EFFECTIVE FLEET MANAGEMENT

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ABSTRACT

With an average of one unit per 1200 subscribers, the Motor Vehicle Fleet has a significant impact on all cable operators' P and L. Acquisition and maintenance costs are on a continually escalating curve. Fuel costs, though currently at a low point, will be volatile through the foreseeable future. Vehicle down time will continue to idle expensive manpower. Are these controllable costs or is the operator held hostage by vehicle dealers, repair shops and OPEC?

The objective of this paper is to identify the factors which, when properly controlled, will help to minimize operation costs whle maximizing the effective use of each vehicle. Analyses will be accomplished in the primary areas of Maintenance, Fuel Usage, Acquisition and Record Keeping. Procedures which have proven successful will be discussed along with suggested implementation plans. The understanding and techniques of effective fleet management will be beneficial to all cable operators regardless of size.

As has been stated, there are four primary areas to be addressed in a cost effective fleet management program. These are acquisition, maintenance, fuel and record keeping.

1.0 RECORD KEEPING

From the outset it must be understood that accurate record keeping is mandatory. Without up to date and correct records, fleet decisions will be, at best, gut level guesses. Detailed records will reveal whether the vehicle, which, is the most expensive general tool being used, is doing the job for which it was purchased.

1.1 Miles

The number of miles put on the vehicle for the measuring period are recorded. This is the fundamental information from which more finite performance measurements are to be made. If technician performance reports are already being generated, it is recommended that these mileage reports be for the same period. If not, a calendar month basis will suffice. Maintaining the same measuring periods for these different reports will allow monitoring of such informantion as regularity of miles traveled per install or service call, whether that average is higher or lower than others in the same department, whether any inexplicable aberrations appear and whether routing is being accomplished in the most effective manner. Current odometer readings, year to date miles traveled and vehicle to date miles traveled should also be kept.

VEH NO./DRIVER		JAN	FEB	MAR	YTD	VTD
#79 JOYCE	MILES	2002	1557	1832	5391	91167
81 FORD PU	GALS	165.0	136.0	138.5	439.5	7293.1
	MAINT $	$37.05	$ .00	$115.48	$152.53	$3648.68
	MPG	12.1	11.4	13.2	12.3	12.5
	MAINT$/MI	$ .02	$ .00	$ .06	$ .03	$ .04
#88 SPELLMAN	MILES	1427	1677	1636	4740	42585
82 S-10 PU	GALS	123.9	122.3	118.8	365.0	3043.1
	MAINT $	$165.95	$25.29	$47.38	$238.62	$1272.55
	MPG	11.5	13.7	13.8	13.0	14.0
	MAINT$/MI	$ .12	$ .02	$ .03	$ .05	.03

Figure 1 - Vehicle Performance Report

1.2 Fuel Usage

The number of gallons of fuel used for each measuring period is also to be recorded. When combined with miles traveled, the resulting MPG data will show the effeciencies or lack thereof by specific vehicle types, possible maintenance problems, driver effectiveness, and, if fuel unit costs are maintained, more accurate job costing. It also can reveal areas of potential employee theft of fuel.

1.3 Maintenance Costs

Measuring period maintenance costs are to be recorded. These costs can be total maintenance costs or can be broken out into preventative maintenance, repair and body damage categories. If company vehicle performance is of importance to the Fleet Manager, then preventative maintenance and repair figures should be kept separate from

body damage. This allows a more accurate comparison between equipment types and/or brands. Whether the operator is self insured or uses a regular insurance carrier will make a difference also. In most cases it will be best to split the costs by source (i.e. maintenance/repair, body damage, etc.) and then combine at a later date when overall costs are needed.

While measuring period maintenance costs per mile can provide insight into specific problems, the vehicle-to-date information is generally the most useful. It can be used to compare vehicle types/brands and drivers over a longer period of time thereby allowing for the implementation of more precise corrective measures in the areas of operator training and vehicle acquisition.

1.4 Regular Maintenance

There are specific maintenance routines that need to be monitored. These are Lubrication, Tune Ups, Brake Work, Exhaust System Repair, Rustproofing and Cooling System Maintenance and Level. Keeping the dates of last service performed and/or levels in the use of coolant generates "ticklers" for needed maintenance. As a point of information, there are companies such as Quaker State who for a price will provide a computerized vehicle PM status report to the fleet operator if so needed.

1.5 Files

In addition to a fleet summary reflecting the above information, each vehicle should have a file contining all pertinent data on that vehicle. This file will contain the vehicle title, a copy of the current registration, a copy of the proof of insurance, copies of any warranties on that vehicle and any special equipment that is part of the vehicle, general maintenance records and copies of all repair invoices. This information is invaluable when analyzing vehicular or service shop performance and whenever warranty questions arise. Accurate and detailed record keeping is not important. It is essential.

