

Deferred communication difficulty reports resulting from such known outages may be considered by the service provider to be of no value. Thus, through well-known techniques, a command message preferably is provided that can be used by the service provider to clear all, or selected types of, communication difficulty reports which originated in the vicinity of the known outage during a time period over which the outage existed (or is expected to exist). This command message can be sent as a broadcast message to all the portable subscriber units **122** to prevent a flood of useless communication difficulty reports.

FIG. **5** is a flow diagram depicting operation of the portable subscriber unit **122** in accordance with a second aspect of the present invention. The flow begins when the portable subscriber unit **122** preferably receives **502** a request for the record of communication difficulty reports **230** from the fixed portion **102**. Preferably, the request is made during off-peak times, so that additional traffic will not be created during peak traffic hours. In response, the portable subscriber unit **122** communicates **504** the record of communication difficulty reports **230** to the fixed portion **102**, along with the identity of the portable subscriber unit **122**. After the communication is acknowledged by the fixed portion, the portable subscriber unit **122** then preferably clears the record of communication difficulty reports **230**, so that the same reports will not be retransmitted later. It will be appreciated that, alternatively, the portable subscriber unit **122** can determine that the record of communication difficulty reports contains a number of communication difficulty reports that has reached a predetermined maximum. In response, the portable subscriber unit **122** then communicates the record of communication difficulty reports to the fixed portion.

It will be further appreciated that the portable subscriber unit **122** can receive a request from the fixed portion to monitor and report a signal quality when entering a pre-defined geographic zone. In response, the portable subscriber unit **122** monitors and reports the signal quality when entering the pre-defined geographic zone. This feature is useful, for example, when the service provider has identified a zone suspected of having a coverage problem which is in need of evaluation.

FIG. **6** is a flow diagram depicting operation of the controller **112** in accordance with a third aspect of the present invention. The flow begins when the controller **112** receives and stores **602** a plurality of records of communication difficulty reports **330** received from the plurality of portable subscriber units **122**. The controller **112** then checks **604** whether any of the plurality of records of communication difficulty reports **330** indicate that a capacity overload has occurred. If so, the controller **112** generates **608** a special report, so that the service provider can plan for capacity adjustments to the wireless communication system in the vicinity of the reported location.

In any event, the flow then moves to step **610**, where the controller **112** checks whether there is a need to create or update the system coverage map. The need can be generated, for example, by a manual request from the service provider. Alternatively, the controller **112** can generate an new/updated system coverage map automatically at a predetermined time each day. If there is a need, at step **612** the flow advances to step **614**, where the controller **112** processes the plurality of records **330** to create or update the system coverage map. In either case, the flow then returns to step **602**. Thus, the service provider advantageously is informed of locations that are experiencing coverage problems and can take measures to correct the coverage problems quickly.

It will be appreciated that for portable subscriber units **122** equipped with displays of adequate resolution, the system coverage map (or portions thereof) also can be transmitted to the portable subscriber units **122**. This feature could, for example, help users avoid areas of poor coverage, or be used by service providers while making system adjustments in the field.

FIG. **7** is diagram depicting an exemplary structure for the record of communication difficulty reports **230** in accordance with the present invention. Each row **702** represents a communication difficulty report, comprising an incident code **704**, an incident location **706**, date and time **708** of the incident, and parameters **710** which are relevant to the report. It will be appreciated that additional columns can be used for providing any additional desired information.

Thus, it should be clear from the preceding disclosure that the present invention advantageously provides a method and apparatus in a two-way wireless communication system for detection and deferred reporting of a communication difficulty and a location at which the communication difficulty occurred. Advantageously, the method and apparatus is automated, comprehensive, cost effective, and allows diagnostic reports to be transmitted at off-peak times.

Many modifications and variations of the present invention are possible in light of the above teachings. Thus, it is to be understood that, within the scope of the appended claims, the invention can be practiced other than as specifically described herein above.

What is claimed is:

1. A method in a two-way wireless communication system for detection and deferred reporting of a communication difficulty and a location at which the communication difficulty occurred, the method comprising in a portable subscriber unit the steps of:

- providing communications for a user;
- monitoring a parameter indicative of communication quality during the communications;
- comparing the parameter with a predetermined threshold; and
- when the communication quality deteriorates such that the parameter reaches the predetermined threshold, performing the steps of:
 - determining geographic coordinates corresponding to the location at which the communication difficulty occurred; and
 - adding a communication difficulty report to a record of communication difficulty reports stored in the portable subscriber unit, the communication difficulty report identifying the parameter and the geographic coordinates, and

wherein the method further comprises in the portable subscriber unit the steps of:

- receiving a request for the record of communication difficulty reports from a fixed portion of the two-way wireless communication system; and
- communicating the record of communication difficulty reports to the fixed portion in response to the request.

2. The method of claim **1**, further comprising in the fixed portion of the wireless communication system the steps of:

- receiving and storing a plurality of records of communication difficulty reports received from a plurality of portable subscriber units; and
- processing the plurality of records to create a system coverage map.

3. The method of claim **1**, wherein the adding step comprises the step of time-stamping the communication difficulty report.