

U.S. ARMY ABERDEEN TEST CENTER  
ABERDEEN PROVING GROUND, MD 21005-5059  
TEST RECORD

18 MAY 1999

TECOM Project No: 1-VG-650-HMT-010      Dates of Test: 26 January 1999 through  
Type Test and Title: Technical Feasibility      22 April 1999  
Test of the High Mobility Trailer (HMT)      Authority: TECOM, Test Execution  
Directive, 5 February 1999  
Test Record No.: AC-V-35-99

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TEST ITEMS

Two High Mobility Trailers (HMTs), serial numbers 05809 and 05811 were provided for testing. Prior to the start of testing, steel drawbar frame improvement kits were applied to both test trailers. The steel drawbar kit was developed to address failures of the standard aluminum drawbar and will be applied to all produced HMTs as a retrofit kit. Both test trailers were equipped with the standard model Six surge brake assembly.

SUPPORTING FACILITIES AND INSTRUMENTATION

a. Facilities:

Building 436 - Field Engineering Laboratory  
Building 338 - Automotive Maintenance Shop  
Building 402 - Contractor Operated Automotive Maintenance Shop  
Perryman Automotive Test Area

b. Instrumentation:

Vehicle Performance Recorders (VPRs)

DETAILS OF TEST

Testing was conducted to ascertain a speed at which an HMT loaded to 4200 pounds gross vehicle weight (GVW) could traverse Perryman level cross country 2 and 3 test courses (PTA-2 and PTA-3) without damaging the trailer or its prime mover. The trailers were towed for 2000 miles on PTA-2 and for 1500 miles on PTA-3 at speeds not exceeding 10 miles per hour (mph).

At 500 mile intervals, the rear bumper assembly of the High Mobility Multi-purpose Wheeled Vehicle (HMMWV) prime movers and the drawbar/surge brake assemblies of the test trailers were inspected. Inspection of the surge brake involved disassembly of the brake actuator to remove the inner slide and visually inspect for cracks or abnormal wear.

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## SUMMARY OF RESULTS

a. An initial inspection was done on both trailers to establish baseline characteristics prior to the start of test. The inspection consisted of an overall visual inspection, functional checks of the lighting and parking brake system, service brake adjustment check, and adjustment of the tire pressure to the required 17 psi.

b. Both test trailers were payloaded with loads fabricated from steel plate and angle iron to provide a gross vehicle weight of 4,200 pounds with a vertical center of gravity of 28 inches above the floor of the cargo bed. The payload was positioned to provide a 420 pound load on the pintle of the towing vehicle.

c. Results of the 500 miles inspections follow. A total of seven (7) inspections were done on each test item:

(1) There was no abnormal wear noted on the surge brake components of either test trailer.

(2) Minor hairline cracks 1/4 to 3/8 inch in length were found on the top of the inner slide assemblies on both trailers at the end of the test. The cracks protrude outward from the square corners of a 3/4 by 1-1/4 inch notch cut in the top surface at the rear of the inner slide assembly. The notch allows operation of the emergency breakaway brake apply mechanism. The square cut corners of the notch produce a high stress area. There is no load on the slide assembly in the immediate area of the notch.

(3) The standard pin (drilled pin with lube fitting) for the upper roller of the brake actuator failed on both test trailers at 1500 and 1800 miles respectively. The drilled pin was replaced with a common stock 9/16 by 5 inch, grade 5 bolt and lock washer. No problems occurred with the roller pins during the remainder of the test.

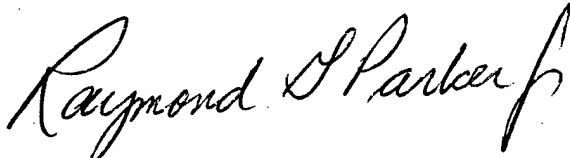
d. Trailer H-2 S/N 05811 rolled over while traversing PTA-3 due to driver error. There was superficial damage done to the right front corner of the trailer. No damage was done to the prime mover. The trailer was turned right side up, taken to the shop for inspection and returned to endurance operation.

This is the final report on this task.

## FUTURE RELATED WORK

Additional High Mobility Trailer drawbar, surge brake and HMMWV bumper, cross member and inner brace evaluation.

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