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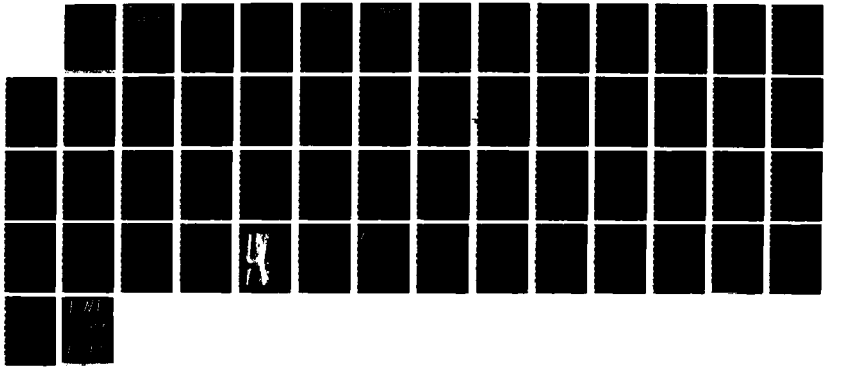

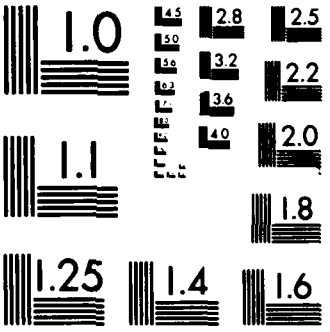

SEA CONTROL IN THE ARCTIC
A SOVIET PERSPECTIVE

by

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20 April 1987

The contents of this paper reflect our own personal views and are not necessarily endorsed by the Naval War College, the U.S. Coast Guard or the U.S. Marine Corps.

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ABSTRACT OF PAPER

This paper exposes the ominous Soviet capability to outflank the US Maritime Strategy by exploiting sea control in the Arctic Ocean. This is a recent development resulting from a long term effort by the Soviet Union to gain access to the immense natural resources of the Siberian region by constructing an inter-modal transportation system which links the Trans-Siberian Railroad to various northward flowing rivers and port facilities of embarkation servicing the Soviet Northern Sea Route. By building an unprecedented ice-strengthened fleet of nuclear and conventionally powered icebreakers, naval combatants and cargo ships, they have opened the Northern Sea Route to virtually year-round operation. This has been coupled to an infra-structure of specialized lighterage and handling systems to move cargo quickly through remote Arctic areas. Although the primary incentives for this development have been economic, the strategic implications are frightening. In the Atlantic, the Pacific and the Mediterranean, concentric circles of Soviet defensive power radiate outward from the motherland but are effectively contained by US and NATO military power. Only in the Arctic can the Soviets project defensive forces virtually unopposed because the West continues to envision the icy polar seas as impenetrable geographic barriers. Meanwhile, the Soviets have developed superior Arctic mobility which, in the near future, can be used to exploit their inherent geo-strategic advantages. They have the capability to project their military forces forward to the North American continent along a new polar axis of advance which provides them with interior lines of communication. Even without first use of nuclear weapons, they have the potential to cut vital US and Canadian energy supplies and may be able to strategically dislocate North American military forces and materiel desperately needed by our NATO allies of Western Europe. Some recommendations are offered for US and Canadian defence planners to counter this Soviet threat.

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PREFACE

We wrote this paper for several reasons. First, our curiosity was peaked by Tom Clancey's novel, Red Storm Rising, because he used a Soviet SEA-BEE style merchant vessel to invade Iceland. After initial research, we discovered that very few naval analysts have recently looked at the cumulative military lift capacity of the Warsaw Pact nations' fleets. Second, in reviewing Lloyd's Register of Shipping we found that most Warsaw Pact ships built in the last 15 years had been designed and constructed to operate in the ice. Because we both were experienced in Arctic operations,* we recognized that ice-strengthened ships could add a new strategic dimension to future NATO-Warsaw Pact confrontations. If the Soviets were rapidly developing their ability to operate large surface ships in the Arctic Ocean and were gaining a substantial degree of Arctic sea control, we believed that this could adversely impact U.S., Canadian and NATO vital interests.

In the ancient Punic Wars, Hannibal surprised and strategically dislocated the Roman legions by attacking them with his war elephants over what had been considered to be an insurmountable geographic barrier, the Alps mountains. In a similar fashion, recent developments in Soviet Arctic mobility and logistics give the Soviets the capability to inflict strategic surprise on the West. We conclude that our icy Arctic barriers may no longer shield the North American continent from Soviet sea-borne power projection. Unless this threat is countered, the Soviets will have the capability to outflank the U.S. Maritime Strategy.

As Canada completes a major review of its defence plans in relationship to NATO commitments, the U.S. Coast Guard contemplates war fighting missions for new icebreakers and as the U.S. Army, Navy and Marine Corps develop concepts and capabilities to conduct Arctic warfare, we hope that this paper will stimulate thinking and discussion to better focus our defence resources. Sea control of the Arctic Ocean must not be ceded to the Soviets.

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* One of the authors has completed four tours of duty onboard Coast Guard icebreakers. These assignments have taken him north of Alaska, into the Davis Straits, to both the north-east and north-west sectors of Greenland and into the northern Norwegian Sea at various times of the year. He holds the professional Ocean Engineer degree from MIT and is a registered Professional Engineer in the state of Missouri. He was the 1984 National Society of Professional Engineers "Federal Engineer of the Year" for the U.S. Coast Guard. The other author has worked as a forester in Alaska during the past 10 years and has over 15 years of experience in both military and forest engineering. He has traveled extensively throughout much of Alaska and northwestern Canada. His primary specialties are solving remote area logistic and transportation problems, vehicle and facility management in the Arctic, and road and bridge design and construction. During his 15 years as a military engineer in the Marine Corps Reserve, he has participated in numerous landing exercises; completed a series of courses in landing force staff planning; served as an observer in northern Norway; and was a contributing author to the three published volumes of Arctic and Cold Weather Warfare, the last of which was completed during 1981 in Anchorage, Alaska by Mobilization Training Unit (Arctic Operations and Training), Alaska-1.

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SEA CONTROL IN THE ARCTIC
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INTRODUCTION: The purpose of this paper is to focus attention on the increasing capabilities of the Soviet Union to project military force in the Arctic. Though there is no proof that the Soviets have intentions to implement the strategic plans or concepts of operations discussed herein, there is overwhelming evidence that they possess substantial capabilities in the Arctic which could be most surprising and disadvantageous to the United States (U.S.), Canada, and our North Atlantic Treaty Organization (NATO) allies. U.S. and Canadian strategists must consider these capabilities in determining our territorial defence plans and our Arctic defence forces. The medium of a converstion between two fictitious Soviet strategists, one a politician and the other a senior military official, is used to allow for a more open discussion of strategic issues and concerns. Factual references are footnoted; other information is simply conjecture or speculation. Fictitious political events and names are used in the development of Soviet strategy. The intent of this paper is to present the world from the perspective of a Soviet strategist looking beyond the borders of the homeland at what has historically been an unfriendly array of nations. We challenge the reader to do the same ... put on a Soviet hat and look at the world from a traditionally Russian point of view.

SETTING: It is the winter of 1987. Voroshilov Academy has recently been tasked to examine Soviet maritime capabilities and doctrine. Comrade Mikhail Sorokin, Professor of Military Economics, Voroshilov Academy, Moscow, and Candidate Member of the Politburo CPSU, is meeting in his office with General Ivan Yermak, an assistant to the First Deputy Minister of Defence (Chief of the General Staff), who has, among his other responsibilities, an administrative support function for the Soviet Northern Fleet. General Yermak has been instructed to brief Professor Sorokin and answer questions which may ultimately facilitate economic planning necessary for enhancing the military posture of the State.

DISCUSSION:

Comrade Sorokin: Welcome General Yermak. Thank you for visiting me on such a cold winter's morning. Your son is doing well, I hope? He was an honor graduate from our Academy just three years ago. Where is he now?

General Yermak: Thank you for your hospitality, Comrade Sorokin. It is always a pleasure to visit the Academy. It has been some time since I have heard from my son. He is still in Afghanistan, however, and has recently received a medal for valor in combat.

Comrade Sorokin: I wish him well. I expect he hopes that the efforts of Party Secretary Gorbachev will bring the war to a successful conclusion?

General Yermak: Yes, a satisfactory solution to that war would be very beneficial.

Comrade Sorokin: Well, I would like to hear more about your son's observations and experiences in Afghanistan. Perhaps we can discuss this over dinner. I know you have a very busy schedule today, so I will get to the point of why I asked you to visit today.

General Yermak: Thank you, Comrade. I have been given a very busy schedule to fulfill today. I believe I will be ready for a leisurely dinner once this day is finished.

Comrade Sorokin: As you may know, the Voroshilov Academy recently has been tasked to critically examine our Soviet maritime strategy and capabilities. My old friend Admiral Gorshkov told me that you and CAPT Kiril Chubakov* of the Defense Ministry have been working on some strategic concepts which he thought you and I should discuss further. He also indicated that the two of you made some interesting observations about the recently published American novel, Red Storm Rising, by Tom Clancey.(1) Although the book is filled with disinformation, deliberately outdated strategic doctrine, and includes slanderous misrepresentations of the peaceful motivations of the Communist party, I believe Mr. Clancey has revealed some valuable insights. I have heard that he gleaned much of his information from conversations on the Washington, D.C. cocktail circuit following his acclaim as author of the novel, Hunt for the Red October.(2) What do you think of the book?

General Yermak: As I discussed with Capt. Chubakov, it amazes me that an American writer would have so much insight into his country's war plans and defensive capabilities. I understand that the book has even received the acclaim of the American President and many of his top military advisors. Personally, I was troubled by Clancey's novel and not just because the capitalistic nations stalemated our intentions. Mr. Clancey made some gross simplifications concerning the capabilities of our northern forces which might be misinterpreted by our leaders. I believe our military and political leaders should be reminded of our true capabilities.

Comrade Sorokin: Still, the novel recognized the essence of some of our strategic maritime potential which I wish he had not stressed. Even though ADM Gorshkov was pleased that Mr. Clancey

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* Capt Chubakov was Head of the Northern Sea Route Administration. Source: SOVSHIP 4/82, p26.

had used some ideas from his book, Seapower of the State*, I felt that Clancey's use of the MV Julius Fuchik as an amphibious force transport ship capable of moving an entire regiment to Iceland in order to capture NATO military facilities was just too close to some of the highly classified scenarios we have played in various war games at this school.

General Yermak: I do not think that Clancey's observations concerning a minor portion of our maritime sea lift capability should be viewed with much concern. Jane's Fighting Ships - 1986/1987, (4) already emphasizes the possible military significance of some of our merchant fleet. Fortunately, the Americans seem naive believing that if a ship is not painted grey, it cannot have military application. For example, they are still trying to determine if the MV Ivan Skuridan was used to support our recent amphibious operation in the Volkovoya Fjord during April 1986. ** Of course we would never consider using our merchant fleet for anything other than peaceful maritime purposes, but as Capt. Chubakov pointed out, we have true capabilities for sealifting considerably more divisions to Iceland than Clancey might envision!

Comrade Sorokin: Having the strategic lift capability is not sufficient in itself, General. Mounting a successful amphibious operation in open water entails controlling the air, the sea, and even the regions under the sea. As Admiral Gorshkov said, "any fleet must always seek to create in a particular area of the sea the regime necessary for it ... to gain control of shipping and ensuring its safety and freedom to deploy one's forces." (6) He also said, "Combat actions (in the air) to secure dominance at sea in selected areas or in particular directions, may either precede the solution by the fleet ... or be conducted simultaneously." (7)

General Yermak: You're absolutely right Comrade. This is one of many errors which are apparent in Clancey's book. At the start of a war with the United States, it would be far too risky to attempt to seize and hold Iceland. It is just too far forward for us to reliably maintain safe air and sea lines of communication and control over the island without the use of a very large force. The plan simply is not feasible.

Comrade Sorokin: Yet undoubtedly there are other amphibious operations on the northern maritime front that would make strategic sense during the initial stages of a conflict.

