CHANGE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

8260.3B
CHG 23

National Policy

Effective Date:
08/17/2011

SUBJ: United States Standard for Terminal Instrument Procedures (TERPS)

1. Purpose. Order 8260.3B, United States Standard for Terminal Instrument Procedures (TERPS), contains the criteria used to formulate, review, approve, and publish procedures for instrument flight operations to and from civil and military airports. The purpose of this change is to incorporate Notice 8260.70 and the June 27, 2009 AFS-400 policy memorandum and to revise/reformat to clarify policies relating to the establishment of takeoff/landing minimums introduced by Change 20. This revision is not intended to modify or rescind any previous agreements relating to implementation.

2. Audience. The audience for this Order is the FAA organization responsible for instrument flight procedure (IFP) development. The secondary audience includes third party service providers, Air Traffic Organization (ATO) Service Area offices, Flight Standards headquarters and Regional office Divisions/Branches, and the applicable elements in the United States Army, Navy, Air Force, and Coast Guard (hereafter referred to as the U.S. Military or Military).

3. What this Order Cancels.

a. AFS-400 Memorandum dated June 27, 2009, "Establishing Straight-in and Circling Visibility Minimums; Clarification of Order 8260.3B, United States Standard for Terminal Instrument Procedures (TERPS), Volume 1, chapter 3, paragraph 3.3.2, 3.3.3, and Table 3-5a as clarified in AFS-400 Policy Memo dated March 14, 2008."

b. Notice 8260.70, Change to the FAA Order 8260.3, Vol. 1, chapter 3, table 3-5a.

4. Explanation of Changes. Significant areas of new direction, guidance, policy, and criteria as follows:

a. Volume 1, Chapter 2, paragraph 210. This paragraph has been revised to delete reference to calculating nautical mile (NM) visibility in overseas locations.

b. Volume 1, Chapter 3, Section 3, Visibility Minimums. This section has been revised to address inconsistencies with other FAA guidance.

c. Volume 1, Chapter 3, Section 4, Alternate Minimums. This section has been revised to clarify policies and incorporate guidance from Order 8260.19, Flight Procedures and Airspace.

d. Volume 1, Chapter 3, Section 5, Takeoff Minimums. This section has been revised to add helicopter values to table 3-12.

5. Distribution. We will distribute this Order to Washington headquarters to the Group and Team level in the Air Traffic Organization (Safety, En Route and Oceanic Services, Terminal Services, System Operations Services, Technical Operations Services, and Mission Support Services), Offices of Airport Safety and Standards, and Offices of Air Traffic Oversight; to the branch level in Offices of Airport Safety and Standards; Flight Standards Service; to the Aeronautical Navigation Products Office (AeroNav Products, AJV-3), and to the Regulatory Standards Division (AMA-200), at the Mike Monroney Aeronautical Center; to the branch level in the regional Flight Standards and Airport Divisions; to all Flight Standards District Offices (FSDOs); to the Team level in the Air Traffic Organization Service Areas (En-Route and Oceanic, Terminal, and Technical Operations); special mailing list ZVN-826; and Special Military and Public Addressees.

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John M. Allen
Director, Flight Standards Service

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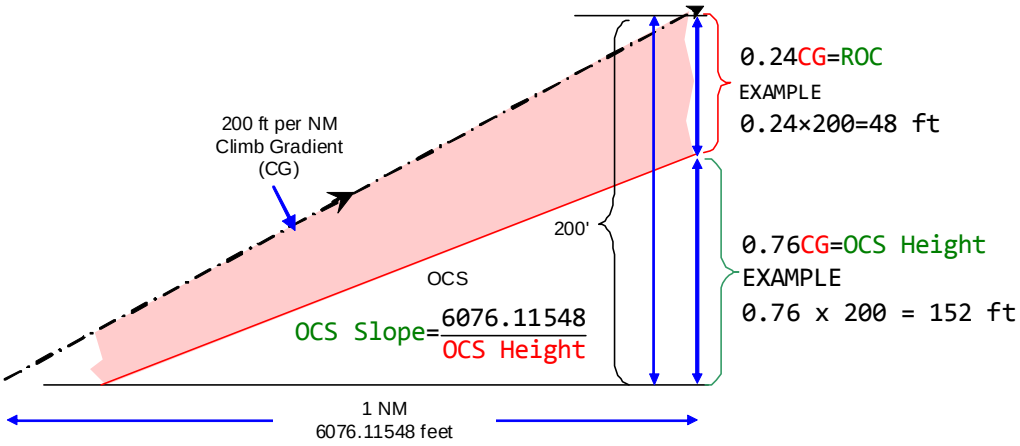
Figure 1-3. Climb Segment. Par 202b.



