



Federal Aviation Administration
Alaskan Region

Capstone Program Management Office
801 B Street, Suite 300
Anchorage Alaska 99501

Capstone Quarterly Report

1st Quarter FY02

October - December 2001



Table of Contents

Capstone to Date	3
Spending Plan	9
Program Summary	10
Capstone Phase I Program Elements	14
1. Phase I Avionics	14
2. Obtain and Install Ground Infrastructure in Support of ADS-B	16
3. Micro-EARTS Adaptation	18
4. Coordinate/Obtain/Implement Flight Information Services (FIS)	20
5. Train Capstone participants	21
6. Obtain and Install Automated Weather Equipment	22
7. Conduct Safety and Human Factors Study	23
Capstone Phase II Program Elements	24
1. Phase II Avionics	24
2. Develop Ground Infrastructure to Support ADS-B Technology	27
3. Provide Weather Information in Support of Useable IFR Infrastructure	29
4. Develop Special GPS Approaches in Support of Useable IFR Infrastructure	31
5. Develop Special GPS Arrival and Departure Procedures in Support of Useable IFR Infrastructure	33
6. Develop Lower Altitudes for Existing Routes in Support of Useable IFR Infrastructure	35
7. Develop Ground Infrastructure for Surveillance of Mixed-Equipped Aircraft	37
8. Improve Communications Infrastructure	38
9. Air Traffic Services	39
10. Improve Safety of Airport Movement Areas via ADS-B Equipped Vehicles	40
11. Train Capstone Participants	42
12. Conduct Safety Study	43

Capstone to Date

Executive Summary

The tragedy of September 11 had imposing effects on the Capstone Program Office this first quarter of fiscal year 2002. Funding allocations were delayed, resources were stretched, and priorities were scrutinized as the nation reexamined the National Airspace System through the prism of September 11.

Although aviation security has understandably been the focus recently, safety of the system is still recognized as being paramount. The Capstone Program continues to make significant contributions to support the Federal Aviation Administration's mission to provide a safe, secure, and efficient airspace system. While initially, installation of ground based transceivers (GBT's) was delayed due to security concerns at locations that were to be collocated with Air Force minimally attended radar sites, installation work has since been resumed subject to Air Force approval.

The heightened emphasis on security will only complement rather than divert us from our mission priorities of safety and ATC modernization. Aviation is simply too important, too integral to Alaska's economy. It is right to be focused on security, but it is also right not to lose that sense of urgency to build and expand infrastructure. We in the Capstone Program recognize our responsibility and take our commitments seriously. We intend to honor them.

Some of the activities towards our goal of improving aviation safety and efficiency for the first quarter of fiscal year 2002 were:

October

- During the week of October 1, representatives from Johns Hopkins Applied Physics Laboratory visited the Capstone Program Office to explore ways the lab could support collection and analysis of Capstone's Automatic Dependent Surveillance-Broadcast (ADS-B) data. The laboratory has been under contract to the Safe Flight 21 Program for analysis of ADS-B datalink technologies. As a result of this visit, Johns Hopkins will be developing a prototype flight following program using developmental ADS-B data.
- During the week of October 1, representatives from Mitre Corporation met with personnel from Advancia Corporation who are working on documentation for the Capstone Communications and Control Server (CCCS) and remote maintenance monitoring (RMM) software.
- October 6 - 7, a Capstone Program display booth was operated at the Fairbanks Aviation North Expo. The display booth included two Capstone training simulators for attendees to operate and observe.
- On October 9, the new AWOS facilities at Upper Kalskag and St. Michael were dedicated in honor of

local residents who contributed largely to their communities. At Upper Kalskag the AWOS was dedicated to Paul Nicholas Kameroff, Sr., the first settler in the area. During his life, Mr. Kameroff owned and operated many commercial enterprises but he is most remembered for his generosity and Christian faith. The dedication ceremony, attended by over 100 people, included songs and a blessing by a group from his church. A potluck meal was held in the school he helped build in 1936. The AWOS facility at St. Michael was dedicated to Martin Andrews, Sr., a lifelong tribal resident of the Native Village of St. Michael. Mr. Andrews has been responsible for maintenance of the original airport and the new St. Michael airport since the early 1960's. Mr. Andrews and his wife attended the dedication ceremony along with representatives from the Village Council.

- October 10, a Capstone users meeting was held in Juneau. The Capstone team presented its plans for Phase II facilities and services and sought confirmation from the air carrier industry that these would meet their needs. Sensis Corporation delivered a briefing on multilateration technology that is being considered for the Juneau Airport, the Gastineau Channel, and the western approach area.
- October 12, the Capstone Overview Committee met to discuss Phase II plans for the Juneau area. The group was advised of higher than expected cost estimates for the possible implementation of

multilateration and the efforts underway to value engineer the program.

- October 15-19, an ICAO Aero Mobile Communications Panel (AMCP) Work Group C meeting was held in Anchorage. Members of this international work group visited the Anchorage ARTCC to receive briefings on the Capstone system. They also observed live ADS-B traffic on an air traffic control display and Flight Information Services initiated by the Capstone Communications and Control Server (CCCS). An informal reception was held at the Alaska Aviation Heritage Museum on Wednesday evening. The Work Group concluded its business session with a recommendation to the full AMCP that Standards and Recommended Practices (SARPS) should be developed for the digital datalink Universal Access Transceiver (UAT) that is used in the Capstone system architecture.
- The week of October 5, Capstone delivered a program briefing to the Helicopter Safety Advisory Conference (HSAC) and the Gulf of Mexico Working Group (GOMWG) in Houston, Texas. The HSAC was organized by the helicopter industry and its users in 1978 to identify critical safety issues related to offshore operations. The GOMWG was formed by FAA to improve safety in the Gulf's airspace. The Work Group is co-chaired by FAA, Mexico, and the Air Transport Association. Capstone personnel discussed current uses of ADS-B

service and multilateration technology for application in Juneau.

- October 22, 2001, a Capstone briefing was presented at the Public Transportation and Intelligent Transportation Systems Conference at the Captain Cook Hotel in Anchorage. Questions from attendees: "Will Capstone avionics be affordable for private aircraft owners?" and "In the aftermath of September 11, could FAA utilize ADS-B to enable flight surveillance for security purposes?" Capstone responded that once the UAT Minimum Operational Performance Specifications (MOPS) is completed by RTCA and a frequency is assigned, manufacturing competition should result in very reasonable avionics prices for interested aircraft owners. This is especially true if the avionics suite is purchased in stages. Capstone stated that FAA has no plans for mandatory equipage -- any such regulation would likely result from Congressional interest and direction similar to the agency's implementation of Traffic Alert and Collision Avoidance System (TCAS).
- October 31, 2001, a Capstone representative briefed the Helicopter Association International (HAI) in Maui, Hawaii, on key elements of the Capstone Program. The president of North Star Helicopters in Juneau, and Chair of the Helicopter Tour Operators Safety Group, had extended the invitation to participate.
- As of the end of October, there were 136 completed Capstone avionics equipment suites installed for

Phase I and 8 installations were in progress.

