



# The Goose Gazette

The Newsletter of the Wild Goose Association,  
the international loran radionavigation forum

**News of the Winter, 1990**

*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.

WGA members 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 below.

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THE WILD GOOSE ASSOCIATION  
P. O. Box 556  
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(516) 862-7500

## President's Message - Jim Culbertson

The Board of Directors and Committees have been very active this quarter taking in the slack after the Cape Cod convention. The Board met in San Diego on 25 January after the ION Technical meeting. A quorum was present as well as several members and a representative of IOA. We have a lot on the plate for 1990 and we will need much help from the membership as I will discuss below.

**Federal Navigation Plan (FRP).** John Illgen, your immediate past president, represented WGA and delivered our statement to the Radionavigation Users Conference on 17 November 1989. Subsequently, the Executive Committee prepared the WGA official comment on the 1988 edition of the Federal Radionavigation Plan (FRP) and submitted it before the 1 January 1990 deadline. This input included an offer for professional help from the WGA in the preparation of the 1991 edition. Although we were able to meet commitments for these two events, the Executive Committee feels strongly that we have to find a better way of handling our responsibilities toward the FRP!

The Special Winter edition of the *Goose Gazette* included an appeal for a volunteer "FRP Watchdog" and I am reiterating that appeal to the membership for help. The entire loran situation nationally and overseas is becoming increasingly complex and we simply have to get closer to the federal plans and policies established by the FRP. We need a person, or a small committee, to become expert in the contents of the FRP, the process by which it is created and changed, its impact on national and overseas loran service, and the inputs WGA has made in the past to its preparation and modification. This "expert" would alert the WGA Board of Directors to FRP issues and events, seek users to attend the annual Radionavigation Users Conference, and direct the preparation of all WGA inputs to the FRP process. This is an important position and anyone interested in helping please contact the Secretary, **John Beukers** or any Director.

**The Wild Goose.** Its all in the name, they say, but some people are having trouble with our ties with the famous Canadian Goose! The talk was all over the convention in Cape Cod - can't we find a better name? Comments from those who are suggesting change include their difficulty in being taken seriously when they announce membership in WGA, resistance on the use of the WGA emblem and logo on company stationery and advertisements for fear of being confused with a preservation group seeking donations, and disapproval by supervisors of requests to attend the Wild Goose Technical Symposium as being frivolous! The Board has kicked this around at two meetings. A change might be achieved by amending the Articles of Incorporation for "doing business as \_\_\_\_ (new name) \_\_\_\_". It is generally agreed that WGA or some tie with any new name to the Wild Goose Association plus retention of the flying goose symbol would be desirable. In any case, approval by membership is required and this means next October at the General Assembly meeting.

## Wild Goose Association

## 1990 Directors/Committee Chairmen (\*) Phone List

	Home	Business	Fax	Modem
Alexander, Jim	213-431-4332	213-431-0244	213-436-5661	
Andren, Carl	703-560-2198	202-331-9097	202-296-5457	
Beukers, John	516-751-0767	516-862-7500	516-862-7403	516-862-7576
* Carter, Dave	301-249-5496	301-249-0288	301-249-0288 (4)	
* Castonia, Jim	805-647-7014	805-563-0665	805-563-2191	
* Cross, Dan	202-363-2129	None	202-966-3017	202-966-3017
Culbertson, Jim	714-531-7974	714-531-7974	714-531-5688	714-531-5688
Dean, Walt	503-694-1443	503-684-1600	503-620-8998	
Enerstad, Kjell	47 2 50 39 89	47 2 40 26 19	47 2 40 25 30	
Fehlner, Leo	301-622-0529	None	301-989-0358 (1)	
* Frank, Bob	313-645-9848	313-645-9848	None (2)	
Illgen, John	805-685-8809	805-563-0665	805-563-2191	
Johnson, Vern	201-228-2642	None	None (2)	
Lilley, Bob	614-592-1282	614-593-1514	614-593-1604	614-593-1442
Marx, Henry	203-353-1757	203-661-3176	203-661-9613	
McGann, Ed	508-475-8606	617-275-2010	617-275-9636	
Moroney, Mike	508-468-2665	617-494-2026	617-494-2628	
Polhemus, Bill	802-644-5569	802-644-5569	802-644-2943	
Scull, Dave	703-360-9430	703-684-2900	703-836-7411	
Van Etten, Jim	201-661-0876	None	201-575-5467 (3)	201-661-0876
Wiener, Ron	415-969-9960	408-947-2070	408-280-5700	

Note (1) Service Bureau; use only for urgent communications

Note (2) Will look for local Service Bureau

Note (3) Mark for the attention of Bill Van Etten

Note (4) After December 4 1989

## President's Message, continued from Page 1

In the meantime, we need some comments and input from the general membership including suggestions for a possible new name. Send them to the Secretary, **John Beukers** or to any Director.

We are still in the hunt to better identify those land mobile users (or beneficiaries) of loran. **Bruce Hensel** (JET Electronics and Technology) (616) 949-6600 will be leading the Land User Committee until **Dave Carter** recovers from his recent illness. This committee will be seeking to identify ALL the players in the chain from receiver manufacturer to end user. We have liaison with the USCG Marine Radio Policy Branch who is working the Power Line Carrier problem - a big source of potential interference to land mobile users of Loran-C - and WGA should be facilitating these regulatory efforts with the needs of the land users. Again, I request members to contact Bruce with any information you have regarding the land users and to help him establish his data base.

Finally, **John Beukers** is gearing up to identify advertisers for the forthcoming Journal. The users and businesses serving the land users with loran positioning are a new and important source of advertising and we request that John Beukers be advised of these "hidden" sources.

Our goal is to double the WGA membership during 1990 - introduce WGA to your contacts and solicit their membership - the Secretary has plenty of application blanks.

## FAA Loran-C Program

The WGA Government Liaison Committee received a letter from FAA with some very positive comments:

"We fully support the Wild Goose Association's effort to publish its Technical Journal on a more frequent basis. The rapid growth and technical advancement being made with Loran-C needs dissemination. ..."

The list given below includes "...the Federal Aviation Administration Loran-C project team." WGA will ask these team members for their contributions to the Journal. The list is given here to alert WGA members to the names of cognizant FAA persons and to indicate the breadth of the FAA commitment to loran.

