



Loran Lines

October 2004

Newsletter of the International Loran Association

Volume 2004-2

Highlights:

Executive Committee Changes

— page 1

ILA 33 in Tokyo

— page 1

eLoran

— page 3

ILA Elections

— page 5

Letters

— page 6

Ben Peterson Award

— page 7

ILA Board of Directors approve changes in the membership of the Executive Committee.

IN VIEW OF THE DECISIONS by the DOT anticipated in the near future, it has been considered imperative that ILA prepare for these actions and position itself for growth in international membership and for increased interaction with other related organizations. It has been proposed and approved that the following changes be made in the membership of the Executive Committee. David Last would assume the position of Past President and Langhorne Bond would become Vice President. The Committee would then be composed of Linn Roth, Langhorne Bond, Erik Johannessen, David Last and Robert Lilley. Gerhard Offermans who received the next highest vote in the recent election would become a member of the Board.

Because of the increasing amount of Loran activity in Washington it was considered important that an ILA officer be located near Washington and have personal access to the highest level government officials. Langhorne Bond has these unique qualifications both in the area of past government service and as a vocal and informed advocate of Loran. Dr. Last was fully supportive of this change and both will continue to make major contribution to the future of Loran and the ILA.



Sakura Tower

ILA 33 in Tokyo to open with Loran Forum

CONFERENCE CO-CHAIRS Erik Johannessen and Tamotu Ikeda have announced the organization of a Loran Forum for Monday, October 25, preceding the two-day Technical Symposium of the 33rd Annual ILA Convention. The purpose of this forum is to provide an executive level view of Loran's role in future information infrastructures of position, velocity, and time. The Forum is split into two parts. The first part is a series of

three presentations that address the development of radionavigation systems in Japan, Europe, and the United States. These presentations will focus on the present state of radionavigation services. Topics to be discussed include the historical and present role of Loran, adoption of the Global Positioning System (GPS), emergence of new GNSS systems such as Quasi Zenith and Galileo, and studies on vulnerability and integrated navigation. The second part includes two presentations that examine what the likely future mix of services will be and

how Loran can contribute to meeting those requirements. These papers will focus on technical (both system and user), economic, political, and regulatory challenges that are being or need to be solved in order for a future Loran to viably serve a role. The format will include a brief question and answer period at the end of each presentation plus a general question and answer session at the end.

(See Forum program on page 3)

★ **ILA33 Convention and Technical Symposium** ★

October 25 – 27, 2004, in Tokyo, Japan

Be there!

Loran Forum Program
October 25, 2004
Challenge to a New Radionavigation System

Welcoming Speeches

- 13:00 – 13:05 Opening Speech
13:05 – 13:10 Speech by representative from sponsor
Mr Yoshiyuki Chibiki, Director General of Traffic Department, JCG
13:10 – 13:20 Speech by President, ILA *Dr. G. Linn Roth*

Forums

- 13:20 – 13:45 Present situation of Radionavigation in Japan
13:45 – 14:10 Development of Radionavigation in USA, *Mr. Langhorne Bond*
14:10 – 14:35 Development of Radionavigation in Europe
14:35 – 14:50 Break
14:50 – 15:15 A picture of the future of Radionavigation, *Dr. David Last, Wales University, UK*
15:15 – 15:40 Challenge to a GPS back up system architecture, *Mr. Mitch Narins, General Project Manager, FAA, DOT, USA*
15:40 – 15:50 Open Question Session
15:50 – 16:00 Closing Remarks and Summary

MARK YOUR CALENDAR for ILA 33
Tokyo October 25 – 27 2004

Studies project a new era for eLORAN

IN A RECENT ARTICLE in the August 2004 issue of Avionics Magazine, Linn Ross, President of ILA, reports on the status of studies by the US DOT, FAA and USCG connected with the possible adoption of enhanced Loran as a backup to GPS. In order for future navigation and landing procedures to be consistent it was necessary that Loran capabilities be enhanced to meet the required navigation standards for non-precision aircraft approach (NPA). In addition it was also necessary that Loran meet the maritime requirement of the U.S. Coast Guard in terms of harbor entrance and approach (HEA) capability. Several agencies evaluated the precision of enhanced Loran and in March 2004 stated that Loran could indeed satisfy the NPS and HEA requirements and in addition provide timing and frequency services for the United States.