November

- November 1, 2001, John Hallinan received the Secretary of Transportation's Award for Meritorious Achievement in Washington, D.C. John was nominated and recognized for his leadership and role as manager of the Capstone Program.
- November 5 - 9, 2001, the Capstone Program Office staffed a display booth during the Air Traffic Control Association convention in Washington, D.C. Simulators were demonstrated at the booth and informational briefings were given to those interested.
- November 15, a Capstone Industry meeting was held in Ketchikan to discuss the program and solicit input from aircraft operators. The meeting validated input previously received from Juneau operators, that is, interest in a usable IFR system together with supporting avionics.
- As of the end of November, there were 144 completed Capstone avionics equipment suites installed for Phase I and 6 installations were in progress.

December

- The Capstone Program Office forwarded to RTCA the FAA's recommended requirements for the ADS-B Minimum Aviation System Performance Standards (MASPS) (DO-242). The recommended

requirements addressed IDENT, distinguishing flights under air traffic control, altitude function off, basic data, stop squawk, emergency, hijack, no radio, VFR (1200), and stand-by features.

- On December 4, FAA representatives met to discuss requirements for communications improvements for Southeast Alaska, Phase II. The fiscal year 2001 appropriations included \$5 million to begin the Capstone Program in southeast Alaska and to improve communications. Alaska Airlines representatives also confirmed the need to improve communications in the Stephens Passage area and suggested our study include a potential site at Five Fingers where they believed FAA and the Coast Guard previously operated facilities.
- December 5, Chelton Flight Systems of Boise, Idaho, was down selected to perform a demonstration of their proposed Navigation Display System and Flight Display System for use in Phase II. The tentative schedule for Chelton's demonstration is February, 2002. A production contract will be signed pending successful demonstration of the equipment's capabilities. There has not yet been a selection for the Stand-alone ADS-B System. That evaluation is ongoing.
- December 6, a representative of the Capstone Program Office met with Nicholas Sabatini, FAA Associate Administrator for Regulation and Certification, and representatives of the Flight Standards organization in Headquarters to discuss proposed

stand-alone GPS navigation capabilities.

- December 7, Capstone Program Decision Paper No. 22 was approved to document the plan for installation and implementation of Ground Broadcast Transceivers (GBT's) in the Yukon-Kuskokwim Delta area. The decision paper states that until the Capstone Communications and Control Server (CCCS) is certified in July 2002, only commissioned GBT's will be used for air traffic control functions. In the mean time, delivery of important Flight Information Services (FIS) and flight monitoring to participating air carriers can be accomplished using installed GBT's that are not yet commissioned. The decision paper strikes a balance between operational air traffic control ADS-B surveillance benefits and the air carriers' need for weather, flight information, and flight tracking services.
- The Site Summit Ground Broadcast Transceiver (GBT) is installed and operating to provide ADS-B reception and to broadcast Flight Information Services (FIS) in the Anchorage area. It is being used in conjunction with the Capstone developmental test bed at Anchorage ARTCC.
- December 11 – 12, Capstone team members met with the ASDE-X product team to discuss antenna sites, system performance, benefits, costs, and associated risks of installing multilateration equipment for airborne surveillance. A possible concept is to initially install the

system along the Gastineau Channel and eventually to expand coverage to include surveillance of the airport surface and the west approach area. However, requirements were not yet sufficiently defined to incorporate multilateration technology, under the ASDE-X contract, into the Capstone Program at Juneau. As a result of this meeting, Capstone's immediate responsibility is to re-coordinate and document firm operational requirements and deliver essential data to the ADSE-X team for its reconsideration.

- December 11 – 14, Capstone representatives demonstrated UPS AT avionics simulators at the National Business Aircraft Association (NBAA) convention in New Orleans. Discussions with aircraft operators regarding phase II avionics capabilities were conducted.
- December 17, Dr. Yadamsuren, Mongolia's Chief Meteorology Inspector, and Charlene Derry, International Affairs, received a Capstone briefing. Dr. Yadamsuren was particularly interested in weather services delivered by Capstone and explained that Mongolia plans to utilize a VDL-4 datalink to broadcast weather information. A trip to Bethel for a demonstration flight to a village airport with an operational AWOS/Weather Camera facility was planned for December 18, but was canceled due to weather conditions.
- December 18, recruitment for the NAS Integration Program Specialist position in the Capstone Office was announced. The incumbent will be primarily responsible for coordinating

the transition of Capstone systems and equipment into the operational National Airspace System.

- December 21, the Capstone Program Office hosted a Holiday open house for family, friends, and associates.
- As of the end of December, there were 144 completed Capstone avionics equipment suites installed for Phase II.

Watch Items

- Bethel ATCT ADS-B Display: The Committee Report for the FAA's Appropriation Bill for fiscal year 2002 has including "funding to install a Capstone display in the Bethel, Alaska tower". The Capstone display unit is intended to enhance air traffic situational awareness for the VFR controllers by indicating the position of Capstone ADS-B equipped aircraft. Installation of this unit is pending a review by an Air Traffic evaluation team and is tentatively scheduled for no earlier than February. The evaluation team's subsequent report/recommendation is anticipated within approximately 5 weeks of their review.
- MOPS: RTCA is in the process of developing Minimum Operational Performance Specifications (MOPS) for the Universal Access Transceiver (UAT). The final MOPS document is scheduled to be completed in June 2002. Both the Capstone Phase II Avionics and the Capstone Phase II GBT's will need to be in compliance with the UAT MOPS. In addition,

once the MOPS is completed by RTCA and a frequency is assigned, manufacturing competition should result in very reasonable avionics prices for interested aircraft owners.

- Phase II Avionics: At this time, there has not been a down select of a vendor to demonstrate the Stand-Alone Universal Access Transceiver (UAT). Evaluation of a vendor for that requirement is still in progress.

