

Government/Industry Charting Forum (92-2)
Washington, DC
December 15-17, 1992

1. Opening Remarks

Mr. Hal Becker, FAA/ATP-200, welcomed the group to the second Aeronautical Charting Forum (ACF) of 1992. He spoke of lean times for funding and how important the ACF will be in prioritizing and planning future charting initiatives.

Mr. Jack Howell, FAA/AFS-400, also welcomed the participants and noted that the ACF can provide the proper focus and balance between the use of new technology and current equipment, and also can play a major role in defining criteria for the new technology.

Mr. Dick Powell, FAA/ATP-220, Co-Chair of the ACF, welcomed the open participation of all the user groups represented and noted the progress that had been made on various agenda items from the ACF 92-1 meeting. ACF 92-2 Attendees are listed in Attachment 1.

2. Agenda Item 92-1-2 State-produced Aeronautical Charts (NASAO)

Dick Powell and John Moore were unable to meet with NASAO to discuss this issue due to scheduling conflicts. They were, however, to meet with NASAO representatives in January, 1993.

Action:

Dick Powell and John Moore will meet with NASAO to discuss the state aeronautical chart working group concept and possible contributions.

Tom Quinlan, FAA/ASA-100, will check on internal FAA policy differences with respect to state chart legality and give the FAA position at the next forum.

3. Agenda Item 92-1-3 Obstruction Data to Support Take-off Performance Calculation (Jeppesen Sanderson)

Wes Te Winkle (FAA/AFS-430), Chair of the Obstruction Chart - Engine Out Working Group, reported on the recommendations of the Group (Attachment 2). The proposed specifications agree with International Civil Aviation Organization (ICAO) specifications on the conservative side. The two runway surveys proposed will be completed by NOS Obstruction Chart (OC) field survey crews in conjunction with previously scheduled surveys at Medford, Oregon, and Charlotte, North Carolina, airfields. The OC surveys will serve as prototypes and provide the Working Group (WG) with a better understanding of the effort and cost to capture the required data. The ACF approved the OC-EOWG recommendations.

Action:

Wes Te Winkle, Chair of the WG, will report survey results and the WG recommendations at the next ACF meeting.

4. Agenda Item 92-1-4 US Terminal Procedures in Loose-leaf Format (AOPA)

Mr. Kim Behrns, NOAA/Aeronautical Charting Division, provided Terminal Procedure Publication (TPP) Change Notice (CN) prototypes, one loose-leaf and the other saddle-stitch bound (current format). Mr. Behrns noted that the Interagency Air Cartographic Committee (IACC) had not addressed the CN when they changed the format of the

TPPs because they did not intend to change the CN format. Even so, ACD had looked into the costs associated with loose-leaf CNs and determined that costs to the user could rise as much as 50%. Mr. Behrns also reported that the loose-leaf TPPs would be available in November, 1993 and that the CNs would continue in their present saddle-stitch bound format.

Action:

None/Closed

5. Agenda Item 92-1-5 Depicting Fix Information on SID Charts (AOPA)

Ms. Gail Sterling, FAA, reported that her office is currently revising the SID and STAR Orders, with expected publication in March, 1993. One solution being considered is to make the depiction of fix data (NAVAID, Radial, DME, Lat/Long) currently on Pilot-Nav SIDs an option on Vector SIDs, to allow for specific user requirements. Mr. Tom Young, ALPA, provided suggested wording for the Orders that will encourage consideration for designating common points to link SIDs and STARS between certain airport pairs. Ms. Sterling said that the proposed Orders will be provided to the ATPAC for their review and comment.

Action:

Ms. Sterling will report on the proposed SID and STAR Orders at the next ACF meeting.

