



EAGLE ® II SL - U.S.A.



To use your EAGLE in normal conditions, follow the simplified instructions on the control box.

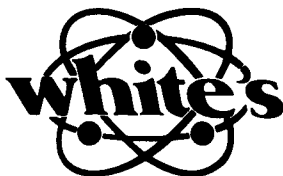
To understand assembly of your EAGLE and to learn the basics of operation, refer to the **Basic Operation Manual**.

Once the basics are mastered, to learn how to customize programs, refer to the **Advanced Programming Manual**.

To refresh your memory in the field, refer to the **Pocket Manual**.

Advanced Programming Manual

EAGLE ® II SL - U.S.A.



— Forward —

The EAGLE II SL represents the leading edge of metal detector technology. Don't expect to master all options in a single outing. To master this instrument you will need patience and practice in the field. Don't worry about options you don't fully understand. The factory settings available with the starting programs are well suited to most conditions. Most importantly, do not attempt to understand this Advanced Programming Manual without first understanding the Basic Operation Manual and reading the Pocket Manual at least once.

Advanced Programming Manual

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HOW TO USE THIS MANUAL

Each control is described through the four questions:

1. *What's it for?*
2. *Why use it?*
3. *When should I use it?*
4. *What else should I know?*

Many controls do several different things which will be stated at the first of each section. "It does three different things." In these sections, number 1 under "What's it for?" corresponds to number 1 under "Why use it?" etc. To best understand each use, read number 1 under "what's it for?" then read number 1 under "Why use it?", then read number 1 under "When should I use it?", etc. Then continue by going back to number 2 under the same section and read number 2 "What's it for?", number 2 "Why use it?", number 2 "When should I use it?", etc.

Use the Table of Contents in the front to quickly refer to specific controls.

Use the INDEX in the back to quickly refer to specific options.

Due to the fact that sometimes a control, mode, function and action can have the same name, the following conventions are observed throughout this manual to avoid confusion:

Controls will be in UPPERCASE plain. For example: the AUDIO MODE control.

Modes will be in Upper/lower case plain. For example: the Audio Mode.

Actions will be in **Upper/lower case bold**. For example: **On/Off** as opposed to the ON/OFF control or something being simply on/off.



EXPLANATION OF CONTROLS

ON/OFF

What's it for?

Turning the power on/off.

Why use it?

So that the battery can power the instrument's functions and the battery power can be turned off when you're through using it.

When should I use it?

When you want to turn the instrument **On** and search. Push ON/OFF again when you're through and want to turn the instrument **Off**.

What else should I know about ON/OFF?

The ON/OFF control automatically switches **Off** if none of the instrument's controls are used for approximately 15 minutes.

AUDIO MODE

(It does three different things.)

What's it for?

1. Directly after turning power on, AUDIO MODE is used to select between the six available starting programs:
 - CJ — Coin & Jewelry
 - PP — Prospecting & Relic
 - bh — Beach Hunting
 - ch — Competition Hunting
 - U1 — User 1
 - U2 — User 2
2. After Air/Gnd balancing, AUDIO MODE is used to select between the three available Audio Modes:
 - A — Threshold: Display/Tone independent
 - B — Silent Search: Display/Tone coincide
 - C — Tone I.D.: Display/Tone coincide. DISC On = Full Tone I.D./DISC Off = Two Tone I.D.
3. If the TRIGGER SWITCH is squeezed and held, AUDIO MODE is used to select between three different audio frequencies (pitch).
 - A — Low Pitch
 - B — Normal Pitch
 - C — High Pitch

Why use it?

1. To select a starting program according to the type of hunting you're doing saves time as all options automatically start out at settings suited to your needs.
2. The three Audio Modes act and sound different from each other. Some operators like the background tone available in the "A" Threshold, others prefer no background tone "B" Silent Search and still others prefer more audio information about the metal being detected — "C" Tone I.D. There are two Tone I.D. modes available; when DISC is on, normal A.C. Tone I.D. is active; when DISC is off, Two-Tone I.D. is active which combines A.C. and D.C. modes for unique sound and performance characteristics.
3. Some operators like the audio frequency (pitch) to be either lower or higher than normal so they can hear it better and/or feel more comfortable with it.

When should I use it?

1. When selecting a starting program (directly after pressing ON/OFF to turn the instrument **On**), or after squeezing and holding TRIGGER and pushing AIR so as to return to the starting programs.
2. To select an Audio Mode after Air/Gnd balancing.
3. To select an audio frequency (with TRIGGER squeezed and held).

What else should I know about AUDIO MODE?

1. After Air/Gnd balancing, if you want to go back to select a different starting program, you can either turn the unit **Off** then back **On** and start over, or squeeze and hold TRIGGER and push AIR, release TRIGGER, select a different starting program and Air/Gnd balance (to keep the same Air/Gnd balance push LRN REJ SET).

If you are using one of the starting programs, and modify it through the various Audio, Disc, and Advanced Options, it can be saved for future use as a custom starting program (U1 or U2). Once you have made the desired modification to the options, squeeze and hold the TRIGGER and push AIR, release the TRIGGER and use the AUDIO MODE to select U1 or U2; you can store two custom starting programs. Now push LRN ACC CLR (to "save"). You can then turn the instrument off to quit or squeeze and release the TRIGGER to continue operating. U1 and U2 will save custom starting programs regardless of the battery condition or installation. After you have saved your custom program, squeezing and releasing the TRIGGER will return to normal operation. However, if you choose to select a starting program other than the custom program you just stored, LRN REJ SET must be pushed or an Air/Gnd balance must be completed. LRN REJ SET maintains original Air/Gnd balance. Squeezing and releasing the TRIGGER will return to the starting program originally selected.

2. Audio Mode "A" (Threshold) works electronically different than either "B" (Silent Search), or "C" (Tone I.D.). When operating in "A" the display indications and tone (beep) function independently. In Audio Modes "B" and "C" the display and tone coincide. When operating in "C", with DISC On, the higher the V.D.I. display number, the higher the audio frequency (pitch). Rejected V.D.I. numbers may either produce scratchy tones or no tone at all. When DISC is Off, Audio Mode "C" makes only two different tones... high pitch for good targets and low pitch for rejected targets. A.C. and D.C. modes operate simultaneously, thus when the loop is in motion the instrument acts like a motion mode and when not in motion, it acts like a non-motion all-metal mode.
3. When wanting to change the audio frequency (pitch), if the three that are available when holding the TRIGGER and pressing AUDIO MODE are not satisfactory, Advanced Option "A" (Expanded Audio Frequency) offers 100 more audio frequencies to choose from.

