

CHECKLIST OVERVIEW

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CHECKLIST 1: KEY FACTORS

1

ENVIRONMENTAL CONDITIONS

- Know the **SOIL TYPE** and mineralization.
- Consider **MOISTURE** and weather conditions.
- Be aware of **DISTURBANCES** from power lines, vehicles, buildings, etc.
- Eliminate or maintain distance to **OTHER SOURCES OF INTERFERENCE**.

2

SCANNING TECHNIQUE

- Ensure correct **SCAN DIRECTION**.
- Maintain steady walking **SPEED**.
- Keep consistent **PROBE HEIGHT**.
- Guarantee equal **SCAN LINE SPACING**.
- Provide sufficient **IMPULSE DENSITY**.

3

MAGNETIC INFLUENCES NEAR THE SENSORS

- Remove **KEYS** and coins from pockets.
- Keep the sensors away from **SMARTPHONE** and **SMARTWATCH**.
- Maintain distance to **FERROMAGNETIC TOOLS AND ACCESSORIES**.
- Avoid **METAL ACCESSORIES**, such as buckles and jewelry.
- Keep the sensors away from **SHOES** with metal components.

4

CORRECT MODE SELECTION

- Use **OPERATING MODE** 3D Ground Scan.
- Select **SCAN MODE** *Parallel* (preferred) or *Zigzag*.
- Choose **IMPULSE MODE** *Automatic* or *Manual*.

CHECKLIST 2: PREPARATION

1 TARGET RESEARCH

- Know your **TARGET OBJECT**: material, size, shape, depth, time buried.
- Know your **TARGET AREA**: Review maps and archives, talk to locals.
- Look for **CLUES**: stone markers, terrain features, vegetation patterns.
- Check **SCAN FIELD CONDITIONS**: soil type, vegetation, accessibility.

2 FIELD DEMARCTION

- Mark the **4 CORNERS** of your scan field.
- Define a scan field of **AT LEAST 5x5 m (16x16 ft)**.
- Know the exact scan field **DIMENSIONS**.
- Use ropes or strings to **DEFINE THE SCAN LINES**.

3 OBSTRUCTION REMOVAL

- Remove **OBSTACLES** like high grass, bushes, stones, tree trunks etc.
- Consider sources of **INTERFERENCE** such as fences, vehicles etc.
- Consider using the **IMPULSE MODE MANUAL** in rough terrain.

4 SCRAP METAL CLEARING

- Use *Magnetometer, Live Sound, Pinpointer or Live Scan* (if available) to perform an **INITIAL QUICK SCAN** of the field.
- Clear the scan field of any **FERROUS ITEMS** close to the surface.

ADDITIONAL TIPS FOR PREPARATION

KNOW THE EXPECTED SIZE OF YOUR TARGET OBJECT

If you are looking for large target structures such as tombs, tunnels, or treasure chests, you can increase the distance between impulses and scan lines. For small objects such as relics, artifacts and jewelry, collect more scan data by reducing the distance between impulses and scan lines.

KNOW THE EXPECTED SHAPE OF YOUR TARGET OBJECT

If you are looking for a sufficient large object, e.g. an aircraft or a bunker, the detected signal in your scan field can have a shape according to your expectations.

If you are searching for an elongated object, scan across it (perpendicular) rather than parallel to it; otherwise, it may remain hidden between the scan lines. Performing control scans rotated by 90° helps ensure that no objects are missed.

KNOW THE EXPECTED DEPTH OF YOUR TARGET OBJECT

To obtain precise depth values, the object must be positioned in the center of the scan image and be surrounded by normal reference values (neutral ground). If the object is located at the edge of the scan image and is not fully visible, an accurate statement about the depth is not possible.

Ideally, there should only be one object in your scan image. Otherwise, several objects in one scan may affect the accuracy of the depth values.

PLAN SUFFICIENT TIME FOR SCANNING

If conditions in the scan field are not optimal (e.g. rough, sloping terrain and/or dense vegetation), using the *Impulse Mode Manual* can be advantageous. However, this requires more time. In addition, to ensure the validity of your scan results, allow time for at least two control scans. This will also help you identify mineralized soil.

