



**Economic and Social  
Council**

Distr.  
GENERAL

TRANS/SC.3/2003/3  
19 June 2003

ENGLISH  
Original: RUSSIAN

---

**ECONOMIC COMMISSION FOR EUROPE**

**INLAND TRANSPORT COMMITTEE**

Working Party on Inland Water Transport  
(Forty-seventh session, 7-9 October 2003,  
agenda item 7 (a))

**EXCHANGE OF INFORMATION ON MEASURES AIMED AT  
PROMOTING TRANSPORT BY INLAND WATERWAYS**

**Submitted by the Government of the Russian Federation**

*Note:* The Inland Transport Committee of the Economic Commission for Europe, at its sixty-fourth session, adopted the plan of action for the implementation of decisions taken by the Pan-European Conference on Inland Water Transport, held in Rotterdam on 5 and 6 September 2001. The plan includes action to prepare, with the help of volunteer Governments concerned, proposals on the development of specific sea routes in the context of the AGN Agreement (such as: River Don-Sea of Azov-Black Sea-Dnieper-Danube; or Guadalquivir-coastal route E60-River Douro-River Gironde-River Loire-River Seine (E80), etc. These projects would have to set conditions and requirements concerning both the sea-river routes themselves (their equipment with necessary aids to navigation, obligatory use of river information services, etc.) and vessels which can be used on those routes.

We provide below a working paper prepared by experts from the Russian Federation covering various aspects of the above issue, relating to the route Don-Sea of Azov-Black Sea-Dnieper-Danube, which could serve as the basis for the initial consideration of this issue by the working group.

**Combined navigation (river-sea) route: Rostov-on-Don-Sea of Azov-Black Sea-Dnieper-Danube, in the context of the European Agreement on Main Inland Waterways of International Importance (AGN)**

**I. ROLE OF RIVER-SEA NAVIGATION IN THE PAN-EUROPEAN INLAND NAVIGATION SYSTEM**

1. At the various international meetings relating to the further development of cooperation among the member countries of the Economic Commission for Europe (ECE) in the context of the AGN Agreement, attention is always given to the important role of river-sea navigation in developing the Pan-European inland navigation market.

2. A number of studies suggest that the establishment of efficient coastal routes would have the following benefits:

- Transfer of foreign-trade freight traffic to river shipping;
- Completing the circle, currently broken in places, of category E waterways, linking the deep waterways of the European part of Russia to the network of European waterways of international significance and establishing a pan-European ring of trunk waterways around the whole of Europe;
- More effective use of the Rhine-Main-Danube trans-European trunk waterway and the pan-European transport corridors (VII, IX);
- Rendering transport operations more environmentally friendly and economically advantageous, since freight will be conveyed by inland waterways directly into the hinterland;
- Use of new transport and fleet management technologies and closer cooperation among the member countries of ECE in these matters;
- Promoting river-sea navigation on the waterways of France, Portugal, Spain and Italy.

3. The same studies point out that, at the current time, half of the vessels of the river-sea fleet belong to member countries of the Commonwealth of Independent States, while the other half belong to countries of the European Union, and the development and operation of coastal routes would therefore be significantly advanced by ensuring that the two groups have shared access to the market for international transport services, with the participation of combined river-sea navigation vessels between the European Union and Russia, as well as between the European Union and Ukraine.

4. The route Don-Dnieper-Danube is given particularly close attention in these studies, since it is precisely this river-sea route which would finally complete the circle of trunk waterways around Europe.

## II. RIVER SECTIONS OF THE ROUTE

### A. Lower Don, Volga-Don canal, river Volga (E90)

5. This section of inland waterways forms part of the combined deep-water network of the European part of Russia, and is navigable by all types of vessels (river-sea). Except in two sectors, a depth of 4.00 metres is ensured throughout its length.

6. There are depth limitations on the lower Don between the town of Kalach and the town of Azov, because of the reduced depth at the sill of Kochetov lock (3.60 metres), and also on the Volga, over the sector Gorodets-Nizhny Novgorod, because of the insufficient depth (3.50 metres) in the lower pond of Gorodets lock.

7. The plan dimensions of locks on the lower Don and the Volga-Don canal are 145 m x 17-18 m and, on the Volga, 290 m x 30 m.

