

Developing Survey Forms for Data Analysis of HDVs

6th PEMS Workshop

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Kent Johnson¹, Tom Durbin¹, Michael Sabish², and Carl Fulper³

¹University of California, Riverside

² U.S. Environmental Protection Agency (EPA)

³ Easter Research Group (ERG)

Goals of This Research

- ❖ Understand Inventory
- ❖ Provide researchers quick access to high quality data with context of the fleet, emissions, and activity
- ❖ Provide data to help make air quality decisions

Understanding Inventory

❖ Vehicle measurements

- ❖ Emissions

- ❖ Activity

❖ Fleet information

- ❖ Inventory

- ❖ Daily usage

- ❖ Vocation

- ❖ DMV databases

What Surveys are Needed?

- ❖ Fleet Interview
- ❖ Detailed vehicle survey (photos)
- ❖ Daily driver survey
- ❖ Trailer survey (Aero)

Photo Data Logging Story



Photo Logging Story



Photo Logging Story

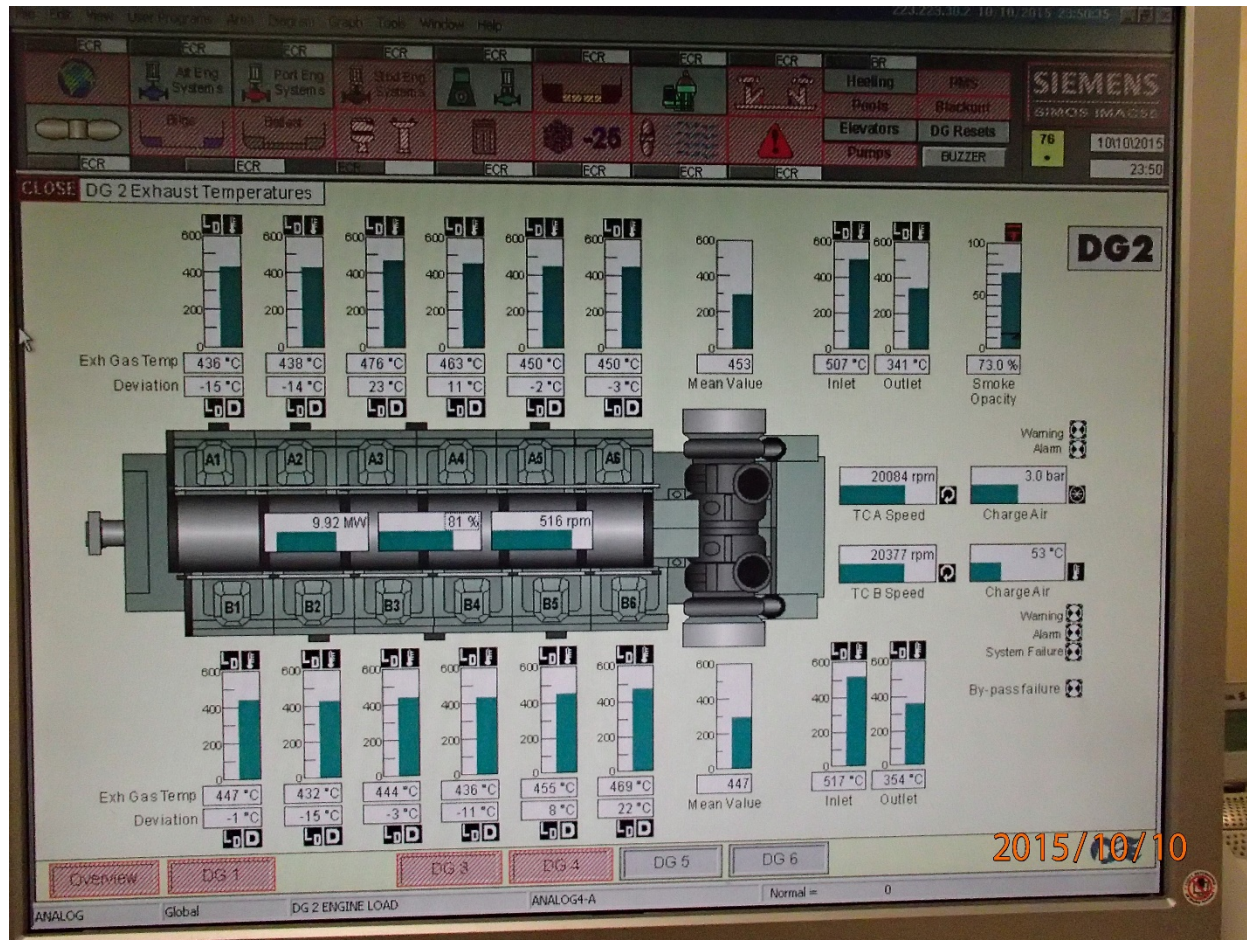


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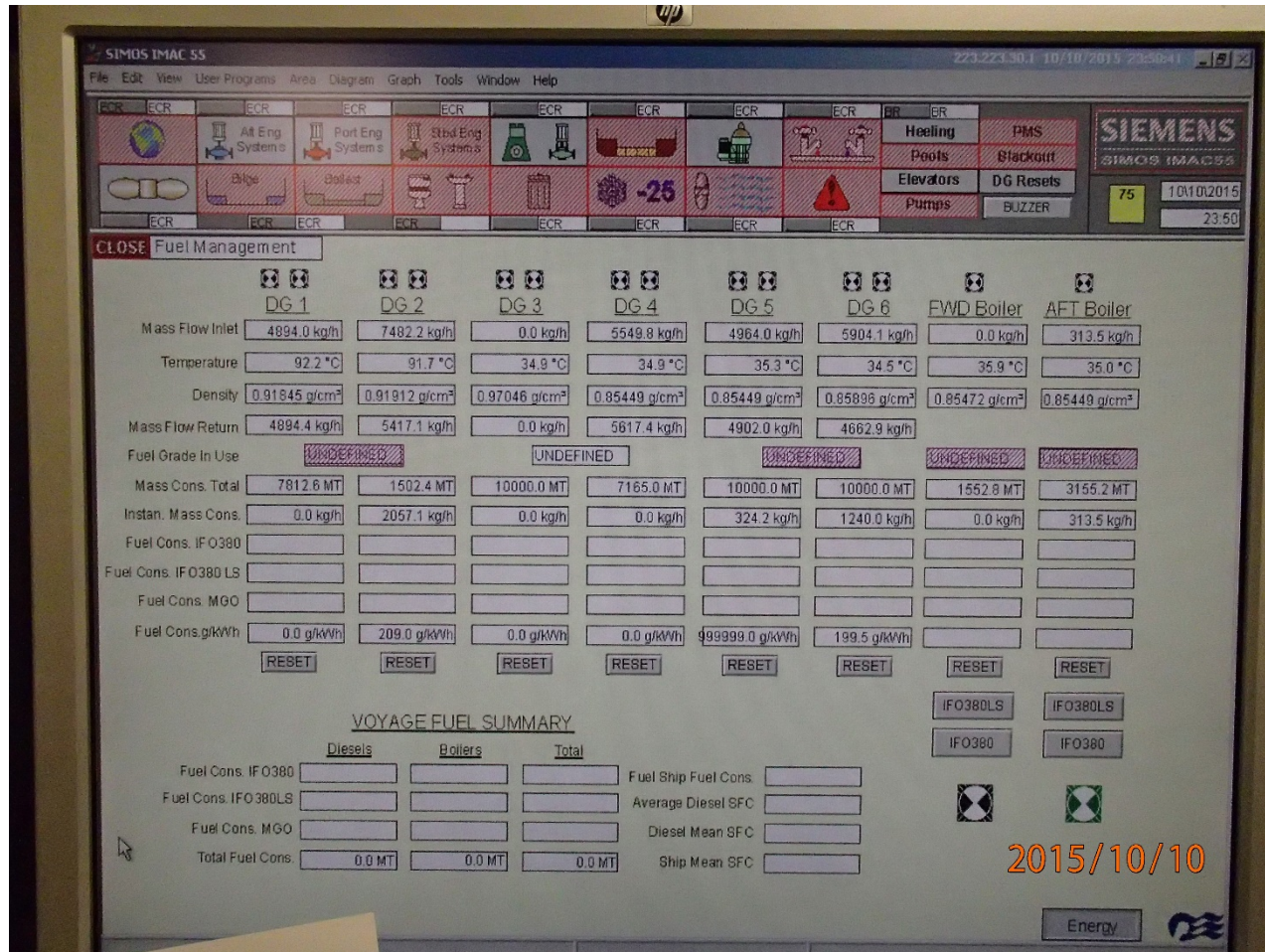