PERFORM SCANS OUTDOORS

Always remember that surrounding objects such as fences, walls, reinforcement in walls and ceilings, vehicles, power lines, or further sources of interference will definitely influence the scan results.

CHECKLIST 3: MEASUREMENT

1 PROBE DIRECTION

- The **FIRST SCAN LINE** defines the probe direction for the entire scan.
- All scan lines must be **PARALLEL TO EACH OTHER**.
- Keep the probe pointing in the **SAME DIRECTION**.
- Use the **ARROW** on top of the probe as a reference.
- DO NOT TURN OR ROTATE** the probe.

2 PROBE ORIENTATION

- Keep the probe **STRAIGHT** during scanning.
- DO NOT PIVOT OR TILT** the probe.
- DO NOT FORCE** the probe into a diagonal position.

3 DISTANCE TO THE GROUND

- Keep the probe at a **CONSTANT HEIGHT** throughout the scan.
- Recommended distance to the ground: **5-10 cm | 2-4"**.
- Do not scan too close to your **FOOTWEAR**.
- If widespread obstacles cannot be removed, increase the height for the **ENTIRE SCAN**.

4 ACCURACY OF THE MEASUREMENT

- Keep **EQUAL SPACING** between scan lines.
- Scan at a **STEADY PACE**.
- Follow the **SCAN GRID** precisely.
- SMOOTH SCANNING**: Avoid sudden stops or abrupt movements.
- Consider using the **IMPULSE MODE MANUAL** in rough terrain.

ADDITIONAL TIPS FOR SCANNING

ALIGN SCAN LINES IN NORTH-SOUTH DIRECTION

Experience shows that scans performed in a north-south or south-north direction often produce clearer results. If possible, align the scan lines with the Earth's natural magnetic field by walking parallel to the meridians.

This does not apply to 90° rotated or diagonal control scans as well as to elongated objects aligned parallel to the scan lines. Especially in the latter case, performing a scan perpendicular to the object is highly recommended.

MAINTAIN A SLOW AND STEADY SCANNING PACE

Walk slowly and evenly along each scan line to collect a sufficient number of impulses (measuring points). A higher number of impulses results in a more detailed scan image, making it easier to detect smaller or deeply buried objects.

INCREASE SCAN LINE DENSITY AND IMPULSE COUNT

Increasing the number of scan lines and reducing the distance between impulses improves data density. The more impulses are collected, the higher the image resolution and the better the chance of identifying subtle or hidden anomalies.

KEEP EQUAL DISTANCE BETWEEN SCAN LINES

Keep the distance between scan lines consistent throughout the scan. Uniform spacing ensures an accurate scan image, as the software *Visualizer 3D Studio* displays the imported scan data at evenly spaced intervals. Inconsistent spacing can therefore lead to distortions in the scan image.

In addition, equal and reduced distances help prevent interpretation errors and missed targets between the lines.

MAINTAIN A CONSTANT SPEED IN ALL SCAN LINES

Try to walk all scan lines at the same speed to achieve reliable and comparable results. If uneven terrain or obstacles make a constant pace difficult, switching from *Impulse Mode Automatic* to *Manual* can help maintain scan accuracy.

CHECKLIST 4: FOLLOW-UP

1 CONTROL SCANS

- Perform at least **2 CONTROL SCANS**.
- Repeat the initial scan under **IDENTICAL** conditions.
- Perform another scan from the side, **ROTATED BY 90°**.
- Note: **REAL TARGETS DON'T MOVE**.

2 SCAN DOCUMENTATION

- TAKE NOTES** for later reference.
- Document **SOIL AND WEATHER CONDITIONS** (mineralization, moisture, soil composition).
- Document **ENVIRONMENTAL FACTORS** (vegetation, obstacles, nearby structures).
- Document **SPECIAL SITUATIONS** occurring during the scan and note where they occurred (scan line).

3 SCAN FIELD ADJUSTMENT

- Do signals appear **NEAR THE EDGES**? Center the area of interest.
- Capture the **BOUNDARIES OF TARGET STRUCTURES**.
- SCATTERED SIGNALS** usually do not indicate relevant targets.

4 CONSIDERATION OF MANUAL MODE

- Do **OBSTACLES OR DENSE VEGETATION** prevent you from a steady scanning pace?
- Does **SLOPING OR DIFFICULT TERRAIN** prevent you from a steady scanning pace?

