

NOAA's Office of Space Commerce Efforts to Provide Space Situational Awareness Services Have Been Delayed and Need a Realistic Schedule

FINAL REPORT NO. OIG-24-031-A
JULY 30, 2024



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Office of Audit and Evaluation



July 30, 2024

MEMORANDUM FOR: Richard W. Spinrad, Ph.D.
Under Secretary of Commerce for Oceans and Atmosphere and
NOAA Administrator
National Oceanic and Atmospheric Administration

A handwritten signature in black ink, appearing to read "F. Meny, Jr.", written over a light blue horizontal line.

FROM: Frederick J. Meny, Jr.
Assistant Inspector General for Audit and Evaluation

SUBJECT: *NOAA's Office of Space Commerce Efforts to Provide Space Situational Awareness Services Have Been Delayed and Need a Realistic Schedule*
Final Report No. OIG-24-031-A

Attached is our final report on our audit of the National Oceanic and Atmospheric Administration's (NOAA's) Office of Space Commerce. Our audit objective was to assess the Office of Space Commerce's progress in providing space situational awareness data and space traffic management services in accordance with Space Policy Directive-3.

We found that:

- I. OSC is behind schedule in providing basic space situational awareness data and services.
- II. A new approach to space traffic management is not yet defined and remains a distant goal.

In response to our draft report, NOAA concurred with three of our recommendations, partially concurred with another, and did not concur with one. We modified the recommendations in light of NOAA's response to gain its full concurrence. We have summarized NOAA's responses and provided our comments in the report. The response is included in appendix D of this report.

Pursuant to Department Administrative Order 213-5, please submit to us an action plan that addresses the recommendations in this report within 60 calendar days. The final report will be posted on the Office of Inspector General's website pursuant to the Inspector General Act of 1978, as amended (5 U.S.C. §§ 404 & 420).

We appreciate the cooperation and courtesies extended to us by your staff during this audit. If you have any questions or concerns about this report, please contact me at (202) 793-2938, Kevin Ryan, Director for Audit and Evaluation, Systems Analysis and NOAA Programs, at (202) 750-5190, or Edward Kell, Director for Audit and Evaluation, Satellite Programs, at (202) 753-6125.

Attachment

cc: Michael C. Morgan, Ph.D., Under Secretary of Commerce for Environmental Observation
and Prediction, NOAA
Richard DalBello, Director, Office of Space Commerce, NOAA
Karen Hyun, Chief of Staff, NOAA



Report in Brief

July 30, 2024

Background

Objects orbiting Earth such as satellites and debris continue to increase in number, making space contested and congested. Preventing collisions is crucial to protecting the safety of space activities and assets.

In June 2018, the White House issued *Space Policy Directive-3, National Space Traffic Management Policy (SPD-3)*, acknowledging that the number of space objects was increasing while the activity and architecture to ensure space safety, including existing traffic management activities, was becoming inadequate.

Currently, the Department of Defense (DOD) is providing basic space situational awareness data and potential collision notifications to space operators. SPD-3 directs the transfer of certain responsibilities for providing data and services from DOD to the Department of Commerce, specifically to the National Oceanic and Atmospheric Administration's (NOAA's) Office of Space Commerce (OSC), which is responsible for the coordination of space-related issues, programs, and initiatives within the Department.

Why We Did This Audit

Our audit objective was to assess OSC's progress in providing space situational awareness (SSA) data and space traffic management (STM) services in accordance with SPD-3.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NOAA's Office of Space Commerce Efforts to Provide Space Situational Awareness Services Have Been Delayed and Need a Realistic Schedule

OIG-24-031-A

WHAT WE FOUND

OSC is developing an enterprise solution—the Traffic Coordination System for Space, or TraCSS—to screen space objects and provide notifications of potential conjunctions to civil and commercial space operators. OSC plans for TraCSS to provide an initial capability to civil and commercial space operators in fiscal year 2024.

We found the following:

- I. OSC is behind schedule in providing basic SSA data and services.
- II. A new approach to STM is not yet defined and remains a distant goal.

Despite being behind schedule, OSC did not update the TraCSS timeline to reflect delays. Also, OSC's lack of a long-term plan for its STM-related responsibilities may delay development of a new approach to mitigate the increasing risk of collisions in space, jeopardizing orbit availability and, potentially, human life.

WHAT WE RECOMMEND

We recommend that the NOAA Administrator direct the Office of Space Commerce Director to do the following:

1. Revise the TraCSS program timeline using agile best practices to include realistic dates, capabilities, and actual progress.
2. Develop and communicate a plan to ensure stakeholders stay informed of changes to the TraCSS timeline.
3. Modify the TraCSS staffing plan to include roles, responsibilities, and priority for each position and strategies for attrition management.
4. Define and document OSC's approach for STM-related responsibilities in the near and long terms to address current and future operational risks and include items such as guidelines, safety standards, behavioral norms, and conjunction prevention protocols.
5. Develop and regularly update a plan to implement OSC's approach to fulfilling the Department's STM-related responsibilities set in SPD-3.

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Cover: Herbert C. Hoover Building main entrance at 14th Street Northwest in Washington, DC. Completed in 1932, the building is named after the former Secretary of Commerce and 31st President of the United States.

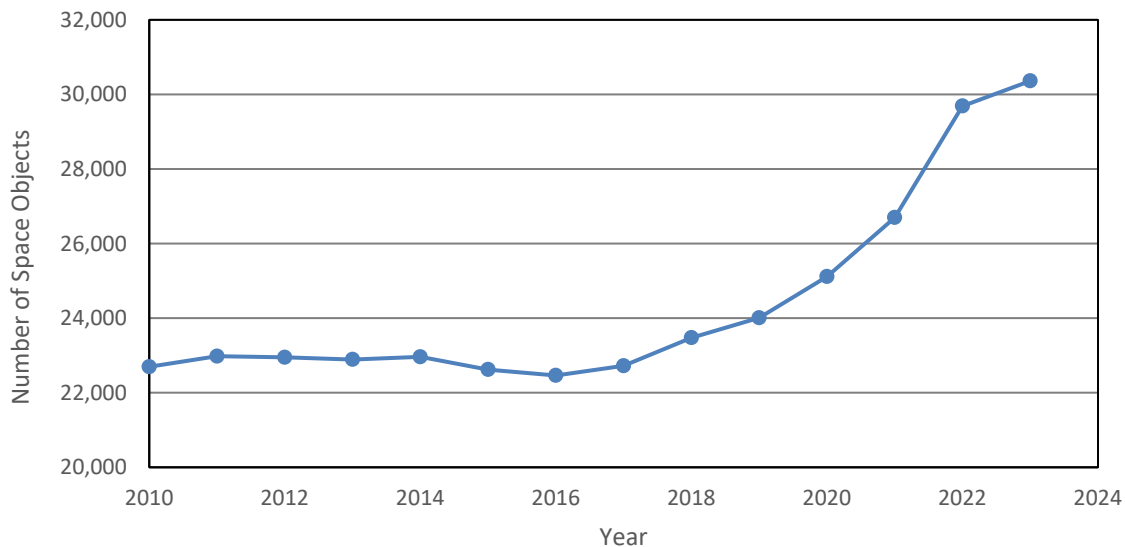
Introduction

Objects orbiting Earth such as satellites and debris continue to increase in number, making space contested and congested. Commercial activity is rapidly growing as companies transport cargo, satellites, and people to space. This increases risks for collisions between satellites and debris. Preventing collisions is crucial to protecting the safety of space activities and assets.

