

## PATENT ASSIGNMENT COVER SHEET

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<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
NICHOLAS PETER DAY	03/03/2019
JEFFERY PAUL OWEN	03/03/2019
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<b>Property Type</b>	<b>Number</b>
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<b>SIGNATURE:</b>	/Daniel Ovanezian/
<b>DATE SIGNED:</b>	09/07/2021
<b>Total Attachments: 12</b>	
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ASSIGNMENTWHEREAS

Nicholas Peter Day, of 27 RAVEN ST. CAMP HILL QLD, Australia  
 [Insert Address]

And

Jeffery Paul Owen, of 26 BARTON ST, REDDY CREEK QLD, Australia  
 [Insert Address]

have collectively made an invention in **WIRELESS DETONATION SYSTEM**  
 and will be collectively referred to as "the ASSIGNORS", and

WHEREAS

**Voyager Innovations Pty Ltd**, an Australian Proprietary Company, Limited  
 by Shares and having official Australian Company Number 630 131 743,  
 hereinafter referred to as "the ASSIGNEE" wishes to acquire said invention,  
 and the ASSIGNORS, for certain consideration have agreed to said  
 acquisition,

THEREFORE

In consideration of ten dollars (\$10:00) cash in hand, and other good and  
 valuable consideration, paid to each of the ASSIGNORS by the ASSIGNEE,  
 the receipt and sufficiency of which is hereby acknowledged by each of the  
 ASSIGNORS, the ASSIGNORS do hereby ASSIGN, SELL and CONVEY to  
 said ASSIGNEE, its successors and assigns, the entire right, title and interest  
 throughout the world in and to:

1. Said invention in **WIRELESS DETONATION SYSTEM**, including the  
 invention, embodiments, aspects, variations and preferred features  
 summarized in Schedule A to this Assignment which is incorporated  
 herein.

2. The right to apply for and have ownership of patents for the invention in the Commonwealth of Australia and in all other places, regions, countries and jurisdictions of the world.
3. All patents and like protection that have now been or may in the future be granted on said invention in the Commonwealth of Australia and in all other places, regions, countries and jurisdictions of the world;
4. All substitutions for and divisions, continuations, additions, renewals, and the like of said applications and patents and like grants, including without limitations, those obtained or permissible under past, present and future law and statutes;
5. All rights of action on account of past, present and future unauthorized use of said invention for infringement of said patents and like protection;
6. The right to ASSIGNEE to file in its name applications for patents and like protection for said invention in the Commonwealth of Australia and in all other places, regions, countries and jurisdictions of the world; and
7. The right to claim priority from any of said patents and/or applications for the invention under any international agreements and conventions;

and each of the ASSIGNORS covenant that they, their heirs, legal representatives, assigns, administrators, and executors will at the expense of ASSIGNEE, its successors and assigns, execute all papers and perform such other acts as may be reasonably necessary to give ASSIGNEE, its successors and assigns, the full benefit of this Assignment which the parties agree is effective as of 03 March 2019.

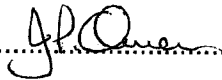
EXECUTION

Executed on this 3<sup>RD</sup> of MARCH..... 2019.

Executed by Nicholas Peter Day [Assignor]

  
.....


Executed by Jeffery Paul Owen [Assignor]

  
.....

Executed by Voyager Innovations Pty Ltd [Assignee]  
in accordance with Section 127 of the Corporations Act:

  
.....  
Director / Company Secretary

NICHOLAS DAY  
.....  
Name of Director / Company  
Secretary/ (print)

  
.....  
Director

JEFFREY OWEN  
.....  
Name of Director (print)

## Schedule A

**SUMMARY OF THE INVENTION**

In one form, although it need not be the only or indeed the broadest form, there is provided a wireless detonation system comprising:

a dongle for removable connection with a computer system and for wirelessly communicating with and controlling one or more trigger devices, the dongle comprising:

a dongle processor programmed to communicate with the computer system via the communication interface to operate the radio transceiver to wirelessly communicate with one or more trigger devices;

a radio transceiver coupled to the dongle processor;

a communication interface coupled to the dongle processor;

one or more contact communication terminals in communication with the dongle processor; and

a trigger device for wirelessly communicating with the dongle, the trigger device comprising:

a trigger device processor programmed to communicate with the dongle

a radio transceiver in communication with the trigger device processor;

one or more contact communication terminals in communication with the trigger device processor; and

an electronic power storage unit under control of the trigger device processor and adapted to store electrical energy for igniting a detonator,

wherein the dongle processor is further programmed to receive one or more commands from the connected computer system and

transmit the one or more commands to the trigger device and wherein the trigger device processor is further programmed to, in response to the commands from the dongle, ignite a detonator, and

wherein the trigger device is adapted to only accept commands from the dongle.

