



ALASKA AIR CARRIERS ASSOCIATION

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PBN Route Structure – Alaska Sub-Committee AACOA Co-Chair Dennis Parrish d.parrish@cop.com

AACA desires member input. Please complete the following two surveys. Your input will be included in summary discussions during the November 15-16, Final RTCA PBN Route Structure Alaska Subcommittee meeting. Recommendations resulting from this meeting will be forwarded to the FAA for implementation.

PLEASE COMPLETE SURVEY #1 and #2 and forward your company completed survey to d.parrish@cop.com or aaca@alaskaaircarriers.org by September 23. The surveys follow the summary below. You are welcome to contact Dennis Parrish with questions or additional comments.

Summary

The FAA's Performance Based Navigation (PBN) is proposed to utilize GPS satellite navigation. As a result, FAA intends to remove NDB approaches by 2025 and most NDB infrastructure by 2020. FAA is seeking an alternate means of navigation for the National Air Space in the event GPS is lost. Resiliency, "the back-up system" is proposed to be provided through a VOR Minimal Operational Network (MON) for the lower 48 only.

AACA desires additional information so the future Alaska enroute structure is meets AACA member needs. Assumptions which are currently in use within the FAA and the FAA research support groups are:

- The VOR MON is primarily to ensure the ability of an aircraft to land should the GPS system fail in a specific area or globally. It is not considered a means for long term and continuous navigation below specific altitudes or approach capabilities at remote locations.*
- The VOR MON program for the lower 48 has the advantage of ground transportation to all communities should the GPS system fail for an extended period. For that reason, different strategies are being considered in Alaska.*
- NDB Airways currently have lower enroute minimums than the "T" routes which would replace them after the elimination of NDB's. That is; as a rule, "T" Routes will likely have higher MEA's than the NDB Route it replaces. The difference is sometimes several thousand feet which is due to the requirement of continuous radio communication with ATC. "T" routes are considered a higher precision operating environment when compared to NDB Airways, with tighter separation standards, thus the need for continuous communication. The FAA is looking at the possibility of "exceptions" for Alaska in regards to communication standards, however it should not be assumed that will occur when answering the below questions.*
- Regarding Victor Airways: The assumption is that all "V" routes which have way points anchored by an NDB can have the NDB designated waypoints replaced by a GPS based waypoint. The "V" Routes known to have NDB anchors are listed in this document. Please review and comment if the NDB's can*

be removed with no impact to enroute navigation, or if there are any "V" Routes which are missed on this list that have NDB's involved in the route.

Additional information and considerations when answering questions:

- Terminal access is not a part of this study, however it will prove to be fundamental in the discussion of VOR's and NDB's. The current decision is to follow-up with a "Terminal and Approach" study after the airway study is completed. With that the question on "Resiliency" (redundancy???) will have a greater play.
- NDB's are viewed by the FAA and most of industry as outdated and unnecessary. It is understood that ADF's are expensive to install, and NDB instrument approaches are used infrequently. For those reasons there is a desire to completely eliminate all NDB's from the National Airspace System (NAS). If the GPS system were out of service for an extended period of weeks or months, would there be adequate backup in Alaska for enroute navigation from the VOR system, without NDB's. Again, during GPS outage, backup approaches for locations such as Gambell or Ambler will be discussed later.

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- Does your company fly IFR? _____
- How many pilots does your company employ? _____
- Company Name and Contact Information _____

Survey #1 this survey is focused only on enroute navigation.

Terminal navigation will be addressed separately at a later date.

- **Are company aircraft equipped with the following equipment in the panel?**
 - _____ ADF one installed two installed
 - _____ VOR one installed two installed
 - _____ WAAS GPS one installed two installed
 - _____ ADSB one installed two installed
 - _____ GPS one installed two installed
- **Do you or other company pilots use VOR as a primary source for enroute navigation?** Yes No
 - If so, how often, as a percentage of total flights? _____ %
- **Do you or other company pilots use VOR as a secondary source for enroute navigation?** Yes No
 - If so, how often, as a percentage of total flights? _____ %
- **Do you or other company pilots use ADF as a primary source for enroute navigation?** Yes No
 - If so, how often, as a percentage of total flights? _____ %
- **Do you or other company pilots use ADF as a secondary source for enroute navigation?** Yes No
 - If so, how often, as a percentage of total flights? _____ %
- **Is WAAS GPS as a primary source for enroute navigation?** Yes No
 - If so, how often, as a percentage of total flights? _____ %

- **Is WAAS GPS as a secondary source for enroute navigation?** Yes No
 - If so, how often, as a percentage of total flights? ____ %

- **Do you or company pilots regularly fly airways (VOR, NDB, T or Q routes) ?** Yes No

If you answered yes, please list the most frequently airways used and frequency of use:

 - VOR airways _____
 - NDB airways _____
 - “T” routes _____
 - “Q” routes _____

- **Do you or company pilots file IFR direct (not filed on airways) ?** Yes No

If you answered yes, what percentage of flights are filed IFR direct? ____ %

- **Please check all the answers that apply to company aircraft.**
 - ____ All aircraft are equipped with ADSB in and out.
 - ____ All aircraft are equipped with ADSB in.
 - ____ All aircraft are equipped with ADSB out.
 - ____ No aircraft are equipped with ADSB.
 - If equipage is mixed, please list the number of aircraft fully equipped, number with ADSB in and number with ADSB out.