AIR

(It does two different things)

What's it for?

1. After turning **On** and selecting a starting program, holding the loop in the air away from the ground and all metals and pushing AIR prepares the instrument for Gnd (ground) Balance.
2. While searching, if you want to switch to a different starting program, or have developed a custom program you want to save, squeeze and hold trigger, then push AIR, release trigger. You may now either select a different starting program with AUDIO MODE control, or save your current program by selecting either "U1" or "U2" and pressing LRN ACC CLR to save.

Why use it?

1. The instrument must first be Air Balanced before it can be accurately Gnd (ground) Balanced.
2. If you ever want to save a custom program for future use, you have to go back to "U1" or "U2" in this manner.

When should I use it?

1. After turning the instrument **On** and selecting a starting program push AIR while holding the loop in the air away from the ground and all metals to prepare for Gnd (ground) balancing. Any time you want to Gnd (ground) Balance first Air Balance.
2. To return to select a different starting program squeeze and hold TRIGGER, then push AIR, and release TRIGGER.

What else should I know about AIR?

So long as the TRIGGER is not squeezed and held or pushed forward to lock, you can re-Air and Gnd Balance any time you feel the need. You should re-Air and Gnd Balance when you see dramatic changes in the ground such as dry sand to wet sand, red dirt to brown dirt, dirt to sand, etc.

Once you push AIR you have to then press GND before the instrument will allow you to continue.

If you push AIR and the instrument makes a "beep" "beep" "beep" sound, and continues to

show the Air prompt, move the loop away from ground, metal, or electrical interference and again push AIR. Continue until Gnd (ground) prompt is visible.

GND

What's it for?

Setting the detector to ignore the ground (ground balance).

Why use it?

The detector will detect metals deeper and work better if the ground is rejected.

When should I use it?

Complete an Air/Gnd Balance every time you start to hunt in an area, and/or anytime you see a dramatic change in the ground such as dry sand to wet sand, red dirt to brown dirt, dirt to sand, etc.

What else should I know about GND?

Always hold the loop the height from the ground you will be sweeping it at when pushing GND.

When pushing GND the different beeps mean:

"beep"
"beep" = a good Gnd setting

"beep" "beep" "beep"
"beep" "beep" = a bad Gnd setting; walk forward and Air/Gnd again.

"beep"
"beep" "beep" "beep"
"beep" = Gnd setting is equal to minimum factory preset, good for low mineral areas or testing.

LAMP

(It does two different things)

What's it for?

1. Turning the night light on/off.
2. Gives a voltage indication of remaining battery power (push and hold LAMP).

Why use it?

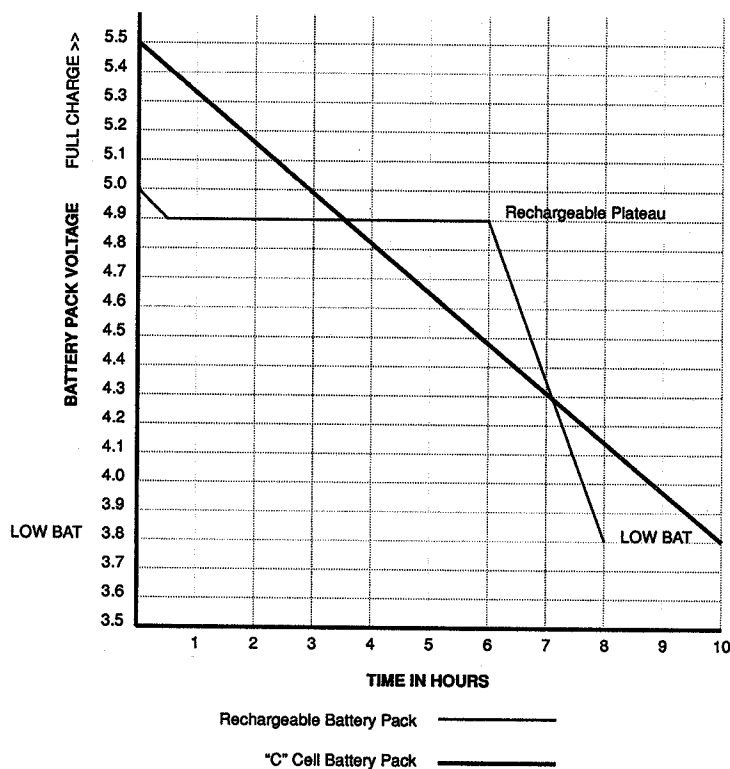
1. The Lamp allows the operator to see the display in low light conditions.
2. Checking the voltage of the battery allows the operator to judge about how long the battery can be used before needing to be recharged or replaced.

When should I use it?

1. Use the Lamp in low light conditions.
2. Check the battery voltage before leaving home for a long search. If the voltage isn't at least 4.9 plan on taking a backup battery pack with you. A backup battery pack is a good idea for any long search.

What else should I know about LAMP?

1. Use of the lamp reduces battery life.
2. When checking battery voltage a display indication of 49 indicates 4.9 volts. When using freshly charged rechargeable batteries the battery voltage may initially check somewhere in the 5.0 volt area. After some use, the battery voltage will quickly drop to somewhere around 4.9 volts and plateau there for most of its remaining life. Once it drops from this plateau it will quickly drop below a usable voltage level and require a charge — LOW BAT appears on display when the battery is in need of recharging.



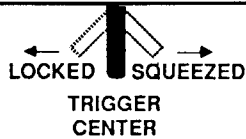
The non-rechargeable "C" cell battery pack is far more predictable as it loses power at a fairly steady rate. Performance will be the same whether the rechargeable battery or "C" cell batteries are used although "C" cells typically discharge at a slower rate. Rechargeable batteries do save money over the long haul.

Caution: Four "C" cell batteries in the holder that test in excess of 6.0 volts should not be used until they're ran down in another application such as flashlight use, to test at 6.0 volts or less.

How long batteries last, varies a great deal depending on the selection of options, temperature, and individual models.

TRIGGER

(It does four different things)



What's it for?

