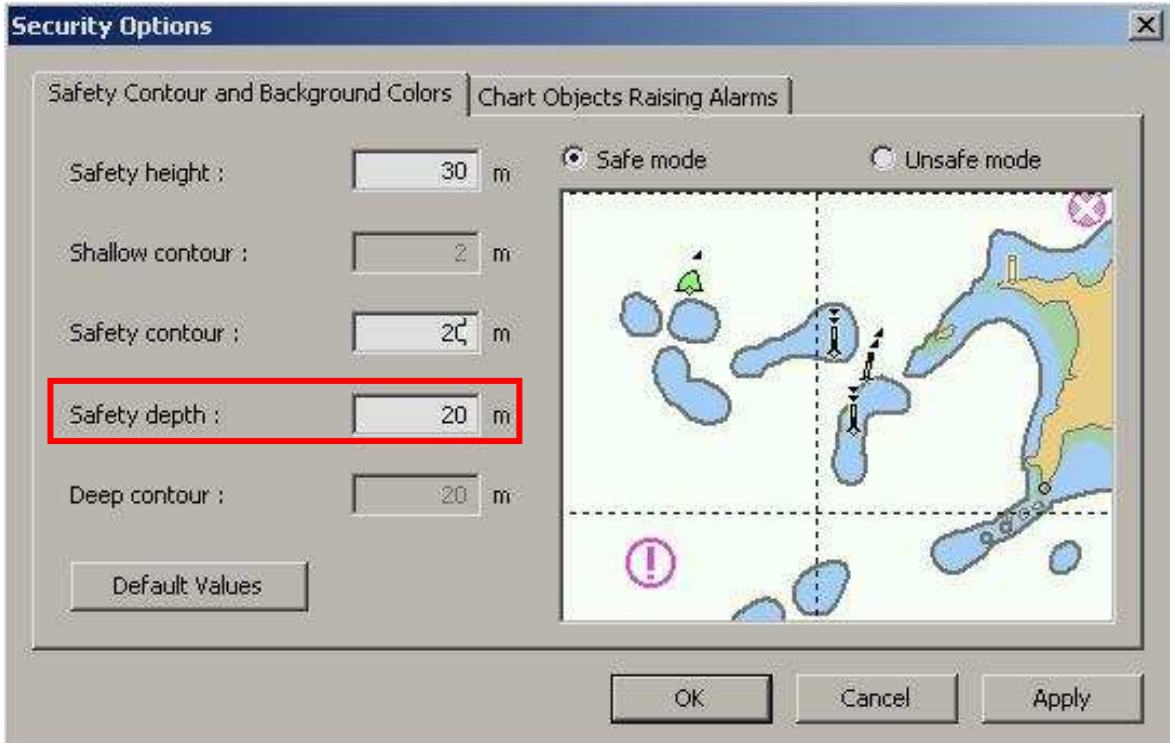
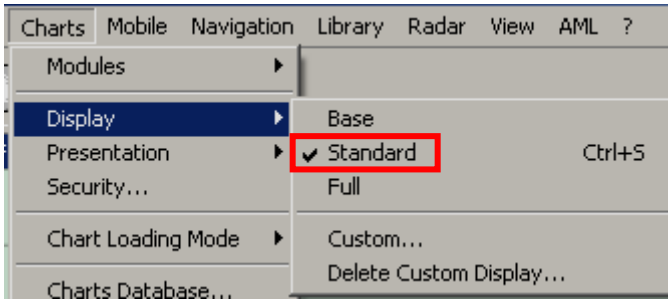
Test cases of gaps and overlaps between coastal ENCs

Is there a significant navigational risk for the mariner? What should be done? Are the draft amplifying annexes applicable?

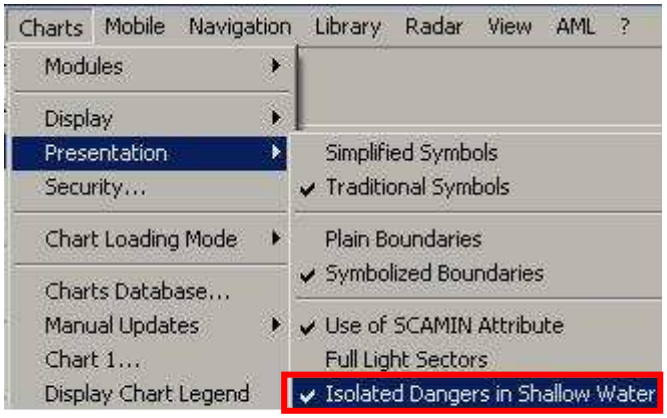
View of ENCs on ECDIS (IX-Blue, ECDIS used by French Navy)

ECDIS settings

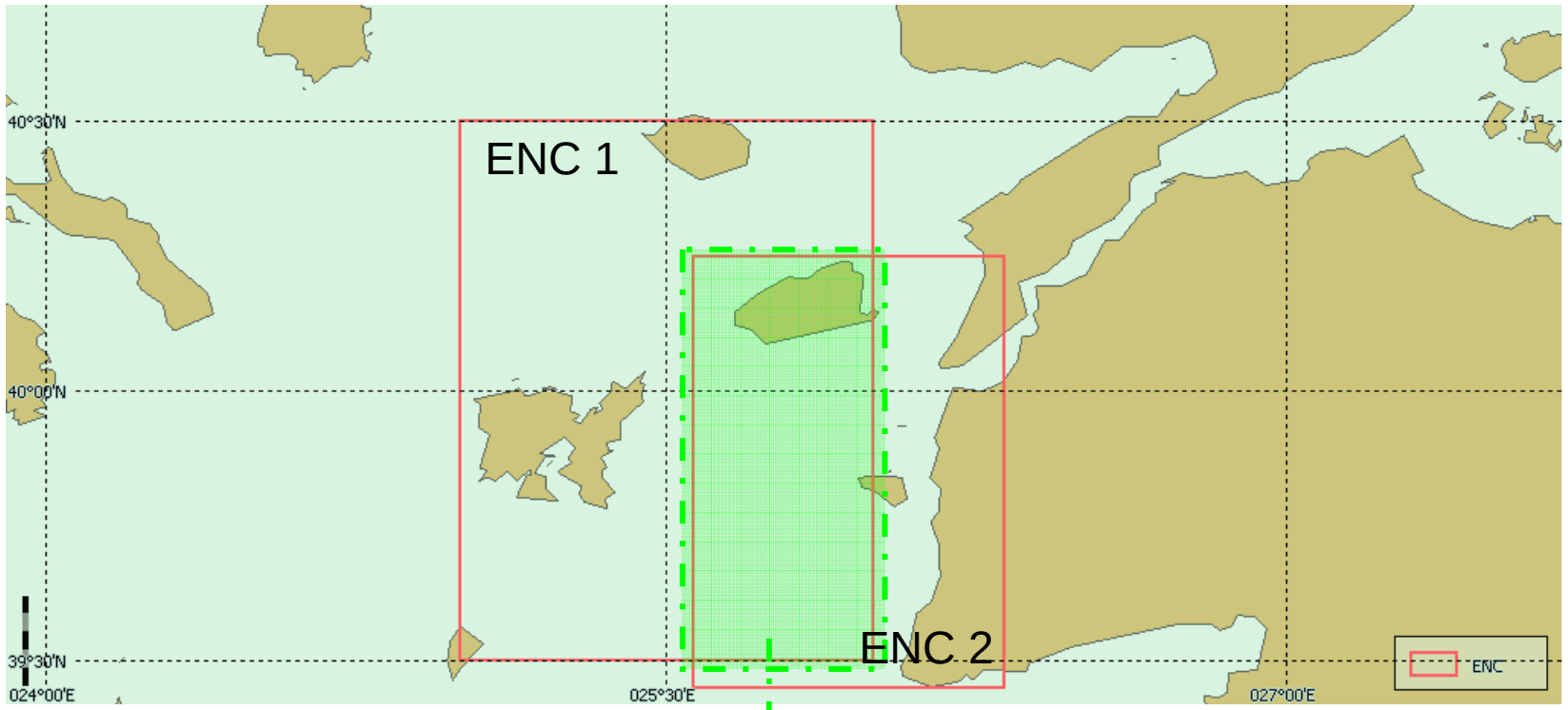




Display : standard



View of ENCs coverages on ECDIS (IX-Blue, ECDIS used by French Navy)

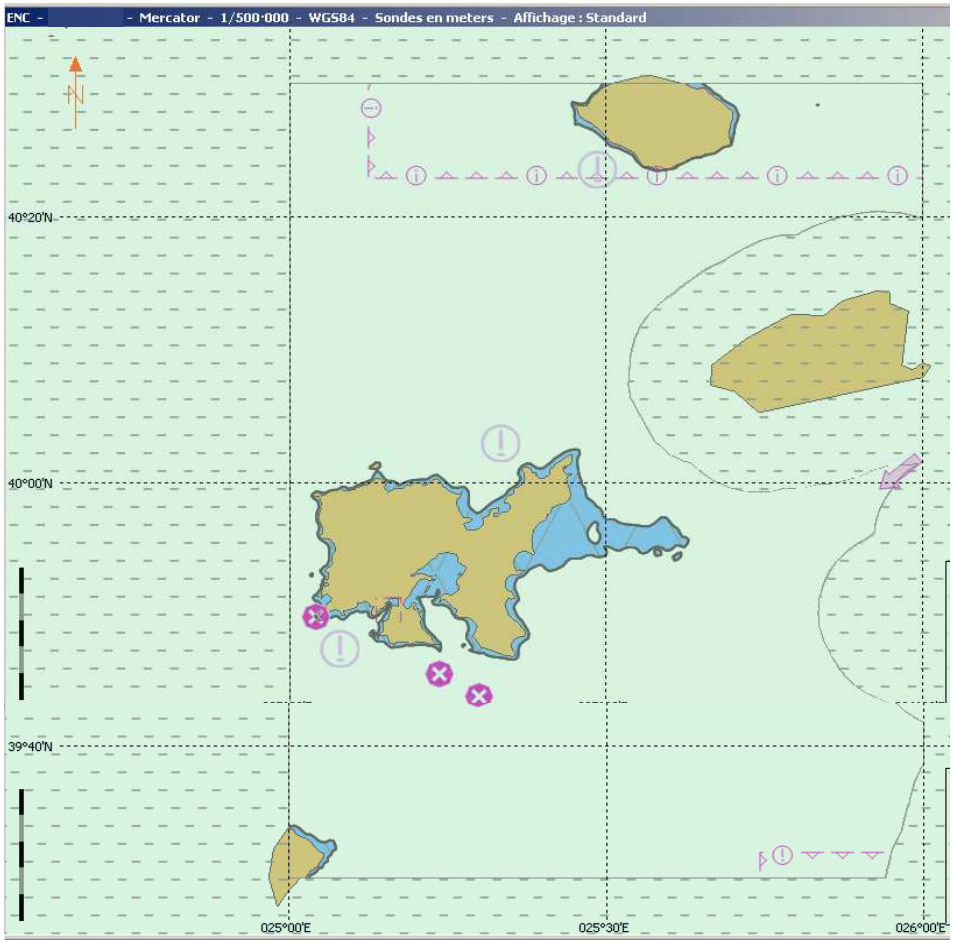


Overlap

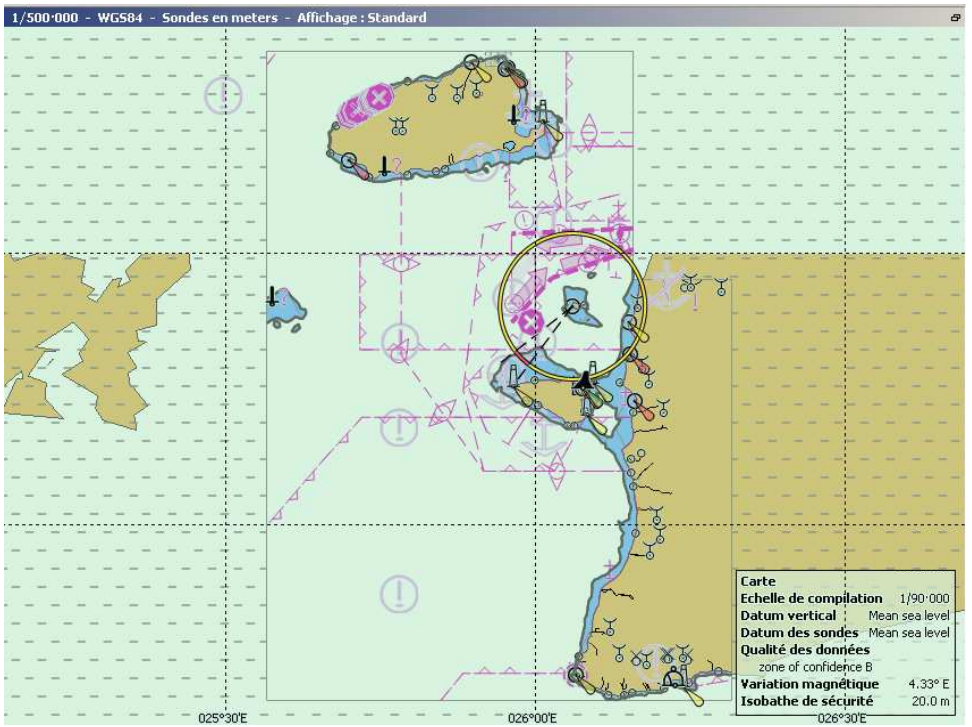
Same compilation scales 1:90 000

View of the ENCs (scale 1/500 000)

