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63-3-2

402 376

CATALOGED BY ASTIA
AS AD No. 402376

Task Y-F015-04-004
Type C

Technical Note N-464

RUSTED COMPONENTS OF MATERIEL IN STORAGE

5 September 1962

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APR 29 1963
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by:
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Port Hueneme, California

RUSTED COMPONENTS OF MATERIEL IN STORAGE

Y-F015-04-004
Type C

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ABSTRACT

The Naval Civil Engineering Laboratory has concluded a 5-year storage test program to determine the type of environment and preservation level best suited for long term storage of materiel under the Bureau of Yards and Docks technical cognizance, taking into account effectiveness, efficiency, and economy.

Similar paired items of military equipment were stored in different storage environments: an open-air slab, a shed, a standard warehouse, a 50% RH warehouse, and a 40% RH warehouse. One of each pair had light domestic treatment, and the other full contact preservation. Deterioration was permitted to develop at its natural rate in each environment. Periodic inspections determined the protection afforded by each storage environment and preservation level by the extent of deterioration encountered.

Results of the test show that protection is poor in open-air storage, fair in a shed, good in the standard warehouse, and excellent in the controlled humidity warehouses. Five components -- internal-combustion engines, gear boxes, fuel-injector sets, hydraulic brake systems, and cooling systems -- had a high incidence of rust regardless of storage environment and with little regard to preservation level. Compared to domestic treatment, contact preservation decreases rust incidence about 53% for open air, 44% for the shed and 30% for the standard warehouse; no rust due to storage environments occurred in the controlled-humidity warehouses for either preservation level.

INTRODUCTION

BuDocks has direct responsibility for design, erection, and maintenance of all Navy land-based storage facilities and is directly concerned with much of the stored materiel. In the interest of increasing storage effectiveness and reducing costs, BuDocks initiated a program at NCEL under Task NY 450 010-8, presently Y-F015-04-004. The task lasted five years and a final report, TR-221, "Warehouse and Preservation Methods and Economics for Storing Materiel" was issued on 20 September 1962. This note presents test data which are too long and detailed to be included in the final report.

BACKGROUND OF TASK

a. Storage Environments

The program tested five types of storage environments: an open-air slab, a shed, a standard warehouse, and two dehumidified (D/H) warehouses, one for 50% RH and the other for 40% RH. All were one story, 40 x 100 foot, prefabricated metal structures. The open-air slab, as well as the floors in the other four environments, was 4-inch thick asphaltic concrete. The shed consisted of a building with its long leeward side open to the atmosphere. The standard warehouse was erected as received from stock except that the walls and ceiling were lined with insulation and fiberboard. The controlled humidity warehouses were similar to the standard warehouse except that all joints were sealed with a bituminous cut-back cement, the windows and the rear cargo doors were replaced with regular metal siding and the front cargo doors were sealed after stores were set in place. The relative humidity was controlled by a silica-gel dehumidifying machine in each D/H warehouse.

Equipment shipped overseas sometimes is stored outside because of one reason or another. To determine the possible effects of outside storage on equipment removed from warehouses, most of the items in the 40% RH warehouse were placed on the open slab for the last 12 months of the test. (Items such as food machinery and machine tools not normally stored outside were not moved.) It was felt that D/H storage might have a drying effect on gaskets, seals, etc., and thus be more vulnerable to outside storage. The equipment in the 40% RH warehouse was chosen over that in the 50% RH warehouse because it was felt that all pertinent information concerning efficacy of controlled humidity storage could be obtained from the 50% RH warehouse.

b. Materiel in Storage

The equipment for the test, selected from the Naval Construction Battalion stocks, included such items as jeeps, dump-trucks, searchlights, steam-boilers, pumps, welders, bake ovens, lathes, and telephone switchboards. Environments were similarly stocked except that certain types not normally stored in the open air or shed were omitted from these environments. The open-air and shed environments each contained 19 different items and the remaining environments each contained 29.

c. Preparation of Materiel for Storage

Preparation entailed disassembly of all items, cleaning, inspecting, repairing, photographing, and preserving. Each item was photographed when placed in "as new" or A-1 condition. The items were stored in pairs for the purpose of studying two levels of protective coatings. One unit of the pair was protected by "domestic" treatment and its mate by "contact" preservation. Domestic treatment is a cursory treatment usually performed by the supplier or manufacturer. It consists of applying P-1 preservative to exterior nonmachined ferrous metal surfaces and placing regular in-service oils and greases in the transmission, differentials, and other working parts of the equipment. It also includes retouching paint and taping shut any opening which might admit moisture. Contact preservation is a very thorough treatment and is performed by the Navy. It consists of a range of P-type preservatives applied to all corrodible exterior and interior surfaces, exterior surfaces repainted where necessary, openings sealed to exclude moisture and air-borne water vapor, and packaging and packing according to BuDocks technical publication TP-PW-14. A detailed description of the preparation for storage and the preservation treatment is in Appendix A.

d. Inspection of Materiel

Materiel was inspected periodically to determine the ability of each environment to protect equipment from rust. Equipment in the open air was inspected every three months, in the shed every six months, and in the remaining three environments every twelve months.

All inspections except final inspections entail a partial disassembly of equipment. For example, inspection of automotive equipment involved the removal of various cover plates, wheels, crankcase pans, cylinder heads, etc. These inspections conformed with the instructions of the BuDocks Quality Control Procedures Manual TP-QC-1 for Class II inspections.

Upon completion of a 5-year exposure period, all equipment was given a final inspection. This inspection consisted of a complete disassembly and conformed to the TP-QC-1 manual for a Class III inspection. A Class III inspection, as described by the manual, is "a complete teardown to conduct a minute examination of a complex item." Items considered complex are construction, automotive, and service equipment and others of complex design and construction. Non-complex items are of simple design, such as hand tools, plumbing supplies, galley supplies, and nonmetallic supplies.

e. Recording of Inspection Data

Rust and deterioration encountered during each inspection was classed and recorded, and representative areas were photographed. Rust classification was in accordance with Bureau of Yards and Docks uniform terminology Class I, II, III, or IV as follows:

Class I - Stain. Discoloration or staining with no evidence of pitting, etching, or other surface damage visible to the naked eye.

Class II - Light Corrosion. Surface corrosion. Loose rust or corrosion - no tight rust or scale. When removed by wiping, leaves a stain but no evidence or pitting, etching or other surface damage visible to the naked eye.

Class III - Medium Corrosion. Loose or granular rust or corrosion, together with visible evidence of minor pitting or etching.

Class IV - Heavy Corrosion. Powdered scale, or tight rust or corrosion together with deep pits, or irregular areas of material removed from the surface.

When rust is first discovered, the class and the percent coverage of the area is recorded. When subsequent inspections are made, progression of old rust is examined as well as searching for new rust. Rust can progress by growing in area, increasing in severity (going to a higher class number) or both.

DESCRIPTION OF DATA

The rust and deterioration discovered at each inspection is listed in Tables I through IV. All inspections were Class II except for the 60-month one which was a Class III. The original open-air stored items are not shown as they were removed from the test after 30 months, and a report of the inspection data, TN 365, was issued on 18 October 1960.

Each table is arranged so that the location, class, and percent coverage of rust when first discovered on an item is recorded in a block that corresponds with the storage type and storage time of the item. At subsequent inspections, any increase in area or severity is recorded, or if no change takes place the abbreviation "NC" is placed in the appropriate block. In general, only rust on areas critical to equipment operation is shown, although rust on other areas is shown when it appears to be significant. Photographs of representative rusted areas and parts are frequently shown, and may be identified by a number that is shown both in the appropriate block in the tables and in the photograph.

Final Inspection

This section describes in general the condition of the items of each environment at final inspection. As the final inspection progressed, it became evident that the same components were rusting regardless of environment and with little regard for preservation methods. It was found too that the deterioration was somewhat similar in each environment. Five components were predominantly involved in this situation: internal-combustion engines, gear boxes, fuel-injector sets, hydraulic brake systems, and cooling systems.

The nature of the deterioration of the internal-combustion engines consisted almost entirely of top cylinder rust, including cylinder walls, valves, and head surfaces. This rust usually occurred when the valves were in a closed or nearly closed position; very little rust was found in cylinders where the valves were open enough to permit air to circulate through the cylinders, except in a few instances where heavy rust was found due to water seeping into cylinders through a leaking head gasket.

Nearly all of the gears in gear boxes, including transmissions, differentials, power take-off units, and transfer cases of the 2-1/2-ton dump truck and the 1/4-ton jeep, were heavily stained by the MIL-L-2105 gear lubricant. (This condition is indicated in the tables by the notation "Gear boxes[1]".) The sole exception was the contact-preserved 2-1/2-ton dump truck located in the standard warehouse, whose gears were in excellent condition. In this instance a light oil preservative (P9 or 10) had been fogged into the transfer case, and the transmission, differential, and power take-off unit had been protected with a non-specification lubricant which was later identified by infrared spectophotometry as Whitmore gear oil.

The 30 KW diesel generator was the only item with fuel injectors. These injectors, irrespective of preservation level, all had corrosion

on such parts as the plunger, sleeve, and spring. It appeared as if these parts had been etched by a weak acid.

In the hydraulic brake systems, rust was predominant in the wheel cylinders and the master cylinder. It is likely that the brake fluid had been contaminated by water since the fluid was hygroscopic.

A high incidence of rust had occurred in the water pumps of engine cooling systems. This rust was the result of water which had pocketed when the system was drained. For reasons unknown, the cooling system of the 2-1/2-ton domestic-treated dump truck in the standard warehouse was incompletely drained and the coolant, it was discovered, was a mixture of water and a water-soluble oil. In this instance the water pump, as well as the entire system, was in excellent condition.

The remaining rust and deterioration encountered at the final inspection appeared to occur randomly and to be caused by environments. In the open-air storage, items which were uncrated or in open crates had extensive exterior rust on places such as control panels, switches, pulleys, flywheels, exposed shaft ends, and universal joints. Boxed items had better protection and had much less exterior rust. For example, the sheet-metal hood over the crated domestic-treated floodlight trailer engine was irreparably damaged, whereas the similar contact-preserved mate, which was boxed, was in good condition. Interior surfaces such as those of the domestic-treated boiler, heater, bake oven, and diesel generator had considerable rust, but the contact-preserved items were in reasonably good condition, especially those that were boxed. The domestic-treated items demonstrated how quickly rust grows after it once has a start.

In the shed storage, the exterior condition of uncrated or open-crated items was poorer than those that were boxed; much like those in the open air, except the rust was less severe. Also, items stored on the open side were generally in poorer condition than those along the wall, where they were more shielded from the weather.

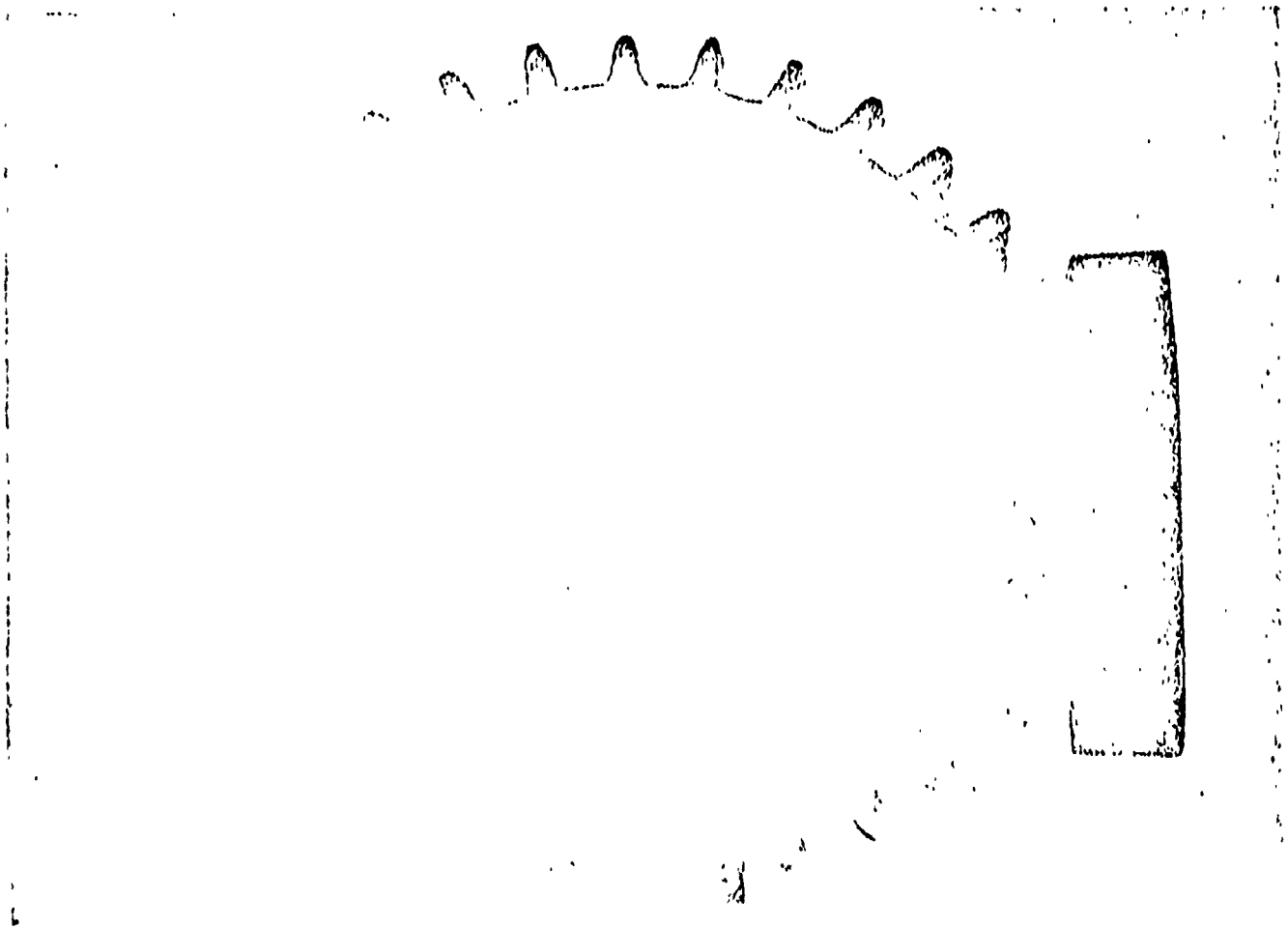
In the standard warehouse storage, rust occurred which was attributable to environment. This rust, however, was limited to small areas of light rust or stain, with a few exceptions such as the combustion chamber and shell of the domestic-treated oil-fired heater and the interior of compression tanks of the domestic-treated and contact-preserved compressor sets, where rust was more extensive. The general exterior condition of all items was good with little or no change (except dusty surfaces) being apparent.

In the dehumidified storage, there was no rusting of items in either the 50% or 40% RH warehouse attributable to the environment. Some rust occurred while the items were temporarily stored in a shed (four or more weeks) waiting for the warehouses to be erected prior to initial start of tests; subsequent storage in the dehumidified atmosphere arrested this rusting. With the exception of the rusting due to the temporary storage, preservatives, and the five components mentioned on page 4, all items were in excellent condition, with no apparent difference in the condition of 50% and 40% RH stored items. All exterior surfaces were in very good condition and with very little surface dust. No detrimental effects of dehumidified environment were detected on seals, rubber, wire harnesses, gaskets, and the like.

The items that were removed from the 40% RH warehouse after 48 months and stored in open air for the following 12 months had the usual rust on the five aforementioned major components plus a considerable amount of other rust caused by the outside environment. The pattern of rusting during the final 12 months followed quite closely that of the domestic-treated items that were originally stored in the open air for the same period of time. The general exterior condition of the items deteriorated rapidly during the 12 months of outside storage.

The final inspection also revealed that an inordinate number of ball bearings, whether sealed, semi-sealed, or open, were rough or frozen because of hardened grease, (roller bearings were apparently unaffected) and for this reason many were discarded. This again was the situation regardless of storage environment. Further, many of the ball bearings in spare-part kits (sealed and semi-sealed) were frozen to the extent they could not be turned by hand. Some of the motors could be started with assistance (hand-turning the pulley or belt) while others would not start until new bearings were installed. These motors that had been hand-started were not operated long enough to determine whether or not hardened grease adversely affected bearing life. However, of particular importance is that the Laboratory found that nearly all of these rough and frozen bearings could be made serviceable by cleaning and relubricating. The number of ball bearings that were discarded from each item is shown in Table V.

The effects that have been brought out in this section are those directly concerned with operation of the equipment. The effects of rain, dust, sunlight, and general weathering as they affect the serviceability and life of the equipment were not determined.



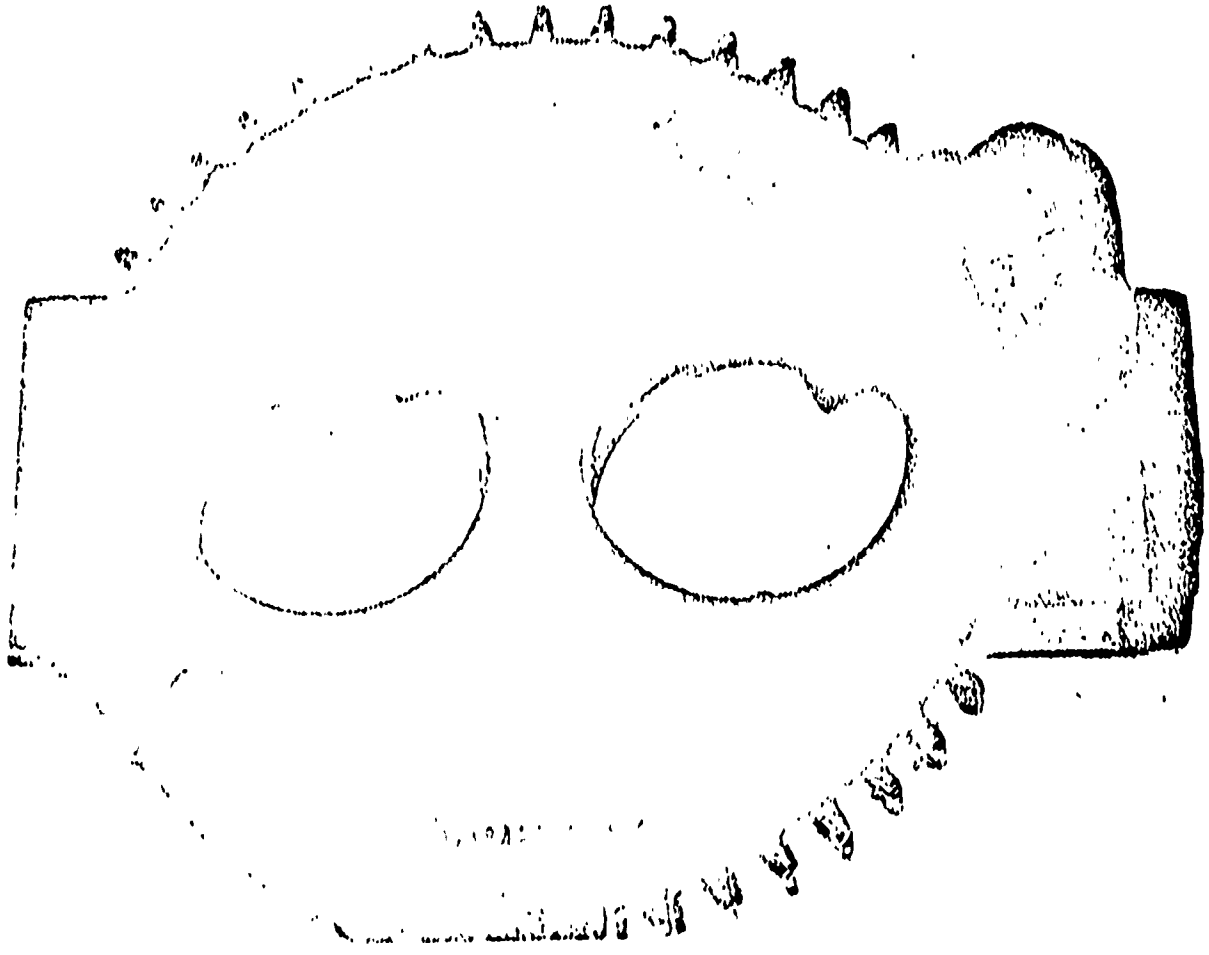
50% Class II rust on high-compression cylinder head from compressor set; domestic treated and stored 60 months in shed.

Table I. Shed

	6 Months	12 Months	18 Months	24 Months	30 Months	36 Month
Boiler, vertical 180,000 btu (domestic)	Top tube and plate 95% (II)	100% (II)	100% (III)	100% (IV)	NC	NC
		Burner chamber 95% (II)	95% (IV)	NC	NC	100% (I
Boiler, vertical 180,000 btu (contact)						
Compressor set 30 cfm (domestic)	Holding coil 5% (I)	5% (II)	10% (II)	50% (II)	NC	NC
	Lamination coil 5% (I)	5% (II)	10% (II)	10% (III)	15% (III)	NC
	Compression tank interior 40% (III)	90% (III)	90% (IV)			
				High compression cylinder head 20% (II)	NC	25% (II
				Low compression cylinder head 10% (I)	50% (III)	NC

Table I. Shed

Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
% (IV)	NC	NC	NC	NC	NC	NC
NC	NC	100% (IV)	NC	NC	NC	NC
						Flame eye assy. 100% (IV)
						Flame eye assy. 5% (I)
(II)	NC	NC	NC	NC	NC	NC
(III)	15% (III)	NC	NC	NC	NC	NC
compres- cylinder (II)	NC	25% (II)	NC	High compres- sion cylinder head and valves 50% (II)	NC	NC FGP 1203
compres- cylinder 10% (I)	50% (III)	NC	NC	NC	NC	NC
						Oil pump housing 25% (II)



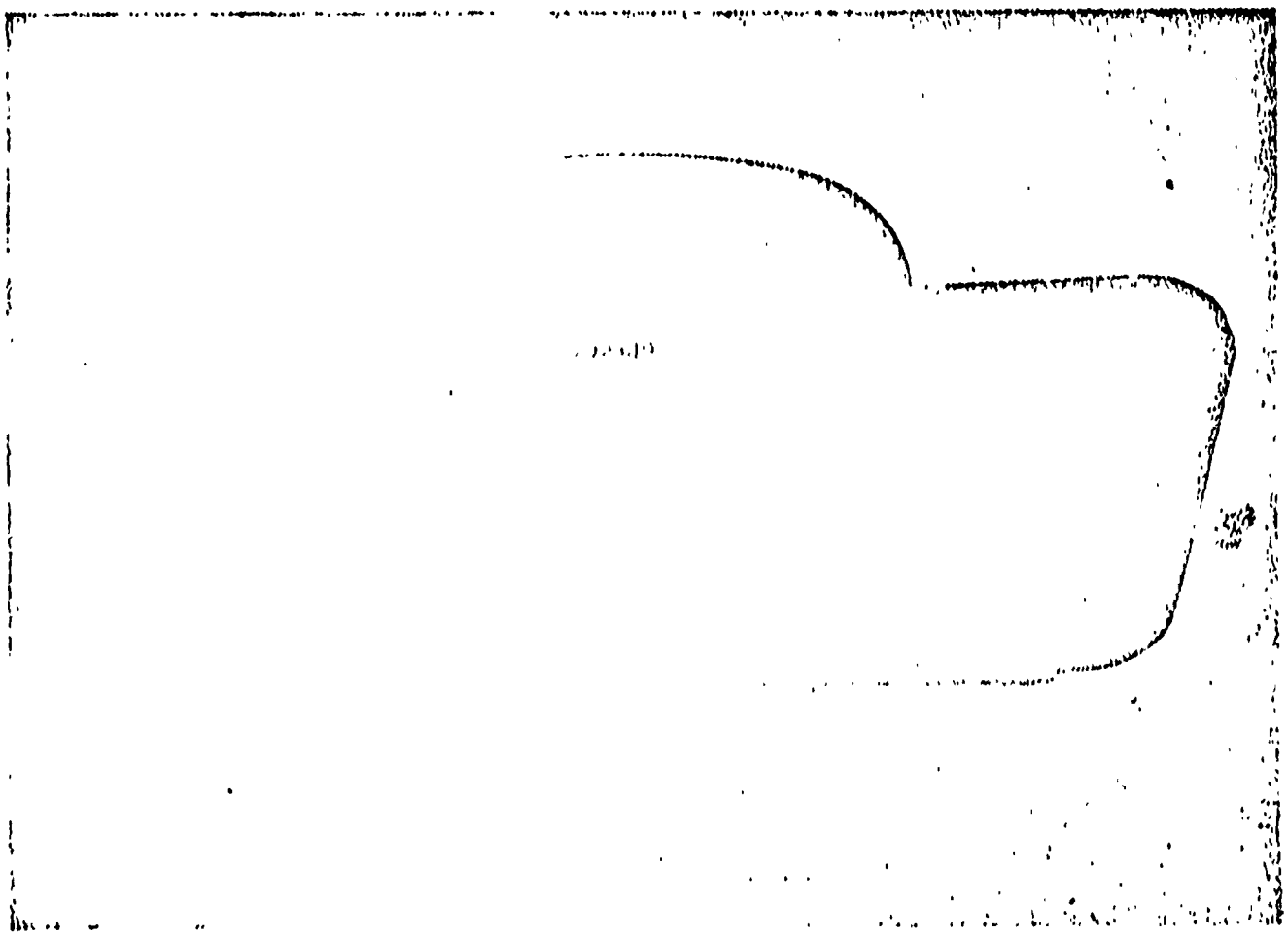
40% Class I rust on low-compression cylinder head from compressor set; contact preserved and stored 60 months in shed.

