AERONAUTICAL CHARTING FORUM
Instrument Procedures Group
Meeting 12-01 – April 24, 2012
HISTORY RECORD

FAA Control # 12-01-301

Subject: Publishing a Vertical Descent Angle (VDA) with 34:1 Surface Penetrations in the Visual Segment (*Also includes Issue 13-01-309 - LP Procedure Cancelled Because of VDA Not Being Charted).*

Background/Discussion: FAA policy is to publish VDAs on all nonprecision approaches. Some of these approaches have obstacles that penetrate the 34:1 surface. AIM paragraph 5-4-5i, makes it clear that the VDA is for information only, is strictly advisory in nature, and there is no implicit additional obstacle protection below the MDA. However, Flight Inspection Services believes use of a VDA in these situations presents a potential hazard to safe flight. Currently, the only specific indication on the approach chart that the 34:1 surface is not clear in the visual segment below the MDA is the absence of shading in the visual segment on the profile view; however, this depiction is only used on RNAV procedures.

A recent user complaint by Southwest Airlines brought this issue to the attention of Flight Inspection Services. They complained of unexpected GPWS alerts on the RNAV RWY 36 at Birmingham, AL (KBHM). A flight inspection aircraft (Challenger) investigated the complaint by flying multiple approaches and determined that GPWS warnings are received (you cross only 200' over a house on 2 mile final) if the published 3.0° VDA is flown. GPWS warnings could be avoided if a dive and drive to the MDA profile is flown, followed by a visual descent, or by intercepting a higher 3.4° glidepath from the FAF altitude.

Ironically, VDAs were added to procedures to reduce the cases of controlled flight into terrain (CFIT) by providing a means for stabilized descents. However, blind application of VDAs has resulted in misleading information that makes it look like once the aircraft is established on the published VDA it has a clear path to the runway. This is especially compelling with the increased use of RNAV avionics and glidepath guidance (albeit advisory in nature) provided for the pilot on the primary flight display.

Recommendations: Suggestions on how to fix the issue are changes to criteria that do one or more of the following:

1. Do not publish a VDA when there is a penetration of the 34:1 surface.
2. Continue to publish the 3.0° VDA, but add a warning to the approach plate.
3. Publish a VDA that clears all obstacles by a safe amount up to 3.5°, without changing the FAF (fix) location or altitude.
4. Change the FAF (fix) altitude and/or location to increase the VDA an amount required to safely clear all the obstacles to the threshold.
5. Move the non-precision missed approach point to a location prior to the threshold and don't provide data for a VDA or threshold crossing height.

Comments: This recommendation affects FAA Orders 8260.3, 8260.19, and the AIM.

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INITIAL DISCUSSION - MEETING 12-01: Tom Schneider, AFS-420, presented this new issue on behalf of the Flight Inspection Services, AJW-331. Tom agreed to put the issue before the ACF-IPG for preliminary discussion until a representative of Flight Inspection can attend the October meeting. The issue arose when Southwest Airlines complained of receiving GPWS alerts while flying a published vertical descent angle (VDA) on approach to Birmingham, AL. Flight Inspection validated the complaint, also receiving GPWS alerts. Although the IAP has a VDA, the 34:1 surface is not clear as indicated by the lack of the "stipple" on the profile view. John Collins, GA Pilot, also expressed concern when VDAs and VDPs are published when 34:1 and 20:1 visual surface penetrations exist. He has forwarded a similar issue to the Charting Group recommending that a cautionary note be published when this condition exists - see ACF Charting Group issue 12-01-252. A copy of John's briefing slides is included here (View). Ted Thompson, Jeppesen, provided an explanation of the history of how VNAV angles came to be added to Jeppesen charts, along with the "DA in lieu of MDA" profile note which Jeppesen charts as a 'value added'. Both of these enhancements were based on ATA/Airline requests to Jeppesen in order to support industry use of vertically-guided, stabilized descents in the final approach segment. Mike Frank, AFS-52, asked whether Jeppesen charted VDAs from the 8260 forms. Ted replied yes, and if one was not provided, Jeppesen would compute the angle. Brad Rush, AJV-3B, interjected that the angle was computed from FAF altitude to TCH, not the runway. John Collins, GA Pilot, stated that it is impossible to fly a stabilized approach to the runway when there is terrain penetrating the VDA. Tom emphasized that VDAs are for information only, advisory in nature, and are not protected for use below the MDA (Editor's Note: See AIM paragraph 5-4-5i). Rich Boll, NBAA, noted that FAA provides an indication of a clear 34:1 on RNAV IAPs, but nothing for conventional IAPs. Tom expects that Bill Geiser, AJW-331, or a member of his staff will attend the next ACF to elaborate on his recommendations and asked all attendees be prepared for further discussion and offer recommended solutions at the next meeting. ACTION: All Participants.

MEETING 12-02: Bill Geiser, AJW-334, who was unable to be present at the last meeting provided a slide presentation on the issue; a copy of which is included here (View). The presentation recapped the flight inspection history of the RNAV (GPS) RWY 36 IAP at Birmingham, AL (KBHM) as a result of Southwest Airlines concerns. The flight inspection results confirm that the procedure is designed correctly and that "on path, on course" is safe. The problem is that pilots are not maintaining responsibility for descending below MDA. Pilots are following the published advisory VDA as a glide slope to the threshold. The 34:1 obstacle surface is not clear resulting in GPWS alerts. There are no standard flight inspection guidelines for checking a VDA or the visual segments. Therefore, as a result of this analysis, whenever a procedure form indicates the 34:1 is not clear, flight inspection will fly all approaches one dot below the VDA for a 'reasonable' obstacle clearance check. If the flight inspection pilot has to destabilize the approach or receives a GPWS warning, he/she will annotate the procedure that the VDA and TCH should not be charted or databased. Bill Geiser's recommendations include: 1) Revise FAA Order 8260.19 guidance to accommodate flight inspection results; i.e., raise the angle or do not publish a VDA, 2) Issue a SAFO and beef up other pilot educational material, and 3) revise industry coding policy. Tom Schneider, AFS-420, briefed that the following has been included in Change 3 to 8260.19, under paragraph 8-57u(1). The change is currently in FAA internal coordination - changes are shown in red text:

