سازمان بنادر و دریانوردی

دستورالعمل برگزاری دوره آموزش کاربری سامانه نقشه های الکترونیکی و اطلاعات (سطح عملیاتی)

The Code Of Practice For Conducting ECDIS Course(Operational Level)

کد مدرک: P6-W 12

تصویب کننده	تأیید کننده	تهیه کننده	شرح تغییرات (علت و محل)	تاریخ بازنگری	شماره بازنگری
معاون امور دریایی سید علی استیری	مدیر کل امور دریانوردان حسین میرزایی	رئیس اداره استانداردهای دریانوردان نصرت اله علی پور	براساس بازنگری کلی کنوانسیون STCW Convention, Amended As	۱۳۹۳/۰۵/۱۳	۰۲

فهرست مندرجات

مقـــدمـــه

سازمان بنادر و دریانوردی در اجرای وظائف و اختیارات قانونی ناشی از ماده ۱۹۲ قانون دریائی جمهوری اسلامی ایران مصوب شهریور ۱۳٤۳ و بند ۱۰ ماده ۳ آیین نامه تشکیل سازمان بنادر و دریانوردی مصوب بهمن ماه ۱۳٤۸ کمیسیون های خاص دو مجلس که صدور هر گونه سند یا گواهینامه و پروانه مربوط به کشتی، فرماندهان،افسران و سایر کارکنان کشتی‌ها را در صلاحیت این سازمان قرارداده است و در راستای رعایت مفاد کنوانسیون بین‌المللی اصلاح شده استانداردهای آموزشی، صدور گواهینامه و نگهبانی دریانوردان (STCW-78) مصوب مردادماه ۱۳۷۵ مجلس شورای اسلامی ایران و با عنایت به جدول A-II/1 از آئین نامه کنوانسیون مذکور ، این دستورالعمل را به منظور نحوه برگزاری دوره آموزش کاربری سامانه نقشه های الکترونیکی و اطلاعات (سطح عملیاتی) تدوین نموده که پس از تصویب هیات عامل سازمان بنادر و دریانوردی لازم الاجرا می باشد.

یادداشت: قانون تغییر نام سازمان بنادر و کشتیرانی به سازمان بنادر و دریانوردی در تاریخ ۱۳۸۷/۲/۱۰ به تصویب مجلس شورای اسلامی رسید.

۱- هدف از تدوین

هدف از تدوین این دستورالعمل ارائه حداقل نیازهای دوره آموزشی کاربری سیستم نقشه هـای الکترونیکـی و اطلاعات (سطح عملیاتی) برای افسران عرشه شناورها می باشد.

۲- دامنه کاربرد

این دستورالعمل به تمام مراکز آموزشی موردتایید سازمان که برگزار کننده این دوره می باشند، کاربرد دارد.

۳- تعاریف

اصطلاحات به کار رفته در این دستورالعمل، دارای معانی تعریف شده ذیل می باشد:

۳-۱ توانایی(Ability)
به معنای توانایی در اجرای مناسب موضوعات مورد تدریس می باشد.

۳-۲ دستگاه نظارت مرکز(Central Monitoring Office)
به معنای اداره یا بخشی که وظیفه صدور مجوز فعالیت آموزش دریانوردی و نظارت بر مراکـز آموزشـی را بـر عهده دارد. دستگاه نظارت در ستاد سازمان ، اداره استانداردهای دریـانوردان مـی باشـد.مـدیر کـل امـور دریانوردان نیز جزء دستگاه نظارت مرکز بوده و می تواند صدور مجوز فعالیت آموزش دریانوردی و نظـارت بـر مراکز آموزش دریانوردان را تایید نماید.

۳-۳ دستورالعمل (Code of Practice)
به معنای مجموعه قوانین، مقررات ملی و الزامات مندرج در این دستورالعمل است کـه توسـط اداره کـل امـور دریانوردان تدوین و به تصویب هیات عامل سازمان رسیده است.

۳-۴ گواهینامه شایستگی (Certificate of Competency)
به معنای گواهینامه صادره و یا شناسایی شده ای است که مطابق الزامات فصل‌های ۲، ۳، ۴ ویا ۷ کنوانسـیون برای فرماندهان، افسران و افسران مهندس الکترونیک صادر و یا تایید می‌شود و دارنده‌ی قانونی آن محق بـه خدمت در مقام و عمل به وظایف مربوطه در سطح مسئولیت مشخص شده در آن است.

۳-۵   گواهینامه مهارت (Certificate of Proficiency)

به معنای گواهینامه‌ای به غیر از گواهینامه شایستگی صادر شده برای دریانورد است کـه الزامـات فصـل‌هـای مرتبط با کنوانسیون را نشان می‌دهد و الزامات آموزشی، شایستگی‌ها یا خدمت دریایی مندرج در کنوانسیون را برآورده می نماید.

۳-۶   گــواهی طــی دوره

(Course Completion Certificate or Documentary Evidence)

به معنای گواهی است که مرکز آموزشی مورد تایید سازمان به فراگیـر پـس از گذرانـدن موفقیـت آمیـز دوره مربوطه ارائه می دهد.

۳-۷   افسر عرشه (Deck Officer)

به معنای افسری است که مطابق مفاد فصل دوم کنوانسیون صلاحیت دارد.

۳-۸   ارائه(Demonstration)

به معنای توانایی در ارائه درست و مناسب مفاهیم مورد تدریس می باشد.

۳-۹   تمرین(Exercise)

به معنای ارائه درست و مناسب مفاهیم مورد تدریس به صورت حل تمرین و یا مسائل مرتبط در فضای کلاس می باشد.

۳-۱۰   آشنایی(Familiarity)

به معنای آشنایی با مفاهیم و موضوعات مورد تدریس می باشد.

۳-۱۱   دانش(Knowledge)

به معنای دارا بودن دانش واطلاعات کامل و کافی از مفاهیم و موضوعات مورد تدریس می باشد.

۳-۱۲   فرمانده(Master)

به معنای شخصی است که عهده‌دار فرماندهی کشتی می باشد.

۳-۱۳   گواهینامه سلامت پزشکی(Medical Fitness Certificate)

به معنای گواهینامه ای است که توسط پزشک معتمد سازمان جهت متقاضیانی که از نظر پزشکی از سلامت برخوردار باشند، صادر می گردد.

۳-۱۴   سفرهای نزدیک به ساحل (Near Coastal Voyages / NCV)

به معنای سفر هایی است که در نزدیکی سواحل هر کشور متعاهد، مطابق با مقرره ی I/3 کنوانسیون STCW و تعریف ارائه شده آن متعاهد انجام می شود. در ایران سفرهای نزدیک به ساحل آبهای خلیج فارس، دریای خزر و محدوده تعریف شده در دریای عمان (آبهای واقع در غرب خطی که نقطه جغرافیایی با مشخصات ٢٢ درجه و ٣٢ دقیقه شمال و ٥٩ درجه و ٤٨ دقیقه شرق « راس الحد- عمان» را به نقطه جغرافیایی دارای مشخصات ٢٥ درجه و ٤ دقیقه شمال و ٦١ درجه و ٢٢ دقیقه شرق «گواتر - ایران» وصل می نماید) می باشد.

۳-۱۵   افسر (Officer)

به معنای عضوی از خدمه‌ی شناور به غیر از فرمانده است که بر اساس قوانین و مقررات ملی و یا بین المللی انتخاب شده باشد

۳-۱۶   سازمان (Ports & Maritime Organization of Iran(Islamic Republic))

به معنای سازمان بنادر و دریانوردی جمهوری اسلامی ایران می باشد.

۳-۱۷   دستگاه نظارت بندر (Port's Monitoring Office)

به معنای معاونتی که اداره امتحانات و اسناد دریانوردان بنادر زیر مجموعه آن می باشد و به نیابت از اداره استانداردهای دریانوردان، وظیفه صدور مجوز دوره های آموزشی و نظارت بر مراکز آموزشی محل استان جغرافیایی خود را به عهده دارد. اداره یا بخشهای دیگر در مجموعه معاونت مربوطه به عنوان دستگاه نظارت محسوب نمی گردند

۳-۱۸   عملی (Practical)

به معنای ارائه درست و مناسب مفاهیم مورد تدریس به صورت عملی در محیط کارگاه و یا بکارگیری از تجهیزات مناسب و مرتبط در فضای کلاس می باشد.

۳-۱۹   مقررات (Regulations)

به معنای مجموعه مقررات مندرج در کنوانسیون و آئین نامه می باشد.

۳-۲۰   کنوانسیون (STCW Convention)

به معنای کنوانسیون اصلاح شده بین المللی استانداردهای آموزشی، صدور گواهینامـه و نگهبـانی دریـانوردان (STCW-78 as amended) می باشد.

۳-۲۱   آئین نامه ی کنوانسیون (STCW Code)

به معنای آئین نامه ی آموزش، صدور گواهینامه ها و نگهبانی دریانوردان (STCW) که طی قطعنامه ی شـماره ۲ کنفرانس 1995 تصویب که ممکن است توسط سازمان بین المللی دریانوردی بر اساس اصلاحیه های بعدی تغییر یابد.

۳-۲۲   مرکز آموزشی(Training Center)

به معنای دانشگاه، شرکت، موسسه یا هر ارگانی که بر اساس مجوز اخذ شده از سازمان در زمینه آموزشـهای دریانوردی فعالیت می کند.

۳-۲۳   تئوری(Theory)

به معنای ارائه درست و مناسب مفاهیم مورد تدریس به صورت نظری ودر صورت لزوم پاورپوینت می باشد.

۳-۲۴   درک و فهم (Understanding)

به معنای درک و فهم مناسب و کافی از مفاهیم و موضوعات مورد تدریس می باشد.

۳-۲۵   سفرهای نامحدود (Unlimited Voyages)

به معنای سفرهای بین المللی که محدود به سفرهای نزدیک به ساحل نباشد.

۴- مسئولیت ها:

۴-۱ مسئولیت بازنگری این دستورالعمل بر عهده دستگاه نظارت مرکز می باشد.

۴-۲ مسئولیت تایید بازنگری این دستورالعمل بر عهده مدیر کل امور دریانوردان می باشد.

۴-۳ مسئولیت تصویب بازنگری این دستورالعمل بر عهده معاون امور دریایی سازمان به نیابت از هیـات عامـل سازمان می باشد.