Table I. Shed (contd)

	6 Months	12 Months	18 Months	24 Months	30 Months	36 Month
Compressor set 30 cfm (contact)	Compression tank interior 40% (I)	60% (III)	90% (III)	95% (III)	NC	NC
	Holding coil 1% (I)	NC	5% (I)	NC	NC	NC
			High compression cylinder wall 1% (I)	NC	NC	NC
					Low compression valves 5% (I)	15% (I)
Distillation unit 83 gph (domestic)	Magneto points mount 5% (II)	NC	NC	NC	5% (III)	NC
Distillation unit 83 gph (contact)	Magneto rotor shaft 1% (I)	NC	NC	NC	NC	NC

Table I. Shed (contd)

Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
(III)	NC	[illegible]	NC	NC	NC	NC
NC	NC	NC	NC	NC	NC	NC
NC	NC	NC	NC	NC	NC	High compression cylinder wall, valves, and head 40% (II)
	Low compression valves 5% (I)	15% (I)	NC	NC	NC	Low compression cylinder walls, valves, and head 40% (I) FOP 12C2
NC	5% (III)	NC	NC	NC	NC	NC
				Cam follower 10% (II)	NC	NC
						Oil pan 90% (III)
						Water pump 30% (II)
						Engine bearings 5% (II)
						Oil pump 10% (I)
						Evaporator tank 60% (I)
						Feed pump 25% (II)
NC	NC	NC	NC	NC	NC	NC
						Jackshaft bearing 10% (II)
						Water pump 100% (III)



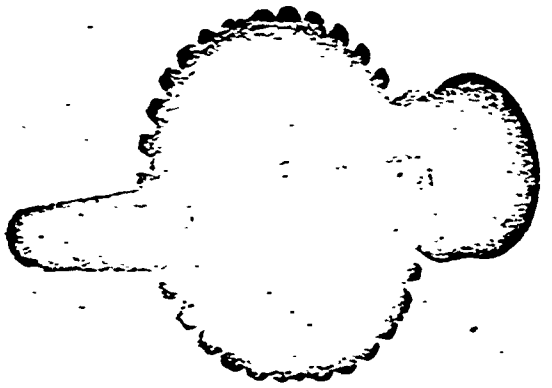
100% Class IV rust on vaporizing chamber from oil fired heater; domestic treated and stored 60 months in shed.

Table I. Shed (contd)

	6 Months	12 Months	18 Months	24 Months	30 Months
Generator set 30 kw (domestic)	Flywheel teeth 10% (I)	10% (II)	NC	NC	NC
	Push rods 1% (I)	NC	NC	NC	NC
				Power generator regulator 25% (I)	NC
Generator set 30 kw (contact)				Power generator brush assy. 30% (I)	NC
Heater, oil fired 50,000 btu (domestic)	Fuel tank 15% (I)	NC	15% (II)	NC	NC
	Cover 5% (I)	NC	50% (III)	NC	NC
	Draft regulator 40% (I)	60% (II)	100% (IV)	NC	NC
	Vaporizing chamber 30% (I)	60% (II)	100% (IV)	NC	NC

Table I. Shed (contd)

Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
NC	NC	NC	NC	NC	NC	NC
NC	NC	NC	NC	NC	NC	NC
er gen- tor ulator % (I)	NC	NC	NC	NC	NC	NC
		Radiator 20% (II)	NC	NC	20% (III)	NC
				Fuel injector shaft 10% (II)	NC	NC
						Water pump 40% (III) Fuel injectors 10% (II)
er gen- tor sh assy. (I)	NC	NC	NC	50% (I)	NC	70% (I)
				Fuel injector shaft 10% (II)	NC	NC
						Fuel pump 40% (II) Fuel injectors 5% (I)
NC	NC	NC	NC	20% (II)	NC	NC
NC	NC	NC	NC	NC	NC	NC
NC	NC	NC	NC	NC	NC	NC
NC	NC	NC	NC	NC	NC	NC P29 24D1



FOP25D1

100% stain on drive gear from washing machine; domestic treated and stored 60 months in shed.

100% Class IV rust on shelves from bake oven; domestic treated and stored 60 months in shed.

40% Class II rust on crankshaft from centrifugal pump; domestic treated and stored 60 months in shed.

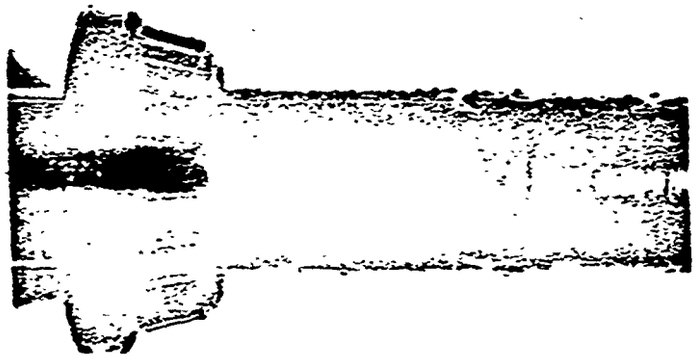
Table I. Shed (contd)

	6 Months	12 Months	18 Months	24 Months	30 Months
Machine, washing (domestic)	Drive motor shaft 5% (I)	NC	NC	NC	NC
Machine, washing (contact)		Main drive shaft 5% (I)	NC	NC	NC
			Magnetic coil 5% (I)	5% (II)	NC
Oven, bake (domestic)	Shelves 50% (II)	90% (II)	100% (IV) (exposed area)	NC	NC
	Carburetor 5% (I)	10% (I)	80% (II)	100% (III)	100% (IV)
Oven, bake (contact)					
Pump, centrifugal 350 gph (domestic)	Valves and cylinder wall 5% (I)	30% (II)	NC	NC	NC
Pump, centrifugal 350 gph (contact)					

[1]See page 4 of text for explanation.

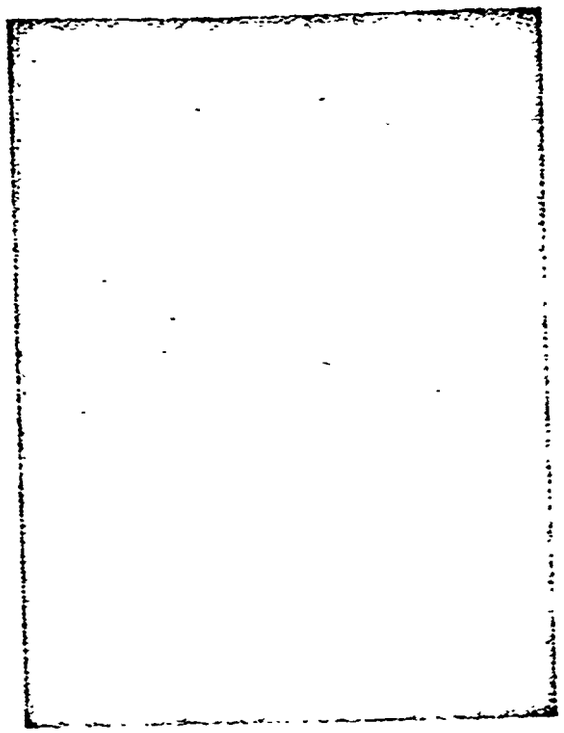
Table I. Shed (contd)

Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
NC	NC	NC	NC	NC	NC	NC
						Gear box[1] FOP 25D1
NC	NC	NC	NC	NC	NC	NC
(II)	NC	NC	NC	NC	NC	NC
						Gear box[1]
NC	NC	NC	NC	NC	NC	NC FOP 23D3
% (III)	100% (IV)	NC	NC	NC	NC	NC
						Burner assy. and flame deflector 100% (III)
		Shelves 5% (I)	NC	NC	NC	20% (II)
						Burner assy. and flame deflector 20% (I)
NC	NC	NC	NC	NC	NC	40% (II)
				Distributer 90% (III)	NC	NC
						Crankshaft 40% (II) FOP 14D2
						Water pump 60% (II)
						Water pump 40% (III)



FOP 13 C1

50% Class III rust on eccentric shaft bearing from diaphragm pump; contact preserved and stored 60 months in shed.



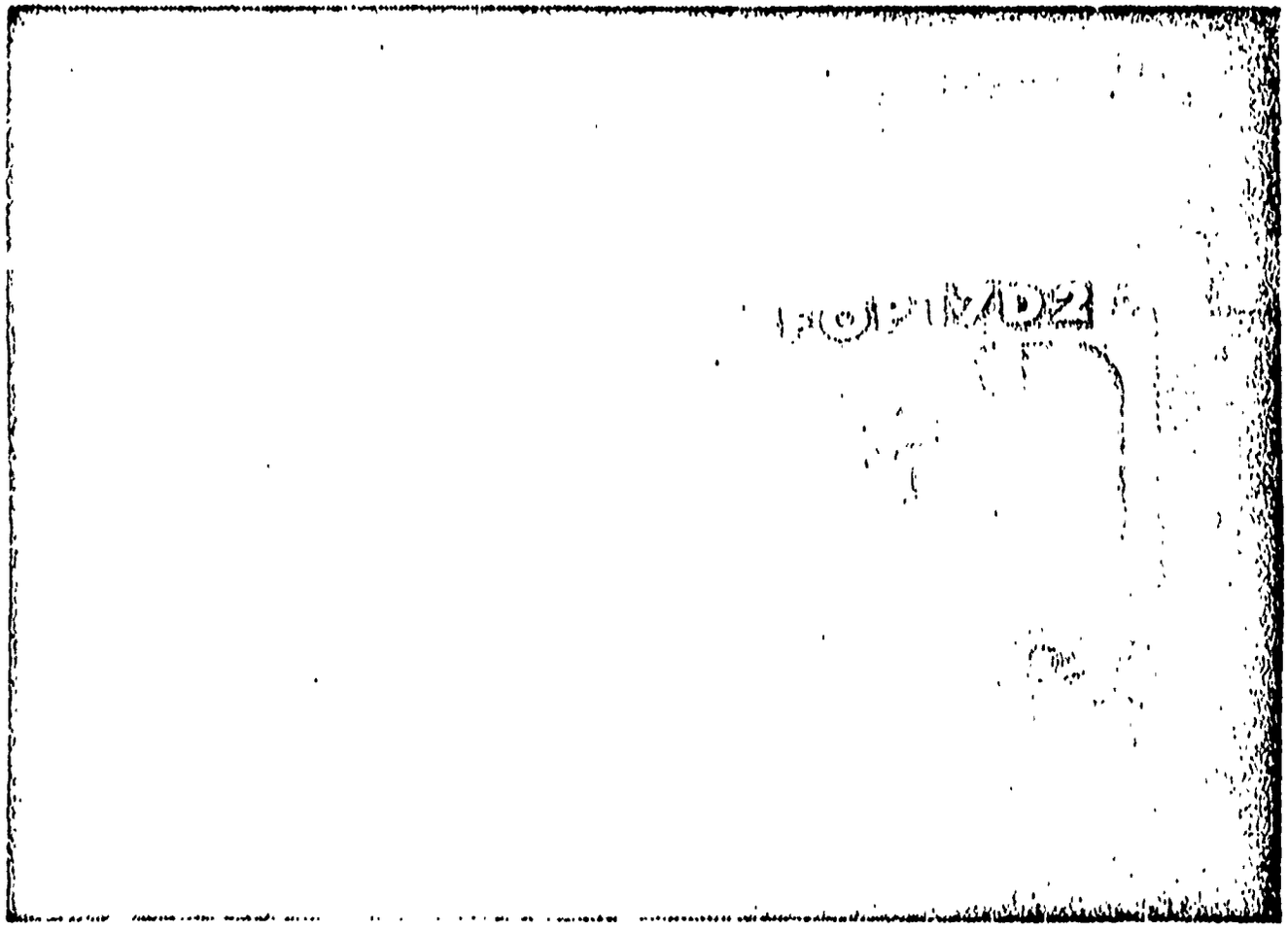
50% Class III rust on eccentric shaft bearing from diaphragm pump; contact preserved and stored 60 months in shed.

Table I. Shed (contd)

	6 Months	12 Months	18 Months	24 Months	30 Months	36 Mont
Pump, diaphragm 3000 gph (domestic)	Diaphragm 75% checked	NC	100% cracked	NC	NC	NC
Pump, diaphragm 3000 gph (contact)	Diaphragm 50% checked	75% checked	100% cracked	NC	NC	NC
Refrigeration unit (domestic)	Electric motor shaft 10% (I)	100% (II)	100% (IV)	NC	NC	NC
			Magnetic switch 25% (III)	NC	NC	40% (II
Refrigeration unit (contact)		Switch panel 1% (I)	NC	NC	NC	NC
			Magnetic switch 15% (I)	50% (II)	NC	NC

Table I. Shed (contd)

Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
NC	NC	NC	NC	NC	NC	NC
						Eccentric shaft bearing 20% (III)
						Block bearing 60% (III)
						Camshaft drive gear 15% (II)
						Magneto assy. 20% (I)
NC	NC	NC	NC	NC	NC	NC
						Eccentric shaft and bearing 50% (III) FOP 13C1, FOP 13C2
						Crankshaft journel 60% (I)
						Reduction gears 90% (III)
NC	NC	NC	NC	NC	NC	NC
NC	NC	40% (III)	NC	NC	NC	NC
						Evaporator fan shaft 40% (II)
NC	NC	NC	NC	NC	10% (I)	NC
% (II)	NC	NC	NC	NC	NC	NC



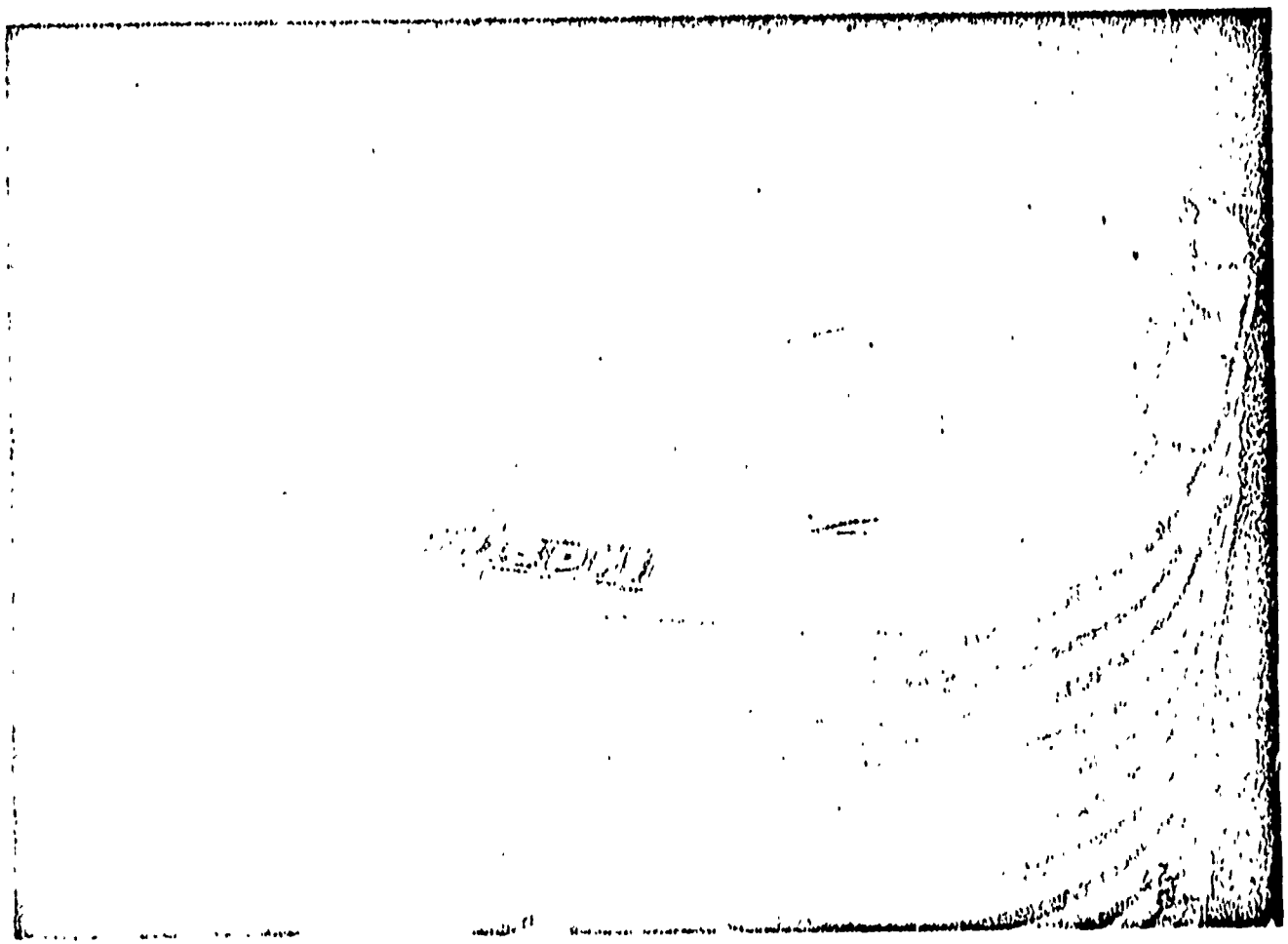
30% Class III rust on amplidyne terminal box from searchlight; domestic treated and stored 60 months in shed.

Table I. Shed (contd)

	6 Months	12 Months	18 Months	24 Months	30 Months	36 Months
Refrigeration panels (domestic)	Connecting slots 25% (I)	25% (II)	50% (III)	50% (IV)	NC	NC
Refrigeration panels (contact)	Connecting slots 10% (I)	25% (II)	NC	NC	NC	NC
Searchlight 60-inch (domestic)	Selenium rectifier 50% (I)	50% (II)	NC	70% (III)	NC	NC
				Reflector 10% (I)	NC	NC
Searchlight 60-inch (contact)	Selenium rectifier 50% (I)	50% (II)	NC	70% (III)	NC	NC
				Reflector 10% (I)	NC	50% (III)
Power plant for 60-inch searchlight (domestic)	Left rear brake drum 20% (I)	25% (I)	30% (I)	40% (I)	NC	NC
					Oil pan 20% (I)	NC

Table I. Shed (contd)

Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
(IV)	NC	NC	NC	NC	NC	NC
NC	NC	NC	NC	NC	NC	NC
(III)	NC	NC	NC	NC	NC	NC
lector (I)	NC	NC	NC	NC	NC	NC
						Amplidyne terminal box 30% (III) FOP17D2
						Dynamotor rotor and field 50% (II)
						Wheel bearings (pitted)
(III)	NC	NC	NC	NC	NC	NC
lector (I)	NC	50% (III)	NC	NC	NC	NC
(I)	NC	NC	NC	NC	NC	NC
	Oil pan 20% (I)	NC	NC	NC	NC	NC
			Brush assy. power generator 10% (II)	15% (II)	NC	NC
						Fuel tank 70% (III)
						Power generator fields 20% (II)



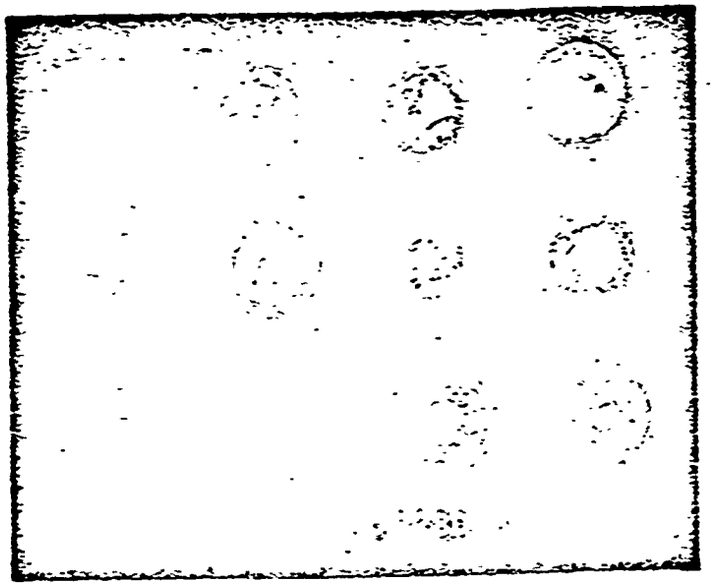
40% Class II rust on engine cylinder walls and valves from floodlight trailer; domestic treated and stored 60 months in shed.

Table I. Shed (contd)

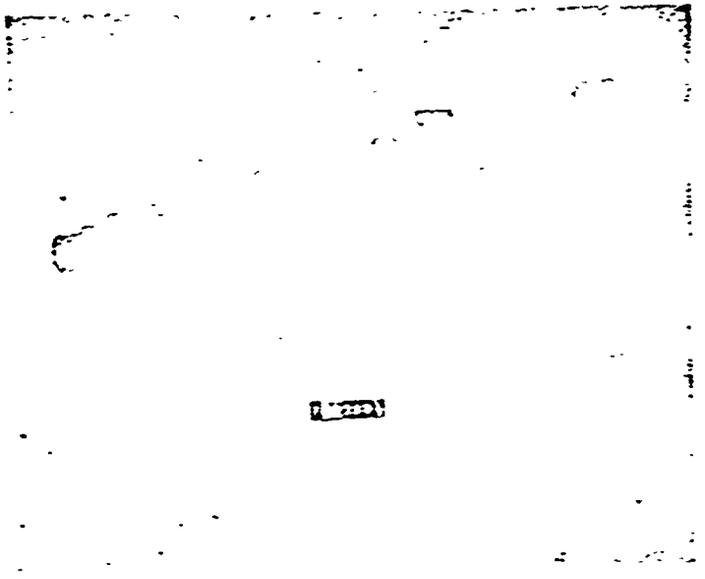
	6 Months	12 Months	18 Months	24 Months	30 Months	36 Month
Power plant for 60-inch searchlight (contact)						
Trailer, floodlight (domestic)	Power generator brush springs 5% (I)	NC	20% (II)	NC	NC	NC
	Magneto shaft 2% (I)	NC	10% (I)	10% (III)	NC	NC
				Carburetor 40% (III)	NC	NC
Trailer, floodlight (contact)	Power generator brush springs 1% (I)	NC	NC	5% (I)	NC	NC
					Magneto assy. 1% (I)	NC

Table I. Shed (contd)

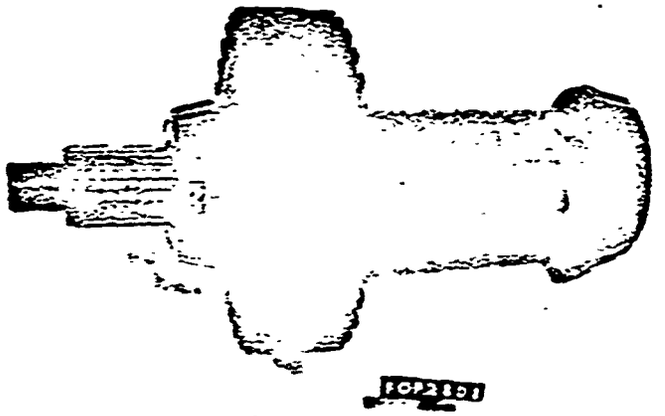
Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
						Power generator rotor 100% (II)
						Fuel tank 100% (III)
						Water pump 10% (I)
NC	NC	NC	NC	NC	NC	NC
% (III)	NC	NC	NC	NC	NC	NC
rburetor % (III)	NC	NC	NC	NC	NC	90% (III)
						Engine cylinder walls and valves 40% (II) CP150F1
						Crankshaft journals 20% (I)
						Wheel bearings with [illegible] 35% (II) with pits
						Generator drive coupling 75% (III)
(I)	NC	NC	NC	NC	NC	NC
	Magneto assy. 1% (I)	NC	NC	5% (I)	NC	NC
						Carburetor 10% (II)



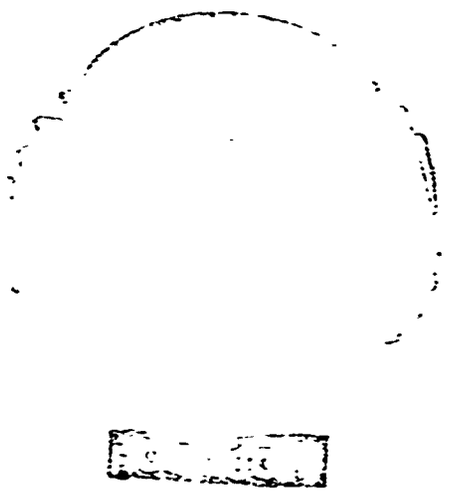
50% Class III rust on brake cylinder pistons from 2-1/2 ton dump truck; domestic treated and stored 60 months in shed.



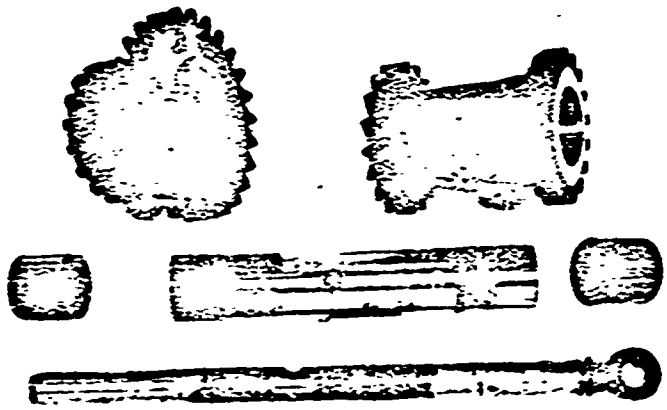
100% stain on cluster gear from 2-1/2 ton dump truck; domestic treated and stored 60 months in shed.



80% stain and 15% Class II rust on gear and bearing from 2-1/2 ton dump truck; domestic treated and stored 60 months in shed.

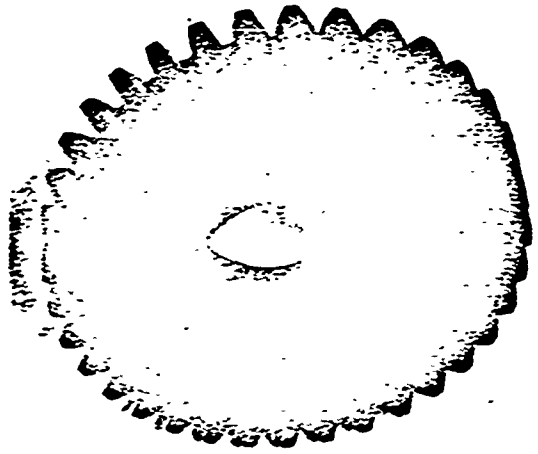


20% Class II rust on gear from 2-1/2 ton dump truck; contact preserved and stored 60 months in shed.

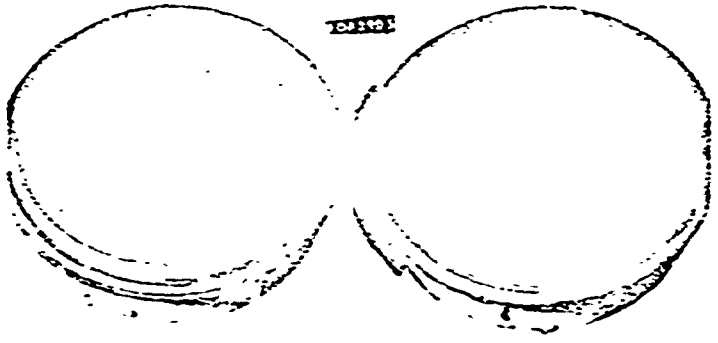


90% stain and 10% Class II rust on gear sub-assembly from 2-1/2 ton dump truck; contact preserved and stored 60 months in shed.