Standard display, Chart loading mode: Fixed Cell



ENC 1

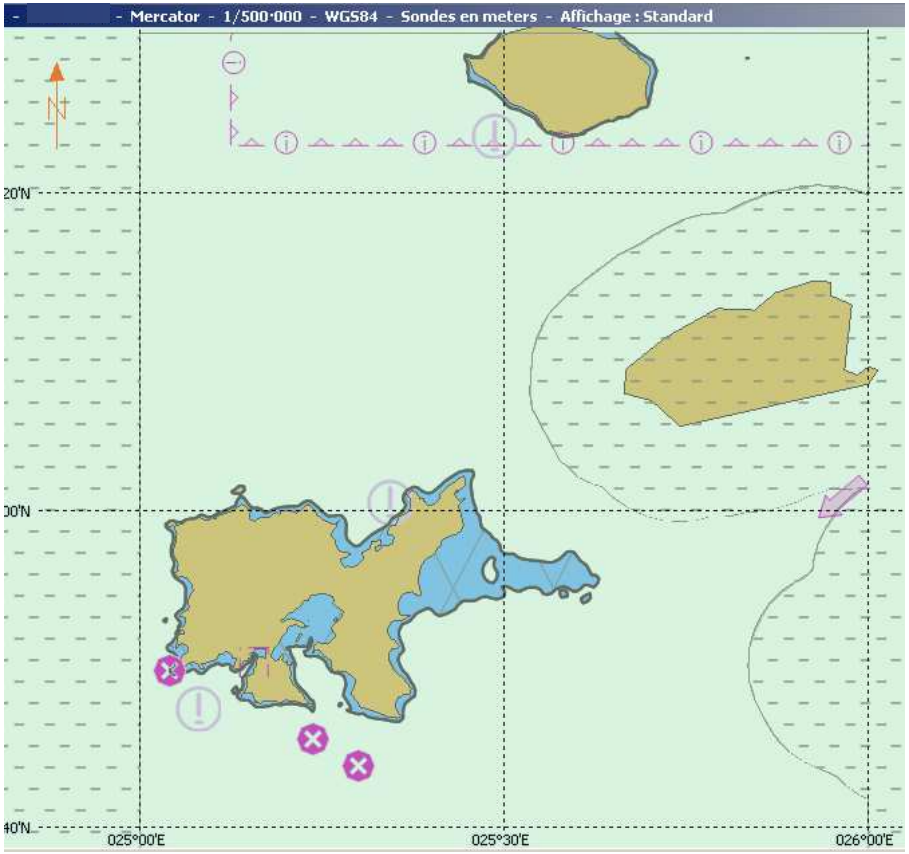


ENC 2

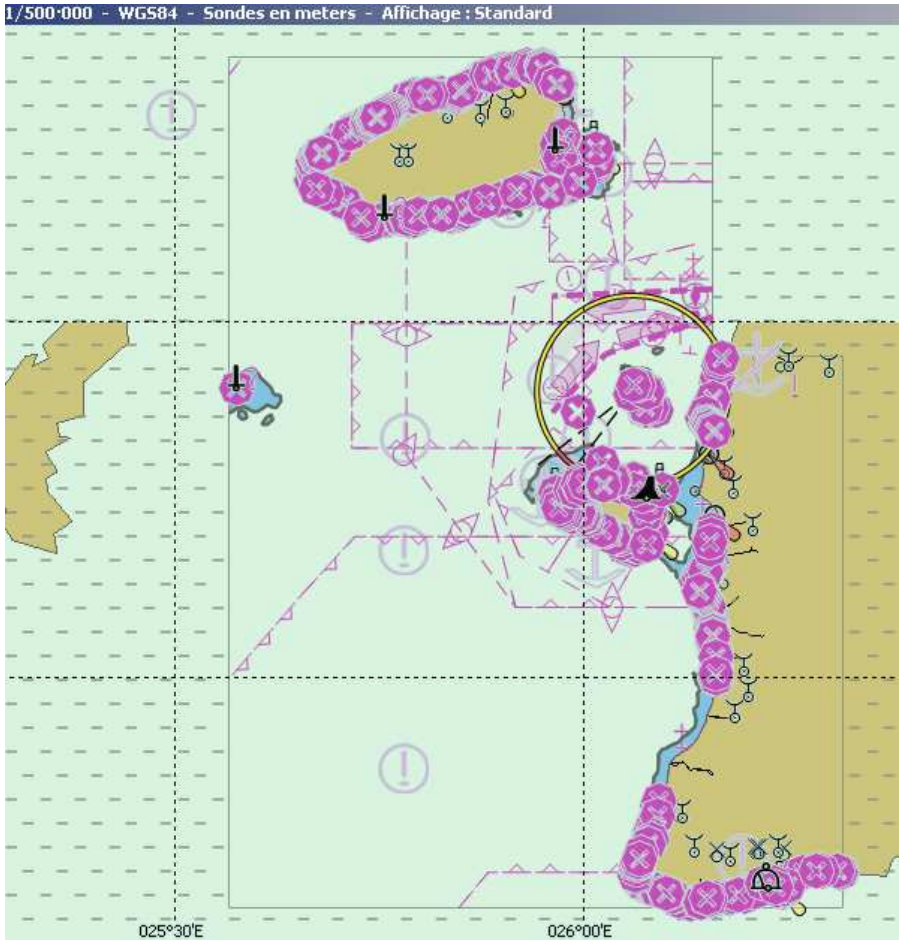
View of the ENCs (scale 1/500 000)