John Kern	AVR-2	FAA Project Team Leader
George Quinn	APS-420	Overall FAA Program Coordination
James Enias	AFS-410	Operational Criteria Development; AVR Program Coordination
Al Hodges	AFS-350	Certification Criteria Development
Dick Kirsh	AWS-120	TSO Coordination (Receiver Specs.)
Paul Best	AFS-420	Instrument Approaches Policy
Don Funai	AVN-5	Instrument Approaches Development
Lyle Wink	AVN-240	Flight Inspection Coordination
Leon Thomas	ATO-304	Air Traffic Coordination
Mike Moroney	DTS-52	EIP Monitors and User Coordination
Walter Frucht	AAS-110	Airports Coordination
Stefan Hoffer	APD-220	Benefits/Cost Criteria Development

## FAA Regional Coordinators

Mr. Mitchell	ASD-204	Southern Region
Dick Weaver	AEA-220	Eastern Region
Pete Gardner	ANM-220	Northwest Mtn. Region
John Mogul	ANE-220	New England Region
Tim Phillips	AGL-220	Great Lakes Region
Tom Katri	ASW-220	Southwest Region
Chuck Hicks	AWP-220	Western-Pacific Region
Walt Gilbert	AAL-220	Alaskan Region
Bob Ravenkamp	ACE-220	Central Region

This FAA team is supported by a wide variety of contractors and consultants, plus US Coast Guard personnel. The joint FAA/NASAO (National Association of State Aviation Officials) Loran-C Planning Work Group provides the forum for discussion of system and implementation issues among all parties relative to instrument-approach use of loran. This working group is chaired by **Mr. John Cornett**, aviation chief for the State of Ohio.

WGA members who are in contact with any of these FAA team people should encourage their efforts on behalf of loran, and should offer the WGA's help wherever it is needed.

## Changing of the Guard

David C. Scull recently retired from federal service at DOT's RSPA. Fortunately for the WGA, he remains active in our midst. Thanks to Dave for his even-handed and competent management at DOT, and best wishes in his new role.

Heywood Shirer replaces Dave Scull. Dave Olsen remains in this office also.

## Congressional Matters

Both VP and USCG Liaison **Dave Scull** and Congressional Liaison **Ed McGann** have expressed concern over Congress' instruction to DoD to prohibit distribution of precision timing information from GPS. This means that GPS would not be allowed to provide accuracies better than 100 meters.

In the same vein, the DoD has denied the Coast Guard the option of synchronizing Loran-C transmitters to uncorrupted (by Selective Availability) GPS time on the basis that such action would distribute time to an accuracy as good as the GPS clocks. Essentially, SA-corrupted time is the best which can be used. Another civilian market, the use of commercial satellites for time transfer, might result from this attitude...

On other matters, Ed reports:

- The installation of the mid-continent loran stations is going forward near schedule. Site preparation and building construction are underway at three sites, with the fourth due to start in the spring. All transmitters have been delivered, ahead of schedule.

- FAA data-collection sensors for non-precision approach use of loran are being installed, with some to be operational in mid- 1990.

- Discussion continues over what role GPS may eventually play in the domestic National Airspace System. It is now generally agreed that neither the 18+3 or the 21+3 constellation would have the availability or integrity for sole-means air navigation. With VOR/DME in place as a primary navaid, and the widely-accepted

supplemental Loran-C system, does GPS have a role?

- With the filling of the mid-continent gap, the National Weather Service is moving toward standardizing its radiosonde tracking to be based upon Loran-C.

- The growing drug interdiction effort presents an opportunity for the Loran-C community to press for Caribbean coverage with extensions to Central and South America. This would serve the civilian navigation community as well as providing a common grid for C31 applications in the drug effort.

- The US Coast Guard does not have in its plans or budgets an upgrade program for Loran-C receivers. USCG will receive some GPS receivers via Navy procurements. Shouldn't we encourage the Coast Guard to equip with the latest Loran-C technology, since it is the official system for US navigable waters and is the standard for position fixing when vessels are seized?

## International Loran

Ed McGann

- Apparently in line with DoD policy not to provide nav services with better than 100-meter accuracy, we have reports of US government representatives attempting to convince friends and allies not to establish differential GPS systems.

- **Canada** is proceeding with a multi-modal cost/benefit study to determine if more Loran-C transmitters should be installed. Provisional planning is taking place toward replacing the tube transmitters at Williams Lake and Cape Race with solid-state units so as to reduce operating costs and increase signal availability.

- **Mexican** and FAA Southwest Region personnel continue to exchange information on Loran-C developments. An FAA spokesperson presented Loran-C status information at a meeting of South American countries in Chile earlier this year.

- The president of **Venezuela** has directed that Loran-C be part of the new national aviation enhancement program in that country.

- **Korea**, at the urging of USCG, is moving to provide its own signal monitoring capability and to take over the old Commando Lion chain.

- **Japan** and the US have discussed host-nation Loran-C operation there.

- **India** indicates it will announce a contract to replace the Decca chains in Bombay and Calcutta harbors with Loran-C. There is effort underway to extend Loran-C into **Bangladesh**.

- **Brazil** has begun a study of aviation navaid enhancements because of a number of military and commercial "lost-aircraft" incidents.

- March 1990 will see the next meeting of the **Northwest Europe Loran-C group**. The UK, Danish and German governments asked for additional time to study an international agreement.

- **South Africa** has renewed its interest in Loran-C, based on the UK Consultative Document recommendations and the growing interest in loran in general.

## Profile

WGA received the following letter from member Albrecht Grimm:

"With the company IGI, Hilchenbach, I have been developing a flight-management and guidance system called "CCNS - Computer Controlled Navigation System;" the 4th generation is now in production. This CCNS can be based on different range or positioning sensors, e.g. 1) GPS or differential GPS; 2) Loran- C; 3) DME and TACAN and 4) Portable precision DMEs.

CCNS has been operated in numerous aerial photography missions, as well as for other special activities such as 1984-85 in Antarctica (DMEs), and 1987 in Syria (Loran-C).

We are now preparing CCNS-4 to be operated on the North American continent for aerial photography and maritime patrol, in 1990."

## Handheld Loran

According to a recent press release, Micrologic, Inc. has begun production of the world's first handheld loran receiver. The unit weighs a little less than two pounds, and will run for about 25 hours on six AA batteries. Dubbed "SportNav," the receiver boasts automatic GRI and secondary selection, magnetic variation, ASF corrections and one hundred waypoints.

## WGA Charter

"The Wild Goose Association is a professional organization of individuals and organizations having an interest in loran radionavigation and who wish to foster and preserve the art of loran. It 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."

