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THE SOVIET AND EAST EUROPEAN MERCHANT AND FISHING FLEETS:
RECENT DEVELOPMENTS

Note by the Secretary-General

This paper has been prepared by the Economic Committee following a meeting held at NATO Headquarters with the participation of experts, on the basis of national contributions and complementary research carried on in the Economics Directorate.

The Council is invited to take note of this report.

(Signed) Joseph M.A.H. LUNS

This document includes: 3 Annexes

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N A T O C O N F I D E N T I A L

CONTENTS

| <u>Item</u> | <u>Subject</u> | <u>Paragraph Nos.</u> |
|-------------|--|-----------------------|
| | Summary | 1 - 4 |
| | Introduction | 5 - 6 |
| I. | Recent Soviet Merchant Fleet growth and developments | 7 - 14 |
| i. | Current fleet size and composition | 7 - 8 |
| ii. | Current acquisition programme | 9 |
| iii. | Projected fleet and maritime transport developments in the 11th Five Year Plan | 10 - 14 |
| II. | Soviet shipping requirements and changes in the foreign maritime trade pattern | 15 - 17 |
| III. | Special interest areas | 18 - 28 |
| i. | River-sea transport developments, their effects on domestic and international transport policies | 18 - 21 |
| ii. | Trans-Siberian Container Service (TSCS) and Trans-Siberian land bridge | 22 - 27 |
| iii. | Arms deliveries by the Merchant Fleet | 28 |
| IV. | Fishing Fleet developments | 29 - 40 |
| i. | Significance of fishing to the USSR and Eastern Europe | 29 - 32 |
| ii. | Fish catch by areas | 33 - 37 |
| iii. | Fishing fleet developments | 38 - 40 |
| V. | Eastern European Merchant and Fishing Fleets | 41 - 54 |
| i. | Bulgarian fleet growth and development | 41 - 42 |
| ii. | Czechoslovak fleet growth and development | 43 - 44 |
| iii. | GDR fleet growth and development | 45 - 46 |
| iv. | Hungarian fleet growth and development | 47 |
| v. | Polish fleet growth and development | 48 - 49 |
| vi. | Significance of Poland to Warsaw Pact shipping | 50 - 52 |
| vii. | Romanian fleet growth and development | 53 - 54 |

N A T O C O N F I D E N T I A L

C-M(82)10

-3-

| <u>Item</u> | <u>Subject</u> | <u>Paragraph Nos.</u> |
|-------------|---|-----------------------|
| VI. | Soviet and Warsaw Pact Merchant and Fishing Fleet developments: implications for the Alliance | 55 - 65 |
| i. | CMEA co-operation in shipping | 55 - 57 |
| ii. | Economic implications | 58 - 63 |
| iii. | Other implications | 64 - 65 |
| | Annexes I - III | |

N A T O C O N F I D E N T I A L

-3-

THE SOVIET AND EAST EUROPEAN MERCHANT AND FISHING FLEETS:
RECENT DEVELOPMENTS

Summary

1. The Soviet and East European merchant fleets have been growing steadily in recent years. The Soviet merchant fleet ranks ninth among the world's fleets. Poland and the GDR possess merchant fleets of considerable tonnage. The Soviet fishing fleet is the largest in the world and both Poland and the GDR have fishing fleets capable of operating on the high seas.

2. The East European merchant fleets support Soviet foreign policy in economic, political and military terms. They earn considerable amounts of foreign currency.

3. European CMEA nations plan to continue to develop their merchant and fishing fleets in the present five year period (1981-1985)(1). In 1981-1985 more specialized ships are to be built. The Soviets will give priority to special dry-cargo carriers and ice-breaker transport vessels, capable of navigation in Arctic waters.

4. In recent years CMEA fleets have made inroads into European-Indian trade and are making full use of the Trans-Siberian Railway to transport containers from Europe to Japan. They currently account for a greater share of the world maritime transport than the volume of their foreign trade relative to total world trade turnover.

Introduction

5. The rôle of maritime transportation in the trade of Warsaw Pact countries varies as a function of their geographic location. In Bulgaria its share of foreign trade shipments is around 60 per cent, whereas in Poland and the USSR it is about 50 per cent. However, the maritime traffic volume went up considerably in the seventies(2). This development has been parallel to merchant fleet developments. In the period between 1967-77, the Merchant Fleet of the USSR increased by 75 per cent, of the GDR by 86 per cent, of Bulgaria by 61 per cent while the Romanian Fleet expanded more than fourfold and the Polish Fleet 2.5 times in terms of tonnage.

(1) This period however will be characterized by a general stagnation in the total tonnage of CMEA member nation fleets except for that of Romania.

(2) See Czeslaw Wojewodka: Jahrbuch der Schiffahrt, Berlin(East). Partly translated by F BIS (JPRS-L-9556-1981) "Facts and trends: Maritime Traffic of CMEA countries".

C-M(82)10

-5-

6. Another function of the Warsaw Pact merchant and fishing fleets is to support foreign policy in economic, political and military terms. If Admiral Sergey Gorshkov, who is considered the father of the modern Soviet fleet, is to be believed, the expansion of the maritime fleet (both merchant and navy) is a goal in itself(3).

I. RECENT SOVIET MERCHANT FLEET GROWTH AND DEVELOPMENTS

(1) Current Fleet Size and Composition

7. The revised 1976-1980 Five Year Plan called for a gross increase of 4.6 million deadweight tonnes (DWT)(4) which probably covers only the Soviet merchant oceangoing fleet. With approximately 600,000 DWT added during 1980, the Soviet merchant fleet had a gross increase of 4.8 mn DWT, or 200,000 DWT over the planned goal during the 1976-1980 Five Year Plan.

8. As of 1st January 1981, the Soviet Union, with 2,281 vessels totalling 20,452,000 DWT, ranked fifth in the world in the number of ships and ninth in deadweight tonnage(5) with 20,452,000 KWT. These were distributed as follows:

| | |
|---|-----------|
| Northern Area (including the North Eastern Administration): | 247 ships |
| Baltic Area: | 713 ships |
| Black Sea Area(6), (including the Caspian): | 848 ships |
| Pacific Area: | 473 ships |

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- (3) He is reported to have said, "Le pavillon de la marine soviétique flotte sur les océans du monde. Tot ou tard les Etats Unis devront comprendre qu'ils n'ont plus la maîtrise des mers." Rapport du Comité 1980, Union des Amateurs Belges.
- (4) See explanatory note at annex for usage of DWT and GRT.
- (5) For the classification, number and tonnage of merchant and fishing fleets, see tables 1 and 2 at annex (for ships over 1000 GRT engaging in open sea operations and fishing vessels over 100 GRT).
- (6) In 1979 a total 7,693 Soviet ships totalling nearly 41 mn registered tonnes made 7,693 voyages through the Turkish Straits. (Source: Rapport Annuel sur les mouvements des navires a travers Les Detroits Turcs 43ème année, Ankara, Janvier 1980).

(ii) Current acquisition programme

9. Domestic and foreign construction programmes on Soviet account during 1980 included the production of design prototype classes and standard series-produced units. Prototype deliveries during 1980 represented ten different classes(7). During 1980, the Soviet Union increased its civilian maritime fleets by 198 newly constructed ships (over 100 GRT) totalling 918,199 GRT and 994,950 DWT. Of the 198 ships constructed, Soviet shipyards accounted for 50.5% (100 ships), other Communist shipyards 31.3% (62 ships) and non-Communist shipyards 18.2% (36 ships). In terms of deadweight tonnage, the Soviet-built ships represent 52.9% (526,803 DWT), other Communist-built ships 29.3% (291,456 DWT) and non-Communist built ships 17.8% (176,691 DWT). Twenty-eight of these ships (605,979 DWT) went to the Soviet merchant fleet, 116 ships (242,078 DWT) to the Soviet fishing fleet and 54 ships (146,893 DWT) to other maritime organizations. In addition to the newly-constructed vessels, one second-hand ship was acquired in 1980. On the other hand, a total of 159 ships (331,228 GRT and 481,266 DWT) was deleted from the Soviet inventory. Thirty four of these ships belonged to the merchant fleet, 96 to the fishing fleet and 29 to the special service fleet(8).

-
- (7) Prototype classes included the KAPITAN SAKHAROV class container ship and the OLEG KOSHEVOY 2 class tanker produced in domestic shipyards, DMITRIY SHOSTAKOVICH and GEORGE OTS class passenger vessels from Poland, DON class tug from Yugoslavia; KAPITAN ANTIPOV class river-sea cargo from Austria; SMOLNYI class LPG from Italy; AKADEMIC MSTISLAV KELDYSH class research and SIBIRSKIY 2101 class river/sea cargo from Finland; and the BAKLAN class tug from Japan.
- (8) River/sea tankers, cargo vessels, ore-oil carriers, research vessels, icebreakers, ferries and tugs are considered as special service ships.