(2) Where an obstruction penetrates the OCS, a nonstandard climb gradient (greater than 200 ft/NM) is required to provide adequate ROC. Since the climb gradient will be greater than 200 ft/NM, ROC will be greater than 48 ft/NM $(0.24 \times CG > 200 = ROC > 48)$. The nonstandard ROC expressed in ft/NM can be calculated using the formula: $(0.24\,h) \div (0.76\,d)$ where "h" is the height of the obstacle above the altitude from which the climb is initiated, and "d" is the distance in NM from the initiation of climb to the obstacle. Normally, instead of calculating the nonstandard ROC value, the required climb gradient is calculated directly using the formula: h ÷ (0.76d).

c. In the case of an instrument departure, the OCS is applied during the climb until at least the minimum en route value of ROC is attained. The OCS begins at the departure end of runway, at the elevation of the runway end. It is assumed aircraft will cross the departure end-of-runway at a height of at least 35 ft. However, for TERPS purposes, aircraft are assumed to lift off at the runway end (unless the procedures state otherwise). The ROC value is zero at the runway end, and increases along the departure route until the appropriate ROC value is attained to allow en route flight to commence.

d. In the case of a missed approach procedure, the climbing flight path starts at the height of MDA or DA minus height loss. The OCS starts approximately at the MAP/DA point at an altitude of MDA/DA minus the final segment ROC and adjustments. Therefore, the final segment ROC is assured at the beginning of the OCS, and increases as the missed approach route progresses. The OCS is applied until at least the minimum initial or en route value of ROC is attained, as appropriate.

e. Extraordinary circumstances, such as a mechanical or electrical malfunction, may prevent an aircraft from achieving the 200 ft/NM minimum climb gradient assumed by TERPS. In these cases, adequate obstacle clearance may not be provided by published instrument procedures. Operational procedures contained outside TERPS guidelines are required to cope with these abnormal scenarios.

204.-209. RESERVED.

210. UNITS OF MEASUREMENT. Units of measurement shall be expressed as set forth below:

a. Bearings, Courses, and Radials. Bearings and courses shall be expressed in degrees magnetic. Radials shall also be expressed in degrees magnetic, and shall further be identified as radials by prefixing the letter "R" to the magnetic bearing FROM the facility. For example, R-027 or R-010.

b. Altitudes. The unit of measure for altitude in this publication is feet. Published heights below the transition level (18,000 ft) shall be expressed in feet above mean sea level (MSL); e.g. 17,900 ft. Published heights at and above the transition level (18,000 ft) shall be expressed as flight levels (FL); e.g., FL 180, FL 190, etc. See Title 14 of the Code of Federal Regulations (14 CFR) Part 91.121.

c. Distances. Develop all distances in nautical miles (NM) (6076.11548 ft or 1852 m per NM) and hundredths thereof, except where feet are required. Use the following formulas for feet and meter conversions:

$$\text{feet} = \frac{\text{meters}}{0.3048} \qquad \text{meters} = \text{feet} \times 0.3048$$

When applied to visibilities, distances shall be expressed in statute miles (SM) (5280 ft per SM) and the appropriate fractions thereof. (1/8 SM = 660 ft; 1/4 SM = 1320 ft; 3/8 SM = 1980 ft; 1/2 SM = 2640 ft; 5/8 SM = 3300 ft; 3/4 SM = 3960; 7/8 SM = 4620 ft). Runway visual range (RVR) must be expressed in feet.

d. Speeds. Aircraft speeds must be expressed in knots indicated airspeed (KIAS).

e. Determination of Correctness of Distance and Bearing Information. The approving agency is the authority for correctness of distance and bearing information, except that within the United States, its territories, and possessions, the National Oceanic and Atmospheric Administration is the authority for measurements between all civil navigation aids and between those facilities incorporated as part of the National Airspace System (NAS).

211. POSITIVE COURSE GUIDANCE (PCG). PCG must be provided for feeder routes, initial (except as provided for in paragraph 233b), intermediate, and final approach segments. The segments of a procedure wherein PCG is provided must be within the service volume of the facility(ies) used, except where Expanded Service Volume (ESV) has been authorized. PCG may be provided by one or more of the navigation systems for which criteria has been published.

212. APPROACH CATEGORIES (CAT). Aircraft performance differences have an effect on the airspace and visibility needed to perform certain maneuvers. Because of these differences, aircraft manufacturer/operational directives assign an alphabetical category to each aircraft so that the appropriate obstacle clearance areas and landing and departure minimums can be established in accordance with the criteria in this order. The categories used and referenced throughout this order are Category A; B; C; D, and/or E. Aircraft categories are defined in Part 97.

213. APPROACH CATEGORY APPLICATION. The approach category operating characteristics must be used to determine turning radii minimums and obstacle clearance areas for circling and missed approaches.

214. PROCEDURE CONSTRUCTION. An IAP may have four separate segments. They are the initial, intermediate, final, and missed approach segments. In addition, an area for circling the airport under visual conditions shall be considered. An approach segment begins and ends at the plotted position of the fix; however, under some circumstances certain segments may begin at specified points where no fixes are available. The fixes are named to coincide with the associated segment. For example, the intermediate segment begins at the intermediate fix (IF) and ends at the precise final approach fix (PFAF). The order in which this chapter discusses the segments is the same order in which the pilot would fly them in a completed procedure; that is from an initial, through an intermediate, to a final approach. In constructing the procedure, the FAC should be identified first because it is the least flexible and most critical of all the segments. Then establish the other segments to produce an orderly maneuvering pattern responsive to the local traffic flow and to conserve controlled airspace to the extent possible (see figure 1-4).

