UNIFIED NETWORK AND NAVIGATION OPERATIONS (UNNO)

STATEMENT OF WORK (SOW)

Date: May 2026 **Contract #:** TBD

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1.0 Introduction

The Space Communications and Navigation (SCaN) program is responsible for and manages NASA's communications and navigation capabilities to enable scientific discovery and space exploration. Currently these capabilities are provided through the Near Space Network (NSN) and the Deep Space Network (DSN) . SCaN is evolving its management and operational structure to form an integrated network operations team under the Unified Network and Navigation Operations (UNNO) construct.

Together as a cohesive organization, SCaN will provide reliable, efficient, secure, and innovative communication and navigation network services that connect mission operations teams to their spacecraft, a vital link that enables mission success. Missions supported include NASA human spaceflight and scientific programs, non-NASA government agencies, commercial companies, and international partners.

SCaN’s network capabilities will continue to evolve through an increasing use of commercial services across the Earth, lunar, Mars, and deep space domains; however, not all capabilities will be fully commercialized. Certain mission-critical functions will

continue to rely on government-owned systems where necessary to ensure performance, resilience, and global coverage. SCaN will pursue the right balance of government and commercial capabilities to efficiently leverage available industry services while sustaining essential government infrastructure.

SCaN is seeking contract support to provide operations, maintenance, sustainment, integration, and continuous improvement for the existing networks as current capabilities transition and integrate new capabilities. This contract will include support for: (1) Unified Network Management functions enabling the unified "One Network" operational construct; (2) Deep Space Network operations including all CONUS-based facilities (Goldstone DSCC, JPL Mission Operations Center, and Monrovia Remote Operations Center) and global logistics and selected activities needed to coordinate with the worldwide DSN footprint; and (3) Near Space Network operations including the Space Relay (TDRS) and Direct-to-Earth (DTE) services.

The contractor will work directly with the DSN and NSN Management teams to enable SCaN's continued evolution toward a more reliable, efficient, secure, and innovative integrated network.

2.0 Scope

2.1 Overview

This contract Statement of Work describes the functions needed to support an integrated end-to-end network for NASA's space communications and navigation services. The contract is Indefinite Delivery Indefinite Quantity (IDIQ), and task orders will be created for network support within the framework of the functions defined in this SOW.

The following networks and functions are within scope of this contract:

- **The SCaN One Network**, comprised of:
    - Unified Network Management
    - Deep Space Network (DSN) — CONUS operations and global logistics coordination
    - Near Space Network (NSN) — Space Relay and Direct-to-Earth services
- Mission Integration and Special Studies (MI&SS) support

2.2 The SCaN One Network

The SCaN One Network provides missions with an integrated ability to obtain communication and navigation services for deep space and near-Earth missions. There is a region of overlap for support, and SCaN selects the optimal support for each mission based on mission requirements and resources available.

2.2.1 Unified Network Management

SCaN seeks to evolve toward common network management systems, tools, and processes to reduce cost, provide a standardized interface experience for missions, and to more effectively manage the networks. The contractor is chartered with bringing forth ideas to continuously improve the methods of operations, maintenance, and sustainment of NASA assets and to optimize processes and tools common to all network providers to increase reliability and efficiency. The contractor will do this in coordination with changes planned by SCaN. The contractor will be responsible for integrating new missions, new providers, and new services, processes, and tools into the SCaN One Network and will track key performance indicators on network performance.

2.2.2 Deep Space Network (DSN)

The DSN provides communication and navigation services for the deep space region (beyond approximately two million kilometers from Earth's surface). The DSN is comprised of a central management and support function, three global deep space communications complexes (DSCCs) strategically placed around the globe to permit constant communication with spacecraft as the Earth rotates, and a test function adjacent to the NASA launch complex at KSC. The DSN locations include:

- **Pasadena, CA, USA** — JPL Mission Operations Center and central management/support (in scope of this contract)
- **Monrovia, CA, USA** — Remote Observation Center and global logistics support (in scope of this contract)
- **Goldstone, CA, USA** — Goldstone Deep Space Communications Complex (GDSCC) (in scope of this contract)
- **Madrid, Spain** — Madrid Deep Space Communications Complex (MDSCC) (Operations and Maintenance obtained through international agreement; contractor shall provide global logistics coordination support)
- **Canberra, Australia** — Canberra Deep Space Communications Complex (CDSCC) (Operations and Maintenance obtained through international agreement; contractor shall provide global logistics coordination support)

- **Merritt Island, FL, USA** — MIL-71 launch support facility

Each of the complexes is responsible for the management of the full DSN communication network through NASA's Follow-the-Sun Operations (FtSO). FtSO allows a single DSCC to monitor and control all connections in the DSN during its location's daylight hours, with handovers between DSCCs at approximately the change in prime shift.

2.2.3 Near Space Network (NSN)

The NSN provides communication and navigation services for missions in the near-space region (defined as zero to two million kilometers above the Earth's surface). The NSN is comprised of a Space Relay (SR) Service (previously known as the Space Network) and a Direct-to-Earth (DTE) Service (previously known as the Near-Earth Network). Central management and support for the NSN is located at GSFC, Greenbelt, MD.

