

CHANGE

**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

National Policy

**ORDER
6750.24E CHG 1**

Effective Date:
10/29/13

SUBJ: Instrument Landing System and Ancillary Electronic Component Configuration and Performance Requirements

- 1. Purpose of This Order.** This order specifies the instrument landing system (ILS) and ancillary electronic component configuration and performance requirements for the various categories of low-visibility flight operations.
- 2. Audience.** The audience for this order is Federal Aviation Administration (FAA) personnel involved in the operations of all categories of ILS approaches, including approach procedures, operations, and ILS installation, maintenance, and monitoring.
- 3. Where You Can Find This Order.** This change may be accessed by Flight Standards personnel through the Flight Standards Information Management System (FSIMS) at <http://fsims.avs.faa.gov>. Operators and the public can find this order at <http://fsims.faa.gov>.
- 4. Explanation of Policy Changes.** The purpose of this change is to clarify the intent on continuing Category (CAT) III operations during temporary outages of a single Runway Visual Range (RVR) sensor and selected ancillary lighting. CAT III operations do not have to be denied if only a single RVR sensor (Touchdown, midpoint or rollout) is temporarily inoperative. CAT III operations must be discontinued if two or more RVR sensors are inoperative. FAA Order 8400.13D, Procedures for the Evaluation and Approval of Facilities for Special Authorization Category I Operations and All Category II and III Operations, authorizes Special Authorization (SA) CAT II operations on facilities that do not meet International Civil Aviation Organization (ICAO) requirements for standard CAT II lighting. This change clarifies the intent and actions for continuing CAT II operations using the SA CAT II procedures after a failure of certain airfield lighting equipment. Additionally, the localizer or glideslope power source failure situation where only battery power is available has been removed from the Abnormal Checklist in Appendix A.
- 5. Disposition of Transmittal Paragraph.** This change will remain in FSIMS until superseded by a revision to this order.

PAGE CHANGE CONTROL CHART

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3, 4, 5	3/29/12	3, 4, 5	10/29/13
Appendix A, A-4, A-6, A-7, and A-9	3/29/12	Appendix A, A-4, A-6, A-7, and A-9	10/29/13

for



John S. Duncan
Director, Flight Standards Service



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- 3. Where You Can Find This Change.** You can find this order on the MyFAA employee Web site at https://employees.faa.gov/tools_resources/orders_notices. Inspectors can access this order through the Flight Standards Information Management System (FSIMS) at <http://fsims.avs.faa.gov>. Air carriers (operators) can find this order on the FAA's Web site at <http://fsims.faa.gov>. This order is available to the public at http://www.faa.gov/regulations_policies/orders_notices.
- 4. What This Order Cancels.** This order cancels Order 6750.24D, Instrument Landing System and Ancillary Electronic Component Configuration and Performance Requirements, dated March 21, 2000.
- 5. Scope.** The requirements of this order apply to public Standard Instrument Approach Procedures (SIAP), identified special approach procedures, and lower-than-standard takeoff procedures (when applicable).
- 6. Definitions.**
 - a. Continuity.** The quality that relates to the rarity of radiated signal interruptions during any approach. The level of Continuity of Service (CoS) of the localizer and/or the glidepath is expressed in terms of the probability of not losing the radiated guidance signals.
 - b. Integrity.** The quality that relates to the trust that can be placed in the correctness of the information supplied by the facility. The level of integrity of the localizer and/or the glidepath is expressed in terms of the probability of not radiating false guidance signals.

7. Explanation of Appendices.

a. Appendix A. Appendix A, Abnormal Checklist, lists the basic ILS ground system components, explains the effect on operations when a component is abnormal or inoperative, and prescribes the action requirements.

b. Appendix B. Appendix B, Instrument Landing System (ILS) Classification System, contains the ILS classification system, which was developed by the International Civil Aviation Organization (ICAO) All Weather Operations (AWO) Panel for guidance material in Annex 10 to the Convention on International Civil Aviation. The “Class” designation differentiates between the various performance capabilities of Types I, II, and III ILS equipment, including differences in performance between equipment generically classified as the same “Type.”

8. Issuance of Notices to Airmen (NOTAM). NOTAMs communicate ILS and ancillary component outages to pilots and air operators. Many outages require the issuance of a NOTAM (D) to inform operators of a facility or component outage and/or a related downgrade to authorized takeoff or landing operations as a result of that outage. However, some component outages may have differing effects based on the specific Instrument Flight Procedure (IFP) or other equipment available to the operator. For example, an Inner Marker (IM) failure only affects Category (CAT) II landing minimums at runways that do not have a published radio altimeter (RA) decision height (DH), which will be depicted on the procedure as “RA NA.” The majority of CAT II runways have a published RA DH. Therefore, close scrutiny is required to ensure that operations remain authorized to the fullest extent allowed by this order. When in doubt, contact the appropriate regional Flight Standards division (RFSO) Next Generation (NextGen) Branch (AXX-220) or the Flight Technologies and Procedures Division (AFS-400) to determine the correct course of action.

