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RDTE PROJECT NO./FSN 1-VG-120-151-047
USATECOM PROJECT NO.
YPG PROJECT NO. QKP-ICT-70-P01
TEST SPONSOR PROJECT NO.
USACDC AC NO.

YPG REPORT 0061

RECONDITION TEST OF TRUCK, UTILITY, 1/4-TON, 4X4, M151, USA REG NO. 2F4501 AND 2D3782

FIRST AND FINAL LETTER REPORT

BY

MICHAEL J. BONKOSKI, 2LT, ORDC
DECEMBER 1970

YUMA PROVING GROUND
YUMA, ARIZONA

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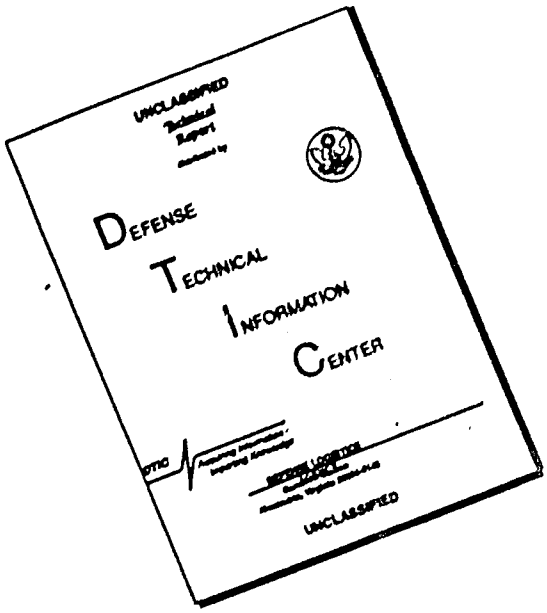

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DEPARTMENT OF THE ARMY MBonkoski/mam/727-1450
Yuma Proving Ground 2693
Yuma, Arizona 85364

STEYP-MTM

SUBJECT: First and Final Letter Report on Recondition Test (RT) of Truck, Utility, 1/4-Ton, 4x4, M151, USA Reg No. 2D3782 and 2F4501, Serial No. 3782 and 4501, PRON No. EH-0-7Q299-01-EH-L5, USATACOM Project No. QKP-ICT-70-P01, USATECOM Project No. 1-VG-120-151-047, FY70 Depot Overhaul Program

Commanding General
U.S. Army Tank-Automotive Command
ATTN: AMSTA-QKP
Warren, Michigan 48090

Dates of Test: 7 July to 6 November 1970

1. REFERENCE

Procurement/Work Directive, AMC Form 1006A, USATACOM, AMSTA-QKP, dated 29 April 1970.

2. BACKGROUND

The two Trucks, Utility, 1/4-Ton, 4x4, M151, USA Reg No. 2F4501 and 2D3782, covered in this report were submitted for recondition testing as part of the FY70 Depot Overhaul Program. The two trucks were rebuilt at Pueblo Army Depot, Pueblo, Colorado. The vehicles arrived on 29 June 1970 with odometer readings of 45.9 and 87.9 miles. Testing began on 7 July 1970 with the Initial Technical Inspection.

3. OBJECTIVE

To provide evidence of conformance to overhaul standards, production capability and the adequacy of the quality assurance system.

4. SUMMARY OF RESULTS

a. Receiving Inspection

No evidence of shipping damage was noted on receipt of vehicles.

b. Initial Technical Inspection

This inspection was performed to assure that the vehicles were in proper operating condition prior to test operations. Results of this inspection are contained in Inclosures 1 and 2.

Shortcomings discovered, corrected (except cracked distributor cap), and reported during this inspection were as follows:

USA REG NO. 2F4501

(1) Defective fan (EPR L5-1, Incl 4 and Fig. 1, Incl 5)

(2) Glazed hand brake band (EPR L5-2, Incl 4)

(3) Insufficient distributor point gap and cracked distributor cap (EPR L5-3, Incl 4)

(4) Improper brake pedal adjustment (EPR L5-4, Incl 4)

(5) Transfer case leak and poor fit of spacer (EPR L5-5, Incl 4)

(6) Incorrect headlight adjustment (EPR L5-7, Incl 4)

USA REG NO. 2D3782

(1) Defective fan (EPR L5-1, Incl 4)

(2) Glazed hand brake band (EPR L5-2, Incl 4)

(3) Incorrect headlight adjustment (EPR L5-7, Incl 4)

(4) Insufficient torque values on engine mount bolts (EPR L5-8, Incl 4)

(5) Missing coil hold-down screw (EPR L5-9, Incl 4)

(6) Broken alternator adjusting arm bolt (EPR L5-10, Incl 4)

c. Endurance Test

Vehicles USA Reg No. 2F4501 and 2D3782 were subjected to 5005 and 5128 miles of endurance testing, respectively. A breakdown of test mileage and fuel and oil consumption data is contained in Inclosure 3.

Deficiencies reported during this phase were as follows:

USA Reg No. 2D3782

Failed universal joint fasteners, rear axle shaft (EPR's L5-11, 12, 16). EPR's L5-11 and 12 were reclassified as deficiencies due to loss of vehicle control that could result in the event failure occurs at highway speed (EPR's L5-11, 12, 16, Incl 4).

USA Reg No. 2F4501

Failed transmission input shaft (EPR L5-14, Incl 4 and Fig. 2, Incl 5).

Shortcomings reported during this phase were as follows:

USA Reg No. 2D3782

(1) Damaged and worn rubber suspension bumpers (EPR L5-17, Incl 4)

(2) Improper front end alignment (EPR L5-18, Incl 4)

(3) Oil leak through O-ring in speedometer cable fitting on transfer case (EPR L5-19, Incl 4)

(4) Cracked parking brake drum (EPR L5-20, Incl 4)

(5) Broken steering wheel spoke (EPR L5-21, Incl 4)

(6) Missing tail pipe clamp (EPR L5-22, Incl 4)

USA Reg No. 2F4501

(1) Leaking fuel line (EPR L5-6, Incl 4)

(2) Loose universal joint fasteners (EPR L5-13, Incl 4)

(3) Oil in distributor (EPR L5-23, Incl 4)

(4) Improper front end alignment (EPR L5-24 (18-2), Incl 4)

(5) Broken exhaust clamp bolt (EPR L5-25, Incl 4)

d. Final Technical Inspection

This inspection was performed to determine the existence of any damage, defects, or abnormal wear resulting from test operations. A repeat of checks and services made during the initial technical inspection was conducted. Shortcomings noted during this inspection were as follows:

USA Reg No. 2D3782

(1) Cracked frame center members (EPR L5-26, Incl 4 and Fig. 3, Incl 5).

