

Implementation Status of the Nationwide Differential Global Positioning System (NDGPS)

NDGPS is a Federally provided GPS augmentation system. The NDGPS will enhance accuracy and integrity for land and marine users. The U. S. Coast Guard developed a ground-based differential Global Positioning System and has implemented this system in the nation's maritime regions. The 1994 study, "A National Approach to Augmented GPS Services," proposed a GPS-augmentation architecture that included the nationwide expansion of the Coast Guard's maritime system to provide continuous coverage for land and marine users.

The low-medium frequency band between 285 and 325 kilohertz has advantages for many land applications since propagation is less affected by terrain features than broadcasts at higher frequencies may be. In addition, this band is protected with primary allocation given to Maritime Radionavigation.

The expected cost-benefit ratio for the NDGPS is 1:152. The NDGPS will revolutionize many industries through better navigation and positioning capabilities and increased economic productivity. We expect the cost of implementation over five years to be under \$31 Million. We estimate the system will require annual operations and maintenance funding of about \$6 Million through the expected system life cycle of fifteen years.

Considerable costs will be avoided (\$16 Million) by converting communications stations in the Air Force's Ground Wave Emergency Network, or GWEN, into DGPS stations. The practicality of converting a GWEN station to a DGPS station was proven successfully in 1997. The Department of Defense has recently decided to release the entire GWEN system at one time during FY 1999. We believe the DOD decision will allow an implementation schedule that is limited only by the funding appropriated to the project by Congress.

Converting a number of these GWEN stations in their present locations significantly enhances the DGPS coverage currently provided by the Coast Guard and Army Corps of Engineers DGPS stations. The addition of seven sites would complete single coverage in the Continental United States. Then by relocating the equipment from the rest of the GWEN sites to the appropriate locations, we achieve double coverage in the Continental United States. Coverage in Hawaii and Puerto Rico will be covered by the Coast Guard Maritime DGPS. In Alaska, we will be working with the state to determine the best coverage pattern.

Congressional support for the NDGPS resulted in the enactment of a Public Law authorizing the Secretary Transportation to establish, manage, and operate the NDGPS without the assessment of any user fee. Congress appropriated \$2.4 Million in Fiscal Year 1998. These appropriations, along with those we are expecting for Fiscal Year 1999 and those we are requesting for Fiscal Year 2000, would allow -- by the end of Fiscal Year 2000 -- 37 new NDGPS stations to be established, as well as other systems enhancements such as the necessary control station upgrade. If appropriations continue at this level, we anticipate double DGPS coverage nationwide by December 31, 2002 and full operational capability during 2003.

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