

# **National Plans for Positioning, Navigation and Time Keeping by Radio**

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# National Plans for Positioning, Navigation and Time Keeping by Radio

- Satellite technology has become a worldwide utility
- Dependency increasing over broad application front
- Recent vulnerability study suggests need for revisit:
  - National plans must acknowledge broad dependency
  - Ancillary systems and procedures must be defined
  - Availability and integrity defined by application category

# Introduction

- U.S. GPS System preferred for a decade
  - Improvement
    - Selective Availability removal May 2000
  - Potential defense restrictions alleviated
    - Civil service component will not be degraded or denied
- Result: Increased acceptance worldwide
  - National plans need to address local/regional effects of acceptance of another nation's global system.

# Provision of Precise Time

- GPS is being applied successfully, broadly
  - National/international communications benefits
- Communication and navigation inter-linked
  - Time is the basis for both
  - Without augmentation/backup, Nav and Comm are now one and the same service

# Provider Plan for a Global Utility

- GPS presently the only “operational” constellation
  - Will GLONASS be replenished
  - Galileo: End of the decade
  - GPS will drive equipage and become entrenched
- Provider Plans:
  - Acknowledge the external world utility?
    - Terms of use
    - Liability?
- National Plans need to acknowledge dependency on a foreign power

# National User Plans

- Should these plans acknowledge that GNSS *is* GPS?
  - Becomes a foundation of the planner nation's transportation and communications infrastructure
- Terms of GPS provision by U.S. must be incorporated.
  - Terrestrial sovereign alternatives
    - Necessary, given vulnerability concerns re: the global service?
    - Can continuity and liability *guarantees* be established with U.S.?

# U. S. GPS Vulnerability Study

- Volpe National Transportation Systems Center:
  - Study report identified GPS vulnerabilities that are outside the control of the provider
  - Make it impossible for the provider to guarantee continuity of service

# Reverse Logic

- National Plans < > national services
  - Owned, or provided through treaty
- Global satellite services are supplemental
  - Offer additional benefits, efficiencies
- Puts the foundation in place, adds on capabilities
  - minimizes effects of “borrowed vulnerabilities”

# A Sea Change in Thinking

- Satellite services are a revolutionary technology
- The resulting global backbone must be augmented
  - Terrestrial services, protected by territorial security forces
- A step into the future for national/regional planning
- Necessary for progress beyond “system mix” debates

# The U.S. Federal Radionavigation Plan:

*A user's view*



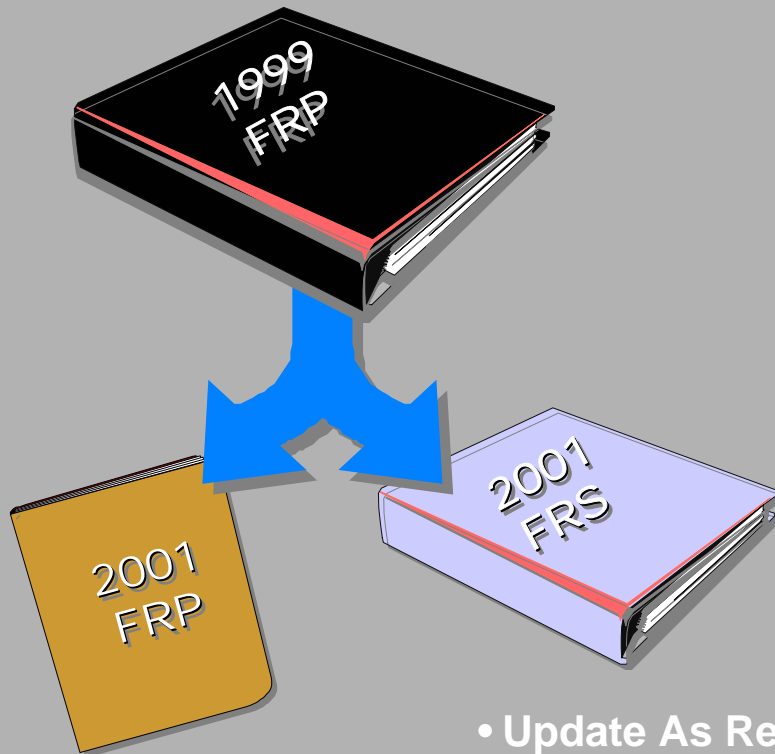
## **ILA29 Photos**



**Heywood Shirer discussed the U.S. Federal Radionavigation Plan**

# 2001 FRP Structure

H. Shirer, CGSIC



- Converted 1999 FRP into 2 documents
- 2001 FRP
  - *Concise*
  - *Focus on Policies & Plans*
- 2001 FRS (Fed Radionav Systems)
  - *Descriptive*
  - *Roles and Responsibilities*
  - *Systems Descriptions*

• Update As Required

• Update not less than biennially

# 2001 FRP Policies and Plans

*H. Shirer, CGSIC*

- **2001 FRP reiterates commitment to GPS**
  - *SPS Available Free of Direct Charge*
  - *GPS Modernization proceeding*
  - *Updated SPS Performance Information in FRS*
- **Revised Schedule for GPS Augmentations**
- **Revised Schedule for phase down of Land-based Nav aids for aviation**
- **Continue evaluating the need for Loran-C**

# 2001 FRP Schedule/Distribution

*H. Shirer, CGSIC*

- **Schedule**
  - *Awaiting Approval of SPS Performance Standard*
  - *2001 FRP will be published in 2001*
- **Distribution**
  - *Coast Guard Website*
  - *CD ROMs Available from Volpe NTSC*
  - *Hard Copies Available from NTIS*

# Expected Availability of the 2001 FRP

- November, 2001: signature by DOT, DOD secretaries
- On the Coast Guard Website in December, 2001
- Hard Copies/CDs available in December / January

# Loran-C in the 2001 FRP

- No change in substance. “The word” still is:
- “While the Administration continues to evaluate the long-term need for continuation of the Loran-C radionavigation system, the Government will operate the Loran-C system in the short term. The U.S. Government will give users reasonable notice if it concludes that Loran-C is not needed or is not cost effective, so that users will have the opportunity to transition to alternative navigation aids.
- With this continued sustainment of the Loran-C service, users will be able to realize additional benefits. Improvement of GPS time synchronization of the Loran-C chains and the use of digital receivers may support improved accuracy and coverage of the service. Loran-C will continue to provide a supplemental means of navigation. Current Loran-C receivers do not support nonprecision instrument approach operations.”

– *Para 3.2.5 B 1999 US Federal Radionavigation Plan*

# Process

- User input sessions concurrent with other navigation meetings
- Draft prepared internally, and signed
- Document published
- Some have called for a more open and immediate process

# A new process in the making?

*You can help!*

- Changes in format in 2001-
  - Will content changes follow?
  - Open minds evident
- Suggestions welcome for post-2001 editions
- Some initial possibilities being considered
- Of course, ILA is interested in the content, as well as the process, but with a good process, ...

# Summary - A User's View

- New FRP in December
  - Don't look for changes in 2001 - not a lot worse, but not better either
- Future FRP edition could see substantive change
  - Pending outcome of Volpe study assessment
  - Pending outcome of FAA/CG Loran-C evaluation/demo projects
- Make your suggestions now for the FRP process and content. Ears and minds are open.