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Regulation of jettisoned material from space launch vehicles
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PEPANZ submission on discussion document concerning jettisoned material from rockets or space launch vehicles under the EEZ Act

Introduction

This document constitutes the Petroleum Exploration and Production Association of New Zealand's (PEPANZ) submission in respect of the discussion document titled *Proposed regulation of jettisoned material from rockets or space launch vehicles under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act* ("Discussion Document"), which was released by the Ministry for the Environment in August 2016.

Answers to Questions in the Discussion Document

Environmental effects

Q1. Do you agree that the environmental effects described are the main environmental effects likely to occur as a result of the activity? If not, why not?

Based on a brief consideration of the available information, yes, but with a major qualification. The discussion document considers only the expected effects of the specific proposal (i.e. its specific jettisoned material, jettison zones, frequency of launches etc.) and jettisoned material associated with other space launch proposals could have completely different effect profiles.

Q2. Do you agree with the scale of the described environmental effects? If not, why not?

Not answered.

Q3. Are there any other environmental effects that you are aware of that the Government should consider? If so, what are they?

Not answered.

Economic effects

Q4. Do you agree that the economic effects described are the main economic effects likely to occur as a result of the activity? If not, why not?

Not answered.

Q5. Do you agree with the scale of the described economic effects? If not, why not?

Not answered.

Q6. Are there any other economic effects that you are aware of that the Government should consider? If so, what are they?

We note the potential adverse economic effects of the proposed activity on other marine users (for example various marine traffic, commercial fishing, and potential seabed mining) have not been explicitly considered as the economic analysis in the discussion document is focused on the economic benefits associated with the proposed space launch activity. It is recognized any adverse economic effects on other marine users would be hard to assess as these would seem to relate primarily to the need to avoid the jettison zone at certain times and would depend on the nature of the impacted activity. Please also see our comments below in response to question 8.

Effects on existing interests

Q7. Do you agree that the existing interests described are the main existing interests? If not, why not? Please describe any other existing interests you are aware of that may be affected by the activity.

What has not been identified in terms of existing interests are the presence of permits under the Crown Minerals Act that overlap the planned jettison zones. For example the southern (sun-synchronous launch) debris zone is overlapped by a petroleum prospecting permit. Exercising this permit could for instance involve undertaking seismic surveying in that area and doing this would be impacted by the need to avoid the jettison zones at certain times.

Q8. What do you think the main effects will be on existing interests? Please provide any information you have in relation to those effects.

Given the generally remote locations of the jettison zones we would assume the effects should be manageable (but not necessarily costless) if accurate and timely information is provided to potentially affected marine users on where and when jettisoned material may come down. The one exception to this is any marine activity that would be present in a jettison zone on a prolonged or perhaps permanent basis (e.g. a possible mining activity) and so could not simply avoid the zone or leave it as required. In this respect the proposed activity is different to other permitted activities under the EEZ Act, which are generally temporary rather than ongoing.

Whilst the likelihood of a vessel within a jettison zone being struck by a piece of jettisoned material is very low, the effects of a vessel or piece of equipment being struck by a large piece of debris falling at high speed (e.g. a 350 kilogram motor assembly) could be disastrous. It will be important to ensure that information on where and when jettisoned material may come down reaches all relevant marine users including recreational mariners and international interests. Various vessels and in some cases yachts (including round the world yacht races) transit through the southern zone in particular.

Whilst it should be possible for other marine users to avoid the jettison zones when necessary there may be costs in doing this (need to re-route or leave the area temporarily before returning). For example if a marine seismic survey was occurring in an affected area the survey design and operations might need to be modified to account for this, which might increase the duration and cost of the survey.

The accuracy and timeliness of the information provided to other marine users will be important to mitigate the impact on other marine users. For example the larger the zones to avoid are, and the more uncertain the launch time, the greater the potential impact on other users. If changes in planned launch times are allowed at relatively short notice this could impose more significant costs for other marine users by upsetting pre-existing avoidance plans, or expose them to greater risk.

An issue that does not seem to have been considered in the discussion document is the potential impact of a launch or flight malfunction leading to the rocket itself or jettisoned material landing outside the pre-identified debris zones. We note that rocket malfunctions are not unusual and that in regard to other activities under the Act there is often a focus on the effects of unlikely but potentially high impact events.

Classifying the deposit on the seabed of jettisoned material from space launch vehicles as a permitted activity

Q9. Do you agree that the deposit on the seabed of jettisoned material from space launch vehicles should be classified as permitted? If not, how should the activity be classified or regulated?

Not answered.

Proposed conditions for the activity

Q10. Do you agree with the proposed conditions for the activity? If not, what changes would you propose and why?

The activity that is being permitted by regulations needs to be clearly defined and limited to the considered parameters of the specific space launch proposal (e.g. type of jettisoned material, jettison zones etc.). Other space launch proposals, or a variation of this proposal, would have different effect profiles thereby potentially requiring different conditions or perhaps an entirely different regulatory approach.

We note the discussion document highlights that effects on the high seas are managed under the *Maritime Transport Act 1994*, however it is uncertain whether any controls would be imposed on the proposed space launch activity under that legislation. As such we have considered the implications of only the proposed conditions on other users.

Consideration needs to be given to the practical implications of the proposed pre-activity notification on both the rocket operator and other parties (mainly marine users). It is not clear from the discussion document how the 15 day notification and 24 hour confirmation work in practice and how rigid they are. For example can the final confirmation at no less than 24 hours from launch differ in any way from the launch date and time originally notified (at least 15 days prior) or is it

purely a confirmation of the prior notification (i.e. is there any ability for the launch date and time to be amended within 15 days of launch and/or for the launch to be delayed due to bad weather or technical problems etc.)?

It is important that any notices to mariners issued are sufficiently accurate and timely to enable the information to be sensibly acted upon. As noted above the shorter the notice period of the launch provided to other marine users the greater the potential impact on their operations or risk of them being exposed to falling debris.

Q11. Are there any other conditions that you think should be set on the activity?

The proposed approach relies on other marine users proactively avoiding areas. We have not identified any other obvious conditions to apply that wouldn't likely impose significant obligation or costs on the party launching space vehicles (e.g. requiring the jettison zone to be observed to be clear).

Other comments

Q12. Do you have any other comments you wish to make?

Regulating the proposed activity as permitted, subject to notification requirements to the EPA, is a different and more straightforward approach compared with the notification and other requirements that are imposed on those conducting many other types of permitted activity under the EEZ Act. This is an interesting development given the effects on the environment and existing interests are more obvious for this proposal than for some of the activities subject to the more extensive requirements under the *Exclusive Economic Zone and Continental Shelf (Environmental Effects—Permitted Activities) Regulations 2013* (e.g. seabed sampling).

In light of this we would suggest consideration needs to be given to reviewing those existing 2013 permitted activity regulations to ensure that the obligations and controls placed on the various permitted activities under the EEZ Act are proportionate and appropriately consistent.

Cameron Madgwick
Chief Executive