

17712 U.S. PTO
100506

PTO/SB/16
OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label No. _____

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Christopher M.	Campion, Jr.	West Belmar, NJ
Harold H.	Woodbury, III	Centreville, VA

Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)

METHOD AND APPARATUS FOR AUTHENTICATED ON-SITE TESTING, INSPECTION, SERVICING AND CONTROL OF LIFE-SAFETY EQUIPMENT USING A REMOTE ACCESSORY

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☒ The address corresponding to Customer Number: **23400**

OR

☐ Firm or Individual Name

Address

City	State	Zip
Country	Telephone	Fax

ENCLOSED APPLICATION PARTS (check all that apply)

☐ Application Data Sheet. See 37 CFR 1.76	☐ CD(s), Number of CDs _____
☒ Specification Number of Pages 15	☐ Other (specify) _____
☒ Drawing(s) Number of Sheets 5	

Application Size Fee: If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$ 125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

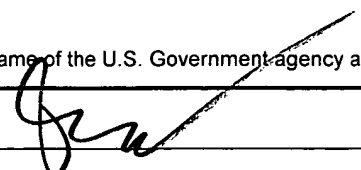
METHOD OF PAYMENT OF FILING FEES AND APPLICATION SIZE FEE FOR THIS PROVISIONAL APPLICATION FOR PATENT

☒ Applicant claims small entity status. See 37 CFR 1.27.	TOTAL FEE AMOUNT (\$) \$100
☒ A check or money order is enclosed to cover the filing fee and application size fee (if applicable).	
☐ Payment by credit card. Form PTO-2038 is attached	
☒ The Director is hereby authorized to charge filing fee and application size fee (if applicable) or credit any overpayment to Deposit Account Number: 50-1147 . A duplicative copy of this form is enclosed for fee processing.	

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

SIGNATURE 

TYPED or PRINTED NAME **Robert L. Scott, II**

TELEPHONE **(703) 707-9110**

Date **October 5, 2006**

REGISTRATION NO. **43,102**
(if appropriate)

Docket Number: **66-001-P**

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Effective on 12/8/2004. Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818). <h1 style="text-align: center;">FEE TRANSMITTAL</h1> <h2 style="text-align: center;">For FY 2006</h2>		Complete if Known Application Number: UNKNOWN Filing Date: October 5, 2006 First Named Inventor: CAMPION, Jr., et al. Examiner Name: _____ Art Unit: _____ Attorney Docket No.: 66-001-P	
☒ Applicant Claims small entity status. See 37 CFR 1.27			
TOTAL AMOUNT OF PAYMENT (\$) 100			

METHOD OF PAYMENT (check all that apply)

- ☒ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____
- ☒ Deposit Account Deposit Account Number: **50-1147** Deposit Account Name: **Posz Law Group, PLC**
- For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)
- ☐ Charge fee(s) indicated below ☐ Charges fee(s) indicated below, except for the filing fee
- ☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	\$100

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
- 20 or HP = 0	x	\$50	=	\$0		

HP = highest number of total claims paid for, if greater than 20

<u>Indep. Claims</u>	<u>Extra Claims</u>	<u>Fee (\$)</u>	<u>Fee Paid (\$)</u>
- 3 or HP =	0	x \$200	= \$0

HP = highest number of independent claims paid for, if greater than 3

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$ _____ (\$ for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41 (a)(1)(G) and 37 CFR 1.16(s).

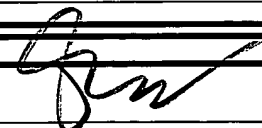
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
- 100 = _____	/ 50 = _____	(round up to a whole number) x _____	=	\$0

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other: _____

SUBMITTED BY

Signature		Registration No. (Attorney/Agent)	43,102	Telephone	(703) 707-9110
Name (Print/Type)	ROBERT L. SCOTT, II	Date	October 5, 2006		

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PROVISIONAL PATENT APPLICATION

FOR

METHOD AND APPARATUS FOR AUTHENTICATED ON-SITE TESTING, INSPECTION,
SERVICING AND CONTROL OF LIFE-SAFETY EQUIPMENT USING A REMOTE
ACCESSORY

BY

CHRISTOPHER M. CAMPION, JR.

AND

HAROLD H. WOODBURY III

DESCRIPTION OF THE INVENTION

Field of the Invention

[0001] The present invention relates generally to the control of life-safety equipment such as smoke detector, fire alarm, and sprinkler systems and more particularly, to providing monitoring and control of a life-safety equipment, such as a fire alarm control panel for facilitating on-site testing, inspection, servicing, and control of fire alarm systems.

