End of Day Rollup

The EODR Encompass data used by various reports such as Vehicle Performance, Driver Performance and DTScan

This document details the data captured via the ELD End-Of-Day-Rollup:

- The data described in this document is available when the ELD is at v4.25.30 or later, the database is at v15 or later, the Switch is at v4.25.30. The first production ELD software release to contain full support for all data elements listed in this document will be v4.26.00.
- For each day the ELD is powered on, it collects a variety of information regarding fuel, idle, communications, speed, distance, driver performance and the ELD environment. This data is "rolled-up" into a single data block that is delivered to the data center sometime after midnight (UTC, using company time zone midnight).
- Data for each truck is inserted into the fleet's database in a very efficient and easy-to-access table, which can then be used for reporting through the Web Portal and can also be accessed through DriverTech™ Web Services and the customer's integration.
- The tables within this document describe the data elements being captured by the ELD on a daily basis. The column of each table of elements is defined as follows:

Element	Element full name
VP	Indicates if the element is part of the Vehicle Performance rollup
DP	Indicates if the element is part of the Driver Performance rollup
Version	Minimum Web Service / Interface version which exposes the element
Unit	Data type or Unit of measure represented by the element
Description	Description or extra detail for the element

The table below contains reference items which are provided with each record.

Record / Entry Identifiers					
Element	VP	DP	Version	Type	Description
[type]Id	X	X	1.2.2	int	Unique ID for each record of data.
Version	X	X	2.x	int	Version of the program which gathered the data
ELDID	X	X	2.x	int	Unique ID for a truck
TruckName	X	X	1.2.2	string	Truck Name of the vehicle from which data originated
DriverID		X	2.x	int	Unique ID for a driver
DriverLogon		X	2.x	string	Unique Logon used to sign on to the ELD
Date	X	X	1.2.2	DateTime	Date of occurrence on the vehicle

ReceivedOn	X	X	2.x	DateTime	Date/Time when Information was received at the Data Center

Vehicle Performance provides many data elements from the perspective of the Vehicle. One record per Vehicle, per 24hr period will be provided.
Detail of the data elements can be found in the EODR Element Detail section of this document

Driver Performance provides information from the perspective of the Driver. One record per Driver, per Vehicle, per 24hr period will be provided.
In the case that no driver was logged on and the vehicles engine was running for more than 30 minutes a record will be provided containing: a DriverId of 0, the EngineStart dateTime, and the EngineEnd dateTime.
Detail of the data elements can be found in the EODR Element Detail section of this document.

The table below describes all the elements included in the rollup.
These elements are used for reporting Wi-Fi, Cell and Satellite communications usage for transmitting DTScan archives from the ELD.

DTScan Elements Detail					
Element	**VP**	**DP**	**Version**	**Unit**	**Description**
FilesTxWiFi	X		2.x	count	Number of batches sent via Wi-Fi
FilesTxCell	X		2.x	count	Number of batches sent via Cell
FileBytesTxWifi	X		2.x	count	Number of bytes sent via Wi-Fi
FileBytesTxCell	X		2.x	count	Number of bytes sent via Cell
FilesPendingTx	X		2.x	count	Number of batches queued to be sent
FileBytesPendingTx	X		2.x	count	Number of bytes queued to be sent
PagesScanned	X		2.x	count	Number of pages scanned during this EODR period

Communications Elements

The table below describes all the communications elements included in the rollup.
These elements are used for reporting Wi-Fi, Cell and Satellite communications usage.

Communication Elements Detail					
Element	**VP**	**DP**	**Version**	**Unit**	**Description**
WifiTxBytes	X		1.2.2	count	Number of bytes sent via Wi-Fi
WifiRxBytes	X		1.2.2	count	Number of bytes received via Wi-Fi
WifiTxMsgs	X		1.2.2	count	Number of messages sent via Wi-Fi
WifiRxMsgs	X		1.2.2	count	Number of messages received via Wi-Fi
WifiTimeConnected	X		1.2.2	seconds	Amount of time the ELD was connected to Wi-Fi
CellTxBytes	X		1.2.2	count	Number of bytes sent via Cell
CellRxBytes	X		1.2.2	count	Number of bytes received via Cell
CellTxMsgs	X		1.2.2	count	Number of messages sent via Cell
CellRxMsgs	X		1.2.2	count	Number of messages received via Cell
CellTimeConnected	X		1.2.2	count	Amount of time the ELD was connected to Cell
CellSuccessfulConn	X		1.2.2	count	Number of successful RASDial cellular network connections
CellFailedConn	X		1.2.2	count	Number of failed RASDial cellular network connections
SatelliteTxBytes	X		1.2.2	count	Number of bytes sent via satellite
SatelliteRxBytes	X		1.2.2	count	Number of bytes received via satellite
SatelliteTxMsgs	X		1.2.2	count	Number of messages sent via satellite
SatelliteRxMsgs	X		1.2.2	count	Number of messages received via satellite
SatelliteTimeInView	X		1.2.2	seconds	Amount of time the ELD could "see" a satellite
FilesTxWifi	X		2.x	count	Number of Files sent via Wi-Fi
FilesTxCell	X		2.x	count	Number of Files sent via Cell
FilesRxWifi	X		2.x	count	Number of Files received via Wi-Fi

