

# Wild Goose Association

107th Board of Directors Meeting  
April 19, 1994 10:00 am  
Cervantes Convention Center, Room 253  
801 Convention Plaza, St. Louis, MO



**To:** Board of Directors and Committee Chairs

**From:** Dale Johnson

**Date:** April 8, 1994

The Cervantes Convention Center is located about 18 miles south of the St. Louis International Airport. The easiest way to get from the airport to the Convention Center is to take Metrolink; I am told the fare is about a dollar. This is a above ground rail system similar to Washington's Metro. Get off at the Washington & 6th Street exit; then walk 1 block to the 7th & Plaza entrance of the Convention Center. Some hotels offer shuttle service, if you plan to arrive Monday.

## Agenda:

1. Call to order. 11:07 AM
2. Appointment of a Recording Secretary.
3. Attendance, Proxies and statement of Quorum.
4. Minutes of the 105th and 106th Board Meetings (included).
5. Reports:

- Executive Committee (minutes of January meeting included) ✓
- Secretary ✓
- Membership ✓
- Nominations and elections ✓
- Treasurer ✓
- 1994 Convention
- Presidents report ✓
- RTCA activities
- Other items

slate Approved  
per person

## Board of Directors

Dale E. Johnson ..... President  
David H. Amos ..... Vice President  
Walt N. Dean ..... Secretary  
Carl Andren ..... Treasurer  
Robert W. Lilley ..... Past President  
James O. Alexander  
John M. Beukers  
Frank S. Cassidy  
Laura G. Charron  
James F. Culbertson  
John D. Illgen  
J. David Last  
Maurice J. Moroney  
Ben Peterson  
William F. Roland  
David C. Scull  
Durk van Willigen

# Wild Goose Association



*The International Loran  
Radionavigation Forum*

## Minutes of the 105th Meeting of the Board of Directors.

### 1. Call to Order

The 105th meeting of the Board of Directors was convened at 4:12 pm on 18 October, 1993, at the Radisson Hotel, Santa Barbara, California, by President Robert Lilley.

### 2. Attendance, Proxies and Statement of Quorum

The following Board members were in attendance:

Bob Lilley, President  
Dave Scull, Vice President  
Walt Dean, Secretary  
Carl Andren, Treasurer  
Jim Culbertson, Past President  
Jim Alexander  
Dave Amos  
John Beukers  
Laura Charron  
John Illgen  
Dale Johnson  
Mike Moroney  
David Last

Also attending:

Bill Brogden, Gazette  
Dave Olsen, FAA  
Bill Roland, newly elected  
Jim Van Etten, Awards  
Durk van Willigen

The secretary reported that the number of Directors present constituted a quorum, and equaled the two-thirds required for ratification of amendments to the By-Laws.

### 3. Acceptance of Minutes of Last Meeting

Acceptance of the minutes of the 104th BOD meeting was moved by Culbertson, seconded by Dean and approved unanimously.

Wild Goose Association, Inc.  
P.O. Box 556, Bedford, MA 01730, USA

#### 4. Standing Committee Reports

a. Convention 1993 - Illgen reported attendance of 83 to date, just above the break even point. An amount of \$2900 has been allocated for the proceedings, which some thought inadequate. Stress was put on the need to not print extra copies, as we already have a room full of extra copies of old proceedings. A certain number more than the attendance (not defined) should be printed for sale and records.

The format for awards has been changed to put some at the Tuesday luncheon, to ease things at the banquet. Exhibitors have not been as evident as desired.

b. Executive Committee - Report accepted.

c. Vice President - Report accepted.

d. Secretary - Report accepted.

e. Membership Renewals - Paid membership 444. About 100 leave each year, so we have to run to keep even.

f. Nomination/Election - Results are confirmed, with Roland on for one year, Illgen, Culbertson, Beukers and Moroney for three years.

g. Treasurer/Audit - Summary. \$37K in bank, net loss of \$15K since last year, mostly due to expenses not picked up earlier. Details in Andren's suitcase coming later.

h. Awards - All awards had been approved by fax. Van Etten is stepping down, to be replaced (by Frank Cassidy?). Plan is to phone Leo Fehner at the banquet for the presentation. Van Etten has a 3-page letter from Leo accepting the award.

i. Constitution - No report

j. Historical - No report

k. Newsletter - Some concern was expressed about the lateness of the Gazette, but no solution was forthcoming.

l. Journal - Beukers expressed his frustration at not being able to spend time on the Journal with all his other activities.

m. Technical and Applications - No additions to Amos report

n. RTCA - Lilley sent a letter to Jack Howell, AFS-400, FAA, containing a draft Loran-C Instrument Approach Overlay Plan. Five companies, Arnav, II Morrow, Goodrich, Northstar and Trimble are reported having the combined loran/GPS architecture.

o. Correspondence - No comments on attached letters.

5. Issues for Board Discussion and/or Action

a. 1994 Convention - In the absence of Bahar Uttam, <sup>DAVE AMOS</sup> ~~Bill~~ Roland reported that the Royal Sonesta Hotel in downtown Boston had been selected, but that other possibilities still existed. It was felt that a complete report would be needed for an Executive Committee meeting in January.

b. 1995 Convention - Beukers stated that Norm Matthews, who is leaving as head of IALA, could be our man to help organize the 1995 convention, as he has frequent contact with Mr. Denisov, and is now with him in Seoul at a meeting of the Far East Loran-C users.

c. Memorandum of Understanding - Considerable uncertainty existed among board members because of the apparent unstable situation in Russia. It was felt premature at this time to sign the MOU which had been drawn up between WGA, INA and IRN. Roland will be in Seoul on Thursday, 20 October, and will be able to talk to Matthew and Denisov.

d. Backup Plan for the 1995 Convention - Backup locations were discussed, starting with Munich. Last suggested that the Germans were more interested in GPS than loran, and that the Netherlands or Norway, where the governments are more favorable, might be a more suitable site in Europe. Van Willigen volunteered to make quiet investigations of possibilities in Amsterdam.

e. WGA Constitution/Terms of Office - Discussion of the term of a candidate taking the vacancy left by a director being elected president was deferred.

6. Other Items

a. DOT User Conferences - Bob Lilley and Dale Johnson plan to attend the conferences on the FRP in Washington and Columbus. It was felt that Beukers should have comments on the international aspects of the plan. It was also expected that AOPA would have an input, and coordination was recommended. Lilley and Johnson will comment for WGA at the two conferences. Ed McGann is also expected to comment.

b. Note was made of the death of Chick Longman, who was greatly liked and respected. He will be sorely missed.

7. Next Meeting

The next meeting will be held at the close of the Technical Symposium, on 20 October, 1993.

8. Adjournment

The meeting was adjourned at 5:55 pm.

## Board of Directors

Dale E. Johnson ..... President  
David H. Amos ..... Vice President  
Walter N. Dean ..... Secretary  
C. Andren ..... Treasurer  
Robert W. Lilley ..... Past President  
James O. Alexander  
John M. Beukers  
Frank S. Cassidy  
Laura G. Charron  
James F. Culbertson  
John D. Illgen  
J. David Last  
Maurice J. Moroney  
Ben Peterson  
William F. Roland  
David C. Scull  
Durk van Willigen

# Wild Goose Association



*The International Loran  
Radionavigation Forum*

## Minutes of the 106th Meeting of the Board of Directors.

### 1. Call to Order

The 106th meeting of the Board of Directors was convened at 4:45 pm on 20 October, 1993, at the Radisson Hotel, Santa Barbara, California, by President Dale Johnson.

### 2. Attendance, Proxies and Statement of Quorum

The following Board members were in attendance:

Dale Johnson, President  
Dave Amos, Vice President  
Walt Dean, Secretary  
Carl Andren, Treasurer  
Bob Lilley, Past President  
Jim Alexander  
John Beukers  
Laura Charron  
Jim Culbertson  
John Illgen  
David Last  
Mike Moroney  
Ben Peterson  
Dave Scull  
Durk van Willigen

Also attending:

Bill Brogden  
Dave Olsen

The secretary reported that the number of Directors present constituted a quorum, and equaled the two-thirds required for ratification of amendments to the By-Laws.

### 3. Acceptance of Minutes of Last Meeting

Since minutes had not yet been prepared, acceptance was deferred to the next meeting.

### 4. New Business

President Johnson announced appointment of Jim Alexander as director in addition to Last and van Willigen already announced.

Beukers stated that the Moscow '95 convention was on target to go. Andy Stratton is the INA representative. There is a Moscow working group, and a steering committee is being formed to coordinate details. Norm Matthews has been active with the planners, and seems to be a logical person to represent WGA. A motion was made by Beukers, seconded by Dean, "that Norm Matthews be nominated for the Steering Committee for the Moscow '95 Convention as the WGA representative". Motion approved. (note - More recently it has been learned that Ian Anderson will be the INA representative for the Moscow meeting)

On the subject of finances, hotels in Moscow are \$200 a night, or the equivalent of \$10 if paid in rubles. Denisov apparently will arrange to have the hotel included in registration fee. Skepticism was expressed on the possibility of a \$10,000 profit for WGA from Moscow, since attendance of WGA members from U.S. may be in the range of 30-40. We still have no signed agreement with INA or the Russians (IRN). There apparently will be a meeting in Moscow in December, but no deadline for a decision.

Dave Amos reported that the Sonesta Hotel, where the '94 convention is planned, has room rates of \$130-140. The dates are 19-21 October, 1994, Wednesday through Friday. Mike Moroney suggested other possibilities, including Goat Island, Newport, RI, where the rates might be more moderate. (late bulletin - the '94 convention will definitely be at Goat Island, either 18-20 or 25-27 October.) The subject of a theme was discussed, and whether it should have a political ring. Some suggestions were made, but no conclusions drawn.

Dave Amos requested a \$5000 advance from treasurer Andren to provide financial assets for the '94 convention.

Extension of Ellen Lilley's contract to run the WGA office was discussed, and the state of WGA finances (going down) was noted. Illgen moved to renew the contract, seconded by Dean, passed unanimously.

Laura Charron presented the audit report done by her associate. The principal comment seemed to be that details of invoices were lacking. Jim Culbertson asked if convention books should be audited. It was noted that this could drain several thousand dollars from the balance. John Illgen said Mark Mandrel will provide a complete spreadsheet of convention receipts and expenditures for the '93 convention. It was suggested that a good spreadsheet could allow an informal audit to substitute for a formal audit.

Jim Van Etten has resigned as chairman of the Awards committee. President Johnson thanked Jim for his efforts and announced his intention to ask Frank Cassidy to take over the job.

Johnson also announced the appointment of Dave Amos as vice president replacing Dave Scull. Carl Andren will continue as treasurer and Walt Dean as secretary. *approved*

The WGA Facts Folder needs update. The artwork is on Beukers' machine. Walt Dean volunteered to edit the text and communicate with Beukers. *sent to Beukers*

Dave Scull noted that the membership application form needs to be updated. Bob Lilley noted that postage could be saved if membership cards were sent out with the dues bill. *✓*

\* It was suggested that the Executive Committee prepare a letter to the Coast Guard suggesting that the name of GPSIC be changed to represent information on a number of radionavigation systems. Tom Gunther was mentioned as a contact. *(not yet)*

John Beukers requested that the WGA accept the wording of a brochure on loran being prepared by the European community. Dean moved acceptance, seconded by Culbertson, passed.

Beukers presented a resolution for publication as a result of the Convention, to be sent to persons in decision-making positions. Acceptance was moved by Andren, seconded by Illgen, passed unanimously. A copy of the resolution is attached. Note that the resolution has been enhanced by additional inputs since the board meeting, however the original intent remains unchanged.

#### 8. Adjournment

The meeting was adjourned at 5:55 pm.

**WILD GOOSE ASSOCIATION**  
**The International Loran Radionavigation Forum**

The 22nd Annual Convention and Technical Symposium of Wild Goose Association was conducted in Santa Barbara, California over the period 18 - 21 October, 1993. The convention's theme was "GNSS and Loran-C - Partners into the 21st Century". At the conclusion the following Resolution was drawn up and approved by the members present and the Board of Directors.

**RESOLUTION**

**Considering:**

- a. The formal material presented during the Technical Sessions and discussions relating thereto.
- b. The Panel debate "Loran/GNSS Interoperability - The Future of Radionavigation - is the U.S. Listening?"
- c. The substance of informal meetings and discussions relating to the future mix for a Global Navigation System (GNS).