General Yermak: Yes, Comrade, but only on islands which are in waters which can be struck by our

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* ADM Gorshkov has consistently stressed the essential prerequisite for crosscompatibility between merchant vessel cargo configurations and military sea lift requirements. (3)

** The fall/winter 1986 issue of Amphibious Warfare Review indicates that the United States is still uncertain as to the use of Soviet RO/RO ships. (5)

land based aircraft. For example, because it is on the direct path of air attack from North America to Moscow, Svalbard is the group of islands that are of immediate concern. (8) Several thousand Soviet miners live and work there, and they outnumber the native Norwegians two to one. Svalbard has an adequate airport which could provide us with an advanced base for staging tactical fighter aircraft. By initially controlling Svalbard rather than Iceland, we are far better situated to attack enemy forces trying to enter the Arctic Ocean from the Norwegian and Greenland Sea approaches. Other strategic islands such as Bear and Jan Mayen could be seized simultaneously and quickly developed to provide radar sites and forward tactical aircraft recovery air strips. All of these islands are located along the approximate maximum limits for pack ice during April. What this means is that most of our surface navy and merchant ships can then operate near or inside the perimeter of the ice. Our sea lines of communication (SLOCs) will be relatively safe from enemy submarines and surface ships. As long as we can also maintain air superiority, it will be nearly impossible for anyone to strike at our fleet. This will ensure the availability of our fleet for combat on our terms, rather than on the enemy's terms.

Comrade Sorokin: But Admiral Gorshkov emphasized using surface ships in a more active and aggressive anti-submarine warfare (ASW) role. He said,"Surface ships remain the basic and often sole combat means of ensuring deployment of the main strike forces of the fleet - our submarines."(9) The current declaratory version of the U.S. maritime strategy, (10) which we take more seriously than Mr. Clancey's outmoded GI-UK Gap barrier strategy, suggests that the U.S. will try to penetrate deep into our bastions in order to seek out and destroy our SSBN forces. We know that their attack submarines have under-ice capability. How can your idea of seizing air bases at Svalbard and Jan Mayen islands, installing radar on Bear Island, plus keeping our surface fleet in the marginal ice zone, by themselves ensure the protection of our SSBNs and deny the Norwegian Sea approaches to the U.S. Carrier Battle Groups (CVBGs)?

General Yermak: Individually, they will not. However, by capturing Svalbard, Jan Mayen, and Bear Island, we will greatly increase the effective coverage by our tactical fighter forces for another 600 miles north of the homeland and substantially over the Greenland and Norwegian Sea approaches. With improvements to the air runway at Svalbard, we can also launch bomber forces from outside of the Norwegian territorial defense zone. These bombers can fly undetected from land based radar and can strike any U.S. battle forces which may be operating in the area. Additionally, our ASW aircraft, such as the Ilyushin Il-38 and Bear F, can have continuous fighter protection between the Kola Peninsula and the edge of the permanent polar ice cap. This is the zone where we intend to locate, trap and destroy submarines and ASW aircraft attempting to kill our SSBNs.

Our massive fleet of fishing and research vessels will assist our ASW aircraft and submarines to hunt and kill the American submarines. I envision this fleet operating as picket ships throughout the ocean area between Greenland and Norway, wherever they fall under the umbrella of our air forces. It would be a defense in depth, with increasingly dense numbers of these ships the closer we get to our homeland. Many of these ships have highly accurate sonars, good radio transmitters, and radar. Some are even equipped with satellite communications. Because they are relatively small vessels, no American submarine would risk exposure to attack them, much less expend valuable ordnance. The ships which stay inside the ice zone are also relatively immune to attack by U.S. surface forces because their ships are not ice strengthened and therefore cannot pursue us into our sanctuary.

The trawlers can employ towed tactical sonar arrays and fish-finding sonars to assist in locating American submarines and to ensnare them with fishing nets. We can also equip the trawlers with depth charges so that they will have the capability to engage any submarines which can be located. The larger factory and research ships which are equipped with helicopters can also have an important ASW role. These ships have helicopter platforms which may be capable of supporting ASW helicopters*. We need to explore this concept further and perhaps some of the ships will need additional modifications. The ASW helicopters have dipping sonars and torpedoes for searching out and destroying enemy submarine contacts. They should be especially successful at prosecuting targets which have been identified by the smaller trawlers. The helicopters can be armed with air to air missiles for the purpose of attacking any enemy P-3s or other slow moving aircraft which might attempt to damage our fleet of picket ships.** We also have plans to arm this fleet with surface to air missiles and anti-aircraft guns for self defence. Deck space has been allocated for these weapon systems and it is a relatively simple task for the crew to perform this modification.*** As you said, Comrade, it takes a combination of air and sea supremacy to ensure the survival of our SSBNs and indeed to protect our northern defensive zone. This combination of land and sea based forces will ensure our initial survivability while providing the basis for future options.

Comrade Sorokin: Yes, General, ADM Gorshkov said that, "The experience of two World Wars showed that fishing fleets were widely used as part of the Navy for solving auxiliary and combat

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* Hormone A or Helix KA-32S helicopters (11)

** Additionally, KIEV-Class and Breshnev-Class aircraft carriers with YAK 38 (FORGER) jump jets and the new navalized version of SU-27 (FLANKER) aircraft, all equipped with air to air missiles, can be very effective against P-3 aircraft that venture into weapon ranges. (12)

*** For instance on the ARTIKA class civilian icebreakers a complete suite of AA and ASUW weapons was fitted but taken off immediately after acceptance trials leaving the attachment platforms only. (13)

tasks, chiefly in the sphere of defence." (14) Is your scheme feasible, though? How big is our fishing fleet, is it strengthened to operate in ice-strewn waters, and what threat can the enemy pose to such small targets? Lastly, how do you envision they can defend and sustain themselves?

General Yermak: The scheme is highly feasible. In 1975, we owned 3,833 fishing vessels grossing three million tons. A separate study completed in 1976 indicated that we had an additional 547 factory ships grossing another three million tons. (15) Not all of these ships were designed for frozen seas, however. Recently I identified over 1,714 ice strengthened fishing vessels which were listed in the 1985 edition of Lloyd's Registry. Even though I did not have time to record the sizes of the various vessel classes, I can assure you that many are as large as a medium freighter and can stay at sea continuously for over six months at a time. For example, we have 175 trawlers of the ATLANTIK class in excess of 2,100 registered tons, and 178 trawlers of the Super Atlantik class which are in excess of 3,000 registered tons. (16) Perhaps a more complete inventory and analysis of the capabilities of our small boat fleet could be conducted. We should not have to learn the lessons of World War II all over again.

The enemy will have little interest in attacking our fishing fleet from the air. He probably will be operating at the limits of his combat radius in a hostile environment. He will not be able to expend his valuable ordnance on anything but our larger merchant ships and naval combatants. On the other hand, if he does attack our fishing fleet, his main striking force is diluted.

Did I tell you about the Odissey class research ships which carry small submarines ? The submarines descend from their holds covertly to provide ideal vehicles for SPETSNAZ (Special Operations Forces) missions such as cutting deep sea surveillance and communication cables and sabotaging enemy installations. These ships look just the same as 187 other Mayakovskiy class trawlers. It is very difficult to detect which of these ships is carrying submarines when viewed from outside.

In summary, Comrade, we have a very sizeable fleet of self-sustained fishing vessels which can be armed for self-defense, and which can be very useful in a role as picket ships to assist in the detection, targeting and interdiction of the enemy.

Comrade Sorokin: I believe ADM Gorshkov was aware of this when he said, "The fishing fleet is a constituent part of the civil fleet and an important component of the sea power of the state. Modern fishing vessels possess considerable seaworthiness, a long operating range and independence of action. They are, as a rule, equipped with the latest navigational, sonar, and radio electronic devices and fishing and technological gear." (17) Until now, I had failed to fully understand the

military significance of the "fishing and technological gear" which these vessels apparently carry Your ideas sound promising.

ADM Gorshkov emphasizes the importance of keeping the SSBN force inviolate not only for their nuclear war fighting capability, but also for intimidation, deterrence, and their potential to serve as a strategic reserve to exact war termination on favorable terms. Since we now can keep our DELTA and TYPHOON submarines at home in ice strewn waters,(18) and by exploiting our surveillance systems, including our fishing fleet, can quickly detect and cue our air and sea ASW resources to intercept and kill NATO SSNs, do you see any strong arguments for keeping the majority of our diesel and nuclear attack submarines bottled up in our own waters?

General Yermak. No! I have demonstrated that we already have the capability to protect our SSBNs. By 1995, our new aircraft carriers with their navalized version SU-27 jets (19) and greatly expanded Arctic fleet will ensure that the role of the attack submarine can be changed from defending SSBNs to one of forward deployment. I believe our diesel submarines will have the greatest potential against forward deployed NATO submarines and aircraft carriers, especially in choke points and coastal waters, as the Americans still have not gained the ability to reliably detect these boats when they operate on batteries.(20) Our new superconductor technology promises to greatly extend the silent operation of these submarines - significantly enhancing their threat potential.

Comrade Sorokin: Just one minute, General! Are you proposing that we assign our most powerful nuclear attack submarines to a peripheral role of attriting NATO merchant shipping while tasking our less sustainable diesel submarines to take on the entire American battle fleet? My friend... think of what you are saying. Interdiction of SLOCs at such an early stage of the war employs a protracted war strategy which doesn't address the enemy's immediate threat of striking the motherland, particularly with cruise missiles. To restrict our multi-mission nuclear attack submarines to such a SLOC interdiction role is preposterous and a complete waste of assets.

General Yermak: Professor, you have completely failed to comprehend what I am saying. I did not propose that we should initially conduct SLOC interdiction with our nuclear submarines. It is true that our diesel submarines might be highly successful against forward deployed carrier battle groups. Had you let me finish, you would have realized that I propose a far more important initial role for our SSNs. They will carry submarine launched cruise missiles (SLCMs), such as the SS-N-21, directly to the waters off of the United States. (21) By having this capability, the Americans will risk retaliation in kind should they decide upon a first use policy for their own

SLCMs (Tomahawk) strikes against our forces on the Kola Peninsula or elsewhere on the motherland.

Comrade Sorokin: You are suggesting that our SSNs can deter cruise missile attacks on our motherland, but our SSNs are used in a pro-SSBN role. Our SSBNs are currently using the ice to their advantage and only the SSNs can protect them in their icy bastions. You have expanded upon some of ADM Gorshkov's recommendations to integrate the fishing fleet into our defensive maritime strategy, even in the ice. You infer that SSNs will thereby be released for your new mission of cruise missile strike deterrence. However, the fishing fleet may not provide an adequate substitute for SSBN protection. Perhaps our naval combatants and auxiliary ships could make up the difference if they were able to operate in a similar environment. ADM Gorshkov has used the pro-SSBN mission as justification for building expensive surface combat ships such as the Kiev, Kara and Krivak classes.(22) Can these vessels operate in the ice?

General Yermak: Comrade Sorokin, I realize that your position does not regularly lend itself to mixing with the operational side of the military. Your background is, of course, in economics and long-term strategies for industrialization. Because I have been told to answer all of your questions concerning operational concepts for our armed forces in northern areas, let me put things into perspective for you. Suppose I told you that a large percentage of our naval combatants might be capable of negotiating heavy ice strewn waters. Jane's Fighting Ships 1986/1987 (23) is finally suggesting that some of our naval auxilary ships might be ice strengthened. (See Appendix A.) However, as early as June 1969, the Center for Strategic and International Studies at Georgetown University in Washington, D.C., recognized some important concepts: "The Northern Sea Route of the Soviet Union is of both military and economic importance." (24) The study emphasized that most ordinary merchantmen on this route are specially reinforced in the hulls using ice-strengthening techniques developed in modern Finnish shipyards. It also alluded to the authors' suspicions about similar ice strengthening designs of our warships.(25) Perhaps he drew his conclusions from the fact that we currently have Kiev Class Surface Action Groups (SAGs) assigned to the ice strewn waters of our Baltic, Northern, and Pacific Fleets. (See figure 1, p38)(26)

The real clue is found in the 1985 edition of Lloyd's Register of Shipping, however, which shows that over 95 percent of our entire merchant marine is ice strengthened. Comrade, do you really think that the senior defence and political strategists who envisioned our rise as a maritime power would have been so foolish as to build the world's largest ice-strengthened merchant marine and submarine fleet without having a surface navy capable of protecting that fleet? Western observers know that we operate our combat ships in ice as an operational requirement driven by our

environment. (27)

Comrade Sorokin: General, you have made your point, but you would be well advised not to assume such an insulting, condescending manner toward a member of the Central Committee. I need not remind you that Clausewitz said, "A major military development, or the plan for one, should not be a matter for purely military opinion. Such a situation would be unacceptable and could be damaging!" (28) I tire of your word games. Let us return to the basics. Since the mid-1960's our foreign policy has stressed: (1.) strategic deterrence, (2.) defense of the homeland, (3.) preservation of political alliances, and (4.) support of national liberation movements. (29)

Obviously, this foreign policy is one of peace. With the exception of our problematical experience in Afghanistan, we have been careful not to commit ground forces to combat.