Background of the Invention

[0002] The installation and maintenance of life-safety equipment such as smoke detectors, fire alarm and sprinkler systems, and the like, continues to be a major concern for existing and new commercial and residential living and working spaces. Given that, under various local ordinances (see, e.g. New Jersey State Fire Prevention Code), which are typically derived from uniform codes such as the Uniform Fire Code, published by the National Fire Protection Association (NFPA), with headquarters at 1 Batterymarch Park, Quincy, MA 02269, periodic maintenance must be performed in accordance with various rules common in most jurisdictions, cost control of such maintenance procedures is of great concern.

[0003] Under the codes, life safety equipment is mandated to be serviced, tested, and inspected at regular intervals as dictated by applicable codes and standards in a given jurisdiction. The life safety equipment must also be serviced and repaired within a defined period from a time of failure, defect, or activation. The life safety equipment such as fire condition sensors commonly reports to a specific location, such as an annunciator panel or control panel, which annunciates through visible and/or audible indicators the status of the equipment for given areas or locations.

[0004] When equipment is serviced, tested, and inspected persons performing this service must physically monitor the control locations for status changes. In most cases for servicing, testing, and inspecting this equipment, it is necessary for two persons to be present for this maintenance. In older control equipment that monitored large locations having zoned equipment, the need for a second person to be on site to monitor the control equipment, acknowledge events, and restore the system subsequent to indication events became even more acute. As will be appreciated, having a second person on site for these types of systems add increased labor costs, slow responses to activations, and significantly high cost.

[0005] Control equipment being placed in service today is typically microprocessor based. Such equipment maintains the ability to distinguish specific faults, alarms, or other events on a system by their specific location or response type. The current equipment is also able to process, log, and/or report multiple events simultaneously. When performing routine, periodic testing and inspection or as-needed servicing and control of life-safety equipment, much effort is concentrated on activating sensors and confirming that the activation of the sensors is detected at the main fire alarm panel for each and every sensor.

[0006] Further, authentication of tests is required for the tests, and ultimately the integrity of the system to be deemed within compliance with the code. Clearly a solution is needed in the art to alleviate the need for excessive manual panel interaction and for separate authentication.

[0007] Accordingly, it would be desirable in the art to significantly decrease the amount of labor required for testing, inspecting and servicing of life safety systems; to provide constant monitoring of life safety equipment during testing, inspection, and service of life safety systems.

[0008] It would also be desirable to provide persons not familiar with inspection and testing of equipment with the ability to monitor testing of systems for observing and accepting such tests; to allow persons interacting with system events the ability to monitor changes in status while investigating events in areas away from the control components; to allow persons interacting with system events the ability to monitor additional events while away from control components.

[0009] It would be still further desirable to decrease the time required to respond and investigate additional events in the facility by the instantaneous transmission of the event to the person on site; to allow persons not familiar with specific makes and models of control equipment to view events while away from the control panel, and the like.

[0010] While a general background including problems in the art are described hereinabove, with occasional reference to related art or general concepts associated with the present invention, the above description is not intending to be limiting since the primary features of the present invention will be set forth in the description which follows. Some aspects of the present invention not specifically described herein may become obvious after a review of the attendant description, or may be learned by practice of the invention. Accordingly, it is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only in nature and are not restrictive of the scope or applicability of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description, serve to explain the principles of the invention. In the figures:

[0012] FIG. 1 is a diagram illustrating a conventional scenario requiring at least two persons to conduct life safety evolutions;

[0013] FIG. 2 is a diagram illustrating an exemplary scenario for reducing a manpower requirement for conducting life safety evolutions using a remote accessory consistent with various embodiments of the present invention;

[0014] FIG. 3A is a diagram illustrating an exemplary testing scenario consistent with various exemplary embodiments of the present invention;

[0015] FIG. 3B is a diagram illustrating an exemplary servicing scenario consistent with various exemplary embodiments of the present invention; and

[0016] FIG. 4 is a diagram illustrating an exemplary scenario using a network for providing various wired and wireless connections to components consistent with the present invention.

DESCRIPTION OF THE EMBODIMENTS

[0017] In accordance with various embodiments, the exemplary method and apparatus can be characterized generally according to the following descriptive test procedure. While the term Inspector is used herein, the term operator, user or other suitable descriptive term can be substituted without departing from the invention.