**Noting:**

- a. The Continental United States enjoys complete territorial and coastal coverage of an operational Loran-C system for use on land and water and in the air.
- b. The deliberations of RTCA Special Committee 159 for the development of Receiver Minimum Optimum Performance Specifications for GPS augmented with Loran-C for sole-means navigation in U.S. national airspace.
- c. The international acceptance and expansion of Loran-C by States assuming responsibility for U.S. Loran-C assets under U.S. Circular 175 authority.
- d. Progress with the Northwest Europe Loran-C initiative and agreement for the reconfiguration and expansion of Loran-C in Northwest Europe (NELS).
- e. Progress in the Far East for cooperation and expansion of Loran-C and the Russian equivalent, Chayka, under an agreement between China, Korea, Japan, and Russia (FERNs).
- f. The expressed interest of other States in Asia and the Pacific Rim to join the FERNs activity.
- g. The continuing work to extend coverage of the Russian Chayka system within the CIS.
- h. Agreements between Russia and surrounding States for the cooperation and combining of Loran-C and Chayka.
- i. Progress in discussions between States directed toward entering Loran-C agreements in the Mediterranean, Iberian Peninsula and surrounding areas.



**Recognizing:**

- a. The worldwide interest in civil satellite positioning technology.
- b. The growing worldwide use of the United States Global Positioning System.
- c. The forming of a global navigation satellite system office in Europe by the International Association of the Institutes of Navigation.
- d. The existence and on-going preparation of independent State Radionavigation Plans developed with full cognizance and consideration of the United States Federal Radionavigation Plan.

**Recognizing Also:**

- a. That an international organization to coordinate and implement a multimodal Global Radionavigation System (land, sea and air) does not currently exist.

**Resolves:**

- a. The United States Government agencies responsible for the development of the 1994 FRP are urged to take into account international trends in global radionavigation, and in particular, worldwide expansion of Loran-C and Chayka, and the growing implementation of the Loran-C/Chayka intermix. To that end, and to eliminate uncertainty among the international community, it is further urged that any reference in the FRP regarding a "decision" in 1996 on the future of Loran-C be removed, since it has been publicly announced that the Loran-C system will remain in place until at least 2015.
- b. The United States government should give due consideration to the worldwide use of Loran-C and the system's role complementary to satellite navigation within the United States territorial boundaries.
- c. The United States government is urged to continue recognition of the national Loran-C asset and to recognize the system's role as an integral component of the Global Navigation System and as a complement to GPS.
- d. The international radionavigation community is encouraged to work with State governments in directing an effort to set up an appropriate international organization to coordinate the implementation of a multimodal Global Navigation System.
- e. The United States Government <sup>is</sup> ~~be~~ urged to identify and appoint an appropriate government agency to facilitate becoming a party to the above international organization using the established Circular 175 procedures.

**Recommends:**

Bringing this Resolution to the attention of the United States Secretary of Transportation and to international organizations such as the International Association of Lighthouse Authorities (IALA), member Institutes of the International Association of Institutes of Navigation (IAIN), the Northwest Europe Loran System Coordinating Office (NELS), the Far East Radionavigation System Committee (FERNS), the Internavigation Committee of the C.I.S. (IRN) the International Maritime Organization (IMO) and other organizations as deemed appropriate.

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## **Minutes**

### **Wild Goose Association**

#### **Executive Committee Teleconference - January 26, 1994**

The meeting was called to order at 1:35 PM by President Dale Johnson. Executive Committee participants were:

Dale Johnson, President  
David Amos, Vice-President and 1994 Convention  
C. Andren, Treasurer  
R. Lilley, Past President

Also participating were:

Ellen Lilley, Operations Director  
Norman Matthews, Member of the Steering Committee, 1995  
Moscow meeting  
John Beukers, Meeting Manager, 1995 Moscow meeting

#### **1. Moscow Steering Committee -- First Meeting Report**

This detailed report, prepared by Norm Matthews, was discussed part by part, and resulted in a generally positive mood about the 1995 meeting. It was agreed that careful attention needs to be paid to the financial arrangements.

The notes below reflect the discussion; the interested reader should obtain a copy of the original report, for reference.

The steering committee is set up, consisting of Vladimir Denisov (IRC), Norm Matthews (WGA) and Ian Anderson (INA). John Beukers was named Meeting Manager, and has included Publicity/Promotion and protocol as part of his responsibility. John will also likely propose a chairman for the Technical Committee.

Meeting dates are June 27-30, 1995. Hotel and meeting arrangements were discussed. There are no known conflicts to this meeting date. The ION '95 annual meeting is scheduled for early June.

A new memorandum of understanding between WGA and INA needs to be prepared; John Beukers should have this done in a day or two. The WGA Board should ratify this MOU.

It was noted that we should encourage INVITED papers (perhaps one from an ICAO official, since our Moscow meeting will closely follow ICAO's 1995 COM-DIV meeting to revisit the ILS/MLS transition plan). The Call for Papers must be sent out soon because of the added lead time required for an international meeting. Papers will need to be submitted in final form by about February, 1995, to allow time for translation and printing. It was agreed that papers not meeting the deadline should be eliminated from the program.

John Beukers will write a press release giving

preliminary meeting information for our Gazette and for Navtech's newsletter.

Overall, the sense of the Executive Committee was one of increased comfort with the preparations for this meeting, and one of complete support for Norm Matthews and John Beukers as WGA representatives for 1995. The only negative note was Norm's admonishment that visitors to Moscow must be quite vigilant as to security. As in many other large cities, nighttime strolls alone are definitely not advised. Daytime activities or group tours should be no problem.

## **2. WGA 1994 Convention -- Newport**

Dave Amos reported that the convention has been arranged at the Hotel Viking, Newport. The schedule is:

Tuesday, November 1: Sessions 8:30-5:00  
Wednesday, November 2: Sessions 8:30-12:00  
Afternoon free  
Black-tie banquet  
Thursday, November 3: Sessions 8:00-5:00  
Friday, November 4: Sessions 8:30-12:00

The hotel's convention rates may be extended up to three days before or after the meeting dates. Room rates are expected to be between \$55 and \$79 per night.

**[The Moroneys report this is a good place!]**

The convention theme will be "The role of LORAN in a Global Navigation World."

The Executive Committee approved these arrangements and theme. Discussion then centered on publicity and mailing methods for the Call for Papers.

- a. Board members need some copies of the Call for Papers to give out personally at meetings, etc.
- b. Ellen pointed out that bulk mailing arrangements at the Post Office can be expensive unless LARGE numbers of items are mailed, or mailings are sent several times per year. Dave will check with Ellen if needed.
- c. The Operations Center can prepare labels and do the mailings if necessary.
- d. Dave Amos is looking in to mailing lists to use.

## **3. Eurofix**

At the WGA convention, Santa Barbara, Durk van Willigen and the Delft contingent reported on this Eurofix communications channel using Loran-C pulses to transmit GPS integrity and corrections data. Ed McGann and Megapulse are working with Delft to demo this method. The Coast Guard is looking at feasibility.

Marty Shuey and Bob Lilley attended the Air Traffic Control Association meeting later, in Nashville, where Marty Pozesky, FAA's Associate Administrator for System Engineering and Development, expressed interest in Eurofix. He requested information. Lilley provided copies of van Willigen's and McGann's materials to Marty. The response was that the FAA Satellite Program Office was looking at the material for technical feasibility and operational suitability and would contact van Willigen if/when appropriate.

In related news, Damon Hart included in his recent CNS News a note that WGA has proposed this GPS augmentation. Hart quoted Heywood Shirer as saying DoT would be looking into this method as they study DGPS uplinks.

It seems we got the word out!

There was no Executive Committee action on this item at this time.

#### **4. Other Business**

- a. WGA is to receive 100 copies of the European Loran-C pamphlet prepared in part by John Beukers. We will distribute copies to the Board and will respond to requests for copies through the Operations Center.
- b. The Executive Committee approved the single-sheet form concept for membership renewal notices and membership cards, and also approved the elimination of business-reply envelopes due to cost increases.
- c. Membership renewals are underway.
- d. The Executive Committee approved the purchase of 144 baseball caps for sale as WGA merchandise.
- e. The Committee approved a \$50 member and \$65 non-member price for Technical Symposium Proceedings, for persons who did not attend the convention, or for extra copies.
- f. Ellen noted that we are running low on pins. Anyone with a possible source for enameled lapel pins is asked to call the Operations Center.
- g. The Operations Center needs to find a copy of the 1992 version of the WGA Convention and Bylaws on a disk file, to facilitate updates and reprinting, when needed. Please call Ellen and arrange to send a copy if you have one.

The teleconference meeting was adjourned at 3:30 PM.

The schedule for the next 107th Board of Directors meeting will be established at a later date. Likely the meeting will be held during April, 1994.

Submitted by Robert Lilley



## ILLGEN SIMULATION TECHNOLOGIES, INC.

February 2, 1994

Mr. Carl S. Andren  
3160 Readsborough Court  
Fairfax, VA 22031

Reference: 1993 Wild Goose Convention, 19 to 21 October 1993, held in Santa Barbara, CA

Dear Carl:

Please find enclosed financial information regarding the above-referenced Wild Goose Association 1993 Convention. Net income before the cost of the proceedings is \$10,614.44. The proceedings are estimated to cost approximately \$3,000. WGA will be billed directly for these expenses. Also enclosed is a cashier's check for \$11,893.66 that closes out all WGA convention accounts, along with a miscellaneous check from the Radisson Hotel in the amount of \$8.71.

A notebook is being mailed that contains all associated financial documents that relate to the convention. The notebook is divided into major sections, which when reviewed, provide price detail into all revenue/expense elements. A floppy disk has been enclosed that can be used on any IBM-compatible computer. You will need Microsoft Windows and Excel for Windows. There are four files on the disk:

1. Income - Statement of Operations
2. Banking - Checking and Savings
3. Booths - Includes Donations
4. Attendees - All Attendees Including Monies Paid

It has been a pleasure working with the WGA. If I can ever be of assistance, please do not hesitate to call me at (805) 562-3870.

Sincerely,

A handwritten signature in dark ink, appearing to read "Mark I. Mandrell".

Mark I. Mandrell  
Director, Finance & Contracts

MIM/sg  
Enclosures (as stated)

cc: Mr. R. Lilley w/attachments 1, 2, 3, and 4

1993 WGA Convention  
Statement of Operations

2/2/94

**Revenue**

Registration includes tours etc..	\$30,107.00
Industry Donations	\$2,900.00
Exhibition	\$2,005.00
Subtotal	\$35,012.00
Misc. Income	\$199.03
<b>Total Income</b>	<b>\$35,211.03</b>

**Reconciliation**

Bank Deposits	\$31,152.00
Visa Payments	\$3,860.00
	<b>\$35,012.00</b>

**Expenses**

Hotel - Lunches, Coffee breaks, Banquet etc..	\$9,295.64
Dr. Charlie Jarvis - Keynote Speaker	\$3,500.00
Erica Faust - Convention Planner	\$3,065.00
Printing and Mailings	\$3,545.47
Ice Breaker - Red Dog Saloon	\$1,187.73
Your Travel Center - Tours	\$1,080.00
Postage (call for papers)	\$938.33
Hospitality suite	\$637.53
Flags, ribbons, signs	\$361.11
Misc. Material & Expenses	\$328.93
Pamela Dunlop - Convention Receptionist	\$146.25
Golf	\$116.00
Banking Expense(currency transactions etc..)	\$195.57

**Reconciliation**

Checks Written	\$24,238.18
Bank Charges	\$184.36
Unreconciled	\$24.98
	<b>\$24,422.54</b>

**Total expenses** **\$24,397.56**

**Income**

**\$10,614.44**

**Wild Goose Association**  
**Summary of Verbal Inputs to the 1994 FRP**  
**Washington DC November 10, 1993**

It is important to recognize we are rapidly moving toward a position referenced worldwide navigation system. We must acknowledge the need for a mix of positioning sensors to provide the Required Navigation Performance (RNP) in a system that is:

Fully capable of meeting all navigation requirements.

Available nearly 100% of the time.

Made up of components which have different vulnerabilities and limitations.