The TRIGGER SWITCH located on the handle is the most used control on this model. This three position switch completes four important functions:

1. The center position is used for normal searching.
2. Squeezing and holding this switch changes the detector to the pinpointing and depth reading mode. When locking this switch forward, the detector acts the same as squeezing and holding it; lock and squeezed do the same thing.
3. When squeezing and holding this switch or locking it forward, most of the controls change to adjust different options.
4. Squeezing and releasing this switch resets and returns the detector to a normal search mode.

Why use it?

Use of the TRIGGER is both convenient and necessary to access features otherwise inaccessible.

When should I use It?

1. For normal searching— center position.
2. For pinpointing — squeezed and held or locked position.
3. To change the options most of the controls adjust — squeezed and held or locked position.
4. Anytime you want to reset or return to the last used program — squeeze and release.

What else should I know about the TRIGGER?

Once you've found a good metal and want to pinpoint exactly where and how deep it is, squeeze and hold the TRIGGER and "X" the area. Note that the strongest response and shallowest depth reading indicates center. Once you determine depth, you can further pinpoint by releasing the TRIGGER and resqueezing it with the loop held over the area where the metal is located. You could release and resqueeze the TRIGGER several times for tighter pinpointing, however, keep two things in mind:

1. Once you release and resqueeze the TRIGGER with the loop held over the area, depth reading accuracy drops off.
2. Once through, squeeze and release the TRIGGER with the loop held waist level to reset before continuing to search for other metals.

If you ever get lost in the programming, squeezing and releasing the TRIGGER usually returns to normal operation. If it doesn't turn the instrument off and start over.

If while using your detector you want to take a break or wish to conserve battery power while digging, you can simply turn it **Off**. When you are ready to resume, turn the detector back **On** and just squeeze and release the TRIGGER to return the instrument to the program last being used, including Air/Gnd.

SENS (Sensitivity)

(It does three different things)

What's it for?

The SENS control is used to adjust the sensitivity of the three major operating modes:

1. The SENS control during normal operation (TRIGGER in center position) selects A.C. (Motion Mode) sensitivity levels 1–7 with 7 being the most sensitive. When Disc is **On** (with prompt), Audio Modes A, B and C are motion modes. When Disc is **Off** (no prompt) Audio Mode B is a motion mode. S.A.T. must be **Off** (no prompt) to notice non-motion characteristics.

2. When the TRIGGER is squeezed and held or locked forward the SENS control selects D.C. (Non-Motion Mode) sensitivity levels 1–5 with 5 being the most sensitive. When the Disc is **Off** (no prompt) Audio Modes A and C are non-motion modes. S.A.T. must be **Off** (no prompt) to notice non-motion characteristics.
3. When the TRIGGER is squeezed and held or locked forward, the SENS control in addition to adjusting D.C. (Non-Motion Mode) sensitivity levels 1–5, also adjusts the sensitivity of the pinpointing mode.

Why use it?

1. When using starting programs such as CJ, bh, ch, the Sens levels 1–7 adjust how sensitive (how deep) the instrument responds to metals. For maximum depth use the highest number 1–7 that works smoothly.
2. When using the “PP” starting program, if the TRIGGER is squeezed and held or pushed forward to lock, the Sens levels 1–5 adjust how sensitive (how deep) the instrument responds to metals. For maximum depth use the highest number 1–5 that works smoothly.
3. When wanting to pinpoint shallower metals, lower D.C. Sens settings pinpoint better. When wanting to pinpoint deep metals higher D.C. Sens settings work better.

When should I use it?

1. Adjust A.C. Sens levels 1–7 with TRIGGER in center position either when the detector is not operating smoothly (reduce it to a lower number) or when detector is operating smoothly (increase it to a higher number for better depth).
2. Adjust D.C. Sens levels 1–5 with TRIGGER squeezed and held or pushed forward to lock; either when the detector is not operating smoothly (reduce it to a lower number) or when the detector is operating smoothly (increase it to a higher number for maximum depth).
3. Adjust D.C. Sens levels 1–5 with TRIGGER squeezed and held or pushed forward to lock; either when the detector is not pinpointing well (detects over wide area — reduce it to a lower number) or when the detector is having trouble responding to deep metals (increase it to a higher number).

What else should I know about (SENS)?

While the SENS control is one way of increasing the sensitivity (depth) of this model, it’s not the only way. Through the Advanced Options — Sig Bal, V.D.I. Sens, and User A.C. Sens will effect sensitivity more dramatically. Additionally, many other options have an effect on sensitivity (depth).

Keep in mind too much sensitivity can cause the instrument to be unstable (misbehave).

VOL(▲)/VOL(▼)

(It does three different things)

What’s it for?

The VOL(▲)/VOL(▼) controls are used to adjust three different options:

1. When the TRIGGER is in the center position, pushing the VOL(▲) increases the threshold (background tone). Pushing VOL(▼) decreases the threshold (background tone).
2. When the TRIGGER is either squeezed and held or pushed to lock, the VOL(▲) increases the volume of the beep produced when metal is detected. Pushing VOL(▼) decreases the volume of the beep produced when metal is detected.
3. When in the advanced options (TRIGGER squeezed and held or locked and pushing EDIT(▲)), the VOL(▲)/VOL(▼) controls select which Advanced Option is to be adjusted.

Why use it?

1. Optimum threshold (background tone) is a hum so quiet an operator can barely hear it. Since everyone’s hearing capability is different, threshold should be adjusted to the operator’s hearing.

2. Some operators like metals to produce loud beeps. Others prefer quieter beeps. An operator should adjust the volume according to their wants and hearing needs.
3. To select an Advanced Option to be adjusted, the VOL(▲)/VOL(▼) must be used.

When should I use it?

1. Anytime the volume of the threshold (background tone) annoys you during normal operation — adjust the threshold.
2. Anytime you want to make the beeps that metals produce louder or quieter — adjust the volume while squeezing and holding or locking forward the TRIGGER.
3. When you desire to enter the Advanced Options mode — squeeze and hold TRIGGER and press EDIT(▲). You may then select an advanced option using the VOL(▲)/VOL(▼) controls. Advanced Options appear as the top number on the display.

What else should I know about VOL(▲)/VOL(▼)?

The volume of both the threshold (background tone) and beep over metals will affect battery life. Threshold level is shown on the bar graph on the display. The volume of the beep a target produces is demonstrated as an increase/decrease of the beep during adjustment.

AUTO TRAC®

(It does three different things)

What's it for?

