Loran Lines

April 2006 | Newsletter of the International Loran Association | Volume 2006-1

Highlights:

Norway to continue operation of Loran-C stations

The Norwegian Ministry of Fisheries and Coastal Affairs has announced that operation of the four Norwegian Loran-C stations of the NELS network will continue at least through 2006. The stations involved are at Værlandet, Bø, Berlevåg and on the island of Jan Mayan. Their locations are shown on the map on page 4. The Bø Chain (GRI 7001) comprises Bø (M), Jan Mayen (X) and Berlevåg (Y). Værlandet is (Y) in the Sylt chain (GRI 7499). The Edje Chain (GRI 9007) includes Jan Mayen (W), Bø (X) and Værlandet (Y)

An earlier declaration of the Norwegian government to withdraw from the NELS cooperation agreement had suggested that these stations would cease operation on December 31, 2005. With the growing recognition that satellite systems like GPS and the planned Galileo constellation need Loran as a secure terrestrial backup, considerable concern was expressed in many quarters that loss of these stations would eliminate Loran and Eurofix capabilities at a critical time in the formation of the European Radionavigation Plans.

As explored in detail in the Case for Loran recently prepared by the ILA Board

(Continued on page 4)

ILA Board report summarizes the case for Loran

Acting on concerns expressed by ILA members on the persisting areas of opposition in the USA and in Europe to continued support of Loran, an ad hoc committee of Board of Directors members was organized in October 2005. Their mission was:

- to review the current status, achievements and performance of eLoran as it has evolved in the last decade, and
- to present its state-of-the art capabilities in a concise form to be communicated to appropriate administrators, agencies, and legislative bodies

A significant enhancement in Loran's capabilities for timing, navigation and position finding has been demonstrated and the BOD was felt it was critical at this time to collect and summarize the case for Loran to serve as a terrestrial-based second source available and qualified to back up any or all satellite based systems.

The Case For Loran

Detailed studies in the USA and Europe have shown clearly that Enhanced Loran (eLoran) will be the principal internationally-recognized backup of GNSS position, naviga-

(Continued on page 3)

Solar Wind Data users urged to Contact NOAA

Currently there is no plan in place to replace NASA's Advanced Composition Explorer (ACE) satellite when its instruments fail. Since this is the only source of real-time solar wind data, those using this data and products derived from it are urged to communicate to NASA their interest and views on the need to provide a follow-on facility when ACE fails. More background information can be found at the National Weather Service (NWS) web site http://www.weather.gov/os/space. Comments can be addressed to solar.wind.comments@noaa.gov not later than May 18.

ILA35 Convention and Technical Symposium

October 23 – 25, 2006, in Groton, Connecticut

Be there!

International Loran Association

Board of Directors and Committee Chairs — 2006

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Secretary: Robert W. Lilley
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A complete listing of the Board Membership, addresses 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**

Wire transfers received by the ILA Operations Office do not contain information about the sending party. As a consequence, the Center does not know whom to credit with the payment.

When paying by wire transfer, please notify the Operations Center by e-mail or by FAX that a transfer is on the way, along with the amount and what it is for.

If you have multiple addresses or are making a move, please notify the Ops center by e-mail, fax, or phone when the address change is effective.

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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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The case for Loran *(continued from page 1)*

tion and timing services for safety and national security:

In the USA:

- In 2001, the Department of Transportation's Volpe Transportation Systems Center reported: "Backups for positioning and precision timing are necessary for all GPS applications involving the potential for life-threatening situations or major economic or environmental impacts." They recommended continuation of the Loran-C modernization program.
- In 2004, the Department of Transportation's Navigation Task Force Report concluded: "If Loran can meet requirements for non-precision approach for aviation users, harbor entrance and approach for maritime users, and improved performance for time and frequency users, and is cost effective, Loran should be included in the future navigation mix."
- In 2004, the Federal Aviation Administration concluded: "a modernized Loran system (e-Loran) could satisfy the current Non-Precision Approach, Harbor Entrance and Approach, and timing/frequency requirements in the United States and could … mitigate the … effects of a disruption of GPS services."
- In 2005, authors at the US National Institute of Standards and Technology and the US Naval Observatory identified e-Loran as "the best available backup source to GPS for precise time synchronization … and frequency control in the United States."
- During the past seven years, the United States has funded e-Loran testing and development, and modernization of its 24 Loran transmitting stations, with an investment of $140M. Funding continues for e-Loran testing, development and installation as well as further modernization of six Alaskan stations.