Spend Plan for Fiscal Year 2002

F&E Funding as of December 31, 2001

Spend Plan	1 st Quarter 2002	2 nd Quarter 2002*	3 rd Quarter 2002*	4 th Quarter 2002*	Totals
Avionics	\$.0M	\$.0M	\$5.000M	\$2.739M	\$7.739M
AWOS/AWSS	\$.0M	.041M	\$.893M	\$.893M	\$1.827M
Automation	\$.0M	\$.0M	\$.285M	\$.285M	\$.570M
CPO/Technical Support	\$.0M	\$.172M	\$.736M	\$.735M	\$1.643M
GBT's/Ground Systems	\$.0M	\$.088M	\$2.255M	\$2.256M	\$4.599M
AT Services	\$.0M	\$.0M	\$.480M	\$.480M	\$.960M
INFOSEC	\$.0M	\$.0M	\$.480M	\$.480M	\$.960M
Management Reserves	\$.0M	\$.0M	\$1.366M	\$1.365M	\$2.731M
Totals	\$.0M	\$.301M	\$11.495M	\$9.233M	\$21.029M
Travel	\$55K	\$46K	\$31K	\$30K	\$.162M

Capstone Fiscal Year 2002 Spend Plan:

- 1) 1st Quarter 2002: Funding not received as of 12/31/01.
- 2) 2nd Quarter 2002*: Estimated \$41K to establish AWSS at three sites in Southeast Alaska, \$88K to finish Phase I ground stations, \$112K for UAA contract extension for work on Phase I, and \$60K for contract support and program office expenses.
- 3) 3rd Quarter 2002*: Estimated \$4.933M for Phase II avionics contract; \$250K for Surface Vehicles contract; \$50K for Satellite Proof of Concept; \$2.25M for finishing Phase I GBT's, improving communications in Southeast Alaska, CCCS work and beginning Phase II GBT surveys.
- 4) 4th Quarter 2002*: No estimates at this time.

*Estimates

Program Summary

A. Phase I

1. Phase I Avionics

- | | |
|--|-------------|
| a. Coordinate and complete a Request for Information (RFI) | Completed |
| b. Coordinate and complete a Request for Offer (RFO) | Completed |
| c. Down select prospective vendor | Completed |
| d. Initial operational capability demonstration | Completed |
| e. Contract awarded | Completed |
| f. Install equipment | In Progress |

2. Obtain and Install Ground Infrastructure to Support ADS-B

- | | |
|--|-------------|
| a. Coordinate and complete a Request for Information (RFI) | Completed |
| b. Coordinate/evaluate purchase of a Mitre Ground Station | Cancelled |
| c. Coordinate and complete a Request for Offer (RFO) | Completed |
| d. Down select prospective vendor | Completed |
| e. Initial operational capability demonstration | Completed |
| f. Contract awarded | Completed |
| g. Install Ground Stations | In Progress |

3. Micro-EARTS Adaptation

- | | |
|--|-------------|
| a. Procure modification to Micro-EARTS | Completed |
| b. Conduct BETA Demo | Completed |
| c. Conduct design reviews | Completed |
| d. Certification | In Progress |

4. Coordinate/Obtain/Implement Flight Information Services (FIS)

- | | |
|----------------------------------|-----------|
| a. National contractor selection | Completed |
| b. Select contractor | Completed |

5. Train Capstone Participants

- | | |
|-------------------------------|-------------|
| a. Complete statement of work | Completed |
| b. Issue contract | Completed |
| c. Conduct Training | In Progress |

6. Obtain and Install Automated Weather Equipment

- | | |
|--|-------------|
| a. Select prospective sites | Completed |
| b. Perform site surveys | Completed |
| c. Procure the automated weather equipment | Completed |
| d. Install automated weather equipment | In Progress |

7. Conduct Safety and Human Factors Study

- | | |
|-------------------------------|-------------|
| a. Complete statement of work | Completed |
| b. Issue contract | Completed |
| c. Conduct Study | In Progress |

B. Phase II

1. Phase II Avionics

- | | |
|--|---------------------|
| a. Coordinate and complete a Request for Information (RFI) | Completed |
| b. Coordinate and complete a Request for Offer (RFO) | Completed |
| c. Down select prospective vendor | Partially Completed |
| d. Conduct Initial operational capability demonstration | Upcoming |
| e. Award contract to deliver avionics | Contingent |
| f. Award contract for Install Program Assessment | In progress |
| g. Receive Install Program Assessment Report | Contingent |
| h. Develop Users Agreement | Needed |
| i. Develop installation program | Contingent |
| j. Select participants and execute Users Agreement | Contingent |
| k. Receive avionics equipment | Contingent |
| l. Install avionics equipment | Contingent |

2. Develop Ground Infrastructure to Support ADS-B

- | | |
|--|-------------|
| a. Determine GBT locations | In Progress |
| b. Coordinate and complete Request for Information (RFI) | Needed |
| c. Prepare GBT specification | Needed |
| d. Coordinate/Complete a Request for Proposal | Contingent |
| e. Award installation contract | Contingent |
| f. Install GBT's | Contingent |
| g. Commission GBT's | Contingent |

3. Provide Weather Information

- | | |
|---|-------------|
| a. Identify automated weather sites | In Progress |
| b. Perform site surveys | Completed |
| c. Purchase automated weather equipment | Completed |
| d. Install automated weather equipment | Completed |
| e. Commission automated weather equipment | In Progress |

4. Develop Special GPS Approaches

- | | |
|---|-------------|
| a. Identify locations/airports for approaches | Completed |
| b. Obtain IFR airport designation | Completed |
| c. Survey airports/runways | In Progress |
| d. AVN conduct feasibility study | Completed |
| e. Form Tiger Team | Needed |

- f. AVN develop approach Needed
- g. Perform flight inspections Contingent
- h. Obtain AFS approval Contingent
- i. Chart approach(s) Contingent

5. Develop Special GPS Arrival and Departure Procedures

- a. Identify locations/airports for arrival/departure procedures Completed
- b. Obtain IFR airport designation Completed
- c. Survey airports/runways In Progress
- d. AVN conduct feasibility study Completed
- e. Form Tiger Team Needed
- f. AVN develop procedure(s) Needed
- g. Perform flight inspections Contingent
- h. Obtain AFS approval Contingent
- i. Chart approach(s) Contingent

6. Develop Lower Altitudes for Existing Routes

- a. Identify routes for lower altitudes Completed
- b. AVN develop pilot charting specifications In Progress
- c. AFS develop policy guidance Needed
- d. AVN conduct feasibility study Completed
- e. Form Tiger Team Needed
- f. AVN develop route(s) Needed
- g. Perform flight inspections Contingent
- h. Obtain AFS approval Contingent
- i. Chart approach(s) Contingent

7. Develop Ground Infrastructure for Surveillance of Mixed-Equipped Aircraft

- a. Air Traffic identify requirement Needed
- b. Explore avenues for surveillance of mixed-equipped AC Contingent
- c. Additional action Contingent

8. Improve Communications Infrastructure

- a. Define requirements In Progress
- b. Identify locations and type equipment needed In Progress
- c. Purchase equipment Contingent
- d. Install equipment Contingent
- e. Commission equipment Contingent

