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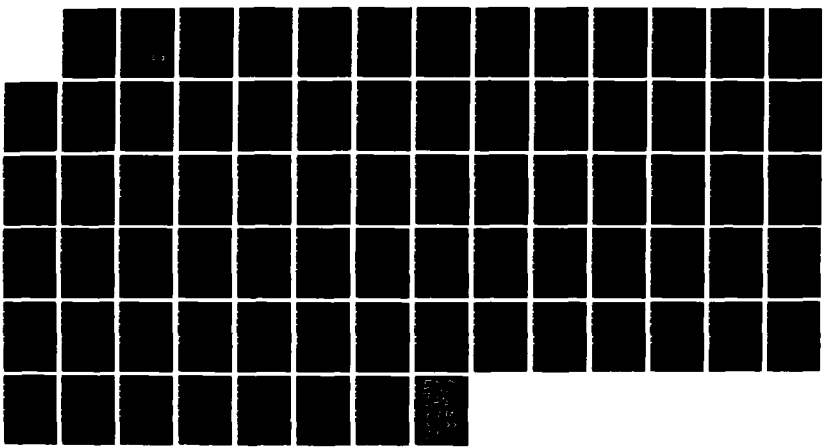

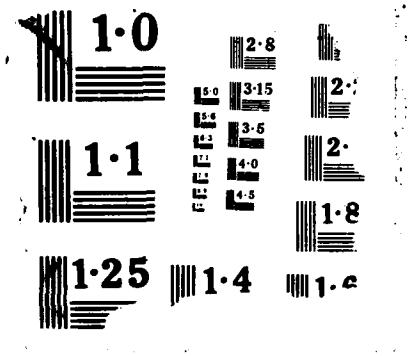
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A RAND NOTE

Factors Affecting the Military Environment of North Norway: Its History, International Relations, Physical Characteristics, and Balance of Military Forces

James G. Terry

January 1988

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Northern Europe has been remarkably stable since the end of World War II. This report discusses how certain factors--the history, international relations, physical characteristics, and the present balance of military forces of northern Europe--have shaped the military environment of North Norway to make it unique among the theaters of military operations in the world. (See also R-3439-AF.)

A RAND NOTE

N-2497-AF

Factors Affecting the Military Environment of North Norway: Its History, International Relations, Physical Characteristics, and Balance of Military Forces

James G. Terry

January 1988

Prepared for
The United States Air Force

PREFACE

This Note examines the military environment surrounding North Norway. The environment of that region, which has been shaped by the interactions of history, international relations, physical characteristics, and military forces, possesses traits that affect military operations unlike any other region in the world. Before any observer proposes changes to the present structure in the North Norway region, with the expectation of improving Norway's (and NATO's) standing with regard to the Soviet Union, that observer must understand the constraints and power balances making up that structure.

The author is a Lieutenant Colonel in the U.S. Air Force who was stationed at Eielson Air Force Base, Alaska, and flew A-10 aircraft as an Instructor Pilot and Squadron Operations Officer for three years beginning the summer of 1982. During the fall of 1984, he was Deputy Commander of a 343rd Tactical Fighter Wing deployment of 12 A-10 aircraft to Andoya Flystasjon, a Royal Norwegian Air Force base located on the northern tip of Vesteralen, an archipelago that lies to the west of Troms in North Norway.

This study documents research performed by the author in the fall and winter of 1985-1986, while he was assigned as a RAND Research Fellow in Project AIR FORCE. A companion report, *A-10 Operations and the Battle for North Norway*, R-3439-AF, is being published simultaneously with this Note. The work was performed under the Project AIR FORCE project entitled "Concept Development and Project Formulation."

To promote wide distribution of this material and to encourage discussion of the subject matter, the author performed all of the research and writing for this report at the unclassified level.

SUMMARY

The military environment surrounding North Norway today is a product of the interactions of several factors, including the region's history, foreign relations, physical characteristics, and balance of military forces.

Since their earliest history, the peoples of northern Europe—Norway, Sweden, Denmark, and Finland—frequently engaged in armed conflicts. However, following the Napoleonic Wars and before World War II, the region enjoyed long periods of peace. Before World War I, the Nordic countries formalized a set of rules to govern their neutrality, which kept them out of that war.

As World War II approached, the Nordic countries attempted again to avoid involvement by remaining neutral. However, because of the strategic importance of the North to the outcome of the conflict in Central Europe, only Sweden was able to stay directly out of World War II. Norway and Denmark were invaded and occupied by the Germans, and Finland twice fought—and was defeated by—the Soviet Union.

At the end of World War II, the Nordic governments were faced with sobering remembrances of the war years and the problem of maintaining their security within a new world order, particularly the massive Soviet power to their east. **Finland, Sweden, and Norway each chose a different path to maintain their security.**

Though dominated by the Soviets, Finland has avoided the fate of those in eastern Europe who are still occupied by Soviet troops. The Finns and Soviets have developed a mutually beneficial economic relationship, they cooperate on military matters such as arms sales and exchange visits, and they are tied together by a Friendship, Cooperation, and Mutual Assistance Treaty.

Despite these ties, however, Finland is ruled by a democratic government, and its foreign policy is officially neutral. The Finns see themselves as a neutral buffer zone dedicated to the reduction of tensions between East and West. **The key to the stability of their position is their ability to convince the Soviets not to worry about anyone using Finnish territory to attack the Soviet Union.** This also means that the Finns watch Swedish and Norwegian actions closely to ensure no action from the West provokes a Soviet response against Finland.

Sweden emerged from World War II with its neutrality intact. Since then, Sweden has been able to maintain its armed neutrality status because its large population allows it to support a credible armed force, it has a buffer state between itself and the Soviet Union, and its location is not nearly as strategically important as other nations in the region.

The Swedes have recognized that their continued neutrality depends on a credible territorial defense. **By possessing the means and the will to deny the use of their land or airspace by one superpower to attack the other, the Swedes have ensured that the status quo will be in each superpower's interest.** Each can count on Sweden to screen a significant portion of its northern flank from attack by the other.

Norway had a nostalgic desire to remain neutral at the end of World War II, but as it viewed the failure of neutrality to keep it out of the fighting and sized up the emerging balance of power in Europe, it decided to throw in with the Allies. **Norway became a charter member of NATO in 1948.**

To placate loud Soviet protestations about its abandonment of neutrality, Norway placed restrictions upon its own activities within the Alliance. These unilateral restrictions remain unchanged today: no permanent foreign troops in Norway, no nuclear or chemical weapons in Norway, no Allied air or naval sorties east of 24° E, no Allied ground maneuvers in Finnmark, and the announcement of all exercises even if they fall below the Helsinki Agreements' thresholds.

The stability that has existed in northern Europe since World War II has resulted from what some have called the Nordic Balance. **This region can be considered a multi-layered buffer zone, with each nation showing restraint in its actions to avoid disrupting over 40 years of stability.** Some observers have commented that the Soviets have deployed smaller numbers of ground forces into the region and have kept out of Finland to keep Norway (and, perhaps, Sweden) from requesting a larger, permanent NATO presence. Furthermore, the Norwegians maintain the restrictions on NATO activities within their country to reduce Soviet pressure on Finland.

The distances involved in North Norway are enormous. The country is oriented on a northeast to southwest axis, stretching from above Leningrad in the east to above Amsterdam in the west. The farthest north Norwegian territory, the Svalbard Archipelago, extends over 1000 km (540 nm) from the northern tip of the mainland (North Cape), and the distance from the top of mainland Norway to its southern tip on the North Sea stretches 1722 km (930 nm). The country contains over 2650 km (1431 nm) of coast line, possesses over 50,000 islands, and shares a 2531 km (1367 nm) border with Sweden, Finland, and the Soviet Union.

Norway depends heavily upon air and sea transport, particularly in the North where only one North-South road and a parallel railroad exist. The country has the fifth largest land area in Europe, but lowest population (excepting Iceland) of any European nation. **Most of Norway's four million people live in the South, with only a half million residing in North Norway.**

Norway is a mostly mountainous country that has an average elevation of 500 m (1640 ft), is characterized by large amounts of snow fall, and contains over 1700 glaciers. Only Finnmark, Norway's northeastern county, consists of more flat, less mountainous, harder-to-defend tundra and taiga forest. Troms, Norway's northwestern county, is more typical of the country as a whole with deep fjords and interlaced mountains forming natural barriers that can be effectively used by defensive forces.

The weather in North Norway is dominated by the Norwegian Sea, which moderates the temperature near the coast and also produces abundant precipitation across the area. The ocean surrounding the region remains unfrozen throughout the year because of the effects of the northern branch of the Gulf Stream.

A dominant characteristic of the North Norway environment is the arctic lighting conditions. The sun goes below the horizon and remains there for over two months during the winter in the highest latitudes of the region; likewise, it does not set for over two months in the summer.

Each season displays traits that affect military operations in different ways. The darkness, extremely cold temperatures, and heavy snows of winter hamper movement, require greater use of fuels and lubricants, and will favor a prepared defense. The continuous daylight of summer makes a surprise attack difficult, and the standing water that collects on the tundra's surface also hampers movement.

During the spring long periods of daylight allow effective military operations, and the frozen ground permits movement across marshy areas. However, the quick arrival of the spring thaw will bring movement to a standstill. **The most favorable period for operations from a purely military point of view is the fall.** It presents long periods of daylight, the surface conditions are the driest, and the transition into winter is gradual, unlike the rapid spring thaw.

Soviet conventional ground forces on the Kola Peninsula consist of a Naval Infantry Brigade and two Category 1 Motorized Rifle Divisions. The Naval Infantry Brigade numbers approximately 2000 officers and men and is supported by some 15 amphibious ships of the Northern Fleet. Each Motorized Rifle Division is specially

equipped and trained for arctic operations and numbers approximately 12,000 officers and men. The nearest Airborne Division consists of 6500 personnel based at Pskov, just east of the Estonia/Latvia border south of Leningrad. A 1000-strong *Spetsnaz* brigade is collocated with the Naval Infantry Brigade on the Kola Peninsula.

The air forces on or near the Kola Peninsula in the Leningrad Military District consist of *Voyska PVO* (Air Defense), Naval Aviation, and Regional Air Force units. These units **possess approximately 1230 aircraft**, including approximately 340 air defense fighters, 95 bombers, 130 antisubmarine warfare aircraft, and 130 ground attack fighters.

Norway can field a total armed force of about 366,500 men under a system of universal conscription and heavy reliance upon reserves. The active Norwegian Army fields only 6500 men in the North. However, within one week after mobilization, the Norwegians expect to have 30,000 troops in place there. About half of that strength will be mobilized locally, and the remainder will be transported from the South.

The Norwegian Air Force small tactical fighter strength (approximately 107 aircraft) trains exclusively for anti-invasion and air defense missions. The Norwegian Navy is also designed for defensive operations with an emphasis on coastal defense submarines and fast patrol boats. The navy and air force coordinate their tactics to blunt an amphibious invasion assault.

Swedish and Finnish forces are structured similarly to Norwegian forces: All three countries train and equip for territorial defense and all three rely on large numbers of reserves. However, unlike Norway, the two neutral countries are not effectively screened from the Soviet Union, so they deploy large numbers of each country's forces to protect their population and industrial centers in the South.

Four Allied ground forces are available to reinforce North Norway—the Canadian Air/Sea Transportable (CAST) Brigade, a U.K. Marine Commando Brigade, a U.S. Marine Amphibious Force, and the Allied Command Europe (ACE) Mobile Force. Units from these forces have trained in North Norway, and each of their governments has made arrangements to pre-position heavy equipment in Norway to shorten the time it would take to deploy to the region, although Canada recently announced it would drop its commitment.

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The author wishes to thank the following colleagues for their thoughtful comments on earlier drafts of this work. At RAND: William Naslund, John Lund, James Quinlivan, Christopher Bowie, and Jack Cragiie; assigned to RAND: Lieutenant Colonel Karen Williams, Lieutenant Colonel Robert Karner, Lieutenant Colonel Sal Bosco, Captain Rita Decker, and Captain Kevin Lawson (USAF) and Lieutenant Colonel Ronald Adams and Major Michael Potter (USA); assigned outside RAND: Colonel Robert Haffa (HqUSAF/XOXIP), Lieutenant Colonel R. M. Terry (USAF Retired), and Major Michael Terry (USAFA/DFH).

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Special thanks to Blanche Quinlan, whose administrative skills and organizational insights are second to none.

NOTES ON PLACE NAMES

The languages of Scandinavia contain three more letters than the 26 letters in the English alphabet. Within this work, Scandinavian names that do not contain those letters appear as they would in their native languages. Names that contain those three letters—a, æ (ä in Finnish and Swedish) and ø (sometimes written as ö)—are written in this work as follows:

Scandinavian Spelling	English Transliteration
Andoya	Andoya
Bjørnoya	Bjornoya
Bodø	Bodo
Län	Lan
Ørland	Orland
Sodankylä	Sodankylae
Tromsø	Tromso
Vaerness	Vaerness
Vesterålen	Vesteralen

Russian place names and more common Scandinavian place names (such as Copenhagen) are written in their common English forms. Names of Norwegian fjords have been put into English form. (Varangerfjorden becomes Varanger Fjord, etc.)

CONTENTS

FIGURES

TABLES

I. INTRODUCTION

> Although neither side could "win" a European war by winning the North, both the Warsaw Pact and NATO might come close to losing a European war by losing the North.
>
> Kenneth A. Myers,
> Director of European and Canadian Studies,
> The Center for Strategic and International Studies[1]

> We have to ensure as well as we can that we protect, reinforce, and make the defense of Norway as viable as possible.
>
> Admiral Wesley L. McDonald,
> Supreme Allied Commander, Atlantic[2]

At the outset of World War II, northern Europe and, particularly, North Norway became strategically important. This importance intensified since the end of that war because North Norway lies under the great circle route between the heartlands of the eastern United States and the western Soviet Union, it is part of the littorals of two very important seas, and it is located next to a very powerful Soviet military complex.

The military environment surrounding North Norway today is a product of the interactions of several factors, including the region's history, foreign relations, physical characteristics, and balance of military forces. Any changes proposed to the present structure in the region, with the expectation of improving Norway's (and NATO's) standing with regard to the Soviet Union, would have to take into consideration the constraints and power balances that make up that structure. Not to do so risks miscalculation that could cause the collapse of the whole structure.

This Note first reviews the history of northern Europe, particularly the military history of the region in this century. It then summarizes the region's current international relations, concentrating upon the balance of power that is known as the Nordic Balance. The Note next outlines the physical environment of North Norway and discusses how its

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[1]Myers, 1979, p. 64.
[2]McCoy and Schnemmer, 1985, pp. 67-68.

unique conditions affect military operations. The Note concludes by describing the Soviet, Norwegian, and neutral armed forces of the region.[3]

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[3]This Note provides background information to the author's companion report, Terry, 1987.

