

Background Information

Voyage planning is a key element of **Bridge Resource Management (BRM)** forming the foundation the bridge team will use to ensure the vessel's safe transit along its intended route. A voyage plan (or passage plan) is a comprehensive, berth to berth guide, developed and used by a vessel's bridge team to determine the most favorable route, to identify potential problems or hazards along the route, and to adopt bridge management practices to ensure the vessel's safe passage. During passage planning, portions of a voyage that have the potential to pose the greatest risk should receive additional review, and the limits and conditions for undertaking those portions of the voyage set in advance.

The Master should review and approve the plan and each bridge team member should review and sign the plan indicating they understand it. If a voyage is not proceeding as planned or cannot be accomplished safely under existing conditions, this should be communicated honestly and quickly within the ship's management system. Adjustments to the voyage plan must be made accordingly and communicated effectively.

WHY IT'S IMPORTANT

Voyage planning helps ensure the vessel's safe transit by avoiding potential hazards along the route.

MORE INFORMATION

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Special Accommodations:

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Voyage Planning Considerations

In preparation for voyage planning, a wide array of information must be reviewed and considered. The following is a list of some items the officer in charge of voyage planning might consult:

- Appropriately-scaled charts, navigational publications such as notices to mariners, and nautical publications;
- Waterway characteristics, navigational obstructions, bar crossings and water depths;
- Institutional knowledge of areas to be transited from previous voyages (may be taken from previous voyage plans developed by fleet vessels);
- Characteristics, condition (including engineering conditions), and operational limitations of the vessel;
- Applicable local regulations, including Vessel Traffic Services (VTS), tug escort or assist services, and pilotage requirements, etc.;
- Predicted weather, current, tidal, wind, swell, and visibility conditions along the route;
- Vessel traffic patterns and areas of expected high traffic density;
- Internal and external communication procedures and requirements;
- Vessel operations which require additional searoom, such as ballast exchange or pilot embarkation;
- Anticipated watch conditions; and
- Company's regulations such as ships' routing schemes and reporting systems.

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International Maritime Organization (IMO) Guidelines For Voyage Planning, Resolution A.893(21) adopted on 25 November 1999 should be followed.

Voyage Planning Elements

A comprehensive voyage plan will include details marked on the appropriate charts (paper or electronic) as well as voyage planning forms provided by the vessel's management company under their Safety Management Manual and consistent throughout the company's fleet. The voyage plan should include the following details as a minimum:

- Planned track with true course and distance of each leg, plotted out on appropriately-scaled charts (if an electronic charting system is used, the appropriate waypoints should be entered in the system and checked by another individual);
- Safe speed for each leg of the passage, taking into account navigational hazards, maneuvering characteristics, and draft in relation to water depth including squat and heel effect when turning, as applicable;
- Estimated times of arrival at critical points in the plan;
- Wheel over positions, as applicable;
- Turn radius for each alteration, as applicable;
- Areas to be avoided where the vessel is restricted either by local regulations (i.e., marine sanctuaries) or restricted due to water depth or local dangers;
- Areas covered by local regulations such as VTS, tug escort or assist services, and pilotage requirements;
- Areas with high traffic density and/or ferry crossings;
- Areas considered to be pilotage waters where the Master, an area license holder, or a Pilot should be on the bridge;
- Areas where it is considered that the engine room should be at an increased state of readiness;
- Navigational marks to use when navigating visually near a waypoint indicating an alteration of course;
- Method and frequency of position fixing, including primary and secondary alternatives; and
- Contingency plans for emergencies including abort points for port, channel, and/or berth approaches, and actions to take to place the vessel in deep water or proceed to a port of refuge or safe anchorage.

Voyage Planning and Electronic Chart Display and Information System (ECDIS)

ECDIS is a system, approved by an appropriate governmental authority, consisting of type-approved hardware and software which uses a sophisticated electronic database containing authorized charting and other navigation information. This is combined with satellite and other position fixing and with ship's sensors to provide a powerful decision-making tool on the bridge of a ship. ECDIS allows the watch officers to view the intended vessel track, the course made good, surrounding vessel traffic and potential navigational hazards on one screen.

