Vol 87-1 7pp.

Navigation dept winter 86-87 issue #4

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# WILD GOOSE ASSOCIATION

## QUARTERLY NEWSBULLETIN

RCD 18 April 1987

Winter 1987

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FOREWORD (Editor)

The next issue is scheduled for publication in the month of June and will cover the 1987 Spring Quarter (March-April-May). June 1 is the deadline for submission of any material to be considered for publication (nearly anything received will pass the consideration criteria). Material may be mailed to: Kaman Tempo, 1613 University Boulevard NE, Albuquerque, NM, 87102.
Telephone: (505)242-0508

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RADIONAVIGATION JOURNAL (Editor)

The Radionavigation Journal for 1985-1986 has been distributed. Editor and Advertising Chairman, Bernard Ambroseno, deserves all kinds of kudos for a perb job. Not to be slighted are Leo Fehlner, Technical Editor, and Frank adin, Layout and Composition, as members of the team who accomplished publication of an excellent issue. The Wild Goose Association is grateful to all the contributors and advertisers who helped make that publication possible.

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1987 WILD GOOSE ASSOCIATION CONVENTION (Jimmie Toms)

OCTOBER 20-22, 1987 LORAN-C - A MID-LIFE SYSTEM

LORAN-C has been with us since the early 1960's. It has developed a large following and many uses not originally envisioned. LORAN-C user costs have come down and the user's capability has increased. Today LORAN-C counts aviation, marine, and land navigation as well as many special purpose users among its clientele. The conference will examine LORAN-C's position in the world radionavigation community and what dimensions it will take in the future. Papers are invited in the following areas:

- Government Policy
- Marine Systems Applications
- Surface Systems Applications
- User Equipment Developments
- Air Systems Applications
- Special Uses and Applications

Abstracts of papers should be sent to the following address by June 30, 1987:

Wild Goose Association
c/o Tony Pealer
Systems Control Technology, Inc.
Suite 905
1611 North Kent Street
Arlington, VA 22209

Notification of acceptance will be sent by July 31, 1987. Papers will be needed by September 15, 1987 for preprint in the proceedings.

The 1987 Wild Coose Association Convention will be held in Washinton, D.C. from October 20-22, 1987. The specific location will be announced when a contract has been signed. Note that the dates are Tuesday through Thursday as departure from the format of earlier conventions.

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GULF OF ALASKA LORAN-C CHAIN (7960) (Cdr. W. Schorr, USCG)

During March 1987, Loran-C Station Port Clarence on the Seward Peninsula in Alaska will be dual-rated as 9990Y and 7960T. The next two pages provide a predicted groundwave coverage diagram for 7960 and a fact sheet distributed by the Coast Guard.

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UNMANNED VEHICLE SYSTEMS SYMPOSIUM (Editor)

The Third Annual Symposium was held at SRI International in Menlo Park, CA on 27-29 January 1987. Both the WGA and Loran-C appeared to be well represented with four papers:

LORAN:A High Accuracy Position Location System, Robert D. Bronson, II Morrow, Inc.
LORAN-C:A Quiet (R)Evolution, Ed McGann, Racal Megapulse.
Radionavigation Systems in the 21st Century, Robert H. Miller, Kaman Tempo.
High Accuracy Navigation Potential, John Illgen, Kaman Sciences Corporation.

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HYDROGRAPHIC SOCIETY NEWS (Leo Fehlner)

Captain C. William Hayes, NOAA (retd.), President of Shenandoah Navigation Services and former cheif of the Nautical Charting Division at the National Ocean Service, has been elected President of the Hydrographic Society's US Branch in succession to Captain John Hammer, USN. The Hydrographic Society's US Branch is based at PO Box 732, Rockville, MD, 20851.

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AOPA PILOT (Editor)

The December issue of the Aircraft Owners' and Pilots' Association (AOPA) magazine, AOPA Pilot, ran a survey with questions designed to provide input on how many pilots use Loran-C and for what purpose. When those results are available a summary will be presented in this publication.

