THE IMPACT OF REGIONAL DEVELOPMENT ON THE SOVIET'S MILITARY POSTURE IN SIBERIA AND THE FAR EAST

By

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ABSTRACT

THE IMPACT OF REGIONAL DEVELOPMENT ON THE SOVIET'S MILITARY POSTURE IN SIBERIA AND THE FAR EAST

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The purpose of this study is to assess the Soviets' military capabilities in the Far Eastern theater by analyzing the development in the region based on a hypothetical strategic plan for a Soviet invasion of China. The invasion plan combines military border dispositions with an analysis of the terrain and climate. The analysis of development concentrates on four resource categories: manpower and urbanization, energy and industry, transportation and communication, and agriculture.

Despite the extensive natural resources of Soviet Asia, the lack of a well developed infrastructure limits Soviet ability to wage a prolonged conventional war against China. However, the Far Eastern theater is more than a strategic defensive force since it is capable of conducting a limited, short-term offensive operation.

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ACKNOWLEDGEMENTS

A sincere thanks to my advisor, Professor Ian Matley for his support and advice. I wish to formally express my appreciation to my friend, Mike Rip, for his critical review of my work. Last but not least, a warm thanks to my husband, Joe, who not only kept up my morale but greatly assisted me with the production of the maps. For my daughter Anne, lots of love for our blessed one. May your generation live in peace.

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LIST OF FIGURES

AB

AIFV

APC

AR

ASSR

BAM

CAA

CIA

CD

DA

DIA

FEER

FM

INF

IPB

IRBM

KM

LOC

MBT

MD

MPR

MR

MRD

LIST OF ABBREVIATIONS

AB	Airborne Division
AIFV	Armored Infantry Fighting Vehicle
APC	Armored Personnel Carrier
AR	Armor Divisions
ASSR	Autonomous Soviet Socialist Republic
BAM	Baikal-Amur Mainline
CAA	Combined Arms Army
CIA	Central Intelligence Agency
CD	Coastal Defense Division
DA	Department of Army
DIA	Defense Intelligence Agency
FEER	Far Eastern Economic Review
FM	Field Manual
INF	Infantry Divisions
IPB	Intelligence Preparation of the Battlefield
IRBM	Intermediate-Range Ballistic Missile
KM	Kilometer
LOC	Line of Communication
MBT	Main Battle Tank
MD	Military District
MPR	Mongolian People's Republic
MR	Military Region
MRD	Motorized Rifle Division

NATO

OMG

ONC

PLA

POL

PRC

RSFSR

SAM

SSM

SSR

TD

TSUR

TVD

UAC

USSR

NATO	North Atlantic Treaty Organization
OMG	Operational Maneuver Group
ONC	Operational Navigation Charts
PLA	People's Liberation Army
POL	Petroleum, Oil, and Lubricants
PRC	People's Republic of China
RSFSR	Russian Soviet Federal Socialist Republic
SAM	Surface-to-Air Missile
SSM	Surface-to-Surface Missile
SSR	Soviet Socialist Republic
TD	Tank Division
TSUR	Tyumen-Surgut-Urengoi Railroad
TVD	Theater of Military Operations
UAC	Unified Army Corps
USSR	Union of Soviet Socialist Republics

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The soldier regards geography from a somewhat different standpoint to that adopted by the civilian. To the latter the term geography means information as to the physical features of a country, as to its resources, climate, railways, rivers, harbours, cities, inhabitants, exports, imports, policy, etc., which will be valuable in a commercial, political, or even social sense. But the soldier looks on all countries as possible theatres of war, and though he may, and does, seek for information similar to that required by the civilian, he enquires how the various physical, meteorological, commercial, human, and political factors will affect the progress of a campaign carried out in the country the geography of which he is studying.

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PREFACE

Military Geography as an Area of Study

This thesis is a study in military geography the essence of which is captured in Brevet-Major Bird's quote (previous page); little has changed since 1909. Military geography is gaining in importance as world interdependence grows and nations attempt to peacefully coexist. Peace depends on a nation's ability to deter outside aggression, and deterrence relies heavily on combat preparedness and a well defined foreign policy. Combat preparedness is founded on sound military strategic planning that supports national objectives. Military strategic planning as well as foreign policy determinations rely on the proper analysis of the geography of a region or regions.

Current military strategies disregard geographical factors and are based mostly on historical and political factors (Pepper 1988, 249). Geographical factors "once found at the core of military affairs [have] come to be recognized as a critical failing which has not only limited the value of strategic studies, but has also at times made those studies downright dangerous in the narrowness of their focus and their insensitivity to the broader context" (Freedman 1986). There is a lack of interest and emphasis

placed on geography as it pertains to military strategies as summarized by Pepper (1988, 158-159).

> Geography is inherent in military strategic studies, as the works of strategists like Clausewitz or Lidell Hart clearly show. Much 'military geography' is studied and developed inside the military establishment. Yet, unlike other forms of geography, it is not subjected to the process of peer review by the general academic community: a process so vital to the development of any branch of a discipline. This is partly because of the closed nature of some (but not all) of the research, and partly because of the lack of interest from non-military professional geographers noted by O'Loughlin.
>
> Yet that peer review process not only helps disciplinary development: it may also cause changes in public policy by exposing some of the shortcomings in thinking that sometimes characterizes research among people operating in a closed circle to a predetermined and fixed paradigm.

To better understand Pepper's concept, military geography must be defined. For many people the term "military geography" conjures up thoughts of soldiers crossing a raging river, traversing rain-soaked fields in Europe, or maneuvering through the vast desert landscapes in North Africa. These mental images of the geography of war inevitably center around weather and terrain characteristics of the battlefield. There is more to military geography than just weather and terrain (Thompson 1962, 20-22).

> Terrain, the surface of the earth with all its natural and man-made features, certainly is the hard core of military geography. Terrain is the stage upon which wars are fought; terrain is the most tangible aspect of military geography; and terrain features are the most

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> readily studied by means of geography's primary tool, the map. But terrain is not all of military geography....
>
> There are other important factors to be considered....Equally geographic and equally military geographic, are much less tangible factors as political systems and degree of economic development, malaria and malnutrition, language, religion and race.

In 1966, Louis C. Peltier and G. Etzel Pearcy reinforced Thompson's description of military geography with their recognition of the changing battlefield and global military interests that has subsequently expanded the study of military geography (pp. 166-67).

> [Military geography] no longer revolves solely and primarily around terrain and weather, but also concerns social, economic, and political matters. The military effects of actual situations primarily depend upon the level of military technology, the characteristics and distribution of military forces, the missions of these forces, and the geographic characteristics of the area involved. Within this matrix, military geography concerns the effects induced by the area and seeks to predict the effects of specific conditions in specific places upon specific operations.

Peltier and Pearcy (1966, 165-66) further describe military geography in terms of estimates of national power -- resources and accessibility. Accessibility can reduce or enhance the effective strength of an attacking force -- it is a combat multiplier in itself.

Military geography has long been an integral part of military training and planning. At the tactical level, the process of studying the geography of an area identified as a possible military area of operations is known as Intelligence Preparation of the Battlefield (IPB). The

ingredients are similar. The characteristics, distributions, capabilities, and missions of military forces are included in the IPB steps of threat evaluation and integration. The temporal and spatial characteristics and distributions of the battlefield are also developed in an IPB process called templating. Social, political, and economic factors are added to the process when a strategic area of interest is addressed.

The study of military geography should not be the sole domain of the military professional. Non-military geographers can make significant contributions to strategic planning by researching the military and political geography of regions. Unfortunately for many scholars, the term "military" has a negative connotation. The current fate of military geography is somewhat discouraging (Coniglio 1984, 1).

> The term "military" has long rendered this subdiscipline more vulnerable than most to the pressures of public opinion and, more recently, seems to have made students of military subjects feel compelled to overly justify or even apologize for their interest in study of military problems. Yet in view of past and present mutual distrust between nations and peoples, and with it the threat or reality of military conflict, the continued geographic study of military problems and conflict resolution would seem to have a place in scholarly research.

Why do political geographers "seem to ignore the occurrence and distribution of conflict" (O'Loughlin 1986, 75-76)? Only two geographers, O'Sullivan and Miller (1983), have attempted "a detailed treatment of war, from

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battlefield strategy to global geostrategies" (O'Loughlin 1986). Based on a review of current geographical publications, O'Loughlin has validated the seeming lack of interest of political geographers concerning international conflicts and is concerned that military geography has been left to other disciplines. Strategic planning is just as important to deterring war as it is to winning war. Military geography should not be neglected as an area of study or should it remain the sole domain of the military community.

The study that follows is military geographic research that concentrates on "resource distributions" and "accessibility" regarding a possible Soviet invasion of China. Although a Sino-Soviet conflict is less imminent in 1989 than it was in 1969, the Soviet threat to China has not been eliminated, only diminished. The current state of "controlled confrontation" (Miyoshi 1987, 14) can be elevated with little forewarning. It is prudent to be prepared to react to such a confrontation. This can best be accomplished by understanding the geography of the region from a military perspective. This study addresses how the Soviets might deploy forces for an invasion of China as well as their ability to logistically support combat operations in this particular theater.

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INTRODUCTION

Background

Over the last three decades the Soviets have deployed up to 59 divisions of ground forces totaling one-half million men along the Sino-Soviet border. This is one-fourth of the total Soviet ground forces. A quarter of the Soviet Air Force is deployed in the Far East High Command* and the Soviet Pacific Fleet is the largest of the four fleets (Solomon and Kosaka 1986, 5; Erickson 1987, 171). Concurrent with this military expansion, the Soviets have been attempting to exploit the vast natural resources of Siberia and the Far East. These material resources and the region's geographical location provide the Soviets the opportunity to strengthen their position as a Pacific power, both economically and militarily (Hardt 1987). Western analysts and many Soviet authors see this area as the "key to the economic and strategic future of the Soviet Union" (Swearingen 1987).

A formidable military presence in conjunction with economic development in Siberia and the Soviet Far East is a significant occurrence. The relationship between development and military strength is sometimes overlooked.

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* One of the three Soviet strategic theaters of war (Western, Southern, and Far Eastern) which consists of the Far Eastern Theater of Operations (an anticipated area of combat operations).

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How does one impact on the other? Broad generalizations have been made as to the strategic military significance of economic development in Siberia and the Soviet Far East. Alan Whiting (1981, 76-77) has published one of the most insightful accounts of the strategic implications of development in Siberia. Unfortunately, his account is very general and is limited to East Siberia and the Soviet Far East. Whiting concentrates on transportation routes, more specifically the Baikal-Amur Mainline (BAM), but fails to fully address other important aspects of development that will assist the military in pre-hostilities preparation and actual combat. He does not mention manpower, agriculture, and industrial resources, nor does his assessment of logistics lines of communication include roads, waterways, and airfields. Because his focus is limited to the BAM and brief mention of the Trans-Siberian railroad, Whiting determined that Siberian development has accomplished little in terms of strengthening the overall military capability; the region is vulnerable and is a security risk to the USSR. Whiting believes that development has contributed only to pre-hostilities logistics operations but has done nothing for wartime capabilities. He believes the BAM and the Trans-Siberian railroad are both indefensible and too vulnerable to interdiction during hostilities to be of any consequence.

Although some of Whiting's arguments have merit, his assessment is too broad and yet, at the same time, too

specific. He generalizes about "infrastructure" and concentrates too much on the significance of the BAM. Leslie Dienes (1985, 171) has challenged Whiting's assessment of the strategic vulnerability and likely loss of the BAM as a line of communication in time of war. Dienes concludes that the BAM is not doomed to immediate destruction upon initiation of hostilities with the Chinese and will serve as a vital logistic lifeline during war. The fact that a fifth of all war materiel for the Far Eastern Military District is reportedly stocked along the line is a good indication of the BAM's strategic importance. Rodger Swearingen (1987, 237) also attributes the BAM with further strengthening the military's potential and the concomitant shifting of the balance of power in the region to an even more favorable position for the Soviets.

Not only is the relationship between economic development and military strength overlooked and over-generalized, but there is an apparent lack of study of Asian geopolitical issues altogether. Kissinger, in his 1986 address to the International Institute of Strategic Studies Annual Conference, pointed out the unfortunate lack of analysis of foreign policy issues by Western nations concerning Asia. He emphasized the improbability of a Soviet invasion of China, but recognized the importance of addressing the possibility nonetheless. Kissinger believes that the strategic weight of China is as great as Europe, and a military attack on China would have, in terms of

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geopolitical equilibrium, the same impact as an attack on Europe. Recent Sino-Soviet rapprochement does not obviate the need for in-depth analysis of the Soviet military posture in the Far Eastern Theater of Military Operations which encompasses the entire 4,500 mile Sino-Soviet border. Any analysis of military strength should address the ongoing economic development of Siberia and the Soviet Far East.

A nations's military might is based on more than numbers of men and equipment. A force's ability to prepare for and sustain itself in combat will determine the final outcome on the battlefield. This relationship can be considered a "truism" in that "the force structure and supporting infrastructure that are established in peacetime are major determinants of what is possible in war" (MccGwire 1987, 117). A military force will use established facilities, industries, and transportation-communications networks in the conduct of a mission. The Soviet emphasis on establishing a rear service support structure prior to hostilities is clear (Turbiville 1988, 72).

> Soviet planners understand well that establishing a theater logistic support structure is among the most complex and time-consuming elements of preparing for the conduct of theater strategic operations -- a process that to the extent possible they intend to accomplish in peacetime. As a consequence, they have improved transportation systems ... and established stocks of construction materiel for the repair and restoration of war-damaged rail lines, roads and bridges.

Thus, it is imperative to consider the economic development of a region when assessing military strength. A few authors

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have briefly addressed Soviet logistic capabilities with reference to an invasion of China. The majority of them state that the Soviets could not support, nor win, a protracted war with China (Daniel and Jencks 1983, 83; Jencks 1984, 307; Finlayson 1986, 67) and logistics would be their greatest problem (FEER 1975, 34). Erickson (1986, 216) is one of the few authors who believes that Soviet logistic capabilities are adequate to support a conventional war in the Far Eastern Theater. He cites the Soviets' "amazing ability to regroup and field up to 200 new divisions after the Nazi's [devastating onslaught]." Finlayson (1986, 67) does not question the Soviets' ability to launch a conventional war with China, but does address the importance of preventing logistical bottlenecks. Finlayson states that "Soviet logistical constraints will necessitate a strategy of rapid annihilation."

Soviet efforts to develop Siberia are based on economic and political objectives. Soviet political strength is their military strength. The Soviet Union not only has designs on becoming *the* Asian power, but desires to expand from its European superpower status to a global superpower position.

The militarization of Siberia and the Soviet Far East has been rapid and impressive. The most extensive buildup began in the mid to late 1960s during the Brezhnev regime. By early 1978 the Soviets had established the High Command of the Far East and initiated a large scale force

modernization. Forces in Mongolia were augmented. Additional low-category divisions were deployed along the border, SS-20 IRBMs* and Backfire bombers** were deployed, and forces were stationed in the disputed southern Kuriles (Gelman 1982). The buildup continues unabated (Hardt 1987).

Similarly, the economic development of Siberia and the Far East remains a Kremlin priority. Gorbachev's keynote speech at the 27th party congress during February 1986, highlighted the critical importance of the nation's eastern regions. He stated that special attention would be devoted to the "comprehensive economic development of Siberia and the Soviet Far East, the development of their natural resources, and the provision of transportation lines to them" (Swearingen 1987, 233).

A Soviet academician estimates that Siberia is developing faster than other Soviet regions (Conolly 1987, 34-35). The regional energy base has been enlarged with the development of large oil and gas wells and an increasing number of large hydroelectric stations. Mining and engineering industries have been considerably expanded in recent years. The 3,000 kilometer BAM railway has just been completed. Larger investment funds are also being made available for Siberian agriculture.

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* A mobile intermediate-range ballistic missile with three independently targetable warheads and a 5,000 kilometer range.

** Bomber aircraft with an unrefueled combat radius of 4,000 kilometers.

In addition to the lack of a thorough assessment of the Soviets' Far Eastern military posture based on force disposition and regional development, a number of the published threat assessments appear unsubstantiated. Some analysts are convinced that the overall strategic objective of the Far Eastern Theater of Operations is defensive (MccGwire 1987, 163; Erickson 1981, 11). This assessment is based on what they call a modest pace of buildup, a low density of Soviet ground forces, the high proportion of motorized rifle (rather than tank) divisions, and the way the Soviet units are deployed in relation to the Chinese forces. Just because the European theater receives a higher priority in the military buildup is no reason to assume this is the only offensive-capable theater. It is likewise dangerous to assume that a large number of motorized rifle divisions indicates a defense oriented policy. Chinese military capabilities as well as the terrain over which the Soviets may maneuver plays an important role in determining force structure and disposition. The current Chinese threat does not necessarily justify a large armor force. Describing the pace of the Far Eastern buildup as moderate is a matter of debate. Should the Soviet strategic policy in the Far Eastern Theater be defensive, this does not imply that the theater is incapable of an offensive operation.

Problem Statement

The purpose of this study is to determine the impact of development on the military posture in the region.

Regardless of the motives for the development of Siberia and the Far East, improvements in the region's infrastructure and the exploitation of local resources should strengthen the military capabilities. This study assesses the Soviet's ability to sustain theater* combat operations in a hypothetical invasion of China and establishes theater offensive capabilities. This assessment is based upon current military dispositions and combat readiness in conjunction with the distribution of resources and their wartime accessibility.

Objectives

This study is based on the following four objectives:

1. Describe and compare Sino-Soviet military dispositions along the border. Concentrate on ground forces.
2. Develop a possible Soviet strategic-operational plan for a conventional invasion of China.
3. Describe Soviet regional development in Siberia and Soviet Far East.
4. Integrating objectives one, two, and three, determine how development in the region impacts on the current military posture in the region. Determine how the Far Eastern High Command may use these resources to accomplish a hypothetical conventional invasion of China.

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* Strategic combat operations specifically in the Far Eastern theater.

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Organization

The study is organized into four chapters which address each of the four objectives. Chapter One describes the current Sino-Soviet military disposition along the border. Only the Soviet Military Districts and the Chinese Military Regions encompassing the border region are considered. The main focus is on ground-maneuver forces, that is, infantry and armor divisions. Brief mention is made of the air forces. The second and final section is a cursory summation of the Soviet's nuclear weapons use policy which substantiates the possibility of a conventional, theater-independent operation into China.

Chapter Two addresses a hypothetical invasion of China in a conventional (non-nuclear), independent theater scenario. The chapter serves as a *possible* Soviet strategic-operational war plan which details the best time of year for an invasion and the optimum routes of advance for army-size forces in support of front operations. The plan is modeled after several key historical engagements that have occurred in northeastern China (Manchuria) during the last 100 years.

Chapters one and two set the stage for the rest of the study. It is important to understand the existing disposition of forces and how they might be employed before attempting to assess the impact of economic development on the associated military posture.

Chapter three looks at development in the Far Eastern TVD* region. (This region is defined in the "Methods" section below.) Development is divided into the following areas: (a) manpower and urbanization, (b) industry and energy, (c) transportation and communication, and (d) agricultural resources.

Chapter Four presents the conclusions. Considerations from the three previous chapters are integrated with a brief overview of Soviet strategic logistics doctrine to provide a more accurate assessment of the Soviets' military capabilities in Soviet Asia.

Methods

The region under study centers on the Far Eastern Theater of Operations (TVD) which is made up of four Military Districts (MD)**: Central Asian, Siberian, Transbaikal, and the Far Eastern MD (Figure 1). The geographic regions of Siberia, the Soviet Far East and a large portion of Soviet Central Asia make up this military theater. In terms of economic regions, the Far Eastern TVD consists of Western Siberia, Eastern Siberia, the Far East, and portions of Kazakhstan and the Central Asian economic region (Figure 2). The Far Eastern TVD consists of the

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* Teatr Voennykh Deistvii, abbreviated TVD, is the theater of military operations geographical concept which is also known as theater of military operations (TMO), theater of military action (TMA), or theater of strategic military action (TSMA) (Department of Defense 1987, 16).
** A high-level administrative command element that contains military units up to army level and whose primary mission is to train for war.


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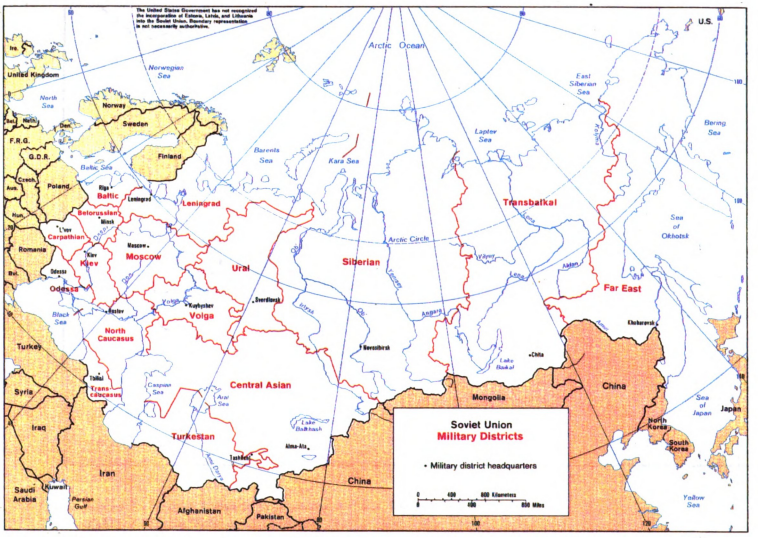

Figure 1. Soviet Union Military Districts
SOURCE: Central Intelligence Agency 1981.

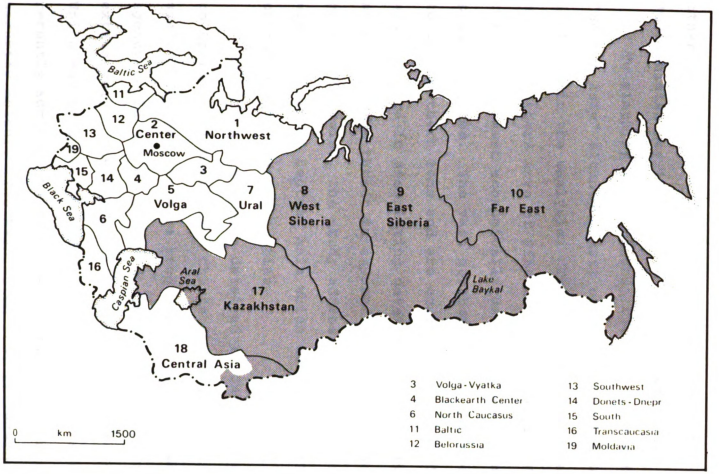

Figure 2. Soviet Economic Regions and the Far Eastern TVD (shaded)
SOURCE: "Soviet Economic Planning Regions," Cole 1984, 85.

following Soviet republics: the part of the Russian Soviet Federal Socialist Republic (RSFSR) east of the Urals, Kazakhstan, Kirgizia, and Tadjikistan (Figure 3). (The other two Central Asian republics of Uzbekistan and Turkmenistan are included in the Southern TVD.)

To simplify descriptions, the region is referred to as "Soviet Asia" although parts of Soviet Central Asia are not included in the analysis. The study concentrates primarily on the southern area of Siberia and the Soviet Far East as this is the most economically developed and densely populated area. The vast northern areas are poorly linked to the southern zone and are considered to be of little significance in associating development and military strength. The threat is assumed to be the Chinese to the south. Likewise, the study addresses development in the eastern half of Central Asia which would most affect combat operations into western China.

The terrain analysis detailed in Chapter Two is based on Operational Navigation Charts (ONC) at a 1:1,000,000 scale. Topographic maps produced by the Defense Mapping Agency could not be accessed. Atlases were used extensively. The reliability of some maps of the Soviet Union may be questioned as the Soviet government has recently admitted to deliberately falsifying maps as a security measure (*The Washington Post* 27 December 1988, sec. B1). The ONC maps are considered to be reliable since they are usually updated from remotely sensed imagery.

