Position Paper

Maintaining U.S. Leadership in LEO Research and Commercialization after the ISS

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The National Space Society (NSS) believes that **a core U.S. space policy must be to lead in microgravity and partial gravity research and development** in low earth orbit (LEO). The U.S., led by SpaceX, AST SpaceMobile, Planet Labs, Black Sky, and many others, has staked out a leading position in the space communications and remote sensing industries. However, the use of microgravity in commercial products remains a nascent industry. Depending on the stage and applications, this R&D may be funded by the U.S. government alone, in collaboration with our international allies, purely by commercial entities, or in public-private partnerships. The U.S. faces rising competition from the operational and growing Chinese space station "Tiangong." Failure to rise to this challenge will turn over the growing LEO space station economy to the Chinese, with all the soft power and hard power advantages that flow from a vibrant base in LEO. Enabling this policy to fully benefit the American people has a number of aspects, which are described in this paper.

With the International Space Station planned for deorbit in 2031, it is imperative that full value be derived from its remaining operational life. After decades of steady incremental improvements in utilization and performance, many ISS-derived solutions are nearing breakthroughs that could unleash substantial scientific and economic value. This means that **proposals to reduce the ISS crew while slashing cutting edge research on the ISS must be rejected**. We urge that funding, in fact, be increased to take advantage of the

unique characteristics of the ISS while this is possible, and to prepare for a near-term transition to commercial LEO stations. A key enabler for ISS productivity lies in the up and down cargo runs to the station. **We urge that there be no reduction in cargo flights to the ISS**, and instead that additional flights using new launchers such as the Neutron and new vehicles such as the Japanese HTV-X be added to the schedule.

Currently NASA is funding the Commercial Destinations – Development and Demonstration Objectives (C3DO) program to develop commercial stations to replace the ISS. The three phase 1 participants in this program are teams led by Axiom Space, Voyager Technologies, and Blue Origin. **NSS urges that this program be fully funded in 2025, 2026**, and on an on-going basis until at least two commercial stations reach operational status. **NSS supports the use of Space Act Agreements** rather than contracts in phase 2 of the C3DO program.

A sign of interest in the construction of commercial LEO stations is found in the startup company VAST, which is not part of phase 1 of the C3DO program but is targeting a 2026 launch of an initial commercial station. VAST is entirely privately funded at this point. **NSS urges that VAST and any other viable alternatives that arise be added to the C3DO program on an equal basis with existing participants**. It is not the job of NASA to "pick winners and losers" – NASA's goal must be to enable the creation of a competitive commercial LEO economic ecosystem.

However, it is not enough for NASA to just provide development funds to the C3DO competitors. Additionally, **operating funds must be provided as soon as any commercial LEO station is placed in orbit and offers services that are currently supplied by the ISS. NSS urges that Congress pass a law requiring that when this situation arises, NASA must move, in a safe and efficient way, experiments and functions currently carried out on the ISS to the newly operational commercial stations without waiting for the ISS to be deorbited**. This policy is essential to the viability of commercial stations. No commercial stations will succeed if forced to compete with free or subsidized services provided by the ISS.

NSS recommends that NASA develop and publish clear criteria for determining when a commercial LEO station is operational and capable of supporting specific functions currently performed on the ISS. Criteria should include safety, reliability, scientific capability, and service continuity. Upon verification that a commercial LEO station meets the established criteria, NASA should initiate a transition of experiments, research, and operational functions from the ISS to the commercial station. The transition plan shall prioritize minimal disruption to ongoing research and international collaborations**. It is vital that such transitions begin as soon as commercial stations can support a particular ISS function, and that the transition not be delayed waiting for the**

commercial stations to be certified for other ISS functions. ISS functions may be distributed over multiple commercial stations; there should be no requirement for any particular commercial station to fully replicate all ISS capabilities.

NSS has no firm position on the exact date for the deorbit of the ISS. However, **NSS urges that if the life of the ISS is extended, it be in the context of specific, funded plans to use the ISS for a purpose that is neither currently available from commercial LEO stations, nor likely to be supplied by them in the future.** Under no circumstances should the ISS be extended in orbit simply to compete with operating commercial LEO stations.

NSS notes that proposals exist to move the ISS to a higher orbit and to continue to use it for new purposes. Any such proposals need to include new funding mechanisms that do not rely on on-going NASA funding, although using the NASA deorbit vehicle currently under-development as part of a plan to boost the ISS to a higher orbit might be part of such a plan. Regardless of the details of such plans to provide for new uses for the ISS, NSS urges that such a plan not be allowed to compete with commercial LEO stations by offering free or subsidized services.

One example of a valuable use of the ISS might be to first boost it using the planned deorbit vehicle, and then use it as a test bed for ion/plasma engines needed to travel to Mars, with a long-term test of such engines being used to boost the ISS to a very high, and very safe, orbit. If this were to be the case, funding would be part of the NASA Mars program. Proposals such as the one published in Space News on October 6 should also be given consideration.

In conclusion, **NSS** urges the U.S. to make leadership in **microgravity and partial gravity R&D in LEO** using commercial space stations a core space policy priority to counter China's growing presence with its **Tiangong Station**. With the **ISS set for deorbit in 2031**, NSS calls for **increased funding**, full **crew and cargo support**, and acceleration of **commercial LEO stations** through NASA's **C3DO** program. NSS supports expanding participation to private firms like **VAST**, opposes cuts or early ISS shutdowns, and advocates transferring ISS activities to commercial stations once operational to ensure a sustainable, competitive U.S.-led LEO economy.

About the National Space Society

The National Space Society is the preeminent non-partisan citizens' voice on space exploration, development, and settlement, reaching millions through its membership, numerous outreach channels, and media activities. The organization was founded in 1987 via a merger of the National Space Institute and the L5 Society. To learn more about NSS and its mission to establish humanity as a spacefaring civilization, visit us on the web at nss.org.