

# AERONAUTICAL CHARTING FORUM

Instrument Procedures Group

Meeting 18-01 – April 24, 2018

RECOMMENDATION DOCUMENT

FAA Control # ACF-IPG RD 18-01-335

**Subject:** Discrepancy Between STAR and Approach Common Fix Speed and Altitude Constraints

**Background/Discussion:** I am writing to pass on some issues with procedure design and Airbus 320 family behavior.

The Airbus 320 Flight Management and Guidance Control (FMGC) has been programmed where in the case of a waypoint that is common to both a STAR and an approach, the FMGC will insert the information coded on the approach vs the information coded on the STAR.

A current example can be found in KSEA on the HAWKS6 Arrival and the ILS or RNAV's to 34L/C/R. Another example is the KSEA MARNR7 Arrival and the ILS/RNAV's to 16L/C/R (GRIFY Intersection). For reference, I have attached the current HAWKS6 STAR and ILS 34L at the end of this email

If we examine the HAWKS6 Arrival (Landing North), the procedure at SONDR is coded "at 6000" and "230KT". However, if we look at the ILS 34L, SONDR is coded "at or above 6000" and no speed restriction. For Airbus 320 operators, if these procedures are selected by normal entry, the FMGC logic will default to the information coded on the approach, in this case the ILS 34L. This results in the omission of the mandatory speed and altitude on the arrival. Best safety practices, FAA and airline procedures dictate that a crew review anything entered into an FMGC/FMS to verify that the procedure is correctly loaded. Airbus 320 operators must manually enter the "at 6000" and "230KT", overriding the default "at or above 6000" and no speed restriction. The manual insertion of altitude and airspeed restrictions are routine and rarely present a conflict to the flight crews.

The major problem arises when ATC issues a late runway change, which would typically occur once the aircraft is first handed off to Approach Control. Anytime a runway is changed in the FMGC, it deletes any manually entered constraints and must again be manually entered to override the default logic. The increased workload of changing the runway during a critical phase of flight can lead a crew to miss this step, and cause a violation or potential loss of separation.

These issues also appeared at several other airports within the National Airspace System (NAS). These included airports such as LAX, OAK, LAS and DEN. However, the procedures were redesigned to have the exact same information coded on the STAR and Approach to avoid these potential hazards. Currently, I am only aware of SEA having this issue. The goal would

be to have procedures designed with the same information coded at waypoints that are common to two different procedures.

There is also a potential for lateral deviations under Airbus FMGC logic. If a STAR and an approach share a common waypoint, the FMGC will automatically link the procedures together from the common point. The issue here is that waypoints or part of the STAR may be deleted from the procedure. An example of this is the SHAIN1 Arrival into KORD. GIBNS is the second to last waypoint on the STAR, but it is also an IAF for every Approach procedure landing east (9L/R, 10L/C/R). The FMGC will connect GIBNS to the approach, delete JUKIC, and the 090 track segment. If this is unrecognized by the flight crew, especially during a late runway change scenario, the potential for a deviation or loss of separation is unnecessarily introduced. This issue can be found in other arrivals, including the KORD WATSN Arrival (VOGLR Intersection), and the KRSW SHFTY Arrival, (Landing 24, LBV VOR).

**Recommendations:** Align STAR and Approach Common Fix Speed and Altitude Constraints

**Comments:** It is understood that the NAS cannot be designed to accommodate every type of aircraft and avionics design. Pilots are still responsible that procedures are loaded correctly and ensure compliance with speed and altitude restrictions for any given procedure. We are tasked with the duty and responsibility to address and implement logical criteria within the design phase to avoid the introduction of hazards. The A320 family is a popular airframe and has a large share in the NAS. It is understandable that procedures may be designed without the intrinsic knowledge of how an aircraft's FMGC interacts with navigation databases. However, with the ever increasing complexity of airspace and procedure design, everyone needs to ensure risk is mitigated through collaboration, education and communication.

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**Date:** 4/6/2018

**Initial Discussion – Meeting 18-01:** Jerry O’Sullivan (ALPA) briefed an issue raised by an ALPA member who is an Airbus pilot. A fix on the KSEA HAWKZ arrival ([View](#)) is common to a fix on the ILS RWY 34L and 34R; however, the fix (SONDR) has dissimilar altitude and airspeed constraints on each procedure. The HAWKZ indicates a mandatory crossing altitude restriction of 6000 feet at 230 knots, whereas the ILS procedures indicate an “at or above” 6000 ft altitude constraint without any speed restriction. Jerry said that in the Airbus, the constraint on the approach procedure will take precedence, thus the “at 6000 feet” and the 230 knot constraint will both drop out of the FMS. Tony Lawson (Aeronautical Information Services) stated criteria has changed to eliminate this in the future; however, it’s possible these procedures haven’t come up for amendment since then. John said the policy changed in 2017 to address this on a day forward basis, and existing procedures are being worked as reviewed. Gary McMullen (SWA) said hard matches at the common fix solve the problem. Jerry brought up another issue of different FMS equipment manufacturers handling data differently. John Barry (Aircraft Certification) said FMS manufacturers are not going to change their systems unless the MOPS change. He strongly encourages operators bring these very valid concerns about FMS box operations to the RTCA meetings and voice these concerns. The operators need to let the engineers know their concerns, and meeting information can be found on the RTCA web site.