3.2.2 d. Excessive Length, Nonprecision Final Approach. When a procedure incorporates a final approach fix (FAF), and the final approach segment (FAS) length FAF-to-MAP exceeds 6 NM (plotted positions), increase FAS primary area ROC 5 ft for each one-tenth NM over 6 NM.

EXCEPTION: If a stepdown fix exists and the remaining segment length is less than 6 NM, the basic FAS ROC may be applied between the stepdown fix and the MAP. See formula 3-2 (Excessive Length Adjustment).

Formula 3-2. Excessive Length Adjustment

$Adjustment = 50(Length_{final} - 6)$ Where $Length_{final}$ = horizontal distance in NM from plotted position of FAF to MAP
$50*(Length_{final}-6)$
Example
Distance FAF to MAP = 6.47 Adjustment = 50(6.47- 6) = 23.5 250 ROC + 23.5 = 273.5 adjusted ROC

Chapter 3. Takeoff and Landing Minimums
Section 3. Visibility Minimums

3.3 Visibility Minimums.

3.3.1 Authorization.

3.3.1 a. Straight-in visibility minimums are authorized when:

3.3.1 a. (1) Applicable straight-in alignment standards are met, and

3.3.1 a. (2) The final approach segment vertical descent angle does not exceed tolerances [see paragraph 252].

3.3.1 b. Circling visibility minimums are authorized when:

3.3.1 b. (1) Straight-in alignment cannot be met (e.g., for "Circling-only" procedures not meeting straight-in alignment requirements) [see paragraph 162].

3.3.1 b. (2) Straight-in alignment requirements are met, but descent angle precludes publication of straight-in minimums [see paragraph 252].

3.3.1 b. (3) Published in conjunction with straight-in minimums.

Note: Do not establish circling minima when PA or APV procedures are established without accompanying SI NPA minima.

3.3.2 Establishing Straight-in Visibility Minimums. Establish as RVR where authorized. Otherwise, establish as a statute mile (SM) value. Meter (M) values are for locations outside the United States only.

3.3.2 a. Step 1. Find the visibility (RVR or SM) appropriate to the HATh and ALS from the applicable table(s). When more than one table applies, use the highest value.

3.3.2 a. (1) Table 3-5a specifies standard civil and military straight-in minimums except for CAT A and B NPA, Category II/III ILS, Special Authorization (SA) Category I/II ILS, and helicopter approaches.

3.3.2 a. (2) Use table 3-6 exclusively for CAT A straight-in NPA approaches. Use table 3-7 exclusively for CAT B straight-in NPA approaches.

3.3.2 a. (3) Use table 3-8 for CAT C/D/E straight-in NPA approaches after determining the visibility minimums prescribed by table 3-5a.

Table 3-5a. Authorized Straight-in RVR/Visibility,
(except CAT A and B NPA, CAT II/III ILS, SA CAT I/II ILS and helicopters).

