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FILE NO. 1010223-0189

October 5, 2000

VIA FACSIMILE AND U.S. MAIL

Mr. Michael Carter
Chief, Emission Research and Regulatory Development Branch
Air Resources Board
9528 Telstar Avenue
El Monte, California

Re: Consideration of Amendments to Adopt Not-To-Exceed and EURO III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-Duty Engines and Vehicles

Dear Mr. Carter:

On behalf of our client, International Truck and Engine Corporation ("International"), we appreciate the opportunity to submit comments regarding the California Air Resources Board's ("ARB") consideration of amendments to adopt the Not-to-Exceed ("NTE") and other supplemental emission standards and test procedures for Model Year ("MY") 2005 and later heavy-duty engines and vehicles. For the reasons described below, the proposed NTE standards are not technologically feasible and are inconsistent with state and federal legal requirements.

• Who Is International?

International, formerly known as Navistar International Transportation Corp., is a major North American manufacturer of medium and heavy-duty trucks and buses marketed under the "International®" brandname. International is the world's largest manufacturer of mid-range (160-300 hp) diesel engines. The Company's engines are more than 97 percent on-road certified. International supplies these engines both to its other divisions and to other customers,

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including Ford Motor Company. International is Ford's exclusive supplier through the year 2012 of V-8 diesel engines for heavy-duty pickups. These heavy-duty vehicles would be subject to ARB's proposed NTE emission standards, as would International's engines for its medium and heavy-duty vehicles and school buses.

- **The NTE Emission Standards Are Not Feasible**

The current heavy-duty engine ("HDE") emission standards are premised on the Federal Test Procedures ("FTP") which, as the ARB proposal states, reflect a prescribed set of engine operation test points that represent the typical, or real-world, operation of a vehicle in-use. The FTP-based standards are based on averages -- to the extent that a certification test engine satisfies the FTP, it will be deemed to meet on average the prescribed emission standard.

ARB, however, proposes to adopt the NTE requirements that EPA has advanced as part of the MY 2004 and MY 2007 HDE rulemakings.¹ The NTE requirements would establish an absolute cap on emissions variability contemplated under the FTP. In particular, the proposal would impose NTE zones under the engine's power curve where the engine may not exceed 1.25 times the specified emissions limit for any of the regulated pollutants. Although the NTE recognizes that engine emissions will rise and fall below the average emissions standard, it nonetheless places an absolute cap on such natural emissions variability (which occurs due to production variability or other effects such as temperature, pressure, humidity, and combustion characteristics) at 1.25 times the underlying standard for a 30 second interval. Thus, notwithstanding that engines are designed to meet, on average, the FTP-based emission standards promulgated by EPA, such engines will not be certified if they exceed 1.25 times the applicable emissions standard at any point in the NTE zone.

To our knowledge, it is not feasible to meet (and there is no data to support) the proposed NTE requirements in connection with the MY 2004 HDE standards. EPA's and ARB's sole basis for proposing such requirements appears to be the agreement by several Consent Decree companies to undertake NTE testing requirements. The feasibility of such requirements, however, cannot be established simply because several Consent Decree companies agreed in a litigation context and behind closed doors to undertake such tests. As part of its Consent Decree, International never agreed to undertake NTE requirements because the

¹ EPA's NTE requirements are being proposed as supplemental test procedures *and* emissions standards. 64 Fed. Reg. at 58488. ARB's proposal similarly characterizes the NTE as an emission standard. Even assuming that the NTE requirements were characterized solely as test procedures, as discussed below, there is no question that (a) these requirements effectively create new emissions standards because they increase the stringency of the proposed MY 2004 HDE standards, (b) test procedures that result in new emissions standards are substantive standards for rulemaking purposes, and thus (c) the NTE must meet technological feasibility requirements under state and federal law.

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Company had serious concerns about the feasibility of meeting such requirements. International informed EPA and ARB of our concerns then, and continues to have those concerns now. It is telling that the NTE is the subject of intense debate on the federal level, as Consent Decree companies that signed up for the NTE are finding that the NTE cannot be satisfied under real-world operating conditions. Indeed, at a September 13, 2000 public meeting regarding the Consent Decrees, EPA and the U.S. Department of Justice acknowledged that serious technical issues exist concerning the NTE.

Why is the NTE a problem? To meet the proposed NTE emission standards and test procedures, engine manufacturers would have to design their engines to meet an FTP-based standard that is significantly below the proposed FTP standard. This means that the NTE emission standard effectively establishes a more stringent *de facto* underlying FTP standard. Neither EPA nor ARB, however, have shown that the NTE standard is technologically feasible when applied to the MY 2004 or proposed MY 2007 HDE standards.²

International is unaware of any feasible pathway to meeting the proposed NTE standards, and neither EPA nor ARB has provided analysis or data indicating that the NTE standards could be met by the technologies that EPA and ARB project will be available to achieve the FTP-based standard in MY 2004. Although ARB suggests in its proposal that several Consent Decree companies have provided EPA and ARB with data suggesting that the NTE may be feasible, International has seen no such data and believes that no such data could exist as a practical or theoretical matter with respect to engines designed to the MY 2004 FTP standards. There is certainly no evidence that manufacturers could comply with the NTE over the NTE's wide-range of actual vehicular operating and varying ambient conditions, which inevitably will cause emissions at times to exceed the NTE even though the FTP is met.

Consequently, as stated above, manufacturers will be required to design their engines for emissions performance significantly below the FTP standard simply to meet the NTE standard. However, dropping the certification target significantly below the FTP standard raises serious, and indeed fatal, technological feasibility concerns. For the MY 2004 HDE emission standards, the NTE would require manufacturers to design engines to meet levels far below the FTP-certification levels, notwithstanding the complete absence of any data showing that such standards could be met.

Moreover, for the proposed federal MY 2007 HDE standards, the NTE effectively would require manufacturers to develop *zero* emission HDEs. This is because – with standards

² Unlike past rulemakings, in which EPA has shown the technological feasibility of proposed standards through actual engine performance data, EPA has failed to provide any data in either the 2004 or 2007 rulemaking record showing the technological feasibility of the NTE given the technology projected to be used to meet those standards.

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of 0.01 g/bhp-hr particulate matter ("PM") and 0.20 g/bhp-hr nitrogen oxides ("NO_x") -- the NTE establishes an emissions surface that is essentially equivalent to the emissions standards. By way of illustration, for PM emissions, the NTE would place an emissions cap of 1.25×0.01 g/bhp-hr on all points within the NTE zone, which equals 0.0125 g/bhp-hr. This obviously leaves an extremely small emissions compliance margin over the underlying FTP standard. In fact, using conventional rounding methods, the 0.0125 rounds to 0.01 g/bhp-hr, *which is the same as the underlying FTP standard.*³ Given inherent emissions variability in HDEs, nothing short of a zero emission HDE would satisfy the NTE. Not only is that result unrealistic, but it is clearly infeasible for any technology projected to be available for 2007 and later model year HDEs.

- **The NTE Is Fundamentally Incompatible With The Underlying FTP-Based Standards It Purports To Test**

Even viewed as a test procedure (as well as an emission standard), the NTE is unworkable because it is fundamentally incompatible with the underlying FTP-based standard. Instead of testing compliance with the proposed FTP based standard, the NTE measures conformity with an altogether different standard -- i.e., $1.25 \times$ FTP standard. Thus, notwithstanding that engines are designed to meet, on the average over 1,200 seconds within a specific temperature range, the FTP standard promulgated by EPA, such engines will not be certified if they exceed 1.25 times the applicable standard at any point in the NTE zone for a 30-second average over a wide temperature, humidity, and pressure range.⁴ As stated above, to the best of our knowledge, an engine designed to comply with the FTP-based emissions standard could not meet the NTE requirement of $1.25 \times$ the FTP standard under any given operating condition, even though the engine conforms with the applicable emissions standards, on average, over the engine's useful life. In that respect, the net result of the NTE requirement is effectively to nullify the underlying FTP-based standard. Because the NTE measures an entirely different

³ See 40 C.F.R. § 86.094-28(a)(4)(i)(B)(2)(ii) (setting forth standard practice for using significant digits in test data to determine conformance with specifications); cf. Cal. Code Regs., tit. 13, § 1960.1 (same).

⁴ By way of illustration, assume that a certification engine meets a standard of 2.5 g/bhp-hr over the FTP transient cycle. In meeting the 2.5 g/bhp-hr standard, it is reasonable to assume that the emissions profile moves from 1.0 to 4.0 g/bhp-hr during normal engine operations. The NTE, however, will limit this emissions profile because it caps the higher emissions value at 3.125 g/bhp-hr. The resulting FTP average would be approximately 2.0 g/bhp-hr, i.e., $(3.125 + 1.0)/2$, instead of the applicable 2.5 g/bhp-hr standard. In fact, the EPA has data which show that engines, certified after the "off-cycle" investigation, operate under certain conditions at levels considerably above $1.25 \times$ FTP that nonetheless will meet the FTP certified limits over their useful life.

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standard, compliance with the NTE bears no relevance to compliance with the FTP-based standard and does not test conformity with that standard.

The inherent inapplicability of the NTE to the FTP standard is further illustrated by the fact that the FTP test cycle itself includes emissions excursions that exceed 1.25 times the standard. Nonetheless, under the FTP test, an engine is still in compliance, even if emissions exceed 1.25 times the standard during the test, so long as, at the end of the twenty-minute test cycle, the engine's average emissions are at or below the applicable standard. That same engine, tested pursuant to the NTE over an equivalent real-world short sampling period, would be out of compliance if it exceeded 1.25 times the FTP standard. The mere fact that excursions above the NTE occur does not allow the conclusion that an engine will not meet the FTP standard on average over its useful life, any more than an excursion above the NTE cap during the FTP test cycle necessarily means that an engine will not meet the FTP standard. Thus, the NTE is fundamentally inconsistent with the FTP and therefore inappropriate as a compliance test.

- **ARB's Proposed NTE Requirements Undermines ARB's Commitments Pursuant To The Statement Of Principles**

Because ARB's proposal would undermine the technological feasibility of the MY 2004 HDE emission standards, it is clear that this proposal contravenes the most basic tenets of the principals set forth the 1995 Statement of Principles ("SOP") between ARB, EPA and leading heavy-duty engine manufacturers (including International). See 60 Fed. Reg. 45602 (August 31, 1995). The SOP established the ambitious MY 2004 emissions targets for HDEs that were codified by regulation in 1997. See 62 Fed. Reg. 54694 (October 21, 1997). International remains committed to the MY 2004 emission reduction targets, and has dedicated considerable time and resources to developing new engine technologies to meet those targets. As ARB is aware, the signatories developed the SOP to achieve historic emissions reductions from heavy-duty engines – but in a manner that is realistic for industry. For International, a key principle of the SOP was that it would provide increased certainty and stability for our business planning. As the SOP states,

Without such certainty and stability, industry would not commit to the enormous investment that the [proposed emissions] standards will require. And, without such certainty and stability, those investments might never be recouped. EPA and California recognize the huge investment that will be required of industry [to meet the proposed MY 2004 standards]. Under the Act, the minimum period of stability that EPA must provide for new on-highway heavy-duty engine emissions standards is three years. However, EPA and California acknowledge that under this SOP industry will be making a commitment that will require more than the minimum period of stability.

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60 Fed. Reg. at 45604.

Based on these principles, International committed to meet heavy-duty engine standards that continue to represent the boundary of technological feasibility. In turn, the SOP explicitly confirms that the proposed standards would be premised on current federal test procedures, recognizing that changes to test procedures could affect industry's ability to meet the standards. In short, by committing to the SOP, the ARB recognized that a longer lead time was required for the MY 2004 HDE standards along all heavy-duty product lines, and that industry would invest significant sums in developing engines to meet standards *which are now suddenly changed* for all HDEs by virtue of the NTE. The proposed NTE requirement represents a significant departure from the SOP because it undermines the principles of "certainty and stability" set forth in the SOP and because it results in an unjustifiable increase in the stringency of emission control requirements and renders the MY 2004 HDE standards technologically infeasible.

- **The NTE Is Inconsistent With Legal Requirements And ARB's Commitments Under The Statement Of Principles**

Given the inherent problems associated with the NTE standards, it is not surprising that EPA and ARB have failed to supply data showing the feasibility of the NTE standard with respect to the MY 2004 (let alone the proposed MY 2007) HDE emission standards. And, because the NTE requirements are not feasible, they violate state and federal legal requirements. At the threshold, ARB is entitled to establish emissions standards that are more stringent than federal standards only if it obtains a "preemption waiver" pursuant to Section 209 of the Clean Air Act ("CAA"). 42 U.S.C. § 7543(b). California's preemption waiver, however, is subject to certain conditions, including the requirement that its emissions standards be consistent with Section 202(a) of the CAA. 42 U.S.C. § 7543(b)(1)(C). Section 202(a), in turn, requires that any new standards be technologically feasible. See 42 U.S.C. § 7521; Motor and Equip. Mfrs. Ass'n v. Nichols, 142 F.3d 449, 463 (D.C. Cir. 1998) ("In the waiver context, section 202(a) 'relates in relevant part to technological feasibility and to federal certification requirements.'") (citing Ford Motor Co. v. EPA, 606 F.2d 1293, 1296 n. 17 (D.C. Cir. 1979)); see also Motor & Equip. Mfrs. Ass'n v. EPA, 627 F.2d 1095, 1111 (D.C. Cir. 1979) (consistency with the CAA requires standards to be "technologically feasible"). The California legislature has imposed a similar requirement. See Cal. Health & Safety Code § 43013 (ARB "may adopt and implement motor vehicle emission standards...which [ARB] has found to be *necessary, cost-effective, and technologically feasible.*") (emphasis added).⁵ For the reasons described above,

⁵ ARB has authority only to adopt test procedures to determine whether a HDE is in compliance with emission standards established under Health & Safety Code § 43101 (which requires such standards to be necessary and technologically feasible). See Cal. Health & Safety Code § 43104. Even if viewed as a test procedure (in addition to an emissions standard), the NTE therefore would violate California law for the reasons described above because (1) the NTE does not

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however, the NTE standards are not technologically feasible. Consequently, just as the EPA's NTE program is unlawful on technological feasibility grounds,⁶ so too would any such requirement adopted by ARB.⁷

Section 202(a) of the CAA also imposes mandatory leadtime and stability requirements on ARB, which means that ARB may not impose any NTE requirements until MY 2007 at the earliest (even assuming that ARB had authority to establish a NTE standard). In particular, Section 202(a) of the CAA mandates that any new HDE standard "shall apply for a period of no less than 3 model years beginning no earlier than the model year commencing 4 years after such revised standard is promulgated." 42 U.S.C. § 7521(a)(2)(C). From a stability standpoint, this requirement means that any new HDE emission standards that go into effect *must* stay in effect for three years before ARB may establish another standard. In MY 2004, new HDE standards will take effect. See 62 Fed. Reg. 54,694 (Oct. 21, 1997); 40 CFR § 86.004-11 (1999); Cal. Code Reg., tit. 13, § 1956.8. Because ARB may not lawfully revise HDE standards until three model years have passed from the effectiveness of the new standards, ARB may not lawfully impose new emissions standards – including the NTE – until MY 2007, at the earliest.⁸

determine compliance with underlying emissions standards, but rather *de facto* imposes new, more stringent emissions standard; (2) ARB has no authority to promulgate testing procedures that impose new emissions standards and fail to determine compliance with underlying standards; and (3) the new emissions standards that are imposed are technologically infeasible and inconsistent with legal requirements, as discussed in the following section.