(2) Undertorqued universal joint bolts (EPR L5-29, Incl 4)

(3) Excessive play in ball joints (EPR L5-30, Incl 4)

(4) Missing brake spring anchor clip (EPR L5-31, Incl 4)

(5) Worn shock absorber (EPR L5-32, Incl 4)

(6) Cracked A-frame (EPR L5-34, Fig. 7, Incl 4)

USA Reg No. 2F4501

(1) Missing and worn thrust washers (EPR L5-27, Incl 4 and Fig. 4 and 5, Incl 5)

(2) Undertorqued rear suspension arm bushing bolts (EPR L5-28, Incl 4)

(3) Shock absorber wet with fluid (EPR L5-32, Incl 4)

(4) Cracked A-frame (EPR L5-34, Fig. 7, Incl 4)

The following EPR was submitted for information only on vehicle 2D3782: Weld on lower A-frame (EPR L5-33, Incl 4 and Fig. 6, Incl 5).

Results of the final technical inspection are contained in Inclosures 6 and 7. An engine teardown, as requested by USATACOM, was performed. The teardown was for crankshaft removal and inspection. Upon removal USATACOM requested that the two crankshafts be sent to Ford Motor Company and new crankshafts were received as replacements.

STEYP-MTM

SUBJECT: First and Final Letter Report on Recondition Test (RT) of Truck, Utility, 1/4-Ton, 4x4, M151, USA Reg No. 2D3782 and 2F4501, Serial No. 3782 and 4501, PRON No. EH-0-7Q299-01-EH-L5, USATACOM Project No. QKP-ICT-70-P01, USATECOM Project No. 1-VG-120-151-047, FY70 Depot Overhaul Program

5. CONCLUSIONS

a. Quality control and workmanship by the depot were unsatisfactory.

b. Durability of universal joint fasteners on rear axle shafts was unsatisfactory.

5. RECOMMENDATIONS

a. Quality control and workmanship be improved.

b. Durability of universal joint fasteners on rear axle shafts be improved.

FOR THE COMMANDER:

GEORGE A. CUSTER
COL, Inf
Director of Materiel Test

8 Incl
1. Initial Technical Inspection (Vehicle 3782)
2. Initial Technical Inspection (Vehicle 4501)
3. Operations Summary
4. Summary of Defects
5. Photographs
6. Final Technical Inspection (Vehicle 3782)
7. Final Technical Inspection (Vehicle 4501)
8. Distribution List

INITIAL TECHNICAL INSPECTION (Vehicle USA Reg No. 2D3782)

DATES OF INSPECTION: 7 July to 21 July 1970

ENGINE: Group 1:

Engine mount bolts were undertorqued - 3 at 0 lb-ft and 1 at 20 lb-ft. They were retorqued to 35 lb-ft.

CLUTCH: Group 02:

Free play was 2 inches; adjusted to 1-1/4 inches.

FUEL SYSTEM: Group 03:

Satisfactory

EXHAUST SYSTEM: Group 04:

Satisfactory

COOLING SYSTEM: Group 05:

No leakage was observed under pressure. Radiator cap relief pressure was 7.0 psi and recovery was at 6.5 psi. The fan was defective (EPR L5-1, Incl 4).

ELECTRICAL: Group 06:

Generator: 2F013646

Operation was satisfactory. Output voltage was 26.6 volts dc. The generator adjusting bolt was broken.

Starter: Serial No. 2A000618
Operation was satisfactory.

Distributor: Serial No. 20280
Operation was satisfactory.
Coil hold-down screw was missing.

INITIAL TECHNICAL INSPECTION (Vehicle USA Reg No. 2D3782)

Switches, Gages, and Lights:

Headlights were incorrectly adjusted as follows:

Left	Right
4-1/2 Inches left	10 Inches right
10 Inches down	10 Inches down

They were readjusted to:

Left	Right
0 Inch	0 Inch
9 Inches down*	3 Inches down

*Could not adjust to specification because adjusting screw was at maximum adjustment

TRANSMISSION: Group 07

Satisfactory

TRANSFER CASE: Group 08

Satisfactory

PROPELLER SHAFTS: Group 09

Satisfactory

FRONT AND REAR AXLES: Groups 10 and 11

Satisfactory

BRAKES AND WHEELS: Groups 12 and 13

The hand brake band was found to be glazed and out of adjustment.

CONTROLS: Group 14

Satisfactory

FRAME AND BRACKETS: Group 15

Satisfactory

INITIAL TECHNICAL INSPECTION (Vehicle USA Reg No. 2D3782)(Concluded)

SPRINGS AND SHOCK ABSORBERS: Group 16

Satisfactory

HOOD AND FENDERS: Group 17

Satisfactory

BODY: Group 18

Satisfactory

INITIAL TECHNICAL INSPECTION (Vehicle USA Reg No. 2F4501)

DATES OF INSPECTION: 7 July to 21 July 1970

ENGINE: Group 01

Satisfactory

CLUTCH: Group 02

Pedal free play was 2 inches.

FUEL SYSTEM: Group 03

Components were satisfactory. Fuel pressure was 6 pounds.

EXHAUST SYSTEM: Group 04

Satisfactory

COOLING SYSTEM: Group 05

No leakage was observed under pressure. Radiator cap relief pressure was 7.0 psi and recovery was at 6.0 psi.

The fan was defective (EPR L5-1, Incl 4).

ELECTRICAL: Group 06

Generator: Serial No. 1Z008549
Operation was satisfactory.
Output voltage was 27.7 volts dc

Starter: Serial No. 2Y000142
Operation was satisfactory.

Distributor: Serial No. 3X980317. Cracked distributor cap.
Point gap was .013 inch; reset to .020 inch.
Dwell angle 43 degrees; reset to 39 degrees.

Switches, Gages, and Lights:

Headlights were incorrectly adjusted as follows:

Left	Right
5-1/2 Inches left	2 Inches right
4 Inches down	7 Inches down

INITIAL TECHNICAL INSPECTION (Vehicle USA Reg No. 2F4501)(Concluded)

They were adjusted to:

Left	Right
0 Inch	0 Inch
3 Inch down	6-1/2 Inch down*

*Could not adjust to specification because adjusting screws were at maximum adjustment

TRANSMISSION: Group 07

Operation was satisfactory.

