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ECONOMIC INTELLIGENCE REPORT

THE VOLUME AND CHARACTER OF SOVIET-FLAG CASPIAN SEA TRAFFIC



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THE VOLUME AND CHARACTER OF SOVIET-FLAG CASPIAN SEA TRAFFIC*

Summary and Conclusions

There are serious deficiencies in virtually all aspects of intelligence on Soviet merchant shipping operations in the Caspian Sea. The isolation of the area makes difficult the gathering of current intelligence, and basic studies of Soviet water transport pay little specific attention to Caspian Sea operations.

The Caspian fleet is estimated to total 119 ships of 320,929 gross registered tons (GRT) (excluding ships under 1,000 GRT). The fleet is generally obsolete, a large number of vessels being over 50 years old. Tankers account for 276,598 GRT, or about 86 percent of the total. Caspian Sea tanker operations are among the most important activities of the Soviet merchant marine. A recent series of defector reports have furnished much detailed intelligence on the fleets and their operations. According to those reports, there are three tanker fleets operating in the Caspian Sea and up the Volga River, comprising small- to moderate-size vessels (1,000 to about 6,000 GRT) which are either old or obsolescent. The more efficient units were built at the Krasnoye Sormovo Shipyard at Gor'kiy. Morale in the Caspian Sea merchant fleet appears to be low, and there is much criticism of working conditions. Certain basic precautions have been taken to expedite mobilization and defense measures in the event of war.

The fishing fleet is another important part of the Caspian Sea merchant fleet. The Ministry of Fishing Industry controls all operations. Included in the closely directed organization under the Ministry are fishing trusts, canneries, research, and maintenance. The fleet consists of small vessels about 5 to 30 meters in length. Some of these vessels have low-powered engines, while many depend on sails.

There are eight ports of importance on the Caspian Sea. The leading ones, in approximate order of importance, are Astrakhan', on the northwest coast; Baku and Makhachkala, on the west coast; and Krasnovodsk, on the east coast. Gur'yev, on the northeast coast, which is the next in importance, handles

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mainly local traffic, as do Derbent, on the west coast; Lenkoran', on the southwest coast; and Fort Shevchenko, on the east coast.

Caspian Sea merchant shipping accounts for a substantial part of all Soviet water-borne trade. Traffic in 1951, excluding the considerable volume of transshipments, is estimated at 24 million metric tons.

Petroleum accounts for about 75 percent of all Caspian Sea cargo tonnage. Oil moves to Astrakhan' from Baku, Krasnovodsk, and Makhachkala for transshipment up the Volga. Astrakhan' also is a processing center for the Caspian Sea fishing industry and is important for lumber and grain traffic. Baku is important primarily for export of oil, most of which goes to Astrakhan', and is the center for Soviet water-borne trade with Iran. Makhachkala also exports oil to Astrakhan' and is a producing center of industrial products for Central Asia. Krasnovodsk exports refined oil to Astrakhan' and receives crude oil in excess of refinery capacity at Baku for refining and reshipment. Krasnovodsk also exports cotton and imports goods consigned to Central Asia. Gur'yev handles fish and considerable oil traffic. Traffic through Derbent, Lenkoran', and Fort Shevchenko is miscellaneous in character, generally being confined to requirements of their respective areas. Other Caspian ports are primarily of local importance.

The trend in Caspian Sea traffic is likely to continue upward. Although development of the Bashkir oil fields, "the second Baku," may reduce the volume of Caspian Sea oil movements, the opening of the Volga-Don Canal, furnishing a water route between the Black Sea and areas now served by the Caspian fleet, will generate traffic in coal, ores, grain, and industrial products.

Caspian Sea merchant shipping is now of primary importance to the Soviet economy for the movement of oil, cotton, fish, grain, and timber. The volume of traffic approaches that of the Soviet-flag ocean fleet, despite the fact that the ocean fleet is over six times as large. Without the Caspian route it is doubtful that the oil reserves of the Baku region ever could have made their contribution to the general economic development of the USSR and especially to the all-important Stalingrad-Leningrad-Moscow triangle area.

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I. Introduction.

Intelligence on the Soviet-flag Caspian Sea merchant fleet is poor, and little organized data on the subject can be found. The fact that the fleet operates virtually within the USSR and that traffic with Iran, the only other country bordering on the Caspian Sea, is of little consequence practically insures the security of the fleet from Western surveillance. Because of the nature of Caspian Sea trade, moreover, Western mercantile interests, normally a source of current shipping intelligence, have little information. The principal sources for such information are the coverage provided by the Foreign Broadcast Intelligence Service (FBIS) and by the reading of Soviet publications. These data are, however, extremely fragmentary. Basic studies of Soviet inland water operations concentrate on river and canal traffic and pay little attention to the Caspian Sea.

II. Caspian Sea Merchant Fleet.

A. Size and Quality.

1. Size.

Some information on the size of the Caspian Sea merchant fleet is contained in a survey of the Soviet merchant marine made early in 1949, indicating 119 ships of over 1,000 gross registered tons (GRT) totaling 320,929 GRT. 1/* There probably has been no appreciable change since 1949. The composition of the fleet is shown in Table 1.

Table 1

The Soviet-flag Caspian Sea Merchant Fleet 2/
(Self-propelled Vessels over 1,000 GRT)
(Data as of 1949)

<u>Type of Vessel</u>	<u>Number of Vessels</u>	<u>GRT</u>
Passenger	7	8,988
Passenger-cargo	7	11,004
Cargo	13	24,339
Tanker	92	276,598
Total	<u>119</u>	<u>320,929</u>

* Footnote references in arabic numerals are to sources listed in Appendix C.

Caspian Sea cargo ships average 1,900 GRT; passenger ships, about 1,300 GRT; and tankers, 3,000 GRT; and a number of tankers are of the 6,000-GRT Gor'kiy type. 3/ Of the total merchant fleet of 119 ships, 78 are from 1,000 to 2,000 GRT; 24, from 2,000 to 4,000 GRT; and 17, over 4,000 GRT. None of the 119 ships is known to be over 6,280 GRT, and only 29 are known to be from 4,000 to 6,000 GRT. (There are, however, unconfirmed reports of "10,000 to 15,000 ton tankers" in the Caspian Sea.)

The small size and draft of most of the merchant fleet permit operations in the many shallow channels and harbors of the Caspian Sea. Despite their shallow draft, however, Caspian tankers cannot proceed up the Volga River but must discharge their cargoes at the Astrakhan' roadstead.

2. Quality.

Information is available on the age of 69 vessels of the Caspian Sea merchant fleet. Of this number, 31 are over 50 years old and 38 were built since 1930, although approximately half of these are at least 10 years old. Data on the speed of 58 ships indicate that the fleet as a whole is slow. Of the 58, 24 are in the 9- to 10-knot category, 14 are in the 11- to 12-knot category, and only 2 are capable of as much as 13 knots.

Table 2

Estimated Speed of Typical Caspian Sea Merchant Vessels 4/
(Self-propelled Vessels over 1,000 GRT)
(Data as of 1949)

<u>Knots</u>	<u>Number of Vessels</u>
13 to 14	2
12 to 13	5
11 to 12	14
10 to 11	1
9 to 10	24
8 to 9	10
7 to 8	2
Total	58

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3. Tanker Fleet.