Standard display with Isolated Dangers in Shallow Water

ENC 1

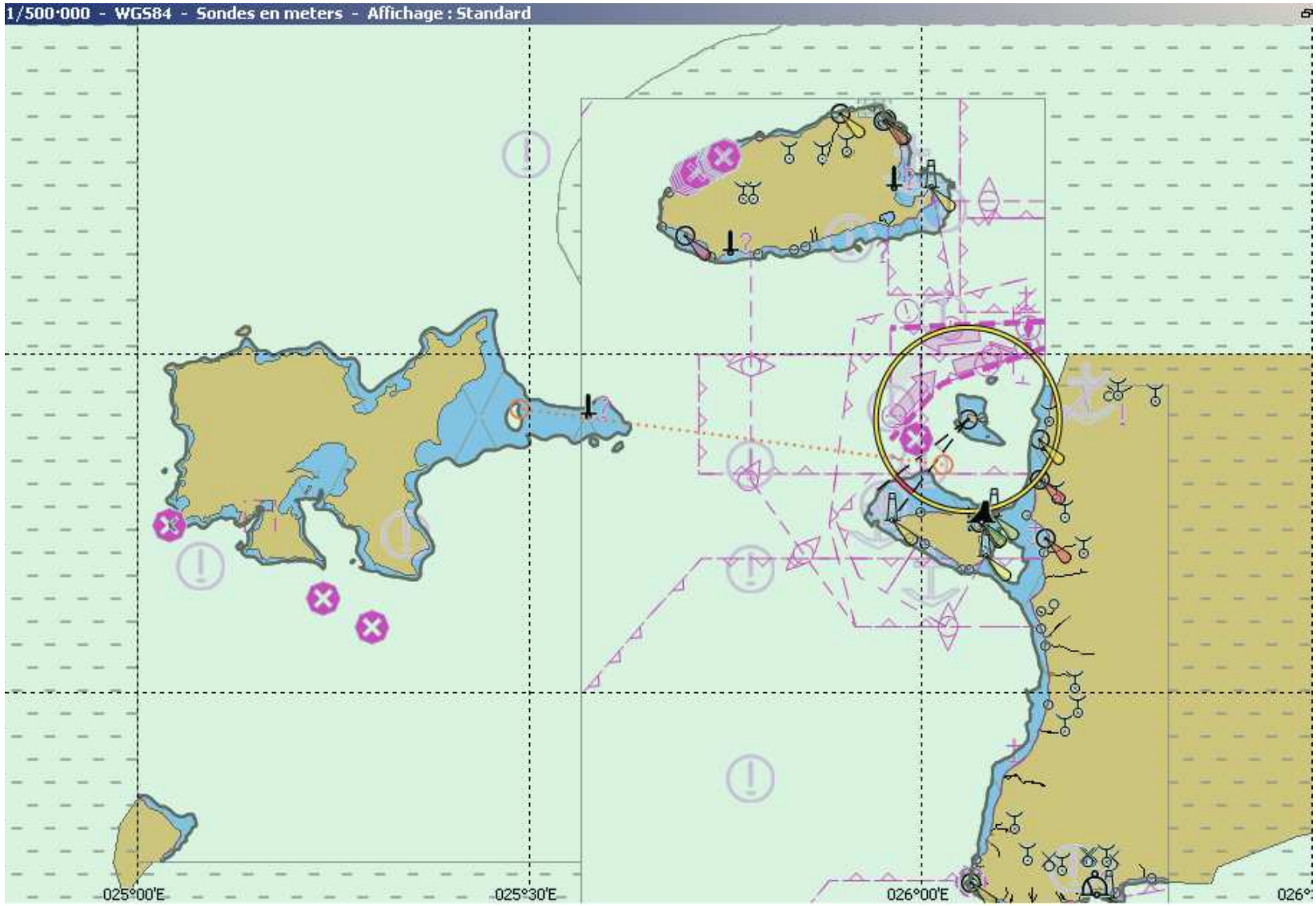


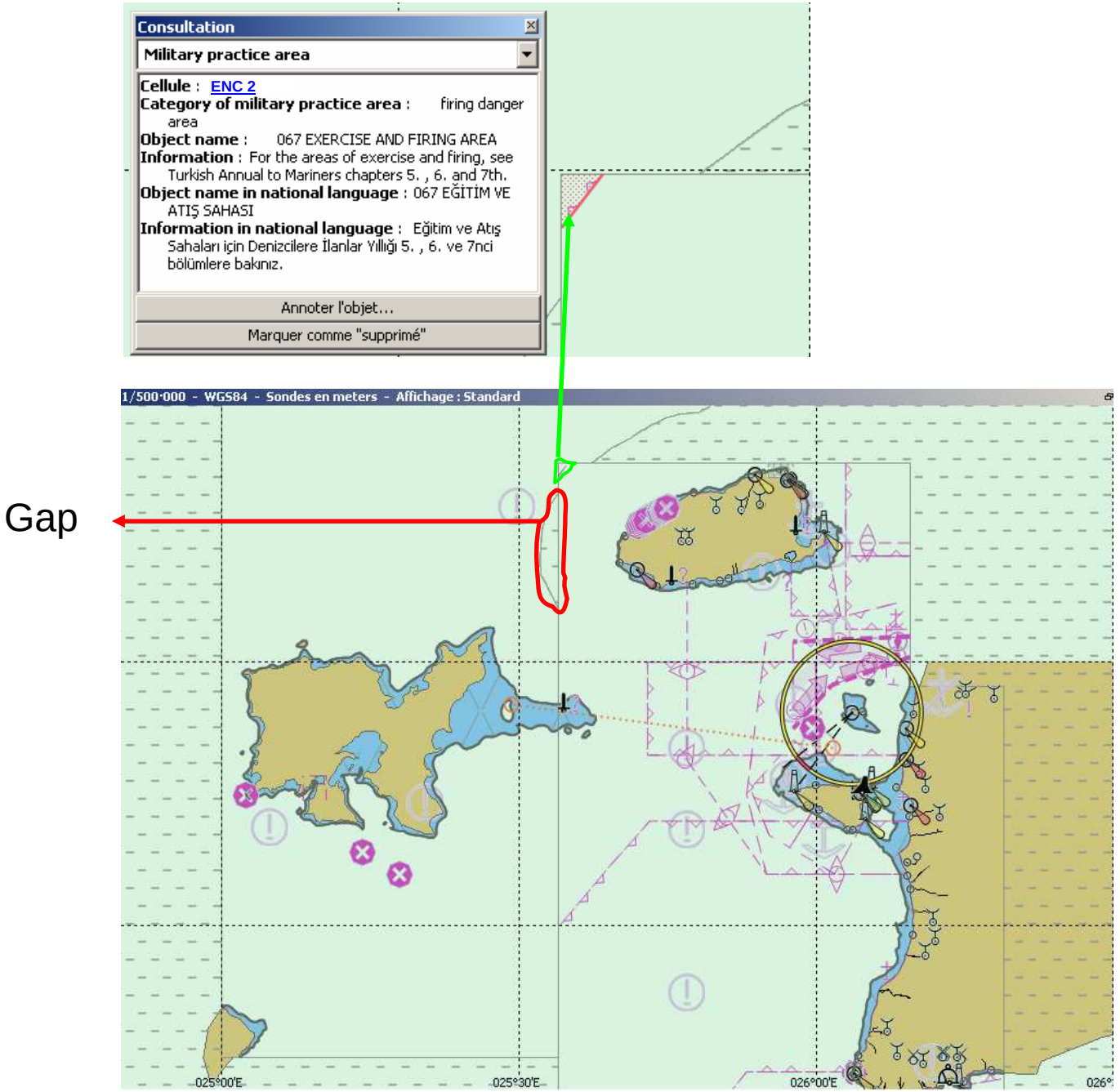
ENC 2



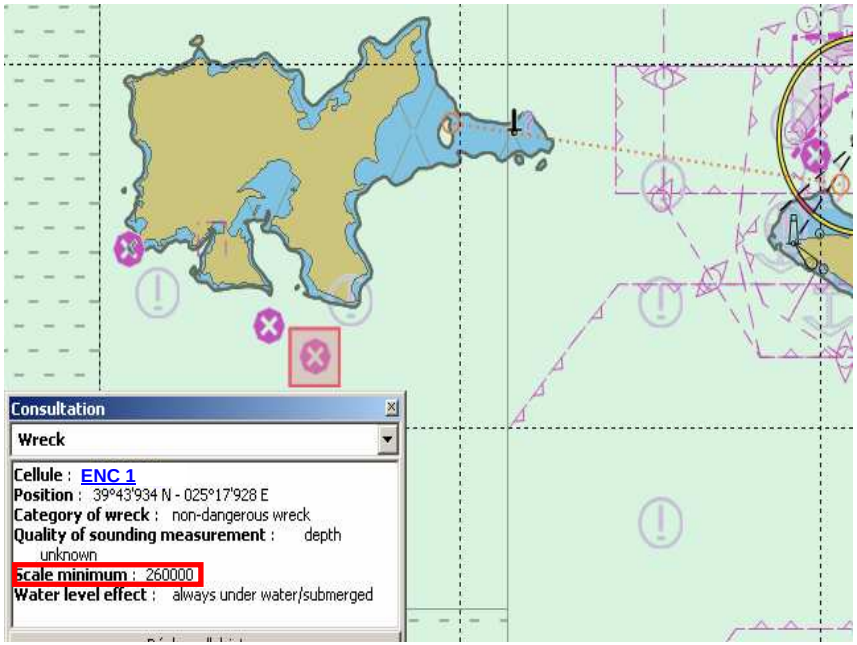
View of the 2 ENCs on ECDIS

display: standard - chart loading mode: automatic coverage

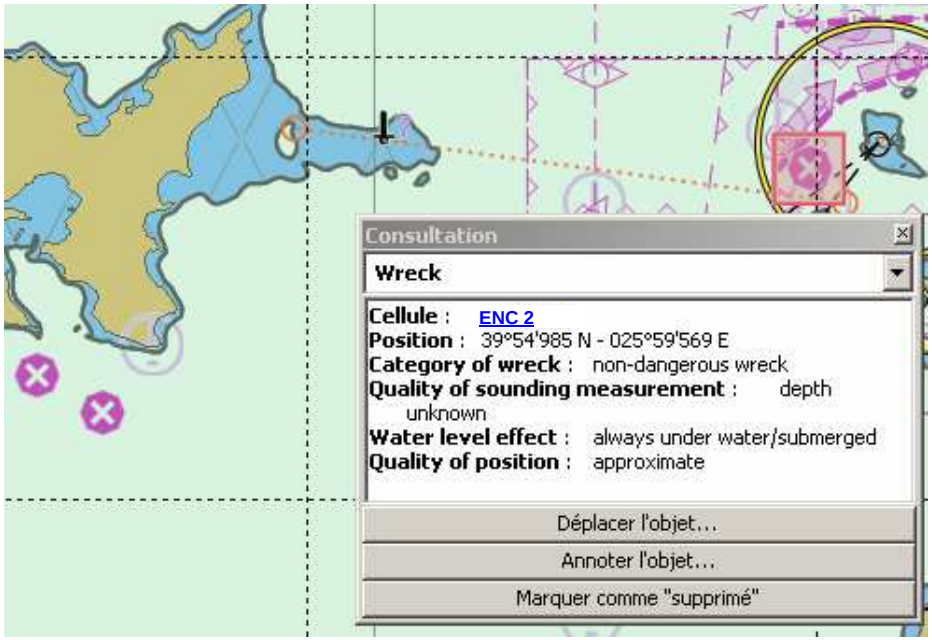



Consultation
Military practice area
Cellule : ENC 2
Category of military practice area : firing danger area
Object name : 067 EXERCISE AND FIRING AREA
Information : For the areas of exercise and firing, see Turkish Annual to Mariners chapters 5. , 6. and 7th.
Object name in national language : 067 EĞİTİM VE ATIŞ SAHASI
Information in national language : Eğitim ve Atış Sahaları için Denizcilere İlanlar Yıllığı 5. , 6. ve 7nci bölümlere bakınız.
Annoter l'objet...
Marquer comme "supprimé"
1/500·000 - WGS84 - Sondes en meters - Affichage : Standard
025°00'E
025°30'E
026°00'E
026°
Gap

SCAMIN

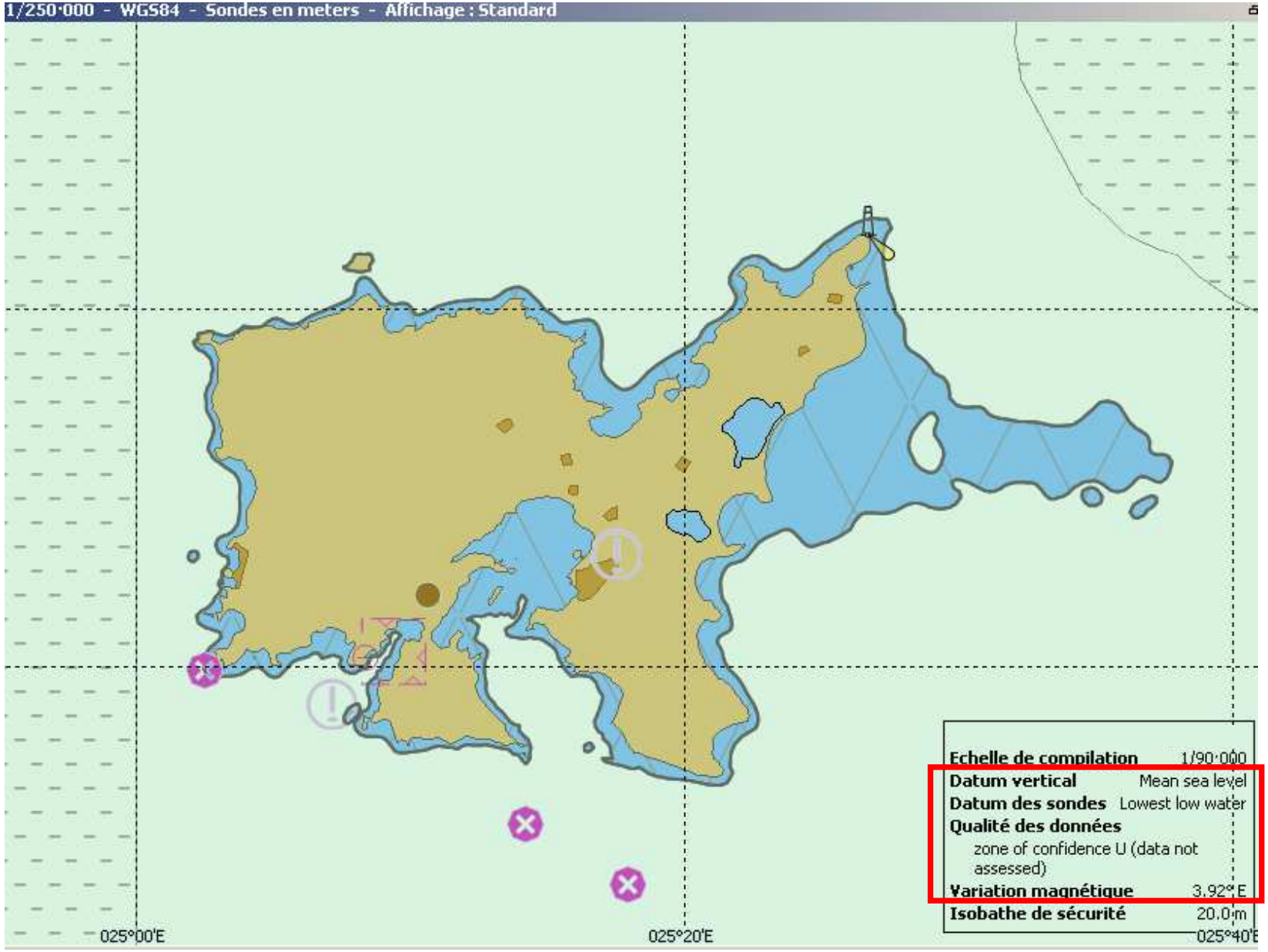


Use of SCAMIN on the ENC 1

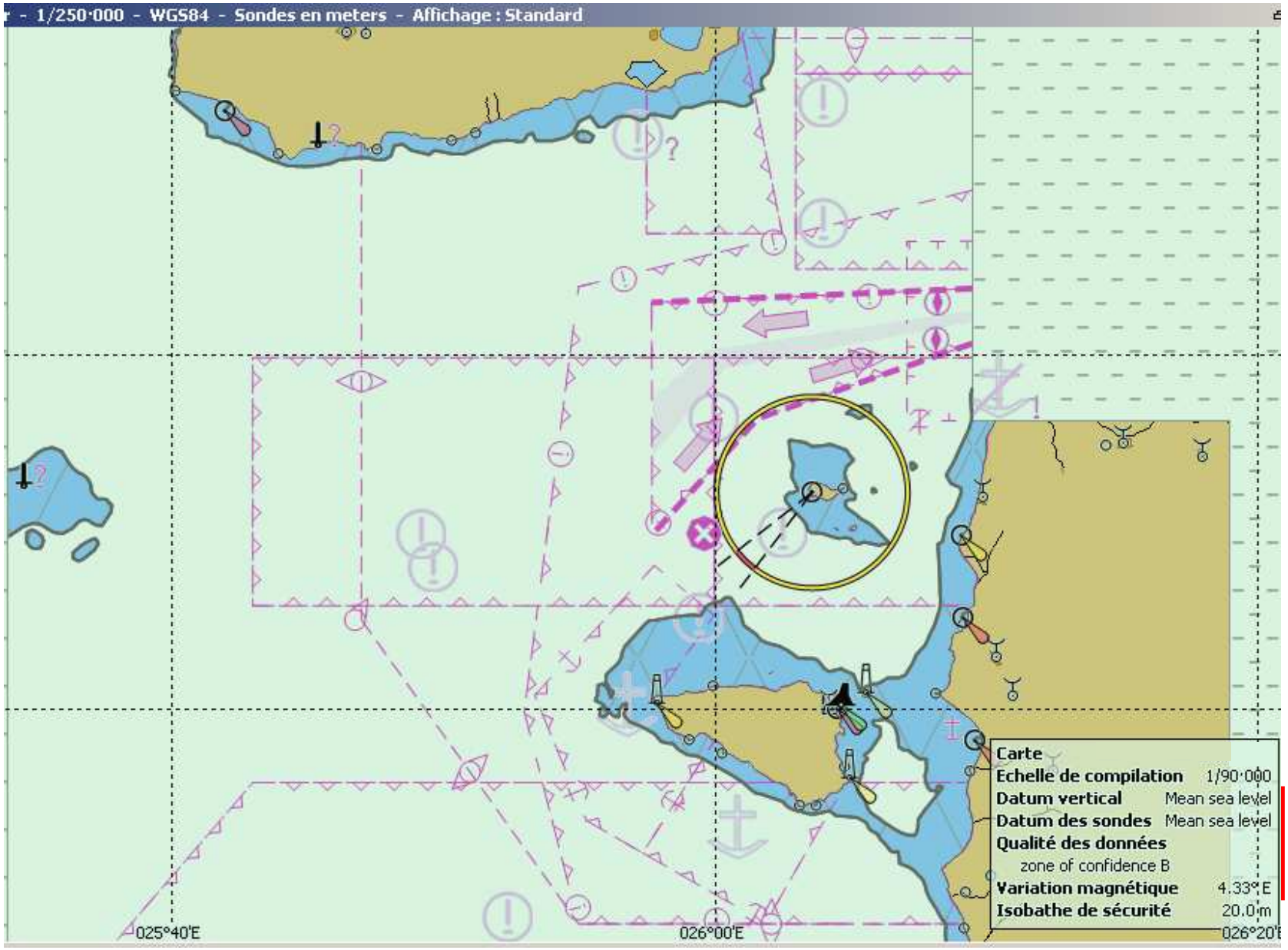


No SCAMIN on the ENC 2

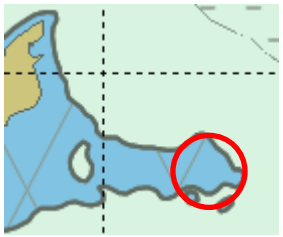
ENC 1

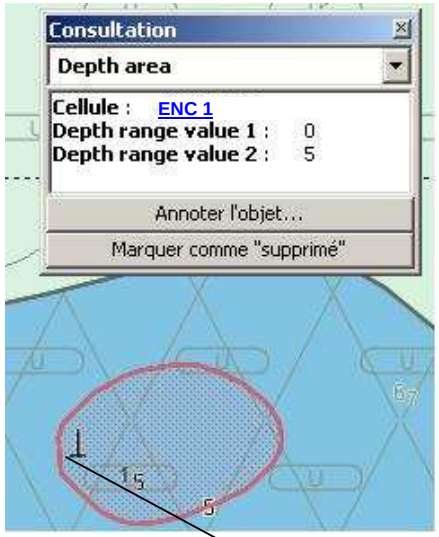

1/250·000 - WGS84 - Sondes en meters - Affichage : Standard
Echelle de compilation 1/90·000
Datum vertical Mean sea level
Datum des sondes Lowest low water
Qualité des données
zone of confidence U (data not assessed)
Variation magnétique 3.92° E
Isobathe de sécurité 20.0 m
025°00'E
025°20'E
025°40'E

