

# *Improved Fuel Efficiency*

**2008 Annual West Coast  
Collaborative Partnership Meeting**

**Jack Ziebarth CTP  
Vice President – Operations  
Gordon Trucking, Inc.**

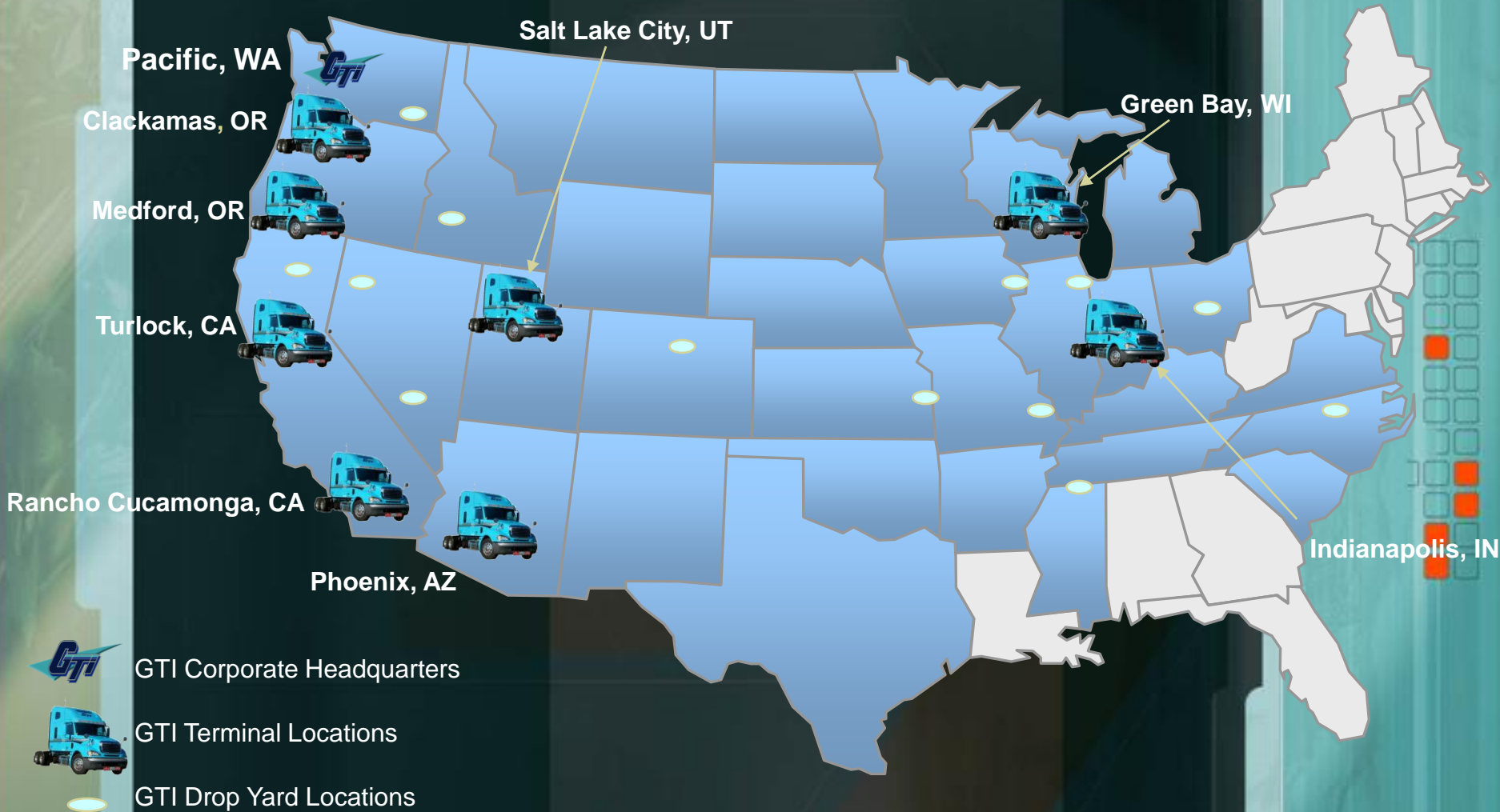
# *Who is Gordon Trucking?*

## **PROFILE**

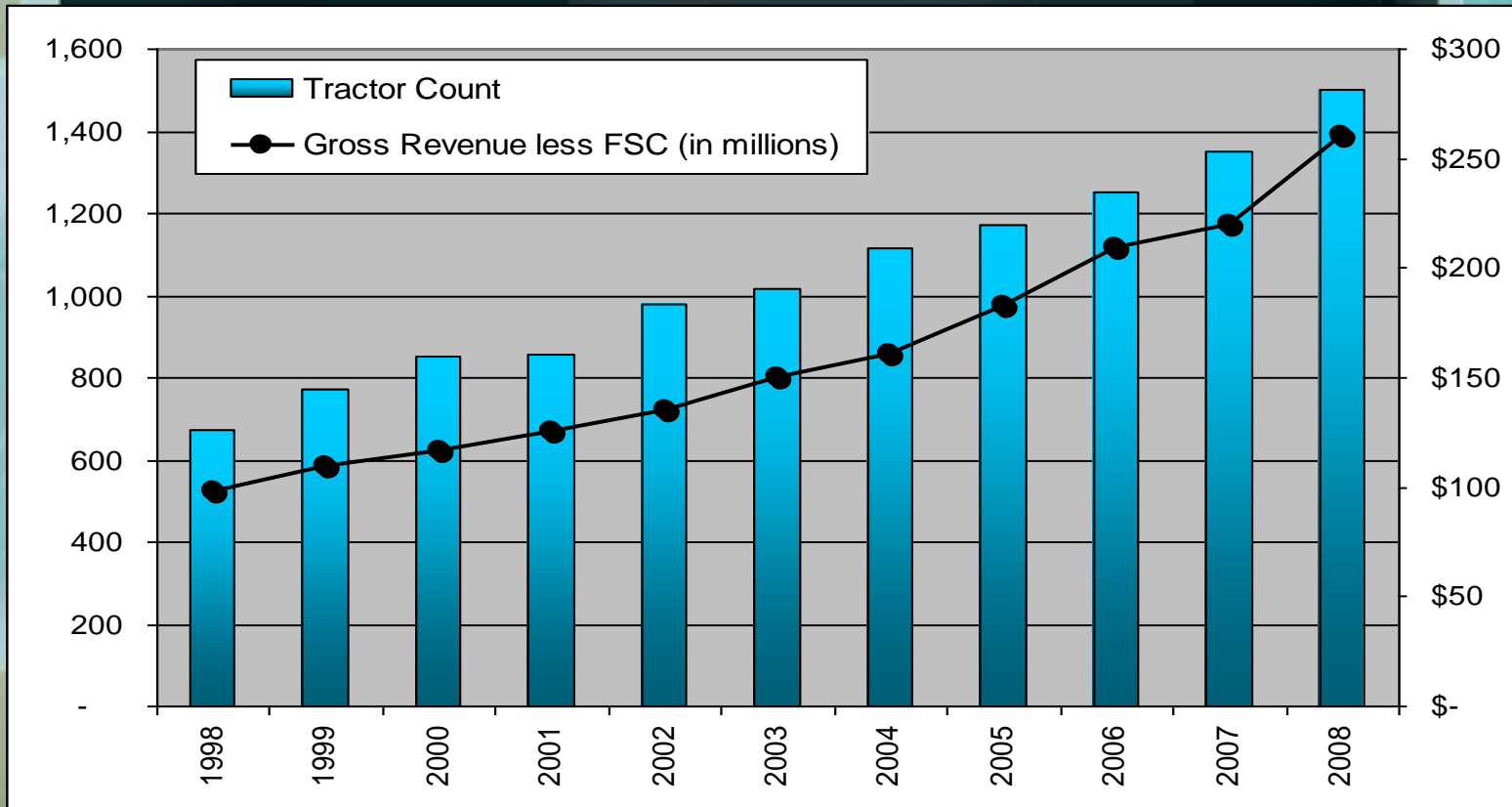
- Founded in 1946
- Privately owned
- Non-Union
- 40+ Fortune 500 customers
- 24 / 7 / 365 Operations
- FAST / CTPAT Certified
- FMCSA ISS Inspection Value - 25
  - *Tops in industry*



# GTI's Regional Facilities



# *Year over Year Growth*



**Cautious yet progressive growth allows expansion without sacrificing GTI standards of service!**

## ***Project “Homeward Bound”***

- Partnership with Washington State Patrol
- Missing children posters displayed on trailers
- 3 children recovered to date
- GTI has committed 100+ more trailers to the project



# SmartWay

## OVERVIEW:

- Gordon Trucking is a SmartWay partner
- Carriers are given a score based on numerous factors such as fuel efficiency & emission control



*Gordon Trucking has obtained a score of 1.25; the highest score attainable in the SmartWay scoring matrix*

**GTI Wins 2008 EPA SmartWay Environmental Excellence Award!**

## RECENT AREAS OF FOCUS:

- Webasto & Espar Direct Fired Bunk Heaters
- ThermoKing TriPac Auxiliary Power Unit (APU)
  - Have installed 450 APUs in the last year
- Aerodynamic Fuel-Saving Devices For Tractors & Trailers

# *What can we do?*

- Understand what drives MPG.
- Understand Driver behavior.
- Educate—Classroom *and* hands on
- Monitor progress



# *The Big Three*

- **Equipment**

*Make sure you have specified the right equipment for the job*

- Tire size
- Gear ratio's
- Horsepower/Torque ratings
- Aerodynamics



# *The Big Three*

- **Equipment Setting & Specialized**
  - Speed setting
  - RPM Limits
  - Idle Limits
  - Auto Inflation – Tire Pressures
  - Bunk Heaters – Espar/Webasto
  - Auxiliary Power units



