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MEMORANDUM CIRCULAR
NUMBER 06-22

GUIDELINES ON THE ESTABLISHMENT OF SHIPS' ROUTEING SYSTEM, TO INCLUDE DESIGNATION OF TRAFFIC SEPARATION SCHEMES WITHIN THE MARITIME JURISDICTION OF THE PHILIPPINES

I. AUTHORITY:

Republic Act 9993 (Philippine Coast Guard Law of 2009) and its Implementing Rules and Regulations (IRR) under Rule 3 (e) (b)

II. REFERENCES:

A. International Convention for the Safety of Life at Sea (SOLAS), 1974, Chapter V – Safety of Navigation, Regulation 10 – Ships' Routeing

B. Convention on the International Regulations for Preventing Collisions at Sea (COLREGs), 1972, Part B – Steering and Sailing Rules, Regulation 10 Traffic Separation Schemes

C. United Nations Convention on the Law of the Sea, 1982, Article 22 Sea Lanes and Traffic Separation Schemes in the Territorial Sea and Article 41 Sea Lanes and Traffic Separation Schemes in Straits used for international navigation

D. IMO Ships Routeing, 2015 Edition

E. Philippine Coast Pilot 1995, 6th Edition

F. IMO MSC Circular Nr 1060 "Ships Routeing System"

III. PURPOSE:

This Circular prescribes the guidelines on the establishment of ships' routeing system, to include standards in designating traffic separation schemes for purpose of improving safety of life at sea, safety and efficiency of navigation and increase protection of the marine environment within the maritime jurisdiction of the Philippines.

IV. SCOPE:

This Circular establishes the policies and parameters in instituting and review of traffic separation scheme and routeing system.

V. DEFINITION OF TERMS:

A. Areas to be avoided – a routeing measure comprising an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or certain classes of ship.

B. Deep-water route – a route with defined limits which has been accurately surveyed for clearance of sea bottom and submerged obstacles as indicated on the chart.

C. Established direction of traffic flow – a traffic flow pattern indicating the directional movement of traffic as established within a traffic separation scheme.

D. Inshore traffic zone – a routeing measure comprising a designated area between the landward boundart of a traffic separation scheme and the adjacent coast, to be used in accordance with the provisions of rule 10(d), as amended, of the International Regulations for Preventing Collisions at Sea, 1972 (Collision Regulations).

E. Mandatory routeing system – a routeing system adopted by the Organization, in accordance with the requirements of regulation V/10 of the International Convention of rhte Safety of Life at Sea, 1974, for mandatory use by all ships, certain catergories of ships or ships carrying certain cargoes.

F. No anchoring area – a routeing measure comprising an area within defined limits where anchoring is hazardous or could result in unacceptable damage to the marine environment. Anchoring in a no anchoring area should be avoided by all ships or certain classes of ships, except in case of immediate danger to the ship or the persons on board.

G. Organization – refers to the International Maritime Organization (IMO).

H. Precautionary area – a routeing measure comprising an area with defined limits where ships must navigate with particular caution and within which the direction of traffic flow may be recommended.

I. Recommended direction of traffic flow – a traffic flow pattern indicating a recommended directional movement of traffic where it is impractical or unnecessary to adopt an established direction of traffic flow.

J. Recommended route – a route of undefined width, for the convenience of ships in transit, which is often marked by centerline buoys.

K. Recommended track – a route which has been specially examined to ensure so far as possible that is free of dangers and along which ships are advised to navigate.

L. Roundabout – a routeing measure comprising a separation point of circular separation zone and a circular traffic lane within defined limits. Traffic within the roundabout is separated by moving in, a counterclockwise direction around the separation point or zone.

M. Route junction – it is where two routes join or cross, the directions of traffic flow are established in the lanes of the adjoining schemes, the separation zones may be interrupted or replaced by a separation line in order to emphasize the correct method of crossing by traffic changing from one scheme to the other.

N. Routeing system – any system of one or more routes or routeing measures aimed at reducing the risk of casualties, it includes traffic separation schemes, two-way routes, recommended tracks, areas to be avoided, no anchoring areas, inshore traffic zones, roundabouts, precautionary areas and deep-water routes.

O. Separation zone or line – a zone or line separating the traffic lanes in which ships are proceeding in opposite or nearly opposite directions; or separating a traffic lane from the adjacent sea area; or separating traffic lanes designated for particular classes of ship proceeding in the same direction.

P. Straits – a body of water used for international navigation between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone;

Q. Traffic lane – an area within defined limits in which on-way traffic is established. Natural obstacles, including those forming separation zones, may constitute a boundary.

R. Traffic Separation Scheme (TSS) – a routeing measure aimed at the separation of opposing streams of traffic by appropriate means and by the establishment of traffic lanes.

S. Two-way route – a route within defined limits inside which two-way traffic is established, aimed at providing safe passage of ships through waters where navigation is difficult or dangerous.

VI. POLICIES:

A. The Philippine Coast Guard shall institute ships' routeing system, to include designation of traffic separations schemes throughout the country's maritime jurisdiction;

B. Ships' routeing system shall be established to improve safety of navigation in converging areas and in areas where the density of traffic is great or where freedom of movement of shipping is inhibited by restricted sea-room, the existence of obstructions to navigation, limited depths or unfavourable meteorological conditions. This includes traffic separation schemes, two-way routes, recommended tracks, areas to be avoided, inshore traffic zones, roundabouts, precautionary areas and deep-water routes.

C. The PCG shall take into consideration the following factors and depending on a particular hazardous circumstances establish a ships' routeing system, to wit:

1. The separation of opposing streams of traffic so as to reduce the incidence of head-on encounters;

2. The reduction of dangers of collision between crossing traffic;

3. The simplification of the patterns of traffic flow in converging areas;

4. The safe traffic flow in areas of concentrated offshore exploration or exploitation;

5. The safe traffic flow in or around areas where navigation by all ships or by certain classes of ship is dangerous or undesirable;

6. The safe traffic flow in or around or at a safe distance from environmentally sensitive areas;

7. The reduction of risk of grounding by providing special guidance to vessels in areas where water depths are uncertain or critical; and

8. The guidance of traffic clear of fishing grounds.

D. The PCG shall ensure that ships' routeing system selected for a particular area provides safe passage for ships through the area without unduly restricting legitimate rights and practices, and taking account of anticipated or existing navigational hazards such as:

1. Rights and practices in respect of the exploitation of living and mineral resources;

2. The existing traffic pattern in the area concerned, including coastal traffic, crossing traffic, naval exercise areas and anchorage areas;

3. The foreseeable changes in the traffic pattern resulting from port or offshore terminal developments;

4. The presence of fishing grounds;

5. Existing activities and foreseeable developments of offshore exploration or exploitation of the sea-bed and subsoil;

6. The adequacy of existing aids to navigation, hydrographic surveys and nautical charts of the area;

7. The environmental factors, including prevailing weather conditions and tidal streams; and

8. The existence of environmental conservation areas and foreseeable developments in the establishment of such areas.

E. The PCG shall conduct public consultation to concerned entities prior establishing a particular ships' routeing system. This includes the following:

1. Mariners using the area;

2. National Mapping and Resource Information Authority (NAMRIA);

3. Port authorities; and

4. Organizations concerned with fishing, offshore exploration or exploitation and environmental protection, as appropriate.

F. The PCG shall ensure that routeing systems should not be established in areas where the instability of the sea-bed in such that frequent changes in the alignment and positions of the main channels, and thus of the routeing system itself, are likely.

G. The PCG shall ensure that no part of the routeing system established lies beyond the territorial seas or in straits used for international navigation; and

H. The PCG shall ensure that the following parameters and standards, so far as the circumstances allow, be applied in the design of ships' routeing measures, to wit:

1. Routes should follow as closely as possible the existing patterns of traffic flow in the areas as determined by traffic surveys;

2. The configuration and length of routeing systems which are established to provide for an unobstructed passage through offshore exploration and exploitation areas may differ from the dimensions of normally established systems of the purpose of safeguarding a clear passage warrants such special feature;

3. Course alterations along a route should be as few as possible and should be avoided in the approaches to convergence areas and route junctions or where crossing traffic may be expected to be heavy;

4. The number of convergence areas and route junctions should be kept to a minimum, and should be as widely separated from each other as possible. Adjacent traffic separation schemes should be placed such that nearly opposing streams of traffic in the adjacent schemes are separated as widely as possible. Route junctions should not be located where concentrated crossing traffic, not following established routes, may be expected;

5. Routes should be designed to allow optimum use of aids to navigation in the area, and of such shipborne navigational aids as are required or recommended to be fitted by international conventions or by IMO resolutions and recommendations; and

6. The state of hydrographic surveys within the limits of a routeing system and in the approaches thereto should be such that full information on existing depths of water and hazards to surface navigation is available to nautical charting authorities.

