GOVERNMENT/INDUSTRY AERONAUTICAL CHARTING FORUM
Instrument Procedures Subgroup
November 28-29, 2000
HISTORY RECORD

FAA Control # 00-02-226

Subject: Precision FAF (PFAF) Location for RNAV Procedures at ILS Runways

Background/Discussion: Typical ILS approach procedures contain a nonprecision FAF used for LOC-only procedures. This nonprecision FAF may be based on a facility, e.g., outer marker (OM) or locator outer marker (LOM), a DME fix, an intersection or a radar fix. When issuing vectors for an ILS approach, air traffic control (ATC) attempts to vector aircraft so as to intercept the LOC course approximately 2-3 miles outside the FAF. For this reason, the FAF is shown on ATC video maps and used by ATC in ground-to-air communication. Because of a variety of reasons, the LOC FAF is seldom located at the glide slope interception point (GSIP) or PFAF of the ILS approach. The PFAF is not named on the procedure chart, nor does ATC vector in relation to the PFAF.

The FAA has started publishing three-dimensional RNAV approaches. These procedures will contain a FAF, which serves as the nonprecision FAF and PFAF. Procedure design logic and present criteria dictates that the RNAV FAF be placed at the vertical descent angle (VDA) interception point (analogous to the PFAF). However, this means that the RNAV FAF will, in most cases, not be coincident with the LOC FAF. ATC objects to non-coincidence of RNAV FAF and LOC FAF location, as well as resulting video map clutter caused by fix names in close proximity. ATC wants a single "gate" fix for vectoring and video display purposes. The following proposal is an outcome of an AFS/AVN/AAT meeting held June 28, 2000 in Oklahoma City.

Recommendations:

CASE 1. If the present LOC FAF is defined by DME, intersection or radar, the LOC FAF will be moved to coincide with the RNAV FAF which will be placed at the vertical descent angle interception point. An example is the ILS RWY 11 at Crescent City (CEC), CA. When a RNAV procedure is developed for this runway, the ILS procedure must also be amended to move SLAMM DME fix to the point where the 1700' MSL altitude intercepts the glidepath. In this case, SLAMM will be moved .1 - .2 NM away from runway 11 threshold. SLAMM will also be the RNAV FAF.

CASE 2. If the LOC FAF is defined by a facility such as a LOM, which cannot be moved, the present facility name will be assigned to the ILS PFAF. The RNAV FAF will be co-located with the ILS PFAF and share the common name. The facility will remain the LOC FAF and the facility identification will serve to mark the location for navigation database purposes. An example is the ILS RWY 25R at Livermore (LVK), CA. When a RNAV procedure is developed for this runway, the ILS procedure must also be amended to move REIGA to the point where the 2800' MSL altitude intercepts the glidepath. In this case, REIGA will be moved 1.2 NM away from runway 25R threshold. REIGA will also be the RNAV FAF. The LOC FAF will remain at the LOM and will be identified by the "LV" facility

identifier. Charting specifications would have to be developed to depict the name associated with the PFAF on the ILS procedure.

CASE 3. An underlying assumption of cases 1 and 2 is that the ILS glidepath angle/TCH will coincide with the RNAV VDA/TCH. If this can't be done, a RNAV procedure, completely independent of the ILS procedure, will be developed. An example is the ILS RWY 26L at La Verne (POC), CA. The glideslope angle is 3.76° with a TCH of 18'. If an RNAV procedure with a standard 3° VDA and a more reasonable TCH can be developed, a new FAF will be established with no association to the underlying ILS PFAF location.

Case 3 would also apply to all procedures that are not specifically covered by cases 1 and 2.

Comments: This recommendation affects:

Charting specifications are impacted through application of this new concept. The anticipated impact on actual charting is thought to be minimal, however, the possibility exists that the ILS procedure would have to be split into a LOC procedure and an ILS procedure. Charting issues affected are:

a. The LOM name would be removed to and retained at the PFAF location.
b. The LOM would not be named, but rather retain only the facility identifier.
c. The ILS PFAF (GS INT) would be named.
d. The DME, intersection, or radar FAF and name would be removed to and retained at the PFAF location.

Fix naming policy stated in FAA Order 8260.19, Flight Procedures and Airspace, paragraph 264, must be revised to delete the requirement to name LOM FAF's.

In addition, database coding standards in ARINC 424 may be impacted.

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INITIAL DISCUSSION (Meeting 00-02): Dave Eckles, AFS-420, presented this issue on behalf of Carl Moore, AFS-420. Problems have arisen when publishing a three-dimensional RNAV approach that contains a charted FAF that is not coincidental with the LOC FAF associated with an ILS SIAP to the same runway. The resulting “dual fixes” in close proximity cause air traffic procedural and radar display problems.
After much internal FAA discussion, it appears that the only logical conclusion is to re-locate and re-name LOC FAF’s to coincide with the RNAV SIAP. Brad Rush, AVN-160, briefed that his office has made an initial survey with the following approximate conclusions: 1) 70% of the SIAP’s (those using DME as the LOC FAF) will present no problem and can be revised by developing the RNAV approach and moving the LOC FAF; 2) 20% (those using a facility for the LOC FAF) will require deleting the 5-letter name for

the facility; and, 3) 10% will require separate charts for each SIAP. Several questions were raised. Mike Riley, NIMA, asked how many procedures were involved. The answer is unknown at this time. Bill Hammett, AFS-420 (ISI) noted that this may have a significant impact on the NFDC database. Pat Fair (ATA-130) agreed and said she would check it out. Wally Roberts, ALPA noted that lengthening the LOC final may pick up more obstacles and increase MDA's. Bill also noted that changing the LOC FAF might cause an excessive length of final penalty to some SIAP's. Dave offered the suggestion that when this occurs, either a stepdown fix would be added or the LOC procedure might be published separately. It was agreed that Brad would take this issue to the AISWG and Pat would take it to the ATSOIT for discussion and report results. Pat will also assess the NFDC impact of changing/deleting the names of the affected facilities. ACTION: AVN-160 and ATA-130.

MEETING 01-01: Dave Eckles, AFS-420, briefed that this issue is currently undergoing a re-evaluation within his office with the effort being led by Carl Moore. The concept under consideration is that when an RNAV approach is being designed to an ILS runway, to re-locate the LOC FAF (while still remaining within TERPS ILS design requirements) to the optimum RNAV PFAF location. The concept will require the ILS GS angle and the RNAV VDA to coincide within approximately .1°, and should ensure a single FAF for the runway for ATC radar display. Gary Powell, ATP-104, and Marty Walker, ATP-120, recommended that the concept be briefed to the National ATSOIT at their next meeting. Pat Fair, ATA-130, briefed that the proposal should have minimum impact on the NFDC data base as long as AVN-100 does the required 8260-2 amendments. ACTION: AFS-420.

MEETING 01-02: Norm LeFevre, AFS-420, briefed that the issue has been resolved. Policy has been developed and promulgated in TERPS Instruction Letter (TIL) 01-023A and TIL 01-029. ISSUE CLOSED.
