PERFORMANCE AUDIT REPORT

Highway Patrol
Motor Vehicle Fleet

A Report to the Legislative Post Audit Committee
By the Legislative Division of Post Audit
State of Kansas
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Legislative Post Audit Committee

Legislative Division of Post Audit

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LEGISLATIVE DIVISION OF POST AUDIT

Suite 301, Mills Building
Topeka, Kansas 66612-1285
Telephone (913) 296-3792
FAX (913) 296-4482

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HIGHWAY PATROL MOTOR VEHICLE FLEET

OBTAINING AUDIT INFORMATION

This audit was conducted by Ellyn Rullestad, Senior Auditor, and Curt Winegarner, Auditor, of the Division's staff. If you need any additional information about the audit's findings, please contact Ms. Rullestad at the Division's offices.

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HIGHWAY PATROL MOTOR VEHICLE FLEET

Summary of Legislative Post Audit's Findings

What are the characteristics of the Kansas Highway Patrol motor vehicle fleet, and how does that fleet compare with fleets in other states? The Patrol maintains a fleet of 434 vehicles, most of which are full-size and mid-size cars equipped with police packages. It assigns a vehicle to each of the 377 sworn officers on its staff, including both road patrol and non-patrol staff. The auditors found that other state highway patrols generally use vehicles similar to those used by the Patrol, and assign those vehicles in a similar manner.

Is the Highway patrol vehicle fleet operated as efficiently as possible? A 1980 audit recommended that the Patrol increase operating efficiency by acquiring fuel-efficient mid-size cars for all its staff, and by equipping those cars with a police package only for the road patrol staff. In this audit, the auditors found that most non-patrol staff are currently driving mid-size cars, but these mid-size cars are not fuel-efficient and nearly all of them are still equipped with police packages. If all non-patrol staff had fuel-efficient mid-size cars without a police package, the auditors estimated the Patrol could save as much as $34,000 a year in operating costs and $50,000 in capital outlay costs.

The road-patrol staff is also driving primarily mid-size police-equipped cars. These cars, which are almost as large as full-size cars and are not fuel-efficient, are the only mid-size cars manufacturers currently offer with a police package. If fuel-efficient mid-size cars become available with a police package, it appears that they could be used effectively by the road-patrol staff, resulting in a cost savings of approximately $144,000 annually.

The auditors also found that operating costs have declined by about 28 percent over the last three years, primarily as a result of declining gasoline prices, but that these costs could be reduced even further through better monitoring of maintenance expenditures. Driving vehicles more miles before replacing them and pooling vehicles in central locations are two additional cost-saving measures worth exploring.

HIGHWAY PATROL MOTOR VEHICLE FLEET

An audit of the State's public safety agencies issued in 1980 examined several aspects of the Highway Patrol's motor vehicle fleet. That audit found evidence that mid-size cars, which used considerably less gasoline and were less expensive to operate than the Patrol's full-size cars, could perform adequately for both non-patrol and road patrol assignments. The audit recommended that the Patrol replace the full-size police-equipped cars used by non-patrol employees with standard mid-size cars, and replace the cars used by road patrol employees with mid-size police-equipped cars. At then-current prices, such replacements would have saved the State about $500,000 annually in gasoline costs and about $150,000 in capital outlay costs over a three-year period.

Legislative concerns have been raised that the Patrol has not down-sized its vehicle fleet, continues to provide full-size police-equipped cars for some non-patrol personnel, and assigns cars to some employees who may not need a permanently assigned car. Because a number of states have down-sized parts of their public safety vehicle fleets, questions have also arisen about those states' costs and experiences with the smaller cars. The audit addresses the following specific questions:

1. **What are the characteristics of the Kansas Highway Patrol motor vehicle fleet, and how does that fleet compare with fleets in other states?**

2. **Is the Highway Patrol vehicle fleet operated as efficiently as possible?**

To answer these questions, the auditors gathered information from the Kansas Highway Patrol, interviewed officials of the Patrol, and surveyed a sample of Patrol staff. They interviewed officials of the State Division of Purchases. They also contacted appropriate staff in several other states about their vehicle fleet operations and reviewed studies that have been conducted about police vehicle performance.

In general, the auditors found that the Patrol is operating a fleet of mostly full-size and mid-size police-equipped vehicles. Highway patrols in other states have vehicle fleets similar to Kansas'. The mid-size police-equipped vehicles used by the road-patrol staff are nearly as big as the full-size cars and are not fuel-efficient, but they are the only mid-size cars manufacturers currently offer with a police package. Non-patrol staff members are driving predominantly full-size and mid-size vehicles with police packages, although eight administrators have been assigned fuel-efficient mid-size cars without police packages. If all non-patrol staff had fuel-efficient mid-size cars without a police package, the auditors estimated the Patrol could save as much as $34,000 a year in operating costs. If such cars become available with a police package, it appears they could be used effectively by the road-patrol staff as well. Operating costs have declined significantly over the past several years, primarily as a result of declines in gasoline prices, but these costs could be reduced even further. Finally, the auditors examined other ways to increase the operating efficiency of the Patrol's motor vehicle fleet.

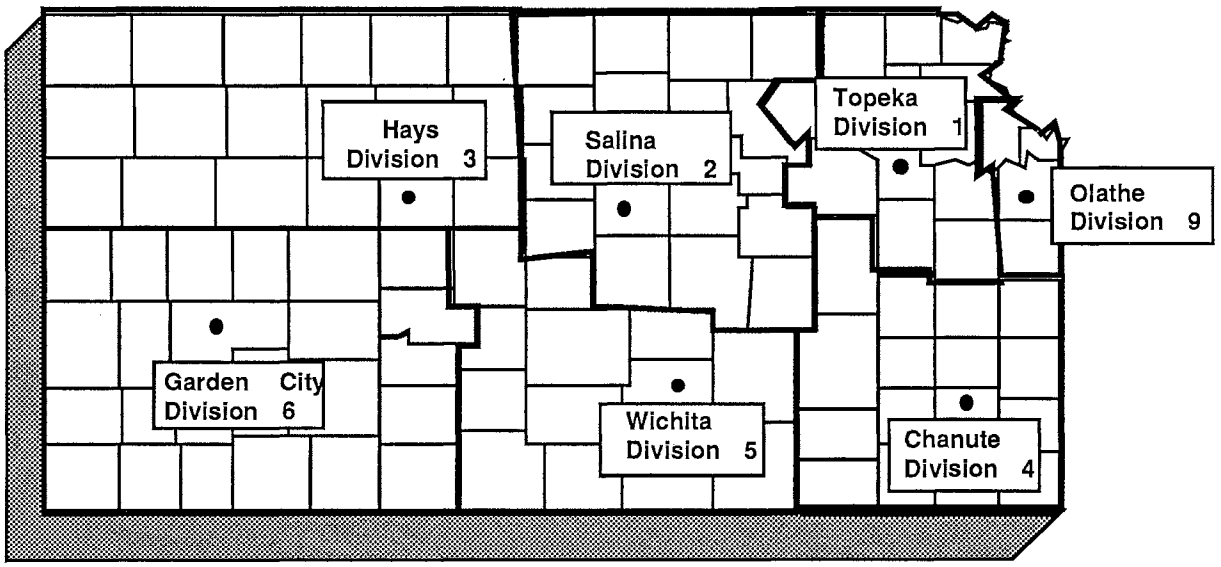
Following a brief background on the Kansas Highway Patrol, the rest of the audit addresses the two questions.

