

Best Practice – March 2008 Report –April 1, 2008

During March 2008 we received 20 completed responses to a Best Practice inquiry consisting of questions submitted by fleet representatives who routinely participate in our research. A description of the participating fleets in this study includes:

In total they operate an estimated 12,000 power units and 35,000 trailers.

<u>Participants by type of fleet</u>		<u>Participants by total size of fleet (power and trailer)</u>	
For Hire	85%	<100	21%
Private Fleets	15%	100-999	26%
		1000-4999	42%
		>5000	11%

*Participants in the study received an excel file with complete fleet demographic information along with the associated answers for each question. In many cases these fleet specific responses could be more helpful than this report.

In the analysis below the original question is shown in *italics*.

Engine Technology

1. If you are operating power units with new 2007 EPA engines:

How has mpg been affected (as compared to previous engines)?

(8) respondents indicated they have been operating these units with the following experience:

- (5) have experienced degradation in mpg on average of 5%
- (2) have experienced improvement in mpg on average .775%

Are there any maintenance/reliability issues?

Emissions control electronics shutting down engines? – 4 respondents

Turbo failures? – 2 respondents

More downtime? - 3 respondents

Why?

- Parts/service availability
- Techs are not educated or equipped to diagnose and repair issues
- Regenerations, Volvo flex pipe breaking, everyone learning how to work on them, OEM's not knowing what's wrong with them

Other issues?

What?

- Avail of ULSD fuel
- Inconsistent manifold pressure and power
- Cummins ECU recalibration needed
- Bellow at DPF

Have they been resolved by engine and/or truck OEM?

The issues that don't seem to be resolved as yet are the availability of parts and service and the regeneration issue with Volvo's

2. Are you expecting a change in oil drain interval schedules with 07 engines?

<u>Engine</u>	<u>Oil Drain Interval</u>
Pre '07 engines	Average 47,000 miles
Post '07 engines	Average 29,000 miles

A few fleets expected a change with the same oil formulation, but the majority expected it to remain the same. However, one fleet (PAM Transport) who is significantly reducing his oil drain interval (from 150,000 to 70,000 miles) is doing it by changing from synthetic to semi-synthetic oil. This change is expected to actually reduce his cost (even with more frequent oil changes) because of the much lower costs of the semi-synthetic oil (vs. synthetic). Carl Tapp, VP of Maintenance at PAM Transport has been interviewed for an upcoming HDT article on this subject.

One other additional comment on this subject:

- No change - also we have elected to stay with CI-4 oil until information is provided to offset the increased cost of CJ oil

3. Regarding DPF cleaning/inspection requirements

Our experience so far is

Most don't have enough miles on these units – additional comment that might be helpful..

- Right now we don't have enough miles on the truck to have to have them cleaned yet. They are telling us that with our type of runs, that we should be able to go 400,000 miles per cleaning

How do you plan to handle this requirement in the future?

- Send to engine distributor
- Not sure, probably dealer service
- Might not need it in our operation and trade cycle
- OEM does not have any systems in place to handle this.
- Exchange program
- Probably outsource until enough units come due at same time. Hopefully cleaning machine prices will have fallen by then
- We'll invest in a cleaning machine
- I plan on taking the filter to the dealer to have cleaned then re-install the same filter back into the same truck it came out of
- With engine OEM reman program

4. What are your concerns regarding infrastructure (such as UREA availability) to support 2010 and beyond engine technology?