6. Agenda Item 92-1-6 Depicting Communication Frequencies on IAP Charts (DOT/VNTSC)

Mr. David Osborne, EG&G/VNTSC, provided the forum with prototype IAPs based on NOAA and Jeppesen formats. The Volpe National Transportation System Center (VNTSC) had been sent several examples of IAPs where it might be difficult to depict the frequency boxes at the top of the chart. These IAPs fell into two groups: charts with numerous communication frequencies and/or lengthy communication names, and; charts with northern approaches and/or enroute feeder facility rings. VNTSC took these examples and, to make room for the frequencies, moved the planview down the page and scaled down the data below the planview. VNTSC recommended that the planview top and bottom borders be allowed to move slightly to accommodate the need for space.

Action:

Dick Powell will provide forum members with samples of the VNTSC prototypes and an evaluation sheet for comments.

7. Agenda Item 92-1-8 Electronic Charting - Standardization of Symbology (ALPA)

RTCA, ATPAC and SAE G-10 are all working this issue.

Action:

ALPA will report on these other efforts at the next ACF meeting.

8. Agenda Item 92-1-9 Electronic Charting - Standardization of Color (ALPA)

RTCA, ATPAC and SAE G-10 are all working this issue.

Action:

ALPA will report on these other efforts at the next ACF meeting.

9. Agenda Item 92-1-10 Electronic Charting - Security (ALPA)

It was noted by several members that this problem is probably best addressed between vendors and the airlines. Ms. Elizabeth Matarese, FAA/ASA-100, reported that data integrity is being addressed within the FAA by Mr. Jim Burns (Safety). Mr. Ron Bolton, NOAA/ACB, recommended that data be run back and visually looked at in a simulator prior to being used in the cockpit. He also recommended that software be developed to provide an automated check of the data after it is loaded into the FMS.

Action:

Dick Powell will ask Mr. Jim Burns (FAA/Safety) to give a presentation at the next ACF meeting.

10. Agenda Item 92-1-11 Use of Color on IAPs (ALPA)

ALPA reported that the ATPAC is now addressing this issue.

Action:

ALPA will report on the ATPAC efforts at the next ACF meeting.

11. Agenda Item 92-1-12 Warning and Caution Notes (ALPA)

Agenda Item 92-1-13 Print Size and Readability (ALPA)

Agenda Item 92-1-14 Use of Icons (ALPA)

Mr. David Osborne, EG&G/VNTSC, provided the forum with the VNTSC IAP prototype for evaluation. The prototype incorporated proposals expressed in Agenda Items 92-1-12, 92-1-13, and 92-1-14. The purpose of the VNTSC format is to improve the speed and accuracy with which pilots locate and comprehend information on IAP charts. The formatting of the information conforms more closely to the way pilots actually use the information. In the case of missed approach instructions, a new method of presenting the information through icons was used. The proposed format was developed using a combination of laboratory experimentation and subject matter expert reviews.

Action:

Dick Powell will provide forum members with samples of the VNTSC IAP prototype and an evaluation sheet for comments.

12. Agenda Item 92-1-15 Obstacle and Terrain Contour Depiction (ALPA)

ALPA reported that the ATPAC is now addressing this issue.

Action:

ALPA will report on the ATPAC efforts at the next ACF meeting.

13. Agenda Item 92-2-16 Equipment Requirements on IAP Charts (FAA)

Currently, the only equipment requirement charted in bold type overprinted on the planview of the IAP chart is for RADAR REQUIRED. FAA/AVN-220 recommended revising the chart specifications to allow annotation in bold type, overprinted on the planview of the IAP chart, whenever ADF, DME, or RADAR, or any combination of these, is required for the approach. Mr. Lyle Wink, FAA/AVN-220, mentioned that this has been an issue for several years and that the language of Chapter 1 of the 8260 ought to be looked at with

respect to amending it. ALPA supports this initiative.

Action:

Lyle Wink, FAA/AVN-220, will staff this within the FAA and report on it at the next ACF meeting.