Capable of offering redundancy in the event of a major component failure, whether it be in the aircraft or in the navigation system.

Based on the information we know today, it is clear that optimum system performance and redundancy can be provided by some mix of the following components depending on the area of operation. Each component has its own unique characteristics:

**1. Global Positioning System / Global Navigation Satellite System**

Satellite systems offer worldwide coverage and the best accuracy available. GPS / GNSS is clearly the primary component of the future worldwide navigation system.

However, it does not meet availability, integrity, or continuity of service criteria without augmentation. Differential augmentation will improve accuracy, but will not make GPS meet the RNP without further augmentation by some other system. GPS is vulnerable to signal interference and intentional jamming.

**2. Loran-C**

Loran is a mature system with the structure in place and paid for. It offers the most stable signal of all candidates. Loran covers most of the heavily populated areas of the world, but does not offer worldwide coverage. There is strong international interest in expanding Loran coverage to offer local control of basic navigation capability at low cost; Loran is also the only low cost hybrid partner candidate for satellite systems capable of meeting RNP criteria. Like GPS, it does not meet availability, integrity, or continuity of service criteria without augmentation. Loran is vulnerable to precipitation static if sound installation procedures are not followed.

### 3. Inertial Reference System

An inertial system offers the capability of an entirely self contained system, but is limited by high cost and long term accuracy. Inertial navigation can be effectively used to coast through short signal outages of GPS / GNSS, but it can not produce a line of position and is limited by the accuracy of the last known position.

It is hoped that some mix of the above components will meet an availability requirement of 99.999% of the time. If this is achievable, the maximum total annual unavailability of the combined system would be limited to approximately five minutes per year.

RTCA Special Committee 159, tasked to establish minimum standards for airborne navigation equipment using the Global Positioning System, has recognized that GPS does not meet the RNP criteria without additional support. As a result SC-159 has formed a working group to evaluate optional methods of augmenting GPS. The primary candidate for GPS augmentation in the opinion of this group is Loran-C. **GPS and Loran have no common vulnerabilities** and Loran positioning accuracy approaches that of GPS in primary coverage areas; for this reason Loran offers the best option as a hybrid partner for GPS.

The decision to keep the United States operated Loran-C coverage in place until 2015 has been publicly announced and should be included in the 1994 Federal Radionavigation Plan to inform the international community. The message to the world should be clear that the USA supports a cost effective mix of radionavigation systems to support the RNP concept.

**If GPS, or any other system, were perfect . . . We still need a backup capability in the event of a major component failure.**



**Board of Directors**

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Durk van Willigen

# Wild Goose Association



*The International Loran  
Radionavigation Forum*

December 20, 1993

Navigation Working Group  
DOT / RSPA / DRT-20  
Washington, DC 20590

Wild Goose Association representatives gave verbal input at each of the recent Federal Radionavigation Plan Users Conferences. The attached document will provide a written input from the WGA which includes verbal inputs at all three meetings plus some specific corrections to information published in the 1992 edition of the FRP.

The officers and members of the WGA recognize that the FRP is an important document that is used as a reference by the international community. If you have any questions about any of the information we have provided, please contact me at (503) 391-3947. We trust that these inputs will be helpful in publishing the 1994 edition of the FRP.

Sincerely,

Dale E. Johnson  
President

## **WILD GOOSE ASSOCIATION**

### **Review and Comments on 1992 Federal Radionavigation Plan**

An objective of this study is to review the current edition of the FRP and to make recommendations for additions or changes to subsequent issues to better reflect the United States involvement in global radionavigation system used worldwide. A second objective is to discuss those aspects of the global radionavigation situation which relate specifically to air navigation. The third objective is to address those areas particularly concerning Loran-C, to make suggestions for changes which would more accurately represent the present status of the system.

The 1992 issue of the FRP is a substantive document that has been significantly enhanced over previous editions, reflecting the inputs from User Conferences and other interested parties. The authors are to be commended upon this comprehensive and useful document. It has been well received by the international community as an official statement of U.S. radionavigation system policy.

I. The following four recommendations override any detailed discussion of the 1992 issue of the FRP:

(1) **Focus.** The current focus of the FRP is on national federally provided radionavigation aids. The future of radionavigation and associated communications is being driven by technological advancements toward global uniformity. Future editions of the FRP should broaden the focus from purely national consideration to include global issues, policy and requirements.

(2) **International Agreements.** A section of the next issue should be devoted to "Administrative Procedures and International Agreements Governing Worldwide Radionavigation". This section could identify organizations that provide the framework for generating international mandates or recommendations and describe the administrative procedures that must be followed to arrive at an international consensus. The section should reference existing international agreements, both involving and not involving the U.S., summarize their intent, and provide both effective and termination dates. It should list the U.S. obligations under the agreements. The section could also contain a discussion of current international administrative activity directed towards new agreements and provide a statement of U.S. policy in this activity.

(3) **U.S. Policy and Practice.** The 1992 edition of the FRP is considered to be a fair and rational approach for current and future radionavigation policy. It also adheres closely to U.S. international commitments. However, a comparison of the document's contents with some of the current activities of U.S. government agencies raises the question as to whether the document truly reflects the intent of U.S. radionavigation policy. This is an important

issue since the disparity of written policy and action by agencies and government individuals creates confusion, not only within the U.S., but among members of the international community.

The recommendation therefore is that either agencies within the U.S. government be directed to adhere to written policy or that the FRP be amended from time to time between the two year publication events to reflect changes in policy and execution.

(4) Status and Preparation. The FRP has taken on international importance for the U.S. and can no longer be regarded as a document for internal consumption only. Its preparation and issue should be elevated to Cabinet level within the government to give it the stature required for international negotiation of global radionavigation issues.

II. The following discussion is directed specifically to aircraft navigation issues.

It is important to recognize that we are rapidly moving toward a position-referenced worldwide navigation system. We must acknowledge the need for a mix of position sensors to provide the Required Navigational Performance (RNP) in a configuration that is:

Fully capable of meeting all navigation requirements,

Available nearly 100% of the time,

Made up of components that have different vulnerabilities and limitations and

Capable of offering redundancy in the event of a major component failure, whether in the aircraft or in the navigation system.

Based on the information we know today, it is clear that optimum system performance and redundancy can be provided by some mix of the following components depending on the area of operation. Each component has its own unique characteristics:

(1) Global Positioning System / Global Navigation Satellite System

Satellite systems offer worldwide coverage and the best accuracy available. GPS/GNSS is clearly the primary component of the future worldwide navigation system. However, it does not meet availability, integrity or continuity of service criteria for a sole means of navigation without augmentation. Differential augmentation will improve accuracy, but will not make GPS meet the RNP without further augmentation by some other system. GPS is vulnerable to signal interference and intentional jamming.

## **(2) Loran-C**

Loran is a mature system with the structure in place and paid for. It offers the most stable signal of all candidates. Loran covers most of the heavily populated areas of the world, but does not offer worldwide coverage. There is strong international interest in expanding loran coverage to offer local control of basic navigation capability at low cost, while providing a good hybrid partner for satellite systems. Like GPS, it does not meet sole-means availability, integrity or continuity of service requirements without augmentation. Loran is vulnerable to precipitation static if sound aircraft installation and maintenance procedures are not followed.

## **(3) Inertial Reference Systems**

An inertial system offers the capability of an entirely self-contained system, but is limited by high cost and poor long-term accuracy. Inertial navigation can be used effectively to coast through short outages of GPS/GNSS, but it can not produce a line of position and is limited by the accuracy of the last known position.

It is hoped that some mix of the above components will meet the availability requirements 99.999% of the time. If this is achievable, the maximum total annual unavailability of a combined system would be limited to approximately five minutes per year.

RTCA Special Committee 159, tasked to establish minimum standards for airborne navigational equipment using the Global Positioning System, has recognized that GPS does not meet the sole-means criteria without additional support. As a result, SC-159 has formed a working group to evaluate optional methods of augmenting GPS. The primary candidate for GPS augmentation in the opinion of this working group is Loran-C. GPS and loran have no common vulnerabilities and loran position accuracy approaches that of GPS in primary coverage areas; for these reasons, the group feels that loran offers the best option as a hybrid partner for GPS.

The decision to keep the U.S. operated Loran-C coverage in place until 2015 should be reiterated in the 1994 issue to assure the international community. The message to the world should be clear that the USA supports a cost-effective mix of radionavigation systems to support the RNP concept.

Even if GPS, or any other single system, provided perfect coverage, the prudent navigator will still insist on a backup system in the event of a major component failure.

III. The remaining comments relate directly to Loran-C and specific items in the 1992 FRP:

**Page 3-11 Figure 3-1. Operating Plan for Loran-C**

The "DECISION ON LORAN-C" shown in Figure 3-1 as scheduled for 1996 implies the possibility that a decision to begin phasing out Loran-C may be made at that time. This is not in keeping with all other statements made in the text and in public on the plans for Loran-C, which stress its usefulness and project its operation to at least 2015. This chart is a relic from the original FRP which reflected the concept that GPS would eliminate all need for other radionavigation systems. It is now clear that GPS will need both augmentation and backup to meet FAA criteria. Changes in the text recognizing the continuing need for Loran-C were not reflected in changes in the diagram.

A proposed substitute figure has been prepared by the WGA, which indicates the inputs of RTCA SC-159 and SC-176 emphasizing the need for Loran-C in the radionavigation systems mix. It also includes a plan for upgrading tube-type transmitters to solid state and modifying antenna couplers to speed switching, both of which will enhance reliability and availability of the system. A Coast Guard source estimates that the cost of upgrading can be paid back by operating cost reduction in 6 to 10 years.

**Page 3-12 Table 3-4. Loran-C Projections**

There was no loss of a U.S./Canadian transmitting facility in 1993. There are still 28 stations in 1993 and there will be 29 starting in 1994, with the addition of the new Canadian master station at Comfort Cove, Newfoundland.

**Page A-8 F. Fix Rate**

The Loran-C fix rate is essentially continuous, not 10-20 fixes per minute.

**Concerning Loran-C in General -**

The role of Canada in the operational structure of Loran-C in North America should be recognized in the FRP. Canadians operate four of the 28 Loran-C stations which are required to provide the existing navigation service to the U.S.. They have recently funded a new station at Comfort Cove, Newfoundland which will be the master for a new Newfoundland chain after the station at Angissoq, Greenland is shut down at the end of 1994.

UPDATE CURRENT  
RECOMMENDATION  
FOR THE FUTURE  
RADIO NAVIGATION  
SYSTEMS MIX

RTCA SC-176  
SC-159

UPGRADE TO SOLID  
STATE TRANSMITTERS  
AND HIGH SPEED  
SWITCHING OF  
ANTENNAS

PAYBACK

1993 1994 1995 1996

2000 2015

CALENDAR YEAR



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

800 Independence Ave., S.W.  
Washington, D.C. 20591

DATE  
FET

JAN 5 1991

Dr. Robert W. Lilley  
Avionics Engineering Center  
Stocker Center  
Ohio University  
Athens, OH 45701-2979

Dear Dr. Lilley:

Thank you for forwarding copies of the two papers on proposed techniques for delivering Global Positioning System integrity and correction information via the Loran-C signal. I have given the package to my technical experts in the Satellite Program Office for further study. Once they review the material for technical feasibility and operational suitability, we can then schedule further discussions with Dr. van Willigen of Delft University.

Once again, thank you for your interest in the Federal Aviation Administration's research and development program. We enjoy an excellent working relationship with Ohio University and hope to continue moving ahead together to bring the full benefits of satellite technology to the aviation users as soon as possible.

Sincerely,

Martin T. Pozesky  
Associate Administrator  
for System Engineering and Development

Dale E. Johnson ..... President  
David H. Amos ..... Vice President  
Walter N. Dean ..... Secretary  
Carl S. Andren ..... Treasurer  
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J. David Last  
Maurice J. Moroney  
Ben Peterson  
William F. Roland  
David C. Scull  
Durk van Willigen

# Wild Goose Association



*The International Loran  
Radionavigation Forum*

February 15, 1994

The Honorable Federico Peña  
Secretary  
U.S. Department of Transportation  
400 Seventh Street, S.W.  
Washington, DC 20590

Dear Secretary Peña,

For the past 22 years the Wild Goose Association has held an international Annual Convention and Technical Symposium to bring together people working in the field of Loran and allied technologies. More recently these symposiums have addressed the interoperability of Loran as a complement to satellite systems to provide a more robust navigation capability and to overcome limitations of each system when used alone.