The tanker fleet is one of the most important segments of the Soviet merchant marine. Although additional details are needed, a recent report has given much new information on Caspian Sea tanker operations. 5/ The report sharply reduces present estimates as to the size of the fleet and may be in error, but it is of considerable interest because of its technical and operating data. The report states that three companies participate in petroleum shipments in the Caspian-Volga region, as follows:

a. The Caspian State Petroleum Steamship Company (Kaspiyskoye Gosudarstvennoye Neftenalivnoye Parokhodstvo), known as "Kasptanker."

b. The Astrakhan' State Roadsteads Petroleum Steamship Company (Astrakhanskoye Gosudarstvennoye Reydovoye Neftenalivnoye Parokhodstvo), known as "Reydtanker."

c. The Volga State Petroleum Steamship Company (Volzhskoye Gosudarstvennoye Neftenalivnoye Parokhodstvo), known as "Volgotanker."

The Kasptanker fleet has 20 old tankers and 12 modern tankers, which operate only on the Caspian Sea and do not go up the Volga. No new tankers have been added to the fleet since the 1930's except perhaps one or two small units received as reparations from Germany. The 12 modern ships are large diesel tankers (bol'shegruznyye teplokhody) built during 1930-35 in the Krasnoye Sormovo Shipyard (now called Zavod imeni Zhdanov) at Or'kiy. They are about 6,000 GRT each, equipped with two compressor-type AN (Maschinenfabrik Augsburg-Nuernberg) diesel engines of 1,400 horsepower (hp), making a total of 2,800 hp per vessel. These engines operate at 110 to 120 revolutions per minute (rpm) and use a mixed fuel of diesel oil and solar oil (solyarka). When loaded, they have a speed of about 11 knots; when empty, with water ballast, their speed is about 13 knots. They have been in operation for only 15 to 20 years, and the hulls are still in excellent shape. The engines, however, have been exposed to considerable wear and are no longer as good as the hulls. In 1917 the 20 old tankers were taken over by the USSR from a Swedish concern, the Nobel Petroleum Steamship Company. They vary between 1,000 and 2,700 GRT. Built around 1900, most of them are equipped with 750- to 1,500-hp steam engines. They use either boiler oil or heavy fuel oil (topochnyy mazut). When loaded,

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these tankers have a speed of about 7 knots; when empty, about 9 knots. The hulls and boilers are in poor shape, but the engines are still fair. As far as is known, there have been no recent changes in Kasptanker pumping equipment. The large tankers are equipped with two Cameron diesel pumps with a total pumping capacity of 800 to 1,000 metric tons per hour, and the smaller tankers are equipped with pumps of lower capacities.

Kasptanker has no self-propelled barges, and tankers are never used to tow barges. The company has a few old ships with engines removed which are used as barges and towed by the few towboats* in the company's fleet. 6/

Maintenance and repairs on vessels of Kasptanker are carried out mostly at the Zakavkazskaya Federatsiya Ship Repair Yard and partly at another shipyard, Parizhskaya Kommuna, both located in Baku. Each tanker is scheduled for maintenance and repair during the winter months. Emergency repairs, which are rather frequent, are made when required. 7/

the fleet of Reydtanker is composed of towboats and barges. 8/ These barge trains operate only from the roadstead, not in the Caspian Sea itself. There are 22 towboats in the fleet. Four are paddle-wheel types, over 50 years old, acquired from the Nobel Company. They have compound steam engines, of some 400 hp, and are reported to be able to tow one barge of 5,000 deadweight tons (DWT) against the current at a speed of 2 knots. (US experience casts doubt on all performance data reported by this defector.) Downstream, with an empty barge, they can make 6 knots. The hulls and boilers are in poor condition, but the engines are still usable. A second group is made up of 11 propeller-and-wheel units, built between 1934 and 1935 in the Krasnoye Sormovo Shipyard. Most of them are equipped with two MAN diesel engines, each developing 450 hp at 235 rpm. Upstream, these tugs are said to be able to tow two 5,000-DWT barges at 2.5 knots; downstream, with empty barges, they can go 9 knots. They use a mixed fuel of diesel and solar oil. All their hulls and engines are in good condition. The remaining seven are modern towboats, all in excellent condition, using a mixture of diesel and solar oil. One is an ex-German vessel, received as reparations, which has two Deutz diesel engines, each of 550 hp at 350 rpm. It can tow a 12,000-metric-ton load (two 5,000-DWT

* As used in this report, towboat is synonymous with tug. Tugs are used in harbor or short-haul operations, whereas towboats are used for long hauls.

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barges and one 2,000-DWT barge) at 2 knots upstream and 9 knots downstream. Four of the ships in this group were built in 1950-51 in the Krasnoarmeysk Shipyard and in the Krasnoye Sormovo Shipyard. All are equipped with two diesel engines, of the adapted Washington-type engine (US Lend-Lease), are of 300 hp, and operate at some 300 rpm. Upstream they can tow one 5,000-DWT barge at 3 knots; downstream their speed is 10 knots. Two of the seven towboats were built in 1950-51 in the Riga Shipyard and are equipped with one diesel engine of the adapted Washington type, with 500 hp at 250 rpm. They can tow one 5,000-DWT barge upstream at 2.5 knots; downstream, their speed is 9 knots. (In 1950, six towboats, equipped with 500-hp Washington diesel engines, were taken away from Reydtanker and given to "Kasplesosplav," a lumber company which specializes in floating timber down the Volga River to Baku.) Reydtanker has about 40 barges in its fleet.

There are 10 old barges, built before the Russian Revolution, which are about 40 or 50 years old. Most of them have a capacity of about 3,000 metric tons and are in poor shape. Some 15 barges built in the 1930's, each with a capacity of 4,560 metric tons, are in fair condition. About 15 barges, each of 5,000-DWT, built between 1948 and 1951, are in excellent condition. There is one 800-GRT self-propelled barge, received as reparations from Germany, equipped with a 500-hp diesel engine. It has a speed of 6 knots upstream when loaded.

Annual repairs of Reydtanker barges and tugs are made in the Tenth Anniversary of the October Revolution Ship Repair Yard (Korable-remontnyy Zavod Desyatoy Godovshchiny Oktyabr'skoy Revolyutsii) at Astrakhan'. Tugs are repaired according to the same schedule as tankers. Occasionally tugs are also taken to the Ship Repair Shop No. 55 in Astrakhan'.

The fleet of Volgotanker consists of some 28 towboats and about 100 barges. Towboats fall into three different groups. There are some 10 paddle-wheel units with steam engines ranging from 400 to 1,200 hp, all about 50 years old. It is reported that a 1,200-hp towboat can tow a load of 12,000 metric tons; a 400-hp towboat, 5,000 metric tons. (These performances are considerably above US experience and are doubtful.) The speed of these boats going upstream is about 2 knots when loaded; the speed downstream, with empty barges, is about 6 to 8 knots. Their engines use heavy fuel oil. The hulls and boilers are in poor shape, but the engines are still good. Some 10 are paddle-wheel tugs, built in the 1930's, equipped with two MAN diesel engines manufactured at the Krasnoye Sormovo Shipyard. The two engines of these tugs develop 900 to 1,000 hp. They can tow a load of 10,000 metric tons. When loaded, their upstream speed is 2.5 to 3 knots; downstream, with empty

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barges, the speed is 10 knots. They use a mixture of diesel and solar oil. All these tugs are in good shape in respect to both engines and hulls. There are about eight propeller tugs, built between 1948 and 1950 in the Krasnoye Sormovo Shipyard, each with two Washington diesel engines of 600 hp, making a total of 1,200 hp per vessel. Upstream they are said to tow one loaded 5,000-DWT barge at 3 to 4 knots; downstream, with an empty barge, their speed is 10 to 11 knots. These tugs are also in excellent condition.