The AUTO TRAC® control turns on/off three different options:

1. Auto Trac® **On** (indicated by a prompt) changes ground rejection (Air/Gnd Balance) automatically as the detector notices changes in the ground.
2. When the TRIGGER is squeezed and held or pushed forward to lock, AUTO TRAC® turns on/off S.A.T. (Self Adjusting Threshold).
3. When in the Disc Options (push EDIT(▼) with TRIGGER in center position) AUTO TRAC® turns on/off Two Quadrant V.D.I.

Why use it?

1. By automatically updating the ground rejection (ground balance), Auto Trac® will improve depth by maintaining an accurate ground rejection setting.
2. S.A.T. (Self Adjusting Threshold) maintains the threshold tone when operating in the non-discriminate modes. Non-discriminate modes are susceptible to threshold drift.
3. Two Quadrant V.D.I. turns on/off a second scale of V.D.I. display numbers below 00 (iron) mostly for better identification of ferrous (iron) metals. Numbers LOW 01 – LOW 96 are the second V.D.I. quadrant.

When should I use it?

1. When you don't want the instrument to track ground changes. For example, if you want to experiment with specific mineral samples, push AUTO TRAC® with TRIGGER in center position to turn Auto Trac® **Off** (no prompt).
2. If you are developing a custom program that is going to be non-discriminate, we suggest S.A.T. be **On** — (TRIGGER squeezed and held or pushed forward to lock, push AUTO TRAC®; prompt should be **On**).
3. When you are developing a custom program and want more display V.D.I. information about ferrous (iron) metals. Push EDIT(▼) with TRIGGER in center position then push AUTO TRAC® to turn **On** Two Quadrant V.D.I. (prompt **On**).

What else should I know about Auto Trac®?

1. Auto Trac® is desirable in most conditions.
2. S.A.T. if turned **On**, can be further adjusted in the Advanced Options (S.A.T. Delay).
3. When using Two Quadrant V.D.I., the display will only show LOW unless the specific V.D.I. number is Edited **Clear** for Accept in the Disc Options or Visual Disc is turned **Off** in the Disc Options.

DISC ON

(It does two different things.)

What's it for?

1. When the TRIGGER is in the center position the DISC ON turns on/off the discrimination (rejection against junk) of the speaker tone (beep).
2. When in the Disc Options (push EDIT(▼) with TRIGGER in center position) DISC ON turns on/off Visual Discrimination, (display does or doesn't show rejected V.D.I. indications).

Why use it?

1. If you want to discriminate (cancel) the responses of junk metals, DISC ON should be **On** (prompt). If you want to detect (beep) all types of metals the DISC ON should be **Off** (no prompt).
2. If you want to discriminate (cancel) the responses of junk metals with the display V.D.I. indication, Visual Discrimination should be **On**, (push EDIT(▼) with TRIGGER in center position) push DISC ON (prompt **On**).
3. If an operator wants all types of metals to produce a display indication, Visual Discrimination should be **Off**, (push EDIT(▼) with TRIGGER in center position) push DISC ON (no prompt).

When should I use it?

1. If you want to change the detector so that it either responds to all types of metals (DISC ON **Off** — no prompt) or change it so that it rejects junk (DISC ON **On** — prompt).
2. If you want to change the display so that it shows an indication for all metals (push EDIT (▼) with TRIGGER in center position, push DISC ON — no prompt) or you want the display to not show rejected metals (push DISC ON — prompt).

What else should I know about DISC ON?

1. Regardless of whether the DISC ON prompt is on or off, unless the discriminator is set up, either from a preset starting program or through EDITING, rejection will not occur.
2. The Visual Discrimination affects only the display. If it is **On** (with prompt) rejected V.D.I. numbers do not appear on the display. If **Off** (no prompt) all metals produce V.D.I. indications. You can use Visual Discrimination while detecting (with beep) all metals.

LRN ACC CLR (Learn Accept Clear)

(It does four different things)

What's it for?

1. When in normal operation (TRIGGER center position) push LRN ACC CLR and pass a sample metal past the loop 4–6 times or until **Accepted**; pushing LRN ACC CLR again **Learns** that sample metal and any others like it to be accepted (CLR).
2. When the TRIGGER is squeezed and held or pushed forward to **Lock**, LRN ACC CLR selects Normal or High Mineral Transmit Power. No prompt indicates Normal. Prompt indicates High Mineral. Used to deal with extreme ground conditions.

3. When in Disc Options (**TRIGGER Centered**; push EDIT(▼)) pushing LRN ACC CLR clears the V.D.I. number (selected with the EDIT(▲)/EDIT(▼) controls) to be accepted. Pushing LRN ACC CLR twice locks **Accept** for all numbers reviewed with the EDIT controls.
4. When in U1 or U2 starting program, LRN ACC CLR loads the current settings into U1 or U2 for future use as a custom starting program.

Why use it?

1. If you have a sample of a metal you want to be sure you will detect, push LRN ACC CLR, pass it by the loop 4–6 times and then push LRN ACC CLR again and you will be sure to detect any similar items.
2. If you're having trouble with the ground conditions indicated by the White's logo fading or flashing on the display, switching to High Mineral Transmit Power will improve performance.
3. When in the Disc Options, LRN ACC CLR must be pushed to **Clear** V.D.I. numbers to be **Accepted**.
4. To save two of your favorite custom programs for future use as a starting program.

When should I use it?

1. If you have a sample metal and want to program it for **Accept**, however you don't know the proper V.D.I. numbers, use LRN ACC CLR.
2. If White's logo on the display is fading or flashing select High Mineral Transmit Power.
3. When in Disc Options use LRN ACC CLR to **Clear** V.D.I. numbers to be **Accepted**. If you want to **Clear** for **Accept** a large number of V.D.I. numbers, push LRN ACC CLR twice then use the EDIT(▲)/EDIT(▼) to select all the V.D.I. numbers to be accepted.
4. Once you have customized a program and want to save it, squeeze and hold TRIGGER, push AIR, release TRIGGER, push AUDIO MODE to select U1 or U2 then push LRN ACC CLR to **Save**.

What else should I know about LRN ACC CLR?