8. Where boatmasters of river-sea vessels hold only maritime qualifications, the vessel is only allowed to proceed along the inland waterways of the Russian Federation under the guidance of river transport specialists with the necessary qualifications, or a pilot.

### B. Dnieper (E40)

9. On the sea section of the Dnieper, from its mouth to the port of Kherson (28 kilometres), the maximum draught of vehicles is 8.00 metres. Over most of its length, the Dnieper is a regulated river. On the section Kherson-Kiev, there is a guaranteed depth of 3.65 metres. Locks on that section of the Dnieper measure 270 m x 18 m.

10. The procedure under which sea vessels and river-sea vessels whose boatmasters hold only maritime qualifications may sail on the Dnieper is similar to that which applies on the inland waterways of the Russian Federation.

### C. Danube (E80)

11. The Danube is an international river open to navigation by the vessels of all countries. There are three routes into the Danube from the sea.

#### *Via the Chilia arm (E80-09)*

12. For almost its entire length, the Chilia arm forms the frontier between Ukraine and Romania. With an 18-kilometre section situated entirely within Ukrainian territory, comprising the Prorva sea canal and the Prorva and Ochakov arms, the Chilia arm has been navigable for the last 40 years by vessels with a draught of up to 5 metres entering from the sea.

13. The anchorage port of Ust-Dunaisk lies on the sea section of the Chilia delta, and its open sea area and access canal have depths of up to 10 metres. The port is linked to the Danube via an artificial connecting canal, which meets the Prorva arm at about the 3-kilometre point. Owing to the silting up of the Prorva canal, this route currently offers the only means of entering the Chilia arm from the sea.

*Via the Sulina canal (E80)*

14. The Sulina canal and the Sulina arm are sections of the river Danube which have international status and are open for unrestricted navigation. Operational control of navigation on the section from Sulina port (0 kilometre point) to the port of Brăila (172 kilometres) is exercised by the Lower Danube River Administration with offices in the port of Galați.

15. There is a guaranteed depth of 7.3 metres along the entire stretch from Sulina to Brăila. Pilotage is compulsory over the entire section controlled by the Lower Danube River Administration.

16. Laden sea vessels proceeding along the Sulina canal are charged dues of \$1.51 per net register ton for each entry and exit, and vessels carrying ballast, \$0.83 per ton. Servicing charges for river vessels in the port of Sulina are \$0.14 per net register ton and in the Sulina roadsteads, \$0.29 per ton.

*Via the Danube-Black Sea canal (E80-14)*

17. The canal stretches from the Danube channel in the vicinity of the old port of Cernavodă (299.3 kilometre point on the Danube), passing across the Dobrogea plateau through the towns of Medgidia and Basarabi, which have become inland ports, to the seaport of Constanța-Sud.

18. The canal's basic parameters are the following: length - 64.17 kilometres; width at bottom - 70-90 metres; width at surface - 90-120 metres; guaranteed depth - 7 metres; radius of sharpest bends - 3,000 metres.

19. The canal is designed for navigation by pushed convoys of six barges with a freight capacity of 3,000 tons each, an assumed convoy length of 296 metres, width of 23 metres and draught of 3.8 metres.

20. Sea vessels and river-sea vessels with a maximum deadweight of 5,000 tons, length of 138.3 metres, beam of 16.8 metres and draught of 5.5 metres may also navigate the canal. Maximum navigation speed on the canal is 12 kilometres per hour. At high water levels, bridge clearance is 17 metres and power-line clearance 29 metres.

21. There are two locks at the head sections of the canal, one in Cernavodă (at the 4 kilometre point on the canal) and one in Agigea (62 kilometre point). These are 320 metres long and 25 metres wide. Locking through takes approximately 45 minutes.

22. For vessels proceeding from the Bosphorus to ports upriver from Cernavodă, use of this canal rather than the Sulina canal cuts their journey by 397 kilometres.

23. The canal is open to navigation by vessels from all countries on conditions set down by Romanian law.

24. There are compulsory dues for use of the canal and fees for services provided. Pilotage is compulsory on the canal. The following dues are charged for transiting the canal:

- For self-propelled river cargo vessels and barges in convoys - \$1 per ton (for vessels with displacement of up to 4,000 tons) and \$0.9 per ton (over 4,000 tons);
- For river-sea vessels - \$2.7 per net register ton;
- For pushing and towing tugs - \$0.7 per horsepower.