			FALS			IALS			BALS			NALS		
HATh Range			RVR	SM	M	RVR	SM	M	RVR	SM	M	RVR	SM	M
		200	1800[1,2], 2400	1/2	550[1,2], 750	4000	3/4	1200	4000	3/4	1200	4000	3/4	1200
201	-	210	1800[1], 2400	1/2	550[1], 750	4000	3/4	1200	4000	3/4	1200	4000	3/4	1200
211	-	220	1800[1], 2400	1/2	550[1], 750	4000	3/4	1200	4000	3/4	1200	4000	3/4	1200
221	-	230	1800[1], 2400	1/2	550[1], 750	4000	3/4	1200	4000	3/4	1200	4000	3/4	1200
231	-	240	1800[1], 2400	1/2	550[1], 750	4000	3/4	1200	4000	3/4	1200	4000	3/4	1200
241	-	250	1800[1], 2400	1/2	550[1], 750	4000	3/4	1200	4000	3/4	1200	4000	3/4	1300
251	-	260	1800[1], 2400	1/2	600[1], 750	4000	3/4	1200	4000	3/4	1200	4000	3/4	1300
261	-	280	2000[1], 2400	1/2	600[1], 750	4000	3/4	1200	4000	3/4	1200	4500	7/8	1300
281	-	300	2200[1], 2400	1/2	650[1], 750	4000	3/4	1200	4000	3/4	1200	4500	7/8	1400
301	-	320	2400	1/2	700[1], 750	4000	3/4	1200	4000	3/4	1200	4500	7/8	1400
321	-	340	2600	1/2	800	4000	3/4	1200	4500	7/8	1300	5000	1	1500
341	-	360	3000	5/8	900	4000	3/4	1200	4500	7/8	1400	5500	1	1600
361	-	380	3500	5/8	1000	4000	3/4	1300	5000	1	1500	5500	1	1700
381	-	400	3500	5/8	1100	4500	7/8	1400	5000	1	1600	6000	1 1/8	1800
401	-	420	4000	3/4	1200	5000	1	1500	5500	1	1700	6000	1 1/8	1900
421	-	440	4000	3/4	1300	5000	1	1600	6000	1 1/8	1800		1 1/4	2000
441	-	460	4500	7/8	1400	5500	1	1700	6000	1 1/8	1900		1 3/8	2100
461	-	480	5000	1	1500	6000	1 1/8	1800		1 1/4	2000		1 3/8	2200
481	-	500	5000	1	1500	6000	1 1/8	1800		1 1/4	2100		1 3/8	2300
501	-	520	5500	1	1600		1 1/4	1900		1 3/8	2100		1 3/8	2400
521	-	540	5500	1	1700		1 1/4	2000		1 3/8	2200		1 1/2	2400
541	-	560	6000	1 1/8	1800		1 3/8	2100		1 3/8	2300		1 5/8	2500
561	-	580		1 1/4	1900		1 3/8	2200		1 1/2	2400		1 5/8	2600
581	-	600		1 1/4	2000		1 3/8	2300		1 5/8	2500		1 3/4	2700
601	-	620		1 3/8	2100		1 1/2	2400		1 5/8	2600		1 3/4	2800
621	-	640		1 3/8	2200		1 1/2	2500		1 3/4	2700		1 3/4	2900
641	-	660		1 3/8	2300		1 5/8	2600		1 3/4	2800		1 7/8	3000
661	-	680		1 1/2	2400		1 3/4	2700		1 3/4	2900		1 7/8	3100
681	-	700		1 1/2	2500		1 3/4	2800		1 7/8	3000		2	3200
701	-	720		1 5/8	2600		1 3/4	2900		1 7/8	3100		2	3300
721	-	740		1 5/8	2700		1 3/4	3000		2	3200		2	3400
741	-	760		1 3/4	2700		1 7/8	3000		2	3300		2	3500
761	-	800		1 3/4	2900		2	3200		2	3400		2 1/2	3600
801	-	850		1 7/8	3100		2	3400		2 1/2	3600		2 1/2	3800
851	-	900		2	3300		2 1/2	3600		2 1/2	3800		2 1/2	4000
901	-	950		2	3600		2 1/2	3900		2 1/2	4100		2 1/2	4300
951	-	1000		2 1/2	3800		2 1/2	4100		2 1/2	4300		3	4500
1001	-	1100		2 1/2	4100		2 1/2	4400		3	4600		3	4900
1101	-	1200		3	4600		3	4900		3	5000		3	5000
1201	-	Above		3	5000		3	5000		3	5000		3	5000

1. Category I PA with TDZ/CL lights.

2. Category I PA without TDZ/CL lights when authorized by Order 8400.13. See Order 8260.19 for charting/annotations.

Table 3-5b. U.S. Military Standard Minimums
PAR with HATh < 200 ft (all CATs)

ALS TDZ/CL			ALS/SSALR/SALS/SSALR			MALSR/MALS/ODALS			NO LIGHTS		
RVR	SM	M	RVR	SM	M	RVR	SM	M	RVR	SM	M
1200	-	350	1600	1/4	500	2400	1/2	750	2400	½	750

Table 3-6. CAT A Straight-in NPA, Authorized RVR/Visibility

	FALS			IALS			BALS			NALS		
HATh/HAA	RVR	SM	M	RVR	SM	M	RVR	SM	M	RVR	SM	M
250-880	2400[1]	1/2[1]	750[1]	4000	3/4	1200	4000	3/4	1200	5500	1	1600
881 and above	4000	3/4	1200	5500	1	1600	5500	1	1600	6000	1 1/4	2000

1. RVR 4000, 3/4 SM, 1200m (NDB).

Table 3-7. CAT B Straight-in NPA, Authorized RVR/Visibility.

	FALS			IALS			BALS			NALS		
HATh/HAA	RVR	SM	M	RVR	SM	M	RVR	SM	M	RVR	SM	M
250-740	2400[1]	1/2[1]	800[1]	4000[2]	3/4	1200	4000	3/4	1200	5500	1	1600
741-950	4000	3/4	1200	5500	1	1600	5500	1	1600	6000	1 1/4	2000
951-above	5500	1	1600	6000	1 1/4	2000	6000	1 1/4	2000		1 1/2	2400

1. RVR 4000, 3/4 SM, 1200m (NDB).

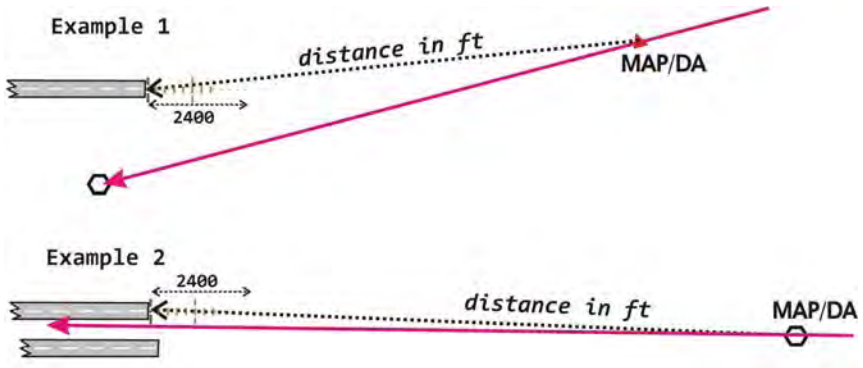
Table 3-8. Minimum Straight-in RVR/Visibility NPA Procedures CAT C/D/E

