Summary of specific (mostly small engine) concerns with EPA proposed Tier IV:

1. The ’08 PM requirement for 19-37 kw of .3 could eliminate DI engines.
2. The oxidation catalyst that EPA is proposing to meet the 19-56 kw ’08 .3 PM requires <300 ppm fuel but 15 ppm fuel is not available until 2010. Oxidation catalyst without low sulfur fuel actually increases PM.
3. Feasible NOx AT technology for small engines in 2012 is nonexistent.
4. It is more feasible for EU to pursue SCR for NOx reduction (due to on-road use) than in US causing disharmonization of technology.
5. NOx AT technology for off-road is unproven.
6. Period of stability of 3 yrs of Tier IVA is not long enough to recover investment (>56 kw).

Summary of EU/EPA disharmonization issues:

1. 1 year difference in start for Tier 4 for 37-56 kw, 2012 vs 2013.
2. 1 year difference in start for Tier 3 for 19-37 kw, 2008 vs 2007.
3. Difference in PM levels for Tier 3 for 19-37 kw, meaning US will require PM AT but EU will not.
4. US Tier 4 vs no EU Tier 4 for 19-37 kw, meaning US will require different (more expensive) NOx lowering technology (EGR?) and PM AT for greater than 19 kw.
5. US Tier 4 vs no EU requirements for less than 19 kw, meaning US will require PM AT for less than 19 kw.

Stan Mullins
March 26, 2004
Title: Engine Emissions – USA EPA

Background:
Regulations requiring further reduction in diesel exhaust emissions are being promulgated. In the USA, this initiative is generally referred to as the EPA (Environmental Protection Agency) Tier IV regulations, having an implementation timeframe of 2011 to 2014.

Current status:
EPA released its Notice of Proposed Rule Making (NPRM) on April 15, 2003 detailing proposed regulations encompassing a two step 99.6% reduction in diesel fuel sulfur content, 95% reduction in particulate matter (PM) and ~90% reduction in Nitrous Oxide (NOx). Included are Tier 3 requirements in 2008 for <37 kw engines. After treatment technologies similar to that being used on Highway trucks are envisioned to accomplish the exhaust reductions. The complete proposal may be viewed at www.epa.gov/nonroad.

Public Hearings were conducted during June, 2003. AEM, as well as many other interested entities, participated in these hearings. Additionally, written comments due by August 20, 2003 were solicited. An accumulation of industry related written comments, including those of AEM, Euromot, and the Engine Manufacturers Association (EMA) can be found at www.aem.org/tier4. A quote from the heading of that website is “Few issues will cause as significant an economic and technical impact on the non-road equipment industry as the US EPA proposed Tier 4 diesel engine emissions regulations to reduce off-road diesel engine emissions. – AEM’s comments focused on concerns with the direct transferability of on-road technologies to the off-road industry, resource issues and timeframes for adoption, and the need for global alignment of requirements between EPA rulemaking, European Union and Japanese regulations”.

Since August 20, 2003, EPA has been diligently addressing the written comments submitted with a genuine effort of being as responsive as possible. This has resulted in many conversations with the fuel industry, engine manufacturers, equipment manufacturers, after-treatment equipment manufacturers, other regulating bodies, environmental groups, etc.

However, to the best AEM has been able to determine, the proposed rule is basically staying in tact, ie very little substantive change is expected in the final rule. Release of the Final Rule is expected in April, possibly coinciding with ‘Earth Day’ April 22, 2004. The ‘political pressures’ currently in place do not allow for any relaxation of the very stringent and costly requirements contained in the proposed rule.

Actions to be taken:
The engine and equipment manufacturing industries must keep pressing for complete global harmonization of diesel engine exhaust emissions regulations. Once the EPA Final Rule is released, industry will need to organize to identify significant issues where harmonization does not exist for exploring alternatives.
Report to AEM/CECE/CEMA/KOCEMA Joint Technical Liaison Meeting
Interpretive Status of EPA Tier 4 Flexibility Issues

April 5-6, 2004
Munich, Germany
Gene Kielb, Bobcat
Two Areas of Flexibility

- Engine Manufacturers
- Machine Manufacturers
Flexibility for Engine Manufacturers

- Averaging
- Banking
- Trading

(For Early Compliance)
Flexibility for Machine Manufacturers
(Allows use of some previous-tier engines)

- Percent of Production Allowance
- Small Volume Allowance
- Existing Inventory/Replacement Engines
- Hardship Relief
  Available for First 7 Years of Tier 4 Standards
  Labeling, Record Keeping and Reporting is Required in many instances
Percent of Production Allowance

- Not to exceed 80% of one year's production
- Can be used over as much as seven years
- Applies to 5 individual power brackets
- Currently Applies to Tiers (1-3)
- Will be “recharged” for Tier 4
  - Tier 4 flexibility can be used for Tier 3 if needed
Small Volume Allowance

- Up to 700 engines in seven years per power category
- Up to 200 engines per power category per year
- Limited to one engine family per power category
Existing Inventory Allowance & Replacement Engines

- Existing engines may be installed after the implementation date
  - Engines may not be stockpiled
- Replacement engines may be sold to the original OEM specification
- Not counted toward 80% limit or small volume allowance
Hardship Relief Provision

- Applies only to OEM’s who do not make engines
- Appeal must be written before first noncompliance
- Special situations:
  - Not the fault of the machine manufacturer
  - Supplier stops producing an engine model
  - Supplier fails to deliver Tier 4 engines/prototypes in a timely manner
  - Serious economic hardship would result if not granted
  - All other flex remedies must be exhausted
  - Generally a one year time limit
  - Generally used in the first year after the effective date
EPA’s Next Steps

- EPA is aiming for release of the rule in April 2004
- Future work will be on mimicking the on highway rule, voluntary retrofits, in use testing, on board diagnostics, additional opportunities for harmonization at technical reviews in 2007 in EU and USA
Title: Explanation of EPA “Flexibility Scheme”

Background:
EPA’s Diesel rule allows manufacturers to use some flexibility in application. Clarification is needed regarding how this is applied and to which tiers of the rule it may be used.

Current status:
Manufacturers are completing the transition to tier two on small engines. Flexibility that was not used during tier one or tier two implementation may be used during tier three. It is hoped that additional new flexibility will be available for tier four compliance.

Actions to be taken:
Awaiting the final rule from EPA during the coming days. Refer to the attached annex for details which are known and those which are still in question.
Annex:

**Summary of Compliance Flexibility Measures for Engine and Equipment Manufacturers**

This section describes the regulatory changes proposed for the engine and equipment compliance program. EPA has included averaging, banking, and trading (ABT) programs in most mobile source emission control programs adopted in recent years. In this new rule, EPA is proposing to retain the basic structure of the existing nonroad diesel ABT program with a number of changes to accommodate implementation of the proposed emission standards. Behind these changes is the recognition that the proposed standards represent a major technological challenge to the industry.

### 1. Flexibility Programs for Engine Manufacturers

ABT programs have served as the major compliance flexibility toll for diesel engine manufacturers; however, it can be shown that ABT indirectly benefits the equipment manufacturer as well by helping to retain certain engine models in the product mix longer and by reducing overall costs.