II. HISTORICAL PERSPECTIVES IN NORTHERN EUROPE

PREWAR EVOLUTION

The common history, shared culture and heritage, and similar languages of the people of Scandinavia have given them a strong sense of unity and deep concern for each other's welfare. Beginning in the eleventh century, Norway and England were under the rule of the Danish crown. Later Sweden, under the rule of Gustavus Adolphus, became the dominant nation in the region, applying the power of its army, which was the first to organize along modern lines, to extend its influence over the whole of Scandinavia, including Finland and the east coast of the Baltic Sea. After centuries of conflict between Sweden and Denmark-Norway, the Swedes' influence began to decline; and during the Napoleonic Wars they lost Finland to Russia. Denmark was forced to cede Norway to Sweden shortly after as a consequence of the Danes' alliance with Napoleon. Except for a short war in 1866 between Germany and Denmark, all the states of Scandinavia were able to avoid military conflicts until the middle of the twentieth century.[1] See Fig. 1.

Throughout its long associations with Denmark and Sweden, Norway maintained its own identity, although it was unable to assert its independence. Norway's lack of political power within these unions was caused mainly by its small population and lack of arable land from which it could create a power base and by the devastating effects of the Black Death upon its aristocracy. During the nineteenth century Norway was able gradually to gain more control of its internal matters, and finally in 1905 it formally separated from Sweden. Shortly thereafter, Prince Carl of Denmark was elected Norway's king and took the name Haakon VII.[2]

Sweden and Finland have traditionally looked upon Russia as a competitor in the area, and they have engaged in armed conflict with it throughout history. Shortly after Norway became independent and while Russia was preoccupied with its Communist Revolution, Finland rebelled and won its independence. Despite being officially neutral, Sweden aided its neighbor by sending material and volunteer fighters.[3]

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[1]Ziemke, 1982, p. 1.

[2]"History of Scandinavia," 1976, p. 328. King Haakon's wife was a British Princess, the youngest daughter of King Edward VII. His son, the present reigning King Olav V, is married to a Swedish Princess. Pragnell and Rogers, 1985, p. 369

[3]Lindstrom, 1981, p. 315.

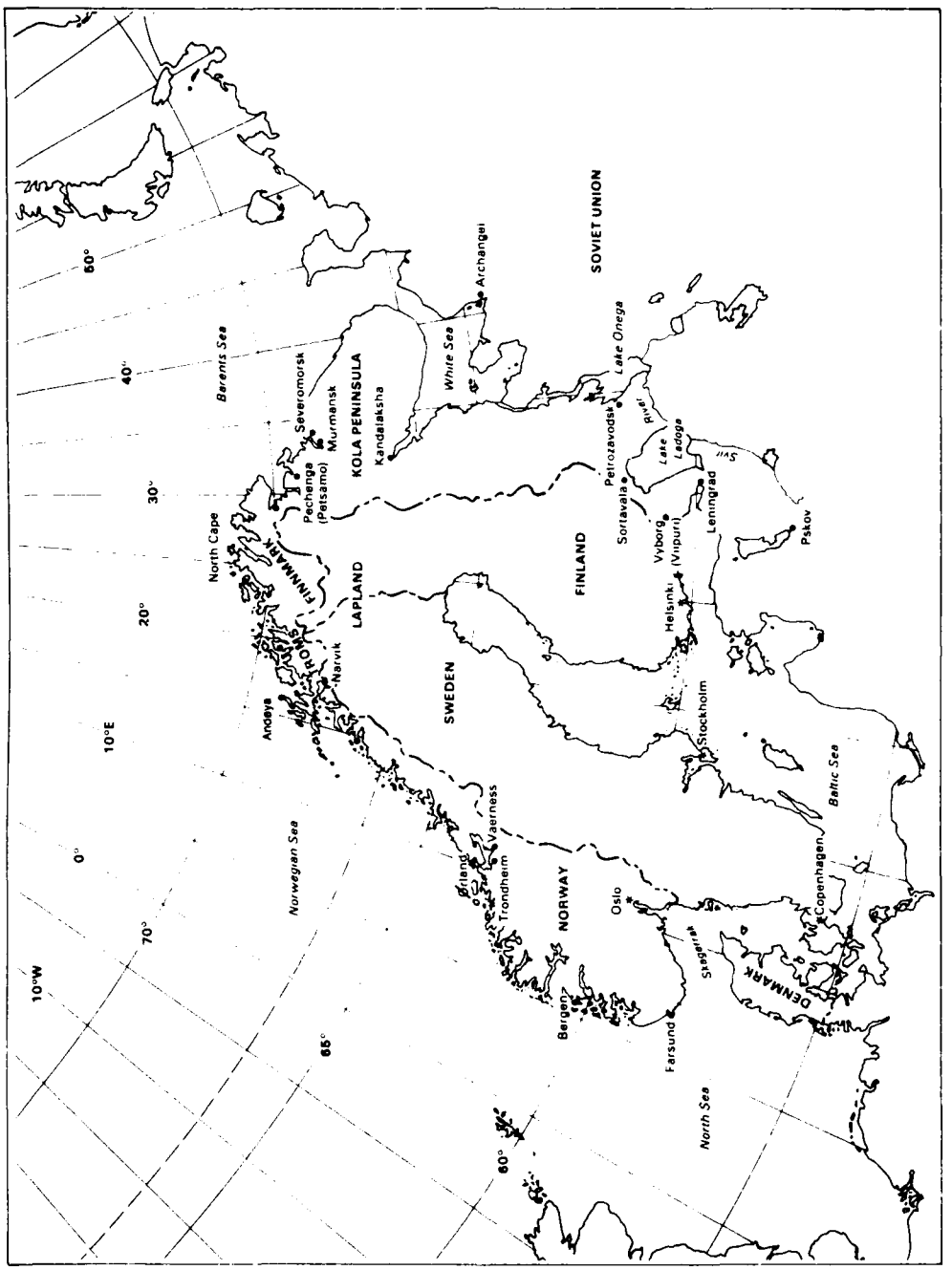

Fig. 1—Northern Europe

In 1912 Sweden, Denmark, and Norway formalized a set of rules to govern their neutrality. During World War I, while Finland was gaining independence, they were able to maintain their neutral status although they were forced to bend their rules in the face of superior Allied sea power and German land power.[4] As 1939 approached, the Scandinavian countries maintained their faith that neutrality would keep them out of the approaching storm, partly because that policy worked in World War I and partly because of the prevalent attitude that it was futile to oppose the superior forces of Central Europe anyway.[5]

WORLD WAR II

The Winter War

In 1939, as the powers in Europe were maneuvering in response to the threat of Nazi Germany and after the Soviets and the Germans had divided Poland, the Soviet Union and Finland became engaged in the Winter War of 1939-1940. Soviet and Western accounts of how that war started differ. Marshal of the Soviet Union K. A. Meretskov writes that tensions were caused by Anglo-French attempts to draw the Soviets and the Nazis into a fight, and that the Finns would not reduce those tensions by trading "a few kilometers" on the Karelian Isthmus for a much larger land area northwest of Lake Onega. (The Soviets wanted additional space northwest of Leningrad as a buffer.) Meretskov claims that the Finns started the war in late November of 1939 with an unprovoked artillery attack.[6] Former Finnish Foreign Minister Vaino Tanner writes that the alleged Finnish shelling was a Soviet fabrication, and that the Soviet leadership was determined to fight regardless of Finnish concessions.[7] On November 30, 1939, the Soviets bombed Helsinki and Viipuri (now called Vyborg) without a declaration, and the conflict turned into an all-embracing war.[8]

The early Soviet campaign against Finland went badly. Invading columns in the northern and central regions of Finland were blocked, isolated, then destroyed by the more mobile Finns in bitter winter fighting. Initial Soviet assaults against the highly fortified

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[4]Ziemke, 1982, pp. 1-2.
[5]Ziemke, 1982, p. 68.
[6]Meretskov, 1971, pp. 102-103, 108.
[7]Tanner, 1957, pp. 86-88.
[8]Department of Military Art and Engineering, 1950, p. 26.

Karelian Isthmus were soundly defeated, and it was only after the Soviets resorted to position warfare, when their overwhelming superiority of men and material could be brought to bear, that the Soviets began to breach the defenses. On March 13, 1940, the Finnish government acceded to Soviet demands and hostilities ended.[9] Finland conceded territory to the Soviet Union, most of it on the Karelian Isthmus north of Leningrad. It also gave the Soviets the Rybachi Peninsula on the Barents Sea and virtually unlimited rights in the extreme northern Petsamo region.[10] (Petsamo is the Finnish name for present day Pechenga.)

Norway Involved

Even after the invasion of Poland, the subsequent declaration of war by the French and British upon the Germans, and the Winter War, Norway charted the course of neutrality. Geography, however, played against it. Germany needed naval bases in Norway so that its fleet could avoid being bottled in the Baltic Sea, as happened in World War I. Germany also depended heavily upon iron ore mined in Sweden that was transported by rail to Narvik in North Norway and then shipped down the Leads, the sheltered coastal waters that Norway allowed international commercial ships to use without restriction. While the Norwegians gamely stuck to their neutrality line, both the Germans *and* the British and French were drawing up plans to invade them: Ostensibly the Allies planned to march to the Finns' aid across Norway and Sweden and the Germans intended to protect the Norwegians from the British. The Germans struck first on April 9, 1940, beating the British and French by only a few days.[11]

The Germans simultaneously occupied Denmark, mainly because they needed the Danish bases to support the thrust into Norway. Sweden was spared German attention because it did not occupy a strategic position, it did not pose any threat to German interests, and its natural resources were readily available to the Germans through trade. Sweden remained independent throughout World War II, but, as in World War I, it had to bend quite often to the predominant German power in the region. Only toward the end of the war when Germany lacked the power to intimidate was Sweden able to resist German demands more effectively.[12]

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[9]Ibid., pp. 30-36.
[10]Tanner, 1957, pp. 263-265.
[11]Ziemke, 1982, pp. 22-24.
[12]Ibid., pp. 13, 38-39, 125, 219, 252.

The German invasion of Norway was initiated with troop landings from the sea and air on six Norwegian cities stretching from Oslo to Narvik, which lies over 980 km (530 nm) to the north by air, over 1175 km (960 nm) by sea. Norwegian resistance was spotty, and all the major German objectives were secured within a few days. The British and French mounted a counterinvasion within a week by landing north and south of the major central city of Trondheim. However, these landings were hastily planned, poorly supported, and effectively engaged by combined German air and ground forces. Allied forces were withdrawn from central Norway by the first few days of May 1940.[13]

The only Allied successes during this campaign occurred during several short but furious naval engagements in the fjords leading to Narvik and during the counterinvasion of the North that landed at Harstad and drove overland toward Narvik. Although the British and French possessed local military superiority in the Narvik area, they still took over six weeks to oust the German defenders because of Allied inexperience in arctic combat operations and because of the rough terrain in the area that favored the defense. Immediately following the capture of Narvik, however, the Allies withdrew because of German successes in France. The last Allied soldier left Norway on June 9, 1940.[14]

Barbarossa

After the Winter War, the Soviet Union kept relentless economic and political pressure on Finland, moving the national boundary even more, driving troop trains across its territory, and requiring the Finns to pay the costs of much of the rebuilding of the facilities on Soviet territory. Finland, feeling its back to the wall, began secret talks with the Germans who agreed to help with the rebuilding of the Finnish military in return for the Finns' guarantee of nickel, copper, and molybdenum production from the Petsamo mines. Eventually the Germans informed the Finns about *Barbarossa*, which was the invasion of the Soviet Union planned for the summer of 1941. Finland agreed to fight alongside Germany as a "cobelligerent" instead of an "ally," a technicality designed to limit its participation in the war. Finland also agreed to fight only if it was attacked by the Soviets—a likely event, particularly because Finland intended to call for general mobilization before *Barbarossa* was begun.[15]

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[13]DMAE, 1950, p. 49.
[14]DMAE, 1950, p. 50.
[15]Ziemke, 1952, pp. 113-114, 121, 203.

The Germans entered the Petsamo area with Finn permission and began driving toward Murmansk on June 22, 1941, the first day of *Barbarossa*. The Finnish government immediately declared that Finland was uninvolved but also that it would defend itself if attacked. As expected, the Soviets began airstrikes onto Finnish cities on June 25, and the Finns began new operations against their traditional enemy in what they began calling the Continuation War.[16]

In southern Finland, the joint German-Finnish attack established the front lines well beyond the original pre-Winter War national boundary, in some cases extending over 360 km (195 nm) into the Soviet Union. The offensive was stopped in December, and defensive positions were established just north of Leningrad, along the Svir River between Lakes Lagoda and Onega, and along a line running north roughly halfway between the border and the White Sea.[17]

The northern flank of the attack did not produce such outstanding results. The advance toward Murmansk was stopped in late September after driving only 24 km (13 nm) into Soviet territory. The Germans' supply lines were projected across very rugged terrain, and they depended upon ship traffic for reinforcements, some of which were transferred all the way from Germany around the North Cape. The British were able to interdict this line and slow down German movement. The Soviets, being much closer to their heartland, were able to reinforce the Murmansk area more quickly than the Germans, particularly by using a North-South rail line that the Germans and the Finns never cut. The Germans also badly misjudged the speed by which they could advance over the tundra and the effectiveness of the Soviet defenders. (The Germans were plagued by bad intelligence and the faulty interpretation of captured maps, which they thought showed roads where only reindeer trails existed.)

Finally, the Germans underestimated the ultimate importance of Murmansk, which later became an important lifeline for the resupply of the Soviets. Following the conquest of Norway, Hitler was obsessed with the possibility of another, more effective British counterattack. When *Barbarossa* was being planned, he denied the requests of his commanders in the North and kept the bulk of the German northern forces in Norway. Much of the German force that may have helped capture Murmansk was tied up in anti-invasion duty in Norway, awaiting an invasion that the Allies never seriously contemplated.[18]

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[16]Ibid., p. 136; Maude, 1976, p. 10.

[17]Ziemke, 1952, pp. 202-203.

[18]Ibid., pp. 153-154. The Germans employed 500,000 troops in the occupation of Norway. Roush, 1980, p. 26.