Volgotanker has about 100 steel oil barges of 3 types. Some are the Kolomenka type, old barges from prerevolutionary times with a capacity from 1,500 to 3,500 metric tons. The Sormovo-type barges were built in the Krasnoye Sormovo Shipyard about 1926-30. They have load capacities varying from 4,000 to 12,000 metric tons. Most of them, however, are in the 4,000-, 5,000-, and 7,000-DWT class. Only five or six of these barges are in the 10,000- and 12,000-DWT class. One type in particular, the Mordovshchik type, is a 5,000-DWT barge, built after the war in the Mordovshchikovo Shipyard in Gor'kiy Oblast and mainly used for transporting gasoline. Their hulls are painted silver and have on both sides an inscription in bold capital letters which means, "Danger, Highly Inflammable."

Volgotanker also has two or three self-propelled barges of 600 to 800 GRT received as reparations from Germany. These are equipped with one 500-hp diesel engine and have a speed of 3 knots upstream when loaded and 8 knots empty when going downstream. Repairs for Volgotanker are made in three ship repair yards in Astrakhan' which belong to the company.

Towboats and self-propelled barges are repaired mostly in the Lenin Ship Repair Yard, although some are repaired in the Stalin Ship Repair Yard. Barges and pumps are repaired in the Third International Ship Repair Yard.

It is believed that except for the few original Washington diesel engines received under Lend-Lease during World War II, all diesel engines used on tankers in the Caspian Sea region were built at the Krasnoye Sormovo Shipyard.

In general, the morale of Caspian Sea vessel crews is low. Crews refer to tankers and petroleum barges as "floating prisons" and try to get jobs on shore. 9/ Reasons for dissatisfaction cover every aspect of life on ships: hard work, short layovers in port (only 4 to 5 hours), low wages, and poor crew accommodations. Food supplies are poorly organized, and authorities are accused of widespread pilferage of foodstuffs.

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Certain defense and mobilization measures have been carried out in all three petroleum shipping companies. In 1949 the "War Emergency Alert" (Raspizaniye Boyevoy Trevozi), an unclassified directive, was distributed to all three shipping companies to outline duties of each member of a crew in case of an alert for war. Main points covered by the directive were as follows:

a. Crews must be organized and trained to man antiaircraft machine guns. (These weapons, however, had not been received up to early 1951.)

b. To reduce danger of fire, all wooden boards covering steel decks of tugs in peacetime must be removed by crews specially appointed for this purpose.

c. Speed-limit governors must be removed by the chief mechanic of all ships having such devices. (Tugs and tankers built in 1949 and later normally have governors limiting speed to about 11 knots. Their removal, punishable in peacetime by 8 years of hard labor according to maritime law, would increase the speed of the vessels to about 15 knots.)

Other innovations have military significance. For example, tugs and barges built since 1948 have practically no wooden parts except the captain's bridge, and all tankers and barges are built with compartments. (A 5,000-DWT barge has approximately 18 to 20 compartments.)

4. Fishing Fleet.

Caspian Sea fishing operations are of considerable importance to the USSR for two reasons. First, the Caspian Sea contains one of the richest fishing grounds of the USSR, being the source of about 20 percent of the total Soviet catch. ^{10/} The fishing fleet, furthermore, is an important part of the Caspian fleet. A detailed survey of the fleet and its current operations is contained in a report. ^{11/} According to that report, the Ministry of Fishing Industry is the controlling organization for all aspects of the Caspian Sea fishing. The Chief Directorate of Caspian Fishing Industries (known as "Glavkasprybprom") is subordinate to the Ministry of Fishing Industry (known as "Minrybprom"). This directorate is located in Astrakhan' and is responsible for fishing and fish-processing operations in the region. The Chief Directorate is made up of two fishing trusts, as well as canneries, motorized fishing stations (MRS), and construction and repair yards for fishing craft. (In addition, the Chief Directorate controls a scientific

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research center specializing in the fauna of the Caspian Sea and the Volga River.) The two trusts are called the Volga-Caspian Fishing Trust (known as "Volgakaspogosrybtrest") and the Ural-Caspian Fishing Trust (known as "Uralkaspogosrybtrest"). Both are located in Astrakhan', but during the fishing season the field office of the Ural-Caspian Fishing Trust is moved to Ganyushkino on the coast, some 80 kilometers east of Astrakhan'. The trusts are broken down into fishing kolkhozes and fish-processing plants (rybozavody). The latter are mostly floating installations, although some plants are on shore, where the catch is cleaned, salted, and smoked. Floating fish-processing plants are installed on double-deck wooden barges 100 meters long, 15 meters wide, and 10 meters above the waterline. They are not self-propelled but must be towed from one location to another.

The fishing fleets of both trusts may be divided into two operational groups: the river fleets and the sea, or saltwater, fleets. The river fleet of the Volga-Caspian Fishing Trust is stationed along all the branches of the Volga River from Astrakhan' to Olya, at the southern end of the delta extending into the sea. All settlements in this area are fishing kolkhozes. The budarki, or fishing boats, form the main component of the river fleet. These budarki are about 5 meters long, usually equipped with oars and occasionally with sails. A few motorboats are assigned by the motorized fishing stations (MRS) to the fishing kolkhozes. These boats are of an older type, with 15-hp Balinger engines, using crude oil. The river fleet has also about 100 motor launches, manufactured in the Kirov shipyard in Astrakhan'. These craft, made of steel plate, are about 15 meters long and 3 meters wide. They have a speed of 4 to 5 knots. A newer model has a speed of about 6 knots. The medium-sized trawler (SRT) used in the Far East and in the Murmansk area does not operate in the Caspian Sea.

The saltwater fishing fleet operating in the Caspian Sea up to Astrakhan' has the same types of craft as the river fishing fleet, and several others in addition. Around Astrakhan' there are about 40 small wooden seiners of 70 to 80 GRT with square sterns. They are 30 meters long and 6 meters wide and use combined sail and motor propulsion; the engines are the Balinger type, reported to be of 35 to 40 hp, with a speed of about 2 knots. Their crews consist of about 10 men. Since 1949, some new wooden seiners of the same size have been added to the fleet. These have the conventional sloping stern and two masts and are equipped with diesel engines or with tractor engines operating on kerosene, which gives them speeds of about 4 knots. Their crews consist of 10 to 12 men.

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The saltwater fishing fleet also has more wheel-type tugs, all 40 to 50 years old. They vary in size from 20 to 40 meters in length and have 100- to 200-hp engines and a speed of some 4 knots. They burn heavy fuel oil and have crews of 25 men. The largest tug is the 40-year-old Tkach Petr Alekseyev, with a 400-hp steam engine. It is a wheel-type tug 50 meters long and 10 meters wide and makes about 5 knots. Its crew consists of 25 men. This tug, and most of the others, has a two-way radio station, equipped with P-1 type receivers, using Morse code but no cipher. There is an entertainment ship (kultparokhod), the Iosif Stalin, which travels among the fish-processing plants with a library and a cinema. It is a former Volga River passenger vessel with two decks. The only real ice-breaker in the fishing fleet is the 40-year-old Sergo Ordzhonikidze, which belong to the Chief Directorate of Caspian Fishing Industries. It is 60 meters long and 10 meters wide and has two propellers and two 200-hp steam engines. It is not a reliable ship and requires frequent repairs. In addition, two modified tugs of the V'yuga type are sometimes used as ice-breakers. Each has a steel belt 3 to 4 feet wide and about 0.30 to 0.40 inch thick all around the ship's body to permit operation as icebreakers. These tugs have diesel engines and can make 6 knots. They belong to another organization, the Directorate of Roadsteads Technical Fleet (known as "Reydtekhflot"), and they may be either Lend-Lease vessels or reparations from Germany.

