

# The Goose Gazette

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

## Volume 90-5 - News of the Fall, 1990

### Good News!

*Eric Swanson, Jim Van Etten named  
IEEE Fellows*

by Bob Frank

The Institute of Electrical and Electronics Engineers has selected **Mr. Eric R. Swanson** and **Mr. James Van Etten** for advancement to Fellow grade. The advancement is effective January, 1991.

Eric Swanson was recognized for his long career devoted to the advancement of VLF radio navigation techniques and the Omega Navigation System. Jim Van Etten was honored for his contributions to the development of the Loran Radio Navigation System.

WGA congratulates Eric and Jim!

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THE WILD GOOSE ASSOCIATION  
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### The President's Message

Jim Culbertson

The year since the last Technical Symposium has gone very fast for me and I am pleased to report to the membership that WGA seems very alive and well.

This year, the Long Beach Ramada Renaissance bent over backwards to provide an outstanding setting for our convention. The technical papers were excellent and I think everyone enjoyed themselves and thought the meeting was very worthwhile and successful. A Soviet delegation joined us again - this time including **Lieutenant General Funtikov**, the Deputy Director of the Soviet Interradionavigation Committee. It was indeed a pleasure to have the Soviets attend and for them to be so open and friendly in exchanging ideas. It is interesting to note that they are wrestling with satellite - terrestrial radio navigation issues that sound very much like ours.

The WGA Board was very busy during the Convention holding two meetings and among other things, approving By-Laws that created a new Standing Technical Committee and establishing the "Rule of 80" for Life Membership. The big issues facing the Board this next year is the successful evolution of the position of Secretary and the development of administrative capability at **NavCom Systems** to carry on the WGA management process put together by **John Beukers**.

**Kjell Enerstad** and **Henry Marx** were reappointed to one-year terms as Directors. **Bruce Hensel** likewise was appointed to a one-year term as Director. Kjell will continue to be our eyes and ears at IALA while Henry will continue to represent our maritime users and Bruce will represent the land users while chairing the newly combined Users Committee.

A major WGA event this year will be our participation in the dedication of the new mid-continent Loran-C chains. The dedication will be taking place on May 14, 1991 and on the following day, WGA will participate in user forums. In addition, we as an organization will be handling the registration of an expected forum attendance of up to a thousand people. This will be a good opportunity to identify and hear from mid-continent users and we plan to utilize this opportunity to expand WGA membership into new arenas.

I have established a number of goals for this year which are discussed separately in the *Gazette*. I think these goals are very achievable and I am looking for the able assistance from the membership to accomplish them. Volunteer to be a committee member and provide WGA with the benefit of your ideas.

### 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 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:

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## WGA Annual General Membership Meeting

The Annual General Membership Meeting of the WGA was held Wednesday, October 24, 1990 during the Technical Symposium in Long Beach. President **Jim Culbertson** chaired the meeting with the following agenda:

- o Welcome
- o Treasurer's Annual Report
- o Introduction of Directors
- o WGA Secretary position changes
- o Committees
- o Users
- o Manufacturers
- o Federal Radionavigation Plan (FRP)
- o WGA Journal
- o Looking Ahead
- o Open Session
- o Adjourn

While many of the agenda items covered "routine" business, others require a few words to explain what was discussed.

This year, **John Beukers** will be relocating his home to the United Kingdom and a new Secretary, **Walt Dean**, will serve during 1990-91. Critical to this change will be the re-establishment of the machinery upon which John has built the business management process for WGA. We need to retain and continue to develop the data bases John has captured or developed including membership files, manufacturers listings, news media listing, etc. This is being planned by purchasing and establishing WGA computer hardware and facilities at **NavCom Systems, Inc.** in Manassas, Virginia. There we will carry on the handling of WGA business through the use of contract assistance and the able efforts of **Dave Scull**, our Vice President, who will pick up additional responsibilities of operations oversight. **Zeke Jackson**, President of NavCom Systems has been very helpful and WGA acknowledges his contributions and assistance in making this evolution work.

In the interest of trimming administration time and paperwork, the Board has reduced the number of Special Committees by combining the three User and four Government Liaison under two individual committees. In addition, one new Standing Committee titled "Loran

Technologies and Applications" has been formed taking the place of two related Special Committees which were abolished.

We want to continue to stress that WGA become more responsive to the needs of users. Our technical symposiums should pay more attention to having programs and sessions directed toward the users, which was tried at this year's conference, and we have to continue to make users aware of the existence of WGA through suitable articles and announcements made in publications that users read.

In another arena, we have discovered that WGA has become less and less associated with Loran related businesses. This was made vividly clear to us when WGA attempted to query manufacturers on user data in response to a request for input to the 1990 edition of the Federal Radionavigation Plan. A new Special Committee titled "Loran Businesses Liaison" under **Mark Morgenthaler** will be addressing this issue. This committee held one meeting during the convention.

The latest (1990) edition of the Federal Radionavigation Plan is reported to be at the printers and should be available for issue before the first of the year. A new Special Committee has been formed under **Andrew Serrell** to be responsible for the review and consolidation of WGA comments and for preparing future inputs to the next edition.

**John Beukers** has promised that we will see a Journal this year. He has assembled most of the material to publish, has identified a printer, and needs to complete his contact with manufacturers which he is doing with the help of the Manufacturers Liaison Committee.

(continued on page 3)

(General Meeting, from page 2)

This publication will be an important vehicle for conveying useful information to users as well as the technical community and will be a source of revenue for WGA to carry on management improvement efforts.

Looking ahead, a set of 1990-1991 goals has been established and are discussed in a separate article in this *Gazette* issue. However, one of the important projects for WGA this year will be our participation in the dedication of the new mid-continent Loran-C stations in mid-May.

There were not very many comments from the floor during the Open Session. We hope that at future annual meeting we can introduce subject matter which will precipitate more lively floor discussions. It is this feedback that the Board and the Officers need to determine what is the "will of the membership" in our conducting the business of WGA for the following year.

## Goose Gazette Ads Get Results!

Some *Gazette* readers obviously responded to the advertisement we have been running for EDI loran simulators. EDI reports good results from this ad.

We still have space for additional advertisements; we'll add pages if necessary! See the "Rent This Space" item in this issue for details.

Thanks to the *Gazette* readership for supporting the WGA and our advertisers.