In the middle of the spring of 1942 the Soviets began a counteroffensive in the Petsamo region, but they faced some of the same problems that the Germans had the previous fall, and the attack failed. Soviet problems were compounded by the spring thaw, which prevented the renewal of the attack.[19] The far North was quiet for the next year and a half, with the German forces building a fortified line of interconnecting strong points and fortified huts along the Litsa River and the Soviets biding their time.[20]

The Finnish Collapse, Kirkenes, and Scorched Earth

At the beginning of 1944 after the series of setbacks in Central Europe, the Germans withdrew from southern Finland to consolidate their defenses, leaving the Finns to face the Soviets alone on that front.[21] The Soviets began a successful offensive in the South in June of 1944. The Germans provided token assistance, but only the minimum they thought would keep the Finns in the war. The Finns began suing for peace during the summer, but harsh terms demanded by the Soviets delayed the Finns' acceptance until September.[22]

The Germans withdrew to a defense line in the Petsamo region to secure the area's mines. The Finnish forces pursued them under the terms of the armistice, but a "Gentlemen's Agreement" between the former cobelligerents prevented any armed confrontations, and the Germans withdrew in good order. The armistice agreement between the Soviets and the Finns also restored the original pre-Winter War boundary, required demobilization of the Finnish forces, gave the Soviets a 50 year lease on a naval base in southern Finland, awarded reparations to the Soviets, and ceded Petsamo (called Pechenga by the Soviets) to the Soviet Union, cutting off Finland from the Barents Sea and creating a common Soviet-Norwegian border.[23]

While the Germans were completing their withdrawal into Finnmark and the Pechenga region, their High Command determined that sufficient German stockpiles existed and the mines of northern Finland were no longer necessary to German industry. Permission to withdraw from Finnmark to the more defensible Troms area was received in the

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[19]Ziemke, 1952, p. 227.
[20]Ibid., p. 245.
[21]Ibid., p. 272.
[22]Petrow, 1974, p. 259.
[23]Ziemke, 1952, p. 278.

beginning of October 1944. During the evacuation, the Germans followed a scorched earth policy, forcing the evacuation of all Norwegian civilians and the destruction of all buildings, crops, livestock, and facilities that couldn't be moved. Some civilians avoided being moved, but the overall evacuation was extremely successful from a German point of view.[24]

Soviet forces began an offensive against the Pechenga defenses at about the same time, attacking the 53,000 German defenders with 97,000 troops. The Soviets captured Pechenga on October 15 and drove on to Kirkenes on the eastern Finnmark frontier 10 days later.[25] The Soviet forces did not pursue the Germans from that area but set up their defenses west of Kirkenes in November. The Germans completed their evacuation of Finnmark in December and waited, undefeated, behind a strong defensive position along the Lyngen Fjord in Troms until the end of the war.

A small Norwegian force joined the Soviets late in the campaign, and they moved into the vacuum between the Germans and the Soviets to reestablish Norwegian governmental control over Finnmark. The Norwegians were suspicious of Soviet postwar intentions, and they wanted to establish a presence as soon as possible. They had urged the British to invade Norway to prevent Soviet forces from occupying parts of it, but in the end they had to settle for a small part in the Soviet campaign.[26]

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[24]Petrow, 1974, p. 263.
[25]Ivanov, 1984, p. 49-50.
[26]Petrow, 1974, p. 265-266; Udgaard, 1973, pp. 55-58, 64.

III. INTERNATIONAL RELATIONS IN THE NORTH

THE INDIVIDUAL SEARCH FOR SECURITY

At the end of World War II each Nordic government was faced with sobering remembrances of the failures of past policies and the need to develop new ones, particularly to meet the challenge of the massive Soviet power to their east. The power of a large state can be gauged in terms of its ability to impose its will on other states. Conversely, the power of a small state must be measured by how well it can avoid having a foreign will imposed upon itself.[1] The states of northern Europe followed widely differing paths to accommodate the fears of their large neighbor, and they have achieved differing successes in maintaining their own measures of power.

Iceland, which became an independent nation after World War II, joined NATO, but it does not maintain an armed force. Finland is officially nonaligned and neutral, but it is closely tied to the Soviet Union by its geographic position and the Finno-Soviet Friendship, Cooperation, and Mutual Assistance (FCMA) Treaty. Sweden maintains a strong armed neutrality based on territorial defense. Norway and Denmark, who joined NATO as charter members, base their security upon territorial defense and strong Allied reinforcement, but they also have limited their NATO participation through unilateral "base and ban" policies, which prohibit the permanent stationing of foreign troops on their soil and nuclear and chemical weapons within their borders.[2]

The defense policies of the Nordic states do have common threads that are found in the policies of small states in general. Because only the great powers have the resources and the influence to develop defense in depth, the defense of each Nordic state is territorial in nature: It begins at the national border and is patently defensive. In addition, the defense planning for each state is geared to the most dire circumstance: a surprise attack by the Soviet Union.[3] The defense policies of Finland, Sweden, and Norway will be discussed next, in turn.

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[1]K. Orvik, 1978, p. 1.
[2]Holst, 1981a, pp. 63-65.
[3]K. Orvik, 1978, pp. 2-3, 6.

Finland: "Realistic Good Neighbor"[4]

Under the terms of the 1939 Nazi-Soviet pact, Finland was considered to be in the Soviet sphere of influence,[5] and it remains there today. The Treaty of Peace, signed in Paris in 1947, formalized the concessions Finland made under terms of the armistice ending its participation in World War II and placed statutory limits on the size of its armed forces.[6] (The Soviets, who seemed to overlook Finland's armed forces when they settled the Winter War, didn't make the same mistake twice.) A year later the FCMA Treaty was signed, under which Finland agreed to resist any attack mounted by Germany or any German ally on itself or on the Soviet Union through Finnish territory.[7] The treaty also contains a consultation clause allowing the Soviets to call for talks if an external threat is perceived. This clause has become an important weapon in the Soviet's diplomatic arsenal, for although they have only invoked it once since the treaty was signed, the threat of calling Finland in for talks and the ominous consequences that could result have kept Finland in line.[8]

Although the word "Finlandization" has become a term of derision when describing the relationships between major and minor powers, the position of the Finns is more enviable than that of the Eastern Europeans who are still occupied by Soviet troops. The relationship between the Finns and the Soviets has evolved since World War II, and the more trust the Finns have earned from their giant neighbor, the more freedom they have enjoyed.[9] The two nations have developed a mutually beneficial economic relationship, they cooperate on military matters such as arms sales and exchange visits, and the Soviets have become the Finns' largest single trading partner.[10] The FCMA Treaty, which has a

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[4]"A convincing example of the realism of (one country's relationship with the USSR) is provided by the genuinely friendly good-neighbourly relations between the USSR and . . . Finland." Denisov, 1984, pp. 52-53.

[5]Ziemke, 1982, p. 117.

[6]The Paris treaty reestablished the post-Winter War boundaries and also ceded the Pechenga region to the Soviet Union, cutting Finland's access to the arctic coast. Maude, 1976, p. 11.

[7]House Armed Services Committee (HASC), 1984, pp. 16-17.

[8]A Soviet "suggestion" for consultations in 1961 resulted in the withdrawal of a Conservative candidate for president, and the more acceptable incumbent was reelected without opposition. Bjol, 1983, pp. 7-8.

[9]Nyberg, 1984, p. 68.

[10]Lindstrom, 1981, pp. 311, 313.

term of 20 years, was renewed in 1955 and again in 1970, both times several years before it was due to expire.[11]

The Finns see themselves as a neutral buffer zone dedicated to the reduction of tensions between East and West and to the continual reassurance of the Soviet Union. This role was officially pronounced in 1984 by the Chief of the Finnish Parliamentary Defense Committee who said, "[I]t is Finland's duty to prevent the use of its territory for military operations against other nations."[12] Although their standing forces are limited by treaty, they have a large reserve army. Finnish defense policy is based upon the existence of a large-enough territorial defense to deter an attack upon Finland and to convince the Soviets that they need not worry about anyone using Finnish territory to attack the Soviet Union.[13] This policy has given Finland over 40 years of peace and a fair amount of freedom since the end of World War II.

Sweden: Armed Neutral

Sweden's neutrality is a result of domestic policy and not a result of international law (such as Switzerland) or a postwar agreement (such as Austria).[14] Theoretically, therefore, Sweden could change its policy anytime it saw fit. Unlike its fellow Scandinavian countries, however, Sweden has had success with the policy of armed neutrality, and it is unlikely, given the balance of power in the region, that Sweden would change its traditional role.

After World War II, Sweden's faith in neutrality was vindicated, and it, along with Denmark, pursued the establishment of an armed, neutral defense alliance joining those two countries with Norway. However, the Norwegians, who had a differing view of the effectiveness of neutrality after nearly five years of occupation, wanted to rearm more quickly and to gain a more credible defense than would be possible though an alliance linking the three Scandinavian nations.[15]

The lack of fruition of the Scandinavian defense alliance did not dissuade Sweden from keeping its own commitment to neutrality because Sweden has several advantages that its neighbors lack. First, Sweden has a larger population than Norway and Denmark, and it

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[11]HASC, 1984, p. 17.
[12]Ibid., p. 17.
[13]N. Orvik, 1978, p. iv.
[14]Marshall, 1984, p. 8.
[15]Udgaard, 1973, p. 34.
[16]Marshall, 1984, p. 8.

can support the largest armed force in the Nordic region.[16] Second, Sweden, unlike Finland, has a buffer state between itself and its most likely adversary, so it is not quite so susceptible to direct military pressure. Third, Sweden's territory does not lie in nearly as strategic a location as Finland's, immediately adjacent to the Soviet Union; as Norway's, controlling the North Cape; or as Denmark's, astride the Baltic Approaches. The Soviets could accomplish all their probable military objectives during a war against NATO and never cross a Swedish border.

The Swedes have recognized that their neutrality depends upon the deterrent value of a credible defense against a direct attack on themselves. They have also recognized that their independence depends upon the prevention of one superpower's use of Swedish territory for operations against the other. Therefore, the Swedes officially plan and equip to defend in *all* directions, though practically they have no doubt that the Soviet Union is their most serious threat.[17]

The Swedes plan their defense based on the prediction that they will not be attacked separately. Instead, they believe they would be involved only as part of a larger conflict between the major powers.[18] Within such a conflict, the Swedes assume that the Soviets may be tempted to invade Southwest Sweden to support an attempt to force the Baltic Approaches, or they may try to cross the northern county of Norrbottens Lan in support of the invasion of North Norway.[19] The Swedish defense strategy in the North is to let Finland buy mobilization time, because Sweden has no standing army and will need three or four days to use its strong air force to act as a forward defense, interdicting the roads that the invading force would be required to use through the rough terrain and relying on a network of forts to bolster its territorial defense.[20]

During the decades following World War II, Sweden has remained key to the planning of both sides in Europe, and its credibly strong defense posture could be seen by both as an advantage, screening each from the other and adding stability to the region.

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[17]Gilberg et al., 1981, p. 16. The storm raised in the Swedish Parliament about the 1981 published comments of two Swedish Air Force officers, a colonel and a general, was centered less on their forecast of defeat if the Soviets invaded and more on their prediction that Sweden would have to ask NATO for assistance. The government had to reaffirm that it did not anticipate any cooperation with NATO. Bjol, 1983, pp. 19-20.

[18]Gilberg et al., 1981, p. 16.

[19]Lindstrom, 1981, p. 315.

[20]Canby, 1982, p. 118. The Swedish Air Force has contingency plans to bomb the lines of communication inside Finland if Finnish resistance is lacking. Bjol, 1983, p. 21.

Recent deterioration of the Swedish armed forces has given those in the West some worry about Sweden's future role in the area. However, the 200 alleged violations of Swedish waters by Soviet submarines, as counted by the Swedish military since the "Whiskey-on-the-Rocks" incident in 1981,[21] have added strength to those in Sweden who want to rebuild their forces; ironically, those same Soviet actions may cause the Swedes to bolster their declining forces more than they would have otherwise.[22]

Norway: NATO Supporter

Norway's historical relations with the Russians were good. The Norwegians saw Russian power in the region as a counterbalance to the dominant Swedish power that was next door. The Russians, for their part, were always friendly to the Norwegians, and theirs was the first government to recognize the newly independent Norway in 1905.[23] As events unfolded during the Winter War and World War II, however, the Norwegian government-in-exile in London became concerned about the Soviets' ultimate objectives in the North.

Before the end of the war, the Soviets began demanding a review of the treaties that gave Norway sovereignty over Svalbard and Bjornoya, a small island between Svalbard and the North Cape. Foreign Minister Molotov reasoned that the treaties were invalid because they were made before the Soviet Union became an important world power, and they were made with the recently defeated Germans. The Soviets said that they had strong, legitimate interests in the area and would not allow Norway to become an obstruction.[24] Norway started discussions with the Soviets on these subjects, but it did not yield to Soviet demands, and the talks were suspended two years later.[25]

The Norwegian government-in-exile was concerned about Soviet forces moving west of their defensive positions around Kirkenes, even after the German surrender.[26] However, the Soviets apparently did not believe that an occupation beyond eastern Finnmark was worth the cost. The engagement of the strong, well-defended German force that was entrenched in Troms would not have affected the main battle in Central Europe. In addition,

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[21]So called when a Soviet Whiskey class boat ran aground in Swedish waters.
[22]Lindstrom, 1981, p. 323; Marshall, 1984, p. 8.
[23]Udgaard, 1973, p. 20.
[24]Ibid., pp. 67-68.
[25]German, 1982, p. 57.
[26]Udgaard, 1973, p. 131.

the Soviets always considered Norway to be in the British sphere, and they didn't want to upset their own plans for Central and South Europe by challenging the British in the north. The Soviets withdrew from Finnmark in late September 1945 without extracting any concessions from Norway on the arctic islands, after ensuring that the large German force left in Norway had been disarmed and was being demobilized.[27] In retrospect, the Soviets apparently did not foresee the overwhelming importance that the Barents and Norwegian Seas would assume in later years, otherwise they might have moved to take over North Norway at the end of World War II.

Norway wanted to remain neutral at the end of the war, but the domination of Finland by the Soviets, the Soviet pressure to give up its arctic islands, the failure of the proposed Scandinavian defense alliance to fulfill its needs, and its desire to rearm quickly all contributed to its decision to join NATO as a charter member in 1948. Loud Soviet protestations about Norway's action led to concern that the Soviet Union might force Finland to accept Soviet troops on Finnish territory. In what appears to have been an attempt to placate the Soviets, Norway established restrictions upon its own activities within the alliance[28] and laid the foundation for its "deterrence, reassurance, and insurance" defense policy.[29] The first restriction, initially stated in February 1949, has remained unchanged until today:

> The Norwegian Government will not be party to any agreement with other states involving obligations on the part of Norway to make available to the armed forces of foreign powers bases on Norwegian territory, as long as Norway is not attacked or subject to the threat of attack.[30]

In 1951 the Norwegian Minister of Defense reaffirmed the original policy and made it clear that this policy did not restrict Norway from:

- Making bases available to its Allies if an attack occurs or is expected;

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[27]German, 1982, p. 56; Udgaard, 1973, pp. 66, 131.

[28]German, 1982, p. 57.