Meanwhile, the West, led by the U.S., continues to escalate their weapons build-up at a frightening pace, developing new weapons of mass destruction, and leaving us no alternative but to follow suit. The weapons which we are forced to mass at the inter-German border serve as a constant reminder of the nuclear sword the U.S. and their NATO allies have hung threateningly over our head. But now they have gone too far. They have introduced hundreds of ground launched nuclear cruise missiles into the German theatre which have the capability to hit Moscow. What's more, after foolishly allowing West Germany to re-arm over the last 30 years, our intelligence has recently suggested that a U.S. general may have offered West Germany access to the top secret Permissive Action Link (PAL) codes* which would allow them to unilaterally activate the nuclear weapons within their zone.** There has also been a dangerous resurgence of German neo-nazi nationalism in the West*** along with substantial pressures to ease the U.S. burden of the NATO expenses. The U.S. and its allies have conveniently forgotten who unleashed the two most catastrophic wars of destruction in this century and are abandoning their responsibility to keep the Germans' "evil genie" in the bottle. Why could they not have allowed West Germany to develop into a peace-loving industrial and trading power such as Japan? Instead, to gain defense "on the cheap," they fostered the inherent beast-like instincts of the German people, placed the nuclear lance virtually in their

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* For a discussion of PAL code nuclear weapon safeguards see Jonathan B. Tucker,, "Strategic Command and Control: America's Achilles Heel?" U.S. Naval War College paper NWC #2155. (30)

** Authors' note: Remember, this political scenario is fictitious, however in the March 6, 1987 issue of The Wall Street Journal, p30, in an article entitled " Let Europe Negotiate With Gorbachev", defense analyst Melvyn Krauss recommended that West Germany and our other allies be allowed to control their own nuclear weapons and claimed support of this position by several highly influential US defense analysts and politicians. (31)

*** See Suskind, Martin, New York Times, "History Cannot be Shrugged Off", Sect. 4, (2 NOV 1986). (32)

hand and pointed them at the peace loving people of the U.S.S.R. Simultaneously, there is a growing atmosphere of distrust and unrest among NATO European member nations who deeply resent U.S. hegemony. Pacifist and anti-nuclear movements are growing in strength. The U.S. is finding it increasingly difficult to gain consensus among NATO members. The basing rights for U.S. forces are a frequently discussed thorn in the sides of the European nations.* The U.S. has reacted in a characteristically disjointed, irrational and warlike manner. They persist in building a large naval fleet and proliferating tactical nuclear weapons throughout their forces. They have increased the number of fleet exercises in geographic areas very close to the maritime approaches to our homeland in an obvious attempt to intimidate our forces and demonstrate that offensive maritime power projection is a key element in their war plans. Recent weapon developments allow the U.S. an extremely long, stand-off offensive strike potential. We must develop an effective counter strategy. We see Germany as the primary land threat, NATO as a brittle alliance, and the U.S. as a potent aggressor who must be neutralized in the event of a major European conflict. Consequently, we are developing the following war aims:

1. Disarm Germany - Despite our forebodings of a united Germany, we feel that a West Germany in control of her own nuclear destiny is far more dangerous. Since the US and its allies have abrogated their responsibility to keep Germany from ever rising to make war on the world again, we must act swiftly to exercise control over all Germany. Our aim is to disarm West Germany, reunite the German people and guarantee a peaceful German government under Soviet protection and supervision highly consistent with our declaratory policy to promote a nuclear free Europe.

2. Eliminate U.S. hegemony on the European continent by destroying the cohesion of NATO - This can be achieved if the European NATO members see the nuclear threat of Germany in its proper perspective and relate it to the U.S. unilateral defense interests. Why should Europe risk becoming a nuclear graveyard just to promote U.S. prestige abroad? Clearly the interests of European member nations are becoming increasingly parochial. We must make our war aims clear as to their objectives and limitations. We must also stress that we do not want nuclear war. Rather, we seek a disarmed Germany and a nuclear free world where all can live in peace!

3. Neutralize the United States - The principal threat to the Soviet homeland is the United States. As long as they have not yet achieved an effective strategic defense, history has shown that our

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* For further discussion of these issues see Cushman, John, "U.S. To Cut Arms Aid to Allies; Includes Some Hosts of Bases," New York Times, 13 Nov. 1986 (33) and Schumacher, Edward, "U.S. - Spanish Discord Over Bases is Growing," New York Times, 14 Dec. 1986, p. 6. (34)

I.C.B.M. and S.L.B.M. forces can keep them in a conventional response mode. However, their navy is increasing their offensive posture, particularly in the maritime approaches to the Kola Peninsula. We would prefer to achieve a strategy in which the U.S. stays at home. If they have launched a massive resupply of military force to the inter-German theatre, we would like to achieve a strategy which turns their ships around. Keeping the U.S. in North America will neutralize them .

4. Improve access to the sea and defence of the maritime approaches to the homeland: - In part this becomes resolved with the reunification of East and West Germany under Soviet control. We thereby get access to the North Sea through the Rhine River and internal canal systems in addition to gaining a virtual monopoly on all significant inland waterway river transportation north of France on the European continent. In addition, we will introduce a resolution in the United Nations General Assembly changing Svalberg from a Norwegian trust territory to a Soviet trust territory. Since we outnumber the local populace with our Soviet mining community on the island, we should make the territorial redistribution a question to be self-determined by a "local" plebiscite. We also feel that by giving Denmark, The Netherlands, and Norway guarantees that we will not attack their territory on the mainland, we can fracture the public support they must rally to actively participate against us in a war with Germany. The neutrality of Sweden and Finland will be respected. However, we might have to intimidate or cajole our Norwegian neighbors to abide by our temporary occupation of Jan Mayen Island as a forward air base for our defensive tactical airpower. Other war aims can follow in time - such as better access to the Mediterranean Sea and Indian Ocean. However, these are secondary concerns which may ultimately develop through political means as a result of our support for third world liberation movements and our increasing stature as a world maritime trading partner.

In summary, General, our concise war aims would be:

1. Disarm Germany to achieve a nuclear free Europe.
2. Eliminate U.S. military hegemony over Western Europe by destroying the cohesion of NATO.
3. Defend our homeland by neutralizing the United States.

Until now, I have had difficulty in reconciling the very expensive naval fleet building programs, promoted by ADM Gorshkov, with a coherent Soviet maritime strategy which substantially contributes to our potential war aims. Do you have such a maritime strategy, General?

General Yermak: I must differ with your observation that there is no coherent maritime strategy component in the Army's overall defense plan. Let me point out the five major objectives which have been the foundation of our naval planning and strategy for over 20 years:

1. Protect our SSBNs;
2. Protect the maritime avenues of approach to our homeland;

3. Destroy American carrier battle groups before they are capable of striking our homeland;
4. Interdict enemy Sea Lines of Communication (SLOCs);
5. Seize the initiative and take fight to the enemy's shores.*

I have already discussed some concepts for accomplishing the first two elements of this strategy. By freeing our attack submarines from the role of defending our SSBNs, we will have the ability to put severe pressure on the enemy's SLOCs. By combining long range bombers and our new generation of cruise missile carrying, wing in ground (WIG) effect aircraft** with simultaneous submarine attacks, the enemy convoys and CVBGs will soon find the high seas to be untenable. We might even force the surviving portions of the American CVBGs to pull back from their forward deployed positions for the purpose of trying to escort convoys across the Atlantic and Pacific Oceans.

Before proceeding further with my explanation of a proposed Soviet maritime strategy, however, I would like to ask if you are beginning to see how all of our assets interrelate?

Comrade Sorokin: Not entirely, General. You have presented a reasonably clear description of how you might accomplish the first four objectives mentioned earlier. However, your fifth objective, seizing the initiative and taking the fight to the enemy's shore, is most troublesome.

General Yermak: *What do you mean, Comrade?*

Comrade Sorokin: Our ability to take the fight to North America seems to be limited to a nuclear option. This is because we still do not have the conventional capability to establish air and sea superiority in either the Atlantic or Pacific Oceans. You have suggested that attack submarines can be used as platforms for launching cruise missiles against targets ashore. I have no problem with this concept because it provides a powerful deterrent. However, the use of these missiles to accomplish your fifth objective will be extremely destabalizing and capable of escalating into a full nuclear exchange. It is common knowledge that these cruise missiles have nuclear warheads. (36) The U.S. may launch strategic nuclear weapons on detection of incoming cruise missiles simply because they do not have the capability to differentiate between tactical and strategic nuclear warheads.

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* Author's conjecture - destruction or neutralization of NATO strategic nuclear forces could be included in the category "seize the initiative and take the fight to the enemy."

* * NATO has code named this WIG aircraft the ORLAN. It has been observed in performance trials armed with the air launched version of the SS-N-22 cruise missile. Stand-off attack radius of this WIG aircraft is therefore in excess of 60 nmi. Maximum speed is estimated to be 300 knots at a cruise altitude of 20-25 feet. The SS-N-22 cruise missile can carry either a conventional or nuclear warhead at an estimated speed of Mach 2.5. (35) Source: Polmar pp 104, 108, 431.

General Yermak: But neither do we!

Comrade Sorokin: Very perceptive of you, General. As I was saying, I do not see any politically acceptable way that submarines would be decisive in a scenario to take the fight to North American shores unless the conflict had already become nuclear. I need not remind you that Clausewitz said, "war is an instrument of policy."(37) Secretary Gorbachev has publicly stated our policy that the Soviet Union will not initiate a nuclear war. * If the war stays conventional the use of submarines as the only means to take the fight to North America will not be decisive.

General Yermak: You misunderstood me, Comrade Sorokin. Having cruise missile submarines stationed off of either coast of the United States does not in itself escalate the war, especially since the enemy has the same capability. Until those missiles are launched, the SLCM situation is merely one of deterrence. However, while our submarines are forward deployed, they can be used to close harbors by mining or they can sink ships with their torpedoes. This is what I consider it means to take the war to the enemy's shores, short of crossing the nuclear threshold. However, this is only part of the effort which we need to employ in a war of global consequences.

Consider, if you will, our war aims, and then consider what must be accomplished in order to achieve those aims. Clausewitz says that in order to succeed in war, we must strike at the enemy's center of gravity.(39) Comrade... I will suggest that the center of gravity for the Americans is the cohesion of their alliance with NATO. If we can divide NATO from the United States, we will win!

This lesson is as old as history itself. The great Chinese General Sun Tzu observed: "Look into the matter of his (your enemy's) alliances and cause them to be severed and dissolved. If an enemy has alliances, the problem is grave and the enemy's position is strong; if he has no alliances the problem is minor and the enemy's positions weak."(40)

Before we could even consider attacking Western Europe, we must first examine the purpose of the NATO alliance. As you know, NATO was created after World War II as an American and British effort to establish a permanent foothold on the continent. More importantly, however, it was an alliance created for the defense of Western Europe and portions of Eur-Asia. It is not an alliance to protect North America. It appears that the alliance serves only for keeping a war in Europe rather than ensuring that the United States will have allies to come to her aid if the American continent were

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* This policy was not originated by Gorbachev. It was articulated in 1982 by Soviet Defence Minister Ustinov when he said," Only extraordinary circumstances - a direct nuclear aggression against the Soviet State or its allies - can compel us to resort to a retaliatory nuclear strike as a last means of self-defence."(38)

invaded. If you are following my lead so far, Comrade, let me emphasize something else which our naval strategists have recognized for some time. "The final destruction and occupation of the territory of maritime opponent cannot be accomplished without amphibious operations."(41) To take that one step further, I am suggesting that it may be necessary to transport our army to North America if we are to successfully terminate a war.

Comrade Sorokin: General, I have heard arguments before that amphibious landings and subsequent operations ashore are necessary to defeat a maritime opponent. Yet, launching an amphibious operation into the teeth of U.S. blue water naval and air superiority is an act that only a madman would consider.