2.0 ACQUISITION

The acquisition of vehicles for the modern CATV operator must be as carefully and meticulously approached as acquiring any other major components in the system. Before actually purchasing a vehicle, the following are to be considered:

2.1 Establishing Specifications

A cost effective vehile must be equipped to perform a specific function. Too big or too little will not do.

The first step in establishing specifications for a vehicle is to clearly define its usage. Observe how other vehicles operating in the specific task area for which the new one is intended are used. Obtain accurate dimensions and weight of the entire intended payload including the driver. Have the drivers profile their specific needs from the vehicle. Check any special equipment requirements. Identify the types of terrain over which the vehicle must operate. Determine towing requirements. Verify applicable OSHA, State and Local regulations. Talk with other operators regarding their experiences meeting similar needs. Refer to your individual vehicle records and reports to determine the sufficiency, performance and operating costs of the variously equipped vehicles currently in your fleet. Compile a list of all the above data.

C/K PICKUP
POWER TEAMS
ALL STATES EXCEPT CALIFORNIA
C-K10/1500 SERIES
POWER TEAMS (MUST ORDER ENGINE, TRANSMISSION AND REAR AXLE)
(Consult GVWR Selector and Tire Chart to insure tire capacity and availability)

ENGINE	TRANSMISSION 3-SP	4-SP	AUTO	AXLES 2.73	3.08	3.42	3.73	GVWR
W/NAS STANDARD EMISSION EQUIPMENT								
-C10703-C10903								
LB1 V8 4.3 Liter (262-4BBL)	MM3	MM4	MX1	GQ1	*GU4	–	–	48/5200
		MM7	MX0	–	GQ1	*GU8	–	48/5200
	MM3	MM4	MX0	–	GQ1	GU8	–	5800
		MM7	–	–	–	GQ1	%GT4	5800
			MX1	GQ1	GU4	–	–	58/6100
		MM7		–	–	–	%GQ1	6100
		MM4		–	GQ1	–	–	6100
	MM3			–	–	GQ1	–	6100
			MX0	–	GQ1	GU8	–	6100
LE9 V8 5.0 Liter (305-4BBL)	MM3	MM7		–	GQ1	GU8	–	N/A 6100
		MM4	MX0/1	GQ1	GU4	–	–	N/A 6100
	MM3	MM7		–	–	GQ1	–	6100
		MM4		–	GQ1	–	–	6100
			MX0	GQ1	GU4	GU8	–	6100
			MX1	GQ1	GU4	–	–	6100
LH6 Diesel 6.2 Liter V8 (379 Cu In)(Reqs 83J)		MM7		–	GQ1	GU8	–	52/5800
		MM4	MX0	GQ1	GU4	–	–	52/5800
		MM7		–	–	GQ1	–	6100
		MM4	MX0	–	GQ1	GU8	–	6100
-K10703-K10903								
LB1 V8 4.3 Liter (262-4BBL)		MM4	MX0	–	–	GQ1	%GT4	6100
		MM7		–	–	–	%GQ1	6100
LE9 V8 5.0 Liter (305-4BBL)		MM7		–	–	GQ1	GT4	6100
		MM4		GQ1	GU4	–	–	6100
			MX0	–	GQ1	GU8	GT4	6100
LH6 Diesel 6.2 Liter V8 (379 Cu In)(Reqs 83J)		MM4	MX0	–	GQ1	GU8	–	6100
		MM7		–	–	GQ1	–	6100
W/NAS HIGH ALTITUDE EMISSION EQUIPMENT								
-C10703-C10903								
LB1 V8 4.3 Liter (262-4BBL)	MM3	MM4/7	MX0/1	–	–	GQ1	%GT4	N/A 6100
	MM3	MM4	MX0/1	–	–	GQ1	%GT4	6100
		MM7		–	–	–	%GQ1	6100
LE9 V8 5.0 Liter (305-4BBL)	MM3	MM4/7	MX0	–	GQ1	–	GT4	N/A 6100
	MM3	MM7		–	–	–	GQ1	6100
		MM4	MX0	–	GQ1	–	GT4	6100
			MX1	–	GQ1	–	–	ALL
LH6 Diesel 6.2 Liter V8 (379 Cu In)(Reqs 83J)		MM4/7	MX0	–	GQ1	–	GT4	52/5800
		MM4	MX0	–	GQ1	GU8	GT4	6100
		MM7		–	–	GQ1	GT4	6100
-K10703-K10903								
LB1 V8 4.3 Liter (262-4BBL)		MM4	MX0	–	–	GQ1	%GT4	6100
		MM7		–	–	–	%GQ1	6100
LE9 V8 5.0 Liter (305-4BBL)		MM7		–	–	GQ1	GT4	6100
		MM4		–	GQ1	–	GT4	6100
			MX0	–	GQ1	GU8	GT4	6100
LH6 Diesel 6.2 Liter V8 (379 Cu In)(Reqs 83J)		MM4/7	MX0	–	–	GQ1	GT4	6100

