



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Washington, DC 20460

MAY 22 2012

OFFICE OF
AIR AND RADIATION

Brian Hockridge
Caterpillar Inc.
P.O. Box 600
Mossville, IL 61552-600

Dear Mr. Hockridge:

The U.S. Environmental Protection Agency (EPA) has reviewed your request for verification of Caterpillar Inc. (CAT) 3406 Engine Upgrade Group (EUG). The CAT 3406 EUG is an upgrade of primary engine parts that include the turbocharger, fuel pump/governor, fuel injection nozzles, jacket water after-cooler, and pistons/rings/liners. Based on our evaluation of the verification application, test data, and additional submittals, EPA hereby verifies that this technology upgrades certain unregulated 3406 Caterpillar engines to the US EPA Nonroad Tier 1 emission standard levels.

The technology is approved for use on the following engines and/or equipment provided all of the operating criteria are met as described below:

Technology	Engine Model/Application	Fuel, Max Sulfur (ppm)	Reductions (%)				
			PM	NO _x	HC	CO	CO ₂
Emissions Upgrade Group	Caterpillar model 3406 diesel engines for nonroad applications with model years from 1973 to 1995 with mechanical fuel injection	15	Tier 1 Level				n/a ¹

This technology is approved for CAT 3406 engines between 150 and 450 kW, originally manufactured between 1973 and 1995 model years (see Attachment A for detailed list). The following criteria must be met in order for appropriately retrofitted engines to achieve the aforementioned emission reductions:

¹ The CO₂ level of reduction was found to be statistically insignificant at this time.

1. The CAT 3406 EUG includes the components necessary to upgrade Caterpillar model 3406 diesel engines from 1973-1995, 150-450 kW to achieve US EPA Nonroad Tier 1 emissions levels. The primary components are the turbocharger, fuel pump/governor, fuel injection nozzles, pistons/rings/liners, and jacket water aftercooler.
2. Prior to installation, the Caterpillar dealer must determine eligibility of the 3406 EUG by confirming the engine serial number with the engine arrangement and machine model as listed in Attachment A of this letter.
3. The servicing dealer must follow specific installation instructions approved by Caterpillar and validate that the upgraded engine has the necessary Tier 1 components installed and has been tested to ensure the proper fuel delivery, power, torque and speed. The dealer must submit a validation form to Caterpillar to receive a label for the upgraded engine.
4. Caterpillar will confirm the engine upgrade with the validation submitted by the dealer and issue an engine label which must be installed by the dealer.
5. For replacement engine upgrades, Caterpillar must comply with the provisions in accordance with 40 CFR 1068.240 for replacement engines.
6. The engine must be operated on ultra-low sulfur diesel fuel (ULSD) of 15 ppm or less.

If the CAT 3406 EUG is modified such that good engineering judgment would indicate that the performance could be affected, you must notify us immediately. This verification does not automatically confer to modified devices or devices that are similar to this original verification.

Information on the CAT 3406 EUG and applicable engines will be posted on the EPA's Verified Technology List website at: <http://www.epa.gov/cleandiesel/verification/verif-list.htm>. As you know, Caterpillar will be responsible for completing the required in-use testing program and for submitting all in-use testing data to EPA as outlined in EPA's in-use test methods.

Thank you for participating in EPA's Technology Assessment Center Verification Program. If you have any questions or comments, please contact Julie W. Hawkins, of my staff, at (202) 343-9072.

Sincerely,



Jim Blubaugh, Deputy Director
Transportation and Climate Division
Office of Transportation and Air Quality

Attachment A. List of eligible 3406 engines and the respective 3406 EUG Kit

Application	Original Engine AR	Emissions Upgrade Group (paper Kit)
16G & 16H	7W-5178 7W-5179 7E-9702	304-6672
578/583	2W-2652	321-3002
621E/623E/627E	1W-6904 4P-3476 7E-3421	312-2925
	4P-3482 9Y-1778	312-2924
D40D/D400D	120-9749 9Y-0222	333-1671
D8N - DIT	7C-0071 4W-9497	304-6670
D8N-DITA	6I-0864 9Y-5555	304-6671
980C	2W-1004	304-6660
980F	4P-7980	304-6669
	4P-8980	
	104-1750	
621B/623B/627B	8N-5405 5R-6706	309-4526
824C/825C/826C DIT	1W-1428	308-7318
824C/825C/826C DITA	100-5082	309-4515