The repair and construction facilities of the Directorate of Roadsteads Technical Fleet consist of the Kirov Shipyard and several repair bases for seiners. This shipyard also builds for the fleet about two motorboats a month of the type described above. Most of them are for the Chief Directorate of Caspian Fishing Industries, although at times such boats are sold to other organizations. The engines are not manufactured in this yard but probably come from the Krasnoye Sormovo Diesel Plant or some other place on the Volga. The Chief Directorate has its own airfield in Astrakhan' and about five UT-2 type airplanes, used primarily for air reconnaissance to locate schools of fish or stranded fishing craft. In special cases the aircraft serve for liaison between agencies of the directorate.

Fishing is done by dragging nets between two motorboats. The catch is loaded into smaller boats and taken to the fish-processing plants installed on barges. Around the mouth of the Volga, two 900-hp tugs are used to collect and tow the small fishing boats (budarki). At times, 100 to 150 of these boats are taken in one tow by one of these tugs.

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The fishing fleet operates from April to June and from August to November. (The summer period is closed for spawning, and the winter period is closed by ice, rendering navigation impossible.) Four thousand to five thousand people work in the fishing fleets, not counting those employed in the kolkhozes. The norms of the fishermen are set so high that in the fall the crews must carry on their work into the winter season. The result is that many small fishing boats of the budarka type are lost. At the end of the fishing season, about half the tugs belonging to Reydtanker are engaged in rescue operations and in towing the floating fish-processing plants into the harbors.

B. Capacity.

The Soviet Caspian Sea merchant fleet has an estimated aggregate cargo capacity of 400,000 metric tons, of which about 80 percent is petroleum or petroleum products. No organized information is available on the ton-kilometer potential of the fleet, but because it operates within a relatively small, closed area and is highly specialized in the transport of bulk cargoes (oil, grain, fish, and such), vessel utilization is considerably above the Soviet-flag ocean fleet average (operations of ore and grain fleets of the US-Canadian Great Lakes bear some similarity).

III. Caspian Sea Ports.

The Caspian Sea is well supplied with ports on all shores. There are at least eight ports, in addition to a number of anchorages and landing places where cargoes can be handled. Cargo capacity and commodities handled by the main ports of the Caspian Sea are shown in Table 3.*

Astrakhan', on the northwest coast, is the leading port for Caspian Sea traffic. It is located on the left bank of the Volga and extends for several miles along the river. Although closed by ice for about 150 days during the winter, it is the principal river port in the USSR. Furthermore, if traffic passing through the roadstead in the Volga delta below the city is included, Astrakhan' ranks first among all Soviet ports in volume of traffic.

The present status of Astrakhan' port facilities is not known, but they are reported to have been rebuilt since the end of the war and by 1946 were reported to be 76 percent mechanized. 15**

* Table 3 follows on p. 13.

** Despite wide Soviet use of such expressions as "mechanized operations," their exact meaning is not clear.

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Table 3

Soviet Caspian Sea Ports:
Estimated Capacities and Major Commodities Handled a/

<u>Port</u>	<u>Cargo-handling Capacity b/ 12/ (Long Tons)</u>	<u>Imports 13/</u>	<u>Exports 14/</u>
Astrakhan'	6,200	Oil,* fish,* salt, grain	Lumber,* grain, machinery, fish*
Makhachkala	3,250	Oil,* cotton, fish, chemicals	Oil,* fish, grain, machinery
Derbent	500	Cotton,* wool	Fertilizer, agricultural products, lumber, fish
Baku	6,000	Foodstuffs, lumber	Textiles, sugar, lumber, oil,* industrial equipment
Lenkoran'	500	N.A.	Lumber, fish
Krasnovodsk	2,200	Manufactures, crude oil*	Crude and refined oil,* cotton, chemicals
Fort Shevchenko	500	N.A.	Fish,* coal, manganese, oil
Gur'yev	2,200	Industrial equipment, lumber*	Oil,* fish*

- a. Major items of traffic are designated by an asterisk.
b. Estimated on the basis of 100 long tons of military cargo per ship hatch per 20-hour day; the alternate capacity for general commercial cargo is somewhat lower. Oil-handling capacity is not included.

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There are in the port and at the roadstead major storage facilities for oil and other cargoes awaiting either transshipment or the opening of the Volga to traffic.

Astrakhan' has the largest oil storage facilities of the Caspian ports. They all belong to the Main Oil Distribution Agency (known as "Glavneft'sbyt"). The following information on these facilities. 16/

There is one oil storage area near the Kirov Shipyard. Dark-oil products such as lubricants and diesel oil are stored there in about eight tanks, 15 to 20 meters in diameter and 30 meters high. Another area, Oil Storage Area (Neftebaza) No. 8, is for storage of all oil products and serves as a POL supply point for the ships of Volgotanker, Reydtanker, and all other shipping companies and for the shore installations and many plants and factories in Astrakhan'. There are about 10 or 12 tanks 50 meters high. This area is provided with permanent steam pumps for piping oil from barges into tanks. Oil Storage Area No. 5 is close to the Lenin Ship Repair Yard. It is used for dark-oil products and kerosene. Equipment consists of about 20 tanks, 50 meters in diameter and 50 meters high, and stationary steam pumps for the transfer of oil. Floating pumps installed on barges also are used when necessary. Oil Storage Area No. 6 is located close to the Third International Ship Repair Yard. This storage area belongs to Volgotanker. It is used for the storage of dark-oil products and consists of some 10 tanks, 50 meters in diameter and 50 meters high. No stationary pumps are available at this area, and all oil transfer is done by pumps on barges. The No. 6 area is the largest POL storage in Astrakhan'. 17/ It is used for storage of all POL products, both dark and pale, except gasoline and Tuymaz crude oil. This installation has stationary pumps and about 50 tanks, half of them 50 by 50 meters, the rest about 30 by 30 meters. Oil Storage Area No. 4, on the east bank of the Volga, is used exclusively for gasoline storage. It is equipped with about 10 tanks, 50 by 50 meters, painted silver. These are the only tanks in Astrakhan' that are painted silver. No stationary pumps are available, and only floating pumps are used. Another oil storage area, referred to as Bertyul' is used only for dark-oil products and is equipped with three tanks, each 30 by 30 meters.

In addition to these tank storage areas there are several open storages for oil products (neftyanaya yama) in Astrakhan'. 18/ These are actually reservoirs dug in the ground, lined with brick, and 5 to 8 meters deep. Some of them are round, about 100 meters in diameter; others are square and about 100 by 100 meters. Several other open storages are located close to the village of Bashmakovka. Two more open storages are located between those

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near Bashmakovka and Oil Storage Area No. 4. All these open storages are used periodically when there is no space available in tanks at Astrakhan'. Two other open storages, located close to the Tenth Anniversary of the October Revolution Ship Repair Yard are no longer used, and even the bricks of the facing have been removed.

