7 October, 2022

Mr. Lawrence Fields
Acting Executive Director, Flight Standards Service
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, DC 20591

Dear Mr. Fields,

The Performance-based Operations Aviation Rulemaking Committee (PARC) Steering Group is pleased to submit the following recommendation from the PARC Navigation Working Group for your consideration: RF Construction on RNP APCH with Extended Visual Segment.

After lessons learned from the recently published RNAV (GPS) X Rwy 31 at KLGA, the PARC NAV working group put together the following recommendation that further improves this new approach type before more are built in the National Airspace System.

The PARC looks forward to the FAA's review of this recommendation and any feedback on the as it pertains to this item.

Sincerely,

Ronald Renk
Industry Co-Chair, PARC

Cc: Chris Hope
Mike Cramer
Angela Williams

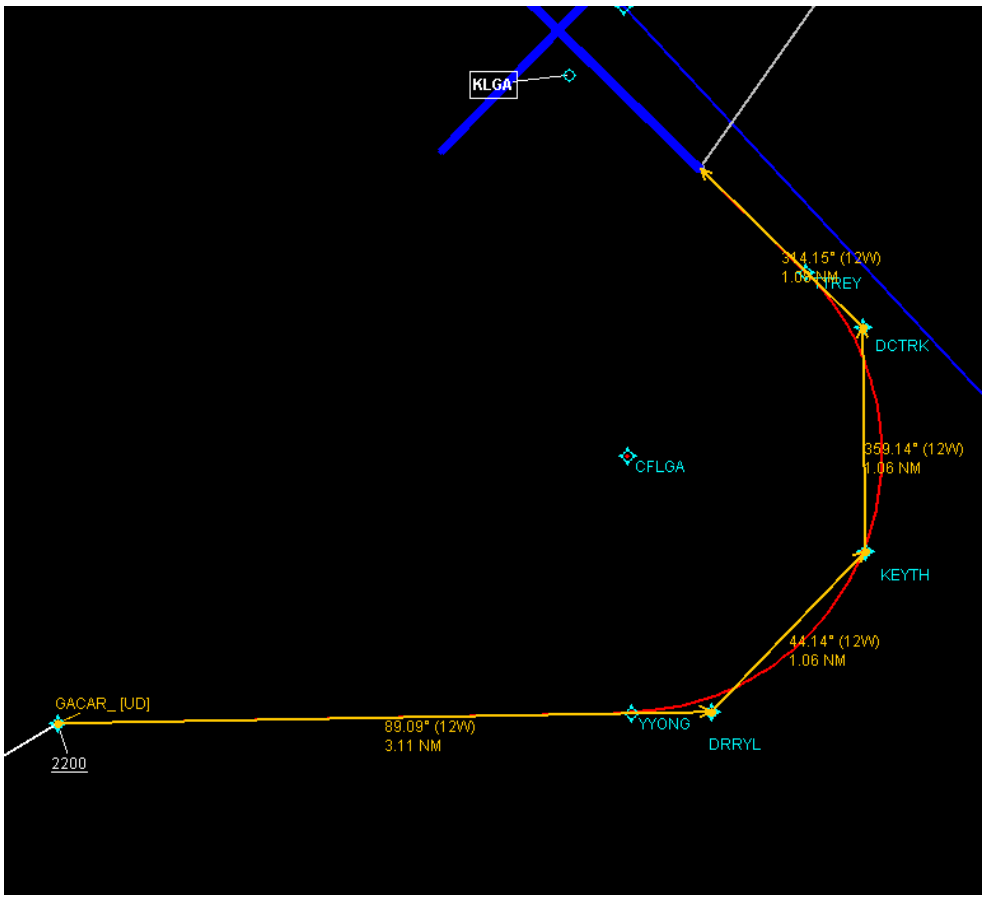
RF Construction on RNP APCH with Extended Visual Segment – Problem Statement

The PARC NAV WG has previously made a recommendation for implementation of RNP APCH operations that include an Extended Visual Segment. This initially came about because of a Commercial Aviation Safety Team (CAST) request to the FAA Administrator for a better approach into KJFK. As a result, more and more RNP APCH approaches are being constructed using the techniques in the NAV WG recommendation.

Since one of the underlying requirements was to have all aircraft be able to fly a stable approach path to the runway, these approaches are only being constructed with "Track to Fix" (TF) legs to the runway. While this is inclusive for most of the aircraft in the NAS, many operators have spent millions of dollars on aircraft with "Radius to Fix" (RF) capability. The RF leg is a turn that has predictable/repeatable lateral containment and provides a far superior capability to align the aircraft with the runway when there is a turn low, close-in to the runway threshold.

As such, each RNP APCH approach currently published with Extended Visual Segment has been tailored by many airlines to include RF in the Extended Visual Segment. While the FAA has stated this is an allowable practice, this causes the following undesirable affects:

1) Airline tailoring of a public procedure causes risk that the procedure be amended by the FAA but not updated by Jeppesen due to the tailoring.
2) Tailoring also has another undesirable effect of allowing each operator that tailors to fly a different ground track. In the LGA example outlined later in this document, N90 wanted only one path to the runway. Industry accomplished this by coordinating an RF solution but who owns the control/liability of this coordinated solution?
3) As noted in another PARC NAV WG recommendation, it is possible to construct an RF turn and then build TF turns to match it but sometimes impossible to construct TF turns and get an RF turn to match.