It is my pleasure as President of the Association to provide you with a copy of the Resolution passed by our Board of Directors and the membership in late 1993.

I have enclosed a copy of the Wild Goose Association fact sheet which briefly describes the aims and objectives of the Association.

If you or your staff have any questions or require clarification on any points, I would be pleased to address them. I can be reached at *II Morrow Inc.*, 2345 Turner Road S.E., Salem, OR 97302-2000, or by phone at 503 391-3410.

Sincerely,

Dale E. Johnson  
President



Dale E. Johnson ..... President  
David H. Amos ..... Vice President  
Walter N. Dean ..... Secretary  
Carl S. Andren ..... Treasurer  
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Durk van Willigen

# Wild Goose Association



*The International Loran  
Radionavigation Forum*

February 15, 1994

David R. Hinson, Administrator  
Federal Aviation Administration  
800 Independence Avenue SW  
Washington, DC 20591

Dear Mr. Hinson,

For the past 22 years the Wild Goose Association has held an international Annual Convention and Technical Symposium to bring together people working in the field of Loran and allied technologies. Recently these symposiums have addressed the use of Loran as a complement for supporting satellite systems to guarantee the signal integrity, availability, continuity of service and redundancy necessary to meet the Required Navigation Performance. Loran working in partnership with satellite systems will provide a more robust capability which will overcome the limitations of each system when used alone.

It is my pleasure as President of the Association to provide you with a copy of the Resolution passed by our Board of Directors and the membership in late 1993.

I have enclosed a copy of the Wild Goose Association fact sheet which briefly describes the aims and objectives of the Association.

If you or your staff have any questions or require clarification on any points, I would be pleased to address them. I can be reached at *II Morrow Inc.*, 2345 Turner Road SE, Salem, OR 97302-2000, or by phone at 503 391-3410.

Sincerely,

Dale E. Johnson  
President

Wild Goose Association, Inc.  
P.O. Box 556, Bedford, MA 01730, USA

# WILD GOOSE ASSOCIATION

*The International Loran Radionavigation Forum*

The 22nd Annual Convention and Technical Symposium of Wild Goose Association was conducted in Santa Barbara, California over the period 18 - 21 October, 1993. The convention's theme was "GNSS and Loran-C -- Partners into the 21st Century". At the conclusion the following Resolution was drawn up and approved by the members present and the Board of Directors.

## RESOLUTION

### **Considering:**

- a. The formal material presented during the Technical Sessions and discussions relating thereto.
- b. The Panel debate "Loran/GNSS Interoperability - The Future of Radionavigation - is the U.S. Listening?"
- c. The substance of informal meetings and discussions relating to the future mix for a Global Navigation System (GNS).

### **Noting:**

- a. The Continental United States enjoys complete territorial and coastal coverage of an operational Loran-C system for use on land and water and in the air.
- b. The deliberations of RTCA Special Committee 159 for the development of Receiver Minimum Optimum Performance Specifications for GPS augmented with Loran-C for sole-means navigation in U.S. national airspace.
- c. The international acceptance and expansion of Loran-C by States assuming responsibility for U.S. Loran-C assets under U.S. Circular 175 authority.
- d. Progress with the Northwest Europe Loran-C initiative and agreement for the reconfiguration and expansion of Loran-C in Northwest Europe (NELS).
- e. Progress in the Far East for cooperation and expansion of Loran-C and the Russian equivalent, Chayka, under and agreement between China, Korea, Japan, and Russia (FERNS).
- f. The expressed interest of other States in Asia and the Pacific Rim to join the FERNS activity.
- g. The continuing work to extend coverage of the Russian Chayka system within the CIS.
- h. Agreements between Russia and surrounding States for the cooperation and combining of Loran-C and Chayka.
- i. Progress in discussions between States directed toward entering Loran-C agreements in the Mediterranean, Iberian Peninsula and surrounding areas.

**Recognizing:**

- a. The worldwide interest in civil satellite positioning technology.
- b. The growing worldwide use of the United States Global Positioning System.
- c. The forming of a global navigation satellite system office in Europe by the International Association of the Institutes of Navigation.
- d. The existence and on-going preparation of independent State Radionavigation Plans developed with full cognizance and consideration of the United States Federal Radionavigation Plan.

**Recognizing Also:**

- a. That an international organization to coordinate and implement a multimodal Global Radionavigation System (land, sea and air) does not currently exist.

**Resolves:**

- a. The United States Government agencies responsible for the development of the 1994 FRP are urged to take into account international trends in global radionavigation, and in particular, worldwide expansion of Loran-C and Chayka, and the growing implementation of the Loran-C/Chayka intermix. To that end, and to eliminate uncertainty among the international community, it is further urged that any reference in the FRP regarding a "decision" in 1996 on the future of Loran-C be removed, since it has been publicly announced that the Loran-C system will remain in place until at least 2015.
- b. The United States government should give due consideration to the worldwide use of Loran-C and the system's role complementary to satellite navigation within the United States territorial boundaries.
- c. The United States government is urged to continue recognition of the national Loran-C asset and to recognize the system's role as an integral component of the Global Navigation System and as a complement to GPS.
- d. The international radionavigation community is encouraged to work with State governments in directing an effort to set up an appropriate international organization to coordinate the implementation of a multimodal Global Navigation System.
- e. The United States Government be urged to identify and appoint an appropriate government agency to facilitate becoming a party to the above international organization using the established Circular 175 procedures.

**Recommends:**

Bringing this Resolution to the attention of the United States Secretary of Transportation and to international organizations such as the International Association of Lighthouse Authorities (IALA), member Institutes of the International Association of Institutes of Navigation (IAIN), the Northwest Europe Loran System Coordinating Office (NELS), the Far East Radionavigation System Committee (FERNS), the Internavigation Committee of the C.I.S. (IRN) the International Maritime Organization (IMO) and other organizations as deemed appropriate.

U.S. Department  
of Transportation

United States  
Coast Guard



Commandant  
U.S. Coast Guard

2100 Second Street S.W.  
Washington, DC 20593-0001  
Staff Symbol: G-NRN  
Phone: (202) 267-0283

16565  
Ser: 94/10026

08 MAR 1994

Mr. Dale E. Johnson  
President  
Wild Goose Association, Inc.  
P.O. Box 556  
Bedford, MA 01730

Dear Mr. Johnson:

On behalf of the Secretary of Transportation, I am responding to your letter of February 15, 1994, regarding the Loran-C system. The Wild Goose Association brings up some interesting points in the Resolution you forwarded in your letter. I have directed the information you provided to the Joint Department of Defense/Department of Transportation Radionavigation Working Group for its use in developing the new Federal Radionavigation Plan for 1994.

The United States already has the appropriate level of international involvement in radionavigation systems. The United States is a member of International Civil Aviation Organization and the International Maritime Organization and participates actively in other bodies such as the International Association of Lighthouse Authorities. The U.S. Coast Guard also participates in the Far East Radionavigation System and Northern Europe Loran-C System Committees as a technical advisor only.

During these times of severe budget constraints, it is necessary that all functions, including provision of radionavigation systems, be scrutinized carefully. Within the Department of Transportation there is certainly a recognition of the importance that radionavigation systems provide to all modes of transportation. Shortly, oversight of civil radionavigation issues is expected to be assigned to the assistant secretary level. FRP to AGS & Sec'y

If you have further questions or comments, please contact Captain Weseman at 202-267-0283.

Sincerely,

A handwritten signature in cursive script, appearing to read "W. J. Ecker".

W. J. ECKER  
Rear Admiral, U. S. Coast Guard  
Chief, Office of Navigation Safety  
and Waterway Services

## Board of Directors

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# Wild Goose Association



*The International Loran  
Radionavigation Forum*

March 30, 1994

Commandant  
United States Coast Guard (G-C)  
2100 2nd Street SW  
Washington, DC 20593-0001

Dear Admiral Kime:

I am writing to you on behalf of the Wild Goose Association (WGA) and the 1.3 million marine and aviation Loran-C users.

Since 1972, the WGA has served as the International Loran-C Radionavigation Forum where industry, users, engineers, scientists and Loran-C service providers, have cooperated to provide what is now the most widely used radionavigation system in the world. Throughout the 22 years of its existence the WGA has worked with the US Coast Guard to develop and refine the Loran-C system to a maturity enjoyed today by a wide range of marine, aviation and terrestrial users.

Over the years the WGA has actively participated in the Federal Radionavigation Plan (FRP) development process and has made its submission for the 1994 issue of the Plan with specific recommendations in a letter to the Navigation Working Group, DOT / RSPA / DRT-20 dated December 20, 1993. Also, a resolution adopted by the WGA Board of Directors urging specific attention to federal and international radionavigation policy was sent to Secretary Peña and FAA Administrator, David Hinson on February 15, 1994. ADM Ecker responded to this letter at the Secretary's request. While being an advocate of Loran-C, the Association clearly recognizes other radionavigation services and endorses a mix of terrestrial and space based systems.

In contrast to the WGA resolution and FRP input, it has recently come to our attention that the US Coast Guard no longer considers Loran-C as an essential service and is considering an action to relieve the agency of both the responsibility and financial burden of providing the service by discontinuing operation of the Loran-C system in 1996. The WGA regards this proposal as counter productive and not in the best interests of the many Loran-C users. Certainly, space based positioning systems offer great promise, but safety and continuity requirements demand that the new system be in place, mature and capable of adequate backup, before considering discontinuance of existing systems. In fact, Loran offers one of the best options for GPS support available.

A recent survey of the known Loran-C equipment manufacturers indicates that since 1986 over 800,000 receivers were sold and 89,000 of these were sold in 1993. Any plan to discontinue operation of domestic Loran-C stations in the near future is clearly premature considering the volume of receivers recently purchased. I am sure you are aware that it was the wide utilization of Loran by the business and general aviation community that led the FAA to fund the installation of the additional transmitters to provide mid-continent Loran-C coverage in the late 1980s.

Wild Goose Association, Inc.  
P.O. Box 556, Bedford, MA 01730, USA

In January 1994, the Department of Transportation, under the signature of Secretary Peña, issued a Strategic Plan consisting of a defined mission and 7 strategic goals. The Objective of Goal 7 is to "*Listen to our Customers...*" The statements made to meet this objective clearly suggest that there will be a dialogue between the DOT and users. The Wild Goose Association assumes this to mean that the DOT will be responsive to the users represented by the Association.

The WGA has always supported the FRP process and regards the 1992 edition as a substantive document reflecting rational policies and a workable plan. The 1992 edition indicated a planned evolution to new technologies with a reasonable adoption period to assure continuity of service and a smooth transition period for users and manufacturers. In its submission of material for the 1994 FRP, the WGA specifically addressed this issue by recommending the removal of the 1996 "decision point" concerning Loran-C to meet the goals previously stated. This recommended action is also in keeping with the fact that on several occasions senior FAA officials have publicly stated that Loran-C will remain in place for many years and probably until about 2015.

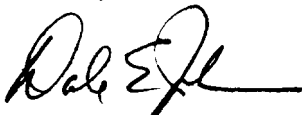
The Coast Guard's sudden and unexpected proposed change in Loran-C policy is of serious concern to the WGA, not only as it affects Loran-C users and the supporting industry but for the effect that it will have on credibility of the very FRP process itself. The FRP is regarded both nationally and internationally as a statement of the U.S. Government's radionavigation policy. Radical changes from one publication of the FRP to the next, will cause the publication to be regarded with suspicion as a document of little value.

Recommendations:

1. Adhere to the protection dates for Loran-C provided in the 1992 FRP.
2. Remove the protection date ambiguity caused by the 1996 decision date for the future of Loran-C.
3. Continue to recognize and provide service for the 1.3 million active Loran-C users.

**In view of the gravity of the decision that the Coast Guard may make regarding the future use of this important national radionavigation asset, may I request the favor of a personal reply to this letter.** If you or your staff have any questions, I may be reached at my office in Salem, Oregon, phone 503 391-3410, Fax 503 364-2138.

