

Technology Safety Data Sheet

Ground Penetrating Radar

Section 1: Technology Identity

Technology Name(s):		Emergency Contact:	
Ground Penetrating Radar		Jim Gramling West Valley Nuclear Services Co. 10282 Rock Springs Road West Valley, NY 15171 716-942-2119	
Manufacturer's Name and Address:		Information Contact:	
Geophysical Survey Systems, Inc. 13 Klein Drive PO Box 97 North Salem, NH 03073-0097		Bruce A. Watson, CHP 1235 Jefferson Davis Hwy Suite 700 Arlington, VA 22202 703-412-2556 GeoModel Inc. 750 Miller Drive SE Suite B-3 Leesburg, VA 20175 703-777-9788, www.geomodel.com	
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Section 2: Technology Pictures



Figure 1: Operator using the GPR on a Vertical Concrete Surface.



Figure 2: Operator using the GPR on Concrete Floor.



Figure 3: SIR-20 GPR Monitor.



Figure 4: Operator Assembling the GPR Unit.

Section 3: Technology Description

The Geophysical Survey Systems Incorporated (GSSI) Ground Penetrating Radar (GPR) system produces a cross-sectional image of subsurface features. The system design allows for concrete scanning to locate rebar, pipes, tension bars, conduits, and voids within and behind/beneath concrete slabs. The GPR is a remote sensing technique that uses microwave electromagnetic energy. An antenna, or transducer, transmits brief pulses of energy into the ground or concrete structure. The antenna is housed in a protective box that is pulled along the surface of the structure being scanned. When the trigger button is pressed, the unit begins the microwave transmission scan. Scanning is stopped by holding the button down for one to two seconds. The GPR antenna radiates signals into the structure, where they are reflected from the subsurface objects or voids. The radar antenna then receives the reflected signals. The GPR data unit processes the received data, records the information, and displays the GPR profiles in real-time on the control unit screen.

Section 4: Safety Hazards

Hazard Category:

(Adapted from Appendix A to MIL-STD-882D, February 10, 2000, Department of Defense Standard Practice for System Safety.)

- 4 - Could result in death or permanent total disability
- 3 - Could result in permanent partial disability or injuries or occupational illness that may result in hospitalization of at least three persons
- 2 - Could result in injury or occupational illness resulting in one or more lost work days
- 1 - Could result in injury or illness not resulting in a lost work day
- N/A - Is not applicable to this technology and poses no appreciable risk

A. Buried Utilities, Drums, and Tanks	Hazard Rating: NA
The system is designed to detect embedded components. Risk is associated with the area in which the unit is used. The application needs to be evaluated for the potential hazards of the embedded components.	
B. Chemical (Reactive, Corrosive, Pyrophoric, etc)	Hazard Rating: NA
The unit does not use any chemicals. Risk is associated with the area in which the unit is used. An evaluation for potential chemical hazards should be performed before using the unit.	
C. Confined Space	Hazard Rating: NA
Is not applicable to this technology and poses no appreciable risk. The unit can potentially be used in a confined space. Confined space requirements should be followed in this application.	
D. Electrical	Hazard Rating: 1
A battery carried by the operator in a harness when the unit is in operation powers the unit. Slight hazard exists when charging the batteries.	
E. Explosives	Hazard Rating: NA
Is not applicable to this technology and poses no appreciable risk.	
F. Fire Protection	Hazard Rating: NA
Fire protection plans should be followed for the area where the unit is deployed.	
G. Gas Cylinders	Hazard Rating: NA
Is not applicable to this technology and poses no appreciable risk.	
H. Ladders/Platforms	Hazard Rating: 1
The unit can be used from a ladder or platform when operating it on vertical walls or overhead.	
I. Lockout/Tagout	Hazard Rating: 1
The unit has a battery that will need to be recharged. Consider using a ground fault circuit interrupter (GFCI) during this process.	
J. Mechanical Hazards	Hazard Rating: 1
There are pinch points on the handle when assembling.	
K. Moving Vehicles	Hazard Rating: NA
Is not applicable to this technology and poses no appreciable risk.	

L. Overhead Hazards	Hazard Rating: 1
<ul style="list-style-type: none"> When the unit is operated overhead, it could result in struck-by hazard. Evaluate area where work is being conducted. 	
M. Pressure Hazards	Hazard Rating: NA
Is not applicable to this technology and poses no appreciable risk.	
N. Slips/Trips/Falls	Hazard Rating: 1
<ul style="list-style-type: none"> Evaluate area where work is being conducted. There is a potential for tripping when the operator is walking and viewing console during measurement. 	
O. Suspended Loads	Hazard Rating: NA
Is not applicable to this technology and poses no appreciable risk	
P. Trenching/Excavation	Hazard Rating: NA
Is not applicable to this technology and poses no appreciable risk	
Section 5: Health Hazards	
A. Inhalation	Hazard Rating: NA
There are no inhalation hazards associated with this technology. Specific areas where the unit will be used needs to be evaluated for inhalation hazards.	
B. Skin Absorption	Hazard Rating: NA
There are no skin absorption hazards associated with this technology. Specific areas where the unit will be used needs to be evaluated for potential skin absorption hazards.	
C. Noise	Hazard Rating: NA
The unit does not produce noise.	
D. Heat Stress/Cold Stress	Hazard Rating: 1
Heat or cold stress can occur if personal protective equipment is used during operation in the work area.	

E. Ergonomics	Hazard Rating: 2
<ul style="list-style-type: none"> The console, with the batteries, is suspended from the worker's harness. Operation includes pulling the antenna along the ground; changing handle length or adding wheels may alleviate ergonomic concerns. 	
F. Ionizing Radiation	Hazard Rating: NA
Specific areas where the unit will be used needs to be evaluated for potential radiation hazards.	
G. Non-ionizing Radiation	Hazard Rating: NA
The unit generates non-ionizing radiation, but is below the OSHA standard (29 CFR 1910.97).	
H. Biological Hazards	Hazard Rating: NA
Specific areas where the unit will be used needs to be evaluated for potential biological hazards.	
I. Other	Hazard Rating: NA
None.	
Section 6: Phase Analysis	
A. Construction/Start-up	
<ul style="list-style-type: none"> Transporting the unit to the work location requires lifting, dragging, or carrying the case housing the unit. Use proper lifting technique, and where possible use container wheels to move the case. There is a potential pinch point on the antenna handle during setup. 	
B. Operation	
Bending, stretching and awkward positions are used when working on vertical and overhead surfaces.	
C. Maintenance (Emergency and Routine)	
<ul style="list-style-type: none"> Disconnect battery. Use GFCI for battery charging. 	
D. Shutdown (Emergency and Routine)	
<ul style="list-style-type: none"> Shut off unit. Disconnect battery. 	
E. Decontamination/Decommissioning	
Follow site-specific procedures if used in contaminated area.	

Section 7: Worker Protection Measures

A. Exposure Monitoring

Meets area specific requirements.

B. Worker Training

- System operation
- Site-specific requirements

C. Medical Surveillance

There are no additional requirements.

D. Engineering Controls

There are no recommended engineering controls.

E. Administrative Controls

Control of worker duty time to alleviate fatigue.

F. Personal Protective Equipment

None required for use of the unit; however, the area where the unit will be deployed may require PPE and should be evaluated before use.

Section 8: Emergency Preparedness

Follow site-specific procedures.

Section 9: Comments, Lessons Learned, & Special Considerations

None.

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