



The Goose Gazette

The newsletter of the *Wild Goose Association*,
the international Loran radionavigation forum.

Volume 91-4 - News of the Fall, 1991

President's Message

by Bob Lilley

As you read this Gazette issue, you will learn that there has been much important activity since the Williamsburg WGA Convention:

- The US issued policy statements which acknowledge that we are in a multi-system world. This is the first step to keeping it that way.
- WGA encouraged the Northwest Policy Group to pursue the Loran-C option, even as GPS is considered. The actions reported in this issue indicate strong support for Loran-C in that region.
- We received a nice acknowledgement in the Coast Guard's new Loran-C Handbook. Thanks to WGA members **Bob Miller, Frank van Graas, John Beukers, Per Enge, Durk van Willigen, Bill Mooney and Bill Brogdon**. They formed the WGA review committee which made recommendations to USCG Auxiliary member Dan Maxim, who is the principal author. The book should be published soon.
- In a move to recognize our long-time members, we amended our Constitution to provide for so-called "Rule of 80" members. See the story inside.
- Convention planning is underway for the Birmingham, England meeting in August. Please note the earlier date than usual, and make plans now to join us! **Mike Moroney, John Beukers, John Illgen, Ellen Lilley, David Last and Frank Cassidy** were all working on this meeting the last I heard... It's a good group!
- WGA will be responding to various press releases about the current status of aviation instrument approach use. There is some mis-information out there that we want to clear up. Your ideas are welcome.

This will be my last Gazette as editor, but I will support fully the efforts of **Bill Brogdon** as he spools up for the task. I ask you to support him also, with ideas and Loran-C subject material for an interesting Gazette.

We have a quarterly Board of Directors' meeting coming up on January 27 in San Diego, in conjunction with the ION meeting. If this issue reaches you before the meeting, you will know that you are welcome at this meeting as an observer, or to insert a discussion item through one of the Directors.

Happy New Year! I look forward to working for you and with you!

WGA 1992 Convention and Technical Symposium

To reflect the growing international involvement with the terrestrial radionavigation aid, Loran-C, the Wild Goose Association is to hold its first Convention and Technical Symposium outside of the United States. The theme of the Technical Program for the 21st Annual Convention is to be "**Loran-C/GPS Interoperability**" and will underline the need to retain a mix of radionavigation systems to ensure security, signal availability and integrity as satellite systems approach operational status.

The convention will be preceded by a one day seminar, provided by Navtech Seminars Inc., covering the "Interoperability of Loran-C with Satellite Systems."

The **Copthorne Hotel in Birmingham, England** has been selected as the venue for the three-day convention which is to be held from Tuesday, August 25th through Thursday, August 27th, 1992. The seminar will be held at the same hotel on Monday, August 24th, 1992.

For further information please contact **Mike Moroney (U.S.A.)**
phone: (617) 494-2026,
fax: (617) 494-2628

John Beukers (U.K.)
phone: 44-451-870777
fax: 44-451-870222.

Personal to **Jim Culbertson**: Thanks for turning over a WGA in such good shape! Yours are big shoes to fill, but with a loyal and professional membership like ours, we can't miss!
Bob

The Goose Gazette is an official publication of The Wild Goose Association (WGA). Period of publication is quarterly, with cutoff dates of 1 March for the Winter issue, 1 June for the Spring issue, 1 September for the Summer issue and 1 December for the Fall issue.

Readers are encouraged to submit material for publication. Materials should be sent directly to the Editor. All other correspondence for the WGA should be addressed to the Association address:

Wild Goose Association
P. O. Box 556
Bedford, Massachusetts 01730
(703) 361-0884

Editor: Robert W. Lilley
150 S. Plains Road
The Plains, Ohio 45780
(614) 592-1282

Publication Office:
Ohio University
Avionics Engineering Center
Athens, Ohio 45701
(614) 593-1514
Fax: (614) 593-1604

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**FAA Hosts
Loran-C Meeting**

The October 16, 1991, Loran-C review session was reported in Aviation Daily. We reprint the article here for our readers. Ed.

