

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

February 28, 2013

Electronic Control Module

**Specialist's Factual Report
By Ben Xu**

1. EVENT

Location: Midland, Texas
Date: November 15, 2012
Vehicle/ID: Peterbilt Tractor / XXXXXXXXXXXX854360
Operator: Smith Industries, Inc.
NTSB Number: HWY13MH003

2. DETAILS OF DEVICE INVESTIGATION

The NTSB's Vehicle Recorder Division received the following devices:

Device: Caterpillar ADEM III Engine Control Module
Device Serial Number: 04356157JX

The Electronic Control Module (ECM) was in good condition in the engine compartment of the vehicle. Power was restored to the vehicle to enable an ECM download. ECM data was imaged by normal methods using Caterpillar's Electronic Technician (ET) software.

2.1. ECM Device Description

The ADEM III ECM is an electronic control and diagnostics module for Caterpillar engines. The ADEM III stores engine parameters, lifetime engine data, and diagnostic and event codes. Depending on the configuration of the ECM, event data may be recorded when triggered by a sudden deceleration, referred to as a Quick Stop event.

2.2. ECM Imaged Data

The ECM was imaged on board the vehicle using the vehicle's diagnostic port. As seen in Attachment 1, the "Quick Stop Rate" parameter was set to 0 mph/s, which disables any data recording capabilities of the ADEM III.

Other engine and vehicle parameters are also included in Attachment 1.

3. ATTACHMENTS

Attachment 1 is the Configuration Report generated by Caterpillar ET for the ECM.

Attachment 1

Configuration Report

Caterpillar Electronic Technician 2012A v1.0 Configuration

11/19/2012 9:43 PM

C15 Truck (MXS25698)

Parameter	Value
Vehicle ID	854360D
Engine Serial Number	MXS25698
ECM Serial Number	04356157JX
Personality Module Part Number	3081279-00
Personality Module Release Date	FEB07
Personality Module Code	22
ECM Date/Time	11/19/2012 10:29:02 PM

Description	Value	TT
Selected Engine Rating		
Rating Number	1	1
Rating Type	Standard	
Multi-Torque Ratio	Unavailable	
Advertised Power	*** Engine Speed Present ***	
Governed Speed	*** Engine Speed Present ***	
Rated Peak Torque	*** Engine Speed Present ***	
Top Engine Speed Range	*** Engine Speed Present ***	
Test Spec	*** Engine Speed Present ***	
Test Spec with BrakeSaver	*** Engine Speed Present ***	
ECM Identification Parameters		
Vehicle ID	854360D	1
Engine Serial Number	MXS25698	
ECM Serial Number	04356157JX	
Personality Module Part Number	3081279-00	
Personality Module Release Date	FEB07	
Security Access Parameters		
Total Tattletale	39	
Last Tool to change Customer Parameters	WB131647	

Last Tool to change System Parameters	ET109279	
ECM Wireless Communications Enable	No	0
Vehicle Speed Parameters		
Vehicle Speed Calibration	26450 P/mile	1
Vehicle Speed Cal (J1939-Trans)	Unavailable	
Vehicle Speed Cal (J1939-ABS)	Unavailable	
Vehicle Speed Limit	105 mph	1
VSL Protection	2112 rpm	1
Tachometer Calibration	113.0 PPR	1
Soft Vehicle Speed Limit	No	1
Two Speed Axle - Low Speed Range Axle Ratio	Unavailable	
Nominal Axle Ratio - High Speed Range Axle Ratio	Unavailable	
Cruise Control Parameters		
Low Cruise Control Speed Set Limit	30 mph	1
High Cruise Control Speed Set Limit	105 mph	1
Engine Retarder Mode	Latch	1
Engine Retarder Minimum VSL Type	Hard Limit	0
Engine Retarder Minimum Vehicle Speed	5 mph	1
Auto Retarder in Cruise (0 = Off)	0 mph	1
Auto Retarder in Cruise Increment	2 mph	1
Cruise/Idle/PTO Switch Configuration	Set/Accel-Res/Decel	1
SoftCruise Control	Yes	0
Adaptive Cruise Control Enable	Disabled	0
Idle Parameters (Old PTO)		
Idle Vehicle Speed Limit	1 mph	0
Idle RPM Limit	1400 rpm	1
Idle/PTO RPM Ramp Rate	50 rpm/s	1
Idle/PTO Bump RPM	20 rpm	0
Dedicated PTO Parameters		
PTO Configuration	Off	0
PTO Top Engine Limit	Unavailable	
PTO Engine RPM Set Speed (0 = Off)	Unavailable	
PTO Engine RPM Set Speed A (0 = Off)	Unavailable	
PTO Engine RPM Set Speed B (0 = Off)	Unavailable	
PTO to Set Speed	Unavailable	
Maximum PTO Enable Speed	Unavailable	
PTO Cab Controls RPM Limit	Unavailable	
PTO Kickout Vehicle Speed Limit	Unavailable	

