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Strata Proximity Systems Underground Silent Zone Generator Users Manual v1.0

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1 Overview

The Underground Silent Zone Generator is part of a complete HazardAvert™ Proximity Detection System from Strata Proximity Systems which provides warnings to both individuals and to machinery to alert them that the individual has entered too close to an operating piece of equipment and is in a dangerous situation. The Underground Silent Zone Generator is mounted on a vehicle or piece of machinery and is connected by an interface cable to an Underground controller. The Underground Silent Zone Generator is mounted on the vehicle or machinery in an area near where the operator would normally be while operating the machinery.

1.1 Theory of Operation

The function of the Underground Silent Zone Generator is:

- To transmit a 73 kHz “Silent Zone” field around a small portion of the vehicle or piece of machinery in which the operator is allowed to work or enter as part of his normal activities.

The Underground Silent Zone Generator is connected to a HazardAvert™ Underground Controller which generates a 73 kHz signal for creating a Silent Zone around the area of a machine where the operator is located. This 73 kHz signal is connected to the Silent Zone Generator via a wire bundle. Inside the Underground Silent Zone Generator is a wire/ferrite radiator element to which the 73 kHz signal is connected. The 73 kHz signal passing through this wire/ferrite radiator element generates a “Silent Zone” electromagnetic field which encompasses only the small area of the machine in which the operator can be during operation. The operator is required to wear a Personal Alarm Device (PAD) which is another component of the HazardAvert™ system which detects and responds to the presence of 73 kHz fields. As long as the operator is within this “Silent Zone” his PAD will know he is within a defined area and not alarm. If the operator exits this Silent Zone area, his PAD will function to alert him and other machines equipped with the HazardAvert™ system of his proximity to dangerous conditions due to his distance from machine or vehicle hazards.

1.2 Frequency of Operation

The Underground Silent Zone Generator will transmit on a frequency of 73 kHz.

1.3 Label Information

The Underground Silent Zone Generator label is located on the face of the unit. A picture of the Strata label is below:

Patent #'s 7,420,471
5,939,986 and 6,810,353
Patent Pending



The Strata label defines the model and serial number of the Underground Silent Zone Generator also MSHA and Commonwealth of Pennsylvania information.

1.3.1.1 MSHA Blasting Distance

MSHA has published Program Policy Letter P11-V-07 concerning Two Way Communications and Blasting Circuits.

SPS magnetic field generators produce a magnetic field that at 100 kHz or .1000 MHz does not achieve the Critical H Field until 1.42 m with a blasting cap having a pickup area of 10 sq. meters.

SPS magnetic field generators are safe to 1.42 m from the blasting caps. SPS does recommend a minimum distance of 25' as a precaution.

1.3.1.2 Pennsylvania Blasting Distance

At this date, Pennsylvania has not made a recommendation or statement concerning surface systems.

1.4 FCC Information

The FCC ID for the Underground Silent Zone Generator is ZQ3-SPS-USZON. When configured by Strata for underground use, the device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received including interference that may cause undesired operation.

Any intentional or unintentional changes or modifications to the configuration of the Underground Silent Zone Generator not specifically detailed in this document could void the user's authority to operate the equipment.

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NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.*
- Increase the separation between the equipment and receiver.*
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- Consult the dealer or an experienced radio/TV technician for help.*

2 Operation

2.1 Installation Information

The Underground Silent Zone Generator is mounted on a vehicle or piece of machinery. Metal near the Underground Silent Zone Generator may impact performance. After installing the Underground Silent Zone Assembly on the machine, performance of the unit should be verified by calibration and test.

2.1.1 Interoperability Warning

The Underground Silent Zone Generator may experience erratic responses when in *very* close proximity to some electronic devices. Electrical devices may transmit an electrical field and noise from these fields *may* cause interference with the Generator. A safe guideline is to keep the Underground Silent Zone Generator *at least 75 mm away* from any electrical devices included but not limited to methane monitor, radio, mobile phone, GPS, PDA, battery charger and laptop computers.

2.2 Charging

The Underground Silent Zone Generator is directly powered from the controller board and requires no internal battery or charging.

2.3 Alerts

The Underground Silent Zone Generator has no alert system.

2.4 Maintenance

The Underground Silent Zone Generator should be regularly cleaned to reduce buildup of dust and dirt.

3 Warranty

Initial system hardware components will be warranted to be free of defects for a period of one (1) year from in service date. Subsequent component purchases will be warranted one (1) year from receipt acknowledgement. Warranted replacement or repair is not applicable in cases of physical damage or abuse as determined at the time of return or inspection.

4 Revision History

4.1 Version 1.0 – December 12, 2011

Original release. No revision history