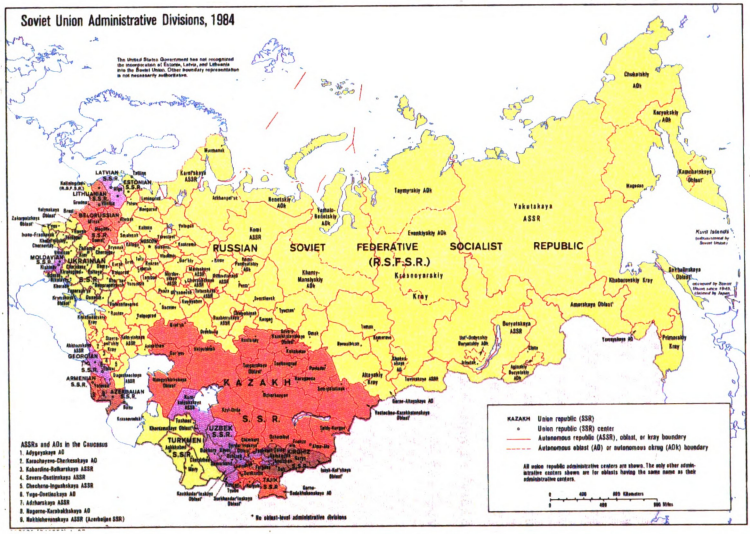

Figure 3. Soviet Union Administrative Divisions, 1984
SOURCE: Central Intelligence Agency

Summary

Siberia and the Soviet Far East serve as an excellent region in which to study the relationship between economic development and its subsequent impact on military capabilities. As previously suggested, Siberia and the Soviet Far East are considered by some analysts to be the key to the economic and strategic future of the Soviet Union. It is a region from which the Soviets can strengthen their position as a Pacific power. As the North Atlantic Treaty Organization (NATO)-Warsaw Pact threat of Central Europe remains in the forefront of foreign policy issues, changes in the Soviet's military posture in Asia tend to be overlooked and under-emphasized. Nations should avoid being too complacent about this part of the world as the Soviet invasion of Afghanistan suggests.

CHAPTER ONE

FACE-OFF AT THE BORDER

Sino-Soviet Military Border Dispositions

One fourth of the total Soviet ground forces are deployed along the 4,150 mile Sino-Soviet border. The 55 combat maneuver divisions* (7 Tank Divisions (TD) and 48 Motorized Rifle Divisions (MRD)) plus one coastal defense division (CD) bring the total number of divisions arrayed against the People's Republic of China (PRC) to 56. A possible airborne division (AB), a new Unified Army Corps (UAC) consisting of two divisions, and the four non-Soviet Mongolian divisions bring the total to 63 (Erickson et.al. 1986, 42; Erickson 1981, 13; *Military Balance* 1988). See Figure 4.

These maneuver divisions are assigned to four Military Districts making up the Far Eastern Theater of Military Operations. Table 1-1 provides the allocation of divisions by district.

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* "Division" refers to ground force units consisting of infantry and armor personnel whose mission is to engage in direct-fire combat. Artillery divisions (indirect fire systems) are not included. Airborne divisions are included in this study since their mission is to secure ground objectives employing infantry tactics and engaging in direct-fire combat.

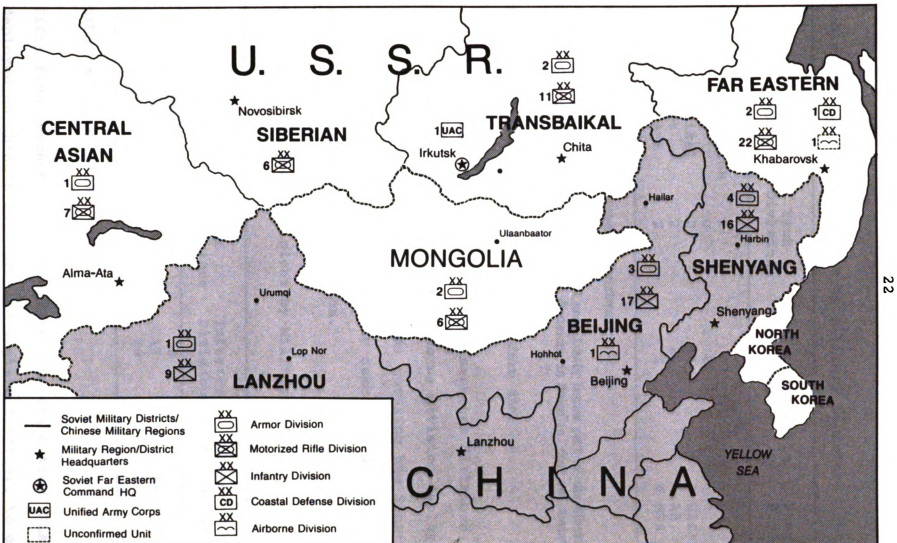

Figure 4. Sino-Soviet Military Border Dispositions, 1989

Table 1-1. Soviet Divisions by Military District

Military District	Tank Divisions	Motorized Rifle Divisions	Other Divisions
Central Asian	1	7	
Siberian	0	6	
Transbaikal	2	11	1 UAC*
Far East	2	22	1 AB, 1 CD
Mongolia**	2	2	4 MPR MRD

* Estimated to consist of two maneuver divisions

** The Mongolian People's Republic (MPR) will most likely become part of the Siberian and Transbaikal Fronts in wartime. Of the eight divisions in Mongolia, four are Soviet and four are Mongolian.

SOURCE: Department of Defense 1988, 15; *Military Balance 1988.*

The Chinese have a total of 51 maneuver divisions, 8 Armor and 42 Infantry, and one airborne division deployed in three of seven Military Regions (MR) covering the Sino-Soviet border. Table 1-2 shows the number of divisions assigned to each military region.

Table 1-2. Chinese Divisions by Military Region

Military Regions	Armor Divisions	Infantry Divisions	Other Divisions
Lanzhou	1	9	
Beijing	3	17	1 AB
Shenyang	4	16	

SOURCE: *Military Balance* 1988

Fifty-five percent of the People's Liberation Army (PLA) are deployed on China's northern and western frontiers to deter

any Soviet act of aggression. This 55 percent does not include an additional four to six border divisions deployed in the Shenyang and Lanzhou Military Regions.

As far as air combat capability is concerned, threat estimates credit the Soviets with 1,100 dedicated combat* aircraft positioned in the Far Eastern TVD while the Chinese have 6000 combat aircraft constituting the entire air force of the PLA (*Military Balance* 1988). The breakdown of Chinese aircraft by Military Region is not available.

When comparing the military strength of two nations, differences in the organization, strength, and combat capabilities of maneuver units must be distinguished. A tank division in the Soviet Union is not identical in structure, numbers of troops, or quantity-quality of equipment to an armor division in the People's Liberation Army. All of these factors, plus unit morale and cohesiveness, leadership ability, and combat experience contribute to the overall combat readiness levels of a force.

Both Soviet and Chinese infantry divisions have about the same number of personnel: 12,695 and 12,606, respectively. Both divisions have similar regimental structures: three infantry regiments, one tank regiment, and one artillery regiment. From here on there are few similarities. The Soviets have a better combat support structure: a Surface-to-Air Missile (SAM) Regiment, an

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* Includes ground attack fighters, fighters, reconnaissance aircraft, and electronic countermeasure capable aircraft.

Anti-tank Battalion, an Engineer Battalion, a Surface-to-Surface Missile (SSM) Battalion, and a Helicopter Squadron just to name a few of the differences. A Soviet infantry division has 419 armored personnel carriers (APCs) and armored infantry fighting vehicles (AIFVs), and is a completely mechanized force. The Chinese divisions are essentially light infantry having no armored personnel carriers. A Soviet tank division has 11,470 personnel to the Chinese' 9,208 personnel. There is little comparability in tank capabilities. The Soviets have 328 modern Medium Battle Tanks (MBTs) while the Chinese have 301 1950s vintage tanks. A Soviet tank division has 306 APCs/AIFVs to the Chinese' 85 APCs. (Department of Army 1984b, 4-33 and 4-106; Defense Intelligence Agency 1976, A-3 and A-8)

In 1983 Soviet units in the Far East TVD were rated at the following categories of combat readiness:

15% at Category 1. **Combat Ready.** 75-100% Authorized Wartime Strength.

35% at Category 2. **Reduced Strength.** 50-75% Authorized Wartime Strength.

50% at Category 3. **Cadre Strength.** Below 50% Authorized Wartime Strength.

(Koenig 1983, 77-79)

Soviet readiness categories have since been redefined while the current percentage of units at each readiness level category are not known. This study combines the 1983 percentages with the current categories of combat readiness which are defined below.

Category A. 75% to full strength, equipment complete, combat ready. Includes both Soviet units at "wartime establishment" and at a "reduced wartime establishment."

Category B. 50-75% strength, equipment normally complete, full manning planned to take three days. Soviet units at "peacetime establishment."

Category C. Some 20-25% strength, equipment possibly complete with older models, planned to be fully manned in seven days and retrained in less than 60 days. Soviet units at "reduced peacetime establishment."

(*Military Balance* 1988)

NATO considers Category A and B units to be combat ready. The four Soviet divisions in Mongolia are estimated to be at full combat readiness (*Military Balance* 1988; Erickson 1981, 13).

This study is based on the following assumptions:

1) Combining Koenig's 1983 combat readiness assessment with that of the International Institute for Strategic Studies for the Far Eastern TVD, it is assumed that 40% of the divisions are Category A and B (combat ready) and 60% are Category C.

2) Should an airborne division be located in the Far East Military District it will probably be a Category A unit.

No similar readiness assessments are available for PLA forces.

The PLA's combat preparedness can be generalized based on current observations. Out of the total 3.2 million Chinese soldiers, the 55 percent arrayed against the Soviets are probably the best equipped and trained. Military analysts credit the entire PLA as being a leaner, fitter,

and more professional force since it began modernizing over a decade ago (Joffe and Segal 1985, 146).

Field armies are being reorganized into *Integrated Corps* having a combined arms structure of ground, air, artillery and logistics units (*Military Balance* 1987, 143). Since 1985 the PLA has been reduced in size by over one million troops, or by 25 percent. A further reduction of 70,000 troops was projected for 1987 (Serrill 1988, 32). China no longer has the world's largest standing army. The Soviet Union now surpasses the PRC force in size with its active military force numbering 5.2 million troops. China's military reforms have been greatest in terms of personnel reductions and improved training. Unfortunately PLA equipment remains somewhat antiquated. "The very best and latest weaponry is made for export, and is not used to any significant degree by the PLA" (Jencks 1987, 276).

PLA force reductions have accommodated dramatic improvements in military organization, logistics, training, and leadership (Joffe 1987, 262). The fielding of a new Rapid Deployment Force consisting of 1500 "premium-quality" soldiers has provided needed flexibility in China's defense without resorting to an unnecessary increase in manpower. This force can be deployed anywhere in China within twenty hours (*Army Times* 11 July 1988).

Although much has been achieved in reforming the PLA, reforms in agriculture, industry, science and technology have a higher priority than national defense. A constrained

defense budget impedes PLA efforts to upgrade its technologically deficient equipment. The People's Liberation Army will not begin to challenge the Soviet Union's combat capability for decades to come.

Weaknesses continue to plague the country's defense posture. The western province of Xinjiang is a major vulnerability. "PLA forces in Xinjiang are sufficient for border skirmishing and internal security, but are neither equipped, trained nor deployed for serious defense against a determined Soviet attack" (Jencks 1984, 307). The Chinese admit that "for all practical purposes, [this] province remains undefended" (*Far Eastern Economic Review* 18-24 December 1981, 29). The Lanzhou Military Region, the largest military region, is defended by only 10 maneuver divisions plus an additional two to three border divisions.

The Soviets are no longer outnumbered on the Sino-Soviet border. Fifty-one Chinese divisions oppose the Soviet's 63 divisions, and the superior Soviet technological capability further broadens the gap in wartime strength. Is the Far Eastern TVD part of a Soviet defensive strategy in Asia? Probably. There are no indications that the Soviets have any intention of invading China for the time being. They will be recovering from the Afghanistan debacle for some time. Is the Far Eastern TVD capable of offensive military engagements. Yes. The Soviets generally do not deploy forces that are incapable of offensive action, regardless of the strategic policy governing employment.

Soviet conciliation towards the Chinese in the way of force reductions will most likely be inconsequential. Forces may be pulled back from the border, but actual unit deactivation is less likely. Given the right motivation, the Soviets are capable of conducting an invasion of China.

Soviet Nuclear Weapons Use Policy

The hypothetical invasion plan detailed in Chapter Two is based on the assumption that the conflict will be conventional, or nonnuclear. This assumption is justified by the recent changes in the Soviet nuclear warfare.

Although the Soviets will most likely use chemical weapons at the onset of an attack, they will strive to keep a theater offensive nonnuclear. Current Soviet doctrine considers the possibility of limiting combat operations to a given theater of military operations (TVD) and to a non-nuclear confrontation.

The Soviets plan and prepare for both nuclear and nonnuclear warfare. They prefer to avoid nuclear war and will probably do so if they can achieve their objective before the enemy indicates intentions of resorting to nuclear strikes. However, should the Chinese indicate nuclear retaliation, the Soviets will not hesitate to launch a preemptive nuclear strike. (Department of the Army 1984, 2-8 to 2-9)

The continued modernization and expansion of Soviet conventional forces reflects the Soviet's desire to keep a theater war nonnuclear. A recent reorganization of the

Soviet's materiel support system is partially based on the renewed emphasis on conducting nonnuclear operations. Forces will need to be sustained for longer periods of time (Turbiville 1987, 2). The Soviets now believe an extended conventional war is possible. (Department of Defense 1988, 11-12)

CHAPTER TWO

A PLAN FOR A HYPOTHETICAL SOVIET INVASION OF CHINA

Introduction

Before examining the regional resources available to the Far Eastern TVD for the conduct of war, it is important to first establish how forces may be employed. This provides a means by which to assess combat sustainability. This study focuses on one possible Soviet invasion scenario, although other scenarios exist.

The strategic-operational plan presented is considered to be both realistic and feasible. This hypothetical war plan addresses a quick and decisive conventional (non-nuclear) war which is theater independent, that is, the plan does not consider combat operations that could be simultaneously occurring elsewhere in the Soviet Union. A war involving all Soviet theaters would obviously strain combat sustainability across the nation. The main objective of this study is to determine what resources are locally available to the Far Eastern TVD should it become engaged in combat with Chinese forces on all four fronts.

The *geography of warfare* addressed in this chapter is limited to the interaction between men, equipment, terrain, and weather in space and through time. This study does not speculate on economic or political scenarios that could

incite a Soviet invasion of China or does it discuss worldwide political repurcussions of a Soviet invasion. The combat operations plan presented below is designed to give the reader some idea of the geographic considerations involved in planning and executing a Soviet invasion of China, that is, ground distances, complexities of command and control, and logistic support requirements.

Background

Northeastern China, formerly known as Manchuria, remains the key to any Soviet invasion of China. During the last one hundred years the Russians, Japanese, and Chinese have battled for control of this strategic region of China. There have been nine significant conflicts, the most recent occurring in 1969. The geographic location and valuable resource base of northeastern China continue to make it a significant wartime objective. Most historians and strategic analysts who have speculated on a possible Soviet invasion of China believe it would resemble the Soviet invasion of Japanese Manchukuo (Manchuria) in 1945 (Finlayson 1986; Salisbury 1969).

The war plan described below is developed in four steps: (1) a review of military engagements occurring in Manchuria over the last 100 years, (2) and (3) an analysis of the climate and terrain for the combat area of operations, and (4) integrating the current military border dispositions. The integration of this information produces an invasion plan that consists of four Soviet front

organizations attacking in three regions: northwestern China, Inner Mongolia, and northeastern China.

Review of Historical Military Engagements

Most military historians and tacticians agree that any future war between the Soviet Union and China will be decided on the battlefields of Manchuria (Jencks 1984, 307; Segal 1983, 8). China's western province of Xinjiang must also be addressed, although this region is not as critical to the outcome of a war.

A synopsis of the military engagements conducted in northeastern China in the last 100 years is provided below. Two maps (Figures 5 and 6) depict battle areas of operation.

1. The Sino-Japanese Conflict. July 1894 to April 1895. Manchuria has been considered a strategic location in the Far East since 1895 when the Sino-Japanese War brought it to world attention (Wang 1941, 1). In this war over control of Korea, the Japanese surprised the world with its superior fighting abilities and defeated the Chinese. The Japanese won control of Port Arthur, Liaotung Peninsula, and Formosa while China was forced to recognize Korea's independence. Much to the Japanese chagrin, the Liaotung Peninsula was soon returned to China as a result of Russian, German, and French intervention.

2. The Russo-Chinese War. June to September 1900. The famous anti-foreign, anti-imperialist Boxer Rebellion of 1900 eventually spread from China Proper into Manchuria

where the movement took on strong anti-Russian overtones. At the time of the conflict the Russians were constructing the Chinese Eastern Railway (an extension of the Trans-Siberian Railway) with a southern branch to Port Arthur. The Russians had leased Port Arthur, Darien, and the surrounding Kwantung territories for 25 years beginning in 1898. Thousands of Chinese regulars and Boxers engaged Russian railway guards and soldiers mobilized and transported from European Russia. The well trained and well equipped Russian forces easily defeated the poorly organized Chinese. Fighting occurred as far north as the Russo-Chinese border along the Amur River and as far south as the treaty port, Yingkou, on the Gulf of Liaotung. The Russians succeeded in securing the Chinese Eastern Railway and its southern branch where most of the fighting occurred.

3. **The Russo-Japanese War. February 1904 to October 1905.** The Russians suffered a devastating defeat at the hands of the out-numbered but well prepared Japanese. The Japanese declared war on Russia when the Russians failed to relinquish interests in Manchuria as they had promised to do in 1903. Japan viewed the Russian influence in Manchuria as expansionist and a direct threat. As a result of Russia's defeat, Japan secured rights to the Kwantung province, the South Manchurian Railway, Port Arthur, Darien, the southern half of Sakhalin, and a "free hand" in Korea.

4. The Mukden Incident and the establishment of the Japanese puppet state of Manchukuo in 1932. 18 September 1931.

The Japanese Kwantung Army deliberately perpetrated the 18 September bombing of the South Manchurian Railway near Mukden (Shenyang). Placing the blame on the Chinese, the Japanese used this incident to justify the subsequent occupation of all of Manchuria. For all practical purposes, Manchuria, now referred to as Manchukuo, became a colony of the expanding Japanese Empire.

5. The Sino-Japanese War. July 1937 to August 1945.

Chinese and Japanese troops clashed at the Marco Polo Bridge near Peking on 7 July 1937. Despite previous efforts by the Chinese to avoid a major conflict with Japan, the two nations could not reach a settlement. War was declared. The Japanese wasted no time in securing the principal cities of North China and successfully occupied Shanghai in autumn of 1937. Large-scale operations against Nationalist China ended in 1941 with the fall of Wuhan; a rough parity of strength existed. Japan continued to concentrate forces in Manchuria throughout the Sino-Japanese War. The Soviet Union was Japan's main threat at the time.

6. Soviet-Japanese Changkufeng/Lake Khasan Border War. 29 July to 11 August 1938.

In a two week battle, a Japanese division engaged a somewhat larger Russian force in a struggle for control of the Changkufeng Hill. This locally strategic hill is located on a "tiny finger of land [that] protrudes close to the Japan

Sea, all but cutting off what was then Japan's colony of Korea from the Maritime Province of Siberia" (Coox 1977). Although there was no decisive victor in this conflict, the Japanese can be credited with being the superior force on most accounts.

7. Soviet-Japanese Nomonhan Border Incident. May to September 1939.

This limited border war was initiated by the Japanese when they skirmished with a few Mongolian cavalrymen who crossed over into a disputed border area between the Halha River and village of Nomonhan in western Manchukuo. The situation escalated and resulted in the commitment of two Japanese divisions and a Soviet Rifle Corps. The Soviets fought a superb battle and defeated the Japanese in only nine days. This may have been a foreshadow of things to come.

8. Soviet Invasion of Manchuria (Japanese Manchukuo). 9 to 14 August 1945.

As World War II drew to an end Stalin agreed to open an eastern front against the Japanese. Three days after the first atomic bomb was dropped on Japan the Soviets invaded Manchuria. Three Soviet Fronts defeated the Japanese Kwantung Army in ten days. Caught by surprise and overwhelmingly outnumbered in terms of men and equipment, the Japanese formally capitulated on 2 September 1945.

9. Sino-Soviet Chenpao/Damansky Island Incident. 2 March to 11 September 1969.

The Sino-Soviet dispute over the riparian rights in the Amur and Ussuri Rivers is over one hundred years old, dating back to the Treaties of Aigun and Peking of 1858 and 1860, respectively. A major dispute erupted in 1967 over control of a pair of river islands located south of Khabarovsk at the confluence of the Amur and Ussuri Rivers when the Soviets blockaded Bear Island. Thousands of minor border incidents ensued. The quarrel intensified and became a test of national resolve for both countries. In March 1969 heavy fighting occurred when Chinese troops drove the Soviets off Chenpao/Damansky Island located 300 miles upstream from Khabarovsk in the Ussuri. A cease-fire was negotiated 11 September 1969. The Soviets made no attempt to regain control of the island as this would have required an invasion of China and an escalation to war. The Bear Island blockade was finally lifted in 1977 (Rees 1982, 17).

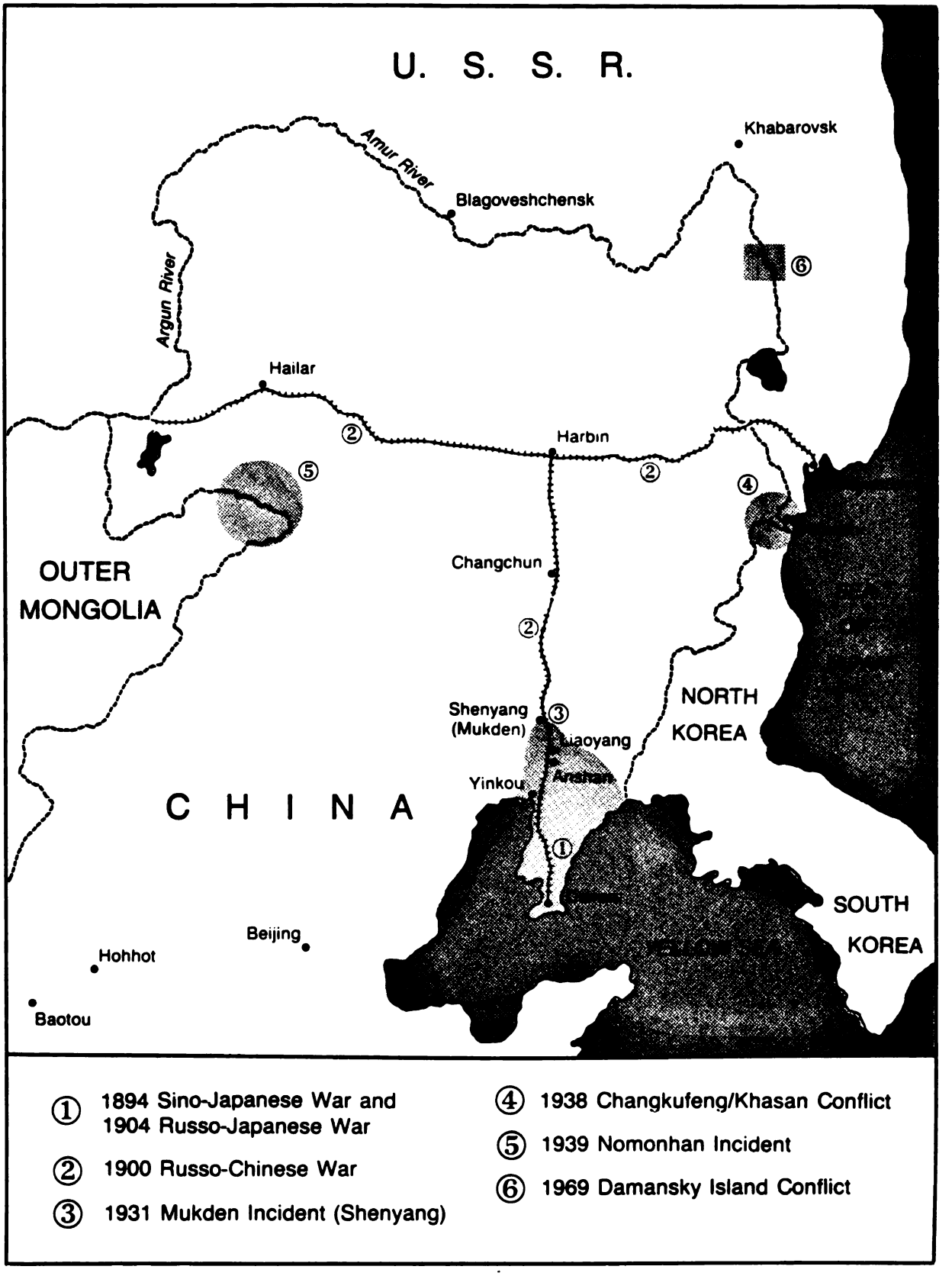

Figure 5. Historical Military Engagements in Northeastern China

Figure 6. Soviet Invasion of Manchuria, 1945
SOURCE: Revised from Betit 1976, 67.

Of these nine engagements, three are the most useful in modeling a plan for a Soviet invasion: the 1945 Soviet invasion of Manchuria; the 1904-05 Russo-Japanese War; and the 1939 Nomonhan Incident between the Japanese and Soviets.

