

# *Improved Fuel Efficiency*

**2008 Annual West Coast  
Collaborative Partnership Meeting**

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

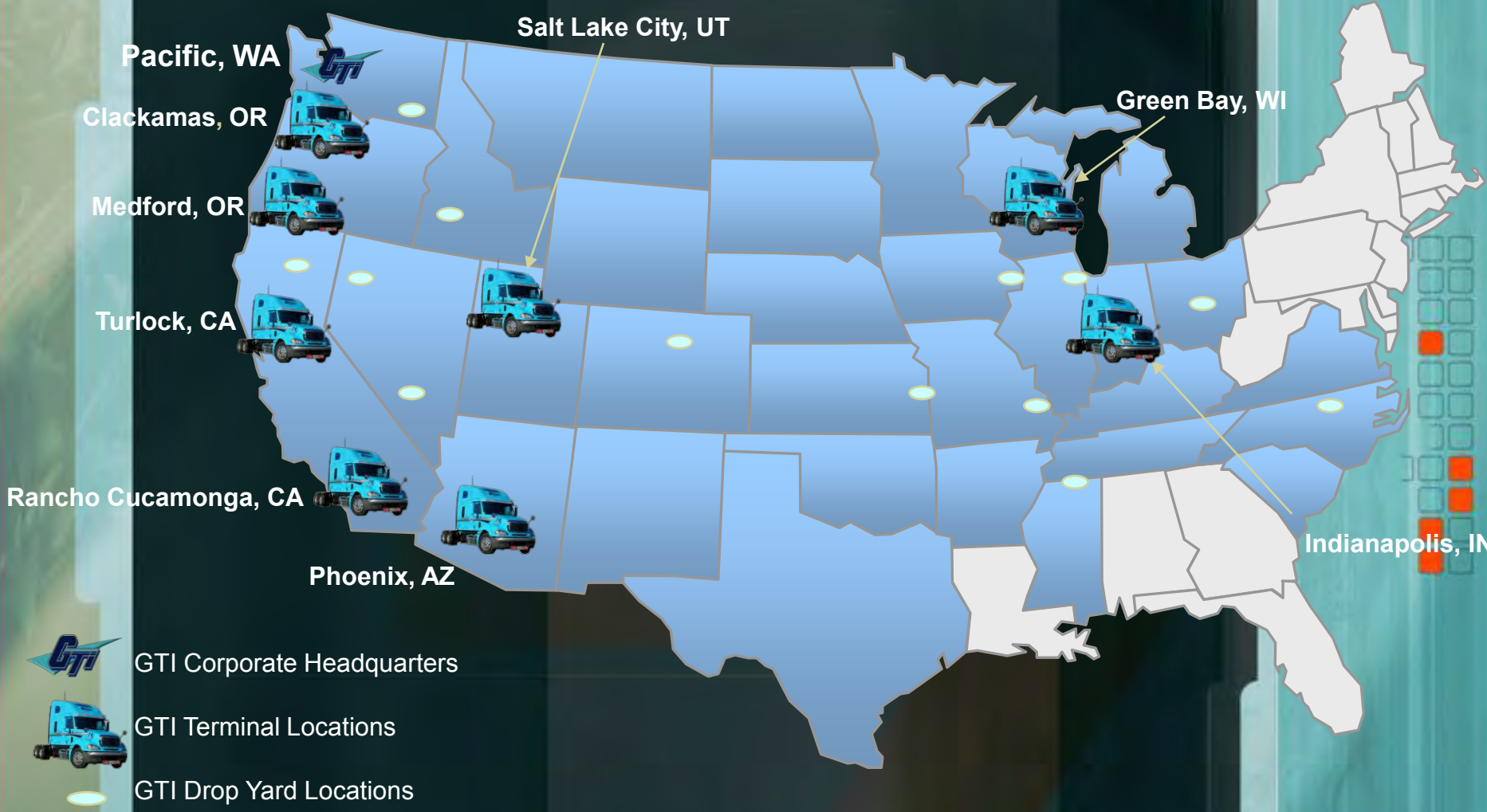
# *Who is Gordon Trucking?*

## **PROFILE**

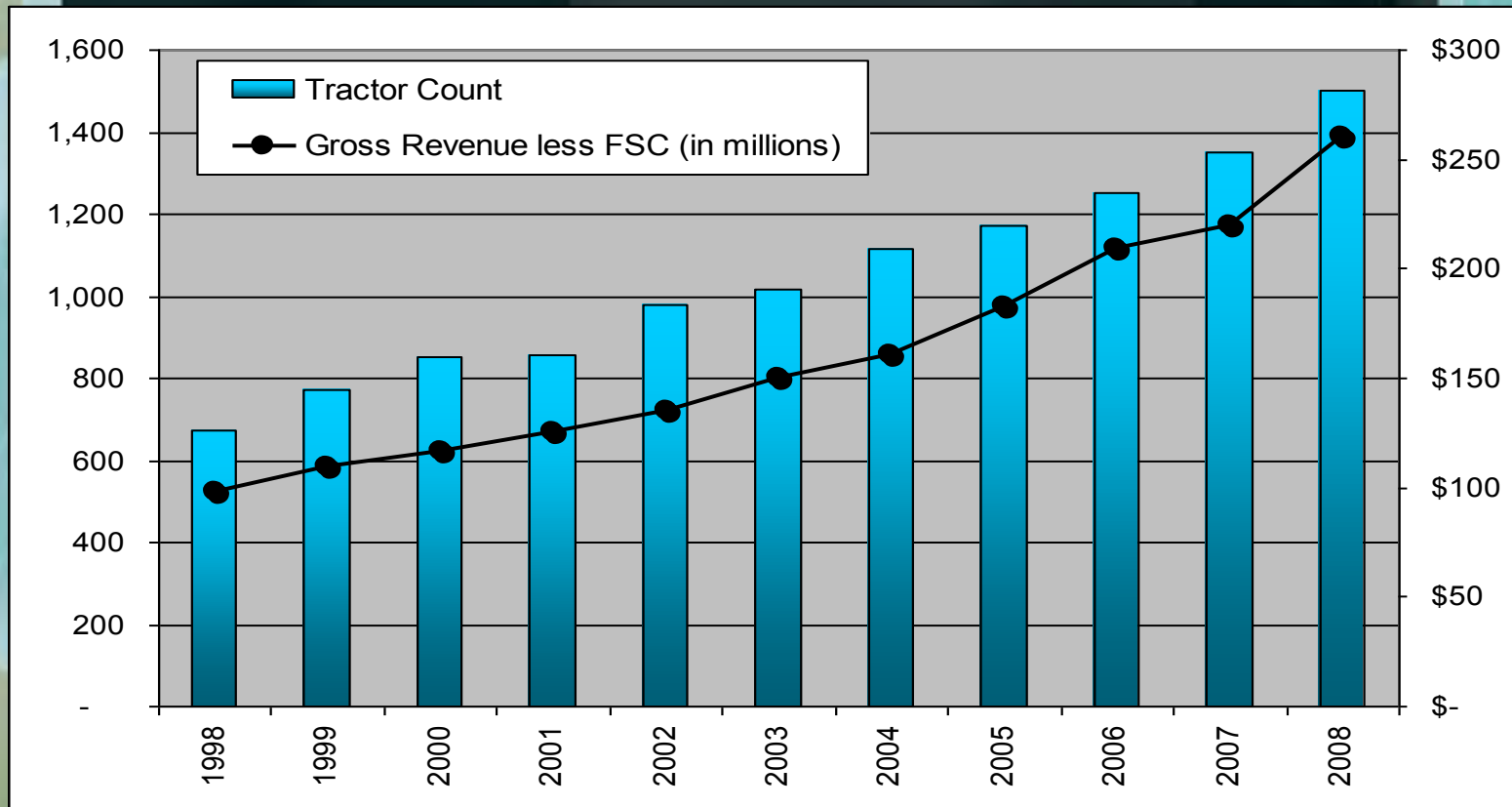
- Founded in 1946
- Privately owned
- Non-Union
- 40+ Fortune 500 customers
- 24 / 7 / 365 Operations
- FAST / CTPAT Certified
- FMCSA ISS Inspection Value - 25
  - *Tops in industry*



# 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*



# *Reduce Speed/MPH*

- Govern trucks at a lower MPH. But watch the gear ratios!
- Use momentum.
- Limit use of the compression brake.
- Light as a feather on the throttle.



