DHS), has jointly requested public input and comments regarding actions which might be taken affecting the future of Loran in the United States. Future actions may include:

- developing a fully deployed Enhanced LORAN (eLORAN) system
- maintaining Loran as currently configured, or
- decommissioning the LORAN system

Decisions will be based on a consideration of the linked questions:

- Are the present GPS system and other backup systems adequate for the public need for navigation and timing services?
- Will eLoran as envisioned in a future enhanced configuration not only back up GPS but provide complementary services?

Full addresses, contacts for further information, and supplementary information on submissions including the background and purpose of the request can be found in a full copy of the Register notice available at the Coast Guard Navigation Center website <http://www.navcen.uscg.gov/>. See the item Loran FRN Published and click on Federal register notice.

Comments and related material must reach the Docket Management Facility on or before February 7, 2007, and be identified as Coast Guard docket number USCG-2006-24685. Submissions may be made directly at the website, <http://dms.dot.gov/>, by mail, Fax or direct delivery.

The Federal Register is the daily publication of the US government for rules, proposed rules and notices of Federal agencies and organizations, as well as executive orders and other presidential documents. ■

★ ILA36 Convention and Technical Symposium ★

October 14 – 17, 2007, in Orlando, Florida

Be there!

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A complete listing of the Board Membership, addresses, affiliations and phone/fax numbers can be found on the ILA website: www.loran.org

ILA members who have not yet paid this year's dues are asked to do so now. Membership forms can be downloaded from ILA's website:

<http://www.loran.org/Membership/Formindividual.htm>

Please note ILA's web site address: <http://www.loran.org>
and e-mail address: ila@loran.org

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The ILA encourages readers to submit material for publication. Any and all news related to Loran and ILA members is welcome. Send information (with pictures, if possible) to either of the co-editors:

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effort to create not only a basic navigation aid, but also a backup to satellite components of the current Global Navigation Satellite System (GNSS). Depending on the results of the proposed tests and developments, and on consequent discussions and negotiations with other national members of the present European Loran network, it is intended to create the UK contribution to a functional European eLoran service. Present plans envision an operational system meeting the required specifications for a 15-year period with the replacement of the current transmitter some time in 2010.

In moving toward an eLoran-based backup, the GLA has acted on the long-expressed concerns of the navigation community of the hazards of considering GPS as a sole source. GPS and other satellite-based navigation systems, including GLONASS and the emerging Galileo constellation, are equally vulnerable to natural, accidental, or deliberate hostile interference or jamming. Of the backup services possible for GPS, there is now a growing consensus that enhanced Loran (eLoran) provides the best platform on which to create a seamless independent alternative service for position, navigation and timing. Full text of the tender can be found at www.PublicTenders.net (see UK eLoran procurement).

Trinity House is responsible for all general aids to navigation from light-houses to radar beacons. Its involvement in sustaining the continuity and stability of radio navigation aids is a part of its charter to ensure safety of shipping and the well-being of seafarers. Further information about Trinity House can be found at its website:

www.trinityhouse.co.uk ■

GPS Backup: AMA White Paper provides overview of the status of eLoran and its essential role for FAA in a next generation air transportation system.

Under support from the Federal Aviation Administration (FAA), ATO-W Navigation Services, Aviation Management Associates, Inc. of Alexandria VA has prepared a comprehensive survey of the status of the current suite of aircraft nav aids, including augmentations, additions and deletions proposed for the future. Under the authorship of Dr. Robert Lilley, Gary Church and Michael Harrison, the report explores the capabilities, limitations, costs, and vulnerability of the current strategies which are proposed to manage navigation in the National Air Space. With the decision by the FAA to deploy a ADS-B system as a primary means of surveillance, the question of the security of the primary data source for this technology is of initial concern, as is the provision of an appropriate backup capability. As has been pointed out in numerous studies in the past several years, land-based eLoran is the prime candidate, in fact the only candidate, for a seamless backup to all the assets required for an ADS-B system in the event of the failure of satellite-based reference signals.

Loran-C has evolved steadily in the last six years and the reports provide a clear overview of the nature of the enhancements which have given it the capability to provide, in any emergency, a high quality substitute for GPS. Modern avionics realization of a state-of-the-art eLoran receiver provides it with an all-in-view capability that uses every Loran transmitter and provides a composite signal analysis to digitally recover needed position, navigation, and timing information for infrastructures services.