Suggestions for future consideration include the possible collocation of GPS augmentation and Loran facilities. The report also identifies Loran as a backup source for automatic dependent surveillance-broadcast (ADS-B). In national use of ADS-B, aircraft or other vehicles or obstacles broadcast on a regular basis a message which includes their position (latitude, longitude, altitude) and velocity. This broadcast information can be received by other aircraft or systems and be used in a wide variety of applications. While current surveillance systems must measure vehicle position the ADS-B system provides accurate position reports broadcast by each vehicle.

Noting that significant work on integration of Loran and GPS is underway for all areas of application, aircraft, marine and timing, it has been demonstrated that such sensor fusion can provide better accuracy, availability and integrity than any one technology.

Royal Institute of Navigation urges the continuation of Loran as a backup to satellite navigation systems

CITING THE FINDINGS of the Volpe report and the demonstrated vulnerability of the inherently low-level signals from satellite navigation systems such as GPS, GLONASS and, in the future, Galileo. Navigation News, the magazine of the Royal Institute of Navigation (RIN) urges in the March-April 2004 issue that Loran in Europe be maintained to provide a terrestrial-based backup system. The robust signal provided by Loran and the increased precision provided by system updates as being currently carried out in the USA make it the most suitable candidate as a second source for position information. The article concludes "the contribution to the safety of navigation would far outstrip the modest cost of such action."

ILA Election Returns Linn Roth to Presidency for 2005

Board members elected this year are:

G. Linn Roth, Ph.D., FRIN
(roth@locusinc.com)

Linn Roth is the current President of the International Loran Association (ILA) and was previously President from 1998-2000. He has been a member of the ILA since 1990, has served on the ILA's Board of Directors since 1995, was ILA Vice President in 1996, and is currently Vice-Chairman of the ILA's global augmentation for satellite systems (GAUSS) initiative, which facilitates development of international Loran standards. Chairman of the ILA's Congressional Liaison Committee since 2000, he has also been active in supporting international cooperation on Loran and multinational participation in the ILA. He received the ILA's Medal of Merit in 1998, President's Award in 1994, and Outstanding Service Award in 2001. Linn is also a member of the Institute of Navigation (ION) and Fellow of the Royal Institute of Navigation (RIN) and president of Locus, Inc. (www.locusinc.com) of Madison, Wisconsin since 1990.

Langhorne Bond

Mr. Bond has operated Bond and Associates in Washington, D.C. since 1986, representing a number of aviation-related clients. He has served in a variety of federal roles, including Special Assistant to the Undersecretary of Commerce for Transportation and later as Special Assistant to the Secretary of Transportation. He participated in the process during which the DOT was formed, and later served as DOT's Assistant Administrator for Public Affairs, Urban Mass Transit Administration. He is a former Administrator of the U. S. Federal Aviation Administration, appointed in 1977 and serving through 1981.

James T. (Jim) Doherty
(JDoherty@ida.org)

Jim retired from the U.S. Coast Guard at the rank of Captain in 1999; his last duty assignment was Commanding Officer of the Navigation Center in Alexandria, VA. Under his leadership, the Maritime Differential GPS service achieved full operational capability, the Nationwide DGPS expansion was initiated, and the first phase of Loran recapitalization was begun. He is currently a Senior Analyst at the Institute for Defense Analyses, Alexandria, VA.

