

## 2. Training and Entrance Test

### Objective

The objective of the Training and Entrance Test was to unpack and register the detectors and to train the personnel involved. Within this phase was a simple entrance test to identify any shortcomings and to ensure that all detector types met a minimum detection distance of 5 cm in air using the standard test object  $M_0$ . The training and entrance test took place at the Miner Training Centre of the Dutch Royal Engineers in Reek (the Netherlands). The test team consisted mainly of the same people that were involved during the other phases of the IPPTC.

### Registration and training

Three copies of each detector type were purchased. The test team unpacked each detector type, registered it, and familiarised themselves with its operation. In order to keep all parts of the same detector together and to keep track of all the events a detector would go through during the IPPTC tests, each detector was given a unique code. This code – designated the IPPTC code - is used interchangeably with the detector name, and can be found on pages 5 and 127. It was put on all detector parts and casings. All information (including test incident reports) was noted in a logbook, which went with the detectors through all phases of the IPPTC.

In most cases, a short self-administered training session was conducted by studying the manual or instruction video and by using the detector outside the building. Some manufacturers took up the opportunity to provide a short on-site training session (Giat, Minelab, and Vallon). A questionnaire was filled-in to support the assessment of human factors in a later phase of the IPPTC.

### Entrance test

To make sure that each copy of a certain detector type worked properly, a simple entrance test was defined. As part of this test a single operator determined the maximum (open-air) detection distance.

The detector was placed in a fixed position in a metal-free environment. A minimum warm-up time of three minutes was applied, unless the manual required otherwise. In general, the detectors were tested at the most sensitive settings. The  $M_0$  test piece was moved manually across the detector head to stimulate a detector response. The distance from target to sensor head was raised in increments of one centimetre up to the distance that no signal was heard when the  $M_0$  test piece was moved across the sensor head. This was repeated for all three copies of each detector. Table 2-1 shows the results of this test.

| Detector Type                      | IPPTC ID | Maximum detection distance in open air (cm) |        |        | Maximum Difference | Remark |
|------------------------------------|----------|---|--------|--------|--------------------|--------|
|                                    |          | Copy 1                                      | Copy 2 | Copy 3 |                    |        |
| Adams AD2500                       | AD25     | 12  | 10     | 9      | 3                  | 1)     |
| Adams AD2600S                      | AD26     | 6   | 6      | 7      | 1                  |        |
| Ebinger EBEX 420 GC                | EB42     | 20  | 18     | 12     | 8                  |        |
| Ebinger EBEX 535                   | EB53     | 15  | 16     | 15     | 1                  |        |
| Fisher 1235-X                      | FI12     | 8   | 8      | 9      | 1                  |        |
| Fisher Impulse                     | FIIM     | 27  | 27     | 29     | 2                  |        |
| Fisher 1266-XB                     | FIXB     | 18  | 17     | 16     | 2                  |        |
| Foerster MINEX 2FD                 | FOMI     | 22  | 22     | 21     | 1                  |        |
| Giat Model F-1 (DHPM-1A)           | GIAT     | 11  | 10     | 9      | 2                  |        |
| Guartel MD2000 (round search head) | GUA2a    | 23  | 24     | 23     | 1                  |        |
| Guartel MD2000 (long probe)        | GUA2b    | 13  | 14     | 15     | 2                  | 2)     |
| Guartel MD2000 (short probe)       | GUA2c    | 13  | 14     | 10     | 4                  |        |
| Guartel MD4                        | GUA4     | 16  | 15     | 13     | 3                  |        |
| Guartel MD8 (round search head)    | GUA8a    | 16  | 17     | 17     | 1                  |        |
| Guartel MD8 (oval search head)     | GUA8b    | 16  | 16     | 16     | 0                  |        |
| Guartel MD8 (probe)                | GUA8c    | x   | 12     | 13     | 1                  |        |
| LG Precision PRS-17K               | LGPR     | 18  | 18     | 15     | 3                  |        |
| Minelab F1A4 CMAC                  | MICM     | 23  | 24     | 24     | 1                  |        |
| Minelab F1A4 MIM                   | MIMI     | 24  | 25     | 23     | 2                  |        |
| Pro-Scan Mark 2 VLF                | PRMA     | 23  | 25     | 25     | 2                  |        |
| Reutech Midas PIMD                 | REMI     | 12  | 11     | 12     | 1                  | 3)     |
| Schiebel AN-19/2                   | SCAN     | 24  | 26     | 25     | 2                  |        |
| Schiebel ATMID                     | SCAT     | 27  | 27     | x      | 0                  |        |
| Schiebel MIMID                     | SCMI     | 20  | 16     | 18     | 4                  |        |
| Vallon ML 1620C                    | VA16     | 28  | 28     | 28     | 0                  |        |
| Vallon VMH2                        | VAVMa    | 30  | 29     | 29     | 1                  |        |
| White's DI-PRO 5900                | WH59     | 16  | 18     | 18     | 2                  |        |
| White's AF-108                     | WHAF     | 20  | 23     | 20     | 3                  |        |
| White's Spectrum XLT               | WHSP     | 25  | 24     | 27     | 3                  |        |

1) Later in the project it was determined that copy 3 of the Ebinger EBEX 420 GC was malfunctioning.  
2) The test of copy 1 of the Guartel MD8 (probe) was not completed, due to electromagnetic interference.  
3) Copy 3 of the Schiebel ATMID had not been delivered in time for the test.

**Table 2.1** - Detection performance in air for the detectors in the Entrance Test.

### Summary of the Training and Entrance Test

Besides some small technical and logistic problems during the training, all detectors passed the entrance

test and were deemed suitable for further testing with no significant differences found among samples of each detector.