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Diesel/Biodiesel Blends – Discussion Paper  
Fuel and Used Oil Policy Section  
Department of the Environment and Heritage  
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Please find attached Caltex's submission on the November 2006 discussion paper,  
*Standardising Diesel/Biodiesel Blends*.

I would be pleased to respond to any questions you might have on the submission.

Yours sincerely

Frank Topham

Government Affairs & Strategic Communications Manager

## 1. Summary

Caltex does not support any of the options 1 to 4 in the discussion paper in isolation. Instead, we propose a regulatory approach that is in effect a hybrid of options 2 and 4, with some additional requirements. This approach, which best meets the criteria set out in Section 2, is set out in Section 3 below. Further technical details of Caltex's preferred approach are set out in Section 4.

At the broadest level, Caltex's approach is as follows:

- Allow diesel containing a maximum of 5% biodiesel to be sold as diesel without any prescribed labelling provided the diesel and biodiesel components meet the diesel and biodiesel fuel quality standards respectively and also allow a density waiver for the blend – this is similar to option 2.
- Allow diesel containing above 5% and up to 20% biodiesel to be sold for commercial use (ie not at retail) provided it is clearly labelled as "biodiesel blend" (not "diesel"), carries additional labelling relating to vehicle suitability and meets a biodiesel blend standard – this is similar to option 4 except for the blend range covered.
- Allow diesel containing above 20% to be sold for commercial use subject to the granting of a fuel quality variation.

Caltex recognises that discussion of this complex issue is at an early stage, so our final position, if and when regulatory options are formally proposed, may evolve to take account of new information that becomes available in the interim.

## 2. Criteria for evaluation of options

In arriving at a Caltex position, various options (including those in the discussion paper) have been evaluated against a number of criteria:

- **Refining economics** – for some refineries, it is expensive to reduce the density of diesel for blending so as to allow blends to meet the diesel density standard. This is true even for B5. As a result, relaxation of the diesel density standard for blends is important to avoid significant refining cost penalties, which could act as a barrier to development of the biodiesel industry.
- **Competitiveness** - some refiners and importers (including BP Bulwer Is refinery) supply low density diesel and could meet a B5 (or even B20) density standard of 850 kg/m<sup>3</sup> and gain competitive advantage against Caltex if there was no relaxation of the biodiesel blend density standard relative to diesel. We note that some suppliers (eg BP Bulwer Is refinery) already benefit from a fuel quality variation to allow them to supply low density diesel that does not meet the diesel standard. Regulation should not lead to outcomes that favour one competitor over another.
- **Warranties** – vehicle manufacturers need to agree (without exception) that blends up to B5 and meeting a biodiesel blend standard will not void warranties in relation to fuel. This may take considerable discussion but is a critical factor underpinning consumer acceptance. If and when a significant number of manufacturers warrant vehicles for blends above 5%, we will have a policy situation similar to E10 where the fuel (in this case blends above 5%) can be sold generally subject to appropriate labelling and other consumer information (such as a vehicle suitability list).
- **Consumer acceptance** – consumers are familiar with diesel but biodiesel blends are a new and largely unknown fuel. In order to encourage consumer confidence and uptake of

biodiesel blends, it would be highly desirable to label blends up to and including B5 as "diesel", provided vehicle manufacturers agree that blends up to B5 meeting a blend standard are in all respects interchangeable with diesel.

- **Consumer confidence** - labelling of blends above B5 is essential as these blends present warranty issues for most (if not all) vehicle manufacturers. Use of these blends is therefore at the customer's risk, which may be quite acceptable for many applications eg off-road fleets, because of the technical support available for fleet monitoring and maintenance.
- **Fuel quality** - additional parameters eg filter blocking tendency, need to be included in a biodiesel blend standard to ensure it meets the requirements of vehicle manufacturers, fuel suppliers and consumers.
- **Enforcement of quality standards** – unless a biodiesel blend standard is enforced, consumers may rapidly lose confidence in biodiesel blends (and biofuels generally).
- **Tax treatment** – the eligibility of various blends for fuel tax credits affects the commercial viability of blends.