[0018] To setup a new building to provide authenticated test, inspection, service or the like, a tester, operator, fire safety officer, inspector or the like (Inspector) first arrives on site, calling the exemplary system offline, and notifying building personnel. The Inspector identifies a printer terminal to be connected to the (RS-232) port present on the alarm control panel. The Inspector connects a serial cable via Transmit, Receive, Reference wires as identified in the control panel manufacturer's user manual, or in connection with the typical conventions established in the RS-232 standard. It will be appreciated that in some applications, a null modem cable may be necessary, such as will generate a hard connection between the Tx conductor of the interface to the Rx conductor of the reading device and vice versa. The Inspector connects db9 or other serial interface cable to laptop PC or other interface equipment for collecting, sorting, storing, and transmitting of data to a remote server, such as over a network or the Internet or the like. The Inspector then sets port settings for their computer, if necessary, as defined in the control panel manufacturer's manual for port settings, including Baud Rate, Stop bits, Flow Control, and Parity as required. IT will be appreciated that the port settings may be included automatically in a later procedure such as when the panel is selected. The Inspector then connects their interface unit to the internet. The Inspector opens an application program, which can also be consistent

with the present invention, and, as will be appreciated can take steps associated with security such as logging in with their user name and password.

[0019] When the Inspector has logged in, the building ID number assigned to the site can be entered or alternatively, the building name can be selected. In the case of a new building, the Inspector can select an option to define a new building. In defining the new building, the Inspector defines the control panel or panels for use and number of loops on the system, and the like. The Inspector follows program prompts to collect information from the control panel by removing loops and placing devices into system or importing versions of the program for the system. The Inspector answers several basic setup questions to complete configuration of the report. The Inspector then disables the panel, ends the configuration program and begins initial inspection. For inspection, the Inspector can connect to an Internet web site via a remote accessory such as a portable wireless device with the capability to provide Internet access and web browsing abilities. The device can be configured such that the server recognizes the login as being associated with the building by way of the building ID from an earlier step, which brings up the appropriate inspection forms. The Inspector tests all devices, verifies response on portable device, answers questions as required for that type of device, entering information where needed during the course of the inspection. It will be appreciated that a primary advantage of the present invention is the ability of the Inspector to conduct the inspection without traversing from a remote portion of the building back to the control panel or for another party to be located at the control panel to provide feedback. Even if feedback can be provided

through, for example, a two-way radio or the like, the stationing of an additional person leads to inefficient use of manpower resources.

[0020] Upon completion of system's initial inspection, where all questions of all systems by the code are asked, questions not applicable to this system type are eliminated at the server, device part numbers and other statistics are recorded and set. The Inspector then disconnects from system, leaving cable attached to panel for rapid connection at a later date, restoring the system to normal operation. Inspection data is now stored and saved on remote server for view at a later date.

[0021] To inspect a building that has been previously setup, for example, using the above procedures, similar procedures, or any procedure that can produce information susceptible of being adapted for use in accordance with the invention, the Inspector arrives on site, calling the system offline, and notifying building personnel and disabling system. The Inspector connects previously installed serial cable and connects to a network such as the Internet. A program can be opened that allows the Inspector to log in with their user name and password. The Inspector enters the building ID number assigned to their site, selects the building name, or the like to identify the building. The Inspector selects the type of inspection to be performed on a time basis such as Annual, Semi-Annual, Quarterly, or the like; or can specify by equipment such as Sprinkler, Fire Alarm, or the like.

[0022] The Inspector connects to a network such as the Internet and to a web site via a remote accessory such as a wireless portable device with Internet access and web browsing abilities, and logs in with their name and password. The server can be configured to recognize the login

associated with the building ID from an earlier step to bring up the appropriate inspection data. The Inspector tests all devices, verifies response on portable device, answers questions as required for that type of device, entering information where needed during the course of the inspection. The Inspector answers general questions on equipment not included in addressable device list, such as control equipment, power supply, batteries, wiring, etc. The Inspector disconnects from system, leaving cable attached to panel for rapid connection at a later date, restoring the system to normal operation. The Inspection data is now stored and saved on remote server for view at a later date. It will be appreciated that the present invention allows authenticated inspection for addressable devices, and for non-addressable devices, authenticated inspection can still be provided, for example, by rapid loop clearing and remote reporting as will be appreciated. In other words, if a condition is set for a non-addressable alarm on a particular loop having 5 non-addressable devices, the loop condition can be monitored and cleared remotely after each non-addressable device is activated such that the operation of each device can be authenticated within the system. The compliance of the non-addressable devices can be provided automatically, such as by sensing a loop alarm condition within a particular time frame after activating the device, or can be left to the discretion of the Inspector.