> *For straight-in aligned nonprecision SIAPs (except for procedures that already have a GS/GP angle established for the vertically guided procedure on the same chart and surveillance (ASR) approach procedures), enter the descent angle for the appropriate fix in the final approach segment, and the appropriate TCH:* ***NIXON to RW15: 3.26/55.*** *Where straight-in minimums are not authorized due to an excessive descent angle, enter the straight-in descent angle (may exceed maximum when compliant with circling descent angle). Where the VDA values are not coincident with published VGSI values, see paragraph 8-55n. Only one angle and TCH will be published on the chart. Do not*

publish a VDA (or TCH) when Flight Inspection has requested that one not be established due to an obstacle that would require an aircraft to deviate from its vertical flight path prior to reaching the TCH.

Rick Dunham, AFS-420, added that a policy memorandum has been issued to preclude continuous waiver requests pending publication in Order 8260.19. John Collins, GA Pilot, asked why the 34:1 is used vice a 20:1. Kevin Allen, US Airways, responded that 34:1 is the standard obstacle surface for a 3 degree angle. Gary McMullin, SWA, added that his organization prefers higher angles, but without eliminating CAT D aircraft operations. Tom stated that if the angle is increased, then it will require increasing the FAF altitude. Marc Gittleman, ALPA, asked why a fly-off from the FAF at the existing altitude couldn't be used to create a higher descent angle. Ted Thompson, Jeppesen, commented that the use of vertical descent angles in databases has been around for decades and gained momentum after the Winsor Locks, CT (KBDL) accident. The original purpose of the VDA/VNAV angle was to facilitate a stabilized descent down **to** the MDA – **not below** MDA while simultaneously designed to clear minimum altitudes at step-down fixes. There was never any intent to clear 34:1 surface obstacles below the MDA. Ted emphasized that if VDAs are removed wherever a 34:1 penetration occurs, it will result in the loss of stabilized descent for thousands of approaches. Tom Schneider, AFS-420, also noted that if VDAs are removed from charts as recommended by Flight Inspection, a descent angle may be included in the database, even if not specified on the associates FAA 8260-series form. If the fly-off suggestion is desired, it will have to be addressed by the US-IFPP. Ted emphasized that pilot education is the key to understanding the purpose of VDAs. Rick Dunham, AFS-420 commented that the FAA has expanded the explanation and use of VDAs in the proposed change to the IPH, which is currently in coordination. FAA will also look into expanding up the AIM language. Val Watson, AJV-3B, agreed that pilot education is the key to a solution and suggested that perhaps an annotation to existing VDAs in the chart profile to show "**3.00 to MDA**" might add emphasis. John Collins, GA Pilot, stated that he had accomplished an informal survey of non-precision approaches in North and South Carolina; 10-15% had the "stipple", 10-15% had a VDP, and the other 80% had nothing. Gary McMullin, SWA, added that we need to be careful about removing descent angles, as if the angle is removed, the procedure will be removed from the database. Increasing the angle is helpful provided the increase does not exclude certain Category aircraft. The better option is to re-design the procedure. Tom wrapped up the discussion saying the issue will be referred to the US-IFPP. In the interim, AFS-420 will track the IPH change and recommend better AIM language.
ACTION: AFS-420 (US-IFPP).

MEETING 13-01: Tom Schneider, AFS-420, briefed that the issue was presented to the US-IFPP at the January 2013 meeting. Volunteers have been identified for a work group that will be led by John Bordy, AFS-420, to study the issue. the first meeting will likely occur in May. Tom added there is nothing much to report thus far. FAA Order 8260.19 has been revised to allow Flight Inspection to direct AeroNav Products to remove the VDA from a procedure when deemed necessary. When directed, AeroNav Products will add a chart note "VDA NA". Ted Thompson stated that Jeppesen has accommodated coding a 0 (zero) degree angle in these instances; however, that does not preclude other agencies from computing and coding an angle. Ted recommended that AIRNC 424 personnel be invited to the meeting. John Collins, GA Pilot, asked whether the meeting was open to the public. Tom said he did not know, but would check. If open to the public, the following requested to participate:

John Collins, GA Pilot	johncollins@carolina.rr.com
Ted Thompson, Jeppesen	ted.thompson@jeppesen.com
Lee Smith, Capitol Airspace	lee.smith@capitolairspace.com
Lev Prichard, Allied Pilots Assn	lhp4@swbell.net
Neal Covington, Aero Nav Data	neal@aeronavdata.com

AFS-420 will continue to co-work this issue and Issue 13-01-309 (see below), through the US-IFPP and update the next ACF. ACTION: AFS-420 (US-IFPP).

