# Alaskan Performance Based Area Navigation Route Development User's Meeting Notes

August 3, 2007

**Purpose:** To furnish the user group with the background paper providing data for route location criteria analysis.

This is a summary of the meeting covering the development of Alaskan RNAV airway route structure, as commissioned by ATO-E with the FAA Administrator's 2007 Flight Plan Goal to implement a RNAV route infrastructure by September 30, 2009. In May, the user group asked the FAA to provide a report outlining the six criteria established to provide an analysis tool to locate the RNAV route structure within the state. Representatives from the Alaskan aviation community and various FAA Lines of Business were invited to meet in order to receive the report (Attach 1). The attendees are listed at the end of this document (Attach 2). After introductions were made, a brief review of the background paper tasking was given, followed by a review of the report with discussion on each of the six criteria described within the report. Lari Belisle (ZAN) also provided a slide briefing (Attach 3) to provide suggestions for specific route modifications.

- Medevac requirements
  The report includes data from four surveyed organizations with medevac operations. It was suggested that we survey each of the 15 medical facilities to gather commonly flown routing in support of that facility's medevac operation. Gary Rolf (AMTI) will perform the survey by September 6th.

- Current and planned IFR airports
  Public and private airports with published IFR procedures were included in this item. There are 142 IFR airports with another 23 proposed for possible upgrade.

- Future Navaid Decommissioning plans
  This item was listed to help determine route locations in light of where possible decommissioning is planned. The Barter Island NDB/AWOS and Galena's ILS are currently being proposed for decommissioning. These are the result of the military's moving out of these locations. No other NAVAIDS are currently planned for decommissioning.

- IFR/VFR use (where primary IFR/VFR use exists)
  A graphic depicting this data is provided in the report. It shows that the highest concentrations occur between the major populations centers. However, the data does not delineate IFR from VFR. Larry Belisle will ask the SBS office to provide specific data derived from flight track computers, which will filter IFR traffic above and below FL180. VFR data from ADS-B will also be obtained.

- Who would be flying them?
  The users are asked to provide this data in their response in late October.

- Planned use rate
  The users are asked to provide this data in their response in late October.

Tom George (AOPA) asked that we open this dialog up to a greater population by conducting a series of public meetings around the state. We could obtain comprehensive feedback from the aviation public. We discussed the possibility of using the web to further advertise this initiative. This decision will be made by the SBS, and Airspace & Rules offices.

Lari Belisle presented a series of slides depicting information about suggested route modifications (attach 3). Two charted routes were furnished to the SBS office to aid them in their coordination with the RNAV/RNP office in establishing separation standards. Two slides depicting the project timeline were also shown.

The next user group meeting will be held at 10 AM on September 6th.
V/R,
Gary Rolf
Alaskan RNAV/RNP Contract Support
Advanced Management Technology Inc.
(907) 271-5898

Attachments:
1. PBN Route Background Paper
2. Attendee List
3. ZAN Briefing

# Performance Based Navigation (PBN) Routes in Alaska

Background Paper

August 3, 2007

The FAA's Flight Plan Initiative (07S31) plans to establish an improved statewide public performance based navigation GPS/WAAS enabled route structure in Alaska; "By FY 2009, establish an improved statewide public performance based navigation (GPS/WAAS) enabled route structure." The objective is to create an enroute structure that is not limited by ground-based navigation aid coverage and has the lowest possible minimum enroute altitudes. The FAA's Surveillance and Broadcasting Services (SBS) Program Office within the Air Traffic Organization – En-route (ATO-E) is charged with accomplishing this task.

In September 2006 a tiger team meeting was hosted by the former CAPSTONE Program to identify RNAV route establishment issues, and instrument approach procedure issues. The specific task of accomplishing Initiative 07S31 was addressed at a second FAA meeting held on May 3rd, 2007. At this meeting, various aspects of the task (feasibility and timing) were discussed, such as documenting separation standards, establishing guidelines for route design, accomplishing the automation tasks, and ability to transition to terminal area. The Mitre Corporation was tasked with drafting an accomplishment waterfall flow chart to capture these various tasks. ZAN staff announced that a User Group meeting was planned on May 30th with the purpose of soliciting specific user feedback on the route structure. The intent of forming this group was to gather feedback from a core group of Alaskan aviation interests. Keeping the group small was intentional to facilitate better communication.

This study is a result of a need arising during the May 30th User Group meeting. The group asked for more data to be provided, so they would be able to provide better suggestions on where to add to or modify the currently charted T and Q routes. There are 33 T routes and 8 Q routes already charted on En-route Low and High charts. For the purposes of this report, the routes are referred to as either "T" or "Q" routes. The FAA Order 7400.2 defines Air Traffic Service (ATS) Routes as either, Color Coded, "V", "J", "T" or "Q". The issue of defining RNAV equipment requirements is not within the scope of this report.

FAA Order 7400.2F, Chapter 20 describes the process for designation and establishment of ATS routes. RNAV routing is part of the ATS system. ATS routes should be designated when (in part), "The benefits of the designation should outweigh any adverse effects to other airspace users, and users will benefit from charted information pertaining to navigational guidance, minimum en route altitudes, and changeover points." This criteria is justified in the Flight Plan goal, because it not only improves efficiency, it will improve safety.

Several criteria were developed in the User Group meeting to aid in providing a template for establishing a standard from which to evaluate the route structure.

- Medical Evacuation Needs

- Current and Planned IFR Airports
- Future NAVAID Decommissioning Plans
- IFR/VFR Use
- Aviation User Base (who would fly)
- Planned Use Rate

**Medical Evacuation Needs**

Four operators providing aeronautical medical evacuation services in Alaska were surveyed to obtain information about common flight routing. They were Guardian Flight, Lifeguard, Warbelow's Flying Service, and North Slope Borough Search and Rescue. They cover most of the state and have aircraft that can reach almost any airstrip (depending on weather conditions). A graphic depicting the communities containing inpatient medical facilities with current and possible future PBN charting is shown at figures 1 and 2. Figure 1 depicts currently charted routing along with common routes flown by medevac aircraft. Figure 2 depicts medevac routing not in the immediate vicinity of charted PBN routing.

