AERONAUTICAL CHARTING FORUM
Charting Group
Meeting 15-01 – April 28 - 30, 2015

RECOMMENDATION DOCUMENT
FAA Control # ACF-CG RD 15-01-293

Subject: STAR Terminus Point Standardization

Background/Discussion:
As transition to the new area navigation National Airspace System continues, a large amount of new RNAV type STARS are being produced. It has become clear that standardization for the endpoint (terminus) to a STAR needs to be addressed. It has come to our attention that FMS entry of procedures and subsequent crosschecking the database (IPAD to FMS check) has become time consuming and increased the opportunity for pilot entry errors. The STAR terminus point is the vertical and lateral clearance limit to a normal full route clearance and should be easy to identify. Additionally, it should be easy to identify which transition goes to which arrival runway as well as easy to input the correct approach with no loss of waypoints. This all occurs in a critical phase of flight with little extra time to discover entry errors when changes occur or critical events occur, such as a loss of communications. Additionally, loss of communications procedures should not cause confusion or distraction on the procedure itself. They should be easy to follow to an IAF or IF. This assists in FMS preparation, briefing, and inflight planning. Also, it is important that the altitudes at the STAR terminus match the altitude on the corresponding IAP fix. In some (FMS) cases, if the altitude is other than “At”, a FMS will not be able to compute a vertical path to that point unless it is connected to a matching approach that continues the path. Additionally, any mismatch opens opportunity for misinterpretation of the procedure, entry input error, and dropped waypoints or constraints. Cockpit confusion on these issues with attempts to fix FMS issues are a distraction in a critical phase of flight. The problem has become widespread and the below examples should make the issues more clear:

1. KBOS OOSHN3: Note the octopus like amount of transitions with no easy way of identifying the applicable runway. No logical connection to approaches or any lost communication procedures. Most legs have MEAs, but a few do not on the Aeronav plate, such as the Pudjj to Aybee leg. Jepp version does place runway identifiers. This seems to be random (some plates do and some do not).

2. KELP SAMMR: Aeronav Plate has no runway ID but Jepp does. There is no logical connection to ILS22 or RNAV26L (commonly used), but the RNAV (RNP) does.

3. KSAN LYNDI3: LOC 27 connects nicely and flows well. However, RNAV(GPS)27 does not connect at an IAF or IF. When connecting this approach to the STAR (common), Honeywell FMS will drop OKAIN and CIJHI along with applicable constraints. They must be manually entered. The lost comm instructions for LYNDI3 are awkward due to these issues.

4. KSDF DAMEN2: Common on the KSDF arrivals for lost communications. Lost comm pictures depicted are confusing and do not always logically connect to an expected
approach. Assumption is that new points will have to be entered into FMS at last minute in an awkward situation (comm out). Additionally, pictorial depiction of transitions confusing. Look at the triangle made by DAMEN- CESAR-HAUGHN. Note also a few missing MEAs (aeronav plate only) and confusing altitude at CHERI (at/above 11000 and EXPECT AT 11000 and 250 kts).

5. KSMF SLMMR1: Runway transitions are hard to discern in depiction. ILS16L/R have an IAF choice of TENCO. If an attempt to connect this transition (which seems logical upon reading the procedure), certain FMS will drop ZIMAM with its constraints.

6. KLAS TYSSN3: Terminus fix for 25L (straight in) does not match ILS25L. One is at/above 8000 and one is at 8000. Depending on your FMS will depend on which one gets loaded.

7. KSFO BDEGA1: neither transition is labeled and situational awareness is difficult (airport is under BRIXX). Logical connections to approaches or lost comm plans are not available.

Recommendations:

The differences in chart depiction of these elements is not the issue, as that should be left to the discretion of the chart company. This IPG entry is not intended to be a charting issue. However the information depicted should be standardized (required) and shown in some form in the plan view. Recommendation is to publish criteria in new STAR order for the terminus fix of a STAR to include the following:

1. Altitude should be published at last fix and match any corresponding IAP that it connects to. The intention is not to say it must be one or another- just that it match. There is a pilot preference for “at”.