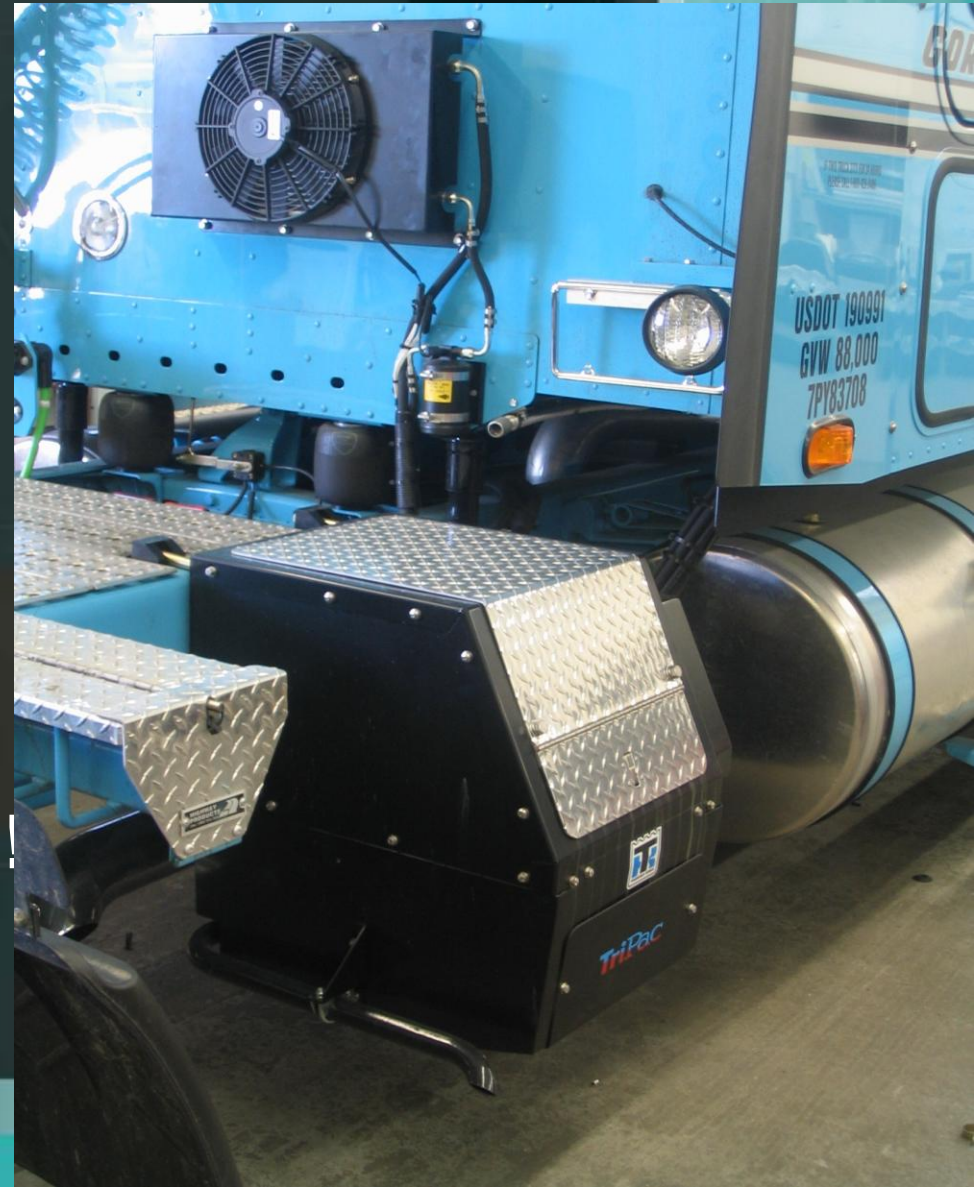
# *The Big Three*

- Driver Behavior
  - Understand Horsepower vs. Torque
  - Understand torque curve
  - Idle time management
  - Use of Compression brake
  - Coast in Gear



# *Auxiliary Power Units!*

- Air Conditioning
- Heat
- 1000 watt power inverter
- Battery Charger
- Quiet
- Fuel efficient!
- \$4,500,000 Invested!



# Auto – Inflation Modules

- Ensuring you have the proper tire pressure is very important to reach the highest fuel mileage possible.

*Remember-Tires make the biggest difference in Fuel Economy below 50 MPH!*

## POSITION CONTRIBUTION TO FUEL ECONOMY

**SINGLE TRAILER  
(80,000 LBS.)**



|                  |     |     |     |
|------------------|-----|-----|-----|
| Weight           | 42% | 42% | 16% |
| Fuel Consumption | 52% | 31% | 17% |

You can see the impact of each tire position on fuel economy. Over 80% of fuel economy related to tires comes from the trailing positions.

# *Single – Wide Tires*





# *Driver Behavior*

- Engine Speed
- Idle



## Does Driving Technique Make a Difference?

*This is a screen shot of poor MPG and poor driver performance.*

```
Vehicle Id/Name..... 2925
Driver Id/Name.....
Start/End Dates..... 07/16/06 02:27 to 07/23/06 01:07

Average Speed..... 056      MPH
Total Distance..... 0001869  Mi
Fuel Mileage..... 00005.19  MPG
Driving Mileage..... 00005.88  MPG
Moving Mileage..... 00005.88  MPG

Engine Time..... 000065:51 H:M
Driving Time..... 000033:23 H:M
Moving Time..... 000032:25 H:M
Total Active Time... 000166:41 H:M

Intertrip Idle Time. 000032:39 H:M
Intertrip Idle Pct.. 049.58   %
Short Idle Time..... 000007:52 H:M
Short Idle Pct..... 011.94   %
Extended Idle Time.. 000024:47 H:M
Extended Idle Pct... 037.63   %
Auto Fault Check.... ENABLED
Possible Faults..... 000004   #
Extraction Date..... 07/23/06 01:10
User Fault Confirm.. NOT REVIEWED

Over RPM Time..... 000000:07 H:M
Over RPM Percent... 000.17   %
Over Speed Time.... 000000:22 H:M
Over Speed Percent.. 001.13   %
Excess Speed Time... 000000:20 H:M
Coast Out of Gear... 000000:00 H:M
```

