Federal Aviation Administration
Alaskan Region

Capstone Program Management Office
801 B Street, Suite 500
Anchorage Alaska 99501

Capstone Quarterly Report

4th Quarter FY00

July - September 2000

FAA ALASKAN REGION

Capstone

Investment in Safety

Capstone To Date

As we come to the end of fiscal year 2000, the Capstone Program has continued to gain momentum while logging significant achievements and meeting major milestones. With a little more than one-third of the "Capstone Fleet" of 150 aircraft equipped, data has continued to flow in that validates our goal of improving aviation safety and efficiency by putting cost effective, new technology avionics equipment into commercially operated aircraft in Southwestern Alaska. The Capstone Program has received worldwide recognition with articles being written in such prominent periodicals and trade journals as Aviation Week & Space Technology, The Alaska Journal of Commerce, Aviation Daily, AOPA, and Federal Computer Week.

The successful Capstone Informational Open House on August 23-24 was a culmination of two years of designing, planning and coordination between government, industry and users. This Open House was also exactly one year since two aircraft demonstrated the proof of concept for contract award to UPS Aviation Technologies for the avionics suites. The William J. Hughes Technical Center's B-727 aircraft acted as a static display (as well as UAA's C-180) and provided in-flight profile data for evaluation. In addition, two State DOT vehicles were ADS-B equipped in Bethel to demonstrate Capstone runway incursion prevention capabilities. Over 200 people attended the Open House. Visitors included technical observers, media representatives, government officials, and dignitaries coming from as far away as England and China. Vendors from NASA, Lockheed-Martin, Harris, MITRE CAASD, SENSIS, ARINC, Sky Source, FAA, and UPS-AT had display booths. Guest speakers were Pat Poe, FAA Alaska Regional Administrator; Dick Harding, Pen Air V.P. Operations; Tom Wardleigh, Alaska Aviation Safety Foundation; and Felix McGuire, Alaska Airmen's Association. The University of Alaska Aviation Technology Complex hosted the Open House and provided a live Micro-EARTS display from the Anchorage ARTCC showing positions of ADS-B equipped aircraft.

User and pilot familiarization courses continue at UAA by Mr. Leonard Kirk to satisfy Capstone equipment training requirements. Future training segments have already been prepared to cover IFR applications of the equipment when "radar-like services" are demonstrated on January 1, 2001.

Some additional highlights of this quarter were:

July:

- The first Capstone Automated Weather Observation System (AWOS) was commissioned at Mountain Village on July 3, 2000. Dial-up service is available and the Capstone homepage (www.alaska.faa.gov/capstone/) has a hotlink to the closed circuit weather camera there.

- On July 7, 2000 a FAA contract for $40,600 was awarded to ARNAV Systems, Inc. to provide weather products pertinent to the Capstone Program. These include Flight

Information Services (FIS), aviation routine weather reports (known as METAR), aviation selected special weather reports (known as SPECI), and aerodrome forecasts (known as TAF) products.

- The Capstone Program Office acquired 10 licenses for a commercial flight following program produced by AIRINC, Inc, and disseminated via the Internet. This demonstrates the capability for dispatchers to flight locate and flight follow Capstone ADS-B aircraft.

- The Cape Romanzof GBT station was installed and site surveys were performed at Aniak and St. Mary's for future GBT installations.

- Mr. Phil Boyer, President, Aircraft Owners and Pilots Association (AOPA) visited Anchorage, Kenai and Bethel on July 18-19 to collect information about Capstone. Mr. Boyer was accompanied by Randy Kenagy of AOPA Craig Hudson and Sam Seery of UPS Aviation Technologies. They interviewed Leonard Kirk at UAA, visited the FAA's Regional Management Team and Richard Przywarty and Bill Alexander at the National Weather Service, Capstone Team representatives, Capstone-trained pilots in Bethel, and avionics installers in Anchorage. Mr. Boyer has subsequently extolled the technologies surrounding Capstone to Congress and has even similarly equipped two of AOPA's aircraft and placed a GBT at the Frederick, MD airport for their own analysis.
- Eight Capstone avionics installations were completed this month.

August:

- In a letter to the U.S. Arctic Research Commission, Mr. Pat Poe, FAA Regional Administrator, invited the Canadian Institute of the North and Nations of the Arctic Council to assist in the evaluation of Capstone capabilities. Due to similarities in needs and environment, greater gains and safety can be realized through mutual cooperation and sharing of these technologies.