General Yermak: Yes, I agree. Only a madman or a fool would sail into the arms of an awaiting American fleet. What I have been contemplating, however, is a great white fleet operating in an area where we anticipate having sea control - the Arctic Ocean TVD*. Do you think the Americans can sail their blue water fleet into the ice to do battle with us?

Comrade Sorokin: Of course not, General. We know that their few icebreakers are unarmed, and their surface ships are thin skinned. Even advanced concepts of arctic warfare using air cushion amphibious vessels, languish for lack of interest and funding on the part of U.S. war planners. Their marines are finally deploying air cushion vehicle landing craft (LCAC)(43), but their craft are not designed for Arctic duty.(44) Our air cushion vehicles are designed for Arctic duty, and even though they have limited endurance, ADM Gorshkov told me that a squadron of these can conceptually operate out of our Arctic class RO-RO ships, barge carriers and LASH carriers** recently developed for our Northern Sea Route. Did I understand CAPT Chubakov to say that the two of you have discovered a new strategic military use for our ice capable merchant fleet as well?

General Yermak: Remember I said it was fortunate that Mr. Clancey missed the essence of our maritime strength by suggesting that one large RO-RO ship, the Julius Fuchik, would carry portions of an airborne division to Iceland for the purpose of securing that island. Clancey leaves his readers with the impression that this is just about the extent of our amphibious capability. This is good, Comrade! If our enemies continue to think this way we will catch them by surprise. Let me show you some tables of data which my staff has compiled concerning our ice-strengthened

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* Arctic Ocean Teatrii Voyennykh Deystviy (Theater of Operations): The Arctic Ocean TVD is one of four maritime theaters of operation established by the Soviets for unified direction of operations. The other maritime TVDs are the Atlantic, the Pacific and the Indian Oceans.(42) Source: Polmar, p13. (See figure 2, p39.)

** RO-RO and LASH refer to roll on- roll off and lighter container aboard ship handling carriers.

merchant fleet.(45,46,47) * The first table (Appendix B) includes all ships having more than 10,000 horsepower. We felt this was the minimum power necessary for ships to safely negotiate Arctic ice at a reasonable convoy speed. The second table (Appendix C) is for ships with less than 10,000 horsepower. Although there are seasonal periods when these ships could independently operate in the Arctic, their primary purpose will be to keep supplies moving northward along our internal lines of communication. **

Comrade Sorokin: Your staff has done considerable homework, General. However, I noticed that you have included Rumanian, Polish and G.D.R. vessels in this report - in addition to ships of the Soviet Union. Were you trying to inflate the numbers?

General Yermak: No, but we did think it was necessary to include all of these ships because our records show that these vessels are capable of flying any flag of opportunity as the political situation requires. You might remember that in October 1983, our valiant Romanian allies had many of their ships, along with ours, caught in the ice of the East Siberian and Chukchi Seas. Of that fleet of 50 resupply vessels, only one was sunk despite one of the worst ice seasons on record.(50) CAPT Chubakov has insisted that many critical lessons were learned during that winter. In a recent article(51) he wrote:

(1). *The 1983 winter was uncommonly severe.*

(2). The nuclear powered icebreakers successfully saved the merchant fleet from disaster.

(3). Ice forcasting and air surveillance is now conducted on a 24 hour basis, as this proved to be invaluable during the 1983 ice rescue missions.

39. Comrade Sorokin: General, I am aware of all this. The 26th CPSU Congress directed the fitting of nuclear power plants on our new fleet of transport vessels.(53) The 27th CPSU Congress reaffirmed CAPT Chubakov's optimistic forecasts and allotted billions of rubles for the building of a

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* "Most new Soviet freighters are completely equipped for ice conditions."(48)

** The Soviet Union's internal transportation system connects the west - east corridor Trans-Siberian Railroad to intermodal cargo handling river ports on the Irtysh, Ob, Yenisey, Angara, and Lena Rivers which move cargo north to Arctic port facilities. The Trans-Siberian Railroad also connects to port facilities on the Volga River which, in turn, are linked by a river and canal network from the Danube River, the Black Sea, the Caspian Sea, and the Baltic Sea to the White Sea on the northern Arctic coast. By the early 1990s the Danube River will also be connected to the Rhine River in a joint FRG-Soviet project. The Rhine River has access to the North Sea through outlets in the Netherlands and through the Rhine-Weser canal in West Germany. Most of the Soviet Union's naval combatants can be shuttled from one fleet operating area to another completely within Soviet territorial waters and internal waterways.(49) (See Figure 3, p. 40)

huge icebreaking cargo fleet capable of year-round navigation across the Northern Sea Route.(54) Many nuclear powered icebreaking ships have been launched or are now being constructed. Once all of these new ships are in service, we will have a year-round navigational capability across the entire Northern Sea Route. Convoys will be able to achieve an average transit speed of 12 knots by the 1990's.* The State Research and Project Development Institute of Merchant Marine Affairs has played an important part in developing rapid cargo transfer capabilities at our most northern Arctic seaports. (55) The result has been the development of an ability to unload tons of containerized cargo from RO-RO type ships directly onto the ice, and then onto intermodal advanced river transport systems such as air cushion assist barge trains and shallow water hydrofoil transports.(56) No doubt this has given us substantial experience in establishing a beach head in Arctic terrain. We also have the necessary mobility for rapid transit over ice, snow, tundra, swamps or rivers. Our ability to open the huge gas fields in Western Siberia required us to develop the ability to carry heavy loads of gas pipeline equipment by timber carrier ships to northern Siberian seaports such as Novy Port in the Bay of Ob, and to develop modularized transport systems to offload and rapidly move the cargo overland. This capability was necessary in order to build the huge gas pipeline which increasingly supplies Western Europe's natural gas requirements from our fields in Siberia. I fully understand the economics and political aspects of this surge in our Arctic mobility capabilities. However, I also find the military perspective to be intriguing because I recognize Lenin's imperative that economic development and the interests of defence must proceed hand in hand.(57)

General Yermak: Actually, the decision to navigate the northern route was made many years ago. You might remember that near the end of World War II, Marshal Stalin emphasized the strategic importance of the Trans-Siberian Railroad. He said that if the Japanese had been able to cut this line of communication, we would have been forced to withdraw from the war.(58) After the war, Stalin began making plans to eliminate our strategic "Achilles heel". Unfortunately, this process was not expedited because the Japanese were no longer a threat, and the Chinese became our allies. As a result, there was little immediate priority for building a new fleet of ice strengthened vessels capable of negotiating our northern sea lanes.

When our relations with China deteriorated in the early 1960's, we again focused upon our strategic West-East communications vulnerability. We drastically upgraded the defence of the Trans-Siberian Railroad, built tactical bypass trackage and began building our northern fleet in

* As a demonstration of things to come, in 1978 the Soviet nuclear icebreaker SIBIR accompanied an ice-strengthened containerized cargo ship through multi-year polar pack ice at an average speed in excess of 11 knots.(52)

earnest. Plans were completed to begin construction of the world's mightiest fleet of icebreakers, both nuclear and conventionally powered. In the early 1970's, an unexpected thaw in Sino-U.S. relations further intensified our need for Arctic class ship construction. The threat to our vital interior railroad lines was never clearer. This was the period when our concepts for highly specialized barge carriers, RO-RO ships, tankers, ferries and air cushion vehicles, became a reality. Using Finnish shipyards, we were able to trade for dozens of these types of ships which had the hull strength and horsepower necessary for operations in polar ice, without icebreaker assistance. We have come a long way since the end of World War II and are now able to keep the Northern Sea Route completely open for 10 months each year. During the 12th five-year plan (1986-1990), our goal is to achieve year-round operations. By 1990, our fleet of icebreakers, ice strengthened cargo vessels and ships of all kinds, will provide us with the capability to fully develop our entire Siberian region.* We will then be able to tie our Atlantic and Pacific naval forces together by a common sea route completely within the territorial waters of the Soviet Union. In time of war or hostilities, we can completely protect these SLOCs using our land based air forces, fleets of ice strengthened naval auxiliaries and combatants and indeed have sea control in the Arctic Ocean.

Comrade Sorokin: If I understand your thinking, General, the normal peacetime operating areas of our blue water combat and merchant fleets may radically change in times of a major conflict with the U.S. and NATO powers?

General Yermak: That is exactly what I am suggesting, Comrade. While some of our less capable ships may stay in neutral ports in warm water countries, there is a good chance that we will recall most of our ice capable ships back into our sphere of protection prior to the start of hostilities. The largest of the merchantmen and capital ships will reassemble in the Arctic TVD. We must preserve as much of our fleet as possible until our submarines and aircraft can roll back those NATO forces which would prevent our fleet from sailing. The fleet will not move forward any faster than we can expand our defensive perimeter by establishing air and sea control outward from the homeland. Because of our virtually uncontested capabilities to operate in the Arctic, we can swiftly expand our defensive perimeter across the Arctic Ocean to the northern shores of Alaska and the Northwest Territories of Canada. With the majority of our large ships attached to the Arctic TVD prior to the commencement of hostilities, we may subsequently be in the position of being able to project a very large force onto the North American continent at the start of the war. The purpose

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* In a recent (JAN 87) newspaper article, Captain Anatoliy Kozanov, master of the SR-15 class Arctic freighter Kapitan Man, was quoted as follows, "off season voyages to end next year or the year after...when the Soviets plan to open the eastern Arctic to year-round shipping."(59)

of such a campaign would be to strike a decisive surprise counter-attack which would decapitate vital North American energy supplies, and strategically dislocate forces and materiel needed to feed the NATO war machine. The element of surprise and methods for employing advance forces would be similar to that which Mr. Clancey(60), alludes to, however, the magnitude would be greatly increased. Many of our RO-RO ships, barge carriers, and other highly specialized ships are already making port calls and conducting trade with the US and the Canadians. In a few more years, carefully negotiated bi-lateral economic development agreements will allow us to use our ice-strengthened fleet to assist the US and Canada in developing their Arctic resources.

Comrade Sorokin: General, please be more precise in your use of terms. "Bi-lateral economic development agreements" are used only with third world countries to extend our political influence, win their people's hearts and minds, and to provide them with ships which allow them to transport their raw materials to our world markets. I think you mean "bi-lateral trade agreements".

General Yermak: No Professor, I mean we should treat the people of Alaska and northern Canada exactly the same as we treat developing nations of the Third World. Use of our ships to carry N. American Arctic raw materials would be similar to our earlier grain agreements whereby our ships were consigned to carry a great percentage of U.S. grain. Once we establish a routine presence, this will facilitate our ability to swiftly land large forces at important points along Alaska's northern coastline and the MacKenzie River Delta in Canada's Northwest Territories.

Comrade Sorokin: But General, what if the American surveillance system detects such a large movement of ships and aircraft?

General Yermak: Surveillance systems must be focused along anticipated axes of advance. It is not their system which we will defeat as much as their interpretation and conventional thinking as to what they see. Most of the US forces will already be forward deployed in Europe and in the Pacific. Even Canada will retain only 2,000 troops to defend her homeland after fulfilling her commitment to NATO.(61) If surveillance systems alert the enemy, they lack the logistic capability to stop us before it is too late. On D-day, we would begin flying in reinforcements using our rapidly growing fleet of WIGs, Canidids, Cubs and Cocks.(62)* They would rendevous with equipment and supplies being shuttled in by our ships. Although in theory we currently have an ice-strengthened lift

* To air deliver personnel, approximately 125 Candid aircraft sorties will move one equivalent U.S. MECH DIV. personnel (Approx. 17,500 men). For example, using a distance of 2,000 nautical miles and 55% of available Soviet Candid aircraft, 125 sorties could be completed each day. The Candid aircraft requires a minimum runway length of 1600 feet and can operate on dirt airstrips..

capacity for over 40* armored divisions, we certainly would not want to sail such a force in one gigantic armada. What I envision is the initial projection of five to ten motorized rifle divisions into Alaska and the MacKenzie River delta concurrent with the start of war in Europe. Where we expect to encounter lightly opposed landings, such as at Barrow and Prudhoe Bay, we would plan to use our naval combatant and amphibious assault ships to conduct forcible entry onto the coast.** Our naval infantry would probably be the logical force for securing the beachheads, with regular army units providing rapid reinforcement either from the air or by sea. If the naval infantry was not available for this operation, we still have many army divisions which are trained in amphibious operations.(64) The main penetration would be rapidly directed south up the MacKenzie River drainage and along all of the roads which have opened up this territory (See fig. 4, p 41.). The extensive transport technology we have developed for mobility in Siberian regions would be ideal for negotiating the terrain of northern Canada and Alaska. This penetration would continue south into the oil and gas fields of central Canada which supply the industrial heartland of the US. All land lines of communication from the continental US to Alaska would be severed. All North Slope oil would cease to flow south because we would seize control of the giant oil production center at Prudhoe Bay.*** We would secure our flanks by seizing other key Alaskan objectives such as Little Diomede Island, Pt. Barrow, Deadhorse, and Barter Island. We would also neutralize as much of the Alaskan Air Defense system as possible including key installations on the Aleutian Islands, just prior to our landings. This would be tasked to our long range bomber fleets equipped with conventional cruise missiles, and also to our airborne and Spetznaz forces. By creating enough confusion among the Americans over the uncertainty of the situation in Europe, I believe there is a good chance that we could initially overwhelm the North American commands long enough for our initial landings to become firmly established ashore.

