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USAMERDC ltr, 23 Aug 1971

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RDT&E PROJECT NO. \_\_\_\_\_

⑩ USATECOM-PROJECT NO. 7-8-0961-01

⑩ 1750961/1

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① INITIAL PRODUCTION TEST OF PUMP, CENTRIFUGAL, 600-GPM.

② FINAL LETTER REPORT.

54 p.

① 17 Mar 69

CONTENTS ARE UNCLASSIFIED

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**U S ARMY  
GENERAL EQUIPMENT TEST ACTIVITY  
FORT LEE, VIRGINIA**

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MAR 20 1969  
REGISTERED

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DEPARTMENT OF THE ARMY  
HEADQUARTERS, U. S. ARMY TEST AND EVALUATION COMMAND  
ABERDEEN PROVING GROUND, MARYLAND 21005

AMSTE-GE

14 MAR 1969

SUBJECT: Final Report of Initial Production Test of Pump, Centrifugal,  
600-GPM, USATECOM Project No. 7-8-0961-01

Commanding General  
U. S. Army Mobility Equipment Command  
ATTN: AMSME-QRT  
4300 Goodfellow Boulevard  
St. Louis, Missouri 63120

1. Reference letter, STEGE-SS-T, USAGETA, 16 October 1968, subject:  
"Interim Letter Report, Initial Production (Specification Requirements)  
Test of Pump, Centrifugal, 600-GPM, GED, 4-Inch, Wheel-  
Mounted, USATECOM Project No. 7-8-0961-01."
2. Subject report is furnished for information and necessary action. (Incl 1)
3. The test item is a centrifugal, single-stage, integral self-priming  
water pump. The item is wheel-mounted, provided with a military  
standard gasoline engine, and has a rated capacity of 600 GPM. The  
initial production test was conducted by U. S. Army General Equipment  
Test Activity at Fort Lee, Va., and Fort Story, Va., during the period  
21 August 1968 through 20 January 1969. The results of the tests to  
determine conformance to the initial production requirements of the  
specification were reported by referenced letter report. Inclosure 1  
reports the results of all tests conducted by USATECOM on the 600-GPM  
pump.
4. Results of the initial production test are as follows:
  - a. The item failed to meet applicable tests of the specification in  
the following respects.

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(1)

AMSTE-GE

14 MAR 1959

SUBJECT: Final Report of Initial Production Test of Pum, Centrifugal,  
600-GPM, USATECOM Project No. 7-8-0961-01

(1) Change 1 to the TM 5-2805-204-14 which is applicable to the Model 4-A084-III standard military engine of the test item was not furnished with the equipment. It is essential that the engine technical manual incorporating Change 1 be issued with the equipment. No evaluation of the manual is required since this is a standard technical manual.

(2) During the fuel tank pressure test with an internal tank pressure of not less than 5 psi and the top of the tank immersed 12 inches below the surface of the water, no evidence of leakage from the tank was noted. However, minimal fuel vapor leakage from the engine fuel tank vent valve was noted. No corrective action is required since the military specification was met in that the fuel tank did not leak during the test under the test conditions as outlined in the military specification.

(3) Two electrical tachometer failures occurred during the test. The tachometer on test item H-2283 was found to be inoperative when the test was initiated. The tachometer on test item H-2283 failed after 230 hours of test operation. The use of a mechanical rather than electrical tachometer should be investigated. This problem is classified as a shortcoming, as outlined in Appendix I of subject report.

b. One deficiency was reported during the operational test. The maintenance instructions for wiring are not compatible with the actual wiring of the control panel. The condition has been downgraded by this headquarters to a shortcoming, since the wiring harness is not complex and is color coded. These factors minimize the chance of maintenance error in trouble shooting by qualified personnel, even though some difficulty may be encountered. However, it is highly desirable that the wiring diagram discrepancy be corrected to improve maintainability of the item.

c. Ten other shortcomings were reported in Appendix I, subject report. Considering the deficiency regraded as a shortcoming as stated in paragraph 4b above, there are a total of eleven shortcomings remaining.

d. The test item demonstrated a reliability of 90 per cent at a confidence level of .90 (Appendix III-B of subject report).

14 MAR 1969

AMSTE-GE

SUBJECT: Final Report of Initial Production Test of Pump, Centrifugal,  
600-GPM, USATECOM Project No. 7-8-0961-01

5. The pump was adequately maintainable. Exceptions were the discrepancy in the wiring diagram, paragraph 4b above, and the lack of maintenance instructions, as relate to flushing and inspection of the intermediate housing when abrasive liquids are pumped.

6. *Considered for [unclear]*  
It is concluded that:

The pump, centrifugal, 600-GPM is suitable for issue; ~~and~~

The item is adequately maintainable and reliable. *g*

7. It is recommended that:

a. As many as possible of the shortcomings be corrected.

b. The maintenance and overhaul manual incorporate suggested changes, as indicated in Appendix IV of subject report.

c. Change 1 to TM 5-2805-204-14, which is applicable to the Model 4-A084-III standard military engine, be issued with the subject item.

FOR THE COMMANDER:

1 Incl  
Final Rept (1 cy)

*William H. Hubbard*  
WILLIAM H. HUBBARD  
Colonel, GS  
Deputy Chief of Staff



**DEPARTMENT OF THE ARMY**  
**U.S. ARMY GENERAL EQUIPMENT TEST ACTIVITY**  
**FORT LEE, VIRGINIA 23801**

STEGE-TE-S

14 February 1969

**SUBJECT: Final Letter Report of Initial Production Test of Pump,  
Centrifugal, 600-GPM, USATECOM Project No. 7-8-0961-01**

**Commanding General  
U. S. Army Test and Evaluation Command  
ATTN: AMSTE-GE  
Aberdeen Proving Ground, Maryland 21005**

1. References are as follows:

a. STE Form 1028, AMSTE-GE, U. S. Army Test and Evaluation Command, 29 January 1968, subject: "Test Directive for Initial Production Test of Pump, Centrifugal, 600-GPM, USATECOM Project No. 7-8-0961-01."

b. Letter, AMSTE-GE, USATECOM, 4 December 1967, subject: "Planning Directive for Initial Production Test of Pump, Centrifugal, 600-GPM-USATECOM Project No. 7-8-0961-01."

c. Military Specification MIL-P-52474 (MO), 3 August 1966, subject: "Pump, Centrifugal, Water, Gasoline-Engine-Driven, 4-inch, 600-GPM at 50-Foot Total Head."

d. Test Plan, U. S. Army General Equipment Test Activity, dated March 1968, subject: "IPT of Pump, Centrifugal, 600-GPM, Water, GED, 4-Inch, Wheel-Mounted, USATECOM Project No. 7-8-0961-01," with Change 1, dated 12 November 1968.

e. MIL-STD-209B, "Slings, Eyes and Attachments for Lifting and Tying Down Heavy Military Equipment," unclassified, 11 May 1960; Notice 1, 12 June 1963.



14 February 1969

SUBJECT: Final Letter Report of Initial Production Test of Pump, Centrifugal, 600-GPM, USATECOM Project No. 7-8-0961-01

f. Letter, STEGE-ET-L, this headquarters, 15 October 1968, subject: "Interim Letter Report, Initial Production (Specification Requirements) Test of Pump, Centrifugal, 600-GPM, Water, GED, 4-Inch, Wheel-Mounted, USATECOM Project No. 7-8-0961-01."

2. IP test of the 600-GPM Water Pump was conducted at Fort Lee and Fort Story, Virginia, during the period 21 August 1968 through 20 January 1969. Plan of test (Ref. d) as changed was followed with no deviations. A total of 750 operational hours were compiled on two test items, 188 of which were accomplished during salt water applications.

3. The test item is considered adequate to meet the specification requirements of Specification MIL-P-52474 (MO) (Ref. c) except as follows:

a. The engine manual furnished with the pumping unit, TM 5-2805-204-14, is not applicable to the Model 4-A084-III standard military engine.

b. The engine fuel tank cap is not suitable to prevent leakage through the vent when the latter is in the closed position (Par. 5e(2), Ref. f).

c. The inoperative tachometer (EPR's No. L7-1, L7-3, and SPECIAL, App. IV) is considered to be directly related to poor quality control inspection procedures at the contractor's plant. See Reference f for detailed findings.

4. The pump performed mission tasks to an acceptable degree. Safe use and handling characteristics were confirmed, and human factors aspects were adequate.

5. The test item was transported by truck over highways and cross-country and by railcar without difficulty; however, the tiedown eyes do not conform to MIL-STD-209B (Ref. e). The tiedown eyes suffered weld fractures and severe bending during the rail impact test. (App. II).


6. The test item met reliability requirements (App. III-A and B) as specified in the test plan (Ref. d). Maintainability of the test item (App. I and III - C, D, and E) is not considered adequate until incorrect wiring instructions in the operation maintenance and overhaul manual are corrected (deficiency, EPR L7-14, App. IV). The malfunction of the pump seal

STEGE-TE-S

14 February 1969

SUBJECT: Final Letter Report of Initial Production Test of Pump, Centrifugal, 600-GPM, USATECOM Project No. 7-8-0961-01

(EPR L7-11, App. IV) is attributed to pumping abrasive liquids. Additional preventive maintenance instructions requiring flushing and inspection of intermediate housing when pumping abrasive liquids will prolong seal life and enable early detection of seal wearout. Liquids to be pumped should be filtered or settled to the maximum practical extent to prevent abrasion of pump impellers, shafts, and seals (EPR L7-15, App. IV).

  
HOWARD W. HEMBREE, Ph.D.  
Technical Director

  
C. R. CHURCH  
Colonel, QMC  
Commanding

4 Incl

Appendix I - Deficiencies and Shortcomings

Appendix II - Transportability

Appendix III - Maintenance Evaluation

Appendix IV - EPR's

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APPENDIX I. DEFICIENCIES AND SHORTCOMINGS

1. DEFICIENCIES

<u>Deficiency</u>	<u>Suggested Corrective Action</u>	<u>Remarks</u>
1.1 Maintenance instructions for wiring the control panel are inaccurate.	Assemble the control panel wiring in accordance with the maintenance instructions or change the maintenance instructions to correspond to the test item.	EPR L7-14.

2. SHORTCOMINGS

<u>Shortcoming</u>	<u>Suggested Corrective Action</u>	<u>Remarks</u>
2.1 Malfunction of two tachometers.	Convert to mechanical tachometers.	EPR L7-1 EPR L7-3.
2.2 The crankcase breather assembly is not accessible for removal with tools found in the general mechanics tool set (FSN 5180-754-0641) when the engine is hot.	Redesign of the breather assembly to permit removal with a socket wrench on top.	EPR L7-2.
2.3 Malfunction of choke solenoid #13206-E0809.	Remove electrical type choke and use the hand choke only; or change to a thermostatic type choke commonly used in automobiles.	EPR L7-4.
2.4 Loss of anchor lock pin.	Use a standard split key ring in place of the ring furnished with the test item.	EPR L7-5. The furnished rings had their openings closed only with friction tape, which deteriorated with time and use.

APPENDIX I

<u>Shortcoming</u>	<u>Suggested Corrective Action</u>	<u>Remarks</u>
2.5 During the rail car hump test, the 4 tiedown eyes bent and 5 of the 8 welds securing the eyes to the pump frame fractured.	Increase diameter of the 1/2" bar tiedown eyes and weld bars to frame on both sides of frame channel flange.	EPR L7-6.
2.6 Temporary malfunction of the electrical system was caused by the tachometer wire being pinched between the top cover and lower shroud of the engine.	Provide an opening in the lower engine shroud to permit the wire leading to the tachometer sending unit to pass through without being pinched by the engine cover.	EPR L7-7. EPR referenced only the tachometer; actually, entire electrical system was affected momentarily.
2.7 Malfunction of the magneto serial #5805606; center carbon worn out, contact point set plate (82796 22437H) loose.	Improve quality control of magneto assembly by the manufacturer.	EPR L7-8. Reclassified from a deficiency to a shortcoming because reliability of magneto was verified after extending test hours from 438 to 750 hours.
2.8 Malfunction of the engine starter motor.	Additional protection for salt water pumping operations should be provided for the starter motor.	EPR L7-9 EPR L7-9s.
2.9 Premature wearout of the pump seal (A004-M36).	Additional preventive maintenance instructions requiring flushing and inspection of intermediate housing when pumping abrasive liquids will prolong seal life and enable early detection of seal wearout.	EPR L7-11. Reclassified from a deficiency to a shortcoming because of additional analysis. Failure of pump seal caused damage to following items: 1. A010-M36 gasket. 2. A907-M36 shim set. 3. A009-M36 plate seal 4. A003-M36 sleeve shaft. 5. A100-M36 inter. assembly.

APPENDIX I

<u>Shortcoming</u>	<u>Suggested Corrective Action</u>	<u>Remarks</u>
2.10 Prior to operation, the priming plug A-909-M36 was broken during removal to prime the pump. The entire wrench area of the plug twisted off, leaving an opening into the pump housing.	Use the same material in the plug and casing.	6. FSN 2920-882-3401 motor starter. 7. 97403-13213E3286 solenoid starter motor.

## APPENDIX II. TRANSPORTABILITY

### 1. Highway

a. The pump, packaged in a wooden crate, was shipped by commercial truck to Fort Lee, Virginia, a distance of 690 miles, with no damage resulting.

b. At Fort Lee, the uncrated, wheel-mounted pump was located onto a truck, cargo, 2 1/2-ton, 6x6, M35, for highway testing (Fig. 1). A standard commercial 2-ton forklift was used for the loading. The test item was also lifted with a 5-ton wrecker, M62, in order to test the lifting eye. The truck-mounted pump was then blocked and tied down as shown in Figure 2. No difficulty was encountered in loading the pump unit aboard the M35 truck by three men and a forklift in 10 minutes. The item was blocked and tied down in the truck bed without difficulty.

c. The test item was transported 114 miles on concrete and blacktop highways between test sites at Fort Lee and Camp Pickett, Virginia, and was subjected to emergency stopping tests at 10, 20, 30 and 45 mph with no damage occurring. During the stopping test, impact registers were mounted on the pump frame and on the truck bed to measure the stopping forces in the longitudinal, transverse, and vertical directions. Stopping distances were obtained by using a gun-type detonator marking device wired to the stoplight circuit of the truck and then measuring the distance with a steel tape. The directions and magnitudes of the stopping forces are recorded in Table I.