Soviet objectives for an invasion today will probably not differ much from the those in 1945: (1) employ surprise, speed, and overwhelmingly superior forces to destroy enemy forces; (2) secure strategic industrial and political sites; (3) paralyze the government; and (4) force total surrender within 15 to 20 days. Soviet avenues of approach into northeastern China will also most likely follow attack routes similar to those used in 1945. Chinese defense forces are concentrated in the same areas that the Japanese Kwantung army occupied in 1945; similarly, the Russians have concentrated their military buildup in the same 1945 locations in Siberia, the Soviet Far East, and Outer Mongolia. (Salisbury 1969, 160; FEER 1975, 33) The Russo-Japanese War of 1904 identified excellent avenues of approach from the south-southeast up the Liaotung Peninsula. The 1939 Nomonhan Incident exhibited good logistical support over extended distances from Outer Mongolia. Both the 1945 invasion and the Nomonhan Incident showed well executed envelopment maneuvers.

When Will the Soviets Attack?

The weather determines the best time for the Soviets to invade China, disregarding the political situation. Weather is critical to military operations as it often dictates the

types of forces to be employed, as well as the type and level of logistics support required to sustain combat operations. Commanders plan to take advantage of favorable weather conditions and minimize adverse weather effects. (Department of Army 1984c, 1-1)

Climatic summaries and studies are used in strategic-operational planning to determine the best time of year to conduct a military attack. For military planners, weather refers to existing weather conditions at specific locations and times and is used in tactical planning. In preparing this invasion plan the climate, or rather the average weather conditions and variations for the different seasons, for northern, northeastern, and western China have been analyzed from a military perspective. (Department of Army 1984c, 2-9 to 2-10)

The following climatic conditions were analyzed: precipitation, temperature and humidity, wind speed and direction, cloud coverage, visibility, and illumination. Based on the climatic study, fall (late September to early December) is determined to be the best time of year for a Soviet invasion. Climatic details are provided in full in Appendix A.

Precipitation drastically decreases in the fall months in Manchuria as the summer monsoon moves southward. More than one-half of the total rainfall occurs in the summer months (Zhao 1986, 23). Northwestern China has an annual rainfall of approximately 10 inches which is more evenly

distributed over the year than in Manchuria. From November to April, Manchuria, Inner Mongolia, and Xinjiang experience five inches or less of rain (Fullard 1968, 10-11). Decreased precipitation affords good ground trafficability, logistics support, air, artillery, and chemical operations. The use of persistent chemicals is enhanced as precipitation can create chemical "hot spots" (Department of Army 1984c, 2-6). As temperatures begin to drop, snowfall may occur as early as September but it will usually be light.

Humidity and temperatures both begin to drop in the autumn. Humidity above 60 percent may still occur causing some troop discomfort, especially if chemical protective suits are worn. High humidity may also affect ballistics (the trajectory of projectiles) as well as sound-ranging operations. Humidity generally has no impact on the effectiveness of toxic agents although it may increase the effectiveness of some, such as blister gas. Increased humidity may increase the effectiveness of some biological agent aerosols since living organisms are affected adversely by dry air and direct sunlight. (Department of Army 1972, 2-23) Thus, a drop in humidity in the fall and winter favors combat operations by allowing for better ballistic performance and less troop discomfort, and would not be a main consideration in the employment of chemical or biological weapons. Temperatures will generally remain above freezing through late October in most of the region. By November low temperatures cause the ground and rivers to

freeze, enhancing trafficability; in southern Manchuria the rivers are frozen for about six months. Motor vehicles travel safely on frozen rivers while sleds are used on snow covered plains. (Hsieh 1973, 179) A frostline several feet deep can hinder the Chinese infantry's ability to prepare fighting positions (Finlayson 1986, 69). The Soviet offense-oriented, mechanized forces will not be as concerned with preparing fighting positions. Equipment damage and troop injury will be less of a problem through October while temperatures remain above freezing.

Northwest winds in Manchuria favor Soviet use of chemical weapons. Northeasterly winds over Xinjiang will likewise favor Soviet employment of chemicals from Outer Mongolia in the direction of Urumqi, located to the southwest. Smoke operations will depend on surface wind directions and speed. Wind speeds above or below 5 to 16 kilometers (3-10 miles) per hour may cause a loss of effectiveness in the use of chemicals and smoke (Department of Army 1972, 2-23). High surface winds and low temperatures can cause a debilitating windchill which could degrade the effectiveness of troops in the open. High winds can degrade visibility if there is snow accumulation or in desert areas with loose dust and sand. Parachute landings are feasible in winds up to 25 kilometers (15 miles) per hour (Department of Army 1972, 2-23). Wind velocity variability is the greatest in the winter in north-northeast China making surface wind speed predictions difficult.

Clear skies prevail in November as the Asiatic winter high is established. Decreased cloud coverage supports air operations and enhances ground visibility. Hours of daylight will decrease during the fall months possibly extending combat operations into the hours of darkness. This poses few problems for either the Soviets or the Chinese who emphasize night training. The Soviets will want to successfully conclude the invasion before the severe winter sets in, by January at the latest.

Summary of the Ground Attack

Assuming the Soviets maintain *unit integrity** in the Far Eastern Theater, an invasion of China would involve four fronts** organized around the existing Military Districts. Applying Soviet doctrine, both the number of army-size units to be deployed and likely avenues of approach for each is established (Figure 7).

NORTHEASTERN CHINA

The first of the three strategic areas of operation to be discussed is the region that is most critical to a successful invasion of China, northeastern China (Figure 8).

The topography of Manchuria consists of three semicircular belts (Figure 9). The outer belt is defined primarily by the major navigable rivers -- the Amur, the Ussuri, the Tumen, and the Yalu; the smaller Argun River

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* Going to war with existing peacetime force organizations that maximize unit cohesiveness and combat training readiness while minimizing command and control problems.
** The largest field formation in wartime. Armies are the next echelon of combat organization.

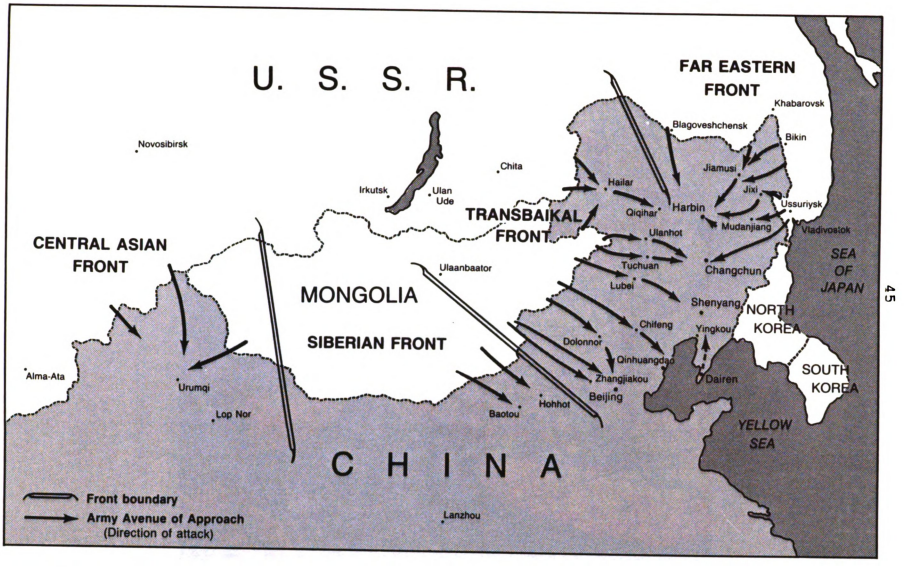

Figure 7. Soviet Fronts and Army Avenues of Approach

Figure 8. Northeastern China
SOURCE: Zhao 1986.

Figure 9. Terrain of Northeastern China
SOURCE: Revised from "Manchuria: Regions and Terrain," Glantz 1983, 7.

forms a portion of the Chinese border with Mongolia and is also part of this outer belt. Below the Argun River the outer belt consists of the desert plateaus which are mostly an extension of the Gobi Desert. The middle belt consists of a group of mountains including the Greater Khingan Range in the west, the Lesser Khingan Range in the north, and the Changbei Mountains and associated ranges in the east (Eastern Highlands). This middle belt is briefly interrupted by the marshy lowlands found at the confluence of the Ussuri, Amur, and Sungari rivers and extending along the Sungari river valley from southwest to northeast. The inner belt is occupied by the Manchurian Central Plain which is an immense, flat basin drained by the north-flowing Sungari, and the south-flowing Liao River (Figure 10). The central plain "extends 1,000 kilometers from north to south and 400 to 500 kilometers from east to west. (Hsieh 1973, 178; Glantz 1983, 6-18)

Most of Manchuria is grassland or mixed grassland and forest. Soils are the most fertile in China, and rich timber reserves are found in the northern Greater Khingan and Lesser Khingan ranges as well as the densely forested areas of the Eastern Highlands.

Endowed with rich mineral resources, the northeast is the most intensively developed industrial region of China. Manchuria's iron ore, coal, oil shale, and hydroelectric resources are among the most valuable in the country (Hsieh 1973, 181). About one-half of China's crude oil comes from

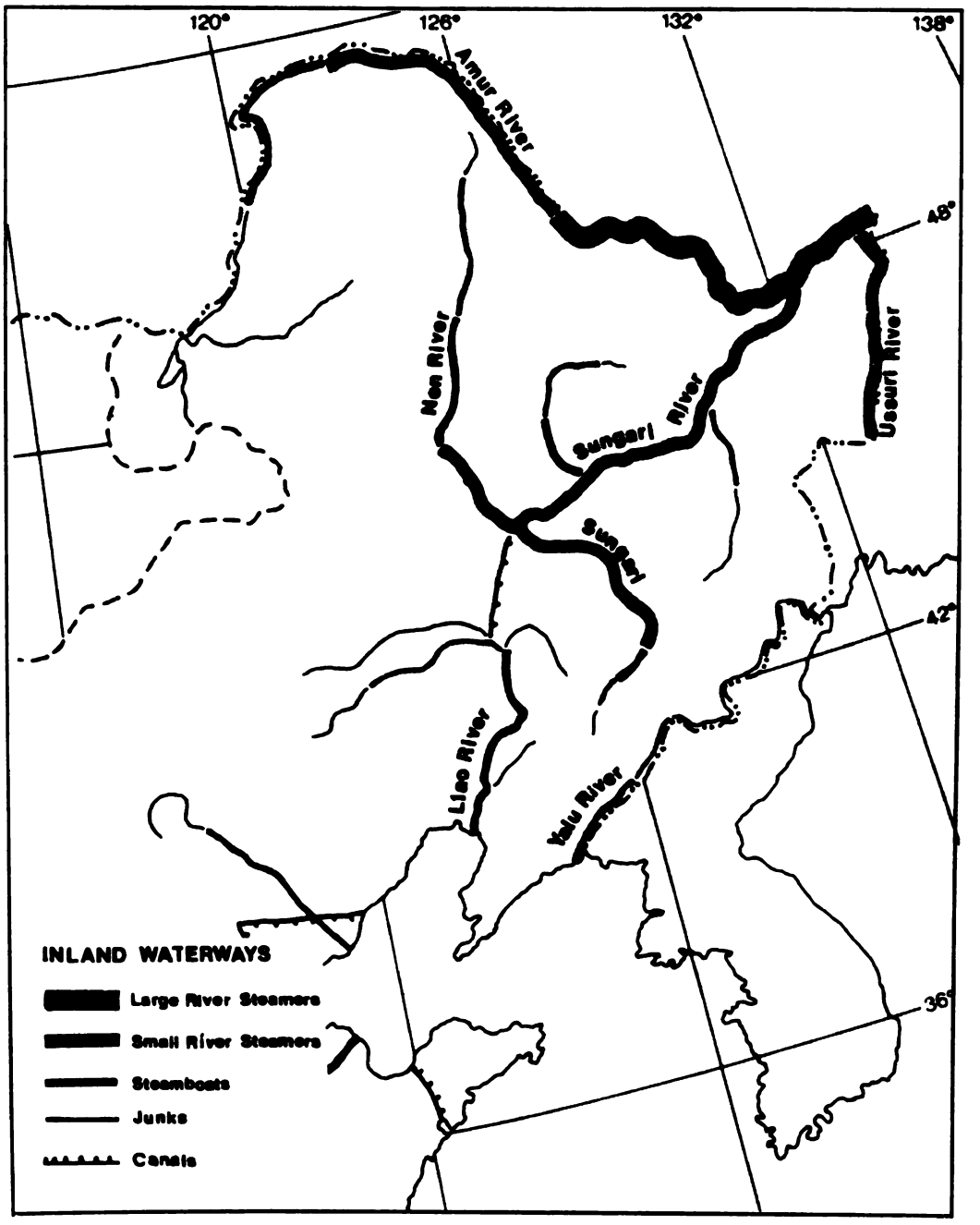

Figure 10. Inland Waterways of Northeastern China
SOURCE: Revised from "Inland Waterways" Hsieh 1973, 78.

the Daqing oil fields in Heilongjiang Province (Pannell 1983, 202).

Manchuria's transportation network centers on its well established rail system (Figure 11). Three main lines cross Manchuria in east-west directions, and three lines run north to south. The Beijing-Shenyang railroad is 840 kilometers long and is double-tracked. The Harbin railroad comprises the former Chinese Eastern Railway and the Southern Manchurian Railway. From Manzhouli on the border with Mongolia, it is 928 kilometers to Harbin along the railroad. It is an additional 552 kilometers to Suifenho on the border with Soviet Far East. The port city, Dairen, is 1,368 kilometers south from Harbin and is double-tracked. Harbin, the capital of Heilungjiang Province, is the railroad hub of northern Manchuria, as well as the center of water transport (Figure 12). The capital of Liaoning Province, Shenyang, is the center of Manchuria's railroad system. (Hsieh 1973, 72 and 182) Railroads throughout China are standard gauge*. Highways extend to areas that are not served by railroads. Of the 800,000 kilometers of highway mileage reported in 1969 in China, less than half were all-weather roads. The remainder are secondary roads. (Pannell 1983, 174-5) Dairen and Yingkou are good ocean ports providing access to ocean transportation. The Sungari,

* Standard gauge is 4 feet, 8.5 inches while the railroads in the Soviet Union and Mongolia are broad gauge (5 feet). The Soviets will have to modify rolling stock upon entering China (Central Intelligence Agency 1971, 46)

Figure 11. Railroads in Northeastern China
SOURCE: Central Intelligence Agency 1985.

Figure 12. Chinese Provinces
SOURCE: Central Intelligence Agency

Amur, Liao and Ussuri rivers are all navigable (Figure 10) (Hsieh 1973, 182).

The strategic value of Manchuria to China is significant, not only for its of agricultural and mineral resources, industrial development, and population, but also because it serves as a buffer between Beijing and the Soviet Union. Within northeast China itself, the central valley, or the Central Plain, is the key to a successful military incursion into China. "Control of the valley means control of Manchuria" (Glantz 1983, 20) Glantz argues that control of the central valley can only be achieved by denying enemy access to the area by establishing adequate defenses in mountainous regions surrounding the central valley and by controlling potential avenues of approach.

At first glance, the terrain surrounding the Central Plain appears to severely restrict large-scale, mechanized operations, yet the Soviets proved otherwise in 1945. The height and slopes of the Greater Khingans do not prohibit military operations by mechanized forces (Glantz 1983, 21). The absence of good roads and the presence of rough terrain inhibit rapid movement but do not make it impossible. Crossing the Lesser Khingan Mountains to the north of the valley involves crossing hilly, wooded terrain on poor roads. Routes into the valley along the Sungari River require traversing swamplands (frozen in the winter).

Although the terrain is difficult, it can be negotiated. The greatest impact of the terrain on the

Soviets in 1945 was the disruption of command and control. "Contiguous combat by adjacent units was impossible" (Glantz 1983, 163). Operations in such an environment require detailed planning and initiative on the part of unit commanders. The Soviets showed that they were capable of overcoming these restrictions.

An invasion of Manchuria today would be conducted on two fronts. The avenues of approach to be used by the Soviets would be similar to those followed in 1945.

Far Eastern Front

The Far Eastern Front, the largest of the four fronts with 24 organic divisions, would be responsible for securing vital objectives in Manchuria from the east. This front's mission would coincide with the Soviet Pacific Fleet's naval operations. The Far Eastern Front would most likely attack on seven to eight avenues of approach with key objectives being the cities of Harbin and Changchun. Harbin, with a population of over 2.5 million* , is the provincial capital of Heilungjiang and is a communication center and industrial city. Changchun is about 225 kilometers south of Harbin and is the provincial capital of Jilin. It is a major railway junction and a major heavy industrial city. Changchun has a population over 1.7 million.

Seven of the eight possible army-size avenues of approach would be in the provinces of Heilongjiang and Jilin

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* Population figures given throughout this chapter have been obtained from the 1987 *Population Atlas of China* which is based on China's 1982 census.

(Figure 12). The Soviets may also attempt to secure the key port city of Dairen, as well as additional cities on the Liaotung Peninsula via an eighth avenue. This may be accomplished by employing airborne or air assault forces in conjunction with an Operational Maneuver Group (OMG). Another option would be the employment of naval infantry forces. Regardless, the several strategic objectives on the Liaotung Peninsula would most likely be secured without a major ground force operation in the first few days of hostilities. Should the Soviets secure the Central Manchurian Plain and effectively sever ground links with the mainland, it would only be a matter of time before the peninsula fell into Soviet hands. Without outside intervention the Chinese navy would not be able to defend the coast from the superior Soviet Pacific Fleet.

Transbaikal Front

The main thrust of the Transbaikal Front would be into western Manchuria and northern China from Outer Mongolia and across Inner Mongolia (Figure 7). Its main political objectives would be to secure Beijing, located about 600 kilometers from the Chinese border city of Erenhot, and the key city of Shenyang located approximately 700 kilometers from the MPR-China border. Shenyang is a major industrial city with a population over 4 million. Five additional army-size avenues of approach into Manchuria are also designated (Figure 7). An airborne division would most likely be dropped on Beijing. The army assigned to the

Beijing avenue of approach would link up with this assault force.

The Transbaikal Front could be augmented with a Soviet-Mongolian tank division and possibly a Mongolian motorized rifle division bringing the total number of divisions in this front to fifteen. Fifteen divisions organized into six armies would allow for three armies of three divisions each and three armies of two divisions each. A Soviet army will doctrinally consist of two to four divisions. Hence, it is conceivable that two-division size armies may be employed. Soviet doctrine now emphasizes rapid operations by forces concentrated well forward, combined with the employment of a single strategic and operational echelon which must be capable of achieving a mission without the second echelon reserve (Glantz 1988, 33). Because this front's operations are critical to securing Manchuria, some of the Siberian Front divisions may be attached to the Transbaikal Front in order to strengthen the smaller armies.

INNER MONGOLIA

The Soviet advance into Inner Mongolia is considered a supporting attack in the overall scheme of maneuvers. Although objectives in this region are less significant than those in northeastern China, the objectives are important to the overall success of the invasion.

Siberian Front

The Siberian Front, augmented with two Soviet-Mongolian divisions and two Mongolian divisions, would be responsible for securing control of the vital communication lines extending through the Gansu Corridor. By severing communications between Urumqi and Hohhot, command and control between the two military regions would be rendered ineffective. The Siberian Front would assign the cities of Hohhot and Baotou as army objectives (Figure 7 and 8). Baotou, with a population of over 1 million, is a key industrial site located 150 kilometers southwest of Hohhot and is China's fourth largest steel producer. Baotou is also known to have nuclear production and testing facilities (Salisbury 1969, 153). Hohhot serves as the provincial capital of Inner Mongolia and has chemical and fertilizer plants and a diesel engine factory. Some of the six Motorized Rifle Divisions currently deployed in the Siberian Military District could serve as the front reserve.

WESTERN CHINA

The Soviet advance into China's western province of Xinjiang is also considered a less significant region compared to northeastern China. Yet it differs from Inner Mongolia in that it has a greater abundance of natural resources (mostly oil) which the Soviets would find very valuable.

Central Asian Front

The seven organic divisions deployed in the Central Asian Military District would be organized into three relatively small armies attacking on three avenues with an attached Soviet division from Mongolia attacking on a fourth avenue (possibly an independent Operational Maneuver Group (OMG)) (Figures 7 and 13). This front would be responsible for securing China's western territories including the communication center and industrial city of Urumqi. The Mongolian division has the most direct land route to Urumqi which is located about 300 kilometers to the Southwest. The city has a population of over 950,000 and is the provincial capital of Xinjiang. The only railroad into western China terminates at Urumqi.*

Because of the lack of cover, the Soviets will have to ensure air superiority on the first day of hostilities. To assist in securing Urumqi, the Soviets may employ a small airborne or air assault force which the Mongolian Division will link up with. The other three avenues originate from Soviet Central Asia and are depicted on Figure 7.

Description of Individual Avenues of Approach

The army avenues of approach depicted on Figure 7 and described below are derived from a terrain analysis developed using current Operational Navigation Charts (ONC). Topographic maps published by the Defense Mapping Agency are

* This line is currently being extended to the Soviet border as the two countries gradually reestablish trade relations.

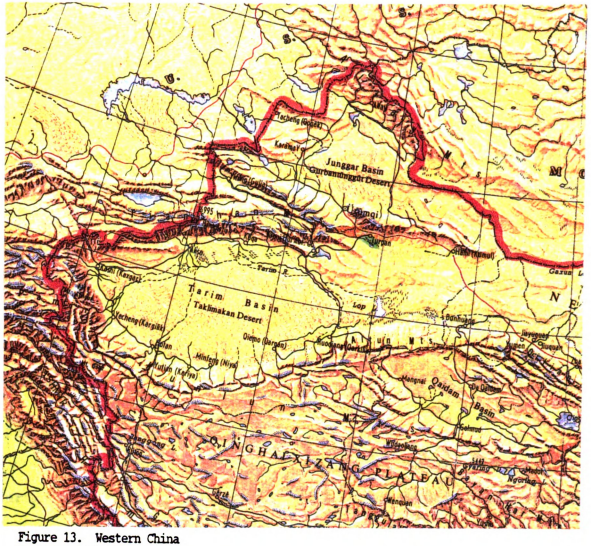

Figure 13. Western China
SOURCE: Zhao 1986.

not accessible. Distances that Soviet forces are expected to travel on each approach are given in kilometers (km), are measured from centers of mass, e.g., cities, and are generally straight line measurements that do not take into account terrain features. A tactical analysis of the terrain incorporates terrain constraints. As this is a strategic-operational analysis it is therefore broader in scope. Avenues of approach are delineated by key cities along the route. Descriptions are general and do not imply that a Soviet army would straddle the "line" of approach designated by the city names. The positioning of forces along these avenues of approach would be determined not only by the terrain but by the disposition of the Chinese forces as well. Soviet rates of advance and depths of military objectives are generally specified by *doctrine*. Tables showing what is believed to be Soviet doctrinal rates of advance and depths of operation by echelon are shown in Appendix B.

FAR EASTERN FRONT.

The largest of the four fronts with 24 infantry and armor divisions, the Far Eastern Front's objective would be to destroy Chinese forces in its area of operations and secure key industrial, administrative, and communications centers in northeastern China. This front would invade Manchuria from the north and the east, that is, from north of the Amur River and from the Soviet Maritime Krai across the Ussuri River (Figures 5 and 9). Its armies would link

up with Transbaikal forces in the key cities of Harbin, Changchun, and Shenyang. The front would have primary responsibility for securing the Liaotung Peninsula with its warm-water ocean ports.

The following approaches would be used by the armies of the Far Eastern Front and are listed from north to south.

a. **Blagoveshchensk/Aihun approach.**

Crossing the Amur River and using the northeast to southwest roads and railway, the army maneuvering on this route would secure the area from the city of Nenjiang to Beian as its immediate objective (approximately 175 to 200 km from the border). This avenue is about 125 km wide at the border. A railroad exists from Aihun to Beian to Harbin. Another railroad extends laterally from Beian in a southwesterly direction to Fuyu then south to Qiqihar (Tsitsihar, Chichihaerh). The army's subsequent objective would probably be along a northwest-southeast line from Hulan Ergi (Fulaerchi) to Daqing to Anda. The key city of Harbin is another 125 km south of Anda or 160 km from Daqing. Harbin is about 500 km straight-line distance from Blagoveshchensk. This is the most direct route to Harbin.

Using this avenue, the army would cross about 150 km of Amur river plains before reaching the slopes of the Lesser Khingan Mountains. It is a 100 to 150 km road march through the mountains before reaching the central valley. The Nen River runs parallel with this approach.

