

# Accurate Locators Inc.

## PI Penetrator 5500

*Professional Pulse Induction System  
Operation and setup manual*

**Detection of smaller  
and deeper targets**

**Higher sensitivity**

**Automatic  
Discrimination**

**Data Port for external  
data transfer**

**Optional 3-D software**

**Optional Blanket  
detection technology**



# PI PENETRATOR 5500

## INSTRUCTION MANUAL



**Accurate Locators Inc.**

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**PACKAGE CONTENTS OF PI PENETRATOR 5500**

1. CONTROL UNIT WITH DATA PORT AND DIGITAL SCREEN
2. VGA DATA PORT CABLE
3. CONTROL UNIT STRAP
4. 12 VOLT BATTERY
5. WALL CHARGER FOR 12VOLT
6. MANUAL
7. ADJUSTABLE COIL HANDLE
8. WASHERS, NUTS AND BOLT FOR ADJUSTABLE HANDLE
9. 11" ROUND COIL
10. 40" X 40" SQUARE COIL W/ CARRY STRAPS
11. CARRY CASE

Accurate Locators' PI Penetrator 5500 executes mastery of deep target detection, discrimination and detection of smaller deeper targets. Delivering best in class pulse Induction technology with revolutionary technologic breakthroughs from the Blanket Antenna to the pulse induction imaging. Deep target detection and the discrimination of smaller targets deeper, than standard VLF or Pulse Induction detectors.

The PI Penetrator 5500 is a very sensitive, deep penetrating and discriminating pulse induction metal detector. The PI Penetrator 5500 provides great functionality and greater depth than any comparable system (see page 4). It discriminates ferrous and non-ferrous targets using the built-in or optional Magnetometer. An imaging data port for connection to data logging and 3D Imaging software which can also be used with a GPS system for pin-pointing and visualization of the buried object.

The PI Penetrator 5500 is designed for detecting deeply buried or lost metal objects, metal pipes, underground communication equipment, treasures, meteorites, precious metals and similar objects and can easily detect larger objects, buried up to 25 feet deep, because the unit works on the principle of electromagnetic induction at a very low frequency. The PI Penetrator 5500 is good choice not only for treasure hunters, but also for Archaeological detection and Geophysical prospecting.

The 3 foot square coil or blanket antenna can identify and discriminate targets deeply into the ground. The 3 foot square coil with built in magnetometer and blanket antennas with optional magnetometer provide target identification and discrimination. This helps you to discriminate out the ferrous (Iron containing) from the non-ferrous (Precious metals like Gold Silver and Platinum). The 3 foot coil and blanket antennas make searching larger areas easy either behind a vehicle or walking a grid. These larger coils not only detect deeper but ignore small surface trash automatically.



# PI PENETRATOR 5500 QUICK REFERENCE GUIDE

The image shows the control panel of a PI Penetrator 5500 metal detector. The panel features a central LCD display with a green background and black text. The display shows a battery icon (1), the text "[ Disc ]" (2), "[ Auto ]" (3), a signal strength bar (4), and "[ Fe ]" (5). The panel is surrounded by several buttons: an up arrow, a down arrow, a "GM" button, a "RES" button, an "ON" button, a "LIG" button, an "A/S" button, an "SD" button, an "OFF" button, and an "SDT" button. Red lines connect callout boxes to these buttons and display elements.

