

**PARC Member F2F Agenda**  
**November 16-17, 2005**  
**AMTI (Overland Room)**  
**1515 Wilson Blvd. Ste. 1100, Arlington, VA 22209**  
**703-841-2684**

**16 Nov**

- 9:00 – 9:15      Welcome & Introductions
- 9:15 – 9:30      Meeting Overview & Agenda Review
- 9:30 – 10:30     How PARC is Doing, What is Needed, and FAA Plans –  
Sabatini and PARC Discussion

NOTE: AC90-RNPSAAAR – Chirasello/DeCleene  
AC Status, FAA resolution on critical issues with Peaks and  
Obstacles, changes between comment version and final, and  
schedule for AC and Approval activities.

- 10:35 – 10:50    Break
- 10:50 – 11:35    Critical Schedule and Program Review- FAA/AMTI  
Expected Result: PARC awareness and agreement on detailed  
activities/schedules, and roles in each (i.e. action, review/comment,  
etc). PARC assigned actions on any proposed changes or  
additions.
- 11:35-12:35     Lunch Break
- 12:35 – 1:05     Critical Decisions WG Progress and key discussion  
issues for PARC action - Davis  
Expected Result: PARC agreement with issues, actions, priorities,  
and recommended plan of action, Status or Recommendations on  
ICAO RNP and RNAV and schedule
- 1:05 – 2:35      Roadmap Update – Shahidi  
Expected Result: PARC discussion and agreement with current  
draft, actions for final draft and schedule. Where does non-PARC  
coordination fit with final actions at PARC?
- 2:35 – 2:50      Break

- 2:50 – 3:20            Communications Working Group Roadmap –  
Tedford/Kraft  
Expected Result: PARC discussion and comment on total set of  
roadmap activities and recommendation on levels of non-PARC  
coordination
- 3:20 – 3:50            FASDAWG Status – Demosthenes  
Expected Result: PARC discussion on key issues, and schedule

## **17 Nov**

- 9:00 – 9:30            AC90-100 Action Team – Alexander  
Expected Result: PARC review and discussion on AT issues in  
work, work plan and schedule

Frank Alexander presented the status of the AC90-100 Action Team (AT). The team has met several times and discussed the work over the next 9-12 months. The current recommendations from the AT include the following:

1. Replacing Type A&B with RNAV 1&2 – The AT recommends eliminating Type A procedures. Bill Vaughn concurred. Type A is the equivalent of RNAV-2 and was originally implemented to allow DME equipped aircraft to fly an RNAV route until they reached 2,000 feet where they could acquire DME coverage. Type B is the equivalent of RNAV-1. Jeff Williams stated it has already been done. Type B procedures with two (2) nm accuracy requirement (RNAV-2) are in use. However, STARS in Atlanta have one (1) NM accuracy (RNAV-1) and would not be able to support arrivals in Atlanta due to DME coverage performance. There is a question of the minimum engagement altitude for LNAV approaches for different aircraft. Some aircraft have an operational limitation, e.g the MD-80, and others have mechanical limitations that need to be considered when developing these approaches.
2. The AT recommended elimination of DME/DME – The AT queried AOPA and RAA and neither organization is opposed to elimination of DME/DME as a required equipage for RNAV. An intense discussion followed with several members making statements. The general summary of the discussion is as follows. The benefit of eliminating the DME/DME requirement is to provide RNAV criteria where DME/DME coverage does not exist. There are several impacts to the operator if this requirement is deleted. First, the MEL must state that for RNAV, GPS is required. If GPS is not available, then you can not dispatch. This detail was not understood by AOPA and RAA. Second, the ability to navigate through large holes in the DME coverage would be lost. Therefore the aircraft may not be able to operate on an RNAV route. It was pointed out that the RNP roadmap calls for the elimination of jet routes in the mid term (2011-2015). When this occurs, the only way to operate above FL240 will be with

RNAV. Aircraft without DME/DME and with a loss of GPS can not fly these RNAV routes. Another issue affecting GPS is intentional interference caused by regular DoD GPS interference testing. This occurs today and will continue. When it happens, large geographic areas are affected with the higher altitudes being affected most. Third, the FAA is currently reviewing DME coverage. The FAA has agreed to provide DME coverage above FL180 and at the 35 OEP airports. If the DME/DME requirement is deleted, the FAA will alter the study and reduce their commitment for DME coverage. Fourth, there were questions why the FAA was relying on GPS under these conditions and why, with the extensive civil use of GPS, the military is allowed to “take away” the GPS signal. The issue should be raised with Mike Shaw’s new Position, Navigation and Timing Committee. Fifth, an aircraft may have to take an air traffic delay if GPS is not available in the terminal area. It was generally agreed that it was unwise to take the DME/DME requirement out of AC90-100 at this time. It should be left in and just not used if not necessary. The decision to eliminate was deferred until Mitre completed a study to determine the impact to RAA aircraft.