TRANSFER CASE: Group 08

Transfer was leaking through thrust washer retaining rivet. Rear spacer in the transfer was also defective (EPR L5-5, Incl 4).

PROPELLER SHAFTS: Group 09

Satisfactory

FRONT AND REAR AXLES: Groups 10 and 11

Satisfactory

BRAKES AND WHEELS: Groups 12 and 13

The service brake pedal free play was 1-3/4 inches. Adjusted to specified
The hand brake band was glazed and out of adjustment. (EPR L5-2, Incl 4).

CONTROLS: Group 14

Satisfactory

FRAME AND BRACKETS: Group 15

Satisfactory

SPRINGS AND SHOCK ABSORBERS: Group 16

Satisfactory

HOOD AND FENDERS: Group 17

Satisfactory

BODY: Group 18

Satisfactory

OPERATIONS SUMMARY

VEHICLE: Truck, Utility, 1/4-Ton, 4x4, M151, Serial No. 2D3782

Endurance Mileage

	Paved[a]	Hilly Cross-Country[b]	Level Cross-Country[b]
With trailer	552.5	1035.0	1044.0
Without trailer	450.1	1000.0	1000.0
Break-in	101.1		

Initial odometer	45.9 miles
Final odometer	5228.6 miles
Total test miles:	5182.7

Fuel and Lubricant Consumption

Gasoline consumption: 421.3 gallons

Economy: 12.3 miles per gallon

Engine oil consumption: 7.0 quarts

Transmission oil consumption: 1.0 quarts

VEHICLE: Truck, Utility, 1/4-Ton, 4x4, M151, Serial No. 2F4501

Endurance Mileage

	Paved[a]	Hilly Cross-Country[b]	Level Cross-Country[b]
With trailer	453.1 m	1000.1	1000.2
Without trailer	451.4	1000.2	1000.1
Break-in	100		

Initial odometer	87.9 miles
Final odometer	5093.0 miles
Total test miles:	5005.1

Fuel and Lubricant Consumption

Gasoline consumption: 327.8 gallons

Economy: 15.3 miles per gallon

Engine oil consumption: 3.5 quarts

Transmission oil consumption: 1 pint

[a]Trailer payload, 1300 pounds.
[b]Trailer payload, 1000 pounds.

Incl 3

SUMMARY OF DEFECTS

TYPES OF DEFECTS
A - DEFICIENCY D - DESIGN
B - SHORTCOMING M - MANUFACTURING
C - SUGGESTED IMPROVEMENT

TEST: [illegible]

PROJECT NO: 1-VG-120-151-047

Item Group	Veh. No.	Item No.	Type	Item	Part No.	Test Mileage	Remarks
05	4501 3782	1	B	Fan	11599014	0	The fan was slightly bent. Upon removal, it was found to be cracked around the rivets on both fan blades. The fan was replaced. (Fig. 1, Incl 5).
12	4501 3782	2	B	Hand brake band	2530-678-1284	0	Brake application was ineffective until maximum force was applied. Both vehicles under test had the same problem and in both cases the bands were replaced. The old bands were hard and glazed making them ineffective.
06	4501	3	B	Distributor	2920-353-7206	0	The distributor point gap was .013 inch and was reset to .020 inch. Also, the distributor cap was found to be cracked around a mounting screw. Since the cap was considered to be serviceable, it was not replaced.
12	4501	4	B	Brake adjustment	NA	0	The service brake pedal free play was 1-3/4 inches rather than the specified 1/2 inch. Adjusted to 1/2 inch.
08	4501	5	B	Transfer case and spacer	8754379-85	0	The transfer case was leaking lubricant. Upon investigation a rivet on the transfer case was found loose. Since oil was dripping out, the transfer case was disassembled for repair. During the repair, spacer (8754379-85) was found poorly seated over the snap ring on the output shaft. Splines had been cut into one side of the spacer as it worked around the shaft. Apparently the spacer

SUMMARY OF DEFECTS

TYPES OF DEFECTS
A - DEFICIENCY D - DESIGN
B - SHORTCOMING M - MANUFACTURING
C - SUGGESTED IMPROVEMENT

TEST: [illegible]

PROJECT NO: 1-VC-120-151-047

GROUP	VEH. NO.	EFR. NO. 1,5	TYPE	ITEM	PART NO.	Test MILEAGE	REMARKS
		5 (Concluded)					had not been the right size. The rivet and spacer were replaced.
03	4501	6	B	Fuel line	4730-013-7398	678	A complaint of excessive gas fumes disclosed a leak in the fitting at the top of the gas tank. The coupling was repaired with sealing tape and operation was continued. No further fumes were noticed.
06	4501 3782	7	B	Headlight adjustment	NA	0	The headlight beams were received incorrectly adjusted as follows (in.): Vehicle 2F4501 Left: 3 1/2 left, 4 down Right: 2 right, 7 down Adjusted to: Left: 0 left and right, 3 down Right: 0 left and right, 6 1/2 down* Vehicle 2D3782 Left: 4 1/2 left, 10 down Right: 10 right, 10 down Adjusted to: Left: 0 left and right, 9 down* Right: 0 left and right, 3 down *Specification, using mechanical aimers, is 0 inch right or left and 3 inches down. No further adjustment could be made because adjusting screws were at maximum adjustment.

STEYP-TGM Form 13, 18 Nov 64, Replaces STEYT-GTE Form 18, 14 May 63 which is obsolete.

SUMMARY OF DEFECTS

TYPES OF DEFECTS
A - DEFICIENCY D - DESIGN
B - SHORTCOMING M - MANUFACTURING
C - SUGGESTED IMPROVEMENT

TEST: Mobilefit

PROJECT NO: 1-VG-120-151-047

SUBL. GRP.	VEH. NO.	LFR NO. L5	TYPE	ITEM	PART NO.	Test MILEAGE	REMARKS
01	3782	8	B	Engine mount fasteners	5305-710-4193	0	The torque was at 0 lb-ft on three engine mount bolts and 20 lb-ft on the fourth. Retorqued to 35 lb-ft.
06	3782	9	B	Coil hold-down screw	424541	0	The engine stopped shortly after it was started. Since it would not restart, the distributor was disassembled. One coil hold-down screw had come loose and dropped between the points shorting the circuit. The screw was reinstalled and the engine started.
06	3782	10	B	Generator adjusting arm bolt	5306-988-2560	0	The generator adjusting bolt was found broken. The bolt was replaced.
11	3782	11	A	Rear U-joint (propeller shaft)	8342296	425	The right rear outside U-joint failed on the propeller shaft. One U-joint needle bearing retainer was found broken and the other damaged. The two races opposite the retainer were unseated, allowing possible movement. The U-joint assembly was replaced. Reclassified a deficiency due to recurring failures.
12	3782	12	A	U-joint fasteners (wheel drive shaft)	Not in TM	989	The right rear propeller shaft failed when the capscrews attaching the U-joint to the wheel spindle fell out. It should be noted here that this type of fastening device (capscrews) cannot be found in any technical manual pertaining to the M151 truck. According to the current TM for an M151 all U-joints should be fastened by use of a U-bolt. The propeller shaft, U-joint, and wheel

STEYP-TGM Form 13, 18 Nov 64. Replaces STEYT-GTE Form 13, 14 May 63 which is obsolete.