**UP AND DOWN ADJUSTMENTS**

**GRAPH MODE**

**DISPLAY LIGHT ON/OFF**

**AUTO/ SEMI-AUTO MODE**

**PRESS AND HOLD TO TURN ON**

**PRESS AND HOLD TO TURN OFF**

**SENSITIVITY, DEPTH AND THRESHOLD SELECTION**

**PRESS RESET BUTTON TO CLEAR DATA**

**1. INDICATOR FOR BATTERY LIFE:**

**2. INDICATOR FOR DISCRIMINATION FUNCTION:**  
[ Disc ] OR [ ----- ]

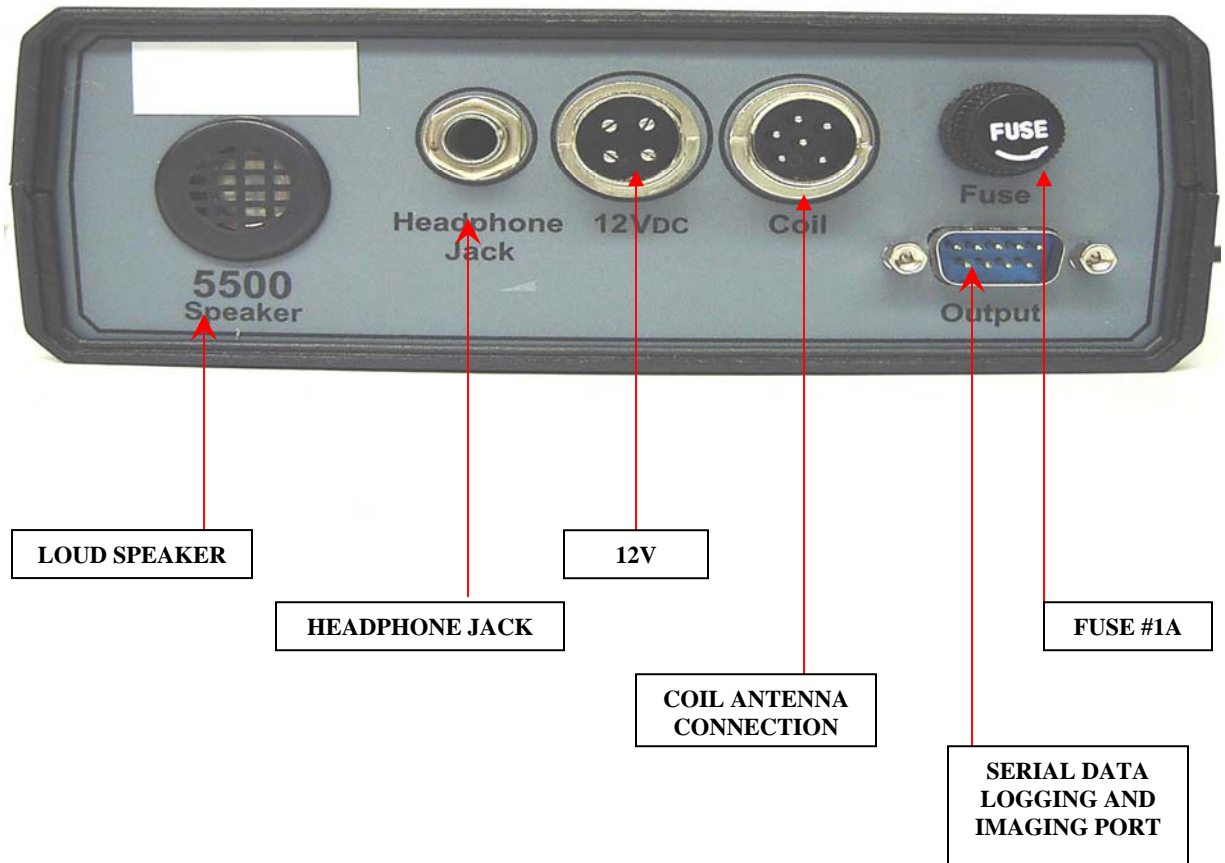
**3. INDICATOR FOR AUTO TUNE MODE:**  
[ Auto ]

**4. INDICATOR FOR SIGNAL STRENGTH:**

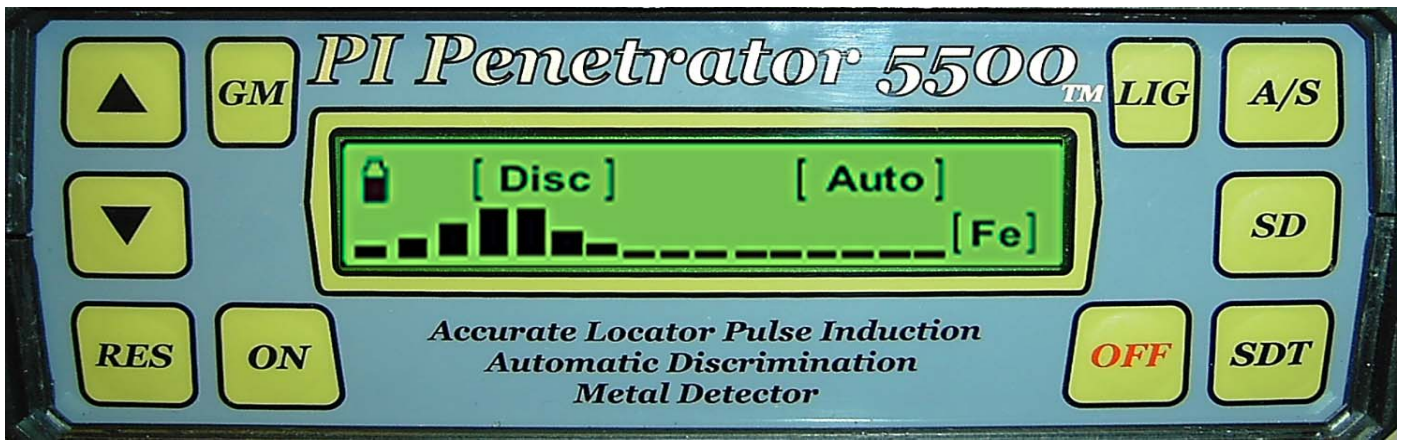
**5. INDICATOR FOR FERROUS METAL:**  
[ Fe ]

**PRESS SD BUTTON TO SELECT BETWEEN SOUND AND NO SOUND**

## PI PENETRATOR REAR PANEL REFERENCE GUIDE



Notice: Do not unplug any component with unit powered up. Power down unit before unplugging any component.