Harbin, with a population of about 2.5 million, is the provincial capital of Heilongjiang. The city serves as the junction for the east-west railroad (Chinese Eastern Railway) and its southern extension to the port city of Dairen (Figure 11). It is also located on the Sungari River. Harbin is a major producer of heavy machinery for power generating, for electrical equipment, for precision tools and bearings for tractors (Geelan and Twitchett 1974, 9). It also produces cement, fertilizers, chemicals, and refines sugar.

b. **Leninskoye approach.** (Figure 14)

This avenue also originates north of the Amur River approximately 200 km southwest of Khabarovsk. The avenue extends southwest towards Harbin, the army's final objective, and follows the Sungari River and plains. Initially upon crossing the border the avenue is wide, that is, 50 km on either side of the river. This 50 km wide corridor extends 125 km deep into northern Manchuria from the border. At this point the avenue is restricted to a 15 km wide pass. Elevations range from 726 meters (2420 feet) on the west and 54 meters (1850 feet) on the east. The avenue continues to be restricted for another 250 km. It opens onto the Manchurian Plains 75 km northeast of Harbin.

Roads parallel both sides of the Sungari. The distance from the border to Harbin, following the path of the river, is about 500 km. A double track railroad runs from Jiamusi

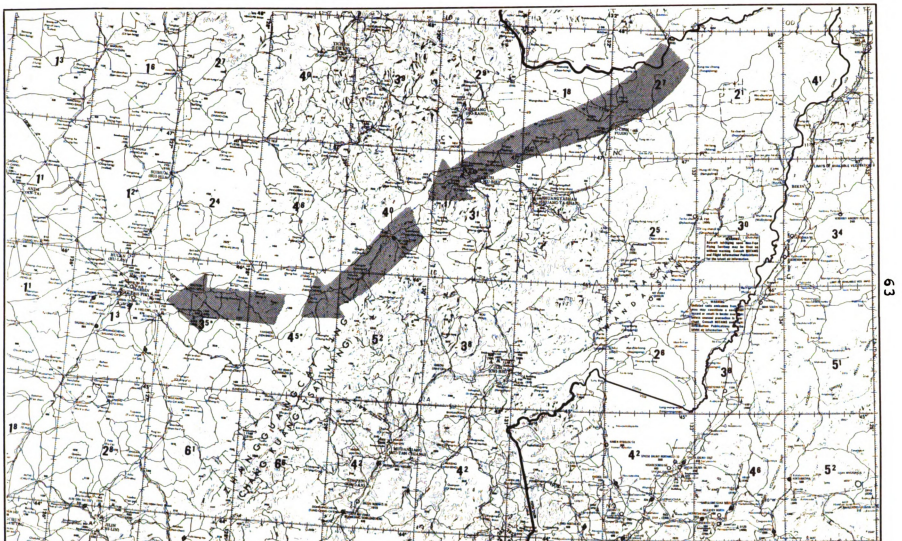

Figure 14. Leninskoye Approach (Far Eastern Front)

(Chiamussu) to Nancha, an industrial site in a mountain valley, then on to Suihua in the plains south to Harbin.

c. **Bikin approach.** (Figure 15)

Bikin is situated just east of the Ussuri River about 200 km south of Khabarovsk and approximately 175 km from Leninskoye across the Sungari plains. The approach crosses the Sungari plains extending in a southwesterly direction towards Harbin which is about 600 km from the border. Bikin, a Soviet city, is approximately 15 km east of the border. There are few good* roads running in a southwesterly direction and the army must negotiate the Wan Tashan Mountains (elevations between 606 and 825 meters; 2020 - 2750 feet).

From Bikin the avenue of approach follows this path of cities: Bikin to Jaoho to Paoching to Shuangyashan to Jiamusi to Harbin. An army on this approach may also deploy forces on a route from Paoching to Poli to Harbin. Jiamusi is 275 km from the border and Harbin is another 310 km from Jiamusi. Paoching is 160 km from the border, Poli is 135 km from Paoching, and Harbin is 305 km from Paoching. Once again, this is about a 600 km army route of advance to the objective of Harbin.

The Wan Tashan mountains must be negotiated immediately upon crossing the border except for forces moving through Jaoho which is 40 km to the north of the range. The army

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* a secondary or a primary road which is wide enough to support heavy equipment movement, has some drainage, and is surfaced.

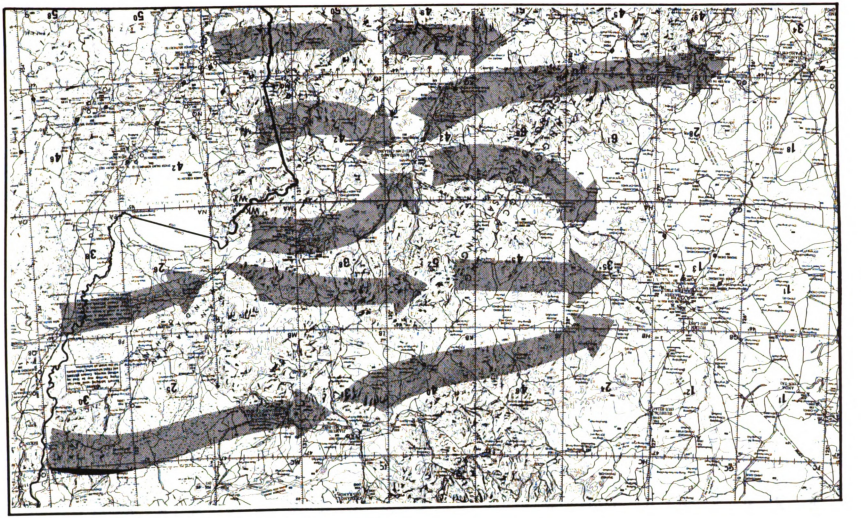

Figure 15. Bikin, Iman, Jixi, Suifenho, Ussuriysk Approaches (Far Eastern Front)

would traverse 100 to 125 km of frozen plains before encountering more of the eastern highlands mountainous terrain. Paoching is on the northern slopes of this range.

A single track railroad begins at Minchutsun which is located in the middle of the plains, 75 km north of Jaoho, and extends to Fujin, Shuangyashan, and on to Jiamusi. Jiamusi is a railroad junction for three separate lines. A major airport is also located there. Shuangyashan is an important coal town with a population just under 400,000 (Geelan and Twitchett 1974, 13). Numerous secondary roads crisscross this area of maneuver, but there are no predominant east-west extensions.

d. **Iman approach.** (Figure 15)

This army approach follows a route from the Soviet city of Iman across the Ussuri River and to the Chinese cities of Mishan and Poli; the primary objective being the city of Harbin. Harbin is approximately 535 km from the border is a westerly direction. Mishan is about 125 km from the border followed by Poli, another 100 km distance from Mishan. Harbin is an additional 305 km from Poli. A single-track railroad starts 40 km from the border and extends to Mishan and on to the city of Jixi which lies on the next army avenue of approach directly south. An invading force on this route must cross the Zhangguang range from Poli to Harbin which is about 110 km in distance.

e. **Jixi-Mudanjiang approach.** (Figure 15)

Jixi is about 60 km from the border, just west of Lake Khanka. It is another 135 km to Mudanjiang and an additional 265 km to Harbin from Mudanjiang for a total distance of 460 km. No roads run directly from Jixi to Mudanjiang. Forces along this route would have to negotiate mountainous terrain. Jixi is located in a valley and serves as a junction for three railroad lines. A dual track railroad extends from Mudanjiang to Harbin. Secondary roads run through the same pass.

f. **Suifenho-Mudanjiang approach.** (Figure 15)

The objective for the army traversing this approach is the city of Changchun located 475 km from the border. Mudanjiang is about 125 km from Suifenho and Changchun is another 350 km from Mudanjiang. This route crosses the Zhangguang range of mountains for approximately 55 km then plains for 65 km before entering Mudanjiang. No roads or railroads extend directly from Suifenho to Mudanjiang. Mudanjiang with a population of almost 600,000, is a lumbering center but also has developed some other industries such as, aluminium smelting, tire manufacturing, and a small iron and steel plant (Geelan and Twitchett, 9).

Changchun is the provincial capital of Jilin (Kirin) and serves as a major railway junction in northeast China. The city is also a major agriculture market and a major heavy industrial city. Changchun has the largest automotive industry in China, possesses a major plant that manufactures

railway locomotives, rolling stock and equipment, and has tire manufacturing, diesel engine and tractor works (Geelan and Twitchett 1974, 13). The city also has a pharmaceutical industry and many institutions of higher learning. Changchun has a population of over 1.5 million.

g. **Ussuriysk approach.** (Figure 15)

The invading army assigned this avenue of approach will also have Changchun as an objective plus follow on objectives of Shenyang and Yingkou (a port city on the Gulf of Liaotung) should conditions allow for continued aggression in a south-southwest direction. The Soviet city of Ussuriysk is about 55 km east of the border, while Changchun is an additional 475 km from the border. A force on this route must traverse approximately 175 to 200 km of the Changbai mountains. The route also crosses a southern portion of the Sungari River. There are few connecting east-west roads and railroads. Numerous timber industry railroads exist in the forested areas of the highlands, but these single-track lines would not be useful as lines of communication for an army-size operation. One single-track railroad extends from the city of Tumen to Yanj and on to Changchun.

h. **Dairen (Dalian) approach.** (Figure 16)

Should the Soviets secure the warm-water ports at the tip of the Liaotung Peninsula, the Far Eastern Front may be tasked to deploy an army from this region on a northward approach toward Yingkou and Shenyang. The key city of

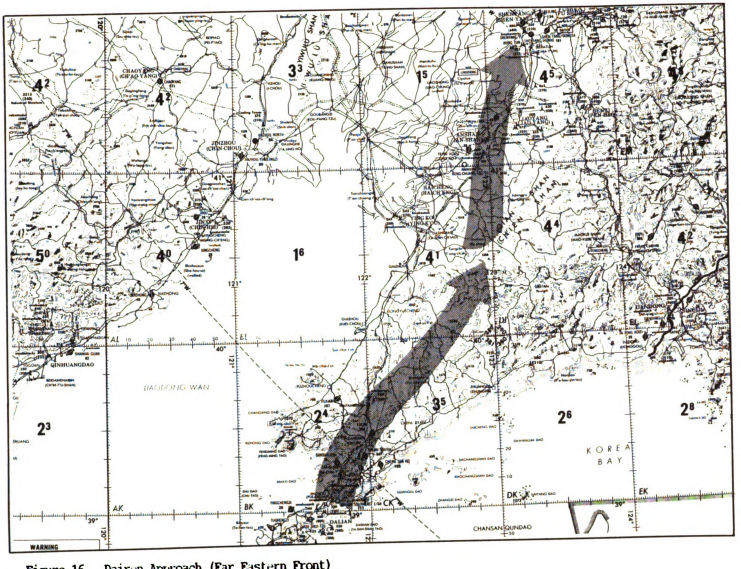

Figure 16. Dairen Approach (Far Eastern Front)

Anshan may also be targeted. Anshan, with one of the greatest iron and steel industries in the country, is located approximately 80 km north of Yingkou and about 85 km south of Shenyang. All three cities lie on the double-track railroad running north and south between Harbin and Dairen (Figure 11). The county of Anshan has a population of over 1 million. Dairen has a population of about 1.5 million while Yingkou's population is under 500,000 (419,640). This approach would resemble the Japanese advance during the 1905-1905 Russo-Japanese War.

TRANSBAIKAL FRONT.

The main thrust of the Transbaikal Front will be into western Manchuria and northern China from Outer Mongolia and across the Chinese province of Inner Mongolia (Figures 7 and 8). Its main objective would be to secure Beijing, the capital of the People's Republic of China. Beijing is located about 600 km from the PRC-Mongolian border city of Erenhot. According to Soviet doctrine, a front objective can be as far as 600 to 800 km in distance and should be reached within twelve to fifteen days. The Transbaikal Front has the most direct route to Beijing. Once again, avenues of approach are listed from north to south.

a. Hailar approach.

An army on this avenue of approach would cross the border in the vicinity of the Soviet cities of Priargunsk (Novo Tsurukhaytuy) and Dauriya (Duroy) and drive for the city of Hailar in a southeasterly and easterly direction,

respectively. From Hailar the route extends to Yakoshi (Yakeshi), Pokotu (Bugt), and on to Qiqihar (Tsitsihar) which is about 515 km from the border. Hailar is approximately 180 km from the border at the Chinese city of Manzhouli (Manchouli) and 135 km from the Soviet city of Priargunsk. Yakoshi is 70 km east of Hailar while Pokotu is another 100 km from Yakoshi. Qiqihar is 225 km from Pokotu.

A single-track railroad, formerly known as the Chinese Eastern Railway, runs from Manzhouli through Hailar and through Qiqihar. Three additional rail lines join at Qiqihar. Both Hailar and Qiqihar have a major airfield. Numerous secondary roads exist in the area with the fewest in the Grand Khingan mountains which are heavily forested, especially on the western face.

Populated areas are largely confined to the railway zone and the eastern foothills. Manzhouli has a variety of minor industries and some coal mines located nearby. Hailar, with a population under 200,000, is a market center for agriculture and the dairy region west of the Grand Khingan range. Hailar has food processing, chemical, and wood-working industries. Qiqihar has a population of over one million and has a variety of industries as well: major engineering industries producing railway locomotives and rolling stock, machine tools and mine machinery; large sugar-refining; paper mills; and extensive food-processing plants (Geelan and Twitchett 1974, 9). Fulaerchi (Hulanergi) is a satellite industrial city of Qiqihar (25 km

southwest) and has a steel plant and heavy machinery factories. Qiqihar lies in the Nenchiang river plain which is a grain-growing area with well developed animal husbandry and dairy farming.

b. **Tuchuan-Ulanhot approach.** (Figure 17)

The objective for the army assigned to this route will be the city of Changchun located 535 km to the east-southeast. This approach is actually two axes converging on Changchun. The first axis is from Ulanhot (180 km from the Mongolian border) to Baicheng which is another 80 km from Ulanhot. Changchun is then 275 km from Baicheng. Baicheng is a likely intermediate objective as it is a junction for four railroads in the area. A single-track railroad extends from the border to Changchun along this axis.

The second axis follows a route through Tuchuan located about 200 km from the border followed by the city of Kaitong (140 km from Tuchuan). Changchun is an additional 210 km from Kaitong. This axis is well connected by a road network. These two axes are separated by approximately 85 to 100 km. The Soviets may wish to repeat the actions of the Transbaikal Front in 1945 by assigning a third axis to this army's area. This third axis would be directed toward Hailar from the south, about 175 km distance and would most likely originate in the vicinity of Amgalang.

c. **Tianshan-Lubei approach.** (Figure 18)

This avenue of approach leads directly to Shenyang approximately 700 km from the Mongolian border. The area of

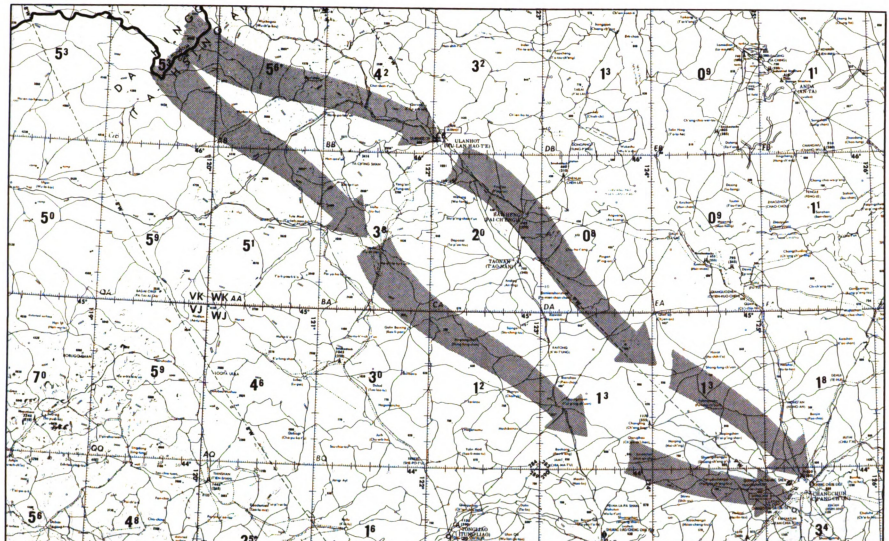

Figure 17. Tuchuan-Ulanhot Approach (Transbaikal Front)

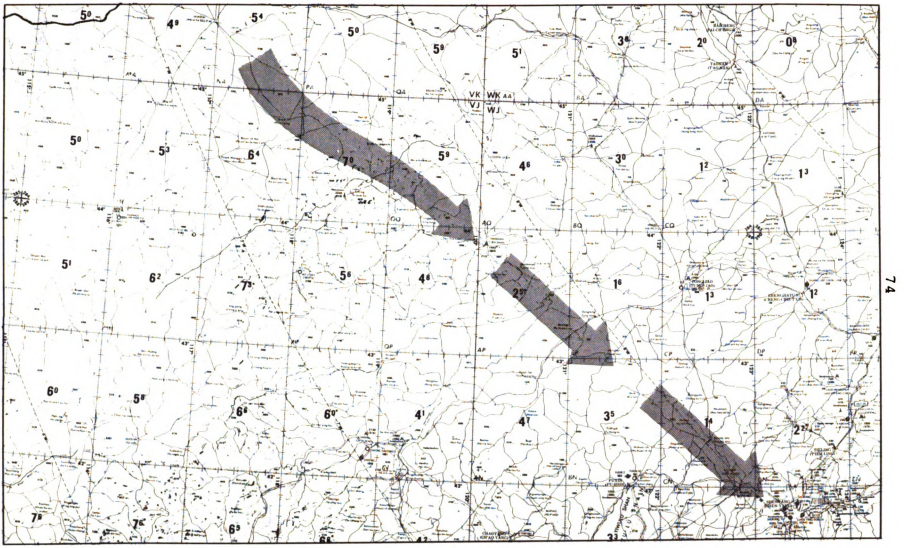

Figure 18. Tianshan-Luboi Approach (Transbaikal Front)

Tianshan and Lubei is about 350 km from the border followed by Fuxin which is another 250 km. The army on this avenue of approach will require significant logistic support as supply lines will be extended in depth, that is, up to 700 km upon reaching Shenyang. Shenyang is the center of Manchuria's railroad system. Shenyang has four major airfields, Jinzhou has two, Jinxi has one, and Fuxin also has one major airfield. The city of Tongliao on this avenue is a junction for five railroads.

The Grand Khingan Mountains are anywhere from 20 to 100 km in width in this area of operations. The narrowest approach through the mountains is towards Lubei. (The Khorokan Pass was used by the Soviets in 1945 (Glantz 1983, 83).) There are numerous northwest-southeast secondary roads through the mountains. This route also crosses the Liao River.

Shenyang, with a population slightly over 4 million, is the provincial capital and largest city of Liaoning. With steel brought in from other regional cities, Shenyang is a major center for engineering industries. It produces heavy machinery and industrial equipment, machine tools, electrical equipment, tractors and aircraft (Geelan and Twitchett 1974, 17). There are major smelteries for copper, zinc and lead. It also produces agricultural machinery, vehicle tires, textiles and glass. There is a very large chemical industry.

d. **Chifeng approach.**

The final objective for the army on this avenue would possibly be the coastal cities of Qinhuangdao and Shanhaikuan only 35 km apart. The route of advance would be from the Mongolian border to the Great Wall about 200 to 250 km distance. It is another 200 km to Chifeng and another 250 km to Shanhaikuan located just north of Qinhuangdao. An army on this approach must cross about 50 km of the Grand Khingans and the Liao River (25 km east of Chifeng) before reaching its final objective. There are few secondary roads through the mountains. The only notable single-track railroad in the area extends south through the small cities of Chengde and southeast to Lingyuan and on into Jinxi. There are no good north-south roads from Lingyuan to Shanhaikuan which is separated by almost 150 km of mountains.

e. **Dolonnor (Duolun) approach.**

After crossing 325 km of desert plateau the army assigned this route of attack will reach the Grand Khingans. Numerous northwest-southeast secondary roads extend across Inner Mongolia. There are only about three good roads traversing the mountains in the direction of Beijing. The mountainous terrain stretches east for about 200 km. From the border it is about 200 to 250 km to the Great Wall followed by another 200 km to Fenning and then another 150 km to Beijing. Overall this avenue extends about 550 km from the border to Beijing through some difficult terrain

with little developed infrastructure for combat sustainability.

f. Beijing approach.

A standard-gauge, single-track, railroad runs from Saynshand, Mongolia, to the border city of Erenhot and on through the Yinshan mountains to Beijing (Figure 8). Using the railroad as a key line of communication the Soviets may commit one division to this avenue. This division would link up with an airborne division that would be dropped near the city. Forces may be split onto another axis to the north and parallel of the Erenhot rail axis. This axis would run along a path from Kangbao to Zhangjiakou (Kalgan). The secondary axis is limited by a lack of good roads through the mountains. Forces assigned to this axis would cross 200 to 250 km before reaching the Great Wall in the vicinity of Kangbao. It is an additional 200 km to Kalgan which is located on the Beijing railroad.

As of 1982, Beijing reportedly had a population of over 5 million. In addition to the city's obvious political importance, it has an iron and steel industry; a heavy engineering plant that manufactures bridge girders, locomotives, machine tools, motor vehicles, ball bearings, and agricultural equipment; electronic and chemical industries; textile industries, and a large thermal generating plant joined by a power grid (Geelan and Twitchett 1974, 29). A railroad passes through a mountain pass (the Shanhaikuan) northeast of Beijing and runs

directly to the important Manchurian city of Shenyang (Hsieh 1973, 113). Another well known pass through the mountainous terrain separating Beijing from the west and north is the Chuyunkuan pass to the west. The Japanese used this pass during World War II for their invasion thrust into China. A railroad also extends through this pass linking Inner Mongolia to north China and the Beijing.

SIBERIAN FRONT.

The Siberian Front may be augmented by three of the four Mongolian divisions. Because of the difficult terrain separating the Siberian MD and the southern area of Mongolia, two of the Soviet-Mongolian divisions may also be assigned to the Siberian Front. Depending on the mobilization time available prior to the initiation of hostilities, it is conceivable that the Soviets would have to rely on divisions already deployed in Mongolia to lead the attack. It is unlikely that the Soviets would allow the Mongolian military to lead the attack into the Gansu Corridor; the Soviet-Mongolian divisions would be the lead elements. The Soviet forces are probably considered more reliable and better equipped and trained. The main objective would be to secure control of the vital communication lines extending through the Gansu Corridor between Urumqi in Xinjiang and Hohhot. The cities of Hohhot and Baotou would be army objectives (Figures 7 and 8). Divisions from the Siberian Front may be held back as

theater reserves or may be allocated to other fronts, in particular the Transbaikal Front.

a. **Baotou approach.**

With a population just over one million, Baotou is a key industrial city located 200 km south of the border with Outer Mongolia. There are two major airfields in the Baotou area: one is 65 km west of the city and located along the important railroad which extends east-west through the corridor; the second airfield is located in the southeast section of the urban area. Three roads and one railroad originate north of the city and continue south to Baotou. The railroad originates at Bayan Obo about 125 km to the north of Baotou and 95 km from the border. The city is located at a mountain pass approximately 5 km in width with 1,650 meters (5,500 feet) elevation on either side. (Both Baotou and Hohhot are located on the southern slopes of the east-west running Yinshan Mountains with elevations ranging between 1,650 and 2,250 meters (5,500 and 7,500 feet)).

Baotou is one of China's major steel producers using coal and iron from nearby sites. There is a coal field just 30 km northeast of Baotou at Shihkuaikou. Baotou is also a major producer of aluminum, chemicals, fertilizer, and cement (Geelan and Twitchett 1974, 25). There is also some engineering, food processing and textiles.

b. **Hohhot approach.**

Hohhot, located 235 km from the border and 150 km northeast of Baotou, is the provincial capital of Inner

Mongolia. It has a population of almost 750,000 and has chemical and fertilizer plants, a diesel engine factory, and a large sugar-refining industry (Geelan and Twitchett 1974, 24). There are two major airfields: one is located 35 km west of the city and is also located along the major railroad running through the corridor, the second airfield is located 15 km east of the city along the multiple-track segment of the railroad running from Jining (Chining) 125 km to the east. This multiple-track railroad continues to Baotou before becoming single-track.

The Huang Ho, or Yellow River, flows generally in an east-west direction and is just south o,f and parallel to, the railroad connecting Baotou and Hohhot. Only one secondary road appears to cross the mountains into Hohhot. This road joins the previously mentioned airfield to the west of the city. There appears to be a narrow (5 km wide) pass through the Yinshans although no road is shown on the map.

It is important to note a major disadvantage of the terrain in the Siberian Front's area of operations. Chinese forces positioned on the Yinshan Mountains would command excellent observation and fields of fire onto the relatively gently rolling, grasslands plains existing from the border to the slopes of the mountains. The Soviet forces maneuvering on the Baotou and Hohhot avenues of approach would require significant air and artillery support as they progressed within range of Chinese weapons systems. The

northwest winds could prove useful in employing smoke for concealment. Conversely, smoke operations might prove useless if there were high wind velocities which often occur in this region known for its Gobi dust storms.