[29]The companion publication to this Note reviews Norway's defense policy in light of Soviet and NATO objectives and strategies in the North. See Terry, 1987.

[30]Sandli, 1983, p. 67.

- Concluding agreements with its Allies to prepare for such an eventuality;
- Developing Norwegian bases so they could effectively receive and maintain Allied forces; or
- Participating in Allied exercises or being visited for short periods by Allied forces, even in peacetime.[31]

Although Norway has insisted it retains the right to change its unilateral policies as circumstances warrant, the Soviets interpret Norwegian declarations as being fixed, almost to the degree of a treaty commitment, and they have put pressure on Norway about virtually every defense decision it has made.[32] The Norwegians, for their part, have walked a tightrope between deterring and reassuring the Soviets, firmly exercising their right to take actions they deem necessary for their security while adhering to additional unilateral "confidence building" defense policies that they have developed through the years:

- No foreign troops may be permanently stationed in Norway (original policy).
- No nuclear or chemical weapons may be stationed in or operated from Norway.
- No Allied aircraft may operate east of 24° E.
- No Allied vessels may operate in territorial waters east of 24° E, nor may they enter territorial waters if they have been operating east of 24° E in international waters.
- No Allied ground maneuvers may take place in Finnmark.
- All exercises must be small and limited in duration, and they must be announced even if they fall below the thresholds stated in the Helsinki Agreements.[33]

Periodically the Soviets (or their allies) have taken actions or mounted diplomatic pressures that seemed to be designed to frighten Norway away from its NATO Allies or appeared to be clumsy attempts to gain a military advantage.[34] However, Norway has

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[31]German, 1982, p. 61.

[32]Ibid., p. 56.

[33]Holst, 1981, p. 23.

[34]The U-2 and RB-47 incidents in 1960; the Finnish "Note Crisis" of 1961; tanks rushing to the Norwegian border in 1968. German, 1982, pp. 64-67, 70. Submarine violations between 1970 and 1983 numbering over 230; merchant ships, icebreakers, and "research" vessels stopping in territorial waters or entering port without permission, 1982-1983. Leighton, 1983, p. 129. Cargo plane on a cattle pickup mission fitted with intelligence-gathering cameras. "Washington Roundup—Landing Ban," 1985.

remained a strong, committed member of NATO. The nation's widespread conscription is accepted as necessary, and reserve training is taken seriously. This maximum civilian participation in the defense effort helps spread the understanding of the nation's goals and strategies,[35] and there is strong public support for NATO membership and for keeping the present defense policy.[36] This pro-NATO attitude can be explained by contrasting it with the attitude that existed before World War II. Now, instead of a "what's the use" attitude, Norway is motivated to defend itself because it believes that its actions can make a difference—if Norway can hold out, NATO reinforcements can come in time to help.[37]

THE NORDIC BALANCE

Russia has been attacked at least 14 times since 1818.[38] Following its experiences before and during World War II, the Soviet Union established a major national objective that it would do whatever was necessary never again to fight on its own territory. Soviet strategy to obtain this objective includes the establishment of buffers along its borders, the determined and patient pursuit of strategic advantage whenever the potential gains outweigh the risks, and the use of preemption if required.[39] The Soviet Union's actions in Finland during the Winter War, in Czechoslovakia following the "Prague Spring," and more recently in Afghanistan illustrate its strong desire to gain and maintain those secure buffer zones.

The nations of northern Europe are keenly aware of the Soviet Union's view of its own security needs and its past actions to fulfill those needs. The situation in the Nordic region has been shaped mainly by these nations' responses to those Soviet concerns. The stability that has existed there since the end of World War II has resulted from what some have called the Nordic Balance, in which Northern Europe can be considered a multi-layered buffer zone, with each nation in the region showing restraint in its actions.

The Finns' FCMA Treaty with the Soviets has stabilized their relations with their former wartime adversary. However, the realities of the consultation clause and the history of Soviet actions elsewhere have made the Finns very mindful of NATO activities in Denmark and Norway. The Finns do not want the Soviets to use any NATO action as a pretext to take action in or against Finland.

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[35]Brenchley, 1982, pp. 14-15.
[36]Holst, 1982, pp. 16-28.
[37]Bjol, 1983, p. 35.
[38]Klenberg, 1968, p. 2.
[39]Bull-Hansen, 1985, p. 8.

The Swedes' unique position in the region has allowed them to pursue an independent foreign policy, although they are particularly sensitive to the pressures faced by the Finns because of their common border and their historical and cultural ties. A militarily strong Sweden allows both NATO and the Soviets to concentrate their defenses elsewhere, counting on Sweden to make good on its commitment to defend its land, airspace, and territorial waters against *all* intrusions.[40]

The Norwegians, strengthened by the certainty of the availability of NATO reinforcements, still show respect for Soviet concerns and have firmly stuck with their "reassurance" strategy, despite the dearth of Soviet reciprocity. If the Soviets were to occupy Finland, Norway's security would be almost impossible to guarantee, especially in the North where the strip of territory called the Finnish Wedge points directly into the heart of the Troms defense region. The Norwegians have decided that a little "reassurance," if it prevents this eventuality, is worth pursuing.

The Soviets have followed three major strategies in their attempt to tip the Nordic Balance more into their favor: They encourage the continued neutrality of Finland and Sweden, particularly because those states have promised to prevent NATO's use of their territories; they have tried to strengthen the domestic non-Communist left of the countries of the region; and they continually strive to separate Denmark, Iceland, and Norway from NATO.[41] The Soviets face a major dilemma, however, because of their own base structure on the Kola Peninsula. If they put too much pressure on the Nordic states or take some precipitate action, Sweden could begin reconsidering its neutrality, Norway could revoke its base and ban policies, and NATO forces could be invited into Norway where they would be in position to strike at the very heart of Soviet power in the region.[42] Although Soviet naval and air defense forces on the Kola are substantial, some observers have noted that the ground forces stationed there would probably be even larger if it were not for the stabilizing effects of the Nordic Balance.[43]

The stability of the Nordic region results in part from guarantees from outside the region: Allied commitments to reinforce. By the same token, events totally separated from

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[40]Lindstrom, 1981, pp. 315, 320-321.
[41]Gilberg et al., 1981, pp. 5-6.
[42]Bjol, 1983, pp. 38-39.
[43]Holst, 1982, p. 12; German, 1982, p. 77.

the region could upset that stability. Consequently, the countries in northern Europe also view the lack of *any* conflict as key to their security, and they are the most consistent supporters of international conciliation, disarmament, arms control, and detente.[44]

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[44]N. Orvik, 1978, p. ii.

IV. THE PHYSICAL ENVIRONMENT OF NORTH NORWAY

NORWEGIAN GEOGRAPHY

Norway lies on the western and northern portions of the Scandinavian Peninsula, divided from Sweden for most of its length by rugged mountain ranges that plunge into the sea. The North Cape lies above 71° N, and the upper tip of the remote Svalbard Archipelago extends across 80° N, over 1000 km (540 nm) farther north. Longyearbyen, the main Norwegian settlement on Svalbard, is closer to the North Pole than it is to Oslo by over 775 km (418 nm). The distance from the North Cape to Farsund on Norway's southern tip is equivalent to the distance from Berlin to Moscow or from Los Angeles to Seattle, approximately 1722 km (930 nm). The country lies on a northeast-southwest axis: Kirkenes, in eastern Finnmark adjacent to the Soviet border, lies due north of Leningrad; and Bergen, on Norway's southwest coast, lies due north of Amsterdam.

Norway shares a 2531 km (1367 nm) border with Sweden, Finland, and the Soviet Union. The 196 km (106 nm) border with the Soviets runs for most of its length along the Pasvikelva River, which flows from the Finnish border to the Barents Sea. The border with Finland separates Finnish Lappland from Finnmark and Troms. A particularly strategic portion of this 716 km (387 nm) border forms the Finnish Wedge, a strip of land approximately 110 km (60 nm) long and 35 km (19 nm) wide that is jammed between Sweden and Norway and points directly at the base of Lyngen Fjord in eastern Troms. The Norwegian-Swedish border runs along the spine of the mountains from the Finnish Wedge to the Skagerrak, the sound between Norway and Denmark.[1]

Norway has 2650 km (1431 nm) of coastline, not counting its numerous fjords and bays;[2] and over 50,000 islands are scattered along its coast, although only 2000 are inhabited. The sea around the country is ice-free for its whole length, thanks to the effects of the Norway Current, the northern branch of the Gulf Stream.[3] Its population is tied closely to the sea with every major city and most of its smaller settlements located near the water. It

[1]Veigaard and Sundby, 1982, p. 3.
[2]Holst, 1981a, p. 65.
[3]The ice-free effects of this current extend in winter only to Mys Svayatov Nos beyond Murmansk on the north Kola coast, approximately 385 km (208 nm) from the Norwegian Border. Klenberg, 1968, p. 12.

depends heavily on air and sea transport, particularly in the North where only one North-South road and one parallel railroad exist. The railroad ends at Bodo, and the only rail traffic above that point travels on the tracks that connect Narvik with Sweden.[4] Fjords cut deeply into the country; and the road, which hugs the coast as it winds its way north, depends on bridges and ferries at several locations. At one point east of Narvik, the water comes within 7 km (4 nm) of the Swedish border.[5]

Only one major road connects eastern Finnmark with the remainder of Norway, and it winds near the coast, connecting the larger towns that are sited along the southern tips of the Finnmark fjords. Three major roads cross the Finnish-Norwegian border farther south: One in southeastern Finnmark heads north into Banak, one near the base of the Finnish Wedge drives north toward Alta, and one tightropes on the north side of the Swedish-Finnish border in the Finnish Wedge and crosses into Norway only 35 km (19 nm) from Skibotn at the base of the Lyngen Fjord. These roads connect with a modest network of roads in Finnish Lappland that connect with the Soviet road network as far southeast as Kandalaksha on the northwest tip of the White Sea. See Fig. 2.

Another way to envision Norwegian geography is to superimpose a map of Norway over a map of Alaska, keeping the latitudes aligned.[6] Kirkenes in the northeast would lie on the Alaska-Canada border on the coast of the Beaufort Sea, and the North Cape would extend about 220 km (118 nm) to the northwest, to a spot even with Point Barrow but approximately 400 km (215 nm) east of it. Bergen would lie on Nunivak Island in the Bering Sea and Farsund would lie at the same latitude as Juneau, but it would rest in Bristol Bay halfway to the Pribilof Islands. With this alignment, Oslo would then rest about 100 km (54 nm) inland due east of the mouth of the Kuskokwim River and the same distance north of the coastal Alaskan village of Togiak. Norway is similar in size to New Mexico, but the total land area of all the Nordic countries (Iceland, Finland, Denmark, Sweden, and Norway) is still 242,000 km (69,500 sq nm) smaller than Alaska's.[7] See Fig. 3.

Norway has the fifth largest land area in Europe, but, excepting Iceland, it has the lowest population, just over four million, with 55 percent of the people living in rural areas. However, only a half million reside in North Norway and only 80,000 of them live in

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[4]Alexander, 1984, p. 182.

[5]Veigaard and Sundby, 1982, pp. 3, 97.

[6]The companion publication recommends the use of Alaska-based A-10 aircraft to strengthen the defense of North Norway. See Terry, 1987.

[7]Veigaard and Sundby, 1983, p. 3; Cole, 1985, p. 188.

[8]Ingebrigtsen, 1983, p. 69; Veigaard and Sundby, 1983, p. 117.