- Dennis Gerstung, joined the Capstone staff on August 3. He came to us from ANI-700 as a NISC Lockheed-Martin engineer and is an Aviation Maintenance Technician and commercial pilot with CFI and instrument ratings.

- A dedicated circuit was installed between ARNAV Systems, Puyallup, WA. and the Anchorage, ARTCC to provide Flight Informational Services (FIS) to the Capstone Communication and Control Server (CCCS).

- On August 23-24, the Capstone Program Office held their annual Informational Open House. This year it included a live demonstration to introduce the aviation industry, media, and the traveling public to the safety benefits and user capabilities afforded by the Capstone initiative. MITRE engineers conducted correlation and analysis on the flight data collected in flight tests using FAA's B727 around the Bethel area. This was the first significant air-to-air data collection effort involving operational aircraft.

- On August 24th, a Capstone plaque was presented by Mr. Pat Poe, FAA Regional

Administrator to Mr. Tom Weidemeyer, Senior Vice President for UPS and President of UPS Airline and his support staff in appreciation for their past and ongoing support to the Capstone Program.

- A "Meeting of Aviation Safety Professionals" was sponsored by the University of Alaska Anchorage (UAA) Aviation Technology Division in conjunction with the open house on August 22. Representatives from National Aeronautics and Space Administration, Ohio University, National Transportation Safety Board, National Institute of Occupational Safety and Health, National Transportation Safety Board, Alaska Aviation Safety Foundation, Alaska Air Carriers Association, the UAA Institute for Social and Economic Research and UAA Aviation Technology Division met to share information on past and current studies and projects.

- Gary Childers of the Capstone team conducted a safety meeting for Capstone-equipped aircraft operators in Bethel on August 23

- Seven Capstone avionics installs were completed this month.

September:

- The Air Traffic Services Mission Analysis and Integrated Requirements Team (IRT) visited Sept 22-29. The team was composed of members from ARR, ARS, FAA Regional Division Managers and major stakeholders from AAF, AAT, AND, AAL-1S, DoD, AAL-400 and AAL-500. The IRT's purpose is to assimilate Capstone initiatives and Alaska's needs into the AMS process by initiating a Special Project. The purpose for entering into this effort is to ensure all of the Alaska's NAS requirements are clearly identified and prioritized. The object is to identify solutions and support issues with a solid acquisition strategy and funding stream, gather data on the performance and service availability with the projected Capstone service levels and sustainment needs into the future. They also conducted a service gap analysis, looked at existing standards, established the cost of service, and established safety ramifications to Alaskan aviation users.

- A D-Brite display was installed in the Bethel ATCT cab. The display, driven from the Anchorage ARTCC Micro-EARTS, depicts radar and ADS-B targets of aircraft operating in the vicinity of Bethel. More than what is traditionally available with radar, Capstone aircraft flying below radar coverage will also be displayed as an ADS-B target. The D-Brite display will be used by the Bethel controllers in accordance with existing Air Traffic policy for VFR towers.

- Six Capstone avionics installs were completed this month, for a total of 60 equipped aircraft by the end of this quarter, 3 installed GBT ground stations, 16 published GPS approaches at 10 airports, and 1 commissioned AWOS III station.

- The Capstone Program Office is supporting the MITRE CAASD and Eurocontrol testing of the UAT data link system in Paris with 2 sets of Capstone avionics.

- DOD and FAA came to an agreement on the 22nd negotiated by NTIA to allow the 981MHz spectrum for UAT use in Alaska. This is a temporary agreement good thru Dec 31, 2001, but is one of the major milestones that allows us to go to "radar-like service" on Jan 1, 2001.

- The Capstone Program personnel participated in the British Columbia Aviation Council 62nd Annual Conference at the Chateau Whistler Resort and Conference Center on September 29-30.

- On September 14th, Mr. Steve Shaffer, Runway Safety Program, Air Traffic Liaison, FAA HQ visited the Capstone Office and received a Capstone briefing, simulator demo and an orientation ride on a Ptarmigan Air PA-18.

- On September 18th, Mr. George Black, National NTSB, Washington, D.C., accompanied by Mr. Pat Poe, visited the Capstone Office and received a briefing and simulator demo. Mr. Black stated that he was very impressed with the capabilities of the equipment and the overall scope of the Capstone Program.

- A key Capstone coordination meeting was held in Washington D.C. Headquarters September 6th – 7th. Together with stakeholders from the involved straight-line organizations, we reviewed every activity and milestone required to successfully achieve Capstone's VFR to IFR transition on January 1, 2001 in Bethel. We received a renewal of commitments from straight-line organizations given last January to complete every critical activity required to meet the Administrator's announced goal to provide radar-like services in Bethel by this date.