## Broadening the Appeal of the WGA

*[Ron Wiener, recently appointed a Director of the WGA, submitted this article some time ago. Some of the items he lists are being implemented or considered as part of the WGA Growth Strategy. Members are encouraged to work for the sort of broad appeal Ron suggests, either individually or on WGA committees. Ed.]*

I asked some of the people here at Azure Technology to put together some thoughts on what types of services and products the WGA might offer. The objective is to broaden the appeal of the Association to loran users. Here is what we came up with. This is a draft; comments, inputs, and suggestions are welcome.

**Areas for enhancement:** - Education - Involvement in Technical Actions - Involvement in Political Actions - Loran-C related Products - Statistical Surveys

### I. Education

#### A. The Need.

The Loran-C system is changing constantly, both in its worldwide configuration and in available products. New users as well as prospective users require timely information which is often difficult to collect from scattered and obscure sources. Examples:

1. Existing and planned coverage areas
2. Basic principles
3. Political Actions being taken
4. Interoperability with other nav aids
5. Rules and regulations affecting Loran-C
6. Matching receiver capabilities to one's real needs
7. Impact of GPS and the FRP on today's users
8. Scheduled outages (from Notice to Mariners)

#### B. The Vehicles

1. Goose Gazette
2. Brief pamphlets on specific subjects
3. A definitive book on Loran-C written and published under auspices of the WGA
4. Seminars or conferences geared towards attracting new users (Note: If a large potential user attendance can be assured, more loran manufacturers would plan to exhibit). Plan user-oriented material, not technical papers
5. Manufacturers Directory
6. Coordination with avionics and navionics dealer organizations (e.g. Aircraft Electronics Association) to reach loran dealers. These dealers would be targeted for education programs which will help them sell more loran hardware, and for volunteer dissemination of WGA information to their customers.

### II. Involvement in Technical Actions

- A. Attendance of technical conferences
- B. Participation in volunteer programs where input from a large user group would be helpful (e.g. interference reporting)
- C. Identification of trouble coverage areas
- D. Identification of new loran/antenna installation techniques
- E. Dissemination of information on new loran applications

Broadening; from page 4

### III. Involvement in Political Actions.

Possibly fashioned after the AOPA structure, designated members in each state or region would be responsible for identifying and working with local, state and federal politicians on issues which are important to the WGA. "Agents" would report unfolding events mailings to members in a particular region where a letter-writing campaign might be called for. Recommend alliances with other PAC's (e.g. AOPA) with mutual interests.

### IV. Loran-C related products

- A. Bibliography/Proceedings at a reasonable price
- B. Keith Connes' Loran-C Guide
- C. TAB Books loran publications
- D. Various waypoint Lat-Long directories
- E. Loran-C videotapes
- F. T-Shirts, mugs etc
- G. WGA-published guide to the Loran-C system
- H. WGA pamphlets on specific subjects
- I. Statistical survey results (see below)

### V. Statistical Surveys.

As an aid for manufacturers, and also as a point of interest to users, the WGA might be the first organization to accurately gather statistics on the loran market and its users' profiles. Statistics may either be published in the Gazette or sold in report form. These stats may also assist in the political objectives of the organization.

### VI. The Task Ahead:

- A. Develop educational aids on a low-cost or no-cost basis. Use WGA members to create the material on a royalty basis to minimize up-front expenses.
- B. Compile "leads" databases and "registered user" databases from the member manufacturers. Use the leads database to promote regional seminars on loran use in marine/aviation/terrestrial applications. Use registered user database to pursue increased membership and sales of products/conferences.
- C. Work with AOPA-type organizations to identify other politicians who should be worked on. Find members willing to work their regions.
- D. Identify products and establish distribution agreements. Add catalog to the back of the Gazette.
- E. Prepare survey forms for statistical projects.
- F. Inform the world through a new press release that the WGA is targeting 10,000 users, is shedding its prior "Industry Only" membership structure, and is adding new products and services. Possibly build this campaign around a name change for the Organization. Get all member manufacturers to print WGA logo on their letterhead and product documentation.

## New Members: Welcome to WGA!

The Wild Goose Association welcomes these new members, who have joined since November, 1989:

Albright, Gerry  
Baldwin, Michael G.  
Bills, Kenneth G.  
Blum, Lawrence J.  
Botsford, Alan  
Canavan, William J.  
Casas, Henry A.  
Cole, Harold L.  
Cook, Kathy  
Driskill, Robert E.  
Erb, Lee A.  
Ewy, Bob  
Fischer, Robert W.  
Fogarasi, Stephen  
Fuchs, Claus  
Futter, Mark E.  
Heavener, Arthur A.  
Hill, John  
Hine, Thomas L.  
Hopkins, Cecil J.  
Keefe, Howie  
Kohler, Mary S.  
Long, Jr., Joseph M.  
McDonald, Carolyn P.  
McDowell, Robert W.  
Moore, D.C., Allen E.  
Moses, Shahar  
Naylor, Robert W.  
Picking, Henry F.  
Richardson, Avery G.  
Ripley, Roger  
Roberts, Wallace B.  
Robinson, J. Milo  
Sinnott, Joseph  
Slobe, Ron  
Todebush, Peter C.  
Weber, Jean-Claude  
Woolsey, E. John  
Yeakel, Larry E.

## Unintentionally Blank

Yes, this is what's known in the business as "filler." It's considered better than blank space.

## Earth-Referenced Nav Could Replace VOR/DME

FAA "Advanced Notice of Proposed Rulemaking" for public comment

From Ed McGann

This is a quotation from the Washington Staff Report of the National Association of State Aviation Officials (NASAO).

"FAA recently issued an "Advanced Notice of Proposed Rulemaking" (ANPRM) requesting public input as it initiates the rulemaking process to develop the future air navigation system. Congress has directed FAA to replace the current VOR/DME based system with one offering greater precision and safety. It is widely believed that the new system will be based on the U.S. global positioning satellites (GPS) and the Soviet global navigation satellite system (GLONASS), though it may also incorporate the inertial navigation system and LORAN. The long-term effort will result in updating the rules to eliminate obsolete language, revising the regulatory standards to accommodate as sole means of navigation for IFR en route and terminal operations. NASAO is reviewing the ANPRM for comment.

And here is a quote from the February 12th issue of Aviation Week and Space Technology:

"The FAA has taken its first step toward authorizing use of Loran-C and the Global Positioning System (GPS) as stand-alone alternatives to the long-used VOR/Distance Measuring Equipment (DME) for Instrument Flight Rules operations. The agency has requested airspace user comment by MAY 22.

