

## **SUMMARY OF FUNCTIONAL AREAS FOR US ANTARCTIC SUPPORT CONTRACT**

United States Antarctic Program (USAP) requirements include providing the necessary personnel, materials, and equipment to operate and maintain the United States' facilities in Antarctica and to support scientific research activities. A general summary of the contractor's responsibilities includes:

1. Provide support to the scientific research activities funded by the National Science Foundation (NSF) and conducted by NSF grantees as part of the U.S. Antarctic Program (USAP).
2. Operate a continental US project office and operate staging areas in the U.S., New Zealand, and South America, and other support facilities, as required.
3. Operate and maintain all plant, property, and equipment of the USAP at three year-round U.S. stations – McMurdo, South Pole, and Palmer – and at all remote locations in Antarctica; as well as the infrastructure necessary to enable summer and winter operations to support the research endeavor in Antarctica.
4. Provide services to accomplish tasks such as snow and ice engineering, facilities engineering, design, construction, and maintenance, including major construction of research facilities such as the South Pole Telescope, and IceCube, and infrastructure replacements and upgrades at any of the stations or research locations.
5. Obtain supplies and equipment to support USAP activities, to meet Government requirements and/or specifications and procurement standards.
6. Provide transportation for and coordinate transportation resources provided by other USAP Program participants; coordinate logistics for movement of materials needed for all Program requirements which may include delicate instruments and machinery, hazardous materials and waste.
7. Obtain (when directed), operate and maintain, directly or through sub-contract, specialized research platforms.
8. Provide the information technology and communications infrastructures used by the USAP. Provide for procurement, installation, and training services to support these functions.
9. Implement and monitor USAP environmental, health and safety programs. Comply with all applicable laws, statutes, regulations and directives.
10. Provide an appropriately skilled workforce.
11. Maintain close communication with the Office of Polar Programs (OPP) and other program personnel to ensure efficient and effective program planning and execution.
12. Remain flexible to the special needs of the USAP and OPP, and provide practical solutions to complex situations as they might arise.
13. Comply with the requirements of the Antarctic Conservation Act (ACA) and the National Environmental Policy Act (NEPA).
14. Perform work described in the annual program plan, which will be developed for each year of the contract period.
15. Ensure fiscal accountability.

## **Specific Functional Areas:**

### **1. General Management**

#### **1.1 Management and Administration**

Manage, operate and maintain all U.S. Antarctic stations, research locations, research vessels and support to other agencies or tenants. Tasks include operation and management (O&M) of all station facilities, transportation networks including airfields and seaports, support of the science program, communications, logistics, and all supporting infrastructure necessary to support the USAP.

Provide a highly trained, qualified, experienced, and motivated workforce to successfully perform the annual program plan and contract requirements. Establish and implement programs for employee training for USAP specific requirements. An experienced and talented workforce is essential for providing a knowledgeable and efficient support team. Organize and manage a workforce throughout Antarctica, including aboard research vessels and at deployed locations.

Provide an automated system to manage an effective business enterprise. This may include, but is not limited to, inventory, maintenance, and re-supply of plant, property, and equipment, personnel and cargo movements, financial accountability and reporting, etc.... Promote project management best practices and provide certified Project Management Professionals.

Establish and enforce a responsive and effective Quality Assurance/Quality Control (QA/QC) program addressing all aspects of Contractor activities to promote successful performance.

#### **1.2 Safety and Health**

Establish and implement an occupational safety and health program covering all USAP activities and participants in Antarctica. Derive the safety and health program covering activities and personnel in Antarctica from the principles of operational risk management (ORM) in accordance with USAP Safety and Health Policy.

Establish and implement an occupational safety and health program that fully complies with all U.S. federal, state, and local standards and requirements.

Establish and implement an occupational safety and health program covering USAP participants' activities and employees in other countries (New Zealand, Chile, etc.) that fully complies with host national, regional and local standards and requirements.

Safety programs shall address, but not be limited to, special interest programs such as scientific diving, radiation safety, as well as specialized training, mishap investigation, risk analysis and risk management for operations and science projects, record keeping and reporting, and supply and management of protective equipment, etc....