## Does Driving Technique Make a Difference?

The red box shows the overspeed. The yellow box shows the over RPM.

| Driver ID.....          |              | Start.. 07/16/06 02:27    |              | Speed Column: <u>17</u> |              |              |            |             |             |              |
|-------------------------|--------------|---------------------------|--------------|-------------------------|--------------|--------------|------------|-------------|-------------|--------------|
| Vehicle ID..... 2925    |              | End.... 07/23/06 01:07    |              |                         |              |              |            |             |             |              |
| % Time Covered.. 100.00 |              | M P H (high ranges to .9) |              |                         |              |              |            |             |             |              |
|                         | <u>63-64</u> | <u>65-66</u>              | <u>67-68</u> | <u>69-70</u>            | <u>71-72</u> | <u>73-74</u> | <u>75+</u> | <u>PTOP</u> | <u>PTOC</u> | <u>TOTAL</u> |
|                         | 1400         | 003:33                    | 014:06       | 000:20                  |              |              |            |             |             | 018:29       |
|                         | 1500         |                           |              | 000:14                  | 000:19       | 000:09       |            |             |             | 001:13       |
|                         | 1600         |                           |              |                         |              | 000:02       | 000:06     | 000:02      |             | 000:44       |
| R                       | 1700         |                           |              |                         |              |              | 000:01     |             |             | 000:30       |
|                         | 1800         |                           |              |                         |              |              |            |             |             | 000:14       |
| P                       | 1900         | 000:02                    |              |                         |              |              |            |             |             | 000:05       |
|                         | 2000         |                           |              |                         |              |              |            |             |             |              |
| M                       | 2100         |                           |              |                         |              |              |            |             |             |              |
|                         | 2200         |                           |              |                         |              |              |            |             |             |              |
|                         | 2300         |                           |              |                         |              |              |            |             |             |              |
|                         | 2400         |                           |              |                         |              |              |            |             |             |              |
| TOT:                    |              | 004:24                    | 014:06       | 000:34                  | 000:19       | 000:11       | 000:06     | 000:03      |             | 065:43       |

## Does Driving Technique Make a Difference?

No overspeed, no over RPM and low idle are the contributors to the higher MPG.

|                      |                |     |                       |                |
|----------------------|----------------|-----|-----------------------|----------------|
| Vehicle Id/Name..... | 2906           |     |                       |                |
| Driver Id/Name.....  |                |     |                       |                |
| Start/End Dates..... | 07/17/06 04:38 | to  | 07/25/06 05:33        |                |
| Average Speed.....   | 040            | MPH | Fuel Mileage.....     | 00007.18 MPG   |
| Total Distance.....  | 0001681        | Mi  | Driving Mileage.....  | 00007.23 MPG   |
|                      |                |     | Moving Mileage.....   | 00007.23 MPG   |
| Engine Time.....     | 000041:08      | H:M | Intertrip Idle Time.. | 000000:03 H:M  |
| Driving Time.....    | 000040:38      | H:M | Intertrip Idle Pct..  | 000.12 %       |
| Moving Time.....     | 000038:33      | H:M | Short Idle Time.....  | 000000:03 H:M  |
| Total Active Time... | 000062:10      | H:M | Short Idle Pct.....   | 000.12 %       |
| Over RPM Time.....   | 000000:00      | H:M | Extended Idle Time..  | 000000:00 H:M  |
| Over RPM Percent.... | 000.00         | %   | Extended Idle Pct...  | 000.00 %       |
| Over Speed Time..... | 000000:00      | H:M | Auto Fault Check....  | ENABLED        |
| Over Speed Percent.. | 000.00         | %   | Possible Faults.....  | 000000 #       |
| Excess Speed Time... | 000000:00      | H:M | Extraction Date.....  | 07/25/06 05:36 |
| Coast Out of Gear... | 000000:00      | H:M | User Fault Confirm..  | NOT REVIEWED   |

## Does Driving Technique Make a Difference?

SensorTRACS v2.2(0307)

Gordon Trucking Inc.