CENTRAL ASIAN FRONT.

The seven organic divisions deployed in the Central Asian Military District will be organized into three relatively small Combined Arms Armies (CAA) attacking on three avenues of approach. The most northern approach, generally following the Irtysh (Ertix) River, will be the main attack (Figures 7 and 13). The secondary supporting attack will be the Ili approach into the familiar Ili river valley. The third supporting avenue of approach is the Tacheng route located centrally between the Irtysh and Ili approaches.

A division deployed from the southwest tip of Mongolia will constitute another Central Asian attack force. This division's objective will be to link up with an airborne force in the city of Urumqi located 300 km to the southwest.

a. **Urumqi approach.**

The city of Urumqi, with a population of nearly one million, is the industrial and administrative center of western China. It is strategically located on the northern face of the Tienshan Mountains and is protected by high ground on three sides: east, south, and west. The high ground ranges in elevation from 600 to 5,481 meters (2000 feet-18,270 feet) to the east and up to 4,770 meters (15,900

feet) on the west. Urumqi is approximately 555 km from China's western border with the USSR. The nearest hostile border is with Mongolia which is approximately 300 km in distance.

Urumqi is the provincial capital of Xinjiang and is the communication center for the region. The only railroad into western China terminates at Urumqi, and it is single-track, standard gauge. All major roads in western China radiate from Urumqi. The city is also serviced by three major airports which have hard surfaced runways of 3000 feet or more.

The city's industrial base includes a medium-sized iron and steel plant processing locally extracted minerals, small-scale engineering firms, cement manufacturing facilities, chemical plants, and cotton textile mills (Geelan and Twitchett 1974, 101). Both a thermal electric and a hydroelectric plant provide the city's power. Large-scale state farms are located in the vicinity of Urumqi using mountain streams for irrigation. The main crops are wheat, corn, rice, soy beans, cotton, and sugar beet.

The Mongolian division will cross the border north of the Baytik Mountains (highest peak 3,456 meters or 11,520 feet) through a 25 km wide mobility corridor, and then cross the Nomin Desert dominated by gravel gobi, sparse vegetation, and few inhabitants (Zhao 1986, 176). Intermittent streams and terminal saline lakes (often called "wandering lakes" because of shifting river channels) also

exist in the area. This maneuver force will have to negotiate eastern portions of the Dzungarian Basin which is mostly desert -- a combination of fixed and shifting sand. Because this avenue of approach offers little cover, the Soviets must insure local air superiority beginning on the first day of hostilities. Traveling at doctrinal rates of advance, this division could reach Urumqi by the sixth day of hostilities. A primary and one secondary road extending north-south may allow for additional speed early on. Eventually, the force will have to move in a southwesterly direction for which no roads exist.

The Mongolian division will be the first ground force to reach Urumqi and will likely link up with the airborne assault unit. The time of the airborne drop will depend on the Mongolian division's rate of advance. The size of the airborne force will depend on the estimated Chinese threat. The Soviets will hope to inflict as much damage as possible to Urumqi's command and control and airfield operations. This would most likely be accomplished by employing strategic air forces early in the hostilities. thereby reducing the need for a division size airborne force. A reinforced regiment is the more common (or doctrinal) size force, but the mission and current battlefield situation will dictate the size more than any other criteria. Only one of the seven known Soviet airborne divisions is located in the Far East TVD, and its peacetime location is in the Far Eastern Military District. The Soviets will want to

judiciously employ this highly valuable combat capability. The city of Urumqi fits the Soviet's doctrinal requirements for operational employment (in support of a front) of an airborne assault force. Urumqi falls within the 500 km distance for airborne assaults conducted in support of a front. Capturing or destroying enemy airbases, destroying enemy command posts, and destroying key rear area installations are standard missions for just such an operational airborne force (Defense Intelligence Agency 1982, 3). Should airborne forces not be available for this mission the Soviets may opt to employ a division-size Operational Maneuver Group (OMG).

b. **Irtysh approach.**

This avenue provides the best maneuver room of the three approaches into western China. Originating in the vicinity of Lake Zaysan, the approach follows the perennial Irtysh River which originates in the Altai Mountains to the north. The Irtysh flows to the west. This avenue of approach is about 85 km wide at the border.

The army's mission would be to destroy enemy forces in the area and to secure lines of communication as far into the interior as possible. A force on this route would pass through the village of Burqin, 100 km east of the border. Several secondary roads radiate from this location. The area is sparsely inhabitated by Kazakhs and Mongol herdsman and is characterized by oases agriculture and pasture. The next settlement of any consequence is the city of Altai

(Figure 13) located about 95 km northeast of Burqin. The county of Altai has a population just over 100,000. A minor airfield exists 10 km south of Altai. Altai will not be an objective of the army as there is little to be gained by seizing it. The army will continue its eastward movement for about 75 km then turn south and head for the Karamai oil fields located 270 km away. Secondary roads extend north-south along this avenue. A primary road also runs south from Burqin crossing through mountainous terrain. The army may allocate this route to one of its subordinate units. It is the most direct route from the Irtysh River region to the Karamai oil fields but is constrained by the mountainous terrain.

The Irtysh army will probably avoid traversing the desert region of the Dzungarian Basin and remain west in the grasslands area. This force could reach Urumqi by the twelfth day of operations having covered a distance of 700 km.

c. **Tacheng approach.**

Serving as a regional economic center, Tacheng (county population just over 100,000) is located only 15 km from the USSR. border. This avenue of approach starts as a 70 km wide corridor easily supporting two divisions abreast, but narrows to 10-15 km about 75 km from the border thus severely limiting maneuverability. This narrow corridor continues for 125 km. A couple of secondary roads cross the mountain range on the south side of this avenue.

Elevation ranges from 600 to 2,100 meters (2000 feet to 7000 feet). The same situation exists as with the Irtysh approach. The mountain roads are more direct, but the terrain may hinder speed and will certainly impede maneuverability. An army assigned this route of advance would be charged with destroying enemy forces and opening lines of communication as far east as Karamai. The final objective would be to secure, intact, the Karamai oil fields as well as the airfield just south of the city. Karamai has a population of less than 200,000.

The Tacheng avenue of approach extends through the Emin Valley and is channeled between two mountain ranges on the north and south. Elevations range from 600 to 3,000 meters (2,000 feet to over 10,000 feet). The region is characterized by oasis agriculture and well watered meadow plus some swamps. The 10 km wide, 125 km long corridor into the Dzungarian Basin proper is the most limiting aspect of this avenue of approach. The total distance to Karamai from the border using this corridor is 320 km. Should this force be directed to move to Urumqi it would conduct a 700 km march from the border.

The famous Dzungarian Gate is located 175 km south of Tacheng. This well known pass through the mountains into Soviet Central Asia is too restrictive to support a major attack. The Soviets have a single-track, broad-gauge railroad running southeast from Atkogay to within 5 km of the "gate". The Soviet town of Druzhba is located just on

the Soviet side of the pass while the closest Chinese settlement of any consequence is Jinghe located 75 km south. No roads or railroads are found on the Chinese side of the gate. The Soviets would probably employ existing border guard units in securing this portion of the border.

d. **Ili approach.**

The well known Ili Valley centers on the city of Yining (Kuldja), population 225,027 and is formed by a separation of the Tienshan range. The Ili River drains westward into the Soviet Union, discharging into Lake Balkash. This is a prosperous agricultural and pastoral area famous for apples and pears, horses and sheep. The Tienshan Mountains face the moisture-bearing westerlies bringing relatively abundant precipitation (300-500 mm annually) (Zhao 1986, 178).

This avenue of approach is about 30 km wide at the border and widens to 45 km around Yining. There is a small airfield at Yining. The city of Yining is located 75 km from the border and could serve as an army immediate objective. Secondary roads run parallel with the valley, and one primary road links the valley with Urumqi located about 800 km away. This road winds its way through rough mountainous terrain. Alma-Ata, the Soviet headquarters for the Central Asian Military District is located 300 km west of the Ili Valley border.

Other than securing the mountain border passes south of the Ili Valley, there are no significant military or political objectives to be achieved in this barren region

dominated by the Takla Makan desert which is located in the Tarim Basin. The Tarim Basin is 1,500 km long from west to east and is 500 km wide from north to south. It occupies 55 percent of the land area of Xinjiang (Hsieh 1973, 189). There are no viable army-size avenues of approach because of the mountain ranges forming the border between the Soviet Central Asia and western China.

However, on the eastern end of the Tarim basin is a mostly uninhabited area of very poor grassland and semi-desert known as Lop Nor. This has been the chief test-site for China's atomic program since 1964 (Geelan and Twitchett 1974, 101). Lop Nor is the lowest part of the basin with an elevation of 760 meters (Hsieh 1973, 189). The Far Eastern Theater command will most likely target this strategic site early on in the hostilities. Lop Nor may not be a ground force objective because of its extremely remote location approximately 475 km into the province of Xinjiang.

Summary

This is just one possible strategic-operational plan for a Soviet invasion of China. In view of the climatic and terrain characteristics of the region and the dispositions of the forces, it is difficult to envisage any logical alternatives. The historical combat experiences of the region also reinforce the plan.

CHAPTER THREE

DEVELOPMENT IN SOVIET ASIA

Introduction

Soviet Asia has more to offer than its abundant natural resources. Because of its geographic position, the region serves as a vital foothold for the Soviet Union in Asia and the Pacific Rim. Not only do the region's natural resources provide the country with a tremendous source of foreign and domestic capital, but increased settlement and development allow the Soviets to bifurcate their geopolitical stretch across the globe. The Soviet Union's geopolitical position in Asia and the Pacific Rim rests on its economic and military strength. This chapter discusses development of Soviet Asia and its concurrent strengthening of the military posture.

Development in Soviet Asia is divided into four resource categories which are viewed from a military perspective: manpower and urbanization, industry and energy, transportation and communication, and agriculture.

MANPOWER RESOURCES AND URBANIZATION

Manpower and Mobilization

The labor shortages of Siberia and the Far East are well documented. The Soviet government has instituted many

programs to reduce the worker turnover rate and increase the number of skilled workers residing in the region. Despite these efforts, labor shortages continue to be a problem. Although there is a shortage of skilled labor for the growing industrial areas, it is foolhardy to assume this situation applies equally to a lack of manpower for a military mobilization.

Some military analysts predict it would take a longer period of time to mobilize forces in Soviet Asia than it would take in the European USSR theaters of military operations (Koenig 1983, 78-79) This assumption ignores the fact that the region has an estimated population of 54 million and is growing.

Table 3-1. Regional Population Figures and Growth Rates for 1987

Region	Population (in thousands)	% Growth (since 1979)
West Siberia	14,607	12.7
East Siberia	8,984	10.1
Far East	7,772	14.0
Kazakh SSR	16,244	10.6
Kirgiz SSR	4,143	17.4
Tadzhik SSR	4,807	26.5

SOURCE: Narodnoe Khozyaystvo SSSR Za 70 let, Moscow, 1987.

The *skill* requirements for a military mobilization will not be as great as the skilled labor requirements for many of the industrial operations. Although newly mobilized soldiers will need to receive some pre-combat training, the

training time involved is certainly less than that required for industrial operators, and newly mobilized Soviet soldiers will be better trained and equipped than the Chinese forces they will oppose. Because the Soviets place such a high premium on maintenance of a large mobilization reserve, the pre-combat training phase is significantly minimized.

Virtually every Soviet male serves in the armed forces at some time; few are completely excused from military service (Scott and Scott 1984, 335). Soviet citizens receive military training and indoctrination beginning at early ages through organizations such as the Pioneers and the Komosomols (Young Communist League) followed by the compulsory Beginning Military Training program for all young men prior to their induction. (Soviet males are usually inducted at age 18.) The program includes instruction in basic drill, weapons familiarization, and field exercises. In the event of an emergency inductees could be prepared for combat duty within a few weeks (Scott and Scott 1984, 331-3).

DOSAAF (Dobrovol'noye Obshchestvo Sodeystviya Armii, Aviastsii i Flotu--The Volunteer Society for Cooperation with the Army, Aviation, and the Fleet) is another means by which the Soviets maintain a citizenry prepared for rapid mobilization and combat. DOSAAF is designed to strengthen the military capabilities of the country and prepare workers for defending "the socialist fatherland" (Pokryshkin, 255-

257). There are 346,000 separate units of DOSAAF with a membership numbering 98 million workers and students. DOSAAF clubs and sports facilities are located throughout the Soviet Union and some DOSAAF organizations operate airfields for flight training (Scott and Scott 1984, 326-8). DOSAAF is about the only way most Soviet youth can engage in activities such as learning to drive an automobile, learning to fly aircraft, hunting, parachuting, and operating a ham radio. These are skills which the government recognizes as having military applicability. DOSAAF is designed to improve the quality of workers entering the national economy and raise the technical level of youth entering the armed forces. In addition to their pre-induction training and indoctrination, Soviet males are subject to call-up and refresher training through the age of 50 upon completion of their obligatory active service time. (Scott and Scott 1984, 340).

Having determined that manpower resources are available in Soviet Asia, what would be the mobilization requirements for the Far Eastern TVD? This is a difficult question to answer, if not impossible, as combat readiness strength levels are a closely guarded secret. However, it is possible to make a very general estimate of mobilization requirements for the infantry and armor divisions. Using documented personnel strengths for standard Soviet infantry and armor divisions, the 55 divisions assigned to the Far Eastern TVD would require 689,650 troops to be considered

Category A or 100 percent combat ready. If it is assumed that the seven tank divisions are Category A then this implies that 34 of the 48 total MRDs would need to be brought up from 20 percent strength (Category C) to 100 percent strength (Category A). Thirty-four full strength MRDs would number 345,304 personnel. Twenty percent of this figure is 69,061; therefore, it would take approximately 69,061 men to fill the ranks of the estimated 34 Category C Motorized Rifle Divisions.

Obviously the Far Eastern TVD commands more than infantry and armor divisions. Standard personnel strengths for most ground force units, as well as forces from the Air Defense, Air Force, etc., are unavailable. Although Scott and Scott (1984) point out that mobilization plans for each of the services differ, the Strategic Rocket Forces and the Troops of Air Defense are generally maintained at full strength at all times. Likewise, the Air Force is prepared for war during peacetime except for the necessary military air transport units that would be formed from the ranks of Aeroflot. The Navy would have to bring reserve ships out of mothballs and reequip them (pp. 343-344). Bear in mind that the ground divisions employed in an invasion of China may be tailored for specific missions, thus these "documented" personnel strengths may be modified. This computation merely gives some idea as to the possible manpower requirements. Some experts estimate the Soviets would

require three million troops for an invasion (*FEER* 1988, 18).

Another important feature of the manpower resources in Soviet Asia, in particular Siberia and the Far East, is that most of the population is young and a good many of them are male. According to de Souza (1986) the proportion of people in Siberia under age 20 is 1.5 to 2 times higher than the average in the RSFSR, and those over 60 number only about 15 percent of those in the RSFSR as a whole (p. 696). Elderly people find the living conditions in Siberia too severe. Likewise, this region does not appeal to many women who encounter limited job opportunities (Manevich 1985, 43). Males predominate in the Maritime Krai where 60 percent of the employed are male. In the fishing industry, 80 percent of the workers are male (Dienes 1987, 218). In the maritime transport industry men outnumber women by a ratio of three to one. There is a nine to one ratio of men to women in actual shipping operations. In the major port city of Vladivostok, 9 percent of the working age population are women in the home. A similar situation is found in the BAM zone where most of the laborers are young men. In 1984, 75 percent of the workers were 30 years old or younger and 66.3 percent were men (Kaple 1986, 731).

Not only is the majority of the population made up of young men, but the majority of the population resides in the southern railway zones (the most economically developed area) which promotes more rapid notification and subsequent

mobilization. The map of population densities clearly shows a higher density in the railway zones in all three subregions of Soviet Asia: Siberia, the Far East, and in Central Asia (Figures 19 and 20). In particular is the Far Eastern Maritime Krai which has a relatively dense population settlement (12.9 inhabitants per square kilometer) compared to the rest of the administrative districts of Soviet Asia sharing borders with China, for example, the Amur Oblast only has a population density of 2.8 inhabitants per square kilometer (de Souza 1986, 692). This is an area of moderate climate with a relatively large agricultural base and a higher level of infrastructure. The Far Eastern Military District is the largest, in terms of numbers of divisions, and is the most important of the four MDs in the Far Eastern TVD. In the event of a Soviet invasion of China, the Far Eastern Front would have the largest thrust into northeastern China west from the Maritime Krai. Population densities also favor rapid mobilization in Kazakhstan and Central Asia where settlements are highly concentrated along railways and in the fertile valleys. The greater part of Kazakhstan is desert thus discouraging denser settlement.

The Soviets have naturally instituted an administrative organization for the sole purpose of insuring a rapid and efficient mobilization which further attests to the government's emphasis on war preparation. Thousands of offices of the Military Commissariats (Voyenkomaty) are

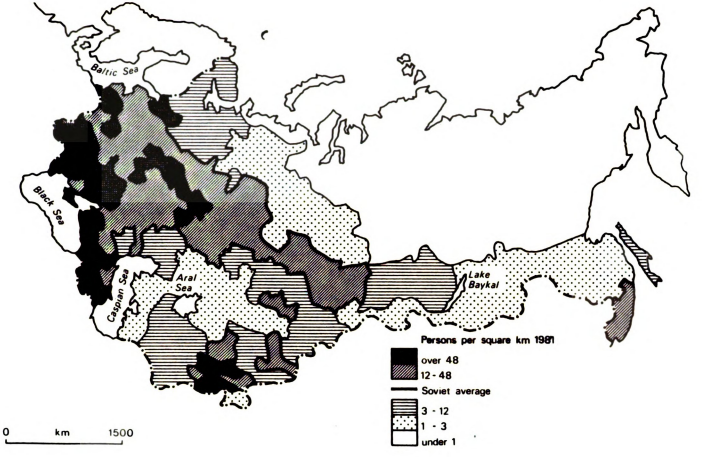

Figure 19. Density of Population in the USSR in 1981
SOURCE: Cole 1984, 244.

Figure 20. The Soviet Union
SOURCE: Central Intelligence Agency

located throughout the Soviet Union (Scott and Scott 1984, 323-4, 342). These agencies are responsible for effecting measures pertaining to the preparation for and conduct of troop mobilization. Citizens are called up for active military service and refresher
training by the Military Commissariats; therefore, available human resources are continually tracked by this agency. Military Commissariats are also responsible for calculating and registering economic resources in the interest of the armed forces. The commissariat is tasked with registering all guns, motorcycles, automobiles, skis, cameras, and other resources belonging to individuals that could be requisitioned for an emergency. Trucks used in industry, as well as construction and agriculture equipment, have mobilization designations for which the commissariat is responsible. Soviet citizens are responsible for being registered at the local commissariat, including people who travel to other parts of the country for several days. Citizens' whereabouts are tracked via the internal passports required of all Soviet citizens.

Scott and Scott (1984, 341) conclude that the 1.6 million men released from the Soviet armed forces each year should be able to become combat-ready in a very short period of time. Soviet Asia will be able to draw on some of this same pool of men as well. There is little doubt that the

manpower requirements for mobilization can be filled from local human resources.

It would be inappropriate not to address the ethnic factor in this discussion of the wartime availability of human resources in Soviet Asia. So much has been written about the significant demographic shift in the Soviet Union and its potential impact on the armed forces' combat capabilities. Although the changing demography in this large multinational country is important, it has little significance in the Far Eastern TVD for the time being.

Most of the population in Siberia and the Far East is Slavic (Figure 21). Out of a total population of 30 million (Siberia and the Far East only), the more than thirty indigenous nationalities totaled little more than 1.15 million (Dienes 1987, 186). Three-fifths, or 670,000, live mostly in the southern border regions and are mostly Altaic and Mongol nationalities. Russians make up 82.6 percent of the RSFSR population in general while only 40.8 percent of the population in Kazakhstan is Russian (36 percent is Kazakh). Russians compose 25.9 percent and 10.4 percent of the populations in Kirgizia and Tadjikistan, respectively (49.9 percent are Kirgiz, 58.8 percent are Tadjiks) (Cole 1984, 263: 1979 figures). Additionally, it is of interest to note that there are no known Han Chinese living on the Soviet side of the Sino-Soviet border.

To counteract changing demographics and to insure Slavic

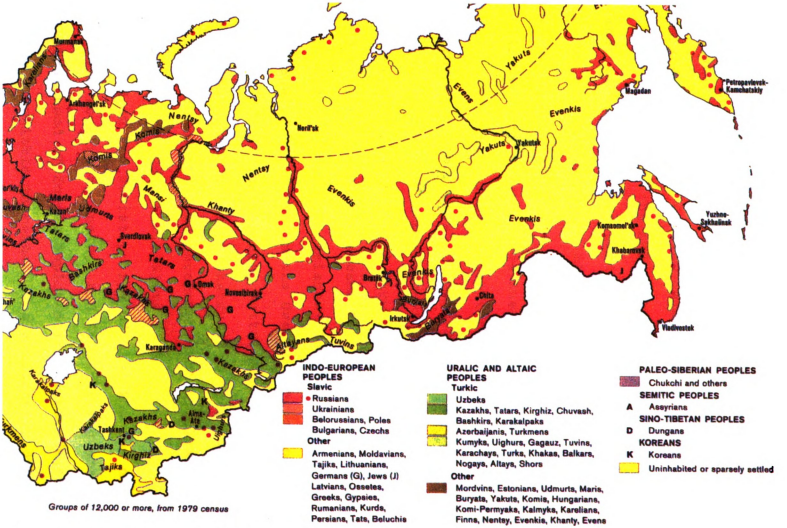

Figure 21. Nationalities in Soviet Asia
SOURCE: Central Intelligence Agency

control, the Soviets practice extraterritoriality in stationing of soldiers, that is, soldiers are assigned to units away from their home regions. Soldiers from the Baltic states are likely found in Central Asia, Caucasus, and Russia proper; Central Asians are likely to serve in Russia proper or the Ukraine (Wimbush 1985, 234). The Soviets also handle the multinational issue by limiting the number of non-Slavs assigned to high technology and front-line units (Wimbush 1985, 232-233). Up to 95 percent of the soldiers in the Air Force, Navy, and Strategic Rocket Forces are Slavic with a very large Russian majority within this group. KGB Border Forces also contain a large majority of Russians and other Slavs. Ground Forces contain the greatest majority of non-Slavs--as much as 20 percent of regimental-size units. Infantry units will be approximately 75-80 percent Slavs, 10 percent Central Asians, 5 percent Balts, and 5 percent Caucasians. Despite the larger percentage of non-Slavs in the Ground Forces, non-Slavs usually serve in construction battalions and not in the front-line combat units. Construction battalions are usually made up of 80-90 percent non-Slavs plus a "sprinkling of undesirable Slavs."

Based on the Soviet policy of limiting the number of non-Slavs to high technology and front-line combat units, the likelihood of forces deployed in the Far Eastern TVD proving unreliable in combat is significantly diminished. Central Asia would be the only area of concern since a rapid

mobilization would require the induction of local non-Slav reserves. Additionally, the Central Asian Front would be engaging the non-Slav population of China's western province of Xinjiang to whom many of the Soviet Central Asians are related. This was a problem in the Soviet invasion of Afghanistan. It has been reported that there was "widespread fraternization" between Soviet Central Asian troops and the Afghans. Initial Soviet invasion forces contained many Central Asians because the forces sent into Afghanistan were brought up to full strength by mobilizing personnel from the local reserve units. Invasion forces came from the Central Asian and Turkestan Military Districts. These initial forces were rapidly withdrawn (late February 1980) and replaced with Slavs (Wimbush 1985, 242).

The authors of a 1983 Rand Corporation study sum up the "ethnic factor" issue in this way:

> In a sudden-attack, short war conducted mainly with first-echelon, well-trained, primarily Slavic personnel, few if any ethnic related deficiencies are likely to manifest themselves. Conversely, in a protracted conflict marked by military reserves and significant manpower attrition requiring constant replenishment, at least some ... weaknesses could surface. (Alexiev and Wimbush 1983, 13)

This study addresses a short, decisive war; therefore, it is unlikely that the ethnic factor will be a significant weakness for the Soviets.

Urbanization

Increased urbanization of the population and a concomitant growth of city and regional infrastructure has obvious economic implications, but it also has important military implications. Many of the cities in Soviet Asia will house wartime logistics bases, command posts, and rear medical operations while existing communication and transportation networks will serve the military as lines of communication. Increased urbanization enhances the Soviet's military posture in Asia.

Population growth builds a manpower pool which can be used for a rapid mobilization. Population growth also serves as an indicator of the development of urban infrastructure in the case of Soviet Asia. The Soviet government continues to emphasize permanent settlement in order to more firmly secure the Soviet's position in Asia; therefore, city infrastructure is developing, albeit slowly.