#### **1.3 Environmental**

Provide the requisite management, qualified personnel, and material resources to perform environmental protection and stewardship activities through an integrated approach to managing science, science support and operational activities in a manner which limits adverse impacts on the Antarctic environment.

Conduct environmental impact assessments (EIA) of USAP activities. Plan and conduct an environmental compliance program including EIA audits and field site audits. Develop and manage the USAP Master Permit to comply with existing waste regulations for USAP activities. Develop and implement environmental monitoring and remediation programs.

Establish and implement an environmental education program for all USAP personnel, which includes online training, video training, in-person briefings, and training programs specifically designed for field sites and work centers.

Support USAP activities in compliance with the Antarctic Treaty System, including development of management plans and other required documents for protected and managed areas.

Understanding and knowledge of the Antarctic Treaty and the Protocol on Environmental Protection to the Antarctic Treaty, the Antarctic Conservation Act of 1978 as amended by the Antarctic Science, Tourism and Conservation Act of 1996 (ACA), and the National Environmental Policy Act (NEPA).

#### **1.4 Medical**

Provide the requisite management, qualified personnel and material resources necessary for year-round operation of medical and dental clinics at the three US stations in Antarctica. Perform medical, dental, and psychological suitability screening and supervision of medical responders (Emergency Medical Technicians, etc.) employed by the Contractor and assigned to remote camps, field parties or research vessels.

Staff and operate the McMurdo Station clinic shall to provide a range of care equivalent to an urgent care center and Level IV/V trauma center (REF: American College of Surgeons Committee on Classification of Trauma Center Levels), including appropriate care for conditions related to USAP activities, including cold water diving, ascent to altitude, and environmental exposures. Staff and operate clinics at South Pole and Palmer Stations to provide comparable care to smaller populations. Because the stations may be physically isolated from outside assistance for many months during the austral winter, clinic staff must be able to manage the medical, dental, and psychological problems reasonably expected to occur in a medically pre-screened population. Collaborate with and support other medical professionals associated with the USAP (e.g., New York Air National Guard Flight Surgeons, and medical researchers participating in the annual science program, etc.).

## **1.5 Project Management**

Provide a plan that is executable: integrates all aspects of work, provides accurate and timely reporting, as well as, project performance analysis and risk management through early detection of problems, thus promoting timely recovery.

The preferred process is an Integrated Program/Project Critical Path Method (CPM) schedule for all engineering and construction projects. This schedule is to be logic driven with minimal constraints and with full integration of all aspects of the work (planning, design, demolition/abatement, core and shell, tenant fit-out, telecommunications, IT systems, furnishings, etc.) from initial planning through move-in. It will integrate all OGCs (Other Government Contractors) schedules, Cost and Resource loaded schedules.

Develop a Work Breakdown Structure (WBS) and Construction Specification Institute (CSI) coding system to provide a common thread for integration of the cost estimate, project schedule(s) and actual cost data. Coding should allow for program and project WBS along with OBS (Organizational Breakdown Structure) summary roll-up reporting and monthly electronic transfer of data. Develop the schedule from the bottom-up, at a level of detail sufficient enough to provide: interface points with all OGCs, tracking of progress at the activity level, early detection of problem areas, impact analysis of scope changes, and provide initial CPM project schedule(s) at concept completion.

Provide an effective Project Estimating system that accommodates cost estimates that are evolutionary as the Statement of Work (SOW) is refined. System should provide conceptual design Rough Order of Magnitude – AACE Class 5 estimate. It will also document all estimate ground rules, (global and element specific), assumptions and items specifically excluded from the estimate. Additionally, it will provide detailed design estimates (AACE Class 2) as the SOW matures between the 30% and 70% design completion stage. A final cost estimate between the 90% - 100% design should also be produced.

Earned Value (EV) will be used to measure monthly performance against the approved baseline by measuring the BCWS (budgeted cost of work scheduled), the BCWP (budgeted cost of work performed) and the ACWP (actual cost of work performed) for the period. It will also be used to statistically calculate the final cost and schedule results from as early as the fifteen percent (15%) completion point.

