

CURRENT POLICY (FROM 09th Dec. 2016)

IC-ENC will consider each case of overlapping ENC coverage individually, following the principles of this policy. For the purposes of this policy, ENC data is considered to be overlapping if the data coverage (M_COVR object with attribute value CATCOV=1) of two or more cells of the same compilation scale and / or navigational purpose covers the same geographical location, and is larger than 5m in width (as measured 'on the ground').

IC-ENC will assess each instance using its Data Quality Classification system of HO Must Correct, HO Should Correct, Accept:

HO Must Correct: If the ENCs have been created by the same Producing Authority, or if the ENC have been created by differing Producing Authorities and the overall Risk Assessment has been classified as High Risk (see Annex A)

HO Should Correct: If the ENC have been created by differing Producing Authorities and the overall Risk Assessment has been classified as Medium Risk or Low Risk (see Annex A)

Accept: If the overlap is less than 5m wide along agreed adjoining national data limits

When a new cell or a new edition is received for validation a test for overlapping data with existing data will be performed. Where overlapping data is identified, it will be assessed through a series of criteria to determine the risk of the overlap on the user (see Annex A). All new instances of overlapping data entering the IC-ENC folio with an assessment of Medium or High risk, must have approval of IC-ENC General Manager (or deputy).

The following procedures will be followed:

1. If the overlapping data is from the same producer, this will be an "HO must correct" issue and the cell will be returned to the producer for improvement action. Note, if an established ENC Producer joins IC-ENC and its own data contains overlapping ENCs, the folio may be released to VARs by IC-ENC, with a defined plan for the Producer to resolve its internal overlaps, prioritised by IC-ENC's risk assessment. This is because the overlapping data is already in use, and including it this way, subject to this IC-ENC policy, will bring increased visibility and resolution effort to these cases.
2. If the overlap is between two different producers, and both members of IC-ENC:
 - 2.1 If this resolution is expected to be swift (up to one month):
 - The overlap issue must be resolved before the new ENC is issued to VARs.
 - This may be achieved either by reducing the coverage area of one, or both, of the ENCs, or by the withdrawal of one of the existing ENCs (by cancellation update).
 - IC-ENC will liaise with both parties to ensure a seamless transition to the new coverage by users, this liaison will be tracked and recorded in the master file.
 - 2.2 If the resolution is expected to be delayed (longer than one month),:
 - IC-ENC will conduct a risk assessment of the content within the area of overlap, reporting results to both producers, an evaluation will be made of the estimated time for a successful resolution of the overlap.
 - IC-ENC will then facilitate the work of the two producers (e.g. by coordinating the exchange of data) to align the content of the affected ENCs to be as consistent as possible with each other, noting any fixed national production policies. This is to reduce, as far as possible, the level of risk resulting from variation in the charting of identical entities and/or identical geographic areas. After completion of this process (up to the pragmatic level of achievable agreement between the affected producers), IC-ENC will then issue the new ENC to its VARs, by following the process in step 5 below.
3. If the overlap is between two different producers, a member of IC-ENC and a member of another RENC:

As step 2, but IC-ENC's liaison will be with its member and with the other RENC

4. If the overlap is between two different producers, a member of IC-ENC and a non-RENC nation
As step 2, but IC-ENC's liaison will be with its member and with the other nation using the published IHO contacts list.

Note 1: In steps 2, 3 and 4, if the data is in Usage Band 1, the result of the initial risk assessment is highly likely to be 'very low' due to the purpose of the ENC (planning).

Note 2: IC-ENC's communication with its members will be via email, supplemented by other methods if required (e.g. phone call). Communications/responses will be tracked internally in IC-ENC systems. IC-ENC members agree the need to respond to IC-ENC's emails/questions/comments etc within 10 working days of receipt.