# *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

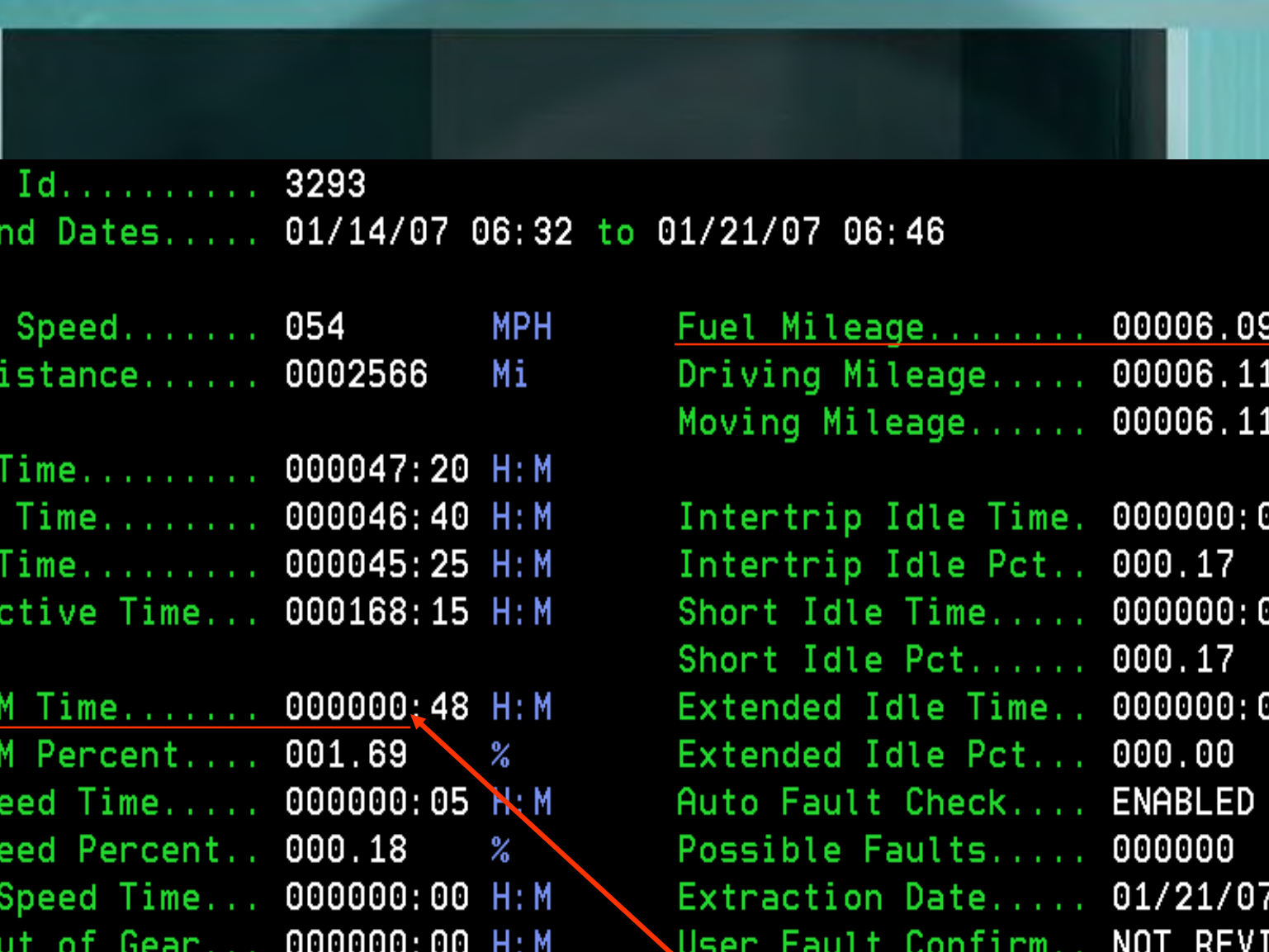
Driver ID..... Start.. 07/17/06 04:38 Speed Column: 17  
Vehicle ID..... End.... 07/25/06 05:33  
% Time Covered.. 100.00 **M P H** (high ranges to .9)

	<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.)