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DILUTION OF PRECISION (Editor)

Geometric Dilution of Precision (GDOP) evolved from the early days of hyperbolic navigation with Loran-A as a measure of accuracy in regions of baseline extension. That was some forty years ago. The new technologies being applied to radionavigation systems, like GPS, for example are still dependent on Dilution of Precision (DOP) from the geometric viewpoint, but with greater complexities. GDOP was adequate for the two-dimensional Loran problem, but with GPS the problem is one of four dimensions: Latitude, Longitude, Altitude, and Time. Today's terminology for DOP measures needs to be better standardized. The following are slowly gaining more acceptance:

| TITLE | ACRONYM | VARIABLES CONSIDERED |
|---|---|---|
| Geometric DOP | GDOP | Latitude, Longitude, Altitude, Time |

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# INFORMATION ON THE ADDITION OF LORSTA PORT CLARENCE TO THE GULF OF ALASKA (GOA) LORAN-C CHAIN

Loran-C Station Port Clarence, Alaska is Yankee secondary to the North Pacific Loran-C chain (9990). The U.S. Coast Guard, in cooperation with the FAA, will have the Loran-C transmitter at Port Clarence, Alaska generate signals as a secondary of the Gulf of Alaska Loran-C chain (7960). Beginning in March 1987 (at a date to be announced) Port Clarence will become Tango (T) secondary to the Gulf of Alaska chain for test and evaluation purposes, with an emission delay of approximately 47932.52 microseconds.

**Transmitted signals of the 7960T baseline are intended for government testing purposes only and not for operational use.** The signals from the 7960T baseline are subject to change without advance warning, may transmit unusable, altered signals for government testing, and may be turned on and off at any time. Therefore any use of the 7960T signals for positioning, navigation, time transfer, or any other operational purpose is not authorized by the U.S. Government and will be at the risk of the user.

During the first ninety (90) days of the test and evaluation period, time-difference tolerances will be widened to allow USCG/FAA testing to determine the approximate coverage area and to assess alternative Loran-C monitor and control plans. The test results will influence the speed at which progress is made on future plans for the Tok-Port Clarence baseline. The total project effort is expected to be completed by September 1988. This effort will include the permanent installation of additional equipment at both transmitting stations (Port Clarence & Tok), site selection and implementation of permanent monitor receivers with data links to the chain control station at Kodiak, and declaration of the Tok-Port Clarence baseline as operational for navigation use.

**An announcement on future operations of 7960T will be made in early June 1987.** Coverage for the Tok-Port Clarence-Narrow Cape triad (7960T and 7960X) is predicted as increasing the usable signal coverage in the area roughly described as follows: from Fairbanks west to Norton Sound, bounded on the north by the Brooks Range, and on the south by a line between Seward and Naknek.

**Existing maritime coverage of the Gulf of Alaska (7960) and North Pacific (9990) Loran-C chains will not be affected.**

The Coast Guard needs to know who can receive signals from this triad. If you have a Loran receiver and can manually program it to receive Port Clarence on rate 7960, we would like to know the following information:

Where the signal is received.
How stable the signal is.
What kind of receiver and antenna is being used.

If you can help, or for more information, please call or write:

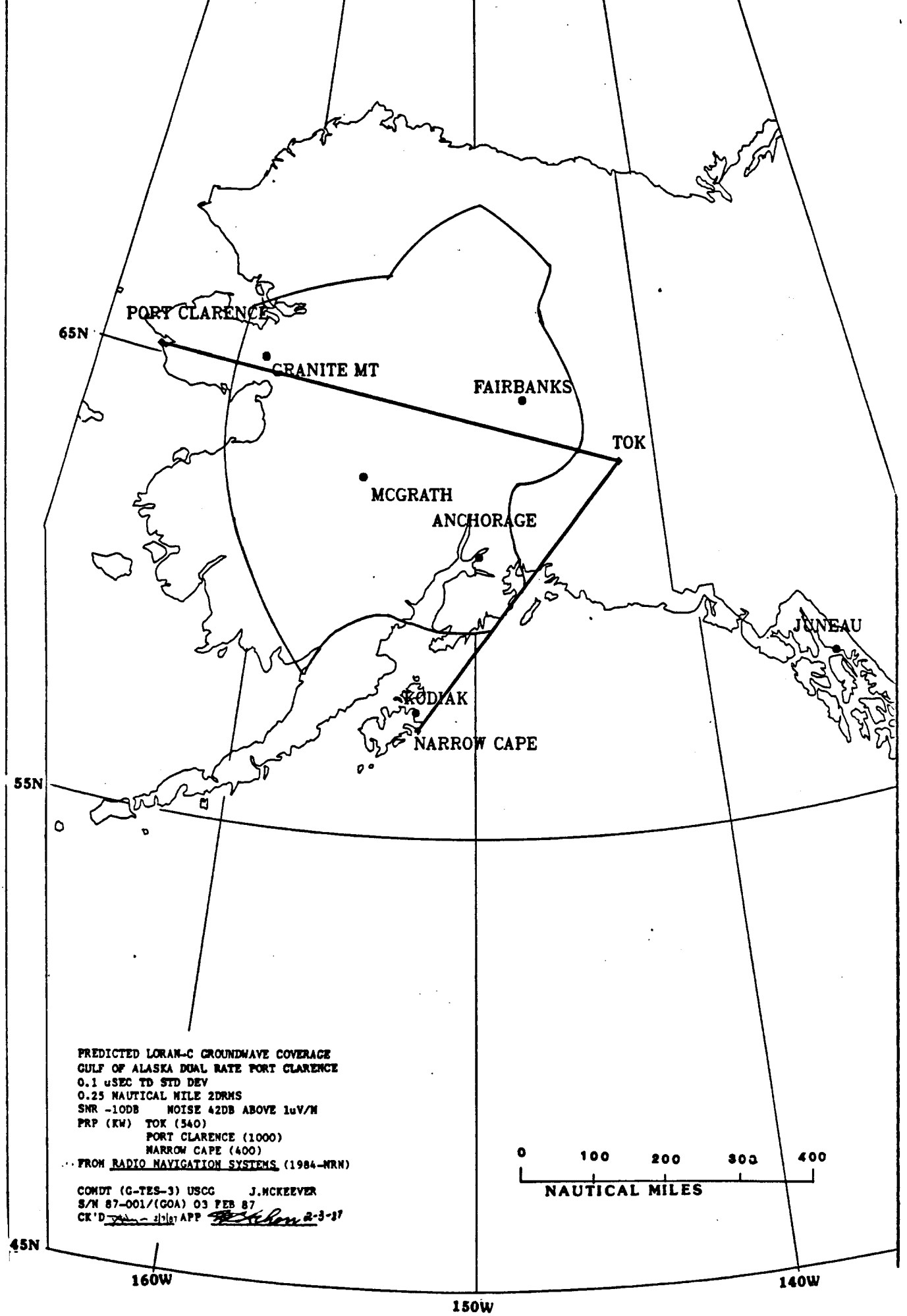
Commandant (G-TES-3)
U.S. Coast Guard
2100 2nd Street SW
Washington, DC 20593-0001
Attn: Mr. John McKeever
(202) 267-1201

Commander (eee)
Seventeenth Coast Guard District
P.O. Box 3-5000
Juneau, AK 99802-1217
Attn: CDR Paul Monette
(907) 586-7327

Federal Aviation Administration
(FPM-420)
800 Independence Avenue, SW
Washington, DC 20591
Attn: Mr. George Quinn
(202) 267-8516

Federal Aviation Administration
Alaskan Region
701 C Street
Anchorage, AK 99513
(907) 271-5645

(G-TES-3;3FEB1987;DDH;PCUSER)




PREDICTED LORAN-C GROUNDWAVE COVERAGE
GULF OF ALASKA DUAL RATE PORT CLARENCE
0.1 uSEC TD STD DEV
0.25 NAUTICAL MILE 2DRMS
SNR -10DB NOISE 42DB ABOVE 1uV/M
PRP (KW) TOK (540)
PORT CLARENCE (1000)
NARROW CAPE (400)
FROM RADIO NAVIGATION SYSTEMS (1984-NRN)

COMDT (G-TES-3) USCG J.MCKEEVER
S/N 87-001/(GOA) 03 FEB 87
CK'D 2/3/87 APP 2-3-87

Vol 87-3

| | | | |
|---|---|---|---|
| Position | DOP | PDOP | Latitude, Longitude, Altitude |
| Horizontal | DOP | HDOP | Latitude, Longitude |
| Vertical | DOP | VDOP | Altitude |
| Time | DOP | TDOP | Time |

While we're at it, the publicized accuracy of GPS with the SPS or C/A code is 30 meters, and that's HDOP - not PDOP, or GDOP! If selective availability is implemented, the accuracy goes to 100 meters.

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## WGA DISTINCTIVE ITEMS (Jim Culbertson)

Hats ($7.50), T-Shirts ($7.50), and Golf Shirts ($17.00) are now available from The Sign Post, 1726 West Chalet Street, Anaheim, CA, 92084. These items were approved by the Board of Directors. It is suggested that individuals call (714)778-1662 for availability, color selection, and additional ordering information.

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## ESSO AUSTRALIA INSTALLS LORAN (Bill Marchal)

ESSO AUSTRALIA, LTD. has purchased from Offshore Navigation, Inc. (ONI) of New Orleans the FLITE-TRAK automatic vehicle tracking system and a complete Loran-C navigation chain. The system will be used to track the ESSO fleet of helicopters and supply vessels for dispatch and search/rescue operations, increasing the efficiency and safety of company operations. The three-station Loran-C chain is the first Loran-C system purchased and installed by a private company for its own use. It also represents the first permanent Loran-C system operating in the southern hemisphere. This particular system is installed with 150 foot antennas using local grid power as primary with diesel generators at each site for backup. The aircraft and vessels will use the Loran-C system as primary navigation, as well as input to the FLITE-TRAK system.