Procedure Design :					
- Final Course-RWY C/L offset: < = 5° - Final Approach segment > = 3 NM - With PFAF procedure - **PFAF to RWY TH < = 8 NM (**Timed approaches ONLY)			ALL OTHERS		
RVR	SM	M	RVR	SM	M
2400	1/2	750	4000	3/4	1200

3.3.2 b. Step 2. Determine visibility based on MAP/DA to LTP distance [see figure 3-2]:

3.3.2 b. (1) When the NPA MAP is located at or after the LTP, proceed to Step 3. Otherwise, determine the distance from the NPA MAP (plotted position) or PA/APV DA to the LTP. When authorized by paragraph 3.1.3b, subtract the ALS length (2400 ft for FALS, 1400 ft for IALS, and 700 ft for BALS). When this distance is less than or equal to the visibility from Step 1, use the Step 1 value. When greater than the visibility from Step 1, use the next higher visibility value (RVR or SM) from the applicable table or the next higher whole SM when the distance exceeds 3 SM.

Figure 3-2. MAP/DA to LTP distance Straight-in Aligned



3.3.2 c. Step 3. Determine visibility based on evaluation of the visual portion of the final approach segment. Apply the Standard visual area to runways to which an aircraft is authorized to circle (either in association with a SI procedure or a Circling only approach). Apply the Straight-In area to runways with approach procedures aligned with the runway centerline (less than or equal to ± 0.03°). Apply the Offset visual area to evaluate the visual portion of a straight-in approach that is not aligned with the runway centerline (more than ± 0.03°). These evaluations determine if night operations must be prohibited due to unlit obstacles or if visibility minimums must be restricted.

Note: Assess the appropriate visual area separately for each line of minima on the same approach plate.

3.3.2 c. (1) Visual Area Types.

3.3.2 c. (1) (a) Standard [see figure 3-3a].

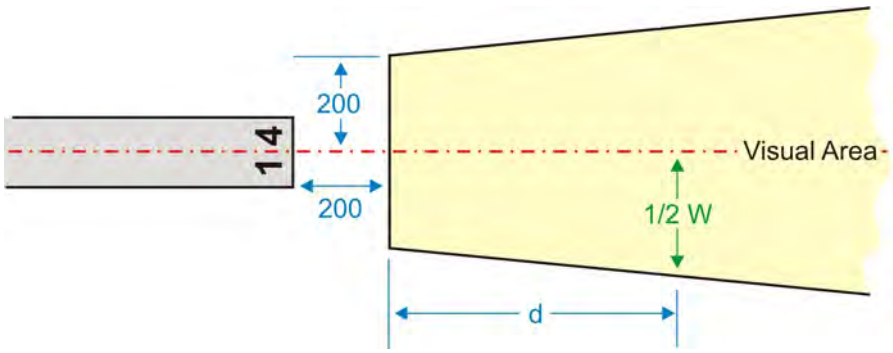
- Alignment. Align with the runway centerline extended (RCL).
- Length. The area begins 200 ft from LTP at LTP elevation and extends 10,000 ft out RCL
- Width. The beginning width is ± 200 ft either side of RCL. The sides splay outward relative to runway centerline. Calculate the half-width of the area at any distance “d” from its origin using formula 3-3a:

Formula 3-3a. Standard Visual Area 1/2 width

$$½W=(0.15\times d)+200$$

where *½W = perpendicular distance (feet) RCL to area edge*
d = distance (feet) from origin measured along RCL

Figure 3-3a. Standard Visual Area



3.3.2 c. (1) (b) Straight-in. (Procedure need not meet straight-in descent criteria) [see figure 3-3b].

- Alignment. Align with the RCL extended.
- Length. The area begins 200 ft from LTP at LTP elevation and extends to the calculated DA point for each PA or APV procedure and to the VDP location (even if one is not published for NPA procedures) [see Vol., para 253].
- Width. The beginning width is ± 200 ft for runways limited to CAT A/B minimums and ± 400 ft for all other runways. The sides splay outward relative to RCL Calculate the half-width of the area at any distance "d" from its origin using formula 3-3b:

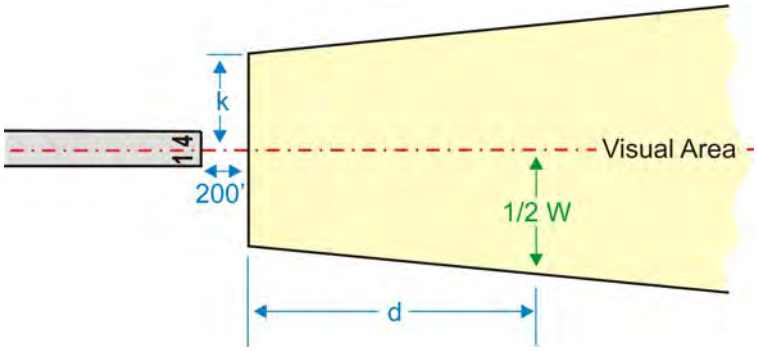
Note: When multiple NPA minimums are published on the same chart (i.e., dual minimums or applicable RNAV procedures) use the lowest MDA to determine VDP location and to determine the length of the visual area. For PA/APV approaches, calculate the DA point based on the primary altimeter source.

