



# Pacific Spaceport Complex - Alaska Range User's Manual

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Kodiak Island - Alaska



**July 2015**

## **PREFACE**

The Pacific Spaceport Complex - Alaska (PSCA) Range User's Manual introduces the potential Range User to the Alaska Aerospace Corporation (AAC) organization, as well as the capabilities at PSCA. Information regarding range policies, procedures, and guidelines for conducting campaign operations at PSCA is provided.

Additionally, this manual contains general information describing the launch facilities, range instrumentation, key personnel, infrastructure, and information regarding PSCA and Kodiak Island. Our intent is to introduce the User to PSCA by providing a top-level overview rather than an all-inclusive manual containing exhaustive detail.

PSCA, with its unique geographic location and state-of-the-industry launch vehicle processing facilities, integrated Range Safety and Telemetry System (RSTS), and experienced range personnel are ready to make each Range User a priority and successful.



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## **Glossary of Abbreviations, Acronyms, and Definitions**

<b>AAC</b> - Alaska Aerospace Corporation	<b>HAZWOPER</b> - Hazardous Waste Operations
<b>ADOT&amp;PF</b> – Alaska Department of Transportation and Public Facilities	<b>ICD</b> - Interface Control Document
<b>AFUB</b> - Antenna Field Utility Building	<b>IPF</b> - Integration & Processing Facility
<b>BNC</b> - Bayonet Neill-Concellman	<b>IRIG</b> - Inter Range Instrumentation Group
<b>C/AW</b> - Caution and Area Warning	<b>ISM</b> - Instrumentation System Manager
<b>CCTV</b> - Closed Circuit Television	<b>ISSM</b> - Information System Security Manager
<b>CDS</b> - Command Destruct System	<b>LEB</b> - Launch Equipment building
<b>CEO</b> - Chief Executive Officer	<b>LEV</b> - Launch Equipment Vault
<b>DoD</b> - Department of Defense	<b>LOCC</b> - Launch Operations Control Center
<b>DRO</b> - Director of Range Operations	<b>LP-1</b> - Launch Pad -1
<b>DoT</b> - Department of Transportation	<b>LP-2</b> - Launch Pad -2
<b>DSS</b> - Defense Security Services	<b>LSS</b> - Launch Service Structure
<b>ECM</b> - Earth Covered Magazines	<b>LV</b> – Launch Vehicle
<b>FAA/AST</b> - Federal Aviation Administration Commercial Space Transportation	<b>LWO</b> - Launch Weather Officer
<b>FSO</b> - Facility Security Officer	<b>MET</b> - Meteorological
<b>FSM</b> - Facility Site Manager	<b>MFCO</b> - Mission Flight Control Officer
<b>FSP</b> - Flight Safety Plan	<b>MOA</b> - Memorandum of Agreement
<b>FTS</b> - Flight Termination System	<b>MSF</b> - Maintenance and Support Facilities
<b>GDOP</b> - Geometric Dilution of Precision	<b>MSL</b> - Mean Sea Level
<b>GMT</b> - Greenwich Mean Time	<b>NASA</b> - National Aeronautics and Space Administration
<b>GPS</b> - Global Positioning System	<b>NOAA</b> - National Oceanic & Atmospheric Administration
<b>GSE</b> - Ground Support Equipment	<b>O&amp;M</b> - Operations & Maintenance
<b>GSO</b> – Ground Safety Officer	<b>OAS</b> - Optical Acquisition System
<b>HVDS</b> - Hazardous Vapor Detection System	<b>OD</b> - Operations Directive

**OIS** - Operational Intercom System

**OR** - Operations Requirements

**OSHA** - Occupational Safety and Health Administration

**P/AW** - Paging and Area Warning

**PI** - Program Introduction

**PPF** - Payload Processing Facility

**PRD** - Program Requirements Document

**PSCA** - Pacific Spaceport Complex Alaska

**PSM** - Process Safety Management

**PSP** - Program Support Plan

**RCC** - Range Control Center

**RCO** - Range Control Officer

**RF** - Radio Frequency

**RMSF** – Rocket Motor Storage Facility

**ROS** - Range Operations Supervisor

**RREB** - Range Radio Equipment Building

**RSDP** - Range Safety Data Package

**RSM** - Range Safety Manual

**RSO** - Range Safety Officer

**RSTS** - Range Safety and Telemetry System

**RUM** - Range User's Manual

**SATCOM** - Satellite Communications

**SC** - Statement of Capability

**SCAPE** - Self-Contained Atmosphere Protective Ensemble

**SCAT** - Spacecraft Assemblies & Transfer Facility

**SOW** - Statement of Work

**SRM** - Solid Rocket Motor

**STARS** - Strategic Target System

**T&C** - Timing and Countdown

**TOD** - Time of Day

**UAO** - Upper Air Observer

**UDS** - Universal Documentation System

**UHF** - Ultra High Frequency

**UL** – Underwriters Laboratories

**UPS** - Uninterruptible Power Supply

**USCG** - United States Coast Guard

## SECTION 1 EXECUTIVE SUMMARY

### 1.1 Purpose of Manual

The purpose of the Pacific Spaceport Complex - Alaska (PSCA) Range User's Manual (RUM) is to provide potential Range Users with the basic information necessary to understand PSCA and its capabilities, as well as plan for a successful launch. This document describes the capabilities of the Alaska Aerospace Corporation (AAC) staff and PSCA's facilities, infrastructure, and instrumentation. The local services and support available on Kodiak Island are also detailed in this document. In some instances, the Range User will be referred to the Range Safety Manual (RSM) or Industrial Safety Plan for safety specific information.



Figure 1. Pacific Spaceport Complex Alaska

### 1.2 General Description of Complex and Capabilities

PSCA is a launch range owned and operated by AAC, an agency of the State of Alaska. PSCA is located at Narrow Cape on Kodiak Island, Alaska and occupies over 3,700 acres. The complex provides integration, checkout, and launch facilities to Government and commercial customers desiring to launch suitably sized vehicles.

The launch site is focused on providing responsive and efficient launch capability for polar, sun synchronous, and high inclination orbits.

The coordinates (Datum WGS 84) for the center point of Launch Pad - 1 (LP-1) launch mount are:

**Latitude:** N 57° 26' 06.752"  
**Longitude:** W 152° 20' 22.137"

Launch Pad 2 (LP-2) is a sub-orbital launch pad located approximately 439' west of LP-1. The coordinates for the center point of Launch Pad 2 (LP-2) are:

**Latitude:** N 57° 26' 05.935"  
**Longitude:** W 152° 20' 30.117"

Kodiak Island is ideal for polar orbits; it provides a wide launch azimuth (110° to 220° True) with an unobstructed downrange flight path for launching targets, satellites, and space-science payloads into low-earth-orbits, including polar, sun synchronous, and highly elliptical orbits. Figure 2 depicts the launch latitudes and azimuths for PSCA.

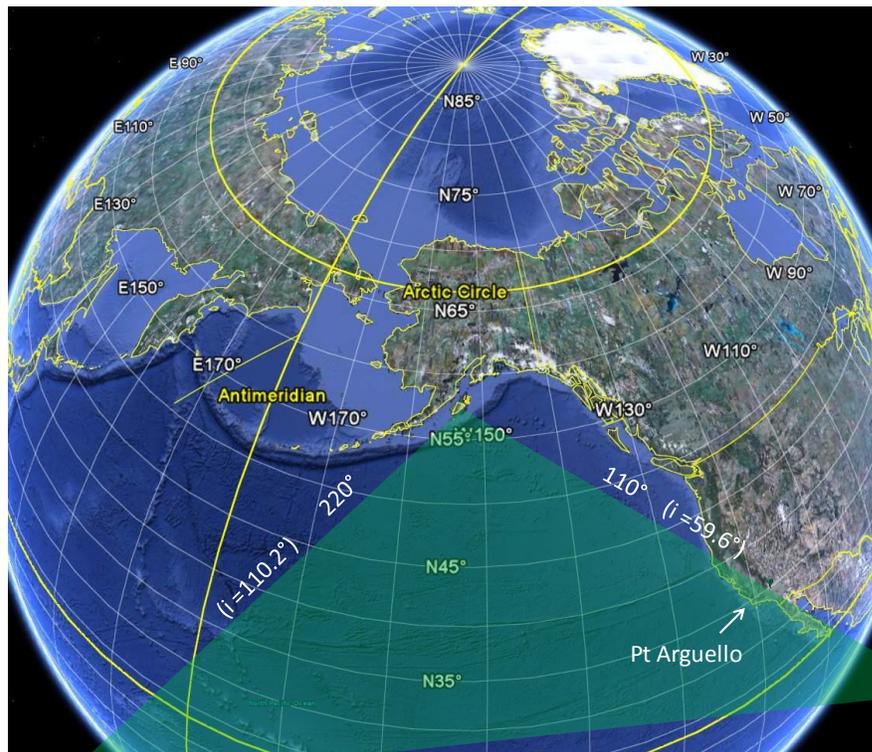


Figure 2. PSCA Launch Azimuths and Inclinations

Additionally, Kodiak Island weather more closely resembles that of the Pacific Northwest instead of Alaska. In fact, as seen below, PSCA has fewer weather delays than either Cape Canaveral AFS or Vandenberg AFB. Also, lightning is rare on Kodiak Island and for a quarter of the year, Kodiak has more daylight hours than other Ranges as seen in Figure 3.