To continue our forward progress toward "radar-like services" and the future, we are working several areas that, at this time, have not been fully settled.

- Airspace
  - Routes
  - Approaches
- Avionics
  - Installations
  - Hardware and software upgrades
- FIS
  - Delivery
  - NEXRAD product
  - AWOS-III installations
- End-to-End Certification
  - Avionics
  - Ground Systems
  - Micro-EARTS
- Operator Acceptance
  - Cultural Issues (enforcement, etc.)
- Procedures
  - Approaches
  - Enroute SVFR
- MOU between NATCA and the FAA
- Safety Data Analysis
- Spectrum
  - Short Term
  - Long Term

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Capstone Timeline

ID	Task Name	Duration	Start	Finish
1	**Avionics**	**1042 days**	**Mon 1/4/99**	**Tue 12/31/02**
2	Develop/Review SOW	40 days	Mon 1/4/99	Fri 2/26/99
3	Develop RFO	15 days	Mon 2/15/99	Fri 3/5/99
4	Receipt of PR	1 day	Tue 3/23/99	Tue 3/23/99
5	Legal Review	10 days	Mon 3/8/99	Fri 3/19/99
6	Announcement	0 days	Mon 3/22/99	Mon 3/22/99
7	Solicitation Period	32 edays	Thu 3/25/99	Mon 4/26/99
8	Evaluate Offers/Discussion	10 days	Fri 5/21/99	Thu 6/3/99
9	Prepare Flight Demo	69 edays	Thu 6/17/99	Wed 8/25/99
10	Bethel Demo	0 days	Wed 8/25/99	Wed 8/25/99
11	Prepare Award/ Congressional Notice	15 days	Wed 8/25/99	Tue 9/14/99
12	Award	1 day	Wed 9/15/99	Wed 9/15/99
13	Manufacture/Certification	114 edays	Wed 9/15/99	Fri 1/7/00
14	Performance	860 days	Wed 9/15/99	Tue 12/31/02
15	Order Units	1 day	Wed 9/15/99	Wed 9/15/99
16	Deliver first Units	120 edays	Wed 9/15/99	Thu 1/13/00
17	VFR STC	1 day	Wed 3/2/00	Wed 3/2/00
18	Phase II Avionics	143 days	Wed 1/19/00	Fri 8/4/00
19	IFR STC	10 days	Wed 12/13/00	Tue 12/26/00
20	IFR Modification	154 days	Fri 7/7/00	Wed 2/7/01
21	Spectrum Modification	200 days	Thu 5/18/00	Wed 2/21/01
22	**Ground Equipment**	**1041 days**	**Mon 1/4/99**	**Mon 12/30/02**
23	Develop/Review SOW	40 days	Mon 1/4/99	Fri 2/26/99
24	Develop RFO	15 days	Mon 2/15/99	Fri 3/5/99
25	Receipt of PR	1 day	Tue 3/23/99	Tue 3/23/99
26	Legal Review	10 days	Mon 3/8/99	Fri 3/19/99
27	Announcement	0 days	Mon 3/22/99	Mon 3/22/99
28	Solicitation Period	32 edays	Thu 3/25/99	Mon 4/26/99
29	Evaluate Offers/Discussion	10 days	Mon 4/26/99	Fri 5/7/99
30	Prepare Flight Demo	69 edays	Thu 5/13/99	Wed 7/21/99
31	Bethel Demo	0 days	Wed 7/21/99	Wed 7/21/99
32	Prepare Award/ Congressional Notice	5 days	Wed 7/21/99	Tue 7/27/99
33	Award	3 days	Tue 7/27/99	Thu 7/29/99
34	Performance	893 days	Thu 7/29/99	Mon 12/30/02
35	Order Ground Units	1 day	Wed 9/15/99	Wed 9/15/99
36	Deliver First Unit	38 days	Wed 9/15/99	Fri 11/5/99
37	Deliver Second Unit	62 days	Wed 9/15/99	Thu 12/9/99
38	Deliver Third Unit	41 days	Wed 12/8/99	Wed 2/2/00
39	Deliver First Rack Mount Units	121 days	Wed 9/15/99	Wed 3/1/00
40	Evaluate MITRE Software	44 days	Wed 2/17/99	Mon 4/19/99
41	RMM Modification	176 days	Mon 5/29/00	Wed 1/31/01
42	Spectrum Modification	200 days	Thu 5/18/00	Wed 2/21/01
43	Testing	74 days	Wed 5/21/00	Mon 1/22/00
44	**MEARTS**	**503 days**	**Tue 1/12/99**	**Fri 12/15/00**
45	Purchase Modification	0 days	Tue 1/12/99	Tue 1/12/99
46	MEARTS BETA Demo	0 days	Tue 5/18/99	Tue 5/18/99
47	Bethel Demo	0 days	Wed 7/21/99	Wed 7/21/99
48	Certification	340 days	Mon 5/30/99	Fri 12/15/00
49	**Weather**	**490 days**	**Mon 2/15/99**	**Fri 12/29/00**
50	Site Surveys	34 days	Mon 2/15/99	Thu 4/1/99
51	Request for Bid	1 day	Thu 4/15/99	Thu 4/15/99
52	Contract Award	30 days	Thu 4/15/99	Wed 5/26/99
53	Site Installations	417 days	Thu 5/27/99	Fri 12/29/00
54	**UAA**	**1010 days**	**Tue 1/19/99**	**Mon 12/2/02**
55	Develop/Review SOW	64 days	Tue 1/19/99	Fri 4/16/99
56	Develop RFO	6 days	Fri 4/16/99	Fri 4/23/99
57	Receipt of PR	1 day	Fri 4/16/99	Fri 4/16/99
58	Legal Review	5 days	Mon 4/19/99	Fri 4/23/99
59	Announcement	0 days	Fri 4/23/99	Fri 4/23/99
60	Prepare Award	5 days	Mon 4/26/99	Fri 4/30/99
61	Award	2 days	Fri 4/30/99	Mon 5/3/99
62	Performance	827 days	Fri 10/1/99	Mon 12/2/02