I. The PCG shall consider providing an associated monitoring service, a reporting service or vessel traffic services in the established area for ships routeing system to ensure that it is well implemented and maintained;

J. The PCG shall ensure that traffic separation schemes shall be designed so as to enable ships using them fully comply at all times with the International Regulations for Preventing Collisions at Sea, 1972, as amended;

K. The PCG shall take into account that a traffic separation scheme may be part of a routeing system, including other routes or routeing measures. However, for compliance with the COLREG, it is essential to describe each TSS or part of TSS separately and under its own specific heading. Any other routeing measure or

route forming part of a routeing system, including one or more TSS should also be described separately under its own specific heading;

L. The PCG shall ensure the following parameters in the designation of TSS, traffic lanes and separation zones are considered:

1. The extent of traffic separation scheme should be limited to what is essential in the interests of safe navigation;

2. Traffic lanes should be designed to make optimum use of available depths of water and the safe navigable areas, taking into account the maximum depth of water attainable along the length of the route. The width of the lanes should take account of the traffic density, the general usage of the area and the sea-room available; and

3. Where there is sufficient space, separation zones should be used in preference to separation lines to separate opposing streams of traffic and to segregate inshore traffic zones from adjacent traffic lanes. Separation zones or lines may also be used to separate a traffic lane from adjacent sea areas other than inshore traffic zones, in appropriate circumstances, taking into account traffic density and the available means of fixing ships' positions.

M. The PCG shall ensure that a vessel using a traffic separation scheme adheres to the following condition:

1. Proceed in the appropriate traffic lane in the general direction of traffic flow for that lane;

2. So far as practicable keep clear of a traffic separation line or separation zone;

3. Normally join or leave a traffic lane at the termination of the lane, but when joining or leaving from either side shall do so to as small an angle to the general direction of traffic flow as practicable;

4. A vessel shall, so far as practicable, avoid crossing traffic lanes but if obliged to do so shall cross on a heading as nearly as practicable at right angles to the general direction of traffic flow;

5. A vessel shall not use an inshore traffic zone when she can safely use the appropriate traffic lane within the adjacent traffic separation scheme. However, vessels of less than 20 meters in length, sailing vessels and vessels engaged in fishing may use the inshore traffic zone;

6. A vessel other than crossing vessel or a vessel joining or leaving a lane shall not normally enter a separation zone or cross a separation line except in cases of emergency to avoid immediate danger;

7. A vessel navigating in areas near the terminations of TSS shall do so with particular caution;

8. A vessel shall so far as practicable avoid anchoring in a TSS or in areas near its terminations;

9. A vessel not using a TSS shall avoid it by as wide a margin as is practicable;

10. A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane;

11. A vessel of less than 20 meters in length or sailing vessel shall not impede the safe passage of a power-driven vessel following a traffic lane;

12. A vessel restricted inher ability to manoeuvre when engaged in an operation for the maintenance of safety of navigation in a TSS is exempted from complying with this rule to the extent necessary to carry out the operation; and

13. A vessel restricted in her ability to manoeuvre when engaged in an operation for the laying, servicing or picking of a submarine cable, within a TSS, is exempted from complying with this rule to the extent necessary to carry out the operation.

VII. PROCEDURES:

A. The Coast Guard Districts in collaboration with the Maritime Safety Services Units (MSSUs) shall recommend to the Maritime Safety Services Command (MSSC) (Attn: NSSU) specific sealanes in their respective Area of Responsibility deemed suitable for the establishment of ships' routeing system, to include designation of traffic separation schemes;

B. The Coast Guard Districts shall identify, assess and submit Risk Assessment (Annex A) and other pertinent information and documents to support the proposal of establishing a routeing system and the designation of a TSS. This includes using and incorporating the following methods in the proposal deem applicable to the probable area:

1. The separation of opposing streams of traffic by separation zones, or lines where zones are not possible;

2. The separation of opposing streams of traffic by natural obstructions and geographically defined objects;

3. The separation of through and local traffic by providing inshore traffic zones;

4. The sectorial division of adjacent traffic separation schemes at approaches to focal points;

5. The routeing of traffic at focal points and route junctions where traffic separation schemes meet; and

6. Other routeing methods (two-way routes, recommended tracks, areas to be avoided, no anchoring areas, inshore traffic zones, roundabouts, precautionary areas and deep-water routes) (Annex B)

C. The MSSC through the Navigational Safety Services Unit (NSSU) shall review the risk assessment submitted by the Coast Guard Districts and conduct public consultation and site survey, to validate and ascertain that the parameters in the

design of ships' routeing system and elements incorporated therein are met and acceptable;

D. The MSSC shall refer the proposed ships' routeing system to the National Headquarters (Attn: CG-8) for perusal and subsequent approval of the Commandant, PCG; and

E. Upon approval, the Commandant, PCG through the Office of the Deputy Chief of Coast Guard Staff for Maritime Safety Services, CG-8 shall subsequently endorse the approved ships' routeing system for IMO adoption and NAMRIA publication; and

F. The Navigational Safety Services Unit (NSSU) through the Technical Working Group (TWG) for Navigational Safety shall conduct yearly review on the existing routeing systems and propose amendments, if necessary;

G. The Commander, MSSC shall approved the results of the annual review of the existing ships routeing systems and propose amendments, if necessary.

VIII. RESPONSIBILITIES:

A. Maritime Safety Services Command

1. Upon review and scrutiny of concerned Functional Support Unit (FSU), shall endorse the proposed ships' routeing system, to include designation of TSS submitted by the Coast Guard Districts to Commandant, PCG (Attn: CG-8);

2. Shall publish the approved ships routeing system; and

3. Shall approve the results of the annual review of the existing routeing systems and propose amendments, if necessary;

B. Coast Guard Districts

1. Shall recommend specific sealanes for the establishment of ships' routeing system, to include designation of TSS;

2. Shall make initial coordination with maritime stakeholders, government/non-government agencies for such purpose;

3. Shall conduct and submit risk assessment, relevant information and documents to the Commander, MSSC in support of the proposal in establishing ships' routeing system, to include designation of TSS in respective AOR;

4. Shall keep and maintain records of approved ships routeing system and TSS in its AOR; and

5. Perform other tasks as directed by the Commandant, PCG

C. Navigational Safety Services Unit

1. Shall create a Technical Working Group for Navigational Safety to review the proposal and risk assessment submitted by the Coast

Guard Districts for the proposed establishment of ships routeing system, to include designation of TSS in respective AOR;

2. Shall conduct public consultation and site survey to validate and ascertain that the parameters in the design of ships' routeing system and elements incorporated therein are met and acceptable;

3. Shall endorse the proposal for approval of the Commander, MSSC and subsequently for transmittal to the Commandant, PCG (Attn: CG-8);

4. Shall continuously provide assistance to Coast Guard Districts and MSSUs on matters relative to navigational safety;

5. The Navigational Safety Services Unit (NSSU) through the Technical Working Group (TWG) for Navigational Safety shall conduct yearly review on the existing routeing systems and propose amendments to the Commander, MSSC, if necessary;

6. Shall keep and maintain records of ships' routeing system and TSS; and

7. Perform other tasks as directed by the Commander, MSSC.

D. Maritime Safety Services Units

1. Shall collaborate with the Coast Guard Districts in its initiative to establish ships' routeing system and TSS in respective AOR and in the conduct of risk assessment;

2. Shall join the Coast Guard Districts in the conduct of initial coordination with concerned entities relative such purpose;

3. Shall coordinate with NSSU pertaining to this initiative and join in the conduct of site survey and public consultation;

4. Shall keep and maintain records of ships' routeing system and TSS in respective AOR;

5. Perform other tasks as directed by the Commander, MSSC

E. Office of the Deputy Chief of Coast Guard Staff for Maritime Safety Services, CG-8

1. Shall endorse the proposed ships routeing system for approval of the Commandant, PCG;

2. Shall provide MSSC a copy of the approved communications pertaining to such initiative;

3. Shall endorse the approved ships routeing system and TSS for adoption of the IMO;

4. Shall furnish NAMRIA copy of the approved ships routeing systems for publication;

5. Shall keep and maintain records of ships routeing system and TSS duly approved by the Commandant, PCG and subsequently adopted by the IMO; and

6. Shall monitor the status of IMO approval and NAMRIA publication.

IX. REPEALING CLAUSE:

All PCG polices, rules and regulations or issuances or parts thereof which are inconsistent with this Circular are hereby repealed, amended, or modified accordingly.