In Europe:

- In 2004, the Helios Technology study for the European Radio Navigation Plan reported to the European Commission: "Loran-C is the only real stand-alone alternative to satellite radio-navigation services for many market sectors (including maritime, land and timing). It delivers 22% of the policy benefits for only 4% of the annual total operating cost."
- In 2004, France decided to keep Loran-C available at least until 2015, to continue to operate its own stations, to support the station in Ejde (Faeroes), and to loan a transmitter to the UK for its new Rugby station.
- In 2005, the UK Department for Transport recognized "Loran's indispensable role complementing GNSS as the central tool in delivering e-navigation; Loran's value in permitting the accelerated phase-out of traditional aids to navigation; and the expected confirmation … of Loran's role as an essential component in the Galileo programme."

In Asia:

- The Far East Loran Service (China, Japan, Korea and Russia) has upgraded Loran-C timing control and service, and has stated that service will continue for the foreseeable future. China has successfully completed testing Eurofix service.

In the Middle East:

- In 2005, Saudi Arabia has introduced Eurofix on its Loran-C service throughout the Kingdom, will add a fourth transmitting station in 2006, and is considering timing service upgrade in the near future.

MEMBERSHIP

NOW is the time to renew your membership! There is an on-line membership form at www.loran.org for your convenience. Renew your own membership or encourage your corporate member to renew and include you!

PLEASE use this secure online method if at all possible to save time and cost for the ILA. Of course you may print the on-line form and fax or mail it back to the ILA Operations Center if you wish to use alternate forms of payment. Please remember that wire transfers require prior approval from the Operations Center and an additional fee.

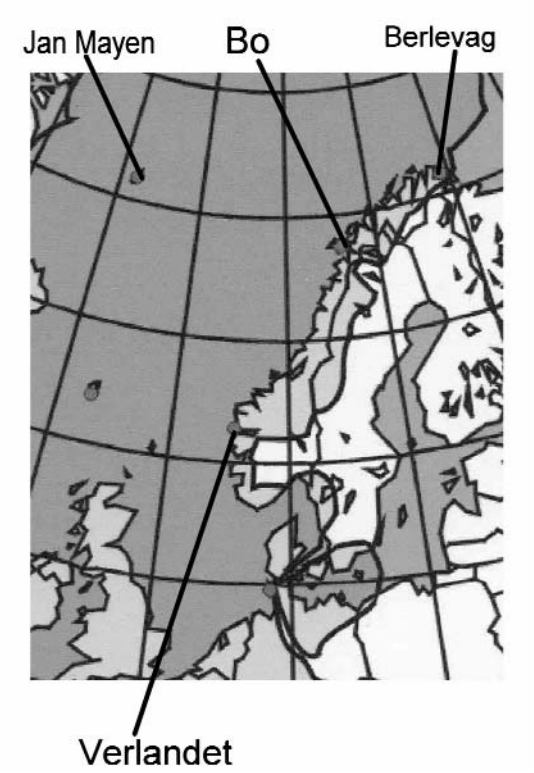
Norway *(continued from page 1)*

of Directors of ILA (page 1), enhanced Loran could provide an alternative and in many cases an equivalent service to that afforded by the satellite systems while lacking their specific vulnerabilities to accidental or deliberate interference and lost of service.

It is expected that the forthcoming European Radio Navigation Plan (ERNP) will recognize the necessity for a backup facility. In the face of the urgent need to maintain an appropriate Loran capability, a significant effort was mounted by the navigation community in the UK and France, other members of the EC, the Royal Institute of Navigation (RIN) and the International Loran Association (ILA), advocating the continuation of Loran services by Norway. Russia has also expressed interest in continued Norwegian operations in cooperation with the Russian system, Chayka.

These efforts have achieved a delay in the termination of Norwegian participation in providing Loran service in the North Sea. However the present situation is a holding one and there is need to persuade Germany that support for their station should be continued. France will continue operations until 2015, and the UK as reported in a previous issue of Loran Lines has started trial operation at its station in Rugby.