[0023] The operation of the invention can be illustrated in the attached figures. FIG. 1 shows the main problem associated with having at least two persons for testing the system with one person remaining at the control panel at all times. In another scenario in accordance with the invention, as shown in FIG. 2, the person at the panel can be eliminated by operation of the remote accessory such as a wireless portable device. The inventive method and apparatus allows for a

person performing maintenance on a system to remotely monitor the control equipment for status changes. As illustrated in FIG. 3A, a person in a remote location would be able to see the activation of a device and verify that the reported location on the control equipment matched the physical location. As illustrated in figure 3B, the instant transmission will allow for persons performing maintenance to react instantly to information as occurs, while deciphering information themselves and thus eliminating the possible confusion from someone who may misinterpret information or improperly relay that information. The inventive method and apparatus will eliminate the need for an additional person to be on site to monitor the control equipment at its installed location to collect this information and relay it as it was received to the person in the field. The person receiving this information could be a person performing the test and activating the devices or creating the conditions, or an observer such as a local fire inspector or insurance representative. The apparatus of the present invention could configured control equipment to place a transmitter therein as either an accessory for temporary use or permanent accessory or subsystem installed within or manufactured with the equipment. The transmitter would transmit the information remotely to a portable device which would display and store this information for use during testing and to generate reports and review the information after completion of the testing. Alternatively, the transmitter could provide a wireless connection to the Internet either in addition to or instead of providing a connection to the portable devices. A wired connection to the Internet could also be provided in the control panel or could be provided in an inventive module that is added to the panel as an accessory, plug-in or the like and connectivity to the Internet, such as through the building infrastructure, e.g. CAT5, coaxial cable

or the like. In the alternative scenarios, the portable device could independently connect to the Internet, such as through a wireless telephone service provider and monitor and control the panel by accessing the Internet and performing the necessary procedures to log in and gain control of the panel. In such an embodiment, various tiers of access could be provided to the remote users such that in some cases, only monitoring is allowed and in other cases, full panel control is allowed. Also in the present embodiment, additional information can be stored in a regional and/or a national server that can add, update and manage information associated with new building information and new testing procedures, general information such as test procedure recommendations or the like as will be appreciated. The web server will then act as a central repository for authenticated test results, inspection procedures and reports that are certified for various jurisdictions and the like, where various parties such as Fire Marshals can go to determine whether inspections are being maintained for particular buildings, review inspection results or the like.

[0024] Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only, with a true scope and spirit of the invention being indicated by the following claims.

WHAT IS CLAIMED IS:

1. A method of reducing a manpower requirement for conducting one of scheduled and unscheduled on-site manual testing of an alarm system having components including alarm condition sensors requiring testing, the method comprising:

providing a first access procedure of a first at least one of the components of the alarm system to identify the system and testing requirements associated with the system, the first access procedure conducted between the first at least one of the components of the alarm system and a second at least one of a remote monitoring and control device and a network server;

providing a second access procedure of the remote monitoring and control device for conducting the one of scheduled and unscheduled on-site testing, the second access procedure conducted between the remote monitoring and control device and one of the alarm system and the network server; and

providing an indication to at least the remote monitoring and control device of information associated with ones of the alarm condition sensors that are activated during the one of the scheduled and the unscheduled on-site manual testing of the alarm system.

2. A method of conducting on-site manual testing of an alarm system having components including alarm condition sensors requiring testing, the method comprising:

establishing a wireless connection between the alarm system and a remote monitoring and control device;

providing an indication to the remote monitoring and control device of information associated with ones of the alarm condition sensors that are activated during the on-site manual testing of the alarm system.

3. A method of providing Internet-based information management, control, and certification of on-site testing of a commercial fire alarm system, including a multi-unit residential fire alarm system, the fire alarm system having components including at least one control panel and fire alarm condition sensors, the fire alarm system requiring periodic certified testing, the method comprising:

storing identification information associated with the fire alarm system, the identification information including information associated with the at least one control panel and a number and one or more types of the fire alarm condition sensors in an Internet-based server accessible by a subscriber;

wirelessly providing the identification information to the subscriber in response to an Internet-based request for an interactive testing session associated with a periodic manual test of the fire alarm system conducted by the subscriber; and

wirelessly providing alarm system status information to the subscriber, including information associated with the status of the fire alarm condition sensors that are manually activated by the subscriber during the periodic test, in response to changes in alarm condition received by the Internet-based server from the at least one control panel.

