Positional Accuracy Assessment Methodologies

Instructions for the questionnaire:

¬ Each questionnaire form is composed of 8 thematic blocks.

¬ Please, fill out as many questionnaires as the different assessment methods your organization is actually applying at the moment

¬ If your organization uses a published methodology, please fill in only the identification blocks (1st and 2nd) and refer to the document where the methodology is published in block section nº 8. In this case, attach a copy preferably in digital format. In addition, in this case you can use the standard questionnaire form for showing those peculiarities that you consider relevant.

¬ At the end of each question, there is a short remark as a guide. It can also include an example.

¬ If the answer to a question offers various possibilities mark the option, or options, you consider most appropriate.

¬ In case of doubt, please do not hesitate to contact with Celia Sevilla Sánchez

¬ In blocks 4, 5, 6 and 7 there are two columns labeled A and B, the first for Planimetry and the second for Altimetry. If the product under consideration is only planimetric please use only column A. If product is altimetric (for instance a digital terrain model), please use only column B. If it is a complete topographic product, use both columns for characterizing each one of the accuracy assessment processes.

1.- ORGANIZATION IDENTIFICATION

1.- Name:

_____

The name of the agency, institute or organization.

2.- Contact:

Name: _____

E-mail: _____

Indicate the name for the responsible and an e-mail for contact.

2.- PRODUCT IDENTIFICATION

1.- Product Title:

_____

The name of the product to which this form refers.

2.- Resolution or equivalent scale:
- □   Resolution: _____ (m)
- □   Scale: _____

Indicate the resolution (meters) or scale of the product.

3.- Product type:
- □   Topographic.
- □   Cadastral.
- □   DEM (Digital Elevation Model).
- □   Ortophoto map.
- □   Other (specify): _____

Choose the appropriate option or write your answer.

4.- Model:
- □   Analogical.
- □   Vectorial.
- □   Grid (geometry cell area).
- □   Grid (geometry cell point).
- □   TIN (DEM).
- □   Other (specify): _____

Choose the appropriate option for the model supporting the product or write your answer.

5.- Structure /organization of the product:
- □   Sheets.
- □   Continuous.
- □   Other: _____

Choose the appropriate option or write your answer.

3.- CONTROL AND ACCEPTANCE PROCESS

1.- The positional control process follows or has affinity to:

- □ NMAS (National Map Accuracy Standard). In "*National Map Accuracy Standards*". U.S. Bureau of the Budget. Washington (1947).
- □ EMAS (Engineering Map Accuracy Standard). In "*Map Uses, scales and accuracies for engineering and associated purposes*". American Society of Civil Engineers, Committee on Cartographic Surveying, Surveying and Mapping Division, New York (1983).
- □ ASLSM (Accuracy Standard Large Scale Maps). In "*Accuracy Standards for Large Scale Maps*". American Society of Photogrammetry and Remote Sensing - Photogrammetric Engineering and Remote Sensing, vol. 56, nº7, 1068-1070. (1989).
- □ NSSDA (National Standard Spatial Data Accuracy). In "*FGDC-STD-007: Geospatial Positioning Accuracy Standards, Part 3. National Standard for Spatial Data Accuracy*". Federal Geographic Data Committee, Reston (1998).
- ☑ STANAG 2215. In "*STANAG 2215: Standardization agreement: Evaluation of land maps, aeronautical charts and digital topographic data*". North Atlantic Treaty Organization. Brussels, (2002).
- □ Other: _____

_____
Choose the closest option to your control process or explain your answer.

2.- Applied error model:

- □ X,Y independent (errors on both components modeled as linear).
- □ X,Y together (errors modeled as circular).
- □ Z, altimetry alone (error on this component modeled as linear).
- □ 3D (X,Y,Z altogether, error modeled as spherical).
- □ Other: _____

_____
Choose the option, or options, being applied to the control process. For instance, for a topographic product for which X and Y components are controlled upon a circular basis and the altimetry is controlled in a separate manner, mark the 2nd and 3rd options.