Background on the Kansas Highway Patrol

The Kansas Highway Patrol enforces laws relating to the operation of vehicles on State highways. In addition to road patrol work, Patrol staff promote public safety, assist disabled motorists, deliver emergency medical services, and assist other State agencies with traffic-related responsibilities. The Patrol also operates the federally funded Motor Carrier Safety Assistance Program, administers the Capitol Area Security Patrol and the Bureau of Emergency Medical Services, and provides limited public official security. This audit examines the vehicle fleet of the Highway Patrol program. Only the 434 vehicles of the uniformed Highway Patrol officers and the Capitol Area Security Patrol are included in the audit. The Turnpike Authority and the Bureau of Emergency Medical Services are not included in this audit.

To carry out its motor vehicle enforcement responsibilities, the Patrol has established seven field divisions throughout the State. The following map shows where these divisions are located and describes other activities of the Highway Patrol.

Highway Patrol Field Divisions



The Patrol has seven field divisions. As the map shows, they are located in Topeka, Salina, Hays, Chanute, Wichita, Garden City, and Olathe. In addition, the Patrol maintains a training division, a division that is responsible for the Motor Carrier Safety Assistance Program and motor vehicle enforcement, an aircraft division, and a public official security detail. The headquarters division in Topeka provides administrative support.

In fiscal year 1987, the field divisions, training division, motor carrier safety division, aircraft division, and headquarters division had 490.5 full-time equivalent employees, of which 377 were uniformed officers and troopers.

What Are the Characteristics of the Kansas Highway Patrol Motor Vehicle Fleet, and How Does That Fleet Compare With Those in Other States?

To answer this question, the auditors interviewed officials of the Highway Patrol, reviewed Patrol inventory and expenditure data, and contacted officials in several other states. In general, they found that the Patrol maintains a fleet made up mostly of full-size and mid-size police-packaged vehicles. Although other states generally have similar types of vehicle fleets for their Highway Patrol staff, some states are using subcompact high performance cars as pursuit vehicles. These findings are discussed in the sections that follow.

Most Patrol Vehicles Are Large and Mid-Size Models Equipped With a Police Package

The Highway Patrol has an inventory of 434 cars and trucks. It assigns a vehicle to each sworn officer on its staff. According to Patrol records, at the end of April 1987, 377 of the 434 vehicles on its inventory were assigned to uniformed Patrol officers, which includes both road-patrol and non-patrol staff.

The majority of the Patrol's vehicles are used to patrol the State's highways. Others are used for non-patrol activities such as supervision, motor carrier safety activities, and public safety demonstrations. As the following table shows, the Patrol's fleet is made up of mostly full-size and mid-size vehicles with police packages. A "police package" includes such features as a high performance engine, heavy duty chassis and suspension, heavy duty battery, heavy duty brakes, and a special cooling system. The purpose of these special features is to enhance vehicle performance and safety.

Assignment of Vehicles To Uniformed Highway Patrol Staff

	Number Assigned to:		
Type of Vehicle	Road Patrol	Non-Road Patrol	Total
Full-size with Police Package	48	12	60
Mid-Size with Police Package	255	39	294
Mid-Size without Police Package	0	8	8
Special-use vehicles (station wagons, trucks, etc.)	0	15	15
Total	**303**	**74**	**377**

The table indicates that 354 of the 377 vehicles assigned to uniformed staff are equipped with a police package. The Patrol has a total of 60 full-size and 302 mid-size vehicles. Most of the full-size cars are Ford LTD Crown Victorias. Most mid-size cars are Plymouth Gran Furys.

The size categories are based on definitions established by the Environmental Protection Agency. It classifies the size of vehicles according to their interior space and trunk volume. A full-size vehicle has an interior space and trunk volume of

Highway Patrol Motor Vehicle Fleet

Model Year	Make/Model	Type/Size of Vehicle	Number of Vehicles
1937	Plymouth	Antique	1
1979	Chrysler Newport	Full-size	5
1981	Chevrolet Impala	Full-size	2
1982	Mercury Marquis	Full-size	5
1983	Ford LTD Crown Victoria	Full-Size	66
1980	Plymouth Volare	Mid-Size	5
1984	Plymouth Gran Fury	Mid-size	146
1985	Plymouth Gran Fury	Mid-size	105
1985	Dodge 600	Mid-size	3
1986	Dodge Diplomat	Mid-size	18
1986	Plymouth Caravelle	Mid-size	5
1987	Dodge Diplomat	Mid-size	54
1981	Ford	Van	1
1982	Mercury Marquis	Station Wagon	2
1984	Ford	Station Wagon	4
1985	Ford	Station Wagon	5
1977	Chevrolet	Pick-up	1
1985	Chevrolet Suburban	Truck	3
1985	Chevrolet	Truck 4 x 4	1
1986	GMC Suburban	Truck	2
TOTAL			**434**