For those that had concerns, the following comments:

- We would spec an engine that doesn't require UREA. No interest in owning equipment that requires this.
- I do not think OEM's have any idea of how they will deal with these issues
- I would like to know more information such as how long UREA will last - is UREA required at each fill up or will it last longer than the fuel. If it is required at each fuel stop, I feel this could create problems. Will we be restricted to a handful of fueling locations which may increase fuel cost. **NOTE: During the Mid America Truck Show, Freightliner announced that UREA will probably need to be added every 4,000-5,000 miles**
- From the information I have seen so far you will have to rely on the OEM's for UREA at least initially
- It's 2008 and no one is discussing this with the goal to set up infrastructure. This won't be ready and engines that don't require it will be at a big advantage. This is a no brainer
- Several OEM and engine suppliers are already committed to this strategy. They need to put the push on this so that infrastructure does not negatively affect their marketing. I suspect that the first year may be a bit rough but it will come around
- Seems very costly. I would hate to see more costs pushed on to us. We run mostly Cummins engines, so we are hoping they continue with the EGR technology vs. having to use UREA
- If they don't do any better than they have so far on USL fuel, it will be a nightmare
- UREA?
- Availability, driver training, maintenance
- Wide spread availability

5. How will manufacturers support 2007 engines once 2010 engines are standard on new equipment?

Most didn't really see an issue, but we did receive some comments from respondents that aren't so sure:

- I do not have much faith in the engine degree of preparedness for any of these issues
- Support is poor now, it will get worse because everyone is running out of money. Maybe it will get better due to non one is buying, therefore making them realize they ought to take care of the customer

Maintenance

6. Do you expect '07 engine technology to increase your overall maintenance costs?

Yes – 70% expect increased costs

Why?

- additional repairs and maintenance necessary to maintain, increased cost of oil
- More components
- Training, jury is still out on failure info
- DPF filter, more complex software and electrical systems

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- Engines are more complicated so there is more opportunity for parts to fail. Fewer technicians that can work on this will mean a higher price due to high demand of qualified technicians
- Training my technicians
- It already has. New diagnostic programs, new training, more parts, accident damage more expensive
- A lot of issues are a combination of first bugs being worked out (these will pass, they always have before) plus truck drivers operating switches they shouldn't (this too will pass but drivers are always harder to fix than technology)
- Possibly shorter PM cycles
- There is wiring and switches that will need servicing
- Extra emission control maintenance and sensors
- The cost of decreased oil change interval, the costs required to clean the DPF's, damage to DPF's due to driver negligence, a possible increase in oil costs for 2007 oil specs once we are forced to use it, technician training costs
- With technology comes added cost if nothing else more technology to diagnose the problem
- Additional components
- Additional training required and equipment to maintain

7. Do you expect maintenance costs to again increase with 2010 engine technology?

Yes – 75%

Why?

- Not sure but expect an increase due to complexity of engine
- Even more components
- Same as previous question (5)
- Same reasons - more complicated than 2007 engines
- Training my technicians
- Require more service and life expectancy is less
- Engine technology has increased with twin-turbos and new exhaust systems
- Probably stay about the same
- SCR tanks and coolant hoses going to SCR tank will need more attention
- Possibly not, some manufacturers not making significant changes (at least not yet)
- Depends on the technology used, but will increase for many of the same reasons as the 2007 engines. Definitely more if forced to use the SCR technology
- Additional components

8. Regarding where maintenance is performed on your fleet's vehicles

Planned Changes	%	What
Plan to bring more in house	28%	<ul style="list-style-type: none"> • All excluding major warranty repairs • All possible • As much as we can. Dealers are writing their own checks, rates are skyrocketing, and they keep finding more wrong • Diagnostics • WE already do most in house, this will continue. Outside shops have same problems we do, tech shortage, training, etc.
Plan to outsource more	0%	
Don't plan any changes	72%	<ul style="list-style-type: none"> • Keep all I can in house to make sure it's done right