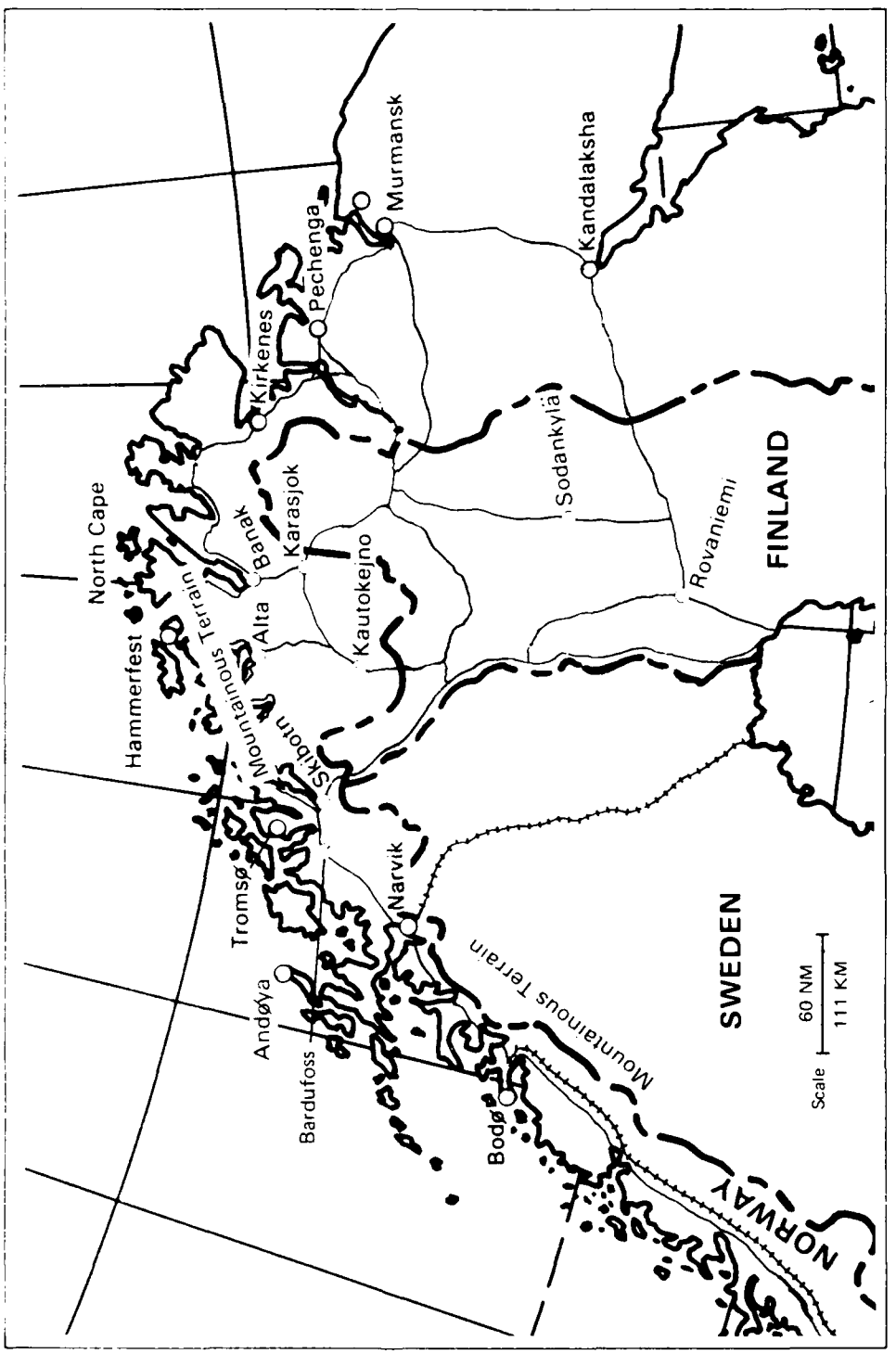

Fig. 2—North Norway region topography and major lines of communication

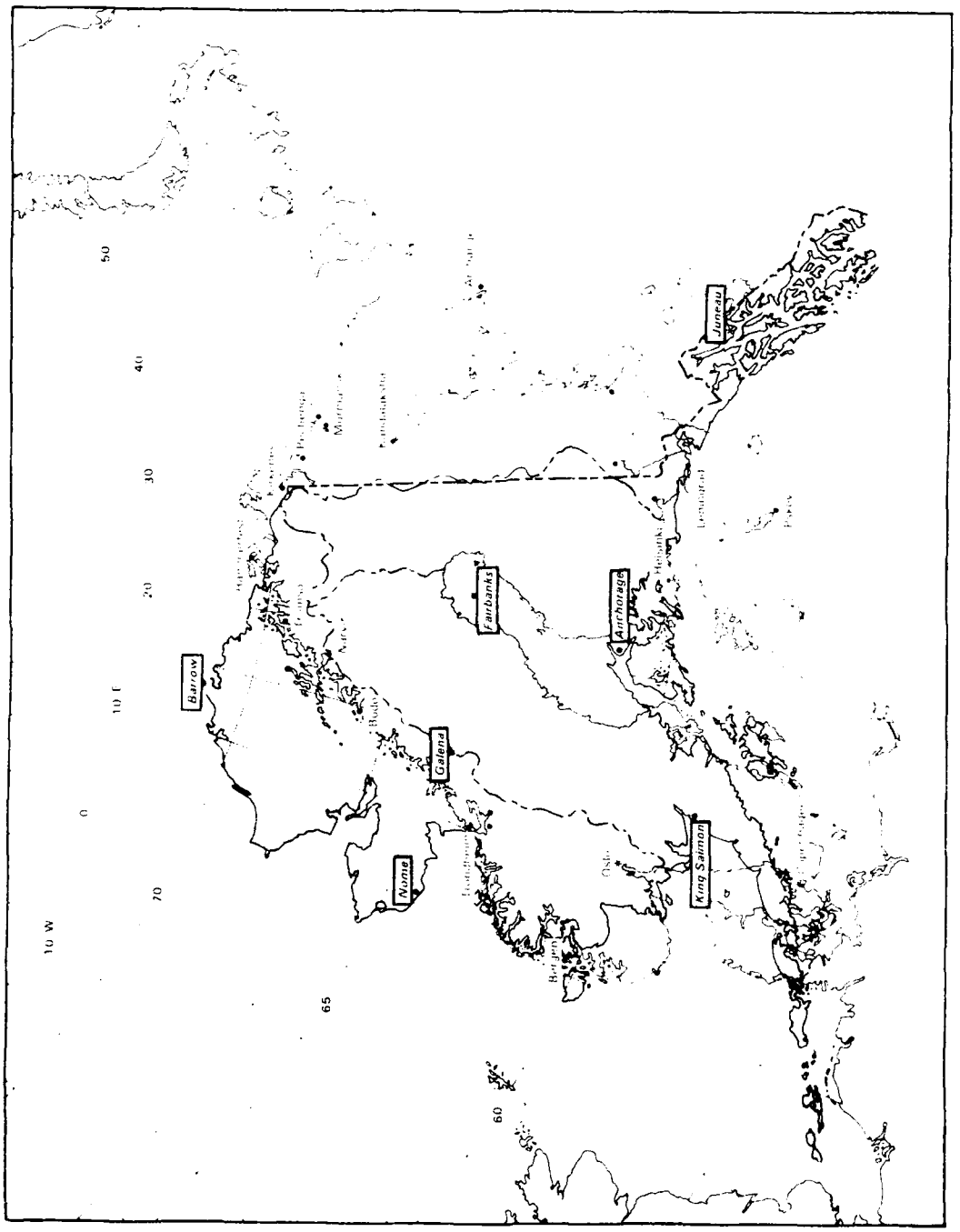

Fig. 3- Comparison: Northern Europe and Alaska

Finnmark, the largest Norwegian county, lying directly on the invasion route from the east.[8] Norway faces a real problem when it considers how to move its mobilizing troops quickly from the South where they live to the North where they will be needed.

NORTH NORWAY TOPOGRAPHY

Norway is a mountainous country: 80 percent of its land area is over 150 m (492 ft) above mean sea level and its average elevation is 500 m (1640 ft). Most of its land consists of treeless high plateaus with numerous long, narrow lakes that are extensions of the structure that formed the fjords. Large amounts of snow fall on Norway, and 1700 glaciers are located throughout the country.[9]

North Norway's topography consists of two distinct types, with the transition zone between the two falling along the border between Finnmark and Troms. The eastern portion of Finnmark is characterized by a tundra belt 10 to 25 km (5 to 13 nm) wide containing grasses, bushes, and a few trees; it is covered with gravel, rocks, and large granite boulders and spotted with hundreds of depressions that form cold lakes. Inland the tundra transitions to the taiga forest, which is dominated by spruce and fir trees.[10] The adjacent sea provides an abundance of moisture to the area, and the moist ground, which is frozen solid for most of the year, thaws only near the surface in the summer. The underlying permafrost prevents the melt water from draining from the soil and many bogs or swamps are formed.[11] As a consequence, the surface conditions in the region are very fragile, and cross country movement is hampered.

Toward the western end of Finnmark the fjords begin to cut deeper inland and the interlaced mountains begin to rise steeper and higher. Inside Troms, the terrain becomes extremely rugged as the fjords project into the mountains, creating natural choke points at several locations. The spine of the central mountain range that marks the border between Sweden and Norway projects into the Norwegian Sea in the vicinity of Tromso, the capital of Troms, and then curves northeast, creating a series of rugged islands, sounds, and fjords that ride up over the top of western Finnmark. The effect of the whole region is to restrict ground movement severely and to create natural defensive barriers.

[9]Ve[illegible]gaard and Sundby, 1983, p. 3.
[10]Ziemke, 1982, p. 140.
[11]Meretskov, 1971, p. 317.

NORTH NORWAY CLIMATOLOGY

The Weather

The weather in North Norway is dominated by the Norwegian Sea and the prevailing westerlies that push the moist, cool air inland. In the winter, successions of arctic storms and blizzards roll across the region, creating temperatures near the coast that can go below -10 F. Farther inland away from the maritime influence, the temperatures can drop to -45° F. Finnmark records 230 frost nights per year. The lowest temperature recorded there was in the southeast near the Finnish border at Karasjok: -61° F. The mean January temperature further west near the water at Tromso is 26° F, although it can be much colder in other parts of Troms that are only a short distance away from the sea.[12]

Summer weather patterns are also affected by the sea. Although highs occasionally reach the 80s, there are only 40 days in a year in eastern Finnmark when the mean temperature reaches over 50° F. Fog frequently occurs, lasting from a few hours to a few weeks. The mean July temperature at Tromso, which is affected even more by the sea, is 54° F, and the average annual precipitation there is 1.5 m (59 in).[13]

The Midnight Sun and Midday Darkness

One of the biggest adjustments that an outsider must make when arriving in an area above the Arctic Circle is to become acclimatized to the unusual lighting conditions. The sun goes below the horizon and stays there for over two months during the winter in the highest latitudes in North Norway; likewise it does not set for over two months in the summer. During the spring and fall, the lengths of the days change rapidly. At North Cape the season changes from continuous daylight to continuous night in only 14 weeks, an average of about one hour and 45 minutes of change per week.

When the sun is extremely low or totally below the horizon, it cannot affect the weather on a daily cycle as it does in lower latitudes, especially if the ground is snow covered and reflects the sunlight's energy. Severe temperature conditions, which can be caused by the convective movement of large air masses or the radiative cooling of the earth during cloud-free conditions, can remain for days or even weeks with the highs and lows for each day only a few degrees apart. When the sun is always above the horizon, the temperature's variance is also moderated, because the sun is always shining and evening

[12]Ziemke, 1982, p. 140; Veigaard and Sundby, 1982, p. 5; Russell, 1984, p. 59.
[13]Ziemke, 1982, p. 140; Veigaard and Sundby, 1982, p. 5; Russell, 1984, p. 59.

cooling cannot take place. During the fall and spring, the sun's pattern allows for daytime thawing and nighttime freezing conditions. When the spring thaw finally comes to interior locations, it tends to come rapidly.

The sun takes longer to rise or set in the far North because the angle its path makes with the horizon is smaller than the angle at lower latitudes. The sun is closer to the horizon for a longer period of time, and the lighting condition, called civil twilight, lasts much longer.[14] The amount of available light varies from the beginning (or end) of civil twilight when the horizon is just visible until just before sunrise (or just after sunset) when virtual daylight conditions exist. Despite the variability, civil twilight generally provides enough light for effective military flying operations. Table 1 indicates representative periods of continuous sunlight and continuous nighttime for various locations in North Norway. See also Fig. 4.

At the North Cape and all latitudes further south, periods of civil twilight occur throughout the year. Even on the Winter Solstice, the shortest day of the year, civil twilight at Tromso lasts almost four and a half hours. In the spring and fall, civil twilight tends to add an hour or more of usable light to the beginning and end of normal solar daylight. Table 2 lists the lengths of daylight and civil twilight for selected latitudes in North Norway for various dates during the year.

During the long nights of winter, the illumination provided by the moon becomes an important military factor. The combination of a bright moon and snow covered terrain can

Table 1

CONTINUOUS SUNLIGHT AND NIGHTTIME DATES
FOR SELECTED NORTH NORWAY LOCATIONS

Location	Continuous Sunlight	Continuous Night
North Cape	May 14 - July 29	November 11 - January 24
Hammerfest	May 16 - July 27	November 12 - January 22
Tromso	May 20 - July 23	November 27 - January 15
Bodo	June 7 - July 8	December 15 - December 29

SOURCE: Veigaard and Sundby, 1982, p. 5.

[14]Civil twilight is defined as the period of time that the sun's zenith distance is less than 96°. United States Naval Observatory (USNO), 1984, p. 257.

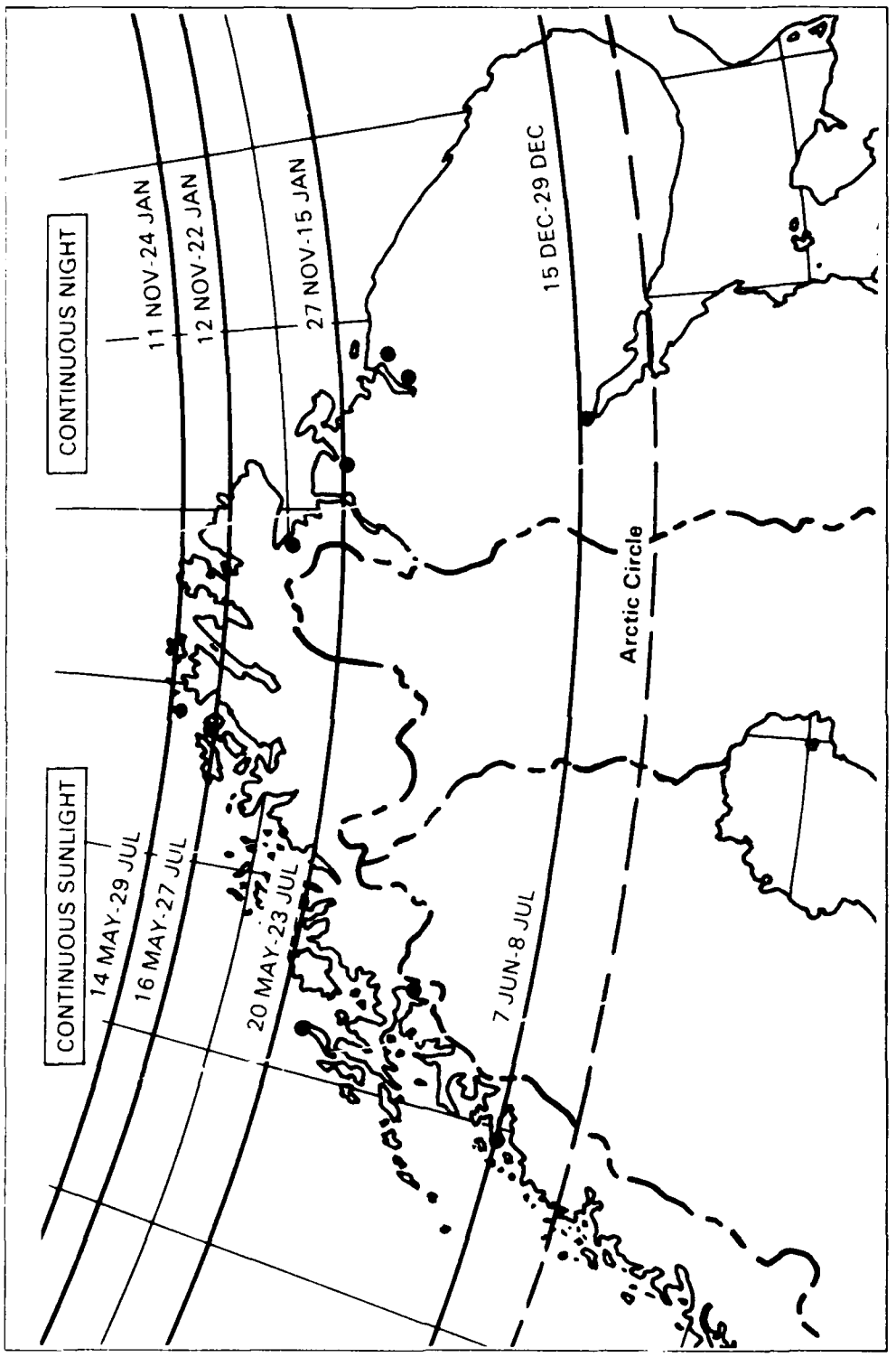

Fig. 4 –Solar lighting conditions during the year

Table 2

LENGTHS OF DAYLIGHT AND CIVIL TWILIGHT IN NORTH NORWAY
(ERRORS UP TO 10 MINUTES MAY EXIST IN DATA DUE TO INTERPOLATION)

		Latitude[a]					Latitude		
Date		70°N	69-30°N	69°N	Date		70°N	69-30°N	69°N
Jan 21	CT[b]	6+17	6+29	6+39	Jul 21	CT	(c)	(d)	(d)
	DT	2+07	2+46	3+32		DT	(c)	(d)	(d)
Feb 21	CT	10+33	10+35	10+39	Aug 21	CT	20+26	20+11	19+52
	DT	8+24	8+34	8+38		DT	17+15	17+11	16+59
Mar 21	CT	14+21	14+21	14+21	Sep 21	CT	14+21	14+21	14+21
	DT	12+23	12+23	12+23		DT	12+23	12+23	12+23
Apr 21	CT	20+26	20+11	19+52	Oct 21	CT	10+33	10+35	10+39
	DT	17+15	17+11	16+59		DT	8+24	8+34	8+38
May 21	CT	(c)	(d)	(d)	Nov 21	CT	6+17	6+29	6+39
	DT	(c)	(d)	(d)		DT	2+07	2+46	3+32
Jun 21	CT	(c)	(c)	(c)	Dec 21	CT	4+07	4+27	4+50
	DT	(c)	(c)	(c)		DT	(e)	(e)	(e)

SOURCE: USNO, 1984.
[a]70°N = Alta; 69-30°N = Between Tromso and Andoya; 69 N = Bardufoss.
[b]CT = civil twilight; DT = daylight; units = hours + minutes.
[c]Continuous daylight.
[d]Continuous twilight—unable to interpolate sunrise/sunset times.
[e]Continuous night.

provide sufficient light to allow effective night movement, despite the long periods of no sun. In northern latitudes, the moon is not visible during part of its cycle as it revolves around the earth. However, because of the relative positions of the earth, moon, and sun, when the winter moon is below the horizon it is in its new moon phase. As the moon approaches its full phase, it remains above the horizon for longer and longer periods, and when it is full, it is above the horizon continuously for over a week each month, providing significant illumination.[15]

[15]During the summer, the full moon is below the horizon. However, because of the long, continuous periods of daylight and twilight, this effect is not important.