a. Responsibilities. Generally, the owner or organization responsible for specific equipment is also responsible for issuing NOTAMs for that equipment. For example, the airport operator is typically responsible for issuing a NOTAM to notify pilots that runway centerline (RCL) lighting is out of service; Technical Operations is responsible for issuing a localizer out of service NOTAM; Flight Inspection is responsible for issuing the NOTAM to address any issue found on a flight check (refer to the current edition of Order 8200.1, United States Standard Flight Inspection Manual); and Flight Procedures is responsible for issuing procedural NOTAMs, such as flight data center (FDC) NOTAMs. Refer to the NOTAM rules for the specific line of business and the current edition of Order JO 7930.2, Notices to Airmen (NOTAM). For questions about operational issues that may occur due to an equipment outage, contact AFS-400 or the appropriate RFSO NextGen Branch (AXX-220).

b. Operation Levels in an Outage. Many operators are transitioning to performance-based operations, and different levels of operation may be authorized based on the flight and ground equipment available in the event of an outage. It is critical that required NOTAMs alert users of an inoperative facility or system. In some situations, an all-encompassing cancellation of specific minima (e.g., “CAT II/III Not Authorized”) may not be necessary. Many operators are authorized for some level of continued operations during outages of ground equipment such as marker beacons, runway lighting, approach lighting, or Runway Visual Range (RVR) sensors. In these situations, continued operations may be predicated on the use of specific equipment or

procedures, which will be required in the operator's authorization (such as an operations specification (OpSpec), management specification (MSpec), or letter of authorization (LOA)).

- **NOTAM.** Ideally, a NOTAM will allow authorized operators to continue while notifying unauthorized operators that the specified approach procedure is not available. This supports accurate flight planning for both types of operators.

9. System Component Requirements. If an IFP must be amended due to a removed or never-installed component, advise the National Aeronautical Navigation Services (AJV-35) and the Flight Inspection Operations Group (AJW-33).

a. Localizer and Glideslope.

(1) CAT II/III operations place a high degree of reliance on ILS guidance for positioning through touchdown, which requires specific integrity and CoS requirements as described in Appendix B. Most CAT II/III ILSs are equipped with dual transmitters and dual executive integrity monitors to meet these integrity and CoS requirements.

Note: The current edition of Order 8400.13, Procedures for the Evaluation and Approval of Facilities for Special Authorization Category I Operations and All Category II and III Operations, authorizes the use of single transmitter facilities for Special Authorization (SA) CAT II operations, provided the ILS meets all applicable CoS requirements. However, to date the FAA has not approved any single transmitter ILS facilities that meet II/D/2 integrity and CoS requirements.

(2) The following is the minimum class of performance (refer to Appendix B) required for an ILS to support a published Title 14 of the Code of Federal Regulations (14 CFR) part 97 CAT II or III SIAP:

- (a) Class II/T/2 for operations not less than RVR 1200.
- (b) Class II/D/2 for operations not less than RVR 1000.
- (c) Class III/D/3 for operations not less than RVR 700.
- (d) Class III/E/3 for operations not less than RVR 600.
- (e) Class III/E/4 for operations less than RVR 600.

(3) Class III/E/4 is required for takeoff operations less than RVR 500. Operators may be authorized takeoff minimums as low as RVR 300 via an operational authorization (OpSpec, MSpec, or LOA). These takeoff minimums require the use of an approved head-up display (HUD) tracking a Class III/E/4 localizer. Local personnel should be aware of the potential impact on takeoff minimums created by a continuity of service (CoS) issue or an outage that requires "CAT III NA" and consult the appropriate RFSN NextGen Branch (AXX-220) or AFS-400 to determine the correct course of action. For example, RVR 300 takeoff operations may continue if a glideslope or Approach Lighting System (ALS) outage restricts ILS approach and landing operations and if the following requirements are met:

(a) The localizer meets class III/E/4 requirements, and air traffic control (ATC) protects the localizer critical area to support CAT III operations.

(b) The taxiway lead-on lights serving the takeoff runway are operational.

(c) At least two RVR sensors are operational and reporting.

(d) High Intensity Runway Lights (HIRL) are operational.

(e) RCL lights are operational.

(4) To maintain the class of performance required for any given operation, the ILS must be flight inspected, and necessary maintenance inspections must be performed accordingly.

(5) Any ILS servicing a runway must be turned off throughout the duration of any scheduled runway closure to avoid hazardous safety risks. The glideslope must be shutdown when a runway threshold is displaced or relocated. In that case, the localizer may continue to operate. Exceptions to this policy are allowed, when agreed to in writing by Operations Engineering, Flight Standards, Flight Procedures, and Terminal Services. Temporary runway closures of limited duration or that cannot practically be scheduled in advance represent a blanket exception to this policy, such as runway inspection, snow removal, or a disabled aircraft.