There is one more important factor in our favor, Comrade. We are much closer to Alaska and Northern Canada than is the rest of the US. Their SLOCs to Europe are over twice as long as our SLOCs to North America. In terms of distance, we have considerable advantage over the Americans.

(Cont. fm p. 19) ...allowing for the use of many alternative North American austere landing sites. (Assumes availability of 1,600 ft. (minimum) runway) (63) Use of much larger Soviet logistics aircraft joining their air fleet, such as the CONDOR or CASP B WIG (See Appendix A), will substantially decrease their sortie requirements.

*See calculations Appendix B and C.

** Ships of the Ivan Rogov class (LPD) can carry over 550 troops, 30 armored personnel carriers, 10 tanks, and three air cushion landing craft. Alligator class ships (LST) can carry 375 troops and up to 26 tanks. The Soviets have a large fleet of air cushion vehicles of various sizes, all of which are highly capable of negotiating shore ice. They also have the Polnocny A class landing craft (25M) capable of carrying 200 troops and six tanks; and the Polnocny C class landing craft can carry an additional 30-tons of cargo. (see Appendix A)

*** This will immediately stop about 20% of US domestic oil production.

Comrade Sorokin: General Yermak, I gather that you are exploiting the Western strategist's mindset - the Mercator Global Projection. Soviet strategic planners prefer the polar projection which results in a much more meaningful presentation of strategic geo-proximities.

General Yermak: Precisely! As Sun Tzu once said, "Make it appear that you are far off. You may start after the enemy and arrive before him because you know how to estimate and calculate distances. He who wishes to snatch an advantage from his enemy takes a devious and distant route and makes it the short way." (65) If we could effectively invade the North American continent by way of the Arctic, it could drive a wedge into the NATO alliance. Consider these thoughts:

(1.) Will the political powers in the U.S. allow for the bulk of critical U.S. follow-on forces and war material to be sent to resupply Europe when Soviet troops have successfully landed on the North American Continent?

(2.) If hostilities are essentially confined to the Federal Republic of Germany, which NATO nations will cling to the alliance when the U.S. cannot abide by its treaty obligations? If we make a case that our war is only with West Germany, that the cause is their dangerous rearmament which now includes control of nuclear weapons, and further that the United States is the true cause of instability on the continent and is practicing nuclear brinksmanship, perhaps Western European nations will be more sympathetic to our goals.

(3.) When the U.S. has been politically severed from its NATO responsibilities because of greater priorities on the North American continent, what will deter us from success in Europe ?

Comrade Sorokin: General, I can just imagine the chaos such a situation could throw into the U.S. mobilization infrastructure where all time schedules and transport vectors are directed towards the European resupply scenerio. The diversion of such gigantic logistic momentum would not only be disruptive, but it could buy us the necessary time to win our objectives and favorably terminate the war in the European theatre. This scheme of yours has a certain insane logic to it, but where would such a strategy lead? You surely don't propose to invade and conquer the US; especially with such a small force?

General Yermak: Initially, I envision a landing on the North American continent to be an effort designed to break the United States free of an alliance with NATO. If our current estimates for war in Europe are in any way reasonable, we should be able to complete such a war in about 30 days.*

* Complete speculation on the part of the authors and perhaps overly optimistic.

We could ensure that the world clearly understood that our war aims were limited. Once again, as Comrade Gorbachev has so pointedly stated, we will not be the first nation to introduce nuclear weapons in a global war. Because conducting an unlimited war with the United States can only be concluded through the use of weapons of mass destruction, I believe what our party secretary is saying is that he does not envision a war with the Americans except to accomplish limited objectives. As such, this proposed strategy which we have been discussing hinges on the presumption that the war to this point has remained conventional. An attack on the North American continent, therefore, can only be for limited objectives, not the overthrow of the American system.

What I am suggesting is that the Canadians and Americans may find it in their best interests to terminate the war by acknowledging our historical interests for stabilizing Europe in exchange for a release of any territory which we may occupy as a result of invading North America. As Clausewitz points out, "If the enemy is to be coerced, you must put him in a situation that is even more unpleasant than the sacrifice you call on him to make."(66)

Let us say that we have reached the point where this strategy is on the verge of accomplishing our war aims. The United States will finally have to decide whether Western Europe has greater importance than the defence of the North American continent. If the United States decides that North America is more important, thereby stopping its reinforcement of Western Europe and perhaps even recalling some of the forces which it has already sent, then the NATO alliance will be fractured because the United States will be perceived as no longer being capable of fulfilling the terms of its treaty alliance. If the US military establishment ignores our Arctic campaign and treats it as a diversion, we can continue to build our effort in North America until the U.S. is politically forced to take notice and respond. We have no doubt that the Canadians will take immediate notice and will valiantly defend their homeland, but what can they do alone?

I want to reiterate a point which Clausewitz expounded that may assist you in rationalizing this strategy: "No one should go to war or even contemplate doing so without knowing in advance what final goals they intend to accomplish."(67) Our long term goal has always been to create long term stability on the European continent. The only purpose in quarreling with the Americans, therefore, is to neutralize their support for the NATO alliance.

Comrade Sorokin: Our Arctic capabilities may make your strategy feasible. Depending upon our political sophistication, your strategy may be suitable in fracturing the cohesion of the NATO alliance. But, what of the risks, and are they acceptable? I see the following problems:

1. You propose diverting critical forces to a secondary theatre.
2. Your lines of supply and communications are particularly susceptible to air and submarine interdiction.
3. The U.S. and Canada may choose to escalate the war by using nuclear weapons in such a remote area.

General Yermak: As you know, Professor, the use of nuclear weapons is a political issue. Since there are many civilians living in northern Canada and Alaska, I doubt that the US has the political will to use such weapons on its own citizens while other options exist, and I am certain that the Canadians will have strong reservations about using such weapons to poison their own soil. Canadian winds are born in their Northwest Territories and will carry the seeds of their own destruction... this they cannot forget. Regardless, if nuclear weapons were employed, our fleet of warships, merchant ships, and ground forces are well equipped for operating in a nuclear battle zone.*

Concerning your other points, it is true that valuable resources would be diverted to a secondary front. However, our scheme of mobilization can provide these forces without severe impact to our other TVDs.** One can also argue that the potential gains derived from preventing or detaining U.S. follow-on forces from being sent to Europe, and the resultant fracturing of the NATO alliance, are more than commensurate with the possible losses which we might incur if this secondary effort is not successful. Even though we have the lift capability for transporting over 40 divisions over the ice***, perhaps only 10 to 15 divisions are all that are initially required. The establishment of a

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* For more information about radiological, chemical, and biological warfare defensive systems on Soviet merchant ships see Capt. John Moore R.N., Jane's Naval Review, London: Jane's Publishing Ltd., 1985, p.168.

** This is a conservative estimate based upon a worst case lift requirement for 40 US armored divisions. Soviet armored divisions are believed to require considerably less lift weight capacity. Pages C-2 and D-3 show more detailed calculations by the authors to support this estimate and may be reviewed in the full text version of this paper at the US Naval War College library.

*** The initial Soviet divisions could come from Mongolia in the Far Eastern TVD and from the Central Strategic Reserve.(69) Soviet forces in Mongolia would be replaced by highly trained and loyal forces of the MPR regular and reserve army as part of a regularly practiced routine.(70) The Soviets can mobilize 4-6 million reserves within 48 hours, all of whom have had active military service within the past two years.(71) These reserves will more than replace initial divisions sent to N. America. Also, the Soviets have a highly efficient system for rapid absorption of reserves. Each division has a duplication of officers. When a division moves out, the division commander and one half of the officers (full complement) go with the unit. Meanwhile, the division commander's deputy and a full complement of officers stay behind and immediately form a new division once the reserve complement of enlisted soldiers arrive. It is strongly suspected that there are enough officers in the original division so that the Chief of Staff can form a third division. The first division uses Category 1 equipment (brand new), the second division uses Category 2 equipment (almost new), and the third division uses older war stocks or equipment with which (Cont. p23)..

sizeable beachhead on the North Amerian continent could possibly require as many as 30 to 40 U.S. and Canadian divisions to dislodge our force. To accomplish this they would need to use more than all of their existing active and reserve divisions. So where do they get their divisions? They obviously must use divisions which otherwise were designated for the timely reinforcement of Europe. Inadequate logistics to meet our new threat axis and required mobilization time will delay our enemies' capability to dislodge our N. American expeditionary forces. It is this delay time that is critical to ensuring the success of our main effort in Europe. In addition, the North Americans will suffer greatly from inadequate cold weather training and lack of Arctic materiel. What little cold weather materiel they do have are not easily accessible because they are stored at prepositioned sites in Europe and Korea.

You correctly analyzed that our flanks might be exposed to air and submarine attack. However, our Arctic SLOC can be reasonably well protected by land based air and in depth cordons of anti-air batteries. Icebreaking vessels, such as our SR-15 Norilsk Class RO-ROs could be modified to carry both helicopters and jump jets in a manner similar to concepts successfully used by the British in the Faulkland's War. Our new aircraft carriers, and even our smaller Kiev class carriers, might be assigned protective roles. The same may be true for some of our cruisers, destroyers, and frigates. We are also evaluating new integrated warfare concepts with our growing fleet of Arctic Sea Control air cushioned vessels* operating in both AAW and ASW screens. The logistic support would be facilitated by our helicopter equipped nuclear powered icebreaking barge carriers and other ice strengthened vessels.

One of the biggest problems which we have in taking the war to North America, is establishing air control over our convoy routes and amphibious objective areas. The American's B-52, F-111, F-15 and F-18 aircraft pose a constant and serious all-weather, night attack air threat. If we

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(Cont. fm p 22)....the parent division trains on a daily basis. Mobilization in this context is practiced by all units.(72)

* The Soviets are now operting an impressive fleet of more than 70 air cushion/Arctic capable landing craft (each having an unrefueled range of 200+ nautical miles) including the Pomornik Class, a 360 ton, 59 meter craft which operates at a speed in excess of 50 knots and carries over 200 troops, three medium tanks, SA-N-5 anti-air missiles, 30 mm/65 cal gatling guns; the Aist Class, a 250 ton, 47.3 meter craft which operates at a speed in excess of 60 knots and carries 220 troops, two medium tanks, 2 quad AS-N-5 Grail anti-aircraft missiles, four 30 mm/65 cal. gattling guns; and the Gus class, a 27 ton, 21.3 meter craft which operates at a speed in excess of 50 knots and carries 25 troops, and a 30 mm gatling gun. These craft can sortie out of a barge carrier or Lash ship for logistics and control, refuel from helicopter delivered fuel bladders, or replenish from icebreaking tankers in the convoy. Given this logistic support to extend their range, air-cushion vehicles can be deployed in conjunction with helicopters and vertically launched aircraft to establish dispersed AAW and ASW formations.(73)

were to invade North America today, we would be at a serious disadvantage due to our lack of training and limited inventory of fully capable air attack/air defense all-weather, day/night tactical aircraft. Fortunately, we have finally developed and are producing fighter attack aircraft which may be as good, or even better, than anything currently in the U.S. inventory. Our new Sukhoi, SU-27 (Flanker), all-weather, counter-air fighter with its large pulse-Doppler radar and beyond-visual-range air-to-air missiles, provides us with lookdown/shootdown capabilities against low flying aircraft and cruise missiles. It is even more effective when it is utilized in conjunction with our Ilyushin Il-76 airborne electronic warfare and counter-measures aircraft, AEW&C.(Mainstay). A navalized version of the SU-27 fighter is currently being tested for service with our new 65,000 ton nuclear-powered aircraft carriers, the first of which has been launched for over a year. (74) If these new aircraft carriers and SU-27 fighters are allowed to join our Arctic forces, we will indeed have a vastly improved capability in the regions of the Arctic Ocean. Regardless, our MiG-29 fighter (Fulcrum) and MiG-31 interceptor (Foxhound) are both excellect land based aircraft.* Both of these aircraft have large pulse-Doppler lookdown/shootdown radars and beyond-visual-range missile capabilities. The MiG-31 has a combat radius without refueling that would give us good initial protection of our SLOC from several of the air bases in our Far Eastern theatre. ** Once airfields are seized and secured along Alaska's northern coast, we can shuttle both of these aircraft onto the North American continent for air defensive use in conjuction with our long range picket ships and AEW&C aircraft. This will allow us to have an early warning capability and the means to engage enemy aircraft within our maximum effective combat radius, before they can close with and target our convoys and installations ashore. If we can also be effective in damaging or destroying runways and support facilities at key airbases in Alaska and Northern Canada, we will have seriously degraded the enemy's capability to conduct effective, sustained air attacks against our forces.

