

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 OOSH3: 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:

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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 identifiers 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.

MEETING 15-02:

Valerie Watson, AJV-553, reviewed the issue. Valerie showed the audience two sets of prototypes. The [first showed STAR terminus points with runway and airport identifiers](#) and the suggested procedure source document revisions that would reliably support the charting. The [second set of prototypes](#) also included an example bottom altitude along with the terminus identifiers. There were positive reactions to the addition of the runway identifiers, however strongly negative reactions to the addition of the bottom altitudes at the terminus.

Lev Prichard, APA, stated that he likes the runway information associated with each terminus. However, having such runway information on all STARS may be problematic. Lev added that there should be no effort made to chart the bottom altitudes in this manner.

Brad Rush, AJV-54, stated that the depiction of the bottom altitudes will cause pilot confusion and it is also a problem because there is not a way for them to be properly coded.

Rich Boll, NBAA, commented that the end result of this idea should be a reduction in congestion and the number of notes depicted on the chart.

Ted Thompson, Jeppesen, commented that the idea has merit; however, he feels more work is required. He suggested that AIS develop more concept charts on a variety of different arrivals.

Rick Dunham, AFS-420, stated that the criteria for STARS is in the process of transitioning to Flight Standards. PARC recommendations are being reviewed. It is anticipated that bottom altitudes will not go on STARS because of the potential for pilot confusion and coding issues.

Aside from altitudes, consensus of the group was strongly in favor of STAR terminus identification text shown at the terminus points on the planview of an Arrival chart rather than “buried” in the arrival text. Kevin Allen, American Airlines, and Lev Pritchard, APA, offered to make chart recommendations to Valerie for prototype charts for the next ACF.

STATUS: OPEN

ACTION: Valerie Watson, AJV-553, to create additional prototype STAR charts depicting terminus identifiers.

MEETING 16-01:

Valerie Watson, FAA/AJV-553, reviewed the issue and showed several new prototype STAR charts requested by the audience at the last ACF. The [first set of prototypes](#) showed STAR terminus identifiers and the suggested procedure source document revisions to support the charting. The [second set of prototypes](#) also included terminal altitudes associated with the terminus identifiers.

There was strong consensus in the room *against* the depiction of terminus altitudes shown in association with terminus identifiers.

ACF consensus exists for charting terminus point IDs, boxed, on STAR procedures when specified on the procedure source document. Valerie will draft an IACC specification document to support this.

Tom Schneider, FAA/AFS-420, stated that he will draft language for FAA Order 8260.19 for the STAR terminus information to be included on FAA Form 8260-17.1, in the Additional Flight Data section as proposed in Valerie's presentation.

STATUS: OPEN

ACTION: Tom Schneider, FAA/AFS-420, to make revisions to FAA Order 8260.19 to accommodate STAR Terminus Point Identifiers.

ACTION: Valerie Watson, FAA/AJV-553, to draft an IACC Requirement Document for the depiction of STAR Terminus Point Identifiers.

MEETING 16-02:

Valerie Watson, FAA/AJV-553, reviewed the topic. Valerie reported that the specification change (IACC Requirement Document 766) for the depiction of STAR Terminus Point Identifiers supported by the ACF has been approved and is in place. She showed the audience [a sample chart](#).

Tom Schneider, FAA/AFS-420, showed the audience the [new language](#) added to draft FAA Order 8260.19H, which is still in coordination. Tom also showed the audience [a sample FAA Form 8260.17.1](#) showing how the STAR Terminus Point Identifiers are documented on the source.

STATUS: OPEN

ACTION: John Bordy, FAA/AFS-420, to report on the status of the new guidance to be published in FAA Order 8260.19H.

MEETING 17-01

Meeting was cancelled.

MEETING 17-02

John Bordy, FAA/AFS-420, reported that the [new guidance has been published](#) in FAA Order 8260.19H. Valerie Watson, FAA/AJV-553, reported that the IAC charting specification is in place and that there were no further action items outstanding. There was agreement to close this item.

STATUS: CLOSED