Federal Aviation Administration, DOT

Subpart J—Microwave Landing System (MLS)

SOURCE: Docket No. 20669, 51 FR 33,177, Sept. 18, 1986, unless otherwise noted.

§ 171.301 Scope.
This subpart sets forth minimum requirements for the approval, installation, operation and maintenance of non-Federal Microwave Landing System (MLS) facilities that provide the basis for instrument flight rules (IFR) and air traffic control procedures.

§ 171.303 Definitions.

As used in this subpart:

Auxiliary data means data transmitted in addition to basic data that provide ground equipment siting information for use in refining airborne position calculations and other supplementary information.

Basic data means data transmitted by the ground equipment that are associated directly with the operation of the landing guidance system.

Beam center means the midpoint between the −3 dB points on the leading and trailing edges of the scanning beam main lobe.

Beamwidth means the width of the scanning beam main lobe measured at the −3 dB points and defined in angular units on the boresight, in the horizontal plane for the azimuth function and in the vertical plane for the elevation function.

Clearance guidance sector means the volume of airspace, inside the coverage sector, within which the azimuth guidance information provided is not proportional to the angular displacement of the aircraft, but is a constant fly-left or fly-right indication of the direction relative to the approach course the aircraft should proceed in order to enter the proportional guidance sector.

Control Motion Noise (CMN) means those fluctuations in the guidance which affect aircraft attitude, control surface motion, column motion, and wheel motion. Control motion noise is evaluated by filtering the flight error record with a band-pass filter which has corner frequencies at 0.3 radian/sec and 10 radians/sec for azimuth data and 0.5 radian/sec and 10 radians/sec for elevation data.

Data rate means the average number of times per second that transmissions occur for a given function.

Differential Phase Shift Keying (DPSK) means differential phase modulation of the radio frequency carrier with relative phase states of 0 degree or 180 degrees.

Failure means the inability of an item to perform within previously specified limits.

Guard time means an unused period of time provided in the transmitted signal format to allow for equipment tolerances.

Integrity means that quality which relates to the trust which can be placed in the correctness of the information supplied by the facility.

Mean corrective time means the average time required to correct an equipment failure over a given period, after a service technician reaches the facility.

Mean course error means the mean value of the azimuth error along a specified radial of the azimuth function.

Mean glide path error means the mean value of the elevation error along a specified glidepath of the elevation function.

Mean-time-between-failures (MTBF) means the average time between equipment failures over a given period.

Microwave Landing System (MLS) means the MLS selected by ICAO for international standardization.

Minimum glidepath means the lowest angle of descent along the zero degree azimuth that is consistent with published approach procedures and obstacle clearance criteria.

MLS Approach Reference Datum is a point at a specified height located vertically above the intersection of the runway centerline and the threshold.

MLS back azimuth reference datum means a point 15 meters (50 feet) above the runway centerline at the runway midpoint.

MLS datum point means a point defined by the intersection of the runway centerline with a vertical plane perpendicular to the centerline and passing through the elevation antenna phase center.

Out of coverage indication (OCI) means a signal radiated into areas outside the
intended coverage sector, where re-
quired, to specifically prevent invalid
removal of an airborne warning indica-
tion in the presence of misleading guid-
ance information.

Path Following Error (PFE) means the
guidance perturbations which could
cause aircraft displacement from the
desired course or glidepath. It is com-
posed of the path following noise and of
the mean course error in the case of azi-
muth functions, or the mean glide-
path error in the case of elevation
functions. Path following errors are
evaluated by filtering the flight error
record with a second order low pass fil-
ter which has a corner frequency at 0.5
radian/sec for azimuth data or 1.5 radi-
ans/sec for elevation data.

Path following noise (PFN) means that
portion of the guidance signal error
which could cause displacement from
the actual mean course line or mean
glidepath as appropriate.

Split-site ground station means the
type of ground station in which the azi-
muth portion of the ground station is
located near the stop end of the run-
way, and the elevation portion is lo-
cated near the approach end.

Time division multiplex (TDM) means
that each function is transmitted on
the same frequency in time sequence,
with a distinct preamble preceding each
function transmission.

§ 171.305 Requests for IFR procedure.

(a) Each person who requests an IFR
procedure based on an MLS facility
which that person owns must submit the
following information with that re-
quest:

(1) A description of the facility and
evidence that the equipment meets the
performance requirements of §§171.309,
171.311, 171.313, 171.315, 171.317, 171.319,
and 171.321 and is fabricated and in-
stalled in accordance with §171.323.

(2) A proposed procedure for oper-
ating the facility.

(3) A proposed maintenance organiza-
tion and a maintenance manual that
meets the requirements of §171.325.

(4) A statement of intent to meet the
requirements of this subpart.

(5) A showing that the facility has an
acceptable level of operational reli-
ability and an acceptable standard of
performance. Previous equivalent oper-
ational experience with a facility with
identical design and operational char-
acteristics will be considered in show-
ing compliance with this subparagraph.

(b) FAA inspects and evaluates the
MLS facility; it advises the owner of
the results, and of any required
changes in the MLS facility or in the
maintenance manual or maintenance
organization. The owner must then
correct the deficiencies, if any, and op-
erate the MLS facility for an in-service
evaluation by the FAA.

§ 171.307 Minimum requirements for
approval.

(a) The following are the minimum
requirements that must be met before the
FAA approves an IFR procedure for
a non-Federal MLS facility:

(1) The performance of the MLS facil-
ity, as determined by flight and ground
inspection conducted by the FAA, must
meet the requirements of §§171.309,
171.311, 171.313, 171.315, 171.317, 171.319,
and 171.321.

(2) The fabrication and installation of
the equipment must meet the require-
ments of §171.323.

(3) The owner must agree to operate
and maintain the MLS facility in ac-
CORDANCE with §171.325.

(4) The owner must agree to furnish
operational records as set forth in
§171.327 and agree to allow the FAA to
inspect the facility and its operation
whenever necessary.

(5) The owner must assure the FAA
that he will not withdraw the MLS fa-
cility from service without the permis-
sion of the FAA.

(6) The owner must bear all costs of
meeting the requirements of this sec-
tion and of any flight or ground inspec-
tion made before the MLS facility is
commissioned.

(b) [Reserved]

§ 171.309 General requirements.

The MLS is a precision approach and
landing guidance system which pro-
vides position information and various
ground-to-air data. The position infor-
mation is provided in a wide coverage
sector and is determined by an azimuth
angle measurement, an elevation angle
measurement and a range (distance)
measurement.