AERONAUTICAL CHARTING MEETING
Charting Group
Meeting – April 24 - 25, 2019

RECOMMENDATION DOCUMENT

FAA Control #19-01-331

Subject: Hotspot Information on Departure/Arrival Charts

Background/Discussion:

An in depth analysis of Air Traffic Quality Assurance (ATQA) data revealed that in the year 2017, there were over 5,871 recorded pilot deviations in the US. To date, in 2018 we have had 4,636 recorded so far. The purpose of this recommendation is to target those areas where we see a high volume of pilot deviations. Although we cannot encompass all the recorded deviations with this recommendation, we hope that we can mitigate a good portion of those by putting in place procedures that pilots with any experience level can follow.

Between the years 2012 and 2018, the RUUDY SIX RNAV departure procedure located at KTEB has produced 177 pilot deviations. Actual data shows pilots with high experience levels, as well as low experience levels, have failed to follow Standard Instrument Departure procedure instructions. Out of the total pilot deviations recorded, 59% of those who failed to follow instructions led to unauthorized climbs; 41% of those who failed to follow instructions led to unauthorized turns in the departure. These numbers translate to approximately 2.5 deviations per month.

KTEB lies 11NM to the northeast of Newark Liberty International Airport (KEWR). When a/c traffic bound for KEWR are flying the approaches for Runways 22L/R, the approach corridor to the runways lie right over KTEB, which is why it is so crucial for pilots departing KTEB Runway 24 to adhere to the vertical and horizontal limits of the departure. KEWR ILS RWY22L shows the approach corridor and the proximity to KTEB. We can also see that there is an altitude restriction on the approach to cross over TEB VOR/DME at 3000 feet or above, while the top altitude on the RUUDY SIX RNAV departure is 2000 feet. This guarantees separation of arriving and departing traffic. However, when a pilot fails to meet the vertical constraints of the departure, they can find themselves very quickly in the path of incoming traffic to KEWR.

Recommendations:

Recommend airborne hotspots be created in departures/arrivals that yield a high volume of pilot deviations in the NAS. Much like the hotspots we have for taxi procedures, these airborne hotspots can inform the pilots of potential issues that other pilots have encountered during the departure. Also recommend adding a hotspot description box.

The intent of creating airborne hotspots is to make flight crews aware by highlighting conflict areas that have the propensity to produce pilot deviations.

Recommend this methodology be applied on a test bases for the RUUDY SIX RNAV for a 6-month period to providing a low cost validation of the effectiveness. If, by using these changes,

a reduction in pilot deviations were observed, then implementing these changes at other high volume locations would be easier to justify.
Comments:

This recommendation came to the FAA in the form of an FAA Safety Recommendation.

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Date: 13 March 2019

MEETING 19-01

Jorge Arbona, FAA/AFS-ATL-DELTA-CMO-27, and Brian Dempsey, Flight Safety International, briefed the new recommendation. Jorge said that this proposal is in response to an FAA Safety Recommendation regarding areas that have a high volume of pilot deviations. He is part of a team working to find solutions to mitigate the deviations.

Jorge stated that users flying the RUUDY SIX DEPARTURE out of Teterboro Airport (TEB) experience an inordinately high number of pilot deviations (See Slide #3). After analysis of this specific Departure, a list of four safety concerns (See Slide #8) was generated. The recommendation presented to mitigate those safety concerns is the addition of airborne “hot spots”, strategically located and explained, to inform pilots of areas of potential concern, similar to the hot spots currently in use on Airport Diagrams. Jorge presented an example of the RUUDY SIX DEPARTURE with the addition of three proposed airborne hot spots (See Slide #10). Brian then presented information on the psychological methodology behind the recommendation and reasoning as to why the use of hot spots might be effective. (See Slides 14-15)

The proponents recommended the addition of hot spot information to the RUUDY SIX DEPARTURE for a trial period of six months to see if a reduction in the number of pilot deviations would result. If a marked reduction in pilot deviations at the test site can be documented, it is recommended that similar changes could then be implemented in other locations with high numbers of deviations.