Spending Plan for FY00 F&E Funding as of September 27, 2000

Spend Plan	1Q 00	2Q 00	3Q 00	4Q 00	1Q 01	2Q 01	3Q 01	4Q 01	Totals
Avionics		$.1M	$.909M	$.341M					**$1.350M**
Ground		$.25M	$.938M	$.151M	$.082M				**$1.421M**
Spectrum			$.683M		$.002M				**$.685M**
FIS/TIS/Cert/Proc		$.25M	$.040M	$.239M	$.037M				**$.566M**
MISC/SPO		$.2M	$.513M	$.073M					**$.786M**
AWOS			$.532M	$.155M	$.005M				**$.692M**
MITRE		.5M							**$.5M**
Totals		**$1.3M**	**$3.615M**	**$.959M**	**$.126M**				**$6M**
Travel	$15K	$40K	$23K	$32K	$10K				**$.12M**

Capstone Spend Plan:

a. 1Q 00:

b. 2Q 00: $200K for operation of Capstone Program Office. $100K for avionics installations. $250K for FIS/TIS and certification/procedures work. $250K for finalizing first 12 ground stations. $500K to fund 2 man-years of MITRE work.

c. 3Q 00: $513K for contract support and operation of Capstone Program Office. $909K for avionics installations and modifications. $532K for AWOS work in ANI.. $40K for FIS/TIS and certification/procedures work. $938K for additional ground station, installations, and certification work. $685K for modifications of spectrum change in UATs.

d. 4Q 00: $73K for contract support and operation of Capstone Program Office. $151K for contract engineering for ground stations. $341K for avionics installations. $240M for MEARTS modifications.

Status of Program Elements

Element 1. Aircraft Equipment Package

A. Coordinate and complete a Request For Information (RFI).	Completed
B. Coordinate and complete a Request For Offer (RF0).	Completed
C. Down select prospective vendor	Completed
D. Initial operational capability demonstration	Completed
E. Contract awarded	Completed
F. Install equipment	In Progress

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

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

Element 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

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

A. National contractor selection.	Completed
B. Select contractor	Completed

Element 5. Train Capstone Participants

A. Complete statement of work.	Completed
B. Issue contract	Completed
C. Conduct Training	In Progress

Element 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

Element 7 Conduct Safety and Human Factors Study

A. Complete statement of work.	Completed
B. Issue contract	Completed
C. Conduct Study	In Progress

Program Elements

1. Aircraft Equipment Package

Objective	Purpose
To equip up to 200 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.	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).

Progress: - Completed

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.

Progress/Outcomes - cont.

