

FINANCIAL RESPONSIBILITY AND GOVERNMENT INDEMNITIES FOR COMMERCIAL SPACE LAUNCH ACTIVITIES — THE AUSTRALIAN APPROACH

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ABSTRACT

A number of countries including the United States, Russia, Sweden and the United Kingdom have regulatory régimes governing commercial space activities. In 1998 Australia joined the ranks of those countries by adopting a Space Activities Act. This paper examines the influence on the Australian legislation of models from other countries, with particular emphasis on the issue of financial responsibility and the sharing of risk between launch operators and governments.

The paper observes that the regulatory burden on launch service providers varies from country to country, ranging from a minimum requirement of registration (such as in Sweden) to comprehensive regulatory, environmental, safety and financial requirements. The extent to which the governments indemnify launch service providers in the event of international liability claims under the Liability Convention also varies from country to country.

The paper also considers the United States approach to financial responsibility and insurance requirements that are based on calculations of the maximum probable loss and considers the appropriateness of this method in the Australian context. The paper concludes that in terms of

exposure to financial responsibility for international liability claims, companies launching from Australia enjoy a relative advantage.

INTRODUCTION

Australia has always been an obvious choice for launching space objects, due to its vast vacant land and sparse population. Recent proposals to develop space launching facilities at Woomera (South Australia), Christmas Island (Western Australia) and Gladstone (Queensland) have persuaded the Australian Government to provide a secure and stable domestic regulatory framework that is competitive with those of other countries. Consequently, the Space Activities Act 1998 (Cth), which came into force in December 1998, is intended to provide a system of regulating commercial space activities conducted in Australia or by Australian nationals outside Australia, thus implementing Australia's international obligations under the United Nations space treaties.

The Space Activities Act provides a comprehensive regulatory framework for the

regulation of 1) launch facilities; 2) the launching of space objects; and 3) the return of space objects. Since these régimes significantly differ in the regulatory and financial burden imposed on commercial launch operators, the laws themselves deserve closer attention.

LICENSING REQUIREMENTS

A. The Coverage of the Relevant Laws

The Space Activities Act applies to space activities conducted either in Australia or by Australian nationals overseas. This is in line with the definition of the “launching State” found in the Liability Convention, as the Australian Government is responsible for the space activities of its nationals, wherever the activities themselves are conducted. For anyone operating a launch facility in Australia, a space licence is required for each kind of launch vehicle proposed to be launched.¹ In order to launch a space object from a facility located in Australia, including its external territories, a launch permit is required.² Where an Australian national intends to launch a space object outside Australia, an overseas launch certificate is necessary.³ Authorisation by the Government is also required for the return to Australia of any space object, whether launched from overseas or from Australia.⁴

In the United States, the Commercial Space Launch Act 1984 (US), as amended in 1988 and 1998, provides the framework for launching commercial space objects. The law applies to space launching activities conducted overseas by a citizen, an entity existing or incorporated under United States law, and a foreign entity with the controlling interest held by a citizen or entity of the United States.⁵ This controlling interest is defined as the ownership of an amount of equity sufficient to direct management or to void transactions entered into by management. Ownership of fifty-one percent of the equity creates a rebuttable assumption that a controlling interest is being held.⁶

A launch may be exempted from licensing requirements under the relevant regulations in the United States, provided that:

- 1) the launch takes place from a private site;
- 2) the rocket has a motor or combination of motors with a total impulse of 200,000 pound-seconds or less;
- 3) the motor or combination of motors have a total burning time or operating time of less than fifteen seconds; and
- 4) the rocket has a ballistic coefficient of less than twelve pounds per square inch.⁷

It remains to be seen whether a similar exemption will be allowed in the Australian regulations currently being drafted.

In Sweden and Russia, both the Act on Space Activities 1982 (Swe) and the Law on Space Activity 1993 (Rus) applies to the space launching activities either conducted in the country or conducted by their nationals at an overseas facility.⁸ The scope of these laws is therefore similar to the Australian law. In the United Kingdom, on the other hand, the Outer Space Act 1986 (UK) applies only to British subjects who conduct space activities in the United Kingdom, its colonies and dependent territories.⁹

B. Required Licences and Permits

In Russia, Sweden, the United Kingdom and the United States, a single permit or licence is issued to cover a single launch using a particular type of launch vehicle at a specific launch facility with a particular payload. In the United States, for example, a launch permit may be issued to cover a series of launches using the same type of launch vehicle at the same launch facility. The regulatory authorities maintain a very high level of discretion over the prerequisites and the terms and conditions in a licence or permit with

respect to the different aspects of their activities. Consequently, it is often difficult for launch operators to ascertain in advance the exact requirements for each proposed launch.