ENVIRONMENTAL EFFECTS ON MILITARY OPERATIONS[16]

A U.S. Army manual directly addresses the challenge of operating military forces in the North:

> The northern environment is a dynamic force. He who recognizes and understands this force can use it; he who disregards or underestimates this force is threatened with failure or destruction. . . . In the north the human element is all important. The effectiveness of equipment is greatly reduced. Specialized training and experience are essential. The climate does not allow a margin of error for the individual or the organization.[17]

The problems associated with arctic winter operations are widely recognized. However, the other seasons also present problems that are unique and that must be considered during the planning of the movement and employment of forces in this area.

Winter Effects

Large snowfalls and extremely low temperatures are obvious winter conditions that occur in North Norway. Over level ground, amounts of snow that exceed 30 cm (12 in.) will render conventional wheeled and foot transportation useless, and most tracked vehicles are slowed by snow depths between 60 and 75 cm (24 to 29 in.). If the depth of the snow exceeds 75 cm, especially if the snow is granular or powdery, all movement except for specially equipped snow vehicles will be stopped.[18]

Movement under cold, snowbound conditions requires more vehicle preparation and service, fuel consumption is increased because of external conditions and lubricant thickening, and overland speeds may be drastically reduced. However, the same cold that brings the snow also freezes the ground, and, if the snow conditions are not too severe, overland traffic across frozen bogs and lakes could speed the movement through certain areas that would be impassable in the summer.[19]

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[16]Conditions in North Norway are reminiscent of Alaska. See Terry, 1987.

[17]Department of the Army (DA), 1971, p. 1-3.

[18]DA, 1971, p. 1-7. During World War II, the Germans resorted to stationing snow plows every 10 to 20 km (6 to 12 nm) along their transportation routes to deal with the heavy snows in the area. They also built long snow tunnels—one was over 9 km (5 nm) long—and they erected many miles of snow fence. Ziemke, 1982, p. 264.

[19]Farrar-Hockley, 1982, p. 9; "Northcap, NATO's Dangerous Flank," 1984.

The flat terrain of eastern Finnmark favors mechanized and armored forces, similar to the situation in Central Europe.[20] However, if those forces move as far as the border area between Finnmark and Troms, they will be forced into the channels formed by the valleys and their mobility will be limited.[21] Movement across those hilly or mountainous areas in the winter will be best accomplished in the lower-lying areas.[22]

Operations at night require a well-trained force to be executed effectively.[23] The long periods of darkness that occur in the arctic winter can conceal the movements of forces; however, those same movements will take longer than in daylight. In addition, a well-prepared defense will have the advantage at night in that it will not be attempting extensive movements, and it will be defending familiar terrain.

Flying operations in the winter can be faced with a wide variety of conditions. Simply flying in mountainous terrain in bad weather, especially at night, presents a hazard. The problems of target acquisition are magnified; and routine navigation, especially at low altitude and in the face of antiaircraft threats, is complicated. Flying operations at night under clear, moonlit, snow-covered conditions offer the best chance of night success. During the brief periods of daylight during the winter, the rough terrain, the snow cover, and the patterns of glare and shadows caused by the low sun angle can restrict visibility and cause illusions that hamper operations. During periods of fog or extremely heavy winds or precipitation, normal flying operations can be completely shut down.

Summer Effects

The short summers of Finnmark create much standing water as the snow and ice melt and the underlying permafrost prevents drainage. This effect makes extensive overland movement difficult, particularly for a large force, because vehicles may become bogged down in the tracks of the vehicles ahead. Ordinary wheeled and tracked vehicles are restricted to operations close to the existing roads, and movements must be carefully planned. Generally, when crossing hilly areas, vehicles must use the solid ground along the ridgelines, avoiding the wetter low-lying areas.[24]

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[20]Poulsson, 1981, p. 58. The Soviets successfully used tanks in this area during the Pechenga-Kirkenes campaign in late 1944. Meretskov, 1971, p. 320.

[21]John Berg, 1980, p. 50.

[22]DA, 1971, p. 1-8.

[23]Poulsson, 1981, p. 58.

[24]DA, 1971, pp. 1-7,1-8; Farrar-Hockley, 1982, p. 9.

Faced with continuous daylight, forces must be prepared for around-the-clock operations; the manpower requirements that would suffice for lower latitudes may be insufficient because attacks can be continuously mounted. Tactical surprise is more difficult in the arctic summer; and the expenditures of fuel, material, and munitions may increase over normal planning factors. Flying operations in the arctic summer are less complicated than at night, although 24-hour operations will also stretch flying units' manpower. Those units may be forced to fly at a lower sortie generation rate than similar units elsewhere to keep sorties in the air continuously.

Although the sun is visible for continuous periods, it still hangs low in the sky; long shadows and glare from the sea or the flooded tundra can restrict vision. The lack of well-defined terrain features in Finnmark, especially inland, can complicate navigation, and the apparent motion of the sun as it travels in a circle above the horizon can cause navigation confusion among pilots from lower latitudes where the sun comes up in the east and sets in the west. Although northern North American magnetic variation can range over 40°, North Norway magnetic variation is only 8°.

Transition Periods

Because of the extremes found in both winter and summer in the North, the better times to conduct military operations are either the spring or the fall. The spring offers longer periods of daylight and temperatures that are not quite so severe as the winter, yet the frozen ground and the snow pack will still support movements over areas that would not be passable in the summer. Once the spring melt comes, operations will be severely hampered by the rapidly deteriorating surface conditions. The best season for an attack in the North is the fall, which offers the driest ground conditions yet still provides long periods of daylight that would favor an attacking force. The transition into winter could hamper an operation begun in the fall, but not nearly so severely as the spring melt would hamper the same operation.[25]

Throughout the year, the minimum road network in the North will require a greater dependence upon air and sea lift. The few roads that exist are funneled into natural defensive positions, and cross-country movement will be difficult without specialized vehicles and training. Concealment will be more difficult than in other theaters, because of the lack of natural cover in many areas, especially near the coast, and because of the tracks that the vehicles will leave either in the snow or across the moist, fragile tundra.

[25]Farrar-Hockley, 1982, p. 10.

V. THE MILITARY THREAT TO NORTH NORWAY

CONVENTIONAL GROUND FORCES

Amphibious Forces

The Soviet Naval Infantry (SNI) is an elite force that played a prominent role in the overthrow of the Tsar and can trace its roots to pre-revolutionary times. The SNI had a distinguished record in World War II, taking part in over 100 amphibious operations and river crossings. During the early days of the cold war, however, when nuclear weapons were thought to make the individual fighting man obsolete, the SNI was allowed to fade. In the 1960s the force was reestablished, and it remains an important part of each Soviet fleet today.[1] SNI training is conducted in all aspects of amphibious operations, and the individual naval infantrymen are expected to be tougher and more capable than other troops.[2]

Today the SNI numbers between 12,000 and 17,500 personnel, and it is organized into a training brigade and five operational brigades, two being assigned to the Baltic fleet and one to each of the remaining fleets.[3] The 63d Naval Infantry Brigade (NIB),[4] the "Kirkenes Brigade," is stationed at Pechenga, only 13 km (7 nm) from the Norwegian border.[5] This unit possesses over 2000 men, 40 tanks, and 300 Armored Personnel Carriers (APCs).[6] Table 3 lists the organization and key equipment of a typical Soviet NIB.

Soviet amphibious doctrine categorizes four classes of amphibious landings: strategic landings, which are designed to open a new front; operational landings, which are designed to assist ground force advancement by surrounding and destroying enemy forces; tactical landings, which are designed to strike with battalion-sized forces into the enemy's rear or flanks; and reconnaissance and sabotage landings, which are designed to create diversions and harass the enemy.[7] The Soviets, however, do not have sufficient strength to conduct strategic landings, nor do they train for that kind of operation.

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[1]Hull, 1980, p. 65.

[2]The Soviet Defense Ministry has attempted to equate the elite status of the U.S. Marines to that of the SNI by using the term "marine" in its official English translations instead of the direct translation of *morskaia pekhota*, which means "naval infantry." Lewis, 1982, pp. 57, 59.

[3]Ibid., p. 57; Hull, 1980, p. 66. Soviet Naval Infantry "brigades" are called "regiments" in some references.

[4]Soviet unit designations from O'Donnell, p. 45.

[5]Ries, 1984, p. 878.

[6]Hahn, 1984, p. 19.

[7]Jaroch, 1982, p. 42.

Table 3

ORGANIZATION OF A SOVIET NAVAL INFANTRY BRIGADE[a]

Total	2035 officers and men
3 SNI Battalions	1245 officers and men
1 Naval Tank Battalion	200 officers and men
Combat Support Personnel	590 officers and men
Naval Infantry Battalion	415 officers and men
3 Infantry Companies	315 officers and men
	102 BTR-60PA/PB APCs
Combat Support Personnel	100 officers and men
Naval Tank Battalion	200 officers and men
1 Medium Tank Company	45 officers and men
	10 T-54/55 tanks
3 Light Tank Companies	105 officers and men
	30 PT-76 amphibious tanks
Combat Support Personnel	50 officers and men

SOURCE: Hahn, 1984, p. 19.

[a]There is reason to believe that NIBs are also being equipped with ZSU-23-4 Self Propelled Anti-Aircraft Guns and SA-8 Surface-to-Air Missile Launchers.

Unlike U.S. Marine practice, the SNI does not provide all the forces that take part in an amphibious landing. Rather, the SNI acts as a spearhead, securing beachheads for the follow-on army units that drive further inland.[8] Units of the Soviet 45th Motorized Rifle Division (MRD), which is based in the Murmansk area, have regularly taken part in joint amphibious exercises with the 63d NIB.[9]

In conjunction with the resurgence of the SNI, the Soviet Navy also began building larger, better equipped amphibious support ships, starting with the *Polnochny* class in 1963. Over 100 *Polnochnys* were built, and 43 are still in active service with the Soviet Navy. A few years later, the Soviets began work on a class of ships that displaced nearly three times the tonnage, the *Alligator* class, 14 of which are now serving. In 1974 a similarly sized

[8]Hull, 1980, p. 70. Compared with the USMC, the SNI is a weak force. The USMC possesses 20 times the manpower and provides its own organic artillery, air, and helicopter support; the SNI must depend on that support from other organizations. Unlike the SNI, the USMC has the capability to conduct what the Soviets call a strategic landing.

[9]Erickson, 1976, p. 70.

Ropucha class was begun, and 17 of them have been completed. In the late 1970s, the Soviets introduced the even larger *Ivan Rogov* class, almost four times larger than the *Ropuchas*. This largest class provides the Soviets with a long-range, long-endurance capability that they did not have previously. Two *Ivan Rogovs* have been built so far.[10] In addition to the dedicated amphibious ships, the Soviet Navy can call up 50 Roll-On, Roll-Off (ROLO) ships and numerous bulk freight ships to support operations.[11] Table 4 lists the main characteristics of the four amphibious ship types.

The amphibious ships of the Soviet Navy are divided among the four Soviet fleets, with approximately 15 ships of the type assigned to the Northern Fleet and 22 assigned to the Baltic Fleet.[12] Since the late 1960s, in addition to the more frequent smaller-scale training that takes place, these two fleets have taken part in several large-scale amphibious exercises that have included supporting naval air forces from Soviet aircraft carriers.[13]

Army Forces

The Soviet army units stationed on the Kola Peninsula are assigned to the Leningrad Military District (LMD) and placed under the command of the 6th Army at Petrozavodsk on the western shore of Lake Onega. The two active Category 1 MRDs in the region are the 45th MRD at Murmansk and the 341st MRD at Kandalaksha on the northwest tip of the White Sea. These forces are supplemented by six additional lower-category MRDs that are stationed further south in the LMD: two at Archangel on the south shore of the White Sea, one at Sortavala near the Finnish border on the north shore of Lake Lagoda, and three more in the vicinity of Leningrad.[14]

The standard configuration for MRDs in the Soviet Army is approximately 12,000 officers and men equipped with almost 300 tanks and over 550 APCs. These divisions also have organic artillery, air defense, and antitank assets.[15] The two active MRDs on the Kola are also equipped with specialized GT-T troop carriers designed to operate over snow or

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[10]Moore, 1985, pp. 570-572.

[11]Young, 1984, p. 40.

[12]International Institute for Strategic Studies (IISS), 1984, p. 21.

[13]Hahn, 1984, p. 20. During *Okean 1970* a large fleet left the Baltic, retraced the German invasion route of 30 years before, and then landed forces on the Rybachiy Peninsula only 41 km (22 nm) from the Norwegian border on the northwest coast of the Kola. Hegge, 1979, p. 72; N. Orvik, 1972, p. 725.

[14]Holst, 1982, p. 11; Meyers, 1979, pp. 29-30. Category 1 divisions have 75-100 percent of their personnel strength and are fully equipped with fighting vehicles. IISS, 1984, p. 19.

[15]Lewis, 1982, p. 31.

