OVERVIEW. This section includes guidance for operations other than Category (CAT) II/III approaches for Title 14 of the Code of Federal Regulations (14 CFR) parts 91, 91 subpart K (part 91K), 121, 125, 129, and 135 operators. Approach and landing operations other than CAT II/III include visual approaches, contact approaches, circling approaches, Nonprecision Approaches (NPA), approach procedures with vertical guidance (APV), and CAT I instrument landing system (ILS) approaches. This section includes guidance for both approach procedures using ground-based and/or satellite-based Navigational Aids (NAVAID).

APPLICABILITY. The information detailed in this chapter applies to the operators of all civil aircraft operating under parts 91, 91K, 121, 125, 129, and 135. This section addresses concepts and national policy guidance to be used by an aviation safety inspector (ASI) when evaluating, approving, or denying requests for an authorization to conduct any terminal area approach operation other than CAT II/III operations. Requests for CAT I operations other than those based on ILS, such as a Ground Based Augmentation System (GBAS) Landing System (GLS), are to be directed to the Flight Technologies and Procedures Division. This section does not apply to Special Authorization (SA) CAT I instrument procedures. See Volume 4, Chapter 2, Section 6 for SA CAT I approvals.

REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- Title 14 CFR Parts 91, 97, 119, 121, 125, 129, and 135.
- FAA Order JO 7110.65, Air Traffic Control.
- AC 97-1, Runway Visual Range (RVR).
- AC 120-29, Criteria for Approval of Category I and Category II Weather Minima for Approach.
• AC 120-57, Surface Movement Guidance and Control System.
• Aeronautical Information Manual (AIM).
• FAA Slide Presentation: “Precision Runway Monitor (PRM) Pilot Procedures.”
• Instrument Procedures Handbook (IPH).
• Technical Standard Orders (TSO).
• U.S. Flight Information Publications (FLIP).

B. Forms. None.

C. Job Aids. None.

4-270 DEFINITIONS.

A. Approach Procedures with Vertical Guidance (APV). APV approach and landing operations are three-dimensional operations conducted under IFR that provide both lateral and vertical guidance, but that do not meet all of the accuracy requirements and navigation specifications to be classified as CAT I precision approaches. APV operations are conducted using decision altitude (DA)/decision height (DH). Examples of APV approaches include Area Navigation (RNAV) (lateral approach procedures with vertical guidance (LPV) or lateral navigation (LNAV)/vertical navigation (VNAV) minimums) and localizer type directional aid (LDA) with glideslope (GS).

B. CAT I Operations. CAT I operations are defined as precision approach and landing operations conducted under instrument flight rules (IFR) using CAT I operating minimums. CAT I operating minimums consist of a specified IFR DA/DH that is not lower than the equivalent of 200 feet (60 meters) above the touchdown zone (TDZ), and a visibility or a Runway Visual Range (RVR) that is not lower than one-half statute mile or RVR 1800, respectively.

C. Nonprecision Approach (NPA) and Landing Operations. NPA and landing operations are two-dimensional operations conducted under IFR using lateral guidance but not vertical guidance. Very high frequency (VHF) omni-directional range (VOR), non-directional radio beacon (NDB), LDA, Localizer (LOC), Localizer back course (LOC-BC), RNAV, LNAV minimums or initial RNAV distance measuring equipment (DME)-DME approaches, and airport surveillance radar (ASR) approaches are examples of NPAs. Nonprecision operations are conducted using a minimum descent altitude (MDA) and a specific missed approach point (MAP).

D. Precision Approach and Landing Operations. Precision approach and landing operations are three-dimensional operations conducted under IFR using ILS or GLS, which provides both lateral and vertical guidance. Precision operations are conducted using a DA/DH, or which have no DA/DH and support operation to touchdown. GLS operations use a Local Area Augmentation System (LAAS) or GBAS to augment the standard Global Positioning System (GPS) signal for more precise navigational guidance.
E. Special Authorization (SA) CAT I. Order 8400.13 authorizes SA CAT I approaches to a radio altimeter (RA) DH as low as 150 feet and a visibility minimum as low as RVR 1400 to runways that do not have TDZ or runway centerline (RCL) lighting when the approach is flown using an aircraft with a Head-Up Display (HUD) to DH. The process for approving or denying SA CAT I authorization is found in Volume 4, Chapter 2, Section 6.

4-271 APPROVAL METHOD.

A. Part 91. Part 91 operators do not need a letter of authorization (LOA) for any other than CAT II/III (which includes SA CAT I) authorizations described in this section. Precision runway monitor (PRM) approaches do not require a specific LOA, but the operator must adhere to the criteria prescribed on the “Attention All Users” that accompanies each PRM approach.

B. Parts 91K, 121, 125, 129, and 135. A part 91K program manager is issued management specifications (MSpecs); parts 121, 125, 129, and 135 operators are issued operations specifications (OpSpecs); and a part 125 operator holding a Letter of Deviation Authority (LODA) is issued an LOA for operations described in this section. Volume 3, Chapter 18, Section 5 contains guidance for each of these authorizations, except for part 129, which is in Volume 12, Chapter 2, Section 5. (See Table 4-7, Available OpSpec/MSpec/LOA Paragraphs by 14 CFR Part.)

1) C051. C051 is issued to all operators conducting airplane operations under parts 91K, 121, 125 (including part 125 LODA holders), 129, and 135 who conduct any terminal flight operations under IFR.

2) C052. C052 is applicable to all operators conducting airplane operations under parts 91K, 121, 125 (including part 125 LODA holders), 129, and 135. Paragraph C052 specifies the types of instrument approaches the operator is authorized to conduct under IFR and prohibits the use of other types of instrument approaches, and authorizes the lowest straight-in nonprecision, APV, and CAT I precision approach and landing minimums.