C-M(82)10

-7-

10. Projected Fleet and maritime transport developments in the 11th Five Year Plan 1981-1985.

According to the Soviet sources(9), Soviet ships now transport more than half of the exports and imports of the USSR. The Soviet merchant fleet has acquired 4.2 million DWT of new ships in the tenth five year period (1976-80) which represents an increase of 21.7 per cent over 1975. Total cargo carried has increased by 15.1 per cent, loading-unloading work by 11 per cent and income from international voyages 1.4 times. Moreover, the western part of the North Sea route between Murmansk and Dudinka was opened to nearly all year-round navigation in 1979-80.

11. In the present plan period, maritime transport turnover is to increase 8-9 per cent over 1980. The main feature of the growth of the merchant fleet in the 11th Five Year Plan period will be expansion of the share of special dry-cargo carriers, from 59.7 per cent of the fleet (end 1980) to 63.1 per cent. During the same period the fleet as a whole will receive about 250 vessels totalling 3.2 million DWT. Nearly 170 of these ships will go to the dry-cargo fleet including 28 icebreaker-transport vessels to be used for year-round navigation in the Western Arctic and other regions of the North and Far East. The net growth of the fleet is expected to be 700,000 DWT.

12. It is planned to build several(10) large barge carriers with a dual function in mind:

- (i) to be employed in coastal trade in the Northern and Far Eastern regions during the navigation season
- (ii) to be employed in export-import transport during the remaining period.

(9) Razvite Morskovo Transporta (growth of maritime transport) Ekonomicheskaya Gazeta No. 26, June 1981.

(10) The article does not mention the number of barge carriers but since it does mention that Aleksey Kosygin, which is presently being built at Kherson, is the first of these domestically produced lighter-carriers, it was assumed that it is planned to build at least more than one of this type of vessel. According to some estimates four barge carriers will be built in domestic shipyards in the present plan period.

13. The first of these barge carriers(11), Aleksei Kosygin, is to enter into service in 1983. Moreover, one nuclear powered barge carrier is going to be built for the Murmansk Shipping Company for arctic conditions. Another nuclear ice-breaker, Rossiya, will be added to the existing three. The plan also envisages construction of other special-type vessels, in particular vessels with horizontal loading equipment, container ships, ferries, refrigerator ships, timber carriers, tankers and combination carriers. Important quantities of ships are planned to be acquired from Finland.

14. On the other hand, primary ship classes which are expected to begin phasing out during the 1981-1985 Five Year Plan include the following dry-cargo type classes: ANDIZHAN, ARKHANGELSK, CHULYM, DONBASS, FRYAZINO, KHASAN, KOLOMNA, LENA, NIKOLAY OSTROVSKIY, SERGEY BOTKIN, SHKIPER GEK, STANISLAVSKIY, STAVROPOL, TELNOVSK and tankers of the KAZBEK and YEGOREVSK classes. The majority of these cargo-type ships are in the 2,000-5,000 KWT category, having been built in the mid- to late 1950s.

(11) Russians prefer the terms "lighter-carrier" (Lihterevoz).

C-M(82)10

-9-

TABLE I

MAJOR PORT DEVELOPMENT PROJECTS UNDERTAKEN IN
11TH FIVE YEAR PLAN

| <u>Region/Port</u> | <u>Job to be Undertaken</u> |
|-------------------------------------|---|
| Northern: | |
| i. Murmansk) Arkhangelsk) | Construction of wharves to handle shipments from the Norilsk metallurgical complex will be completed. |
| ii. Kandalahaka (Kola Peninsula) | Port facilities are to be improved to handle lighters. |
| iii. Dikson | Oil handling facilities to be reconstructed. |
| Baltic: | |
| i. Riga | Completion of construction of facilities handling containers and ro-ros as well as other horizontally loaded vessels. |
| ii. Tallinn | Deep water port to be reconstructed. |
| iii. Leningrad | Construction of wharves to handle heavy loads. Construction of a maritime train station and tunnel passage to the Kanoniersky island from the port. |
| Azov and Black Sea: | |
| i. Yuzhny | Minerals, coal. |
| ii. Novorosissk | Grain. |
| iii. Massandr area | Sand, gravel |
| iv. Illichevsk | Reconstruction and enlargement of port container handling area. |
| v. Odessa | Enlargement of quarantine quay and station. Enlargement of ballast water purification facilities. |
| vi. Danube basin | Further development of shore facilities for the Danube fleet. |

Region/Port

Job to be Undertaken

Far East:

- | | | |
|-----------------------------|---|--|
| 1. Vostochny | } | Enlargement of container handling complexes |
| ii. Vladivostok | | |
| iii. Magadan | } | Completion of construction of container terminals. |
| iv. Petropavlovsk-Kamchatka | | |

II. SOVIET SHIPPING REQUIREMENTS AND CHANGES IN THE FOREIGN MARITIME TRADE PATTERN

15. The Soviets have developed a large, dynamic and flexible shipbuilding industry in order to meet their military and civilian needs; this has permitted a steady growth in the merchant fleet and adjustment to world market conditions in spite of the slack which the shipping world currently displays. In addition they are able to purchase abroad with minimum outlay of foreign currency. Thus Poland and the GDR export a considerable number of ships to the USSR. Whilst Finland, on the other hand, is the major Western supplier and conducts her trade with the Soviets mainly on a barter basis.

16. With the loss of most of their American business in cross-shipments in 1980 and the apparent future Soviet vulnerability in the cross-trades, which are greatly influenced by political events, the Soviets appear to have changed their shipbuilding policy. There is now a trend towards building more barge carriers rather than container ships, which were useful to the Soviets for trans-shipments between the European and the American ports, but required specialized port facilities.

17. Moreover, the Soviets are increasingly acquiring more ro-ro ships. Certain types of ro-ros are very expensive to operate. The third generation ro-ros that are being built now have the disadvantage that they require a sophisticated ro-ro harbour. But the first and second generation ro-ros that the Soviets have do not require such facilities and at the same time are ocean-going as well. The ships which need special port facilities(12) constitute only a quarter of the USSR's present inventory. Ro-ros have military advantages over the container ships: firstly, the container ships have no cargo handling facilities on board and they need specialized port equipment. Whilst ro-ros can sail anywhere and load and usually unload cargo without the need for sophisticated port

(12) Such as special cranes to handle loading and unloading.

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facilities. Secondly they provide more flexibility to the military planners. Containers and feeder lines are needed in order to run container ships; in the European trade the Soviets cannot use the feeder lines because both Soviet and European railways are already congested and a large inventory of containers is required, especially if the rail journeys from the ports are very long(13).

III. SPECIAL INTEREST AREAS

(i) River-sea transport developments; their effect on domestic and international transport policies

18. The Soviet Union and other Warsaw Pact countries use the European river network for both domestic and foreign trade. In 1979 they transported via the Danube nearly 69 million tonnes of goods accounting for almost 80 per cent of all goods transported on the Danube(14).

19. However, the most important development concerning Danube international shipping was the full introduction of a barge service between the Danube and the Indian subcontinent(15) which might partly explain the recent Soviet commitment to building sea-going barges and plans to produce new river/sea lighter/barge carriers. This service, which is reported to have made inroads into the Europe/India trade, is controlled by a Budapest-based company and operates by placing the mother vessel at the river-mouth ports and by sending out lighters up the Danube to collect cargo from both Eastern and Western European river ports. Bombay and Karachi are main ports at the other end of the line.

20. In 1980 there were two mother ships operating on the service. The General Manager of the Company, Interlikhter, told the press on 15th May 1981 in Budapest that the total carrying capacity of its 200 barges was 215,000 tonnes. Its barge-carrying ships were plying from the Danube to India and Pakistan, and to the Mekong river to take cargo to Vietnam and Cambodia. Since the enterprise was established three years ago 820,000 t of freight had been carried. The average time for a return voyage on the route to India and Pakistan was 33 days and on the route to the Mekong 43. It had not been planned to make a profit in the first three years, but no loss had been incurred in the first year and some profit had been made in 1979 and last year. The board of management had decided gradually to double the enterprise's assets out of the profits and to buy 50 new barges next year.

(13) In addition idle capacity has to be provided because of container handling times and empty returns.

(14) For Danube freight traffic see Annual Bulletin of Transport Statistics for Europe, United Nations 1980, p. 144 tables 23 and 24.

(15) See Maritime Transport 1979 OECD Paris 1980, p.77

21. If the projected Rhine-Main-Danube Canal is eventually completed, thus providing the opportunity for further development of the service, it could give rise to considerable concern for North West Europe. The problem could become all the more severe if Eastern companies succeeded in imposing a tariff freeze on use of the Canal, just as they imposed a freeze on tariffs on the Danube, which virtually eliminated all Western operators(16).

