TUNISIA POLICE
AUTOMOTIVE REPAIR FACILITIES
SURVEY REPORT

Conducted Nov. 4 - Dec. 5, 1968

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SECTION I

PREFACE

This study of the Tunisian Police automotive repair facilities was predicated upon a request (TUNIS 7009) from the USAID Mission to Tunisia for AID/W assistance to the GOT Police in organizing, establishing management controls and developing shop equipment requirements. This involved assistance to the Central Police Automotive Workshop (5th echelon) in Tunis, two 3rd echelon shops (Sfax and Jendouba) and ten 2nd echelon shops.

The study was conducted during the period of November 4 to December 4, 1968, by Charles Molfetto, Technical Services Division, Office of Public Safety, Agency for International Development. It required a detailed review of the GOT Police plans for the development of the recently authorized Central Automotive Workshop in Tunis. Since this installation is in the state of development and it will be the principal automotive repair facility, the major efforts by the writer were focused on this activity.

Outside of Tunis there are two 3rd echelon shops and ten 2nd echelon shops. The police advise that the facilities and equipment are similar for the two 3rd echelon shops and that the ten 2nd echelon shops have similar facilities and equipment.

Inasmuch as Mr. Bennett had inspected the 3rd echelon shop in Jendouba and four 2nd echelon shops, the writer inspected the 3rd echelon shop in Sfax and two 2nd echelon shops at Sousse and Gabes, not previously visited by Mr. Bennett. The 2nd shops inspected are considered to be typical of the other eight 2nd echelon shops.

This study could not have been completed in the 30-day period had not the writer been extended complete cooperation by the Tunisian Police personnel at all levels. On many occasions, the police willingly worked well past their normal work hours to conclude the work on hand. The Commandant for the Garde Nationale (Acting Deputy Director of Police), Major Sabbagh, found time from his busy schedule to meet on four occasions with this advisor. He instructed his staff to make full use of this advisor's services. Accordingly, the advisor shared the office with the Motor Transportation Officer who is responsible for all Police automotive repair facilities.

Assistance and guidance provided by Mission personnel, and, in particular, Mr. Donald Bennett and Mr. Leonard Kornfeld who closely followed the progress of this study, is gratefully acknowledged.

SECTION II

A. SUMMARY FINDINGS AND CONCLUSIONS

The establishment of the Central Automotive Workshop was only recently authorized; therefore, the repair operations at the location are confusing and effectiveness is minimum. The newly assigned Motor Transportation Officer (also, Chief of the Central Workshop) is able to get a limited amount of work done at the installation due mainly to his managerial skills. All existing buildings at the workshop complex require some modifications before the operations can move into their permanent locations. It is estimated that it will take six to eight months before all necessary construction modifications are completed and the shop operations settle down permitting a higher volume and quality of work output. With minimum additional building construction authorized, modifications of the existing buildings, input of minimum tools and equipment and the experienced mechanics now on hand, the Central Workshop will develop into an efficient operation. However, there is a requirement for additional key personnel such as an administrative officer, an inspector and a Quality Control Officer. The newly appointed Motor Transportation Officer is energetic, has imagination and the will to execute plans.

He is a graduate of Saint Cyr (French West Point) and Fort Lee, Virginia. With the Tunisian Army he instructed in automotive repairs for two years and has always been closely associated with automotive repair facilities in his assignment as P.O.L. Officer. His managerial skills developed as a Captain in the Tunisian Army will be an asset in the improvement of the Police automotive repair facilities.

The 2nd echelon shops have a minimum of tools and equipment; however, they are sufficient to meet their limited repair responsibilities. Some of the tools require replacement. The shops are efficiently operated and good records are maintained on the vehicles under their jurisdiction. In most locations in which a police shop is located, there are several other GOT independent workshops belonging to other Ministries. The logical economical approach to the problem of automotive repair would be to have one workshop servicing all government vehicles. Under the current arrangement, the Police are equipped and staffed to operate their own workshops.

The facilities of the 3rd echelon workshops are small and inadequate for the number of vehicles they support. In Sfax, the writer inspected the new location into which the shop is to move in the near future. The new location is sufficient to establish an efficient operation with a minimum input of

of new tools and equipment. The new location is being made available through an arrangement allegedly concluded by the Police and the Governor of Sfax. The arrangements call for the merger of the governateur and police workshops. Should this merger materialize, it will be one of the first steps in economy which might well be applied throughout the country and by other ministries.

The Police have good regulations on the care and utilization of vehicles. From what the writer has observed, it appears that the drivers and mechanics know the regulations regarding proper care for the vehicles. The vehicles are given preventative maintenance and are regularly lubricated. However, with the creation of the new position of Motor Transportation Officer, the regulations should be reviewed and brought up to date.

The police automotive fleet currently consisting of 1,280 vehicles is in a deplorable state. Approximately 68 percent of the fleet is over five years old and uneconomical to repair. The writer has seen vehicles over ten years old and wear, being completely rebuilt. This is a drain on the Police budget. A tentative plan and specifications for the replacement of 651 vehicles has been presented to the Mission.

The Police mechanics have the capability to care for and repair vehicles that may be provided through USAID assistance.

B. SUMMARY OF RECOMMENDATIONS

1. All existing buildings at the Central Workshop must be modified to make maximum use of space available and to segregate operations.
2. A shop layout for each activity is required.
3. Responsibility for each shop and activity at the workshop complex should be set forth.
4. The GOT Police need to establish an improved chain of command at the Central Workshop as well as between the MTO and the other echelon shops.
5. A cost accounting records system needs to be set up for each vehicle.
6. Useful parts should be cannibalized from old broken down vehicles and the vehicles disposed of.
7. There should be a general clean-up of the yard surrounding the shops and many old pieces of junk laying around should be disposed of.
8. The workshop complex needs to be secured by a wire fence or wall to keep out unauthorized personnel.
9. When the planned construction and clean-up has been completed a USAID automotive maintenance/management specialist should be assigned to Tunisia for a minimum of 60 days TDY to assist in further implementation of the reorganization plan. However, if USAID is to provide additional

vehicle support in any significant quantities, it is recommended that a Public Safety advisor be assigned for a two year period. The development of necessary management controls, reorganization of the 3rd echelon shops and training of mechanic personnel are continuing efforts which can not be accomplished in a period less than two years.

SECTION III

A. INTRODUCTION

Per instructions contained in OPS-69-0014, the writer was authorized to travel from Washington to Tunis, Tunisia o/a November 1, 1968, for a period not to exceed thirty (30) days TDY. The TDY and assessments were completed on December 4, 1968.

The purpose of the TDY was to assist the GOT Police in establishing, organizing and recommending tools and equipment for the major automotive repair facility (5th echelon) in Tunis, two 3rd echelon shops and ten 2nd echelon shops located in the 12 Governateurs. Although not specified in the writer's travel authorization, he was also required to develop vehicle specifications and cost estimates for possible USAID contribution to replace a portion of the current Police automotive fleet.

During the period covered by this study, the writer focused his major efforts to assist the Police in the development of the Central Automotive Workshop (5th echelon) located in Tunis. He also travelled to Sousse and Gabes to inspect the automotive repair shops which are considered to be typical of other eight 2nd echelon shops. The 3rd shop at Sfax was also inspected during this TDY.

Inasmuch as the 2nd echelon automotive repair shops outside of Tunis have limited tools, personnel, have limited servicing functions and had been previously visited by Mr. Bennett, it was felt that inspection of sample shops as indicated above, not previously inspected by Mr. Bennett, would serve to determine necessary action to be taken for all the shops.

B. FINDINGS AND RECOMMENDATIONS RELATIVE TO:

1. Police Automotive Fleet. The current police automotive fleet contains 1,280 vehicles consisting of 24 different makes. Approximately 68 percent of the fleet is over five years old and have been driven an average of 150,000 miles. These vehicles represent an economic drain to the GOT as they require continuous repairs. Some of the old battered vehicles have been completely rebuilt, a greater cost to GOT than the cost of a new vehicle. However, such high costs are necessary because of shortage of foreign currency.

The police advises that it has completed a Table of Equipment for vehicle requirement. Based on this table of equipment, a total of 1,356 vehicles, excluding 304 motorcycles, will be required for full mobility. The police plans to standardize on European manufactured small sedans and motorcycles. The four cylinder small sedans are economical

to operate and appropriate for use in the narrow city streets found in Tunisia. Standardization on German manufactured BMW motorcycles is based on the fact that the Police fleet contains only this make.

The Police has submitted to USAID a tentative proposal for assistance in the replacement of their overaged vehicles in the categories other than those mentioned above. The replacement program will cover a four year period, and cost approximately two million dollars (see Exhibit I). To assist the police in developing this plan, the writer provided the necessary specifications and cost estimates (FOB, New York) to suit police requirements (see Exhibit II).

The major problem confronted by the police in maintaining and repairing their current fleet is created by the many different makes and models of vehicles in use. In replacing their vehicles, it is recommended that the police standardize on one make for each category. This would reduce the current 24 different makes in use to about 7 different makes. A standardization plan for vehicles to be provided with A.I.D. funds should be developed and submitted to AID/W for approval.

2. Management of Police Automotive Fleet. The care and use of police vehicles are set forth in police regulations which have been disseminated to all commands. The regulations detail

the driver and officer responsibilities for the proper care and utilization of vehicles. Observations made by the writer indicate that interested police personnel know the regulations and comply with them. In addition, the regulations specify the limitation of repairs to be performed at the various echelon shops.

To improve the management of the police automotive fleet and repair shops, a new position has been created, Motor Transportation Officer (MTO). This officer is responsible for developing and enforcing policies concerning care and utilization of police owned vehicles, and operations of all automotive repair facilities. Through receipt of monthly activity reports submitted by the Chief of Police from each Governateur and periodic inspection, the MTO will be able to exercise necessary controls to ensure optimum performance of the police fleet.

Although the regulations are adequate and do provide some guidelines for good management of police vehicles, they should be reviewed and updated to include (1) improved reporting system by responsible police officers - monthly reports on which utilization of vehicles and workshop repair activity, to include costing data, should be submitted to the Motor Transportation Officer (MTO); (2) periodic retesting of drivers; (3) acknowledgment of most efficient driver; (4) responsibilities and

functions of the newly created position of the MTO relative to police vehicles and repair facilities; (5) establish cost accounting system for operating and repairing of vehicles, this data is essential to determine when a vehicle is uneconomical to retain in the fleet; and (6) develop a separate accounting system and method of billing for repairs performed on vehicles not belonging to police.

3. Automotive Repair Facilities. The purpose of this TDY was to assist the GOT Police in establishing, organizing and equipping 13 existing automotive repair shops. A fifth echelon shop is located in Tunis, one 3rd echelon shop in Sfax and in Jendouba and one 2nd echelon shop in each of the other 10 Governateurs (see Exhibit III). All shops are operating effectively with the exception of the 5th echelon shop which is in the state of development.

The following are detailed analysis, findings and recommendations relative to each class of repair facility:

a. Central Automotive Workshop (5th Echelon)

(1) SHOP COMPLEX

This facility was recently authorized by the GOT and mergers separate and independent repair shops originally operated by the Garde Nationale and Public Surete into a 5th echelon

shop. A military officer with the rank of captain has been detailed to the Police and assigned as Chief of the workshop complex. He is also the Motor Transportation Officer responsible for all police vehicles and other repair installations.

The Central Automotive Workshop is located at Caserma Bou Choucha, a police compound. The shop area covers 24,600 square meters and contains eight separate buildings (see Exhibit IV). It is an excellent location for a workshop because of the proximity to Tunis (3 kilometers from the center of the city) which serves as a source for skilled mechanics, procurement of parts and supplies and training facilities to upgrade the mechanic personnel. In addition, the shop area is secured by a security wall and guards provided by the police units stationed at Caserma Bou Choucha.

Currently the shop complex is littered with debris, wrecked and cannibalized vehicles. The grounds and buildings are in poor condition. However, this situation is understandable inasmuch as the complex has only recently been released to the police. During the period covered by this study some progress was noted in removing the debris and improving the grounds.

Although the workshop complex is in a state of development, automotive repairs and allied trades (painting and body and fender) are being performed. These operations are conducted

in temporary buildings not suited for efficient operations. There is an average daily backlog of 25 trucks and 28 sedans awaiting repairs. This situation will improve when various activities move into their permanent locations.

The following are recommendations to improve the shops complex area:

(a) Remove all debris.

(b) Improve grounds - level the shop area, improve drainage system, and asphalt the area to minimize the effects of the frequent wind storms.

(c) Relocate the gasoline dispenser from the center of the workshop area. It is suggested that it be located outside the complex near the entrance.

(d) Although the shop complex is secured to keep out unauthorized civilians, it requires a security fence to keep out unauthorized police personnel.

(e) Fire fighting system - install water outlet in all buildings and organize and train fire details.

(f) Establish a visitors car park area separated from shop complex.

(2) <u>ORGANIZATIONAL STRUCTURE AND FUNCTIONAL RESPONSIBILITY (Exhibit V)</u>

The organizational structure recommended for the Central Automotive Workshop complex provides lineal control

by the Chief of the workshop over the various activities. The administrative staff used in the execution of these controls is also used for controlling operations of other echelon automotive repair workshops.

Under the composition of this organization, the following are the recommended functional responsibilities to be assigned.

(a) Chief of Central Automotive Workshop Complex

He is responsible for the administration and operation of the workshop, procurement and storage of repair parts. He advises the Director of Police, through the Material Services Officer (G-4), on all matters pertaining to assignment and utilization of vehicles, including the preparation of the budget for transportation and repair facilities requirements; establishes and monitors a safety program and security of the area; reports to Director of Police on the adequacy of the repair facilities and equipment and tools; directs administrative functions to ensure that accurate records are maintained and proper reports are submitted to higher police echelon; and delegates duties to assigned personnel. He should conduct frequent inspection of the facility to assist him in evaluating the operations. Such inspections are helpful in determining the following:

(1) If number of personnel assigned to an activity is adequate, their qualifications and utilization of personnel.

(2) Adequacy of work space, equipment, tools and repair parts.

(3) Effectiveness of security and safety programs.

(4) Insure that repairs are being performed at minimum cost to GOT through proper utilization of manpower and equipment.

The Chief of the Central Automotive Workshop is also the Motor Transportation Officer. As the MTO, he has the same responsibilities, indicated above, for the other repair facilities operated by the police. These responsibilities are delegated to the Chief of Police in the Governateurs. However, he should make personal periodic inspections of these facilities to provide technical guidance to improve operations.

(b) Administrative Section

This section is responsible for the normal office services and administrative operations to include security of the office and its contents; receiving and distribution of incoming mail, preparing correspondence and submitting of routine and any special reports that may be required; maintains files on correspondence, police directives relative to transportation matters and a reference library. In addition, this section reviews and processes personnel records including personnel actions, leaves and time records.

It coordinates safety and security activities at the installation; reviews all reports received from other repair facilities and ensures that proper entries are inserted in the pertinent file jackets and other central records; maintains cost accounting records for each vehicle and repair shop; prepares data relative to transportation requirements for inclusion in the Police annual budget. In the absence of the Chief of the Central Automotive Workshop, he will be responsible for the operation at Caserma Bouchoucha.

(c) Supply Section

The supply section is responsible for servicing all automotive repair workshops with repair parts that may be required. It is responsible for establishing and operating the supply warehouse to include identifying, segregating, storing, issuing and recording repair parts, tools and equipment; maintains a stock record account and when stocks reach a minimum level, it recommends new procurements.