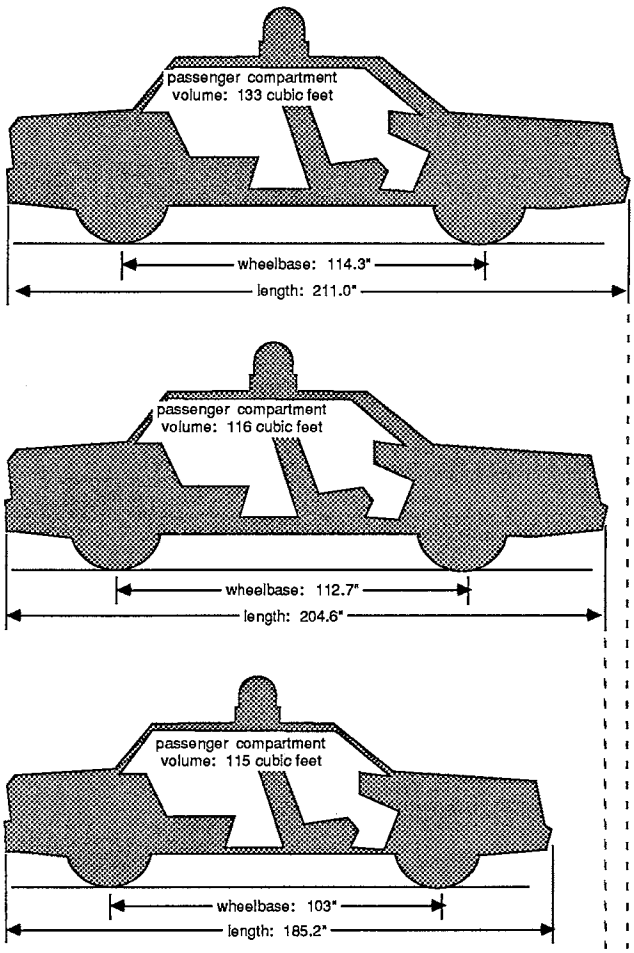
more than 120 cubic feet, while a mid-size vehicle has an interior and trunk volume of between 110 and 120 cubic feet. The Patrol's mid-size vehicles fall into this category because of their interior and trunk volume. However, as illustrated in the chart on the following page, the wheelbase, overall length, and weight of the mid-size cars equipped with a police package are comparable to full-size vehicles.

In addition to the vehicles included in the table, the Patrol has 57 vehicles that are not currently assigned to uniformed staff. These include 25 new Dodge Diplomats that will be used to replace older vehicles in the fleet, 12 vehicles in the process of being replaced, 10 spares, two vehicles in the maintenance shop, six pursuit training vehicles, and two vehicles in the training division. The box above shows all the vehicles in the Patrol's fleet.

Other States Have Patrol Fleets That Are Similar to Kansas' Fleet

The auditors contacted highway patrol officials in eight other states to obtain information about the characteristics of those states' motor vehicle fleets. They found that most other states' highway patrols use a mix of full-size and mid-size vehicles with police packages for road patrol. The mid-size vehicles are the same type of mid-size vehicles with police packages being used in Kansas. Iowa was the only state contacted that currently uses only full-size vehicles, because mid-size vehicles do not meet its specifications for interior and trunk space.

Relative Dimensions of Full-Size and Mid-Size Highway Patrol Vehicles



FULL-SIZE PATROL CAR
With Police Package
Ford LTD Crown Victoria
8-cylinder engine
4,079 pounds

MID-SIZE PATROL CAR
With Police Package
Dodge Diplomat
8-cylinder engine
3,885 pounds

MID-SIZE PATROL CAR
Without Police Package
Plymouth Caravelle
4-cylinder, turbo-charged
2,596 pounds

The Environmental Protection Agency designates a vehicle's size on the basis of interior space and trunk volume. The chart shows that the mid-size car with a police package, which makes up the majority of the Patrol's fleet, has an interior space and trunk volume that is about the same as the mid-size car without a police package. In other features, including wheelbase, overall length, and weight, the mid-size car with a police package is more similar to the full-size car.

Like Kansas, all the highway patrols equip their road-patrol vehicles with a police package. Six of the eight highway patrols contacted also use police-equipped vehicles for all non-patrol and administrative staff. Missouri uses full-size non-police-package vehicles for its headquarters staff. Washington uses mid-size non-police-package vehicles for its headquarters staff.

One major area of difference between Kansas' and other states' highway patrol vehicle fleets is the use of subcompact vehicles. Five of the eight states contacted currently use high-performance Ford Mustangs without police packages in the role of pursuit vehicles. Although these subcompact vehicles

are not suited for normal road patrol activities because of their limited passenger and equipment space, highway patrol officials in other states indicated their performance characteristics make them superior to typical police vehicles for high-speed pursuit situations. For example, Mustangs can be used to set up speed check lanes or to assist aircraft and stationary radar units in pursuing speeders. Officials of the Kansas Highway Patrol said they had considered Mustangs for use in a pursuit role, but the Patrol currently has no plans to purchase or test such vehicles.

Other states' highway patrols assign vehicles in a manner similar to the Kansas Highway Patrol. Kansas' Highway Patrol assigns a vehicle to every uniformed staff member on a permanent basis. Both non-patrol and road-patrol staff are allowed to drive their vehicles to and from their homes and duty stations, and are responsible for ensuring that the vehicles are properly serviced and maintained. Six of the eight states contacted by the auditors also assign a separate vehicle to each uniformed staff member, including non-patrol staff. Both Colorado and California assign vehicles to units rather than to individual staff members. These two states operate multiple shifts of road patrols, and patrol cars are shared by two or more officers on different shifts. In Colorado, administrative staff members are still assigned vehicles individually, while in California, administrative staff are required to draw upon a pool of vehicles assigned to their units.

Is the Highway Patrol Vehicle Fleet Operated As Efficiently As Possible?

To answer this question, the auditors interviewed officials of the Highway Patrol. They reviewed steps the Patrol had taken in response to the 1980 audit, and other steps that had been taken to reduce fleet costs. They reviewed budget and cost data for the Patrol's vehicle fleet. They also surveyed a a total of 79 Patrol staff, 69 of which responded. Finally, they examined what other states had been doing to reduce their fleets' costs.

The 1980 audit recommended that the Patrol should reduce fleet costs and increase operating efficiency by assigning non-police-equipped mid-size cars to its non-patrol staff, assigning mid-size police-equipped cars to its patrol staff, and exploring ways to purchase gasoline more cheaply. In general, the auditors found that most non-patrol staff are now assigned mid-size cars, but nearly all these cars are still equipped with police packages. In addition, these mid-size cars, like the ones assigned to the road-patrol staff, are not any more fuel-efficient than full-size cars. The fleet's operating costs have declined by about 28 percent over the past three years, primarily as a result of declining gasoline prices, but additional efficiencies are possible. These and other findings are discussed in the sections that follow.