SUMMARY OF DEFECTS

TYPES OF DEFECTS
A - DEFICIENCY D - DEFER
B - SHORTCOMING M - MANUFACTURING
C - DESIRED IMPROVEMENT

TEST - M151 Rebuilt

PROJECT NO: 1-VC-120-151-047

SNL. GRP.	VEH. NO.	EPR. NO.	TYPE	ITEM	PART NO.	Test MILEAGE	REMARKS
		12 (Completed)					spindle from an M151A1 were installed in the vehicle so that the testing operation could continue. Reclassified a deficiency due to recurring failures.
11	4501	13	E	U-joint fasteners (right, rear propeller shaft)	Unknown	2840	There was severe vibration in the rear end of the vehicle while being driven to one of the test courses. Upon inspection of the right rear propeller shaft, the driver noticed that the U-bolt holding the U-joint in place was loose. Further inspection revealed that all U-bolts on the two rear propeller shafts were loose. The other vehicle being tested (USA No. 2D3782) had problems with capscrew fasteners (see EPR L5-12 dated 4 Sep 70). Although this vehicle also uses capscrew fasteners on the two rear propeller shafts, the difficulty was with the two U-bolts. The U-bolts were tightened and testing operations continued.
07	4501	14	A	Gear shaft, helical spur	2520-887-1350	3243	During operation on the truck hilly cross-country course with towed load, the operator noted a loud noise coming from the transmission. On disassembly and subsequent inspection it was disclosed that two adjacent teeth were broken off the helical input gear shaft. No subsequent damage to other gears was noted. The failed part was replaced. (Fig. 2, Incl 5)

STEYP-TGM Form 13, 18 Nov 64. Replaces STEYT-GTE Form 18, 14 May 63 which is obsolete.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	3782	15					BER 15-15 submitted to reclassify 15-14 as a deficiency.
11	3782	16 (11-3)	A	U-joint fasteners	Not in PM	1788	The U-joint fastener on the left rear axle shaft failed. The capscrews that secure the fastener assembly were twisted and broken off. The assembly was replaced. This fastener assembly is totally unsatisfactory resulting in the failures (BER's 15-11, 12, 16). This incident is classified a deficiency due to loss of vehicle control that could result in the event failure occurs at highway speeds and the recurring nature of the failures.
	3782	17	B	Bumper, rubber, rear suspension	2510-678-3126	1788	The rubber bump stops for the rear suspension were damaged and worn. Both right and left were replaced.
13	3782	18	B	Bolt, machine: Lower arm to cross member	5306-678-1416	3749	The front end of the vehicle shimmied and steering was difficult. Upon inspection it was noted that the rear lower suspension arm bolt on left front was loose and the shims were missing. The front end alignment was as follows:

	Camber	Caster	Toe In
Left	1/2°	1°+	
Right	1°-	0°	7/16" Toe-out

The alignment was adjusted to:

SUMMARY OF DEFECTS

TYPE OF DEFECT
A - DEFICIENCY D - DESIGN
B - SHORTCOMING E - MAINTENANCE
C - OPPORTUNITY FOR IMPROVEMENT

TEST: [illegible]

PROJECT NO: 1-VG-120-151-047

SNF GRP.	VEH. NO.	DEF. NO.	TYPE	ITEM	PART NO.	Test MILEAGE	REMARKS
		18 (Cancelled)					Camber / Caster / Toe-In Left 1/4°+ / 1/2°+ / Right 1/4°+ / 1/2°+ / 1/16" Toe-In The shims were replaced.
08	3782	19	B	O-ring (gear, speedometer drive)	2520-887-1346	3749	A slight oil leak was noted in the transfer case. The leak was from the speedometer cable fitting on the transfer The leak was corrected by replacing the O-ring in the fitting.
07	3782	20	B	Drum, parking brake	NA	3749	The parking brake drum was cracked. The crack was transverse across the outer surface of the drum and approximately 1/4 inch long. The drum was replaced.
14	3782	21	B	Steering wheel	2530-678-3078	3749	A steering wheel spoke was broken at the wheel hub and was repaired by welding.
04	3782	22	B	Clamp, tail pipe	NA	3749	The rear tail pipe clamp was missing and was replaced.
06	4501	23	B	Distributor, ignition system	2920-065-7536	4720	The engine misfired occasionally, became hard to start and would backfire. The inside of the distributor was coated with oil. The distributor was replaced. Origin of the oil could not be determined
13	4501	24 (18-2)	B	Bolt, machine: lower arm to cross member	5306-678-1416	4720	The rear lower front suspension arm bolts on both sides were loose and all shims missing. The front end alignment was noted to be:

STEYP-TGM Form 13, 18 Nov 67. Replaces STEYT-GTE Form 18, 14 May 63 which is obsolete.