(d) Inspection Section

This section is responsible for examining all vehicles reporting to the workshop for repairs and outgoing vehicles to ensure that repairs requested have been performed and that the vehicles are in sound condition. In addition, will inspect

all automotive components submitted by the other repair shops to determine repairs required. A member of this staff will serve on a committee to verify that repair parts, tools and equipment procured conform to the specifications on the purchase order and that the price paid is reasonable.

(e) Automotive Repair Shops

The shops are responsible for performing up to 4th echelon repairs on all vehicles; maintain control boards of vehicles under repair; submits daily activity reports and other special reports to the Chief of the workshop complex, and maintains cost accounting records of repairs performed.

(f) Motorcycle Shop

The shop is responsible for performing up to 4th echelon repairs on motorcycles with the same controls and reporting responsibilities indicated above, Automotive Repair Shops.

(g) Reclamation Shop

This is one of the most essential activities at the Central Automotive Workshop Complex. It is responsible to receiving and rehabilitating "like new" all salvageable automotive engines, components and parts; maintains records of work performed including cost accounting.

(h) Body and Fender Shop

In addition to performing normal body and fender work, this shop is responsible for all metal work that may be required by the automotive repair shops, e.g. frame hoists, work benches, stationary vehicle stands, etc.

(i) Canvas and Upholstery Shop

This shop manufactures and fits canvas tops and upholsters interior of vehicles. Also, manufactures camouflaged police uniforms.

(j) Paint Shop

This shop is responsible for preparing and painting police vehicles.

(k) Carpenter Shop

This shop is responsible for performing all woodwork that may be required on vehicles as requested by the repair facilities. In addition, it manufactures work benches, shelves, cabinets, etc. that may be required by the automotive repair facilities.

(l) Lubrication and Service Station

This activity is responsible for servicing all police vehicles assigned to the Governateur of Tunis as well as vehicles completing major repairs.

(3) FLOW OF WORK AT THE CENTRAL AUTOMOTIVE WORKSHOP

An organizational chart is of little value unless supported by a Flow Chart (See Exhibit VI). The following are explanatory remarks relative to the flow of work:

(a) A driver reports to the Central Automotive Workshop with a duly signed request from the responsible officer for repairs to be performed on the vehicle.

(b) The vehicle is received by the inspector, examined and tested to determine the repair action required. To assist in this operation, the inspector has a check list of items to be checked.

(c) At the conclusion of the inspection, he completes a work order request describing the deficiencies in the vehicles, with estimated time to complete the repairs.

(d) If it is a repair of a minor nature or quick repair (e.g. repair of tire, quick charge of battery or adjustment of lights, etc.) the vehicle is sent with the driver to the quick repair section which is segregated from the shop complex. This minimizes the number of unauthorized personnel within the workshop complex.

(e) On repairs other than quick repairs, the vehicle is tagged with a numbered card (4" x 4") and placed on the inside of the windshield with the red color facing the outside.

The red color designates that vehicle is to be repaired. When the repairs have been completed, the card is turned to reflect the green color on the other face of the card.

(f) All removable items such as tools, spare tire, and cigarette lighters are removed from the vehicle, identified and placed in storage located near the Inspector's Office. A receipt is given to the driver for the vehicle and removable accessories.

(g) The vehicle is placed in the waiting pool and the work order request is submitted to the Administrative Office for approval, entry of necessary data on the central board, vehicle jacket and submission of a request to Supply for parts if indicated on the inspector's reports.

(h) The pertinent shop (or shops if more than one repair operation is involved) is given the approved work order request. Based on the backlog of workload that a shop has (determined from the control board and/or the non-availability of parts at that time) the Chief of the Central Workshop or his representative will determine which shop will be given the first repair action.

(i) Upon receipt of the work order by the shop foreman, he should make proper entries on his control board. His shop must complete the repair operations within the period estimated by the Inspector. If the work is not completed

within the specified period, the shop foreman should indicate on the work order the reasons for the delay. The shop foreman should also indicate on the work order the parts and supplies used in the repairs, costs, and man-hours involved.

(j) The salvageable parts which have been replaced should be sent to the Reclamation shop with a copy of the transmittal form to the Supply Section. However, parts or components which can not be rebuilt should be disposed of in accordance with GOT regulations.

(k) When the parts and/or components have been rehabilitated by the Reclamation Shop, they are delivered to the Supply Section to be included in the inventory for reissuance.

(l) Upon completion of all repairs, the vehicle and the work order reflecting work performed are released to the Inspector for final inspection.

(m) If the inspector finds the repair work performed by the Shops to be satisfactory and the vehicle to be in sound condition, he will recommend to the Chief of Workshop the release of the vehicle to the using police unit. The vehicle is placed in the waiting pool until retrieved by the end-user.

(n) The inspector signs the authorized work order, indicating approval of work performed, and submits it to the Administrative Officer to make proper entry in vehicle jacket and control records.

(o) Upon authorization from the Chief of the Central Workshop, the vehicle and accessories are released to the authorized personnel after proper identification is made.

(4) ANALYSIS OF THE WORKSHOPS ACTIVITIES

(a) Automotive Repairs. (See Exhibit VII) - Automotive repairs are to be performed in two separate buildings connected by a common spare parts and tool room. It would have been more practical to have had all automotive operations under one roof; however, it would be an unnecessary cost to the GOT for the construction of a new building. The use of two separate buildings connected by a common tool and parts room is a feasible solution.

1 - The larger building to accommodate 19 vehicles has been assigned to repair light vehicles (sedans, jeeps). The larger shop area for the light vehicles is necessary in that this category of vehicle requires frequent repairs due to the constant use.

The shop personnel currently assigned this shop consist of:

11 Mechanics

21 Assistant Mechanics

2 Electricians

6 Mechanic Apprentices

1 Shop Foreman

The current personnel level assigned to this operation is adequate and no changes are recommended.

The following is the tools and equipment status:

Description	On-Hand Quantity	Condition	Recommended
Tool Set 88 pcs. (American)	-	-	6
Tool Set (60 pcs.)(Metric)	12	Fair	1
Vise Bench	13 ea.	10 poor	9
Bench Grinder, 1 HP	1 ea.	Poor	1
Bench Grinder 1/2 HP	1 ea.	Fair	1
Volkswagon Engine Stand	3 ea.	Good	--
Wrench Impact	-	-	1
Service Jack (1½ T)	2 ea.	Good	--
Hydraulic Press (30 ton)	1 ea.	Good	--
Special Tools (500 pcs)	1 set	Good	--
Wear & Oil Leak Detection	-	-	1
Battery Hydrometer	-	-	1
Volt-Ammeter	-	-	1
Screw Drive Spreader	-	-	1
Tester -AVR-Combustion Dwell-Tack, Ignition	-	-	1
Headlight Tester	1	Good	--
Engine Tune-up Set	-	-	1
Starter-Generator Tester	-	-	1

Description	On-Hand Quantity	Condition	Recommended
Alternator-Generator Tester	-	-	1
Battery Cell Tester	-	-	1
Soldering Iron Gun w/3 tips	-	-	2
Flaring Tool	-	-	1
Fuel Pump Tester	-	-	1
Carburetor Jet Wrench	-	-	1
Coil Condensor Tester	-	-	1
Spark Plug Tester & Cleaner	-	-	1
Master Mechanic Tool Set	-	-	1
Hoist	1	-	-
Clutch Aligner Set	-	-	1
Tools (electrician) set	-	-	1
Flexible Tool Drive	-	-	1
Torqometer	-	-	1
Wrench Adjustable Set	-	-	1
Drill Press	1	Poor	1
Wrench, Hex Head	-	-	1
Chisel and Punch Set	-	-	1
Plier, Interlocking	-	-	1
Plier, Bent Needlenose	-	-	1
Screw Driver Spark Test	-	-	1
Press Hydraulic	1	Good	-
Wrench Vise Grip	1	Poor	1
Press Arbor	-	-	1
Bolt Clipper	-	-	1
Anvil	1	Good	-

The building in which this activity is to be located is currently being used for the truck automotive repairs and for a motor reclamation operations. Both activities will move into other buildings when construction and modification of existing buildings are completed. The one end of the building (six meters wide and 20 meters long) is walled off. This area will be used to establish a battery, a tire and quick repair shops. The building has electricity; however, water pipes should be installed for fire fighting.

Conclusion: When the shop is established and with the minimum input of new tools and equipment, it should meet police requirements.

2- The smaller building is currently under construction and estimated to be completed in about 45 days. This building will be able to accommodate up to 12 heavy vehicles (2½ ton trucks and buses).

The shop personnel currently assigned to this shop consists of:

1 Shop Foreman

10 Mechanics

12 Assistant Mechanics

The following is the tool and equipment status:

Description	Quantity	Condition	Recommended
Hand Tool (60) Set (Metric)	9 sets	Fair	1
Hand Tool (88) Set (American)	-	-	4
Wear and Oil Detection	-	-	1
Vise Bench	10 ea.	5 poor	7
Hoist with Frame	1 ea.	Good	-
Service Jack	2 ea.	Good	-
Transmission Jack	-	-	1
Puller Set Complete	1 ea.	Good	-
Special Tools	300 pcs.	Good	-
Wrench Impact	-	-	1
Fuel Pump and Pressure Ga.	-	-	1
Armature Tester	-	-	1
Carburetor Wrench	-	-	1
Hoist, H.C. Rigger Type	1	Poor	1
Tool (Electrician) Set	1 set	Poor	1
Drill press w/drills	1	Poor	1
Tool Flexible Drive	-	-	1
Rachet Wrench H.D.	-	-	1
Wrench, pipe, (set)	-	-	1
Wrench Adjustable Set	-	-	1
Wrench, Hex Head	-	-	1

Description	On-Hand Quantity	On-Hand Condition	Recommended
Chisel and Punch Set	2	Poor	1
Plier Interlocking	-	-	1
Screw Driver Spark Plug Tester	-	-	2
Plier, Bent Needle Nose	-	-	1
Wrench, Vise Grip	1	Poor	1
Battery Hydrometer	-	-	1
Bolt Clipper	-	-	1
Hydraulic Press, 30 ton	-	-	1
Arbor Press 1 ton	-	-	1
Spark plug tester and cleaner	-	-	1
Grinder Bench (1 HP)	1	Poor	1
Grinder Bench (½ HP)	1	Poor	-
Starter - Generator Tester	-	-	1
Alternator-Generator Tester	-	-	1
Screw Driver Spreader	-	-	1
Battery Cell Tester	-	-	1
Volt-Ammeter	-	-	1
Soldering Gun w/3 tips	1	Poor	1
Commutator Turning Tool	-	-	1
Flaring Tool	-	-	1
Soldering Iron	-	-	1

Conclusion: The personnel assigned to this operation are qualified mechanics. The average years of experience for the mechanics is over ten years. They have the capability of repairing any type of gasoline powered vehicle.

Recommendations for the Automotive Shops

(1) Although the shop personnel are qualified mechanics, very few have had any theoretical mechanical training. It is suggested that a training course be implemented for all personnel. Guidance as to a curriculum has been provided to the Chief of the workshop complex. Also, key mechanical personnel should be enrolled in the Ariani Trade School evening courses for mechanics. The younger mechanics should be selected for this training.

(2) Although the hand tools are old, the poor condition is partly due to poor utilization. It is recommended that the personnel be trained in the care and proper utilization of hand tools. This training should also be made available to the mechanics in the other echelon shops.

(3) It is recommended that the construction of the common tool and spare parts room connecting the two automotive shop buildings be given high priority. The automotive shops will not be able to function with any degree of efficiency

without this facility. The tool room common to both shops will eliminate duplication of special tools, reduce tool room personnel requirement and provide easy access for both shop personnel.

(4) Start the construction of shelves, parts bins and tool boards to be installed in the tool and parts room.

(b) Motorcycle Shop. (Exhibit VIII) - The Police have 304 motorcycles of German manufacture in their fleet and no other make. They plan to standardize on the German BMW motorcycle. This shop is staffed with a working shop supervisor, 8 mechanics and 6 assistant mechanics. Currently, the repairs of motorcycles are being performed in two separate temporary locations. The building in which this activity will be housed requires modification and general repairs in accordance with the layout proposed in Exhibit VIII.

The shop has sufficient tools on hand; however, many pieces require replacements. Since such tools are only available from foreign sources, no input of tools through USAID assistance is recommended.

The following shop equipment is recommended:

Description	On-Hand Quantity	Condition	Recommended
Grinder Bench (1/2 HP)	1	Poor	1
Special Tools (90 pcs)	1	Fair	-
Soldering Iron	-	-	1
Vise Bench	1	-	2
Tool Set (50 pcs)	6	Fair	-

Conclusion: The mechanic personnel have an average of ten years experience in motorcycle repairs. Most of the motorcycles in the police fleet are old and have been driven over 90,000 miles. The fact that these vehicles are still operational is indicative of the mechanics' capabilities.

(c) Lubrication and Service. (Exhibit VIII) - This activity is located in a covered enclosed area, in the center of the workshop complex. It is a well planned operation permitting maximum utilization of space, personnel and equipment. Three vehicles can be lubricated at one time in all types of weather. This activity is staffed with a working supervisor, and three servicemen. The equipment on-hand consists of a 10 HP compressor, grease and oil dispensers, one hydraulic lift, one 15 meter ramp, wheel alignment equipment, headlight awner, wheel balancer and small hand tools. The tools and equipment

on hand are adequate for level and type of work performed. In addition, there is an open wash rack to accommodate 2 vehicles. The drainage system for this activity is good as evidenced by the comparative dryness of the area.

The operation is efficient; however, the servicing personnel should be given instructions on additional servicing operations required on 12 month lubrication period. The Chief of the Workshop has been provided with lubrication operations required for 4 month and 12 month periods.

(d) Paint Shop. (See Exhibit IX) - This shop is currently operating in a covered open area large enough to paint one small European sedan at any one time. The larger vehicles are painted in the open. The proposed shop facility will provide sufficient enclosed area to paint large vehicles including buses. Also, one enclosed area leading from the painting room is provided for preparing vehicles to be painted and drying after being painted. The drying area is essential in that only slow drying paint is available in Tunisia.

The staff currently consists of one working supervisor, 7 painters and assistant painters and 2 apprentices. The painters and assistants also serve to prepare vehicles for painting and for polishing.

The following is the equipment status of the shop:

Description	Quantity	Condition	Recommended
Sander	1	Fair	2
Polisher & Bonnets	-	-	1
Spray Gun	3	Good	-
Spray Gun (touch up)	1	Good	-
Drying Lamps (set) (drying paint)	1	Good	-
Supply of Compressed air	-	Available	-
Respirators	6	Good	4
Paint Spray Hoods w/glass	-	-	3
Vise, Bench	1	Poor	1

Conclusion: The personnel assigned to this shop have had several years experience in painting vehicles. From the type of work performed, as observed by the writer, they are well qualified. The new proposed shop will increase their work out and eliminate the necessity of drying the painted vehicle in the open not appropriate because of the dust and sand in the area.

(e) Carpenter Shop. (See Exhibit IX) - This operation is currently non-existent at the facility. If any wood work is to be performed on a vehicle (e.g. bench, flooring, sides) a

request is submitted to Police Headquarters. The wood work is performed by the police at their central workshop located about 15 kilometers from this facility. This procedure is time consuming and frequently the end product does not meet the specifications. The following is an illustration of the inefficiencies created by the current procedures:

The workshop had completed the mechanical repairs on a vehicle; however, the vehicle could not be released to the end user for another three weeks because the wooden slats for benches requested to be made at the time the vehicle arrived at the shop, had not been delivered.