9. What is the best way to prevent wheel run off due to loose lugs?

- Torque wheel nuts after any maintenance, proper training to technicians and drivers
- Use a torque wrench
- Torque, verify torque, re-torque, inspect components, lube nut and studs properly
- Use torque wrench every time you put a wrench onto a lug nut, and re-torque often
- Proper training to ensure they are installed properly. Regular inspections to ensure there are not any loose lugs
- Always use a torque wrench for final tightening and inspect wheels at every PM
- Don't take the liability on yourself. If that doesn't work, join TMC and they will teach you. If you can't wait contact TMC S.2 Chair for advice. If that doesn't work, torque them. If that doesn't work, have a two person sign off on every tire removal job. every job consists of ABS sensor replacement and brake job, maybe wheel seal job. Don't just look at tire replacement, but tire removals. The 2 person check off works for us, but you have to be religious about it and never let a work order go through without 2nd person sign off
- Torque them properly to start with
- Make sure your people know what they are doing plus make sure tools are good
- Using unimount wheels with the flanged wheel nut
- Train your people to do things the right way
- Proper installation when wheel installed
- Torque check at each service
- Tech training on how to install wheels correctly, and hold them accountable
- Improve pre-trip inspection would be a start
- Frequent and quality inspections
- Torque check at PM service
- Lubricate nut as per manufacturers recommendations and tighten to proper torque

10. How often should chassis lubes and inspections be performed for OTR class 8 power units?

Since we received all manner of suggestions here, there was really no way to give an average, so we're showing you all the answers we received to this question

- Same interval as oil change 25K to 30K
- 25,000 miles or 60 days
- Depends on the operation and duty cycle
- Weekly

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- Every 15,000 to 20,000 miles
- 25,000 has worked for our company
- 250 hours
- Don't exceed 25,000 miles
- Depends on the lube you are using and components you are spec'ing
- We do ours every two weeks but have older fleet average plus run high duty cycles (mountain runs with day/night drivers)
- 28,000 mi
- 15-18,000 mile intervals
- Every 7500 miles
- 90 days or 30000 mi
- 15,000km
- At least every 15,000 miles
- Every 25,000 miles
- AT least monthly
- Every 90 days
- Every 60 days
-

11. Are you using extended oil change systems such as OPS-1? if yes, what are the savings?

(3) of the 20 answered yes to this question, but only one answered – what are the savings– his answer “Every 45,000 kms” (Canadian fleet).

12. Do you use Puradyne By-Pass Oil Filtration products? If yes, how are they beneficial?

Only one respondent gave any indication that he might be using these products, but – “Have not used long enough” Another respondent offered this: “Use Filtakleen system for extended engine life”

13. Do you have tires checked at all positions whenever vehicles come in the garage?

Yes 66%

14. How do you identify parts that failed when the part is under warranty? For instance, you replace an alternator, the alternator has a 1 year unlimited warranty. If that alternator fails within that time frame, how do you recognize this? If your answer is "the computerized maintenance software" does your system actually do this or are you wishing it did?

- Maintenance software and yes it does track this if the correct information has been entered at the time of replacement
- Computer has parts tracking if properly listed
- Our system actually points it out but....you have to watch and file it!
- Actually looking it up in our computer system
- We use RTA and it will flag the part as warranty as long as the information is logged in correctly
- Report n trucks under a year old
- It actually does
- Our system does have the capability for any items we request a flag. Most of our components make it through their warranty period. We monitor one's that have problems and (better yet) switch to components hat don't have problems
- The lease provider is responsible for tracking warranty
- WE track it with in-house warranty person
- In house software to help and hired warranty manager to oversee

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- I'm using TMT's software system and it does. For each part that you put into your inventory system you must correctly input the warranty information (miles and time ie. Volvo gives you 1 year and 100,000 mile warranty on their parts). In order for the system to flag the technician that a part is warrantable, they would have to charge the same VMRS code for each time you put the warrantable part on. For example if your parts department would accidentally change the VMRS code, or the new alternator was a different part number and they used a different VMRS code when inputting that info in the part inventory system, the system would not recognize it as being the same item, therefore would not look at it as a warrantable item.
- My parts manager also enters work orders and anytime a part is replaced, he cross checks for warranty
- Manually check maintenance file
- WE set up the RO in our maintenance program, the costs is zero, but the failure is logged, then you run reports that include zero dollar amount RO's for that item. You can then determine failure rate of component based on count not just costs

15. How do you avoid paying current shop rates of \$70 to \$100 per hour to repair minor things like lights, mud flaps, mirrors, door locks and handles, etc?