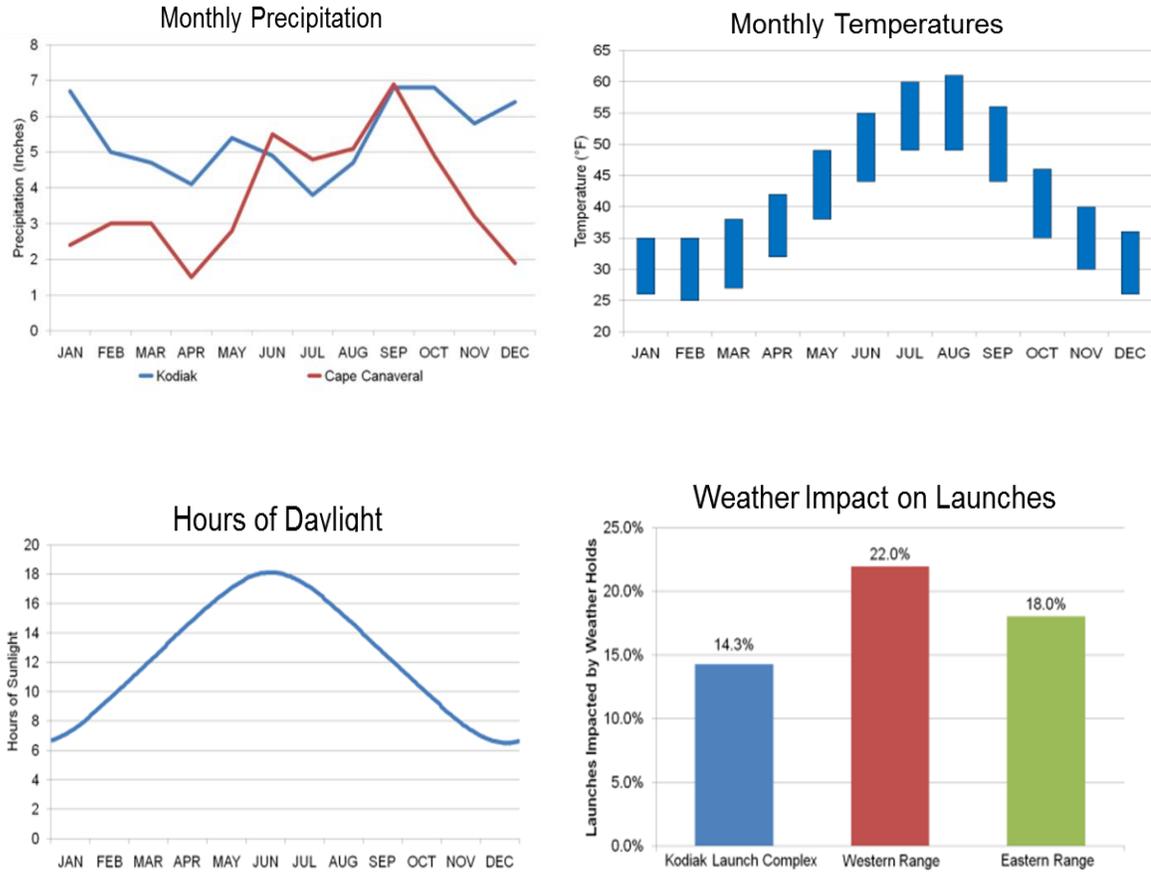


Figure 3. Kodiak Weather Trends

PSCA offers state-of-the-industry facilities for all-weather indoor processing. The complex consists of nine primary facilities and a number of support facilities. PSCA facilities include:

**Range Control Center (RCC):** A 14,000 square foot building that houses range operations and customer offices, Tech Control for inter and intra communications, weather office, security, emergency medical services, conference rooms for unclassified and classified support, and the Launch Operations Control Center.

**Launch Operations Control Center (LOCC):** Seats 49 people (7 seats reserved for AAC Range personnel) and is User configurable for accommodating User provided equipment as necessary.

**Payload Processing Facility (PPF):** A class 10,000 capable clean room facility for the checkout and fueling of spacecraft, with two 40' x 60' x 66' high processing bays with airlock, and a 15-ton bridge crane with 50' hook height. It can also support fueling operations of up to 10,000 lbs. of hypergolic propellants.

**Integration & Processing Facility (IPF):** A 50' x 100' environmentally controlled structure designed for vehicles requiring horizontal processing or for any other covered, horizontal operation. It also contains a 25-ton bridge crane with 40' hook height.

**Spacecraft Assemblies & Transfer Building (SCAT):** A self-contained, environmentally controlled, rail-mounted rolling structure that is used for transporting launch vehicles and payload assemblies from the IPF to Launch Pads 1 or 2, and serves as a LP- 2 processing enclosure.

**Launch Service Structure (LSS) and Launch Pad 1 (LP-1):** The 174' LSS houses LP-1, which is mainly used for orbital launches. The LSS has a 75-ton bridge crane to hoist rocket segments and payloads for vertical build up on the launch stool. The LSS is equipped with moveable work platforms, adjustable in one-foot increments, and adjustable custom inserts that accommodate a variety of launch vehicle diameters. The LSS is constructed with a 20' diameter throat by 40' deep flame trench rated for up to 1.3 million pounds of thrust. Outside of the LSS is the Launch Equipment Vault (LEV), a concrete structure with pass-throughs to the pad and umbilical tower for communications, power, and conditioned air.

**Launch Pad – 2 (LP-2):** Used to launch sub-orbital missions, and vehicle processing can be performed inside the SCAT by positioning it over the launch pad/stool. LP2 is supported by the Launch Equipment Building (LEB), a small blockhouse that provides pass-throughs to LP2. It can also accommodate customer supplied launch stools.

**Instrumentation Field:** A 260' x 390' gravel area that accommodates a wide array of Range User instrumentation equipment and antennas as well as AAC's Range Safety & Telemetry System (RSTS) Mobile Operations Centers and the Mobile Telemetry System vans. This area also houses a communications, power and fiber optics hub for interfacing to User equipment or instrumentation.

**Rocket Motor Storage Facility (RMSF):** The Rocket Motor Storage Facility (RMSF) is comprised of two Earth Covered Magazines (ECMs) for short or long term storage of rocket motors. The RMSF is designed using the DDESB Technical Paper 15 approved 7-bar Oval Arch Steel Magazine. Each ECM is sited for 225,000 lbs. HD 1.1 and 225,000 lbs. HD 1.3.

**Maintenance and Support Facility (MSF):** A 19,000 square foot building that houses PSCA maintenance shops for all Range equipment and vehicles; as well as storage bays for RSTS and customer equipment. MSF also houses the PSCA facilities personnel offices.

Each site within PSCA is connected by Operational Intercom System (OIS), telephone, data, Closed Circuit Television (CCTV) and Paging and Area Warning (P/AW) systems. Communication is by dual submarine fiber optic telecommunications systems connecting Kodiak Island with the Kenai Peninsula and Anchorage, as well as a second connection to Seward. Both cables onshore connection is at Narrow Cape adjacent to PSCA. Both secure and unsecure communications can be transmitted through this system.

Public electrical power provided by the Kodiak Electric Association, along with on-site backup generators configured with Uninterruptible Power Supplies (UPS), provide power throughout the Complex. Potable and firefighting water, localized septic fields, paved roads, parking and work areas complete the Complex.

PSCA accommodates a variety of Department of Defense (DoD) and commercial solid rocket motors including Castor 120, Castor IVB, Orion 50S, and derivatives of Minuteman, Polaris, Peacekeeper, and Trident C4 propulsion systems. Launch Vehicles supported include: Athena, Taurus, STARS, and Minotaur series suborbital and orbiting systems. PSCA is sited for 1.1C and 1.3C solid propellants and is designed for all weather indoor processing. Additionally, a new Environmental Assessment (EA) for solid and liquid propellant medium-lift launch vehicles,

including LOX, JP-4, JP-10 and methane is pending approval, which is expected during the summer of 2015.

### **1.3 Primary Mission**

PSCA's primary mission is to serve as a west coast launch facility to commercial, government, and military customers. PSCA's location at Narrow Cape on Kodiak Island is ideal for space access into polar, sun synchronous and highly elliptical orbits. PSCA offers unrestricted down range launch azimuths ranging from 110 degrees to 220 degrees. PSCA is the nation's highest latitude, full service spaceport that is able to launch into high inclination orbits (including 63.4 degrees) without flight over land or high energy consuming dog-leg trajectories to reach orbit.

The PSCA has supported Government and commercial launches for agencies such as the National Aeronautics and Space Administration (NASA), the U.S. Army Space and Missile Defense Command (SMDC), the U.S. Air Force (USAF) Space and Missile Systems Center (SMC), and the Missile Defense Agency (MDA), as well as Orbital Sciences, Lockheed Martin, Space Vector Corporation, and Sandia National Labs.

## SECTION 2 STRUCTURE AND METHODOLOGIES

### 2.1 Alaska Aerospace Corporation (AAC)

AAC is an agency of the State of Alaska, established in 1991 by the legislature to promote development of an aerospace industry in Alaska. AAC owns and operates PSCA.

