

## 2009 Highlights

- Alaska Aerospace Development Corporation becomes Alaska Aerospace Corporation.
- Renewal of FAA operating license
- Completed process for certification of AAC owned Range Safety and Telemetry System
- Begin construction on Rocket Motor Storage Facility
- Detailed planning occurs for future range expansion
- Minotaur IV pathfinder occurs
- Completed NOAA Phase I study
- RSTS training camp
- RSTS Upgrades project
  
- Continuing Business
  - Facility modifications in preparation for 2 planned AF satellite launches in CY2010
  - Equipment and network upgrades for future viability
  
- Expanded corporate horizons to
  - Something about LMA???
  - World-wide applications for safety and telemetry system
  - Operational Responsive Space
  - University Space Grants Program
  
- Kodiak Launch Complex Projects
  - Begin construction of motor storage facility
  - Update telemetry computer systems
  
- Community Projects  
Pasagshak Park, Crab Fest Supporter, USCG....
  -

## *Chairperson's Letter*

To the Governor, the State Legislature, and the People of Alaska:

“Expanding Horizons” is the Alaska Aerospace Corporation’s 2009 annual report theme. There has never been a better opportunity for diversity and expansion in Alaska’s aerospace industry than right now. The Board of Directors and I are excited about the path that AAC is forging, exploring new opportunities, and refining on-going relationships and efforts.

As Board Chair, I am impressed with the organization’s ability to move quickly and adapt to the changing requirements of the aerospace industry. Leading, during this lean economic time, means making hard decisions and envisaging innovative plans that positions AAC to meet challenges and seize opportunities in the coming years.

Improving AAC’s posture in the aerospace industry requires the experience of top level management working in concert with Board members who provide a wide range of knowledge in the business and aerospace community. The Corporation’s Board of Directors has long had a goal of ensuring that a diversity of expertise is represented on the Board.

For this reason, I am pleased to announce that Dr. Ronald Segal has accepted an appointment from Governor Sean Parnell to the Board of Directors at Alaska Aerospace Corporation. Dr. Segal is the Vice President for Energy, Environment, and Applied Research at the Colorado State University Research Foundation, as well as the Woodward Professor of Systems Engineering at Colorado State University. He was formerly the United States Under Secretary of the Air Force, serving as the Department of Defense’s Executive Agent for Space. Dr. Segal served as the Director of Defense Research and Engineering and initiated the National Defense Education Program. He served in the U.S. Air Force and Air Force Reserves, retiring as a Major General. Previously, he was a NASA astronaut who flew two missions on Space Shuttle Discovery. We welcome the contributions he will provide to the corporation.

When I joined the AAC Board, I knew I was aligning myself with an incredible organization and my involvement has been tremendously rewarding. AAC is a company of capable people proud of the Corporation’s past and excited about the future. Above all, it is a company defined by the character and integrity of its employees. The year 2010 will bring exciting opportunities for AAC and Alaska. We are ready for the challenge.

Sincerely,  
Sharon E. Anderson

*Chief Executive Officer's and  
President & Chief Operating Officer's Letter*

To the Governor, the State Legislature and the People of Alaska:

As Alaska Aerospace Corporation strives to serve our customers, to build new infrastructure and market position, and to innovate and diversify our launch services, we have always keep paramount in our minds the importance of advancing our excellent reputation through our personal integrity, shared values, and through our consistently ethical and honest business conduct.

Leadership is important in a time when change and adaptation will mark AAC's future. We could not be prouder of the senior management team that is leading the company through this period of transformation. The team is a good mix of AAC best and brightest along with external perspectives, such as our highly knowledgeable Board of Directors, and it is second to none.

In addition to our successful launch services, AAC is finding ways to increase our services into other areas of the aerospace industry. The people of AAC continue to work hard to expand the horizons of our corporation, driven by our determination to be a strong industry competitor. AAC's accomplishments in 2009 increase our confidence in our ability to achieve the goal of rapid access to space and other goals we have set for 2010, positioning AAC for success in the years beyond. Our accomplishments will be attained through the cooperative efforts and combined resources of the people of our company and community.

Nowhere is our determination to expand more evident than in AAC's infrastructure development efforts. In response to customer's needs, AAC, with funds from the State of Alaska, is building a Rocket Motor Storage Facility and has a working plan for a third launch pad which allows AAC to accommodate multiple rapid launches from our Kodiak Launch Complex.

With space-based systems becoming an integral part of our world economy and our national defense, assured rapid access to space has never been more important. We are excited to say that the KLC has the capability to provide the rapid access to space and this capability will only improve and expand with our infrastructure additions.

Looking ahead to 2010, Alaska Aerospace will be providing services for two United States Air Force launches, working with the Missile Defense Agency on preliminary test planning, and continuing our research for National Oceanic and Atmospheric Administration (NOAA).

As you'll read throughout this report, we are achieving significant and sustainable results, accelerating our responsiveness to the ever changing aerospace industry, and gaining an outstanding name as an industry competitor.