The carpenter shop is to be staffed by a carpenter and an assistant. To equip this operation, a minimum of equipment is recommended:

Description	Recommended
Vise, Woodwork	1
Chisel Set	1
Wood leveler	1
Saw, electric, wood	1
Wood planer, hand	1
Saw, bayonet, wood	1
Wood planer, electric	1
Tool set (27 pcs)	1
Carving Tool set	1
Drill electric	1
Bits (set)	1
Bits, augur	1

Conclusion: The establishment of this operation will reduce deadline time for vehicles requiring wood work. The shop will also perform necessary wood work for the shop complex as needed.

(f) Canvas and Upholstery Shop. (See Exhibit IX) This operation is currently operating in two separate temporary locations. A combined operation is planned which will result in improved operation. This shop is charged with manufacturing canvas for vehicles, upholstering interior of vehicles and manufacturing camouflaged cloth uniforms.

When the shop is established in the planned new location, it will be staffed by a working supervisor, 2 cutters, 8 sewing machine operators and fitters. The area will be large enough to work on 2 small vehicles at one time with ample space for the operating staff and storage facilities.

The following is the equipment status of this shop:

Description	On-Hand Quantity	Condition
Shears	3	Good
Sewing Machines	8	Good
Designing and Cutting Table	1	Good
Electric Drill	1	Good

Conclusion: No commodity assistance is required for this operation. Although the work quality is good, the work output will improve through better supervision of personnel when the operation is relocated in one work area.

(g) Body and Fender Shop. (Exhibit IX) - This is one of the most active shops at the workshop complex. Because of the narrow streets in Tunisia, the rate of damage to police vehicles is high. In addition, the police small sedans are old and are normally parked in the open areas resulting in rapid deterioration of the body of the vehicles.

Currently the repair operations are performed in a conjested small area in which no more than three small vehicles can be worked on at one time. The shop is staffed with one working supervisor, three welders, four body and fender repairmen, two sheet metal operators, one forge operator, three general operators and ten apprentices. In the same shop the repair of radiators is performed. Two men are employed on this operation. Because of shortage of space, most of the body and fender work is performed in the open.

The planned shop area will provide space to repair nine vehicles at any one time, also adequate space for the sheet metal operation, forge work and radiator repairs.

The tool and equipment status of the shop is as follows:

Description	On-Hand Quantity	Condition	Recommended
Acetylene Manifold	5	Good	-
Acetylene Regulator	5	Good	-
Electric Welder	2	Good	-
Welding Goggles	3	Good	7
Angle Cutter	1	Good	
Miscellaneous Tools (95 pcs)	1	Fair	
Anvil	1	Good	-
Forge	1	Good	-
Wrench Impact	-	-	1
Sander	1	Fair	1
Spot Welder	-	-	1
Grinder, Bench (1HP)	1	Poor	1
Grinder, Bench (½HP)	-	-	1
Tool Set	-	-	2
Soldering gun & bits	-	-	1
Tap and Dies	-	-	2
Hack Saw, Power	-	-	1
Body Jack	2	Poor	1
Electric Drill (¼")	1	Poor	1
Electric Drill (½")	1	Poor	1
Sandblaster	-	-	1
Soldering Iron	-	-	1
Blow Torch	2	Poor	2
Wrench Pipe (set)	-	-	1
Wrench, adjust	-	-	1
Wrench, Hex Head	-	-	1
Chisel & Punch	-	-	1

Description	On-Hand Quantity	Condition	Recommended
Metal Cutter	1	Good	-
Shear, electric	-	-	1
Drill Press, Floor	1	Good	-
Service Jack (1½ ton)	-	-	1
Vise, Bench	4	Fair	5
Creepers	-	-	2
Body Reconditioning Tools	2	Poor	2
Goggles Safety	-	-	4
Rivet Gun, Hand	-	-	1
Body file	-	-	4
Radiator Work Stand	1	Poor	1
Press Arbor	1	Poor	1
Spot Welder	1	Poor	1
Helmet, Welding	-	-	4
Metal bending machine	-	-	1
Thread chaser	-	-	4

Conclusion: The skilled personnel have had an average of six years experience in body and fender work. The quality of work performed, as observed by the writer, is fair. However, when the planned shop is established and additional equipment is provided, both the quality and quantity of work output will increase.

(h) Reclamation Shop. (Exhibit IX) - This operation is the key to saving the GOT foreign currency and also providing improved service for spare parts to the other echelon shops. The most pressing problem in the repair of vehicles is the non-availability of required repair parts on the local market, which are imported items. In view of this situation, it is essential that the parts and components be rehabilitated or manufactured even though the actual costs may be higher than the imported items.

Currently the reclamation operation is functioning in a conjested area with minimum work force and tools. The reclamation functions are limited to rehabilitating engines, transmissions and clutch assemblies. All other reclamation work is farmed out to commercial enterprises at a great cost to the Police. Due to the lack of proper testing equipment, the rebuilt engines are assembled in vehicles without adequate testing. Frequently this results in a quick breakdown of the engine.

The tools and equipment status of the shop is as follows:

Description	On-Hand Quantity	Condition	Recommended
Lathe	2	Good	-
Knurler Utility	-	-	2
Boring Tool Clamp	-	--	2
Shaper, Bench	2	Good	-
Milling Machine	1	Good	-

Description	On-Hand Quantity	Condition	Recommended
Alternator Generator Tester	-	-	1
Commutator Turning Tool	-	-	1
Mica Undercutter & Tools and Blades	-	-	1
Arbor press	-	-	1
Armature Growler	-	-	1
Remove and Replace Diodes	-	-	1
Soldering gun	-	-	2
Soldering Iron and Tips	-	-	1
Drafting Equipment (Set)	-	-	1
Tools for Lathe (set)	1	Poor	2
Vise bench	4	Good	5
Armature Tester	1	Poor	1
Alternator-Generator Regulator Starter Tester	-	-	1
Dynometer and 8 adaptors	-	-	1
Coil Condenser Tester	-	-	1
Flaring Tool	-	-	1
Hack Saw Power	-	-	1
Alternator Service Set	-	-	1
Cam Shaft Bearing Puller	-	-	1
Crank Shaft Grinder (Excess Property)	-	-	1
Hoist, H.D. Rigger type	1	Poor	1
Drill press, floor	1	Fair	1

Description	On-Hand Quantity	Condition	Recommended
Tool Set (electrician	-	-	1
Tool, Master Set	-	-	1
Tool Set (88 pcs) American	-	-	2
Brake Drum Lathe	-	-	1
Hydraulic press (30 ton)	1	Good	-
Transmission Repair Stand	-	-	1
Brake Riveter	-	-	1
Parts Cleaner	-	-	1
Wrench impact	-	-	1
Bench Grinder (1HP)	1	Poor	1
Bench Grinder (½HP)	-	-	1
Valve Refacer	1	Poor	1
Grinder Lathe	1	Good	-
Battery Hydrometer	-	-	1
Volt-Ammeter	-	-	1
Screw driver spreader	-	-	1
Crane, portable	-	-	1
Engine test stand	3	Good	1
Drill Electric	-	-	1
Cylinder Hone Set	-	-	1
Cylinder Hone	-	-	1
Engine Tune Up Set	-	-	1
Starter-Generator Tester	-	-	1

Description	On-Hand Quantity	Condition	Recommended
Fuel pump & pressure gauge	-	-	1
Carburetor jet wrench	-	-	1
Tool flexible drive	-	-	1
Rachet wrench, H.D.	-	-	1
Torqometer	-	-	1
Wrench, pipe (set)	-	-	1
Wrench adjustable (set)	-	-	1
Wrench, Hex Head	-	-	1
Chisel and punch set	-	-	1
Plier interlocking	-	-	1
Screwdriver spark test	-	-	4
Wrench grip vise	-	-	1
Tool holder	-	-	8
Turning tool holder	-	-	6
Knurling tool	-	-	1

Currently the reclamation shop is staffed with nine mechanics and assistants to rehabilitate engines, four mechanics to rehabilitate transmissions and clutch assembly. Their work quality has not been adjudicated inasmuch as the completed work has not been tested. The output is averaged at two engines and three clutch and transmission assembly per week.

When the planned shop is completed, staffed and equipped, it will have the capability of rebuilding all components, e.g. carburetors, engines, generators, alternators, etc. This will

be a great savings to the GOT by not depending on commercial sources for rebuilding operations and also time saving. Based on the current and foreseeable future workload, it is estimated that the staff must be increased and should consist of the following:

(1) Inspector or Quality Control - He should be an expert mechanic able to advise mechanics, machinists, assemblers and electricians assigned to the reclamation shop. He should be able to examine parts and determine compliance with specifications. Also, he will order required parts from Supply and ensure that all parts for the assembly are complete before releasing the work to the assemblers.

(2) Sixteen (16) assemblers - This group will be responsible for tearing down and reassembling complete engines, clutch assemblies and transmissions.

(3) Two (2) lathe machinists to repair and manufacture some parts.

(4) Three (3) machinists to perform valve grinding and refacing, repairing brake drums.

(5) Two (2) operators for the repair of smaller components, e.g. carburetors.

(6) One electrician and two assistants for the testing, adjusting and repair of all electrical automotive components.

(i) Battery, Quick Repairs and Tire Shops. (Exhibit VII)

These shops are segregated from the shop complex in order to minimize and control movement of non-shop personnel. To provide adequate work area for these operations, it is recommended that an area of square meters in front of the shops be asphalted and covered by a roof made of gulvanized tin. The following is an analysis and recommendation for each activity:

(1) Battery Shop - to be staffed by one mechanic and an assistant who will be responsible for replacing batteries, charging and minor repairs. The following are recommended tools and equipment to be provided to this operation:

Description	Quantity
Battery charger	1
Hydrometer	1
Battery Cell Tester	1
Battery Service Kit	1
Battery Terminal Lifter	1

Construction of work benches, storage area for batteries and supplies, and battery charging area.

(2) Quick Repairs Shop - to be staffed by one mechanic to perform quick minor repairs. He will have access to mechanics and tools assigned to the automotive work shop if assistance is required. The following tools will be required:

Description	Quantity
Tool Set (88 pcs)	1
Service Jack (1½ T)	1

(3) Tire Repair Shop - to be staffed by one mechanic and one assistant to change and repair tires. The following is the tools and equipment status:

Description	On-Hand Quantity	Condition	Recommended
Vulcanizer, hot patch	2	Good	-
Air pressure	-	Available	-
Tire Tool Service (set)	-	-	1
Tire Spreader	-	-	1
Inflator gauge	-	-	1
Tire bead remover	-	-	1

(j) Supply Warehouse (Exhibit X) - Recently the Police provided a building measuring 18 M x 20 M, to establish an automotive parts warehouse. This activity will procure, store and service all police automotive repair facilities in Tunisia including the major repair facility at Caserma Bou Chouche with repair

parts and equipment that may be required. The building is located on the periphery of the central workshop complex; however, within three minutes walking distance from any of the shop activities.

In establishing the warehouse, the following recommendations are submitted for guidance:

(1) A receiving, inspecting and dispatching area is to be screened off with a security fence. All incoming shipments are to be inspected in this area before storing. The inspection and receiving report is to be submitted to the stock clerk for inclusion of data on stock card. Outgoing shipments to repair facilities are to be checked in this area and data reported to clerk.

(2) Heavy components, e.g. engines, transmissions and clutch assemblies are to be stored close to receiving and dispatching area to minimize movement of heavy components.

(3) Construction of shelves and bins (.5 m x 5 m x 13 m)

(4) Install a tin of lighting fixtures to provide adequate light.

(5) Construction of counter service area and office space.

(6) To establish the tools for the management of the parts warehouse, it is recommended that arrangements be made

with Montaney, Inc., Dodge representative in Tunis, to train key police personnel. Observations made by the writer indicate that this firm operates an efficient automotive parts warehouse. It uses a good locator system, minimum and maximum stock levels, as well as a good cost accounting system.

(k) Administrative Activities (Exhibit XI) - The administrative staff assigned to the Chief of the Workshop also assists him in the administration of the other 12 repair facilities in Tunisia. Since the records for all repairs will be centralized, the staff required to maintain these records should be as follows:

(1) Administrative Officer

(2) Personnel Officer

(3) Two Senior Clerks (Analysists)

(4) Ten (10) Clerk-Typists

The buildings in which the staff is to be housed require extensive construction modifications to conform with the recommended layout.

SUMMARY OF RECOMMENDATIONS FOR THE CENTRAL AUTOMOTIVE WORKSHOP

(a) Remove all debris.

(b) Dispose of non-salvageable vehicles, parts and components.

(c) Hire a qualified administrative officer, inspector and a quality control expert to perform duties recommended under paragraph d above.

(d) Install water pipelines into all buildings and organize fire details.

(e) Construct common tool and supply room connecting the automotive repair workshops.

(f) Complete construction of the truck automotive workshop.

(g) Transfer the automotive repair operations into permanent locations.

(h) Modify construction of building to be used as a Parts Warehouse in accordance with paragraph j, above, and Exhibit X.

(i) Modify the building to house the reclamation shop, canvas, body and fender paint and carpenter shop in accordance with Exhibit IX.

(j) Repair building to be used as motorcycle shop (Exhibit VIII).

(k) Complete and modify construction of administrative building (Exhibit XI).

(l) Pave the general area.

(m) Security fence around the complex.

(n) Four laborers are required for general maintenance and repair of the shop complex.

It is imperative that the Police give the construction work listed above a high priority. If construction efforts are focused on this project, the shop complex could be fully operational in four to six months; otherwise, it will take more than a year before some degree of organization can be established.

SUMMARY OF RECOMMENDATIONS FOR MANAGEMENT CONTROLS

(a) Establish jackets on all vehicles which should be reviewed periodically.

(b) Review and revise the current police regulation governing the care, utilization and repairs of police owned vehicles.

(c) Establish files on tools and equipment provided to all repair facility.

(d) Develop costing data on repairs performed - to be included in jackets.

(e) Establish control boards for each workshop.

(f) The Motor Transportation Officer (Chief of Workshop) should retain a control board covering activities of all workshops in Tunisia.

(g) Improve activity reporting system by all workshops to include costing data.

(h) It was originally recommended that at such a time that all construction (5th echelon shop) was completed and shop activities moved into their permanent location, a TDY for a period of 60 days of a Public Safety technician would be required to implement the recommendation set forth in this report. However, only a minimum can be accomplished during this short period. Inasmuch as the establishment of management controls is a continuous process, the relocation and reorganization of the two 3rd echelon workshops will require several months efforts and the additional vehicle support which may be provided by A.I.D. over a four year period, it is recommended that a Public Safety Advisor Logistics/Vehicle maintenance be assigned for a period of not less than 2 years.

(i) Three month on-the-job training in the United States is recommended for the Chief of the 5th echelon workshop at the Aberdeen Proving Grounds in Maryland and at the Public Works Automotive Repair Center in Richmond, Virginia. The training is to cover management of workshops with emphasis on cost accounting. The latter installation is recommended because it services and repairs vehicles belonging to other state agencies.

Conclusion:

The newly appointed Chief of the Central Automotive Workshop is a well qualified manager with a good background in automotive repair activities (6 months formal training, several years experience and two years as instructor). He is a military officer

with the rank of captain. His personal qualities as an energetic, driving, inquisitive individual complements his training and experience to ensure a successful conclusion of this operation. The one major negative aspect at the workshop complex is lack of discipline. The new Chief has the force and tact to overcome this situation. The Central Workshop complex with modification of existing buildings, organization and management controls recommended in this report will suffice to establish an efficient operation.

b. Third Echelon Shops

There are two 3rd echelon shops operated by the police. One is located at Jendouba to service the vehicles operating in the Algerian border area, and one shop at Sfax to render support to police vehicles in the Libyan border area. The installation at Sfax was visited in November, 1968.