The decision in 2006 with respect to the selection of a backup system in the context of the European Radio Navigation Plan will have a decisive impact on the continuation of multi-national participation in a coordinated Loran network. As in the United States, the case for Loran must be clearly presented to the agencies and committees involved with particular emphasis on the current enhanced capabilities of eLoran for timing, position finding and navigation.



NELS network station locations

Michael Eaton awarded Order of Canada

The Governor General of Canada announced on October 29, 2004, the appointment to membership in the Order of Canada of R. Michael Eaton of Dartmouth, Nova Scotia, for his outstanding contributions to the advancement of hydrography in Canada.

The Order of Canada is Canada's highest honor with membership awarded to those who exemplify the Order's Motto "Desiring a better country." It was established in 1967 to recognize the lifetime contributions made by Canadians who have made a major difference in Canada.

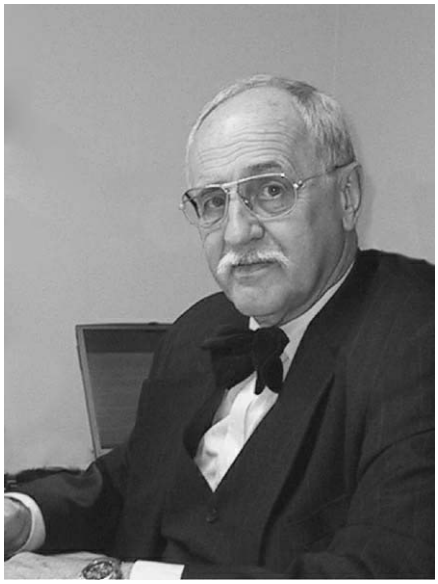
Now a Scientist Emeritus of the Canadian Hydrographic Service in which he served since 1957, Mike Eaton developed techniques to accurately map frozen bodies of water and is renowned internationally as the father of the electronic chart.

For this and his work using Loran he was awarded the Medal of Merit from the International Loran Association in 1983.

Marc Clerens of ELSIS AG joins ILA Board of Directors

Acting on concerns of possible future conflict of interest Jim Doherty (IDA) has recently resigned from the ILA Board of Directors. Taking his place on the board will be Marc Clerens. A German national, he is an electronic engineer with extensive experience in the security, communications and navigation fields. In the past he has worked for Brown Boveri, L.M. Ericsson, Rockwell International, and Siemens as Senior Director.

In 2001 he and C. Schuldes co-founded ELSIS AG for the development of indoor navigation systems based on Loran. ELSIS is presently carrying out trials with DHL World Net of a tracking system allowing tracking inside and outside buildings and underground using a combination of Loran and other navigation systems. For further information see their web site www.elsisag.com. Marc has been very active in promoting Loran operations in Europe.



Marc Clerens

NBF celebrates 40th Anniversary at Spring Meeting in Alameda CA

Founded in 1966, the National Boating Federation is composed of the largest national alliance of recreational boating organizations and associate members. Large numbers of yacht and boat clubs as well as a sizeable group of individual members round out the membership which represents all aspects of recreational boating. The officers and directors are dedicated volunteers and the associations represent no commercial interests. The NBF is free to assess and comment on laws and regulations that may or may not be in the best interests of the boating community. The Federation and its officers Margot Brown and Earl Waesche have been solid supporters of the continuation and upgrading of Loran-C. The ILA is delighted to extend its congratulations and best wishes to the NBF on this occasion.

Meetings

ILA 35 to meet in Groton Connecticut October 23 – 25, 2006

With the theme "2006 The Year of LORAN" the ILA Annual Conference and Technical Symposium will meet at the Mystic Marriott Hotel and Spa in Groton, Ct. Chairman for this year's meeting will be Greg Johnson, Sr., Program Manager at Alion Science and Technology, JJMA Maritime Sector in New London, Ct.

Preliminary Schedule:

Monday October 23
- AM Gauss Meeting
- PM ILA Board of Directors Meeting
- Evening Meet-and-Greet Social

Tuesday October 24
- AM ILA Conference Sessions
- PM ILA Conference Sessions
- Evening Cocktail party

Wednesday October 25
- AM ILA Conference Sessions
- PM ILA Conference Sessions
- Evening Annual banquet

The website for the Conference Hotel is **http:/Marriott.com/property/propertypage/GONMM**. Per diem rate group code is LAGLAGA, group code is ILAILAA

Watch the ILA web site at **http:/loran.org/events/html** for the program as it is developed in the months ahead.