#### 2.1.1 Organization/Charter

AAC is a public corporation created by State of Alaska Statute and governed by a Board of Directors. AAC/PSCA management consists of a President/Chief Executive Officer, Chief Operating Officer (COO), various engineering and administrative staff located in Anchorage, Alaska; with PSCA facilities, operations and support staff at Kodiak, Alaska.

### 2.2 Authority

PSCA is a spaceport licensed by the Federal Aviation Administration Commercial Space Transportation (FAA/AST) under provisions of the Commercial Space Launch Act (CSLA) Title 51 U.S. Code Chapter 509) to provide an orbital launch capability. The principle law governing operations at PSCA is Title 14 CFR 420 – License to Operate a Launch Site. This CFR, PSCA's site operator's license (reference LSO-03-008), and AAC's enabling legislation (Alaska Statute 14.40.846, Article 7), all designate AAC as the final authority for ensuring flight, ground, and operational safety at PSCA. Therefore, it is AAC's responsibility to ensure that customers comply with the policies and procedures developed as a condition of the operators' license.

### 2.3 Services Provided

#### 2.3.1 Range Operations Support

AAC provides tailored levels of support for licensed Launch Operators with its own workforce, supplemented by various contractors. Some of the support services offered by AAC include launch operations, telemetry and flight termination systems (FTS) ground and in-flight support, communications, ground safety, and facilities maintenance. All support by AAC is on a "task order" basis; if a customer requires support that is not currently on contract, that support can be acquired as an additional service.

#### 2.3.2 Facility and Logistics Support

AAC support is tailored to customer needs and includes, but is not limited to:

- Logistics, including motors/stages, equipment, supplies and personnel
- Assistance with licenses, permits and exemptions, as appropriate, including state and federal environmental permits and transportation matters
- Payload and launch vehicle processing and operations support
- Facilities modifications and installations to configure for specific missions
- Clean Room monitoring
- Instrumentation including telemetry and range safety
- Communication at PSCA and downrange assets or Ranges

- Meteorological support
- Program-oriented security, including physical and classified
- Clerical and administrative support
- Facilities engineering and construction support

## 2.4 Range Organization

Launch vehicle support and operations at PSCA are conducted per the requirements of the user's FAA Launch Operator's License, or other Federal agency requirements (such as NASA or DoD). As the FAA-licensed Launch Site Operator, AAC is responsible to ensure that all mission operations conducted from PSCA are compliant with all FAA licenses, or with appropriate DoD launch processes that are executable within the limits of the Launch Site Operator's License. AAC works with the customer to tailor the specific launch operations team and levels of support needed for the mission and license compliance.

For any Launch Operator, AAC is able to provide all functions and positions required for launching both commercial and DoD vehicles. These include:

- Range operations management: Under the Director of Range Operations (DRO) provides oversight of all mission operations, mission planning and Range User interfaces at PSCA. Responsible for providing ground safety officer, facilities readiness, range operations support, and AAC staff support.
- Range Control Officer: Oversees day-to-day Range activities during mission operations at PSCA and has the authority to approve the test, maintenance and uses of the Range.
- Range Safety Officer (RSO)/Mission Flight Control Officer (MFCO): Generally provided through a Federal range, provides flight safety for operations at PSCA.
- Facility Security Officer: Responsible for directing the overall PSCA security program to ensure all Federal security requirements are met for Range Users along with obtaining and maintaining approvals for classified networks, materials, and Information Systems when required by the Range User.
- Launch Weather Officer: Supports the Range Users specific mission meteorological requirements.

These personnel actively work with the customer to support or provide all aspects of support from pre-launch processing, the launch processing, and post-launch operations. These positions, along with the rest of the PSCA team, provide flight safety (focused on telemetry and flight termination systems), ground safety, scheduling, weather prediction and tracking, facility instrumentation, on-site communications, facility and support equipment, and logistics.

## 2.5 Range User Interface Procedures

The function of PSCA as an FAA-Licensed Launch Site Operator is to ensure the Launch Operator/Range User's safe and efficient campaigns from initiation to completion. Support

agreements are defined by a contract and supporting Statement of Work (SOW), or by a Memorandum of Agreement (MOA). In addition, AAC has adopted a streamlined form of the Range Commanders Council's Universal Documentation System (UDS) in order to capture Range User requirements, as well as support approach by AAC at PSCA. The UDS is the standardized documentation system for stating requirements and preparing range support responses that is accepted and used at ranges operated by the Department of Defense (DoD) and National Aeronautics and Space Administration (NASA).

### **2.5.1 Introduction**

To determine the feasibility of conducting the proposed project at PSCA, the Range User is encouraged to confer with AAC personnel before submitting a formal request. The initial contact will normally lead to a meeting between the Range User and AAC Range personnel to exchange preliminary information and to reach a tentative position on the feasibility of conducting the project at PSCA.

### **2.5.2 Range User Documentation**

#### **2.5.2.1 Program Introduction (PI) Document**

The PI is the Range User's initial planning document containing the top-level scope of requirements, milestone schedule and duration of program activities.

#### **2.5.2.2 Program Requirements Document (PRD)**

The PRD is a program planning document containing the Range User's more detailed project description, technical requirements, and program schedule. This information will be assessed by AAC for supportability and cost estimates. The PRD is required for more complex or long lead-time programs.

#### **2.5.2.3 Operations Requirements (OR) Document**

The OR is a detailed description of the program's requirements for each specific test, or series of tests, and the specific support required.

### **2.5.3 Range Response to User Documentation**

#### **2.5.3.1 Statement of Capability (SC)**

The SC is AAC's response to the Range User's PI. The SC is evidence that AAC has accepted a program for support. It also serves as a baseline reference for support conditions, qualifications, and resources understood by AAC.

#### **2.5.3.2 Program Support Plan (PSP)**

The PSP is the response to the requirements identified in the Range User's PRD. It also provides detailed information for requirements that AAC is either unable to meet or can meet in ways different than specifically requested

in the PRD. A cost estimate for Range support and/or Range modifications is included.

#### 2.5.3.3 Operations Directive (OD)

The OD is AAC's response to the User's Operations Requirements (OR) document and is the detailed plan for implementation of specific program or mission testing, the associated schedules, and the specific resources needed in support of these tests.

### 2.5.4 Additional Documentation Requirements

2.5.4.1 Range Safety requirements, including ground safety and flight safety documentation, are described in the AAC Range Safety Manual, which details Range Safety Data Package (RSDP) submittals and schedule based on a planned launch date.

2.5.4.2 Interface Control Documentation (ICD), which describes communication, mechanical, electrical and facilities interfaces between the User and PSCA, are required to ensure that the PSCA can be properly configured for the mission.

### 2.5.5 Operations Scheduling

AAC maintains a master schedule of PSCA activities. Each Range User is to provide AAC with a detailed schedule to be incorporated into the master schedule. Any activity requiring AAC support must be included in the Range User's schedule. The PSCA OD is responsible for maintaining the daily/weekly schedule. All Range User requests for Range support and hazardous operations must be coordinated through the OD and the PSCA schedule.

### 2.5.6 Documentation Schedule

AAC attempts to avoid excessive documentation wherever possible. Although Range Users are required to provide appropriate levels of the UDS to aid AAC in defining support requirements, only applicable levels/sections need to be provided. Documentation required from the Range User, with general publication dates for first-time projects, is as follows:

Program Introduction (PI) .....	L – 24 Months
Program Requirements Document (PRD) .....	L – 12/18 Months
PSCA Range Safety Data Requirements Check List .....	L – 12 Months
Preliminary Range Safety Data Package (PRSDP) .....	L – 12 Months
Trajectory Simulation Data .....	L – 120 days
Final Range Safety Data Package (FRSDP).....	L – 120 days
Hazardous Operations Plan (HOP).....	L – 90 days
Operations Requirements (OR) .....	L – 90 days

AAC responses (SC, PSP, & OD) will be submitted within 30 days of receipt from the Range User request (PI, PRD, & OR). Schedules can be adjusted to support individual campaign requirements. Exact data requirements shall be determined during the planning process based on unique schedule and project details. AAC encourages Range Users to provide documentation as early as possible to assure adequate time for review and approval. The tailored Range Safety Data Checklist is contained in the AAC Range Safety Manual (RSM) Appendix A - Data Requirements Checklist, and Appendix B – Range Safety Data Requirements Tracking List and Delivery Schedule.

## **2.6 Security**

PSCA security consists of a UL Certified state-of-the-industry Intrusion Detection System (IDS) approved and certified by the Defense Security Services (DSS) for the control of classified materials (physical handing and electrical transmission) as well as physical security during operations, provided by an AAC security contractor.

Site security is provided by 8' fencing around all individual facilities. Barricades are established at PSCA check points of entry when hazardous operations require them.

Building access is controlled by a combination of DSS approved cipher and combination spin locks and magnetic card readers. A facility-wide key system also allows control of access to certain work areas and individual rooms.

AAC has established operational security controls and procedures, which require Range User compliance. These controls include controlled issuance of photo identification badges color coded by various levels of authorized activity/area entry; security guards and check points that restrict access to certain areas by authorized personnel only; and procedures for visitors. Range Users will receive a detailed briefing on operational security, controls, and procedures from AAC soon after the first contact with the AAC Security Manager.