Formula 3-3b. Straight-in Visual Area 1/2 width

$$½W=(0.138\times d)+k$$

where *$^{1/2}W$ = perpendicular distance (feet) RCL to area edge*
d = distance (feet) from origin measured along RCL
k = 200 for Cat A/B, 400 for Cat C/D/E

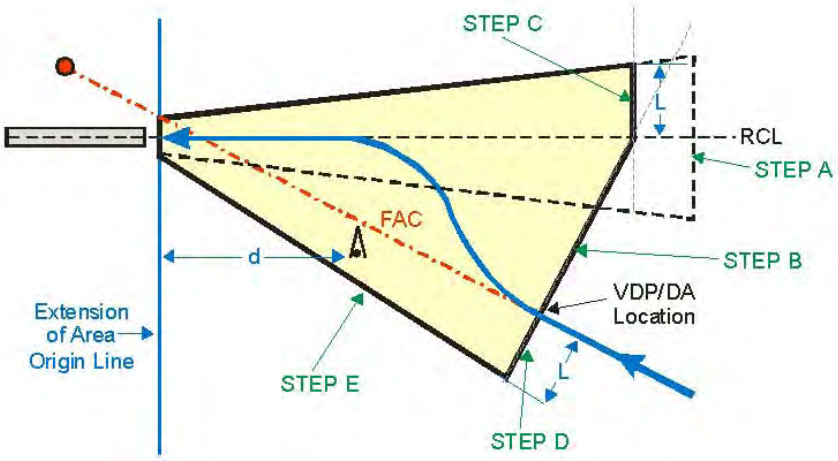
Figure 3-3b. Straight-in Visual Area



3.3.2 c. (1) (c) Offset [see figure 3-3c]: When the final course does not coincide with the RCL (± 0.03°), modify the straight-in visual area as follows:

- Step A. Draw the straight-in area aligned with the RCL as previously described.
- Step B. Extend a line perpendicular to the final approach course (FAC) from the DA point or VDP (even if one is not published) to the point it crosses the RCL.
- Step C. Extend a line from this point perpendicular to the RCL to the outer edge of the straight-in area, noting the length (L).
- Step D. Extend a line in the opposite direction of the line in Step B from the DA/VDP perpendicular to the FAC for distance (L).
- Step E. Connect the end of the line constructed in Step D to the end of the inner edge of the area origin line 200 ft from LTP.

Figure 3-3c. Offset Visual Area



3.3.2 c. (2) Obstacle Clearance. When evaluating a straight-in or offset visual area, apply both a 34:1 and a 20:1 surface. When evaluating the standard visual area, apply a 20:1 surface only. Calculate surface height above LTP elevation at any distance "d" from an extension of the area origin line using formula 3-3c:

Formula 3-3c. Visual Area OIS Height

$$20{:}1 \text{ Surface Height} = \frac{d}{20}$$

$$34{:}1 \text{ Surface Height} = \frac{d}{34}$$

where d = distance (feet) from origin line (extended) measured along RCL

3.3.2 c. (2) (a) 34:1 OIS. If penetrated, limit visibility to no lower than 4000 RVR or 3/4 SM.

3.3.2 c. (2) (b) 20:1 OIS. If penetrated, take the following action:

- Lighted Obstacles: Do not publish a VDP and limit visibility to no lower than 5000 RVR or 1 SM.
- Unlighted Obstacles: Do not publish a VDP, limit visibility to no lower than 5000 RVR or 1 SM, and annotate the chart denying the approach or applicable minimums at night.
  - A Visual Glide Slope Indicator (VGSI) may be used in lieu of obstruction lighting with Flight Standards or Military authority approval. USAF not applicable.

3.3.2 d. Step 4. Establish the SI visibility as the highest value determined from Steps 1-3.

3.3.2 d. (1) Visibility greater than 3 SM. Where the HATh is 1000 ft or higher, 3 SM visibility may be established with Flight Standards approval when the procedure is annotated "Fly Visual to Airport."

Note 1: "Fly Visual to Airport" provides relief from visual reference requirements specified in Part 91.175, and related rules such as 121.651, 135.225, and 125.381. This option will only be approved where deemed safe and operationally beneficial.

Note 2: Not applicable to procedures developed under Order 8260.49, Simultaneous Offset Instrument Approaches (SOIA), Order 7110.98 Simultaneous Converging Instrument Approaches, or Order 7110.110 Dependent Converging Instrument Approaches (DCIA) With Converging Runway Display Aid (CRDA).

3.3.2 e. When authorized approach light credit, determine the applicability of the U.S Terminal Procedures Publication (TPP) "Inoperative Components or Visual Aids" (INOP Components) table. This step is not applicable to the USAF.