**Current and Planned IFR Airports**

The Anchorage Flight Procedures Office (FPO) reports that there are 142 Alaskan airports with IFR access (with published instrument approaches). They are depicted with charted PBN structure along with currently charted PBN structure on the graphic at figure 3. The Anchorage FPO reports that 22 airports have been approved by the Alaska Regional Airspace & Procedures Team (RAPT) for IFR upgrade surveys, and possible publication. They plan to develop instrument procedures for these airports in the next four to five years. These are depicted on the graphic in figure 4 and in text form in figure 6. There are currently four Alaskan airfields with LPV approaches published, and another 17 scheduled for LPV surveys. They are listed in Figure 6. The only one which isn't already depicted in figure 4 is Nikolski.

**Future NAVAID Decommissioning Plans**

In August, 2002 the FAA published a report titled Navigation and Landing Transition Strategy. This report in part defined the FAA's approach to decommissioning ground-based NAVAIDs. As the nation's aviation aircraft and infrastructure transitions to satellite based navigation systems, it's logical to conclude that the FAA should consider restructuring the ground-based NAVAIDs, or remove them altogether. However, a major point of discussion in the report is the threat and vulnerabilities to Sat-Nav systems. What would serve as a backup if the GPS service were compromised?

The 2002 report specifically exempted Alaska from removing any VORs or NDBs due to safety considerations related to the Alaskan flying environment. However, the White Paper published in August 2006 written for ATO-W to supplement the earlier report, only exempts NDB navigation aids. The White Paper centered its discussion on GPS vulnerabilities and on possibly adopting Enhanced LORAN as a suitable backup to GPS. In 2007 the Navigation Evolution Roadmap was drafted and is currently awaiting the administrator's signature. The plan will outline navigation evolution process guidance

and policy as the FAA transitions from ground-based navigation structure to satellite based, including NAVAID divestment. For the purposes of this study, there is no specific plan or schedule for decommissioning any particular group of Alaskan NAVAIDs. The following chronicles the most recent divestment activity. In 2005 the FAA decommissioned the Bishop, Gustavus and Wildwood NDBs. The Bishop NDB was in danger of falling into the river and the costs for moving it were formidable. The Gustavus and Wildwood NDBs were not connected to any airways or used by any instrument approach procedures. In 2006, the FAA determined that the Kipnuk VOR would be decommissioned due to ground interference caused by building development encroachment. The Kipnuk VOR has three (each) "T" and "V" Routes connected to it. In the future the FAA will be adding an intersection to preserve the routing and minimize impact to any instrument approaches connected to the VOR. Two military facilities at Galena (ILS, AWOS) and Barter Island (NDB, AWOS) are also currently being considered for decommissioning. For the purposes of this initiative, the information provided above should be considered by the users for providing input.

**IFR/VFR Use**

At the May 30th meeting, IFR and VFR usage data was discussed as a way of providing historical information which could be factored into the decision-making. This data is provided at figure 5 in the form of a graphic. The graphic depicts contains both VFR and IFR tracks obtained from flight plan and radar data . Unfortunately, is does not discern IFR from VFR, but does reveal that most of the higher volume traffic is flown between the hubs of Anchorage, Fairbanks, Bethel, Galena, King Salmon, Kodiak, Juneau, Dillingham, Nome and the North Slope.

**Aviation User Base (Who would use them)**

The intent of this report is to provide a source of data from which Alaskan Aviators can provide feedback to the FAA on the merits of possible modifications to the charted route structure. This User Base measure was discussed at the meeting as a way for the users to provide their own information about who they think will actually be flying these routes. The FAA will factor this information into the decision-making process.

**Planned Use Rate**

The planned use rate will also need to be provided by the Aviation groups and be assessed by the FAA this Fall.

**Summary**

This report provides no conclusions or recommendations. It supplies data as it exists today, from which the user groups will analyze and provide route structure input to the FAA. We have waited until the end of July to release this information at the user's request. We ask that the users take this data and spend the next couple of months preparing feedback on specific routing they think would be most beneficial. They should also factor the existing route structure in their feedback.

Note: A couple of errors were found in the report's graphics in Fig 1-4. They have been corrected in the attachment 1 copy.