Table 4

SOVIET AMPHIBIOUS SHIP CHARACTERISTICS

Class	Size	Capacity/Defensive Armament
Ivan Rogov	13,000 tons 159 m (521 ft) length 24 m (80 ft) breadth	550-600 Troops 40-50 AFVs[a] 4-5 Helix or Hormone helicopters 2 SA-N-4 twin SAM launchers 2 SA-N-5 quad SAM launchers 2 76 mm twin AAGs[b] 4 30 mm Gatling AAGs
Ropucha	3,800 tons[c] 113 m (371 ft) length 15 m (48 ft) breadth	250 troops 35 AFVs 4 SA-N-5 Quad SAM launchers[c] 4 57 mm twin AAGs
Alligator	4,700 tons[c] 111 m (364 ft) length 16 m (51 ft) breadth	25-30 AFVs Crews for the AFVs on board 2 or 3 twin SA-N-5 SAM launchers[c] 2 57 mm twin AAGs[c] 4 25 mm twin AAGs[c]
Polnochny	1,000 tons[c] 80 m (262 ft) length[c] 10 m (33 ft) breadth[c]	6-8 AFVs Crews for the AFVs on board 2 or 4 quad SA-N-5 launchers[c] 2 or 4 twin 30 mm AAG[c]

SOURCES: Moore, 1985, pp. 570-572; Hahn, 1984, p. 20.
[a]AFV = Armored fighting vehicle (tanks, APCs, etc.).
[b]AAG = Antiaircraft gun.
[c]Numbers vary within the class.

marshy ground.[16] Those two units plus the MRD at Sortavala also receive specialized arctic training.[17] Table 5 lists the organization and key equipment of a typical Soviet MRD.

Counting the two active MRDs and the NIB at Pechenga, the Soviets maintain an active ground force of over 26,000 troops on the Kola Peninsula. Observers disagree on whether that number could mount a successful surprise attack on North Norway without help from mobilized reserve units farther south in the LMD.[18] However, after only a

[16]Leighton, 1983, p. 113; Russell, 1984, p. 61.
[17]Meyers, 1979, p. 30.
[18]Holst, 1982, p. 11; Sandli, 1983, p. 69; Erickson, 1976, p. 70.

Table 5

ORGANIZATION OF A SOVIET MOTORIZED RIFLE DIVISION

Motorized Rifle Division[a]	11,931	officers and men
3 Motorized Rifle Regiments	6540	officers and men
Tank Regiment	1000	officers and men
Combat and Combat Support Units[b]	4391	officers and men
Motorized Rifle Regiment	2180	officers and men
(Organized into 3 Battalions	40	medium tanks
plus Support Units)	3 PT-76	amphibious tanks
	162	APCs
	4	ZSU-33-4 SPAAGs
	4	SA-9 SAM launchers
	30	SA-7 SAMs
Tank Regiment	1000	officers and men
	95	medium tanks
	3	PT-76 amphibious tanks
	33	APCs
	4	ZSU-33-4 SPAAGs
	6	ZSU-57-2 SPAAGs
	4	SA-9 SAM launchers
	12	SA-7 SAMs
Combat Support and Combat Service Support Units	4391	officers and men
	51	medium tanks
	10	PT-76 amphibious tanks
	53	APCs
	24	S-60 TAAGs[c]
	6	ZU-23-2 TAAGs
	6	SA-6 SAM launchers
	39	SA-7 SAMs
	Numerous general purpose trucks	

SOURCE: Lewis, 1982, pp. 31-32.

[a]Units not assigned to the Central European Military Districts may have lower numbers and older equipment.

[b]Various antitank, engineer, mortar, and artillery assets are distributed throughout the Division.

[c]TAAG = Towed antiaircraft gun.

week's mobilization time, they could have many units of the six reserve divisions of the region into position.[19] Although they would be sure to leave some units in their garrison

[19]Holst, 1981a, p. 70; Bowman, 1984, p. 88.

areas to provide security and to support their forces in Central Europe, they could draw from 72,000 reserve troops to reinforce the Kola.

Airborne Forces

The Soviets field eight Airborne Divisions (ABDs), each consisting of approximately 6500 men and all rated as Category 1.[20] Some of the missions for which the Soviet airborne forces train and equip include the seizure of key routes in advance of other operations; the destruction or capture of airfields; the disruption of enemy troop and logistics movements by attacking key headquarters, communications centers, and rear area installations; and the support of amphibious landings.[21] The Soviets must accomplish all of these missions in North Norway to ensure a successful invasion, and units of a Soviet ABD would be the right choice to assign those tasks. Table 6 lists the organization and key equipment of a typical Soviet ABD.

The ABD nearest to the Kola Peninsula is the 76th Guards Airborne Division based at Pskov, just east of the Estonia-Latvia border south of Leningrad.[22] However, it is unrealistic to expect the Soviets to mount a division-sized airborne assault against North Norway, because such an operation would exhaust a large part of the airlift that the Soviets could provide and would be extremely vulnerable.[23] Rather, considering the nature of the objectives in North Norway and the distances from Pskov that lightly armed transports must transit, battalion- or company-sized airborne landings coordinated with amphibious and ground-based assaults are more likely. One only need imagine the consequences of a Soviet airborne battalion in possession of the airbase at Bardufoss located in the center of the main defense area of North Norway to realize that the Soviet airborne threat must be taken seriously.

AIR FORCES

Air Defense

The Archangel Air Defense District (ADD) possesses about 340 aircraft, about 120 of which are stationed on the Kola Peninsula. These aircraft have the strategic defense mission of intercepting nuclear bombers, carrier and forward-based tactical fighters, and cruise missiles. They are also charged with denying the airspace over the sea to NATO antisubmarine aircraft.[24]

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[20]Hahn, 1984, p. 21; IISS, 1984, p. 19; DA, 1984, p. 4-140.
[21]Lewis, 1982, p. 272.
[22]O'Donnell, 1985, p. 48.
[23]Donnelly, 1980, p. 37.
[24]Ries, 1984, pp. 875-876.

Table 6

ORGANIZATION OF A SOVIET AIRBORNE DIVISION

Soviet Airborne Division[a]	6500	officers and men
3 Airborne Regiments	4365	officers and men
Assault Gun Battalion	180	officers and men
Combat and Combat Support Units	1955	officers and men
Airborne Regiment	1455	officers and men
(Organized into three Battalions	113	APCs
plus Support Units)	36	SA-7 SAMs
	6	ZU-23 TAAGs
Assault Gun Battalion	180	officers and men
(Organized into three	31	ASU-85 85mm SPAGs[b]
Assault Gun Companies)	12	SA-7 SAMs
Combat Support and Combat Service		
Support Units	1955	officers and men
	9	APCs
	57	SA-7 SAMs
	18	ZU-23 TAAGs
	Numerous	general purpose trucks

SOURCE: DA, 1984, p 4-140.

[a]Various antitank, engineer, mortar, and artillery assets are distributed throughout the division.

[b]SPAG = Self-propelled assault gun.

To help accomplish its mission, the Archangel ADD also encompasses at least 23 airfields on or near the Kola Peninsula, 13 of which are longer than 2000 m (6500 ft). In addition, over 30 SAM complexes comprising over 200 launchers are also stationed on the Kola. The SA-2, -3, and -5 are in place now, and the SA-10 and -12 are probably being deployed, too.[25]

Naval Aviation

The Soviet Navy operates a large fleet of aircraft from the Kola, most of which are dedicated to antishipping and antisubmarine missions. However, of the 390 naval aircraft in place, 95 are bombers that could be used to attack the bases in North Norway.[26]

[25]Ibid., pp. 876-878.
[26]Ibid., p. 876.

Tactical Aviation

The Soviets do not permanently station fighter-bombers on the Kola Peninsula, probably in response to the Nordic Balance constraints discussed earlier.[27] However, there are 130 fighter-bombers and 60 attack helicopters assigned to the LMD Regional Air Force Command that are only a short flight away from potential employment bases on the Kola. During the past ten years, large amounts of supplies and equipment have been prepositioned in that area to support tactical aircraft, and about 500 underground aircraft shelters have also been constructed.[28] These facilities were probably built primarily for use by the air defense aircraft on the Kola Peninsula, but their use by fighter-bombers is also to be expected. Table 7 lists the aircraft strength of Soviet air forces in the LMD and on the Kola.

UNCONVENTIONAL FORCES: THE SPETSNAZ

At the close of World War II, the Soviets successfully employed small units of highly trained troops behind enemy lines to sabotage and disrupt Japanese efforts. The well-coordinated attacks by small paratroop and combat swimmer teams did not produce significant material damage to the enemy, but the shock and panic effects produced in the Japanese rear were considerable and added to the success of the overall campaign. Today, the Soviets continue to recognize that attacks on military and civilian leaders in their homes and headquarters along with other disruptions of communications and transportation would be most useful.[29] They have developed and continue to maintain the capability to launch those types of attacks through their *voiska spetsial' nogo naznacheniia* (literally "troops of special distinction"), which are more simply known as *Spetsnaz*.[30]

A Soviet defector, writing under the pseudonym Viktor Suvorov, has provided a detailed account of *Spetsnaz* organization and operations. *Spetsnaz* units are led by intelligence officers, and they are organized into independent brigades of approximately 1000 personnel who are located within airborne or naval infantry units. (According to Suvorov, a *Spetsnaz* brigade is attached to the 63d NIB at Pechenga.) These units report, however, to Soviet Military Intelligence, the GRU.[31]

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[27]Holst, 1982, p. 10.
[28]Ries, 1984, pp. 877-878.
[29]Donnelly, 1980, pp. 37-38; Alexander, 1984, p. 183.
[30]Hansen, 1984, p. 5.
[31]Suvorov, 1983, p. 1211.

Table 7

AIR FORCES IN THE LENINGRAD MILITARY DISTRICT
AND ON THE KOLA PENINSULA

Voyska PVO Archangel Air Defense District[a]		
Excluding Kola	220	Aircraft
Kola Peninsula only	120	Aircraft (Su-15, Yak-28P, Tu-28P, MiG-23S, MiG-25, MiG-31, Tu-126, Il-76)
Naval Aviation (All on Kola)	390	Aircraft
	95	Bombers (Tu-16, Tu-22)[b]
	80	Tactical Support Aircraft (Tu-16, Tu-95, Tu-22, Il-20)
	130	ASW (Tu-16, Il-38, Be-12, Ka-25, Ka-27, Mi-14)
	40	Transports
	45	Trainers
Leningrad Military District Regional Air Force		
Excluding Kola	370	Aircraft
	130	Ground Attack (MiG-21, MiG-27, Su-17)
	30	Reconnaissance (MiG-21, MiG-25, Su-17)
	60	Attack Helicopters (Mi-24, Mi-8, Mi-17)
	150	Utility Helicopters and Transports
Kola Peninsula only	130	Aircraft
	30	Reconnaissance (MiG-25, Su-17)
	30	Attack Helicopters[c] (Mi-24, Mi-8)
	70	Utility Helicopters and Transports
Total	1230	Aircraft

SOURCE: Ries, 1984, pp. 876-877.

[a]*Voyska PVO* - National air defense troops.

[b]An additional regiment of about 40 Tu-26 Baltic Fleet bombers have used the Kola as a forward operating base.

[c]Deployment listed as "possible."

The *Spetsnaz* forces in the Soviet Union have three purposes: combat support, anti-VIP operations, and foreign intelligence. Their intelligence network places "sleeping" agents near important installations. They are in position to help with sabotage and intelligence only if hostilities commence. This network operates independently of (and in competition with) the KGB's network, and the agents involved have little contact with the Soviet Union.[32]

The *Spetsnaz* units attached to conventional formations are assigned the anti-VIP and combat support missions. The *Spetsnaz* naval brigades are organized into a headquarters company, a midget submarine group, several combat swimmer (frogman) battalions, a parachute battalion, and supporting units. The headquarters company troops specialize in assassination, and they are trained to work in small groups prepositioned in embassies or on ships or disguised as members of sports teams. When activated, they would hunt down and eliminate the local military and civilian leaders just as important decisions concerning the conduct of the war would be required. These troops receive foreign language training and they have access to NATO uniforms.[33]

The *Spetsnaz* naval brigade's combat support mission would be accomplished in close coordination with other, more massive operations, such as an amphibious landing. The combat swimmers are trained to remove beach obstructions, and they could be used to neutralize key defense positions such as naval defensive artillery fortifications or early warning sites. They could also move to control key roads or bridges until relieved by the advancing invasion force, preventing defending reinforcements from moving into position. Members of the parachute battalion could accomplish the same missions farther inland.[34]

The midget submarine group would help position the combat swimmers close to their objectives or penetrate deep into enemy naval bases, planting mines or delivering sabotage teams. A Swedish investigation into submarine sightings conducted in 1982 concluded that at least two types of bottom-crawling midget subs had been operated within restricted Swedish waters, including Stockholm Harbor, confirming the Soviet capability in this area.[35]

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[32]Ibid., p. 1213.
[33]Ibid., p. 1211; Donnelly, 1980, p. 38.
[34]Suvorov, 1983, p. 1215.
[35]Hansen, 1984, p. 19.

The members of the *Spetsnaz* naval brigades are specially selected for additional training from among troops already selected for the naval infantry. Their training is intense, and emphasis is placed on underwater swimming, parachuting, and noiseless killing. Part of their training includes practice assaults against their own installations.[36] North Norway, with its sparse population and deep fjords, is a favorable place to employ unconventional forces; and the well-trained, specialized *Spetsnaz* troops are ready.

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[36]Suvorov, 1983, pp. 1212, 1214; Hansen, 1984, p. 6.

VI. FORCES DEFENDING NORTH NORWAY

NORWEGIAN FORCES

Universal Conscription, Rapid Mobilization

Norway has a universal conscription system. Each Norwegian man faces 24 years of military obligation, beginning at age 20 with a year of active service. Following his active service, each man then serves in the mobilization field army until age 34, at which time he joins the local Home Guard until age 44. Even after this long period of obligation, if war threatens, men between 45 and 55 years of age can be required to serve in special Home Guard duty.[1] This system provides Norway with 366,500 men available for service with its armed forces.[2]

Such a large force in reserve mandates that Norway must equip its forces with easy-to-maintain, easy-to-operate weapons and equipment. The Norwegian Army aims to conduct training of its mobilization field army units an average of a week to 10 days each year, although the realities of budget constraints mean that higher priority mobility brigades receive more, and lower priority units receive less each year. Those high priority units practice mobilizing and air-lifting twice a year in conjunction with NATO exercises; lower priority brigades concentrate their training on individual skill maintenance. Home Guard members train for about 50 hours per year.[3]

Norway still remembers the uncertainty, confusion, and ultimate humiliation that followed the German invasion in 1940; to make sure it is not faced with a similar situation in the future, its armed forces have been issued standing orders to assume mobilization upon the first signs of an invasion and to fight automatically if attacked, even without guidance from higher authority. Norway also has a 35 year-old law that allows its military to requisition everything necessary from the civilian sector (property, transportation, communications) to pursue the nation's defense in time of war. The fragile link from the South to the North will be supplemented by boats, ferries, and civilian aircraft, which can all be placed under military control in an emergency.[4]

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[1]Sohlberg, 1980, p. 10.