ENC 2

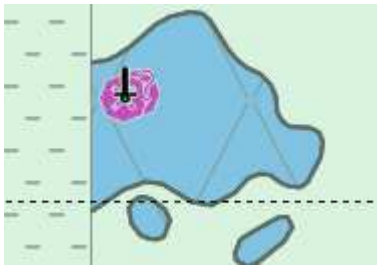

- 1/250·000 - WGS84 - Sondes en meters - Affichage : Standard
Carte
Echelle de compilation 1/90·000
Datum vertical Mean sea level
Datum des sondes Mean sea level
Qualité des données
zone of confidence B
Variation magnétique 4.33°E
Isobathe de sécurité 20.0 m
025°40'E
026°00'E
026°20'E

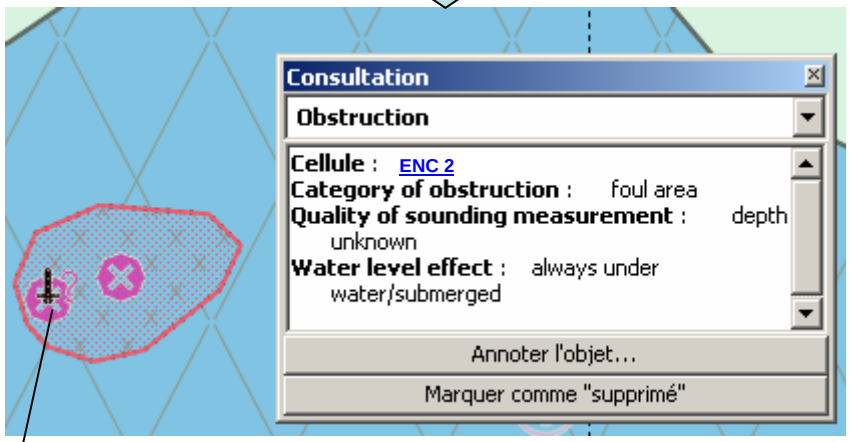
On the ENC 1

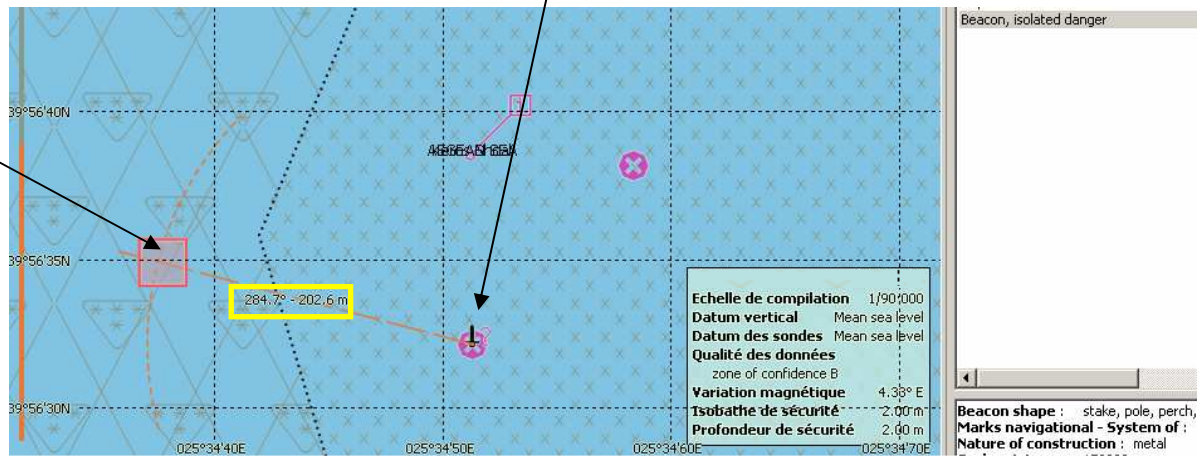




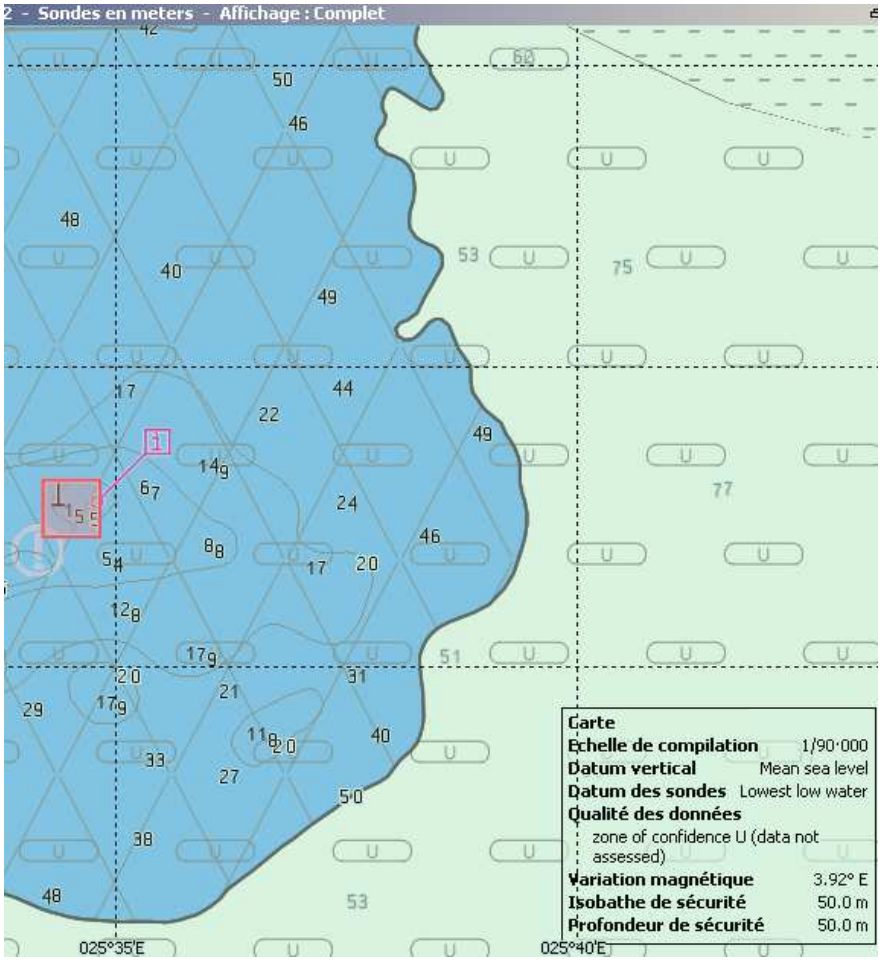
On the ENC 2

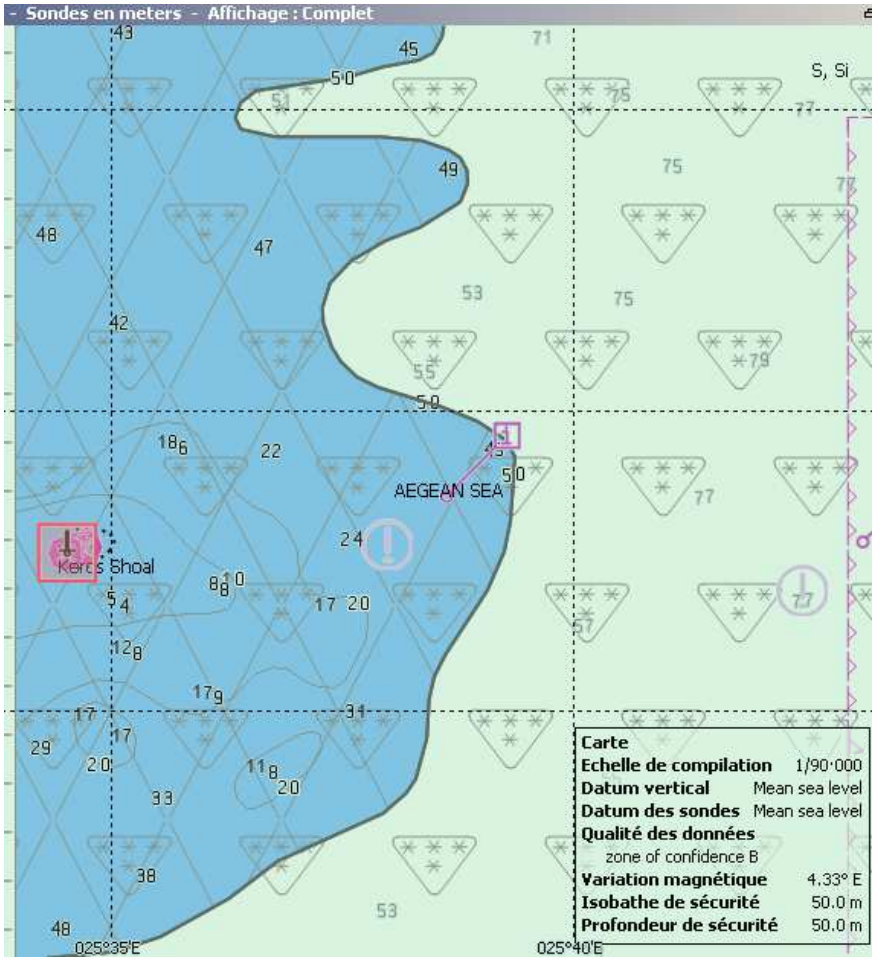






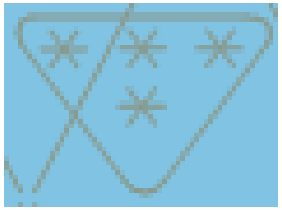
50m depth on these ENCs





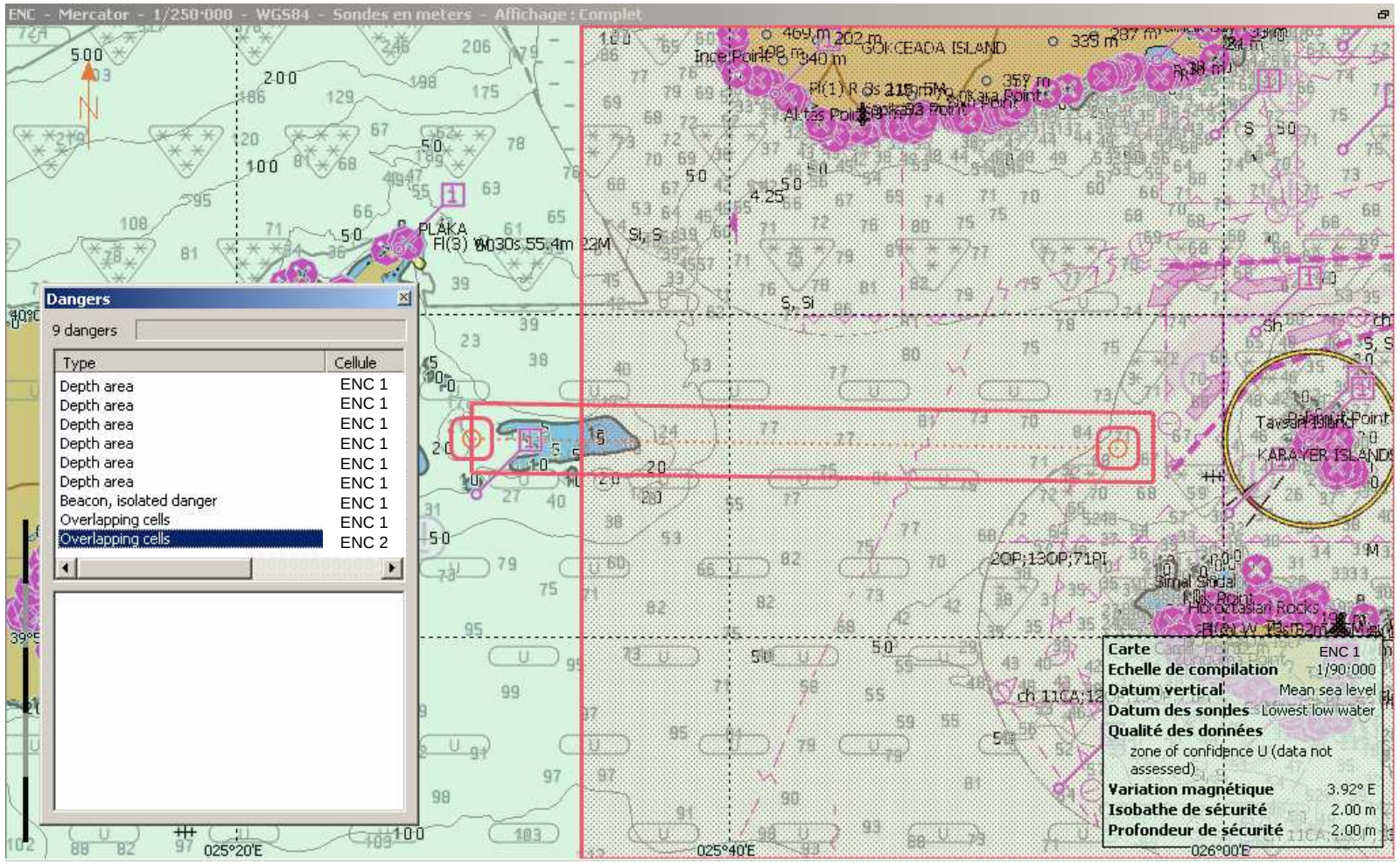
Note: Difference of CATZOC

On the ENC 1



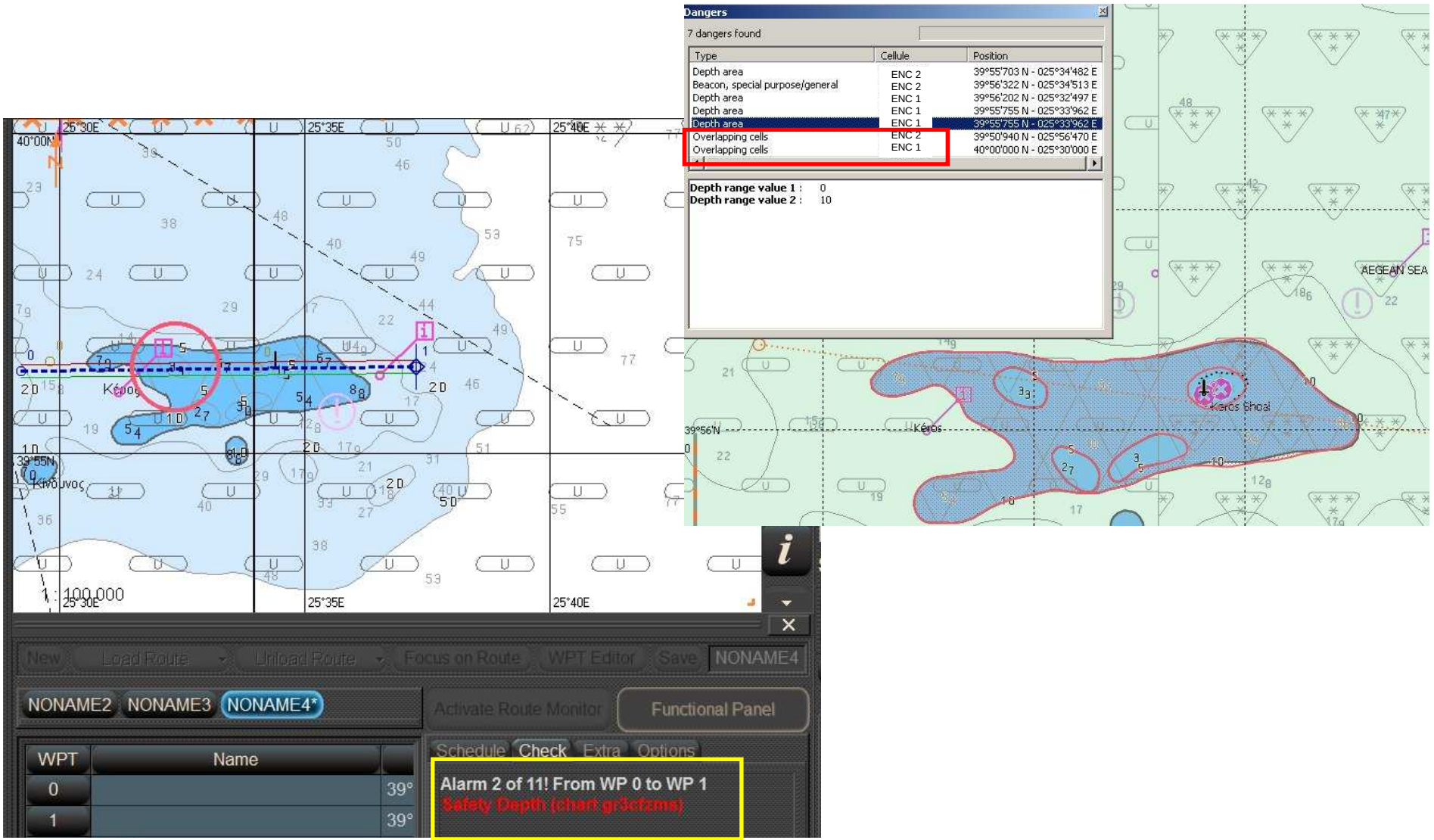
On the ENC 2

Check of a route on these ENCs



The obstructions on the ENC 2 are not detected.

Senin: indication of the overlap



Transas: 11 dangers on both ENCs but no indication of overlap

Traffic Separation Scheme

INTERNATIONAL HYDROGRAPHIC
ORGANIZATION

IHB File No. S3/8152

CIRCULAR LETTER 78/2012
10 August 2012

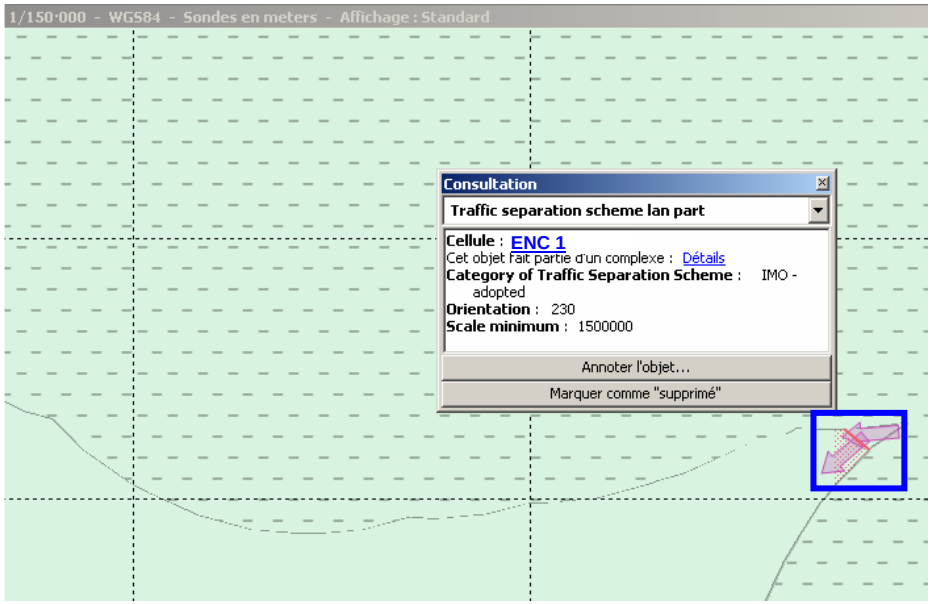
WORLDWIDE ELECTRONIC NAVIGATIONAL CHART DATABASE WORKING GROUP
REQUEST FOR INPUT TO
THE GUIDELINES FOR THE IMPLEMENTATION OF THE WEND PRINCIPLES