It is reported that some oil storage facilities in Astrakhan' have been expanded since 1950 by construction of several additional tanks in each area. Special attention was paid to Oil Storage Area No. 4, which was carefully camouflaged. 19/ Cargo-handling capacity of the port proper is estimated to be 6,200 long tons per day, excluding oil cargoes. 20/ To this substantial figure must be added the capacity of the roadstead facilities. Capacity data for these roadstead facilities are not available, but the roadstead capacity for handling general dry cargo and bulk cargoes such as grain and coal is believed to be at least equal to that of the port proper, and probably much greater. Capacity for oil cargo-handling and for storage facilities is almost certainly much greater at the roadstead than at the port. Port clearance facilities are estimated to be only fair. This situation apparently does not pose a serious problem, however, since the major part of the port traffic is transhipped directly to barges or other vessels.

Baku is next in importance to Astrakhan' among Caspian Sea ports. Located on the west coast about 150 miles north of the Iranian border, Baku is the traditional center of the Soviet petroleum industry but is being rivalled by the Bashkir region. The port suffered only minor war damage, which is believed to have been fully repaired. Baku ranks as a major port not only for its petroleum traffic but also for its general trade. For example, the small volume of Soviet water-borne trade with Iran is centered in Baku. The capacity of the port for handling general cargo is estimated to be 6,000 long tons a day. 21/ Capacity of the port for handling oil cargoes is not known but is obviously much larger than the capacity for general cargo. One report states that there are about 430 storage tanks ranging from 10,000 to 30,000 barrels each. 22/ Oil is loaded and unloaded by means of wooden piers carrying pipelines for pumping cargoes directly into tankers and barges or for discharging cargoes of oil brought from other areas to Baku for refining. 23/ There is unlimited anchorage in the harbor, and, unlike Astrakhan', Baku is not closed by ice during the winter. Adequate rail and road facilities exist for clearing the port. A double-track rail line runs from Baku to Makhachkala, then northwest to Rostov to connect with the general rail system. The opening of the Volga-Don Canal (officially named the V.I. Lenin Volga-Don Ship Canal), furnishing an alternative, though longer, east-west route, may somewhat effect the importance of Baku. There is little reason, however, to forecast any significant decline in the volume of traffic through the port.

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On the contrary, it is possible that continued industrial and agricultural development of the Central Asian area east of the Caspian Sea may increase the volume of traffic through Baku. Development of supplemental oil-handling facilities reported to be under way at Apsheronkiy on the peninsula nearby also will increase the importance of the Baku area for oil transport.

Makhachkala, also on the west coast, about 200 miles north of Baku, is the third largest Caspian port. Part of the moles and quays of the harbor of Makhachkala were destroyed during the war. On the whole, however, the damage was repaired by the end of 1947, and buoyage and lighting facilities of the harbor had been reconditioned by that time. The lighthouses on the mole heads seemed to be in operation after 1948. 24/ Depth of water was estimated at between 5 and 6 meters. Merchant shipping, which was only moderate as late as 1947, increased in 1948. An average of 30 to 40 ships was observed in ports at one time in 1948, moored at various berths of the quays and moles. 25/ Most vessels calling at the port sail under the Soviet flag, but some are Iranian ships. Pilotage is compulsory for practically all ships entering harbor. Makhachkala is a transit depot for oil products from the Baku and Groznyy fields as well as an important port for grain, cotton, and general cargo. It has oil storage areas of considerable capacity. The storage area is reported to be equipped with stationary steam pumps of total capacity of about 400 tons per hour. 26/ In 1942 there were about 20 tanks, 50 by 50 meters. In view of a report that in 1950 Reydtanker started carrying Tuymazy crude oil down the Volga to Makhachkala to be refined, it seems probable that oil storage facilities in Makhachkala have increased since 1942.

One unconfirmed report, covering the years from 1945 to 1948, stated that docking facilities at the oil harbor consisted of one pier 100 meters long and 10 meters wide which could accommodate two tankers simultaneously. Incoming tankers unloaded oil from Baku into pipelines leading directly to an oil-storage area where oil was stored either to be shipped later by rail to Rostov or the Makhachkala refinery or to be used to refuel Caspian freighters (it was estimated that an average of four 5,000- to 6,000-GRT tankers and one larger tanker put in at the oil harbor weekly). At the fishing harbor, schooners and trawlers unloaded their catch, which consisted chiefly of herrings and seals. Herrings were salted and shipped out in drums; seals, used for industrial purposes, were shipped without processing of any kind. Just south of the fishing harbor was a quay served by a special railroad spur where sulfide shipped in from the salt deposits at Kara-Bogaz-Gol was unloaded. It was then shipped by rail to various chemical plants in the USSR. 27/ In

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addition to the traffic in oil and fish, about five freighters of 2,000 to 3,000 GRT were reported to put in daily. Passenger traffic at Makhachkala appears to be negligible. The port has received considerable attention in recent years, having been largely rebuilt and modernized. According to Soviet sources, the port is now well equipped with modern freight-handling equipment, including portal, caterpillar, and railroad cranes and new loading machines of Soviet and foreign manufacture. In 1950, mechanical cargo-handling in the port reached 90.5 percent,* and special equipment was built for unloading cotton. So-called "fast methods" are used for handling most ships. 28/ Despite this modernization, Soviet technical journals report that Makhachkala does not yet have enough piers and is not sufficiently mechanized. 29/ Organization of the port is criticized in the Soviet press and official technical journals, and in the spring of 1950 the port administration was sharply criticized for inefficiency and idleness. 30/ Present capacity of the port for general cargo is estimated to be 3,250 long tons a day. 31/ Capacity for handling petroleum, though unknown, is undoubtedly much greater than that for general cargo. The reported prewar (1938) handling capacity of 100,000 metric tons of oil daily is believed to have been greatly exaggerated. 32/ (The figure is roughly equal to the entire output of the Soviet petroleum industry.) The port is on the main rail line between Baku and Rostov, and rail facilities are believed to be adequate to care for the general cargo capacity of the port. Its oil-handling capacity by rail is unknown. Highway facilities are poor, and oil traffic moves largely by water or pipeline.

Krasnovodsk, the leading port on the east coast, is important for the import of crude oil from Baku and the export of refined oil products. The port has considerable oil storage facilities. In 1944 there were two oil storage areas in the vicinity of Krasnovodsk. The first was about 8 kilometers south of the city, at Ufra, referred to as Ufrinskaya Neftebaza (Ufra Oil Base). There were 5 or 6 tanks, 35 by 35 meters, used for the storage of dark-oil products. The second storage area of the same capacity was located in the northern part of Krasnovodsk, close to the ship repair plant. 33/

Krasnovodsk is a key port in Soviet planning for Central Asia and will become of greater importance upon completion of the Turkmen Canal, the Caspian Sea, terminus of which will be in the vicinity. That project already is having considerable effect on port operations at Krasnovodsk, as freight

* As in other Soviet data on port mechanization, the base data for this figure is not indicated.

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traffic in 1951 is reported to have exceeded the planned figure by 26 percent and was well above the average performance for all Soviet ports. 34/ The capacity of the port for handling general cargo is estimated to be only 2,200 long tons a day. 35/ Oil-handling capacity is not known, but is certainly much larger than that for general cargo. The Trans-Caspian Railroad serves Krasnovodsk, and facilities are believed to be at least adequate for present traffic.