۴-۴ مسئولیت اجرای این دوره آموزشی بر اساس عناوین اعلام شده بر عهده مرکز آموزشی می باشد.

۵-٤ مسئولیت نظارت بر حسن اجرای این دستورالعمل در مراکـز آموزشـی بـر عهـده دسـتگاه نظـارت مرکـز می باشد.

۵- روش اجرا:

۵-۱ هدف از برگزاری دوره آموزشی:

هدف از برگزاری این دوره آماده نمودن فراگیران جهت احراز شایستگی منـدرج در جـدول A-II/1 ائـین نامـه کنوانسیون به منظور حفظ ایمن ناوبری از طریق کار با ECDIS می باشد.

۵-۲ طول دوره:

۵-۲-۱ حداقل آموزش تئوری و ارائه : ۲۸ ساعت، آموزش عملی و دریانوردی با نقشه های الکترونیکی : ۹ ساعت، امتحان و ارزیابی حین و پایان دوره : ۳ ساعت (مجموعاً ٤٠ ساعت) می باشد.

۵-۳ تعداد شرکت کنندگان دوره:

۵-۳-۱ حداکثر تعداد فراگیران در هر دوره بستگی به تعداد دستگاههای موجود دارد. در کـلاس درس هـر فراگیر باید یک دستگاه کامپیوتر مجهز به نرم افزار ECDIS داشته باشد. اگـر کـلاس درس ۱۲ دسـتگاه دارد، حداکثر تعداد فراگیران ۱۲ نفر می باشد. اگر تعداد دستگاهها بیش از ۱۲ است، تعداد فراگیران مـی توانـد بیش از ۱۲ نفر باشد به شرط آنکه مدرس دوم در کلاس حضور یابد.

۵-۳-۲ برای تمرینات عملی در لابراتوار ناوبری یکپارچه(integrated) به ازای هر ۱۲ فراگیر یک نفر مربی نیاز می باشد. در صورتیکه فراگیران بیش از ۱۲ نفر باشند یک کمک مربی واجد شرایط در هر دو دستگاه بـا رضایت سر مربی مورد نیاز است.

۵-۳-۳ در لابراتوار شبیه ساز- حداکثر ۲ نفر فراگیر در پل فرماندهی مستقل مجاز به بهره برداری و نشان دادن شایستگی با دستگاه لابراتوار ناوبری(INL) می باشند.

۵-٤ شرایط ورود به دوره :

۵-٤-۱- دارا بودن گواهینامه سلامت پزشکی معتبر بر اساس دستورالعمل مصوب سازمان

۲-۴-۵- دارا بودن گواهی طی موفقیت آمیز دوره آموزش رادار و آرپا (سطح عملیاتی)

۳-۴-۵- دارا بودن حداقل سه ماه خدمت دریایی (نگهبانی در پل فرماندهی) به منظـور آشـنایی بـا دریـانوردی سطحی ساحلی و دریانوردی بصری (VISUAL NAVIGATION)

۵–۵ دانش،درک و مهارت مورد انتظار:

۱-۵-۵- درک محدودیتهای سامانه نقشه های الکترونیکی

۲-۵-۵- مهارت در استفاده صحیح، تجزیه و تحلیل و آنالیز اطلاعات بدست آمده از نقشه های الکترونیکی

۳-۵-۵- مدیریت اجرایی عملیاتی و اطلاعات موجود در سامانه

۴-۵-۵- آشنایی با مشخصات کلی انواع نقشه های الکترونیکی

۵-۵-۵- درک خطر اعتماد بیش از حد به سامانه نقشه های الکترونیکی

۶-۵-۵- آشنایی با قابلیتهای عملیاتی سامانه بر اساس استانداردهای موجود

توانایی در استفاده، تفسیر و آنالیز اطلاعات بدست آمده از سامانه شامل:

۷-۵-۵- توانایی استفاده و تنظیم عملیاتی که در ارتباط با دیگر دستگاههای ناوبری هستند

۸-۵-۵- توانایی استفاده از تنظیمات و کارکرد نقشه الکترونیکی برای دریانوردی، رسم مسیر و استفاده از منابع موجود، کنترل یک مسیر طراحی شده، ارتباط با دیگر دستگاههای ناوبری مانند AIS و رادار

۹-۵-۵-توانایی دریانوردی ایمن با استفاده از سامانه پشتیبانی نقشـه الکترونیکـی در صـورت از کـار افتـادن سامانه اصلی

۱۰-۵-۵- توانایی در تنظیم دستگاه و بروز نگهداشتن سامانه اطلاعات نقشه های الکترونیکـی و درک اهمیـت آن، آگاهی از نمایش گرها، نشاندهنده های وضعیت و اخطارها برای حالتهای مختلف و انجام فعل مناسـب، آگاهی از خطاهای بالقوه در تجزیه و تحلیلها و توانایی اخذ تصمیم مناسب در جهت رفع آنها.

۱۱-۵-۵- توانایی تنظیم سیستم و داده ها متناسب با وضعیتهای مختلف.

۵-۵-۱۲- آگاهی از موقعیتها در زمان استفاده از سامانه شامل: عمق ایمن و نزدیکی به خطرات، جهت و سرعت جریان آب، اطلاعات نقشه و انتخاب مقیاس مناسب، مناسب بودن مسیر، شناسایی تلاقیها و مدیریت آنها و حسگرهای مورد استفاده.

۵-۶ مواد درسی دوره:

حداقل مواد درسی دوره عملیاتی جهت آموزش و کسب مهارت افسران به شرح مندرج در متن انگلیسی صفحات ۲۰ الی ٤٥ می باشد.

۵-۷ امکانات مورد نیاز برای برگزاری دوره:

جهت برگزاری دوره آموزشی علاوه بر فضای آموزشی قید شده در "دستورالعمل صدور مجوز و نظارت بر مراکـز آموزشـی دریـانوردی "مصـوب سـازمان ، تجهیـزات کمـک آموزشـی مشـروحه زیـر نیـز مـورد نیـاز می باشد:

۵-۷-۱- سالن /کلاسها می بایست مجهز به سیستم تهویه و نورکافی و وسایل سمعی و بصری و امکانات مورد نیاز برای تدریس باشد (وسائل کمک آموزشی شامل: وایت بورد/ تخته سفید، کامپیوتر و دستگاه ویدئو پروژکتور چند رسانه ای، پرده ویدئو پرژکتور ، جزوات آموزشی ، نمونه هایی از نقشه های کاغذی و نمونه هایی از نقشـه های الکترونیکی بر روی CD).

۵-۷-۲- هر فراگیر باید یک دستگاه کامپیوتر (ایستگاه کاری) داشته که سامانه نقشه الکترونیکی مورد تایید بر روی آن نصب شده باشد. دستگاه شبیه ساز " سامانه نقشه های الکترونیکی و اطلاعـات " بـا ورودی اطلاعـات واقعی یا شبیه سازی شده در خصوص موقعیت کشتی، جهت، سرعت و عمق آب که دارای توانمندی لازم برای برگزاری آموزشهای عملی مندرج در این دستورالعمل باشد. کشتی خودی می بایست بتواند در طول مسـیر روی نقشه حرکت نماید و سامانه شبیه ساز ضوابط مندرج در بخش " الف- ۱/۱۲ " کنوانسـیون STCW را رعایـت نماید

۵-۷-۳- تمامی ایستگاههای کاری فراگیران می بایست با ایستگاه کاری استاد به صورت شبکه متصل باشد به نحوی که سیستم یکپارچه وسایل کمک ناوبری هدایت کشتی شامل ، AUTO PILOT, GPS، رادار و آرپا، صفحه نمایش محیط اطراف کشتی و ECDIS قابل استفاده باشد.

۵-۷-۴- دستگاه شبیه ساز باید مجهز به تمام امکانات ایستگاه کاری بوده و بتواند بر اساس همان اطلاعـات و تجهیزات کار کند. حداکثر دو داوطلب می توانند هم زمان از یک دستگاه شبیه ساز استفاده کنند.

۵-۷-۵- هر دستگاه شبیه ساز (پل فرماندهی) باید دارای یک کامپیوتر برای نقشـه الکترونیکـی، دسـتگاههای شبیه ساز پل فرماندهی کشتی، رادار، آرپا، و همچنین نقشه های کاغذی باشد.

۵-۷-۶- فرستنده رادیویی (VHF) از نوع تایید شده یا به صورت مجازی در سیسـتم دسـتگاه ECDIS موجـود باشد.

۵-۷-۷- نقشه های الکترونیکی در ایستگاههای کاری باید با نقشه های الکترونیکی موجود در سیستم دسـتگاه شبیه ساز تطابق داشته باشد.

۵-۷-۸- نرم افزار دستگاه شبیه ساز یکپارچه هدایت کشتی نصب شده در کلاس باید بـا نـرم افـزاری کـه در پل های فرماندهی نصب شده از نوع تایید شده و یکسان/ منطبق باشند.

۵-۸ شرایط مدرسین و مربیان دوره:

مدرسین و مربیان دوره های آموزشی مندرج در این دستورالعمل می بایست علاوه بر گذراندن دوره مدرسین و مربیان باید دوره فنون آموزشی (TFT) را در یکی از مراکز آموزشی مورد تایید سازمان طی نموده باشند.

۵-۸-۱-   دارای حداقل گواهینامه شایستگی فرماندهی در کشتیهای با ظرفیت ناخالص GT≥3000 سـفرهای نامحدود با ۱۲ ماه خدمت دریایی در این سمت ، ۱۲ ماه سابقه تدریس مرتبط

۵-۸-۲-   گذراندن موفقیت آمیز دوره آموزش ECDIS (سطح عملیاتی) مورد تایید

کد مدرک : P6-W12/02
صفحه : ۱۲ از ۱۲

دستورالعمل برگزاری دوره آموزش کاربری سامانه نقشه های الکترونیکی و اطلاعات (سطح عملیاتی)
The Code Of Practice For Conducting ECDIS Course (Operational Level)

سازمان بنادر و دریانوردی

۹- ۵ ارزیابی و صدور گواهینامه:

در صورت موفقیت شرکت کنندگان در ارزیابیهای عملی حین و پایان دوره، گواهی طی دوره برای متقاضی مربوطه توسط مرکز آموزشی صادر می گردد.

