

Understanding your

X-TERRA

by Randy Horton (AKA Digger)

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“you”ll never know for sure... unless you read it”



CONCENTRIC
3 kHz

DOUBLE D /
CONCENTRIC
7.5 kHz

DOUBLE D /
CONCENTRIC
18.75 kHz

World's Best Metal Detection Technologies



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Dear Reader,

I was fortunate to be chosen to help field test the first series of Minelab's X-TERRA metal detectors. Since that time, I've spent thousands of hours trying to better understand how to maximize the performance of this truly amazing metal detector. Although the X-TERRA is quite capable of operating as a "turn on - and - go" detector, there are some techniques I've discovered that have improved its performance in the sites I hunt.

I primarily hunt for old coins at old sites. These sites include municipal parks, private lawns, athletic fields, homesteads, old farm sites, ghost towns and abandoned fair grounds. I've used every coil available for the X-TERRA, and made "in the field" comparisons of their effectiveness.

This eBook is not intended to replace the X-TERRA Instruction Manual that comes with the detector. But instead, is intended to help you better understand the X-TERRA's functionality and capabilities, using techniques I've developed.

Sandy AKA "Digger"
May 2011

Definitions !!!

U Ferrous:

Ferrous objects/targets contain iron and therefore are attracted to a magnet.



Conductivity:

Conductivity refers to how well a target allows electrical current to flow through it. In other words a highly conductive target has low electrical resistance and therefore allows current to flow more easily. Conversely, a target with low conductivity has high electrical resistance and does not allow current to flow easily.

Ferrous targets are categorized in the negative notch segments. And conductive targets will be found in the positive notch segments.

The term notch segment relates to where the target is placed, in regard to how ferrous or non-ferrous (conductive) it is. Each notch segment on the X-TERRA is preprogrammed to accept targets within a specific range of ferrous and/or conductive properties. Those notches below zero represent ferrous targets. Those notch segments above zero represent non-ferrous (conductive) properties. For example, a U.S. nickel typically provides a Target ID (TID) of 12 on all X-TERRA models.

The TID is the same on all models of X-TERRA because all three detectors have the number 12 represented on their scales (12 is divisible by 2, 3 and 4, representing the number of notch segments on each model). For a U.S. silver three-cent piece, all three detectors will likely register a TID of 24 (again, 24 is divisible by 2, 3 and 4). And silver dimes can register a 36 on each of the models (same thing in that 36 is divisible by 2, 3 and 4).

The thing to remember is that all three models have a maximum and minimum range of conductivity. Again ferrous targets are categorized in the negative notch segments. And conductive targets will be found in the positive notch segments. The difference between the X-TERRA models is the number of notch segments assigned to each model (see page 26).

As I mentioned, the 30 and 305 have 12 of those segments, meaning all targets will be identified as having one of twelve possible TID values. Each of those notch segments represents a four digit range of numbers (counting by 4's) -4, +4, +8, +12, +16, +20, +24, +28, +32, +36, +40, +44.

The 505 has 19 segments, meaning all targets will have one of nineteen possible TID values. Each of the 505 segments represents a three digit range of numbers (counting by 3's) -9, -6, -3, +3, +6, +9, +12, +15, +18, +21, +24, +27, +30, +33, +36, +39, +42, +45, +48 (the X-TERRA 50 is similar, with the exception of not having the +48 notch segment).



Coil Options

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The X-TERRA is a unique detector in that it can literally switch operational frequencies by simply changing to a different frequency coil.

The X-TERRA range is a unique series of metal detectors in that they can literally switch operational frequencies by simply changing to a different frequency coil. In the previous model series, the X-TERRA 30 was capable of using the 7.5 kHz coils. The X-TERRA 50 could utilize either the 7.5 kHz or the 18.75 kHz coils. And the X-TERRA 70 could utilize the 7.5 kHz, 18.75 kHz or the 3 kHz coils. The newer released 305 can utilize the 7.5 kHz or the 18.75 kHz coils. And both the 505 and 705 can use all three frequencies.

Currently there are eight coils available for the X-TERRA. Five are waterproof and three are water resistant.

Water resistant: May be splashed, washed, used in drizzling rain, or moved through wet grass. Must not be submersed under water.

Waterproof: Submersible to one meter. Ideal for shallow water wading and gold prospecting in shallow streams .