FilesRxCell	X		2.x	count	Number of Files received via Cell
FileBytesTxWifi	X		2.x	count	Number of File Bytes sent via Wi-Fi
FileBytesTxCell	X		2.x	count	Number of File Bytes sent via Cell
FileBytesRxWifi	X		2.x	count	Number of File Bytes received via Wi-Fi
FileBytesRxCell	X		2.x	count	Number of File Bytes received via Cell
FilesPendingTx	X		2.x	count	Number of Files queued to be Sent
FileBytesPendingTx	X		2.x	count	Number of File Bytes queued to be sent
GpsLockTime	X		2.x	seconds	Amount of time the GPS had a valid GPS lock
GpsLockTransitions	X		2.x	Count	Number GPS transitioned from lock to no-lock

Performance Elements

The table below describes all the driver performance elements included in the rollup.
These elements are used to report on the driver's safe driving habits.

Performance Elements Detail					
Element	**VP**	**DP**	**Version**	**Unit**	**Description**
OverRPM	X	X	1.2.2	seconds	Total time spent with engine RPM in excess of Vehicle RPM limit
OverSpeed	X	X	1.2.2	seconds	Total time spent in Vehicle Motion at speed in excess of fleet Vehicle Speed Limit
OverIdle	X	X	1.2.2	seconds	Total time spend idling in excess of Vehicle idle limit
HardBrakes	X	X	1.2.2	count	Total number of Hard Braking events
EngStartTime		X	2.x	DateTime	Start of engine time when driver not logged on. Not reported when the driverId is valid (non-zero).
EngEndTime		X	2.x	DateTime	End of engine time when driver not logged on. Not reported when the driverId is valid (non-zero).
LogonTime		X	2.x	seconds	The amount of time the user was logged on
OverSpeedMiles	X	X	1.2.2	count (1/10 mile units)	Total miles spent Vehicle Motion at a speed in excess of fleet Vehicle Speed Limit
MaxRPM	X	X	1.2.2	RPM	Max RPM during rollup period
MaxSpeed	X	X	1.2.2	MPH	Max speed during rollup period
MaxLoad	X	X	2.x	Percent	Max engine load % during rollup period
HardTurns	X	X	1.2.2	count	Total number of hard-turn events (not implemented yet)
StopCount	X	X	1.2.2	count	Number of times a truck stops during a rollup period
OverRPMCount	X	X	1.2.2	count	Number of time a truck exceeds a over RPM threshold
OverRPMLongestPeriod	X	X	1.2.2	seconds	Length of time for longest over RPM event
OverSpeedCount	X	X	1.2.2	count	Number of time a truck exceeds the fleet Vehicle Speed Limit
OverSpeedLongestPeriod	X	X	1.2.2	seconds	Length of time for longest over speed event
OverSpeedAvg	X	X	1.2.2	MPH	Average over speed value while Driving
CoastingOutOfGear	X	X	1.2.2	seconds	Cumulative time for all Coasting events – i.e. vehicle moving while out of gear
CoastingOutOfGearCount	X	X	1.2.2	count	Number of times a coasting event occurred
AvgSpeed	X	X	1.2.2	MPH	Pre-calculated: Speed samples are taken once per second once the vehicle is in Vehicle Motion. Samples are then accumulated throughout the day and finally divided by the number of samples taken at the end of the day.
SpeedRPMProfileIdx	X	X	1.2.2	string	Index of data fields being reported in the Speed RPM Profile field
SpeedRPMProfileData	X	X	1.2.2	string	Values for each speed/rpm index reported by Speed RPM Profile field
OverSpeedFE	X	X	2.x	seconds	Value of in Vehicle Motion at speed in excess of fleet Vehicle Speed Limit for Fuel Economy
OverSpeedCountFE	X	X	2.x	count	
OverSpeedLongestPeriodFE	X	X	2.x	seconds	
OverSpeedAvgFE	X	X	2.x	MPH	
OverSpeedMilesFE	X	X	2.x	count (1/10 mile units)	
CruiseMiles	X	X	2.x	count (1/10 mile units)	Total distance traveled while cruise control was set
CruiseTime	X	X	2.x	seconds	Total time spent with the cruise control set

MaxCruiseSpeed	X	X	2.x	MPH	Highest cruise set speed set
AvgCruiseSpeed	X	X	2.x	MPH	Average cruise set speed
OverCruiseSpeedCount	X	X	2.x	count	Values of Cruise Control Set Speed in excess of fleet Vehicle Cruise Control Speed Limit
OverCruiseSpeedTime	X	X	2.x	seconds	
AvgOverCruiseSpeed	X	X	2.x	MPH	

Speed/Rpm Profile

The Speed/RPM Profile values (DSRI, DSRD) are gathered upon transmission by the J-Bus.
The Speed is split into 5mph increments beginning at 0 until 55mph and speed is split into 2mph increments above 55mph.
RPM is split into 100 rpm increments beginning at 0. PTOC and PTOP will always have value of 0 as they are supplied via an analog signal but the ELD only supports JBus.
The following table illustrates the Speed and RPM increments and provides an example of the correlation between Profile Index and Profile Data:

Profile Index Example Data (speedRPMProfileIdx – DSRI):
0009 050A 050E 050E 050E 050E 060A 080B 0907 0A08 0C07 0D03 0F01 0F02 1001 1002 1101 1101 0000 0000 0000 0000 0000 0000 0000

Profile Data Example Data (speedRPMProfileData – DSRD):
015C 0000 0000 0000 0000 000B 0041 0001 0005 0004 001A 0005 0004 0004 0004 0003 0004 0003 0001 0001 000D 0003 0004 0006 0007 0006 0007 0008 0007 0003 0002 0001 0001 0001 0009 0003 0005 0005 0005 0003 0004 0004 0005 0007 0002 0002 0001 0001 0007 0003 0003 0005 0004 0005 0007 000F 0010 0001 0004 0005 0002 0001 0004 0002 0006 0005 0003 000A 0014 0009 0003 0017 0023 0011 0002 0001 0006 0001 0005 0010 000B 0000 0012 001E 0019 0007 0007 0000 0012 0038 0024 0001 0003 0017 000E 0002 000B 001E 0000 0000 0034 005D 0021 0003 005A 0029 0002 0002 003A 003B 0008 0085 00A4 0001 0001 0001 000E 0002 006A 01D0 0013 019F 017B 0055 0173 004B 0014 000A 0001

	IDLE	1 < 5	5 < 10	10 < 15	15 < 20	20 < 25	25 < 30	30 < 35	35 < 40	40 < 45	45 < 50	50 < 55	55 < 57	57 < 59	59 < 61	61 < 63	63 < 65	65 < 67	67 < 69	69 < 71	71 < 73	73 < 75	>= 75	PTOC	PTOP	PTOE
0 < 100	348																									
100 < 200	0																									
200 < 300	0																									
300 < 400	0																									
400 < 500	0																									
500 < 600	11	4	1	1	1	1																				
600 < 700	65	26	13	9	7	4	1																			
700 < 800	1	5	3	3	3	2	6																			
800 < 900	5	4	4	5	3	6	1	7																		
900 < 1000		4	6	5	5	5	5	7	11																	
1000 < 1100		4	7	5	4	3	16	0	30	3																
1100 < 1200		3	6	3	5	10	11	18	0	90																
1200 < 1300		4	7	4	7	20	0	56	0	41	133															
1300 < 1400		3	8	4	15	9	18	36	52	2	164	106														
1400 < 1500		1	7	5	16	3	30	1	93	2	1	464														
1500 < 1600		3	7	1	23	25	3	33	58	1		19	415	379												
1600 < 1700		2	2	4	35		23			59	1			85	371	75										
1700 < 1800		1	2	5	17		14		8	14						20	10	1								
1800 < 1900		1	1	2	2		2			2																
1900 < 2000																										
2000 < 2100																										
2100 < 2200																										
2200 < 2300																										
2300 < 2400																										
> 2400																										

Fuel and Mileage Elements

The table below describes all the fuel and mileage elements included in the rollup.
These elements are used for miles-per-gallon reporting, determining the amount of driver idle time, and overall fuel consumption.

Fuel and Mileage Elements Detail					
Element	**VP**	**DP**	**Version**	**Unit**	**Description**
Odometer	X		1.2.2	count (1/10 mile units)	Last odometer reading of the day (UTC)
FuelPrimary	X		1.2.2	count (0-255% tank level)	Primary (left) fuel tank level at the end of the day (UTC). Values reported in ½ percent
FuelSecondary	X		1.2.2	count (0-255% tank level)	Secondary (right) fuel tank level at the end of the day (UTC). Values reported in ½ percent

Miles	X	X	1.2.2	count (1/10 mile units)	Total distance traveled
Fuel	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed
IdleFuel	X	X	1.2.2	value (1/8 gallon units)	All fuel consumption that occurs while not in Vehicle Motion and while the PTO was not engaged
IdleTime	X	X	1.2.2	seconds	All time while the engine was running and not in Vehicle Motion and while the PTO was not engaged
ShortTermIdle	X	X	1.2.2	seconds	Sum of all time that occurs outside of Vehicle Motion that is less than or equal to 15 minutes while the PTO was not engaged
MidTermIdle	X	X	1.2.2	seconds	Sum of all time that occurs outside of Vehicle Motion that is between 15 minutes and 90 minutes while the PTO was not engaged
LongTermIdle	X	X	1.2.2	seconds	Sum of all time that occurs outside of Vehicle Motion that is greater than 90 minutes and while the PTO was not engaged
AvgIdleNoDrive	X	X	2.x	seconds	Average Idle time outside of Driving
LongestIdleNoDrive	X	X	2.x	seconds	Longest Idle time outside of Driving
EngineTime	X	X	1.2.2	seconds	Total time spent with the engine on
PtoTime	X	X	1.2.2	seconds	Total time spent with the PTO was engaged
DriveTime	X	X	1.2.2	seconds	Total time spent Driving
DriveFuel	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while Driving
InterStopIdle	X	X	1.2.2	seconds	Sum of all idle time that occurs while Driving (i.e. time at stop lights)
ParkedIdle	X	X	1.2.2	seconds	All idle that occurs while the parking brake is applied
ParkedIdleFuel	X	X	1.2.2	value (1/8 gallon units)	All idle fuel consumption that occurs while the parking brake is applied
PtoFuel	X	X	1.2.2	value (1/8 gallon units)	Total fuel used while the PTO engine was engaged
MotionTime	X	X	1.2.2	seconds	Total time counted during Vehicle Motion