The government continues to have a pro-urban bias at the expense of rural development. City growth enhances the military posture while a lack of rural growth may degrade food supply operations in time of war. This issue is discussed in the section on agricultural development. Approximately 70 percent of the population is urban in Siberia and the Far East (70.9% in West Siberia, 70.6% in East Siberia, and 77.7% in the Far East) (Rowland 1986, 173: 1984 figures). Conversely, 56.6 percent of the population in Kazakhstan is urban and 41.2 percent of the population is

urban in Central Asia. This is below the national average of 64.8 percent. Central Asia has the least urbanized population in the country. There is an accelerated rural outmigration in Northern Kazakhstan and Siberia, less so in the Far East. The highest net rural outmigration tends to be in West Siberia. Almost half of the population under the age of 20 leave the rural villages. Most of the rural population is remaining in the same region; it is only moving to the larger settlements that offer more amenities (Dienes 1987, 173-4).

What are the components of urban areas which make them suitable for military use? Cities may be a combination of power centers (political, economic, or military); industrial production centers; population centers; transportation centers; service centers (distribution points for fuels, power, water, raw materials, food, manufactured goods); or cultural and scientific centers. In assessing a city's suitability for friendly military use, the following urban components are considered:

1) Accessibility and communications lines--internal and external links, transportation lines by type and capacity.
2) Industries--type, amount, quality of products; number of people employed; distribution facilities.
3) Construction resources--type and quantity of materials; manpower, construction equipment available; capability of local construction industry to support base

development.

4) Utilities--type, means of supply, distribution and collection of water, gas, electricity and sewerage; extent and adequacy of tele-communications system.

5) Hospitals, transfer and storage facilities, billeting and other accommodations.

6) Services for emergencies, e.g., fire, police, health, sanitation, civil defense.

(Department of Army 1972, 7-1 to7-2)

Using this urban components list, what can be said about the suitability of the cities in Soviet Asia? "The physical conditions and isolation of many settlements have led to serious deficiencies in social services and infrastructure--housing space, household services, nursery schools, and the like. Those services that are allocated by the state budget lag by 30 percent compared to the RSFSR average. City dwellers enjoy less per capita floor space than those of European USSR" (Dienes 1982, 205-9). Because of an industrial production bias, housing and service facilities bear the brunt of any shortfalls from planned construction goals. Housing and service facilities are generally under planned.

The BAM railway zone is a good place in which to study the process of urbanization because it has been the focus of attention during the last decade. Sold as the "Project of the Century", construction along the BAM from 1974 to 1984 has produced 500,000 square meters of housing, 18

kindergartens, 14 schools, 12 medical facilities, and 4 bathhouses (Kaple 1986, 728-733). Three cities have become known as BAM centers: Severobaykal'sk in the west, Tynda in the central section, and Komsomol'sk in the east. There are plans for 50 more settlements in the BAM area. The original goal called for a town every 60 to 70 kilometers, but this has not been achieved thus far. In 1984, 1.3 million people were reported to be living along the railway. Two million people are projected to be living in this zone by the end of the century. The main goal today is permanent settlement which is proving difficult to achieve. Planned construction is behind schedule and the quality of existing structures is questionable. Only 40 percent of the projected homes, kindergartens, schools, and other social services were built by October 1984.

In Tynda, the "Capital of the BAM", there is no city-wide transportation system, there are too few schools and day-care centers, little cultural activities, and only enterprise-owned stores and services. The city that was designed to accommodate 13,500 young bachelors now has 65,000 inhabitants (Kaple 1986, 733). In this case population growth has far outstripped development of city infrastructure. According to Dienes (1987, 170), only two-thirds of the population located in the central BAM zone is supplied with permanent housing; less than one-third have household services.

The same situation exists in the Far Eastern coastal zone, that is, a shortage of communal services, housing, and municipal infrastructure. Construction projections do not include the registered population that is at sea most of the time (Dienes 1987, 219).

A shortage of medical facilities also characterizes Soviet Asia. According to a unit of a RSFSR State Planning Committee, medical norms in Siberia and the Far East must be "increased by 30 to 40 percent to equal the level of medical services available in European USSR" (de Souza 1986, 711). The physician to population ratio is slightly less than that of the USSR as a whole (Table 3-2) Surprisingly, the ratio of hospital beds to the population in 1978 is somewhat better than the ratio for the country in general. In the central section of the BAM zone, only one-tenth of the population has access to a medical clinic and hospital space (Dienes 1987, 170).

Table 3-2. Physician-to-Population Ratio for 1978 (per 10,000 residents)

USSR	35.4
RSFSR	38.1
W. Siberia	34.3
E. Siberia	32.6

SOURCE: Extracted from "Health Service Indicators" de Souza 1986, 712.

Table 3-3. Ratio of Hospital Beds in 1978 (per 10,000 residents)

USSR	122
RSFSR	127
W. Siberia	134
E. Siberia	131

SOURCE: Extracted from "Health Service Indicators" de Souza 1986, 712.

Summary

As the population of Soviet Asia grows, urban settlement will also grow. Along with urban growth comes the development of infrastructure which will be used by the military in time of war. The lack of well developed infrastructure as exists in Soviet Asia today would not be cause for the Soviets to avoid a confrontation with China, but this deficiency certainly is a hindrance to better command and control. The Soviet armed forces would be more reliant on military resources than would forces committed in a NATO conflict. The registration of economic and other civilian resources by the Military Commissariats takes on even more significance in Soviet Asia.

INDUSTRY AND ENERGY

The Soviet prioritization of supply categories clearly points out the importance of industrial and associated energy resources as they pertain to wartime potential:

1. Missiles
2. Ammunition
3. Petroleum, oils, and lubricants (POL)
4. Weapons, equipment, and technical parts
5. Rations

6. Medical and non-technical supplies
7. Captured material

The Soviets' technological superiority in weapons and equipment is critical to a successful military engagement with China. The 54 million Soviets in Soviet Asia (or the entire 264 million national populace for that matter) are no match for the one billion Chinese. The Soviets must win with technology.

What industrial resources are reasonably accessible to the Far Eastern TVD? To answer this question it is important to address energy resources concurrently with industry as energy drives industrial operations. Energy resources in Siberia and the Far East accounted for a large percentage of the overall total energy produced in the Soviet Union in 1980.

Table 3-4. Siberian Resource Contributions in 1980 (percent of total for USSR)

Resource	Percent
Oil	42.5
Natural Gas	28.0
Coal	25.4
Hydroelectricity	3.3
Wood	0.6

SOURCE: Cole 1984, 168.

Estimates show that 80 percent of Soviet industry and nearly 80 percent of the energy requirements are found in European USSR while 90 percent of energy resources are east of the

Urals (Cole 1984, 165). West Siberia is the "primary energy colony of the USSR" as it produces one-half of all the country's fuel and accounts for all the increment in energy output (Dienes 1985, 150). Most of the output is shipped to the European USSR and abroad. This does not bode well for the Far Eastern TVD as the resource infrastructure linkages are with the West.

Only minor quantities of energy resources are processed and used in Soviet Asia. The Omsk refinery, one of the nation's largest, processes only 8 percent of West Siberia's crude oil (Dienes 1984, 198). There are few "downstream linkages" for natural gas extracted in West Siberia. Only 5-6 percent of the region's output is utilized within Siberia.

Most industries in Soviet Asia are extractive energy industries. Unprocessed materiels are transported out of the region in great quantities. The last two decades of Siberian development have been dedicated to producing raw materials for domestic and East European markets (Bradshaw 1987, 100-113). Although Siberia has an abundance of hydrocarbons, cheap energy and water, the refineries and chemical plants are located in the European regions. Pipelines move crude oil and natural gas west. Siberian investment has been restricted to resource extraction with only a limited amount of primary processing and energy-intensive heavy industries.

Despite the rich natural resources of Soviet Asia, it appears that the Far Eastern TVD would not be well serviced in time of war. Looking at the four main energy resources: oil, natural gas, coal, and electricity, it is possible to summarize the availability of each resource to the Far Eastern TVD by Military District or wartime front (Figure 22).

The Tyumen oil and gas fields of West Siberia are the most productive in the USSR. As has been pointed out, these fields primarily service European Russia. Only one main oil pipeline extends from this region to the east. The pipeline generally runs from Surgut (almost the center of the oil and gas region) through Krasnoyarsk and Achinsk, terminating in Irkutsk (headquarters for the Far Eastern TVD). This same pipeline has a second branch through Novosibirsk and Omsk near the Urals. Nonetheless there is only one oil pipeline that actually services the *heart* of the Far Eastern TVD. One oil refinery exists in the Siberian MD at Achinsk while one refinery exists in the Transbaikal MD at Angarsk which is just north of Irkutsk. There is a source of oil for the Far East MD via Sakhalin with a pipeline from Okha on the northern tip of the island extending as far south as the city of Komsomol'sk. Oil refineries are found at Komsomol'sk and Khabarovsk (headquarters for the Far Eastern MD). The Transbaikal MD has poor access in terms of supporting a military operation into northeastern China. Chita, the Military District's headquarters, is about 1,630

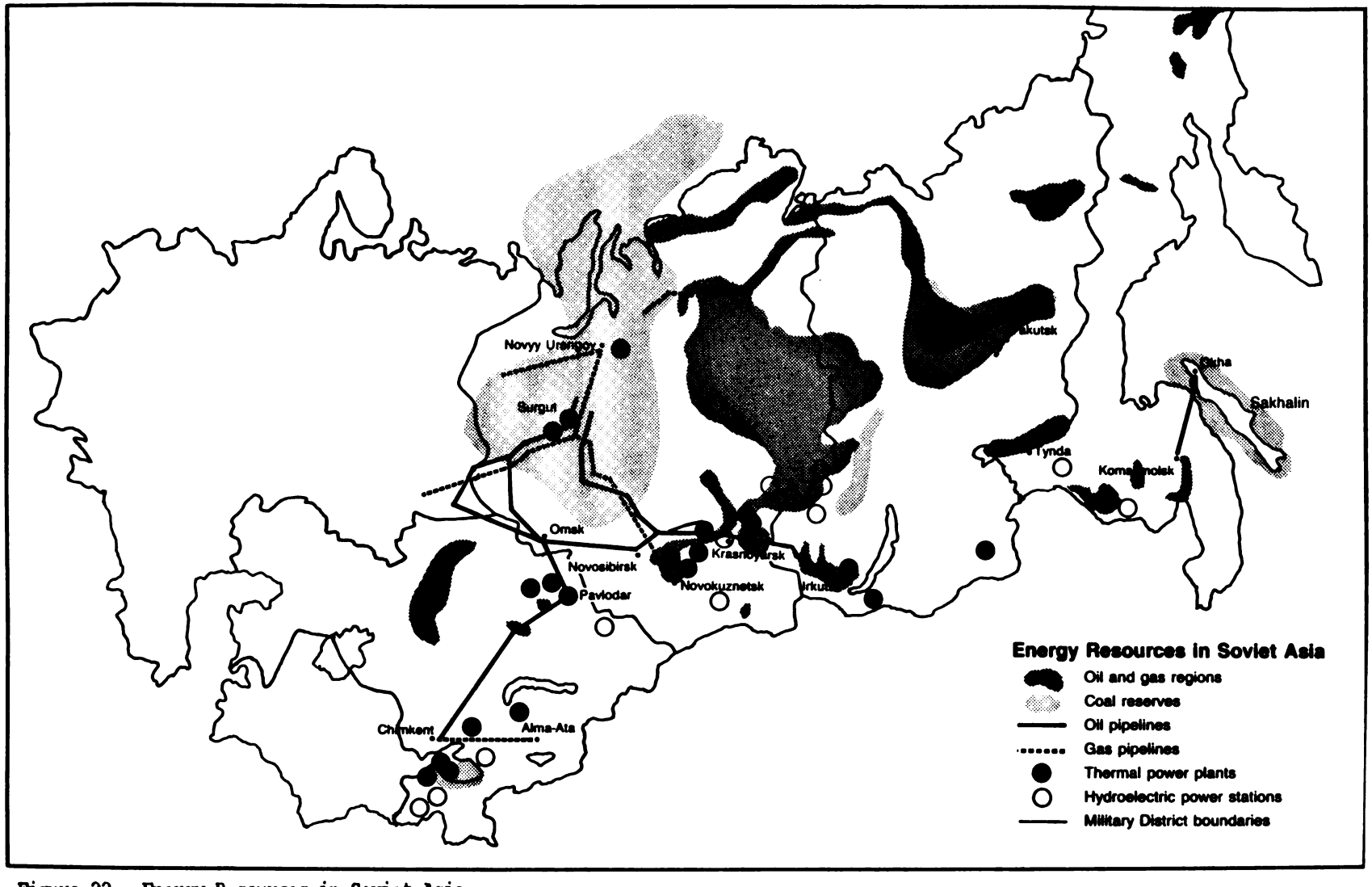

Figure 22. Energy Resources in Soviet Asia
SOURCE: Extracted from Central Intelligence Agency 1985.

kilometers west from Komsomol'sk and approximately 1,480 kilometers south of the Yakutsk oil and gas region. The closest link is Irkutsk which is about 630 kilometers to the west across Lake Baikal. The Central Asian MD would have to access the north-south oil pipeline from Omsk through Pavlodar and terminating in Chimkent in southern Kazakhstan. Pavlodar is approximately 770 kilometers west of the Soviet-PRC border at the origin of the Irtysh avenue of approach (a main invasion route). Refineries are located at both Pavlodar and Chimkent. In summary, the Far Eastern TVD's access to oil is extremely limited and vulnerable should any of the three pipelines or six refineries be damaged by war.

There are even fewer gas pipelines servicing Soviet Asia. One line extends south from Nizhnevartovsk (from the center of the West Siberian oil and gas fields) to Novokuznetsk which is approximately 1,200 kilometers west of Irkutsk. The only gas pipeline in the east is in the northern Yakutsk oil and gas region which is almost 1,500 kilometers from the border. A pipeline runs west-east in Central Asis (from Chimkent to Alma-Ata). Alma-Ata is the headquarters for the Central Asian MD which means that this district has the best access. Unfortunately the main attack forces would be in the more northern part of the district, once again exacerbating support.

Siberia and the Far East contain the USSR's largest coal resources (Table 3-5) with nearly 75 percent of the explored coal reserves.

Table 3-5. Coal Resources.

	Geological Resources	Economically Exploitable Reserves*	
		Probable/ Possible	Explored
Total USSR	6,806	5,609	281
European USSR (including Urals)	473	218	76
Kazakhstan	170	121	25
Hard coal	65	37	16
Lignite	105	84	9
Ekibastuz basin	10	7	7
Karaganda basin	45	25	NA
Turgay basin	51	48	6
Central Asia	44	38	4
Hard coal	37	33	1
Lignite	7	5	3
Siberia and Far East	6,119	5,232	176
Hard coal	4,169	3,574	88
Lignite	1,950	1,658	88
Irkutsk basin	77	33	7
Kansk-Achinsk basin	638	484	75
Kuznetsk basin	637	548	66
Lena basin	1,647	1,539	4
South Yakutia basin	44	40	4
Tunguska basin	2,299	1,967	2

*With present technology.
** Includes anthracite and bituminous coal.

SOURCE: Central Intelligence Agency 1985, 35.

Kuznetsk and Kansk-Achinsk are the two largest explored basins with Kuznetsk being the Soviet's second-largest producer--after Donets in European USSR--of both steam and coking coal. The Kansk-Achinsk basin, astride the Trans-Siberian Railroad, contains huge lignite (or brown coal

which is one-half as valuable in thermal terms as hard coal) reserves. The Kansk-Achinsk could become the nations's largest coal-producing area by the year 2000. Central Asia has two basins located in Kazakhstan--Ekibastuz and Karaganda. Coal resources are relatively abundant along the USSR-PRC border in the Transbaikal and Far Eastern MD areas although many of them are lignite reserves. The Tunguska basin, having the largest geological coal resources, is located in the Siberian MD and the Lena basin located in the Transbaikal MD are yet unexplored will probably not be of any commercial or military significance in the near future. (Central Intelligence Agency 1985, 35) With abundant coal resources, the Far Eastern TVD might be able to compensate for a severe lack of oil and gas. There are nine operational thermal power plants in Soviet Asia and five under construction. Six of the fourteen are found in the Siberian MD while five are located in the Central Asian MD. The remaining three are located in the Transbaikal MD leaving none in the Far Eastern MD. The Far Eastern MD's two oil refineries and one pipeline take on even more importance with the lack of thermal power plants despite the abundant lignite reserves in the area.

Hydroelectric power stations are allocated in a similar manner in that the majority of them are located in west of Lake Baikal. Of the six power stations in operation, two are in the Siberian MD (on the Yenisey River) and two are in Transbaikal (on the Angara River). The Angara-Yenisey basin

contains one-fourth of the country's total hydroelectric resources. Although East Siberia produces enormous amounts of electricity per inhabitant little can be transmitted to deficient areas (Cole 1984, 190). One operational plant on the Zeya River falls within the domain of the Far Eastern MD. Electric production per inhabitant in Central Asia is "well below the Soviet average" (Cole 1984, 190). One operational hydroelectric power station exists in Tadjikistan on the Vakhsh River. A second station is under construction on the Naryn River in Kirgizia. Three additional stations are under construction in the rest of Soviet Asia: one in the Far Eastern MD, one in the Siberian MD, and one along the Irtysh River in Kazakhstan (Central Intelligence Agency 1985, 50).

In summary, the Far Eastern MD would be the most reliant on hydroelectric power for wartime industries due to the lack of thermal power stations. Siberia and Transbaikal are well served by both thermal and hydroelectric power. Central Asia, more reliant on thermal power, will continue to have little hydroelectric power as hydrological sources are few in this dry climate region.

Although energy resources are critical to wartime materials production and sustainment of base operations, there are other industries which should be addressed. Table 3-6 below indicates the general structure of industries in Soviet Asia.

Table 3-6. The Structure of Industry in Siberia and Kazakhstan (in percent of gross output for 1975)

Industrial branch	West Siberia	East Siberia	Far East	Kazakhstan
Fuel industries	23.70	16.86	7.74	7.8
Electric power	3.60	7.69	2.77	4.2
Iron and steel	5.20	0.95	0.95	16.2
Nonferrous metals	1.90	17.66	10.37	
Chemical industries	9.40	4.63	1.22	4.0*
Wood products, pulp and paper	4.70	13.81	11.63	4.9**
Building materials	3.50	5.01	7.25	5.7
Machine-building	28.20	16.20	21.88	14.4
Light industries	8.60	11.53	5.29	17.1
Food industries (includes fishing and fish processing)	14.80	13.35	33.67	25.7
All industries	100	100	100	100

*Includes petrochemicals
**Somewhat inflated share

SOURCE: Extracted from "The Structure of Industry in Siberia, Kazakhstan, USSR and the European Soviet Union" Dienes 1982, 232.

Dienes adequately summarizes the industrial structure of this region (1982, 233-4):

> [The data] shows the dominance of basic resource and first-stage processing industries (fuel-energy, iron and steel, and nonferrous metals, wood processing and heavy chemicals), though in rather different combinations, in each of the [regions]. The fuel industries are particularly strong in West Siberia [while] nonferrous metals [are strong] in East Siberia, the Far East and Kazakhstan .... Relative to the Soviet average or the European regions, the forest product and wood processing branches are prominent east of the Yenisey [while it is] the food industries in Kazakhstan and the Far East, where fishing account for about a fifth of the region's industrial output and a third of the entire Soviet fish catch. Labor intensive light industries are poorly represented everywhere despite growing shares, as is machine-building, except in West Siberia. [Although] most machinery manufactured in West Siberia is heavy engineering and agricultural implements [manufactured] in plants built

> several decades ago, obsolete even by Soviet standards. ...even the first resource processing stages of manufacturing, such as iron and steel, petroleum refining and chemicals are rather poorly developed.

Analyzing mostly nominal data makes an overall summary of the energy-industry resources in Soviet Asia not only difficult but very subjective. Regardless of this drawback it is a beginning in terms of determining military capabilities. Using a very simple and subjective weighting system, the four military districts are rated from best to worst regarding energy-industry resources: Siberian MD, Central Asian MD, Transbaikal MD, and lastly the Far Eastern MD. The categories and ratings are provided in Appendix B. In general, the Far Eastern TVD is deficient in these critical resources and based on the aforementioned rating of military districts, the theater is deficient in its main wartime fronts, that is, Transbaikal and the Far East. The Siberian MD is the most well endowed yet it has a secondary objective for a hypothetical invasion of China. Resources in the Siberian MD will have to be transported over great distances to support operations in the east as well as its own operations in the south through Mongolia. The mountainous terrain between Siberia and Mongolia will make logistics support extremely difficult.

TRANSPORTATION AND COMMUNICATION

This section looks at transportation and communication as wartime lines of communication. What transportation systems are in place and how can they be used to support

wartime operations? Is the existing transportation network adequate for supporting a hypothetical invasion of China? Transportation and communication consists of the following transport means: railway, road, waterways, air, and pipeline. The transportation infrastructure for Soviet Asia is briefly described and then followed by a list of what would appear to be critical wartime LOCs regarding a hypothetical invasion of China.

The following general description of the transportation and communication network in Soviet Asia is based primarily on material extracted from "The Communications Infrastructure" by Victor L. Mote (1987). Refer to Figure 23.

Rail Transport

Railroads continue to be the most important transportation mode in the Soviet Union as a whole and particularly in Soviet Asia. In some parts of Siberia, the railway is the only form of transport. Eight major railways serve Soviet Asia. The longest and most famous is the Trans-Siberian Railroad which extends for some 6,600 kilometers (4,150 miles) between Sverdlovsk and Vladivostok. It is the only transportation artery, except for aviation routes, that connects the east and west coasts of the USSR. The Trans-Siberian Railroad is double-tracked and is continuously electrified from Moscow to just east of Lake Baikal. The last link of track between Chita and

Figure 23. Transportation and Communication Routes
SOURCE: Central Intelligence Agency

Vladivostok should be electrified by 1990.

Another, but less important, east-west link is the South Siberian Railroad which extends through portions of Kazakhstan (through the Ekibastuz coal basin) to the river junctions at Pavlodar (on the Irtysh River) to Barnaul (on the Ob), and across to the iron and steel metallurgy at Novokuznetsk in the Kuzbas. From here the railroad continues on and terminates at Taishet on the Trans-Siberian. The South Siberian is electrified except for the 500 kilometer stretch between Ekibastuz and Barnaul.

A third east-west link is the Central Siberian Railroad which spans 1,500-2,000 kilometers between Talmenka and Chelyabinsk. The eastern half of the line should be electrified and double-tracked by 1990. Double-tracking exists only on the segment in the west that links the Trans-Siberian with the South Siberian.

The fourth major east-west railway is the BAM of which the track-laying was just completed in 1984. The railway is not expected to be fully operational until 1990. Only about 800 kilometers (25 percent) of the line is fully operational in terms of the range and weight of cargoes and train velocities. Another 1,650 kilometers has been designated as service track; therefore, three-fourths of the mainline can be used. The railroad covers some 3,145 kilometers (2,000 miles) (Kaple 1986, 716). Construction problems exist with the 15.3 kilometer Severo-Muyskiy tunnel in Buryat ASSR which may not be completed for another three years. The

first 28 kilometer temporary bypass loop has not been adequate so a second 52 kilometer bypass with a less severe gradient is being constructed (Asia Yearbook 1988, 234). The BAM links the town of Lena, neat Ust-Kut on the Lena River, with Komsomol'sk and runs anywhere from 200 to 500 kilometers north of the Trans-Siberian (Cole 1984, 311). The BAM is expected to remain a single-track line for the foreseeable future (Dienes 1987, 217).

The last four railways to be mentioned here are north-south spurs which have traditionally served as "feeders for resource and energy development" (p. 46): The Turksib Railroad, the Kuzbas Railway, the Tyumen-Surgut-Urengoi Railway (TSUR), and the Little BAM. The Turksib Railroad connects Siberia with Kazakhstan and Central Asia and is double-tracked from its starting point at Novosibirsk to Semipalatinsk. The Turksib links the Trans-Siberian with the Central Siberian at Talmenka and the South Siberian at Barnaul. The Kuzbas is completely double-tracked and electrified. It runs from Yurga on the Trans-Siberian to Tashtogol. The TSUR is 1,260 kilometers in length and is single-track. The line currently extends from Tyumen north to Urengoi but may eventually reach Norilsk in the far north. The last north-south line of importance is the 399 kilometer, single-track Little BAM which extends from Berkakit in the Yakut ASSR to the Trans-Siberian in the south (Asia Yearbook 1988, 234). The Little BAM is projected to be extended to Yakutsk.

