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ARMY COLD REGIONS TEST CENTER FORT GREELY AK
FEASIBILITY TEST (COLD REGIONS PHASE) OF PLASTIC FUEL TANKS FOR--ETC(U)
AUG 79 J B STOREY

F/G 13/4

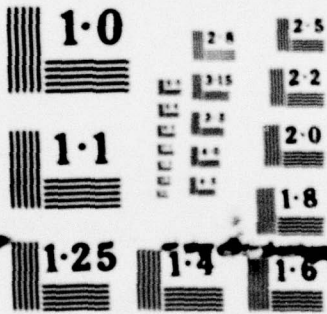
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NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

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RDT&E PROJ NO
USATECOM PROJ NO 1-VG-123-000-008 ✓
TEST SPONSOR TARADCOM

②
FEASIBILITY TEST
(COLD REGIONS PHASE)
OF PLASTIC FUEL TANKS FOR TRUCK
CARGO: 5-TON, 6x6, M809 SERIES

DDC
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DEC 14 1979
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BY

⑩
JAMES B. STOREY
⑪ 17 August 1979
⑫ 15

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USA COLD REGIONS TEST CENTER
APO SEATTLE 98733

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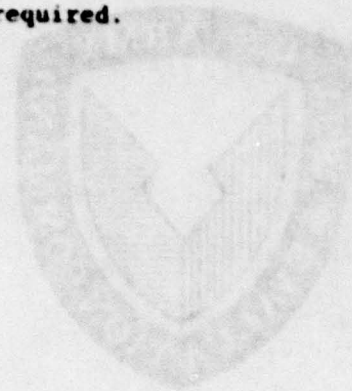
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Disposition Instructions

Destroy this plan when no longer required.

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SECTION 1 - INTRODUCTION

1.1 BACKGROUND

During 1976/1977, 4-ton truck plastic fuel tanks were evaluated in conjunction with cold regions test of the M151A2, 4-ton truck (Product Improved) tests. A plastic fuel tank has since been designed and manufactured for use on 5-ton trucks and evaluation of these tanks under cold regions conditions has been requested by Tank-Automotive Research and Development Command (TARADCOM).

1.2 DESCRIPTION OF MATERIEL

The test fuel tanks are manufactured of plastic and are the standard 55-gallon capacity. The test tanks are intended to replace the steel fuel tanks on 5-ton trucks.

1.3 TEST OBJECTIVES

- a. To determine the compatibility of the plastic fuel tanks with 5-ton trucks.
- b. To determine the durability of the plastic fuel tanks in a typical cold regions environment.

1.4 SCOPE

- a. One pair of fuel tanks will be shipped to the Cold Regions Test Center (CRTC) in July 1979 for testing.
- b. The fuel tanks will be installed on M51A2 5-ton truck(s) that will be dispatched on routine missions during the period August 1979 through May 1980. In addition, the truck will be dispatched on test runs over primary, and secondary roads and cross-country during periods of intermediate cold and cold temperatures.
- c. The test fuel tanks will be inspected before and after each period of use to detect cracks, wear, deformation, leaks, and any other form of degradation.
- d. All incidents involving the test fuel tanks will be reported by equipment performance report IAW TECOM PAM 70-3.
- e. Upon completion of testing, the plastic fuel tanks will be disposed of in accordance with instruction from TARADCOM.

f. The environmental impact of this test has been assessed and is considered negligible.

2.1 ENVIRONMENTAL IMPACT AND INSTALLATION

2.1.1 Objectives

- a. Determine the condition of the test tank and associated hardware upon receipt.
- b. Install the plastic bag tanks on a 3-ton crane.

2.1.2 Site

None.

2.1.3 Data Required

- a. The number and condition of the test tank units received.
- b. The number of the number of units received at the location of the tank.
- c. The condition of the test tank units upon receipt for installation.
- d. The personnel, equipment, and time required to install the tanks.

2.1.4 Data Acquisition Procedure

- a. Data required for this test will be inspected and recorded upon receipt of the test tank units.
- b. The test tank will be installed on a 3-ton crane and pertinent data relative to the installation will be recorded.

2.1.5 Analytical Procedure

- a. The test tank units will be considered to be proper condition for testing if there are no defects or shipping damage discovered during the inspection.

SECTION 2 - DETAILS OF TEST

2.1 PREOPERATIONAL INSPECTION AND INSTALLATION

2.1.1 Objective

- a. Determine the condition of the test fuel tanks and associated hardware upon receipt.
- b. Install the plastic fuel tanks on a 5-ton truck(s).

2.1.2 Criteria

None.

2.1.3 Data Required

- a. The number and condition of the test fuel tanks received.
- b. The nomenclature of the truck or trucks selected for installation of the tanks.
- c. The compatibility of the test fuel tanks with the truck(s) selected for installation.
- d. The personnel, equipment, and time required to install the tanks.

2.1.4 Data Acquisition Procedure

- a. Upon receipt the fuel tanks will be inspected and any associated hardware inventoried.
- b. The test fuel tanks will be installed on a 5-ton truck and pertinent data relative to the installation will be recorded.

