

GOVERNMENT/INDUSTRY AERONAUTICAL CHARTING FORUM
Instrument Procedures Group
October 17, 2006
HISTORY RECORD

FAA Control # 06-02-267

Subject: Pilot Option to Use Standard Timing for RNAV IAP Holding Patterns

Background/Discussion: NBAA introduced an issue at the last ACF about the considerable variation in RNAV instrument approach procedure holding pattern lengths. In some cases, a very generous 8 NM pattern is provided at, for example, KSVC, Silver City, NM, RNAV (GPS) RWY 8, missed approach hold at 10,000. At other locations, for example, KJAC, Jackson, WY, RNAV (GPS) RWY 1, a very tight, difficult-to-fly 6 NM pattern is provided for the missed approach hold at 14,000.

According to information obtained by NBAA from the NFPO, these inconsistencies are not subject to resolution.

Recommendations: The Aeronautical Information Manual (AIM) be revised to advise pilots that it is their *option* to use the charted leg lengths shown in RNAV IAP holding patterns or they may, instead, elect standard timing (1:00 minute inbound, 14,000 and below; 1:30 inbound, above 14,000). This would require no changes to policy or criteria because selection of the appropriate holding pattern template by AVN assures containment with standard timing.

Comments: This recommendation affects the Aeronautical Information Manual.

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Initial Discussion Meeting 06-02: New issue introduced by Rich Boll, NBAA. NBAA is concerned that many RNAV holding patterns specify short distance legs (also see issue 06-01-263) and requests that pilots be given the option to use standard timing in lieu of the specified ATD legs for RNAV holding (1:00 minute inbound 14,000 ft and below, or 1:30 minutes above 14,000 ft). Ted Thompson, Jeppesen, noted that specified leg lengths may have been established to accommodate Flight Management Systems as FMS-equipped airplanes fly the length as coded in the database. Lance Christian, NGA, asked whether the change would affect ATC; i.e., controllers expecting NM legs and a pilot using timing. Tom Schneider, AFS-420, agreed to have a specialist in AFS-420 review the criteria to ensure protection is provided to allow timing substitution. The issue may also be added to the AFS-440 holding pattern analysis if deemed necessary. **ACTION: AFS-420.**

MEETING 07-01: Tom Schneider, AFS-420, briefed that the request has been made to have a specialist in AFS-420 review the criteria to ensure protection is provided to allow timing substitution. AFS-420 has also requested the issue be added to the AFS-440 holding pattern analysis requested under issue 03-01-247. Brad Rush, AJW-321, stated that there are approximately 5,000 RNAV procedures with one or more holding patterns that now may require change. Wally Roberts, NBAA, responded that ATD leg lengths should still be published; however, guidance should be issued to pilots that timing is also satisfactory. Brad suggested this should be included in AC 90-100.
ACTION: AFS-440 and 420.

MEETING 07-02: Tom Schneider, AFS-420, briefed that using standard timing in-lieu-of specified leg lengths for RNAV holding has been included in the AFS-450 holding pattern study initiated under related issue 03-01-247. AFS-420 will monitor the study results and report.
ACTION: AFS-450 and AFS-420.

MEETING 08-01: Sherri Avery, AFS-450, briefed that using standard timing in-lieu-of specified leg lengths for RNAV holding has been included in the AFS-450 holding pattern study initiated under related issue 03-01-247. **ACTION:** AFS-450.

MEETING 08-02: Tom Schneider, AFS-420, briefed the following update as received from Steve Barnes, Manager, AFS-450, which applies to all open issues relating to holding. "Numerous issues continued to arise from attempts to utilize the original holding tool for a broader application than it was originally intended. As a result, this past summer AFS-450 elected to take a new approach and have a new holding tool developed to better meet our present needs. The initial date for completion of this new holding tool was October. Due to other requirements during this time frame, that date was not met. We are anticipating something to look at and evaluate in December. As was presented/requested at the last meeting, AFS-450 is in search of the proper FMS logic to utilize in our modeling for appropriate simulations. Any support the ACF attendees can provide Dr. Sherri Avery in this matter would be appreciated" - also see related issues 03-01-247 and 07-02-278. AFS-450 will ensure use of timing in lieu of ATD for RNAV holding is assessed in the study.
ACTION: AFS-450.