Speed Group Elements

The table below describes all the speed group elements included in the rollup.
These elements provide the amount of time, the amount of fuel consumed, and the distance traveled inside the eight speed group ranges: 1-34 MPH; 35-52 MPH; 53-57 MPH; 58-62 MPH; 63-67 MPH; 68-72 MPH; 73-77 MPH; and 78 MPH and over.

Speed Group Elements Detail					
Element	VP	DP	Version	Unit	Description
SpeedTimeGrp1	X	X	1.2.2	seconds	Total time spent driving from 1-34 MPH
SpeedTimeGrp2	X	X	1.2.2	seconds	Total time spent driving from 35-52 MPH
SpeedTimeGrp3	X	X	1.2.2	seconds	Total time spent driving from 53-57 MPH
SpeedTimeGrp4	X	X	1.2.2	seconds	Total time spent driving from 58-62 MPH
SpeedTimeGrp5	X	X	1.2.2	seconds	Total time spent driving from 63-67 MPH
SpeedTimeGrp6	X	X	1.2.2	seconds	Total time spent driving from 68-72 MPH
SpeedTimeGrp7	X	X	1.2.2	seconds	Total time spent driving from 73-77 MPH
SpeedTimeGrp8	X	X	1.2.2	seconds	Total time spent driving 78 MPH and faster
SpeedFuelGrp1	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while driving in speed group 1
SpeedFuelGrp2	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while driving in speed group 2
SpeedFuelGrp3	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while driving in speed group 3
SpeedFuelGrp4	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while driving in speed group 4
SpeedFuelGrp5	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while driving in speed group 5
SpeedFuelGrp6	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while driving in speed group 6
SpeedFuelGrp7	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while driving in speed group 7
SpeedFuelGrp8	X	X	1.2.2	value (1/8 gallon units)	Total fuel consumed while driving in speed group 8
SpeedMilesGrp1	X	X	1.2.2	count (1/10 mile units)	Total distance traveled while driving in speed group 1
SpeedMilesGrp2	X	X	1.2.2	count (1/10 mile units)	Total distance traveled while driving in speed group 2

SpeedMilesGrp3	X	X	1.2.2	count (1/10 mile units)	Total distance traveled while driving in speed group 3
SpeedMilesGrp4	X	X	1.2.2	count (1/10 mile units)	Total distance traveled while driving in speed group 4
SpeedMilesGrp5	X	X	1.2.2	count (1/10 mile units)	Total distance traveled while driving in speed group 5
SpeedMilesGrp6	X	X	1.2.2	count (1/10 mile units)	Total distance traveled while driving in speed group 6
SpeedMilesGrp7	X	X	1.2.2	count (1/10 mile units)	Total distance traveled while driving in speed group 7
SpeedMilesGrp8	X	X	1.2.2	count (1/10 mile units)	Total distance traveled while driving in speed group 8
SpeedCruisePerGrp1	X	X	1.2.2	Percent	Percent cruise control time while driving in speed group 1
SpeedCruisePerGrp2	X	X	1.2.2	Percent	Percent cruise control time while driving in speed group 2
SpeedCruisePerGrp3	X	X	1.2.2	Percent	Percent cruise control time while driving in speed group 3
SpeedCruisePerGrp4	X	X	1.2.2	Percent	Percent cruise control time while driving in speed group 4
SpeedCruisePerGrp5	X	X	1.2.2	Percent	Percent cruise control time while driving in speed group 5
SpeedCruisePerGrp6	X	X	1.2.2	Percent	Percent cruise control time while driving in speed group 6
SpeedCruisePerGrp7	X	X	1.2.2	Percent	Percent cruise control time while driving in speed group 7
SpeedCruisePerGrp8	X	X	1.2.2	Percent	Percent cruise control time while driving in speed group 8
SpeedEngLoadPerGrp1	X	X	1.2.2	Average	Average engine load while driving in speed group 1
SpeedEngLoadPerGrp2	X	X	1.2.2	Average	Average engine load while driving in speed group 2
SpeedEngLoadPerGrp3	X	X	1.2.2	Average	Average engine load while driving in speed group 3
SpeedEngLoadPerGrp4	X	X	1.2.2	Average	Average engine load while driving in speed group 4
SpeedEngLoadPerGrp5	X	X	1.2.2	Average	Average engine load while driving in speed group 5
SpeedEngLoadPerGrp6	X	X	1.2.2	Average	Average engine load while driving in speed group 6
SpeedEngLoadPerGrp7	X	X	1.2.2	Average	Average engine load while driving in speed group 7
SpeedEngLoadPerGrp8	X	X	1.2.2	Average	Average engine load while driving in speed group 8
SpeedRpmAvgGrp1	X	X	1.2.2	Average	Average RPM while driving in speed group 1
SpeedRpmAvgGrp2	X	X	1.2.2	Average	Average RPM while driving in speed group 2
SpeedRpmAvgGrp3	X	X	1.2.2	Average	Average RPM while driving in speed group 3
SpeedRpmAvgGrp4	X	X	1.2.2	Average	Average RPM while driving in speed group 4
SpeedRpmAvgGrp5	X	X	1.2.2	Average	Average RPM while driving in speed group 5
SpeedRpmAvgGrp6	X	X	1.2.2	Average	Average RPM while driving in speed group 6
SpeedRpmAvgGrp7	X	X	1.2.2	Average	Average RPM while driving in speed group 7
SpeedRpmAvgGrp8	X	X	1.2.2	Average	Average RPM while driving in speed group 8
SpeedBrakeGrp1	X	X	1.2.2	count	Brake count while driving in speed group 1
SpeedBrakeGrp2	X	X	1.2.2	count	Brake count while driving in speed group 2
SpeedBrakeGrp3	X	X	1.2.2	count	Brake count while driving in speed group 3
SpeedBrakeGrp4	X	X	1.2.2	count	Brake count while driving in speed group 4
SpeedBrakeGrp5	X	X	1.2.2	count	Brake count while driving in speed group 5
SpeedBrakeGrp6	X	X	1.2.2	count	Brake count while driving in speed group 6
SpeedBrakeGrp7	X	X	1.2.2	count	Brake count while driving in speed group 7
SpeedBrakeGrp8	X	X	1.2.2	count	Brake count while driving in speed group 8