Note: Exceptions are appropriate when users and providers agree that there may be a procedural benefit to leaving the ILS in operation, such as improving air traffic services (circling minima, localizer-only minima, approach separation, etc.). Operations Engineering, Flight Standards, Flight Procedures, and Terminal Services rarely grant exceptions for glideslopes. For all exceptions, Technical Operations must assure that construction activities will not degrade the ILS signals.

b. Marker Beacons. An Outer Marker (OM) or suitable substitute (refer to subparagraph 9c and Appendix A) is only required to indicate the final approach fix (FAF) for Nonprecision Approach (NPA) operations (i.e., localizer only). The FAF on CAT I/II/III ILS approach operations is the published glideslope intercept altitude, not the OM. Therefore, an OM or suitable substitute is not required for CAT I/II/III ILS approach operations. Middle Marker (MM) beacons are not required for CAT I/II/III ILS. An IM is only required for CAT II operations below RVR 1600 that do not have a published RA minimum (refer to Appendix A). CAT II operations with a published RA minimum do not require an IM.

c. Compass Locator and Distance Measuring Equipment (DME). These aids increase operational flexibility and may support transition to the Final Approach Segment (FAS) or to define the Missed Approach Segment (MAS), based on the SIAP design. Also, they may substitute for the OM.

d. Localizer Far Field Monitor (FFM). This equipment provides additional monitoring of the localizer signal in the runway approach area. Although lengthy time delays (15 to 120 seconds typical) prevent nuisance alarms, the FFM is a useful indicator of critical area incursions and localizer antenna array problems not detected by the localizer integral monitors.

Installation of FFM equipment is required to support most CAT II and III operations. Because of the high degree of reliance placed on the localizer for CAT III automatic landings, the FFM must be remotely monitored during CAT II/III operations.

Note: SA CAT II operations authorized by Order 8400.13 do not require an FFM.

e. RVR System.

(1) Other than CAT II/III. In all operations with RVR minimums other than CAT II/III (including non-precision, approach procedures with vertical guidance (APV), and CAT I precision operations), the touchdown RVR is controlling when installed and operational. If the touchdown RVR is inoperative, an operator may be authorized (via OpSpec, MSpec, or a LOA) to substitute an operative midpoint RVR for visibility minima greater than or equal to RVR 1800. If substitution is not authorized, reported visibility is controlling for these operations.

(2) CAT II. Touchdown RVR is required and controlling for all CAT II operations. Where installed, midpoint and rollout RVR provide advisory visibility information to pilots. For CAT II operations less than RVR 1600, touchdown and a second RVR (either midpoint or rollout) must be installed. Touchdown, midpoint, and rollout RVR is an FAA system installation requirement for CAT II operations below RVR 1600 at runways in excess of 8,000 feet.

(3) CAT III. All CAT III operations require a touchdown, midpoint, and rollout sensor of an RVR reporting system. AFS-400 may approve CAT III operations on a runway with only two RVR sensors (a touchdown and either a midpoint or rollout RVR sensor) on a case-by-case basis.

Note: Under specific circumstances, many operators are authorized for continued operations during a temporary outage of one RVR sensor if the remaining two RVR sensors are operational.

(4) RVR Sharing. RVR may be authorized on adjacent runways in accordance with the current Terminal Instrument Procedures (TERPS) standards and the current edition of Order 6560.10, Runway Visual Range (RVR).

f. ALS. If installed, this equipment supports reduced visibility minima for CAT I operations. An Approach Lighting System With Sequenced Flashing Lights (ALSF)-2, is normally required for CAT II and III operations. SA CAT II operations authorized by Order 8400.13 require an ALSF-1/ALSF-2, simplified short approach lighting system with runway alignment indicator lights (SSALR), or medium intensity approach lighting system with runway alignment indicator lights (MALSR) (with a threshold bar that is separate from the runway end lights). CAT II and III operations (including SA CAT II) may continue if the installed ALSF-2 is operating as an SSALR or short approach light system (SALS), or if the MALSR is operating as a medium intensity approach lighting system (MALS), as described in Appendix A.

g. Touchdown Zone (TDZ) and RCL Lights. These lights are normally required for CAT II and III operations. SA CAT II operations authorized by Order 8400.13 do not require TDZ or RCL lights when using specific onboard equipment. The operator's authorization

specifies this equipment requirement and may allow continued CAT II operations if installed TDZ and/or RCL lights fail. CAT I operations below RVR 2400 require TDZ and RCL lights, except where onboard equipment substitution is permitted in lieu of TDZ and/or RCL lights. The IFP, the operator's authorization, or both will note this onboard equipment requirement.

h. Runway Edge Lights. Edge lights are required for the approval of straight-in minima at night. A high intensity capability is required for lower-than-standard takeoff minima, CAT I RVR minima, and all CAT II and III operations. A high intensity incandescent capability (or equivalent) is required to support most operations utilizing infrared-based enhanced flight vision systems (EFVS).

i. Taxiway Lights. For Flight Standards Service (AFS) approval of operations below RVR 500, at least one continuation of taxiway centerline lighting, extending from the runway to the ramp/apron area, is required. During operations below RVR 500, all taxiways that are illuminated must be equipped with controllable red stop bar lights at the appropriate runway holding position when the illuminated taxiway leads onto or across any runway being used. At each airport, a Surface Movement Guidance and Control System (SMGCS) plan lists approved taxiway lighting configurations and uses during light outages, and the airport or operator may have contingency plans in place in the event of taxiway lighting failure (e.g., follow-me vehicles).