Editor's Note: *At this meeting, John Collins, GA Pilot, presented the following related new issue, which expresses concern over the loss of LP minimums when the VDA is not authorized. The forum recommended that the new issue be addressed concurrently with issue 12-01-301. John agreed provided the retention of LP minimums when a VDA is not charted is an added requirement for resolution of issue 12-01-301. AFS-420 agreed to ensure the US-IFPP will respond to both issues under 12-01-301. The full text of the initial discussion may be viewed on the ACF-IPG web site under the History of Closed Issues, Issue # 13-01-309.*

AERONAUTICAL CHARTING FORUM
Instrument Procedures Group
April 24, 2013

RECOMMENDATION DOCUMENT

FAA Control # 13-01-309

Subject: LP Procedure Cancelled Because of VDA Not Being Charted

Background/Discussion: *Wally Roberts, consultant for NBAA, copied me on a conversation/inquiry dealing with the reasoning behind why an update to the RNAV (GPS) RWY 9 approach at Washington County, PA (KAFJ) had cancelled the LP procedure.*

Wally wrote:

> *I note that LP minimums are being deleted (as noted on the FAA Form 8260-9) but no reason is given.*
>
> *Could you please provide us the reason for the removal of LP? Also, why is the procedure presently 'NOTAMed' NA?*
>
> ***FDC 2/2272*** *- FI/T IAP WASHINGTON COUNTY, WASHINGTON, PA. RNAV (GPS) RWY 9, AMDT 1...PROCEDURE NA. WIE UNTIL UFN. CREATED: 07 DEC 16:16 2012*

The AeroNav Products response was:

> *Control Number 16280 has been assigned to this issue for tracking purposes.*
> *This concern has been closed with the following response:*
>
> ***The LP minimums were removed from amendment 1A (to be published on March 7). Amendment 1B (to be published on April 4) was done to correct an error on 1A.***
>
> ***The 8260-9 is used to give future developers the reason the LP minimum were removed and the reason was on the back of the -9 two lines above. The reason should have been place together with LP minimums deleted.***
>
> ***The procedure was NOTAM'd NA per Flight Inspection, but we will reinstate the procedure, per new guidance.***

Wally presented a follow up question:

Attached is the back of the 8260-9. Could you point me to the reason for the deletion of LP? I cannot find it.

The following response was received:

This is the reason, but it has more to do with coding. Once we remove the VDA, the coding has to be changed 3.00 degrees to 0.00 degrees thus negating the LP minimums and the FAS DATA. If we kept the 3.00 degrees in coding it would override what we are trying to prevent. We are trying to prevent the aircraft flying from FAF to THLD, like an LPV /ILS, when it should be flying from FAF to MDA like an LNAV.

We had a test case go thru flight inspection to see if we could keep LP minimums, but it did not work. I hope this answers your question.

PART C - REMARKS:

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

TERPS PARAGRAPH 289 APPLIED TO 1639 AAO
400801N/0802457W

BLOCK 3: ALTIMETER SETTING
SOURCE: KAFJ/KHLG
DISTANCE: 16.54
HRS REMOTE: 24
ADJUSTMENT: 39.54

AWOS-3 AND ASOS ON SERVICE A

RWY 09 VGSI DATA: 4.00/77

WAVVO TO RW09: 3.00 / 50

FLIGHT INSPECTION RESULTS DO NOT WARRANT A VDA

TAA NOT USED, ATC REQUEST

LP MINIMUMS DELETED

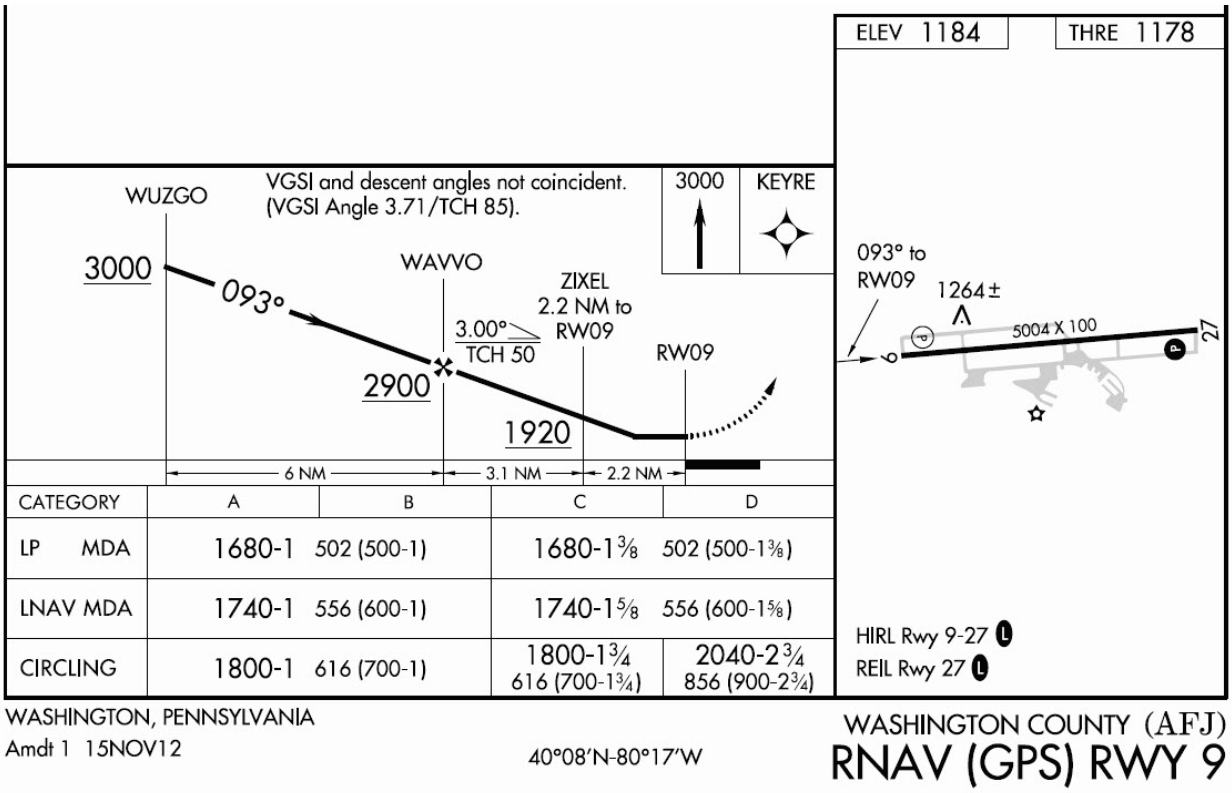
PRESSURE PATTERNS ARE THE SAME
KAFJ (1184 MSL)
KHLG (1195 MSL)

RASS ADJUSTMENT ROUNDED TO 40 AND ADDED AS NOTE

NO ADDITIONAL AIRSPACE REQUIRED.
RASS PRESSURE PATTERNS SAME
KAFJ 1183.90, KHLG 1194.70
RA = 39.56.

