

## Port State Control Issues – Australian Maritime Safety Authority

*The following concerns were provided by the Australian Maritime Safety Authority. They have been extracted from a series of separate emails in the period December 2016 to February 2017. Discussion with AMSA's Principal Marine Surveyor indicate their strong hope that the scope of "S Mode" will be sufficient for ship's staff to more easily and effectively manage ENC subscriptions, permits and ENC update status, and to be able to demonstrate this to Port State Control inspectors.*

*As a result of reading these emails, my personal opinion is that, when considering crew competency, the wide variety and complexity of managing charts and permits, and the wide variety of methods required across different existing systems to access this information, that total reliance upon current generation ECDIS remains a significant risk. This is particularly the case for those operators providing only the minimum levels of training for bridge staff.*

*While crew competency is in the hands of the IMO, the inclusion of subscription, permit and update status tools for ENC management within the scope of the projected "S Mode" must be considered the highest priority to address these difficulties. "S Mode" should not be limited to only those functions associated with active navigation.*

*Mike Prince  
Director Charting Services  
Australian Hydrographic Service  
16 Feb 17*

Good Morning Mike,

As requested, please find below/attached.

[AMSA36](#) – booklet freely available online with PSC checklist. Area 4 contains "Voyage Plan and publications" which are checked against the SOLAS and appropriate circulars for compliance.

Port State Control Officers (PSCOs) may ask the following:

- Demonstration that appropriate and adequately updated ENCs are loaded and installed
- ECDIS software is maintained and updated
- Voyage plan for previous and/or next passage can be displayed
- Officers are familiar with the system and back up arrangements
- Back up arrangements are appropriate (if paper charts the passage is duplicated, or if ECDIS the information is duplicated)

In a semi-related note we are finding large numbers of ECDIS incidents where ECDIS HDDs fail, which appear to be due to cumulative errors over time.

Kind regards,

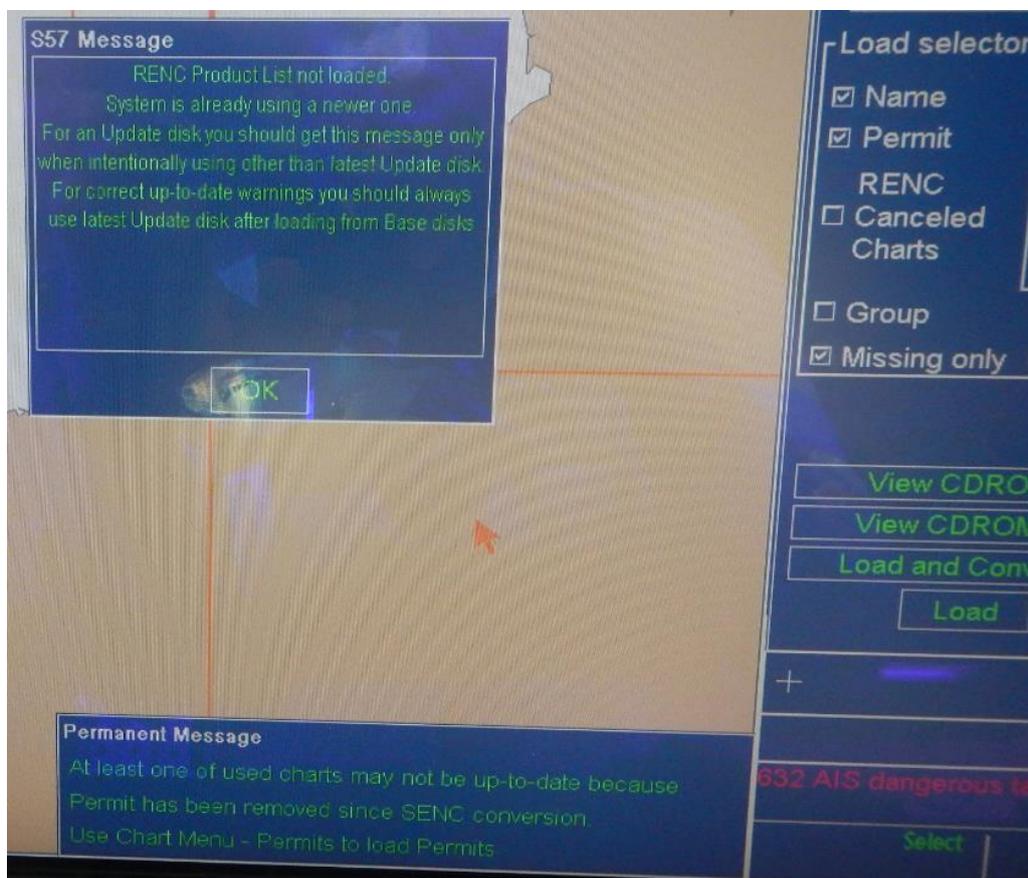
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## ECDIS Update and Permit Issues

As per previous emails we have found that if the ECDIS ENC Base Discs (usually updated monthly) are not loaded then the following ENC updates (usually weekly by email) will not be accepted by the ECDIS. This will also happen when a ship changes operators and the new operators obtain their ENC permit from another provider. I have even seen this when the new company uses the same provider and are issued a new permit. It seems many deck officers are not aware of this and do not realise the ENCs are not updated.