The following table shows the correlation between various elements which reference the speed groups:

Element Category	Speed Groups 1-8 in MPH							
	1-34	35-52	53-57	58-62	63-67	68-72	73-77	78+
Total time spent Driving	GT1	GT2	GT3	GT4	GT5	GT6	GT7	GT8
Total Fuel Consumed	GF1	GF2	GF3	GF4	GF5	GF6	GF7	GF8
Total Distance travelled	GM1	GM2	GM3	GM4	GM5	GM6	GM7	GM8
Percent Cruise Control	SGC1	SGC2	SGC3	SGC4	SGC5	SGC6	SGC7	SGC8
Average Engine Load	SGE1	SGE2	SGE3	SGE4	SGE5	SGE6	SGE7	SGE8
Average RPM	SGR1	SGR2	SGR3	SGR4	SGR5	SGR6	SGR7	SGR8
Brake Count	SGB1	SGB2	SGB3	SGB4	SGB5	SGB6	SGB7	SGB8

EODR Element Detail

Engine Load Group Elements

Band data for engine load percentage. Engine load is the ratio of engine torque to available torque of the current engine speed.

Element	VP	DP	Version	Unit	Description
Engine Load Group Elements Detail					
EngLoadPerGrp1	X	X	1.2.2	Percent	Percent of time at engine load % < 20%
EngLoadPerGrp2	X	X	1.2.2	Percent	Percent of time at engine load % between 20% and 39%
EngLoadPerGrp3	X	X	1.2.2	Percent	Percent of time at engine load % between 40% and 59%
EngLoadPerGrp4	X	X	1.2.2	Percent	Percent of time at engine load % between 60% and 79%
EngLoadPerGrp5	X	X	1.2.2	Percent	Percent of time at engine load % between 80% and 99%
EngLoadPerGrp6	X	X	1.2.2	Percent	Percent of time at engine load % >= 100

RPM Group Elements

Percentage of time that the vehicle is within the defined RPM bands.

Element	VP	DP	Version	Unit	Description
RPM Group Elements Detail					
RpmPerGrp1	X	X	1.2.2	Percent	Percent of time at RPM < 600
RpmPerGrp2	X	X	1.2.2	Percent	Percent of time at RPM between 600 and 899
RpmPerGrp3	X	X	1.2.2	Percent	Percent of time at RPM between 900 and 1199
RpmPerGrp4	X	X	1.2.2	Percent	Percent of time at RPM between 1200 and 1499
RpmPerGrp5	X	X	1.2.2	Percent	Percent of time at RPM between 1500 and 1799
RpmPerGrp6	X	X	1.2.2	Percent	Percent of time at RPM between 1800 and 2099
RpmPerGrp7	X	X	1.2.2	Percent	Percent of time at RPM between 2100 and 2399
RpmPerGrp8	X	X	1.2.2	Percent	Percent of time at RPM >= 2400

Diagnostic Elements

The table below represents a list of miscellaneous truck diagnostic type elements. These fields are used to proactively determine if there are problems with the truck or ELD.