## What's in a Name?

*The Wild Goose 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.*

## Bermuda Bound!

[The Bermuda region must be a real hotbed of Loran-C usage! Here's another testimonial, passed along by Capt. Henry Marx. We did just a little editing. Ed.]

Dear Henry:

We completed our 19th trip to Bermuda this year. Tabulated below you will find the results of our comparison of various electronic positioning equipment:

Chart Position	32-22.60/64-40.91
Ross Nav 200	32-20.39/64-37.39
Micrologic ML2000	32-20.45/64-37.65
Micrologic ML5500	32-20.36/64-37.61
Magellan GPSNav1000	32-22.72/64-40.93
( Selective Availability not operating)	

We used Loran-C 9960 Master and secondary stations 24 and 38 on all Loran receivers. As you will observe, all Loran-C receivers agreed closely with one another. All had a consistent minus two minutes of latitude and three minutes of longitude error. Based on my experiences, this is typical of Loran-C performance in Bermuda.

Our Walker (Decca) 801 Sat/Nav has consistently reproduced its position to less than minus 1/2 mile error in both latitude and longitude at Bermuda. The Magellan GPS receiver position agrees very closely with the chart position, even after the minor lat/long corrections in the chart notes are applied.

The position fix of Loran-C agreed more closely with GPS as we approached the US coast. At Ambrose Light, there was negligible difference between GPS and all the Loran-C receivers.

My experiments and experiences suggest:

1. Loran-C receivers may be used to navigate to Bermuda and back from the East coast. Heavy rain will temporarily knock out the Loran-C signals.

2. A loran fix at Bermuda will be in error by less than minus two minutes of latitude and minus three minutes of longitude.

3. A GPS receiver will give very accurate positions at Bermuda. Please note that we made our observations in May, before GPS positioning accuracy was degraded!

4. Loran receivers are most adequate for coastal position fixing and piloting.

5. Loran receivers are the most cost effective device for coastal navigating.

These observations will be included in the seventh edition of my book *BVI Bermuda Bound*, and my "Bermuda Navigator's Briefing" seminars.

We are always interested in testing electronic equipment on our trips, should any manufacturer ask you about that sort of thing.

Sincerely,  
Thomas R. Tighe  
Gemini Group  
Norwalk, CT  
(203) 852-8173

## New Video Coming

Ron Wiener

*"How to Use Loran-C & GPS"*

It's been a long time coming but at last we set aside enough time to shoot an aviation training video that shows how to use both Loran-C and the Global Positioning System. The video is a joint production of Steve Elsberg of Aviation Training Centers and the staff at **Azure Technology** and lasts approximately 90 minutes.

We expect a wide distribution for the video which will also be added to the list offered by the WGA. We expect the release to be made by the end of July.

WGA member price will be \$20, and non-member price will be \$28.

## Who Was Captain Marvel?

Jack Murphy

*Excerpt from a Congressman's address.*

After some introductory remarks to the 1974 WGA Annual Convention, **Jack Murphy**, Chairman of the Subcommittee on Coast Guard and Navigation, went on to say:

"I will give you a brief review of what I see the Federal Government's coming involvement to be in Loran-C. But first, let me say that a rapid change is taking place: from near indifference to growing involvement of many Federal agencies. You will recall that the modern-day fable of Loran-C began with a blunder by the Office of the Management and Budget and the Department of Transportation, weathered one of the hottest lobbying campaigns on the Hill, and survived with the help of a real live "Captain Marvel".

"In Fiscal Year 1974, the Department of Transportation had proposed a Loran-C budget that rejected funds for a West Coast chain as well as other monies for proper maintenance and updating of the chains then in existence. Also there was a rapid and premature phase-out of Loran-A called for that greatly upset the fishing industry and would have blinded commercial air lines with routes in the South Pacific. The airlines complained to me that all of their flights in the Pacific would have had to stack up over Wake Island to get a fix. It also turned out that the DoD needed Loran-A also for 600 long range military aircraft including our B-52 fleet. The Navy was the most concerned because of the effect on its over-all effectiveness in that part of the world. All of this was without the regard to a previous phase-out program set forth in the Department's National Navigation Plan.

"It is not too much to say that Loran-C was about to go down the drain! It was at this point in time that our famous "Captain Marvel" appeared in the form of a Navy Officer from the Joint Chiefs of Staff, who phoned me from pay booths at the Pentagon to give me information bolstering our position on the Loran systems. The fact that "Captain Marvel" would not publicly go to lunch with me is just an indication of the fierce battle I was soon to uncover in the Executive Branch over which navigation system the United States was to select for the future.

"In addition to help from the good "Captain" the response from the user community and interviews with many experts that I and my Staff contacted indicated that the proposed actions were not only extremely ill-advised in terms of their impact on present users, but that they were also preventing implementation of a system having potentially enormous impact on maritime safety, coastal pollution, and on U.S. air and land applications.

"Parenthetically, I want to say in this respect that we did not set out to favor Loran-C; we sought the opinion of respected figures in many fields of electronic navigation. And we did not set out to "do in" any system. While our Committee authorized the monies, our Fiscal Year 1974 Hearings did not succeed in restoring appropriated funds for the West Coast chain. They did, however, with the help of "Captain Marvel's" famous "Shazam", halt the neglect of the system and turned around the disastrous plan to phase-out Loran-A without adequate time for planning and change-over to Loran-C."

*[So will the true Captain Marvel stand up? Perhaps the Captain is a candidate for a WGA award. Incidentally, the rest of this address is as pertinent today as it was when given some 16 years ago. Contact the Secretary for a copy.]*

## Professional Activities

WGA member **John C. Castonia**, V.P. of **Illgen Simulation Technologies, Inc.** (ISTI), Santa Barbara, CA, attended a Federal Aviation Administration/ National Aeronautics and Space Administration national workshop focused on artificial intelligence technologies that may have merit in upgrading air traffic control operations. A paper authored by Mr. Castonia and **John Illgen** was presented. The workshop was hosted by Cal Poly, San Luis Obispo.

## WGA Membership

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 \$200.00. The annual membership is \$25.00 for the first year and \$20.00 annually after the first. Members in countries other than the U. S., Canada and Mexico are assessed an additional \$10.00 per year to defray international mailing costs.

### Organizational

Associate membership is provided for organizations which desire only to receive WGA publications. Associate membership is \$105.00 first-year and \$100.00 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. Dues for Class 1 are \$335.00 first year and \$300.00 after. For Class 2, dues are \$170.00 and \$150.00.

