

4. SURVEY METHODS AND PROCEDURES

4.1 ARGO Positioning System and Calibration

4.1.1 Mode of Operation

ARGO DM-54 is a long range radio positioning system operating between the frequencies of 1600 and 2000 KHz. The system determines the range (in lanes) of the mobile station from each of the coordinated base stations by measurement of fractional lane distances and accumulation of whole lane counts. The fractional lane distances are determined by measuring the phase difference between RF signals transmitted by the mobile station and received from the base station. The mobile station initiates the basic ranging process by transmitting a pulse of RF energy (Interrogation Burst). The fixed stations receive this signal, correct the phase to that of the original transmission, and, in sequence broadcast pulse of RF energy (Reply Burst). These pulses are received by the mobile station, and the phases of these signals are compared to the phase of that originally broadcast. This phase difference (delay) is used in the computations to determine the whole lane count. A weighted average of fractional values is used to determine when a whole lane value should be changed.

The ground wave component of the high frequency (HF) transmission utilized by the ARGO System enables measurement beyond the optical horizon. Operational ranges up to 400nm can be expected during daytime hours. Maximum usable range decreases during night