⁶ It is also apparent that the NTE would unlawfully create a new emissions standard based on absolute emissions caps rather than average emissions. Under Section 202(a) of the CAA and analogous California law, ARB is authorized only to promulgate emissions standards that reflect the average emissions over a variety of engine cycles during an engine's useful life.

⁷ Section 202(a)(3)(A) of the CAA, as well as analogous requirements under the California Health & Safety Code, require that ARB consider costs and related factors in setting a new standard. 42 U.S.C. § 7521(a)(3)(A) (requiring that EPA give "appropriate consideration to cost, energy and safety factors" associated with the application of technology used to achieve new emissions standards); Cal. Health & Safety Code § 43018 (ARB "shall adopt standards and regulations [to reduce emissions from motor vehicles] which will result in the most cost-effective combination of control measures on all classes of motor vehicles and motor vehicle fuel...."). There is no question that because the NTE would require manufacturers to design engines that, in addition to meeting the FTP-based standard, would also have to meet the more stringent NTE requirements, the costs associated with the imposition of the NTE would be significant – if not prohibitive. Consequently, there appears to be no basis under federal or state law for ARB to establish controls that, by definition, could not be cost-effective.

⁸ It should be noted that ARB could not escape the foregoing 3-year stability requirement by accelerating the NTE to apply to MY 2004 standards since ARB is still subject to the 4-year leadtime requirement under Section 202(a) of the CAA. In short, because we are in MY 2000,

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We hope that the ARB finds our comments to be useful as it deliberates on the question of whether NTE standards should be imposed on MY 2005 and later HDEs certified in California. As our comments make clear, we believe that the answer to this question is "no."

Very truly yours,



Patricia Guerrero
of LATHAM & WATKINS

cc: Michele Smith, Esq.
David A. Piech, Esq

the earliest that any new HDE standard could be imposed would be MY 2005 under the 4-year leadtime requirement. However, given the 3-year stability requirement, the MY 2004 HDE standards will be locked in for at least three years, meaning that (i) no new standards, including the NTE, could be imposed in MY 2005, and (ii) MY 2007 is the earliest that any such standards could be mandated.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

October 31, 2000

David A. Piech
Senior Counsel
International Truck and
Engine Corporation
155 North Cityfront Plaza Drive
Chicago, Illinois 60611

Re: Freedom of Information Act
Request RIN-03120-00

Dear Mr. Piech:

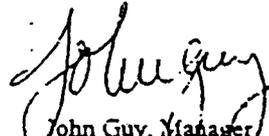
This will respond to your letter dated October 13, 2000, in follow-up to our letter to you dated October 12, 2000 which responded to the above-referenced Freedom of Information Act (FOIA) request. In the FOIA request, International requested any and all emission data and information verifying engine compliance with the certification requirements cited in EPA's "Control of Emissions of Air Pollution from 2004 and Later Model Year Heavy-duty Highway Engines and Vehicles: Response to Comments," July 2000, page 8-29. In the particular reference you cited, EPA noted that over 75 heavy-duty diesel engine (HDDE) families certified as of July 2000 complied with the NTE emission limits. In your follow-up letter, you requested in writing, confirmation of a statement by Mr. Richard Gezelle of this office that EPA has no data and/or information confirming or measuring the "Not-to-exceed"(NTE) on the approximately 75 heavy-duty diesel engine families certified by July 2000.

As you know, these 75 engine families were certified under the terms of the EPA's settlement with several heavy-duty diesel engine manufacturers, including International, regarding the alleged violation of EPA's defeat device prohibition. Each manufacturer's (except International's) consent decree resulting from that settlement requires compliance with not only the traditional Federal Test Procedure (FTP), but also two supplemental emissions tests: the Euro III and the Not-to-Exceed (NTE). Compliance with the Euro III, as with the FTP, must be demonstrated prior to the issuance of an EPA certificate of conformity. On the other hand, the manufacturers are not required to submit NTE data, but instead must submit a statement of compliance that subject engines meet the NTE requirements. Each manufacturer is required to keep and provide to EPA, within 30 days of a request, all emission test results, engineering

analyses, and any other information which forms the basis for making the NTE compliance statement. Furthermore, manufacturers will be required to demonstrate NTE compliance in required in-use testing. At present, EPA does not have any data showing NTE compliance because this information has not been requested from any manufacturer, nor has any required in-use testing occurred yet. Given this need to demonstrate compliance, we strongly anticipate and expect that manufacturers have data in their possession to enable them to make the Statements of Compliance with confidence.

If you have any further questions, please contact Mr. Gezelle directly at (202) 564-9267.

Sincerely,


John Guy, Manager
Engine Programs Group



Winston H. Hickox
Agency Secretary

Air Resources Board

Alan C. Lloyd, Ph.D.
Chairman

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Gray Davis
Governor

September 15, 2000

Mail Out #MSC-00-20

TO: ALL INTERESTED PARTIES

SUBJECT: CONSIDERATION OF AMENDMENTS TO ADOPT NOT-TO-EXCEED AND EURO III EUROPEAN STATIONARY CYCLE EMISSION STANDARDS AND TEST PROCEDURES FOR THE 2005 AND SUBSEQUENT MODEL YEAR HEAVY-DUTY ENGINES AND VEHICLES.

The current certification requirements of new heavy-duty diesel engines for sale in California include the Federal Test Procedure (FTP). The FTP is a prescribed set of engine operation test points conducted in the laboratory that represents the typical operation of a vehicle in-use. In the 1990s, it was found that seven of the largest heavy-duty diesel engine (HDDE) manufacturers violated certification regulations by turning off emission control devices, used to comply with the FTP emission standard, during in-use highway driving. Consequently, the Department of Justice, the United States Environmental Protection Agency (U.S. EPA) and the Air Resources Board (ARB or "Board") signed consent decrees with these engine manufacturers. A consent decree is a judicial decree which recognizes the mutual settlement between two parties; in this case, between the government and the engine manufacturers (herein referred to as the "settling manufacturers").

In these consent decrees, the settling manufacturers are required, among other things, to produce HDDEs that meet a 2.5 gram per brake horsepower (g/bhp-hr) hour limit on non-methane hydrocarbons (NMHC) plus oxides of nitrogen (NOx) emissions no later than October 1, 2002 (about 50 percent cleaner than current engines). The majority of these settling manufacturers have also agreed to produce engines by October 1, 2002 that meet supplemental certification standards and test procedures including the Not-To-Exceed (NTE) test and the EURO III European Stationary Cycle (ESC) test. The consent decree stipulates that these requirements must be met for a period of 2 years. Together with the FTP test, these supplemental procedures will require control of emissions from a majority of real world operation and conditions.

California Environmental Protection Agency

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Recognizing the effectiveness of the supplemental tests, the U.S. EPA published a Notice of Proposed Rulemaking (October, 1999) proposing to adopt the supplemental standards and test procedures for 2004 and subsequent model year HDDEs. However, because of legal timing constraints imposed on the U.S. EPA, the NTE and ESC standards and test procedures will not be required until the 2007 model year. Therefore, once the HDDE consent decree requirements expire in 2004, diesel engine manufacturers will not be obligated to comply with the supplemental test procedures starting in 2005, and ending with the 2007 model year, when the Federal Rule comes into effect.

In order to fill the 2005 and 2006 model year gap, staff proposes the inclusion of the NTE and ESC tests in the required certification procedure for the 2005 and subsequent model year HDDEs. Taking this action will prevent the consent decree manufacturers from producing 2005 and 2006 model year engines that will emit significantly greater NOx emissions during in-use steady state driving compared to engines produced from 2002 through 2004. The proposed NTE and ESC requirements would also apply to the manufacturers which were not covered by the consent decree. These new NTE and ESC compliant engines produced in 2005 and 2006 model years will contribute to significant emission benefits during the 2005 and 2006 calendar years, as well as throughout the lifetime of the engines. The remainder of this notice provides greater detail on the supplemental tests, standards, feasibility of these standards, and preliminary emission benefit calculations.

A. Proposed Amendments

As indicated above, the U.S. EPA has already adopted the NTE and ESC supplemental tests for 2007 and subsequent model year heavy-duty diesel engines. Staff is proposing to incorporate these supplemental test procedures into the California certification procedures two years earlier, beginning in the 2005 model year. To incorporate these supplemental test procedures, ARB staff is proposing amendments to Section 1956.8 (Exhaust Emissions Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles) of Title 13 of the California Code of Regulations as shown in Appendix A. In addition, staff is also proposing to amend the California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles, as shown in Appendix B. Incomplete medium-duty diesel engines and vehicles above 8,500 and below 14,000 pounds gross vehicle weight rating and heavy-duty diesel engines and vehicles over 14,000 pounds gross vehicle weight rating are subject to the requirements in the proposed amendments.

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The proposed amendments contain the following three main requirements for 2005 and subsequent model year heavy-duty diesel engines:

- The new NTE Test with numerical emission standards of 1.25 times the FTP emission standards,
- The new ESC with numerical emission standards equivalent to the FTP emission standards, and
- Maximum Allowable Emission Limits.

These proposed emission standards are applicable for NMHC plus NO_x, particulate matter, and carbon monoxide emissions. The proposed emission tests are referred to as the HDDE supplemental FTP tests since they supplement the standard Federal FTP test.

Not-To-Exceed Test

The NTE test, as defined in CFR 86.1370-2007, establishes an area (NTE control area) under the torque curve of an engine where emissions must not exceed a specified standard for a given pollutant. The NTE control area for diesel engines is a function of engine speed and all engine operation at or above 30 percent of the maximum torque value of the engine. The NTE requirement would apply under any engine operating conditions that could reasonably be expected in normal vehicle use. In addition, the NTE is applicable in a wide range of ambient conditions. For example, NTE ambient temperature coverage can range from 55° to 95°F compared to the FTP ambient conditions of 68° to 86°F. These requirements would apply to new engines throughout their useful life.

A vehicle can be tested over the NTE procedure either on the road or in an emission testing laboratory using an engine or chassis dynamometer. Instead of using a specific driving cycle such as the FTP, it can involve driving of any type which could reasonably be expected to occur in normal vehicle operation within the boundaries of the NTE control area, including operation under steady-state or transient conditions and under varying ambient conditions. Measured emissions are averaged over a minimum of thirty seconds and compared to the NTE emission limit.

Additionally, two different options related to temperature and altitude will be available for manufacturers to comply with the NTE requirement. Under option one, manufacturers can choose to comply with the NTE emission standards

within the ambient temperature range of 55°F to 95°F, up to 5,500 feet above sea level. There is no temperature correction for different altitudes. Under option two, manufacturers can use correction factors for the temperature at different altitudes. For example, the upper temperature limit is 100°F at sea-level and 86°F at 5,500 feet above sea-level.

In U.S. EPA's Final Rule¹, an NTE deficiency provision for 2007 and subsequent model year engines provides manufacturers with a relief mechanism for failing to comply with some of the NTE requirements. Unlike the U.S. EPA's Final Rule, however, this proposal does not include deficiency provisions for NTE. Because the NTE control area, test procedures, and associated emission standards in the proposed regulation are identical to the NTE requirements in the HDDE consent decree for model years 2003 and 2004, the settling manufacturers will be in full compliance with proposed NTE standards prior to the effective date of this proposal.

Euro III European Stationary Cycle Test

The ESC test cycle, as defined in CFR §86.1360-2007 as the "supplemental steady state test", consists of 13 modes at different speed and power conditions, primarily representing the typical highway cruise operating conditions of heavy-duty diesel vehicles.

During the test cycle, the engine is initially operated at idle speed, then through a defined sequence of 12 modes at various speeds and engine loads. The test modes are at three different engine speeds at 25%, 50%, 75%, and 100% of maximum load. Each mode (except idle) requires that the engine be operated for two minutes. Manufacturers would be required to show compliance with the following:

Average Allowable Emission Limits

During each mode of operation of the ESC test, the concentration of the gaseous pollutants is measured. The weighted average emissions for each pollutant, as calculated according to this steady-state test procedure, must not be greater than 1.0 times the Federal Test Procedure emission standard which is 2.5 g/bhp-hr for NMHC plus NOx for 2005 and subsequent model year engines. A single, particulate matter measurement is made of the entire 13 modes at the end of the test.

¹ U.S. EPA Final Rule on the Control of Emissions of Air Pollution from 2004 and Later Model Year Heavy-Duty Highway Engines and Vehicles; Revision of Light-Duty On-Board Diagnostics Requirements.

Maximum Allowable Emission Limits

Maximum allowable emission limits are determined from the 12 non-idle test points of the ESC tests. The maximum allowable emission limit at any set of speed and load conditions between the test points is determined by using a four-point interpolation procedure. Emissions of gaseous pollutants at any point within the maximum allowable emission limit operational zone must not exceed the limit as determined by interpolation. Maximum allowable emission limits only apply to gaseous pollutants and do not apply to particulate matter.

The ARB is seeking manufacturers' comments on technical feasibility and economic impact of complying with the supplemental standards listed above.

B. Technical Feasibility

As described in the U.S. EPA Final Rule, significant technological progress has been made in the last few years to achieve emission reductions from heavy-duty diesel engines. The following examples of technologies have been demonstrated to effectively lower emissions: second generation fuel injection systems, cooled exhaust gas recirculation for heavy-duty diesels, advanced turbocharging systems (such as variable geometry and multiple turbochargers), and advanced electronic control systems. These systems have been proven technically feasible and effective in numerous demonstrations and documented in scientific and engineering publications. These emission control technologies can produce substantial emission reductions in NO_x, particulate matter and hydrocarbons, over a broad range of engine operating conditions. Emission reductions of approximately 50 to 90 percent from current generation heavy-duty diesel engines, have been demonstrated using combinations of these technologies.

In response to U.S. EPA's 1999 Notice of Proposed Rulemaking to adopt these supplemental test procedures, several consent decree manufacturers provided U.S. EPA and ARB with information and data regarding testing and development work they have performed. The data show that under some extreme ambient and operating conditions, some engines have technical challenges meeting the NTE and ESC requirements without sacrificing performance. Overall however, under typical operating conditions, the data demonstrate that engines are capable of fully complying with the NTE and ESC standards. Additionally, the settling manufacturers are required to meet the supplemental test standards

beginning October 1, 2002 pursuant to the HDDE consent decree. Thus, the proposed standards and test procedures, identical to those in the consent decree, will be technically feasible for the 2005 model year, about two years after the first consent decree engines have been manufactured.

The ARB is seeking specific comment and information on the technology required to comply with the proposed requirements. Additionally, the ARB is interested in the cost of such technology as well as any additional consumer costs to purchase, fuel, and maintain the new engines.