2.2.3.1 Space Relay Service

The flight segment includes the Tracking and Data Relay Satellites (TDRS), positioned in geosynchronous orbit and spaced around the globe in the Atlantic Ocean Region (AOR), Pacific Ocean Region (POR), and Indian Ocean Region (IOR). The constellation evolves over time as spacecraft age and are moved to new orbit positions. The constellation presently includes:

- 1st generation: TDRS-3 (storage), TDRS-5 (active), TDRS-6 (active), TDRS-7 (active)
- 2nd generation: TDRS-8 (active)
- 3rd generation: TDRS-11 (active), TDRS-12 (active), TDRS-13 (active)
- Space Test Program Satellite – 6 (STPSat-6)

The ground segment includes four ground stations and several remote support sites. Operations are managed from the Second TDRS Ground Terminal (STGT). The four SR ground stations are located at:

- White Sands Complex (WSC) — STGT and White Sands Ground Terminal (WSGT), Las Cruces, NM
- Guam Remote Station (GRS), Dededo, Guam
- Blossom Point Remote Station (BPRS), Welcome, MD

Remote support locations include:

- Australian TDRS Facility (ATF), Yatharagga, Australia

- Bilateration Ranging Transponder System (BRTS) sites at Alice Springs (Australia), Ascension Island, Guam Remote Station, and White Sands Test Facility
- Blue Mesa, Magdalena Peak, NM

The SR is in the process of adding commercial service providers for which NASA will administer the contract.

2.2.3.2 Direct-to-Earth (DTE) Service

The DTE service provides telemetry, tracking, and commanding (TT&C), high-rate data acquisition downlink, and radiometric tracking services through a global network of NASA and commercial ground stations. NASA-operated DTE antenna systems are located at:

- Wallops Ground Station, Wallops Island, VA
- McMurdo Ground Station, Antarctica
- White Sands 1 Antenna, Las Cruces, NM
- Alaska Ground Station, Fairbanks, AK
- Kennedy Uplink Station and Ponce de Leon Station, FL

The DTE service has a 25-year history of using commercial service providers for which NASA administers contracts. There is potential for increased commercial support during execution of UNNO, including support for NASA's Artemis missions. As commercial capabilities are increased government owned footprint may decrease through the life of UNNO.

3.0 General Requirements

3.1 Requirements Framework

This Statement of Work is intended to identify all potential work required to support continuous operations, maintenance, sustainment, and evolution of the networks toward a future architectural vision.

Government-issued task orders will define the specific work to be performed for each network, including requirements to be met, standards of performance, required deliverables or output, government furnished property or information, and specific applicable documents.

3.2 Service Performance Standards

The contractor shall provide secure, reliable, and proficient communication and navigation services to ensure user mission success. The contractor shall meet or exceed the availability, proficiency, and reliability requirements established for each service category, including but not limited to:

NSN Performance:

- **Near Space Network Service Availability (Nominal):** ≥ 97% averaged over one month
- **Near Space Network Service Availability (Critical):** ≥ 99% averaged over one month
- **Operational Service Proficiency:** ≥ 99.90% averaged over one month (Standard of Excellence ≥99.97%)
- **Terrestrial Communication Service Availability:** ≥ 99.9

DSN Performance:

- **Service Availability:** Nominal 95%
- **Mission critical event:** 98%

Detailed service-specific performance requirements for DSN and NSN services shall be specified in applicable task orders.

4.0 Management

The contractor shall:

4.1 Program Management

Perform program management functions, including technical, cost, schedule, and risk management, necessary to manage the work, employing proven and effective management systems and an integrated approach while identifying opportunities for efficiencies.

4.1.1 Workforce Readiness

Supply a qualified workforce with the appropriate training, certification, experience, educational attainments, and security clearances. Workforce readiness shall be sustained through formal training, certification, proficiency, and cross-training programs across all sites.

4.1.2 Task Implementation Plans

Develop and submit Task Implementation Plans, including Work Breakdown Structure (WBS) and cost proposals, for task orders issued by the Government.

4.1.3 Reporting & Meetings

Develop, compile, prepare, and deliver weekly, monthly, quarterly, annual and ad hoc reports, reviews, presentations, and meetings which provide status, clarifications, risks, challenges, issues, concerns and proposed resolution.

4.1.4 Automated Metrics & Reporting

Provide automated reporting of contractor progress, network health, network Discrepancy Reports (DRs), weekly status, monthly status, and network metrics (e.g., JIRA boards or automated metrics collection) to support recurring reports, reviews, presentations, and meetings.

4.1.5 Financial Management System

Provide and maintain a financial management system for planning, tracking, accumulating, and reporting contract costs, and provide other financial support required to meet cost reporting, billing, and disclosure requirements.

4.1.6 Configuration Management

Perform configuration management and control of the configuration of all operational systems in accordance with the Configuration Management Plan. Configuration of underlying layers of hardware, operating systems, applications, scripts, settings, and tailoring shall be similar across SCaN One Network systems to facilitate reuse and eliminate duplication. The contractor shall generate and deliver configuration change summary reports.

4.1.7 Audits & Assessments

Support NASA audits and assessments, including but not limited to Inspector General audits, IT security assessments, health and safety audits, ISO audits, and property audits.

4.1.8 Technical Performance Metrics

Develop, maintain, and report technical performance metrics that effectively measure the level of performance in execution of the SOW.

4.1.9 Environmental Management System

Implement and maintain an Environmental Management System (EMS) that complies with all applicable international, Federal, state, and local environmental requirements;

environmental Executive Orders; NASA Procedural Requirements; and applicable Center environmental directives, procedures, and policies.

4.1.10 Environmental Regulatory Correspondence

Submit to appropriate environmental regulatory agencies any required official correspondence (e.g., permits/permit applications, negotiated agreements, requests for information).

4.1.11 Investigations & Root Cause

Prepare and present root cause and corrective action, failure investigation, and mishap investigation reviews to the Government, and respond to action items.

4.1.12 Nonconformance, Anomaly, and Corrective Action Management

Establish and maintain processes for identifying, documenting, tracking, dispositioning, and resolving nonconformances, anomalies, escapes, process failures, and mission assurance concerns. The contractor shall perform root cause analysis as appropriate and track corrective and preventive actions to closure.