Last week we inspected a ship that had been laid up by the owners for 9 months due to lack of a charter. We found that several of the ENCs for the intended voyage were not updated. The ship had been laid up cold (that is without crew) so the ECDIS ENCs was not updated during those 9 months. The ENCs were updated when the ship was brought back into service, however because the ENCs were not updated in the previous 9 months the updates were not accepted by the ECDIS. To cut a long story short, the ENC could only be updated after all the updates for the missing 9 months were loaded with the assistance from the ENC provider. It took several hours to download the updates and would have cost a small fortune in data.



Regards

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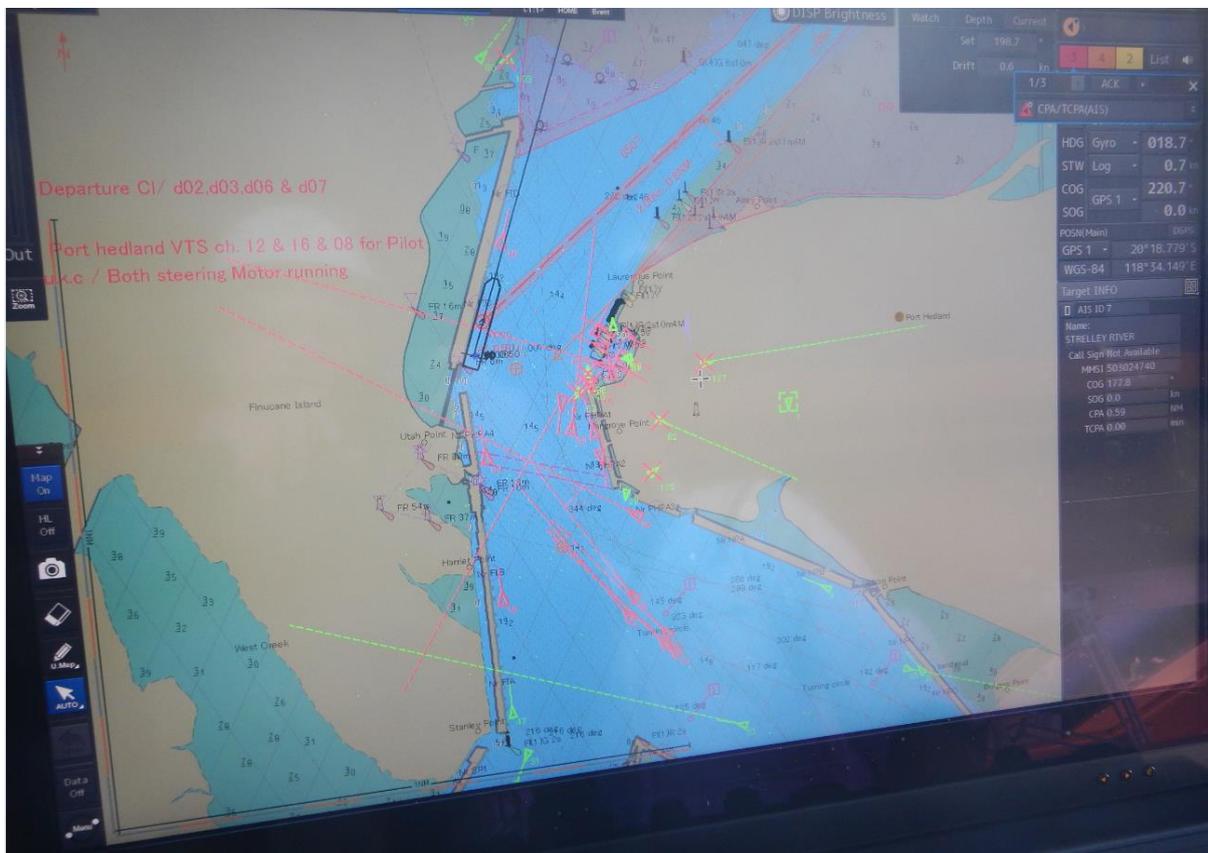
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## ECDIS and AIS data inconsistencies