*N/A P195/75R15 or P205/75R15 Tires
%Reqs KC4 Eng. Oil Cooler

C/K Pickup—Page 18 General Motors Corporation January,

Figure 2 - Vehicle Facts Sheet

Secondly, obtain a specification book from the various manufacturers. If you have national fleet account status with the manufacturers, they normally will provide the spec books to you at no cost. If you are not yet qualified for this status, your local dealers will generally allow you to use their facts books.

Thirdly, match your compiled list of needs with the manufacturer's fact book. This will quickly begin to identify specific types and manufacturer parameters within which you will operate. It is critical that, once this process has begun, you resist the temptation to compromise these minimum specs. Under equipping a vehicle will result in an inability to perform the required tasks. Over equipping wastes expensive capital.

Special equipment needs (i.e. utility bodies, lift units, etc.) must be approached in essentially the same manner. The specs furnished to the special equipment manufacturer or OEM should include the physical dimensions and capabilities of the generic vehicle type on which the equipment will be installed.

2.2 Fleet Account Numbers

All U.S. manufacturers currently have fleet incentives and discounts available to fleet operators who have applied and qualified for their specific programs. Qualifying requires basically the following:

2.2.1 AMERICAN MOTORS

The fleet must be ten vehicles or more. The fleet operator should send a letter requesting fleet status, with proof of ownership of ten or more vehicles, to the local AMC dealer. AMC offers option package incentives and/or discounts on vehicle purchases. These discounts are in addition to the best deal you can make with the dealer.

2.2.2 CHRYSLER CORPORATION

The fleet must be ten vehicles or more. The application procedure is the same as AMC. Incentives and discount structures are also similar.

2.2.3 FORD MOTOR COMPANY

Fleet must purchase ten or more vehicles annually. The fleet operator should request a national fleet account application form from a local Ford dealer which the dealer will obtain from his district office. The form will be completed by the fleet operator and submitted with proofs of purchase of ten or more vehicles within the past twelve months to the local dealer. The dealer verifies the information and submits the application to the district office which approves and issues the account number. This account entitles the fleet operator to incentives and/or fleet discounts on certain vehicles ranging normally from $100 - $500.00. Periodic bonus incentives are offered in addition to the standard discounts. As with AMC, these discounts are in addition to the best deal that can be made with the local dealer.

2.2.4 GENERAL MOTORS CORPORATION

GM has several fleet programs. The basic plan requires the purchase of ten or more vehicles annually and has incentive and discount structures similar to Ford. Application procedures are similar to Chrysler with the exception that application must be made to each division (i.e. Chevrolet, GMC, Buick, etc.). The Mega-Fleet program requires the purchase of five hundred or more vehicles annually and offers improved terms resulting in $100 - $300.00 improvement over the standard program.

Most dealers will generally grant additional labor and parts discounts to fleet operators having the appropriate national fleet account numbers. It is also important to understand that these numbers are not based on each local fleet but can apply to the national operation as long as the name on the registration is fundamentally the same. (i.e. UA Cablesystems of Michigan, UACC Midwest, UACI, etc.)

2.3 Requesting Quotes

FULL SIZE PICKUP

MINIMUM 6100# GVWR
LONG WHEELBASE
TRANSMISSION - AUTOMATIC (SPECIFY IF LOCKING TORQUE CONVERTER)
TRANSMISSION COOLER
ENGINE - MINIMUM 6.0 L DIESEL
AXLE - TRACTION LOK REAR 3.73 GEAR RATIO
TIRES - P235/75R 15 BSW STEEL BELTED ALL SEASON TIRES (5) OR EQUIVALENT
BATTERY - H.D. (SPECIFY RATING) MINIMUM 515 CCA
BRAKES - POWER
STEERING - POWER
COOLING - H.D.
GUAGES - FULL INCLUDING TACHOMETER
ALTERNATOR - H.D. (SPECIFY RATING) MINIMUM 64 AMP
GLASS - TINTED WINDSHIELD ONLY
RADIO - AM
PAINT - DARK BLUE METALLIC
INTERIOR - VINYL - BLUE OR DARK GRAY
MIRRORS - LO MOUNT SWING LOK PAINTED
BUMPER REAR - STEP PAINTED

QUANTITY - 1

DELIVERY - 7/1/85

TERMS - NET 30 DAYS FOLLOWING DELIVERY

Figure 3 - Quote Request Specs

Format a generic list of the specifications. The list must be specific while simultaneously sufficiently generic to prevent precluding a manufacturer whose product could meet the need. Request that the dealer quote the vehicle as requested specifying in detail any variances from the specifications listed. Be sure and note any fleet account numbers which apply. Note on the list quanity, desired delivery dates and locations, and terms. Most dealers prefer to work on a cash or a maximum of Net 15 days basis. If, however, other terms are specified on the request for quote, the dealer can often use the request in procuring an extension on his money from his floor planner (i.e. GMAC, FoMoCo Credit, etc.).