Collisions between satellites and space debris have the potential to create a large amount of additional space debris, further increasing risks to the space environment. Due to the dense number of satellites and debris within low earth orbit,¹ a collision event could lead to a cascading scenario of other collision events, possibly rendering certain regions of this orbit unusable.²

The Department of Defense (DOD) currently tracks both operational satellites and debris for collision risk and notifies space operators when there is a potential for a collision. Space debris mainly consists of materials used to launch satellites that remain in Earth’s orbit and non-operational satellites, but it is also created by pieces from deteriorating satellites such as tiny flecks of paint and explosions of satellites and rocket bodies. Current and future satellites will operate in a space debris environment much denser than presently tracked.

Figure 1. The Number of Space Objects Since 2010^a



Source: Office of Inspector General (OIG) derived from Space-Track.org

^a These numbers represent the publicly releasable portion of the DOD catalog, consisting of objects that have a minimum size of 10 centimeters squared.

¹ Based on Federal Communications Commission applications, satellite populations are expected to rapidly increase in low earth orbit, which is also home to most space debris.

² The Kessler Syndrome is a theoretical scenario in which low earth orbit is so overpopulated with objects and debris that a collision would result in an uncontrolled cascade of additional collisions, generating so much space debris as to render the orbit unusable.

The DOD estimates that as of the end of 2023 there are over 30,300 space objects large enough to be tracked (see figure 1); these objects are both satellites and debris. The number is expected to increase due to rapid growth in commercial activity in space. The National Aeronautics and Space Administration (NASA) estimates that 500,000 marble-sized space debris objects and over 100,000,000 that are 1 millimeter or smaller cannot be tracked. As illustrated in figure 1, the number of tracked space objects has grown by almost 30 percent since 2018.

Transitioning Collision Avoidance Support Services in Accordance with Space Policy Directive-3

Although DOD has been tracking space objects and providing potential collision notifications, some services are transitioning to the Department of Commerce (the Department), specifically to the National Oceanic and Atmospheric Administration's (NOAA's) Office of Space Commerce (OSC). OSC is responsible for the coordination of space-related issues, programs, and initiatives within the Department.

In June 2018, the White House issued *Space Policy Directive-3, National Space Traffic Management Policy (SPD-3)*, acknowledging that the number of space objects was increasing while the activity and architecture to ensure space safety, including existing traffic management activities, was becoming inadequate. Currently, DOD is providing basic space situational awareness (SSA) data³ and collision avoidance support services of conjunction screening⁴ and data messages⁵ to space operators.

SPD-3 directs the transfer of certain responsibilities for providing basic SSA data and services from DOD to the Department. This transfer will allow DOD to focus on protecting and defending U.S. space assets and interests. Additionally, SPD-3 assigned the Department a number of responsibilities (often in coordination with other government agencies) intended to develop a new approach to space traffic management (STM).

NOAA's OSC will implement the Department's SPD-3 responsibilities. According to OSC, the term *STM*, as defined in SPD-3, has been replaced with the term *space traffic coordination* among the satellite operations community. STM, according to OSC, "involves enforcement, regulatory and licensing authorities and activities, and international governance structures." In this report, we use the terminology as defined in SPD-3.

According to SPD-3:

SSA is defined as the knowledge and characterization of space objects and their operational environment to maintain safe, stable, and sustainable space activities.

STM is defined as the planning, coordination, and on-orbit synchronization that enhance safety, stability, and sustainability of space operations.

³ Some basic SSA data is contained in the publicly releasable portion of the DOD catalog. Basic SSA services include, but are not limited to, sharing the publicly releasable portion of the DOD catalog data, predicting close approaches, and providing warnings to space operators.

⁴ Conjunction screening is the process of identifying close approaches between two orbiting objects.

⁵ Conjunction data message is the format for exchanging spacecraft conjunction information with satellite owner/operators.

The Traffic Coordination System for Space

In December 2022, Congress appropriated \$70 million in funding for OSC. This funding allowed OSC to begin developing an enterprise solution for ingesting, archiving, processing, and disseminating SSA data. OSC is developing the system, now called the Traffic Coordination System for Space (TraCSS), using an agile approach.⁶ TraCSS development consists of three separate procurements: the cloud infrastructure that hosts the software and data for TraCSS; the system integrator, responsible for developing software and combining components from multiple vendors forming the operational TraCSS within the cloud infrastructure; and the presentation layer, which is the public-facing website/user interface with TraCSS.

OSC plans for TraCSS to provide an initial capability to civil and commercial space operators in fiscal year (FY) 2024. The initial capability will be to provide at least the minimum viable product,⁷ defined as the ability to execute conjunction screening and produce conjunction data messages on a 4-hour cadence (DOD provides an 8-hour cadence). The minimum viable product was set as the program's baseline in a March 2024 decision memorandum. Also, as part of this initial capability, OSC expects to make additional improvements (over the DOD capability) to the data that represents the trajectory of an object over time.

The TraCSS initial capability will be at least the **minimum viable product**—the ability to execute conjunction screening and produce conjunction data messages on a 4-hour cadence.

See appendix B for additional details about TraCSS and appendix C for a timeline of key events since the issuance of SPD-3.

OSC's efforts support the Department's strategic goal I.7 to advance U.S. leadership in the global commercial space industry.⁸ During her nomination hearing, Secretary Raimondo testified about the importance of providing services to ensure safe and productive development in space.⁹ Given the significance of this new responsibility, implementing basic SSA services is one of the Department's top management and performance challenges.¹⁰

⁶ Agile is an approach where software is incrementally developed and continuously evaluated for functionality, quality, and customer satisfaction.

⁷ A minimum viable product is the simplest version that can be released, has enough value that it is usable, retains customer buy-in by demonstrating future benefit, and provides feedback to guide future development.

⁸ DOC, n.d. *Strategic Plan 2022–2026*, 25. Washington, DC: DOC. Available at <https://www.commerce.gov/sites/default/files/2022-03/DOC-Strategic-Plan-2022%E2%80%932026.pdf> (accessed March 26, 2024).

⁹ Raimondo, Gina. *Testimony of Gina Raimondo, Governor of Rhode Island, hearing before the Senate Committee on Commerce, Science, and Transportation on "Nomination of Hon. Gina M. Raimondo, Nominee to be Secretary, U.S. Department of Commerce."* January 26, 2021. <https://www.govinfo.gov/content/pkg/CHRG-117shrg53058/pdf/CHRG-117shrg53058.pdf> (accessed August 7, 2023).

¹⁰ DOC OIG, October 12, 2023. *Top Management and Performance Challenges Facing the Department of Commerce in Fiscal Year 2024*, OIG-24-002, 18. Washington, DC: DOC OIG.

Objective, Findings, and Recommendations

Our objective was to assess Office of Space Commerce's (OSC's) progress in providing space situational awareness (SSA) data and space traffic management (STM) services in accordance with Space Policy Directive-3 (SPD-3). Appendix A provides a more detailed description of our scope and methodology.

We found the following:

- I. OSC is behind schedule in providing basic SSA data and services.
- II. A new approach to STM is not yet defined and remains a distant goal.