Hello all

See below ECDIS screen with the AIS ship targets displayed over land. I have not seen this before, has anyone else seen this or something similar? In this case when the No1 ECDIS was zoomed in or out some of the AIS targets persisted in the same position on the ECDIS screen however the same thing did not happen on No2 ECDIS. When I asked the attending deck officers what the targets were over the land they told me that those targets were planes or helicopters. After I pointed out that those were ship targets and persisted in the same position on the screen when the scale was changed, the deck officers admitted they had observed the AIS error several times on that ECDIS but not on the other ECDIS. The ship was her maiden voyage and a company superintendent had been on board since before the ship left the shipyard. He was present on the bridge when I inspected the ECDIS and discovered the problem. He told me that he had not been informed there was an issue with the ECDIS AIS interface and naturally he became annoyed with the deck officer and master. I did not issue a deficiency as the superintendent said he would submit a warranty claim and contact the manufacturers for advice. A note was put on the No1 ECDIS alerting about the AIS targets. By the way the one target that is acquired, the Strelley River, is actually on land, it is under repair in the workshop.



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## **ECDIS PSCI Issue Companies Saving on Data Costs for ENC Updates & ENC Update Failures**

Hello surveyors please see below another ECDIS lesson learnt.

When the ship was inspected 4<sup>th</sup> Jan 2017 the ECDIS ENC's had not been updated since week 45 of 2016. See the photo below showing the ENC; the red ENC cells are not corrected up to date (colour appears orange on photo). The master said that the ENC are updated with CD's delivered to the ship rather than by email download. He said that he was unable to update the ENC by email download because he had not received the CD with the ENC base update. The premise being that any ENC updates, whether by CD or email download issued subsequent to the latest base update, cannot be loaded into the ECDIS. This is very similar to the issue I recently found on another ship where the ENC updates were not loading into the ECDIS because the newest CD catalogue had not been loaded into the ECDIS. The ship had changed the management company and RENC provider so the CD catalogue was not recognised by the new RENC updates. In that case the master and navigating officers were not aware that the ECDIS ENC were not updating. See attached email FYI.

Which also reminds me that we discussed RENC at a previous west PMS meeting, see definition below FYI.

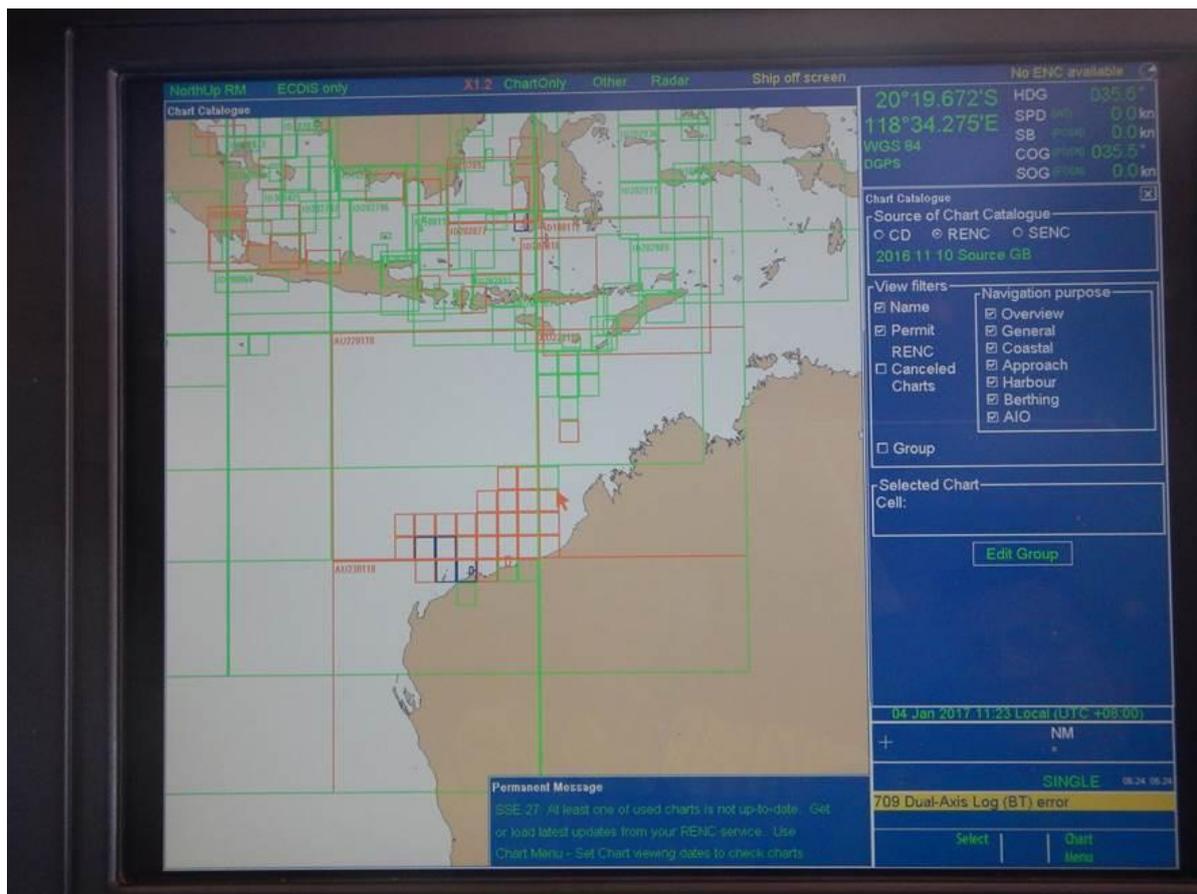
### **RENC - *Regional ENC Coordination Centre***