14. Agenda Item 92-2-¹⁷~~2~~ Charting Private Airports on Sectional Charts (AOPA)

AOPA reported that many of the smaller private airports have been omitted from the current Sectional charts, despite their functional and emergency value. AOPA recommends putting these airports back on the Sectional. Mr. Ron Bolton, NOAA/ACB, replied that there is no program to remove these airports from the Sectional and that NOAA would be happy to address the reported omissions on a case-by-case basis. There are several reasons that private airports might not be charted: the airport operator requests that their airport not be shown; the airport is not reported through the NFDC, and; when the airport is in a congested area, cartographic judgement could result in it not being charted. Mr. George Lutz, EAA, recommended that all airports be charted and those whose owners don't want them depicted be annotated with an asterisk and noted as restricted. Lt Col Harry Hodges, USAF IFC, noted that, while right to privacy is very important, the impact of private airport operations in the NAS on the flying public is more important. Mr. Charles Branch, NOAA/ACB, indicated that even though the airport is not charted, it is still in the airport database and therefore accessible to anyone who uses the database. Captain Dick Muller, NOAA, contacted the General Counsel Ocean Services on this issue. Their opinion is that all airports identified by the FAA should be charted by NOS, and that unless specifically directed otherwise by the FAA, all private airports published in the NFDD should be charted.

Action:

Dick Powell will staff with the FAA General Counsel the legality of private airport owners being able to tell the FAA not to chart their airport. He will report on their recommendation at the next ACF meeting. AOPA will research those airports that have been omitted and, where warranted, discuss them with NOAA.

15. Agenda Item 92-2-¹²~~2~~ Charting Minimum Altitudes on Enroute Low Altitude Charts (USAF IFC)

The USAF IFC, representing the Department of Defense, requested that minimum terrain clearance altitudes be depicted on Enroute Low Altitude Charts. The recommendation would have minimum altitudes depicted within one degree squares, with the altitudes providing obstacle clearance of 1000 feet in nonmountainous, and 2000 feet in mountainous terrain. The recommendation had been submitted to and approved by the ATPAC. Mr. Gar Williams, FAA, addressed the issue for the FAA. One of the FAA's concerns is that the minimum altitude restriction used by the FAA Controller is within a geographical boundary that varies greatly from one degree squares. This would lead to situations where the Controller could assign an altitude lower than the charted minimum altitude and cause "20 questions" from the cockpit crew. Another FAA concern is that the Controller's minimum altitudes change more often than

the 56 day charting cycle, leading to more "20 questions." Mr. Williams also stated that the charted altitude would be erroneous since it would not usually agree with the Controller's altitude in any given area. ALPA stated that pilots do not really always know the terrain under them and this charted altitude information is very important. ALPA also stated that the charted altitude is not erroneous but, in fact, provides a safety margin. ALPA noted that the charted altitude should be useable by and apply equally to all aircraft. ALPA, AOPA, and HAI support the DoD requirement.

Action:

A task group is to be formed to try to resolve this issue. A sign-up sheet was passed around for all to indicate their interest in participating.

16. Agenda Item 92-2-150~~0~~ Perceived FMS Application Problems (Jeppesen Sanderson)

The combination of FMS hardware, ARINC 424 Specifications, SID/STAR procedure design, and database coding sometimes causes problems that pilots, et al, believe are caused by poor database integrity. Mr. Rudy Ruana, Jeppesen Sanderson, noted that this is especially prevalent when procedures are designed with multiple 'expect' instructions that cannot be coded into the database. When this happens, the pilot, rather than the FMS, is on the hook for navigating to the next SID/STAR point. These instances can be reduced by improving source data through increased user input. ATA is currently evaluating advanced FMS systems and the FAA is currently rewriting the SID and STAR orders. User input is encouraged in both of these efforts.

Action:

Rudy Ruana will monitor the ATA and FAA efforts and report on this at the next ACF meeting.

TERPS

17. Agenda 92-2-100 TERPS Visual Descent Point (VDP) (ALPA)

VDP's are not being published on a routine basis on civilian instrument approach procedures (IAP). ALPA inquired about the possibility of having a stabilized approach during the final phase of the IAP. This stabilized portion would be just prior to landing when the aircraft is leaving the minimum descent altitude or at 500 feet above ground level.