Tamotsu Ikeda (ikeda774@oki.com)

Mr. Ikeda graduated in electrical engineering from Waseda University, and in 1973 began work with the Japan Coast Guard (JCG). He held positions in the office of the Director of Communications, and the divisions of Engineering and Radionavigation. He retired from the JCG in 2002. Mr. Ikeda is presently with the SENA company and the OKI Electrical Company. He is presently serving on the ILA Board of Directors and is co-chairman of the 2004 Convention and Technical Symposium.

Douglas S. Taggart
(dtaggart@overlooksys.com)

Doug Taggart, USCG CDR retired, is a 1976 graduate of the U.S. Coast Guard Academy with a BSEE and a 1980 MSEE degree from Purdue University. He is currently a Senior Systems Engineer with Overlook Systems Technologies, Inc. of Vienna, Virginia, supporting the Office of the Secretary of Defense dealing with GPS Policy and Program-matics.

Mr. Taggart has over twenty-six years of professional experience in the field of radionavigation. He was active in the International Loran Association's predecessor, the Wild Goose Association, going back to 1981. He is currently the Maritime Representative on the Council of the Institute of Navigation (ION).

ILA 33 Banquet Speaker to report on the Japanese Super-computer "Earth Simulator"

For the third year the Earth Simulator super computer, built by NEC and installed in 2002 at the Earth Simulator Center In Yokohama, Japan, has retained its title as number one in the annual listing by top500 (www.top500.org). With the cooperation of Mr. Hajime Kinoshita, Managing Director of JAMSEC (Japan Agency for Marine-Earth Science and Technology). Those attending the ILA 33 banquet on October 27 will be introduced to the worlds fastest computer. Demonstrating a standardized benchmark performance of 35.86 trillion calculations per second, it once more has been ranked first in the world of high performance computing. The measure used in making these comparisons is the numerically intensive Linpack benchmark test, devised by Dr. J. Dongarra (University of Tennessee). It evaluates the processing performance as a computer program solving a large scale linear equation.

Earth Simulator has been jointly developed by the ES Center, the Japan Atomic Energy Research Institute and JAMSTEC, and was placed in operation in March 2002. Its basic mission is to investigate global environmental problems such as unusual atmospheric phenomena, tectonic activities with a high degree of precise simulation and global warming.



NATIONAL BOATING FEDERATION

LEGISLATIVE DIRECTOR EARL M. WAESCHE
819 MIDSHIP COURT
ANNAPOLIS, MD 21401-7380
Home: (410) 573-1494 • Fax: (603) 806-5900
emwaesc@erols.com



June 3, 2004

The Honorable Norman Y. Mineta
U. S. Department of Transportation
400 Seventh Street, SW
Washington, D.C. 20590

Dear Secretary Mineta:

I am writing on behalf of the National Boating Federation's (NBF) 2,000,000 members nationwide to urge that you promptly announce a decision by the Department confirming the continuation of Loran as part of the long-term navigation system mix necessary to meet our nation's transportation safety and security goals.

As you know, other marine users and related groups, including the United States Power Squadron (USPS) have also continually expressed strong support for Loran. We are delighted that work has progressed to modernize the Loran system and improve Loran technology through a collaborative interagency working agreement between the Federal Aviation Administration (FAA) and the U.S. Coast Guard (USCG), even though primary responsibility for marine matters has transferred from the Department of Transportation (DOT) to the Department of Homeland Security (DHS). This ongoing and cooperative modernization effort, for which more than \$120 million has been invested, underscores the importance of Loran as an important national asset.

We urge you to make a prompt decision and announcement confirming the long-term continuation of Loran. It is a decision that is long-overdue and has repeatedly been promised in recent years, only to be delayed pending further evaluations, studies and reports. For our members, improved Loran can serve as a most suitable complement and important backup to satellite technology.

Three years ago, you indicated a Loran evaluation was nearing completion and a decision about Loran was anticipated by the end of 2002, yet no decision has ever been finalized. We have seen yet another DOT report, released in January 2004, entitled: *Radionavigation Systems: A Capabilities Investment Strategy*. That report states the expectation that technical studies done by the FAA and the Coast Guard on new Loran technology will validate that Loran will provide capabilities to support critical aviation, maritime, timing, and other national infrastructure requirements. We understand the FAA /USCG technical Loran evaluation has now been completed and submitted to the DOT, along with favorable cost/benefit findings resulting from a recent Loran analysis by the Volpe National Transportation Systems Center.