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

Progress 1st Quarter FY99: - In Progress

The Alaskan Region's Logistics Division in coordination with ACO, AND, AIR and the Industry Council is working to complete the RFO.

Progress 2nd Quarter FY99: - Completed

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

Progress 3rd Quarter FY99: - Completed

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.

Progress/Outcomes - cont.

D. Conduct Initial operational capability demonstration

Progress 3rd Quarter FY99: - In Planning

An initial operational capability demonstration is scheduled for August 25, 1999. UPS AT will 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.

Progress 4th Quarter FY99: - Completed

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

Progress 4th Quarter FY99: - Completed

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.

Progress/Outcomes - cont.

F. Install Equipment

Progress 1st Quarter FY00 - In Progress

A provisioning STC, issued 16 November 1999 permits installation of the GX-50/60 GPS navigator and provisions for the Capstone configured MX-20 and UAT transceiver. Nine provisional STC kits have been forwarded to three of the Bethel commercial operators, Larry's Flying Service, Peninsula Airways, Inc., and Ptarmigan Air, for installation. One complete Capstone avionics package, to include the MX-20 multifunction display and UAT transceiver, has been installed in the University of Alaska, Anchorage Cessna 180 for certification flight-testing.

Progress 2nd Quarter FY00 - In Progress

Ten (10) airplanes were installed with Capstone avionics suits in the second quarter. These installations took place in Anchorage, Fairbanks, and Bethel, Alaska. Operators participating in the Capstone program as well as independent avionics shops are participating in the installation of the Capstone avionics suites. UPS AT has delivered seventy-one (71) avionics suites to date.

Progress 3rd Quarter FY00 - In Progress

Thirty-one (31) airplanes were installed with Capstone avionics suits in the third quarter for a total of forty-one (41) installed to date.

Progress 4th Quarter FY00 – In Progress

Sixty (60) aircraft have been installed with Capstone avionics suites with 9 installations in-progress.

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

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

Progress : - Completed

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.

Progress 2nd Quarter FY99: - In Progress

The Alaskan Region Airway Facilities Division is in coordination with the SF21 office and Mitre/CAASD personnel regarding purchase of a Mitre ground station from the existing contract with IIMorrow for the Ohio Valley ground stations.

Progress 3rd Quarter FY99: - On Hold

The purchase of the Mitre ground station is on hold. The proposed vendor ground station and datalink infrastructure may not require an additional Mitre ground station. A decision will be made after the August equipment demonstration in Bethel.

Progress/Outcomes - cont.

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

Progress 4th Quarter FY99: - Cancelled

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.

Progress 2nd Quarter FY99: - Completed

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.

Progress/Outcomes - cont.

D. Down select prospective vendor.

Progress 3rd Quarter FY99: - Completed

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.

Progress 3rd Quarter FY99: - In Planning

The initial operational capability demonstration is planned for August 25, 1999. 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.

MITRE is teaming with the Alaskan Region to develop and configure an architecture and network for the Capstone program. The system will be based on the proven Ground Base Server developed by MITRE and tested on several though the Safe Flight 21 work with the CAA Ohio Valley project.

Progress 4th Quarter FY99: - Completed

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.

Progress/Outcomes - cont.

F. Award contract

Progress 4th Quarter FY99: - Completed

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 13th

G. Install ground stations.

Progress 4th Quarter FY99: - Awaiting delivery

Seven ground stations have been ordered to date.

Progress 1st Quarter FY00: - In Progress

Six additional ground stations were ordered in the first quarter of FY00. Two from the 4th quarter FY99 original order have been received. It is anticipated that the installation of these two ground stations, at Bethel and Anchorage Center, will occur second quarter of FY00.

Progress 2nd Quarter FY00: - In Progress

Two developmental Ground Based Transceivers (GBT)s were installed at Anchorage Center and Bethel during January 2000. These GBT's will be used for test and development of the ground system and will be replaced by certified units, when available.

Progress 3rd Quarter FY00: - In Progress

Installation at Cape Newenham Minimally Attended Radar (MAR) was completed on June 4th. The Bethel GBT was certified on June 21st. The GBT installation at Cape Romanzof is scheduled beginning the first week of July.

Progress 4th Quarter FY00: - In Progress

Cape Romanzof Minimally Attended Radar (MAR) install completed and FIS connectivity into Anchorage ZAN finished.

3. Micro-EARTS Adaptation

Objective	Purpose
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.	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.

