The implementation of geophysical prospection in the frame of criminal soil forensics

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THEORETICAL BACKGROUND

Geo-electrical measurements

<table>
<thead>
<tr>
<th>Normal arrangement</th>
<th>Schlumberger configuration</th>
<th>Wenner arrangement</th>
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</thead>
<tbody>
<tr>
<td>$E = \frac{1}{2} (A+M)$</td>
<td>$V = \frac{1}{2} (O+L)$</td>
<td>$I = \frac{1}{2} (M-N)$</td>
</tr>
<tr>
<td>$A, M$</td>
<td>$L$</td>
<td>$N$</td>
</tr>
<tr>
<td>$B$</td>
<td>$O$</td>
<td>$R$</td>
</tr>
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Electrode configuration diagram: Schlumberger, Wenner, normal.

The electromagnetic measurements were carried out at the end of 2002, five years after burying. During this period, the bodies had either been "dressed", and/or wrapped in plastic, others were naked.

Belgium in the frame of the BABE project. The depth of the bodies varies between 10 and 100 cm below ground level. Pig bodies have been decomposing, releasing fluids to the surroundings. These fluids have migrated downward to the water table, after which they

1) LOCATION OF UNDERGROUND CAVITIES

1.1 LOCATION OF UNDERGROUND CAVITIES BY MEANS OF GEO-ELECTRICAL PROFILING AT RIEMST

The area of Zichen-Zussen-Bolder is undermined by a dense network of caverns. These caves are mostly preferentially visited by Roman soldiers for marl that was used as construction material. After the second World War the caves were filled with sand for mushroom growing. In order to find the tunnels the walls were eroded. On December 23th 1958 a real disaster happened when 4 ha of the tunnel was flooded causing the death of 14 people.

To diminish the danger for the new owners, the cavities were filled as much as possible. Only a part of the subterranean cavities can be mapped because parts of the ceiling were not accessible. For this reason, a mapping method from the surface was used. Data herein show the results obtained with this method. Before to locate the anomalies, as accurately as possible, geo-electrical models can be used. In this case the best results are obtained by geo-electrical methods rather than seismic and gravity methods.

Electromagnetic profiling with Schlumberger configuration (L = 1.5m; a = 8m; measuring step 1m)

Measured resistivities obtained for 6 geo-electrical profiles with Schlumberger configuration (L = 1.5m; a = 8m; measuring step 1m)

1.2 LOCATION OF UNDERGROUND MINE SHAFTS AT NIVELLES

Underneath a section of the planned ring road around Nivelles, geophysical prospection was called upon to find the subsurface cavities. During the last years some high resistivity anomalies have been detected along the planned route. The subsurface cavities are due to weathering of the walls. In this case, the anomalies are due to weathering of the walls. The detected anomalies were inspected with consolidating fluids for preservation.

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