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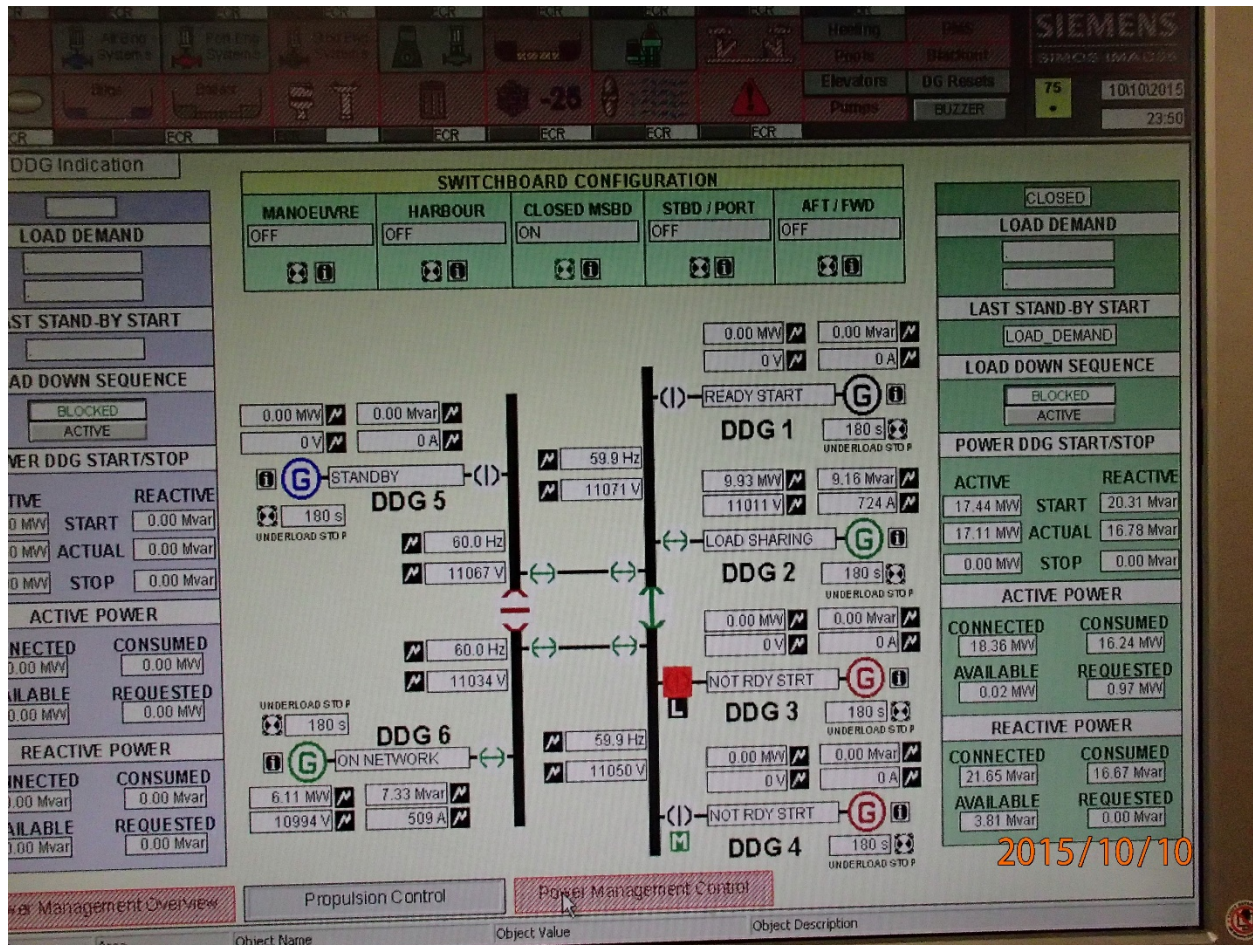


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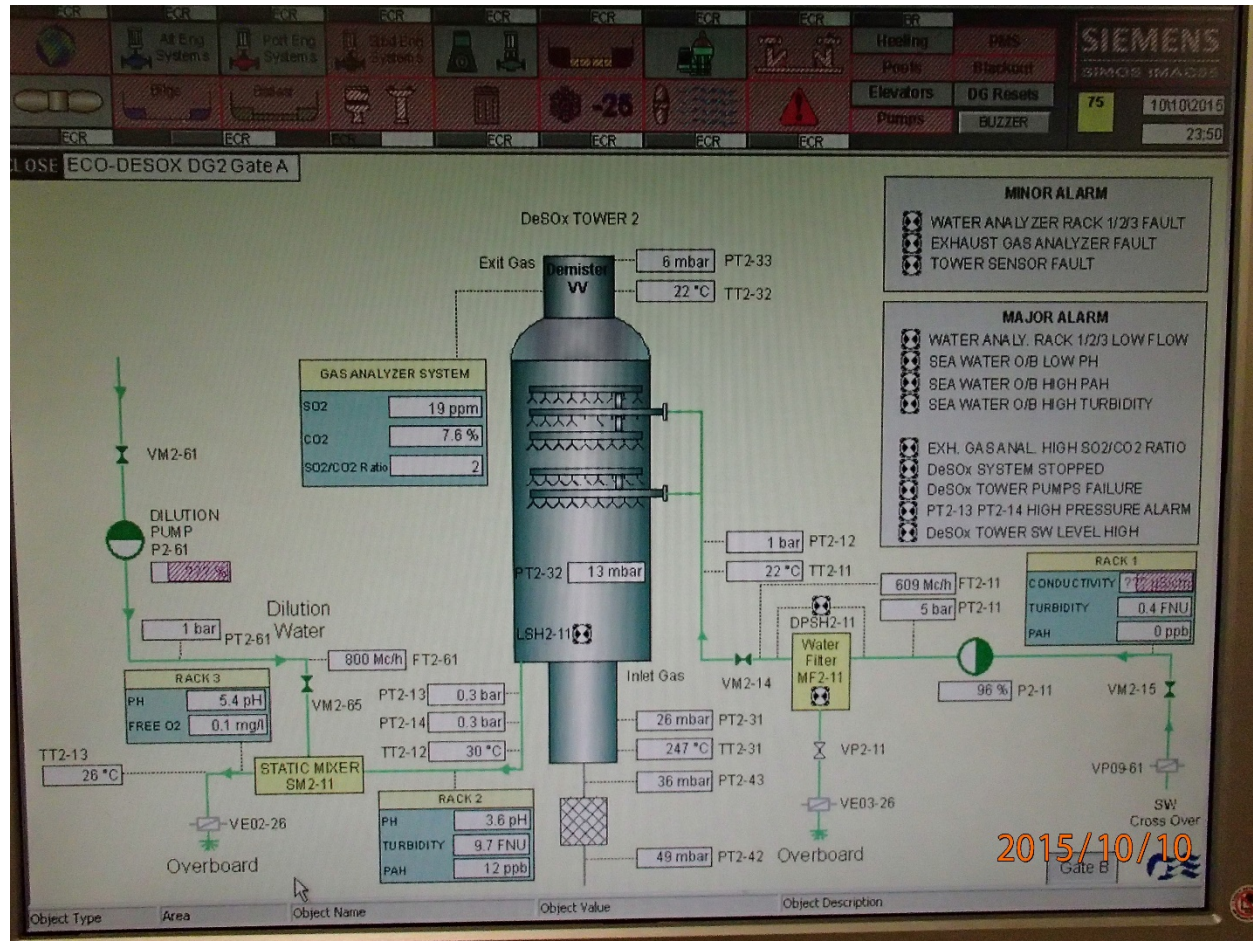