C. Preliminary Emission Estimates

Preliminary emission benefits as a result of adopting the HDDE supplemental FTP tests were estimated. Emissions from engines produced in 2005 and 2006 without NTE and ESC requirements were calculated to quantify the excess emissions. These excess emissions can also be viewed as reductions we can achieve if NTE and ESC requirements are adopted. Any reductions would exclude the emissions emitted by out-of-state vehicles. Out-of-state vehicles account for approximately 25 percent of the heavy heavy-duty vehicle miles traveled. Calculations were based on the relationship among vehicle miles traveled, emission factors, and different types of engine operations. A preliminary emission factor of 2.5 g/bhp-hr of NOx emissions in excess of the proposed NTE emissions standards is used in the calculations. This emission factor was provided by a diesel engine manufacturer as an approximation of excess emissions of a HDDE that does not have to comply with the NTE and ESC standards versus one that is compliant with the NTE and ESC standards. Other input data such as estimating the number of new engines in 2005 and 2006 are projected by running ARB's EMFAC2000 model.

The equation used to calculate the excess emissions if the NTE and ESC standards were not required for the 2005 and 2006 model years is as follows:

$$\begin{array}{l} \text{Excess} \\ \text{Emissions} \\ \text{(tons/day)} \end{array} = [\text{EF} \times \text{CF} \times (\text{Daily_VMT}) \times (\text{Percent_steady_state})] / 90,901$$

Where:

EF = Incremental NOx emission factor in grams per bhp-hr (2.5 g/bhp-hr)
CF = Conversion factor from grams per bhp-hr to grams per mile.
= 2.3 for medium-heavy diesel engines or
= 2.6 for heavy-heavy diesel engines
(both are from California's previous Motor Vehicle Emission Factor Model - MVEI7G)

Daily_VMT
= Total daily vehicle miles traveled (from EMFAC2000)

Percent_steady_state
= Percent of VMT under steady-state conditions.
= 72% for heavy-heavy diesel engines or
= 25% for medium-heavy diesel engines
(both are estimated from data in U.S. EPA's MOBILE5 Heavy-Duty Diesel Vehicle Defeat Device Spreadsheet Model)

90,901 = Conversion factor from grams per day to tons per day.

Using the equation above, preliminary excess emissions are in excess of 20 tons of NOx in the 2006 calendar year from new heavy-duty diesel vehicles (Gross Vehicle Weight Rating of 14,001 pounds and greater) in California. The excess emission in the absence of the proposed rule on life long emission reductions from these engines should not be overlooked. Preliminary estimates indicate that lifetime excess emissions are 1 ton per engine from medium heavy-duty diesel engines² and 4 tons per engine from heavy heavy-duty diesel engines³ if they are not obligated to comply with NTE and ESC requirements. ARB staff believes that the excess emissions are significant and can be prevented by adopting the proposed emission standards and test procedures.

The ARB is seeking additional comparative emission data between 2.5 g/bhp-hr NMHC plus NOx compliant engines that are not subject to the proposed supplemental standards (non-consent decree engines) and engines that are required to comply with the proposed standards.

² Engines used in vehicles with Gross Vehicle Weight Rating equal to and greater than 14,001 pounds and less than 33,000 pounds.

³ Engines used in vehicles with Gross Vehicle Weight Rating equal to and greater than 33,000 pounds.

To: All Interested Parties
September 15, 2000
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This regulatory proposal is scheduled for consideration by the Board on December 7, 2000. Comments to the proposed amendments should be mailed by October 5, 2000 to the following address.

Air Resources Board
Attn: Mr. Michael Carter
Chief, Emission Research and Regulatory Development Branch
9528 Telstar Avenue
El Monte, California 91731

Further inquiries regarding this matter should be directed to Ms. Susan O'Connor, Manager, On-Road Heavy Duty Diesel Section, at (626) 450-6162.

Sincerely,

Robert H. Cross, Chief
Mobile Source Control Division

Attachment

APPENDIX A

PROPOSED REGULATION ORDER

Amend the following section of Title 13, California Code of Regulations,
to read as set forth in the following pages:

| | |
|----------------|---|
| Section 1956.8 | Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Year Heavy-Duty Engines and Vehicles |
|----------------|---|

SECTION 1956.8, TITLE 13, CCR

Amend Title 13, California Code of Regulations, section 1956.8, to read:

- Notes:
- a) The regulatory language below does not include any amendments that have not been finalized (i.e., Transit Bus Rule amendments). The term "RESERVED" is used to show where these amendments would appear once finalized.
 - b) The proposed regulatory amendments are shown in underline to indicate additions to the text and ~~strikeout~~ to indicate deletions.

1956.8. Exhaust Emission Standards and Test Procedures - 1985 and Subsequent Model Heavy-Duty Engines and Vehicles.

(a)(1) The exhaust emissions (A) from new 1985 and subsequent model heavy-duty diesel engines (except methanol-fueled engines) and heavy-duty natural-gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, (B) from new 1991 and subsequent model heavy-duty methanol-fueled diesel transit bus engines, and (C) from all new 1993 and subsequent model heavy-duty methanol-fueled, diesel engines, except in all cases engines used in medium-duty vehicles, shall not exceed:

Exhaust Emission Standards
(grams per brake horsepower-hour)

| Model Year | Total Hydrocarbons or OMHCE ^A | Optional Non-methane Hydrocarbons ^A | Carbon Monoxide | Oxides of Nitrogen | Particulates |
|------------------------|--|--|-----------------|--------------------|-------------------|
| 1985-1986 | 1.3 | | 15.5 | 5.1 | — |
| 1987 ^B | 1.3 | | 15.5 | 5.1 | — |
| 1988-1989 | 1.3 | | 15.5 | 6.0 | 0.60 |
| 1990 | 1.3 | 1.2 | 15.5 | 6.0 | 0.60 |
| 1991-1993 ^C | 1.3 | 1.2 | 15.5 | 5.0 | 0.10 |
| 1991-1993 ^D | 1.3 | 1.2 | 15.5 | 5.0 | 0.25 ^E |
| 1994 -1997 | 1.3 | 1.2 | 15.5 | 5.0 | 0.10 ^E |
| 1994-1995 ^F | 1.3 | 1.2 | 15.5 | 5.0 | 0.07 |

| | | | | | |
|----------------------------|-----|-----|------|-------------------------|---------------------|
| 1994-1995 ^G | 1.3 | 1.2 | 15.5 | 3.5 to 0.5 | 0.07 |
| 1995-1997 ^J | 1.3 | 1.2 | 15.5 | 3.5 to 0.5 | 0.10 |
| 1996 ^F -2003 | 1.3 | 1.2 | 15.5 | 4.0 ^{L,O} | 0.05 ^{M,C} |
| 1996 ^G -2003 | 1.3 | 1.2 | 15.5 | 2.5 to 0.5 | 0.05 ^M |
| 1998 ^K -2003 | 1.3 | 1.2 | 15.5 | 4.0 ^{O,S} | 0.10 ^O |
| 1998 ^J -2003 | 1.3 | 1.2 | 15.5 | 2.5 to 0.5 ^T | 0.10 |

| Model Year | Oxides of Nitrogen Plus Non-methane Hydrocarbons | Optional Oxides of Nitrogen Plus Non-methane Hydrocarbons | Carbon Monoxide | Particulates |
|-------------------------------------|--|---|-----------------|---------------------|
| 2004 and ^C subsequent | 2.4 ^{L,P,S} | 2.5 ^{M,P,S} | 15.5 | 0.05 ^{H,P} |
| 2004 and ^N subsequent | 2.4 ^{L,P,S} | 2.5 ^{M,P,S} | 15.5 | 0.10 ^P |
| 2004 and ^C subsequent | n/a | 1.8 to 0.3 ^{L,R,T} | 15.5 | 0.05 ^H |
| 2004 and ^N subsequent | n/a | 1.8 to 0.3 ^{L,R,T} | 15.5 | 0.10 |

^A The total or optional non-methane hydrocarbon standards apply to petroleum-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled engines. The Organic Material Hydrocarbon Equivalent, or OMHCE, standards apply to methanol-fueled engines.

- ^b As an option a manufacturer may elect to certify to the 1988 model-year emission standards one year early, for the 1987 model year.
- ^c These standards apply to urban bus engines only.
- ^d For engines other than urban bus engines. For methanol-fueled engines, these standards shall be applicable beginning with the 1993 model year.
- ^e Emissions averaging may be used to meet this standard. Averaging is restricted to within each useful life subclass and is applicable only through the 1995 model year. Emissions from engines used in urban buses shall not be included in the averaging program. However, emissions from methanol-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled urban bus engines certified to a 0.10 grams per brake horsepower-hour standard for particulates for the 1991-1993 model years, and certified to a 0.07 grams per brake horsepower-hour standard for particulates for the 1994-1995 model years, may be included in the averaging program for petroleum-fueled engines other than urban bus engines.
- ^f These mandatory standards apply to urban bus engines only.
- ^g These optional standards apply to urban bus engines only. A manufacturer may elect to certify to an optional NOx standard by 0.5 grams per brake horsepower-hour increments. Engines certified to any of these optional NOx standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
- ^h For in-use testing, a 0.07 gram per brake horsepower-hour standard for particulates shall apply.
- ⁱ A manufacturer may apply to the Executive Officer for an exemption from the 4.0 gram per brake horsepower-hour standard for oxides of nitrogen for 1996 and 1997 model year urban bus engines for which the manufacturer can demonstrate a technological need for the exemption. The exemption or exemptions shall not exceed 10 percent of the average of the manufacturer's total urban bus engine sales in California for the three model years prior to the model year for which an exemption is requested. The manufacturer shall submit technical justification for each engine model and shall provide the number of urban bus engine sales in California for the engine model for which the exemption is requested (if any) and for all urban bus engine models for the three preceding model years, to the Executive Officer when the manufacturer applies for the exemption.
- ^j These are optional standards and apply to all heavy-duty engines excluding urban bus engines. A manufacturer may elect to certify to an optional NOx standard between the values, inclusive, by 0.5 grams per brake horsepower-hour increments.

- Engines certified to any of these optional NOx standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
- K These mandatory standards apply to all heavy-duty engines except urban bus engines.
 - L This is the standard for the arithmetic sum of the oxides of nitrogen exhaust component certification value and the non-methane hydrocarbon exhaust component certification value, without individual restriction on the individual component values.
 - M This is the standard for the arithmetic sum of the oxides of nitrogen exhaust component certification value and the non-methane hydrocarbon exhaust component certification value, with the non-methane hydrocarbon individual component value not to exceed 0.5 g/bhp-hr.
 - N These standards apply to all heavy-duty engines except urban bus engines.
 - O Engines of 1998 through 2003 model years may be eligible to generate banking credits based on these standards according to the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
 - P Emissions averaging may be used to meet this standard. Averaging must be based on the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
 - R A manufacturer may elect to certify to an optional reduced-emission NOx+NMHC standard between the values, inclusive, by 0.3 grams per brake horsepower-hour increments. Engines certified to any of these optional reduced-emission NOx standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
 - S May be used as the certification standard for the higher emitting fueling mode of an engine certified under the dual fueling mode certification process of (a)(3), below.
 - T May be used as the certification standard for the lower emitting fueling mode of an engine certified under the dual fueling mode certification process of (a)(3), below.
- (2), (3) [No Change]

(4) RESERVED

(5)(A) For 2005 and subsequent model year heavy-duty diesel engines, the weighted average exhaust emissions, as determined under § 86.1360-2007(e)(5) pertaining to the supplemental steady-state test cycle, for each regulated pollutant shall not exceed 1.0 times the applicable emission standards or FELs specified in paragraph (a)(1) of this section.

(B) Gaseous exhaust emissions shall not exceed the steady-state interpolated values determined by the Maximum Allowable Emission Limits (for the corresponding speed and load), as determined under § 86.1360(f), when the engine is operated in the steady-state control area defined under § 86.1360(d), during steady-state engine operation.

(6)(A) For 2005 and subsequent model year heavy-duty diesel engines, the brake-specific exhaust emissions in grams/bhp-hr, as determined under § 86.1370 pertaining to the not-to-exceed test procedures, for each regulated pollutant shall not exceed 1.25 times the applicable emission standards or FELs specified in paragraph (a)(1) of this section during engine and vehicle operation specified in paragraph (a)(6)(B) of this section, except as noted in paragraph (a)(6)(C) of this section.

(B) For each engine family, the not-to-exceed emission limits must apply during one of the following two ambient operating regions;

(a) The not-to-exceed emission limits apply for all altitudes less than or equal to 5,500 feet above sea-level, during all ambient conditions (temperature and humidity). Temperature and humidity ranges for which correction factors are allowed are specified in § 86.1370-2007(e); or

(b) The not-to-exceed emission limits apply at all altitudes less than or equal to 5,500 feet above sea-level, for temperatures less than or equal to the temperature determined by the following equation at the specified altitude:

$$T = -0.00254 \times A + 100$$

Where:

T = ambient air temperature in degrees Fahrenheit

A = altitude in feet above sea-level (A is negative for altitudes below sea-level)

Temperature and humidity ranges for which correction factors are allowed are specified in § 86.1370-2007(e);

(C) For engines equipped with exhaust gas recirculation, the not-to-exceed emission limits specified in paragraph (a)(6)(A) of this section do not apply to engine or vehicle operation during cold operating conditions as specified in § 86.1370(f).

(7) For 2005 and subsequent model year heavy-duty engines, operation within the NTE zone (defined in § 86.1370) must comply with the following:

(A) A filter smoke number of 1.0 under steady-state operation, or the following alternate opacity limits:

(a) A 30 second transient test average opacity limit of 4% for a 5 inch path;

and

(b) A 10 second steady state test average opacity limit of 4% for a 5 inch path.

(B)(a) The standards set forth in paragraphs (a)(7)(A)(a) and (b) of this section refer to exhaust smoke emissions generated under the conditions set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" and measured and calculated in accordance with those procedures.

(b) The standards set forth in paragraph (a)(7)(A) of this section refer to exhaust smoke emissions generated under the conditions set forth in § 86.1370 and calculated in accordance with the procedures set forth in § 86.1372.

(b) The test procedures for determining compliance with standards applicable to 1985 and subsequent heavy-duty diesel engines and vehicles and the requirements for participation in the averaging, banking and trading programs, are set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles", adopted April 8, 1985, as last amended ~~April 15, 1999~~ [insert date of finalized amendment], which is incorporated herein by reference.