### 3. Caltex position on biodiesel blends

- Caltex supports the creation of a biodiesel blend standard.
- All blends (from 1% upwards) must meet the biodiesel blend standard (ie once it is regulated). The biodiesel and diesel components of a blend must meet the biodiesel and diesel standards respectively.
- There should be no density standard for biodiesel blends. Instead, each of the blend components should meet the relevant density standard for that component, which effectively imposes a density limit on the blend. If this is not acceptable because of the perception that density is not controlled, there should be a scale of density limits for biodiesel blends - this would be based a linear relationship between the maximum densities of diesel (850 kg/m<sup>3</sup>) and biodiesel (890 kg/m<sup>3</sup>). For example, the maximum density for B5 would be 852 kg/m<sup>3</sup>. The effective density limits for these alternative regulatory options are the same.
- A fuel quality information determination should make clear that biodiesel blends up to B5 that meet the biodiesel blend standard may be sold as diesel and do not need to be labelled at the pump – this is because they are interchangeable with diesel. All vehicle manufacturers should confirm that blends up to B5 will not affect warranties (which would be consistent with the European diesel standard). Suppliers may wish to label voluntarily (eg "contains x% biodiesel" or "contains up to x% biodiesel") but this should not be mandated for blends up to and including B5. All blends must be identified in transaction documentation at the wholesale level.
- Biodiesel blends above B5 must be sold as "biodiesel blend" not as diesel and labelled as such. They must be labelled with the content of biodiesel ("contains x% biodiesel" or "contains up to x% biodiesel") and information relating to warranties (similar to the former ethanol label eg "Check with your manufacturer before using this product"). As outlined in Section 1, Caltex does not support sale of blends above 5% at retail until a significant number of manufacturers warrant such a product. If and when this occurs, the labelling requirements above would apply at retail as well as wholesale/commercial supply.
- There is no need for a biodiesel blend standard to set a floor on the percentage of biodiesel in a blend. Blends as low as 2% could fail to meet the diesel standard (although Caltex's 2% blend fully meets the standard). There is good reason to cap blends at 20% (or some other emerging standard determined by vehicle manufacturers) in order to promote consumer confidence. As discussed above, a 5% cap should apply at retail initially.
- A quality standard, together with appropriate labelling and enforcement is necessary for consumer confidence and acceptance but is not sufficient – it must be accompanied by significant vehicle manufacturer acceptance and confidence that all the fuels made to conform to the standard are in fact fit for use. In relation to the latter point, there are a number of examples of gasoline and diesel fuels meeting standards that have nevertheless caused problems in applications. With a fuel as new as biodiesel blends, caution is warranted to ensure that biodiesels made from a wide variety of feedstocks make blends that are satisfactory in all applications.
- Caltex has no views on whether a full fuel tax credit (FTC) should be available to biodiesel blends except that a full FTC should be available for blends up to and including B5. Caltex notes the government may wish to apply a cap to blends that are eligible for a full FTC.

## 4. Parameters to be regulated

### 4.1 General considerations

Biodiesel blending is done mainly in terminals rather than refineries and terminal laboratories are usually staffed and equipped to a much less sophisticated level than refinery laboratories.

Caltex assumes regulation will not require tests to be performed on all batches released. As for petrol, diesel and auto LPG, the government should simply require a supplier to have confidence that all product released conforms to the standard. Frequency testing (testing of say every fifth or 10<sup>th</sup> batch for properties that always easily meet the specification), or reliance on the known qualities of diesel and biodiesel should be adequate. Moreover, Caltex recommends only tests that add genuine value be regulated.

When a property is regulated in both the diesel and B100 standards, or there is an accepted Australian industry limit, or when typical ULSD is far superior to B100 quality, the least stringent limit (generally the B100 limit) should NOT apply for the blend specification. The correct specifications for blends are discussed in the sections below.

### 4.2 Oxidative stability

It is well recognised among fuel scientists that ASTM D 2274 is not a particularly useful test method for ensuring customer satisfaction, even for conventional diesel. Some fuels which perform poorly during prolonged storage will pass the test. Fuel scientists have sought a more reliable test which can be applied to routine quality control with limited success (eg ASTM D 5304) and consequently ASTM D2274 continues to be tolerated in fuel standards.

During the 1980s, some Australian automotive diesel was unstable in storage due to the inclusion of substantial concentrations of unhydrotreated catalytically cracked blendstock. Interestingly, the concentration was close to the 20% limit being considered for biodiesel blends in Australia.

The advent of 500 and 50 ppm sulfur diesel effectively eliminated the inclusion of unhydrotreated catalytically cracked blendstock in Australian diesel. Consequently, the oxidation stability requirement in the Australian diesel standard is essentially redundant, as all fuels very easily pass the specification of 25 mg/L max. It is likely that any test results above 7 mg/L obtained for Australian ULSD are due to inaccurate measurements and not a true reflection of fuel quality.

Given that ASTM D2274 with an associated limit of 25 mg/L is neither a useful nor reliable test method for current Australian diesel, it is unlikely to serve a useful purpose for biodiesel blends. Even though biodiesel is the minor blendstock, there would be more value in using the biodiesel test method prEN14112 together with a limit somewhat tighter than the B100 minimum limit of 6 h at 110°C.

### 4.3 Filter blocking tendency (FBT)

The limit should be 2.0 rather than 2, so the compliance range is 1.95 to 2.04 rather than 1.5 to 2.4. There is a significant difference in the filter life expected from fuel with FBT of 2.4 (which satisfies a specification of 2 maximum) and a fuel which satisfies 2.0 maximum.

### 4.4 Total acid number (TAN)

TAN is limited to 0.80 mg KOH/g in the B100 specification and the same limit is proposed in the discussion paper.

The accepted limit for diesel in the Australian oil industry is 0.30 mg KOH/g and typical Australian quality is well below this limit. A recent submission by AIP to DEH argued that the limit of 0.08 mg KOH/g in the World Wide Fuel Charter was out of step with other diesel specifications and that a limit of 0.20 mg KOH/g would be appropriate for Australian diesel.

Caltex recommends the TAN limit for B20 should be 0.30 mg KOH/g ( $80\% * 0.2 + 20\% * 0.80 = 0.32$  rounded to 0.30 mg KOH/g maximum).

#### 4.5 Phosphorus, Metals Groups 1 and 2

The B100 limits are much higher than typical Australian ULSD concentrations, reflecting the realities of the manufacturing process for biodiesel. Consumers should be provided with biodiesel blend quality which is a blend of typical ULSD and B100. Transferring the same limits from the B100 specification to the blend specification could encourage the production of lower quality B100 as a blendstock for biodiesel blends. This is not in the interests of consumers or the biodiesel industry.

Caltex recommends for B20 the appropriate limits should be 20% of the B100 limits:

Phosphorus	2 mg/kg max.
Group 1 metals (Na + K)	1 mg/kg max.
Group II metals (Ca + Mg)	1mg/kg max.