Findings

1. The shop is currently located in the center of the city occupying the ground floor of a five floor Police Headquarter building. Only six small sedan type vehicles can be repaired at any one time. Trucks are repaired in the street since they can not fit into the shop area. The new shop location into which the police are expected to move in the near future was inspected. This new facility has ten work bays, storage and machine shops area. It also has a grease

and wash rack fully equipped with a compressor, lubrication equipment, special heavy duty tools for repair of construction equipment. The writer was advised that the new shop facility is being made available as a result of an agreement concluded between the Governor of Sfax and the Chief of Police to merge their automotive repair facilities. The police will operate the workshop and also repair vehicles belonging to the Governateur.

2. The shop is currently staffed with six mechanics, five assistant mechanics, one electrician and one clerk. When the shops are merged, the staff will be increased by three mechanics and 3 assistant mechanics and one electrician.

3. A daily log on repair performed is maintained; however, no file jackets are maintained on vehicles assigned to this shop for 3rd echelon repair support.

4. Does not maintain a control board to reflect vehicles under repairs to be repaired.

5. Monthly activity reports are submitted through the Chief of Police, to Material Services Officer in Tunis.

Description	On-Hand Quantity	Condition	Recommended
Hydraulic Press, 30 ton	1	Good	-
Hoist, Chain with Frame	1	Good	-
Drill Press, Floor	1	Good	-
Tire Tool Service Set	-	-	1
Vulcanizer, hot patch	1	Good	-
Tire Spreader (HD)	-	-	1
Grinder, Bench (1HP)	1	Poor	1
Grinder Bench (½HP)	-	-	1
Valve Refacer	1	Good	-
Volt ammeter	1	Poor	1
Drill, electric (¼")	-	-	1
Drill, electric (½")	1	Poor	1
Engine test stand	2	Good	-
Hydraulic Press (30 ton)	1	Good	-
Arbor press	-	-	1
Vise, bench	4	Poor	4
Compressor	1	Good	-
Service Jack	2	Good	-
Electric Welder	1	Good	-
Acetylene Welding	1	Good	-
Helmet, welding	-	-	1
Tool Set (60 pcs) (metric)	6	Fair	1
Tool Set (88 pcs-American)	-	-	2
Engine tune up set	-	-	1
Clutch Aligning Set	-	-	1

Description	On-Hand Quantity	Condition	Recommended
Special Tools 250 pcs.	1	Good	-
Lathe	1	Good	-
Anvil	1	Good	-
Wrench impact	-	-	1
Valve Grinder Seat	-	-	1
Soldering iron,3 tips	-	-	1
Soldering Gun	-	-	1
Wear and Leak Oil Detection	-	-	1
Spark plug tester	-	-	1
Battery Hydrometer	-	-	2
Coil Condenser Tester	-	-	1
Screwdriver Spreader	-	-	1
Starter Generator Tester	-	-	1
Alternator - Generator Tester	-	-	1
Battery Cell Tester	-	-	1
Remove and replace Diodes	-	-	1
Flaring Tool	-	-	1
Goggle welder	-	-	3
Alternator Service Set	-	-	1
Armature Tester	-	-	1
Fuel Pump Tester and Pressure ga.	-	-	1
Carburetor jet wrench	-	-	1
Tire bead remover	-	-	1
Blow Torch	-	-	1
Battery Service Kit	-	-	1

Description	On-Hand Quantity	Condition	Recommended
Inflator gauge	-	-	1
Wrench Adjustable	-	-	1
Tool Set (Electrician)	-	-	1
Flexible Tool Drive	-	-	1
Rachet Wrench HD	-	-	1
Torqometer	-	-	1
Wrench, pipe	-	-	1
Wrench, hex head	-	-	1
Chisel and Punch Set	-	-	1
Plier, interlocking	-	-	2
Plier, bent needlenose	-	-	1
Screw driver, spark plug tester	-	-	1
Wrench Vise Grip	-	-	1
Bolt Clipper	-	-	1

The following tools and equipment will be added to the police inventory when the governateur and police shops are consolidated.

Lubrication	1 set	Good.
Compressor (10 HP)	1	Good
Forge Equipment	1	Good
Pipe cutter, HD	1	Good
Vise Bench	5	2 Broken

Hoist	1	Good
Acetylene Welding Equipment	1	Good
Vulcanizer	1	Good
Special HD tools (400 pcs)		Fair

Recommendations

1. The transfer to the new location should be effected as soon as possible. The following actions should be taken at the new location.

(a) The center of the workshop area should be paved to minimize the sand problem.

(b) Rolling steel doors should be installed to close off the open bays.

(c) A wall should be constructed to separate the work shop area from the other governateur activity in the same location.

2. A control board is necessary for this echelon workshop. This should be displayed on the wall in the foreman's office. The board should reflect the following data on each vehicle in his custody:

(a) Serial number of vehicle

(b) Post vehicle assigned

(c) Date received in shop

(d) Repairs required

(e) Date expected to terminate repairs

(f) Date released to using unit, and

(g) Remarks - to indicate delays or difficulties encountered in repairs.

3. A file jacket on each vehicle should be maintained to reflect costs of repairs performed.

4. Monthly activity reports should be submitted by the shop foreman through the local chief of police to the MTO in Tunis. Such reports should include costing data for repairs performed on each vehicle (to include costs of parts, labor and overhead costs).

5. A detailed and separate accounting system will be necessary for repairs performed on Governateur vehicles. Invoices for repairs performed should be submitted to the Governor's Office for payment as soon as repairs are completed.

The other 3rd echelon shop at Jendouba was not visited by this advisor. The police advise and confirmed by Mr. Bennet who has visited this installation, that this shop is similar

in size and having same equipment and tools as found in the shop at Sfax. It is recommended that a new shop facility be provided having a minimum of 10 work bays, storage area and grease rack. The quantity and type of tools and equipment recommended for the shop in Sfax is applicable for the shop in Jendouba.

c. Second Echelon Shop

There are ten second echelon police shops to service and perform minor repairs on police vehicles operating in different areas. One workshop is assigned to a governateur. Inasmuch as time did not permit the writer to visit all these shops and the fact that the equipment needs are limited because of limited repair responsibility, he inspected the 2nd echelon shops at Gabes and Sousse on November 18 and 20, respectively. These shops are considered to be typical 2nd echelon police workshops. Therefore, the findings and recommendations made on these shops would be applicable to the others.

Findings

1. The shops are located in enclosed covered area having sufficient (3 to 4) work bays, wash and grease racks and work benches.

2. An average of one qualified mechanic and an apprentice are assigned to each facility.

3. The shop maintains records on all lubrications and repairs performed on the vehicles. Monthly activity reports, through the local chief of police, to the Material Services Officer in Tunis.

4. The shop retains a small stock of fast moving parts or makes purchases on the local market.

5. The tools and equipment on hand are limited. Hand tools consisting of hammer, wrenches, etc. are old and some pieces are worn out. The grease dispenser, compressor and battery chargers are old and have been repaired many times.

6. The shops maintain good records of repairs performed.

7. It has been observed that in some cases, repairs of higher echelon are performed. This practice can result in unnecessary damage to vehicles.

Conclusion

The 2nd echelon workshops are well kept and equipment and tools on hand are secured. It is felt that some tools are worn out because of lack in the care and use of tools. The shop personnel appear to be qualified mechanics. Input of limited new tools would be fully utilized and improve the work performance at these facilities.

RECOMMENDATIONS

1. Each of the ten second echelon shops should be provided with the following tools and equipment to replace or augment those on hand. The total cost for the second echelon shops is estimated to amount to $8,000.

Description	Quantity	Estimated Cost
Gauge, Inflator	1	$ 15
McMaster 54K 40 Tool set (88 pcs)	1	160
Snap-on 5088-GB-B Service Jack 1½ Ton	1	125
Brohead-Garrett Model GH Chain Hoist, 1 Ton Cap	1	55
Brohead-Garret Model "Billy Boy" Vise, Bench 4½" jaw	1	60
Brohead-Garret Model 45ON Grease Dispenser	1	17
McMaster 1032L1 Starter Generator Tester	1	4
McMaster 1380Y Alternator Regulator Tester	1	45
McMaster 1381X Compressor Portable, Complete, 220 Volts 50 cycles	1	190
TOTAL		$731

The equipment listed above should be procured on "or equal basis".

2. Monthly activity reports of repairs performed should include costing data. These reports are to be submitted, through the Chief of Police, to the MTO in Tunis.

3. The MTO should issue reminders to the lower echelon shops of limitations of repair work to be performed in their respective shops.

C. GENERAL COMMENTS

1. Based on limited observations made by the writer and information provided by the police, it appears that in every location where there is a police automotive workshop there are two or more other repair workshops operated by different GOT Ministries. This situation creates a financial drain on the GOT to support parallel automotive repair operations, e.g. the Minister of Agriculture operates 16 repair shops to repair mobile agricultural equipment. Most of these shops are located in same area in which the police operate workshops. Also, the Governateur administrative government have their own workshop. A feasible and practical solution would be to consolidate these separate repair operations into one workshop to repair all government owned vehicles. This would eliminate waste and reduce cost for repairs through full utilization of the facility.

2. In an effort to reduce costs to GOT for maintaining a large spare parts inventory for vehicles provided by USAID, the Mission concluded an agreement with the U.S. manufacturer's representative in Tunis that he would retain sufficient spare parts to meet police requirement. The GOT should make similar arrangements with other suppliers of vehicles.

3. All tools and equipment recommend for the various shops are to be procured on "or equal" basis. To assist the Police in developing detail specifications, the writer has identified each item by make and model, model number in addition to cost (see attachment "A"). It is important to remember that all electrically operated tools and equipment be specified to operate on 220 volts 50 cycle current. In addition, gauges be specified to read in kilograms or meters or a conversion table be provided.

The following catalogs have been used for identifying the equipment listed in this report:

a. Brodhead-Garrett - 1968 Catalog

b. Snap on tools - Catalog "Z"

c. McMaster-Carr - Catalog 73

d. Marquette Catalog

The catalogs listed above will be transmitted to USAID in order that Public Safety Advisor may assist the Police in developing the specifications.

TENTATIVE VEHICLE PROCUREMENT PROGRAM SUBMITTED BY THE GOT POLICE

The GOT Police recently completed a table of equipment covering their mobility requirements for the replacement expanded automotive fleet. The police advise that a total of 1356 vehicles of all types are required to meet their needs.

At a recent conference, Commandant Salem Sabbagh concurred with USAID's position that for economy and standardization the procurement of small sedans (Volkswagons) and motorcycles should be made through other sources than the United States. The aforementioned further advised that the GOT is currently discussing with the West German Government the procurement of Volkswagon sedans. He does not know, at this time, how many vehicles the Police will receive from this source.

The Police have requested USAID assistance in procuring a total of 651 vehicles with a 10% of cost overage for spare parts. The procurement is to be phased over a four year period. At the end of the fourth year, the old vehicles are expected to be completely replaced. Beginning with the sixth year and for each year thereafter 20% of the fleet is expected to be replaced. The life span of police vehicles is expected to average five years.

The proposed initial procurement is for 46% of the total requirement (300 vehicles) during the first year. This appears to be feasible inasmuch as 514 vehicles of the current fleet are considered to be too costly to repair and operate. During each of the three following years approximately 20% of the existing

EXHIBIT I

total requirement will be replaced.

The total cost for the assistance requested is estimated at $2,237,318 F.O.B. New York. In the first year, an expenditure of $940,720 (or 43% of the total) is requested. The expenditure for each of the three subsequent years is estimated to average $432,000.

Based on the present condition of the Police automotive fleet, the proposal submitted by the Police is a modest approach to resolving their transportation difficulties. If reduction in USAID funding from the amount requested for the first year is required, the two types of vehicles which may be reduced are station wagons for highway patrol operations and/or buses for the Presidential Honor Guard.

It was tentatively recommended that vehicles specified under paragraphs c through e and g below be equipped with diesel engines. This recommendation was based on police needs to reduce cost of operation (estimated cost of operating diesel powered vehicle is 50% less than gasoline) and information provided by U.S. manufacturers' representatives in Tunis that diesel engines were available for U.S. manufactured vehicles.

As a result of discussions with the U.S. automobile manufacturers' representative in Washington, D.C., the following information has been developed relative to diesel powered vehicles:

a. Kaiser Jeep International has discontinued manufacturing jeep, $\frac{1}{4}$ ton, powered with Perkins diesel engines. No other U.S. manufacturer provide this class of vehicles which is diesel powered.

b. Trucks in the 3/4 ton and 2 1/2 ton classes of U.S. manufacture are only equipped with gasoline engines.

Inasmuch as diesel operated vehicles of U.S. manufacture are not available, gasoline powered vehicles are recommended for procurement with A.I.D. funds. This eliminates the necessity of providing tools and equipment at an estimated cost of $22,000 to establish diesel engine repair support. In addition, it will eliminate the requirement to train police mechanic personnel in diesel engine repairs.

In the selection of vehicles for this program, standardization and economy in maintenance and repairs were considered along with the Police functional requirements. The following types of vehicles are recommended for the reasons indicated:

a. Five (5) sedans and one station wagon are to be equipped with 8 cyclinder engines to permit high speed travel. The station wagon is to be used as an emergency medical vehicle having compartments for medical equipment and supplies. The vehicle is not to give the appearance of an ambulance. These vehicles are to be used by the Presidential security guards. It is recommended that these vehicles be procured on "or equal" basis.

b. Station wagons equipped with six cylinder gasoline engines to be used for highway patrol. The vehicles will also be be used as ambulance to transport persons injured in highway accidents, as well as the sick when regular ambulance

services are not available. This service provided to the populace will initiate civic action program by the police. It is recommended that these vehicles be equipped with Dodge engine 225-140 GHP six cylinder, same engine as fitted in the one hundred and twenty (120) Dodge D300 previously provided with A.I.D. loan funds. The previously large number of vehicles provided may be sufficient justification to procure these vehicles on a proprietary basis.

c. Truck, $2\frac{1}{2}$ ton, Dodge Model W500 - equipped with a Dodge six cylinder engine 225-140 HP. This vehicle is to be used to transport personnel (up to 40) or cargo in difficult terrain. Proprietary procurement justification same as b, above.

d. Truck, 3/4 ton, Dodge Model W300 - equipped with Dodge six cylinder engine 225-140 HP. This vehicle is to be used to transport personnel (squad of 14 men) or cargo in difficult terrain. Proprietary procurement for this vehicle may be justified as indicated in "b" above.

e. Jeep ($\frac{1}{2}$ ton) Kaiser Jeep Model CJ-6, 4 cylinder engine. Vehicle is to be used to transport squad of 8 men or cargo in difficult terrain. Inasmuch as the Police now own only 34 International Harvester "scouts" in this category of vehicle, it is recommended that these vehicles be procured on "or equal" basis.

f. Carry-all vehicles - Dodge Model A-100 equipped with a Dodge six cylinder engine 225-140HP. These vehicles are to be used to transport the sick, prisoners and police personnel on primary and secondary roads. Inasmuch as the engine in this type vehicle uses the same as engine in the Dodge D300 previously provided by A.I.D., this may be sufficient justification to procure these vehicles on a proprietary basis.

g. Bus - Sixty passenger bus is required to transport the Presidential Honor Guard. The vehicle is to be equipped with a gasoline operated engine. It is recommended that this category of vehicle be procured on "or equal" basis.

The provision of 10% spare parts is recommended to support the vehicles procured. This would permit the Police to establish a basis of necessary replacement parts. As the parts are used, they should be replaced by the Police through local purchases from the supplier's representative in Tunisia. In the procurement of spare parts to support A.I.D. purchased vehicles, it is recommended that the supplier submit to the consignee a list of parts to be provided for review and approval prior to final procurement. In addition, the supplier should guarantee that his representative in Tunisia will stock sufficient parts to support the vehicles sold under the contract. It should further be stipulated that delivery of all parts requested by the police will be made with five days after the request is made. This provision will ensure that the supplier's representative maintains an adequate stock of parts and

minimize the deadline time of Police vehicles awaiting parts to be shipped from the United States.

