NOTICE

U.S. Department of Transportation
Federal Aviation Administration

N 8200.89

05/03/06

Cancellation Date: 05/03/07

SUBJ: **FAA Order 8200.39, Flight Inspection of Precision Runway Monitor/Final Monitor Aid**

1. PURPOSE. This Notice is being issued to address an interim change to FAA Order 8200.39, Flight Inspection of Precision Runway Monitor/ Final Monitor Aid.

2. DISTRIBUTION. This Notice is distributed to Air Traffic Technical Operations Service Areas, to the Air Force Flight Standards Agency, to the U.S. Navy Airspace and Air Traffic Control Program, to the U.S. Army Air Traffic Control Center, and to all Aviation System Standards Flight Inspection Operations Offices and Crewmembers

3. BACKGROUND. Existing flight inspection procedures and analysis of the boundary accuracy for the No Transgression Zones and Inbound Courses is very labor intensive and requires post analysis. With the addition of Automated Flight Inspection System (AFIS) equipped with Differential Global Positioning System (DGPS), the analysis can be accomplished real-time. The real-time solution saves flight hours and adds to the efficient use of flight inspection resources. The following guidance incorporates the new methods and procedures for flight inspecting the PRM/ FMA using DGPS as the truth source.

4. GUIDANCE:

a. Appendix 1:

(1) Paragraph 4b(1). Add to the beginning of the first paragraph, "General. During commissioning and periodic inspections, all checks must be accomplished with the flight inspection transponder power output and receiver sensitivity set to "LOW/ LOW". For a commissioning inspection, a Personal Computer Memory Card International Association (PCMCIA) card or equivalent will be used to log the inspection data and will be forwarded to the Flight Inspection Policy Team for archiving."

(2) Paragraph 4b(4)b. Replace with the following, "Usable Distance Check. The service volume will be evaluated by flying inbound from the limits of the service volume of the Video Map Display throughout to exit the departure end of the video map boundary. This check may be combined with the approach procedure in Paragraph 4b (6). Only one usable distance check is required per video map display, unless additional checks are requested.

Distribution: ATO-W Service Areas; Air Force Flight Standards Agency; U.S. Navy Airspace and ATC Program; U.S. Army ATC Center; Aviation System Standards Flight Inspection Operations Offices and Crewmembers

Initiated By: Air Traffic Technical Operations (ATO-W) Aviation System Standards Flight Inspection Policy (AJW-331)

Approved Procedure. Fly a level run inbound on course of either localizer or LDA at the GSI altitude, or 500 ft above the highest terrain or obstruction, from the limits of the service volume of the Video Map Display boundary to the interception point of the published approach procedure. Fly the published approach procedure then complete the low altitude coverage check by conducting a low approach from the runway threshold to the runway end at 50 ft AGL. Continue until exiting the departure end of the video map boundary. Request the monitor controller report when entering and exiting the video map boundary.

Evaluation. Usable distance is satisfactory when there is no loss of track, as defined by the video map display boundaries."

(3) **Paragraph 4b(4)c. Replace all paragraphs with the following, "Inbound Courses and NTZ Boundary Accuracy.** This check is performed to verify the accuracy of the presentation of the inbound courses and NTZ boundaries that are located between the inbound courses. For NTZ(s) which are defined by 6 or more points (see Appendix 3, Figure 5A, Example 7), the accuracy of the NTZ boundaries will be verified by flying each segment of the inbound boundaries separately.

Using the Automated Flight Inspection System (AFIS) GPS Non Precision Mode and Differential GPS (DGPS) is required to evaluate the inbound courses and the NTZ boundaries. Information about AFIS operations with DGPS as a truth system is located in FAA order VN200 8240.52, Appendix 9.

Automated Flight Inspection System (AFIS) GPS Non-Precision Mode (GPS NP) and DGPS. The latitude/ longitude of the corner-posts defining the NTZ boundary(ies) will be available on the AVNIS PRM Data Sheet. Calculate the latitude/ longitudes for the points 2 nm prior and beyond the corner-posts for each leg that defines the NTZ boundary using the 8200.39 PRM Worksheet located on the Aircrew Information File/ Flight Inspection/ Related Documents Link. The 2 nm points will define the IAF and the IF (See Appendix 3, Figures 12 and 15). The pilot must enter a flight plan using the calculated IAF and IF for each leg of the NTZ which will be flown. The pilot will transfer the flight plan to the AFIS. The mission specialist will designate the waypoints as "IAF" and "IF". The mission specialist will record each leg of the boundary using AFIS GPS non-precision mode and plot as a minimum the RXTK, RXER, number of satellites tracked, and ground speed traces.