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The image above shows how the KLGA RNAV (GPS) X Rwy 31 had to be constructed to get an RF to fit the FAA constructed TF legs. The waypoint DRRYL is the MAP on the FAA version, but DRRYL is not on the RF version since if we waited until DRRYL to start the RF leg, the two procedures wouldn't overlay. This created a couple issues for the tailored RF version:

1) Different MAP waypoints on the RF and TF. Technically the extended visual segment is outside DRRYL and so tailoring should only take place after DRRYL. Adding RF cannot be done while keeping ground track compliance.
2) Different approach minima since the instrument approach ends at the MAP and the MAP for the RF had to be placed before the MAP on the public procedure.

Had the FAA been responsible to provide construction of the RF, the MAP could be the same with the same approach minima. DRRYL simply would have been an additional waypoint in the Extended Visual Segment after YYONG.

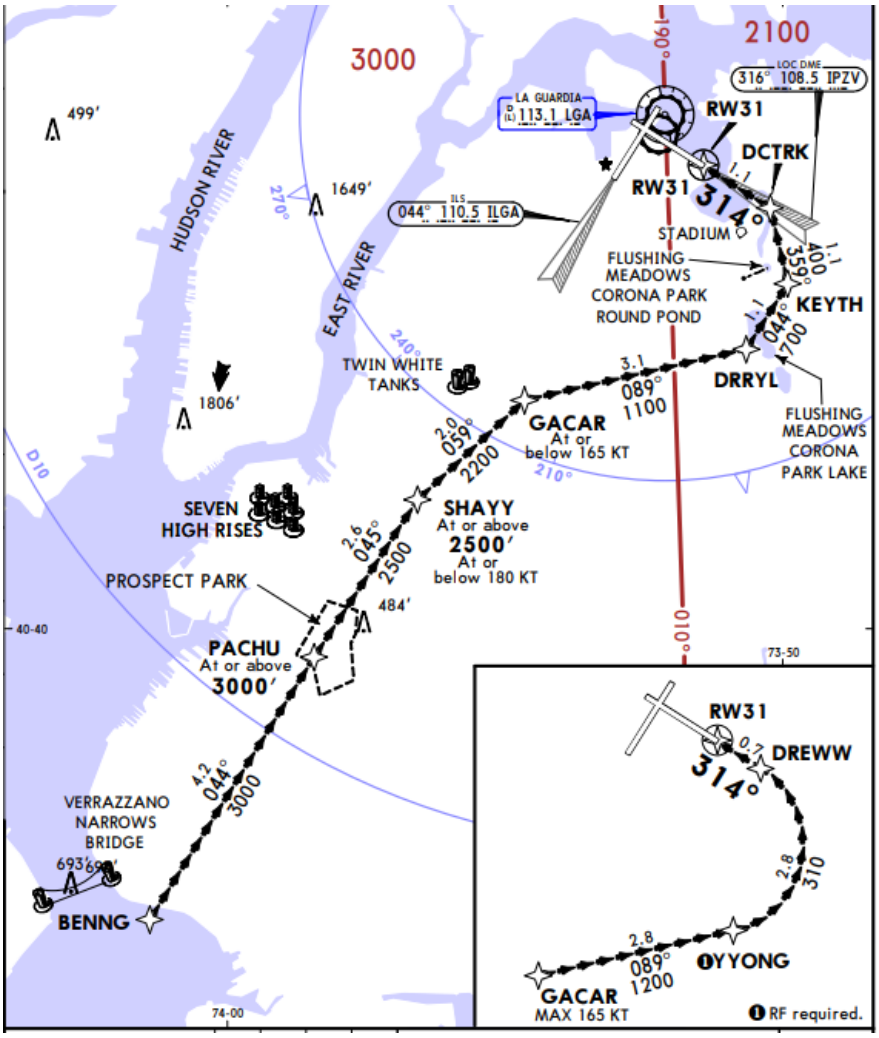
Finally, there is also an issue of packing the TF solution. It was thought that using TF was the ultimate solution to get 100% usage because all aircraft can fly TF. This simply is not the case as some FMS manufacturers prohibit coding TF turns in the final segment of the approach (PFAF to runway). For these airplanes, the RNAV approach with extended visual segments will not be included in the database. These same manufacturers allow RF in the final segment for aircraft that are "RF capable". Including an RF option would greatly increase the number fleet types that could participate in approaches with extended visual segments.

Having an FAA sponsored RF solution in the extended visual segment solves all the issues above.

Recommendation

The PARC NAV WG would like to recommend an addendum be added to the recommendation for implementation of RNP APCH operations that include an Extended Visual Segment. This addendum would request that anytime the FAA build one of these approaches that require turns in the final segment to the Final Roll-out Point (FROP), that the FAA construct both the RF and TF approach legs using the PARC RF/TF concurrent operations recommendation as a baseline. Keep in mind however, that the RF/TF recommendation was designed around instrument procedures. Since we are talking about RF/TF concurrent operations for the visual segment some variables of procedure design can be different for this use case (i.e., minimum turning radius can be smaller for extended visual approaches)

Combining the RNP APCH operations that include an Extended Visual Segment with the RF/TF concurrent operations would allow for maximum participation with the TF version but also allow the increased safety afforded by those that invested in RF capability.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