Rune Duke, AOPA, asked what criteria would be used to determine which procedures qualify for the addition of hot spots. Brian said that if the test at TEB proved successful, a workgroup would be formed to establish criteria.

Michael Stromberg, UPS, commented that pilots need to read and understand the chart. He said calling attention to areas of concern may have the effect of making the rest of the chart seem less important. He also pointed out that Airport Diagram hot spots are different because there is no defined path.

Valerie Watson, FAA/AJV-A250, expanded on this line of thinking, explaining that hot spots on Airport Diagrams are used to highlight confusing ground locations on the airport so that pilots can plan how to approach and transition through them. On a Departure Procedure, she pointed

out that the planning has been done for the pilot in the form of published headings and altitudes that he is expected to follow.

Rich Boll, NBAA, said that that he has a lot of personal experience with the issues at TEB. He said it is important to understand the reasons why these deviations are occurring before implementing a solution. If the problems at TEB go beyond pilots having trouble reading the chart, this solution will not fix it. He also does not like the idea of adding clutter to the chart. He pointed out that there have been 12 Notices to Airmen issued at TEB in an attempt to solve these issues and they have not fixed the problem. Several others in the audience also stressed that it is important to find the root cause of these pilot deviations before deciding on a solution.

Valerie stated that she knows of no mechanism within the FAA to publish a new item on a chart as a test case. The Interagency Air Committee (IAC) charting specifications are shared with the military and changes to the charts need to be vetted and formally approved through that group. Additionally, she feels that using hot spots to highlight certain elements on a procedure as more important than others introduces a legal liability issue. She asserted that is it important that pilots comply with ALL published procedural elements and underlining only selected attributes as more crucial than others is legally problematic.

Rich suggested, as an alternative to the proposed hot spot solution, the publication of an Attention All Users Page (AAUP) for locations such as Teterboro that experience a high number of deviations. He showed the audience a prototype AAUP for TEB with recommended wording that he suggested may help to mitigate the problems at that location. He pointed out that an AAUP can give a pilot a lot more information than the brief explanatory text of the proposed hot spots. Rich stated that he recognizes that Departure AAUPs are not currently used specifically to mitigate pilot deviations, but suggested that if approved, this may be a good solution.

Rich added that he would not recommend the addition of large numbers of new AAUPs as they are not necessary at most airports. He stated that the first step should always be to try to amend the procedures that are believed to be causing the deviations. Rich acknowledged that Flight Standards will have to set criteria for when an AAUP is authorized and should be used only after other mitigations have been pursued.

Valerie asked the group firstly if there was support for the depiction of hot spots on Departures and Arrivals as presented in the original proposal. There was general agreement that the addition of airborne hot spots on Departures and Arrivals was not a good solution. She then asked the group about the proposal to publish an AAUP to address the pilot deviations and historical problem at TEB. There was unanimous support among the pilot audience for an AAUP.

Based on ACM support, Rich will work with Jorge and Brian to initiate coordination for the publication of the proposed Departure AAUP for TEB. Valerie said that the publication specifications already exists for Departure AAUPs, but that Flight Standards would need to approve the process and perhaps issue a waiver to support the publication for purposes of reduction of pilot deviation. If it proves successful, there was ACM support for the possibility of future AAUPs with set criteria as determined by Flight Standards.

STATUS: OPEN

ACTION: Rich Boll, NBAA, will coordinate with Jorge Arbona, FAA/AFS-ATL-DELTA-CMO-27, and Brian Dempsey, Flight Safety International, to initiate the publication request for an RNAV Departure AAUP for Teterboro Airport (TEB).