## **1.6 Information Programs and Publications**

The area of Information Programs and Publications functions covers Educational Outreach, Media and Communications functions as well as responsibility for Section 508 compliant internet and intranet content. Provide quality content that reflects the USAP mission and technically support the various methods of information dissemination. Information should be accurate; clearly written; and presented in a way that makes it as easy as possible for people to understand the material. Responsibilities range from management of the Website to cataloging

and captioning photos and videos. Coordination with NSF and other Government agencies is critical to ensure a high quality, cohesive and accurate presentation of the USAP.

Create an information distribution hub/center using the latest technologies available to promote access to USAP passive and interactive information and data. Maintain a web-based repository for all standardized information across the program (Standing Operating Procedures; policy; air and sea schedules; etc...). Focus on effective integration of existing systems, where feasible, rather than just re-inventing systems.

Facilitate the production and dissemination of public information of general interest, such as, station operations information, weather conditions, flight management information, and any other information source identified as valuable or beneficial to the conduct of daily affairs at the Antarctic stations and at Christchurch, New Zealand.

### 1.7 Information Security and Privacy

Operate and maintain federally compliant information systems for the storage, retrieval, transmission and usage of mission data in support of mission assurance. Mission assurance support shall be provided to assure confidentiality, integrity, availability, authorization, and authentication of information in physical and electronic format. The following is a sample of the laws, regulations and guidance that are required to be followed:

- Federal Information Security Management Act (FISMA) 2002
- National Institute of Standards and Technology 800 Series Special Publications (NIST SP 800 Series)
- Office of Management and Budget Circular (OMB A-130)
- NIST SP 800-53 (17) Seventeen Management, Operations, and Technical Controls:

AC	Access Control	Technical
AT	Awareness and Training	Operational
AU	Audit and Accountability	Technical
CA	Certification, Accreditation, and Security Assessments	Management
CM	Configuration Management	Operational
CP	Contingency Planning	Operational
IA	Identification and Authentication	Technical
IR	Incident Response	Operational
MA	Maintenance	Operational
MP	Media Protection	Operational
PE	Physical and Environmental Protection	Operational
PL	Planning	Management
PS	Personnel Security	Operational
RA	Risk Assessment	Management
SA	System and Services Acquisition	Management
SC	System and Communications Protection	Technical

SI	System and Information Integrity	Operational
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- (NIST SP 800-53 2006: page 6)
- OMB Privacy Mandates OMB M-06-16, M07-16.
- NIST SP 800-53A Security Controls for MODERATE and HIGH systems
- NSF Information Security Handbook
- NIST Information Security Handbook (NIST SP 800-100)

Some of the security and privacy services required include:

- FISMA and NIST compliant information security program (NIST SP 800-100) with service level compliance verification metrics based on NIST 800-53.
- A 24x7x365 security incident response center (FISMA required) also known as a security operations center (SOC). The SOC can be combined with a network operations center (NOC). The SOC shall monitor the computer intrusion detection systems (NIST SP 800-31)
- Computer Incident Response Team (CIRC) for 24x7x365 on-call incident response and investigations of information security and privacy events (NIST SP 800-61).
- Certification and Accreditation of MODERATE and HIGH systems (NIST SP 800-37)
- Operational security compliance by establishing and maintaining a LOW or MODERATE level of risk security posture.
- NIST Standard Configuration, checklist, and Federal Desktop Core Configuration (FDCC) compliance of operating platforms according to NIST and OMB direction
- Grantee Security Program to include research science community in the AIS Security and Privacy Program. (OMB M07-19)
- Patch and Vulnerability Management Program (NIST SP 800-40)
- Supervisory Control and Data Acquisition (SCADA) protection of power plants, public utilities, and communications (NIST SP 800-82 DRAFT)
- Privacy of personally identifiable information (PII) data identification, classification, and extraction of unnecessary PII, masking of mission required PII. (Privacy Act 1974 and OMB M06-16, M-07-16).
- Management review, Independent Inspection, and Audit Support: The contractor shall provide resource support for government reviews, independent inspections, audit support.
- Information Security and Privacy integration into the system development lifecycle of all projects (NIST SP 800-64)
- Maturity, Repeatability, and Quality of information security and privacy throughout the enterprise via an industry standard framework.

## 2. Science Support

Science support is USAP's primary mission with other functional areas supporting it directly or indirectly. Science support is comprised of the field planning, travel and transportation support,

laboratory management at the permanent stations, construction, purchase and upkeep of science equipment, resource allocation, and field support provided to the scientists who have been awarded grants by the NSF. Support is provided to grantees to facilitate research and experiments conducted in the Antarctic and surrounding seas.