3. Definition of RNAV segment – This issue deals with a requirement in the AC90-100 that states that an RNAV segment should be in the navigation data base. Any manual loading appears to violate this requirement. The new definition is intended to clarify this requirement. Problems that can occur without the new clarification include: incorrect manual entries, course reversals, and discrepancies on what the chart says versus what the FMS displays, as well as others. PARC did not object to the definition. The final decision was tabled until further analysis including what impact the clarification will have on disqualifying aircraft for RNAV operations. This recommendation could also affect the use of CF legs.

9:30 – 10:00      Operational Safety Assessment – Shahidi  
Expected Result: PARC discussion of resource availability, leveraging competing activities, role of the WG, and next steps.

The OSA working group started with several members with meetings well attended. As work progressed, attendance dwindled due to other commitments. The work was partitioned into 3 prongs. The first was an assessment of the current collision risk modeling tools for possible enhancements and modernizations needed to adequately analyze performance based operations. There are on going projects in AFS-440 that are looking at this area. The second prong was the development of an OSA process/methodology. This has been taken as far as it can, is considered completed and is on the PARC member site for review. The third prong was a validation of the developed process/methodology. However with the limited resources, the WG needs direction from the PARC on whether to proceed with this last activity. This is expected to be a very time consuming process. John McGraw praised the work completed to date and said it was a good structure for an outline of a process that would lead into the SRND and the SMS process. The PARC members concurred with the recommendation to not proceed into the third prong and to post the results from the second prong on the

PARC KSN site for review. The review timeframe and required deadlines will be emailed to PARC members.

10:00 – 10:30 Human Factors WG Update – Abbott/Kerns  
Expected Result: PARC discussion of issues, work tasks, current views and planned actions, any key activities and schedule, plus New Proposed AT

Kathy gave a brief status of the mitigations instituted at ATL and briefed that things were working well. The HF WG has been working on developing a database that will contain all of the HF issues that have occurred with RNAV and RNP implementation. Items in the data base will not necessarily be worked or addressed by the HF WG. The goal is to create a library/repository for future reference. Kathy requested input from all PARC members on lessons learned. The HF WG has researched RNAV/RNP issues from European states from the ASRS, and from any others with knowledge. An issue was raised that concerned helicopters where the autopilot turns in the wrong direction if a turn on a missed approach is greater than 180 degrees. The auto pilot attempts to turn the shortest direction to the point which is not what the procedure calls for. Kathy noted this and thanked the members for the input.

10:30 – 10:45 Break

10:45 – 11:15 ATC Phraseology AT Update – Don Porter

Don Porter reviewed the activity of the “climb via” and “maintain” study that has been in progress for about 20 months. His group would prefer to be called the Pilot/Controller Procedures & Phraseology Working Group since they are looking at both sides of the communication and will eventually update the AIM, AIP, and the 7110.65. Don would like to get international harmonization on the definitions as well since ICAO does not define “maintain” in any of their documentation. A comment was made that PANS ATM might have these definitions in it. Don said he would research that document. Carol Kerns expressed concern that AIM input might be too legalistic and not understandable by pilots and controllers. Don replied that the study actually cleared up the multiple definitions of the terms in use today. Carol will address her concerns offline with Don. Don indicated the next steps were to coordinate the terms with the HF WG and with the FMS Task Force.

11:15 – 11:45 RNAV Criteria Recommendation review – John McGraw  
Expected Result: PARC discussion on key issues, and schedule

John McGraw gave a briefing that addressed the FAA activity needed to address the RNAV recommendations from both the TAOARC and the PARC. He drew an “approach pyramid” that had NDB/VOR approaches at the base and RNP SAAAR approaches at the peak with several layers of progressively more precise approaches in between. John indicated the line between RNAV and RNP SAAAR approaches has not been defined yet. Bill Vaughn commented that this appeared to drive