Sincerely,



Dale E. Johnson  
President

Enc: Wild Goose Association Statement of Radionavigation Policy  
Summary of AOPA verbal inputs at the 1994 FRP Users Conference

Copy: Federico F. Peña, Secretary of Transportation  
David R. Hinson, FAA Administrator

---

# Wild Goose Association

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## 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 Loran 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.

**Aircraft Owners and Pilots Association  
Summary of Verbal Inputs to the 1994 FRP  
Washington DC - November 10, 1993**

The following is a summary of verbal input delivered by AOPA Vice President, Steve Brown at the 1994 Federal Radionavigation Plan users conference in Washington, DC.

Mr. Brown spoke in favor of using both GPS and Loran-C as major components of the future National Airspace System. He pointed out that both systems are in wide use today and both offer similar navigation capabilities for the General Aviation user. Additionally, taking benefit of the integrity and redundancy offered by using a mix of two dissimilar systems makes good sense.

In summarizing the results of an AOPA membership survey taken in August 1993 he reported that 70 percent of the membership has Loran in their aircraft today and most of the remaining members indicated they plan to install Loran within the next two years. He also reported that 5 percent of their members have GPS in their aircraft now and about 65 percent plan to install GPS within the next two years. Registration numbers show that the General Aviation fleet represents 96 percent of all aircraft registered in the USA.

Comment - It appears that most General Aviation aircraft owners want to have both systems available for their use. Many owners have stated that they plan to keep their Loran and add a GPS receiver in the near future.



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Durk van Willigen

# Wild Goose Association



*The International Loran  
Radionavigation Forum*

March 30, 1994

The Honorable Federico Peña  
Secretary of Transportation  
U.S. Department of Transportation  
400 Seventh Street, S.W.  
Washington, DC 20590

Dear Secretary Peña,

Thank you for your response to my letter of February 15, 1994.

I am writing to you on behalf of the 1.3 million marine and aviation Loran-C users who consider Loran to be a national asset.

The Wild Goose Association is very concerned about recent information that the Coast Guard is considering a plan to eliminate Loran-C from its budget after 1996. I have written the attached letter to the Commandant stating our concern. We agree that the Global Positioning System (GPS) will soon become a valuable utility. Many users as well as industry leaders and engineers agree that Loran-C is the most cost effective method of supporting and providing a backup for this new system.

Loran-C is now serving as primary navigation for many users who do not want to buy new equipment until the emerging GPS technology matures and all of the support components are in place.

Sincerely,

Dale E. Johnson  
President

Wild Goose Association, Inc.  
P.O. Box 556, Bedford, MA 01730, USA

**Board of Directors**

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# Wild Goose Association



*The International Loran  
Radionavigation Forum*

March 30, 1994

David R. Hinson, Administrator  
Federal Aviation Administration  
800 Independence Avenue SW  
Washington, DC 20591

Dear Mr. Hinson,

The Wild Goose Association is very concerned about recent information that the Coast Guard is considering a plan to eliminate Loran-C from its budget after 1996. For your information, I have attached a copy of my letter to the Commandant stating our concern.

We share the excitement about the promise of the Global Positioning System and agree that GPS will soon become a valuable utility. Many users as well as industry leaders and engineers agree that Loran-C is the most cost effective method of supporting and providing a backup for this new system.

Loran-C is now serving as primary navigation for many users who do not want to buy new equipment until the emerging GPS technology matures and all of the support components are in place.

Sincerely,

Dale E. Johnson  
President

## Board of Directors

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 Ben Peterson  
 William F. Roland  
 David C. Scull  
 Durk van Willigen

# Wild Goose Association

April 3, 1994



*The International Loran  
 Radionavigation Forum*

The Hon. John Glenn  
 United States Senate  
 Washington, DC 20510-3501

Att:Ms. Susan Carnohan

Dear Ms. Carnohan,

The Wild Goose Association is the professional association representing the users, providers and technical practitioners relating to the Loran-C navigation system. As a means of protecting the user investment in Loran-C and to provide stability for users and investors in other navigation systems, we propose a change in the process which results in the Federal Radionavigation Plan.

I have enclosed a copy of the 1992 Federal Radionavigation Plan (FRP). Issued every two years, the FRP is the official source of radionavigation policy and planning for the federal government. It is prepared by government agencies after a series of user input sessions. There is, however, no public input during document drafting and prior to publication.

Without oversight, such a Plan can change precipitously. An example is the current consideration by the Coast Guard to solve a budget problem by removing itself from Loran-C navigation responsibility as early as 1996. In contrast, over the past year many public statements have been made by senior FAA officials that the FRP plan to keep Loran-C in place until about the year 2015 would be followed. As it currently stands, a change in this plan for the Coast Guard to terminate the operation of Loran-C could be announced in the 1994 FRP, which would normally not be available to the public until the Spring of 1995, without public hearing or input.

The result could be considerable loss of investment by navigation system users. In Loran-C case, a recent industry survey shows that over 800,000 receivers have been sold since 1986, 89,000 of which were sold last year. This system is widely used by 1.3 million marine, aviation and terrestrial users, many of whom are not eager to change immediately to the new satellite system.

Wild Goose Association, Inc.  
 P.O. Box 556, Bedford, MA 01730, USA

The FRP is considered "gospel" or law by other countries and should faithfully represent US public policy. Without open discussion prior to publication, the Plan may be significantly influenced and changed by a very few persons within government. A potential result is the sort of instability referenced above.

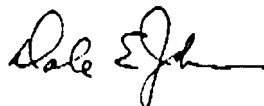
We believe that the following action would be appropriate:

Cause the Federal Radionavigation Plan to come under a form of oversight which requires public input prior to publication so that changes are discussed in the open. Publication in the Federal Register, and/or requiring Congressional hearings prior to publication might be appropriate.

The navigation and positioning communities throughout the world look to the FRP as a guide for planning and investment. The stronger and more stable the Plan is, the more credible and useful it will be. As we move rapidly toward a seamless worldwide navigation environment, the need for stability and international coordination will increase. An open forum achieving consensus is the best means for meeting the requirements of all users.

I hope you share our concerns; we look forward to working with you to enhance this important government product.

Sincerely,



Dale E. Johnson  
President

xc. WGA Executive Committee members

Loran-C Manufacturing Data  
1986-1994  
24-Jan-94

Company Name	Street Address	P. O. Box	City, State, ZIP	Contact	Tel. Nr.	FAX nr.
Companies responding to survey questions and providing data for compilation						
Allied Signal Aerospace	18216 154th Avenue N.E.		Redmond, WA, 98052	Randy Lincoln	206-861-6200	206-861-6265
BFG Flight Systems	2001 Polaris Parkway		Columbus, OH, 43240	Mike Ross	614-285-2001	614-825-2035
BFG Jet Electronics	5353 52nd Street, S.E.	P. O. Box 873	Grand Rapids, MI, 49588-0873	Steve Wilson	616-494-6600	616-825-4224
Furuno, USA	271 Harbor Way	P. O. Box 2343	So. San Francisco, CA, 94083		415-873-9393	415-872-3403
IlMorrow, Inc.	2345 Turner Road, S. E.	P. O. Box 13549	Salem, OR, 97309	Dale Johnson	503-391-3410	503-364-2814
Koden Electronics Co. Ltd.	2-10-45, Kami-Osaki		Tokyo, Japan	T. Kurosawa	81-3-440-3864	81-3-473-5837
Micrologic, Inc.	9174 Doering Avenue		Chatsworth, CA, 91311	Cal Culver	818-998-1216	818-799-3658
Navigation Data Systems, Inc.	520 Commerce Point,	P. O. Box 23850	New Orleans, LA, 70183	Bill Marchall	504-734-5566	504-734-5-81
Navstar Systems Ltd.	Royal Oak Way, Coventry,	Daventry,	Northants, England, NN11 5PJ	Clive de la Fuente	44-327-79066	44-327-71116
Northstar	30 Sudbury Road		Acton, MA, 01720	Jim Bricker	508-897-6600	508-897-7241
Pipkin, Inc.	23 River Oaks Drive		Chico, CA, 95926	Jesse Pipkin	916-342-8521	
Raytheon Marine Co.	46 River Road		Hudson, NH, 03051	Bob Schwartz	603-881-5200	603-881-4756
Ross Engineering, Inc.	12505 Starkey Road		Largo, FL, 34643	Todd Wood	813-536-1226	813-535-4248
Sitex		P. O. Box 6700	Clearwater, FL, 34618	Ted Bodtmann	813-535-4681	813-530-7272
Terra Corp.	3520 Pan American Freeway		Albuquerque, NM, 87107-4796	Dennis Schmidt	505-884-2321	505-884-2384
<b>Production Totals:</b>	<b>Production, 1986-1993:</b>	<b>801,540</b>	<b>Production, 1993:</b>	<b>89,890</b>	<b>Planned, 1994:</b>	<b>90,150</b>
Companies not listed above, but whose production is covered by one or more OEM suppliers above, or visa versa						
Apelco Marine Electronics	1107 North Ward Street		Tampa, FL, 33607		603-881-4750	603-881-4756
B&G International Marine	7855 126th Avenue North		Largo, FL, 34643	Jake Marantz	813-536-1400	813-536-1717
King Marine Electronics	5320-140th Avenue, North		Clearwater, FL, 34620		813-530-3411	813-530-3820
Ray Jefferson	Maine & Cotton Streets		Philadelphia, PA, 19127	Steve Koff	215-487-2800	215-482-3323
Companies not listed above which did not respond, or refused to release data						
Admiral Marine Electronics	8-33 40th Avenue		Long Island City, NY, 11101		718-937-7955	718-729-9140
Bendix King Gen'l Aviation Div.	400 North Rogers Road		Olathe, KN, 66062-1212		913-782-0400	913-791-1302
Data Marine	53 Portside Drive		Pocasset, MA, 02559-1030	Frank Cassidy	508-563-7151	508-564-4707
Internav		P. O. Box 1261	Sydney, NS, Canada, B1P6J9	John Currie		
STS Avionics Products, Inc.	11600 Lilburn Park Road		St. Louis, MO, 63146			314-567-0304
Seatech		P. O. Box 6700	Clearwater, FL, 33518		813-535-4681	813-530-7272
Taiyo	20-7, 2-chome, Ebisu-nishi	Shibuya-ku	Tokyo, 150, Japan		81-3-496-3294	81-3-496-1677
Tigershark			Salem, OR, 97309	Jim Lookabaugh		503-327-2922
Trimble Navigation, Inc.	585 North Main Avenue	P. O. Box 3642	Sunnyvale, CA, 94088-3642		408-730-2900	408-730-2997
All data compiled by Megapulse, Inc. from direct contact with the manufacturers and distributors involved. Data compiled between 4 Jan and 20 Jan, 1994.						

# STAFF OF THE SENATE COMMITTEES

~~ARMED SERVICES~~ 275  
APPROPRIATIONS.

## SUBCOMMITTEE ON MILITARY CONSTRUCTION

Sen. Jim Sasser (D TN), Chairman

MAJORITY (4 D.): Senators Sasser, Inouye, Reid and Fowler.

MINORITY (3 R.): Senators Gramm, Garn and Stevens.

### STAFF

Washington DC 20510-6036

Waker, Michael  
Hall, Mary C.  
Hard, James W.  
Pete, Dona

★ Clerk  
Professional Staff Member  
Minority Clerk  
Minority Staff Assistant

Building	Room	Direct Dial
SDOB	131	224-7276
SDOB	119	224-6817
SDOB	157	224-7271
SDOB	157	224-7246

## SUBCOMMITTEE ON TRANSPORTATION

Sen. Frank R. Lautenberg (D NJ), Chairman

MAJORITY (5 D.): Senators Lautenberg, Byrd, Harkin, Sasser and Mikulski.

MINORITY (4 R.): Senators D'Amato, Kasten, Domenici and Hatfield.

### STAFF

Washington DC 20510-6037

McCann, Patrick J.  
Rogoff, Peter M.  
Rose, Joyce C.  
Miano, Anne M.  
Pastis, Dorothy

★ Clerk  
★ Professional Staff Member  
Staff Assistant  
Minority Clerk  
Minority Staff Assistant

Building	Room	Direct Dial
SDOB	156	224-0330
SDOB	156	224-7245
SDOB	156	224-7281
SDOB	153	224-7213
SDOB	153	224-7234

## SUBCOMMITTEE ON TREASURY, POSTAL SERVICE AND GENERAL GOVERNMENT

Sen. Dennis DeConcini (D AZ), Chairman

MAJORITY (3 D.): Senators DeConcini, Mikulski and Kerrey (NE).