- Try to bring this in house vs. paying to have minor repairs done out sourced. Set up programs with dealers for reduced labor expense
- In-house
- Be very selective with your vendors, negotiate rates with your regular vendors or move the work!
- In-house PM
- Perform this work in our shops
- WE do as much work in house as possible
- Sometimes you just have to do it to keep the equipment moving
- Shop vendors, USE INDEPENDENTS....YOU WILL NEED THEM MORE IN FUTURE SO START USING THEM NOW, THEY WILL APPRECIATE YOUR BUSINESS
- Stay out of dealerships
- Do them ourselves (2) lights, brake adjustments, small things our drivers help on (3) Try to avoid breaking things thru error (tell drivers "don't screw up")
- Lease provider on site and few maintenance problems on the road
- You don't
- Pick specific vendors for this type of work
- As much as possible in house
- WE do all this in house. We do very thorough PM inspections, and catch most items while in our shop
- If it is not a safety related item it does not get repaired on the road
- Working on that
- Negotiation, quantity of work performed at a specific location

16. How are you making your maintenance operation more efficient?

- Centralized parts purchasing; in source of maintenance, better PM practices
- Less staff
- Training on proper use of tooling, besides a normal PM focus on the specific issues that cause on the road failures
- Streamlining flow through our facility
- Standardize parts and work procedures
- Consolidating parts suppliers to a limited few rather than buying 1 part here, one part there, etc.

- Never forgetting what your mission is and keeping it simple. This works. Don't get side tracked over stupid stuff
- Better training, accountability
- (1) Reviewing everything we do, justify what we do well, reinvent things we don't (2) always strive to do good PM (decent prevention cheaper than best cure)
 - Lease provider manages very well
 - Always looking at ways to improve getting your people involved and listen
 - WE are always looking for items that we can replace in the shop before they break on the road. We consider our shop a Preventative Maintenance shop rather than a repair shop.
 - Trying to work smarter by paying more attention to trends
 - Constant state of change, break it

Technicians/Other Human Resources

17. How do you develop the correct attitude towards shop safety/risk management? Understanding that we have a responsibility to the public to perform repairs properly and operate safe equipment. No issues Inform and discuss

- Lead by example, safety is not optional in our facilities, provide and enforce use of PPE, enforce safety rules, provide proper equipment-jacks, wheel chocks, etc. and keep them maintained
- Do not rush into a situation always assess it first
- We make safety part of our every day discussions
- Nothing changes an attitude quicker than cash - we pay yearly safety bonus's
- We have really beefed up the safety training and the wearing of safety goggles
- It's a personal thing. If a person gets hurt, they are no good to their family or to our shop. Remind them of that. If they don't have a family, find them one. It makes them work harder when they have kids, house payments, etc.
- Reward good performers and continually review processes
- "Attitude is a choice" Present safety as an act of personal choice, make sure the message is constant (not just passing) make sure management leads by example, make sure some tangible recognition comes for safety success, and involve shop personnel in invention of solutions
- Talk with your people coach make sure to spend time with them everyday if possible
- Have not - health and safety dictates and is very hard to operate much less efficiently
- Give the technicians the responsibility of helping develop the safety policies
- My technicians take pride in no accidents/they do not want to be a cost because maintenance is already looked at as a cost with no benefit in some eyes
- NO shop
- Show photos of an on the job injury, make it personal to the family.

18. How do you motivate technicians to grow within the organization?

- Training/involvement
- Whip (*suppose he's kidding??*)
- This can be a challenge...there is not always a position to move up to and some are happy doing what they are doing
- Pay all education costs including housing
- Encourage them to be their best
- We do a poor job of it
- Be a first class operation. Experts say people want to belong to a first class organization. If you can't do this, at least make your department first class. Again, you also have to tell people they are first class too
- Reward and recognize good performers