multiple approach codes to the same runway where certain attributes may need to be on different approach plates. Bruce DeCleene indicated that multiple approach codes are not a problem for some equipment. The recent policy and standards activity has been addressing these two areas and the RNP SAAAR area like swiss cheese. The FAA has been addressing policy here and there but has not completely covered these approach types. The GAWG from the TAOARC provided six (6) recommendations. Some were outdated. Steve Hickock indicated the vertical flight community is being accommodated by five of the six and that there is not an implementation problem for helicopters. He asked why RNAV is not being implemented immediately. John responded that some approaches are being implemented as specials. The public criteria are not yet available. Randy Kenagy indicated the TAOARC recommendations were not intended to be applied universally at all airports. Some airports have only Cat A&B aircraft and the intent of the recommendations was to use these criteria at those airports. AVN stated that it can be developed that way but some CAT A&B aircraft also operate in the CAT C realm and ask for that capability as well. John McGraw asked if the GAWG had made any recommendations of locations where this could be applied. No formal recommendation has been made, but in general it applies to runways 4,000 feet long. Step down fixes are currently being implemented in RNAV procedures and is no longer an issue. Randy Kenagy indicated that immediate climbing turns can be applied to all aircraft categories, not just CAT A&B. Don Pate indicated the understanding was that this was just for CAT A&B. There was some concern of going to a two-chart requirement immediately and that this tool should be used to improve procedures for all users where appropriate. Wally Roberts indicated that step down fixes in the final approach segment for reasonable course changes would require testing by manufacturers.

The PARC recommendations were presented and partitioned into items that are going to be incrementally released into public criteria. The first revision should be out for PARC review in December. Several items that do not require AFS-440 analysis will be released for PARC review in Q3FY06. The RNAV independent parallel approach separation needs further input from the PARC on the suggested RNAV and RNP accuracy to be included in the various approach combinations. Other items needed further clarification by the PARC on the intent of the recommendation. There will be additional vertical flight issues added to this discussion. The FAA encouraged issue be brought to their attention.

Frank Alexander suggested there be a new approach transition category to allow RNAV STARS for aircraft not capable of route type 3. These aircraft are capable of RNAV transitions but not type 3. AVN stated that RNAV transitions to an ILS need to be in the public criteria before procedures can be developed with this capability. There was some discussion on multiple segmented vertical angles. The FAA assumed these were inside the FAF. If it is outside the FAF, it is not a criteria issue. An example is at Eagle, CO where the approach starts at 4.6 degrees and then shallows out to 3.0 degrees. Some aircraft are capable of this and some are not. The question is broader than just equipment. There was a HF study 30 years ago that indicated changes in glide slope angle in the final approach segment and at lower altitudes has problems. This subject needs more discussion to look at all the potential impacts of implementing these approaches including overall safety, use at all airports

for noise abatement, etc. Bill Vaughn stated it would be beneficial if an RNAV approach could continue to be used below the minimum specified temperature. This issue was raised about 12 months ago was not pursued by the PATC. Bill volunteered to lead a Temperature Correction AT. The final comments concerned how you get from where we are today with a performance based NAS to where the PARC wants to go. The PARC needs to start by defining the line separating RNAV and RNP approaches. The FAA is looking for decisions from the PARC for this definition. It was decided that the RNAV and CD WGs needed to work more closely together. First step is to address this issue with a white paper recommending this definition.

11:45 - 12:45      Lunch

Dave Nakamura stated he would like to have a PARC page set up on the FAA's public web site. This would contain the Charter of PARC, PARC membership, official PARC letters of recommendation to the FAA, and documents the PARC has produced. Olga took the action to pursue this.

12:45- 1:15      WAAS Paper – Perry Solmonson

RAA presented a position paper advocating the use of WAAS as a primary means of navigation. Several advantages to RAA aircraft were cited in the briefing including no more need for an alternate approach, use of RNAV and LPV, removal of some ops approvals, among several others. RAA expressed a desire to have the SBAS capability integrated into the avionics systems. This is anticipated to take about 24 months for a full certification. Frank Alexander stated that SBAS only solves a small component of temperature compensation problem, does not solve the problem for enroute and terminal area. However, we are seeing the intermediate segments of procedures (e.g. Portland, OR RNP procedures) getting longer and longer. Use of WAAS gives options to correct the intermediate segment and have a seamless transition to the final approach segment. Randy Kenagy agreed with the briefing but stated there were some policy and regulatory decisions needed to get full implementation and benefit from WAAS. One example is the changes to the practical test standard to use WAAS for precision currency. Dave Nakamura did not want the PARC to short themselves looking at specific changes, that policy or guidance may need to be more general so as not to preclude qualifying systems and technology that meet an operational requirement. LPV is considered non-precision approach in some areas and precision in others. A question was raised about the number of RJs that do not have an IRU. Mitre did a quick survey of their data base and determined that 1,167 of approximately 2,400 RJs do not have IRU capability.