MINORITY (2 R.): Senators Domenici and D'Amato.

### STAFF

Washington DC 20510-6038

Lynch, Patty  
Brown, Shannon  
Davies, Rebecca M.  
Tenenbaum, Mary

Clerk  
Staff Assistant  
Minority Clerk  
Minority Staff Assistant

Building	Room	Direct Dial
SDOB	190	224-6280
SDOB	190	224-8271
SDOB	152	224-7219
SDOB	150	224-0336

## SUBCOMMITTEE ON VA, HUD AND INDEPENDENT AGENCIES

Sen. Barbara A. Mikulski (D MD), Chairman

MAJORITY (6 D.): Senators Mikulski, Leahy, Johnston, Lautenberg, Fowler and Kerrey (NE).

MINORITY (5 R.): Senators Garn, D'Amato, Nickles, Gramm and Bond.

### STAFF

Washington DC 20510-6032

Kelly, Kevin F.  
Apostolou, Carolyn E.  
Griffin, Juanita  
Kohashi, Stephen H.  
Pete, Dona

★ Clerk  
Professional Staff Member  
Staff Assistant  
★ Minority Clerk  
Minority Staff Assistant

Building	Room	Direct Dial
SDOB	142	224-7231
SDOB	142	224-7238
SDOB	142	224-7211
SDOB	157	224-7253
SDOB	157	224-7246

Kner, Charles O., Jr.	★ Senior Analyst, International Affairs	SDOB	627	224-0837
Phillips, Roy F.	★ Senior Analyst for National Defense	SDOB	626	224-0834
Rel, Ricardo	Senior Analyst for Agriculture and Natural Resources	SDOB	629	224-0529
Obermayer, Adele B.	★ Senior Analyst for Commerce and Housing	SDOB	625	224-6588
Reidy, Cheri	Economist and Senior Analyst for Revenues	SHOB	625	224-0564
Taylor, Peter M.	★ Chief Economist	SDOB	633	224-0557
Ramonas, Denise G.	Counsel and Senior Analyst for Science	SDOB	631	224-0566
Longoria, Melissa	Legal Assistant for Veterans Affairs	SDOB	626	224-0543
Gatta, Andrea	Staff Assistant	SDOB	630	224-6815
Kearney, James	Staff Assistant	SDOB	626	224-2574
Mitchell, Kevin	Staff Assistant	SDOB	626	224-2990
		SDOB	630	224-0536

[The Senate Budget Committee has no standing subcommittees.]

## **SENATE COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION**

"...to consist of 20 Senators: to which committee shall be referred all proposed legislation, messages, petitions, memorials, and other matters relating to the following subjects: 1. Coast Guard. 2. Coastal zone management. 3. Communications. 4. Highway safety. 5. Inland waterways, except construction. 6. Interstate commerce. 7. Marine and ocean navigation, safety, and transportation including navigational aspects of deepwater ports. 8. Marine fisheries. 9. Merchant Marine and navigation. 10. Nonmilitary aeronautical and space sciences. 11. Oceans, weather, and atmospheric activities. 12. Panama Canal and interoceanic canals generally, except as provided in subparagraph (c). 13. Regulation of consumer products and services, including testing related to toxic substances, other than pesticides, and except for credit, financial services, and housing. 14. Regulation of interstate common carriers, including railroads, buses, trucks, vessels, pipelines, and civil aviation. 15. Science, engineering, and technology research and development and policy. 16. Sports. 17. Standards and measurement. 18. Transportation. 19. Transportation and commerce aspects of Outer Continental Shelf lands. (2) Such committee shall also study and review, on a comprehensive basis, all matters relating to science and technology, oceans policy, transportation, communications, and consumer affairs, and report thereon from time to time.

Sen. Ernest F. Hollings (D SC), Chairman

MAJORITY (11 D.): Sen. Ernest F. Hollings (D SC); Sen. Daniel K. Inouye (D HI); Sen. Wendell H. Ford (D KY); Sen. J. James Exon (D NE); Sen. Albert Gore, Jr. (D TN); Sen. John D. Rockefeller IV (D WV); Sen. Lloyd Bentsen (D TX); Sen. John F. Kerry (D MA); Sen. John B. Breaux (D LA); Sen. Richard H. Bryan (D NV) and Sen. Charles S. Robb (D VA).

MINORITY (9 R.): Sen. John C. Danforth (R MO); Sen. Bob Packwood (R OR); Sen. Larry Pressler (R SD); Sen. Ted Stevens (R AK); Sen. Robert W. Kasten, Jr. (R WI); Sen. John McCain (R AZ); Sen. Conrad Burns (R MT); Sen. Slade Gorton (R WA) and Sen. Trent Lott (R MS).

[The Chairman and Ranking Minority Member are *ex officio* members of all subcommittees.]

### **STAFF**

#### **Washington DC 20510-6125**

		Building	Room	Direct Dial
Curtin, Kevin G.	★ Chief Counsel and Staff Director	SROB	254	224-0427
Morgan, Linda J.	General Counsel	SROB	254	224-0411
McCormick, Walter B., Jr.	★ Minority Chief Counsel and Staff Director	SDOB	554	224-1251
Bierle, Mary Pat	★ Minority Deputy Staff Director	SDOB	554	224-1251
Boyd, Moses	Senior Counsel	SHOB	227	224-0415
Cook, Antoinette D.	Senior Counsel	SHOB	227	224-9340
Creel, Harold J., Jr.	★ Senior Counsel	SHOB	425	224-4914
Dunn, Loretta L.	★ Senior Counsel	SHOB	428	224-9325
Nussman, J. Michael	★ Senior Staff	SHOB	425	224-4912
Palmer, Steven O.	★ Senior Staff	SHOB	427	224-9360
Washington, Shervi W.	Senior Staff	SHOB	428	224-9350
Whitehorn, Samuel E.	Senior Counsel	SHOB	428	224-9350
Windham, Patrick H.	★ Senior Staff	SHOB	427	224-9360
Hall, Gerri L.	Minority Senior Staff	SDOB	516	224-4852
Keeney, Regina Markey	★ Minority Senior Counsel	SDOB	554	224-1251
Maness, Alan D.	★ Minority Senior Counsel	SDOB	516	224-4852
Adams, Susan		SDOB	554	224-8170
Arnold, Laura W.		SDOB	554	224-1251
Bauroth, Leonard A.		SHOB	420	224-4294
Bosse, Leslie G.		SDOB	554	224-1251
Edenhausen, Bradley		SDOB	516	224-1251
Hewers, Joan A.		SHOB	420	224-4958
Robert		SDOB	516	224-4852
Agant, Barbara		SHOB	427	224-9360
Campbell, Thelma		SROB	254	224-0411
Carmody, Carol J.	★	SHOB	428	224-9350
Hins, Sylvia A.		SROB	254	224-0422
Cole, Jeanette L.		SHOB	425	224-4914
Cull, Rebecca		SDOB	554	224-1251
Don; Penny		SHOB	425	224-4912
Amato, Richard D.		SROB	254	224-0411
Empey, Kevin M.	★	SDOB	554	224-1251
James S. W.	★	SDOB	510	224-1265

Telegraphical section

Foggin, Pamela C.		SHOB	428	224-9358
Foster, Robert L.		SDOB	508	224-1249
Fox, Michelle E.		SHOB	428	224-9350
Garnett, Nancy		SHOB	566	224-8172
Garvin, Kerry		SDOB	516	224-2670
Gowdy, Yvonne T.		SDOB	512	224-1263
Graman, Mary Pat		SDOB	554	224-1251
Hughes, William J.	★	SDOB	554	224-7535
Ingwersen, Julie		SDOB	508	224-5118
Izkoff, Donald M.	★	SHOB	428	224-9350
Jones, E. Vanessa		SHOB	227	224-0415
Joseph, Kevin M.		SHOB	227	224-9340
Joyce, Sherman	★	SDOB	516	224-4852
Kennedy, Joyce		SDOB	510	224-1260
Koim, Rebecca A.		SHOB	254	224-0411
Lew, Lory C.		SHOB	425	224-4912
MacDonald, Susan H.		SHOB	254	224-0411
Maes, Michelle A.		SDOB	554	224-1251
McManus, Mary		SDOB	554	224-1251
Moran, John A.		SDOB	554	224-8170
Mavetta, Lori		SDOB	554	224-1251
Nelson, Michael R.	★	SHOB	427	224-9360
Nicholas, Valerie		SDOB	554	224-7535
Portee, Yvonne F.		SHOB	227	224-9340
Post, Gretchen Stevenson		SDOB	516	224-4852
Pritchard, Randolph		SHOB	425	224-4914
Provaznik, Michelle		SDOB	554	224-1251
Schlager, Ivan A.		SHOB	428	224-9325
Sidell, Arlene M.		SDOB	508	224-1267
Socci, Anthony D.		SHOB	427	224-9360
Suen, Claire		SHOB	427	224-9360
Turek, Mary L.		SHOB	254	224-0411
Turner, Roslyne D.		SHOB	420	224-5396
Vales, Joan K.		SDOB	508	224-5119
Watson, Andriette		SHOB	428	224-9350
Whalen, Stacy		SDOB	554	224-4852
Whitsett, Louis C.	★	SDOB	566	224-8172
Willis, Deral E.		SHOB	427	224-9360
Windhausen, John D., Jr.	★	SHOB	227	224-9340

[Commerce Committee professional staff members are listed under each subcommittee.]

## SENATE

### SUBCOMMITTEE ON AVIATION

OF COMMERCE

Sen. Wendell H. Ford (D KY), Chairman

MAJORITY (5 D.): Senators Ford, Exon, Inouye, Kerry (MA) and Bentsen.

MINORITY (4 R.): Senators McCain, Stevens, Kasten and Gorton.

#### STAFF

Washington DC 20510-6128

Whitenorn, Samuel E.

Senior Counsel

Building

Room

Direct Dial

Carmody, Carol J.

★ Staff Member

SHOB

428

224-9350

Hughes, William J.

★ Minority Staff

SHOB

428

224-9350

SDOB

554

224-7535

### SUBCOMMITTEE ON COMMUNICATIONS

Sen. Daniel K. Inouye (D HI), Chairman

MAJORITY (8 D.): Senators Inouye, Hollings, Ford, Gore, Exon, Kerry (MA), Bentsen and Breaux.

MINORITY (6 R.): Senators Packwood, Pressler, Stevens, McCain, Burns and Gorton.

#### STAFF

Washington DC 20510-6130

Cook, Antoinette D.

Senior Counsel

Building

Room

Direct Dial

Windhausen, John D., Jr.

★ Staff Counsel

SHOB

227

224-9340

Keeney, Regina Markey

★ Minority Senior Counsel

SHOB

227

224-9340

McManus, Mary

Minority Counsel

SDOB

554

224-1251

SDOB

554

224-1251

### SUBCOMMITTEE ON CONSUMER

Sen. Richard H. Bryan (D NV), Chairman

MAJORITY (4 D.): Senators Bryan, Gore, Ford and Robb.

MINORITY (3 R.): Senators Gorton, McCain and Kasten.

#### STAFF

Washington DC 20510-6132

Boyd, Moses

Senior Counsel

Building

Room

Direct Dial

Maness, Alan D.

★ Minority Senior Counsel

SHOB

227

224-0415

Joyce, Sherman

★ Minority Counsel

SDOB

516

224-4852

SDOB

516

224-4852

★ see biographical section



## SUBCOMMITTEE ON FOREIGN COMMERCE AND TOURISM

Sen. John D. Rockefeller IV (D WV), Chairman

MAJORITY (3 D.): Senators Rockefeller, Hollings and Bryan.

MINORITY (2 R.): Senators Burns and Packwood.

STAFF	Washington DC 20510-6134	Building	Room	Direct Dial
Dunn, Loretta L.	★ Senior Counsel	SHOB	428	224-9325
Schlager, Ivan A.	Staff Counsel	SHOB	428	224-9325
Hall, Gerri L.	Minority Senior Staff	SDOB	516	224-4852
Dempsey, Kevin M.	★ Minority Counsel	SDOB	554	224-1251

## SUBCOMMITTEE ON MERCHANT MARINE

Sen. John B. Breaux (D LA), Chairman

MAJORITY (3 D.): Senators Breaux, Inouye and Bentsen.

