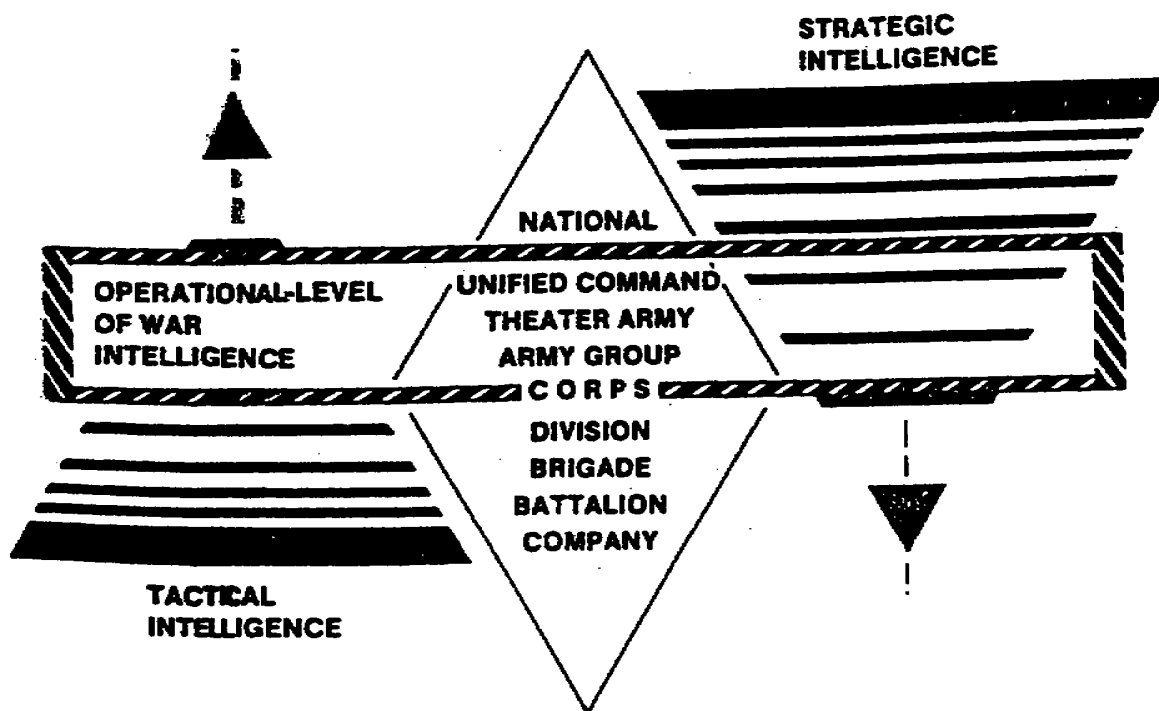

US ARMY INTELLIGENCE CENTER

STRATEGIC INTELLIGENCE



THE ARMY INSTITUTE FOR PROFESSIONAL DEVELOPMENT
ARMY CORRESPONDENCE COURSE PROGRAM

**A
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READINESS /
PROFESSIONALISM



THRU
GROWTH

STRATEGIC INTELLIGENCE

EDITION B

Subcourse number IT 0583

US Army Intelligence Center
and Fort Huachuca, AZ 85613-6000

10 Credit Hours

Edition Date: September 1997

SUBCOURSE OVERVIEW

This subcourse will enable you to compile information on the country of concern from all sources; research materials to isolate any information of strategic value; prepare strategic intelligence reports, summaries, assessments, and reviews for dissemination; identify gaps in holdings to supervisor/user personnel/agencies; recommend strategic intelligence gaps be added to collection plan as priority intelligence requirements/information requirements (PIRIR); dissemination approved studies/report to users to give you realistic practice in performing strategic analysis, each practice exercise contains questions from appendixes.

There are no prerequisites for this subcourse.

This subcourse reflects the doctrine which was current at the time the subcourse was prepared. In your own work situation, always refer to the latest publications.

The words 'he,' hi, 'his,' and 'men', when used in this publication, represent both the masculine and feminine genders unless otherwise stated.

TERMINAL LEARNING OBJECTIVE

ACTION: You will be able to compile information on the country of concern from all sources and research materials to isolate any information of strategic value concerning but not limited to the following:

- a. Military capabilities, vulnerabilities, probable courses of action of the country of interest.
- b. Biographic and geographic information.
- c. Social, political, economic, cultural, and scientific data.
- d. Armed forces intelligence.

CONDITIONS: You will be given narrative information and illustrations from FM 34-1.

STANDARDS: To demonstrate competency of this task, you must achieve a minimum of 70% on the subcourse examination.