Groton has been a home base for US submarines for many years and has many interesting historical sites for the visitor including the US. Submarine Force Museum, home of the first nuclear powered submarine, the USS Nautilus.

For contrast, a few miles to the east is the town of Mystic which houses the Mystic Seaport Museum with exhibits of the era of sailing ships. These include the last of the great whaling ships, the Charles W. Morgan, in a setting of historic houses and shops.

RTCM meeting to include session on Loran

ILA president Langhorne Bond will moderate a session concerned with the Future of Loran at the 2006 Annual Assembly Meeting and Conference of the Radio Technical Commission for Maritime Services to be held in Newport Beach CA on May 7 – 13.

The RTCM is an international non-profit, scientific, professional and educational organization. Its membership is comprised of organizations from both the government and private sectors. It seeks to keep its membership informed about regional and international maritime radio navigation and radio communication policy issues, regulatory changes and technical standards. Further information about the complete program and the meeting which is open to members and non-members can be obtained at their web site **www.rtcm.org**.

Meetings

EURAN 2006 to meet in Munich July 11 – 12

The Integration of GNSS and Loran-C/Eurofix

The annual International Symposium on European Radio Navigation Systems and Services will meet this year in Munich on July 11 and 12. The program will be organized by the German Institute of Navigation in cooperation with the International Loran Association. Significant recent developments in various navigation systems, EGNOS, Galileo and enhanced Loran along with related technical developments in sensors and communications networks will be presented and discussed at EURAN 2006. A Technical Exhibition for the display of hardware and software complementing the topics of the conference will be organized in the conference area. Manufacturers and system developers are also encouraged to provide field demonstrations of their products.

Main Topics will include
- Policy (Europe/EU countries/USA)
- Stand-Alone Systems
- Augmentation Systems
- System and Sensor Integration
- Integration with Communications Networks
- Application (positioning, navigation location, time synchronization)

Additional information and symposium registration forms are available at the Institute website **www.degon.de**

Abstracts are invited and should be submitted by 18 April 2006 to:

German Institute of Navigation
att. Symposium Coordinator EURAN 2006
Kölnestrasse 70
D-53111, Bonn, Germany

European Navigation Conference to review the status of navigation systems

Hosted by the Royal Institute of Navigation (RIN), the UK Location and Timing Knowledge Transfer Network and the Industrial Space Committee ENC 06 will meet May 8 – 10, 2006 in the Manchester International Convention Center.

The Opening Session of the Conference, under the Chairmanship of ILA member David Last, President of RIN, will be followed by a presentation of navigation system status reports. The first paper will be a report by Mitch Narins on Loran-C, eLoran and DME. This will be followed by reports on GPS, Glonass, Galileo and GIOVE-A, the first satellite in the Galileo system. The subsequent parallel sessions will present papers reflecting the wide range of interests and activities represented by the member organizations of EUGIN in navigation and timing applications. These will include GNSS infrastructure and technology, integrated navigation systems, indoor, marine, aviation and land-based applications. Full information on program, registration and accommodations can be obtained at the Institute web site **www.rin.org.uk**.

RADM Alfred P. Manning, Jr.

1932 – 2006

Rear Admiral Manning passed away in Seattle, Washington on February 19, 2006.

Born in Cambridge, Massachusetts, he was raised in Watertown, Mass. After graduation from Watertown High School he was appointed to the US Coast Guard Academy, graduating in 1951 with a Bachelor's degree in Electrical Engineering. After a tour of duty at sea, he enrolled at the University of Connecticut where he was awarded the degree Master of Electrical Engineering in 1958. He was subsequently assigned to the Coast Guard team in Europe, installing the first overseas Loran-C chain. He served as station commander of Lorsta Simeri Crichi, Italy, with later assignments at the Coast Guard Engineering Center (Wildwood) and as head of the Loran-C branch in London. On promotion, RADM Manning returned to headquarters as Chief of the Office of Research and Development.

While Chief of the Office of Command, Control and Communications at USCG Headquarters, he was the luncheon speaker at the 12th Wild Goose (now ILA) Symposium with the topic "The Past is Prologue" on 14 October 1983.