### SensorTRACS PERFORMANCE MATRIX

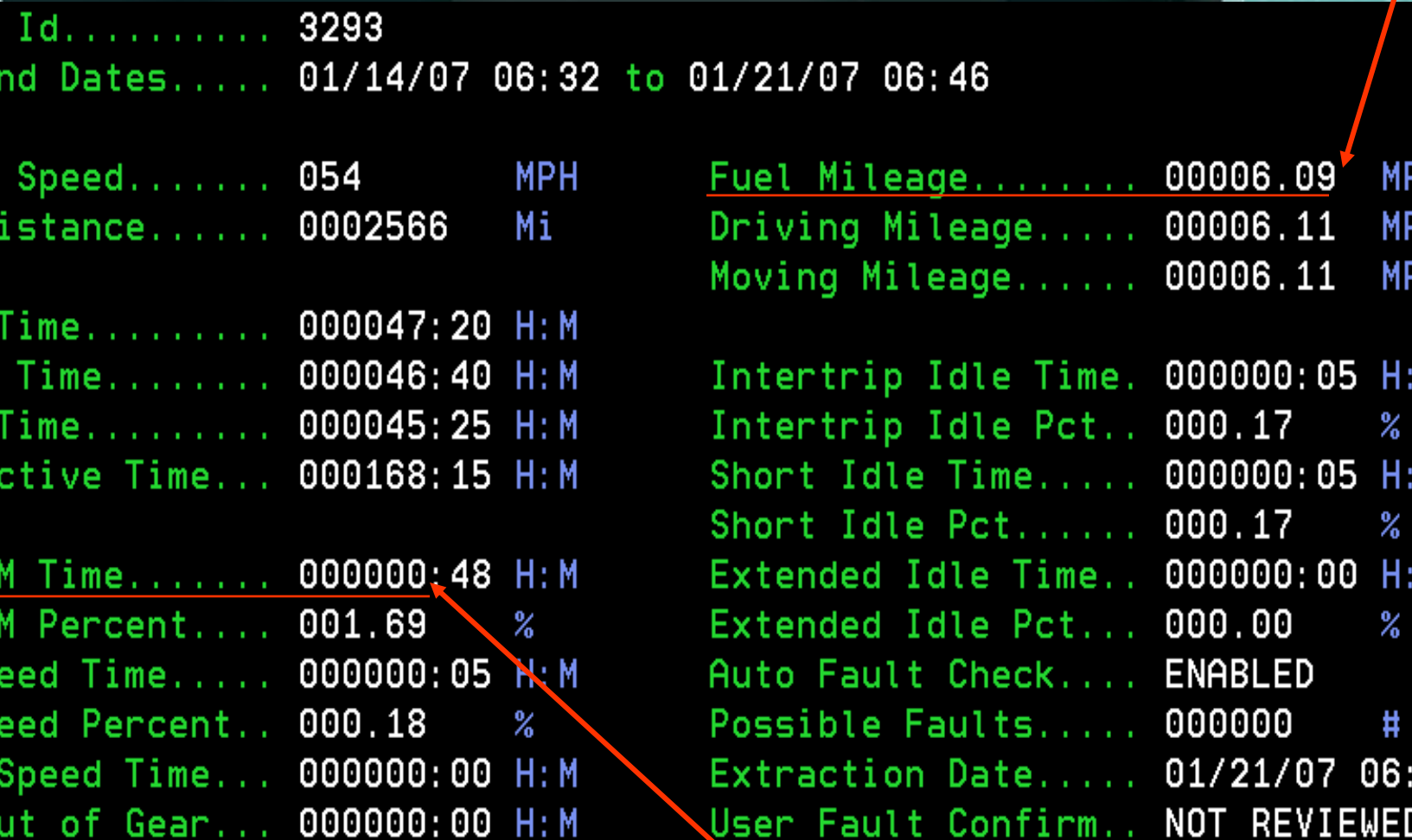
Driver ID..... Start.. 07/17/06 04:38 Speed Column: 17  
Vehicle ID..... End.... 07/25/06 05:33  
% Time Covered.. 100.00 **M P H** (high ranges to .9)

|      | <u>63-64</u> | <u>65-66</u> | <u>67-68</u> | <u>69-70</u> | <u>71-72</u> | <u>73-74</u> | <u>75+</u> | <u>PTOP</u> | <u>PTOC</u> | <u>TOTAL</u> |
|------|--------------|--------------|--------------|--------------|--------------|--------------|------------|-------------|-------------|--------------|
|      | 1400         | 001:38       | 000:17       |              |              |              |            |             |             | 002:46       |
|      | 1500         |              |              |              |              |              |            |             |             | 000:21       |
|      | 1600         |              |              |              |              |              |            |             |             | 000:07       |
| R    | 1700         |              |              |              |              |              |            |             |             |              |
| P    | 1800         |              |              |              |              |              |            |             |             |              |
|      | 1900         |              |              |              |              |              |            |             |             |              |
|      | 2000         |              |              |              |              |              |            |             |             |              |
| M    | 2100         |              |              |              |              |              |            |             |             |              |
|      | 2200         |              |              |              |              |              |            |             |             |              |
|      | 2300         |              |              |              |              |              |            |             |             |              |
|      | 2400         |              |              |              |              |              |            |             |             |              |
| TOT: | 003:24       | 000:17       |              |              |              |              |            |             |             | 041:03       |

(The red box shows the overspeed. The yellow box shows the over RPM.)