Efforts to pursue Loran-C (long-rangenavigation) instrument approaches will continue following a meeting among [representatives of WGA], the Aircraft Owners and Pilots Association, National Association of State Aviation officials, avionics manufacturers, FAA and the Coast Guard October 16, in Washington, D.C. (DAILY, Oct. 22) Phil Boyer, AOPA president, said he believes that any Loran limitations for approach capability "can be worked out." Dick Arnold, Loran program manager for FAA, agreed, saying that despite recent problems with certification for a Loran receiver for non-precision approaches, industry has indicated it now is "basically satisfied" with the direction in which the program is headed. "We all agree it needs some fine-tuning," he said, "but we also believe there is no great barrier to certification of Loran-C as a non-precision approach aid."

Boyer said that at smaller or remote airports where there are no instrument approaches, "our members just want to get safety below the clouds. We are not necessarily looking to Loran for precision guidance to these runways, but Loran offers the potential for IFR approach capability where none is currently available." The meeting examined limitations to Loran, which could hinder its uses for approaches, including signal interruptions, precipitation and thunderstorm interference, charting problems and pilot/controller training requirements. "We understand the FAA and Coast Guard will work to reduce transmitter outages, and manufacturers can employ a faster signal reacquisition routine for Loran equipment," said Marty Shuey, AOPA director of air traffic control.

Lost Goose?

We are receiving returns from the Postal Service for:

Allen Revsbaek
Center for Communications
Trondheimsuecien 100
Oslo 0501 OSLO5
NORWAY

Can any member help us re-establish contact with Allen? Please contact Dave Scull at (703) 361-0884 or write to the WGA address. Many thanks.



**WILD GOOSE
ASSOCIATION**

**Member and Non-Member
Price List**

	Member	Non Member
Proceedings: 1972-1990		
Bound volumes of papers presented at past Conventions, each volume	\$30.00	\$45.00
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Bibliography		
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THE WILD GOOSE ASSOCIATION
P. O. Box 556
Bedford, Massachusetts 01730
(703) 361-0884
fax (703) 361-0535

WGA Life Memberships

Association changes the rules to benefit long-time members

The Wild Goose Association has always offered a Life Membership option to those who paid the appropriate membership fee. Now, the "Rule of 80" can be applied. See the excerpt from the WGA constitution, below:

Section 4. Life Member. A life member is a person whose application has been accepted and elects to pay in advance the life membership dues or has qualified for life membership by the "Rule of 80." Such a person shall be a member for life without further payment of annual dues. A life member in good standing shall be entitled to all privileges and rights of regular membership. Life membership under the "Rule of 80" is applicable only to a regular member who has attained the age of 65 years and who has been a WGA member in good standing for such period that the sum of his/her age and years of membership equals or exceeds 80 years.

Members who feel they meet the requirements for free membership under the Rule of 80 should send a request to the Association's address, giving current age and length of WGA membership.

Membership in General

Any individual or organization that has an interest in Loran is eligible for membership. There are several classes of membership:

Regular

Two classes of individual membership are available: **annual and life**. The life membership fee is \$200, except for "rule of 80" members. The annual membership is \$25 for the first year and \$20 annually after the first. Members in countries other than the U.S., Canada and Mexico are assessed an additional \$10 per year to defray international mailing costs.

Organizational

Associate membership is provided for organizations which desire only to receive WGA publications. Associate membership is \$105 first-year and \$100 annually thereafter, and does not carry the privilege of voting or holding WGA office.

Corporate Classes 1 and 2 memberships provide options for organizations that wish to be involved directly in WGA activities. Class 1 permits nomination of ten regular members from the corporate member; Class 2 permits five. Class 1 dues are \$335 the first year and \$300 per subsequent year. For Class 2, first-year dues are \$170 and subsequent years, \$150.

For overseas members, dues for Class 1 are \$435 first year and \$400 after. For Class 2, dues are \$220 and \$200.

Academic Progress and Publication

Congratulations to Martin Beckmann on completion of his engineering thesis, "Carrier Wave Signals Interfering with Loran-C." An edited Summary is given:

In this thesis, a thorough analysis of interference problems in the Loran-C radionavigation system (including possible solutions) is given. Part of this description is new; it fills a gap in the numerical analysis of the influence of interference on Loran-C. It shows that for further expansion of Loran-C especially in western Europe, solutions to the interference problems are needed.

Two types of interference to Loran-C are distinguished: interference that comes from within the Loran-C system (Loran-C transmissions that are not used for positioning, but can be received), and interference that is generated by other activities, mostly legal transmissions in the frequency bands around the Loran-C spectrum. Attention is focused on interference from non-Loran-C transmissions in the frequency bands around the Loran-C spectrum.