MINORITY (2 R.): Senators Lott and Stevens.

STAFF	Washington DC 20510-6136	Building	Room	Direct Dial
Creel, Harold J., Jr.	★ Senior Counsel	SHOB	425	224-4914
Pritchard, Randolph	Staff Member	SHOB	425	224-4914
Moran, John A.	Minority Counsel	SHOB	425	224-4914

## SUBCOMMITTEE ON SCIENCE, TECHNOLOGY AND SPACE

Sen. Albert Gore, Jr. (D TN), Chairman

MAJORITY (6 D.): Senators Gore, Rockefeller, Bentsen, Kerry (MA), Bryan and Robb.

MINORITY (4 R.): Senators Pressler, Stevens, Kasten and Lott.

STAFF	Washington DC 20510- 6138	Building	Room	Direct Dial
Palmer, Steven D.	★ Senior Staff	SHOB	427	224-9360
Windham, Patrick H.	★ Senior Staff	SHOB	427	224-9360
Nelson, Michael B.	★ Staff Member	SHOB	427	224-9360
Socci, Anthony D.	Staff Member	SHOB	427	224-9360
Willis, Deral E.	Staff Member	SHOB	427	224-9360
Whitsett, Louis C.	★ Minority Counsel	SDOB	566	224-8172

## SUBCOMMITTEE ON SURFACE TRANSPORTATION

Sen. J. James Exon (D NE), Chairman

MAJORITY (7 D.): Senators Exon, Rockefeller, Hollings, Inouye, Gore, Breaux and Robb.

MINORITY (5 R.): Senators Kasten, Packwood, Pressler, Burns and Lott.

STAFF	Washington DC 20510-6140	Building	Room	Direct Dial
Washington, Sherri W.	Senior Staff	SHOB	428	224-9350
Itzkoff, Donald M.	★ Staff Counsel	SHOB	428	224-9350
Hall, Gerri L.	Minority Senior Staff	SDOB	516	224-4852
Maness, Alan D.	★ Minority Senior Counsel	SDOB	516	224-4852
Bry Robert	Minority Counsel	SDOB	516	224-4852

## NATIONAL OCEAN POLICY STUDY

Sen. Ernest F. Hollings (D SC), Chairman

Sen. John F. Kerry (D MA), Vice Chairman

MAJORITY (8 D.): Senators Hollings, Kerry (MA), Inouye, Ford, Gore, Bentsen, Breaux and Robb.

MINORITY (7 R.): Senators Stevens, Danforth, Packwood, Kasten, Pressler, Gorton and Lott.

EX OFFICIO: Members had not been assigned at press time.

STAFF	Washington DC 20510-6142	Building	Room	Direct Dial
Gussman, J. Michael	★ Senior Staff	SHOB	425	224-4912
Malton, Penny	Staff Member	SHOB	425	224-4912
Moran, John A.	Minority Counsel	SDOB	554	224-8170

## COMMITTEE ON ENERGY AND NATURAL RESOURCES

... to consist of 20 Senators; to which committee shall be referred all proposed legislation, messages, petitions, memorials, and other matters relating to the following subjects: 1. Coal production, distribution, and utilization. 2. Energy policy. 3. Energy regulation and conservation. 4. Energy related aspects of deepwater ports. 5. Energy research and development. 6. Outer Continental Shelf lands. 7. Hydroelectric power, irrigation

**STAFFS OF THE HOUSE COMMITTEES****APPROPRIATIONS 577****SUBCOMMITTEE ON LABOR, HEALTH AND HUMAN SERVICES AND EDUCATION**

Rep. William H. Natcher (D KY-2), Chairman

**MAJORITY (9 D.):** Representatives Natcher, Smith (IA), Obey, Roybal, Stokes, Early, Hoyer, Mrazek and Whitten.  
**MINORITY (4 R.):** Representatives Pursell, Porter, Young (FL) and Weber.

<b>STAFF</b>	<b>Washington DC 20515-6024</b>	<b>Building</b>	<b>Room</b>	<b>Direct Dial</b>
Stephens, Michael A.	Staff Assistant	RHOB	2358	225-3508
Knisely, Robert L.	Staff Assistant	RHOB	2358	225-3508
Mioduski, Mark	Staff Assistant	RHOB	2358	225-3508
Quantius, Susan E.	★ Staff Assistant	RHOB	2358	225-3508
Orndorff, Jeanne	Administrative Aide	RHOB	2358	225-3508
Blazey, John T.	★ Minority Staff Assistant	LHOB	1016	225-3481

**SUBCOMMITTEE ON LEGISLATIVE**

Rep. Vic Fazio (D CA-4), Chairman

**MAJORITY (7 D.):** Representatives Fazio, Smith (FL), Obey, Murtha, Traxler, Lehman (FL) and Whitten.  
**MINORITY (3 R.):** Representatives Lewis (CA), Porter and Vucanovich.

<b>STAFF</b>	<b>Washington DC 20515-6025</b>	<b>Building</b>	<b>Room</b>	<b>Direct Dial</b>
Lombard, Edward E.	★ Staff Assistant	Capitol	H-301	225-5338
Dawson, Elizabeth G.	Minority Staff Assistant	LHOB	1016	225-3481

**SUBCOMMITTEE ON MILITARY CONSTRUCTION**

Rep. W. G. (Bill) Hefner (D NC-3), Chairman

**MAJORITY (9 D.):** Representatives Hefner, Thomas (GA), Bevil, Alexander, Early, Dicks, Fazio, Hoyer and Whitten.  
**MINORITY (4 R.):** Representatives Lowery, Edwards (OK), DeLay and Lightfoot.

<b>STAFF</b>	<b>Washington DC 20515-6026</b>	<b>Building</b>	<b>Room</b>	<b>Direct Dial</b>
Marinelli, W. Paul	Staff Assistant	RHOB	B-300	225-3047
Moore, Henry	Staff Assistant	RHOB	B-300	225-3047
Arnold, Mary	Administrative Aide	RHOB	B-300	225-3047
Dawson, Elizabeth G.	Minority Staff Assistant	LHOB	1016	225-3481

**SUBCOMMITTEE ON RURAL DEVELOPMENT, AGRICULTURE AND RELATED AGENCIES**

Rep. Jamie L. Whitten (D MS-1), Chairman

**MAJORITY (9 D.):** Representatives Whitten, Traxler, McHugh, Natcher, Durbin, Kaptur, Price, Mrazek and Smith (IA).  
**MINORITY (4 R.):** Representatives Skeen, Myers (IN), Weber and Vucanovich.

<b>STAFF</b>	<b>Washington DC 20515-6016</b>	<b>Building</b>	<b>Room</b>	<b>Direct Dial</b>
Foster, Robert B.	Staff Assistant	RHOB	2362	225-2638
Novak, Carol A.	Staff Assistant	RHOB	2362	225-2638
Sanders, Timothy K.	★ Staff Assistant	RHOB	2362	225-2638
Savia, Toni M.	Administrative Aide	RHOB	2362	225-2638
Warfield, William L.	★ Minority Staff Assistant	LHOB	1016	225-3481

**SUBCOMMITTEE ON TRANSPORTATION**

Rep. William Lehman (D FL-17), Chairman

*Bob Carr (D-MLI)  
CHAIRMAN 1999***MAJORITY (7 D.):** Representatives Lehman (FL), Carr, Durbin, Sabo, Price, Coleman (TX) and Whitten.  
**MINORITY (3 R.):** Representatives Coughlin, Wolf and DeLay.

<b>STAFF</b>	<b>Washington DC 20515-6027</b>	<b>Building</b>	<b>Room</b>	<b>Direct Dial</b>
Efford, Richard E. ←	Staff Assistant	RHOB	2358	225-2141
Kingfield, Thomas J.	Staff Assistant	RHOB	2358	225-2141
Muir, Linda J.	Administrative Aide	RHOB	2358	225-2141
Blazey, John T., III	★ Minority Staff Assistant	LHOB	1016	225-3481

**SUBCOMMITTEE ON TREASURY — POSTAL SERVICE AND GENERAL GOVERNMENT**

Rep. Edward R. Roybal (D CA-25), Chairman

**MAJORITY (7 D.):** Representatives Roybal, Hoyer, Pelosi, Coleman (TX), Skaggs, Visclosky and Whitten.  
**MINORITY (3 R.):** Representatives Wolf, Lightfoot and Rogers.

<b>STAFF</b>	<b>Washington DC 20515-6028</b>	<b>Building</b>	<b>Room</b>	<b>Direct Dial</b>
Gunnels, Aubrey A. (Tex)	★ Staff Assistant	Capitol	H-164	225-5834
Smith, C. William, Jr.	Staff Assistant	Capitol	H-164	225-5834
Phillips, Betsy	Staff Assistant	Capitol	H-164	225-5834
Mummert, Jenny	Administrative Aide	Capitol	H-164	225-5834
	★ Minority Staff Assistant	LHOB	1016	225-3481

1992

## COMMITTEE ON MERCHANT MARINE AND FISHERIES

to consist of 45 Members: (1) Merchant marine generally. (2) Oceanography and Marine Affairs, including coastal zone management. (3) Coast Guard, including lifesaving service, lighthouses, lightships, and ocean derelicts. (4) Fisheries and wildlife, including research, restoration, refuges, and conservation. (5) Measures relating to the regulation of common carriers by water (except matters subject to the jurisdiction of the Interstate Commerce Commission) and to the inspection of merchant marine vessels, lights and signals, lifesaving equipment, and fire protection on such vessels. (6) Merchant marine officers and seamen. (7) Navigation and the laws relating thereto, including pilotage. (8) Panama Canal and the maintenance and operation of the Panama Canal, including the administration, sanitation, and government of the Canal Zone; and interoceanic canals generally. (9) Registering and licensing of vessels and small boats. (10) Rules and international arrangements to prevent collisions at sea. (11) United States Coast Guard and Merchant Marine Academies, and State Maritime Academies. (12) International fishing agreements."

Rep. Walter B. Jones (D NC-1), Chairman

CHAIRMAN 1994

MAJORITY (28 D.): Rep. Walter B. Jones (D NC-1); Rep. Gerry E. Studds (D MA-10); Rep. Carroll Hubbard, Jr. (D KY-1); Rep. William J. Hughes (D NJ-2); Rep. Earl Hutto (D FL-1); Rep. W. J. (Billy) Tauzin (D LA-3); Rep. Thomas M. Foglietta (D PA-1); Rep. Dennis M. Hertel (D MI-14); Rep. William O. Lipinski (D IL-5); Rep. Robert A. Borsini (D PA-3); Rep. Thomas R. Carper (D DE-AL); Rep. Robin Tallon (D SC-6); Rep. Solomon P. Ortiz (D TX-27); Rep. Charles E. Bennett (D FL-3); Rep. Thomas J. Manton (D NY-9); Rep. Owen B. Pickett (D VA-2); Rep. George J. Hochbrueckner (D NY-1); Rep. Stephen J. Solarz (D NY-13); Rep. Frank Pallone, Jr. (D NJ-3); Rep. Greg Laughlin (D TX-14); Rep. Nita M. Lowey (D NY-20); Rep. Jolene Unsoeld (D WA-3); Rep. Gene Taylor (D MS-5); Rep. Glenn M. Anderson (D CA-32); Rep. Jack Reed (D RI-2); Rep. William J. Jefferson (D LA-2); Del. Eni F. H. Faleomavaega (D AS); Rep. Martin Lancaster (D NC-3) and Rep. Lucien E. Blackwell (D PA-2).

MINORITY (17 R.): Rep. Robert W. Davis (R MI-11); Rep. Don Young (R AK-AL); Rep. Norman F. Lent (R NY-4); Rep. Jack Fields (R TX-8); Rep. Herbert H. Bateman (R VA-1); Rep. Jim Saxton (R NJ-13); Rep. Helen Delich Bentley (R MD-2); Rep. Howard Coble (R NC-6); Rep. Curt Weldon (R PA-7); Rep. Wally Herger (R CA-2); Rep. James M. Inhofe (R OK-1); Rep. Porter J. Goss (R FL-13); Rep. Arthur Ravenel, Jr. (R SC-1); Rep. Sonny Callahan (R AL-1); Rep. Wayne T. Gilchrest (R MD-1); Rep. John T. Doolittle (R CA-14) and Rep. Randy (Duke) Cunningham (R CA-44).