3) C054. C054 is issued to all operators conducting operations under parts 121, 125 (including part 125 LODA holders), and 129. It is also issued to operators who conduct turbine-powered airplane operations under part 135. It is not issued to part 135 operators who do not operate turbine-powered airplanes unless that operator also conducts operations under part 121. C054 specifies the RVR landing minimum equivalent to the published RVR landing minimum that must be used by high-minimum pilots (less than 100 hours in aircraft type). It also specifies that before a pilot in command (PIC) of a turbojet can conduct an instrument approach with visibility conditions reported to be below three-quarters of a mile or RVR 4000 (basic turbojet landing minimums), the pilot must be specifically qualified and authorized to use standard landing minimums.

4) C061. C061 authorizes an operator to use a flight control guidance system with automatic landing capabilities to touchdown in conditions other than CAT II/III. Part 121, § 121.579(c) and part 135, § 135.93(d) specify that this type of operation must be authorized by OpSpecs. C061 is optional for parts 91K, 121, 125, and 135.
5) **C062.** OpSpec/MSpec C062 is optional for parts 91K, 121, 125, and 135 operations to authorize operators to use manually flown flight control guidance systems to conduct approach and landing operations to fly a CAT I ILS using a Head-Up-Guidance System (HGS).

6) **C064.** C064 authorizes an operator to conduct nonscheduled passenger and all-cargo (scheduled and nonscheduled) terminal area IFR operations in Class G airspace or into airports without an operating control tower.

7) **C073.** C073 authorizes operators to use DA in lieu of MDA on certain NPA procedures. These procedures must meet specific criteria to verify that the visual approach area is clear of obstacles and will safely permit a brief descent below DA.

8) **C075.** OpSpec C075 is issued to operators who conduct parts 91K, 121, 125 (including part 125 LODA holders), 129, and 135 operations with fixed-wing airplanes. OpSpec C075 specifies the lowest minimums that can be used for CAT I circling approach maneuvers. It also provides special limitations and provisions for instrument approach procedures (IAP) at foreign airports. For part 129, OpSpec C075 also authorizes contact approaches.

9) **C077.** C077 is an optional authorization that is applicable to all operators conducting operations under the provisions for part 135 on-demand turbojet and all parts 121 and 129 foreign operators (except for rotorcraft operations). OpSpec B051 is applicable for parts 121 and 129 visual flight rules (VFR) en route operations for propeller-driven aircraft and may be issued in conjunction with C077.

10) **C080.** C080 is used to authorize terminal area IFR operations for scheduled passenger operations in Class G airspace or at airports without an operating control tower.
### Table 4-7. Available OpSpec/MSpec/LOA Paragraphs by 14 CFR Part

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<tr>
<th>Paragraph</th>
<th>91K</th>
<th>121</th>
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#### 4-272 GENERAL.

**A. Areas of Operation.** Nonprecision, APV, and CAT I precision approaches can be conducted at controlled and uncontrolled airports. All of these approaches can be conducted under IFR in visual or instrument flying conditions. Visual approaches are conducted with reference to the airport and/or the proceeding aircraft. Contact approaches are conducted with visual reference to the terrain. The circling maneuver of an NPA is conducted with visual reference to the airport. Straight-in NPAs, circling approaches down to the MDA, and CAT I ILS approaches may be conducted in instrument flying conditions.

**B. Landing Minimums.** Landing minimums for other than CAT II/III approaches are generally addressed by part 91, § 91.175, and §§ 121.651, 121.652, 135.225, and standard or special OpSpecs Part C. The published minimums on a part 97 instrument approach reflect these requirements.

**C. CAT I Terminology.** The CAT I terminology used in this section is based on and consistent with U.S. OpSpecs for parts 121, 125, 129, and 135 operators. AC 120-29 is being amended to reflect this definition. While there are slight variations with International Civil Aviation Organization (ICAO), the broad objectives and practical operational applications are similar. For U.S. applications to parts 121, 125, 129, and 135 operators, CAT I is considered to include any ILS, GLS, or precision approach radar (PAR) IAP having minimums not less than 200 feet height above touchdown (HAT) and RVR not less than 1,800 feet. SA CAT I procedures have approach minimums as low as 150 feet DA/DH and RVR 1400. Approval for these procedures requires special equipage and training, which is discussed in Volume 4, Chapter 2, Section 6. In certain circumstances, usually related to training, the FAA and industry...
commonly refer to CAT I procedures as precision approaches and the other-than-CAT I procedures as NPAs. These terms are used below when describing CAT I operations.

D. DA/DH. For APV and CAT I precision approaches, a DA/DH is typically specified. The DA/DH presents the minimum altitude in an approach to which descent may continue, or by which a missed approach must be initiated, if the required visual reference to continue the approach has not been established. The DA/DH altitude value is typically measured by a barometric altimeter and is the determining factor for an ILS approach procedure. The height value specified in parentheses is typically a radio or radar altitude equivalent height above the TDZ (HAT) used only for advisory reference, and it does not necessarily reflect actual height about the underlying terrain. The height value in the DA/DH will be in reference to the height above threshold (HATh) for approaches with minimums calculated after August 2010.

E. Minimum Descent Altitude/Height (MDA/H). The minimum heights or altitudes for IAPs that do not have vertical guidance are specified as an MDA/H. For straight-in minimums, the MDA is a barometric altitude (above mean sea level (MSL)) with a specific HAT zone. The height value in the MDA/H will be in reference to the HATh for approaches with minimums calculated after August 2010. For circling minimums, the MDA is a barometric altitude with a specific height above airport (HAA). The height value specified in parentheses is the minimum descent height (MDH), which is typically a radio or radar altitude height equivalent to the HAT for straight-in minimums or HAA for circling minimums. The MDH is used only for advisory reference, and it does not reflect actual height above the underlying terrain.