(11) Trans-Siberian Container Service (TSCS) and Trans-Siberian Land Bridge (TSLB)

22. In 1979 approximately 20 per cent of the Japanese West-bound trade was carried via the Trans-Siberian Land Bridge. The TSCS is estimated to account for 10-15 per cent of total cargo movements Europe/Far East/Europe(17). Until 1977, the service had to rely on imported containers, mainly from Japan. However in 1978 a container plant capable of producing 5,000 units a year was built in Odessa. Another plant being built in Abakan (Siberia) will produce 40,000 containers per year when completed.

(16) A supplementary protocol No. 2 to the Mannheim Act in which the rights of the Rhine-riverains and EC countries are safeguarded has been completed and will shortly be ratified. In fact the goal of this protocol is to ban CMEA vessels from the transport of goods between two Rhine ports.

(17) The transit container service which uses the TSLB is called the Trans-Siberian Container Service. For details of TSCS see Maritime Transport 1979 OECD, pages 101-106 and Annex to C-M(80)1.

C-M(82)10

-13-

23. The Trans-Siberian Railway, which is the only overland through connection, has a capacity of some 100 trains per day. The completion of Baikal-Amur Mainline (BAM) (expected in 1985) and Trans-Siberian Highway (TSH) - (it seems unlikely that TSH will be in operation before 1990) which will be some 9,900 kms long and connect Brest-Litovsk to Vladivostok along with feeder lines and roads planned to serve the TSCS may increase the capacity of the service to 600,000 TEU(18) per year(19). However, even the present rail and ship (including canal) systems in the Western USSR are considered to be more than adequate to support the present and planned Trans-Siberian Railway and Trans-Siberian Highway facilities.

24. The capacity of the Trans-Siberian Land bridge is also dependent on the container handling port capacity at both ends. The Leningrad Container Terminal should be able to handle 200,000 TEU per annum when completed. (It handled 80,000 TEU in 1976.) Container facilities exist at the Riga port and more are under construction. The capacity of the Tallinn container berths is expected to reach 25,000 TEU a year from the present 2,500. Ilichevsk on the Black Sea can handle 500,000 TEU a year and the Far Eastern ports are expected to be able to handle 300,000 TEU a year by 1985 at the latest.

(18) TEU = Twenty feet equivalent.

(19) The BAM will almost double the overall railway capacity to the Soviet Pacific Coast. On the other hand, the TSH will provide another link to European highway networks. In 1979, 107,000 TEU of foreign goods and Soviet export-import traffic were carried. See OECD Report 1979, page 103.

25. At first sight, the Trans Siberian container service seems to have two advantages over the direct sea journey from Western Europe to Japan. It provides a quicker service, and it is cheaper. Best journey times (rail element only) from Amsterdam to Japan take 20-25 days, compared with 30-35 days via Panama or Suez and 40-45 days via the Cape of Good Hope. The best transit times are not the norm, however: journeys of 35-40 days are the general rule and in the second half of 1979 TSLB transit times had reached 80-100 days due to port congestion and handling problems at Nakhodka. Thus, lower fares, along with larger profit rebates to forwarding agents seem to be the real reasons for the TSLB's attracting freight. Although it is difficult to make a meaningful comparison, it has been estimated that TSCS rates are generally 15 per cent below the Far East Freight Conference rates, although other sources imply that the difference might be much higher(20).

26. Despite the fact that the throughput of the TSCS via the Trans-Siberian land bridge fell by 15 per cent during 1980, it continued to contribute to "the declining viability of shipowners operating within the far Eastern Freight Conference". Recognizing this fact, the EEC decided to monitor movements of containers via the Trans-Siberian land bridge(21).

(20) The 1980 Report of Union des Amateurs Belges makes the following comments about Soviet rates: "Par un dumping forcené des prix de transport ferroviaire russe! Ce prix est de \$0,12 par conteneur/mille, soit la moitié du prix américain de la Cote Est à la Cote Ouest, le quart du cout ferroviaire de Winnipeg à Montreal et le quart du tarif Intercontainer de Hambourg à Marseille. Les tarifs offerts par le Transsibérien sont de 50% inférieurs à ceux de la Conférence maritime de l'Extreme-Orient".

(21) Maritime Transport 1980 OECD Report Paris 1981, page 14.

C-M(82)10

-15-

27. The fluctuations in the amount of containers carried by the TSCS does not alter the basic fact that TSLB is a viable alternative to the other existing routes to the Far East. Further dumping by the Soviets could increase the number of containers carried by this Service. The improvement of port facilities at both ends of the land bridge could also result in attracting more cargo. The diversion of traffic to the TSLB, therefore will mainly depend on the Soviet attitude and priorities, unless some form of joint government action is taken at least along the lines of the decision by the EEC in December 1980.

(iii) Arms Deliveries by the Merchant Fleet

28. Arms deliveries by the fleet are currently slightly lower in comparison with 1979 which was a record year. Ro-ros have been taking a larger share of arms deliveries. Three medium sized "ro-flow" ships that the Soviets have acquired are capable of holding 700-tonne objects and have a flooding deck. These ships can deliver small navy vessels and large aircraft crates can be carried without being noticed. Furthermore, ocean-going barges could be used to transport tanks and arms. Although such a form of transport has not been noticed it remains a possibility. The barges the Soviets possess could be brought from inland over the internal waterways and transported to their destinations by barge carriers.

IV. FISHING FLEET DEVELOPMENTS

(i) Significance of fishing to the USSR and Eastern Europe

29. Fish have an important place in the Soviet diet. They are also used as animal feed. For the other European CMEA countries, the consumption of fish has been rising steadily since the sixties.

30. In 1979 36 kgs of fish and sea products were caught per Soviet citizen. Only Japan surpassed this figure (94 kgs). The other East European countries were also among the main fish catchers of the world, with the exception of Hungary and Czechoslovakia.

TABLE 2

PER CAPITA FISH CATCH IN CMEA AND SELECTED COUNTRIES IN 1979

| <u>Country</u> | <u>Catch</u> |
|----------------|--------------|
| Bulgaria | 15 kgs |
| Hungary | 1.5 kgs |
| GDR | 14 kgs |
| Poland | 18 kgs |
| Romania | 8.2 kgs |
| Czechoslovakia | 1.2 kgs |
| USSR | 36 kgs |
| Great Britain | 19 kgs |
| USA | 16 kgs |
| France | 17.9 kgs |
| Japan | 94 kgs |

Source: Narkhoz 1979, pp 80-81

31. In 1977 an average of 17.7 kgs of fish and fish products were consumed in the Soviet Union(22). Bulgarians and Czechs consumed nearly 6 kgs, citizens of the GDR and Poland consumed 7.6 kgs each.

32. Fish and fish products are thus an export commodity, especially for the Soviet Union. The currency earnings of the USSR from exports of fish is steadily increasing. Whilst in 1977 the Soviet Union earned nearly ten million dollars from fish exports, it earned about 21 mn dollars in 1979(23).

(ii) Fish catch by areas(24)

33. CMEA catches most of its fish in marine areas. In 1979 14.1 per cent of the total world fish catch in marine areas was taken by CMEA fishing fleets. CMEA also had a 12.2 per cent share in the total amount of fish caught in inland waters. However, since 1975 the comparative catch of CMEA has declined. In 1975 CMEA caught 15.1 per cent of the total amount of world fish catch in inland waters and 17.5 per cent of the fish in marine areas which together represented 17.3 per cent of the world total. In absolute terms, whilst CMEA countries caught 944,000 tonnes of fish in inland waters and 10,405,000 tonnes in marine areas in 1975 the respective figures from 1979 were 951,100 tonnes and

(22) CMEA Yearbook 1978, p.50

(23) FAO Yearbook of fishery statistics, fishery commodities 1979, p. 85

(24) For details see tables 3 and 4 at Annex

C-M(82)10

-17-

9,306,500 tonnes only. This development, which took place despite the increase in the fishing fleet size can be partially explained by examining the changes in Soviet and East European fishing patterns.

34. The CMEA fish catch declined first of all as a direct result of implementation of the 200-mile restrictive fishing zones by the coastal states, as well as over-exploitation of some stocks by foreign fleets. The traditional fishing areas of the CMEA are now within the national jurisdiction of coastal states, especially Canada, the US and the EEC. Thus, while CMEA in 1975 caught nearly 1.5 mn tonnes of fish in the north west Atlantic area(25), by 1979 this catch declined to 173,000 tonnes, a nearly tenfold decrease (see table 4 at Annex).

35. In the waters between Europe and North America(26) the total CMEA fish catch declined in the same time span from 4.5 million tonnes to 2.5 million tonnes. In the Atlantic area as a whole, that is, all the waters between the European and African coast and the North and South American coasts, the Arctic in the north and Antarctica in the south, the CMEA fish catch declined from nearly 6.5 mn tonnes in 1975 to 5 mn tonnes in 1979. This decrease could have been sharper if the CMEA had not increased its fish catch in the Atlantic Arctic area from a mere 39,000 tonnes in 1975 to an impressive 899,000 tonnes in 1979. None the less, the decrease in the Atlantic area as a whole is mainly responsible for the nearly two mn tonnes difference in the total CMEA catch between 1975 and 1979.