Provide a qualified, educated, and experienced workforce to assist in the assessment of field requirements for high priority research proposals. Projects are selected based primarily on scientific merit with support feasibility being secondary. On average 160 to 180 science projects will be supported, with a total field complement of about 650 – 800 senior scientists and graduate students each year. The actual number of field participants is dependent on the Annual Program Plan. Research projects vary in size and scope and span the natural sciences (biology, geology, oceanography, climatology, and environmental science) as well as aeronomy and astrophysics. These projects are conducted at USAP stations, remote field sites, on board research vessels, or at facilities of other National programs. Occasionally, field projects are conducted in South America and at islands above the Antarctic Circle.

Science support requested by the academic community is varied and can evolve over the course of a grant as scientific observations are analyzed and incorporated into field planning. Annually, NSF determines the feasibility of science support for all highly ranked proposals based on the nature of proposed field requirements, program capabilities, and available resources. Decisions on supportability are based in part on support assessments provided by the Contractor to NSF's Science Support Program Managers.

Development of field requirements for science support of individual proposals begins with an assessment of grantee support needs using information submitted in their proposal, from communications between Contractor personnel and proposers, and the field knowledge and experience of the Contractor personnel. Information gathered forms the basis for further, more comprehensive planning that will determine the appropriate level USAP assets and resources to be provided in support of proposed research efforts in Antarctica at the US stations, field sites, and aboard the research vessels. It is expected that the Contractor will employ state of the art technology, software and processes throughout the term of this contract to facilitate planning, resource programming and tracking of committed assets in support all funded field projects. A list of projects worthy of support will be provided to the Contractor by NSF and the Contractor is expected to perform short term, intermediate term and long term programming of all support functions needed to make the project a success. This programming must be constantly reviewed, and projections updated, to ensure the effective and efficient use of the assets and services available to Grantees.

For NSF funded research projects deployed into the field, the Contractor shall provide direct planning, logistical, operational, and technical support to the research teams as outlined in designated operational support reviews.

Establish, maintain and continually develop an information database for science planning. Use of the current or equivalent system shall provide the means for research proponents and USAP grantees to submit and access information on their support plans electronically. Access to the science support database shall be via the Worldwide Web. The Contractor may be tasked with further development of such a system to enable remote access to information on USAP

inventories, facilities and equipment available in Antarctica. The purpose of this system is to provide a centralized repository of support and planning information and for sharing documentation related to project support.

### **3. IT and Communications**

#### **3.1 Communications Systems**

Provide quality and reliable communications throughout the Antarctic supporting voice and data transmission through a variety of communications systems and networks. The Contractor may choose to use any methodology including commercial out-source services wherever practicable to fulfill this requirement. Provide voice and data services via commercial services contract where available.

Provide a full variety of communications to meet the needs of the program. The Contractor may operate and maintain the full range of current communications systems and/or replace existing systems or processes with alternatives to ensure the full range of fixed and deployable service requirements.

Provide upgrades and apply evolving technology to the operating satellite communications earth stations in Antarctica and continental U.S. teleport services, to the USAP wide-area-network. Be responsible for ensuring end-to-end service performance for USAP networking supported by such links (commercial or government furnished) and coordinate with all providers/suppliers to ensure effective operations management, fault identification/reporting, and troubleshooting/resolution.

The Contractor's responsibility for operation and maintenance may include the following: Antarctic earth stations, space segment, CONUS teleport services, CONUS common carrier interconnects, CONUS private network management, and special-purpose tail circuits.

Evaluate the best means of providing a combination of private-network and public-network infrastructure to establish an integrated USAP telecommunications infrastructure. This infrastructure will combine the base-level telephone service/central office functions at each station with the satellite communications links. Support will include the interface of the satellite systems with the, station/facility telecommunications infrastructure (wire/cable plant, switched voice network, LAN and data network), and satellite and terrestrial service provider networks for end-to-end service.

Provide radio communications systems and operations in conformance with USAP radio frequency spectrum utilization, coordination, and management plans as administered by the USAP RF Spectrum Manager.