SUMMARY OF DEFECTS

TYPE OF DEFECT
A - DEFICIENCY B - DESIGN
C - SHORTCOMING D - MANUFACTURE
E - SUGGESTED IMPROVEMENT

PROJECT NO. 1-VC-120-151-047

GROUP	VEH. NO.	ITEM NO.	TYPE	ITEM	PART NO.	Test MILEAGE	REMARKS
		24	(Concluded)				Camber / Caster Left 1-1/2° / 1°+ Right 1-3/4°+ / 1/4°- The alignment was adjusted to: Camber / Caster Left 1°+ / 1/4°- / 1/8" Toe-In Right 3/4°+ / 1/8° The shims were replaced.
01	4501	25	B	Screw, cap, hexagon head	5305-262-374	4720	One of the bolts on the rear clamp of the exhaust manifold was broken off. The bolt was drilled out, the hole was retapped, and the bolt replaced.
15	3782	26	B	Center frame members	NA	5230	The center frame side members were cracked where they meet the third cross member. The right side member crack was approximately 1 inch long and the left side member crack was approximately 1-1/2 inches long (Fig. 3, Incl 5).
10	4501	27	B	Thrust washers, pinion gear	2520-678-1339 (parts kit)	5000	Three of the four thrust washers on the spider pinion gears in the rear differential were missing and the fourth was badly worn. Foreign material was found in the differential housing, possibly the remains of the washers (Fig. 4 and 5, Incl 5).
13	4501	28	B	Rear suspension arm bushing bolts	2530-979-8898	5000	During the final technical inspection it was noted that the rear suspension arm

STEYP-TGM Form 13, 18 Nov 64. Replaces STEYT-GIA Form 18, 14 May 63 which is obsolete.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		2[illegible]					[illegible] 6 lb. [illegible] specification in technical [illegible] state 40-50 lb-ft. The bolts were torqued to specification.
09	3782	29	B	U-joint bolts	EA	5230	The universal joint bolts were torqued as follows: U-Joint — Values (lb-ft) Right side rear differential to drive — 0-0-0-0 Right side front differential to drive — 10-10-0-0 Left side rear differential to drive — 0-0-0-0 Left side front differential to flange — 0-0-0-0 Specification 15-20 lb-ft torque. The bolts were torqued to specification.
13	3782	30	B	Socket assembly: ball joint, lower arm	2520-678-1362	5230	The left and right lower ball joints were found to have excessive free play. Specification in the technical manual state that more than 1/8 inch is excessive. Measurements taken during the final technical inspection were as follows: Left, 9/64 inch Right, 5/32 inch
12	3782	31	B	Spring, anchor, leaf	Unknown	5230	The front spring anchor clip on the left rear bracket was missing allowing the bracket shoe to be [illegible] back and forth. The shoe lifting should cause [illegible] wear. The anchor clip was replaced.

[illegible]

SUMMARY OF DEFECTS

TYPES OF DEFECTS

A - DEFICIENCY D - DESIGN

B - SHORTCOMING M - MANUFACTURING

C - SUGGESTED IMPROVEMENT

TEST: [illegible]

PROJECT NO: 1-VG-120-151-047

SNL. GRP.	VEH. NO.	ITEM NO.	TYPE	ITEM	PART NO.	Test MILEAGE	REMARKS
16	3782 4501	32	B	Shock absorbers, front and rear	2540-678-2996/ 2978	5000	Three shock absorbers were wet with fluid. The shock absorbers were left and right rear, vehicle 3782 and right rear vehicle 4501. These shock absorbers had sufficient resistance. The right front shock absorber, vehicle 3782 had no resistance.
13	3782	33	Info	Arm assembly, rear suspension	2530-979-8897	NA	The right lower suspension arm assembly (A-frame) had prior to testing at Yuma Proving Ground, been repaired by welding. The T-weld (approximately 1-1/4 by 1-1/4 inch) was on the top flange area of the A-frame channel between the backing plate and shock absorber mounting bracket. No cracks were observed. (Fig. 6, Incl 5).
13	4501 3782	34	B	Arm assembly, lower right, front	2530-678-3070	5000 and 5230	The right front lower suspension arm assembly (A-frame) was cracked on each vehicle. The crack (approximately 1/2 inch in length) was in the rear part of the reinforcing flange for the spring seat opposite the rear fastener for the shock absorber lower mounting bracket (Fig. 7, Incl 5).

STEYP-TGM Form 13, 18 Nov 64. Replaces STEWT-GTS Form 18, 14 May 63 which is obsolete.