Preferably, the system further comprises a detonator connected to the trigger device and configured to be activated or ignited by the electronic energy storage unit. Preferably, the detonator is connected to an explosive charge.

Preferably, the system comprises one or more trigger devices. Preferably, each trigger device is connected to a detonator.

Preferably, the dongle further comprises a database stored on the dongle in communication with the dongle processor. Preferably, the database stores unique identifiers associated with trigger devices. Preferably, the dongle processor comprises a central processing unit and a USB controller.

Preferably, the dongle processor has a unique identifier stored thereon, wherein the unique identifier is associated with the dongle.

Preferably, the trigger device processor of the trigger device comprises a central processing unit. Preferably, the trigger device processor has a unique identifier associated with the trigger device stored thereon.

Preferably, each of the trigger device and the dongle comprise a battery. Preferably, each battery is rechargeable. Alternatively, each battery is non-rechargeable.

Preferably, the communication interface comprises a Universal Serial Bus connection.

Preferably, the electronic energy storage unit comprises a capacitor.

Preferably, the dongle further comprises one or more annunciators for providing visual and/or haptic feedback. Preferably, the annunciators are at least one of a light emitting diode, a buzzer, or a speaker. Preferably, each annunciator is in communication with and is controlled by the dongle processor.

Preferably, the trigger device further comprises one or more annunciators for providing visual and/or haptic feedback. Preferably, the annunciators are at least one of a light emitting diode, a buzzer, or a speaker. Preferably, each annunciator is in communication with and is controlled by the trigger device processor.

Preferably, the system further comprises a computer system having a software application installed thereon adapted to control the dongle and the trigger device. Preferably, the computer system is located remotely from the trigger device located around the blast site.

Preferably, the computer system is programmed to communicate with the dongle and the trigger device. Preferably, the computer system is programmed to communicate with the trigger device via the dongle, wherein the dongle is a conduit between the trigger device and the computer system.

In another aspect, the invention resides in a method for controlling detonation of one or more explosive charges, the method comprising the steps of:



wirelessly associating one or more trigger devices with a dongle, wherein each trigger device is connected to a detonator connected to an explosive charge;

connecting the dongle to a computer system having a control application installed thereon;

transmitting a first command generated by the control application from the dongle to the trigger device to arm the trigger device; and

transmitting a second command generated by the control application from the dongle to the trigger device to detonate the explosive charge,

wherein each trigger device is adapted to only accept commands from the dongle.

Preferably, the method further comprises the steps of:

drilling a blast hole in a blasting face; and

locating a trigger device connected to a detonator and an explosive charge within the blast hole.

Preferably, the method further comprises the step of instructing the dongle via the computer system to transmit a first command to the trigger device to arm the trigger device.

Preferably, the method further comprises the step of instructing the dongle via the computer system to transmit a second command to the trigger device to detonate the explosive charge, wherein an electric charge is released from the trigger device to the detonator.

Preferably, the method further comprises the step of charging an electric energy storage unit of the trigger device in response to

receiving the first command to arm the trigger device. Preferably, the electric energy storage unit is connected to the detonator.

Preferably, the method further comprises the step of discharging the electric energy storage unit to ignite the detonator in response to receiving the second command to detonate the explosive charge.

Preferably, the method further comprises the step of transmitting a third command from the dongle to the trigger device to evaluate the trigger device. Preferably, the third command is transmitted after the first command and before the second command. Preferably, the step of discharging the electric energy storage unit cannot be actioned until the third command has been received.

Preferably, the method further comprises the step of evaluating one or more conditions of the trigger device. Preferably, the evaluation comprises evaluating the electrical connection between the electric energy storage unit and the detonator of the trigger device. Preferably, the evaluation is performed by a processor of the trigger device.

Preferably, the method further comprises the step of instructing the dongle via the computer system to transit a third command to the trigger device to evaluate one or more conditions of the trigger device.