Element	VP	DP	Version	Unit	Description
Diagnostic Elements Detail					
FaultCount	X		1.2.2	Count	J1708 Fault Count within the rollup period
FaultTime	X		1.2.2	Seconds	Amount of time when J1708 fault codes where active
AnomalyCount	X		1.2.2	Count	Count of odd system occurrences that might be used to signal a person to run additional reports to determine if a driver was tampering with the TPC.
SystemMask	X		1.2.2	Bit Field	Collection of events that occurred during the rollup period. See table: System Mask
JbusParamsMissing	X		1.2.2	Bit Field	Provides status of expected jbus PIDs which were non respondent. See Table: J-Bus Parameters Missing
JbusParamsAudit	X		1.2.2	Bit Field	Provides status of jbus PIDs used. See Table: J-Bus Parameters Audit

Item	Bit	Description	Possible Cause
System Mask Bit Field Breakdown			
BSOD	0x000 0001	Major Malfunction	Major hardware or software malfunction of ELD: "Blue Screen of Death"
LOSS_OF_POWER	0x000 0002	ELD has booted without proper shutdown	ELD powered off without proper system shutdown

Name	Value	Condition	Description
SOFTWARE_MALFUNCTION	0x00 0004	Malfunction of the subsystem responsible for communicating with the JBus	Hung Thread Unable to communicate with Data Link Adapter
NO_LOGON	0x00 0008	Vehicle in motion without Driver Logon	Driver did not Logon to ELD
ENGINE_TIME_JUMP	0x00 0010	Disruption of data continuity	Engine run with main power disconnected Engine run with Data Link disconnected Engine run with Ignition Line disconnected Tampering with equipment
ODOMETER_JUMP	0x00 0020	Disruption of data continuity	Engine run with main power disconnected Engine run with Data Link disconnected Malfunction in Odometer Sensor
GPS_JUMP	0x00 0040	Disruption of data continuity	Engine run with main power disconnected Engine run with Data Link disconnected Malfunction in GPS Receiver
BAD_IGNITION	0x00 0080	Ignition off and Speed or RPM non-zero	Issue with ignition line wiring or fuse
BAD_JBUSJ1708_SPEED	0x00 0100	Engine posted diagnostic code for road speed PID 194 and 84	Speed sensor or connection problem to engine, detected by the engines diagnosis
BAD_JBUS1708_RPM	0x00 0200	Engine posted diagnostic code for engine RPM Engine posted PID 194 and 190	Speed sensor or connection problem to engine, detected by the engines diagnosis
FAULT_A	0x00 0400	More than 2hrs with:Ignition =is 'On' Speed not being received=0 RPM > 1300 is being received PTO = False	Speed sensor or connection problem
FAULT_B	0x00 0800	More than 2hrs with: Ignition is 'On' Ignition = ON Speed **not** being received RPM not being received Speed = 0RPM = 0	Disconnect of main power/accessory cable Data Link connection problem Driver using ignition position for accessory operation Ignition line wired to accessory position
MODEM_FAULT	0x00 1000	Can't connect to modem	This flag occurs when the modem's serial port resource is locked by the OS
JBUS_HDWARE_RESET	0x00 2000	JBus hardware reset	Indicates that the JBUS hardware in the TPC has been reset. This can happen when REV 3 TPC hardware has a defective I-Bridge cable (intermittent connection)
JBUS_HDWARE_NOT_RESP	0x00 4000	JBus hardware not responding	JBus hardware in the TPC is not responding. This is caused by the same issue as JBUS_HARDWARE_RESET, but instead of having intermittent resets the cable has long persistent losses of power. If this flag is set you need to RMA the TPC.
MODEM_NOT_RESP_FW_INSTALLED	0x00 8000	Firewall installed, Modem not responding	Bidirectional firewall software installed on TPCCOM port to modem is open but is not responding to AT commands
FUEL_JUMP	0x01 0000	Fuel jump	Fuel sensor jump detected. This can occur when the computer was not on, or not able to monitor fuel usage.
MOVING_WITHOUT_JBUS	0x02 0000	More than 10 minutes of: GPS speed >= 9 MPH JBUS speed = 0	This indicates that JBUS was not functioning or not available while the truck was in motion according to GPS
LARGE_TIME_CHANGE	0x04 0000	Large change in system clock	System clock changed by over 1 hour – this could affect driving detected statuses if using HOS and any other time sensitive logging that occurs on the device.
GPS_NOT_FUNCTIONING	0x08 0000	GPS not functioning	The GPS was not able to get a GPS fix for a period of over 20 minutes while the truck was determined to be moving by the JBUS
MISSING_HOS_JBUS_PARAMS	0x10 0000	JBUS parameter(s) needed for HOS is missing	One or more JBUS parameter needed for HOS are missing
SYSTEM_CTRL_FAULT	0x20 0000	Can't connect to system controller	Unable to open the COM port to the system controller
COMM_DRIVER_EXCEPTION	0x40 0000	Communication driver threw an exception	An Exception was thrown in the communication driver. This exception may prevent communication with NOC until device is rebooted
UNACCOUNTED_TRUCK_USE	0x80 0000	Unaccounted truck usage by device	The device detected that the truck was in operation while the device was not operating (i.e. truck engine time jump)

J-Bus Parameters Missing Bit Field Breakdown		
PID	**Bit**	**Description**
84	0x000001	Speed
190	0x000002	RPM
245	0x000004	Total Distance