## Wild Goose Association Awards:

Press Release October 24, 1990, by the WGA Awards Committee  
Robert L. Frank, Chairman

The Wild Goose Association, a professional organization of individuals and organizations having a common interest in LORAN (long range navigation) made awards at its nineteenth annual convention in Long Beach, California, as follows:

**Honorary Member:** Congressman Denny Smith of Oregon, in recognition for his many years of strong and effective support of the Loran-C system and his leadership in promoting it as a major component of the nation's future mix of navigation systems.

**President's Award:** Robert W. Lilley of Ohio University, for his outstanding dedication and perseverance as editor and publisher of the WGA's highly successful newsletter -- The Goose Gazette.

**Best Loran Conference Paper:** David Last, of University of Wales, U.K. and Nick Ward of Trinity House Lighthouse Service, U.K., for "Loran-C Measurement Trials in Ireland and U.K. -- Interference, Noise and Field Strength Results" in WGA Proc. of the 18th Annual Technical Symposium, October, 1989.

**Service Award:** Marilyn Beukers, of Beukers Technologies, Inc., for dedication to the WGA and for her efforts to advance Loran's status as a world-wide navigation system.

**Service Award:** Edward L. McGann, of Megapulse, Inc., for his efforts as a 1989 WGA Convention Co-Chairman.

**Service Award:** Maurice J. Moroney, of the Volpe National Transportation Systems Center, for his work as a 1989 WGA Convention Co-Chairman.

**Service Award:** Francis S. Cassidy of Datamarine International Inc., for his work as a 1989 WGA Technical Symposium Co-Chairman.

**Service Award:** Dr. Per Enge, of Worcester Polytechnical Institute, for his efforts as 1989 WGA Technical Symposium Co-Chairman.

## Candidate Directors Sought

President Jim Culbertson

The Officers and Board of Directors of the WGA are actively recruiting candidates who will serve as Directors of the Association. Over the years, there has been a tendency to fill Director positions with members having considerable tenure. This process has resulted in a Board with enormous background and experience both with loran and the WGA. While this has provided the Association with a strong foundation in one regard, the absence of a continuous infusion of younger leadership may weaken us in the long run. If WGA is going to move forward in a leadership role for the loran community in the 90's, we must reinforce the leadership from within with those same kinds of people who were actively pursuing their careers in the loran business when they formed WGA.

Each year, four Directors are elected and three additional Directors may be appointed from the membership. We are soliciting responses from WGA members who would be interested in serving in this leadership role, if not as a Director, then perhaps in an intern position on a Committee.

The requirements for Director are fairly simple; the most important attribute is the desire to take an active interest in the management of WGA and willingness to put forth effort in this regard. Members are encouraged to take a hard look at this opportunity and to notify any Director or any Officer of his or her interest. The slate of candidates for the next election will be made up during January 1991, so members should make their desires known as soon as possible.

## FANS and Redundancy

The Special Committee for the Monitoring and Coordination of Development and Transition Planning for the Future Air Navigation System [whew] or FANS Phase-II held its first meeting in May, 1990 and will meet again in April of 1991. The FANS-II timetable currently shows:

- 1990-1995 - Research and development, trials and demonstrations
- 1995-2000 - Gradual implementation of various elements of the eventual FANS system with the terrestrial system as a backup. e.g. satellite communications and ADS would be used...
- 2000-2005 - Full FANS CNS (communications-navigation-surveillance services available in parallel with the existing system.
- 2005-2010 - The terrestrial system, not required for FANS, is progressively dismantled.
- 2010 - FANS is the sole system.

WGA will be preparing appropriate inputs to FANS-II to highlight the necessary role of Loran-C as a dissimilar redundant partner with GPS. To quote a recent letter from Cdr. J. M. MacKay of the Northern Lighthouse Board, Edinburgh, published in *Navigation News* for March/April, 1990:

"... It is a fundamental principle of navigation that one aid should be checked against another. Manufacturers of space-age systems would have us forget this, but one hopes that the nautical colleges will not, and one can be certain that the Admiralty courts never will. ... The authorities in the USA are ... presently building a transcontinental Loran-C system. What does this tell us about their faith in GPS?"

fillerfillerfillerfillerfiller...

## Report on the 19th Annual Convention and Technical Symposium

by John Beukers, WGA Exec. Administrator

### Introduction

The 19th Annual convention and Technical Symposium of the Wild Goose Association was held in Long Beach, California on October 23-25, 1990. Representatives from Canada, England, France, Ireland, the Netherlands, Japan, Norway, Scotland, the United States, the Soviet Union, and Wales were in attendance. Highlights of the Convention were reports on the national (U.S.) and international expansion of Loran-C and the progress towards introducing Loran-C into the U.S. National Airspace System (NAS).

### Completion of Loran-C Coverage in the United States

Four new transmitting stations, located north-south in the middle of the continent, are being added to the existing network of transmitters. These will provide complete coverage of the United States for coastal navigation, aircraft navigation and the land mobile use. **CDR Thomas Gunther** of the Office of Navigation Safety and Waterway Services, U.S. Coast Guard, reported that the South Central chain (SOCUS), with the exception of the station at Las Cruces, NM, will be operational in December, 1990, and the North Central chain (NOCUS) will come on line in April of 1991 along with the Las Cruces station. He added that the stations at Boise City and Gillette were already on air and being tested and that dual-rating of existing stations was complete.

A dedication of the new chains is to be held on May 14, 1991, followed by a Loran-C Users Forum to take place at the Airport Hilton Hotel in El Paso, TX, on May 15, 1991. Further information can be obtained from **Michelle B. Ingram** in the FAA MLS/LORAN/GPS Program Office, 800 Independence Ave., S.W. Washington, DC 20591. Telephone (202) 267-7585.

### Loran Station Refurbishment

In addition to new stations, the U.S. Coast Guard is in the process of upgrading and refurbishing existing transmitter control, monitoring and communication equipment. A status report on this program was provided by **LCDR Douglas Taggart** and **LT Ben Stewart** from the U.S. Coast Guard Engineering Center at Wildwood, New Jersey. Chain Time Synchronization of Master clock timing, by satellites, to UTC to within 100 nanoseconds was described by **Ms. Laura Charron** from the US Naval Observatory, Washington, DC. This important action will permit cross-chain operation and increase the number of transmitters that can be received at any location. This was reported to be a significant step toward meeting the signal availability requirements for aviation to make instrument approaches available at a wider population of airports.

