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THE GROWTH AND EMPLOYMENT OF THE SOVIET TANKER FLEET 1 JANUARY 1951 THROUGH 31 MARCH 1957

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THE GROWTH AND EMPLOYMENT OF THE SOVIET TANKER FLEET 1 JANUARY 1951 THROUGH 31 MARCH 1957*

Summary

In January 1951 the tanker fleet of the USSR** consisted of only 28 vessels, totaling 119,872 gross register tons (GRT).*** Most petroleum shipments of the Soviet Bloc from the Black Sea to points in Europe and the Near East were at this time being carried in Free World tankers, although Free World shipowners were refusing to charter tankers for runs to the Communist Far East.**** At the same time, there was an increasing demand for petroleum in Communist China and in the expanding economy of the Soviet Far East.**** To answer the growing need for tankers, an intensive program of tanker building was undertaken in Soviet and foreign shipyards. Under this program the USSR added 64 tankers, totaling 353,650 GRT, to its fleet between 20 June 1951 and 31 December 1956.

Most (80 percent) of the total tonnage added consisted of Soviet-built 8,000-GRT tankers of the Kazbek class. The remainder, with two exceptions, consisted of foreign-built tankers: 1,000- and 3,000-GRT tankers built by Finland, 1,000-GRT tankers built by Sweden, 3,000-GRT reinforced concrete tankers built by Bulgaria, and 9,000-GRT tankers built by Denmark. With adjustments for losses, retirements, and transfers, these additions increased the size of the fleet to 85 tankers, totaling 444,618 GRT, by the end of 1956.

As a result of this expansion, the cargo-carrying capacity of the tanker fleet rose from 149,800 to 555,000 metric tons, and the average

* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 May 1957.

** Including seagoing tankers of more than 1,000 gross register tons (GRT) assigned to the Ministry of the Maritime Fleet and the Ministry of the Fishing Industry but excluding those tankers operating in the Caspian Sea or serving as naval auxiliaries.

*** Gross register tonnage is a measure wherein the entire internal capacity of the vessel is expressed in register tons (100 cubic feet to the ton). Not included in the measurement are certain spaces such as peak tanks and other tanks of water ballast, open forecastle, bridge and poop, hatchway excess, certain light and air spaces, anchor gear, steering gear, wheelhouse galley, cabins for passengers, and other minor spaces specified by law.

**** Communist Far East refers to Communist China, North Vietnam, and the Soviet Far East but does not include North Korea. Soviet Far East refers specifically to the Far Eastern portions of the USSR.

age per tanker dropped from 23.9 to 7.9 years. Although Soviet tankers are newer in terms of average age than the tankers in the world fleet, their average speed and tonnage are not as high. This is the result of the Soviet decision to continue production of the outmoded Kazbek-class tankers at a time when other nations were beginning to produce larger and faster supertankers.

During 1956, 46 Soviet tankers were employed in the export trade to Western Europe and the Near East and in deliveries of POL to the Communist Far East; 32 other tankers remained virtually at all times within Communist waters; and 7 tankers served the Soviet fishing fleets in and out of Communist waters. With few exceptions the tankers active out of the Black Sea included all of the large tankers in the fleet (more than 6,000 GRT). Virtually all of the remaining tankers in the fleet were less than 4,000 GRT. Since 1951 the important changes in the disposition of the fleet have all involved tankers making voyages out of the Black Sea. During the postwar years through 1953, Soviet tankers made few voyages out of the Black Sea. Activity began to increase in 1954, however, when 17 tankers departed for the Soviet Far East and Communist China. The highest number in any previous postwar year had been three. In 1955, Soviet tankers began a movement of POL to Egypt and in 1956 a movement to Western Europe. During the latter year, Soviet tanker movements out of the Black Sea reached a new high with 57 tankers departing for Egypt, 53 for the Soviet Far East, and 41 for Western Europe.

When the Suez Canal was closed at the end of October 1956, this pattern of employment began to change. Only 1 Soviet tanker departed for the Far East between 31 October 1956 and 31 March 1957; the number departing during that same period 1 year before was 19. This cutback made possible a further increase in the movement of POL to Egypt and Western Europe, especially the latter. Another aspect of this changing pattern of employment was a sharp increase in the number of Soviet tankers chartered by Free World interests. In the spring of 1956, for the first time, a Soviet tanker returning from the Far East in ballast was chartered to carry a cargo from the Persian Gulf to the Continent. Between 1 October 1956 and 31 March 1957, nine more Soviet tankers were similarly chartered. Early in 1957, moreover, seven Soviet tankers under Free World charter were to go to the Caribbean area to load petroleum for the Continent.

In spite of the expansion which took place during 1951-56, the Soviet tanker fleet remains inadequate in certain important aspects. Because it lacks sufficient tanker tonnage, the USSR is inconvenienced both in exporting Soviet Bloc POL to the Free World from the Black Sea and in supplying the Soviet Far East and Communist China. In 1956, Soviet tankers carried only 18 percent of the exports of Bloc POL from the Black Sea to the Free World; the remainder was carried in Free World tankers, many under charter to the Bloc. This situation decreased Bloc earnings of foreign exchange. Furthermore, the petroleum requirements of the Communist Far East still had to be met largely by rail. It is estimated that 77 percent of the total amount of petroleum shipped to Communist China and the Soviet Far East in 1956 was shipped at a considerably higher cost on the Trans-Siberian Railroad because of insufficient tanker tonnage.

It is impossible to estimate accurately the expansion contemplated for the Soviet tanker fleet outside of the Caspian Sea under the Sixth Five Year Plan because neither the planned deliveries to the Ministry of the Fishing Industry (MRP) nor the proportion of the planned deliveries to the Ministry of the Maritime Fleet (MMF) that will go to the Caspian are known. Under the Sixth Five Year Plan (1956-60) the MMF is expected to receive 364,000 GRT of tankers with a total cargo-carrying capacity of 460,000 metric tons. This figure will also include deliveries to the MRP for which there are no Plan figures available. Progress in tanker production in the first year of the current Five Year Plan has been good -- in 1956, deliveries to the MMF totaled 95,230 GRT, including 9,600 GRT delivered for use on the Caspian Sea. At this rate the planned additions to the Soviet tanker fleet will be realized in 1960.