X. SEPARABILITY CLAUSE:

In case any provision on this Circular is declared unconstitutional or contrary to law by a competent court, such as parts not affected thereby shall remain in full force and effect.

XI. EFFECTIVITY:

The Circular shall take effect upon approval.

BY COMMAND OF COAST GUARD ADMIRAL ABU PCG:

OFFICAL:

TITO ALVIN G ANDAL
CG COMMO
Chief of Coast Guard Staff

JAYSIEBELL B FERRER
CG CDR
Coast Guard Adjutant

ANNEXES:

Annex A1 – Risk Assessment in the Establishment of Ships Routeing System and Traffic Separation Scheme
Annex A2 – Risk Assessment for Review of Existing Routeing System and Traffic Separation Scheme
Annex B – Other Routeing Methods

"ANNEX A1"

Risk Assessment in the Establishment of Ships Routeing System and Traffic Separation Scheme

1. What is the vessel traffic density in the proposed area? Is the freedom of movement of vessel is inhibited by restricted sea-room? Is there an obstruction to navigation? Is there limited depth or unfavourable meteorological conditions? Provide data on grounding and collision accidents in the area, if any.

2. The following should be taken into consideration in determining a particular ships routeing system:

    a) Is there a need to separate opposing streams of traffic so as to reduce the incidence of head-on encounters?
    b) Would a routeing system reduce the danger of collision between crossing traffic?
    c) Would the routeing system simplify the patterns of traffic flow in converging areas?
    d) Would the routeing system ensure safe traffic flow in areas of concentrated offshore exploration or exploitation? (for offshore facilities)
    e) Would the routeing system ensure the safe traffic flow in or around or at a safe distance from environmentally sensitive areas?
    f) Would the routeing system reduce the risk of grounding in areas where water depths are uncertain or critical?
    g) Is the fishing grounds considered in establishing vessel traffic guidance?

3. It should be guaranteed that ships routeing system selected for a particular area would provide safe passage for ships through the area without unduly restricting legitimate rights and practices, and should take account anticipated or existing navigational hazards such as:

    a) Rights and practices in respect of the exploitation of living and mineral resources;
    b) The existing traffic pattern in the area concerned, including coastal traffic, crossing traffic, naval exercise areas and anchorage areas;
    c) The foreseeable changes in the traffic pattern resulting from port or offshore terminal developments;
    d) The presence of fishing grounds;

e) Existing activities and foreseeable developments of offshore exploration or exploitation of the sea-bed and subsoil;
f) The adequacy of existing aids to navigation, hydrographic surveys and nautical charts of the area;
g) The environmental factors, including prevailing weather conditions and tidal streams; and
h) The existence of environmental conservation areas and foreseeable developments in the establishment of such areas.

"ANNEX A2"

Risk Assessment for Review of Existing Routeing System and Traffic Separation Scheme

What are the hazards?	What are the effects?	What is currently being done to control the risks?	What further action is needed to control the risks?	Who needs to carry out the action?	When is the action needed?	Remarks
Ship's not giving specific particulars to operators						
Is there a need to separate opposing streams of traffic?						
Ship's entering in no go areas, marine protected areas, and areas to be avoided						
Sailing vessel and fishing vessel						
Aids to navigation not operational						

What are the hazards?	What are the effects?	What is currently being done to control the risks?	What further action is needed to control the risks?	Who needs to carry out the action?	When is the action needed?	Remarks
Nautical charts, Electronical charts, Hydrographic survey not updated						
Areas to be avoided and environmental conservation areas						
Vessels not complying with ship reporting system						
Vessels not complying with international and local rules with regards to navigational safety						
VTMS equipment malfunction						
Piracy incident						
Fire onboard at						

What are the hazards?	What are the effects?	What is currently being done to control the risks?	What further action is needed to control the risks?	Who needs to carry out the action?	When is the action needed?	Remarks
port/sea						
Near miss situations for head on vessels						
Congestion of vessels in the area						
Submarine cable in the anchorage area						
Inclement weather						
Vessels entering the TSS						
Vessels navigating near shallow water						
Vessel Restricted in her ability to manoeuvre						
Natural Obstructions and Ship wrecks in the area						

What are the hazards?	What are the effects?	What is currently being done to control the risks?	What further action is needed to control the risks?	Who needs to carry out the action?	When is the action needed?	Remarks
Oil spill at port/sea						
Drifted Buoys						
Vessels crossing traffic lanes						
Vessel emergency anchoring						
Restricted in her Ability to Manoeuvre vessel due to operational activity e.g. laying, servicing or picking of a submarine cable						

"ANNEX B"

A. The Separation of opposing streams of traffic by separation zones (3) or lines (4) where zones are not possible

In this method, streams of traffic proceeding in opposite or nearly opposite direction are separated by separation zones or lines; the use of zones is to be preferred but in narrow passages and restricted waters it may be necessary to use separation line than a zone so as to allow more navigable space in traffic lanes. The outside limits (6) of such traffic separation schemes are the outer boundaries of the traffic lanes. The arrows (1) indicate the established direction of traffic flow.

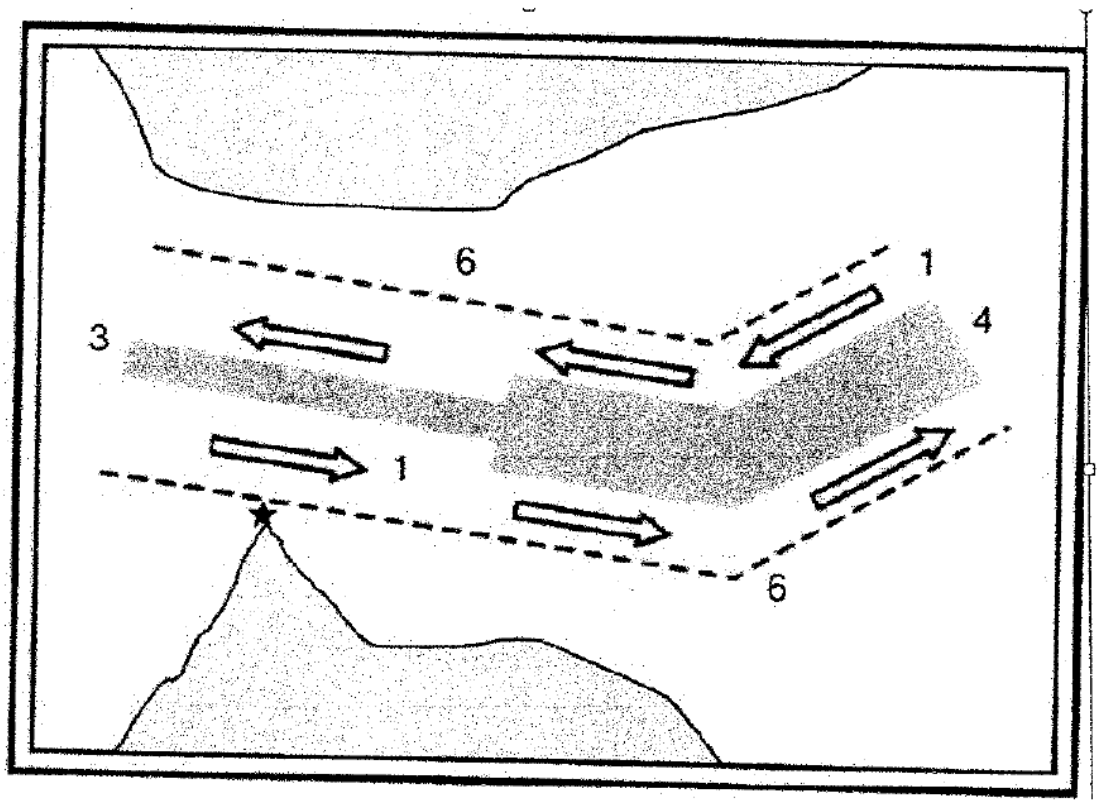

Figure 1 – Traffic Separation by separation zone and line

B. The Separation of opposing streams of traffic by natural obstructions and geographically defined objects.

This method is used when there is a defined area with obstructions such as islands, shoals or rocks restricting free movement and providing a natural division for opposing traffic streams.