247	0x000008	Total Engine Time
250	0x000010	Total Fuel
91	0x000020	Throttle
171	0x000040	Ambient Temperature
70	0x000080	Parking Brake
89	0x000100	PTO Status

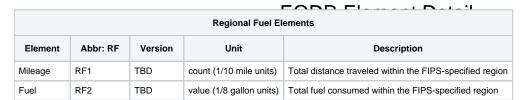| J-Bus Parameters Audit Bit Field Breakdown		
PID	**Bit**	**Description**
DATA_PRESENT	0x000001	>120 seconds of J1708 data was received
65	0x000002	Service Brake Switch Status
70	0x000004	Parking Brake Switch
84	0x000008	Road Speed
85	0x000010	Cruise Control Status
89	0x000020	Power Takeoff Status
91	0x000040	Percent Accelerator Pedal Position (throttle)
92	0x000080	Percent Engine Load
96	0x000100	Fuel Level
38	0x000200	Second Fuel Level (Right Side)
163	0x000400	Transmission Range Attained
171	0x000800	Ambient Air Temperature
184	0x001000	Instantaneous Fuel Economy
190	0x002000	Engine Speed
236	0x004000	Total Idle Fuel Used
245	0x008000	Total Vehicle Distance
247	0x010000	Total Engine Hours
250	0x020000	Total Fuel Used
409	0x040000	Axel Weight for Air-Weigh onboard scale equipment

Environmental Elements

The table below describes all the environmental elements included in the rollup. These elements are used to understand the temperature extremes the ELD has been subjected to and can be used to determine if the ELD was used outside it environmental specifications.

Environmental Elements Detail					
Element	**VP**	**DP**	**Version**	**Unit**	**Description**
HddMinTemp	X		1.2.2	value (°C)	Minimum temperature of the hard drive
HddMaxTemp	X		1.2.2	value (°C)	Maximum temperature of the hard drive
SystemMinTemp	X		1.2.2	value (°C)	Minimum temperature of the ELD unit
SystemMaxTemp	X		1.2.2	value (°C)	Maximum temperature of the ELD unit
OperationTime	X		1.2.2	seconds	Amount of time the ELD was powered on

Regional Fuel Elements

This section describes all the regional fuel elements included in the rollup.
These elements are used to tabulate activity inside a FIPS region code, which is based on state boundaries inside the United States, provinces inside Canada, and territories inside Mexico. These elements are used to calculate fuel and mileage within each region, which can then be used to calculate IFTA and other tax settlements. The rollup includes an array of 106 REGION_FUEL elements that are described in the table below.

<table>
<tr><th colspan="5">Regional Fuel Elements</th></tr>
<tr><th>Element</th><th>Abbr: RF</th><th>Version</th><th>Unit</th><th>Description</th></tr>
<tr><td>Mileage</td><td>RF1</td><td>TBD</td><td>count (1/10 mile units)</td><td>Total distance traveled within the FIPS-specified region</td></tr>
<tr><td>Fuel</td><td>RF2</td><td>TBD</td><td>value (1/8 gallon units)</td><td>Total fuel consumed within the FIPS-specified region</td></tr>
</table>

Each FIPS region is identified by a FIPS region code and index in the array. There are 51 entries for the United States – a two-letter abbreviation for each of the 50 states and the District of Columbia. There are 13 entries for Canada – a two or three-letter abbreviation for each province. There are 32 entries for Mexico – a three or four-letter abbreviation for each territory.

Mapping Elements to other vendors

The following table illustrates the mapping of fields from another vendor to DriverTech™ Vehicle Performance Elements:

Vendor Field	DriverTech Element	Comment
	TruckName	
Driver ID	DriverLogon	
Average MPH	AvgSpeed	Total Distance / Driving Time = Avg MPH Alternate: FD / FM
Start Date	Date	
End Date	Date	
Total Trips	StopCount	
Total Distance	Miles	
Driving Time	DriveTime	
Engine Time	EngineTime	
Intertrip Idle Time	InterStopIdleTime	
Over RPM Time	OverRpmTime	
Over RPM Count	OverRPMCount	
Over RPM Max	OverRPMLongestPeriod	
Over Speed Time	OverSpeedTime	
Over Speed Count	OverSpeedCount	
Over Speed Max	OverSpeedLongestPeriod	
Moving Time	MotionTime	
Short Idle Time	ShortTermIdle	Alternate: DC (overIdleTime) which has a configurable idle threshold via the Web Portal

The following table illustrates the mapping of Fault Code fields to the DriverTech™ system mask bit field:

Item	Vendor Code	Bit	Description	Alternate
BSOD	n/a	0x000 001	Major Malfunction	None
LOSS_OF_POWER	0	0x000 002	ELD has booted without proper shutdown	Provided for each occurance: InboundMessageResponse-> InboundMessages-> InboundMessage-> MessageBody->Event-> VehicleEvent->ComputerLossOfPower
RPM_ZERO	1	n/a	RPM Zero	None
BAD_IGNITION	2	0x000 080	Ignition off and Speed or RPM non-zero	None
BAD_J1708_RPM	3	0x000 200	Engine posted PID 194 & 84	None
BAD_J1708_SPEED	4	0x000 100	Engine posted PID 194 & 190	None
ENGINE_TIME_JUMP	9	0x000 010	Disruption of data continuity	None