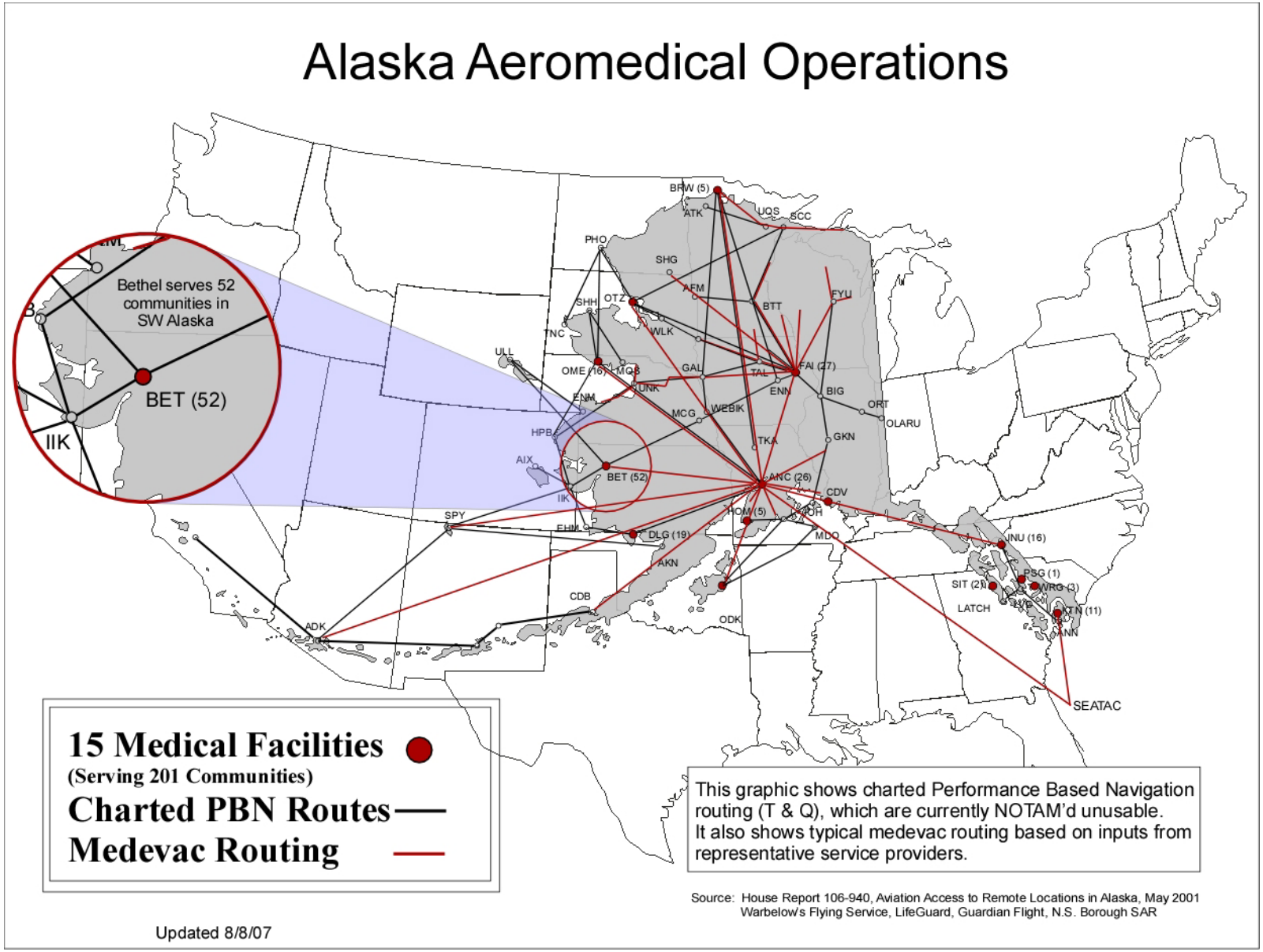

Alaska Aeromedical Operations
Bethel serves 52 communities in SW Alaska
BET (52)
IIK
BRW (5)
ATK
UQS
SCC
PHO
SHG
AFM
SHH
OTZ
BTT
FYU
TNC
WLK
ULL
OME (16)
MOB
GAL
TAL
FAI (27)
UNK
ENN
BIG
ENM
MCG
WEBK
ORT
OLARU
HPB
TKA
GKN
AIX
BET (52)
ANC (26)
CDV
IIK
HOM (5)
SPY
EHM
DLG (19)
MDO
AKN
CDB
ODK
ADK
INU (16)
PSG (1)
SIT (2)
WRG (3)
LATCH
ANN
SEATAC
15 Medical Facilities
(Serving 201 Communities)
Charted PBN Routes
Medevac Routing
This graphic shows charted Performance Based Navigation routing (T & Q), which are currently NOTAM'd unusable.
It also shows typical medevac routing based on inputs from representative service providers.
Source: House Report 106-940, Aviation Access to Remote Locations in Alaska, May 2001
Warbelow's Flying Service, LifeGuard, Guardian Flight, N.S. Borough SAR
Updated 8/8/07