One method which we could use to get our land based tactical aircraft into position prior to "D-day" would be to upgrade well camouflaged and protected airfields on some of the large ice islands within the polar ice pack.*** Our nuclear-powered icebreakers could escort an ice strengthened tanker, a RO-RO support ship, and long-range air search radar equipped research vessels right to the edge of the ice island, thus giving us the rapid potential to activate the airfields for self-sustained air operations. As you know, we have had considerable experience in operating our aircraft off of marginal Arctic runways, and our aircraft are designed for these types of conditions. Whether

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* In 1985, U.S. Assistant Secretary of Defense Donald Latham hinted that the MiG-31 might be better than any existing U.S. fighter. (75)

** See map of Arctic Ocean, supplement to National Geographic, p519A. Vol 140, No-4. (76)

*** Lowell Thomas, Jr. said, "Between 1937 and 1958 Russia airlifted the astonishing total of 565 temporary scientific stations onto Arctic ice pack islands." (77)

operating off of ice islands or from bases ashore in Alaska and Northern Canada, there will be an urgency to develop aircraft revetments, protected SAM sites, and hardened logistic support facilities. Fortunately, we already have large, highly trained engineer forces that are adept at using snow and water to construct massive fortifications or repair damaged runways. As usual, the engineers will accomplish the critical support tasks.

Old concepts are being merged with new. We are evaluating the use of lighter than air dirigibles as surveillance, targeting, and communication devices towed by ice-strengthened timber carrier ships(78) or other surface platforms. These dirigibles, used in conjunction with our over-the-horizon targeting, video data link equipped helicopters (Hormone B),(79) could have considerable potential if equipped with a combination of look-down sensors and tightly linked communication relays, enhancing our detection of incoming threats and allowing for a coordinated anti-air defense in depth.

To aid in countering submarine threats to our convoys, the Bering Straits approach to the Chukchi Sea could be mined, making enemy submarine passage extremely hazardous. Finally, U.S. carrier battle groups operating in the Bering Sea will find their own flanks vulnerable to missile, air and sea attack by our forces operating from air and naval bases in the vicinity of the Kamchatka Peninsula.

Comrade Sorokin: General, I found this discussion to be quite enlightening and helpful in terms of directing future economic programs and understanding new technologies for exploiting Arctic sea control. You have made considerable progress in analyzing the military application of technologies which were initially designed to economically develop our northern regions. You have also reinforced my appreciation of looking at our world from a polar perspective. Your scheme of attack is very appropriate to contemplate in the context of our response to the U.S. Maritime Strategy. It offers a feasible, acceptable, and suitable means to achieve our four objectives: (1) To protect our SSBN bastions; (2) To strategically dislocate North Americans away from Europe; (3) To deter or respond in kind to U.S. attacks on the Kola Peninsula, the Kamchatka Peninsula and the Kurile Islands; and (4) To avoid the use of nuclear weapons. I like it! Please keep me informed of any significant new developments, for who can say with certainty what opportunities future world events will bring. I would appreciate a written summary of your recommendations for bases and facility requirements, research and development projects, capital equipment procurement schedules, and general support requirements to round out our existing capabilities for supporting such a concept of operations. We may be able to address some of these shortages in the next five year plan. Unfortunately, our time is up. ... Shall we discuss dinner for this evening?

CONCLUSIONS:

1. The Soviets are rapidly developing an Arctic Ocean war fighting and strategic lift capability, couched in massive, ice-strengthened naval, fishing, commercial and icebreaking fleets.

2. Because of their Arctic maritime geography, ice-strengthened Soviet war vessels are postulated including the Kiev class and new, larger aircraft carriers. When combined with new generations of all-weather, day/night tactical aircraft (SU-27, MiG-29, and MiG-31), a potential to project military force across ice strewn seas, and defend it under cover of the long Arctic night becomes credible.

3. When the inability of U.S. forces to operate in the ice is taken into account, Soviet sea power assumes a unique and far more dangerous nature. Their massive ice-strengthened fleet of fishing, research and merchant ships may greatly complicate our ASW prosecution of Soviet submarines in their Arctic bastions. Potential uses of this fleet also include picket duty for intelligence gathering, covert operations, general surveillance, and targeting of US forces.

4. The Soviet ice-strengthened merchant fleet and strategic air lift is now capable of landing on the North American Arctic shore with a force as great as 40 equivalent U.S. armored divisions. Soviet icebreaking tankers and cargo vessels are more than sufficient, in deadweight capacity, to support such an effort over a sustained period of land combat.

5. Technology has increased Soviet mobility in the Arctic Ocean, with the result that the protective polar ice barriers have come down. Long exposed Arctic coastlines have become vulnerable to exploitation by economic enterprises as well as by military forces possessing the necessary platforms. Due to geo-strategic advantages, a new Soviet axis of advance has evolved which combines internal lines of supply with Soviet sea control in the Arctic Ocean. In combination these factors open the gate for Soviet power projection into the North American continent.

RECOMMENDATIONS: (TO THE UNITED STATES)

1. North American defence plans need to address the growing Soviet threat of sea control and surface power projection in their Arctic Ocean TVD. The requirements of the U.S. and Canada to defend their maritime zones out to the 200 mile limit and to deny amphibious landings on North America's Arctic coasts need to be as carefully considered as other NATO defence commitments.

2. Future shipbuilding and conversions for the U.S. strategic lift fleet should encourage ice-strengthened hull designs and sufficient horsepower ratings to be effective in Arctic marginal ice zone conditions. If the economics do not lend to such upgrading of privately owned strategic lift shipping, it is important that the federal government provide necessary incentives to the private sector to facilitate the conversions.

3. The U.S. Navy should begin an experimental conversion program to retro-fit selected categories of combatants with ice-strengthened hulls and then conduct routine operations in the Arctic Ocean areas with these ships. Because of the massive number of potential surface targets in the Soviet Arctic Ocean TVD, naval gunfire platforms should receive priority in the conversion process. U.S. icebreakers should be armed accordingly.

4. The U.S. Navy should prepare for forward defence in the Arctic Ocean with overall concepts of operation developed from the U. S. Maritime Strategy. New Arctic warfare concepts including the use of properly armed and Arctic equipped Landing Craft Air Cushion (LCAC) squadrons as anti-air warfare (AAW) defense screens and as Anti-Submarine Warfare (ASW) screens need to be evaluated in concert with the use of armed icebreaker surface raiders as logistics (POL) motherships. (Icebreakers are critical to extend the range and project the power of such a task force. They could be equipped with naval guns, Harpoon missiles, Tomahawk missiles such as TASM-C or TLAM-C, anti-aircraft missiles and ASW weapons, including the LAMPS-III helicopter.) For amphibious strike power projection, new classes of ice-breaking LASH or barge carrying ships need to be built and configured for helicopter, vertical launched jets (Harrier), and air-cushion landing craft. They need to be able to carry the air cushion craft, launch and retrieve them, refuel them directly or use helo-delivered fuel bladders and serve as integrated battle management platforms. These ships could be configured in a manner similar to the U.S. Marine LHA type ships, but would also have icebreaking capability and preferably nuclear propulsion.

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FIGURE 1: ICE-STRENGTHENED SHIPS ARE REQUIRED BY THE SOVIET ENVIRONMENT. A SOVIET KRIVAK II FRIGATE, ONE OF THE MOST HEAVILY ARMED FRIGATES AFLOAT, ESCORTS A SOVIET MANYCH CLASS MERCHANT SHIP THROUGH 6-8 FT THICK ICE FLOES IN THE SEA OF OKHOTSK.
(THE KRIVAK II IS ARMED WITH TWO 100 MM GUN TURRENTS, 20 SA-N-4 ANTI-AIR MISSILES, 8EA 533MM TORPEDO TUBES, 2 EA RBU 6000 CHAFF ROCKET LAUNCHERS, RAILS FOR 20 MINES AND 4EA SS-N-14 ASW MISSILES. THE SOVIET NAVY OPERATES 32 SHIPS OF THE KRIVAK I AND II CLASS WHICH DIFFER ONLY IN THEIR ARMAMENT SUITES. A SIMILAR VERSION, THE KRIVAK III IS CURRENTLY BEING BUILT FOR THE KGB TO JOIN THEIR FLEET OF ARMED (IVAN SUSANIN CLASS) ICEBREAKERS. THIS VERSION OF THE KRIVAK HAS ONE LESS 100MM GUN BUT IS FITTED FOR A HELICOPTER DECK AND OPERATES WITH THE KA 27 HELIX HELICOPTER AND POSSIBLY THE KA 25 HORMONE HELICOPTER. THE KRIVAK FRIGATE IS FITTED WITH A HULL MOUNTED AND VARIABLE DEPTH SONAR. (SOURCE: POLMAR , pp 218-220))