Sincerely,

Dale Nash, Chief Executive Officer

Thomas Case, President & Chief Operating Officer

# *2009 In Review*

## **Launch Services**

Alaska Aerospace has been contracted to provide launch services for the United States Air Force (USAF) launches of TacSat-4 and STP-S26. These launches, initially scheduled for the fall of 2009, have been moved to the summer of 2010 because of changing Department of Defense mission priorities.

TacSat-4 is a Navy led joint mission to augment current satellite communications (SATCOM) capabilities and to advance Operationally Responsive Space (ORS) systems. The TacSat-4 mission was selected by a joint process with Army, Navy, Air Force, Marines and US Strategic Command. The TacSat-4 satellite provides multiple Ultra High Frequency (UHF) channels which can be used for communications. Its unique orbit augments geosynchronous SATCOM by providing near global, but not continuous, coverage including the high latitudes. TacSat-4 improves on current SATCOM by providing communications-on-the-move for existing radios without requiring antenna pointing, which increases the ability to operate in some interfered environments.

STP-S26 is a multi-payload launch that represents the 26th small launch vehicle mission in the Space Test Program's forty year history of flying Defense Department experiments. S26 will demonstrate a multi-payload capability on the Minotaur IV. The primary payload, STPSat-2, will include two Space Experiment Review Board (SERB) payloads: a space phenomenology experiment and an ocean data telemetry microsats link. S26 will also launch four SERB rideshare payloads including FastSat, a science and technology satellite developed by NASA. Included also is the Air Force Academy's newest cadet-built satellite, FalconSAT-5. After launch, FalconSAT-5 will be monitored and controlled by Academy cadet operators. FalconSAT is one of the Academy's capstone undergraduate systems engineering courses.

## **Unmanned Aerial Vehicle Studies**

In July of 2008, AAC received a grant from Mississippi State University (MSU) to assist in developing a concept of operations for National Oceanic and Atmospheric Administration (NOAA) Unmanned Aerial Systems (UAS). In July of 2009, MSU provided an additional grant for Phase II of the original scope of work. Phase II builds on AAC's work in Phase I and focuses on detailed studies of potential operational bases and payload/sensor options to be flown on the NOAA UAS

Under Phase II, AAC completed a site visit of Kennedy Space Center (KSC), Florida to evaluate the possibility of using a KSC runway as a UAS base. In the near future, AAC will visit to Grand Forks AFB, North Dakota, to learn how Customs and Border Protection operate their existing Predator-B fleet. AAC will also evaluate the Pacific Missile Range Facility in Hawaii and Naval Air Station Corpus Christi, Texas as other potential bases.

### **Range Safety Telemetry System (RSTS)**

The Alaska Aerospace Corporation (AAC) owns and operates a Range Safety and Telemetry System (RSTS). The prime purpose of this state-of-the-art system is to provide the range safety and telemetry functions necessary to track, receive, and process critical flight data during a missile launch. The RSTS is a quadruple redundant system comprised of two Mobile Operations Centers, two extended telemetry vans, four dual-purpose telemetry receiving transmitting antennas, and four omnidirectional transmitting antennas.

AAC initiated an approval process with the Missile Defense Agency (MDA) and the Federal Aviation Administration (FAA) to allow the RSTS to serve as the sole Range Safety System (RSS) for both government and commercial launches from the Kodiak Launch Complex (KLC). MDA selected the Pacific Range Support Team (PRST) to evaluate this request. The PRST is a coalition of the Department of Defense (DoD) and Commercial Test Ranges providing test planning and execution expertise/resources and range resource management in support of Ballistic Missile Defense System (BMDS) flight testing worldwide.

As part of the approval process, the PRST deployed a similar RSS to the KLC which operated in concert with the RSTS. MDA executed six launches between December 2004 and December 2008 at the KLC. In the first five MDA launches, the RSTS shadowed the PRST RSS and participated in proof of concept exercises.

After successfully executing these MDA launches, the RSTS was approved by MDA/PRST to serve as the sole RSS for future MDA launches at the KLC. AAC is also in the process of receiving a similar authorization from the FAA for the RSTS involving commercial launches. Once granted, this will be the first Safety Approval ever issued by the FAA for a commercial RSS.

### **RSTS Operator Training Program**

AAC spent approximately two years developing a comprehensive training program for the operators and technicians who work with the RSTS. As

part of this training program, AAC held the first RSTS operator Training Boot Camp to qualify new RSTS operators. These qualified operators will staff the RSTS in support of the USAF missions scheduled in 2010 and any new support opportunities outside of KLC which may present itself.

With this training program, AAC now has a documented mechanism for maintaining the proficiency of the RSTS operators and continuing the successful utilization of the RSTS going forward.

