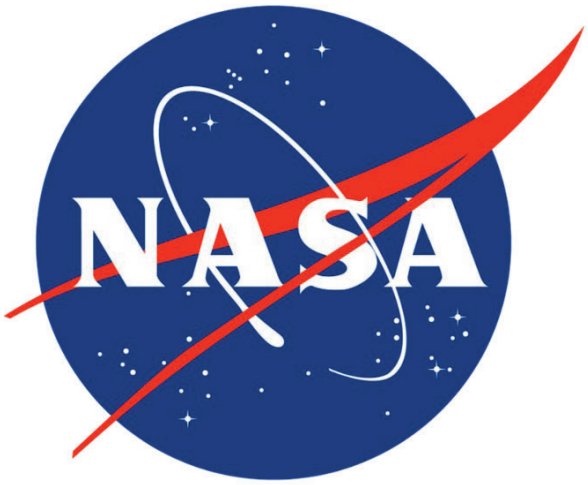

Selection Statement

Next Space Technologies for Exploration Partnerships-2
(NextSTEP-2) Appendix P: Human Landing system (HLS) Sustaining Lunar Development (SLD)

Broad Agency Announcement (BAA)
NNH19ZCQ001K_APPENDIX-P-HLS-SLD

National Aeronautics and Space Administration

May 8, 2023

I. Introduction

In my role as the Selection Official (SO) for the National Aeronautics and Space Administration (NASA or Agency) Human Landing System (HLS) Appendix P procurement, for the reasons set forth below, I select the following firm for contract award: Blue Origin, LLC. This selection statement documents my independent analysis and judgment as the SO and constitutes my final determination on this matter.

II. Procurement Description

Space Policy Directive-1, issued in December 2017, instructs NASA to "[l]ead an innovative and sustainable program of exploration with commercial and international partners to enable human expansion across the Solar System and to bring back to Earth new knowledge and opportunities. Beginning with missions beyond low-Earth orbit, the United States will lead the return of humans to the Moon for long-term exploration and utilization, followed by human missions to Mars and other destinations."

To address a portion of these objectives, NASA instituted the Artemis campaign and awarded a contract for the development and demonstration of an initial crewed lunar lander capability in April 2021 under Option A of Appendix H to the Next-STEP-2 Omnibus BAA to serve as the human lander for the Artemis III mission. NASA also exercised an option for a contract in December 2022 under the same BAA for a sustainable lander known as Option B, which will serve notionally as the lander for the Artemis IV mission. The purpose of this solicitation is to request proposals from industry for selection and a second award for the rapid development and demonstration of a Sustainable Human Landing System (HLS) from a second provider, delivering humans to the lunar surface in a subsequent Artemis mission, and with the requirement of completing the required Lunar Orbit Checkout Review (LOCR) by April 2028. Additionally, NASA plans to leverage crewed lander development activities to procure and certify the design of landers capable of human-class cargo delivery via specific Contract Line Item Numbers (CLINs).

III. Background

NASA released the final Appendix P solicitation (as amended) on November 3, 2022. Four Offerors, listed below in alphabetical order, submitted timely proposals by the due date of December 6, 2022.

Archer Tactical Group (Archer)
Blue Origin, LLC (Blue Origin)
Dynetics, Inc. (Dynetics)
Midwest Institute for Applied Physics Research (Midwest)

Based on the proposals submitted and the evaluation thereof, two of these Offerors – Blue Origin and Dynetics – currently remain eligible for selection and award.[1]

[1] Archer and Midwest were removed from the competition in January 2023 because their proposals were not fully compliant with solicitation requirements.

After receipt of proposals, the Source Evaluation Panel (SEP) appointed to evaluate proposals (documented in a memorandum signed on August 11, 2022), and which was comprised of three subpanels (one each for Technical, Price, and Management), began its evaluation. The SEP evaluated proposals in accordance with the evaluation plan (dated December 6, 2022) established in the solicitation. To fully document its work, the SEP produced a report for each Offeror containing all of the SEP's findings, ratings, and other evaluative content. The SEP has provided these reports to me, along with comprehensive briefings summarizing its evaluation work and conclusions. These briefings provided an opportunity for the SEP to fully explain its final assessment of each of the proposals, and for me and other senior NASA leaders to ask questions and receive answers directly from the Agency experts that comprised the SEP. During these briefings, I asked questions of the SEP to ensure I fully comprehended the evaluation results, rationale of the findings, and had a sufficiently in-depth understanding across each of the three subpanels of each Offeror's proposal to support making an informed selection decision. I also solicited and considered the viewpoints of other senior advisors in attendance to ensure completeness across the leadership of the Explorations Systems Development Mission Directorate and appropriate mission support functions, including the Office of the General Counsel and Office of Procurement.

