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# WILD GOOSE ASSOCIATION

## NEWSLETTER

MARCH 1977

*Recd  
3/21/77*

**ITEM.** The sixth annual Wild Goose Association convention is scheduled for 12-14 October 1977 at the Edgewater Inn, Seattle, Washington. The theme of the convention is "Loran-C Comes to the West Coast." The session on 13 October will be a technical program, while the morning of 14 October will be a special session oriented to users as part of Fish Expo. Papers are solicited from both WGA members and non-members that expand on the following themes:

1. West coast Loran-C service, charts and user requirements.
2. West coast transition from Loran-A to Loran-C.
3. Current Loran-C user experiences - marine, land or aircraft.
4. Current Loran-C user equipment.
5. Conversion of Loran-A coordinates to Loran-C.

Please send three copies of one-page abstracts of proposed papers to the following address by 1 June 1977:

Mr. Daniel A. Panshin  
Extension Oceanographer  
School of Oceanography  
Oregon State University  
Corvallis, OR 97331

Notification of acceptance may be expected by 15 July 1977 and three copies of papers in final form will be due by 1 October 1977. Papers will be published by the Wild Goose Association.

**NOTE:** Bev Hilbun is in the process of making travel arrangements which will save as much as \$100 on the trip, providing you are able to make plans 30 days ahead of the convention. If you choose to take advantage, air and hotel reservations will have to be made through her. Detailed information on this item will be in the next Newsletter.

### **ITEM.** WEST COAST LORAN-C UPDATE.

After many delays occasioned by such diverse factors as weather, contracting problems, and strikes, the U.S. West Coast Loran-C chain (Fallon, Nevada; Searchlight, Nevada; Middletown, California; George, Washington) is scheduled to be declared operational in April 1977. The data collection phase of an extensive calibration effort has been completed and data reduction is in its final stage. Calibration data was gathered from a combination of fixed monitor sites, mobile land measurements, shipboard data, and baseline extension flights. Correlation between all sources was very high.

On March 1, 1977, the North Pacific chain will be reconfigured to its new rate (GRI 9990), Narrow Cape, Alaska will be added as an operational station and Sitkanak Island, Alaska will be moved to a new interval for use in converting previous Sitkanak - St. Paul time differences to the Narrow Cape - St. Paul baseline before Sitkanak is shut down on July 1, 1977.

Calibration is due to begin for the Canadian West Coast chain (Williams Lake, British Columbia, Canada; George, Washington; and Shoal Cove, Alaska) and the Gulf of Alaska chain (Tok, Alaska; Shoal Cove, Alaska; and Narrow Cape, Alaska) on March 15, 1977. These chains are now scheduled to be operational in May and June respectively, although every effort is being expended to achieve an earlier date for full service.

#### ITEM. NEW SOUTHEAST U.S. AND NORTHEAST U.S. CHAINS.

Work has begun on the second phase of the National Implementation Plan to expand Loran-C coverage to the Gulf of Mexico (U.S. Southeast Coast chain) and improve coverage on the U.S. East Coast (U.S. Northeast Coast Chain).

In this phase, the Southeast U.S. chain will be formed by constructing new transmitting stations at Malone, Florida (the master and chain control site), Grangeville, Louisiana and Raymondville, Texas (the secondaries), and by double-rating Jupiter, Florida (presently a secondary for the U.S. East Coast chain). Unmanned monitor sites will be established at Savannah Beach, Georgia; Eglin, Florida; and Sabine Pass, Texas.

The Northeast U.S. chain will be formed by constructing a new transmitting station at Seneca, New York (the master and chain control site), by converting the Loran Test Facility, Caribou, Maine into an operational secondary, and by double-rating Nantucket, Massachusetts and Carolina Beach, North Carolina (presently a secondary and the master, respectively, for the U.S. East Coast chain). Unmanned monitor sites will be located at Southwest Harbor, Maine; Barnegat Inlet, New Jersey; Marblehead, Massachusetts; and Savannah Beach, Georgia.

Equipment at the new stations will consist of Megapulse solid state transmitters, Coast Guard timing and control equipment, and Austron monitor receivers. Antennas will be 700-foot top-loaded monopoles. Clearing and other site work has begun at most stations. The new chains are scheduled to become operational in the summer of 1978. After a period of overlapping operation, the present U.S. East Coast chain will be disestablished, Dana, Indiana will be added as a Northeast U.S. secondary and Carolina Beach, North Carolina will be added as a Southeast U.S. secondary.