All of this work has provided added and convincing evidence that Loran has an essential long-term role in our nation's navigation system mix because it a proven, reliable, cost-effective multimodal backup to satellite navigation. Your strong support for Loran is warranted from any important vantage point, whether it is transportation, navigation safety, national security or the taxpayer's perspective.

On behalf of all our members, I urge you to make an announcement confirming the long-term continuation of Loran at the soonest.

Sincerely,

Earl M. Waesche

International
Loran
Association

741 Cathedral Pointe Lane Santa Barbara, CA 93111 USA
ph: 805.967.8649 fax: 805.967.8471 email: lla@loran.org www.loran.org

September 2004

Dear ILA Member,

Secretary Mineta has recently forwarded identical letters regarding the Loran decision process to several members of Congress, and below is his letter to Representative F. James Sensenbrenner, Jr., Chairman of the House Judiciary Committee. I am pleased to report that Congressional Loran support is strong and bipartisan during this FY2005 budget period, and we fully expect that support to continue.

As you are well aware, the Department of Transportation (DOT) has continually maintained that the Loran decision was to be based on the outcome of the recent technical and economic evaluations, and if Loran met those criteria, it would be endorsed as part of the Nation's long-term radionavigation mix. In this context, I note several key issues addressed by Secretary Mineta in his Congressional letter. First, the studies were "key to making an informed and unbiased technical and cost-benefit studies were positive. Lastly, "a decision will be made soon" on Loran.

Since the DOT has now acknowledged that Loran is included in the US long-term radionavigation mix, I am confident that Loran will be a policy statement in the near term.

Respectfully,



G. Linn Roth, Ph.D., FRIN
President



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

August 19, 2004

The Honorable F. James Sensenbrenner, Jr.
U.S. House of Representatives
Washington, DC 20515

Dear Congressman ^{JFM:} ~~Sensenbrenner~~:

Thank you for your letter of May 20, cosigned by your congressional colleagues, supporting the continuation of Loran as part of the long-term navigation system mix necessary to meet our Nation's transportation safety and security goals. I share your view regarding the importance of arriving at a decision concerning Loran's role as part of the Nation's long-term radionavigation system mix.

Given a concern in some quarters that Loran would not meet the requirements of its primary intended beneficiaries, specifically the aviation, maritime, and timing communities, at the end of 2002 the Department of Transportation (DOT) Position, Navigation and Timing Executive Committee (POS/NAV EC) initiated two studies, one technical, the other a benefit-cost analysis, to answer critical questions that were key to making an informed and unbiased decision on the fate of Loran. These questions were:

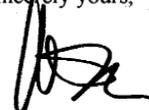
- Can Loran meet aviation Non-Precision Approach (NPA) requirements?
- Can Loran meet maritime Harbor Entrance and Approach (HEA) requirements?
- Can Loran meet timing and frequency requirements?
- Can Loran meet all requirements in a cost-beneficial manner?

The required reports were delivered on time to DOT at the end of March this year. As you indicate in your letter, both the technical and the benefit-cost studies had favorable findings. The reports were distributed for review by interested agencies. The results of the reports were also formally presented to the POS/NAV Working Group for review, comment, and briefing up to working group principals on the POS/NAV EC. The POS/NAV EC met in early June to consider the findings of these reports. The POS/NAV EC will shortly deliver their recommendation to me concerning Loran as part of the Nation's long-term radionavigation infrastructure.

Please be assured that a decision will be made soon concerning Loran's role as part of the Nation's long-term radionavigation system mix.

An identical letter has been sent to each cosigner of your letter. If I can provide further information or assistance, please feel free to call me.