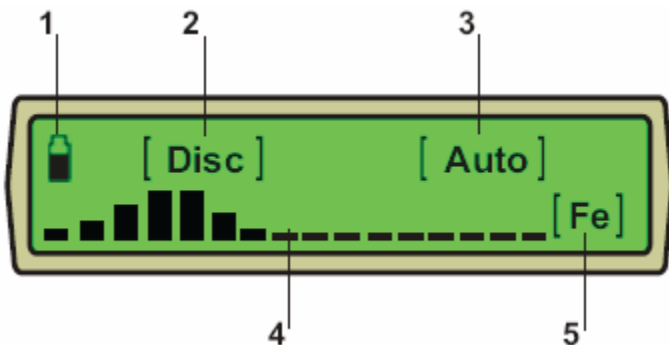


To operate PI Penetrator 5500. Take the coil out of the leather bag. After the assembly, position the coil on operational height over the ground's surface, far from metal subjects. (*Attention: be careful of exposure to metal parts on your shoes and clothing*) Connect the antenna cable to the control box, using the coupling on the rear panel. Then connect the battery to the battery port on back of unit. Both the antenna and the battery have a screw on coupling design. Make sure the threads are aligned properly and screw until secured. Press the on button shown below and wait for greeting screen to appear. You will see PI Penetrator 5500 and the software version.

After you have turned on the unit it will go into auto tune mode immediately. After it has auto-tuned itself then take a battery reading shown below.



Displayed to the left is the battery meter which is displayed on the screen of the PI Penetrator 5500. Make sure to take your readings of the battery life after you have turned the unit on and ground balanced. This will give you an accurate reading of battery life.

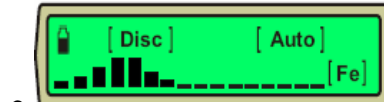
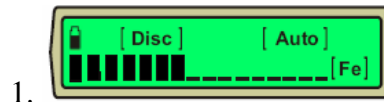


Displayed to the left is the screen of the PI Penetrator 5500. We will list each display components feature:

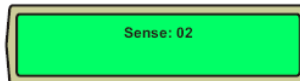
1. Battery meter and life of battery
2. Indicator for discrimination modes:  
On: [ Disc ] Off: [ ----- ]
3. Indicator for auto tune or semi tune mode.
4. Indicator of intensity or strength of signal
5. Displays Fe when metal or iron is located. Signal strength will read very high.



Displayed to the right is the GM button which allows you to switch between graph modes.



Now you can Press the SDT button displayed to the left. This will allow you to adjust your suitable parameters for the area you are working. The functions are Sensitivity, Delay, Threshold. These functions are controlled from this button. The sensitivity level alters how responsive the detector is to signals received from the search coil. The higher the sensitivity level is set the more responsive the detector is. Pressing the button it will first show sense (sensitivity) on the screen. The sensitivity values are only adjustable in the range of 0-15



By pressing the buttons you can increase or decrease the values for sensitivity. Heavy ground mineralization, nearby radio stations or power transformers are reasons to lower the value of Sensitivity.

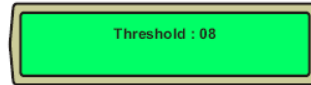
By pressing the SDT button a second time the symbol delay will appear on the LCD display:



By pressing the buttons you can increase or decrease the values. The delay values are also adjustable in the range of 0-15. For beaches and very light soil minerals you can choose the low value for the Delay. For standard or general operating conditions use the middle values. When working in heavy mineral ground or when searching very deep and large targets select high values.



By pressing the SDT button a third time the symbol threshold will appear on the LCD display.

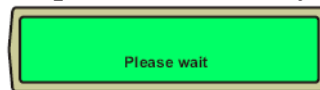


The values are adjustable in the range of 0-15 by pressing



The sound threshold is used to ground balance the detector. When in heavy mineralization use low levels of adjustment.

By pressing the SDT button a fourth time you will go out of the setup screen and the symbol PLEASE WAIT will appear.



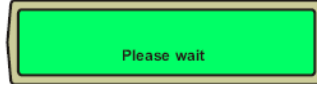
You can use the PI Penetrator 5500 with or without sound discrimination. By pressing the SD button you can choose between discrimination with sound or discrimination without sound. Working with or without sound discrimination the symbol Fe still appears when a ferrous (iron, metal) object is detected.