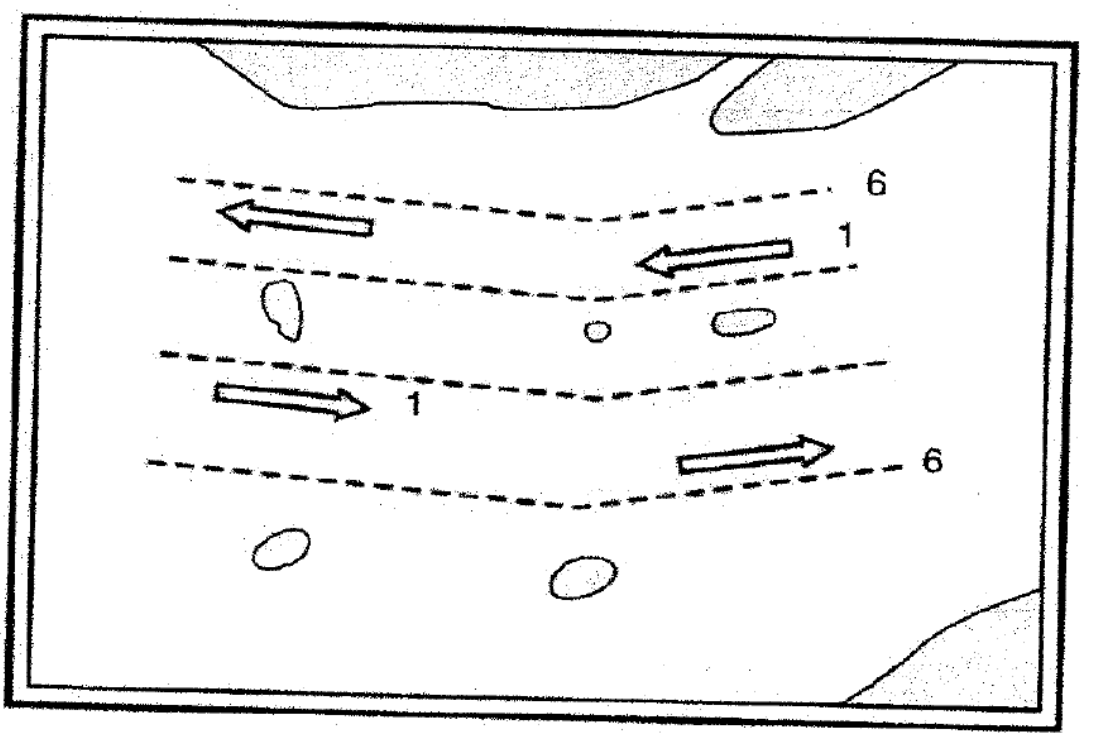

Figure 2 Separation of traffic by natural obstructions

C. **The Separation of through and local traffic by providing inshore traffic zones**

In this method, beyond the outside limits of traffic separation schemes, ships may navigate in any direction. Where such area lie between the traffic separation scheme and the coast they may be designated as inshore traffic zones with the purpose of keeping local traffic clear of the traffic separation scheme which should be used through traffic. Traffic in inshore traffic zone is separated from traffic in the adjacent lane by separation zones or by separation lines.

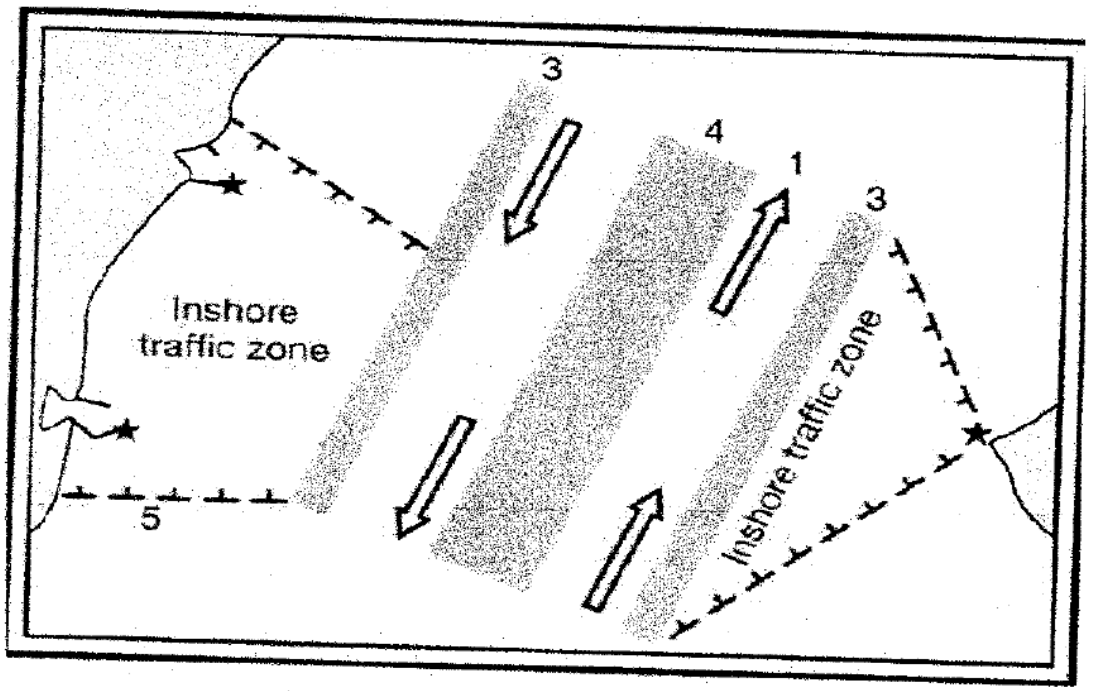

Figure 3 Inshore Traffic Zones

D. The sectorial division of adjacent traffic separation schemes at approaches to focal points

This method is used where ships converge at a focal point or a small area from various directions. Port approaches, sea pilot stations, positions where landfall buoys or light vessels are located, entrances to channels, canals, estuaries, etc., may be considered as such focal points.

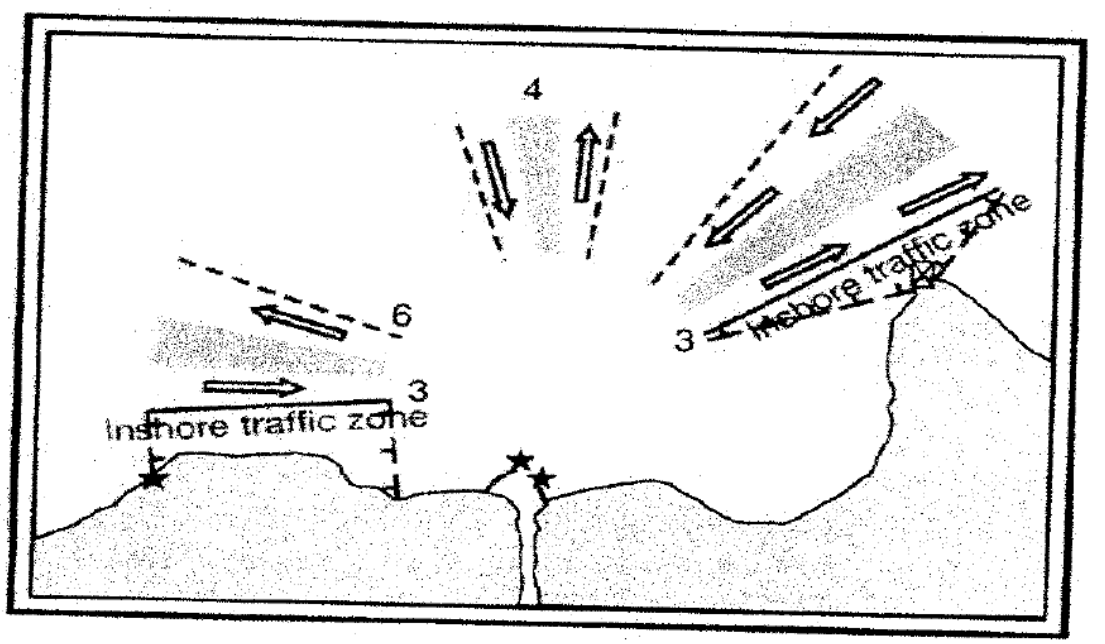

Figure 4 Sectorial division of adjacent traffic separation schemes at approaches to focal points

E. The Routeing of traffic at focal points and route junctions where traffic schemes meet

The routeing measure to be utilized at focal points, route junctions and intersections should be selected from the most appropriate of the following methods:

- Roundabouts – may be used to guide traffic, counterclockwise round a circular separation zone or specified point.