RAA requested PARC take action to address the regulatory issues in implementing WAAS/SBAS as a primary means of navigation. A question was raised to clarify the request was for a suggested rule change from PARC. Perry replied he did expect a NPRM to result from this study. It was recommended that the issues presented in the RAA paper be addressed by the CD WG and coordinated with the RNAV WG.

A question was asked to confirm that all of RAA supported this recommendation. The paper presented has the full support of the RAA including the Regional Operations Panel and the Flight Technical Committee.

1:15- 1:45            Public F2F Meeting Planning and Agenda – PARC

The public meeting required by the charter is tentatively planned for March 15-16, 2006. The purpose of the meeting is informational and educational on RNAV, RNP, and RNP SAAAR. We want to make sure that people understand where we are today, where we are going and how we get there. Human factors needs to be added to the agenda. One lesson learned from last year's meeting was the need for earlier public notification. Cindi Nordlie offered to help with a public notice. Dave has posted the draft agenda on the PARC member KSN site and requests feed back by Nov 28<sup>th</sup>. There was some concern stated about conflicts with international meetings. Olga took an action to check on the international meeting plans and to work with Dave to work out any conflicts.

Action: Need everyone's feedback on the agenda in one week – Monday following Thanksgiving (Nov. 28).

Action: Olga will check on international conflicts with March 15-16 meetings dates.

1:45 – 3:40            Harmonization Activities, 15 minutes each  
CAR/SAM – McGraw

ICAO RNP SORSG – Williams/DeCleene

There is a study group meeting in two weeks in Montreal. The purpose is to start the development of a performance based RNP operations manual covering both RNP and RNAV operations. Bruce will make a concerted effort to ensure the manual is consistent with the PARC developed material and suggestions. One such area will be to ensure that RNAV and RNP terms are used correctly and that RNAV-X is correctly differentiated between RNP-X, i.e. no containment versus containment. Others involve the integration of AC90-100 with the European PRNAV document and obtaining agreement with the terms in the approach domain. The US RNP SAAAR implementation has been accepted by the SORSG. Other approach types will be addressed as well.

ICAO OCP – Nakamura

A meeting was held two weeks ago to start putting together the RNP procedure design manual being "ICAOized" by Ralph Sexton. The basis of the manual is FAA Order 8260.52, but it needs to be rewritten using PANS OPS terminology. The plan is to present the completed manual to the RNP WG by mid year. Since it is an ICAO manual, it only needs the approval of the group chair and ICAO to be published. Bureaucracy is minimized. The VNAV WG is discussing an update to criteria using the VEB to provide additional information on Baro VNAV. Outside the US, there has been some recent concern that Baro VNAV is unsafe. This has originated from a

misunderstanding of how an FMS generates, produces, and implements vertical paths. There is work in progress on an informational paper/ manual on Baro VNAV. PARC needs to have feedback by end of year. Bruce DeCleene stated that the agitation in some countries is from the service provider side and from Europe is primarily from one person using a European Safety Study. There is potential here for significant impact from the manufacturers' point of view. Bruce takes notes for these meetings. If anyone is interested in reviewing these, let him know and he will send them to you.

#### ICAO NSP – DeCleene

The group has been developing changes to the ICAO flight inspection document (8701) on how to perform DME/DME/IRU flight inspection. There are also some new SATNAV SARPS. Bruce takes notes for these meetings. If anyone is interested in reviewing these, let him know and he will send them to you.

#### ATA FMS Task Force – Vaughn

The FMS Task force is reviewing the subjects listed below. Dave Nakamura would like to see a better sharing of information to provide better coordination between the two groups. The next meeting is 13-15 December. Targets will be reviewed Tuesday 0800-1200 and the GLS users' meeting is in the afternoon on Thursday.

- TARGETS issues and investigating the feasibility to access AVSNIS and incorporating TAWS.
- Charting Issues
- The NTSB is looking at FMCs. Sam Miller is working this and works with Jeff Meyers in Seattle and how to tackle
- The need to change approach classification but are not sure how to change.

#### RTCA ATMAC R&P WG – Wall/Speir

Nothing to report

#### Eurocontrol TERA – Frank Alexander

Information was provided to the TERA on RNP and RNAV procedures. The group has received very little user inputs. Expectations for progress using this group have been scaled back. The next meeting is after Christmas.

#### Classification of Instrument Approach Operations in the ICAO OPSP – Wink

Lyle Wink presented a draft document from the ICAO OPSP modifying the current definitions of approach classifications to account for the new performance based capabilities. The formal panel meeting where this draft will be considered is in May 2006. The changes are in Annex 2 and 6 and will require the formal IGIA vetting. In general, the current terms of precision and non-precision approaches are being replaced with 3D and 2D approaches. The gist if the change is to call the operations as either 2D or 3D operations and to classify an approach as precision or non-precision.