**Action Items:** John Bordy (Flight Procedure Standards Branch) will see if it is possible to move these procedures up for amendment to eliminate the discontinuity.

**Status:** Item open.

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**Meeting 18-02:** John Bordy (Flight Procedures and Airspace Group) informed the group that the affected procedures are in development and will be published in 2019 to remove the speed restriction discrepancies between the HAWKZ STAR and the approach procedures. John indicated there might be other STARs and approach procedures that have inconsistent altitude/speed restrictions at the termination of the STAR since the policy to harmonize these is new. Jose Alfonso, AJV-53, suggested that any customer or stakeholder that has a particular concern about a procedure could use the [IFP gateway comment form](#).

Jose indicated a response would be provided within 10 days.

**Action Items:** John Bordy to report on the status of the procedure amendments.

**Status:** Item open.

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**Meeting 19-01:** John Bordy, Flight Procedures and Airspace Group, briefed the issue directly from the [slide](#): discussing a summary and current status. Policy currently exists to require speed and altitude constraints to be identical when a STAR and approach procedure share a common fix. The HAWKZ STAR and ILS procedures used in the original recommendation as examples are schedule for amendment in 2020 as part of a large Seattle project. Kevin Allen, AAL, mentioned they discovered a couple more instances where there are disconnects between STARs and approach procedures, and when found, they enter requests into the IFP Gateway to have the procedures corrected. Gary McMullen, SWA, said a method is needed to rapidly make simple

changes to STARs (such as adding a speed constraint). John Bordy suggested this item be closed since policy already exists to prevent occurrences and since the procedures are scheduled for amendment in 2020; Darrel Pennington, AOPA, will consult with original submitter to determine if closure is acceptable.

**Action Item:** Darrel Pennington to advise if this item can be closed.

**Status:** Item open until advised by Darrel Pennington.

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**Meeting 19-02:** John Bordy, FAA Flight Procedures and Airspace Group, briefed the issue summary and current status from the [slide](#). The issue was related to a specific example where there was a mismatch of speed constraints between a STAR and instrument approach. There is now a policy to prevent this from occurring, but the specific procedures in question have not yet been amended. They were planned for amendment in 2020, but that date has been moved to 2021. Darrel Pennington, ALPA, had an action item from IPG 19-01 to advise if this could be closed, and he said it could now be closed. Lev Prichard, Allied Pilots Association asked why these specific procedures had not yet been amended and why they weren't made compliant the last time they were reviewed, and John Bordy explained the review process; for STARs and SIDs reviews are only required every four years, and a review which notes a criteria non-compliance will not necessarily trigger an amendment unless there is a safety issue. Lev inquired if a criteria issue is noted and entered into the IFP Gateway, how long would it take for the procedure to be amended. John discussed the Order 8260.43 procedures for priority scheduling and noted that if the issue is related to safety, it should be communicated as such. Gary McMullin, Southwest Airlines, said some procedures have been problematic for several years and suggested the system should be addressed, and that this meeting would be an appropriate venue to discuss this. John agreed it would be the appropriate venue, and said if this was a primary concern the FAA could see what could be done to make this a factor for the Prioritization Team. Lev said this is a problem, and the expectation should be that if something is entered into the system as an issue, the issue should be addressed in a reasonable amount of time. Rich Boll, NBAA, pointed out this discussion is related to agenda item 16-01-325. John agrees this is related to agenda item 16-01-325 and said allowing P-NOTAMs for SIDs and STARs should help resolve problematic procedures. Additionally, revisions of processes for abbreviated amendments could help, and discussions of those was an issue accepted by the US-IFPP. Rich asked if the US-IFPP WG on these issues can be open to industry participation. John says it could, but since these are internal FAA processes then it is appropriate to be an FAA internal discussion at this point. Rich suggested in addition to full amendments and abbreviated amendments, perhaps there could also be a corrective amendment option. Gary offered to provide specific examples of problematic procedures, and John said that would be helpful. Steve VanCamp (CTR), Flight Procedures and Airspace Group, took an action to get examples from Gary. John says the best way to elevate concerns regarding procedures would always be to send comments directly to managers at the appropriate Flight Procedures Team office. John took an action item to provide a briefing of IFP Prioritization Team factors at the next meeting as part of item 16-01-325.

**Action Items:**

- Steve VanCamp will request example problem procedures from Gary McMullin
- John Bordy will prepare a briefing of IFP Prioritization Team factors and brief with item 16-01-325

**Status:** Item closed