Gur'yev, at the mouth of the Ural River, on the northeast coast, is a major port for the Caspian Sea fishing industry and also is important for oil cargoes bound for Astrakhan' from the Emba oil fields. There are major oil storage facilities in Gur'yev. There is reported to be a storage area in the western part of Bol-shoy Peshnoy Island, referred to as the oil storage area for Plant 441 in Gur'yev. This installation belongs to the Main Oil Distribution Agency (known as "Glavneft'sbyt") through its subsidiary, East Oil (known as "Vostokneft"). These storage facilities are used mainly for gas oil and are equipped with some 15 tanks, 35 by 35 meters. There are several stationary steam pumps for the transfer of oil products from barges into tanks. Total pump capacity is about 200 metric tons per hour. In addition, there are several steam pumps for conveying oil from barges through a 35-centimeter pipeline to Plant 441 in Gur'yev. This pipeline, laid on the bottom of the sea, is 25 to 30 kilometers long. 36/ The general cargo capacity of the port is estimated to be 2,200 long tons a day. 37/ Petroleum-handling capacity is unknown. The port is served by the Gur'yev-Kandagach rail line leading northeastward, eventually joining the Trans-Siberian line. It is believed that the rail line is adequate to serve the port.

The remaining Caspian ports of any consequence are Derbent, on the west coast; Lenkoran', on the southwest coast; and Fort Shevchenko, on the Mangyshlak peninsula, on the east coast. These ports are of minor importance, the general cargo-handling capacity being estimated to be only 500 long tons a day for each. 38/ Derbent is on the main rail line to Baku, and Lenkoran' also has rail facilities, but Fort Shevchenko has no rail connection. The latter port may, however, become an important military installation if reported plans to establish a large naval base are carried out.

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IV. Caspian Sea Merchant Shipping Operations.

A. Volume and Nature of Traffic.

1. Volume.

Caspian Sea traffic for many years has accounted for a substantial part of all Soviet water-borne trade. Before the development of oil fields around the sea, grain and other agricultural products of the area moved up the Volga in large quantities. Opening of oil fields around Baku and Krasnovodsk, however, assured to Caspian Sea shipping an important place in over-all Soviet transport and forced the volume of traffic upward in the years before World War II.

In 1913, for example, Caspian Sea traffic totaled 6.3 million metric tons, ^{39/} in contrast to 37.1 million metric tons transported along the rivers of the USSR. ^{40/} After the Revolution, traffic declined so that in the fiscal year of 1925-26 Caspian Sea movements totaled only 4,025,520 metric tons. ^{41/} By 1935, however, traffic had increased, so that in that year Astrakhan', Baku, and Makhachkala each handled over 2 million metric tons of cargo, the major portion of which was oil import-export traffic. ^{42/}

The main flow of petroleum products follows the route from Baku to Astrakhan' and up the Volga to transshipping points. In 1937, 6.1 million metric tons of petroleum were shipped along this route. Of this amount, 73.8 percent was transferred to railroads for shipping to the Volga region, the Urals, and Siberia, and the remaining 26.2 percent was transshipped directly to consumers at Volga ports. ^{43/} Table 4* illustrates the steady upward trend in Caspian Sea oil traffic in the prewar years.

In the postwar period the rate of increase in the volume of Caspian Sea oil traffic is believed to have leveled off somewhat because of increased oil production elsewhere and the development of pipelines across to Batumi on the Black Sea.

No reliable data are available either on the recent or on the present total volume of Caspian Sea traffic. It is possible, however, to estimate the volume within very broad limits, using Soviet data and Western estimates. On that basis, 1950 Caspian Sea traffic, excepting transshipments, is estimated at about 24 million metric tons. This estimate is derived

* Table 4 follows on p. 20.

Table 4

Petroleum Tonnage Hauled on the Caspian Sea 44/
1931-38

<u>Thousand Metric Tons</u>	
<u>Year</u>	<u>Amount Hauled</u>
1931	7,513
1932	8,214
1933	8,233
1934	11,744
1935	12,048
1936	12,711
1937	12,973
1938	15,200

as follows: (a) about 60 percent of all Soviet petroleum production (estimated at 37.5 million metric tons in 1950) comes from the Caspian area 45/; (b) 80 percent of that production moves in Caspian tankers 46/; and (c) petroleum transport accounts for about 75 percent of all Caspian traffic. 47/ The volume of traffic in 1951 and at present is believed to be about the same as in 1950. The Caspian Sea dry cargo fleet fulfilled the freight plan for 1951, with eight ships mentioned as having fulfilled the plan considerably ahead of schedule. 48/ Data on tanker fleet operations were not mentioned. Progress thus far in 1952, moreover, is apparently satisfactory. A report early in February praised the performance of a number of ships and noted that competition for the prescheduled completion of the freight plan was in progress. 49/

Virtually the entire volume of Caspian Sea traffic is between Soviet ports, either on the sea or up the Volga. The volume of trade with Iran, the only foreign country bordering on the Caspian Sea, is negligible. In the 2 years ending March 1951, water-borne trade (practically all in Soviet bottoms) between the USSR and Iran totaled only about 95,000 metric tons, or approximately 0.4 percent of the estimated Soviet-flag Caspian Sea traffic. 50/

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2. Nature.

Current detailed information on the nature of Caspian Sea traffic is limited to brief Soviet press and radio reports and to occasional bits of intelligence from diplomatic and defector sources. Since the Caspian is virtually a Soviet sea, there are few opportunities for even limited surveillance of Soviet shipping operations by Western ships.

Caspian Sea shipping is heavily concentrated on the movement of petroleum and its products, which account for about 75 percent of all tonnage. Other major items of traffic are bulk cargoes such as grain, timber, and fish, the Caspian Sea accounting for about 20 percent of the total Soviet fish catch. ^{51/} Salt and cotton also are important items of traffic, and general industrial cargoes moving down the Volga to ports on the sea contribute to Caspian traffic. (See Table 3, above.)

Astrakhan' is the center for petroleum traffic bound up the Volga from Baku, Krasnovodsk, and Makhachkala. Some oil cargoes move directly up the river in shallow-draft barges and tankers, but the major portion of such traffic is transshipped at the roadstead below the port. Import traffic of Astrakhan' includes grain from Gur'yev and Krasnovodsk and a large import trade in fish as well as salt and other commodities required by its fish-processing industries. Large quantities of cotton are imported from the eastern shore of the Caspian. Astrakhan' also is a major center for lumber moving downstream on the Volga. Export trade of Astrakhan' actually consists largely of re-exports of import traffic, since the port consumes only a small part of its imports and produces a relatively small part of its exports. It does, however, produce a considerable volume of export traffic in lumber products, meat, and miscellaneous foodstuffs which are sent to all Caspian ports as well as northward up the Volga.

Baku is predominantly a petroleum export center, exporting principally to Astrakhan'. In addition to oil traffic to Astrakhan' and Krasnovodsk, Baku has a substantial volume of export trade in manufactured and industrial goods originating in the Black Sea area and bound for Krasnovodsk and Gur'yev on the eastern shore. Baku also is the center for virtually all the small Soviet trade with Iran. This trade consists principally of sugar, cement, iron goods, and cotton products which are sent to the Iranian port of Pahlevi, whence Baku imports food and agricultural products such as rice, dried fruit, tobacco, and raw cotton. ^{52/}

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Makhachkala exports refined petroleum products to Astrakhan' and grain to Krasnovodsk. Makhachkala is an industrial center producing chemicals, aircraft, and lumber products, and these exports move across the Caspian to Krasnovodsk in exchange for agricultural products of Central Asia. Quantities of salted fish also are exported from Makhachkala to Astrakhan'.