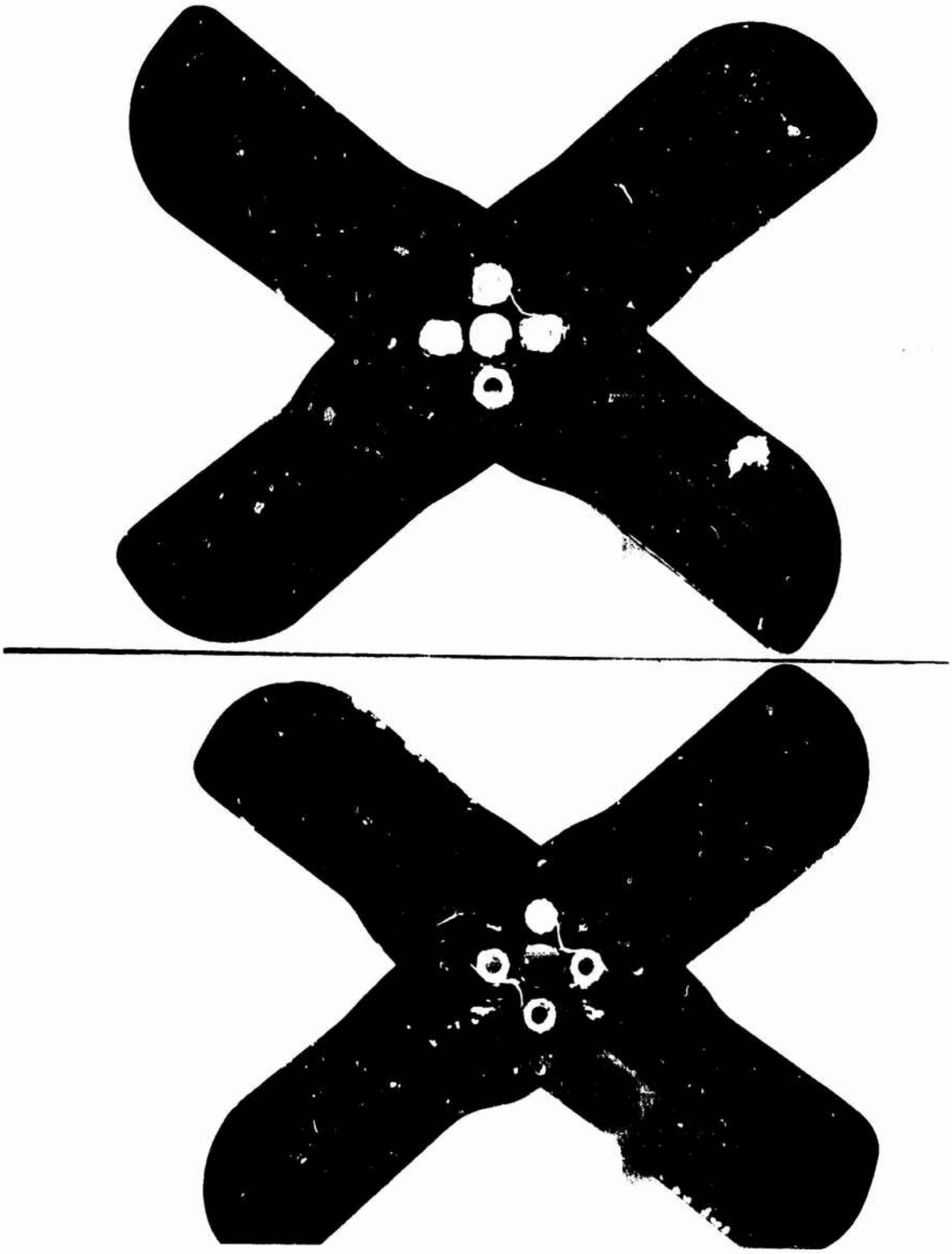

FIGURE 1. Cracked fan, vehicle 4561.

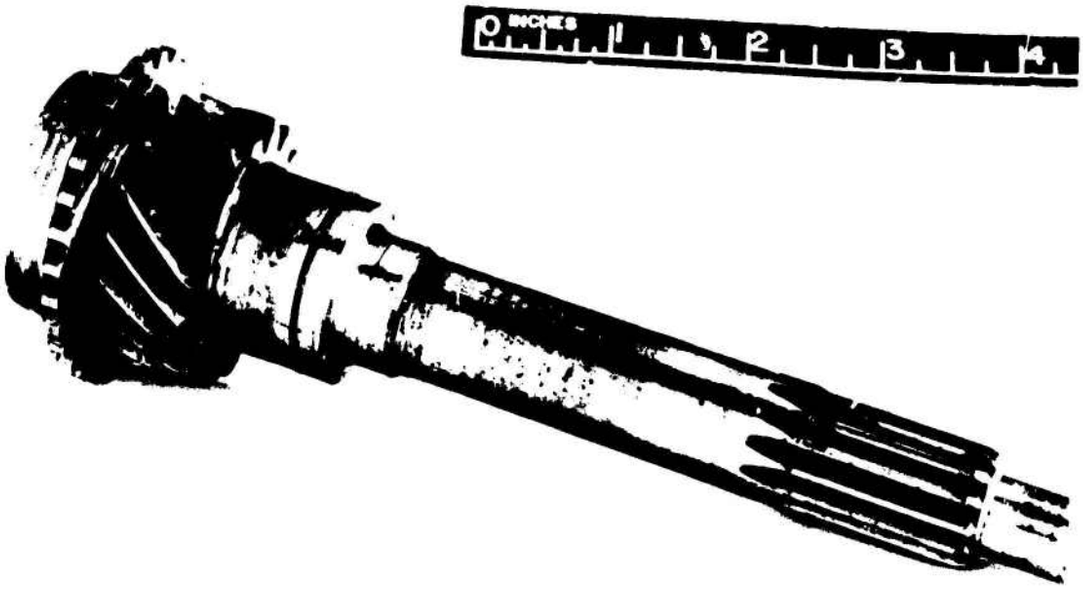

FIGURE 2. Broken teeth on input shaft.

FIGURE 3. Frame cracks, vehicle 3782.

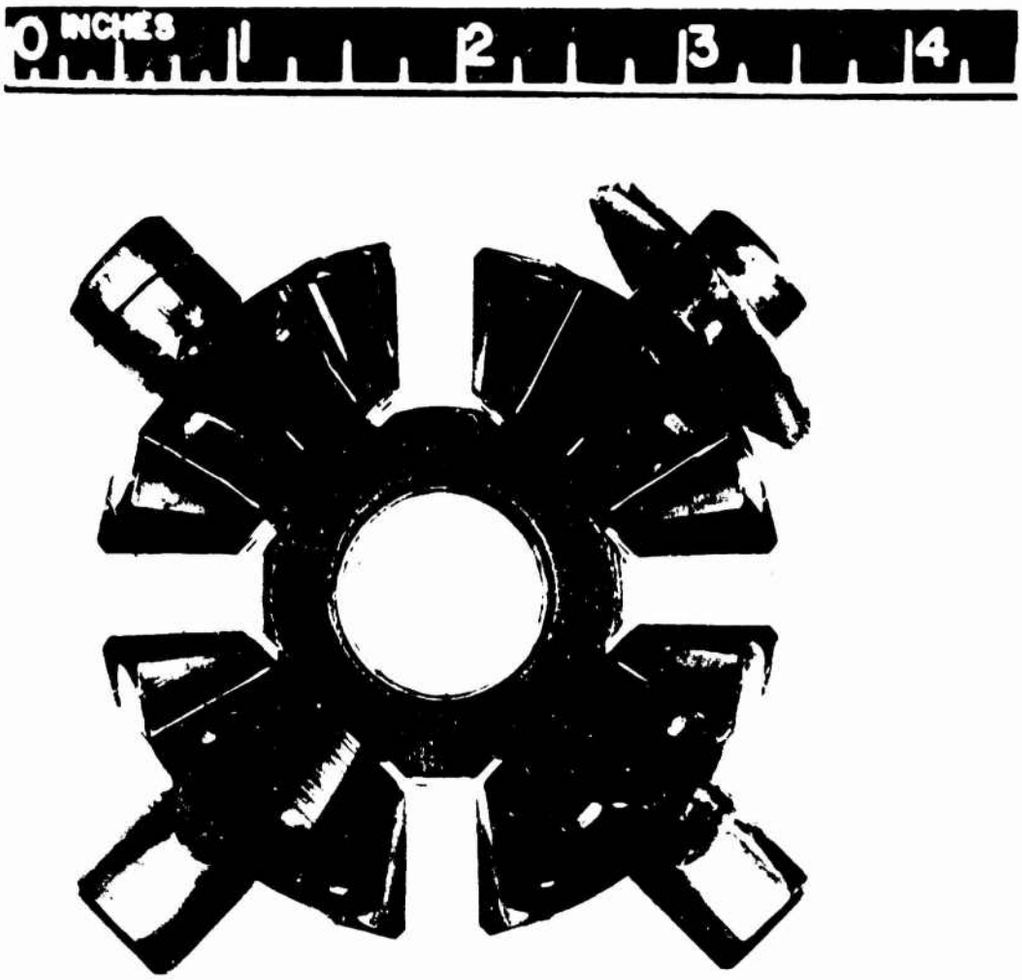

FIGURE 4. Worn and missing thrust bushings, vehicle 4501.

