

CEN tests at Swedish EOD and Demining Centre (SWEDEC)

by

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At the end of September 2008 GICHD participated in the CEN tests of the Swiss Digger D-2 flail/tiller at Swedish EOD and Demining Centre (SWEDEC) (www.swedec.mil.se).

The tests were conducted at the SWEDEC test facility between 22 September and 2 October 2008. SWEDEC tests are undertaken in accordance with CEN Workshop Agreement (CWA) 15044:2004 (available at www.mineactionstandards.org) and the subsequent test results are published on the International Test and Evaluation Programme's (ITEP) webpage (www.itep.ws).



Test lane being prepared

Test standardisation for demining machines supports the development of new demining tools and methods. Standardisation also

enables the comparison of available tools and products, and helps improve the efficiency of demining programmes. The CWA covers testing of performance, survivability, acceptance and test targets. The tests are coordinated through ITEP.



Test lane with sand at SWEDEC

The SWEDEC test facility is located at Norra Kulla, a 20 minutes drive from Eksjö. The purpose-built test facility has office facilities, a workshop and canteen, as well as three test lanes offering different soil conditions. One lane has top soil, another sand, the third, gravel. These lanes are used for testing tillers and flails, with targets buried between 0 and 15 centimetres deep. Each test involves 50 mines at varying depths, with a total of 450 mines per machine test.

Explosive-free test mines are used at SWEDEC, however fuses are live in order to determine whether the mine has detonated or not. If a mine has failed to detonate it will fall under one of the following three categories:

- triggered (detonated) - The firing chain or circuit has been completed;

- mechanically neutralised (untriggered, damaged, non-functional) - the target has been engaged by the tool, and the firing chain or circuit cannot be completed;
- live damaged (untriggered, damaged, still functional) - the tool has engaged the target, but the possibility of the firing chain being completed exists.

An alternative to using test mines with live fuses is to use the purpose-developed Wireless Operated Reproduction Mine (WORM) target (http://www.itep.ws/pdf/WORMBrochure_LowResolution.pdf).



Live fuse with test mine



Pizza cutter being used to prepare for placement fibre boards

While the tillers and flails are being tested against mines the tool penetration profile is simultaneously evaluated. This is done with sections of 3mm thick fibre boards. The fibre board is buried in the ground across the clearance path/test lane of the machine, up to 15cm below the maximum depth.

The width of the fibre board is always at least 10 per cent wider than the width of the digging tool. A minimum of three fibre boards are used, one before engaging the targets, one within the targets, and one after the targets. SWEDEC use a so-called 'pizza slicer', mounted on an excavator, to cut the ground for the fibre boards.



Fibre board being buried

On the last day of the machine trial a survivability test is conducted. This measures blast effects on the tool under controlled conditions, using charges as specified in the CWA and with the tool in normal operation. The size and characteristics of the charges are also defined in the CWA. The target selection is based on the manufacturer's declaration of capacity, unless otherwise agreed in the test documentation.



Fibre board after test

As a minimum the machine will always be tested with an anti-personnel mine. At SWEDEC a high speed camera is used during the survivability test to document the test, picture by picture. The tests are carried out at a demolition training area with a shelter, to allow them to be observed at a close distance.

The full reports of the above tests will be made available on the ITEP webpage over the coming months. Full test reports from previous ITEP tests are also available on the ITEP webpage.

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