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- Provide them with appropriate business information, challenge them to make decisions based on business principals. Offer them the chance to show leadership (project level to start) reinforce risk taking (push the limit) by being objective about initial struggles and possible mistakes during "new" tasks, and give positive recognition as the accept "ownership" of their tasks and results
- Do different things for them let them know you care!
- All openings posted and are open to all employees at all facilities
- Challenge them to learn new things. I challenge them to come up with at least one item that they learned that week in the weekly shop meeting. They look bad to the rest of the techs if they fail to come up with at least one item. Then they try to compete with each other
- Business planning, Action plan, and then performance plan. The Company business plan is shared with the company, then corporate objectives are built to support that, then department action plans support them, then performance plans support the action plans. This assigns accountability to everyone

19. How do you develop loyalty – from the company to the employee and from the employee to the company?

- Competitive pay, several options on shifts, good benefits, expectations of the employee and the company and employee are readily available
- Treat them as individuals
- Flexibility, take personal interest in them, recognize the difference in personality, and character
- Make them feel they are part of the family. Include their family members I company functions
- Working with the OEM's to see they keep our people trained.
- Just a basically decent place to work with benefits that are reasonable
- Our boss said this once. The relationship with employee and company is like a marriage. It's a give and take thing. You can't always give and you can't always take. Treat it as a marriage
- WE take care of our people and all leadership have a servant attitude
- See previous question plus recognize when they do "above and beyond"
- Be upfront and honest with them and say thanks for job done well. Remember they are human
- Treat like family
- For me, the loyalty from the company to the employees was easy because of the wonderful company I work for. Loyalty from the employee to the company follows once you show the true loyalty to the employee
- Family atmosphere 90% of my maintenance staff have over 15 years with me.
- By how you treat them

20. How are you training your technicians to maintain the newest version of engine?

- Engine manufacturer on site training, in house training programs
- Rely on dealer for training
- Vendor, in-house, and self study
- I am trying to get them into the OEM training program, however they have not fully developed it in regards to the newest engines
- Working with the OEM's to see they keep our people trained
- We are still old school, we send heavy engine work to the dealer
- Shop supervisor gets trained, then he trains shift supervisors and other techs. Shift supervisor trains techs too. Bring OEM's in for some of this training. In this day of no one buying, they should be happy to come in and train you. If someone from OEM says no, then contact someone else, you will find someone to come in and do this.
- In house with OEM support
- Strong relationship with engine supplier (required of supplier)
- Spend the time and money to have them schooled

- Through OEM's
- OEM Training
- In house trainer

21. What should the servicing interval be for air dryer systems such as the Bendix AD-?

- 1yr., 100,000 miles
- Lifetime
- I'd like to see the "real" answer!
- On a year
- Twice per year
- Once per year preferably just before the onset of winter.
- When they break is how we do it
- I Love AD9's, we still spec them. We rebuild every two years, every year if it's an old truck (2000 and under) for 1 hour and \$26.00 you can't beat it. Don't forget to ensure 12V to heater element, put this on a form!!!!!!
- 250,000 miles or every three years
- "As needed per individual vehicle" WE have two operations that are serviced yearly (very cold winters, lots of air consumption on 7 air ride axles. WE have other divisions with milder climates pulling spring trailers that go 3 or 4 years between services)
- Depends on your environment in your application
- Yearly
- Replace the purge valve each year, and the canister every other
- Depends on your duty cycle, you must measure failure rate, then determine when to replace

22. How do you calculate workload staffing for your maintenance facilities?

- Average SRT based on model, year, miles. Shop bay availability, fleet size, miles
- Based on previous experience and customer demands
- Call Carl Tapp at PAM Transport to discuss
- 1 mechanic for every 11 tractors
- We try to staff to handle the load, not always easy
- WE do a fair amount of outside work so its different than fleet. Customer work dictates this. Our customer work has increased steadily
- Look at the quantity of equipment assigned to each facility
- A lot depends on the individual mechanics at each facility. The right person can do three times
- Depends on how much work you do in house
- No equation used - as required
- With help from TMC recommended practice
- Just do the best we can with what we have
- Through an in-house scheduling board that we created with our software package