F. Straight-In Minimums for Approaches with a DA. The lowest permissible minimums for Categories A, B, C, and D aircraft during the conduct of straight-in IAPs that have a DA are HAT 200 and one-half statute mile visibility or RVR 1800. The lowest permissible minimums for helicopters operated at 90 knots or less are HAT 200 and one-fourth statute mile visibility or RVR 1200. These minimums for helicopters operated at more than 90 knots are HAT 200 and one-half statute mile visibility or RVR 1800. These minimums are the lowest authorized for approaches that have a DA and are restricted to runways that are equipped with a runway TDZ and RCL lighting and either a medium intensity approach lighting system with runway alignment indicator lights (MALSR), simplified short approach lighting system with runway alignment indicator lights (SSALR), Approach Lighting System with Sequenced Flashing Lights (ALSF)-1, or ALSF-2 approach lighting systems, or foreign equivalents.

G. Straight-In Minimums for Approaches with an MDA. The lowest permissible minimums for Categories A, B, C, and D aircraft during the conduct of straight-in IAPs that have an MDA are HAT 250 and one-half statute mile visibility or RVR 2400. The lowest permissible minimums for helicopters operated at 90 knots or less are HAT 250 and one-fourth statute mile visibility or RVR 1600. These minimums for helicopters operated at more than 90 knots are HAT 250 and one-half statute mile visibility or RVR 2400. These minimums are the lowest authorized for approaches that have an MDA and are restricted to runways that are equipped with an MALSR, SSALR, ALSF-1, or ALSF-2 approach lighting systems, or foreign equivalents.
4-273 OPERATIONAL AUTHORIZATION.

A. Straight-In Approach and Landing Operations. Before an operation can be authorized for the use of straight-in IAPs that have either an MDA or a DA/DH, inspectors must evaluate the proposed operation and determine that the operator is competent to safely conduct those procedures. Inspectors must ensure that the operator’s program specifies the conditions necessary for the safe conduct of proposed operations. The operator’s program should incorporate systems, methods, and procedures that meet the following criteria:

- Program restricts operations to aircraft that are properly equipped and Airworthy for the straight-in approaches to be conducted.
- Complies with regulatory requirements specified for the operations.
- Meets the requirements of Parts B, C, and H of the OpSpecs and the criteria of this order.
- Provides for accepted safe operating practices, such as altitude awareness and sterile cockpit procedures.
- Meets the criteria of AC 120-29, when applicable.
- Requires the use of the stabilized approaches when turbojet, turbofan, or propfan airplanes are used.
- Program restricts operations to pilots who are properly trained, experienced, qualified, and proficient for the particular operation being conducted (including use of basic air carrier minimums as well as standard minimums).
- Program restricts operations to airports and runways that meet the requirements applicable to straight-in instrument approaches.

B. Approaches Requiring Circling Maneuvers. When an operator is authorized to conduct instrument approaches, the OpSpecs automatically authorize the conduct of circling maneuvers in VFR weather conditions (1,000-foot ceiling and 3-statute mile visibility). A circling maneuver conducted under this authorization may be performed at the published HAA appropriate for the highest speed in the circling maneuver. However, before circling maneuvers can be conducted with ceilings below 1,000 feet and/or visibilities below 3 statute miles, the operator’s approved training program must provide for training in the circling maneuver. If an operator intends to conduct circling maneuvers with ceilings below 1,000 feet and/or visibilities below 3 statute miles, inspectors must evaluate the operator’s training program and determine that it provides adequate instruction and checking of pilots on the circling maneuver. When an operator does not provide training on circling maneuvers, the operator’s operating policies and procedures must prohibit circling maneuvers when ceilings and/or visibilities are below 1,000 feet and 3 statute miles. Inspectors must also ensure that the certificate holder’s overall program specifies the necessary conditions (over and above those required for straight-in approaches) to safely conduct circling maneuvers. The operator’s program should incorporate methods, procedures, and training that meet the following criteria:

- Meets the circling maneuver criteria in the OpSpecs.
- Requires the circling maneuver to be performed in visual flight conditions.
- Provides for safe missed approaches throughout the circling maneuver.
• Requires the use of circling maneuver minimums appropriate to the highest speed used in a particular circling maneuver.
• Program restricts operations to those airports and runways where circling maneuvers can be safely completed.
• Program restricts circling maneuvers with ceilings below 1,000 feet and/or visibilities below 3 statute miles to those pilots who are properly trained and checked for the circling maneuver in those weather conditions.

1) No part 135 certificate holder authorized to conduct operations under IFR shall use, nor may any PIC execute, a circling approach maneuver to minimums published in the IAP for the circling approach maneuver or the minimums specified in the chart in OpSpec C075, whichever is higher, unless that PIC has (within the last 6 months, or as required by an Advanced Qualification Program (AQP)) satisfactorily demonstrated the circling approach maneuver to published minimums to an approved check airman or the Administrator.

2) For part 121, if the operator does not provide flight training and flight checking on the circling approach maneuver in accordance with part 121 appendices E and F, respectively, then the operator’s General Operations Manual (GOM) and the manuals used by the flightcrews must specifically prohibit conducting circling approach maneuvers when reported weather conditions are below 1000-3 (ceiling and visibility).

3) Ground training must include instruction on procedures to be used to ensure that missed approaches executed during a circling approach maneuver will be conducted safely.

4) See OpSpec C075 for details on the training and checking requirements for the circling approach maneuver authorization for all certificate holders.

C. Operator Manuals. Before granting approval by issuing OpSpecs, inspectors must evaluate the ability of the operator’s overall program to provide the policy guidance, methods, and procedures necessary for ensuring the safe conduct of instrument approach operations using basic air carrier operating minimums. In conducting this evaluation, inspectors must consider certain factors related to the manuals. After completing this evaluation, the inspector must make a judgment concerning whether the operator’s program as described in its manuals is able to meet the 14 CFR and OpSpecs requirements. Inspectors must also make a judgment concerning the operator’s ability to provide for safe, accepted operating practices and procedures. When conducting this evaluation and making an appropriate judgment, the inspector should consider the following factors:

• Criteria and procedures for determining the suitability of runways, airport facilities, services, and ground-based equipment necessary for the types of aircraft used and the CAT I operation to be conducted.
• Criteria and procedures for determining the airborne equipment required to be serviceable at departure.
• Criteria and procedures for determining the airborne and ground-based equipment that must be serviceable before conducting CAT I operations at the destination and alternate airports.
• Criteria and procedures for determining the airworthiness status of the aircraft for the operation to be conducted.
• Criteria and procedures to ensure that the minimum equipment list (MEL) requirements are met for the operation being conducted.
• Criteria and procedures that ensure that CAT I dispatch or flight release requirements are met.
• Criteria and procedures for determining the instrument procedures and operating minimums authorized, including the equipment, training, and qualification requirements necessary for conducting the operations.
• Specific and detailed operating procedures and crew duty assignments for the types of aircraft used and the IAPs authorized. (These policies and procedures must require all turbojet operations to be conducted in accordance with the “stabilized approach” concept.)
• Specific requirements and instructions concerning the operating restrictions and limitations associated with the types of aircraft and the IAPs to be used.