MEETING 19-02

Rich Boll, NBAA, reviewed the history of this item. He reported that since the last ACM he has formed a workgroup to look into this issue and has been in discussion with the Flight Operations Group regarding a proposed Attention All Users Page (AAUP) for the RUUDY DEPARTURE at Teterboro Airport (TEB). Rich said that the Flight Operations Group has expressed concern with widening the use of AAUPs which are currently only used for a very specific criteria. The office has expressed they would prefer to pursue other options to mitigate the issues at TEB.

Rich then showed the audience how an Alert Notice is being used at Seattle/Tacoma International (SEA) to make pilots aware of the potential danger of misidentifying a taxiway located in between three runways. He pointed out that the information regarding the Alert Notice is published directly on the FAA 8260-3 Form. John Bordy, FAA/AFS-420, commented that there is no criteria for Alert Notices in FAA Order 8260.19. He voiced that the Seattle case appears to be a “one-off” that does not follow currently published procedure development guidance. Valerie Watson, FAA/AJV-A250, pointed out that there is also no Interagency Air Committee (IAC) Specification guidance for publication of Alert Notices.

Rich said that the FAA Safety Office is examining the origins, intent and effectiveness of the SEA Alert Notice. If it is determined that it has been effective at increasing safety at SEA, that could justify the publication of another such notice at TEB.

Joel Dickinson, FAA/AFS-410, commented that if there is a procedure with a high rate of deviations, the FAA should first look at a redesign of the procedure. Dave Teffeteller, FAA/AJV-A433, agreed that the first step is to look at the procedure(s) in question and make an attempt to remedy the situation by revising the procedure(s). He also said that before another Alert Notice is considered, criteria would need to be established for when the publication of an Alert Notice is indicated. Rich explained that the RUUDY DEPARTURE is a particularly difficult procedure to fly given the complexities of the airspace constraints around New York. He said there is not a lot that can be done procedurally to fix the issues at this location and that numerous attempts to do so had been made to little effect in the past.

Gary McMullin, Southwest Airlines, suggested that the FAA could do a safety risk management review to look at the particular issues causing problems at TEB. That could help to identify the problems, and help find ways to mitigate them.

Discussion then shifted to a debate between AAUP or Alert Notice and which would better serve. Joel commented that the criteria will have to be modified to accomplish either one of those as a solution. Valerie stated that the first choice should be an AAUP rather than an Alert Notice as there is already criteria and specifications in place for RNAV Departure AAUPs and it is likely easier to expand the existing guidelines for an AAUP rather than creating new guidance for an Alert Notice. She added that the FAA is looking into removing the published Alert Notice at SEA because it is not supported by either current procedure design criteria or charting specifications. Valerie asked John Bordy, FAA/AFS-420, if he could start looking into these

issues from a criteria standpoint. John said that he would be part of Rich's workgroup going forward.

STATUS: OPEN

ACTION: Rich Boll, NBAA, will report on progress of the workgroup regarding the addition of criteria for the use of an Alert Notice or Departure AAUP for Teterboro Airport (TEB).

ACTION: Rich Boll, NBAA, will report on the results of the FAA Safety Office's examination of the origins, intent and effectiveness of the SEA Alert Notice.

MEETING 20-02

Samer Massarueh, FAA/AJV-A221, reviewed the issue. Rich Boll, NBAA, presented a briefing on the status of this item. He reported that after reaching out to multiple lines of business within the FAA, it was determined that the pilot deviations on the RUUDY DEPARTURE at Teterboro Airport (TEB) are indeed a safety concern. He explained that the FAA introduced a new tool in October called the Aviation Risk Identification and Assessment (ARIA) tool. The plan is to use this tool to assess the risk at TEB and, based on those findings, determine if a Safety Risk Management Panel (SRMP) should be conducted. Rich said that the proposed draft AAUP/Alert Notice is largely complete but on hold pending results of the FAA risk analysis.

Rune Duke, FAA/AJI-314, supported Rich's summary and said FAA Safety Management Group is awaiting the data from the risk analysis before determining what the next steps will be.