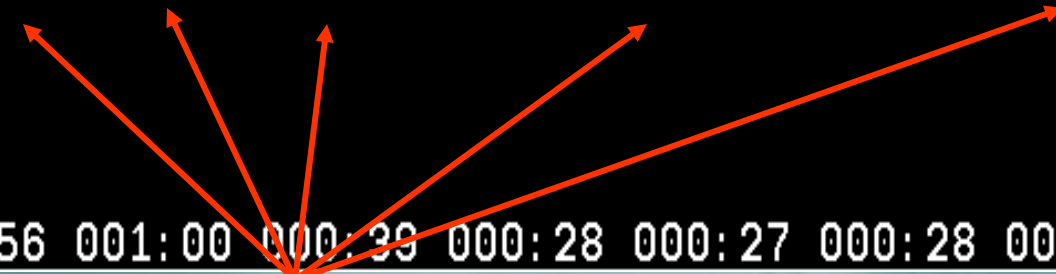
# Before

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	



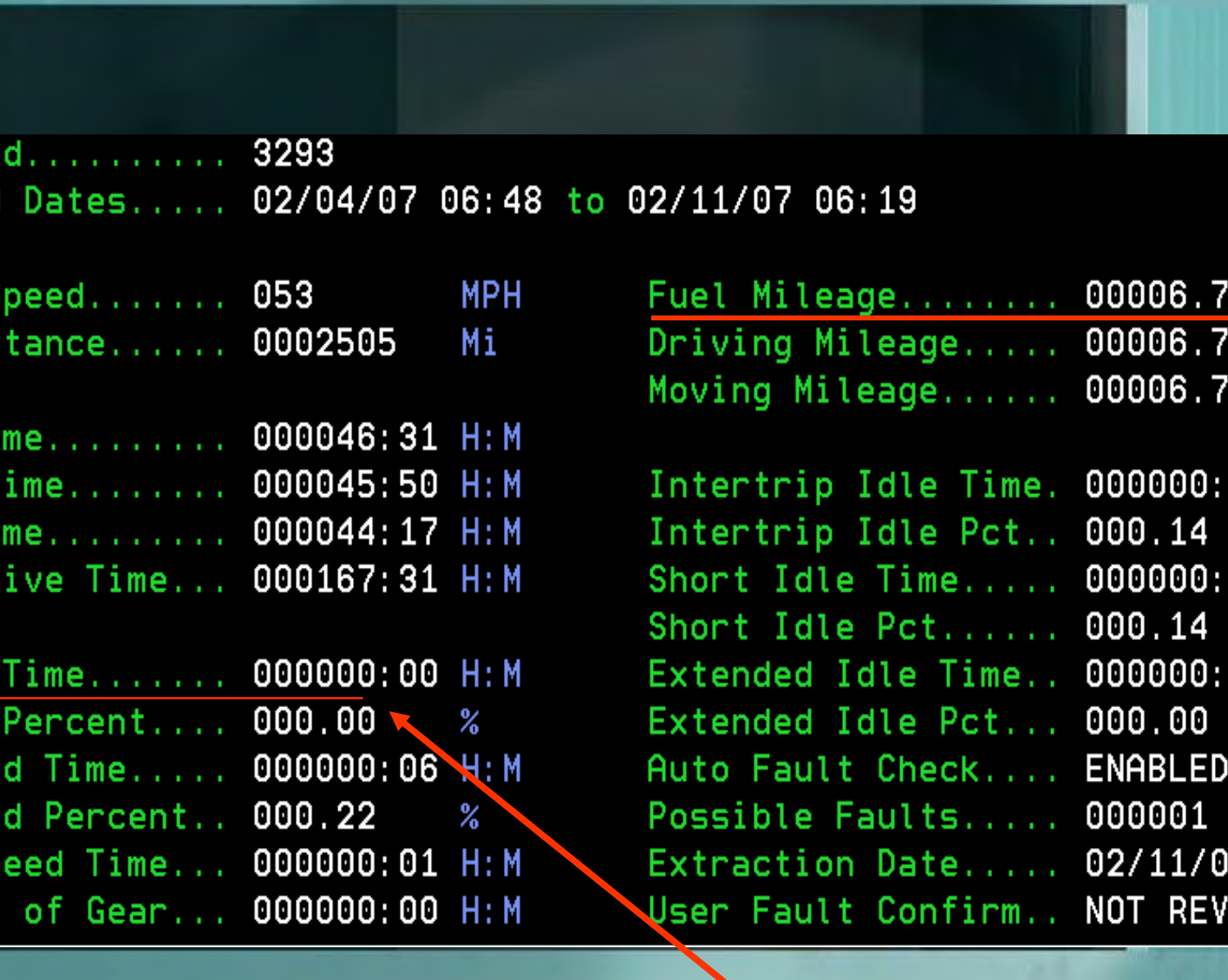
# Before

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	

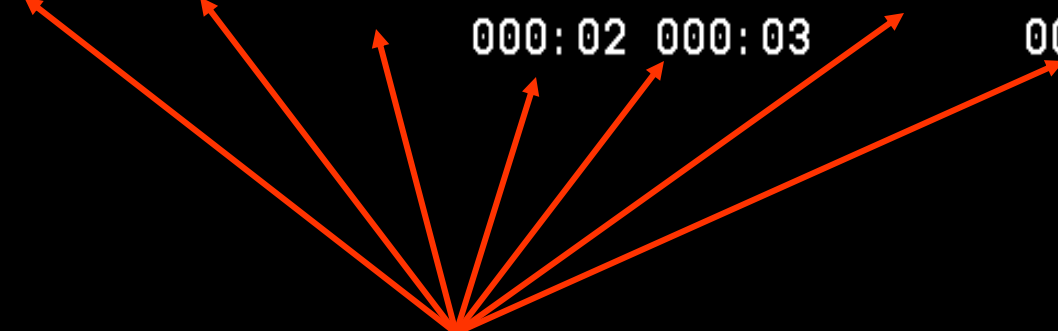


# After

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.

***Thank You!***

Michael G. Zinkoff, CTO  
Vice President, Operations  
Gordon Trucking, Inc.