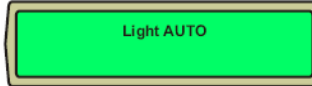
Pressing the A/S button gives you the ability to choose auto or semi auto mode. This allows you to have the unit automatically ground balance and self adjust its Sensitivity, Depth and Threshold settings. If you choose manual setting you may consider the semi auto mode. It's more responsive by using the inputs you put when setting your Sensitivity, Depth and Threshold modes. You will however have to hit reset following the detection of a target.



Reset button is used to reset control unit in new ground conditions. Depressing the button one or more times is needed in each target area or if other settings are changed. Pressing the reset button over a metal target will ignore similar metal targets until the unit is reset again over a clear ground balancing area. After pressing the reset button the symbol "Please Wait" will appear. Five seconds after that the unit is ready for use.



The light button feature on the PI Penetrator 5500 works in three ways. You can set it to auto. The device will always start with the light on. After pressing any button the light will stay on for five second intervals.



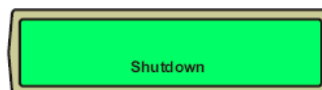
When you press the LIG (light button) once the light will stay on for 5 seconds then shut off entirely until activated again. This symbol will display:



You can press the LIG (light button) again this will keep the light on constantly. *\*Note: When the light is on constantly it will drain your voltage from your battery very quickly\**



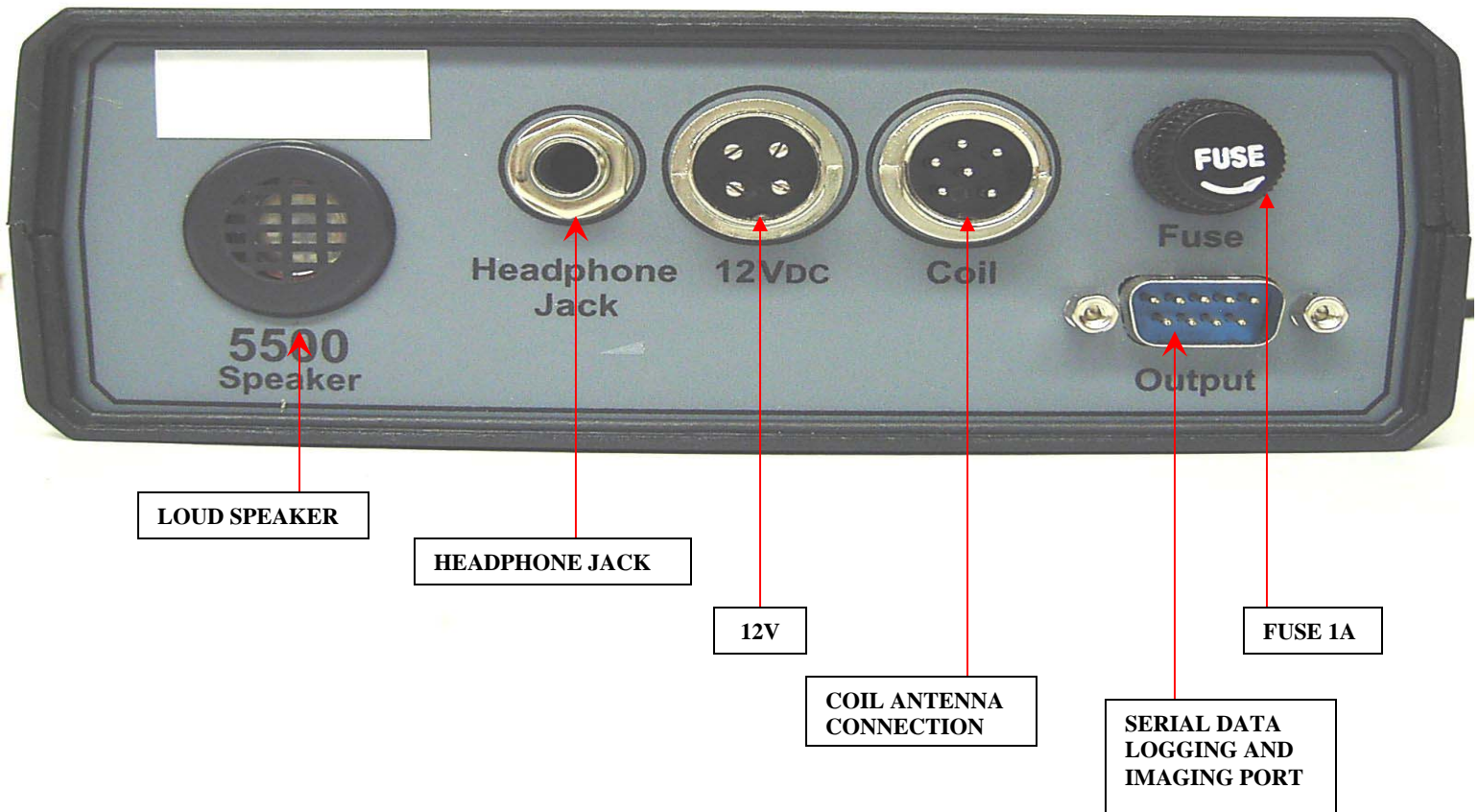
When turning off the control unit of the PI Penetrator 5500 you must hold down the OFF button for approximately three seconds for unit to shut down. You will hear a sounding signal and the symbol "Shutdown" appears.



