

February 16, 2007

Clerk of the Board  
 Air Resources Board  
 1001 I Street, 23<sup>rd</sup> Floor  
 Sacramento, CA 95814

**RE: Comments to ARB’s Second Notice of Public Availability for the Adoption of New Emission Standards, Fleet Requirements, and Test Procedures for Forklifts and Other Industrial Equipment**

IMPCO Technologies, Inc. (IMPCO) respectfully submits the following comments regarding the subject proposed modifications.

**Field-Test Standards for Engines Certified to Optional Lower Emission Standards (“OLES”), All Model Years**

CCR 2433, 1048.140

ARB proposed to add the following language to CCR 2433 to allow for more lenient OLES field-test standards:

“(b)(2)(B) Field Testing Standards. The field testing standards for optional emission standard off-road large spark-ignition engines shall be 140 percent of the corresponding OLES HC+NOx standard and 150 percent of the corresponding OLES CO standard, rounded to the nearest tenth of one gram, using the field testing procedures described in subpart F, Title 40 (CFR) Section 1048.101(c).”

However, these proposed field-test standards are not incorporated into 1048.140 of either the 2007-2009 or 2010 and later ‘Proposed California Exhaust and Evaporative Emission Standards and Test Procedures for New Off-Road Large Spark-Ignition Engines’. IMPCO suggests that ARB update 1048.140 to remain consistent with the language in CCR 2433.

**Tier 2 versus OLES Emission Standards, Model Years 2007-2009**

CCR 2433, 1048.101, 1048.140

The difference between the MY2007-2009 Tier 2 emission standards and the MY2007-2009 OLES emission standards is still not clear.

The proposed OLES emission standards  $\geq 0.8$  g/kW-hr HC+NOx are:

Model Year	Engine Displacement	Durability Period	Standard – g/bhp-hr (g/kW-hr)	
			HC+NOx	CO
2007-2009	> 1.0 liter	5000 hours or 7 years	1.5 (2.0)	4.8 (6.4)
			1.0 (1.3)	8.3 (11.1)
			0.6 (0.8)	15.4 (20.6)

These OLES emission standards are identical to the Tier 2 standards found in 1048.101 using the formula  $(\text{HC}+\text{NO}_x) \times \text{CO}^{0.784} \leq 8.57$ . Because the standards are the same, it appears that the primary differences between the Tier 2 and the OLES standards are:

1. Field-Test Standards

To account for varying engine operation in the field, the Tier 2 field-test standards are more lenient than the Tier 2 certification standards.

Engines certified to the OLES standards have identical field-test and certification standards.

2. Flexibility in Choosing Emission Standards

Tier 2 standards allow for certification to any emission standard using the formula  $(\text{HC}+\text{NO}_x) \times \text{CO}^{0.784} \leq 8.57$  as long as the standards do not exceed 2.7 g/kW-hr HC+NOx and 4.4 g/kW-hr CO.

Under the OLES provisions, a manufacturer certifying an engine to  $\geq 0.8$  g/kW-hr HC+NOx may only certify to three distinct standards (above). For example, a manufacturer may not certify an engine to 1.5 g/kW-hr HC+NOx under the OLES provisions.

With more stringent field-test standards and minimal flexibility when choosing an emission standard, there does not appear to be any reason for a manufacturer to certify under the OLES provisions. IMPCO requests that ARB either provide further clarification on the difference between engines certified under the Tier 2 and OLES emission standards, or remove Section 1048.140.

**Units Used for Emission Standards, All Model Years**

40 CFR 1048

Although ARB has clarified that emissions are to be reported in units of g/kW-hr, the primary emission standards are still written in terms of g/bhp-hr with g/kW-hr listed after, in parenthesis. To minimize confusion between ARB and EPA regulations, the primary reference to all emission standards should be in g/kW-hr with g/bhp-hr listed after, in parenthesis.

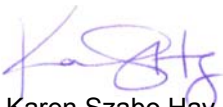
**Emission-Related Warranty Requirements, Model Year 2010 and Later**

1048.120

ARB proposed to add a new paragraph (f) to Section 1048.120. Because 1048.120(f) already exists, ARB should clarify that either the existing paragraph (f) is to be replaced with the new paragraph (f), or that the new paragraph (f) be renamed paragraph (h) and added to Section 1048.120.

Thank you for the opportunity to publicly comment on this proposal. Please give me a call if you have any questions.

Respectfully,



Karen Szabo Hay  
Certification and  
Regulatory Affairs