100% stain on gear from 2-1/2 ton dump truck; contact preserved and stored 60 months in shed.



90% stain and 10% Class II rust on gear from 2-1/2 ton dump truck; contact preserved and stored 60 months in shed.



100% Class III rust on brake drums from jeep; domestic treated and stored 60 months in shed.

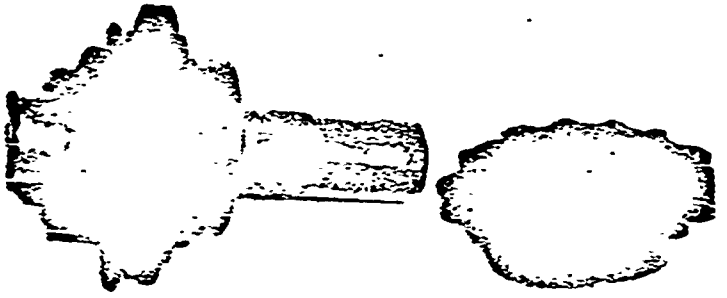
Table I. Shed (contd)

	6 Months	12 Months	18 Months	24 Months	30 Months	36 Months
Truck, 2-1/2 ton dump (domestic)	Left front brake drum 15% (I)	30% (I)	40% (I)	80% (II)	NC	NC
	Left front brake cylinder 1% (I)	NC	NC	5% (II)	NC	NC
Truck, 2-1/2 ton dump (contact)						
Truck, jeep (domestic)	Left front brake drum 95% (I)	95% (II)	95% (III)	100% (III)	NC	NC
	Universal joints 10% (I)	15% (II)	20% (III)	50% (IV)	100% (IV)	NC
	Spindle Seal 1% (I)	NC	30% (II)	50% (IV)	NC	NC
	Waterproof shielding 20% (II)	40% (II)	80% (III)	80% (IV)	NC	100% (IV)

[1]See page 4 of text for explanation.

Table I. Shed (contd)

Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
% (II)	NC	NC	NC	NC	NC	All brake drums 90% (II)
(II)	NC	NC	NC	NC	NC	All brake cylinders 50% (III) FOP28D18
						Clutch throwout bearing 20% (II)
						Water pump 60% (II)
						Air compressor cylinder 5% (II)
						Camshaft 10% pitted
						Gear boxes[1] FOP28D4, FOP28D8
						Gear boxes[1] FOP28C1, FOP28C5 FOP28C10, FOP28C11
						Water pump 40% (II)
% (III)	NC	NC	NC	NC	NC	All brake drums 100% (III) FOP29D5
(IV)	100% (IV)	NC	NC	NC	NC	NC
(IV)	NC	NC	80% (IV)	NC	NC	NC
(IV)	NC	100% (IV)	NC	NC	NC	NC



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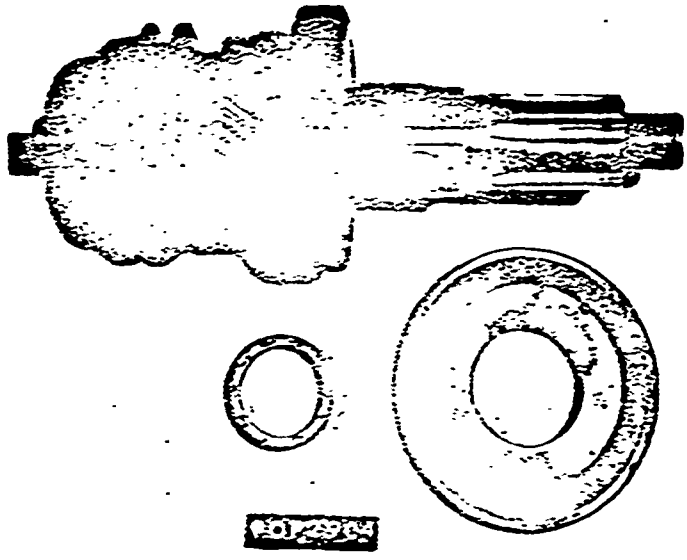
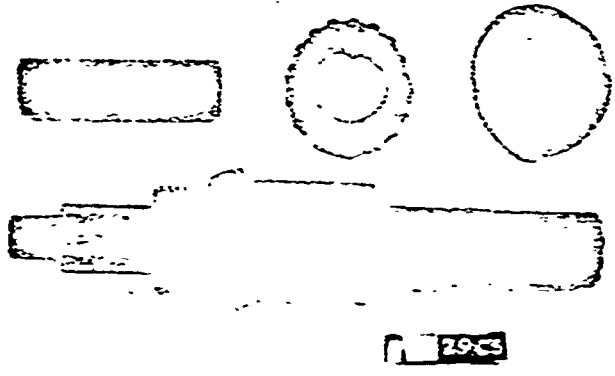
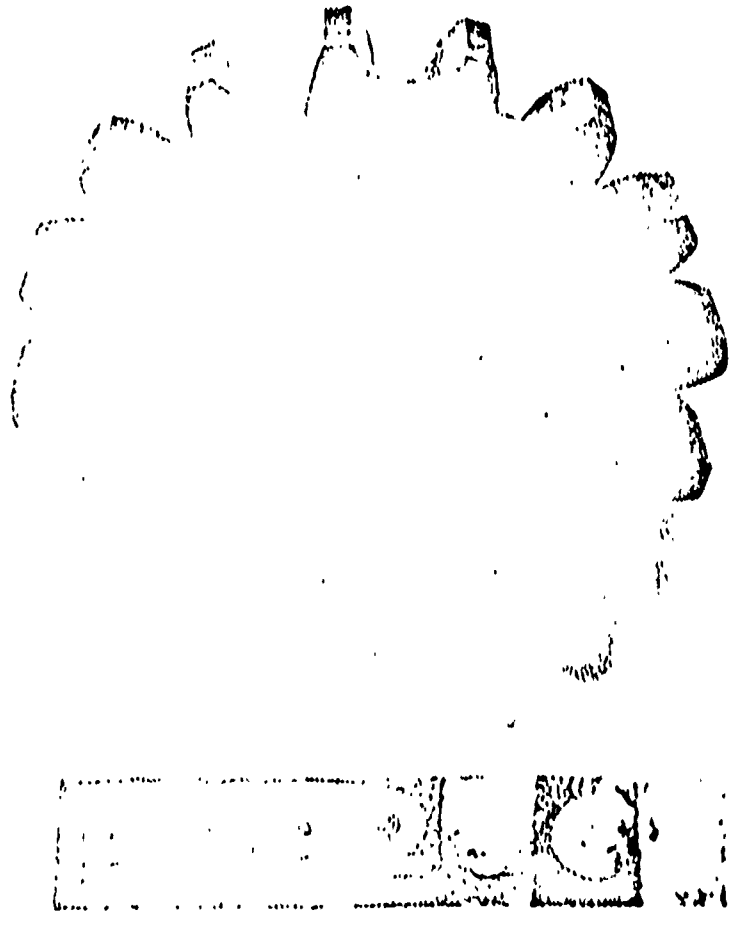
90% stain and 5% Class II rust on sprocket and shaft from jeep; contact preserved and stored 60 months in shed.



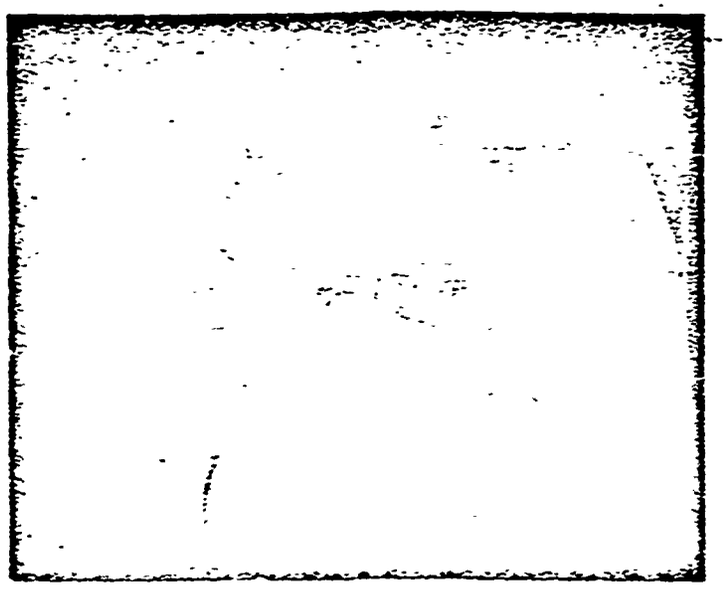
100% stain on gear sub-assembly from jeep; contact preserved and stored 60 months in shed.



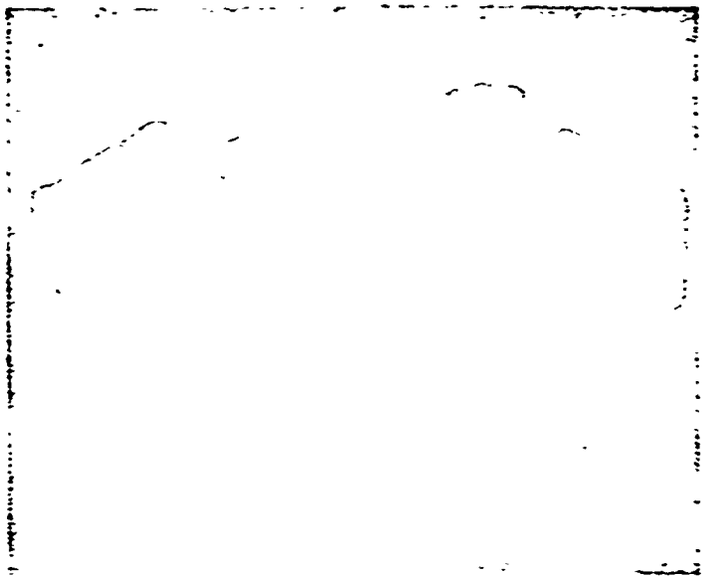
100% stain on gear sub-assembly from jeep; contact preserved and stored 60 months in shed.



100% stain on gear from jeep; contact preserved and stored 60 months in shed.



10% Class II rust on engine cylinder walls from arc welder; domestic treated and stored 60 months in shed.



100% Class IV rust on water pump from arc welder; domestic treated and stored 60 months in shed.

Table I. Shed (contd)

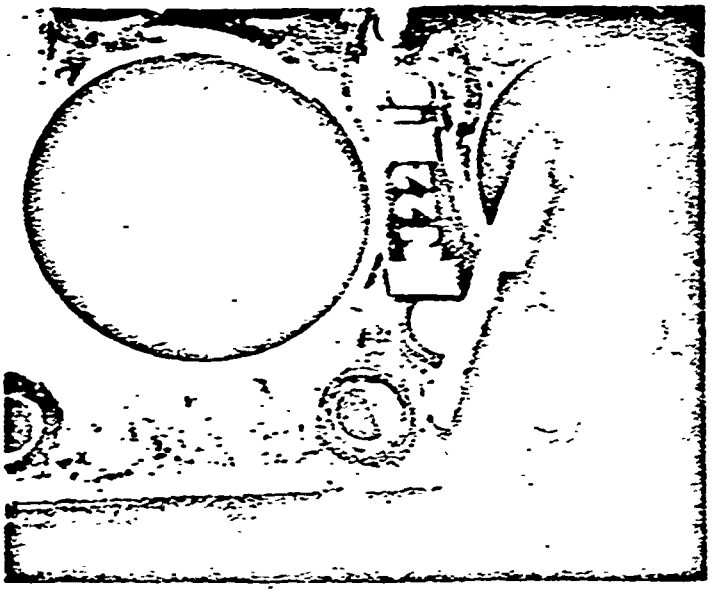
	6 Months	12 Months	18 Months	24 Months	30 Months	36 Months
Welder, arc (domestic) (contd)	Thermostat 1% (I)	NC	NC	NC	NC	NC
	Flywheel teeth 50% (I)	NC	100% (IV)	NC	NC	NC
	Carburetor shaft 100% (I)	100% (II)	NC	100% (IV)	NC	NC
	Oil pan 1% (I)	NC	NC	5% (I)	NC	NC
			Control panel switches 20% (I)	NC	NC	NC
				Cylinder wall 10% (I)	NC	20% (II)
Welder, arc (contact)						

Table I. Shed (contd)

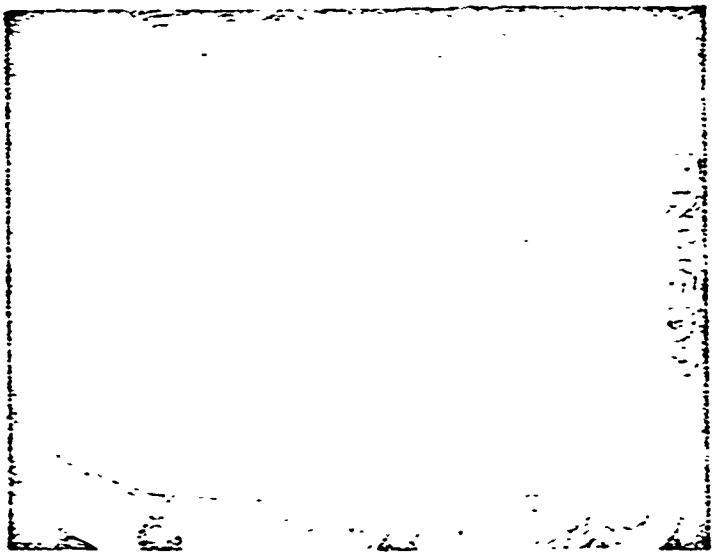
Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
NC	NC	NC	NC	NC	NC	NC
NC	NC	NC	NC	NC	NC	NC
% (IV)	NC	NC	NC	NC	NC	NC
(I)	NC	NC	NC	NC	NC	NC
NC	NC	NC	NC	NC	NC	NC
inder 1 (I)	NC	20% (II)	NC	NC	NC	NC FCP180E
			Generator armature 80% (I)	NC	NC	80% (II)
						Water pump 100% (IV) FCP180J
						All engine bearings pitted
						All cylinder walls 10% (I)
						Oil pump 15% (I)

Table II. Standard Warehouse

	12 Months	24 Months	36 Months	48 Months	60 Months
Boiler, vertical (domestic)	Bottom base tube 5% (I)	NC	NC	10% (II)	NC
Compressor set, 30-cfm (domestic)	Compression tank interior 100% (IV)	NC	NC	NC	NC
	Magnetic coil & point assy. 5% (I)	NC	NC	NC	NC
			High compression cylinder wall 5% (I)	NC	NC
Compressor set, 30-cfm (contact)	Compression tank interior 70% (III)	NC	NC	NC	NC
	Magnetic coil & point assy. 1% (I)	NC	NC	NC	NC
		High compression cylinder wall 5% (I)	High compression cylinder wall, valves & head 5% (I)	NC	NC



20% Class III rust on cylinder walls of distillation unit; contact preserved and stored 60 months in standard warehouse.



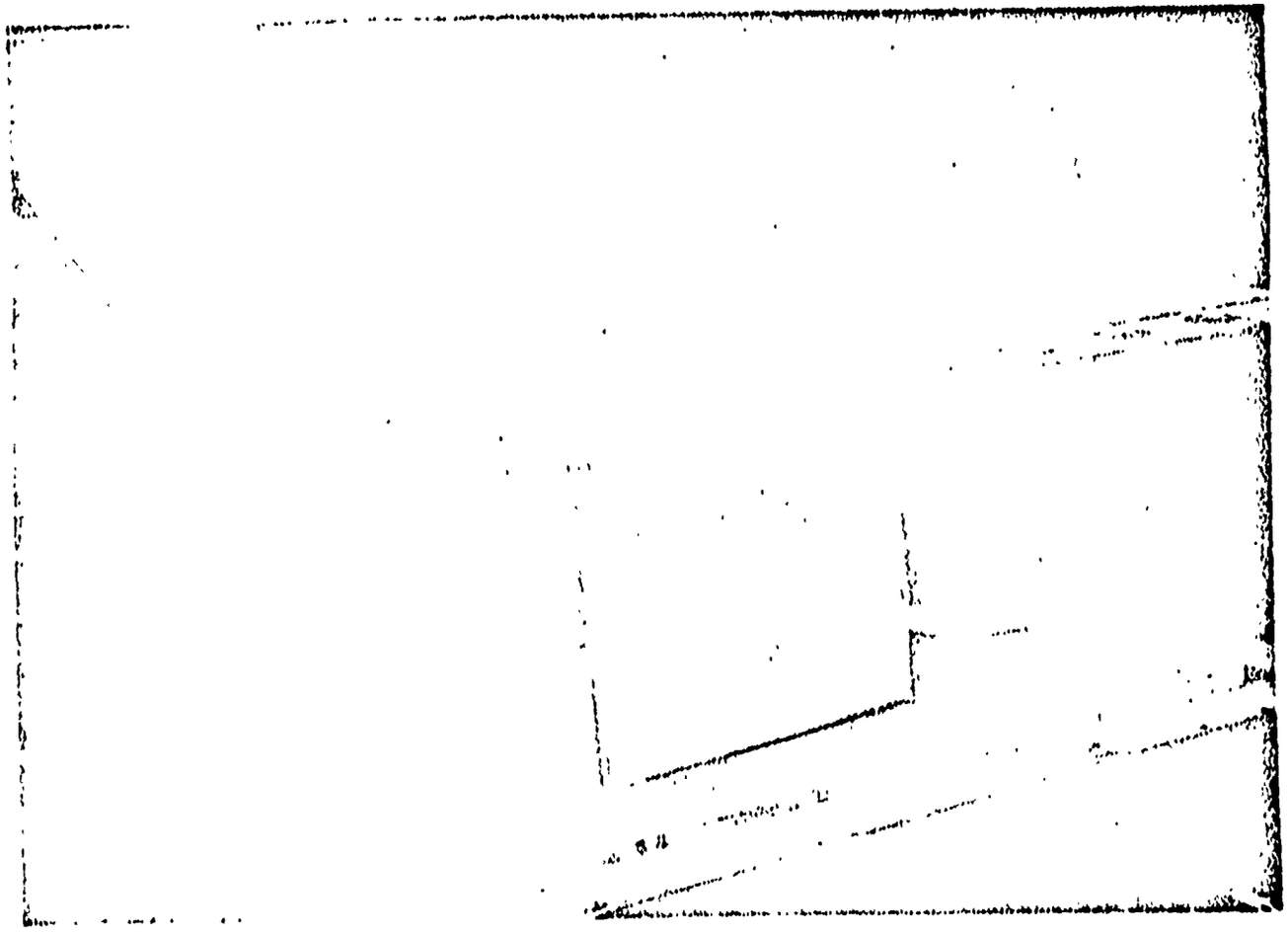
100% Class III rust on cylinder walls, head and valves of floodlight trailer; domestic treated and stored 60 months in standard warehouse.

Table II. Standard Warehouse (contd)

	12 Months	24 Months	36 Months	48 Months	60 Months
Distillation unit (domestic)	Cylinder wall & valve 60% (IV)	NC	NC	NC	NC
Distillation unit (contact)					Cylinder walls 20% (III) FN22C1
Floodlight trailer (domestic)	Power generator brush springs 75% (II)	NC	NC	NC	NC
	Cylinder head valve chamber 40% (II)	NC	NC	NC	Cylinder head, walls, and valves 100% (III) FN15D2
					Wheel bearings 20% (IV)
Floodlight trailer (contact)	Power generator brush springs 75% (II)	NC	NC	NC	NC
			Carburetor assy. 15% (I)	NC	NC
					Wheel bearings and hub 40% (III)

Table II. Standard Warehouse (contd)

	12 Months	24 Months	36 Months	48 Months	60 Months
Generator set 30 kw (domestic)	Flywheel surface & teeth 1% (I)	NC	NC	NC	NC
	#3 cylinder push rods 1% (I)	NC	NC	NC	NC
Generator set 30 kw (contact)	Rocker arm assy. 30% (IV)	NC	NC	NC	NC
	Fuel rack adjunter 5% (II)	NC	NC	NC	NC
					Fuel injector 50% (I)



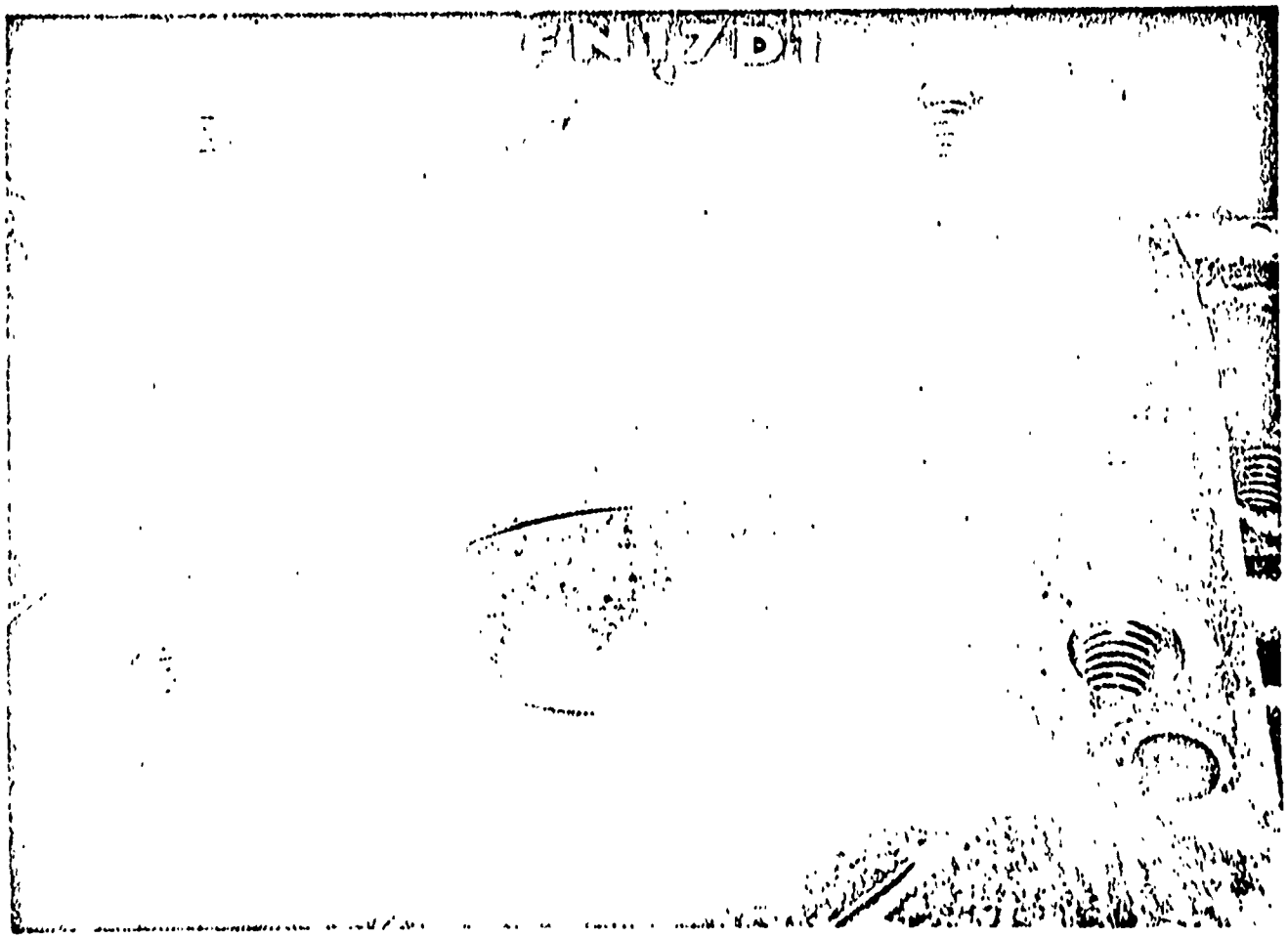
100% Class III rust on shelves of bake oven; domestic treated and stored 60 months in standard warehouse.

Table II. Standard Warehouse (contd)

	12 Months	24 Months	36 Months	48 Months	60 Months
Heater, oil-fired (domestic)	Base of shell 100% (III)	NC	NC	NC	NC
	Burner chamber 70% (III)	NC	NC	NC	90% (III)
	Fuel tank interior 20% (III)	NC	NC	NC	NC
	Damper 30% (II)	NC	NC	NC	NC
Oven, bake (domestic)	Shelves 100% (II)	100% (III)	NC	NC	NC FN23D1
Pump, diaphragm (domestic)					Eccentric shaft bearing 80% pitted
					Arm bearings 80% pitted

Table II. Standard Warehouse (contd)

	12 Months	24 Months	36 Months	48 Months	60 Months
Pump, diaphram (contact)					Eccentric shaft bearing 100% pitted
					Arm bearings 80% pitted
Refrigeration panels (contact)	Panel connectors 10% (II)	NC	NC	NC	NC
Searchlight 60-inch (domestic)	Selenium rectifier 50% (II)	NC	NC	100% (IV)	NC
				Coil tension spring 100% (I)	NC
Searchlight 60-inch (contact)	Selenium rectifier 40% (II)	NC	NC	100% (III) [illegible] (III)	NC



10% Class II rust on cylinder walls of power plant for searchlight; domestic treated and stored 60 months in standard warehouse.

Table II. Standard Warehouse (contd)

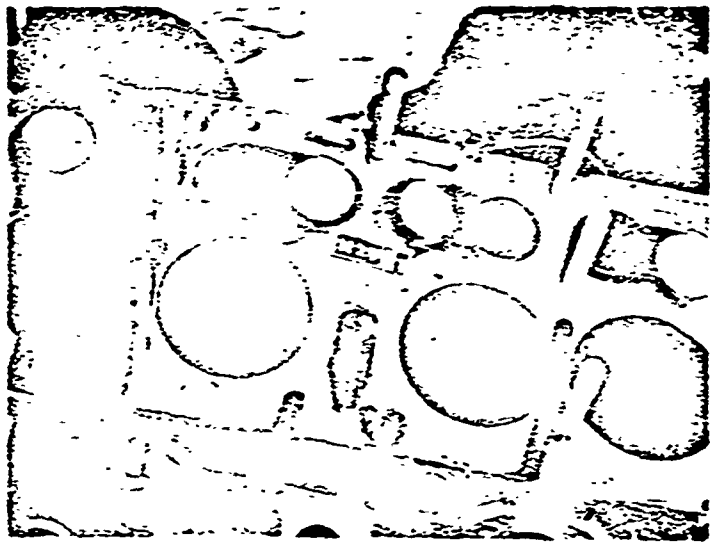
	12 Months	24 Months	36 Months	48 Months	60 Months
Power plant for searchlight (domestic)			Valve spring assy. 20% (I)	40% (I)	NC
					Cylinder wall 10% (II) FN17D1
Truck, dump 2-1/2-ton (domestic)	Pressure plate clutch 10% (I)	NC	NC	NC	NC
					Brake cylinders 100% (II) [1] Gear boxes
Truck, dump 2-1/2-ton (contact)	Rear differential pinnion shaft 1% (I)	NC	NC	NC	NC
				Intermediate differential pinnion shaft 1% (I)	NC

[1] See page 4 of text for explanation.