3.- Categories of accuracy being considered:

- □ No.
- □ Yes: _____

_____
If a categorization is used, list such categories, for instance: i) numeric classes (class 0.01m, class 0.05m, and so on), or predefined classes (class A, class B, and so on).

4.- Positional accuracy sub elements:

- □ Absolute or external accuracy.
- □ Relative or internal accuracy.
- □ Gridded data position accuracy.

Choose the option or options controlled.

5.- The control is applied to:

- □ Sheet: The control and acceptation processes are applied to each one of the sheets of a product.
- □ Isolated lot: The control process is applied to a selection of the elements (e.g. sheets) conforming a lot. The acceptation is performed for the entire lot.
- □ Lot by lot: The control process is applied to a selection of the elements (e.g. sheets) conforming a lot. The acceptation is performed for the entire lot but results of previous lots affect present and future acceptances.
- □ Series: The control process is applied to a selection of elements (e.g. sheets) of the series. The acceptation is performed for the entire series.
- □ Other: _____

_____
Choose the appropriate option for describing your control and acceptation processes. If no answer is valid, please write your answer.

4.- CONTROL ELEMENTS

A.- PLANIMETRY

1.- Typology of the control elements:

- □ Punctual (points).
- □ Lineal.
- □ Areal.
- □ Others:_____

_____
_____
Choose the appropriate option for the base element of your controls.

2.- Conditions of control elements:

_____
_____
_____
_____
Indicate if there is any specific condition upon control elements, for instance, if they should be house or wall squares, if they should not be triangulation points, and so on.

B.- ALTIMETRY AND DEM

1.- Typology of the control elements:

- □ Punctual (points).
- □ Profiles.
- □ Surfaces.
- □ Other:_____

_____
_____
Choose the appropriate option for the base element of your controls.

2.- Conditions of control elements:

_____
_____
_____
_____
Indicate if there is any specific condition upon control elements, for instance, if they should belong to terrain planes with a minimum size in relation to mesh size, it the maximum slope is limited, and so on.

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3.- Stratification of control elements:
- □ No.
- □ Yes:_____
_____
_____

If any mandatory or recommended stratification of control elements exists, indicate such classes. For example, buildings, crossings, parcel limits, and so on.

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3.- Stratification of control elements:
- □ No.
- □ Yes:_____
_____
_____

If a mandatory or recommended stratification of control elements exists, indicate such categories. For example, a distribution taking into account slope, altitude, and so on.

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5.- SAMPLE

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A.- PLANIMETRY
1.- Minimum recommended size:
- □ Total: _____
- □ Other: _____
_____
_____

Indicate the minimum recommended size. If any mandatory or recommended stratification exists, write strata classification and proportions or size.

2.- Spatial distribution criteria for the control sample:
- □ No (homogeneously).
- □ Yes:_____
_____
_____

Indicate if any specific criteria for the spatial distribution of the control sample exist. In the affirmative case, explain them briefly.

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B.-ALTIMETRY AND DEM
1.- Minimum recommended size:
- □ Total: _____
- □ Other: _____
_____
_____

Indicate the minimum recommended size. If any mandatory or recommended stratification exists, write strata classification and proportions or size.

2.- Spatial distribution criteria for the control sample:
- □ No (homogeneously).
- □ Yes: _____
_____
_____

Indicate if any specific criteria for the spatial distribution of the control sample exist. In the affirmative case, explain them briefly

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6.- STATISTIC

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A.- PLANIMETRY
1.- Precision of control works:
- □ 2x.
- □ 3x.
- □ 4x.
- □ 5x.
- □ Other:____ x
_____
_____

Choose the adequate answer quantifying the exigency of precision for control works in relation to controlled data (x means times).

2.- Gaussian model (normality) is assumed:
- □ Yes.
- □ No/ Others: _____
_____
_____

Indicate if the applied control process is based upon a Gaussian model. If not, explain the model.

3.- Basic hypothesis statistical testing:
- □ Randomness.
- □ Normality.
- □ Other:_____
_____
_____

If randomness and normality tests are driven, mark the appropriate option. In the case of other tests, explain them briefly.