ATTACHMENT: Tentative Vehicle Procurement Program submitted by GOT Police

GOT PRELIMINARY PROPOSAL VEHICLE REPLACEMENT AND EXPANSION PROGRAM

Type of Vehicle	Table of Equip.	Current Status			Assistance Requested of USAID Number and Type of Vehicles to be replaced					EST. Cost per Vehicles F.O.B. N.Y.
		Total vehi-cles	Dead-lined	Over 5 years old	1969	1970	1971	1972	Total	
1. Sedans	371	371	196	111	5	-	-	-	5	$2,700
2. Station Wagons					48	23	24	22	117	$2,875
3. Heavy Troop Carriers	106	100	22	2	8	9	7	6	30	$6,000
4. Light Troop Carriers	689	619	295	42	33	33	31	31	128	$4,300
5. Jeeps					180	42	42	42	306	$2,400
6. Carry alls					24	12	12	11	59	$2,700
7. Bus	6	6	1	5	2	2	1	1	6	$8,500
* -Total Vehicles	1172	1096	514	160	300	121	117	113	651	
-Estimated Cost	-	-	-	-	$855,200	$421,255	$386,000	$371,500	$2,033,925	
-Est. Cost Spare part	-	-	-	-	$ 85,520	$ 42,123	$ 38,600	$ 37,150	$ 203,393	
-TOTAL EST. COST					$940,720	$463,348	$424,600	$408,650	$2,237,318	

* Does not include motorcycles in Police Fleet

VEHICLE SPECIFICATIONS RECOMMENDED FOR REPLACEMENT PROGRAM
(Cost Estimates f.o.b. New York)

1. Truck, Dodge Model W500, 4x4, gasoline-powered, 225 six cylinder, 140 HP, 157" wheelbase, military stake body (14' length and 7' width), longitudinal, collapsible wooden seats, canvas top. Add following optional equipment:

   a. Dual rear wheels
   b. Tires, size 8.25x20, 10 ply-all service tread
   c. Pintle hooks
   d. Extra cooling radiator
   e. Heavy duty front and rear shock absorbers
   f. Battery, 70 amp.
   g. Hydraulic jack
   h. Alternator, 46 amp.
   i. Speedometer in kilometers
   j. Color - olive green
   k. Driver's manual in French

19 vehicles	$6,000	$114,000

To transport troops and cargo cross-country.

2. Bus - cowl and chassis, GVW 26,000 lbs., wheelbase minimum 240", gasoline powered engine V8-212 HP,4x2, similar to Dodge S-600. To be fitted with bus body (Superior) to accommodate sixty (60) passengers. Color: Dark blue

6 each	@$8,500	$ 51,000

To be used for Presidential honor guard.

EXHIBIT II

3. Truck, Dodge W300. 4x4, with Dodge Model 225, 140 HP, 6 cylinder engine, GVW 10,000 lbs., military stake body 9' in length and 7' in width, side longitudinal, collapsible wooden seats. Add the following optional equipment:

   a. Roof mounted, interior controlled spot light
   b. Heavy duty shock absorbers
   c. Heavy duty battery
   d. Extra cooling radiator
   e. Dual wheels rear
   f. Tires, 8x19.5, 8 ply-all service tread
   g. Speedometer in kilometers
   h. Full canvas top
   i. Color - olive green
   j. Driver's manual in French

76 trucks	$ 4,300 ea.	$313,900

To be used for border patrol operations.

4. Truck, panel, Dodge Model A-100, 2x4, 6 cylinder engine 225, 140 HP, GVW 5,200 lbs., wheelbase 108". Add following optional equipment:

   a. Heavy duty axle
   b. Tires, 8.15x15, 8 ply with spare
   c. Roof ventilator
   d. Extra cooling radiator
   e. Oil bath
   f. Heavy duty shock absorbers
   g. Longitudinal, collapsible wooden side seats
   h. Speedometer in kilometers

i. Color - white

j. Driver's manual in French

30 vehicles @ $2,600 $78,000

To transport personnel and prisoners and general purpose use.

5. Truck, Panel, Dodge Model A-100, 2x4, 6 cylinder 225, 140 HP engine, GVW 5,200 lbs., wheelbase 108". Add following optional equipment:

a. Glass panel in lieu of closed body

b. Tires, 8.15x15, 8 ply with spare

c. Roof ventilator

d. Extra cooling radiator

e. Oil bath

f. Heavy duty shock absorbers

g. Roof mounted rotating red flashing light

h. Interior mounted siren

i. Speedometer in kilometers

j. Color - white

k. Driver's manual in French

$13 vehicles @ $2,850 $37,050

To be used as ambulances by thirteen Governorateurs (civil administrative sub-division)

6. Truck, panel, Dodge Model A-100, 2x4, 6 cylinder 225, 140 HP engine, GVW 5,200 lbs., wheelbase 108". Add following optional equipment:

a. Heavy duty axle

b. Heavy duty shock absorbers

c. Oil bath

d. Tires, 8.15x15, 8 ply with spare

e. Slide glass windows in lieu of closed body

f. Seats, removable, to accommodate 7 passengers and driver

g. Extra cooling radiator

h. Color - dark blue

i. Speedometer in kilometers

j. Driver's manual in French

5 vehicles @ $2,800 $ 14,000

To be used to transport police personnel and cargo.

7. Truck, 4x4, wheelbase 101" minimum, GVW 3900 lbs., gasoline operated engine, Kaiser Jeep Model CJ-6 or equal. The following optional equipment is required:

a. Tires, 7.00x15, 4 ply-all service tread

b. Oil bath cleaner

c. High temperature thermostat

d. Extra cooling radiator

e. 45 amp. alternator

f. Heavy duty springs and shock absorbers

g. Speedometer in kilometers

h. Spare wheel and tire

i. Longitudinal side wooden seats

j. Full canvas top and sides

k. Color - olive green

l. Driver's operating manual in French

m. Warn hub drive

o. Pintle hook

252 vehicles @ $2,400 $604,800

To operate cross country and rural areas for transport of squads up to 8 men including driver

8. Station Wagon, Plymouth Belvedere Police Special Model, 6 cylinder 225, 140 HP, wheelbase 117", four door. Add the following optional equipment:

   a. Heavy duty shock absorbers
   b. Second and third seats to fold down to give full floor length of 92.2 inches with gate closed
   c. Extra cooling radiator
   d. Tires, 8.15x15, 4 ply
   e. Speedometer in kilometers
   f. Driver's manual in French
   g. Siren mounted under hood
   h. Red flasher beacon light roof mounted
   i. Color - olive green
   j. Alternator, 46 amps. HD
   k. Manual shift
   l. Radio interference supression kit
   m. Spotlight, adjustable, mounted on right side

94 vehicles @ $2,875 $270,250

To be used for highway patrol and for emergency transportation of injured and sick to hospital when no ambulances are available.

9. Sedan, Plymouth Belvedere Model equipped with V-8 engine, wheelbase 116", four door, overall length 202.7". Add the following optional equipment:

   a. Heavy duty shock absorbers
   b. Extra cooling radiator
   c. Tires, 8.15x15, 4 ply

d. Speedometer in kilometers

e. Power brakes

f. Alternator, 46 amps. HD

g. Manual shift

h. Radio interference suppression kit

i. Siren mounted under hood

j. Driver's manual in French

k. Color - black

5 vehicles @ $ 3,000 $ 15,000

To be used as Presidential security guard

10. Station wagon, Plymoutn Belvedere, model equipped with V-8 engine, wheelbase 117". Add the following optional equipment and special features:

a. Heavy duty shock absorbers

b. Back rest of second seat to be half of the normal length so that when folded it will give a continuous floor space on the left side. The open side will remain a seat for a medical personnel.

c. The interior right side will have compartments to store medical emergency equipment and supplies; also, small refrigerator (4 cu.ft.) to preserve blood plasma and perishable medicines.

d. Speedometer in kilometers

e. Extra cooling radiator

f. Radio interference suppression kit

g. Manual shift

h. Alternator, 46 amps. HD

i. Siren, mounted under hood

j. Driver's manual in French

k. Second, third and rear window glass to be heavily tinted in blue so that the interior cannot be seen from outside

l. Blue tinted windshield

m. Heavy duty shock absorbers

n. Power brakes

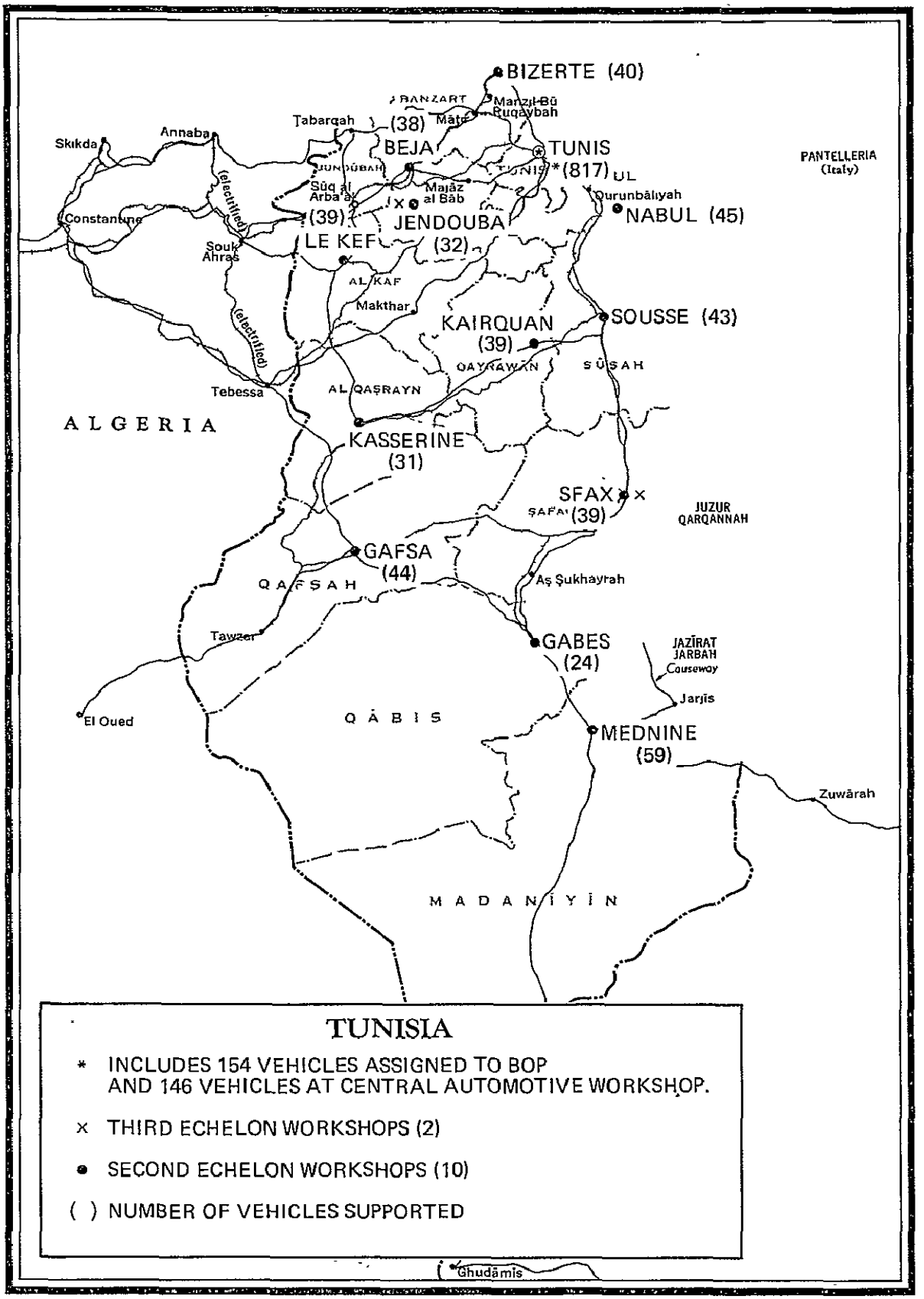
o. Tires, 8.15x15, 4 ply

p. Color - black

1 vehicle	@ $ 4,400	$ 4,400

To be used for Presidential security guard.