### FAA Sets Up Loran Program Office

The work underway in the Microwave Landing System/Loran-C/Global Positioning System (MLS-Loran-C/GPS) office within the Federal Aviation Administration (FAA) was reported by the program manager, **Mr. Richard Arnold**. He stated that the FAA was committed to bringing Loran-C into the NAS as quickly as possible and emphasized that safety was of prime concern. He further stated that GPS would remain a supplemental radionavigation system until such time as technical and operational issues are resolved.

Mr. Arnold noted that funding had been allocated for Loran-C monitor stations and a system for communicating an automatic warning to user equipment in the event of

transmitter failure. A paper covering this system-integrity and performance-assurance subject was presented by **Dr. Robert Lilley** from Ohio University.

The immediate goal is for ten airports per state to be certified for instrument approaches for public use in the coming year.

### Soviet Chayka and Loran-C

An impromptu address by **Lt. General Anatolii Funtikov** of the Soviet delegation stressed the desire to link the Soviet Chayka system with Loran-C in other parts of the world. Specifically mentioned were China, the Republic of Korea (ROK), Japan, European countries and continued cooperation with the United States.

Further evidence of this international desire to cooperate was given by **CDR Thomas Gunther** of the U.S. Coast Guard who reported on his attendance at the September 1990 IALA meeting in the Far East. Quoting from the recommendation issued by the meeting, he stated "The meeting unanimously reached the technical opinion that complete coverage of the far eastern area by Loran-C/Chayka will meet the needs of navigation for at least 15-20 years as the primary long-range terrestrial-based system, to supplement the GLONASS and GPS systems." It was further recommended that a far East Loran-C/Chayka technical working group be established with representatives from China, ROK, Japan, USSR and with participation from the U.S. Coast Guard.

### North West Europe

The Norwegian Defense Communications and Data Services Administration (NODECA) and the North West Europe Loran-C policy group were represented by **Mr. Kjell Enerstad**, who provided an update on --->

(Report, from page 6)

the North West Europe Loran-C system. He noted that all members of the policy group, with the exception of Denmark which had requested more time for considering the matter, were committed to establishing North West Europe Loran-C coverage.

In this vein, the radio frequency signal environment in Europe and its effect on Loran-C reception was the subject of several papers which stressed the need for better receiver designs and cautioned against over-optimistic predictions of coverage.

#### WGA Announces New Technology Committee

The WGA Board of Directors unanimously approved the formation of the "Loran Technologies and Applications Committee" whose charter is to define and act upon technical issues of Loran-C with the objective of overall system improvement (transmitted signal, receivers and operation). Newly-elected WGA Director **David Amos** was selected and agreed to serve as the Chairman of this important committee.

Technical issues that need attention should be addressed to Mr. Amos at:  
**Synetics**  
**540 Edgewater Drive**  
**Wakefield, MA 01880**  
**V (617) 245-9090, F (617) 245-6311.**

#### WGA Radionavigation Policy Statement

To clarify the WGA stand with respect to Loran-C and other radionavigation aids, in particular GPS, the Board of Directors recently approved a Statement of Policy which was made available to attendees. This clearly states that while the WGA is an advocacy group for Loran-C, the Association supports interoperability between radionavigation aids to obtain the best and most economic mix for today and the future.

#### Conclusion

Attendance at the Convention was less

than that of previous years due in part to the U.S. budget negotiations. However, the attendees were of high caliber and the papers of outstanding quality. Significant progress towards multi-national adoption of Loran-C was accomplished due to the excellent communications among countries and individuals.

## Rent This space!

*WGA Offers Advertisement, Promotion and Communication Opportunities at bargain prices!*

Three *Goose Gazette* formats are offered:

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. The consultants and business people among us may appreciate this method of "getting the word out." Please provide at least two clean business cards with your order.
3. **Classified ads**, in the following categories, will be accepted for \$5.00 per insertion of 50 words or less. Please provide typed copy with your order. Standard or bold-face type may be specified, for all or part of the entry.

- a. For Sale
- b. Wanted to Buy
- c. Exchanges
- d. Situations Wanted
- e. Positions Available
- f. Miscellaneous

Please contact the *Goose Gazette* editor with your orders or your questions. All submissions must be accompanied by payment; copy will not be returned unless a request is made at the time of the order.

## DOT/RSPA News

by Dave Olsen

### 1990 Federal Radionavigation Plan

The letter of promulgation for the 1990 FRP was signed by Secretary of Transportation Skinner on 10/30/90 and by Secretary of Defense Cheney on 11/28/90. We hope to get it back from printing and to begin distribution by the end of December. In the meantime, the USCG is considering the possibility of placing the FRP text in downloadable files on the bulletin board system at the GPS Information Center. The GPSIC BBS is at (703) 866- 3890 with data rates of 300, 1200, and 2400 baud, and at (703) 866-3894 with data rates of 4800 and 9600 baud. Communication parameters on both numbers are full duplex, 8 data bits, 1 start bit, 1 stop bit, no parity. Any user may log onto the BBS and set up an account; there is presently no cost for the service.

Franked postcards for requesting a copy of the FRP and notification of radionavigation user conferences were distributed at the Long Beach convention. For those who are interested but didn't pick up a postcard, requests should be directed to: E. J. Carpenter, DTS-52; Transportation Systems Center; 55 Broadway; Kendall Square; Cambridge, MA 02142.

### User Conference

The following announcement appears in the preface to the 1990 FRP: "A public Radionavigation User Conference that will provide radionavigation system users the opportunity to comment on this document is planned to be held in Washington, D.C. in November 1991." The conference has been tentatively scheduled for 19-20 November, 1991 at the new Embassy Suites Hotel, which is accessible from the King Street Metro stop in Alexandria, Virginia. We are considering the possibility of holding an additional conference for the convenience of users on the West Coast.

## Wild Goose Association

### Statement of Radionavigation Policy

The Wild Goose Association (WGA) consists of organizations and individuals who advocate the continued implementation and use of the LOnG RAnge radio Navigation system Loran-C throughout the world.

Since its inception in 1972 the WGA has followed its charter which states:

*"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."*

While the Association's interest is loran and loran's development over the past 50 years, its current priority is the responsible implementation and use of Loran-C. In this context the WGA provides a technical forum for national and international lo ran related radionavigation issues.