### 2. Cross-Country

The pump unit, mounted on the truck, cargo, 2 1/2-ton, 6x6, M35 and secured as described for the highway test, was transported 153 miles cross-country over rough terrain at Camp Pickett, Virginia, at an average speed of 10 mph without difficulty.

### 3. Rail

a. At Fort Lee, Virginia, the test item was towed onto a concrete loading ramp and then loaded onto a USAX 50-ton capacity, military standard domestic service flatcar equipped with AAR couplers at both ends. A 1 1/4-inch-wide 16-gage steel band was run through the trailer tongue eye and attached at each end by a 2x4x1/8-inch plate nailed to car deck with 8 3/16-inch diameter by 1 3/4-inch-long screw nails (Fig. 3). The test item was loaded and centered on the flatcar by two men in 15 minutes. Five men required 1 hour 30 minutes to chock and tie down the unit.

APPENDIX II

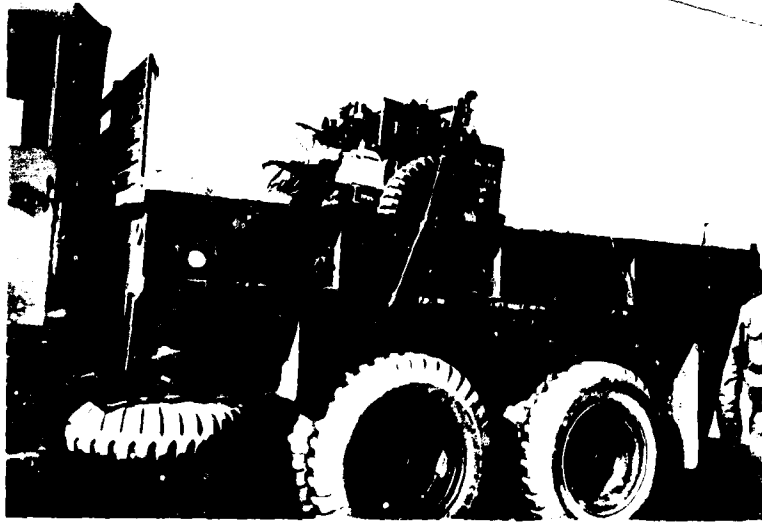


Figure 1. 600-GPM pump, trailer-mounted, loaded on truck for highway and cross-country testing.

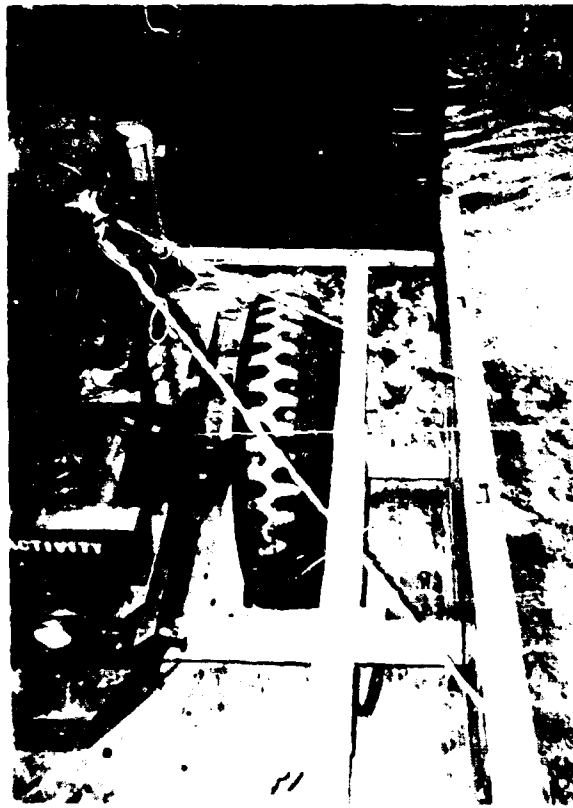


Figure 2. Pump unit blocked and tied down in truck bed.



Figure 3. Pump unit chocked and tied down for rail impact test.



Figure 4. Tiedown eye after rail impact test with fractured weld and bent eye.



## APPENDIX II

b. Rail impact tests were conducted in accordance with AAR recommendations. Six empty flatcars having a total weight of 305,000 pounds were coupled together with the brakes set. Accelerometers were installed on the frame of the pump unit and on the deck of the test flatcar. Impacts were made at 4, 18, 6, 31, and 8.54 mph in the forward direction and 8.02 mph in the reverse direction. During the impact testing, the four tiedown eyes became permanently bent (Fig. 4). Maximum deflection at the bottom of the "U"-shaped eyes was 1 1/2 inches. Five of the eight welds, attaching the eyes to the pump frame, were fractured. Bending of the eyes caused the wires to become loose. The chocking and bracing did not suffer any damage. The direction and magnitude of impact forces and location of accelerometers are shown in Table II.

c. The test item, mounted on the flatcar with a deck height of 43 1/2 inches from the top of rail, without difficulty passed through the clearance device consisting of clearance diagrams of the AAR Standard, the International Universal Gage, and the Foreign Service Military Standard.

4. Lifting and Tiedown Attachments. The lifting and tiedown attachments did not meet the requirements of MIL-STD-209B (Table III).

TABLE I

### EMERGENCY STOPPING TEST DATA

PUMP UNIT MOUNTED ON TRUCK, CARGO, 2 1/2 TON, 6x6, M35

Run No.	Speed (MPH)	Max "G" Force Readings on Impact Register Tapes						Stopping Distance (Feet)
		Mounted on Truck			Mounted on Pump			
		Vert	Lat	Long	Vert	Lat	Long	
1	10	0.2	0.6	0.8	0.2	0.6	0.8	8.6
2	10	0.2	0.6	0.8	0.2	0.6	0.8	9.6
3	10	0.4	0.6	0.8	0.2	0.6	0.8	9.8
4	20	0.2	0.6	0.6	0.2	0.6	0.8	22.7
5	20	0.2	0.6	0.6	0.2	0.6	0.8	24.8
6	20	0.4	0.6	0.8	0.6	0.6	0.8	24.8
7	30	0.2	0.6	0.8	0.2	0.6	0.8	55.3
8	30	0.6	0.6	0.6	0.6	0.8	0.8	51.3
9	30	0.2	0.6	0.6	0.2	0.6	0.8	45.8
10	45	0.2	0.6	0.8	0.4	0.6	0.8	95.4
11	45	0.2	0.6	0.6	0.4	0.6	0.8	108.3
12	45	0.2	0.6	0.6	0.4	0.6	0.8	107.5

APPENDIX II

TABLE II

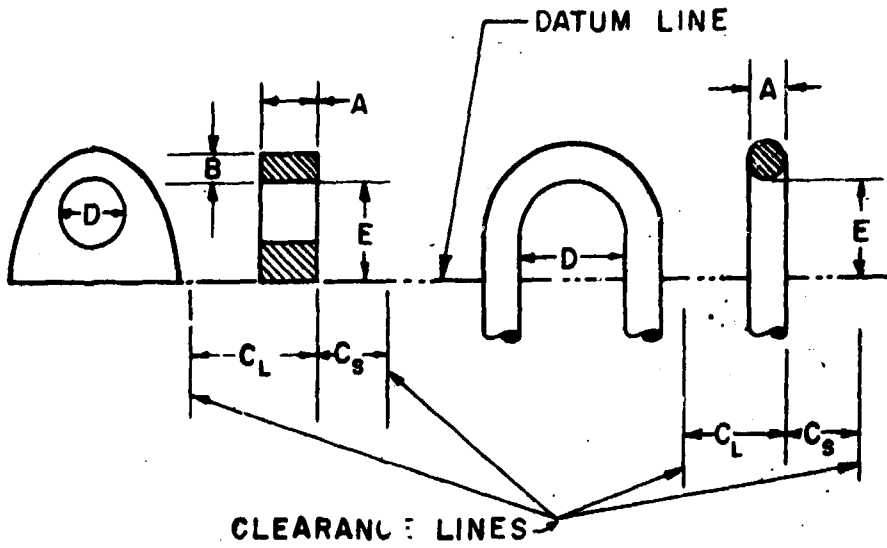
SUMMARY OF MAXIMUM "G" FORCES FOR IMPACT TEST ON FLATCAR

Run No.	Direction of Hump	Actual Car Speed (MPH)	Accelerometer Mounting Location						Buffer Car Movement (Inches)
			Flatcar			Pump Frame			
			Vert	Lat	Long	Vert	Lat	Long	
1	Fwd	4.18	2.1	0.7	4.1	3.4	1.0	3.6	3
2	Fwd	6.31	3.6	1.1	6.4	2.7	1.9	3.7	7
3	Fwd	8.54	6.6	1.9	12.4	2.7	1.1	6.4	13
4	Reverse	8.02	7.4	2.0	15.0	3.9	1.4	5.4	6

APPENDIX II

TABLE III

COMPARISON OF DIMENSIONS OF LIFTING AND TIEDOWN EYES  
(Dimensions are in inches)



	Weight Range (Long Ton 2240 lbs)	Restricting Points									
		A		B		C <sub>L</sub> <sup>a</sup>	C <sub>S</sub> <sup>a</sup>	D		E	
		Max	Min	Max	Min	Min	Min	Max	Min	Max	Min
MIL-STD-209B Type III Class I	1-10	1	3/4	1	3/4	7	3	3½	3	5	3
Lifting Eye (Only one provided)	1		½			No Rest	8½		3		3 5/8
Tiedown Eyes (4 provided)	1		½			No Rest	16		2½		1 5/8

<sup>a</sup>There shall be no interference with C<sub>L</sub> and C<sub>S</sub> which could interfere with engaging a shackle and pin in the eyes.

## APPENDIX III. MAINTENANCE EVALUATION

### APPENDIX III-A

#### MAINTAINABILITY, RELIABILITY, AND AVAILABILITY SYMBOLS

The symbols listed below will be used as variables in the computations in Appendix III-B.

$R_L(x; 1-\alpha)$	=	The lower confidence limit on reliability
$\chi^2_{1-\alpha, 2r+2}$	=	Chi-square value for a confidence level of 100 (1- $\alpha$ ) % and 2r+2 degrees of freedom
x	=	Mission time
1- $\alpha$	=	Confidence coefficient
MTBF	=	Mean time between failures
MDT	=	Mean downtime
MTTR	=	Mean time to repair (failures)
$\bar{M}$	=	Mean active maintenance downtime
MTBM	=	Mean time between maintenance
MR	=	Maintenance ratio
$A_i$	=	Inherent Availability
$A_a$	=	Achieved Availability
$A_o$	=	Operational Availability
b	=	Operating Time (hours, miles, etc.)
c	=	Active maintenance man-hours (scheduled and unscheduled)
d	=	Active maintenance clock hours (scheduled and unscheduled)
f	=	Unscheduled active maintenance clock hours
g	=	Downtime in hours (include active and inactive maintenance time for both scheduled and unscheduled maintenance actions)
r	=	Number of failures
s	=	Number of maintenance layovers (include both scheduled and unscheduled maintenance actions)
p	=	Active maintenance man-hours to correct failures.
q	=	Active maintenance clock hours to correct failures.

APPENDIX III-B

MAINTAINABILITY, RELIABILITY, AND AVAILABILITY COMPUTATIONS

	#2282	#2283	Sample
Mission Time (x)	= 20	20	20
Confidence Level (1- $\alpha$ )	= .90	.90	.90
No. of Failures (r)	= 0	1	1
Operating Time (b)	= 150.0	600.0	750.0
Maintenance Man-hours (c)	= 1.7	35.8	37.5
Maintenance Clock hours (d)	= 1.7	32.2	33.9
Unscheduled Maintenance clock hours (f)	= 0.3	13.0	13.3
Downtime (g)	= 1.7	51.8	53.5
No. of Maintenance Layovers (s)	= 3	15	18
Maintenance Man-hours (p)	= 0.0	4.0	4.0
Maintenance Clock hours (q)	= 0.0	4.0	4.0

COMPUTATIONS:

MDT = (g/s)	= 0.6	3.5	3.0
MTBF = (b/r)	= *	600.0	750.0
$\bar{M}$ = (d/s)	= 0.6	2.1	1.9
MTTR (man-hours) = (p/r)	= *	4.0	4.0
MTTR (clock hours) = (q/r)	= *	4.0	4.0
MTBM = (b/s)	= 50.0	40.0	41.7
MR = (c/b)	= 0.011	0.060	0.050
$A_i$ = (MTBF/(MTBF+MTTR (clock hours)))	= 1.000	.993	.995
$A_a$ = (MTBM/(MTBM+ $\bar{M}$ ))	= .988	.950	.956
$A_o$ = (MTBM/(MTBM+MDT))	= .988	.920	.933

RELIABILITY;  $R_L(x, 1-\alpha) = \exp\left(-\frac{\chi^2_{1-\alpha, 2r+2}}{2b}x\right) = .90$

\* Indeterminable due to division by zero.

