



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Washington, DC 20460

JAN 3 2020

OFFICE OF  
AIR AND RADIATION

Gregory Hoenert  
Emissions Certification Manager  
Caterpillar Inc.  
PO Box 610  
AC – 6146  
Mossville, IL 61552

Dear Mr. Hoenert:

The U.S. Environmental Protection Agency (EPA) has reviewed your request for verification of the Caterpillar Converter GP-Catalytic Technology (CGP) system by Caterpillar Inc. (Caterpillar) for certain wheeled hydraulic excavators. The CGP system consists of a diesel oxidation catalyst (DOC), an active diesel particulate filter (DPF) and a selective catalytic reduction (SCR) system. Based on the additional test data provided, EPA hereby verifies that this technology reduces emissions of certain criteria pollutants by the percentages described in the table below.

This verification approval is based on Caterpillar’s fulfillment of the terms specified in the conditional verification approval dated May 16, 2017. In the conditional approval letter, Caterpillar was required to conduct additional testing in accordance with applicable verification protocols within one year of the conditional approval date. Caterpillar had satisfied the terms of the conditional approval, followed the test protocols and provided required test information.

Technology	Engine Model/Application	Fuel, Max Sulfur (ppm)	Reductions (%)			
			PM	NO <sub>x</sub>	HC	CO
Caterpillar Converter GP-Catalytic Technology System	Certain M313D and M315D Caterpillar wheeled hydraulic excavators equipped with models 313 and 315 for Tier 3 engines from families: CPKXL04.4NH1, CPKXL04.4NJ2, CPKXL04.4NJ1, or CPKXL04.4NL1.	15	95	15	95	95

The following criteria must be met in order for appropriately retrofitted engines to achieve the aforementioned emission reductions:

1. The Caterpillar CGP system is appropriately installed on excavators with engines as described above, and operates with an exhaust temperature at or above 240 °C for 40% of the machine’s duty cycle and not to exceed 600 °C.
2. The vehicle must be operated on ultra-low sulfur diesel fuel (ULSD) of 15 ppm or less.

3. The vehicle must always have a supply of Diesel Exhaust Fluid (DEF) that meets and displays certification of the American Petroleum Institute ISO Standard 22241-1 quality requirements that ensures the proper purity and concentration of 32.5% of urea. The vehicle must be designed to track and log, in nonvolatile computer memory, all incidents of engine operation with inadequate DEF injection or DEF quality.
4. The CGP system shall not be sold or operated in geographic areas where the DEF may freeze (-20°C), unless it is equipped with tank heaters and DEF line heaters to prevent freezing. It also shall not be operated in areas with temperature above 52 °C and operating height over 3,000-meter.
5. Caterpillar is required to provide the operator with clear and visible instructions for maintaining DEF for proper system operation.
6. Each installation will be equipped with a monitoring system that displays warning lights visible to the operator and audible alarms for low DEF tank level, high CGP inlet temperature and system abnormalities. The monitoring system will also store diagnostic error codes related to DEF tank level and system malfunctions.
7. Caterpillar is responsible for informing customers, in writing, that disposal of the CGP SCR system must be handled in accordance to all applicable federal, state, and/or local laws.

The active Converter GP-Catalytic Technology (CGP) system uses hydrocarbon (diesel fuel) injection over a diesel oxidation catalyst to raise the exhaust temperature sufficiently for periodic DPF regeneration. As a result, the average fuel consumption may be increased by 2 to 3% with the system. With colder duty cycles, fuel consumption will be higher.

If the CGP system is modified from the application description provided to EPA and representative of products tested, you must notify EPA immediately. This verification does not automatically confer to modified devices or devices that are similar to this original verification. EPA reserves the right to conduct testing of technologies submitted for verification. Verification approval and web listing may be revoked if the technology is modified from the device tested and described in the application or if it fails to meet requirements in EPA testing.

Information on the Caterpillar Converter GP-Catalytic Technology system, percent reduction, and applicable engines will be posted on the EPA's Verified Technologies List website at: <https://www.epa.gov/verified-diesel-tech/verified-technologies-list-clean-diesel>. EPA reserves the right to review and/or revoke this verification if these operating criteria are not met or if information becomes available regarding the safety, design and/or operation of the technology.

Thank you for participating in EPA's Technology Assessment Center Verification Program. If you have any questions or comments, please contact Kuang Wei, of my staff, at (202) 343-9329.

Sincerely,



Karl Simon, Director  
Transportation and Climate Division  
Office of Transportation and Air Quality