## **2.7 Hazardous Waste Disposal**

### **2.7.1 Non-Hazardous**

AAC provides for the removal of non-hazardous refuse and waste limited to routine materials generated from normal operations. The Range User is responsible for disposing of major packing materials, shipping containers, and construction refuse.

### **2.7.2 Hazardous Materials**

AAC will dispose of facility-related hazardous waste not directly the result of the Range User's launch activities. AAC staff and contract security personnel are HAZWOPER trained at the First Responder Operations Level. In the event of a spill or release to the environment involving a PSCA-related hazardous chemical, AAC staff and security personnel shall follow AAC's Emergency Response Plan procedures. In the event of a spill or release to the environment involving a Range User-related hazardous chemical, AAC staff and security personnel shall notify the Range User's designated Emergency Responder and act to protect the health and safety of nearby persons, following relevant emergency procedures.

Range Users shall manage hazardous waste generated by their operations at PSCA, including collection of and disposal of any by-products, in compliance with applicable environmental regulations. For additional information, please refer to the PSCA RSM.

## **2.8 Fire Protection and Medical Support**

AAC fire support consists of fire detection and protection equipment at PSCA. Fire protection systems at the individual buildings are supported by a 169,000-gallon water storage tank and pump station located at the PPF. This pump distributes water through a distribution system to each facility. Fire hydrants are located along the distribution main. Systems for individual buildings are described separately. An onsite pumper fire truck provides wildfire suppression.

Fire, ambulance, and medical evacuation coverage is provided by Kodiak Island emergency services organizations, within normal non-service district response times. Additional fire, ambulance, and medical support can be negotiated in the launch services agreement.

## SECTION 3 RANGE FACILITIES OVERVIEW

### 3.1 Range Control Center (RCC)

The RCC is the administrative, engineering and operations support facility for PSCA. It is the primary communications and data center for Range functions and is connected throughout the facilities by the communications backbone. Located approximately two miles away from the LP-1 & 2, the RCC is outside the safety hazard zone, thus ensuring the safety of mission personnel.

The RCC houses the Launch Operations Control Center (LOCC), the Tech Control/Communications Room, administrative and engineering support personnel offices, conferences rooms, restrooms/showers, and break room. A facility of approximately 14,000 square feet, the RCC provides both private office and open space areas primarily for Range Users. Figure 4 shows the exterior of the RCC.



Figure 4. Exterior of Range Control Center

#### 3.1.1 Launch Operations Control Center (LOCC)

The LOCC is approximately 1,610 square feet and has raised flooring that allows for console reconfiguration. The LOCC is connected with an under-floor cable-way to the Tech Control to accommodate connectivity changes. The LOCC has both fiber optic and satellite communications connectivity for worldwide communications and data distribution, both secure and non-secure.

The LOCC seats up to 49 people with operations consoles for AAC and Range User personnel. Workstations consist of computer monitors, keyboards, and CPUs. The mission voice network or Operational Intercom System (OIS) is also distributed to each workstation. The configuration below in Figure 5 is an example of how the LOCC can be configured.

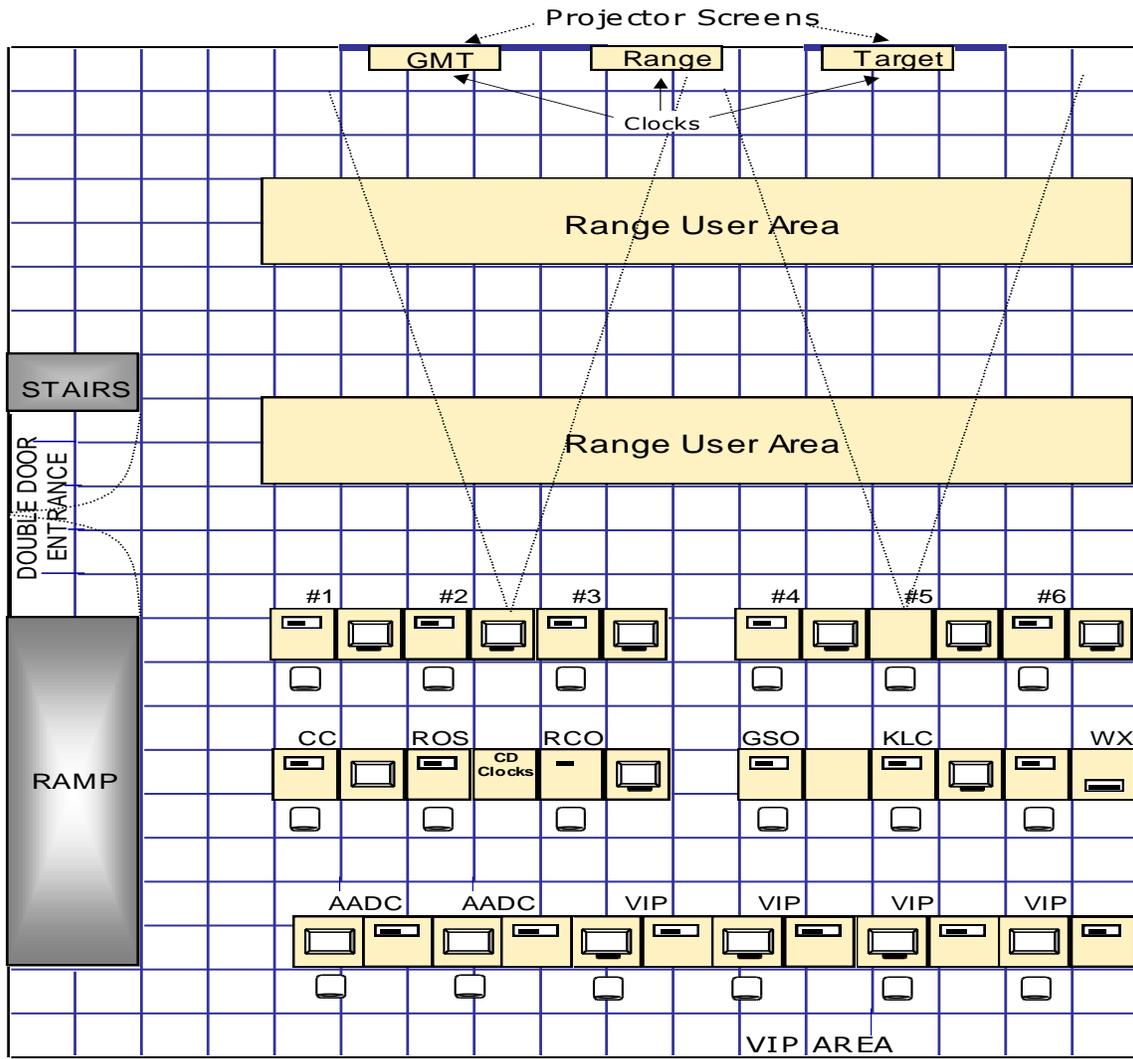


Figure 5: Launch Operations Control Center

### 3.1.2 Engineering Office Area

The engineering office area (4,059 square feet) seen below in Figure 6, offers partitioned offices and cubicles. This area is generally configured to support 64 cubicles and offices. Electrical power, telephone and data connections are provided to each workstation. A dedicated customer Local Area Network (LAN) is provided for printing and internet access.



Figure 6. Engineering Office Area

### 3.1.3 Tech Control

The Tech Control/Communications includes the communications and network equipment shown in Figure 7. This area houses the core of the communications system, timing and countdown, PA, CCTV, telephone, and the interface for the HVDS. Tech Control is also the interface point for external copper and fiber distribution cabling from other PSCA facilities and Range User equipment.



Figure 7. Typical Tech Control Equipment

### 3.1.4 Backup Power

The RCC has its own backup generator and UPS. A stand-by 350kW generator supplies power to the entire building during outages. The generator fuel tank is sized to run the generator for a minimum of 72 hours at full load. Each generator at the PSCA is contained in heated enclosures. A total of 32 kVA UPS are located in the Tech Control. The UPS supplies uninterruptible power to critical communications systems and Range User equipment.

## 3.2 Payload Processing Facility (PPF)

Space vehicles and payloads are processed in the PPF, which includes a 40' x 60' airlock bay and a 40' x 60' processing bay. Each bay has 2,400 square feet of floor space for a total of 4,800 square feet. The PPF can be operated anywhere from a class 100,000 up to a class 10,000 clean room depending on customer needs. An air shower with air lock provides personnel access to the clean room. A wash room and area for changing clothes is also included. A 15-ton bridge crane with 50' of hook height serves both the airlock and processing bays. A 30' x 32' equipment airlock facilitates controlled entry of support equipment and fueling carts to the processing bay without having to open the primary airlock. Pass-through conduits are available to bring cabling from outside support equipment into the structure without compromising environmental quality. The PPF also includes a 700 square foot control room with blast shutter. The facility is equipped to supply hydrazine/hypergolic fuel to space vehicles and payloads, and includes a Hazardous Vapor Detection System (HVDS) and appropriate engineering controls to provide a safe fueling environment. The PPF is also equipped with ordnance certified (Class 1, Div 2) electrical equipment. The breathing air system in the clean room is capable of supporting four SCAPes from a wall mounted panel. Hypergolic fuels are stored proximal to the PPF in an approved armored vault. One of the two high bays is pictured in Figure 8.



