CHANGE HISTORY		
Issue	**Date**	**Summary of Change**
3	02/11/17	Version agreed by Steering Committee
4	Xx/xx/2022	Updated to reflect experiences gained and evolution of ECDIS performance

CURRENT POLICY (FROM xx/xx/2022)

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, reaching a conclusion of:

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 Impact Assessment has been classified as High (see Annex A)

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

Accept: If the overlap is less than 5m wide along agreed adjoining national data limits, or over land.

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 by IC-ENC to provide an indication of the potential impact on the user (see Annex A). All new instances of overlapping data entering the IC-ENC folio with an Impact assessment of Medium or High, 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 (i.e. expected to be resolved before release) 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 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 an impact 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, any negative impact on the user resulting from variation in the charting of the same geographic area. 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.

Note 1: In steps 2, 3 and 4, if the data is in Usage Band 1, the result of the initial impact 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. online meeting / 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 add the new overlap to its master file "IC-ENC Member Overlaps and Gaps Analysis Spreadsheet", which includes IC-ENC's impact 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 impact 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 impact assessment conclusion. IC-ENC will then make a re-assessment of the impact, 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 identified that overlapping data causes serious problems for users of certain ECDIS which display both overlapping cells, and IC-ENC's approach to overlapping ENCs was previously based on a risk assessment accounting for a range of factors. The policy has evolved to consider the impact on the user as a result of improvements in ECDIS performance for overlapping ENCs – there is now greater consistency in these cases.

The ECDIS Presentation Library has been updated and effectively promulgated to all ECDIS users, such that now, in the case of overlapping ENCs, one of the ENCs will be selected for display. This successfully mitigates the previous potential impact of display issues such as repeated content etc. The safety problem that the two ENCs might show different navigational content (and which one is "right"?) remains, and it is noted that there is no defined decision criteria regarding which of the two ENCs will be chosen for display by the ECDIS algorithm.

Noting that overlapping data is often the result of political considerations and not technical policies, resolution times are long and/or indefinite. The IC-ENC policy assesses the potential impact on the user, and the process limits this as far as possible by making release of overlapping ENCs the last resort.

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 ENCs it receives have been produced in good faith.

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 policy v3 were 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. Version 4 of the policy is the result of a IC-ENC experiences, Steering Committee dialogue, and IHO-based dialogue particularly via the WENDWG and in particular IHO Resolution 1/2018. The evolution of the ECDIS performance, and discussions at Steering Committee 22, have specifically prompted an update in 2022 through dialogue with the Steering Committee (see Circular Letters xxxxxxxx)

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 involving IC-ENC members’ data, along with the date that the issue was last reported to the relevant HOs, and other relevant tracking information. Specific attention will be made by the IC-ENC Validation team when processing Members’ reschemes to ensure seamless and coherent coverage is available at all times to users.

CONTROL MECHANISM TESTED: Regularly through validations/validator competence assessment framework,

LAST REVIEWED DATE
xxx 2022

NEXT REVIEW DUE
xxx 2024

FUTURE POLICY UNDER CONSIDERATION
Consideration will need to be made to overlapping S101 ENCs and other S1XX products

FUTURE PROCESS IMPROVEMENT UNDER CONSIDERATION
Inclusion of QGIS and AIS information to refine impact assessment process
Improved reporting functionality (e.g. continually available master file, rather than distribution by periodic email).

ANNEX A CRITERIA FOR ASSESSING THE IMPACT

The severity of the potential impact on the ECDIS navigator by any overlap will be made by an impact assessment of the (mis)alignment of navigationally significant content.

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 an impact assessment, the consistency of data content within the area of overlap will be used to determine the potential impact. 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, using the processes and guidance described in document IC-ENC WP-02, including the list of priority objects. The same method of categorising errors used in ENC Validation will be used to make an assessment of the severity of any inconsistencies.

Overlap impact assessment	Comments
Low	The overlapping data content is sufficiently aligned to support safe navigation if either of the ENCs is chosen for display by the ECDIS algorithm. In other words, the data is mostly consistent between the two cells, with only minor (if any) misalignment between (any) significant content. Both HOs should continue to work towards resolving these. The justification for HOs to resolve 'Low' overlaps is to prevent the chance of content becoming misaligned in the future. Note 1: An Overview (Band 1) case will always be 'Low' noting the purpose of the ENC (planning). Note 2: If the overlap is over land, this will be 'accept'.
Medium	The overlapping data content contains some inconsistencies which have the potential to impact negatively on the user and safe navigation. 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 A conclusion of Medium could apply to any cells in Usage Band 2-6, dependent on the severity of the issues presented. IC-ENC will track the resolution of the overlap to its conclusion. Both HOs should continue to work towards resolving these cases.
High	The overlapping data content presents a definite negative impact on the user and undermines the safety of navigation. 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, missing obstructions in critical locations relevant to chart purpose ○ 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

	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 relevant stakeholders. A conclusion of High could apply to any cells in Usage Band 2-6, dependent on the severity of the inconsistencies identified.

These definitions are for guidance, noting that it is not pragmatic to attempt to define a policy the caters for every conceivable scenario. IC-ENC Validator will use their experience to assess each case, under the guidance in the base cell validation document (WP-02). The rationale for the impact conclusion will be recorded and be available to stakeholders.