

**Change ID: 5.1-28**

## **ILS Categories**

### **Summary**

It is proposed to update the ILS classification in order to also include the course quality and safety/integrity level as required by Annex 10. In addition, it is proposed to review the list of values for the landingCategory attributes of FinalLeg and TaxiHoldingPosition.

### **Background**

The [Navaid](#) class has a "landingCategory" attribute, which models the "landing precision of a navaid when used as a landing system". It applies to ILS and MLS nav aids and the list of values ( [CodeLandingAidCategoryType](#) ) includes I, II, III, IIIA, etc. The same data type is used for [FinalLeg](#) and [TaxiHoldingPosition](#) .

The "precisionApproachGuidance" attribute of the [RunwayDirection](#) uses the [CodeApproachGuidanceType](#) list of values for indicating the degree to which navigation aids provide accurate approach guidance. The list of values CodeLandingAidCategoryType and CodeApproachGuidanceType are almost identical.

### **Rationale for the change**

#### **ILS quality of course and signal integrity**

According to ICAO Annex 10, Volume 1, ILS installations are characterised by a "facility performance" classification code which has 3 alphanumerical characters:

1. Signal Performance Level in Space - with the values I, II or III.
2. Quality of Course Structure - with the values A, B, C, T, D or E. It indicates the ILS point up to where the course structure meets the ICAO 10 requirement. For example, point "D" is 900 M after threshold, while the letter "T" indicates the threshold.
3. Integrity Level - with the values 1, 2, 3, or 4. It indicates both the continuity of service level and the integrity level of the ILS.

For example, ILS CLASS III/E/4 means: ILS facility performance category III, usable up to point "E" with "safety level 4".

An example of NOTAM text announcing a downgrading of the ILS category is below: " *THE PUBLISHED ILS CAT FOR EHAM RWY 06 AND RWY 27 IS ILS CAT III (CLASS III/E/4) AND IS BY NOTAM DOWNGRADED TO (CLASS III/D/4), THIS ACCORDING ICAO ANNEX 10 CHAPTER 3.*"

To support this ILS categorisation, it is proposed to remove the landingCategory attribute and to introduce three new attributes in the Navaid class: signalPerformance, courseQuality and integrityLevel. The signalPerformance applies to both ILS and MLS nav aids.

#### **ILS categories for FinalLeg**

For the landingSystemCategory attribute [FinalLeg](#) class, it is more appropriate to use the list of values of the [CodeApproachGuidanceType](#) . It covers all values necessary for indicating the landing system category for the use of the associated minima.

## ***ILS categories for TaxiHoldingPosition***

The list of values of the landingCategory attribute of the [TaxiHoldingPosition](#) allows values such as III, IIIA, IIIB, etc. But from the point of view of a taxi holding stopbar, the only difference that matters is between cat I and cat II/III. Therefore, a specific list of values should be used in this case. This will increase the compatibility between AIXM and the Airport Mapping Database standards (AMDB).

## ***Change proposal details***

Remove the existing data type CodeLandingAidCategoryType

In the Navaid class:

- remove the attribute landingCategory
- insert a new attribute "signalPerformance" = " *The signal performance level indicating the precision of an ILS or MLS system*", with data type CodeSignalPerformancellSMLSType;
- insert a new attribute "courseQuality" = " *An indication of the signal quality of the ILS course structure based on the location the precision signal is usable to*", with data type CodeCourseQualityILSType;
- insert a new attribute "integrityLevel" = " *That quality which relates to the trust which can be placed in the correctness of the information supplied by the ILS facility*", with data type CodeIntegrityLevelllSType

Insert a new "enumeration" data type CodeSignalPerformancellSType:

- definition = " *A coded value indicating the signal performance level in space corresponding to the precision of an ILS or MLS system according to ICAO Annex 10, Volume I, Chapter 3*",
- enumerated list of values:
  - I - Facility Performance category I
  - II - Facility Performance category II
  - III - Facility Performance category III
  - OTHER - Other

Insert a new "enumeration" data type CodeCourseQualityILSType = " *A coded value indicating the signal quality of the ILS course structure based on the location the precision signal is usable to, according to ICAO Annex 10, Volume I, Chapter 3*",

- enumerated list of values:
  - A = " *Usable up to a point on the ILS glide path measured along the extended runway centre line in the approach direction to a distance of 7.5km (4NM) from the threshold*"
  - B = " *Usable up to a point on the ILS glide path measured along the extended runway centre line in the approach direction to a distance of 1050m (3500ft) from the threshold*"
  - C = " *Usable up to a point through which the downward extended straight portion of the nominal ILS glide path passes at a height of 30m (100ft) above the horizontal plane containing the threshold*"
  - T = " *Usable up to a point 4m (12ft) above the runway centre line and 900m (3000ft) from the threshold in the direction of the localizer*"
  - D = " *Usable up to a point 4m (12ft) above the runway centre line and 600m (2000ft) from the stop end of the runway in the direction of the threshold*"
  - E = " *Usable up to a point at a specified height located above the intersection of the runway centre line and the threshold and through which the downward extended straight portion of the ILS glide path passes*"
  - OTHER - Other.

Insert new data type CodeIntegrityLevelllSType

- definition = " *A coded value indicating the quality which relates to the trust which can be placed in the correctness of the information supplied by the ILS facility, according to ICAO Annex 10, Volume I, Attachment C*";
- enumerated list of values:
  - 1 = Integrity Level 1
  - 2 = Integrity Level 2
  - 3 = Integrity Level 3
  - 4 = Integrity Level 4
  - OTHER - Other

In the FinalLeg class modify the attribute landingSystemCategory to use the data type CodeApproachGuidanceType.

## AIXM Workarea - ILS categories

Insert a new "enumeration" data type CodeHoldingCategoryType

- definition = "A coded list of values that indicates the type of precision approach for which that holding position is designed"
- enumerated list of value:
  - NON\_PRECISION = "Non precision approaches"
  - CAT\_I = " *Precision approaches cat I*"
  - CAT\_II\_III = " *Precision approaches cat II/III*"
  - OTHER = " *Other*"

In the TaxiHoldingPosition class, change the data type of the landingCategory attribute into CodeHoldingCategoryType.