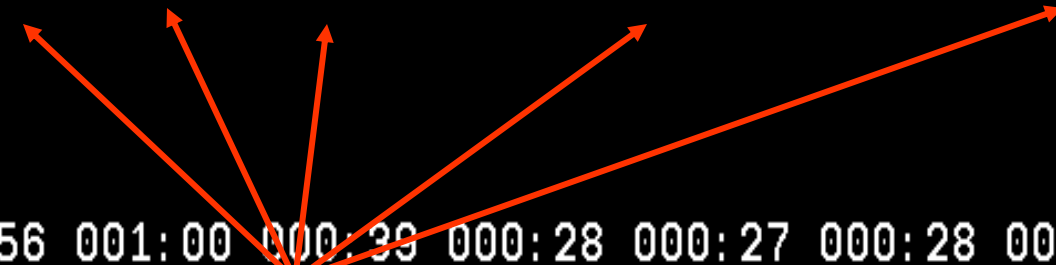
# Before

|                      |                |     |                          |                |     |
|----------------------|----------------|-----|--------------------------|----------------|-----|
| Vehicle Id.....      | 3293           |     |                          |                |     |
| Start/End Dates....  | 01/14/07 06:32 | to  | 01/21/07 06:46           |                |     |
| Average Speed.....   | 054            | MPH | <u>Fuel Mileage.....</u> | 00006.09       | MPG |
| Total Distance.....  | 0002566        | Mi  | Driving Mileage....      | 00006.11       | MPG |
|                      |                |     | Moving Mileage.....      | 00006.11       | MPG |
| Engine Time.....     | 000047:20      | H:M |                          |                |     |
| Driving Time.....    | 000046:40      | H:M | Intertrip Idle Time.     | 000000:05      | H:M |
| Moving Time.....     | 000045:25      | H:M | Intertrip Idle Pct..     | 000.17         | %   |
| Total Active Time..  | 000168:15      | H:M | Short Idle Time....      | 000000:05      | H:M |
|                      |                |     | Short Idle Pct.....      | 000.17         | %   |
| Over RPM Time.....   | 000000:48      | H:M | Extended Idle Time..     | 000000:00      | H:M |
| Over RPM Percent.... | 001.69         | %   | Extended Idle Pct...     | 000.00         | %   |
| Over Speed Time....  | 000000:05      | H:M | Auto Fault Check....     | ENABLED        |     |
| Over Speed Percent.. | 000.18         | %   | Possible Faults....      | 000000         | #   |
| Excess Speed Time... | 000000:00      | H:M | Extraction Date....      | 01/21/07 06:49 |     |
| Coast Out of Gear... | 000000:00      | H:M | User Fault Confirm..     | NOT REVIEWED   |     |