The ABT program has three main components. Averaging means the exchange of emission credits between engine families within a given engine manufacturer’s product line. (Engine manufacturers divide their product line into “engine families” that are comprised of engines expected to have similar emission characteristics throughout their useful life.) Averaging allows a manufacturer to certify one or more engine families at levels above the applicable emission standard, but below a set upper limit. However, the increased emissions must be offset by one or more engine families within that manufacturer’s product line that are certified below the same emission standard, such that the average emissions from all the manufacturer’s engine families, weighted by engine power, regulatory useful life, and production volume, are at or below the level of the emission standard. (The inclusion of engine power, useful life, and production volume in the averaging calculations is designed to reflect differences in the in-use emissions from the engines.) Averaging results are calculated for each specific model year. The mechanism by which this is accomplished is certification of the engine family to a “family emission limit” (FEL) set by the manufacturer, which may be above or below the standard. An FEL that is established above the standard may not exceed an upper limit specified in the ABT regulations. Once an engine family is certified to an FEL, that FEL becomes the enforceable emissions limit for all the engines in that family for purposes of compliance testing.

Averaging is allowed only between engine families in the same averaging set, as defined in the regulations. Banking means the retention of emission credits by the engine manufacturer for use in future model year averaging or trading. Trading means the exchange of emission credits between nonroad diesel engine manufacturers that can then be used for averaging purposes, banked for future use, or traded to another engine manufacturer.

### 2. Flexibility Programs for Equipment Manufacturers
As EPA developed the 1998 Tier 2/3 standards for nonroad diesel engines, it was determined that provisions were needed to avoid unnecessary hardship for equipment manufacturers. The specific concern is the amount of work required and the resulting leadtime needed for equipment manufacturers to incorporate all of the necessary equipment redesigns into their applications in order to accommodate engines that have been redesigned to meet the new emission standards. This is confirmed by comments to EPA by a number of the equipment Small Entity Representatives during the SBREFA process, which indicated that the Tier 2/3 transition provisions were proving beneficial in providing adequate leadtime and urging EPA to adopt comparable provisions in a Tier 4 rule.\(^1\) The program consists of four major elements: (1) a percent-of-production allowance, (2) a small-volume allowance, (3) availability of hardship relief, and (4) continuance of the allowance to use up existing inventories of engines.\(^2\)

**a. Percent-of-Production Allowance**

Under the proposed percent-of-production allowance, each equipment manufacturer may install engines not certified to the proposed Tier 4 emission standards in a limited percentage of machines produced for the U.S. market. Equipment manufacturers would need to provide written assurance to the engine manufacturer that such engines are being procured for the purpose of the transition provisions for equipment manufacturers. These engines would instead have to be certified to the standards that would apply in the absence of the Tier 4 standards (i.e., Tier 2 for engines below 50 horsepower, Tier 3 for engines between 50 and 750 horsepower\(^{301}\), and Tier 2 for engines above 750 horsepower). This percentage would apply separately to each of the proposed Tier 4 power categories (e.g., engines below 25 horsepower, engines between 25 and 75 horsepower, engines between 75 and 175 horsepower, engines between 175 and 750 horsepower, and engines above 750 horsepower), and is expressed as a cumulative percentage of 80 percent over the seven years beginning when the Tier 4 standards first apply in a category. No percent-of-allowance exemptions would be allowed after the seventh year.

For example, an equipment manufacturer could install engines certified to the Tier 3 standards in 40 percent of its entire 2011 production of nonroad equipment that use engines rated between 175 and 750 horsepower, 30 percent of its entire 2012 production in this horsepower category, and 10 percent of its entire 2013 production in this horsepower category. (During the transitional period for the Tier 4 standards, the fifty percent of engines that would be allowed to certify to the previous tier NOx standard but meet the Tier 4 PM standard would be considered as Tier 4-compliant engines for the purpose of the equipment manufacturer transition provisions.)

If the same manufacturer were to produce equipment using engines rated above 750 horsepower, a separate cumulative percentage allowance of 80 percent would apply to these machines during the seven years beginning in 2011. This proposed percent-of-production allowance is almost identical to the percent-of-production allowance adopted

---

in the October 1998 final rule, the difference being, as explained earlier, that EPA is proposing to have fewer power categories associated with the proposed Tier 4 standards.

The choice of a cumulative percent allowance of 80 percent is based on EPA’s best estimate of the degree of reasonable leadtime needed by equipment manufacturers. The proposed 80 percent exemption allowance, were it to be used to its maximum extent by all equipment manufacturers, would bring about the introduction of cleaner engines several months later than would have occurred if the new standards were to be implemented on their effective dates. However, the equipment manufacturer flexibility program has been integrated with the standard-setting process from the initial development of this proposal, and as such EPA believes it is a key factor in assuring that there is sufficient lead-time to initiate the Tier 4 standards according to the proposed schedule.

Machines that use engines built before the effective date of the proposed Tier 4 standards would not be included in an equipment manufacturer’s percent of production calculations under this allowance. Machines that use engines certified to the previous tier of standards under the Small Business provisions (as described in Section VII.C. of the Tier 4 proposal) would not be included in an equipment manufacturer’s percent of production calculations under this allowance. All engines certified to the Tier 4 standards, including those engines that produce emissions at higher levels than the standards, but for which an engine manufacturer uses ABT credits to demonstrate compliance, would count as Tier 4 complying engines and would not be included in an equipment manufacturer’s percent of production calculations. As noted earlier, engines that meet the proposed Tier 4 PM standards but are allowed to meet the Tier 3 NMHC+NOx standards during the phase-in period would also count as Tier 4 complying engines and would not be included in an equipment manufacturer’s percent of production calculations. And, as also noted earlier, all engines used under the percent-of-production allowance would have to certify to the standards that would be in effect in the absence of the Tier 4 standards (i.e., the Tier 3 standards for engines between 50 and 750 horsepower and the Tier 2 standards for engines below 50 horsepower and above 750 horsepower).

EPA is also proposing to allow manufacturers to start using a limited number of the new Tier 4 flexibilities once the seven-year period for the existing Tier 2/Tier 3 programs expires (and so continue producing engines meeting Tier 1 or Tier 2 standards). In this way, a manufacturer could potentially continue exempting the most difficult applications once the seven-year period of the current Tier 2/3 flexibility provisions is finished. (Under the existing transition program for equipment manufacturers, any unused allowances expire after the seven year period. EPA is not reopening this provision with this proposal.) However, opting to start using Tier 4 allowances once the seven-year period from the current Tier 2/Tier 3 program expires would reduce the available percent of production exemptions available from the Tier 4 standards. EPA is proposing that equipment manufacturers may use up to a total of 10 percent of their Tier 4 allowances prior to the effective date of the proposed Tier 4 standards. (The early use of Tier 4 allowances would be allowed in each Tier 4 power category.) This percentage of equipment utilizing the early Tier 4 allowances would be subtracted from the proposed Tier 4 allowance of 80 percent for the appropriate power category, resulting in fewer allowances once the Tier 4 standards take effect. For example, if an
equipment manufacturer used the maximum amount of early Tier 4 allowances of 10 percent, then the manufacturer would have a cumulative total of 70 percent remaining when the Tier 4 standards take effect. EPA is also requesting comment on requiring equipment manufacturers to take a two-for-one loss of Tier 4 allowances for each allowance used prior to the Tier 4 effective date. This would reduce the number of overall engines that could be exempted under the Tier 4 allowance program and result in greater environmental benefits than would be realized if manufacturers used all of the Tier 4 allowances in the Tier 4 timeframe.