# PI Penetrator 5500

BACK PANEL REFERENCE GUIDE

## BACK PANEL



**It is recommended that you connect your antenna to control unit before you plug in your battery.**

**This can help avoid any damage to circuits.**

**You can use head phones with this unit. They are recommended in loud working spaces. Example near a river or noisy industrial area.**

**The fuse is a standard f1A size fuse and easily replaced just by unscrewing cap that says FUSE.**

**The data port is used to transfer scans to logger for the use of 3-D imaging software.**

The PI Penetrator 5500 can also detect smaller coins and precious metals near the surface. Coil performance of tests of the 11 inch and 3 foot coil highlight the abilities of each coil. The test was performed with the following settings.

Sensitivity = 0 where 15 is the most sensitive

Delay = 0 where 15 is the highest setting

Threshold settings where at 10 where 15 was the highest setting

**DEPTH:**

Testing shows the incredible depth and sensitivity the PI Penetrator 5500 can reach to. Finding extremely small targets close to the surface and small targets quite deep. Coke cans to 5 feet and chests down to 25 feet. Below is a test performed by a competitor and as you can see the PI Penetrator found a soda can 31.5 inches deeper than the Deepers 10 DD Pulse Induction Unit.

The square search coils with size 40" x 40" square coil ; Is easily assembled for use or dismantled for transportation . Searching with large search coils (40") is easy, when the coil is carried by two people and the help of supplied straps. The search coil should be held approximately 4-6" from the ground while searching.

The pinpointing of the buried object with PI Penetrator 5500 can be achieved with area of ROUND SEARCH COIL: The smaller search coils offer greater sensitivity to smaller objects and improved target separation in trashy areas.




23" BELOW SURFACE  
\$1.00 COIN

DEPTH SCAN WITH 11" COIL



18" BELOW SURFACE  
\$0.25 COIN

DEPTH SCAN WITH 11" COIL



5FOOT/ 1.524METERS  
FROM SURFACE

DEPTH SCAN WITH 40" X 40" SQUARE COIL

Some quick definitions:

#### Sensitivity

The intensity of the signal received from the search coil. 2) The measure or capacity of a metal detector to perceive changes in conductivity within the projected detection pattern. 3) The changing of control settings to make the search coil more receptive to a chosen target. 4) Also the knob that controls the coil sensitivity. Generally, the more sensitivity a detector can smoothly provide the more depth it will achieve in sensing targets.

#### Delay

The time period between transmitter shut-off and the sampling point (pulse delay) 2) by increasing the time period between transmitter shut-off and the sampling point (pulse delay), certain metal items can be rejected. Aluminum foil will be the first to be rejected followed by nickel, pull tabs and gold. Some coins can be rejected at very long sample delays however, iron cannot be rejected.

#### Threshold

The continuous tone, or background hum, that 1) establishes a reference point for tuning the detector so it can be ground balanced, 2) sets the audio level for pinpointing targets and 3) determines the minimum (lowest) sound level for deep targets in the discriminate mode.

COMPANY TYPE	TYPE HEAD (searchcoil or loop)	DEPTH AT WHICH A CAN OF SODA CAN BE DETECTED  12 x 6,5 cm - 78 cm <sup>2</sup>	DEPTH AT WHICH A METAL GALLON JUG CAN BE DETECTED  400 cm <sup>2</sup>	DEPTH AT WHICH A METAL 2 1/2 GALLON JUG CAN BE DETECTED  650 cm <sup>2</sup>	MAXIMUM DISTANCE ABOVE GROUND FOR DETECTION FOR A METAL 2 1/2 GALLON JUG
<b>Gemini III Fisher</b>	Two box detector	45 cm	70cm	80	Little signal strength more than 80 cm
<b>TM 800 White's</b>	Two box detector	40 cm	65 cm	70	Weak signals at more than 75 cm
<b>TF 900</b>	Two box detector	45 cm	65 cm	75	maximum at 120 cm
<b>Série CX Garrett</b>	Two heads depth multiplier	40 cm	55 cm	65	Little signal strength at more than 65 cm
<b>Deepstar</b> ★★	Round Searchcoil	42 cm	60 cm	No signals further than 80 cm	
<b>Pulse Star II</b> ★★★★	Loop 1 m x 1 m	48 cm	85 cm	115 cm	160 cm
<b>MD8</b> ★★★★★	Elliptical head	48 cm	85 cm	90 cm	No signals further than 90 cm
<b>Lorenz 5</b> ★★★★	Loop 1.25 m X 1.25 m	50 cm	95 cm	120 cm	140 cm
<b>Deepers 10 DD</b> ★★★★★	Elliptical searchcoil of 20 x 40 cm Super Sensitive	65 cm	120 cm	140 cm	180 cm (with loop)