Most Non-Patrol Staff Are Assigned Mid-Size Cars That Are Equipped With Police Packages

The 1980 audit recommended that the Patrol purchase mid-size vehicles without police packages for use in non-patrol activities. The audit found that non-patrol staff did not require police-equipped vehicles because those staff were rarely involved in pursuit situations. In addition, the audit found that the use of mid-size vehicles without police packages would increase operating efficiency because these vehicles got better gas mileage and were less expensive to purchase.

As of April 1987, the auditors identified 74 non-patrol staff in the Highway Patrol. These included all staff in the headquarters, training, public official security, and motor carrier assistance divisions, as well as the captain and administrative lieutenant in each field division. In all, 51 of these non-patrol staff are still driving police-equipped full-size or mid-size vehicles. Fifteen of the non-patrol staff are driving special-use vehicles such as station wagons or trucks. Only eight non-patrol staff are driving mid-size vehicles that do not have police packages.

The eight mid-size cars without police packages include three Dodge 600s and five Plymouth Caravelles that were bought in fiscal years 1985 and 1986. They are generally used for work-related travel and supervisory tasks, and are rarely used for road patrol. These particular mid-size cars are fuel-efficient; they average 21.4 miles to the gallon. At $.04 per mile, overall operating costs are less than one-half the operating costs of other vehicles in the Patrol's fleet. If all 51 police-equipped vehicles assigned to non-patrol staff were replaced with fuel-efficient mid-size vehicles without police packages, the Patrol could save more than $34,000 a year in operating costs. In addition, for the 1986 model year, the initial cost of the fuel-efficient mid-size vehicles was $982 apiece less than the mid-size police-equipped vehicles that were purchased. Thus, the Patrol could save an estimated $50,000 in capital outlay expenses when it purchased the 51 fuel-efficient mid-size cars.

Although non-patrol survey respondents generally did not favor switching to smaller cars wthout police packages, four staff members currently driving such cars rated their performance as superior. In all, 69 Highway Patrol staff members responded to the auditors' survey. Eighteen of 29 non-patrol respondents indicated they would not be willing to perform their jobs in a smaller vehicle without a police package. These staff members said that the full-size vehicle provided comfort as well as better driver and passenger protection. They also said that the weight of the vehicle was an important safety consideration. A number of respondents indicated that the current cars were already so small that it was difficult to carry all the required equipment.

The non-patrol respondents also indicated that the police package provided better performance than non-police-equipped cars because it included heavy-duty parts that make the car better able to withstand the stresses of road patrol. The performance characteristics of the vehicle were viewed as an important factor, particularly in those instances where the car is used for high-speed pursuits.

Vehicle performance is an important and valid concern for Highway Patrol officers. However, it is important to note that all four of the survey respondents who are currently assigned the mid-size cars without police packages indicated they have performed well as non-patrol vehicles. All four said the vehicles have superior top speed. Three of the four also indicated that acceleration, pursuit capabilities, and comfort were superior. Besides these four respondents, seven of 29 non-patrol staff said they would be willing to perform their jobs in a smaller vehicle without a police package. In addition, according to the results of the survey, the non-patrol staff spend an average of only 26 percent of their time in their vehicles. Only about one-fourth of the time spent in their vehicles is devoted to road-patrol activities. Because they spend so little time on actual road patrol, these non-patrol staff members' vehicles are not subject to the same stresses that a road-patrol vehicle goes through. As a result, the non-patrol staff are less likely to require the special, heavy-duty police package features.

The Michigan State Police Evaluation and Purchasing Program For Police Vehicles

Each year, the Michigan State Police Department evaluates "police patrol package" vehicles. The Department also provides comparative information on the Ford Mustang, even though this vehicle does not come in a police package. The results of the tests are used by police departments and fleet managers throughout the country. Michigan uses the results to determine which vehicle to buy for its staff.

In order to qualify for bidding, all of the test vehicles must meet certain minimum performance standards. These include the following for 1987 models:

Acceleration:	0 - 60 mph in 12.9 seconds 0 - 80 mph in 23.0 seconds 0 -100 mph in 42.3 seconds
Top speed:	The vehicle must attain a speed of 110 miles per hour within two miles.

In addition, the vehicles are compared in braking ability, comfort, fuel economy, and handling.

The Michigan vehicle specifications do not require that a specific engine be included with the vehicle, as long as the performance standards are met.

The fuel-efficient mid-size vehicles without a police package are not as large as the full-size vehicles. However, they do have the same interior and trunk volume as the mid-size vehicles with the police package, which make up the majority of the Patrol's fleet. As a result, the size of the vehicle may not be an important consideration.

For the reasons outlined above, the auditors concluded that the non-patrol staff could be equipped effectively with mid-size fuel-efficient cars without police packages. Such cars would increase the efficiency of the fleet by reducing both operating and capital costs.

Most Road-Patrol Staff Are Assigned Mid-Size Cars With Police Packages, But These Cars Are Not Fuel-Efficient

The 1980 audit recommended that the road-patrol staff be assigned mid-size police-equipped vehicles in place of the full-size police-equipped vehicles the Patrol was using at that time. The audit found that at least one mid-size vehicle met the performance standards of the Michigan State Police vehicle evaluation study for that year. As the accompanying profile describes, that study is used by law enforcement agencies throughout the country to evaluate police vehicles. The mid-size vehicle that met the performance standards at the time of the earlier audit got an estimated 18 miles to the gallon. Thus, that audit found that substantial operating cost savings would result from replacing the existing fleet with mid-size police-equipped vehicles.

In 1980, all three major automobile manufacturers built full-size vehicles with police packages. One of Chrysler's large vehicles then was the Plymouth Gran Fury, which was rated by the U.S. Environmental Protection Agency at 13 miles to the gallon. It had a wheelbase of 118.5 inches and an overall length of 220.2 inches. In 1980, automobile manufacturers also built a number of mid-size vehicles with police packages. One Chrysler mid-size vehicle was the Plymouth Volare. It had a wheelbase of 112.7 inches, an overall length of 204.3 inches, and was rated at 19 miles to the gallon.

