proof. As such, it can be composed of a Kevlar® material, or other such impact resistant material. A padding, such as a soft compressible filler or air-filled chambers (such as in a flack jacket) can be employed in combination with the impact resistant material to form the impact dispersing layer. It will be appreciated that other, impact dispersing structures, such as those currently used in traditional bullet proof vests, and the like, can be employed and still practice the invention.

An inner impact sensing layer can be provided along the inner surface of the impact dispersing layer. Again, this layer may be made of a piezoelectric material and may be separated in several distinct panels. The sensing layers include a sensor or other means for detecting when an impact has been delivered to the panel. This impact detecting device may also determine the level or degree of the impact. An impact signal is generated corresponding to the existence of the impact and, when appropriate, the degree of the impact. Separate impact signals are generated for the outer sensing layer and the inner sensing layer.

Referring to FIG. **4**, the impact sensors send the impact signal to a controller. The controller then sends a control signal to a transmitter mounted to the vest (see also FIG. **1**). The transmitter then sends a distress signal to the dispatcher or other receiver (see FIG. **3**). The transmitter is preferably a radio but other transmitters (such as infrared transmitters) can be employed and practice the invention. The distress signal may include information regarding the strength of the impact, the location of the impact on the vest, whether the impact was delivered to the outer sensing layer, the inner sensing layer or both, and any other information regarding the impact that is believed important to measure and transmit.

Physiological sensors can be attached to the vest and operably engaged to the body of the wearer to detect the physiological conditions of the wearer. For example, a thermometer, a heart beat monitor and blood pressure sensor can detect the temperature, heart rate and blood pressure of the wearer. These devices send a body condition signal to the controller corresponding to the heart rate and the blood pressure. This data can be stored in the controller. Further, this data can be transmitted with the distress signal, apprising the dispatcher of the current physiological state of the wearer. Of course, any acceptably physiological sensors can be employed and practice the invention. Alarms and other sensors can be employed, as taught in U.S. Pat. Nos. 5,557,263 and 5,319,355, incorporated herein by reference. It will be appreciated that other body conditions, such as skin surface moisture and breathing rate can also be measured and included in the body condition signal.

The body condition signals can also be monitored by the controller to determine whether they fall within a predetermined range. When the body condition signals vary beyond the predetermined ranges, the controller can signal the transmitter which, in turn, will send a distress signal. As a result, should the wearer undergo under physical stress, even without an impact, the dispatcher can be warned, sending assistance if it is deemed necessary.

A global positioning device, such as those currently commercially available, is attached to the vest (see FIG. **1**). This device sends a location signal to the controller. Again, the location signal can be recorded in the controller and incorporated into the distress signal. As a result, the dispatcher can be informed of the location of the wearer when the distress signal is sent. Any commercially available global positioning device, see U.S. Pat. No. 4,740,792, incorporated herein by reference, or even a local positioning device, see U.S. Pat. No. 5,274,359, incorporated herein by reference, may be employed and practice the invention.

The controller may be provided with information concerning the route of the wearer. Should the wearer vary from the route by a predetermined amount, or for a predetermined time, a distress signal can be sent, indicating the location of the wearer and the length of time outside the predetermined route.

The distress signal may include information identifying the wearer. Further, a communication device, such as a two-way radio or cellular phone can be supplied to the wearer, either mounted to the vest or distinct from the vest. When the dispatcher receives a distress signal, he can attempt to contact the wearer on the communication device. When the wearer is not in fact in need of assistance, the wearer can so inform the dispatcher, thereby preventing the unnecessary use of relief aids. This communication device can also be a simple radio frequency transmitter which can be activated to send a status signal to the dispatcher that the wearer is okay. A lock, such as one requiring a password input may be provided to prevent the unauthorized activation of the status signal sending device.

It will be appreciated that other sensors, such as tilt sensors or temperature sensors can be employed attached to the controller. Consequently, when the wearer is in a dangerous position, such as lying horizontally for an extended period of time or in extreme heat, the controller can cause the transmitter to send a distress signal relaying this information to the dispatcher.

Once the distress signal is sent, it may be repeatedly broadcast at set intervals until it is deactivated. Consequently, the current status of the wearer, as well as his present location, is constantly updated to the dispatcher until help arrives.

While this invention has been described with reference to specific embodiments disclosed herein, it is not confined to the details set forth and the patent is intended to include modifications and changes which may come within and extend from the following claims.

What is claimed is:

1. An apparatus for protecting a user from severe impact and identifying of, the severe impact, the apparatus comprising: a vest having an outer sensing layer, an inner sensing layer and a central layer disposed between the inner sensing layer and the outer sensing layer;

wherein the inner sensing layer and the outer sensing layer respectively initiate an impact signal and a penetration signal when they are respectively subjected to an impact above a predetermined level;

a transmitter adapted to broadcast a signal notifying that at least one of an impact signal and a penetration signal is generated;

a global positioning device for determining the location of the apparatus and generating a signal corresponding to that location; and

means for actuating the global positioning device to transmit the location signal when one of said impact signal and said penetration signal is generated.

2. A garment for providing a signal notifying that a user is subjected to an impact comprising:

a vest, having:

an outer protective layer;

an inner sensing layer disposed adjacent to the protective layer, which sensing layer is adapted to send an