RENC validates and distributes ENCs from producing nations to end-users. Only two currently exist, PRIMAR in Norway and IC-ENC in the UK

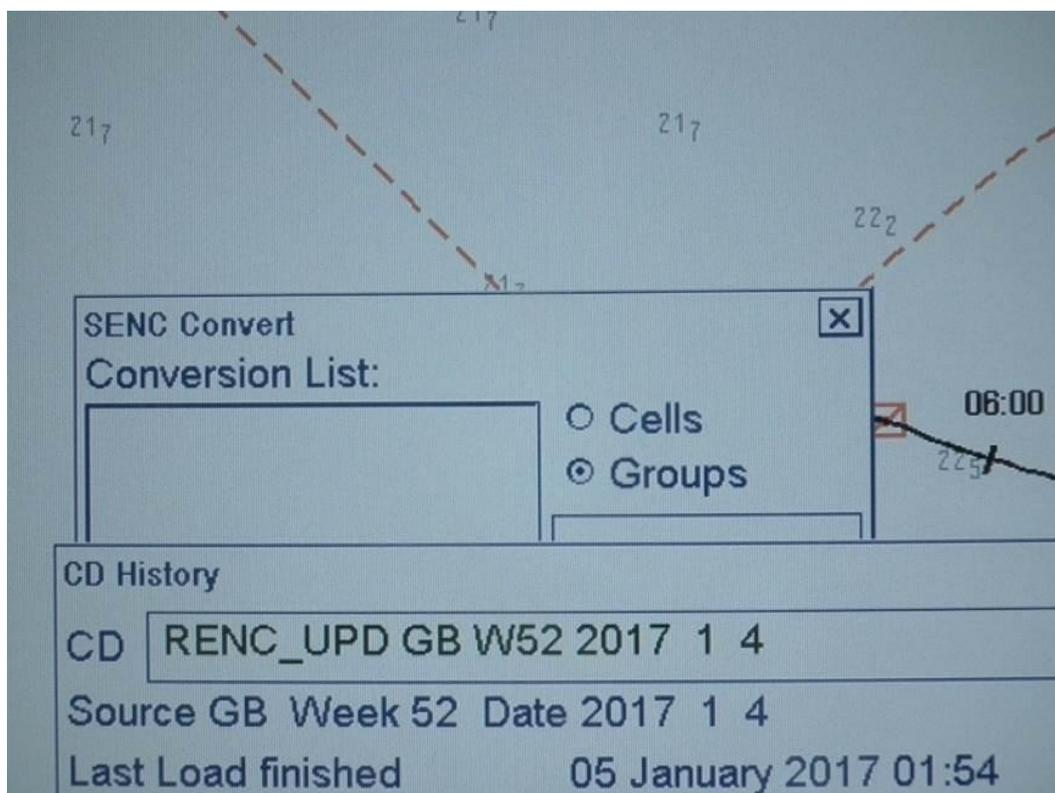
There are several issues here, one is that the companies are saving the cost of data transfer by obtaining ENC updates by CD rather than email download even though the CD's make take several weeks to reach the ship and there is the possibility some will be lost in transit.

The other issues are that while the ENC are being updated by CD or email download as required some officers are not recognising when the updates are failing and are accepting that it is OK that the last ECDIS ENC updates were two months ago. If the ship had been using paper charts for navigation I am sure the master would have made more effort to obtain the latest chart corrections.