1. When pushing LRN ACC CLR and passing sample metals past the loop, watch the V.D.I. numbers. If they vary throughout the V.D.I. scale 00–95 discontinue attempt, squeeze and hold TRIGGER and push AIR, release TRIGGER and Air/Gnd Balance to erase attempt. Do not use this method of programing on metal alloys such as bottle caps that produce varied V.D.I. display numbers.
2. When switching to High Mineral Transmit POWER always Air/Gnd Balance and keep in mind depth reading calibration will lose some accuracy.
3. When in the Disc Options pushing LRN ACC CLR once clears the V.D.I. number shown on the display to be accepted. When pushed twice the V.D.I. number shown on the display and all others viewed with the EDIT controls will be accepted. When pushed three times it returns to individual (one at a time) V.D.I. number editing.
4. It is advisable to save two of your custom programs for future use as starting programs U1 and U2. U1 and U2 start out just like **CJ Coin & Jewelry** until you load one of your custom programs into them. Your custom programs will remain until a different one is saved. You cannot use U1 or U2, make modifications to it, and expect those modifications to remain, unless you push LRN ACC CLR after modifications are completed to **Save** those settings as a starting program.

LRN REJ SET (Learn Reject Set)

(It does four different things)

What's it for?

1. When in normal operation (TRIGGER center position) pushing LRN REJ SET and passing a sample metal past the loop 4–6 times or until rejected, then pressing LRN REJ SET again **Learns** that sample metal and any others like it to be **Rejected** (Set).
2. When the TRIGGER is squeezed and held or pushed forward to **Lock**, LRN REJ SET selects **On/Off** the V.C.O. (Voltage Controlled Oscillator).

3. When in the Disc Options (TRIGGER **Centered** push EDIT(▼)) pushing LRN REJ SET **Sets** the V.D.I. number (selected with the EDIT(▲)/EDIT(▼) controls) to be **Rejected**. Pushing LRN REJ SET twice locks accept for all numbers reviewed with the EDIT controls.
4. Once returned from normal operation to starting programs, (TRIGGER squeezed and held push AIR release TRIGGER) when a different starting program is selected, pushing LRN REJ SET loads that new program and returns to operation, maintaining the original Air/Gnd Balance.

Why use it?

1. If you have a sample of a metal you want to be sure you will reject (discriminate) push LRN REJ SET, pass it by the loop 4–6 times and then push LRN REJ SET again, and you will be sure to reject any similar items.
2. Voltage Controlled Oscillation has a particular sound many operators like. It also has advantages in pinpointing. Dynamic range is increased when using V.C.O.
3. When in the Disc Options, LRN REJ SET must be pushed to **Set** V.D.I. numbers to be **Rejected** (discriminated).
4. Once returned to starting programs if a different starting program is selected, push LRN REJ SET to return to normal operation.

When should I use it?

1. If you have a sample metal and want to program it for reject and you don't know the proper V.D.I. numbers, use LRN REJ SET.
2. If you like V.C.O. use it. It only works in the pinpoint mode (TRIGGER squeezed and held or pushed forward to **Lock**) and non-discriminate (DISC OFF) modes.
3. When in Disc Options, use LRN REJ SET to **Set** V.D.I. numbers to be **Rejected**. If you want to **Set** for **Reject** a large number of V.D.I. numbers, push LRN REJ SET twice then use the EDIT(▲) EDIT(▼) controls to select all the V.D.I. numbers to be accepted.
4. Once you've returned to the starting programs from normal operation, if a different starting program is selected, pushing LRN REJ SET returns to normal operation and maintains original Air/Gnd Balance.

What else should I know about LRN REJ SET?

1. When pushing LRN REJ SET and passing sample metals past the loop watch the V.D.I. numbers (Visual Disc Off). If they vary throughout the V.D.I. scale 00–95 discontinue attempt, squeeze and hold TRIGGER and push AIR, release TRIGGER and Air/Gnd Balance so as to erase all memory of attempt. Do not use this method of programming on metal alloys such as bottle caps that produce varied V.D.I. display numbers.
2. V.C.O. performance is altered significantly by Advanced Option "A" — Expanded Audio Frequency. Dynamic range can be increased or decreased by this Advanced Option. Dynamic range is the amount of tone variation between initial response and peak response.
3. When in the Disc Options, pushing LRN ACC CLR once **Clears** (approves) the V.D.I. number shown on the display to be **Accepted**. When pushed twice the V.D.I. number shown on the display and all others viewed with the EDIT controls will be accepted. When pushed three times it returns to individual (one at a time) V.D.I. number editing.
4. Once you've returned to the starting programs from normal operation, (squeeze and hold TRIGGER, push AIR release TRIGGER), if a different starting program is selected, you must either push LRN REJ SET to return to normal operation or Air/Gnd Balance. If the TRIGGER is squeezed and released after selecting a different starting program, the instrument will return to the prior program you were using. If a custom program is saved, you can squeeze and release the TRIGGER, push LRN REJ SET, or Air/Gnd Balance to return to the custom program saved.

EDIT(▲)/EDIT(▼)

(It does three different things)

What's it for?

1. When using the following starting programs: **CJ Coin & Jewelry**, **bh Beach Hunting**.
 - a. When the TRIGGER is in the center position pushing either EDIT control switches to the Disc Options mode.
 - b. Once in the Disc Options mode the EDIT controls are used to select V.D.I. numbers for possible change (Reject or Accept).
 - c. If the TRIGGER is squeezed and held, pushing either EDIT control switches to the Advanced Option mode.
 - d. Once in the Advanced Option mode, the EDIT controls are used to make adjustments to the Advanced Option selected with the VOL(▲)/VOL(▼) controls.
2. When using the **PP Prospecting & Relic** starting programs:
 - a. With the TRIGGER in the center position, pushing EDIT(▲)/EDIT(▼) manually adjusts ground rejection (ground balance).
 - b. With the TRIGGER squeezed and held, EDIT(▼) switches to the Disc Options.
 - c. With the TRIGGER squeezed and held, EDIT(▲) switches to the Advanced Options.
3. When using the **CH Competition Hunting** starting program:
 - a. With the TRIGGER in the center position, pushing EDIT(▲)/EDIT(▼) manually adjusts operating frequency.
 - b. With the TRIGGER squeezed and held, EDIT(▼) switches to the Disc Options.
 - c. With the TRIGGER squeezed and held, EDIT(▲) switches to the Advanced Options.

Why use it?

1. When using the **CJ Coin & Jewelry** and **bh Beach Hunting** starting programs, you may want to make custom changes to the Disc Options and/or the Advanced Options.
2. When using the **PP Prospecting & Relic** starting program, often slight manual adjustment to the ground rejection (ground balance) improves performance. You may also wish to make custom changes to the Disc Options and Advanced Options.
3. When using the **ch Competition Hunting** starting program sometimes interference from other metal detectors occurs. By shifting to a different operating frequency, often such interference is avoided. You may also wish to make custom changes to the Disc Options and Advanced Options.