Even if deliveries of Kazbek-class and 20,000-GRT steam turbine tankers are the equivalent of 38 Kazbeks during the Plan period, however, the USSR will still be short by between 80 and 90 tankers of the number estimated to be required to carry all POL exports from the Black Sea and all POL shipments to Communist China and the Soviet Far East in Soviet tankers during 1960.

I. Introduction.

In January 1951 the Soviet tanker fleet consisted of 28 vessels totaling 119,872 gross register tons (GRT). Of these, 4 were German tankers acquired as reparations, 1/* and 1 was a US lend-lease tanker which was not returned after the war. 2/ Because of wartime losses, the fleet was little larger in 1951 than it has been in 1941, in spite of the additions during and after the war. At the same time, Soviet tanker needs continued to mount. POL production in the USSR had been rising steadily since 1945,** and the USSR was beginning to increase its exports of POL to the Free World. The requirements of the Soviet Far East for POL from western USSR were mounting because of increased economic and military activity in the area, and the entry of Communist China into the Korean War made that country, which had previously had access to Free World supplies, dependent on the USSR for its POL needs. Largely as the result of anti-Communist sentiment engendered by the Korean War, the USSR encountered another complication in its POL movement at this time. The development among Free World nations of controls on East-West trade was accompanied by a denial to the Soviet Bloc of Free World tankers for charter on voyages from the Black Sea to the Communist Far East. In 1951, before any sizable movement of POL to the Communist Far East by sea had begun, at least 35 different Free World tankers, totaling 127,253 GRT, had been chartered to move Bloc POL from the Black Sea to Free World destinations. Thus in 1951, even without a large commitment of tankers to the Far East run, the USSR did not have sufficient tankers to carry its POL exports. 4/ The maritime fleets of the other Bloc nations were of little assistance because, among them all, there was only one tanker of more than 1,000 GRT, the Polish Karpaty.

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* For serially numbered source references, see Appendix C.

** It rose from 19.3 million metric tons in 1945 to 42.2 million in 1951. 3/

Under these circumstances, it is not surprising that the USSR began a large-scale expansion of its tanker fleet during 1951, the first year of the Fifth Five Year Plan (1951-55).

II. Expansion, 1951-56.

The expansion of the Soviet tanker fleet during 1951-56 was accomplished almost entirely by new construction, including tankers from shipyards in the USSR, Bulgaria, Finland, Denmark, and Sweden.* The Soviet role in the program was undoubtedly larger than it would otherwise have been because of COCOM (Coordinating Committee on International Export Controls) regulations forbidding the majority of Free World shipbuilding nations to build tankers for the USSR. Denmark was the only COCOM nation which did build tankers for the USSR, and it was permitted to do so because of commitments made before the COCOM regulations went into effect. Although neither Sweden nor Finland, the other Free World nations which built tankers for the USSR, were members of COCOM, it appears likely that their contributions were limited to smaller and slower tankers in deference to COCOM sentiment.

Thus far the major effort in the USSR has been devoted to production of 8,000-GRT** Kazbek-class tankers, with cargo-carrying capacities between 10,000 and 11,500 metric tons. These tankers are powered by twin 2,000-horsepower (hp) diesel engines which operate a single screw through reduction gears and which permit a maximum operating speed in ballast of 13.3 knots. 5/ The prototype tanker of this class was the Kazbek, delivered by Shipyard No. 444 in Nikolayev in June 1951. By the end of 1952, serial production of these tankers was under way in three shipyards: No. 444 at Nikolayev, No. 402 at Kherson, and No. 194 at Leningrad.

A certain amount of confusion has existed because this class of tanker is sometimes referred to as Kazbek and sometimes as Leningrad. The two classes are actually the same. Although all of the tankers in this class are identical in regard to capacity and external dimensions, there are variations among them with regard to GRT because of differences in non-cargo-carrying space. 6/ The Kazbek itself measures 8,033 GRT, 14 others measure 7,961 GRT, and the remainder (more than 20) measure 8,229 GRT. All the tankers of this class which have been delivered since July 1955 have measured 8,229 GRT.

By the end of December 1956, 36 tankers of this class had been delivered -- 35 to the MMF, and 1, the Volkhov (8,229 GRT), to the Ministry of Defense as a naval auxiliary. 7/ Thus between June 1951 and December 1956 the production program of the Kazbek class increased the cargo-carrying capacity of the Soviet tanker fleet by 350,000 metric tons. Tankers of this class, therefore, account for almost two-thirds of the total cargo-carrying capacity of the tanker fleet, which is 555,000 metric tons. As the workhorses of the fleet

* See Appendix A, Table 3, p. 20, below.
** GRT rounded to nearest thousand when referring to classes of tankers.

they were used through 1956 chiefly on the long runs from the Black Sea to the Far East and Western Europe. During this period the USSR also constructed 6 shallow-draft Koshevoy-class tankers of about 3,000 GRT for use in the Caspian Sea traffic.

The largest tanker-building program for the USSR abroad was carried out in Finland during 1951-56. The Finns produced two classes of tankers. The first class consisted of 3,000-GRT tankers built at the Repola Shipyard in Rauma. Each is equipped with a single 2,650-hp Swedish-built diesel engine* and is designed to operate at 13 knots. 9/ Of the 4 tankers of this class which the USSR has purchased, 1 was assigned to the MRP and 3 to the MMF. Although at least 1 of them has made the round-trip voyage to the Far East, the 3 assigned to the MMF were restricted in their operations to the Black Sea for most of 1956.

The 20 tankers of the second class built in Finland for the USSR are slightly larger than 1,000 GRT. Five were built at the Crichton-Vulcan shipyard in Turku and 15 at the Crichton shipyard in Valmet. Except for slight differences in GRT and length, the tankers built at these shipyards are identical. 10/ Each is equipped with a single 1,150-hp diesel engine which permits a maximum speed of 12.0 knots. 11/ Of these 20, 2 have been assigned to the Ministry of Defense as naval auxiliaries, 3 to the MMF for use on the Caspian Sea, and 13 to the MMF and MRP, largely for use in coastal waters or with the fishing fleets. 12/ The disposition and ministerial subordination of the remaining two are not known

During 1952 and 1953, Denmark built 2 tankers having cargo-carrying capacities of 11,000 metric tons for the USSR. 13/ These 2 tankers, the Apsheron (9,047 GRT) and the Tuapse (9,051 GRT), were equipped with single 6,900-hp diesel engines which permit speeds of 14.5 knots. 14/ Both of these tankers were assigned to the MMF upon delivery.

