

Annex E – Manufacturer Comments

The following material was received from the machine manufacturer in response to a draft version of this report.



DEMINE AND MANUFACTURING OF SPECIAL EQUIPMENT

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Zagreb, 13th November 2007

Mr. William Roberts
Neutralization and Protection Group
Military Engineering Section
Defence R&D Canada – Suffield

SUBJECT: Comments on the DOK-ING MV-10 Test Report

Dear Mr. Roberts,

DOK-ING would like to use this opportunity to thank you for submitting to us the draft of the MV-10 Test Report, and we would also like to submit our comments to be included in the final version of the MV-10 Test Report. Some of our comments include only minor word corrections, and some of the comments require some explanation.

1. Title of the Test Report

First of all, DOK-ING would like to change the title of the Test Report to "DOK-ING MV-10 Double Tool Mine Clearance System Test and Evaluation", and anywhere where it is needed to reflect the correct name of the machine to DOK-ING MV-10 Double Tool Mine Clearance System;

2. Page iii, chapter EXECUTIVE SUMMARY, paragraph 4;

DOK-ING acknowledges the suggestion that the incorporation of automatic depth and forward speed control system would probably improve the productivity and consistency of penetration, and this issue has already been addressed by the DOK-ING's engineering team, and will be included as a feature on every newly built MV-10 Mine Clearance System;

3. Page iii, chapter EXECUTIVE SUMMARY, paragraph 5;

DOK-ING would like to change the wording in this paragraph, and would like to exchange the statistical data provided there, and instead of that to replace it with the following sentence; "The effectiveness in destroying targets varied

widely from 34 of 50 targets either triggered or mechanically neutralized, to a 48 of 50 targets either triggered or mechanically neutralized". DOK-ING thinks that this is enabling the ordinary reader to better understand the achieved figures and numbers, and this type of wording was always used by the CCMAT and the Defence R&D Canada – Suffield when publishing the test reports.

4. Page iii, chapter EXECUTIVE SUMMARY, new paragraph;

DOK-ING thinks that it is worth of mentioning that no breakdowns or maintenance problems of any kind occurred during the execution of the tests, and that the remote control system operated well during the tests, and no malfunctions or problems with this system were observed or reported.

5. Page 15, chapter TRIAL CONDITIONS

As mentioned in the Executive Summary, and the Introduction, the test was conducted to the methodology specified in the European Committee for Standardisation (CEN) Workshop Agreement "CEN Workshop Agreement 15044; Test and Evaluation of Demining Machines". That document clearly explains the test environment and the soil types and how the trial should be setup (see page 11 of the above mentioned document). There was no soil analysis completed on the three types of soil available for these tests; the theoretical maximum dry density was not available; only a portion of the soil densities and moisture content measurements were taken during the trials. The CEN Workshop Agreement 15044; Test and Evaluation of Demining Machines clearly identifies that before every run, the soil in the test lanes needs to be cultivated, and then compacted to its original state again, and the level of compactness is to be measured and recorded using 10 points randomly distributed along the lane. The measurement should be done with a densitometer and at the expected depth. Unfortunately, that was not done. It is out of the scope of this document to question the validity of the test results, and the influence of the preparation of test lanes to the test results, but certainly DOK-ING can conclude that the test was not done under controlled conditions and not according to the CEN Workshop Agreement 15044; Test and Evaluation of Demining Machines as it was expected.

6. Page 16, table

The same comment as under 5., with addition, no reference values or benchmark values were set either for moisture content or for maximum dry density. The CEN Workshop Agreement 15044; Test and Evaluation of Demining Machines clearly identifies that the gravel test lane should have $94\% \pm 2\%$ level of compactness of the maximum theoretical dry density; the sand test lane should have $90\% \pm 2\%$ level of compactness of the maximum theoretical dry density; and the topsoil lane should have $85\% \pm 2\%$ level of compactness of the maximum theoretical dry density. DOK-ING also knows from the previous tests that if the moisture content were out of range on a given day, this may restrict testing.

7. Page 20, footnote 6

The correct text should be: Six targets could not be found. If these targets were neutralized, the value would be 48/50.

- 8. Page 22, chapter 4.1.3 DEBRIS AND SCATTER, 3rd line**
Instead of wording "it may be intact but damaged" DOK-ING proposes the following: "it may be damaged but still functional".
- 9. Page 26, Figure 10.**
DOK-ING acknowledges your conclusion that the tiller tool was not engaged in this case, and two skip zones resulted out of that. This is an operator fault, and it was noted.
- 10. Page 28, Figure 13.**
DOK-ING acknowledges your conclusion that the tiller tool was not engaged in this case, and two skip zones resulted out of that. This is an operator fault, and it was noted.
- 11. Page 30, chapter 4.2.4, paragraph 2,**
DOK-ING acknowledges your observation. This is an operator fault in which the operator did not follow an operational method and procedure.
- 12. Page 32, chapters 4.2.5.1 Sand, 4.2.5.2 Gravel, 4.2.5.3 Topsoil, 4.2.5.4 General**
DOK-ING fully acknowledges and confirms your observations and conclusions. This was an operator fault in which the operator did not follow regular operational method and operational procedure which had a direct effect on the testing results.
- 13. Page 33, chapters 4.4 Mobility Test, 4.5 Vegetation Cutting Test, 4.6 Survivability Test**
It should be noted that all those tests were done in 2005, and DOK-ING has all test data and reports which is also available at the International Test and Evaluation Program (ITEP) for Humanitarian Demining Website (www.itep.ws).
- 14. Page 36, chapters 5.1 Positive Observations, 5.2 Areas Requiring Attention**
DOK-ING acknowledges all positive observations and also areas requiring attention mentioned in the text and DOK-ING would like to confirm that all of these areas have already been noted and addressed by DOK-ING's Engineering Team.
- 15. Page 37, chapter 5.3 Recommendations**
Like in the previous comment, all recommendations are very welcome and highly appreciated, and they have already been addressed. DOK-ING would like to express the fact that the particular MV-10 machine tested and evaluated in this test report represents the 1st prototype MV-10 machine developed and manufactured in April 2005. Following the DOK-ING strategy on a serial production of MV-10 machines, 2 prototypes are always produced and tested before serial production takes place. The manufacturing of both prototypes is planned so that a series of field and test assessments can be done, which at the end will result in all improvements put on place for a serial production of a next generation of the MV-10 machine. DOK-ING is confident that this is the

right approach for achieving the full satisfaction of both the producer and the final user of the equipment.

16. page 48, chapter Test Methods, paragraph 1, 2nd line,

The methodology specified in the European Committee for Standardisation (CEN) Workshop Agreement “CEN Workshop Agreement 15044; Test and Evaluation of Demining Machines” (see page 12 of the document) clearly identifies that “the machine shall be allowed to stabilize itself and drive 5 meters before the measurement starts which was not the case during the testing (2-3 meters only), and we strongly believe that this had no influence on the performance or the test results.

DOK-ING wishes to acknowledge the team from Defence R&D Canada – Suffield, and the team from CROMAC – Centre for Testing, Development and Training for preparing and executing the actual test at Cerovac test site in Croatia, and for providing the Draft Test Report to DOK-ING. The achieved test results expressed in this Test Report will enable DOK-ING to add additional value and raise the quality of DOK-ING’s existing and future program of remote controlled demining machines. Keep up the good work.

Yours sincerely,

GENERAL MANAGER

Vjekoslav Majetić