D. The Operator’s Training Program. Inspectors must evaluate training programs to determine that flightcrews receive both ground and flight training on the instrument approaches the operator is authorized to conduct. Because of procedural and design similarities, flight training on one type of IAP often provides the necessary training for other types of IAPs. Inspectors observing training in progress should verify that the approved training and qualification curriculum segments ensure flightcrew competency in the conduct of authorized IAPs.

E. Maintenance Program. Before approving an operator’s proposal to use turbojet, turbofan, and/or propfan airplanes in All Weather Terminal Area Operation (AWTA) operations that use standard operating minimums, inspectors must ensure that the operator’s approved airworthiness program includes the special airborne equipment required for the standard minimums. Close coordination with the principal maintenance inspector (PMI) and the principal avionics inspector (PAI) is essential before granting operational approval.

F. Authorizing Part 97 ILS CAT I. Principal operations inspectors (POI) authorize issuance of part 97 ILS CAT I operations via issuance of an OpSpec or LOA, as appropriate. The purpose of this task is for a principal inspector (PI) to authorize ILS CAT I operations.

1) For CAT I, unless a certificate-holding district office (CHDO) otherwise specifies that approach demonstrations are necessary due to unusual circumstances or special situations for special systems such as autoland, operators may conduct CAT I operations without need for special demonstrations if the aircraft type Aircraft Flight Manual (AFM) does not preclude the intended operation. This task is usually performed in a Flight Standards District Office (FSDO)/certificate management office (CMO).

2) The acceptable task performance is that applicants are issued the OpSpec (or a letter of disapproval of application for the OpSpec), as appropriate to the content of the application and the qualifications of the applicant.
G. Proving and Validation Tests. Validation testing is not required if CAT I operations are evaluated during the aircraft proving tests required by part 121 or 135. Validation tests are required, however, if an operator has previously conducted VFR only operations and is proposing to conduct AWTA operations for the first time with existing aircraft. Validation tests may also be required when a part 135 operator or an applicant for a certificate proposes to conduct AWTA operations with an aircraft in which part 135 does not require that a proving test be conducted.

4-274 CONTINUOUS DESCENT FINAL APPROACH (CDFA). CDFA is a specific technique for flying the Final Approach Segment (FAS) of a nonprecision IAP as a continuous descent, without level-off, from an altitude/height at or above the final approach fix (FAF) altitude/height to a point approximately 50 feet (15 meters) above the landing runway threshold or the point where the flare maneuver should begin for the type of aircraft flown.

A. CDFA Operating Concept. The CDFA operating concept is to fly nonprecision IAPs as a continuous descent maintaining the published nominal vertical profile using VNAV guidance, altitude versus range (or DME) cross-checks, or altitude versus time cross-checks. The most critical aspect of CDFA is that the pilot executes a missed approach at the MDA plus an additive buffer altitude (to prevent descent below MDA) instead of leveling off at the MDA.

B. Near-Term Safety Benefits. Based on near-term safety benefits (controlled flight into terrain (CFIT)-reduction) of using stabilized-approach criteria on a continuous descent with a constant, pre-determined Vertical Path (VPATH) to the runway, and the desire to move to three-dimensional operations where possible, users have indicated their intent to apply the CDFA technique to nonprecision IAPs. Use of the CDFA technique will enhance landing safety by eliminating the potential vulnerability of two-dimensional approach operations and the use of stepdown fixes by providing a continuous descent to the runway. This both reduces exposure to unstabilized approaches that lead to inappropriate landing performance and reduces vulnerability to CFIT accidents.

4-275 PRM. The FAA began the Multiple Parallel Approach Program (MPAP) to research whether ILS approaches to parallel runways would improve capacity. The objective initially was to achieve improvements in airport arrival rates through the conduct of independent, simultaneous, parallel approaches. The program was later broadened to include closely spaced runways and PRM operations that met that objective.

A. PRM Approaches. Where parallel RCLs are less than 4,300 feet apart, but no less than 3,000 feet, simultaneous PRM approaches may be conducted. Similarly, where parallel RCLs are less than 3,000 feet apart, but no less than 750 feet, simultaneous offset instrument approaches (SOIA) may be conducted using PRM approaches. Those approaches have “PRM” and the words “simultaneous close parallel” or “close parallel” in the title block. Air traffic control (ATC) provides one PRM monitor controller for each runway to provide intrusion protection for the no transgression zone (NTZ) located equidistant between the two final approach courses. Whenever the runway spacing is less the 3,600 feet (but not less than 3,400 feet) and approach courses are parallel, a high-update PRM radar must be utilized. With at least one offset approach with runway spacing less than 3,600 feet, and for all other PRM approaches, high-update radar is not required to conduct PRM approaches, but all other
requirements remain. Pilots need not know which radar system is in use as flight procedures are the same in either case. Utilization of vertical guidance is required for all PRM approaches. Pilots must have completed PRM training prior to conducting any PRM approach. Different types of PRM approaches to the same runway are procedurally equivalent. Therefore, pilots may request a different type of approach to the same runway (e.g., the RNAV (GPS) PRM approach in lieu of the ILS PRM or LDA PRM approach). However, they may only conduct the approach when specifically cleared to do so by ATC.