Despite being behind schedule, OSC did not update the TraCSS timeline to reflect delays. A realistic timeline is necessary to effectively manage the program, assess its progress, and communicate credible expectations to stakeholders. Also, OSC's lack of a long-term plan for its STM-related responsibilities may delay development of a new approach to mitigate the increasing risk of collisions in space, jeopardizing orbit availability and, potentially, human life.

I. OSC Is Behind Schedule in Providing Basic SSA Data and Services

Although OSC plans to provide an initial SSA capability by Q4 FY 2024, its TraCSS program is behind on its original schedule. The contract award for the system integrator, which is integral to develop the initial SSA capability, was delayed. While the contract has now been awarded, there is likely insufficient time to complete the necessary work by Q4 FY 2024. As a result, the program may deliver less functionality than planned or postpone delivery of the initial SSA capability. While OSC has a stakeholder management plan, progress updates have yet to be communicated to stakeholders such as DOD and space operators to keep them informed about the status of the transition and avoid a lapse in services.

The John S. McCain National Defense Authorization Act for Fiscal Year 2019 directs that, as of January 1, 2024, DOD may provide SSA services and information to non-U.S. government entities only to the extent necessary to meet national security interests.¹¹ While DOD continues to provide these services, OSC has planned to provide SSA capability in FY 2024. OSC's strategic plan provided to Congress indicates its intent to provide an initial operating capability no later than FY 2024. The TraCSS program roadmap as of December 2023 indicates initial SSA capability will be delivered by Q4 FY 2024.

Acquisition Planning and Approval

The Department's Administrative Order 208-16, *Acquisition Project Management*, defines major decision milestones for program acquisition phases from initiation through disposal. The TraCSS program had worked through the planning phase and prepared for its Milestone 2 review, which would allow it to proceed into the design/production phases. The Milestone 2 review, which is normally required prior to awarding contracts, was postponed

¹¹ Pub. L. No. 115-232, § 1604, 132 Stat. 1636, 2106 (2018), codified at 10 U.S.C. § 2274(a).

from November 2023 to late January 2024 because the program had not fully developed the required documents.

Instead of granting Milestone 2 approval, in March 2024 the Deputy Secretary gave the program an “authority to proceed,” allowing the program to award contracts but requiring it to return to the review board for Milestone 2 approval within 2 years or before starting its next phase. Accordingly, the program must update and improve the quality of its cost estimate no later than March 2025.

In addition, the program’s system integrator contract award was awarded late. Program officials considered this the most important procurement, as it drove the critical path from both a technical and schedule perspective.¹² In September 2023, program officials had identified as a risk the need for the contract to be awarded by November 2023 to avoid delays in providing initial SSA capability. However, the contract was not awarded until March 14, 2024.¹³

OSC’s original procurement approach was to use an existing contract vehicle set aside for small businesses. However, program officials determined their procurement approach did not provide adequate competition, due to only one vendor having SSA domain knowledge, and therefore changed the acquisition strategy, which triggered a lengthy internal review and approval process. The program ultimately issued a request for quotation in November 2023. Source selection took longer than anticipated, further delaying the contract award.

Workforce Planning

In addition to the acquisition-related challenges described above, difficulties filling key program positions contributed to TraCSS programmatic delays. In June 2023, program officials identified a risk to executing the TraCSS mission due to critical vacancies being unfilled. Critical job announcements for the TraCSS program manager and lead system engineer closed in November 2023, but the positions were still unfilled as of early April 2024. In addition, numerous TraCSS operations positions remain unfilled.

Program officials voiced their staffing concerns to NOAA leadership. At an October 2023 meeting with NOAA’s Program Management Council, OSC expressed concerns about its hiring risk. In response, NOAA’s Deputy Under Secretary for Operations said that hiring was a NOAA-wide issue and that delays obtaining security clearances were a Department-level issue.

OSC had a staffing plan for the program, but it lacked important details, including staff roles, responsibilities, and priority for each position. In addition, the plan did not address attrition management.

¹² Critical path is defined as the sequence of discrete tasks that has the longest total duration.

¹³ In a technical comment on our draft report, OSC stated that our conclusions related to the delays were “not informed by the capabilities, competency, and Agile planning currently being undertaken by the contractor.” See appendix A for details of our methodology for this assessment.

Schedule Management

Despite the procurement and hiring delays, the program did not subsequently update its timeline and roadmap. In addition, the timeline and roadmap did not include the duration of all activities or identify actual progress.¹⁴ Best practices call for establishing the duration of all activities in a program schedule and making updates based on actual progress.¹⁵

According to OSC officials, the program plans to limit the scope of its initial delivery to the minimum viable product if it cannot meet its Q4 FY 2024 initial capability deadline. However, because of the delays, our analysis indicates that the program may deliver even less than the minimum viable product (e.g., the system would replicate DOD's 8-hour screening and messaging cadence versus the minimum viable product's 4-hour requirement) or delay the delivery of operational system capability altogether. Now that it has awarded the contract, the program will need to work with the system integrator to develop a schedule in accordance with best practices.

According to a DOD official from U.S Space Force, Space Systems Command, if priorities change due to a national security concern and TraCSS is not operational, critical spaceflight safety services currently provided by DOD may cease. Without an updated, realistic program timeline, we conclude stakeholders are unable to plan accordingly and make informed decisions.

Recommendations

We recommend that the NOAA Administrator direct the Office of Space Commerce Director to do the following:

1. Revise the TraCSS program timeline using agile best practices to include realistic dates, capabilities, and actual progress.
2. Develop and communicate a plan to ensure stakeholders stay informed of changes to the TraCSS timeline.
3. Modify the TraCSS staffing plan to include roles, responsibilities, and priority for each position and strategies for attrition management.

¹⁴ In response to our draft report, NOAA indicated that the program was in the process of updating its timeline and roadmap with its contractor's input.

¹⁵ U.S. Government Accountability Office, December 15, 2023. *Agile Assessment Guide: Best Practices for Agile Adoption and Implementation*, GAO-24-105506, 160-161. Washington, DC: GAO. Available online at <https://www.gao.gov/assets/d24/105506.pdf> (accessed January 24, 2024).

II. A New Approach to STM Is Not Yet Defined and Remains a Distant Goal

OSC considers implementation of a new approach to STM to be at least 10 years in the future, given challenges to regulation and standardization of international and commercial space assets. However, OSC does not have a long-term plan to ensure all SPD-3 responsibilities assigned to the Department are met.

SPD-3 calls for the United States to develop a new approach to STM that addresses current and future operational risks. Implementing STM includes coordination and data-sharing across domestic and international stakeholders. In support of this, SPD-3 states that the Department and partner agencies should:

- Develop a plan for providing basic SSA data and basic STM services either directly or through a partnership with industry or academia.
- Develop space traffic standards and best practices, including guidelines, safety standards, behavioral norms, and conjunction prevention protocols.
- Assess the suitability of incorporating these standards and best practices into each agency's respective satellite operations licensing processes.

Efforts toward these responsibilities were identified in the National Space Council's *SPD-3 National Space Traffic Management Policy Implementation Plan*, which was produced in 2018. This plan identifies success indicators, key tasks, and implementing actions for each goal in SPD-3. Additionally, it states that departments and agencies should develop more detailed plans to implement goals and associated key tasks. However, OSC has not developed such a detailed plan on behalf of the Department.

