

Best Practice Report For Participants  
July 25, 2008

During the 2nd week of July, we conducted a Best Practice Study for those who chose to participate. The questionnaire was based on suggested topics from regular contributors to our quarterly Fleet Sentiment Report. In addition to this report, each participant will receive an excel worksheet showing raw data. Each participant is identified only by type of fleet and number of vehicles. We received (32) completed questionnaires.

*Throughout this report, the original question appears in italics*

*What specific new SAFETY technologies have you added or are considering for your trucks? And what have been the results*

The most popular safety technology that has been added is Rollover Stability with almost half of the respondents (14) indicating their fleet has added these products to their equipment. And the results have been positive for those with enough history. However, quite a few respondents indicated that it's really too early to tell.

Other safety technologies mentioned included (with results):

Technology	Results
Lane Departure Systems (3)	Overall good, but (1) indicated that they have not seen payback yet
Automated transmissions (2)	Positive or too early to tell
Vorad (2)	Undecided, but one indicated it has NOT been well received by drivers
Back up alarms	Too early
Drive Cam (2)	Good for catching abuse and accountability
Collision Avoidance	Has had since 2003 – very positive results which he is willing to share
Electronic Logging	Still evaluating
Engine exhaust brakes	Excellent
GPS Tracking	Positive driver behavior modification
Grote rear detection device	Very good
More convex mirrors	Less blind spot collisions
Tram Support System for top of tank trailers	No accidents - falling off tanks
Improved driver door steps	Combined with safety awareness, we see fewer falls
Pro-tread training	Good
PM methods to inspect aux wiring	Positive
Improved driver training	Better safer driving performance (in spite of al the technology, driving is still a "people thing")
Improved cab access lighting	Fewer falls
Delete day time running light spec	Save money, headlights last longer and less wiring/dtri module issues

Technologies that are being considered are some of the same technologies that have already been added by some but there are additional ones as well:

- |                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Adaptive Braking</li> <li><input type="checkbox"/> Adaptive cruise control</li> <li><input type="checkbox"/> Airbag</li> <li><input type="checkbox"/> Back up cameras/or proximity alerts/Rear Cameras</li> <li><input type="checkbox"/> Collision Avoidance</li> <li><input type="checkbox"/> Fatigue and Alcohol/Drum Detection (CRAM)</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> HID Headlamps</li> <li><input type="checkbox"/> In Cab cameras</li> <li><input type="checkbox"/> Lane change warning/Lane Deviation</li> <li><input type="checkbox"/> Radar</li> <li><input type="checkbox"/> Roll Stability</li> <li><input type="checkbox"/> Vorad 400</li> </ul> |
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*Are you having success reducing fuel consumption by changing your equipment specs, and/or by changing the way you operate equipment?*

Changed specs that have resulted in reduced fuel consumption include:

- Adding APU's (3)
- Improved aerodynamics (2)
- Changing gear speed
- Detroit DD15
- Direct drive drivetrains
- Eaton auto or ultra shift transmissions
- Idle shutdown
- Larger hp engines
- Progressive shift sequence
- Rear end ratio (2)
- Smaller engines
- Wide based tires

Changes in operation:

**(19) fleets** have reduced their top speed. The **average top speed** is now (after the change) **65 MPH**. The **average change** (from old top speed to new top speed) was **6.25%**

**(17) fleets** have reduced their idle time an **average of 44.3%**. **This was accomplished by:**

- Idle awareness program matched with idle reports from GPS
- Made fleet managers responsible and paid incentive to them
- Installed apu's on some units
- Monitoring, plus giving the driver a print out sheet when doing a PM
- Driver focus/acceptance/training/bonus and incentive programs
- Electronic idle limiter on engine
- Idle shut downs
- APU
- Better management
- Hotels, IdleAire
- Reprogrammed road speed parameters
- Reprogrammed the ECM to 180 seconds
- Bunk heaters and driver incentives
- Monitored through PeopleNet reports and discuss with drivers
- Automatic shutoff after five minutes and driver feedback

Specific **driver incentive programs** mentioned included:

- Monthly contest for driver with lowest idle time
- Money, up to 50% of fuel savings for OTR
- Driver meetings where they are trained in "business awareness" (how health insurance works, how work comp works, what fuel costs are and how to drive for best efficiency. Incentive is that being able to offer the best benefits depends on their performance. They appreciate the "straight talk" and we see them take their efforts more seriously afterwards
- Fuel incentives
- Using TurnPike Global system to monitor speed(62 max) idle time and hard braking counts
- mpg bonus program
- Increased mileage pay for reducing idling and increasing average mpg