**MAINTENANCE AND RELIABILITY ANALYSIS CHART**

Scheduled and Unsheduled Maintenance

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL			T M INSTRUCTIONS			ACTIVE MAINTENANCE TIME		LIFE H-HOURS M-MILES	REASON PERFORMED	RE MARKS
		3	4	5	6	7	8	9	10			
		PRE-SCRIBED	RECOM-MENDED	INADE-QUATE	INADE-QUATE	CLOCK-HOURS	MAN-HOURS					
1	2											
0100	Service Engine (Change oil)	C	C	X		0.5	0.5	50	Scd	50-hour service EPR L7-2		
0100	Service Engine	C	C	X		0.4	0.4	100	Scd	50-hour service		
0100	Service Engine	C	C	X		0.3	0.3	150	Scd	50-hour service		
0100	Service Engine	C	C	X		0.3	0.3	200	Scd	50-hour service		
0607	Tachometer Replace	0	0		X	2.3	2.3	200	Unscd	Deferred to 250 hours Scd Maint EPR L7-3		
0312	Choke Assy Automatic	0	0		X	1.5	1.5	225	Unscd	Deferred to 250 hours Scd Maint EPR L7-4		
0100	Quarterly Service	0	0	X		6.7	6.7	250	Scd	Quarterly 250-hour Maintenance		
1501	Lock Pin	0	0	X		0.2	0.2	250	Unscd	Lock pin lost EPR L7-5		
0100	Service Engine (Change oil)	C	C	X		0.5	0.5	300	Scd	50-hour service		

**MAINTENANCE AND RELIABILITY ANALYSIS CHART**

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL				TM INSTRUCTIONS		ACTIVE MAINTENANCE TIME		LIFE HOURS H-MILES	REASON PERFORMED	REMARKS
		C-OPER/CREW O-ORGZN F-DIRECT H-GENERAL	RECOM- MENDED	PRE- SCRIBED	4	5	6	7	CLOCK MAN- HOURS			
0605	Magneto	0	F	X			4.0	4.0	316	Unscd	EPR L7-8, Failure	
0603	Motor Starter	0	0	X			1.0	1.0	350	Unscd	EPR L7-9 and L7-9s	
0100	Service Engine	C	C	X			0.5	0.5	350	Scd	50-hour service	
0100	Service Engine	C	C	X			0.5	0.5	400	Scd	50-hour service	
0100	Service Engine	C	C	X			0.5	0.5	450	Scd	50-hour service	
0100	Service Eng & Pump	0	0	X					500	Scd	250-hour QM service	
0312	Auto Choke	0	0	X			0.1	0.1	500	Unscd	Adjust Elec Auto Choke	
5501	Pump Seal	F	F	X			1.6	3.2	512	Unscd	EPR L7-11, Failure	
0603	Starter	0	0	X			0.3	0.3	512	Unscd	Result of seal malfunction	
5501	Primer Plug		F		X		2.0	4.0	512	Unscd	EPR L7-13	
0100	Service Engine	C	C	X			0.5	0.5	550	Scd	50-hour service	
0100	Service Engine	C	C	X			0.5	0.5	600	Scd	Final Technical inspection.	

APPENDIX III-C

MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL			TM INSTRUCTIONS		ACTIVE MAINTENANCE TIME		LIFE H-HOURS M-MILES	REASON PERFORMED	REMARKS
		C-OPER/CREW O-ORGZN F-DIRECT H-GENERAL		RECOM- MENDED	ADE- QUATE	INADE- QUATE	CLOCK MAN- HOURS	HOURS			
		3	4								
1	2										
0100	Service Engine	C	C	X		0.5	0.5	50	Scd	50-hour service	
0100	Service Engine	C	C	X		0.4	0.4	110	Scd	50-hour service	
5505	Check Valve	O	O	X				110	Unscd	EPR L7-	
0607	Control Panel Assembly	O	O	X		0.3	0.3	110	Unscd	EPR L7-1	
0100	Service Engine	C	C	X		0.5	0.5	150	Scd	Final Tech. Insp.	



APPENDIX III-C

**MAINTENANCE AND RELIABILITY ANALYSIS CHART**

Simulated and Reviewed Maintenance

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL			TM INSTRUCTIONS		ACTIVE MAINTENANCE		LIFE HOURS M-MILES	REASON PERFORMED	REMARKS
		C-OPER/ORGZN	F-DIRECT	H-GENERAL	PRE-SCRIBED	RECOM-MENDED	ADE-QUATE	INADE-QUATE			
1	2	3	4	5	6	7	8	9	10		
01	ENGINE:										
0100	Engine Assembly	C	C	X		0.1	"S"	Sim			
	Inspect	O	O	X		1.0	"S"	Sim			
	Test	C	C	X		0.5	"S"	Sim			
	Service	H	F	X		2.0	"S"	Sim			
	Replace	H	H	X		7.0	"S"	Sim			
	Overhaul										
03	FUEL SYSTEM:										
0306	Tanks, lines, Fittings										
0306	Tank Service	O	O	X		0.1	"S"	Sim			
	Replace	H	O	X		2.0	"S"	Sim			
	Repair	F	F	X		E 2.0				Reviewed-not performed.	
						E 4.0					
0306	Lines, Fittings										
	Inspect	O	O	X		0.1	"S"	Sim			
	Replace	O	O	X		0.5	"S"	Sim			

APPENDIX III-C

MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL						ACTIVE MAINTENANCE TIME	LIFE HOURS M-MILES	REASON PERFORMED	RE MARKS	
		C-OPER/CREW O-ORGZN		F-DIRECT H-GENERAL		PRE-SCRIBED						T M INSTRUCTIONS
		3	4	5	6	7	8					
04	EXHAUST SYS-TEM											
0401	Muffler and Pipes Replace	0	0	X			0.2	0.2	Sim			
06	ELECTRICAL SYSTEM											
0607	Control Panel Repair	0	0		X		E 1.0	E 1.0			Reviewed-not performed.	
061	Batteries, Storage	C	C	X			0.1	0.1	Sim			
	Inspect Service	O	O	X			0.2	0.2	Sim			
	Replace	O	O	X			0.3	0.3	Sim			
11	REAR AXLE											
1100	Rear Axle Assembly	F	O	X			2.0	4.0	Sim			
	Replace Repair	O										
12	WHEEL AND TRACKS											

**MAINTENANCE AND RELIABILITY ANALYSIS CHART**

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL				TM INSTRUCTIONS		ACTIVE MAINTENANCE TIME		LIFE HOURS M-MILES	REASON PERFORMED	REMARKS
		3	4	5	6	7	8	9	10			
		PRE-SCRIBED	RECOM-MENDED	ADE-QUATE	INADE-QUATE	CLOCK HOURS	MAN-HOURS					
1												
1311	Wheel Axle Service Repair	O	O	X		0.1 E 0.5	0.1 E 0.5	"S"	Sim	Reviewed-not performed.		
1313	Tires, Tubes Inspect Service Repair	C	C	X		0.1 0.1 0.7	0.1 0.1 0.7	"S" "S" "S"	Sim Sim Sim			
1315	FRAME, TOW-ING ATTACH-MENTS AND DRAWBAR											
1317	Frame Repair	F	F	X		E 2.0	E 2.0			Reviewed-not performed.		
1318	Draw Bar Repair	F	F	X		E 1.0	E 1.0			Reviewed-not performed.		
1319	BODY CHASSIS OR HULL AND ACCESSORY ITEMS											
1320	Engine, Drive Shaft, Gear Box, etc.	C	C	X		0.1 0.2	0.1 0.2	"S" "S"	Sim Sim			

**MAINTENANCE AND RELIABILITY ANALYSIS CHART**

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL				TM INSTRUCTIONS		ACTIVE MAINTENANCE TIME		LIFE HOURS M-MILES	REASON PERFORMED	REMARKS
		C-OPER/CREW O-ORGZN F-DIRECT H-GENERAL		RECOM- MENDED	A- ADE- Q- UATE	I- NADE- Q- UATE	CLOCK HOURS	MAN- HOURS				
		3	4						5			
1									9		10	
2	Drive Pulley Replace	C	O	X			0.2	0.2	Sim	"S"		
3	PUMPS											
4	Pump Assembly Inspect Service Replace Repair Overhaul	C C F F H	C C F F H	X X X X X			0.1 0.1 2.0 E 2.0 2.0	0.1 0.1 4.0 E 4.0 4.0	Sim Sim Sim Sim Sim	"S" "S" "S" "S"	Reviewed-not performed.	
5	Shafts, im- pellers, Bearings, Seals Adjust Replace Repair	F F F	F F F	X X X			0.2 0.2 E 0.5	0.2 0.2 E 0.5	Sim Sim	"S" "S"	Reviewed-not performed.	
6	Suction and Discharge Assembly: Inspect Repair	O O	O	X			0.2 0.5	0.2 0.5	Sim Sim	"S" "S"		
7	Pump Drive Sub-assembly Inspect											

MAINTENANCE AND RELIABILITY ANALYSIS CHART

GROUP NO.	COMPONENT AND RELATED OPERATIONS	MAINT LEVEL						TM INSTRUCTIONS		ACTIVE MAINTENANCE TIME	LIFE HOURS H-MILES	REASON PERFORMED	REMARKS
		C-OPER/CREW O-ORGN F-DIRECT H-GENERAL		RECOM- MENDED		ADE- QUATE	5	6	7				
		3	4	3	4								
1	2									8	9	10	
	Service Repair	O	O	X	X				0.1 0.5	"S" "S"	Sim Sim		
	Service Complete Repair	F	F	X	X				E L O E L O			Reviewed-not performed.	

APPENDIX III-D

PARTS ANALYSIS CHART

Fig. #10-28

GP NO CROSS REF	FEDERAL STOK NUMBER	NOUN NOMENCLATURE	MAINTENANCE LEVEL		PART LIFE H-HOURS M-MILES	REASON USED	REMARKS
			C- OPERATOR / CREW	F- DIRECT O- ORGANIZATIONAL H- GENERAL			
			PRESCRIBED	RECOMMEND.			
1	2	3	4	5	6	7	8
2106	4940-580-6302	Filter Element	C	C	50.0 H	Scd.	50-Hour Oil Change
2107	4940-580-6302	Filter Element	C	C	100.0 H	Scd.	
2501	MFG PART NOS. A001-M-36	Volute Casing	F	F	110.0 H	Unscd.	EPR L7-12.
2505	A006-6-M36	Check Valve Gasket	O	O	110.0 H	Unscd.	EPR L7-12.
2607	B500-M-36	Control Panel Assembly (Tachometer)	O	O	110.0 H	Unscd.	EPR L7-1.

APPENDIX III-D

PARTS ANALYSIS CHART

Item #H2283

GP NO. CROSS REF	FEDERAL STOCK NUMBER	NOUN NOMENCLATURE	MAINTENANCE LEVEL		PART LIFE H - HOURS M - MILES	REASON USED	REMARKS
			C - OPERATOR / CREW	F - DIRECT O - ORGANIZATIONAL H - GENERAL			
			PRESCRIBED	RECOMMEND.			
1	2	3	4	5	6	7	8
0100	2940-580-6302	Filter Element Oil	C	C	50.0 H	Scd	EPR L7-2
0100	2940-580-6302	Filter Element Oil	C	C	100.0 H	Scd	
0100	2940-580-6302	Filter Element Oil	C	C	150.0 H	Scd	
0100	2940-580-6302	Filter Element Oil	C	C	200.0 H	Scd	
0100	2940-580-6302	Filter Element Oil	C	C	250.0 H	Scd	
0100	2940-580-6302	Filter Element Oil	C	C	300.0 H	Scd	
0100	2940-580-6302	Filter Element Oil	C	C	350.0 H	Scd	
0100	2940-580-6302	Filter Element Oil	C	C	400.0 H	Scd	
0100	2940-580-6302	Filter Element Oil	C	C	450.0 H	Scd	

APPENDIX III-D

PARTS ANALYSIS CHART

Item #H2283

GP NO. CROSS REF	FEDERAL STOCK NUMBER	NOUN NOMENCLATURE	MAINTENANCE LEVEL		PART LIFE H-HOURS M-MILES	REASON USED	REMARKS
			C- OPERATOR / CREW F - DIRECT O - ORGANIZATIONAL H - GENERAL	PRESCRIBED			
1	2	3	4	5	6	7	8
0312	MFG PART NO. 13206E0809	Choke Assem- bly Automa- tic Solenoid	0	0	200.0 H	Unscd	EPR L7-4.
0603	2920-867-8827	Magneto	0	F	316.0 H	Unscd	EPR L7-8, <u>Failure.</u>
0603	2920-882-3401	Motor, Starter	0	0	350.0 H	Unscd	
0603	2920-882-3401	Motor, Starter	0	0	512.0 H	Unscd	EPR L7-11.
0603	MFG PART NO. 13213E3286	Solenoid, Starter Motor	0	0	512.0 H	Unscd	EPR L7-11
0607	MFG PART NO. 812831	Tachometer	0	0	225.0 H	Unscd	EPR L7-3.
1501	MFG PART NO. B004-M36	Lock pin	0	0	250.0 H	Unscd	EPR L7-5.
5501	MFG PART NO. A002-M36	Impeller	0	0	512.0 H	Unscd	EPR L7-11.



APPENDIX III-D

PARTS ANALYSIS CHART

Item #H2283

GP NO. CROSS REF	FEDERAL STOCK NUMBER	NOUN NOMENCLATURE	MAINTENANCE LEVEL			PART LIFE H-HOURS M-MILES	REASON USED	REMARKS
			C- OPERATOR / CREW	F- DIRECT O- ORGANIZATIONAL H- GENERAL	PRESCRIBED			
1	2	3	4	5	6	7	8	
5501	MFG PART NO. A003-M36	Sleeve Shaft	0	0	512.0 H	Unscd	EPR I7-11.	
5501	MFG PART NO. A004-M36	Pump Seal	0	0	512.0 H	Unscd	EPR I7-11.	
5501	MFG PART NO. A009-M36	Plate Seal	0	0	512.0 H	Unscd	EPR I7-11.	
5501	MFG PART NO. A010-M36	Gasket	0	0	512.0 H	Unscd	EPR I7-11.	
5501	MFG PART NO. A100-M36	Inter Assy	0	0	512.0 H	Unscd	EPR I7-11.	
5501	MFG PART NO. A907-M36	Shim Set	0	0	512.0 H	Unscd	EPR I7-11.	
5501	MFG PART NO. A909-M36	Primer Plug	F	F	512.0 H	Unscd	EPR I7-13.	