EPA views this proposed provision on early use of Tier 4 allowances as providing reasonable leadtime for introducing Tier 4 engines, since it should result in earlier introduction of Tier 4-compliant engines (assuming that the 80% allowance would otherwise be utilized) with resulting net environmental benefit (notwithstanding longer utilization of earlier Tier engines, due to the stringency of the Tier 4 standards) and should do so at net reduction in cost by providing cost savings for the engines that have used the Tier 4 allowances early. As discussed above, once the Tier 4 implementation model year begins, engines that use the transition provision allowances must be certified to the standards that would apply in the absence of the Tier 4 standards.

b. Small-Volume Allowance

The percent-of-production approach described above may provide little benefit to businesses focused on a small number of equipment models. Therefore EPA is proposing to allow any equipment manufacturer to exceed the percent-of-production allowances described above during the same seven year period, provided the manufacturer limits the number of exempted engines to 700 total over the seven years, and to 200 in any one year. As noted earlier, equipment manufacturers would need to provide written assurance to the engine manufacturer when it purchases engines under the transition provisions for equipment manufacturers. The limit of 700 exempted engines would apply separately to each of the proposed Tier 4 power categories (engines below 25 horsepower, engine between 25 and 75 horsepower, engines between 75 and 175 horsepower, engines between 175 and 750 horsepower, and engines above 750 horsepower).

In addition, manufacturers making use of this provision must limit exempted engines to a single engine family in each Tier 4 power category.

As with the proposed percent-of-production allowance, machines that use engines built before the effective date of the proposed Tier 4 standards would not be included in an equipment manufacturer’s count of engines under the small-volume allowance. Similarly, machines that use engines certified to the previous tier of standards under our Small Business provisions would not be included in an equipment manufacturer’s count of engines under the small-volume allowance. All engines certified to the Tier 4 standards, including those that produce emissions at higher levels than the standards but for which an engine manufacturer uses ABT credits to demonstrate compliance, would be considered as Tier 4 complying engines and would not be included in an equipment manufacturer’s count of engines under the small-volume allowance. Engines that meet the proposed Tier 4 PM standards but are allowed to meet the Tier 3 NMHC+NOx standards during the phase-in period would also be considered as Tier 4 complying engines and would not be included in an equipment manufacturer’s count of
engines under the small-volume allowance. All engines used under the small-volume allowance would have to certify to the standards that would be in effect in the absence of the Tier 4 standards (i.e., the Tier 3 standards for engines between 50 and 750 horsepower and the Tier 2 standards for engines below 50 horsepower and above 750 horsepower).

In discussions regarding the current small-volume allowance, some manufacturers expressed the desire to be able to exempt engines from more than one engine family, but still fall under the number of exempted engine limit. (Under the current rules, although equipment manufacturers are allowed to exempt up to 700 units over seven years, they must all use the same engine family. In many cases, a manufacturer’s largest sales volume model does not even sell 700 units over seven years. As a result, the maximum number of units a manufacturer can exempt under the small-volume allowance is less than the 700 unit limit.) EPA is concerned, however, that allowing manufacturers to exempt engines in more than one family, but retaining the current 700-unit allowance, could lead to significantly higher numbers of engines being exempted from the Tier 4 program.

Using data of equipment sales by equipment manufacturers that qualify as small businesses under Small Business Administration (SBA) guidelines, EPA has analyzed the effects of a small-volume allowance program that would set an exempted engine allowance lower than 700 units over seven years but allow manufacturers to exempt engines from more than one engine family. Based on sales information for small businesses, EPA believes it could revise the small volume allowance program to include lower caps and allow manufacturers to exempt more than one engine family while still keeping the total number of engines eligible for the allowance at roughly the same overall level as the 700-unit program described above. Such a program would in general provide sufficient leadtime for equipment manufacturers, allowing them to temporarily exempt greater numbers of equipment models from the proposed Tier 4 standards, but, as noted above, keeping the total number of engines eligible for the allowance at roughly the same overall level as the existing program would allow (and so not allow more leadtime than necessary). Based on EPA’s analysis, the small-volume allowance program could be revised to allow equipment manufacturers to exempt 525 machines over seven years (with a maximum of 150 in any given year) for each of the three power categories below 175 horsepower, and 350 machines over seven years (with a maximum of 100 in any given year) for the two power categories above 175 horsepower. Concurrent with the revised caps, manufacturers would be allowed to exempt engines from more than one engine family under the small-volume allowance program. Table VII.B-1 compares the proposed small-volume allowance program to the variation described in this paragraph.
EPA requests comment on adopting a small-volume allowance program with the lower caps noted above that allows manufacturers to exempt more than one engine family in each power category. We specifically request comment on allowing equipment manufacturers to choose between the two small-volume allowance programs described above. Alternatively, EPA requests comment on whether they should replace the current program (which allows 700 units over seven years with a one engine family restriction) with this revised small-volume allowance program (which would allow fewer units over seven years but without the single engine family restriction). EPA’s analysis of small businesses noted above did show that there were a very limited number of companies that could potentially get fewer total allowances under a revised program with the lower caps compared to the existing program (i.e., a company that sells an equipment model that utilizes one engine family whose sales over a seven year period are above the revised limits noted above but less than 700). Allowing an equipment manufacturer to choose between the two programs would help to ensure that manufacturers are able to retain the current level of flexibility they have under the current program.

Because EPA is proposing fewer power categories for the Tier 4 standards, the proposed equipment flexibility program is designed to reflect those changes. Therefore, under the proposed small-volume allowance, the specified unit allowances will apply separately to each of the five power categories being proposed for the Tier 4 standards. As noted earlier, EPA is also proposing to allow manufacturers to start using a limited number of the new Tier 4 flexibilities once the seven-year period for the existing Tier 2/Tier 3 program expires (and so continue producing engines meeting Tier 1 or Tier 2 standards). Under the proposed small-volume allowance, any engines used by the manufacturer prior to Tier 4 would be subtracted from the proposed 700 unit allowance (for the appropriate Tier 4 power category), resulting in fewer allowances once the Tier 4 standards take effect. As with the proposed percent of-production allowance, EPA is proposing to limit the number of Tier 4 small-volume allowances that can be used prior to the effective dates of the Tier 4 standards to a total of 100 units in each of the Tier 4 power categories. EPA is taking comment on requiring equipment manufacturers to take a two-for-one loss of Tier 4 small-volume allowances for each allowance used prior to the Tier 4 effective date. As explained above, EPA views this proposal as providing reasonable leadtime for introduction of Tier 4 engines by providing the possibility of earlier introduction of such engines with a net cost savings.

c. Existing Inventory Allowance and Replacement Engines

<table>
<thead>
<tr>
<th>Proposed program</th>
<th>Engines exempted over 7 years</th>
<th>Maximum exempted engines in one year</th>
<th>Single Engine Family Restriction?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation under consideration</td>
<td>- 525 for power categories &lt;175 hp. - 350 for power categories &gt;175 hp.</td>
<td>100</td>
<td>- No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposed program</th>
<th>Engines exempted over 7 years</th>
<th>Maximum exempted engines in one year</th>
<th>Single Engine Family Restriction?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation under consideration</td>
<td>- 700 for each power category.</td>
<td>200</td>
<td>- Yes</td>
</tr>
</tbody>
</table>
The current program for nonroad diesel engines includes a provision for equipment manufacturers to continue to use engines built prior to the effective date of new standards, until the older engine inventories are depleted. It also prohibits stockpiling of previous tier engines. EPA is proposing to extend these provisions as manufacturers transition to the standards contained in this proposal.