Pilots for the most part like the new terms. Mike Cramer asked how these terms relate to the three approach types currently in the CD WG recommendations, i.e.

RNP, RNAV, RNP SAAAR. Bill Vaughn asked how these related to precision, semi-precision, and non-precision approaches. AIR-130 published a paper that is on the PARC KSN site that gave approval to do 3D all the time and not have to do 2D operation. Lyle indicated these types of perturbations would require changes to the ICAO world.

Lyle presented a table that would be used to classify an approach as precision. Questions that arose were: 1) is this used for obstacle assessment? Bruce DeCleene stated that the numbers in the table are actual numbers that are active AVS policy, signed out by Tony Broderick. The idea is to keep the paradigm where XLS is still a precision approach. 2) How are they going to be used? The goal is to help classify a procedure as precision or semi-precision. 3) If this is a total system error it needs to be consistent with standards. For example, the FTE currently approved in the error budget takes up most of the numbers presented in the table. 4) How does an operator make use of this information? If a procedure meets values in table then it is called a precision approach. The key is this information is used to classify a procedure. An alternative is to classify based on minima. A difficulty occurs as you get into other operations based on infrastructure items. By connecting to performance, you can assign a classification without regard to infrastructure. Therefore, when you call an approach precision, it meets the performance in table.

HAT is used in the table. Does it mean the operational decision? If it does not mean that, then it would be more appropriate to define HAT as the operational decision point (DA) and ensure the numbers in the table reflect such.

Mike Cramer pointed out that given these new classifications, no linear procedures would be classified as a precision approach. RNP SAAAR would be a 3D operation but not precision. Hassan Shahidi reminded everyone that in the RNP Roadmap, three approach types are defined, basic RNP, RNP SAAAR and XLS. John McGraw suggested it is time we cut the umbilical cord between procedure name and type of operation. Maybe this should be addressed in the roadmap.

3:40 – 3:55          Break

3:55 – 4:15          Vertical Flight WG Update – Steve Hickok

The VF WG has been inactive for a period of time. Steve wants to become an active member and was asking direction on how to accomplish that. The Terms of Reference were explained and how to provide a proposal for an action team or a long term WG project. Dave asked Tann Pinney to assist Steve in working through the details of the process. The immediate need was to send a copy of a terms-of-reference document to Steve so he can develop one for his needs. Olga agreed to send one. Another issue dealt with reimbursable agreements and what these entailed. Tann agreed to research this.

Steve pointed out that some of the current RNP issues were solved by the VF community long ago. As stated above he agreed to contribute to the lessons learned data base. He also stated that the VF community has numerous simultaneous non-interfering operations (SNI). An example in New York City involves three heliports with over 80,000 operations per year. These numbers do not include tourists

operations. The application of RNAV and RNP routes through the New York City airspace would greatly improve operations throughout the terminal area.

4:15 – 4:45            8260.52 criteria at KSUN and KPSP implementation –  
Wally Roberts.

Wally presented an NBAA position that NBAA believes there needs to be better implementation policy for RNAV/RNP implementation and NBAA is available and willing to participate in the development of that policy. This briefing is in direct response to the offer by Jeff Williams and John McGraw at the NBAA convention that any issues be brought to the PARC as a clearing house. Tann was given the action to start setting up coordination. Wally suggested that follow up is required on original PARC guidance for implementing criteria and on changes to criteria that are needed.

ACTION: Tann – set up a tracking mechanism 1) to follow up on the original PARC recommendation for guidance for creating criteria, and 2) to follow up on changes to criteria that are needed.

4:45 – 5:00            New Business/Future Meetings

Kathy Abbott proposed an Automation AT to address some issues she has identified with automation through results from the Line Oriented Safety Assessment (LOSA). Through the LOSA, safety personnel observed normal flight operations and noted that 20% of the operational errors were automation related. The CAST has had similar concerns and has identified the need for an automation training tool. Kathy proposed the AT look at critical actions required to accomplish operations in a performance based NAS. Kathy offered that this will require very active support from people with an estimated commitment of 30 months with a time commitment of approximately 30%. She also noted that this has the support of Nick Sabatini as a PARC activity. Kathy will draft a ToR for review and approval by the PARC

Future F-2F PARC Member Meetings are planned for: Feb 21-22 as a working meeting to finalize the plans for the March 2006 public meeting and regular meetings June 13-14, Sep 12-13, Dec 5-6.