(c), (d), (e), (f), (g) [No Change]

(h) The exhaust emissions from new 1992 and subsequent model-year engines used in incomplete medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles, and for diesel engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles and super-ultra-low-emission vehicles shall not exceed:

**Exhaust Emission Standards for Engines Used in Incomplete Medium-Duty
Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super
Ultra-Low-Emission Vehicles, and for Diesel Engines Used in Medium-Duty
Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and
Super Ultra-Low-Emission Vehicles^{A,F}
(grams per brake horsepower-hour)**

| Model Year | Vehicle Emissions Category ^B | Carbon Monoxide | Non-Methane Hydrocarbons and Oxides of Nitrogen ^C | Formaldehyde | Particulates ^D |
|--------------------------|---|-----------------|--|--------------|---------------------------|
| 1992 ^E - 2001 | LEV | 14.4 | 3.5 ^A | 0.050 | 0.10 ^A |
| 2002-2003 ^E | LEV | 14.4 | 3.0 ^A | 0.050 | 0.10 ^A |
| 1992-2003 ^{E,H} | ULEV | 14.4 | 2.5 ^A | 0.050 | 0.10 ^A |
| 2004 and subsequent | ULEV - Opt A. | 14.4 | 2.5 ^{G,I,J,K} | 0.050 | 0.10 ^A |
| 2004 and subsequent | ULEV - Opt. B | 14.4 | 2.4 ^{G,I,J,K} | 0.050 | 0.10 ^A |
| 1992 and subsequent | SULEV | 7.2 | 2.0 ^A | 0.025 | 0.05 ^A |

^A This set of standards is optional. Manufacturers of engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles from 8501-14,000 pounds gross vehicle weight rating may choose to comply with these standards as an alternative to the primary emission standards and test procedures specified in section 1960.1, Title 13, California Code of Regulations. Manufacturers that choose to comply with these optional heavy-duty standards and test procedures shall specify, in the application for certification, an in-use compliance test procedure, as provided in section 2139(c), Title 13, California Code of Regulations.

^B "LEV" means low-emission vehicle.
"ULEV" means ultra-low-emission vehicle.
"SULEV" means super ultra-low-emission vehicle.

^C This standard is the sum of the individual non-methane hydrocarbon emissions and oxides of nitrogen emissions. For methanol-fueled engines, non-methane hydrocarbons shall mean organic material hydrocarbon equivalent ("OMHCE").

^D This standard shall only apply to diesel engines and vehicles.

- E Manufacturers may certify engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles to these standards to meet the requirements of section 1956.8(g), Title 13, California Code of Regulations.
- F In-use compliance testing shall be limited to vehicles or engines with fewer than 90,000 miles.
- G [The U.S. EPA is considering the adoption of amendments to the federal emission standards for engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles as they existed June 24, 1996. If the U.S. EPA promulgates amendments to the emission standards for this category, the ARB will hold a noticed public hearing within one year of such promulgation to consider the adoption of similar or identical standards in California.]
- H For engines certified to the 3.5 grams per brake horsepower-hour (g/bhp-hr) LEV standards, the in-use compliance standard shall be 3.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 2002 and 2003 model year LEV standards, the in-use compliance standard shall be 3.2 g/bhp-hr. For engines certified to the 1992 through 2003 model year ULEV standards, the in-use compliance standard shall be 2.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 1992 and subsequent SULEV standards, the in-use compliance standard shall be 2.2 g/bhp-hr for the first two model years of introduction.
- I Manufacturers have the option of certifying to either option A or B. Manufacturers electing to certify to Option A must demonstrate that the NMHC emissions do not exceed 0.5 g/bhp-hr.
- J Emissions averaging may be used to meet these standards for diesel engines, using the requirements for participation in averaging, banking and trading programs, as set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles", adopted April 8, 1985, as last amended April 15, 1999 [insert date of finalized amendment], incorporated by reference in paragraph (b), above.
- K Engines of 1998 and subsequent model years may be eligible to generate averaging, banking and trading credits based on these standards according to the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles", adopted April 8, 1985, as last amended April 15, 1999 [insert date of finalized amendment], incorporated by reference in paragraph (b), above.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43103, 43104, and 43806, Health and Safety Code, and section 28114, Vehicle Code. Reference: Sections 39002, 39003, 43000, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43106, 43204, and 43806, Health and Safety Code.

APPENDIX B

**PROPOSED AMENDMENTS TO THE CALIFORNIA EXHAUST EMISSION
STANDARDS AND TEST PROCEDURES FOR 1985 AND SUBSEQUENT MODEL
HEAVY-DUTY DIESEL ENGINES AND VEHICLES**

State of California
AIR RESOURCES BOARD

CALIFORNIA EXHAUST EMISSION STANDARDS
AND TEST PROCEDURES FOR 1985 AND SUBSEQUENT MODEL
HEAVY-DUTY DIESEL-ENGINES AND VEHICLES

Adopted: April 8, 1985
Amended: July 29, 1986
Amended: January 22, 1990
Amended: May 15, 1990
Amended: December 26, 1990
Amended: July 12, 1991
Amended: October 23, 1992
Amended: October 22, 1993
Amended: March 24, 1994
Amended: September 22, 1994
Amended: June 29, 1995
Amended: June 4, 1997
Amended: April 15, 1999
Amended: To Be Finalized (Board approved on February 24, 2000)
Amended: (insert date of finalized amendment)

NOTES: This document incorporates by reference various sections of the Code of Federal Regulations (CFR), some with modifications. Modifications to portions of paragraphs in the Federal language are indicated by underline for additions and ~~strikeout~~ for deletions. Larger portions of Federal language for a specific section which is not to be included in these procedures are denoted by the "DELETE" and larger portions of new California language are indicated by "REPLACE WITH" or "INSERT". The symbols "*****" and "....." mean that the remainder of the federal text for a specific section, which is not shown in these procedures, has been included by reference, with only the printed text changed. The symbol "#####" means that the remainder of the text of these procedures, which is not shown in this amendment document, has not been changed.

CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 1985 AND SUBSEQUENT MODEL HEAVY-DUTY DIESEL ENGINES AND VEHICLES

The following provisions of Subparts A, I, and N, Title 40, Code of Federal Regulations, as adopted or amended by the U. S. Environmental Protection Agency on the date listed, and only to the extent they pertain to the testing and compliance of exhaust emissions from heavy-duty diesel-engines and vehicles, are adopted and incorporated herein by this reference as the California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles, except as altered or replaced by the provisions set forth below.

The federal regulations contained in the Subparts identified above which pertain to oxides of nitrogen emission averaging shall not be applicable to these procedures except for diesel engines and vehicles produced in the 1998 and subsequent model years. The federal regulations contained in the Subparts identified above which pertain to particulate emission averaging shall not be applicable to these procedures for 1996 and subsequent model years. The smoke exhaust test procedures shall be applicable to California petroleum-fueled, liquefied-petroleum gas-fueled, and compressed-natural gas fueled heavy-duty diesel engines and vehicles for 1988 and later model years.

The federal regulations contained in the subparts identified above which pertain to nonconformance penalty shall not be applicable.

The federal regulations contained in the subparts identified above which pertain to evaporative emission shall not be applicable to these procedures. Applicable regulations pertaining to evaporative emissions are contained in "California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Motor Vehicles," as incorporated in Title 13, California Code of Regulations, Section 1976.

Starting with the 1990 model year, these regulations shall be applicable to all heavy-duty Diesel natural-gas-fueled and liquefied-petroleum gas-fueled engines (and vehicles) including those engines derived from existing Diesel engines. For any engine which is not a distinctly Diesel engine nor derived from such, the Executive Officer shall determine whether the engine shall be subject to these regulations or alternatively to the heavy-duty Otto-cycle engine regulations, in consideration of the relative similarity of the engine's torque-speed characteristics and vehicle applications with those of Diesel and Otto-cycle engines.

The regulations concerning the certification of methanol-fueled urban bus engines are not applicable in California until 1991 and subsequent model years. The regulations concerning the certification of all other methanol-fueled diesel engines and vehicles are not applicable in California until 1993 and subsequent model years. Regulations concerning the certification of incomplete medium-duty diesel low-emission vehicles and engines and ultra-low-emission vehicles and engines operating on any fuel are applicable for the 1992 and subsequent model years.

Subpart A, General Provisions for Emission Regulations for 1977 and Later Model Year New Light-Duty Vehicles, Light-Duty Trucks, and Heavy-Duty Engines, and for 1985 and later Model Year New Gasoline-Fuel and Methanol Fueled Heavy-Duty Vehicles.

Adopt and amend § 86.007-11, Title 40, Code of Federal Regulations, to read:

§ 86.007-11 Emission standards and supplemental requirements for ~~2005 2007~~ and later model year ~~diesel~~ heavy-duty diesel engines and vehicles [date of Federal Register publication to be inserted].

This section applies to new ~~2005 2007~~ and later model year heavy-duty diesel engines ~~HDEs~~. Section 86.007-11 includes text that specifies requirements that differ from § 86.004-11. Where a paragraph in § 86.004-11 is identical and applicable to § 86.007-11, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see § 86.004-11."

(a) through (a)(2) [Reserved]. For guidance see § 86.004-11.

(3)(i) For 2005 and subsequent model year heavy-duty diesel engines, ~~The~~ weighted average exhaust emissions, as determined under § 86.1360(e)(5) pertaining to the supplemental steady-state test cycle, for each regulated pollutant shall not exceed 1.0 times the applicable emission standards or FELs specified in paragraph (a)(1) of this section.

(ii) Gaseous exhaust emissions shall not exceed the steady-state interpolated values determined by the Maximum Allowable Emission Limits (for the corresponding speed and load), as determined under § 86.1360(f), when the engine is operated in the steady-state control area defined under § 86.1360(d), during steady-state engine operation.

(4)(i) For 2005 and subsequent model year heavy-duty diesel engines, ~~The~~ brake-specific exhaust emissions in grams/bhp-hr, as determined under § 86.1370 pertaining to the not-to-exceed test procedures, for each regulated pollutant shall not exceed 1.25 times the applicable emission standards or FELs specified in paragraph (a)(1) of this section during engine and vehicle operation specified in paragraph (a)(4)(ii) of this section, except as noted in paragraph (a)(4)(iii) of this section.

(ii) For each engine family, the not-to-exceed emission limits must apply during one of the following two ambient operating regions;

(A) The not-to-exceed emission limits apply for all altitudes less than or equal to 5,500 feet above sea-level, during all ambient conditions (temperature and humidity). Temperature and humidity ranges for which correction factors are allowed are specified in § 86.1370-2007(e); or

(B) The not-to-exceed emission limits apply at all altitudes less than or equal to 5,500 feet above sea-level, for temperatures less than or equal to the temperature determined by the following equation at the specified altitude;

$$T = -0.00254 \times A + 100$$

Where:

T = ambient air temperature in degrees Fahrenheit

A = altitude in feet above sea-level (A is negative for altitudes below sea-level)

Temperature and humidity ranges for which correction factors are allowed are specified in § 86.1370-2007(e);

(iii) For engines equipped with exhaust gas recirculation, the not-to-exceed emission limits specified in paragraph (a)(4)(i) of this section do not apply to engine or vehicle operation during cold operating conditions as specified in § 86.1370(f).

~~(iv) Deficiencies for NTE emission standards. (A) For model years 2007 through 2009, upon application by the manufacturer, the Administrator may accept a HDDE as compliant with the NTE standards even though specific requirements are not fully met. Such compliances without meeting specific requirements, or deficiencies, will be granted only if compliance would be infeasible or unreasonable considering such factors as, but not limited to: technical feasibility of the given hardware and lead-time and production cycles including phase in or phase out of engines or vehicle designs and programmed upgrades of computers. Deficiencies will be approved on a engine model and/or horsepower rating basis within an engine family, and each approval is applicable for a single model year. A manufacturer's application must include a description of the auxiliary emission control device(s) which will be used to maintain emissions to the lowest practical level, considering the deficiency being requested, if applicable. An application for a deficiency must be made during the certification process; no deficiency will be granted to retroactively cover engines already certified.~~

~~(B) Unmet requirements should not be carried over from the previous model year except where unreasonable hardware or software modifications would be necessary to correct the deficiency, and the manufacturer has demonstrated an acceptable level of effort toward compliance as determined by the Administrator. The NTE deficiency should only be seen as an allowance for minor deviations from the NTE requirements. The NTE deficiency provisions allow a manufacturer to apply for relief from the NTE emission requirements under limited conditions. EPA expects that manufacturers should have the necessary functioning emission control hardware in place to comply with the NTE.~~

~~(b) through (b)(1)(iii) [Reserved]. For guidance see § 86.004-11.~~

~~(iv) For 2005 and subsequent model year heavy-duty diesel engines, operation within the NTE zone (defined in § 86.1370) must comply with a filter smoke number of 1.0 under steady-state operation, or the following alternate opacity limits:~~

~~#####~~

Adopt and amend § 86.007-21, Title 40, Code of Federal Regulations, to read:

§ 86.007-21 Application for certification [date of Federal Register publication to be inserted].

Section 86.007-21 includes text that specifies requirements that differ from § 86.004-21. Where a paragraph in § 86.004-21 is identical and applicable to § 86.007-21, this may be indicated by specifying the corresponding paragraph and the statement "[Reserved]. For guidance see § 86.004-21."

(a) through (n) [Reserved]. For guidance see § 86.004-21.

(o) For 2005 and subsequent model year diesel heavy-duty diesel engines, the manufacturer must provide the following additional information pertaining to the supplemental steady-state test conducted under § 86.1360:

(1) Weighted brake-specific emissions data (i.e., in units of g/bhp-hr), calculated according to § 86.1360(e)(5), for all pollutants for which an emission standard is established in § 86.004-11(a);

(2) Brake specific gaseous emission data for each of the 13 test points (identified under § 86.1360(b)(1)) and the 3 EPA-selected test points (identified under § 86.1360(b)(2));

(3) Concentrations and mass flow rates of all regulated gaseous emissions plus carbon dioxide;

(4) Values of all emission-related engine control variables at each test point;

(5) Weighted brake-specific particulate matter (i.e., in units of g/bhp-hr);

(6) A statement that the test results correspond to the maximum NO_x producing condition specified in § 86.1360-2007(e)(4). The manufacturer also must maintain records at the manufacturer's facility which contain all test data, engineering analyses, and other information which provides the basis for this statement, where such information exists. The manufacturer must provide such information to the Administrator upon request;

(7) A statement that the engines will comply with the weighted average emissions standard and interpolated values comply with the Maximum Allowable Emission Limits specified in § 86.007-11(a)(3) for the useful life of the engine. The manufacturer also must maintain records at the manufacturers facility which contain a detailed description of all test data, engineering analyses, and other information which provides the basis for this statement, where such information exists. The manufacturer must provide such information to the Administrator upon request.

#####

Subpart N, General Provisions for Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures.

Adopt § 86.1360-2007, Title 40, Code of Federal Regulations, to read:

§ 86.1360-2007 Supplemental steady-state test; test cycle and procedures
[date of Federal Register publication to be inserted]

#####

Adopt § 86.1370-2007, Title 40, Code of Federal Regulations, to read:

§ 86.1370-2007 Not-To-Exceed test procedures [date of Federal Register publication to
be inserted]

#####

Adopt § 86.1372-2007, Title 40, Code of Federal Regulations, to read:

§ 86.1372-2007 Measuring smoke emissions within the NTE zone [date of Federal
Register publication to be inserted]

#####

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FILE NO. 010233-0192

November 6, 2000

VIA OVERNIGHT DELIVERY

Mr. Michael Carter
Chief, Emission Research and Regulatory Development Branch
Air Resources Board
9528 Telstar Avenue
El Monte, California

Re: Consideration of Amendments to Adopt Not-To-Exceed and EURO III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-Duty Engines and Vehicles

Dear Mr. Carter:

Enclosed are International Truck and Engine Corporation's ("International") Public Records Act requests dated September 18, 2000, September 22, 2000, October 13, 2000 and November 3, 2000, and correspondence with the California Air Resources Board ("CARB") relating to these requests dated October 26, 2000 and November 6, 2000. These documents evidence International's efforts to review any data upon which CARB relies to contend that the proposed "Not-to-Exceed" standard is technologically feasible, as well as any data demonstrating that it is not technologically feasible. To date, CARB has provided none of the requested data.