9. Air Traffic Control Services

- | | |
|--------------------------------------|------------|
| a. Air Traffic identify requirements | Needed |
| b. Additional action | Contingent |

10. Improve Safety of Airport Movement Areas via ADS-B

- | | |
|--|-------------|
| a. Conduct feasibility discussions | In Progress |
| b. Obtain design information | In Progress |
| c. Prepare and execute Capstone Decision Paper | Contingent |
| d. Develop vehicle ADS-B transmitter specifications | Contingent |
| e. Award contract to deliver vehicle ADS-B transmitter | Contingent |
| f. Receive vehicle ADS-B transmitters | Contingent |
| g. Install and test vehicle ADS-B transmitters | Contingent |
| h. Purchase/install/test ADS-B receivers, display, and GBT | Contingent |

11. Train Capstone Participants

- | | |
|-----------------------------------|------------|
| a. Complete the statement of work | Completed |
| b. Issue contract | Completed |
| c. Conduct training | Contingent |

12. Conduct Safety Analysis Study

- | | |
|--------------------------------|-------------|
| a. Develop a statement of work | Completed |
| b. Issue contract | Completed |
| c. Conduct study | In Progress |
| d. Receive report(s) | Contingent |

1. Phase I Avionics

Objective

To equip up to 150 aircraft used by the commercial operators in the Yukon-Kuskokwim delta region of Alaska with a government-furnished Global Positioning System (GPS) based avionics package.

Purpose

A significant number of mid-air collisions, controlled flight into terrain incidents, and weather-related accidents can be avoided with new technologies incorporated into the Capstone avionics package. The Alaskan Region's "Capstone Program" is an accelerated effort to improve aviation safety and efficiency through installation of government-furnished Global Positioning System (GPS)-based avionics and data link communications suites in most commercial aircraft serving the Yukon-Kuskokwim delta area. Capstone-equipped aircraft will be used initially to validate three of the nine high priority Free Flight Operational Enhancements requested by RTCA.

- Flight Information Services (FIS)
- Cost Effective Controlled Flight Into Terrain (CFIT) Avoidance
- Enhanced See and Avoid

The Capstone program will provide real world information and experience that will provide enhanced safety and operational capabilities.

Progress/Outcomes

A. Coordinate and complete a Request For Information (RFI).

Completed - 1st Quarter FY99: The Alaskan Region's Logistics Division published in the Commerce Business Daily a "Request for Information (RFI)." The RFI publicly announced to interested avionics vendors the FAA's proposed Capstone Program and requested submission of information on their products, services, and capabilities which are currently available, to meet the needs for the Capstone program. Information provided by the five vendors who responded will be considered as the FAA prepares performance specifications for Capstone Program avionics and ground transceiver equipment.

B. Coordinate and complete a Request for Offer (RFO).

Completed - 2nd Quarter FY99: The Alaskan Region's Logistics Division completed the RFO. The announcement was made on the internet March 22, 1999. The RFO will close April 26, 1999. The Request for Proposals (RFP) for avionics suites will be published in hard copy controlled by the Logistics Division. Standard performance specifications common to the avionics industry are being utilized.

C. Down select prospective vendor.

Completed - 3rd Quarter FY99: The Avionics RFO closed April 26, 1999. UPS Aviation Technologies (formerly II Morrow, Inc), an Oregon based subsidiary of United Parcel Service was down selected. UPS AT will be required to produce at least two sets of installed avionics (in aircraft provided by UPS AT), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in August 1999. Following a successful flight demonstration, a production contract will be awarded. The number of avionics suites purchased, up to a maximum of 200, will be based on the total available budget of \$4 million. It is anticipated approximately 150 units will actually be procured.

D. Conduct initial operational capability demonstration.

Completed - 4th Quarter FY99: An initial operational capability demonstration was completed on August 25, 1999. UPS AT, using a company-owned Beechcraft King Air airplane and a specially equipped Cessna Model 208 Caravan furnished by PenAir, UPS AT, demonstrated that its proposed Global Positioning System (GPS) navigation unit, multi-function cockpit display (MFD), and datalink radio system would meet FAA performance specifications for the Capstone Program.

E. Award contract.

Completed - 4th Quarter FY99: A determination was made that FAA specifications were met and a contract was awarded on September 13th, 1999. The contract was for Capstone avionics systems, installation kits, terrain databases, ground-based transceivers, an avionics training simulator and training assistance.

F. Install equipment.

In Progress: One hundred thirty-five (135) aircraft have been installed with Capstone avionics suites and 9 installations are in-progress.

2. Obtain and Install Ground Infrastructure to Support ADS-B

Objective

To install ADS-B ground stations at up to twelve (12) locations in the Yukon-Kuskokwim delta region of Alaska.

Purpose

To provide enhanced see and avoid information, each ADS-B equipped aircraft broadcasts its precise position in space via a digital datalink along with other data, including airspeed, altitude and whether the aircraft is turning, climbing or descending. This provides other aircraft, as well as ground facilities that have ADS-B equipment a much more accurate depiction of air traffic than radar can provide. To provide the digital datalink capability in a cost-effective manner requires the installation of ground based transceivers.

Progress/Outcomes

A. Coordinate and complete a Request For Information (RFI).

Completed - 1st Quarter FY99: The Alaskan Region's Logistics Division published in the Commerce Business Daily a "Request for Information (RFI)." The RFI publicly announced to interested avionics vendors the FAA's proposed Capstone Program and requested submission of information on their products, services, and capabilities which are currently available, to meet the needs for the Capstone program. Information provided by the five vendors who responded will be considered as the FAA prepares performance specifications for Capstone Program avionics and ground transceiver equipment.

B. Coordinate and evaluate purchase of a Mitre Ground Station.

Canceled - 4th Quarter FY99: The purchase of the Mitre ground station has been cancelled. The proposed vendor ground station and datalink infrastructure does not require an additional Mitre ground station.

C. Coordinate and complete a Request for Offer (RFO) for ground stations.

Completed – 2nd Quarter FY99: The Alaskan Region's Logistics Division completed the RFO. The announcement was made on the internet March 22, 1999. The RFO will close April 26, 1999. The Request for Proposals (RFP) for avionics suites will be published in hard copy controlled by the Logistics Division. After an initial bidding period, FAA will accept written proposals for evaluation. An independent team will then select the best apparent offer based on technical qualifications and cost considerations using previously documented objective selection criteria. The number of ground stations allowed to be purchased as a separate line item under the Avionics contract includes a minimum of 12 and maximum of 50 sets if the line item is exercised. The apparent successful vendor will be required to produce at least two sets of installed avionics (in

aircraft provided by the manufacturer), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in July 1999. Following a successful demonstration, the decision to order ground stations from the Avionics vendor will be made. The Avionics RFP will include a delivery line item for data link ground stations compatible with the avionics. FAA may procure all necessary units from the vendor, or purchase some or all from another source, with cost being the primary consideration. Additional units beyond the 12 immediately required may be procured from the vendor if it is determined advantageous to FAA and if funds become available.