Progress 2nd Quarter FY99: -In progress

A contract modification will be negotiated with Lockheed Martin for development of M-EARTS functions to support the Capstone Program. This principally includes display of ADS-B targets fused with radar targets and the capability to produce Traffic Information Service-Broadcast (TIS-B). Funding for this $2.8 million contract modification has already been transferred to Headquarters. A Beta Demonstration is planned for May 1999 with a demonstration planned for July 1999.

Progress 3rd Quarter FY99: -Completed

Lockheed-Martin Corporation representatives installed the Capstone Micro-EARTS modification during April in preparation of the Beta-demonstration.

B. Conduct Beta Demonstration.

Progress 3rd Quarter FY99: -Completed

The modification 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.

Progress/Outcomes - cont.

C. Design Reviews.

Progress 3rd Quarter FY99: - In Planning

Preliminary Design Review (PDR) for the MEARTS modification is scheduled for July 19-23rd July.

Progress 4th Quarter FY99: - In Progress

A Micro-EARTS Preliminary Design Review (PDR) at Anchorage ARTCC was completed during July. The Capstone modification to show ADS-B equipped aircraft on controller displays was discussed with Lockheed Martin representatives along with other software improvements. It will take about one year of testing before the ADS-B service can be certified for air traffic management functions.

Progress 1st Quarter FY00: - In Progress

Progress 2nd Quarter FY00: - In Progress

Progress 3rd Quarter FY00: - Completed

Design reviews were completed by AOS in May 2000. Software was delivered and installed in the Anchorage ARTCC in June.

Progress/Outcomes - cont.

D. Certification

Progress 3rd Quarter FY99: - In Planning

Progress 4th Quarter FY99: - In Progress

An initial operational capability demonstration was completed on August 25, 1999 during the Bethel demonstration. A meeting held in Salem Oregon, September 30th, 1999 resulted in a process to baseline and develop the Mitre software to be included in the certification process.

Progress 1st Quarter FY00: - In Progress

The certification effort is proceeding on schedule to meet the August FY00 timeline. Numerous telecons have been held as a follow-up to the meeting in Oregon. An additional group meeting is scheduled for the second quarter FY00 at the Technical Center in Atlantic City, New Jersey.

Progress 2nd Quarter FY00: - In Progress

A Capstone Engineering conference was conducted in February at the William J. Hughes Technical Center in Atlantic City, New Jersey. The principal topic was the hardware and software architecture for certification testing of the Capstone ADS-B ground system. Future system requirements for uplink of FIS-B and TIS-B products to aircraft were also discussed. In March 200 an avionics suite was shipped from UPS AT direct to the Technical Center to support certification testing of the Capstone ground system.

Progress/Outcomes - cont.

D. Certification – con't

Progress 3rd Quarter FY00: - In Progress

IOC (Initial Operating Capability) scheduled for June 29th has been delayed. It is anticipated that IOC will occur in July 2000.

a. The Micro-EARTS program was delivered and installed at the Anchorage ARTCC on June 21. An IOC evaluation, including adding the ADS-B data to the controllers' displays, was successfully completed on June 27.

b. Air Traffic advised that two items remained could be declared: A procedures issue must be resolved between Air Traffic and Flight Standards and the Memorandum of Agreement (MOA) with NATCA must be completed.

c. The NATCA MOA is expected to be completed within the next two weeks. While IOC has been delayed, we don't expect any impact to the projected Operational Readiness Demonstration (ORD).

Progress 4th Quarter FY00: - In Progress

a. A 30 day data analysis period started at the Anchorage Center on September 25, 2000.

b. A NATCA MOA for evaluation is being coordinated.

c. Procedure issues are being developed and will be finalized between Air Traffic and Flight Standards, and the final Memorandum of Agreement (MOA) with NATCA will be completed following data analysis.

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

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

Progress 2nd Quarter FY99: -In progress

FAA selection of a national contractor(s) is underway for delivery of FIS products to properly equipped aircraft via a data link system.

Progress 3rd Quarter FY99: -In progress

FAA selection of a national contractor(s) is continuing. It appears that there will be a down select of two (2) service providers for the FISDL RFO by July 23,1999.

Progress 4th Quarter FY99: - Completed

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

Progress/Outcomes - cont.

B. Select Contractor

Progress 4th Quarter FY99: - In Progress

We are currently reviewing the contracts of each FISDL service provider to determine the national vendor products and services to be used in the Capstone program.

Progress 1st Quarter FY00: - In Progress

We are continuing to work with industry and UPS AT to determine the Capstone FIS requirements.