According to OSC officials, STM implies a regulatory authority to drive certain behaviors, such as mandating the movement of spacecraft away from other spacecraft to avoid conjunctions. Such an authority does not yet exist, but recent efforts have begun to address this need.

To facilitate the development of space traffic standards and best practices, we found OSC has begun collaborative work to adopt existing international policies, standards, and best practices that improve SSA data and information sharing and build on them for TraCSS. In December 2023, OSC held an initial industry and government engagement on incorporating international data exchange standards into TraCSS. In addition, OSC attended commercial and international advocacy and outreach activities in 2023, and more activities are scheduled in 2024.

We also found OSC has been working to obtain the authority needed to implement STM capabilities for U.S. civil and commercial space assets. OSC worked closely with the National Space Council on drafting a November 2023 legislative proposal that could address STM.¹⁶ According to the OSC Director, this proposal, if passed, would give OSC the

¹⁶ The National Space Council's November 2023 legislative proposal on the "Authorization and Supervision of Novel Private Sector Space Activities Act" has specified additional authorities to agencies to address some STM

authority needed to provide operational recommendations ensuring the safety of space operations; develop and implement standards, policies, and practices for space traffic; and engage in international dialogue and collaboration toward implementing an internationally aligned space traffic framework. In addition, OSC is considering how to incorporate space traffic standards and best practices into NOAA licenses it issues to private remote sensing space systems.

This limited progress is a start in developing a new approach to STM, but OSC lacks its own plan to fulfill its vision for STM in accordance with its responsibilities under SPD-3. At present, OSC is primarily focused on TraCSS' initial capability, which includes the first step toward STM services, specifically conjunction notifications. However, OSC's documented vision does not address current and future operational risks. In addition, while the vision includes the development of initial guidelines and standards for data and information exchange, it does not address development of safety standards, behavioral norms, and conjunction prevention protocols, which could further mitigate potential conjunctions beyond just notifications to space operators.

OSC's near-term focus and lack of a long-term, regularly updated plan to meet its SPD-3 responsibilities may prolong the achievement of goals for STM and ultimately increase the risk of collisions with satellites and debris.

Recommendations

We recommend that the NOAA Administrator direct the Office of Space Commerce Director to do the following:

4. Define and document OSC's approach for STM-related responsibilities in the near and long terms to address current and future operational risks and include items such as guidelines, safety standards, behavioral norms, and conjunction prevention protocols.
5. Develop and regularly update a plan to implement OSC's approach to fulfilling the Department's STM-related responsibilities set in SPD-3.

functions in SPD-3. The legislative proposal is available at https://www.whitehouse.gov/wp-content/uploads/2023/11/Authorization-and-Supervision-of-Novel-Private-Sector-Space-Activities_Legislative-Text_final.pdf (accessed January 31, 2024).

Summary of Agency Response and OIG Comments

In response to our draft report, NOAA indicated that it concurred with three of our recommendations but did not concur with recommendation 4 and only partially concurred with recommendation 5. In its general comments, NOAA's OSC asserted that it "believes the OIG report should not base its review on the policy guidance of SPD-3, as SPD-3 was never intended to be used as a specific program implementation plan. OSC also believes that the OIG misinterprets some of the language of SPD-3, particularly in regard to an outdated definition of STM."

Applicability of SPD-3

OIG Comment. Regarding OSC's comments on the applicability of SPD-3, we conclude that it continues to serve as appropriate criteria for our assessment, as there has been no other superseding government policy. However, we did not consider SPD-3 a "specific program implementation plan." Our findings and recommendations are generally intended to assist OSC in creating and executing its own, viable implementation plan to meet SPD-3 goals. Further, SPD-3's definition of STM has not been modified by other policy language. That said, we acknowledge that near- and medium-term goals for OSC's preferred term, *space traffic coordination*, are appropriate, and we would encourage OSC to include those in its action plan to meet the report's recommendations.

Recommendation 4

NOAA Response. Regarding recommendation 4 (in the draft report: to define and document OSC's approach for STM in the near and long terms), NOAA stated that it will continue to develop its implementation strategy, which aligns with the needs of the satellite and space industry and TraCSS objectives. NOAA further stated that STM involves management of space traffic, including enforcement, regulatory and licensing authorities and activities, and international governance structures. Absent legislative relief or additional statutory authority, NOAA cannot pursue STM and will await guidance and authority from Congress to address those aspects of the recommendation.

OIG Comment. NOAA's nonconcurrence with recommendation 4 stems from the fact that OSC does not have the authority from Congress to implement STM services. However, while we acknowledge OSC does not currently have the authority to implement STM, it can and should identify its approach to fulfilling its STM-related responsibilities set forth in SPD-3, including what authority OSC would need to do so. In turn, OSC's approach could be shared with Congress to further its efforts to provide the needed guidance and authority. We have modified the recommendation to this effect and believe that it can be resolved in discussions with OSC regarding its action plan.

Recommendation 5

NOAA Response. Regarding recommendation 5 (in the draft report: to develop and regularly update a plan to implement OSC's approach for STM in furtherance of SPD-3 goals), NOAA partially concurred and stated that it will continue to update the appropriate stakeholders regarding progress in TraCSS, through development of an implementation strategy and appropriate space traffic coordination policy. NOAA stated, however, that it cannot plan for the management aspects of space traffic (STM) without additional authorities from Congress.

OIG Comment. NOAA's partial concurrence again stems from the use of the term *STM* in our recommendation. We recognize OSC lacks authority to directly implement STM. However, as summarized in the previous comment, OSC can and should lay out a plan of what needs to be done to fulfill its STM-related responsibilities as set forth in SPD-3. We have modified our recommendation to this effect.

NOAA also provided technical comments, which we reviewed and incorporated into the final report where appropriate. NOAA's full response is included in appendix D.

We appreciate NOAA's response to the report and look forward to reviewing its action plan for implementing the recommendations.

Appendix A: Objective, Scope, and Methodology

Our audit objective was to assess the progress of NOAA's OSC in providing SSA data and STM services in accordance with SPD-3. To satisfy our objective, we assessed various aspects of the planning related to OSC's program formulation, acquisition, and system cybersecurity requirements.

To assess OSC's overall plan to meet the requirements of SPD-3, we reviewed OSC's 5-year strategic plan and NOAA's FY 2023 and FY 2024 congressional budget justifications identifying the mission and planned activities for the next 5 years. We also interviewed the OSC Director and Special Advisor to understand OSC's planned activities. We reviewed OSC's updates provided via webinars along with documentation such as the TraCSS concept of operations, system integrator performance work statement, and Senate hearing testimony.¹⁷

To assess OSC's acquisition practices and examine the rationale for procurement and contract types for its system integration and cloud management support, we reviewed the TraCSS acquisition strategy, TraCSS acquisition plan, and its determination and findings. We then compared the determination and findings to the General Services Administration's developed principles and standards to determine adequacy of the justification for selecting contract types. In addition, we interviewed contracting officers to understand the procurement approach.