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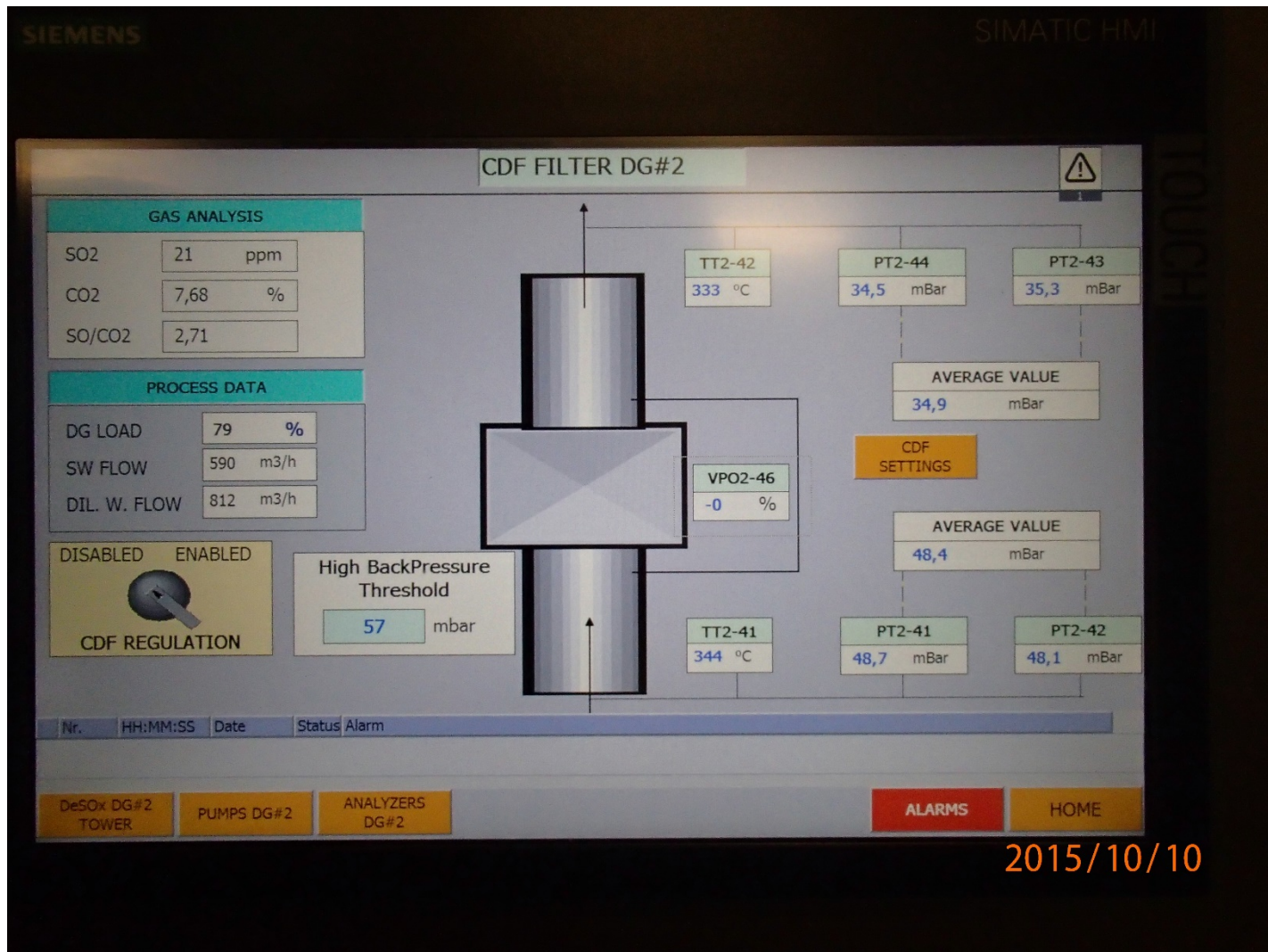


Photo Logging Story



Fleet Interview Form: 1 of 4

CE-CERT SCR Study HD On-road Testing and Analysis, Establishment Interview

Form completed ☐

Database completed ☐

Name of establishment		Interview date	
Interviewee name		Interviewer name	
Telephone number of point of contact	()		
Address of company (main HQ or where interviewee is domiciled)			
Description of industry / services provided			
Establishment's North American Industry Classification (NAICS) code			
Types of delivery (local daily, in-state, interstate)			
Est of number of paid employees (including drivers)			
Est of number of contract personnel (including drivers)			
Number of sites / hubs / distribution centers from which operations are performed:			
Addresses of sites / hubs / distribution centers (only name of city if outside of HQ city)			

Fleet Interview Form: 2 of 4

Estimated counts / types of trucks and trailers owned by company (i.e., 8 reefers, 32 Class 4 walk-in, etc.)	
<u>Estimated counts / types of trucks leased to company and approximate lease duration</u>	
Estimated counts / types of trucks and trailers contracted to company full-time / throughout the year	
Estimated counts / types of trucks and trailers contracted to company part-time / part of the year Addresses of sites / hubs / distribution centers (only name of city if outside of HQ city)	

Fleet Interview Form: 3 of 4

<u>Form completed</u> <input type="checkbox"/>	<u>Database completed</u> <input type="checkbox"/>
Status of permission to perform truck inventories at all "local" (same city) sites	
Name and contact info for point of contact with whom to coordinate at each of the sites	
Request establishment records of truck inventory (i.e., maintenance database, paper copies, other)	
Who performs major truck maintenance (in-house / outsourced)? If outsourced, name of company / contact person. Could we contact to obtain truck info database / records?	

Fleet Interview Form: 4 of 4

[illegible]

Detailed Photo Survey : 1 of 4

CE-CERT SCR Study HD On-road Testing and Analysis, Establishment Inventory

Please collect the following information at each site where an inventory is conducted. Much of this information may be available remotely (i.e., information collected through e-mail transmission of inventory files maintained by the establishment). All local sites for each establishment will be inventoried. Inventories will only be performed for remote sites (in other cities or states) if the information can be obtained remotely (i.e., by e-mail, without on-site visits).

Establishment Information

Name of establishment		Interview date	
Site location		Interviewer name	
Representative phone	()	Site representative	

Truck Information

License plate			
Truck co. ID			
VIN	-----		
Start time		End time	
<input type="checkbox"/>	1	License plate	
<input type="checkbox"/>	2	Full front	
<input type="checkbox"/>	3	Front left angle side	
<input type="checkbox"/>	4	Front right angle side	
<input type="checkbox"/>	5	Truck Co. ID	
<input type="checkbox"/>	6	Additional outside door information	
<input type="checkbox"/>	7	Door jamb labels	
	<input type="checkbox"/>	VIN	
	<input type="checkbox"/>	Axle ratio	

License plate			
Truck co. ID			
VIN	-----		
Start time		End time	
<input type="checkbox"/>	1	License plate	
<input type="checkbox"/>	2	Full front	
<input type="checkbox"/>	3	Front left angle side	
<input type="checkbox"/>	4	Front right angle side	
<input type="checkbox"/>	5	Truck Co. ID	
<input type="checkbox"/>	6	Additional outside door information	
<input type="checkbox"/>	7	Door jamb labels	
	<input type="checkbox"/>	VIN	
	<input type="checkbox"/>	Axle ratio	

Detailed Photo Survey: 2 of 4

<input type="checkbox"/>	8	OBD connection
<input type="checkbox"/>	9	HEM logger ID and CERT ID
<input type="checkbox"/>	10	Odometer
<input type="checkbox"/>	11	Inside cabin (middle section)
<input type="checkbox"/>	12	Tire and tire size
<input type="checkbox"/>	13	SCR tank cap
<input type="checkbox"/>	14	Back right angle side
<input type="checkbox"/>	15	Full back
<input type="checkbox"/>	16	Tailpipe
<input type="checkbox"/>	17	Back left angle side
<input type="checkbox"/>	18	Additional outside door information
<input type="checkbox"/>	19	Engine body
<input type="checkbox"/>	20	Engine labels
	<input type="checkbox"/>	Emissions control equipment
	<input type="checkbox"/>	Rated engine information
<input type="checkbox"/>		
Comments:		

Photo Establishment Inventory_Pages 1 and 2_20160114

<input type="checkbox"/>	8	OBD connection
<input type="checkbox"/>	9	HEM logger ID and CERT ID
<input type="checkbox"/>	10	Odometer
<input type="checkbox"/>	11	Inside cabin (middle section)
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<input type="checkbox"/>	14	Back right angle side
<input type="checkbox"/>	15	Full back
<input type="checkbox"/>	16	Tailpipe
<input type="checkbox"/>	17	Back left angle side
<input type="checkbox"/>	18	Additional outside door information
<input type="checkbox"/>	19	Engine body
<input type="checkbox"/>	20	Engine labels
	<input type="checkbox"/>	Emissions control equipment
	<input type="checkbox"/>	Rated engine information
<input type="checkbox"/>		
Comments:		

Page 1 of 2

Detailed Photo Survey : 3 of 4

Establishment Information (contd.)