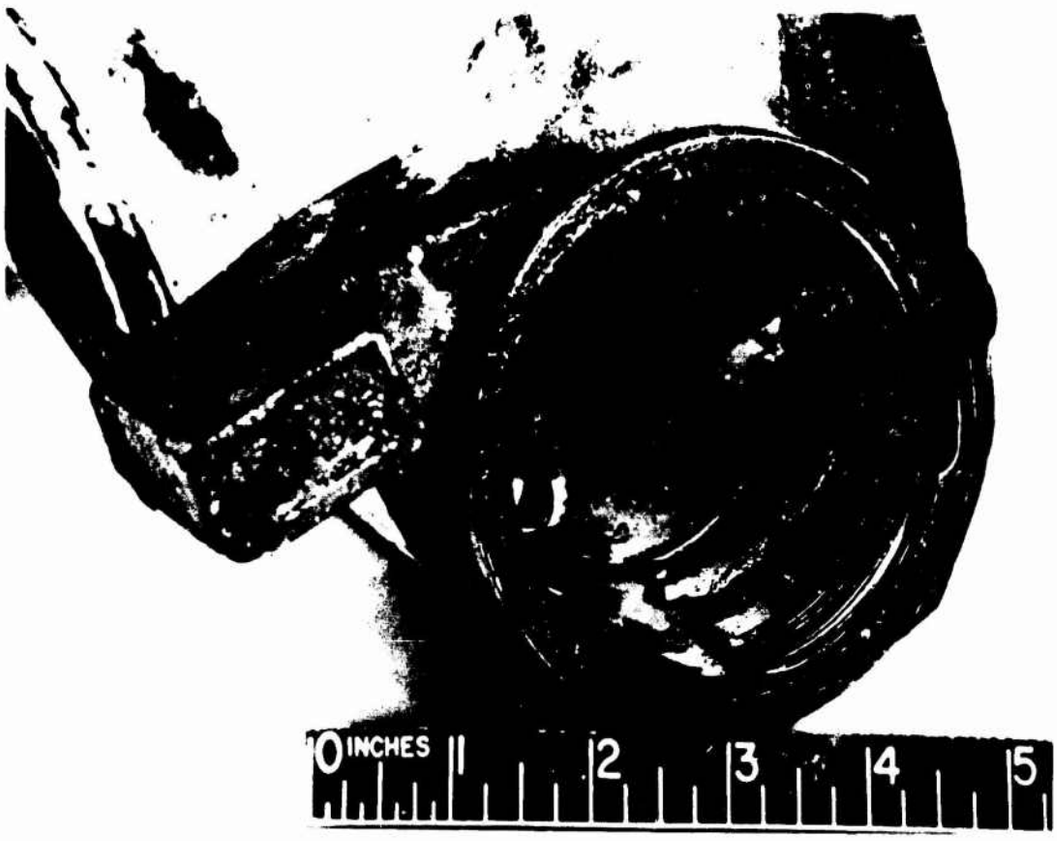

FIGURE 5. Foreign material in differential, vehicle 4501.

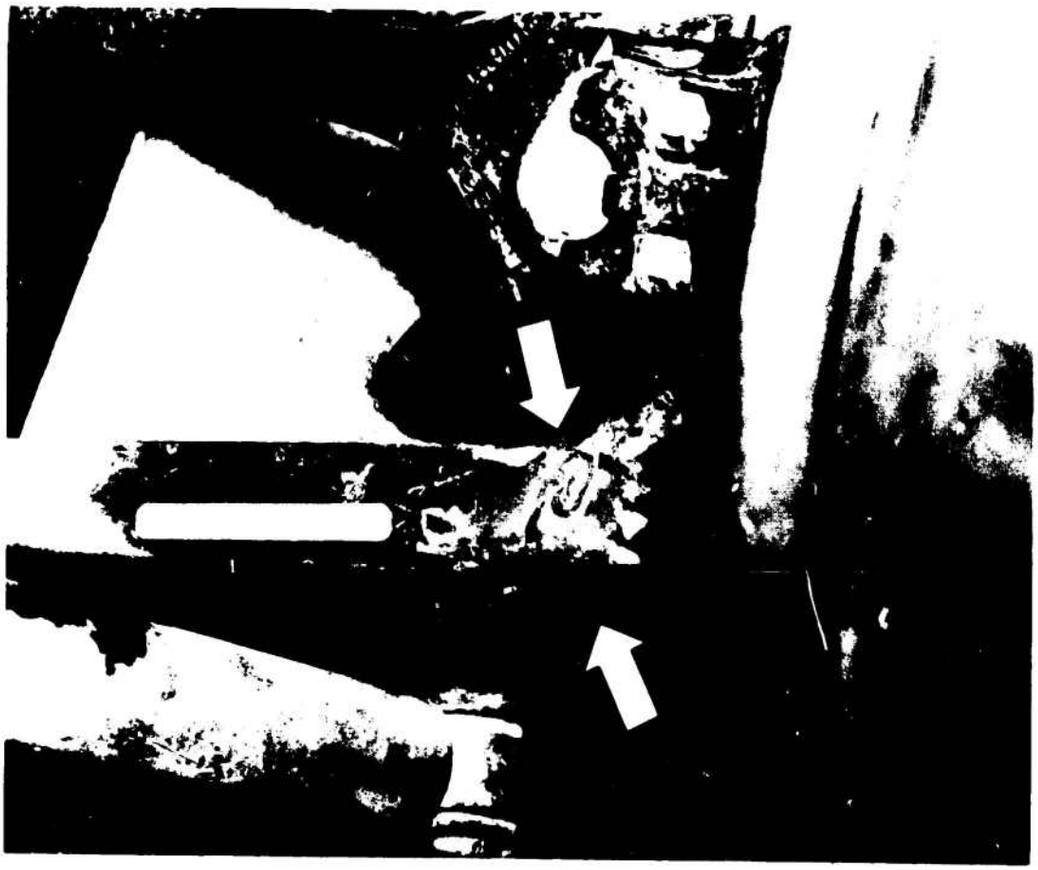

FIGURE 6. Weld on rear A-frame, vehicle 3782.

FIGURE 7. Cracked front A-frame.