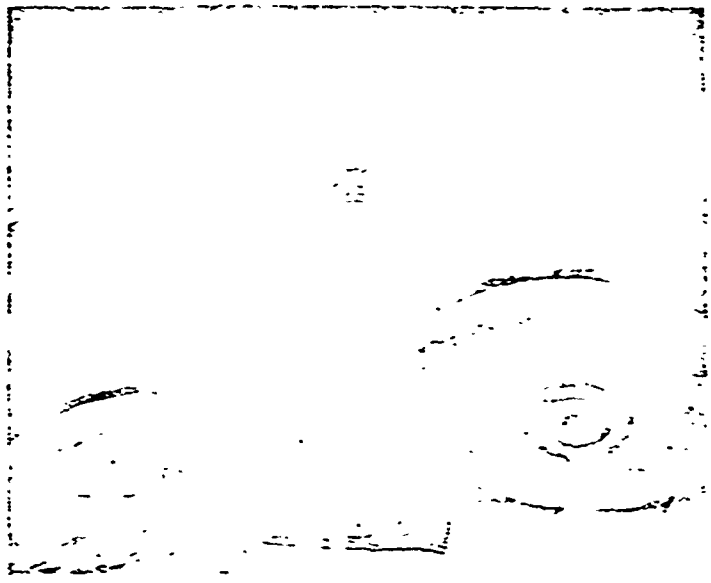
Table II. Standard Warehouse (contd)

	12 Months	24 Months	36 Months	48 Months	60 Months
Truck, dump 2-1/2-ton (contact)					
				Wheel brg. race 1% (I)	NC
					Brake cylinders 40% (II)
Truck, jeep (domestic)	Brake drum 5% (I)	NC	NC	NC	NC
	Front & rear differential bearing straps 5% (I)	NC	NC	NC	NC
					Water pump 100% (III)
					Brake cylinders 60% (II)
					Gear boxes[1]

[1]See page 4 of text for explanation.



20% Class II rust on cylinder walls of jeep; contact preserved and stored 60 months in standard warehouse.



60% Class II rust on cylinder walls and valves of arc welder; domestic treated and stored 60 months in standard warehouse.

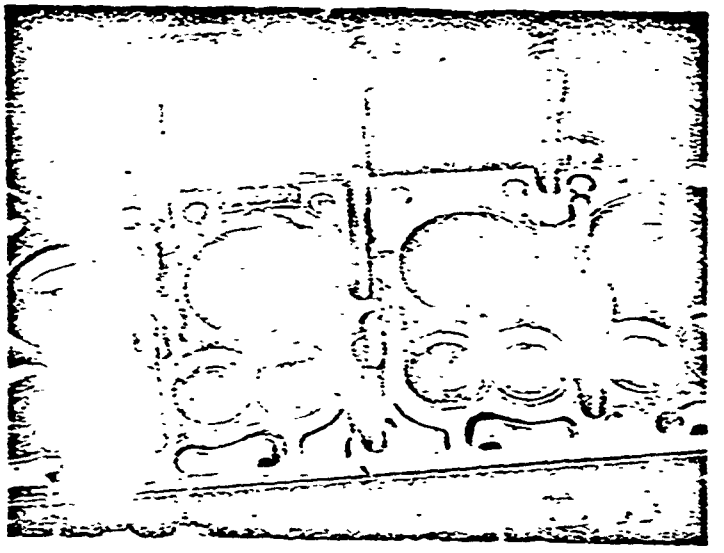
Table II. Standard Warehouse (contd)

	12 Months	24 Months	36 Months	48 Months	60 Months
Truck, jeep (contact)					Engine cylinder wall 20% (II) FN29C1
					Brake cylinders 30% (II)
					Gear boxes[1]
Welder, arc (domestic)	Valve heads, cylinders #3, 4, 6 1% (I)	NC	50% (I)	60% (I)	60% (II) FN18M1
	Water jacket ports in cyl. head 100% (III)	NC	NC	NC	NC
		Oil pan 5% (I)	NC	NC	NC
					Water pump 70% (III)
					Power generator shaft 10% (III)

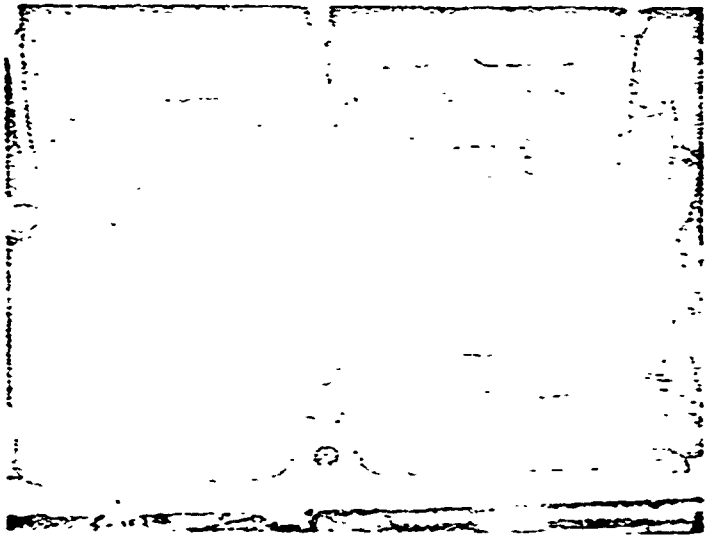
[1]See page 4 of text for explanation.

Table II. Standard Warehouse (contd)

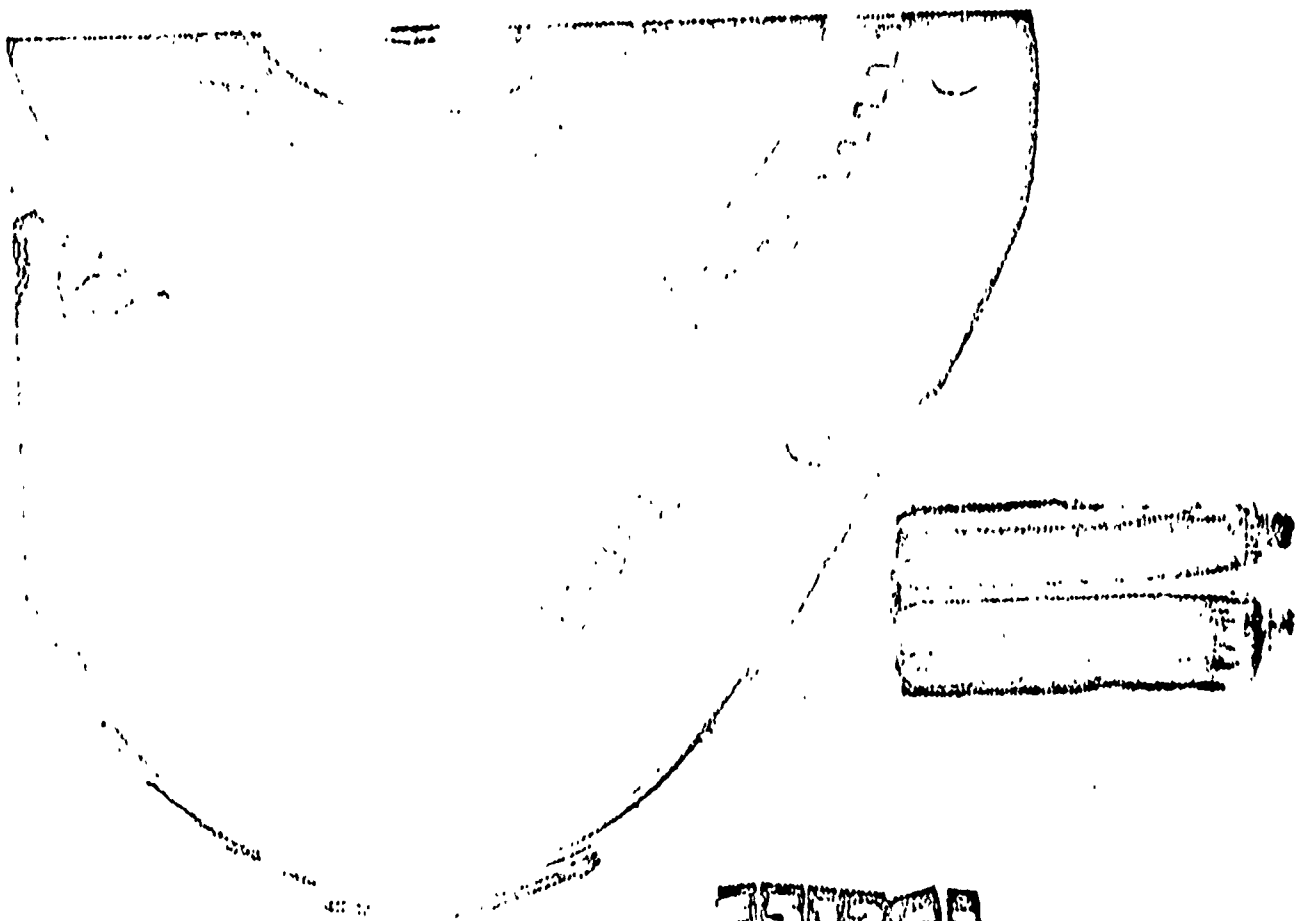
	12 Months	24 Months	36 Months	48 Months	60 Months
Welder, arc (contact)					Brush assy. power generator 30% (I)
					Water pump 20% (III)



50% Class II rust on cylinder walls of distillation unit; domestic treated and stored 60 months in 50% RH warehouse.



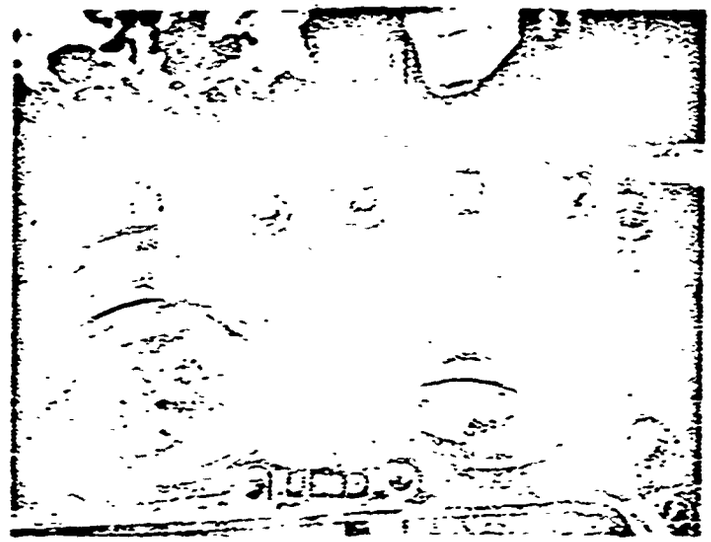
10% Class II rust on cylinder walls of generator set: domestic treated and stored 60 months in 50% RH warehouse.



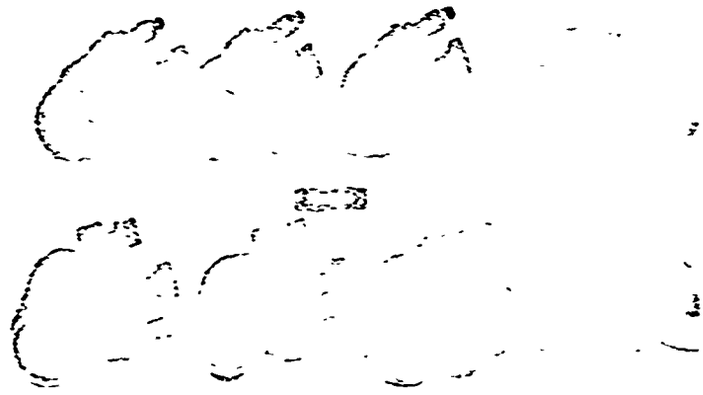
25% Class III rust on main drive gear of diaphragm pump; contact preserved and stored 60 months in 50% RH warehouse.

Table III. 50% R/H Warehouse

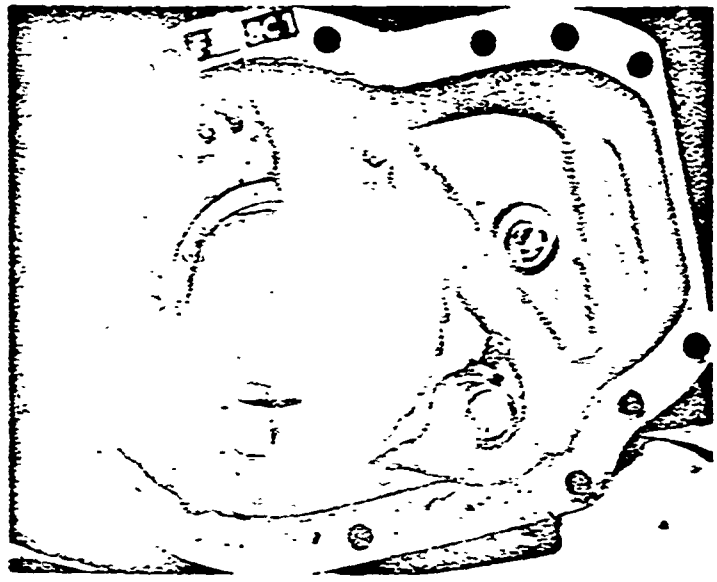
	0-48 Months	60 Months
Compressor set 30-cfm (domestic)		High pressure cylinder wall, head and valves 20% (II)
Distillation unit (domestic)		Engine cylinder walls 50% (II) F522DA
Distillation unit (contact)		Engine cylinder wall pitted
Generator set 30-kw diesel (domestic)		Engine cylinder walls 10% (II) F516DA
Generator set 30-kw diesel (contact)		Engine cylinder wall pitted
		Fuel injectors pitted
Oven, bake (domestic)		Shelves 5% (I)
		Flame deflector 1% (I)
Pump, diaphragm (contact)		Main drive gear 25% (III) F513C1
		Eccentric shaft bearing pitted
Searchlight, 60-inch (contact)		Wheel bearings pitted
Power plant for Searchlight (domestic)		Water pump 70% (III)
Power plant for Searchlight (contact)		Rotor fan 60% (II)



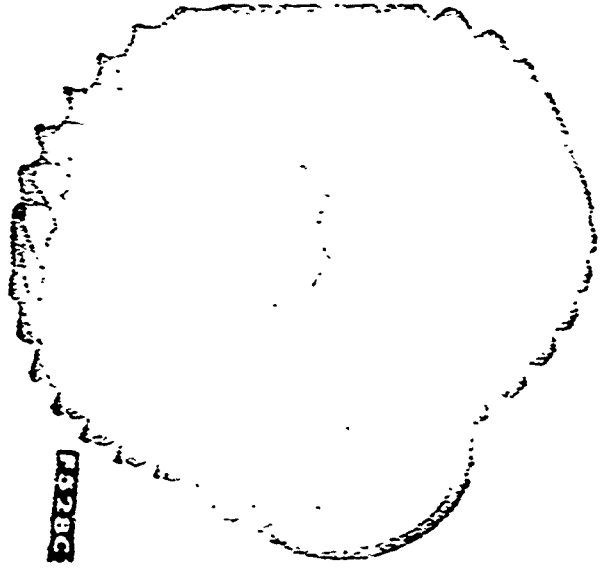
70% Class II rust on cylinder walls of dump truck; domestic treated and stored 60 months in 50% RH warehouse.



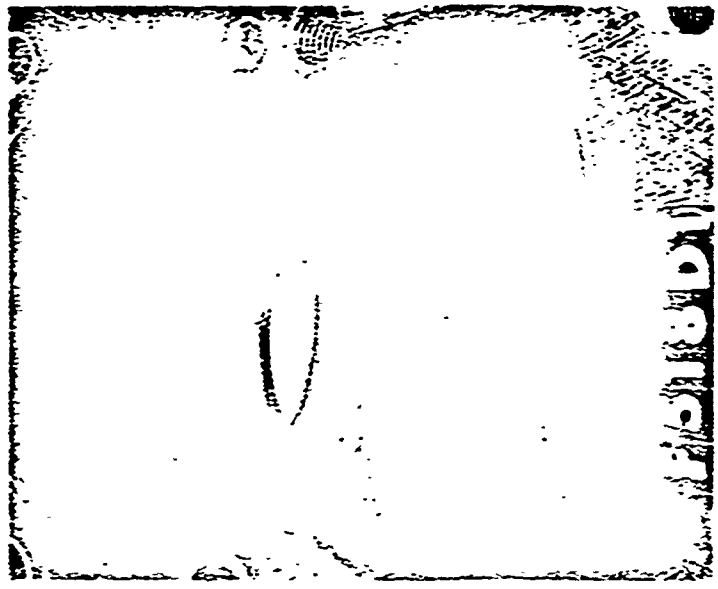
50% Class II rust on brake cylinder of dump truck; domestic treated and stored 60 months in 50% RH warehouse.



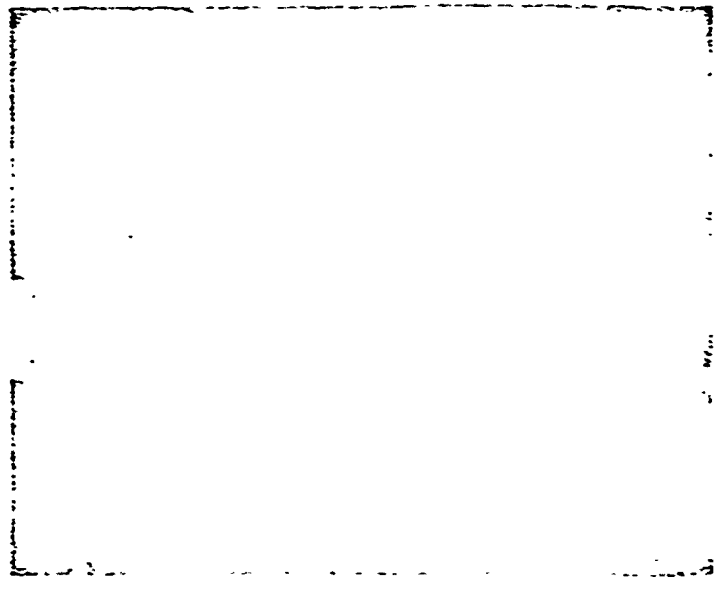
50% stain on transfer gear of dump truck; contact preserved and stored 60 months in 50% RH warehouse.



40% stain on differential gear of dump truck; contact preserved and stored 60 months in 50% RH warehouse.



25% Class II rust on cylinder walls of arc welder; domestic treated and stored 60 months in 50% RH warehouse.

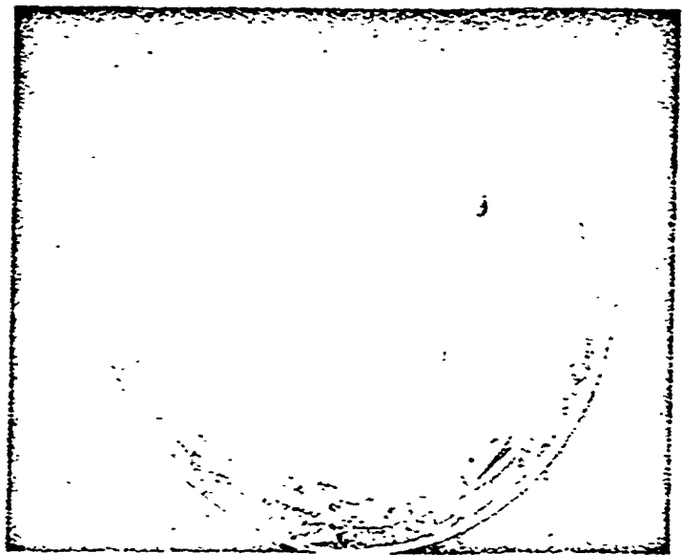


2% Class II rust on crankshaft journals of arc welder; domestic treated and stored 60 months in 50% RH warehouse.

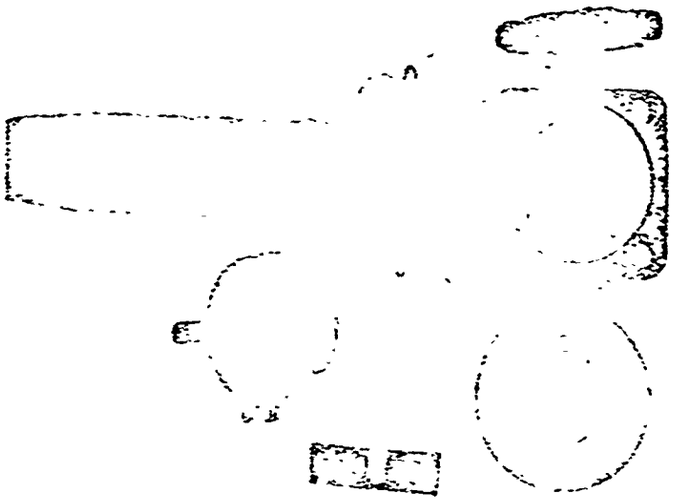
Table III. 50% R/H Warehouse (contd)

	0-48 Months	60 Months
Slicer, meat (domestic)		Electric motor 20% (I)
Slicer, meat (contact)		Electric motor 20% (I)
Truck, dump 2-1/2-ton, 6 x 6 (domestic)		Engine cylinders 70% (II) F528D6
		Brake cylinders 50% (II) F528D2
		Water pump 100% (III)
		Air Compressor valves 90% (III)
		Gear boxes[1]
Truck, dump 2-1/2-ton, 6 x 6 (contact)		Water pump 20% (II)
		Gear boxes[1] F528C1, F528C2
Truck, jeep 1/4-ton, 4 x 4 (domestic)		Brake cylinders 20% (II)
		Gear boxes[1]
Truck, jeep 1/4-ton, 4 x 4 (contact)		Brake cylinders 20% (II)
		Water pump 70% (III)
		Gear boxes[1]
Welder, arc (domestic)		Engine cylinders 25% (II) F518D1
		Crankshaft Journals 2% (II) F518D2
		Water pump 10% (II)

[1]See page 4 of text for explanation.



100% Class III rust on tubes of vertical boiler; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



75% Class III rust on blow-down valve of vertical boiler; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.

20% Class III rust on engine cylinder walls of distillation unit; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.

40% Class II rust on compressor drive gears of distillation unit; domestic treated, stored 43 months in 40% RH warehouse and 12 months in open air.

10% Class II rust on compressor drive gears of distillation unit; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.

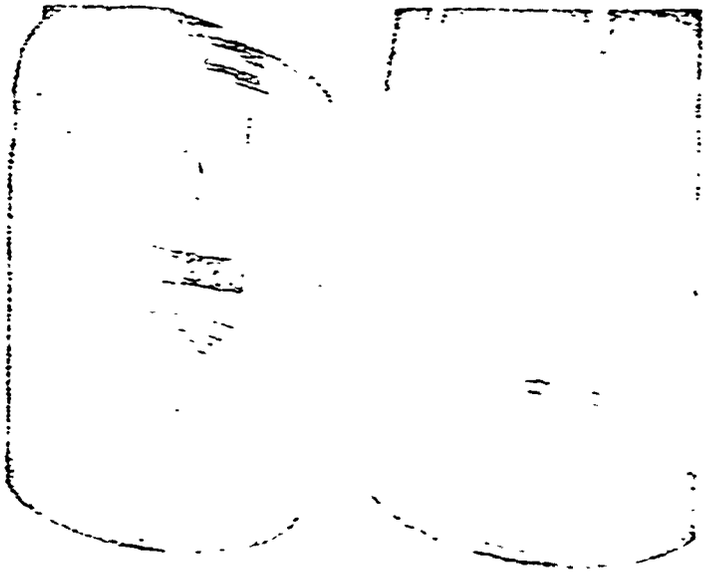
Table IV. 40% R/H Warehouse - Open Air

	40% R/H	Open Air		
	0-48 Months	51 Months	54 Months	57 Month
Boiler, vertical (domestic)		Tubes 50% (I)	100% (II)	100% (I
		Burner cover 100% (I)	NC	NC
Boiler, vertical (contact)		Tubes 5% (I)	NC	NC
Compressor set (domestic)		Pulleys 50% (III)	NC	100% (I
		Compression tank 70% (III)	NC	90% (II
Compressor set (contact)		High compression head and valves 25% (I)	NC	NC
		Low compression valves 10% (I)	NC	NC
		Compression tank 70% (II)	NC	80% (II
Distillation unit (domestic)		Fuel tank 75% (II)	NC	NC
		Pulleys 25% (II)	NC	Pulleys, shafts
Distillation unit (contact)				

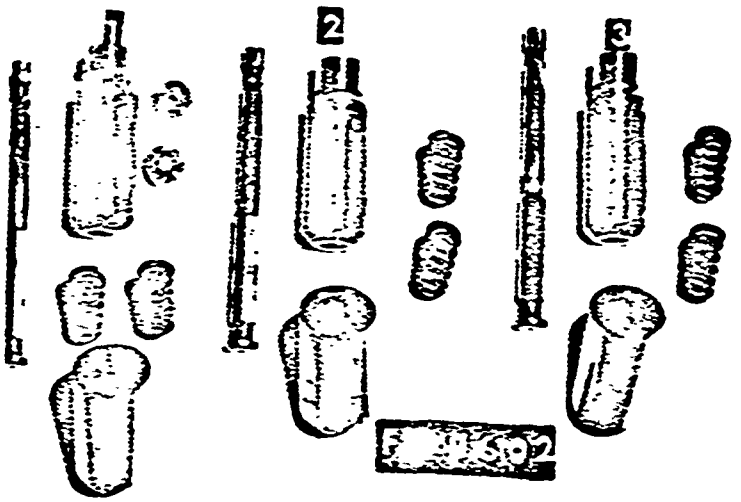
Table IV. 40% R/H Warehouse - Open Air

	Open Air		
	54 Months	57 Months	60 Months
	100% (II)	100% (III)	NC FS421D2
0% (I)	NC	NC	NC
			Blow-down valve 75% (III) FS421D1
	NC	NC	NC
I)	NC	100% (IV)	NC
x	NC	90% (III)	NC
head I)	NC	NC	NC
valves	NC	NC	NC
	NC	80% (II)	NC
I)	NC	NC	NC
	NC	Pulleys and shafts 35% (II)	NC
			Engine cylinder walls 20% (III) FS422D1
			Compressor drive gear 40% (II) FS422D2
			Engine cylinder walls 20% (III)
			Compressor drive gear 10% (II) FS422C1
			Magneto drive gear 30% (I)
			Engine thrust bearing pitted

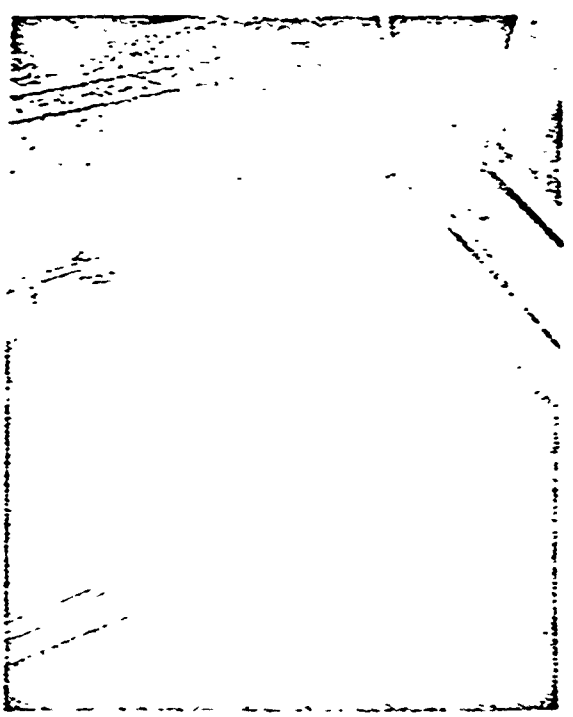
50% Class III rust on engine cylinder walls of generator set; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.