Progress 2nd Quarter FY00: - In Progress

Capstone team members James Call and Dave Palmer met with Rita McNair, contracting officer, in headquarters during January 2000. As a result of the meeting an informational request outlining the Capstone weather requirements was prepared and sent to both FISDL vendors. The response from Honeywell (formally NavRadio Corporation) indicated that they could not meet our timeframe. A Capstone Technical Review Committee reviewed ARNAV's proposal and submitted a report of their findings to the Capstone Program manager.

Progress 3rd Quarter FY00: - In Progress

On June 29th a Notice of Award letter was sent to ARNAV Systems, Incorporated. The one-year contract is to supply FIS METAR (including SPECI) and TAF products pertinent to Alaska as well as a data transmission link, and training and support provisions for the development and implementation of Capstone transmitted weather products.

Progress 4th Quarter FY00: - Completed

FIS installed at the Anchorage ZAN and is operational on developmental system at Bethel and Anchorage.

5. Train Capstone Participants

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

Progress 2nd Quarter FY99: - In Progress

The statement of work for training Capstone participants was delivered to the Alaskan Region's Logistics Division. The contracting officer is working with the Capstone office and the Regional Counsel Office to complete the training contract. It is anticipated that the contract will be awarded during the FY99 third quarter.

Progress 3rd Quarter FY99: - Completed

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

Progress 3rd Quarter FY99: - In Progress

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.

Progress 4th Quarter FY99: - Completed

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.

Progress/Outcomes - cont.

C. Conduct training

Progress 4th Quarter FY99: - In Planning

The University of Alaska is working with the Capstone office, UPS AT, Anchorage FSDO, Industry Council and the Bethel operators to develop the Capstone avionics training program. A beta training class is scheduled for 1st quarter FY00.

Progress 1st Quarter FY00: - In Planning

The University of Alaska conducted a beta session for the Capstone Pilot Training Program on December 7th and 8th at the Merrill Field complex. Several industry pilots were in the beta class along with an Industry Council representative, a FSDO inspector, and a pilot from the Capstone Program Office and an Air Traffic controller. Feedback from the beta class will be used to finalize the training curriculum. Formal Capstone training is scheduled to begin in the 2nd quarter FY00.

Progress 2nd Quarter FY00: - In Progress

The University of Alaska (UAA) is using four (4) certified Capstone simulators for pilot training. The first session of the Capstone Pilot Training Program for Air Carrier Instructors and Check Airmen was conducted in Bethel in February. Training classes will continue through the third quarter in Anchorage and Bethel. UAA received an excellent grade on the critique submitted by every student.

Progress 3rd Quarter FY00: - In Progress

UAA conducted three Air Carrier Instructors and Check Airmen training sessions during the third quarter, two in Anchorage and one in Bethel. A total of 20 participants were trained.

Progress 4th Quarter FY00: - In Progress

The University of Alaska Anchorage Aviation Technology has trained an additional 36 pilots in the use of Capstone avionics through direct contract with participating air carriers

6. Obtain and Install Automated Weather Equipment

Objective	Purpose
To obtain and install Automated Weather Observing Equipment at up to 10 sites in the Capstone area.	To assist in providing weather information to accomplish IFR enroute 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:

Progress 1st Quarter FY99: - Completed

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.

B. Perform site surveys:

Progress 1st Quarter FY99: - In Progress

ANI 700 has scheduled the site surveys at the ten sites. Scheduled completion date is during the second quarter FY99.

Progress 2nd Quarter FY99: - In Progress

ANI 700 has completed 7 of 10 sites. The survey results will be used to install the automated weather equipment.

Progress/Outcomes - cont.

B. Perform site surveys – cont.

Progress 4th Quarter FY99: - In Progress

ANI 700 has completed 7 of 10 sites.

Progress 1st Quarter FY00: - In Progress

Progress 2nd Quarter FY00: - Completed

ANI 700 has completed the last three survey sites.

C. Procure the automated weather equipment.

Progress 2nd Quarter FY99: - In Progress

The preliminary strategy developed by the NAS Implementation Center, ANI-700, provides for procurement of 10 plastic equipment shelters under an existing government supply contract. ANI-700 plans to construct a prototype aluminum frame structure for support of weather sensors. Maintenance personnel in Anchorage will evaluate the frame, which will span the shelter, for field suitability and the design will be finalized. A competitive advertisement will next be issued to selected, pre-qualified, bidders. The contract will include procurement of FAA-certified aviation weather observation equipment of the type planned for "NEXWOS." The sensors required will be the minimum necessary to support Capstone flight operations. The selected turnkey contractor will be responsible for fabrication of the aluminum frames per the FAA design drawings, installation of weather equipment within the government-furnished plastic shelters, transportation of all shelters, frames, and equipment to the specified village airports, and for installation at the specified locations in accordance with FAA design drawings and specifications.

