Fact Sheet

PERFORMANCE OF AN/PSS-12 MINE DETECTION IN WINTER CONDITIONS

PROBLEM

Determine the impact of snow and frozen ground on AN/PSS-12 mine detection capabilities. The results of this research will be valuable during winter operations in Bosnia.

SOLUTION

Two AN/PSS-12 mine detectors operated by engineer soldiers from the 41st Engineer Battalion, 10th Mountain Division, Ft. Drum, New York, were tested at the U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. Conditions included frozen soil, thawed soil and snow. Performance was measured as the stand-off height at which the training mines and small metal discs could be detected with confidence. It was assumed that the search head of the AN/PSS-12 would be held above the snow during searching operations to avoid trip wires, fuse activation, and other potential hazards.

RESULTS

1. Snow and soil conditions had no significant effect on performance with the exception of forcing a greater stand-off distance when searching for mines.
2. Large metallic mines (6 inch to 13 inch diameter) were consistently detected at stand-off heights up to 18 inches.
3. Stand-off detection heights for small metal discs varied with the type of metal. A 3-inch-diameter steel disk was detectable with stand-off distances up to 12 inches. An M-12 booster alumninum training device (0.75 inch diameter) was detectable at stand-off heights up to 8 inches. A brass shotgun primer was detectable at stand-off heights up to 2 inches.

CONCLUSIONS

Assuming that the mine search operation is conducted above the snow surface:

1. Large metallic mines should be consistently detected with up to a foot of snow cover.
2. For mines with very small metal content, any snow cover could dramatically reduce detector performance by forcing deviation from the recommended 2-inch stand-off search height.
3. Frozen ground will not allow the use of a probe to confirm the presence of a buried mine.

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December 1995

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