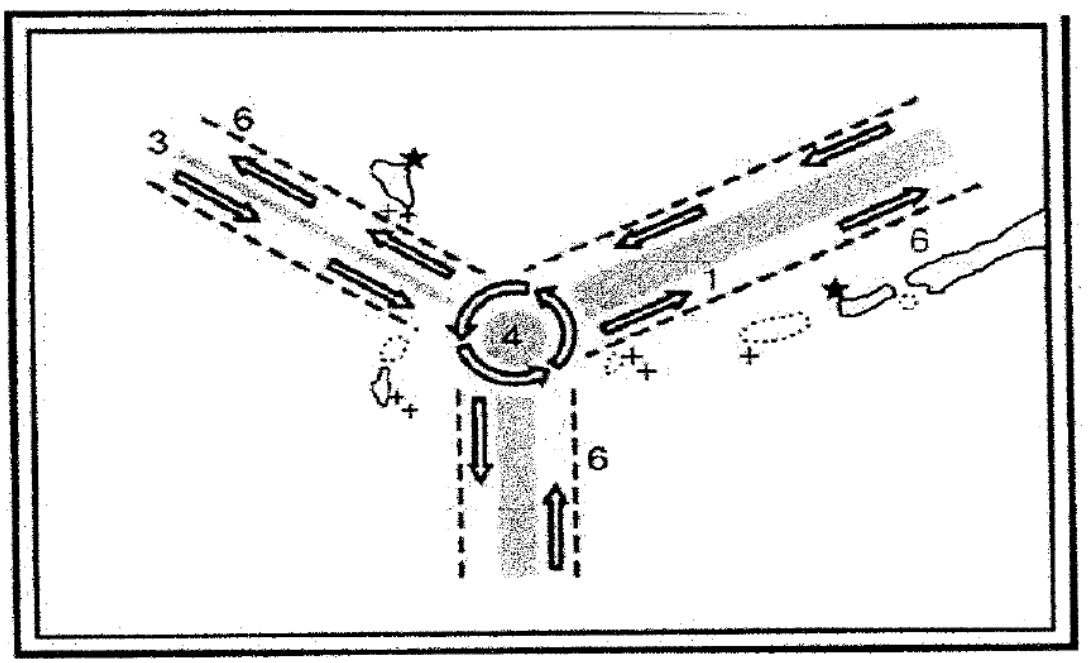

Figure 5 Separation of traffic at a roundabout

- Junctions - are used where two routes join or cross. The direction of traffic are established in the lanes of the adjoining schemes; the separation zone may be interrupted or replaced by a separation line in order to emphasize the correct method of crossing by traffic changing from one scheme to the other.

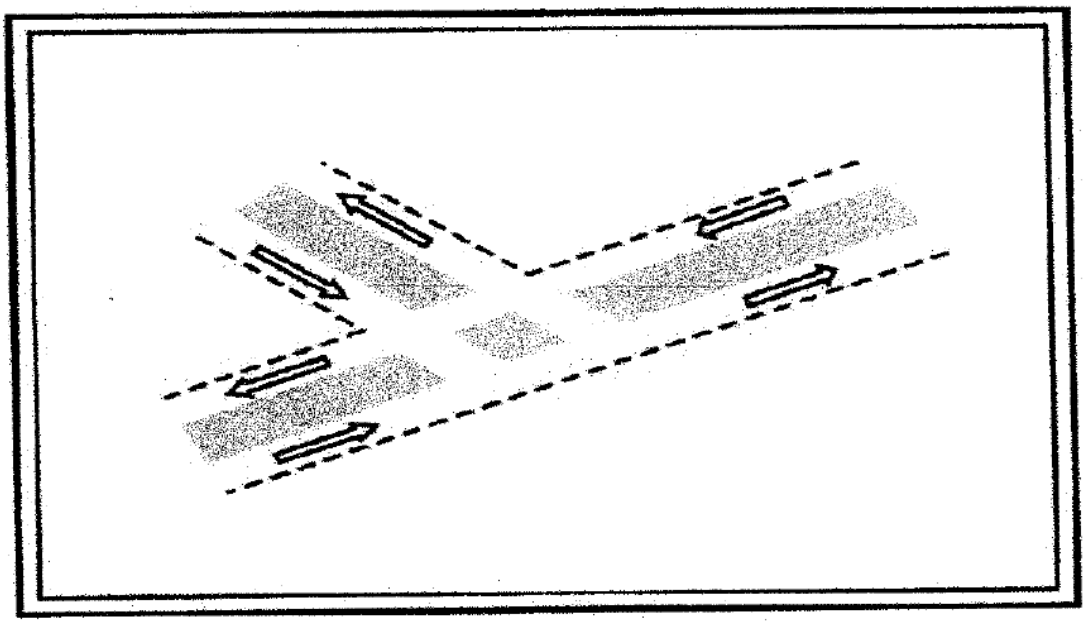

Figure 6 Separation of traffic at a crossing

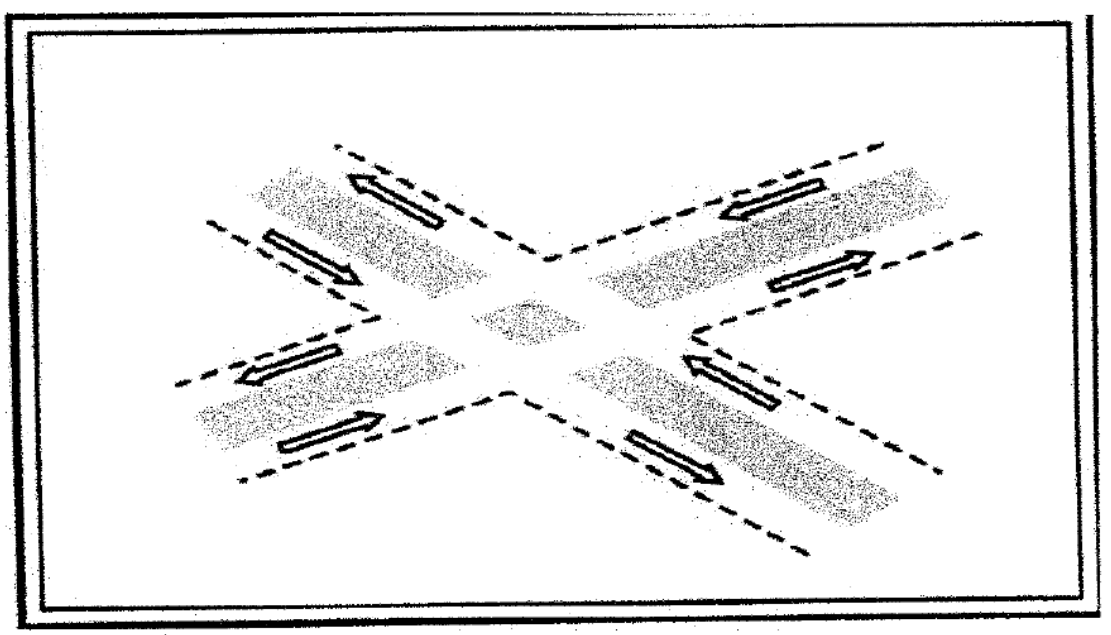

Figure 7 Separation of traffic at a junction

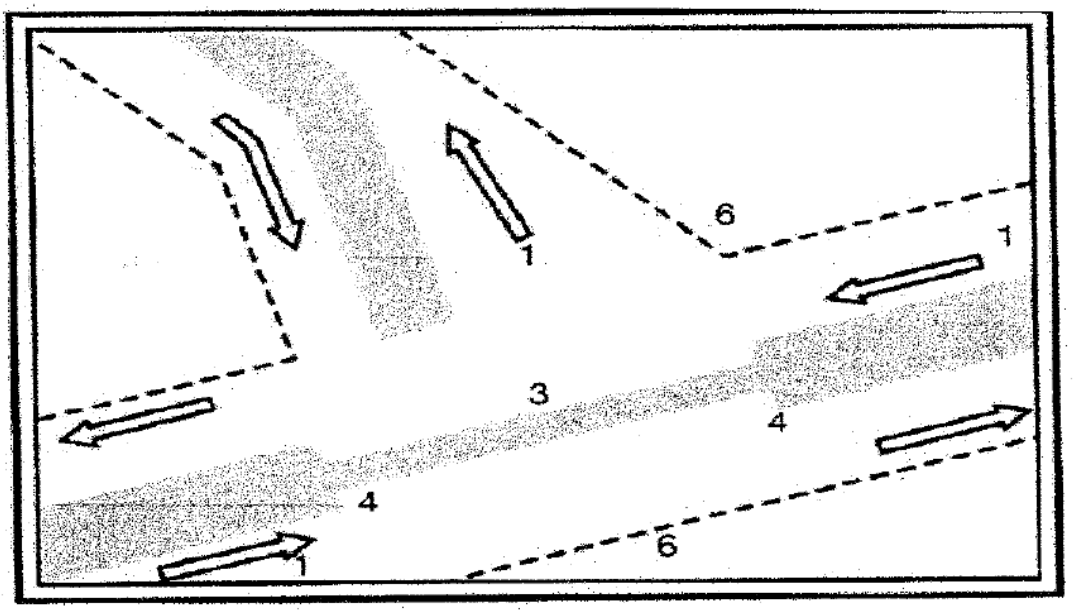

Figure 8 A junctions showing a separation line substituted for a zone where there will be crossing traffic

F. Precautionary Areas

In this method, it may be best, when routes converge, to terminate them clear of their potential joining points and in such case a precautionary area (9) can be instituted so as to emphasize the need for care in navigation. Figures 9 and 10 illustrate the use of such area at focal points; a direction of traffic flow may be recommended (2) around the focal point.