D. Down select prospective vendor.

Completed – 3rd Quarter FY99: UPS Aviation Technologies (formerly II Morrow, Inc), an Oregon based subsidiary of United Parcel Service was down selected. UPS AT will be required to produce at least two sets of installed avionics (in aircraft provided by UPS AT), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in August 1999. Following a successful flight demonstration, a production contract will be awarded. FAA may procure all necessary units from the vendor, or purchase some or all from another source, with cost being the primary consideration. Additional units beyond the 12 immediately required may be procured if it is determined advantageous to FAA and if funds become available.

E. Conduct initial operational capability demonstration.

Completed – 4th Quarter FY99: An initial operational capability demonstration was completed on August 25, 1999. UPS AT, using a company-owned Beechcraft King Air airplane and a specially equipped Cessna Model 208 Caravan furnished by PenAir, UPS AT, demonstrated that its proposed ground station system would meet FAA performance specifications for the Capstone Program.

F. Award contract.

Completed – 4th Quarter FY99: After analyzing the data from the initial operational capability demonstration, a determination was made that FAA specifications were met and a contract for the ground stations was awarded on September 13, 1999.

G. Install ground stations.

In Progress: The Site Summit GBT was installed in December 2001. The primary Bethel GBT site remains the only operational site with Site Summit, Aniak, St. Mary's, Cape Newenham, and Cape Romanzof being installed and providing information through the developmental system. Sparrevohn, Tatalina, King Salmon, Dillingham, and Unalakleet still remain to be installed.

3. Micro-EARTS Adaptation

Objective

Adapt the Micro-EARTS at the Anchorage ARTCC to receive and process ADS-B position reports and fuse radar targets for display to air traffic controllers and pilots.

Purpose

To allow pilots of Capstone-equipped aircraft to see radar targets for all nearby aircraft as well as ADS-B equipped aircraft position reports and radar targets via Traffic Information Service-Broadcast (TIS-B) for all nearby traffic on their multiple function display (MFD). The Micro-EARTS at the Anchorage ARTCC is being adapted to receive and process ADS-B position reports and fuse radar targets for display to air traffic controllers and pilots.

Progress/Outcomes

A. Procure and install modification to Micro-EARTS.

Completed – 3rd Quarter FY99: Lockheed-Martin Corporation representatives installed the Capstone Micro-EARTS modification during April in preparation of the Beta-demonstration. This modification fused radar targets for display to air traffic controllers. However, the fused ADS-B/radar targets are not available for display to pilots.

B. Conduct beta demonstration.

Completed – 3rd Quarter FY99: The modification for display to controllers was successfully demonstrated during the week of April 19 and again on May 18-19. Radar targets were fused with ADS position reports and displayed on remote displays. Following testing, this capability is expected to reach Operational Readiness Demonstration by August 2000. Again, this demonstration did not include display to pilots.

C. Design reviews.

Completed – 3rd Quarter FY00: Design reviews for the modification to display targets to controllers were completed by AOS in May 2000. Software was delivered and installed in the Anchorage ARTCC in June. Again, this review did not include display to pilots.

D. Certification.

Completed – 3rd Quarter FY00: Certification was accomplished for receiving and processing ADS-B position reports and fusing radar targets for display to air traffic controllers.

In Progress: The capability to receive and process ADS-B position reports and fuse radar targets for display to the pilots in the cockpit has not been resolved due to a number of issues. There is ongoing discussion if this capability can be provided through either the operational or developmental Micro-EARTS and what additional hardware and software changes are required to accomplish this, much of which is unfunded at this time.

4. Coordinate/Obtain/Implement Flight Information Services (FIS)

Objective

To work in conjunction with AND-700 to obtain and field FIS.

Purpose

There is a significant amount of data in the National Airspace System that, if the pilot could have access to it in the cockpit, would make the flight safer through improved situational awareness (e.g., weather information) or more cost effective (e.g., knowledge of special use airspace restrictions). Without this information the pilot faces uncertain weather hazards and other operational inefficiencies. Capstone will use the Flight Information System (FIS) to receive current and forecasted weather and weather-related information as well as the status of SUAs. The enhanced weather products will be available to pilots and controllers, allowing them to share the same situational awareness. The information will be displayed graphically to the pilot. Expected benefits: increased availability of flight services, increased timeliness and quality of data on weather and system status, increased access to airspace, and reduced flight times and distance.

Progress/Outcomes

A. National contractor selection.

Completed – 4th Quarter FY99: On July 28, 1999 ARNAV Systems, Incorporated and NavRadio Corporation were selected as the national Flight Information Services Data Link (FISDL) service providers by headquarters. We will be examining the products and services offered by these vendors to determine which might be suitable for the commercial operators in the Capstone service area.

B. Select contractor.

Completed – 4th Quarter FY00: FIS installed at the Anchorage ZAN and is operational on the developmental system at Bethel and Anchorage.

5. Train Capstone Participants

Objective

To ensure all participants in the Capstone program are properly trained on the Capstone avionics.

Purpose

To ensure the Capstone avionics equipment is utilized properly and to the fullest to achieve the greatest benefit to enhanced safety and operational capabilities all participants must be trained.

Progress/Outcomes

A. Complete the statement of work.

Completed – 3rd Quarter FY99: The contracting officer has issued the package to UAA and received their response. It is anticipated that the contract will be awarded during the FY99 fourth quarter.

B. Issue contract.

Completed – 4th Quarter FY99: The University of Alaska has been awarded a contract to deliver a pilot training program for the Capstone equipment and to conduct Capstone participant training.

C. Conduct training.

In Progress: UAA continues to conduct training as new Capstone participants are added.

6. Obtain and Install Automated Weather Equipment

Objective

To obtain and install Automated Weather Observing Equipment at up to 10 sites in the Capstone area.

Purpose

To assist in providing weather information to accomplish IFR en route and landings at Capstone area airports and to enable the use of the, up to eighteen, new GPS approaches requires current weather information be available. The weather observation equipment will meet at least the minimum functionality required by the Federal Aviation Regulations to support an instrument approach procedure for commercial operators. Weather sensors will provide the following observations: (a) wind speed, direction, and gusts; (b) altimeter setting; (c) temperature and dew point; (d) cloud height and sky cover; and (e) visibility. The equipment will provide an automatic radio broadcast of observations and have the capability to provide remote weather observations via a telephone line or connection to Service A.