Please include these documents in the administrative record for CARB's activities relating to CARB's "Consideration of Amendments to Adopt Not-to-Exceed and Euro III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-Duty Engines and Vehicles," scheduled for

LATHAM & WATKINS

Michael Carter
California Air Resources Board
November 6, 2000
Page 2

hearing on December 7, 2000.

Very truly yours,



Patricia Guerrero
of LATHAM & WATKINS

Enclosures



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LAW OFFICES

David A. Piech
Senior Counsel
312 626 2029

Air Resources Board
Office of Communications
P.O. Box 2815
Sacramento, California 95812

September 18, 2000

Re: Supplemental Emission Requirements Pursuant to Various Heavy-Duty
Diesel Settlement Agreements
File No. WH199900567 / ltr2.cafoia.nte.wpd

Dear Ms/Sir

International Truck and Engine Corporation [International] requests, pursuant to the California Public Records Act, Government Code Section 6250 *et seq.* and Title 13 California Code of Regulations, Section 91000 *et seq.*, any and all emission data and information, either in paper or electronic form, verifying engine compliance with the certification requirements contained in various settlement agreements (see ARB News Release at <http://www.arb.ca.gov/newsrel/nr1022298.htm>) including, but not limited to, "Not-to-exceed" [NTE] and other supplemental testing required thereunder.

In particular, International requests emission data and information, including, but not limited to 1 Hz emissions response during the Federal Test Procedure, "Not-to-Exceed", transient load response or other supplemental testing, as required under or in confirmation of the certification under the respective settlement agreements, either on an engine dynamometer or under in-use, on-highway operation. If you have any questions, please call me at the number above.

Sincerely,

David A. Piech

ltr2.cafoia.nte.wpd



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P.3



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312 436 3025

Air Resources Board
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Sacramento, California 95812

September 22, 2000

Re: Supplemental Emission Requirements Pursuant to Various Heavy-Duty Diesel Settlement Agreements
File No. WH199900567 / tr2.cafoia.nteestimate.wpd

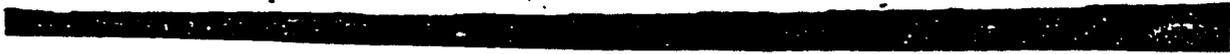
Dear Ms/Sir:

International Truck and Engine Corporation [International] requests, pursuant to the California Public Records Act, Government Code Section 6250 et seq. and Title 13, California Code of Regulations, Section 91000 et seq., any and all emission data and information, either in paper or electronic form, with respect to "Not-to-exceed" [NTE] emission estimates calculated with In Mail Out #MSC-00-20 dated September 15, 2000 on "Consideration of Amendments to Adopt Not-to-exceed and Euro III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-duty Engines and Vehicles." Such data shall include, but not be limited to, all information and calculations related to "emission factor ... provided by a diesel engine manufacturer as an approximation of excess emissions of a HDDE that does not have to comply with the NTE and ESC standards versus one that is compliant with the NTE and ESC standards."

If you have any questions, please call me at the number above.

Sincerely


David A. Piech





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312 636 2000
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Air Resources Board
Office of Communications
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October 13, 2000

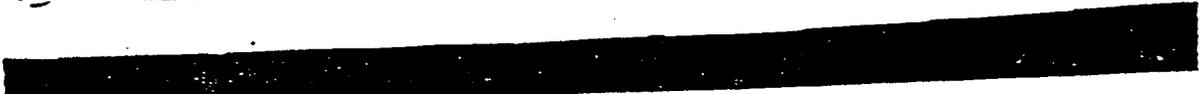
Re: Proposed Emission Standards under ARB Mail Out #MSC-00-20
"Consideration of Amendments to Adopt Not-to-exceed and Euro III
European Stationary Cycle Emission Standards and Test Procedures for
the 2005 and Subsequent Model Year Heavy-duty Engines and Vehicles"
File No. W-199900567 / ltr2.cafoia.nte2.wpd

Dear Ms/Sir

International Truck and Engine Corporation [International] requests, pursuant to the California Public Records Act, Government Code Section 6250 et seq. and Title 13, California Code of Regulations, Section 91000 et seq., any and all emission data and information either in paper or electronic form, which demonstrate the technical feasibility or infeasibility of the emission standards, including but not limited to supplemental steady state and Not-to-exceed standards, proposed in ARB's Mail Out #MSC-00-20 dated September 15, 2000 on "Consideration of Amendments to Adopt Not-to-exceed and Euro III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-duty Engines and Vehicles." If you have any questions, please call me at the number above

Sincerely,

David A. Piech





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312 630 3002

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David A. Piech
Senior Counsel
312 536 3035

Via Overnight Delivery
Via facsimile 915-445-5025
Jerry Smith
Director of Communications
Air Resources Board
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P.O. Box 2815
Sacramento, California 95812

Via Overnight Delivery
Carmen Madia
Legal Analyst
Air Resources Board
2020 L Street
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October 26, 2000

Re: Public Records Act Request
File No. WH199900567 / ltr2.cafoia.nte3.wpd

Dear Sirs:

As originally requested in my September 18, 2000 letter to the Air Resources Board [ARB], I requested:

... any and all emissions data ... including, but not limited to, Not-to-exceed [NTE] and other supplemental data.

However, as per your e-mail and letter response dated October 18, 2000, ARB did not provide any NTE data. If ARB has no such data in which case I would appreciate ARB responding to me, in writing, that it has none. Conversely, if ARB has such data, I would appreciate you expediting this information to me for my review. If you have any questions, please call me at the number above.

Sincerely,

David A. Piech

ltr2.cafoia.nte3.wpd



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FILE NO 010235-3192

November 3, 2000

VIA OVERNIGHT MAIL

California Air Resources Board
Office of Communications
P.O. Box 2815
Sacramento, CA 95812

Re: Public Records Act Request Relating To California Air Resources Board
Mail Out #MSC-00-20

To Whom It May Concern:

On behalf of our client, International Truck and Engine Corporation ("International"), we request to inspect the following public records pursuant to the California Public Records Act, California Government Code Sections 6250 *et seq.* and Title 13, California Code of Regulations Sections 91000 *et seq.*¹

• Any and all emission data and information, either in paper or electronic form, verifying engine compliance with the certification requirements contained in various settlement agreements (see CARB News Release at <http://www.arb.ca.gov/newsrel/nr1022298.htm>) including, but not limited to, "Not-to-Exceed" (NTE) and other supplemental testing required thereunder.

¹ This request supplements International's prior Public Records Act requests dated September 18, 2000, September 22, 2000 and October 13, 2000. Copies of International's prior requests are enclosed for your reference.

- Any and all emission data and information, either in paper or electronic form, with respect to "Not-to-Exceed" (NTE) emission estimates calculated within Mail Out #MSC-00-20 dated September 15, 2000 on "Consideration of Amendments to Adopt Not-to-Exceed and Euro III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-Duty Engines and Vehicles." Such data shall include, but not be limited to, all information and calculations related to "emission factor...provided by a diesel engine manufacturer as an approximation of excess emissions of a HDDE that does not have to comply with the NTE and ESC standards versus one that is compliant with the NTE and ESC standards."

- Any and all emission data and information, either in paper or electronic form, which demonstrate the technical feasibility or infeasibility of the emission standards, including but not limited to supplemental steady state and Not-to-Exceed standards, proposed in CARB's Mail out #MSC-00-20 dated September 15, 2000 on "Consideration of Amendments to Adopt Not-to-Exceed and Euro III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-Duty Engines and Vehicles."

Pursuant to California Government Code Section 6253, we request that the above public records be made available for our inspection during the week of November 13, 2000 during CARB's office hours.² In the event that we decide to copy any documents following our inspection, we will pay for the costs of duplication in accordance with CARB's Public Records Access Guidelines. If you would like to schedule an alternative time for us to visit your offices

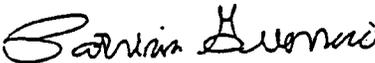
² Cal. Gov't Code § 6253 provides in relevant part that: "Public records are open to inspection at all times during the office hours of the state or local agency and every person has a right to inspect any public record, except as hereafter provided." If CARB takes the position that any documents subject to International's request may be withheld from inspection, CARB has the burden to justify withholding such documents. See Cal. Gov't Code § 6255 ("The agency shall justify withholding any record by demonstrating that the record in question is exempt under express provisions of this chapter or that on the facts of the particular case the public interest served by not making the record public clearly outweighs the public interest served by disclosure of the record."); see also Rogers v. Superior Court, 19 Cal. App. 4th 469, 476 (1993) ("exemptions are construed narrowly, and the burden is on the public agency to show that the records should not be disclosed").

LATHAM & WATKINS

California Air Resources Board
November 3, 2000
Page 3

and exercise our right to inspect and copy the above documents, please contact me at (415) 395-8207 and advise me of the location, date and time at which the requested records may be inspected and copied.

Very truly yours,


Patricia Guerrero
of LATHAM & WATKINS

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September 18, 2000

Re: Supplemental Emission Requirements Pursuant to Various Heavy-Duty
Diesel Settlement Agreements
File No. WH199900567 / ltr2.cafoia.nte.wpd

Dear Ms/Sir

International Truck and Engine Corporation [International] requests, pursuant to the California Public Records Act, Government Code Section 6250 et seq. and Title 13 California Code of Regulations, Section 91000 et seq., any and all emission data and information, either in paper or electronic form, verifying engine compliance with the certification requirements contained in various settlement agreements (see ARB News Release at <http://www.arb.ca.gov/newsrel/nr1022298.htm>) including, but not limited to, "Not-to-exceed" [NTE] and other supplemental testing required thereunder.

In particular, International requests emission data and information, including, but not limited to 1 Hz emissions response during the Federal Test Procedure, "Not-to-Exceed", transient load response or other supplemental testing, as required under or in confirmation of the certification under the respective settlement agreements, either on an engine dynamometer or under in-use, on-highway operation. If you have any questions, please call me at the number above.

Sincerely,

David A. Piech

ltr2.cafoia.nte.wpd

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Air Resources Board
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P.O. Box 2815
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September 22, 2000

Re: Supplemental Emission Requirements Pursuant to Various Heavy-Duty Diesel Settlement Agreements
File No. WH199900567 / tr2.cafoia.nteestimate.wpd

Dear Ms/Sir:

International Truck and Engine Corporation [International] requests, pursuant to the California Public Records Act, Government Code Section 6250 et seq. and Title 13, California Code of Regulations, Section 91000 et seq., any and all emission data and information, either in paper or electronic form, with respect to "Not-to-exceed" (NTE) emission estimates calculated with In Mail Out #MSC-00-20 dated September 15, 2000 on "Consideration of Amendments to Adopt Not-to-exceed and Euro III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-duty Engines and Vehicles." Such data shall include, but not be limited to, all information and calculations related to "emission factor ... provided by a diesel engine manufacturer as an approximation of excess emissions of a HDDE that does not have to comply with the NTE and ESC standards versus one that is compliant with the NTE and ESC standards."

If you have any questions, please call me at the number above.

Sincerely

David A. Piech



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435 NORTH MICHIGAN AVENUE CHICAGO, IL 60611

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David A. Fiech
Senior Counsel
312 438 3029

Air Resources Board
Office of Communications
P.O. Box 2815
Sacramento California 95812

October 13, 2000

Re: Proposed Emission Standards under ARB Mail Out #MSC-00-20
"Consideration of Amendments to Adopt Not-to-exceed and Euro III
European Stationary Cycle Emission Standards and Test Procedures for
the 2005 and Subsequent Model Year Heavy-duty Engines and Vehicles"
File No. W4199900567 / ltr2.cafoia.nt2.wpd

Dear Ms/Sir

International Truck and Engine Corporation [International] requests, pursuant to the California Public Records Act, Government Code Section 6250 *et seq.* and Title 13, California Code of Regulations, Section 91000 *et seq.*, any and all emission data and information, either in paper or electronic form, which demonstrate the technical feasibility or infeasibility of the emission standards, including but not limited to supplemental steady state and Not-to-exceed standards, proposed in ARB's Mail Out #MSC-00-20 dated September 15, 2000 on "Consideration of Amendments to Adopt Not-to-exceed and Euro III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-duty Engines and Vehicles." If you have any questions, please call me at the number above

Sincerely,

David A. Fiech

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FILE NO. 010225-0192

November 6, 2000

VIA OVERNIGHT DELIVERY

Carmen Media, Legal Analyst
California Air Resources Board
2020 L Street
P.O. Box 2815
Sacramento, CA 95812

Re: Public Records Act Request Relating To California Air Resources Board
Mail Out #MSC-00-20

Dear Mr. Media:

I am writing to confirm our conversation today regarding International Truck and Engine Corporation's ("International") Public Records Act request dated November 3, 2000.

As I informed you, the November 3, 2000 request to inspect CARB's documents relating, *inter alia*, to CARB's "Consideration of Amendments to Adopt Not-to-Exceed and Euro III European Stationary Cycle Emission Standards and Test Procedures for the 2005 and Subsequent Model Year Heavy-Duty Engines and Vehicles," follows up on International's prior Public Records Act requests dated September 18, 2000, September 22, 2000 and October 13, 2000. Because CARB failed to provide any documents in response to the prior requests, International's November 3, 2000 request asks that such documents be provided for our inspection the week of November 13, 2000.

Although you indicated that CARB will need some time to gather the documents requested, CARB has had plenty of time to respond to International's earlier requests and has failed to produce any documents (as we pointed out in the attached letter dated October 26, 2000). As you know, CARB is scheduled to consider the above proposal on December 7, 2000.

SF_DOCS\262413.1 [W97]

LATHAM & WATKINS

California Air Resources Board

November 6, 2000

Page 2

Accordingly, it is imperative that the documents be produced for our inspection and copying immediately, as we will need adequate time to review the documents in advance of CARB's scheduled hearing.

If CARB does not have any of the requested documents, please so state.

Very truly yours,



Patricia Guerrero
of LATHAM & WATKINS

Enclosure



INTERNATIONAL TRUCK AND ENGINE CORPORATION
498 NORTH CITYFRONT PLAZA DRIVE, CHICAGO, IL 60611

T 312 636 2000
F 312 636 3002

LAW OFFICES

David A. Piech
Senior Counsel
312 636 3029

Via Overnight Delivery
Via facsimile 916-445-5025
Jerry Smith
Director of Communications
Air Resources Board
2020 L Street
P.O. Box 2815
Sacramento, California 95812

Via Overnight Delivery
Carmen Madia
Legal Analyst
Air Resources Board
2020 L Street
P.O. Box 2815
Sacramento, California 95812

October 26, 2000

Re: Public Records Act Request
File No WH199900567 / ltr2.cafoia.nte3.wpd

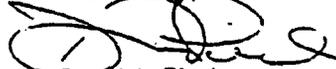
Dear Sirs:

As originally requested in my September 18, 2000 letter to the Air Resources Board [ARB], I requested:

.. any and all emissions data ... including, but not limited to, Not-to-exceed [NTE] and other supplemental data.