[2]The active force consists of 41,500 personnel, 28,000 of whom are conscripts. The mobilization field army can call on 235,000 men and the Home Guard can call on another 90,000 men. Hooton, 1984/1985, pp. 60-61. IISS (1984, p. 45) lists a slightly smaller active force of just under 37,000 and somewhat different reserve force numbers.

[3]Sohlberg, 1980, pp. 11, 22-23.

[4]Alexander, 1984, p. 184; Sohlberg, 1980, p. 8.

The Norwegian Army

During peacetime, Norway maintains 6500 personnel in its standing army in North Norway. Facing the Soviet's 63d NIB and 45th MRD (over 14,000 men) across the Pasvikelva River is the Norwegian South Varanger Battalion, a border patrol force of approximately 500 men. This nonprovocative border force is backed up by the 1000 men of an infantry battalion group based about 185 km (100 nm) further west at the Porsangen Fjord. The bulk of the northern defense, the 5000 man strong Brigade North, is concentrated around Bardufoss behind the natural fortress terrain along the east edge of Troms. The main defense is 400 km (216 nm) from the border by air and 900 km (486 nm) from the border along the winding Finnmark road.[5]

Norwegian mobilization planners expect that within two days of notification, one reserve brigade will be mobilized in Finnmark and two more in Troms. A battalion group can be transported from the South to North Norway within a day; within three days, one of the nine brigades mobilized in the South will be in the North, with a second following within four days. Within a week of mobilization, the Norwegian Army could have over 30,000 army troops in the North.[6] Table 8 lists the major equipment fielded by the Norwegian Army.

The Norwegian Home Guard

The Norwegian Home Guard is organized around a full-time cadre of about 1000 men spread across the country that increases to 90,000 when activated. That force is able to mobilize and get into position in an extremely short time because its members keep their weapons at home, and their prime mission is to secure key objectives that are only short distances away. The Home Guard concentrates on securing the critical portions of the South-to-North lines of communication such as bridges, tunnels, ferry slips, and communications facilities.[7]

The Home Guard is organized into small, independent groups. In addition to their security duties, they also serve as pathfinders for larger units, demolition experts to slow an invading force, and guerrillas or saboteurs to harass an enemy's supply line.[8] The rapidity

[5]Sandli, 1983, p. 71; Bjol, 1983, p. 24.
[6]Sandli, 1983, p. 71.
[7]Mendershausen, 1980, p. 5; Alexander, 1984, p. 84; Ingebrigtsen, 1983, p. 70.
[8]Mendershausen, 1978, p. 64.

Table 8

NORWEGIAN ARMY MAJOR EQUIPMENT

70	*Leopard 1* main battle tanks
30	M-48 main battle tanks
70	NM-116 light tanks
23	O-1 light aircraft
8	L-18 light aircraft
	NM-135 20 mm gun-equipped mechanized infantry combat vehicles
	M-113 APCs
	M-109 155 mm self-propelled howitzers
	20 and 40 mm AAGs
	RBS-70 SAM launchers

Equipment divided between Brigade North and the All-Arms Group in the South.

SOURCE: IISS, 1984, p. 45.

by which the Home Guardsmen can be activated, their familiarity with their home regions, and their motivation to defend their own land all combine to make them a credible force.

The Norwegian Air Force

The Norwegian Air Force is a small but modern force that fields 114 combat aircraft and a handful of transports and trainers. The 9500 strong active duty Air Force depends upon conscripts for more than half of its strength, and another 25,000 personnel (plus 2500 Home Guard members) make up its reserve component. The Air Force provides its own air defense for its bases, fielding four active and seven reserve light antiaircraft battalions and four SAM batteries.[9] Table 9 lists the Norwegian Air Force's major equipment and key northern and central airfields.

Norway has 52 airfields with permanent surfaces, and 12 of them are over 2500 m (8000 ft) in length.[10] All of Norway's military bases are also used by civil aviation,[11] and the Norwegian F-16s have been specially equipped with drag chutes to allow them to use the abundant shorter fields.[12]

[9]IISS, 1984, p. 46.
[10]Copley et al., 1984, p. 454.
[11]Bacon, 1976, p. 46.
[12]Ries, 1984, p. 876.

Table 9

NORWEGIAN AIR FORCE EQUIPMENT AND KEY NORTHERN AND CENTRAL AIRFIELDS

		Key Airfields	
	Major Equipment	North	Central
72	F-16s	Andoya	Orland
35	F-5s	Bardufoss	Vaerness
7	P-3s	Bodo	
13	Transports	Evenes	
38	Helicopters		
21	*Safari* Trainers		
88	L-60 and L-70 AAGs		
128	*Nike-Hercules* SAMs		
(162	*HAWK* SAMs on order)		

SOURCES: Alexander, 1984, p. 182; Farrar-Hockley, 1982, p. 6; IISS, 1984, p. 46; O'Donnell, 1985, p. 44.

Norwegian F-16s prepare for two missions: the air defense of Norwegian airspace and the engagement of sea-borne invasion forces in coordination with the Norwegian Navy.[13] They have left the interdiction and close air support missions to allied reinforcements.[14] This policy reflects the Norwegians' judgment that the best use of their limited fighter resources is to concentrate on the two missions with the highest payoffs; it also indicates their desire to avoid obtaining an offensive military capability that could threaten the Soviet forces on the Kola Peninsula.

Norwegian Navy

The structure of the Norwegian Navy, listed in Table 10, also reflects the defensive nature of Norwegian military policy. The large number of fast patrol boats (FPBs) in the fleet are ideally suited for operation in the closed waters of the many sounds and fjords of Norway's coast. A key part of the overall anti-invasion strategy, the FPBs are expected to rely on their speed and maneuverability to engage an amphibious invasion force.[15]

[13]Berg, 1980, p. 51; Holst, 1982, p. 62; Corddry, 1982, p. 162.
[14]Holst, 1982, p. 62; Corddry, 1982, p. 162.
[15]The Norwegian Navy, 1984, pp. 645, 651.

Table 10

NORWEGIAN NAVY MAJOR EQUIPMENT AND KEY NORTHERN BASES

Major Equipment[a]		Key Northern Bases
14	Coastal defense submarines	Tromso
5	Frigates w/ SSMs and *Sea Sparrow* SAMs[b]	Harstad
2	Corvettes	Ramsund
38	Fast patrol boats	Narvik
12	Minelayers, minesweepers, and minehunters	
15	Coast defense fortresses manned by 50 artillery, mine, and torpedo batteries.	

SOURCES: Hooten, 1984/1985, p. 57; IISS, 1984, p. 46.

[a]The Norwegian Coast Guard also operates 13 armed patrol and fishery protection vessels.

[b]SSM = surface to surface missile.

NEUTRAL FORCES

Sweden and Finland structure their forces in ways similar to Norway: All three train and equip for territorial defense and all three rely on large numbers of reserves. However, unlike Norway, these two neutral countries are not effectively screened from their biggest threat by credible buffer zones, and they must deploy large portions of each country's forces to protect their population and industrial centers in the south.

Both countries depend upon the Nordic Balance to maintain stability in the North, and they both recognize that their presence as credible buffers between the Soviet Union and Norway helps reduce tensions in the area. This situation makes the far North of each country strategically important and mandates that those remote areas be defended. Uncertainty, however, still surrounds Sweden's and, particularly, Finland's responses to any Soviet move across their northern regions. This uncertainty has been an integral part of the Nordic Balance since the end of World War II.

Five of Sweden's infantry brigades are specially trained and equipped Norrland brigades.[16] These units will contain 50 percent of their strength within hours of mobilization because they draw half of their complements from local residents. Sweden plans to use its air force, fixed forts along the northern Gulf of Bosnia shore, and Finnish resistance to buy time to airlift the remaining men from the South. If an attack comes,

[16]IISS, 1984, p. 54.

Sweden expects it would require more troops than the Soviets currently deploy on the Kola Peninsula. Most of the reinforcing Soviet forces are not specially trained for arctic operations, and the Swedes plan to use their superior mobility to blunt any such attack.[17] Table 11 lists the major forces and equipment of the Swedish Army and Air Force.

Finland has been faced with the problem of trying to convince all comers that they have nothing to gain from an attempt to use Finnish territory and airspace against anyone else. Finnish defense capabilities in the far North, however, appear noticeably weaker than those of Sweden. For some years the Finns had only a single battalion in all of Lapland, and they were frequently criticized by NATO countries for allowing their strategically important far North to become a military vacuum.

While denying this, the Finns have taken a number of actions in the last 10 years to improve the credibility of their defenses. The infantry battalion in Lapland was increased to a brigade with an artillery regiment previously stationed in the South attached to it. The Finns have also continued to improve their armed forces through new fighter aircraft, greater ground mobility, better antitank weapons, and continued efforts to improve air defenses.[18]

Table 11

SWEDISH ARMY AND AIR FORCE

Army		Air Force	
47,000	Active (37,000 conscripts)	95	AJ-37 *Viggen* ground attack fighters
700,000	Reserves (includes 100,000 Home Guards)	20	SK-60B/C Saab 105 ground attack fighters
4	Armored brigades	146	J-35 *Draken* air defense fighters
1	Mechanized infantry brigades	70	JA-37 *Viggen* air defense fighters
19	Infantry brigades	52	SH/SF-37 *Viggen* reconnaissance fighters
60	Independent battalions	37	SK-37 and SK-35 fighter trainers
670	Main battle tanks (various types)		Numerous liaison aircraft, trainers, transports, and helicopters
	Pbv-302 APCs		
	20 and 40 mm AAGs		
	RB-69 (*Redeye*) SAMs		
	RBS-70 SAMs		
	RB-77 (*Improved HAWK*) SAM		

SOURCE: IISS, 1984, pp. 54-55.

[17]Canby, 1982, p. 118-119.
[18]HASC, 1984, p. 18.

Finnish wartime ability to defend the North and prevent a Soviet transit to attack North Norway would depend upon several variables affecting full mobilization of Finnish defenses. Even under favorable conditions, many deficiencies would persist, particularly with respect to air superiority and air defense for the ground forces. However, if NATO is uncertain how the Finns would resist in the far North, the Soviets also face uncertainties about the practicality of plans to use Finnish territory to attack North Norway. Table 12 lists the major forces and equipment for the Finnish Army and Air Force.

REINFORCING FORCES

From its earliest association with NATO, Norway emphasized the requirement to receive Allied reinforcements successfully during a time of crisis. Its strategy requires that reinforcing units get into place prior to hostilities both to demonstrate resolve and to act as a mechanism to prevent those hostilities. If this deterrence fails, then Norway requires those units to help hold North Norway.

Table 12

FINNISH ARMY AND AIR FORCE

Army		Air Force	
30,900	Active (22,300 conscripts)	35	MiG-21 fighters (8 trainer versions)
700,000	Reserves (all services)		
1	Armored brigade	27	J-35 *Draken* fighters (3 trainer versions)
6	Infantry brigades		
1	Commando brigade	6	MiG-21 reconnaissance fighters
27	Independent regiments and battalions	111	Liaison aircraft, trainers, transports, and helicopters
	T-54/55 main battle tanks		
	PT-76 light tanks		
	BMP-1 mechanized infantry combat vehicles		
	BTR-50, -60 APCs		
	20, 23, 30, 35, 40, and 57 mm AAGs		
	SAM-79s (SA-3s)		
	SAM-78s (SA-7s)		

SOURCE: IISS, 1984, pp. 52-53.

The four Allied forces that are available to reinforce North Norway—the Canadian Air/Sea Transportable (CAST) Brigade,[19] the U.K. Marine Commando Brigade, the U.S. Marine Amphibious Force, and the Allied Command Europe (ACE) Mobile Force—cannot move quickly with large amounts of heavy equipment. Consequently, the Norwegians have established depots to preposition selected equipment for all those forces. The latest agreement calls for stocking of heavy artillery, trucks and artillery prime movers, bridging equipment, ammunition, fuel, and food in the Trondheim area to support the U.S. Marine contingent.[20] The exact composition of any Allied force designated to aid Norway cannot be precisely predicted because of the uncertainties surrounding other NATO commitments. However, observers do not believe that the totals will add up to more than one division.[21]

Because of the potential effect such an action might have on the Nordic Balance, intense debate surrounded the Norwegian decision to request U.S. Marine prepositioning. To underscore the defensive nature of the arrangement, the Norwegians requested that the longer-range A-6 aircraft that would normally support such a deployment be deleted from the planned force.[22] The storage locations in the Trondheim region were also chosen to avoid threatening the Soviets' Kola bases by placing U.S. assets closer than need be.[23]

Several airfields in Norway have been designated and equipped to accept Allied fighter aircraft.[24] In keeping with Norway's desire to remain as nonthreatening as possible, those aircraft do not include any that possess long-range interdiction capabilities; only reconnaissance, close air support, and air defense fighters have been invited.[25] Orland, close to Trondheim, has been designated to receive NATO Airborne Warning and Control System (AWACS) aircraft, and an AWACS visits there about four times each month.[26]

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[19]Canada recently announced it was dropping its commitment to reinforce North Norway with the CAST Brigade. Norway and NATO are currently grappling with the problem of finding other NATO units to replace the Canadians.

[20]Stark, 1985, p. 118; Holst, 1982, pp. 27, 32-33.

[21]Farrar-Hockley, 1982, p. 9.

[22]Hofmann, 1984, p. 12.

[23]Holst, 1982, p. 27.

[24]Holst, 1985b, p. 202.

[25]Farrar-Hockley, 1982, p. 9.

[26]Holst, 1982, p. 22.

VII. CONCLUSIONS

Norway's history, its severe northern climate and rugged terrain, its strategic location, and its position so close to the Soviet bases on the Kola Peninsula have shaped the military environment of the region such that it is unlike any other in which U.S. forces must plan to operate. Only in Alaska are similar physical conditions encountered by U.S. units, and the interrelated political structure of the Nordic Balance is unique to northern Europe.

Unforeseen restrictions to military operations in this theater, whether caused by the long polar night, enemy forces, long distances, or self-imposed political decisions, could be fatal. However, the hardships of the physical environment will affect each side evenly during any potential conflict, and viable solutions to the problems posed by the political restrictions can be put into place if those problems are recognized and accounted for before operations begin.

Proper planning, which is essential for any successful military operation, is particularly important for North Norway because the margin for planning errors is exceedingly thin. Understanding the factors discussed in this Note will help NATO military planners increase that margin.

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