**B. Dual Communications.** Aircraft that conduct PRM approaches must be capable of simultaneously monitoring the audio from two separately tuned communications receivers set to different frequencies.

**C. The Breakout Maneuver.** Working with industry, the FAA conducted extensive analysis of simulation data and determined that the implementation of PRM and SOIA approach operations to closely spaced parallel runways requires additional crew training. The primary focus of this training is to raise each pilot’s situational awareness in PRM operations.

1) **Traffic Alert.** One important element of the additional training is the pilot’s understanding of the difference between a normal missed approach initiated by a pilot, and a breakout initiated by a PRM final monitor controller. It must be clear to flightcrews that the words “Traffic Alert,” when used by the final monitor controller, signal critical instructions that the pilot must act on promptly to preserve adequate separation from an airplane straying into the adjoining approach path.

2) **ATC Breakout Maneuver Command to Turn and Descend or Climb.** The flightcrew must immediately follow the final monitor controller’s vertical (climb/descend) and horizontal (turn) commands. If the flightcrew is operating the Traffic Alert and Collision Avoidance System (TCAS) in the Traffic Advisory (TA)/Resolution Advisory (RA) mode and receives a TCAS RA at any time while following the final monitor controller’s command, the flightcrew will simultaneously continue to turn to the controller’s assigned heading and follow the vertical guidance provided by the TCAS RA.

3) **Time-to-Turn Standard.** Regardless of airplane type, tests and data analysis revealed that pilots normally passed through an angle of bank of at least 3 degrees while rolling into a breakout turn, within 10 seconds of receiving a breakout command. (Bank angles of between 20 and 30 degrees were normally achieved during the breakout.) The operator must show that its pilots can readily meet this time-to-initiate-turn standard prior to the POI authorizing PRM approaches in OpSpec/MSpec/LOA C052. Flying the breakout in auto modes can be only approved by the PI, with concurrence from the Air Transportation Division and the Flight Technologies and Procedures Division. The air carrier should demonstrate its ability to meet this standard by having representative pilots perform the breakout maneuver while the POI or the POI’s designated representative observes. The demonstration should conform to procedures contained in the air carrier’s approved operating manual for its flightcrews. The commercial operator should submit procedures to its POI for this authorization.
NOTE: In a breakout, ATC will never command a descent below the applicable minimum vector altitude (MVA), thus assuring that no flight will be commanded to descend to lower than 1,000 feet above the highest obstacle during a breakout.

D. PRM Approaches and the Use of TCAS. TCAS may be operated in TA/RA mode while executing PRM approaches. However, when conducting these operations, pilots must understand that the final monitor controller’s instruction to turn is the primary means for ensuring safe separation from another airplane. Pilots must bear in mind that TCAS does not provide separation in the horizontal plane; TCAS accomplishes separation by commands solely in the vertical plane. Therefore, during final approach only the final monitor controller has the capability to command a turn for lateral separation. Flightcrews are expected to follow any ATC instruction to turn.

1) ATC Command to Turn with TCAS RA. In the unlikely event that a flightcrew should simultaneously receive a final monitor controller’s command to turn and a TCAS RA, the flightcrew must follow both the final monitor controller’s turn command and the TCAS RA’s climb or descent command.

2) TCAS RA Alone. In the extremely unlikely event that an RA occurs without a concurrent breakout instruction from the final monitor controller, the pilot should follow the RA and advise the controller of the action taken as soon as possible. In this instance, it is likely that a breakout command would follow.

3) TCAS Not Required. An operative TCAS is not required to conduct PRM approaches.

E. Pilot Training. Pilots must comply with their OpSpecs and view the slide presentation “Precision Runway Monitor (PRM) Pilot Procedures” no later than the next time such training is required.

F. PRM Operations Authorization. In order to be authorized to conduct PRM operations by choosing the selectable OpSpec/MSpec C052 subparagraph, Precision Runway Monitor (PRM) Approaches, operators/POIs must ensure compliance with the PRM guidance and training located in this section of the 8900.1 guidance.

NOTE: For the part 91 LOA, PRM authorization is not required for domestic operations (see the AIM for guidance). It is provided, if needed, to comply with international requirements.

4-276 VISUAL APPROACH. OpSpec C077 authorizes an operator to conduct visual approaches, provided the conditions specified in C077 are met. For operations at foreign airports, it is important to understand that the term “visual approach” can have a different meaning than the U.S. definition of visual approach. The ICAO definition of a visual approach includes a contact approach and does not include requirements to have VFR weather conditions, to be under the control of an ATC facility, or to be within 35 nautical miles (NM) of the destination airport. In both domestic and foreign operations, the operator must comply with the conditions specified in the OpSpecs when conducting visual approaches. When authorized to operate in foreign
countries, the operator’s policies, procedures, and approved training program must ensure that the requirements for visual approaches in foreign countries are adequately addressed.

4-277 CONTACT APPROACHES. Contact approaches, in accordance with OpSpec/MSpec C076, are authorized only when the operator’s approved training program provides training on contact approaches. A contact approach is an authorization to deviate from the prescribed IAP (under IFR weather conditions) and to proceed visually to the runway of intended landing. Although the flight is still on an IFR flight plan and ATC maintains responsibility for the separation of aircraft and wake vortex requirements, the flightcrew does assume total responsibility for navigation, terrain, and obstacle avoidance. If an operator does not provide training on contact approaches, its policies and procedures must prohibit pilots from requesting, accepting, or conducting contact approaches. When an operator does provide training on contact approaches, the operator’s operating policies and procedures must ensure that the conditions and requirements for accepting and conducting these approaches are clearly stated.

4-278 OTHER APPROACH OPERATIONS.

A. Airborne Radar and Offshore Approaches. An operator can be authorized to conduct Airborne Radar Approaches (ARA) and/or offshore standard approach procedures (OSAP). The operator’s approved training program, equipment installations, and operational policies and procedures must meet the criteria specified in the current edition of AC 90-80, Approval of Offshore Standard Approach Procedures, Airborne Radar Approaches, and Helicopter En Route Descent Areas, before the operator can be authorized to conduct ARAs and OSAPs. ARAs and OSAPs are authorized by listing the procedure in OpSpec H113.