Steps 1 – 4 are activities conducting before an ENC is issued to Value Added resellers. If, after these steps have been followed, the ENC Producer instructs IC-ENC to issue its ENC under the specific direction of the Producer, IC-ENC will follow Step 5:

5. When IC-ENC issues a new ENC that creates overlapping coverage (or another party releases a new ENC that overlaps with an existing ENC in the IC-ENC folio):

- IC-ENC will list this in the README.TXT file sent to the VARs.
- IC-ENC will add the new overlap to its master file "IC-ENC Member Overlaps and Gaps Analysis Spreadsheet", which includes IC-ENC's risk assessment of the overlapping coverage. This master file will be distributed to:
 - IHO WENDWG Chair (annually, to inform the ENC coverage report)
 - RHC Chairs and ENC Co-ordinators as required, to support regional ENC dialogue (source of contact: https://www.iho.int/iho_pubs/standard/S-11/Regional_INT_Chart_Coordinators.pdf).
 - IHB as required (info@iho.int)
- IC-ENC will re-assess the overlap risk-assessment each time a new edition is received for the area, reporting back to both HOs and maintaining the master file if the assessment requires it.

6. When an ENC Producer issues an ENC update file to an ENC which is overlapping data, the Producer will inform IC-ENC when the update file is taking action which, in the opinion of the Producer, has an effect on the risk assessment conclusion. IC-ENC will then make a re-assessment of the risk, recording the result in the master file.

IC-ENC will not make an assessment of the production responsibilities or sovereign rights of a member to produce and issue the ENCs IC-ENC receives from it. As described above, all instances of overlapping ENCs will be the result of specific instruction from, and at the responsibility of, the Producer. IC-ENC's service and feedback reports are focussed on quality assurance and data issues alone, with the driver of ensuring safety at sea.

JUSTIFICATION

Overlapping data between cells within the same usage band is not allowed. ENC Product Specification paragraph 2.2 states: *"Cells with the same navigational purpose may overlap. However, data within the cells must not overlap. Therefore, in the area of overlap only one cell may contain data, all other cells must have a meta object M_COVR with CATCOV = 2 covering the overlap area. This rule applies even if several producers are involved."*

IHB Circular Letter 47/2004 dated 5 July 2004 states: *"There must be no overlapping data between cells of the same navigational purpose (see S-57, Appendix B.1 clause 2.2), except at national boundaries, where, if it is difficult to achieve a perfect join, a 5 metre overlapping buffer zone may be used."*

Research has also identified that overlapping data causes serious problems for users of certain ECDIS which display both overlapping cells. The navigator is then presented with different representations of the same area,

and which may cause data consistency problems, most notably with inconsistent depth areas. This would undermine the important safety contour feature of the ECDIS, and which navigators use to determine safe waters.

However, overlapping data is often the result of political considerations and not technical policies, and as such resolution times are long and/or indefinite. The IC-ENC policy reduces risk in these areas as far as possible. The release of overlapping data is the final stage after a risk assessment, notifications and liaison.

IC-ENC offers production advice, support and a quality assurance service to its members only, its remit is not to assess, define or comment on national jurisdiction and areas of production responsibility. IC-ENC is not placed to offer arbitration between parties with differences based on political considerations. Its members work in collaboration with each other and so IC-ENC must accept that all ENC's it receives have been produced in good faith. Therefore, previous policy D9 (ENCs beyond national waters) has been withdrawn.

IC-ENC collates, maintains and communicates information about overlaps to:

- VARs (so that they are informed of all new overlapping data in the IC-ENC folio at the same time it is delivered to them)
- WENDWG Chair (so the IHO can be responsive to IMO requests for information and assessment on progress with adequate ENC coverage and other charting matters)
- RHCs if required (to assist these bodies with ENC issues, schemas etc)

The main elements of the current policy are the result of collating member feedback from IC-ENC Circular Letter 2014_14, and builds on IRCC endorsed WENDWG approach to processing overlaps (IHO IRCC6 – Decision 15 refers). For further information see IC-ENC Papers produced for Steering Committee 15 (papers SC15.8.1a-d)

Further practical enhancements to the policy, based on IC-ENC lessons learned, were approved at Steering Committee 16. Refinement of policy made following internal audit of process November 2016.