FINAL TECHNICAL INSPECTION (Vehicle USA Reg No. 2D3782)

DATES OF INSPECTION: 19 October to 24 October 1970

ENGINE: Group 01

Satisfactory

Crankshaft was removed and inspected. Connecting rod and main bearing journals showed evidence of superficial checks in the spray-on metal build-up. After inspection the crankshaft was forwarded to Ford Motor Company per fonecon with USATACOM.

CLUTCH: Group 02

Satisfactory

FUEL SYSTEM: Group 03

Satisfactory

Fuel pressure 5.5 psi.

EXHAUST SYSTEM: Group 04

Satisfactory

COOLING SYSTEM: Group 05

No leakage observed under pressure.

Radiator relief pressure 8 psi; recovery 6-1/2 psi.

ELECTRICAL: Group 06

Generator: Output, 27.3 vdc.

Starter: Operation satisfactory.

Distributor: Operation satisfactory.

Switches, lights, gages: Satisfactory.

TRANSMISSION: Group 07

Satisfactory

TRANSFER CASE: Group 08

Satisfactory

PROPELLER SHAFTS: Group 09

Satisfactory

FRONT AND REAR AXLES: Groups 10 and 11

Universal joints were undertorqued as follows:

U-Joint	Values
Right side rear differential to drive	0-0-0-0
Right side front differential to drive	10-10-0-0
Left side rear differential to drive	0-0-0-0
Left side front differential to flange	0-0-0-0

Specification, 15-20 lb-ft

BRAKES AND WHEELS: Groups 12 and 13

The front spring anchor clip on the left rear brake was missing. There was evidence of resulting uneven wear.

The left and right lower ball joints had excessive free play:

Left	Right
9/64 Inch	5/32 Inch

Specification: No more than 1/8 inch

CONTROLS: Group 14

Satisfactory

FRAME AND BRACKETS: Group 15

The center frame side members were cracked where they meet the third cross member. Right side crack was approximately 1 inch long; left side, approximately 1-1/2 inches long.

SPRINGS AND SHOCK ABSORBERS: Group 6

Rear shock absorbers were wet with fluid, but still had sufficient resistance. The right front shock absorber had no resistance.

HOOD AND FENDERS: Group 17

Satisfactory

BODY: Group 18

Satisfactory

FINAL TECHNICAL INSPECTION (Vehicle USA Reg No. 2F4501)

DATES OF INSPECTION: 19 October to 22 October 1970

ENGINE: Group 01

Satisfactory

Crankshaft was removed and inspected. Connecting rod and main bearing journals showed evidence of superficial checks in the spray-on metal build-up. After inspection the crankshaft was forwarded to Ford Motor Company per fonecon with USATACCM.

CLUTCH: Group 02

Satisfactory

FUEL SYSTEM: Group 03

Satisfactory

Fuel pressure, 5.0 psi.

EXHAUST SYSTEM: Group 04

Satisfactory

COOLING SYSTEM: Group 05

No leakage was observed under pressure.

Radiator cap relief pressure, 8 psi; recovery pressure, 6-1/2 psi.

ELECTRICAL: Group 06

Generator: Output 27.3 vdc.

Distributor: Satisfactory

Starter: Satisfactory

Switches, lights, gages: Satisfactory

TRANSMISSION: Group 07

Satisfactory

TRANSFER CASE: Group 08

Satisfactory

FINAL TECHNICAL INSPECTION (Vehicle USA Reg No. 2F4501) (Concluded)

PROPELLER SHAFTS: Group 09

Satisfactory

FRONT AND REAR AXLES: Groups 10 and 11

Three of the four thrust washers on the spider pinion gears in the rear differential were missing and the fourth was badly worn. Foreign material was found in the differential housing.

BRAKES AND WHEELS: Groups 12 and 13

The rear suspension arm bushing bolts were found to be at 0 lb-ft torque.

CONTROLS: Group 14

Satisfactory

FRAME AND BRACKETS: Group 15

Satisfactory

SPRING AND SHOCK ABSORBERS: Group 16

The right rear shock absorber was wet with fluid; however, had sufficient resistance.

HOOD AND FENDERS: Group 17

Satisfactory

BODY: Group 18

Satisfactory

Security Classification

DOCUMENT CONTROL DATA - R & D

Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)

Yuma Proving Ground
Yuma, Arizona 85364

2a. REPORT SECURITY CLASSIFICATION

Unclassified

2b. GROUP

NA

3. REPORT TITLE

RECONDITION TEST OF TRUCK, UTILITY, 1/4-TON, 4x4, M151, USA REG NO. 2F4501 AND 203732

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Final and Final Letter Report, 7 July to 6 November 1970

5. AUTHOR(S) (First name, middle initial, last name)

L. J. Bonkoski, 2LT, OrdC

6. REPORT DATE

Dec Ber 1970

7a. TOTAL NO. OF PAGES

32

7b. NO. OF REFS

8a. CONTRACT OR GRANT NO.

b. PROJECT NO. 1-VG-120-151-047

c.

d.

9a. ORIGINATOR'S REPORT NUMBER(S)

YPG Report No. 0061

9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)

Fire Code Ø

10. DISTRIBUTION STATEMENT

Each transmittal of this document outside the Department of Defense must have prior approval of Commanding General, U.S. Army Tank-Automotive Command, Warren, Michigan 48090

11. SUPPLEMENTARY NOTES

None

12. SPONSORING MILITARY ACTIVITY

Commanding General, U.S. Army Tank-Automotive Command, ATTN: AMSTA-QKP, Warren, Michigan 48090

13. ABSTRACT

A Recondition Test of two Trucks, Utility, 4x4, M151, was conducted at Yuma Proving Ground from 7 July 1970 to 6 November 1970. The test consisted of an initial technical inspection, a total of 10,187 endurance miles, and a final inspection.

The purpose of the test was to provide evidence of depot conformance to overhaul standards production capability, and the adequacy of the quality assurance system.

A total of four deficiencies and 30 shortcomings were reported during the test. It was concluded that the quality control and workmanship by the depot were unsatisfactory and that the durability of the rear axle shaft universal joints was unsatisfactory.

DD FORM 1473 REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

Security Classification

Unclassified
Security Classification

14. KEY WORDS	LINK A ROLE	LINK A WT	LINK B ROLE	LINK B WT	LINK C ROLE	LINK C WT
Truck, Utility, 1/4-Ton, 4x4, M151						
Quality control						
Durability						
Endurance						

Unclassified
Security Classification