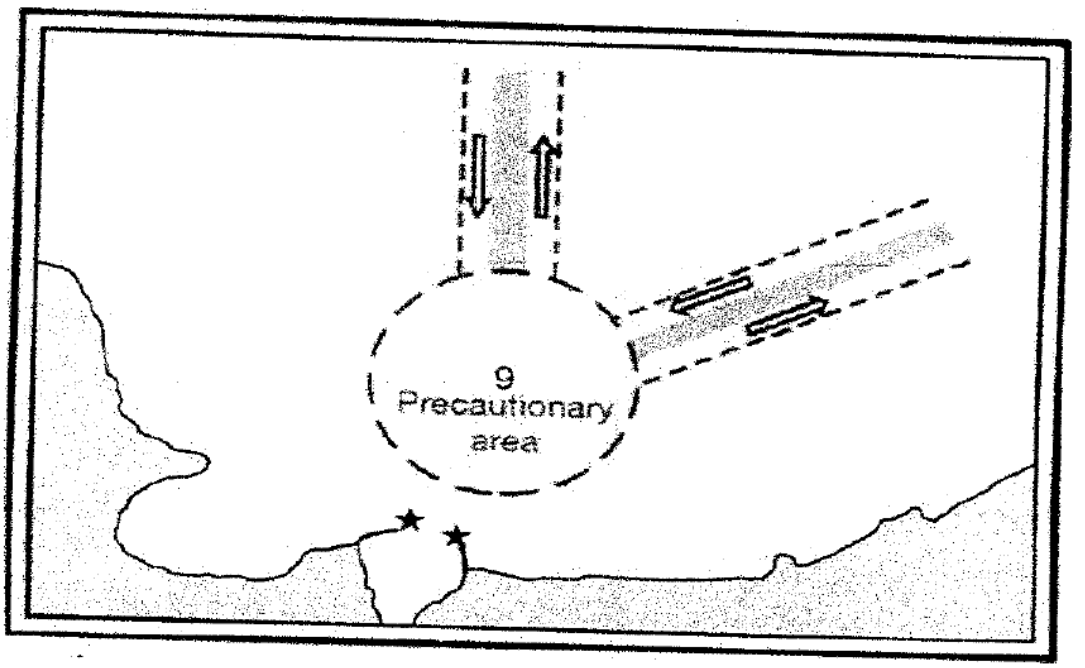

Figure 9 Precautionary areas at a focal point

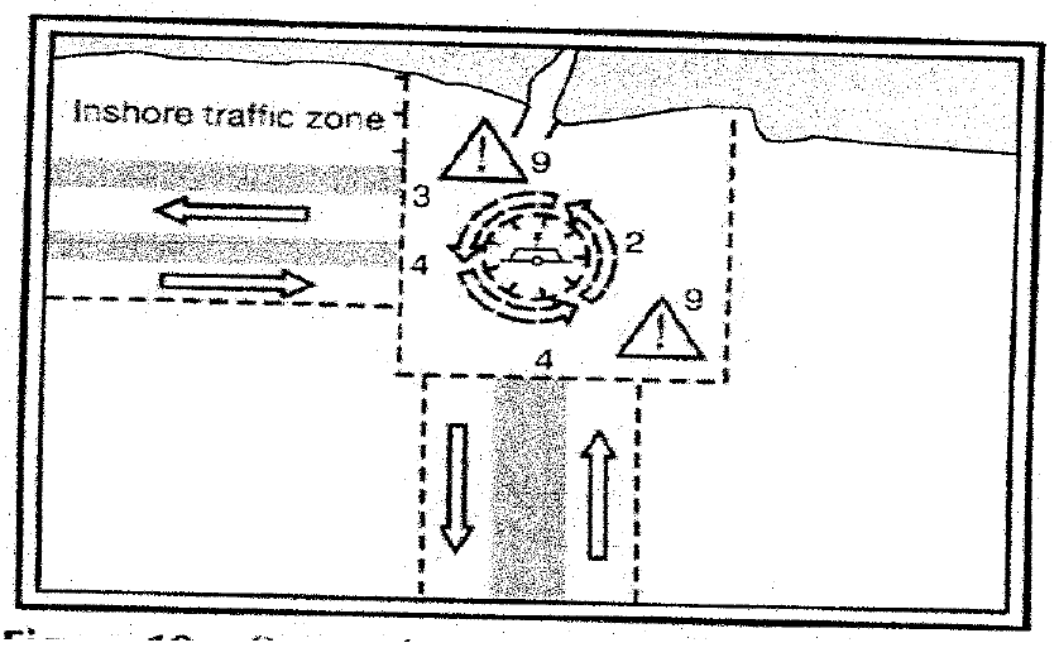

Figure 10 Precautionary areas with recommended direction of traffic flow around an area to be avoided

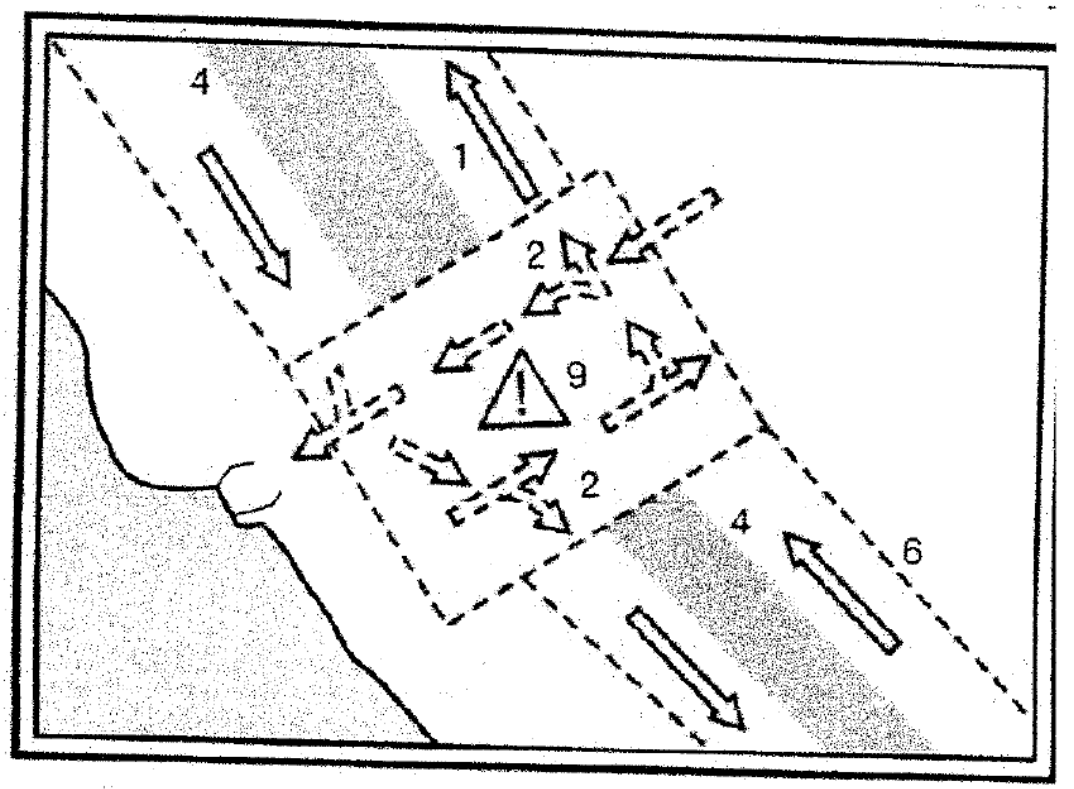

Figure 11 Precautionary area at a junction with recommended directions of traffic flow