25. The rates set out above are increased by 20 per cent for vessels carrying dangerous goods and reduced by 25 per cent for vessels carrying ballast.

26. Navigation in the canal is under the operational control of the canal administration in Agigea.

### **III. SEA SECTION OF THE ROUTE (E90)**

27. The sea section of the route is already widely used by Ukrainian and Russian combined river-sea navigation vessels, thanks to the favourable navigation and hydrometeorological conditions along the route during most of the year.

28. The distances between the main ports along the route are as follows, in nautical miles:

Sea ports	Chilia arm on the Danube (Ust-Dunaisk port)	Sulina arm on the Danube (Sulina port)
Odessa	79	96
Kherson	147	170
Kerch	319	333
Berdyansk	411	425
Taganrog	486	500
Rostov-on-Don	521	535

29. The routing is mainly through sea areas A1 and A2, owing to the distress warning possibilities, in compliance with the Global Maritime Distress and Safety System (GMDSS).

30. Accordingly, vessels must also be fitted with radio equipment.

31. When work is completed on the still outstanding shoreline installations along the route, the entire route could be redirected through A1 sea areas.

32. Both in Ukraine and in Russia, river-sea vessels have basically been constructed in accordance with the class rules set down in the register of inland navigation vessels in the Russian Federation (the Russian river register), although there are also a number of models of river-sea vessels which have been built to classes of the Russian maritime register and those of other classification societies.

33. Given that, from economic and practical viewpoints, river-sea vessels built to the class of the Russian river register are the best suited for this route, more detailed information on this class is given below.

34. The regulations for the classification and construction of combined navigation vessels, set out in the Russian river register, stipulate that the codes (in Russian) "M-SP", "M-pr" and "O-pr" are the main symbols designating the class of combined navigation vessel, indicating its construction type and navigation area and conditions.

35. Given the importance of these fundamental provisions, we provide below an extract from the river register rules, covering the definition of the maritime navigation areas along the route in question for each class of vessel:

**"Class 'M-SP' vessels** are permitted to navigate in sea areas with a maximum wave height of 3.5 metres at a 3 per cent frequency of occurrence.

"Under the river register rules, the following areas fall into this category:

No.	Sea	Geographical limits of sea basin	Seasonal restrictions	Application restrictions
1	Sea of Azov	Unlimited	All-year-round	
2	Black Sea	20-mile coastal zone along eastern, northern and western coastlines from port of Batumi to Bosphorus	All-year-round	Only for self-propelled cargo vessels
		20-mile costal zone along eastern, northern and western coastlines from port of Tuapse to Bosphorus	All-year-round	For vessels of other types
		20-mile costal zone along eastern coastline from port of Tuapse to port of Batumi	All-year-round	April-October inclusive

**“Vessels of ‘M-pr’ class** are permitted to navigate in sea areas with a maximum wave height of 2.5 metres at a 3 per cent frequency of occurrence.

“Under Russian river register rules, the following areas fall into this category:

No.	Sea	Geographical limits of sea basin	Seasonal restrictions	Application restrictions
1	Sea of Azov	Unlimited	March-November inclusive	
2	Black Sea	20-mile coastal zone from Kerch strait to port of Novorossiysk	April-October inclusive	Only for self-propelled and towed cargo vessels and tugs
		10-mile coastal zone around Crimean peninsula from Kerch strait to 45°N	April-September inclusive	Only for self-propelled and towed cargo vessels and tugs
		20-mile coastal zone in north-western area north of 45°N	March-November inclusive	
3	Sea of Azov and Black Sea	Kerch strait	April-October inclusive	Only for self-propelled and towed cargo vessels and tugs

**“Vessels of ‘O-pr’ class** are permitted to navigate in sea areas with a maximum wave height of 2.0 metres at a 3 per cent frequency of occurrence. Under the rules of the Russian river register, the following areas fall into this category:

No.	Sea	Geographical limits of sea basin	Seasonal restrictions	Application restrictions
1	Sea of Azov	Gulf of Taganrog to line of the Dolgaya spit-Berdiansk spit port of Berdiansk. 20-mile coastal zone along north-western shoreline to port of Henichesk. 20-mile coastal zone along eastern shoreline to port of Kerch		
2	Black Sea	5-mile coastal zone from Odessa to Danube breach (Prorva arm)	March-October inclusive	
		5-mile coastal zone from Odessa to port of Skadovsk	March-November inclusive”	