CURRENT DISPOSITION OF VEHICLES AND MAINTENANCE FACILITIES



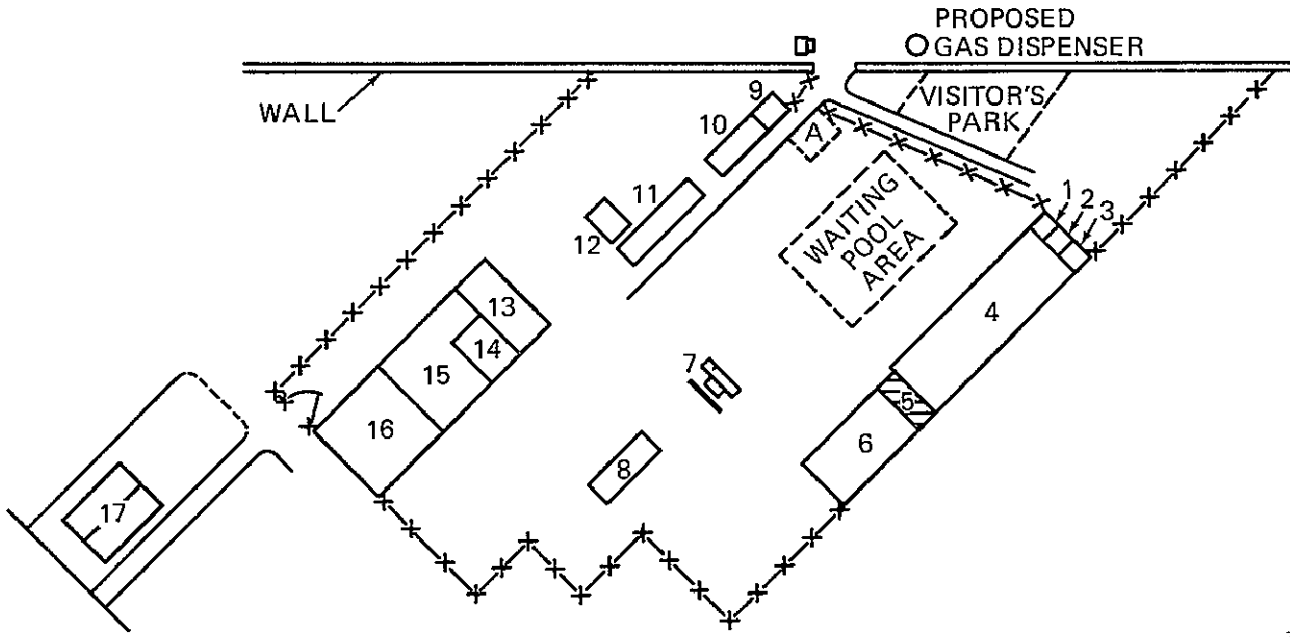
Base 54504 8-67

EXHIBIT III

CENTRAL AUTOMOTIVE WORKSHOP

SHOP LAYOUT

.MEASUREMENT 1 cm = 2 m



ACTIVITIES

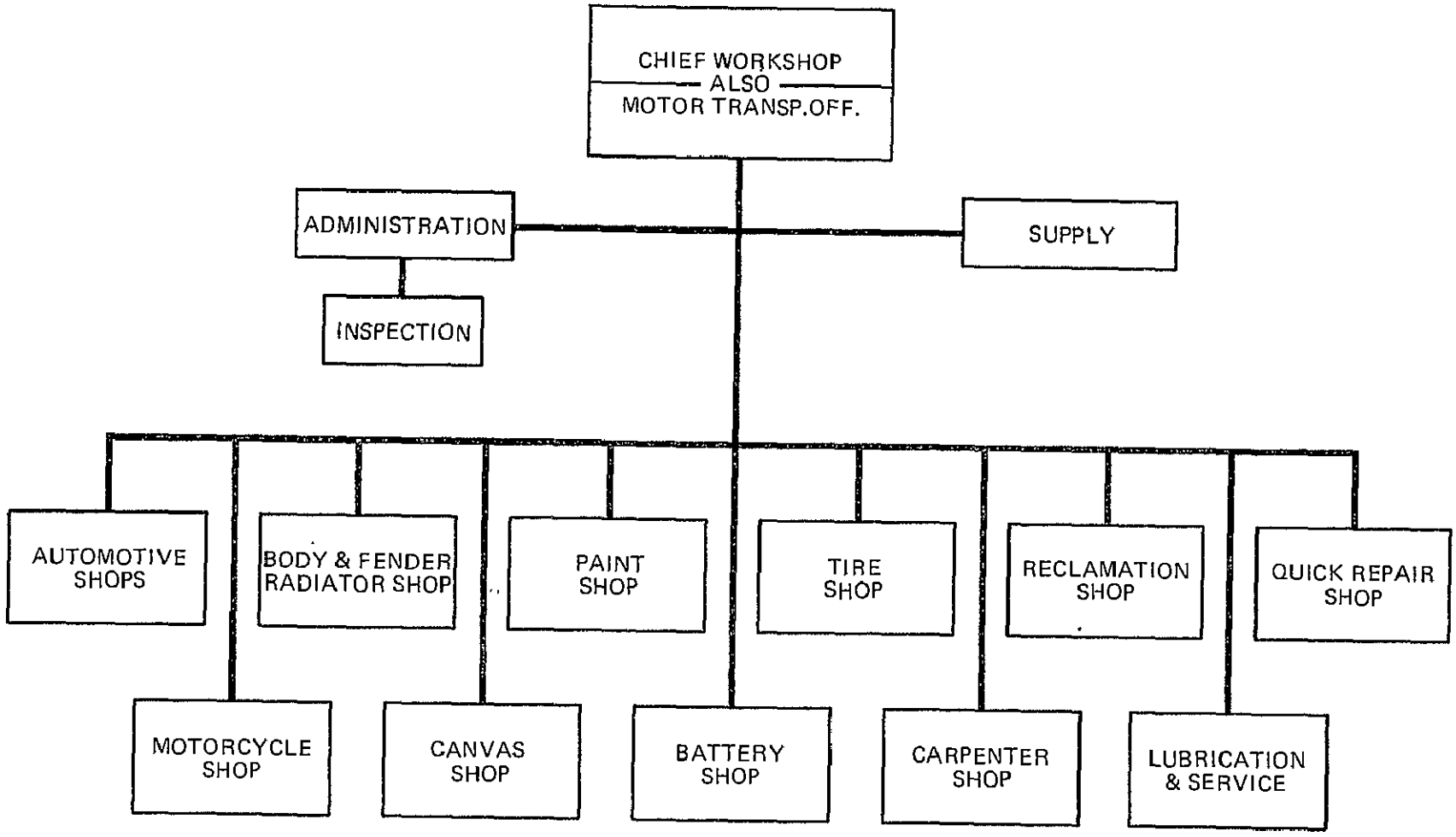
1. TIRE SHOP
2. QUICK REPAIRS
3. BATTERY SHOP
4. AUTOMOTIVE REPAIR - LIGHT VEHICLES
5. TOOL ROOM - COMMON TO 4 & 5
6. AUTOMOTIVE REPAIR - TRUCKS
7. LUBRICATION & WASH
8. MOTORCYCLE SHOP
9. NIGHT DUTY MECHANICS QUARTERS
10. INSPECTOR'S OFFICE & STORAGE
11. ADMINISTRATION
12. TRAINING ROOM
13. PAINT SHOP
14. CANVAS SHOP
15. BODY & FENDER
16. RECLAMATION SHOP
17. SUPPLY

A. PROPOSED INSPECTION AREA

EXHIBIT IV

CENTRAL AUTOMOTIVE WORKSHOP (Caserma Bouchoucha)

ORGANIZATIONAL CHART

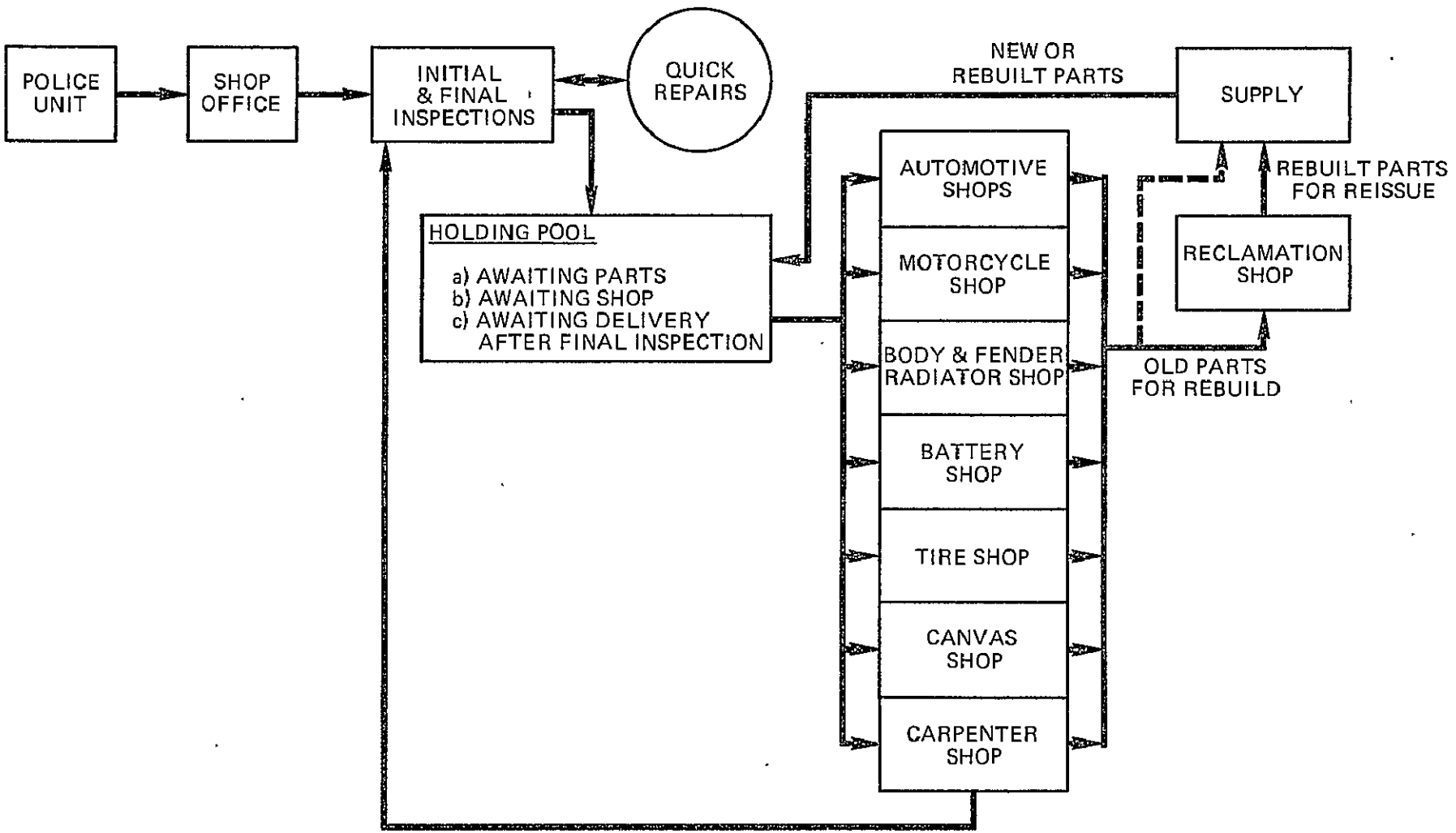


NOTE: THE CHIEF OF THE CENTRAL AUTOMOTIVE WORKSHOP IS RESPONSIBLE FOR 12 OTHER AUTOMOTIVE REPAIR FACILITIES IN TUNISIA. THE SAME STAFF WHICH ASSISTS HIM IN THE OPERATION OF THE CENTRAL WORKSHOP (ADMINISTRATION, INSPECTION AND SUPPLY) IS USED TO SERVICE THE OTHER SHOPS.

EXHIBIT V

CENTRAL AUTOMOTIVE WORKSHOP (Caserma Bouchoucha)

WORK FLOW CHART

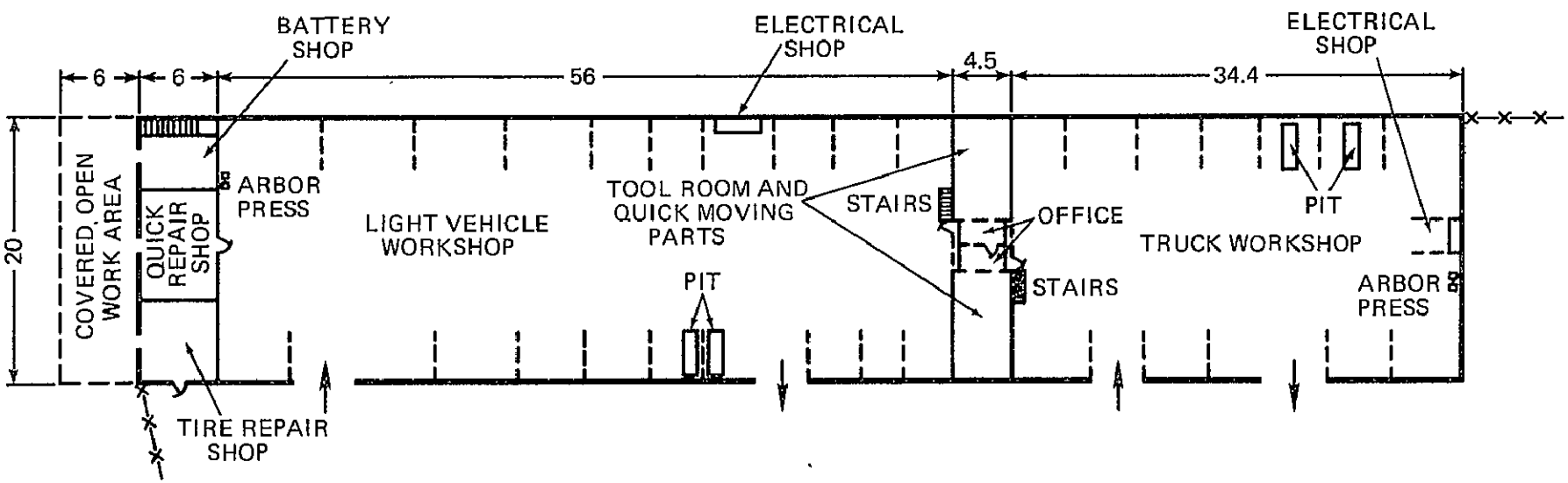


NOTE: ▬▬▬ NOTIFICATION TO SUPPLY OF OLD PARTS & COMPONENTS SENT TO RECLAMATION SHOP.

EXHIBIT VI

CENTRAL AUTOMOTIVE WORKSHOP (Caserma Bouchoucha)

SHOP LAYOUT FOR AUTOMOTIVE REPAIRS



NOTE: (1) OVERHEAD OFFICE SPACE - OVER TOOL ROOM AND SPARE PARTS

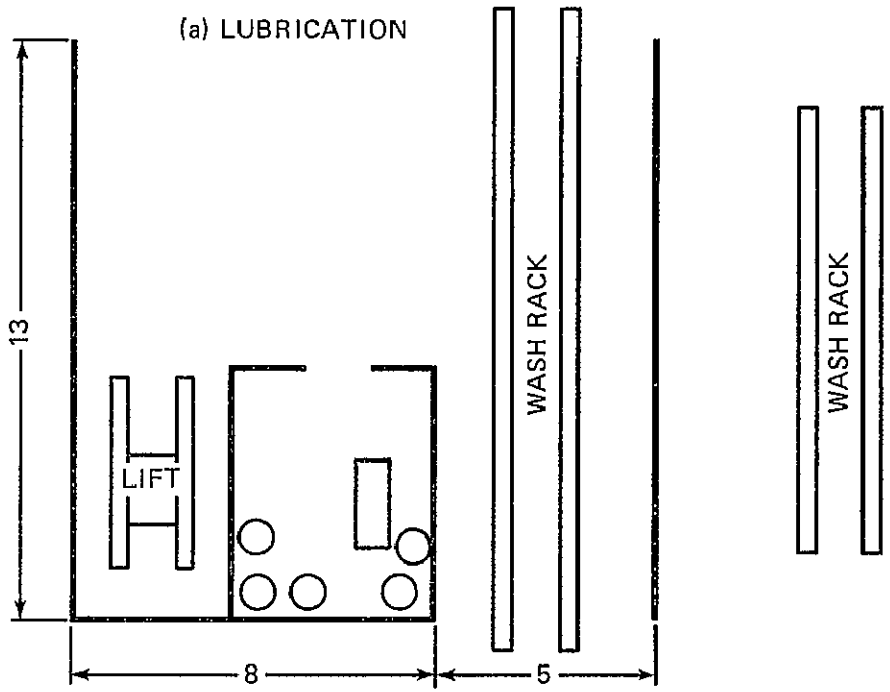
(2) MEASUREMENTS IN METERS

EXHIBIT VII

CENTRAL AUTOMOTIVE WORKSHOP (Caserma Bouchoucha)

SHOP LAYOUT FOR LUBRICATION & MOTORCYCLE SHOP
(measurements in meters)