**Accurate Locators' PI Penetrator 5500 Pulse Induction Discriminating Detector  
11 inch and 3 foot field depth tests.**

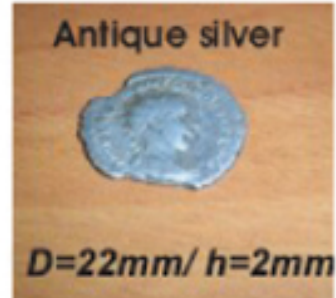
What was registered by our **TEST** with 11" round search coil and 1/1 m square search coil, made by the following tuning:

**SENS=0    DELAY=0    THRESHOLD=10**

	<b>DEPTH:</b>	
11" search coil 1/1 m search coil	- 26 cm -	<p><b>Antique bronze</b></p>  <p><b>D=12mm/h=2mm</b></p>
11" search coil 1/1 m search coil	- 29 cm -	<p><b>Antique bronze</b></p>  <p><b>D=16mm/ h=3mm</b></p>
11" search coil 1/1 m search coil	- 34 cm -	<p><b>Bronze</b></p>  <p><b>D=21mm/ h=5mm</b></p>
11" search coil 1/1 m search coil	- 35 cm -	<p><b>Bronze</b></p>  <p><b>D=21mm/ h=2mm</b></p>

Accurate Locators' PI Penetrator 5500 Pulse Induction Discriminating Detector  
 11 inch and 3 foot field depth tests.

11" search coil - 35 cm  
 1/1 m search coil -



11" search coil - 38 cm  
 1/1 m search coil -



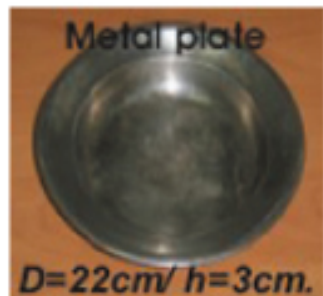
11" search coil - 44 cm  
 1/1 m search coil -



11" search coil - 78 cm  
 1/1 m search coil 145 cm



11" search coil - 110 cm  
 1/1 m search coil 205 cm



Why for this test we have used 1/1 m search coil? The concentrated magnetic field of this coil allows an excellent detection range on relatively small metal objects. Targets the size of a cash box are clearly detected from a distances of 7 feet.

Accurate Locators' PI Penetrator 5500 Pulse Induction Discriminating Detector  
18 inch Blanket Antenna field depth tests.

The 18 inch Blanket Antenna was able to detect a 55 gallon drum at 15 feet. The Discriminating Blanket Antenna is unmatched in depth and sensitivity, discriminating out surface trash and locating smaller gold shallower while punching down to depths unheard of for an 18 inch coil.

