

Mobile Drilling Kits

(National Center for Defense Manufacturing and Machining)

PROBLEM / OBJECTIVE

Drilling through armor plating is a difficult task with crews primarily utilizing high-speed steel (HSS) drill bits with rechargeable hand held drills. It can take 5-8 HSS drills to penetrate one hole in the armor plating. The technicians are tasked with drilling holes in materials that range from aluminum, thin sheet metal to armor plating. This process is time consuming and costly with most of this work field conducted with limited access to machining equipment normally used during installation. The National Center for Defense Manufacturing and Machining (NCDMM) successfully provided a solution for their situation with Mobile Drilling Kits designed for general drilling operations on armored vehicles.



Armor kit for field retrofits



Field conditions



Lab testing of mobile drill units and new drill concepts

Implementation and Technology Transfer:

A total of 795 kits have been assembled and delivered to Rock Island Arsenal and their New Cumberland Distribution Center. NCDMM has demonstrated installation techniques to crewmembers on how to utilize the Mobile Drilling Kit high performance tooling and maintenance equipment.

Expected Benefits and Warfighter Impact:

Mobile drilling kits have improved support to our Warfighters. The mobile drilling kits were developed, manufactured and fielded to meet a real time operational Warfighter need. These kits enable more efficient drilling operations on armored vehicles. Advanced manufacturing techniques that have significantly improved the process include:

- Consistent tooling that contains common tools for all technicians (same drills and batteries that are interchangeable)
- Drill sharpener to sharpen drill bits

ACCOMPLISHMENTS / PAYOFF

Process Improvement:

After review, NCDMM concluded HSS tooling was not an efficient method for drilling through the differing material types. NCDMM developed solutions for this issue by testing a variety of carbide drills, while a mobile magnetic base drill press supported rigidity for the carbide drills. This process successfully penetrated armor. A durable mobile tooling kit containing the tooling and equipment was assembled for shipment anywhere in the world. This improved process is providing technicians the capability to repair/replace damaged armor plates and to make hole modifications to armor for accessories on various vehicles while in the field.

TIME LINE / MILESTONE

Start Date	February 06
End Date	February 07

FUNDING

NCDMM	\$3.6M
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PARTICIPANTS

- Component suppliers for the kit who supply training information on components

U.S. Army RDECOM AMRDEC
Rock Island Arsenal
Darex Corporation
Jancey Engineering
Kennametal Inc.
VEE Sales