Action: ALPA was asked to develop a recommended TERPs change and present it at the next forum.

18. Agenda 92-2-101 Turbojet Straight In Maneuvering in non-precision standard instrument approach procedures (ALPA) ,

ALPA presented the Nashville, Tennessee VOR Runway 31 approach as an example to illustrate this agenda item. As presented, was the difficulty Category C and D aircraft have intercepting the missed approach point on runways where missed approach procedures

call for large intercept angles of up to 30 degrees. It was recommended that the missed approach point be moved back to the point at which the final approach course (FAC) intercepts the runway centerline extended for procedures where the VOR is co-located at the airport. A VDP is highly desirable. Order 8400.10, page 4-163 describes stabilized approaches and was cited as a reference supporting this proposal. This issue is closely related to 92-2-102.

ACTION: ALPA will draw-up a strawman proposal that ties this agenda item with the Visual Descent Point/stabilized approach described in 92-2-100. This proposal will be presented at the next ACF.

19. Agenda 92-2-102 IFR Departure Procedures and Standard Instrument Departures (ALPA)

ALPA contends that TERPs IFR departure criteria have never been uniformly applied by the FAA. Further, pilots have not been given meaningful directives in the application of departure procedures. This is especially true where dual minimums (climb gradients) have been applied. Adding to the confusion is the fact that SIDs generally replace IFR departure procedures at busy airports creating a situation where dual minimums exist. Additionally, climb gradients exist for both air traffic purposes as well as terrain clearance but none of this information is available to the pilots. The GALA 3 departure for Los Angeles was used to illustrate.

ALPA believes that SID construction should be incorporated into Chapter 12 of the TERPs Handbook and the FIFO 's or TERPs specialist should develop SIDs in lieu of Air Traffic. Further, SID criteria should be formalized and made consistent with IFR departure procedure criteria. At the very least, Air Traffic procedure specialists responsible for SID construction should be required to attend the TERPS class.

ACTION: AVN will review Chapter 12 of the TERPS handbook, AFS-420 will present the topic to ATPAC for consideration.

20. Agenda item 19-2-103 Minimum Crossing Altitude (MCA) on Obstacle Clearance SIDs

ALPA presented this topic stating that there are SIDs which have climb gradients that are for air traffic use only. These SIDs also have underlying obstacle climb gradients that are not specified on the procedure. Some of these procedures are "Pilot NAV" SIDs and are subject to air traffic controller level offs that are below the minimum instrument altitude assigned to the procedure. When ATC assigns an altitude below that established for the procedure, the pilot has no idea of the climb gradient required to clear the underlying terrain or obstacles. The GABRE SID at Los Angeles was used to illustrate.

ALPA contends that "Minimum Crossing Altitudes" (MCAs) should be established for all pilot navigation or radar-pilot navigation SIDs where the 40:1 terrain/obstacle clearance criteria has not

been applied. Perhaps, a note applied to the SID providing MCA terrain clearance would be appropriate. ALPA believes, as was stated in 92-2-102, that SIDs and STARS should be the responsibility of Flight Standards and not Air Traffic.

ACTION: Office of Aviation Safety stated that it will take a look at this.

21. Agenda 92-2-104 TERPs Precipitous Terrain Additives

ALPA presented the topic explaining that the original intent of TERPs was to increase the obstacle clearance where significant precipitous terrain underlies approach segments. The language in TERPs 323a is not specific enough to direct procedure specialists to apply precipitous terrain additives when necessary. Two cases to illustrate are instrument approaches into Medford, Oregon and Monterrey, California. In each case, the intermediate segment is several thousand feet higher than the airport elevation. These procedures were devised without regard to the precipitous terrain characteristics that exist.