Figure 1

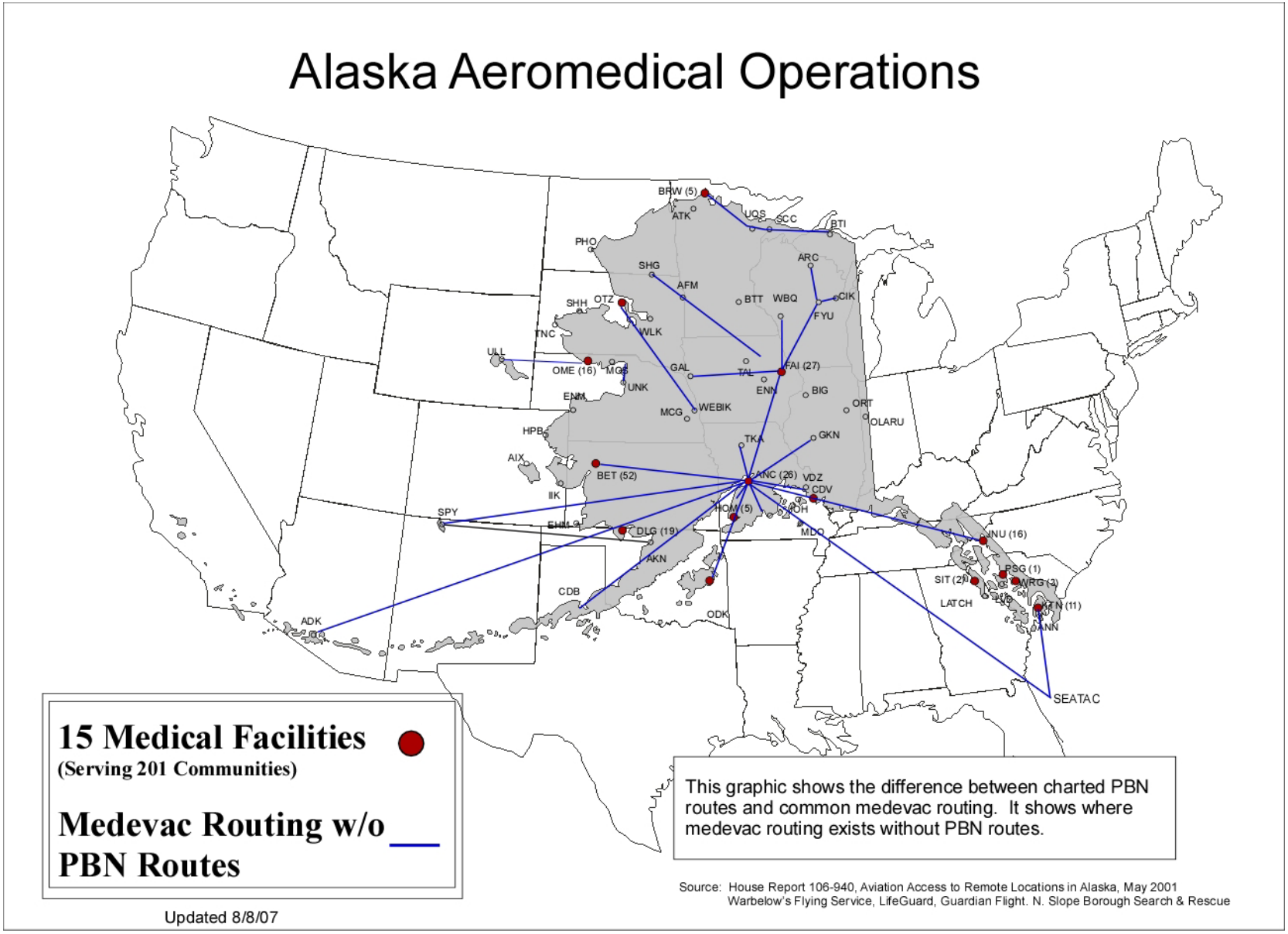

Alaska Aeromedical Operations
BRW (5)
ATK
UQS
CCC
BTI
PHO
ARC
SHG
AFM
BTT
WBQ
CIK
SHH
OTZ
FYU
TNC
WLK
ULL
OME (16)
MQS
GAL
TAL
FAI (27)
UNK
ENN
BIG
ENM
MCG
WEBIK
ORT
OLARU
HPB
TKA
GKN
AIX
BET (52)
ANC (26)
VDZ
CDV
IIK
HOM (5)
SPY
DLG (19)
MLD
AKN
JNU (16)
PSG (1)
SIT (2)
WRG (2)
LATCH
YAK (11)
CDB
ADK
ODK
SEATAC
15 Medical Facilities
(Serving 201 Communities)
Medevac Routing w/o PBN Routes
This graphic shows the difference between charted PBN routes and common medevac routing. It shows where medevac routing exists without PBN routes.
Source: House Report 106-940, Aviation Access to Remote Locations in Alaska, May 2001
Warbelow's Flying Service, LifeGuard, Guardian Flight. N. Slope Borough Search & Rescue
Updated 8/8/07

Figure 2

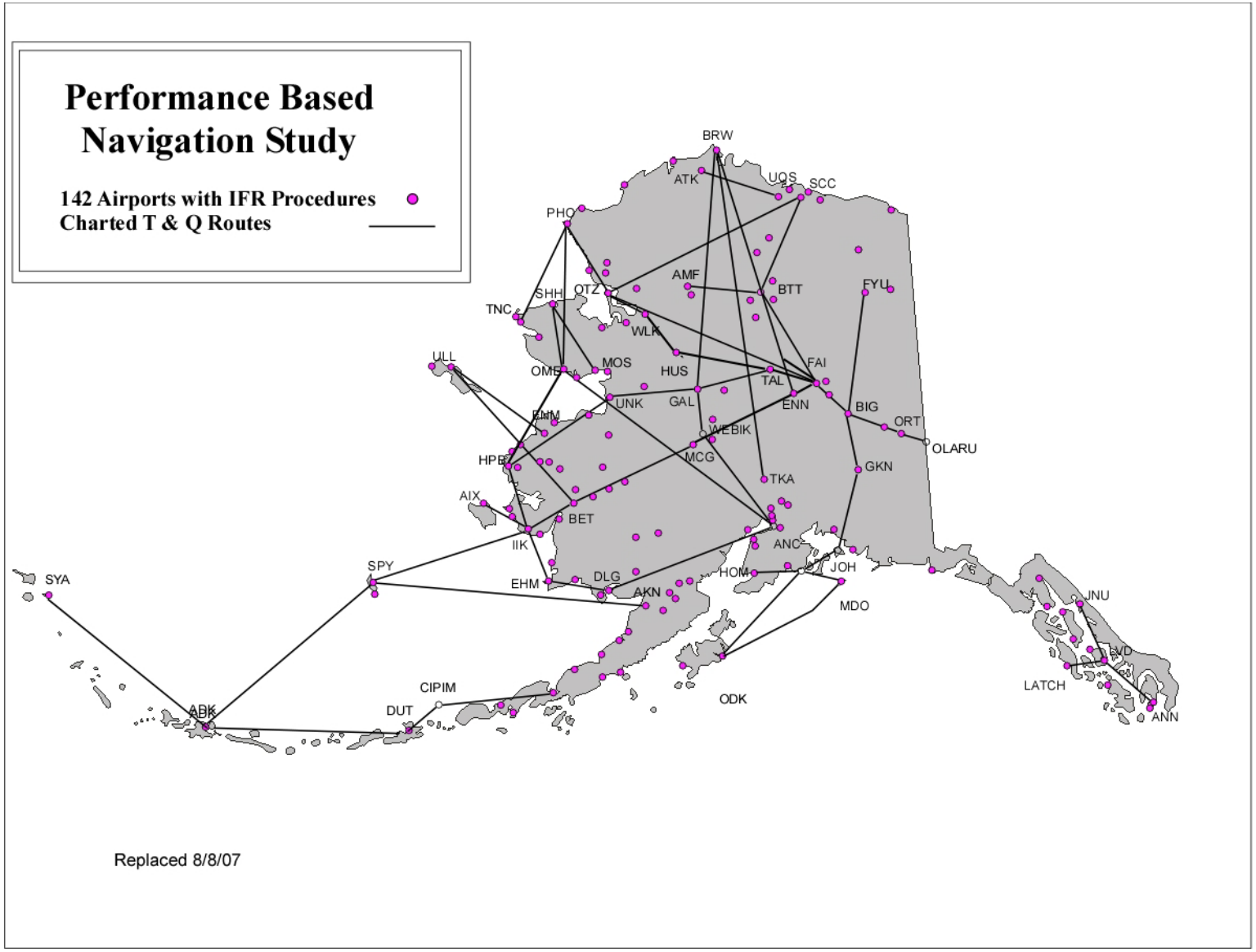

Performance Based Navigation Study
142 Airports with IFR Procedures
Charted T & Q Routes
BRW
ATK
UQS
SCC
PHO
AMF
BTT
FYU
SHH
OTZ
TNC
WLK
ULL
OME
MOS
HUS
FAI
TAL
UNK
GAL
ENN
BIG
ORT
WEBIK
OLARU
HPB
MCG
GKN
TKA
AIX
BET
IIK
ANC
SPY
SYA
EHM
DLG
HOM
JOH
AKN
MDO
JNU
CIPIM
DUT
ADK
ODK
LATCH
ANN
Replaced 8/8/07