Name of establishment		Interview Date	
-----------------------	--	----------------	--

Truck Information (contd.)

License plate			
Truck co. ID			
VIN	-----		
Start time		End time	

- ☐ 1 License plate
- ☐ 2 Full front
- ☐ 3 Front left angle side
- ☐ 4 Front right angle side
- ☐ 5 Truck Co. ID
- ☐ 6 Additional outside door information
- ☐ 7 Door jamb labels
 - ☐ VIN
 - ☐ Axle ratio
- ☐ 8 OBD connection
- ☐ 9 HEM logger ID and CERT ID
- ☐ 10 Odometer
- ☐ 11 Inside cabin (middle section)

License plate			
Truck co. ID			
VIN	-----		
Start time		End time	

- ☐ 1 License plate
- ☐ 2 Full front
- ☐ 3 Front left angle side
- ☐ 4 Front right angle side
- ☐ 5 Truck Co. ID
- ☐ 6 Additional outside door information
- ☐ 7 Door jamb labels
 - ☐ VIN
 - ☐ Axle ratio
- ☐ 8 OBD connection
- ☐ 9 HEM logger ID and CERT ID
- ☐ 10 Odometer
- ☐ 11 Inside cabin (middle section)

Detailed Photo Survey : 4 of 4

<input type="checkbox"/>	12	Tire and tire size
<input type="checkbox"/>	13	SCR tank cap
<input type="checkbox"/>	14	Back right angle side
<input type="checkbox"/>	15	Full back
<input type="checkbox"/>	16	Tailpipe
<input type="checkbox"/>	17	Back left angle side
<input type="checkbox"/>	18	Additional outside door information
<input type="checkbox"/>	19	Engine body
<input type="checkbox"/>	20	Engine labels
	<input type="checkbox"/>	Emissions control equipment
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<input type="checkbox"/>		
Comments:		

<input type="checkbox"/>	12	Tire and tire size
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<input type="checkbox"/>	17	Back left angle side
<input type="checkbox"/>	18	Additional outside door information
<input type="checkbox"/>	19	Engine body
<input type="checkbox"/>	20	Engine labels
	<input type="checkbox"/>	Emissions control equipment
	<input type="checkbox"/>	Rated engine information
<input type="checkbox"/>		
Comments:		

Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



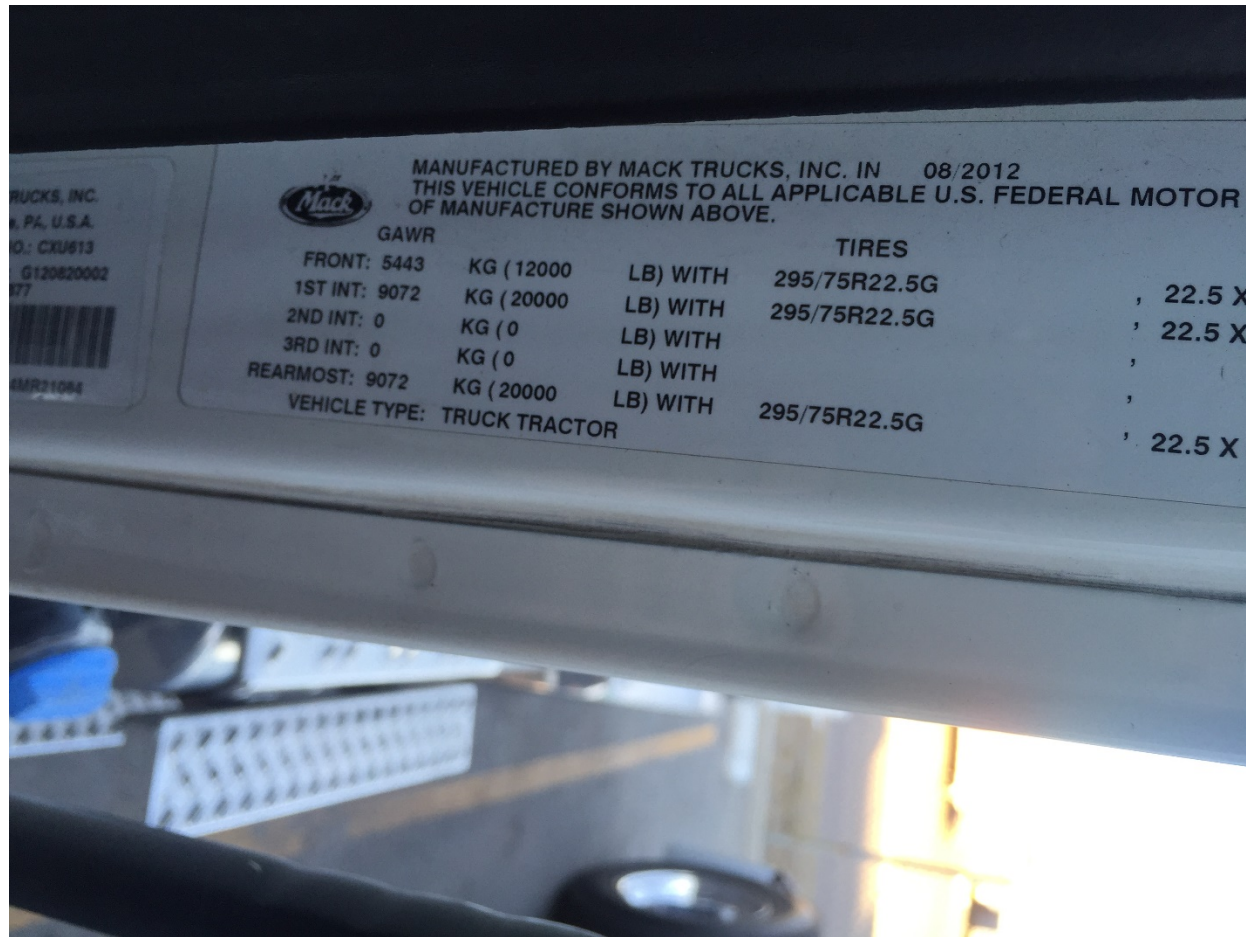
Detailed Photo Survey: Pictures



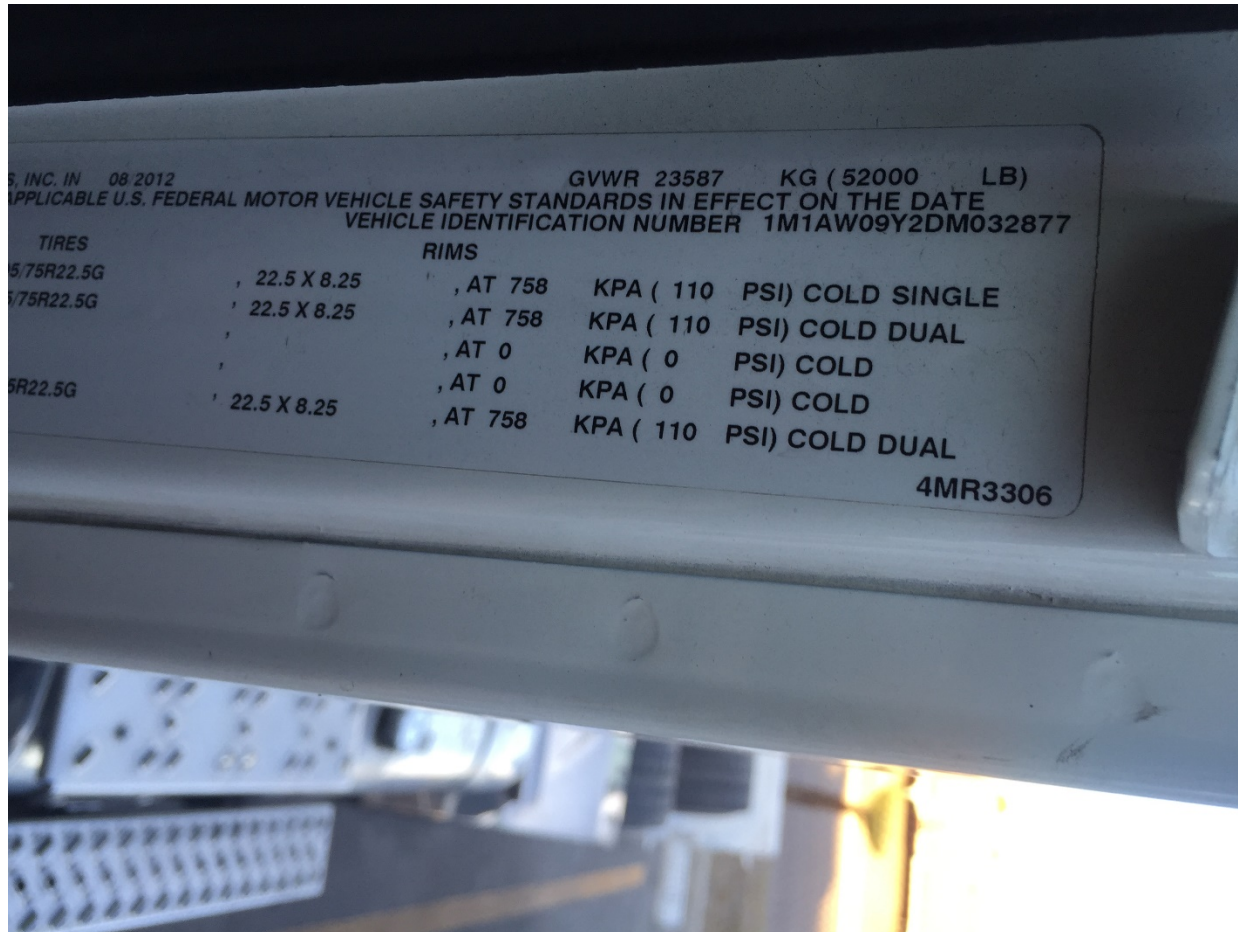
Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



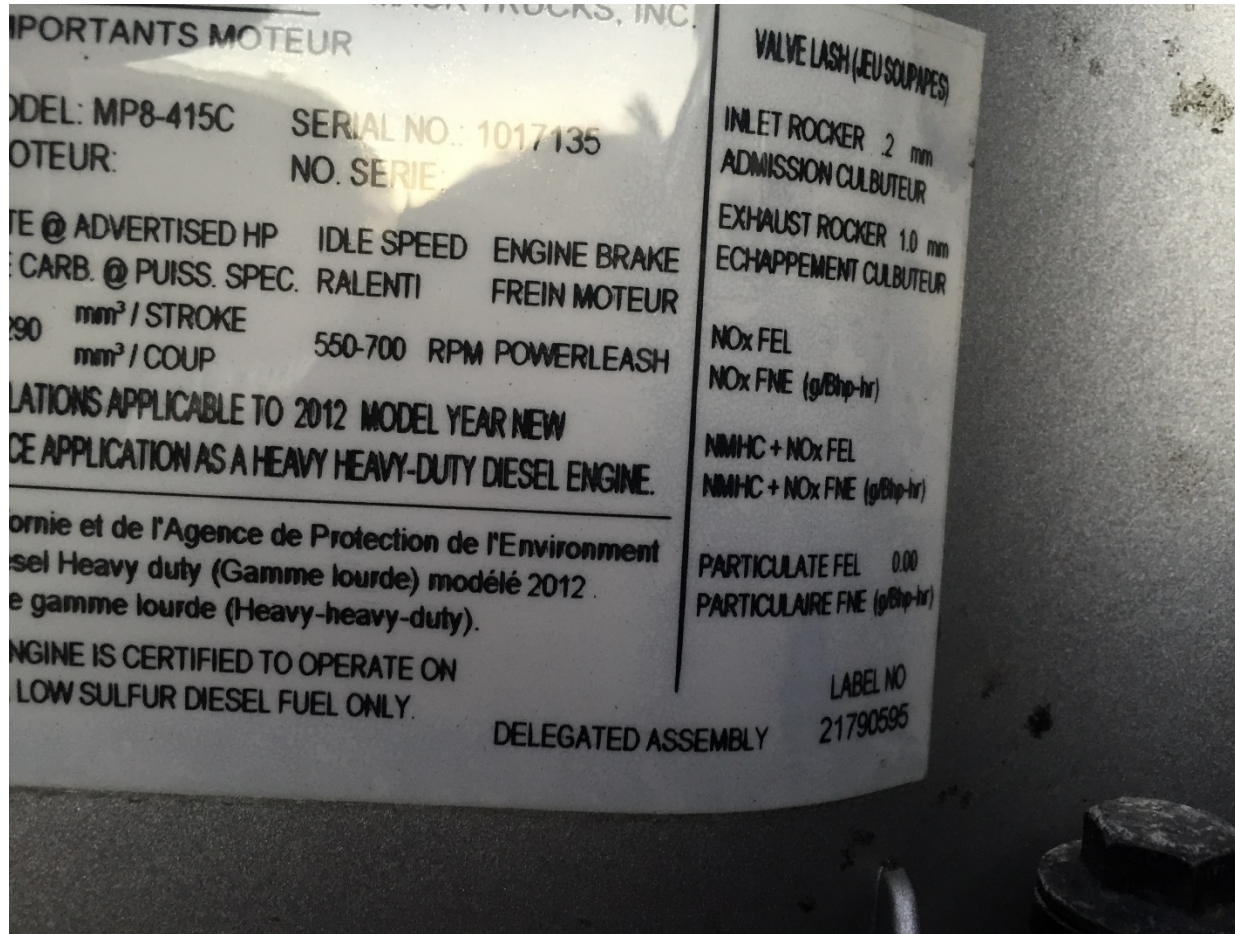
Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Pictures



Detailed Photo Survey: Ex Orders



California Environmental Protection Agency

Air Resources Board

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Friday, March 18, 2016

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PROGRAM LINKS

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On-Road New Vehicle & Engine Certification Program

New EOs added March 17, 2016 

CERTIFICATION

- [Certification Overview](#)
- [Certification Regulations, Test Procedures and Policies](#)
- [Executive Orders Overview](#)
- [How to Search for an Executive Order](#)
- [Frequently Asked Questions \(FAQ\)](#)
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BACKGROUND

The On-Road Light-Duty Certification Section is responsible for the certification and production audit of new passenger cars (PC), light-duty trucks (LDT), medium-duty vehicles (MDV), on-road motorcycles (ONMC), off-highway recreational vehicles (OHRV) including off-road motorcycles (OFMC), all-terrain vehicles (ATV), off-road utility vehicles (UV), off-road sport vehicles (SV), sand cars (SCAR), and electric golf carts (eGC). The Compression Ignition and Heavy-Duty Certification Section is responsible for the certification and production audit of new heavy-duty engines (HDE) and vehicles (HDV) including urban buses (UB), and new off-road compression ignition (OFCI) engines. Vehicles and engines (hereinafter, vehicles) are not legal for sale in California until certified. Violation of the requirement for certification can subject the vehicle manufacturers and/or selling dealers to enforcement actions including a fine of up to \$5000 per vehicle.

<http://www.arb.ca.gov/msprog/onroad/cert/cert.php#6>

Detailed Photo Survey: Ex Orders

EXECUTIVE ORDERS LISTING

To view a specific Executive Order, please click on the appropriate link to view a category. **The link for each category is the date that new Executive Orders were last added to that directory.** Links with "new" next to them have been updated in the last 5 days.