Voyage planning and monitoring can be done on an approved ECDIS instead of paper charts for areas covered by Vector Charts (ENC). (ENC is a vector chart issued by a national hydrographic office and approved by the competent authority.) For areas of the world not covered by vector charts, the system

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may be used with Raster charts. However, ECDIS equipment must be used together with an appropriate folio of up-to-date paper charts when using Raster Chart Display system (RCDS) mode.

When using ECDIS for voyage planning, the navigation officer should establish a “safety contour” around the vessel to fully use the automated function of ECDIS. (The safety contour function of the ECDIS allows the mariner to choose an isobaths from the database to be emphasized and associated with a variety of available alarms.) If the ship crosses a safety contour or approaches a prohibited or specially-defined area such as a traffic separation zone, ECDIS will automatically indicate the error while the route is being planned and executed. Due to the complexity of the system, navigation officers should receive training on the vessel’s specific ECDIS system with annual refresher training.

For ECDIS to meet a minimum level of reliability and functionality, the International Maritime Organization (IMO) developed a performance standard. This standard specifies how an ECDIS must work to be an adequate replacement for the paper nautical chart. IMO Performance Standards permit ECDIS-equipped vessels to dispense with the up-to-date paper charts required by Regulation V, Chapter 20 of the 1974 SOLAS Convention. The ECDIS system also needs to be approved by the appropriate government authority.

Properly trained navigation officers should determine what is appropriate in terms of alarms and navigation parameters according to the characteristics of the vessel and other prevailing conditions.

Voyage Planning and Electronic Charting Systems (ECS)

All electronic chart systems other than ECDIS are known simply as ECS. There are no agreed standards for ECS or versions of the charts that they use. Because of this, ECS are NOT recognized as an alternative to paper charts where charts are required to be carried under United States or international regulations. An ECS may be used as one of the suite of navigation tools used by the bridge team but may not replace the paper charts.

Vector Electronic Charts (ENC) - ENC are vector charts that also conform to the International Hydrographic Organization’s (IHO) specifications. ENC are compiled from a database of individual items ('objects') of digitized chart data which can be displayed as a seamless chart. When used in an electronic navigation system, the data is reassembled to display either the entire chart image or a user-selected combination of data. ENC are intelligent in that systems using them can be programmed to give warning of impending danger in relation to the vessel's position and movement.

Raster Nautical Charts (RNC) - RNCs are raster charts that also conform to IHO specifications but are produced by digitally scanning a paper chart image. The resulting digital file may then be displayed in an electronic navigation system where the vessel’s position, generally derived from electronic position-fixing systems, can be shown. Since the displayed data are merely a digital photocopy of the original paper chart, the image has no intelligence. Other than visually, it cannot be interrogated. IMO resolution MSC.86 (70) permits ECDIS equipment to operate in a Raster Chart Display System (RCDS) mode in the absence of Electronic Navigational Charts; however, when in this mode ECDIS must be used together with an appropriate folio of up-to-date paper charts.

VOYAGE / PASSAGE PLAN

VESSEL: _____

DATE: _____

VOYAGE NUMBER: _____

FROM: _____

TO: _____

CHARTS TO USE:

LIST OF LIGHTS:

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SAILING DIRECTIONS:

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LIST OF LIGHTS, RADIO AIDS & FOG SIGNALS:

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PILOT CHART ATLAS:

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EQUIPMENT: _____

VHF CHANNELS: _____

PLAN PREPARED BY: _____

2nd Officer

APPROVED BY: _____

Master

PLAN REVIEWED BY: _____

Chief Officer

PLAN REVIEWED BY: _____

3rd Officer

PLAN REVIEWED BY: _____

Chief Engineer

GYRO ERROR: _____ (EAST / WEST)

Chart No.	WP No.	Waypoint Latitude	Waypoint Longitude	Course (RL/GC)	Dist. To Next WP	Dist. To Go Pilot to Pilot	Min. Exp. Depth	Dist. From Shore	Fix Frequency	Primary Fix Method	Secondary Fix Method	GMDSS Info.	Remarks & Instructions

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