What of transportation routes in Mongolia? Salisbury (1969, 151-2) briefly describes transportation in Outer Mongolia from a military perspective in *War Between Russia and China*. He mentions the Trans-Mongol Railroad which he claims "was no accident." The railroad runs south from Irkutsk and Ulan-Ude and "forms the core for the Soviet military dispositions in Mongolia" (Figure 24). From Ulaanbaator the railroad continues south to the Chinese border at Erenhot. The Trans-Mongol is a broad gauge line while the adjoining Chinese line is narrow gauge. This too is no accident. According to Salisbury Soviet missiles have been installed in location not far from the rail right-of-way in southern Mongolia. An east branch of the Trans-Mongol projects into Manchuria across the Khalkin-gol River where a branch from the Trans-Siberian breaks off from the old Russian link to the Chinese Eastern Railroad from Chita. The Soviets have another major area of military concentration in this area.

Road Transport

There is no complete interregional highway across the USSR and the only way to cross Siberia on land is via the Trans-Siberian Railroad. Soviet highways are ranked among the worst in the world; only about half of them are "hard-surfaced." A large percentage of the hard-surfaced roads are gravel roads. "Hard-surfaced highways are eight times

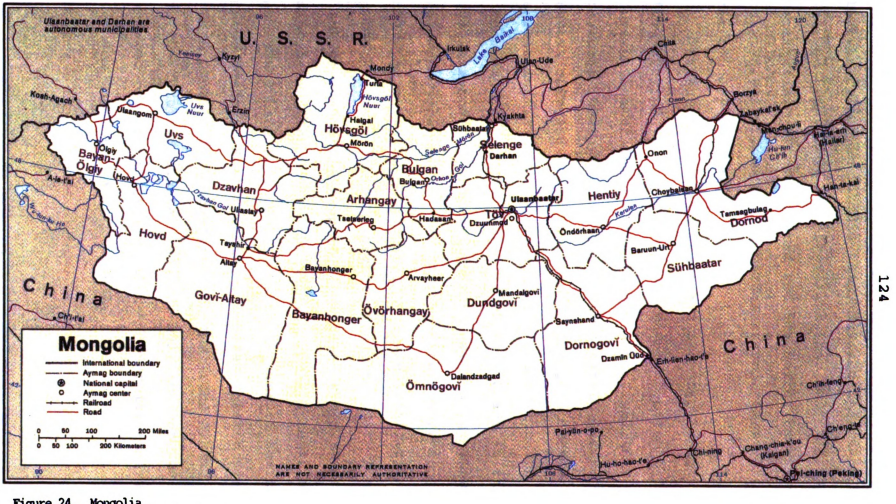

Figure 24. Mongolia
SOURCE: Central Intelligence Agency

less prevalent in Siberia than they are in Soviet Europe and two and two-thirds less prevalent than they are in Kazakhstan. All of Siberia and the Soviet Far East may have only 25,000 kilometers of hard-surfaced roads--3 percent of the country's total."

Asphalt and gravel roads are poor resulting in a high frequency of vehicle breakdowns and a 15 percent higher consumption of fuel. Siberia has a critical lack of repair garages. Most Siberian paved roads cannot accommodate trucks carrying over four tons of freight. Truck transport serves mostly local transportation needs with the average truck haul being about 20 kilometers. Roads in the BAM zone are unimproved and travel on them may average speeds of 30 kilometers per hour. "As of 1983, there were no gas stations over the entire length of the temporary road network within the BAM service area" (p. 64). A serious lack of automobile support facilities exists throughout Siberia and the Soviet Far East. "In 1982 there were 600 gas stations and 109 repair garages. One of the better motor roads in East Siberia, the Never-Yakutsk Highway, which runs 1,177 kilometers from the Trans-Siberian Railroad to the Yakutian capital, has had only ten service stations and one repair garage (in Yakutsk) over its entire length for the last ten years" (p. 64).

Table 3-7. Road Distances in Soviet Asia.

Republic	Roads (km in 1000s)	Roads (per km²)
USSR	1424	.06
RSFSR	843	.05
Siberia and the Far East	48	.015
Kazakh	97	.04
Kirgiz	22	.11
Tadzhik	13	.09

SOURCE: Extracted from "Ratio of Automobiles to Roadways (1977) Mote 1987, 62.

Table 3-8. Service Stations and Repair Garages in Siberia and the Soviet Far East (1982)

	1976		1982	
Province	Stations	Garages	Stations	Garages
Kurgan oblast	30	2	30	4
Altai krai	73	5	78	12
Kemerovo oblast	27	7	30	12
Novosibirsk oblast	42	3	46	12
Omsk oblast	38	1	41	2
Tomsk oblast	14	1	15	3
Tyumen oblast	26	3	27	3
Krasnoyarsk krai	67	7	70	14
Irkutsk oblast	40	4	40	10
Chita oblast	35	2	40	5
Buryat ASSR	29	3	29	4
Tuva ASSR	13	1	13	2
Maritime krai	28	5	32	9
Khabarovsk krai	14	2	17	7
Amur oblast	24	1	26	2
Kamchatka oblast	4	1	4	2
Magadan oblast	19	2	19	2
Sakhalin oblast	5	1	6	2
Yakutsk ASSR	38	1	38	3
Total	566	52	600	109

SOURCE: Mote 1987, 63.

Waterways

In some areas of Soviet Asia rivers are used for navigation during the short summers and as winter roads once frozen. Inland waterways are an alternative to railways and are less expensive than truck and air transport. Waterway shipping costs are seven to ten times lower than truck transport and fifteen to seventeen times cheaper than air freight. A main disadvantage of river transport is the predominately north-south running rivers and east-west trade axes. These rivers tend to be shallow (2 or 3 meters/6 to 9 feet) in the areas of high economic intensity and have highly irregular rates of seasonal flow. Flooding is common along the Amur, Bureya, and Zeya rivers. Most rivers and their tributaries also require constant dredging.

Waterways servicing Soviet Asia can be grouped as follows: the Ob-Irtysh Basin, the Yenisey Basin, the Lena River and BAM waterway, the Amur Basin, and the Northern Sea Route. Table 3-9 below provides a brief summary of the major rivers in Soviet Asia and important "port" cities on each. Rail junctions are also shown to identify the importance of the city as a transportation (and possible LOC) center.

Table 3-9. Multi-modal Transportation Centers in Soviet Asia

River	Military District	Port Cities	Rail Junctions	Airport
Ob	Siberian	Salekhard		
		Surgut	TSUR	
			*North Siberian	
		Nizhnevartovsk		
		Tomsk	Trans-Siberian	
		Novosibirsk	Trans-Siberian	Main
			Turksib	
		Barnaul	South Siberian	
			Turksib	
Irtysh	Siberian	Tobol'sk		
		Omsk	Trans-Siberian	Main
	Central Asian	Pavlodar	South Siberian	
		Semipalatinsk	Turksib	
Yenisey	Siberian	Norilsk		Secondary
		Igarka		
		Krasnoyarsk	Trans-Siberian	Secondary
			*North Siberian	
		Lesosibirsk		
		Abakan	South Siberian	
Angara	Transbaikal	Ust-Ilimsk		
		Bratsk	BAM	
		Irkutsk	Trans-Siberian	Main
Lena	Transbaikal	Yakutsk		Secondary
		Lensk		
		Ust-kut	BAM	
Aldan	Transbaikal	Aldan		
Amur	Far East	Blagovshchensk	Trans-Siberian	
		Khabarovsk	Trans-Siberian	Main
		Komsomol'sk	Trans-Siberian	
				BAM
Ussuri	Far East	Bikin	Trans-Siberian	

*Planned railway, not yet constructed

The northern sea route, which fringes the arctic coast, is 2,800 kilometers (1,750 miles) long and connects Murmansk

(on the Kola Peninsula) with Pacific ports. The route can generally be navigated from late June to late October. The Ob River is probably the most developed inland waterway in Soviet Asia. Two steamship authorities administer the Ob Basin and as is shown in Table 3-7. there are numerous port cities located on key railroads. The Yenisey River carries freight from Krasnoyarsk and Lesosibirsk to Norilsk and Igarka. Ocean ships can navigate up to 600 kilometers upstream from the mouth of the Yenisey. Conversely, the Lena River is completely navigable to its mouth and main port of Tiksi for at least 60 to 65 days. The Aldan, a tributary of the Lena is navigable for only 10 to 12 days out of the year because of excessive shoaling. The BAM region waterways are relatively unnavigable. The Amur River is the fourth largest river in Siberia and the Far East. It is navigable all the way to Chita and Nerchinski Zavod (on the Argun) for 4,000 kilometers (2,500 miles). "The 1,500 kilometer segment between Blagoveshchensk and Nikolayevsk-na-Amure accounts for the bulk of the shipping" (p. 59). The Ussuri is navigable almost to Lake Khanka.

Air Transport

Because of the limited and over-capacity use of the existing ground transportation systems, air transport is heavily used in Siberia despite its high costs. According to Mote most small Siberian communities have air strips for regular passenger and mail service; villages and towns are linked by mail planes and helicopters. "Soviet heavy cargo

aircraft of the Antonov class (An-12, AN-28, AN-72) fly up to 700 kilometers per hour and carry up to 45 tons of freight. Where terrain is too rough or too boggy (Yakutia and northeast Siberia, West Siberian swamps, and parts of the BAM service area), heavy-duty cargo and passenger helicopters of the Mil series (MI-4, MI-6, MI-8) are used" (p. 64). The main airports are listed in Table 3-9.

Pipeline Transport

Pipeline transport is the "most rapidly growing sector of the transport economy." Pipeline transport of oil and gas is not discussed here. Refer back to the section of energy and industry.

Other Communications

Communications infrastructure also includes telephones and radio telecommunications. Finding information in the literature has been unsuccessful just as Mote found. Mote did find that the USSR was reported to have a ratio of 89 telephones per 1,000 persons in 1981 and he assumes the ratio is even lower in Soviet Asia. On the other hand, radio and television communications fare better. According to Mote urban settlements in Siberia usually had television reception within two years of establishment of the city (two channels minimum). The Soviet Union supposedly has a ratio of over 300 televisions per 1,000 persons.

Summary

What can be said of the overall transportation and communications network in Soviet Asia? It has severe limitations regarding logistics support of combat operations into China. The Soviets obviously recognize the limitations and therefore practice heavy pre-stocking of war supplies along major rail routes. Pre-positioned stockpiles in theaters opposite NATO can "support many weeks of operations" (Turbiville 1988, 47). The amount of prepositioned materials in the Far Eastern TVD is unknown although it is estimated that one-fifth of all war materiel of the theater is positioned along the BAM (Dienes 1985, 171). Turbiville (1988, 45) has recently published several analyses of Soviet logistics doctrine. He points out the Soviets' use of integrated transport for strategic movements.

> Rail will remain a critically important means of strategic movement in many circumstances and the continuing growth and capability of military transport aviation is significant in terms of transporting tailored motorized rifle or airborne light armored forces. Additionally, the potential of inland waterways and the water movement of forces along maritime axes is not significant from the Soviet planners' perspective.

This quote adequately sums up the transportation network for Soviet Asia. Railroads are the only means by which men, equipment, and materiels can be effectively moved across Siberia to the Pacific coast. Railroads are the only lateral routes and are the *backbone* of the transportation

system since there is no complementary road system. Unfortunately, railroads and their associated facilities are highly vulnerable to enemy attack, particularly to sabotage and guerrilla operations (an area in which the Chinese are extremely capable). Three bridges over 400 meters long and two tunnels, over 6 and 14 kilometers long, along the BAM would be vulnerable to missiles although Dienes (1985, 171) argues against the often exaggerated vulnerability of the BAM in a conflict with China. He believes the Soviet air defense to be capable of defending the line against air attacks and that the Chinese missile systems are incapable of pinpoint accuracy.

Roads are almost nonexistent and the ones that are available are of such poor quality that they are of little use from a strategic perspective. Routes in the combat zone usually need meet only minimum standards, but those in rear areas must be well surfaced and capable of carrying heavy traffic without excessive maintenance (Department of Army 1972, 5-1). This is not the case in the intended area of operations. Roads will be used as north-south links from the railroads to unit assembly areas and rear service areas. Logistics movement along these roads will be slow and assuming they remain unimproved they will most certainly increase maintenance requirements. The inland waterways are run mostly north-south and navigation is generally restricted. Air transport will rely on a good air defense umbrella which the Soviets should be able to provide. There

are so few oil and gas pipelines that they appear inconsequential, but the Soviets will want to secure these from attack as there are so few transportation alternatives. The lack of a good logistics transportation network in Soviet Asia serves as the biggest impediment to any prolonged confrontation with China. No matter how much ammunition, parts, POL, etc., is available locally, if it cannot be moved to the frontlines, it is worthless.

AGRICULTURAL RESOURCES

Although the supply of rations to troops is fifth on priority list of seven supply categories (Erickson, Hansen, Schneider 1986, 124), it is important to determine the Far Eastern TVD's regional agricultural resource base. The Soviets tend to emphasize "living off the land" more than many Western military commands who place a higher priority on ration supply. Nonetheless, this section presents a general look at agricultural resources and potential combat sustainability.

According to Leslie Dienes (1982, 205-7), only 2.34 percent of Siberia is arable and no more than 5.1 percent is agriculturally utilizable in any way. East of the Yenisey River the only large stretch of arable land is found in the Amur and Ussuri valleys (Figure 25). Siberia as a whole cannot feed itself. Of Siberia's subregions, only the Altai Krai and Omsk Oblast produce an agricultural surplus. The same situation exists in Kazakhstan and Central Asia despite

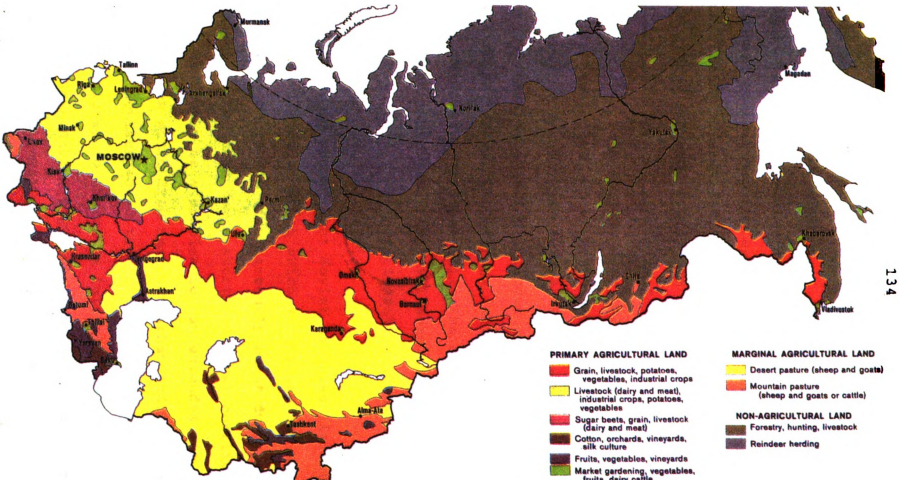

Figure 25. Land Use
SOURCE: Central Intelligence Agency

a large rural population employed in agriculture, that is, small amounts of good arable land and a region not self-sufficient in food production. Industrial crop production and little Soviet capital investment in food and light industry contributed to Central Asia's lack of food self-sufficiency (Dienes 1987, 125).

Three thousand collective and state farms cultivate 30 million hectares of arable land in Siberia and the Far East (Figure 26) This acreage does not account for the total agricultural area. Over 2,500 farms worked 35.7 million hectares of arable land in 1984 in Kazakhstan. The total agricultural area (which includes grazing land) is over 190 million hectares. The average farm in Siberia and the Far East comprises 7 villages while the average farm in Kazakhstan comprises 8 to 9 villages. These villages tend to be quite small, that is, less than 1000 inhabitants (Dienes 1987, 181 and 185).

It would appear that Soviet Asia has limited agricultural resources on which a civilian and military population could not simultaneously exist during war. This may not be the case for a short (20 days) conflict, but would obviously be a problem for an extended war. Mobilization would draw men from urban and rural activities. Since the Soviets would try to limit the number of Central Asians assigned to the units initially committed to combat, the surplus non-Slav population could be used to fill the gaps in agricultural production in Siberia and the Far East.

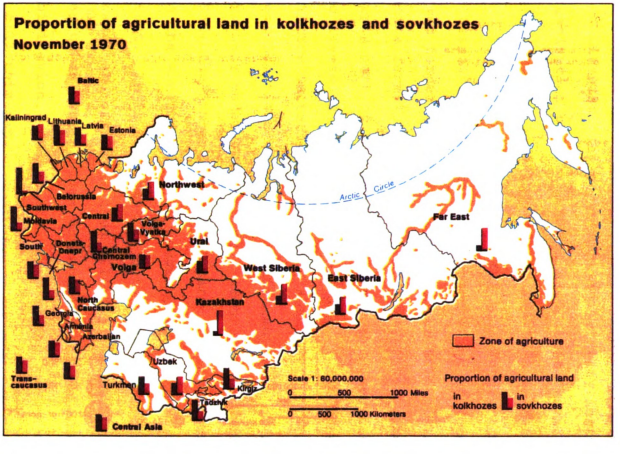

Figure 26. Proportion of Agricultural Land in Kolkhozes and Sovkhozes (November 1970)
SOURCE: Central Intelligence Agency 1974.

Very little of the food producing agriculture is mechanized in Soviet Asia. Most agricultural production would continue to rely on manual labor. Equipment maintenance and parts supply, which is already deficient, would not improve.

Likewise, the government has already instituted an organization of military-operated state farms throughout Central Asia, Siberia, and the Far East to meet peacetime food requirements. The Central Food Supply Administration is responsible for ensuring procurement of food for the armed forces and for supervising the military sovkhozes (state farms) (Scott and Scott 1984, 257). These farms supply part of the food requirements -- vegetables, grain, and livestock. The number and size of the farms is a military secret although it is not difficult to estimate their locations based on the limited areas of arable land currently under cultivation. According to Scott and Scott (1984) the number of the military sovkhozes has increased and the armed forces are becoming more dependent on their output. It is important to note that many of the farm workers are civilian, thus allowing for continued production despite an initial loss of the military workers during mobilization. Once again, the Central Asians could be used to fill this gap.

The state farms already in operation and dedicated to the military has significant wartime implications. Added to this is the fact that most of the arable land in Soviet Asia is found in the border areas thus providing for a quicker

resupply of troop rations. Soviet Asia's overall agricultural resources may be limited when compared to European Russia, but what arable lands exist are in locations favorable for wartime resupply.

CHAPTER FOUR

CONCLUSIONS

Strategic Logistics Doctrine

A Soviet division will normally carry 3 to 5 days worth of supplies into combat. This means that even for a short, war (15-20 days), theater rear services must be prepared to resupply units for a minimum of an additional two weeks. This should not be a problem since the Far Eastern TVD has traditionally maintained large quantities of war supplies on hand. They recognize the limitations imposed by the long lines of communication to the production facilities in the European Soviet Union and the apparent shortage of production facilities in Soviet Asia itself (Department of Defense 1988, 91).

According to the 1988 issue of *Soviet Military Power*, the current ammunition stocks in Soviet Asia could support combat operations for more than 100 days. Additionally, the Air Force has stockpiled large quantities of fuel, air weapons, and spare parts at main operating bases to "facilitate the logistics independence of Soviet combat aviation during the initial period of a conflict."

In addition to prestocking supplies, the Soviets are also constructing hardened command posts and communications

facilities as part of their peacetime war preparations (Turbiville 1988, 44). The armed forces rear service support system continues to maintain the ability to mobilize large transport and other resources from the national economy with which they will establish a logistic support base (Turbiville 1988,73).

Current Soviet logistics doctrine is aimed at sustaining protracted conventional wars, and efforts to this effect are readily apparent in Eastern Europe. Storage facilities are being improved. Ancillary support measures such as computer management, prepackaging and containerization, mobile repair shops, pipe-laying vehicles, and materiel handling equipment, are being refined. Warsaw Pact transportation routes are being upgraded (Department of Defense 1988, 91). Although the Soviets place tremendous emphasis on peacetime preparation for war, the support structure in place in Europe is unique. Soviet Asia is sorely lacking in a good many logistics requirements, except for the prepositioned stockpiles. A 100 day supply of ammunition will not win a war. It is only one small, albeit important, piece of the pie.

Rear Services in Soviet Asia

Where will the strategic supply lines originate and what distances will they cover? Front main supply bases are generally located near major LOCs (in this case railroads) about 150 to 200 kilometers behind army rear boundaries. A quick look at a map clearly shows that even at the outset of

hostilities the more well developed urban areas that will most likely serve as logistics bases are in poor locations. Most sites are either too far or too close to the border. Table 4-1 gives an example of some possible logistic base sites and their associated rear service support distances. The cities shown have been selected based on their strategic location within the anticipated wartime front area of operations. The avenues of approach and front objectives identified in Chapter Two served as guidelines. These cities are only potential base sites which are large enough to have relatively well developed urban infrastructures (for Soviet Asia) and are located on major rail lines of communication.

Table 4-1. Potential Far Eastern TVD Rear Service Areas

Military District (Front)	Logistic Base (Possible)	Support Location	Distance (km-straight line)
Far Eastern	Khabarovsk	Leninskoye	200
		Bikin	200
		Blagoveshchensk	600
		border	50
		Harbin	700
	Blagoveshchensk	border	0
	Ussuriysk	border	75-175
		Harbin	490
		Changchun	530
		Shenyang	730
Transbaikal	Chita	border (Manzhouli)	400
		Choybalsan	450
		Qiqihar	900
		Harbin	1200
		Changchun	1250
		Shenyang	1380
	Choybalsan, MPR	border	100
		Changchun	960
	Ulaanbaator	Beijing	1200

Table 4-1 (cont'd)

Siberian	Ulaanbaator	Baotou	870
		Hohhot	890
Central Asian	Ust-Kamenogorsk	Urumqi	800
	Alma-Ata	Urumqi	870

The Far Eastern Front logistics bases are generally vulnerable to attack because of their location close to the border. Distances to front objectives are not so great as to restrict support to frontline units. (A front objective doctrinally falls between 600 and 800 kilometers in depth). The Transbaikal Front would likely establish rear service bases in Mongolia in order to support the majority of its armies attacking east into Manchuria. The army attacking on the Manzhouli avenue is the closest to Chita and even then it is 400 kilometers away, twice the doctrinal support distance. The main front objectives of Beijing, Shenyang, and Changchun are all at least 1,200 kilometers in distance. In addition to lengthy support distances, this front would have to contend early on with the vulnerability of the open desert plateaus in establishing support bases followed by maneuvers through the Grand Khingan Mountains.

The Siberian Front will have the most tenuous supply lines. Assuming the command can be relocated out of West Siberia and into Mongolia before the initiation of hostilities, the Sayan and Altai Mountains along the border with Mongolia will not be an impediment. Ulaanbaator then becomes critical to the logistics network supporting this

front's attack into Inner Mongolia. Once again the desert plateaus provide little cover and the LOCs will stretch over 800 kilometers. The Central Asian Front has an extremely poor choice of LOCs with the majority of the transportation infrastructure oriented north-south. Although both Ust-Kamenogorsk and Alma-Ata are relatively close to the border, 300 kilometers each, the lateral (east-west) linkages are poor.

In general, Soviet options for establishing a viable logistics network are severely limited based on distances from the well established peacetime command and control centers such as Khabarovsk, Chita, and Alma-Ata, to the border with China.

Conclusions

What are the Soviet's strengths and weaknesses? What is the Soviet threat to China? Chapter One clearly shows a Soviet advantage in men and equipment. There are more Soviet divisions poised on the border, and they are much better equipped than the People's Liberation Army. The Soviets appear to be more combat ready as the Chinese struggle through a significant period of military reform.

Is it then safe to say that the Soviet's are indeed a formidable and indefeatable opponent for the Chinese? No. This study has been predicated on the fact that too often the threat assessments upon which national strategies are formed fail to take into account the other half of the pie. Counting men and equipment is only the beginning and may

serve as the starting point or "line of departure." Men and equipment that are initially committed to battle will not win a war if they cannot be sustained long enough to accomplish the mission. This is probably no surprise. But, what most people fail to consider when assessing the military strength and capabilities of a potential enemy is the logistics or rear service component of the existing theater of war. This is a critical aspect of the geography of war which should not be overlooked in peacetime. As the Soviets and NATO allies negotiate ratios of combat aircraft, tanks, and artillery, the continued emphasis on the Soviet's peacetime preparation for war -- prestocking of supplies, hardening command post facilities, improving lines of communication, should not be ignored or discounted.

Combining the count of men and equipment with an assessment of development in Soviet Asia, it is possible to more accurately determine and substantiate the Soviet threat to China. Chapter Three points out Soviet strengths and weaknesses regarding a potential theater wartime support structure. The weaknesses are easily identified. Table 4-2 is a quick summation of the findings.