In recognition of his extensive contributions to the fostering of Loran, including improvement of equipment and the deployment and use of the system over a quarter of a century, RADM Manning was awarded the Medal of Merit by the Wild Goose Association (ILA) at their Annual Convention and Technical Symposium in 1986. He was cited at that time as a driving force in the growth of Loran-C. His farsightedness was a major factor in the coastal confluence expansion and the procurement of solid state synchronizers and transmitters. As a Flag Officer he continued to promote the use of Loran-C where applicable.

Subsequent USCG commands included the 11th District, Long Beach, CA (1980), and in 1985 the 14th District, Honolulu, HI. He retired on June 27, 1987 after 41 years of service.

After retirement he worked in the private sector for Hawaiian Electric Industries as President of Hawaiian Electric Renewable Systems, concentrating on developing wind, solar and geothermal energy projects. He retired to Mercer Island, Washington in 1993, where he was an active volunteer

RADM Alfred P. Manning, Jr.

member of various Seattle organizations including the Board of Directors of the Pacific Medical Centers and the Coast Guard Retiree Council Northwest.

He maintained an active interest in maritime safety serving in an expert capacity on various maritime safety study groups and panels. In August 2005 he participated in the first Coast Guard District-14 RADM Manning Softball Tournament held at the RADM Alfred P. Manning Ball Field, Sand Island Hawaii.

Services were held at St Monica's Church and interment followed on February 28 at Arlington National Cemetery. He is survived by his wife Claire and daughters Carol Chicarello and Maureen of Arlington MA.

From Al Manning's daughter, Maureen:

I would like to offer a few words about my Dad. Although everyone thinks they have the best dad in the world, I happen to know that I did.

My dad came from a large family. He was raised in Watertown, Massachusetts with 4 sisters and one brother. Each of them always had "dad" stories to tell whenever we got together as a family. Whether it was needing to be rescued after capsizing his homemade raft at the local golf course pond at 6:00am by the one lonely golfer who was there at the time – he was fishing for golf balls which he could later sell. Or the time he got caught by the Watertown police while trying to climb up the side of the house after being locked out – he had run away from home to his aunt's house, the stories were always funny, and depending on who told the story, sometimes had different slants and endings.

My dad had a rich and full life. He traveled extensively during career as a Coast Guard officer. This afforded my mother, my sister Carol and myself the opportunity to visit many parts of the world. Whether it be Christmas in beautiful, sunny Hawaii, or Easter Mass at the Vatican, we had an enriching and full childhood because of him. We especially remember touring Europe and traveling across the US. My dad always welcomed our suggestions as to which places to visit.

My dad was a mentor and teacher. His patience and guidance and high expectations have made Carol and I what we are today. So often, when talking to people who worked for him through out his

(Continued on page 9)

RADM Manning *(continued from p. 8)*

career, I heard of how he influenced and enriched their lives and career. Long after his retirement, the respect and admiration others have had for Dad are echoed over and over in annual Christmas cards.

He was also a deeply religious and spiritual man. This faith got him through the many ups and downs that he experienced in his lifetime. Whether it be personal illness, or devastating loss, he firmly believed that God had a plan for him. He was not a "Why, me?" man.

Like every member of the military, my dad looked handsome in a uniform. He also had some exceptional moments in civilian attire. My mom and I picked out a special suede jacket for him after he made flag officer status. He looked dashing in it! However, whenever he wore it, my mom would notice that many of the women around him would pat him. However, don't get me wrong, left to his own devices, my dad wasn't always a fashion plate. Carol I were always mortified when he would wear his plaid Bermuda shorts with his sandals, socks and flowered aloha shirt.

My dad was Irish! Surely the twinkle in his eyes and smile was the first giveaway. In fact, his classmates were so aware of his heritage that it is written in his USCG Academy Class of 1951 yearbook "so much of Ireland has the gnomie in him, that he has long been suspected to have sprung from the leprechauns."

My Dad loved to debate. In fact, he loved to argue. Some say that the less he knew about something, the more he loved to argue. I can't tell you how many evenings with friends and family stretched way into the night because of this particular fondness. When Carol and I were home from college, Dad liked to challenge us. The poor sister who rose to take the bait could end up at the dinner table for hours, while the other one escaped!