In a recent interview reported in the European Journal of Navigation, Dr. Brad Parkinson, GPS pioneer, pointed out the essential role of Loran as a backup to GPS in the event of deliberate or accidental GPS signal contamination or loss, commenting that "GPS helps Loran ... Loran helps GPS." There is extensive agreement in the technical community that eLoran provides a necessary component for future navigation plans for air, land and sea. It is only in some political sectors that this case must still be made. Efforts to advocate such integration of Loran into the long range planning programs of the future continue to be an urgent action item for all concerned.

The complete report can be found at the ILA website: www.loran.org ■

ILA 36 Convention

The 36th annual ILA Convention and Technical Symposium will be held on October 14 – 17, 2007, at the Embassy Suites in Orlando, Florida. Details and registration information will be available soon. Mark your calendar and plan to attend! As Langhorne Bond indicates in his Members' Letter on page 4, Loran is poised for widespread adoption throughout the world. ■

President's Letter

2007 – The Real Year for LORAN

Greetings to the members of the International Loran Association (ILA) for AD 2007 – the Real Year for Loran.

A year ago I wrote that 2006 was the Year for LORAN. We all anticipated that the final green light for the long term continuation of LORAN in the US would be made in December 2006. Well, the schedule has slipped a few months into early 2007, so I'm now calling 2007 the REAL year for LORAN. Nevertheless, I expect a long term green light early in the year.

The year 2006, as expected, has been a year of remarkable progress for LORAN in the US and around the world.

Let me start with the US Congress. As you know, each year the US Coast Guard, through the Department of Homeland Security, requests operating funds for the coming fiscal year, 1 Oct – 30 Sept. In February 2006 the Coast Guard budget unexpectedly provided funds for "termination" of LORAN. This was in contravention of an agreement in the 2005 Federal Radionavigation Plan (FRP) between the Secretaries of Transportation, Homeland Security, and Defense to **jointly** study the future of LORAN, with the final decision by the Secretary of Transportation. This was stated to ILA-34 by the Coast Guard at Santa Barbara in October of 2005. Many people believe that the Office of the Secretary of DHS was unaware of this agreement because the proposal to "terminate" was subsequently withdrawn.

Nevertheless, the issue persisted during the Congressional hearings on the DHS/USCG budget. For the first time LORAN was the subject of intense debate in the Appropriations Committee and even on the floor of the Senate! I am pleased to report that overwhelming support for LORAN emerged from both Democrats and Republicans and the Congress finally placed full funding

for LORAN operations in the DHS budget. This strong Congressional support is a big boost

to the continuation of LORAN in the US.

As a result of this tangle of miscommunications, a joint task force

... the Coast Guard budget unexpectedly provided funds for "termination" of LORAN.

The eleven-member group unanimously supported continuation of LORAN!

between DOT and DHS was formed to bring it all to a prompt conclusion. Jeff Shane, Undersecretary for Policy of DOT, and Rob Zitz, Deputy Undersecretary for Infrastructure Protection of DHS (and a licensed pilot), head the effort, and USCG Capt. Curt Dubay, formerly head of the Coast Guard Navigation Center (NavCen), heads the staff.

Shane and Zitz decided to form an Independent Assessment Team (IAT) to review everything and make a long term recommendation for LORAN. The Institute for Defense Analysis, a military think tank, was hired to run the project. The eleven-member group was chaired by Brad Parkinson, the

"father of GPS," and included 10 other experts, none with a background in LORAN. The IAT held three days of closed hearings in Washington (ILA testified) and one day at Stanford.

On 13 December Parkinson briefed Shane and Zitz on the recommendation. The eleven-member group unanimously supported continuation of LORAN!

The written report by the IAT, which I expect to be released, is due the first week of February.

The final step, I hope, in this process was published in the Federal Register on 8 January requesting all interested parties worldwide to submit comments on LORAN. I urge all LORAN supporters to submit positive comments, reports, etc. All submissions will be published on line. After eleven days, over 400 comments, the overwhelming number positive, have come in.

Meanwhile, in the Summer DOT Secretary Norm Mineta resigned and has been replaced by Mary Peters of Arizona, former Federal Highway Administrator.

Three important conferences were held in May 2006. The European Navigation Conference, organized by the Royal Institute of Navigation and chaired by David Last, was held in Manchester, England. GNSS backup was the defacto theme, with LORAN much discussed. One delegate was heard to say he thought the conference was to be about satellites, not LORAN.

