representing the difference between the values in memory and those values determined by subsequent calculation. A vector addition is then performed to update values for current set and drift in RAM **22**.

Following CALCULATE CUS & CUD & UPDATE RAM **330**, the program moves to the UPDATE COURSE & DISTANCE DATA IN RAM **340** step to replace the current positional information, which has accumulated in RAM **22** by the addition of incremental distances by MPU **30**, with the positional information derived from GPS receiver **52**. The reason for performing this step has been explained above.

The next program step is to CLEAR TIMER **350** which begins the process of measuring the period until the next current set and drift calculation is to be made after the vessel has moved beyond the required distance. After the timer is reset, the program moves to CLEAR FIRST TIME POINTER **360** so that the program will follow the route during the next cycle dictated by a "yes" answer to the FIRST TIME AROUND? **210** routine. Following that action, the program returns to PERFORM ALL CALCULATIONS & PUT RESULTS IN RAM **150**. The program continues to cycle, updating positional and current set and current drift data every time the vessel's movement exceeds the minimum value required to provide the desired accuracy.

It will be understood from following the program through its various operations, that in the absence of information that authentic information is provided from the GPS receiver, the program operates in the same manner as the program disclosed in Mounce. In other words, the present system is capable of operating in a known manner, in the absence of authentic positional. information from a GPS receiver, or in the absence of the GPS altogether.

The foregoing description of the preferred embodiment of the invention has been presented to illustrate the principles of the invention and not to limit the invention to the particular embodiment illustrated. It is intended that the scope of the invention be defined by all of the embodiments encompassed within the following claims, and their equivalents.

What is claimed is:

1. A navigational aid system for use in navigating a vessel to a destination, comprising:

(a) means for measuring variable navigational parameters defining the movement of the vessel relative to the water, and the movement of the wind relative to the vessel, including:

(i) heading sensor means for measuring the heading of the vessel relative to the earth;

(ii) heel angle sensor means for measuring the heel angle of the vessel relative to the vertical;

(iii) hull speed sensor means for measuring the rate of movement of the vessel relative to the water; and

(iv) leeway sensor means for measuring the leeway angle between the direction of movement of the vessel relative to the water and the heading;

(b) means for inputting fixed navigational parameters;

(c) a first random access memory for temporarily storing the variable and fixed navigational parameters;

(d) a first read only memory containing a first program;

(e) a first microprocessor for executing said first program, said first program utilizing said variable navigational parameters and said fixed navigational parameters to compute the position of the vessel by dead reckoning;

(f) a timer means for repetitively initiating the execution of said first program after the lapse of a repetition period;

(g) a starter means for determining a starting location of the vessel, said starter means being manually operable to enable said first program to initially erase any previously stored positional information from said first random access memory means and then to obtain once for each said repetition period said variable navigational parameters from said heading sensor means, said heel angle sensor means, said hull speed sensor means and said leeway sensor means, and to store the obtained said variable navigational parameters in said first random access memory means, and to enable said first program to correct the value of the leeway angle obtained from said leeway sensor means by utilizing the value of the heel angle obtained from said heel angle sensor means and to store the corrected value of the leeway angle in said first random access memory in place of the value obtained from said leeway sensor means;

(h) means for supplying to said first microprocessor electronic information from a source external to the vessel defining the vessel position with respect to the earth, said electronic information being supplied each time the vessel travels a distance interval, at which times said first microprocessor computes the current set and current drift by comparing the position of the vessel computed by dead reckoning to the vessel position derived from said electronic information, said first program subsequently utilizing the values of the heading, corrected leeway angle and computed current set and drift to compute the actual direction of movement of the vessel with respect to the earth and then to correct the position of the vessel computed by dead reckoning so that it corresponds to the vessel position derived from said electronic information;

(i) a first alpha-numeric display connected to said first microprocessor for providing a readout of the actual direction of movement of the vessel with respect to the earth, said readout being updated by said first microprocessor after the lapse of each said repetition period; and

(j) a second alpha-numeric display connected to said first microprocessor for providing a readout of a selected navigational parameter.

2. The navigational aid system of claim **1**, wherein said external source of information comprises the Global Positioning System (GPS).

3. The navigational aid system of claim **2**, wherein said supplying means comprises an antenna and a receiver for receiving said electronic information from said GPS and providing an output of characters.

4. The navigational aid system of claim **3**, wherein said supplying means comprises a second random access memory for storing said electronic information until it is transferred to said first microprocessor, the electronic information stored in said second random access memory being replaced by updated information at intervals of time as required by said supplying means.

5. The navigational aid system of claim **4**, wherein said supplying means comprises a second microprocessor and a second read only memory containing a second