

### Bridge Resource Management Guide

*Weakness in bridge organization and management has been cited as a major cause for marine casualties worldwide. Accidents in operations are frequently caused by resource management errors. Bridge Resource Management reduces the risk of marine casualties by helping a ship's bridge crew anticipate and correctly respond to their ship's changing situation.*

#### Principles of Good Management practices are:

- *Shared view of goals;*
- *Delegation of responsibilities;*
- *Effective organization; and*
- *Sense of team ownership in achieving goals.*

#### What is Bridge Resource Management?

Bridge Resource Management (BRM), or as it is also called Bridge Team Management (BTM), is the effective management and utilization of all resources, human and technical, available to the Bridge Team to ensure the safe completion of the vessel's voyage.

BRM focuses on bridge officers' skills such as teamwork, teambuilding, communication, leadership, decision-making and resource management and incorporates this into the larger picture of organizational and regulatory management. BRM addresses the management of operational tasks, as well as stress, attitudes and risk. BRM recognizes there are many elements of job effectiveness and safety, such as individual, organizational, and regulatory factors, and they must be anticipated and planned for. BRM begins before the voyage with the passage plan and continues through the end of the voyage with the passage debrief.

#### What Are My Available Resources To Manage?

A mariner has many resources available to him/her for safe passage planning and execution. Some examples include:

- Electronic equipment (i.e. radar, depth sounder, GPS/DGPS, ARPA, gyro compass)
- Charts and publications, including electronic publications
- Environmental factors (i.e. tide, wind, currents)
- Electronic Charting and Display Information Systems (ECDIS)
- Vessel Traffic Services (VTS)
- Passage plan

#### WHY IT'S IMPORTANT

Bridge Resource Management reduces the risk of marine casualties by helping a ship's bridge crew anticipate and correctly respond to their ship's changing situation.

#### MORE INFORMATION

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#### Special Accommodations:

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# Focus on Bridge Resource Management

- Internal and external communication equipment
- NAVTEX
- Automatic Identification System (AIS)
- Persons with local knowledge (i.e. Pilot)
- Bridge Personnel (i.e. Master, Officer On Watch (OOW), helmsman, lookout)

## What are the objectives of Bridge Resource Management?

- Share a common view of the intended passage and the agreed procedures to transit the passage with all members of the Bridge Team.
- Develop and use a detailed passage plan to anticipate and manage workload demands and risks.
- Set appropriate manning levels and make contingency plans based on anticipated workload and risks.
- Make roles and responsibilities clear to Bridge Team members.
- Involve all team members in problem solving.
- Acquire all relevant information early and anticipate dangerous situations.
- Team members clearly understand the chain of command including the way decisions and instructions are made, responded to, and challenged.

## How do I implement Bridge Resource Management on my vessel?

The Master can implement BRM by considering and addressing the following:

- Passage Planning – covering ocean, coastal and pilotage waters. Particular attention is paid to high traffic areas, shallow waters, or pilotage waters where the plan incorporates appropriate margins of safety and contingency plans for unexpected incidents.
- Passage Plan Briefing - all bridge team members are briefed on the passage plan and understand the intended route and procedures to transit the route.
- Bridge Manning – Master uses passage plan to anticipate areas of high workload and risk and sets manning levels appropriately.
- Bridge Team Training (ashore and on-the-job) - is given all bridge crew members and they are sure of their roles and responsibilities, both for their routine duties and their duties in the event of an incident/emergency.
- Master's Standing Orders – are read and signed before the commencement of the voyage. Orders are clear on the chain of command, how decision and instructions are given on the bridge and responded to, and how bridge team members bring safety concerns to the notice of the Master.
- Master/Pilot Exchange – the passage plan is discussed by the Master and the pilot and changes made as necessary. Any new information is communicated to the rest of the bridge team. When the pilot is onboard he/she should be supported as a temporary bridge team member.
- End of Voyage Debriefing – provides the opportunity for the bridge team to review the passage plan's strengths and weaknesses, make suggestions for improved safety or communications, and improve team problem solving skills.