۱۰-۵ شرایط تمدید/تجدید گواهینامه:

گواهینامه طی دوره نیازمند تمدید یا تجدید نمی باشد.

۵-۱۱ روش تایید دوره:

روش تایید دوره بر اساس دستورالعمل صدور مجوز و نظارت بر اجرای دوره ها در مراکز آموزش دریانوردی مصوب سازمان می باشد.

۶- سوابق:

کلیه سوابقی که نشان دهنده رعایت موارد مندرج در این دستورالعمل باشد

۷- مراجع:

۷-۱- کنوانسیون STCW و آئین نامه STCW

۷-۲- مدل کورس IMO جهت کار عملیاتی با ECDIS

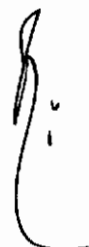۷-۳ - دستورالعمل صدور مجوز و نظارت بر اجرای دوره ها در مراکز آموزشی دریانوردی

۸- ضمائم:

ندارد.

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PMO

The Code Of Practice For Conducting

ECDIS Course (Operational Level)

DOC. No. :P6-W 12

Revision No.	Date of revision	Comment on revision	provider	approving amendments authority	endorsing amendments authority
02	04.AUG.2014	STCW Convention, as amended	N. Alipour, Head of Seafarers' Standards' Directorate	H. Mirzaei, Director General of Seafarers' Affairs	S. A. Estiri, PMO's Deputy for Maritime Affairs

Introduction

Ports and Maritime organization (P.M.O) of the Islamic republic of Iran in performing its duty and in exercising its prerogative resulting from article 192 of the Islamic republic of Iran maritime code ,1964 and paragraph 10 of article 3 of PMO manifesto, 1970 enabling it to issue any document , certificate or license for ships , masters, officers and other ship personnel and also in accordance with the provisions of the international convention on standards of training, certification and watch keeping for seafarers (STCW) 1978, as amended, adopted by the Islamic consultative assembly in 1996 and taking into account table A-II/1 of the STCW Code, develops this "code of practice for conducting ECDIS course (operational level)" which is applicable after endorsement by the board of executives of Ports & Maritime Organization.

NOTE: the title of Ports and Shipping Organization changed to Ports and Maritime Organization dated 29.04.2008 through parliamentary act and approved by Islamic council assembly.

1. Objective:

The objective of this code of practice is to specify the minimum requirements for conducting ECDIS (Electronic Chart Display and Information System) training course at operational level.

2. Scope of Application:

This code of practice applies to all approved training centers that conduct ECDIS training course at operational level.

3. Definition:

For the purpose of this code of practice, unless expressly provided otherwise,

3.1 Ability

The mental or physical capacity, power or skill required to do something.

3.2 Central Monitoring Office

Central monitoring office which is responsible for approving and monitoring training courses is the Seafarer's standard directorate of the PMO.

3.3 Code of Practice

Means all national rules, regulations and requirements specified in this document which have been drafted by the PMO's General Directorate of Maritime affairs and endorsed by the PMO's board of executive.

3.4 Certificate of Competency (COC)

Means a certificate issued and endorsed for masters, officers and GMDSS radio operators in accordance with the provisions of chapters II, III, IV or VII of the STCW Convention and entitling the lawful holder thereof to serve in the capacity and perform the functions involved at the level of responsibility specified therein.

3.5 Certificate of Proficiency (COP)

Means a certificate, other than a certificate of competency issued to a seafarer, stating that the relevant requirements of training, competencies or seagoing service in the STCW Convention have been met.

3.6   Course Completion Certificate or Documentary Evidence

Means a certificate issued through the training center, after successfully completion of training program by the applicants

3.7   Deck Officer

Means an officer qualified in accordance with the provisions of chapter II of the STCW Convention.

3.8   Demonstration

An act of showing something by giving proof or evidence or explaining how something works or is done.

3.9   Exercise

To perform some kind of physical exercise or to involve somebody/something in physical or mental effort or activity.

3.10   Familiarity

Having a good knowledge of something.

3.11   Knowledge

Knowledge is a familiarity with someone or something, which can include facts, information, descriptions, or skills acquired through experience or education. It can refer to the theoretical or practical understanding of a subject

3.12   Master

Means the person having command of a ship

3.13   Medical Fitness Certificate

Means a certificate issued by the PMO's recognized medical practitioner to the candidates who found to be medically fit.

3.14   Near-Coastal Voyages (NCV)

Means voyages between ports situated in the Persian Gulf and Gulf of Oman (positions from LAT 22 0 32' N 0590 48' E to 25 0 04' N 061 0 22' E) or between Caspian Sea ports.

3.15 Officer

Means a member of the crew, other than the master, designated as such by national law or regulations or, in the absence of such designation, by collective agreement or custom.

3.16 PMO

Means Ports & Maritime Organization (PMO) of the Islamic Republic of Iran.

3.17 Port's Monitoring Office

Means the deputy of general directorate in ports in which the directorate of examinations & seafarers' documents is included and on behalf of seafarers' standards directorate is responsible for approving and monitoring training courses conducted in the province that port is situated.

3.18 Practical

Concerned with reality and action rather than theory and ideas which is likely to work in real circumstances.

3.19 Regulations

Means regulations contained in the annex to the STCW Convention

3.20 STCW Convention

Means international convention on standards of training, certification and watch keeping for Seafarers, 1978, as amended.

3.21 STCW Code

Means the seafarers' training, certification and watchkeeping (STCW) code as adopted by the 1995 conference resolution 2,as it may be amended by the international maritime organization.

3.22 Training center

Means maritime university/center/ directorate/ department/company and/or any organization conducting maritime training course approved by PMO.

3.23 Theory

A set of properly argued ideas intended to explain facts or events or the principles on which a subject of study is based.

3.24 Understanding

Understanding is a psychological process related to an abstract or physical object, such as a person, situation, or message whereby one is able to think about it and use concepts to deal adequately with that object. Understanding is a relation between the knower and an object of understanding. Understanding implies abilities and dispositions with respect to an object of knowledge sufficient to support intelligent behavior.

3.25 Unlimited Voyages

Means voyages not limited to the near coastal voyages.

4. Responsibilities

4.1 Central Monitoring Office is responsible for revising this code of practice.

4.2 General Director of seafarers' Affairs is responsible for approving amendments to this code of practice.

4.3 Deputy Of Maritime Affairs is responsible to endorse amendments to this code of practice on behalf of PMO's board of executives.

4.4 Training centers are to conduct training course in accordance with this Code of practice.

4.5 Central Monitoring Office is responsible for supervising on the implementation of this code of practice in training centers.

5. Procedure:

5.1 Course Objective:

The objective of this course is to prepare trainees to achieve " Maintain the safety of navigation through the use of ECDIS and competency set out in the table A-II/1of the STCW Code.

5.2 Course Duration:

5.2.1 A minimum of practice & lecture 28 hrs, Solo ECDIS navigation: 9.0 hrs and Solo evaluation & Exam: 3 hrs (total of 40 hours).

5.3 Number of Attendees:

5.3.1 The maximum number of trainees should depend on the facilities and equipment available. In particular, class size should be limited to 1 trainee per ECDIS workstation. Where a classroom training environment has 12 ECDIS workstations, the maximum class size is 12

trainees. Where there is an additional ECDIS-equipped multiple ownship labs, those ECDIS installations should not be used as substitutions for classroom instruction, nor should it be used to augment the number of trainees taken into the course.

5.3.2 The ratio for lecturing in an open classroom setting and for practical exercises in an Integrated Navigation Lab should be limited to 12:1. When a class size exceeds 12 trainees, an assistant instructor is required in both settings, qualified to the satisfaction of the lead instructor.

5.3.3 Simulation lab –The number of trainees to develop and demonstrate proficiencies in an Integrated Navigation Lab (INL) setting is no more than two persons in a semi-isolation Bridge.

5.4 Course Entry Requirement:

The course trainees shall, at least;

5.4.1 hold a valid medical fitness certificate issued by a medical practitioner recognized by the PMO;

5.4.2 hold course completion certificate for RADAR & ARPA at operational level

5.4.3 have 3 months seagoing service as part of bridge navigational watch on ships fitted with ECDIS.

5.5 Expected Knowledge, Understanding And Proficiency:

5.5.1 Knowledge of the capability and limitations of ECDIS operations, and all indicated sub-topics.

5.5.2 Proficiency in operation, interpretation, and analysis of information obtained from ECDIS, and all indicated sub-topics.

5.5.3 Management of operational procedures, system files and data, and all indicated sub-topics.

5.5.4 A thorough understanding of Electronic Navigational Chart (ENC) data, data accuracy, presentation rules, display options and other chart data formats

5.5.5 The dangers of over-reliance.

5.5.6 Familiarity with the functions of ECDIS required by performance standards in force Proficiency in operation, interpretation, and analysis of information obtained from ECDIS, including:

5.5.7 Use of functions that are integrated with other navigation systems in various installations, including proper functioning and adjustment to desired settings

5.5.8 Safe monitoring and adjustment of information, including own position, sea area display, mode and orientation, chart data displayed, route monitoring, user-created information layers,contacts (when interfaced with AIS and/or radar tracking) and radar overlay functions (when interfaced).

5.5.9 Confirmation of vessel position by alternative means

5.5.10 Efficient use of settings to ensure conformance to operational procedures, including

alarm parameters for anti-grounding, proximity to contacts and special areas, completeness of chart data and chart update status, and backup arrangements

5.5.11 Adjustment of settings and values to suit the present conditions

5.5.12 Situational awareness while using ECDIS including safe water and proximity of hazards set and drift, chart data and scale selection, suitability of route, contact detection and management, and integrity of sensors.

5.6 Course Minimum Syllabi:

5.6.1 Lesson Plans: Elements of ECDIS (11 hours)

5.6.1.1 Introduction & familiarization plan (0.5 hrs)

A thorough understanding of ENC data and familiarization with the goals of the 40-hour course; and becomes familiar with the layout of the ECDIS equipment at the workstations and on the bridge simulator.