10. Remote Monitoring Requirements.

a. General. The current edition of Order 8260.19, Flight Procedures and Airspace, defines four categories of Navigational Aid (NAVAID) monitoring and the utilization of those monitoring categories. (These categories should not be confused with categories of flight operations.) The monitoring categories describe combinations of executive (capable of shutdown) and remote status monitoring. For an IFP to use a facility without limitation, both executive and remote status monitors must be operational (monitoring Category 1). Consult Order 8260.19 for additional details.

b. CAT II and III Operations.

(1) All ILS or ancillary electronic components that support CAT II and III operations must be monitored by personnel who are capable of determining whether the combined components' capability can support continued operation following the loss or abnormal status of a required component. The monitoring personnel must be cognizant of the contents of this order and equipped to carry out the necessary action requirements promptly.

(2) The remote control/status indicator panel for a CAT II/III ILS is equipped with category status lights in addition to the standard equipment on/off/abnormal lights. The category status lights are intended to conveniently provide the operational status of the ILS to the local control personnel; that is, the lights enunciate the highest category of operation that the ILS is capable of supporting and will downgrade the category following the loss or change to abnormal status of a required system component. Although in some cases this downgrading is more stringent than that required in Appendix A, the category status lights must be considered valid and appropriate NOTAM action must be initiated, unless the following conditions can be met:

(a) An airway transportation systems specialist is continuously monitoring the ILS equipment monitor panel. The panel must be displaying the status of all subsystems that normally provide electronic inputs to the category status light circuitry.

(b) The specialist has the capability to immediately communicate with air traffic or any other personnel assigned the responsibility of notifying the pilot of an inoperative component or change in operational status per the checklist in Appendix A.

(c) There is a written agreement between the local technical operations and air traffic personnel that the category status lights can be disregarded, that the specialist will monitor the required parameters and inform air traffic personnel of any change in equipment status, and that air traffic personnel will implement the checklist in Appendix A.

Note: A CAT II annunciation on the remote control/status indicator panel is not required at SA CAT II runways that do not have an FFM installed. This annunciation is due to the lack of the FFM and may be disregarded.

c. Visual Aid Lights.

(1) Runway edge, centerline, TDZ, and approach lights that support CAT II or III operations must be remotely monitored. Remote monitoring systems must be capable of detecting when more than 10 percent of the lights are inoperative. The lighting system/configuration must be considered inoperative when more than 10 percent of the lights are not functioning. For some systems, the system may be considered inoperative if two or more consecutive lights are inoperative. If the remote monitoring system is inoperative, an acceptable interim procedure is to station a cognizant person in a position to visually verify operation of runway edge, centerline, and TDZ lights during low-visibility operations who will immediately notify the controlling ATC element if they become inoperative. Additionally, Order 8400.13 allows the use of similar visual monitoring procedures in lieu of remote monitoring for runway edge lights, and allows the use of ALSs without any monitoring.

(2) Taxiway lights and individual airport/runway lights do not have to be remotely monitored. However, they must be inspected at an interval that assures that it would be very unlikely that no more than 10 percent of the lights and 2 adjacent lights would be inoperative, taking into consideration lamp life, environmental conditions, quality of power, etc.

11. Restoration Requirements. In some circumstances, maintenance action may be required to restore some or all categories of landing operations. Technical Operations will restore service in accordance with the current edition of Order JO 6030.31, National Airspace System Failure Response.

a. Reconciling Temporary Conditions. Order 8260.19 requires temporary conditions, such as lighting or NAVAID restrictions, to be reconciled as soon as possible so the temporary NOTAM can be canceled within a 224-day timeframe. If the condition cannot be corrected within 224 days, appropriate procedure amendments and/or airway revisions must be processed in accordance with Order 8260.19.

b. CoS Outages. The benefits of maintaining low-visibility operational capabilities must be weighed against the risk of a greater downgrade for a longer period of time as a result of an additional CoS outage. Restorations following CoS outages should be considered carefully to avoid unnecessary operational impacts or impose additional reductions in the level of service. For example, after the fifth CoS outage in the preceding 6 months, the ILS must be downgraded from Level 3 to Level 2 service. The technician should consult with their first level manager, who may consult with the ILS CoS Office of Primary Responsibility (OPR), to weigh the advantages and disadvantages of a return to Level 2 service.

c. Service Restoration. The advantage of a return to Level 2 service is continued CAT II operations, which may be necessary based on weather conditions and current operational needs. In this situation, Level 3 service can be restored after a 4-week period that is free of outages. However, a potential disadvantage is that the ILS will be further downgraded to Level 1 service if a CoS outage occurs within the next 4 weeks, which would require a 4-week period free of outages to restore Level 2 service, and an additional 2-week period to restore Level 3 service.