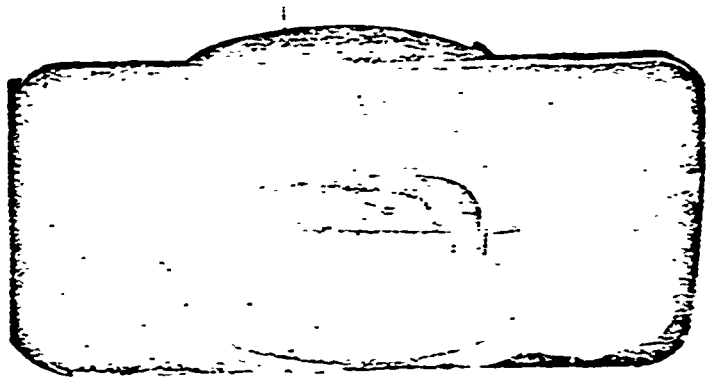
50% Class III rust on engine cylinder walls of generator set; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.



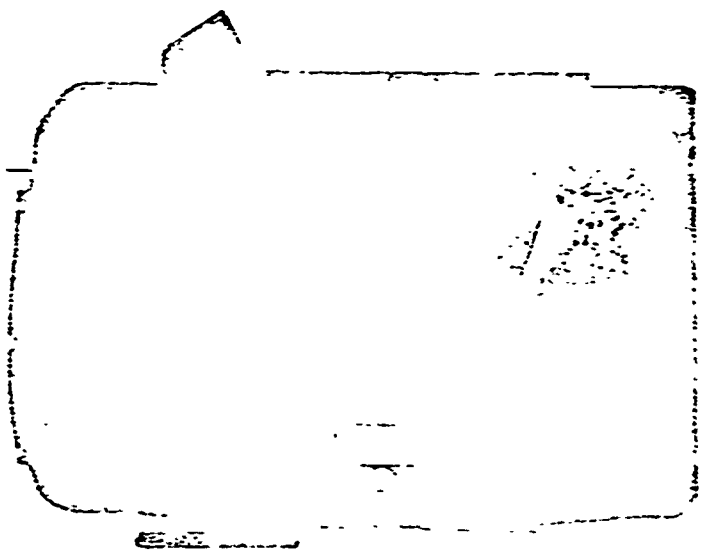
20% Class II rust on fuel injectors of generator set; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.



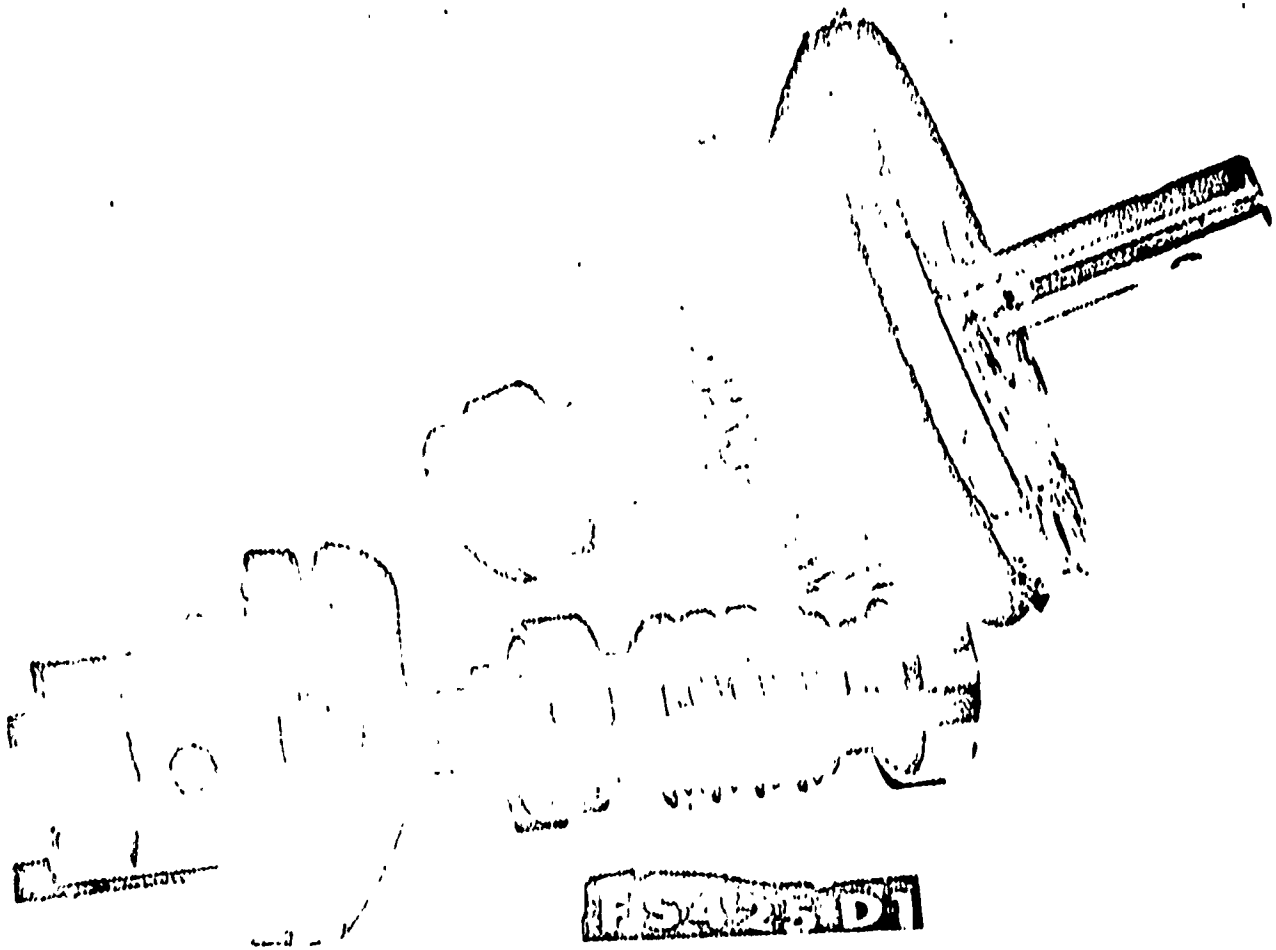
90% Class III rust on interior surfaces of oil-fired heater; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



90% Class III rust on interior surfaces of oil-fired heater; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



90% Class III rust on interior surfaces of oil-fired heater; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



100% stain on drive gear of washing machine; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.

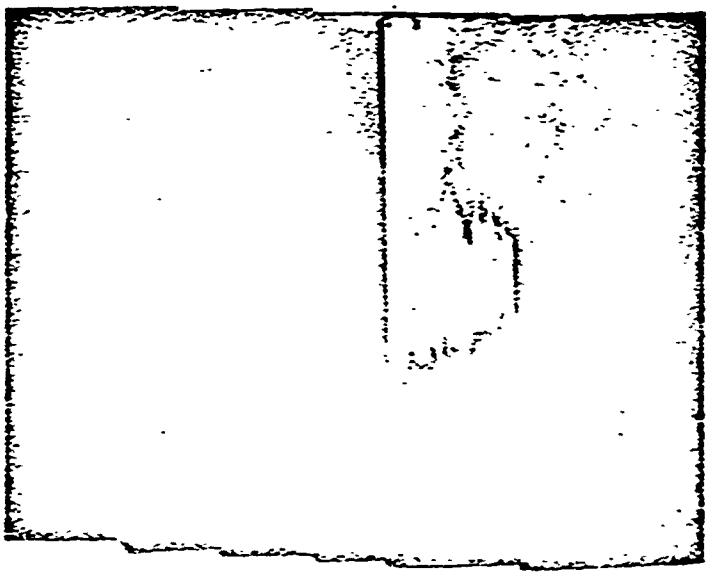
Table IV. 40% R/H Warehouse - Oper

	40% R/H	Open Air		
	0-48 Months	51 Months	54 Months	
Floodlight trailer (domestic)		Magneto drive gear 50% (I)	60% (II)	
			Magneto rotor shaft and points 60% (II)	
Floodlight trailer (contact)				
Generator set, 30 kw (domestic)		Pulleys 75% (II)	NC	
		Rocker arms 1% (I)	NC	
		Blower housing 75% (II)	NC	
Generator set, 30 kw (contact)				
Heater, oil fired (domestic)		Interior surfaces 75% (II)	90% (II)	
			Fuel tank 20% (II)	
Machine, washing (domestic)		Pulley and shaft 5% (I)	5% (II)	
Machine, washing (contact)				

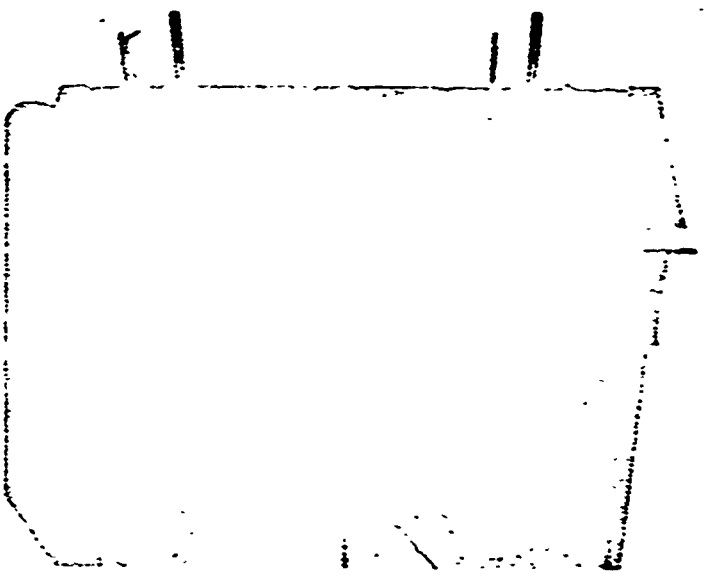
[1] See page 4 of text for explanation.

Table IV. 40% R/H Warehouse - Open Air (contd)

Open Air			
	54 Months	57 Months	60 Months
ar	60% (II)	80% (II)	NC
	Magneto rotor shaft and points 60% (II)	NC	NC
		Magneto 10% (II)	NC
		Fuel tank 30% (II)	NC
	NC	80% (II)	NC
I)	NC	NC	NC
5% (II)	NC	NC	NC
			Water pump 50% (III)
			Fuel injectors pitted
			Engine cylinders 50% (III) FS416C1, FS416C4
			Fuel injectors 20% (II) FS416C2
			Oil pump 10% (II)
			Water pump 30% (III)
s	90% (II)	NC	90% (III) FS424D1, FS424D2, FS424D3
	Fuel tank 20% (II)	50% (III)	50% (IV)
	5% (II)	10% (II)	30% (II)
			Gear box[1] FS425D1
			Gear box[1]

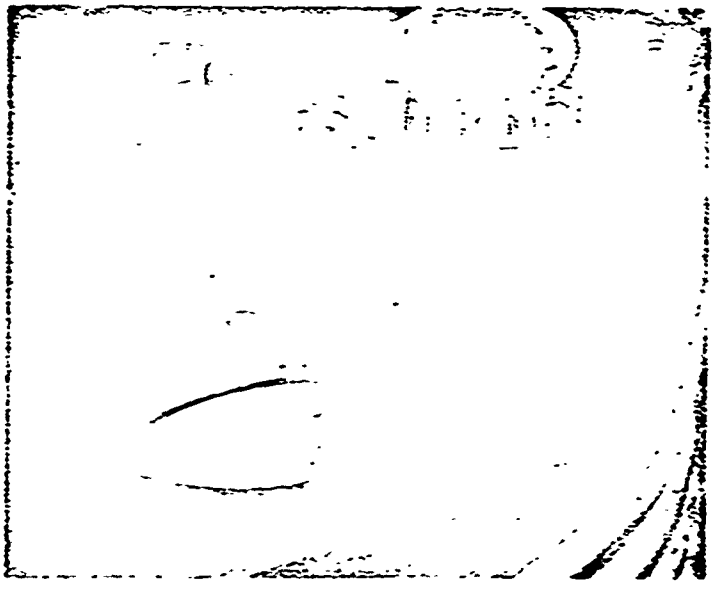


100% Class III rust on shelves of bake oven; domestic treated, stored 45 months in 40% RH warehouse and 12 months in open air.

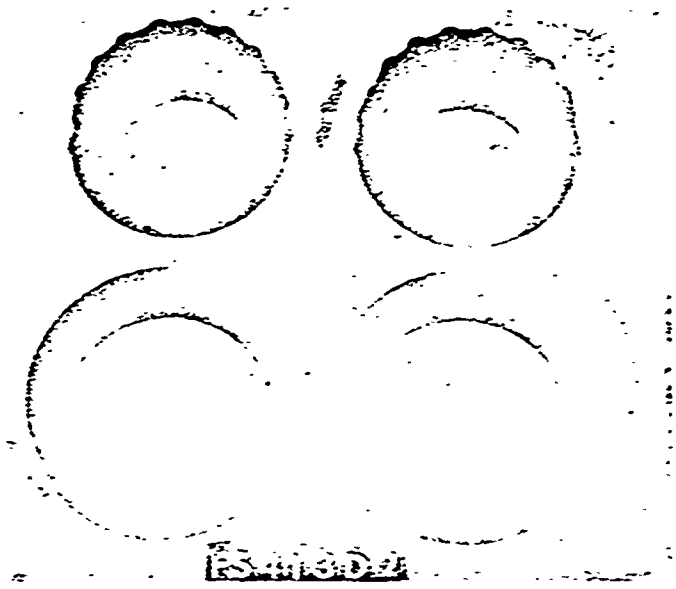


20% Class II rust on shell of bake oven; domestic treated, stored 45 months in 40% RH warehouse and 12 months in open air.

50% Class III rust on impeller of centrifugal pump; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.

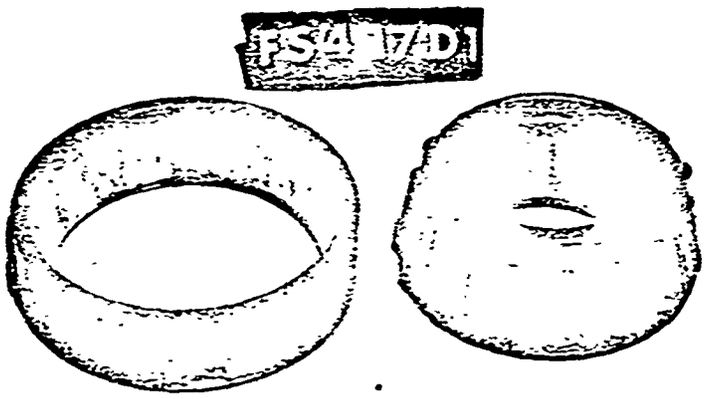


10% Class II rust on engine cylinder walls of diaphragm pump; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.

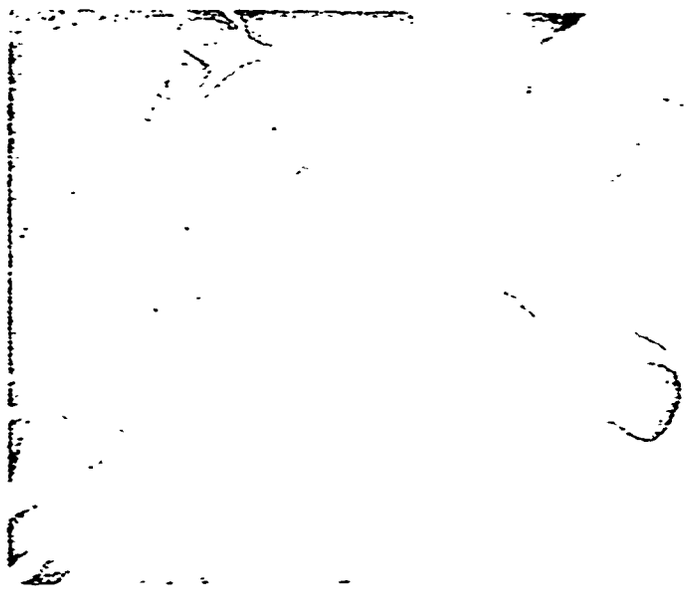


70% Class III rust on eccentric shaft bearings of diaphragm pump; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.

10% Class II rust on oil pump of refrigeration unit; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



10% Class IV rust on wheel bearings of searchlight; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



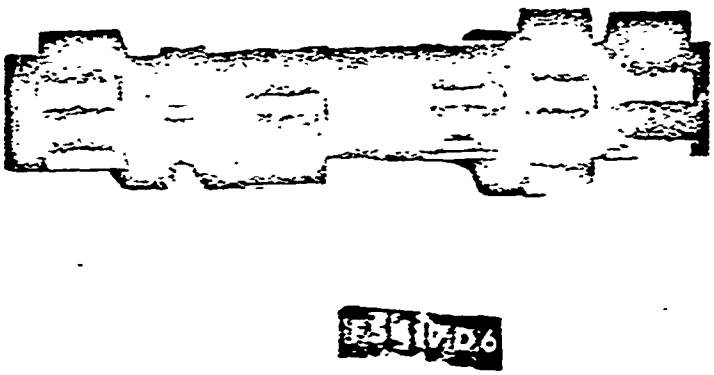
50% Class IV rust on wheel spindle of searchlight; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.

Table IV. 40% R/H Warehouse - Open Air (cont

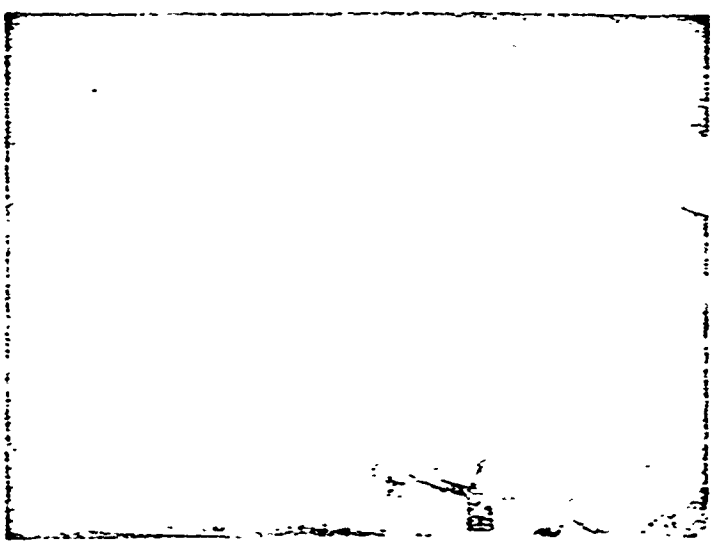
	40% R/H	Open Air		
	0-48 Months	51 Months	54 Months	57 Months
Oven, bake (domestic)		Shelves 50% (I)	100% (II)	100% (III)
		Carburetor 50% (I)	75% (I)	NC
Pump, centrifugal (domestic)		Pulleys 50% (I)	75% (I)	100% (II)
Pump, diaphragm (domestic)		Cylinder wall 10% (I)	NC	10% (II)
Refrigeration unit (domestic)		Pulleys 75% (II)	100% (III)	NC
		Magnetic switch 50% (I)	75% (II)	NC
Searchlight, 60-inch (domestic)				Selenium rectifier 30% (II)
Searchlight, 60-inch (contact)		Selenium rectifier 25% (III)	NC	75% (III)
		Lamp and reflector 5% (I)	NC	30% (II)

Table IV. 40% R/H Warehouse - Open Air (contd)

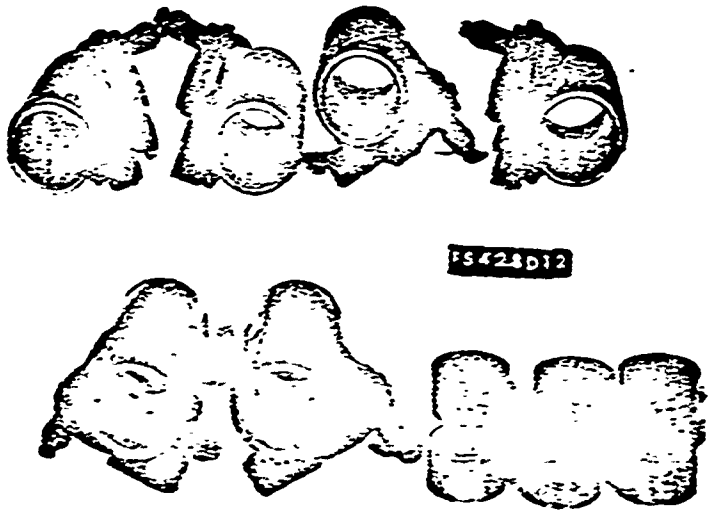
Open Air			
	54 Months	57 Months	60 Months
	100% (II)	100% (III)	NC FS423D1
I)	75% (I)	NC	NC
			Shell 20% (II) FS423D4
	75% (I)	100% (II)	NC
			Engine cylinders 25% (I)
			Pump impeller 50% (III) FS414D1
			Water pump (engine) 50% (III)
% (I)	NC	10% (II)	NC FS413D1
			Diaphragm shaft bearing 70% (III) FS413D2
)	100% (III)	NC	NC
	75% (II)	NC	NC
			Oil pump 10% (II) FS426D1
			Valve plate 10% (II)
		Selenium rectifier 30% (II)	NC
			Wheel bearing 10% (IV) FS417D1
			Terminal box 20% (II)
er	NC	75% (III)	NC
or	NC	30% (II)	NC
			Wheel spindles 50% (III) FS417G1



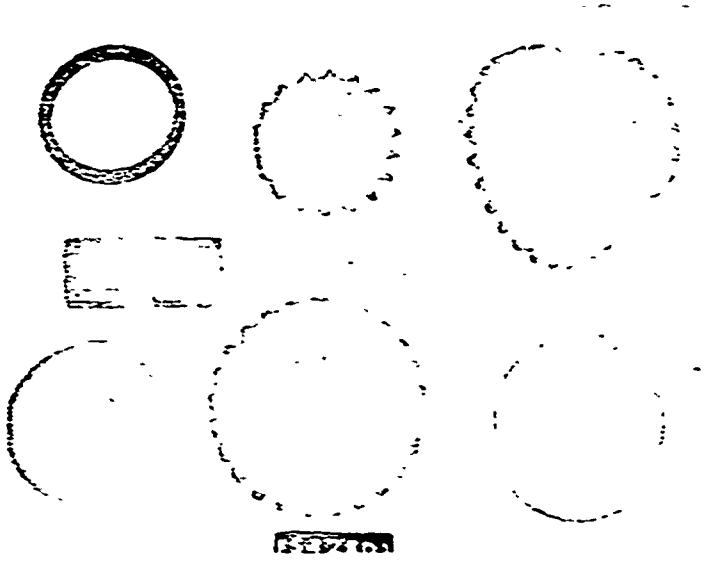
30% Class I rust on camshaft of power plant for searchlight; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



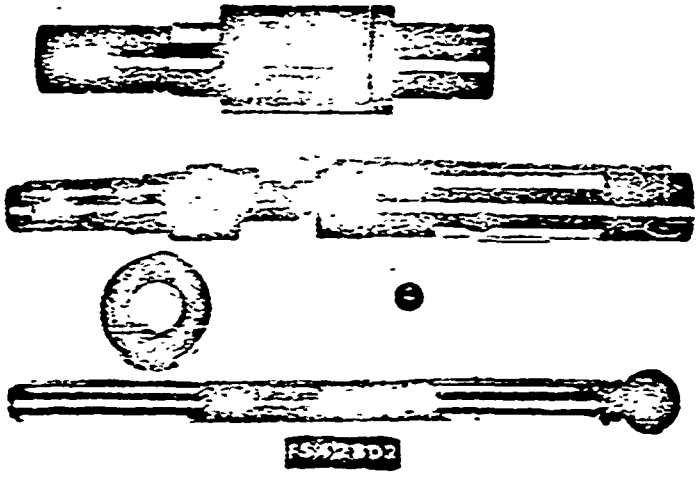
30% Class III rust on engine cylinder walls of power plant for searchlight; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



20% Class II rust on brake cylinders of dump truck; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



35% stain on gear sub-assembly of dump truck; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



20% stain on gear sub-assembly of dump truck; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.

70% Class III rust on brake cylinders of dump truck; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.

90% stain on cluster gear from dump truck; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.

25% stain on gear and bearing from dump truck; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.