5.6.1.1.1 General introductions: Knowladge of the goals of the course and course certification, Verify that all trainees have basic computer skills (objective assessment). Understanding the course structure, attendance requirements and the evaluation process. The trainees will achieve an understanding of type-approved ECDIS in general, and proficiency specifically in the use of system in use in the course

5.6.1.1.2 Administration: Issue study guides and other reference material, Review course syllabus

5.6.1.1.3 Familiarization with ECDIS learning environment .Work station power-up and ECDIS software start and stop. Demonstrate how to get

information from the ECDIS User Manuals and help structure within ECDIS software package, and briefly tour classroom and lab used for ECDIS navigation training to see navigation and control equipment.

5.6.1.2 Purpose of ECDIS (1.0 hrs)

Demoastrate the main characteristics of ECDIS data display, accuracy, presentation rules and the information which is constantly displayed by ECDIS and which is selectable.

5.6.1.2.1 Familiarity with revised IMO Performance Standards for ECDIS (June 2006, Resolution ECDIS definition). Capability of displaying all chart information necessary for safe and efficient navigation, Swiftly enables positioning, route monitoring and route planning, Provides appropriate alarms and indications.

5.6.1.2.2 Differentiate between display options: Electronic navigational chart (ENC) and system ENC (SENC), Standard display and display base. Display of information other than ENC data.

5.6.1.2.3 Ability to identify information types and areas on navigation display: Electronic chart area, Information area, Task panels, other menu options, Automatic displays for monitoring ship's safety including position, gyro heading, speed log, time,and safety values, course over ground and speed over ground.

5.6.1.2.4 Apply presentation of ECDIS data: Major rules of presentation library, Automatic presentation, such as scale, display category, day/night, modes, such as true motion and North-up.

5.6.1.3 Value to Navigation (0.5 hrs)

Ability to recognizes that safe navigation with ECDIS requires the selection and analysis of displayed information, display options, data format that is relevant to the prevailing situation.

5.6.1.3.1 Recognize factors that characterize and modify chart presentation, projection, colors, symbols,

5.6.1.3.2 Recognize factors that characterize and modify the data quality: Accuracy, resolution, completeness and ssessment of differences.

5.6.1.3.3 Manually change scale, area & position of ownship, chart area and scale, Position of own hip relative to display edge

5.6.1.3.4 Demostrae the route monitoring mode of ECDIS operation

5.6.1.3.5 Understanding the value of ECDIS to navigation: Own ship position with respect to route, shipping lanes, acquired targets, depth contours, soundings, and predicted tides and currents, Multi-chart loading, scaling, on-chart object information. Centralized information station for navigational bridge team, including ERBL, user layers, radar target tracking, SAR, Navtex, AIS, climate, and port information.

5.6.1.4 Correct & Incorrect Use (0.5 hrs)

The ECDIS is as a tool which aids but does not replace proper navigational watchkeeping and dangers of over-reliance always exist.

5.6.1.4.1 Use ECDIS within the prevailing navigation situation:

Name the principles of navigation and operational guidance for officers in charge of a navigational watch (STCW, SOLAS), Familiarity with the many areas of bridge operations to which ECDIS may be applied, Situational awareness includes the functioning of navigational aids and the reliability of sensors, ECDIS is only a tool designed to support the mariner performing navigational tasks, A navigational watch is not to be performed on only one system

5.6.1.4.2 Understanding of the ways to avoid over-reliance on ECDIS. A system malfunction and data inaccuracy is always a potential.The displayed hydrographic data are not more reliable than the survey data they are based on, The displayed sensor data are not more reliable than the respective originating sensor system. Errors / inaccuracies in one subsystem may degrade others and can potentially render ECDIS useless.

5.6.1.4.3 Proficiency in the use of ECDIS includes assessing the integrity of the system and all data at all times, such use should be integrated into standing a normal watch including a competent visual lookout, and the continued maintenance of good situational awareness. One method is to overcome the problem of partial use – the less thoroughly the ECDIS is used and applied, the less willing the users become to apply ECDIS to navigation, resulting less familiarity and less trust.

5.6.1.5   Work Station Start, Stop & Layout (1.0 hrs)

Familiarity, analyzes and assessing the proper functioning of ECDIS during the booting-up process and normal operation

    5.6.1.5.1 Perform standard PC start: Understaning that some sensor feeds may need to be off or disconnected to PC com ports, and tha the PC is subject to all normal limitations of hardware, operating system, and memory. ECDIS is a navigation aid (not a general use PC) and has: Potential limitations in hard drive storage, RAM size, power supply interruptions, hardware malfunctions, and overall system lockup. Operating system boot-up procedures and internal tests. A pre-programmed "dongle" installed in the parallel printer port which enables the registration and use of the ECDIS manufacturer's products. The potential to fail due to incorrect use of OS and ECDIS software.

    5.6.1.5.2 Familiarity with the ECDIS start windows for sensors requested, sensors found, and selected chart data. Understanding the significance of the ECDIS Activator Key (dongle) and associated license files. The ECDIS software boots up with: A small indicator window against the desktop background, then a full screen panel indication of initialization, then the ECDIS basic display with alarm indicators (if any) requiring acknowledgement.

    5.6.1.5.3 Familiarity with alarms and determine initial conditions of ECDIS readiness for navigation

    5.6.1.5.4 The ECDIS initialization screen indicates on-line tests: For date/time, position, heading, and speed log, Displays "Received" when these inputs match expected protocols ("Received" status is not a check on data accuracy), Displays "Aborted" when these inputs are missing or corrupt, Boot-up without inputs will continue, with alarms on ECDIS display and ENC data will be loaded from the chart files as licensed.

5.6.1.6   Vessel position (0.5 hrs)

To operate basic navigational functions proficiently and settings pertaining to vessel position information, Mouse / trackball and device buttons, Keyboard and hotkeys, Control of standard cursor and free mouse cursor, Use of cursor and ERBL on the display.

5.6.1.6.1 Review display of vessel's position: Shift the vessel on the display in navigation mode Familiarity with vessel's symbols, GPS position information, Track of vessel's position.

5.6.1.6.2 Understanding position information in the display panels: System (tidal height, current, sounding, set and drift at position), Route (vessel position on the route), Pilot (position relative to next WP as per route schedule data).

5.6.1.6.3 Determine a position fix on the ECDIS chart display panel: Manually draw and move bearing lines (LOPs), Manually mark position on the display.

5.6.1.7 Position source (1.0 hrs)

Knowledge of the principle features of DGPS as the primary vessel position source

5.6.1.7.1 Review basics of GPS: Satellite constellation, theory, atmospheric interference, Signal quality indication, HDOP, data age, station ID, Accuracy (2drms probability), USCG's beacons for differential corrections (DGPS).

5.6.1.7.2 Coordinate GPS antenna position settings: Set GPS antenna locations from amidships and off centerline, Switch on primary and secondary position sources by assigning ports for NMEA data feed

5.6.1.7.3 Select position system: Primary or PS1, Secondary or PS2, Auto change (automatic switching to dead reckoning position).

5.6.1.7.4 Determine fix quality (status) of GPS: Position information, Alarms and indications of disruptions of GPS data feed, Tracking the discrepancy between PS1 and PS2, Monitoring the GPS data port, Check ship's position by a second independent means.

5.6.1.8 Basic navigation (1.0 hrs)

Ability to operate many of the basic navigational functions and settings and interprate, analysis information obtained from instruments.

5.6.1.8.1 Activate display categories and information layers: Base, Standard, All and Custom Spot soundings limit (depths <= safe setting are displayed as bold), Channel limits, fairways, landmarks, special areas, warnings, Message "Layers Lost" when any are turned off.

5.6.1.8.2 Monitor vessel safety: Recognize position, gyro, speed log, COG, SOG, time, Set a safe depth value from sea level with regards to Isolated Dangers, Set a

safe depth contour, Identify contours shown in Base Display, Identify other Base Display information that cannot be turned off.

5.6.1.8.3 Activate route monitoring features: Track, log, drift summary, sensor status, target tracks, scale, route information, contours, isolated dangers, special areas, alarm limits, Activate day/night color sets, track display, scale bar, vessel symbol, Set voyage recording (Logbook) track period, precision, color, history, routing info, filters.

5.6.1.9   Heading & drift vectors (0.5 hrs)

Ability to operates basic navigational functions and settings pertaining to ownship's heading vector, course over ground vector, and guard ring

5.6.1.9.1 Activate vessel's motion vectors: Turn either or both vectors on or off, Alignment of vessel contour, set vector length.

5.6.1.9.2 Obtain vessels' course and speed from the positioning system: COG & SOG may be from position system or from ARPA reference, HDG is true or undefined (manual entry only when in DR), LOG may be bottom, water, ARPA, or position system referenced.

5.6.1.9.3 Interpret the movement of the vessel: The graphical difference between the COG/SOG and the HDG/LOG vectors is the drift angle, Display of drift angle reveals vessel momentum in a turn, Drift angle in steady state reveals sum of wind and current on vessel.

5.6.1.9.4 Recognize the effects of gyro error: Drift angle results from gyro data without any provision for correction, Gyro precession due to high-speed turns produces an unreliable HDG display on ECDIS.

5.6.1.9.5 Graphically monitor ownship's approach to isolated dangers by means of a guard ring

5.6.EX .1. Simulation exercise – open sea (2.5 hours)

The proficiency to operates specific functions constituting task groups for route monitoring in an open sea area, and obtains all relevant information for basic safe integrated navigation. Demonstrate the following task groups on ECDIS while navigating safely in an open sea setting with non-threatening ARPA targets:

Monitor sea area, Use pre-defined route, Check position with pre-defined fix, Select pre-defined user layers, Check settings such as vector time, display reset, information layers, alarms, track, sensors, and ownship configurations.

5.6.1.10 Understanding chart data (1.0 hrs)

Understanding the types of electronic charts, and the characteristics of ECDIS data or system electronic navigational chart (SENC)

5.6.1.10.1 Define the relevant terminology of ECDIS.

5.6.1.10.2 Name the differences between electronic chart systems and ECDIS: Different ECDIS systems, ECDIS and ECS, Vector and raster charts.

5.6.1.10.3 Familiarirty with the various electronic chart data formats: Vector data, Raster data.

5.6.1.10.4 Understanding the relationship between ECDIS data and the information presented on the display: ECDIS database and its structure, ENC data and the SENC, How manual updates are stored in the database, Steps and responsibilities during ENC creation.

5.6.1.10.5 Understanding that only information stored as objects with corresponding attributes in the database is available for display.