In pursuing its advocacy role, the WGA acknowledges the presence of other long range or global radionavigation systems and recognizes that benefits accrue when these systems are used in concert.

The WGA supports the use of satellite systems, Omega or special purpose systems when employed within their technical limits. The Association is, however, opposed to, and will respond to pronouncements of "sole means" for a single system when these are detrimental to the orderly implementation of a mix of radionavigation systems.

The WGA is both technically and user oriented. In support of the User the Association advocates that all radionavigation systems for use by the civil sector have transmitted signal specifications and signal availability published in the Federal Register. Further the WGA advocates that dynamic notice of signal condition and availability are broadcast to users in a timely manner.

The WGA supports the position of the prudent navigator who requires the availability of more than one navigation system for navigating with integrity.

The WGA actively participates in the formulation of government radionavigation policy by providing comments and suggestions to the biennial U.S. government Federal Radionavigation Plan (FRP).

The WGA is sensitive to false and misleading claims of signal availability, performance and schedules for all long and medium range radionavigation systems and responds to such claims as appropriate.

The WGA recognizes that there is a substantial amount of development work to be completed with Loran-C as the system spreads to worldwide use and campaigns for the continued financial support of these activities.



## Letter to WGA

September 4, 1990

To: Capt J.F. Culbertson, USCG (Ret.)

Dear Jim:

I always look forward to receiving my "Gazette," if for no other reason than that it keeps me abreast of what my long time Loran-C friends are up to. The recent Spring, 1990 issue (Vol 90-2) was a special treat. As I read the various articles I could not help but smile and think of that well known advertising slogan "You've come a long way baby." How well it applies to Loran-C.

I was particularly struck by the point and counterpoint items concerning the adoption in principle, by the UK, of Loran-C as the standard marine radionavigation system (Press Notice: The Department of Transport, April 24, 1990) and the well chosen excerpts from the September 18, 1981 GAO report to the Secretary of Transportation (How Wrong Can You Be?) Most of us, in Loran-C had to read or listen to such disparaging words throughout the 60's, 70's and into the 80's. The current state of Loran-C acceptance by practicing navigators of the air and maritime communities, is more than enough to cleanse our memories of the often insulting and usually condescending attitudes of uneducated number crunchers. We not only had to be right, we had to rely on rather large measures of intestinal fortitude (or was that just plain stubbornness?)

I am now embarked on a new path-finding venture, that of bringing clean renewable energy technologies on line, as viable commercial alternatives to fossil-fired power generation. I feel as though I am back in the old Loran-C trenches. I swear the same uneducated number crunchers have given up on Loran-C and are now focused on renewable energy. Could this be Deja Vu?

If we in the renewable energy industry can be as well served by our professional organizations as the radionavigation

community has been served by the Wild Goose Association, we will prevail. Lord knows, we are right and maybe even stubborn enough. This Charter Member sends his best to his friends in WGA. I may not be actively involved in Loran-C but I am still interested and proud to have been associated with a group which could bring about such meaningful contribution to the benefit of so many.

Congratulations!

Sincerely,

RADM Al Manning  
USCG, (Ret.)

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**The Officers and  
Board of Directors of  
the WGA extend best  
Holiday wishes to the  
entire membership.  
Have a happy, safe  
and prosperous New  
Year!**

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**President's Award:** A plaque for significant achievements, selected by the President with input from the membership.

**Service Award:** An inscribed plaque for outstanding service to the WGA.

**Honorary Membership:** A framed certificate with citation for outstanding contributions to loran. Usually restricted, informally, to those whose present activity is not in the loran area.

Send nominations and supporting data: Robert L. Frank, Chmn, Awards Committee  
30795 River Crossing  
Birmingham, MI 48010  
(313) 645-9848

## Awards Committee Seeks Nominations

by Bob Frank

Each year the WGA gives awards to those who have made contributions to loran or furthered the use of the system. We make every effort to seek out deserving individuals. Many make their contributions in a quiet way, and are not always known to the Committee.

We need to recruit additional committee members to help in the awards process; we also need to hear from the membership of individuals who should be considered for the various awards as listed in Article XI of the WGA By-Laws. You can help us to recognize those who "foster and preserve" the art and science of loran.

It is not too early to consider awards nominations for this year. Awards will be presented at the 1991 Convention and Technical Symposium in October, but the Committee needs time to review the nominations. Please submit these by 15 July, 1991, for the following awards:

**Medal of Merit:** A medallion and a framed citation for contributions of outstanding value to the development and fostering of loran.

**Paper Award:** A trophy with the Wild Goose in flight, for the outstanding paper published prior to 1 July, 1991, with emphasis placed on papers published in the year preceding that date.

## Loran-C News and Notes

Ed McGann

(1) The **mid-continent Loran-C signal expansion program** is coming along on schedule. The first new station at Boise City is on-air for testing purposes and transmitter equipment is being installed at the second site at Gillette. The third and fourth stations at Havre, MT and Las Cruces, NM, respectively, are scheduled for December, 1990 and February, 1991. An inauguration ceremony is scheduled for 14-15 May 1991, at El Paso, TX with planning activities shared by the FAA, USCG, NASAO, WGA and Texas and New Mexico state and local officials.

(2) At the fly-in at Oskosh over the July 27-August 2 weekend, FAA Administrator **James Busey** specifically noted the progress of the Loran-C efforts directed toward aviation and pledged that based on the success of the Early Implementation Program, twenty new Loran-C based instrument landing approaches will be developed by the end of 1990 with hundreds more to come in the next few years. [These approaches were published November 15, 1990. Ed.]

(3) The **realignment of the Alaskan chain configuration** involving the dual rating of Port Clarence as suggested by WGA Director **Walt Dean** has been completed and is operating (providing much needed navigation capability to 98% of the population and 93% of the defined landing areas in that region.

(4) Hundreds of Loran-C receivers are being provided for use by U.S. and other forces in **Saudi Arabia**. These involve aviation, marine, land use and meteorological units. These units make use of the widespread, precise Loran-C signal coverage made available in that area years ago by the government of Saudi Arabia.

Since militarized GPS user equipment is not in mass production, the DoD has temporarily reverted to operations of the GPS satellites without deliberate distortion (without Selective Availability) so as to make use of commercially available GPS sets. Given this circumstance, commercial Loran-C user equipments which have undergone much more extensive user qualification by virtue of the nearly one-million-user Loran-C population became a very attractive alternative if only for the short term for the immediate Mid-East situation.