36. After being challenged in the Atlantic, however, the CMEA fleets have shifted to other fishing areas. For example the CMEA fish catch (mainly Soviet) in the North West Pacific which was nearly 2.7 mn tonnes in 1975, increased to 3.2 mn tonnes in 1979. The CMEA fish catch in the North East Pacific (off the coast of Alaska) increased from 600,000 tonnes to over 2 mn tonnes(27) CMEA fishing fleets also started fishing in areas, such as the Eastern Indian Ocean, where they were not present in 1975.

37. The Soviets also sometimes buy fish caught by local companies within the 200-mile limit and process them in their own factory ships. They also enter joint ventures. For example, in joint fishing concerns on the US West Coast, basic fishing is done by the US boats but processing is done by the Soviet ships and the produce is sold to Asian or African countries. Whilst this kind of venture may appear as one way of circumventing the 200-mile fishing zones, it is profitable to both sides and is encouraged by US law.

(25) Area which covers Canadian East coast, American north-east coast and western Greenland

(26) By FAO classification, North West and North East Atlantic which covers Scandinavian waters as well.

(27) However, in 1980 almost all Soviet fishing off the US coast ceased as a result of US Government sanctions in response to the Afghanistan invasion.

The amount of catch through these ventures from 1980 to 1981 doubled to 50,000 tonnes. The US has not allocated surplus US fish to the Soviets since 1981, however, because of the Afghanistan invasion

(iii) Fishing fleet developments

38. As may be seen from table 4, the Soviets have to operate their fishing fleet over long distances. In the fifties large mother ships operated with side trawlers. Despite the fact that the USSR needs a large proportion of the world's fishing fleets to catch a relatively small percentage of the fish, the actual catch grew continuously until the seventies, when it levelled off. Since then, however, the USSR has begun to build ships which can stay at sea for longer periods. In the coming decade a large renewal of the USSR's fishing fleet inventory can be expected. Smaller ships will be replaced by newer and larger vessels; there will thus be fewer units and they will require less personnel. In terms of real efficiency, the Soviets are therefore likely to progress.

39. These bigger ships will be able to fulfil some other functions: they can mount more electronic equipment for intelligence gathering, could carry out more undersea operations and will have a higher potential for supporting the Soviet Navy.

40. In the coming decade more Soviet fishing fleet activities are likely in the Third World, especially in the Indian Ocean; plans to build air-conditioned trawlers serve as an indication of the likelihood of this development.

V. EASTERN EUROPEAN MERCHANT AND FISHING FLEETS

(i) Bulgarian fleet growth and development - 1980

41. Present situation. As of 1st January 1981, the Bulgarian merchant fleet consisted of 126 ships (1,000 GRT and over) totalling 1.6 mn DWT; it is under the control of the Navigation Maritime Bulgare, Varna, and ranks seventh in DWT among the Communist fleets. During 1980 Bulgaria acquired two bulk carriers (47,400 DWT) from domestic shipyards. Seven ships were deleted (91,002 DWT) thus giving a decrease of five ships and 43,002 DWT. Ten coastal ships supplement the ocean-going fleet (8 cargo and 2 passenger) totalling 2,500 GRT and 2,100 DWT. These ships are employed on routes to ports in the Baltic and Mediterranean seas. There are 40 ships (110,000 GRT) in the Bulgarian fishing fleet: all units were acquired from the USSR, Poland and German Democratic Republic. The fishing fleet operates in the Atlantic Ocean, its total catch in 1979 was 89,500 tonnes.

C-M(82)10

-19-

42. Future developments. Approximately 80 per cent of all ships constructed in Bulgaria are launched from the Georgi Dimitrov shipyard at Varna, where two bulk carriers of 25,000 and 38,000 DWT are being constructed at present. A new series of 15,000 DWT cargo ships is now being developed at the Shipbuilding Institute in Varna.

(ii) Czechoslovak fleet growth and development - 1980

43. As of 1st January 1981, the Czechoslovak merchant fleet consisted of 17 ships (1,000 GRT and over) which includes 12 general cargo and 5 bulk cargo ships (185,000 DWT). During 1980, one cargo ship was acquired from foreign shipyards and one ship was deleted. All 17 ships were built in foreign shipyards, 9 in Poland, 2 in Hungary, 2 in Romania, 1 in Yugoslavia and 1 each in East Germany, Japan and the United Kingdom. The merchant fleet is administratively controlled by three ministries: the Ministry of Transportation, the Ministry of Foreign Trade, and the Ministry of the Interior. The fleet is used primarily in tramp operations, and harbours primarily in East German ports.

44. Future developments. During 1981, Czechoslovakia is to acquire three 15,000 DWT cargo ships from foreign shipyards.

(iii) German Democratic Republic fleet growth and development - 1980

45. As of 1st January 1981, the merchant fleet of the GDR consisted of 213 ships (1,000 GRT and over) totalling 1.9 mn DWT, and in terms of DWT it ranks sixth among the Communist fleets. The entire fleet is controlled by the DeutscheFracht Seereederei, Rostock - DSR. In 1980, the fleet gained 8 new ships (7 general cargo and 1 bulk carrier) and one second-hand ship. Of these 7 ships were produced in the domestic shipyards and one was imported. In 1980, 13 ships (181,400 DWT) were deleted giving a decrease of 5 ships and 46,868 DWT. The East German fishing fleet has 132 ships (over 100 GRT) with 154,000 GRT. Of these, 25 vessels are over 1,000 GRT. The fishing fleet operates mainly in the Atlantic; in 1979 its total catch was nearly 250,000 tonnes. In addition to the ocean-going fleet, the East German merchant marine fleet has 76 ships less than 1,000 GRT (26,767 GRT, 40,400 DWT). These ships operate in the Baltic and North seas. The GDR is another significant ship supplier to the USSR; in 1980 it exported 36 ships totalling 192,000 GRT to the USSR, nearly 50 per cent of East German ship exports.

46. Future developments. Orders have been placed for the construction of a new type ro-ro ship of 6,300 DWT and a capacity for 167 twenty-foot trailers, 480 passenger cars and 285 twenty foot containers, which is being built at Wismar.

(iv) Hungarian fleet growth and development - 1980

47. As of 1st January 1981, the Hungarian merchant fleet consisted of 22 ships (1,000 GRT and over) totalling 106,000 DWT. The merchant marine fleet is controlled by the Shipping Department of the Ministry of Transportation and Postal Affairs and is managed by the Hungarian Joint Stock Shipping Company, MAHART. The majority of the Hungarian ships are assigned to shipping routes between Danube Black Sea ports and the Mediterranean.

(v) Polish fleet growth and development - 1980

48. Present situation. The Polish merchant fleet, the largest and most advanced in Eastern Europe, has the greatest amount of tonnage on order for delivery through 1989. In terms of DWT, Poland ranks third in the Warsaw Pact. The Polish Merchant Marine fleet operates under the Ministry of Shipping which delegates operational control to three shipping companies: the Polish Ocean Line, the Polish Steamship Company and the Polish Baltic Shipping Company. As of 1st January 1981, the Polish merchant fleet consisted of 348 ships (1,000 GRT and over) aggregating 4.7 mn DWT, ranking 21st among world merchant fleets. In 1980 Poland acquired 17 new ships (4 cargo, 1 refrigerated cargo, 1 ro-ro and 11 bulk cargo) totalling 175,100 DWT. One ship was from a domestic yard and 16 from foreign shipyards. During 1980, 13 ships totalling 183,916 DWT were deleted giving Poland a net increase of 4 ships, but a decrease of 9,000 DWT. The Polish Fishing Fleet numbers 343 ships (over 100 GRT) aggregating 338,000 GRT. Of these, 108 ships are over 1,000 GRT.

49. The fishing fleet operates in the Atlantic, Pacific and Arctic waters. Its total catch in 1979 was 600,000 tonnes(28). In addition to the ocean-going fleet, the Polish merchant marine fleet has 136 ships (less than 1,000 GRT) totalling 43,496 DWT.

(vi) Significance of Poland to Warsaw Pact shipping

50. Polish maritime ports serve as a transit point for exports and imports of other CMEA countries and have the largest transit cargo handling capacity within Eastern Europe. In 1978 Polish ports handled 2.4 million tonnes of goods for Czechoslovakia, 1.6 mn tonnes for the GDR, 484,000 tonnes for Hungary, 61,000 tonnes for Romania. The Polish port of Szczecin with a transit volume of 2 mn tonnes was the biggest transit port of Eastern Europe.

(28) In 1980 over 100,000 mn tonnes were caught off the US West Coast.