LPV AND LNAV/VNAV NOT DEVELOPED DUE TO GQS PENETRATIONS.

ORDER 8260.3, VOLUME 1, VISUAL PORTION OF FINAL PENETRATIONS:
20:1



I called the Quality Advisor involved in the discussion to make sure I understood what was going on. He confirmed that the LP could not be published because it could not be coded with a VDA of 0 (zero). He indicated that the 0 was required to prevent advisory vertical guidance on the procedure.

I have several issues with this. The purpose for LP procedures is to provide a lower MDA than permitted by the LNAV where the smaller OCS footprint allows. It is only used when a vertically guided procedure isn't appropriate for the runway. Although a Constant Angle Non Precision Approach (CANPA) may be desirable, it is not always available as an option on all NPA procedures. The advisory glidepath provided by some manufacturers' GPS units is only permitted to be used during the descent to the MDA and not below it. It is my understanding that regardless whether a VDA is published or not, advisory vertical guidance may be provided, in that if the 8260 doesn't provide the data for the advisory glidepath, the manufacturer may calculate one. Therefore, setting the VDA to 0 in the database doesn't necessarily eliminate the advisory glidepath from the database. Because of the coding issue described by the Quality Advisor, the LP procedure is eliminated. It is ironic that the unintended consequence is that the LNAV will end up with an advisory glidepath, but if it is coded in the database it will not generate advisory guidance, at least in the Garmin units. This is because, the LP procedure in the Garmin units don't support advisory vertical guidance under any circumstance whenever LP is the highest service level coded for the approach, regardless if the integrity at the time of the approach supports LP or LNAV. My understanding of the ACF issue dealing with VDA was only to affect whether or not the VDA would appear on the chart and there was to be a note added to the effect "Descent Angle NA". This situation ends up being a 'catch 22', if the runway doesn't qualify for vertical guidance, and flight testing indicates that CANPA is not an option, it doesn't qualify for LP, and when a LP is coded it doesn't have advisory vertical guidance, but if only a LNAV is coded, it does have advisory vertical guidance.

Recommendations: *The database coding of LP procedures should be permitted even when the VDA is not charted. Being able to fly a procedure with CANPA should not be a requirement for a NPA.*

Comments: *This recommendation affects FAA Order 8260.19.*

Note 1: From the 12-02 ACF/IPG Minutes, the related issue is:12-01-301 Publishing a Vertical Descent Angle (VDA) with 34:1 Surface Penetrations in the Visual Segment. This issue may be considered as a continuation of 12-01-301.

Note 2: Quote from the 12-02 ACF/CG Meeting Minutes re: 12-01-252 Warning Note on Vertical Descent Angle (VDA) Procedures: "Bill Hammett's recommendation, that when Flight Inspection deems prudent, the VDA will not be published (on the source document and thus on the chart – databasing remains unresolved), received general acceptance."

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Date: *February 20, 2013*

MEETING 13-02: Tom Schneider, AFS-420, briefed the following update as provided by John Bordy, the AFS-420 conventional TERPS criteria specialist: "This issue was discussed at length during the US-IFPP meeting in June. The US-IFPP determined that AFS-420 will lead a working group (tentative members were identified during the US-IFPP meeting) to develop a recommended position for the US-IFPP to consider. It was also agreed that non-US-IFPP member participation would be included in the working group as requested at AFC-IPG meeting 13-01. AFS-420 intends to convene a meeting of the working group prior to the next meeting of the US-IFPP." Rich Boll, NBAA, requested he be included as a meeting participant.

Lev Prichard, APA, briefed that he had decided to research examples where the problems exist and emphasized that it is not strictly a commercial operational problem. He briefed from a PowerPoint presentation, which included a CFIT history slide that showed where aircraft accidents occurred relative to runways. Lev used the San Diego (KSAN) LOC RWY 27 IAP to demonstrate the benefits of vertical guidance. Lev compared the FAA and Jeppesen approach plates, with emphasis on the advisory altitudes on the Jeppesen chart. Lev said the point is that APA supports all vertical guidance to MDA, with advisory use below MDA; however, NOTAMs not allowing straight-in procedures at night effectively cancel all vertical guidance. A synopsis of Lev's presentation and briefing slides are included here (View).

From the GA perspective, Lev discussed the Fayetteville (FYV) RNAV RWY 34 which illustrated several issues. This approach has LPV minimums, has a VDP so the 20:1 visual surface is clear, but no 'stipple' indicating the 34:1 is not clear, and has a VDA. However, if you fly into the airport with a Garmin equipped aircraft, you will note the box is stripped of vertical descent programming because of Garmin programming methodology. Therefore, even though the chart shows LPV and LNAV minimums, you have no vertical guidance. But, if you look at the plate, you would think you also have vertical guidance since it has both a VDA and VDP. This is the unintended consequence of when this box was certified; some systems may have the guidance while others do not. Lev recommended charting everything and letting pilots/operators sort it out to their specifics. John Collins, GA Pilot, stated that a pilot can't always tell from a charted NPA whether vertical guidance is available. Discussion ensued about steep glide paths, and that advisory vertical guidance is advisory everywhere.