## Interesting and Important Meetings

The following notices of forth-coming meetings or conventions have been received by the Secretary:

NOAA National Ocean Service and the Hydrographic Society of America  
"The Fourth Biennial National Ocean Service"

"Navigating the Nineties"

Omni International Hotel, Norfolk, VA

May 1-4, 1990

Contact: Frank P. Margiotta, U.S. Hydrographic Conference'90

PO Box 177, Norfolk, VA 23501

Satellite Division of the Institute of Navigation

ION GPS-90, 3rd International Technical Meeting

Sept. 19-21, 1990

Broadmoor & Red Lion Inn, Colorado Springs

Abstracts for "Call for Papers" to be sent to Dr. Per Enge

Worcester Polytechnic Institute

Dept. of EE, 100 Institute Road, Worcester, MA 01609

Phone: 508-831-5338 FAX: 580-831-5491

IEEE Aerospace & Electronics Systems Society

PLANS'90 Position Location & Navigation Symposium 1990

"The 1990's - A Decade of Excellence in the Navigation Sciences"

March 20-23, 1990

Riviera Hotel, Las Vegas, Nevada 89114

Contact: Larry Atkins, Phone: 828-506-4231

International Omega Association 15th Annual Meeting

"Omega in the Nineties: High Technology, Low Cost, International Ownership"

September 24-28, 1990

Hotel Sanur Beach, Sanur, Bali, Indonesia

Technical Paper Abstracts due: June 1, 1990

General Chairman: Henry B. Schlachta

Phone: 514-340-3043 Fax: 514-340-3100

Technical Chairman: Robert C. Thomson

Phone: 703-866-3862 Fax: 703-866-3866

Department of Transportation Civil GPS Service Committee Meetings

March 6-7 1990

June 5-6 1990 (Tentative)

Sheraton Premiere Hotel

Tysons Corner, VA

Contact: Joe LoVecchio; Karen Van Dyke 617-494-2432

**Don't forget -- it's dues renewal time!**  
**Your WGA needs your active participation!**

## FAA Loran-C: Schedule of Events

FAA has developed a Loran-C Master Plan to guide its program team and to provide information and target dates for manufacturers and users. This schedule is subject to change, but was current in October, 1989, when it was presented to the FAA/NASAO Loran Planning Work-Group. It relates specifically to provision of instrument approaches using Loran-C.

[At this writing, work was underway regarding the potential for improvement of existing RNAV, VOR and NDB approaches using Loran-C, methods for conducting site (signal-quality) surveys at airports prior to starting development of an approach, on monitor parameters and tolerances for aviation blink and on the degree of far-field monitoring required for approach integrity. The need for close inter-agency cooperation between FAA and Coast Guard is evident. Ed.]

-FAA issues Advisory Circular 20-121 for IFR and VFR enroute Loran-C operations	June, 1984
-RTCA SC-137 and SC-158 approach specifications	November, 1987
-FAA issues TSO C-60b for receiver certification	May, 1988
-FAA modifies AC 20-121 to include approaches	June, 1988
-FAA Administrator tasks regions to develop the first 500 approaches based on states' lists	October, 1988
-Initial requirements for Loran-C aviation blink provided to US Coast Guard	May, 1989
-FAA publishes Loran-C cost/benefit criteria	May, 1989
-Installation of first Loran-C aviation monitor	June, 1989
-Publication of Loran-C terminal procedures (TERPS)	August, 1989
-First receiver approved (C-60b) for approaches	December, 1989
-Delivery of monitor interface equipment	July, 1990
-Integrate Loran-C into automated procedures system	July, 1990
-FAA criteria for routine Loran-C approaches development	October, 1990
-First aviation monitor declared operational	November, 1990*
-Publish first public-use Loran-C approach	November, 1990
-Integrate Loran-C into the Automated Flight-Inspection System	November, 1990
-Aviation blink operational	December, 1990*
-Loran aviation monitor installation complete	June, 1991
-All mid-continent transmitters operational	June, 1991

\* indicates a key pacing item

## Paul Burket Retires

Paul Burket retired as administrator of the Oregon Aeronautics Division effective January 1. Burket had held the post since 1972, after holding a similar position in Nebraska.

A well-known aviation figure both at the state and national levels, Burket received FAA's Award for Distinguished Service for his work as chairman of the NASAO task force on Loran-C and as co-chairman of the FAA/NASAO Loran Planning Work Group. Under his leadership these groups advanced the development of Loran-C instrument approaches.

The WGA extends its thanks to Paul for his contributions to loran and its best wishes to the Burket family.

[Excerpted from "Aviation News, Winter, 1990," published by the Oregon Aeronautics Division, with permission. Ed.]

## WGA Has Videos

The sale of the three loran videos offered by the WGA has been lively. We have prepared labels and created a package for these that are very professional. An inventory is being maintained which is replenished as necessary and is available for immediate shipment. The two FAA-created tapes are shipped direct from St. James, the third, created by Henry Marx of Landfall Navigation, is drop shipped by Henry.

Formats other than NTSC are available by special order. Such an order in PAL format recently went to Norway. The FAA GPS/Loran video was shown at ministerial level.

There is an indication from Ron Wiener that a loran training tape is being prepared for the aviation community which we hope will be made available to WGA for distribution.

## Bibliography Update

1989 Technical Symposium papers are added.

The 1990 edition of the WGA Bibliography has been prepared to include the papers presented at the 1989 Convention.

The Bibliography has turned out to be a useful document to introduce newcomers to the loran discipline. The Secretary gets a fair number of calls of the nature "I'm interested in learning about loran - where do I start?" The small (\$10) investment required to get the Bibliography appears to be appreciated and has led to several new members and the sale of publications.

## GPS World Published

New Magazine specifically addresses GPS issues.

Some members will have received the first issue of the new magazine GPS World. The editorial staff and publisher are to be congratulated on an excellent publication supported by a professional staff of contributors. The magazine is of the "qualification for free subscription" type and carries a substantial amount of advertising.

Unlike the situation with Loran-C, it must be remembered that at present the GPS system is in the development stage, substantial contracts are in place, and there is a lot of money flowing.

You are invited to join the Wild Goose Association at its 19th Annual Convention and Technical Symposium. This 1990 event will be held on 23-25 October at the Ramada Renaissance Hotel in Long Beach, California.

Papers are invited in all areas of Loran-C technology and applications. The Wild Goose Association especially invites international participation.

Student papers are particularly solicited. The WGA can provide partial or complete reimbursement of travel expenses to the author of the best student paper. The selection will be made by the Technical Chairman from the final manuscripts submitted by students.