C-M(82)10

-21-

51. Poland, being among the ten leading shipbuilding nations in the world, is an important supplier of ships to other Warsaw Pact countries, especially to the Soviet Union. Only 11 per cent of its production is used for domestic requirements. Forty-two per cent of the ships built at Polish shipyards are exported to the Soviet Union.

52. Future developments. Over the next few years Poland is to acquire a series of cargo, ro-ro, refrigerated cargo and passenger car ferries from domestic shipyards and a number of cargo, ro-ro containers and ro-ro cargo vessels from foreign shipyards.

(vii) Romanian fleet growth and development - 1980

53. Present situation. As of 1st January 1981, the Romanian merchant fleet consisted of 200 ships (1,000 GRT and over) totalling 2.8 mn DWT, and operating worldwide. In terms of DWT, Romania ranks fifth among the Communist fleets. The merchant marine fleet is state-owned and all ships are under the operational control of the Romanian Maritime and River Navigation Company. During 1980, Romania acquired 9 new ships (6 cargo and 3 bulk cargo), all from domestic shipyards. Romania's fishing fleet consists of 56 ships totalling 196,000 GRT. It operates in the Atlantic; with a total catch of 179,000 tonnes in 1979, it ranked fourth among the East European countries after USSR, Poland and GDR.

54. Future developments. In the 1981-85 period a series of tankers, bulk carriers, ro-ro ships and general cargo ships is planned to bring the capacity of the fleet to over 3 mn DWT. Romanian shipyards are also building a passenger ship about 150 metres long and having a 23 metre beam and a speed of 22 knots. The ship is designed to carry 515 passengers.

VI. SOVIET AND WARSAW PACT MERCHANT AND FISHING FLEET DEVELOPMENTS: IMPLICATIONS FOR THE ALLIANCE

(1) CMEA co-operation in shipping

55. The co-operation among the European CMEA members in maritime trade and shipping began more than 30 years ago with the co-ordination of ship chartering. The CMEA countries, not having enough ships to carry their goods, chartered ships as a group from other countries in order to be in a better position to negotiate fares(29).

56. Within the CMEA a Permanent Commission for Transportation was founded in 1958. A Co-ordination Bureau for the Chartering of Ships of the CMEA was formed in 1962 with headquarters in Moscow, and in 1970 CMEA established

(29) In 1949, when the CMEA was established, the merchant fleets of the member countries had a tonnage of only 2.5 mn tonnes, including the USSR.

an International Shipping Association (INSA). The Association's members include most of the shipping companies of the Socialist countries and the Association of Indian Shipping Companies. East European CMEA countries also operate joint shipping lines to the Mediterranean (Uni Levant), to West Africa (Uni Africa), to East Africa (Balt Africa) and to the East Coast of South America (Balt America).

57. These arrangements were formalized in an agreement signed by the CMEA member countries on "Collaboration in Maritime Merchant Shipping between European CMEA countries" in Budapest on 3rd December 1971. The parties to that agreement pledged "to support bilateral and multilateral co-operation to achieve the full and effective utilization of the maritime merchant fleet and the maritime ports in order to meet the requirements of international and maritime shipping and to develop collaboration in the field of chartering".

(ii) Economic implications

58. The Soviet and Warsaw Pact Merchant Fleets have a greater share in the world maritime trade than the volume of their foreign trade relative to total world trade volume. In 1979, for instance, when the USSR carried 8 per cent of the world general cargo tonnage, its own foreign trade by sea did not surpass 2 per cent of the world maritime foreign trade tonnage(30). None the less, the USSR still carries only about half of Soviet seaborne foreign trade.

59. The main commercial aim of the CMEA merchant fleets is to earn and to save foreign currency. In some cases, this priority may overshadow high costs. For the USSR, if an enterprise is likely to bring in more foreign convertible currency than it takes away it is considered to be worth continuing; rouble expenses are considered as a secondary criteria. For the same reason the USSR exports ships they have constructed at prices below comparable ones in the West and import many ships from Finland, whose trade with the USSR is conducted in clearing accounts rather than foreign currency.

60. In addition, the Soviet merchant fleets benefit from the following cost advantages:

- (a) Soviet seamen are paid less than their Western counterparts and are trained by the State. However Soviet ships may be overmanned by Western standards.
- (b) Hull and cargo insurance are covered by the State. This becomes particularly advantageous for the Soviets when a trading policy CIF exports and FOB imports is implemented in bilateral trade.

(30) Rapport du Comité 1980, Union des Armateurs Belge, p.20
It should be noted that general cargo tonnage, however, is only a portion of all types of tonnage transported.

C-M(82)10

-23-

- (c) Although the Soviet shipping companies, when operating on the cross trades, have to bear costs for ship handling on a comparable basis with their Western counterparts they benefit from lower State-set fuel costs.
- (d) The greatest advantage of the Warsaw Pact shipping companies however, is their potential to act together. They can, acting in unison, offer lower rates to force other competitors out of the market and, by State support, continue on occasion to operate by undercutting rates.

61. The Soviets, using these advantages, have acquired a greater share of the world's merchant shipping trade in recent years. According to the estimates of VDR(31), on cross trade on the Caribbean-Continental Europe route, Soviet Balcapas Line and Soviet-Finnish Scan-Pacific Line, making use of their spare capacities on the return voyage from Cuba, have been carrying 32 per cent of all cargo (mainly cotton and coffee) from the West Indies to Europe in 1979 and 1980. For coffee they have reportedly undercut conference rates by 30 per cent. On the Europe-East Africa route Soviet merchant lines hold 9 per cent of the market by cutting the freight rates up to 40 per cent below that of conference lines(32). It is also estimated that they now hold 45 per cent of the Far Eastern freight conference tonnage on the Far East-Northern Europe route.

62. Until 1980, the majority of the Soviet liner ships concentrated on services to the United States. This changed when US Longshoremen boycotted all Soviet flag ships on the US East Coast in protest to the Soviet invasion of Afghanistan. As a result the Soviet share in the eastbound North Atlantic liner trade between 1979 and the first half of 1980 fell from 5 per cent to 0.8 per cent(33). The boycott also affected the US West Coast trade. Although a boycott was not effected against the Soviets on the US West Coast, the threat of a boycott and the lack of confidence of shippers in Asia led to a similar reduction in Pacific eastbound trade. As a consequence, Soviet services on the route have been reduced and were to be discontinued in May 1981.

63. The results of the longshoremen's boycott tend to demonstrate that non-commercial administrative measures may have some success in countering Soviet merchant shipping cost advantages. Toward the same end, additional measures are currently being implemented by some Western governments.

(31) Verband Deutscher Reeder - German Shipowners Assn.
"How Russia is grabbing the shipping lanes" by
Pete Stevens, The Times, 7th July 1981

(32) However, cutting freight rates is not a practice particular only to the Soviets

(33) Maritime Transport OECD Report 1980, p. 47

For example, the EEC decided in June 1978 to introduce a system of "compulsory notification" valid from January 1979 to the end of 1982 for some routes. Only some parts of the United States are open to Soviet merchant and fishing fleets and Soviet vessels can visit these either with four days' notice for some ports or 14 days' request for others. All these measures help in checking the Soviet maritime activities. Moreover, the US "controlled carrier bill" of 1979 aims to prevent dumping by State-owned companies. The activities of (34) Soviet sole-ownerships and joint companies are being kept under varying degrees of surveillance.

(iii) Other implications

64. The Warsaw Pact merchant and fishing fleets are geared to support their respective navies. They fulfil both intelligence-gathering and troop and military material transport functions. In the designing and production of ships, military needs are taken into consideration. For example, many fishing trawlers could easily be transformed into minelayers.

65. The ability of Warsaw Pact fleets to act in co-ordination gives them further advantages as far as military operations are concerned.

(34) The Soviets have joint or solely-owned companies in Australia, Austria, Belgium, Canada, Denmark, Germany, Finland, France, Greece, Italy, Japan, the Netherlands, Philippines, Singapore, Spain, Sweden, Switzerland, United Kingdom and United States. The Soviets, through these companies, establish a foothold in other countries. For detailed information about joint companies see C-M(80)1.

ANNEX I to
C-M(82)10

-2-

6. Finally, a hybrid type of ship exists which can transport either liquids (generally oil) or dry commodities in bulk; these ships are generally termed combination oil/bulk carriers, or simply combination carriers.

To recapitulate, all types of ships can be categorized according to the following ship classification table:

TERMINOLOGY

1. Merchant ships are generally classified on the basis of the goods they carry. Thus a preliminary distinction is made between those that carry dry cargo of any type, and those that carry either liquids or gases - tankers. Within the category of dry cargo ships, a broad division can be made between ships designed to handle general cargo, and those designed to transport unpackaged commodities in bulk (principally bauxite, phosphate, iron and other metal ores, coal and grain), known as bulk carriers.

