Engineering and Construction Support

- USAP Facility Overview
- Overarching Planning Function
- Project Types
- Technical Interfaces
- Review and Oversight Process
- Antarctic Support Contractor Functions
- Navfac Assistance to NSF
- NSF Oversight

Overview:
USAP Facility Assets

- 3 Stations with >300 Buildings and Structures
- >750,000 sq. ft. enclosed space
  - >4 miles of water/sewer lines
  - >30 mi elect./comms lines
- McMurdo Station – Logistics Hub
  - Community assets, warehouses, admin, offices, labs, dorms
  - Utilities, repair facilities, airfields, helicopter & port
- South Pole Station – Platform for Science
  - Elevated Station supporting 154 persons, ~65,000 SF
  - “Summer Camp” supports additional 100 persons
  - Many remote facilities; sector driven
- Palmer Station – Marine Support
  - Small set of facilities supporting 43 persons

Overarching Planning Function

- Guide new facility & infrastructure process
- Apply standards for design and construction
- Establish development priorities
- Coordinate priorities
- Consolidate functions
- Improve operational efficiencies
- Reduce operating costs
- Compliance with Environmental and Treaty Policies

Design Concept

- Facilities support existing & future science
- Safe working and living environment
- Maximize opportunity for science personnel
- Minimize operations personnel
- Minimize environmental impacts
- Minimize energy demand
- Minimize footprint

Project Types

- Major Research Equipment & Facility Construction (MREFC)
  - Separate appropriation & requirements
  - South Pole Station Modernization (SPSM) - $149M
    - 94% complete, final acceptance 2010
- Program Projects
  - New Project Proposal (NPP) process for approval
  - Prioritization process for selection
  - McM Power & Water Plant Upgrade / Wind Turbine Installation
    - $18.6M total cost, 82% complete, 2010 commission
    - Scott Base responsible for installing/operating 3-330kw turbines
    - Antarctic Support Contractor in support role with Scott Base
- Small & Minor Projects (up to $25,000)
  - Energy initiatives, power improvements, life-cycle replacements
  - Configuration changes, Interagency Support Requests (IASR)

Technical Interfaces

Project planning & execution is a combination of:

- Antarctic Support Contractor & Subs
- Government Agencies
- Consultants

- Small & Minor Projects
  - ASC Responsibility
- Program Projects
  - ASC w/subs is responsible
  - Gov't led case by case, e.g. NAVFAC, NASA or SPAWAR in lead