Figure 3

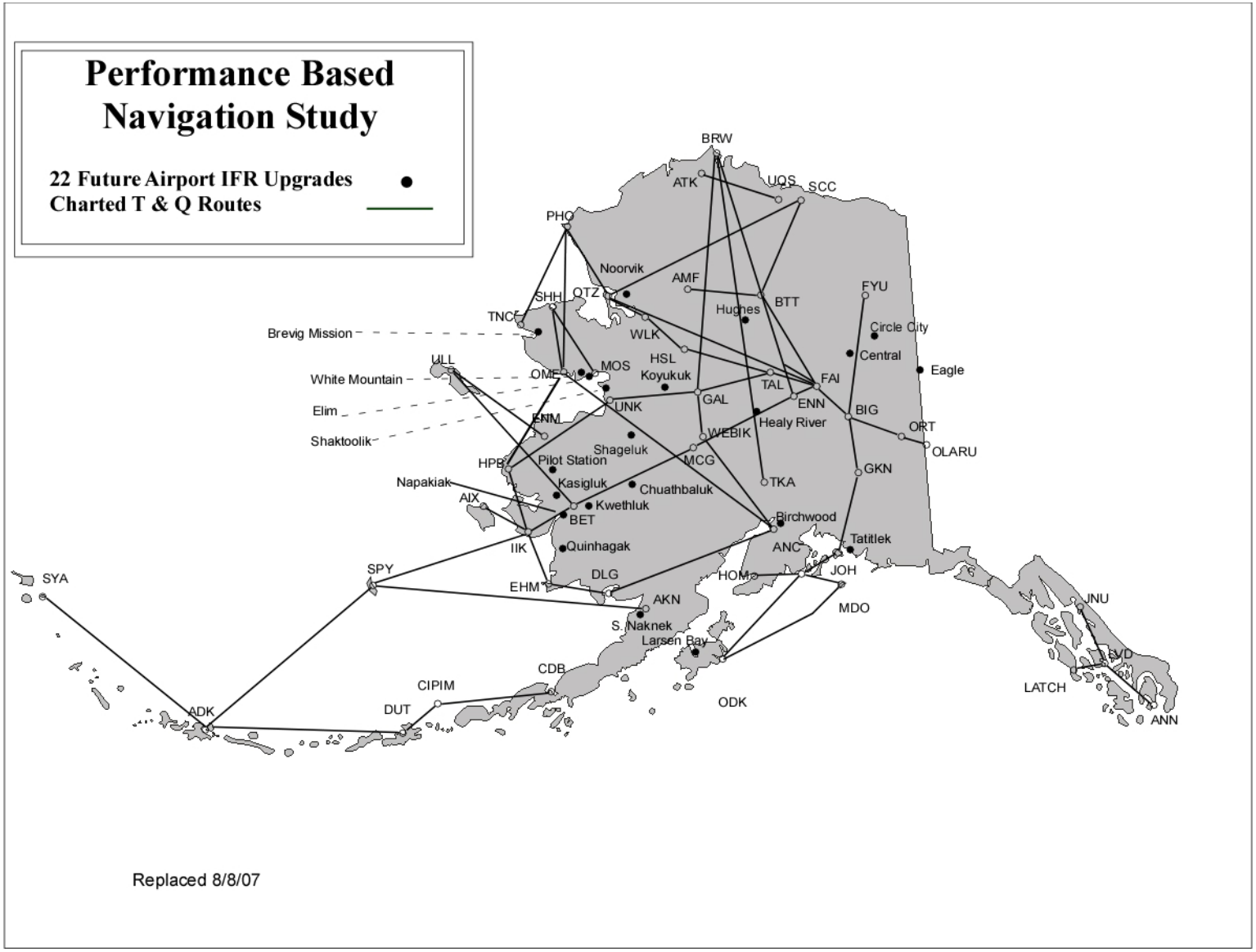
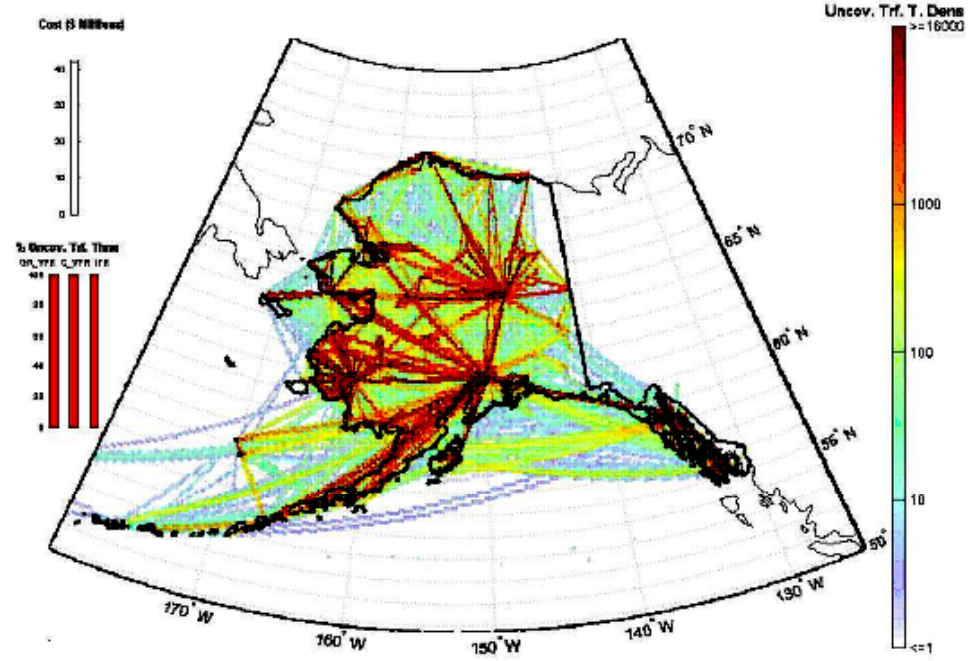