Executive Orders					
Model Year	PC_LDT_MDV_MDEV	HDE_HDV_MDE	ONMC	OFMC_ATV_UV_SV_SCAR_eGC	
				Green Sticker	Red Sticker (OFMC, ATV only)
2017	03/17/16 NEW	03/02/16	03/07/16	03/07/16	03/02/16
2016	03/17/16 NEW	03/09/16	03/17/16 NEW	03/17/16 NEW	03/07/16
2015	01/04/16	01/25/16	12/28/15	01/04/16	11/30/15
2014	03/18/15	12/29/14	12/09/14	01/09/15	07/25/14
2013	10/12/15	02/07/14	01/03/14	12/27/13	08/12/13
2012	02/13/13	12/14/12	09/23/13	12/31/12	12/31/12
2011	12/31/12	03/27/15	12/13/13	12/28/12	12/28/12
2010	10/29/14	10/23/14	12/31/12	02/07/11	11/05/10
2009	12/21/12	03/19/13	12/28/10	12/31/12	12/31/12
2008	10/31/13	07/05/12	12/31/12	12/31/12	04/30/14

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UP LINKS

- ARB Programs
 - Mobile Sources
 - Manufacturers
 - On-Road New Vehicle and Engine Certifications**

PROGRAM LINKS

- Background
- Certification Overview
- Certification Regulations, Test Procedures, and Policies
- Executive Orders Listing
- Executive Orders Overview
- How to Search for an Executive Order
- Proposed Amendments to the Alternative Fuel Certification Procedures

RESOURCES

- Contact Us
- Join Any Mobile Sources Email List(s)
- RSS / Newsfeed

Heavy-Duty Engines and Vehicles, including Urban Buses, and Engines Used in Diesel or Incomplete Medium-Duty Vehicles of 8501-14000 Pound GVWR Executive Orders - 2012

New Executive Orders added December 14, 2012

Listed below are links to the Executive Orders for Heavy-Duty Engines and Vehicles, including Urban Buses, and Engines Used in Diesel or Incomplete Medium-Duty Vehicles of 8501-14000 Pound GVWR for the 2012 model year. To resort alphabetically or by date, please click on the header "Executive Orders" or "Modified."

File name of Executive Orders for Heavy-Duty Engines and Vehicles, including Urban Buses, and Engines Used in Diesel or Incomplete Medium-Duty Vehicles of 8501-14000 Pound GVWR: Manufacturer_Category 1B_EO Number_All Engine Displacements (in liters)_NMHC+NOX (or NOx) and PM (in that order) Standards or FELs (in g/bhp-hr)_Non Diesel or Non Gasoline Fuel 3. Click [HERE](#) for an explanation of the information displayed in the file name of Executive Orders.

Executive Orders	Modified
azuredynamics_hdov_a3780005_5d4_0d20_e85.pdf	Nov 14 2011
baf_hdoe_a3640031_6d8_0d20-0d01_cng.pdf	Oct 03 2011
baf_hdoe_a3640032_6d8_0d20-0d01_cng.pdf	Oct 03 2011
baytech_hdoe_a3300233_6d0_0d20_cng.pdf	Aug 29 2012
baytech_hdoe_a3300233r1_6d0_0d20_cng.pdf	Dec 12 2012
baytech_hdoe_a3300233r2_6d0_0d20_cng.pdf	Dec 12 2012
baytech_mdое_a3300234_6d0_0d20_cng.pdf	Dec 12 2012
baytech_mdое_a3300234r1_6d0_0d20_cng.pdf	Dec 12 2012
biphase_hdoe_a3600017_5d4_0d20_lpg.pdf	Oct 31 2011
biphase_hdoe_a3600018_6d0_0d20_lpg.pdf	Oct 31 2011
biphase_hdov_a3600019_5d4_0d20_lpg.pdf	Oct 31 2011
biphase_hdov_a3600019_5d4_0d20_lpg.pdf	Oct 31 2011

<http://www.arb.ca.gov/msprog/onroad/cert/mdohdehdv/2012/2012.php?so=1>


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Executive Order: 2012 VOL... X +

www.arb.ca.gov/msprog/onroad/cert/mdehdehdy/2012/volvo_hhdd_a2420068_ Search

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CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
AIR RESOURCES BOARD

VOLVO POWERTRAIN CORPORATION

EXECUTIVE ORDER A-242-0068
 New On-Road Heavy-Duty Engines
 Page 1 of 1

Pursuant to the authority vested in the Air Resources Board by Health and Safety Code Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: The engine and emission control systems produced by the manufacturer are certified as described below for use in on-road motor vehicles with a manufacturer's GVWR over 14,000 pounds. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	ENGINE SIZES (L)	FUEL TYPE ¹	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS ²	ECS & SPECIAL FEATURES ³	DIAGNOSTIC ⁶
2012	CVPTH12.8S01	12.8	Diesel	Diesel	HHDD	DDI, TC, CAC, ECM, EGR, OC, PTOX, SCR-U, AMOX	EMD+
PRIMARY ENGINE'S IDLE EMISSIONS CONTROL ⁵		ADDITIONAL IDLE EMISSIONS CONTROL ⁵					
30g		N/A					
ENGINE (L)		ENGINE MODELS / CODES (rated power, in hp)					
12.8		See attachment for engine models and ratings					

¹ =not applicable. GVWR=gross vehicle weight rating; 13 CCR xyz=Title 13, California Code of Regulations, Section xyz; 40 CFR 86.abc=Title 40, Code of Federal Regulations, Section 86.abc; L=liter; hp=horsepower; kw=kilowatt; hr=hour;
² CNG/LNG=compressed/liquefied natural gas; LPG=liquefied petroleum gas; E85=85% ethanol fuel; MF=multi fuel a.k.a. BF=bi fuel; DF=dual fuel; FF=flexible fuel;
³ L/M/H HDD=light/medium/heavy heavy-duty diesel; UB=urban bus; HDO=heavy duty Otto;
⁴ ECS=emission control system; TWC/OC=three-way/oxidizing catalyst; NAC=NOx adsorption catalyst; SCR-U / SCR-N=selective catalytic reduction - urea / - ammonia; WU (prefix) =warm-up catalyst; DPF=diesel particulate filter; PTOX=periodic trap oxidizer; HO2S/O2S=heated/oxygen sensor; HAFS/AFS=heated/air-fuel-ratio sensor (a.k.a. universal or linear oxygen sensor); TBI=throttle body fuel injection; SF/IMFI=sequential/multi port fuel injection; DGI=direct gasoline injection; GCARB=gaseous carburetor; IDIDI=indirect/direct diesel injection; TC/SC=turbo/supercharger; CAC=charge air cooler; EGR / EGR-C=exhaust gas recirculation / cooled EGR; PAIR/AIR=pulsed/secondary air injection; SPL=smoke puff limiter; ECM/PCM=engine/powertrain control module; EM=engine modification; 2 (prefix)=parallel; (2) (suffix)=in series; AMOX=Ammonia Oxidation Catalyst;
⁵ ESS=engine shutdown system (per 13 CCR 1956.8(a)(6)(A)(1); 30g=30 g/hr NOx (per 13 CCR 1956.8(a)(6)(C); APS =internal combustion auxiliary power system; ALT=alternative method (per 13 CCR 1956.8(a)(6)(D); Exempt=exempted per 13 CCR 1956.8(a)(6)(B) or for CNG/LNG fuel systems; N/A=not applicable (e.g., Otto engines and vehicles);
⁶ EMD=engine manufacturer diagnostic system (13 CCR 1971); OBD=on-board diagnostic system (13 CCR 1971.1);

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.8; 2) the EURO and NTE limits under the applicable California exhaust emission standards and test procedures for heavy-duty diesel engines and vehicles (Test Procedures); and 3) the corresponding certification levels, for this engine family. "Diesel" CO, EURO and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For flexible- and dual-fueled engines, the CERT values in brackets [] are those

Detailed Photo Survey: Ex Orders

Executive Order: 2012 VOL... X +

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duty diesel engines and vehicles (Test Procedures); and 3) the corresponding certification levels, for this engine family. "Diesel" CO, EURO and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For flexible- and dual-fueled engines, the CERT values in brackets [] are those when tested on conventional test fuel. For multi-fueled engines, the STD and CERT values for default operation permitted in 13 CCR 1956.8 are in parentheses.).

In g/bhp-hr	NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
STD	0.14	0.14	0.20	0.20	*	*	15.5	15.5	0.01	0.01	*	*
FEL	*	*	*	*	*	*	*	*	0.00	0.00	*	*
CERT	0.01	0.003	0.12	0.11	*	*	0.1	0.01	0.003	0.002	*	*
NTE	0.21		0.30		*		19.4		0.00		*	

* g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; EURO=Euro III European Steady-State Cycle, including RMCSET=ramp mode cycle supplemental emissions testing; NTE=Not-to-Exceed; STD=standard or emission test cap; FEL=family emission limit; CERT=certification level; NMHC/HC=non-methane/hydrocarbon; NOx=oxides of nitrogen; CO=carbon monoxide; PM=particulate matter; HCHO=formaldehyde.