Torque Limit	Unavailable	
PTO Shutdown Time (0 = Off)	Unavailable	
PTO Shutdown Timer Maximum RPM	Unavailable	
PTO Activates Cooling Fan	Unavailable	
Engine/Gear Parameters		
Lower Gears Engine RPM Limit	2120 rpm	0
Lower Gears Turn Off Speed	3 mph	1
Intermediate Gears Engine RPM Limit	2120 rpm	0
Intermediate Gears Turn Off Speed	5 mph	1
Gear Down Protection RPM Limit	2320 rpm	0
Gear Down Protection Turn On Speed	127 mph	1
Low Idle Engine RPM	700 rpm	1
Transmission Style	Manual Option 1	1
Eaton Top 2 Override with Cruise Switch	Unavailable	
Top Gear Ratio	0.730	1
Top Gear Minus One Ratio	0.000	0
Top Gear Minus Two Ratio	0.000	0
Governor Type	Full Range	0
Timer Parameters		
Idle Shutdown Time (0 = Off)	0 min	1
Idle Shutdown Timer Maximum RPM	2120 rpm	0
Allow Idle Shutdown Override	Yes	1
Minimum Idle Shutdown Outside Temperature	Not Installed	
Maximum Idle Shutdown Outside Temperature	Not Installed	
A/C Switch Fan On-Time (0 = Off)	1 sec	1
Fan with Engine Retarder in High Mode	No	0
Engine Retarder Delay	0.0 sec	0
Smart Idle Parameters		
Battery Monitor and Engine Control Voltage	0.0 Volts	0
Engine Monitoring Parameters		
Engine Monitoring Mode	Derate	1
Engine Monitoring Lamps	Option 1	1
Coolant Level Sensor	No	2
Maintenance Parameters		
Maintenance Indicator Mode	Off	0
PM1 Interval	0 Miles	0
Engine Oil Capacity	40 quarts	0
Trip Parameters		

Fuel Correction Factor	0 %	0
Dash - Change Fuel Correction Factor	No	0
Dash - PM1 Reset	No	0
Dash - Fleet Trip Reset	No	0
Dash - State Selection	Yes	0
Theft Deterrent System Control	No	0
Theft Deterrent Password	****	
Quick Stop Rate	0 mph/s	0
Vehicle Overspeed Threshold	127 mph	0
Vehicle Activity Report Parameters		
Minimum Idle Time (0 = Off)	0 min	0
Driver Reward		
Driver Reward Enable	Enabled	0
Input Selections		
Fan Override Switch	J1/P1:46	1
Transmission Neutral Switch	None	0
Ignore Brake/Clutch Switch	Unavailable	
Torque Limit Switch	Unavailable	
Diagnostic Enable Switch	None	0
PTO On/Off Switch	Unavailable	
Remote PTO Set Switch	Unavailable	
Remote PTO Resume Switch	Unavailable	
PTO Engine RPM Set Speed Input A	Unavailable	
PTO Engine RPM Set Speed Input B	Unavailable	
Starting Aid On/Off Switch	None	0
Two Speed Axle Switch	None	0
Cruise Control On/Off Switch	J1/P1:59	0
Cruise Control Set/Resume/Accel/Decel Switch	J1/P1:35 & 44	0
Cruise Control Pause Switch	None	0
Clutch Pedal Position Switch	J1/P1:22	0
Retarder Off/Low/Med/High Switch	J1/P1:23 & 40	0
Service Brake Pedal Position Switch #1	J1/P1:45	0
Accelerator Pedal Position	J1/P1:66	0
Vehicle Speed Input	J1/P1:32 & 33	1
Output Selections		
Engine Running Output	None	0
Engine Shutdown Output	None	0
Auxiliary Brake	None	0

Starting Aid Output	None	1
Fan Control Type	On/Off PWM	1
Engine Retarder Maximum Setting	High	0
PTO Active Output	Unavailable	
Passwords		
Customer Password #1	*****	
Customer Password #2	*****	
Data Link Parameters		
Powertrain Data Link	J1939	1
System Settings		
Personality Module Code	22	2
FLS	26	1
FTS	-32	1