2. Additional specialized types of general cargo ships are refrigerator ships and timber carriers - refrigerator ships as the name implies, are designed primarily to haul such perishable cargoes as meat and fruit, but may also be utilized as desired to carry general cargo. Timber carriers, on the other hand, are built to carry cargoes of logs and lumber, but they are also well adapted to the carriage of free-flowing bulk commodities.

3. Liners are ships designed to transport general cargo which usually, but not necessarily, operate on established shipping routes according to fixed schedules - that is, on shipping lines. New types of ships have been developed in recent years to handle the transport, and especially the loading and unloading of general cargo more efficiently than is possible with conventional general purpose cargo ships. Also characterized as liners, but more specifically known as unit load ships, these new ship types include container ships, roll-on/roll-off (ro-ro) vessels, lift ships, multi-flex ships and barge carriers.

4. With container ships, goods are put into uniform containers for transfer from one means of conveyance to another (truck, train, ship) without repacking; because of the uniformity of the containers, specialized equipment can quickly effect transfer. Ro-ro vessels have special loading ramps for transfer directly from ship to road, and vice-versa, of automobiles or goods in motorized or non-motorized vehicles. Often these vehicles are containerized(1). Lift ships, meant for the transport of heavy equipment such as cranes and oil derricks, are often semi-submersible for easy loading and unloading. Multiflex ships are extremely versatile ro-ros which can also easily handle containers and general cargo.

5. Barge carriers are of several types, but all transport a number of smaller vessels, or barges, to facilitate shallow-water unloading and transfer. The two principal types are the lighter-aboard-ship (Lash) system, which can carry up to 89 barges of 370 tons each, and the Seabee, which can carry 38 barges each weighing 850 tons.

(1) Ro-flow vessels are ro-ro with facilities for deck flooding to permit cargoes to be floated off.

SHIP CLASSIFICATION TABLE

I. DRY CARGO

A. Liners

1. General purpose

- (a) General cargo
- (b) Passenger/cargo
- (c) Cargo/training

2. Unit load

- (a) Roll-on/roll-off (ro-ro)
- (b) Lift ships
- (c) Multiflex ships
- (d) Barge carriers
- (e) Container ships
- (f) Other

B. Refrigerator ships

C. Timber carriers

D. Bulk carriers

II. TANKERS

A. Petroleum

B. Gas

C. Other

III. COMBINATION OIL/BULK CARRIERS

IV. PASSENGER/FERRY

V. AUXILIARY

A. Research

B. Icebreaker

C. Other auxiliary (tugs, dredges and training ships)

VI. FISHING

A. Trawlers (including refrigerated trawlers, seiners, whale catchers and seal catchers)

N A T O U N C L A S S I F I E D

ANNEX I to
C-M(82)10

-4-

- B. Factory ships
 - (a) Factory trawlers
 - (b) Factory/Base ships
- C. Refrigerated cargo (subordinate to fishing fleet)
- D. Tankers (subordinate to fishing fleet)
- E. Research (subordinate to fishing fleet)
- F. Auxiliary (general cargo, tugs and training ships subordinate to fishing fleet)

VII. RIVER-SEA CRAFT

N A T O U N C L A S S I F I E D

-4-

DWT, GRT, CGRT AND THEIR RELATION TO EACH OTHER

DEFINITIONS

Deadweight ton (DWT)

Unit of measurement of a ship's size. The deadweight tonnage of a ship is the weight, in long tons, of cargo, fuel, stores etc., which it is able to carry at the applicable loadline. (Usually the summer mark.)(1)

Gross register ton (GRT)

Unit of measurement of a ship's size based on its cubic capacity, 100 cubic feet of permanently enclosed space equals one gross ton(1).

Net register ton (NRT)

A unit of measurement of a ship's size which is derived from the gross tonnage by deducting spaces for crew accommodation, propelling machinery and fuel(1).

Compensated gross register ton (CGRT)

Unit of shipyard capacity, derived from the gross tonnage by the application of a coefficient reflecting the "standard man/hours" required for production of the type of ship under consideration. These coefficients were established by the Association of West European Shipbuilders and the Shipbuilders' Association of Japan, and ratified by the OECD Council Working Party No. 6 on Shipbuilding in 1978.

(1) Committee of Inquiry into Shipping, Glossary, HMSO, London,
May 1970

SOURCE: Maritime Transport 1980, OECD Report Paris 1981, page 89.

ANNEX II to
C-M(82)10

-2-

CONVERSIONS OF TONNAGE

When considering shipping questions, the use of DWT or GRT will depend upon the purpose for which the work is being undertaken. Generally speaking DWT is of most use when relating the ship to the quantity of cargo to be transported, particularly in bulk. However, when considering ships designed for cargoes with a low specific gravity such as liquefied natural gas, or requiring a lot of storage space in relation to the goods carried, as for containers, vehicles or human beings, the GRT is of more significance, and, for ships not employed in trading, like ice-breakers or tugs, it is the only meaningful unit. Since, however, data provided may be in either unit, it has in the past been a matter of some difficulty to convert one to the other, when different ship types are involved.

However, early in 1981, Lloyd's Register published a complete "Analysis of ship type by size in deadweight tonnage by country of registration as at 1st July 1980". From this analysis it has been possible to calculate the GRT:DWT ratio for all the main ship types and size ranges and these are listed in the table on the following pages. In determining the values, ships with no recorded DWT or with DWT of less than 200 tons have been excluded; certain ship types have been included for the sake of completeness but where it is considered that the GRT:DWT ratio is not meaningful, it has been placed in brackets. The table also gives the coefficients which have been established for converting GRT to CGRT. It is hoped that this table may be of some help to readers wishing to compare or compute information expressed in different units.

TONNAGE CONVERSION COEFFICIENTS

| VESSEL TYPE | MILLION GRT AT 1.7.80. | DWT COEFFICIENT | CGRT COEFFICIENT |
|---------------------------------------|---------------------------|--------------------|---------------------|
| <u>Crude Oil Tankers</u> (1) Total | 175.00 | (1.94) | - |
| 200 - 5,000 DWT | 3.24 | 1.66 | 3.00 (to 4,000 DWT) |
| 5 - 10,000 | 1.42 | 1.64 | 1.80 (4-10) |
| 10 - 25,000 | 8.83 | 1.56 | 0.65 (10-30) |
| 25 - 60,000 | 21.19 | 1.69 | 0.50 (30-50) |
| 60 - 80,000 | 22.37 | 1.87 | 0.45 (50-80) |
| 80 -150,000 | 29.91 | 1.93 | 0.40 (80-160) |

(1) Lloyd's Register does not distinguish between crude and product tankers: the second set of tonnage figures relate to tankers transporting other than oil or chemicals.

TONNAGE CONVERSION COEFFICIENTS (Contd)

| VESSEL TYPE | MILLION GRT AT 1.7.80 | DWT COEFFICIENT | CGRT COEFFICIENT |
|-------------------------------------|--------------------------|--------------------|--------------------------------|
| <u>Crude Oil Tankers</u> | | | |
| (1) Total (Contd) | | | |
| 150-250,000 | 21.08 | 2.02 | 0.35 (160-250) |
| Over 250,000 | 59.02 | 2.07 | 0.30 (over 250) |
| <u>Product(1) and other tankers</u> | | | |
| Total | 0.24 | (1.52) | - |
| 200-5000 DWT | 0.13 | 1.53 | 3.00 (to 4000 DWT) |
| 5-10,000 | 0.04 | 1.51 | 1.80 (4-10) |
| 10-30,000 | 0.08 | 1.51 | 0.80 |
| 30-50,000 | - | - | 0.80 |
| Over 50,000 | - | - | 0.50 |
| <u>Chemical Tankers</u> | | | |
| Total | 2.25 | (1.68) | - |
| 200-5000 DWT | 0.38 | 1.76 | 3.00 (to 4000 DWT) |
| 5-10,000 | 0.27 | 1.67 | 1.60 (4-10) |
| 10-25,000 | 0.45 | 1.65 | 1.00 (10-30) |
| 25-40,000 | 1.15 | 1.66 | 0.80 (Over 30) |
| <u>Liquefied Gas Carriers</u> | | | |
| Total | 7.39 | (1.04) | - |
| 200-5000 DWT | 0.50 | 1.08 | 3.00 (to 4000 DWT) |
| 5-10,000 | 0.27 | 1.21 | 1.60 (4-10) |
| 10-25,000 | 0.83 | 1.07 | LPG 1.00 LNG 0.90 (10-30) |
| 25-60,000 | 3.22 | 1.12 | LPG 0.80 LNG 0.70 (30-50) |
| Over 60,000 | 2.57 | 0.90 | LPG 0.80 LNG 0.50 (Over 50) |

(1) Lloyd's Register does not distinguish between crude and product tankers: the second set of tonnage figures relate to tankers transporting other than oil or chemicals.