To assess OSC's plans and progress to provide basic SSA data and services, we reviewed TraCSS program documents such as the roadmap, schedule, risk register, and acquisition plan and compared them to actual progress. We attended webinars and NOAA Program Management Council briefings to understand the TraCSS program's goals and risks. We interviewed key personnel from the Department's Office of Acquisition Management, reviewed documents required for the milestone review, OSC budget justifications, and Department guidance on acquisition and agile program management to understand Department acquisition and milestone review process. We interviewed OSC's DOD point of contact, who is the Strategic Advisor for Space Domain Awareness for U.S. Space Force, Space Systems Command, to understand the activities necessary to transition the SSA mission to the Department. We also interviewed the OSC Director, Deputy Director, Special Advisor, Acting TraCSS Program Manager, and NOAA's Acquisition and Grants Office personnel to assess the progress of the TraCSS program and understand its challenges. Due to the late contract award, we did not interview the system integrator and instead based our conclusions on the available evidence regarding the program's plans, schedule, and risks.

¹⁷ DalBello, Richard. *Testimony of Richard DalBello, Director of the Office of Space Commerce National Oceanic and Atmospheric Administration Department of Commerce before the Senate Committee on Commerce, Science, and Transportation's Subcommittee on Space and Science on "Government Promotion of Safety and Innovation in the New Space Economy."* December 13, 2023. <https://www.commerce.senate.gov/services/files/E2628F3A-43D3-4D68-B6DA-289A2996856D> (accessed January 4, 2024).

To assess OSC's STM plans and progress, we reviewed OSC's 5-year strategic plan, TraCSS program documentation such as the mission needs statement, concept of operations, capabilities and requirements analysis, and a request for information on the scope of SSA services and its responses and compared each to SPD-3. We reviewed the United Nations' Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, to understand international space traffic policy. We reviewed 51 U.S.C. chapters 501, 507, and 601; 14 C.F.R. parts 401 through 460; 15 C.F.R. part 960; and 47 C.F.R. parts 5, 25, and 97 to assess OSC's and other agencies' current regulatory authority. We reviewed the National Space Council's draft bill, "Authorization and Supervision of Novel Private Sector Space Activities Act," the National Science and Technology Council's National Orbital Debris Implementation Plan, and bills introduced by Congress to understand future U.S. policy directions and potential new departmental authorities. We also conducted interviews with OSC leadership and officials related to STM policy, regulations, staffing, standards and best practices, and orbital debris mitigation to understand how each OSC division addresses STM.

To assess TraCSS' cybersecurity requirements, we reviewed procurement documents and system security artifacts and compared them to Federal Information Processing Standards Publications and security baselines required by the Department. We interviewed the TraCSS IT program manager, contracting officer, and contracting officer's representative to confirm the system categorization decision and to understand the IT acquisition process. We also reviewed the acquired cloud platform to determine the extent of the cybersecurity risk. We found that TraCSS was categorized as a high-impact system, but the awarded cloud services contract only required a moderate-impact system. Upon further analysis, we found that the system procured was in fact rated as a high-impact system as specified in the categorization. The audit team notified NOAA officials in January 2024 of the discrepancy in the contract language. On March 4, 2024, NOAA officials modified the contract to reflect the appropriate security requirements. As such, we chose not to report the matter as a finding.

In addition, we assessed internal controls that are significant within the context of our objective through document reviews and interviews with key personnel to determine adherence to procedures and plans. Specifically, we observed OSC's participation in quarterly Program Management Council briefings with NOAA leadership. We also reviewed quarterly updates to the Department and the Office of Management and Budget to share the TraCSS program's updates, budget, staffing, and path forward. Finally, we reviewed Department guidance for Milestone Review Board processes, along with interviewing officials from the Department's Office of Acquisition Management to assess how the program would meet the requirements for its transition from the planning phase to the development phase. Our findings and recommendations are inclusive of our internal control assessments.

Although we could not independently verify the reliability of all the information we collected, we compared it with other available supporting documents to determine data consistency and reasonableness. Based on these efforts, we believe the information we obtained is sufficiently reliable for the purposes of this report.

We conducted our audit from August 2023 through May 2024 under the authority of the Inspector General Act of 1978, as amended (5 U.S.C. §§ 401-424), and Department

Organization Order 10-13, as amended October 21, 2020. We performed our fieldwork remotely.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

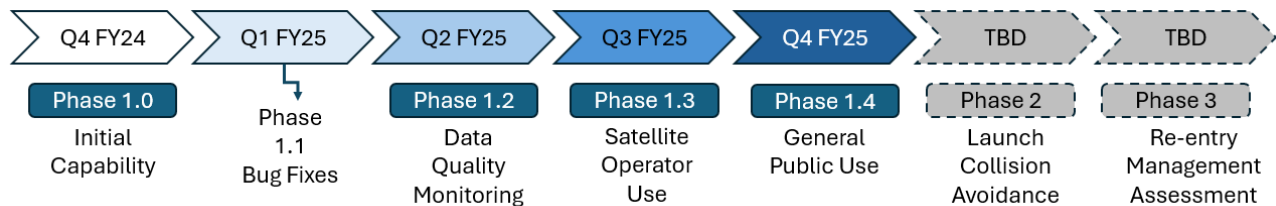
Appendix B: Additional TraCSS Background

System Overview

TraCSS is planned to screen space objects and provide notifications of potential conjunctions to civil and commercial space operators. OSC plans to incrementally incorporate SSA data in TraCSS. DOD will provide publicly releasable data to TraCSS throughout its lifetime. For the first release in phase 1.0, TraCSS will only use this DOD data. In later releases within phase 1, data from commercial and international sources is planned to be integrated.

OSC is gradually taking over the basic SSA mission from DOD, starting at initial capability in Q4 FY 2024. A ramp up – ramp down transition approach is planned, where more responsibility will transfer to OSC as TraCSS incrementally develops in capability and operational capacity. Generally, phase 1.0 focuses on routine conjunction assessment screening and production of conjunction data messages for beta users with DOD’s interface. Phase 1.1 refines the existing software and address bugs. Phase 1.2 implements data quality monitoring. In Phase 1.3, the TraCSS user interface (in parallel with DOD’s user interface on Space-Track.org) begins distributing conjunction data messages to space operators. In Phase 1.4, TraCSS plans to be available for the general public and provide conjunction data message distribution to fully transition to the TraCSS user interface. Eventually, future phases of TraCSS are planned to provide launch collision and re-entry support (see figure B-1).

Figure B-1. TraCSS Phased Agile Development



Source: OIG adapted from TraCSS program documentation (not inclusive of all functions within the phases)

Status of TraCSS Program Baselines

On March 5, 2024, the Deputy Secretary issued a decision memorandum that established budget, schedule, and performance “baselines” for the program’s phase 1. The phase 1 baseline budget for OSC was \$70 million per year from FYs 2023 to 2025, most of which was dedicated to TraCSS.¹⁸ The figures were considered estimates that will need to be updated. Subsequently, Congress appropriated \$65 million for OSC for FY 2024. The full program lifecycle cost estimate is required no later than March 2025. Program officials are working with the Department's Office of Acquisition Management to baseline budget, schedule, and performance by phases (i.e., 1, 2, and 3). OSC is conducting pilot studies to further define program costs.

¹⁸ The TraCSS FY 2024 budget is approximately 88 percent of the total funds allocated for OSC.