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- We still have our own truck set up to run 75 mph, but we are giving the drivers a chance to reduce their fuel economy by improving their driving habits and driving slower. The drivers that can't get their improved fuel economy to the company goal mark of 7.2 mpg will get their trucks speed limited turned down. This way the drivers that already get 8mpg or better, don't get punished by reducing their speed limit

*Do you have any DOCUMENTED proof that oil additives or full synthetic oils can improve mpg? And does the cost justify the results?*

Based on the responses we received, many believe that full synthetic oils should improve mpg, but it's too costly to justify their use

**(3)** respondents indicated that they have had success with full synthetics (with some caveats)

- We got better mpg with full engine synthetic however not enough to justify the cost
- We used Delvac1, couldn't document fuel economy but greatly extended drain intervals and reduced starter usage by 2/3's unfortunately, the CJ-4 version won't live at those intervals and becomes too expensive to justify using at a lower oil
- Yes, we use synthetic engine and gear oils. We don't have our own documentation but there are plenty of accredited SAE type Fuel Economy results from SWRI and others that confirm the benefits of synthetics on fuel economy. No need to re-invent the wheel

One of the answer options to this question was "*Full synthetic oils should improve fuel consumption, but the cost outweighs any benefit.*" And an additional **(12)** respondents made this choice.

**(1)** respondent also indicated that an oil additive might work as well, but again the cost doesn't justify adding those products.

*Are you using unique ECM settings to increase fuel economy?*

Choices Given	Number who are using
Gear down protection	<b>15</b>
Load based speed control	<b>7</b>
Upper and lower droop settings for accelerator and cruise	<b>8</b>
If yes, what are your settings?	<ul style="list-style-type: none"> <li><input type="checkbox"/> 1250 rpm in low range, 1600 in upper range</li> <li><input type="checkbox"/> 2 mpg droop in cruise and accelerator. 1 mph more top speed in cruise</li> <li><input type="checkbox"/> 3 mph downhill</li> <li><input type="checkbox"/> 62 mph</li> <li><input type="checkbox"/> Accelerator upper-1, lower-2. Cruise upper-0, lower-3. This gives the driver better feel in cruise control. We wanted to try to get them to want to use cruise more</li> <li><input type="checkbox"/> foot speed to 62, 65 on cruise, 50 lower gear road speed</li> </ul>
Other ECM settings to increase fuel economy	<b>11</b>

*Have you calculated the mpg loss attributed to ultra low sulfur fuel?*

**(6) Yes**, with average loss **2.5%**

**(2) Yes, but our calculation includes engine changes** as well with average loss **1.15%**

**(21) NO**

*Are you integrating alternative fuels into your fleet?*

**(8) Yes, How?**

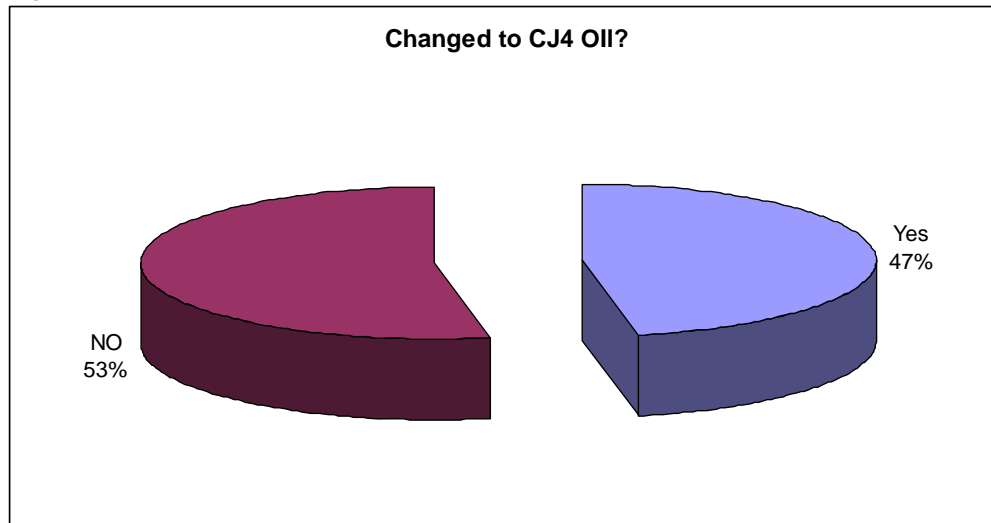
- B20 Bio diesel and E85
- Bio-diesel at one location
- Hybrids/Propane
- Local mandate use a % of bio diesel
- Purchasing bio diesel when possible
- States that offer them at the pump
- Trying to purchase bio fuels
- We will be using them at some point