EPA is also proposing to extend the existing provision for the sale of replacement engines that provides an exception to the applicable compliance regulations. In extending this provision, engines built to replace certified engines must be identical in all material respects to an engine of a previously certified configuration that is of the same or later model year as the engine being replaced. The term “identical in all material respects” would allow for minor differences that would not reasonably be expected to affect emissions.

d. Hardship Relief Provision

EPA is proposing to extend the availability of the “hardship relief provision” with the Tier 4 transition provisions for equipment manufacturers. Under the proposal, an equipment manufacturer that does not make its own engines could obtain limited additional relief by providing evidence that, despite its best efforts, it cannot meet the implementation dates, even with the proposed equipment flexibility program provisions outlined above. Such a situation might occur if an engine supplier without a major business interest in the equipment manufacturer were to change or drop an engine model very late in the implementation process.

Applications for hardship relief would have to be made in writing, and would need to be submitted before the earliest date of noncompliance. The application would also have to include evidence that failure to comply was not the fault of the equipment manufacturer (such as a supply contract broken by the engine supplier), and would need to include evidence that serious economic hardship to the company would result if relief were not granted. EPA would work with the applicant to ensure that all other remedies available under the flexibility provisions were exhausted before granting additional relief, if appropriate, and would limit the period of relief to no more than one year. Applications for hardship relief generally will only be accepted during the first year after the effective date of an applicable new emission standard.

The Agency expects this provision would be rarely used. This expectation has been supported by the initial experience with the Tier 2 standards in which only one equipment manufacturer has applied under the hardship relief provisions. Requests for hardship relief would be evaluated by EPA on a case-by-case basis, and may require, as a condition of granting the applications, that the equipment manufacturer agree (in writing) to some appropriate measure to recover the lost environmental benefit.

Recordkeeping Requirements for Equipment Manufacturers

EPA is proposing to extend the recordkeeping requirements from the current equipment manufacturer transition program. Equipment manufacturers choosing to take
advantage of the proposed Tier 4 allowances would be required to: (1) keep records of the production of all pieces of equipment excepted under the allowance provisions for at least five full years after the final year in which allowances are available for each power category; (2) include in such records the serial and model numbers and dates of production of equipment and installed engines, and the rated power of each engine, (3) calculate annually the number and percentage of equipment made under these transition provisions to verify compliance that the allowances have not been exceeded in each power category; and (4) make these records available to EPA upon request.

EPA is also proposing some new notification requirements for equipment manufacturers with the Tier 4 program. Under this proposal, equipment manufacturers wishing to participate in the Tier 4 transition provisions would be required to notify EPA prior to their use of the Tier 4 transition provisions. Equipment manufacturers would be required to submit their notification before the first calendar year in which they intend to use the transition provisions. Under the proposed notification requirements, each equipment manufacturer would be required to notify EPA in writing and provide the following information: (1) the nonroad equipment manufacturer’s name, address, and contact person’s name, phone number; (2) the allowance program that the nonroad equipment manufacturer intends to use by power category; (3) the calendar years in which the nonroad equipment manufacturer intends to use the exception; (4) an estimation of the number of engines to be exempted under the transition provisions by power category; (5) the name and address of the engine manufacturer from whom the equipment manufacturer intends to obtain exempted engines; and (6) identification of the equipment manufacturer’s prior use of Tier 2/3 transition provisions.

**ACTION:** EPA is requesting comment on whether the notification provisions should also apply to the current Tier 2/Tier 3 transition program, and if so, how these provisions should be phased in for equipment manufacturers using the current Tier 2/Tier 3 transition provisions. EPA believes such a notification provision could be implemented as soon as 2005 and requests comments on the appropriate start date should EPA adopt such a notification provision for equipment manufacturers for the Tier 2/Tier 3 transition program.

**A. Reporting Requirements for Equipment Manufacturers**

EPA is proposing new reporting requirement for equipment manufacturers participating in the Tier 4 equipment manufacturer transition provisions. Under this proposal, equipment manufacturers participating in the program would be required to submit an annual written report to EPA that calculates its annual number of exempted engines under the transition provisions by power category in the previous year. Equipment manufacturers using the percent of production allowance would also have to calculate the percent of production the exempted engines represented for the appropriate year. Each report would include a cumulative calculation (both total number and, if appropriate, the percent of production) for all years the equipment manufacturer has used the transition provisions for each of the proposed Tier 4 power categories. In order to ease the reporting burden on equipment manufacturers, EPA intends to work with the manufacturers to develop an electronic means for submitting information to EPA.
ACTION: EPA is requesting comment on whether these reporting requirements should also apply to the current Tier 2/Tier 3 transition program, and if so, how these provisions should be phased in for equipment manufacturers using the current Tier 2/Tier 3 transition provisions. They request comments on the appropriate start date should EPA adopt such reporting requirements for equipment manufacturers for the Tier 2/Tier 3 transition program.

B. Labeling Requirements for Engine and Equipment Manufacturers

Under this proposal, equipment manufacturers would be required to apply a label to the engine or piece of equipment that identifies the equipment as using an engine produced under the Tier 4 transition program for equipment manufacturers. These proposed labeling requirements would allow EPA to easily identify the exempted engines and equipment, verify which equipment manufacturers are using these exceptions, and more easily monitor compliance with the transition provisions. Labeling of the equipment could also help U.S. Customs to quickly identify equipment being imported using the exemptions for equipment manufacturers.

ACTION: EPA is requesting comment on whether these labeling requirements should also apply to the current Tier 2/Tier 3 transition program, and if so, how these provisions should be phased in and the appropriate start date to adopt such labeling requirements for the Tier 2/Tier 3 program.
Title: EU Engine Emissions

Background:
After three years of negotiations between European Commission (EC), National experts, Industry, European Parliament and Council of Member States, a final document has been approved by EU Parliament in October 2003. It should be endorsed in the next days by EU Member States then published in April 2004 as a new Engine Emission Directive for Non Road Mobile Machinery. The main points are:

- Stage III A identical to EPA Tier 3 starting January 2006 with moderate NOx reduction
- Stage III B identical to interim EPA tier 4 starting January 2011 with PM after treatment + NOX reduction
- Stage IV identical to proposed EPA Tier 4 starting January 2014 with NOx after treatment
- Realistic limits and timing supported by European trade associations: CECE, CEMA, EUROMOT
- Two year Sell Off period for all EU Countries
- Flexibility provision by power band: 20% of one year production or optional small volume allowance
- Technical Review in 2007 to evaluate Stage III B and Stage IV, in-use compliance, and fuel quality

These new EU regulations set the stage of Non Road Engine Emissions for the next ten years and provide our industry with a long-term vision for elaborating consistent product development and marketing strategy with acceptable periods of stability to recover R&D expenses.