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LESSON 1

STRATEGIC INTELLIGENCE

CRITICAL TASK: 301-336-3604
301-336-4605

OVERVIEW

LESSON DESCRIPTION:

In this lesson, you will define strategic intelligence and components. You will also describe collection and coverage, sources of information, evaluation of sources of information, interpretation, dissemination of strategic information, and report preparation.

TERMINAL LEARNING OBJECTIVE:

ACTIONS: To define strategic intelligence and identify the components of strategic intelligence and to describe the material and procedures needed or used for gathering information of a strategic value.

CONDITIONS: You will be given narrative information and illustrations from FM 34-1.

STANDARDS: You will define strategic intelligence and identify the components of strategic intelligence and know how to collect information of a strategic value from various sources and evaluate and test sources and information.

REFERENCES: The material contained in this lesson was derived from the following publications:

FM 34-1
STP 34-96B14-SM-TG

INTRODUCTION

The aim of this subcourse is to assist you in the performance of your duties as a strategic intelligence analyst. The purpose of this lesson is to ensure your understanding of military capabilities and vulnerabilities; geographic and biographic information; social, political, economic, cultural, scientific data; and armed forces intelligence.

By recognizing the capabilities and vulnerabilities of the militaries of the world, you will be able to better collect, evaluate, test, and disseminate valuable strategic information to and from your unit.

PART A: DEFINE STRATEGIC INTELLIGENCE AND COMPONENTS

General: An intelligence analyst must be able to distinguish between strategic and tactical intelligence. In general, the distinction lies within the scope and application of collection processing techniques.

Tactical Intelligence: Tactical intelligence focuses on the enemy and environment and is obtained through such means as: interrogation, ground and aerial reconnaissance /surveillance, signals intelligence, counterintelligence, technical intelligence, imagery interpretation, and sensory data obtained from target acquisition and night observation devices. Tactical intelligence objectives are limited, short-ranged, and directed at immediate requirements for the tactical commander.

Strategic Intelligence: Strategic intelligence is required for the formation of policy and military plans at national and international levels. Unlike tactical intelligence, strategic intelligence is oriented on national objectives, assisting in determining their feasibility, and planning methods of accomplishment.

OVERLAPPING INTERESTS OF STRATEGIC AND TACTICAL INTELLIGENCE: Strategic and tactical intelligence, though treated as separate categories of intelligence, do have functional subcategories. These include: Order of Battle (OB), technical, target, terrain, and weather intelligence. Information gathered and intelligence produced for strategic purposes is useful in the conduct of tactical operations and will include maps, charts, beach and port studies, rivers, trafficability studies, lines of communication, hydrology, climate, and OB studies on foreign armies. Tactical commanders planning a beach assault will need strategic studies in order to prepare their battle plans. Likewise, information collected by combat units helps produce strategic intelligence. For example, questioning of enemy prisoners of war (EPW) and other people of intelligence value captured during combat operations would aid strategic planners by providing information on political and economic conditions in the area of operations (AO). Tactical operations could turn up new enemy weapons or equipment that will require technical appraisals at the strategic level. This makes it important that battlefield information on enemy forces be reported up through channels so the proper user will have it available. What may not appear valuable to the tactical user could be of major significance to the strategic planner. Collection managers at all levels must assure strategic information from supporting units is processed expeditiously to the requesting units. This is critical due to the overlapping interest shared by tactical and strategic intelligence users.

Oriented on national objectives, strategic intelligence assists in determining feasible national intelligence objectives and furnishing a basis for planning methods to accomplish them. Factors which influence the military capabilities, vulnerabilities, and probable courses of action of nations are considered components of strategic intelligence.

All militarily significant aspects of national life are of interest to strategic intelligence, not just local situations or strictly military affairs. Although strategic intelligence is produced in both peacetime and wartime, its production is seldom easy because it requires the collection and evaluation of masses of complex and detailed information.

This total intelligence includes information about the economy, politics, culture, number and composition of the population, and tensions which exist among various groups in the country.

Large amounts of information are available about every country in the world. However, this information is not always readily available because it is located in many different places. Often it is contained in publications and references used or understood only by specialists in a particular research field.

Whatever the source, huge amounts of information are collected to be evaluated, interpreted, and used or discarded. The information must be separated into categories to eliminate the chaos resulting from uncoordinated information and facilitate the collection of further information. These categories are called the components of strategic intelligence. These components include-

- * Geographic.
- * Transportation.
- * Telecommunications.
- * Sociological.
- * Political.
- * Economic.
- * Scientific.
- * Biographic.
- * Armed forces.

The division of strategic intelligence into the components described above provides a useful system of organization for analytical purposes. The source materials relating to each of these components are studied by specialists who then pass their reports on to strategic intelligence analysts. The analysts collect and combine the reports in order to compile an estimate of the capabilities, vulnerabilities, and probable courses of action of the nation under consideration. None of the components should be considered alone. Also, it must be realized the value of the components varies from country to country.