*Have you been able to extend oil drain intervals?*

**(14) Yes, How?**

- Added bypass filter
- Changing brands of oil and oil testing
- Detroit dd15 recommended interval is 50,000 miles
- Gone to semi-synthetic blend engine oil
- Increased 5K to 25K
- Long experience with oil samples and monitoring our engines
- New filtration by Donaldson
- Oil analysis, oil and filter selection
- Oil sampling to 30,000
- Test of OPIS install
- Trying ops filtration systems
- Using good filtration and synthetics
- Volvo increased interval to 35,000 miles
- With synthetics and semi synthetics

*Have you changed to CJ4 Oil?*



*If yes, what are the benefits and if no, why not?*

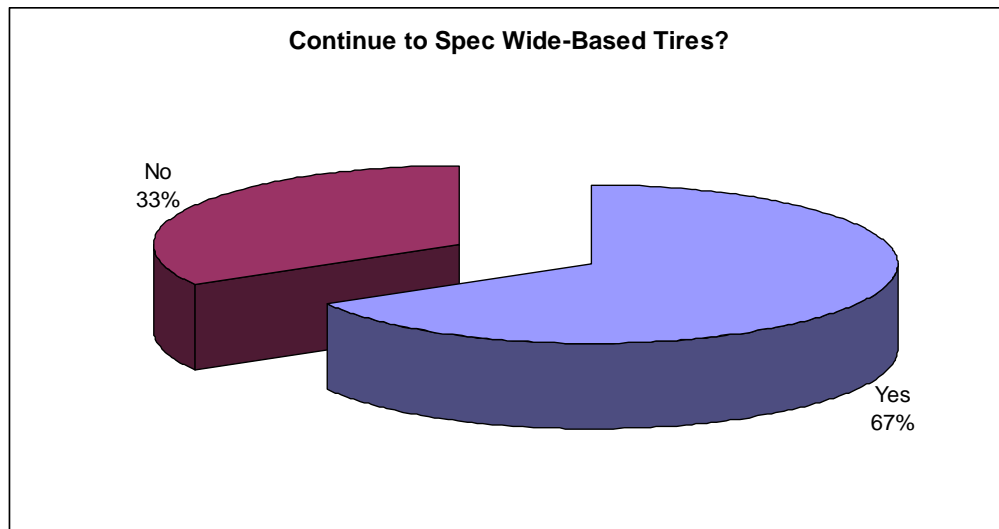
Most of those that have changed to CJ4 oil see no real benefits outside of having only one type of oil in inventory. A couple did mention that they have been able to extend their oil drain intervals. But a few not only didn't see a benefit but thought it might be detrimental.

For those that have not changed to CJ4, the primary reasons were cost or that they don't have any equipment that requires it.

*If you are operating wide based tires, how is the wear mileage compared to standard dual tires?*

- (1) Better by 1%**
- (4) Worse by an average of 19%**
- (4) The same**

*Will you continue to spec wide based tires?*



*In your view, what is the best tire pressure monitoring system?*

The systems mentioned appear in the following table with the number for each if mentioned by multiple respondents.

Monitoring Only	With Automatic Tire Inflation
<ul style="list-style-type: none"> <li><input type="checkbox"/> IVTM</li> <li><input type="checkbox"/> A trained and motivated tire expert with a pressure gauge is still the best tire program (our trucks return to base each shift)</li> <li><input type="checkbox"/> Cross Fire</li> <li><input type="checkbox"/> Doran (2)</li> <li><input type="checkbox"/> The BAT System</li> <li><input type="checkbox"/> We are testing the Eaton Michelin monitor</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Meritor Tire Inflation System by PSI (11)</li> <li><input type="checkbox"/> Hendrickson (1)</li> </ul>

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*Have you made any changes regarding recapping vs. new tire purchases?*

The number of respondents to each choice given is listed in the table below with the majority not making any changes at all.