4. A remote monitoring and control device for wirelessly monitoring and controlling the status of a fire alarm system, including fire alarm condition sensors, during a periodic manual test of the fire alarm system, the remote monitoring and control device comprising:

a wireless network interface;

an information display; and

a controller coupled to the wireless network interface and the information display, the controller configured to:

establish a connection over the wireless network interface with a component of the fire alarm system;

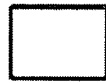
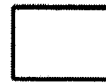
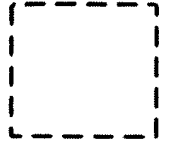
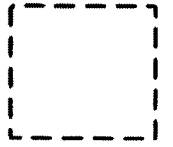
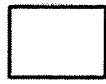
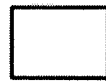
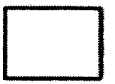
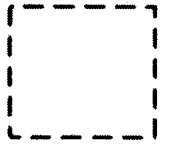
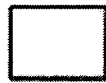
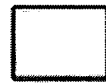
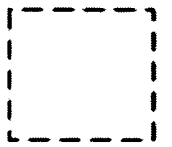
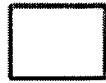
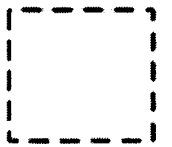
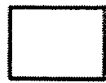
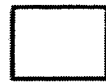
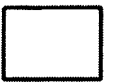
receive information over the established connection corresponding to ones of the fire alarm condition sensors registering as active with the component of the fire alarm system during manual activation of the sensors during the periodic manual test of the fire alarm system.

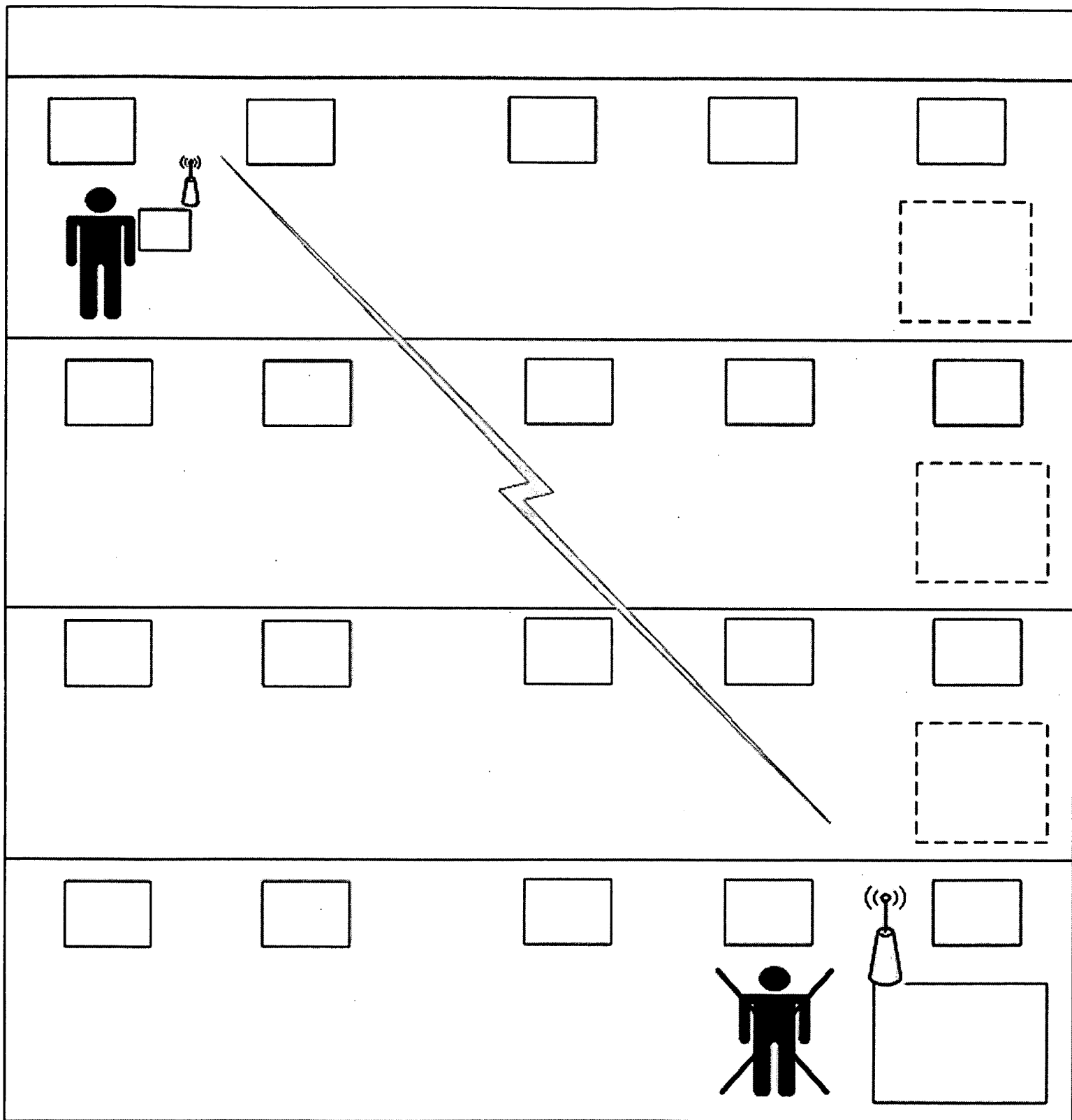
5. A method for authenticating an inspection of life safety equipment to ensure code compliance during a periodic test of the life safety equipment, the method comprising:

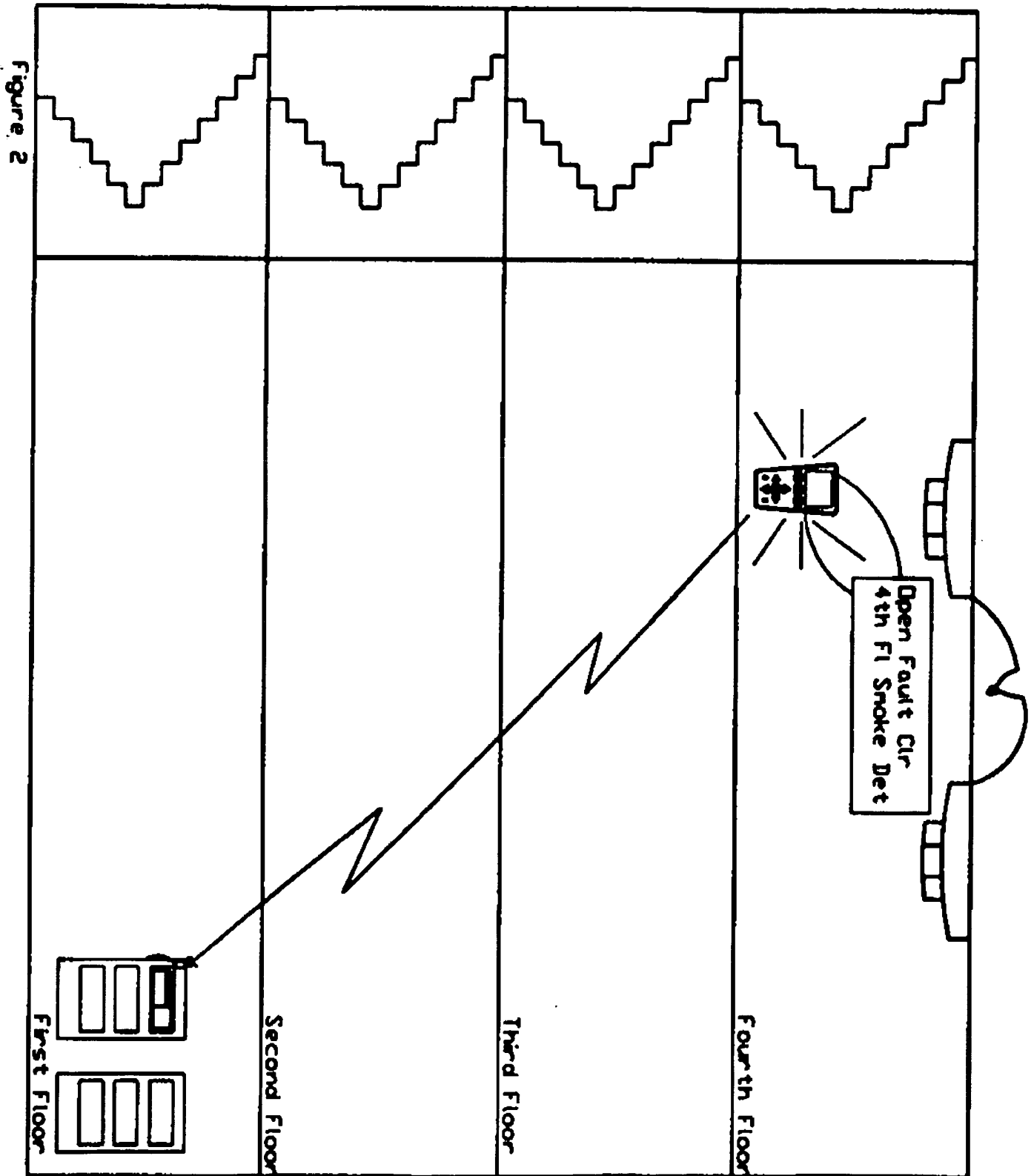
monitoring the periodic test of the life safety equipment in real time, the periodic test including wirelessly monitoring the status of the life safety equipment, including fire alarm condition sensors,