OTHER ROUTEING METHODS

G. Deep-water routes

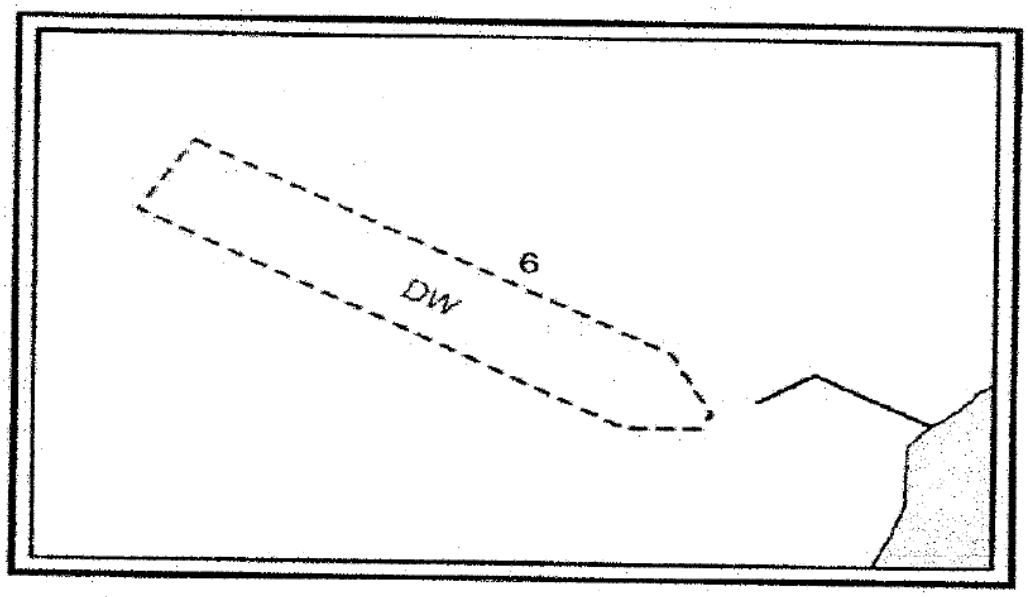

Figure 12 Deep-water route (two-way)

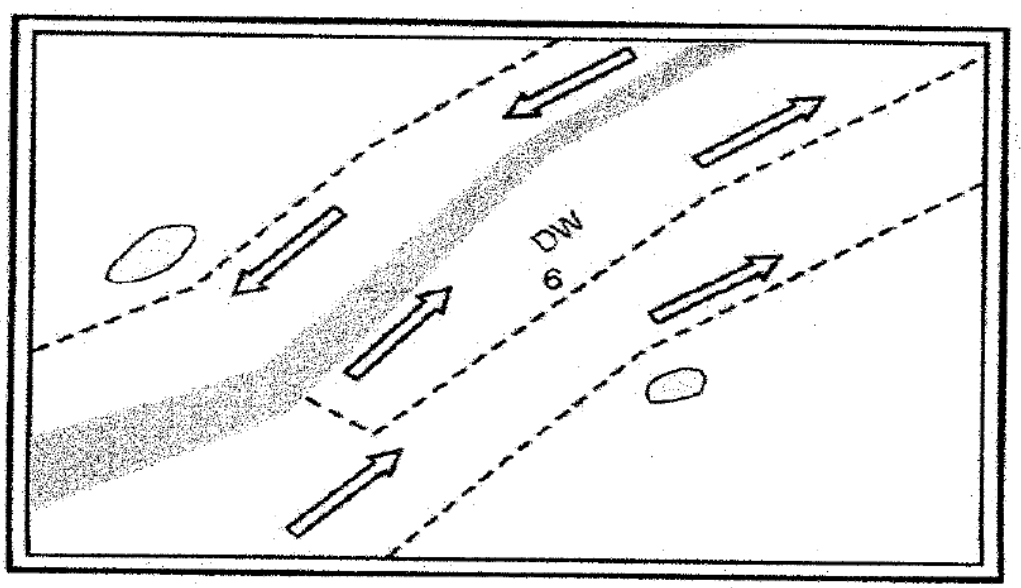

Figure 13 One-way deep-water route (within a traffic lane)

H. Areas to be Avoided

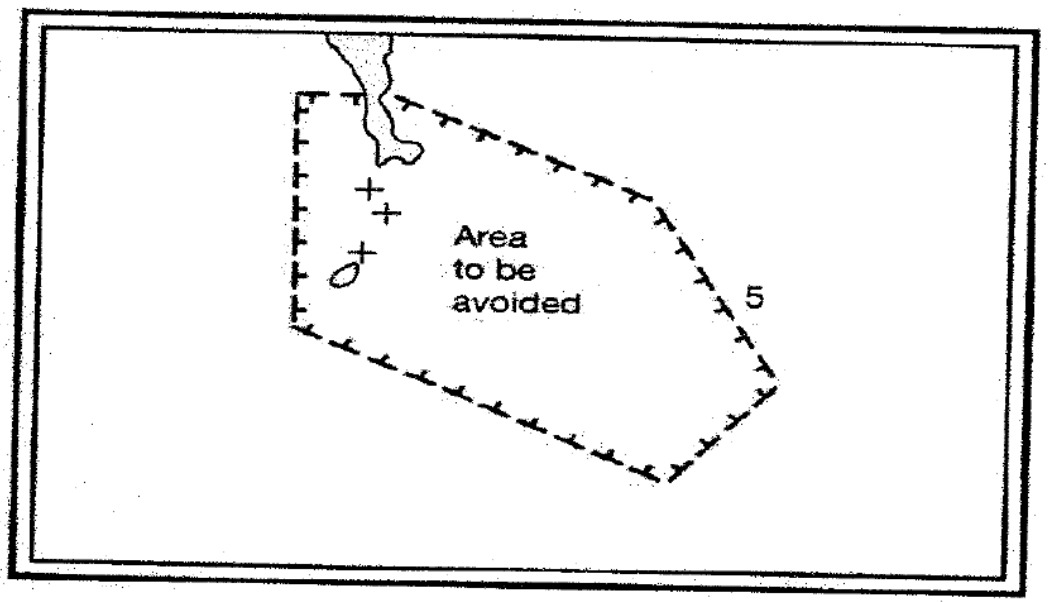

Figure 18 Area to be avoided

I. Recommended directions of traffic (figure 14), two-way routes (figure 15) and recommended routes and tracks through areas where navigation is difficult or dangerous (figures 16 and 17)

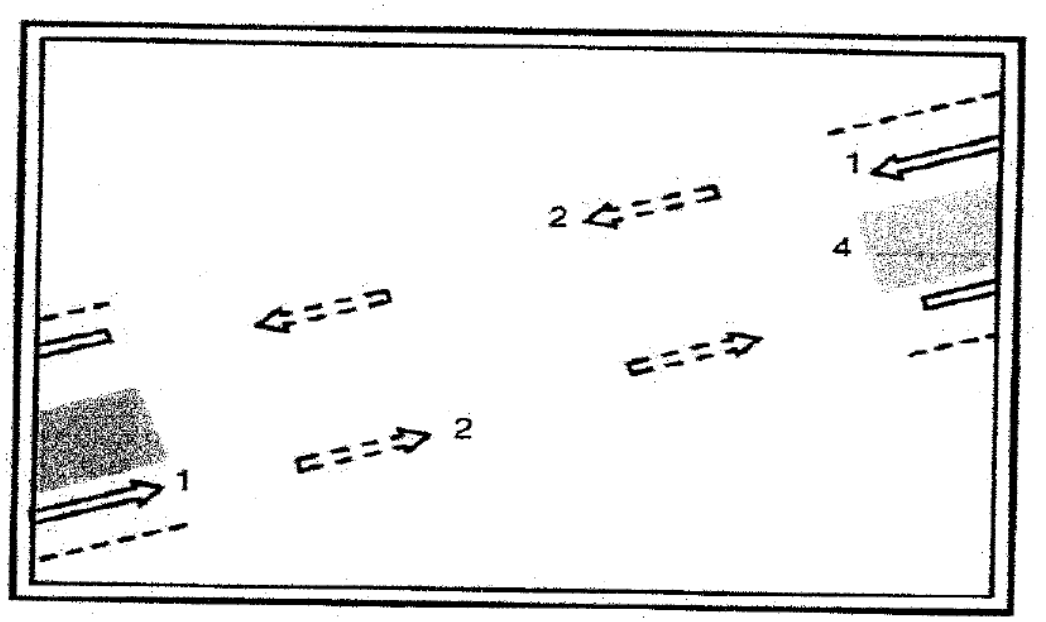

Figure 14 Recommended directions of traffic flow between two traffic separation schemes