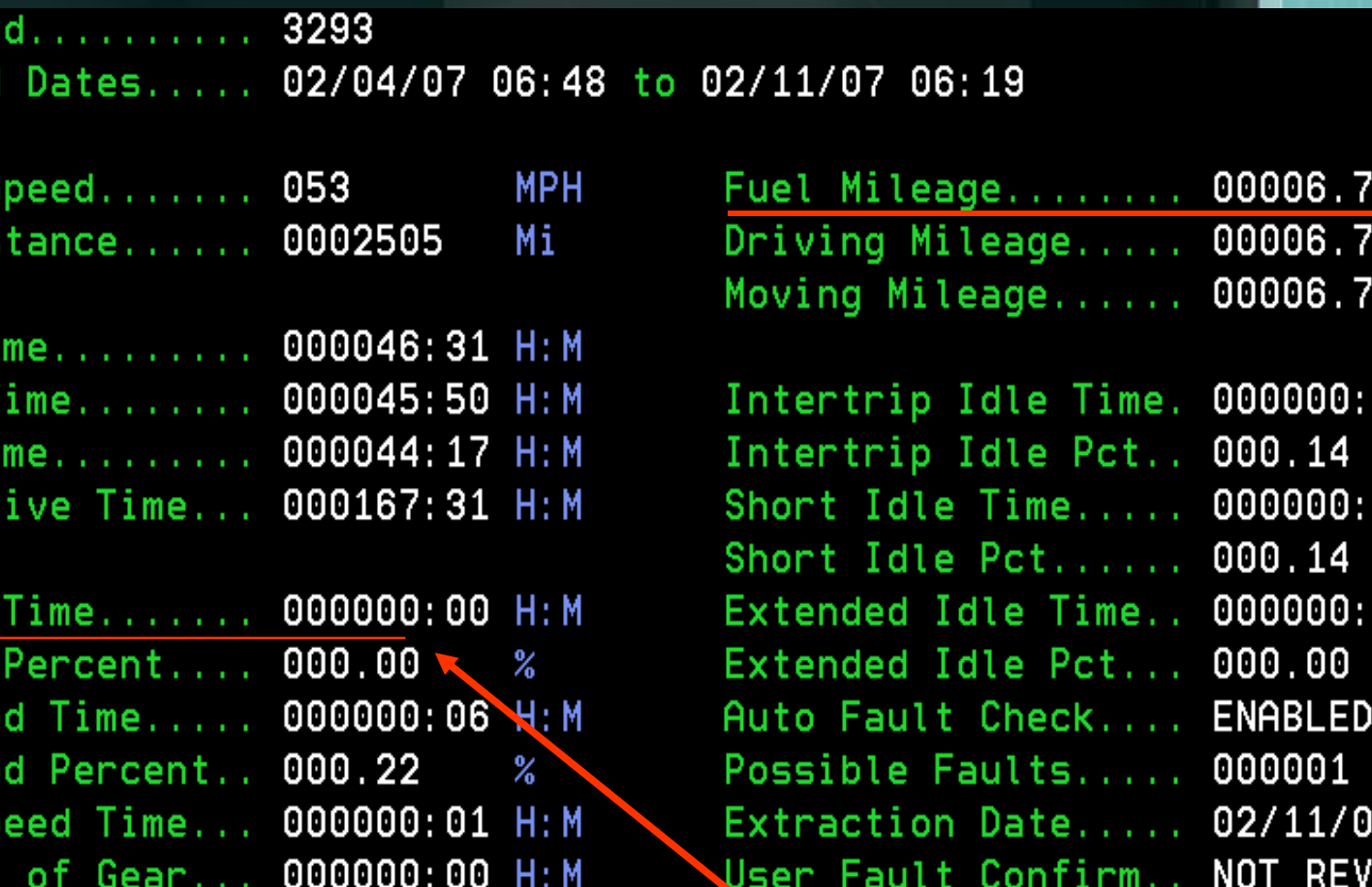
# Before

|                  |          |                           |            |              |              |              |              |              |              |
|------------------|----------|---------------------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Vehicle ID.....  | 3293     | End....                   | 01/21/07   | 06:46        |              |              |              |              |              |
| % Time Covered.. | 100.00   | M P H (high ranges to .9) |            |              |              |              |              |              |              |
|                  | <u>0</u> | <u>1-4</u>                | <u>5-9</u> | <u>10-14</u> | <u>15-19</u> | <u>20-24</u> | <u>25-29</u> | <u>30-34</u> | <u>35-39</u> |
| 1400             |          | 000:01                    | 000:05     | 000:07       | 000:02       | 000:01       | 000:03       | 000:04       | 000:05       |
| 1500             |          |                           | 000:03     | 000:09       | 000:02       | 000:02       | 000:05       |              | 000:11       |
| 1600             |          |                           | 000:03     | 000:04       | 000:06       | 000:04       | 000:05       |              | 000:07       |
| R 1700           |          | 000:01                    | 000:03     | 000:03       | 000:05       | 000:03       |              | 000:04       |              |
| 1800             |          |                           | 000:03     | 000:03       | 000:04       | 000:03       |              | 000:04       |              |
| P 1900           |          |                           | 000:02     | 000:02       | 000:03       | 000:01       | 000:01       | 000:02       | 000:01       |
| 2000             |          |                           | 000:01     | 000:03       | 000:02       |              | 000:02       |              | 000:02       |
| M 2100           |          |                           | 000:02     | 000:03       | 000:01       |              | 000:01       |              | 000:01       |
| 2200             |          |                           |            |              |              |              |              |              |              |
| 2300             |          |                           |            |              |              |              |              |              |              |
| 2400             |          |                           |            |              |              |              |              |              |              |
| TOT:             | 001:57   | 000:39                    | 000:56     | 001:00       | 000:39       | 000:28       | 000:27       | 000:28       | 000:38       |



# After

|                      |                |     |                          |                |     |
|----------------------|----------------|-----|--------------------------|----------------|-----|
| Vehicle Id.....      | 3293           |     |                          |                |     |
| Start/End Dates....  | 02/04/07 06:48 | to  | 02/11/07 06:19           |                |     |
| Average Speed.....   | 053            | MPH | <u>Fuel Mileage.....</u> | 00006.75       | MPG |
| Total Distance.....  | 0002505        | Mi  | Driving Mileage.....     | 00006.79       | MPG |
|                      |                |     | Moving Mileage.....      | 00006.79       | MPG |
| Engine Time.....     | 000046:31      | H:M |                          |                |     |
| Driving Time.....    | 000045:50      | H:M | Intertrip Idle Time..    | 000000:04      | H:M |
| Moving Time.....     | 000044:17      | H:M | Intertrip Idle Pct..     | 000.14         | %   |
| Total Active Time..  | 000167:31      | H:M | Short Idle Time.....     | 000000:04      | H:M |
|                      |                |     | Short Idle Pct.....      | 000.14         | %   |
| Over RPM Time.....   | 000000:00      | H:M | Extended Idle Time..     | 000000:00      | H:M |
| Over RPM Percent.... | 000.00         | %   | Extended Idle Pct...     | 000.00         | %   |
| Over Speed Time....  | 000000:06      | H:M | Auto Fault Check....     | ENABLED        |     |
| Over Speed Percent.. | 000.22         | %   | Possible Faults.....     | 000001         | #   |
| Excess Speed Time..  | 000000:01      | H:M | Extraction Date.....     | 02/11/07 06:21 |     |
| Coast Out of Gear..  | 000000:00      | H:M | User Fault Confirm..     | NOT REVIEWED   |     |



# After

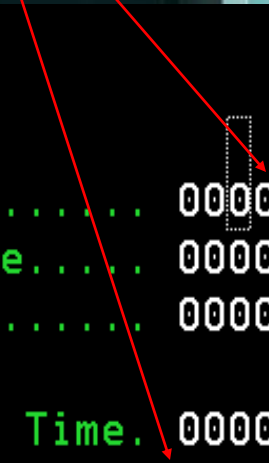
Vehicle ID..... 3293                      End.... 02/11/07 06:19