In Krasnovodsk the output of the nearby Nebit-Dag oil fields is refined and sent to Astrakhan' and to construction projects in Central Asia. Crude oil in excess of refinery capacity at Baku also is received at Krasnovodsk for refining and reshipment to Baku as well as to other Caspian ports. Mineral salts, such as Glauber salts, from the nearby Kara-Bogaz-Gol deposits move from Krasnovodsk to various Caspian ports, particularly to Makhachkala. Large shipments of lumber come down the Volga to this port for construction work under way in nearby areas.

Cargoes from Gur'yev consist mostly of oil shipments brought by pipeline from the Emba oil fields some 200 miles to the east, and fish is another leading export. Like that of Krasnovodsk, Gur'yev import traffic consists of lumber brought down the Volga for consignment to Central Asian areas and of industrial goods from Baku, Astrakhan', and Makhachkala.

Traffic in the small ports of Derbent, Lenkoran', and Fort Shevchenko is varied in nature but small in volume. Derbent trades mostly in lumber and fish exports to Baku. Lenkoran' exports lumber and fish to Astrakhan'. Fort Shevchenko is a center for fish exports to Astrakhan'. Reports of traffic in coal and manganese to Makhachkala and petroleum to Krasnovodsk must be greatly discounted because of the lack of rail lines to the port.

B. Probable Trends.

Caspian Sea Soviet-flag traffic doubtless will continue to increase steadily, although probably not so rapidly as it has increased since the mid-1920's. Caspian Sea traffic mounted sharply during this period from about 4 million metric tons in 1926 to an estimated 24 million metric tons in 1950. This increase largely reflected the great expansion of oil production around Baku, but increased production of cotton and grain in the area east of the Caspian Sea also played a significant part. Development of the Bashkir oil fields, "the second Baku," in the Urals will reduce greatly the dependence of the industrial areas around the upper Volga on Caspian-borne oil shipments. The region south of Kuybyshev, however, will still depend on Caspian production for a large part of its oil requirements, and Stalingrad and surrounding regions also will continue to be supplied from Baku via the Caspian route.

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In addition to the traffic generated by the continuing demand for oil, the opening of the Volga-Don Canal will increase the volume of Caspian Sea traffic. Most of the additional export traffic will consist of grain and cotton from Krasnovodsk, Fort Shevchenko, and Gur'yev on the eastern shore shipped to Astrakhan', up to the canal (at Krasnoarmeysk below Stalingrad), thence into the Black Sea. Substantial cargoes of oil also will probably move to the Black Sea from Baku and Krasnovodsk through the canal, although the volume of such traffic is not expected to affect greatly the present pattern of pipeline traffic to Batumi. Import cargoes through the canal to Caspian ports will consist of coal and iron ore from the Donets Basin and manufactured goods from the Black Sea ports. One Soviet report states that opening of the canal will increase the freight turnover of the Don Basin by five or six times the present level. 53/

No estimate of the increase in the volume of Caspian Sea traffic to be brought about by the opening of the Volga-Don route can be made. The capacity of the canal for all traffic has been estimated at about 10 million metric tons annually. 54/ It is believed, however, that actual traffic will be well below such levels, since not all canal traffic will move in part on the Caspian Sea.

The greatest increase in Caspian Sea traffic probably will be brought about by economic developments now in progress in Central Asia. Irrigation and hydroelectric projects now in progress or planned are certain to generate traffic from Krasnovodsk and Gur'yev across the Caspian to the Volga ports, as well as to Baku and Makhachkala on the western shore. These developments, furthermore, will require increased shipments of petroleum products from Baku and Krasnovodsk insofar as the Emba fields cannot supply the eastern area. Thus it is possible that a future trend in Caspian traffic may be the development of east-west traffic to complement in part the present predominantly north-south pattern.

V. Significance of Caspian Sea Traffic to the Economy of the USSR.

Caspian Sea merchant shipping is of primary importance to the Soviet economy for the movement of oil, cotton, fish, grain, and timber. The volume of traffic carried approaches that of the Soviet-flag ocean fleet -- approximately 24 million metric tons as compared with about 31 million metric tons carried by the ocean fleet -- although the ocean fleet is over six times as large as the Caspian Sea fleet. Another gauge of the importance of Caspian Sea traffic is the fact that the Caspian tanker fleet is about double the size of the ocean-going tanker fleet of the USSR.

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The Caspian Sea affords an excellent low-cost route for movement of oil, grain, and cotton to consuming areas in the west and the north. Although some exploitation of oil reserves in the Caspian region probably could have been carried out with the rail systems in the area, great expansion of the rail systems would be required to approach the traffic capabilities of the tanker fleet, and rail haul would be much more costly. The economy of the USSR is not tied to petroleum to the same degree as is that of the US, but the relative ease with which petroleum can be moved across the Caspian and up the Volga contributes substantially to Soviet economic development, especially in the Stalingrad-Leningrad-Moscow triangle, where a large part of the Soviet industrial potential is located.

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APPENDIX A

GAPS IN INTELLIGENCE

There are serious gaps in virtually all aspects of intelligence on Caspian Sea merchant shipping operations covered in this report. Principal reasons for these gaps are outlined in the Introduction.

Intelligence on the size, quality, and capacity of the Caspian Sea merchant fleet is poor, since much of the available statistical and descriptive information antedates World War II. Inventory data are extremely scanty; technical aspects of the fleet, such as speed, draft, and propulsion, can be assessed only in the most general terms. Since cargo-carrying capacity is directly related to both fleet size and technical aspects, it is apparent that estimates as to capacity must be tentative.

Information on Caspian Sea ports is probably good, insofar as physical characteristics are concerned, but is only fair with respect to cargo-handling capacity, port facilities, clearance capacities, and other operational aspects. Intelligence on cargo-handling capacity is a significant weakness, especially with respect to current information on petroleum-handling capacity, the principal item of Caspian Sea traffic.

The lack of organized statistical information on the volume of traffic in recent years constitutes another major deficiency in this report. Estimates of traffic in recent years are tentative, being based upon estimates, interpolations, and the usual Soviet references to percentages of Plan fulfillment. Intelligence founded on such bases must necessarily be taken with caution.

In contrast to volume, the nature of Caspian Sea traffic in general is known with considerable accuracy. The most significant weakness in this intelligence is the almost complete lack of detailed information on cargoes carried by specific ships whose operations are mentioned from time to time. The gap in detailed information on cargoes would be less serious, however, if better information were available as to the volume of traffic by specific commodities.

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APPENDIX B

METHODOLOGY

The gathering of the basic information for this report consisted primarily of pulling together the relatively small amount of available intelligence considered to be pertinent and useful. This task was much simpler than the process usually involved in the preparation of a report of this nature, because there is actually little intelligence available on Caspian Sea merchant shipping (as is explained in the Introduction). The scope of the gathering process can be judged by the fact that the only available estimate as to the traffic capacity of the Volga-Don Canal (see IV B, above) is taken from US News and World Report, while other figures are taken from the Encyclopedia Britannica.