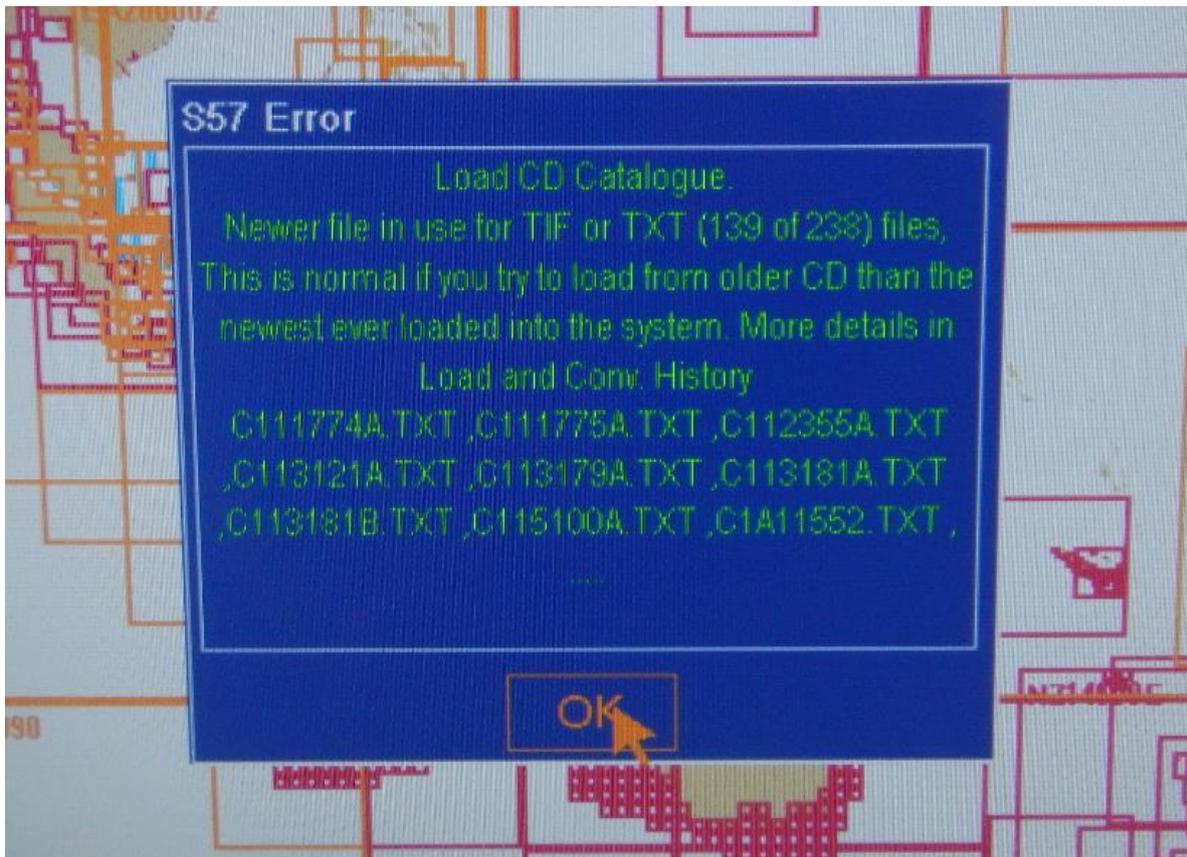
The ship was able to download the ENC base update from the SENC however this took several hours because of the data transfer speeds and was not completed until the early hours of the morning. Yan was very pleased to receive the phone call from the master at that time.



See below from ship following successful update.



The photo below is from the previous case as described in the attached email. The error message is pretty self explanatory, however the officers did not understand what it meant.



Regards

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## ECDIS & ENC Permits & Licenses Lesson Learnt