Figure 8. Payload Processing Facility (PPF)

## 3.3 Integration and Processing Facility (IPF)

The IPF is designed to support indoor horizontal processing of vehicles and other covered, horizontal operations. The IPF is a 50' x 100' environmentally conditioned structure capable of maintaining vehicle specific temperature and humidity with four 40' high by 18' wide roll-up doors. The IPF is also equipped with ordnance certified (Class 1, Div 2) electrical power receptacles and a 25 ton bridge crane having 40' of hook height. A 10' x 15' airlock is provided

to accommodate transfer of support items without compromising environmental control. A Test Assemblies Inspection Records Room, washroom/lavatory, and mechanical room complete the structure. Stepdown transformers and switch panels supply 208-480V, 3 phase and 120V single phase throughout the IPF. The IPF is located two miles away from the RCC. The IPF is pictured in Figure 9.



Figure 9. Integration and Processing Facility (IPF)

### 3.4 Spacecraft Assemblies & Transfer Building (SCAT)/Launch Pad-2 (LP-2)

The SCAT building is a self-contained, environmentally controlled mobile structure that houses LP-2 and is used for transporting launch vehicle and payload assemblies from the IPF to the launch pads. The SCAT is 45' wide and 70' long, with a 60' high ceiling, with four roll-up doors. Three doors are 40' high by 18' wide, and one door is 43' high to allow SCAT removal from the stool-mounted launch vehicles while on the LP-2 launcher. This structure is roller mounted on tracks between the IPF and the LSS. Also, the SCAT is available as a launch vehicle processing building when positioned over LP-2. Ordnance certified (Class 1, Div 2) electrical power receptacles and 25 ton bridge crane with 45' hook height service the SCAT. Both primary (750 KW) and backup generator (600 KW) power, with auto switchover, are available to the IPF-SCAT and launcher area. Electrical heaters and humidifiers provide environmental control. The SCAT/LP-2 is pictured in Figure 10.

The reinforced concrete LEB, located adjacent to the LP-2, is environmentally controlled, and offers 108 square feet of floor space to house User electrical ground support equipment (GSE). Conduit pass-throughs are available between the LEB and the LP-2 to accommodate User umbilical connectivity.



Figure 10. SCAT/Launch Pad-2

### 3.5 Launch Service Structure (LSS)/Launch Pad-1 (LP-1)

The LP-1 consists of a 174' tall LSS, which will accommodate Minotaur, Taurus, Athena, Vega, Shavit, and Epsilon class vehicles. The LSS is an environmentally controlled, all weather facility, with adjustable height and adjustable diameter work platforms, flame trench, transporter erector accommodation, side entry with booster break-over accommodations, and fiber and copper connectivity to the RCC/LOCC. The LSS is also equipped with ordnance certified (Class 1, Div 2) electrical power receptacles and has a 75-ton bridge crane to hoist rocket segments and payloads for vertical build up on the launch stool. Prior to launch, two rotating building sections are rotated clear of the launch vehicle. The LSS is also equipped with OIS, telephone, data, CCTV, and Paging/Area Warning systems. Stepdown transformers and switch panels supply 208-480V, 3 phase and 120V single phase.

The reinforced concrete Launch Equipment Vault (LEV), located adjacent to the LSS, is environmentally controlled, and offers 331 square feet of floor space to house User launch vehicle electrical ground support equipment (GSE). Conduit pass-throughs are available between the LEV and LP-1 to accommodate umbilical connectivity. The LSS/LP-1 is pictured in Figure 11.

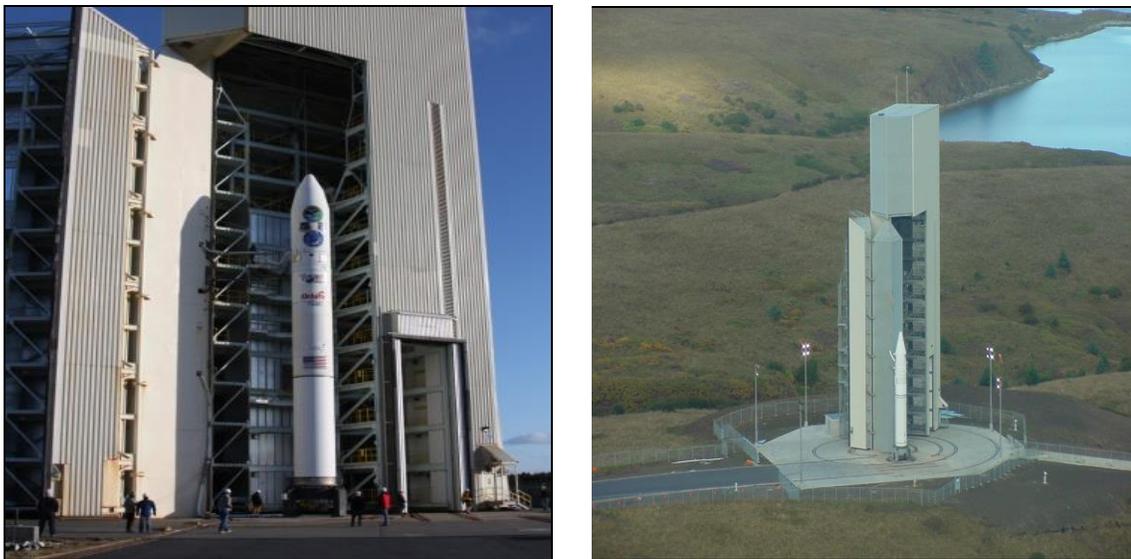


Figure 11. Launch Service Structure (LSS)/Launch Pad-1 (LP-1)

### 3.6 Instrumentation Field

The instrumentation field, a 260' x 390' packed gravel parking area, is situated to the west of the RCC and occupies higher ground. It provides line of sight to LP-1 and LP-2 and accommodates a wide variety of Range User's instrumentation and antennas. It also houses the PSCA's Range Safety & Telemetry System (RSTS) seen in Figure 12. The instrumentation field is secured by an 8' barbwire topped fence and includes the Antenna Field Utility Building (AFUB), Range Radio Equipment Building (RREB) and antenna pads. The AFUB supplies power and communication, via copper, fiber, and coax, to meet customer requirements. A single, 500 KVA transformer converts 480V to provide lugged 1-phase or 3-phase 120/208 VAC volts. The RREB facilitates radio communication throughout the entire complex.



Figure 12. Instrumentation & Antenna Field

### 3.7 Rocket Motor Storage Facility (RMSF)

The Rocket Motor Storage Facility (RMSF) shown in Figure 13, is comprised of two Earth Covered Magazines (ECM's) for short or long term storage of rocket motors. The RMSF is designed using the DDESB Technical Paper 15 approved 7-bar Oval Arch Steel Magazine design number 421-80-03. Each ECM is sited for 225,000 lbs. HD 1.1 and 225,000 lbs. HD 1.3. The RMSF allows multiple customers to have motors at PSCA at the same time. The 7-bar DDESB approved design of each ECM will protect the contents of the magazine even if there is detonation in an adjacent magazine. The RMSF is separated from the lower range by Intra-Line Distance (ILD) in order to provide direct support to the launch pad area, regardless of the mission.



Figure 13. RMSF Storage Bunkers

### 3.8 Maintenance and Support Facility (MSF)

The MSF is a 19,000 square foot building housing three large maintenance and support bays that provide all-weather in-door equipment maintenance and support areas for PSCA. One of the 3 bays can be dedicated for Range User support. The MSF is pictured in Figure 14.



Figure 14. Maintenance and Support Facility (MSF)

### 3.9 Narrow Cape Lodge

The Narrow Cape Lodge, seen in Figure 15, is a privately-owned facility located approximately 3 miles from the RCC, providing lodging and food services to AAC clients when at PSCA. The Lodge has 56 rooms, a large dining hall, and a recreation room. Each room has a private bath, telephone/Internet, and television. Laundry facilities are available on-site.



Figure 15. Narrow Cape Lodge

## SECTION 4 PSCA INSTRUMENTATION

### 4.1 Range Safety and Telemetry System (RSTS)

The RSTS consists of two mobile, GPS based, S-band telemetry receiving and UHF command destruct systems, each with two 5.4-meter auto-tracking antennas, and two omnidirectional command destruct antennas. Each system is operationally identical and capable of providing 8 redundant or 16 independent S-Band telemetry links.

One RSTS system is located at PSCA with the second mobile unit at varying mission specific off-axis locations depending on the mission geometry and requirements. The systems can act in conjunction with each other or as stand-alone units. See Figure 16.



Figure 16. Range Safety & Telemetry System

#### 4.1.1 Telemetry Subsystem

The RSTS telemetry subsystem is capable of receiving multiple telemetry downlinks in a redundant configuration via dual auto-tracking antennas. The RSTS receives and records the downlink S-band data and computes and performs engineering unit conversion, while sending Range Safety-pertinent data to the two Mission Flight Control Officer (MFCO) positions. Each RSTS is capable of processing 16 telemetry streams with a maximum data rate of 20 Mbps, with complete redundancy: formats include PCM/FM, PCM/FM/FM, BPSK and A-QPSK. Each stream is processed through redundant antenna paths and redundant receiver channels. Pre-D analog and combined Post-D Recording is available. Timing, telemetry modulation, formats, and rates are compatible with IRIG

standards. Tracking characteristics as well as receive and record characteristics are shown in Tables 1 and 2.