- **Are there communication or navigation issues impacting IFR flights?** Yes No

If you answered Yes, please explain below, listing the location and specific issue . To review the current list of issues, please visit:
http://www.alaskaaircarriers.org/uploads/5/5/3/8/55385301/comm_problems.pdf

Survey #2 (If you have already completed Survey #1, please start here)

- ***There are inconsistencies with MEAs for Victor airways, GNSS, T-Routes, and NDB airways. Ensuring there are benefits from an existing and future route structure is critical to Alaskan commercial air operators. Some NDB airways are planned to be replaced with T-routes by 2025, but only if deemed necessary and required. Due to communication requirements, MEA’s for NDB airways are lower than for T-routes.***
 - Do you support replacing NDB airways with T-routes, even if it resulted in higher MEA’s? Yes No
 - Would you support replacing NDB airways with T-routes, if MEA’s were not raised? Yes No
 - Are there specific areas where a T-route would improve your operation’s economic efficiency? Yes No

If yes, please list _____
 - Would a GPS waypoint in lieu of an NDB serve your company needs? Yes No
 - If so, which NDB’s could be replaced with a waypoint? _____
 - If not, which NDB supported airways are vital to your operation? _____
 - Are there any victor airways, anchored by an NDB, that are vital to your operation Yes No
 - If so which air ways are vital? _____
 - If so would a GPS waypoint in lieu of an NDB serve your company needs? Yes No

- Why are the NDB airways or Victor airways anchored on one end by an NDB, important to your operation,
 - Lower MEA altitudes _____ Yes No
 - Location Yes No please indicate locations _____
 - Other, please identify other _____

- **Unlike NDB airways, T-routes require continuous communication. Which are more critical to Alaskan operators:** additional RCOs for improved communication with flight service or RCAGs for improved communication with Center. Currently FAA is considering installing two new RCO's.
 - Our company supports additional RCO's for FSS communications. _____
 - Locations that would benefit our company operations include: _____
 - Additional RCAGs are needed for Center communications. _____
 - RCAGs are necessary to resolve issues in the following locations: _____
 - _____

- **FAA intends to use a VOR MON for redundancy in the Performance Based Navigation (PBN) Route Structure. In the lower 48, the VOR MON Program will enable pilots to:**
 - Revert from PBN to conventional navigation in the event of a Global Positioning System (GPS) outage;
 - Tune and identify a VOR at a minimum altitude of 5,000 feet above ground level or higher;
 - Conduct VOR navigation through a GPS outage area or;
 - Navigate to a MON airport within 100 nautical miles to fly an Instrument Landing System (ILS) or VOR instrument approach without Distance Measuring Equipment (DME), Automatic Direction Finder (ADF), surveillance, or radar (where the capability currently exists); and
 - Navigate along VOR Airways, especially in mountainous terrain, where Minimum En-route Altitudes (MEAs) make direct-to navigation impracticable.
 - Alaska's existing VOR infrastructure would NOT currently support the MON standard.
- **If the satellite based navigation was not operational, how would your operation be impacted?**
 - Would your operation be adequately served by the existing Alaska VOR infrastructure? _____yes
_____no
 - Would your operation require any of the NDB supported airways?
_____yes _____no
 - If yes, which NDB supported airways are important _____

- **In regard to redundancy, Is there a need to consider additional recommendations around GPS interference such as current military exercises in Alaska?**
_____ Yes _____no

- **Allowing point to point flight in uncontrolled airspace above 1,200' AGL can result in ATC not providing traffic separation services to aircraft under their control, pilots not being told when entering or exiting this area, and ATC unable to vector a pilot unless requested. Eliminating all high altitude Class G airspace with Class E airspace in Alaska would be beneficial for point-to-point flight.**
 - Does your company support eliminating all Class G airspace above 1200' in Alaska?
_____yes _____no

- **The definition for mountainous areas are overly conservative and do not reflect the advanced navigation technology available today which could allow a safe reduction in size.**
 - Do you agree? _____yes _____no
 - Are there specific areas where this would benefit your company operation? _____yes _____no

If yes, please list _____

- **How will Alaskan Air Carriers operate IFR in 2025? Is there confusion among the pilot community on route planning and flight plan filing when it comes to off route flying.**
 - Would updating the Instrument Procedures Handbook and Instrument Flying Handbook to include off route RNAV guidance remedy the issue? _____yes _____no
 - Is additional FAA outreach and education needed for the Alaskan Commercial Aviation Industry?
_____yes _____no

- **Are there incentives that would encourage your company to equip with the TSO 145/146 WAAS navigation equipment?**
 - List Terminal infrastructure improvements needed _____

 - List Enroute Infrastructure improvements needed _____

 - What would the monetary incentive need to be? _____

- **It has been estimated that 12 to 14 additional radio stations are needed to adequately support ADSB statewide. Others have estimated far more than 14 radio stations are needed.**
 - Do you support including ADSB system needs with the enroute recommendations?
_____yes _____no
 - Given what you know of communications issues, do you feel that additional studies on radio station location should be done prior to forwarding a recommendation to FAA? _____ yes _____no

- **Please rank the following (1 – most important to 8 – lesser importance) for Alaska:**
 - Address RCO Communication Issues _____
 - Address RCAG Communication Issues _____
 - Redefine Mountainous Terrain _____
 - Update Education Material that Supports Pilot Flight Planning _____
 - Eliminate uncontrolled airspace above 1200' in Alaska _____
 - A VOR MON or combination VOR/NBD MON must be available in Alaska by 2025 for system redundancy

 - Establish Incentives for equipping with TSO 145/146 Equipment _____
 - Eliminate NDB airways _____

- **Do you support RTCA hosting an additional sub-committee to discuss terminal issues:**
 - What additional issues would you like included, check all that apply:
 - Need for additional LPV/LP approaches _____
 - Improved communication _____
 - Addition AWOS infrastructure _____
 - More tech ops support _____
 - Other, please list.