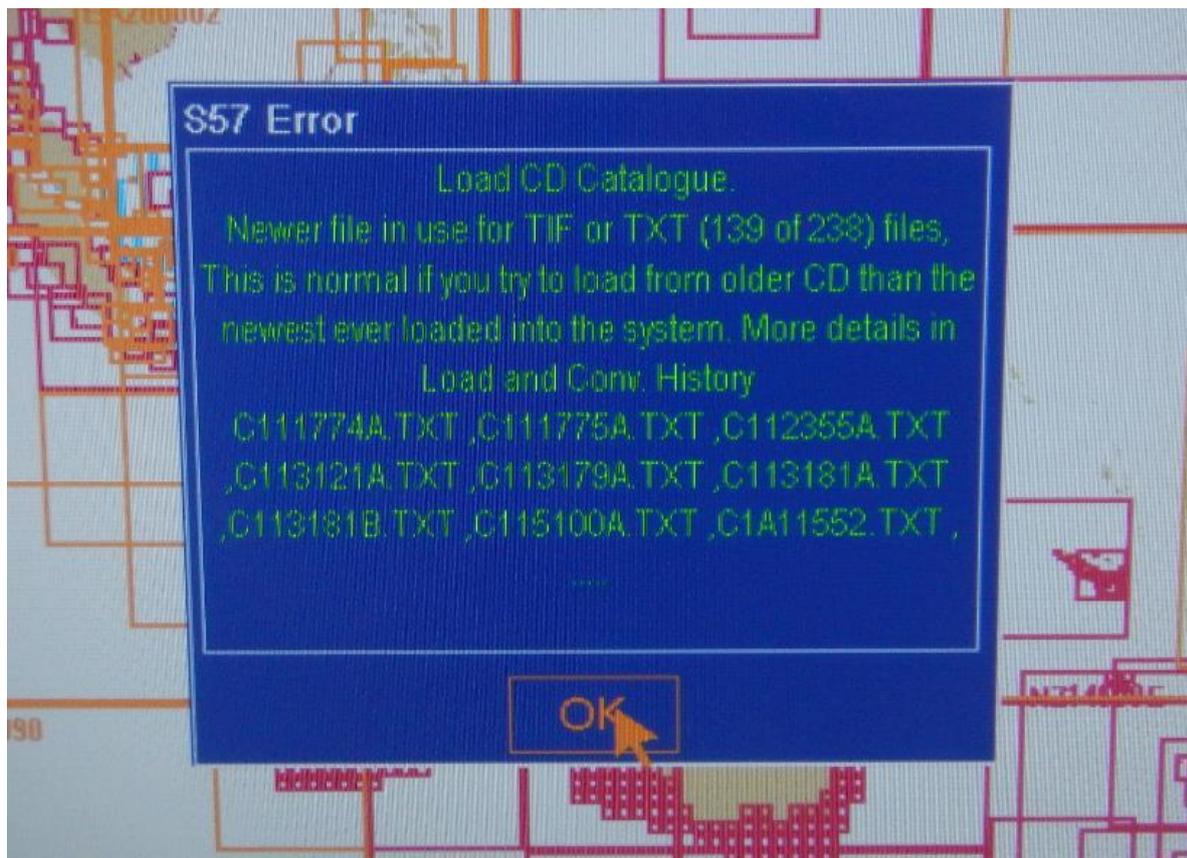
Hello all

I inspected a ship last week that had changed management company the previous week. A company superintendent was on board conducting an audit and assisting the new master and crew with the implementation of the company safety management system and familiarisation with the ship.

The master and superintendent told me that the ECDIS ENC licence permits from the company were loaded and the ENC were updated with latest available CD ROM just prior to me coming on board. When I inspected the ECDIS I requested to be shown the passage plan and ENC for the intended voyage as well as all the licensed ENC. The master and officers had difficulty in bringing up the diagrammatic screen showing all ENC available. After some confusion and delay the screen was found. The ENC for the intended voyage were outlined orange while other ENC were mostly outlined red and a few were green. There was also a permanent message that charts may not be up to date because the permit has been removed. See below.



There was another message which the master and officers were unable to explain the meaning of (it was not necessarily a real error message) see below.



I asked the master, officers and attending superintendent what the ENC colour codes represented; after initially telling me the ENC were up to date, they admitted the ENC were not up to date or cancelled after referring to the ECDIS operation manual. Red means no permit, green means has permit and is up to date. As per the operations manual orange means "the chart is available for use in SENC format but the chart is either not up to date or has been cancelled". I also asked them what the permanent message and other message meant and again they did not get the correct answers.

The superintendent contacted the company's ENC & tech support provider (Marine Press of Canada) by telephone and emailed a screen shot of the ECDIS as well. The tech support people diagnosed the problem that updating the ECDIS ENC with the new company licence did not allow updating of the ENC provided on the previous licence (not exactly as simple as that). I had come to that conclusion myself when I saw that the Port Hedland harbour ENC was green therefore updated. The master told me that they had obtained the permit for the Port Hedland harbour ENC from the new provider Marine Press of Canada. The other ENC that are green are those that have no updates (mostly ocean charts, China and Indian coastal).