A specific cover letter to each dealer should indicate the fleet operator's request for quotes on the attached specified vehicles. The letter should give a specific date and time by which the quotes are due and should provide the name and telephone number of a contact person who can answer any questions the dealer may have.

When the quotes are returned, the Fleet Manager must establish a method of comparing "apples and apples". Use a side by side, item by item comparison chart. This will quickly indicate which dealers have omitted certain requirements. A telephone call to these dealers will determine whether the omissions can be corrected or whether the vehicle simply cannot qualify. The bottom line price comparison will help to select the winner from the remaining qualifying quotes.

FULL SIZE PICKUP	GOOD GMC	KELLER FORD	COURTESY DODGE	BERGER CHEV
≥6100# GVWR	✓ W100	✓ W200	5300	✓ W100
TRANS	✓ Auto 4spd	✓ Auto 4spd	✓ Auto 3spd	✓ Auto 4spd
ENG ≥ 6.0 L DIESEL	✓ 6.2 L	✓ 6.9 L	N/A	✓ 6.2
AXLE LOK 3.73:1	✓ 3:73	✓ 4:10	✓ 4:10	✓ 3:73
TIRES	✓ P235 75R	✓ P235 75R	✓ P235 75R	✓ P235 75R
BATTERY	✓ 515	✓ 515	✓ 500	✓ 515
BRAKES POWER	✓	✓	✓	✓
STEERING POWER	✓	✓	✓	✓
COOLING H.D.	✓	✓	✓	✓
GLASS TINTED	✓	✓	✓	✓
RADIO AM	✓	✓	✓	✓
MIRRORS	✓ Ls Lgt.	✓ Ls Lgt.	✓ Ls Lgt.	✓ Ls Lgt.
BUMPER	✓ Strgt	✓ Strgt	✓ Strgt	✓ Strgt
PRICE	10,497.61	11,477.00	N/A	10,194.41

Figure 4 - Quote Comparison

The lowest price should not always be the final qualifying factor. Before making the decision, verify service capabilities and past performance. Political considerations are also very important especially in this industry. It is often wiser to purchase from a dealer within the franchise area. Evidence of returning money to the community from which it came is always positive during rate increase hearings and franchise renewals.

3.0 MAINTENANCE

Maintenance is an area of fleet management which is second in importance only to accurate record keeping. While intensive preparation in vehicle selection and purchase is vital, it will all be for naught if proper preventative and repair maintenance procedures are not adhered to consistently.

3.1 Preventative Maintenance

3.1.1 Lube

Lubrication schedules are some of the most critical and frequent of all preventative maintenance procedures. Oil and oil filter replacements for the vehicle's engine, transmission, generator and other on board equipment must take place regularly and be monitored closely. Differential grease, brake and power steering pump fluids also require systematic level and condition checks. Steering and suspension components are in need of periodic lubrication.

The frequency of maintenance on each of these is determined by several factors:

3.1.1.1 Manufacturer's Recommendations

Most manufacturers will recommend maximum lubrication intervals. In order to maintain the warranty, these intervals are not to be exceeded.

3.1.1.2 Environmental Considerations

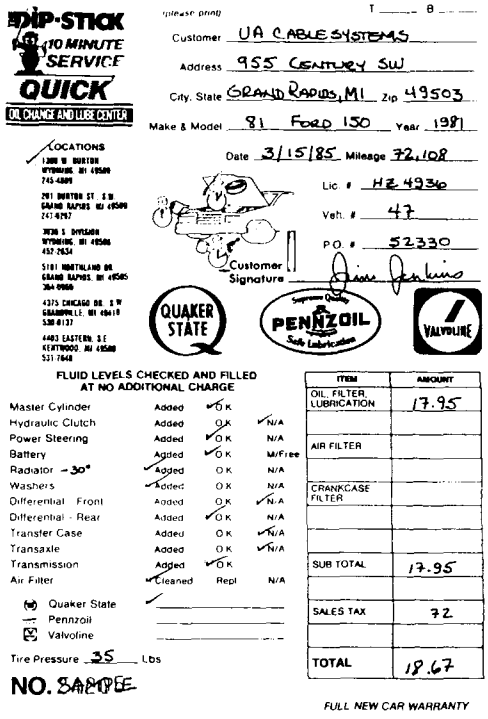
While the manufacturer establishes generous intervals, the environment will help to set more realistic maximums. Dust, sand and heat from the Southwest, salt sprays and humidity from the Eastern Seaboard and chloride from the icy roads of the Northlands all affect the vehicle's lubricants and, as a result, profoundly shorten their effective life. All of these substances, when not cleaned from metal surfaces, cause excessive wear and, eventually, breakdown.