Progress/Outcomes

A. Select prospective sites.

Completed – 1st Quarter FY99: The Industry Council has selected the following ten (10) villages as prospective sites for installation of automated weather equipment; Kipnuk, Platinum, Scammon Bay, Holy Cross, Kwigillingok, Kalskag, Mountain Village, Russian Mission, St. Michael, and Koliganek. Pilot Point was later selected as a site in lieu of Kwigillingok.

B. Perform site surveys.

Completed – 2nd Quarter FY00: All site surveys have been completed.

C. Procure the automated weather equipment.

Completed – 3rd Quarter FY99: Ten equipment shelters were purchased and ten AWOS III facilities were purchased from Qualimetrics, Inc.

D. Install automated weather equipment.

In Progress: Nine of the original 10 AWOS sites have been installed. Pilot Point is still the only site still remaining to be installed. Of the nine sites installed, Kalskag, Holy Cross, Kipnuk, Koliganek, Mountain Village, Platinum, Russian Mission, and St Michael are operational. Scammon Bay is awaiting commissioning before becoming operational.

7. Conduct Safety and Human Factors Study

Objective

To accomplish independent documentation, measurement, and reporting of the Capstone Program.

Purpose

A major “Capstone” objective is to improve safety in Alaska while offering efficiencies to operators. Key to the Capstones program’s overall success is the need conduct an independent evaluation of system safety improvements and to document the user benefits.

Progress/Outcomes

A. Complete the statement of work and issue contract.

Completed – 3rd Quarter FY99: The contracting officer has issued the package to UAA and received their response. It is anticipated that the contract will be led during the FY99 fourth quarter.

B. Issue contract.

Completed – 4th Quarter FY99: The University of Alaska has been contracted to conduct an independent analysis of safety improvements related to the Capstone program.

C. Conduct study.

In Progress: UAA has obtained and is analyzing tower data on Special VFR operations to provide a base from which to measure the effect of ADS-B on traffic movement in the Capstone area. The joint NIOSH/ISER survey was accomplished during this quarter. The 2001 annual Safety Study Report is due January 2002.

1. Phase II Avionics

Objective

To equip up to 200 aircraft used by operators in the Southeast region of Alaska with a government-furnished, Wide Area Augmentation System (WAAS) capable avionics package that includes a minimum operational performance specification (MOPS) compliant Universal Access Transceiver (UAT) broadcasting ADS-B.

Purpose

A significant number of mid-air collisions, controlled flight into terrain incidents, and weather-related accidents can be avoided with new technologies incorporated into the Capstone avionics package. The intent of the avionics for Phase II is to reduce pilot workload, increase pilot situational awareness, and increase navigational performance during IFR operations. The Phase II avionics package is planned to include the following functions:

- Display ADS-B air-to-air traffic targets on a multi-function display (MFD) and primary flight display (PFD) when appropriate. Traffic warnings will also be provided.
- Display terrain information. The system will include terrain alerting and warning system (TAWS) that meets TSO-151a, Class B.
- Display FIS-B information (text and graphics).
- For selected aircraft, display primary flight information (pitch attitude, roll attitude, heading, track angle, flight path or velocity vector, rate of climb, airspeed, etc.).

Progress/Outcomes

A. Coordinate and complete a Request For Information (RFI).

Completed – 2nd Quarter FY01: The RFI was published in March 2001. Information pertaining to products, services, capabilities, equipment, and technologies that Capstone is interested in for the Phase II avionics package was obtained and used in preparation of the Request for Offer.

B. Coordinate and complete a Request for Offer (RFO).

Completed - 4th Quarter FY01: The RFO announcement was made July 2001 and closed September 2001. These offers were reviewed and considered for selecting a vendor to demonstrate their product's capabilities.

C. Down select prospective vendor.

Partially Completed – 1st Quarter FY02: Chelton Flight Systems of Boise, Idaho, was been down-selected to perform an operational demonstration of their proposed Navigation Display System and Flight Display System, in accordance with the requirements of our Request for Proposal DTFA04-01-R-30060.

At this time, there has not been a down select of a vendor to demonstrate the Stand-Alone Universal Access Transceiver (UAT). Evaluation of a vendor for that requirement is still in progress.

D. Conduct Initial operational capability demonstration.

Upcoming – 2nd Quarter FY02: Demonstration of the Chelton navigation display system and flight display system is tentatively scheduled for February 2002.

A demonstration of the stand alone UAT is contingent on the down select of a prospective vendor.

E. Award contract to deliver avionics.

Contingent on successful demonstration.

F. Award contract for Install Program Assessment.

In progress: To effectively manage the avionics installation phase of the Capstone Program, the FAA will obtain an appraisal of installation capabilities in Juneau, an installation cost analysis and reimbursement recommendation for typical installations, and a comprehensive installation plan. This assessment must demonstrate how to accomplish the avionics installation program as safely, efficiently, and expeditiously as possible at a fair and reasonable cost. A contract will be awarded to accomplish the assessment.

G. Receive Install Program Assessment Report

Contingent on contract award mentioned in item F above.

H. Develop Users Agreement

Needed.

I. Develop installation program

Contingent on contract award mentioned in item F above.

J. Select participants and execute Users Agreement

Contingent on contract award mentioned in item F above.

K. Receive avionics equipment

Contingent on contract award mentioned in E above.

L. Install avionics equipment.

Contingent on contract award mentioned in E above.

2. Develop Ground Infrastructure to Support ADS-B Technology

Objective

To provide the digital datalink capability in a cost-effective manner requires the installation of ground based transceivers (GBT's).

Purpose

GBT's provide a means for receiving and transmitting data for use by controllers and aircraft. To provide enhanced see and avoid information, each ADS-B equipped aircraft broadcasts its precise position in space via a digital datalink along with other data, including airspeed, altitude and whether the aircraft is turning, climbing or descending. This provides other aircraft, as well as ground facilities that have ADS-B equipment a much more accurate depiction of air traffic than radar can provide. GBT's will also provide uplink broadcast of FIS-B and TIS-B information to the aircraft, once these services are available.

Progress/Outcomes

A. Determine GBT locations.

In Progress: GBT's will be initially installed in the immediate Juneau area with others to follow as coverage and site analyses are completed. Site analysis is currently being accomplished.

B. Coordinate and complete a Request For Information (RFI).

Needed.

C. Prepare GBT specification.

Needed.

D. Coordinate and complete a Request for Proposal (RFP) for purchase of new ground stations.

Contingent on above results.

E. Award installation contract.

Contingent on above results.

F. Install GBT's.

Contingent on above results.

G. Commission GBT's.

Contingent on above results.

3. Provide Weather Information in Support of Useable IFR Infrastructure

Objective

To obtain and install Automated Weather Observing Equipment at sites in the Capstone Phase II Program area.