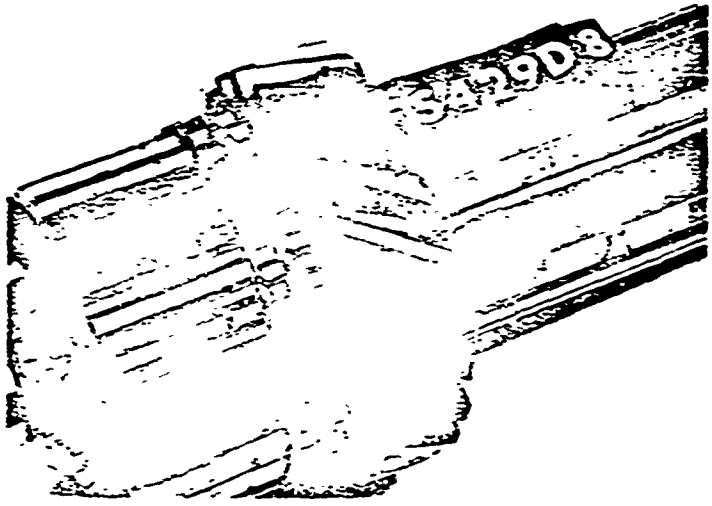
Table IV. 40% R/H Warehouse - Open A

	40% R/H	Open Air		
	0-48 Months	51 Months	54 Months	
Power plant for searchlight (domestic)		L.R. wheel hub 75% (I)	NC	
		Camshaft 10% (I)	NC	
Power plant for searchlight (contact)				
Transfer unit (domestic)				
Truck, dump 2-1/2 ton, 6 x 6 (domestic)		Pulleys 20% (I)	30% (II)	
			Brake drum 50% (II)	
Truck, dump 2-1/2 ton, 6 x 6 (contact)				

[1] See page 4 of text for explanation.

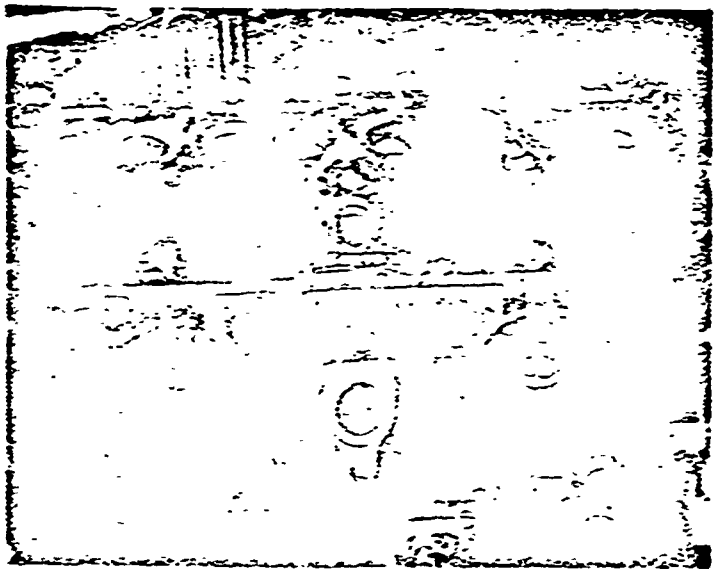
Table IV. 40% R/H Warehouse - Open Air (contd)

Open Air			
	54 Months	57 Months	60 Months
	NC	NC	NC
	NC	NC	30% (I) FS417D6
		Power generator brush spring assy. 10% (I)	NC
			Engine cylinder walls 30% (III) FS417D1-1
			Brake drums 60% (III)
			Water pump 30% (II)
		Camshaft 5% (I)	NC
			Water pump 5% (I)
			Engine generator 10% (I)
			Piston and cylinder wall 20% (I)
	30% (II)	NC	NC
	Brake drum 50% (II)	75% (II)	NC
		Camshaft 30% (I)	NC
			Air compressor valves 30% (III)
			Brake cylinders 20% (II) FS428C[illegible]
			Gear boxes[1] FS428D1, FS428D2
		Camshaft 100% (II)	NC
			Brake cylinders 70% (III) FS428C6
			Air compressor valves 10% (II)
			Gear boxes[1] FS428C3, FS428C5

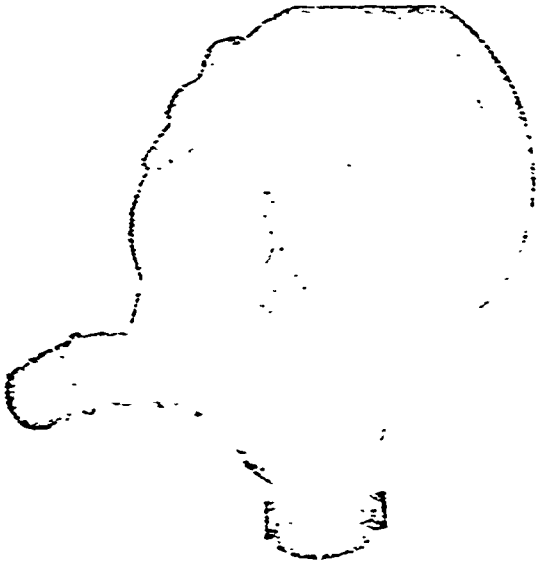


40% stain and 10% Class II rust on gear sub-assembly of jeep; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.

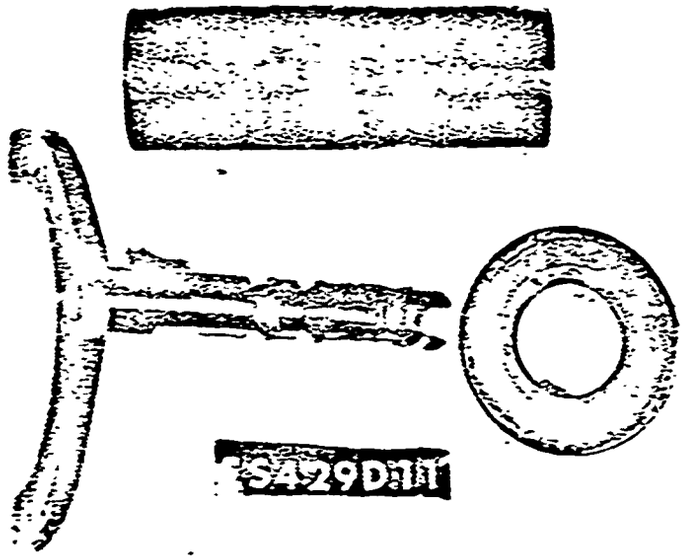
30% Class III rust on gear of jeep; domestic treated, stored 48 months in 40% RH warehoure and 12 months in open air.



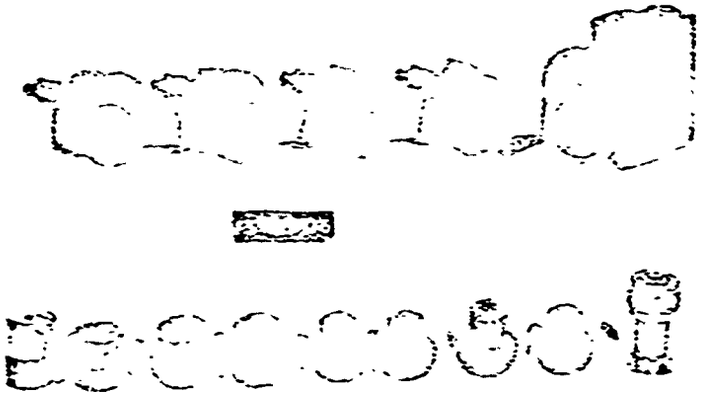
10% Class II rust on engine cylinder walls of jeep; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



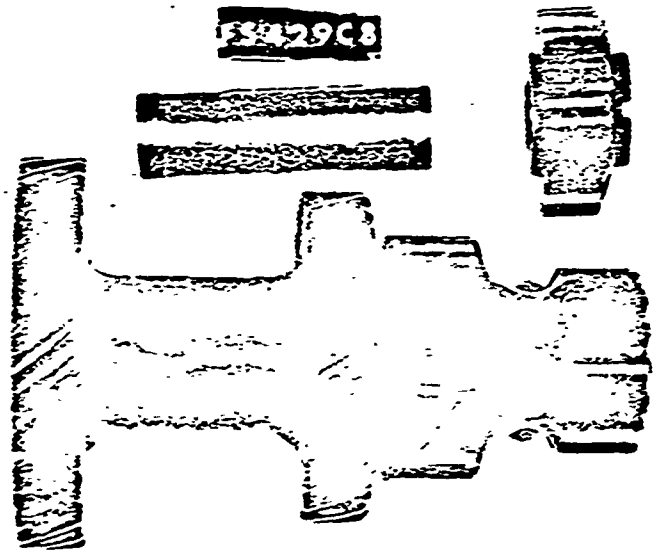
90% Class III rust on water pump of jeep; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



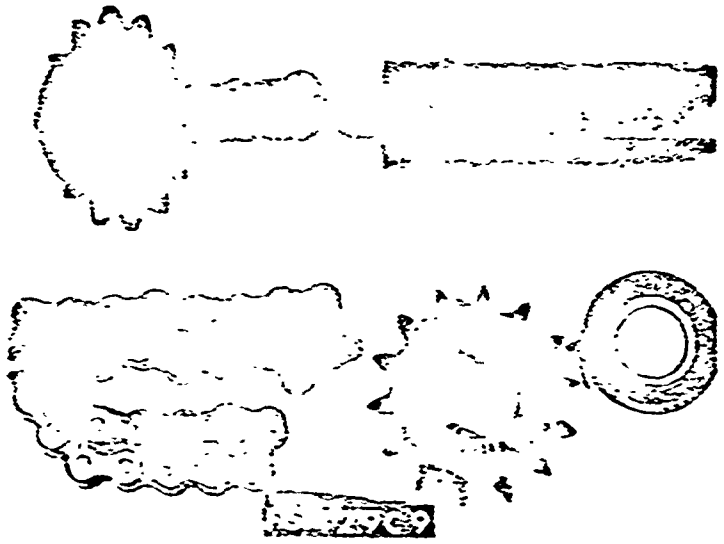
50% Class III rust on shaft and bearing of jeep; domestic treated, stored 48 months in 40% RH warehouse and 12 months in open air.



75% Class III rust on brake cylinders of jeep; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.



90% stain on cluster gear of jeep; contact preserved, stored 48 months in 40% RH warehouse and 12 months in open air.



40% Class III rust on sprocket assembly of jeep; contact preserved, stored 43 months in 40% RH warehouse and 12 months in open air.

Table IV. 40% R/H Warehouse - Open Air (contd)

	40% R/H	Open Air		
	0-48 Months	51 Months	54 Months	57 Months
Truck, jeep 1/4-ton, 4 x 4 (domestic)		Brake drum 100% (II)	100% (III)	NC
		Pulleys 30% (II)	60% (II)	60% (III)
Truck, jeep 1/4-ton, 4 x 4 (contact)		Pulleys 20% (I)	20% (II)	30% (III)
Welder, arc (domestic)		Pulleys 25% (II)	50% (II)	75% (II)
		Brush spring assy. 25% (I)	50% (I)	50% (II)
		Flywheel teeth 25% (I)	NC	50% (II)
				Camshaft

[1] See page 4 of text for explanation.

Table IV. 40% R/H Warehouse - Open Air (contd)

Open Air			
	54 Months	57 Months	60 Months
(II)	100% (III)	NC	NC
)	60% (II)	60% (III)	70% (III)
			Engine cylinder walls 10% (II) FS429D3
			Brake cylinders 70% (III)
			Water pump 90% (III) FS429D1
			Clutch assembly 70% (II)
			Gear boxes[1] FS429D8, FS429D9, FS429D11
	20% (II)	30% (III)	40% (III)
			Brake cylinders 75% (III) FS429C6
			Gear boxes[1] FS429C8, FS429C9
	50% (II)	75% (II)	NC
y.	50% (I)	50% (II)	75% (III)
	NC	50% (II)	NC
		Camshaft 20% (I)	NC
			Engine cylinder walls 30% (III)
			Water pump 50% (III)

Table V. Number of ball bearings found frozen after 60 months of storage.

Item Stored	Shed		Standard		50% RH		40% RH-Open Air	
	Domestic	Contact	Domestic	Contact	Domestic	Contact	Domestic	Contact
Compressor set	2	2	2	2	1	0	2	0
Distillation unit	2	3	0	0	4	5	2	0
Drill press	*	*	0	0	7	3	6	4
Floodlight trailer	0	0	1	1	0	1	0	0
Generator set	0	0	0	3	0	0	0	0
Lathe	*	*	2	1	0	0	2	2
Machine, washing	1	1	0	0	0	0	0	0
Refrigeration unit	2	3	2	0	0	0	0	0
Saw, radial	*	*	0	0	10	8	8	5
Searchlight w/p.p.	4/1	0	4/1	4/1	3/1	1/1	0	0
Slicer, meat	*	*	2	2	0	0	0	0
Transfer unit	0	0	1	0	0	0	0	0
Welder, arc	0	2	0	0	2	2	0	1

* Item not stored in shed.

Appendix A

DESCRIPTION OF PRESERVATION TREATMENT STORAGE CONDITIONS EXPOSURE TEST

1. CLEANING

1.1 Dirt, Excess Oil and Grease: Remove all accumulations of dirt, excess oil and grease and all foreign matter from the exterior surfaces of equipment by washing with solvents, soap and water, or by steam cleaning. Particular attention should be given to points most subject to corrosion or deterioration. Care shall be exercised to avoid wetting or steaming electrical circuits and the accumulation of water in recesses. Immediately after cleaning, all accumulation of water in recesses shall be drained. Dry compressed air and clean wiping cloths shall be used where necessary to insure that all parts are thoroughly dried.

1.2 Rust and Damaged Paint: Rust and corrosion, as well as paint which has been damaged by scraping or abrasions or which is blistered or checked, shall be removed from exterior surfaces by wire brushing, buffing, sandpapering, or, if badly rusted, by sandblasting, if feasible. Sandblasting shall not be conformed near working or moving surfaces and mechanisms. Sealing openings of such mechanical operating parts with tape shall not be considered sufficient protection against the entrance of sand particles when sandblasting. In extreme instances it may be necessary to sandblast badly rusted exterior surfaces of the equipment. In such instances, all openings of working or moving surfaces and mechanisms shall be thoroughly sealed and in addition, shall be completely enclosed with canvas covering prior to sandblasting.

1.3 Highly Finished Surfaces: Petroleum solvent followed by a properly controlled acid neutralizer shall be used to clean all highly finished surfaces. Cleaned surfaces shall be thoroughly dried by dry compressed air, ovens or where necessary, with clean wiping cloths. Metallic items with non-metallic parts, such as fabric, rubber or other organic materials in place on the metallic items, cannot be cleaned without exercising great care in either organic solvent or water soluable cleaners. Such parts shall be carefully cleaned by hand brushing, or wiping and in no case immersed in the cleaner.

2. CONTACT PRESERVATION OF COMPONENT PARTS AND SURFACES

2.1 Bake Oven Interiors and Racks: Oven interiors and racks shall be coated with type P-14 preservative.

2.2 Belts and Pulleys, Drive: The tension on belts shall be relieved and the pulley faces or groves coated with a thin film of lacquer-resisting synthetic primer. The pulleys shall be rotated by hand during application of the primer to insure complete coverage.

2.3 Boilers.

2.3.1 Waterside of Boilers.

2.3.1.1 Type P-3 preservative shall be applied by flooding and draining. The preservative shall be reclaimed and re-used until contaminated. If flooding is not practicable the preservative shall be applied by the fogging method.

2.3.1.2 Safety valves shall be left intact, adjusted to working pressure, and all internal parts shall be preserved with Type P-3 preservative.

2.3.1.3 External unpainted surfaces shall be coated with Type P-1 preservative.

2.3.1.4 All openings shall be closed with plugs or blank flanges except drains at the lowest level in the water system, and additional other openings deemed necessary for proper cross ventilation to reduce condensation.

2.3.2 Fireside of Boilers. The fireside shall be coated with Type P-1 preservative.

2.3.3 Burner. Interior surfaces of burner shall be coated with type P-10 preservative. The burner shall then be packaged in accordance with method 1A-2 of TP-PW-14.

2.4 Brakes.

2.4.1 Brakes General All parts shall be inspected for serviceability while disassembled with necessary repairs being made prior to application of preservatives. All metal surfaces enclosed within brake drum, such as adjusting wedges, pins, eccentrics, cam levers, retracting springs, and similar parts and the brake surfaces or faces of the brake drums shall be coated with a lacquer-resisting

synthetic primer. Exterior brake parts shall be coated with Type P-1 preservative. Care shall be taken to prevent preservatives from coming in contact with rubber or rubber impregnated parts, such as brake hose.

2.4.2 Brakes, Hydraulic System: The interior of hydraulic brake systems shall be filled with preservative hydraulic brake fluid, Specification MIL-P-12058 (ORD). Bleed and adjust brakes as required.

2.5 Burners, Oil. Interior surfaces of burners and blowers shall be coated with Type P-10 preservative by spraying preservative into the air intake while the blower is operating. Unpainted exterior surfaces and electrical components shall be coated with ignition insulation compound. All openings shall be either sealed with pressure-sensitive tape or covered with Grade C greaseproof barrier-material sealed with pressure-sensitive tape.

2.6 Canvas Tanks: The tanks shall be wrapped with Type C-2 or E-1 waterproof barrier material with all seams, folds and laps sealed with water resistant adhesive.

2.7 Chemical Warfare Detectors: Chemical warfare detectors shall be packaged in accordance with Method 1A-2 of TP-PW-14.

2.8 Clutches.

2.8.1 Clutches, Composition, Disc Type. All metal surfaces, including clutch collars, linkage, and pins shall be coated with a thin film of lacquer-resisting synthetic primer. Spring loaded clutches shall be blocked in a partially disengaged position to eliminate contact with facing and pressure plates. They shall not be blocked entirely open, however, since prolonged depression may cause clutch springs to lose their tension. Snapover-center or toggle-in clutches shall be completely disengaged.

2.8.2 Clutch Housing Openings. All openings in all clutch housings shall be sealed with either pressure sensitive tape or with greaseproof barrier material, secured with pressure-sensitive tape. The tape or barrier material and adjacent surfaces shall be coated with strippable compound. Drain plugs shall be removed from dry type clutch housings and shall be attached to the clutch control lever or placed in some conspicuous place, and each plug identified with a waterproof tag.

2.9 Combustion Chambers, Fire Boxes, Flue Pipes, Canopies and Smoke Jacks of Heaters and Ovens: Combustion chambers, fire boxes, flue pipes, canopies and smoke jacks of heaters and ovens shall be coated with Type P-1 preservative.

2.10 Compressors. The compressor unit shall be preserved before or simultaneously with the driving engine. The crankcase shall be filled to proper operating level with Grade 2, Type P-10 preservative. The compressor shall be operated at one-quarter throttle for one minute to insure complete coating of all internal surfaces. The air cleaner shall be removed, and the same type preservative shall be fogged into the intake opening during the one minute run. The preservative shall remain in the compressor crankcase. The storage tank shall be left open to the atmosphere during preservation. The cooling fins of the air cooled compressors and other external unpainted surfaces of air cooled compressors shall be coated with ignition insulation compound. Compressors with liquid cooling systems shall have the cooling system flushed with Type P-3 preservative. The air cleaner shall be re-oiled using Type P-10 preservative, or shall be replaced as required. While the compressor is in operation, Type P-10 preservative shall be sprayed into intake line until the oil appears at the outlet. If it is impracticable to preserve the compression chamber in the manner specified above, the compressor shall be declutched or stopped and either one valve hold-down set screw removed from each inlet valve cover or the entire valve cover removed. A sufficient quantity of Type P-10 preservative shall then be poured into each inlet valve chamber and the screws or covers replaced. The compressor shall then be operated for sufficient length of time to insure a complete coating on all surfaces. Care shall be taken to tighten set screws alternately so as to insure equalized clamping of the valve assemblies. Replace air cleaner. All openings, through which moisture or dirt might enter the interior sections of the equipment, shall be covered with greaseproof barrier material, Type I, Grade C, secured with pressure-sensitive tape, and sealed with strippable compound. Air receivers shall have the pipe plugs removed and the entire interior of the receiver fogged, or sprayed with Type P-10, Grade 2 preservative. The pipe plugs shall then be replaced. Drain cocks, shall be left completely open to allow the discharge of excess preservative and condensation.

2.11 Controls, Mechanical. Unpainted working surfaces and parts of door hinges and latches, shall be coated with Type P-2, P-7 or P-10 preservative. Pull out throttle, choke, light switch buttons, etc, and coat with Type P-10, Grade 1 preservative, then push back into "OFF" position. Levers shall be left in an idling position and shall be secured in such a manner as to prevent movement. Shift levers unprotected by conventional dust shields shall be wrapped with greaseproof barrier material, Type I, Grade A, and secured with pressure sensitive tape.

2.12 Electric Machines Having Rotating Parts. (Motors and Generators.)

2.12.1 Shafts and couplings with unpainted surfaces shall be coated with Type P-1 preservative.

2.12.2 In general, ball or roller bearings shall be lubricated with Type P-11 preservative. Lubricating systems, sleeve bearings and housings shall be flushed with Type P-2 or P-10 preservative thoroughly drained.

2.12.3 No preservative treatment shall be necessary for commutators. When commutators are accessible, the brushes shall be lifted and a strip of Grade A Greaseproof barrier material shall be wrapped around the commutator in such a manner that it is completely covered, using pressure-sensitive tape to secure paper in place. Where disassembly of the motor or generator is necessary to comply with this requirement, commutators need not be wrapped as described above.

2.12.4 Slip rings and brush springs of ferrous material shall be coated with Type P-2, Type P-7, or Type P-12 preservatives. Bronze or brass slip rings shall require no preservative. Slip rings with a diameter of more than 4 inches shall be wrapped with Grade A greaseproof barrier-material.

2.12.5 All openings, that would permit the entrance of liquid water shall be sealed with Type I, Grade B, pressure-sensitive tape. The tape and generator shall be coated with ignition insulation compound.

2.13 Electric Wiring, Controls and Switches. Electric wiring, including battery cables, and the interior or working parts of electrical controls and switches, the functioning of which will not be affected by the application of a preservative compound, shall be treated with insulation ignition compound. When treating working parts of electrical controls and switches, avoid application of the compound to electrical contacts or points where the electrical flow may be interrupted, as it is not a conductor of electricity. The compound can be applied by either brushing or spraying. The solvent in the compound is flammable, therefore must be handled with care.

2.14 Engines, Gasoline or Diesel, and Accessories.

2.14.1 Engines, Gasoline, Liquid Cooled.

2.14.1.1 Lubricating System. Drain and fill the lubricating system, crank case, and oil tank with type P-10 preservative lubricating oil, Grade 2. Run the engine at 800 to 1200 RPM or as per manufacturer's instructions for not less than 10 minutes. Perform all preservation required on engine power before processing the combustion chamber of the engine. Do not drain lubricating system.

2.14.1.2 Combustion Chamber. After the engine has thoroughly cooled, open carburetor butterfly valve and fog type P-10, Grade 2, preservative at engine cranking speed into carburetor. Spray until oil fumes are visible at end of exhaust pipe, remove spark plugs and spray through the spark plug hole approximately 1 ounce of type P-10 preservative into each cylinder for engines up to 300 cubic inches in displacement; for engines over 300 cubic inches displacement, use approximately 2 ounces of oil per cylinder. Replace spark plugs after preserving combustion chamber.

2.14.1.3 Air Cleaner. Install and fill the air cleaner to proper level with Type P-10 preservative and seal intake openings. (See para 2.14.4.4)

2.14.1.4 Lubricating System, Draining. Drain lubricating system except for engines used on uncrated equipment.

2.14.1.5 Valve Compartment. Remove valve covers and spray within the valve compartment including rocker mechanism, valve stems, springs, guides and push rods with P-10, Grade 2 preservative. Spray with the same preservative, interior surfaces of valve cover, oil filter, and crank-case ventilator pipes and replace valve cover.

2.14.1.6 Oil Filters. Where non-replaceable element type oil filters are used, remove old filter and install new.

2.14.1.7 Carburetor. Drain gasoline from carburetor.

2.14.1.8 Distributors and Magnetos: Distributor or magneto caps and rotor shall be removed and all surfaces within the breaker compartment, except contact points, carefully coated with ignition insulation compound. The rotors and caps shall be replaced and all openings to the interior of the distributors or magnetos, including cap joints, sealed with pressure sensitive tape. All exterior surfaces, including the tape and wiring connections, shall be sprayed with ignition insulation compound.

2.14.2 Engines, Gasoline, Air Cooled. Preservation shall be accomplished as prescribed for Engines, Gasoline, Liquid Cooled (see para 2.14.1) except that the cylinder barrels and heads shall not be sprayed with ignition insulation compound. The crankcase,

gear case, and/or governor case (if so equipped) shall be filled with Type P-10, Grade 2 preservative engine oil.

2.14.3 Engines, Diesel.

2.14.3.1 Lubricating System. The engine lubricating system shall be filled to the proper operating level with Type P-10 preservative lubricating oil conforming to Specification MIL-L-21260, Grade 2.

2.14.3.2 Preservative Run-In. The engine shall be started, using diesel fuel specified and allowed to run on fast idle and under no load until thoroughly warm. The engine shall be stopped and the diesel fuel drained from the tank. The fuel tank shall then be partially filled with enough Type P-9 preservative to fill all other components of the fuel system. The fuel return line shall be disconnected from the injectors to prevent the diesel fuel in the fuel system from diluting the Type P-9 preservative in the fuel tank. The engine shall be started again and allowed to run on fast idle and under no load until the engine is running on Type P-9 preservative oil and the fuel system components, other than the tank, are filled with Type P-9 preservative. The engine shall not be allowed to run longer than the time required to fill the aforementioned fuel system with the preservative oil. After the engine has stopped, the fuel return line shall be connected and the fuel tank drained of excess type P-9 preservative. The type P-9 preservative shall remain in the rest of the fuel system for protection during storage and shipment.
NOTE 1: Diesel engines with injection pump oil reservoirs shall have the reservoirs filled to proper operating level with type P-10 preservation lubricating oil, Specification MIL-L-21260, Grade 2.

