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ANCHORING LAW IN ORBIT: TREATY OBLIGATIONS, MISSION AUTHORIZATION, AND INVESTMENT STRUCTURES FOR COMMERCIAL SPACE STATIONS

Abstract

The emergence of commercial space stations represents a fundamental shift in the governance of outer space, transitioning from state-led initiatives to privately operated orbital platforms. Envisioned for research, manufacturing, and tourism, these stations introduce complex legal and policy challenges that existing frameworks inadequately address. This paper examines three primary legal considerations essential to the successful operation of commercial space stations: the intersection of international treaty frameworks, the role of national regulations on that intersection, and investment security through contractual structures.

First, applying international treaties to a multi-national, multi-operator commercial space station environment presents unprecedented complexity. This study evaluates the need for national licensing frameworks and coordinated regulatory mechanisms to establish clear jurisdictional authority and dispute resolution, as both commercial space station operators and their customers—engaged in research, manufacturing, and tourism—require authorization and continuous supervision by their respective states. Additionally, the supervision requirement raises complex questions about maintaining regulatory oversight without compromising proprietary research, trade secrets, and high-value commercial operations aboard these stations.

Second, mission authorization is a key mechanism for regulatory oversight. As commercial space stations move closer to reality, the need for a consistent and transparent authorization framework has become increasingly clear. Current approaches to private space station authorization remain fragmented, leading to regulatory uncertainty. This paper examines the legal and policy considerations involved in developing a mission authorization structure that balances regulatory clarity, international treaty compliance, and the realities of continuous oversight in a private-sector environment.

Finally, contractual frameworks are essential for investment security in commercial space stations. Without clear mechanisms for risk allocation, operational governance, and regulatory compliance, private-sector participation remains precarious. As these stations evolve into hubs for research, manufacturing, and tourism, the customer-operator dynamic introduces additional complexities. This research explores how established contractual models, including lessons from the ISS model, can be adapted to commercial space stations to clarify ownership rights, allocate operational liabilities, and establish effective dispute resolution mechanisms.

Resolving these three legal challenges is essential to the long-term success of commercial space stations. The establishment of robust frameworks today will promote a stable and attractive environment for commercial space stations to emerge as the backbone of a thriving off-world economy.