Rich Boll, NBAA, referred back to the KSAN LOC RWY 27 approach. The Jeppesen version profile has the ball note: "only authorized operators may use VNAV/DA/H in lieu of MDA/H". Rich asked how the VGSI could be inop and the FAA still allow an operator to treat a MDA as a DA/H under

OpSpec C073. Rich stated he is raising this issue due to the note, and he is seeing it on a lot of approaches, where straight-in/circling is N/A at night but the ball note is still on the chart. Tom asked John Moore if he could determine the Jeppesen source for these notes. John said he did not know, but there had been internal discussions on the matter and he would check with Ted Thompson. Group discussion indicated that this was due to criteria at Part 139 airports only, and also is unique to Jeppesen charts, not FAA charts. Tom stated that since this subject is off topic from the agenda item, it would be put in the minutes as a discussion item, but will not be tracked by ACF. Rich concurred since NBAA concern deals with Part 135 operators.

Much later in the Forum John Collins raised concern that no updates or discussion was provided relating to Recommendation 13-01-309, which was combined with this item at the last meeting. Tom assured the group that this item will not be closed till both 12-01-301 and 13-01-309 are resolved. John asked that issue 13-01-309 be specifically updated in the next update to this issue. AFS-420 will continue to work these two issues through the US-IFPP.
ACTION: AFS-420 (US-IFPP).

> ***Editor's Note:*** *The following response was provided by Ted Thompson, in response to John Moore's inquiry regarding the use of the ball note in the profile of Jeppesen approach charts: "In essence, the origins of the Jeppesen-added notes are based on HBAT 99-08 and related requests from several ATA (now A4A)-member airlines when VNAV was introduced. The criteria originally cited in HBAT 99-08 were eventually replaced with amended criteria contained in OpSpec C073. The criteria were mainly unchanged with the exception that they now only apply at 14 CFR, Part 139 Airports. Jeppesen charting specs address the removal of the notes for charts at non-Part 139 Airports."*

MEETING 14-01: Tom Schneider, AFS-420, briefed that the working group has had several meetings and brought Flight Inspection onboard. The slide shows the results of the VDA Working Group meeting and the US-IFPP recommendations. The first slide shows design criteria in Order 8260.3 & policy in Order 8260.19. (View) Joshua Fenwick, Aero Nav Data, inquired if a flight inspection failed, would a redesign to increase the descent angle occur? Tom said that would be one option. John Collins, GA Pilot, inquired about the 0 degree angle in VDA. There was discussion on one manufacturer who had coding issues with using the zero, and this has been fixed. Brad Rush, AJV-3, added that this only affects approximately 120 procedures (out of well over 10,000) in the US NAS. A discussion followed with previous points restated from other meetings: i.e. VDA advisory only; ARINC 424 coding; data base suppliers coding "0" for the angle; publishing note "VDA N/A below MDA"; TPP changes; pilot guidance in AIM and IPH; coded value; etc. It was recommended these coding issues be brought up in the scheduled Database Manufacturers Forum scheduled for Thursday afternoon (5-1-2014).

Status: AFS-420 will continue to work this agenda item through the US-IFPP. Item Open [AFS-420 (US-IFPP)].

MEETING 14-02: Tom Schneider, AFS-420, briefed there are two parts to the issue. The first provided by Dan Wacker, AFS-420, (View) shows what is in coordination for VDA design in FAA Order 8260.3C. The chart note change is in FAA Order 8260.19G, which will be published in March 2015. Rick Dunham, AFS-420, advised that they are working on IPH guidance and strengthening the language in FAA Order 8260.3C to maximize use of vertical guidance. The goal is to provide vertical guidance if at all possible on all procedures. Revised AIM/AIP language will follow as appropriate. John Collins, GA pilot, pointed out that higher angles will restrict categories and would not want to see an approach "lost" because of a high angle. Rich Boll, NBAA, asked Ted Thompson, Jeppesen, what happens if AeroNav Products does not provide a Descent Angle or a Descent Angle NA note, and Ted replied they code a zero angle. Kevin Bridges, AIR-130, said charts can be tailored to user requests and they can provide whatever they want

on advisory vertical guidance. Joshua Fenwick, AeroNavData, said the ARINC NDB group looked at this issue and was interested in the ACF discussion, which he will communicate. The ARINC group acknowledged if coding a zero is a bad idea, they will consider removing angle from the ARINC 424 coding. There are pilots that may want the advisory angle to continue to be calculated and coded. John asked if the zero is used as an angle or code and Kevin said it depends on the manufacturer. Kevin added that AIR-130 was against using zero as a solution because of the problems it may cause. Brad Rush, AJV-344, said that AeroNav Products will not source or support the enabling of an angle on a procedure that would take aircraft thru an obstacle. Discussion followed on how the angle is coded and how it's used by pilots. The main issue is use of an angle below the MDA. Lev Prichard, APA, said this is an education issue since pilots are "visual" at that point. Tom said issue was discussed internally and there will not be a SAFO issued, however, clearly pilot education needs to be expanded. Rick added that language in the AIM/AIP and IPH are under review. Kevin said the angle is being coded as a zero and guidance has been published that this can cause problems with boxes. There is nothing that prevents a manufacturer from using another method to calculate advisory vertical guidance or charts being tailored to display information, but it might be good idea to publish a list of affected airports until all notes have been published. Discussion followed on possible benefits of a list and who would use information. Brad is looking internally at the possibility. Kevin then addressed a second issue (View) with a recap that there are no MOPS/TSO requirements and people can choose how to use. AIR-130 issued a Special Airworthiness Information Bulletin (SAIB) (View) to inform that the issue exists (i.e., be ready for it) and also alerted aircraft OEMs, avionics manufacturers, and operators, providing suggestions on mitigation.

