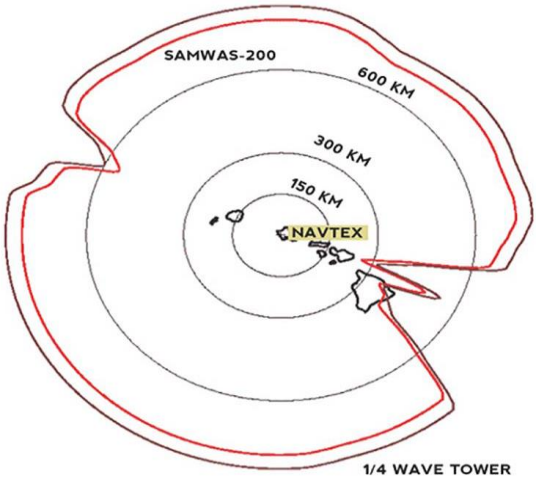
SAMWAS-200

DGPS/NAVTEX TRANSMITTING ANTENNA

The LBA Technology SAMWAS-200 is a heavy duty, compact, very short aperture medium wave transmitter antenna system with integral single or multi-frequency ATU. The SAMWAS-200 is designed to fit completely on a site as small as 200 feet (60 meters) in radius. Designed to operate on a single or dual frequency from 275 kHz to 530 kHz, it uses a unique electrically short radiator and peripherals to provide reliable and cost-effective omnidirectional coverage for DGPS and radio navigation applications. The SAMWAS-200 replaces all previous conventional-type DGPS and NAVTEX antenna systems.



Comparative SAMWAS-200 NAVTEX Coverage

UNSURPASSED RANGE VS. HEIGHT COVERAGE PERFORMANCE

The SAMWAS-200 can provide 300 kHz DGPS correction signals for safety and warning information to mariners over approximately 80% of the groundwave and skywave coverage achievable from a full ¼ wave vertical antenna, using a structure under 30% of that height. Even better coverage performance is realized on the 490 and 518 kHz NAVTEX frequencies.

ADVANCED RADIATOR DESIGN

The low-Q design of the SAMWAS-200 DGPS/ NAVTEX antenna system minimizes voltages compared to high-Q conventional designs. Because of its low-Q trapezoidal feed design, more transmitter power gets through the antenna radiator, safely, than in conventional systems. System stability is unmatched by conventional whips and narrow towers. The low-Q design, coupled with a proprietary top loading and ground reference system, isolates the antenna system impedance from changing earth conditions, while providing a low loss ground termination path.

Overall system height is 199 feet (60.6 meters) above ground. The high efficiency system utilizes an insulated vertical radiator antenna tower with proprietary enhanced top loading and a trapezoidal symmetrical unipole Q-reduction system. The radiator is rated for 2500 watts, MSK modulated, continuous duty, which is conservative for reliable service at the typical lower power levels in the DGPS and NAVTEX bands. Higher power levels can be accommodated on request. Proprietary Delta Unit™ auto tensioning terminations ensure radiator system stability.

Although lighting is not normally required at this height, a toroidal ring air gap transformer can provide aviation hazard lighting isolation if required.

Standard subsystem components are to EIA/TIA-222-F. Typical tower structure components are hot-dip galvanized. Safety features include safety climb devices.

LBATECHNOLOGY®
3400 Tupper Drive, Greenville, North Carolina 27834
Phone: 800-522-4464 / 252-757-0279 | Fax 252-752-9155 | Email: lbagrp@lbagroup.com | www.lbagroup.com

An integral antenna tuning system provides an interface between the DGPS/NAVTEX transmitting Tower Radiator Subsystem and a SO-ohm coaxial transmission line. The ATU is rated for 1000 watts, MSK or PSK modulated, continuous duty in the 300 kHz band and NAVTEX 2500 watts transmitting power in the 500 kHz band). The inherent stability of the low-Q antenna makes constant retuning unnecessary. The system is highly reliable, as there are no active components or control circuits in the ATU section of the SAMWAS-200. The ATU System for NAVTEX can be configured to switch between local and international frequencies.

While a ¼ wave buried copper wire ground plane is recommended, above ground and shorter buried ground systems may be accommodated. To enhance stability of the short radiator under varying weather and earth conditions, and to improve displacement current collection at the base of the tower, a proprietary cantilevered six element radial capacitance reference is provided for above ground installation on the Radiator Subsystem base structure.

MINIMUM LIFE CYCLE SUPPORT COSTS

The SAMWAS system components are designed for the high reliability and minimum life cycle support costs demanded by critical DGPS, NAVTEX and radio navigation missions. Using standard parts and maximum commonality in subsystems ensures lowest cost life cycle maintenance.

HIGH RELIABILITY

Reliability is further enhanced by the use of galvanically compatible structural materials, computer confirmed mechanical and electrical safety factors, and special attention to insulator endurance under salt spray and high solar conditions. The system is designed and installed to endure local ice and wind conditions. The SAMWAS antenna system radiating structure uses high-flashover, corona protected guy insulators as needed to protect against lightning and other voltage-induced outages.

Since installation and performance can be influenced by geotechnical siting conditions, coupled RF energy from nearby antennas, and other local effects, an LBA site survey before design completion is recommended.

LBA technician Supervises US Navy Guam Installation

TECHNICAL SERVICES OPTIONS AVAILABLE:

- Ala Carte technical services: Qualified personnel can be provided for such services as site qualification, installation commissioning, and performance verification.
- Inspection, rehabilitation, and supervision of upgrade of existing transmitter systems
- Emergency and maintenance service: Technical Services available on an off-air response or routine basis for all system components, including scheduled inspections and periodic performance revalidation.

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