2.1.5 Analytical Procedure

- a. The test fuel tanks will be considered in proper condition for testing if there are no defects or shipping damage discovered during the inspection.

b. The test fuel tanks will be considered compatible with the 5-ton truck if the fuel tanks can be installed using the personnel, equipment, and methods normally required to replace a standard fuel tank.

2.2 PERFORMANCE AND SERVICEABILITY

2.2.1 Objective

Determine the functional performance and serviceability of the plastic fuel tanks under cold regions conditions.

2.2.2 Criteria

None.

2.2.3 Data Required

a. The distance traveled and the type of surface negotiated by the 5-ton truck with the test fuel tanks.

b. The high, low, and mean temperature for each day's operation.

c. The results of inspections of the fuel tanks to include information regarding any cracks, wear, deformation, and any other degradation.

2.2.4 Data Acquisition Procedure

a. No TOP's or MTP's were found to be applicable to this sub-test.

b. The 5-ton truck(s) with the test fuel tanks installed will be operated routinely during the test period. In addition, the following specific mileages will be accomplished at intermediate cold (-5°F to -25°F) temperatures:

- (1) Primary Road - 250 miles
- (2) Secondary Road - 200 miles
- (3) Cross-country - 100 miles

The following specific mileages will be accomplished at cold (-26°F to -50°F) temperatures:

- (4) Primary Road - 250 miles
- (5) Secondary Road - 200 miles
- (6) Cross-country - 100 miles

c. The checklist, appendix D will be used on a daily basis to gather data required in para 2.2.3.

2.2.5 Analytical Procedure

Data accumulated during this subtest will be tabulated and analyzed to determine durability indicators of the test fuel tanks.

2.3 POST OPERATIONAL ACTIVITIES

2.3.1 Objective

a. Determine the serviceability and condition of the test fuel tanks at the conclusion of testing.

b. Dismount the test fuel tanks from the vehicle for disposition.

2.3.2 Criteria

None.

2.3.3 Data Required

Condition of the fuel tanks to include any cracks, wear, deformation, or any other degradation that may have occurred.

2.3.4 Data Acquisition Procedure

a. At the conclusion of active testing the condition of the fuel tanks will be established by the test officer.

b. The fuel tanks will be dismantled from the vehicle by maintenance personnel.

2.3.4 Analytical Procedure

Based on data accumulated during this subtest the serviceability of the plastic fuel tanks will be appraised.

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SECTION 3 - APPENDICES

APPENDIX A - CRITICAL ISSUES, OTHER ISSUES, AND TEST CRITERIA

None.

APPENDIX B - SUPPORT REQUIREMENTS

1. General

The following personnel and materiel are required in support of the plastic fuel tank test:

a. Vehicles - Truck tractor, 5-ton.

b. Personnel

(1) Test Officer

(2) Test NCO, E7, 19E40

(3) Driver, E5, 64C20

(4) Mechanic, E4, 63H10 (As Required)

c. Photo Support

(1) Black and white still, 25 ea.

(2) Motion pictures (If Required).

d. Maintenance shop space for the 5-ton truck during mounting and dismounting of the plastic fuel tanks (2 days).

APPENDIX C - TEST SCHEDULE

X = Hardware delivery date

Name of Subtest	Time Increments (Months)										
	X	X+1	X+2	X+3	X+4	X+5	X+6	X+7	X+8	X+9	
Preoperation Inspection and Training											====
Performance and Serviceability											=====
Post Operational Activities											===
Report Preparation											=====

APPENDIX D - CHECKLIST

DAILY DATA SHEET

Driver's Name/Rank _____ Date _____

Vehicle Bumper Number _____

Odometer Reading Prior To Mission _____

Odometer Reading At Completion Of Mission _____

Total Miles Operated _____

Ambient Air Temperature: High _____ Low _____

Ambient Air Temperature Mean _____

What type of terrain was the vehicle operated on:

Primary Road _____ Miles

Secondary Road _____ Miles

Cross-country _____ Miles

What were the results of inspection of the fuel tanks before and after operation, were any cracks, wear, deformation, or any other degradation observed: _____

APPENDIX E - REFERENCES

None.

Inspector's Name/Date
Vehicle Inspection Number
Observer's Name/Date
Observer's Address
Total Miles Observed
Subject Air Temperature High/Low
Subject Air Temperature Low

What type of terrain was the vehicle operated on?

Primary Road _____ Miles
Secondary Road _____ Miles
Cross-country _____ Miles

What were the results of inspection of the fuel tanks before and after operation, were any cracks, wear, deterioration, or any other defects observed?

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APPENDIX F - ABBREVIATIONS

None.

APPENDIX G - DISTRIBUTION LIST

<u>Addressee</u>	<u>Test Plan</u>	<u>EPR</u>	<u>Final Report</u>
Commander USA Tank-Automotive Research and Development Command ATTN: DRDTA-A 28251 Van Dyke Avenue Warren, MI 48090	1	1	20
Commander USA Test and Evaluation Command ATTN: DRSTE-CT Aberdeen Proving Ground, MD 21005	10	10	10
Commander Defense Documentation Center ATTN: Document Service Center Cameron Station Alexandria, VA 22314			2