36. In the light of the above, where the route in question, i.e., Don-Sea of Azov-Black Sea-Dnieper-Danube, is concerned, this is clearly open to navigation by vessels in the classes "M-SP", "M-pr" and "O-pr" during the following periods of the year, bearing in mind that the restrictions applicable to the Black Sea are more rigorous:

- Class "M-SP": 20-mile coastal zone throughout the year;
- Class "M-pr": 10-mile coastal zone around the Crimean peninsula from the Kerch strait to 45°N; 20-mile coastal zone in the north-eastern area of the Black Sea north of 45°N (March-November);
- Class "O-pr": 5-mile coastal zone from the port of Odessa to the Danube breach (Prorva arm) (March-October); and 5-mile coastal zone from the port of Odessa to the port of Skadovsk (March-November).

37. Vessels in navigation class II-SP of the Russian maritime register are less restricted and are able to proceed up to 100 miles from shelter points, and vessels in class III-SP - up to 50 miles.

#### IV. EXISTING TYPES OF VESSELS

38. Of the vessels currently operated by the Russian river fleet, cargo vessels of the types "Sibirsky", "Volgo-Balt", "Amur", "STK", "Omsky", "Volgoneft" and "Lenaneft" belong to classes "M-SP" and "M-pr" of the Russian river register (see table 1 below).

39. Some vessels with Russian maritime register classes are also operated in combined river-sea navigation, namely, those of the types "Sormovsky", "Baltisky", "Morskoy", "Volga", "Ladoga" and "Volgo-Don".

40. The following table sets out the main specifications for vehicles in the river-sea navigation class of the Russian river register and the Ukrainian navigation register:

**Table 1**

Vessel specifications	Vessel type							
	Sibirsky	Volgo-Balt	Slavutich	Amur	STK	Volgoneft	Lenaneft	Volgo-Don
Displacement (tons)	5 536/ 6 141*	4 420	4 533	5 013.0	2 700.0	6 984.3	3 680.4	6 517/ 6 923
Cargo capacity (tons)	3 245/ 3 850	2 900	3 120	2 900	1 314.0	4 620.0	2 100.0	4 544/ 4 950
Length (m)	129.5	114.0	108.1	115.8	82.0	137.8	122.8	138.3

**Table 1 (continued)**

Vessel specifications	Vessel type							
	Sibirsky	Volgo-Balt	Slavutich	Amur	STK	Volgoneft	Lenaneft	Volgo-Don
Beam (m)	15.8	13.2	16.2	13.4	11.9	17.0	15.3	16.7
Draught at maximum load (m)	3.2/3.55	3.8	3.2	4.0	3.1	3.7	2.5	3.33/3.52
Speed fully laden (knots)	9.5	11.0	11.3	10.0	11.0	19.0	19.0	10.3

\* In sea water.

41. In its report on the standardization of ships and inland waterways for river-sea navigation (document TRANS/SC.3/WP.3/1999/21), the Permanent International Association of Navigational Congresses (PIANC) recommended the following classes of vessels:

River-sea class	Maximum permissible dimensions of vessels			Air clearance (m)
	Length (m)	Beam (m)	Draught (m)	
1	90	13	3.5 or 4.5	7 or 9.1
2	135	16	3.5 or 4.5	≥ 9.1
3	135	22.8	4.5	≥ 9.1

42. In fact, the Russian and Ukrainian vessel types listed above correspond fairly closely to those suggested by PIANC, although a draught of 4.5 metres is unacceptable for the inland waterways along the route in question.

43. At the same time, most of the river-sea vessels operated in the Russian Federation and Ukraine do not fully comply with all the height and draught limitations on certain waterways along the route of the future waterway ring around Europe.

44. Accordingly, there is a need to develop new types of river-sea vessels with dimensions that meet the requirements for navigation both along the combined deep-water network of the European part of Russia and the Dnieper, and along the Rhine-Main-Danube route.

## V. TECHNICAL ASPECTS

45. Existing and new types of river-sea vessels, operating along coastal routes, could be exempted from a number of excessively stringent requirements of the International Convention on Safety of Life at Sea (SOLAS) which are not always justified, since river-sea vessels are already subject to a number of restrictions relating to navigational areas, wave height, etc.