When should I use it?

1. Whenever you want to make changes in the Disc Options or Advanced Options.
2. When using the **PP Prospecting & Relic** starting program, if ground conditions are difficult, and you hear a faint beep but can barely tell if it's a metal, slight alterations to the ground reject may improve the response. Also, if you're not using Auto Trac® (prompt **Off**) a permanent manual ground balance bias similar to Advanced Option "b" (Auto Trac® Offset) can be selected.
3. When using **ch Competition Hunting** if your detector or your friend's starts beep, beep, beeping, shift operating frequencies.

What else should I know about EDIT(▲)/EDIT(▼)?

1. It's a good idea to make it a habit of pushing EDIT(▼) to go to Disc Options and when holding in TRIGGER, pushing EDIT(▲) to go to the Advanced Options.

2. When using the PP Prospecting & Relic starting program, simply pushing the EDIT controls makes only a slight adjustment to ground rejection; **Holding** either EDIT control makes dramatic ground rejection adjustment. Check ground rejection by squeezing and holding the TRIGGER with the loop at waist level then lowering and lifting the loop from the ground. Little or no change in threshold indicates correct ground rejection. If there is a big change in threshold, make sure you're not lowering the loop over a metal. Manual adjustments to the ground rejection will be temporary unless Auto Trac® is turned off.
3. When using the ch Competition Hunting starting program, the best performance will be achieved at the normal operating frequency. As operating frequency is varied, V.D.I. calibration and depths of detection vary slightly as well. As operating frequency is adjusted, higher frequencies are indicated by a slightly high frequency threshold, lower frequencies are indicated by a slightly lower frequency threshold.

SIG BAL

What's it for?

For dealing with ground conditions by adjusting the loop receiver signal. Used in combination with Audio Options, Normal/High Mineral Transmit Power, White's logo on the display, and the Air/Gnd Balance.

Why use it?

For optimum detection depth, sensitivity, and stability.

When should I use it?

1. If the White's logo on the display is flashing on and off or fades out completely, select High Mineral Transmit Power by squeezing and holding the TRIGGER, press LRN ACC CLR (prompt visible) and release TRIGGER. After changing transmit power always re Air/Gnd Balance.
2. After selecting High Mineral Transmit Power, or if you want maximum depth, sweep the loop over ground that's free of metal while slowly turning the SIG BAL control clockwise. Stop when White's logo on the display starts flashing on/off and back SIG BAL off counterclockwise so White's logo is always visible. If the White's logo never flashes on/off or fades, use the farthest clockwise SIG BAL setting which allows smooth stable operation. Always re Air/Gnd Balance after making SIG BAL adjustments.

What else should I know about SIG BAL?

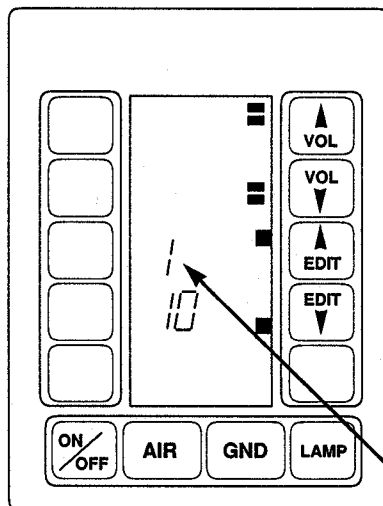
SIG BAL settings other than "Preset" will alter Depth Reading indications.

Normal & High Mineral Transmit Power are adjustments to the loop's transmit signal.

SIG BAL adjusts the loop's receive signal.

DESCRIPTION OF CONTROLS

"Advanced Options"



TRIGGER: To enter Advanced Options **Lock** TRIGGER and push EDIT(▲).

VOL(▲)/VOL(▼): Press to select between the various Advanced Options designated by the top number on the display which corresponds to the options below.

EDIT(▲)/EDIT(▼): Press to adjust the particular advanced option selected with the VOL(▲)/VOL(▼) controls. Adjustment appears as the bottom number on the display.

Advanced Option	Available Settings
1 — S.A.T. Delay	0 (fast) through 10 (slow)
2 — B.C. (Bottle Cap) Rejection	0 = Normal; 1 = 15% more Rejection; 2 = 30% more Rejection
3 — Search Speed	0 = Normal; 1 = Fast Recovery
4 — Track Level	1 (fast) through 25 (slow) tracking
5 — V.D.I. Sensitivity	1 (maximum) through 50 (minimum)
6 — Operating Frequency	1 = 6.0 KHz; 2 = 6.2 KHz; 3 = 6.4 KHz; 4 = 6.6 KHz (normal); 5 = 6.8 KHz; 6 = 7.0 KHz; 7 = 7.2 KHz
7 — User A.C. SENS	0 = Off. Numbers 1–99 represent custom settings. Lower numbers are more sensitive. Appears as "0" on regular SENS control
8 — Prospecting	0 = Off; 1 = Absolute; 2 = No Labels; 3 = Both
9 — Auto Trac®	0 = Off; 1 = See Trac; 2 = No Trac Inhibit; 3 = Both
A — Expanded Audio Frequency	0 = Low Frequency; 50 = Normal; 99 = High Frequency
b — Auto Trac® Offset	5 = X-Large Positive Ground Tracking 4 = Large Positive Ground Tracking 3 = Medium Positive Ground Tracking 2 = Small Positive Ground Tracking 1 = Slightly Positive Ground Tracking 0 = Perfect Ground Tracking Low 1 = Slightly Negative Ground Tracking Low 2 = Small Negative Ground Tracking Low 3 = Medium Negative Ground Tracking Low 4 = Large Negative Ground Tracking Low 5 = X-Large Negative Ground Tracking

EXPLANATION OF ADVANCED OPTIONS

1. S.A.T. (Self-Adjusting Threshold) DELAY — 0 (Fast) through 10 (Slow)

What's it for?

Used to maintain threshold (background tone) when operating with DISC off.

Why use it?

When DISC is off the detector's circuits are susceptible to threshold drift. S.A.T. compensates for threshold drift.

When should I use it?