In Australia, separate licences and permits are required for the different activities of a launch operator. For every launch from Australia, including its external territories such as Christmas Island, the launch operator must hold a space licence to operate the launch facility using a particular type of launch vehicle as well as a launch permit for launching a particular rocket or for a series of launches using the same kind of rocket. For an Australian national to launch from an overseas facility, an “overseas launch certificate” is necessary. Where the return of a space object to Australia is contemplated, permission from the relevant Minister must be obtained and may be contained in the particular launch permit if the payload was launched from Australia.¹⁰ While this may appear to be a heavy regulatory burden, the clarity and simplicity in which these provisions are prescribed makes it relatively easy for launch operators to know with a reasonable degree of certainty the specific regulatory requirements of the Australian authorities.

In essence, for any launch conducted in Australia, two concurrently held regulatory permits are required: a space licence covering the launch facility and the launch vehicle, along with a launch permit covering the launch of the space object itself. It is anticipated that since the technical and safety considerations are addressed in a space licence, the launch permit would cover the insurance requirements, the trajectory and the type of payload. This should significantly shorten the time required for the issue of a launch permit, providing Australia with an internationally competitive edge.

C. General Prerequisites and Conditions

Unlike several other countries with similar legislation, the Australian law specifically proscribes the prerequisites and conditions for the grant of a space licence, a launch permit or

an overseas launch certificate. These prerequisites generally relate to:

- 1) The applicant’s competence and experience in the proposed launch activity. This is likely to be limited to those individuals identified as “key personnel” by the applicant. There are no fixed criteria relating to the experience and competence provided for in the law.
- 2) The need to obtain all necessary environmental approvals under Australian law and the need to prepare an adequate environmental plan for the construction and operation of the launch facility. In Australia, the protection of the environment is a matter of both Commonwealth and State jurisdiction and the relevant planning and environmental approvals must be obtained at both levels of government.¹¹
- 3) The Minister being satisfied that there is no conflict with Australian national security, foreign policy or international obligations. It is unlikely that this criterion would be infringed by most anticipated commercial space launching activities.
- 4) The insurance or financial responsibility requirements being satisfied for a launch or launches, and any connected return. This is considered below.
- 5) The probability being sufficiently low that the launch, or any connected return, will cause substantial harm to public health or public safety or cause substantial damage to property. This is likely to be measured by the total casualty expectation, as is the case in the United States.

In the United States, the general requirements for a launch permit are found in the Commercial Space Launch Regulations. The requirements include most of those proscribed by the Australian law, along with technical requirements involving procedures and range safety that Australia may adopt in its own regulations which at the date of writing this paper have not been finalised. Consequently, although the Australian régime appears to be more onerous in terms of the number of licences required, the regulatory burden is in fact no more onerous than in other countries with launch licensing régimes.

FINANCIAL RESPONSIBILITY AND GOVERNMENT INDEMNITIES

A. Maximum Probable Loss Determinations

Under both the Australian and United States law, a launch or return of a space object must comply with relevant insurance or financial responsibility requirements. These provisions require the launch operator to demonstrate financial responsibility to the amount of the maximum probable loss (MPL) that may be incurred in respect to damage to third parties caused by the launch or return.

In both countries, the law requires launch operators to demonstrate their financial ability to pay claims by a third party for damage claimable under the Liability Convention. These include death, bodily injury, or property damage or loss resulting from the licensed space activity. This demonstration of financial ability can be done through proving the existence of sufficient financial reserves, placing the required amount in escrow or purchasing liability insurance for the MPL amount. The most common and preferred method is the purchase of liability insurance.¹²

The determination of the MPL is done by the regulatory authorities in both countries and is based on an analysis and assessment of the maximum monetary losses likely to be incurred in the event of an accident. This is calculated

by assessing the dollar value of the properties at risk by launch accidents likely to occur as the result of the conduct of launch activities with reference to a "threshold probability". For example, where a farming shed located near the launch facility has a higher probability of being damaged or destroyed by the threshold probability, then the total replacement cost of the shed would be added to the MPL amount. In Australia, the threshold probability is likely to be the same as that in the United States, which is 1 in 10 million.

Generally the MPL assessments in the United States have ranged from around US \$30 million to \$100 million for an orbital launch and around \$12 million for a sub-orbital launch. It is anticipated that the Australian Government would adopt similar methodology and techniques of MPL calculation, though the MPL assessments are likely to be significantly lower as Australia is more sparsely populated than the United States and launch sites are likely to be located further away from significant population centres.¹³

For a reusable launch vehicle (RLV), it is anticipated that the maximum probable loss would be considerably higher than that of an expendable launch vehicle (ELV). This is because there are additional risks associated with the return of the stages of the launch vehicle for every launch. As yet the relevant regulatory authorities in both countries have not formulated specific regulations relating to the calculation of MPLs for RLV launches.

B. Damages under the Liability Convention

Under the Australian law, the launch operator is also responsible for indemnifying the Commonwealth against any damages payable under the Liability Convention. Article XII of the Convention provides that:

The compensation which the launching State shall be liable to pay for damage under this Convention shall be determined in accordance with international law and the principles of

justice and equity, in order to provide such reparation with respect to the damage as will restore the person, natural or juridical, State or international organisation on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred.