Approved Procedure for NTZ Boundary. This check may be flown at any altitude within the service volume of the NTZ up to but not including the top altitude of the boundary (recommend flying at least 500' below the top altitude). The pilot will fly the track along each long leg of the NTZ boundary (do not fly the boundary that is 2,000' wide). The monitor controller will verbally report each time the aircraft is centered on the boundary. The mission specialist will actuate an event mark and the "on-path" event at each report. The "on-path" event will document the on centerline mark on the data logger file. Request the monitor controller report, using the phrase, "Ready, Mark" to facilitate accurate marking.

Evaluation. Average the cross-track results (RXTK) of all event marks on each leg flown. Obtain as many centerline reports from the controller as possible, but a minimum of three reports is required. If only three controller reports are documented, they must be located in the vicinity of the beginning, middle, and end of the boundary flown.

Approved Procedure for Inbound Course. This check may be flown at any altitude within the service volume of the video map display up to but not including the top altitude of the boundary (recommend flying at least 500' below the top altitude). The pilot will fly the track along the inbound course. The monitor controller will verbally report each time the aircraft is centered on the inbound course. The mission specialist will actuate an event mark and the "on-path" event at each report. The "on-path" event will document the on-centerline mark on the data logger file. Request the monitor controller report, using the phrase, "Ready, Mark" to facilitate accurate marking."

Evaluation. Average the cross-track results (RXTK) of all event marks on each leg flown. Obtain as many centerline reports from the controller as possible, but a minimum of three reports is required. If only three controller reports are documented, they must be located in the vicinity of the beginning, middle, and end of the boundary flown.

(4) **Paragraph 4b(5). Replace all paragraphs with the following, "NTZ Boundaries or Video Map Display Boundaries (when presented).** This check is for NTZ boundaries that are not located within the runway environment (see Appendix 3, Figure 2) and video map display boundaries (when presented). The latitude /longitudes of the corner-posts of the video map/ NTZ boundaries are site variable, and this information must be obtained from the AVNIS PRM Data Sheet. Some facilities will not have video map width boundaries (outlined in blue), as depicted in Appendix 3, Figure 2, and will not require this portion of the check.

Some PRM applications will require uniquely shaped NTZ(s), based on operational requirements (see Appendix 3, Figure 5A, Example 6, and Figure 2). Other facilities could be sited with one or more NTZ areas beyond the runway environment for varied purposes, such as noise abatement, terrain, or airspace avoidance. This check must be accomplished based on operational requirements as determined by air traffic control. The boundaries of the video map display (when present) and one or more of the NTZ(s) will be evaluated to provide confidence in the accuracy of the map presentation. There is no requirement to check all of the NTZ(s), unless Air Traffic deems it necessary.

Using the Automated Flight Inspection System (AFIS) GPS Non Precision Mode and DGPS is required to evaluate the video map display and NTZ boundaries. Instructional information for AFIS operations using DGPS as a truth system is located in Order VN200 8240.52, Appendix 9.

Automated Flight Inspection System (AFIS) GPS Non-Precision Mode (GPS NP) and DGPS. The latitude/ longitude of the corner-posts defining the video map display and NTZ boundary(ies) will be available on the PRM Data Sheet. Calculate the latitude/ longitudes for the points 2 nm prior and beyond the corner-posts for each leg that defines the video map display and NTZ boundaries using the 8200.39 Worksheet located on the Airmen's Information File/ Flight Inspection/ Related Documents Link. The 2 nm points will define the IAF and the IF (See Appendix 3, Figures 12 and 15). The pilot must enter a flight plan using the calculated IAF and IF for each leg of the video map display or NTZ which will be flown . The pilot will transfer the flight plan to the AFIS. The mission specialist will designate the waypoints as "IAF" and "IF". The mission specialist will record each leg of the boundary using AFIS GPS non-precision mode and plot as a minimum the RXTK, RXER, number of satellites tracked, and ground speed traces.