ANNEX II to
C-M(82)10

-4-

TONNAGE CONVERSION COEFFICIENTS (Contd)

| VESSEL TYPE | MILLION GRT AT 1.7.80 | DWT COEFFICIENT | CGRT COEFFICIENT |
|-----------------------------|--------------------------|--------------------|----------------------|
| <u>Combination Carriers</u> | | | |
| Total | 26.24 | (1.85) | |
| Under 25,000 DWT | 0.22 | (0.80) | As for Crude tankers |
| 25-60,000 | 1.12 | 1.70 | 0.55 (30-50) |
| 60-100,000 | 5.74 | 1.80 | 0.50 (50-100) |
| 100-225,000 | 16.24 | 1.87 | 0.45 |
| Over 225,000 | 2.92 | 1.97 | 0.45 |
| <u>Dry Bulk Carriers</u> | | | |
| Total | 83.32 | (1.71) | - |
| 10-25,000 DWT | 20.51 | 1.58 | 0.60 (10-30)(1) |
| 25-60,000 | 42.53 | 1.69 | 0.50 (30-50) |
| 60-100,000 | 11.58 | 1.86 | 0.45 (50-100) |
| 100-175,000 | 8.70 | 1.91 | 0.40 |
| <u>General Cargo</u> | | | |
| Total | 81.22 | (1.44) | - |
| Single Deck | | | |
| 200-5000 DWT | 7.68 | 1.52 | 4.00 (to 4000 DWT) |
| 5-10,000 | 6.71 | 1.58 | 1.40 (4-10)(2) |
| 10-25,000 | 4.25 | 1.52 | 1.00(3) |
| Over 25,000 | 0.20 | 1.61 | 1.00(3) |
| Multi-Deck | | | |
| 200-5000 | 7.16 | 1.50 | 4.00 (to 4000 DWT) |
| 5-10,000 | 12.65 | 1.35 | 1.40 (4-10)(2) |
| 10-25,000 | 41.57 | 1.40 | 1.00(3) |
| Over 25,000 | 1.00 | 1.44 | 1.00(3) |

(1) 3.00 (to 4000 DWT); 1.80, (4-10)

(2) Reefers 2.0

(3) Reefers 1.4

TONNAGE CONVERSION COEFFICIENTS (Contd)

| VESSEL TYPE | MILLION GRT AT 1.7.80 | DWT COEFFICIENT | CGRT COEFFICIENT |
|----------------------------------|--------------------------|--------------------|-----------------------------|
| <u>Container ships</u> | | | |
| Total | 11.28 | (0.99) | - |
| 200-8000 DWT | 0.66 | 1.28 | 4.00 (to 4000 DWT) |
| 8-25,000 | 4.63 | 1.04 | 1.40 (4-10) 0.90 (10-30) |
| Over 25,000 | 5.98 | 0.93 | 0.80 (Over 30) |
| <u>Passenger/Cargo</u> | | | |
| Total | 1.31 | (0.81) | - |
| 200-5000 DWT | 0.57 | 0.61 | Not specified |
| 5-10,000 | 0.47 | 0.90 | |
| 10-18,000 | 0.27 | 1.08 | |
| <u>Ferries and Passenger</u> | | | |
| Total | 6.58 | 0.36 | - |
| 200-8000 | 5.81 | 0.34 | 2.50 |
| Over 8000 | 0.77 | 0.51 | |
| <u>Vehicle Carriers</u> | | | |
| Total | 1.84 | (1.09) | - |
| 200-5000 DWT | 0.11 | 1.02 | 4.00 (to 4000 DWT) |
| 5-10,000 | 0.41 | 0.97 | 2.00 (4-10) |
| 10-25,000 | 1.06 | 1.00 | 1.60 |
| Over 25,000 | 0.26 | 1.68 | 1.60 |
| <u>Barge Carriers</u> | | | |
| Total | 0.76 | (1.26) | - |
| Under 25,000 DWT | 0.05 | 0.91 | Not specified |
| Over 25,000 | 0.71 | 1.28 | - |

ANNEX II to
C-M(82)10

-6-

TONNAGE CONVERSION COEFFICIENTS (Contd)

| VESSEL TYPE | MILLION GRT AT 1.7.80 | DWT COEFFICIENT | CGRT COEFFICIENT |
|-------------------------------|--------------------------|--------------------|---------------------|
| <u>Livestock Carriers</u> | | | |
| Total | 0.28 | 1.33 | Not specified |
| Fish Factories | 3.60 | 0.85) | |
| Fishing Ships | 5.54 | (0.69) | |
| Supply Ships | 0.85 | (1.11) | Up to 2000 GRT |
| Tugs | 0.69 | (1.20) | 3.00 |
| Dredgers | 1.01 | (1.24) | |
| Icebreakers | 0.35 | (0.50) | Over 2000 GRT |
| Research Ships | 0.47 | (0.60) | 2.00 |
| Sundry non-trading | 2.22 | (1.17) | |
| World Total | 412.45 | (1.67) | - |

N A T O C O N F I D E N T I A L

ANNEX III to
C-M(82)10

TABLE 1

WARSAW PACT MERCHANT SHIPPING FLEETS (1st January 1981)
(tonnage in 1,000 DWT)

| | GENERAL CARGO(1) | | RO/RO (2) | | BULK CARRIER (3) | | TANKER(4) | | PASSENGER (5) | | RIVER CARGO (6) | | RIVER TANKER | | TOTAL | |
|--------------------|------------------|---------------|-----------|------------|------------------|--------------|------------|---------------|---------------|------------|-----------------|------------|--------------|------------|--------------|---------------|
| <u>USSR</u> | | | | | | | | | | | | | | | | |
| North(a) | 195 | 1,019 | 1 | 1 | 32 | 458 | 4 | 11 | 12 | 9 | 3 | 6 | - | - | 247 | 1,694 |
| Baltic | 290 | 2,000 | 27 | 201 | 12 | 108 | 563 | 1,105 | 20 | 47 | 256 | 629 | 45 | 225 | 713 | 4,315 |
| Black(b) | 377 | 3,489 | 17 | 180 | 60 | 1,225 | 225 | 6,280 | 56 | 161 | 77 | 225 | 36 | 111 | 848 | 11,671 |
| Pacific | 321 | 2,148 | 3 | 14 | 22 | 192 | 60 | 506 | 50 | 62 | 17 | 40 | - | - | 473 | 2,962 |
| USSR TOTAL | 1,183 | 8,656 | 48 | 396 | 126 | 1,983 | 352 | 7,902 | 138 | 279 | 353 | 900 | 81 | 336 | 2,281 | 20,452 |
| <u>NSWP</u> | | | | | | | | | | | | | | | | |
| Poland | 207 | 1,513 | 2 | 9 | 101 | 2,170 | 26 | 953 | 12 | 20 | - | - | - | - | 348 | 4,665 |
| GDR | 155 | 1,070 | 6 | 26 | 18 | 347 | 16 | 423 | 11 | 12 | 7 | 4 | - | - | 213 | 1,882 |
| Romania | 143 | 757 | - | - | 46 | 1,325 | 10 | 740 | 1 | 2 | - | - | - | - | 200 | 2,824 |
| Bulgaria | 60 | 352 | - | - | 33 | 611 | 22 | 663 | 11 | 30 | - | - | - | - | 126 | 1,656 |
| Hungary | 22 | 106 | - | - | - | - | - | - | - | - | - | - | - | - | 22 | 106 |
| CSSR | 12 | 57 | - | - | 5 | 128 | - | - | - | - | - | - | - | - | 17 | 185 |
| NSWP TOTAL | 599 | 3,855 | 8 | 35 | 203 | 4,581 | 74 | 2,778 | 35 | 64 | 7 | 4 | - | - | 926 | 11,318 |
| GRAND TOTAL | 1,782 | 12,513 | 56 | 431 | 329 | 6,564 | 426 | 10,681 | 173 | 343 | 360 | 904 | 81 | 336 | 3,207 | 31,770 |

- (a) Includes North Eastern Administration (Tiksi/Lena).
 (b) Includes Caspian.
- (1) Includes (374/1,984) container, (32/156) refrigerated and (2/76) barge vessels.
 (2) Includes (3/16) heavy lift ships.
 (3) Includes (43/266) bulk carriers with lift capability of 10 ton or more.
 (4) Includes (10/1,097) bulk/oil, (10/32) wine and bunkering tankers and (10/195) gas tankers.
 (5) Includes (26/58) ferries and (12/63) cargo training.
 (6) Includes only river ships engaged in open sea navigation. In addition the Soviet Merchant Fleet is supported by (7/30) chemical tankers, (40/92) Icebreakers, (195/45) tugs, (169/142) research and (50/38) support vessels.