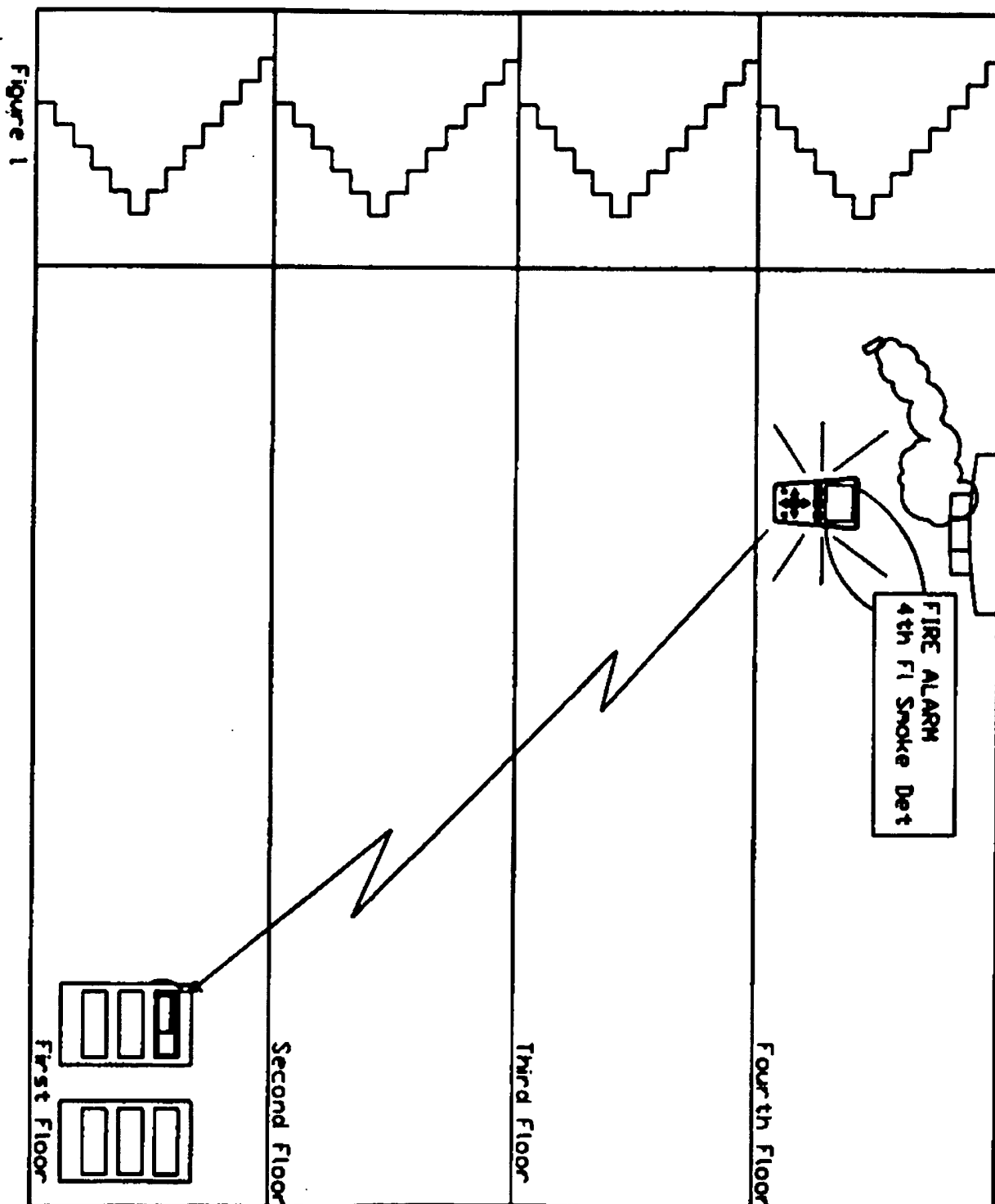
capturing an event associated with the periodic test that corresponds to a section of a life safety code, a status of the event determining one of authenticated compliance and authenticated non-compliance with the corresponding section of the life safety code; and