However, as per your e-mail and letter response dated October 18, 2000, ARB did not provide any NTE data. If ARB has no such data in which case I would appreciate ARB responding to me, in writing, that it has none. Conversely, if ARB has such data, I would appreciate you expediting this information to me for my review. If you have any questions, please call me at the number above.

Sincerely,



David A. Piech

ltr2.cafoia.nte3.wpd



Guerrero, Patricia (SF)

From: Raushenbush, Richard (SF)
Sent: Wednesday, December 06, 2000 3:42 PM
To: 'Michele Smith'; 'David Piech'
Cc: Levine, Laurence (CH); Barrett, James (DC); Guerrero, Patricia (SF); Raushenbush, Richard (SF)
Subject: FW: Revised NTE addendum
Importance: High

Michele and Dave: Since we submitted International's comments pointing out that ARB had not produced any documents showing that the NTE is technologically feasible, ARB has produced two more packets of documents. Because the Court will only look to the administrative record, we want comments in the record saying that these documents (as well) fail to show technological feasibility. Indeed, they show that the EMA and other manufacturers are saying NTE is not feasible.

We can submit comments to the Clerk of the ARB tomorrow morning at the hearing. We plan to leave a number of sets (not 30) of these comments at Larry's hotel this evening. If you have any comments before then, let Trish know. Otherwise, you should let Larry know if you have any objection to filing them as is. Larry doubtless will pick up his voice mail, and we will leave a message for him to contact you before filing them. RWR

-----Original Message-----

From: Guerrero, Patricia (SF)
Sent: Wednesday, December 06, 2000 3:08 PM
To: Raushenbush, Richard (SF); Levine, Laurence (CH); Barrett, James (DC)
Subject: Revised NTE addendum



pg NTE addendum to
supplementa...

The revised addendum to International's comments is attached. Let me know whether I should go ahead and prepare the 30 copies of the 3 exhibits. Thanks. Trish



Winston H. Hickox
Agency Secretary

Air Resources Board

Alan C. Lloyd, Ph.D.
Chairman

2020 L Street • P.O. Box 2815 • Sacramento, California 95812 • www.arb.ca.gov



Gray Davis
Governor

December 4, 2000

Ms. Patricia Guerrero
Latham & Watkins
505 Montgomery Street, Suite 1900
San Francisco, California 94111

By overnight mail (415) 391-0600

Re: California Public Records Act (CPRA) Request

Dear Ms. Guerrero:

These are additional documents responsive to your CPRA request.

Sincerely,

AIR RESOURCES BOARD
Office of Legal Affairs

Carmen W. Madia
Senior Legal Analyst

California Environmental Protection Agency

Printed on Recycled Paper

STATE OF CALIFORNIA
AIR RESOURCES BOARD

ADDENDUM TO SUPPLEMENTAL COMMENTS OF
INTERNATIONAL TRUCK AND ENGINE CORPORATION

| | | |
|---|---|---------------------------------|
| Notice Of Public Hearing To Consider |) | Mail Out #00-20 And Subsequent |
| Amendments To Adopt Not-To-Exceed And |) | Notice of Public Hearing |
| Euro III European Stationary Cycle Emission |) | Board Hearing: December 7, 2000 |
| Test Procedures For The 2005 And Subsequent |) | |
| Heavy-Duty Diesel Engines |) | |

International Truck and Engine Corporation
455 N. Cityfront Plaza Drive
Chicago, IL 60611

December 7, 2000

I. Introduction

On December 4, 2000, International Truck and Engine Corporation ("International") submitted its Supplemental Comments regarding the Air Resources Board's ("ARB") Notice of Public Hearing to Consider Amendments to Adopt Not-To-Exceed and Euro III European Stationary Cycle Emission Test Procedures for the 2005 and Subsequent Heavy-Duty Diesel Engines, scheduled for hearing on December 7, 2000.

As discussed in International's comments, the ARB failed to provide any evidence in response to International's Public Records Act requests that suffices to demonstrate that the "Not-To-Exceed," or "NTE" standard is or will be technologically feasible based on the technologies anticipated to be available for use on model year ("MY") 2005 and later heavy-duty diesel engines ("HDEs").

After submitting its comments, International received two additional sets of documents that ARB believes are responsive to International's Public Records Act requests. The documents provided cannot be relied upon by ARB to support a finding that the NTE requirements are technologically feasible, as required under the Clean Air Act and California law. Indeed, the documents contain numerous statements that the NTE requirements are not technologically feasible. Because these documents were received after International submitted its supplemental comments, International hereby submits this addendum to its comments.

II. The Documents Recently Provided By ARB In Response To Public Records Act Requests Do Not Provide Any Information Demonstrating That The NTE Requirements Are Technologically Feasible

The information supplied by ARB following International's submission of its supplemental comments cannot be relied upon to support a finding that the proposed NTE is technologically feasible. These documents instead demonstrate that the ARB's proposed NTE is not technologically feasible.

1. Letter Dated December 4, 2000. In this letter, attached as Exhibit 1, ARB provided a slide presentation prepared by the Engine Manufacturers Association ("EMA") in response to questions raised by the United States Environmental Protection Agency ("EPA"). The first question addressed in EMA's presentation clearly suggests that there are aspects of the EPA's NTE requirements that are not technologically feasible.¹ None of the remaining questions addressed the issue of whether the NTE requirements currently proposed by the Board are technologically feasible.² In addition, in addressing the NTE requirements that were proposed

¹ The first question addressed in EMA's slide presentation is: "What part of the 1.25 NTE can be retained?" See Exhibit 1, attached Slide Presentation at 1.

² The remaining questions addressed in EMA's slide presentation are: (1) "What are the differences for LH, MH, HH?"; (2) "Why same approach for NO_x and PM?"; (3) "New issue of LH Leadtime"; (4) "What are the Cap NTE values in each zone?"; and (5) "Can we enlarge 'B' Zone (Alt & Temp)?" See Exhibit 1, attached Slide Presentation at 1.

by the EPA, the EMA expressly stated that the proposal was "[d]ependent upon [t]echnologically *infeasible core NTE*."³

In sum, the EMA presentation contains no information to support the Board's proposed amendments, and in fact contains information that indicates that the proposed NTE requirements are technologically infeasible.

2. Letter Dated December 5, 2000. ARB's letter dated December 5, 2000, attached as Exhibit 2, provided three sets of documents, none of which can be relied upon to establish the feasibility of the proposed NTE requirements: (1) a list of progress reports by certain manufacturers (not including International) that agreed to comply with NTE requirements as part of their Consent Decrees; (2) letters from certain manufacturers in response to a letter by Paul G. Wolfeich of the U.S. Department of Justice, dated April 4, 2000; and (3) a print-out from the Office of Regulatory Enforcement's website regarding an "In-Use Test Program."⁴

As discussed in International's prior comments, the fact that certain manufacturers agreed in a litigation context to comply with NTE requirements provides no evidence that the NTE requirements currently being proposed by the ARB are technologically feasible. Nor do the progress reports, submitted by these manufacturers in accordance with the terms of their Consent Decrees (but withheld from production as "Confidential Business Information"), demonstrate that the proposed NTE requirements are technologically feasible, especially in light of the fact that these manufacturers are finding that the NTE cannot be satisfied under real world operating conditions.⁵

Similarly, the letters and referenced "Confidential Business Information" submitted by these manufacturers fail to demonstrate that the proposed NTE is technologically feasible, and in fact confirm that the NTE requirements are not technologically feasible. There are several statements in the letters indicating that these manufacturers are experiencing difficulty in meeting the NTE requirements in their Consent Decrees without some modifications to those decrees. For example, Mack Trucks, Inc. states that "Mack has not been able to achieve steady state NTE compliance within current acceptable turbocharger or chassis cooling system limits . . . with the high BMEP rating (E7-460) at Mack test cell conditions," and that "Mack is certain that technical amendments to the Consent Decree will be required to allow compliance with it's [sic] provisions." Similarly, RENAULT VI states that "the technical feasibility of US 2002 has not yet been reached," and "there is an important risk that RENAULT VI cannot be ready within the deadline." These statements are consistent with information that the EPA provided to ARB, which expressly contradicts ARB's position that its proposed NTE requirements feasibly can be met. In a memorandum dated July 17, 2000 prepared by EPA Mechanical Engineer Charles Schenk, attached as Exhibit 3, EPA summarizes several aspects of the NTE that present challenges for the Consent Decree manufacturers who agreed to comply with NTE requirements, such as the following: (a) "Difficulty achieving 1.25 x NO_x + NMHC

³ Exhibit 1, attached Slide Presentation at 29 (emphasis added).

⁴ These documents are submitted as Attachments A-C to Exhibit 2.

⁵ See International's Supplemental Comments at p. 5 and n.2.

limit near torque peak, particularly with high specific power ratings"; (b) "High speed engines (engines with Euro C speeds >2400 rpm) have difficulty meeting NTE requirements at high speed and high load"; (c) "Engines using some Diesel Oxidation Catalyst (DOC) formulations cannot meet the NTE PM requirement"; and (d) Under high load operations at high temperature and high altitude conditions compliance with the NMHC + NO_x 1.25 NTE limit at the 2.5 g/hp-hr standard pushes current turbomachinery beyond its mechanical limits."⁶ This evidence that the NTE requirements are technologically infeasible cannot be ignored by the ARB.

Finally, the website printout simply describes the different phases of the in-use testing program that certain manufacturers agreed to in their Consent Decrees. Pursuant to the terms of their Consent Decrees, the manufacturers are required to conduct testing to assess in-use mobile monitoring technologies, establish calibration and operating procedures for selected monitoring technologies, establish a baseline emission characterization, and conduct on-road testing to monitor in-use compliance on representative HDEs of the manufacturers. The printout simply describes the different phases of the program, and includes a link to reports for Phases I and II only.⁷ There is no data in these reports that the NTE proposed by ARB is feasible. On the contrary, the Phase II Report indicates that "[i]t has been seen that vehicles operating on a route may fail to remain in the 'Not-to-Exceed' (NTE) zone for 30 seconds or more, due to low power demand during low-speed cruise and loss of engine shaft power during manual gear changes." Phase II Report at 48. In addition, the manufacturers that agreed to the NTE requirements as part of their Consent Decrees are not required to monitor their HDEs for on-road compliance with the requirements of their Consent Decrees until Phase IV of the in-use testing program, and we are unaware of any data that exists with respect to this phase of the program.⁸

⁶ See Exhibit 3 at 3-5.

⁷ The in-use testing program consists of four phases. In Phase I, the manufacturer is required to conduct engineering studies to determine the correlation, accuracy, precision and repeatability of existing mobile monitoring technologies. In Phase II, the manufacturer is required to develop in-use testing procedures, including the identification of candidate driving routes representing typical urban, suburban and highway driving, to be used in connection with Phases III and IV. In Phase III, the manufacturer is required to conduct emissions testing on a variety of its in-service diesel engines to characterize real world emissions from such diesel engines. In Phase IV, the manufacturer is required to conduct on-road compliance monitoring on its HDEs using the monitoring technology and previously defined testing procedures and driving routes approved pursuant to Phases I and II. ARB provided International with a copy of the printout, but not the reports.

⁸ In any event, the objective of each report was not to determine the technological feasibility of the NTE. See Phase I Report at i ("The objective of this study was to evaluate the currently available on-road emission measurement systems (OREMS) for measurement of heavy-duty diesel exhaust emissions."); Phase II Report at ii ("The objective of this study was to develop in-use testing procedures that will be employed in Phases III and IV of the in-use testing program as required by the Consent Decrees.").

III. Conclusion

Far from supporting the ARB's proposed amendments, the latest documents provided by ARB in response to International's Public Records Act requests actually confirm that ARB's NTE requirements are not technologically feasible.

STATE OF CALIFORNIA
AIR RESOURCES BOARD

EXHIBITS IN SUPPORT OF
ADDENDUM TO SUPPLEMENTAL COMMENTS OF
INTERNATIONAL TRUCK AND ENGINE CORPORATION

| | | |
|---|---|---------------------------------|
| _____ |) | Mail Out #00-20 And Subsequent |
| Notice Of Public Hearing To Consider |) | Notice of Public Hearing |
| Amendments To Adopt Not-To-Exceed And |) | Board Hearing: December 7, 2000 |
| Euro III European Stationary Cycle Emission |) | |
| Test Procedures For The 2005 And Subsequent |) | |
| Heavy-Duty Diesel Engines |) | |
| _____ |) | |

International Truck and Engine Corporation
455 N. Cityfront Plaza Drive
Chicago, IL 60611

December 7, 2000

- Exhibit 1 Letter from ARB to Patricia Guerrero of Latham & Watkins, dated December 4, 2000.
- Exhibit 2 Letter from ARB to Patricia Guerrero of Latham & Watkins, dated December 5, 2000. [With Attachments A-C]
- Exhibit 3 Memorandum prepared by United States Environmental Protection Agency Mechanical Engineer Charles Schenk, daed July 17, 2000.