Under the terms of the Soviet-Swedish Credit Agreement of 1946, six tankers were built for the USSR at the Norkoppings Mary and Verkstad A/B Shipyards in Sweden during 1951 and 1952. 15/ These tankers are quite similar to the small tankers built in Finland. Their cargo-carrying capacities and speeds are almost the same, and their engines are of the same make, although slightly larger in stroke and displacement. 16/ Four of these 6 tankers, are currently assigned to the MMF and MRP for use outside of the Caspian Sea, 1 is assigned to the MMF for use in the Caspian Sea, and 1, formerly assigned to the MRP, was rammed and sunk off Hokkaido, Japan, in 1955. 17/

During 1952 and 1953, 3 tankers made of reinforced concrete with cargo-carrying capacities of 4,000 metric tons were built for the USSR at Varna, Bulgaria. Their low maximum speed of 9 knots and their frequent breakdowns are likely reasons for the Soviet decision to discontinue their procurement. All three tankers of this type are restricted in their operations to short runs on the Black Sea. 18/

* This engine is reported to have given Soviet crews a great deal of trouble. 8/

Not every tanker added to the Soviet fleet during 1951-56 was of new construction. It appears that at least two converted older ships were added also. The first, the Zhiguli (1,620 GRT), is reported to be a tank barge of prewar construction which was converted into a self-propelled tanker at Tuapse in 1952. 19/ The second, the Ural (6,840 GRT), is a diesel-electric tanker placed in service in November 1956. 20/ It had been in the Odessa Shipyard since the end of 1950. 21/ Its announced displacement and cargo-carrying capacity are very close to those of the diesel tanker Varlam Avanesov (6,557 GRT), which was last reported in 1948. 22/ Because the Avanesov was one of the newer tankers in the fleet at the time it was last reported and because there has been no indication of its having been lost, it is possible that the vessel was selected for an experimental conversion from diesel to diesel-electric propulsion and has now been renamed the Ural. It is also possible that the Ural is the former Tuapse (6,320 GRT, built in 1931), which was apparently sunk or seriously damaged in World War II. In 1948 the MMF announced its intention to build 1 diesel-electric tanker for use on the Caspian and 1 or 2 for use outside the Caspian. 23/ The tanker for Caspian use was delivered in 1950, 24/ but neither of the others appeared until the delivery of the Ural in 1956.

There is evidence that as many as seven tankers were either lost, retired, or transferred during 1951-56. The only known losses were the MRP tanker Ishim (1,114 GRT), which sank in 1955, and the Tuapse (9,051 GRT), which was seized by the Chinese Nationalists in 1954. The three oldest tankers included in the 1951 fleet list have not been reported to Lloyd's and have not appeared since 1950. These ships, presumably retired, are the Shaumian (3,471 GRT, built in 1886), the Cheleno (1,624 GRT, built in 1897), and the Valerian Kuybyshev (4,629 GRT, built in 1914). 25/

Two tankers assigned to the MMF outside of the Caspian Sea were transferred during the period of the expansion. The Groznyy (4,961 GRT) was transferred to the Ministry of Defense as a naval auxiliary, and the Apsheron (3,781 GRT) was transferred to the Caspian. 26/

III. Characteristics as of 31 December 1956.

Between 1 January 1951 and 31 December 1956, 64 tankers totaling 353,650 GRT were added to the Soviet tanker fleet. After allowance for the tankers assumed to have been lost, retired, or transferred, the net increase in the size of the fleet amounts to 57 tankers totaling 324,746 GRT. As a result of this increase, the tonnage of the fleet almost quadrupled. Its size increased from 28 tankers totaling 119,872 GRT to 85 tankers totaling 444,618 GRT. In spite of the magnitude of this expansion, however, the Soviet tanker fleet remains little more than one-tenth the size of any one of the three largest tanker fleets in the world.* The more important changes in the

* As of 30 June 1956, the 3 countries in the world with the largest tanker fleets were as follows: (1) the UK, with 550 tankers totaling 4,998,000 GRT; (2) the US, with 427 tankers totaling 4,289,000 GRT; and (3) Norway, with 427 tankers totaling 4,141,000 GRT. 27/

characteristics* of the fleet which occurred between 1951 and 1956 are as follows:

Characteristics	1 January 1951	31 December 1956
Cargo-carrying capacity (metric tons)	149,800	555,000
Average GRT	4,280	5,220
Average age (years)	23.9	7.9
Average speed (knots)	9.5	11.9

A recent study of the world tanker fleet sponsored by a major US oil company provides the basis for a comparison of some of these characteristics of the Soviet tanker fleet with those of the world tanker fleet. 28/ Because this study considered only those tankers in the world fleet larger than 2,000 GRT as of 31 December 1955, the characteristics of the Soviet tanker fleet used in the comparison apply only to those Soviet vessels larger than 2,000 GRT in the fleet as of 31 December 1955. A comparison of these characteristics is as follows:

Characteristics	Soviet Fleet	World Fleet
Average age (years)	7.9	9.9 29/
Average GRT	8,800	10,200 30/
Average speed (knots)	12.1	13.2 31/

This comparison shows that, although the tankers in the Soviet fleet are more modern in terms of age than those of the world fleet, they are actually less modern in terms of design as reflected in speed and tonnage. This lag is largely the effect of the Soviet policy of continuing to mass-produce the Kazbek-class tankers while the rest of the world is producing larger, faster, and more economical supertankers. The Kazbek-class tankers are neither as fast nor as large as the now-outmoded World War II US T-2 tankers. It is possible that the USSR has continued to produce these tankers because of the difficulties involved in putting into production a powerplant for a large and faster tanker. Until recently, at least, the USSR has been producing no non-naval marine powerplants more powerful than those in use on the Kazbeks because of emphasis on powerplants for naval use.