ALPA recommends a sliding scale value be devised for applying precipitous terrain and paragraph 323a be changed to read "shall" instead of "should." This would eliminate discretion and force the procedure specialist to apply conservative precipitous terrain additives. Additionally, the procedures at Medford and Monterrey need to be immediately reviewed.

Action: AVN will look into the providing better guidance and will also review the two procedures in question.

22. Agenda Item 92-2-105 Review of TERPs SIAP Circling Approach Maneuvering Area. (ALPA)

ALPA stated that there is little lateral obstacle buffer at the edge of the SIAP circling approach maneuvering areas. These circling maneuvering areas are based on turning radii established for each approach category (A through E). Since there is no obstacle buffer extending past the edge of the circling areas, these circling maneuvering area radii are questionable during times of strong low level winds and at high elevation airports.

The present circling approach maneuvering area radii needs to be reviewed during conditions of strong low level winds and at high elevation airports. Perhaps, a tapered secondary obstacle buffer added around the primary circling maneuvering area should be added to TERPs criteria. A 30 knot wind should be considered as the adverse condition when undergoing this review.

Action: AFS-420, Paul Best, will examine this agenda item and review the PANS OPS, which utilizes a much larger area and conservative approach to defining the SIAP Circling Approach.

23. Agenda Item 92-2-106 Circling Approach Maneuvers at airports with very high heights airport of circling MDAs. (ALPA)

Circling maneuvers for operations at places such as Aspen and Eagle, Colorado, are increasingly stressful because there are numerous obstacles in the circling area. ALPA believes that

circling maneuvers at high elevation, mountainous airports are very hazardous and warrant special charting consideration.

At Mountainous airports, ALPA would like to see topographic information displayed on instrument approach procedure charts that contain circling maneuvering areas at high elevation airports. Further, procedurally, it may be necessary to develop criteria that would restrict or prohibit circling maneuvers in sectors which contain high terrain.

ACTION: ALPA will develop a proposal and possibly a chart prototype to be presented at the next forum.

24. Agenda Item 102-2-107 Questionable Accuracy of FAA Obstacle Data Used in the Construction of Instrument Approach Procedures (ALPA)

ALPA contends that FAA procedure specialists used to use the United States Geological Survey (USGS) Quadrangle (QUADS) maps as the source for terrain and obstacle heights when constructing IAPs. Now it appears that they are using the Sectional chart as the source for this information. Further, FAA Order 8260.29A states that the accuracy of information taken from the sectional chart is +/- 3 feet. This accuracy is not realistic given that many QUADS, which are used to derive terrain elevations for the sectional have a contour interval of 20 feet. Medford, Oregon was used by ALPA to illustrate the point.

ALPA recommends that the accuracy coding used for developing instrument approach procedures be reviewed and changed appropriately to reflect the source. Also, the USGS Quads, as the best available source, should be used to construct IAPs.

ACTION: AVN will review the accuracy coding stated 8260.29A and 8260.19B and check the source being used to develop IAPs.

25. Agenda Item 102-2-108 Application of Holding Pattern Criteria in Instrument Flight Procedures (ALPA)

ALPA contends that the FAA is disregarding basic holding pattern criteria by reducing their size in some flight procedures designed for turbojet aircraft. The Medford, Oregon holding pattern was used to illustrate where the design was inadequate and did not meet the established criteria. ALPA requested that the FAA review the criteria and consider the difference in holding pattern airspace with respect to aircraft speed, flight level and whether the aircraft is climbing or descending in the holding pattern.

The FAA should review the instrument approach and departure holding pattern sizes associated with type of aircraft and whether it's operation is level, climbing or descending. Holding pattern criteria are described in FAA Handbook 7130.3.

ACTION: AVN-200 will look into the application of holding pattern criteria for instrument flight procedures.