ADDITIONAL TIPS FOR FOLLOW-UP

REVIEW SCAN DATA ON SITE AND ADJUST IMMEDIATELY

Check the scan image briefly during or between scans to adjust the scan field on site in real time, if necessary. This allows you to perform additional useful scans immediately, especially if returning to the scan location at a later time would be difficult or delayed.

ADD PHOTOS OF THE SCAN FIELD

Take photos clearly showing the scan area and its surroundings. These images help document ground conditions, obstacles, and the exact scan location, supporting later evaluation and comparison.

ADD GPS LOCATION INFORMATION

Whenever possible, record GPS coordinates of the scan field. This helps precisely relocate the scan field, supports documentation, and ensures accurate reference for future scans or follow-up investigations.

USE UNIQUE PROJECT NAMES AND ORGANIZE SCAN DATA

Assign clear and unique project names and keep all scan data well organized. Structured data management makes it easier to find, compare, and interpret scans at a later stage, especially when working on multiple projects or returning to a site after some time.

CHECKLIST 5: STEPS IN VISUALIZER 3D STUDIO

1

CHARACTERISTICS

- Add a **PROJECT TITLE**.
- Enter **FIELD LENGTH** and **FIELD WIDTH**.
- Check the **SCAN MODE**.
- Add **DETAILS** about irregularities, environment etc.

2

TOP VIEW

- Toggle between **VIEWS**.
- Select **TOP VIEW**.

3

TARGET FOCUS

- Adjust the **THRESHOLD**.
- Toggle between **COLOR SCHEMES**.
- Use **WIREFRAME** view.

4

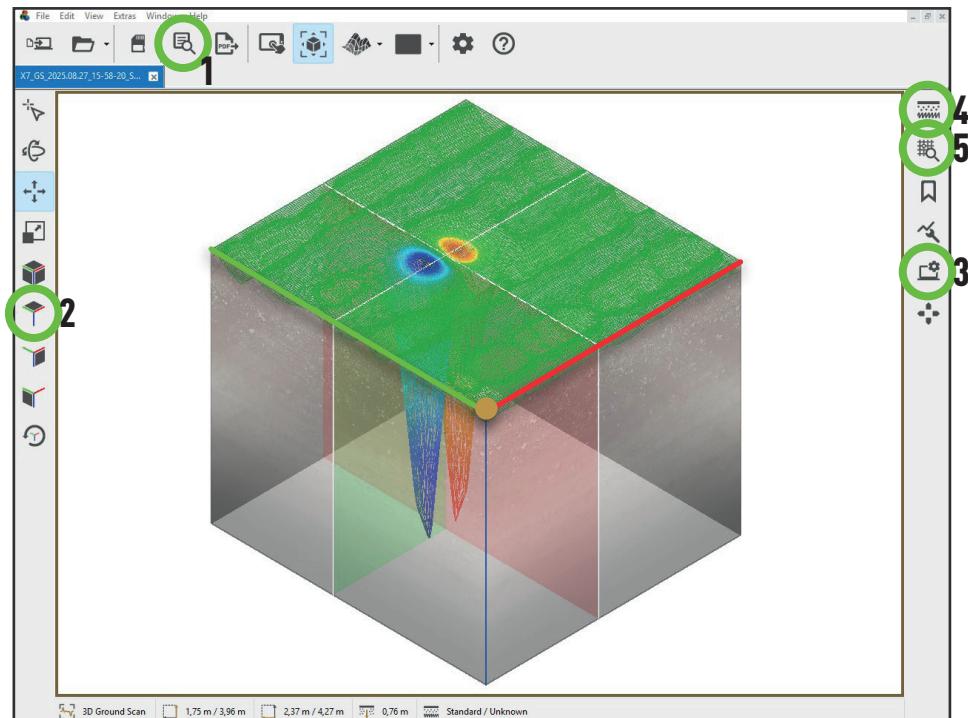
SOIL TYPE

- Select a **SOIL TYPE**.
- Define **INDIVIDUAL SOIL TYPES**, if necessary.