However, since this is the second time in recent memory that Loran-C capability has been available to DoD in the same geographical area and they were unprepared to make use of it - perhaps this circumstance will cause some rethinking of the sole dependence by DoD on GPS. If interoperability is being considered by the civilian world and Loran use is expanding worldwide, then why not a possible use of interoperability by DoD?

(5) An historic meeting was held in **Japan** during September at which delegates from that country, the **PRC**, the **USSR**, the **ROK** and the **U.S.** discussed navigation aid directions for that region. The International Association of Lighthouse Authority (IALA) chaired the meetings at the invitation of the hosts and attending parties. International support for Loran-C continuation and expansion was strongly expressed by the attendees as representing one of the goals of their governments.

(6) The government of **India** recently announced the award of a contract to **Megapulse, Inc.** of Bedford, MA to provide Loran-C transmitting, monitoring and control equipments to replace the existing Decca Navigator systems providing radionavigation capability to the ports of Calcutta and Bombay.

(7) The next meeting of the **Northwest Europe Loran-C Planning Group** is now scheduled for early November in Ottawa, Canada with Transport Canada as the host. Depending on the final disposition of the multiple governments involved, this could be the meeting at which the Northwest Europe nations finally commit to cooperative Loran-C operations. The price of oil and the US/Foreign currency exchange rate are strongly in favor of a Loran-C decision at this time.

(8) **Transport Canada** is now in the process of making a cost-benefit assessment on the issue of extending Loran-C coverage further to the north than the area currently served by U.S. and joint U.S./Canada transmitter configurations.

## WILD GOOSE ASSOCIATION

### 1990-1991 GOALS

o **MAKE NEW WGA MANAGEMENT PROCESS WORK.** This will entail the selection and purchase of computer hardware, printers, modem, and ancillary hardware that is needed to preserve and carry on the business management process John Beukers has been developing for the past two years or so. This hardware must be installed at NavCom Systems, Inc., tested and placed into operation. In the meantime, the new WGA Secretary will be working with new procedures, through a modem to the computer for conducting his business. Plans are to have the equipment set up and ready for demonstration during the April 18th 1991 WGA Board meeting at NavCom Systems. From then on it will be an iterative process to determine just how much contract assistance is needed and how we can effectively serve the membership and continue to conduct WGA business efficiently.

o **CONTINUE TO STRENGTHEN USER TIES.** We hope to accomplish this through inclusion of user oriented sessions at the annual Technical Symposium, the publication of user information and articles in the Journal and by continuing to identify user publications through which WGA can reach the growing user population on land and in the air.

o **KEEP MANUFACTURERS INFORMED.** Our discovery during the past year while trying to collect user information for the FRP authors, that loran businesses have lost contact with WGA surprised us. The new Loran Businesses Liaison Committee already has started to overcome this problem and we want to continue to have close contact with the loran industry in order to exchange information and to bring increasingly interesting technical issues into the annual Technical Symposium.

o **REVIEW 1990 FRP - COMMENT AS APPROPRIATE.** With the 1990 edition of the FRP about to be available, WGA must gear up to have the publication carefully reviewed for comment and clarification and for developing input, as appropriate, to the next edition. A new Special Committee to do this has been organized under Andrew Serrell and he is looking for volunteers to assist him in the FRP review and comment process.

o **PARTICIPATE IN MID-CONTINENT DEDICATION AND USER FORUM.** WGA will have an important role in this May 14 and 15, 1991 event, in cooperation with DOT, FAA and the Coast Guard. We will be handling registration and will handle one of the Technical Forum panels being held on the May 15th. This is an excellent opportunity for WGA to gain some visibility and to participate in a meaningful and significant event for the continued expansion of Loran-C. John Beukers is WGA's point man for this project with Director Bob Lilley and Member Paul Burket playing leadership roles in planning and executing this event.

o **CONTINUE TO PURSUE BUILDING MEMBERSHIP.** This will be continued through several efforts including the Response Card program initiated two years ago whereby each purchaser of loran equipment receives a card to mail in to WGA for more information on membership. This has worked well with a relatively high percentage of cards returned and a good percentage of resulting memberships. However, this program must be managed properly and the volume of responses can be large. The response card project will be included with the efforts being transferred to NavCom Systems.

o **VIGOROUSLY PURSUE TECHNICAL ISSUES.** Much of the original foundation of WGA was built upon the resolution of technical issues. The WGA membership pursued them with vigor and such contributions as the WGA Loran-C Characterization were the result. With time and the maturing of Loran-C and focus turning to producing user products in a highly competitive market, the emphasis on pursuing technical loran issues has faded somewhat. As we discussed in a recent edition of the *Goose Gazette*, "the bloom is not yet off the technical rose" and there are still many technical issues and problems with which WGA must become active. In recognition of this need, the By-Laws have recently been amended and a new Standing Committee has been formed titled the "Loran Technologies and Applications Committee". Our new Director, Dave Amos will chair this committee and is actively seeking member candidates. We believe by emphasizing this technology need through a new committee, that a number of important loran technology issues, which have been around for some time, will be addressed and be resolved.

o **PUBLISH THE WGA TECHNICAL JOURNAL.** Unfortunately in the past, other important WGA business has been responsible for distracting John Beukers away from the Journal and there has been some trouble focusing on manufacturers and other businesses for purchasing ads. We believe that we are making some headway and hopeful we will be to press well before John departs for the U.K. sometime this coming summer.

## Technical Symposium Follow-Up

by Larry Cortland and Bob Miller

1990 Long Beach Convention Co-Chairmen

In order to publicize this announcement widely, we opted to publish this item in the *Goose Gazette* in place of sending individual letters. We want to congratulate all the Session Chairmen for their outstanding participation and accomplishments. The persons cited are Commander **Tom Gunther** from Coast Guard Headquarters, **Dave Scull** from NACVOM in Virginia, **Mike Moroney** from the Volpe National Transportation Systems Center in Massachusetts, **John Illgen** from IST in California, and **Walt Dean** from ARNAV in Oregon. These people were greatly responsible for what we felt was an affair without glitches.