Antenna	Gain*(dB) @ 2.25 GHz	T <sub>s</sub> (K°)	G/T (M')	3 dB Beam width	Frequency (GHz)
Four (4) Mobile 5.4 Meter	38	125	16	1.6 degrees	2.2 to 2.4

Table 1. Tracking Characteristics

Site	S-Band (MHz)	Multi- Couplers	Receivers	Combiners	Bit Syncs	Recorders
RSTS 1	2200-2400	2 Dual	16NB	12NB	8	2 Digital
RSTS 2	2200-2400	2 Dual	16NB	12NB	8	2 Digital

Table 2. Receive and Record Characteristics

#### 4.1.2 Range Safety Subsystem – Command Destruct System (CDS)

The CDS Subsystem provides for a RSO/MFCO to verify a safe flight trajectory or terminate the flight if flight safety criteria are violated. This command destruct is accomplished by transmitting a UHF 1 KW signal modulated by secure or standard IRIG tone frequencies. Two antennas operate for each Command Subsystem: a low-gain omni-directional antenna for the early boost phase and the high-gain auto-track antenna for down range boost phase. The omni-directional antenna and a command RF signal monitoring probe antenna are mounted separate from the steerable auto track antennas. The center frequency for the command transmitter is tunable from 400 MHz to 450 MHz and is able to receive and decode 20 IRIG tones and 7 secure tones. Command and control characteristics are shown in Table 3.

Site	Band (MHz)	Antenna	3 dB Beam width
RSTS 1	400-450	5.4 M	8 Deg
RSTS 1	400-450	Omni	
RSTS 2	400-450	5.4 M	8 Deg
RSTS 2	400-450	Omni	

Table 3. Command and Control Characteristics

## SECTION 5 TECHNICAL SYSTEMS

### 5.1 Fiber Optic and Copper Backbone Systems

Fiber optics and copper communications lines are run underground throughout the PSCA. The Tech Control is the central hub between the Instrumentation Field, PPF, IPF, LEB, and LEV. At each facility, connectivity is available for customer use.

### 5.2 Communications Systems

PSCA's modern communication infrastructure includes fiber optic marine cable to mainland Alaska and the lower 48 states. Offsite communication is provided through fiber optic marine cable via Tech Control downlinking to locations required by the Range User. The locations include, but are not limited to, Anchorage, Cordova, and Seattle. This system provides T-1 and IP based services for voice, data, and Internet connections. If fiber optics are unavailable at an off-axis site, communications would be routed through satellite communication (SATCOM) ground station with its antenna located at PSCA. Communication from the Launch Pads to the other facilities at PSCA is via telephone, operational intercom, paging, and the data network. All communications, security, fire alarm, and area warning are controlled at the resident facilities and report back to Tech Control.

#### 5.2.1 Telephone

A PBX telephone system provides phone communications throughout PSCA. This system is configurable to allow controlled access to long distance service.

The phone system interfaces with the OIS allowing remote users to monitor various intercom networks. Phone location and quantity may be specified for each campaign.

#### 5.2.2 Operational Intercommunication System (OIS)

The OIS is installed throughout the PSCA. The OIS is a Quintron DICES IV intercom system and can be connected depending on Range User requirements. Presently, the system is configured for a combination of 16 T-1 lines.

The OIS interfaces with the telephone and P/AW systems to allow monitoring of the OIS by remote users via telephone and paging initiation on the P/AW system. The OIS provides direct communication from station to station. Stations are either 24 or 6 channel with handsets and headsets, depending on location and need.

#### 5.2.3 Paging and Area Warning (P/AW)

The P/AW system provides paging and initiation of area warnings such as hazardous operations, lightning alerts, or security concerns throughout the PSCA.

Each facility is equipped with direct access to the paging system through a dedicated station with speakers located to allow dissemination of pages or area warnings throughout interior and exterior areas. At the direction of the Launch Director or PSCA Range personnel, a pre-programmed alert signal can be sounded throughout the Complex.

### 5.3 Meteorological Systems and Support

AAC provides comprehensive meteorological services at PSCA, including weather forecasting, ground observation, and upper-air observations for launch, as seen in Figure 17. A Launch Weather Officer (LWO) and Upper Air Observer (UAO) manage and relay weather forecasting, measurements, and data processing during operations.

PSCA's meteorological equipment include: W-9000 Dual Track GPS ground station, balloon inflation and sonde preparation, Weather Radar, Lightning Strike Detection System, Field Mill Lightning Potential, Ground Weather Stations (RCC and launch pads); and Internet resources for accessing NOAA Weather Maps, solar activity monitoring, and other meteorological advisories



Figure 17. PSCA Meteorological Services

Ground and upper-air measurements include temperature, pressure, relative humidity, wind speed/direction, visibility, cloud cover, density, lightning, and potential gradient. Lightning strike, reflective index, and speed of sound are also available. Upper air measurements are available up to 100,000' with low-resolution balloon sondes, and up to 50,000' with high-resolution balloon sondes. Multiple balloons can be tracked at the same time. Launch weather constraints, advisories, and warnings shall be provided in accordance with program operational requirements.

### 5.4 Caution and Area Warning (C/AW)

C/AW lights are installed at the RCC, PPF, IPF, Instrumentation Field and LP-1. The C/AW consists of pole-mounted warning lights that use a three-color approach to visually indicate dangerous operations. A green light represents non-hazardous operations. An amber light indicates that hazardous operations are active and that access to the facility is limited. A red strobe light means that an emergency condition exists or launch operations are underway and access to the facility is restricted. Manual control stations are located inside each facility.

### 5.5 Hazardous Vapor Detection System (HVDS)

HVDSs are installed in the PPF and LP-1. Each facility reports to its own controller, which then reports to the control unit in the RCC.

The PPF HVDS is connected to the RCC for monitoring purposes and interfaces with the fire alarm, C/AW, and P/AW systems. Detection in the PPF is from ceiling-mounted detectors and

from portable detectors positioned by the Range User for optimum detection. Each HVDS will be fitted with chemical sensors specific to the chemicals to be detected (i.e., hydrazine, ammonia).

Hazardous vapor detection in the LSS is provided through portable detectors positioned by the Range User. Connection points are available on work levels where detectors are expected to be placed. The detection of a hazardous vapor condition will initiate audio and visual alarms at the affected facility and at the fire alarm control panel in the RCC.

## 5.6 Security

Each facility has a security system consisting of intrusion detection devices that are connected to a control panel. The PSCA site security systems are UL-certified. Entry and passive sensors are used to monitor access and detect intrusion. Secure locking systems are used to controls access. The security systems function by transmitting status, integrity, and alarms signals to local and remote units. Alarms are both visible and audible.

## 5.7 Closed Circuit Television (CCTV)

CCTV is available in each of the PSCA facilities. A video switch located in Tech Control determines what displays have access to individual camera outputs and allows slave control for Range User predetermined cameras so that monitoring and control of cameras can be accomplished from the LOCC.

In the PPF, local control of cameras is available in the PPF Control Room. At LP-1, local control for tower and pad perimeter cameras is available from the Launch Equipment Vault (LEV).

## 5.8 Timing Systems: Real-Time, Mission Clock, Countdown Clock

Timing information is available throughout the Complex with Time of Day (TOD), countdown, and mission elapsed-time displays in various locations. The system consists of a master controller in the RCC. Display units are located in the RCC, LOCC, PPF, and IPF. The display unit consists of three items: GMT or Zulu time, Range time, and LV/missile countdown time. These units are wall mounted in strategic places in each facility.

Timing is based on either an IRIG-B or IRIG-G signal format. TOD is based on GPS time from a receiver at the RCC. The IRIG-B signal is available at BNC (Bayonet Neill- Concellman) connector outlets in the PPF and IPF for connection to Range User equipment.

## 5.9 Power Distribution

### 5.9.1 Commercial Power Interface

Primary commercial electrical power is supplied at 24,000 Volts via an underground grid to step down transformers at each of the three main launch and processing facilities. Each facility has switch panels, with 480/277V, 3 phases, 120/208V, 3 phase and 120/240V single phase for distribution to the equipment. Single phase 220 V power is available upon request. Additional power capacity is available with site modifications.

Electrical receptacles in hazardous materials processing areas are Class 1/Div 2 ordnance certified. Receptacles in administrative and non-hazardous processing areas are standard.

### 5.9.2 Backup Power

Each generator starts automatically upon loss of power and provides backup power for essential equipment within the PSCA. The minimum operating time of each generator is 72 hours for normal operations.

Uninterrupted power supply (UPS) backup is provided for critical equipment in areas where required. Range Users may bring their own UPS system for Range User-supplied equipment.

### 5.10 Electrical Grounding and Lightning Protection

Non-ordnance related electrical grounding and bonding systems at PSCA are installed according to articles 250 and 500 of the National Electrical Code (NEC).

Ordnance grounds, where ordnance is stored and tested on vehicles (PPF, IPF, LP-1 and LP-2), are provided via dedicated ground buss bars connected directly to the ground grid. The ordnance vaults are also tied to this ground grid. Ordnance grounds are tested biannually and at the request of customers, and are in accordance with AFMAN 91-201 section 2.52 and 2.53, and Air Force Instruction (AFI) 32-1065, Grounding Systems.