4.1.13 Lessons Learned and Continuous Improvement

Capture, evaluate, share, and apply lessons learned from operations, maintenance, tests, anomalies, incidents, assessments, and customer feedback. The contractor shall use lessons learned and performance data to improve procedures, training, controls, and mission assurance outcomes.

4.1.14 Official Communication Methods

Use official NASA.gov email to communicate with the Government on all matters pertaining to O&M, development and modernization, contract deliverables, and other non-contractual business managed using the TOMS system.

4.1.15 Public Web Services Security

Secure Public Web Services adhering to current National Institute of Standards and Technology (NIST) guidelines.

4.1.16 Export Control Compliance

Comply with all Federal and NASA export control regulations, including the International Traffic in Arms Regulations (ITAR), Export Administration Regulations (EAR), and the NASA Export Control Program (NPD 2190.1).

4.1.17 CUI Management

Control and manage Controlled Unclassified Information (CUI) in accordance with NIST SP 800-171 Rev 3, NIST SP 800-172, CMMC 2.0, 32 CFR Part 2002, and NPR 2810.7A

4.1.18 Software Development & Assurance

Comply with software application and code development per applicable NASA policies and procedures, including software assurance standards (NASA-STD-8739.8) and software engineering requirements (NPR 7150.2).

4.1.19 Office Administration

Provide the office administration functions necessary to support the management of the networks.

4.1.20 Real Property Transactions

Comply with NASA Procedural Requirements for any NASA real property transactions.

4.1.21 Technology Procurement Policy

Procure all technologies in accordance with Committee on National Security Systems Policy (CNSSP) No. 11, "National Policy Governing the Acquisition of Information Assurance and IA-Enabled Information Technology Products".

4.1.22 Contract Documentation & DRDs

Produce, control, and maintain contract documentation in accordance with the Data Requirements Descriptions (DRDs) and Data Requirements List (DRL). All data shall be prepared, maintained, and delivered to NASA in accordance with the requirements of the task order SOWs and Contract Data Requirements List (CDRL).

4.1.23 General Legal Compliance

Conduct all work in compliance with applicable laws, regulations, policies, procedures, and the terms and conditions of the contract.

4.2 Unified Network Management

The contractor shall:

4.2.1 SCaN Network Evolution & Standardization

Support SCaN evolution toward common network management systems, tools, and processes to reduce cost, provide a standardized interface experience for missions, and to more effectively manage the networks as an integrated whole.

4.2.2 Continuous Improvement & Optimization

Develop continuous improvement and optimization plans to improve the methods of operations, maintenance, and sustainment of NASA assets, and optimize processes and tools common to all network providers to increase reliability and efficiency.

4.2.3 SCaN One Network Integration

Integrate new missions, new providers, and new services, processes, and tools into the SCaN One Network.

4.2.4 Network Performance Tracking (KPIs)

Track key performance indicators on network performance across the integrated network.

4.2.5 Enterprise Coordination & Interoperability

Provide enterprise coordination, operational standardization, and interoperability across SCaN network elements.

4.2.6 Interface & Protocol Standardization

Standardize interfaces, protocols, and data exchange across the integrated networks to the maximum extent practicable, including support for interoperability standards, cloud-based interfaces, and industry-standard protocols.

4.2.7 Network Visibility & Planning Support

Provide network visibility and planning support, including operational planning, scheduling visibility, resource loading insight, and performance reporting to enable NASA decision-making, mission support forecasting, and network readiness management.

4.3 Mission Assurance

The contractor shall develop, implement, maintain, and continuously improve an integrated Mission Assurance Program for all work performed under this contract. The Mission Assurance Program shall support mission success by applying disciplined processes for risk management, quality assurance, reliability, readiness, anomaly resolution, corrective action, and continuous improvement across operations.

The contractor shall:

4.3.1 Mission Assurance Program

Develop, document, implement, and maintain a Mission Assurance Program that is consistent with applicable Federal, NASA, Center, and site requirements and is

integrated with contract management, engineering, operations, maintenance, and support functions.

4.3.1.1 Risk Management and Hazard Integration

Establish and maintain processes to identify, assess, document, mitigate, monitor, and communicate risks affecting mission success, service availability, technical performance, schedule execution, and Government property. The contractor shall ensure mission assurance considerations are incorporated into hazard analyses, work planning, change implementation, and operational decision-making.

4.3.1.2 Quality Assurance and Process Compliance

Implement quality assurance and process controls sufficient to ensure work is performed in accordance with approved requirements, procedures, technical baselines, configuration controls, and applicable standards. The contractor shall monitor compliance, identify nonconformances, evaluate trends, and implement corrective and preventive actions.

4.3.1.3 Government Insight and Support

Provide support for Government mission assurance reviews, assessments, audits, investigations, readiness activities, and independent evaluations. The contractor shall provide timely access to records, personnel, analyses, metrics, procedures, and corrective action status as requested by the Government.

4.3.1.4 Subcontract Mission Assurance

Flow down applicable mission assurance requirements to subcontractors, suppliers, and other entities performing work under this contract. The contractor remains responsible for effective integration and compliance of those parties with contract mission assurance requirements.

4.4 Industrial Safety

The contractor shall develop, implement, maintain, and continuously improve an Industrial Safety Program for all work performed under this contract. The Industrial Safety Program shall provide a safe and healthful work environment; prevent injury, illness, and damage to Government property; and ensure compliance with applicable Occupational Safety and Health Administration, NASA, Center, host-site, and local safety requirements.