CONTROL MECHANISM

Visual Assessment check – ICE-WP2 refers. Data Manager is responsible for implementing the policy in a consistent manner.

The “IC-ENC Member Overlaps and Gaps Analysis Spreadsheet” details each instance of an overlap or gap between IC-ENC members’ data, along with the date that the issue was last reported to the relevant HOs, and other relevant tracking information, including the assessment of each of the criteria used to assess risk, plus the overall statement regarding why the conclusion of Low, Medium or High was reached.

CONTROL MECHANISM TESTED: N/A

LAST REVIEWED DATE

November 2016

NEXT REVIEW DUE

November 2017

FUTURE POLICY UNDER CONSIDERATION

Nil

FUTURE PROCESS IMPROVEMENT UNDER CONSIDERATION

Inclusion of AIS information to refine risk assessment process

ANNEX A CRITERIA FOR ASSESSING THE RISKS

(source ref. WENDWG03-5, 6)

The severity of the risk presented by any overlap is likely to depend on the factors listed below:

1. Differences in the overlapping data relating to the positions of features and the existence/non-existence of features (point, line and area objects), i.e. many worse than few.

When making a risk assessment, the consistency of data content within the area of overlap will carry the heaviest weighting in determining the overall risk. The IC-ENC Validation Team will use the same judgement criteria for assessing this as that used when conducting vertical consistency checks between two Usage Bands. The same method of categorising errors used in ENC Validation will be used to make decisions as to whether inconsistencies should be resolved.

Overlap risk assessment	IC-ENC Validation Vertical consistency check category
Low	CORRECT AS SOON AS POSSIBLE e.g. misalignment of depth contours
Medium	HO SHOULD CORRECT e.g. missing shoal area in insignificant location relevant to chart purpose
High	HO MUST CORRECT e.g. missing Traffic Separation Schemes, missing obstructions in critical locations relevant to chart purpose

2. The geographical location of the overlap, i.e. port approaches worse than deep water.

Overlap risk assessment	
Low	1. All depths are deeper than 100m
Medium	1. From pilot boarding place to 100m depth contour 2. Includes a narrow "straight" (Less than 30km wide)
High	1. Includes an area from port to Pilot Boarding place. 2. Includes a narrow "straight" with a Traffic Separation Scheme

These definitions are for guidance, the IC-ENC Validator will use their experience to assess each case.

3. The shipping density in the area, i.e. many ships worse than few.

It is often difficult to judge the shipping density of an area simply by studying the ENC. Therefore, IC-ENC will use ENC sales volumes of the existing IC-ENC ENC as an indication for a new cell and the risk can then be determined using the ranges set out below.

If the new cell is released, the total sales volumes for the two overlapping ENCs will be used to calculate an average when the overlap is assessed for RHC reporting.

These volumes are for guidance, and IC-ENC may apply other market knowledge to reach its conclusion of Low/Medium/High, e.g. if both ENCs are new to IC-ENC there will be no sales volumes recorded so a holistic assessment will be made.

For Usage Band cells 1-4:

Overlap risk assessment / Sales Volumes	Usage Band cells 1-4:	Usage Band cells 5-6
Low	0-999	0-349
Medium	1,000-1,999	350-749
High	2000+	750+

In future, AIS information may be analysed to improve this part of the assessment.

4. The size of the area of overlapping data, i.e. large is worse than small.

The risk introduced by the size of the overlap is also dependent upon the percentage of the 2 cells. This assessment will be made by eye, to the nearest 10%.

Low	up to 20%
Medium	30, 40 or 50%
High	above 50%

5. The scale of the overlapping cells, i.e. large scale most likely worse than small scale, but the quality of the different scales is also a factor as some ECDIS will display the larger scale automatically where overlaps occur.