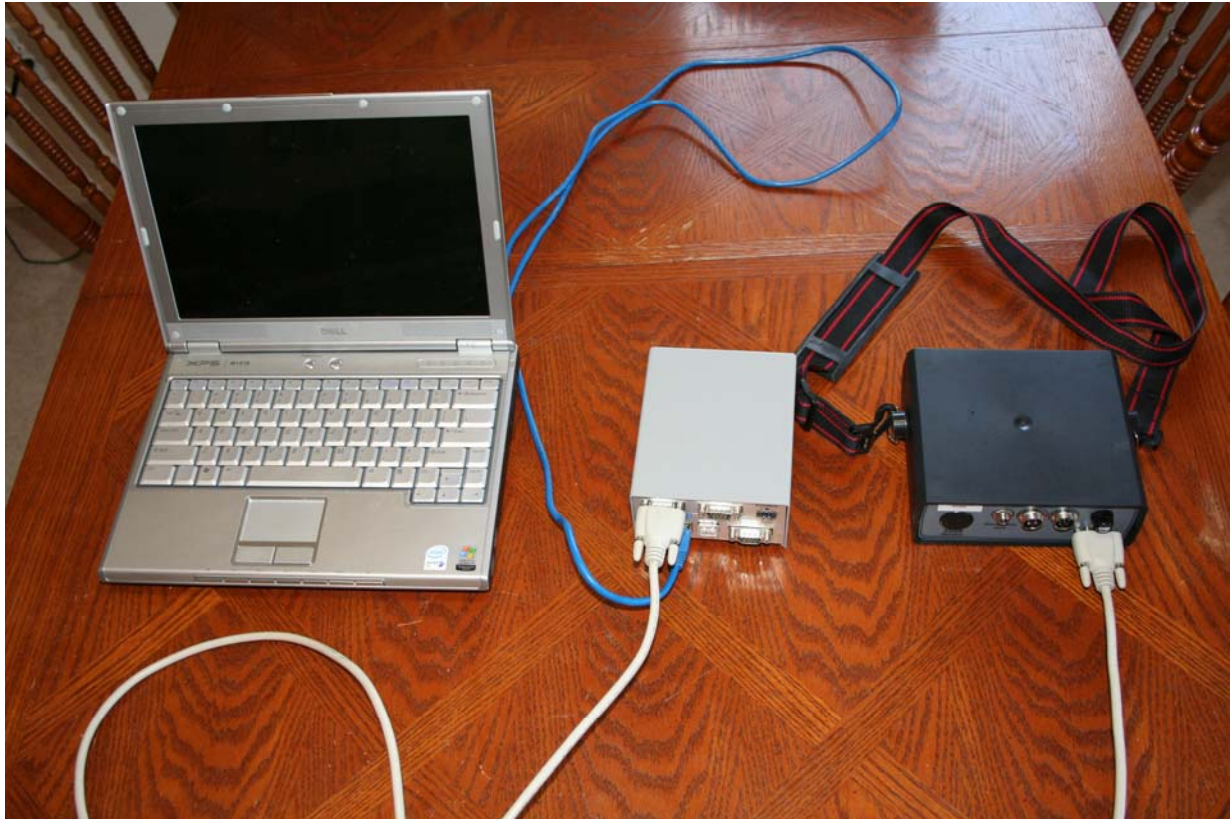
The PI revolution continues delivering smaller gold to greater depths leaving the competition behind again.

**Accurate Locators**  
Since 1992

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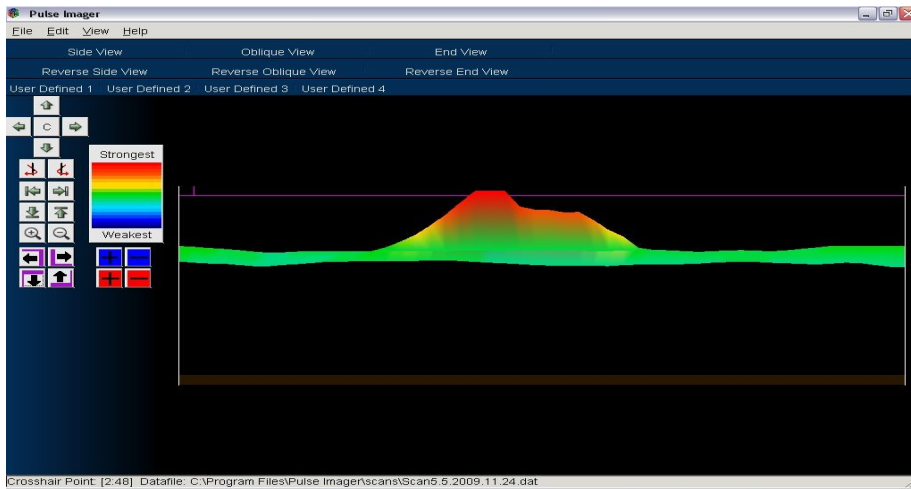


## **3-D IMAGING WITH PI PENETRATOR 5500**



**Geosurveyor 3-D Imaging software for PI Penetrator 5500 is designed to work with the imaging processor and Windows based lap tops. As you can see the data is passed from the PI Penetrator (the receiver) through the processing unit which interprets the data and communicates it to the 3-D imaging software in the lap top. The 3-D imaging software then produces the 3-D image for you to analyze. From this point you can determine target, size, and depth. You can save the data for later use or send data to various types of storage devices.**