Since 1980, a number of changes have occurred in the automobile industry. Most full-size cars have been down-sized or discontinued, and only a handful of full-size vehicles are currently being manufactured. In 1987, Chrysler no longer makes a car as large as its 1980 Gran Fury. The 1987 Gran Fury, which is

currently used by the Patrol, is the size of the 1980 Volare and is classed as a mid-size car. This mid-size Gran Fury's gas mileage in 1987 is rated at only 14 miles to the gallon, compared with the 19 miles to the gallon the mid-size Volare was rated at in 1980.

Clearly, the Patrol's mid-size vehicles are different from those discussed in the earlier audit. They are smaller than the full-size cars, but because they are not fuel-efficient, their use has not significantly reduced operating costs. However, automobile manufactuers do not currently offer a fuel-efficient mid-size vehicle equipped with a police package.

Although road-patrol survey respondents generally did not favor switching to smaller cars with police packages, a number of other reasons exist for strongly considering the use of such vehicles for road patrol. Twenty-four of the 37 road-patrol staff members responding to the survey indicated they would not be willing to perform their jobs in a smaller vehicle with a police package. Several indicated that their current cars were already too small. These staff indicated that a full-size vehicle was very important for carrying supplies and passengers. They also said the larger vehicles provided better stability, handling, protection, and comfort. In addition, the heavier weight of the larger vehicles was cited as an important feature by several respondents.

Also, if a fuel-efficient mid-size vehicle, such as the Plymouth Caravelle or Dodge 600, were offered with a police package, the Patrol's existing vehicle specifications for patrol vehicles would preclude consideration of such a car. The specifications require a minimum wheelbase of 112.7 inches; the wheelbase of the Caravelle is only 103 inches. The specifications call for an eight-cylinder engine. As described earlier, the Caravelle and the Dodge 600 each have a four-cylinder, turbo-charged engine.

Despite these concerns, there are other reasons for strongly considering purchasing mid-size fuel-efficient cars for road-patrol activities.

-- **Eight mid-size fuel-efficient vehicles have already been purchased by the Patrol for its non-patrol staff.** These cars are not equipped with a police package. The Patrol had been informed by the manufacturer that subsequent model years of the vehicle would be available in a police package, and it wanted to gain some experience with the cars in the event they became available in a police package.

-- **These eight cars are performing effectively as non-patrol vehicles.** Besides their increased fuel efficiency, these cars have a turbo-charged, four-cylinder engine to give greater acceleration. According to the staff who have been assigned these cars, they have superior performance characteristics, particularly in the areas of top speed and acceleration. Because they are classified as mid-size, these vehicles have an interior and trunk volume that is comparable to the mid-size cars currently used by the Patrol. As a result, they are able to provide the same amount of equipment and passenger space as the Patrol's mid-size police-equipped cars.

-- **Thirteen road-patrol staff indicated they would be willing to perform their jobs in a smaller vehicle with a police package.** These staff said that a smaller car would be acceptable as long as the car provided adequate stability and handling characteristics at high speeds.

-- **Replacing the existing fleet with fuel-efficient mid-size cars with police packages would save approximately $141,000 annually.** At 21.4 miles to the gallon, these cars withut police packages have shown excellent fuel economy. Although such vehicles might get fewer miles to the gallon when equipped with a police package and used for road patrol, they would still be expected to get better mileage than the current average of 13.3 miles to the gallon. If these cars became available in a police package, and if they got a conservative 17 miles per gallon, the auditors estimated that the Patrol's operating costs for such cars would decline by $118,000 annually solely as a result of purchasing less gasoline. As gasoline prices increase, this savings would be even greater. The auditors also estimated that a fuel-efficient mid-size vehicle equipped with a police package would cost approximately $175 less than the vehicles now in use. Because the Patrol purchases an average of 131 patrol vehicles each year, the capital outlay savings would be about $23,000 annually. Thus, total annual savings in operating and capital costs would be approximately $141,000.

Although fuel-efficient mid-size cars equipped with a police package are not offered by any manufacturer at the present time, if such cars meeting Kansas' performance requirements become available in the future, it appears they should be strongly considered by the Patrol for road-patrol activities.

Overall Operating Costs Declined From 1984 to 1986, But Maintenance Costs Could be Reduced Even Further

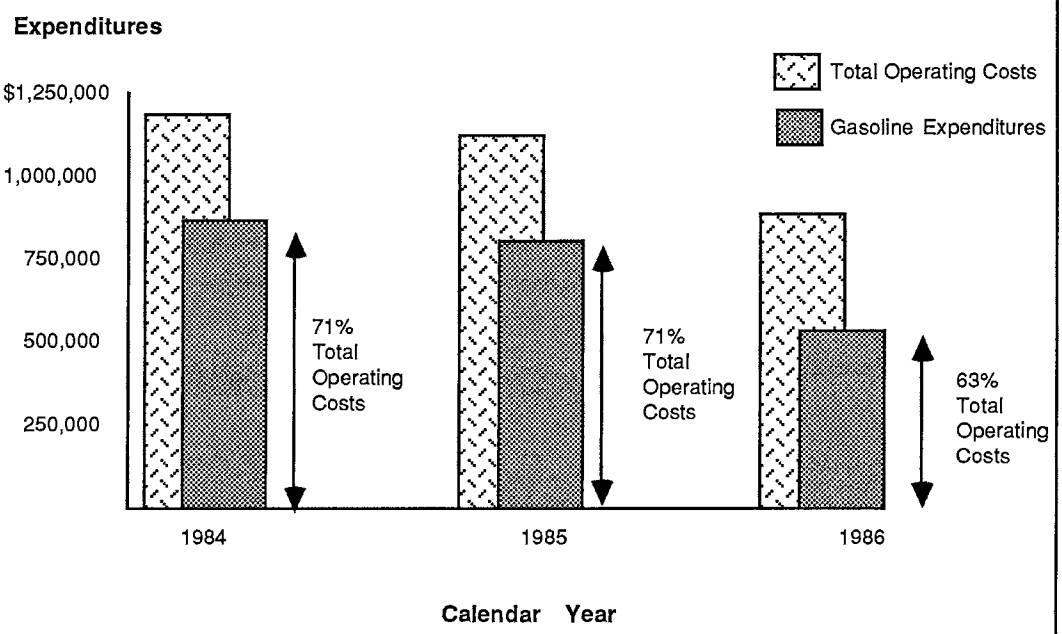
The auditors reviewed the operating costs for the fleet to determine whether any additional savings might be possible. They found that operating costs have been declining, primarily due to drops in the price of gasoline, but that savings in other operating expenditures may be possible.