Purpose

To provide weather information for use in accomplishing IFR operations at Capstone area airports. Use of GPS approaches requires current weather information be available. The weather observation equipment will meet at least the minimum functionality required by the Federal Aviation Regulations to support an instrument approach procedure for commercial operators. Weather sensors will provide the following observations: (a) wind speed, direction, and gusts; (b) altimeter setting; (c) temperature and dew point; (d) cloud height and sky cover; and (e) visibility. The equipment will provide an automatic radio broadcast of observations and have the capability to provide remote weather observations via a telephone line or connection to Service A.

Progress/Outcomes

A. Identify automated weather sites.

In Progress: The Industry Council recommended a list of airports to be equipped with weather services. This recommendation was based on a review of all Alaskan airports which are currently limited to VFR service and considered aspects such as population of the community served, enplanements from the airport, and proximity to roads or other IFR airports. Currently, Hoonah is the only airport from the list that falls within the Capstone Phase II Program area. However, additional sites will be considered as development of a “Useable IFR Infrastructure” matures.

B. Perform site surveys.

Completed: The Hoonah site survey has been completed.

C. Purchase automated weather equipment.

Completed: The automated weather equipment has been purchased for Hoonah.

D. Install automated weather equipment.

Completed – 4th Quarter FY01: The Hoonah automated weather equipment was installed and JAI'd in July 2001.

E. Commission automated weather equipment.

In Progress: There were no major exceptions during JAI and the site is awaiting certification and commissioning.

4. Develop Special GPS Approaches in Support of Useable IFR Infrastructure

<p>Objective</p> <p>To develop special GPS approaches to remote airports.</p>
<p>Purpose</p> <p>To improve low visibility terminal operations and access to remote airports.</p>
<p>Progress/Outcomes</p> <p>A. Identify locations/airports for approaches.</p> <p><u>Completed – 1st Quarter FY02:</u> The initial Phase II sites identified for approaches are: Hoonah, Haines, and Gustavus*.</p> <p>*A public approach is in the normal process of being developed for Gustavus.</p> <p>B. Obtain IFR airport designation.</p> <p><u>Completed:</u> IFR airport designation has been obtained for Hoonah, Haines, and Gustavus.</p> <p>C. Survey airports/runways.</p> <p><u>In Progress:</u> A detailed survey is needed for Hoonah and Haines. It is believed that survey requirements have been met for Gustavus.</p> <p>D. AVN conduct feasibility study.</p> <p><u>Completed - 1st Quarter FY02:</u> A feasibility study has been completed.</p> <p>E. Form Tiger Team.</p> <p><u>Needed:</u> A meeting between all necessary participants is planned for January 2002. It is anticipated that a Tiger Team consisting of representatives from the Capstone Office, Air Traffic, AVN-100, AVN-230, AFS-410, and AFS-420 will be formed. This team will help facilitate completion of the steps necessary to develop special GPS approaches to selected airports.</p> <p>F. AVN develop approach(s).</p> <p><u>Needed.</u></p>

G. Perform flight inspections.

Contingent on above results.

H. Obtain AFS approval.

Contingent on above results.

I. Chart approach(s).

Contingent on above results.

5. Develop Special GPS Arrival and Departure Procedures in Support of Useable IFR Infrastructure

Objective

Develop new GPS based Departure, Arrival and approach procedures to airports in Southeast Alaska that were previously unserved by instrument procedures.

Purpose

Based on industry requirements Capstone is considering feasibility studies, conducting airport surveys, and building procedural development teams to create a usable low level IFR infrastructure connecting Juneau, Hoonah, Gustavus, Haines and Angoon. Each airport will be considered for an arrival, departure, and GPS approach procedure to enable aircraft based in Southeast to use each as an IFR destination.

Progress/Outcomes

A. Identify locations/airports for arrival/departure procedures.

Completed – 1st Quarter FY02: The initial Phase II sites identified for new arrival/departure procedures: Hoonah, Haines, Gustavus, and Juneau.

B. Obtain IFR airport designation.

Completed: IFR airport designation has been obtained for Hoonah, Haines, Gustavus, and Juneau.

C. Survey airports/runways.

In Progress: A detailed survey is needed for Hoonah and Haines. It is believed that survey requirements have been met for Gustavus and Juneau.

D. AVN conduct feasibility study.

Completed - 1st Quarter FY02: A feasibility study has been completed.

E. Form Tiger Team.

Needed: A meeting between all necessary participants is planned for January 2002. It is anticipated that a Tiger Team consisting of representatives from the Capstone Office, Air Traffic, AVN-100, AVN-230, AFS-410, and AFS-420 will be formed. This team will help facilitate completion of the steps necessary to develop special GPS approaches to selected airports.

F. AVN develop procedure(s).

Needed.

G. Perform flight inspections.

Contingent on above results.

H. Obtain AFS approval.

Contingent on above results.

I. Chart approach(s).

Contingent on above results.

6. Develop Lower Altitudes for Existing Routes in Support of Useable IFR Infrastructure

Objective

To develop lower IFR minimum en route altitudes (MEA's) for existing routes based on the Global Positioning System (GPS).

Purpose

Minimum en route altitudes on conventional airways, both VOR and LF/MF, ensure navigation facility coverage over the entire length of the airway. This requirement can result in high MEA's necessary to ensure navaid reception. The widespread availability and acceptability of the GPS provides a system alternative for navigating along existing airways that is not dependent on ground-based navaid signal reception. Capstone desires to use MEA's based on GPS. GPS MEA's can provide lower IFR en route altitudes and permit IFR flight below icing levels.

Progress/Outcomes

A. Identify routes for lower altitudes.

Completed – 1st Quarter FY02: The initial routes that have been identified for consideration for lower altitudes are: V-307, V-309, V-311, V-317, V-318, V-319, V-362, V-428, V-431, V-440, V-473, A-1, B-28, B-37, B-38, and B-40.

B. AVN develop pilot charting specifications.

In Progress: Recommended specifications have been developed and are in the process of being reviewed/approved.

C. AFS develop policy guidance.

Needed.

D. AVN conduct feasibility study.

Completed - 1st Quarter FY02: A feasibility study has been completed.

E. Form Tiger Team.

Needed: A meeting between all necessary participants is planned for January 2002. It is anticipated that a Tiger Team consisting of representatives from the Capstone Office, Air Traffic, AVN-100, AVN-230, AFS-410, and AFS-420 will be formed. This team will help facilitate completion of the steps necessary to develop special GPS approaches to selected airports.

F. AVN develop routes.

Needed.

G. Perform flight inspections.

Contingent on above results.

H. Obtain AFS approval.

Contingent on above results.