The annual Radio Technical Commission for Marine Services (RTCM) was held in Newport Beach,

I urge all LORAN supporters to submit positive comments!

(Continued from previous page)

California. I chaired a panel on LORAN; one panelist revealed that the telecom provider Sprint used LORAN to time its networks. Brian Wadsworth of the UK Ministry for Transport endorsed LORAN in a keynote speech.

There was much support for LORAN. I am delighted to report that the RTCM

board voted to support LORAN in response to the Federal Register request for comment. This support from the world's most prestigious marine radio navigation standards association contradicts the US Coast Guard's claim that no GNSS backup is needed for marine safety.

The 2006 ILA Convention was held in Groton, Connecticut, just across the river from the Coast Guard Academy. There was the usual array of excellent technical papers reflecting the continuing technical development of LORAN. We also learned that the UK is going to establish a new, permanent transmitter site to replace the tem-

porary one at Rugby. And Zach Conover of Crossrate described the first thorough (and very positive) market survey for LORAN receivers.

There was a panel on marine navigation safety to discuss the Coast Guards position that, in the absence of PNT by

GPS, mariners could safely revert to "traditional" forms of navigation. A paper by Capt. Bill Brogdon, USCG (ret.), a much-published marine navigation expert, pointed out that traditional navigation, unlike GPS navigation, requires a high level of tactile skills and constant practice, neither of which now exists among the current generation of navigators. Capt. Brogdon also pointed out that traditional navigation required high levels of bridge staffing which no longer exist. In short, reversion to traditional navigation today is unworkable.

... 2006 has been an excellent year for LORAN

A second paper was submitted by Capt. Tom Heinan on behalf of the International Registry of the Marshall Islands, a registry which sets standards for, and inspects, some 5,000 ocean going vessels and has numerous offices worldwide. The Marshall Islands Registry strongly endorsed LORAN as a GPS backup.

The Coast Guard safety office declined to appear on the safety panel.

To summarize, 2006 has been an excellent year for LORAN. We have overcome an unexpected bump in the road, US Congressional support has emerged very publicly, and user support continues to build as more and more users, groups, and governments get the word. The ILA and its friends are in the thick of this struggle and we will see it through to victory now and widespread adoption in the years to come.

Langhorne Bond, President
January 2007 ■

Langhorne Bond honored by RIN award

The Royal Institute of Navigation (RIN) was pleased to confer an Honorary Fellowship on ILA President Langhorne Bond at the Annual General Meeting in October. Honorary fellowship is the highest form of membership in the society and is a recognition by the Council of individuals whose contributions to the society are judged to merit special distinction.

The Award citation reads as follows:

Given in recognition of his past role as Administrator of the US Federal Aviation Administration and his continued influential role worldwide in the formation of national and international policy not only in aviation.

Of a membership of over 3400, there are at present only 24 Honorary Fellows including the Patron of the Society, HRH The Duke of Edinburgh.

At the same meeting, Dr. Abbas Mohammed, ILA Member, was recognized for his contributions to navigation, in particular to signal processing techniques that have enhanced the capability of Loran-C, and he was made a Fellow of the Society. ■



Langhorne Bond receives his award of Honorary Fellowship in the Royal Institute of Navigation from HRH the Duke of Edinburgh at the Annual General Meeting in London.

Walter Nelson Dean 1919 – 2006

Walt Dean was born in Brooklyn NY on January 14, 1919. He attended Columbia University where he earned the Bachelors and Masters Degree in Electrical Engineering.

After graduation in 1941 he worked during the war at Sperry Rand where he was involved with the Coast Guard on classified government projects that eventually lead to the development of the Loran navigation systems which was central to his professional career. He married Marjorie Ball in 1946. In 1963 he moved to a job with Magnavox in Ft Wayne IN. and subsequently to Torrance CA. In 1978 he formed his own consulting company. In 1982 he joined Arnav, a spin-off from Morrow Electronics as smaller Loran receivers became available for aircraft, finally moving on to Compix in 1986. Marjorie died in 1990. Walt married Shirley Mize in 1991 and continued with various projects at Compix until 1994 when they felt it was time for a real retirement and the chance to enjoy travel. Shirley passed away February 2006.