Within the context of the Convention, “a claimant would be required to show that the harm flowed directly or immediately from, and as the probable or natural result of, the malfunctioning of the space object.”¹⁴ Once this required causation is established, compensation would presumably be payable to the claimant State for the following:

- pain and suffering;
- humiliation;
- physical impairment, including impairment of mental faculties;
- reasonable medical, hospital and nursing costs occasioned by the harm to the person;
- loss of services of a third party to which the injured party was entitled;
- lost time and earnings;
- impaired earning capacity;
- destruction or deprivation of use of property;
- rendering the property unfit for the use for which it was intended;
- loss of profits resulting from an interruption in business activities;
- lost of rents;
- reasonable costs of the repair of property that has been wrongfully harmed; and
- costs incurred in mitigating existing wrongful harm.¹⁵

With respect to personal injuries, it is generally believed that recovery can be made when the harm results either from physical impact with the debris of a space object or from contamination emanating from such an object.¹⁶ This is because most academic scholars argue that the Convention covers indirect damage as well as the direct

consequences of an impact.¹⁷ The liability of the launching States under the Convention is unlimited but there is no provision for the award of punitive damages as liability under the Convention is purely compensatory in nature.¹⁸

C. Government Liability for International Claims

Under the Australian statute, the launch operator has the duty to ensure that the Commonwealth is also covered by the launch operator’s insurance to the amount of the MPL calculated for the launch with respect to any claim under the Liability Convention. Should a foreign country, on its own behalf or on behalf of a citizen, issue a claim against the Australian Government, the launch operator is liable only up to the insured amount which is based on the calculated maximum probable loss.

The exposure of launch operators in Australia is therefore less than that of other countries. In Russia, Sweden and the United Kingdom, launch operators are absolutely liable to indemnify their respective governments for any claims arising under the Liability Convention.¹⁹ In the United States, there is a statutory ceiling of US \$1.5 billion dollars, beyond which the launch operator is personally liable.²⁰ The United States Government will only take responsibility for claims exceeding the MPL amount but less than the statutory ceiling.

In essence, the liability of a launch operator is limited to the insured amount and in practice this insured amount is likely to be significantly less than in other countries. From a legal and economic standpoint, therefore, this makes Australia a more attractive launching country.

CONCLUSION

The Australian regulatory framework is largely based on that of the United States. The regulatory burden is similar, though the Australia legislation is less complicated than

the United States equivalent. Furthermore, in terms of the likely cost of insurance and the extent to which the Government does not seek indemnity from launch operators, there are clear economic advantages in launching from Australia. Coupled with vast open spaces and less risk of personal and property damage in the event of an accident, Australia is well placed to take advantage of commercial space launching projects.

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Notes

¹ *Space Activities Act* s15. Under the Liability Convention, the Australian Government would be liable for any space activities conducted from an Australian facility. Presumably, therefore, should an Australian national operate a launch facility overseas, the Australian Government would be liable for any activities conducted from it. This liability is not covered by any regulatory requirements under the Act.

² *Ibid.*, s11.

³ *Ibid.*, s12.

⁴ *Ibid.*, ss13 and 14.

⁵ *Commercial Space Launch Act* (US), s70102(1).

⁶ *Commercial Space Launch Regulations* (US) 14 CFR 401.5(n).

⁷ *Commercial Space Launch Regulations* (US) 14 CFR 400.2.

⁸ *Act on Space Activities* (Sweden) s2 and *Law on Space Activity* (Russia) Art 9.

⁹ *Outer Space Act* (UK) ss1 and 2. Consequently, the Act does not apply to activities conducted by foreign nationals in the territory of the United Kingdom, notwithstanding the application of liability.

¹⁰ Sections 13 and 26(2) of the *Space Activities Act*.

¹¹ However, only Commonwealth law would apply to activities conducted on Commonwealth land. Commonwealth and State authorities can agree that one environmental report will satisfy the requirements of both jurisdictions.

¹² See the web site of the U.S. Office of the Assistant Administrator for Commercial Space Transportation, <http://ast.faa.gov>.

¹³ See the website <http://ast.faa.gov>.

¹⁴ Christol, "International Liability for Damage Caused by Space Objects" (1980) 74 A.J.I.L. 346 at 359.

¹⁵ *Ibid.*.

¹⁶ Foster, "The Convention on International Liability for Damage Caused by Space Objects" (1972) 10 Canadian Y.B. Intl. L. 137 at 159.

¹⁷ Christol, *supra* note 12, at 362.

¹⁸ Foster, *supra* note 14, at 172.

¹⁹ See *Outer Space Act* (UK), *Law on Space Activity* (Rus) and *Act on Space Activities* (Swe).

²⁰ *Commercial Space Launch Act* (US).