3.1.1.3 Equipment Usage/Condition

A well tuned vehicle operated at a constant 55 MPH under cool and dry conditions for distances of more than twenty miles per trip will operate with less frequent lubrication intervals than the vehicle with an engine miss pulling a 5,000 pound load through the mud. Other factors such as idle time add lubricant wear and tear not reflected on the odomoter.

When establishing lubrication intervals, all of the above factors must be analyzed. The result should be general intervals, related to specific vehicle categories, that have both time and mileage "ticklers". For example, a light pickup averaging 12,000 miles per year should have a 2,500 miles or a 3 months interval, while a bucket truck, which spends a great deal of time idling, would more appropriately be scheduled for 2,000 miles or 200 hours.

The implementation of regularly scheduled lubrication intervals not only gives the confidence that comes from knowing that dirt is being cleaned out but also gives the operation greater availability of additional diagnostic information. Fluid leaks can be spotted. The coloration and smell of fluids being replaced provides insight into potential problems. Wear on mechanical components is readily detectable. In most cases, the repair or quick lube shop is more than willing to check all these points, while doing the full service lube and to give the operator a report on what is found.


DIP-STICK
10 MINUTE SERVICE
QUICK
OIL CHANGE AND LUBE CENTER

Customer UA CABLE SYSTEMS
Address 955 CENTURY SW
City, State GRAND RAPIDS, MI Zip 49503
Make & Model 81 FORD 150 Year 1981
Date 3/15/85 Mileage 72,108
Lic. # HZ 4936
Veh. # 47
P.O. # 52330
Customer Signature

QUAKER STATE
PENNZOIL
VALVOLINE

FLUID LEVELS CHECKED AND FILLED AT NO ADDITIONAL CHARGE

Master Cylinder	Added	OK	
Hydraulic Clutch	Added	OK	N/A
Power Steering	Added	OK	N/A
Battery	Added	OK	M/Free
Radiator -30°	Added	OK	N/A
Washers	Added	OK	N/A
Differential - Front	Added	OK	N/A
Differential - Rear	Added	OK	N/A
Transfer Case	Added	OK	N/A
Transaxle	Added	OK	N/A
Transmission	Added	OK	
Air Filter	Cleaned	Repl	N/A

Quaker State
Pennzoil
Valvoline

Tire Pressure 35 Lbs

NO. SAMPLE

ITEM	AMOUNT
OIL, FILTER, LUBRICATION	17.95
AIR FILTER	
CRANKCASE FILTER	
SUB TOTAL	17.95
SALES TAX	72
TOTAL	18.67

FULL NEW CAR WARRANTY

Figure 5 - Oil Change Inspection Report

Many subscribe to an oil/fluid analysis service which can give a more in depth picture of what wear is taking place inside the engine or transmission and will advise if that wear is within normal limits.

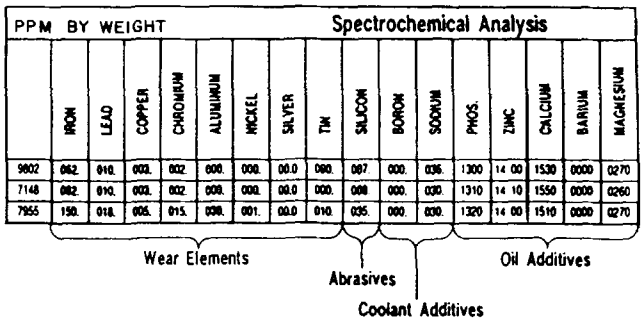


Figure 6 - Oil Analysis Report

This information has not been shown to be consistent enough to be considered "Gospel" but rather a trend indicator.

The utilization of conservative lubrication intervals allows the Fleet Manager to extend the useful life of the vehicle by minimizing wear, to correct many problems before a costly breakdown occurs and, to operate a safer more cost effective fleet.