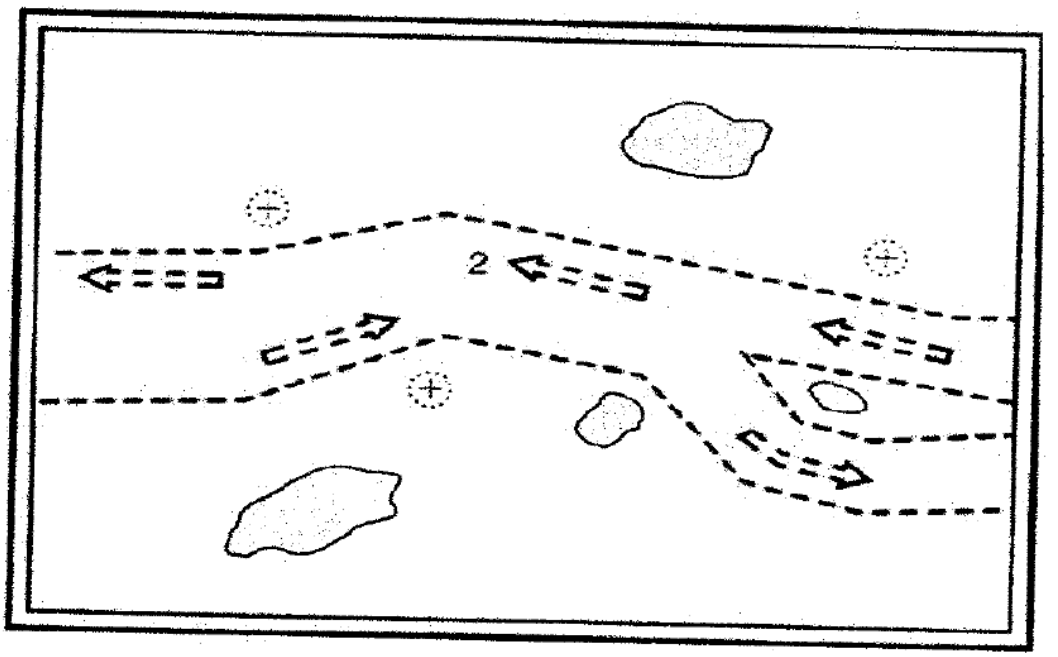

Figure 15 Two-way route (with one-way sections)

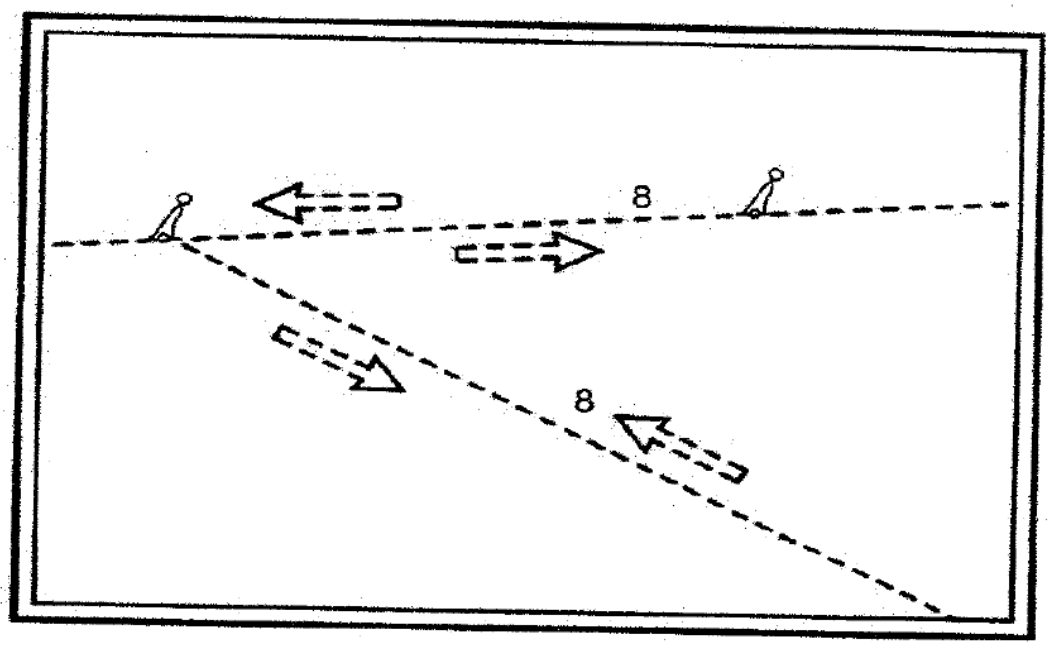

Figure 16 Recommended routes

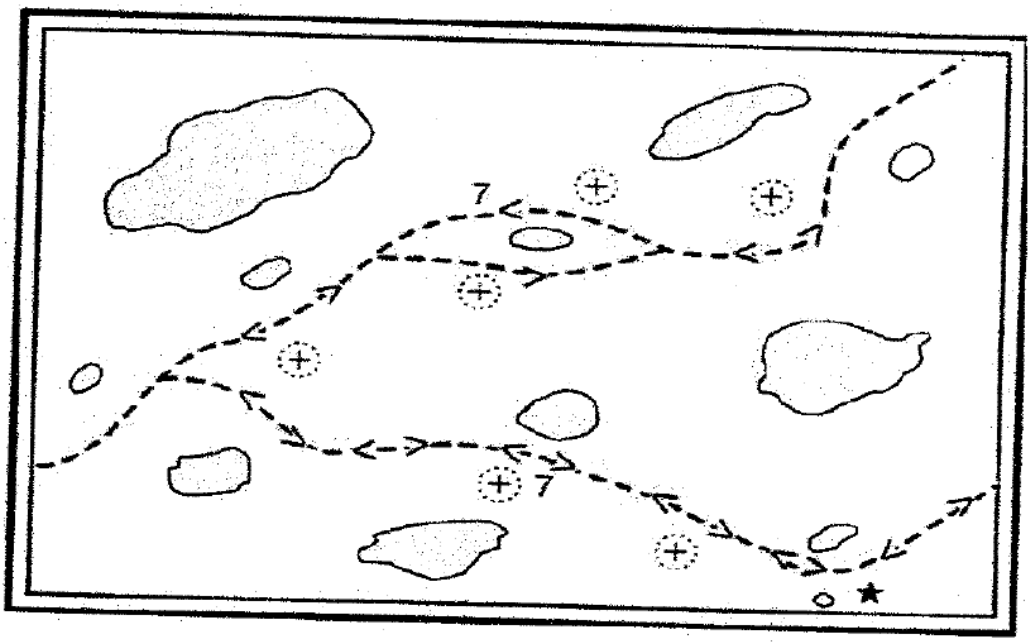

Figure 17 Recommended tracks (in black)

J. No Anchoring areas

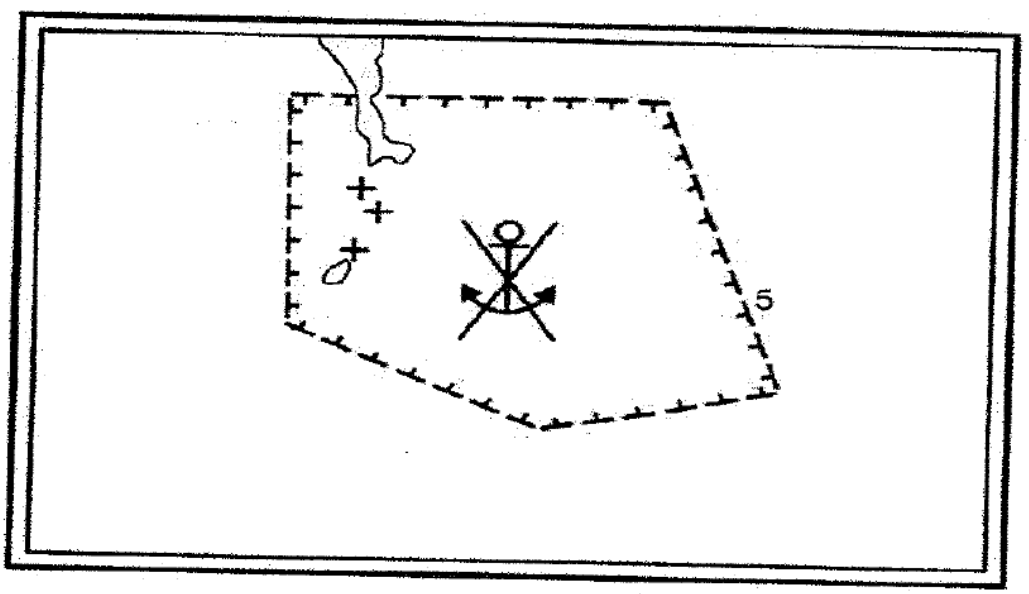

Figure 19 No anchoring areas

Reference: IMO Ships Routeing System Edition 2015