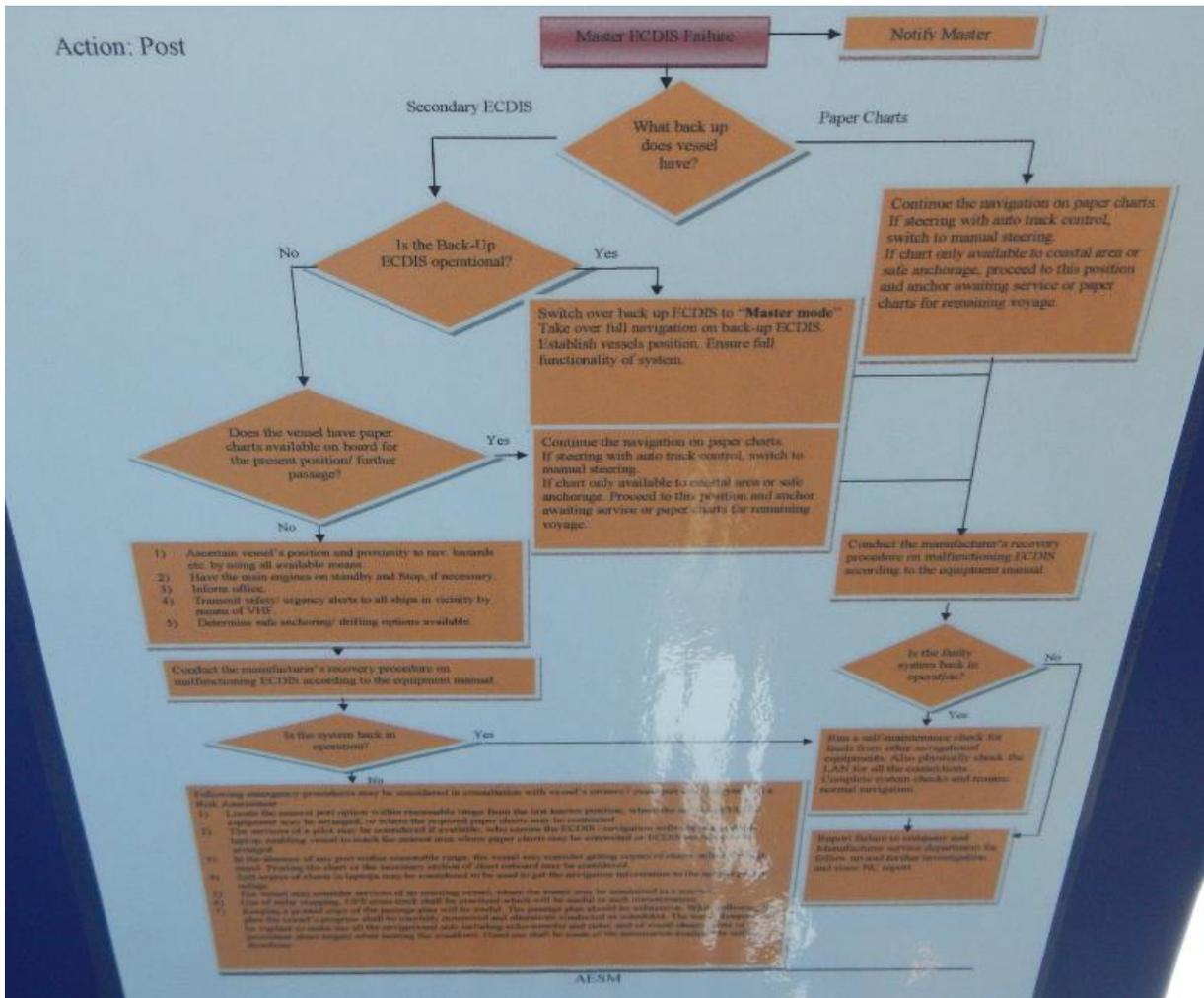
Marine Press of Canada emailed the fix (new permit numbers I guess) to be loaded on to the ECDIS.

The company has well developed ECDIS procedures passage planning and navigation with ECDIS as well as comprehensive ship specific ECDIS familiarisation checklist which all navigating officers had completed (except for the master). Despite the master and crew having completed generic and type specific ECDIS training very recently and all (except the

master) having completed the ship specific ECDIS training in the last week they were unable to recognise instantly that there was a problem with the ECDIS updates.

I was very impressed with the tech support from Marine Press of Canada, they answered the phone after one or two rings (noting it would have been in the middle of the night in Canada) and called back within minutes of receiving the screen shot with the diagnoses and fix.

Less reassuring was the company contingency procedure for ECDIS failure, see below.