The contractor shall:

4.4.1 Industrial Safety Program

Develop, document, implement, and maintain an Industrial Safety Program addressing workplace safety, hazard identification, work controls, employee protection, inspections, investigations, training, and continuous improvement for all contract activities.

4.4.2 Environmental, Health, and Safety (EHS)

The contractor shall implement a comprehensive Environmental, Health, and Safety (EHS) program that integrates environmental compliance, occupational safety, and worker health protection across all locations where contract work is performed, including government-controlled and contractor-controlled sites. The contractor shall comply with all applicable international, Federal, state, and local environmental requirements, environmental Executive Orders, NASA Procedural Requirements

4.4.3 Hazard Identification and Worksite Controls

Identify workplace hazards and implement controls appropriate to the work being performed. This includes, at a minimum, hazards associated with maintenance, testing, construction-like activities, facility modifications, transportation, material handling, machine operations, hazardous energy, electrical systems, elevated work, confined spaces, pressure systems, hazardous materials, fire hazards, and environmental conditions.

4.4.4 Safe Work Planning and Execution

Plan and execute work using approved procedures, job hazard analyses, permits, pre-task briefings, risk-based controls, and supervisory oversight commensurate with the complexity and hazard level of the activity. The contractor shall ensure work controls (i.e. lock out/tag out) remain effective throughout execution and are revised when conditions change.

4.4.5 Occupational Safety and Health Compliance

Comply with applicable Occupational Safety and Health Administration standards and all applicable NASA, Center, and site-specific safety and health requirements. The contractor shall maintain records, postings, certifications, medical surveillance documentation, and other compliance artifacts required by applicable regulations and directives.

4.4.6 Training, Qualification, and Competency

Ensure personnel are trained, qualified, certified, medically cleared, and otherwise authorized, as applicable, before performing hazardous, specialized, or regulated work. The contractor shall maintain current records of required training and qualifications and ensure recurring training is completed on schedule.

4.4.7 Stop-Work Authority and Unsafe Conditions

Create a safety first workplace culture. Empower personnel to identify unsafe conditions and exercise stop-work authority when conditions present imminent danger to personnel, property, or operations. The contractor shall immediately stop affected work, take actions to place the activity in a safe condition, notify appropriate management and the Government as required, and not resume work until authorized by the appropriate authority.

4.4.8 Inspections, Reporting, and Incident Investigation

Conduct routine workplace inspections and promptly report, document, and investigate safety incidents, injuries, illnesses, close calls, and unsafe conditions in accordance with applicable requirements. The contractor shall provide event reports to notify the government of significant events (such as mishaps, close calls, reportable incidents, etc.), preserve evidence as appropriate, determine root causes and contributing factors, implement corrective actions, and track those actions to closure.

4.4.9 Emergency Preparedness and Response

Coordinate industrial safety activities with site emergency management, fire protection, medical response, and continuity requirements. The contractor shall ensure personnel understand emergency procedures; that emergency equipment remains accessible and operational as required; and that emergency conditions are reported and managed in accordance with site procedures.

4.4.10 Safety Culture and Employee Involvement

Promote a strong safety culture that encourages hazard reporting, employee involvement, lessons learned, procedural compliance, mutual accountability, and continuous improvement without fear of reprisal for raising safety concerns.

4.4.11 Subcontractor and Visitor Safety

Ensure subcontractors, vendors, temporary personnel, and visitors performing or supporting work under this contract comply with applicable industrial safety requirements. The contractor shall coordinate interfaces, communicate hazards, verify required controls, and maintain oversight commensurate with the risk of the activity.

4.5 Security

The contractor shall:

4.5.1 General Security Compliance

Perform physical, personnel, operations, communications, information, and information technology security functions for space and ground systems in accordance with

applicable Federal, NASA, and Center regulations, policies, procedures, standards, and guidelines, and the applicable Contract Security Classification Specification (DD Form 254).

4.5.2 Physical Security Contingency

Provide, on a contingency basis, physical security services that require personnel certified as Security Police Officers with Federal Arrest Authority where applicable.

4.5.3 Comprehensive Security Programs

Establish effective and comprehensive Communications Security (COMSEC), Personnel Security (PERSEC), Physical Security (PHYSEC), Operations Security (OPSEC), Information Security (INFOSEC), and IT security programs.

4.5.4 IT and COMSEC Operations

Ensure all facets of operations meet IT and COMSEC current requirements and are responsive to future changes.

4.5.5 COMSEC Account Management

Maintain a COMSEC account with the NASA Central Office of Record for COMSEC keys and operate and maintain all COMSEC equipment in accordance with NPR 1600.6A.

4.5.6 Personnel Security & Credentialing

Implement personnel security in accordance with NPR 1600.3A and ensure all required personnel security screening (including PIV credentialing) is conducted.

4.5.7 Information & IT Security

Comply with NASA Information Security Policy (NPD 2810.1) and Security of Information Technology requirements (NPR 2810.1).

4.5.8 Annual Security Assessments

Conduct an annual assessment in accordance with NIST SP 800-171 or ISO 27002 and provide the results to the Government for review and concurrence.

4.5.9 Interconnection Security Agreements

Complete Interconnection Security Agreements (ISAs) with any information systems authorized by a different organization or Authorizing Official (AO).

4.5.10 Threat & Risk Assessments

Participate in NASA end-to-end threat assessments and conduct internal assessments in advance of audits to identify and address information technology security risks and non-compliances.

4.5.11 FedRAMP Cloud Services

Use FedRAMP-approved Cloud services, as applicable, for processing and/or transporting data associated with network services.