2.14.3.3 Combustion Chamber and Cylinders. After preservation of the fuel system has been accomplished, each combustion chamber and cylinder shall be coated with Type P-10, Grade 2 preservative, using a minimum of 2 ounces for each combustion chamber and cylinder. Fuel injectors or other components of the preserved fuel system shall not be removed for the purpose of gaining an opening to apply the preservative in the combustion chambers and cylinders.
CAUTION: Preservative oil shall not be poured into the air intake of diesel engines. The preservative shall be applied to the combustion chambers and cylinders of the diesel engines in accordance with the following procedure:

2.14.3.4 Valve Compartment. Valve compartment shall be preserved as outlined in paragraph 2.14.1.5.

2.14.4 Component Parts and Accessories of Gasoline and Diesel Engines.

2.14.4.1 Cooling Systems. Cooling systems shall be thoroughly flushed out with clean soft water. The cooling system shall then be flushed with Type P-3 preservative which shall be continued until the absence of any milky colored emulsion indicates that all the water has been removed. The unit shall then be drained. A thin film of the preservative will thus be left on all interior surfaces. Drain cocks shall be left open.

2.14.4.2 Air Cleaner. Install air cleaner and fill to proper level with Type P-10 preservative then seal intake openings as outlined in paragraph 2.14.4.4.

2.14.4.3 Governors. After draining, the housing shall be filled to the proper level with Type P-10 preservative which shall remain in the housings during subsequent procedures, after which it shall be drained.

2.14.4.3.1 Filler and drain plugs shall be coated with Type P-1 preservative.

2.14.4.3.2 Drain plugs shall be replaced and securely tightened, after which the lubricant housings shall be filled again to the proper operating level with new type P-10 preservative, and the filler plugs shall be replaced and securely tightened.

2.14.4.3.3 Governor mechanisms such as weights, springs, pins, linkages, and such other parts or assemblies within the governor housing not lubricated by the engine lubricating system or by the governor's own lubricating system, shall be sprayed or fogged with Type P-10 preservative.

2.14.4.3.4 Governor control linkages not enclosed within the governor housings shall be coated with Type P-6 preservative or Type P-7 preservative.

2.14.4.4 Openings and Exterior Surfaces of Engines and Engine Compartment. Seal all openings in engine and accessories including air intake breathers, exhaust and exhaust expansion joints and openings in starter motor, generator and other electrical equipment with Type I, Grade B, pressure-sensitive tape. Spray interior of engine compartment, exterior surfaces of engine including all seals and accessories (except cylinder barrels and heads of air cooled engines), and including the following items, with ignition insulation compound:

Distributor	Spark Plugs
Engine Manifold	Starting Motors
Exhaust Pipe (engine compartment)	Voltage Regulators
Fuel Pump	Wiring Compartment
Generators	Wiring from instrument to Firing Wall

2.14.4.5 Belts and Pulleys. Tension shall be released on fan drive, generator drive and other belts. Pulley faces or grooves shall be coated with lacquer resisting synthetic primer.

2.14.4.6 Exhaust Pipes and Mufflers. The muffler, exhaust pipe, and tail pipe, including the raincap, shall be coated with Type P-1 preservative. Seal all openings and cracks as outlined in paragraph 2.14.4.4.

2.14.4.7 Batteries.

2.14.4.7.1 Remove batteries from equipment.

2.14.4.7.2 Clean all corrosion from, and neutralize acid spillage on cable terminals and battery racks and boxes with a solution compound of eight ounces of soda ash or one pound of baking soda to one gallon of water. Cleaned surfaces shall then be rinsed with clean warm water.

2.14.4.7.3 The cable terminals shall be coated with either petrolatum (vaseline), or Type P-6 preservative compound, then wrapped with Grade A, greaseproof barrier material, secured with pressure-sensitive tape or securely tied with cord. The cables shall be coated with ignition insulation compound.

2.14.4.7.4 Battery racks and boxes shall be coated with asphalt varnish Specification TT-V-51.

2.14.4.8 Flywheel Ring Gears. Flywheel ring gears shall be coated with Type P-1 preservative.

2.14.4.9 Starter Drive Mechanisms. Starter drive mechanisms shall be sprayed or fogged with Type P-10 preservative.

2.14.4.10 Fuel Tanks. Drain the fuel tanks and then fill with Type P-10, Grade 2 preservative. Drain the preservative and save for re-use for subsequent processing. When fuel tanks have no drain plugs, or are inaccessible and must be drained through the fuel system, tanks may be preserved by fogging with the preservative. The filler cap shall be sealed with pressure-sensitive tape.

2.14.4.11 Couplings, Flexible. Couplings shall be coated with Type P-5 or P-6 preservative and then wrapped with grease-proof barrier-material, secured with pressure-sensitive tape.

2.14.4.12 Engine Housings. Hinges and fasteners shall be coated with Type P-2 or P-7 preservative and all cracks and joints of housings sprayed with ignition insulation compound. Cracks over 1/4 inch wide shall be sealed with pressure-sensitive tape and covered with strippable compound.

2.15 Floodlights (Mobile Trailer). Seal all joints with pressure-sensitive tape, then bolt each floodlight in place in the trailer housing.

2.16 Gears, Internal, Installed. The housing shall be filled to proper operating level with universal gear lubricant, Specification MIL-L-2105, of the appropriate viscosity and the unit operated without load for sufficient length of time to insure complete coverage of surfaces within the housing. The gear housing drain and filler plugs shall be coated with Type P-1 preservative. Openings into gear housing shall be covered with Grade C greaseproof barrier material, secured with pressure-sensitive tape, and sealed with strippable barrier material.

2.17 Hose and Fittings. Hose fittings shall be coated with Type P-1 preservative. Preservative shall be applied only to metal parts and shall not be applied to fabric, rubber, or rubber impregnated parts. Application of preservative shall be by careful brushing. Hose fittings attached to hose which will be packaged separately (not attached to equipment) shall have the preserved parts covered with Grade A greaseproof barrier material, so as to prevent preservative from contacting non-metallic parts. Flexible hose shall be coiled to the minimum safe diameter and the coils secured with at least five (5) ties of 1/2 inch wide flat cotton tape, evenly spaced.

2.18 Hydraulic Systems (Except Hydraulic Brake Systems). The hydraulic fluid supply tank shall be filled to the proper operating level with Type P-15 preservative, Specification MIL-O-6083. Operate pumps and motors sufficiently to thoroughly coat all interior surfaces. Exposed surfaces of piston rods and controls shall be coated with Type P-6 preservative. The pistons shall be fully retracted into cylinders, or as far as the hook-up will permit. Exposed surfaces of piston

rods shall be spirally wrapped with greaseproof barrier material, Type 1, Grade A, secured in place with pressure-sensitive tape, and sealed with strippable barrier material. All assemblies actuated by the hydraulic system shall be wired or strapped to the main unit to prevent movement. Hydraulic operating control valves shall be secured against movement and the exposed portions of controls shall be wrapped as described above. Threaded openings shall be sealed with threaded metal caps or plugs. Other openings shall be sealed with pressure-sensitive tape. Overspray taped openings with strippable barrier material.

2.19 Instruments and Instrument Panels. The front and back of instrument panels including meters, wiring, and wiring connections and front fire walls shall be sprayed with ignition insulation compound. Non-electrical gages, enclosed in metal cases shall have openings to the interior of the gages and gage cases sealed with pressure-sensitive tape. The metal case, including the surface of the tape, and connecting tubing and piping, shall be coated with ignition insulation compound. The faces of the dial glasses shall be covered with Grade A greaseproof barrier material, and protected with a fitted piece of plywood secured in place with pressure-sensitive tape.

2.20 Lamp Assemblies. All exterior unpainted and non-reflecting metal surfaces of lamps on equipment shall be coated with Type P-1 preservative. Reflecting surfaces shall not be coated with a preservative.

2.21 Locks, Keys, and Key Openings. Interior of locks shall be treated with powdered graphite and the locks operated a number of times with key to insure penetration of the graphite. Key and similar openings in locks shall be sealed with Type 1, Grade A, pressure-sensitive tape. Ignition switch keys shall be wired to the choke button or some other conspicuous location on the equipment.

2.22 Lubrication. All grease fittings shall be wiped clean and joints, bearings, bushings, rollers, and similar moving parts shall be thoroughly lubricated with Type P-11 preservative lubricant. Excess grease shall be removed after lubrications.

2.23 Machine Tools and Accessory Parts.

2.23.1 Internal Surfaces. The internal surfaces of liquid-carrying systems shall be drained of all lubricants and liquid solutions. After draining, liquid-carrying systems using water solutions shall be carefully blown out with moisture-free compressed air. If additional cleaning is necessary, refill the system with clean lubricating oils or coolants (for coolant systems only), then circulate the oil or coolant, repeating until the oil or coolant shows no evidence of

emulsification or dirt.

2.23.2 Lubricating and Cooling Systems.

2.24.2.1 Lubricating Systems. Lubricating systems after draining and cleaning as specified above, shall be refilled as follows:

2.23.2.1.1 Lubricating systems normally requiring SAE-10 motor oil for operation, shall be filled with Type P-10, Grade 1, preservation oil.

2.23.2.1.2 Lubricating systems normally requiring SAE-30 motor oil for operation, shall be filled with Type P-2 or P-10, Grade 2, preservative oil.

2.23.2.1.3 Lubricating systems normally requiring very light oils for operation, such as in the case of very high-speed spindles, shall be filled with Type P-9 preservative.

2.23.2.2 Cooling Systems. Cooling systems, after draining and cleaning as specified above, shall be refilled with Type P-7, Grade 2, preservative.

2.23.2.3 Operating Equipment to Insure Thorough Coating. Operate equipment under no-load for a sufficient length of time to insure a thorough coating of the internal mechanisms. Make all necessary gear shifts, of equipment with enclosed reduction gears, to accomplish thorough coating. After all internal surfaces and internal mechanisms are coated with preservative, drain the lubricating and cooling systems.

2.23.3 Gear Cases. Used grease shall be removed from gears in gear cases that are packed with grease. Gears shall then be repacked to a level of 2 inches above the top surfaces of the gears with new grease.

2.23.4 Bearings. Journals and journal boxes containing oil lubricated bearings shall be drained and refilled with Type P-2, P-9 or P-10 preservative, depending upon weight of oil normally required for operating purposes as described under "Lubricating Systems" above. Excess oil shall be drained.

2.23.5 Sliding Surfaces. The surfaces of ways or other sliding or friction surfaces; surfaces of driving gears and of traversing and adjusting screws after proper cleaning, shall be coated with Type P-2 or P-7 preservative.

2.23.6 Finished Surfaces. All finished surfaces, except those covered specifically in other paragraphs, including recesses, blind holes, cavities, etc., which cannot be easily degreased shall be coated with Type P-6 or P-12 preservative.

2.23.7 Other Metal Surfaces. All other unpainted exterior surfaces subject to corrosion shall be coated with Type P-1 preservative.

2.23.8 Protection of Preservatives. All surfaces of the equipment which have been coated with a preservative shall be protected from direct contact with any blocking or dunnaging by inserting Grade A greaseproof barrier-material between contacting surfaces.

2.23.9 Sealing of Openings. All openings, other than vents or louvers, which will permit the entrance of water shall be sealed with pressure-sensitive tape, or if openings are large, with Grade A greaseproof barrier-material secured with pressure sensitive tape.

2.23.10 Parts and Accessories. Highly finished surfeces of parts and accessories shall be coated with Type P-2, P-6, P-7, or P-12 preservative and wrapped in Grade A greaseproof barrier-material, overwrapped in Grade C greaseproof barrier-material and coated with dipcoating sealing compound. All other non-critical unpainted metal surfaces, subject to corrosion, shall be coated with Type P-1 preservative.

2.24 Name Plates. Name plates shall be carefully cleaned by Method C-4 in a manner which will not deface the name plate. The name plates shall then be coated with a clear, transparent film of ignition insulation compound.

2.25 Oil Control Valves of Heaters. The interiors of oil control valves of heaters shall be coated with Type P-10 preservative. The oil control valves shall then be overwrapped with Grade C greaseproof barrier-material secured with pressure-sensitive tape.

2.26 Openings. Crevices and Areas Subject to Holding Moisture. Large exterior openings of equipment, such as radiators, shall be covered with Type B-2 or B-3 waterproof barrier-material secured in place with pressure-sensitive tape. All metal surfaces to which the tape adheres shall be coated with ignition insulation compound before the tape is applied. The barrier-material and tape shall then be sprayed with strippable barrier-material which shall overlap the metal surfaces around the edges sufficiently to provide a thoroughly waterproof seal. Exterior seams and joints of equipment in which water may accumulate shall be thoroughly sealed with strippable barrier-material. Seams or openings which are too large for proper bridging of the strippable

barrier-material shall be covered with pressure-sensitive tape or with non-corrosive barrier-material secured with pressure-sensitive tape. Surfaces to which the tape adheres shall first be coated with ignition insulation compound. The barrier-material and/or tape shall then be sprayed with strippable barrier-material which shall overlap the metal surfaces around the edges sufficiently to provide a thoroughly waterproof seal. Openings such as exposed electric horns, sirens, light sockets, horn buttons, etc., shall be sealed with pressure-sensitive tape.

2.27 Public Address System. Public address systems shall be packaged in accordance with Method IA-2 of TP-PW-14.

2.28 Pumps.

2.28.1 Pumps, Oil or Fuel Dispensing. The interior surfaces of the casings and all parts within the casing shall be coated with Type P-10 preservative. Small single-stage general purpose pumps shall be coated by spraying or fogging the preservative through the suction and discharge pipe taps while actuating the pumps for a sufficient time to insure complete coverage. Two-stage and larger pumps with horizontally and vertically split casings shall be internally coated by removing the top or end case. Excess preservative shall be drained from the casings. Top or end cases and drain plugs shall be replaced. Exposed machined surfaces shall be covered with Grade A greaseproof barrier-material overwrapped with Grade C greaseproof barrier material. The overwrap shall be sprayed with strippable barrier-material. Openings to the interior of the pump through the suction and discharge connections shall be sealed by covering with either gasketed flanges, or greaseproof barrier-material secured with pressure-sensitive tape.

2.28.2 Pumps, Potable Water. The interior surfaces of pumps including all working parts, shall be coated with Type P-14 preservative. The preservative shall be applied and the openings sealed in the same manner as specified in paragraph 2.29.1 for oil and fuel dispensing pumps.

2.28.3 Pumps, Sludge, Diaphragm Type. The interior surfaces of the pump casings including the upper and lower sections, the suction and discharge connections, and the air chambers shall be coated with Type P-10 preservative. When the suction and discharge valves are not removed, care shall be exercised in the application of the preservative to prevent the preservative from coming in contact with the rubber of leather facings of the valves. Openings to the interior of the pump through the suction taps, force, or carry-off attachments, and the top sections of the casings shall be covered with greaseproof barrier material secured with pressure-sensitive tape.

2.29 Refrigeration and Cooling Equipment.

2.29.1 Coils cooling. Heat exchangers shall be thoroughly drained and blown out by the application of dry compressed air until thoroughly dry.

2.29.2 Compressor, refrigerant. Exterior unpainted surfaces except cooling fins shall be coated with a thin film of Type P-1 preservative.

2.29.3 Condenser, refrigerant. The exterior unpainted surfaces shall be coated with Type P-1 preservative. Avoid applying Type P-1 preservative on heat transfer surfaces. A thin coat of ignition insulation compound shall be used on such surfaces.

2.29.4 Evaporator. The evaporator shall be drained and blown out with dry compressed air until thoroughly dry. Drain valve shall be left open.

2.29.5 Controls. Interior surfaces of the pressure regulating system shall be coated with Type P-10, Grade 2, preservative. Provision shall be made to prevent the preservative from contacting fabric or fabric-and-rubber-composition diaphragms. Unpainted exterior surfaces shall be coated with ignition insulation compound.

2.30 Refrigerator Panels. Galvanized surfaces shall be coated with type P-14 preservative. The galvanized surfaces shall then be placed face to face with separator sheets of Grade A, greaseproof barrier-material.

2.31 Rope, Wire. Wire rope shall be uncoiled and cleaned by brushing to remove grit. No solvents shall be used. Wire rope shall then be coated with wire rope preservative Specification VV-L-751, Type II, by dipping the rope in a trough using pulleys so arranged that the rope is drawn through the trough in a completely immersed position. Wire rope shall be coiled on the drum or winch immediately after application of the preservative in such a manner as to prevent damage to the coating. Wire rope on drums and winches shall be covered with Grade A greaseproof barrier-material, secured in place with an opening on the lower side to allow draining. The greaseproof barrier-material shall be oversprayed with a continuous coat of strippable barrier material, extending on to the drum surface. Do not close the opening in the greaseproof barrier-material.

2.32 Searchlights.

2.33 Seat and Back Cushions. Remove foreign materials from seats and back cushions by thoroughly brushing. Grease shall be removed by Method C-4. After cleaning, coat the seats and back cushions with strippable barrier-material.

2.34 Slicer, Meat. Slicing knife, meat carriage and receiving tray shall be coated with type P-14 preservative. The meat slicer shall then be packaged in accordance with Method 1A-2 of TP-PW-14.

2.35 Surfaces, Exterior.

2.35.1 Normally Painted, Surfaces. After all exterior surfaces requiring repainting have been properly cleaned and dried as specified above, they shall be painted with two (2) coats of "Primer, Paint, Synthetic (for ferrous metal and wood surfaces) Federal Specification TT-P-636," and one (1) coat of "Enamel, Gloss, Synthetic, (for exterior and interior surfaces) Federal Specification TT-E-489." Surfaces from which rust has been removed shall be coated with pretreatment Primer (Formula No. 117) Specification MIL-C-15328A immediately after cleaning, then painted as specified above. Areas which are subject to holding moisture shall be sealed with strippable barrier-material.

2.35.2 Galvanized Surfaces. Galvanized surfaces shall be coated with Type P-1 preservative, except that galvanized surfaces of galley and laundry equipment shall be coated with Type P-14 preservative.

2.35.3 Normally Unpainted Exterior Non-Machined Ferrous Metal Surfaces. Parts or items which have unpainted threaded surfaces such as tie rods, clevises, all types of bolts and nuts and also the unpainted surfaces of coil springs, leaf springs, grease fittings, universal joints, gear housings, structural frames, supports, cable drums, tanks, and exposed gears, sprockets and shafts, or any surfaces of a ferrous nature which may become exposed by disassembly shall be coated with Type P-1 preservative.

2.35.4 Underside of Vehicles. The underside of vehicles, including the under surfaces of fenders, shall be sprayed with chassis coating compound, Specification AXS-1827, or Specification TT-C-520.

2.36 Switchboards. Switchboards shall be packaged in accordance with Method 1A of TP-PW-14.

2.37 Telephone Systems. Telephone systems shall be packaged in accordance with Method 1A-2.

2.38 Tires. Mounted tires and spare tires attached to vehicles shall be sprayed with tire preservative compound, ready mix, Stock List Number 152-C-3256-200, 210 and 220. Before applying the coating material remove dirt and other loose particles by means of mild brushing. Mounted tires and spare tires attached to vehicles shall be deflated to one-half of the operating pressure. The load shall be removed from springs, bearings, and tires by placing a block between the frame and axle and a second block between the axle and the ground. Tires which are not part of a vehicle shall be cleaned and preserved the same as specified above for mounted tires.

2.39 Transit Surveyors. Surveyors transits shall be packaged in accordance with Method 1A-2 of TP-PW-14.

2.40 Wheel Bearings. Mounted wheels shall have the bearings filled with the proper amount of Type P-11 preservative grease. Do not fill cavity completely unless instructions for equipment requires complete filling, as excess grease will expand when hot and break grease seal.

2.41 Windshields and Doors. Windshield frame channels shall be sealed with strippable plastic coating. The glass in the doors shall be lowered completely and the door glass opening sealed with pressure-sensitive tape. Surfaces to which the tape adheres shall first be coated with ignition insulation compound. The tape shall then be coated with strippable plastic coating which shall overlap the metal surfaces around the edges sufficiently to provide a thorough waterproof seal.

2.42 Wringers (Washing Machine). The rubber rollers shall be wrapped in Grade A greaseproof barrier-material secured with pressure-sensitive tape.

3. DOMESTIC PREPARATION.

3.1 Preservative Coatings and Sealing. Normally painted surfaces requiring repainting shall be painted in accordance with paragraph 2.36.1. Unpainted exterior non-machined ferrous metal surfaces shall be coated with Type P-1 preservative. Unpainted exterior machined and sliding surfaces shall be coated with standard lubricant or grease. Normally lubricated interior surfaces shall be lubricated as for service. Seal all openings into mechanical and electrical components of the units which are exposed to the elements and would permit the entrance of liquid water with pressure sensitive tape.

3.2 Packaging. The units shall be packaged in accordance with Method 1C-2 of TP-PW-14.

4. PACKING.

4.1 Nailed Wood Sheathed Crates, Fully Weatherproofed. The units shall be packed in fully weatherproofed nailed wood sheathed crates with skid type base with the following modifications: The side and end panels shall be secured to the base with lag screws so that the complete upper assembly of the crate can be removed from the base without necessitating removal of nails.

4.2 Nailed Wood Boxes. The units shall be packed in nailed wood boxes.

4.3 Modified Nailed Wood Boxes (With Shrouds). The units shall be packed in nailed wood boxes modified as follows: Two (2) nominal 4" x 4" skids shall be secured to the bottom of each box. The units shall be shrouded with Type E-2 waterproof barrier-material.

4.4 Nailed Wood Box Housings (Floodlight Trailers). The engine and generator shall be housed in a nailed wood box except that the bottom shall be omitted to permit placing the housing over the engine and generator. The engine and generator shall be shrouded with Type E-2 waterproof barrier material.

4.5 Nailed Wood Open Crates. The units shall be packed in nailed wood open crates with skid type base with the following modifications: The side and end panels shall be secured to the base with lag screws so that the complete upper assembly of the crate can be removed from the base without necessitating removal of nails.

4.6 Modified Nailed Wood Boxes (Without Shrouds). The units shall be packed in nailed wood boxes modified as follows: Two (2) nominal 4" x 4" skids shall be secured to the bottom of each box.

4.7 Nailed Wood Sheathed Crates (Non-weatherproofed). The units shall be packed in non-weatherproofed nailed wood sheathed crates with skid type base with the following modifications: The side and end panels shall be secured to the base with lag screws so that the complete upper assembly of the crate can be removed from the base without necessitating removal of nails.

5. PRESERVATION OF END ITEMS (DIRECTORY)

5.1 Contact Preservation.

5.1.1 Boilers, Vertical, 180,000 BTU, SNS No. 4520-184-3708
Ser Nos. 0-9521, 0-9496, 0-9509, 0-9516, and 0-9525

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Waterside of boiler.....See 2.3.1
.4 Fireside of boiler.....See 2.3.2
.5 Burner.....See 2.3.3
.6 Wiring and switches.....See 2.13
.7 Gages.....See 2.19
.8 Name Plates.....See 2.24
.9 Packing (Boiler).....See 4.1
.10 Packing (Burner).....See 4.2

5.1.2 Chemical Warfare Detector Kit, SNS No. 6665-160-0123

3 Units (No serial numbers)

.1 Unit packaging .....See 2.7
.2 Packing.....See 4.2

5.1.3 Compressor Set, 30 CFM, SNS No. 4310-160-0089

Ser Nos. 113615, 113692, 113826, 113847, and 114499

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Electric motor.....See 2.12
.4 Wiring and switches.....See 2.13
.5 Gages.....See 2.19
.6 Compressor.....See 2.10
.7 Belts and pulleys.....See 2.2
.8 Name plates.....See 2.24
.9 Packing.....See 4.1

5.1.4 Distillation Unit, 83 GPH, SNS No. 4620-185-0857

Ser Nos. 2199, 1999, 2082, 2198 and 2229

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Gasoline engine.....See 2.14.1
.4 Engine accessories.....See 2.14.4
.5 Pump, potable water.....See 2.28.2
.6 Compressor.....See 2.10
.7 Hose and fittings.....See 2.17
.8 Gages.....See 2.19
.9 Wiring and switches.....See 2.13
.10 Name plates .....See 2.24
.11 Packing.....See 4.1

5.1.5 Drill Press. 18" Swing, SMS No. 3413-160-0001

Ser Nos. 1726, 1733 and 1740

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Electric motor.....See 2.12
.4 Wiring and switches.....See 2.13
.5 Belts and pulleys.....See 2.2
.6 Gears and other machined parts..See 2.23
.7 Packing.....See 4.1

5.1.6 Fan, Exhaust, 4900 CFM, SMS No. YS56-F-70020-50

Ser Nos. 78427, 78435 and 78439

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Electric motor.....See 2.12
.4 Switches.....See 2.13
.5 Name plates.....See 2.24
.6 Packing.....See 4.2

5.1.7 Floodlight Trailer, Mobile, SMS No. 6230-283-9760

USN Nos. 51-02779, 51-02777, 51-02778, 51-02780 and 51-03697

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Generator.....See 2.12
.4 Wiring and switches.....See 2.13
.5 Gasoline engine.....See 2.14.2
.6 Engine accessories.....See 2.14.4
.7 Floodlights.....See 2.15
.8 Openings and crevices subject to holding moisture.....See 2.26
.9 Wheel bearings.....See 2.40
.10 Tires.....See 2.38
.11 Name plates.....See 2.24
.12 Packing.....See 4.4

5.18 Generator Sets, 30 KW, DE, SNS No. 6115-295-0973

USN Nos. 51-00776, 51-00554, 51-01108, 51-01114 and 51-01120

.1 Cleaning .....See 1.
.2 Exterior surfaces.....See 2.35
.3 Diesel engine.... .....See 2.14.3
.4 Engine accessories.....See 2.14.4
.5 Generator..... .....See 2.12
.6 Wiring and switches.....See 2.13
.7 Gages.....See 2.19
.8 Name plates.....See 2.24
.9 Packing.....See 4.1

5.1.9 Heater, Oil Fired, 50,000 BTU, SNS No. 4520-200-0647

Ser Nos. F435755, F435808, F435883, F435888 and F77041

.1 Cleaning.....See 1.
.2 Oil control valve.....See 2.25
.3 Combustion chamber and flue pipe....See 2.9
.4 Fuel tank.....See 2.14.4.10
.5 Packing.....See 4.1

5.1.10 Lathe, Floor Model, 14 1/2" Swing, SNS No. 3416-174-1535

Ser Nos. 1530FKL12, 1535FKL12 and 1539FKL12

.1 Cleaning..... See 1.
.2 Exterior Surfaces..... See 2.35
.3 Electric motor..... See 2.12
.4 Wiring and switches..... See 2.13
.5 Belts and pulleys..... See 2.2
.6 Hose and fittings..... See 2.17
.7 Lubricating and cooling systems, gears, bearings, sliding surfaces, openings and accessories..... See 2.23
.8 Name plates..... See 2.24
.9 Packing..... See 4.1