Most Loran-C system parameters have little or no effect in the reduction of interference; only the Group Repetition Interval (GRI) does have a noticeable influence. Fortunately, the GRI can be chosen and optimized independently. An algorithm for GRI selection is given.

This thesis presents a completely new concept for detecting all interference harmful to a Loran-C chain, based on Digital Signal Processing of antenna signals with very powerful processors.

1992 Wild Goose Association Convention and Technical Symposium
August 25 through 27, 1992, in Birmingham, England!
Contact: Mike Moroney (US) (617) 494-2026
John Beukers (UK) 44-451-870777



Advance Notice

International Radionavigation Forum

Wild Goose Association 1992 Convention
and Technical Symposium

Loran-C/GPS Interoperability "Sharing The Success"

in cooperation with

International Association of Lighthouse Authorities
Aircraft Owners and Pilots Association
National Association of State Aviation Officials
United States Coast Guard
Volpe National Transportation Systems Center
Navtech Seminars, Inc.
Birmingham Convention & Visitors Bureau

Preceded with a Loran-C/GPS Interoperability Seminar
by Navtech Seminars, Inc.

August 23 - 26, 1992
Birmingham, England

Loran-C and GPS - Questions by Europe, and Answers by the U.S.

Admiral James B. Busey, then Administrator of the Federal Aviation Administration, addressed a September 5, 1991 meeting of the ICAO Air Navigation Conference in Montreal. In this speech he referred to a ten-year "free" period of GPS availability to users worldwide. Coming as it did, a short time prior to a key meeting of the Loran-C Northwest Europe Policy Group, this statement raised questions of long-term U. S. policy regarding GPS, Loran-C and other aids to navigation. The Europeans sent a series of questions to the U. S. for clarification of policy.

The resulting answers may be of interest to the membership:

Question: Is the announcement of the Administrator of the FAA to be understood as a unilateral commitment legally binding the U.S. economically as well as operationally for a period of 10 years?

Answer: At the Tenth Air Navigation Conference (10th AN- Conf), the Federal Aviation Administrator, Admiral Busey, confirmed that the Standard Positioning Service (SPS) of Global Positioning Service (GPS) was being made available to civil aviation for a period of 10 years, beginning in 1993, with no direct user charges. This offer by the United States is intended to allow civil users to equip with GPS and gain operational experience while ICAO begins to develop a Global Navigation Satellite System (GNSS).

Question: If so, does that mean the U.S. security interests as defined in the FRP (DoD/DOT Policy and Plans for the future radionavigation mix 1990-1992, Objectives, last paragraph) is no longer applicable?

Answer: The U.S. offer of GPS as a practical starting point for the development of GNSS is not inconsistent with U.S. security interests as stated in the DoD/DOT FRP (1990).

Question: Positive answers to these questions could have a significant impact on planning of terrestrial radionavigation systems world wide. For Northwest Europe, it would most probably mean the further planning of a regional LORAN-C system would be stopped with the result that some existing DECCA systems covering a very small part of the area of interest would be the only available alternative to GPS as a general system for public use. Is it the intention and the wish of the U.S. to give GPS to serve as the sole means civil radionavigation system world wide?

Answer: The U.S. announcement is intended to allow users who equip for GPS to gain operational experience needed for the development of GNSS under the auspices of ICAO. Moreover, at the 10th AN-Conf, the U.S. delegate cited the many uses of GPS and concluded that there was no need for the 10th AN-Conf to adopt GPS or any other satellite navigation system as the standardized ICAO system. Rather the Conference should endorse the Required Navigation Performance Concept.

Question: It has been noted that the U.S. continued to develop LORAN-C as a terrestrial element of the radionavigation mix. Does this mean that LORAN-C in the U.S. is a necessary supplement to GPS in offering an integrated sole means navigation system to the users and solve the integrity problem inherent in GPS? If not, what is the rationale for continued development of LORAN-C?

Answer: The U.S. has several research and development programs to investigate methods of providing GPS integrity for civil aviation. One possible means of providing integrity would be accomplished by using other signal sources much as those available from a LORAN-C system.

We note with interest the references to a multi-system world, which WGA advocates. The action of the Northwest Europe Policy Group, reported elsewhere in this issue, would appear to reflect a similar view. Ed.