Appendix C: Key Events Since SPD-3

Table C-1. Timeline of Activities Since the Issuance of SPD-3

Date	Significant Action
June 2018 to January 2021: Kevin O’Connell is OSC Director	
June 2018	President signs SPD-3
April 2019	OSC issues request for information on commercial capabilities in SSA/STM services
December 2019	The appropriations act for FY 2020 in the Senate Amendment to H.R. 1158, Division B (116th Congress) directs completion of a National Academy of Public Administration study to identify the best organization to assume the mission of space traffic management
August 2020	The National Academy of Public Administration study determines OSC is best suited for SSA and STM tasks within the federal government
December 2020	Joint Explanatory Statement for Division B—Commerce and Justice, Science, and Related Agencies Appropriations Act, 2021 (Pub. L. No. 116-260) directs OSC to initiate an open architecture data repository
January 2021 to April 2022: NOAA’s Deputy Assistant Administrator for Satellite and Information Services is the Acting OSC Director	
February 2022	OSC rolls out an open architecture data repository prototype for a space catalog and traffic software platform that would provide basic SSA and STM services
May 2022 to present: Richard Dalbello is OSC Director	
September 2022	Memorandum of agreement between the Department and DOD to define path forward to meet specific goals outlined in SPD-3
September 2022 to December 2022	OSC awards pilot contracts to demonstrate capability of U.S. commercial SSA data products (i.e., assess commercial capabilities) in the medium- and geostationary-earth orbits
December 2022	Congress appropriated OSC \$70 million for FY 2023, allowing it to initiate TraCSS development
July 2023	OSC hosts workshops for commercial SSA providers and civil and commercial operators to discuss TraCSS
August 2023	OSC awards cloud infrastructure contract for TraCSS

Date	Significant Action
January 2024	OSC awards a consolidated pathfinder project to test incorporating commercial low-earth orbit SSA data into TraCSS
March 2024	Department Deputy Secretary gives OSC authority to proceed for Phase I design and production
	OSC awards system integrator contract for TraCSS

Source: OIG analysis of NOAA, OSC, and other publicly available data


Appendix D: Agency Response

NOAA's response to our draft report follows on p. 18.



UNITED STATES DEPARTMENT OF COMMERCE
Deputy Under Secretary for Operations
National Oceanic and Atmospheric Administration
Washington, D.C. 20230

MEMORANDUM FOR: Frederick J. Meny, Jr.
Assistant Inspector General for Audit and Evaluation

FROM: Benjamin P. Friedman
Deputy Under Secretary for Operations *bn*  2024.06.14
National Oceanic and Atmospheric Administration 10:53:48 -04'00'

SUBJECT: *NOAA's Office of Space Commerce Efforts to Provide Space Situational Awareness Services Have Been Delayed and Need a Realistic Schedule Draft Report*

The Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) is pleased to submit the attached response to the draft report on NOAA's progress in providing space situational awareness data and space traffic management services in accordance with Space Policy Directive-3. We reviewed the report and concurs with recommendations 1, 2 and 3; Partially concurs with 5; and does not concur with recommendation 4.

We appreciate the opportunity to review and respond to your draft report. If you have questions, please contact Lawrence Burney, (acting) Director, Audit and Information Management Office on (202) 643-6010.

Attachment



Department of Commerce
National Oceanic and Atmospheric Administration
Response to the OIG Draft Report Entitled
NOAA's Office of Space Commerce Efforts to Provide Space Situational Awareness Services
Have Been Delayed and Need a Realistic Schedule Draft Report
(May 2024)

General Comments

From the Office of Space Commerce (OSC): The National Oceanic and Atmospheric Administration's (NOAA's) Office of Space Commerce appreciates the opportunity to review the Office of Inspector General's (OIG) draft report on assessing OSC's progress in providing space situational awareness (SSA) data and space traffic management (STM) services in accordance with Space Policy Directive-3 (SPD-3). OSC reviewed the draft report and concurs, in part, with the OIG's recommendations. However, OSC believes that the OIG report should not base its review on the policy guidance of SPD-3, as SPD-3 was never intended to be used as a specific program implementation plan. OSC also believes that the OIG misinterprets some of the language of SPD-3, particularly in regard to an outdated definition of STM. General comments and responses to the five recommendations are provided below.

NOAA Response to OIG Recommendations

Recommendation 1: Revise the TraCSS program timeline using agile best practices to include realistic dates, capabilities, and actual progress.

NOAA Response: We concur. NOAA has been updating the TraCSS program timeline across the course of program development to reflect current information available. With the system integration contractor on board as of mid-March 2024, NOAA has been making program timeline updates to include the current and projected progress from the TraCSS contractor and leveraging Agile best practices. .

Recommendation 2: Develop and communicate a plan to ensure stakeholders stay informed of changes to the TraCSS timeline.

NOAA Response: We concur. NOAA has already produced a Stakeholder Management Plan and will update as needed. NOAA maintains and implements an aggressive outreach program to government, industry, and public stakeholders.

Recommendation 3: Modify the TraCSS staffing plan to include roles, responsibilities, and priority for each position, strategies for attrition management, and options for using supplemental DOD resources.

NOAA Response: We concur.

Recommendation 4: Define and document OSC's approach for STM in the near and long terms to address current and future operational risks and include items such as guidelines, safety standards, behavioral norms, and conjunction prevention protocols.

NOAA Response: We do not concur. NOAA will continue to develop and pursue its Vision for Global SSA Coordination through development of an implementation strategy and via appropriate space traffic coordination (STC) policy development, which aligns with needs of the satellite and space industry and TraCSS objectives. Acknowledging that STM involves management of space traffic - including enforcement, regulatory and licensing authorities and activities, and international governance structures – absent legislative relief or additional statutory authority, NOAA cannot pursue STM. NOAA will await guidance and authority from Congress to address those aspects of the recommendation.

Recommendation 5: Develop and regularly update a plan to implement OSC’s approach for STM in furtherance of SPD-3 goals.

NOAA Response: We partially concur. NOAA will continue to update the appropriate stakeholders regarding progress in TraCSS, pursuit of its Vision for Global SSA Coordination through development of an implementation strategy, and appropriate STC policy development. NOAA cannot plan for the management aspects of space traffic (STM) without additional authorities from Congress. See also response to Recommendation 4.

Recommended Changes for Factual/Technical Information

Use of “space traffic management (STM)” throughout report

The draft report uses the term “space traffic management” as defined in SPD-3 and as reflected in the definition of Page 2. Since the publishing of SPD-3 in 2018, the technical, academic and satellite operations community have generally shifted terminology, whereby the definition for STM given within SPD-3, is now often used to refer to “space traffic coordination (STC).” This terminology shift also reflects current operational realities that true “management” of space traffic involves enforcement, regulatory and licensing authorities and activities, and international governance structures. Across the course of the audit, OSC has communicated to OIG that the Traffic Coordination System for Space (TraCSS) program is focused on STC. We urge that any use of the term STM by OSC refer to the inclusion of a regulatory, licensing, and/or enforcement component, which OSC does not consider a practicable near- or mid-term goal and does not have legal authority to pursue.

The use of “STM” across the report misconstrues OSC’s position on STC and STM, resulting in what we believe to be inaccuracies, as noted in the recommended changes below.