	Steer Tires	Drive Tires	Trailer Tires
Recapping more	0	10	6
Recapping less	0	5	3
No changes	23	17	22

*Have you started DPF Filter Replacements? If yes,*

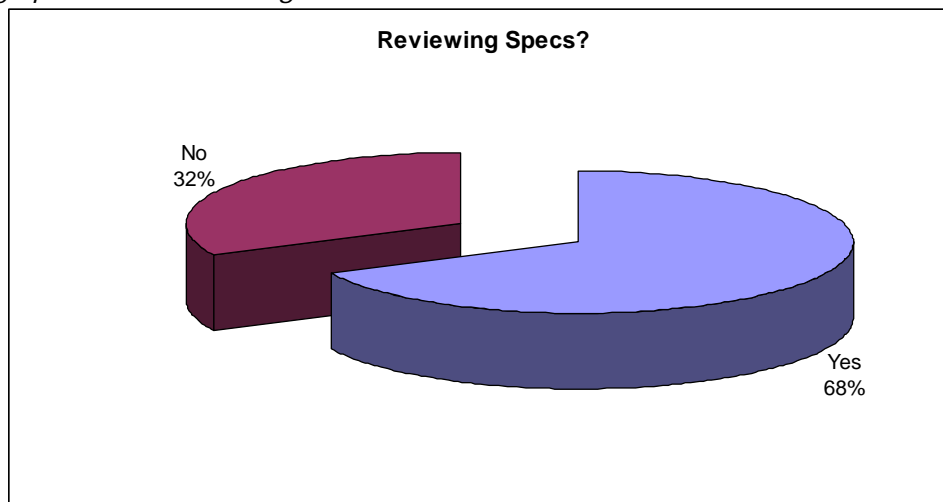
- At what mileage did you need to replace the filter?*
- What's the operation profile for the equipment?*
- Where did you purchase the filter?*
- What was the cost of the filter?*
- How long did it take to make the change?*

Unfortunately no one in this group has started filter replacement yet, so no data to report.

*What "best practices" has your fleet established using Telemetrics?*

- All loading and unloading points are geo fenced
- Doing some work with wireless between tractor and the shop
- Driver operation warnings sent to office such as speeding
- Idle Control
- Less idle time
- Less out of route miles
- Monitor and publish mpg by location and application
- Overall speed reduction
- Over-speed, MPG through SensorTracs
- Tire inflation issues through QC T2
- TurnPike Global Monitoring
- Weekly reports showing idle and time and MPG
- Working on capturing "accurate" idle info through QC

*New vehicle components are changing weight proportioning, wheel bases, etc. Are you doing review of your engineering specs when ordering new vehicles?*



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*If yes, please explain.*

- Looking for optimal setups
- Trying to optimize everything on any new truck we purchase
- Concern of steer axle weight
- Wheel base change and cab extenders for fuel economy
- Got to stay current
- Trying to mitigate added weight with other weight saving devices
- Review each truck order with mfg engineering
- General spec review but no changes planned because of changing weight proportioning
- Every time we spec, we review entire truck
- To stay legal on CA 65' length laws we have had to re-engineer exhaust, wheel base, cab components, trailer swing and dip clearances, etc. Basically went back and reinvented our trucks
- Paper pilot to make sure of all our add on equipment fits
- Wheel bases and wt proportioning
- Shorten wheel base
- Looking for the sweet spot in HP and torque
- Specific to weight savings
- Looking at heavier engine that gets better mpg
- We do a paper pilot and weight analysis before we build the truck with the vendor
- We tend to go by OEM recommendations for best fuel economy
- We always review the specs before the purchase
- All of the above, weight will be a problem, exhaust systems and added SCR will all effect weight

*What dispatch software does your fleet use? Is it satisfactory?*

The table indicates the number of fleets who are using a particular software. Most were satisfied with their choice with the exception of those noted.

Type – How many using	If not satisfied, why not?
TMW - 6	(1) We are a doubles operation and we can not get TMW to work. To add to that TMW support stinks! We have had the system for (3) years with limited support
Home Grown/In House Software - 5	
Cadec Mobius4000 – 1	
ICC - 2	(1) We have had to customize it a lot
Innovative - 3	
LTL-38 - 1	
McLeod - 2	
PC Miles - 1	(1) Not specific enough to actual location/miles

*Do you have a special tip to share with others that makes your shop run more efficiently?*

- Communication. When you think it is good is when you need to improve
- Computerized parts inventory. Bar coded parts tags and automatic reorders for stocked parts
- Do to economic forces on business; some mechanics are beginning to become available. It is a good time to enhance your current staff or replace some that are not productive
- Employee involvement in what is going on with maintenance costs