IV. Employment.

The three principal ways in which the Soviet tanker fleet was employed during 1956 were as follows: (1) for voyages outside of Communist waters originating in the Black Sea; (2) for voyages

* For more detailed characteristics of the various classes of tankers involved, see Appendix A, Table 4, p. 21, below; for a breakdown of the fleet by tonnage, see Appendix A, Table 5, p. 22, below; for a breakdown of the fleet by age, see Appendix A, Table 6, p. 22, below; and for more detailed characteristics and other information regarding specific tankers, see Appendix A, Table 7, p. 23, below.

largely within Communist waters; and (3) for support of the fishing fleet, both inside and outside Communist waters.

In the postwar years before 1954, few Soviet tankers made voyages out of the Black Sea. With increasing tanker tonnage available because of the expansion of the fleet, however, and with Soviet production of POL rising (from 42.2 million metric tons in 1951 to almost 84.0 million in 1956), the USSR was able to increase its exports of POL to the Free World and to Communist China and its shipments of POL to the Soviet Far East.* 33/ These increases were naturally accompanied by an upsurge in Soviet tanker movements out of the Black Sea, the only loading area for Soviet tanker shipments to the Communist Far East and the Free World.

During 1956, 46 Soviet tankers totaling 354,220 GRT were utilized on voyages out of the Black Sea. These ships included all of the large postwar tankers and, with two exceptions,** all were between 6,000 and 10,000 GRT. They fall into three distinguishable age groups, as follows:

Age Group	Number
Under 6 years old	38 (35 Kazbek class)
25 to 30 years old	7
35 years old	1
Total	46

A second group of Soviet tankers normally operates only within Communist waters in the jurisdictions of the various steamship companies of the MMF. During 1956, these tankers were distributed as follows:

Area	Number	Total GRT
Black Sea	13	39,677
Soviet Far East	10	29,625
Barents and White Seas	4	5,012
Eastern Arctic Ocean	2	2,748
Baltic Sea	3	3,504
Total	32	80,566

* Between 1951 and 1956, shipments of POL by Soviet tankers from the Black Sea to Communist China and the Soviet Far East rose from 28,139 to 539,944 metric tons. During the same period, Soviet and Rumanian exports of POL to the Free World (including shipments by Soviet tanker) rose from 1,345,000 to 5,873,663 metric tons. 32/

** In July 1956 the Iskra (1,117 GRT) departed from the Black Sea with a cargo for Haiphong. This voyage was in conjunction with its transfer to the Far East Steamship Company. 34/ In December 1956 the Gudermes (3,340 GRT) delivered 2 cargoes of petroleum to Alexandria. 35/

With the exception of 4 tankers between 6,000 and 10,000 GRT, all between 25 and 30 years old, the tankers which operate only in Communist waters are all under 4,000 GRT. These smaller tankers vary in age from 1 year to 40 years old.

The remaining tankers in the Soviet tanker fleet are assigned to the MRP. During 1956, these tankers were distributed as follows:

Area	Number	Total GRT
Baltic Sea	2	4,317
Soviet Far East	3	3,281
Barents and White Seas	2	2,234
Total	7	9,832

These ships include 1 Finnish-built 3,000-GRT tanker delivered in 1956 and 6 tankers from 1,000 to 2,000 GRT. Of these 6, 5 are under 6 years old and the other is 19 years old. Although confirmatory information is not available, it is possible that an additional number of the small tankers listed as subordinate to the MMF in the Baltic and Barents - White Sea areas are actually subordinate to the MRP.

The upsurge in movements of Soviet tankers out of the Black Sea and the subsequent changes in the pattern of employment of the tankers normally used on long voyages out of the Black Sea are the most important features of the employment of the Soviet tanker fleet during the period since the expansion of the fleet began in 1951. The first year after 1951 in which Soviet tanker voyages out of the Black Sea increased substantially was 1954. The increase largely involved tankers bound for the Communist Far East. Before 1954 the greatest number of Soviet tankers departing from the Black Sea for the Communist Far East in any postwar year was three. The following tabulation shows the increase in the number of such departures in the period from 1954 through the first quarter of 1957,36/:

Destination	1954	1955	1956	First Quarter 1957
Communist China	5	1	0	0
North Vietnam	0	3	4	2
Soviet Far East	12	43	53	1
Total	17	47	57	3

As shown above, most of the shipments to the Communist Far East are to the Soviet Far East. Because of its importance, this movement to the Soviet Far East is shown in greater detail as follows 37/:

Month	1954	1955	1956	1957
January	0	4	1	0
February	0	1	7	1
March	0	4	5	0
April	0	2	6	
May	0	5	12	
June	1	4	6	
July	3	6	3	
August	1	3	6	
September	1	4	6	
October	2	4	1	
November	1	2	0	
December	3	4	0	
Total	12	43	53	

The above tabulation shows how abruptly the movement to the Soviet Far East stopped after the closure of the Suez Canal on 31 October 1956 and how little it had revived by 31 March 1957. During this period, only one Soviet tanker departed from the Black Sea for the Soviet Far East. During the same period 1 year before, there were 19 departures.

The only other two movements of POL from the Black Sea by Soviet tankers during 1956 of magnitudes comparable to that of the movement to the Communist Far East were the movements to Egypt and to Western Europe. As shown in the following tabulation, the movement to Egypt began late in 1955 and reached a very high level by August 1956 with little decrease by 31 March 1957. 38/

Month	1955	1956	1957
January	0	2	7
February	0	1	9
March	0	2	5
April	0	4	
May	0	2	
June	0	1	
July	0	2	
August	0	9	
September	0	9	
October	2	8	
November	3	5	
December	2	12	
Total	7	57	

The movement of Soviet tankers from the Black Sea to Western Europe did not begin until February 1956, but by the beginning of 1957 its volume was exceeding that of the movement to Egypt as shown below 39/:

Month	1955	1956	1957
January	0	0	13
February	0	1	9
March	0	2	17
April	0	1	
May	0	1	
June	0	1	
July	0	2	
August	0	6	
September	0	3	
October	0	5	
November	0	9	
December	0	10	
Total	0	41	

The destinations of Soviet tankers departing from the Black Sea for Western Europe during this time period are as follows 40/:

1 January Through 31 December 1956		1 January Through 31 March 1957	
Country	Number of Tankers	Country	Number of Tankers
Sweden	18	Netherlands	12
Netherlands	8	Italy	10
Yugoslavia	7	Sweden	5
West Germany	4	Belgium	5
Belgium	3	Yugoslavia	4
Italy	1	West Germany	1
		Greece	1
Total	41	France	1
		Total	39

Apparently there were a number of factors behind the Soviet decision to curtail shipments of POL from the Black Sea to the Soviet Far East beginning in October 1956. The first is that the closure of the Suez Canal increased the time required for an average voyage from the Black Sea to the Soviet Far East from 33 to 57 days and raised the cost of shipping POL to the Soviet Far East by sea from US $14* to at least $20 per metric ton. 41/ Other factors are suggested by the curtailment itself, which indicates that (1) the deficit (estimated to be 200,000 metric tons, or slightly less than 10,000 metric tons per shipment for the period 1 October 1956 through 31 March 1957) was made up entirely by increased rail shipments; (2) that consumption in the area actually fell by the amount of the deficit; (3) that petroleum stocks in the Soviet Far East were adequate

* Dollar values are given in terms of current US dollars throughout this report.

to meet requirements; or (4) that the deficit was made up by a combination of these alternatives. It is not certain which of these possibilities is closest to the truth. If reports of deliveries by tanker to the Dal'stroy area around Magadan for the first 10 months of 1956 are correct, however, it is possible that consumption there -- as reflected in deliveries -- fell by as much as 150,000 metric tons in 1956. 42/ If this pattern continued into 1957, it is quite possible that decreased consumption had a role in the curtailment of deliveries.

Whether it was decreased consumption or increased rail shipments which caused the curtailment of tanker shipments of POL to the Soviet Far East, the advantages to the USSR of using the tankers which were diverted from the Soviet Far East to Egypt and Western Europe should be considered: (1) the political gain involved in assisting Egypt, and (2) the opportunity to conserve and acquire additional foreign exchange by using Soviet instead of chartered Free World tankers in petroleum deliveries to the Free World. This conservation of foreign exchange was especially important in the period after the closure of the Canal, when rates of the tanker charter market rose to higher levels than were reached during the Korean War. 43/

In keeping with sound fleet management, the USSR has always sought to reduce the number of voyages its tankers make in ballast. For a number of years, Soviet tankers returning from the Far East have loaded soybeans in Dairen for delivery to Western Europe. In 1956, however, for the first time, seven tankers returning from the Far East in ballast were chartered o pick up cargoes for Western Europe in the Persian Gulf. 44/ This new practice was continued into 1957. In the first 3 months, 2 additional Soviet tankers, 1 returning from Indochina and the other from the Soviet Far East, picked up cargoes in the Persian Gulf for delivery to Europe. 45/ After these voyages, Soviet practice changed, and the principle of reducing voyages in ballast appeared to be less important. After the reopening of the Canal, three Soviet tankers were scheduled to go to the Persian Gulf to load for Western Europe immediately after unloading cargoes in Port Suez delivered from the Black Sea 46/ -- one of a number of moves indicating a new Soviet willingness to divert tankers from their usual voyage patterns in order to reap the advantages of chartering to Free World shippers of petroleum. The best example of this willingness occurred during February and March 1957, when seven Soviet tankers, were scheduled to make trips to the Caribbean to load cargoes for Western Europe. 47/ Like the increased use of Soviet tankers in delivering POL to Western Europe, these cargo operations are enabling the USSR to conserve and increase its holdings of foreign exchange. This is an important consideration because during 1956, and to an even greater extent during the first 3 months of 1957, the USSR showed an increasing need for foreign exchange, as indicated by the following increase in sales of gold to the Free World:

Year	Million US $
1955	75 48/
1956	150 49/
1957 (first quarter)	100 (estimated) 50/

Soviet sales of were motivated both by the need to pay for increased purchases from the Free World during 1956 and by the extension of aid to the European Satellites, part of which took the form of freely convertible currencies to enable them to purchase goods from the Free World. The USSR also assumed some of the debts of Hungary which were payable in Free World currency. Thus it appears likely that the USSR has been influenced to a considerable degree in the employment of its tanker fleet by a desire to earn more foreign exchange.

V. Adequacy.

In spite of the increased capacity resulting from the expansion of the Soviet tanker fleet during 1951-56, the USSR found it necessary in 1956 to move considerable quantities of POL by less desirable or more expensive means because it did not have sufficient tanker tonnage of its own to do the job. This deficiency of the tanker fleet shows up particularly in the movements of POL from the Black Sea to importing countries in the Free World and to the Communist Far East.* Table 1* shows the movement of POL out of the Black Sea by Soviet tankers in 1956.

Table 1

Movement of POL Out of the Black Sea by Soviet Tanker
1956

	Thousand Metric Tons
To the Free World	
By Free World tanker	4,788
By Soviet tanker	1,086
Subtotal	5,874
To the European Satellites	
By Free World tanker	488
By Soviet tanker	132
By Polish tanker	8
Subtotal	628
To the Communist Far East	
By Soviet tanker	562
By Polish tanker	42
Subtotal	604

Table 1

Movement of POL Out of the Black Sea by Soviet Tanker a/
1956
(Continued)

	Thousand Metric Tons
To the Antarctic	
By Soviet tanker	39
Subtotal	39
Total	7,145

a. 51/

Although tankers comprising 80 percent of the tonnage of the Soviet tanker fleet were employed in carrying POL out of the Black Sea during 1956, they carried only 25 percent of the total. With the exception of less than 1 percent carried in Polish tankers, the remainder was carried in Free World tankers. In the case of deliveries to the Free World, Soviet tankers carried 18 percent, and Free World tankers carried 82 percent. Although some of the POL carried in Free World tankers was sold on an f.o.b. basis (purchasers chartering tankers), the remainder was sold on a c.i.f. basis (sellers chartering tankers). The USSR was thus forced to ship some of its POL on chartered Free World tankers because there was not sufficient Soviet tanker space available. In 1955, 37 percent of the Free World tanker tonnage which carried POL out of the Black Sea was under charter to the USSR and other Soviet Bloc countries. 52/ This continuing need to charter Free World tankers because of the scarcity of Soviet tankers obviously limits the opportunities of the USSR to earn foreign exchange.