Northwest Europe Policy Group Decision

Acting through our European representatives Kjell Enerstad and John Beukers, the WGA has encouraged the widespread use of Loran-C in Northwest Europe. Here's some good news!

by John Beukers

The meeting of the Northwest Policy Group was concluded yesterday with a positive decision to move forward with Loran-C coverage of Europe. This decision has to be ratified by the Governments involved and the deadline is March 1, 1992.

An enormous amount of work went into the preparation for this meeting by many individuals within the government agencies and by individuals in Universities, Industry and representing themselves. The anti-loran GPS lobby has been and still is a formidable force and resulted in at least one negative in the final result.

The casualty is Iceland. Although the minister involved was positive he was overruled just 20 minutes before the meeting by his government. It is understood that the position taken was on the basis that GPS would be free and that the United States would be forced to remove selective availability because of worldwide pressure to do so. It was felt that the money needed to retain the station at Angissog could be better spent elsewhere. The sum involved is about \$5M of which Canada has already agreed to contribute 55%. As it stands at the moment Angissog will go off the air and the link to Canada will be broken. This is a serious matter and one that should get WGA attention - the amount of money required is insignificant.

The withdrawal of the UK from the policy group is history, however the result of the policy group decision to go ahead creates an interesting situation. The numbers of the Decca proposal leaked out. The 20 year cost for capital and running the Decca stations is \$146M. For Loran-C the figure is \$59M of which \$50M is for running the Decca stations for an overlap period of 5 years. Now the UK is to get complete Loran-C coverage at no cost to the UK. Of course

the question that is being raised is "why spend money on Decca if Loran-C coverage is available?" It is understood that there is to be some further confidential meeting to consider this situation.

The other UK perturbation is the pending takeover of Racal Marine by Bremen-Vulkan, a shipbuilding company with interest in ships bridge design. Apparently, serious negotiations are taking place and, if successful, would mean that the Decca stations would be run by this German company.

One other mild negative is Germany. The position there is that GPS will satisfy their needs and if the system is not available then they could fall back on their VTS. They are, however, signatories to the Policy Group decision.

It would appear that there are three actions for the WGA. One is get Iceland back in the fold and shake loose funds for running the Angissog station. The second is to encourage the UK to contribute something to the cause and third to make sure that during the ratification process by governments the decision to move ahead is not reversed.

Rent This space!

1. **Half-page advertisements** may be placed in the Gazette for \$75 per insertion, or \$250 for four prepaid insertions. Your advertisement must be submitted as camera-ready copy.
2. **Business cards** may be submitted, and will be published for \$5.00 per insertion, or \$15.00 for four prepaid insertions. Please provide at least two clean business cards with your order.
3. **Classified ads** will be accepted for \$5.00 per insertion of 50 words or less. Provide typed copy with your order.

WGA Charter

"The Wild Goose Association is formed to provide an organization for individuals who have a common interest in Loran and who wish to foster and preserve the art of Loran, to promote the exchange of ideas and information in the field of Loran, to recognize the advances and contributions to Loran, to document the history of Loran, and to commemorate fittingly the memory of fellow Wild Geese."

The Association is named after the majestic bird that navigates thousands of miles with unerring accuracy. Its membership represents many interests including those of planners, promoters, designers and users of loran equipment throughout the world.

Did you know?

While we say Loran-C operates "at 100 KHz," the actual operating band is from 90 to 110 KHz.

Non-Loran-C signals in this band may interfere with Loran-C operations.

Although primarily used for navigation, Loran-C transmissions may also be used for time dissemination and frequency reference purposes

Loran-C was developed to provide the Department of Defense with a radio-navigation capability with longer range and much greater accuracy than its predecessor, Loran-A.

The Press:

Read the January 1, 1992 *Aviation Consumer*, January, 1992 *Business/Commercial Aviation*, and *Aviation Week & Space Technology* for January 6, 1992.

All have articles on the FAA's October 16, 1991 meeting on certification for instrument approaches. **Warning: read ALL THREE articles to be sure you get some balance.**

Navigation and Information Points Of Contact

ATLANTIC AREA LORAN-C INFO:

1. The current operational status of all Atlantic Area Loran-C stations is available from the **Coordinators of Chain Operation (COCO's)**. The COCO monitors the day-to-day operations of the Loran-C chain and provides information with a recorded telephone announcement or responds to queries directed to the COCO personally. Pertinent telephone numbers follow:

a. **COCO CANADIAN EASTCOAST (CEC - 5930) AND LABORADOR SEA (LABSEA - 7930)** chains are located at Loran Monitor Station St. Anthony NFLD Canada. Recorded announcement: (709) 454-3262. COCO: (709) 454-2392.

b. **COCO GREAT LAKES (GLKS - 8970) and NORTHEAST US (NEUS - 9960)** chains are located at Loran Station Seneca, NY. Recorded announcement: (607) 869-5395. COCO: (607) 867-1334.

c. **COCO SOUTHEAST US (SEUS - 7980) and SOUTH CENTRAL US (SOCUS - 9610)** chains are located at Loran Station Malone, FL. Recorded announcement: (904) 569-5241. COCO: (205) 899-5226/6.