% Time Covered.. 100.00                      M P H (high ranges to .9)

|        | <u>0</u> | <u>1-4</u> | <u>5-9</u> | <u>10-14</u> | <u>15-19</u> | <u>20-24</u> | <u>25-29</u> | <u>30-34</u> | <u>35-39</u> |
|--------|----------|------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1400   |          | 000:01     | 000:06     | 000:08       | 000:03       | 000:01       | 000:04       | 000:05       | 000:05       |
| 1500   |          | 000:01     | 000:01     | 000:04       | 000:02       | 000:02       | 000:04       |              | 000:09       |
| 1600   |          | 000:01     | 000:02     | 000:02       | 000:02       | 000:03       | 000:04       |              | 000:05       |
| R 1700 |          |            |            |              | 000:02       | 000:03       |              | 000:03       |              |
| 1800   |          |            |            |              |              |              |              |              |              |
| P 1900 |          |            |            |              |              |              |              |              |              |
| 2000   |          |            |            |              |              |              |              |              |              |
| M 2100 |          |            |            |              |              |              |              |              |              |
| 2200   |          |            |            |              |              |              |              |              |              |
| 2300   |          |            |            |              |              |              |              |              |              |
| 2400   |          |            |            |              |              |              |              |              |              |
| TOT:   | 002:14   | 000:48     | 001:01     | 000:50       | 000:29       | 000:29       | 000:28       | 000:32       | 000:36       |

# Does Idle Make a Difference? Look at tractor 3136

|                      |                |     |                       |                |     |
|----------------------|----------------|-----|-----------------------|----------------|-----|
| Vehicle Id.....      | 3136           |     |                       |                |     |
| Start/End Dates..... | 09/18/06 04:39 | to  | 09/24/06 01:06        |                |     |
| Average Speed.....   | 052            | MPH | Fuel Mileage.....     | 00004.89       | MPG |
| Total Distance.....  | 0002639        | Mi  | Driving Mileage.....  | 00005.61       | MPG |
|                      |                |     | Moving Mileage.....   | 00005.61       | MPG |
| Engine Time.....     | 000098:22      | H:M |                       |                |     |
| Driving Time.....    | 000049:45      | H:M | Intertrip Idle Time.. | 000048:28      | H:M |
| Moving Time.....     | 000047:38      | H:M | Intertrip Idle Pct..  | 049.27         | %   |
| Total Active Time... | 000140:26      | H:M | Short Idle Time.....  | 000009:27      | H:M |
|                      |                |     | Short Idle Pct.....   | 009.60         | %   |
| Over RPM Time.....   | 000000:19      | H:M | Extended Idle Time..  | 000039:01      | H:M |
| Over RPM Percent.... | 000.32         | %   | Extended Idle Pct...  | 039.66         | %   |
| Over Speed Time..... | 000000:15      | H:M | Auto Fault Check....  | ENABLED        |     |
| Over Speed Percent.. | 000.52         | %   | Possible Faults.....  | 000001         | #   |
| Excess Speed Time... | 000000:01      | H:M | Extraction Date.....  | 09/24/06 01:08 |     |
| Coast Out of Gear... | 000000:00      | H:M | User Fault Confirm..  | NOT REVIEWED   |     |



# Sure looks like it makes an impact!

|                      |                |     |                       |                |     |
|----------------------|----------------|-----|-----------------------|----------------|-----|
| Vehicle Id.....      | 3136           |     |                       |                |     |
| Start/End Dates..... | 10/02/06 04:18 | to  | 10/08/06 02:06        |                |     |
| Average Speed.....   | 053            | MPH | Fuel Mileage.....     | 00006.73       | MPG |
| Total Distance.....  | 0002403        | Mi  | Driving Mileage.....  | 00006.80       | MPG |
|                      |                |     | Moving Mileage.....   | 00006.80       | MPG |
| Engine Time.....     | 000046:16      | H:M |                       |                |     |
| Driving Time.....    | 000044:27      | H:M | Intertrip Idle Time.. | 000001:21      | H:M |
| Moving Time.....     | 000043:17      | H:M | Intertrip Idle Pct..  | 002.91         | %   |
| Total Active Time... | 000141:49      | H:M | Short Idle Time.....  | 000001:21      | H:M |
|                      |                |     | Short Idle Pct.....   | 002.91         | %   |
| Over RPM Time.....   | 000000:00      | H:M | Extended Idle Time..  | 000000:00      | H:M |
| Over RPM Percent.... | 000.00         | %   | Extended Idle Pct...  | 000.00         | %   |
| Over Speed Time..... | 000000:02      | H:M | Auto Fault Check....  | ENABLED        |     |
| Over Speed Percent.. | 000.07         | %   | Possible Faults.....  | 000000         | #   |
| Excess Speed Time... | 000000:00      | H:M | Extraction Date.....  | 10/08/06 02:08 |     |
| Coast Out of Gear... | 000000:00      | H:M | User Fault Confirm..  | NOT REVIEWED   |     |

# What We Know

## **Rock-Solid Rules**

- Every 2% reduction in aerodynamic drag results in approximately 1% improvement in fuel economy.
- Above 55 mph, each 1 mph increase in vehicle speed decreases fuel economy by 0.1 MPG.
- Worn tires provide up to 7% better fuel economy than new tires.
- Used lug drive tires can get up to 0.4 MPG better fuel economy than new lug tires.
- Ribbed tires on the drive axles provide 2–4% better fuel economy than lugged tires.
- Every 10 psi that a truck's tires are underinflated reduces fuel economy by 1%.
- The break-in period for tires is between 35,000 and 50,000 miles.
- Tires make biggest difference in MPG below 50 mph; aerodynamics is the most important factor over 50 mph.
- The most efficient drivers get about 30% better fuel economy than the least efficient drivers.
- Idle time is costly. Every hour of idle time in a long-haul operation can decrease fuel economy by 1% because you're burning fuel and not moving.