B. Helicopter En Route Descent Areas (HEDA). HEDAs permit a single instrument procedure to serve many offshore heliports, and significantly reduce the burden of developing numerous Standard Instrument Approach Procedures (SIAP) for this dynamic situation. This is particularly useful in offshore operations where heliports frequently exist for short periods of time and where the location of the heliport is frequently moved because of operational needs. Once the criteria specified in AC 90-80 have been met, HEDAs are authorized by being listed in OpSpec H104.

C. Point in Space (PinS) Approaches. In certain cases, the instrument portions of an IAP may deliver the aircraft to a predetermined PinS instead of to an airport or runway. These types of approaches are intended to provide an IFR descent to a point where sufficient visual reference is available for the pilot to navigate visually for several miles to the airport of intended landing. If the required seeing conditions are not established before passing this PinS, a missed approach can be safely executed. These procedures are useful in the following two situations:

1) Terrain, obstacles, conflicting air traffic, and/or navigation systems limitations can occasionally prevent the establishment of a standard IFR approach procedure to a particular airport or runway. In certain cases where this occurs, an instrument approach can be established to provide an IFR descent to a point a few miles from the airport. Upon arrival at this PinS, the flight can then proceed under VFR conditions using pilotage and/or station-referenced VFR Class I navigation to a landing at that airport.
2) These procedures are, in effect, an IAP followed by an extended visual segment. The approach procedure will contain the notation “fly visual to the airport.” In normal circumstances, an authorization to conduct approaches that have an MDA automatically authorizes the operator to conduct fly visuals in accordance with part 97 and the OpSpecs.

4-279 OPERATING MINIMUMS. The lowest operating minimums for operations conducted under parts 91K, 121, 125, 129, and 135 are specified in standard OpSpecs, MSpecs, or LOAs. In general, an operator is authorized to use operating minimums specified by the following groups of IAPs, provided the minimums are not lower than the lowest minimums specified in the air carrier’s OpSpecs/MSpecs/LOAs for any particular type of approach procedure.

- Part 97 IAP.
- U.S. military IAPs at U.S. military airports.
- Any IAPs approved and incorporated in the OpSpecs/MSpecs/LOAs.
- ICAO Contracting State IAPs at foreign airports.
- IAPs established by an air carrier at foreign airports, provided the procedure is accepted in accordance with the OpSpecs/MSpecs/LOAs.

4-280 CONTROLLING MINIMUM CONCEPT. The concept of a controlling minimum is based on reported weather conditions at the destination airport. The controlling minimum concept includes considerations for the reported weather conditions, the capabilities of the flightcrew, and the capabilities of the airborne and ground- or space-based equipment. This concept prohibits a pilot from continuing past the FAF, or beginning the FAS of an IAP unless the reported visibility (RVR, if applicable) is equal to or greater than the authorized visibility (RVR) minimum for that IAP. The basic objective of the controlling minimum concept is to provide reasonable assurance that once the aircraft begins the FAS, the pilot will be able to safely complete the landing. The controlling minimum concept, however, permits a pilot to continue a CAT I approach to DA/DH if the visibility/RVR was reported to be at or above the controlling minimum when the pilot began the FAS even though a later visibility/RVR report indicates a below-minimum condition. RVR reports, when available for a particular runway, are the reports (controlling reports) that must be used to determine whether an approach to, and landing on, that runway are authorized or prohibited.

A. Parts 91 and 91K Controlling Minimum. The controlling minimums concept as described above is not applicable to part 91 or 91K operators when determining if the pilot can continue past the FAF or begin the FAS. Parts 91 and 91K operations can begin an approach and continue to the DA/DH or the MDA and the MAP, even when the weather conditions are reported to be below the authorized IFR landing minimums. Upon arrival at the MDA and before passing the MAP, or upon arrival at the DA/DH, the approach may be continued below DA/DH or MDA to the runway if the seeing conditions required by § 91.175(c) and (d) or (1) are met.

B. Part 121 Controlling Minimum. The controlling minimum concept for operations conducted under part 121 is implemented by § 121.651(b). For these operations, the controlling minimum must be used at civilian airports within the United States and its territories, and at U.S. military airports, unless the provisions of § 121.651(d) are met. Section 121.651(d) permits a pilot to begin the FAS even though the reported visibility/RVR is below the controlling minimum if the approach procedure is an ILS and the flight is actively monitored by a PAR.
Therefore, pilots are not constrained by the controlling minimum on runways with ILS and active PAR facilities, provided the provisions of § 121.651(d) are met. The controlling minimum concept allows for a pilot to continue a CAT I approach to DA/DH or MDA NPA if the visibility/RVR was reported to be at or above the controlling minimum when the pilot began the FAS, even though a later visibility/RVR report indicates a below-minimum condition. Upon reaching DA/DH or MDA and before passing the MAP, the approach may be continued below DA/DH or MDA to touchdown if the requirements of § 121.651(c) are met even though the visibility/RVR is reported to be below the controlling minimum.

C. Parts 125 and 135 Controlling Minimum. The controlling minimum concept for parts 125 and 135 differs in application from part 121. Part 91 applies to all parts 125 and 135 operations whether they are conducted in foreign countries or the United States (see part 125, § 125.23(b) and § 135.3(b)). Operations conducted under parts 125 and 135 must also be in compliance with §§ 125.381 and 135.225 (which applies to all operations within the United States, U.S. territories, U.S. military airports, and foreign airports). For parts 125 and 135 operations, the controlling minimum concept must be used at all airports (with the exception of a part 135 “eligible on-demand” operator who is permitted to start an approach without weather reported above landing minimums (see § 135.225(b)). As a consequence, §§ 125.381(b) and 135.225(b) prohibit parts 125 and 135 operators from conducting look-see approaches at any airport. The controlling minimum concept, however, allows for a pilot to continue a CAT I approach to DA/DH or MDA if the visibility/RVR was reported to be at or above the controlling minimum when the pilot began the FAS, even though a later visibility/RVR report indicates a below-minimum condition. The controlling minimum concept also allows for a pilot (upon reaching DA/DH or MDA and before passing the MAP) to continue the approach below DA/DH or MDA and touchdown if the requirements of § 91.175 are met, even though the visibility/RVR is reported to be below the controlling minimum.