To ensure consistency when making judgements regarding the scale of the overlapping cells, IC-ENC has used the ENC Usage Band scale ranges to set ranges for 'low', 'medium' and 'high' risk.

Low	350,000+ (Usage Bands 1 and 2)
Medium	22,000-349,999 (Usage Bands 3 and 4)
High	0-21,999 (Usage Bands 5 and 6)

6. Shipping route patterns, i.e. the direction that ships usually transit through the area covered by the overlapping data.

Low	1. Includes no/very little SOLAS traffic expected
Medium	1. Includes "branch" route(s) towards a port/anchorage 2. Includes "secondary" route(s) through a "Straight"
High	1. Main route towards a port/anchorage 2. Main route through a route (indicated by TSS)

For now, shipping route patterns will be determined by a general assessment of the region. In the future, however, AIS (GIS analysis) will be used to aid the risk assessment.

7. Display within ECDIS, ie how the overlapping data behaves within an ECDIS, determined assessment by IC-ENC's office based ECDIS suite.

Low	Little/no impact on ECDIS performance within the IC-ENC suite (noting that other ECDISs might behave differently)
Medium	Some problems with ECDIS performance
High	Significant problems with ECDIS performance

RISK DESCRIPTORS

Taking into account the 'Criteria for Assessing the Risks' above, IC-ENC has developed the following descriptors to use as a guide for categorising each instance of overlapping data.

Each of the seven risk criteria will be assessed individually and contribute to an overall risk level of either 'low', 'medium', or 'high' risk.

Usage Band 1 ENCs are not likely to pose a high risk to navigation, and therefore will be automatically categorised as 'low' risk unless there are critical differences in data content.

Note: This guidance provides a framework for assessment. Each case of overlapping data is unique, and assessed on a case-by-case basis. Therefore, specific considerations may override this general guidance.

Judgements are made by personnel who are deemed competent through the IC-ENC Validator Competence Assessment Framework.

Low:

The overlapping data content poses little risk to the safety of shipping. However, there is always the underlying concern of unpredictable behaviour of certain ECDIS with any type of overlap, and so there is still justification for the two HOs to resolve the overlap.

Examples of instances of Low risk:

- A large or small overlap which exists over land or deep water with limited bathymetric depiction.
- The data is mostly consistent between the two cells
- Generally, a low risk would include Overview or General cells (Usage Band 1 or 2) as these cells are mainly used for planning purposes

Medium:

The overlapping data presents some risk to the safety of shipping. IC-ENC will track the resolution of the overlap to its conclusion.

Examples of instances of Medium risk:

- An overlap which exists over navigable water with regular vessel activity
- There may be several objects captured inconsistently or missing from either cell which require correction as soon as practicable, e.g. caution areas, submarine cables, pipelines, lights, buoys, beacons.
 - i.e. If the same inconsistency of data was identified during IC-ENC's vertical consistency check between two cells in neighbouring usage bands, the validation categorisation would be: HO SHOULD CORRECT
- The display of some features may be impacted when using an ECDIS to view the cells, e.g. disappearing or reappearing objects
- A medium risk could apply to any cells in Usage Band 3-6, dependent on the severity of the issues presented

High:

The overlapping data presents significant risk to the safety of shipping. IC-ENC will proactively track and facilitate resolution of the overlap to its conclusion. IC-ENC will issue such warnings as it thinks fit in the circumstances of the case, and shall bring such warnings to the attention of Value Added Resellers.

Examples of instances of High risk:

- An overlap which presents a high risk to the safety of shipping
- A large or small overlap which exists over shallow water or around busy ports
- There may be important objects captured inconsistently or missing from either cell which require immediate action, e.g. Traffic Separation Schemes, wrecks, depth contours, depth areas
 - i.e. If the same inconsistency of data was identified during IC-ENC's vertical consistency check between two cells in neighbouring usage bands, the validation categorisation would be: HO MUST CORRECT
- A high risk could apply to any cells in Usage Band 3-6, dependent on the severity of the issues presented