3.1.2 Tune Up

With today's modern engines, tune ups though less frequent, are still critical and substantially more expensive than in the past. Unleaded fuels, computerized ignition systems and electronically controlled fuel injection all combine to extend spark plug life and have actually eliminated components such as contact points and condensors. Tune up maintenance will generally be to improve driveability or correct running problems rather than strictly as preventative maintenance. The increased test equipment and mechanical skill levels required to maintain these technologically advanced systems, however, have increased the overall cost. Diagnostic time is such a factor that the mechanic has to have a solid working knowledge of both theory and application.

Tune up frequency will be based on several factors:

3.1.2.1 Manufacturer's Recommendations

Manufacturers have suggested maintenance intervals for various components in the ignition/fuel systems. While some of these may have an actually longer life than that recommended, warranty maintenance mandates compliance. Additionally, the recommended checks may reveal problems that are correctible at a lower cost than if left to breakdown.

3.1.2.2 Vehicle/Equipment Type

Whether a vehicle is normally aspirated or turbo charged, fuel injected or carbureted, has an electronic ignition system or plugs and points will also affect the maintenance frequency. The vehicle with a carburetor and standard ignition system will probably require, under normal usage, tune up maintenance every 10,000 - 14,000 miles. A multiport fuel injected vehicle with a computerized electronic ignition system will go 15,000 - 21,000 fairly easily.

3.1.2.3 Vehicle Usage/Conditions

Idling, frequent starts and stops and environmental conditions will also impact tune up maintenance schedules. As with lubrication scheduling, time rather than mileage, may often be the "tickler".

While all of the above must be considered in establishing an appropriate tune up maintenance schedule, the two primary ticklers will be driveability and fuel consumption. The individual operators are responsible for informing either the Fleet Manager or their Supervisor when their vehicle is not running right. The aforementioned proper record keeping will enable accurate monitoring of fuel consumption.

3.1.3 Tires

Proper tire maintenance is contingent on operator awareness. The operator is the individual who should be the first to be aware of the two primary causes of shortened tire life - improper inflation and front end alignment/tire balance:

3.1.3.1 Inflation

Tire pressures should be maintained within the manufacturers prescribed limits for loading, operating and environmental conditions. Under or over inflating causes excessive tread wear and can weaken sidewalls resulting in adversely affected handling and the danger of a blowout.

3.1.3.2 Alignment/Tire Balance

Improper alignment and/or tire balance will result in irregular wear patterns shortening tire life. Handling characteristics such as pulling, drifting, darting and wheel vibration will generally be manifest causing unpredictable and unsafe operation. Each vehicle operator is to visually note tire inflation and wear daily. Precise air pressure guage checks should be made at least weekly. Inflation and front end maintenance will result in safer and more dependable operation along with extended tire wear.

3.1.4 Cooling System

The vehicle's cooling system is as equally important as the lubrication system. This fluid keeps an engine from over heating while also preventing ice from forming and causing permanent component damage. Overheating is one of the primary causes of premature bearing and ring failure in engines. Freeze ups can cause severe cylinder head and engine block damage. Levels should be monitored and maintained at factory settings. Antifreeze effectiveness should be checked at every oil change and be kept between -25 to -40 F. The vehicle's entire cooling system should be backflushed at least every two years. The radiator should be cleaned periodically to keep it free from buildups of debris that restrict air flow thereby reducing effectiveness. Hoses should be visually checked at every oil change. The thermostat and pressure cap should be checked for proper operation at least yearly. An improperly operating thermostat can cause over heating or can prevent an engine from reaching proper operating temperatures. Use a good brand of antifreeze. All vehicles should be equipped with temperature guages so that the operator can monitor minor temperature increases or decreases that can affect performance.

3.1.5 Body Maintenance

There are two main sources of generation of body repair. One is corrosion and the other is accidental damage. Both can be addressed to a certain degree by preventative procedures.

3.1.5.1 Corrosion

Rust is a problem in most geographic areas and is a result of improperly treated or unprotected metal. Fleet operators need to take several steps to prevent this rust from starting, for once begun, it is difficult if not impossible to totally eradicate.

First, a vehicle should be thoroughly rustproofed by a reputable company before being put into service. Firms such as Rusty Jones, Ziebart, Tuff Kote Dinol and others will do a comprehensive job and offer rust through warranties.

Keep in mind that just rustproofing a vehicle when it is new is not sufficient. Most warranties require annual cleanings and inspections. While these inspections and any touchups usually are without charge, the cleaning necessary to do the inspection is not. This cost can be minimized by regular cleanings of both the outer and under bodies. In addition to keeping inspection cost down, this procedure will help in preventing rust.

The vehicle should be checked

periodically for stone chips and other sources of surface rust. Use rubbing compound to clean the surface and then touch up with the manufacturers recommended touch-up paint. This few minutes weekly will help to add to the usable life of the vehicle and to good customer perception of the operation.