The persons who actually performed in chairmen roles were not always the same individuals that we had expected only moments before session times. What we mean is that some of our chairmen undertook their roles without the benefit of any prior preparations, in particular Dave Scull and John Illgen. They took the places of **Zeke Jackson** and **John Castonia**, respectively, who were unable to attend.

We sincerely thank you for all your efforts because we couldn't have gotten along without you. We also want to express our appreciation to our presenters, all of whom did an outstanding job of preparing manuscripts and visual aids, and succeeded in giving very interesting and professional presentations. Several nations were represented from three continents, and we also recognize those people who traveled great distances to get to Long Beach. Your manuscripts were expertly prepared (and, for the most part, received on time!).

Thanks are also extended to **Dick Arnold**, the Loran Program Manager for the FAA, to **Laura Charron** from the U.S. Naval Observatory, and to **General Anatolli Funtikov** from the Soviet Union, for taking the podium and giving the audience the benefit of their knowledge on loran and navigation related issues. We hope that all WGA members will recognize these people for performing a service to the organization overall.

As you read this, we are pleased to announce that the official proceedings should be out of the printers and on their way to you, or perhaps you already have them. Thus comes to a close the Nineteenth Annual Technical Symposium, opening the pathway for the Twentieth in October of 1991, at Williamsburg, Virginia, under the direction of **Zeke Jackson** and **Dave Scull**.

We would like to take this opportunity to encourage all WGA members to attend and participate.



## WILD GOOSE ASSOCIATION

### Member and Non-Member 1990 Price List

	Member	Non Member
<b>Proceedings: 1972-1989</b>		
Bound volumes of papers presented at past Conventions, each .....	\$30.00	\$45.00
<i>(When not available, individual paper charge will apply)</i>		

<b>Bibliography</b>		
List of titles and listing of all Authors for papers presented at all Conventions .....	\$7.50	\$10.00

<b>Papers</b>		
Individual papers presented at Conventions, each .....	\$5.00	\$10.00

<b>Journals</b>		
Back Issues of the Radionavigation Journal, each .....	\$10.00	\$15.00

<b>Videos</b>		
Loran - A Quick Refresher Course .....	\$15.00	\$20.00

Loran-C and GPS as a Navigation Mix for the United States Airspace .....	\$15.00	\$20.00
<i>(Federal Aviation Administration)</i>		

Loran-C - A Navigator's Approach .....	\$35.00	\$39.50
<i>(Capt. Henry Marx, Landfall Navigation)</i>		

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**Celebrate WGA's 20th year at Williamsburg  
in October, 1991!**

## Omega News

by Heywood Shirer

The International Omega Association held its 15th Annual Meeting in Bali, Indonesia from September 24-28, 1990. The IOA- 15 was hosted by the Garuda Indonesia Group companies which included Garuda Indonesia Airlines, Merpati Nusantara Airlines, Aerowisata Hotels, and Satriavi tours and Travel. There were six technical sessions that covered policy and plans, scientific and technical developments, and equipment and applications of the Omega Navigation System. Manufacturer representatives, technical specialists, and government officials were present to help answer questions and resolve problems concerning use of the Omega system. The Global Positioning System was emphasized at the meeting as a desirable complement to the Omega Navigation System. IOA President **Charlie Sakran** concluded that "Omega is alive, healthy, and continues to serve a multitude of users as an economical and international navigation system."

Omega Station Liberia has been off air since July 9, 1990, because of a civil war in that country. A complete shutdown, including power to the timing and control equipment and VHF voice radio repeaters, occurred on September 15, 1990 and all personnel were ordered to leave the station. The Omega Navigation System Center is hopeful, however, that negotiations will be successful to allow station personnel to return to station as soon as the situation permits. The shutdown has caused major concerns in the Omega community because of its potential to produce gaps in coverage should another Omega station go off air.

**John A. Pierce** was awarded the IEEE Medal for Engineering Excellence at the IEEE Medals Presentation on October 6, 1990, in Toronto, Canada. He received the award in recognition of his major contributions in radio propagation and navigation which led to Loran, Loran C and Omega. He is widely recognized as the "father of Omega."

IOA President **Charlie Sakran** paid a visit to Omega Station Australia after IOA-15 in Bali. The station is located on the southeast coast near the town of Yarram, a 3.5 hour drive from Melbourne. "A unique aspect of OmSta Australia," reports **Charlie**, "is a public Visitor's Center having displays explaining the Omega Navigation System, its operation, and the functions of OmSta Australia. A video presentation runs continuously which includes a background musical score based on the tonal sequence transmitted by the Australian Omega frequencies."

## SYNETICS

### A New England Growth Company

**John Beukers**

*An Interview with Bahar Uttam*

In the relaxed atmosphere of the San Diego Princess Resort, after the ION meeting technical sessions, **Bahar Uttam** provided me with a profile of his company - SYNETICS - and shared some of his personal background.

SYNETICS is privately held and enjoys the reputation as being the 10th fastest growth company in New England. With 12 offices around the United States the company has a payroll of some 250

employees and an annual turnover of \$25 million. SYNETICS specializes in systems engineering in the fields of Information Technology, Telecommunications and C3I and has the DOD, DOT, Health and Human Services and other government, state and private agencies as major customers. In the field of radionavigation, SYNETICS is visible with the work being conducted on GPS, Loran-C and Omega and is a team player of the Public Law 100-223 Loran-C/GPS Interoperability study.

**Bahar** formed SYNETICS in June of 1984 with **Bill O'Halloran** and 6 others and work started with contracts for the Department of Defense in navigation. Today, SYNETICS has contracts with 35 different government agencies, 5 international contracts, 2 state-level contracts and twelve in the private sector. In 1988 the Small Business Administration voted the company New England's Small Business of the Year and in 1989 SYNETICS was a finalist in INC Magazine's New England High Tech Entrepreneurial Award.

Born in India, **Bahar** was educated in England, receiving his first degree in electrical engineering from Queen Mary's College of London University and two further degrees in electrical engineering in the United States. He emigrated to the United States in 1967. After being with The Analytical Science Corporation (TASC) for 10 years he joined Jaycor and became a Senior Vice President. He has been active with the WGA since its inception, has co-edited the Radionavigation Journal and has chaired several meetings. **Bahar** is also active with the ION and the IEEE, and is chairman of the US delegation of the International Electrotechnical Commission on Navigation Standards. In March of 1990, **Bahar Uttam** was awarded the IEEE Kirshner Award at PLANS for his contributions to navigation.