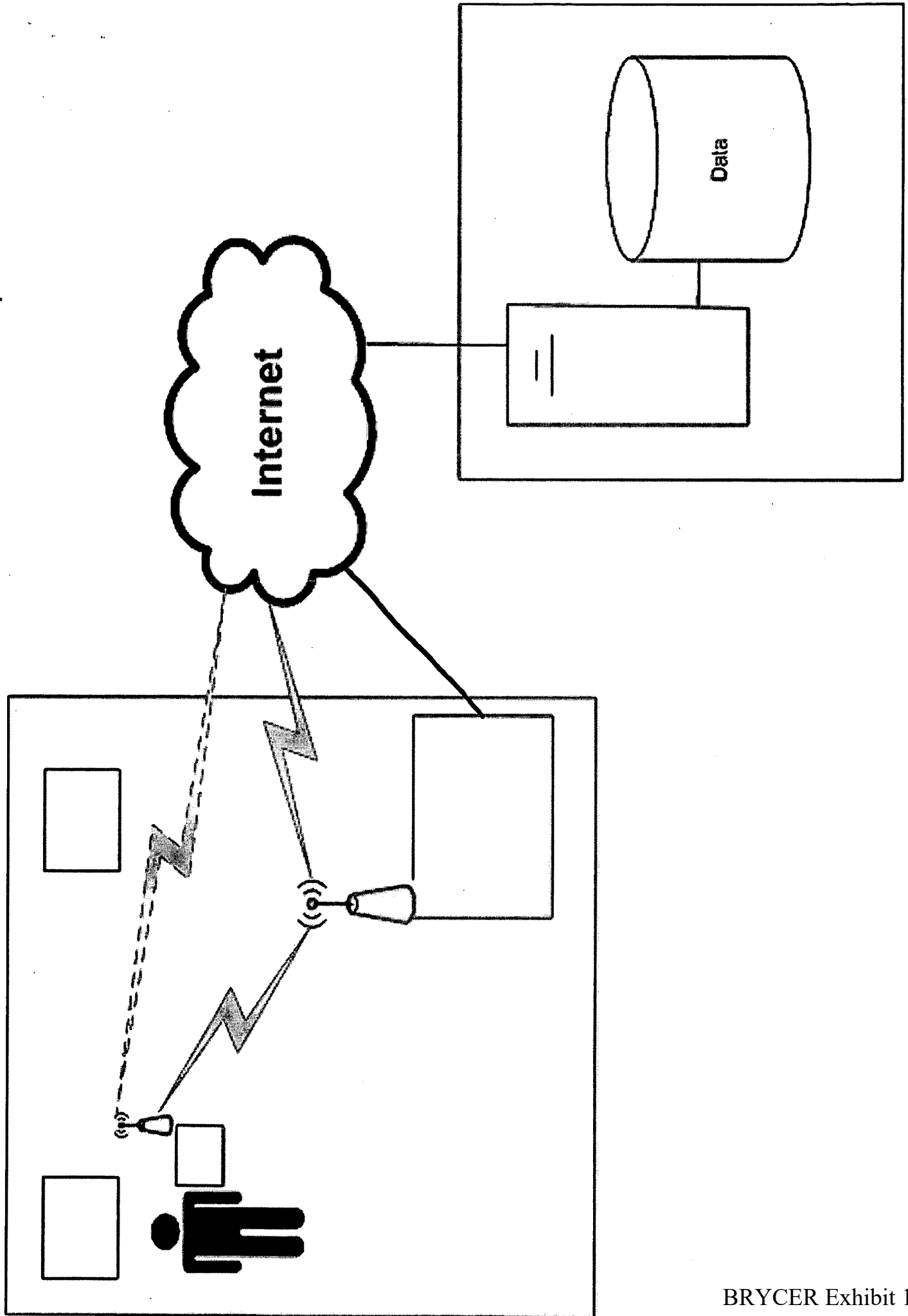
recording the status of the event with respect to the section of the life safety code to
record the one of the authenticated compliance and authenticated non-compliance of the event.











PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

10/06/2006 RFEKADU1 00000018 60849478

01 FC:2005

100.00 0P

PTO-1556
(5/87)