26. Agenda Item 102-2-109 Holding Pattern Wind Assumptions (ALPA)

ALPA stated that, although current holding pattern criteria were developed in conjunction with TERPS, they are not actually part of TERPS. Rather, holding pattern criteria were actually developed the FAA's Air Traffic. ALPA contends that wind assumptions built into these criteria are invalid. This assumption is based on multiple crew observations of low level wind observations using inertial guidance type systems. Of particular concern, are the criteria's suitability to provide basic obstacle clearance at mountainous locations. Since these criteria were developed in 1967, which is prior to the use of INS type systems, they need to be reviewed. The Medford, Oregon, was used to illustrate the point. ALPA requests an evaluation of the wind assumptions presently contained in holding pattern criteria.

ACTION: AVN will examine the 8260-2 for Medford, Oregon, VOR. FAA (AVN-AFS) will review the criteria and report at the next forum.

27. Agenda Item 92-2-110 - Cold Station Altimeter Settings (ALPA)

ALPA states that the FAA does not apply corrections to minimum instrument altitudes to account for very cold weather conditions or cold weather in combination with high terrain. High terrain, in this case, is defined as an area where the surrounding topography is at least 2000 feet higher than the airport's elevation. The Air Force and Canadians are currently applying cold weather altimeter corrections from the Final Approach Fix point and inward. Medford Oregon was again used to illustrate the point.

The FAA, AFS-420, has been studying this issue. Ron Maunder briefed the forum on FAA findings to date. FAA has asked the Canadians to forward their information on the application of cold weather/high altitude airport corrections.

ACTION: AVN-220 will review the Medford situation. AFS-420 will report on this agenda item at the next forum.

28. Agenda Item 92-2-111 TERPS NDB System Accuracy Assumptions (ALPA)

ALPA inquired if the along and cross course accuracy assumptions for low frequency NDB terminal navigation had been changed from +/- 6° to +/- 5° over the last several years. If the accuracy had been changed, ALPA suggested that the issue should be further analyzed to determine if a +/- 5° system accuracy was justified. Chuck Everest, AVN-540, stated that he believed the NDB System accuracy had always been +/- 5°.

ACTION: Chuck Everest will check to see if the NDB System accuracy has been changed and report back at the next forum.

29. Agenda Item 92-2-112 Procedure Turn Maneuvering Area and FAA Directive Information (ALPA)

Current TERPS criteria allow procedure turns to be predicated

on intersection fixes as well as overheading a navigational facility. These criteria assume that an aircraft will remain on the outboard course until executing the reversal maneuver. FAA directives now permit pilots to execute, at their own discretion, tear drop and race track course reversals not actually authorized or specified in the procedure. When executing such a maneuver, a pilot could get out of the 30 nautical mile protected area of the trapezoid especially when the procedure turn is predicated on a fix. This could result in the loss of lateral obstacle protection.

ALPA believes that the Airman's Information Manual (AIM) should be changed to direct out bound pilots to stay on course except for the actual reversal maneuver.

ACTION: ALPA will draft a change

30. Agenda Item 92-2-113 TERPS Paragraph 289 Close-In Final Approach Segment

TERPS criteria call for obstacles penetrating a 7:1 slope on the final approach segment of non precision IAPs to be noted on the procedure transmittal form (8260). Even though the obstacles are indicated on the procedure, there is no direction on the 8260 that these obstacles must be charted. ALPA would like the order changed to require the charting of TERPS Paragraph 289 Close-in Final approach segment obstacles. FAA agreed.

ACTION: FAA will ensure that procedure specialists indicate "chart" on the 8260 form for obstacles that penetrate the 7:1 slope defined in TERPS Paragraph 289. This item should be considered closed.

31. Agenda Item 92-2-114 FDC NOTAMs and Use of the Inoperative Components Table by Users.

Withdrawn by ALPA

Action: None Required

32. Agenda Item 92-2-115 Instrument Approach Procedures Automation (IAPA) System

Withdrawn by ALPA

Action: None Required

33. Agenda Item 92-2-116 FAA Quality Control During Development of IAPs and FAA Training of TERPS Personnel

Withdrawn by ALPA

Action: None Required

CHARTING FORUM
DECEMBER 15, 16 and 17

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