Equipment & Product Purchasing/Spec'ing

23. Do you lease or buy trailers?

Rent or lease	%	What drives the decision
We rent/lease our trailers	5%	<ul style="list-style-type: none"> • Overall cost
We purchase our trailers	85%	<ul style="list-style-type: none"> • You can't come out renting or leasing, we do rent for short periods • WE keep them long term and find this the most cost efficient • We have specialized trailers • We own everything • Business model • WE own trailers for 25+ years • WE keep the ma long time, plus many of them have expensive graphics in them. • Own our assets • Length of time we use equipment • Built to our spec to stand up and last • Utility trailer has become the trailer of choice based on reliability and dealer support
We do both	10%	<ul style="list-style-type: none"> • Our need change frequently • Business conditions

24. How long do you keep van trailers?

TL or LTL	Average	Median	Low	High
Truckload	14	15	8	25
Less-than-TL	15	15	10	16.5

25. Are you considering non-USA sources for trailers? If yes, why?

Only one respondent answered yes to this question and his reason was price. Another respondent indicated that they have recently bought Vanguard (which has Chinese components and Chinese ownership, but they are built in the U.S.) – it “wasn’t my decision” but price was the main issue in placing this order.

26. If you are running automated manual transmissions:

- How long have you been running them?**
- What has been your experience?**
- What have you learned?**
- Will you continue to spec?**

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(12) respondents are using Automated manual transmissions and one is testing now

How long	Experience	Learned	Continue to Spec?
Testing	Good	Some fuel improvement	Yes
1 year	Drivers like them, no benefit from maintenance or fuel economy increases		NO
	No problems yet - drivers like them a lot even if they did not want to use them before	We feel very comfortable that these are very reliable and driver friendly	Yes
	Good so far	Drivers like them	Yes
2 Years	OK to this point - nuisance in can't pull start, can't rock on snow and ice	Brings worst drivers to same level as best, drivers enjoy, cost involved	Limited use
	Good - occasional issue with repairs on road	Dealer/field technician training is needed	Yes
3 Years	Not too bad, some drivers just don't like to drive them	It's another electronic part that give you problems on the road, plus it adds another course to training of techs	No
	Not good	Bad on ice and snow especially in parking lots and truck docks, lunging problems, other problems	No
	Will reduce your mpg by 2 tenths of a mile per gallon, new drivers in the industry must have them, but the new driver can obtain better MPG with them than a veteran driver can.	There is not enough competition in the market	Yes
5 years	Overall pretty good. There are still a lot of electrical issues to contend with. I don't feel the transmissions still communicate with the engines properly at all times.	The drivers that said they would not drive them when we first started to buy them would not give them up now that they have been running them	Yes
8 Years+	Still replacing pim's and xy shifters on Eaton gen 1 and gen .5, not as many as before	Not ready to try again at this time	No
	Good	Must have for city LTL drivers	Yes
	Reasonable good performance some electrical connection issues	Connection issues - same issues we went through with initial electronic engines	Yes

27. If you don't have automated manual transmissions now, do you have plans to spec on future vehicles? If yes, why?

Only (2) of the remaining respondents (that didn't answer yes in the previous question) indicated they planned to spec in the future:

- For driver ease and hopefully for a tad better mpg
- I will manage to use several units to best understand the benefits

28. In your opinion, which engine manufacturer has the best average MPG?

For those choosing a specific engine manufacturer:

- (4) Cummins
- (4) Detroit
- (2) Volvo

29. In your opinion which engine manufacturer has the best technology?

For those choosing a specific engine manufacturer:

- (2) CAT
- (4) Cummins
- (2) Detroit

30. What APU units are the most cost effective?

- Nite system, cost is less than engine equipped APU and do not require fuel to operate
- Only have Tri-Pac
- ThermoKing
- Electric, no specific brand
- Absolutely none
- There are cost affective APU"s? Where?
- Cummins ComfortPro
- The battery style made by Sun Power Technologies
- Electric