4-281 AIR CARRIER OPERATING MINIMUMS. Although part 97 establishes standard minimums for the various types of approaches and lighting system combinations, these standard minimums cannot automatically be used by parts 121 and 135 certificate holders. The air carrier minimums must consider the high-minimum PIC requirements and basic turbojet requirements contained in OpSpec C054, or any other limitations imposed on the carrier by the FAA where appropriate, as described below.

A. Air Carrier Minimums Limitations. Any limitations to air carrier minimums must be used by all parts 121 and 135 operators until the requirements for special airborne equipment, pilot qualification, pilot training, and/or experience requirements for standard operating minimums are met. The POI may then authorize the certificate holder to use the standard operating minimums (i.e., the minimums defined by the part 97 SIAP).

B. High-Minimum PIC. The increased difficulty in piloting tasks encountered during low visibility approach and landing operations make it necessary for PICs to acquire a certain amount of flight experience before operating to the lowest authorized CAT I minimums. The objective of this flight experience requirement is to ensure that the pilot is fully aware of the aircraft’s equipment capabilities and limitations, the available external visual cues, and the aircraft’s handling characteristics.
1) The flight experience necessary to meet this objective is specified in § 121.652 or § 135.225(e), as applicable. High-minimum PIC requirements for part 135 operations are applicable only to turbine-powered airplanes (turbojet or turbopropeller). These rules require those PICs who do not meet these experience requirements (high-minimum PICs) to increase the published MDA/DA/DH by 100 feet and the published visibility by one-half statute mile or the RVR equivalent. The RVR that must be used when an RVR is published and available is the applicable high-minimum PIC RVR value specified in OpSpec C054, shown in Table 4-7A, Sample C054 Table 1 – High-Minimum PIC RVR Landing Minimum Equivalents.

2) The increased operating minimums for high-minimum PICs always result in operating minimums that are higher than standard minimums. For example, if the minimums published for an ILS approach to a certain runway are HAT 200/RVR 1800, the operating minimums that must be used by a high-minimum PIC for an approach to that runway must not be lower than HAT 300 and RVR 4500 (HAT 200 + 100 feet and the high-minimum PIC equivalent of RVR 1800, which is RVR 4500, as specified in OpSpec C054). If the minimums published for an approach that has a DA/DH were HAT 200 and a visibility of three-fourths statute mile, the high-minimum PIC would have to use a HAT of 300 and a visibility of 1¼ statute miles. Therefore, when dispatching or releasing a flight, the increased operating minimums for high-minimum PICs and the reported and/or forecasted weather conditions at the destination airport must be considered.

3) The specific operating rule provisions, §§ 121.652 and 135.225(e), are similar; however, significant differences exist in the specific details of these rules.

a) Section 121.652 raises high-minimum PIC operating minimums by HAT 100 feet and visibility by one-half statute mile or by the RVR equivalent. The high-minimum PIC RVR equivalents are specified in the OpSpecs. Section 121.652 specifies that the MDA or DA/DH and visibility minimum required for a high-minimum PIC do not have to be raised above the conditions required to designate the airport as an alternate airport.

1. The method for determining alternate minimums, however, is to add a buffer to the HAT/HAA and visibility or RVR authorized for landing. The lowest buffer when determining alternate minimums is to add 200 to the ceiling and one-half mile to the visibility, which is greater than the requirement to add 100 and one-half to determine the high time PIC minimum. Therefore, alternate minimums will always be higher than the high-minimum PIC’s landing minimums.

2. This rule establishes HAT 300 feet and one statute mile (or the RVR equivalent as low as RVR 4500) as the lowest straight-in operating minimums for high-minimum PICs when conducting approaches that have a DA/DH or MDA. This rule also permits the 100-hour flight experience requirement to be reduced by up to 50 percent by substituting one landing for 1 required hour of flight experience, provided the PIC has at least 100 hours of PIC time in another type airplane in part 121 operations.

3. Section 135.225 establishes the same requirements for part 135 operators, with two exceptions:
a. Section 135.225 applies only to turbine-powered (turbojet and turbopropeller) airplanes.

b. Section 135.225 does not permit a reduction to the 100-hour flight experience requirement.

C. Basic Turbojet Minimum. A basic turbojet visibility/RVR operating minimum has been established for all turbojet airplanes operated under parts 121 and 135. The basic turbojet minimum for straight-in approaches is three-fourths statute mile visibility or RVR 4000. Any minimum less than the basic turbojet minimum is not authorized in turbojet aircraft until the specific requirements of OpSpec C054 are met. When the airplane equipment, the runway lighting/marking systems, and the pilots are in compliance and qualified, then the lowest minimums that have been established for various approved approach and runway lighting/markings may be authorized.

Table 4-7A. Sample C054 Table 1 – High-Minimum PIC RVR Landing Minimum Equivalents

<table>
<thead>
<tr>
<th>RVR Landing Minimum as Published</th>
<th>RVR Landing Minimum Equivalent Required for High-Minimum Pilots</th>
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<tbody>
<tr>
<td>RVR 1800</td>
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4-282 AUTOLAND OR HUD TO TOUCHDOWN OPERATIONS. Autoland or HUD to touchdown operations are required for all CAT III operations, and many operators use autoland or HUD for CAT I, CAT II, and VFR operations as well. Sections 121.579(c), 125.329(d), and 135.93(d) prohibit the use of autoland or HUD to touchdown in any operation unless the operator is specifically authorized via OpSpecs. OpSpec C060 authorizes autoland or HUD to touchdown in CAT II and III operations, respectively. OpSpec C061 or H110 authorizes autoland operations in other than CAT II/III operations and OpSpec C062 or H111 authorizes HUD to touchdown in other than CAT II/III operations.