BE IT FURTHER RESOLVED: Certification to the FEL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(s) is the emission level declared by the manufacturer and serves in lieu of an emission standard for certification purposes in any averaging, banking, or trading (ABT) programs. It will be used for determining compliance of any engine in this family and compliance with such ABT programs.


BE IT FURTHER RESOLVED: Except in vehicle applications exempted per 13 CCR 1956.8(a)(6)(B), engines in this engine family certified under 13 CCR 1956.8(a)(6)(C) [30 g/hr NOx] and section 35.B.4 of the incorporated "California Exhaust Emissions Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" adopted Dec. 12, 2002, as last amended Sep. 27, 2010, shall be provided with an approved "Certified Clean Idle" label that shall be affixed to the vehicle into which the engine is installed.

BE IT FURTHER RESOLVED: For the listed engine models the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels), 13 CCR 1971 (engine manufacturer diagnostic) and 13 CCR 2035 et seq. (emission control warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this 23 day of December 2011.



Detailed Photo Survey: Ex Orders

Executive Order: 2012 VOL... X

www.arb.ca.gov/msprog/onroad/cert/mdehdehdv/2012/volvo_hhdd_a2420068_12

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Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: mm/stroke @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke @ peak torque	8.Fuel Rate: (lbs/hr) @ peak torque	9.Emission Control Device Per SAE J1930
CVPTH12.8S01	50 State	D13H - 500	500 @ 1700	307.5	174.5	1812 @ 1050	336.8	118.1	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 475	475 @ 1800	279.7	168.1	1734 @ 1050	324.6	113.8	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 455	455 @ 1700	277.0	157.0	1761 @ 1050	329.0	115.0	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 435	435 @ 1700	286.7	162.7	1711 @ 1050	317.8	111.4	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 425	425 @ 1700	273.2	155.1	1600 @ 1050	297.7	104.4	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 425	425 @ 1700	258.8	146.9	1807 @ 1050	340.4	119.3	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 405	405 @ 1700	250.2	142.0	1508 @ 1000	278.1	92.9	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 405	405 @ 1700	246.2	139.8	1732 @ 1050	326.8	114.6	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 375	375 @ 1700	236.7	134.4	1506 @ 1000	277.6	92.7	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 500P	500 @ 1700	298.9	169.7	1765 @ 1050	328.3	115.1	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	D13H - 435P	435 @ 1700	268.4	152.3	1727 @ 1050	321.3	112.6	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	MP8 - 505E	505 @ 1700	308.2	174.9	1824 @ 1100	340.3	125.0	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	MP8 - 445E	445 @ 1700	286.0	162.3	1780 @ 1100	330.4	121.3	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	MP8 - 415E	415 @ 1700	266.9	151.5	1702 @ 1100	314.4	115.5	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	MP8 - 505C	505 @ 1500	341.9	171.3	1824 @ 1100	336.2	123.5	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX
CVPTH12.8S01	50 State	MP8 - 445C	445 @ 1500	311.3	155.9	1780 @ 1100	330.4	121.3	TC, CAC, EGR, DDI, ECM, DOC, PTOX, SCR, AMOX

Daily Trip Log HDVs

Trip Log

Center for Environmental Research & Technology, UCR

Driver name: _____

Date: _____ Start Time: _____

Tractor License Plate # _____

Trailer License Plate # _____

Trailer Type: ☐ Flatbed (non-dropdeck) ☐ Curtainside ☐ Container Chassis ☐ Tanker
☐ Dead Head ☐ Other _____

Trailer length: ☐ 53' plus ☐ 52' to 48' ☐ 47' to 40' ☐ less than 40'

Load Type: ☐ Goods delivery ☐ Construction ☐ Agriculture ☐ Other _____

Aero modifications: ☐ tail ☐ skirt ☐ gap ☐ none ☐ other

Max load lb.: ☐ <10,000 ☐ <20k ☐ <30k ☐ <40k ☐ <50k ☐ 55,000+

Trailer Survey Form: 1 of 2

UC Riverside Fleet Survey Form

Fleet Name: _____ Physical Address: _____

Contact Name: _____ Phone Number/Email: _____

TRACTOR FLEET INFORMATION

of Tractors your company currently owns or leases: _____ Day cabs _____ Sleeper Cabs _____ Total

How do you track fuel use: ☐ Hand logs ☐ Computerized tracking ☐ Real time GPS/engine signals ☐ other _____

TRAILER FLEET INFORMATION

Total # of trailers (all types) you own and operate: _____

of these specific trailer types you own and operate (If you do not own a trailer-type specified below but pull (operate) trailers of that type that are owned by others, please indicate that by putting “OP” in the appropriate box below):

Trailer Type	Trailer Length (feet)				
	53' plus	52'-48'	47'-40'	Less than 40'	
Flatbed (non-dropdeck)					
Curtainside					
Container Chassis					
Tanker					Grand Total
Total					

Trailer Survey Form: 2 of 2

If the company does NOT own or operate any of above trailer types, please return form. Otherwise continue with the survey

Trailer GPS Tracking Capabilities: ☐ Yes ☐ No

Average Trailer Age: ☐ 0-3 years ☐ 3-5 years ☐ 5-10 years ☐ 10+ years

of Trailers for each Tractor (on average): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ More than 4

Load Types: ☐ Goods delivery ☐ Construction ☐ Agriculture ☐ Other _____

	LTL	Parcel	Truckload	Food/Bev	Construction	Dry Bulk	Liquid/Gas	Other
% of Fleet								

FLEET OPERATION INFORMATION

Please provide approximate percentage (%) of fleet mileage by trip length in table below:

Trip Length	0-25 miles from home base	25-50 miles	51-75 miles	76-100 miles	101-500 miles	501- 1000 miles	1001- 1500 miles	1500+ miles
% of 2015 fleet mileage	%	%	%	%	%	%	%	%

Average Annual Vehicle Miles Traveled in 2015:

	0-1000mi	1000-10000 mi	10000-25000 mi	25000-50000 mi	50000+mi
a) Per Tractor:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Per Trailer:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) California miles:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please indicate if your company participates in any existing fuel-economy programs or uses fuel saving technologies:

☐ "Good Driver" reward program ☐ US EPA SmartWay Verified Tractors ☐ Trailer aerodynamic devices (e.g. side-skirts, wheel covers) ☐ Tractor speed limiters ☐ Low rolling resistance tires ☐ Tire monitoring or auto inflation system ☐ Other _____

Would fleet be willing to participate in data logging study with UC Riverside where the fleet receives an incentive? ☐ Yes ☐ No

Comment: _____

Trip Log

Center for Environmental Research & Technology, UCR

Driver name: _____

Date: _____ Start Time: _____

Tractor License Plate # _____

Trailer License Plate # _____

Trailer Type: ☐ Flatbed (non-dropdeck) ☐ Curtainside ☐ Container Chassis ☐ Tanker
☐ Dead Head ☐ Other _____

Trailer length: ☐ 53' plus ☐ 52' to 48' ☐ 47' to 40' ☐ less than 40'

Load Type: ☐ Goods delivery ☐ Construction ☐ Agriculture ☐ Other _____

Aero modifications: ☐ tail ☐ skirt ☐ gap ☐ none ☐ other

Max load lb.: ☐ <10,000 ☐ <20k ☐ <30k ☐ <40k ☐ <50k ☐ 55,000+

UC Riverside Fleet Survey Form

Fleet Name: _____ Physical Address: _____

Contact Name: _____ Phone Number/Email: _____

TRACTOR FLEET INFORMATION

of Tractors your company currently owns or leases: _____ Day cabs _____ Sleeper Cabs _____ Total

How do you track fuel use: ☐ Hand logs ☐ Computerized tracking ☐ Real time GPS/engine signals ☐ other _____

TRAILER FLEET INFORMATION

Total # of trailers (all types) you own and operate: _____

of these specific trailer types you own and operate (If you do not own a trailer-type specified below but pull (operate) trailers of that type that are owned by others, please indicate that by putting "OP" in the appropriate box below):

Trailer Type	Trailer Length (feet)				
	53' plus	52'-48'	47'-40'	Less than 40'	
Flatbed (non-dropdeck)					
Curtainside					
Container Chassis					
Tanker					Grand Total
Total					