4.6 Cybersecurity

The contractor shall develop, implement, maintain, and continuously improve a Cybersecurity Program for all systems, networks, applications, devices, services, and data used in performance of this contract. The contractor shall protect Government information and systems against unauthorized access, use, disclosure, disruption, modification, or destruction and shall comply with all applicable Federal, NASA, Center, site, and contract-specific cybersecurity requirements

The contractor shall:

4.6.1 Cybersecurity Program and Compliance

Develop, document, implement, and maintain cybersecurity policies, procedures, plans, and controls necessary to support secure contract performance. The contractor shall comply with applicable cybersecurity laws, regulations, standards, directives, authorizations, and Government-approved security requirements for information technology, operational technology, cloud services, remote access, software, hardware, and connected devices within contract scope.

4.6.2 Access, Configuration, and Protection of Systems and Data

Control access to systems, networks, applications, and data to ensure only authorized users, processes, and devices are granted access required for performance of assigned duties. The contractor shall implement least privilege, account management, configuration control, vulnerability management, patching, malware protection, audit logging, monitoring, secure remote access, and protection of Government information, including controlled or sensitive information, in accordance with applicable requirements.

4.6.3 Incident Response and Reporting

Promptly identify, report, contain, investigate, and support recovery from actual or suspected cybersecurity incidents, unauthorized access, malicious code events, data spills, loss of data confidentiality, integrity, or availability, and other reportable cyber events affecting contract performance or Government information and systems. The

contractor shall preserve evidence, support Government response and reporting requirements, perform root cause analysis as appropriate, and implement corrective actions to closure.

4.6.4 Security Assessment, Authorization, and Government Oversight

Support Government cybersecurity assessments, audits, inspections, authorization activities, continuous monitoring, and corrective action tracking for all systems, services, and environments within contract scope. The contractor shall provide required security documentation, inventories, diagrams, implementation evidence, status reports, and access to personnel and records as requested by the Government.

4.6.5 Subcontractors, Suppliers, and External Services

Flow down applicable cybersecurity requirements to subcontractors, suppliers, cloud providers, external service providers, and other entities performing work under this contract or providing systems or services used in contract performance. The contractor remains responsible for ensuring compliance and effective integration of those parties into the overall Cybersecurity Program.

5.0 Operations and Maintenance

This section defines the requirements to operate, maintain, sustain, and continuously deliver communication and navigation services across the existing SCaN One Network at required availability, proficiency, and reliability levels.

5.1 Operations

The contractor shall:

5.1.1 Network Operations & Reporting

Operate the networks proficiently and efficiently as specified in task orders, maintaining continuous 24x7 operational support, implementing Follow-the-Sun Operations (FtSO) across the DSN complexes, generate and submit a Daily Operations Summary (DOS) report.

5.1.2 Workforce Readiness & Training

Enhance workforce readiness and sustainment effectiveness through formal training, certification, proficiency, and cross-training programs. Identify areas to consolidate training for operation of the unified network.

5.1.3 TDRS & Ground Systems Operations

Safely and securely operate the TDRS spacecraft and network ground systems to provide communications and tracking services, maximizing TDRS potential lifetime.

5.1.4 DTE Operations

Operate and maintain Direct-to-Earth services to provide TT&C, high-rate data acquisition downlink, and radiometric tracking services through NASA-operated DTE ground stations. Coordinate with commercial DTE service providers (e.g., KSAT, SSC) as required.

5.1.5 DSN Operations

Operate the DSN, including the Deep Space Communications Complex at Goldstone, the Remote Observation Center in Monrovia, and the Mission Operations Center at JPL, in support of all NASA deep space missions.

5.1.6 Unified Scheduling & System Monitoring

Schedule services using applicable systems, configure and monitor systems, identify and address discrepancies, and generate operational reports. Resolve schedule conflicts to optimally meet customer requirements, balance network loading, and minimize cost.

5.1.7 Reliability & Availability

Ensure the reliability, availability, and maintainability of operations and mission data delivery.

5.1.8 Spacecraft & Ground System Operations

Perform spacecraft and ground system operations including: console operations; spacecraft state-of-health monitoring; commanding for routine and non-routine operations; ground antenna handovers and frequency switches; prevention and recovery from Emergency Time Outs (ETOs) and losses of attitude control; and scheduling of tracking activities.

5.1.9 Conjunction Assessment & Avoidance

Conduct conjunction assessment reviews and execute conjunction avoidance maneuvers upon NASA concurrence.

5.1.10 Critical Event Support

Provide critical event support across unified network for mission launches, early orbit operations, planetary encounters, Artemis operations, and other mission-critical phases.

5.1.11 DTN Services & Maintenance

Complete Phase III Delay/Disruption Tolerant Networking (DTN) service in coordination with SCaN's Multi-Center DTN Project, and assume responsibility for DTN software (Bundle Protocol Version 7 or higher) operations and maintenance following project completion.

5.2 Continuity of Operations Planning (COOP)

The contractor shall:

5.2.1 Continuity of Operations Management

Manage network systems and facilities to ensure continuity of operations in accordance with:

a. NASA Procedural Directive (NPD) 1040.4C, NASA Continuity of Operations (COOP) – is rev C current or rev D
b. NASA Procedural Requirements (NPR) 1040.1, NASA Continuity of Operations (COOP) Planning Procedural Requirements

5.2.2 SCaN COOP Plan Maintenance

Implement, maintain, and deliver updates to the SCaN One Network continuity of operations plan.

5.2.3 Emergency Preparedness & Disaster Recovery

Implement, maintain, and deliver updates to the Emergency Preparedness and Disaster Recovery Plan.

5.2.4 Emergency Situation Resolution

Support any required resolution of unusual or emergency situations.