Status: Joshua Fenwick, AeroNavData, will bring the issue back to the ARINC NDB workgroup and report at the next ACF; AFS-420 will review AIM/IPH language; AJV-344 will look at possibly developing a list of affected airports. **Item Open:** Joshua Fenwick, AeroNavData, AFS-420, and AJV-344

MEETING 15-01: Joshua Fenwick, AeroNavData, was not present to brief an update from the ARINC NDB workgroup. Tom Schneider, AFS-420, briefed a slide (View) provided by Dan Wacker, AFS-420 contract support, emphasizing that item #1 in draft Order 8260.3C language has been established to address the criteria portion. Lev Prichard, Allied Pilots Association, asked if this means the FAA intends placing a VDA on every procedure including a circling minimums approach, unless Flight Inspection determines it cannot be done (even after trying different designs/angles/displaced thresholds/RAPT process review). Rick Dunham, AFS-420, answered yes, but that applies to only those straight-in aligned procedures (per Order 8260.19F, paragraph 8-6-8s). Tom briefed slide item #2 regarding draft Order 8260.19G language, showing how the chart note will read. Rick advised that the visual segment language has been rewritten for the AIM/AIP and is being reviewed in AFS-400. John Moore, Jeppesen, inquired about possible differences between Order 8260.3 and Order 8260.19 language regarding reworking procedures that fail flight check. Tom explained the Order 8260.3 is for design and Order 8260.19 is for documentation. John Collins, GA pilot, asked what actually gets documented as directed in Order 8260.19 and Tom responded information placed in the additional flight data block of FAA Form 8260-3. Discussion followed on how this will not prevent manufacturers from publishing an angle in their database and/or on a chart if they so choose, but the required note will provide warning to the pilot if they choose to follow that angle below the MDA. The note will now read: "Visual Segment – Obstacles." Ted Thompson, Jeppesen, asked about the note wording rationale. Tom responded this is an AFS group consensus and it could have been different (matter of opinion), but this was the final AFS/AIR group decision. Valerie Watson, AJV-553, added guidance is already in the AIM/AIP about this angle being advisory and we are expanding on that. Tom briefed that item #3 shows the SAIB guidance (previously discussed) as put out by Kevin Bridges, AIR-131. Tom briefed item #4 showing draft (DCP format) of proposed AIM/IPH language and again advised it is being reviewed internally in AFS-400, adding that nothing is finalized yet. Rick said to keep in context that there are over 20,000 procedures and only 180 (so far) have encountered this issue; the intent is to either redesign the procedure(s) to eliminate the issue or provide pilot education that there may be obstacles in the visual path. Lev asked if visibility tables are being looked at and Rick responded "yes," but no change yet. Ted Thompson, Jeppesen,

added visibility tables are typically based on level segments of the approach and not revised with vertically guided procedures. Tom said the last IOU was for Aeronautical Information Services (AIS) to develop a list of affected airports for the web site and discussion with Brad Rush, AJV-54, prior to the meeting, indicated there was some resistance to that idea. Rick stated that at some point, maybe there should be no procedure developed at some airports due to obstacles. There is a balance between safety and airport access, adding this is our first attempt at guidance change.

Status: Tom requested all read the AIM draft (work in progress) in the minutes and send comments to AFS-420. **Item Open:** AFS-420

MEETING 15-02: Tom Schneider, AFS-420, and John Bordy, AFS-420, briefed (View) that draft FAA Order 8260.3C language is in place, but there are ongoing discussions that could result in changes to what is in the current draft. FAA Order 8260.3C has not gone out for coordination. Rick Dunham, AFS-420, added that the FAA wants criteria/language that encourages vertical guidance to the maximum extent possible; adding that if the procedure cannot be developed with vertical guidance, it may not be developed. The objective is to make VDA mandatory and possibly moving towards removing LP approaches. Rich Boll, NBAA, asked about Flight Standards review of procedures. Tom said there is a Procedures Review Board that looks at the procedure to see if it should go forward. Kevin Bridges, AIR-131, inquired about when considering LNAV and LP approaches, if there is an obstacle in the visual segment but nowhere else, the procedure will not be published. Rick said that is not correct. Maybe the airport is willing to remove the object or consider other options in order to get an instrument procedure. The FAA wants to provide vertical guidance wherever it can. This concept will not happen overnight. Lev Prichard, APA, likes the policy statement. Rune Duke, AOPA, agreed and said vertical guidance is very important, but there is value in LNAV and LP to provide access to many general aviation airports. Rick added this is a long term goal. Kevin added that the issue is whether you will have vertical guidance or not, and this discussion is for approved vertical guidance (LNAV/VNAV criteria) with stabilized approaches (everything clear/no obstacles). John added FAA will still calculate a VDA and try to design at three degrees. Tom said there is an effort between FAA Airports and Flight Standards to harmonize airport and TERPS surfaces. Tom outlined changes to FAA Order 8260.19, mentioning that IPH guidance is already out, and the AIM change will be published in Dec 2015. Brad Rush, AJV-54, said what you will see on the approach chart in the profile is a note and there will be no angle or TCH charted in the profile view, but data will be in the database. Ted Thompson, Jeppesen, briefed how Jeppesen will handle the data. A discussion followed commenting on how the pilot can generate the angle; stabilized approaches; advisory angles - MDA vs. DA; obstacles below the MDA; OpsSpec authority for certain users; obstacles that may not be on centerline but VDA was eliminated; the ongoing effort to “marry” VDA with TERPS criteria; pilots using an advisory angle as if it was an approved angle.

Status: Provide update from sub-group. **Item Open:** AFS-420.