1.7. The S-57 standard requires that there is no overlap of ENC data within usage bands. ECDIS systems will operate unpredictably in areas where overlapping ENC data is present; for this reason overlapping ENC data is not acceptable in end-user services. Where overlapping coverage exists the producing States should recognize their responsibility and take the necessary steps to resolve the situation. In situations where overlapping data cannot be resolved through negotiation, the ENC producer(s) can anticipate that an end-user service provider may need to take action itself to eliminate the overlap or discontinue services until the issue is satisfactorily addressed. Any such action to eliminate overlap should be communicated in advance to the affected ENC producer(s) and be based on guidelines that emphasize navigation safety, such as the following:

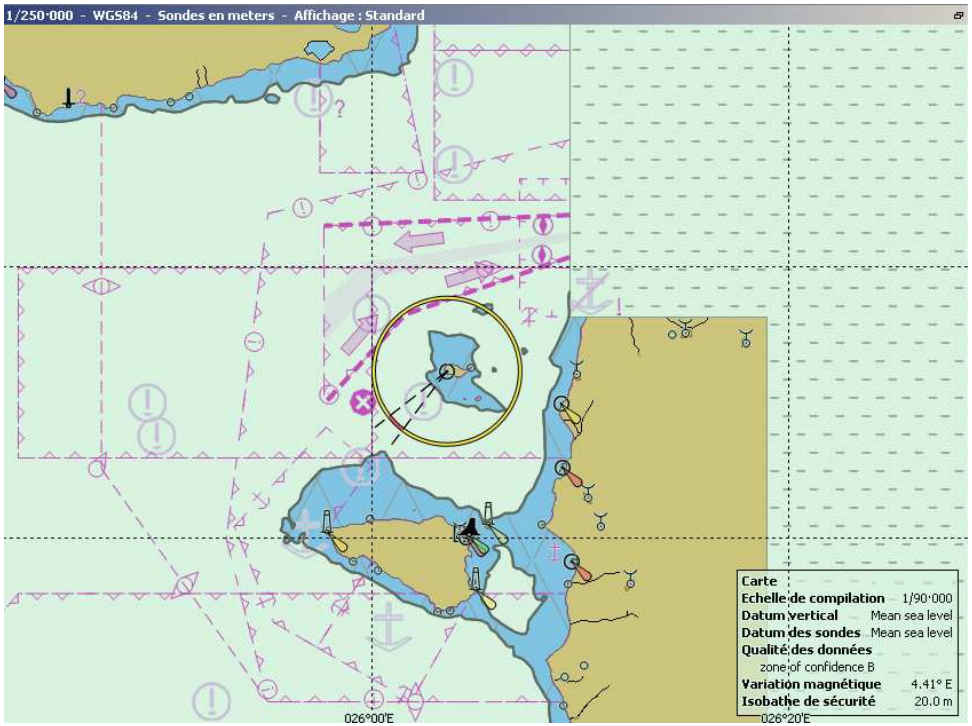
1. Scale of the data compiled in the ENC,
2. Currency of data in the ENC - i.e. most recent surveys, shoalest soundings, wrecks, rocks, and obstructions,
3. Avoidance of dividing navigationally significant features between producers. For example, Traffic Separation Schemes should be handled by one producer or the other.

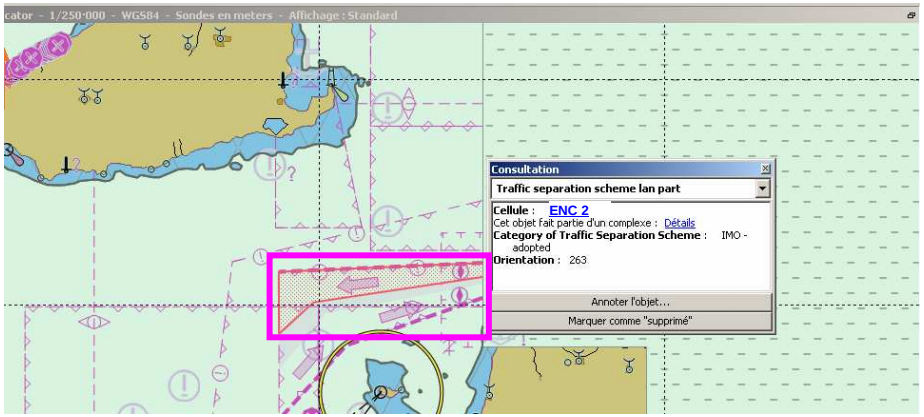
Traffic Separation Scheme (TSS)