The Patrol maintains records on the operating costs of each vehicle including expenditures for gasoline, oil, car washes, tires, miscellaneous parts and repairs, and accident parts and repairs. Gasoline is the largest category of expenditures, representing more than two-thirds of total operating costs. Miscellaneous parts and repairs make up the next largest category of costs. The chart on the following page shows the trend in operating costs for the past three years.

Highway Patrol Motor Vehicle Fleet
Operating Costs

Calendar Year	Gasoline Costs	Other Operating Costs	Total Operating Costs	Cost Per Mile
1984	$846,720	$339,447	$ 1,186,167	$.12
1985	798,720	327,151	1,125,871	.12
1986	535,324	316,666	851,990	.09
Change	-36.8%	-6.7%	-28.2%	0%

As the table shows, expenditures for gasoline fell by nearly 37 percent between 1984 and 1986. The primary reason for this was a decline in gasoline prices. In both 1984 and 1985, the average amount paid for a gallon of gasoline was $1.07. By 1986, this figure had dropped to $.75 per gallon. In addition, the



As the table shows, operating costs have declined from $1.2 million in calendar year 1984 to $850,000 in calendar year 1986, a drop of 28.2 percent. During the same time period, gasoline expenditures dropped from $846,000 to $535,000, a decline of 36.8 percent. Gasoline expenditures have gone down faster than total operating costs, primarily due to the fall in gasoline prices. As a result, gasoline represented a smaller proportion of total operating costs in 1986 than in 1984.

Patrol has installed bulk gasoline storage facilities in five locations. By purchasing gasoline in large quantities, the Patrol should be able to keep the price it pays for gasoline as low as possible.

The number of gallons used declined somewhat over the time period as a result of slightly better gas mileage. In 1984, overall miles to the gallon for the fleet were 12.2. By calendar year 1986, overall miles per gallon were 13.3, an increase of nine percent. Patrol officials indicated that one reason for this improvement was that troopers began to consciously think about ways to increase mileage. This was particularly important by the end of calendar year 1986, when the Patrol met its required budget reduction by cutting fuel consumption 17 percent.

Better monitoring of other operating costs could make the fleet's operation more efficient. The table also shows that other operating costs declined by just under seven percent between 1984 and 1986. These costs include expenditures for oil, car washes, tires, miscellaneous parts and repairs, and accident repairs. Even though these costs declined slightly over the three-year period, the auditors found that they may be able to be reduced even further .

The Patrol maintains records of operating costs for each vehicle, but much of the information is aggregated. For example, all miscellaneous repairs (including

alignments, transmission changes, and any other type of repair) are grouped into one category. As a result, it is not possible to determine what types of repairs were done without looking at each vehicle's folder. In addition, it appears that different vehicles have different performance experiences. The auditors found some vehicles that used as many as 10 tires in 30,000 miles, while others used only one or two tires in the same number of miles. Without more information, it is not possible to determine why so many tires had to be purchased for a particular vehicle.

Patrol officials indicated they were aware of this problem. In fact, the Patrol's fleet manager is in the process of setting up a computerized expenditure system that will allow expenditures for each vehicle to be entered into a computer at the division level. Headquarters staff will be able to access the information. With computerized expenditure information, the Patrol will be able to determine whether certain types of vehicles routinely have certain types of problems, the types of preventive maintenance that could be done on those vehicles to eliminate future problems, and the like. Or, if a trooper is wearing out too many tires, the Patrol will be able to instantly access all information about that trooper's vehicle to determine possible reasons for the excessive tire wear.

This system is in the early stages of development and no timetable has yet been established for its completion. However, the type of system that is envisioned offers real potential for ensuring that the fleet is operated as efficiently as possible.

Other Cost-Saving Measures Are Worth Exploring

From their discussions with other states, the auditors identified two other areas where cost savings might occur. Although little information currently exists to evaluate these alternatives, the potential savings from driving vehicles more miles before replacing them and pooling vehicles would appear to warrant further study.

The Patrol may be able to reduce its capital outlay expenditures by driving vehicles more miles before replacing them. In 1980, the Patrol replaced its vehicles every 76,000 miles. To reduce its capital costs, the Patrol now replaces vehicles after 85,000 miles. Although this replacement mileage is comparable to that of most other state highway patrols contacted by the auditors, Colorado, Oklahoma, and Washington drive their vehicles at least 100,000 miles before replacing them. Like those states, the Patrol could further reduce its capital costs by replacing vehicles at higher mileages. However, as the mileage on vehicles increases, operating costs tend to rise due to the need for increasing maintenance and repairs. For example, the Oklahoma Highway Patrol has determined that its operating cost for cars driven 80,000 miles is about six cents per mile, while its cost for cars driven more than 90,000 miles is about 12 cents per mile. Such an increase in operating costs, applied to the fleet as a whole, might offset any savings obtained by purchasing cars less frequently, but more information is needed to fully evaluate this alternative.

The Patrol could reduce operating costs in certain localities by pooling vehicles. Current Patrol policy is to assign a car to each uniformed staff member on a full-time basis. Staff members keep their cars at home and drive them directly to and from their work stations.

If the Patrol assigned vehicles to divisional or regional motor pools, the operating costs associated with driving to and from work could be eliminated.

There are some disadvantages with using this alternative in Kansas. Because the Patrol does not operate in shifts with 24-hour coverage to all areas of the State, troopers sometimes have to respond to emergency calls while off duty. Having their cars available at home not only allows them to proceed directly to an emergency scene, but also allows troopers to receive and communicate information while enroute. In addition, many troopers are assigned to isolated regions of the State, far from any central location where a motor pool could be established. However, in the more populated areas of the State, such as Topeka, Olathe, and Wichita, pooling vehicles at the division headquarters might be a feasible alternative.

Recommendations

1. To increase operating efficiency, the Highway Patrol should purchase fuel-efficient mid-size vehicles without police packages for all non-patrol staff who do not require special-use vehicles.

2. If fuel-efficient mid-size cars equipped with police packages once again become available, the Highway Patrol should strongly consider replacing its current full-size and mid-size police-equipped vehicles with these fuel-efficient cars.