5

SCAN INFORMATION

- Place the **CROSSHAIRS** on prominent signals.
- Determine the **DEPTH** and **POSITION**.
- Read and compare **SCAN VALUES**.



1 MAIN TOOLBAR: CHARACTERISTICS

also accessible via Main Menu > Edit
or keyboard shortcut **F9**

2 LEFT SIDEBAR: TOP VIEW

also accessible via Main Menu > View
or keyboard shortcut **F6**

3 RIGHT SIDEBAR: VISUALIZATION

also accessible via Main Menu > View >
Sidebars

4 RIGHT SIDEBAR: SOIL TYPES

also accessible via Main Menu > View >
Sidebars

5 RIGHT SIDEBAR: SCAN INFORMATION

also accessible via Main Menu > View >
Sidebars

Further shortkeys:

| | |
|-------------------------|-------------------------|
| F5 | Perspective View |
| F6 | Top View |
| F7 | Side View (right) |
| F8 | Front View |
| Ctrl + F7 | Side View (left) |
| Ctrl + F8 | Rear View |
| Ctrl + P | PDF Report ¹ |

¹ only available in *Professional Edition*

CHECKLIST 6: EVALUATION

1 CONTROL SCAN COMPARISON

- Arrange **WINDOWS SIDE BY SIDE**.
- ROTATE THE SCAN IMAGE** if you scanned from a 90° angle.
- Look for **REPEATABLE SIGNALS** at the same positions.

2 MINERALIZATION VS. REAL TARGETS

- Identify noise (scattered signals) caused by **SOIL MINERALIZATION**.
- Look for prominent signals that extend over **MORE THAN 1 IMPULSE**.

3 COLOR INTERPRETATION

- Look for **STRONG SIGNALS** (high contrast) regardless of their color.
- RECONSIDER MULTIPLE INTERPRETATIONS** of the different color-coded signals, as well as combinations of both.

4 SCAN VALUE STRENGTH

- View the scan in **SIDE VIEW OR FRONT VIEW** to identify prominent maximum amplitudes.
- Check the **SCAN VALUES AND THE VALUE RANGE** between the maximum, average, and minimum values of prominent impulses.

5 TROUBLESHOOTING

- Identify **SCATTERED SIGNALS** – so-called noise.
- Recognize **STRIPED SCAN STRUCTURES** and their causes.
- Question **RECURRING SIGNALS** and determine their origin.
- Prevent **MISSING SCAN DATA** due to transfer errors.

ADDITIONAL TIPS FOR EVALUATION

ENSURE CORRECT SCAN FIELD DIMENSIONS

You can add and adjust the scan field dimensions at any time within your scan file in *Visualizer 3D Studio*.

The scan field size is – unlike what is common in graphic design – always defined as **SCAN FIELD LENGTH FIRST**, then width. This is based on the fact that the length of the first scan line is set first. The number of scan lines is determined afterwards, which defines the scan field width.

UNDERSTAND THE LIMITATIONS OF THE TECHNOLOGY

Scans cannot precisely reveal what an object is – such as whether it is a vase, ring, statue, box, or sword. However, large objects such as aircraft or bunkers can become visible in their shape if the scan field is large enough.

CONSIDER THE HALO EFFECT OF FERROUS OBJECTS

For ferromagnetic objects, the halo effect and corrosion traces in the surrounding soil must be considered, as they can distort the perceived size and shape of the target.

CONSIDER THE PHYSICAL LIMITATIONS OF MAGNETIC FIELD MEASUREMENT

Furthermore, non-magnetic objects can only be detected through the surrounding structures. *Magnetic Field Measurement*, as the name implies, requires the presence of anomalies in the magnetic field.

Anomalies are not caused by non-magnetic objects such as diamonds or gold themselves. However, they can be caused by human intervention, such as excavation. Depending on how recently the digging took place, this disturbance may still be visible in the scan results.

LOOK FOR ASSOCIATED FINDS

Precious metals can be detected through associated finds, e.g. if it is located in a treasure chest with iron fittings, if ferrous artifacts are present nearby, or if it is made of an alloy that combines precious metals with ferromagnetic metals.