On April 10, 2023, I determined that it would be in the Agency's best interests to make an award without conducting discussions or post-selection negotiations. This decision was based on my assessment that Blue Origin's proposal is the one that is the most advantageous to the Agency across all evaluation factors, and that best aligns with the objectives set forth in this solicitation.

IV. Proposal Evaluation Methodology Overview

For this procurement, NASA utilized a BAA to solicit firm fixed-price proposals in accordance with Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. BAAs are not negotiated procurements conducted on the basis of competitive proposals. As such, as the SO, I did not conduct a tradeoff between the two proposals. Rather, each proposal was evaluated on its own individual merits.

Based on the briefings provided to me, the SEP evaluated each Offeror's proposal as a measure of its understanding of and approach to meeting all of the requirements and goals of this solicitation. The SEP evaluated the degree to which each proposal demonstrates the Offeror's in-depth knowledge of the required engineering processes, procedures, and tools to successfully perform the tasks on schedule, and understanding of current NASA requirements, goals, policies, and procedures affecting such tasks.

For each of the following evaluation criteria, the SEP evaluated the credibility, feasibility, effectiveness, comprehensiveness, suitability, risk, completeness, adequacy, and consistency of each Offeror's unique proposed approach, as well as its ability to successfully meet the technical, management, schedule, and all other requirements and goals of this solicitation.

The SEP based its evaluation only on the information presented in the Offeror's proposal. Data previously submitted, or presumed to be known (e.g., data or services previously submitted or performed for the Government), was not considered as part of the proposal unless such information was entirely incorporated into and contained within the proposal.

Consistent with FAR 35.016(e), the primary basis for selecting a proposal for award is technical, importance to Agency programs, and funds availability, as delineated through the BAA's evaluation factors and areas of focus. The BAA establishes three factors for evaluation: Technical Approach, Crew Safety, and Mission Assurance (Factor 1); Total Evaluated Price (Factor 2); and Management Approach (Factor 3). These factors are listed in descending order of importance to the Government: Factor 1 is more important than Factor 2, and Factor 2 is more important than Factor 3. Factors 1 and 3, when combined, are significantly more important than Factor 2. All Areas of Focus were considered as approximately of equal importance within their respective Factor.

Evaluation Factor	Area of Focus
Factor 1: Technical Approach, Crew Safety, and Mission Assurance	1. Technical Design Concept
	2. Development, Schedule, and Risk Mitigation
	3. Verification, Validation, and Certification
	4. Insight
	5. Launch and Mission Operations
	6. Approach to Early System Demonstrations
Factor 2: Total Evaluated Price	No additional Area of Focuss
Factor 3: Management Approach	1. Organization and Management
	2. Schedule Management Process
	3. Risk Management Process
	4. Business Approach
	5. Past Performance
	6. Small Business Subcontracting
	7. Data Rights

Table 1: Evaluation Factors and Areas of Focus

For the evaluation of Factors 1 and 3, the SEP identified strengths and weaknesses as defined below. Elements of the Offeror's proposal that merely met the Government's requirements were not eligible for either a finding of a strength or a weakness and were not otherwise documented in the evaluation. For purposes of evaluating strengths and weaknesses, the SEP considered how an Offeror's proposed approach affects risk, such as technical risk, risk to meeting the Offeror's proposed schedule, the need for increased Government oversight, or the risk of likelihood of unsuccessful contract performance. Based on my review and analysis of the SEP reports, I fully concur with and adopt the SEP Report for each Offeror.

	Definition
Significant Strength	An aspect of the proposal that greatly enhances the potential for successful contract performance and/or that appreciably exceeds specified performance or capability requirements in a way that will be advantageous to the Government during contract performance.