Provide radio and television service facility at McMurdo station in accordance with the Memorandum of Agreement (MOA) between the NSF and the U.S. Navy Media Center, which operates as an agent of the Armed Forces Information Service (AFIS).

### **3.2 Information Technology**

Operate, maintain, and upgrade the USAP computer networks for all USAP locations including the research vessels. Provide infrastructure, products, and services for Information Technology, Information Systems, and general electronic systems necessary for the support of the USAP mission. The Contractor shall be responsible for the complete life cycle of Information Technology applications: such as needs assessment, product and service specification, infrastructure development, service delivery, sustaining operations and maintenance, and evolution in response to changes and new requirements. The span of responsibility shall apply to USAP enterprise-wide. The Contractor shall support all USAP stakeholders and functions with regard to Information Technology and Information Systems.

Provide customer service, systems engineering, and electronic maintenance support to all USAP stakeholders and operational organizations. The types and kinds of support provided by the Contractor shall include: systems engineering, design, field implementation, on-call maintenance, operations assistance, pre-deployment planning, deployment logistics, and technical reviews. The types and kinds of skill support provided by the Contractor would include among other skills: Unix systems administration, LAN/WAN network engineering and operations, telecommunications engineering and operations, RF engineering, and general electronics (analog, digital).

Assist NSF with the formulation, development, and modification of strategies for IT and with the alignment of IT deployment to meet NSF strategic goals for the USAP and the evolution of the Enterprise Architecture for the USAP. Establish the planning framework, and plan of action to implement an Enterprise Architecture for the USAP, consistent with industry best practices and recognized model frameworks.

Perform inventory asset management, and system configurations for all Antarctic stations computer equipment. Be responsible for servicing specific computers or computer configurations to all USAP participants including subscribers with specific equipment ownership or unique configuration requirements.

Maintain systems performance requirements for suitability, availability, dependability, reliability, maintainability, supportability, quality, and affordability to meet required performance levels.

Provide business process re-engineering services in support of strategic, long range, and tactical planning, to include: stakeholder reviews of USAP business processes; and definition and maintenance of activity models that map IT functions, products, and services to USAP mission operations, management, and customer support functions (with emphasis on identified mission critical and mission essential areas).

Propose changes in business and/or operational processes and practices to address: lower overall USAP operational footprint within Antarctica without compromise to the USAP scientific research support goals, lower USAP enterprise operating expense, and enable greater USAP mission effectiveness to support scientific research.

Provide Systems Engineering services and cross-disciplinary subject matter and technical engineering expertise for Information Technology, Information Systems, Communications, and General Electronics discipline areas.

Operate all computing, data center, and network systems in accordance with effective information security measures, U.S. law, Federal Executive Branch guidance/direction and NSF requirements (see IT Assurance).

Provide continuous improvement support to the Government in the form of research, evaluation, design engineering, development, and implementation of innovations in techniques, processes, technologies, and means used to conceive, provide, sustain, and evolve Information Technology applications for the USAP.

Recommend improvements in areas including, but not limited to: insertion of new technology, design changes, changes in installed technical infrastructure and systems, and implementation of new systems, to meet evolving mission needs, customer requirements, and technology overturn and obsolescence.

Provide wide area networking infrastructure, station-level data centers, data network backbone infrastructure, science general computing equipment and applications software, desk-top computing equipment and software, file/print services and peripherals, and related automatic data processing equipment associated with Local Area Network functions and services at all Antarctic stations, non-Antarctic logistics centers, and research vessels.

Serve as source of supply for USAP desktop computing needs and shall provide all maintenance support at Antarctic stations for all computing equipment. Provide subscriber customer support services for internal and external customers, to include full help desk support during normal working hours and emergency support during all other times.

#### **4. Architecture, Engineering, Construction Management (AECM)**

##### **4.1 Technical Services**

Provide professional engineering architectural design services, maintenance of facilities, and multi-disciplined construction tasking program-wide. This includes, but is not limited to: Station Primary Utilities, Station Facilities and Ancillary Utilities, Fuel Storage and Operation, and Airfield and Aviation Support.