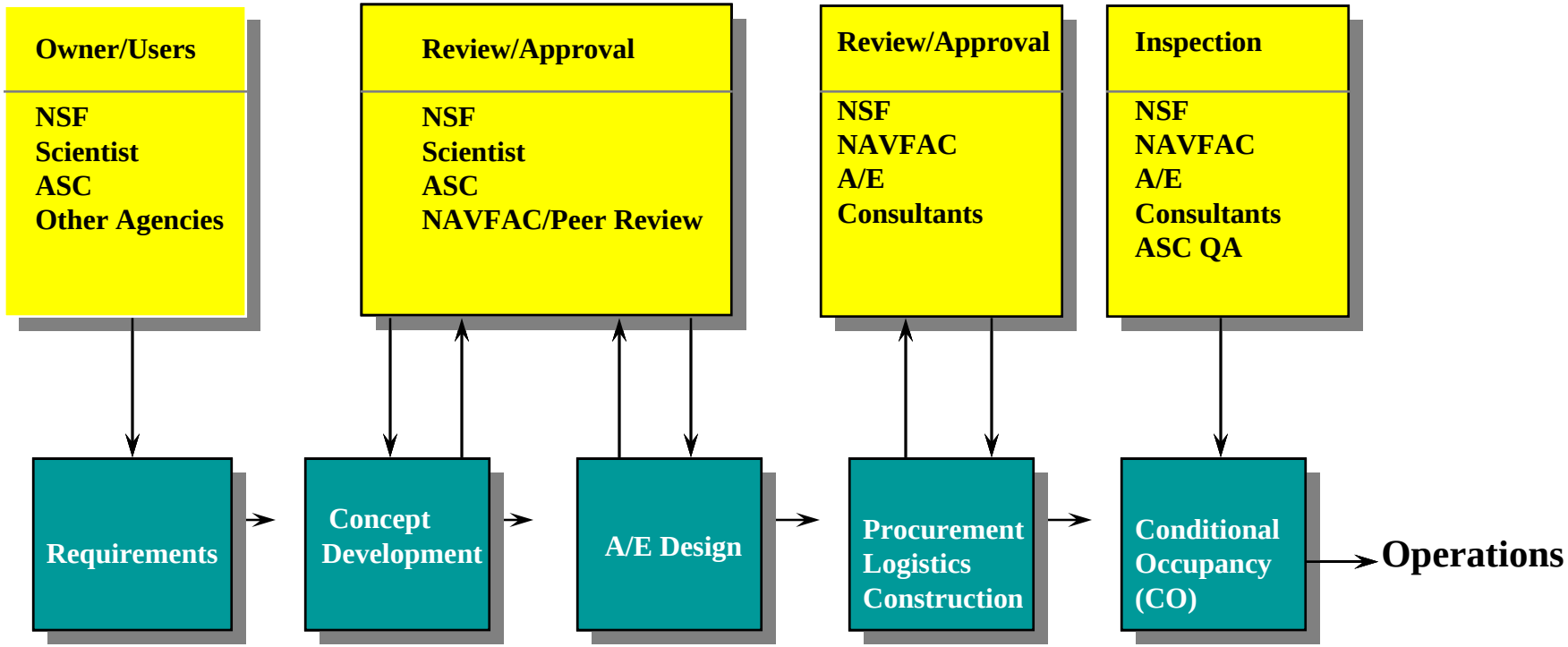
Peer Review by Gov't

- NSF, NAVFAC, CRREL, NREL, SPAWAR, Consultants

Construction Inspection & Project Acceptance

- NSF and NAVFAC

Review and Oversight Process



Requirements Document (RD)

~10% Plan

Basis of Design (BOD)

Submittals & Comment Resolution:

30-60-90-100-AFC

Shop Drawings, RFI - Change Requests via Expedition

Submittals:

- **Test Results per Specs**
- **ASC Internal QA punchlist**

Gov't Inspection & CO Transfer to real property

Antarctic Support Contractor Functions

- **Project & Construction Management**
  - Professional Design; in house and/or acquired
  - Cost Estimating
  - Scheduling and Cost Control
  - Integrated Master Scheduling
  - Logistics Planning & Coordination
  - Procurement and QA on Products
  - Construction and Testing
  - System Integration
  - Internal Quality Assurance
  - Transition Planning & Training
- **Facility Management & Documentation**
  - Procedures, O&M Manuals, Life Cycle Replacements, Preventive Maintenance, Work Orders, etc.

NAVFAC Assistance to NSF

In-house Services

- Fire safety reviews and inspections
- Code analysis and compliance inspections
- Waiver review and risk assessment input to NSF

Management of Independent A/E Services

- PDC Inc.
  - General Engineering Services, Inspection and Peer Review
- Ferraro Choi & Associates, LTD
  - Engineering Services for SPSM
- Kumin Associates Inc.
  - Engineering Services for McM Power/Water Plant Project
- RSA Engineering, Inc.
  - Title II Inspection Services
  - Peer Review

NSF Oversight

- **Infrastructure Projects & Facilities (not all inclusive)**
  - Engineered Designs & Design Documents
  - Concept Plans and Business Cases
  - Cost & Schedule Performance
  - Progress & Status Reporting
  - Procurement & Logistics Plans
  - Transition Plans
  - Document Control
  - Change Order Management
  - Construction Planning
  - Quality Assurance
  - Performance Risk Assessments

Engineering and Construction Support

Questions?