3.1.5.2 Accidental Damage

The most prevalent type of body damage is the small ding and dent variety. Prevention of this type of repair is, as in most moving vehicle accidents, 90% the responsibility of the operator.

There are a number of procedures that can be used in bringing driver generated damage under control:

When a person is considered for a position, initiate a driving record check with the State Department of Motor Vehicles. Visually check each operators driving permit annually. Make the ability to safely operate a vehicle part of the criteria for getting and keeping a job.

When an employee is being trained to perform their specific job function, include, as intregal part of the training, how to safely, by regulatory and company standards, operate their vehicle. The driver must perceive the vehicle as an expensive tool requiring proper operation and maintenance.

Provide long term safe driving recognition and awards on a frequent basis. Do not assume that pride in one's vehicle and driving record comes naturally.

Set up disciplinary procedures for incidents of preventable accidents. These actions should range from time off without pay up to and including termination. Accident damage is not only expensive to repair but also endangers health and the community's perception of the company.

The Fleet Manager or department supervisor should physically check each vehicle for damage and safety problems (i.e. broken mirrors, poor housekeeping, etc.) at least monthly.

3.2 Repair Maintenance

Repair is expensive. The cheapest approach to repair is always a comprehensive preventative maintenance program. Even the best PM programs cannot prevent all component failure and when that happens, the Fleet Operator must be prepared to respond in the most effective manner. A decision must be made regarding who will repair the vehicle. Will it be a specialty shop, a dealership, general repair garage or maybe the company's own in-house mechanic? For most fleets, however, the latter cannot be cost justified and will not be considered at this time.

Generally, a hybrid approach must be taken with several factors being considered.

First is quality of work. No matter how quickly or inexpensively the work is completed, if it's not right it's not quick enough and too expensive. Check past information in the vehicle files for an insight into repair shops performance. Also spot check each shop's equipment, mechanical expertise and work in progress.

Secondly is down time. The time a technician spends waiting for a vehicle to be repaired is money lost. A shop that can provide repairs during off hours or one that will give your fleet higher priority should be given higher consideration.

Thirdly is cost. Cost can be controlled in several ways. The fleet operator should request fleet quotes on different types of repairs, negotiate discounted rate structures, obtain work quality guarantees and use flat rate manuals to verify that services performed are not being overcharged. These manuals can be purchased through a local distributor. Some dealers however, will even provide this to their fleet accounts as a method of assuring dealer intent and retaining the account. The best manuals to use are Chiltons, Motor or Mitchell.

As was stated, a hybrid approach will generally be the most effective. Send all warranty work to the selling dealer if geographically possible. Use specialty shops for brake, exhaust, transmission and tire repair. These are specialists, usually guaranteeing their work and probably giving the fastest turn around. Establish a relationship with a good general repair shop that can take on miscellaneous and long term repair. Monitor the work performed and the stability of costs. Annually request quotes and re-evaluate the shops being used

Utilizing these procedures and a good PM program will maximize the fleet operator's control of cost and the operating life of the vehicles.

4.0 FUEL

The fleet operator is faced with essentially three fuel alternatives in powering his fleet - gasoline, diesel and propane. He can buy this fuel at a local pump or can fill up at a company owned and operated pump. Which fuel type and source is the best?

4.1 Fuel Type

4.1.1 Gasoline

Unleaded gasoline is the predominant vehicle fuel sold. It is readily available, relatively inexpensive and most vehicles can be specified to run on it.

Gasoline fuel systems are more complex and expensive to maintain than diesel but also more familiar to most service shops than diesel or propane.

4.1.2 Diesel

Diesel powered light duty vehicles are more common now than twenty years ago. Diesels will exhibit better fuel consumption rates than similar gasoline fired vehicles. Diesel fuel is almost as readily available as unleaded gasoline and more so than propane though it is somewhat more expensive than either. High usage rate diesel powered vehicles generally are cheaper to operate than their gasoline powered counterparts. Light duty U.S. diesels are being phased out by GM and are available in quantity only from Ford. There are fewer shops that will do repair and and maintenance on diesels and diesel engines cost more.

4.1.3 Propane

While fairly popular ten years ago, propane is not being used as much as was originally projected. Propane can provide both lower unit cost and better consumption rates than gasoline or diesel. It requires special fuel tank and fuel system modifications and is not as readily available as the other fuels.

For most fleets, gasoline powered passenger cars and light duty trucks are preferrable to diesel or propane. The general unavailability of diesel powerplants in all light duty equipment but Ford makes the diesel's future in this class uncertain. Fuel system technology is advancing rapidly enough to make manufacturers compliance with CAFE standards using gasoline powered engines almost a certainty thereby assuring continued availability and MPG improvement.