The last phase of the National Implementation Plan will establish a U.S. Great Lakes chain with Dana, Indiana as the master (double-rated) and control station, Malone, Florida and Seneca, New York as double-rated secondaries, and a new secondary in the vicinity of International Falls, Minnesota. Unmanned monitor sites will be located at Muskegon, Michigan; Marblehead, Massachusetts; Eglin, Florida; and Savannah Beach, Georgia. This final phase is scheduled for completion in 1980.

ITEM. ST. MARYS RIVER MINICHAIN UPDATE.

The initial phase of the evaluation of the feasibility of using Loran-C for all-weather precision navigation in restricted waters was completed on October 8, 1976. The operation of the St. Marys River experimental chain (four unmanned 100-watt peak-power transmitting stations and one monitor station) has improved steadily since its installation in January 1976. Two sets of user equipment, designated User I (Applied Physics Laboratory) and User II (Teledyne Systems Company) were tested along selected portions of the river and were demonstrated on board the Coast Guard Cutter NAUGATUCK, to several prospective commercial users.

Significant test results include demonstration of the feasibility of controlling the Loran-C signals within a tolerance of 15 nanoseconds. Dynamic tests of the user equipment indicated position accuracies (2d RMS, 95%) which ranged from within 30 to 45 feet for User I and from 30 to 75 feet for User II. Chain availability, even in the face of data link problems was 94%.

The evaluation is being conducted by several Coast Guard facilities. These include the Ninth Coast Guard District, Cleveland, Ohio; the Research and Development Center, Groton, Connecticut; the Electronics Engineering Center, Wildwood, New Jersey, and the Offices of Research and Development, and Engineering at Coast Guard Headquarters, Washington, D.C..

Future activities include the continued improvement of chain performance by the installation of better data links between stations, by the addition of hardware and software control and monitor equipment, and by developing more efficient operating and maintenance procedures. The user equipment performance will be improved and several independent efforts are underway to develop better Loran-C receivers as input sensors to the guidance and positioning system. Operator interface improvements are also scheduled. Data collection will continue with special emphasis [on grid prediction models]. Finally, as user equipment performance improves, successively larger vessels will be used as test beds for the demonstrations. The final goal of all activities is to prove the utility of this compact navigation system for precision guidance and navigation.

ITEM. The WGA presented its views on the USCG rulemaking requiring Loran-C receivers on all vessels 1600 gross tons and over using U.S. ports at the public hearing in Washington on 4 March 1977. The WGA strongly concurred with the USCG position and urged that the rulemaking proceed expeditiously based on a preliminary receiver description summarized as "an automatic acquisition, cycle selection and tracking unit." Ed McGann presented the WGA position.

ITEM. Megapulse is now under contract for a total of four solid-state Loran-C transmitters for the Gulf of Mexico coverage and for the Seneca, NY facility which will allow the East Coast realignment to take place as scheduled in mid-1978.

ITEM. The USAF Loran-C/D mini-chain at Hill AFB is now equipped with full "blink" capability following a retrofit program by Megapulse. Captain Hodges

reports excellent operation of the system and reminds the Loran community of the availability of this capability for qualified users.

ITEM. The USCG solid-state transmitter built by Megapulse and installed at the Wildwood Engineering Center continues to perform very well. An open-house is being planned for WGA members at that facility in the near future. Captain Jim Culbertson and Captain Bill Roland will coordinate this activity and supply further information.

ITEM. NEW PRODUCTS.

Two new Loran-C receivers have recently appeared on the market. Vexilars Model 310 Loran-C is a newly developed manual receiver. Employing all solid state components, it has a low power draw and utilizes cycle matching with a repeatability of 50 feet. A chain plug assures of fool-proof selection stations. Two built-in Notch filters increases its reliability. Modular circuit board construction is utilized for ease of maintenance and operational simplicity. Vexilar INC, 9345 Penn Ave South, Minneapolis, MN 55431.