APPENDIX III-E

MAINTENANCE PACKAGE LITERATURE CHART

Number	Manuscript		Date Received				Evaluation		Form 1598	
	Qty	Title	Lit	Materiel	Adqt	Inadqt	Reference No. and date fwd	Remarks		
1	2	3	4	5	6	7	8	9		
TM 5-2805-204-14	1	Organizational DS and GS Maintenance Manual; Engine, Gasoline, Military Standard Models (Model 4-A084-II)	21 Aug 68	21 Aug 68	X		None	Satisfactory		
Contract No. DAAK 01-67-C-A010	1	Operation, Maintenance and Overhaul Manual with parts list. Schleyer Model No. 36M-SPS 3011G-T, Pump, Centrifugal Gasoline Engine Driven	21 Aug 67	21 Aug 67	X	X	EPR L7-10 31 Dec 68	Changes submitted EPR L7-10 Electrical diagram submitted EPR L7-14		

## EQUIPMENT PERFORMANCE REPORT

1 FROM Commanding Officer U. S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2 OFFICE SYMBOL: STEGE-ET-L	
		3 DATE: 21 August 1968	
		4 EPR NO. L7-1	
5 TO Commanding General U. S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6 USATECOM PROJ NO. 7-8-0961-01 ROTB E PROJ NO. CONTRACT NO. DAAK01-67C-A010	
		7 TEST TITLE Pump, Cent. 600 Gal/Min. Water	
<b>I. MAJOR ITEM DATA</b>			
8 MODEL 36M-SPS3011G-T		9 SERIAL NO. H-2282	
10 QUANTITY One		11 LIFE PERIOD 0 Hours	
12 MFR. E. C. Schlever Pump Co., Inc.		13 USA NO.	
<b>II. PART DATA</b>			
14 NOMENCLATURE/DESCRIPTION Eng. 4A084II Tachometer		16 MFR. PART NO. 102-812831	
15 FSM		18 MFR. Hercules Engines Inc.	
17 DRAWING NO.		20 NEXT ASSEMBLY -	
19 QUANTITY One		22 PART TEST LIFE 0 Hours	
21 STD. GOVT. GRP.			
<b>III. INCIDENT DATA</b>			
23 OBSERVED DURING		24 TEST ENVIRONMENT	
a. OPERATION		POL Test Area	
b. MAINTENANCE			
<input checked="" type="checkbox"/> c. IP Test			
		25 INCIDENT CLASS	
		e. DEFICIENCY	
		<input checked="" type="checkbox"/> b. SHORTCOMING	
		c. SUB. IMPROVEMENT	
		d. OTHER	
		26 ACTION TAKEN	
		a. REPLACED	
		b. REPAIRED	
		c. ADJUSTED	
		d. DISCONNECTED	
		e. REMOVED	
27 DATE AND HOUR OF INCIDENT 1300 hours, 20 August 1968		<input checked="" type="checkbox"/> f. NONE	
<b>IV. INCIDENT DESCRIPTION</b>			
28 DESCRIBE INCIDENT FULLY			
<p>When engine was started to perform IP Tests, it was noted that the tachometer was inoperative.</p> <p>This failure is considered to be a shortcoming.</p>			
29 DEFECTIVE MATERIAL SENT TO:			
30 NAME, TITLE & TEL EXT OF PREPARER		31 FOR THE COMMANDER:	
<i>M. A. Stowell</i> MANUEL A. STOWELL Project Leader - 2186		<i>J. T. Donahue</i> JAMES T. DONAHUE Chief, Log Spt Eq Test Div	

# EQUIPMENT PERFORMANCE REPORT

1 FROM: Commanding Officer U.S. Army General Equipment Test Activity Ft Lee, VA 23801	2 OFFICE SYMBOL: STEGE-SS-MED 3 DATE: 14 October 1968 4 EPR NO. 17-2
5 TO: Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St Louis, Missouri 63120	6 USATECOM PROJ NO. 7-8-0961-01 ROT & PROJ NO. CONTRACT NO. DAAK01-67-C-A010 7 TEST TITLE: Pump, Cent, 600 Gal/Min, Water

### I. MAJOR ITEM DATA

8 MODEL: 56M-SPS3011GT	9 SERIAL NO. H-2283
10 QUANTITY: 1	11 LIFE PERIOD: 50 hours
12 MFR. E.C. Schlever Pump Co. Inc.	13 USA NO. N/A

### II. PART DATA

14 NOMENCLATURE/DESCRIPTION: Breather Assembly Air Inlet	
15 FSN: 2520-867-8819	16 MFR. PART NO. 13206E0550
17 DRAWING NO. N/A	18 MFR. 97403 ERDL
19 QUANTITY: 1	20 NEXT ASSEMBLY: Engine Block
21 STD. GOVT. ORG. 0106	22 PART TEST LIFE: 50 hours

### III. INCIDENT DATA

23 OBSERVED DURING	24 TEST ENVIRONMENT	25 INCIDENT CLASS	26 ACTION TAKEN
a. OPERATION <input checked="" type="checkbox"/> b. MAINTENANCE c.	River Test Site	a. DEFICIENCY <input checked="" type="checkbox"/> b. MIGHTY CORNER <input checked="" type="checkbox"/> c. BUC. IMPROVEMENT d. OTHER	a. REPLACED <input checked="" type="checkbox"/> b. REPAIRS <input checked="" type="checkbox"/> c. ADJUSTED <input checked="" type="checkbox"/> d. DISCONTINUED <input checked="" type="checkbox"/> e. OTHER
27 DATE AND HOUR OF INCIDENT: 9 October 1968 0900 hours		28 I. See block	

### IV. INCIDENT DESCRIPTION

29 DESCRIBE INCIDENT FULLY

(Reference TM 5-2805-204-14, page 42, figure 38; Lubrication Order 5-2805-204-14, page 13, figure 6)


a. The crankcase breather assembly is not accessible for removal with tools found in the general mechanics tool set (FSN 5180-754-0641) when the engine is hot.

b. Removal of the breather assembly during the 50 hour service on the hot engine tends to burn the repairman's hand because of the insufficient work space. Improvised tools (i.e., cam lock pliers) will be used and damage to breather assembly will result.

c. The 50 hour scheduled service is easy to neglect because of the difficulty and hazard involved, and contributes to premature engine failure.

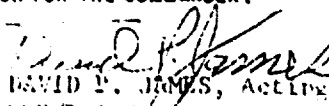
d. Improper design is considered to be the cause of this incident.

e. Redesign of the breather assembly to permit removal with a socket wrench on top is suggested.

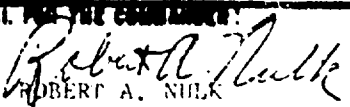
29 DEFECTIVE MATERIAL SENT TO: N/A 30 NAME, TITLE & TEL EXT OF PREPARED:  JOSEPH T. HARVEY Equip Spec (Gen) ext 1006	31 FOR THE COMMANDER:  ROBERT A. NULK MAJ, ORD Chief, Maintenance Evaluation Div
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## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-5	
		3. DATE: 18 November 1968	
		4. EPR NO. 1.7-3-(1-2)	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: ANSHE-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 NOT BE PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 3GN-SPS3011G-T		9. SERIAL NO. H-2283	
10. QUANTITY 2		11. LIFE PERIOD 230 hours	
12. MFR. E. C. Schleyer Pump Co., Inc.		13. USA NO. N/A	
<b>II. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Tachometer			
15. FSM None		16. MFR. PART NO. 812831	
17. DRAWING NO. N/A		18. MFR. 57733	
19. QUANTITY one		20. NEXT ASSEMBLY Control Panel	
21. STD. GOVT. GRP. 0607 - Control Panel		22. PART TEST LIFE 230 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
<input checked="" type="checkbox"/> a. OPERATION		River test site	
<input type="checkbox"/> b. MAINTENANCE			
<input type="checkbox"/> c.			
		25. INCIDENT CLASS	
		<input type="checkbox"/> a. DEFICIENCY	
		<input checked="" type="checkbox"/> b. SHORTCOMING	
		<input type="checkbox"/> c. IMPROVEMENT	
		<input type="checkbox"/> d. OTHER	
		26. ACTION TAKEN	
		<input type="checkbox"/> a. REPLACED	
		<input type="checkbox"/> b. REPAIRED	
		<input type="checkbox"/> c. ADJUSTED	
		<input type="checkbox"/> d. DISCONNECTED	
		<input type="checkbox"/> e. REMOVED	
27. DATE AND HOUR OF INCIDENT 1600, 12 Nov 68		<input checked="" type="checkbox"/> f. NONE See 28	
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. Tachometer readings fluctuated from 3000 to 3200 rpm over an extended period. At the time of the incident, the tachometer indicated less than 100 rpm. Check test with instrumented portable tachometer indicated that engine was running at pre-set 3200 rpm (Page 8, para 2-10-6, manufacturer's manual). Operations continued, and maintenance was deferred until regular scheduled 250-hour quarterly maintenance service.</p> <p>b. Incident is classified as a shortcoming pending evaluation of repairs required.</p>			
29. DEFECTIVE MATERIAL SENT TO: N/A			
30. NAME, TITLE & TEL EXT OF PREPARER		31. FOR THE COMMANDER:	
THOMAS N. BORGAN, 114, 114 Test Officer, NME/POL Equip Test Br Ext 1585/1697		 DAVID P. JAMES, Acting Chief NME/POL Equipment Test Branch Service Test Division, Testing Directorate	

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-SS-E	
3. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, MO. 63120		3. DATE: 21 November 1968	
		4. EPR NO. 17-4	
		5. USATECOM PROJ NO. 7-8-0961-01	
		6. ROT & E PROJ NO.	
		CONTRACT NO.	
		7. TEST TITLE Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36N-SPS 3011 GT		9. SERIAL NO. R-2283	
10. QUANTITY 2		11. LIFE PERIOD 250 hours	
12. MFR. E.C. Schlever Pump Co. Inc.		13. USA NO. N/A	
<b>II. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Choke Assembly, Automatic			
16. FPN N/A		18. MFR. PART NO. 13206E0809	
17. DRAWING NO. N/A		19. MFR. 97403	
18. QUANTITY 1		20. NEXT ASSEMBLY Carburetor	
21. STD. GOVT. SPP. 03.12		22. PART TEST LIFE 250 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
a. OPERATION		25. INCIDENT CLASS	
X b. MAINTENANCE		a. DEFICIENCY	
c.		X b. SHORTCIRCUIT	
		c. USE IMPROVEMENT	
		d. OTHER	
		26. ACTION TAKEN	
		a. REPLACED	
		b. REPAIRED	
		c. ADJUSTED	
		d. DISCONTINUED	
		e. OTHER	
27. DATE AND HOUR OF INCIDENT 19 Nov 68, 1015 hrs		X f. SEE See block 28	
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. The automatic choke failed to function when cold start of engine was required during quarterly maintenance.</p> <p>b. Testing with a multi-meter revealed an open circuit in the automatic choke.</p> <p>c. Cause of shortcircuiting is unknown.</p> <p>d. Testing of the major item will continue.</p> <p>e. The hand choke will be used when necessary until a replacement automatic choke assembly is obtained.</p> <p>f. A temperature sensitive (thermal) type choke is recommended over the present electrical type which appears to be (2 position) completely open or completely closed.</p> <p>g. Request documentation regarding operation of the automatic choke and basic requirement for an electrical type choke on the test item be furnished this command, ATTN: SPEGE-SS-E.</p>			
29. DEFECTIVE MATERIAL SENT TO:			
30. NAME, TITLE & TEL EXT OF PERSON		31. FOR THE COMMANDER:	
JOSEPH T. HARVEY Equip Spec (Gen) MED. SSD, Ext 1006		 ROBERT A. NULCK MAJ, ORD Chief, MED, SSD	

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# EQUIPMENT PERFORMANCE REPORT

<b>1. FROM</b> Commanding Officer U.S. Army General Equipment Test Activity Ft. Lee, VA 23801	<b>2. OFFICE SYMBOL:</b> STEGE-SS-F <b>3. DATE:</b> 21 November 1968 <b>4. EPR NO.</b> L7-5
<b>5. TO</b> Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, MO 63120	<b>6. USATECOM PROJ NO.</b> 7-8-0961-01 <b>ROT &amp; PROJ NO.</b> <b>CONTRACT NO.</b> <b>7. TEST TITLE</b> Pump, Centrifugal, 600 GPM

## I. MAJOR ITEM DATA

<b>8. MODEL</b> 36M-SPS 301i GT	<b>9. SERIAL NO.</b> H-2283
<b>10. QUANTITY</b> 2	<b>11. LIFE PERIOD</b> 250 hours
<b>12. MFR.</b> E.C. Schleyer Pump Co., Inc.	<b>13. USA NO.</b> N/A

## II. PART DATA

<b>14. NOMENCLATURE / DESCRIPTION</b> Pin, Anchor on Trailer	<b>15. MFR. PART NO.</b> B003-M36
<b>16. FSN</b> N/A	<b>17. MFR.</b> E.C. Schleyer Pump Co., Inc.
<b>17. DRAWING NO.</b> N/A	<b>18. NEXT ASSEMBLY</b> Trailer Frame
<b>19. QUANTITY</b> 3	<b>20. PART TEST LIFE</b> 250 hours
<b>21. STD. GOVT. ORP.</b> 1501	

## III. INCIDENT DATA

22. OBSERVED DURING	23. TEST ENVIRONMENT	24. INCIDENT CLASS	25. ACTION TAKEN
<input type="checkbox"/> a. OPERATION	GETA Maintenance Shop	<input checked="" type="checkbox"/> a. DEFICIENCY	<input checked="" type="checkbox"/> a. REPLACED
<input checked="" type="checkbox"/> b. MAINTENANCE		<input checked="" type="checkbox"/> b. SHORTCOMING	<input checked="" type="checkbox"/> b. REPAIRED
<input type="checkbox"/> c.		<input type="checkbox"/> c. PNL IMPROVEMENT	<input type="checkbox"/> c. ADJUSTED
		<input type="checkbox"/> d. OTHER	<input type="checkbox"/> d. DISCONTINUED
<b>27. DATE AND HOUR OF INCIDENT</b> 19 November 1968, 1015 hrs			<input type="checkbox"/> e. NONE

## IV. INCIDENT DESCRIPTION

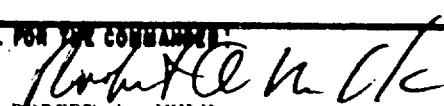
**28. DESCRIBE INCIDENT FULLY**

a. During quarterly maintenance inspection, the lock pin on the right side of the trailer was observed missing and assumed lost during movement from the test site to the maintenance shop. The lock pin is attached to the test item frame with a chain and split ring. The ring opening is covered by wrapping with friction tape, as are the other 2 lock pins on the test item.

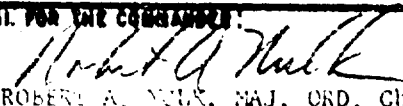
b. The friction tape had slipped away from the ring opening, permitting the pin to separate from the chain and apparently was lost.

c. The method of retaining the lock pins by covering the ring opening with friction tape is not considered satisfactory.

d. Additional study is being made of the incident and recommendations for improvement will be submitted.