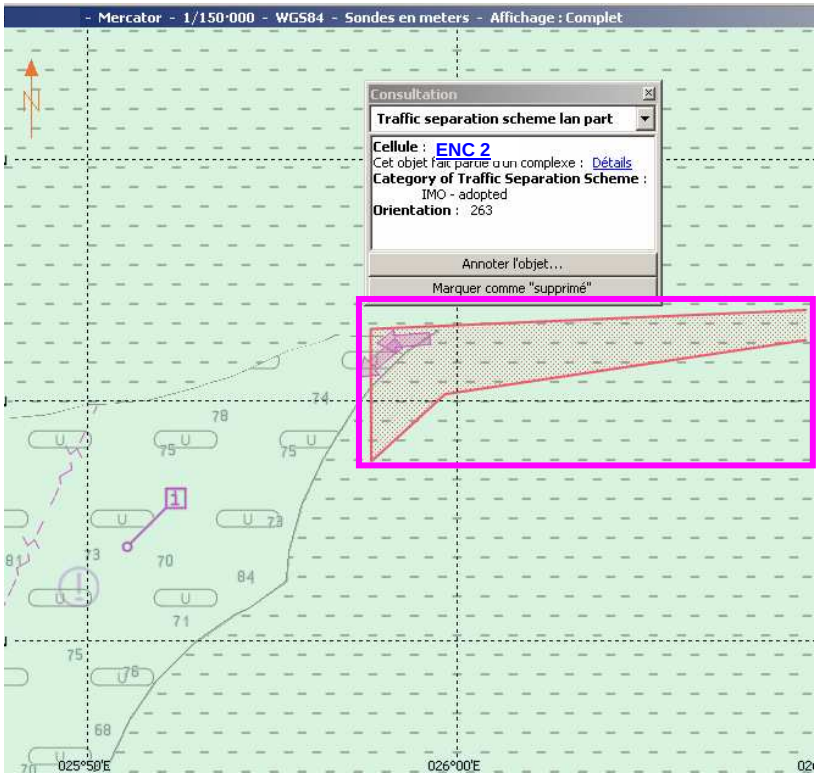
On the ENC 1



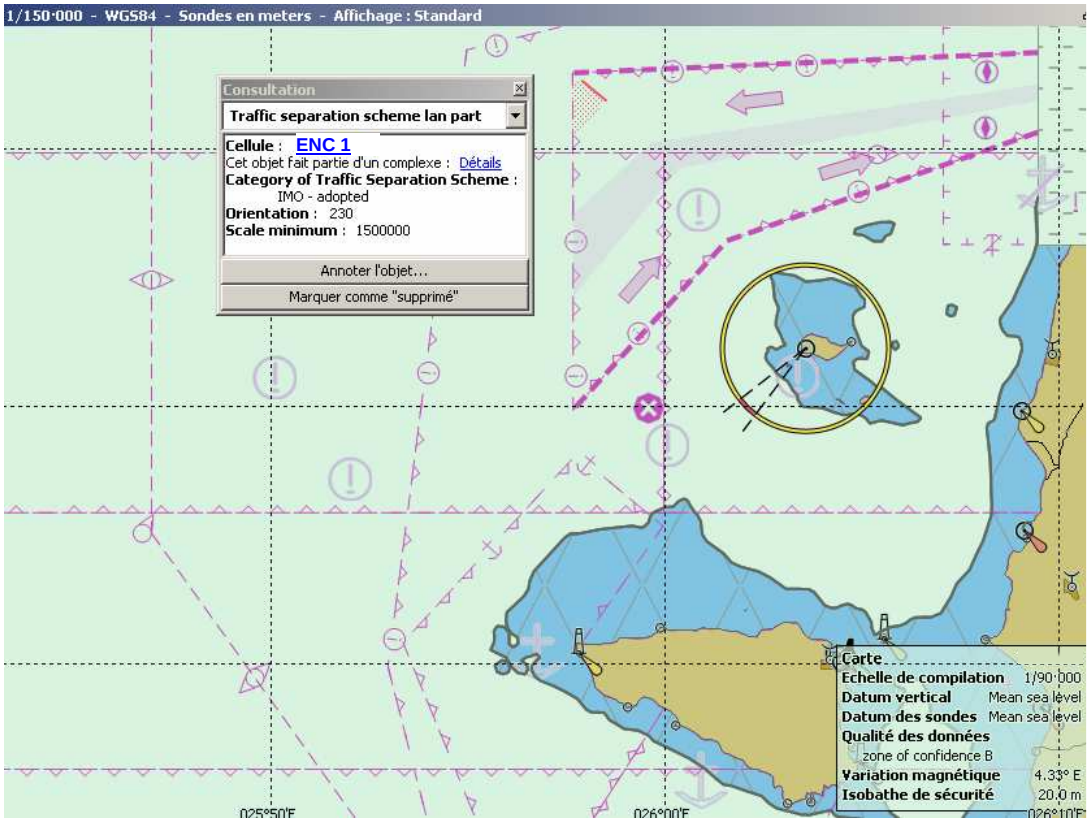
On the ENC 2







View on the ENC 1 of the TSS coded in the ENC 2



View on the ENC 2 of the TSS coded in the ENC 1

About the standards…

S-65 If ENCs are to display correctly in an ECDIS it is especially important that there is no overlap of data within the same navigational purpose band. The ENC Product Specification3 makes it clear that such overlap must not occur. See also S-57 Appendix B.1, Annex A – Use of the Object Catalogue for ENC, clause 2.1.8.

S-57 Appendix B.1, annex A – Use of the Object Catalogue for ENC

2.1.8 Seamless ENC coverage

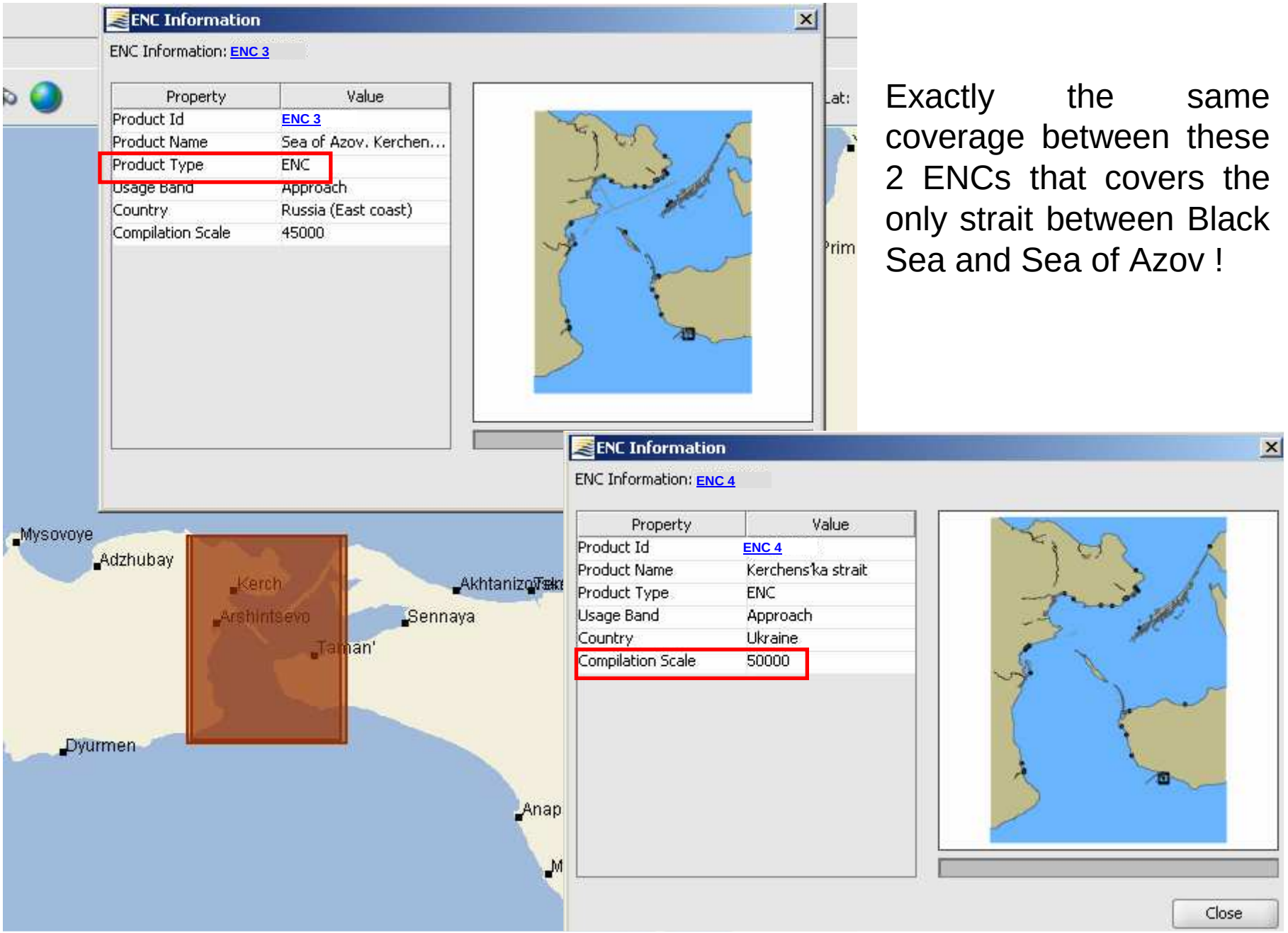
There must be no gaps in data between adjoining cells of the same Navigational Purpose. Similarly, there must be no overlapping data between cells of the same Navigational Purpose (see S-57 Appendix B.1 – ENC Product Specification, clause 2.2),

S-57 Appendix B – Product Specifications

2.2 Cells

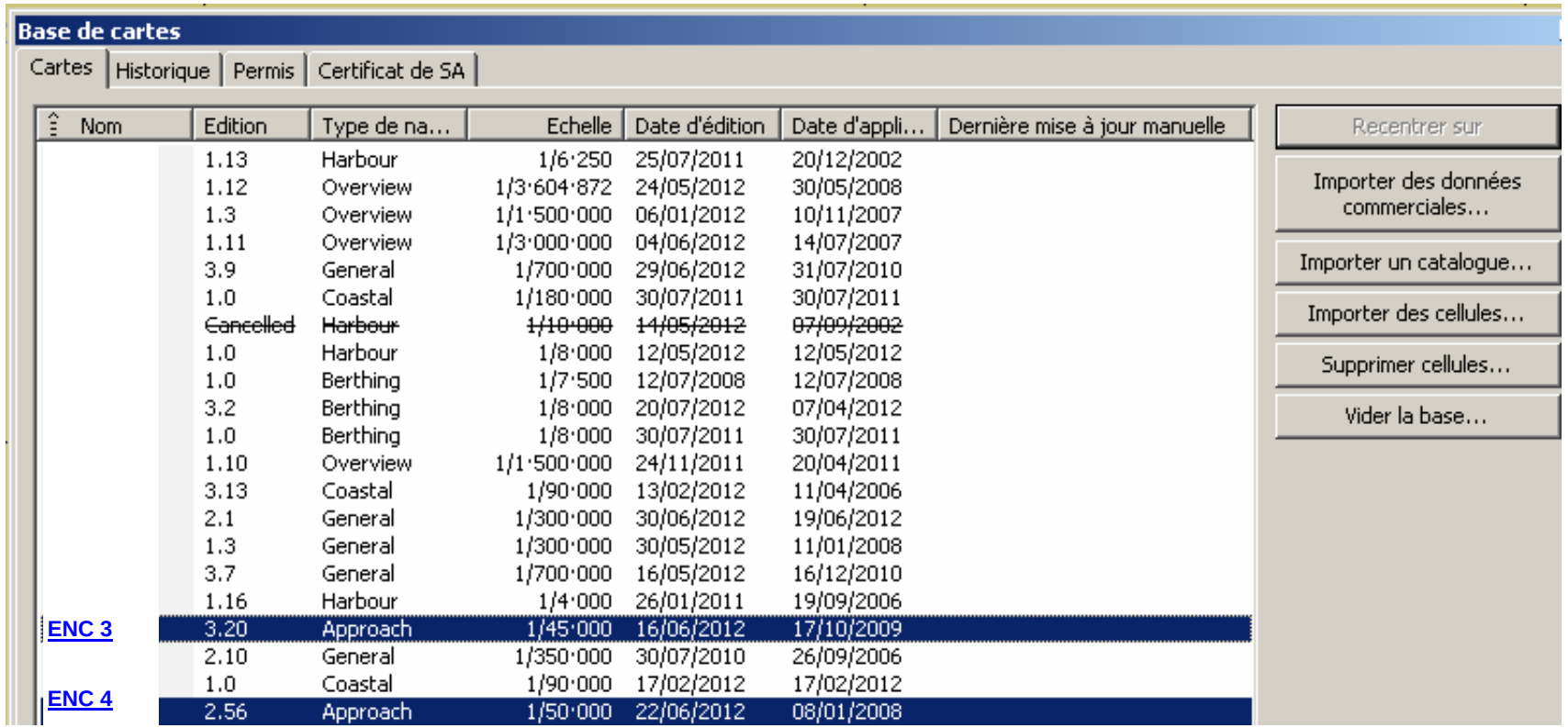
The area within the cell which contains data must be indicated by a meta object M_COVR with CATCOV = 1. Any other area not containing data must be indicated by a meta object M_COVR with CATCOV = 2.
Cells with the same navigational purpose may overlap. However, data within the cells must not overlap. 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.

Another example…



Exactly the same coverage between these 2 ENCs that covers the only strait between Black Sea and Sea of Azov !