Performance Based Navigation Study
22 Future Airport IFR Upgrades
Charted T & Q Routes
BRW
ATK
UQS
SCC
PHO
Noorvik
AMF
SHH
OTZ
FYU
BTT
Hughes
TNC
Brevig Mission
WLK
Circle City
Central
ULL
MOS
HSL
Koyukuk
Eagle
White Mountain
OME
TAL
FAI
UNK
GAL
ENN
BIG
Elim
ENM
Healy River
ORT
Shaktoolik
WEBIK
Shageluk
OLARU
HPB
Pilot Station
MCG
GKN
Napakiak
Kasigluk
Chuathbaluk
TKA
AIX
Kwethluk
BET
Birchwood
Tatitlek
IIK
Quinhagak
ANC
SPY
DLG
HOM
JOH
SYA
EHM
AKN
MDO
JNU
S. Naknek
Larsen Bay
CDB
CIPIM
LATCH
ADK
DUT
ODK
ANN
Replaced 8/8/07

Figure 4

IFR/VFR Use - Based on Flight Plan and Radar Data. Red lines indicate greater flight activity.




Source: Mitre Corporation 2007

Figure 5

## Alaskan Airports with Instrument Approach Procedures (142) - AK FPO

Adak
Akhiok
Akiak
Allakaket
Allen AAF
Alpine
Ambler
Anaktuvuk Pass
Angoon
Merrill Field
Ted Stevens Anchorage Intl (LPV)
Aniak
Annette Island
Anvik
Arctic Village
Atka
Atqasuk
Barrow
Barter Island
Beaver
Badami
Beluga
Bethel
Bettles
Big Lake
Buckland
Cape Lisburne
Cape Newenham LRRS
Cape Romanzof LRRS
Chalkyitsik
Chevak
Chignik
Cold Bay
Coldfoot
Cordova
Deadhorse
Deering
Dillingham
Eareckson AS
Egegik
Eielson AFB
Elmendorf AFB
Emmonak (LPV)
Fairbanks INTL
Fort Yukon
Galbraith Lake, AK
Galena
Gambell
Golovin
Gulkana
Gustavus
Haines
Holy Cross
Homer (LPV)
Hoonah
Hooper Bay
Huslia
Igiugig
Iliamna
Indian Mountain LRRS
Juneau
Kake
Kalskag
Kenai
Ketchikan
Kiana
King Cove
King Salmon
Kipnuk
Kivalina
Klawock
Kodiak
Kulik Lake
Kokhanok
Koliganek
Kotlik
Kotzebue
Koyuk
Kwigillingok
Kulik Lake
Ladd AAF
Manokotak
Marshall
McGrath
Mekoryuk
Metlakatla
Middleton Island
Minchumina
Mountain Village
Napaskiak, AK
Nelson Lagoon
Nenana
New Stuyahok
Nikolai
Noatak
Nome
Nondalton
Northway
Nuiqsut
Nulato
Palmer
Perryville
Petersburg
Pilot Point
Platinum
Point Hope
Point Lay LRRS
Port Heiden
Prospect Creek
Red Dog
Ruby
Russian Mission
St. George
St. Mary's
St. Michael (LPV)
St. Paul Island
Sand Point
Savoonga
Scammon Bay
Selawik
Seward
Shishmaref
Shungnak
Sitka
Soldotna
Sparrevohn
Talkeetna
Tanana
Teller
Tin City LRRS
Togiak Village
Tok Junction
Toksook Bay
Kuparuk
Unalakleet
Unalaska
Valdez
Wainwright
Wales
Wasilla
Wrangell
Yakutat

Figure 6

## Airport Data

### Alaskan Airports approved for IFR Upgrade Study by Alaskan RAPT (22):

| | | | | |
|---|---|---|---|---|
| Quinhagak | Kasigluk | South Naknek | Tatitlek | Brevig Mission |
| Pilot Station | White Mountain | Kwethluk | Larsen Bay | Birchwood |
| Shaktoolik | Circle City /New | Robert (Bob) Curtis/Noorvik | Shageluk | Eagle |
| Hughes | Chuathbaluk | Koyukok | Healy River | Elim |
| Napakiak | Central | | | |

### Alaskan Airports approved for LPV Surveys by Alaskan RAPT (17):

Galena
Gustavus
Iliamna
McGrath
Saint Marys
Sand Point
Prospect Creek
Galbraith Lake
Gulkana
Huslia
Kaltag
Kotzebue
Allakaket
Ruby
Nikolski
Red Dog
Kodiak Island

Figure 6

## August 3rd Meeting Attendees:

| Name | Organization | Contact Info. |
|---|---|---|
| Dennis Parrish | Conoco Phillips | d.parrish@conocophillips.com |
| Tom George | AOPA | Tom.george@aopa.org |
| Carl Siebe | AASF | Csiebe@hdrinc.com |
| Dan Owen | Alaska Air Transit | Dano57@earthlink.net |
| Jerry Wortley | Alaska Airmen's Assoc. | jwortley@airsure.com |
| Bob Hajdukavich | Frontier Flying Service | bob@frontierflying.com |
| Mike Borowski | MITRE | borowski@mitre.org |
| Jerry Baker | MITRE | jbaker@mitre.org |
| Joe Spelman | MITRE | jspelman@mitre.org |
| Al Herndon | MITRE | aherndon@mitre.org |
| Jim Hill | SBS | Jim.hill@faa.gov |
| Lari Belisle | Anchorage Center | Lari.belisle@faa.gov |
| JoAnn Ford | ATO-W | Joann.y.ford@faa.gov |
| Kyle Christiansen | Anchorage FPO | Kyle.christiansen@faa.gov |
| Kevin Bridges | Aircraft Certification | Kevin.bridges@faa.gov |
| Hamza Abduselam | Aircraft Certification | Hamza.abduselam@faa.gov |
| Jesse Patterson | AMTI (ANM) | Jesse.ctr.patterson@faa.gov |
| Gary Rolf | AMTI (AAL) | Gary.ctr.rolf@faa.gov |