MEETING 16-01: Tom Schneider (AFS-420) briefed (View) that the associated US-IFPP issue 13-02-18 is closed, and AFS-420 has been involved in several working group meetings on the issue. Orders 8260.3C (VDA design criteria) & 8260.19G (Note changes) have been published, and the AIM (guidance) was published on 12-15-2015. John Collins (General Aviation) commented that he has seen both old and new notes on current charts, and Valerie Watson (AJV-5) said procedures will be updated with the new obstacle profile note as they are reworked, but they are not being processed solely to apply the new note. Ted Thompson (Jeppesen) said they are charting the advisory angle and TCH based on data provided in the ARINC data record that is incorporated into the 8260 series Forms. This includes the new note as the procedures are updated. Jeppesen wants to ensure the chart and data base do not have conflicting information (i.e., “chart/database harmonization”). Tom said there is some internal FAA discussion about having the angle and TCH in the data base, the new chart note, but no angle/TCH charted on procedure. Ted again said the Jeppesen chart will include the angle and TCH for database

compatibility. John said the General Aviation community does not understand this and needs it to be explained. Ted said it is an education issue and they were under pressure (customers) to put angles and TCH back on the charts. Tom said on the FAA chart you will not see the angle or TCH, just the note, but the information will be in the database. Lev Prichard (APA) added he thinks the FAA will have problems not charting the angle/TCH with the users of AIS charts, since the database will not match the charts. Tom will take this information back for internal discussion, and was not aware Jeppesen and Lido were publishing the angle and TCH along with the new note. Chris Hill (Delta), Larry Hill (FedEx) and other industry representatives all like the Jeppesen approach, so the database and chart are compatible. John Collins added most General Aviation pilots were unaware that the angles being restored to Jeppesen charts, but likes it.

Status: With the publishing of Orders 8260.3C, 8260.19G & the AIM/AIP updates, those portions of the issue are completed. Tom will take the charting disconnect issue back (Jeppesen and Lido supplying angle and TCH on charts and FAA is not) for discussion at the US-IFPP. **Item Open:** AFS-420

MEETING 16-02: Tom Schneider (AFS-420) briefed on current Order 8260.19 guidance to publish a profile note "Visual Segment – Obstacles" and to eliminate publication of the VDA and TCH on FAA procedures when requested by Flight Inspection. Until recently, the FAA was still providing the glidepath angle and TCH data in the FAS Data Block of the source document, providing chart producers with a means to provide VDA and TCH on/in their products. An FAA memo (VIEW) was issued clarifying the intended policy. This memorandum specified that the FAA would no longer provide the ARINC data record as part of the publicly-disseminated procedure package content, but would still provide FO/FB waypoints and path terminators (for TERPS containment) along with all other FAS data block information. AIS will continue to provide an ARINC data record to Flight Inspection and to interested parties by specific request. John Moore (Jeppesen) confirmed with Tom that the ARINC data record will not be considered official state source and will not be published in the Transmittal Letter as part of the instrument procedure, but would still be available by request. John then inquired how the ARINC data record would be made available. Tom stated that details have not been worked out on how to process requests. Lev Pritchard (APA) inquired about the original problem, and Tom said that the FAA is not willing to publish/provide a VDA or TCH when Flight Inspection identifies a problematic obstacle that could cause an issue if the VDA were flown to the runway. It is believed that removing the data from the source documentation will eliminate the confusion in these cases. John Bordy (AFS-420) explained that the current requirement within Order 8260.3C (not yet fully implemented) is to attempt a redesign of the VDA to the highest allowable angle if Flight Inspection identifies a problem obstacle in the visual segment. If the redesign doesn't result in an improvement then we would publish the profile note indicating there are problem visual segment obstacles John Bordy added that an initiative is in the works to develop and evaluate non-precision runways in the same manner we do today using the Glideslope Qualification Surface (GQS) for evaluation of vertically guided procedures (i.e., If there is a penetration of the surface, the procedure not allowed) before Flight Inspection. As the FAA understands this will be a significant impact to the NAS, MITRE will conduct a NAS impact analysis for problem locations. When the impact study is completed, AFS will work with the Office of Airports and AJV-5 on an implementation plan. A discussion followed including the possibility of using higher angles to allow for a VDA at an airport, even with a loss of Cat D minimums, or providing no ARINC coding at all, since chart and database providers can calculate and publish angle/TCH to meet customer requests. The chart note "Visual Segment – Obstacles" will still be required by the source document as appropriate. Rich Boll (NBAA) stated we need to explain within the AIM why it might be possible for an FMS to contain an angle and TCH whereas the published procedure is absent of that information; Tom agreed. -The issue will remain open until those publications are updated. Kevin Bridges (AIR-130) added this guidance needs to include *advisory only* emphasis on any non-precision approach. The group concurred.

Status: AFS-410 will work AIM/AIP and IPH changes. **Item Open:** AFS-410

MEETING 17-02: Rich Boll (NBAA), briefed (VIEW) there are two primary purposes in changing the AIM; the first is to emphasize that VDA on non-precision approaches are advisory, and the second is to explain why a VDA might be included on a chart when not included in source and how it may end up in a data base. Rich discussed the draft guidance on the slide as shown, with group comments on each. John Bordy (Flight Procedure Standards Branch), said this guidance would be sent to both Flight Standard' Flight Operation Branch and AIR-6B1 for review. The next AIM cut-off is March 29, 2018, with publication Sept 2018. Rich added comment is requested on the language from ACF participants (not necessarily the final version). Ted Thompson (Jeppesen) said the effort in last 20 years was to provide as many non-precision approaches as possible with advisory VDAs with ARINC 424 coding, adding that Jeppesen did that down to MDA. Rich also discussed (VIEW) the BIH RNAV (GPS) Y RWY 12 approach, noting in the chart profile view there is a visual segment obstacle note, which means somewhere there is an obstacle which flight inspection was concerned about. However, there is also a stipple, indicating the 34:1 visual segment (and thus the 20:1) is clear, which is confusing. Rich would like resolution on these two charting standards prior to issue closure (only publish one of the two). John suggested it's possible the obstacle that flight inspection was concerned about was not contained within the database that was used to evaluate the approach procedure. John Bordy and Tony Lawson (Aeronautical Information Services) took an action to research how this can occur and provide feedback at the next ACF.