5.6.1.10.6 Familiarity with the chart data selected for display.

5.6.1.11 Chart quality & accuracy (0.5 hrs)

The ability to assesse all errors, inaccuracies and ambiguities, chart data in the SENC caused by improper data management.

5.6.1.11.1 Knowledge of what the accuracy of chart data is dependent upon: Accuracy of survey and all hydrographic data, Shifting of buoys, Coverage and completeness of chart data.

5.6.1.11.2 Knowledge of the problems in ECDIS associated with variant datums: Different reference systems used for positioning (time, direction, speed), The effects of datum (horizontal, vertical), Different geodetic coordinate systems.

5.6.1.11.3 Ability to assess all errors, inaccuracies and ambiguities caused by improper data management.

5.6.1.11.4 Understanding the need and requirement that electronic chart data must be systematically updated for safe navigation.

5.6.1.11.5 Demonstrate issues pertaining to computer monitor display resolution: Potential distortions in chart scale, The amount of information that appears on the screen, Display adapter and the Desktop Area Setting, Troubleshooting display problems.

5.6.1.12 Chart organization (0.5 hrs)

The ability to handles ECDIS data at the workstation

5.6.1.12.1 Introduce the organization of chart data distribution: Demonstrating the organization of chart data by the processes of procurement (downloading), installation (also applies to updates), selection of chart type (format), initialization, and loading (autoload by position), Demonstrate the chart data manager application associated with the type approved ECDIS, Familiarity with the chart data file structure associated with the type approved ECDIS.

5.6.1.12.2 Demonstrate the loading (retrieval) of ECDIS data: Automatically from the directory of available chart data for the vessel's position, Automatically from the directory of available chart data for the cursor location, Manually by chart (cell) name from the directory of available data

5.6.2 Lesson Plans: Watchstanding with ECDIS (8.0 hours)

5.6.2.1 Sensors (0.5 hrs)

Understanding the performance limits of sensors and assesses their impact on the safe use of ECDIS.

5.6.2.1.1 Familiarity with the performance limits of devices for position, course over ground, heading, speed, depth, radar, and AIS, especially concerning: Availability, Accuracy, Integrity.

5.6.2.1.2 Understanding the need for selecting sensor data displayed in ECDIS that is appropriate and unambiguous, and accurate.

5.6.2.1.3 Demostrate the impairment of ECDIS when sensor performance deteriorates.

5.6.2.1.4 Demostrae and analyze various sensor alarms and indications: Activated when ECDIS receives no data from the external output device, Displayed in the second line of the Information Area as they occur,Use Alarm button or free cursor on 2nd-line message to disable the sound and message from the display, Alarm submenu function remains orange parameter returns to set limits, or when function is deliberately turned off, Correct response is to check the operation and connection of the relevant sensor.

5.6.2.2   Ports & data feeds (0.5 hrs)

Knowledge of selecting data ports, and assesses sensor input values and use of functions that are integrated with other navigational systems.

5.6.2.2.1   Select between primary and secondary position source.

5.6.2.2.2   Observe automatic change over to secondary position source.

5.6.2.2.3   Familiarity with the data reference system of each connected sensor:
Geodetic system, Antenna position, Transducer position, Clock or time source

5.6.2.2.4   Knowledge of the data port assigned to each connected sensor

5.6.2.2.5   Monitor, identify and to a limited extent decode the data stream for each attached sensor:
Select a sensor and monitor the data stream (live or simulated), generally recognize the sentence syntax associated with the sensor, Where possible, associate data with displayed navigational information

5.6.2.2.6   Assess the plausibility of sensor input values to ECDIS.

5.6.2.2.7   Assess the impact on displayed information when a sensor port is improperly selected.

5.6.2.3   Chart selection (0.5 hrs)

Demonstrates manual and automatic selection of charts, and explains the potential error of the ECDIS display due to improper chart selection.

5.6.2.3.1   Demonstrate the variety of methods that chart data can be loaded and changed: Automatically, Manually for the presently loaded route, manually from the total portfolio, Manually displayed by the cursor position, during the activity of the operator using the graphics cursor

5.6.2.3.2 Assess the inaccuracies and ambiguities caused by improper selection of a chart for display: When ownship position is on display, chart data list is sorted by scale, When ownship position is not on display (viewing elsewhere), chart data list is sorted by name(alpha), ECDIS displays largest scale data (smallest area) on the topmost layer, but the user may prioritize by format, especially ENC to keep ECDIS in the ECDIS mode, Automatic chart loading may be switched on or off or held to a user-selected chart (fixed)

5.6.2.3.3 Display updates in order to review content and to establish their inclusion in the SENC:

Review their contents, Determine that they have been included in the SENC

5.6.2.3.4 Dmostrae and analyze the data and chart alarms resulting from overscaling (zooming in) and underscaling (zooming out)

5.6.2.3.5 Demostrate and analyze the data and chart alarms resulting from use of a non-WGS 84 geodetic datum

5.6.2.4   Chart information (1.0 hrs)

Knowledge of how to matches presentation to situation, and demonstrates how to get the information about the chart and chart objects

5.6.2.4.1 Select the task panel and apply the functions suitable for position monitoring, route monitoring, route creation and editing, trial maneuver, creating and accessing user layers:

Continuous positioning while monitoring navigation, Trial maneuvers, Route planning and scheduling, Creating User Charts, Other functions

5.6.2.4.2 Demostrae who to obtain information on charted objects: For vector charts, use the Info button and position the acquisition marker box on the object, Navtex symbol, line, zone, free space, or chart frame corner and cycle through information, Window, For raster charts information is available only for the same frame size of a matching vector chart as described above.

5.6.2.4.3 Demonstrate how the presentation of navigation marks is changed according to ownship's position

5.6.2.4.4 Demonstrate errors of interpretation by the incorrect selection of display categories.

5.6.2.5 Changing the settings (0.5 hrs)

Efficient use of setting to demonstrates how to verify the operational settings and to assess that the navigational process is safe and confirm to operational procedures.

5.6.2.5.1 Manually test the major functions of hardware, keyboard, mouse / trackball, sensor data, and chart data.

5.6.2.5.2 primary information panel: Primary task panels, Primary information panel, Ship, Alarm, Chart, Logbook, ARPA, Configuration, Add Info (user layers), Route

5.6.2.5.3 Demonstrate alarm and function status indications: Alarms, time, position update, heading and speed log, Route keeping, heading vectors, chart scale, track, logbook functions

5.6.2.5.4 Demonstrate errors of interpretation by the incorrect selection of safety values: Safety depth; Safety contour; Least depth alarm; anti-grounding alarms, Alarms for sailing along a route

5.6.2.5.5 Adjust track length and precision

5.6.2.5.6 Familiarity with the range of information recorded in the log table (voyage recording):
Check navigational conditions (ownship progress, charts displayed, etc.), Check routing events (including manual notations), Check system events, Display additional data groups

5.6.2.6 Chart scaling (0.5 hrs)

Demonstrates the use of chart scaling and explains and avoids interpretation errors due scale

5.6.2.6.1 Demonstrate scaling of electronic chart display:

5.6.2.6.2 Apply the automatic changing of chart scale ratio: Use a value from –5 to +5 to reset the scale from larger to smaller respectively from the original chart scale (0), Use to display electronic chart on the same scale as the original paper chart

5.6.2.6.3 Apply additional chart scale information: Horizontal screen span, Display of chart scale, scale bar, and bold-thin scale angle, calculated range across screen display for scale in use, Warning messages associated with scale choice

5.6.2.6.4 Knowledge of interpretation errors due to scaling:

Overscale of the display will spread out chart and user information with the possible loss of familiar cues for estimating distance, Underscale of the display may cause some information to be hidden, Underscale with SCAMIN off will result in unacceptable clutter due to data density, Verify the selection of the appropriate scale

5.6.2.7 Information layers (0.5 hrs)

Understanding and proficient use of information layers.

5.6.2.7.1 Observe effect on information layers and status indications when chart data is loaded and when chart area is underscaled:

Determine native scale of chart data as it is loaded, Observe function of SCAMIN on and off when a chart area is underscaled (zoomed too far out), Observe indication of scale value

5.6.2.7.2 Review and apply appropriate display mode: Day or night presentation, Scale, Display category

5.6.2.7.3 Practice selecting information options in display category of "All other information".

5.6.2.7.4 Differentiate between information layers, User Chart layers, and Event graphic: Information layers (chart display categories) and User Chart layers, The addition and removal of own chart entries such as manual corrections and voyage planning notes, The addition of Event on the display and notations made in Logbook

5.6.2.7.5 Respond to the indicators representing the loss of displayed information: Layers Lost, Position Dropped

5.6.EX .2. Simulation exercise – open sea (2.5 hours)

The ability to operate specific functions constituting task groups for route monitoring in an open sea area, and obtains all relevant information for basic safe integrated navigation.

Demonstrate the following task groups on ECDIS while navigating safely in an open sea setting with non-threatening ARPA targets.

Monitor sea area, Use pre-defined route, Check position with pre-defined fix, Select pre-defined user layers, Check settings such as vector time, display reset, information layers, alarms, track, sensors, and ownship configurations.

5.6.2.8 System & position alarms (0.5 hrs)

Familiarity with the status indications and alarms pertaining to system and position, and Demonstrates the proper responses

5.6.2.8.1 Familiarity with and respond to alarms for primary and secondary positioning systems, such as: Primary (Secondary) Failure, Prim. (Secondary) Diff. Mode Loss, Prim/Sec Pos Diverge, Echo Ref. Loss, Primary (Secondary) Data not WGS84, Primary (Secondary) Unreliable Position

5.6.2.8.2 Identify and respond to chart related alarms, such as: Off Chart, No Official Data, Datum Unknown, AG (Anti-grounding) Monitoring Off

5.6.2.8.3 Knowledge and respond to ECDIS alarms from autopilot in Track Control, such as: Autochange, Autochange restore.