# Focus on Bridge Resource Management

### What are the benefits of BRM when correctly practiced on my vessel?

When BRM is practiced correctly onboard the result should be a Bridge Team that:

- Maintains its situational awareness;
- Continually monitors the progress of the vessel making appropriate adjustments and corrections as necessary to maintain a safe passage;
- Acquires relevant information early;
- Appropriately delegates workload and authority;
- Anticipates dangerous situations;
- Avoids becoming pre-occupied with minor technical problems and losing sight of the big picture;
- Undertakes appropriate contingency plans when called for;
- Recognizes the development of an error chain; and
- Takes appropriate action to break the error-chain sequence.

### Expectations for BRM when in Washington State waters including Puget Sound, Strait of Juan de Fuca, and the Columbia River

While operating in Washington State waters, vessel owners, operators, and Masters are expected to ensure that bridge watchstanders:

- Are properly trained in BTM in accordance with the 1995 Standards for Training, Certification, and Watchkeeping for Seafarers (STCW);
- Practice effective BRM;
- Prepare a comprehensive voyage plan for transiting from entry into US waters to their final berth or anchorage (and for the outbound transit);
- Have on the bridge at all times an OOW capable of effectively communicating in English; and
- Follow the communication procedures below.

BTM is required by U.S. 33 CFR 157.415 and is recommended by Section B-VIII/2 of the STCW95 Code.

### Communication Procedures

- The Master should advise the pilot, upon boarding, which members of the bridge team speak English, and discuss how communications between the pilot and the bridge team will be handled.
- The Master should discuss the voyage plan with the pilot, and inform bridge team members of the pilot's intentions and special concerns.
- The Master or OOW should immediately advise the pilot when, at any point in the transit:
  - The maneuverability of the vessel has been adversely affected;
  - When he or she has information necessary for the safety of the ship's transit; or
  - When he or she is uncertain of the pilot's intentions regarding the ship's movements.

# Focus on Bridge Resource Management

## Some examples of incorporating BRM

*Example of setting Watch Condition*

A watch condition structures the bridge team based on the environment in which the ship is operating. The environment consists of both internal and external factors affecting the vessel. These factors include the mechanical condition of the vessel, weather, traffic, location and sea state.

WATCH CONDITION	SHIP'S EXTERNAL ENVIRONMENT*		
	VISIBILITY	WATERWAY	TRAFFIC
1	Unrestricted	Offshore Waters	Light
2	Restricted	Restricted	Moderate
3	Restricted	Restricted	Heavy
4	Restricted	Pilotage Waters	Heavy

NOTE: There are many combinations of the above environmental and other factors for setting different watch conditions. These should be set by company policy and supplemented by the master's orders.

## Example of setting bridge team duties

BRM may group bridge duties into three general areas:

- **Collision Avoidance** - Detecting and avoiding other craft and objects.
- **Navigation** - Keeping the vessel safely clear of shoal water, close to her intended track, and on schedule.
- **Administration** - Routine watch duties such as communications, log keeping, and supervising watch personnel.

## Example of the division of bridge team duties under different watch conditions

BRIDGE TEAM DUTIES BY WATCH CONDITION*							
WATCH CONDITION	BRIDGE TEAM DUTY						
	CONN	COLLISION AVOIDANCE	RADIO COMMUNICATIONS	NAVIGATION	OTHER DUTIES	HELM	LOOKOUT
1	Watch Officer				AB		
2	Master	Watch Officer			AB	AB/OS	
3	Master	Watch Officer(s)			AB	AB/OS	
4	Pilot	Master	Watch Officer		AB	AB/OS	

NOTE: "OTHER DUTIES" may include logbook keeping, equipment checks, and tending the engine order telegraph and thruster control. Overlap among bridge team members indicates duties that may be shared. Cadets, when onboard, may be used to supplement and complement other members of the team.

\*The charts on this page were adapted from the MITAGS "Bridge Resource Management Course," see reference below.

## For more information on Bridge Resource Management

Bridge Procedures Guide. International Chamber of Shipping, Third Edition, 1998.

Bridge Resource Management Course. Maritime Institute of Technology & Graduate Studies (MITAGS) ([www.mitags.org](http://www.mitags.org))/Pacific Maritime Institute (PMI) ([www.mates.org](http://www.mates.org)), 2002.

Guidelines for Developing Bridge Management Teams. American Petroleum Institute, 1991.

Meurn, R.J. Watch Standing Guide for the Merchant Officer. Cornell Maritime Press, 1990.

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