<b>29. DEFECTIVE MATERIAL SENT TO:</b> <b>30. NAME, TITLE &amp; TEL EXT OF PERSON</b>  JOSEPH T. HARVEY Equip Spec (Gen) MED, SSD, ext 1006	<b>31. FOR THE COMMANDER:</b>  ROBERT A. NULK MAJ, ORD Chief, MED, SSD
--	--

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-SS-E	
		3. DATE: 26 November 1968	
		4. EPR NO. SPECIAL	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 1300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. See Block 28	
		7. TEST TITLE See Block 28	
<b>II. MAJOR ITEM DATA</b>			
8. MODEL		9. SERIAL NO.	
10. QUANTITY		11. LIFE PERIOD	
12. MFR.		13. USA NO.	
<b>III. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Tachometer (Electrical)			
15. P/N		16. MFR. PART NO. 102 and 812831	
17. DRAWING NO.		18. MFR. Stewart Warner	
19. QUANTITY 4		19. NEXT ASSEMBLY Engine	
20. STD. GOVT. ORP.		20. PART TEST LIFE 0; 30; 225; 344 5 hrs	
<b>IV. INCIDENT DATA</b>			
21. OBSERVED DURING		22. INCIDENT CLASS	
a. OPERATION		X 1. DEFICIENCY	
b. MAINTENANCE		2. SHORTCOMINGS	
X 4. See Block 23		3. DEFICIENCY	
		4. DEFICIENCY	
		5. DEFICIENCY	
		6. DEFICIENCY	
		7. DEFICIENCY	
		8. DEFICIENCY	
27. DATE AND HOUR OF INCIDENT		28. NOTE	
<b>V. INCIDENT DESCRIPTION</b>			
29. DESCRIBE INCIDENT FULLY			
<p>a. During initial production tests of the 200-GPM Centrifugal Pumps (USATECOM Project No. 7-7-0754-01), and the 600-GPM Centrifugal Pumps (USATECOM Project No. 7-8-0961-01), malfunctions of the same component (electrical tachometer, Mfr. No. 102-812831 and 812831) occurred on all test items (4).</p> <p>b. Repeated malfunctions of a single component on separate equipment appears significant enough to warrant a special investigation prior to future procurement of items using the component. Whether or not this tachometer is used on end items other than those listed above is unknown at this time.</p> <p>c. Attached for consideration are the problem areas and supporting data which document the component malfunctions.</p> <p>d. The malfunctions of the tachometer are classified together as a deficiency insofar as the tachometers themselves are concerned--even though the malfunctions were separately classified as shortcomings with regard to the mission accomplishment of the end items to which they were attached. One or more of the aspects of quality control, accuracy, reliability, durability, and application have caused the tachometers to be inadequate for the performance of their intended functions.</p>			
(Continued)			
30. DEFECTIVE MATERIAL SENT TO:			
30. NAME, TITLE & ADDRESS OF PURCHASER		31. FOR THE COMMANDER:	
JOSEPH T. HARVEY, Equip Spec (Gen) MED, SSD, ext 1006		 ROBERT A. NEIK, MAJ, ORD, Chief, MED, SSD	



APPENDIX IV

STECE-SS-E  
EPR NO.: SPECIAL

Block 28, Continued:

e. It is recommended that:

(1) An investigation, study, or test be conducted to identify and correct the problem.

(2) Consideration be given to use of a mechanical tachometer in place of the electrical tachometer on the aforementioned items.

USATECOM Project Nos. 7-7-0784-01 and 7-8-0961-01

APPENDIX IV

STEGE-SS-E  
EPR No.: SPECIAL

Problems concerning the tachometer were as follows:

1. One tachometer tested upon receipt was inaccurate by 800 rpm, indicating a need for improved quality control.
2. Another tachometer was tested after 30 operating hours and was found to be inaccurate by 400 rpm, indicating a possibility of poor quality control or low reliability.
3. Two additional tachometers developed malfunctions at 225.0 and 344.5 test hours respectively, indicating a high mortality rate.
4. Electrical schematic wiring diagrams, furnished with the test items, were not identical to actual wiring of the test items, thereby causing additional problems during corrective maintenance.
5. The actual wiring of the two test items using the same tachometer and control panel was not identical and did not conform to schematic wiring diagrams as furnished by the manufacturer.
6. Two organizational maintenance personnel assigned to the test projects were not knowledgeable about troubleshooting the tachometer and its associated component: electrical sender, Mfr. No. 811532. Either additional troubleshooting information should be included in the literature or additional training should be provided for the mechanics (62B20 and 63C20).
7. A combined mechanical tachometer/hour meter used on the 350-GPM Pump (FSN 4320-916-9172) appears to be more reliable and would eliminate the electrical problem areas.

USATECOM Project Nos. 7-7-0784-01 and 7-3-0961-01

*Incl 1*

## APPENDIX IV

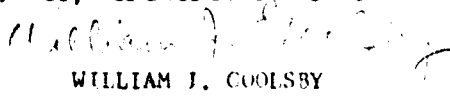
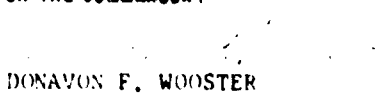
STEGE-SS-E  
EPR NO.: SPECIAL

END ITEM	EPR OR REFER-ENCE	DATE OF EPR	TEST HRS OF PART	NAME AND MFR OF COMPONENT	MFR PART NUMBER	MALFUNCTION
200-GPM Centrifugal Pump, Gorman-Rupp, 392664, (USATECOM 7-7-0784-01)	L7-10	16 Aug 68	344.5	Tachometer Stewart-Warner	102-812831	Indicator (Needle) fell off its shaft
200-GPM Centrifugal Pump, Gorman-Rupp, 392632, (USATECOM 7-7-0784-01)	Eng. Test Report Input, Mr. Stowell	20 Jun 68	30.0	Tachometer Stewart-Warner	102-812831	Inaccurate by 400 rpm
600-GPM Centrifugal Pump, CED 4", Wheel Mtd, E.C. Schleyer, H2283, (USATECOM 7-8-0961-01)	L7-3-(1-2)	13 Nov 68	225.0	Tachometer Stewart-Warner	812831	Indicator fluctuated and then dropped to 100 rpm. Engine speed continued at 3200 rpm
600-GPM Centrifugal Pump, CED 4", Wheel Mtd, E.C. Schleyer, H2282, (USATECOM 7-8-0961-01)	L7-1	21 Aug 68	0.0	Tachometer Stewart-Warner	812831	Inoperative on receipt

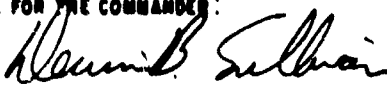
USATECOM Project Nos. 7-7-0784-01 and 7-8-0961-01

*Encl 2*


## EQUIPMENT PERFORMANCE REPORT

1 FROM Commanding Officer US Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-T	
		3. DATE: 29 November 1968	
		4. EPR NO. L7-6	
5. TO Commanding General US Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 7. TEST TITLE Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS 3011 GT		9. SERIAL NO. H-2283	
10. QUANTITY 3		11. LIFE PERIOD 20 hours	
12. MFR. E. C. Schleyer Pump Co., Inc.		13. USA NO. NA	
<b>II. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Tiedown Eyes			
15. FSN UNK		16. MFR. PART NO. UNK	
17. DRAWING NO. Fig 1-2, Pg 2, Oper Maint & Ovhd		18. MFR. E. C. Schleyer Pump Co., Inc	
19. QUANTITY Man 4		20. NEXT ASSEMBLY Frame, Trailer	
21. STD. GOVT. GRP. 18		22. PART TEST LIFE 20 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
a. OPERATION		25. INCIDENT CLASS	
b. MAINTENANCE		a. DEFICIENCY	
X c. Rail Humping Test		X b. SHORTCOMING	
Rail Transportability		c. SUB. IMPROVEMENT	
		d. OTHER	
		26. ACTION TAKEN	
		a. REPLACED	
		b. REPAIRED	
		c. ADJUSTED	
		d. DISCONNECTED	
		e. REMOVED	
27. DATE AND HOUR OF INCIDENT 1530 hours, 27 November 1968		X f. NONE	
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>During the 8 MPH railcar hump test, the 4 tiedown eyes bent and 5 of the 8 welds securing the eyes to the pump frame fractured.</p>			
29. DEFECTIVE MATERIAL SENT TO: NA			
30. NAME, TITLE & TEL EXT OF PREPARER		31. FOR THE COMMANDER:	
 WILLIAM J. COOLSBY Project Director LOTS Test Branch, IID, N1595		 DONAVON F. WOOSTER Acting Chief LOTS Test Branch, IID	

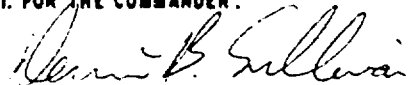
## EQUIPMENT PERFORMANCE REPORT

1 FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S	
		3. DATE: 5 December 1968	
		4. EPR NO. L7-7	
5 TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 NDT & E PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM			
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS3011G-T		9. SERIAL NO. H-2283	
10. QUANTITY 3		11. LIFE PERIOD 300 hours	
12. MFR. E.C. Schleyer Pump Co., Inc.		13. USA NO. N/A	
<b>II. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Wire from Tachometer Sending Unit to Tachometer, Engine 4A0B4II			
15. FSN None		16. MFR. PART NO. 812831	
17. DRAWING NO. Fig 12		18. MFR. Stewart and Warner	
19. QUANTITY one		20. NEXT ASSEMBLY Tachometer	
21. STD GOVT. GRP.		22. PART TEST LIFE 300 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
X a. OPERATION		Beach test site, Fort Story, VA	
b. MAINTENANCE			
c.			
		25. INCIDENT CLASS	
		a. DEFICIENCY	
		X b. SHORTCOMING	
		c. SUP. IMPROVEMENT	
		d. OTHER	
		26. ACTION TAKEN	
		a. REPLACED	
		b. REPAIRED	
		c. ADJUSTED	
		d. DISCONNECTED	
		e. REMOVED	
27. DATE AND HOUR OF INCIDENT 2 Dec 68, 0900		X f. NONE	
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. The wire extending from the tachometer sending unit to the tachometer became pinched between the top and bottom shrouds of the engine. The top shroud is taken off the engine for performance of daily maintenance on the engine. When this top shroud is replaced, this wire becomes pinched unless extreme care is exercised. Reference Fig 12, Page 21, TM 5-2805-204-14, Jul 65.</p> <p>b. From a performance viewpoint, this is considered a shortcoming because no provisions have been made to keep the wire from being pinched during performance of daily maintenance.</p>			
29. DEFECTIVE MATERIAL SENT TO: N/A			
30. NAME, TITLE & TEL EXT OF PREPARER		31. FOR THE COMMANDER:	
THOMAS M. HORGAN, 1LT, TC, Test Officer Fort Story Test Facility AUTOVON 555-1420, ext 5104		 DENNIS B. SULLIVAN, MAJ, OMC Chief, MHE and POL Equipment Test Branch Service Test Division, Testing Directorate	

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-ST-M	
		3. DATE: 9 December 1968	
		4. EPR NO. L7-8	
3. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROY BE PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS3011G-T		9. SERIAL NO. H-2283	
10. QUANTITY 3		11. LIFE PERIOD 316 hours	
12. MFR. E. C. Schlever Pump Co., Inc.		13. USA NO. N/A	
<b>II. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Magneto			
16. FPN 2920-867-8867		15. MFR. PART NO. 13206E1280	
17. DRAWING NO. N/A		18. MFR. Fairbanks-Morse	
19. QUANTITY 1		20. NEXT ASSEMBLY Timing Gear	
21. STD. GOVT. GRP. 0605		22. PART TEST LIFE 316 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
<input checked="" type="checkbox"/> a. OPERATION		Salt water pumping	
<input checked="" type="checkbox"/> b. MAINTENANCE		operations, Fort Story	
<input type="checkbox"/> c.		Virginia	
		25. INCIDENT CLASS	
		<input checked="" type="checkbox"/> a. DEFICIENCY	
		<input type="checkbox"/> b. SHORTCOMING	
		<input type="checkbox"/> c. SUG. IMPROVEMENT	
		<input type="checkbox"/> d. OTHER	
		26. ACTION TAKEN	
		<input checked="" type="checkbox"/> a. REPLACED	
		<input type="checkbox"/> b. REPAIRED	
		<input type="checkbox"/> c. ADJUSTED	
		<input type="checkbox"/> d. DISCONNECTED	
		<input type="checkbox"/> e. REMOVED	
		<input type="checkbox"/> f. NONE	
27. DATE AND HOUR OF INCIDENT 4 Dec 68, 0930			
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. Test item engine would not start.</p> <p>b. Inspection and trouble-shooting revealed malfunction of the magneto (Serial No. 5805606).</p> <p>c. Partial disassembly of the component revealed:</p> <p>(1) Center carbon contact point of distributor cap to rotor was completely worn out. Spring tension was gone, and the carbon contact point was rendered totally inoperative.</p> <p>(2) The contact point set (82796 22437H) plate was loose (four screws were only hand tight).</p> <p>(3) 1/8" lateral movement was evident in the magneto drive gear.</p> <p>d. Incident is classified as a deficiency because it caused the engine to be inoperative.</p> <p>e. Cause of incident is attributed to faulty assembly of the magneto by the manufacturer.</p>			
29. DEFECTIVE MATERIAL SENT TO: Retained			
30. NAME, TITLE & TEL EXT OF PREPARER		31. FOR THE COMMANDER:	
THOMAS M. HORGAN, 1LT, TC, Test Officer Fort Story Test Facility AUTOVON 555-1420, ext 5104		 DENNIS B. SULLIVAN, MAJ, QMC Chief, MHE and POL Equipment Test Branch Service Test Division, Testing Directorate	
32. FORM 1025, 18 DEC 67. REPLACES AMSME FORM 1025.		USATECOM REGULATION 765-4	

## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S	
		3. DATE: 16 December 1968	
		4. EPR NO. L7-9	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROT & E PROJ NO. CONTRACT NO. DAAK01-67-C-A010	
7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM			
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS301IG-T		9. SERIAL NO. H-2283	
10. QUANTITY 3		11. LIFE PERIOD 350 hours	
12. MFR. E. C. Schlever Pump Co., Inc.		13. USA NO. N/A	
<b>II. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Motor, Starter, 24v, Solenoid Actuated			
15. P/N 2920-882-3401		16. MFR. PART NO. MS53013-1	
17. DRAWING NO. Fig 18, Item No. 5		18. MFR. Military Standard	
19. QUANTITY 1		20. NEXT ASSEMBLY Engine	
21. STD. GOVT. GRP.		22. PART TEST LIFE 350 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
X a. OPERATION		Salt water pumping operations, Fort Story, Virginia	
b. MAINTENANCE			
c.			
		25. INCIDENT CLASS	
		a. DEFICIENCY	
		X b. SHORTCOMING	
		c. PLS. IMPROVEMENT	
		d. OTHER	
		26. ACTION TAKEN	
		a. REPLACED	
		b. REPAIRED	
		c. ADJUSTED	
		d. DISCONNECTED	
		e. REMOVED	
27. DATE AND HOUR OF INCIDENT 10 Dec 68, 1100 hours		X f. NONE See para 28	
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. Starter motor failed to function. Reason for malfunction is unknown. There was no difficulty in starting the pump manually.</p> <p>b. This is judged to be a shortcoming because the pump can continue to operate. If cause of malfunction can be determined, a supplementary EPR will follow.</p> <p>c. EPR was telephoned to USATECOM 13 Dec 68, 1500 hours.</p>			
29. DEFECTIVE MATERIAL SENT TO: N/A			
30. NAME, TITLE & TEL EXT OF PREPARER		31. FOR THE COMMANDER:	
THOMAS M. HORGAN, 1LT, TC, Test Officer Fort Story Test Facility AUTOVON 555-1420, ext 5104		 DENNIS B. SULLIVAN, MAJ, QMC Chief, MHE and POL Equipment Test Branch Service Test Division, Testing Directorate	

APPENDIX IV

# EQUIPMENT PERFORMANCE REPORT

<b>1. FROM</b> Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801	<b>2. OFFICE SYMBOL:</b> STEGE-SS-E <b>3. DATE:</b> 19 December 1968 <b>4. EPR NO.</b> L7-9s
<b>5. TO</b> Commanding General U.S. Army Mobility Equipment Command ATTN: AMSSE-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120	<b>6. USATECOM PROJ NO.</b> 7-8-0961-01 <b>ROY &amp; E PROJ NO.</b> <b>CONTRACT NO.</b> DAAK01-67-C-A010 <b>7. TEST TITLE</b> Initial Production Test of Pump, Centrifugal, 600 GPM

## I. MAJOR ITEM DATA

<b>8. MODEL</b> 36M-SP3011G-T	<b>9. SERIAL NO.</b> H-2283
<b>10. QUANTITY</b> 3	<b>11. LIFE PERIOD</b> 350 hours
<b>12. MFR.</b> E.C. Schlever Pump Co. Inc.	<b>13. USA NO.</b> N/A

## II. PART DATA

<b>14. NOMENCLATURE / DESCRIPTION</b> Motor Starter, 24 volt, Solenoid Actuated	
<b>15. FSM</b> 2920-882-3401	<b>16. MFR. PART NO.</b> MS53013
<b>17. DRAWING NO.</b> Fig 18, Item No. 5	<b>18. MFR.</b> Military Standard
<b>19. QUANTITY</b> 1	<b>20. NEXT ASSEMBLY</b> Engine
<b>21. STD. GOVT. ORP.</b> 0603	<b>22. PART TEST LIFE</b> 350 hours

## III. INCIDENT DATA

23. OBSERVED DURING	24. TEST ENVIRONMENT	25. INCIDENT CLASS	26. ACTION TAKEN
<input type="checkbox"/> a. OPERATION	Salt Water Pumping Operations, Fort Story, Virginia	<input type="checkbox"/> a. DEFICIENCY	<input type="checkbox"/> a. REPLACED
<input checked="" type="checkbox"/> b. MAINTENANCE		<input checked="" type="checkbox"/> b. SHORTCOMING	<input checked="" type="checkbox"/> b. REPAIRED
<input type="checkbox"/> c.		<input type="checkbox"/> c. IMPROVEMENT	<input type="checkbox"/> c. ADJUSTED
		<input type="checkbox"/> d. OTHER	<input type="checkbox"/> d. DISCONNECTED
			<input type="checkbox"/> e. REMOVED
			<input type="checkbox"/> f. NONE

27. DATE AND HOUR OF INCIDENT

## IV. INCIDENT DESCRIPTION

**28. DESCRIBE INCIDENT FULLY** (Reference EPR L7-9)

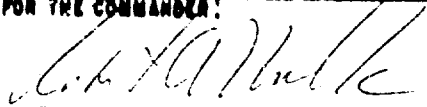
d. Disassembly of the starter revealed corrosion on the armature and all internal parts of the starter.

e. This is attributed to the salt water environment.

f. The starter was cleaned with dry solvent, dried, reassembled, tested and returned to service and is operating satisfactory.

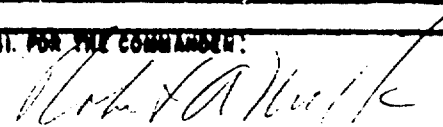
g. Recommendation: Page 38, Paragraph 52-C(2), TM 5-2805-204-14 contains a "caution": "Every 250 hours remove starter drive gear housing and tighten the two screws that hold the end plate on the starter." Recommend this "caution" be placed in the end item manual under Quarterly Maintenance and include cleaning the starter motor internally.

DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION

<b>29. DEFECTIVE MATERIAL SENT TO:</b> <b>30. NAME, TITLE &amp; TEL EXT OF PREPARER</b>  JOSEPH T. HARVEY Equip Spec (Gen) MED, SSD; ext 1006/4487	<b>31. FOR THE COMMANDER:</b>  ROBERT A. NULKE, MAJ, ORD, C, MED, SSD
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## EQUIPMENT PERFORMANCE REPORT

1 FROM Commanding Officer, U. S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-SS-E	
		3. DATE: Dec. 31, 1968	
		4. EPR NO. L7-10	
5. TO Commanding General U. S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROTB E PROJ NO. CONTRACT NO. DAAR01-67-C-A010	
7. TEST TITLE Initial Production Test of Pump Centrifugal, 600-GPM			
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36-M-SPS3011G-T		9. SERIAL NO. N/A	
10. QUANTITY 3		11. LIFE PERIOD N/A	
12. MFR. E. C. Schleyer Pump Co. Inc.		13. USA NO. N/A	
<b>II. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION Operation, Maintenance & Overhaul Manual, with Parts List			
15. FSW		16. MFR. PART NO.	
17. DRAWING NO.		18. MFR.	
19. QUANTITY		20. NEXT ASSEMBLY	
21. STD. GOVT. SAMP.		22. PART TEST LIFE	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
a. OPERATION		Maintenance Evaluation	
b. MAINTENANCE			
X c. Manual Review			
		25. INCIDENT CLASS	
		a. DEFICIENCY	
		b. SHORTCOMINGS	
		XX c. SUG. IMPROVEMENT	
		d. OTHER	
27. DATE AND HOUR OF INCIDENT		26. ACTION TAKEN	
		a. REPLACED	
		b. REPAIRED	
		c. ADJUSTED	
		d. DISCONNECTED	
		e. REMOVED	
		XX f. NONE See block 28	
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. Attached are recommended changes and additions to Operation, Maintenance and Overhaul Manual with Parts List for Schleyer 600-GPM Centrifugla Pump, Model No. 36M-SPS3011G-T.</p> <p>b. During conduct of the test, the manual was continuously evaluated to determine its applicability and adequacy for the test item. The suggested recommendations should improve the operation and maintenance of the test item.</p>			
DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION			
29. DEFECTIVE MATERIAL SENT TO:			
30. NAME, TITLE & TEL EXT OF PERSON		31. FOR THE COMMANDER:	
JOSEPH T. HARVEY, Equip Spec (GEN) ext 1006/4457		 ROBERT A. NULK, MAJ, ORD, C, MED, SSD	

## APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS (AR 310-3)				DATE 17 Dec 68
SUBJECT Operation, Maintenance & Overhaul Manual w/parts list, Schleyer Model No. 36M-SPS 301G-T, Centrifugal Pump, Gasoline Eng Driven, USATECOM Project No. 7-8-0961-01				
REVISION NOTES FROM				
ITEM NR	PAGE	PARAGRAPH	LINE*	COMMENT (Exact wording of recommended change must be given)
1	111	During Operations		<u>Add:</u> "CAUTION: Do not tow trailer over 30 mph on surface roads." <u>Explanation:</u> Page 1, Par. 1-2-0, indicates the above caution. DUPING OPERATIONS appears to be the logical place for this caution. Information furnished to the test officer reveals that the test item is not designed for towing at convoy speeds (1. Test item has no safety chain; 2. Test item is wheel mounted only for ease of movement in work area).
2	111	After Operations (2nd Par.)		<u>Delete</u> the whole paragraph. <u>Explanation:</u> This paragraph is a duplication of paragraph 4 on the same page and can be deleted.
3	111	After Operations (3rd Par.)		<u>Delete</u> the whole paragraph. <u>Add</u> whole paragraph in appropriate section of manual, Pars. 3-15b and 3-15d. <u>Explanation:</u> Tank repairs requiring welding or soldering would require removal. Instructions shown should be in the removal paragraphs.
4	1	1-1	4	<u>Delete:</u> "operation"; <u>add:</u> "maintenance instructions." <u>Explanation:</u> Chapter 2, Section III, NOTE, in TM 5-2805-204-14 states that operating instructions are not provided in this manual. However, maintenance instructions for the engine are provided.
5	1	1-2.A	7	<u>Delete:</u> "instrument"; <u>add:</u> "control." <u>Explanation:</u> Control is used for identity nomenclature in parts list and figures designated throughout manual.
6	1	1-2.A	7	<u>Delete:</u> "(Fig 1-2)"; <u>add:</u> "(Fig 2-2)." <u>Explanation:</u> Figure 1-2 does not show the controls. Figure 2-2 show the controls.
7	1	1-2.D	3	<u>Delete:</u> "stand"; <u>add:</u> "support leg." <u>Explanation:</u> Support leg is used for proper nomenclature in parts list.
8	4	1-3.C	5	<u>Add</u> after "head": "and equals total of lift and discharge head measured in feet." <u>Explanation:</u> This explanation may help avoid field problems when specified 600-GPM cannot be accomplished because Total Dynamic Head (TDH) is not fully understood. The 350-GPM Pump appears to be the same as the 600-GPM Pump and the TDH is the significant factor.
9	5	1-5.A.2		<u>Recommendation:</u> 1. The performance plate be eliminated on future procurements because:

\* Reference to line number within the paragraph or subparagraph

APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS				DATE
AR 710-33				17 December 1968
SUBJECT Operation, Maintenance & Overhaul Manual w/parts list, Schleyer Model No. 36M-SPS 3011G-T, Centrifugal Pump, Gasoline Engine Driven, USATECOM Project No. 7-8-0961-01				
REVISION NOTES FROM				
ITEM NR	PAGE	PARAGRAPH	LINE*	COMMENT (Exact wording of recommended change must be given)
9	5	1-5.A.2 (Continued)		a. It was not used during testing. b. The operator did not know its purpose. c. The technical manual contains no instructions for its use. 2. If the above recommendation is not acceptable: a. Add to the manual instructions for use of the performance plate. b. Place caution in the manual to prevent painting over the performance plate. c. Add an illustration in the manual of the performance plate to be used when the actual performance plate is no longer serviceable (i.e., TM 5-4320-242-15, Page 2-11, MEC 5-4320-242-15/2-4. <u>Explanation:</u> Self explanatory.
10	7	2.7.A	1	<u>Add</u> after "SUCTION LINE": "CAUTION: Attach a suitable strainer before operating pump." <u>Explanation:</u> A strainer is not provided as a basic issue item and must be obtained on site. A caution is recommended to prevent operation, and subsequent damage, without a strainer.
11	8	2.9	1	<u>Delete</u> line 1. <u>Explanation:</u> The controls on the engine are not described in TM 5-2805-204-14.
12	8	2.9	3	<u>Add</u> after "control panel": "(Fig 2.2)." <u>Explanation:</u> The controls referenced are shown in Fig 2.2.
13	8	2.9	15	<u>Add</u> after "position": "and the oil pressure switch depressed." <u>Explanation:</u> The oil pressure switch must be depressed to complete the magneto ignition circuit when oil pressure is below 20 psi as indicated further in this paragraph. Specified instructions are required to avoid starting difficulties with inexperienced operators.
14	8	Fig 2-2		<u>Delete:</u> "Override low oil pressure cut-off switch." <u>Add:</u> "Start engine." <u>Explanation:</u> Simpler language is applicable for the intended level of reading. The last sentence in Par. 2.9 explains the function of the low oil pressure switch; however, previous experience has revealed operators do not fully comprehend this explanation.
15	8	2-10.1	3	<u>Delete:</u> "Fig 3-2". <u>Add:</u> "Fig 3-1." <u>Explanation:</u> Fig 3-2 refers to electrical wiring diagram. Fig 3-1 refers to preventive maintenance.

\* Reference to line number within the paragraph or subparagraph.

## APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS		For use of this form, see AR 310-3; the proponent agency is Office of the Assistant Chief of Staff for Force Development.		DATE
				17 Dec 68
SUBJECT Operation, Maintenance & Overhaul Manual w/parts list, Schleyer Model No. 36M-SPS 3011G-T, Centrifugal Pump, Gasoline Driven, USATECOM Project No. 7-8-0961-01				
REVISION NOTES FROM				
ITEM NO.	PAGE	PARAGRAPH	LINE *	COMMENT (Exact wording of recommended change must be given.)
16	8	2-10.4	3	<p>Add after "(TM 5-2805-205-14)": "Figure 5."  <u>Explanation:</u> To help operator find the proper figure and instructions for the oil baffel control. Fig 3, TM 5-2805-204-14 shows a clearer view of the oil baffel control. However, there are no instructions for the oil baffel control on Fig 3. Consideration should be given for inclusion of the instructions and illustration in the "end item" operators manual because this is an operational function.</p>
17	8	2-10.6		<p><u>Change</u> as follows: "Depress oil pressure switch and start switch."  <u>Explanation:</u> Oil pressure switch must be depressed for all initial startings, or when less than 25 psi oil pressure is in the system (Ref Par. 2.9).</p>
18	9	2-12	1	<p>Add after "stopping": "CAUTION: Reduce engine speed to 700 or 800 rpm with the governor control to prevent back firing."  <u>Explanation:</u> Back firing occurs when run-stop switch is activated to the stop position at high speed.</p>
19	9	2-14.D		<p>Add after "warm up": "by manually adjusting governor control to approximately 1500 rpm."  <u>Explanation:</u> Engine governor control is pre-set at 3200 rpm (Par. 2-10.6, note) and will attain this speed immediately unless it is controlled manually by the operator.</p>
20	10	2-18.4		<p><u>Change</u> paragraph as follows: "Hold choke control in the OUT position while pulling rope to start engine."  <u>Explanation:</u> Manual choking is required when the battery is weak or dead (Ref. Par. 2-10.6, note).</p>
21	12	3-6	3	<p>Delete NOTE.  <u>Explanation:</u> The note may be deleted because the instruction is shown in line 1 of Par. 3.6 (items 1 through 15) and again on page 13, item 9.</p>
22	17	Fig 3-7	Item 9	<p>Delete: "INSULATED." Add: "STARTER SOLENOID."  <u>Explanation:</u> Both cables are insulated so this would not properly identify the item. Item 7 is identified as the ground cable. Adding starter solenoid to item 9 will standardize the nomenclature for identification purposes and should be added in parts list.</p>
23	19	3-16	1	<p>Delete: "3-9." Add: "5-1."  <u>Explanation:</u> Fig 3-9 illustrates the fuel system. Fig 5-1 illustrates trailer parts.</p>

\* Reference to line number within the paragraph or subparagraph.

DA FORM 1598

IV-18

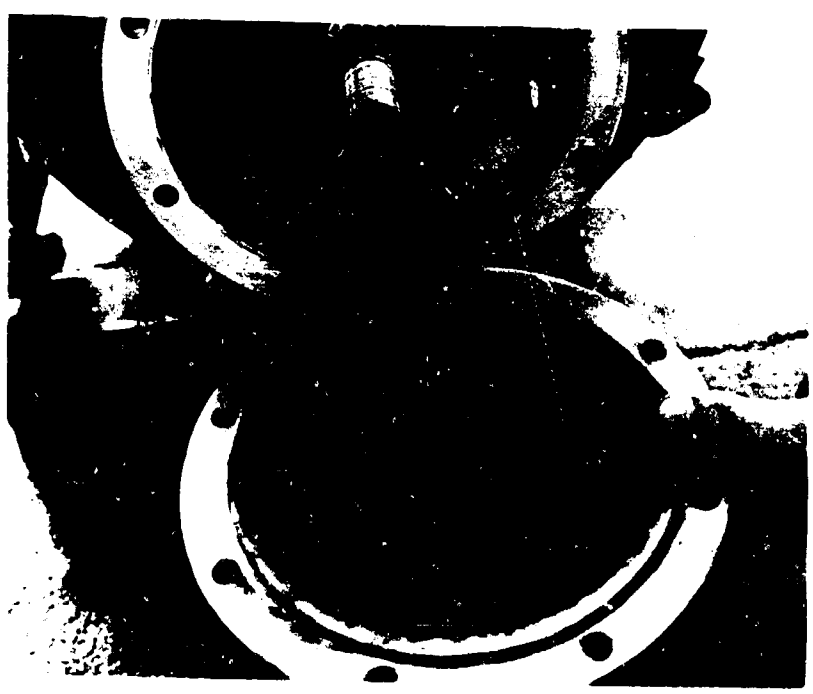
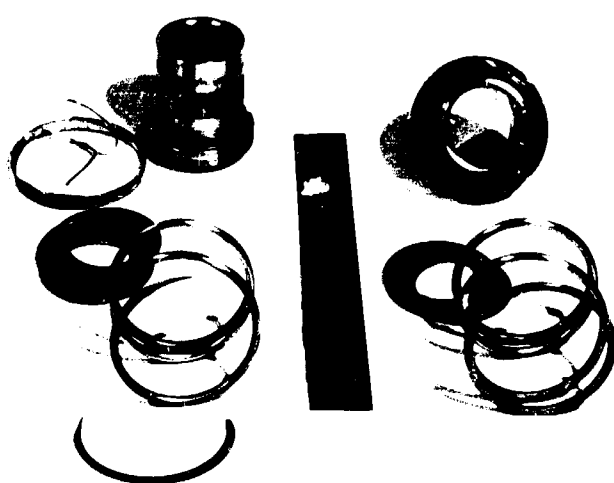
APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS		For use of this form, see AR 310-3; the proponent agency is Office of the Assistant Chief of Staff for Force Development.		DATE
				17 Dec 68
SUBJECT Operation, Maintenance & Overhaul Manual w/parts list, Schleyer Model No. 36M-SPS3011G-T, Centrifugal Pump, Gasoline Driven, USATECOM Project No. 7-8-0961-01				
REVISION NOTES FROM				
ITEM NO.	PAGE	PARAGRAPH	LINE *	COMMENT (Exact wording of recommended change must be given.)
24	20	3-16.Ca	1	<u>Add</u> after "refer to". "paragraph 3.18 and". <u>Explanation:</u> Paragraph 3.18 directs that pump and engine will be removed as a unit.
25	22	3-18.B.3		<u>Delete:</u> "to the pump and engine assembly." <u>Add:</u> "in the threaded hole on top of the intermediate housing and the engine block." <u>Explanation:</u> An eye bolt threaded into these holes was used satisfactorily during service testing.
26	23	4-2.B	1	<u>Delete:</u> "(41)". <u>Add:</u> "(44)". <u>Explanation:</u> While (41) is incorrect, (44) is correct (see Fig 4-1, Page 26 and Par. 4.4e3, Page 25, and parts list 4-1-44, Page 29).
27	23	4-3.B.1	1	<u>Delete:</u> "retaining." <u>Add:</u> "snap". <u>Explanation:</u> Standardizing nomenclature with parts list nomenclature, Page 29, Index 4-1-37.
28	25	Fig 4-1		<u>Add:</u> "item 21." <u>Explanation:</u> Items 22 and 23, combined, are item 21. The parts list shows item 21 but does not show items 22 and 23.
29	30	Index No. 3-7-7		<u>Add</u> after battery: "ground." <u>Explanation:</u> To simplify ordering of parts and reduce error.
30	30	Index No. 3-7-9		<u>Add</u> after battery: "starter solenoid." <u>Explanation:</u> Same as item 29, above.
31	31	Index No. 3-12-1		<u>Delete:</u> "Washer lock 3/8-in, MS 35338-46." <u>Add:</u> "Screw cap, 3/8-in x 16-1, MS 90725-16." <u>Explanation:</u> To make the parts list correspond with Figure 3-12, No. 1.
32	31	Index No. 3-12-2		<u>Delete:</u> "Screw cap, 3/8-16-1, MS 90725-16." <u>Add:</u> "Washer, lock, 3/8-in, MS 35338-46." <u>Explanation:</u> To make the parts list correspond with Figure 3-12, No. 2.


\* Reference to line number within the paragraph or subparagraph.

## EQUIPMENT PERFORMANCE REPORT

1 FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S	
		3. DATE: 10 January 1969	
		4. EPR NO. L7-11	
5 TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 RDT & E PROJ NO. CONTRACT NO.	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS3011G-T		9. SERIAL NO. II-2283	
10. QUANTITY 2		11. LIFE PERIOD 512 hours	
12. MFR. E. C. Schleyer Pump Co., Inc.		13. USA NO. N/A	
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Pump Seal			
15. FSN None		16. MFR. PART NO. A-0004-M36	
17. DRAWING NO. None		18. MFR. 71724	
19. QUANTITY 1		20. NEXT ASSEMBLY Intermediate Housing	
21. STD. GOVT. GRP. 5501		22. PART TEST LIFE 512 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
<input checked="" type="checkbox"/> a. OPERATION		Normal pumping operations - fresh water	
<input type="checkbox"/> b. MAINTENANCE			
<input type="checkbox"/> c.			
		25. INCIDENT CLASS	
		<input checked="" type="checkbox"/> a. DEFICIENCY	
		<input type="checkbox"/> b. SHORTCOMING	
		<input type="checkbox"/> c. SUG. IMPROVEMENT	
		<input type="checkbox"/> d. OTHER	
		26. ACTION TAKEN	
		<input checked="" type="checkbox"/> a. REPLACED	
		<input type="checkbox"/> b. REPAIRED	
		<input type="checkbox"/> c. ADJUSTED	
		<input type="checkbox"/> d. DISCONNECTED	
		<input type="checkbox"/> e. REMOVED	
27. DATE AND HOUR OF INCIDENT 1100, 9 Jan 69		<input type="checkbox"/> f. NONE	
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. At 512 test hours, water began spraying from the flywheel housing of the engine to the extent that the test item had to be stopped.</p> <p>b. Disassembly of the pump revealed the seal (Schleyer part No. A004-M36) to be completely worn out and the spring broken, and the intermediate housing half filled with sand (see attached photographs).</p> <p>c. The incident is classified as a deficiency because continued operation would cause damage to the test item and the efficiency of the pump was lowered below an acceptable level.</p> <p>d. Cause of the incident is attributed to premature failure of the pump seal (A004-M36) following salt water (surf) operations.</p>			
DEFICIENCIES AND SHORTCOMINGS AND SUBJECT TO RECLASSIFICATION			
29. DEFECTIVE MATERIAL <del>SENT</del> RETAINED AND PHOTOGRAPHS ATTACHED.			
30. NAME, TITLE & TEL EXT OF PREPARER <i>Thomas M. Horgan</i> 1-5/T THOMAS M. HORGAN, 1LT, TC Test Officer, MHE/POL Equip Test Br Ext 1585/1697		31. FOR THE COMMANDER: <i>Dennis B. Sullivan</i> DENNIS B. SULLIVAN, MAJ, QMC Chief, MHE/POL Equipment Test Branch Service Test Division, Testing Directorate	



## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: SIEGE-TE-S	
		3. DATE: 15 January 1969	
		4. EPR NO. L7-12	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMXME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 ROTB E PROJ NO. CONTRACT NO.	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal. 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL	36M-SPS3011G-T	9. SERIAL NO.	H-2282
10. QUANTITY	2	11. LIFE PERIOD	110 service test hours
12. MFR.	E.C. Schleyer Pump Co., Inc.	13. USA NO.	N/A
<b>II. PART DATA</b>			
14. NOMENCLATURE / DESCRIPTION		Volute Casing	
15. PGM	None	16. MFR. PART NO.	Schleyer A-001-M36
17. DRAWING NO.	None	18. MFR.	Schleyer
19. QUANTITY	1	20. NEXT ASSEMBLY	Intermediate housing
21. STD. GOVT. GRP.	5500	22. PART TEST LIFE	110 hours
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	25. INCIDENT CLASS
a. OPERATION		Below freezing temperatures	a. DEFICIENCY <input checked="" type="checkbox"/>
b. MAINTENANCE			b. SHORTCOMING <input checked="" type="checkbox"/>
x c. Before-operation inspection			c. BUS. IMPROVEMENT
			d. OTHER <input checked="" type="checkbox"/>
27. DATE AND HOUR OF INCIDENT		13 January 1969, 0600 hours	26. ACTION TAKEN
			a. REPLACED <input checked="" type="checkbox"/>
			b. REPAIRED <input checked="" type="checkbox"/>
			c. ADJUSTED
			d. DISCONNECTED
			e. REMOVED
			f. NONE
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			
<p>a. Water left in the pump froze and cracked the volute casing #A-001-M36 approximately 3 inches on the outer surface.</p> <p>b. During disassembly of the pump casing, the check valve was found to be damaged.</p> <p>c. The volute casing is being repaired by Heli-Arc Welding and will be hydrostatically tested.</p> <p>d. Test operations will be resumed using the volute casing of test item H 2322 as a replacement.</p>			
DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION			
29. DEFECTIVE MATERIAL SENT TO:			
30. NAME, TITLE & TEL EXT OF PREPARER		31. FOR THE COMMANDER	
THOMAS M. HORGAN, 1LT, TC Test Officer, MHE/POL Equip Test Br Ext 1585/1697		 DENNIS E. SULLIVAN, MAJ, QMC Chief, MHE/FOL Equipment Test Branch Service Test Division, Testing Directorate	



## EQUIPMENT PERFORMANCE REPORT

1. FROM Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801		2. OFFICE SYMBOL: STEGE-TE-S	
		3. DATE: 15 January 1969	
		4. EPR NO. L7-13	
5. TO Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120		6. USATECOM PROJ NO. 7-8-0961-01 RDTE PROJ NO. CONTRACT NO.	
		7. TEST TITLE Initial Production Test of Pump, Centrifugal, 600 GPM	
<b>I. MAJOR ITEM DATA</b>			
8. MODEL 36M-SPS3011G-T		9. SERIAL NO. H-2283	
10. QUANTITY 2		11. LIFE PERIOD 512 hours	
12. MFR. Schleyer Pump Co., Inc.		13. USA NO. None	
<b>II. PART DATA</b>			
14. NOMENCLATURE/DESCRIPTION Priming Plug			
15. PBM None		16. MFR. PART NO. A-909-M36	
17. DRAWING NO. None		18. MFR. Schleyer	
19. QUANTITY 1		20. NEXT ASSEMBLY Volute casing	
21. STD. GOVT. ORP. 5500		22. PART TEST LIFE 512 hours	
<b>III. INCIDENT DATA</b>			
23. OBSERVED DURING		24. TEST ENVIRONMENT	
a. OPERATION		Pump had just been removed from Maint	
b. MAINTENANCE		Shop after quarterly maintenance had been accomplished.	
x. Initial inspection prior to operations		25. INCIDENT CLASS	
		a. EFFICIENCY	
		x. b. SHORTCOMING	
		c. SUB. IMPROVEMENT	
		d. OTHER	
27. DATE AND HOUR OF INCIDENT 13 January 1969, 0800 hours		26. ACTION TAKEN	
		x. a. REPLACED	
		b. REPAIRED	
		c. ADJUSTED	
		d. DISCONNECTED	
		e. REMOVED	
		f. NONE	
<b>IV. INCIDENT DESCRIPTION</b>			
28. DESCRIBE INCIDENT FULLY			

a. Prior to operation, the priming plug A-909-M36 was broken during removal to prime the pump. The entire wrench area of the plug twisted off, leaving an opening into the pump housing. The remaining portions (thread section) were removed by hacksawing and a screw extractor.

b. The incident is classified as a shortcoming because the pump could not be primed until the item was repaired.

c. Cause of the incident is attributed to using a ferrous metal plug in a nonferrous metal volute casing, resulting in seizure (unequal expansion and contraction of dissimilar metals and corrosion by electrolysis) of the plug to the volute casing, making removal difficult.

DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION

29. DEFECTIVE MATERIAL SENT TO:

30. NAME, TITLE &amp; VOL. NO. OF PREPARED

THOMAS M. HORGAN, 1LT, TC  
Test Officer, MHE/POL Equip Test Br  
Ext 1585/1697

31. FOR THE COMMANDER:

*Dennis B. Sullivan*  
DENNIS B. SULLIVAN, MAJ, QMC  
Chief, MHE/POL Equipment Test Branch  
Service Test Division, Testing Directorate

# EQUIPMENT PERFORMANCE REPORT

<b>1. FROM</b> Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, VA 23801	<b>2. OFFICE SYMBOL:</b> STEGE-SS-E <b>3. DATE:</b> 16 January 1969 <b>4. EPR NO.</b> L7-14
--	---

<b>5. TO</b> Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120	<b>6. USATECOM PROJ NO.</b> 7-8-0961-01 <b>NOT &amp; E PROJ NO.</b> <b>CONTRACT NO.</b> <b>7. TEST TITLE</b> Initial Production Test of Pump, Centrifugal, 600 GPM, Water
--	---

### I. MAJOR ITEM DATA

<b>8. MODEL</b> 36M-SPS3011GT	<b>9. SERIAL NO.</b> H 2283
<b>10. QUANTITY</b> 2	<b>11. LIFE PERIOD</b> N/A
<b>12. MFR.</b> E.C. Schleyer Pump Co. Inc.	<b>13. USA NO.</b> N/A

### II. PART DATA

<b>14. NOMENCLATURE/DESCRIPTION</b> Operation, Maintenance & Overhaul Manual with Parts List.	
<b>15. P/N</b> N/A	<b>16. MFR. PART NO.</b> N/A
<b>17. DRAWING NO.</b> N/A	<b>18. MFR.</b> Schleyer Pump Co. Inc.
<b>19. QUANTITY</b> 1	<b>20. NEXT ASSEMBLY</b> N/A
<b>21. STD. GOVT. ORP.</b> N/A	<b>22. PART TEST LIFE</b> N/A

### III. INCIDENT DATA

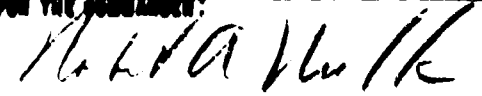
<b>23. INCIDENT CLASS</b>	<b>24. INCIDENT CLASS</b>	<b>25. INCIDENT CLASS</b>	<b>26. INCIDENT CLASS</b>
<input type="checkbox"/> a. OPERATION	<input type="checkbox"/> b. DEFICIENCY	<input type="checkbox"/> c. REPLACED	<input type="checkbox"/> d. REPAIR
<input type="checkbox"/> e. MAINTENANCE	<input type="checkbox"/> f. SUBSTANDARD	<input type="checkbox"/> g. CORRECTED	<input type="checkbox"/> h. OTHER
<input checked="" type="checkbox"/> a. Simulated Maint	<input type="checkbox"/> i. IMPROVEMENT	<input type="checkbox"/> j. MODIFIED	<input type="checkbox"/> k. OTHER
<b>27. DATE AND HOUR OF INCIDENT</b> 15 January 1969 1330	<b>28. SEE BLOCK</b> See block 28		

### IV. INCIDENT DESCRIPTION

**29. DESCRIBE INCIDENT FULLY**

a. Attached is a shop sketch of the actual wiring as found on the above test item. This wiring does not correspond to the schematic diagram, Fig 3-2, Page 16, of the maintenance manual furnished with the test item.

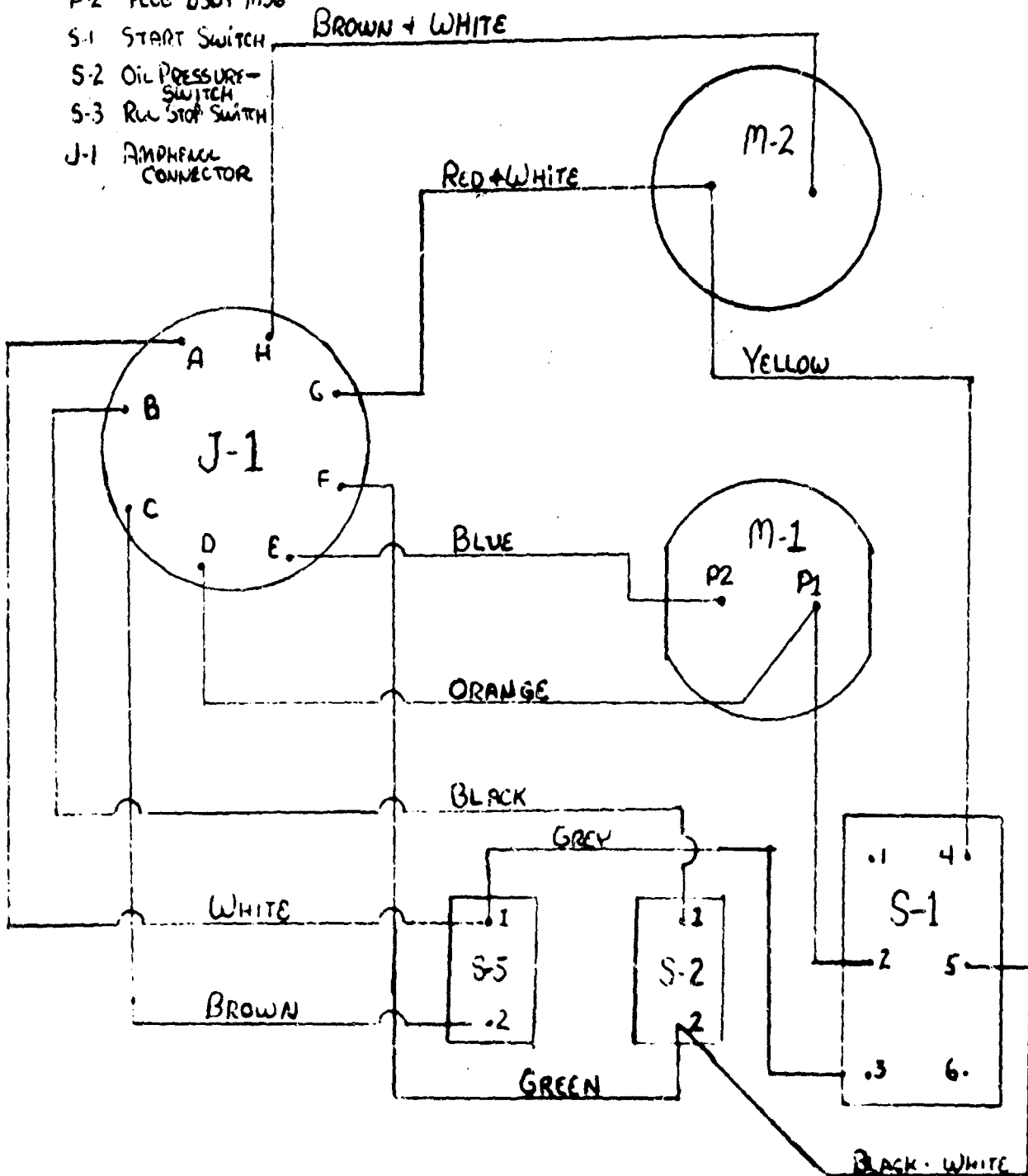
b. Incident is classified as a deficiency until corrective action is approved and the remainder of items under contract are verified for correct wiring. Accurate maintenance instructions must be provided that reflect correct wiring of test item prior to issue.

<b>30. RELEVANT MATERIAL SENT TO:</b> CO. NAME, TITLE & FULL CITY OF PREPARER:  JOSEPH T. HARVEY, Equip Spec (Gen), MED ext 1006	<b>31. FOR THE COMMANDER:</b>  ROBERT A. NULKE, MAJ, ORD, C, MED, SSD
--	---

APPENDIX IV

REFERENCE DESIGNATIONS

- M-1 PRESSURE INDICATOR
- M-2 TACHOMETER
- P-1 PLUG 8505-M36
- P-2 PLUG 8504-M36
- S-1 START SWITCH
- S-2 OIL PRESSURE SWITCH
- S-3 RUN STOP SWITCH
- J-1 AMPHENAL CONNECTOR



# EQUIPMENT PERFORMANCE REPORT

<b>1. FROM</b> Commanding Officer U.S. Army General Equipment Test Activity Fort Lee, Virginia 23801	<b>2. OFFICE SYMBOL:</b> SIEG-E-SS-E <b>3. DATE:</b> 24 January 1969 <b>4. EPR NO.</b> 17-15
<b>5. TO</b> Commanding General U.S. Army Mobility Equipment Command ATTN: AMSME-QRT 4300 Goodfellow Boulevard St. Louis, Missouri 63120	<b>6. USATECOM PROJ NO.</b> 7-8-0961-01 <b>ROTB E PROJ NO.</b> <b>CONTRACT NO.</b> <b>7. TEST TITLE</b> Initial Production Test of Pump, Centrifugal, 600 GPM, Water

## I. MAJOR ITEM DATA

<b>8. MODEL</b> 36M-SPS3011G-T	<b>9. SERIAL NO.</b> H-2283
<b>10. QUANTITY</b> 3	<b>11. LIFE PERIOD</b> 600 hrs
<b>12. MFR.</b> E.C. Schleyer Pump Co., Inc.	<b>13. USA NO.</b> N/A

## II. PART DATA

<b>14. NOMENCLATURE / DESCRIPTION</b> Operation, Maintenance & Overhaul Manual with Parts List	
<b>15. PGM</b> N/A	<b>16. MFR. PART NO.</b> N/A
<b>17. DRAWING NO.</b> N/A	<b>18. MFR.</b> N/A
<b>19. QUANTITY</b> N/A	<b>20. NEXT ASSEMBLY</b> N/A
<b>21. STD. GOVT. ORP.</b> N/A	<b>22. PART TEST LIFE</b> N/A

## III. INCIDENT DATA

23. OBSERVE / DUROR	24. TEST ENVIRONMENT	25. INCIDENT CLASS	26. ACTION TAKEN
<input type="checkbox"/> a. OPER. FAIL	Maintenance Evaluation	<input type="checkbox"/> c. DEFICIENCY	<input type="checkbox"/> e. REPLACED
<input type="checkbox"/> b. MAINTENANCE		<input type="checkbox"/> d. SHORTCOMING	<input type="checkbox"/> f. REPAIRED
<input checked="" type="checkbox"/> c. Manual Review		<input checked="" type="checkbox"/> g. IMPROVEMENT	<input type="checkbox"/> h. ADJUSTED
		<input type="checkbox"/> 4. OTHER	<input type="checkbox"/> i. DISCONNECTED
			<input type="checkbox"/> j. REMOVED
<b>27. DATE AND HOUR OF INCIDENT</b> N/A			<input checked="" type="checkbox"/> k. NOTE See item 28

## IV. INCIDENT DESCRIPTION

**28. DESCRIBE INCIDENT FULLY**

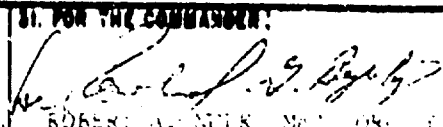
a. Attached are recommended additions to the Operation, Maintenance & Overhaul Manual with Parts List for Schleyer 600 GPM Centrifugal Pump, Model 36M-SPS3011G-T.

b. Premature failure of the pump seal (Part No. A004-ME5... EPR... attributed to insufficient maintenance instructions.

c. Adherence to recommended additions to the daily maintenance instructions will prolong the life of the seal, and permit replacement prior to or at the failure of the seal and additional damage to the internal components.

d. Reference EPR 17-10.

DEFICIENCIES AND SHORTCOMINGS ARE SUBJECT TO RECLASSIFICATION

<b>29. DEFECTIVE MATERIAL SENT TO:</b> <b>30. NAME, TITLE &amp; TELETYPE OF PERSON</b>  JOSEPH T. HARVEY, Equip Spec (Gen), MEU ext 1006/4487	<b>31. FOR THE COMMANDER:</b>  ROBERT A. MULK, Maj. Gen., Chief, MEU, SSD
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## APPENDIX IV

RECORD OF COMMENTS ON PUBLICATIONS			For use of this form, see AR 310-3; the proponent agency is Office of the Assistant Chief of Staff for Force Development.	DATE 23 January 1969
SUBJECT Operation, Maintenance & Overhaul Manual with Parts List, Schleyer Model No. 36M-SPS3011G-T, Centrifugal Pump, Gas Eng Driven, USATECOM Project No. 7-8-0961-01				
REVISION NOTES FROM				
ITEM NO.	PAGE	PARAGRAPH	LINE *	COMMENT (Exact wording of recommended change must be given.)
1	7	2-7-A	9	<p>Add after "debris": "and abrasive liquids."  <u>Explanation:</u> Disassembly of the test item revealed extensive wear to the internal components indicating a need for additional caution and filterization during surf operations.</p>
2	7	2-7-A	9	<p>Add after "pump": "(Provide a settling bed during surf operations to minimize entrance of sand into the pump)"  <u>Explanation:</u> Same as item 1, above.</p>
3	13	Fig 3-1	9	<p>Add: "Item 9. Remove drain plug (Item 33, Fig 4-1) from the intermediate housing and flush entire pump with fresh water. A daily increase in the amount of drainage from the intermediate housing indicates a defective seal (A004-M36) and the seal must be replaced."  <u>Explanation:</u> During service testing, sand accumulated in the intermediate housing (EPR L7-11) and caused premature failure of the pump seal, and the intermediate housing assembly. Daily draining and early recognition and replacement of a defective seal will prevent mission stoppage and additional damage.</p>

\* Reference to line number within the paragraph or paragraphs.