Page 1, 3rd full paragraph, first sentence:

The Department of Defense (DoD) provides space traffic coordination, not traffic management, as noted in our comment regarding the definition of space traffic management. DoD provides information to satellite operators, but does not manage satellites or provide maneuver recommendations.

Page 2, 1st paragraph, 3rd sentence

With today’s technology, it is not possible to track (detect a space object and reliably track it across time) space objects that are smaller than 1mm. As the report does not address Goal A of SPD-3 on advancing SSA and STM Science and Technology, including activities around

characterizing small debris and advancing observational data, NOAA suggests the current text “The National Aeronautics and Space Administration estimates that 500,000 marble-sized space debris objects and over 100,000,000 that are 1 millimeter or smaller are not being tracked.” should read “The National Aeronautics and Space Administration estimates that over 500,000 marble-sized space debris objects or smaller are not being tracked.”

Page 2, 2nd paragraph, 1st sentence

The sentence does not align with the services being transitioned to OSC. Per SPD-3 and the Memorandum of Agreement between DoD and DOC on these activities, DoD is retaining responsibility for maintaining the authoritative catalog of space objects. Such responsibility involves tracking all space objects. DOC will be responsible for dissemination of the publicly releasable information from the DoD catalog and providing basic SSA and STC data and services for spaceflight safety purposes. Additionally, DoD currently provides notifications of potential collisions, also known as conjunctions, not collisions post hoc. The current text reads “Although DOD has been tracking all space objects and providing collision notifications, these services are transitioning to the Department of Commerce (the Department),...”. NOAA suggests the text read “Although DOD has been tracking all space objects and providing potential collision notifications, some services are transitioning to the Department of Commerce (the Department), ...”

Page 2, 2nd paragraph, 2nd sentence

OSC was created in 1988, not 2015 (history and statutory authority outlined here: <https://www.space.commerce.gov/law/office-of-space-commerce/>).

Page 2, SSA and STM definitions

NOAA suggests that the draft report be updated to explicitly reference that these are the definitions given in SPD-3 (2018). Current terminology has shifted.

Page 2, 3rd paragraph, 2nd sentence and footnote 3

The scope of basic SSA data and services DoD currently provides to private space operators extends beyond just conjunction screening and data messages. DoD also provides additional services to space operators who have signed formal SSA Sharing Agreements. SPD-3 does not define what the exact scope of basic SSA data and services are, nor does it direct that DOC provide the exact same scope of basic SSA data and services that DoD currently provides. Footnote 3 currently states “Basic SSA data is contained in the publicly releasable portion of the DOD catalog. Basic SSA services include sharing the DOD catalog data, predicting close approaches, and providing warnings to space operators.” NOAA suggests that the text reads “Some Basic SSA data is contained in the publicly releasable portion of the DoD catalog. Basic SSA and space traffic coordination services, as provided currently by DoD, include, but are not limited to, sharing the publicly releasable portion of the DoD catalog data, predicting close approaches, and providing warnings to space operators.”

Page 2, 3rd paragraph, 3rd sentence

The draft report states that “SPD-3 effectively transferred responsibility for providing basic SSA data and services from DOD to the Department”. NOAA posits that SPD-3 did not transfer any statutory authorities from DoD to DOC. As confirmed in Sec. 7(a)(i), Sec. 7(b), and multiple other sections, SPD-3 did not limit DOD’s authority or responsibility to provide SSA services or establish DOC authority or responsibility. Instead, it states that DOC “should, consistent with

applicable law, be responsible for the publicly releasable portion of the DoD catalog and for administering an open architecture data repository.” New legislation is required to curtail DOD’s legal authority or to create DOC legal authority. NOAA suggests that the sentence be updated to reflect the limitations of SPD-3 by stating “SPD-3 directed a transfer of responsibility for providing basic SSA data and services from DOD to the Department.”

Page 2, 3rd paragraph, 5th sentence

The draft report states “Additionally, SPD-3 assigned the provision of basic space traffic management (STM) services to the Department,” which is not wholly accurate. The language used in SPD-3 is “The Secretaries of Defense and Commerce, in coordination with the Secretaries of State and Transportation, the NASA Administrator, and the Director of National Intelligence, should cooperatively develop a plan for providing basic SSA data and basic STM services either directly or through a partnership with industry or academia, consistent with the guidelines of sections 5(a)(ii) and 5(b)(ii) of this memorandum.” Sec. 4(d) of SPD-3 also establishes the goal of continuing to provide these data and services, confirming that this describes what is currently provided by DOD and will be provided by OSC through TraCSS.

Page 4, 1st full paragraph after I. header, 3rd and 4th sentence

NOAA concurs that the contract was delayed and awarded in March 2023. The OIG audit learning period concluded in March 2023 and therefore, to NOAA’s knowledge, the contractor was not interviewed through the course of the audit. Thus, the report’s statement “there is likely insufficient time to complete the necessary work by…” is not informed by the capabilities, competency, and Agile planning currently being undertaken by the contractor.

Page 4, 1st full paragraph after I. header, last sentence

We note that, counter to the statement in the report, during the course of the audit, NOAA submitted a detailed stakeholder management plan describing the categories of the Department of Defense, Congressional branch, Executive branch, NOAA and DOC organizations, private/commercial entities, and public stakeholders; stakeholder interests; and engagement plan including messaging, medium, and frequency. The plan was submitted in the format required by the DOC Office of Acquisition Management (OAM) Milestone Review Board for an Agile program. NOAA regularly kept stakeholders updated on acquisition progress of the system integrator, within the bounds that respected procurement sensitivity. The statement also does not reflect recent progress and updates with the system integrator contractor, and does not specify which stakeholders have not been updated.

Page 4, 2nd full paragraph after I. header, last sentence

The decision memorandum referenced in the sentence set the program’s baseline for all of Phase 1 of TraCSS, not just the minimum viable product delivery date. NOAA suggests the sentence be updated to reflect the full scope of the decision memorandum.

Page 4, last partial paragraph, 1st sentence

The *Guidebook* referenced in the sentence was specifically designed for engineering programs following a waterfall approach, which is an entirely different program development approach than Agile. In working with DOC OAM through the Milestone 2 review process, the TraCSS program was one of the first programs to go through new and evolving OAM processes for an Agile program.

Page 4-5, last partial paragraph and first partial paragraph on subsequent page, last sentence
NOAA notes that the Milestone 2 review was moved to accommodate the complete process, including adjudication of evolving OAM processes for an Agile program and IPT review meetings across all participants, not solely due to documentation timelines. NOAA suggests the sentence be updated accordingly to "... late January 2024 to accommodate evolving OAM processes, availability of IPT review participants, and documentation development."

Page 5, 4th full paragraph, last sentence

DoD has not explicitly signed an agreement to supplement OSC operations staff resources in FY24. U.S. Space Force Space Delta 2 and NOAA have signed an MOU to allow the possibility of temporarily providing supplemental staff to each other's organizations and supporting training needs. NOAA notes that it does have contractor personnel stationed at Vandenberg Space Force Base and has had staff trained with Space Delta 2, 19th Space Defense Squadron (SDS) at Dahlgren Naval Base. However, in early May 2024, NOAA was informed by the 19th SDS that the 19th SDS would not be able to supplement staff to NOAA due to personnel availability. NOAA also sent a similar request to the 18th Space Defense Squadron and was informed in June 2024 that the 18th SDS would also not be able to supplement staff to NOAA due to personnel availability. Given recent changes in operations personnel availability at the Space Force, NOAA suggests the sentence be stricken.