Strength	An aspect of the proposal that will have some positive impact on the successful performance of the contract and/or that exceeds specified performance or capability requirements in a way that will be advantageous to the Government during contract performance.
Weakness	A flaw in the proposal that increases the risk of unsuccessful contract performance.
Significant Weakness	A flaw in the proposal that appreciably increases the risk of unsuccessful contract performance.
Deficiency	A material failure of a proposal to meet a Government requirement or a combination of significant weaknesses in a proposal that increases the risk of unsuccessful contract performance to an unacceptable level.

Table 2: Strength and Weakness Definitions

For Factor 2, the SEP's price evaluation consisted of four components: (1) a calculation of each Offeror's Total Evaluated Price; (2) an evaluation of each Offeror's price reasonableness; (3) an evaluation of each Offeror's balanced pricing; and (4) an evaluation of whether the Offeror's proposal contained advance payments. As noted in the solicitation, the evaluation of Offerors' prices did not result any strengths or weaknesses. The SEP calculated each Offeror's Total Evaluated Price by summing the Offeror's proposed firm-fixed-price amounts for CLINs 001 and 003 through 008, plus the value of any Optional Government Furnished Property (GFP), plus the value associated with any Government Task Agreements (GTAs), plus the minimum Indefinite Delivery Indefinite Quantity (IDIQ) obligation as provided in the solicitation.

The evaluation of Offerors' prices did not result in the assignment of any strengths or weaknesses.

V. Selection Analysis

I have independently analyzed the SEP's findings and price assessment for each Offeror and it is my determination that they were created in accordance with the evaluation criteria and methodology set forth in the solicitation. Further, it is my determination that the SEP's findings and price assessments have a rational basis, are thoroughly documented, and provide me with information regarding the qualitative merits and drawbacks of each Offeror's proposal that is sufficient to support my selection decision. All decisions made herein are based on those findings and price assessments, and subsequent decisions represent my independent analysis and judgement as the Agency official solely responsible for making a selection decision in this procurement. Below are my analyses for each Offeror and the basis for my selection for contract award.

A. Blue Origin

My selection decision is based on my independent review and assessment of the SEP's findings and price assessment, which I have approved. Below is a discussion of the findings and price assessment that I find to be particularly notable in making my selection decision. This selection statement does not identify or describe other SEP findings for Blue Origin that did not represent significant considerations in my analysis.

Notable Findings

2024 and 2025 Pathfinder Lander Missions (Technical Area of Focus 2: Development, Schedule, and Risk).

To facilitate Blue Origin's ability to successfully complete the required Lunar Orbit Checkout Review (LOCR) and crewed demonstration mission in 2028, Blue Origin is proposing what I consider to be a unique and highly advantageous aspect of its technical approach that matures several technologies critical to the success of the crewed and cargo landers early in the development cycle to burn down risk associated with the current low-Technology Readiness Levels (TRLs) of multiple technologies. Specifically, Blue Origin plans to fund and execute pathfinder lander missions in 2024 and 2025, to land on the Moon to mature several critical, low-TRL technologies three years before the Sustaining Lunar Development (SLD) uncrewed demonstration mission by demonstrating lunar lander components, subsystem designs, and system behaviors. I find this aspect of the proposal to be compelling — it is a forward-thinking solution to mature key low-TRL technologies allowing for incorporation for any changes into the final design well in advance of the LOCR and crewed demonstration mission. The proposed solution to maturing these technologies is a significant strength of the technical proposal because it is highly advantageous to NASA in terms of maintaining schedule and ensuring mission success, and there is no financial impact to NASA because the pathfinder missions are being funded by Blue Origin. The incorporation of the technical volume of the proposal into the awarded contract ensures that the maturation of the technologies early become part of the technical baseline to which Blue Origin will be held accountable.

Fully Integrated Flight Configuration for Uncrewed Demonstration (Technical Area of Focus 6: Approach to Early System Demonstrations).

Another unique and highly advantageous aspect that I note in Blue Origin's technical approach is the plan to burn down risk associated with the crewed demonstration mission by using a fully integrated flight configuration of all systems for the Uncrewed Flight Test (UFT), which is conducted before the crewed demonstration mission. The success criteria for the UFT that are identified in the Statement of Work (SOW) only include a landing test to the lunar surface with a demonstration of precision landing capabilities. However, the UFT being proposed by Blue Origin will also demonstrate critical lander systems that will be at play during the crewed demonstration mission (i.e., thermal and fluid characterization of cryogenics, lunar surface storage, Environmental Control and Life Support System (ECLSS), reignition of the engines after surface stay, and the autonomous ascent burn and Non-Rectilinear Halo Orbit (NRHO) return). Early demonstration of the crewed lander, through all mission phases, allows lander systems to be exercised in the environments they are expected to operate in during the crewed demonstration mission. Thus, I find that using a fully matured crewed lander configuration for the UFT is another compelling aspect of the technical proposal — it is a significant strength that is highly advantageous to NASA because it will decrease risk to the crewed demonstration mission.