The planned activities for the Technical Symposium include 5 sessions devoted to paper presentations and a Special Session specifically for users of Loran.

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### *How to Submit a Paper*

Send a one-page abstract of your paper and a one-paragraph author biography to Bob Miller or Larry Cortland by **July 1, 1990**. See committee addresses overleaf.

You will be notified of acceptance by July 15, 1990 and sent format instructions for final manuscripts which become due by September 1, 1990.



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## Wild Goose Association

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## CALL FOR PAPERS

for the

*19th Annual  
Technical Symposium*

**“Loran-C and  
Its Place in Global Navigation”  
with  
User Seminars and Workshops**

**• Open to the Public •**

**Tuesday through Thursday  
October 23 - 25, 1990**

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**Ramada Renaissance Hotel**  
111 E. Ocean Boulevard  
Long Beach, CA 90802  
(213) 437-5900



**This is the annual Call-for-Papers "centerfold!" Plan those technical, planning and policy papers now, and let your session chairman know you're going to participate!**

**Executive Committee:**

**General Chairman**

James Alexander  
Alexander Marine Transportation  
3262 Tigertail Drive  
Los Alamitos, CA 90720  
(213) 431-0244

**Technical Symposium Chairman**

Robert Miller  
II Morrow, Inc.  
P.O. Box 13549  
Salem, OR 97309  
(503) 581-8101 Fax 503-581-7205

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**The Wild Goose Association**

The Wild Goose Association is a professional organization of individuals and organizations having an interest in loran radionavigation and who wish to foster and preserve the art of loran. It 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.

**SYMPOSIUM TOPICS AND CHAIRMEN**

<i>Morning</i>	<i>Afternoon</i>
<b>Tuesday, October 23</b>	
<b>Session 1</b>  <b>Worldwide Loran Activities</b> CDR G.T. Gunther U.S. Coast Guard (202) 267-0283	<b>Session 2</b>  <b>Navigation Sciences</b> Elijah "Zeke" Jackson NAVCOM Systems, Inc. (703) 361-0535
<b>Wednesday, October 24</b>	
<b>Session 3</b>  <b>Loran Integration and Applications</b> Maurice "Mike" Moroney Transportation Systems Center (617) 494-2026	<b>• SPECIAL SESSION •</b>  <b>Loran-C Awareness Seminars</b> Information for Loran Users  <b>• OPEN TO THE PUBLIC •</b>
<b>Thursday, October 25</b>	
<b>Session 4</b>  <b>Loran and GPS Interoperability</b> John Castonia Illgen Simulation Technologies, Inc. (805) 563-0665	<b>Session 5</b>  <b>Loran Technologies</b> Walter N. Dean ARNAV Systems, Inc. (503) 684-1600

## WGA Participates in DOT Navigation User Conference

Past President John Illgen represented the WGA at the recent DOT navigation users' conference; his report and the text of WGA's position paper are reprinted here:

To: Capt. James Culbertson, President  
 From: John D. Illgen  
 Subj: WGA Presentation to Federal Radionavigation Plan (FRP) Users Conference

On November 17, 1989, I presented the WGA position document entitled "The U.S. Department of Transportation Open Meeting for All Users of U.S. Government-Provided Radio Systems" to the Radionavigation Users Conference held in Arlington, VA. The purpose of the meeting was to obtain user inputs on government policy and future plans for these services as outlined in the 1988 Federal Radionavigation Plan. The DOT is seeking views and positions to assist in the formulation of future plans for the next edition (the 1990 FRP). Here are the key points regarding this year's Conference:

1. All participants have been given until 1 January 1990 to provide written comments (see paragraph 3 of the WGA position letter).
2. WGA was well represented (WGA attendees included Dave Scull, Bob Miller, Carl Andren, myself for a short period of time, and others).
3. LtCol Jules McNeff (202/695-6123), Office of the Assistant Secretary of Defense, C3I, has replaced LtCol Russ Nakamura as OSD's Navigation Systems, AWACS, and Air Traffic Control lead. Since Jules is new, I suggest well coordinated visits to his office. The WGA DoD Working Group can provide background information for such visits. I plan to visit Jules in January.
4. There was a clear lack of Congressional staffer attendance at

the Users' Conference. I found this surprising.

*[Text of November 10, 1989 paper]*

### U.S. Department of Transportation Open Meeting for All Users of U.S. Government-provided Radio- navigation Systems.

The Wild Goose Association takes great pleasure in attending this Department of Transportation open meeting for users of U.S. Government-provided Radionavigation Systems. The Wild Goose Association is a professional organization of individuals who have an interest in loran and other associated radionavigation systems. Our membership includes marine, land and aviation users of loran equipment throughout the world as well as engineers, scientists, technicians, universities, laboratories, planners, promoters, designers and manufacturers of radionavigation systems.

We desire to comment formally on the 1988 edition of the Federal Radionavigation Plan and provide constructive responses that will strengthen future editions. However, the announcement of this forum was not received until just before the first of November 1989. This has not allowed sufficient time to prepare our formal input. We respectfully request that our written comments be accepted into the proceedings at a later date and ask that we be advised as to the cut-off date for receipt of the comments by the Department of Transportation.

For information purposes, our formal comments will include discussions of the following:

1. Numbers of Users presented in various tables.
2. Impact of the FRP on planning by overseas governments.

3. Need for more depth in Loran-C material.
4. Need for more material on the land (terrestrial) users.
5. Need for expanded material on time standards and time dissemination using GPS, Loran-C & Omega.
6. Publication in the FRP of coverage diagram updates.
7. Interoperability of radionavigation systems.
8. Civil use of GPS during development/deployment phase.
9. Publication of user meeting schedules in the FRP.
10. Funding for maintenance of mature systems.
11. Proposed new section summarizing trends on key issues documenting past, present and future radionavigation alternatives.
12. Need to include a "Mix of Navigation/Position Location Systems" for DoD use.

The Wild Goose Association appreciates the intent of the FRP to direct the management and funding of U.S. radionavigation systems. Many of these systems, however, are used internationally and our Nation's policies should not exclude the recognition of this fact. The FRP impacts foreign governments wrestling with their own radionavigation decisions, the outcome of which may have a material effect upon U.S. domestic national policies.

The WGA is an international organization and finds itself deeply involved with overseas users and forums addressing radionavigation issues. We trust that our inputs derived from this presence will be useful in DOT and DoD's efforts in updating the FRP.

James F. Culbertson, President

User Conference, from Page 10

Subsequently, on December 29, 1989, WGA submitted formal comments on the FRP, noting "...with satisfaction that many of its comments on the 1986 FRP were included in the 1988 edition." WGA President Jim Culbertson offered the services of the Association during preparation of the 1990 Federal Radionavigation Plan.

