

ler/modem module 91 may cause the transmitter module 103 to broadcast the present (possibly changing) position, velocity and position fix quality of the vessel, as received on the signal lines 69 and 75 from the position decoder module 67, as part of the EES. This latter approach would be preferable if the vessel is likely to drift or move after occurrence of the emergency event so that the present position of the vessel is likely to change from the vessel position at the time of the emergency event.

The controller/modem module 91 optionally also receives one or more input signals from emergency event sensing apparatus 111 on a fourth signal line 113. The event sensing apparatus 111 is driven by a manually operated alarm module 115 and, optionally, by one or more automatic alarm modules 117 that automatically sense the occurrence of certain kinds of emergency events on or adjacent to the vessel. An alarm signal is received from the manual alarm module 115 and/or from an automatic alarm module 117 by a status sensing module 119 that determines that an emergency event has occurred and notifies the controller/modem module 91 of this occurrence on the signal line 113.

FIG. 4 illustrates suitable apparatus located at a Coast Guard or other emergency response facility that can be used to receive and respond to an emergency event information signal or distress signal transmitted by a vessel in distress. The EES is received by an EPIRBs receiver apparatus 131 that includes an antenna 133, a signal amplifier 135 and an EES decoder module 137, arranged serially as shown. A decoded emergency event signal, DEES, is issued by the EES decoder module 137 on a first signal line 139, and the DEES is received by a signal splitter module 141 that issues the DEES on a second signal line 143 and on a third signal line 145. The DEES is received on the second signal line 143 by an EPIRBs distress module 151 that informs personnel at the ERF that a reportable emergency event has occurred. The DEES is received on the third signal line 145 by an EPIRBs data decoder module 161 that further decodes the this signal to determine the position of the vessel that issued the distress signal, the time of occurrence of the emergency event and (optionally) the type of emergency event that has occurred. The EPIRBs data decoder module 161 issues this decoded information on a fourth signal line 163 that is received by a signal switch module 171.

The switch module 171 is connectable through a fifth signal line 181 to a conventional AVLS display module 183 that receives and graphically displays position information on the vessel in distress. Preferably, the AVLS display module 183 automatically calls up an appropriate map of the region that includes the present distress vessel position and graphically displays the position of the vessel in distress by a suitable icon positioned at the broadcast site on this map. Optionally, the AVLS display module 183 can also graphically display the velocity vector or velocity heading of the vessel at the time the distress signal is received.

The switch module 171 is also connectable through a sixth signal line 191 to an alphanumeric display module 193 that displays latitude and longitude information on the vessel in distress, together with information on time of occurrence and type of emergency event, on such display. Optionally, the display module 193 can also display the velocity vector components of the vessel at the time the distress signal is received.

While this invention has been described in terms of a preferred embodiment, it is contemplated that alterations, modifications and permutations thereof will become apparent to those skilled in the art upon a reading of the specification and study of the drawings. It is intended that the following appended claims include all such alterations, modifications and permutations that fall within the spirit and scope of the present invention.

We claim:

1. A method for reporting of an emergency event experienced by a marine or airborne vessel, or one of the occupants of the vessel, the method comprising the steps of:

receiving signals transmitted by three or more satellites in a Global Positioning System by a position-determining module located on the vessel;

determining, from these received signals, the present position of the vessel and the quality of the present position fix that estimates the inaccuracy of the vessel present position fix at each of an ordered sequence of times;

when an emergency event occurs, determining the approximate time of occurrence of such event, the position of the vessel and the quality of the position fix at approximately the time such event occurred; and

broadcasting the approximate time and position and present position fix quality of the vessel when the emergency event occurs on a selected frequency in at least one of the Emergency Radiowave Bands.

2. The method of claim 1, further comprising the steps of:

determining the components of velocity heading of said vessel when an emergency event occurs; and broadcasting the vessel velocity heading information on said selected frequency in said Emergency Radiowave Bands.

3. The method of claim 1, further comprising the steps of:

determining the type of said emergency event that has occurred; and

broadcasting information identifying this type of said emergency event on said selected frequency in said Emergency Radiowave Bands.

4. The method of claim 3, further comprising the step of determining that an emergency event has occurred whenever vessel disablement, radio disablement, vessel sinking, vessel capsizing; vessel crash; fire on board; explosion on board; navigational position loss; person overboard; heart attack; or serious injury occurs on or adjacent to said vessel.

5. The method of claim 1, further comprising the step of continuing to broadcast the approximate time said emergency event occurred and the present position of said vessel after an initial broadcast is made in response to occurrence of said emergency event.

6. The method of claim 5, further comprising the step of continuing to broadcast the approximate time said emergency event occurred and the present velocity heading of said vessel after an initial broadcast is made in response to occurrence of said emergency event.

7. The method of claim 5, further comprising the step of continuing to broadcast the approximate time said emergency event occurred and the present quality of position fix of said vessel after an initial broadcast is made in response to occurrence of said emergency event.