Issue Status:
- Get the Technical Review completed end of 2007 with the full involvement of Industry:
  EC will start the Technical Review early 2006 with GEME / Industry participation
  Commission will prioritize the items end of 2004 in considering industry recommendations
  CECE-CEMA-EUROMOT task force re-established to develop position and lobbying action
• Get the Non Road fuel timely and properly regulated for Stage III B implementation:
  EU Commission plans to complete the revision of Road fuel Directive end of 2005.
  EC is expecting industry proposal by 3Q 2004 for the Non Road fuel and could
  incorporate an amendment into the 2005 revision to regulate the Non Road fuel.
• Keep worldwide alignment for 2011 and 2014 steps:
  EC confirmed last week that alignment stays in their top priority list

Future Outcome/Proposed JTLM Action:
• US, Japan, … trade associations to lobby Governmental Authorities to keep alignment of
  further steps
JTLM
5-6 April 2004
European Engine Emissions Regulation
( NRMM)
M.BOUILLIN
**Timetable:**

21 October 2003:
Directive voted by EU Parliament

28 October 2003:
Political agreement expressed by MS’s Council

February 2004:
Juristic linguistic check

March 2004:
Approval by COREPER

April 2004:
Final endorsement /signature of MS’s Council

April 2004:
Publication in EU Official Journal
## Limits and timing

<table>
<thead>
<tr>
<th>kW</th>
<th></th>
<th>Stage IIIA</th>
<th>Stage IIIIB</th>
<th>Stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PM</td>
<td>0.2</td>
<td>0.025</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>Nox+HC</td>
<td>4</td>
<td>2.2</td>
<td>0.4+0.19</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>0.3</td>
<td>0.025</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>Nox+HC</td>
<td>4</td>
<td>3.5</td>
<td>0.4+0.19</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>0.4</td>
<td>0.025</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>Nox+HC</td>
<td>4.7</td>
<td>3.5</td>
<td>0.4+0.19</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>0.4</td>
<td>0.025</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>Nox+HC</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>0.6</td>
<td>0.025</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>Nox+HC</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
</tr>
</tbody>
</table>
Overview of new Emissions Directive:

- Stage IIIA identical to EPA Tier 3 from 2006
- Stage IIIIB identical to inter.EPA Tier 4 from 2011
- Stage IV identical (?) to EPA Tier 4 from 2014
- Sell Off (2 years for all EU countries)
- Flexibility (20% or small volume allowance)
- Acceptable limits and timing for Stages IIIIB & IV
- 2007 Tech Review for evaluating Stages IIIIB & IV
Industry issues:

- Technical Review (Article 2):
  - applicability of PM & Nox after-treatment
  - "In use" compliance

- 10ppm sulphur fuel available for Stage III B

- Worldwide alignment for 2011 and 2014 steps
Strategy for the Technical Review:

Step # I:
• Prepare Industry position by end 2005

Step # II:
• Influence the Tech Review conducted by EC from Jan 2006 to June 2007
• Make sure the Tech Review is complete and published by end of 2007
Proposed JTLM Action:

US, Japan, ...EU trade associations to keep lobbying Governmental Authorities to ensure alignment of 2011 and 2014 steps.
Back up charts
EU Sell Off provision:

Possibility to sell, everywhere in EU, old stage compliant engines during two years after the new stage introduction, provided these engines are built before the effective date of the new stage.
EU Flexibility scheme:

- During the period between two stages, produce and place on market a limited quantity of old stage compliant engines after new stage introduction
- Cumulated flexed quantity: 20% of one year volume
- Alternative: small volume allowance / power range
- Special labels for flexed engines and related machines
- Actual flexed engines reported to National Authority
- Low emission increase: +0.25% Nox, +0.40% PM
Small Volume Allowance:

50 units: 130-560 kW
100 units: 75-130 kW
150 units: 37-75 kW
200 units: 19-37 kW
New Fuel Directive 2003/17 EC :
( amending 98/70 EC Fuel Directive)

<table>
<thead>
<tr>
<th>Year</th>
<th>On Road Fuel</th>
<th>Off Road Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>350 ppm</td>
<td>2000ppm</td>
</tr>
<tr>
<td>2005</td>
<td>ULS available</td>
<td>1000ppm</td>
</tr>
<tr>
<td>2008</td>
<td></td>
<td>100% ULS</td>
</tr>
<tr>
<td>2009</td>
<td>100% ULS</td>
<td></td>
</tr>
</tbody>
</table>

ULS : Ultra Low Sulphur ( < 10 ppm )
Title: Engine exhaust emission -Japan

**Background:**
1. Stronger Emission regulation for Special Motor Vehicles
   - 2006-2008 PM, NOx : 20-50% reduction
2. Current regulations apply only to special vehicles on public roads (on-road vehicles).
3. Introduction of regulation for off-road vehicles are in light of the exhaust emission regulation.
4. Use of low-sulfur diesel oil with a sulfur content of 50 ppm.

**Current status:**
Rule making for Introduction of regulations for off-road vehicles.
1. The study of the framework of law is underway.
2. CEMA proposed one law for on-road special vehicles and off-road special vehicles.
   - The law for on-road special vehicle has already established as a part of safety regulations of Road Vehicles Act Law. It is impossible to make up one law for on-road and off-road special vehicles.
   - The reciprocal recognition between type approval of on-road engine and off-road engine is under consideration.
3. The engines and the vehicles should have marks indicating meet of regulation.
4. The user of off-road vehicles should register and receive identification No.: This is under consideration as one plan. CEMA and other associations are very much against the idea.
5. The vehicles which have no identification are forbidden to use.
   - It will be required 1 year, until details of procedure and standard etc. are decided.

**Actions to be taken:**
Future Measures to Reduce Emission in view of expected Tier 4/Stage 4 (Central Environment Council)
1. Use of low-sulfur diesel oil with a sulfur content of 10 ppm.
2. Regulations Premised on after-treatment devises such as DPF are scheduled to come into force round 2010, which is expected to greatly reduce emission from special diesel vehicles.
3. Importance to harmonize Japanese regulations with EU and EPA.

**Proposed Resolution:**
AEM, CECE, EMA, and Euromot are requested to support CEMA for an internationally harmonized emission regulation at 4th level emission regulation.
1. Target Levels for permissible limits (3rd level emission regulation)

Although understanding the importance of international cooperation, Japan has a strong need to reduce PM emissions.