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## Loran-C Video Cassettes Available from the WGA

By arrangement with the producers, three Loran-C video cassettes are being offered for sale by the WGA. Two of these address Loran for aviation interests while the third is directed towards the mariner. They may be obtained by writing or calling the Secretary at 516-862-7500 or by Fax at 516-862-7403.

**Loran - A Quick Refresher Course.** Created by the U.S. Department of Transportation, Federal Aviation Administration, this 21-minute video provides a brief history of Loran and then goes on to explain and demonstrate its current use in aviation. How Loran is being introduced into the U.S. National airspace is covered with a layman's explanation of Loran-C operation. The tape addresses the general aviation pilot and shows the advantages of Loran-C for area navigation and non-precision approaches. There is some tongue-in-cheek historical humor throughout! WGA member price is \$15 plus shipping (see below).

**Loran-C and GPS as a Navigation Mix for the United States Air Space.** This video was created by the Department of Transportation to describe and illustrate in non-technical terms how Loran-C, together with the Global Positioning (satellite) System could be able to satisfy the future needs of the U.S. national airspace. It provides an excellent review of the two navigation systems and how they complement each other. The presentation is easy to follow by the lay person and yet commands the attention of the professional navigator or engineer. WGA member price is \$15 plus shipping (see below).

**Loran-C - A Navigators Approach,** Instructed by Capt. Henry E. Marx. This is a best seller amongst the small (and not so small) boat owners and provides a wealth of hands-on practical navigation instruction using Loran-C together with classic navigation techniques. To quote from Landfall Navigation's descriptive leaflet " ... A Navigator's Approach is a 90-minute instructional video tape that finally shows you the power and usefulness of your Loran-C receiver - in addition to teaching you how to navigate using the information provided. Capt. Henry Marx of Landfall Navigation has put his acclaimed Loran-C Navigation Course on video to clear up the mysteries of this amazing navigation system. The course includes a description of the Loran-C system, how it works and how to use the features of Loran-C receivers. Numerous Loran-C plotting problems and exercises are worked with the viewer and answers provided. A chart and plastic interpolator are provided. WGA member price is \$35 (regularly \$39.93).

Tapes will be shipped UPS ground from St. James, NY. U.S. Domestic shipping costs are \$2.50 - \$4.00 depending upon zone.

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## Solar Terrestrial Glossary

*A useful compendium of terms for radionavigation interests*

The Space Environment Services Center recently issued a Glossary of Solar- Terrestrial Terms. Since the sun plays a major role in setting the limits of radionavigation system accuracy, many of the terms show up in radionavigation literature. This 69-page document should prove useful to authors and others interested in the effects of solar output on radio propagation and satellite performance.

To quote the preface:

The National Plan for Space Environment Services and Supporting Research stipulates that the Space Environment Services Center (SESC) provide space environment services to meet the common needs of all Federal agencies and public users. The SESC is operated jointly by NOAA and the U.S. Air Force Air Weather Service. It is located in Boulder, Colorado, as part of the NOAA Space Environment Laboratory.

The SESC collects observations and compiles a real-time data base in the Space Environment Laboratory Data Acquisition and Display System (SELDAS). The data are used by the

SESC to monitor solar and geomagnetic activity and radiation levels, to issue indexes and alerts describing current conditions, and to make forecasts of future conditions. The users of these services include, among others, customers concerned with satellite monitoring, national defense, and scientific research ranging from solar to seismic physics.

A common vocabulary is necessary to help such a diverse variety of customers achieve the best use of the services. This manual provides a collection of customized definitions and standardized terms specifically used by the SESC in its products, publications, and user support services. We hope that our customers and others working in this field find it helpful.

Copies of the glossary are available from SESC:

Space Environment Services Center  
NOAA/ERL R/E/SE2  
325 Broadway Boulder, CO 80303

The WGA member contact at SESC is Joe Kunches. He may be reached at (303) 497-5275.

# Decca Chain Faces Replacement in North Atlantic, Europe by Loran-C

*Article in June 1990 issue of Sea Technology in the Marine Electronics section.*

Britain's secretary of state for transport, Cecil Parkinson, announced recently that international civil Loran-C will replace the venerable Decca Navigator System in U.K. waters, "Subject to satisfactory international agreement within an acceptable time scale," he said. Loran-C will become the standard marine radionavigation system during the 1990s for northwest Europe and the North Atlantic.

In response to a parliamentary question from Sir David Price, MP, Parkinson added: "This decision has not been an easy one. It would mean closing down in 1997 the present widely respected U.K. Decca Navigator System ... successfully operated by Racal Decca Marine Navigation Ltd." Racal's current contract with the General Lighthouse Authorities runs to February 1994 with options to extend the service to February 1997.

The U.K.'s fishing industry had campaigned against the change because of the cost of converting to Loran-C. Parkinson noted the industry "will gain some important benefits," such as avoidance of seasonal and night-time skywave effects. In addition, he said Loran-C will mean lower light dues paid by fishermen -- user fees that go to Britain's General Lighthouse Fund.

Parkinson predicted that -- assuming satisfactory negotiations -- a new U.K. Loran transmitter could be operating by the end of 1992 and satisfactorily validated for use in repeatable mode before the end of 1993. The pace would allow "a reasonable transition period" of more than three years for conversion of the fishing industry's Decca records. Final reconfiguration would be in place by January 1995.

The clock is running, however; Parkinson noted that the U.K. will make clear to potential partners in the agreement that "our window for a decision in favor of Loran is time-limited." He added: "In the event of a firm commitment to Loran-C, I would wish to give the marine community about six years notice of the ending of Decca transmission."

## WGA Officers and Directors for 1991

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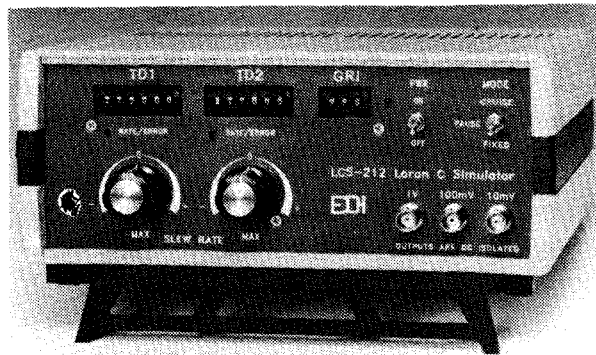
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