MEETING 08-02: Tom Schneider, AFS-420, briefed the following from Dr Sherri Avery, AFS-450: "There has been no progress on the holding pattern study. AFS-450 has received information regarding holding pattern logic from Garmin and is awaiting the same from Honeywell." Tom thanked Rich Boll for soliciting information from FMS manufacturers. The use of timing in lieu of ATD for RNAV holding will be included in the study. **ACTION:** AFS-450.

MEETING 09-01: Tom Schneider, AFS-420, briefed the following from Dr Sherri Avery, AFS-450: "There has been no progress on the holding pattern study. AFS-450 has received information regarding holding pattern logic from Garmin and is awaiting the same from Honeywell." Tom thanked Rich Boll for soliciting information from FMS manufacturers. The use of timing in lieu of ATD for RNAV holding will be included in the study. **ACTION:** AFS-450.

MEETING 09-02: Tom Schneider, AFS-420, briefed the following from Dr Sherri Avery, AFS-450: "Further discussion is needed (e.g. with pilots, ACF reps). AFS-450 would like to continue with the study given the restriction that standard timing leg lengths be less than or equal to the current RNAV leg lengths." No progress. Rich Boll, NBAA, stated that he had previously provided input to Dr. Avery but has heard nothing since then. He added that if AFS-450 will advise him what they need, he will try to obtain it for them. Tom agreed to pass this information to AFS-450.

ACTION: AFS-450.

MEETING 10-01: Tom Schneider, AFS-420, briefed the following from Dr Sherri Avery, AFS-450: "Further discussion is needed (e.g. with pilots, ACF reps). AFS-450 would like to continue with the study given the restriction that Standard Timing leg lengths be less than or equal to the current RNAV leg lengths." Brad Rush, AJW-372, asked whether this particular issue could be studied closer and faster. While there is no problem with conventional DME holding leg lengths, RNAV ATD leg lengths are not being applied properly in all cases as noted in issue 07-02-278; therefore, timed holding would be standardized and safer. Brad added that magnetic variation also presents a problem when RNAV holding is over a facility. FMS systems will apply the assigned magnetic variation of the facility vice the variation to be used for RNAV. Tom asked whether Order 8260.19 was being applied properly. Brad responded yes. The airport magnetic variation of record is used for the RNAV approach design; however, if the missed approach goes to a facility, the FMS switches to the assigned variation of the facility. Tom agreed to pass the priority request to AFS-450.

ACTION: AFS-450 and the ACF-IPG Chair.

MEETING 10-02: Tom Schneider, AFS-420, briefed that he did request priority for this issue after the last meeting; however, pre-meeting input from AFS-450 did not appear to directly address the issue of containment if substituting standard timing in lieu of ATD on the outbound leg for RNAV holding. As a result, AFS-420 criteria specialists reviewed the existing holding criteria for pattern selection. It was determined that as long as the specified holding pattern leg length is within criteria, the containment area would also support standard timing holding (1 minute legs at 14,000 and below; 1.5 minute legs above 14,000). However, Steve Jackson, AFS-420, expressed last minute concerns over FMS application of timing. The issue remains open. **ACTION:** AFS-450.

MEETING 11-01: Tom Schneider, AFS-420, briefed the following from Steve Jackson, AFS-420, who is following the study: "Currently AFS has MITRE doing a survey of manufacturers to obtain and validate the assumptions to be used in the AFS-450 model. We also added several questions to a questionnaire going to helicopter avionics manufacturers concerning holding that will provide information for fixed-wing as well." No response was received from AFS-450. **ACTION:** AFS-450.

MEETING 11-02: Tom Schneider, AFS-420, briefed the following report as received from Steve Jackson, the newly assigned AFS-420 point person for holding issues: "This was originally submitted as a pilot preference, or ease of flight issue. It would allow pilots who did not like the specified length of the holding pattern to apply timing rather than the specified length. Many RNAV(GPS) procedures have 4 NM legs specified. Timing on these patterns when utilized by faster aircraft, and/or a tail wind on the inbound leg could result in exceeding the specified distance outbound in order to make the inbound timing "good", which is the subject of another ACF issue. We have seen in the past that when there is a blanket authorization to do something it is almost impossible to eliminate the practice. Additional chart notes or symbols would be required on future

PBN based holding charts to indicate that distance really does mean distance, with no substitution allowed. We recommend closure of this item with continued compliance with current operational guidance on timed versus distance based holding." The group agreed with closure.

ACTION: CLOSED.