5.1.11 Oven, Bake, (Viking V-10-434) SNS No. 7310-275-6180

Ser Nos. 151-375, 151-392, 151-397, 851-5193 and 851-5203

.1 Cleaning..... See 1.
.2 Electric motor..... See 2.12
.3 Burner..... See 2.5
.4 Interiors and racks..... See 2.1
.5 Fire box, Flue pipe and canopy..... See 2.9
.6 Packing..... See 4.1

5.1.12 Public Address System, SNS No. 5830-501-4724

Ser Nos. 7, 8, and 9

.1 Unit packaging..... See 2.27
.2 Packing..... See 4.3

5.1.13 Pump, Centrifugal, 350 GPM, SNS No. 4320-273-8574

USN Nos. 52-02175, 52-0158, 52-02172, 52-02182 and 52-02183

.1 Cleaning..... See 1.
.2 Exterior surfaces..... See 2.35
.3 Gasoline engine..... See 2.14.1
.4 Engine accessories..... See 2.14.4
.5 Gages..... See 2.19
.6 Gears..... See 2.16
.7 Pump ..... See 2.28.1
.8 Name plates..... See 2.24
.9 Packing..... See 4.1

5.1.14 Pump, Diaphragm, 3000 GPH, SNS No. 4320-132-5382

USN Nos. 52-01537, 52-01577, 52-01578, 52-01580 and 52-01582

.1 Cleaning..... See 1.
.2 Exterior surfaces..... See 2.35
.3 Gasoline engine..... See 2.14.2
.4 Engine accessories..... See 2.14.4
.5 Gears..... See 2.16
.6 Pump ..... See 2.28.3
.7 Name plates..... See 2.24
.8 Packing..... See 4.1

5.1.15 Refrigeration Unit (675-6800) SNS No. 4110-287-3184

Ser Nos. WR7-5654, WR7-4623, WR7-5726, WR7-6052
WR7-6248

.1 Cleaning..... See 1.
.2 Exterior surfaces..... See 2.35
.3 Electric motor..... See 2.12
.4 Wiring and switches..... See 2.13
.5 Gages..... See 2.19
.6 Belts and pulleys..... See 2.2
.7 Pump..... See 2.28.2
.8 Cooling coils..... See 2.29.1
.9 Refrigerant compressor..... See 2.29.2
.10 Refrigerant condensor..... See 2.29.3
.11 Evaporator..... See 2.29.4
.12 Controls..... See 2.29.5
.13 Name plates..... See 2.24
.14 Packing..... See 4.1

5.1.16 Refrigerator Panels for 6800 C.F. Unit (Crate #3)
SNS No. 4110-287-3179

5 crates each containing 8 panels and 2 floor racks
.1 Cleaning..... See 1.
.2 Refrigerator panels..... See 2.30
.3 Packing..... See 4.1

5.1.17 Saw, Radial, 16 inch, SNS No. Y140-S-1365-200

Ser Nos. 96782, 96785, and 96790

.1 Cleaning..... See 1.
.2 Exterior surfaces..... See 2.35
.3 Electric motor..... See 2.12
.4 Wiring and switches..... See 2.13
.5 Machined surfaces..... See 2.23
.6 Packing..... See 4.1

5.1.18 Searchlight, 60 inch, GE Power Plant, SNS No. 6230-160-0142

Ser Nos. 4693, 4910, 6246, 6335 and 6479

.1 Cleaning..... See 1.
.2 Exterior surfaces..... See 2.35
.3 Generator..... See 2.12
.4 Wiring and switches..... See 2.13

.5 Gages..... See 2.19
.6 Gasoline engine..... See 2.14.1
.7 Engine accessories..... See 2.14.4
.8 Binoculars, binocular mount, director and pedestal..... See 2.32
.9 Wheel bearings..... See 2.40
.10 Tires..... See 2.38
.11 Name plates..... See 2.24
.12 Packing (Director, binocular, binocular mount and pedestal). See 4.1
.13 Packing (Cables) ..... See 4.2

5.1.19 Slicer, Meat, Hobart Model 411, SNS No. 7320-222-417

Ser Nos. 1032627, 1032643 and 1032645

.1 Preservation and unit packaging... See 2.34
.2 Packaging..... See 4.2

5.1.20 Switchboard, 50 Line, Stromberg Carlson, SNS No. 5805-501-4725

Ser Nos. 37, 54 and 65

.1 Unit packaging..... See 2.36
.2 Packing..... See 4.1

5.1.21 Tank, Canvas, 3000 Gals. SNS No. 5430-222-1923

5 Tanks (No serial numbers)

.1 Packaging..... See 2.6
.2 Packing..... See 4.2

5.1.22 Telephone System, 13 Unit, Dictograph SNS No. 5805-501-4726

3 Telephone systems (No serial numbers)

.1 Unit packaging..... See 2.37
.2 Packing..... See 4.2

5.1.23 Tires, 8.25x20, 10 ply, 1954

Ser Nos. 851EN52, 494EN52, 510EN52, 511EN52 and 589EN52

.1 Cleaning and preservation..... See 2.38

5.1.24 Transfer Units, 302, SMS No. 3655-245-0073

5 Units (No serial numbers)

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Electric motor.....See 2.12
.4 Belts and pulleys.....See 2.2
.5 Pump.....See 2.28.1
.6 Hose and fittings.....See 2.17
.7 Packing.....See 4.3

5.1.25 Transit, Surveyors, SMS No. YZ18-T-3311-750

Ser Nos. 129406, 129408 and 129409

.1 Unit packaging.....See 2.39
.2 Packing (Transit).....See 4.2
.3 Packing (Tripod).....See 4.2

5.1.26 Truck, Dump, 2-1/2 Ton, 6 x 6, SMS No. 2320-835-8595

USN Nos. 96-10739, 96-10745, 96-10748, 96-10752 and 96-10767

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Gasoline engines.....See 2.14.1
.4 Engine accessories.....See 2.14.4
.5 Instruments and Instrument panels....See 2.19
.6 Gears.....See 2.16
.7 Clutches.....See 2.8
.8 Brakes.....See 2.4
.9 Hydraulic systems (Except hydraulic brake systems).....See 2.18
.10 Locks, keys and key openings.....See 2.21
.11 Mechanical controls.....See 2.10
.12 Wire rope and winches.....See 2.31
.13 Seats and back cushions.....See 2.33
.14 Lamp assemblies.....See 2.20
.15 Openings and crevices subject to holding moisture.....See 2.26
.16 Windshield and doors.....See 2.41
.17 Wheel bearings.....See 2.40
.18 Tires.....See 2.38
.19 Lubrication.....See 2.22
.20 Name plates.....See 2.24

5.1.27 Truck, Jeep. 1/4 Ton; 4 x 4, SNS No. 2320-835-8317

USN Nos. 94-05453, 94-05471, 94-05476, 94-05477 and 94-07288

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Gasoline engines.....See 2.14.1
.4 Engine accessories.....See 2.14.4
.5 Instruments and instrument panels.....See 2.19
.6 Gears.....See 2.16
.7 Clutches.....See 2.8
.8 Brakes.....See 2.4
.9 Locks, keys and key openings.....See 2.21
.10 Mechanical controls.....See 2.11
.11 Wire rope and winches.....See 2.31
.12 Seats and back cushions.....See 2.33
.13 Lamp assemblies.....See 2.20
.14 Openings and crevices subject to holding moisture.....See 2.26
.15 Windshields.....See 2.41
.16 Wheel bearings.....See 2.40
.17 Tires.....See 2.38
.18 Lubrication.....See 2.22
.19 Name plates.....See 2.24

5.1.28 Washing Machines, SNS No. 3510-240-6552

Ser Nos. 3129, 3109, 3113, 3121 and 3133

.1 Cleaning.....See 1.
.2 Electric motor.....See 2.12
.3 Wiring and switches.....See 2.13
.4 Gages.....See 2.19
.5 Belts and pulleys.....See 2.2
.6 Galvanized surfaces.....See 2.35.2
.7 Wringer.....See 2.43
.8 Packing.....See 4.1

5.1.29 Welder, Arc, GED, Trailer, SNS No. 3432-224-7722

USN Nos. 51-70979, 51-70964, 51-70978, 51-70986 and 51-70990

.1 Cleaning.....See 1.
.2 Exterior surfaces.....See 2.35
.3 Generator.....See 2.12
.4 Wiring and switches.....See 2.13
.5 Gages.....See 2.19
.6 Gasoline engine.....See 2.14.1

.7 Engine accessories.....See 2.14.4
.8 Wheel bearings.....See 2.40
.9 Tires.....See 2.38
.10 Name plates.....See 2.24
.11 Packing.....See 4.1

5.2 Domestic Preparation

5.2.1 Boilers, Vertical, 180,000, BTU, SNS No. 4520-184-3708

Ser. Nos. 0-9514, 0-9467, 0-9472, 0-9481 and 0-0484

.1 Preservation and sealing.....See 3.1
.2 Burner.....See 3.2
.3 Packing (boiler).....See 4.2
.4 Packing (burner).....See 4.5

5.2.2 Chemical Warfare Detector Kits, SNS No. 6665-160-0123

3 Units, No serial numbers

.1 Unit packaging.....See 3.2
.2 Packing.....See 4.2

5.2.3 Compressor Sets, 30 CFM, SNS No. 4310-160-0089

Ser. Nos. 113560, 111162, 113570, 113578 and 113629

.1 Preservation and sealing..... See 3.1
.2 Packing..... See 4.5

5.2.4 Distillation Units, 83 GPH, SNS No. 4620-185-0857

Ser. Nos. 2228, 1150, 1953, 1997 and 1998

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.5

5.2.5 Drill Presses, 18" Swing, SNS No. 3413-160-0001

Ser. Nos. 1717, 1722 and 1723

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.7

5.2.6 Fans, Exhaust, 4900 CFM, SNS No. YS66-F-70020-50

Ser. Nos. 78414, 78418 and 78419

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.2

5.2.7 Floodlight Trailers, Mobile, SNS No. 6230-283-9760

USN Nos. 51-03696, 51-02692, 51-02699 and 51-02775 and 51-0698

.1 Preservation and sealing.....See 3.1

Note: No packing required

5.2.8 Generator Sets, 30KW, DE, SNS No. 6115-295-0973

USN Nos. 51-00548, 51-00533, 51-00539, 51-00542 and 51-00550

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.5

5.2.9 Heaters, Oil Fired, 50,000 BTU, SNS No. 4520-200-0647

Ser Nos. F172081, F435666, F435706, F435762 and F435805

.1 Packing.....See 4.7

Note: Shroud Serial Number F172081 (Slab storage) with Type E-2 waterproof barrier-material

5.2.10 Lathes, Floor Model, 14-1/2" Swing, SNS No. 3416-174-1535

Ser Nos. 1490FKL12, 1521FKL12 and 1528FKL12

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.7

5.2.11 Ovens, Bake, (Viking V-10-434), SNS No. 7310-275-6180

Ser Nos. 151-411, 1051-6231, 1051-6314, 1051-6322 and 1151-6498

.1 Packing.....See 4.7

Note: Shroud Serial Number 151-411 (slab storage) with Type E-2 waterproof barrier-material

5.2.12 Public Address Systems, SMS No. 5830-501-4724

Ser Nos. 4, 5 and 6

.1 Unit packaging.....See 3.2
.2 Packing.....See 4.6

5.2.13 Pumps, Centrifugal, 350 GPM, SMS No. 4320-273-8574

USN Nos. 52-01014, 52-01016, 52-02120, 52-02140 and 52-02153

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.5

5.2.14 Pumps, Diaphragm, 3000 GPH, SMS No. 4320-132-5382

USN Nos. 52-01535, 52-01533, 52-01534, 52-01536 and 52-01575

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.5

5.2.15 Refrigeration Units (675-6800) SMS No. 4110-287-3184

Ser Nos. WH7-7303, WH7-6330, WH7-6401, WH7-6462 and WH7-7247

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.5

5.2.16 Refrigerator Panels for 6800 C. F. Units, (Crate #3) SMS No. 4110-287-3179

5 Crates, each containing 8 panels and 2 floor racks

.1 Packing.....See 4.5

5.2.17 Saws, Radial, 16 inch, SMS No. NL 40-5-1365-200

Ser Nos. 96776, 96778 and 96780

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.7

5.2.18 Searchlights, 60-inch, GE Power Plant, SNS No. 6230-160-0142

Ser Nos. 4572, 4493, 4532, 4695 and 4903

.1 Preservation and sealing.....See 3.1
.2 Unit packaging (binoculars, binocular mount, director and pedestal).....See 3.2
.3 Packing (binoculars, binocular mount director and pedestal.....See 4.7
.4 Packing (cables).....See 4.2

5.2.19 Slicers, Meat, Hobart Model 411, SNS No. 7320-222-417

Ser Nos. 1032615, 1032621 and 1032625

.1 Unit packaging.....See 3.2
.2 Packing.....See 4.2

5.2.20 Switchboard, 50 Line, Stromberg Carlson, SNS No. 5805-501-4725

Ser Nos. 1, 18 and 30

.1 Unit packaging.....See 3.2
.2 Packing.....See 4.7

5.2.21 Tanks, Canvas, 3000 Gals, SNS No. 5430-222-1923

5 Tanks, no serial numbers

.1 Packing.....See 4.2

5.2.22 Telephone Systems, 13 Unit, Dictograph, SNS No. 5805-501-4725

3 Telephon systems, no serial numbers

.1 Unit packaging.....See 3.2
.2 Packing.....See 4.2

5.2.23 Tires, 3x25x200, 10 ply, 1954

Ser Nos. 262E052, 150E452, 199E452, 201E052 and 362E452

Note: No preservation of packing required.

5.2.24 Transfer Units, CO2, SNS No. 3655-245-0073

5 Units, no serial numbers

.1 Preservation and sealing.....See 3.1
.2 Packing.....See 4.6

5.2.25 Transits, Surveyors, SNS No. YZ18-T-3311-750

Ser Nos. 129393, 129397 and 129401

.1 Unit packaging.....See 3.2
.2 Packing.....See 4.2

5.2.26 Trucks, Dump, 2-1/2 Ton, 6x6, SNS No. 2320-835-8595

USN No. 96-10722, 96-10702, 96-10714, 96-10736 and 96-10740

.1 Preservation and sealing.....See 3.1

5.2.27 Trucks, Jeep, 1/4 ton, 4x4, SNS No. 2320-835-8317

USN Nos. 94-05450, 94-05460, 94-05463, 94-05466 and 94-05469

.1 Preservation and sealing.....See 3.1

5.2.28 Washing Machines, SNS No. 3510-240-6552

Ser Nos. 3128, 2988, 2996, 2957, and 3067

.1 Packing.....See 4.7

Note: Shroud Serial Number 3128 (slab storage) with Type E-2 waterproof barrier-material.

5.2.29 Welders, Arc, GED, Trailer, SNS No. 3432-224-7722

USN Nos. 51-70994, 51-70991, 51-70992, 51-70995 and 51-71004

.1 Preservation and sealing.....See 3.1

Note: No packing required

6. STORAGE METHODS

6.1 Open Slab Storage

Description	Contact Preservation	Domestic Preparation
Boiler, vertical, 180,000 BTU	Ser. No. 0-9521	Ser. No. 0-9514
Compressor Set, 30 CFM	Ser. No. 113615	Ser. No. 113560
Distillation Unit, 83 GPH	Ser. No. 2199	Ser. No. 2228
Floodlight Trailer Mobile	USN No. 51-02779	USN No. 51-03696
Generator Set, 30 KW, diesel	USN No. 51-00776	USN No. 51-00548
Heater, oil fired, 50,000 BTU	Ser. No. F435755	Ser. No. F172081
Oven, bake, (Viking V-10-434)	Ser. No. 151-375	Ser. No. 151-411
Pump, centrifugal, 350 GPM	USN No. 52-02175	USN No. 52-02140
Pump, diaphragm, 3000 GPH	USN No. 52-01537	USN No. 52-01535
Refrigeration Unit (675-6800)	Ser. No. WH7-5654	Ser. No. WH7-7303
Refrigeration panels for 6200 unit (Pkg 3)	1 unit	1 unit
Searchlight, 60", GE Power Plant	Ser. No. 4693	Ser. No. 4572
Tank, canvas 3000 gals	1 unit	1 unit
Tires, 8.25x20, 10 ply	Ser. No. 851E352	Ser. No. 262E652

Slab Storage (continued)

Transfer units, CO2	1 unit	1 unit
Truck, dump, 2-1/2-ton, 6x6	USN No. 96-10739	USN No. 96-10722
Truck, jeep, 1/4-ton, 4x4	USN No. 94-05453	USN No. 94-05450
Washing Machine, Prosperity	Ser. No. 3129	Ser. No. 3128
Welder, Arc, GED, Trailer, 300 amp	USN No. 51-70979	USN No. 51-70994

6.2 Shed Storage

Description	Contact Preservation	Domestic Preparation
Boiler, vertical, 180,000 BTU	Ser. No. 0-9496	Ser. No. 0-9467
Compressor sets 30 CFM	Ser. No. 113692	Ser. No. 111162
Distillation Unit, 83 GPH	Ser. No. 1999	Ser. No. 1150
Floodlight Trailer, Mobile	USN No. 51-02777	USN No. 51-02692
Generator Set, 30 KW, diesel	USN No. 51-00554	USN No. 51-00533
Heater, oil fired, 50,000 BTU	Ser. No. F435808	Ser. No. F435666
Oven, bake (Viking V-10-434)	Ser. No. 151-392	Ser. No. 1051-6231
Pump, centrifugal, 350 GPM	USN No. 52-02158	USN No. 52-01014
Pump, diaphragm 3000 GPH	USN No. 52-01577	USN No. 52-01533

Refrigeration Unit (675-6800)	Ser. No. WR7-4623	Ser. No. WR7-6330
Refrigerator Panels for 6800 unit (Pkg 3)	1 unit	1 unit
Searchlight, 60", GE Power Plant	Ser. No. 4910	Ser. No. 4493
Tank, canvas 3000 gals	1 unit	1 unit
Tires, 8.25x20, 10 ply	Ser. No. 494EM52	Ser. No. 150EA52
Transfer units (675-6800)	1 unit	1 unit
Truck, dump, 2-1/2-ton, 6x6	USN No. 96-10745	USN No. 96-10702
Truck, jeep, 1/2-ton 4x4	USN No. 94-05471	USN No. 94-05460
Washing Machine, Prosperity	Ser. No. 3109	Ser. No. 2957
Welder, Arc, GED Trailer 300 Amp	USN No. 51-70964	USN No. 51-70991

6.3 Normal Atmosphere Warehouse Storage

Description	Contact Preservation	Domestic Preparation
Boiler, vertical, 180,000 BTU	Ser. No. 0-9509	Ser. No. 0-9472
Chemical Warfare Detector Kit	1 unit	1 unit
Compressor Set 30 CFM	Ser. No. 113826	Ser. No. 113570
Distillation Unit, 83 GPH	Ser. No. 2082	Ser. No. 1953

6.3 Normal Atmosphere Warehouse Storage (continued)

Drill Press, 18" Swing	Ser. No. 1726	Ser. No. 1717
Fan, exhaust 4900 CFM	Ser. No. 78427	Ser. No. 78414
Floodlight Trailer, Mobile	USN No. 51-02778	USN No. 51-02698
Generator Set, 30 KW, diesel	USN No. 51-01108	USN No. 51-00539
Heater, oil fired, 50,000 BTU	Ser. No. F435883	Ser. No. F435706
Lathe, Floor model 14-1/2" swing	Ser. No. 1530FK112	Ser. No. 1490FK112
Oven, bake (Viking V-10-434)	Ser. No. 151-397	Ser. No. 1051-6314
Public Address System	Ser. No. 7	Ser. No. 4
Pump, centrifugal, 350 GPM	USN No. 52-02172	USN No. 52-01016
Pump, diaphragm, 3000 GPH	USN No. 52-01578	USN No. 52-01534
Refrigeration Unit (675-6800)	Ser. No. WH7-5726	Ser. No. WH7-6401
Refrigeration Panels for 6800 unit (Pkg 3)	1 unit	1 unit
Saw, Radial 16"	Ser. No. 96782	Ser. No. 96776
Searchlight, 60", GE Power Plant	Ser. No. 6246	Ser. No. 4532
Slicer, Meat, Hobart Mod 411	Ser. No. 1032627	Ser. No. 1032615
Switchboard, 50 line Stromberg Carlson	Ser. No. 37	Ser. No. 1

Tank, canvas 3000 gals	1 unit	1 unit
Telephone System 13 Unit Dictograph	1 unit	1 unit
Tires, 8.25x20 10 ply	Ser. No. 510EM52	Ser. No. 199EA62
Transfer Units, CO2	1 unit	1 unit
Transit, Surveyors	Ser. No. 129406	Ser. No. 129393
Truck, Dump, 2-1/2 ton 6x6	USN No. 96-10748	USN No. 96-10714
Truck, Jeep, 1/4-ton 4x4	USN No. 94-05453	USN No. 94-05463
Washing Machine, Prosperity	Ser. No. 3113	Ser. No. 2988
Welder, Arc, GED, Trailer, 300 Amp	USN No. 51-70978	USN No. 51-70992

6.4 50% R/H Atmosphere D/H Warehouse Storage

Description	Contact Preservation	Domestic Preparation
Boiler, vertical, 180,000 BTU	Ser. No. 0-9516	Ser. No. 0-0481
Chemical Warfare Detector Kit	1 unit	1 unit
Compressor Jet, 30 CFM	Ser. No. 113847	Ser. No. 113578
Distillation Unit, 83 GPH	Ser. No. 2198	Ser. No. 1997
Drill Press, 18" Swing	Ser. No. 1733	Ser. No. 1722
Fan, exhaust, 4900 CFM	Ser. No. 78435	Ser. No. 78418

50% R/H Atmosphere D/H Warehouse Storage (continued)

Floodlight Trailer, Mobile	USN No. 51-02780	USN No. 51-02699
Generator Set, 30 KW, diesel	USN No. 51-01114	USN No. 51-00542
Heater, oil fired, 50,000 BTU	Ser. No. F435838.	Ser. No. F435762
Lathe, Floor Model, 14-1/2" swing	Ser. No. 1535FKL12	Ser. No. 1521FKL12
Oven, bake, (Viking V-10-434)	Ser. No. 851-5193	Ser. No. 1051-6322
Public Address System	Ser. No. 8	Ser. No. 5
Pump, centrifugal, 350 GPM	USN No. 52-02182	USN No. 52-02120
Pump, diaphragm, 3000 GPH	USN No. 52-01580	USN No. 52-01536
Refrigeration Unit (675-6800)	Ser. No. WR7-6052	Ser. No. WR7-6462
Refrigeration Panels for 6800 units (Pkg 3)	1 unit	1 unit
Saw, Radial 16"	Ser. No. 96785	Ser. No. 96778
Searchlight, 60", GE Power Plant	Ser. No. 6335	Ser. No. 4695
Slicer, Meat Hobart Mod 411	Ser. No. 1032543	Ser. No. 1032521
Switchboard, 50 line Stromberg-Carlson	Ser. No. 54	Ser. No. 18
Tank, Canvas, 3000 gals	1 unit	1 unit
Telephone system, 13 unit Dictograph	1 unit	1 unit

50% R/H Atmosphere D/H Warehouse Storage (continued)

Tires, 8.25x20, 10 ply, 1954	Ser. No. 511[illegible]52	Ser. No. 201[illegible]52
Transfer Units CO2	1 unit	1 unit
Transit, Surveyors	Ser. No. 129408	Ser. No. 129397
Truck, Dump, 2-1/2 ton, 6x6	USN No. 96-10752	USN No. 96-10736
Truck, Jeep, 1/4 ton, 4x4	USN No. 94-05477	USN No. 94-05466
Washing Machine Prosperity	Ser. No. 3121	Ser. No. 2996
Welder, Arc, GED, trailer, 300 Amp	USN No. 51-70986	USN No. 51-70995

6.5 40% R/H Atmosphere D/H Warehouse Storage

Description	Contact Preservation	Domestic Preparation
Boiler, vertical, 180,000 BTU	Ser. No. 0-9525	Ser. No. 0-9484
Chemical Warfare Detector Kit	1 unit	1 unit
Compressor Set, 30 CFM	Ser. No. 114499	Ser. No. 113629
Distillation Unit 83 GPH	Ser. No. 2229	Ser. No. 1998
Drill Press, 18" Swing	Ser. No. 1740	Ser. No. 1723
Fan, exhaust 4900 CFM	Ser. No. 78439	Ser. No. 78419
Floodlight Trailer Mobile	USN No. 51-03697	USN No. 51-02775

40% R/H Atmosphere D/H Warehouse Storage (continued)

Generator Set, 30 KW, diesel	USN No. 51-01120	USN No. 51-00550
Heater, oil fired, 50,000 BTU	Ser. No. F77041	Ser. No. F43805
Lathe, floor model, 14-1/2" swing	Ser. No. 1539FKL12	Ser. No. 1528FKL12
Oven, bake, (Viking V-10-434)	Ser. No. 851-5203	Ser. No. 1151-6498
Public Address System	Ser. No. 9	Ser. No. 6
Pump, centrifugal, 350 GPM	USN No. 52-02183	USN No. 52-02153
Pump, diaphragm, 3000 GPH	USN No. 52-01582	USN No. 52-01575
Refrigeration Unit (675-6800)	Ser. No. WR7-6248	Ser. No. WR7-7247
Refrigerator Panels for 6800 unit (Pkg #3)	1 unit	1 unit
Saw, Radial 16"	Ser. No. 96790	Ser. No. 96780
Searchlight, 60", GE Power Plant	Ser. No. 6479	Ser. No. 4903
Slicer, Meat, Hobart Mod 411	Ser. No. 1032645	Ser. No. 1032625
Switchboard, 50 line Stromberg-Carlson	Ser. No. 65	Ser. No. 30
Tank, Canvas, 3000 gals	1 unit	1 unit
Telephone System, 13 unit Dictograph	1 unit	1 unit
Tires, 8.25x20, 10 ply	589EN52	362EN52
Transfer Units CO2	1 unit	1 unit

40% R/H Atmosphere D/H Warehouse Storage (continued)

Transit, Surveyors	Ser. No. 129409	Ser. No. 129401
Truck, dump, 2-1/2 ton 6x6	USN No. 96-10767	USN No. 96-10740
Truck, jeep, 1/4 ton 4x4	USN No. 94-07288	USN No. 94-05469
Washing Machine, Prosperity	Ser. No. 3133	Ser. No. 3067
Welder, Arc, GED Trailer, 300 Amp	USN No. 51-70990	USN No. 51-71004