<table>
<thead>
<tr>
<th>Power P (kw)</th>
<th>PM (g/kwh)</th>
<th>NOx (g/kwh)</th>
<th>HC (g/kwh)</th>
<th>First Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 P&lt;37</td>
<td>0.4</td>
<td>6</td>
<td>1</td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>[0.8]</td>
<td>7</td>
<td>7.5</td>
<td>[2007]</td>
</tr>
<tr>
<td>37 P&lt;75</td>
<td>0.3</td>
<td>4</td>
<td>0.7</td>
<td>2008</td>
</tr>
<tr>
<td>P&lt;55</td>
<td>[0.4]</td>
<td>4.7</td>
<td>4.7</td>
<td>[2008]</td>
</tr>
<tr>
<td>55 P&lt;75</td>
<td>0.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.4]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 P&lt;130</td>
<td>0.2</td>
<td>3.6</td>
<td>0.4</td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>[0.3]</td>
<td>4.0</td>
<td>4.0</td>
<td>[2007]</td>
</tr>
<tr>
<td>130 P&lt;560</td>
<td>0.17</td>
<td>3.6</td>
<td>0.4</td>
<td>2006</td>
</tr>
<tr>
<td></td>
<td>[0.2]</td>
<td>4.0</td>
<td>4.0</td>
<td>[2008]</td>
</tr>
</tbody>
</table>

( ) : EU Emission Standards
Engine exhaust emission Japan

Japan Construction Equipment Manufacturers Association

2004. 4. 5
Background:

1. Stronger Emission regulation for Special Motor Vehicles
   2006-2008 PM, NOx : 20-50% reduction

2. Current regulations apply only to special vehicles on public roads (on-road vehicles).

3. Introduction of regulation for off-road vehicles are in light of the exhaust emission regulation.

4. Use of low-sulfur diesel oil with a sulfur content of 50 ppm.
Target Levels for permissible limits (3rd level emission regulation)

Although understanding the importance of international cooperation, Japan has a strong need to reduce PM emissions.

<table>
<thead>
<tr>
<th>Power P (kw)</th>
<th>PM (g/kwh)</th>
<th>NOx (g/kwh)</th>
<th>HC (g/kwh)</th>
<th>First Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 P &lt; 37</td>
<td>0.4</td>
<td>6</td>
<td>1</td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>[0.6]</td>
<td>7</td>
<td>[7.5]</td>
<td>[2007]</td>
</tr>
<tr>
<td>37 P &lt; 75</td>
<td>0.3</td>
<td>4</td>
<td>0.7</td>
<td>2008</td>
</tr>
<tr>
<td>P &lt; 55</td>
<td>[0.4]</td>
<td>4.7</td>
<td>[4.7]</td>
<td>[2008]</td>
</tr>
<tr>
<td>55 P &lt; 75</td>
<td>0.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.4]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 P &lt; 130</td>
<td>0.2</td>
<td>3.6</td>
<td>0.4</td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>[0.3]</td>
<td>4.0</td>
<td>[4.0]</td>
<td>[2007]</td>
</tr>
<tr>
<td>130 P &lt; 560</td>
<td>0.17</td>
<td>3.6</td>
<td>0.4</td>
<td>2006</td>
</tr>
<tr>
<td></td>
<td>[0.2]</td>
<td>4.0</td>
<td>[4.0]</td>
<td>[2006]</td>
</tr>
</tbody>
</table>

\[\text{EU Emission Standards}\]
**Current status:**

Rule making for Introduction of regulations for off-road vehicles.

1. The study of the framework of law is underway.

2. CEMA proposed one law for on-road and off-road special vehicles. The law for on-road special vehicle has already established as a part of safety regulations of Road Vehicles Act Law. It is impossible to make up one law for on-road and off-road special vehicles.

   The reciprocal recognition between type approval of on-road engine and off-road engine is under consideration.

3. The engines and the vehicles should have marks indicating meet of regulation.
4. The user of off-road special vehicles should register and receive identification No.?
   This is under consideration as one plan.
   CEMA and other associations are very much against the idea.
5. The vehicles which have no identification are forbidden to use.
   It will be required 1 year, until details of procedure and standard etc. are decided.
6. **Probation period** to continuously manufacturing cars and **exemption allowance** to small volume production are under consideration.
Actions to be taken:

Future Measures to Reduce Emission in view of expected Tire 4/Stage 4 (Central Environment Council)
1. Use of low-sulfur diesel oil with a sulfur content of 10 ppm.
2. Regulations Premised on after-treatment devices such as DPF are scheduled to come into force round 2010, which is expected to greatly reduce emission from special diesel vehicles.
3. Importance to harmonize Japanese regulations with EU and EPA.
Proposed Resolution:

AEM, CECE, EMA, and Euromot, EPA are requested to support CEMA for an internationally harmonized emission regulation at 4th level emission regulation.
Gas Emissions In Korea

March 23, 2004

By KOCEMA
| Applied C/E             | 1<sup>st</sup> Step: Excavators, Loaders, Forklifts  
|                         | 2<sup>nd</sup> Step: (Excavators, Loaders, Forklifts) + Dozers, Rollers, Mobile Cranes |
| Regulation Body        | MOE (Ministry of Environment) |
| Time Schedule          | - Tier I: From Jan, 2004  
|                         | - Tier II: From Jan, 2005 |

Note: All details are tentative

- TIER I stage regulation has already started from January, 2004 in Korea
- Used Machines from Overseas should be inspected by each unit
- One unit approval by each model in case of new machine
### Time Table of Gas Emissions

#### 1st stage: Jan. 1 ~ Dec. 31, 2004

<table>
<thead>
<tr>
<th>Engine (kw)</th>
<th>NOX (g/kW·h)</th>
<th>HC (g/kW·h)</th>
<th>CO (g/kW·h)</th>
<th>PM (g/kW·h)</th>
<th>Method of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>19&lt;kw≤37</td>
<td>9.5</td>
<td>5.5</td>
<td>0.8</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>37&lt;kw≤75</td>
<td>9.2</td>
<td>1.3</td>
<td>5.5</td>
<td>0.6</td>
<td>ISO 8178 C1-8 mode</td>
</tr>
<tr>
<td>75&lt;kw≤130</td>
<td>9.2</td>
<td>1.3</td>
<td>5.0</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>130&lt;kw≤225</td>
<td>9.2</td>
<td>1.3</td>
<td>5.0</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>225&lt;kw≤560</td>
<td>9.2</td>
<td>1.3</td>
<td>5.0</td>
<td>0.54</td>
<td></td>
</tr>
</tbody>
</table>

#### 2nd stage: from Jan. 1, 2005

<table>
<thead>
<tr>
<th>Engine (kw)</th>
<th>NOX + HC (g/kW·h)</th>
<th>CO (g/kW·h)</th>
<th>PM (g/kW·h)</th>
<th>Method of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>19&lt;kw≤37</td>
<td>7.5</td>
<td>5.5</td>
<td>0.6</td>
<td>ISO 8178 C1-8 mode</td>
</tr>
<tr>
<td>37&lt;kw≤75</td>
<td>7.5</td>
<td>5.0</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>75&lt;kw≤130</td>
<td>6.6</td>
<td>5.0</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>130&lt;kw≤225</td>
<td>6.6</td>
<td>3.5</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>225&lt;kw≤560</td>
<td>6.4</td>
<td>3.5</td>
<td>0.2</td>
<td></td>
</tr>
</tbody>
</table>
Thank you for your kind attention
Title: Thailand exhaust gas regulation

Background:
Thailand regulate exhaust gas for vehicle.

Current status:
This regulation includes only vehicle and factory. Not includes EMM.

Actions to be taken:
We continue “watching”.