3. The Highway Patrol should continue its efforts to establish a computerized system to monitor expenditures and improve the quality of information available relating to vehicle operating costs.

4. The Highway Patrol should evaluate the feasibility of driving its road-patrol vehicles more miles, and should consider increasing the number of miles each car is driven if the potential savings exceeds operating costs.

5. The Highway Patrol should evaluate the feasibility of pooling road-patrol and non-patrol vehicles in a central location in the more populated areas of the State.

APPENDIX A

Results of the Survey of Highway Patrol Staff

The auditors sent surveys to a sample of 79 uniformed Highway Patrol staff to determine how satisfied they were with their vehicles, how important certain features of cars were to them in their jobs, and whether they would be willing to replace their current vehicle wth a smaller vehicle. The sample included all staff above the rank of sergeant, one sergeant from each division, four troopers from each field division, and one trooper from the training division. A total of 69 responses were returned, for a response rate of 87.3 percent.

The results of the survey, presented separately for road-patrol and non-patrol staff, are presented on the following pages. More detailed information is available at the Division's office.

SURVEY OF UNIFORMED HIGHWAY PATROL STAFF
Road-Patrol Staff Survey Results

The Legislative Post Audit Committee has directed the Legislative Division of Post Audit to conduct a performance audit of the Highway Patrol motor vehicle fleet. The following survey is intended to obtain information about how uniformed Highway Patrol staff use their vehicles, and how they rate the performance of those vehicles.

A. Identifying Information

Name *39 Road-patrol staff responded to the survey* Rank _____ Division _____

Assigned vehicle: Year _____ Make/Model _____ ID # _____

The information above: is accurate ____ is not accurate, and I have made corrections where appropriate ____

B. Motor Vehicle Usage

1. In general, what percent of your on-duty time do you spend in your assigned vehicle? *64.1 %*

2. When you are on-duty in your assigned vehicle, about what percent of your time do you spend in each of the following activities?

Road patrol	*56.8 %*	Non-patrol travel	*3.7 %*
Investigatory tasks	*7.8*	Supervisory tasks	*14.2*
Training	*2.4*	Vehicle inspections	*4.7*
Emergency calls	*5.3*	Other	*4.6*

3. How many times during the last 12 months have you been involved in a high-speed pursuit? *5.3 times*

C. Motor Vehicle Performance

1. Ten areas of vehicle performance are listed below. In the column on the left, please rank the areas in terms of their importance in performing your job (use "1" to indicate the most important area and "10" to indicate the least important area). In the columns on the right, please indicate how well your currently assigned vehicle performs in each area:

		Number of Responses		
Avg. Rank		Superior	Satisfactory	Less Than Desirable
3.6	Handling	*3*	*31*	*5*
3.7	Acceleration	*0*	*12*	*27*
4.3	Braking	*4*	*4*	*31*
4.7	Comfort	*6*	*22*	*11*
5.0	Driver/Passenger Protection	*3*	*32*	*4*
5.4	Overall Pursuit Capability	*2*	*16*	*21*
5.6	Maintenance/Reliability	*8*	*28*	*3*
5.9	Top Speed	*1*	*16*	*22*
6.7	Visibility	*7*	*32*	*0*
7.5	Equipment Storage Space	*9*	*17*	*13*

Explanation or additional comments about your vehicle's performance:

Several road-patrol staff commented that the current Chrysler vehicles were already down-sized, and should not be considered full-size cars.

2. In order for you to perform your job, is it essential for you to have a full-size vehicle equipped with a police package?

   yes *30* no *9*

   Please explain:

   A large number of respondents indicated that space was important both for carrying equipment and for transporting passengers and prisoners. Many said the police package was important for its handling and pursuit characteristics.

3. Would you be willing to perform your job in a smaller vehicle:

   with a police package? yes *13* no *24*

   without a police package? yes *7* no *30*

   Please explain:

   Many respondents indicated that the size of the vehicle is of great importance given the amount of equipment that has to be carried on road patrol assignments. Those who indicated a police package was not needed generally indicated that a high performance package would be an essential feature.

Thank you for your assistance. If you have any questions about the survey, please call Ellyn Rullestad or Curt Winegarner at (913) 296-3792 or KANS-AN 561-3792.

SURVEY OF UNIFORMED HIGHWAY PATROL STAFF
Non-Patrol Staff Survey Results

The Legislative Post Audit Committee has directed the Legislative Division of Post Audit to conduct a performance audit of the Highway Patrol motor vehicle fleet. The following survey is intended to obtain information about how uniformed Highway Patrol staff use their vehicles, and how they rate the performance of those vehicles.

A. Identifying Information

Name *30 Non-road -patrol staff responded to the survey* Rank _____ Division _____

Assigned vehicle: Year _____ Make/Model _____ ID # _____

The information above: is accurate ____ is not accurate, and I have made corrections where appropriate ____

B. Motor Vehicle Usage

1. In general, what percent of your on-duty time do you spend in your assigned vehicle? *26.1 %*

2. When you are on-duty in your assigned vehicle, about what percent of your time do you spend in each of the following activities?

Road patrol	*25.3 %*	Non-patrol travel	*5.6 %*
Investigatory tasks	*8.1*	Supervisory tasks	*32.9*
Training	*7.0*	Vehicle inspections	*2.7*
Emergency calls	*3.1*	Other	*15.2*

3. How many times during the last 12 months have you been involved in a high-speed pursuit? *2.8 times*

C. Motor Vehicle Performance

1. Ten areas of vehicle performance are listed below. In the column on the left, please rank the areas in terms of their importance in performing your job (use "1" to indicate the most important area and "10" to indicate the least important area). In the columns on the right, please indicate how well your currently assigned vehicle performs in each area:

		Number of Responses		
Avg. Rank		Superior	Satisfactory	Less Than Desirable
3.0	Maintenance/Reliability	*4*	*25*	*10*
3.4	Driver/Passenger Protection	*5*	*24*	*1*
3.8	Handling	*7*	*22*	*1*
4.5	Braking	*6*	*24*	*0*
4.8	Comfort	*8*	*16*	*6*
5.0	Visibility	*7*	*23*	*0*
6.3	Acceleration	*4*	*17*	*9*
6.8	Equipment Storage Space	*6*	*14*	*10*
6.9	Overall Pursuit Capability	*4*	*17*	*9*
7.9	Top Speed	*5*	*15*	*10*

Explanation or additional comments about your vehicle's performance:

Several respondents indicated that their currently assigned vehicles were satisfactory in most areas, but were lacking in acceleration and top speed. Most respondents familiar with the mid-size non-police-equipped cars commented that the turbo-charged four cylinder engines performed well and got good gas mileage.