If the company does NOT own or operate any of above trailer types, please return form. Otherwise continue with the survey

Trailer GPS Tracking Capabilities: ☐ Yes ☐ No

Average Trailer Age: ☐ 0-3 years ☐ 3-5 years ☐ 5-10 years ☐ 10+ years

of Trailers for each Tractor (on average): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ More than 4

Load Types: ☐ Goods delivery ☐ Construction ☐ Agriculture ☐ Other _____

	LTL	Parcel	Truckload	Food/Bev	Construction	Dry Bulk	Liquid/Gas	Other
% of Fleet								

FLEET OPERATION INFORMATION

Please provide approximate percentage (%) of fleet mileage by trip length in table below:

Trip Length	0-25 miles from home base	25-50 miles	51-75 miles	76-100 miles	101-500 miles	501- 1000 miles	1001- 1500 miles	1500+ miles
% of 2015 fleet mileage	%	%	%	%	%	%	%	%

Average Annual Vehicle Miles Traveled in 2015:

	0-1000mi	1000-10000 mi	10000-25000 mi	25000-50000 mi	50000+mi
a) Per Tractor:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Per Trailer:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) California miles:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please indicate if your company participates in any existing fuel-economy programs or uses fuel saving technologies:

☐ "Good Driver" reward program ☐ US EPA SmartWay Verified Tractors ☐ Trailer aerodynamic devices (e.g. side-skirts, wheel covers) ☐ Tractor speed limiters ☐ Low rolling resistance tires ☐ Tire monitoring or auto inflation system ☐ Other _____

Would fleet be willing to participate in data logging study with UC Riverside where the fleet receives an incentive? ☐ Yes ☐ No

Comment: _____

CE-CERT SCR Study HD On-road Testing and Analysis, Establishment Inventory

Please collect the following information at each site where an inventory is conducted. Much of this information may be available remotely (i.e., information collected through e-mail transmission of inventory files maintained by the establishment). All local sites for each establishment will be inventoried. Inventories will only be performed for remote sites (in other cities or states) if the information can be obtained remotely (i.e., by e-mail, without on-site visits).

Establishment Information

Name of establishment		Interview date	
Site location		Interviewer name	
Representative phone	()	Site representative	

Truck Information

License plate	
Truck co. ID	
VIN	_____
Start time	End time

<input type="checkbox"/>	1	License plate
<input type="checkbox"/>	2	Full front
<input type="checkbox"/>	3	Front left angle side
<input type="checkbox"/>	4	Front right angle side
<input type="checkbox"/>	5	Truck Co. ID
<input type="checkbox"/>	6	Additional outside door information
<input type="checkbox"/>	7	Door jamb labels
	<input type="checkbox"/>	VIN
	<input type="checkbox"/>	Axle ratio
<input type="checkbox"/>	8	OBD connection
<input type="checkbox"/>	9	HEM logger ID and CERT ID
<input type="checkbox"/>	10	Odometer
<input type="checkbox"/>	11	Inside cabin (middle section)
<input type="checkbox"/>	12	Tire and tire size
<input type="checkbox"/>	13	SCR tank cap
<input type="checkbox"/>	14	Back right angle side
<input type="checkbox"/>	15	Full back
<input type="checkbox"/>	16	Tailpipe
<input type="checkbox"/>	17	Back left angle side
<input type="checkbox"/>	18	Additional outside door information
<input type="checkbox"/>	19	Engine body
<input type="checkbox"/>	20	Engine labels
	<input type="checkbox"/>	Emissions control equipment
	<input type="checkbox"/>	Rated engine information
<input type="checkbox"/>		
Comments:		

License plate	
Truck co. ID	
VIN	_____
Start time	End time

<input type="checkbox"/>	1	License plate
<input type="checkbox"/>	2	Full front
<input type="checkbox"/>	3	Front left angle side
<input type="checkbox"/>	4	Front right angle side
<input type="checkbox"/>	5	Truck Co. ID
<input type="checkbox"/>	6	Additional outside door information
<input type="checkbox"/>	7	Door jamb labels
	<input type="checkbox"/>	VIN
	<input type="checkbox"/>	Axle ratio
<input type="checkbox"/>	8	OBD connection
<input type="checkbox"/>	9	HEM logger ID and CERT ID
<input type="checkbox"/>	10	Odometer
<input type="checkbox"/>	11	Inside cabin (middle section)
<input type="checkbox"/>	12	Tire and tire size
<input type="checkbox"/>	13	SCR tank cap
<input type="checkbox"/>	14	Back right angle side
<input type="checkbox"/>	15	Full back
<input type="checkbox"/>	16	Tailpipe
<input type="checkbox"/>	17	Back left angle side
<input type="checkbox"/>	18	Additional outside door information
<input type="checkbox"/>	19	Engine body
<input type="checkbox"/>	20	Engine labels
	<input type="checkbox"/>	Emissions control equipment
	<input type="checkbox"/>	Rated engine information
<input type="checkbox"/>		
Comments:		

CE-CERT SCR Study HD On-road Testing and Analysis, Establishment Inventory

Establishment Information (contd.)

Name of establishment		Interview Date	
-----------------------	--	----------------	--

Truck Information (contd.)

License plate			
Truck co. ID			
VIN	_____		
Start time		End time	

- ☐ 1 License plate
- ☐ 2 Full front
- ☐ 3 Front left angle side
- ☐ 4 Front right angle side
- ☐ 5 Truck Co. ID
- ☐ 6 Additional outside door information
- ☐ 7 Door jamb labels
 - ☐ VIN
 - ☐ Axle ratio
- ☐ 8 OBD connection
- ☐ 9 HEM logger ID and CERT ID
- ☐ 10 Odometer
- ☐ 11 Inside cabin (middle section)
- ☐ 12 Tire and tire size
- ☐ 13 SCR tank cap
- ☐ 14 Back right angle side
- ☐ 15 Full back
- ☐ 16 Tailpipe
- ☐ 17 Back left angle side
- ☐ 18 Additional outside door information
- ☐ 19 Engine body
- ☐ 20 Engine labels
 - ☐ Emissions control equipment
 - ☐ Rated engine information

Comments:

License plate			
Truck co. ID			
VIN	_____		
Start time		End time	

- ☐ 1 License plate
- ☐ 2 Full front
- ☐ 3 Front left angle side
- ☐ 4 Front right angle side
- ☐ 5 Truck Co. ID
- ☐ 6 Additional outside door information
- ☐ 7 Door jamb labels
 - ☐ VIN
 - ☐ Axle ratio
- ☐ 8 OBD connection
- ☐ 9 HEM logger ID and CERT ID
- ☐ 10 Odometer
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- ☐ 12 Tire and tire size
- ☐ 13 SCR tank cap
- ☐ 14 Back right angle side
- ☐ 15 Full back
- ☐ 16 Tailpipe
- ☐ 17 Back left angle side
- ☐ 18 Additional outside door information
- ☐ 19 Engine body
- ☐ 20 Engine labels
 - ☐ Emissions control equipment
 - ☐ Rated engine information

Comments:


CE-CERT SCR Study HD On-road Testing and Analysis, Establishment Interview

Form completed ☐

Database completed ☐

Name of establishment		Interview date	
Interviewee name		Interviewer name	
Telephone number of point of contact	()		
Address of company (main HQ or where interviewee is domiciled)			
Description of industry / services provided			
Establishment's North American Industry Classification (NAICS) code			
Types of delivery (local daily, in-state, interstate)			
Est of number of paid employees (including drivers)			
Est of number of contract personnel (including drivers)			
Number of sites / hubs / distribution centers from which operations are performed:			
Addresses of sites / hubs / distribution centers (only name of city if outside of HQ city)			
Estimated counts / types of trucks and trailers owned by company (i.e., 8 reefers, 32 Class 4 walk-in, etc.)			
<u>Estimated counts / types of trucks leased to company and approximate lease duration</u>			
Estimated counts / types of trucks and trailers contracted to company full-time / throughout the year			
Estimated counts / types of trucks and trailers contracted to company part-time / part of the year Addresses of sites / hubs / distribution centers (only name of city if outside of HQ city)			

CE-CERT SCR Study HD On-road Testing and Analysis, Establishment Interview

Form completed 

Database completed

[illegible]