Table 4-2. The Pluses and Minuses of Development in Soviet Asia

Resource Category	Rating
Manpower	+
Urbanization	-
Industry-Energy	-
Transportation	-
Agriculture	+

Three of the five resource categories do not favor Far Eastern TVD combat support operations. Manpower for mobilization is available as are agricultural resources which may not be the best in the country but are well established and favorably located to support military operations. From here on the situation deteriorates. The energy and associated industries infrastructure is almost exclusively oriented and dedicated to the European USSR. Likewise, the transportation and communication network flows west and promotes the flow of materials in the same direction. It is the transportation and communication system that most significantly impedes the Soviet's ability to conduct military operations into China. Urbanization, or urban infrastructure, is not any better. Compared to the theaters of Eastern Europe, the urban resources in Soviet Asia are severely lacking. Urban development is not keeping pace with the influx of civilian population, and war will only magnify the existing deficiencies.

The Soviet's status as a world power continues to be based on its military strength. Some analysts seem quick to say that the Soviets represent a considerable threat to the Chinese while others are convinced that the Far Eastern TVD is a strategic defensive force incapable of successfully invading China. Having looked at both sides of the coin, that is, numbers of men and equipment and the command's ability to sustain itself, it can be strongly argued that the Far Eastern TVD is a defensive force. Yet, this theater also has the capability to conduct a short term offensive operation in China. It is unlikely that the Soviets would risk a major confrontation with China because the possibility of a prolonged confrontation cannot be discounted. The Soviets could not support or win a prolonged conventional war with China. The Far Eastern TVD, Soviet Asia, is not sufficiently developed to sustain extended combat operations on a modern battlefield.

APPENDIX A

DESCRIPTION OF THE CLIMATE FOR THE FAR EASTERN TVD AREA OF OPERATIONS

This appendix provides a more detailed description of the climate in the planned area of operations. References are made to the impact of the climate on the military engagements occurring in northeastern China in the last 100 years.

Precipitation. Northern and northeastern China experience spring drought and summer rains. More than one-half of the total rainfall occurs in the summer months (Zhao 1986, 24). The southeastern monsoon begins in southern China in March and moves north, reaching north and northeastern China in July. The monsoon retreats southward in late August and early September; therefore, the rainy season ends by the beginning of the fall. Of the summer typhoons common along the coasts of China, only 6.2 percent strike north/northeastern China in July and August.

The Ili Valley and Altai Mountains in Xinjiang experience a somewhat homogeneous seasonal distribution of precipitation with about twenty to thirty percent occurring in each season(Zhao 1986, 24) .

Manchuria experiences 20 to 40 inches of precipitation annually. Inner Mongolia has 10 to 20 inches and Xinjiang 10 inches or less precipitation annually. From November to

April Manchuria, Inner Mongolia, and Xinjiang combined experience 5 inches or less of rain (Fullard 1968, 10-11).

Hail, another form of precipitation, has seasonal maximums as well. Manchuria experiences a higher frequency of hail in the spring and summer. Xinjiang has a higher frequency of hail in the late spring and through the summer (Hsieh 1973, 35).

Many of the previous battles fought in northeastern China demonstrated how the heavy summer rain impeded resupply and movement of forces. Foot troops and mechanized forces both found the central plains difficult to negotiate as the rain quickly saturated the podzolic, brown forest, and chernozem soils. Rain fell in bursts of 3 to 8 days (Bird 1909, 7) from July to September during the Russo-Japanese War 1904 to 1905. According to the soldiers the "dry out" time for the roads was 2 to 3 days (Bird 1909, 7). Heavy rains in August ended large-scale operations for a month (Bird 1909, 47). The same account has been made of the August 1939 Nomonhan Incident. The heavy rains severely impeded Japanese logistics support and contributed to their defeat (Drea 1981, 27). Soviet and Japanese forces committed during the Changkufeng border clash from July to August 1938 spoke of the impassable roads along the bank of the Tumen River after one to two days of rain (Coox 1977, 26). Heavy summer rains swelled the rivers making them obstacles to movement. Bridging had to be emplaced where none had previously been required. The Halha and Holsten

rivers along the Manchukuo-Mongolia border where the Nomonhan clash occurred are also good examples of unfordable rivers resulting from the August rains. The rains also brought mosquitoes and fog (Drea 1981, 23). Thunderstorms were often accompanied by hail which restricted visibility to "100 paces" according to one account of the Russo-Chinese War during June and July of 1900 (Lensen 1967, 174).

Large-scale combat operations during the year long Russo-Japanese War resumed with the end of the torrential August rains. Temperatures began to drop and the roads were reported to have frozen by October and would remain frozen through March (Bird 1909, 7). The frozen roads naturally enhanced trafficability.

The Soviet invasion of Manchuria in 1945 was plagued by torrential rains from 11 to 20 August. Rain hampered air activity and assaults across the Amur and Ussuri Rivers were impeded. In some places the Amur was 15 kilometers wide and the Ussuri spread as much as 5 kilometers in places. (Betit 1976, 69-70) It took the Soviet Amur Flotilla thirty hours to raft combat elements across the swollen Amur. Rear service units took an additional two days to cross and separated them from lead elements by 150 to 200 kilometers (Glantz 1983, 153). This situation severly hindered combat sustainability. Forces traversing the Greater Khingan Range encountered problems from the rain. Dirt roads became soggy mud causing rear service units to lag behind forward maneuver units. Artillery support was hindered by the bad

weather. Rain magnified the difficulties in crossing swampy areas. Corduroy roads had to be emplaced (Betit 1976, 69-70).

Temperature. Northern areas of China experience a rapid drop in temperature with the onset of autumn. Heavy snowfall can occur as early as September. Strong cold air masses invade the region in October with the strongest and most frequent occurring in January. Freezing temperatures appear in early September and last eight to nine months. Manchuria is characterized as having long very cold winters. "Cold waves" defined by the Chinese as "a decrease of minimum air temperature within 48 hours of more than 10°C" (50°F) occur on the average once every 10 days during late autumn, winter, and spring. "The cold wave front usually 'bursts' together with strong northwestern winds. At first, there are sandstorms or snowstorms in North and Northeast China....Then, when the polar continental air mass controls the whole region, the weather is fine and cold, warming up gradually until the arrival of the next cold wave." The same cold waves can occur in the summer in northwest China bringing precipitation (Zhao 1986, 24-25). Frost usually appears from December through February. The mean January temperature in the Greater Khingan Mountains is -22°F (-30°C) and below 14°F (-10°C) in most parts of northeast China, Inner Mongolia, and the Dzungarian Basin in Xinjiang (Zhao 1986, 22). Mean January temperatures range from 23°F (-5°C) at about 35°N to -22°F (-30°C) at the very northern

tip of Manchuria. The air gradually warms after January with monthly temperature increases of 43°F to 50°F (6°C to 10°C) in Northeast China and 41°F to 43°F (5°C to 6°C) in North China (Zhao 1986, 19). Highest temperatures occur in July and August (Glantz 1983, 19). Mean July temperatures range from 77°F (25°C) along 40°N latitude to 68°F (20°C) along the eastern border of Outer Mongolia. Most of Xinjiang averages 77°F (25°C) except for the Ili Valley which averages 68°F (20°C) (Fullard 1969, 10).

Humidity in the north/northeastern portion of China peaks in August and will generally remain above 60 percent through December. Beijing's humidity has been recorded at 50 percent in December and is an exception to this generalization. Conversely, some areas of Xinjiang are characterized by higher humidity in December and January. Xinjiang and north/northeastern China all generally seem to experience a low percentage of humidity in the spring (March through May) (Zhao 1986, 206-209). The dew point is a more reliable measure of humidity, but climatic data for China failed to provide dew points.

During the Russo-Japanese War of 1904 the first snowfall occurred on 5 November and within a month the temperatures were down to 0°F (-18°C) ; the ground was frozen to a depth of several feet (Walder 1973, 213). During the 1939 Nomonhan Incident, soldiers faced hot, humid days ranging in temperatures from 86°F to 104°F (30°C to

40°C) . The nights were cool with temperatures ranging from 58°F to 60°F (14°C to 16°C) (Drea 1981, 23).

Wind. Prevailing winds are from the northwest to the southeast from November to April in north/northeastern China while winds are from the northeast in Xinjiang. Winter wind directions are determined by the continental high pressure system that dominates the atmosphere over the Inner Mongolia Plateau. From May to October the prevailing wind direction varies from the south, southwest, north, northeast, and east (Fullard 1969, 10).

Wind velocity of North China is generally higher than South China. Coastal areas experience higher wind velocity than inland areas; plains and plateaus experience higher wind velocity than mountains and hills. The northern Nei Mongol Plateau has an annual mean wind velocity higher than 4 to 5 meters per second. Wind velocity varies more in spring and winter with less variation during the summer. This is not the case in northwestern China where the greatest seasonal variation in wind velocity occurs in the summer (Zhao 1986, 24).

Cloud Cover. High atmospheric pressure and low winter temperatures contributes to the decreased cloudiness. January and February tend to be the least cloudy months. Maximum cloudiness occurs during the summer months of May through August. The lower reaches of the Amur River experience maximum cloudiness in May. The Russian town of Blagoveshchensk on the Amur River experiences maximum

cloudiness in June. The strengthening and weakening cyclonic activity directly affects the levels of cloudiness. Western China will experience minimum cloud cover in the summer (Borisov 1965, 54-56).

Visibility. Along the Chinese coasts the maximum number of days with fog occur in the spring and summer. The lowest frequency of fog days occurs in the late summer and autumn, especially in September and October. Foggy conditions pertain only to the Liaotung Peninsula coasts of Manchuria. The total number of fog days per year becomes far fewer than that of the coasts and off-shore islands, and the distribution of fog days inland shows no sharp peaks of concentration (Hsieh 1973, 38-39).

Illumination. During the Nomonhan Incident there were more than sixteen hours of daylight in June and fifteen and one-half hours in July. August had thirteen to fifteen hours of daylight. Sunrise was at 0400 hours in May, 0400 or before in June, 0500 in July , and 0530 in August. Sunset began at 1900 in May, 2000 in June, 2030 in July, and 2030 in August. Japanese infantrymen had good close-in observation during the approximately one hour of dawn, but targets at distances of 700 to 1,000 meters were difficult to observe (Drea 1981, 23).

APPENDIX B

SOVIET MILITARY DOCTRINE TABLES

Table B-1. Force Objectives by Distance and Time

Objective	Distance (km)	Number of Days
Front Final	600-800	12-15
Army Subsequent	250-350	6-7
Army Immediate	100-150	3-4
Division	25-30*	First Day

* Some estimates go as high as 50 km on the first day

SOURCE: Department of Army 1984a, 4-4

Table B-2. Average March Rates for Divisional Elements (kph*)

Day, on roads	20-30
Night, on roads	15-20
Cross country	5-15

* Kilometers per hour

SOURCE: Department of Army 1984a, 5-2

APPENDIX C

ENERGY-INDUSTRY RESOURCE MATRIX

This matrix is a simple, subjective presentation of the potential wartime resource base for the Far Eastern Theater of Operations. The energy resource ratings are based on the information found in Chapter Three, "Energy and Industry" and Figure 22. The list of industries and the associated resource rating is based on the gross output values extracted from a table which compares the structure of industry in Soviet Asia and the European Soviet Union (Dienes 1982, 232; 1975 figures used, Kirgzia and Tadjikistan are not included). The overall values for the USSR serve as the standard. A value above the national average is given a three while anything below is given a one. A gross output value equal to the national average is given a two. The assigned values' nomimal designation is shown below.

1 = negligible
2 = moderate
3 = adequate

For example, coal reserves and thermal power stations are relatively abundant and reasonably accessible in all of the military districts except for the Far Eastern MD; therefore, it receives a two while the other districts receive a rating of three. Table ratings are further generalized because

Dienes' table is organized by economic regions which do not correspond exactly to the four military district boundaries.

Table C-1. Energy Resource Analysis Matrix

Industry-Energy Resource	Central Asian	Far Eastern TVD Siberian	Transbaikal	Far Eastern
Energy Resources				
Oil	2	1	1	2
Gas	2	2	1	1
Coal	3	3	3	2
Hydroelectric	2	3	3	2
Subtotal	9	9	8	7
Industries				
Fuel	3	3	3	3
Electric	3	3	3	2
Iron and Steel	3	1	1	1
Nonferrous metals	3	3	3	1
Chemical	1	3	1	1
Wood, pulp, paper	2	3	3	3
Building materials	3	3	3	3
Machine-building	1	3	3	1
Light industries	3	2	3	1
Food industries	3	3	3	1
Subtotal	25	27	26	17
TOTAL	34	36	34	24

The Siberian MD has the highest rating yet it has the least important wartime front mission. The Far Eastern MD, the most critical front for an invasion of China, has the fewest developed wartime energy and industrial resources.

LIST OF REFERENCES

Asia Yearbook 1988. Far Eastern Economic Review.

Alexiev, Alexander and S. Enders Wimbush. 1983. *The Ethnic Factor in the Soviet Armed Forces (R-2930/1).* Santa Monica, California: The Rand Corporation.

Betit, Eugene D. 1976. The Soviet Manchurian Campaign, August 1945: Prototype for the Soviet Offensive. *Military Review* (May): 65-73.

Bird, W.D. 1909. *Strategy of the Russo-Japanese War.* London: Hugh Rees, Limited.

Borisov, A.A. 1965. *Climates of the USSR.* Edited by Cyril A. Halstead. Translated by R.A. Ledward. Ledward, London: Oliver and Boyd Limited.

Bradshaw, Michael J. 1987. Trade and High Technology. In *Siberia and the Soviet Far East,* ed. Rodger Swearingen, 100-134. Stanford, California: Hoover Institution Press.

Central Intelligence Agency (CIA). 1971. *People's Republic of China Atlas.* Washington, D.C.: U.S. Government Printing Office.

_____. 1974. *USSR Agriculture Atlas.* Washington, D.C.: U.S. Government Printing Office.

_____. 1985. *USSR Energy Atlas.* Washington, D.C.: U.S. Government Printing Office.

Cole, J.P. 1984. *Geography of the Soviet Union.* Boston: Butterworths.

Coniglio, James V. 1984. Military Geography: Legacy of the Past and New Directions. In *Readings in Military Geography,* ed. Colonel John B. Garver, Jr. USA (Retired) and Colonel Gerald E. Galloway, Jr., 1-4. New York: United States Military Academy.

Conolly, Violet. 1987. Siberia: Yesterday, Today, and Tomorrow. In *Siberia and the Soviet Far East*, ed. Rodger Swearingen, 1-39. Stanford,California: Hoover Institution Press.

Coox, Alvin D. 1977. *The Anatomy of a Small War: The Soviet-Japanese Struggle for Changkufeng/Khasan, 1938*, Foreword. Westport, Connecticut: Greenwood Press.

Daniel and Jencks. 1983. Soviet Military Confrontation with China: Options for the USSR, the PRC, and the United States. *Conflict 5: 57-87.*

de Souza, Peter. 1986. The Nature of the Manpower Problem in the Development of Siberia. *Soviet Geography: Review and Translation* (hereafter shown as *Soviet Geography*) 27 (December): 689-715.

Defense Intelligence Agency (DIA). 1976. *DIA Handbook on the Chinese Armed Forces (DIA-2680-32-76).* Washington, D.C.: DIA.

_____. 1982. *The Soviet Airborne Forces (DDB-1110-2-82).* Washington, D.C.: DIA.

Department of Army (DA). 1972. *Military Geographic Intelligence (Terrain) FM 30-10.* Washington D.C.: Headquarters, DA.

_____. 1984a. *Operations and Tactics (FM 100-2-1).* The Soviet Army series. Fort Leavenworth, Kansas: USA CACDA.

_____. 1984 b. *Troops, Organization and Equipment (FM 100-2-3).* The Soviet Army series. Fort Leavenworth, Kansas: USA CACDA.

_____. 1984c. *Weather Support for Army Tactical Operations (FM 34-81).* Washington, D.C.: HQ, DA.

Department of Defense. 1987. *Soviet Military Power.* Washington, D.C.: U.S. Government Printing Office.

_____. 1988. *Soviet Military Power: An Assessment of the Threat 1988.* Washington, D.C.: Government Printing Office.

Dienes, Leslie. 1982. The Development of Siberian Regions: Economic Profiles, Income Flows and Strategies for Growth. *Soviet Geography* 23 (April): 203-244.

_____. 1985. Economic and Strategic Position of the Soviet Far East. *Soviet Economy* 1,2: 146-176.

_____. 1987. *Soviet Asia: Economic Development and National Policy Choices.* London: Westview Press.

Drea, Edward J. 1981. Nonmonhan: Japanese-Soviet Tactical Combat, 1939. *Leavenworth Papers* 2 (January).

Erickson, John. 1981. The Soviet Strategic Emplacement in Asia. *Asian Affairs*, 12 (Feb): 5-18.

_____. 1987. Military and Strategic Factors. In *Siberia: Problems and Prospects for Regional Development*, ed. Alan Wood, 171-192. London: Croom Helm.

Erickson, John, Lynn Hansen, and William Schneider. 1986. *Soviet Ground Forces: An Operational Assessment.* Boulder, Colorado: Westview Press.

Far Eastern Economic Review. 1975. "The Kremlin's reliance on 'blitzkrieg'. *FEER* 90 (31 October).

_____. 1988. "Strategy in Flux". *FEER* (7 January).

Finlayson, LTC Andrew R. 1986. US Arms for China - A New Look. *Naval War College Review* 39 (Jan-Feb): 66-76.

Freedman, L. 1986. Consent, coercion and the application of military power. *Political Geography Quarterly* 5, 49-61. Quoted in D.M. Pepper. 1988. Geographical dimensions of NATO's evolving military strategies. *Progress of Human Geography* 12 (June): 157-178.

Fullard, Harold, ed. 1969. *China in Maps.* London: George Philip and Son Ltd.

Geelan, P.J.M. and D.C. Twitchett, ed. 1974. *The Times Atlas of China.* Times Newspapers Ltd.

Gelman, Harry. 1982. *The Soviet Far East Buildup and Soviet Risk-Taking Against China*, Summary and Conclusions. A Project Air Force Report (R-2943-AF) (August): The Rand Corporation.

Glantz, David M. 1983. August Storm: The Soviet 1945 Strategic Offensive in Manchuria. *Leavenworth Papers* 7 (Feb).

Hardt, John. 1987. Soviet Siberia: A Power-to-Be?. In *Siberia and the Soviet Far East*, ed. Rodger Swearingen, Introduction. Stanford, California: Hoover Institution Press.

Hsieh Chiao-min. 1973. *Atlas of China*. Edited by Christopher L. Salter. Mcgraw-Hill, Inc.

Jencks, Harlan W. 1984. "People's War under Modern Conditions": Wishful Thinking, National Suicide, or Effective Deterrent? *The China Quarterly* No. 98 (Jun): 303-319.

_____. 1987. Defending China in 1987, *Current History* 86 (September).

Joffe, Ellis. 1987. "The Chinese Army: A Decade of Reforms," in *Brassey's Defence Yearbook 1988*. Edited by The Royal United Services Institute for Defence Studies. London: Brassey's Defence Publishers Ltd.

Joffe, Ellis and Gerald Segal. 1985. The PLA Under Modern Conditions, *Survival* 27 (July/August).

Jukes, Geoffrey. 1973. *The Soviet Union in Asia*. California: University of California Press.

Kaple, Deborah A. 1986. The BAM: Labor, Migration and Prospects for Settlement. *Soviet Geography* 27 (December): 716-740.

Kissinger, Henry Dr. 1987. East Asia, the Pacific and the West: Strategic Trends and Implications: Part I. In *East Asia, the West and International Security*, ed. Robert O'Neill, 1-18. London: The Macmillan Press, Ltd.

Koenig, William and Peter Scofield. 1983. *Soviet Military Power*. Greenwich, Connecticut: Bison Books Corp.

Kozlov, Viktor. 1988. *The Peoples of the Soviet Union*. Translated by Pauline M. Tiffen. Indianapolis: Indiana University Press.

Lee, William T. 1981. "Soviet Perceptions of the Threat and Soviet Military Capabilities," *Soviet Perceptions of War and Peace*, ed. Graham D. Vernon. Washington, D.C.: National Defense University Press.

Lensen, George Alexander. 1967. *The Russo-Chinese War*. Florida: The Diplomatic Press.

Manevich, Efim. 1985. *Labour in the USSR: Problems and Solutions*. Trans. Peter Greenwood. Moscow: Progress Publishers.

MccGwire, Michael. 1987. *Military Objectives in Soviet Foreign Policy*. Washington, D.C.: The Brookings Institute.

The Military Balance 1988-1989. 1988. International Institute for Strategic Studies. London: IISS.

Miyoshi, Osamu. 1987. Soviet Strategy in Asia: A Japanese View. *Comparative Strategy* 6: 1-27.

Mote, Victor L. 1987. The Communications Infrastructure. In *Siberia and the Soviet Far East*, ed. Rodger Swearingen, 40-73. Stanford, California: Hoover Institution Press.

Narodnoe Khozyaystvo SSSR. 1987. Moscow.

O'Loughlin, John. 1986. Political Geography: tilling the fallow field. *Progress in Human Geography* 10 (January): 69-83.

O'Sullivan, Patrick and Jesse W. Miller. 1983. *The Geography of Warfare*. New York: St. Martin's Press.

Palka, Eugene J., and Dawn M. Lake. 1988. *A Bibliography of Military Geography*. West Point, New York: United States Military Academy. USMA has compiled this four volume bibliography to be used as a research tool. The bibliography contains over 4,000 entries. Volumes are organized as follows: alphabetized listing, systematic listing, topical entries, and regional sources. The bibliography will be updated every two to four years.

Pannell, Clifton W. 1983. *China: The Geography of Development and Modernization*. London: Edgard Arnold Ltd.

Peltier, Louis C. and G. Etzel Pearcy. 1966. *Military Geography*. Princeton: D. Van Nostrand Company, Inc.

Pepper, D.M. 1988. Geographical dimensions of NATO's evolving military strategies. *Progress of Human Geography* 12 (June): 157-178.

Pokryshkin, A.I. "DOSAAF." *Sovetskaya Voyennaya Entsiklopediya* 3: 255-257.

Pollack, Jonathan. 1981. "The Men but not the Guns," *Far Eastern Economic Review* 29 (18 December).

The Population Atlas of China. 1987. Population Census Office of State Council of PRC and Institute of Geography of the Chinese Academy of Sciences. New York: Oxford University Press.

Rees, David. 1982. Soviet Border Problems: China and Japan. *Conflict Studies* 139: 3-30.

Rowland, Richard H. 1986. Regional Population Redistribution in the USSR: 1979-84. *Soviet Geography* 27 (March): 158-182.

Salisbury, Harrison E. 1969. *War Between Russia and China*. New York: W.W. Norton and Co., Inc.

Scott, Harriet Fast and Scott, William F. 1984. *The Armed Forces of the USSR*. Boulder, Colorado: Westview Press Inc.

Segal, Gerald. 1983. The Soviet "Threat" at China's Gate. *Conflict Studies* 143: 3-22.

Serrill, Michael S. 1988. "Sprucing Up the Troops," *Times Magazine (11 July)*.

Solomon, Richard H. and Masataka Kosaka, ed. 1986. *The Soviet Far East Military Buildup: Nuclear Dilemmas and Asian Security*. Dover, Massachusetts: Auburn House Publishing Co.

Swearingen, Rodger, ed. 1987. *Siberia and the Soviet Far East: Strategic Dimensions in Multinational Perspective*, Foreword. Stanford, California: Hoover Institution Press.

_____. 1987. The Soviet Far East, East Asia, and Pacific--Strategic Dimensions. In *Siberia and the Soviet Far East*, ed. Rodger Swearingen, 226-272. Stanford, California: Hoover Institution Press.

Thompson, Edmund R. 1962. The nature of military geography: a preliminary survey. Ph.D. diss., Syracuse University.

Turbiville, Graham H. 1987. Soviet Logistics Support Concepts Change. *Army Logistician* Mar-Apr: .

Turbiville, Graham H. 1988. Rear Service Support: Concepts and Structures. *Military Review* 68 (December).

Wang Ching-Chun. 1941. *Japan's Continental Adventure*. London: George Allen and Unwin Ltd.

Walder, David. 1973. *The Short Victorious War: The Russo -Japanese Conflict 1904 - 1905.* London: Hutchinson and Company. Limited.

Whiting, Allen S. 1981. *Siberian Development and East Asia.* Stanford, California: Stanford University Press.

Wimbush, S. Enders. 1985. Nationalities in the Soviet Armed Forces. In *Soviet Nationalities in Strategic Perspective.* ed. S. Enders Wimbush, 227-248. London: Croom Helm.

Zhao Songqiao. 1986. *Physical Geography of China.* New York: John Wiley and Sons.