The need to rely on overland movement for a substantial part of the requirements of the Communist Far East for POL results in costs which could be eliminated with a larger tanker fleet. Table 2* shows that Soviet shipments of POL in 1956 by rail and tanker to the Soviet Far East and Communist China** are estimated to have totaled about 2.8 million metric tons in 1956. Of this tonnage, possibly more than 2 million metric tons were carried on the Trans-Siberian Railroad. The remainder came by sea on Soviet and Polish tankers. The costs of the shipments by rail averaged around $90 per metric ton, $71 higher than the estimated $19 cost per metric ton of the sea shipments from the Black Sea. 53/ This pattern is in sharp contrast to the US practice, where in 1956 the movement of 92 million metric tons of POL from the Gulf Coast to the East Coast was made almost exclusively by tanker. 54/

* Table 2 follows on p. 15.

** Exclusive of POL originating in the Soviet Far East.

MAP

Table 2

Estimated Movement of POL from Western USSR
to the Communist Far East
by Tanker and by Rail
1956

Thousand Metric Tons

Destination	By Rail	By Tanker	Total
Communist China	893 a/	282 b/	1,175
Soviet Far East	1,135 c/		
	100 d/		
	72 e/		
Total Soviet Far East	1,307	300 f/	1,607
Total	2,200	582	2,782

a. 55/
b. By sea to Vladivostok and thence by rail to Communist China. 56/
c. Estimate for 1955. 57/
d. Estimated increase above the level of 1955.
e. Estimated extra movement in November-December 1956 because of the Suez crisis.
f. 58/

It has been pointed out that the Soviet tanker fleet is inadequate in that the USSR has to ship a large portion of its POL exports to the Free World in chartered Free World tankers and a large portion of its POL to the Soviet Far East and Communist China at a considerably higher cost by rail instead of by sea because of a shortage of tankers. So long as such alternatives as chartered Free World tankers and stepped-up rail shipment remain available, however, there is little possibility that the USSR will encounter any serious bottlenecks in moving its POL and, in fact, the Soviet fleet is now sufficiently large that its employment can be altered for such ends as economic penetration in Egypt and the earning of foreign exchange by charter to the Free World.

VI. Expansion Under the Sixth Five Year Plan (1956-60)

During the period of the Sixth Five Year Plan (1956-60) the USSR plans to deliver 346,000 GRT of new tankers, with a total cargo-carrying capacity of 460,000 metric tons, to the MMF. 59/ The number and capacity of tankers scheduled for delivery to the MRP have not been specified, and it is not certain what portion of the deliveries to the MMF will end up on the Caspian Sea. Because of this uncertainty and the lack of information on Soviet retirement plans, it is impossible to determine the exact amount by which the Soviet tanker fleet outside of the Caspian will have expanded by the end of the Plan period in 1960.

During 1956, 14 tankers with a total GRT of 95,230 and a total cargo-carrying capacity of 116,000 metric tons were delivered to the MMF. This figure includes 10 Kazbek-class tankers, three 3,000-GRT shallow-draft Oleg Koshevoy-class tankers for use on the Caspian Sea, and one 3,000-GRT Finnish-built tanker. 60/ The only delivery to the MRP during 1956 was one 3,000-GRT Finnish-built tanker with a cargo-carrying capacity of 4,000 metric tons. 61/ Thus in 1956 the Soviet tanker fleet outside of the Caspian was increased by 12 tankers with a total GRT of 88,830 and a total cargo-carrying capacity of 108,000 metric tons.

If the USSR goes ahead with present plans, the tankers remaining to be delivered to the MMF under the Sixth Five Year Plan will definitely include two types scheduled to go into production in 1957: a drastically revised version of the Oleg Koshevoy class for use on the Caspian Sea and a new 200,000-GRT steam turbine tanker with a cargo-carrying capacity of 25,000 metric tons and a speed of 18.5 knots. 62/

It is not known how many of these types the USSR plans to produce during the remainder of the Plan period. Because of the problems involved in getting a new ship with an untested powerplant into production, however, it appears unlikely that more than 2 or 3 of the large steam turbine tankers will be delivered by the end of the Plan period. Four of the revised Oleg Koshevoy tankers are scheduled for delivery during 1957, but the number -- if any -- to be delivered in 1958-60 is not known.

In negotiations with Finnish shipbuilding firms and businessmen during 1956, the USSR indicated that it desires at least 6 additional 3,000-GRT tankers of the type built in Finland. 63/ There was no indication through the end of 1956, however, that any contracts had been let for their construction. Regarding the Kazbek-class tankers, 11 are scheduled for production during 1957, and it appears that their production will continue through 1958. 64/ East Germany has been promised delivery of two as late as September and November of that year. 65/

In 1956 the USSR had to depend on Free World tankers to move a large part of Soviet Bloc petroleum exports from the Black Sea to the Free World and on the Trans-Siberian Railroad to move a large part of the POL shipped to Communist China and the Soviet Far East. During that year the equivalent of 39 large tankers (more than 6,000 GRT) was active in the movement out of the Black Sea. It is estimated that 42 more Kazbeks would have been required to put the movement of POL to the Free World entirely into Soviet tankers and another 44 to put the movement to China and the Soviet Far East entirely into Soviet tankers. *

* The estimates of the number of additional tankers required were calculated on the basis of the amount of POL which had to be carried and the distances it had to be carried. In addition, the following assumptions were made: (1) the average speed in nautical miles per day for a Kazbek-class tanker is 288, (2) the average length of time in port per round-trip voyage for a Kazbek-class tanker is 5 days, and (3) a typical Kazbek-class tanker spends 37 days a year in repair.

Assuming that the 218,000 metric tons of cargo-carrying capacity remaining to be delivered to the MMF during 1958-60 will be made up of Kazbeks, six 3,000-GRT Finnish-built tankers, and a small number of 20,000-GRT steam turbine tankers, the greatest increase in number possible for Soviet tankers operating out of the Black Sea would be slightly more than 38 Kazbeks or the equivalent. If exports to the Free World and shipments to Communist China and the Soviet Far East grow at the same rate as that estimated for Soviet crude oil production, by the end of 1960 the deficiency will have increased from 86 to 95 tankers in spite of planned additions.