2. If additional information is required after contacting COCO's, contact the **Chain Manager** at Governors Island, NY: (212) 668-7880 or FTS 664-7880.

3. Scheduled Loran-C unusable times are published by notifications or announcements in Local Notice to Mariners (LNTM's), Canadian Coast Guard Notices to Shipping (NOTSHIP's), FAA Published Notices to Airmen (NOTAMS), FAA NOTAM "D"s, and on the prerecorded service for the pertinent chain. In many cases scheduled outages are preceded by a Coast Guard Marine Radio Broadcast in the area where the coverage will be affected. Users desiring inclusion on our

notification messages should request such in writing to:

**COMMANDER (ATL)
USCG ATLANTIC AREA
Governor's Island, NY 10004-5090**

Requests must include a point of contact, telephone number, why you need this service and a Government Plain Language Address (PLAD) or commercial name and TELEX number. Due to the time sensitive nature of this information it is sent only over

government message services or TELEX/TWX services.

4. If you have a problem with Loran, please call the COCO for the rate used. If you need to check about unusable time, system failures or report abnormalities, please note the rate used, model of receiver, location, type of problem, date and time occurred. This will enable the COCO to quickly check the records for the period in question and give a more exact answer.

A Hand for Loran-C

This letter to the editor appeared in Defense News for July 22, 1991.

As a subscriber to Defense News for several years, I have read recently about the contributions that GPS Navigation made to allied forces during the recent Desert Storm and the earlier Iran-Iraq conflict.

While it is true that GPS proved invaluable to the military operations (land, sea, air), it was not the only 24-hour-a-day navigation system in operation. The other choice was Loran-C, the signals provided by the Kingdom of Saudi Arabia National Navigation System. Since 1985 Loran-C has been providing 24-hour-a-day coverage in the Arabian Gulf, a civilian system for the common use.

During the Iran-Iraq conflict, the U.S. Navy needed a full-time navigation system, the only choice was Loran-C for mine warfare operations. From the reports it was a success, and this has led to Loran-C receivers on all types of mine-hunting vessels.

The Desert Shield and Desert Storm operations proved that Loran-C was ready again to provide navigation

capabilities to the various land, sea and air users among the coalition forces. At last count more than 12,000 Loran-C receivers were ordered and shipped before the end of hostilities. From the inexpensive hand-held units for the individual soldier, instrument flight rules aviation units for the C-130s and survey grade marine units for the minesweeping operations, Loran-C was available, was utilized and provided another common grid reference navigation system.

Since one system cannot be all things to all users, the common sense approach is to have complementary navigation systems available to the navigator at all times. Perhaps the fortuitous availability of Loran-C in Saudi Arabia will be a lesson for future planners who may wish to include deployable Loran-C systems in their portfolios.

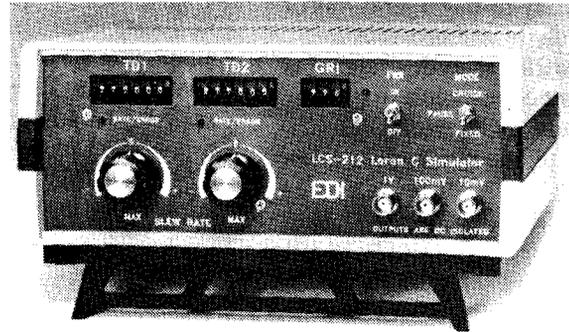
Such readily available mobile assets - using pseudo random signal characteristics offering high levels of jamming and spoofing resistance - could provide a very valuable level of common-grid redundancy with almost no development cost.

**Eugene Brusin
Megapulse
Bedford, MA**

EDI's LCS-212 Dynamic Loran Simulator Offers The Best Value For Your Money.

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 Wild Goose Association
 P. O. Box 556
 Bedford, Massachusetts 01730

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