ASSESS MAGNETIC PROPERTIES AND GEOLOGICAL CONTEXT

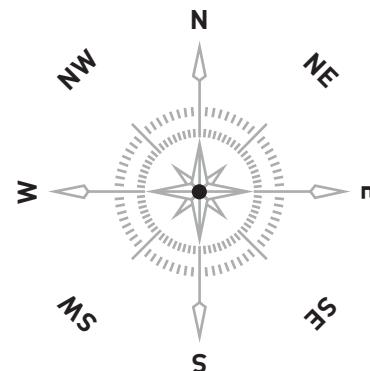
Gold deposits can still be detected with a high level of expertise and knowledge about the geological conditions that are typically associated with the desired valuable target structures. For more information, refer to our documents on *Mineral Scan*.



OKM 3D GROUND SCAN LOG

Date / Time _____

Scan Direction



Scan Mode Parallel Zigzag

Impulse Mode Auto Manual

Weather: dry humid rain snow _____

Soil Type: sand loam clay rock _____

Surface: flat uneven difficult sloping _____

Sources of interference (incl. removed): Yes No

(e.g. power lines, fences, vehicles, trees, houses, walls, nails, screws)

Incidents during scanning (e.g. stumbling, starting point errors): Yes No

Control Scans

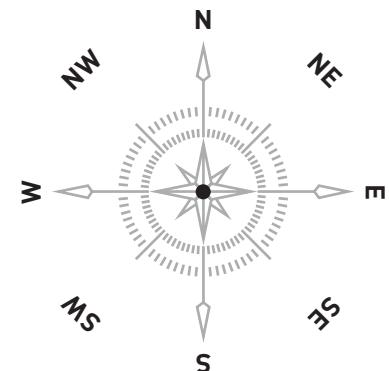
(add dimensions and
sketch starting point
and/or directions relative
to the original scan)



OKM 3D GROUND SCAN LOG

Date / Time _____

Scan Direction



Scan Mode Parallel Zigzag

Impulse Mode Auto Manual

Weather: dry humid rain snow _____

Soil Type: sand loam clay rock _____

Surface: flat uneven difficult sloping _____

Sources of interference (incl. removed): Yes No

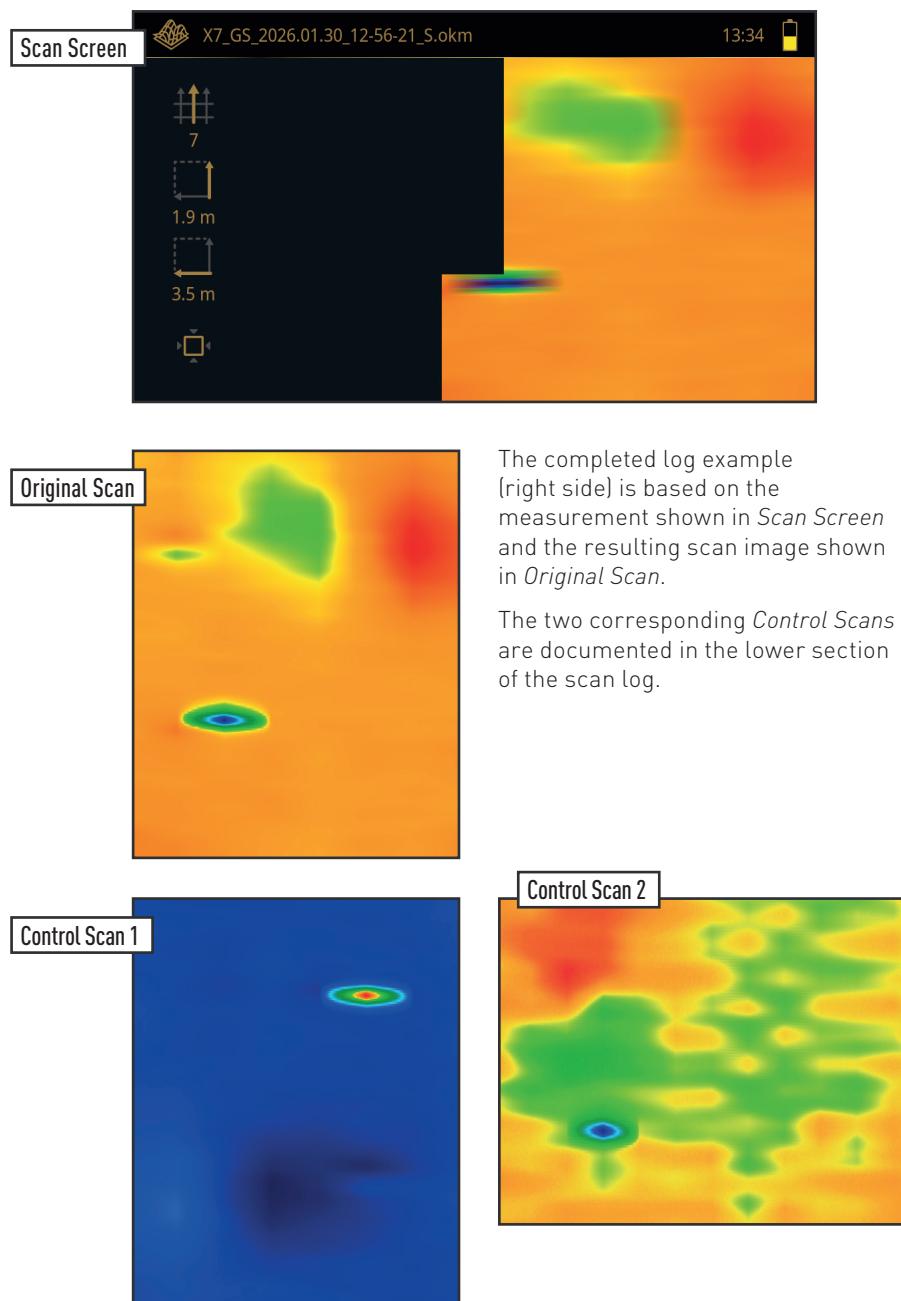
(e.g. power lines, fences, vehicles, trees, houses, walls, nails, screws)