A. ILS Category Classification. The ILS category classification system provides a more comprehensive method of describing ILS performance than the simple CAT I/II/III classification. ILS facility classification is described in Order 6750.24. A facility’s classification is defined by using two characters (I/C, II/D, III/E, etc.).

1) The first character indicates conformance to the facility performance category standards. This character indicates if the ground equipment is classified as a CAT I, CAT II, or CAT III ILS.
2) The second character defines the ILS point (Figure 4-21, Localizer Course and Glidepath Bend Amplitude Limits) to which the LOC conforms to the Facility Performance CAT III course structure tolerances. These classifications indicate ILS conformance to a physical location on the approach or runway as follows:

- A: 4 NM before the threshold.
- B: 3,500 feet before the threshold (CAT I decision point).
- C: Glidepath altitude of 100 feet HAT (CAT II decision point).
- T: Threshold.
- D: 3,000 feet beyond the threshold (CAT III requirement only).
- E: 2,000 feet before the runway end (CAT III requirement only).

B. Use of Autoland at U.S. CAT I Facilities or Equivalent. For CAT I, autoland may be used at runways with facilities other than those with published CAT II or III IAPs if the precautions discussed in subparagraph 4-282C are followed. This is to aid pilots in achieving stabilized approaches and reliable touchdown performance to improve landing safety in adverse weather; for CAT II or III training; to exercise the airborne system to ensure suitable performance; for maintenance checks; or for other such reasons. Use of this capability may be particularly important for pilot workload relief in stressful conditions of fatigue after long international flights; night approaches; crosswinds or turbulence; when there may be other aircraft non-normal conditions being addressed; or to aid safe landing performance in otherwise adverse weather, restricted visibility, or with cluttered runways. This is true even though reported visibility may be well above minimums (e.g., heavy rain distorting view out the windshield, snow-covered runways where markings are not easily visible).

C. ILS Classification and CAT I Autoland Operations. ILS classification is being added to the Airport/Facility Directory (A/FD), but not all ILS runways are included as of February 2012. To support autoland or HUD to touchdown operations, CAT III course structure tolerances to at least point D are highly encouraged (e.g., I/D, II/D, III/D). All published CAT II and III approaches in the United States meet this standard. CAT II approaches that do not support autoland operations will note this limitation via chart note or Notices to Airmen (NOTAM). When conducting autoland operations on a CAT I runway/ILS, runways with a I/D or I/E classification are the most suitable and are preferred. Practice autoland or HUD to touchdown operations may be conducted at CAT I runways in VFR conditions where the facility classification is unknown, because the flightcrew is monitoring system performance, visually verifying the position of the aircraft, and can determine whether to continue to a landing or execute a missed approach in VFR conditions. Though it is not recommended, flightcrew monitoring and increased visibility also permits practice autoland or HUD to touchdown operations using an ILS classified as I/A, I/B, I/C, or I/T, provided the operation is performed in VFR conditions. The flightcrew must be ready at all times to execute a missed approach when conducting CAT I autolands. Order 6750.24, subparagraph 9a, Localizer and Glideslope, describes the minimum class of performance required for an ILS to support a published part 97 CAT II or III SIAP. Appendix B of the order describes the ILS classification system.
D. Pre-Threshold Terrain.

1) The Flight Operations Branch maintains a list of CAT II/III runways with special terrain that may affect autoland or HUD to touchdown operations, such as irregular pre-threshold terrain or TDZ slope. This list is available at https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs400/afs410/cat_ils_info/. Each operator and aircraft must be approved for each special terrain runway to conduct any CAT II or III operations using autoland or HUD to touchdown. Volume 4, Chapter 2, Section 2 contains more information about how to authorize CAT II/III operations at special terrain runways.

2) The FAA does not analyze CAT I runways to determine if any irregular pre-threshold terrain will impact autoland or HUD to touchdown operations. Practice autoland or HUD to touchdown operations may be conducted at CAT I runways where the pre-threshold terrain has not been analyzed because the flightcrew is monitoring system performance, visually verifying the position of the aircraft, and can determine whether to continue to a landing or execute a missed approach in VFR conditions. All operators approved to use autoland- or HUD-equipped aircraft should be encouraged to routinely use these systems at suitably equipped runways during operations in VFR and in CAT I IFR conditions. Flightcrew training should emphasize the importance of monitoring equipment performance on all practice autolands.

E. Maintenance Return to Service and Required Practice Autolands. An aircraft manufacturer and certification requirements may require that a practice autoland or HUD to touchdown be performed on a published CAT II or III approach. If so, the operator should adhere to these requirements. If autoland is not required to be performed on a CAT II ILS, it is important to note that an unsatisfactory approach is extremely difficult to attribute to small errors in ILS ground equipment. Even CAT I ILS facilities that meet CAT III signal standards are not monitored to the same tolerances as CAT II/III facilities. An unsatisfactory approach due to a critical area incursion is something that may be identified, but an unsatisfactory approach due to a signal or monitor error cannot be detected by the flightcrew or maintenance.

F. Flightcrew Training. In addition to other training requirements, flightcrew training should emphasize the importance of:

1) Monitoring equipment performance and visual verification of aircraft position on all practice autolands.

2) Verifying that the CAT I approach does not have any charted restrictions that would prohibit autoland or HUD to touchdown operations (“ILS unusable within 0.5 DME,” “autopilot coupled approach not authorized below XXX feet”).

3) Requesting that ATC protect the critical area for all practice autolands. ATC will protect the ILS critical areas if the ceiling is less than 800 feet and/or the visibility is less than 2 miles. Note that ATC is not required and may not be able to protect the critical areas if the weather is better than 800/2.

4) Performing maintenance return to service as required by either the manufacturer, certification, or the operator, as described in subparagraph 4-282E.
Reserved. Paragraphs 4-283 through 4-299.