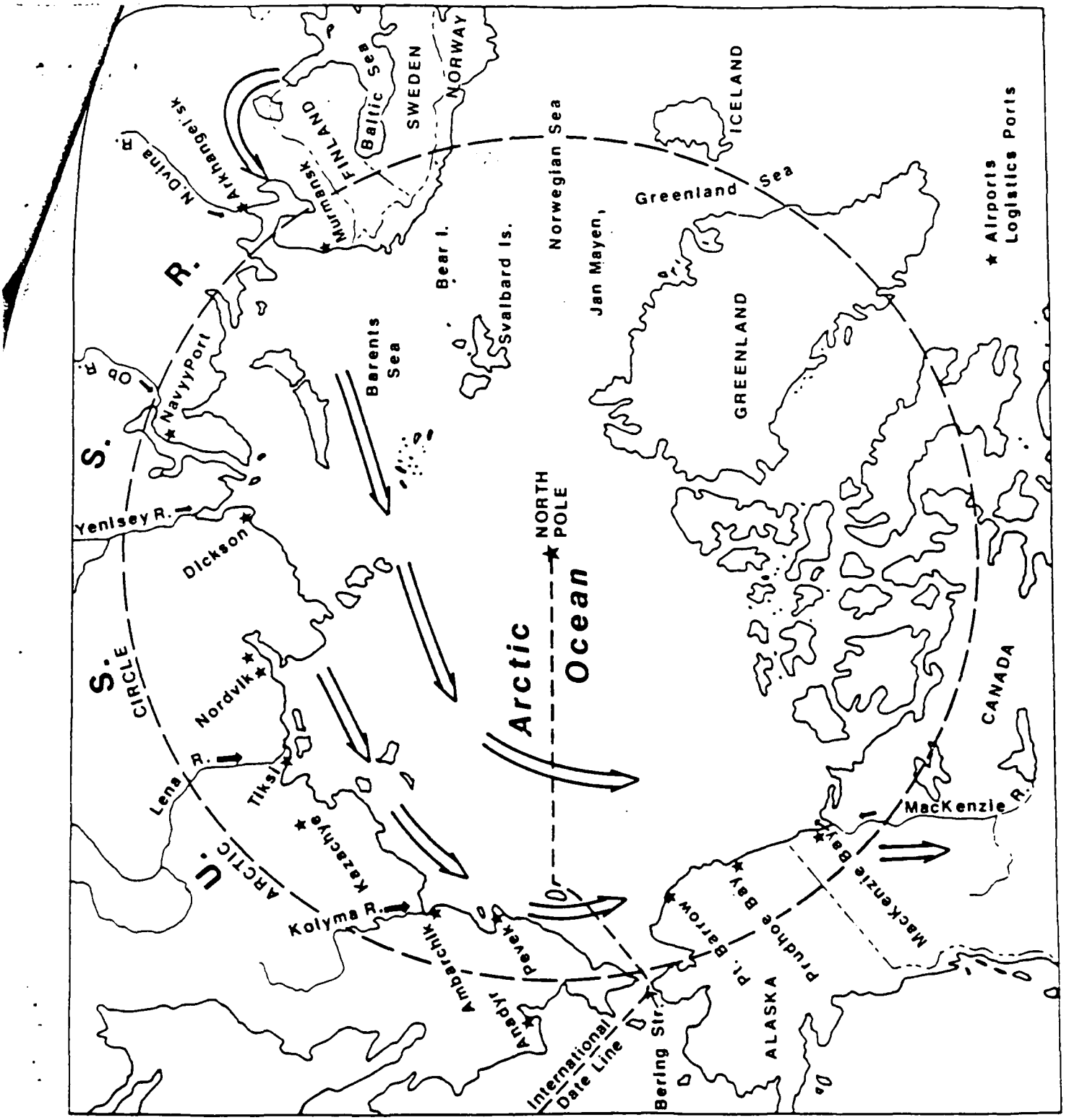

Figure 2

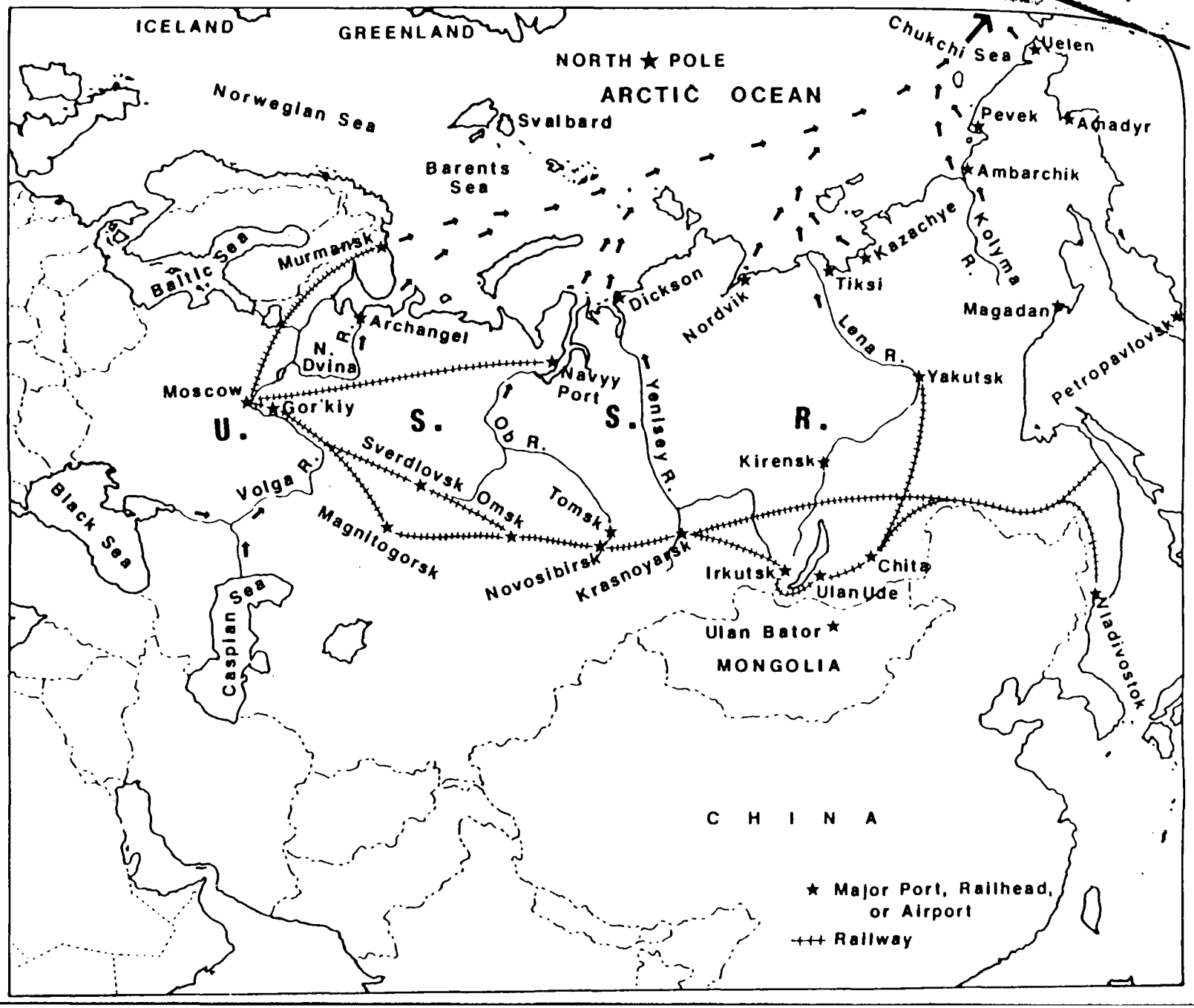
ICELAND
GREENLAND
NORTH ★ POLE
ARCTIC OCEAN
Chukchi Sea
Velen
Norwegian Sea
Svalbard
Pevek
Anadyr
Barents Sea
Ambarchik
Kolyma R.
Kazachye
Baltic Sea
Murmansk
Tiksi
Dickson
Nordvik
Magadan
Archangel
N. Dvina
Lena R.
Navyy Port
Yakutsk
Petropavlovsk
Moscow
Gor'kiy
Yenisey R.
U. S. S. R.
Ob R.
Kirensk
Sverdlovsk
Volga R.
Omsk
Tomsk
Black Sea
Magnitogorsk
Novosibirsk
Krasnoyarsk
Irkutsk
Chita
Ulan Ude
Caspian Sea
Ulan Bator
MONGOLIA
Vladivostok
C H I N A
★ Major Port, Railhead, or Airport
+++ Railway

Figure 3

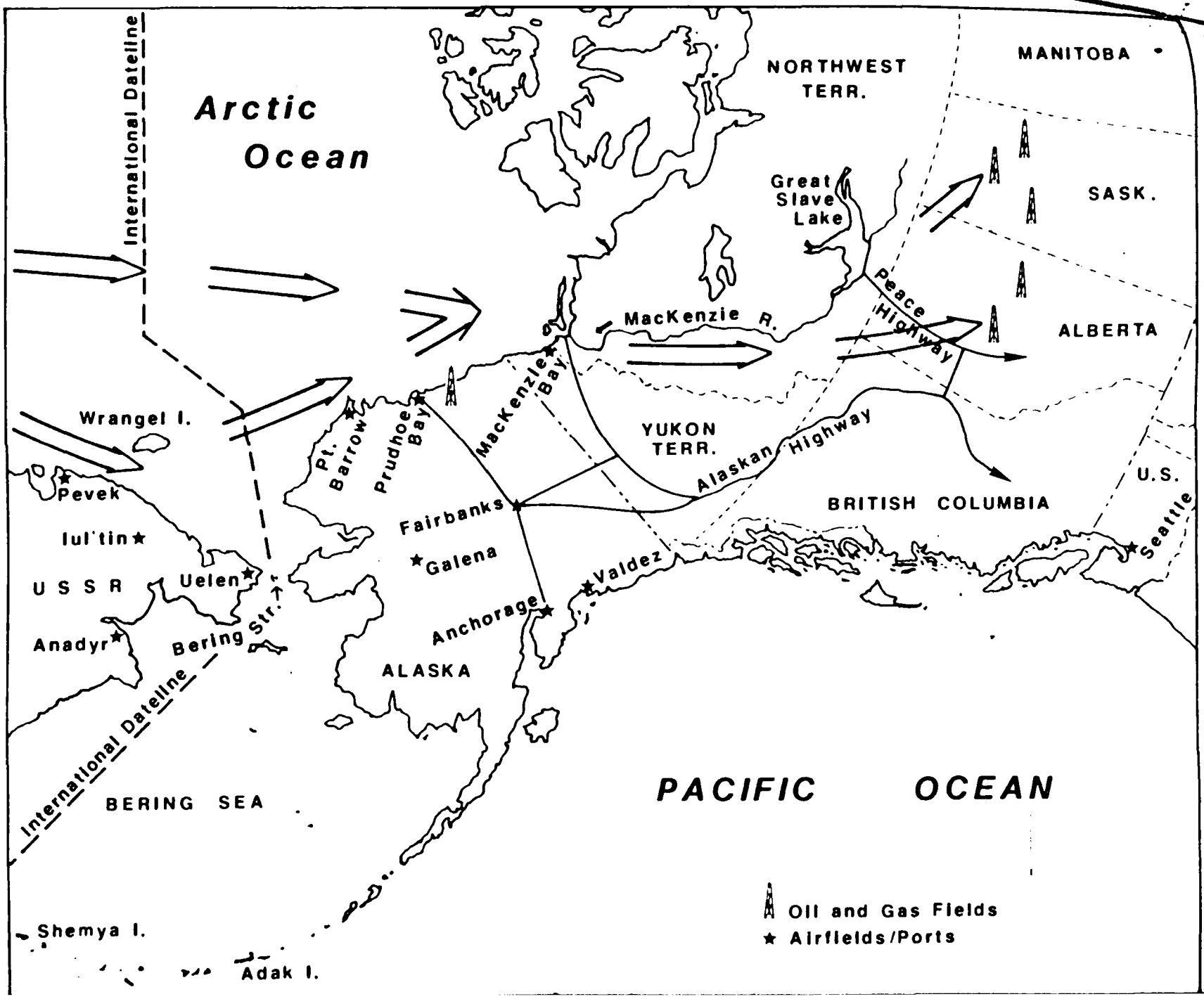
Arctic Ocean
International Dateline
NORTHWEST TERR.
MANITOBA
SASK.
ALBERTA
Great Slave Lake
MacKenzie R.
Peace Highway
MacKenzie Bay
Wrangel I.
Pt. Barrow
Prudhoe Bay
YUKON TERR.
Alaskan Highway
BRITISH COLUMBIA
U.S.
Seattle
Pevek
Iul'tin
Fairbanks
Galena
Valdez
U S S R
Uelen
Anchorage
Anadyr
Bering Str.
ALASKA
International Dateline
PACIFIC OCEAN
BERING SEA
Shemya I.
Adak I.
Oil and Gas Fields
Airfields/Ports

Figure 4

APPENDIX A

Soviet Naval Ships and Specialized Craft Capable of Operating in the Arctic

Type/Class of Vessel	Number of Ships 1986	1995
A. Naval War Ships*		
1. Suspected Ice Strengthened		
a. Aircraft Carrier (CVN)	0	+2
b. Kiev (CV)	4	4
c. Kirov (CG)	3	3
d. Kara (CG)	7	7
e. Kresta II (CG)	10	10
f. Sverdlov (CA)	14	14
g. Polnocny A (LSM)	43	43
h. Ivan Rogov (LPD)	2	3
i. Ropucha (LST)	21	21
j. Sovremenny (DDG)	5	9
k. Udaloy (DDG)	7	9
l. Kashin & Kashin Mod. (DDG)	19	19
m. Kanin (DDG)	8	8
n. Riga (FF)	45	45
B. Air Cushion/ Surface Effect Vehicles		
1. Non-rigid Skirt		
a. LCPA (Gus) (24-troops)	31	31
b. LCUA (AIST) (80-ton)	19	+19
c. LCMA (LEBED) (40-ton)	18	+18
d. Pomornik (350-ton)	1	+1
e. Tsaplya (not availible	1	+1
f. Utenok	2	+2
2. Wing in Ground Effect (WIG)		
a. Ekranoplan (Casp-B) (900-troops)	2	+2
b. Bartini T-wings (80-passengers)	?	?

