



Winston H. Hickox
Agency Secretary

Air Resources Board

Alan C. Lloyd, Ph.D.
Chairman

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Gray Davis
Governor

October 10, 2001

Mr. Marty Lassen
Johnson Matthey
434 Devon Park Drive
Wayne, Pennsylvania 19087-1816

Dear Mr. Lassen:

The Air Resources Board (ARB) previously verified that the CRT catalyzed diesel particulate filter system reduces emissions of diesel particulate matter (PM) by 85 percent or greater with a number of engine families and applications, for an emissions durability of 150,000 miles, thereby qualifying the CRT filter system as a Level 3 retrofit device. The ARB has now reviewed your subsequent request for extending the verification of the CRT filter system to include a wider range of engines in on-road applications. Based on its evaluation of the data provided, ARB hereby approves the CRT as a Level 3 retrofit device for use with 1994-2001 model year diesel engines belonging to engine families listed in Attachment 1. All such engines are:

- Certified in California for on-road applications,
- Four-stroke,
- Certified at a PM emission level of at most 0.1 grams per brake horsepower-hour (g/bhp-hr), and
- Turbocharged.

The approved engines do not employ exhaust gas recirculation (EGR) and were not certified new with diesel particulate filters. For convenience, the engine families detailed in Attachment 1 are summarized by make and representative engine series names in Table 1 below.

Table 1. Overview of Engines in Attachment 1

Model Year	Make	Engine Series
1994-2001	Caterpillar	3116, 3126, 3176, 3306, 3406, C10, C12, C15, C16 (all horsepower)
1994-2001	Cummins	L10, M11, N14, ISB, ISC, ISL, ISM, ISX, Signature, B-series, C-series (all horsepower)
1994-2001	Detroit Diesel	Series 50, Series 60 (all horsepower)
1994-2001	International	T444, DT 466, 530, 7.3 DIT (all horsepower)
1994-2001	Mack	E7, EM7 (all horsepower)
1994-2001	Volvo	VE D7, VE D12 (all horsepower)

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Website: <http://www.arb.ca.gov>.

California Environmental Protection Agency

Mr. Marty Lassen
October 10, 2001
Page 2

The aforementioned extension of verification is valid provided the following operating criteria are met:

1. The engine must be operated with a fuel that has a sulfur content of no more than 15 parts per million by weight.
2. The average engine exhaust temperature must be at least 270 degrees Celsius for 40 percent of the operating cycle.
3. The engine should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
4. Johnson Matthey must install a backpressure monitor and indicator light on all vehicles retrofitted with a CRT filter system.

Since there may be significant variations from application to application, Johnson Matthey has indicated that it will review actual vehicle operating conditions and perform temperature datalogging prior to retrofitting a vehicle with the CRT filter system to ensure compatibility.

The ARB estimates that the CRT filter system will incur no discernible fuel economy penalty when used in a compatible application.

After reviewing the submitted data, the ARB does not find that the CRT filter system has an appreciable effect on overall emissions of oxides of nitrogen.

Thank you for participating in ARB's diesel retrofit verification program. Should you have any questions or comments, please contact Ms. Annette Hebert, Chief, Heavy-Duty Diesel In-Use Strategies Branch, at (626) 575-6973.

Sincerely,

//s//

Robert H. Cross, Chief
Mobile Source Control Division