My dad told me that he fell in love with my mother because of her brownies. They had a connection and deep love for each other that spanned over 54 years. That is pretty remarkable these days. Mom has been his best buddy, shipmate, and skipper. To watch them together, especially after retirement gave them more free time, was like watching a couple whom had just fallen in love.

Dad had three other passions — golf and Winston and the Red Sox. He loved to golf, especially with his brother, Joe. What a comfort to know that Dad and Joe are probably on the front nine, enjoying that glorious game together again. I wonder if there are mulligans in heaven.

And Winston! The stories about Winston stretch from Massachusetts to Hawaii. His escapes from various kennels are legendary. If there was ever a man and dog made for each other, it was Dad and Winston.

Dad's passion for the Red Sox was of course born and raised during his youth in Watertown. He spent his academy years trying to convince Yankee fan George Adamson that the Red Sox were the only ball club worth supporting. And he passed his passion on to his daughters and grandchildren. And thankfully, he saw the Red Sox win the World Series in 2004.

We will always remember Dad for his sense of justice, his integrity, his sense of fairness, his willingness to stand against the crowd to do what is right. William Penn said "what is right is right even when everyone is against it. What is wrong is wrong even if everyone is for it." That was how our father lived. He lived a life with no regrets, one that he would live again and live in the same way.

May his final voyage to his final tour of duty be a joyous one. May he have fair winds and following seas. We will all miss him but will remember him with laughs and love.

May God bless our father, Al and may God bless you all.

From Bill Roland:

I first met Al Manning when he was Loran-C Branch Chief at the USCG Electronics Engineering Center in Wildwood NJ. It was my first assignment out of Engineering school. This was the heyday of Loran-C. Al was overseeing the testing and acceptance of new Loran-C transmitters, as well as installation engineering at a half a dozen sites world-wide. He had recently had a lung removed and was threatened with early retirement. He successfully fought retirement with an extreme exercise regimen and worked a typical ten hour day. He believed in what we, the Coast Guard, were doing and held us all to the highest standards. This was true throughout his career. But when the work week was done, we all relaxed in friendship.

Al knew his co-workers families as well as he knew his crew. And he showed it. When we got together, the kids were there. At bed time, it was time to read a story. He was right there with all the kids, listening with them.

We were together again at Headquarters and in Honolulu and never out of touch. He always kept his high standards for himself and his crew. And he kept the friendships and love of his fellow men and women. I miss that friendship and counsel. God speed, Al.

Awards

Medal of Merit

Mitchell Narins

Michael Narins, Senior Navigation Systems Engineer, FAA led a team of FAA, US Coast Guard and contract engineers and technicians in a successful program to evaluate the use of Loran-C to mitigate the vulnerabilities of the Global Positioning System. He demonstrated dynamic leadership and technical excellence while managing this cross-organizational team, creating new eLoran functionality in communications, aviation, maritime and terrestrial applications. His efforts lead to the on-time completion of the Loran Technical Evaluation Report provided to the US DOT for program decisions on the mix of federally provided radio navigation systems.

Medal of Merit

George T. Gunther

George Thomas Gunther led a team from government, industry and academic sectors that conducted ground-breaking research on Loran-C performance and applications. They both developed and proved innovative approaches to previously intractable radio navigation integrity problems and documented their finding in a report to the Secretary of Transportation. As technical director of this highly regarded team, Tom's personal standing among this group enabled him to convey complex technical analyses to a policy level audience while retaining the trust and confidence of the researchers. As a consequence, U.S. and international navigation policy will be impacted for years and cost-effective systems can be brought into an internationally supported mix of complementary radionavigation technologies.

President's Award

David Waters

David Waters has been and continues to be a champion for Loran services in Canada and throughout the world as he completes a distinguished career in the Canadian Department of Fisheries and Oceans. Beyond advocating Loran service in the region, he has been exceptionally effective in providing key technical and policy leadership in coordinating Loran efforts in North America and across the Atlantic Ocean.

John M. Beukers Technical Innovation Award

Professor Durk van Willigen

In 1989, Professor Dr. Durk van Willigen proposed the Eurofix concept of integrated navigation in which GPS and GLONASS differential corrections and integrity information are broadcast using Loran-C. Then, as holder of the chair in Electronic Navigation Systems at the Delft University of Technology, the Netherlands, and as President of Reelektronika bv, he led a team of researchers who implemented his proposals within the European and other Loran systems.