PSCA's high voltage transformers are equipped with counterpoises that are connected to the ground grid at each facility having a transformer. Each occupied building has a buried copper ground grid surrounding its perimeter. Building steel is bonded to the grid at several locations. The mobile SCAT is connected to the grid by hot line clamps.

Lightning protection is provided on PSCA facilities in accordance with National Fire Protection (NFPA) Standard 780 Lightning Protection Code. A 10' air terminal on top of a 42' 5" in tower provides lightning protection when the SCAT is located away from LP-2. Grounding grids are tested biannually and upon customer request. Chain link fences are also grounded. High voltage main facility power conduits are buried; grid continuity is provided by copper cable bonded to the building grids.

### 5.11 Fire Protection, Alarm and Reporting

An automated pre-action system provides fire protection for the PPF and IPF facilities. Hydrant service is available at the RCC. A 4-inch Class II standpipe is provided for the LSS with fire hoses provided at each work level. Additional site fire protection is provided for by fire hydrants located in parking lots and along the main road and access drives and a 750-gallon pumper fire truck.

Each facility has its own fire alarm, detection system, and fire alarm control panel. Each fire alarm control panel reports back to the Master Display Unit in the RCC. The Master Display Unit has a modem connection for off-site reporting to AAC personnel. Additionally, sensors automatically activate zoned sprinkler systems in the PPF and IPF.

### 5.12 Cranes

Bridge cranes are located in the PPF, IPF, LP-2/SCAT, MSF, and LP-1/LSS. AAC personnel maintain and safety-certify each crane. Crane operation during payload processing is performed by the Range User's personnel or AAC personnel, if desired. Operators must be certified as operators of the specific cranes. Range Users are required to submit a list of critical and flight

hardware certified crane operators to AAC prior to operating any crane. AAC personnel shall provide familiarization for crane operation to Range Users as required.

Detailed descriptions of the facility bridge cranes and capabilities are listed in Table 4.

<b>Facility</b>	<b>Capability (Tons)</b>	<b>Hook Height (Ft)</b>
PPF	15	50
IPF	25	40
LP-2/SCAT	25	45
LP-1/LSS	75	157

**Table 4. Facility Cranes and Capabilities**

## SECTION 6 KODIAK LOGISTICS AND SUPPORT SERVICES

### 6.1 Overview

Kodiak Island hosts a highly capable industrial and logistics infrastructure. Kodiak Island is home to the largest United States Coast Guard (USCG) station in the world. This USCG installation currently supports an air wing composed of C-130 aircraft and H-60 helicopters as well as several fully equipped ocean patrol vessels. The same logistic supply lines that support this base are available to support PSCA operations. In addition, the USCG has allowed for limited, pre-coordinated support of missions using their base resources.

AAC provides on-site and off-site logistics support for Range Users, as required in the PRD/OR. Figure 18 shows a map of Alaska and Kodiak Island.

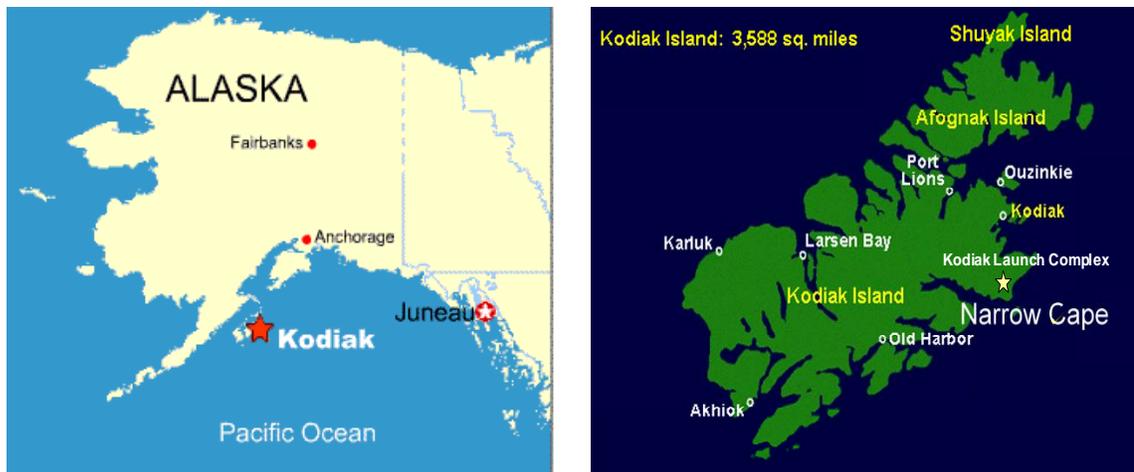


Figure 18. Map of Kodiak Island, Alaska

### 6.2 Transportation

Personnel and most equipment travel to Kodiak on daily flights offered by Alaska Airlines and Ravn Airlines. Rocket motors and other heavy equipment can travel by aircraft, barge, or container ship.

#### 6.2.1 Air Transport

The Kodiak Island public airport is shared with the USCG. It is served by Alaska Airlines and its affiliate, Ravn Airlines. Both are scheduled airlines with published flight schedules. Additionally, the airfield also supports C-130, C-17, and C-5A cargo aircraft and has a preselected “hot spot” for off-load of hazardous or ordnance items. The airport is located four miles south of the City of Kodiak and approximately 40 road miles from PSCA. Figure 19 shows the airport’s proximity to Kodiak City and PSCA, as well as the orientation of the 3 runways.

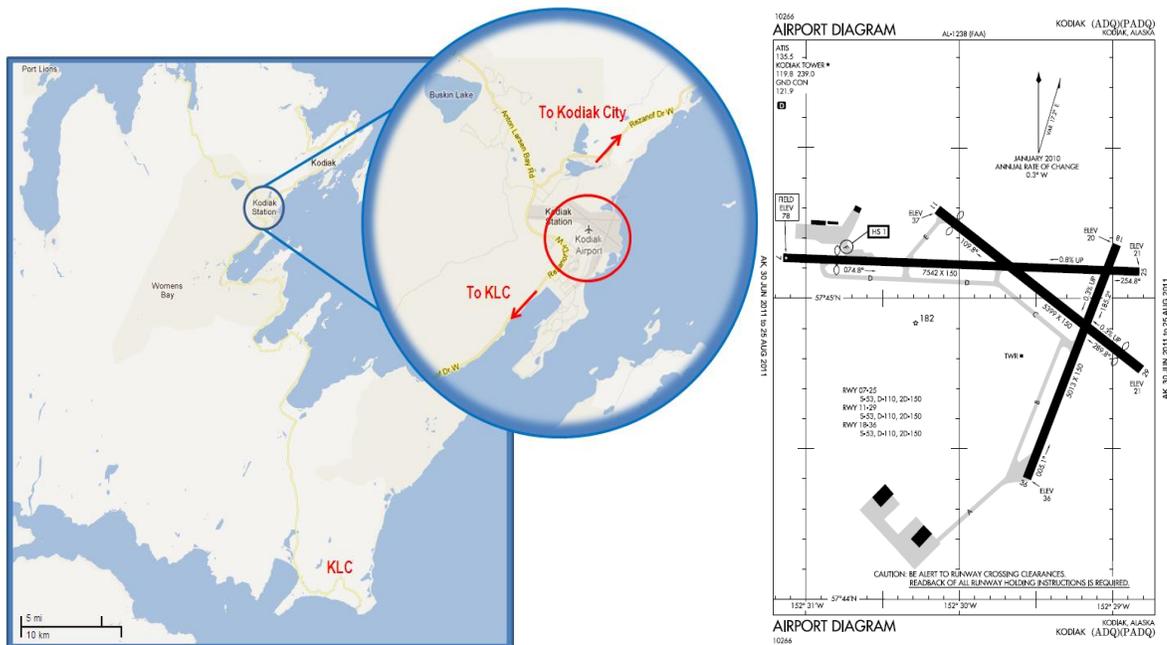


Figure 19. Kodiak Airport

### 6.2.1.1 Runways

The Kodiak Airport operates three runways and supports C-130, C-17, C-5A, 737, 727, Dash 8, and other general aviation aircraft. The Kodiak Airport runways are as follows:

Runway 7/25:	7,542 x 150 ft (2,299 x 46 m)	Surface: Asphalt
Runway 11/29:	5,399 x 150 ft (1,646 x 46 m)	Surface: Asphalt
Runway 18/36:	5,013 x 150 ft (1,528 x 46 m)	Surface: Asphalt

### 6.2.2 Road Transport

From Kodiak, road transport to PSCA is 40 road miles via the Chiniak Highway and Pasagshak Point Road. Oversize or overweight vehicles require a permit from the Alaska Department of Transportation and Public Facilities (ADOT&PF). AAC assists Range Users in obtaining necessary permits and in transporting materials and equipment. AAC has demonstrated safe movement of loads up to 100' long from the dock areas to PSCA.

### 6.2.3 Shipments to Kodiak

AAC's responsibilities for shipping mission support equipment to Kodiak and PSCA shall be determined contractually.

AAC personnel can provide receiving inspection and inventory support as required.

#### 6.2.3.1 Barges and Container Ships

Sealift capability includes three facilities: CSX Lines Terminal (Pier III), Lash Terminal, which is privately owned, City Dock (Pier II) and Lash Dock. Lash Marine Terminal provides service to several freight carriers, freight

forwarders, and consolidators. Boyer Towing, Carlisle Transportation with Foss, and Samson Tug & Barge serve Kodiak from Seattle and Anchorage and are familiar with aerospace transport requirements.