Excess Capabilities (Technical Area of Focus 1: Technical Design Concept).

I also found value in Blue Origin's technical approach to providing excess capabilities for the Integrated Lander and Human-class Delivery Lander (HDL). I find this approach to be a significant strength and another distinguishing aspect of the proposal that is highly advantageous to NASA because these excess capabilities offer NASA operational flexibility and increased mission performance to accomplish its objectives for current and future NASA Design Reference Missions (DRMs) defined by the solicitation; the benefits of these capabilities include, but are not limited to, additional science delivery return, greater flexibility in the design of other lunar elements, and flexibility with launch opportunities through use of extended loiter capability.

Proposed excess capabilities for the Integrated Lander above the solicitation functional requirements for both NASA DRM-H-001 (Polar Sortie Mission) and NASA DRM-H-002 (Polar Excursion Mission) include delivery from Earth to Near-Rectilinear Halo Orbit (NRHO) (volume only), delivery from NRHO to lunar surface, delivery from Lunar Surface to NRHO (volume only for NASA DRM-H-002), extended loiter in NRHO, lunar ascent video, surface operations vertical orientation, and peak power for GFP. Blue Origin also provides more than the goal for volume on Delivery from NRHO to Lunar Surface and Delivery from Lunar Surface to NRHO. Additionally, excess capability is provided for science/utilization, including total power wattage, individual power wattage, interface power feed, interface envelope and providing more than goal allocations for externally mounted payloads. Excess capabilities are also proposed for the NASA HDL DRMs, DRM-C-001 (Integrated Cargo Delivery Mission) and DRM-C-002 (Offloaded Cargo Delivery Mission) that include cargo delivery and surface operations vertical orientation. Lastly, Blue Origin proposes an excess capability to provide Non-Polar Surface Access to six of the six sites listed for NASA DRM-H-001b (Non-Polar Sortie Mission Variant), which demonstrates flexibility and added margin against the non-polar NASA DRM.

Corporate Support and Business Approach (Management Area of Focus 4: Business Approach).

Blue Origin's management proposal discusses a corporate support and business approach that I consider to be of particular importance in helping NASA further its interests in the future commercialization of space. It is a significant strength of the proposal. Blue Origin's architecture supports market expansions above and beyond the Appendix P mission of the Lunar Cargo Delivery Service, In-Space Transportation services, and Refueling markets by expanding the space economy through Blue Origin's availability of its commercial lander capabilities to international agencies, other Government customers, and private astronauts. I also find that reusability is a promising key future characteristic within Blue Origin's architecture and business approach, which will greatly benefit the Government in the future by enabling long-term affordability, reducing crew safety risks by having multiple landers available, and/or delivering multiple cargo missions without disposal. When coupled with Blue Origin's plans for a reusable New Glenn launch vehicle, the proposal demonstrates a strong commitment to future cost reductions and increasing the customer base with emerging markets. A path to sustainability is also addressed within Blue Origin's business approach and it shows NASA that up-front design considerations are being studied and acted upon. Examples include the plan to launch duplicate landers for the 2027 uncrewed flight test and 2028 crewed demonstration missions and their ability to loiter in Near Rectilinear Halo Orbit (NRHO) exceeding NASA's requirements. This approach provides

additional avenues for potential reuse and/or as a backup capability to protect against the unknown. Blue Origin's proposed corporate contributions demonstrate a significant investment in the SLD development efforts and future business capabilities to mature emerging space economies. This public-private partnership investment will greatly benefit the Government by reducing overall prices and enabling other segments of the Artemis Program.

Continuous Communication Requirement Risk (Technical Area of Focus 1: Technical Design Concept).