Proposed action (Resolution(if any)):
Not to make question to Government of Thailand about this issue. Keep silent watching is need.
Title: engine emissions

11.1.6. China

No written report

11.1.7. South America

No written report
Major Global Nonroad Emissions Limits and Timeframe - US/EU/Japan/Korea

Limits: HC\(^1\)+NO\(_x\)/PT or HC/NO\(_x\)/PT [g/kW-hr] versus years\(^2\)

<table>
<thead>
<tr>
<th>Power [kW]</th>
<th>2002</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>130 - 560</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0/6.0/0.2</td>
<td>4.0/0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.19/2.0/0.025</td>
<td></td>
<td>0.19/0.4/0.025</td>
<td>EU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4/0.2</td>
<td>4.0/0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.19/2.0/0.02</td>
<td></td>
<td>0.19/0.4/0.02</td>
<td>US 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4/0.2 (2003 130-225 NO(_x) 6.6)</td>
<td>4.0/0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.19/2.0/0.02</td>
<td>4.0/0.02</td>
<td>0.19/0.4/0.02</td>
<td>US 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0/6.0/0.2</td>
<td>0.4/3.6/0.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>not decided(^7)</td>
<td></td>
<td></td>
<td>JAPAN(^5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4/0.2 (2003 130-225 NO(_x) 6.6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>KOREA(^6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 - 130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0/6.0/0.3</td>
<td>4.0/0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.19/3.3/0.025</td>
<td></td>
<td>0.19/0.4/0.025</td>
<td>EU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.6/0.3</td>
<td>4.0/0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.19/3.3/0.02</td>
<td></td>
<td>0.19/0.4/0.02</td>
<td>US 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.6/0.3</td>
<td>4.0/0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.19/2.0/0.02</td>
<td>4.0/0.02</td>
<td>0.19/0.4/0.02</td>
<td>US 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0/6.0/0.3</td>
<td>0.4/3.6/0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>not decided(^7)</td>
<td></td>
<td></td>
<td>JAPAN(^5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3/9.2/0.6</td>
<td>6.6/0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>KOREA(^6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56 - 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3/7.0/0.4</td>
<td>4.7/0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.19/3.3/0.025</td>
<td></td>
<td>0.19/0.4/0.025</td>
<td>EU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5/0.4</td>
<td>4.7/0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.19/3.3/0.02</td>
<td></td>
<td>0.19/0.4/0.02</td>
<td>US 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5/0.4</td>
<td>4.7/0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.7/0.02</td>
<td>0.19/0.4/0.02</td>
<td>US 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3/7.0/0.4</td>
<td>0.7/4.6/0.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>not decided(^7)</td>
<td></td>
<td></td>
<td>JAPAN(^5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3/9.2/0.6</td>
<td>7.5/0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>KOREA(^6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years</td>
<td>02</td>
<td>03</td>
<td>04</td>
<td>05</td>
<td>06</td>
<td>07</td>
<td>08</td>
<td>09</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>-------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>EU</td>
<td>1.3/7.0/0.4</td>
<td>7.5/0.4</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
</tr>
<tr>
<td>US</td>
<td>1.3/7.0/0.4</td>
<td>7.5/0.4</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
<td>4.7/0.3</td>
</tr>
<tr>
<td>EURO</td>
<td>(18+37) 1.5/8.0/0.8</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
<td>7.5/0.6</td>
</tr>
<tr>
<td>US</td>
<td>9.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
</tr>
<tr>
<td>JAPAN</td>
<td>9.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
</tr>
<tr>
<td>US</td>
<td>9.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
</tr>
<tr>
<td>US</td>
<td>9.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
</tr>
<tr>
<td>US</td>
<td>9.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
<td>7.5/0.8</td>
</tr>
</tbody>
</table>

**Remarks:**

1. Total HC in EU, NMHC in US, Korea
2. Placing on the market for EU and MY for EPA
3. Manufacturer's choice
4. Optional limits applicable only to air cooled hand startable DI engines
5. Japan regulation type approval system up to step 2 covers Tunnel machines, TTT, WL, HEX, Portable gensets, compressors, mobile crane
6. Korea regulation covers Wheel & crawler HEX, Wheel & crawler loader, forklift, TTT, Compactor and cranes only.
7. Date of Compliance based upon machine build date or date of importation into Korea.
8. Date has been suggested to be in line with EU and USA.
Title: Regional Trade Organisations

11.2.1 Mercosur

11.2.2 Saso

11.2.1 Asean

11.2.1 Apec
Title: Eastern Europe – report on new EU-countries

Annex
11.2.5. Eastern-Europe – report on new EU-countries
### 11.2.5 Earthmoving Equipment sales in the new EU countries

<table>
<thead>
<tr>
<th>Country</th>
<th>2002</th>
<th>vs. 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>1,100</td>
<td>+20%</td>
</tr>
<tr>
<td>Hungary</td>
<td>1,100</td>
<td>+49%</td>
</tr>
<tr>
<td>Poland</td>
<td>700</td>
<td>+10%</td>
</tr>
<tr>
<td>Baltic Countries</td>
<td>450</td>
<td>+98%</td>
</tr>
<tr>
<td>Others New EU</td>
<td>700</td>
<td>+28%</td>
</tr>
<tr>
<td>Total New EU</td>
<td>4,050</td>
<td>+33%</td>
</tr>
<tr>
<td><strong>Total Eastern Europe</strong></td>
<td>6,300</td>
<td>= 5% of Total Europe!</td>
</tr>
</tbody>
</table>
Title: Trans-atlantic Business dialogue

Annex
TO WHOM IT MAY CONCERN

The Work Programme of the European Commission includes the carrying out of evaluations of certain priority activities.

In 2003, the Unit for International Affairs of the Directorate General for Enterprise decided to launch an evaluation of the Commission’s involvement in the Trans-Atlantic Business Dialogue (“TABD”). The objective is to evaluate the relevance and effectiveness of the TABD’s activities and organisation.

This is to confirm that The European Evaluation Consortium (TEEC) has been selected to carry out this evaluation on behalf of the Directorate General for Enterprise of the European Commission.

In order to ensure that this study is carried out successfully, I would be grateful if you could welcome Messrs. John P. Watson, Alexander Norsworthy, Andres Larriera and Mrs. Melanie Kitchener of the TEEC, who may contact you on the TABD evaluation between now and 30 May 2004. In this respect, I kindly ask you to give them full support and to provide any information that they may need to complete this evaluation. Please note that they are required to treat all information in confidence.

Further information can be obtained from Mr Antti KARHUNEN (tel. +32 2 296 02 81, e-mail: antti.karhunen@cec.eu.int).

Thanking you in advance, I remain,

Yours sincerely,

Signed
Philippe Jean
TRANSATLANTIC BUSINESS DIALOGUE ANNOUNCES 2004-5 CO-CHAIRS

The Coca-Cola Company’s Douglas N. Daft and Unilever’s Niall FitzGerald will lead revitalised TABD

Brussels & Washington, DC: Niall FitzGerald, co-chairman and CEO, Unilever and Douglas N. Daft, chairman and CEO, The Coca-Cola Company, will be the new co-chairs of the TransAtlantic Business Dialogue (TABD) and will hold their tenure until the end of 2005.

After a period in which governments and business on both sides of the Atlantic have reflected on the future of the TABD, Unilever and Coca-Cola are to lead its efforts to strengthen the transatlantic relationship and foster global economic cooperation and development. The TABD’s activities will have a new focus and will be built on the participation of a core group of CEOs from companies from both the services and manufacturing sectors.

FitzGerald said: “The quality and experience of the people who are committing themselves to this initiative signal a renewed dedication to strengthening transatlantic partnerships. We cannot take transatlantic economic ties for granted and shall play our part in identifying common global challenges and recommending appropriate responses through the direct participation of our member companies’ chief executives.”