5.6.2.9 Depth & contour alarms (1.0 hrs)

Familiarity with the situational awareness and status indications and alarms pertaining to depth and contours in route planning and monitoring, and demonstrates the proper responses

5.6.2.9.1 Knowledge of route monitoring alarms, such as: Crossing a safety contour, Prohibited or other area, Track error allowance (XTE), Waypoint arrival circle,Safety Contour changed, See Sounder Reading

5.6.2.9.2 Familiarity with depth-related information, such as: Safe water depth, charted obstruction, Depth sounder related alarms, Depth from sounder, Depth value of Safety Contour

5.6.2.9.3 Knowledge of the safety values for route monitoring: Safety Contour will only utilize an existing depth contour in the chart data, Set the value for a Safety

Contour to represent preferred underkeel clearance, Set the value for Safety Depth, Set the value for spot sounding display category

5.6.2.9.4 Setting the limits pertaining to safe water, such as: Apply the ENC option of four shades, Nav. Danger, Depth sounder limit, Set an advance time for approaching the set safety contour.

5.6.3 Lesson Plans: ECDIS Route Planning (7.0 hours)

5.6.3.1 Vessel maneuvering characteristics (0.5 hrs)

Demonstrates safe monitoring and adjustment of information with the use of ship's particulars in the display of route planning and maneuvering information, and knowledge of the possible errors of interpretation

5.6.3.1.1 Select appropriate turning criteria for efficient and effective use of Autopilot in heading control mode: Autopilot parameters for turn radius and for turn rate govern the movement of the vessel with results viewable on ECDIS, Maneuvers measured on ECDIS may require adjustments in the Autopilot.

5.6.3.1.2 Correlate rudder limits in Autopilot with turning radii and rates of turn for curved track planning on ECDIS,turning radius for curved track planning (all waypoints), Maneuver data for steering to next route segment when underway using safe speed and wheel, over point settings

5.6.3.1.3 Familiarity with methods of alert for wheel over, when approaching waypoints, such as:

Turn radius maneuvering characteristics of ownship apply to curved track in ECDIS route planning. Arrival circle centered on waypoint with circumference intersecting wheel over point on ECDIS route.

5.6.3.1.4 The navigator must verify positioning especially when ECDIS is connected to auto pilot

Generally, only the "observed position" is controlled. An ECDIS curved predictor may only project a momentary rate of turn, rather than sophisticated hydrodynamic calculations, and therefore have limited accuracy.

5.6.3.2 Route planning by table (0.5 hrs)

Knowledge of how to operate all specific functions and obtains all relevant information for route planning by table.

5.6.3.2.1 Retrieve a stored route plan: For use in route monitoring, for planning and review. Rename as working route to allow ad hoc changes while underway, Obtain track courses and distances from list of waypoints as displayed in the table.

5.6.3.2.2 Approve an existing route for planning, safety review and monitoring. Apply systematic methods of examination, Utilize appropriate chart data intended for use along the route, Set alarm parameters, Adjust cross track zones, Scale in on charts for safety check analysis

5.6.3.2.3 Select the sea areas and the required waters for planning the whole passage.

5.6.3.2.4 Construct a route plan by inputting waypoint data alphanumerically into a route-planning table.

5.6.3.2.5 Adjust the route plan by editing, adding and deleting waypoints inside the table.

5.6.3.2.6 Review curved track planning and wheel over indication: Ownship maneuvering characteristics, Requirements of planning a safe passage including waypoint spacing.

5.6.3.2.7 Establish procedures to name, link, rename, archive, retrieve and delete route files:

Naming, linking and re-naming techniques for Route files, Archiving route plans, Deleting route plans.

5.6.3.3   Route planning by chart (1.0 hrs)

Familiarity with the operation of all specific functions and obtains all relevant information for route planning graphically by chart.

5.6.3.3.1 Select the sea areas and the required waters for planning the whole passage.

5.6.3.3.2 Construct a route by inputting waypoints directly on the ECDIS display. Fine-tune the waypoint positions, track zones and turn radii using practical navigation considerations, such as for radar and visual navigation, traffic patterns, and ENC data quality indicators.

5.6.3.3.3 Adjust the route by graphically editing waypoints.

5.6.3.3.4 Obtain track courses and distances from the chart: Cursor position, Selection of route segment

5.6.3.3.5 Obtain relevant route planning information, such as: Ocean wind, wave and surface current information, Tidal heights and currents, Sailing directions (port information), for special situations (anchoring, chart data quality, special areas, pilotage, quarantine, etc.)

5.6.3.4 Track limits (0.5 hrs)

Knowledge of operating all specific functions and obtains all relevant information for setting track limits in route planning.

5.6.3.4.1 Reviewing the alarm settings used as vessel is proceeding along a monitored route: Deviation of the current course angle as set in the planned route, XTE (cross track error) exceeds the value set in the route data table, Guard vector for crossing safety contour, Guard vector for entering special purpose areas, Guard ring for crossing an isolated danger.

5.6.3.4.2 Modify the setting of XTE in a previously saved route: Re-check the route for crossing dangers of navigation according to the setting of XTE zones, Observe the alarm triggering while proceeding along the modified route leg, Examine results graphically on appropriate scale chart data

5.6.3.5 Checking plan for safety (0.5 hrs)

The ability to operate all specific functions and obtains all relevant information for checking a route for the presence of dangers to navigation.

5.6.3.5.1 Check a previously created and saved route for crossing dangers of navigation according to the setting of cross-track distance: Safety contours, Isolated dangers, Limits of Special Purpose Areas.

5.6.3.5.2 Check the route as it is being created for dangers as listed above and use Safety Check while adding a waypoint and leg along a route, Use Safety Check while modifying an existing leg or waypoint

5.6.3.5.3 Assess a route plan based on a safety check: Consider all predictable hazards along the track and assess if it is reliably safe, Assess which route should finally be taken, Assess which areas and points of the passage are critical.

5.6.3.6 Embedded tide, current & climate almanac (0.5 hrs)

Proficiency to operate specific functions pertaining tidal height, currents, and wind and wave calculations pertinent to specific situations such as route selection, anchoring and drifting

5.6.3.6.1 Determine the force and direction of the true wind: Observe relative wind speed and direction and ownship's heading and SOG, Enable display of wind vector and assess its graphic validity

5.6.3.6.2 Display the ocean climate wind vectors and lines of equal wave height, selected by month.

5.6.3.6.3 Display the dynamics of surface currents: Zoom out to large area view to locate surface current reference points, Load by month.

5.6.3.6.4 Determine the tidal rise and tidal currents: At the reference station nearest to ownship position (up to 30 nm). At a reference station selected by name or by cursor, Use chart display features to predict values.

5.6.3.6.5 Use Current option in calculating a Route Plan Schedule.

5.6.3.6.6 Determine bottom type and assess anchor holding ground from information obtained on an appropriately scaled chart.

5.6.3.7 Route schedule (0.5 hrs)

Demostrate how to operate all specific functions and obtains all relevant information for route scheduling.

5.6.3.7.1 Dmostrate any deviation from the route schedule setting in use as vessel is proceeding along a Route.

5.6.3.7.2 Determine expected passage times: Use route schedule table for proceeding along a route,

Apply effects of surface and tidal currents in calculations, Calculate schedule from starting ETD and ETA's for waypoints, Calculate schedule from starting ETD and Log speeds for waypoints, Edit input data as required

5.6.3.7.3 Observe calculations of progress along the planned route: Load a route and the route schedule created for that route, Monitor the route, Display route monitoring data on ECDIS information panel, Display schedule information on ECDIS information panel.

5.6.3.7.4 Using the ETA application in ECDIS, calculate time or speed at a selected waypoint on a

monitored route: Speed to make good (STG) for the indicated waypoint, Estimated time of arrival (ETA) at any waypoint

5.6.3.8 User charts in route planning (1.0 hr)

Knowledge of all navigational functions pertaining to own (user) chart entries and the use of planning notes.

5.6.3.8.1 Review the ECDIS function for creating mariner's notes (User Chart). A User Chart is vector editor for creating added graphic and textual layers with specified attributes in the SENC, Display of User Chart objects is superimposed (layered) on any chart data without changing it, There can be many User Charts maintained in the system directory, but usually only one or two displayed at a time,Voyage planning notes and objects called into one layer may be merged into a file called into the other layer, and resaved with or without a new name, to construct a composite file, A User Chart may also consist of a symbol providing a link to extensive notes and hyperlinked files including photos and documents.

5.6.3.8.2 Knowledge of effective policy regarding User Charts: Purpose of particular file or chart or layer (correction, note, reference, etc.), Content with regard to visible data and links to data files, Naming with regard to purpose and geographic location, Value for using one or both layers (A/B) separately or simultaneously

5.6.3.8.3 Proficiency to Select User Chart for display: Load and unload various user charts already stored in the appropriate directory, Select specific information layers for display, Save, re-save, and re-name user charts (observe naming techniques)

5.6.3.8.4 Use the graphic editor for creating and modifying a User Chart: Add the many various types of new objects in the required position with care as pertains to use of scale, Edit objects and information, Shift objects

5.6.3.8.5 Create, save and move an anchor circle guard zone as a User Chart. An anchor circle can include a "danger" attribute triggered by the ECDIS Consistent Common Reference Point (CCRP).The diameter should represent
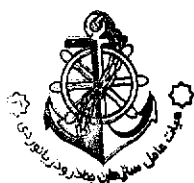
the maximum swing circle of the vessel The User Chart anchor circle should be positioned on the vessel's hawse pipe at the moment the anchor is let go, Anchor Guard Zone functions provided on ECDIS (as on GPS units) generally do not reference the position of the vessel's anchor or the vessel's swing circle

5.6.EX.3 Simulation exercise – coastal waters (2.0 hours)

Knowledge of how to operate specific functions constituting task groups for route monitoring in an open sea area, and obtains all relevant information for basic safe integrated navigation. Demonstrate the following task groups on ECDIS while navigating safely in coastal setting with non-threatening ARPA targets: Monitor sea area, Use route created by trainee including route schedule, Select user layers created by trainee, Validate own ship's position by alternate means, Check settings such as vector time, display reset, information layers, alarms, track, sensors, and ownship configurations, Assess environmental conditions such as tide, current, wind, waves, Modify the selected route as instructed, check for safety, adjust route schedule.

5.6.4 Lesson Plans: ECDIS Targets, Charts & System (8.0 hours)

5.6.4.1 ARPA tracked target overlay (0.5 hrs)

To demonstrate the use of ARPA operations in ECDIS and radar overlay founctions.