Action Items:
John Blair will review proposed AIM language.
John Bordy to provide draft AIM language to IPG participants to solicit comments.
John Bordy and Tony Lawson will research how it's possible for flight inspection to determine that no VDA should be published, yet the procedure chart still includes a stipple.

Status: Item will remain open.

Meeting 18-01: John Blair (Flight Operations Branch) (VIEW) displayed draft Aeronautical Information Manual (AIM) language developed in conjunction with Rich Boll, National Business Aviation Association (NBAA). The intent of the draft AIM addition is to fortify that VDAs are advisory only, and to explain that a database provider may calculate and provide a VDA even though one isn't charted. John Blair indicated the draft language is currently being coordinated internally within the FAA for comment and noted its focus is on FAA publications as opposed to how commercial charting entities address VDAs. A lengthy discussion followed, with one commenter indicating that perhaps the language isn't strong enough (i.e., in providing a warning about obstacles below minimum descent altitude) to which Rich responded that the displayed language only represented a small portion of the current VDA language in the AIM. Another commenter was concerned about data houses continuing to provide VDAs even though the FAA themselves weren't charting them; it was suggested that was a separate issue perhaps best addressed by certification. John Collins (GA pilot) felt the last paragraph addressed higher end aircraft equipment, and since the AIM is used more by GA pilots, the intended audience may be missed. Michael Stromberg (UPS) and Valerie Watson (Aeronautical Information Services) noted the paragraph does state clearly "...the VDA is advisory only and does not provide obstacle protection below the MDA", and do not see the need for different language. It was agreed that

The draft language would be made available to everyone in attendance and that comments should be directed directly to John Blair. John Bordy (Flight Procedure Standards Branch) also addressed the stipple issue brought up by Rich at the last meeting (*Note: The stipple is the shaded extension of the glide path depiction in the profile view of an RNAV procedure and is intended to indicate the 34:1 visual surface is free from obstructions*.) John explained that stipples can be charted even where Flight Inspection has directed the VDA to be removed because the two policies have no direct linkage. The 34:1 is determined to be clear or not by evaluation of obstacles within the procedure designer's database, whereas removal of VDA can often be a subjective call by the Flight Inspector. This issue will be referred to the US-IFPP to firstly determine whether stipples should continue to be published, and if so, if there should be policy to remove stipples for those procedures where Flight Inspection directs a VDA to be removed.

Editor's Note: *Proposed AIM language sent to all ACF 18-01 IPG participants in attendance via e-mail on 04-25-2018 soliciting comment for John Blair NLT 05-08-2018.*

Action Items:

- John Blair will look at feedback from the 04-25-2018 email and review proposed AIM language.
- John Bordy will present a new agenda item for the US-IFPP on stipple usage.

Status: Item open.

Meeting 18-02: Discussed two action items from the previous meeting. The first action item was to provide an update to the AIM. John Blair (Flight Operations Group) provided the update and thanked participants for the input they provided for the upcoming change to the AIM. John Blair indicated the changes scheduled for publication in February 2019. The second action item was for the FAA to provide an explanation on how a stipple can be published on an RNAV procedure that has had the VDA/TCH removed and is annotated with the note, "Visual Segment – Obstacles" since these two pieces of charting information appear contradictory. In addition, and to refer this issue to the U.S. Instrument Flight Procedures Panel (US-IFPP). John Bordy explained that currently, the procedure designer will evaluate the TERPS 34:1 visual surface against the obstacle database; if there are no penetrations then the FAA Form 8260-3 will be annotated with the statement that the "34:1 is clear." Charting will then chart a stipple based on the annotation that the 34:1 is clear. However, flight validation pilots are making visual assessments of the actual obstacle environment below MDA; therefore, they may determine it is inappropriate to chart a VDA/TCH based on their assessment. To eliminate this disparity, John proposed to revise FAA Order 8260.19 to require an annotation that the "34:1 is not clear" whenever flight validation pilots determine a VDA/TCH must not be published, this annotation will be required even if the TERPS evaluation of database obstacles indicates there are no penetrations to the 34:1 surface. John indicated that this issue was referred to the US-IFPP in June 2018 and that in general, there was no opposition to the proposed change. John Moore (Jeppesen) asked if the loop between what flight inspection determines and what a procedure designer has evaluated needs to be closed. John Bordy agreed a feedback loop should be established between flight inspection and procedure designers particularly when flight inspection

identifies a concerning obstacle that is not in the procedure designer's database. George Bland (USAF) asked if the definition of a stipple within the U.S. Terminal Procedures Publication (TPP) legend should also be considered for revision and it was agreed that the FAA would look at that to determine if a change is warranted.

Action Items:

- John Blair will report on the status of the AIM publication scheduled for February 2019.
- Valerie Watson will look at the TPP definition of a stipple.
- John Bordy will report on status of the proposed revised language for FAA Order 8260.19.

Status: Item open.

Meeting 19-01:. John Bordy, Flight Procedures and Airspace Group, briefed the issue directly from the slide: A historical summary of the issue was provided. John Blair, Flight Operations Group, indicated his action to add additional information within the AIM was completed, with the information published in February 2019. The addition to the AIM explains that commercial charts/navigation database may contain VDAs even though the government doesn't provide this information. John Bordy informed the group that a change is being made to Order 8260.19 to prevent the charting of a "stipple" whenever flight inspection has directed removal of a VDA; this change will be published in Order 8260.19I. Once the change is issued to prevent charting of a stipple (when directed by flight inspection), the definition of a stipple within the legend of the FAA's Terminal Procedures Publication would require revision. Valerie Watson indicated AIS will submit a change to the charting specification to indicate that absence of a stipple indicates either the 34:1 surface is not clear, or there are visual segment obstacles. John Bordy recommend this item be closed since the original issue has been addressed; no objections to closure were received from the group so this item is closed.

Action Item: NA

Status: Item closed.