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APPENDIX A

STATISTICAL TABLES

Table 3

Deliveries of New Soviet and Foreign-Built Oceangoing Tankers of More Than 1,000 GRT in the USSR
1951-56

	Recipients a/											
	Ministry of the Maritime Fleet											
	Ministry of the Fishing Industry		Outside Caspian Sea		Caspian Sea		Ministry of Defense (Navy)		Unknown		Total	
Type of Tanker b/	Number of Tankers	GRT	Number of Tankers	GRT	Number of Tankers	GRT	Number of Tankers	GRT	Number of Tankers	GRT	Number of Tankers	GRT
Danish 9,000 GRT c/			2	18,098							2	18,098
Kazbek 8,000 GRT d/			35	284,067			1	8,229			36	292,296
Koshevoy 3,000 GRT e/					6	20,400					6	20,400
Bulgarian 3,000 GRT f/			3	9,850							3	9,850
Finnish 3,000 GRT g/	1	3,200	3	9,858							4	13,058
Finnish 1,000 GRT h/	3	3,351	10	11,098	3	3,213	2	2,234	2	2,234	20	22,130
Swedish 1,000 GRT i/	3	3,374	2	2,294	1	1,145					6	6,813
Total	7	9,925	55	335,265	10	24,758	3	10,463	2	2,234	77	382,645

a. 66/
b. Rounded to the nearest thousand.
c. 67/
d. 68/
e. 69/
f. 70/
g. 71/
h. 72/
i. 73/

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Table 4

Characteristics of Tankers Added to the Soviet Tanker Fleet
1951-56

Type of Tanker [a]	Cargo-Carrying Capacity (Metric Tons)	Length [b] (Feet)	Beam (Feet)	Draft Loaded (Feet)	Number of Engines	Horsepower Per Engine	Maximum Speed (Knots)
Danish 9,000 GRT	11,000	463 [c]	63 [d]	27.3 [c]	1	6,900 [c]	14.5 [c]
Kazbek 8,000 GRT	10,000	452 [e]	62	28 [e]	2	2,000 [e]	13.3 [e]
Bulgarian 3,000 GRT	4,000	N.A.	N.A.	N.A.	1	N.A.	9.0 [f]
Finnish 3,000 GRT	4,000	318 [g]	48 [g]	20 [g]	1	2,650 [h]	13.0 [h]
Finnish 1,000 GRT	1,100	208 [i]	33 [i]	14 [i]	1	1,150 [i]	12.0 [i]
Swedish 1,000 GRT	1,100	215 [j]	34 [j]	14 [j]	1	N.A.	11.0 [j]

a. Rounded to nearest thousand.
b. Length between perpendiculars, or calculated length.
c. 74/
d. 75/
e. 76/
f. 77/
g. 78/
h. 79/
i. 80/
j. 81/

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Table 5

Breakdown of the Soviet Tanker Fleet by Tonnage a/
31 December 1956

Tonnage per Tanker (GRT)	Number of Tankers	Total Tonnage (GRT)
1,000 to 2,000	28	35,015
2,000 to 3,000	1	2,299
3,000 to 4,000	7	22,908
4,000 to 5,000	0	0
5,000 to 6,000	0	0
6,000 to 7,000	6	38,062
7,000 to 8,000	20	156,446
8,000 to 9,000	22	180,841
9,000 to 10,000	1	9,047
Total	85	444,618

a. Compiled from data in Table 7, p. 23, below.

Table 6

Breakdown of the Soviet Tanker Fleet by Age a/
31 December 1956

Age (Years)	Number of Tankers	Total Tonnage (GRT)
0 to 5	60	335,025
6 to 10	0	0
11 to 20	7	10,758
21 to 30	12	79,208
31 to 40	3	10,107
Over 40	0	0
Unknown	3	9,520
Total	85	444,618

a. Compiled from data in Table 7, p. 23, below.

Table 7

List of Vessels in the Soviet Tanker Fleet a/*
(Nonnaval Tankers of More Than 1,000 GRT Outside of the Caspian Sea)
31 December 1956

Name	GRT	Speed (Knots)	Delivery		Area of Operation
			Place	Date	
Apsheron	9,047	14.5	Denmark	1952	Black Sea to Far Ea
Ararat	2,299	13.0	Germany	1944	Black Sea
Ashkhabad	7,961	13.3	USSR	1954	Black Sea to Far Ea
Azerbaydzhan	6,114	9.0	USSR	1932	Far East
Azneft'	1,117	12.0	Finland	1954	Barents Sea, White S
Bashkirneft'	1,117	12.0	Finland	1955	Black Sea
Batumi	6,236	10.0	Denmark	1932	Black Sea to Far Eas
Beshtau	1,827	9.0	Germany	1916	Black Sea
Chernovtsy	8,229	13.3	USSR	1955	Black Sea to Far Eas
Chkalov	8,229	13.3	USSR	1956	Black Sea to Far Eas
Drogobych	3,259	13.0	Finland	1955	Black Sea
Dzerzhinsk	8,229	13.3	USSR	1956	Black Sea to Far East
El'ban	1,117	12.0	Finland	1955	East Arctic
Emba	3,207	9.0	Bulgaria	1953	Black Sea
Frunze	7,961	13.3	USSR	1955	Black Sea to Far East
Gor'kiy	8,229	13.3	USSR	1955	Black Sea to Far East
Grigoriy Vakulenchuk	7,961	13.3	USSR	1955	Black Sea to Far East
Grodno	8,229	13.3	USSR	1956	Black Sea to Far East
Grozneft'	1,117	12.0	Finland	1954	Barents Sea, White Se
Groznyy	7,961	13.3	USSR	1954	Black Sea to Far East
Gudermes	3,340	12.0	Finland	1956	Black Sea to Near Eas
Iosif Stalin	7,061	9.0	US	1921	Black Sea to Far East
Iosif Stalin	7,745	12.0	USSR	1932	Black Sea to Far Eas

* Footnotes for Table 7 follow on p. 27.