Approved Procedure. This check may be flown at any altitude within the service volume of the video map display or NTZ, up to, but not including, the top altitude (recommend flying at least 500' below the top altitude). The pilot will fly the track along each leg of the video map display or NTZ boundary. The monitor controller will verbally report each time the aircraft is centered on the boundary. The mission specialist will actuate an event mark and the "on-path" at each report. Request the monitor controller report, using the phrase, "Ready, Mark" to facilitate accurate marking.

Evaluation. Average the cross-track results (RXTK) of all event marks on each leg flown. Obtain as many centerline reports from the controller as possible, but a minimum of three reports is required. If only three controller reports are documented, they must be located in the vicinity of the beginning, middle, and end of the boundary flown."

(5) **Paragraph 4b(6). Replace all paragraphs with the following, "Approach/ Missed Approach/ Low Altitude Coverage. On commissioning inspections**, the approach will be verified by flying the published approach, missed approach procedure, and the low altitude coverage. This check may be combined with the usable distance check defined in Paragraph 4b(4)(b).

During periodic inspections, fly the final approach segment and the low altitude coverage (when required).

Approved Procedure. Fly the published approach and missed approach and verify the accuracy of each fix that is presented on the video map. The monitor controller must report each fix (FAF, LOM, etc.), when present, to the pilot as the fix is transitioned. Cross the threshold at 50 ft AGL, then conduct a low approach at 50 ft AGL from the runway threshold to the runway end. Low altitude coverage is not required inside the missed approach point (MAP) for those facilities where the NTZ ends at the MAP (See Figure 5 Item (4)).

Evaluation. The pilot will determine from the controller reports if the fixes (when present) are displayed accurately on the video map. Verify from the monitor controller there is no loss of track (coast drop "CSTD") throughout the approach. If there is a loss of track at 50 ft AGL, fly the low altitude approach again at 100 ft AGL from runway threshold to the runway end. If there is a loss of track at 100 ft AGL, continue checking incrementally as requested by engineering personnel, or up to the limit of the service volume altitude as defined by the geographical filter, to determine if and at what altitude the track coverage is regained. Provide this information to the appropriate operations and engineering personnel. When there is a loss of track at 100 ft or above, the PRM is unusable and cannot be commissioned unless a waiver is granted by Flight Standards Service Technical Programs Division."

(6) **Tolerances. Parameter 4. Change to read, "**Inbound courses and NTZ Boundary (located between the inbound courses) accuracy."

(7) **Tolerances. Tolerance/ Limit 7.** Add, "Distance accuracy = ± 0.2 nm" following the first sentence. Delete the second sentence.

b. **Appendix 3.** Delete Figures 12 and 13 and renumber the remaining figures.

c. Appendix 4.

(1) Workbook Instructions. Replace with the following:

WORKBOOK INSTRUCTIONS FOR FAA ORDER 8200.39B
Facility Data Worksheet
Video or NTZ Data Worksheet (Page 1)
This worksheet is provided to calculate the latitude/longitudes of the points 2nm prior and 2nm beyond the corner-posts of the video map display or NTZ boundaries (See Appendix 3, Figure 12). These points will be entered into the GPS/ FMS for each leg that defines the video map or NTZ boundary. The points for each leg will be identified as IAF and IF. Following data entry into this worksheet (page 1) the resultant lat/ longs will be located in the Video or NTZ data worksheet pg 4.
Video or NTZ Data Worksheet (Page 2)
No data entry required. Part of "Video or NTZ Data Page 1" worksheet calculation.
Video or NTZ Data Worksheet (Page 3)
No data entry required. Part of "Video or NTZ Data Page 1" worksheet calculation.
Video or NTZ Data Worksheet (Page 4)
Following entry of the required data into the "Video or NTZ Data Page 1" worksheet, the resultant latitude and longitudes designated as IAF IF will be presented. These points will be entered into the GPS/FMS for each leg that defines the video map display or NTZ boundary (see Appendix 3, Figures 12 and 15).

(2) Delete Figures 1, 2, 3, 4, and 5 and renumber the remaining figures.

5. The above guidance will be incorporated into the next change to FAA Order 8200.39, Flight Inspection of Precision Runway Monitor/ Final Monitor Aid.

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Thomas C. Accardi
Director of Aviation System Standards