## Theme for 1990 Convention

by Jim Alexander

One of the prime objectives of the 1990 Convention will be to bring loran to the thousands of users and to get the WGA some exposure to the public. We have had several suggestions for a theme that are consistent with this objective. We have settled on "Loran-C - Its Place in Global Radionavigation, With User Seminars and Workshops."

The Seminars and Workshops are open to the public. Every effort will be made to get substantial support from manufacturers to display their equipment and for them to take active participation in the seminars and workshops.

We are also looking for support from the local Coast Guard to provide speakers and perhaps give demonstrations. In addition we are anticipating the Notice to Mariners to be a vehicle to publicize the Convention and its theme.

## Loran-C Meeting in Marseille, France

Report of 3rd I.A.L.A. gathering for Mediterranean Countries received by the Secretary.

Seven countries attended the meeting hosted by I.A.L.A. in Marseille on 21- 22 November 1989. The sixteen page report provides the activity of each country considering the use of Loran-C in the Mediterranean and includes a presentation by Andreas Stenseth of the proposal for the N.W. European Chain. There is a statement of U.S. GPS policy delivered by the U.S. Coast Guard Acteur, Cdr. Stoeger, from London.

The report ends with twelve agreed-upon conclusions which are, in effect, an action list. The next meeting of the Iberian Chain Working Group is to be held in Madrid in March 1990. The 4th Loran-C meeting for the Mediterranean countries is to be held on May 9th and 10th in either Rome or Paris.

## PLC Follow-up

from Walt Dean

The WGA has contacted the U.S. Coast Guard Marine Radio Policy Branch seeking closer liaison on power-line interference issues. WGA member Paul Arnstein works this area, and the Association looks forward to helping him in this important effort.

[See the Goose Gazette for Spring, 1989, for articles on loran interference and FCC Part 15 issues. Ed]

In related news, the WGA has written to the FCC requesting that two items be included on the agenda of the World Aeronautical Radio Conference (WARC-92). Resolution 706, from WARC-MOB-87, deals with the use of the 90-110 KHz. band by other fixed services, which can cause interference.

Resolution 705 deals with services near the loran band, like the Navy VLF transmitters. The resolution encourages data exchange between spectrum users, so that interference may be documented and minimized.

## RTCA Activities

by Walt Dean

Two RTCA Special Committees have issued pertinent documents which should be of interest to WGA members. SC-137, which has the job of preparing Minimum Operational Standards (MOPS) for Area Navigation Systems of various types, has a revision of RTCA/DO-180 nearly finished. *Minimum Operational Performance Standards for Airborne Area Navigation Equipment using a Single Colocated VOR/DME Sensor Input* has been aligned with other RTCA MOPS for multisensor, Omega and Loran-C documents, published previously.

SC-156 has produced RTCA/DO-199, *Potential Interference to Aircraft Electronic Equipment from Devices Carried Aboard*. The committee dealt with bands from 10 KHz (Omega) to the gigaHertz region (MLS), and generally concluded that there is no big problem.

## Loran-C Session Held at ION Meeting

The National Technical Meeting of the Institute of Navigation included a Loran-C session in a well rounded agenda. Papers presented under the Session Chairmanship of Director Mike Moroney are listed below:

**Loran System Expansion for Aviation**  
Cdr. G. T. Gunther, USCG  
**Predicted Solar Flare Activities for the 1990's**  
Joseph M. Kunches, NOAA  
**The FAA Gears Up for Loran**  
James Enias, FAA  
**NASAO Initiatives for Loran Aviation**  
Michael J. Ferguson, NASAO  
**Loran/GPS Interoperability**  
Video Report

The meeting was held at the Princess Resort, San Diego. International Navigation Initiatives, GPS, Omega, VLF and Inertial Navigation sessions were included in the program.

**Pealer, Nevin Anthony (Tony)**  
**Commander, U.S. Coast Guard Ret.**

It is with sadness that we have to report the death of WGA member Tony Pealer, U.S. Coast Guard (Ret.).

Tony was a loran enthusiast and an outstanding contributor to "fostering the art of loran". As Chief of the loran branch G-NRN-1, and as Deputy Chief of the Navigation Division, his colleagues speak of him as a man of vision, a dedicated worker and a good friend. While assigned to the Research and Special Projects Administration of the U.S. Department of Transportation, he was a vocal spokesman for the Federal Radionavigation Plan.

Tony's death is a loss to the loran community and he will be missed by his colleagues. Our condolences to his family and friends.

## Loran Signal Spec Available

We have now received a copy of the DOT Coast Guard Specification of the Transmitted Loran-C Signal, COMDTINST M16562.4 dated July 1981. This is an old document, and it has been somewhat elusive. We understand that it is the latest edition. This 88-page document is now in the WGA files and can be made available to members and non-members for a nominal charge.

WGA files are still lacking a copy of the original WGA initiative document "Loran-C System Characterization". This is an appeal to get a copy for the files.

These are important documents that are requested from time to time by parties interested in learning about the Loran-C transmitted signal. The Coast Guard Specification is in need of an update - should this be a WGA initiative to push or help with a revision?

## FRP Receives WGA Input

**Directors' and Members' comments are transmitted to the DOT Working Group.**

Telephone, faxes and modems were busy since the last *Gazette*, receiving and exchanging material to be consolidated into a unified document responding to the request for input to the 1990 Federal Radionavigation Plan. The WGA response was finalized on December 29th and mailed to Washington, meeting the deadline. Our genuine thanks to all who contributed, especially our President, **Jim Culbertson**, who did much of the spade work. The amount of work that goes into an effort like this should not go unnoticed.

A couple of points are worth noting: the time saved by the use of modems to exchange files cannot be overstated, and secondly the FRP is a monumental task for the DOT Working Group who need all the assistance that it can get. The WGA can and should do more to make the 1990 FRP a better planning document - we need to hear from more of the members! A copy of the material presented is available from the Secretary along with the cover letter sent to the Chairman of the Working Group.

## WGA Biblio Abstracts

### Typing Assistance Requested

A goal for making the WGA loran bibliography more useful is to include an abstract for each paper. The abstracts will then be published along with the listing of authors and paper titles. This involves a substantial amount of typing. It would be greatly appreciated if someone could volunteer some hours to input the abstracts into a word processor and output them as an ASCII text file. Please contact the Secretary.