## ZAN Slides:

### CANDIDATES FOR POSSIBLE DELETION OR REWORKING

| | |
|---|---|
| T264 | Kodiak to Middleton |
| T262 | Kodiak to Johnstone |
| T237 | Homer to WUXAN |
| T242 | Talkeetna to Barrow |
| T246 | Anchorage to Galena |
| T232 | Northway to 141W |
| Q8 | Anchorage to Galena |
| Q16 | Kodiak to Middleton |
| Q14 | Kodiak to Johnstone |

### ROUTES SUBMITTED

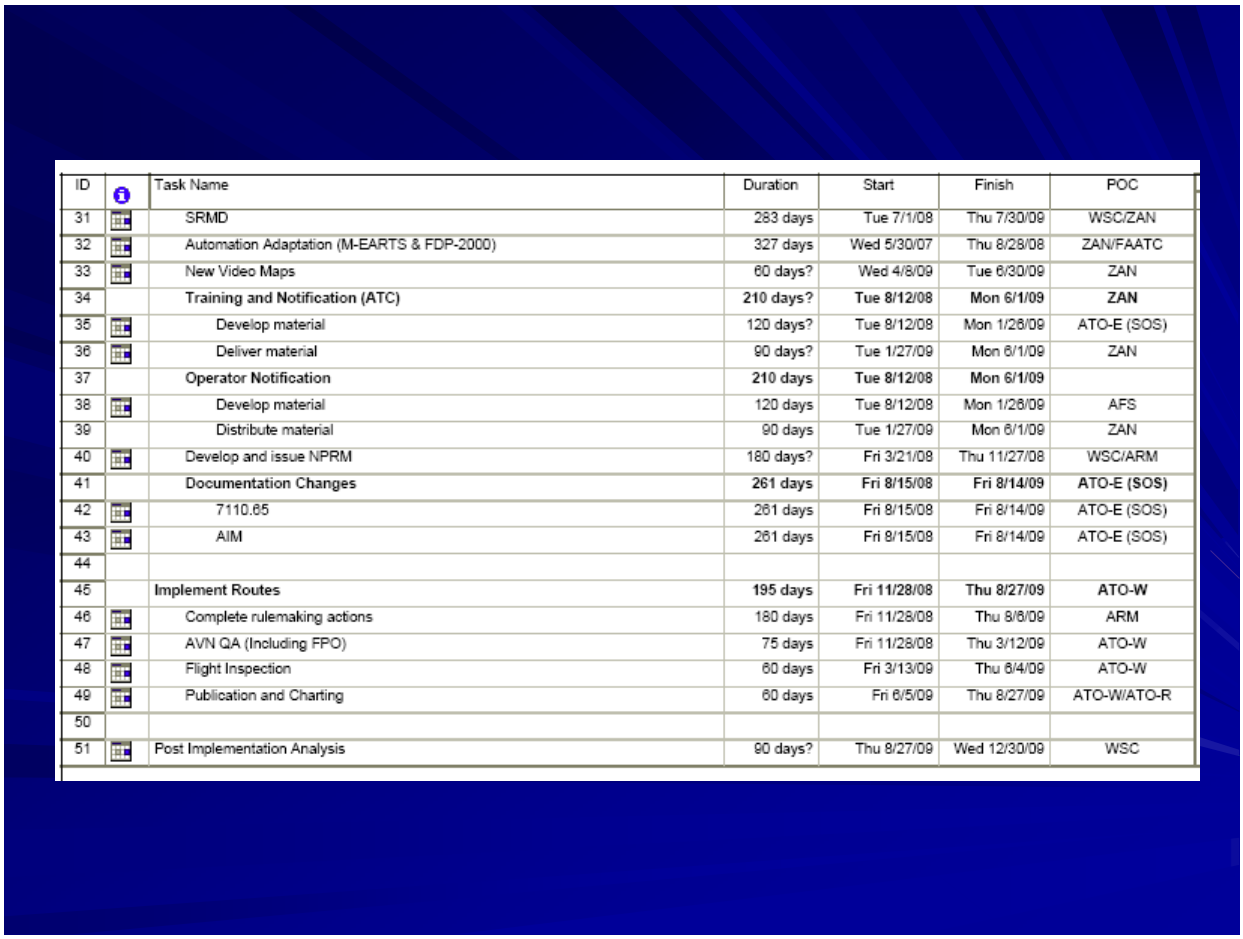
T-223 ANC to EHM

| | | |
|---|---|---|
| ANC | VOR/DME | (lat. 61°09'03"N., long. 150°12'24"W.) |
| BLUGA | WP | (lat. 60°46'22"N., long. 151°55'07"W.) |
| NONDA | WP | (lat. 60°19'16"N., long. 153°47'58"W.) |
| FAGIN | WP | (lat. 59°51'56"N., long. 155°32'43"W.) |
| DLG V | OR/DME | (lat. 58°59'39"N., long. 158°33'08"W.) |
| EHM | NDB | (lat. 58°39'21"N., long. 162°04'33"W.) |

T-244 ANC to OME

| | | |
|---|---|---|
| ANC | VOR/DME | (lat. 61°09'03''N., long. 150°12'24''W.) |
| CAKAD | WP | (lat. 61°18'24''N., long. 150°43'12''W.) |
| CEXIX | WP | (lat. 61°29'52''N., long. 151°21'58''W.) |
| BETPE | WP | (lat. 62°21'01''N., long. 154°29'43''W.) |
| CHEFF | WP | (lat. 63°02'10''N., long. 157°22'49''W.) |
| CONFI | WP | (lat. 63°49'03''N., long. 161°13'59''W.) |
| OME | VOR/DME | (lat. 64°29'06''N., long. 165°15'11''W.) |