When operating with DISC off, if the threshold (background tone) is not being maintained (non-metal causing changes in threshold) a different S.A.T. should be selected. As a general rule ground inconsistent in composition requires a faster S.A.T. delay. When the ground is fairly consistent in composition, a slower S.A.T. delay generally works better.

What else should I know about S.A.T. Delay?

S.A.T. starts out turned **On** in all starting programs with a recommended delay according to each use. S.A.T. is turned **On/Off** by holding TRIGGER and pushing AUTO TRAC®. When DISC is **On** and/or when the TRIGGER is held for pinpointing, S.A.T. will have little effect.

2. B.C. (Bottle Cap) REJECTION — 0 = Normal; 1 = 15% more rejection; 2 = 30% more rejection

What's it for?

Used to optimize the capability to reject junk.

Why use it?

The DISC (rejection of junk) may need to be adjusted for particular areas to allow the operator to ignore such junk.

When should I use it?

When operating with DISC **On** if an operator has difficulty hearing the differences between the sound (beep) over junk and the sound (beep) over good metals, more rejection should be selected.

What else should I know about B.C. REJECTION?

As the rejection is increased all beeps sound more scratchy. The junk sounds more scratchy than the good metals. Don't increase rejection just because one junk metal sounded good. Look for a pattern of junk sounding good before increasing rejection.

3. Search Speed — 0 = Normal; 1 = Fast

What's it for?

Used to change how fast metal responses (beeps) are processed. Once the instrument responds (beeps), Search Speed determines how fast it processes the response and recovers so that it can respond again to another metal close to the first.

Why use it?

To optimize recovery for the amount of metals close together in the area being searched.

When should I use it?

"0" (Normal) should be selected if there are not a lot of metals close together in the area being searched. "1" (Fast) should be selected if there are a lot of metals close together in the area being searched.

What else should I know about SEARCH SPEED?

Search Speed starts out at "0" (Normal) in all starting programs except **ch** Competition Hunting. Optimum Disc accuracy is achieved at the "0" (Normal) setting. Loop sweep speed need not be changed between these two settings.

4. Track Level — 1 (Fast) through 25 (Slow) Tracking

What's it for?

Used to adjust how much change in the ground is required to cause Auto Trac® to change the Gnd (ground) rejection.

Why use it?

To optimize Auto Trac® so as to allow for accurate ground rejection thus maximizing detection depth.

When should I use it?

When using Advanced Option "9" (Auto Trac 1 = See Trac). If it appears that Auto Trac® is not tracking, a faster track setting should be selected. If it appears to be tracking with every sweep of the loop, a slower tracking setting should be selected for stability or if the ground appears fairly consistent in composition.

What else should I know about TRACK LEVEL?

Auto Trac® must be turned on. Many of the other options affect Auto Trac®; particularly Advanced Options "9" (Auto Trac 2 = No Trac Inhibit), Advanced Option "b" (Auto Trac® Offset) and the SENS/SIG BAL settings. Tracking occurs only in small increments. Tracking occurs only if the loop is in motion. Tracking occurs regardless of Disc being on or off.

5. V.D.I. SENS — 1 (Maximum) through 50 (Minimum)

What's it for?

Used to adjust the intensity (strength) of the signal (metal response) required to activate the display V.D.I. indication.

Why use it?

To increase or decrease the display V.D.I. sensitivity thus the number of indications and the depths at which metals are identified.

When should I use it?

When you want the display V.D.I. indications to respond to deeper metals, adjust toward maximum. If you are unhappy with display V.D.I. accuracy, adjust toward minimum.

What else should I know about V.D.I. SENS?

The higher the V.D.I. SENS (towards maximum) the more likely the display will try to guess V.D.I. indications of deep metals. At lower V.D.I. SENS settings (toward minimum) the display will not guess. If it doesn't know for sure the proper V.D.I. number it will remain blank. In Audio Mode "A" (Threshold) the instrument will "beep" over such metals and not give a V.D.I. display indication. In Audio Modes "B" (Silent Search) and "C" (Tone I.D.), V.D.I. SENS will effect both the sensitivity of the tone (beep) and the display thus the same target at the same depth would neither (beep) nor produce a V.D.I. display indication. See Audio Modes for more on the relationship of the display and the tone (beep).

6. **Operating Frequency —**

1 = 6.0 Khz; 2 = 6.2 Khz; 3 = 6.4 Khz; 4 = 6.6 Khz (Normal); 5 = 6.8 Khz; 6 = 7.0 Khz; 7 = 7.2 Khz

What's it for?

Changing the operating frequency of the metal detector so as to avoid interference.

Why use it?

When other metal detectors are being operated close to yours, interference will result. Such interference to your metal detector and to others is avoided by shifting to a different operating frequency.

When should I use it?

When another metal detector gets close to yours and the other model or yours starts beep, beep, beep, beeping, it's time to shift operating frequency.

What else should I know about OPERATING FREQUENCIES?

Your metal detector is going to work best at the 4 = 6.6 Khz (Normal) setting. The further away from 6.6 Khz you get the more you will notice alterations in calibration and performance. When using the "ch" (Competition Hunting) starting program Operating Frequency is moved out to the EDIT(▲)/EDIT(▼) for easy access. To get to the Edit Disc Options from the "ch" starting program hold TRIGGER and push EDIT(▼). To get to Advanced Options from the "ch" starting program hold TRIGGER and push EDIT(▲).

7. **USER A.C. SENS —** 0 = Off; Numbers 1–99 represent custom settings. Lower numbers are more sensitive.

What's it for?

Used to create a new A.C. Sens setting which appears as "0" on the regular SENS control and can be any sensitivity level you desire.

Why use it?

You may find that the A.C. Sens levels normally available 1–7 do not suit your needs. This option would allow for a new setting that could be less sensitive than the number 1 setting, more sensitive than the number 7 setting, or in between two of the available 1–7 settings such as 4 ½, 5 ½, 6 ½, etc. You select what sensitivity level you want "0" to be on your SENS control.

When should I use it?

If you're using a Sens setting of "1" and still getting instability, create a new Sens setting of "0" which is less sensitive than the "1" setting. If operating at a Sens setting of "7" and the instrument operates smoothly and is stable, create a new Sens setting of "0" which is more sensitive than the "7" setting. If a Sens setting of "4" works smoothly and is stable, however "5" isn't, create a new Sens setting of "0" which is halfway between 4 and 5.

What else should I know about USER A.C. SENS?

