

## **VOLUME D09**

# **GEOPHYSICAL INVESTIGATION**

## **RESISTIVITY SURVEY**

| <b>Volume</b> | <b>Km from</b> | <b>Km to</b> | <b>Task</b> | <b>Length</b> | <b>Survey Type</b> |
|---------------|----------------|--------------|-------------|---------------|--------------------|
| D01           | 800            | 1+300        | i           | 0.5           | Seismic            |
| D02           | 27+200         | 27+500       | i           | 0.3           | Seismic            |
| D03           | 28+400         | 28+600       | i           | 0.2           | Seismic            |
| D04           | 28+600         | 29+600       | i           | 1             | Resistivity        |
| D05           | 36+800         | 37+300       | i           | 0.5           | Resistivity        |
| D06           | 37+300         | 37+800       | i           | 0.5           | Seismic            |
| D07           | 37+800         | 38+900       | i           | 1.2           | Resistivity        |
| D08           | 10+200         | 10+700       | iii LLR     | 0.5           | Seismic            |
| <b>D09</b>    | <b>300</b>     | <b>900</b>   | <b>iii</b>  | <b>0.6</b>    | <b>Resistivity</b> |
| D10           | 900            | 1+300        | iii         | 0.4           | Seismic            |
| D11           | 1+300          | 2+700        | iii         | 1.4           | Resistivity        |
| D12           | 2+700          | 3+100        | iii         | 0.4           | Seismic            |
| D13           | 3+100          | 5+300        | iii         | 3.2           | Resistivity        |
| D14           | 8+500          | 11+000       | iii         | 2.5           | Resistivity        |
| D15           | 12+000         | 13+000       | iii         | 1             | Resistivity        |
| D16           | 15+000         | 18+000       | iii         | 3             | Resistivity        |
| D17           | 20+000         | 21+000       | iii         | 1             | Resistivity        |
| D18           | 25+200         | 25+900       | iii         | 0.7           | Resistivity        |
| D19           | 29+500         | 30+700       | iii         | 1.2           | Resistivity        |
| D20           | 36+400         | 36+800       | iii         | 0.4           | Seismic            |
| D21           | 38+600         | 39+300       | iii         | 0.7           | Resistivity        |
| D22           | 39+300         | 39+700       | iii         | 0.4           | Seismic            |
| D23           | 39+800         | 41+300       | iii         | 0.5           | Resistivity        |
| D24           | 43+200         | 43+500       | iii         | 0.3           | Seismic            |
| D25           | 51+700         | 55+300       | iii         | 3.6           | Seismic            |
| D26           | 68+600         | 69+800       | iii         | 0.2           | Seismic            |
| D27           | 70+800         | 71+600       | iii         | 0.8           | Resistivity        |
| D28           | 90+700         | 91+300       | iii         | 0.6           | Seismic            |
| D29           | 91+800         | 92+600       | iii         | 0.8           | Resistivity        |
| D30           | 96+200         | 98+200       | iii         | 2             | Resistivity        |
| D31           | 1+000          | 1400         | ii          | 0.4           | Seismic            |
| D32           | 9+000          | 10+000       | ii          | 1             | Seismic            |
| D33           | 14+500         | 14+900       | ii          | 0.4           | Seismic            |
| D34           | 20+900         | 21+600       | ii          | 0.7           | Seismic            |
| D35           | 27+300         | 27+700       | ii          | 0.4           | Seismic            |
| D36           | 29+500         | 29+900       | ii          | 0.4           | Seismic            |
| D37           | 32+000         | 32+400       | ii          | 0.4           | Seismic            |
| D38           | 27+700         | 29+000       | ii          | 1.3           | Resistivity        |
| D39           | 62+500         | 64+000       | ii          | 1.5           | Seismic            |
| D40           | 71+000         | 71+700       | ii          | 0.7           | Seismic            |
| D41           | 73+000         | 73+400       | ii          | 0.4           | Seismic            |

## General Information

### Survey Line Parameters

|   |                                    |                                       |
|---|------------------------------------|---------------------------------------|
| <b>Projected Parameters</b>   | Volume name                        | D09                                   |
|   | Survey type                        | Resistivity                           |
|   | Task                               | iii                                   |
|   | Km from                            | 0+300                                 |
|   | Km to                              | 0+900                                 |
|   | Length (km)                        | 0.6                                   |
| <b>Survey Parameters</b>  | Length (km)                        | 0.64                                  |
|   | Maximum offset from projected line | 15 m                                  |
|   | Data acquisition period            | 13.09.2008                            |
|   | Weather condition                  | Cloudy + Showers                      |
|   | Brief terrain description          | Flat terrain covered by pasture lands |
| <b>Notes:</b>   |                                    |                                       |
| <ul style="list-style-type: none"> <li>Maximum offset is due to projected motorway curvature</li> </ul> |                                    |                                       |

See Annex 09/41 (Survey Line Location and Results)

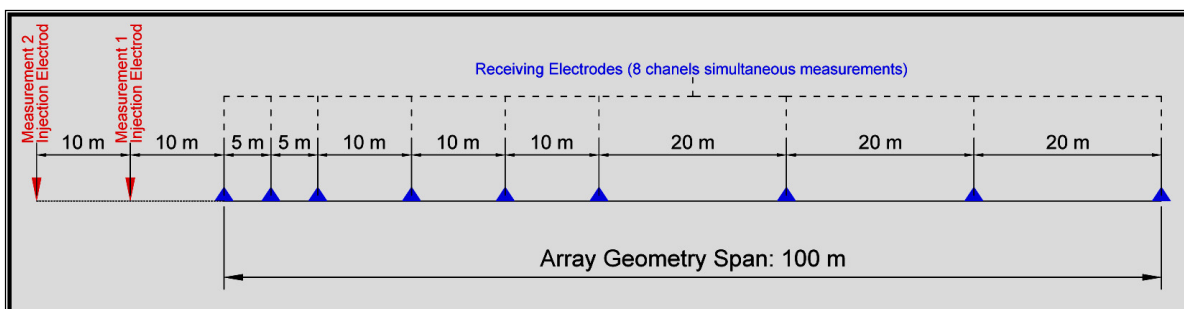
### Survey equipment

Data acquisition stage was completed using the following equipment:

- ZONGE, 2.5 kW – IP Transmitter
- SCINTREX IPR 12 – IP Receiver
- Non-polarizable Electrodes

Array geometry: **pole-dipole**

- 16 depth levels resolution
- 40 meters depth of investigation
- 20 meters station step



## Data Acquisition Parameters

### Measurement Parameters

Input signal: square wave (4s I+, 4s 0, 4s I-, 4s 0).

Additional chargeability measurements were recorded over 340-520 ms window span.

### Quality Control

To insure reliability of acquired data several stages for quality control were applied to data processing workflow:

- Each measurement was averaged at over five cycles.
- To insure repeatability and reliability, up to 5% out of total measurements were repeated in the same station point;
- Quality control was applied in each stage of the processing workflow using specific programs and routines to filter any abnormalities found within raw data

## Results

Results were organized as follows:

1. Three Longitudinal Sections (*See. Annex 09/41*) covering all volume length containing:
  - a. *Inverted Resistivity and Chargeability* (Vertical and Horizontal Scale 1 : 1000)
  - b. Plan location of Survey Line and Projected Volume (Scale 1 : 5000)
  - c. Interpretation of physical parameters distribution
2. Raw data available in several suitable formats
3. Topographic data for each measurement location
4. Inverted Result Data in suitable formats (easy to integrate into any follow up workflow).

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