Walt Dean was active in the International Loran Association (ILA) from its creation in 1972 when it was originally named the Wild Goose Association. He was one of the founding members and continued on the Board of Directors until 2000. During that long period of essential service to Loran and the ILA he served as President in 1986-87 and at various times was called upon to be active in the posts of Vice-President, Treasurer and Secretary. At the Nav99/ILA28 Joint Conference with the Royal Institute of Navigation in London in November 1999, Walt's continuing service to the ILA was further recognized with an Outstanding Service Award.

His work on both the scientific and engineering aspects of the development of Loran and Loran networks resulted in his award in October 1980 of the Medal of Merit of the Wild Goose Association.

Acknowledging his many lasting contributions to the development and fostering of Loran, contributions which significantly influenced the evolution of radio navigation toward the Loran Radio Navigation System

now operational over the world, the citation goes on to state:

"In the early days of Loran C, Mr. Dean was responsible for transmitter design and construction for station installation and for major portions of system field testing. This work included the first Loran-C chains on the Eastern Seaboard of the United States, the Mediterranean and North-east United States. . . . His work has been most thoughtfully and carefully documented in technical papers, reports and presentations."

His service to Loran and the Association which has earned him the title among his friend and associates as the father of modern Loran will be long remembered.

Survivors include his daughters Marilyn Leggett and Cynthia Dean Nelson, his brother Robert, four grandchildren and five great-grandchildren.

Walt died August 3 and a memorial service was held on August 9, 2006, at the Tualatin (Oregon) Presbyterian Church. ■

Memories of Walt Dean

Loran Lines and the International Loran Association Operations Center have received many communications with expressions of sadness and a sense of loss at Walt's passing. They contained many stories, shared memories and an appreciation of his talents in many areas. We offer here a few excerpts from family, friends and colleagues

From daughter Cindy Dean Nelson:

After retirement he and Shirley enjoyed travel for its own sake. I think he checked off all the countries he had missed during his professional career. Dad had several hobbies that he began as a child and continued through out his life. He loved photography and I don't think any of us can picture him without his video camera or in his earlier days a camera around his neck. He loved gardening and especially flowers and took hundreds of pictures of flowers. He was also an avid stamp

and coin collector. He tried to get Marilyn and I interested and we each had little sets to get us started but neither of us stuck with it.

Beside his love for his family, he was very involved with his community. As well as many professional organizations he belonged to many civic organizations. I found a letter thanking him for almost single handedly getting a Public Television Station set up in Ft Wayne. Another thanking him for going to Portland State to be a mentor to high school students interested in Science and Math.

Recently we asked him if he need help at home and he would say no, no I'm doing fine. I don't fall and when I do I get right back up. That was how Dad lived his life. It says it all.

from Dr. Durk van Willigen, President of Reelektronika, The Netherlands:

It is sad news that Walt Dean died. I used his papers when doing my thesis

on Loran-C receivers. The subjects he raised, after 25 years, are still today's topics of interest like ECD variation in overland propagation (1979) and the Loran-C tests in New York (1980). His role in Loran-C and his friendly attitude will be remembered by many."

from Robert Lilley, Secretary and Ellen Lilley, Executive Director International Loran Association:

Ellen and I worked with Walt during most of our years associated with the International Loran Association. We came to know him as truly a professional and a gentleman and we shall certainly miss him.

We hope that it is some comfort to you that his friendship and his contributions to the Association and to the success of the Loran Navigation system remain fresh in the minds of us all, though we regret that they are now, rather suddenly, his complete works.

(Continued on next page)

From John Illgen, Northrop-Grumman Simulation Technologies:

When I started my career, Walt was at Magnavox in Ft. Wayne Indiana. I was a young kid who took his first Business Trip in 1968 to discuss a highly classified project at that time called Yankee Clipper. I was simulating the process of modulating the Loran-C carrier for communications and needed his expert advice on selecting an alternative that would not interfere with navigational accuracy. We did a series of experiments on the West Coast looking at the poten-

tial use of Loran-C for harbor and harbor entrance navigation.

From Rick Crall, President of Compix Incorporated of Tualatin OR:

I met Walt about the time the Tualatin Presbyterian Church was formed. I quickly realized we had a lot of professional interests in common - he was still at ARNAV, a company that manufactured Loran receivers, and our company was in the midst of providing some aerial mapping software that relied on data from those receivers.