The process of appraisal and evaluation is largely one of selecting material and assaying its reliability. Appraisal was fairly simple because of the small body of available information. Evaluation, however, depends on several factors. Principal among these are familiarity with the topics of the report and some convictions as to the reliability of the basic material. The processes involved in the evaluation step, therefore, are intangibles, largely depending on the breadth and depth of knowledge.

The final step in the preparation of the report, coverage of appropriate topics, requires little description. Topics clearly within the scope of the study (nature and volume of traffic, for example) are treated in detailed fashion. On the other hand, topics such as ports are treated largely from the point of view of traffic and capacity, technical description being outside the framework of the report.

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APPENDIX C

SOURCES AND EVALUATION OF SOURCES

1. Evaluation of Sources.

A large part of the sources for this report are of Soviet origin, directly or indirectly. Intelligence of non-Soviet origin is limited to the following:

- a. CIA Defector Reports.
- b. Other CIA documents.
- c. Naval attaché reports.
- d. World War II photo-interpretation coverage.
- e. Prisoner-of-war interrogations.
- f. State Department peripheral reports.

The data from Soviet sources vary widely in value. Some are mere propaganda, whereas some are almost certainly true (each source quoted in the report is evaluated separately below). The little material used from non-Soviet sources is evaluated to be more consistent and is considered to be generally true, with the major exception of prisoner-of-war data, considered to be generally poor. The value of the non-Soviet intelligence, is, however, greatly diminished by its fragmentary nature. In general, it is safe to say that, despite their over-all degree of credibility, Western sources contributed little to the report with the exception of several defector reports on the tanker fleet and its operations, oil storage facilities, and fishing operations. Some of these were of exceptional value and are cited in detail in the appropriate sections of the report.

2. Sources.

1. NIS 26 (USSR), Section 36 (Merchant Marine), p. 20.
(Probably the best available source on details of the Caspian Sea merchant fleet. The data are old, however, and include a number of vessels not actually known to be in the fleet. Evaluated no higher than possibly true.)
2. Ibid.

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3. JANIS 41 (USSR; the Caucasus Area), Chapter VI (Ports, Shipping, and Navy), p. 55.
(Originally from a Soviet source; probably true.)
4. NIS 26 (USSR), Section 36 (Merchant Marine), p. 20.
(See comment under 1, above.)
5. CIA SO, 21 Jul 1952.
(Evaluated A-2 by ONI, this report is believed to be fairly reliable as to operational data but incomplete with respect to fleet data.)
6. Ibid.
7. Ibid.
8. Ibid.
9. Ibid.
10. CIA ORR estimate.
11. CIA SO, 9 Jul 1952.
(Evaluated as probably true; fleet data probably in error.)
12. Department of the Army, G-2, Technical Branch; CIA ORR estimates.
13. Soviet published sources; State and ONI reports; CIA SO and OO reports.
14. Ibid.
15. NIS 26 (USSR), Section 33 (Inland Water Transport), original draft.
(Soviet source; possibly true.)
16. CIA OO, 5 Jul 1952.
(These details are probably true, but they do not supplant JANIS, NIS, and other reports for detailed but older information.)
17. Ibid.
18. Ibid.
19. Ibid.
20. Department of the Army, G-2, Technical Branch.
(This estimate is largely based on various Soviet sources -- such as press, radio, and technical journals -- and prisoner-of-war reports. The actual estimate of port capacity for handling dry cargo is derived from a technical appraisal of the facilities of the port on the basis of the foregoing source data. It is the best estimate available and is probably true.)

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21. Ibid.
22. NIS 26 (USSR), Section 35 (Ports and Naval Facilities), Department of the Army, Corps of Engineers, Apr 1952. (An excellent report. The data are old but probably are the best available.)
23. JANIS 41 (USSR; the Caucasus Area), Chapter VI (Ports, Shipping, and Navy). (Photographs of the port taken in recent years show this information to be true. It is not likely that conditions have changed appreciably.)
24. CIA SO, 26 Feb 1952. (Soviet source; possibly true.)
25. Ibid.
26. Morskoy Flot, Moscow, 25 Oct 1950. (Soviet source; probably true.)
27. Comnavforger 449-51, 10 Sep 1951 (CIA 694398). (Defector report; probably true.)
28. Morskoy Flot, Moscow, 25 Oct 1950. (See comment under 26, above.)
29. Morskoy Flot, Moscow, 29 Jul 1950. (From a Soviet technical publication; probably true.)
30. Ibid.
31. Department of the Army, G-2, Technical Branch. (See comment under 20, above.)
32. Interpretation Report, No. D 19, Joint Air Photographic Interpretation Center (UK), 31 Mar 1949 (CIA 306225). (The capacity figure reported in this document is roughly equivalent to the daily production of the entire Soviet petroleum industry. The estimate is believed to be several times that of the actual capacity of the port to handle petroleum.)
33. CIA OO, 5 Jul 1952. (See comment under 16, above.)

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34. FBIS, 23 Jan 1952.
(A Soviet broadcast; probably true.)
35. Department of the Army, G-2, Technical Branch.
(See comment under 20, above.)
36. CIA OO, 5 Jul 1952.
(See comment under 16, above.)
37. Department of the Army, G-2, Technical Branch.
(See comment under 20, above.)
38. Department of the Army, G-2, Technical Branch; CIA ORR estimates.
(See comment under 20, above.)
39. Encyclopedia Britannica, 1949, Vol. 4, p. 970.
(Originally from Soviet sources; probably true.)
40. NIS 26 (USSR), Section 33 (Inland Waterway Transport), figure 33-1.
(From Soviet sources; possibly true.)
41. Encyclopedia Britannica, 1949, Vol. 4, p. 970.
(See comment under 39, above.)
42. Sotsialisticheskoye Stroitelstvo, SSSR, Moscow, 1936, p. 470.
(Soviet statistics; possibly true.)
43. Organizatsiya perevozok naliveykh gruzov na zheleznodorzhnom, Gostranszheldorizdat, Moscow, 1941; published by CIA as OO-W-21646, 27 Feb 1952.
(One of the few sources for actual tonnage statistics, this Soviet economic analysis is estimated to be probably true. It is not clear, however, whether transshipment traffic is included in the data, and for that reason the figures must be taken with some reserve.)
44. Ibid.
45. ONI Intelligence Review, Feb 1952.
(Although the original source is not known, it is probably Soviet and probably true.)

46. Ibid.
47. CIA ORR estimate from various Soviet sources.
(This estimate is believed to be fairly close to the actual proportion which oil cargoes form of all Caspian Sea Soviet merchant shipping traffic.)
48. FBIS, 26 Nov 1951.
(Soviet broadcast source; probably true.)
49. FBIS, 2 Feb 1952.
(Soviet broadcast source; probably true.)
50. State Desp. 336 from Tehran, 11 Sep 1951.
(Iranian official statistics; probably true.)
51. CIA ORR estimate.
52. State Desp. 336 from Tehran, 11 Sep 1951.
(This description of traffic is estimated to be true.)
53. Rechnoy Transport, 30 Dec 1950.
(From a Soviet technical journal; possibly true, although it cannot be judged accurately.)
54. US News and World Report, 22 Feb 1952, p. 38.
(The original source of the estimate is not known but is probably a Western estimate based on Soviet propaganda, which may overstate the capacity of the route.)