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## LORAN LAB COMPARISON (Editor)

DPL can't find (Reports avail from II Morrow)

The Aviation Consumer, Volume XVI, Number 23/24, December 1/15 1986 contains a report on the results of testing 11 different models of Loran receivers when subjected to a rigorous battery of laboratory of laboratory tests under equal conditions. For good measure, the test group also checked their ease of operation from a pilot's viewpoint. An overall performance score was obtained by averaging the ranking of each receiver on all of the tests. The relative merit maximum score was 60. The receivers tested with their overall performance score in parentheses were: II Morrow Apollo 612 (52), II Morrow 612B (46), Terra Corp. TLC-100 (27), Northstar M1 (23), ARNAV R-40 (22), King LC-8001 (22), Micrologic ML-6500 (21), ARNAV R-21 (19), and Foster AirData LRN 500 (19).

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## TREASURER'S REPORT (Carl Andren)

Balance from October 22, 1986 $13,448.23

| Receipts | | Expenditures | |
|---|---|---|---|
| Dues | $2,387.00 | Journal Expense | $4,826.00 |
| Proceedings/Journals | 85.00 | Newsletter Expense | 420.58 |
| | | Stationary Expense | 299.25 |

Cash Flow $(3,073.83)

Balance as of January 16, 1987 $10,374.40

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## WGA AWARDS NOMINATIONS NEEDED FOR 1987 (Bob Frank)

It is not too early to start thinking of nominations for this year; the awards will be presented at the 1987 Convention, but to give the committee,

chaired by Bob Frank, time to review the information submitted, a deadline for nominations is 15 July 1987. In the past, very few nominations have come from the general membership -- most input has been from the committee. Let's get the membership's thoughts!!

Nominations are needed 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 for the outstanding paper published prior to 1 July 1987. Usually, primary consideration is given to papers published in the year ending on that date.

President's Award An inscribed Plaque for significant achievements, selected by the President assisted 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 professional activity is not in the Loran area.

The WGA By-Laws in the RADIONAVIGATION JOURNAL contain more details on the awards and the criteria. Several changes in the By-Laws were made by the Board of Directors at their April 1985 meeting. The previous restriction of the Paper Award to WGA members was removed insofar as papers in WGA publications is concerned; the restriction of Service Awards to members was completely removed.

Send your nominations with supporting information to:

Robert L. Frank
30795 River Crossing
Birmingham, MI 48010 Phone: (313)645-9848

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## 1986 WGA AWARDS

(Bob Frank)

An award was inadvertently left out of the list for 1986 awards in the Fall 1986 Quarterly Newsbulletin. The following should have been added:

Honorary Membership to Lloyd Higgenbotham for his services to the Association from its inception.

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## 1988 WGA CONVENTION

(Editor)

The city and dates for the 1988 Convention have been adopted by the Board of Directors. The convention will be held in Portland, OR on October 18-20, 1988. As with the 1987 Convention, these dates are Tuesday through Thursday. Bob Bronson of II Morrow, Inc. is Convention Chairman and Bob Miller of Kaman Tempo is Technical Chairman.

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## MEETINGS OF INTEREST

(Editor)

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### INTERNATIONAL TEST AND EVALUATION ASSOCIATION WORKSHOP

"Interoperability Testing"
Pacific Missile Test Center, Pt. Mugu, CA, 11-14 May 1987

Contact: Mr. Henry Norton
PMTC Code 02A, Point Mugu, CA, 93042
(805)989-7202

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INSTITUTE OF NAVIGATION

44th Annual Meeting

Dayton, OH, 23-25 June 1987

Contact: ION, 815 15th St. NW, Suite 832, Washington, DC, 20005

INTERNATIONAL OMEGA ASSOCIATION

12TH Annual Meeting

Honolulu, HI, 19-23 October 1987

Contact: IOA, Box 2324, Arlington, VA, 22202

1987 WILD GOOSE ASSOCIATION CONVENTION

LORAN-C - A MID-LIFE SYSTEM

Washington, D.C., 20-22 October 1987

Contact: Mr. Jimmie L. Toms, Advanced Navigation, Inc., 61 Thomas Johnson Drive, Frederick, MD, 21701