(a) LUBRICATION



(b) MOTORCYCLE SHOP

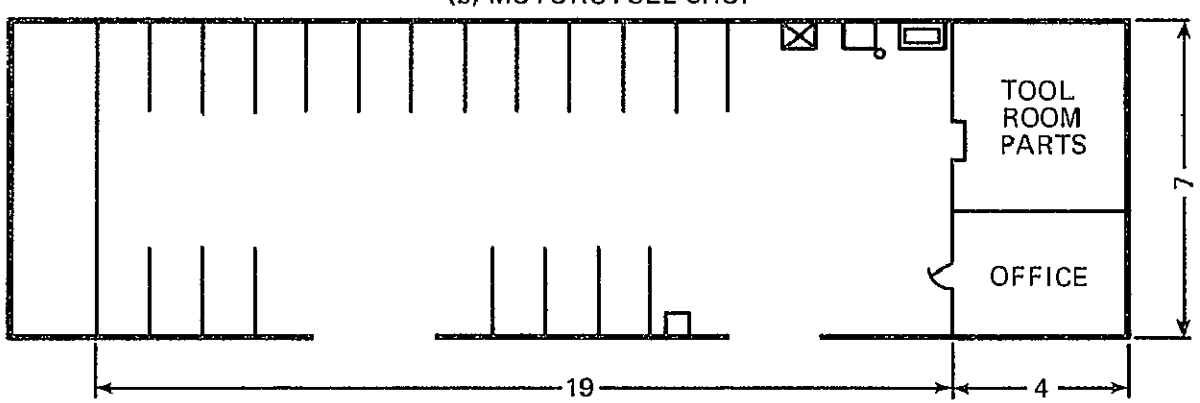
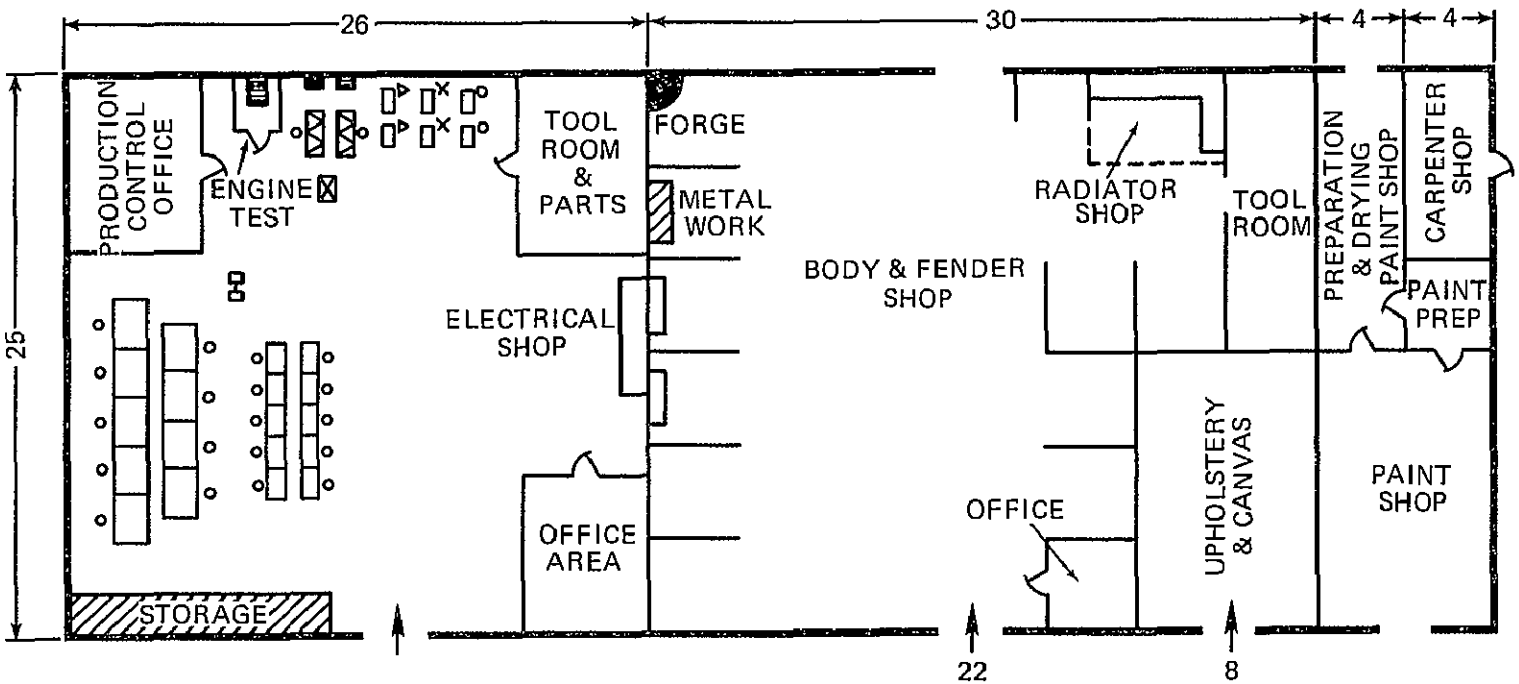


EXHIBIT VIII

CENTRAL AUTOMOTIVE WORKSHOP (Caserma Bouchoucha)

SHOP LAYOUT FOR RECLAMATION, PAINT, CANVAS, CARPENTER AND BODY & FENDER SHOP



LEGEND:

(1) DISASSEMBLING & ASSEMBLING OPER.

(2) LATHE

(3) DRILL

(4) VALVE REFACE & GRINDING

(5) ARBOR PRESS

(6) GRINDER

(7) BRAKE DRUM LATHE

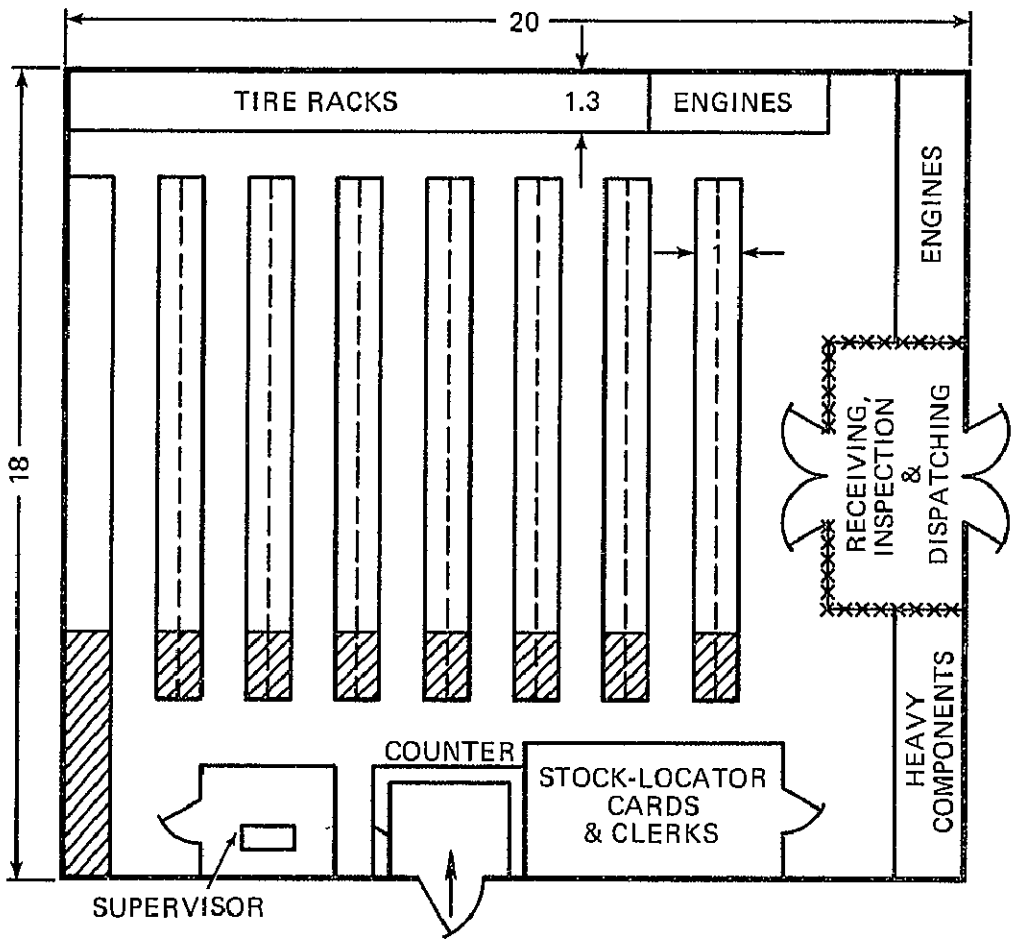
(8) MEASUREMENTS IN METERS

EXHIBIT IX

CENTRAL AUTOMOTIVE WORKSHOP (Caserma Bouchoucha)

PARTS & SUPPLY WAREHOUSE LAYOUT

(measurements in meters)



FOR FAST MOVING PARTS

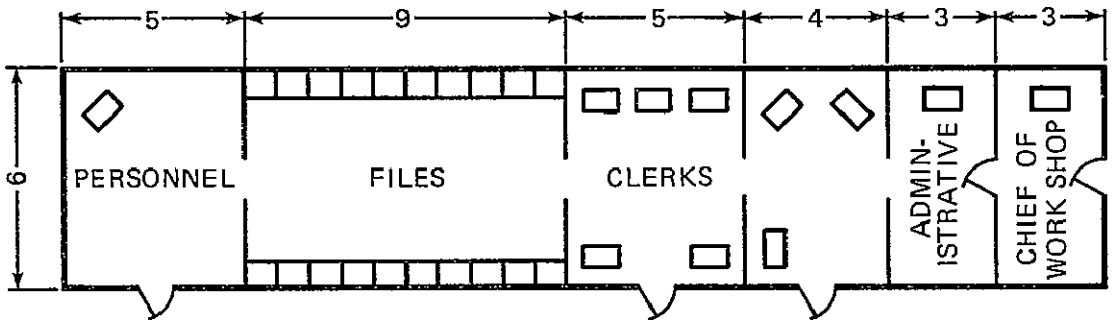
SECURITY PARTITION

EXHIBIT X

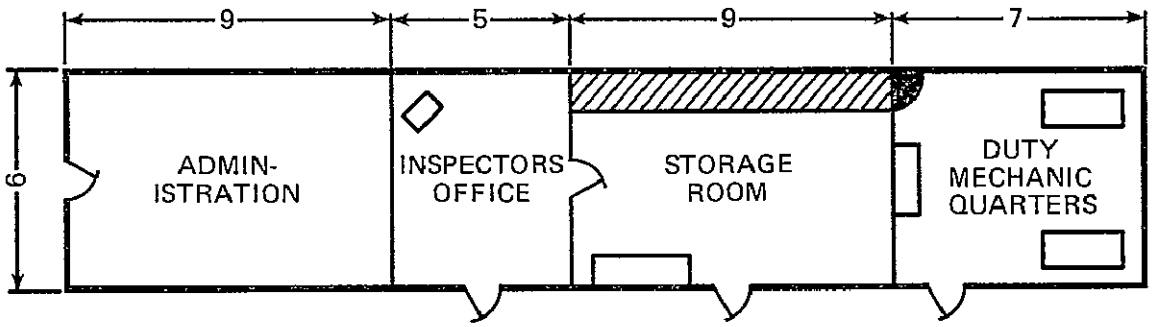
CENTRAL AUTOMOTIVE WORKSHOP (Caserma Bouchoucha)

LAYOUT FOR ADMINISTRATIVE BUILDINGS

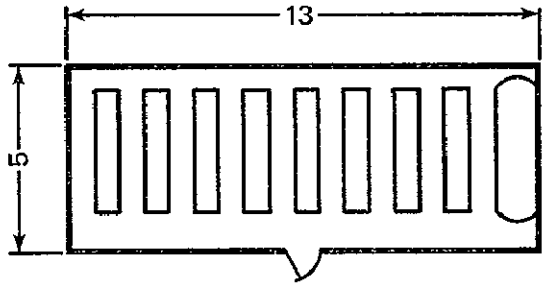
(measurements in meters)



(a) ADMINISTRATION



(b) INSPECTION & MECHANIC'S QUARTERS



(c) TRAINING ROOM

EXHIBIT XI

ATTACHMENT "A"

SPECIFICATIONS FOR TOOL AND EQUIPMENT RECOMMENDED FOR THE 5th AND 3rd ECHELON WORKSHOPS

The attached is a detailed listing of tools and equipment recommended for the 5th echelon shop (Caserma Bouchoucha) and the two 3rd echelon shops (Sfax and Jendouba). The recommendation is based on observations made by the writer of equipment on hand, data provided by the police and capability of police mechanics to fully utilize the equipment to be provided. The total dollar value of the tools and equipment is estimated at $42,000 F.O.B. supplier.

There is an adequate automotive training facility in Tunis to provide necessary instructions to police mechanics personnel in the care and utilization of all testing and specialized equipment recommended in this report. It is suggested that before the equipment requiring special training is submitted for procurement, the police should enroll the end user personnel in the local automotive trade school.

In developing the final specifications for procurement, the following items must be specified.

a) Tools and equipment powered by electricity should specify 220 volts, 50 cycles.

b) Equipment measuring ounces or pounds must have a conversion table into kilograms. It would be preferable to have direct reading in kilograms.

c) All items should be procured on "or equal basis".

The specifications for the tools and equipment listed in the attachment may be found in Snap-On Corp., Carr-McMaster and Brohead-Garrett Catalogs, copies of which have been forwarded to the Mission.

ATTACHMENT "A"

SHOP TOOLS AND EQUIPMENT FOR 5th ECHELON (CASERMA BOUCHOUCHA) AND TWO 3rd ECHELON SHOPS

(INDICATING SOURCE FOR PROCUREMENT AND ESTIMATED COST FOB SUPPLIER)

NOMENCLATURE	MAKE	ITEM NO.	QTY. RECMD. A	B	C	COSTS UNIT	TOTAL	DISTRIBUTION AT (A) 1	2	3	4	5	6	7	8	9	10
Grinder, Bench 1HP220V50 cyc.	Snap-On	BG-1000	4	1	1	220	1320	1	1	-	1	1	-	-	-	-	-
Grinder, Bench ½HP220V50 cyc.	" "	BG-500	4	1	1	132	792	-	1	-	1	1	-	-	1	-	-
Valve Seat Grinder 220V50 cyc.	" "	VG-124 C-B	1	1	1	300	900	-	-	-	1	-	-	-	-	-	-
Engine Tune Up Set	" "	MT 318D-B	2	1	1	72	288	-	1	-	1	-	-	-	-	-	-
Commutator Turning Tool Set	" "	AT-2X-B	1	-	-	70	70	-	-	-	1	-	-	-	-	-	-
Mica Undercutter-220V50 cyc.	" "	UC-6	1	-	-	13	13	-	-	-	1	-	-	-	-	-	-
Mica Tool Blades (Set)	" "	UC-6-10,15, 20,25	1	-	-	6	6	-	-	-	1	-	-	-	-	-	-
Armature Growler,220V50 cyc.	" "	MT-326-220	1	-	-	110	110	-	-	-	1	-	-	-	-	-	-
Tool Set(60 pcs.) Metric	" "	5193 GM-B	3	1	1	700	3500	1	1	-	1	-	-	-	-	-	-
Creeper	" "	JC-12	2	-	-	10	20	-	-	-	-	2	-	-	-	-	-
Body File	" "	BF-775B	4	-	-	7	28	-	-	-	-	4	-	-	-	-	-
Thread Chaser	" "	TD-2224	2	-	-	12	24	-	-	-	-	2	-	-	-	-	-
Thread Chaser	" "	TD-1127	2	-	-	12	24	-	-	-	-	2	-	-	-	-	-
Clutch Aligning Set	" "	A-37H	2	1	1	60	180	-	1	-	-	-	-	-	-	-	-
Tool Kit (88 pcs)	" "	5088-GS-B	12	2	2	325	4550	4	6	-	2	-	-	-	-	9	-
Tire Bead Remover	" "	TR-200	1	1	1	30	90	-	-	-	-	-	-	1	-	-	-
Tool Set (Electrician)	" "	5074 ET-B	3	1	1	202	1010	1	1	-	1	-	-	-	-	-	-
Ratchet Wrench, HD	" "	EHD-B	2	1	1	68	272	1	-	-	1	-	-	-	-	-	-
Torqometer (set of 3)	" "	TGCD-12,51,252	2	1	1	161	644	-	1	-	1	-	-	-	-	-	-
Wrench, Pipe (set of 4)	" "	RWA-906	3	-	-	40	120	1	-	-	1	1	-	-	-	-	-
Wrench, Adjust, (set of 3)	" "	D-903	4	1	1	13	78	1	1	-	1	1	-	-	-	-	-
Wrench, Hex, Head	" "	AW-1018K	4	1	1	13	78	1	1	-	1	1	-	-	-	-	-
Chisel & Punch Set	" "	PPC-200K	3	1	1	28	140	1	-	-	1	1	-	-	-	-	-
Plier, Interlocking	" "	90A	3	2	2	5	35	1	1	-	1	-	-	-	-	-	-
Plier, Bent Needle Nose	" "	497	3	1	1	6	30	1	1	-	1	-	-	-	-	-	-
Screwdriver, Spark Test	" "	SSD-214	12	1	1	1	12	2	2	-	4	2	-	-	-	2	-
Body Jack	" "	BJ-4-SA	1	-	-	255	255	-	-	-	-	1	-	-	-	-	-
Tap and Die Set	" "	TD 2500	3	-	-	18	54	-	-	-	1	2	-	-	-	-	-
Tool, Master Set (Less Testing Meters)	" "	5592-GS	2	-	-	2000	4000	-	1	-	1	-	-	-	-	-	-
Diode Press Set	" "	CJ 96-1,2,3, 4:CJ91B-1	1	1	1	195	585	-	-	-	1	-	-	-	-	-	-
Tool Flexible Drive	" "	TM 62A	3	1	1	3	15	1	1	-	1						