EMA presentation

EPA Questions

- **What part of the 1.25 NTE can be retained?**
 - Define 1.25 core area for Zone “C”
- **What are the differences for LH, MH, HH?**
- **Why same approach for NO_x and PM?**
- **New issue of LH Leadtime**
- **What are the Cap NTE values in each zone?**
- **Can we enlarge “B” Zone (Alt & Temp)?**

Zone Design Freeze (HHDDE)

- **“A” Zone**
 - 86 Degrees flat top at 1000' altitude
 - 70% Torque for Core Zone
 - 1.20 NTE Core Maximum
- **“B” Zone**
 - No change to 95 Degrees at zero altitude
 - Change to 82 Degrees at 3600' altitude
 - 60% torque for Core Zone
 - 1.25 NTE Core Maximum
- **“C” Zone**
 - No change in temperature and altitude
 - 100 degrees to 80 degrees at 5500' altitude
 - Explore 1.25 NTE Core Maximum Shape

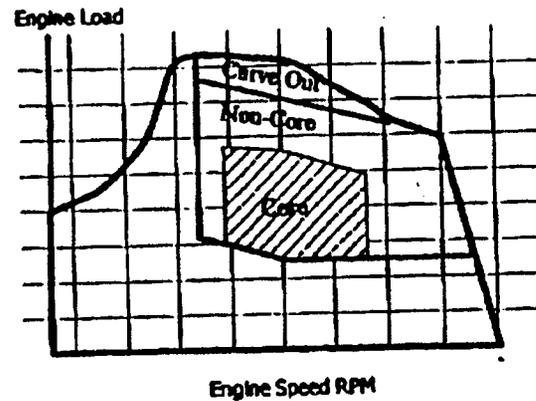
Utilization Rates - Core / Non-Core (HHDDE)

| Zone | Core | Non-Core |
|------|------|----------|
| A | 75% | 25%* |
| B | 70% | 30%* |
| C | TBD | TBD* |

*Factors follow reduced core area with "A", "B" & "C"

Variable Cap Definition as Proposed by EMA

Variable Cap Formula



- Variable Cap =
 - Core NTE * Core Use %
 - + Noncore NTE * (1 - Carve out %) * Noncore use %
 - + SUM{Cap NTE * Carve out % * Noncore use %}

NTE Limits (HHDE)

| | Core NTE Cap | Variable Cap | Maximum Cap |
|---------|--------------------|-----------------|----------------|
| A | 1.20 | 1.22 | 2.0 |
| B | 1.25 | 1.40 | 2.5 |
| C | 1.25 | 1.60 | 3.0 |
| Outside | | | 3.0 |

PM NTE (HHDDE)

Based upon this proposal, EMA will develop
PM NTE Proposal

NTE Proposal for MHDDE

- Proposal must be developed for MHDDE
- Will start with HHDDE approach

FROM OFF-ROAD 1462615756686

3:53:41

NTE Proposal for LHDDE

- Proposal must be developed for LHDDE
- Will start with either HHDDE approach or > 3000 RPM approach

Concept for Engines rated > 3000 RPM Proposal subject to EMA review by mid-April

- **ESC Definition**
 - NHIGH = FTP Rated (max. power)
 - NLOW = 30% of maximum power
- **NTE**
 - 15% ESC / 25% power / 30% max torque
- **Utilization**
 - 2 Factors (i.e. 70% / 30%), or
 - Multiple factors (TBD)
- **Ambient Conditions**
 - Same as IHDDE
- **NTE Values**
 - TBD

Utilization Rates - Core / Non-Core (> 3000 RPM)

| Zone | Core | Non-Core |
|------|------|----------|
| A | TBD | TBD |
| B | TBD | TBD |
| C | TBD | TBD |

Variable Cap Definition as Proposed by EMA

NTE Limits (> 3000 RPM)

| | Core NTE Cap | Variable Cap | Maximum Cap |
|---------|--------------------|-----------------|----------------|
| A | "1.20" | TBD | TBD |
| B | "1.25" | TBD | TBD |
| C | "1.25" | TBD | TBD |
| Outside | | | TBD |

PM NTE (> 3000 RPM)

EMA will develop PM NTE Proposal after
NTE NO_x framework is developed (expected
to follow HHDDE framework)

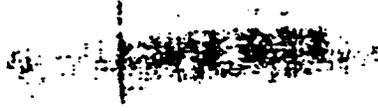
FROM OFF-ROAD 1+626+5756686

13:55AM

1-21-200 10:57AM

1+626+5756686
FROM OFF-ROAD 1+626+5756686

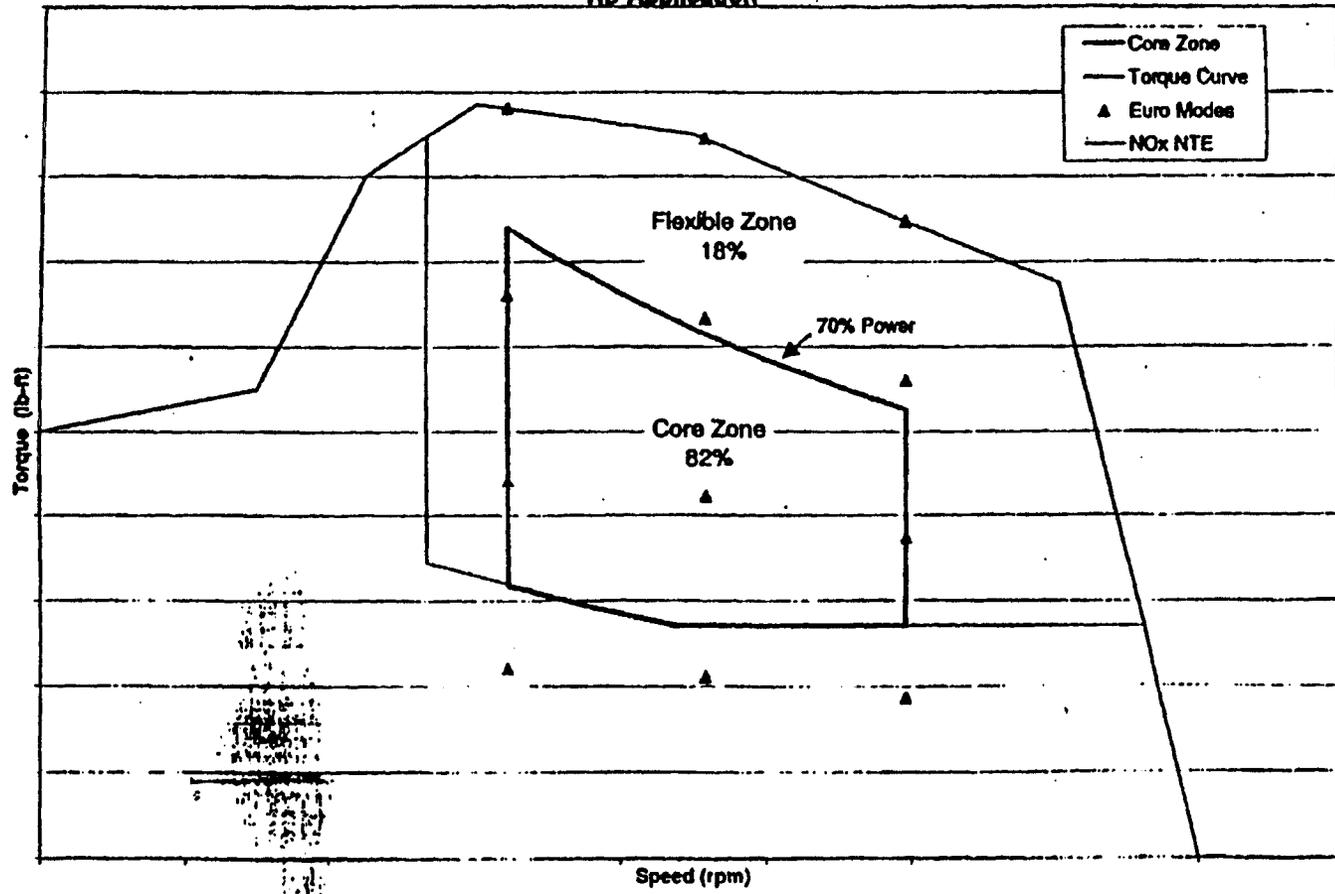
P. 1

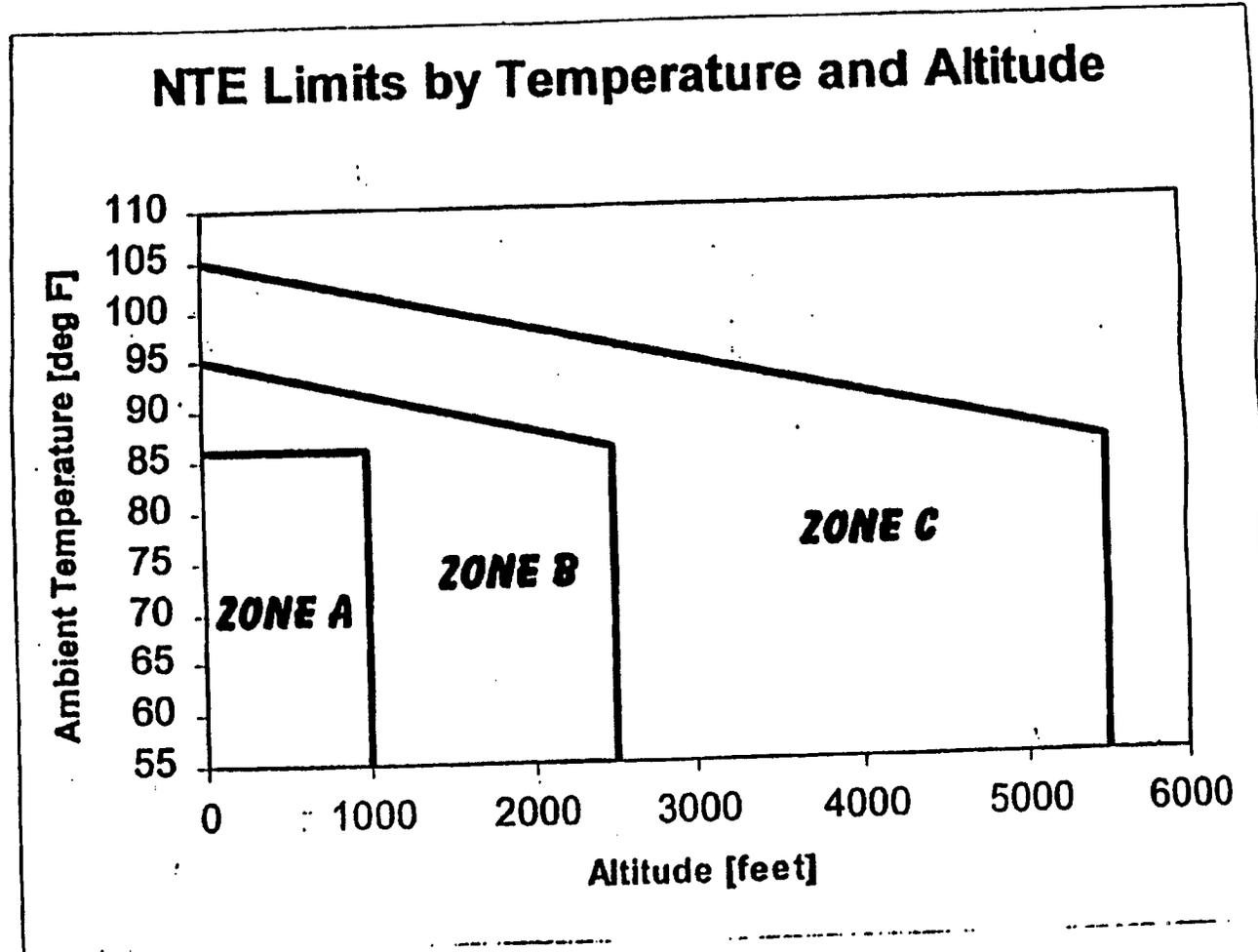


8

FROM OFF-ROAD 1+626+5756686

Draft Core and Flexible Zones HD Application





FROM OFF-ROAD 1+626+5756886

10:59AM

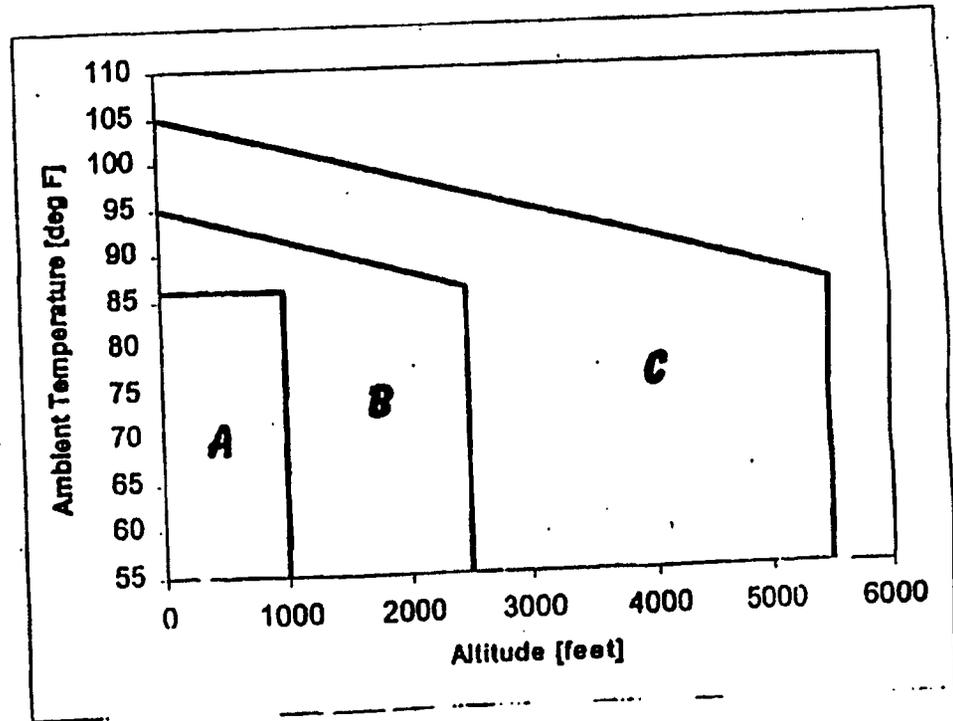
ZONE A
 NTE cap 1.2
 max altitude 1000 feet
 max temp at low alt 86 deg F
 max temp at high alt 86 deg F

ZONE B
 NTE cap 1.3
 max altitude 2500 feet
 max temp at low alt 95 deg F
 max temp at high alt 86 deg F

ZONE C
 NTE cap 1.4
 max altitude 5500 feet
 max temp at low alt 95 deg F
 max temp at high alt 86 deg F

Above Zones
 NTE cap 1.5

Alternative NTE Limits by Temperature and Altitude



Variable Cap

- NTE_F = NTE in that portion(s) of Flexible Zone where manufacturer needs higher NTE cap
- NTE_C = NTE across entire Core Zone manufacturer determines which offsets NTE_F area
- General Equation:
 - (0.18) (portion of Flexible Zone applicable to NTE_F) ($NTE_F - Z$)
 - = (0.82) ($Z - NTE_F$)
 - where Z = allowable cap which depends on altitude and temperature and core zone versus flexible zone

Altitude & Temperature Zones

- Zone A

$$(0.18) (\text{fraction of flexible zone}) (\text{NTE}_F - 1.2) = (0.82) (1.2 - \text{NTE}_C)$$

- Zone B

$$(0.18) (\text{fraction of flexible zone}) (\text{NTE}_F - 1.3) = (0.82) (1.25 - \text{NTE}_C)$$

- Zone C

$$(0.18) (\text{fraction of flexible zone}) (\text{NTE}_F - 1.5) = (0.82) (1.25 - \text{NTE}_C)$$

Examples

- Low Altitude (Zone A), 20% of flexible zone has NTE of 1.5

$$(0.18) (0.20) (1.5 - 1.2) = (0.82) (1.2 - NTE_C)$$

$$NTE_C = 1.19$$

- Medium Altitude (Zone B), 20% of flexible zone has NTE of 2.0

$$(0.18) (0.20) (2.0 - 1.3) = (0.82) (1.25 - NTE_C)$$

$$NTE_C = 1.22$$

- High Altitude (Zone C), 20% of flexible zone has NTE of 2.0

$$(0.18) (0.20) (2.0 - 1.5) = (0.82) (1.25 - NTE_C)$$

$$NTE_C = 1.23$$

3/17/2000

Attention: Susan O'Connor
626 2186

EMA

EMA Proposal Benefits

- **Emissions Benefits**
 - Provides lowest technically feasible emissions
 - Enables Voluntary Program in 2004
 - Substantial Benefit below 1000' (74% utilization)
 - Better than Mobile 6 with Altitude
 - Responsive to BMEP
- **Technically Feasible**
 - Provides flexibility required across engine designs
 - Level Playing Field
 - Different numbers for LHDDE, MHDDE, HHDDE
 - Addresses NOx + HC and PM
- **Relatively Easy to Administer**
 - Preset Utilization factors and formulae
 - Certainty of a high utilization core zone
 - Does not require review within Product Development Cycle

Mobile 6

NOx **PM**

5300'

1.1

1.65

1.375

* 1.25

1.72

Emissions Neutrality

- Based on Tom Darlington's Analysis

- "A" = 74%

- "B" = 18%

- "C" = 6%

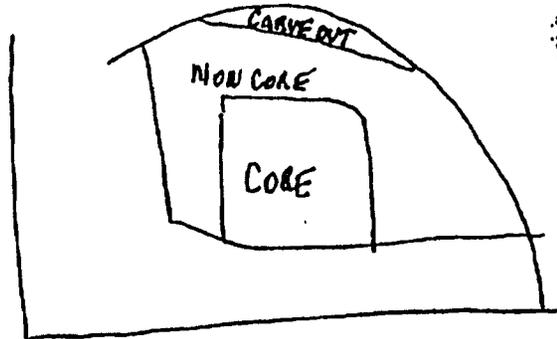
- "D" = 2%

- Most areas will have lower NTE ("A" zone)

- Core NTE of 1.20 in "A" zone

*data for heavy-duty class.
3 years of data.*

Variable Cap Formula



- Variable Cap =

$$\begin{aligned} & \text{Core NTE} * \text{Core Use \%} \\ + & \text{Noncore NTE} * (1 - \text{Carve out \%}) * \text{Noncore use \%} \\ + & \text{SUM}\{\text{Cap NTE} * \text{Carve out \%} * \text{Noncore use}\% \} \end{aligned}$$

**March 20 Framework Yields the
Following Variable Caps**

A 1.22
B 1.40
C 1.60

Result: Technologically Feasible Solution

Question: "What is the Minimum
NTE in the Core Zone?"