Blue Origin's proposed communication link margin allocations introduces a risk to not meeting NASA's continuous communication requirements. I have some concern that there is risk to meeting NASA's HLS continuous communication requirement, HLS-S-R-0030, in HLS-RQMT-006, because the included margin for multipath loss is less than the recommended worst-case predicted levels provided in the solicitation. Therefore, it is considered a weakness in their proposal.

Integrated Master Schedule (IMS) Conflicts (Management Area of Focus 2: Schedule Management Process).

Blue Origin's Integrated Master Schedule (IMS) contains numerous conflicts and omissions. The Volume 3 Management proposal states that Blue Origin's "…schedule management approach is anchored by the program IMS, a single source of truth for the whole team;" however, the IMS has numerous conflicts and omissions, which is a weakness of their proposal. I have some concern with this aspect of the proposal and view it as a potential schedule management process weakness for integrating disciplines, Integrated Product Teams (IPTs), and/or subcontractors, and contrary to the stated "single source of truth" intent of the IMS. These flaws in the IMS increase the risk that deliverable deadlines may be missed due to incorrect documentation and increases the risk of confusion across the contractor and NASA teams as multiple delivery dates are documented or missing.

Price Assessment

Using the methodology provided in the solicitation and the techniques specified at FAR 15.404-1(b)(2)(i) and 15.404-1(b)(2)(v), the SEP calculated the Total Evaluated Price for Blue Origin as $3,419,345,052.35, and the evaluation concluded that this amount was reasonable and balanced. The SEP also reviewed Blue Origin's pricing for advance payments and concluded that it did not propose any advance payments. Finally, the SEP compared Blue Origin's proposed milestone payment amounts to its monthly expenditures and concluded that the contractor's investment assumed a fair sharing of risk throughout contract performance. I concur with these conclusions.

B. Dynetics

As stated above, my selection decision is based on my independent review and assessment of the SEP's findings and price assessment, which I have approved. Below is a discussion of the findings and price assessment that I find to be particularly notable in making my selection decision. This

selection statement does not identify or describe other SEP findings for Dynetics that did not represent significant considerations in my analysis.

Notable Findings

Excess Capabilities (Technical Area of Focus 1: Technical Design Concept).

Dynetics provided several excess capabilities within the applicable system specifications for use on the Crewed Demonstration Mission, as well as future NASA Design Reference Missions (DRMs) defined by the solicitation. These excess capabilities offer NASA operational flexibility and increased mission performance to accomplish its objectives for current and future NASA DRMs defined by the solicitation. Benefits of these capabilities include, but are not limited to, additional science delivery return and flexibility for future NASA DRMs by offering access to all six non-polar sites defined in the solicitation. As such, this exceeds specified performance and capability requirements in a way that I see as advantageous to the Government during contract performance and is considered a strength of this proposal.

Corporate Support and Business Approach (Management Area of Focus 4: Business Approach).

Dynetics' proposed business approach describes a strategy for commercialization that enables the firm to pursue additional customers, markets, and missions for its lander architecture and helps to enable the development of a commercial cis-lunar economy. The "low-slung architecture" for the crewed vehicle presents safety and operational benefits for deploying (or loading) cargo for cargo lander missions. Dynetics' business approach is flexible in the concepts presented and aligns with continuing to build the commercial space economy.

I appreciate that Dynetics' proposed system provides mission flexibility and extensibility in a modular architecture (as demonstrated by the cargo Autonomous Logistics Platform for All-Moon Cargo Access (ALPACA) concept). Reusability is incorporated incrementally in future missions, which may minimize future mission costs. Also, offering design considerations for reuse capability shows an integrated and effective approach to meet future requirements and functionality.

Overall, Dynetics' Business Approach is a strength to the proposal and increases the potential for cost-effective recurring lunar transportation services for Artemis missions, as well as non-NASA missions that will allow commercial opportunities to continue to develop.

Uncertainty of Crew Module (CM) Proposed to Meet Requirements for 4 Crew DRM-H-002 (Technical Area of Focus 1: Technical Design Concept).

Dynetics' technical approach presents uncertainty whether it meets the 4-crew Appendix P requirements for NASA DRM-H-002 (Polar Excursion Sortie), stating that it did not account for Appendix P utilization cargo and the Exploration Extravehicular Activity (xEVA) suit, and further stating that revisions to the current design or the necessity for a different CM design for NASA DRM-H-002 could result in cost and schedule impacts. I am highly concerned with this aspect of the proposal and consider it to be a significant weakness because it is unclear whether the proposed CM design meets the requirements of the solicitation.