5.2.5 Emergency Response Assistance

Assist NASA in preparation for, rehearsal of, or response to emergencies. Obligations under this requirement shall only arise when one or more of the criteria in Federal Acquisition Regulation (FAR) 18.001, enabling NASA to utilize "Emergency Acquisition Flexibilities," are met.

5.3 Maintenance

The contractor shall:

5.3.1 Space & Ground Systems Maintenance

Maintain space and ground systems in accordance with task order requirements.

5.3.2 Software & Hardware Maintenance

Maintain custom and Commercial Off-The-Shelf (COTS) software, firmware, hardware, and mechanical components.

5.3.3 Preventive & Corrective Maintenance

Perform preventive and corrective maintenance to meet contract performance requirements and retain government property value.

5.3.4 Test Equipment Calibration

Maintain calibration certifications for applicable test equipment.

5.3.5 Reliability & Maintainability Improvement

Improve operational reliability and maintainability through updates to sparing philosophy, more robust testing and engineering analysis, evaluation and standardization of preventive maintenance tasks and processes, and use of robust commercial capabilities where appropriate.

5.3.6 Software & Firmware Lifecycle Maintenance

Maintain and update networks software and firmware, including arranging vendor maintenance agreements for COTS products, correcting defects in custom software and firmware, supporting test and integration of new or modified software, installing software products and patches, maintaining currency of software licenses, documenting software changes and problems, maintaining operational parameter databases, and controlling software system configurations.

5.3.7 Hardware Maintenance

Perform hardware preventive and corrective maintenance as necessary to meet service performance requirements, including for TDRS and DTE ground systems, DSN antennas (34-meter and 70-meter), and supporting subsystems.

5.3.8 Hardware Replacement & Repair

Replace failed or degraded hardware components and repair, return to vendor for repair, or dispose of failed or degraded hardware components as appropriate.

5.3.9 Vendor Agreements & Data Sanitization

Establish and maintain maintenance agreements with vendors as appropriate, and sanitize any components containing classified or CUI data in accordance with NIST SP 800-88, Revision 1, prior to return to vendor or disposal.

5.4 Recurring Sustaining Engineering

The contractor shall:

5.4.1 Sustainment Plan Development

The contractor shall provide a Sustainment Plan (SP) for systems and subsystems, and/or components that currently do not meet the needs of the systems operationally or functionally; are obsolete or will soon be obsolete. Described in sufficient detail the labor, cost, and schedule that is required to return to or maintain a compliant state.

5.4.2 Ground Systems Sustaining Engineering

Perform ground systems sustaining engineering, including identifying, evaluating, planning, designing, and implementing system and configuration changes needed to sustain system operations.

5.4.3 TDRS Constellation Sustaining Engineering

Provide TDRS sustaining engineering, including but not limited to generation of command plans for routine and non-routine spacecraft operations, maintenance of telemetry limit databases, tracking parameter trends, assessing health of spacecraft systems, supporting anomaly resolution, planning constellation configurations, monitoring of TDRS performance via long-term telemetry trending and periodic payload performance testing, and direction of ETO recovery, attitude recovery, and planning end-of-mission activities.

5.5 Facilities

The contractor shall:

5.5.1 Ground System Facilities Operations & Maintenance

Operate and/or maintain ground system facilities including buildings, grounds, antennas, heating, ventilation, and air conditioning (HVAC) systems, electrical power plants, uninterruptable power systems (UPS), vehicles, mechanical systems, locks, plumbing, environmental systems, lighting systems, supervisory control and data acquisition (SCADA) systems, security systems, and fire protection systems.

5.5.2 Host Organization Coordination

Coordinate with facility host organizations to ensure compliance with local requirements and plan for host organization-driven changes.

5.5.3 Custodial Services & Utilities

Provide custodial services and utilities at ground system sites.

5.5.4 Architect-Engineer (A&E) Services

Provide Architect-Engineer (A&E) services in support of Construction of Facilities projects, including preliminary engineering reports, design packages, minor and major construction, modification/rehabilitation construction, and repair construction. These

services shall include safety, reliability, and maintainability studies; engineering; project management; construction; supervision; inspection; documentation; commissioning; training; activation; and validation.

5.5.5 Environmental Baseline Surveys

Conduct Environmental Baseline Surveys as required.

5.5.6 Facility Outfitting

Outfit facilities with workstations, equipment, signage, and materials required for the facility to be fully functional in support of personnel and equipment.

5.5.7 Facility Lifecycle Management

Safely and efficiently operate, maintain, modify, design, and build facilities.

5.5.8 Facilities Configuration Management

Provide configuration management and maintain facilities systems requirements, designs, as-built implementations, operations procedures, and maintenance documentation.

5.5.9 Emergency Generator Fuel Supply

Provide fuel for emergency generators (e.g., WSGT, STGT, BPRS, GDSCC) in sufficient quantities to support contract performance requirements.

5.6 Logistics and Property Management

The contractor shall:

5.6.1 Property Management System

Implement and maintain a property management system approved by a delegated NASA property administrator.

5.6.2 Government Property Accountability

Maintain accurate accountability of government property.

5.6.3 Global Logistics Services

Provide logistics services in support of maintenance activities at facilities, stations, and other remote locations as required, including coordination of selected DSN global logistics activities to support the worldwide DSN footprint (i.e., MDSCC and CDSCC).

5.6.4 Resource Maintenance & Value Retention

Maintain all government-furnished resources to ensure continued service delivery at required performance levels and reasonable retention of government property value.

5.6.5 Integrated Supply Chain Management (ISCM)

Provide Integrated Supply Chain Management (ISCM) capability, including assessments of existing supply chain management processes; identification of obsolescence issues; and Reliability/Maintainability Analysis (RMA) capability.