Contractor responsibilities include coordination with Architect & Engineer (A&E) firms selected by NSF or the contractor for major capital projects involving engineering and construction, design/build of smaller projects; and planning, management and execution of all NSF approved facilities renovation, demolitions, and new construction projects. Additionally provide sufficient personnel resources to direct, control and manage all O&M, science support and construction activities

The Contractor will provide real property services including managing, preparing, processing, and tracking real estate instruments, including leases, permits, licenses, and easements.

#### **4.2 Utilities**

Utility services will be sustained on a 24 hour/7 days a week basis to all the USAP stations. The Contractor shall efficiently operate and maintain the Electrical Power Generation Plant and Transmission and Distribution Systems to safely produce, transmit and distribute reliable and continuous electrical power.

Efficiently operate and maintain the Raw Water Supply, Water Treatment Plant and Distribution System to safely produce, treat and distribute quality, reliable potable water to meet demand. Water quality shall meet the required health and purity standards.

#### **4.3 Maintenance of Facilities/Public Works**

The Contractor will be responsible for maintaining all facilities, systems, and equipment, identified in the contract, including utilities generation, to a standard that prevents deterioration that extends beyond normal wear and tear and corrects deficiencies/problems in a timely manner to achieve full life expectancy of the facilities, systems, and equipment. Best commercial practices shall be applied in the performance of work. All work will be completed in accordance with industry and equipment manufacturers' standards and shall comply with building and safety codes, applicable activity, local, state, and federal regulations, and other contractual technical requirements.

### **5. Infrastructure and Operations**

#### **5.1 Crash, Fire and Rescue**

Plan, develop, implement, oversee and enforce a Fire Prevention, Protection and Suppression program for all USAP activities and participants in Antarctica. This includes airfield crash and fire response at McMurdo Station's airfield and South Pole Station's airfield.

Inspect and certify Fire Prevention Protection systems such as water sprinkler systems, fire extinguishers. Operation and maintenance of such systems shall be performed by Contractor personnel separate from this section.

Provide the resources and methods used to achieve all Fire Prevention and Protection objectives assigned to the Contractor.

Provide all labor, supervision, tools, materials (including all consumables and uniforms), initial and annual medicals, initial and random drug testing, fire vehicles, fire equipment, and training necessary to perform fire fighting (structural, shipboard, airfield and wild land), fire protection services, emergency medical services and rescue services (including special operations). Ensure all fire protection systems are in an operational status at all times.

## **5.2 Supply and Warehousing Operations**

Maximize use of available warehousing to minimize the physical footprint of each station, and to the extent practicable, eliminate materials that are exposed to the weather. Supporting geographic locations may be identified by the contractor to optimize the supply and warehousing effort.

Meet the challenges of managing an efficient and effective supply system, to support the USAP and provide inventory management that enables the implementation of a just-in-time delivery system.

The contractor must consider that packaging is a significant issue in Antarctica both from a perspective of preservation of materials and equipment and from the need to meet environmental requirements to remove waste materials from the continent and to minimize the cost of the return of materials off the continent.

Store, control, issue, and re-stock supplies/materials at Antarctica stations and all support locations. Ensure the care of all items in the warehouse, and provide for inventory control. The Contractor shall establish and maintain an effective Material Management and Supply Services discipline program. Establish and maintain an effective internal control program designed to encourage supply economy and reduce the risk of fraud, waste and abuse. Support the NSF and tenant requirements, user activities and other USAP support contractors on all issues from inventory.

Serve as the local Postmaster for the U.S. Air Force, which controls the APO serving the USAP. It will manage the post office in McMurdo, handle all incoming and outgoing U.S. Mail as well as local mail (guard mail) between the stations and camps, sell stamps and postal insurance, and provide secure, locked storage for all mail.

## **5.3 Personnel Support and Recreational Services (To include Custodial, Food Service, Housing and Recreation)**

Manage USAP housing assets to provide appropriate berthing for all program personnel (NSF staff, all the Contractor's workforces, science groups, military units and other NSF-approved program participants or visitors) at all stations, field camps and research vessels.

Provide hostelry, dining and medical laundry service (bed sheets and other general laundry requirements).

Provide and direct a janitorial staff of sufficient size to clean common use living spaces, bathrooms and administrative offices to appropriate standards.