* There is currently little information availible with which to confirm or deny the authors' suspicions that Soviet warships are ice-strengthened. As a result, we selected these particular vessels on the basis of hull characteristics, the unique appearance of the bow wave which the ship made when moving through the water, and on abnormally large horsepower ratings which are typical of ships that have been designed to negotiate heavy ice conditions. In most instances, we were able to confirm that the ships had operated in the Arctic or other regions subject to heavy ice conditions. (See figure 1)

APPENDIX B

ICE STRENGTHENED SOVIET MERCHANT SHIPS
WITH GREATER THAN 10,000 SHAFT HORSEPOWER RATINGS

Type of Ship	Total Number of Ships	Total Net Cargo		Total Bulk Cargo		Total Liquid Capacity•		Total 20 ft. Container TEU	Total•• Passenger Capacity
		M	Tons	M	Tons	M	Gal.		
Bulk	108	N/A	N/A	5,057,702	3,795,198	1,782	470,713	3,536	N/A
Container	22	318,220	280,925	N/A	N/A	N/A	N/A	14,644	N/A
Drilling	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GC	162	3,211,462	2,835,078	N/A	N/A	N/A	N/A	8,898	N/A
Hospital	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Icebreaker	40	12,688	11,201	N/A	N/A	N/A	N/A	5,770	N/A
LPG Tanker	2	N/A	N/A	N/A	N/A	[151,512]	[40,021,701]	N/A	N/A
Ore	10	139,974	123,569	N/A	N/A	N/A	N/A	N/A	N/A
Pass/Ferry	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,966
Pass/GC	9	5,736	5,064	N/A	N/A	N/A	N/A	N/A	6,002
Ref GC	78	974,249	860,067	N/A	N/A	10,590	2,797,335	11,036	28
RoLo/GC	12	224,004	197,751	N/A	N/A	N/A	N/A	5,352	N/A
RoRo/Ferry	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11,574
RoRo/GC	31	1,208,270	1,066,660	N/A	N/A	N/A	N/A	24,138	138
Tanker	160	480,132	423,861	N/A	N/A	7,336,291	1,937,871,877	N/A	N/A
Whaling	2	16,980	14,990	N/A	N/A	53,222	14,058,523	N/A	N/A
TOTALS:	662	6,591,715	5,819,166	5,057,702	3,795,198	7,401,885	1,955,198,448	73,374	19,708

• Capacity of LPG Tankers are not included in the totals

•• This figure represents only certified berth passenger compartment capacity and certified deck passenger space for purposes of insurance registration with Lloyds of London. In emergency situations, or during times of war, troops could be billeted aboard all of the ships, in any space not devoted to cargo, including on top of cargo. In other words, the actual capability to carry passengers is many times the figure shown above.

APPENDIX B

Calculations of Lift and Fuel Requirements using Only Those Soviet Merchant Ships with More Than 10,000 shp

Step #1: Compute lift capability in terms of net cargo:

One US Armored Division	= 243,573 Tons[1]
One US Mechanized Infantry Division	= 240,308 Tons
One US Infantry Division	= 188,537 Tons
One US Air Assault Division	= 181,963 Tons
One US Airborne Division	= 120,986 Tons

1 Ton = 40 ft^3; 1 M^3 = 35.314 ft^3;

35.314 ft^3/M^3 - 40 ft^3/Ton = 0.8828 Ton/M^3

Net cargo = 6,591,715 M^3 X 0.8828 Tons/M^3 = 5,819,166 Ton

5,819,166 Tons - 243,573 Tons = 23.9 US Armored Divisions

Step #2: Compute lift capability in terms of bulk cargo:

Bulk cargo must be reduced by 85 percent to = net cargo

5,057,702 M^3 X 0.8828 Ton/M^3 X 0.85 = 3,795,198 Tons

3,795,198 Tons - 243,573 Tons/Div. = 15.6 Armored Divisions

Step #3: Compute fuel requirements:

One US Armored Division consumes 460,000 gal/day of fuel[2]

7.48 gal/ft^3 X 35.314 ft^3/M^3 X 7,401,885 M^3 =
=1,955,198,448 gallons

1,955,198,448 gal - 460,000 gal/day = 4,250 Arm. Div. Days

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[1] Logistics Handbook for Strategic Mobility Planning, Military Traffic Management Command, PAM 700-1, Jan 1986, pp. 5 - 8.

The authors used the lift requirement for an armored division as that unit had the largest tonnage to be moved. Our rational was that if we could move a calculated number of these units, then we could easily move units with less of a requirement.

[2] Charles D. Odorizzi, "Can Army Support Keep Those Caissons Rolling Along", "Armed Forces Journal", Oct 1986, p. 83
Note: We used a slightly higher figure than the 450,000 gallons per day quoted by Odorizzi.

APPENDIX C

ICE STRENGTHENED SOVIET MERCHANT SHIPS
WITH LESS THAN 10,000 SHAFT HORSEPOWER RATINGS

Type of Ship	Total Number of Ships	Total Net Cargo		Total Bulk Cargo		Total Liquid Capacity*		Total 20 ft. Container TEU	Total** Passenger Capacity
		M	Tons	M	Tons	M	Gal.		
Bulk									
>9,000shp	47	N/A	N/A	1,036,417	777,707	N/A	N/A	N/A	N/A
>8,000shp	11	N/A	N/A	214,310	160,814	N/A	N/A	N/A	N/A
>7,000shp	38	N/A	N/A	579,561	434,891	N/A	N/A	N/A	54
<7,000shp	33	N/A	N/A	unl	unl	N/A	N/A	N/A	unl
Cablelayer	11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Container									
>9,000shp	6	N/A	N/A	N/A	N/A	N/A	N/A	2,400	N/A
<7,000shp	11	101,060	89,216	N/A	N/A	N/A	N/A	2,828	N/A
Dredge	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GC									
>9,000shp	146	2,560,881	2,260,746	N/A	N/A	N/A	N/A	N/A	N/A
>8,000shp	22	349,889	308,882	N/A	N/A	1,650	435,845	N/A	24
>7,000shp	41	552,364	487,627	N/A	N/A	1,836	484,977	N/A	76
<7,000shp	1,112	unl	unl	N/A	N/A	unl	unl	unl	N/A
Icebreaker	38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LPG Tanker									
>9,000shp	6	N/A	N/A	N/A	N/A	[72,000]	[19,018,708]	N/A	N/A
<7,000shp	2	N/A	N/A	N/A	N/A	[4,192]	[1,107,311]	N/A	N/A
Ore									
>9,000shp	12	N/A	N/A	129,600	97,249	N/A	N/A	N/A	N/A
<7,000shp	4	30,712	27,113	N/A	N/A	N/A	N/A	N/A	N/A
Pass/Ferry	4	3,000	2,648	N/A	N/A	N/A	N/A	N/A	824
Pass/GC									
>7,000shp	1	2,257	1,992	N/A	N/A	N/A	N/A	N/A	779
<7,000shp	39	14,606	12,894	N/A	N/A	N/A	N/A	N/A	9,926
Ref GC									
>9,000shp	5	67,413	59,512	N/A	N/A	N/A	N/A	N/A	N/A
>8,000shp	25	245,015	216,299	N/A	N/A	N/A	N/A	N/A	132
>7,000shp	40	496,979	438,733	N/A	N/A	3,141	829,691	N/A	72
<7,000shp	128	unl	unl	N/A	N/A	14,997	3,961,438	9,284	unl
Research	1	8,757	7,731	N/A	N/A	N/A	N/A	N/A	N/A

* Capacity of LPG Tankers are not included in the total on Page C2

APPENDIX C

ICE STRENGTHENED SOVIET MERCHANT SHIPS
WITH LESS THAN 10,000 SHAFT HORSEPOWER RATINGS

Type of Ship	Total Number of Ships	Total Net Cargo		Total Bulk Cargo		Total Liquid Capacity•		Total 20 ft. Container TEU	Total•• Passenger Capacity
		M	Tons	M	Tons	M	Gal.		
RoRo/Ferry									
>9,000shp	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,659
RoRo/GC									
>9,000shp	8	61,200	54,027	N/A	N/A	N/A	N/A	2,176	12
>8,000shp	9	138,870	122,594	N/A	N/A	N/A	N/A	N/A	N/A
>7,000shp	2	unl	unl	N/A	N/A	N/A	N/A	N/A	82
<7,000shp	32	unl	unl	N/A	N/A	N/A	N/A	N/A	12
Tanker									
>9,000shp	31	6,496	5,735	N/A	N/A	444,850	117,506,558	N/A	N/A
>7,000shp	1	11,091	9,791	N/A	N/A	22,081	5,832,668	N/A	N/A
<7,000shp	252	unl	unl	N/A	N/A	unl	unl	N/A	N/A
[1] Total:	262	2,695,990	2,380,020	1,166,017	874,956	444,850	117,506,558	4,576	1,671
[2] Total:	2,123	4,650,590	4,105,540	1,959,888	1,470,661	488,555	129,051,177	16,688	13,785

[1] This total is for all ships with a shaft horsepower rating greater than 9,000 shp. We used these figures for the calculations on page D3. For purposes of tying the entire transportation system together, those ships with less than 9,000 shp are predominantly used on internal waterways and seas to haul cargo to embarkation ports at points along the north coast of the Soviet Union.

[2] This total is for all ships listed in the above tables for Appendix D. However, only the total number of ships is complete. A lack of complete information especially in the general cargo (GC) type of ship resulted in a partial listing of the remaining data. The important point to remember is that these figures should be considerably higher as the difference in number of ships between the two totals would suggest. The lack of information is not detrimental to this report as it is highly unlikely that ships with less than 9,000 shp would be employed in the Arctic Ocean except during a few weeks in late summer when the ice pack has retreated from the shoreline.

N/A - means that the category is not applicable to this ship class.

Unl - means that the information was not provided in Lloyd's Registry or that the authors purposely left the information out.

• Capacity of LPG Tankers are not included in the above totals.

•• This figure represents only certified berth passenger compartment capacity and certified deck passenger space for purposes of insurance registration with Lloyds of London. In emergency situations, or during times of war, troops could be billeted aboard all of the ships, in any space not devoted to cargo, including on top of cargo. In other words, the actual capability to carry passengers is many times greater than the figures shown above.

APPENDIX C

Calculations of Lift and Fuel Requirements
Using only those Soviet Merchant Ships with 9,000 to 10,000 shp

Step #1: Compute lift capability in terms of net cargo:

One US Armored Division	= 243,573 Tons[1]
One US Mechanized Infantry Division	= 240,308 Tons
One US Infantry Division	= 188,537 Tons
One US Air Assault Division	= 181,963 Tons
One US Airborne Division	= 120,986 Tons

1 Ton = 40 ft^3; 1 M^3 = 35.314 ft^3;

35.314 ft^3/M^3 - 40 ft^3/ton = 0.8828 Ton/M^3

Net cargo = 2,695,990 M^3 X 0.8828 Tons/M^3 = 2,380,020 Ton

2,380,020 Tons - 243,573 Tons/Div. = 9.8 US Armor Div'n

Step #2: Compute lift capability in terms of bulk cargo:

Bulk cargo must be reduced by 85 percent to = net cargo

1,166,017 M^3 X 0.8828 Ton/M^3 X 0.85 = 874,956 Tons

874,956 Tons - 243,573 Tons/Div. = 3.6 US Armor Div'n

Step #3: Compute fuel requirements:

One US Armored Division consumes 460,000 gal/day of fuel[2]

7.48 gal/ft^3 X 35.314 ft^3/M^3 X 444,850 M^3 =
= 117,506,558 gallons

117,506,558 gal - 460,000 gal/day = 255 Arm. Div. Days

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[1] Logistics Handbook for Strategic Mobility Planning, Military Traffic Management Command, PAM 700-1, Jan 1986, pp. 5 - 8.

The authors used the lift requirement for an armored division as that unit had the largest tonnage to be moved. Our rational was that if we could move a calculated number of these units, then we could easily move units with less of a requirement.

[2] Charles D. Odorizzi, "Can Army Support Keep Those Caissons Rolling Along", "Armed Forces Journal", Oct 1986, p.83. Note: We used a slightly higher figure than the 450,000 gallon per day quoted by Odorizzi.

The Ice-Strengthened SOVIET AUXILIARY FLEET SUMMARY

Lloyd's Registry Representative Ship in Class	Number in Class	Fishing	Tug Salvage	Research	<1000 shp Cargo	Other
TOTAL ALL SHIPS:	1,972	1,714	36	117	15	44

END

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