I. Chart approach(s).

Contingent on above results.

7. Develop Ground Infrastructure for Surveillance of Mixed-Equipped Aircraft

Objective

To provide surveillance of mixed-equipped aircraft.

Purpose

To enhance non-radar surveillance coverage to include aircraft that may not be ADS-B equipped but are equipped with a Mode A, C, or S transponder. This additional surveillance coverage would further enhance controller situational awareness in the highly congested airspace around the Juneau Airport, improve traffic and safety advisories, and aid in more effective sequencing of air traffic.

Progress/Outcomes

A. Air Traffic identify requirement.

Needed: A public meeting is scheduled for March 7, 2002. It is anticipated that air traffic control requirements will be established as a result of this meeting.

B. Explore avenues for surveillance of mixed-equipped aircraft.

Contingent on above results.

C. Additional action.

Contingent on above results.

8. Improve Communications Infrastructure

Objective

To install additional remote communication air/ground (RCAG) and remote communication outlet (RCO) sites in Southeast Alaska.

Purpose

To improve communications between pilots and controllers in areas of Southeast Alaska where coverage is currently limited and to develop communication capabilities to meet requirements for an RNAV route structure being developed at lower altitudes. This increase in air traffic and complexity makes it necessary to improve communication capabilities so as to maintain or improve current safety and service levels.

Progress/Outcomes

A. Define requirements.

In Progress: Initial requirements identified indicate a need for improved communications in the Stephens Passage area.

B. Identify locations and type equipment needed.

In Progress: Analysis of existing communication coverage and locations of possible additional facility sites is being conducted. Sites being considered are Gunnuk and Five Fingers.

C. Purchase equipment.

Contingent on above results.

D. Install equipment.

Contingent on above results.

E. Commission equipment

Contingent on E above.

9. Air Traffic Control Services

Objective

To improve air traffic control services in Southeast Alaska.

Purpose

Current traffic increases for the Juneau area are projected at greater than 9.7 percent per year. Implementation of Capstone surveillance initiatives and the planned development of a new, lower altitude IFR route structure and approaches will increase traffic complexity appreciably over the next 3 years. To maintain and to further improve safety and service levels, the following initiatives will be considered:

- improved surveillance capabilities
- tools to enhance the tower controller's situational awareness in the highly congested airspace around the Juneau Airport
- tools to assist air traffic personnel in providing traffic and safety advisories
- tools to aid air traffic personnel in more effective sequencing of air traffic
- tools to assist air traffic personnel in providing vehicle and aircraft advisories
- method to provide near, real-time tracking for search and rescue

Progress/Outcomes

A. Air Traffic identify requirements.

Needed: A public meeting is scheduled for March 7, 2002. It is anticipated that air traffic control requirements will be established as a result of this meeting.

B. Additional action.

Contingent on above results.

10. Improve Safety of Airport Movement Areas via ADS-B Equipped Vehicles

Objective

To equip approximately 15 emergency and maintenance vehicles at Juneau International Airport with an ADS-B transmitter so that pilots of participating Capstone aircraft, air traffic control specialists, and airport personnel can observe airport surface vehicle traffic on displays as they prepare to land and takeoff.

Purpose

As confirmed by DOT Inspector General Ken Meade, one of the most important long term contributions to improved runway safety and the prevention of runway incursion accidents is a real-time situational awareness of airport surface traffic commonly shared between pilots, controllers, and ground vehicle operators. It is proposed to install Automatic Dependent Surveillance-Broadcast (ADS-B) transmitter equipment on airport emergency and maintenance vehicles and a supporting ground infrastructure that will enable vehicle position monitoring. The mobile ADS-B equipment will include a Universal Access Transceiver (UAT) datalink for all participating vehicles and a moving map display with a runway occupancy alerting function for some. Ground system equipment and displays will be installed at the Airport Rescue and Firefighting (ARFF) station, the airport maintenance supervisor's work station, the airport manager's office, dispatch offices, and other locations as determined necessary. Asset managers and others, as determined by FAA, will be provided with an ADS-B airport surface display. Initially, the system will be operated in a demonstration mode using current UAT hardware and displays. Later, as MOPS-compliant UAT equipment is fielded, the vehicle transmitters and ground receiver will be converted to the new standard.

Progress/Outcomes

A. Conduct feasibility discussions.

In Progress: Feasibility discussions are currently being conducted with Juneau Airport management, the local and national FAA Runway Safety Program offices, FAA Safe Flight 21 Program office, and Mitre personnel.

B. Obtain design information.

In Progress: Preliminary design information is being obtained from Mitre personnel. It is anticipated that additional information will be obtained from UPSAT once a Capstone Decision Paper is executed sponsoring this objective.

C. Prepare and execute Capstone Decision Paper.

Contingent on above results: Depending on the results of feasibility discussions, technical information obtained, and costs associated with it, a Capstone Decision Paper may be executed sponsoring this objective.

D. Develop vehicle ADS-B transmitter specifications.

Contingent on above results.

E. Award contract to deliver vehicle ADS-B transmitter.

Contingent on above results.

F. Receive vehicle ADS-B transmitters.

Contingent on above results.

G. Install and test vehicle ADS-B transmitters.

Contingent on above results.

H. Purchase, install, and test ADS-B receiver(s), display(s), and GBT.

Contingent on above results.

11. Train Capstone Participants

Objective

To ensure all participants in the Capstone program are properly trained on the Capstone avionics.

Purpose

To ensure the Capstone avionics equipment is utilized properly and to the fullest to achieve the greatest benefit to enhanced safety and operational capabilities all participants must be trained.

Progress/Outcomes

A. Complete the statement of work.

Completed: A statement of work describing required services has been completed.

B. Issue contract.

Completed – 1st Quarter FY02: The University of Alaska has been awarded a contract to deliver a pilot training program for the Capstone equipment and to conduct Capstone participant training.

C. Conduct training.

Contingent on participant selection and avionics installation.

12. Conduct Safety Analysis Study

Objective

To accomplish independent documentation, measurement, and reporting of the Capstone project.

Purpose

A major “Capstone” objective is to improve safety in Alaska while offering efficiencies to operators. Key to the Capstones program’s overall success is the need conduct an independent evaluation of system safety improvements and to document the user benefits.

Progress/Outcomes

A. Develop a statement of work.

Completed

B. Issue contract.

Completed: The University of Alaska has been contracted to conduct an independent analysis of safety improvements related to the Capstone program.

C. Conduct study.

In Progress: University of Alaska is in the process of documenting data within the Capstone Phase II program area as of December 31, 2001.

D. Receive Report(s).

Reports Due:

Baseline Report – May 2002
 1st Annual – March 2003
 2nd Annual – March 2004
 Final Report – March 2005