### **Radar System Upgrade**

AAC is required by the Federal Aviation Administration (FAA) to coordinate with Air Route Traffic Control Centers for air safety during launch campaigns. Previous Furuno Radars used by AAC had become obsolete and not able to meet FAA requirements. A new 30kW Solid State Detect Inc. Harrier™ Radar was purchased and installed to provide coverage that exceeds FAA's requirement of 20nM down range for aircraft. It also meets the requirements for coverage of surface vessel traffic. AAC anticipates success for this new capability.

### **New Enterprise Resource Planning System**

AAC is implementing an Enterprise Resource Planning System that incorporates a project scheduling and earned value management system. Many of the system design and development decisions have been made and implementation is under way. Initial system familiarization and training has taken place and AAC personnel are working within the system on their own to become more efficient prior to system testing. A parallel test with our current accounting system to verify accuracy is underway.

The Full system Go-Live date will be January 1, 2010. This new system will propel AAC into the modern world of Earned Value tracking and will make accounting for contracts, work orders, purchases, and inventory more efficient.

# *Expanding Our Horizons*

## Expanding Infrastructure

### Rocket Motor Storage Facility

Alaska is a beautiful and remote state. For many customers in the aerospace industry, the remoteness and rugged terrain can present complexity in the logistics of launching a rocket. To help meet motor transportation and storage challenges, AAC is constructing a Rocket Motor Storage Facility (RMSF) that will enable customers to ship rocket motor components with enough lead time to ensure a scheduled launch date is met.

The RMSF will also accommodate the shipping of multiple motor components. This will allow one customer to achieve multiple launches in a short period of time, or multiple customers to achieve consecutive launches in a short period of time. It also enables AAC to remain competitive with other ranges that do not have significant transportation challenges.

The RMSF Phase 1 & 2 project is progressing as planned. Both wing wall footers have been poured, the water line to the utility annex building has been installed, electrical and communication vaults along the road and down to the utility annex building have also been installed. The preparation work for pouring portal walls is on-going. The completion of two Earth Covered Magazines (ECM) is expected to be complete in the summer of 2010.

### Launch Pad 3

AAC's vision for the future is to provide the KLC to multiple customers simultaneously. This has not been viable in the past due to the close proximity of KLC's Launch Pad 1 and Launch Pad 2 which does not provide sufficient separation to process two missions concurrently.

AAC's continuing relationship with MDA, the company's commitment to developing a long-term relationship supporting Air Force programs, along with securing new business will require an additional launch pad and associated facilities. An additional launch pad will allow two launch customers to occupy the range simultaneously, doubling KLC's launch capabilities and helping to ensure AAC's continued growth and increased revenues. Additional staff may also be required to support the facilities and to meet the increased workload associated with expanding AAC's business base.



## **Expanding Orbits**

AAC's setting in Kodiak provides an excellent location to launch directly into Tundra and Molniya orbits.

Tundra orbit is a type of highly elliptical geosynchronous orbit with a high inclination (usually near 63.4°) and an orbital period of one sidereal day (almost 24 hours). A satellite placed in this orbit spends most of its time over a chosen area of the Earth, a phenomenon known as apogee dwell. The ground track of a satellite in a tundra orbit is a closed "figure-eight" lemniscate. A Tundra satellite constellation can provide constant coverage to an area the size of North America anywhere in the world.

Molniya orbits are conceptually similar to Tundra orbits and have the same inclination, but half the period (about 12 hours). A single Molniya orbit satellite can access the entire Arctic Circle for 7.5 hours a day with a 30° look angle.

Tundra and Molniya orbits are used to provide high latitude users with higher elevation angles than a geostationary orbit. Satellite launches into these orbits are currently provided by Russian spaceports. AAC hopes to capture a portion of the market for these types of orbits.

## **Expanding Business**

The success of AAC's RSTS has led to the consideration of using the RSTS at other locations outside of KLC including California, Hawaii, the Marquesas Islands in French Polynesia, and the Kwajalein Atoll. AAC has fielded numerous requests for information associated with deploying the RSTS.

One potential customer for using the RSTS outside of KLC is the United States Air Force (USAF). To ensure that the RSTS could meet the USAF's shipping requirements, it funded an RSTS Antenna Feasibility Study at the KLC where AAC and USAF personnel disassembled and containerized the RSTS antenna. At the conclusion of the feasibility study, AAC proved that the RSTS antennas could meet the USAF's shipping requirements.

Deployment of the RSTS to locations outside of KLC opens up a new potential revenue center for AAC when the RSTS is not being used to support launches from KLC.

## **Expanding Our Horizons**

AAC's long standing relationship with MDA has been for the launch of the STARS rocket. With the depletion of this rocket, MDA will be launching a new class of rockets to accommodate the changing national

defense environment. The new family of rockets will be viable for launch at KLC in 2013.

# *Alaska Aerospace Board of Directors*

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AAC is also expanding our business base by promoting our highly successful Range Safety and Telemetry System. This mobile system can be shipped to other ranges across the world to supplement an existing Range Safety System.