FAULT_A	A	0x000400	More than 2hrs with:Ignition = OnSpeed =0RPM > 1300PTO = False	None
FAULT_B	B	0x000800	More than 2hrs with:Ignition = ONSpeed = 0RPM = 0	None
FAULT_D	D	n/a	Steady Speed	n/a – No support for analog signals
FAULT_E	E	n/a	Hard Braking	EODR Element: hardBrake (DD) orProvided for each occurrence by: InboundMessageResponse > InboundMessages -> InboundMessage-> MessageBody -> Event -> DriverEvent -> HardBraking
ODOMETER_JUMP	n/a	0x000020	Disruption of data continuity	None
GPS_JUMP	n/a	0x000040	Disruption of data continuity	None
SOFTWARE_MALFUNCTION	n/a	0x000004	Malfunction of the subsystem responsible for communicating with the J-Bus	None
NO_LOGON	n/a	0x000008	Vehicle in motion without Driver Logon	None

Frequently Asked Questions

Question	Answer
In FleetWatcher, What is the format of the time fields ?	Both the UI and Export use the same format but in excel we are providing the total hours instead of breaking down into day periods. Breaking down into day periods on the UI was done to make it easier for the User to comprehend the value. Days . hours : minutes : seconds 0 . 20 : 12 : 32 Days . hours : minutes : seconds 111 : 16 : 13
Is "Over Idle" included in "Idle Time", "Long Term Idle", "Mid Term Idle", or "Short Term Idle"?	Yes
Is "Inter Stop Idle" included in "Idle Time", "Long Term Idle", "Mid Term Idle", or "Short Term Idle"?	Those Idle values are a super-set of all other idle times reported
Does Over Idle include any idle time before the Over Idle threshold ?	No. Over Idle is only the amount of time spent after the over idle threshold was crossed For example , if Over Idle threshold is 300 seconds (5 minutes) : 1) Driver Idles for 300 seconds: 300 seconds is logged to 'idle time' 2) Driver Idles for 400 seconds: 400 seconds is logged to 'idle time', 100 seconds is logged to over idle
Is Idle fuel an actual number sent from the trucks computer, or do you calculate this?	This is calculated due to ECM variances among vehicle manufacturers

Definitions

Coasting

Vehicle is deemed to be coasting when both of the following last for more than 5 seconds:
Vehicle transmission is in neutral
Vehicle speed is above 30mph

Cruise Control Set Speed

The speed that the vehicles cruise control will try to maintain

Driver Logon

The effect of a Driver logging onto the ELD.

Driving

Vehicle is deemed to be driving after it has been at rest and vehicle has moved a 1/2 mile. A vehicle is deemed not driving if either the vehicle is not moving (i.e. speed is 0) for over 5 minutes, or the engine is turned off (RPM is 0) for a period of 4 seconds.Vehicle is deemed to be driving after it has been at rest and vehicle has moved the distance specified as 'Minimum Drive Distance' in the Web Portal (defaults to 1/10th mile).

Fleet Cruise Control Speed Limit

A threshold value for determining Over Cruise Set Speed based on MPH only.

Fleet Speed Limit for Fuel Economy

A threshold value for determining Over Speed based upon the vehicle moving faster than the threshold and peddle position is > 10%. This should be set at a lesser value than the Fleet Speed Limit.

Fleet Speed Limit

A threshold value for determining Over Speed based on MPH only.

Hard Braking

Occurs when vehicle decelerates at a rate greater than 8mph within 1 second.

Vehicle Cruise Control Speed Limit

A threshold value for determining Over Cruise Set Speed based on MPH only. In FleetWatcher web the field is named "Cruise Over Speed MPH" and field "Cruise Over Speed Log Seconds" specifies the buffer amount before the event is recorded.

Vehicle Idle Limit

A threshold value for determining when Over Idle begins specified in seconds. In FleetWatcher Web the field is named "Over Idle Log Seconds".

Vehicle Speed Limit

A threshold value for determining when Over Speed begins based on MPH only. In FleetWatcher Web the field is named "Over Speed MPH" and field "Over Speed Log Seconds" specifies the buffer amount before the event is recorded.

Vehicle Speed Limit for Fuel Economy

A threshold value for determining Over Speed based upon the vehicle moving faster than the threshold and peddle position is > 10%. This should be set at a lesser value than the Fleet Speed Limit. In FleetWatcher Web the field is named "FE Over Speed MPH" and field "FE Over Speed Log Seconds" specifies the buffer amount before the event is recorded.

Vehicle RPM Limit

A threshold value for determining when Over RPM begins. In FleetWatcher Web the field is named "Over RPM" and field "Over Speed Log Seconds" specifies the buffer amount before the event is recorded.

Vehicle Motion

A vehicle is considered to be in motion when speed is above minimum speed threshold. If the speed data is received from the trucks SAE J1708 or J1939 bus then this threshold is 2 MPH and if using GPS it is 7 MPH.