Page 5, last full paragraph, first sentence

The staffing plan NOAA submitted included priority for TraCSS positions. The staffing plan also references areas where contract personnel would be leveraged, but the plan focuses on Federal staff and not potential external resources. The sentence currently states "OSC had a staffing plan for the program, but it lacked important details, including staff roles, responsibilities, and priority for each position. In addition, the plan did not address attrition management or options to use DOD resources." NOAA suggests the sentence be updated to "OSC had a staffing plan for the program, but it lacked details, including staff roles, responsibilities, and attrition management."

Page 6, first full paragraph, first sentence

NOAA notes that, following best practices, actual progress and updated roadmapping could not be identified without the system integrator contracted and on board. As the contractor is now on board, NOAA is working with the contractor to update Agile roadmaps. The sentence currently states "Despite the procurement and hiring delays, the program did not subsequently update its timeline and roadmap." NOAA suggests the sentence be updated with an addendum to note the program is currently making such informed updates.

Page 6, second paragraph, first sentence

The draft report earlier states that the minimum viable product is the Q4 FY 2024 delivery item. This sentence contradicts the earlier statement. NOAA suggests that the earlier reference be updated to include the scope of Phase 1.0 (which includes improvement of trajectory information) as the Q4 FY 2024 delivery item; and to update the sentence to read “According to OSC officials, the program plans to limit the scope of its initial delivery from Phase 1.0 to the minimum viable product if needed.”

Page 6, second paragraph, second sentence

NOAA notes that it is not clear from this sentence what analysis is being referenced. Analysis that would support an 8-hour screening and messaging cadence relates to coordination between DoD and NOAA on unclassified data delivery (both machine-to-machine and via manual processes), analysis for which is not referenced in the report.

Page 6, third paragraph, second sentence

The framing of the paragraph suggests that either the DoD official made the statement in the second sentence or that the second sentence is an analysis of the prior paragraphs. NOAA posits that the characterization of DoD’s planning capabilities are at odds with other public statements made by a senior DoD official in regards to the partnership with DOC, see:

(<https://breakingdefense.com/2023/04/commerces-initial-space-safety-system-will-lean-heavily-on-dod-data/> , <https://spacenews.com/office-of-space-commerce-selects-locations-for-tracss-operations-centers/>).

Page 7, first paragraph, first sentence

NOAA notes that this is an inaccurate statement of NOAA’s policy and planning regarding space traffic coordination (STC) and space traffic management (STM). Given that the draft report defines STM using a definition that the community now uses for STC, the statement portrays NOAA’s policy position that any type of “planning, coordination, and on-orbit synchronization that enhance safety, stability, and sustainability of space operations” to be at least 10 years in the future. However, NOAA has presented publicly on its Vision for Global SSA Coordination, includes in its program objectives support for STC, and posits that the TraCSS program will provide basic SSA and STC safety services. NOAA suggests the sentence be stricken, or the use of “STM” be updated throughout the draft report, as suggested in an earlier comment.

Page 7, first paragraph, second sentence

OSC has submitted an SPD-3 implementation plan to the OIG, as jointly developed across the interagency working group and led by the National Space Council. SPD-3 goals also encompass many topics that are not limited to just STM (in terms of regulation and licensing needs). NOAA suggests the sentence be updated to clarify which goals do not have an implementation plan.

Page 7, second paragraph, third sentence

SPD-3 states that the Department and partner agencies “should cooperatively develop a plan...” while the draft report states “must: Develop a plan...” NOAA suggests the “must’ be updated to “should.”

Page 7, second paragraph, third bullet item

The bullet item does not exactly paraphrase SPD-3. SPD-3 states that a role and responsibility (not goal) for DOC and the Department of Transportation is to “assess the suitability of incorporating these updated standards and best practices into their respective licensing processes, as appropriate and consistent with applicable law.” NOAA suggests the bullet item be updated to reflect the limitations of existing legal authorities granted by Congress. Otherwise the bullet item suggests that DOC will implement additional conditions to licensing processes, which current authorities do not allow.

Page 7, third paragraph, last sentence

NOAA and DOC update National Space Council staff on a monthly basis on progress and planning towards applicable goals and key tasks, via verbal briefings, and approximately twice a year with interagency partners as convened by the National Space Council. NOAA suggests that the sentence be modified to include this information.

Page 7-8, footnote 14

The footnote inaccurately summarizes the legislative proposal. The majority of the legislative proposal is focused on authorization and supervision of novel private space activities. One subtitle of the legislative proposal is focused on SSA authorities for the Department and addresses some STM (as the term is used by NOAA) functions. Under the proposal, licensees would not necessarily be required to implement operational recommendations, but DOC would have the authority to place such conditions if it chooses to do so.

Page 8, first partial paragraph, last sentence

NOAA believes that this sentence does not capture the intent of recent activities. NOAA suggests that the sentence be updated to read “... OSC is considering how to incorporate space traffic standards and best practices related to space debris mitigation and satellite disposal into NOAA licenses it issues to private remote sensing space systems.”

Page 8, first full paragraph, first sentence

In early April 2024, NOAA publicly released its Vision for Global SSA Coordination. NOAA has also communicated to National Space Council staff to develop from this strategic vision a tactical implementation plan in parallel with prioritizing development of TraCSS. NOAA suggests the sentence be modified to include this information.

Page 8, first full paragraph, third sentence

NOAA’s Vision for Global SSA Coordination describes the need for coordination, but OSC determined that an in-depth analysis was too detailed for inclusion in the scope of a vision document. NOAA suggests the draft report specify what is meant by “risks.” NOAA’s public documentation on TraCSS highlights the growing need for coordination given the increase in space activity.

Page 12, Appendix B, first paragraph, third sentence

TraCSS is an enduring operational mission, similar to air traffic control, and thus “lifecycle” is not the correct term to use here. There is no disposal phase for TraCSS. NOAA suggests updating the text from “lifecycle” to “lifetime.”

Page 12, Appendix B, second paragraph, second sentence

The ramp up-ramp down approach for the transition relates to both a ramp up in TraCSS operational capacity and also capability as TraCSS incrementally deploys more capabilities over the course of Phase 1, and then subsequently Phase 2 and Phase 3. The current text reads “A ramp up – ramp down transition approach is planned, where more responsibility will transfer to OSC as TraCSS operators complete training, gain experience, and produce comparable data.” NOAA suggests the text read “A ramp up – ramp down transition approach is planned, where more responsibility will transfer to OSC as TraCSS incrementally develops in capability and operational capacity.”

Page 12, Appendix B, third paragraph, fourth sentence

The sentence does not accurately reflect the directive from the decision memorandum. The memorandum directs the program to complete an independent cost estimate through Phase 3. Subsequent phases beyond Phase 3 are envisioned, per discussions with DoD, but have not yet been scoped. There is no “full program lifecycle cost estimate” as TraCSS is an enduring mission for spaceflight safety, with no disposal phase.

Editorial Comments

Page 6, third paragraph, last sentence

NOAA suggests the sentence clarify whether the sentence is OIG analysis or a continuation of the DoD official’s paraphrased statements.

REPORT

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