12. ILS Critical Areas. The current edition of Order 6750.16, Siting Criteria for Instrument Landing Systems, describes localizer and glideslope critical areas that must be marked and protected from parking and the unlimited movement of surface and air traffic to ensure the continuous integrity of the signal received by the user aircraft.

a. Longitudinal Axis. The entire length of the longitudinal axis of the aircraft must be clear of the critical area when conditions are such that the area must be protected. An aircraft with its longitudinal axis aligned with (parallel to) and outside of the edge of a critical area is not considered to be violating the critical area.

b. Ground Traffic in Critical Areas. The airport authority that controls ground traffic movements must assure that appropriate controls and devices are correctly located and that it has implemented specific holding instructions (when necessary) to protect the critical areas from ground traffic that is approaching or departing an active runway if the critical area dimension exceeds the distance of the normal runway holding position marking from the RCL. Where installed, taxiway centerline lead-off lights will be color-coded in accordance with the current edition of Advisory Circular (AC) 120-57, Surface Movement Guidance and Control System, or AC 150/5300-13, Airport Design. For taxiways not equipped with centerline lights, a “Critical Area Boundary” sign may be installed on the reverse side of the ILS sign to indicate the critical area boundary.

c. Nonstandard Critical Areas. Where the standard critical area has a significant adverse impact on airport operations, such as specific taxi routes, it may be possible through operational constraints to provide relief on a case-by-case basis (e.g., considering the varying size of aircraft). Mathematical modeling techniques are available to facilitate this consideration.

13. Directive Feedback. Direct questions or comments regarding this order or minimum reduction for operations conducted with properly equipped aircraft to the Flight Operations Branch (AFS-410) at 202-385-4625. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this order on FAA Form 1320-19, Directive Feedback Information, and forward your comments to AFS-410 for consideration. If an

interpretation is needed immediately, call AFS-410 for guidance and use FAA Form 1320-19 as a followup to verbal conversation.

APPENDIX A. ABNORMAL CHECKLIST

Component	Situation	CAT	Effect on Operation	Maintenance Required?	Notify Aircraft	Facility NOTAM	NOTAM (D)
Localizer (LOC) or Glideslope (G/S) transmitter	One transmitter is inoperative	I	No effect.	No	No	No	No
		II	No effect—expedite corrective maintenance.	Yes	No	No	No
		III	Denies operations.	Yes	Yes	No	“CAT 3 NA”
LOC or G/S remote status monitor	Remote status monitor is inoperative	I	Refer to Order 8260.19, paragraph 2-13, Monitoring of Navigation Facilities.	Yes	No	No	Based on Order 8260.19
		II & III	Denies operations unless an alternate method to continuously monitor the affected system(s) is implemented and aircraft can be informed immediately if a failure occurs.	Yes	Yes	Yes	“CAT 2/3 NA”
Far Field Monitor (FFM) Sensor(s) or Indicator	At least one sensor (receiver subsystem) operating and not in alarm	All	No effect.	No	No	No	No
Far Field Monitor (FFM) Sensor(s) or Indicator (continued)	All sensors (receiver subsystems) inoperative	I	No effect.	No	No	No	No

Component	Situation	CAT	Effect on Operation	Maintenance Required?	Notify Aircraft	Facility NOTAM	NOTAM (D)
		II	Denies operations, unless the maintenance specialist has verified, within the last hour, that LOC signal integrity is within required limits.	Yes	Yes	No	Issue “CAT 2/3 NA” Notices to Airmen (NOTAM), unless specialist has verified LOC signal integrity
		III	Denies operations.	Yes	Yes	No	“CAT 3 NA”
LOC or G/S Executive (Integrity) Monitors (excludes FFM function)	One monitor in a dual-channel system fails	All	No effect.	No	No	No	No
Air Traffic Control Tower (ATCT)	Unscheduled ATCT closure or otherwise not controlling ground and airborne traffic	I	No effect for minima at or above Runway Visual Range (RVR) 1800, denies Special Authorization (SA) Category (CAT) I operations below RVR 1800.	No	Yes	Yes	“SA CAT 1 minima NA”
		II & III	Denies operations.	No	Yes	Yes	“CAT 2/3 NA”

Component	Situation	CAT	Effect on Operation	Maintenance Required?	Notify Aircraft	Facility NOTAM	NOTAM (D)
Outer Marker (OM) Beacon	Inoperative	All	No effect on CAT I, II, and III ILS operations. Non-precision operations that use an OM as a final approach fix (FAF) cannot be conducted if the FAF cannot be identified by alternate means, Navigational Aid (NAVAID), radar, or published waypoint.	Yes (if operation is affected)	Yes	Yes	All non-precision procedure(s) or minima where the FAF cannot be identified by alternate means "NA" (refer to paragraph 8)
Middle Marker (MM) Beacon	Inoperative	All	No effect.	No	Yes	Yes	No
Inner Marker (IM) Beacon	Inoperative	I	No effect.	No	No	Yes	No
		II	No effect if the aircraft is equipped to utilize radio altimeter (RA) minimum as published on the Standard Instrument Approach Procedure (SIAP).	Yes (only if the SIAP does not have an RA minimum)	Yes	Yes	"CAT 2 RVR 1600" only if the SIAP does not have an RA minimum refer to paragraph 8
		III	No effect.	No	Yes	Yes	No
RVR	One or more RVR sensor is inoperative	I	Inoperative touchdown zone (TDZ) RVR increases CAT I minima to one-half mile, except for operators who are approved to substitute an operative midpoint RVR.	No	Yes	Yes	No
		II	TDZ RVR is required for all CAT II operations. TDZ and either a mid or rollout RVR are required for minima below RVR 1600.	Yes	Yes	Yes	"CAT 2 NA" if the TDZ RVR is inoperative "CAT 2 RVR 1600" if there is an operational TDZ RVR but not a second RVR sensor