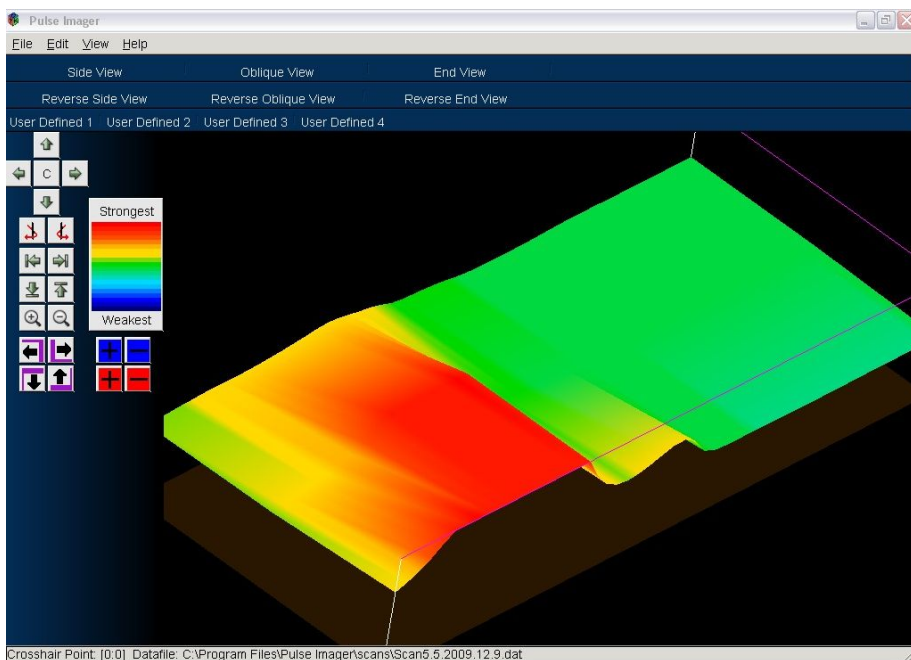
## 3-D IMAGING WITH PI PENETRATOR 5500



Target: *Coke Can*

Scanned at 5 foot/ 1.524meters under surface. Using PI Penetrator 5500 and new 18" coil blanket

The PI Penetrator 5500 Pulse 3D imaging software was designed to help discover the un-known. Helps distinguish between actual targets and trash. With proper techniques your scans will identify viable targets. The 3D Imaging software is designed to run with Windows 2000pro, Windows XP, Windows Vista. Setup instructions provided with software. Hook up a GPS system for accurate determination of location for target.



Treasure box at 6ft/ 1.82m below surface.

As seen in picture the strongest readings come from red in target. Red indicates strong target reading usually ferrous metal and/ or iron ore.

## Limited Warranty Information

Accurate Locators Inc. Warrants against defects in material or workmanship for a period of (2) years from the date of purchase. If Accurate determines the product to be defective in materials or workmanship, Accurate will replace or repair the product to the original purchaser only. To obtain warranty service worldwide, call +01 541-855-1590 or visit us at <http://www accuratelocators.com>. Please include a written description of the problem encountered. A return Merchandise Authorization ("RMA") will need to be obtained prior to returning the equipment. If equipment is returned without RMA it will not be accepted.

REPLACEMENT OF THIS PRODUCT AS PROVIDED UNDER THIS LIMITED WARRANTY SHALL BE THE EXCLUSIVE REMEDY OF THE CONSUMER. ACCURATE SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGES, INCLUDING CONSEQUENTIAL, INDIRECT AND INCIDENTAL DAMAGES, ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE PRODUCT OR FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY OR CONDITION ON THIS PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY LAW, ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some states/jurisdictions do not allow limitations on how long an implied warranty or condition lasts or exclusions or limitations or consequential or incidental damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state in the U.S. and Puerto Rico or from province or territory of Canada.

Accurate warranty is for repair or replacement only of the products that proves to be defective in workmanship or material subject to the warranty period and any other conditions set forth on the package. In some cases manufacturer's warranty may supersede Accurate Locators warranty. Physically damaged merchandise or merchandise where control seals are removed or damaged is not covered under warranty. Customer is responsible for all shipping costs to and from Accurate Locators.

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## **TECHNICAL CHARACTERISTICS:**

Working voltage: 12V.

A VGA data port is provided for connection to computer and GPS system

Baud rate: 19200

Data bits: 8

Stop bits: 1

Com port setup: 19200 8n1

Raw data format direct from ADC

Continuous power consumption: in 240mA (with no sound and light).

Pick power :> 250 W.

Maximum power consumption: 280 Ma.

Working Frequency: 100 Hz.

Sound range: 0, 1Hz-6,5kHz.

Battery: rechargeable 1, 3(2, 3-optional) Ah, hermetic, acid battery.

Charger input (adapter):100/240V 50/60 Hz/AC

Charger output: 14.6 VDC 500mA.

Battery charging time (empty):max.10 hours.

Full microprocessor control.

Automatic ground balance.

Auto tracking.

Manual tuning.

Delay control.

Graphic mode analyzing target.

Display: 20/2 LCD module with back light with three mode.

All metal/no motion mode.

Audio and visual discrimination mode (by built-in magnetometer-mensor system).

Depth control for maximized detection depth.

Reset controls for easy operation.

Headphone input: 1/4" mono jack.

External power supply.

Protection against reverse polarity.

Optimal temperature range:

55F - 122f degrees.