The Lash Terminal located south of the USCG Station and on the main road to PSCA, is a roll-on, roll-off operation with 150-ton lift capability provided by mobile crane. Heavier crane-lift requirements are met by transporting the required crane on the barge. The Lash Terminal is licensed for explosive and hazardous materials handling. Seaport Terminal Services, Inc. operates the terminal and provides necessary support services. The terminal has 1,200 square feet of dock space as well as a warehouse. The city dock is serviced by both containerized ocean shippers and barge carriers.

#### 6.2.3.2 Ferry

The Kodiak Terminal, as part of the Alaska Marine Highway System (AMHS) South Central route, provides ferry service to and from Kodiak Island. Passenger and vehicle services, including commercial and construction equipment vehicles, are available. Up-to-date arrival and departure schedules, routes, and rates are easily accessed on the Internet at:

- <http://www.alaska.gov/ferry>, a site that provides fee, schedule, and booking information for the AMHS.
- <http://www.akferry.org>, a site that provides information specific to Kodiak Island ferries.

#### 6.2.3.3 Air Freight

Both jet and turboprop services are available to the Kodiak airport, which is fully IFR instrumented, operates three runways (7,500', 6,500', and 5,500' in length), and supports C-130, C-17, C-5A, 737, Dash 8, and general aviation aircraft.

#### 6.2.3.4 Small Parcel Service

Express package delivery is available through the USPS, FedEx, DHL, Gold Streak, and UPS. Second-day and Priority air shipping are available to Kodiak. Customers can arrange to have their parcels delivered to a prearranged location in Kodiak City or PSCA.

### 6.3 Accommodations for Personnel

#### 6.3.1 Food and Lodging near PSCA

The Narrow Cape Lodge is a private enterprise that is three miles from PSCA-RCC, and is the only commercial lodging for Range Users available close to the Range. The Narrow Cape Lodge has 56 single rooms, each equipped with a full-size bed, Internet access, phone service, private bathroom, and television. The first floor dining hall comfortably seats up to 60 people for dining. Meals are served buffet style, but menu service is available on request. Meals can be provided at PSCA during countdown dress

rehearsals and meetings that require uninterrupted operations at PSCA. On-site laundry facilities are available 24 hours a day. The lounge area can be used for large meetings and briefings. A recreation room is available for guests' use.

### 6.3.2 Food and Lodging in Kodiak

Kodiak offers a variety of hotels and bed and breakfast facilities to provide personnel with comfortable, convenient accommodations during their stay. Close to PSCA at Kalsin Bay, is the Olds River Inn, consisting of four comfortable cabins and a restaurant. The Best Western Kodiak Inn in Kodiak and the Comfort Inn at the Kodiak airport are the largest hotels.

The Olds River Inn phone number is (907) 486-6040. The Best Western Kodiak Inn phone number is (907) 486-5712 and the Comfort Inn phone number is 1-800-544-2202. Visitors are encouraged to make advanced reservations during summer months when, due to tourism, the population of Kodiak Island doubles. For additional information on suitable accommodations in the Kodiak City area, Pasagshak, and Chiniak, contact the Kodiak Island Convention and Visitor's Bureau.

## 6.4 Road System

### 6.4.1 Access from Kodiak

From Kodiak, access to PSCA is via the Chiniak Highway and Pasagshak Point Road. The road is approximately 40 miles of well-paved asphalt, and will accommodate DoT legal heavy haul equipment. Figure 20 shows a map of this route.



Figure 20. PSCA Road Map from Kodiak

### 6.4.2 Access within PSCA

Paved access roads within PSCA are at least 18' wide and asphalt paved. Roadways, shown in Figure 21, serving the individual facilities are designed to accommodate tractor-trailer transport vehicles as well as passenger vehicles and light trucks. The road grade ranges from 1 percent to just over 15 percent. For areas where transporters will travel, roadway design provides a minimum 150' inside turning radius.

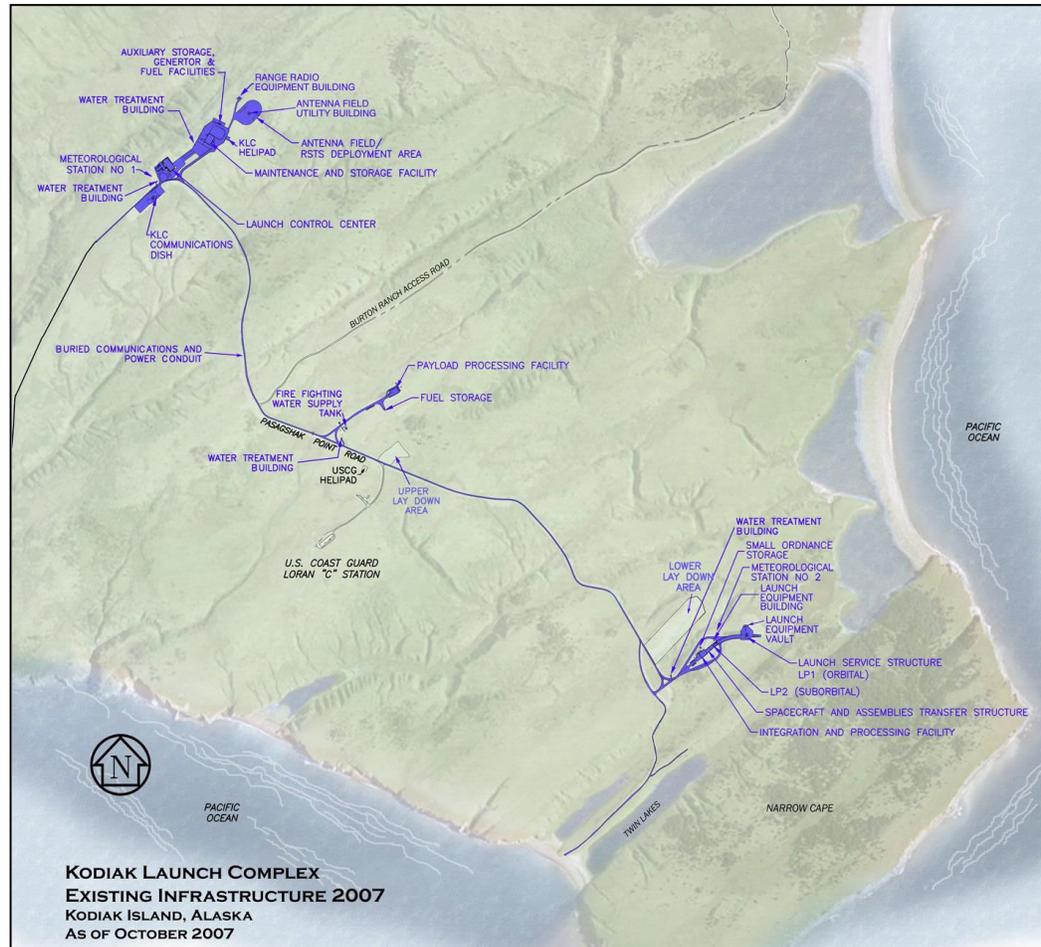


Figure 21. PSCA Roadways

### 6.5 Medical Services

Providence Kodiak Island Medical Center is an acute-care hospital staffed by board-certified surgeons. The hospital provides 24-hour emergency services as well as coronary, obstetric, and surgical services. Onsite Emergency Medical Technician coverage can be provided at PSCA if required by the Range User. A helipad, located onsite near the RCC, can support Medivac transport.

## **6.6 Industrial Shops**

### **6.6.1 US Coast Guard (USCG)**

The USCG installation has skilled aircraft maintenance and minor fabrication capability for airframe, specialized welding, hydraulics, gas turbine engines, machining, sheet metal, electrical, avionics, and marine electronics. The USCG has agreed to provide selected services that cannot be obtained from local industry.

### **6.6.2 Local**

Because Kodiak is one of the busiest fishing ports in the world, it has a broad-based infrastructure that can provide local support for maintenance and repair.

## **6.7 Storage**

PSCA has indoor storage space in the MSF, IPF, and PPF for launch related equipment. Additional support, such as maintaining and staging equipment, enclosures, and environmentally-controlled storage in excess of installed site systems may be negotiated. Exterior storage areas are also available, but it is suggested that Range Users provide tarps or storage vans for equipment stored outdoors.

## SECTION 7 SUMMARY

### 7.1 Pacific Spaceport Complex Alaska Summary

Alaska Aerospace Corporation provides state-of-the-industry processing and launch facilities, Range personnel, associated instrumentation, communications, clean rooms and support systems. We are responsive and flexible to customer needs and priorities. Our schedule flexibility is unmatched at any other Range, allowing our customers to not only meet their schedule, but also their cost goals due to reduced delays and Range conflicts.

AAC is proud of our PSCA, our employees, and 100% success rate for our customers. Our philosophy and approach is not to provide just a service to Range Users, but a partnership. AAC's goal is to make your mission successful no matter how hard or how complex.

We invite you to visit our corporate offices in Anchorage, Alaska or the PSCA in Kodiak, and let AAC prove to you our commitment and our exceptional capabilities to support all types of launch vehicles, missiles, targets and satellite missions.

### 7.2 Key Contact Information

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