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Policy, Legal, Institutional and Economic Aspects of Space Debris Detection, Mitigation and Removal (1-A6.8)

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APPLYING LESSONS LEARNED FROM DECOMMISSIONING IN NON-SPACE SECTORS TO ACTIVE DEBRIS REMOVAL

Abstract

The danger posed by human-created, orbital debris has been well documented and there is a broad consensus that, if unchecked, such debris poses a significant threat to the future of space activity. There has been much discussion on the difficulties inherent in trying to remove large, non-functioning satellites from Earth orbit. Whilst the physical aspects of the space domain make this a unique technical challenge, the issues faced by the space community in tackling the economic and legal difficulties of this environmental threat are not without terrestrial parallels. Industries, such as oil, gas and nuclear are also tackling vexing issues in relation to dealing with remediation of potentially harmful assets that have reached the end of their operational lifespan.

This paper will evaluate the issues facing end-of-life standards and practices from the oil and gas, and nuclear energy industries contrasted against issues faced when contemplating actively removing debris from space. Such a discussion will highlight how shared knowledge from terrestrial decommissioning initiatives could be applied to the satellite industry, encouraging responsible behaviour in space and improving space environmental protection. Although the health and safety of people and the environment are the primary concern in the oil, gas and nuclear industries, decommissioning strategies also focus on returning the environment to its natural state. Legal and regulatory frameworks have been enacted in many countries, creating decommissioning funds and ensuring that the provision of end-of-life capabilities are integral in licensing processes. This paper will examine the synergies between the environmental challenges faced in space and those addressed by the decommissioning industry.

The paper will look to ascertain how these other industries such as oil, gas and nuclear deal with assets that reach the end of their operational life. The work will examine whether there are any protocols and procedures that can be directly applied to space activity. The discussion will explore how these end-of-life protocols and procedures originate looking at specific events, international frameworks and industry initiatives that have led to decommissioning practices in other industries. Crucially, this paper will explore what lessons satellite operators, debris removal agents and policy-making agencies can learn from the way in which nuclear, oil and gas decommissioning is regulated and funded.