46. The SOLAS Convention already makes provision for the recommendation by the Administration that there should be exemptions for vessels whose safety features and route conditions are such that the requirements under certain of the Convention's chapters are either pointless or superfluous and which, when under way, do not sail further than 20 miles from the nearest shore.

47. The International Convention on Load Lines also provides for the granting of exemptions to the requirements, in particular when regional agreements exist between the countries where the ports of entry are situated.

48. It was precisely with these possibilities in mind, as well as the many years of positive experience of cooperation in navigation on the Azov and Black seas, that, in June 2002, the Russian and Ukrainian ministries of transport signed a protocol on conditions governing the entry of Russian and Ukrainian combined river-sea navigation vessels into Russian and Ukrainian ports on the Azov and Black seas.

49. The parties to the protocol agreed that:

- Russian and Ukrainian vessels carrying documents of the Russian maritime register or the Russian river register and the Ukrainian navigation register sufficient to cover their passages in the corresponding navigation area, without convention documents, shall be permitted to enter Russian and Ukrainian ports on the Azov and Black seas for the performance of cargo operations or to shelter from bad weather;
- The operating conditions and restrictions applicable to each specific vessel, depending on its class, shall be determined by the appropriate technical oversight and classification authorities in accordance with the procedure stipulated by the vessel's flag Administration.

50. There are also cases of combined river-sea navigation vessels sailing between Ukrainian ports and Danube ports without convention documents.

51. The experience in operating river-sea vessels accumulated by Ukrainian and Russian navigation companies and classification societies could be used by all member countries of ECE for the development of coastal routes.

## **VI. NAVIGATIONAL SPECIFICATIONS OF THE ROUTE**

52. The recommended routing for vessels proceeding from the Sulina canal (Danube mouth) to the mouth of the Don passes via the Black Sea and the Sea of Azov. For a route that remains within 50 miles from the shore, the total distance is in the range of 500 miles.

53. The recommended routings are the optimal and safest routes from the point of view of navigation.

**A. Busy shipping lanes on the Crimean peninsula and Kerch strait route and approaches to the ports**

54. When approaching major ports, the Crimean shoreline and the Kerch strait, additional safety measures must be taken because of the increasing volume of traffic on these lanes.

55. The north-western section of the Black Sea and the entire Sea of Azov are shallow-water areas. In the north-western section of the Black Sea, the 100-metre depth contour line runs some 20-30 miles from the shore. Along the Crimean shoreline, up to the entrance into the Kerch strait, the water gets increasingly deep and the 100-metre line runs some 1.5-10 miles from the shore. The Sea of Azov has a maximum depth of 15 metres.

56. The coastal strip along the north-western section of the Black Sea has a sandy bottom, while along the rocky coast of the Crimean peninsula the sea bottom is shells and gravel. The bottom of the Sea of Azov is a soft sand and shell mix.

**B. Hydrometeorological conditions**

57. The hydrometeorological conditions for navigation in the north-western section of the Black Sea are generally favourable. Difficulties may be caused by strong winds, poor visibility due to haze and, on occasion, heavy precipitation. The strongest and most sustained winds are easterlies and north-easterlies, encountered in the northern areas of the sea during the period from November to March.

58. Weather conditions in summer on the Black Sea tend to be calm and dry. Poor visibility due to haze occurs mostly in winter and spring. Heavy downpours which mar visibility are rare. Ice is usually only encountered in the north-western section of the Black Sea during severe winters.

59. Hydrometeorological conditions are favourable for navigation in the Sea of Azov between May and September. During this period, fogs and gales are rare and the recurrence of heavy swells does not exceed 4 per cent.

60. Between October and April, the hydrometeorological conditions are less favourable. During this period, north-east gales become more frequent, often accompanied by frost and blizzards. The recurrence of heavy swells reaches 18 per cent and visibility is considerably impaired by heavy precipitation and haze.

61. The navigation of vessels, particularly small vessels, is rendered difficult by their icing up, which occurs between December and March.

62. Between January and March or April, during moderate and severe winters, navigation is usually halted because of difficult ice conditions, or continues with the use of icebreakers.

63. South-west and west winds become more frequent in the spring. During this period, conditions tend to be clear.

64. In the summer the weather is usually calm, bright and very warm. Squall-like gales sometimes occur, accompanied by thunderstorms and downpours.