Incidents during scanning (e.g. stumbling, starting point errors): Yes No

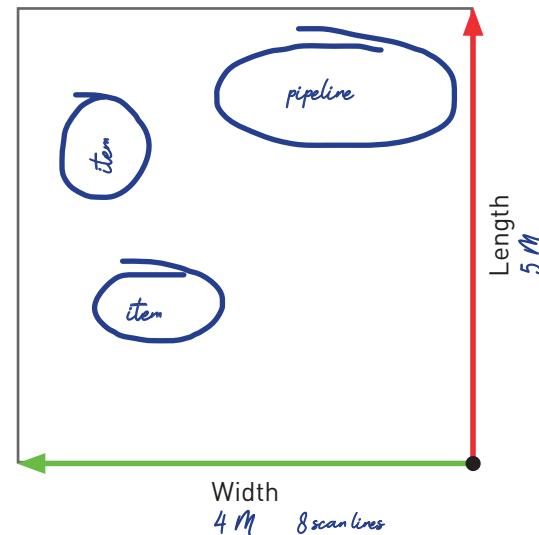




SCAN LOG EXAMPLE

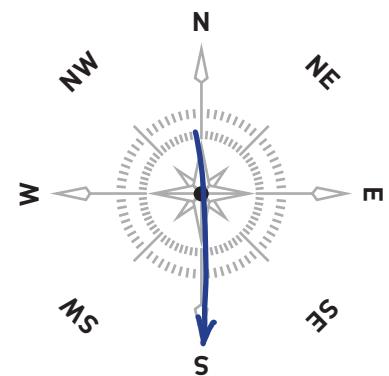


OKM 3D GROUND SCAN LOG



Date / Time 2026/01/30 12:56

Scan Direction



Scan Mode

Parallel Zigzag

Impulse Mode

Auto Manual

Weather: dry humid rain snow _____

Soil Type: sand loam clay rock _____

Surface: flat uneven difficult sloping _____

Sources of interference (incl. removed):

(e.g. power lines, fences, vehicles, trees, houses, walls, nails, screws)

fence is approx. 2 m next to scan field

Yes No

Incidents during scanning (e.g. stumbling, starting point errors):

Yes No

control scan #2 from side was performed with error: starting point in scan lines 4 to 6 were shifted

Control Scans

(add dimensions and sketch starting point and/or directions relative to the original scan)