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Table 7

List of Vessels in the Soviet Tanker Fleet a/
(Nonnaval Tankers of More Than 1,000 GRT Outside of the Caspian Sea)
31 December 1956
(Continued)

Name	GRT	Speed (Knots)	Delivery		Area of Operation
			Place	Date	
Irtysh	1,113	11.0	Sweden	1951	Far East
Iskra	1,117	12.0	Finland	1954	Black Sea to Far East
Ivanovo	8,229	13.3	USSR	1951	Black Sea, Baltic Sea
Kakhovka	7,961	13.3	USSR	1954	Black Sea to Far East
Karl Marks	8,229	13.3	USSR	1951	Black Sea, Baltic Sea
Kartaly	1,117	12.0	Finland	1952	Barents Sea, White Sea
Kaunas	8,229	13.3	USSR	1956	Black Sea to Far East
Kazbek	8,033	13.3	USSR	1951	Black Sea to Far East
Kerch	7,961	13.3	USSR	1954	Black Sea to Far East
Kherson	7,961	13.3	USSR	1953	Black Sea to Far East
Kirov	8,229	13.3	USSR	1955	Black Sea to Far East
Klaypeda	8,229	13.3	USSR	1954	Black Sea to Far East
Klyaz'ma	1,081	12.0	Finland	1952	Far East
Kostroma	8,229	13.3	USSR	1955	Black Sea to Far East
Krasnovodsk	8,229	13.3	USSR	1956	Black Sea, Baltic Sea
Kreking	1,117	12.0	Finland	1955	Baltic Sea
Kreml'	7,661	12.0	USSR	1932	Black Sea to Near East
Leningrad	7,961	13.3	USSR	1953	Black Sea to Far East
Leninsk	8,229	13.3	USSR	1956	Black Sea, Baltic Sea
Lok-Batan	3,200	13.0	Finland	1956	Baltic Sea
Lok-Batan	1,827	8.0	USSR	1930	Far East

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Table 7

List of Vessels in the Soviet Tanker Fleet a/
(Nonnaval Tankers of More Than 1,000 GRT Outside of the Caspian Sea)
31 December 1956
(Continued)

Name	GRT	Speed (Knots)	Delivery		Area of Operation
			Place	Date	
Maykop	7,961	13.3	USSR	1953	Black Sea to Far Eas
Makhachkala	8,229	13.3	USSR	1954	Black Sea to Far Eas
Maksim Gorkiy	1,021	8.0	Japan	1937	Far East
Molodechno	8,229	13.3	USSR	1956	Black Sea to Far Eas
Moskva	6,086	12.0	USSR	1931	Black Sea to Far Eas
Narva	1,147	11.0	Sweden	1952	Barents Sea, White Se
Neftegorsk	3,259	12.0	Finland	1955	Black Sea
Nenets	1,631	8.0	Japan	1937	Barents Sea, White Se
Nercha	1,081	12.0	Finland	1952	Far East
Novinsk	1,117	12.0	Finland	1954	Far East
Ochakov	8,229	13.3	USSR	1955	Black Sea to Far East
Okean	1,147	11.0	Sweden	1952	Baltic Sea
Orsk	1,117	12.0	Finland	1953	Baltic Sea
Pamir	6,662	10.2	Germany	1927	Black Sea to Far East
Penza	8,229	13.3	USSR	1955	Black Sea to Far East
Peredovik	1,857	9.0	USSR	1940	Far East
Poti	7,961	13.3	USSR	1954	Black Sea to Far East
Rion	3,321	9.0	Bulgaria	1952	Black Sea
Rostov	8,229	13.3	USSR	1955	Black Sea to Far East
Sakhalin	6,124	9.2	USSR	1931	Far East
Samarkand	7,961	13.3	USSR	1955	Black Sea to Far East

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Table 7

List of Vessels in the Soviet Tanker Fleet a/
(Nonnaval Tankers of More Than 1,000 GRT Outside of the Caspian Sea)
31 December 1956
(Continued)

Name	GRT	Speed (Knots)	Delivery		Area of Operation
			Place	Date	
Sergo	7,596	10.2	USSR	1930	Black Sea to Far East
Slavgorod	8,229	13.3	USSR	1956	Black Sea, Baltic Sea
Sovetskaya Neft'	8,228	11.0	France	1929	Far East
Soya VII	1,240	10.0	Germany	1938	Baltic Sea
Stakhanovets	1,219	7.0	USSR	1922	Black Sea
Sungari	1,147	11.0	Sweden	1952	Far East
Sverdlovsk	8,229	13.3	USSR	1954	Black Sea to Far East
Tallinn	7,961	13.3	USSR	1954	Black Sea to Far East
Tanker No. 3	1,079	8.0	Japan	1937	Far East
Tendra	1,060	8.0	N.A.	N.A. f/	Black Sea
Terek	3,322	9.0	Bulgaria	1953	Black Sea
Ufa	1,117	12.0	Finland	1953	Far East
Ural	6,840	N.A.	N.A.	N.A. g/	Black Sea
Urzhum	1,117	12.0	Finland	1953	Barents Sea, White Sea
Vayyan Kuturye	7,602	10.2	USSR	1930	Black Sea to Far East
Volga-Don	7,961	13.3	USSR	1952	Black Sea to Far East
Volganeft'	7,327	10.2	France	1929	Black Sea
Yukagir	1,631	10.0	Japan	1937	East Arctic
Zhdanov	7,961	13.3	USSR	1954	Black Sea to Far East
Zhiguli	1,620	8.0	N.A.	N.A. h/	Black Sea

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Table 7

List of Vessels in the Soviet Tanker Fleet a/
(Nonnaval Tankers of More Than 1,000 GRT Outside of the Caspian Sea)
31 December 1956
(Continued)

a. 82/
b.
c.
d.
e. /.
f. This tanker is reported to be a converted flat-bottomed barge. The dates of its original construction and conversion are not known.
g. Because this tanker is suspected to be a conversion, the date of its original construction is not known.
h. Like the Tendra, this tanker is reported to be a converted barge. The date of its original construction is not known.

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APPENDIX B

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APPENDIX C

SOURCE REFERENCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

Source of Information	Information
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

1.

2.

3.

4.

APPENDIX C

APPENDIX C

APPENDIX C