Component	Situation	CAT	Effect on Operation	Maintenance Required?	Notify Aircraft	Facility NOTAM	NOTAM (D)
		III	CAT III operations may continue with one RVR sensor inoperative. Two or more RVR sensors inoperative deny operations.	Yes	Yes	Yes	"CAT 3 NA" if two or more RVR are inoperative. Facility NOTAM only if TDZ, mid or rollout RVR is inoperative
Approach Lighting System (ALS)	Inoperative (Entire System)	I	Increases visibility to three-fourths mile or RVR 4000. SA CAT I procedures not authorized.	No	Yes	Yes	"SA CAT 1 NA"
		II & III	Denies operations.	Yes	Yes	Yes	"CAT 2/3 NA"
	ALSF being operated as simplified (SSALR) (or ALSF sequenced flashing lights inoperative)	I	No effect.	No	Yes	No	No
		II & III	No effect.	Yes	Yes	Yes	No
	ALSF or SSALR being operated as a short approach lighting system (SALS), medium intensity approach lighting system with runway alignment indicator lights (MALSR) being operated as a medium intensity approach lighting system (MALS)	I	Increases visibility to three-fourths mile or RVR 4000.	No	Yes	Yes	No

Component	Situation	CAT	Effect on Operation	Maintenance Required?	Notify Aircraft	Facility NOTAM	NOTAM (D)
ALS Setting Control	Inoperative, and setting 3 or higher cannot be selected	I	Increases visibility to three-fourths mile or RVR 4000.	No	Yes	No	No
		II & III	Denies operations.	Yes	Yes	No	“CAT 2/3 NA”
Power Source for ALS	Main or standby (commercial) power source inoperative	I & SA CAT II	No effect.	No	No	No	No
		II & III	Denies operations unless lights can be visually or are remotely monitored continuously, and aircraft can be informed immediately if a failure occurs.	Yes	No	No	“CAT 2/3 NA” unless interim procedure implemented
Remote Monitor for ALS	Remote monitor inoperative	I & SA CAT II	No effect.	No	No	No	No
		II & III	Denies operations unless lights can be visually monitored continuously and aircraft can be informed immediately if a failure occurs.	Yes	No	No	“CAT 2/3 NA” unless interim procedure implemented
Runway Edge Lights	Two consecutive lights, or more than 10% of the runway edge lights are not functioning	I	Day: Minima below RVR 2400 not authorized. Night: Denies operations.	Yes	Yes	Yes	“CAT 1 RVR 2400 AND NA AT NIGHT”
		II & III	Denies operations.	Yes	Yes	Yes	“CAT 2/3 NA”

Component	Situation	CAT	Effect on Operation	Maintenance Required?	Notify Aircraft	Facility NOTAM	NOTAM (D)
Standby Power Source for Runway Edge Lights	Inoperative	I	No effect.	No	No	No	No
		II & III	Denies operations unless lights can be visually or are remotely monitored continuously, and aircraft can be informed immediately if a failure occurs.	Yes	Yes	No	“CAT 2/3 NA” unless interim procedure implemented
Remote Monitor for Runway Edge Lights	Inoperative	I	No effect.	No	No	No	No
		II & III	Denies operations unless lights can be visually monitored continuously and aircraft can be informed immediately if a failure occurs.	Yes	Yes	No	“CAT 2/3 NA” unless interim procedure implemented
Runway TDZ Lights	Two adjacent crossbars, or more than 10% of either side of the runway TDZ lights are not functioning	I	Increases RVR to 2400, unless the operator uses a flight director or autopilot or head-up display (HUD) to Decision Altitude (DA).	No	Yes	Yes	No
		II	Reduced Lighting CAT II operations authorized. Operators require specific OpSpec, MSPEC, or LOA approval and use of autoland or HUD to touchdown.	Yes	Yes	Yes	“REDUCED LIGHTING CAT II OPERATIONS: REQUIRES SPECIFIC OPSPEC, MSPEC, OR LOA APPROVAL AND USE OF AUTOLAND OR HUD TO TOUCHDOWN”
		III	Denies operations.	Yes	Yes	Yes	“CAT 3 NA”