5.6.4.1.1 Knowledge of sensor setup requirements for ARPA tracked targets: Correct location of sensor reference.

5.6.4.1.2 Determine speed and heading inputs used in ARPA tracked target data calculations

5.6.4.1.3 Access target info display: Cursor,Target table, with sorting options for data fields, Target name field in table may provide direct display link on chart

5.6.4.1.4 Interpret target symbol features: Identify by number from ARPA-A or ARPA-B, or by writing an alias into target table, Vector and green circle at radar-determined position, Alarm can be set when both CPA and TCPA approach limitations are exceeded, Vector length the same as set for ownship.Target tracks are saved in daily files, and selectable for viewing on display.

5.6.4.2 AIS functions (0.5 hrs)

Knowledge of the use of Automatic Identification Systems in ECDIS. The demonstration will be through the slide show including all information which can be received or transmitted.

5.6.4.3   Radar overlay (RIB) functions (0.5 hrs)

Familiriazation with the display of radar signal input, and demonstrating the use of radar image in ECDIS.

5.6.4.3.1   Familiarity with the technical function of the radar integrator board (RIB) hardware , the RIB gain, filters, scaling, and target tracking function independently of the radar transceiver delivering the raw video and trigger, Is displayed in the SENC as a layer over chart data, RIB functions on ECDIS permit the continuous recording in the ECDIS PC of the radar picture and motion of tracked targets.

5.6.4.3.2   Familiriazation with the main functions of the radar integrator board require sensor setups and involve numerous interfaces on the ECDIS task panel, Radar signal input, Radar target selection, Formation of a radar image, Target functions, Radar operation functions independent from radar transceiver

5.6.4.3.3   Operateing the user interface controls for radar overlay, Target tracking, Image recording. The overlay image can be removed from the display by a single interface option

5.6.4.3.4   Demonstrating sources of image offset: A mismatch can develop between chart and radar data, Sensor position setup, Input of radar data heading misalignment, Position sensor error, Uncharted and/or incorrectly charted objects, and chart datum error

5.6.4.3.5   knowledge of source of ECDIS-tracked target data calculations: ECDIS speed and heading inputs are used in ECDIS-tracked target data calculations, Radar motion vector may be through the water rather than over ground, CPA & TCPA are derived from the ECDIS independently from the radar

5.6.4.4   Procuring & installing chart data (1.0 hr)

Demonstrate how to install chart license software and chart data of various formats and chart up date.

5.6.4.4.1 Review chart data structure, terminology, and installation procedures: SENC, and various formats, DNC format corresponds with American MIL-STD-2407 standards, which are based on the"Feature/Attribute Coding Catalogue (FACC)" normative document.The operator procures, installs / updates, selects; the ECDIS unit initializes, loads

5.6.4.4.2 Review chart format requirements for ECDIS.

5.6.4.4.3 Examine data distribution sources for ENC: Regional/global coordinating centers (RENC) which are engaged in the distribution of ENC data.

5.6.4.4.4 Examine data distribution sources for SENC conversions

5.6.4.4.5 Examine license structure for various formats, and practice installation License / permit structure depends on the chart data format, License / permit installation generally occurs through the chart data management utility, associated with the ECDIS:

5.6.4.4.6 Extract information on installation history.History includes the addition and deletion of individual charts/cells and history file is generally accessible through the chart data management utility associated with the ECDIS.

5.6.4.5 Installing chart corrections (1.0 hrs)

Kowledge of manual and automatic updates (corrections) to electronic charts, and assess the importances of updating

5.6.4.5.1 Electronic chart data is to be maintained with up-to-date corrections: The safety of navigation requires data that is maintained with up-to-date corrections

5.6.4.5.2 Add or modify a chart object using Manual Correction task: Using the Manual Correction task in ECDIS, a chart object layer may be added or modified.The manual correction may include attributes and links, may be concealed, may be made timeactive, and may be deleted

5.6.4.5.3 Familirity with production license options for accessibility of automatic updates: Chart data licensing options may include services for automatic updating, sometimes referred to as maintenance in reference to proprietary chart data

5.6.4.5.4 Install various automatic update formats using various methods using chart managing utility associated with the ECDIS program, install the following

depending on availability: Procured or downloaded update files for proprietary chart data, Procured or downloaded ENC updates, Downloaded DNC update patch files, Procured or downloaded BSB and NDI raster update patch files, Procured or downloaded ARCS update patch files

5.6.4.5.5 Extract information on update history Installation history is retained during updating, History includes the addition and deletion of individual charts/cells, History file is generally accessible through the chart data management utility associated with the ECDIS.

5.6.EX . 4 Simulation exercise – confined waters (2.0 hours)

Proficiency in btainning all relevant information for safe navigation and operates specific functions for collision avoidance while route monitoring in confined waters. Demonstrate the following task groups on ECDIS while navigating safely in a confined waters setting with threatening targets in specified waters.Monitor sea area, Use route created by trainee including route schedule, Select user layers created by trainee, Validate own ship's position by alternate means, Check settings such as vector time, display reset, information layers, alarms, track, sensors and ownship configurations.

Use ECDIS features to assess target threats and execute course and/or speed alterations to avoid collision (or advise conn if working in 2-person team in SAR exercise, where ECDIS operator is advising the conn) Comply with COLREGS, Comply with bridge procedures established by trainee and/or instructor Instructor guidelines

5.6.4.6 System reset & backup (0.5 hrs)

The knowledge of performing the basic troubleshooting and uses the back-up system in the case of ECDIS failure

5.6.4.6.1 Familiriazation with the regulations on ECDIS back-up arrangements.The regulations on ECDIS back-up arrangements intend that backup is ensured through electronic and/or paper chart options, The installation of a duplicate set of ECDIS equipment combined in a single computer network where each ECDIS PC is connected to the navigational sensors and assigned "Master" or "Slave" status, guarantees interchangeability without loss of data in case of

failure of one of the systems.The availability of an updated paper chart collection is required where a single set of ECDIS equipment is installed (standalone), or when ENC coverage for the intended route is unavailable, such as when raster or proprietary chart data is provided instead of ENC data

5.6.4.6.2 Perform back-up procedures in standalone ECDIS failure event: Charts include the planned route Regular plotting of ship's position when navigating within restricted waters

5.6.4.6.3 Perform back-up procedures in (Master) ECDIS failure event: Includes prior equalizing of route, chart data and user data

5.6.4.6.4 Perform troubleshooting routines in ECDIS, such as for: Damaged initialization and configuration files, Integrity of cables and com ports integrity, Sensor assignment and configuration

5.6.4.6.5 Familiaritiy with consequences to navigation safety while troubleshooting including,track display, autopilot functions and other systems deriving data feed from ECDIS

5.6.4.6.6 Knowledge of consequences to data storage while ECDIS PC is down: Despite continuous functioning of sensors, the consequence while ECDIS PC is down is that all data storage ceases.

5.6.4.7 Archiving with ECDIS data management utility (0.5 hrs)

Knowledge of storing and retrieving files on the same workstation and transfers certain files between workstations.

5.6.4.7.1 Use ECDIS data management utility to work with files associated with ECDIS operations:

Select many groups of navigational data files (logbook, ownship tracks, target tracks, user charts, routes, ship model, system log, S57 log), Convert from binary to text (can be subsequently opened in word processing programs for formatting, printing or archiving), View and print various converted data files directly within utility.

5.6.4.7.2 Use ECDIS data management utility to transfer select data files between storage media:

Recognize ECDIS directory structure for file retrieval and storage, Recognize which files can be copied or moved to other directories or drives, Copying files into the ECDIS program via Data Tool Would normally be done only for user layer files and route plan files created in another ECDIS installation (such as on another vessel), require familiarity with the directory structure in ECDIS,

5.6.4.8 Data logging and logbook (1.0 hrs)

Understanding the meaning of voyage recording

5.6.4.8.1 Familiarity with requirements and functions of logbook task in ECDIS, such as: Voyage recording consists of 24-hour data files, changing dates at GMT midnight, A complete status check of all alarm functions and many setup conditions upon date change, Collection of all fields upon: Waypoint and Watch change (basic), Manually triggered Event, Screen coordinates change due to display reset (true and relative motion) and scale change, Change in chart data displayed, Change in alarm status and condition, Chart data field includes displayed chart number (if ENC, also source, edition, date and cell)

5.6.4.8.2 Demonstrate display functions of ownship track and tracks of ARPA and RIB targets:

Includes position and heading data up to every second, but possibly less frequent depending on the ECDIS and its settings, No matter what track date is displayed, current track for six minutes will be displayed targets tracked on ARPA, radar overlay and will be included in track file

5.6.4.8.3 Perform various hard copy print outs, such as: Direct from ECDIS logbook task, Direct from ECDIS route planning and route schedule task

5.6.4.9 Playback (0.5 hrs)

Demonstrate the operation of the functions pertaining to voyage recording, specifically the reconstruction and playback of selected situations.

5.6.4.9.1 Knowing the disruption of ECDIS when operating Playback utility, Operating Playback utility runs all normal ECDIS functions but also bypasses all inputs, Results in the complete disruption of all route monitoring and data logging

5.6.4.9.2 Knowing that no route or route plan is securely associated with any playback. No route or route plan is securely associated with any playback; there will be no indication of any route plan(s) in the track files.

5.6.4.9.3 Knowing that no chart data is securely associated with any playback. No chart data is securely associated with any playback; there may be no record of chart formats enable or disabled in system setup. During playback, the chart data displayed is captured in logbook with every entry, Chart data available at the time of the selected track file can only be deduced by reviewing chart installation and update history file.

5.6.4.9.4 Perform a playback of an event or passage specified by date and time.Select a previous exercise or real vessel track file for review, In Playback utility, select date for file to observe, start then pause, then advance to desired time by moving cursor, Observe the construction of the past track, including tracked target data through targets task

5.6.4.9.5 Closely observe the position and heading update interval in Playback.During playback, analyze the updating interval for position and heading

5.6.4.9.6 During playback, analyze the logbook for the quality of navigation: Alarms and responses, Chart data in use, Operational settings in use

5.6.5 Lesson Plans: ECDIS Responsibility & Assessment (6.0 hours)

5.6.5.1 Responsibility (1.5 hrs)
Knowledge of the essential legal aspects and responsibilities in the use of ECDIS

5.6.5.1.1 Re-examine COLREGS – implicit

There is no specific mention of ECDIS (in the COLREGS, yet however, ECDIS use is implied in the phrase "all available means" (Lookout (5), Risk of Collision (7)) occurring in Conduct of Vessels in Any Condition of Visibility - Rules 4-10

5.6.5.1.2 Re-examine SOLAS, as amended – explicit

Operating ECS and ECDIS without complete or updated chart data has been considered a contributing factor in several recent casualties. SOLAS V/2, V/19 & V/27 regulations address the carriage of charts. The equivalency of

ENC format vector charts and paper charts, The non-equivalency of any other format.