Crewed Demonstration Mission (CDM) Uncertainty in Meeting DRM-H-001 Requirements (Technical Area of Focus 1: Technical Design Concept).

Dynetics identifies different capabilities within the Integrated Lander System Specification (ILSS), for both a Crew Autonomous Logistics Platform for All-Moon Cargo Access (ALPACA) and Crewed Demonstration Mission (CDM) vehicle. Both the Crew ALPACA and CDM vehicles are mentioned in reference to the Crewed Demonstration Mission, which must meet NASA DRM-H-001 requirements. However, because both vehicles are mentioned, it is unclear whether the vehicle being used will meet the requirements of the solicitation. For example, the ILSS reflects differences in NASA DRM-H-001 requirements flow down between the Crew ALPACA and CDM vehicle (i.e., number of EVAs, mass delivery to NRHO, etc.). Additionally, the ILSS omits the flow down of multiple NASA DRM-H-001 requirements for the CDM vehicle (i.e., Human Lander System-to-Gateway docking, etc.). This results in several requirements not being met if the CDM vehicle is in fact being flown for the CDM mission. I am highly concerned with this proposed approach and consider these flaws to be a significant weakness because I am unclear which capabilities will be demonstrated on the CDM, which provides uncertainty whether the CDM Vehicle will meet the full set of NASA DRM-H-001 (Polar Sortie Mission) requirements.

Late Technology Maturation (Technical Area of Focus 2: Development, Schedule, and Risk).

Dynetics' development approach to technology maturation and integrated system demonstration calls for the maturation of eight major Critical Technology Elements (CTE) from TRL 6 to TRL 7 or 8 during a single test flight in July of 2027, only nine months before its proposed Crewed Demonstration Mission (CDM) LOCR. I am deeply concerned with this proposed approach and consider it to be a significant weakness because simultaneous maturation of so many critical technologies late in the Design, Development, Test and Evaluation (DDT&E) cycle allows very little opportunity to impact the CDM lander build and operation should the need for design or operational changes arise while maintaining schedule.

Price Assessment

Using the methodology provided within the solicitation and the techniques specified at FAR 15.404-1(b)(2)(i) and 15.404-1(b)(2)(v), the SEP calculated a Total Evaluated Price for Dynetics and while it was also evaluated as being reasonable and balanced, it was substantially higher in amount than the competing proposal. The SEP also reviewed Dynetics' pricing for advance payments and concluded that it did not propose any advance payments. Finally, the SEP compared Dynetics' proposed milestone payment amounts to its monthly expenditures and concluded that the contractor's investment assumed a fair sharing of risk throughout contract performance. I concur with these conclusions.

VI. Selection Determination

My decision to select Blue Origin's proposal for award is based on my independent review and assessment of the SEP's findings and price assessments for the proposals submitted by Blue Origin and Dynetics. My selection decision also considered the Agency's currently available and

anticipated future funding for the solicitation effort. In making my selection, I examined the totality of the SEP's findings and price assessments for each competing proposal across the solicitation's evaluation criteria, as well as the relative importance of those criteria as stated therein. This analysis leads me to the conclusion that Blue Origin's proposal is the most advantageous to the Agency across all evaluation factors, and it aligns with the objectives of the solicitation. Specifically, after duly considering the merits and drawbacks of all findings for the proposals, I conclude that the Blue Origin proposal provides abundant value for NASA at its Total Evaluated Price. Also, it provides the least risky and most advantageous technical and management approaches for meeting NASA's HLS SLD requirements and schedule, and these features are offered at a substantially lower price. Dynetics' proposal does not provide the same value for NASA due to the increased risk associated with its technical approach and less advantageous management approach and price. Therefore, I select Blue Origin's proposal for a single Appendix P, HLS SLD contract.

This Appendix P selection represents a critical step in our return to the Moon. The Moon is uniquely suited to prepare us, and propel us, to Mars and beyond. The next chapter in human spaceflight exploration is upon us. With this award, we take another step closer in going to the Moon, and we go to stay.

James Free Digitally signed by James Free
Date: 2023.05 08 14 03:13 -04'00'

James M. Free
Associate Administrator
Exploration Systems Development Mission Directorate,
Selection Official