3.3.2 e. (1) Determine the visibility required without approach lights.

3.3.2 e. (1) (a) Follow Step 1, except use the visibility from the NALS column.

Figure 3-4. Example U.S. TPP Inoperative Components or Visual Aids Table

INOPERATIVE COMPONENTS OR VISUAL AIDS TABLE

Landing minimums published on instrument approach procedure charts are based upon full operation of all components and visual aids associated with the particular instrument approach chart being used. Higher minimums are required with inoperative components or visual aids as indicated below. If more than one component is inoperative, each minimum is raised to the highest minimum required by any single component that is inoperative. ILS glide slope inoperative minimums are published on the instrument approach charts as localizer minimums. This table may be amended by notes on the approach chart. Such notes apply only to the particular approach category(ies) as stated. See legend page for description of components indicated below.

(1) ILS, MLS, PAR and RNAV (LPV line of minima)

Inoperative Component or Aid	Approach Category	Increase Visibility
ALSF 1 & 2, MALSR, & SSALR	ABCD	¼ mile

(2) ILS with visibility minimum of 1,800 RVR

ALSF 1 & 2, MALSR, & SSALR	ABCD	To 4000 RVR
TDZL RCLS	ABCD	To 2400 RVR*
RVR	ABCD	To ½ mile

*1800 RVR authorized with the use of FD or AP or HUD to DA.

(3) VOR, VOR/DME, TACAN, LOC, LOC/DME, LDA, LDA/DME, SDF, SDF/DME, GPS, ASR and RNAV (LNAV/VNAV and LNAV line of minima)

Inoperative Visual Aid	Approach Category	Increase Visibility
ALSF 1 & 2, MALSR, & SSALR	ABCD	½ mile
SSALS,MALS, & ODALS	ABC	¼ mile

(4) NDB

ALSF 1 & 2, MALSR, & SSALR	C	½ mile
MALS, SSALS, ODALS	ABD	¼ mile
	ABC	¼ mile

3.3.2 e. (1) (b) Follow Step 2, except do not subtract the ALS length.

3.3.2 e. (2) Add the visibility increase from the INOP Components table to the SI visibility determined in Step 4. When the result is not equal to or greater than the visibility without approach lights [paragraph 3.3.2e (1)], annotate the chart in accordance with Order 8260.19, paragraph 8-54m.

3.3.3 Establishing Circling Visibility Minimums. Establish as a statute mile (SM) value. Meter (M) values are for locations outside the United States only.

3.3.3 a. Step 1. Determine the minimum HAA based on CAT from table 3-9, and then find the visibility appropriate to the HAA and CAT from table 3-10.

Table 3-9. Minimum Authorized HAA

CAT	A	B	C	D	E
HAA	350	450		550	

Table 3-10. Authorized Circling Visibility Minimums

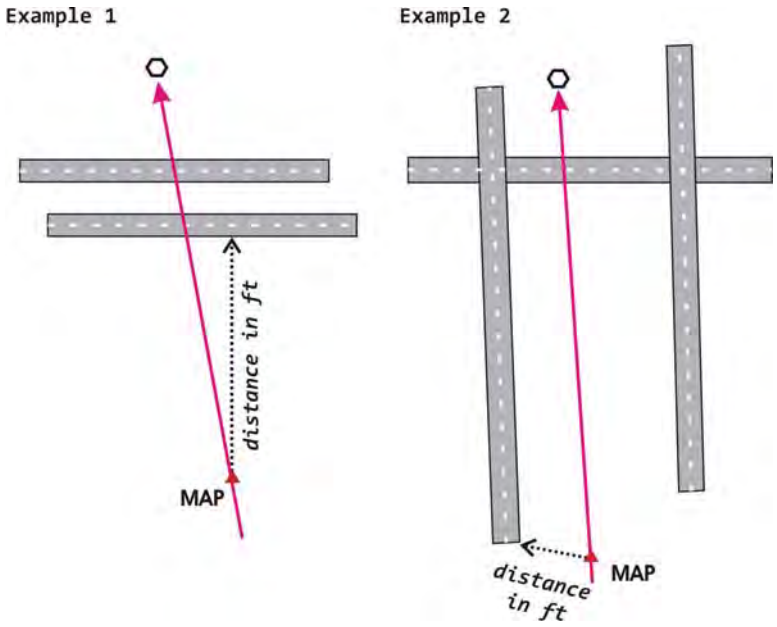
CAT →	A		B		C		D		E	
HAA ↓	SM	M	SM	M	SM	M	SM	M	SM	M
350 - 449	1	1600								
450 - 549	1	1600	1	1600	1 1/2	2400				
550 - 600	1	1600	1	1600	1 1/2	2400	2	3200	2	3200
601 - 670	1	1600	1	1600	1 3/4	2800	2	3200	2 1/4	3600
671 - 740	1	1600	1	1600	2	3200	2 1/4	3600	2 1/2	4000
741 - 810	1	1600	1	1600	2 1/4	3600	2 1/2	4000	2 3/4	4400
811 - 880	1 1/4	2000	1 1/4	2000	2 1/2	4000	2 3/4	4400	3	4800
881 - 950	1 1/4	2000	1 1/4	2000	2 3/4	4400	3	4800	3	4800
951 and above	1 1/4	2000	1 1/2	2400	3	4800	3	4800	3	4800

3.3.3 b. Step 2. Determine visibility based on MAP to nearest landing surface distance [see figure 3-5] (not applicable to circling minimums published in conjunction with SI procedure).