Medium, heavy and 4 x 4 trucks are another matter. Diesels such as the International 6.9L, the Detroit 8.2L and others of the same type are readily available and well proven. Fuel consumption rates average approximately fifty percent higher than similar gasoline powered units. Ignition systems in the newer generation of diesels are sufficiently improved that winter starts no longer need be a problem. When specifying a diesel, however, great care must be exercised in gearing. To obtain the maximum efficiency from the more expensive diesel engine, it must be operated within its designed range. A knowledgeable truck rep can be invaluable in properly equipping these vehicles.

Propane powered vehicles are not usually recommended for fleet usage. The cost of installation of the propane system is rarely returned through improved performance and the limited availability of fuel sources is inconvenient.

4.2 Fuel Sources

Whether to purchase gas from a local gas station, a company owned pump or from a combination of the two is a decision that requires due diligence. Each has its positive and negative aspects and must be considered in the light of several factors.

How much of what types of fuel are pumped monthly? Is there a service station operator that will carry a running tab and invoice monthly? Will all drivers have to carry major oil company credit cards? Is there the physical space to install a fuel tank and pump? Is the area zoned for a pump?

If there is physical space, the area is zoned properly, and the fleet uses three thousand gallons or more of a particular type of fuel monthly, there is probably sufficient justification for a company owned pump. The comany owned pump allows access twenty four hours a day, seven days a week which can be very beneficial during late night or Sunday long term outages. It will save a net cost of about three cents per gallon if monthly purchases are under ten thousand gallons and about five cents if over that amount. It is more easily controllable than credit cards which are subject to misuse. If used as the only source of fuel, it is inconvenient for trucks deep in system which need to fill up.

The best approach for those fleets that can justify a pump will be to use the pump as the primary source of fuel and issue a limited number of credit cards to the specific field personnel who need them. A sign out log or computerized issue system should be incorporated with the company pump. Individual vehicle gas logs should be maintained. Monthly, all credit card slips and the company pump log should be reconciled aganst the vehicle logs and the tank stick measurements. This will allow the maximum in cost savings while not sacrificing convenience or control.

5.0 CONCLUSION

When analyzing fleet management, one must bear in the mind that the fleet of vehicles exists primarily for the conveyance of workers and equipment to and from the job site. All efforts must be directed at meeting that need as efficiently and consistently as possible. Implementing the above suggestions will assist in accomplishing that objective while concurrently controlling costs. The results of effective fleet management will be reduced costs with improved integrity.

GASOLINE LOG

DRIVER: Verne Reed VEH #: 214 Ve 6-90

DATE (JULIAN)	ODOMETER (LAST FILL-UP)	ODOMETER (THIS FILL-UP)	GALLONS/ LITERS	LOCATION CODE	COMMENTS
8-6		35 690	18.0		* Last Entry from
					July
8-8	35 690	35 771	13.6	1	
8-10	35 771	35 901	17.7	1	
8-13	35 901	36 028	16.4	1	
8-15	36 028	36 138	18.9	16	
8-16	36 138	36 258	18.2	1	
8-21	36 258	36 369	19.5	1	
8-23	36 369	36 480	17.0	1	
8-27	36 480	36 598	16.98	1	
8-28	36 598	36 718	17.8	1	
8-29	36 718	36 817	16.9	1	
8-30	36 817	36 908	17.3	1	
8-30	36 908	36 982	16.8	5	
8-31	36 982	37 114	18.2	1	
9-2	37 114	37 244	17.9	1	
		MILES:	GALS:		M.P.G.:
		1 554	243.2		6.4

CODE #	GAS STATION LOCATION	CODE #	GAS STATION LOCATION
1	G.R. OFFICE	13	COOPER'S, 7535 MAIN, JENISON
2	N E. HUB	14	EASTERN, 5225 EASTERN S.E.
3	BENTON'S, S - 28TH S.W.	15	GEORGE'S, 3287 ALPINE
4	BRETON, 2363 - 28TH S.E.	16	LANGS, 3960 28TH SW
5	BUCHANAN'S, 4417 KALAMAZOO	17	PAGANELLI'S, 608 - 28TH S.W.
6	DAN'S, 2600 E. BELTLINE	18	PAUL'S, 1201 MICHIGAN N.E.
7	DAN'S, 3603 BYRON CENTER	19	SHELL, 415 S. DIVISION
8	MARINER'S, 808 - 44TH S.W.	20	WONDERLAND, 4133 W. RIVER DR.
9	MARINER'S, 5381 S DIVISION	21	
10	JAY'S, 3960 - 28TH S E.	22	
11	MASON & NOVITSKY'S, 2050 LEONARD N.W	23	
12	CASCADE HILLS, 4019 CASCADE	24	OTHER

Figure 7 - Monthly Gas Log

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