## Honorary Member

### Appreciation from Mike Eaton

In a letter addressed to Past President John Illgen, **Mike Eaton** writes that he received his certificate of Honorary Membership from Gerard Lachapelle and expresses his appreciation.

"I want to thank you, and through you, the WGA, for this very gratifying award. I appreciate your recognition a great deal."

Mike adds that although he has been retired for 18 months he "...still takes any opportunity to contribute to the cause of loran, GPS or any other useful advance in Navigation."

## Dues Renewal Reminder

Does the number following your name on the Newsletter mailing label end in 1989? If it does, then you are on file as not having paid your 1990 dues. To preserve our cash and to better serve our paying members, we purge the WGA mailing list in April of members who are in arrears (reinstatement will cost you an additional \$5!). This, therefore, is an urgent reminder to renew. For just \$20 (\$30 Overseas) you will continue to receive the *Gazette*, the new Journal and Convention Announcements.

Notice the increased size and content of the *Gazette* and read the article on the Executive Committee's decision to increase the frequency of publication from quarterly to bimonthly. Loran is moving right along, and we would like to have you remain with us.

## Answer the Call!

(for papers;  
 1990 Technical Symposium)

## IEEE AES Magazine Accepts WGA Input

by John Beukers

Through the good graces of Warren Cooper, the Aerospace and Electronic Systems magazine editor and with the approval of the IEEE Board, the WGA is able to provide a column every other month to the AES readership of some 10,000. In addition the magazine carries a calendar listing of meetings which includes the WGA Annual Convention.

In a recent conversation with Warren, he offered to publish one of the papers printed in the WGA 1989 proceedings. Frank Cassidy, the Technical Chairman for the meeting, has been contacted for a recommendation for the paper to be selected.

AESS correspondence is reprinted here for our members' information:

Dear WGA Member:

The leading interests of AESS members are navigation and radar. Through our magazine we attempt to benefit our members by providing a forum for organizations whose members are navigation-oriented.

Non-IEEE members should read this magazine. As a member of the Wild Goose Association you may subscribe this year for a special rate of \$20.00/year--the normal nonmember rate is \$54.00. Options of IEEE/AESS membership or affiliation are available elsewhere or by calling 1-800-678-IEEE.

Our magazine contains articles in the systems field which includes, but is not limited to, navigation, avionics, spacecraft, space power, radar, sonar, telemetry, defense, transportation, and command and control.

Member interest has resulted in regular columns from ION president Portney, OMEGAs Heywood Shirer, and your own Jim Culbertson.

Descriptions of the objectives of the magazine, and future plans, are given in Editor-in-chief Warren Cooper's accompanying message.

Sincerely,  
James D. Engelland, President, IEEE/AES

Dear Wild Goose Member:

Expanding upon President Jim Engelland's letter, I would like to describe further our objectives with *SYSTEMS*. Because of the interest of our members in navigation we have invited the Presidents of IOA, WGA and ION to contribute a monthly or bimonthly column addressing topics of interest to their members. As a monthly magazine we feel we can provide a current forum for topical communications in navigation specialities.

We provide announcements and calls for papers for ION, WGA, and IOA conferences as well as for our own, and IEEE conferences of interest to our members. In addition we publish the tables of contents of conference proceedings and selected papers from these conferences. We have invited conference chairmen (or their designees) to provide summaries of those papers or events that made the conference memorable.

In *SYSTEMS* we publish papers selected from AESS cosponsored conferences, such as the Position, Location and Navigation (PLANS) conference, Digital Avionics Conference (DASC), National Aerospace Electronics Conference (NAECON), as well as from non-AESS navigation conferences such as OMEGA, Wild Goose and those ION proceedings papers not selected to be published in the ION JOURNAL of the Institute of Navigation.

We also publish--on a regular basis--abstracts and references of other publications on navigation from the IEEE INSPEC data base.

We welcome non-IEEE members to subscribe to our magazine, *SYSTEMS*, or to join the IEEE/AESS as Affiliates or as regular IEEE members (and receive the *IEEE Transactions on Aerospace and Electronic Systems*).

signed,  
H. Warren Cooper  
Editor, *SYSTEMS* Magazine

## New Constitution Committee Chairman Sought

The WGA owes much to Vern Johnson who, with other charter members of the WGA, had the vision to create a Constitution and By-laws that has served the Association so well since its inception in 1972. Vern has been the rigorous keeper of the document and counseled the Board over the years on changes that have been necessary as the Association has grown.

Now Vern wishes to pass the baton. An understudy is sought to become a member of the Constitution Committee to be groomed for taking over from Vern. Interested members should contact the Secretary or any Director.

## Civil GPS Service Committee Meetings

The Civil GPS meetings cover 2 days and are usually held at the Sheraton Premiere Hotel, Tysons Corner, VA. The June meeting is tentatively set for June 5-6. The first day is a general session requiring no registration and is open to anyone caring to attend. The meeting starts at 8.30 am and takes up a full day.

On the second day there is an Executive Committee meeting from 8.30-10.00 am which is restricted to government and International representatives. At 10.30 the sub-committees meet. There is no restriction to attending these meetings.

- (1) **International Issues**, chaired by George Preiss and usually attended by representatives from Canada and overseas.
- (2) **Reference Stations**, chaired by LCDR Doug Alsip.
- (3) **Surveying and Precise Positioning**, chaired by Bill Strange
- (4) **Timing**, chaired by Dave Allan

A proposed 5th group will deal with **Carrier Phase Positioning and Navigation**.

The WGA is on the mailing list for meeting notification and more timely information will be available in future. The contacts at the Department of Transportation are Joe LoVecchio or Karen Van Dyke at 617-494-2432.

## Coming Attractions

Once again, we have more Gazette material than we have space! Future issues will feature articles on:

**The joint Soviet/US Chayka/Loran-C program.**

**The National Severe Storms Laboratory Project STORM.**

**Use of loran in wind profile radar tests**

## United Kingdom Issues Rebuttal

The Marine Directorate of the U.K.DOT issued a point by point rebuttal to the Racal-Decca company's comments on the DOT Consultative Document. In his letter to Racal-Decca, **Michael Jackson** of the Marine Directorate comments that since Racal-Decca's comments were "made available to a wide audience", the department was making a wide distribution of its response. Since this issue is pivotal to the acceptance of loran in Europe and possibly other areas, the letter to Racal-Decca's **J. A. Trubee** is reproduced below. Copies of the full DOT response are available from the Secretary.

Support for loran in Europe runs high. **Norm Matthews**, Director General of IALA, made a television appearance in the UK in early January to publicize the issue. We understand that the UK Meteorological Office jumped in because of their commitment to use loran for tracking atmospheric probes.