" Model 444 Loran-C from Ray Jefferson boasts fully automatic signal acquisition, and cycle and phase matching. Accuracy of better than 500 yds can be expected, and the 444 can acquire, track, and display as many as four Loran lines of position, according to the manufacturer. The LOP's are displayed sequentially, following each other within a few minutes on an LED six digit display. An audible alarm alerts the navigator to new readings. Featuring plug-in circuit boards and coaxial antenna cable, the Model 444 Loran C operates on 10 to 40v DC and is available with remote readout for bridge operation. List price for the 444 Loran is \$1995. Ray Jefferson, Main and Cotton Sts., Philadelphia, PA 19127. "

ITEM. Excerpts from the Federal Register, Vol 42, No. 20, dated 31 Jan 77 announced that DOT was considering an amendment to the navigation safety requirement by adding LORAN-C to the list of required equipment for vessels of 1600 gross tons or more. It suggested 120 days after publication of the rule for implementation on tankers with other categories of vessels being staggered out over a one-year period. In Vol 42, No. 33, dated 17 Feb 77 it was noted that the 31 Jan article inadvertently omitted discussion of the economic impact and no mention was made of minimum specifications for receivers.

"The Coast Guard estimates that there would be no more than 800 U.S. and 5000 foreign flag vessels which might be affected by this rule. Of those, it is estimated that 50 percent of U.S. and 20 percent of foreign flag vessels already have LORAN-C receivers installed. Therefore, approximately 400 U.S. and 4000 foreign flag vessels would have to purchase and install the equipment. Purchase costs range from \$2000 to \$5995. Installation costs vary from about \$2000 to \$5000. For purposes of this analysis, it is assumed that purchase cost is \$3500 and installation \$3500, that the amortization period would be seven years, and that the installed cost would be passed to U.S. consumers in seven equal increments. The economic impact on the U.S. economy for the first year would be the cost of the installed equipment for U.S. vessels, plus 1/7 of the installed cost to all vessels. One seventh of the cost to all vessels would be passed to U.S. consumers in each of the succeeding six years. The initial cost to foreign vessels is not considered a cost to the U.S. economy."

The article goes on to point out that cost of compliance to U.S. economy over the seven year period would be \$33.5 million. It compares this to the annual

spill clean up costs of \$30 to \$35 million dollars. It also points out that:

"The Coast Guard is developing minimum specifications for LORAN-C receivers which could use the full capability of the LORAN transmitting system and will publish them in a supplemental notice in the near future. Interested parties may submit comments concerning minimum standards to the docket at this time or at the scheduled public hearings."

ITEM. Director Change. Ed Durbin of Kaiser Electronics has resigned his post on the Board of Directors of the WGA because of business commitments. Mr. Pat J. Reynolds of Pan American has been named to replace Ed whose term runs through 1978.

ITEM. Honker Dave Haislip will be presenting a paper at the Off-Shore Technology symposium to be held in Mexico City on 9-10-11 March 77.

ITEM. Bumper sticker received from D. Johnston in Germany "LORAN D Folks Show Fighter Pilots Where to Put It."

ITEM. There is a call for papers for the "International Conference on Electronic Systems and Navigation Aids," to be held in Paris in October of 1977. For further information, please contact:

JOHN M. BEUKERS  
Beukers Labs, Inc.  
30 Orville Drive  
Bohemia, N.Y. 11716

ITEM. Lapel Pins.

"Repeat ITEM. WGA Tie Tack/Lapel Pins. Leo Fehlner and his awards committee have had subject pins designed and manufactured. They are the official emblem with blue enamel background and the etching is in either gold or silver. They will be available at the Convention for \$3.00 each (our cost). If you would like to order one by mail, please send \$3.35 to cover mailing costs to Mr. Keith Bruhl, 3110 Saber Drive, Falls Church, VA 22044."

ITEM. The 9th Coast Guard District is preparing a draft environmental statement for the proposed Northern Minnesota LORAN-C transmitting station. Three sites have been evaluated. Tentative sites are located in Koochiching County and Lake of the Woods County, Minn. Construction and completion is anticipated before the end of 1978 and fully operational by Feb 1980. Based on a series of public meetings, the draft environmental would be distributed in late 1976 and that final statement would be filed with the Council on Environmental Quality in March or April 1977. Source: Federal Register, 11 Nov 76, FR DOC 76-34040.

ITEM. "Oregon State University has received a \$91,800 Sea Grant award from the Coast Guard for a study aimed at minimizing problems for mariners converting to the new, national loran C navigation system. The year-long study will be conducted by Associate Professors Daniel A. Panshin and R. Charles Vars. One of the purposes of the study is to determine the benefits and the problems to