2. In order for you to perform your job, is it essential for you to have a full-size vehicle equipped with a police package?

   yes *11* no *18*

   Please explain:

   Of those who made additional comments, 15 indicated that a full-size vehicle was essential and 11 indicated that a police package was essential. Some of the reasons for needing a full-size vehicle included storage requirements and transporting passengers. Reasons for the police package were the performance features of such vehicles in emergency situations, the improved safety of the vehicles at high speeds, and the need to use the administrative vehicles for road patrol duties in some instances.

3. Would you be willing to perform your job in a smaller vehicle:

   with a police package? yes *14* no *16*

   without a police package? yes *11* no *18*

   Please explain:

   Many respondents indicated that full-size vehicles provide more comfort and protection than smaller vehicles. Many also indicated that a police package is important, particularly given the stresses placed on their vehicles - the heavy-duty features of the police package make the cars more reliable at high speeds.

Thank you for your assistance. If you have any questions about the survey, please call Ellyn Rullestad or Curt Winegarner at (913) 296-3792 or KANS-AN 561-3792.

APPENDIX B

Agency Response

A copy of the draft audit report was sent to the Kansas Highway Patrol on June 30, 1987. The Highway Patrol's response is included in this appendix.

KANSAS HIGHWAY PATROL

Service—Courtesy—Protection

Mike Hayden
Governor

Col. Donald L. Pickert
Superintendent

July 7, 1987

Mr. Meredith Williams
Legislative Post Auditor
Division of Legislative Post Audit
109 West 9th, Suite 301
Topeka, Kansas 66612-1285

Dear Mr. Williams

We have completed our review of your report, Highway Patrol Motor Vehicle Fleet.

The review was conducted by Captain Miller of our staff, the officer responsible for fleet management within the agency. A copy of his observations is attached.

In addition to Captain Miller's comments, I would only add that the agency is most cognizant of fleet costs and making every effort to address the problem. One outstanding example is the bulk purchase and dispersing of gasoline at our division points at considerable savings to the state.

Additionally, I would register our opposition to the concept of vehicle pooling in our metropolitan areas. We feel this would defeat the necessary response capability now afforded by the portal to portal application employed by the agency.

We appreciate the outstanding cooperation and professionalism displayed by your audit team in this undertaking and stand ready to further assist the study.

Sincerely

Donald L. Pickert

DONALD L. PICKERT
Superintendent

DLP:md

Enclosure

122 SW Seventh Street
Topeka, Kansas 66603-3847 (913) 232-9200

KANSAS HIGHWAY PATROL

Service—Courtesy—Protection

Mike Hayden
Governor

Col. Donald L. Pickert
Superintendent

July 6, 1987

Subject: Motor Vehicle Post Audit

To: Col. Donald Pickert
Superintendent

Attn: Major Charles Wickham

The following comments are in response to the draft of the Highway Patrol Motor Vehicle Fleet dated June 30, 1987.

Page 2, paragraph 1, line 8, states that 434 vehicles were included in the audit. What needs to be kept in mind, some of these vehicles were newly issued vehicles and retired vehicles. We will not have this many vehicles in use at any one given time. We will normally have approximately 375 in use depending upon manpower.

Page 2, paragraph 3, line 4. The aircraft division doesn't house the public official security function. The aircraft division does house the Capitol Area Security. The public official security detail is under the direct command of the Superintendent.

Page 3, paragraph 1, line 6, states that some states are using subcompact high performance cars as pursuit vehicles. It should be noted that there are not any police package vehicles that are subcompacts unless they are including the Mustangs as subcompacts. Yet on page 5, paragraph 2, it talks about other states using non police package Mustangs, yet the Michigan test included the Mustang in their test as police package vehicles.

Page 6, paragraph 1, line 4. I feel that there aren't any state patrol units that conduct "speed traps". One usually entices or baits a trap to catch something. A better statement could be made of our role as "speed check lane or enforcement lanes".

122 SW Seventh Street
Topeka, Kansas 66603 (913) 232-9200

Page 5, paragraph 2. We assign vehicles to all uniform personnel. This state doesn't have the manpower to have troopers on duty 24 hours a day. Every uniformed person is subject to call at all times. In the same light all staff officers are included in this obligation. It is of the utmost importance that every officer be available to respond to an emergency and be in immediate radio contact with the situation at hand.

Page 7, paragraph 2. As we consider the Plymouth Caravelles and the Dodge 600s compared to the rest of the fleet and stating that they operate at less than one half the operating cost, one must consider that these vehicles have no more that 34,000 miles. It is probable that one half of the remaining fleet could have more than 40,000 miles on the vehicles. We need to run the above vehicles the full term of their life to show a fair comparison.

Page 7, paragraph 5. Though our staff officers spend less time in their vehicle, they are under the same obligation to put themselves on the line if the need should arise. Being as our staff officers don't drive as much as the road officer they are less proficient drivers thus should be afforded the safety the police package provides. In comparison it is our intention to issue a rechargeable flashlight with a car charger to staff officers. Though they normally work days this doesn't alleviate the need for a flashlight at night that has a charged battery when normally they would have non chargable carbon batteries which often are run down due to short self life. The question is still at hand who will burden the vicarious liability if some mishap should occur.

Page 8, paragraph 5-6, line 8. We had some Volare units with the so called "lean burn engines" which actually operated in the 10 miles per gallon range.

Page 9, paragraph 3. As we consider the front wheel drive cars we should keep in mind that the front wheel vs. the rear wheel drive will drive differently in a pursuit situation, such as in curves, skids, and skid recovery. As human beings we are imprinted in a certain way to react to situations such as how to recover from a skid. The two type of vehicles react totally differently. Are we sacrificing safety for acceleration and economy?

Page 11, paragraph 2. Having to cut our fuel consumption by 17% the last half of FY 87 we cut back on miles patrolled. By doing so we in all probability have not covered all of our rural districts. Those individuals who live in the rural areas are tax payer just as their city neighbors and should be afforded the same service.

MARVIN J. MILLER, Captain
Logistical Setion

cc: file