5.6.5.1.3 Re-examine IMO approval of equipment and installations equipment and installations are specified in IEC 61174 ed. 3.0, ECDIS operational and performance requirements, methods of testing and required test results.Other references to installations include: IMO's revised ECDIS Performance Standards, MSC.232(82), See also SN.1/Circ.266/Rev.1 (12/ 2010) on ECDIS software maintenance and also SN.1/Circ.265 (10/2007) on bridge design

5.6.5.1.4 Re-examine IMO carriage requirements SOLAS ch. V Reg. 19.2.10 and 19.2.11 as amended by resolution Annex 1 of MSC 86/26), adopted 6/2009, (also MSC.282(86)) makes the carriage of ECDIS mandatory in a phase-in schedule from 7/2012 through7/2018. See also details from the recent International ECDIS Conference, (Singapore, 10/09).

5.6.5.1.5 Re-examine STCW Code, as amended International ECDIS training requirements are now included in STCW 2010 Part A (Code) through the Manila Amendments of 6/2010, effective 1/2012 with a 5-year grace period. The basic STCW competence requires maintaining the safety of navigation using ECDIS, with differences in application between junior and senior deck officers:

5.6.5.1.6 Re-examine flag state (maritime) implementation.A detailed outline for training and assessment in the operational use of ECDIS is now included in the STCW 2010 Manila amendments, Part B and see also SN.1/Circ.207/Rev.1 "Differences between RCDS and ECDIS";

5.6.5.1.7 Re-examine ISM requirements of ship owners & operators under the terms of the ISM Code, the ship owner or operator has a responsibility to ensure that personnel are given proper familiarization with their duties.If a ship is equipped with a compliant ECDIS as the primary means of navigation at sea, the shipowner has to provide ECDIS training to ensure that ECDIS users are both properly trained and familiar with the shipboard equipment before it is used.

5.6.5.2   Effective navigation with ECDIS (1.5 hrs)

Proficiency in how ECDIS is used effectively in navigation with situatinal awareness including safe water, proximity of hazards, set and drift, chart data and scale selection.

5.6.5.2.1 knowledge of bridge functions incorporating ECDIS. ECDIS can be used in support of many important bridge functions, but such support requires its own skill and knowledge facility, and constitutes an additional bridge function. Visual monitoring – effective lookout, verify visual contact, Planning – charts, updates, routes, weather forecasts, weather routing, Piloting – course changes, dead reckoning, vessel position, radar overlay, position history, alarm history, Maneuvers – conditions (wind, tide, current, ice, climate data), vessel characteristics, docking, anchoring lightering, canal transit, Traffic – collision threat analysis, target data (ARPA, overlay tracking), verify ARPA, target presentation, trial maneuver, COLREGS application, track history, At anchor – monitor position, monitor other traffic, tidal current trends

5.6.5.2.2 Re-examine sample bridge operating procedures addressing ECDIS. Simplified bridge operating procedures addressing ECDIS should include (but should not be limited to) the following:
Maintain visual lookout supplemented by ARPA & ECDIS, Validate correct functioning of electronic instruments at regular intervals, Manage chart database and updates, Maintain voyage plans & files (consistent with approved and filed copies).

5.6.5.2.3 Define safe and practical navigation with ECDIS. Safe and practical navigation with ECDIS should include (but should not be limited to) the following: Use of ECDIS unit itself, Make setup choices for specific conditions, Recognize that bridge team members may be viewing the ECDIS for widely differing purposes, therefore setups should be accommodating, Perform visual scanning techniques applied to ECDIS pages/screens, Use of instruments integrated with the ECDIS, Cross check displayed information by all other available means,Verify settings and functions of sensors connected to ECDIS, Acknowledgement of the "Problem of Partial Use" (unfamiliarity with the unit and/or procedures may lead to distracting problem solving attempts at inopportune times, or to a disuse of the unit altogether, neither of which improves the safety of navigation). Therefore navigators should know

what can and cannot be accomplished before the need arises, Know that limited or restricted use results in unverified and unintended settings, Perform on ECDIS anything done on a paper chart Perform on ECDIS things that cannot be otherwise done as effectively or efficiently.

5.6.5.2.4 Examine evolving concepts of e-navigation with regards to ECDIS.With regards to ECDIS, the evolving concepts of e-navigation appear to be leading toward a thorough and uniform level of competence, reliability and usage of ECDIS in all aspects of navigation. The e-navigation strategy implementation also depends upon ENC availability, coverage, consistency and quality (NAV 56/8/7).Comprehensive practice with ECDIS is essential for achieving one of the stated purposes of e-navigation, namely, to prevent the overburdening and distraction of the seafarer.

"The vision behind the e-navigation strategy ... is to integrate existing and new navigational tools, in particular electronic tools, in an all-embracing transparent, user-friendly, cost-effective and compatible system that will contribute to enhanced navigational safety while simultaneously reducing the burden on the navigator."

5.6.EX . 5.1 Written evaluation (1.0 hr)

Knowledge and comprehension in the learning areas of ECDIS that could not be otherwise   demonstrated by workstation tasks or in simulation exercises.Correctly answer questions. Each written evaluation will consist of at least 25 questions. The selection of questions cover all segments of the course requiring assessment in leaning dimensions of knowledge and comprehension.Each evaluation will reflect a similar distribution of questions drawn from the learning objectives listed above. Passing marks shall be set at 70 percent.

5.6.EX . 5.2. Simulation evaluation – coastal & confined waters (2 hrs)

To operate specific functions for route monitoring in coastal and confined waters, and obtains all relevant information for safe navigation.Demonstrate the following task groups on ECDIS while navigating safely in coastal & confined setting with potentially threatening targets in specified waters.Monitor sea area, Use route created by trainee including route schedule, Select user layers created by trainee, Validate own ship's position by altenate means, Check settings such as vector time, display reset, information layers, alarms, track, sensors, and ownship configurations. Use

ECDIS features to assess target threats and execute course and/or speed alterations to avoid collision, Modify route as instructed, checking for safety and adjusting schedule, Assess tide and current, adjust ETA for timed arrival at waypoint as instructed, Comply with COLREGS, Comply with bridge procedur established by trainee and/or instructor

5.7 Facilities and equipment required for conducting the course:

Apart from requirements mentioned in Code of practice for approval and monitoring of maritime training courses, followings also to be provided.

5.7.1 A classroom with audio-visual facilities, air condition, Screen projection through PC and document reader, CBT and PC presentations, hard-copy handouts, and sample ECDIS interfaces on CD.

5.7.2 Lecturing with practical demonstration is conducted in an ECDIS classroom (Open Lab) setting, where each trainee has sole use of a PC workstation with a resident installation of type-approved ECDIS; An ECDIS simulator system with real or simulated input for position, course, speed and depth. Own ship must be able to move along the chart and simulator system and should comply with the requirements of section A-I/12 of the STCW.

5.7.3 all workstations should be networked to an Instructor Station running an integrated navigation simulation application that delivers to each workstation high-fidelity own ship conning controls, navigational aids including GPS, track control-capable Autopilot, AIS and radar/ARPA, and a visual scene, all of which are interfaced to the ECDIS. Lecturing without demonstration is conducted in the same ECDIS classroom with the workstations powered down.

5.7.4 An Integrated Navigation Lab (INL) setting, where each trainee has use (either alone or in groups of no more than two) of an own ship in semi-isolation (Bridge).

5.7.5 The Integrated Navigation Lab (INL) should run the same simulation application as in the ECDIS classroom, except that each bridge consists of four uniquely dedicated PCs: ECDIS with trackball and keyboard, conning and control, radar/ARPA, and visualization channel displayed on a large flat screen. As in the ECDIS classroom, all navigation functions should be integrated and interfaced to the ECDIS. There should also be a provision in each Bridge for plotting on standard paper charts.

5.7.6 VHF radio, either type-approved or de-amplified, or digitally embedded in the simulation software to be available.

5.7.7 The particular brand and software version of the ECDIS used in the classroom (open lab) environment should match that which is used in the simulation lab. (Trainees will benefit from gaining some familiarity with the approaches taken by different manufacturers to the ECDIS Performance Standards, especially with regards to menu structures and value-added options. Achievement of competency in safe navigation with ECDIS should occur through prolonged and in-depth practice with one particular ECDIS common to both training environments)

5.7.8 The integrated navigation simulation application installed in the ECDIS classroom and Integrated Navigation Lab as outlined above should include type-approved ECDIS software to which the simulation delivers sensor input in an underway context. Assessment and evaluation systems built into the simulation software offer considerable benefits, especially by unobtrusive and objective measure of "safe navigation" parameters; its inclusion and application especially in route monitoring exercises is encouraged.

5.8 Lecturers and Instructors Minimum Qualifications:

Lecturers and instructors shall have completed a course in instructional techniques (TFT) in one of the training centers approved by the PMO, and:

5.8.1 Hold a Master certificate GT≥3000 unlimited voyages and 12 months of sea service in that capacity and 12 months of related lecturer exprience.

5.8.2 Have successful completion of an approved ECDIS training course (operational level).

5.9 Assessment and Certification:

Upon successful completion of the assessment which is carried out during and at the end of the course, the trainees will be awarded course completion certificate issued by the approved training center.

5.10   Revalidation/Renewal of Certificates:

Course completion certificates do not require revalidation or renewal.

5.11   Course Approval:

It will be carried out as per code of practice for approval and monitoring of maritime training courses.

6. Records:

All records showing compliance with the provisions of this code of practice

7. References:

7.1 STCW-78 convention , STCW code.
7.2 IMO Model course on Operational use of Electronic Chart Display and Information Systems (ECDIS)
7.3 Code of practice for approval and monitoring of maritime training courses.

8. Appendix:

Nil