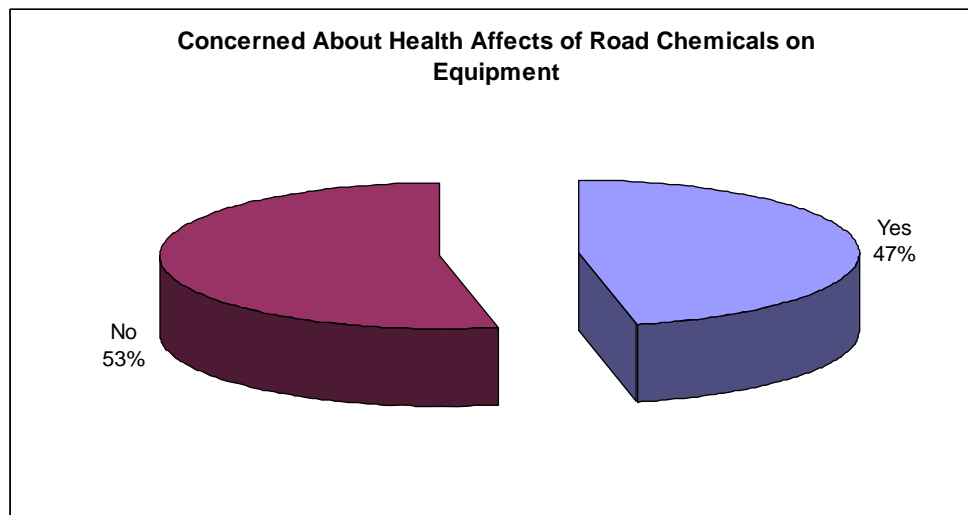
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- Get the right people. Give them confidence in company leadership. Offer the motivated ones a career path
- Hire qualified technicians
- Incentive training
- Keep it clean and well organized and open lines of communications
- Listen to your people
- TMT Software
- Treat people good, hold them accountable, realize mistakes will happen, deal with it
- We are currently customizing our electronic maintenance system to provide real time global information in reportable formats what's down, why it's down, shop productivity and through put, staffing based on workload, etc. Pretty neat stuff

*Are there new (or newly discovered) shop tools on the market that you have found to be particularly useful to your operation?*

- Cummins - Quickserv (online tool for finding all Cummins procedures for any Cummins engine in the world)
- Doing our own alignments which has improved tire wear and mpg
- Gray-model MM2000AHS Transmission jack with clutch, rear end adapters air operated
- Insyght II electrical testers
- IR Temperature guns
- Michelin "Tool Box" (On line fuel saving calculator, used to show fuel savings by switching to a different tire (for example - switching from a recap to new rubber shows a savings of over \$2,000 per truck in fuel)
- Not new, but have all pressure/vacuum gages with correct fittings laid out
- Probe camera
- Purchasing more tech manuals on CD from engine mfg
- Truck Lift

*Are you concerned about the health effects to technicians from working on equipment covered with road chemicals?*



*If yes, are you taking any precautionary measures to alleviate this risk?*

- Pre-washing equipment (4)
- We offer new type of gloves that help protect skin

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- Concerned about health but really haven't encountered the problems many fleets see
- Not too concerned about road chemicals, just other items, ash for DPF, etc.
- WE wash equipment regularly that helps
- OSHA Training
- Require use of gloves
- We have a drive through truck wash
- We supply gloves, eye protection and breathing masks
- We steam off every truck before bringing into the shop
- Try to wash off until before it is worked on, with just pressure water

*How are you maximizing shop safety and the use of and compliance with Personal Protection Equipment (PPE) standards?*

- (3) sets of OSHA training each year
- All wear safety glasses, steel toed shoes
- Constant monitoring by co-workers and supervisors, techs divided into teams and incentive paid to winning team
- Daily monitoring by foreman and management - MBWA
- Discuss in monthly safety meetings. Audit team makes sure shop personnel follow safety procedures
- Hold monthly safety meetings and provide all PPE equipment
- In house health and safety program
- Making sure that every one has the correct hearing and eye protection for their jobs, gloves and clothing
- Management by walking around, and on the spot corrections
- Monitor their work practices via supervisors, enforce safety at all times
- Monthly safety meetings to review success, annual department of labor inspections
- Quarterly safety reviews by a designated team and monthly reviews by my maintenance team
- Safety and PPE is a habit in our shops - you only get one chance
- Safety glasses are a must, constant reinforcement of hearing protection, good shoes, dust protection, "think safe"
- Standard issue of routine safety equipment - would like to review the PPE Standards
- Using behavior based safety
- Video cameras and active monitoring - additional training
- We monitor all work being performed for compliance with OSHA Standards
- We use all PPE Equipment that fits the task at hand.
- Yes, gloves, safety glasses, etc.
- Yes, have yearly audits to improve this area
- Yes, with daily audits
- You can't just have a written program in place and then forget about it. You have to follow through with enforcement

If you have any additional questions about the content of this report or the accompanying excel worksheet, please send me an e-mail at [chris@ckcvr.com](mailto:chris@ckcvr.com) and I will try to answer them.

Best regards,  
Chris Kemmer