Provide community social, recreational and entertainment functions, including but not limited to: hair cutting, equitable distribution of program-owned entertainment devices (TVs, VCR, etc.), library and reading/quiet areas, exercise/activity facilities and equipment (e.g., cross-country skis), television and radio broadcasting, event organization and management (e.g., art and food

events, sports/games contests, social activities, etc.), and other healthy off-hours choices (e.g., film showings, lectures, etc.). Operate and maintain club(s) or social center(s) serving a limited variety of alcoholic and non-alcoholic beverages. Manage such centers to be financially self-sustaining. Establish, in collaboration with NSF, and enforce an alcohol provisioning and consumption policy.

Operate and maintain a retail store(s) at each station to include procuring, storing and restocking inventories of items such as snacks, essential supplies, personal hygiene products, and souvenirs.

#### **5.4 Food Service**

Provide food service at all sites that meet the health and sanitization standards of the Department of Agriculture, Food and Drug Administration, and ISO 22000. Provide year-round scheduled food service in accordance with worker shift schedules.

Provide comprehensive menu planning as well as food preparation to ensure reasonable variety and appropriate nutritional content of all meals to meet the dietary needs of all personnel. Procure all food supplies for shipment by government vessel (or when required, by air) to the Antarctic.

#### **5.5 Solid Waste**

Conduct waste management operations in compliance with USAP policies and all other applicable regulations. This will include tasks to segregate, collect, process, package and arrange logistics (transportation) to the U.S. for all waste generated at the Antarctic stations and camps and on the ships (includes common and hazardous waste streams and recycling materials). Economically manage and remove waste, such as establishing waste consolidation at a single point of departure. Coordinate with all necessary federal and state regulators, for final disposition of wastes designated for removal from Antarctica and importation into the U.S. IAW all applicable federal and state laws.

The Contractor shall have familiarity with and apply rules and regulations governing waste handling, packaging, shipping and disposal. These include: the Pollution Prevention Act, the Solid Waste Disposal Act and the Resource Conservation and Recovery Act, the Toxic Substances Control Act; and the Comprehensive Environmental Response, Compensation and Liability Act.

#### **5.6 Fuels Storage and Distribution**

Manage, operate and maintain station and field fuel storage and distribution systems on a year-round basis in accordance with accepted industry safety and operational standards.

Provide all necessary management, supervision and, labor, for the operation of petroleum facilities in support of aviation, mobile equipment (including ships) and fixed facilities within the USAP. Operations include requirements determinations and forecasting, receiving and accountability, storage and handling, issue (to include aircraft refueling, defueling, delivery into

target area tanks as required, and delivery into equipment as required), sampling, inventory management, quality control, transfer of product, maintenance and operational safety and associated administrative functions (e.g., reporting and SOP development) relative to the mission of the USAP. The Contractor shall perform in a manner to effectively accomplish all facets of managing and operating the fuel (POL – Petroleum, Oil and Lubricants) facilities.

All POL department personnel, including managers, supervisors, inspectors, foremen and laborers must be appropriately trained, certified, licensed and experienced (as referenced to industry standards such as the API) for the tasks they will be assigned to execute.

Operate and maintain large bulk fuel tank farms and bladder-based field fuel storage systems and associated pumps, piping and hoses. Direct the off-load of the annual fuel re-supply vessel. Employ properly trained professionals for interaction with all ships participating in the USAP.

Immediately upon discovery report any spills, POL infrastructure failures (or impending failures), or requirements for new safety standards.

## **5.7 Meteorology**

Provide observational weather support to the USAP when required by Space and Naval Warfare Center, Charleston, South Carolina (SPAWAR) for the safety of flight operations into South Pole and outlying camps.

Provide synoptic weather and Upper Air observations at South Pole in support of scientific research. When directed by SPAWAR provide meteorological observations in support of flight operations at South Pole and outlying camps. Provide synoptic weather reporting as well as current weather reports for all USAP and other international government ship and small boat traffic.