3.3.3 b. (1) For procedures meeting straight-in alignment requirements not authorized straight-in minimums, apply paragraph 3.3.2b.

3.3.3 b. (2) For “Circling-only” procedures not meeting straight-in alignment requirements, when the MAP is located at or after the nearest landing surface, proceed to Step 3. Otherwise, determine the distance from the MAP (plotted position) to the nearest landing surface. When this distance is less than or equal to the visibility from Step 1, use the Step 1 value. When greater than the visibility from Step 1, use the next higher table value (next higher whole SM when the distance exceeds 3 SM).

Figure 3-5. MAP to Nearest Landing Surface, Circling Aligned



3.3.3 c. Step 3. Determine visibility based on evaluation of the visual portion of the final approach segment [see paragraph 3.3.2c].

3.3.3 d. Step 4. For circling minimums published in conjunction with SI procedure, compare circling visibility to the established SI visibility.

3.3.3 d. (1) The circling visibility may not be lower than the no-light visibility of the SI visibility of the highest NPA line.

Note: For dual minimums, the circling visibility is compared to the corresponding SI visibility set (e.g., "UKENE FIX MINIMUMS" circling visibility compared to "UKENE FIX MINIMUMS" straight-in visibility).

3.3.3 e. Step 5. Establish circling visibility as the highest value determined from Steps 1-4 (as applicable)**.**

3.3.3 e. (1) Visibility greater than 3 SM. Where the HAA is 1000 ft or higher, 3 SM visibility may be established with Flight Standards approval when the procedure is annotated "Fly Visual to Airport."

Note 1: "Fly Visual to Airport" provides relief from visual reference requirements specified in Part 91.175, and related rules such as 121.651, 135.225, and 125.381. This option will only be approved where deemed safe and operationally beneficial.

Chapter 3. Takeoff and Landing Minimums
Section 4. Alternate Minimums

3.4. Civil Alternate Minimums [see 14 CFR Part 91.169] (Military – Refer to applicable Service Directives).

3.4.1 Authorization. To qualify the airport must have local weather disseminated via a "Service A" reporting network. Do not authorize alternate minimums when the facility providing final approach guidance is a CAT 3 monitored facility [see Order 8260.19, paragraph 2-13].

3.4.2 Establishing Alternate Minimums. If a procedure has a stepdown fix predicated on a CAT 3 monitored facility, base alternate minimums on the minimums without the fix.

3.4.2 a. Determine the need to establish alternate minimums by comparing the ceiling and/or visibility associated with the no-light minimums (local altimeter) for each approach category with the standard ceiling and visibility.

3.4.2 a. (1) When both the ceiling and visibility of the applicable no-light minimums are less than or equal to the standard specified in table 3-11, alternate minimums are not published.

3.4.2 a. (2) When either the ceiling or visibility from the applicable no-light minimums is greater than the standard, establish alternate minimums as the higher of the standard or the no-light value.

Note: Ceiling values are based on the DA/MDA minus airport elevation, rounded to the next higher 100-ft increment (e.g., 601 through 699 round to 700).

3.4.2 b. When required, alternate minimums are based on the NPA line with the highest ceiling or visibility on the same chart. For procedures without an NPA line, alternate minimums are based on the PA/APV line with the highest ceiling or visibility on the same chart.

3.4.2 c. Specify PA and NPA alternate minimums separately when both lines are published on the same chart.

Table 3-11. Standard Alternate Minimums

Approach Type	Ceiling	Visibility
NPA or APV	800	2
PA	600	2
Example (NPA or APV)		
Highest no-light Ceiling/Visibility	Alternate Minimums	
CAT A/B = 700 – 1	Not Published (Both Ceiling/Vis ≤ Standard)	
CAT C = 800 – 2 1/4	800 – 2 1/4	
CAT D = 900 – 2 1/2	900 – 2 1/2	

Chapter 3. Takeoff and Landing Minimums.
Section Five. Takeoff Minimums.

3.5 Civil Standard Takeoff Minimums.

Title 14 CFR Part 91.175 (f) defines civil takeoff minimums as shown in table 3-12. A ceiling value may also be required to see and avoid an obstacle. In this case, the published procedure must identify the location of the obstacle(s) that must be avoided. See Order 8260.46, Departure Procedure (DP) Program, or appropriate Military directives for guidance on how and when other than standard takeoff minimums and/or obstacles are defined.

Table 3-12. Standard Civil Takeoff Minimums

Aircraft type	Visibility (SM)
Fixed wing w/ ≤ 2 engines	1
Fixed wing w/ > 2 engines	1/2
Helicopters	1/2