Progress 3rd Quarter FY99: - Completed

The 10 plastic equipment shelters were purchased and shipped to Anchorage for retrofitting. Ten AWOS III facilities were purchased from Qualimetrics, Inc. The first item arrived and is being installed in a proto-type facility being constructed at the ANI Anchorage Complex.

Progress/Outcomes - cont.

D. Install Automated Weather Equipment

Progress 3rd Quarter FY99: - In Progress

Four sites have been selected for installation before the end of FY99. They include Scammon Bay, Holy Cross, Mountain Village and St. Michael. Real estate and utilities coordination is ongoing.

Progress 4th Quarter FY99: - In Progress

A proto-type facility for the Capstone automated weather observation equipment was constructed at the ANI Anchorage Complex. A "open house" was held at the Lake Hood property to inspect and "kick the tires" on the new weather station enclosure on Friday, September 9th . The materials and equipment will be shipped to Holy Cross in September 1999 to begin installation.

Progress 1st Quarter FY00: - In Progress

Phase I, which includes grounding, bonding and shelter installation was completed for four of the ten Capstone sites; Holy Cross, Mountain Village, Saint Michael and Scammon Bay. Phase II is scheduled for the 2nd quarter of FY00.

Progress 2nd Quarter FY00: - In Progress

With the cleanup of some exceptions, Phase II is nearing completion on the first four sites.

Progress 3rd Quarter FY00: - In Progress

Mountain village completed JAI on July 3, 2000. Holly Cross, Scammon Bay and St. Michael are anticipated to be completed in July. ANI-700 expects to have the other AWOS sites commissioned by this autumn.

Progress/Outcomes – cont.

D. Install Automated Weather Equipment – cont.

Progress 4th Quarter FY00: - In Progress

Seven (7) locations have been installed with one (1) commissioned (Mt. Village). St. Michael and Russian Mission or Kalskag will go through a 30 day ORD prior to being JAI'd and commissioned which should be completed by late Oct. Once this occurs, the remaining 4 will be JAI'd and commissioned directly. Kipnuk, Pilot Point and Koliganek require equipment installations but all buildings are on site. ANI expects all 10 locations to be commissioned by the end of the calendar year.

7. Conduct Safety and Human Factors Study

Objective	Purpose
To accomplish independent documentation, measurement, and reporting of the Capstone project.	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 - cont.

A. Complete the statement of work and issue contract.

Progress 2nd Quarter FY99: -In Progress

The statement of work for the safety study was delivered to the Alaskan Region's Logistics Division. The contracting officer is working with the Capstone office and the Regional Counsel Office to complete the contract. It is anticipated that the contract will be let during the third quarter.

Progress 3rd Quarter FY99: - Completed

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

Progress 3rd Quarter FY99: - In Progress

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.

Progress 4th Quarter FY99: - Completed

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

Progress/Outcomes - cont.

C. Conduct Study

Progress 4th Quarter FY99: - In Progress

The University of Alaska is in the process of gathering data to develop the baseline for the Capstone safety study.

Progress 1st Quarter FY00: - In Progress

Quarterly meetings are scheduled to discuss the study process and progress. An interim baseline report is scheduled for 2nd quarter FY00.

Progress 2nd Quarter FY00: - In Progress

UAA has submitted an electronic preliminary baseline data to the Capstone office. A review and evaluation of the information is underway.

Progress 3rd Quarter FY00: - In Progress

On June 9th the Capstone office forwarded a statement of work to contracting for the University of Alaska Anchorage to incorporate additional data collection for evaluation of IFR services delivered via the Capstone system. The University's original evaluation contract did not cover this subject. The contract add-on is for the gathering of data to include interviews with approximately 100 pilots twice each year of the demonstration, during summer and winter seasons.

Progress 4th Quarter FY00: - In Progress

The University of Alaska Anchorage Aviation technology has traveled to the Capstone area and conducted Pilot/Operator interviews for equipment usability and feedback surveys. The information gathered has been forwarded to the appropriate agencies for analysis and an initial report has been published.

The University of Alaska Anchorage Aviation Technology and ISER (Institute for Social and Economic Research) continue the safety study and will produce the first annual report in December 2000