65. In autumn, particularly the first half, the weather is warm and bright, becoming increasingly wintry during the second half of autumn.

66. Weather reports and forecasts are provided by coastal radio stations following a schedule for the broadcasting of navigational and hydrometeorological reports for shipping.

67. The eastern section of the Sea of Azov, from the Kerch strait to the Gulf of Taganrog, is bounded on the south by the hilly northern shore of the Taman peninsula and, on the north, by the Kuban lowland, stretching from the Kurgan estuary to the Gulf of Taganrog.

68. The crests of hills and certain headlands may be used as landmarks for navigating the southern part of the coast. There are virtually no prominent natural features on the northern part.

69. All along the shore there are offshore banks of less than 5 metres in depth; as far as the bay of Yaseni, particularly along the Taman peninsula, these banks are not very wide, but on the section between the Achuevo and Dolgaya spits, the bank stretches from the shore for a distance of up to 13 miles, reaching 15 miles at the approaches to the Dolgaya spit.

70. There are no anchoring points along the shore protected from all winds. When winds are offshore, vessels may stand at anchor at any point, depending upon their draught. The bottom consists of mud, sand and shells.

71. The current is almost entirely dependent on the wind. With sustained strong winds, current speeds may reach up to 2 knots. In the eastern section of the sea, navigation is usually closed in December and reopened in March or the beginning of April.

### **C. Shelter points**

72. In bad weather, vessels may shelter from gales in the bay of Zhebriyany, the ports of Illichivsk, Odessa and Yuzhne, in the vicinity of the Kinburn spit, in the bays of Karkinit and Kalamit, in the ports of Sebastopol, Eupatoria and Yalta and in Feodosiya bay. The bottom in these areas consists of sand, mud and shells.

### **D. Navigation aids**

73. Navigation aids have been installed on the shores of the Black Sea and the Sea of Azov, to ensure safe navigation along the coastline and in the approaches to ports and anchorages. Vessels entering the ports and certain bays are guided by light beacons and may enter at any time of day or night. Beacons and lighthouses have been erected on most headlands, with a visibility range of 10-25 miles.

74. Hazards lying within likely shipping routes, the mid-channels of fairways leading to ports and the shelf edges of canals are marked off with lighted and unlighted buoys and spar-buoys.

75. In winter, the buoys and spar-buoys in frozen sections of the sea are replaced by winter navigation aids, such as torpedo buoys and route markers, or are removed altogether.

76. In addition to visual navigation aids, radio beacons have also been installed along the shores of the Black Sea and the Sea of Azov and fitted with high-precision radio navigation systems.

77. Detailed information about the visual and radio navigation aids on the Black Sea and the Sea of Azov may be found in the papers on beacons and marks on the Black Sea and the Sea of Azov (No. 2217), radio and navigation aids on the Black Sea and the Mediterranean (No. 3203) and radio and navigation systems (No. 3010), issued by the Central Navigation and Oceanographic Office of the Ministry of Defence.

78. The International Association of Lighthouse Authorities (IALA) (region A) buoyage system, as set out in manual No. 9029 issued by the Central Navigation and Oceanographic Office of the Ministry of Defence, is in operation in the Black Sea and the Sea of Azov.

#### **E. Shipping regime**

79. In the Black Sea and the Sea of Azov there are (numbered) areas closed and temporarily closed to navigation; areas hazardous for navigation; areas where vessels are not permitted to stop or moor; fishing areas; and areas of underwater and dredging work.

80. Special instructions about navigation in these areas and the boundaries of these areas are set out in the compendium of shipping rules for the Black Sea and the Sea of Azov.

81. To lessen the risk of collisions in busy shipping lanes at the approaches to the ports of Illichivsk, Odessa and Yuzhne, to the Buh-Dniester lagoon, the Kerch strait and the bays of Berdyansk and Taganrog, traffic separation systems have been set in place and recommended sea lanes and fairways demarcated.

82. Vessels navigating in accordance with the traffic separation systems and proceeding along or near recommended sea lanes and fairways must comply with the 1972 International Regulations for Preventing Collisions at Sea, as well as the rules set out in the compendium of shipping rules for the Black Sea and the Sea of Azov.

#### **F. Fixing positions of vessels by visual and radar observation and with the use of radio aids**

83. The ease with which position lines can be plotted and the high accuracy of the navigation aids mean that these aids can be used practically throughout the entire route.