Further features and advantages of the present invention will become apparent from the following detailed description.

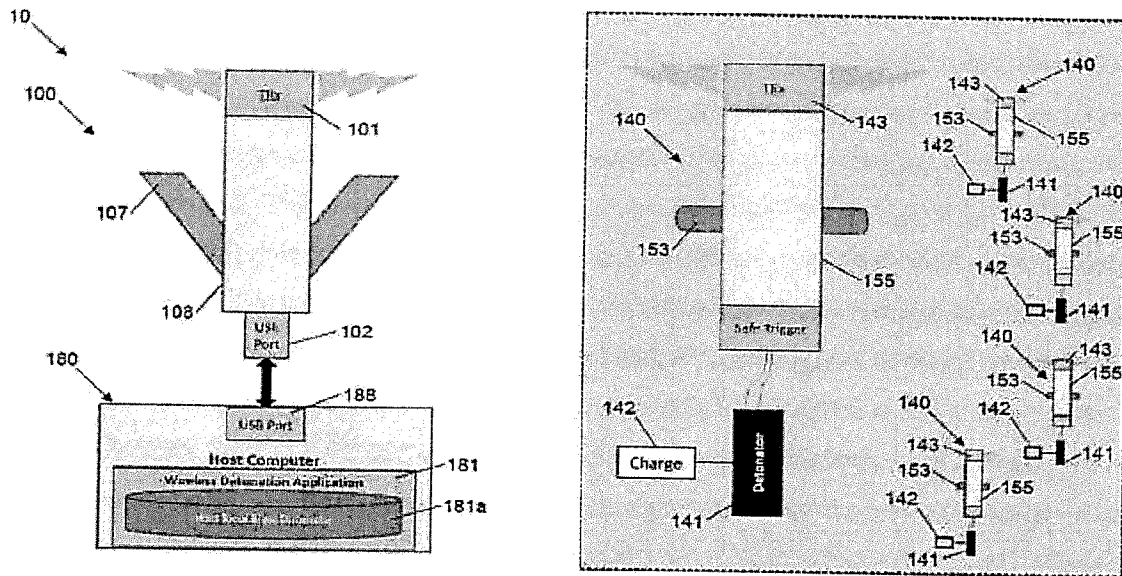


FIG. 1

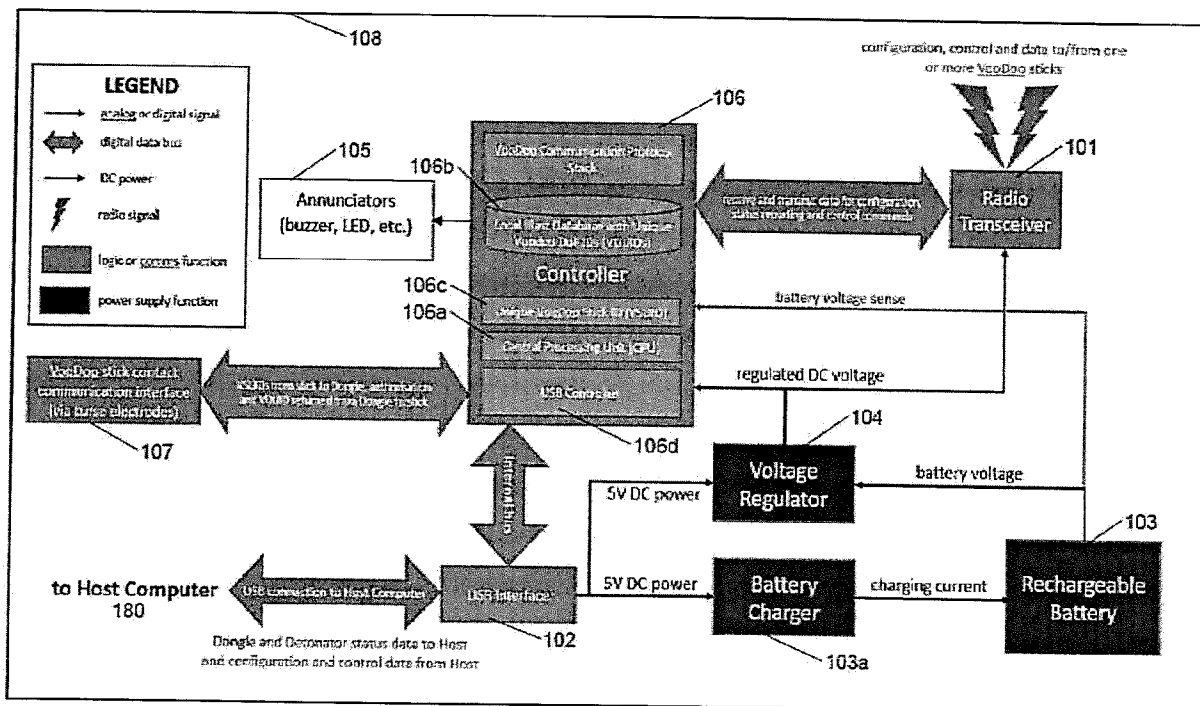


FIG. 2





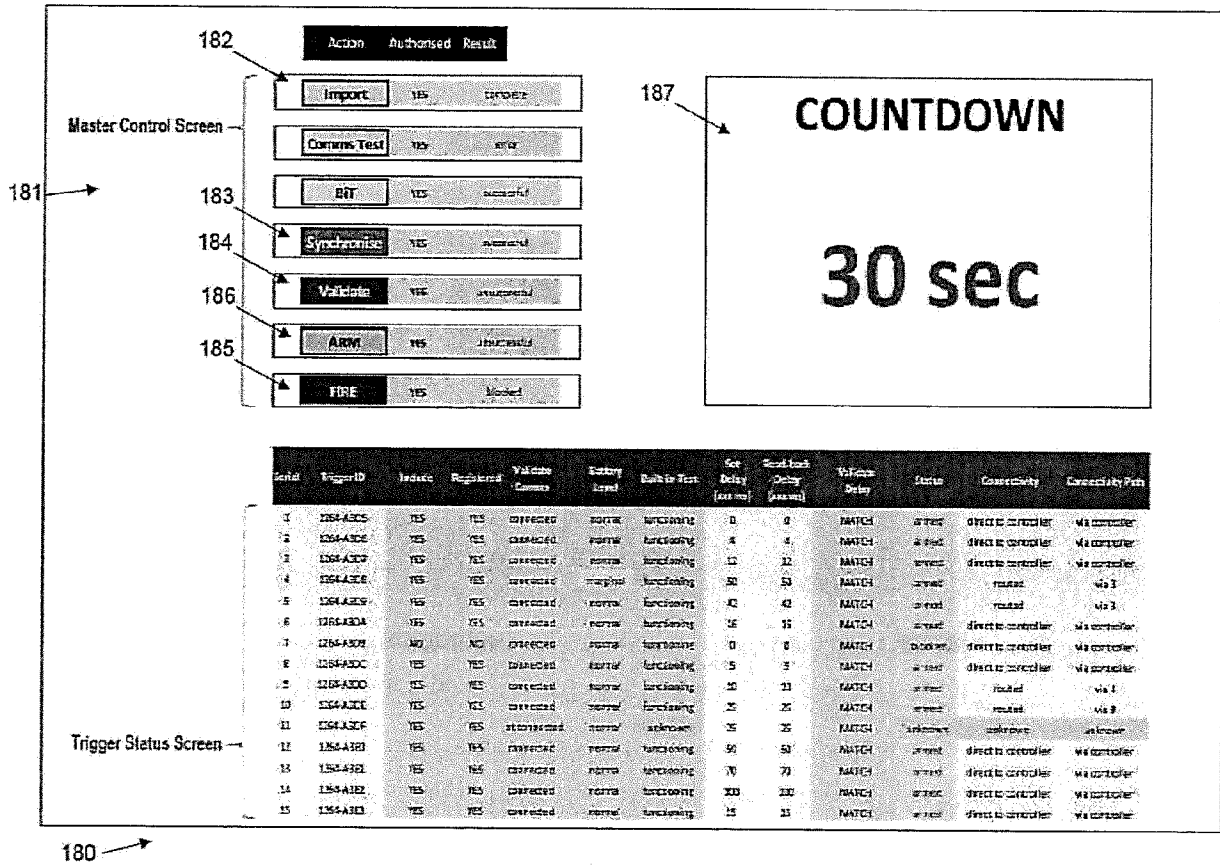


FIG. 7