5.6.6 Property Procurement & Control

Manage, research, procure, ship, and control all property owned, leased, or acquired by the Government under the terms of the contract.

5.6.7 Hardware & Software Inventories

Conduct hardware and software inventories and deliver resulting Installation Accountable Government Property (IAGP) and Government Furnished Property (GFP) lists. Utilize Government-furnished or approved property management software (e.g. IBM Maximo) to perform property and logistics data management.

5.7 Spectrum Management

The contractor shall:

5.7.1 Regulatory Spectrum Compliance

Ensure compliance with NASA RF Spectrum Management Manual (NPR 2570.1C), International Telecommunications Union (ITU), Federal Communications Commission (FCC), and National Telecommunications and Information Administration (NTIA) spectrum regulations, as applicable.

5.7.2 Frequency Authorizations & Licensing

Obtain the required frequency authorizations and licenses for the services provided under this contract.

5.7.3 International Licensing Compliance

Maintain compliance with appropriate national and local authorization and licensing requirements and regulations for operations outside of the United States.

5.7.4 Spectrum Engineering Analyses

Provide spectrum engineering analyses and provide technical recommendations and documentation for local, national, and international spectrum matters.

6.0 Development and Modernization

This section defines the requirements to evolve the network architecture; conduct studies and engineering; integrate and test new missions, providers, and capabilities;

onboard and commit to mission customers; and advance the unified "One Network" construct.

6.1 Systems Architecture and Engineering

The contractor shall:

6.1.1 Operational Systems Architecture

The contractor shall analyze proposed changes and provide concepts, architecture domains and views, roadmaps, and plans for modernization, enhancement, evolution, and sustainment of new and existing systems supporting current and future architectures. This work shall include the identification and evaluation of technologies, standards, and concepts that may be incorporated into the network systems to enhance network performance and provide additional capabilities.

6.1.2 Systems Engineering Lifecycle

Perform work involving all phases of the systems engineering lifecycle, including studies, technology evaluations, prototyping, customer planning, concept development, requirements definition, design, verification, validation, and transition to operations.

6.1.3 Communication & Navigation Analyses

Perform communication and navigation engineering analyses for future missions and capabilities, including network loading analyses, link budget analyses, telecommunications analyses (RF and optical), and PNT performance analyses.

6.1.4 Electromagnetic Spectrum Management (ESM)

Perform Electromagnetic Spectrum Management (ESM) engineering analyses for new systems and provide technical recommendations and documentation for local, national, and international spectrum matters.

6.1.5 IT Systems Management

As new missions onboard, manage all aspects of government-provided IT systems including planning, acquisition, integration, security, maintenance, sustainment, and remediation.

6.1.6 Systems Configuration Management

Conduct formal systems configuration management for all scope beyond current baseline.

6.1.7 Baseline Specifications & Procedures

Establish baseline of new specifications, processes, and procedures to be consistently applied to support all lifecycle phases. This includes systems transitioning into operations, day-to-day mission success, and future evolutionary planning.

6.2 Special Studies and Initiatives

The contractor shall:

6.2.1 Network Improvement Studies

Perform studies to update continuous improvement and optimization plans for new network capabilities. These studies may include: analyzing and assessing needs; conducting trade studies; creating operational concepts; deriving and controlling requirements; developing preliminary and detailed designs; implementing and/or procuring hardware, software, and firmware components; integrating subsystems and elements; conducting tests and inspections; verifying and validating requirements; generating operational and maintenance documentation; and transitioning systems to operations.

6.2.1.1 Mission Integration & Special Studies

Support Mission Integration and Special Studies (MI&SS) Task Orders to address specific or unique network needs requiring contractor support. The contractor shall perform work related to special studies, analyses, and testing in support of network activities and shall collaborate and coordinate with NASA throughout the MI&SS Task Order.

6.3 Integration and Test

The contractor shall:

6.3.1 Mission Integration & Testing

Integrate and test new missions and changes to network services, including those provided by commercial service providers, partner service providers, and the contractor, to provide the complete set of communications, navigation, and tracking services required by customer missions.

6.3.2 Mission Support Requirements

Assess and document new mission support requirements and identify new or mission-unique service capabilities or configurations.

6.3.3 Interface Compatibility Testing

Conduct interface compatibility analysis and testing to verify and validate that customer mission interfaces are compatible with network interfaces.

6.3.4 Integrated Networks Testing

Conduct integrated networks testing to validate and verify new customer requirements for services from the integrated networks.

6.3.5 System Transition & Validation

The Contractor shall integrate, test, verify, validate, and transition system and configuration changes to operations in accordance with the NASA System Engineering Handbook.

6.3.6 Test & Simulation Systems:

Operate, maintain, and sustain systems used for testing and simulation.

6.3.7 Technology Development Support:

Provide engineering and testing support for technology developments and prototypes, including support for hybrid RF/Optical capabilities and Delay/Disruption Tolerant Networking (DTN).

6.4 Mission Integration and Customer Commitment

The contractor shall:

6.4.1 Mission Catalog

Provide a catalog for mission planning that includes all network services and associated costs.

6.4.2 Mission Onboarding Support

Support the Government during onboarding of new missions. This includes activities such as, but not limited to:

- Performing feasibility, coverage, and/or link analyses that identify effects on existing and projected network load
- Assessing and documenting mission support requirements, and identifying mission-unique service capabilities or configurations
- Supporting the Government in defining the network-to-user mission Interface Control Documents
- Establishing Interconnection Security Agreements (ISAs)
- Performing compatibility testing
- Developing test plans for user mission testing
- Conducting integrated network testing to verify and validate services to be provided to user missions

6.4.3 Mission Interface Management

Provide Mission Interface Manager (MIM) and Mission Interface Engineering Manager (MIEM) functions for each mission as designated in task orders supports Artemis support functions referenced in.