31. Are you buying off-shore tires? If yes, what brand and what has been your experience?

Brand	Experience
GT Radial (1)	<ul style="list-style-type: none"> • Lower cost but about 20% less run out
Toyo (1)	<ul style="list-style-type: none"> • Very good
Triangle (1)	<ul style="list-style-type: none"> • Retreadability reasonable and cost less than a retread and casing
No Brand Identified (2)	<ul style="list-style-type: none"> • Work well on drive axles, still needs work for the steer axle • Define off-shore, the only American owned tire company is Remington

32. Have you tested, or are you using wide-based tires? If yes, what is your experience with them?

Yes 50%

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Experience:

- Will not spec in the future, casing issues, mile per 32nd is considerably less, throw rocks
- Too soon to tell
- Two tractors with wide base, hard to recap
- Do not work in LTL
- "Totaled" three on the road..had to wait for road service after finding a tire...very expensive...not running them any more. Had 5 sets on tractors
- No benefits for my fleet
- Just putting in system
- Good for weight savings
- Haven't run long enough to come to a conclusion
- accelerated irregular should wear

33. At what mileage are tires typically removed? Identify by vehicle type or operation, CPM and Retread?

I've combined the answers based on logical (to me) categories. Specific tire miles and data from each individual respondent can be found on the accompanying spreadsheet

Operation or Vehicle (# of responses)	Miles when removed (average) (Median)	CPM (average)	Do you retread?
TL Drive Axle Tires (10)	296,000 299,000	0.01173625	50% said yes
TL Steer (7)	129,000 120,000	0.0252798	43%
Trailer (3)	172,000 180,000	0.0175	100%
LTL (1)	250,000		Yes
LTL Drive Cap	130,000		Yes

34. Are you using a proven mpg improvement additive? If yes, what and how has it helped?

(2) respondents indicated they are (or will be soon) using something, but no specifics were given.

35. Are you aware of problems with Desert Gold grease when it is exposed to extreme temperatures or moisture?

The only answer we got to this question was "Never heard of it", so I Googled it and found:

Recommended Use Caterpillar. The difference counts.™
Cat Desert Gold Grease is recommended for grease fittings and lubrication points in all load and speed applications and ambient temperature ranges of -20° to 60°C (-4° to 140°F).

36. Do you do a periodic complete review of your vehicle specs? If yes, what frequency, what criteria do you use and what factors do you consider now that you may not have considered 5 years ago?

- (18) do a periodic review
- (10) do it on every order
 - (5) review their specs annually
 - (1) Each major model change or when components change enough to re-examine
 - (1) Every two years
 - (1) No specific time frame

Criteria:

- resale/reduced maintenance/driver acceptance/OEM support
- New items, dealer-factory recommendations
- cpm on components, new and improved products
- Specs that make life easier for drivers, or technicians
- Driver retention, safety ROI improvements
- Driver comfort
- What works best for us
- roi, quality, cpm, parts and service support
- Always doing tests on something somewhere helps get info that we may later incorporate. Knowing what it is that you are trying to achieve is a starter (too often decisions are made on guesswork that can't be measured)
- Ideas from vendors and other fleets
- What will be a fuel saving arrangement, Research and Truck Shows
- ROI and what is longevity an safety aspects of option
- May consider possible weight reduction possibilities
- Drivers opinions
- Safety
- Weight savings/cost

Factors considered now:

- Engine heat
- Still working my plan to reduce maintenance intervals an spec up so the equipment runs through the trade cycle with not much more than preventative maintenance and warranty work
- Security of loads, drivers, and equipment
- Driver retention issues
- always considered these just looking harder at them, b life and mpg
- Aging driver population safety and accommodation. Also vehicle performance issues (especially cooling) that were previously non-issues. Looking at a vehicle more as a complete package and less as a sum of components
- Vorad, automated manual trannies, LED lights, super singles, galvanized trailer components
- Fuel saving devices
- Every day is a difference challenge
- Fuel economy
- Crash avoidance accessories
- Climate obtainability, bunk insulation, radiant heat deflection and such. No idle means we must force improvements in this area