Over the next couple of years in the late 80's Walt provided numerous pieces of help and advice. Walt was semi-retired at that point. Having formerly been engineering vice-president for ARNAV, Walt enjoyed a kind of engineer-emeritus status and had his own small office at ARNAV, where their engineers as well as ours, frequently called upon him for help and he was still active as a worldwide consultant for Loran system performance issues and specifications. ■

Awards

Medal of Merit

Robert Wenzel

Robert J. Wenzel is cited for his continuing dedication and contributions to the development, installation and improved operation of Loran-C service for over 30 years. After receiving a Masters Degree in Electrical Engineering, Bob Wenzel directly contributed to the design and installation of substantial improvements to Loran-C transmitters and timing equipment while assigned at the US Coast Guard Electronics Engineering Center. Next he was responsible for technical oversight of Loran-C operations in the Western Pacific, achieving near perfect performance from aging equipment. He became a strong advocate of cost reduction and performance improvement programs, encouraging development of automation, redundancy and minimum personnel requirements. Since retirement from the US Coast Guard, he has continued to apply his knowledge and technical skills to improvements to Loran-C service, advocating eLoran services such as UTC synchronization, ASF data improvements and ninth pulse communications.

John M. Beukers Award for Technical Innovation

Dr. Benjamin Peterson

Dr. Benjamin Peterson is cited for his diligence and dedicated engi-

neering efforts in the development of the 9th pulse method of communication using Loran-C pulses. The needs of a diverse range of user applications, concern for cross rate interference, need to provide accommodation for legacy users, and the demand for extremely high continuity of service created considerable technical barriers to a successful design. Despite these conflicting demands Dr. Peterson has laid the groundwork for an extremely effective communications service on Loran-C signals

Presidents Award

Albert Frost and Otis Philbrick

Albert Frost and Otis Philbrick have brought creativity and professionalism to their nine years as Co-Editors of Loran Lines, the official publication of the International Loran Association. Under their leadership, Loran Lines has consistently and accurately reported news of technical, management and policy events relating to Loran and to positioning, navigation and timing in general. Their efforts have enhanced significantly the International Loran Association's objective of informing and educating users, providers and governments throughout the world.

2005 Technical Symposium

Best Paper Award

Thomas Celano, Timing Solutions; Michael A. Lombardi, NIST; and Edward D. Powers, USNO

The Potential Role of Enhanced Loran-C in the National Time and Frequency Infrastructure presented at ILA 34, October 2005

William L. Polhemus Best Student Paper Award

Wouter Pelgrum, Technical University of Delft

Noise – From a Receiver Perspective Presented at ILA 34, October 2005

Outstanding Service Awards

Dr. Robert Lilley

For his contribution to Loran and the Association as General Chair of the International Loran Association 34th Annual Convention and Technical Symposium 2005.

Gregory A. Johnson

For his contribution to Loran and the Association as Technical Chair of the International Loran Association 34th Annual Convention and Technical Symposium 2005.

Charles Schue

For his contribution to Loran and the Association as Sponsorship Chair of the International Loran Association 34th Annual Convention and Technical Symposium 2005. ■

Positioned for the future



Innovators in advanced navigation and communication concepts
Leaders in high power, low frequency solid-state transmitter technology



eLoran Monitor Receiver

The Accufix eLoran Monitor Receiver is designed for use in monitor and control of Loran systems. The unit is designed to support legacy Loran-C systems while featuring the processing capabilities for tomorrow's eLoran. Housed in a 2U 19" rack module, the powerful DSP platforms are flexibly controlled via software commands.

eLoran Antenna

The eLoran sensor integrates GPS, Loran, and their augmentation systems such as WAAS in a single package. A clear benefit is the two independent navigation systems with dissimilar failure modes. A single cable provides power in and data out. In addition to precision navigation from the WAAS/GPS, the eLoran outputs true TD data. The crossed loop antenna also provides compass functionality with true heading accuracy within 1 degree, even while stationary.

Loran Signal Generator

The LS1000A is a precision Loran Signal Generator that generates a simulated Loran-C signal. Pulse and group parameters that can be controlled include the Group Repetition Interval, ECD, and phase code. In response to a 5MHz input, the unit will output a single rate stream of Loran pulses on either or both of two rear panel connectors. Additionally, the output can be automatically synchronized and/or phase delayed to an external signal such as Phase Code Interval (PCI), Local Interval (LI), or Loran-C Time of Coincidence (TOC.)



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