84. The coastal markers in these navigation areas comprise navigation aids (beacons, signs and lights), distinctive peaks, tall headlands and islands. Weather conditions in this area are relatively favourable for visual position-fixing and visibility is usually good.

85. In poor visibility, the vessel's position may be determined with the use of on-board radar equipment or global positioning systems (GPS). Steep headlands, isolated cliffs, islands and other points fitted with radar reflectors may be used as radar positioning points.

86. When navigating by GPS, it must be borne in mind that GPS display units only give the coordinates of the vessel's position, and it is therefore necessary to back these up in good time with visual observation of coastal features.

#### **G. Radio communications on the route**

87. GMDSS (areas A1 and A2) stations are in operation in the north-western section of the Black Sea and on the Sea of Azov.

88. Radio communications between vessels and GMDSS shore stations in the A1 area are on VHF channel 16 and channel 70 - using the digital selective calling method.

89. Commercial communications are made by radio telephone or telex, depending on the equipment installed on the vessel.

**Annex**

**Table showing routes for combined river-sea vessels on the sector:  
Danube mouth-Dnieper estuary-Kerch strait-Don mouth**

Route in degrees	Coordinates of turning points		Navigation distance in miles	Notes
	Latitude north	Longitude east		
Route for vessels restricted to within 20 miles of shore				
1	64°-244°	45°08'0"	29°47'5"	13.6
2	32.5°-212.5°	45°14'2"	30°05'0"	70
3	360°-180°	46°12'5"	30°57'4"	19
4	70.4°-250.4°	46°32'6"	30°56'8"	
5	92.5°-212.5°	46°34'8"	31°07'0"	10
6	Entrance buoy of Buh-Dnieper estuary canal			
7	167.5°-347.5°	46°35'0"	31°26'0"	11.5
8	181.0°-01.0°	46°23'5"	31°29'7"	8
9	131.0°-311.0°	46°16'0"	31°29'2"	6.5
10	104.5°-284.5°	46°11'6"	31°36'7"	25
11	170.0°-350.0°	46°05'5"	32°11'2"	52
12	128.0°-308.0°	45°13'8"	32°24'5"	45
13	181.0°-1.5°	44°46'6"	33°13'8"	13.5
14	136.0°-316.0°	44°33'0"	33°13'0"	18
15	90.0°-270.0°	44°20'0"	33°30'0"	21
16	55.3°-235.3°	44°20'0"	33°59'0"	9
17	63.5°-243.5°	44°25'0"	34°09'0"	34
18	81.0°-261.0°	44°40'5"	34°52'0"	40
19	85°-265.0°	44°46'5"	35°47'6"	30
20	355.0°-175.0°	44°49'0"	36°32'0"	17
21	329.0°-149.0°	45°06'8"	36°30'0"	2.8
22	356.6°-176.6°	45°09'4"	36°28'0"	2.8
23	Kerch-Enikal canal			
24	4.0°-184.0°	45°27'4"	36°41'7"	46
25	34.0°-214.0°	46°14'0"	36°49'0"	44
26	76.5°-256.5°	46°49'5"	37°23'5"	25
27	65°-245.0°	46°55'2"	37°59'0"	12
28	89.0°-269.0°	46°59'8"	38°14'0"	16.5
29	51.0°-231.0°	47°00'5"	38°38'2"	7
30	106.0°-286.0°	47°04'8"	38°45'8"	5
31	Entrance buoy to Azov-Don canal	47°02'6"	38°55'3"	
Route for vessels restricted to within 50 miles of the shore				
1	75.0°-255.0°	45°08'0"	29°47'0"	72
2	308.0°-128.0°	45°32'0"	31°20'0"	110
3	90.0°-270.0°	44°20'0"	33°30'0"	21

From this turning point to the Kerch strait and beyond, as far as the entrance buoy to the Azov-Don sea canal (see above), the routes and turning points are as set out under Nos. 9-25 above.

**Routes for vessels restricted to within 100 miles of the shore**

Route in degrees		Coordinates of turning points		Navigation distance in miles	Notes
		Latitude north	Longitude east		
1	109.0°-289.0°	45°08'0"	29°47'0"	170	
2	90.0°-270.0°	44°20'0"	33°30'0"		

-----