Sincerely yours,



Norman Y. Mineta

Ben Peterson receives US Coast Guard Award for Technical Innovation

Dr. Benjamin Peterson and the USCG Loran Support Unit Differential Loran Team have received a Capt Niels P. Thomsen Innovation Award for 2004. The Thomsen Awards have been established to recognize the efforts of individual U.S. Coast Guard members or teams who have created or implemented innovative solutions to Coast Guard challenges. They are named in honor of Capt Niels P. Thomsen who invented the chain-stopper which is used by Buoy Tenders to safely secure and release the chain

and sinker for buoys, thereby preventing accidents and injury to personnel. These awards are made in four categories: Administration, Training and Support, Operation and Readiness, Science and Technology, and Management. Dr. Petersen (Capt USCG, ret.) is a member of the ILA Board of Directors.

Loran has been recognized as the best single system to act as a backup in the event of any interference or disruption of GPS services. However, the traditional maritime accuracy of Loran does not meet the Harbor Entrance and Approach (HEA) requirement, which has been set at 20 meters. It was apparent that Loran must be improved in

some way to meet this criteria for acceptance as a back-up to satellite based navigation systems. The technology which Dr. Petersen and his colleagues have used to achieve this goal has involved shore-side monitors to collect GPS signal correction data. This information is relayed to area shipping by imposing it as an additional modulation on the existing Loran signal. This differential correction significantly improves the value of enhanced Loran as a navigation aid and provides the US Coast Guard Maritime Domain Awareness units and other users with an accurate alternative navigation aid.

Positioned for the future

Innovators in advanced navigation and communication concepts

Leaders in high power, low frequency solid-state transmitter technology



Accufix 7500 Transmitter Control System (TCS)–

a new digital control subsystem for the Megapulse transmitter family. Designed for automated, unattended operation, the TCS provides a graphical interface with touch-screen control to permit local operators to observe system status, interact with the various control modes, and perform maintenance operations. Benefits include dynamic timing and pulse shape control, enhanced robustness, flexible architecture, and lower cost of ownership.



Megapulse

101 Billerica Avenue
4 Billerica Business Center
North Billerica, MA 01862
ph 978.670.9960 fax 978.670.3776
www.megapulse.com



Loran Receivers for Time, Frequency and Navigation Applications

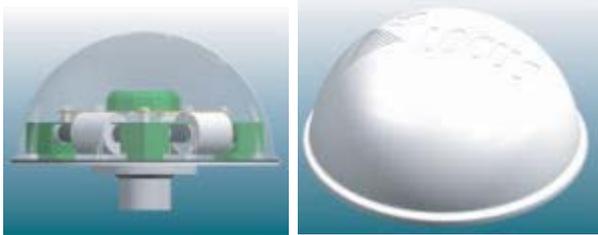


- All-in-view station acquisition/tracking
- 12 chain, 40 station capabilities
- Adaptive interference cancellation
- E-Field or H-Field antenna operation



- NMEA 0183 output messages
- Cesium-like (Stratum 1) frequency performance
- Independent UTC source
- Time and frequency outputs

H-Field Antennas for Time, Frequency and Navigation Applications



Locus H-Field antenna shown in new radome enclosure.

- P-static immunity
- Small form factor
- No ground required
- Penetration into non line-of-sight areas
- Can be integrated with GPS into single unit for a comprehensive time, frequency and navigation solution

Industrial Radios for Demanding Applications



OS2400-HSE

- 20+ mile range
- 11 Mb/s over the air
- 802.11b compatible
- Ethernet
- Best industrial 802.11 solution
- 3-year warranty
- Applications include security, cameras, factory/building automation, industrial LAN/WAN



OS2400-E/STE/485/OF

- 16 mile range
- Extensive networking capabilities
- Ethernet, serial-to-Ethernet, serial
- Most robust solution for difficult environments
- 3-year warranty
- Applications include remote monitoring, oil/gas, water treatment, factory, SCADA