In recognition of this innovative application of the Loran-C service the International Loran Association has presented this award to Professor Dr. van Willigen.

2004 Technical Symposium

Best Paper Award

Dr. Paul Williams & Dr David Last: *Extending the Range of Loran-C ASF Modeling* presented at ILA 33, Tokyo, Japan, October 2004

William L. Polhemus Best Student Paper Award

Wouter Pelgrum, Arthur Helwig, Gerhard Offermans, Durk van Willigen, Erik Johannessen and Andrei Grebnev: *Differential Loran Measurement Results in the Tampa Bay Harbor* presented at ILA 33, Tokyo, Japan, October 2004

Outstanding Service Awards

Tamotsu Ikeda

For his contributions to Loran and the Association as General Chair of the International Loran Association 33rd Annual Convention and Technical Symposium 2004.

Erik Johannessen

For his contributions to Loran and the Association as Co-Chair of the International Loran Association 33rd Annual Convention and Technical Symposium 2004.

Gerard Offermans

For his contributions to Loran and the Association as Technical Chair of the International Loran Association 33rd Annual Convention and Technical Symposium 2004.

President's Message

2006 – THE YEAR OF LORAN

Greetings to the members of the International Loran Association for AD 2006 – the Year of Loran!

For the past twelve years, after the decommissioning of LORAN was decreed, we have all engaged in a struggle to save this marvelous, multi-functional technology from abandonment.

I am proud of the professional way this effort has been carried out. Hundreds of papers, committee reports, and projects have been delivered to determine the long-term, low-cost benefits of LORAN to all nations of the world. Every bit of this work has turned out positive. Originally envisioned as duplicative of, and a threat to satellite PNT, LORAN is now seen as the perfect, protective complement to GNSS. LORAN is the best friend GNSS ever had.

The radio navigation community worldwide now knows of the rebirth and recapitalization of LORAN in the US, and of the emergence of modernized, more capable eLORAN.

The year 2005 has been especially successful for LORAN. First, the US report on the future potential of LORAN was released. Its findings were uniformly positive. Next, the draft proposed European Radio-Navigation Plan (ERNP) was released by Helios Technologies. The ERNP listed LORAN as a core technology for the EU and suggested a path to extend coverage to all of Europe. It also placed LORAN at the top of the cost/benefit chart. Thirdly, the Norwegian plan to stand down its numerous LORAN transmitters was reversed following vigorous interventions from cabinet ministers in the UK and France, and from the European Commission. Finally, an excellent tour d'horizon paper on sources of precise time left no doubt that LORAN was the best back up to GNSS precise time. The contents of this paper should put to rest the last open issue.

The European Commission, lately distracted from the ERNP by procedural issues in the GALILEO program, will take up and likely adopt the ERNP, with LORAN as a core technology, in 2006.

In the US, the final report on timing is due in January 2006 from DHS. Then the final decision will be made in 2006 by Secretary Norm Mineta, according to a paper by the Coast Guard at ILA 34 in Santa Barbara. I am confident the light will be green.

A number of issues remain after a go-ahead is rendered. The most immediate is the fair allocation of the operating cost of LORAN. The Coast Guard pays the full operating costs and feels this is inequitable due to the future multi-model uses of LORAN. The Coast Guard is dead right, although the inter-agency discussion of this is likely to be gritty.

In the longer term, the specific applications of LORAN will emerge. The answer to this question is unknowable until a long term commitment to LORAN is made, but we all know that many manufacturers worldwide have GNSS/LORAN receivers on the shelf ready to go. The first volume production will be in marine receivers, where an integrated GPS/LORAN marine receiver is already on the market-priced under $1000. Within a year after go ahead new marine receivers will include LORAN. Integrated GNSS/LORAN timing receivers for telecom applications will be next, followed at an interval by aviation.

There will be a race to approval between the US and the EU. The Europeans understand there is a large world market for LORAN and they want to get there first.

As I said before the Royal Institute of Navigation, we are in the Golden Age of Navigation. 2006 will be a banner year for LORAN and for radio PNT worldwide.

I thank the Board and members of the ILA for electing me President. I promise that the ILA will continue its advocacy of GNSS security and LORAN development for the next 35 years.

Langhorne Bond, President

Positioned for the future

Megapulse

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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