## **6. Transportation and Logistics**

### **6.1 Logistics Management**

The Contractor's logistics organization shall provide the management skills and support necessary to conduct all of the logistics-related activities for the USAP, including activities at the Continental U.S.(CONUS) consolidation point (currently Port Hueneme, CA), New Zealand, South America, and at the Antarctic stations. The Contractor shall perform all necessary planning for USAP to include the movement of scientific and non-scientific materials, and personnel to and from Antarctica. This shall include considerations for staging of materials, movement of materials and personnel, coordination with NSF and scientific grantees, unloading of materials and trans-shipment and storage of materials at Antarctic stations. Except for items supplied by grantees for their own use, the Contractor shall arrange for the procurement of all required materials, including consumables, equipment, foodstuffs, building materials, tools and scientific instruments, and coordinate transportation to their final destinations.

The management of the logistics program necessitates that the Contractor provide a highly effective tracking system. The Contractor's Supply Chain Management system must be comprehensive and meet all the needs of the USAP operations supporting the movement of people, equipment and materials necessary to conduct and sustain the science and operations conducted by the grantees, construction and renovation of facilities, and for the efficient operation of the stations. Complete visibility of all logistics must be available in real time to meet tracking requirements.

The expected outcome of the logistics management effort is to ensure Just-In-Time (JIT) management of the entire logistics function to maximize use of available warehousing, to minimize the physical footprint of each station, and to the extent practicable, eliminate materials that are exposed to the weather.

Provide automated electronic tracking and control systems for personnel and cargo movement, and for inventory control. Plan for the proper handling of all hazardous materials transported to and from Antarctica by USAP. Be responsible for all plant, property, and equipment with respect to items owned by, leased to or used by the USAP.

For the re-supply vessels, specific tasks shall include staging of cargo, control of pier activities, and direction of cargo ship off-load and on-load operations at the pier followed by the staging of cargo to be trans-shipped the following season or distribution of cargo to the various McMurdo work centers.

## **6.2 Base Support Vehicles and Equipment (Including bus, taxi and dispatching services as well as maintenance and repair of all such assets)**

Stock, operate, manage, and maintain a dedicated mechanical equipment center(s) serving the needs of all bases and field science programs. Ensure the facility is appropriately staffed, stocked with sufficient shop tools and inventory, to maintain and repair a light vehicle fleet (pick up trucks, vans, tracked personnel carriers and snowmobiles, etc.), support equipment (drills, sleds, trailers, heaters, etc.) and heavy equipment (snowblasts, graders and dozers).

Provide industry standard fleet management to ensure availability of assets to meet all requirements and that fleet assets achieve or exceed their useful life.

## **6.3 Aviation Operations**

Provide all aspects of Aviation Support to the program. Aviation operations are conducted from one or more airfields at or near McMurdo, South Pole, and Christchurch. Aviation operations support field camps and other locations by assigning the appropriate aviation asset to meet the requirement. Support includes ground handling of aircraft, handling of passengers and cargo, and providing other support (weather reporting, etc.) necessary to provide a comprehensive level of aviation support. It also includes ground support to the aircraft at the stations and camps.

The contractor shall establish a movement control center whose responsibility shall include, at a minimum, preparing manifests, conducting pre-flight check-ins, arranging transportation to and

from the airfields, and coordinating aircraft boarding/deplaning with flight crews and process all intercontinental aircraft passengers.

Plan, coordinate, manage, track, and evaluate grantee aviation support requirements and adequacy of provided services via a cadre of personnel knowledgeable in all facets of air support/close air support of field science teams. Coordinate all science helicopter and fixed-wing flight operations.

#### **6.4 Marine Operations**

Coordinate and oversee support of the research vessels supporting the USAP.

Research vessels providing primary science support in Antarctica are under long-term (10 year) charter to the USAP. The charters are Baltic Time Charters, written for the benefit of the Government, and are transferable to the new contract. Over the term of the contract, the Contractor will manage an icebreaking research vessel, and an Antarctic supply and research vessel. At present, two such vessels are under long-term charter to the USAP. The newest vessel (acquired in January, 1998) is the R/V Laurence M. Gould, a 3400 ton research and cargo vessel. The second vessel (acquired in March, 1992) is the R/V Nathaniel B. Palmer, a 6,800 ton research vessel. Both vessels are rated as icebreakers, although only the Gould has the cargo carrying capacity to re-supply Palmer Station. Both are owned and operated by Edison Chouest Offshore (ECO), a Louisiana-based company.

Provide qualified technical support for the research vessels as defined by the research needs of each individual cruise as well as the necessary oversight of owner provided services supporting vessel operation.