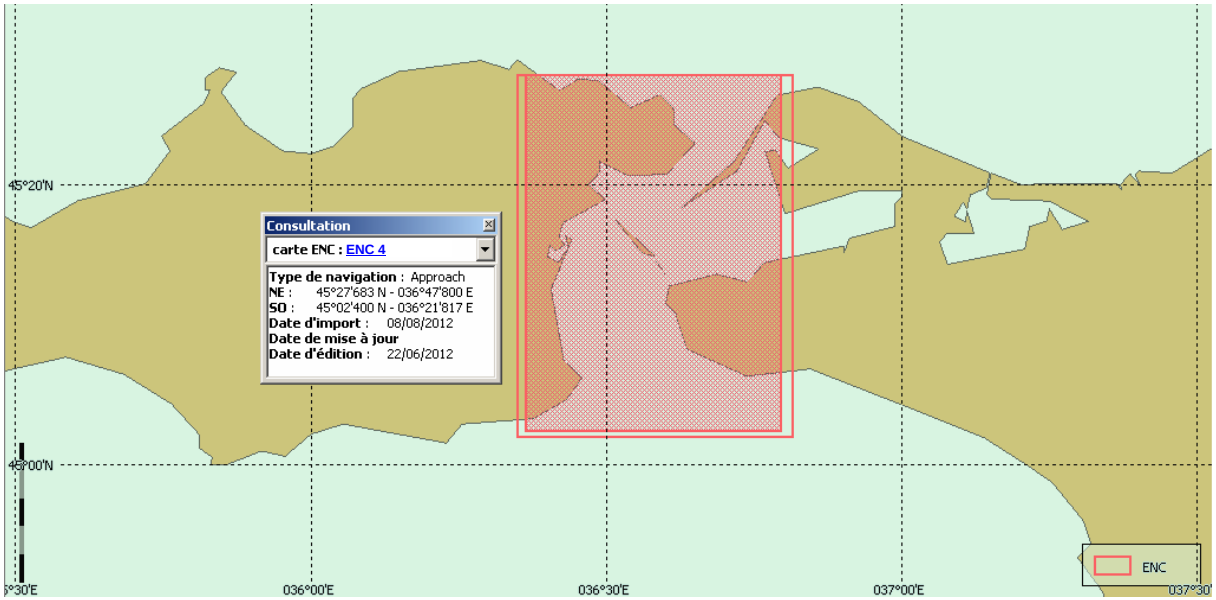
Scales : ENC 3 : 1/45 000
ENC 4 : 1/50 000



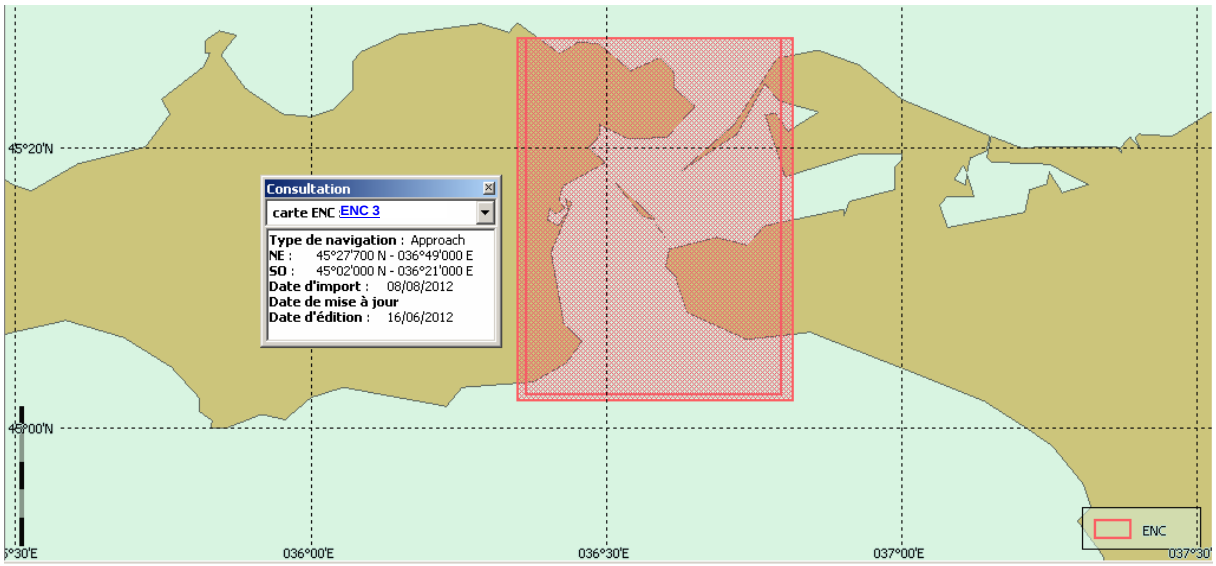
Scales very close : it is possible to compare the ENCs.

Coverages of the ENC on ECDIS

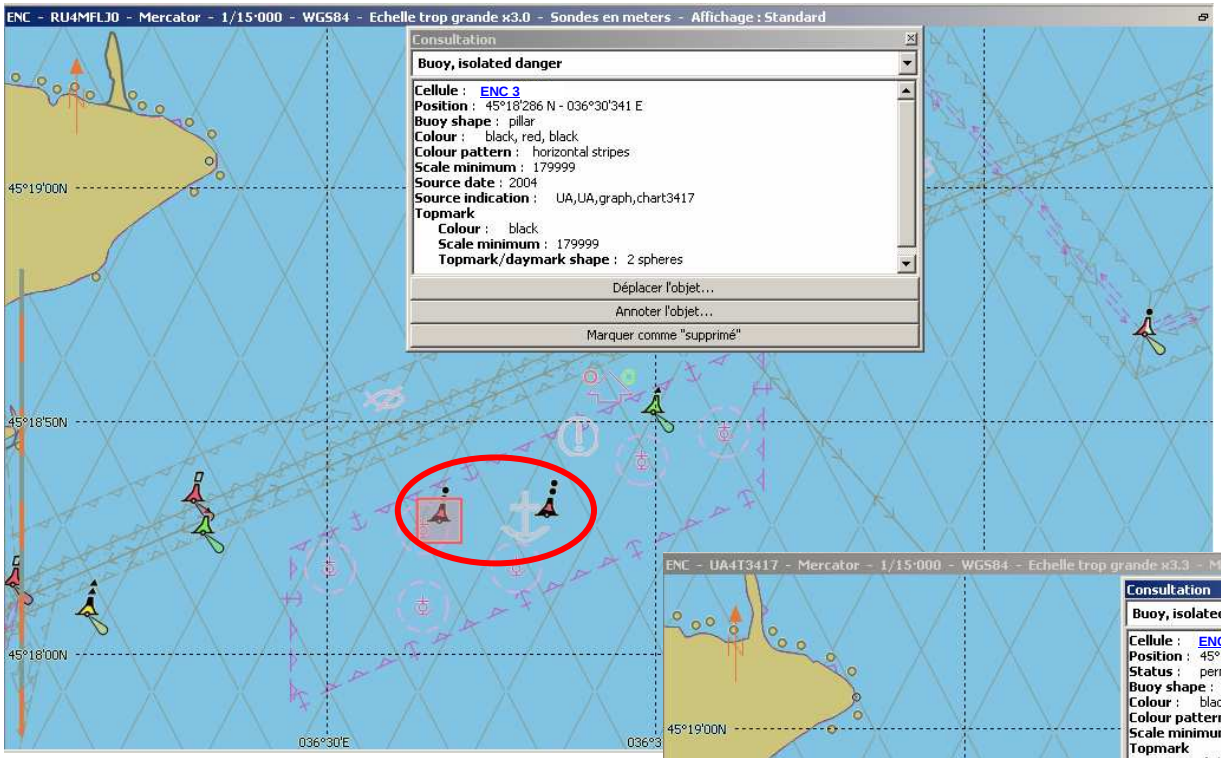
For the ENC 4 :



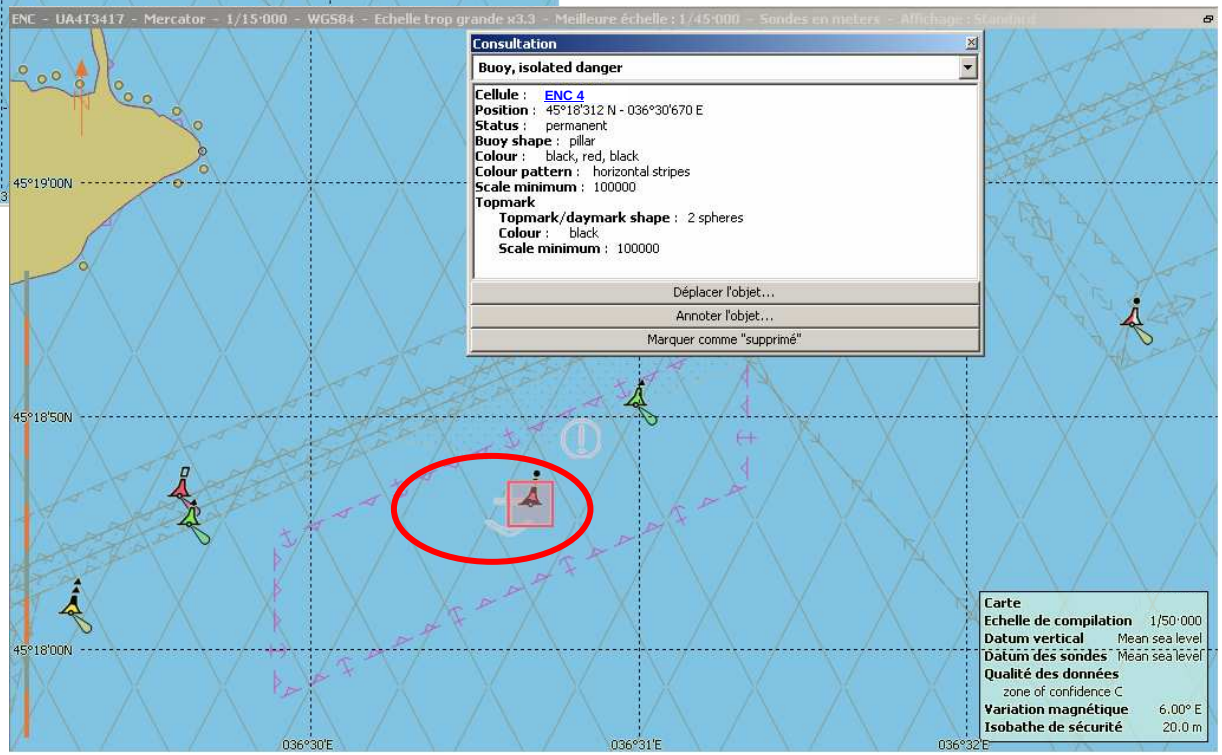
For the ENC 3 :



Buoys of isolated dangers:



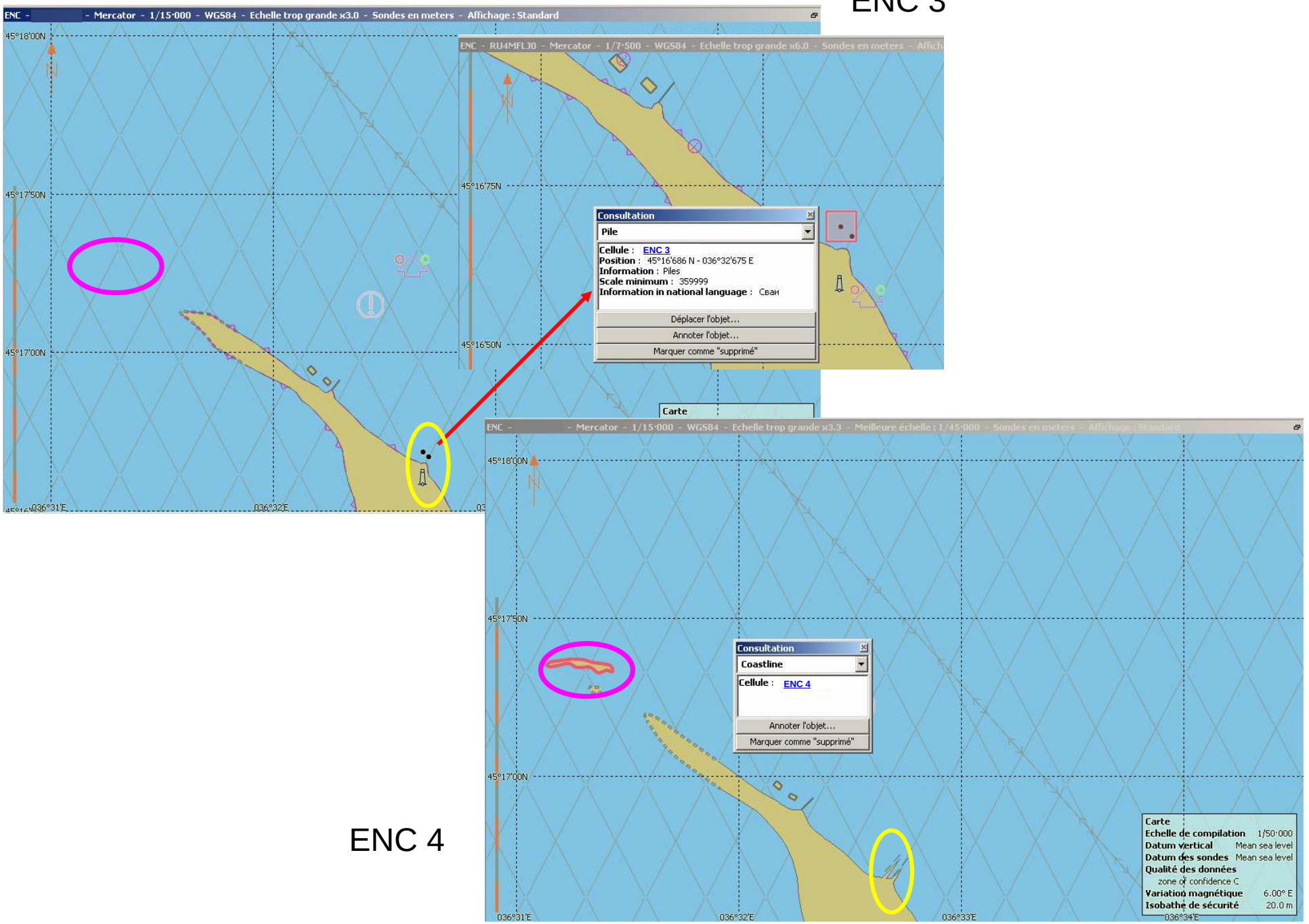
ENC 3



ENC 4

Piles and Coastal lines:

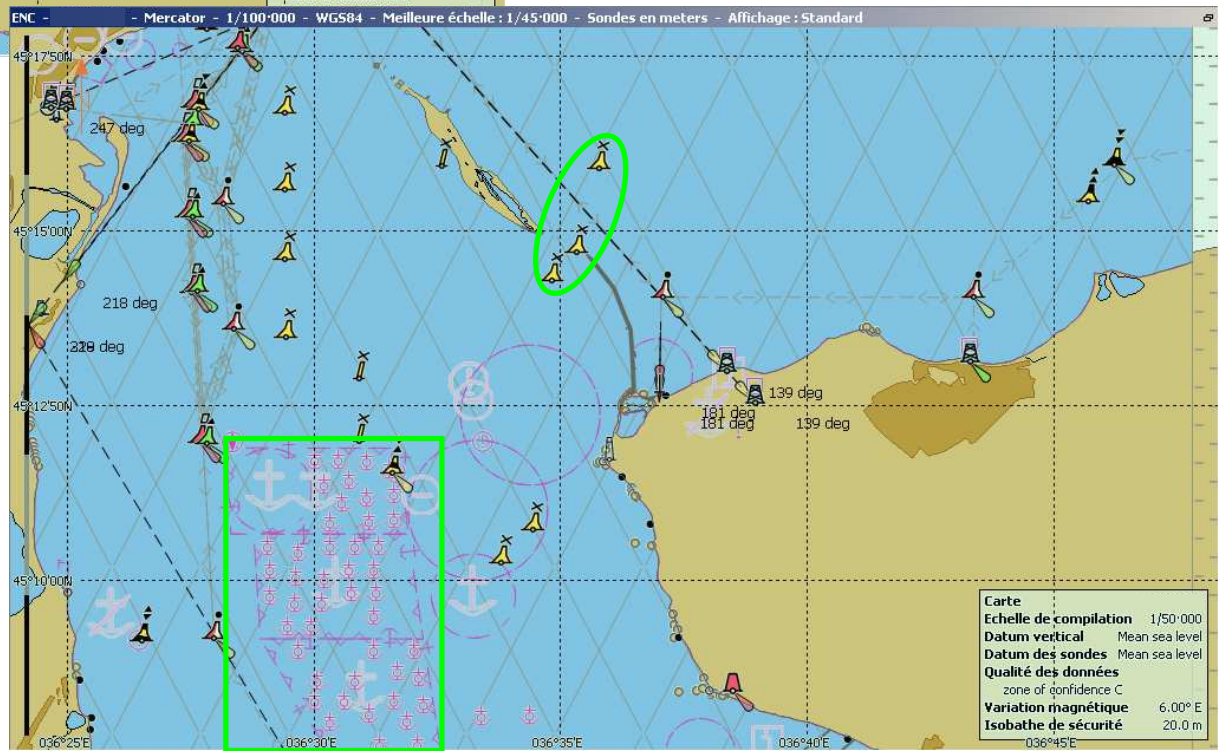
ENC 3



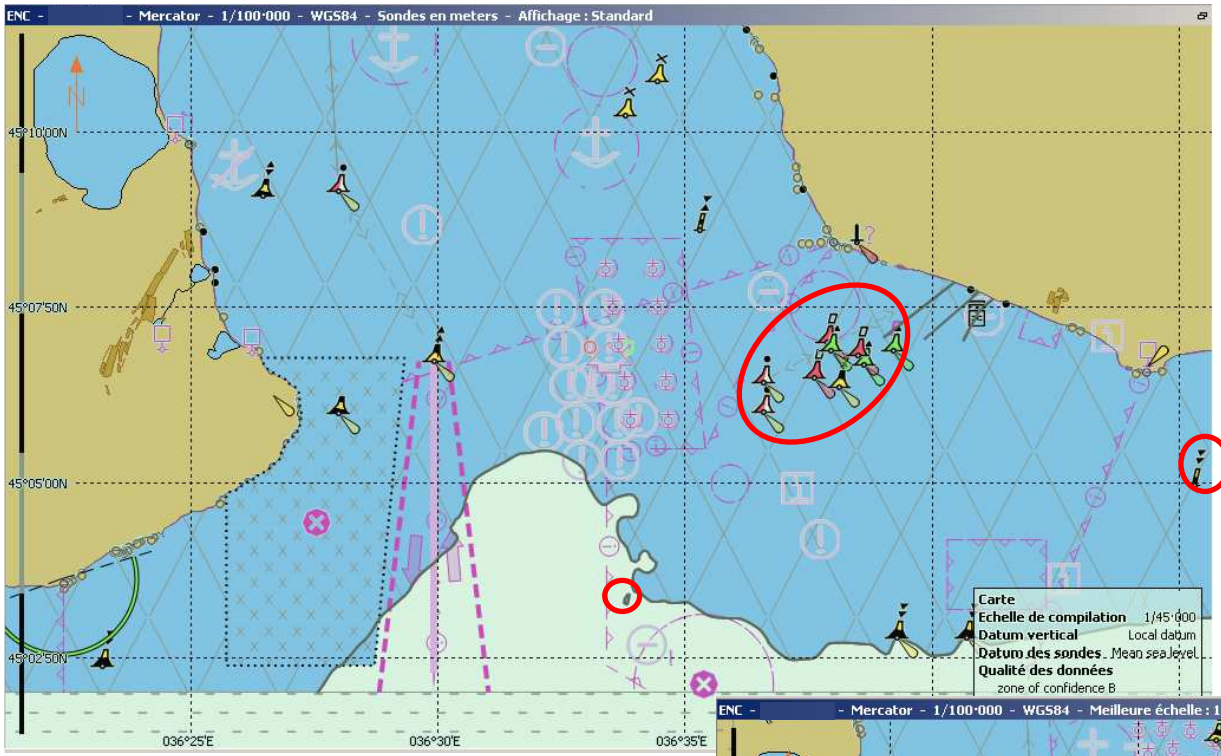
ENC 4


ENC - Mercator - 1/100·000 - WGS84 - Sondes en meters - Affichage : Standard
45°17'50N
45°15'00N
45°12'50N
45°10'00N
036°30'E
036°35'E
Carte
Echelle de compilation 1/45·000
Datum vertical Local datum
Datum des sondes Mean sea level
Qualité des données
zone of confidence B

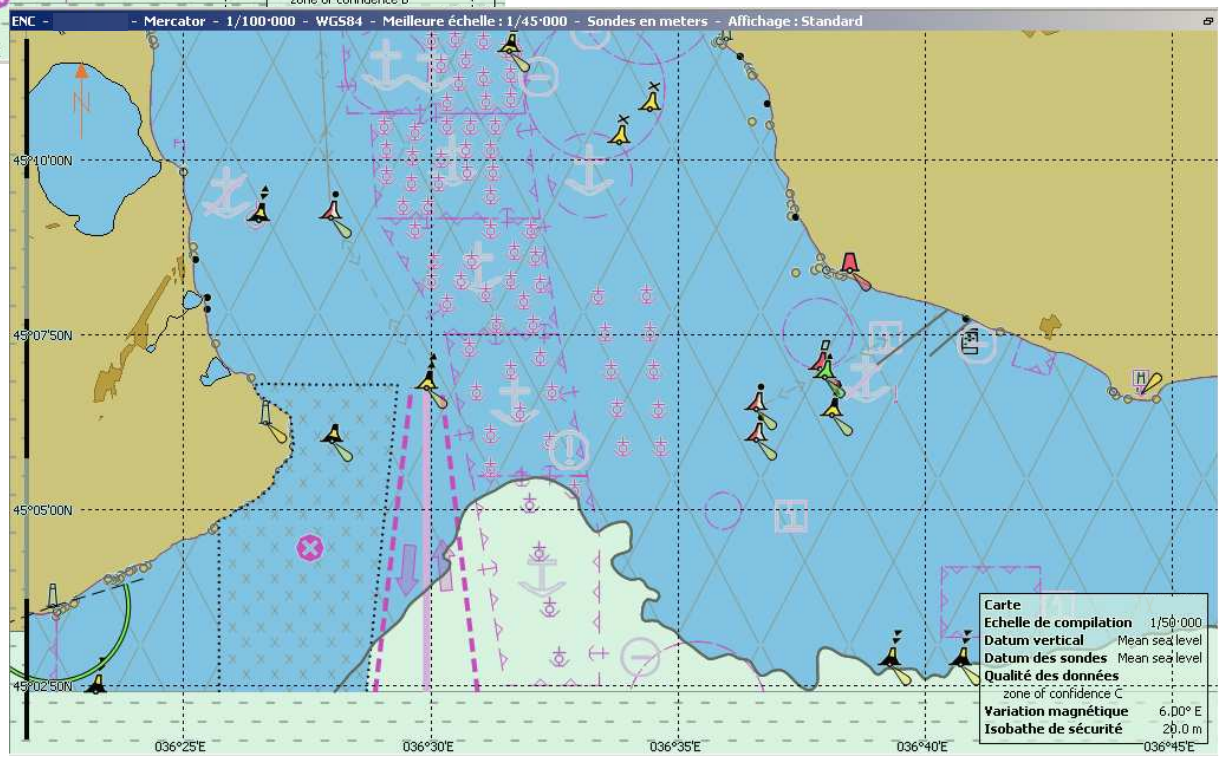
ENC 3


ENC - Mercator - 1/100·000 - WGS84 - Meilleure échelle : 1/45·000 - Sondes en meters - Affichage : Standard
45°17'50N
247 deg
45°15'00N
218 deg
45°12'50N
139 deg
181 deg
45°10'00N
036°25'E
036°30'E
036°35'E
036°40'E
036°45'E
Carte
Echelle de compilation 1/50·000
Datum vertical Mean sea level
Datum des sondes Mean sea level
Qualité des données
zone of confidence C
Variation magnétique 6.00° E
Isobathe de sécurité 20.0 m

ENC 4


ENC - Mercator - 1/100·000 - WGS84 - Sondes en meters - Affichage : Standard
45°10'00N
45°07'50N
45°05'00N
45°02'50N
036°25'E
036°30'E
036°35'E
Carte
Echelle de compilation 1/45·000
Datum vertical Local datum
Datum des sondes Mean sea level
Qualité des données
zone of confidence B

ENC 3


ENC - Mercator - 1/100·000 - WGS84 - Meilleure échelle : 1/45·000 - Sondes en meters - Affichage : Standard
45°10'00N
45°07'50N
45°05'00N
45°02'50N
036°25'E
036°30'E
036°35'E
036°40'E
036°45'E
Carte
Echelle de compilation 1/50·000
Datum vertical Mean sea level
Datum des sondes Mean sea level
Qualité des données
zone of confidence C
Variation magnétique 6.00° E
Isobathe de sécurité 20.0 m

ENC 4

Provisional analysis

- Overlaps issues have been identified by the RENCs and information was reported to the relevant HOs « *Discussions are in hand between the relevant hydrographic offices in order to resolve this overlapping data problem".* So what?

- Issues may impact navigation safety…meanwhile the ENCs remain distributed to the EUSPs through the RENCs and therefore share some of the responsibility for their distribution

- The more ENCs we will have, the more we may be faced to such situations all over the world

- The RHC, the RENC, the IHB can do very little about this…but it would be an IHO collective responsibility if an accident occurs

→So, is there any other alternative than going to the process suggested in the draft amplifying annexes (incl. amendments suggested by IHO MS to be analyzed during WEND-WG02)? Is it acceptable for the RENCs (who have a better knowledge of the discrepancies than the RHCs) to continue the distribution of these ENCs? If not, for how long may the IHO accept a "gap"? Do we accept an EUSP (industry for instance) to create a seamless coverage until the problem is solved? If ENCs are distributed, who should issue the NAV warning? The RENC operator?

→Alternatives and potential consequences?