“It is crucial that the TABD maintains the momentum behind the multilateral approach to the trade agenda. We will encourage the EU and the US to adopt convergent rather than divergent policy approaches to important financial and economic issues so as to avoid obstacles to proper conduct of transatlantic business,” he added.

-more-
Daft and FitzGerald are in the process of bringing together a ‘business advisory board’ consisting of CEOs from European and US companies across a range of business sectors which will meet for the first time in January.

“The TABD certainly will make a difference by helping improve transatlantic relations and identifying and working for the elimination of trade barriers and other obstacles between the US and the EU that inhibit economic growth on both sides of the Atlantic and needlessly raise costs to consumers,” said Daft.

Daft and FitzGerald assumed their commitments after the US Secretary of Commerce Don Evans, European Commissioner for Trade Pascal Lamy and European Commissioner for Enterprise and the Information Society Erkki Liikanen all gave their strong support and commitment to the TABD process.

###

Notes to editors:

Since 1995, the TABD has played a crucial role in fostering the exchange of ideas and promoting constructive solutions in US-EU issues. The TABD will under its new leadership pursue a core agenda within a new structure and operating model that will allow business to play an effective and influential role in strengthening transatlantic relations. The TABD will proactively identify upcoming challenges and give concrete high-level business input to the EU-US government leadership. The TABD will aim for a re-invigorated transatlantic alliance to foster global economic cooperation and development.

The following companies have committed to being TABD members, and a number of other companies are expected to do the same in the near future:

The Coca-Cola Company, Unilever, The Estée Lauder Companies, UPS, FedEx, Ernst & Young, Merck, Arcelor, BASF, Deutsche Bank, Ericcson, Lafarge, Renault, Repsol, SEB and Shell.

A biography and high-resolution photo of Mr. Douglas N. Daft may be found at:

http://www2.coca-cola.com/ourcompany/executivea.html

A biography and high-resolution photo of Mr. Niall FitzGerald may be found at:

Title: Recognition of global standards in National regulations

Annex
0. **Introduction**

The earth-moving machinery industry has been a global industry for many years and ISO standards have already been developed to address most of the regulatory issues. Thus, an International Model for harmonizing technical regulations based upon international standards can be easily prepared for earthmoving machines. ISO/TC 127 was formed in 1968 with an objective to develop a complete set of standards to address the safety and commercial needs for earth-moving machinery. Over 100 standards for earth-moving machinery have been published and new standards are continually being developed to address new technology and new types of earth-moving machinery.

Many national and regional regulations already use the technical requirements in the ISO/TC 127 standards to address the safety risks for earth-moving machinery. A good example is in the EU, where the EN 474 standard was developed for manufacturers as one means of conforming with the essential requirements of the EU Machinery Directive (98/37/EC). EN 474 addresses all significant risks for earth-moving machinery and the technical requirements to minimize the risks are covered by references to more than 50 ISO/TC 127 standards.

During the Construction Equipment Joint Technical Liaison (JTLM) meeting in 2003 between the industry associations from Europe (CECE), the USA (AEM) and Japan (CEMA), it was unanimously decided to propose a CRO (Common Regulatory Objectives) for Earth-Moving Machinery within UN/ECE/WP6. It was also decided to establish a Working group to develop the proposal for the CRO on Earth-Moving Machinery based on the ISO/TC 127 standards and an ISO version of EN 474. The following were nominated as members of the JTLM working group:

Jan Mimer, Volvo and Gerhard Steiger VDMA, representing CECE and the EU
Dan Roley, Caterpillar, representing AEM and the USA
Kenzo Tanaka, Komatsu, representing CEMA and Japan

A CRO for earthmoving machines is proposed, incorporating the principal elements defined in Annex B of the United Nations report “ECE/STAND/17Rev.4”.

1. **Scope Statement**

This CRO specifies the general safety requirements for earth-moving machinery (machines as described in ISO 6165). This CRO deals with all significant hazards pertinent to earth-moving machinery, when used as intended and under the conditions foreseen by the manufacturer. This CRO specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards and hazardous situations for earth-moving machinery.
2. Machine Requirements

This CRO applies to the design and construction of earth-moving machinery and establishes essential Health and Safety requirements concerning the prevention of hazards to which workers can be exposed at work. Machinery must be constructed so that it can be used, adjusted, and maintained without putting persons at risk when these operations are carried out under the conditions foreseen by the manufacturer. Measures must be taken to minimize any risk of accident throughout the foreseeable lifetime of the machinery, including the phases of assembly and dismantling.

The CRO deals with the following general safety requirements for earth-moving machinery, with the technical requirements specified in the corresponding ISO standards:

- Access systems – ISO 2869 and ISO 2867
- Operator space – ISO 3411
- Operator protection systems – ISO 3449, ISO 3471, ISO 10262 and ISO 12117
- Braking – ISO 3450 and ISO 10265
- Visibility – ISO 5006
- Steering – ISO 5010
- Controls - ISO 10968 and ISO 6682
- Seats and seat belts – ISO 11112 and ISO 6683
- Vibration – ISO 7096
- Sound – ISO 6393, ISO 6394, ISO 6395 and ISO 6396
- Safety signs – ISO 6405 and ISO 9244
- Electrical – ISO 9247, ISO 13766 and ISO 15998
- Warning alarms – ISO 9533
- Operator environment – ISO 10263
- Lighting – ISO 12509
- Guarding – ISO 3457
- Operator Instructions – ISO 6750
- Visual displays – ISO 6011

The specific requirements to address the risks in these areas are covered in the ISO/TC 127 standards listed in the references.

NOTE: ISO/TC127 has just started a project to develop an ISO version of EN 474, where all relevant specific requirements for earth-moving machinery will be compiled in one standard.

3. Reference to ISO Standards for Compliance

Machines that comply with the ISO standards for earthmoving machines (see the standards list at end of the CRO proposal) are presumed to comply with the requirements.

4. Compliance Clause

Compliance with this CRO shall be shown by Suppliers Declaration of Conformity (SDoC).
5. Market surveillance and Protection Clause

Countries having agreed to the CRO are responsible for market surveillance within their territory. If a country finds machines claiming conformity with a CRO that do not actually conform to the requirements, the country may withdraw such a machine from its market.

Listing of ISO Standards for Earth-Moving Machines

ISO 2860:1992, Earth-moving machinery — Minimum access dimensions
ISO 3411:1995, Earth-moving machinery — Human physical dimensions of operators and minimum operator space envelope
ISO 3449:1992, Earth-moving machinery — Falling-object protective structures — Laboratory tests and performance requirements
ISO 3450:1996, Earth-moving machinery — Braking systems of rubber-tyred machines — System and performance requirements and test procedures
ISO 3457:2003, Earth-moving machinery — Guards — Definitions and requirements
ISO 3471:1994 Earth-moving machinery — Roll-over protective structures — Laboratory tests and performance requirements
ISO 6011:2003, Earth-moving machinery – Visual display of machine operating functions


ISO 12117:1997, Earth-moving machinery - Tip Over Protection Structure(TOPS) for Compact Excavators - Laboratory tests and performance requirements


ISO 13766:1999, Earth-moving machines — Electromagnetic compatibility