37. How does your engine ECM fuel mileage compare to actual tank mpg?

- Is not correct, closer than it used to be a few years ago though. ECM mileage is always higher than actual
- Go figure, actual gallons purchased vs. an algorithm that is based on injector squirts! The ecm version is usually at least 1 mpg higher
- Seems to be higher than the actual MPG by about 5%
- ECM mileage ALWAYS favors the OEM. Who would have guessed that!
- Close but not the same
- No, I wish it would
- Close enough to show trends but not equal in accuracy to true tank mileage properly measured
- Very close

- ECM mileage is more accurate
- Close
- Sometimes close, other units not very
- .2 mpg better
- They are never the same in some cases better and others worst
- Close enough not to be concerned
- Off 4 to 5 tenths
- Higher than actual tank

38. Do you have a top (maximum) speed set on your power units?

All 20 respondents do have a maximum speed set on their units

Average Top Speed	Median Top Speed	Lowest	Highest
67.8	67	60	80

A few fleets had multiple speeds set:

- 65 - 70 if employed over 5 years and safe record
- 70 TL, 68 LTL

39. Are you working with any manufacturers to develop alternative fuel vehicles?

No-one in this group is doing this

40. If you run trucks in CA (but your fleet is not domiciled there) – how are you positioning for CARB’s approaching on-highway truck emissions law and new emission laws for refrigeration, anti-idling, and port trucks?

Only (3) fleets other than a CA domiciled fleet actually indicated that they might be thinking about this issue.

- Upper management doesn't seem concerns about this....maybe we won't run there? But...they need to face reality soon as other states are adopting the CARB rulings
- WE don't deal with port or refrig, but anti idling yes. Stay on private property and idle
- WE are domiciled there. Advice: Go to CARB's web site, read and understand the proposed on-highway law. Use their fleet average calculator to help plan your business decisions (if your truck isn't compliant then you don't run here when law starts). Port law is already ironed out for vehicle specs. Same for refrigeration (know what will work, what won't). Be aware that whatever that whatever California does, the rest of the nation will follow (starting with west coast and NE states)
- Will be on board - newest equipment for out there

41. Has your fleet made a decision on how to address stricter anti-idling legislation and the increased cost of idling? If yes, how?

Yes – 70%

How?

- WE are testing several kinds of APU'
- I'd be a gazillionaire if I'd have that answer! Walmart can't double their fuel mileage with everyone in the world working on it.
- More use of Idle-Air
- Adding electric APU's
- New IH ProStars have clean idle code you can get. Diesel fitted heaters work.
- We are a day cab fleet with long established 5-minute limit. We advise our drivers that the law reads that citations go to the driver, not the company. Much grumbling but so far no citations.
- We have apu's on all sleeper tractors
- Using apu's on sleepers and low idling percentage with Conv. Cabs
- Idle parameters are set at 3 mins
- Idle shut downs on all day cabs and apu equipped sleepers
- Fuel fired bunk heaters and driver incentives
- Trying apu's
- Minimize it as much as possible- automatic shut offs
- Using OEM fuel incentive programs
- Diesel fuel fired heaters and battery power cooling systems

42. What specs will allow us to erase the carbon footprint with much increased fuel mileage?

- Aerodynamics, rolling resistance and driver education. You could always spend your profits buying carbon credits, I am sure that will save the planet.
- Aerodynamics whenever practical. Driver training. Good route planning. Speed control. God tire maintenance and low rolling resistance tires if practical. Pay attention to how vehicles need to be driven and gear ration accordingly. Lobby for efficient weight laws.
- Extreme aerodynamics
- Not sure today but WalMart solution that I've seen not workable
- Not the current ones - ULSD is a nightmare in cold weather

Additional comments:

- WE are still running 1998 and 1999 tractors which are showing up with wiring problems, basically with the Eaton autoshifts and auto selects
- Have no 2007 engines in fleet at this time only because business prospects for 07 and early 08 did not warrant buying - hoping later this year

If you have any questions or comments regarding the contents of this report, please send me an e-mail at chris@ckcvr.com. I hope the information included is helpful to you.

Best regards,

Chris Kemmer