4.- Outliers management:
- □ No.
- □ Yes: _____
_____
_____

If any standard process is carried out, explain it briefly. For example, the elimination of values greater than 3σ.

5.- Bias management:
- □ No
- □ Yes:_____
_____
_____

If any standard process is carried out, explain it briefly. For example, causes elimination and correction of numerical values by means of shifting.

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B.- ALTIMETRY AND DEM
1.- Precision of control works:
- □ 2x.
- □ 3x.
- □ 4x.
- □ 5x.
- □ Other:____ x
_____
_____

Choose the adequate answer quantifying the exigency of precision for control works in relation to controlled data (x means times).

2.- Gaussian model (normality) is assumed:
- □ Yes.
- □ No / Others: _____
_____
_____

Indicate if the applied control process is based upon a Gaussian model. If not, explain the model.

3.- Basic hypothesis statistical testing:
- □ Randomness.
- □ Normality.
- □ Other:_____
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If randomness and normality tests are driven, mark the appropriate option. In the case of other tests, explain them briefly.

4.- Outliers management:
- □ No.
- □ Yes: _____
_____
_____

If any standard process is carried out, explain it briefly. For example, the elimination of values greater than 3σ.

5.- Bias management:
- □ No.
- □ Yes:_____
_____
_____

If any standard process is carried out, explain it briefly. For example, causes elimination and correction of numerical values by means of shifting.

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6.- Measure for the accuracy:
- □ ISO 19138: _____
- □ RMSE.
- □ Mean.
- □ Standard deviation.
- □ Other:_____
  _____

If you are applying measures included in ISO 19138 (Annex D (normative)), please list here the identifiers of these measures. In other case, choose the appropriate option(s).

7.- Known reliability for the assessment method:
- □ No.
- □ Yes:_____
  _____
  _____
- □ ISO sampling plans: _____

If the reliability of the assessment methodology is known, give estimation.
If you are using ISO 2859 -1, 2859-2 or ISO 3851-1 standards, specify the sampling plan being applied.

6.- Measure for the accuracy:
- □ ISO 19138:_____
- □ RMSE.
- □ Mean.
- □ Standard deviation.
- □ Other:_____
  _____

If you are applying measures included in ISO 19138 (Annex D (normative)), please list here the identifiers of these measures. Choose the appropriate option(s).

7.- Known reliability for the assessment method:
- □ No
- □ Yes:_____
  _____
  _____
- □ ISO sampling plans: _____

If the reliability of the assessment methodology is known, give estimation.
If you are using ISO 2859 -1, 2859-2 or ISO 3851-1 standards specify the sampling plan being applied.

7.- RESULTS OF THE ASSESSMENT

A.- PLANIMETRY

1.- Confidence level of the result:

Probability:___ %

Indicate the probability associated to the derived result of the assessment. For instance, 90 % or 95%.

2.- Expression of the assessment result:

_____
_____
_____
_____
_____
_____

Indicate how the expression of the final result of the evaluation is carried out. For instance, a) *"This map complies with ___ Accuracy Standard";* b) *"Tested ___ meters horizontal accuracy at 95% confidence level",* c) using the ISO 19114 report.

B.- ALTIMETRY AND DEM

1.- Confidence level of the result:

Probability:___ %

Indicate the probability associated to the derived result of the assessment. For instance, 90 % or 95%.

2.- Expression of the assessment result:

_____
_____
_____
_____
_____
_____

Indicate how the expression of the final result of the evaluation is carried out. For instance, a) *"This map complies with ___ Accuracy Standard";* b) *"Tested ___ meters vertical accuracy at 95% confidence level",* c) using the ISO 19114 report.

8.- DOCUMENTATION ABOUT THE CONTROL PROCESS:

1.- Documentation:
1. _____
2. _____
3. _____
4. _____

Please refer and attach (if possible) the published documentation about the positional accuracy assessment method.

Thank you very much for your time and collaboration!!!