| ID | Task Name | Duration | Start | Finish | POC |
|---|---|---|---|---|---|
| 1 | **Pre-Design Phase** | **105 days?** | **Wed 5/30/07** | **Tue 10/23/07** | **WSC/ZAN** |
| 2 | Alaskan PBN Route Background Paper | 45 days? | Wed 5/30/07 | Tue 7/31/07 | WSC/ZAN |
| 3 | User review and feedback on Alaskan PBN Route Background Paper | 60 days | Wed 8/1/07 | Tue 10/23/07 | WSC/ZAN |
| 4 | Develop Mission Need Statement | 60 days | Mon 7/9/07 | Fri 9/28/07 | ATO-E/WSC/ZAN |
| 5 | | | | | |
| 6 | **Determine where PBN routes are required** | **33 days?** | **Wed 10/24/07** | **Fri 12/7/07** | **WSC/ZAN** |
| 7 | Complete an analysis of existing RNAV/WAAS routes | 30 days | Wed 10/24/07 | Tue 12/4/07 | WSC/ZAN |
| 8 | Review and prioritize user input | 30 days | Mon 10/29/07 | Fri 12/7/07 | WSC/ZAN |
| 9 | Identify and consider newly IFR certified airports (~22), including implementation schedule. | 30 days? | Mon 10/29/07 | Fri 12/7/07 | WSC/ZAN |
| 10 | Consider NAVAID decommissioning | 30 days | Mon 10/29/07 | Fri 12/7/07 | ATO-W/WSC |
| 11 | Develop route implementation schedule/waterfall | 30 days | Mon 10/29/07 | Fri 12/7/07 | WSC/ZAN |
| 12 | Identify data needed for post-implementation analysis | 30 days? | Mon 10/29/07 | Fri 12/7/07 | WSC/ZAN |
| 13 | | | | | |
| 14 | **Develop Route Criteria** | **235 days?** | **Tue 8/7/07** | **Mon 6/30/08** | **AFS** |
| 15 | Develop criteria, approve safety analysis, for the establishment of performance based navigation routes to include protected airspace in a non-radar environment. (PBN in non-radar environment) | 235 days | Tue 8/7/07 | Mon 6/30/08 | ATO-R/AFS |
| 16 | **Define aircraft route performance criteria** | **30 days?** | **Mon 10/29/07** | **Fri 12/7/07** | **AFS** |
| 17 | Identify supporting infrastructure requirements. (WAAS, Surv, Comm) | 30 days | Mon 10/29/07 | Fri 12/7/07 | AFS/AIR |
| 18 | Consider user fleet equipage | 30 days? | Mon 10/29/07 | Fri 12/7/07 | AFS/AIR |
| 19 | | | | | |
| 20 | **Develop Routes** | **300 days** | **Mon 10/29/07** | **Fri 12/19/08** | **WSC/ZAN** |
| 21 | Review/redesign routes to tie-in to new/existing DPs/IAPs | 90 days | Tue 7/1/08 | Mon 11/3/08 | WSC/ZAN |
| 22 | Establish new WPs as needed | 30 days | Tue 7/1/08 | Mon 8/11/08 | WSC/ZAN |
| 23 | Environmental requirements satisfied | 300 days | Mon 10/29/07 | Fri 12/19/08 | WSC |
| 24 | Review proposed route design | 7 days | Tue 11/4/08 | Wed 11/12/08 | WSC |
| 25 | Complete Paperwork | 10 days | Thu 11/13/08 | Wed 11/26/08 | WSC |
| 26 | Paperwork to AVN and ARM | 1 day | Thu 11/27/08 | Thu 11/27/08 | WSC |
| 27 | | | | | |
| 28 | **Pre-Implementation Activities** | **578 days?** | **Wed 5/30/07** | **Fri 8/14/09** | |
| 29 | Determine aircraft performance requirements. (Specific requirements to meet route criteria) | 60 days | Tue 7/1/08 | Mon 9/22/08 | AIR |
| 30 | Establish Operator Approval Process | 60 days? | Tue 7/1/08 | Mon 9/22/08 | AFS |



| ID | Task Name | Duration | Start | Finish | POC |
|---|---|---|---|---|---|
| 31 | SRMD | 283 days | Tue 7/1/08 | Thu 7/30/09 | WSC/ZAN |
| 32 | Automation Adaptation (M-EARTS & FDP-2000) | 327 days | Wed 5/30/07 | Thu 8/28/08 | ZAN/FAATC |
| 33 | New Video Maps | 60 days? | Wed 4/8/09 | Tue 6/30/09 | ZAN |
| 34 | **Training and Notification (ATC)** | **210 days?** | **Tue 8/12/08** | **Mon 6/1/09** | **ZAN** |
| 35 | Develop material | 120 days? | Tue 8/12/08 | Mon 1/26/09 | ATO-E (SOS) |
| 36 | Deliver material | 90 days? | Tue 1/27/09 | Mon 6/1/09 | ZAN |
| 37 | **Operator Notification** | **210 days** | **Tue 8/12/08** | **Mon 6/1/09** | |
| 38 | Develop material | 120 days | Tue 8/12/08 | Mon 1/26/09 | AFS |
| 39 | Distribute material | 90 days | Tue 1/27/09 | Mon 6/1/09 | ZAN |
| 40 | Develop and issue NPRM | 180 days? | Fri 3/21/08 | Thu 11/27/08 | WSC/ARM |
| 41 | **Documentation Changes** | **261 days** | **Fri 8/15/08** | **Fri 8/14/09** | **ATO-E (SOS)** |
| 42 | 7110.65 | 261 days | Fri 8/15/08 | Fri 8/14/09 | ATO-E (SOS) |
| 43 | AIM | 261 days | Fri 8/15/08 | Fri 8/14/09 | ATO-E (SOS) |
| 44 | | | | | |
| 45 | **Implement Routes** | **195 days** | **Fri 11/28/08** | **Thu 8/27/09** | **ATO-W** |
| 46 | Complete rulemaking actions | 180 days | Fri 11/28/08 | Thu 8/6/09 | ARM |
| 47 | AVN QA (Including FPO) | 75 days | Fri 11/28/08 | Thu 3/12/09 | ATO-W |
| 48 | Flight Inspection | 60 days | Fri 3/13/09 | Thu 6/4/09 | ATO-W |
| 49 | Publication and Charting | 60 days | Fri 6/5/09 | Thu 8/27/09 | ATO-W/ATO-R |
| 50 | | | | | |
| 51 | Post Implementation Analysis | 90 days? | Thu 8/27/09 | Wed 12/30/09 | WSC |