Added by AHS - The key points within the lowest action box from this image include:

Following emergency procedures may be considered in consultation with vessel's owners / managers ... a Risk Assessment	
1)	Locate the nearest port option within reasonable range from the last known position, where the service TEC?... equipment may be arranged, or where the required paper charts may be connected.
2)	The services of a pilot may be considered if available, who carries the ECDIS / navigation software ... laptop, enabling vessel to reach the nearest area where paper charts may be connected or ECDIS service may be arranged.
3)	In the absence of any port within reasonable range the vessel may consider getting copies of charts online? ... email. Printing the chart or the necessary section of chart onboard

	<i>may be considered.</i>
4)	<i>Soft copies of charts in laptops may be considered to be used to get the navigation information to the nearest port or refuge.</i>
5)	<i>The vessel may consider services of an assisting vessel, where the transit may be conducted in a convoy.</i>
6)	<i>Use of radar mapping, GPS cross track shall be practiced which will be useful in such circumstances.</i>
7)	<i>Keeping a printed copy of the passage plan will be useful. The passage plan should be exhaustive. While following the plan the vessel's progress shall be carefully monitored and alterations conducted as scheduled. The watch keeper ... be vigilant to make all use all the navigational aids including echo-sounder and radar and of visual observations of prominent shore targets when nearing the coastlines. Good use shall be made of the information in sailing directions.</i>

Regards

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## ECDIS Hardware and Software Issues

Hello all

This week a ship calling at Port Hedland reported that one of the two ECDIS failed after the weekly update. This is the 4th such incident in the last 2 months or so.

While I was conducting the PSCI the technician was still on board and he told me that this type of ECDIS failure is typical and fairly common for ECDIS units a few years old.

He told me that there are several reasons why the ECDIS hard drive become corrupted over time. This can be caused by the introduction of a virus during the ENC updates or through cumulative errors generated when updates are made or by random errors while the ECDIS is in operation. The ECDIS hard drive has both the operating software and the data required to generate the ENC's and to perform all the operating functions of the ECDIS. The issue is that, particularly with older generation ECDIS, the CPU speed is not sufficient to process the amount of data generated when the ECDIS is in operation and as a result these random errors occur. The newer generation ECDIS have solid state hard drives and faster CPU's to partially eliminate the problem.

The technician said that the manufacturers frequently update their ECDIS software to fix problems with the software (bug fixes). FURUNO apparently update their software about every 3 months. The updated software can only be installed by a technician so ships may operate for some time with an ECDIS which has outdated software.

The technician makes reference to the unavailability of ECDIS installation parameters on board in his report (see below). I have noticed that most ships do not have a copy of a "commissioning report" or other documents where these installation parameters can be found. One usually only finds the type approval certificate and the ENC provider licence certificate on board.

<b>Brief Fault Description:</b>	<b>Customer Order No.:</b>	ZWJ20161205
<b>Fault Reported :-</b> Regret to inform you that one of FURUNO FEA-2807 ECDIS (master) fail to start, pls kindly find attached photos for your reference and provide profession instruction from shore resource.  Event as following: The screen of ECDIS (FURUNO FEA-2807) became seizing-up during updating as usual on every friday , then switched off the ECDIS (FURUNO FEA-2807) and restarted after few minutes, then red light of system failure on key board is on and a disk read error occurred on the screen. Same error occurred after press ctrl+alt+del to restart.		
<b>Action: Detail: (Work Performed)</b> Collected spare parts from Toll Depot. Attended vessel at Port Hedland. Inspected ECDIS no. 1 and confirmed reported fault. Unable to start-up Windows and ECDIS program." A disc read error occurred " appeared on display unit. Suspected HDD to be faulty, replaced it with new one from our stock. Updated software to latest version V.6.24. There was no record of installation parameters available on board. Checked our technical department and got only some block diagrams and drawings. Traced connections of LAN adapters and B- adapter input data. Carried-out setting-up of installation parameters one by one. Managed to get all sensors ( GPS1, GPS2, Gyro, Speedlog, Echosounder, AIS, BNWAS, WIND, NAVTEX, Rudder Indicator) except for optional engine rpm data. Radar overlay from S-band radar also connected. Noticed conning doesn't show any data, only black screen, further check found input source was set-up wrong and dimmer/brightness was adjusted to minimum. Set-up conning data in the installation parameters settings. Loaded all required base charts, latest permits and latest updates plus AIO with ship's officer assistance. Routes and all chart settings also done by crew. Observed ECDIS operation for some time, performance found to be satisfactory. Saved all installation parameters for ECDIS no. 1 and ECDIS no.2 and copy given to Master for future requirements. Also copy of new software V.24 included. Completed inspection sheet. Left unit in good order. ( On board time/ work start time 1300 hr ( 07/12/2016 ) & finished 0400 hr (08/12/2016). Left vessel at 1130 hr ( 08/12/2016 ).		

Regards

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