(The Chairman and Ranking Minority Member are *ex officio* members of all subcommittees on which they do not hold a regular assignment.)

(Delegate not included in committee ratio.)

## MAJORITY STAFF

Welch, Edmund B.  
Kitsos, Thomas R.  
Livingston, Linda L.  
Kitsos, Mary J. Fusco  
Mohler, Eleanor  
Bullard, Pamela  
Vogt, Ann  
Denson, Kay  
Cole, Shelley  
Jenkins, Ruth  
Patch, Richard  
Kinne, Betty Lee  
Waldron, Suzanne J.  
Bondareff, Joan M.  
Ashe, Daniel M.  
Moore, Charles O.  
Crockett, Lee R.  
Mann, Christopher  
Anthony, Clementine  
Zeeb, Marvadel  
McCallum, James K.  
Dierauf, Leslie  
Wilkinson, Cynthia Marie  
Barber, Melanie M. C.  
Lambert, Gregory Lee  
Harvey, Elnora  
Brooks, Cher (Sharon)  
White, William  
Tucker, Marion, Jr.

## 1334 LHOB, Washington DC 20515-6230

★ Chief Counsel  
★ Senior Policy Analyst  
Secretary to Chief Counsel  
Chief Clerk, Administrator  
Assistant Chief Clerk  
Systems Manager  
Calendar Clerk  
Legislative Clerk  
Research Assistant  
Staff Assistant  
Staff Assistant  
Documents Clerk  
★ Press Secretary  
★ Counsel  
★ Senior Staff  
★ Counsel  
★ Professional Staff Member  
Professional Staff Member  
Staff Assistant  
Staff Assistant  
Professional Staff Member  
Professional Staff Member  
★ Counsel, Coast Guard  
★ Counsel  
★ Counsel  
Staff Assistant  
★ Counsel, Panama Canal, Maritime  
Editor  
Editor

Building	Room	Direct Dial
LHOB	1334	225-4047
LHOB	1339A	225-2429
LHOB	1334	225-4047
LHOB	1334	225-4047
LHOB	1332	225-2835
LHOB	1332	225-2835
LHOB	1332	225-6282
LHOB	1332	225-6282
LHOB	1334	225-4047
LHOB	1334	225-4047
LHOB	1334	225-4047
FHOB	550	226-3530
LHOB	1334	225-4047
LHOB	1340	226-2535
FHOB	531	226-3500
FHOB	531	226-3500
FHOB	531	226-3500
FHOB	531	226-3500
FHOB	545	226-3547
FHOB	531	226-3500
FHOB	545	226-3547
FHOB	545	226-3547
FHOB	544	226-3543
FHOB	544	226-3543
FHOB	544	226-3543
FHOB	544	226-3543
FHOB	575	226-2460
FHOB	550	226-3529
FHOB	550	226-3529

**House**  
**606 MERCHANT MARINE**

**1992 CONGRESSIONAL Staff Directory**

Steele, Sherry	★ Professional Staff Member	Building	Room	Direct Dial
Miller, Kathleen A.	Staff Assistant	FHOB	538	226-3552
Mason, Frances	Staff Assistant	FHOB	539	226-3556
Canter, Marsha	Staff Assistant	FHOB	539	226-3556
Gray, Leslie A.	Staff Assistant	FHOB	577	226-3492
Dunnebacke, Lisa A.	Staff Assistant	FHOB	539	226-3556
		FHOB	337	225-2650

**SUBCOMMITTEE ON COAST GUARD AND NAVIGATION**

Rep. W. J. (Billy) Tauzin (D LA-3), Chairman

MAJORITY (14 D.): Representatives Tauzin, Reed, Hughes, Hutto, Carper, Pickett, Hochbrueckner, Pallone, Laughlin, Lowey, Taylor (MS), Anderson, Studds and Lancaster.

MINORITY (8 R.): Representatives Fields, Young (AK), Bateman, Coble, Inhofe, Goss, Callahan and Gilchrest.

STAFF	Washington DC 20515-6231	Building	Room	Direct Dial
Meggison, Elizabeth R.	★ Staff Director and Counsel	FHOB	547	226-3587
Mikerson, Laurie L.	★ Counsel	FHOB	547	226-3587
Savore, Rusty J.	★ Professional Staff Member	FHOB	547	226-3587
Night, Bill	Professional Staff Member	FHOB	547	226-3587
Daley, Bob	Professional Staff Member	FHOB	547	226-3587
Roberts, Catherine	Clerk	FHOB	547	226-3587
Burroughs, Harry F.	Minority Professional Staff Member	FHOB	537	226-3540

**SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION  
AND THE ENVIRONMENT**

Rep. Gerrv E. Studds (D MA-10), Chairman

MAJORITY (17 D.): Representatives Studds, Hughes, Hutto, Carper, Tallon, Ortiz, Manton, Hochbrueckner, Solarz, Pallone, Unsoeld, Laughlin, Lowey, Anderson, Reed, Jefferson, Delegate Faleomavaega and Representative Tauzin.

MINORITY (9 R.): Representatives Young (AK), Saxton, Coble, Weldon, Herger, Goss, Ravenel, Gilchrest and Doolittle.

STAFF	Washington DC 20515-6232	Building	Room	Direct Dial
Pike, Jeffrey	Staff Director	FHOB	543	226-3533
DeFerrari, Gina	Professional Staff	FHOB	543	226-3533
Flemma, Jean	Professional Staff	FHOB	543	224-3533
Stelle, William W., Jr.	★ General Counsel	FHOB	543	226-3533
Sacco, Joyce	Legislative Clerk	FHOB	543	226-3533
Murray, Lisa	Research Assistant	FHOB	543	226-3533
Moore, Rodney H., Jr.	★ Minority Professional Staff Member	FHOB	540	226-3520

**SUBCOMMITTEE ON MERCHANT MARINE**

Rep. Walter B. Jones (D NC-1), Chairman

MAJORITY (15 D.): Representatives Jones (NC), Hubbard, Borski, Bennett, Pickett, Taylor (MS), Jefferson, Studds, Hertel, Lipinski, Tallon, Ortiz, Solarz, Unsoeld and Blackwell.

MINORITY (8 R.): Representatives Lent, Fields, Bateman, Inhofe, Ravenel, Callahan, Doolittle and Cunningham.

STAFF	Washington DC 20515-6233	Building	Room	Direct Dial
Bentzel, Carl W.	★ Counsel	LHOB	1339	225-6785
Brooks, Cher (Sharon)	★ Counsel, Panama Canal	FHOB	575	226-2460
Cullather, John	Professional Staff	FHOB	575	226-2460
Mueller, Ann M.	Subcommittee Clerk	LHOB	1339	225-6785
Savoy, Theresa	Staff Assistant	FHOB	575	226-2460
Robinson, Kip	★ Minority Counsel	FHOB	577	226-3492

**SUBCOMMITTEE ON OCEANOGRAPHY, GREAT LAKES AND**

**MAJORITY STAFF**

Dovie, John S., Jr.  
Esposito, Sante J.  
Maitlin, Robert W.  
Bryson, Joy B.  
Miller, Jimmy  
Guilfoyle, Kathy E.  
Smullen, David  
Taliano, Joseph A.  
Botuck, Joan H.  
Ferrera, John  
Hoffman, Kathleen  
Mount, Margaret J.  
Lockwood, Sheila R.

**MINORITY STAFF**

Schenendorf, Jack L.  
Bergman, Robert Alan  
Fry, Susan L.

**2165 RHOB, Washington DC 20515-6256**

★ Chief of Staff  
★ Chief Counsel  
★ Exec. Asst. to the Chairman  
★ Administrator  
Director of Com. Transportation  
Admin. Asst. to the Chairman  
★ Director of Communications  
Editor  
Legis. Calendar Clerk  
Prof. Staff Member  
Prof. Staff Member  
Office Manager  
Exec. Staff Asst.,  
Computer Systems Manager

Windham, Judy  
Dubia, Maureen  
Thompson, Florence E.  
Carroll, Sterlyn B.  
Piro, Jamie  
Russell, Robert S.  
Scott, Linda D.  
Williams, Betty J. R.  
Ambro, Antoinette  
Hafner, Judy  
Hess, John W.  
Farlow, Arlene M.  
Shirley, Gilda  
Yarosh, Laura

**Direct Dial 225-4472**

Exec. Staff Asst.  
Exec. Staff Asst.  
Admin. Staff Asst.  
Senior Staff Asst.  
Staff Asst.  
Staff Asst.  
Staff Asst.  
Staff Asst.  
Research Asst.  
Research Asst.  
Research Asst.  
Travel Clerk  
Editorial Staff Asst.  
Receptionist

**2163 RHOB, Washington DC 20515-6256**

★ Minority Chief Counsel and  
Staff Director  
★ Deputy Minority  
Chief Counsel  
Minority Counsel for Budget  
and Economic Development

Youmans, Eria S.  
Bannister, Barbara  
Brumbaugh, Kathi  
Noblin, George M.

**Direct Dial 225-9446**

★ Minority Administrator  
Minority Exec. Asst.  
Minority Staff Asst.  
Minority Director of Public Affairs

**SUBCOMMITTEE ON AVIATION**

→ Rep. James L. Oberstar (DFL MN—8), Chairman  
Rep. Joan Kelly Horn (D MO—2), Vice Chair

**MAJORITY (23 D.):** Representatives Oberstar, Horn, Collins (MI), Mineta, Nowak, Rahall, Delegate de Lugo, Representatives Savage, Kolter, Valentine, Lipinski, Traficant, Lewis (GA), DeFazio, Hayes (LA), Clement, Payne (VA), Costello, Parker, Laughlin, Geren, Sangmeister, Poshard and Swett.

**MINORITY (13 R.):** Representatives Clinger, Shuster, Petri, Boehlert, Inhofe, Ballenger, Duncan, Hancock, Cox (CA), Molinari, Hobson, Nichols and Ewing.

**STAFF**

Levinsfeld, David A.  
Traynam, David F.  
Waisn, Mary  
Gabel, Caroline D.  
Galarin, Mary Beth  
Daniels, Melissa M.  
Ziegler, Charles C.  
Schaffer, David E.  
Feddeman, Edward G.  
Burdett, Linda

**Washington DC 20515-6257**

★ Counsel  
★ Professional Staff Member  
Professional Staff Member  
★ Professional Staff Member  
Staff Assistant  
Staff Assistant  
★ Minority Counsel  
★ Assistant Minority Counsel  
Minority Professional Staff Member  
Minority Staff Assistant

Building	Room	Direct Dial
RHOB	2251	225-9161
RHOB	2251	225-9161
RHOB	2251	225-9161
RHOB	2251	225-9161
RHOB	2251	225-9161
RHOB	2251	225-9161
RHOB	2251	226-3220
RHOB	2251	226-3220
RHOB	2251	226-3220
RHOB	2251	226-3220

**SUBCOMMITTEE ON ECONOMIC DEVELOPMENT**

Rep. Joe Kolter (D PA—4), Chairman  
Rep. James L. Oberstar (DFL MN—8), Vice Chair

**MAJORITY (11 D.):** Representatives Kolter, Oberstar, Applegate, Savage, Swett, Cramer, DeLauro, Horn, Collins (MI), Nowak and Traficant.

**MINORITY (6 R.):** Representatives Bentley, Boehlert, Inhofe, Ballenger, Emerson and Gillmor.

**STAFF**

Lorenz, Carl J., Jr.  
Downie, Martha E.  
Beltz, Charlotte  
Dowling, Marjorie M.  
Lally, William A., Sr.  
Jordan, Melanie

**Washington DC 20515-6259**

★ Staff Director and Counsel  
★ Professional Staff Member  
Professional Staff Member  
Staff Assistant  
Minority Professional Staff Member  
Minority Staff Assistant

Building	Room	Direct Dial
RHOB	8-376	225-6151
RHOB	8-376	225-6151
RHOB	8-376	225-6151
RHOB	8-376	225-6151
RHOB	2167A	225-3014
RHOB	2167A	225-3014

**SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT**

Rep. Robert A. Borski (D PA—3), Chairman