LEGEND

(A) CASERMA BOUCHOUCHA
(B) SFAX
(C) JENDOUBA

(1) TRUCK SHOP
(2) LIGHT VEH. SHOP
(3) CARPENTER SHOP
(4) RECLAMATION
(5) BODY & FENDER
(6) BATTERY SHOP
(7) TIRE SHOP
(8) MOTORCYCLE SHOP
(9) QUICK REPAIRS
(10) PAINT SHOP

ATTACHMENT "A"

SHOP TOOLS AND EQUIPMENT FOR 5th ECHELON (CASERMA BOUCHOUCHA) AND TWO 3rd SHOPS

(INDICATING SOURCE FOR PROCUREMENT AND ESTIMATED COST FOB SUPPLIER)

NOMENCLATURE	MAKE	ITEM NO.	QTY. RECMD. A	B	C	COSTS UNIT	TOTAL	DISTRIBUTION AT (A) 1	2	3	4	5	6	7	8	9	10
Battery Cell Tester	McMaster	7263K1	3	1	1	13	45	1	1	-	-	-	1	-	-	-	-
Battery Service Kit	"	6682F	1	1	1	15	45	-	-	-	-	-	1	-	-	-	-
Battery Terminal Lifter	"	6680E	1	1	1	5	15	-	-	-	-	-	1	-	-	-	-
Knurler Utility	"	3B3281	2	-	-	20	40	-	-	-	2	-	-	-	-	-	-
Boring Tool Clamp	"	15-F	1	-	-	12	12	-	-	-	1	-	-	-	-	-	-
Boring Tool Clamp	"	18-F	1	-	-	30	30	-	-	-	1	-	-	-	-	-	-
Polisher, H.D. 220V50 cyc.	"	478D 15	1	-	-	85	85	-	-	-	-	-	-	-	-	-	1
Bonnet, Polisher	"	483FD3	20	-	-	2	40	-	-	-	-	-	-	-	-	-	20
Hood, Paint Spray	"	5434S3	3	-	-	10	30	-	-	-	-	-	-	-	-	-	3
Window, Hood, Paint Spray	"	5434S4	15	-	-	1	15	-	-	-	-	-	-	-	-	-	15
Tire Tool, Service Set	"	6691D2	1	1	1	120	360	-	-	-	-	-	-	1	-	-	-
Inflatur Gauge	"	54K40	1	1	1	17	51	-	-	-	-	-	-	1	-	-	-
Transmission Jack	Brohead-Garrett	Model 54	1	-	-	170	170	1	-	-	-	-	-	-	-	-	-
Wrench Vise Grip	"	7CR	3	1	1	15	75	1	1	-	1	-	-	-	-	-	-
Bolt Clipper	"	1490NE	3	1	1	16	80	1	1	-	1	-	-	-	-	-	-
Service Jack (1½ton)	"	Model WS	2	-	-	140	280	-	-	-	-	1	-	1	-	1	-
Goggle, Welder	"	1010	7	2	2	5	55	-	-	-	-	7	-	-	-	-	-
Welder, Spot 220V	"	MSW 42	1	-	-	145	145	-	-	-	-	1	-	-	-	-	-
Engine Test Stand	"	Model 151	1	-	-	200	200	-	-	-	1	-	-	-	-	-	-
Transmission Repair Stand	"	Model 152	1	-	-	200	200	-	-	-	1	-	-	-	-	-	-
Helmet Welding	"	Model 936	4	1	1	12	72	-	-	-	-	4	-	-	-	-	-
Dynometer	"	DA-500	1	-	-	2000	2000	-	-	-	1	-	-	-	-	-	-
Crank Shaft Grinder 220V50 cyc.	Excess Property		1	-	-	2000	2000	-	-	-	1	-	-	-	-	-	-
Armature Tester 220V50 cyc.	Sun	AT 76-2	1	-	-	119	119	1	-	-	-	-	-	-	-	-	-
Goggles, Safety	Brohead-Garrett	291	4	1	1	5	30	-	-	-	-	4	-	-	-	-	-
Dynometer, Clutch Adaptors	"	DA-500 (A-1)	10	-	-	40	400	-	-	-	10	-	-	-	-	-	-
Drafting Set	"	Page 845	1	-	-	150	150	-	-	-	1	-	-	-	-	-	-
Tire Spreader (HD)	McMaster	6693D2	1	1	1	18	54	-	-	-	-	-	-	1	-	-	-

ATTACHMENT "A"

SHOP TOOLS AND EQUIPMENT FOR 5th ECHELON (CASERMA BOUCHOUCHA) AND TWO 3rd SHOPS

(INDICATING SOURCE FOR PROCUREMENT AND ESTIMATED COST FOB SUPPLIER)

NOMENCLATURE	MAKE	ITEM NO.	QTY. RECMD. A	B	C	COSTS UNIT	TOTAL	DISTRIBUTION AT (A) 1	2	3	4	5	6	7	8	9	10
Hydraulic Brake Bleeder	John Bean	Model B186D	1	-	-	75	75	-	-	-	-	-	-	-	-	1	-
Fuel Pump & Pressure Gauge	King	Model VT	3	1	1	15	75	1	1	-	1	-	-	-	-	-	-
Volt-Ammeter	"	469	3	1	1	50	250	1	1	-	1	-	-	-	-	-	-
Cylinder Hone Set	Rockwell	AN-111	1	-	-	74	74	-	-	-	1	-	-	-	-	-	-
Cylinder Hone	"	AN-815	1	-	-	103	103	-	-	-	1	-	-	-	-	-	-
Saw, Bayonet Wood, 220V50 cyc.	"	548	1	-	-	125	125	-	-	1	-	-	-	-	-	-	-
Sander, Electric, 220V50 cyc.	"	304	3	-	-	75	225	-	-	-	-	1	-	-	-	-	2
Drill Press W/Drill Bits, 220V50 cyc.	"	Delta 20"	2	-	-	850	1700	-	1	-	1	-	-	-	-	-	-
Alt-Gen.-Regulator Tester 220V50 cyc.	King	GT25	1	-	-	790	790	-	-	-	1	-	-	-	-	-	-
Coil Condenser Tester	King	Model 603	2	1	1	65	260	-	1	-	1	-	-	-	-	-	-
Brake Drum Lathe 220V50 cyc.	AMMCO	9000	1	-	-	850	850	-	-	-	1	-	-	-	-	-	-
Wear & Oil Leak Detection	"	7050	3	1	1	25	125	1	1	-	-	-	-	-	-	1	-
Spark Plug Cleaner & Tester	Vixen	400	2	1	1	60	240	1	1	-	-	-	-	-	-	-	-
Parts Cleaner	Hydro Clean	500	1	-	-	400	400	-	-	-	1	-	-	-	-	-	-
Metal Bending Machine	DiArco	Model 24	1	-	-	450	450	-	-	-	-	1	-	-	-	-	-
Battery Charger	Schauer	FC85, A6641	1	-	-	155	155	-	-	-	-	-	1	-	-	-	-
AVR-Combustion, Dwell Tack, Timer Ignition Tester	Marquette	Model 41-104	2	-	-	350	700	-	1	-	-	-	-	-	-	1	-
Crane, Portable	Hein Werner	74	1	-	-	520	520	-	-	-	1	-	-	-	-	-	-
Wrench Impact	Sioux	3168	2	1	1	150	600	-	1	-	-	1	-	-	-	-	-
Press, Arbor (1 ton)	Drake	No.00	4	1	1	38	228	1	1	-	1	1	-	-	-	-	-
Drill Electric, $\frac{1}{4}$"w/Bits 220V50 cyc.	Delta	107A	1	1	1	60	180	-	-	-	-	1	-	-	-	-	-
Drill Electric, $\frac{1}{2}$" w/Bits 220V50 cyc.	Hein Werner	C-15	1	1	1	85	255	-	-	-	-	1	-	-	-	-	-
Vise Woodwork	Columbia	10CDW	1	-	-	25	25	-	-	1	-	-	-	-	-	-	-

ATTACHMENT "A"

SHOP TOOLS AND EQUIPMENT FOR 5th ECHELON (CASERMA BOUCHOUCHA) AND TWO 3rd SHOPS

(INDICATING SOURCE FOR PROCUREMENT AND ESTIMATED COST FOB SUPPLIER)

NOMENCLATURE	MAKE	ITEM NO.	QTY. RECMD. A	B	C	COSTS UNIT	TOTAL	DISTRIBUTION AT (A) 1	2	3	4	5	6	7	8	9	10	
arburator Jet Wrench	Proto	6526,6528	3	1	1	15	75	1	1	-	1	-	-	-	-	-	-	
ody Reconditioning Tools	"	14ASP	2	-	-	320	640	-	-	-	-	2	-	-	-	-	-	
crew Driver Spreader	"	9855	2	1	1	5	20	1	1	-	-	-	-	-	-	-	-	
oist, H.D. Rigger Type	McMaster	3348Y2	1	-	-	185	185	1	-	-	-	-	-	-	-	-	-	to fit on wrecker
oldering Gun 220V50 cyc.	"	7711A14	4	1	1	18	126	1	1	-	2	1	-	-	-	-	-	
oldering Tips	"	7711A24	12	3	3	4	72	3	3	-	3	3	-	-	-	-	-	
oldering Iron 220V	"	7710F	5	1	1	15	105	1	1	-	1	1	-	-	1	-	-	
aw, Electric, Wood 220V50 cyc.	"	4033F8	1	-	-	200	200	-	-	1	-	-	-	-	-	-	-	
laring Tool	"	2727D	3	1	1	14	70	1	1	-	1	-	-	-	-	-	-	
andblaster, Portable 220V 50 cyc.	"	YY76681	1	-	-	220	220	-	-	-	-	1	-	-	-	-	-	
orch, Blow	"	337J7	2	1	1	18	72	-	-	-	-	2	-	-	-	-	-	
ivet Gun, Hand 220V50 cyc.	"	6666D4	1	-	-	28	28	-	-	-	-	1	-	-	-	-	-	
adiator Workstand	"	7183F2	1	-	-	150	150	-	-	-	-	1	-	-	-	-	-	
tarter-Generator Test	"	13804	3	1	1	5	25	1	1	-	1	-	-	-	-	-	-	
ool Holder	"	TR-65	2	-	-	17	34	-	-	-	2	-	-	-	-	-	-	
ool Holder	"	TL-65	2	-	-	17	34	-	-	-	2	-	-	-	-	-	-	
ool Holder	"	SR-65	2	-	-	17	34	-	-	-	2	-	-	-	-	-	-	
ool Holder	"	SL-65	2	-	-	17	34	-	-	-	2	-	-	-	-	-	-	
urning Tool Holder	"	3-S	2	-	-	16	32	-	-	-	2	-	-	-	-	-	-	
urning Tool Holder	"	3-L	2	-	-	16	32	-	-	-	2	-	-	-	-	-	-	
urning Tool Holder	"	3-R	2	-	-	16	32	-	-	-	2	-	-	-	-	-	-	
Knurling Tool	"	2-K	1	-	-	33	33	-	-	-	1	-	-	-	-	-	-	
Brake Riveter, 220V50 cyc.	"	66F59	1	-	-	300	300	-	-	-	1	-	-	-	-	-	-	
Wood,Planer, Elec.220V50 cyc.	"	3682E2	1	-	-	65	65	-	-	1	-	-	-	-	-	-	-	
Wood, Planer, Hand	"	3963B2	1	-	-	5	5	-	-	1	-	-	-	-	-	-	-	
Carving Tool Set	"	3587B21	1	-	-	10	10	-	-	1	-	-	-	-	-	-	-	
Chisel Set	"	3590C41	1	-	-	10	10	-	-	1	-	-	-	-	-	-	-	
Drill,Electric 220V50 cyc.	"	3146D2	1	-	-	110	110	-	-	1	-	-	-	-	-	-	-	
Drill Bits (Set)	"	2894A24	1	-	-	15	15	-	-	1	-	-	-	-	-	-	-	
Bits, Augar (Set)	"	2898E6	1	-	-	18	18	-	-	1	-	-	-	-	-	-	-	
Battery Hydrometer	"	4057K	3	2	2	8	56	1	1	-	-	-	1	-	-	-	-	
Saw, Hack, Elec. 220V50 cyc.	"	3974A3	1	-	-	335	335	-	-	-	1	-	-	-	-	-	-	

ATTACHMENT "A"

SHOP TOOLS AND EQUIPMENT FOR 5th ECHELON (CASERMA BOUCHOUCHA) AND TWO 3rd SHOPS

(INDICATING SOURCE FOR PROCUREMENT AND ESTIMATED COST FOB SUPPLIER)

NOMENCLATURE	MAKE	ITEM NO.	QTY. RECMD. A	B	C	COSTS UNIT	TOTAL	DISTRIBUTION AT (A) 1	2	3	4	5	6	7	8	9	10
Tool Set (27 pcs) Woodwork	Stanley	H895	1	-	-	75	75	-	-	1	-	-	-	-	-	-	-
Alternator Service Set	Owatonna	A200S	1	1	1	150	465	-	-	-	1	-	-	-	-	-	-
Camshaft Bearing Puller	"	817	1	-	-	95	95	-	-	-	1	-	-	-	-	-	-
Hydraulic Press	Drake	25H	1	-	-	550	550	1	-	-	-	-	-	-	-	-	-
Vise, Bench, Swivel	Wilton	450S	29	4	4	75	2775	7	9	-	5	5	-	-	-	2	1
Respirator, Paint	McMaster	5512X1	4	-	-	15	60	-	-	-	-	-	-	-	-	-	4
Respirator Cartridge	"	5512X2	8	-	-	12	96	-	-	-	-	-	-	-	-	-	8
Respirator Pre-filter	"	5512X3	8	-	-	5	40	-	-	-	-	-	-	-	-	-	8
TOTAL							41,779										

MAINTENANCE AND REPAIR ECHELON TERMINOLOGY

CATEGORY	CONSISTS OF:	PERFORMED BY:
FIRST ECHELON (Driver's Maintenance	Verification: oil, water, gas, air and checking performance	Driver
SECOND ECHELON	Minor repair - such as: Replacing spark plugs, adjusting fan belts. Changing oil filter; cleaning fuel pump. Adjusting points. Packing wheel bearings, etc. Limited repairs. Tune-ups.	Shop with facilities
THIRD ECHELON	Removal and repair of starter motors, carburetors, fuel pumps, valves, pistons, voltage regulators and minor assemblies. Limited engine repair and electrical. Preventive maintenance. Scheduled lubrication.	Shop with proper tools
FOURTH ECHELON	Complete engine and transmission repair. All other components removed and repaired. Shop testing. Regrinds crankshaft, hones, etc.	Well equipped shop
FIFTH ECHELON	Complete rebuilding of the engine and major assemblies. Vehicle completely torn down and replacement parts added. Vehicle restored to like new condition.	A Major shop facility with factory trained mechanics and special equipment.

ATTACHMENT "B"