Comparison of regular Sens settings and those available:

Regular Sens Settings									
Off	More Sensitive	7	6	5	4	3	2	1	Less Sensitive
0	20	25	30	35	40	50	60	70	99

8. **Prospecting** — 0 = Off; 1 = Absolute; 2 = No Labels; 3 = Both

What's it for?

Used for the selection of two different options; Absolute which enhances specialty loop functions and No Labels which turns **On/Off** the IRON, FOIL, NICKEL, PULLTAB 1 cent, 10 cents, QUARTER, HALF DOLLAR and DOLLAR display indications.

Why use it?

When using this model with specialty loops such as the BIG FOOT and GOLD FOOT elongated designs in the non-discriminating mode, Absolute increases the detecting area to the full length of these loops, thus increasing ground coverage.

If searching for natural metals or foreign coins, the labels have little or no value and may be distracting.

When should I use it?

When using elongated loops select Absolute.

When developing custom programs for use in prospecting or outside the United States select No Labels and rely upon the V.D.I. numbers.

Setting Number	Absolute Value	V.D.I. Labels
0	OFF	ON
1	ON	ON
2	OFF	OFF
3	ON	OFF

9. **Auto Trac®** — 0 = Off; 1 = See Trac; 2 = No Trac Inhibit; 3 = Both

What's it for?

Used for selection of two different options: See Trac which allows you to monitor Auto Trac® and No Trac Inhibit which allows for full time tracking.

Why use it?

Use See Trac to see when Auto Trac® tracks. Use No Trac Inhibit when searching primarily for metals which do not corrode. Corrosion can trick Auto Trac® thus the inhibitor avoids such confusion. When searching for metals that do not corrode such as gold, the Auto Trac® works better without the inhibitor.

When should I use it?

When you want to adjust Track Level use See Trac to determine a proper setting.

When developing a custom program primarily for locating non-corroded metals select No Trac Inhibit.

What else should I know about Auto Trac®?

See Trac and No Trac Inhibit are automatically turned **On** when the "PP" (Prospecting and Relic) starting program is selected. Relic hunters may want to select a setting number of 1 which allows for See Trac and has Trac Inhibit since most relics do corrode.

Setting Number	See Auto Trac	Trac Inhibit
0	NO	YES
1	YES	YES
2	NO	NO
3	YES	NO

A. **EXPANDED AUDIO FREQUENCY** — 0 = Low ; 50 = Normal; 99 = High

What's it for?

Used to expand the audio frequency or pitch, much further than what is available in the Audio Options.

Why use it?

If you can hear specific tones better than others or simply like the metal detector to sound different, select an audio frequency which suits your hearing.

When should I use it?

When you are unhappy with the audio frequency (pitch) and none of the three Audio Option frequencies satisfy you. This option gives you 0–99 selections to choose from.

What else should I know about Expanded Audio Frequencies?

When using Expanded Audio Frequencies the three audio frequencies available under Audio Options (TRIGGER squeezed/press AUDIO MODE control) will automatically go to the “A” position. Expanded Audio Frequency only works in this “A” position.

b. **Auto Trac® Offset**

- 5 = X-Large Positive Ground Tracking
- 4 = Large Positive Ground Tracking
- 3 = Medium Positive Ground Tracking
- 2 = Small Positive Ground Tracking
- 1 = Slightly Positive Ground Tracking
- 0 = Perfect Ground Tracking
- Low 1 = Slightly Negative Ground Tracking
- Low 2 = Small Negative Ground Tracking
- Low 3 = Medium Negative Ground Tracking
- Low 4 = Large Negative Ground Tracking
- Low 5 = X-Large Negative Ground Tracking

What's it for?

Used so that Auto Trac® tracks the ground slightly more or slightly less than what would normally be considered perfect.

Why use it?

Experts have proven in many circumstances what would normally be considered a ground rejection (Air/Gnd Balance) setting slightly offset for the area, enhances metal responses. Prior to the development of this offset feature manual ground rejection models had an advantage over automatic ground balance models because of their offset capability.

When should I use it?

Recommended only when operating in highly mineralized ground where an offset is found to enhance performance through testing with sample metals. Recommended only for experienced operators who fully understand ground rejection.

What else should I know about Auto Trac®?

Offset Positive

When prospecting in highly mineralized ground, a slight positive ground tracking offset is desirable to enhance the response of small gold nuggets.

When using a slightly positive ground tracking setting, holding in the TRIGGER as if to pinpoint and lowering the loop to the ground will result in a slight increase in the threshold (background tone). Because of the S.A.T. feature this increase will not be noticed much in normal operation, (TRIGGER not held). You can reduce the threshold level with the VOL(▼) to compensate for this

slight threshold increase. There may be other applications where a positive Auto Trac® Offset may be an advantage. Small low-conductive metals such as small gold jewelry respond better at positive offset. Experiment with it before extensive field use. For those interested in theory, a positive Auto Trac® Offset is slightly under ground-balanced for the area.

Offset Negative

When searching an area with frustrating ground conditions, ground inconsistent in composition can cause so many false responses you want to give up searching it. A negative Auto Trac® Offset will quiet such ground responses. True some small metals and depth will be sacrificed — however, keep in mind such areas are rarely searched by others therefore you may make some impressive finds in such areas.

When using a slightly negative ground tracking offset, holding the TRIGGER as if to pinpoint and lowering the loop to the ground will result in a slight decrease in the threshold (background tone). Because of the S.A.T. feature this decrease won't be noticed much in normal operation, (TRIGGER not held). There may be other applications where a negative Auto Trac® Offset may be an advantage. Experiment before extensive field use. For those interested in theory, a negative Auto Trac® Offset is slightly over ground-balanced for the area.

What about Auto Trac®?

If the Auto Trac® feature is **Off**, manual ground rejection adjustments in the “PP” (Prospecting & Relic) starting program are permanent until manually changed again. If Auto Trac® is **On**, manual ground rejection will be temporary as Auto Trac® will track to the ground. If Offset is used, Auto Trac® will track to the ground in an “offset” manner.

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Treasure Hunter's Code of Ethics



1. Respect the rights and property of others.
2. Observe all laws.
3. Aid law enforcement officials whenever possible.
4. Never destroy priceless, historical, or archeological treasures.
5. Leave the land and vegetation as it was.
6. Remove all trash and litter when you leave.
7. All treasure hunters may be judged by the example you set. Always conduct yourself with courtesy and consideration.

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