N A T O C O N F I D E N T I A L

ANNEX III to
C-M(82)10

TABLE 2

WARSAW PACT FISHING FLEETS (1st January 1981)

(Units of over 100 GRT engaged in open sea operations)

(tonnage in 1,000 GRT)

| | TRAWLERS(1) | | FACTORY TRAWLERS(2) | | BASE SHIPS(3) | | TANKERS(4) | | MISCELLANEOUS(5) | | TOTAL | |
|-------------|-------------|-----|---------------------|-------|---------------|-------|------------|-----|------------------|-----|-------|-------|
| | No. | GRT | No. | GRT | No. | GRT | No. | GRT | No. | GRT | No. | GRT |
| <u>USSR</u> | | | | | | | | | | | | |
| North | 219 | 122 | 250 | 697 | 46 | 381 | 15 | 35 | 23 | 27 | 553 | 1,262 |
| Baltic | 499 | 197 | 299 | 959 | 206 | 955 | 24 | 51 | 43 | 40 | 1,071 | 2,168 |
| Black(6) | 123 | 68 | 166 | 504 | 135 | 435 | 9 | 20 | 33 | 40 | 466 | 1,067 |
| Pacific | 827 | 345 | 297 | 844 | 205 | 1,592 | 29 | 77 | 53 | 46 | 1,411 | 2,904 |
| USSR TOTAL | 1,668 | 732 | 1,012 | 2,970 | 592 | 3,363 | 77 | 183 | 152 | 153 | 3,501 | 7,401 |
| Poland | 221 | 70 | 101 | 241 | 10 | 72 | - | - | 11 | 14 | 343 | 338 |
| GDR | 103 | 44 | 16 | 53 | 9 | 54 | - | - | 4 | 3 | 132 | 154 |
| Romania | - | - | 42 | 127 | 9 | 69 | - | - | - | - | 56 | 196 |
| Bulgaria | - | - | 34 | 78 | 6 | 32 | - | - | - | - | 40 | 110 |
| NSWP TOTAL | 324 | 114 | 193 | 199 | 34 | 227 | - | - | 15 | 17 | 366 | 799 |
| GRAND TOTAL | 1,992 | 846 | 1,205 | 3,469 | 626 | 3,590 | 77 | 183 | 167 | 170 | 3,862 | 8,199 |

- (1) Includes trawlers, refrigerated trawlers, seiners and whale catchers of less than 1,000 GRT.
 (2) Includes fish factory trawlers and tuna clippers of more than 1,000 GRT.
 (3) Includes non-commercial breakbulk cargo, non-commercial refrigerated cargo, fish factory and base ships.
 (4) Includes tankers subordinate to the fishing fleet.
 (5) Includes training, research vessels and tugs subordinate to the fishing fleet.
 (6) Includes Caspian Sea Fleet.

NATO CONFIDENTIAL

ANNEX III to
C-M(82)10TABLE 3
FISH CATCH OF CMEA - 1975-1979*

| | 1975 | | | 1976 | | | 1977 | | | 1978 | | | 1979 | | |
|------------------------|----------------------|---------------------|--------------|----------------------|---------------------|--------------|----------------------|---------------------|--------------|----------------------|---------------------|--------------|----------------------|---------------------|--------------|
| | <u>Inland Waters</u> | <u>Marine Areas</u> | <u>Total</u> | <u>Inland Waters</u> | <u>Marine Areas</u> | <u>Total</u> | <u>Inland Waters</u> | <u>Marine Areas</u> | <u>Total</u> | <u>Inland Waters</u> | <u>Marine Areas</u> | <u>Total</u> | <u>Inland Waters</u> | <u>Marine Areas</u> | <u>Total</u> |
| Bulgaria | 7.8 | 150.3 | 158.1 | 7.9 | 159.2 | 167.1 | 9.1 | 128.9 | 138.0 | 8.6 | 92.5 | 101.1 | 10.9 | 78.6 | 89.5 |
| Czechoslovakia | 16.9 | - | 16.9 | 17.4 | - | 17.4 | 18.0 | - | 18.0 | 17.1 | - | 17.1 | 16.7 | - | 16.7 |
| GDR | 14.8 | 361.4 | 376.2 | 13.2 | 266.1 | 279.3 | 16.1 | 195.4 | 211.5 | 15.0 | 183.4 | 198.4 | 15.0 | 209.4 | 224.4 |
| Hungary | 30.8 | - | 30.8 | 31.9 | - | 31.9 | 34.7 | - | 34.7 | 32.6 | - | 32.6 | 32.8 | - | 32.8 |
| Poland | 23.3 | 777.4 | 800.7 | 23.8 | 726.3 | 750.1 | 26.2 | 628.6 | 654.8 | 21.4 | 550.0 | 571.4 | 20.1 | 581.0 | 601.1 |
| Romania | 46.8 | 89.9 | 136.6 | 50.3 | 76.9 | 127.2 | 54.9 | 95.8 | 150.7 | 45.9 | 91.8 | 137.7 | 49.6 | 129.5 | 179.1 |
| Eastern Europe (total) | 140.4 | 1,379.0 | 1,519.3 | 144.5 | 1,228.5 | 1,373.0 | 159.0 | 1,048.7 | 1,207.7 | 140.6 | 917.7 | 1,058.3 | 145.1 | 998.5 | 1,143.7 |
| USSR | 944 | 9,026 | 9,970 | 770.0 | 9,362.0 | 10,132.0 | 771.0 | 8,580.0 | 9,351.0 | 730.0 | 8,185.0 | 8,915.0 | 806.0 | 8,308.0 | 9,114.0 |
| Total CMEA | 1,084.4 | 10,405 | 11,489.3 | 914.5 | 10,590.5 | 11,505.0 | 930.0 | 9,628.7 | 10,558.7 | 870.6 | 9,102.7 | 9,973.3 | 951.1 | 9,306.5 | 10,257.7 |
| World Total | 7,193.0 | 59,294 | 66,487.0 | 7,113.0 | 62,757.0 | 69,870.0 | 7,364.0 | 61,806.0 | 69,170.0 | 7,127.0 | 63,421.0 | 70,548.0 | 7,480.0 | 63,807.0 | 71,287.0 |
| Share of CMEA % | 15.1 | 17.5 | 17.3 | 12.9 | 16.9 | 16.5 | 12.6 | 15.6 | 15.3 | 12.2 | 14.4 | 14.1 | 12.7 | 14.1 | 14.4 |
| Share of USSR % | 13.1 | 15.2 | 15.0 | 10.8 | 14.9 | 14.5 | 10.5 | 13.9 | 13.5 | 10.2 | 11.6 | 12.6 | 10.8 | 13.0 | 12.8 |

Based on figures given in 1979 FAO Yearbook of Fishery Statistics pp. 35, 43, 44, 46, 47, 49

* per '000 tonnes

NATO CONFIDENTIAL

N A T O C O N F I D E N T I A L

TABLE 4
FISH CATCH BY CMEA COUNTRIES IN THE WORLD OCEANS(1)
 1979*

ANNEX III to
AC/127-WP/648

| | NW Atlantic | NE Atlantic | WC Atlantic | EC Atlantic | SW Atlantic | Mediterranean & Black Sea | SE Atlantic | Atlantic Antarctic (2) | Western Indian Ocean | Eastern Indian Ocean | Indian Ocean Antarctic(2) | NW Pacific | NE Pacific | Western Central Pacific | Eastern Central Pacific |
|----------|----------------|----------------|----------------|----------------|----------------|------------------------------|----------------|------------------------------|----------------------------|----------------------------|------------------------------|---------------|---------------|-------------------------------|-------------------------------|
| Bulgaria | 9.6 | 14.4 | - | - | - | 15.1 | 27.1 | 3.4 | 1.8 | - | - | - | - | - | - |
| GDR | 11.5 | 118.6 | - | 42.6 | .4 | - | 31.2 | 37.5 | - | - | - | - | - | - | - |
| Poland | 24.5 | 203.5 | - | 67.7 | 73.9 | - | 112.6 | 406.1 | - | .2 | - | - | 64 | - | - |
| Romania | 2.4 | - | - | 45.5 | - | 7.6 | 73.9 | - | - | - | - | - | 0 | - | - |
| USSR | 125.2 | 1,933.3 | - | 526.0 | 2.2 | 315.9 | 850.7 | 452.0 | 11.8 | 13.4 | 32.3 | 3,267.5 | 2,102.6 | 8.8 | .1 |
| TOTAL | 173.2 | 2,269.8 | - | 681.8 | 76.5 | 338.6 | 1,095.5 | 899.0 | 12.6 | 13.6 | 32.3 | 3,267.5 | 2,166.6 | 8.8 | .1 |

Based on figures given in FAO yearbook 1979, pp 250, 253, 259, 262, 265, 268, 269, 272, 275, 276, 279, 281, 284 and 287

- (1) Excluding Czechoslovakia and Hungary
- (2) 1978-79 (total 12 months)
- * per annum '000 tonnes

N A T O C O N F I D E N T I A L