Component	Situation	CAT	Effect on Operation	Maintenance Required?	Notify Aircraft	Facility NOTAM	NOTAM (D)
Runway Centerline (RCL) Lights	Four consecutive lights, or more than 10% of the RCL lights are not functioning	I	Increases RVR to 2400, unless the operator uses a flight director or autopilot or HUD to DA.	No	Yes	Yes	No
		II	Reduced Lighting CAT II operations authorized. Operators require specific OpSpec, MSpec, or LOA approval and use of autoland or HUD to touchdown.	Yes	Yes	Yes	“REDUCED LIGHTING CAT II OPERATIONS: REQUIRES SPECIFIC OPSPEC, MSPEC, OR LOA APPROVAL AND USE OF AUTOLAND OR HUD TO TOUCHDOWN”
		III	Denies operations.	Yes	Yes	Yes	“CAT 3 NA”
Standby Power Source for Runway TDZ Lights or RCL Lights	Inoperative	I	No effect.	No	No	No	No
		II	Reduced Lighting CAT II operations authorized. Operators require specific OpSpec, MSpec, or LOA approval and use of autoland or HUD to touchdown.	Yes	No	Yes	“REDUCED LIGHTING CAT II OPERATIONS: REQUIRES SPECIFIC OPSPEC, MSPEC, OR LOA APPROVAL AND USE OF AUTOLAND OR HUD TO TOUCHDOWN”
		III	Denies operations.	Yes	Yes	Yes	“CAT III NA”

Component	Situation	CAT	Effect on Operation	Maintenance Required?	Notify Aircraft	Facility NOTAM	NOTAM (D)
Remote monitor for Runway TDZ Lights or RCL Lights	Inoperative	I	No effect.	No	No	No	No
		II	Reduced Lighting CAT II operations authorized. Operators require specific OpSpec, MSpec, or LOA approval and use of autoland or HUD to touchdown.	Yes	No	Yes	“REDUCED LIGHTING CAT II OPERATIONS: REQUIRES SPECIFIC OPSPEC, MSPEC, OR LOA APPROVAL AND USE OF AUTOLAND OR HUD TO TOUCHDOWN”
		III	Denies operations.	Yes	Yes	Yes	“CAT 3 NA”
Taxiway Centerline Lights	Visibility is less than RVR 600, and more than 10% of the lights on the active taxiway(s) are not functioning	I & II	No effect.	No	No	Yes	No
		III	Denies operations below RVR 600 unless alternate procedures have been approved by Air Traffic and Flight Standards Service (AFS).	Yes (for restoration of CAT III RVR 300)	Yes	Yes	No

Note: Where the action requirement is to inform the aircraft of the inoperative component situation, do so in accordance with the current edition of Order 7110.65, Air Traffic Control, paragraphs 4-7-12, Airport Conditions, and 3-3-3, Timely Information. Pilots will adjust minima/discontinue operations predicated on the inoperative component notification in accordance with the inoperative components table, the approved OpSpecs, MSpecs, and/or FAA LOA.

Note: Where the action requirement is to initiate a NOTAM to disallow the operation, do so in accordance with the current edition of Order 7930.2, Notices to Airmen, in the sections on Navigational Aid (NAVAIDS), Communications Outlets, and Services.

Note: “CAT” indicates the operation being conducted or approved.

APPENDIX B. INSTRUMENT LANDING SYSTEM (ILS) CLASSIFICATION SYSTEM

1. Purpose of the ILS Classification System. The ILS classification system specified in this appendix provides a more comprehensive method of describing ILS performance than the Facility Performance Category (CAT) method alone.

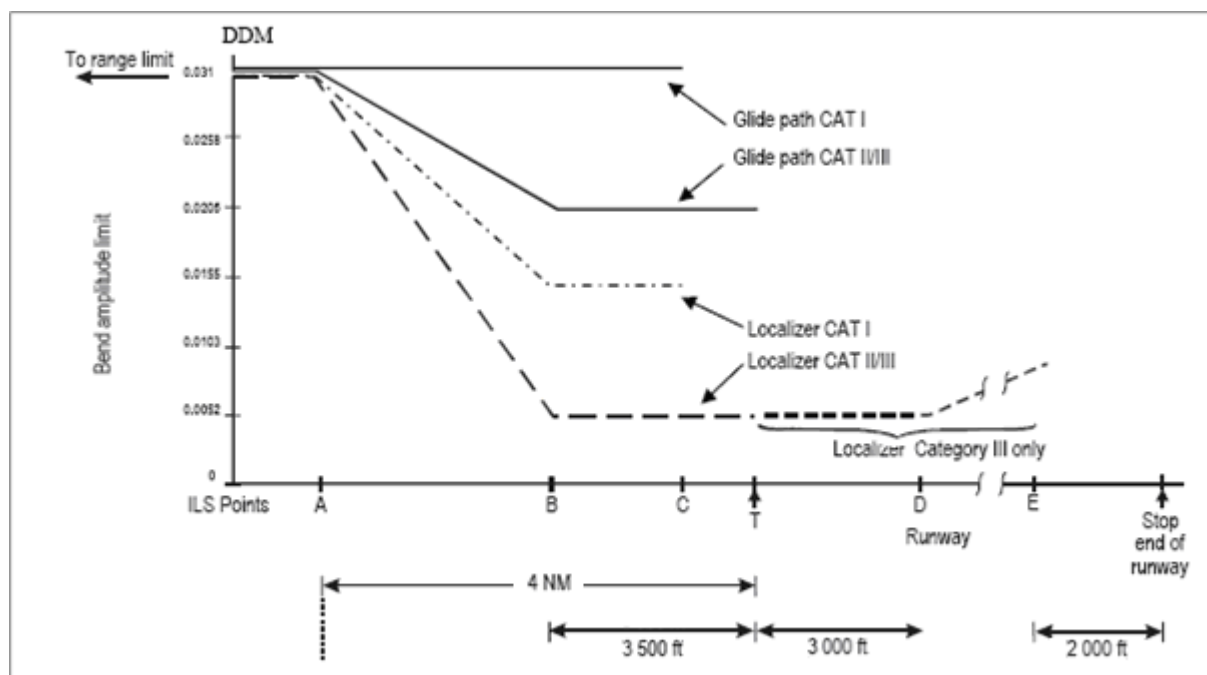
2. Class Definitions. A facility's "Class" of performance is defined by using three characters as follows:

a. I, II, or III. The first character indicates conformance to the Facility Performance CAT standards contained in International Civil Aviation Organization (ICAO) Annex 10, unless superseded by an FAA directive.

b. A, B, C, T, D, or E. The second character defines the ILS point to which the localizer 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 nautical miles (NM) before the threshold,
- B: 3,500 feet before the threshold (CAT I decision point),
- C: Glidepath altitude of 100 feet height above touchdown (HAT) (CAT II decision point),
- T: Threshold,
- D: 3,000 feet beyond the threshold (CAT III requirement only), and
- E: 2,000 feet before the runway end (CAT III requirement only).

Figure 1. Instrument Landing System Reference Points and Bend Limits



c. **1, 2, 3, or 4.** The third character indicates the minimum level of integrity and Continuity of Service (CoS) given in Table 1. Refer to the current edition of Order JO 6750.57, Instrument Landing System Continuity of Service Requirements and Procedures.

(1) Level 1-rated ILS equipment supports low-visibility operations for which positioning guidance below approximately 200 feet height above threshold (HATh) is supplemented by other means, such as visual cues or advanced avionics.

(2) Level 2-rated ILS equipment supports reduced visibility operations for which positioning guidance below 100 feet HATh is supplemented by other means, such as visual cues.

(3) Level 3-rated ILS equipment supports operations that place a high degree of reliance on ILS guidance for positioning through touchdown.

(4) Level 4-rated ILS equipment supports operations that place a high degree of reliance on ILS guidance throughout touchdown and rollout, or for low-visibility takeoff operations that require a localizer for lateral guidance throughout the takeoff roll.

3. Class Explanations and Examples. As an example, an ILS that conforms to the ICAO Annex 10 Facility Performance CAT III standards, meets the CAT III localizer course structure criteria to ILS point “D,” and conforms to the integrity and CoS objectives of Level 3 would be described as “Class III/D/3.” An ILS that conforms to ICAO Annex 10 Facility Performance CAT I standards, has a localizer CAT III course structure to point “E,” and conforms the integrity and CoS objectives of Level 2 would be described as “Class I/E/2.” However, when Facility Performance standards are monitored to CAT II standards, this same facility having a localizer CAT III course structure to point “E” and conforming to the integrity and CoS objectives to Level 2, would be described as “Class II/E/2.”

Table 1. Minimum Localizer and Glideslope Integrity and Continuity Levels

Level	Integrity	Continuity	MTBO (Hours)
1	Not demonstrated, or less than required for Level 2		
2	1 - 1×10^{-7} in any one landing	1 - 4×10^{-6} in any period of 15 seconds	1000
3	1 - 0.5×10^{-9} in any one landing	1 - 2×10^{-6} in any period of 15 seconds	2000
4	1 - 0.5×10^{-9} in any one landing	1 - 2×10^{-6} in any period of: 30 seconds (LOC) 15 seconds glideslope (G/S)	4000 (LOC) 2000 (G/S)

Note: Some earlier design ILS equipment types have been determined to require minimum demonstrated Mean Time Between Outages (MTBO) performance and/or manual integrity tests to conform to the integrity and continuity level requirements of Table 1. Order JO 6750.57 describes how ILS equipment must

meet the MTBO criteria in Table 1 and includes the method for calculating MTBO.

Note: Attachment C to Part 1 of ICAO Annex 10, Volume I contains additional information on integrity and CoS.



U.S. Department
of Transportation
**Federal Aviation
Administration**

FAA Form 1320-19, Directive Feedback Information

Please submit any written comments or recommendations for improving this directive, or suggest new items or subjects to be added to it. Also, if you find an error, please tell us about it.

Subject: Order 6750-24E, Instrument Landing System and Ancillary Electronic Component Configuration and Performance Requirements.

To: Directive Management Officer, _____

(Please check all appropriate line items)

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:
(attach separate sheet if necessary)

☐ In a future change to this directive, please include coverage on the following subject
(briefly describe what you want added):

☐ Other comments:

☐ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____

FTS Telephone Number: _____ Routing Symbol: _____