6.4.4 Service Agreements & Requirements Documentation

Support the Government in the development and maintenance of Service Level Agreements (SLAs), Network Services Requirements Documents (NSRDs), and Service Agreement and Requirements Documents (SARDs) for customer missions.

6.4.5 Comprehensive Mission Services & Planning

Provide requirements analysis, spectrum management, communications analysis, service agreements, mission design, mission planning, and support for launch, operations, and post-mission activities.

6.4.6 Critical Event Support & Contingency Response

Support critical events including launch and early orbit, critical maneuvers, flight activities, and spacecraft emergencies or contingencies. Coordinate with customer missions to identify critical support periods and respond immediately to discrepancies during critical support periods.

6.4.7 Commercial Service Provider Integration

Support integration of new commercial service providers into the NSN, including support for NASA's commercialization goals.

6.5 Non-Recurring Sustaining Engineering

The contractor shall:

Provide sustaining engineering including identification of risks associated with new system State of Health (SOH); refining new systems era materials and labor assessments; and ensuring successful transition of new systems hardware and software licenses and service level agreements.

6.5.1 System Sustainability Plans

Provide sustainability plans for all systems, including identification of obsolescence issues, capital rehabilitation needs, and recommendations for lifecycle replacements.

6.5.2 Support & Budgetary Estimates for Sustaining Engineering

The contractor shall provide an annual assessment as part of the integrated Sustainment Plan capturing the basis of estimation for Non-Recurring Engineering (NRE), design, implementation, testing, and fielding of each potential Sustainment Plan item requiring modification beyond normal maintenance and sustainment activities.

7.0 Appendices

Appendix A — Definitions

The following terms and definitions are used throughout this contract:

- **Applicable Documents** — Government-prepared and controlled documents and industry standards documents that levy requirements on the contractor. The contractor must comply with these documents.
- **Reference Documents** — Documents that amplify or clarify information presented; the contractor is not required to meet any requirements listed within these documents.
- **CDRL** — Contract Deliverable Requirements List.
- **DRD** — Data Requirements Document; specifies the requirements for the content and delivery of an associated CDRL.
- **"Shall"** — Designates a requirement.
- **"Will" and "Is"** — Designate statements of fact.
- **"(TBS)"** — To be supplied; identifies missing or incomplete information.
- **"(TBD)"** — To be determined; identifies a missing requirement.
- **Government** — Federal Government employees.
- **Government Representatives** — Federal Government employees and support contractors.
- **Support Contractors** — Government FFRDC and SETA support contractors.
- **On-Site** — Work performed on Government-owned facilities.
- **Off-Site** — Work performed on contractor and non-Government facilities.
- **Mission** — A user mission platform/system that utilizes communication and navigation services.
- **Customer** — Any entity requiring communications and navigation services.
- **Mission Support** — Nominal/routine activities, processes, and procedures required to provide service to a mission.
- **Electromagnetic Spectrum** — Used instead of "Radio Frequency" (RF) or "Optical" alone, to broaden the potential for use of other spectrum in addition to traditional frequencies.

- **Preventive Maintenance** — Activities to prevent errors, problems, or failures before they occur.
- **Corrective Maintenance** — Fixes needed as a result of system discrepancies.

Appendix B — Acronyms

Acronym	Definition
AOR	Atlantic Ocean Region
ATF	Australian TDRS Facility
BPRS	Blossom Point Remote Station
BRTS	Bilateration Ranging Transponder System
CCSDS	Consultative Committee for Space Data Systems
CDSCC	Canberra Deep Space Communications Complex
COMSEC	Communications Security
COOP	Continuity of Operations Planning
CUI	Controlled Unclassified Information
DRD	Data Requirements Description
DSCC	Deep Space Communications Complex
DSN	Deep Space Network
DTE	Direct-to-Earth
DTN	Disruption Tolerant Networking
EVMS	Earned Value Management System
FtSO	Follow-the-Sun Operations
GDSCC	Goldstone Deep Space Communications Complex
GSFC	Goddard Space Flight Center
GRS	Guam Remote Station
IDIQ	Indefinite Delivery, Indefinite Quantity
INFOSEC	Information Security
IOR	Indian Ocean Region
ISCM	Integrated Supply Chain Management
JPL	Jet Propulsion Laboratory
MDSCC	Madrid Deep Space Communications Complex
MI&SS	Mission Integration and Special Studies
MIM	Mission Interface Manager
NSGN	NASA Space Geodesy Network
NSN	Near Space Network
NSRD	Network Services Requirements Document

OPSEC	Operations Security
PERSEC	Personnel Security
PHYSEC	Physical Security
PNT	Position, Navigation, and Timing
POR	Pacific Ocean Region
PPBE	Planning, Programming, Budgeting, and Execution
SARD	Service Agreement and Requirements Document
SCaN	Space Communications and Navigation
SGLT	Space-to-Ground Link Terminal
SLA	Service Level Agreement
SOMD	Space Operations Mission Directorate
SOW	Statement of Work
SR	Space Relay
STGT	Second TDRS Ground Terminal
TDRS	Tracking and Data Relay Satellite
TOMS	Task Order Management System
TT&C	Telemetry, Tracking, and Commanding
UN2O	Unified Network and Navigation Operations
UPS	Uninterruptible Power Supply
WBS	Work Breakdown Structure
WSC	White Sands Complex
WSGT	White Sands Ground Terminal