"Dear Mr. Trubee,

### FUTURE OF MARINE RADIONAVIGATION IN UK WATERS

We are now in a position to respond to the points which you raised on the Department's Consultative Document in your letter of 11 August and I attach our detailed comments on yours.

We regret that we have not been afforded an opportunity of continuing the discussion with you on the points you raised in your letter which we started at our meeting on the 29 September and which you decided to terminate. We stand ready to resume that discussion when you are prepared to do so.

We do not believe that the conclusions which you set out in your letter are well founded. We consider that sufficient time has been allowed to produce the ASF corrections and that our costings include realistic provision for this. Similarly we believe that we have made a realistic assessment of the performance and accuracy of the two systems under consideration; and that well-understood means are available for dealing with interference to Loran C transmissions.

We remain to be convinced that we have not allowed a sufficient overlap for the two systems, given the notice of the changeover which we would be able to give. And we believe that the basis which you have adopted for assessing the costs of replacement equipment which would fall on the users in the event of a changeover is unrealistic and greatly overstates the real cost of premature receiver replacements.

We consider that the cost arguments in favour of Loran-C are generally stronger than you are prepared to concede. We are however keeping the relative costs of the two systems under review.

I should conclude by emphasising that no decision has yet been taken on whether to retain the Decca Navigator system or to change over to Loran C.

Since I believe that your comments on the Consultative Document have been made available to a wide audience, I am circulating our own comments to all those from whom we originally sought comments on our Consultative Document, together with the other bodies who have subsequently commented on it. We should be grateful for any further comments which they may wish to make. It would be helpful if we could have any further such comments by the end of January.

Yours sincerely, (signed) Michael W. Jackson"

## Solar Activity Up: What are Loran-C Effects?

At our 1989 convention in Hyannis and also at the ION conference in San Diego, we heard from **Joseph Kunches** of the NOAA Space Environment Service Center that solar activity is indeed approaching a 11-year peak in 1990, and that this peak may be a big one. The potential for disruption of Loran-C services is not well known, however.

Members may be interested to know that the National Science Foundation (NSF) is also working this phenomenon, through grants to university researchers and national laboratories. Following is an excerpt from a recent NSF release:

Major episodes of solar activity affecting Earth and the near-earth environment have been responsible for intense fluxes of charged particles bombarding the Earth, and for large geomagnetic storms... The sun is approaching the peak of its 11-year sunspot cycle, and as a result, even stronger storms may occur through next spring.

Large [solar] flares occurred in March, August, September and October, 1989. On March 6, 1989, a very large and complex sunspot group, dubbed 'region 5395,' rotated into view around the east limb of the Sun and produced an enormous flare.

This activity produced an historically 'great' magnetic storm on the Earth in March, 1989. The resulting bombardment of Earth by energetic particles produced aurora as far south as Cancun, Mexico and the Florida Keys.

Some low-altitude satellites tumbled out of their orbits. A similar storm in August, 1989 knocked out a communications channel on the GOES-6 weather satellite. The Magellan spacecraft now on its way to Venus has lost approximately 12 percent of its electrical power capacity from solar flare activity.

Terrestrial power distribution systems also have been affected, when their long lines have had large, low-frequency currents induced by solar activity. The resulting saturation of transformers causes protective circuitry to trip.

## Eric Swanson Receives John Alvin Pierce Award.

Omega Researcher **Eric Swanson** is the first recipient of the newly established John Alvin Pierce Award of the International Omega Association (IOA), named in honor of the Harvard University researcher generally credited as the inventor of both Loran and Omega. The award was presented during the recent 14th Annual Meeting of the IOA in Long Beach, California.

Omega provides worldwide continuous positioning service via a network of eight radio transmitting stations. The early developmental Omega system, which was declared interim operational in 1968, was a development of the Navy Electronics Laboratory, a predecessor of Naval Ocean Systems Center.

Mr. Swanson has long been active with Omega developments and has published numerous technical papers concerning the navigational sciences. He is responsible for development of the mathematical model that is widely used to predict the phase delay of Omega signals as they travel over the earth. Knowledge of signal phase delay as a function of location is the key principle on which Omega navigation is based. The Swanson model is responsible for the 1-4 nautical mile accuracy achieved globally by the system.

Omega is finding growing use in civil aviation and accounts for the safe and efficient accomplishment of a trillion passenger miles annually, a transportation impact roughly equivalent to the highway miles driven each year in the United States. Omega is

also deployed on nearly all navy ships and submarines and many naval aircraft. It is also used by merchant ships and fishing vessels and for diverse special purposes. Omega navigated the eight-day around-the-world nonstop unrefueled flight of the Voyager airplane.

The system also plays an essential role in global meteorological forecasting: Over 200,000 weather balloons equipped with Omega transponders are launched annually to measure winds aloft.

[Excerpted from a press release from the IOA; contact **Charlie Sakran**, 301-863-4578, for further information.]

## Nominations Committee Report

Jim Van Etten

The Nominations and Election Committee, comprising **Bill Garmany**, **Vern Johnson**, and **Jim Van Etten**, Chairman, have selected a slate of candidates for President and Directors. This slate will be presented to the Board of Directors in April for approval or revision:

For President: **Jim Culbertson**, **Bob Lilley**

For a three year term as Director:

**Jim Alexander**, **Dave Amos**, **John Beukers**, **Leo Fehlner**, **Henry Marx**, **Mike Moroney**, and **Ron Wiener**. **Kjell Enerstad** and **Bob Bronson** have been nominated but not responded as of this date.

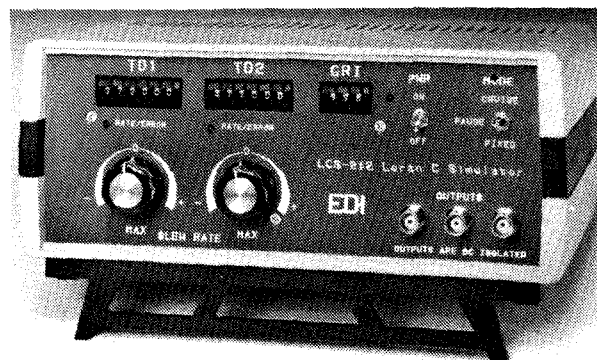
Candidates have been asked by the committee to define their particular interest and how they could and would contribute to the organization. Short biographical sketches have been requested.

Ballots will be mailed in May; polls will close June 30th. Election results will be published in the next Gazette.

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