"A" 1.2

"B" 1.25

"C" 1.35

Stringency - EPA March 23 Proposal

| Zone | Equivalent Variable Cap | 82/18 Utilization |
|------|-------------------------|---------------------------|
| A | 1.20 | |
| B | 1.259 | .82 * 1.25 +.18 * 1.30 |
| C | 1.295 | .82 * 1.25 +.18 * 1.50 |

Technical Feasibility

Technologically Infeasible to be Emissions
neutral within each Zone

EPA March 23 Proposal has major changes from March 20 Framework

- 70% Power vs. 70% Load at speed
- Zone "C" 105 to 86 vs. 100 to 80
- No Variable Cap
- Substantial Stringency Increase
- Substantial Reduction in Flexibility
- Dependent upon Technologically inflexible core NTE

NTE - 2004 Voluntary Program

- Principles:
 - Technical Feasibility
 - Emissions Neutrality at 1.25 NTE
 - Flexibility
 - Recognize engine designs
 - Level Playing field
 - Compatible with defeat Device Definition
 - Physics (temperature & altitude)
 - Continue EPA Review of AECD's

California Environmental Protection Agency
 Air Resources Board



OFFICE OF LEGAL AFFAIRS

2020 L STREET
 SACRAMENTO, CA 95814
 PHONE: (916) 322-2884
 FAX: (916) 322-3928

TO:

NAME

Patricia Guerrero

DEPARTMENT

Tathan Wetheri

FAX #

415-395-8095

FROM:

NAME

Carroll Mohr

COMMENTS:

Document response to your CAAA
request. Thank You!

NUMBER OF PAGES TO FOLLOW 21

THE INFORMATION CONTAINED IN THIS COMMUNICATION IS CONFIDENTIAL, MAY BE ATTORNEY-CLIENT PRIVILEGED, MAY CONSTITUTE INSIDE INFORMATION OR TRADE SECRETS, AND IS INTENDED ONLY FOR THE USE OF THE ADDRESSEE. UNAUTHORIZED USE, DISCLOSURE OR COPYING IS STRICTLY PROHIBITED AND MAY BE UNLAWFUL. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY AT (916) 322-2884.



Winston H. Hickox
Agency Secretary

Air Resources Board

Alan C. Lloyd, Ph.D.
Chairman

2020 L Street • P.O. Box 2815 • Sacramento, California 95812 • www.arb.ca.gov



Gray Davis
Governor

December 5, 2000

Ms. Patricia Guerrero
Latham & Watkins
505 Montgomery Street, Suite 1900
San Francisco, California 94111

By facsimile and regular mail

Re: California Public Records Act (CPRA) Requests

Dear Ms. Guerrero:

I have just been provided with the attached list of all NTE documents provided by various manufacturers to the Air Resources Board. Documents not designated as business confidential are also attached and can be released as public records. To the best of my knowledge, the Air Resources Board has no other documents responsive to your CPRA requests.

Thank you for your patience and cooperation in working with me in resolving this matter.

Sincerely,

AIR RESOURCES BOARD
Office of Legal Affairs

A handwritten signature in black ink, appearing to read "C. W. Madia".

Carmen W. Madia
Senior Legal Analyst

California Environmental Protection Agency

Printed on Recycled Paper

December 1, 2000

Public Records Act Request - Not-to-Exceed [NTE]

Consent Decree Quarterly Progress Reports

- (1) Quarter 3/2000 Compliance Auditor Progress Report of Cummins (dated 10/30/00)
11 pages of ISM and ISX Engines Emissions Test Results (Business Confidential)
- (2) Quarter 2/2000 Compliance Auditor Progress Report of Cummins (dated 7/28/00)
11 pages of Dakota '02 and Enforcer '02 Engines Emissions Test Results (Business Confidential)
- (3) Quarter 1/2000 Compliance Auditor Progress Report of Cummins (dated 5/9/00)
9 pages of ISM and ISX Engines Emissions Test Results (Business Confidential)
- (4) Quarter 3/2000 Compliance Administrator Progress Report of Caterpillar (dated 10/27/00)
Approx. 81 pages of different test data (all Business Confidential) as follows:

Attached data:

C-15 Bypass Venturi EGR Field Test Observations
 EGR Corrosion Ingn Summary 10/8/00 - in process
 2002MY C-15 560HP Transient Emissions Progress
 2002MY C-15 550HP Transient Emissions Results

5 Pages

Attached data:

2002MY C-12 430 HP Transient Emissions Progress
 C-12 Transient Emissions Capability
 C-12 EGR Uniflow Head 430hp @ 2100 rpm FT02 software Emissions Levels 7/12/00
 C-12 EGR Uniflow Head 2K300354 430hp @ 2100 rpm FT02 software results 8/15/00
 C-12 EGR Uniflow Hd. Hardware dev., 430hp @ 2100 rpm - graph and data points 7/17/00
 C-12 EGR uniflow head 430hp @ 2100 rpm various base, cold valve & hot valve maps 7/12/00
 C-12 EGR Emissions Development graph of baseline, 33 kst, 31 kst, piston dev. 8/1/00
 Data - Cell 220 - C-10 Re-armed Steady Flow Injector Nozzle Evaluation
 Data - Cell 224 - C-12 Uniflow Head EGR: piston, camshaft & injector nozzle trial results
 Data - Cell 224 - C-12 Uniflow Head EGR: injector nozzle & 31 kst reduced pressure trial results
 Data - Cell 220 - C-12 Perkins Round Robin - CSLA's and ABC smoke results
 Data - Cell 224 - C-12 Uniflow Head EGR emissions results w/ lower peak injection pressure hardware

= 18 pages

Attached data:

Technical Document - 3126 224hp VGT EGR study - dated May 2, 2000
 Technical Document - 3126 EGR FT1 Steady-State development - dated April 24, 2000
 3126B HEMI - 175hp - hpcurves test data
 3126B HEMI - 330hp RV - power curves test data
 3126B HEMI - 175hp test data - hpcurves graph 8/15/00
 3126B HEMI - 330hp RV test data - power curves graph

= 56 pages

Attached data:

3126B DF Values applied to C-9 / Single Injection data from transient test cell
 3126B DF Values applied to C-9 / ACT data from steady-state test cell

2 pages

(5) Quarter 2/2000 Compliance Administrator Progress Report of Caterpillar (dated 7/25/00)

Approx. 150 pages of different test data (all Business Confidential) as follows:

Attached data

C-15 Bypass Venturi EGR Engines for Fall 1999 Field Test #1 Report — dated April 25, 2000
NPI Update charts and graphs used in April 11, 2000 meeting
Presentation charts and graphs used in the Engineering "A" Review held on June 27, 2000

≈ 150 pages

(6) Quarter 1/2000 Compliance Administrator Progress Report of Caterpillar (dated 4/28/00)

Approx. 41 pages of different test data (all Business Confidential) as follows:

Attached data:

Twin turbo rating capability and fuel economy impact charts.

Twin turbo issues list.

Twin turbo performance development chart.

Twin turbo BSFC vs VNT efficiency chart.

Twin turbo exhaust temperature summary.

Twin turbo performance conclusions.

} 7 pages

C15 2002 MY PIP study on by-pass venturi fit#1 EGR engine.

C-15 peak injection pressure study conclusions.

C-15 2002 MY PIP study 2100 rpm - 100% load chart.

C-15 2002 MY PIP study peak injection pressure - 550 hp lug curve chart.

C-15 2002 MY PIP study 2100 rpm - 100% load chart.

C-15 2002 MY PIP study 1800 rpm - 100% load chart.

C-15 2002 MY PIP study 1500 rpm - 100% load chart.

C-15 2002 MY PIP study 1200 rpm - 100% load chart.

C-15 2002 MY PIP study Transient Emissions vs PIP chart.

C-15 2002 MY PIP study Transient Emissions results chart.

C-15 2002 MY PIP study 13-mode Emissions results chart.

C-15 2002 MY PIP study Transient Emissions results chart.

≈ 23 pages

- C-15 2002 MY PIP study Steady State Particulate chart.
- C-15 2002 MY PIP study Transient EngDev Soot (g/hp-hr) chart #1.
- C-15 2002 MY PIP study Transient EngDev Soot (g/hp-hr) chart #2.
- C-15 2002 MY PIP study Transient EngDev Soot (g/hp-hr) chart #3.
- Schematic of Twin Turbo Systems with VGT.
- Schematic of Twin Turbo Systems with MFV.
- C-15 Twin Turbo VGT vs Multi-functional valve chart #1
- C-15 Twin Turbo VGT vs Multi-functional valve chart #2
- C-15 Twin Turbo VGT vs Multi-functional valve chart #3
- C-15 Twin Turbo Multi-functional valve lug curve performance chart.
- C-15 Multi-functional valve conclusions.
- C-15 2 pass EGR cooler coolant side restriction charts.

Attached data:

Low NOx Rebuild Check out of 3126B2V HEUI 250hp @ 2200rpm 800ft-lb @ 1440rpm

1 page

- 500 hr Endurance Engine - 3126B w/16.0 c/r pistons w/measured ring sets chart
- 3126B FT1 Endurance NOx chart #1
- 3126B FT1 Endurance NOx chart #2
- Oil degradation test of a 3126B, EGR, ADEM-3, front sump #1
- Oil degradation test of a 3126B, EGR, ADEM-3, front sump #2
- Oil degradation test of a 3126B, EGR, ADEM-3, front sump #3
- 3126B EGR exhaust valve face wear test #1
- 3126B EGR exhaust valve face wear test #2
- 3126B EGR valve stem & lifting fork wear photo
- 3126B EGR valve pin wear photo

10 pages

Public Records Act Request - NTE

Page 4

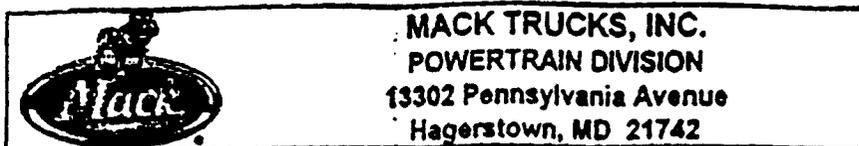
12/04/00

- (7) 1999 Model Year Transient NTE Test Results for Caterpillar (dated 2/25/1999)
7 pages document (attached).
- (8) Quarter 3/2000 Compliance Administrator Progress Report of Detroit Diesel (dated 10/30/00)
2 pages of 2000 MY Validation Testing Data and 6 pages of 4.0 gm S50 EGRVNT Program Emission Test Summary Data (Business Confidential).
8 pages of 2002 S60 System Data including Euinox Steady State and Transient State Test Emission Data (Business Confidential).
- (9) Quarter 2/2000 Compliance Administrator Progress Report of Detroit Diesel (dated 7/28/00)
2 pages of 2000 MY Validation Testing Data and 5 pages of 4.0 gm S50 EGRVNT Program Emission Test Summary Data (Business Confidential).
8 pages of Euinox Performance and Emission Development Targets Data (Business Confidential).
- (10) Quarter 1/2000 Compliance Administrator Progress Report of Detroit Diesel (dated 5/01/00)
2 pages of 2000 MY Validation Testing Data and 8 pages of 4.0 gm S50 EGRVNT Program Emission Test Summary Data (Business Confidential).
7 pages of Euinox Development Targets Data (Business Confidential).
- (11) Quarter 4/1999 Compliance Administrator Progress Report of Detroit Diesel (dated 2/17/00)
2 pages of 2000 MY Validation Testing Data and 6 pages of 4.0 gm S50 EGRVNT Program Emission Test Summary Data (Business Confidential).
4 pages of 1999 FETS Data (Business Confidential).
5 pages of Euinox Transient and Steady State Test Emission Data (Business Confidential).
- (12) Quarter 3/2000 Compliance Administrator Progress Report of Mack Trucks (dated 10/30/00)
24 pages of Oct. 2002 Engine Development Testing Data (Business Confidential).
- (13) Quarter 2/2000 Compliance Administrator Progress Report of Mack Trucks (dated 7/28/00)
30 pages of Oct. 2002 Engine Development Testing Data (Business Confidential).
- (14) Quarter 1/2000 Compliance Administrator Progress Report of Mack Trucks (dated 4/27/00)
29 pages of Oct. 2002 Engine Development Testing Data (Business Confidential).
- (15) Quarter 4/1999 Compliance Administrator Progress Report of Mack Trucks (dated 1/28/00)
22 pages of Oct. 2002 Engine Development Testing Data (Business Confidential).
- (16) Quarter 3/2000 Compliance Administrator Progress Report of Renault VI (dated 10/27/2000)
9 pages of Oct. 2002 Engine Development Testing Data (Business Confidential).
- (17) Quarter 2/2000 Compliance Administrator Progress Report of Renault VI (dated 7/26/2000)

9 pages of Oct. 2002 Engine Development Testing Data (Business Confidential).

(18) Quarter 1/2000 Compliance Administrator Progress Report of Renault VI (dated 4/28/2000)

20 pages of Oct. 2002 Engine Development Testing Data (Business Confidential)

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