John Moore, Jeppesen, asked if the FAA can provide a future briefing on the ARIA tool. Valerie Watson, FAA/AJV-A250 said she will coordinate with the FAA Safety Management Group on providing a briefing at the next ACM.

STATUS: OPEN

ACTION: Rich Boll, NBAA, will report on the results of the FAA Safety Management Group's risk analysis of the RUUDY DEPARTURE at Teterboro Airport (TEB).

ACTION: Rich Boll, NBAA, will report on progress of the addition of criteria for the use of an Alert Notice or Departure AAUP for Teterboro Airport (TEB).

MEETING 21-01

Samer Massarueh, FAA/AJV-A223, reviewed the issue. Rich Boll, NBAA, reported that the FAA is still considering conducting a Safety Risk Management Panel (SRMP) to determine if there is a safety risk on the RUUDY DEPARTURE at Teterboro Airport (TEB). He said they are still awaiting results from the FAA's Aviation Risk Identification and Assessment (ARIA) tool. Rich said that they hope to complete the analysis by 6/30/2021, and, based on those findings, they will then determine if a SRMP should be conducted.

STATUS: OPEN

ACTION: Rich Boll, NBAA, will report on the results of the FAA Safety Management Group's risk analysis of the RUUDY DEPARTURE at Teterboro Airport (TEB).

ACTION: Rich Boll, NBAA, will report on progress of the addition of criteria for the use of an Alert Notice or Departure AAUP for Teterboro Airport (TEB).

MEETING 21-02

Samer Massarueh, FAA/AJV-A223, reviewed the issue. Rich Boll, NBAA, reported that the FAA is still considering conducting a Safety Risk Management Panel (SRMP) to determine if there is appreciable safety risk associated with the RUUDY DEPARTURE at Teterboro Airport (TEB). He reported he is not aware of progress since the last report. Rich said the risk analysis must be completed before it can be determined if this an ongoing issue and whether or not an Alert Notice or Departure Attention All Users Page (AAUP) is warranted to mitigate that risk. Valerie Watson, FAA/AJV-A250, expressed concerns that this issue has stalled.

Rune Duke, FAA/AFS-001, said it is his understanding that that this issue is still being worked by Air Traffic Safety and that they are close to finalizing the safety study. Bobbie Kahklen, FAA/AJI-151, said that she recently received an email update on this issue that she will share the information she received with Rich and Valerie. Valerie said they will look at the update and if it appears that this issue still has momentum, it will remain on the agenda.

STATUS: OPEN

ACTION: Rich Boll, NBAA, will investigate the status of the FAA Safety Management Group's risk analysis of the RUUDY DEPARTURE at Teterboro Airport (TEB) and determine whether to leave this issue open.

MEETING 22-01

Rich Boll, NBAA, briefed the status of this issue. He said in late 2021, Air Traffic Safety concluded the safety study associated with the RUUDY DEPARTURE at Teterboro Airport (TEB). It was found that the procedure has since been improved and that improvements will continue to be made as needed, both to the procedure and to operating processes. Rich reported the number of pilot deviations has dropped. It was reported that the FAA will continue to monitor the RUUDY Departure. As a result, Flight Standards does not support publication of either an Attention All Users Page (AAUP) or an Alert Notice for this location. Rich said without Flight Standards concurrence it would be difficult to move forward with a charting solution so he recommends closing this issue. He said he will keep an eye on this location and if a safety case emerges, he may look to readdress the issue. He said he reached out to the original proponents of this item and no comments were received. There were no audience objections to closing.

STATUS: CLOSED

Addendum to 19-01-331:
During the discussion of 20-02-345 Wrong Surface Hot Spots, Rich pointed out that in past issues, the use of a test was rejected because it was the FAA's policy that the NAS not be used as a test arena. If running tests in the NAS is now acceptable as FAA policy, based on the precedent set in the handling of the Hot Spot issue, Rich would like to leave open the possibility to have the FAA reconsider adding a test Attention All Users Page (AAUP) at Teterboro (TEB).