2. Runway Identifier should be visible next to last fix, particularly on any procedure with multiple transition legs.

3. IAF or IF should be at terminus fix when possible to facilitate understanding of clearance, FMS entry, and lost comm plans.

4. Communication Lost instructions should be available if the STAR procedure does not logically connect to the IAP.

Comments:

Submitted by: Lev Prichard
Organization: Allied Pilots Association
Phone: 817-302-2150
E-mail: lprichard@alliedpilots.org
Date: 8APR15
MEETING 15-01:

Lev Prichard, APA, briefed the issue. Lev described complications encountered when Standard Terminal Arrivals (STARs) do not terminate smoothly into an instrument approach. One of the complications is when the Arrival terminus fix altitude does not agree with that of the Approach IAF, IF or feeder altitude. Lev reviewed several examples where an altitude discrepancy exists between an Arrival procedure and the subsequent Approach. Lev recommended that criteria needs to be revised to ensure the altitudes coincide.

Lev also recommended that runway identifiers be added in the planview of Arrival charts in proximity to the terminal fix to which they apply. Valerie Watson, AJV-553, commented that runway identifiers associated with transitions/terminal fixes are published in the note form taken directly from the procedure source document. She commented that if runway identifiers were specified for charting at given terminus points on the source document, they would be charted there, but cautioned that on many charts significant congestion may occur due to the limited size of the pre-composed paper charts. Valerie then stated that for these charting changes to happen, changes would first have to be made to the procedure source documents. The runway identifiers are currently identified in note form on the source and so are shown that way on the charts.

Delta Air Lines representatives asked that if Approach IAFs were added to each STAR that link to an approach, wouldn’t that also add chart clutter? Lev replied that it would actually add less clutter to a STAR and it would aid the pilot in insuring that he/she understood the clearance limit issued by ATC.

Tom Schneider, AFS-420, stated that there is new guidance in the draft FAA Order 8260.19G for STARS, soon to be in internal coordination. Tom added that part of that revision included new language regarding lost comm and on connecting the STAR terminus altitudes to the coinciding altitudes on IAPs. Orders 8260.3C and 8260.58A also have portions of this criteria issue and will soon be going out for comment. Some of this new guidance was recommended by the PARC and by the Climb/Descend Via WG.

Ted Thompson, Jeppesen, commented that it appeared to him that the continuity issue between the STAR and IAP pertains to a huge database coding issue. Ted added, if the information on the source document were improved to indicate the connection between the STAR and associated approaches, the FMS process would be better. Ted also agrees that with regard to the runway labels, the procedure source document needs to spell out what should be charted.

Valerie summarized that the bulk of this issue is related to procedure design and criteria. She stated that the runway label charting piece of this item will remain on the Charting Group agenda. Valerie will create prototype STAR charts with runway identifiers in the planview to determine the level of difficulty of fitting this information into
an already cluttered chart. She will also work up suggested text to be documented on the source document that will support the runway ident charting at the terminus points.

For the policy aspects of this recommendation, it was determined that industry (APA, NBAA and others) will review the new criteria in the draft Orders and submit comments through the normal coordination process. This item will not be added as an agenda item with the ACF-IPG because the transfer of STAR policy and criteria to FAA Orders 8260.3C, 8260.19G, and 8260.58A and the changes therein are still a work in progress. If industry is not satisfied with the outcome of their submitted comments to the draft policy, any specific issues may be introduced to the ACF-IPG at a future date.

**STATUS: OPEN**

**ACTION:** Valerie Watson, AJV-553, to create prototype STAR charts depicting terminus runway idsents and the suggested procedure source text that would support charting them.

**ACTION:** Tom Schneider, AFS-420, will provide an update on the status of FAA Orders 8260.3C, 8260.19G, and 8260.58A.