@ From Minelab's Coil Selection Guide

- The stock coil (except for the 705 Gold Pack) is a waterproof 9-inch Concentric, at 7.5 kHz. Also available in the waterproof 9-inch Concentric is a high frequency 18.75 kHz and low frequency 3 kHz.
- There are two waterproof 6-inch coils available. A small Concentric at 7.5 kHz and a small Double-D at 18.75 kHz.
- The stock coil in the 705 Gold Pack, is the 18.75 kHz water resistant elliptical Double-D, measuring 5" x 10".
- And there are two water resistant 10.5-inch Double-D coils. One at 7.5 kHz and the other at 18.75 kHz.

In a nutshell, larger coils will detect larger targets deeper than a smaller coil, but smaller coils are more sensitive to small objects. Higher frequencies are better suited for lower conductive targets, such as gold. And lower frequencies are better suited for higher conductive targets such as silver and copper. A Concentric coil will hunt deeper than a comparably sized Double-D coil, in moderately mineralized soil. But due to the design characteristics, Double-D coils are the best application for highly mineralized soil. And, a Double-D coil separates targets better than a comparably sized Concentric.

A Concentric coil will hunt deeper than a comparably sized Double-D coil, in moderately mineralized soil.



Dr. Laurence Stamatescu

Dr. Laurence Statmatescu is the inventor of VFLEX technology. He worked as a nuclear physicist in a nuclear research institute in Romania, then moved to Australia in 1992.

Laurence completed a PhD in Optics (lasers) gaining experience in electronics and signal processing. He joined Minelab's engineering team in 1996, with the XT 18000 (the predecessor of the Eureka Gold) being his first project.

VFLEX technology was Laurence's own design that he started at home as a 'spare time' project. He is a Senior Technical Manager in Minelab's engineering team and responsible for the research and development of new metal detection technologies.

Question.

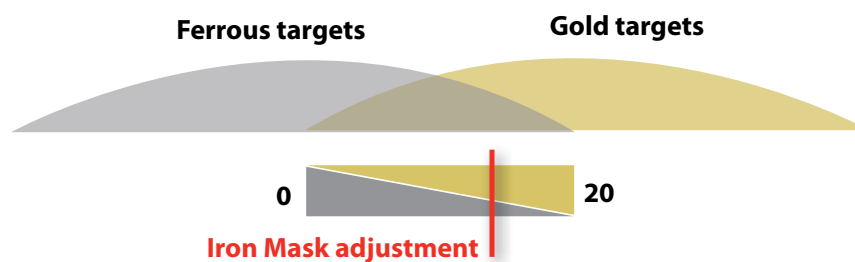
Is there a correlation between target properties when comparing the negative TID numbers (ferrous targets) while using the Coin & Treasure Mode and the Iron Mask numbers while using the Prospecting Mode? Are the Iron Mask settings an extension of the Coin & Treasure Mode's ferrous discrimination scale, but on a more refined level?

Answer.

The short answer is no. The long answer is as follows.

TID and Iron Mask have somewhat different purposes: TID aims at giving each target the best ID, while Iron Mask aims at separating the ferrous and non-ferrous targets in conditions of high mineralization. Ferrous/non-ferrous discrimination is difficult in high mineralization conditions, where in fact most of the gold nuggets are. Thus, the Iron Mask feature gives the user a way to adjust where the compromise lies. In other words, the user can choose anywhere between two extremes:

1. "I am prepared to dig each detected target, because I do not want to miss any nuggets"- In this case I set the Iron Mask at minimum (0, All metal).
2. "I do not want to dig ferrous junk, even if I might miss some nuggets"- In this case I set the Iron Mask at maximum (20).



As the mineralization makes identification harder the Iron Mask sets the boundary between what it believes to be a good or a bad target, based on both the user preference and the measurements of the ground interference.

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About the Author

Randy (or Digger as he's known) has been metal detecting in the Central US for nearly 40 years and has a passion for finding old coins at old sites. In addition to performing field tests for several manufacturers (including the Minelab X-TERRA series), he also serves as Moderator on the X-TERRA forum at Find's Treasure Forums. Digger has written several articles, and enjoys sharing his thoughts and tips on various aspects of the hobby. His detectors of choice include the X-TERRA, E-TRAC and Musketeer Advantage.



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