The geographic component is one of the largest and most complex categories studied by strategic intelligence analysts. Geography is the scientific study of the earth's surface, the relatively thin layer which extends a few miles under the surface. The two general divisions of geographic study are physical and cultural.

Physical features include climate and weather, surface configuration, soils, minerals, surface and underground water, plant and animal life, and other natural aspects of man's environment.

Cultural features are those which are made by man, such as buildings, roads, factories. Many features, such as cultivated lands and the vegetation of an inhabited area are both natural and cultural.

Several kinds of geographic inquiry are of special interest to strategic intelligence. These include economic and political geography, geomorphology, and climatology.

Economic geography is the study of production, the natural resources upon which production is based; and trade.

Political geography is the study of the relationship between the state and the land.

Geomorphology, the study of earth forms, is one of the most important aspects of geography from both a tactical and strategic point of view. Knowledge of the origin and evolution of topographic features provides information on trafficability of soils, ease of entrenchment, and availability of construction materials.

Climatology is the study of weather and climate. The weather of any place is the total of its atmospheric conditions for a short period of time. Climate is a composite of long-range averages of short-term weather conditions.

The transportation component includes all types of transportation, even the most primitive. Many shipments move by several different types of transportation during a single journey; and in case of damage to a system, one form may be a temporary substitute for another.

The telecommunication component is the science of electronic communication, principally the transmission of sounds and images by telegraph, telephone, radio, and television. Industry and commerce are based on rapid communication, and the basis of successful national defense is instantaneous communication between key points.

The sociological component gets its name from sociology, which is the study of human groups and the relationship of the individual to the group. This component is used to achieve an understanding of what the population of a country is like as a whole, how it tends to behave; and the nature and distribution of various groups. The major aim of sociological intelligence is to determine the size, characteristics; and effectiveness of the labor force and potential military manpower. Differences in health, wealth, religion, education, and social status provide opportunities to use propaganda against the populace.

The political component is essential to any assessment of a government's operation and organization. The decision to wage war is essentially a political decision; therefore, who the rules are, how they operate, what their political views are, and what controls they have over the government are some of the more cogent facts to be determined. A study of political parties in democratic countries helps to determine the stability of the political system. Two other factors of extreme importance in assessing a country are its internal structure and foreign relations.

The economic component concerns itself with the extent and utilization of natural and human resources and the industrial potential of nations. Economic intelligence will include information concerning the economic structure and strategic materials of a nation.

The scientific component is important in the development of a country. Large populations and great stores of raw materials do not assure formidable military power unless the country is also advanced in science and technology. The time lag between the discoveries of basic research and their application by applied research has narrowed to the extent that today's discovery may be tomorrow's weapon. There is no purely national science, for science is international; therefore, when a secret weapon or technique is created in one country, there is an immediate review of the basic research which could have resulted in this development. Eventually the weapon or technique can be created independently.

The biographic component considers personalities in relationship with one or more of the components listed above. It deals with the study of biographies of foreign individuals who are of actual or potential importance. By applying historical analysis to the lives of these political and military leaders, information can be obtained to aid in predicting their probable future courses of action. The methods used in collecting, evaluating, and compiling biographical information are regarded as an important separate study.

The armed forces component is probably regarded as the most important component of strategic intelligence, because it deals with the direct, physical means by which a nation wages war. Factors involved include the size, organization, capacity for expansion, effectiveness, tactics, and strategic practices of a nation. A thorough study of foreign armed forces is important in shaping US military organizational doctrine. It also provides our military departments with concepts which may be adapted to our use, or for which countermeasures may be developed.

PART B: DESCRIBE COLLECTION AND COVERAGE, SOURCES OF INFORMATION, AND EVALUATION AND TESTING OF SOURCES AND INFORMATION

Collection in the strategic intelligence sense is defined as the systematic development and exploitation of the most widely ranging, as well as the most intensive, sources of information. The chain of collection is completed by timely reporting of the data obtained.

The collection phase is sometimes confused with the entire intelligence process, because it is the most easily understood. This tendency has sometimes led to an overemphasis on collection. Masses of raw information have been accumulated and then completely evaluated. Collection is only one step in the intelligence cycle, but it is neither more nor less important than the dissemination phase or the production phase. The two basic types of collection used for strategic intelligence are field collection and static collection.

Field collection uses both overt and covert means to get information while using primary and secondary sources. Overt information is obtained through open means. Covert collection is planned and executed to conceal the identity of, or permit plausible denial by, either the sponsor or the source of the information. Another distinction within the collection process can be made between surveillance and research. Surveillance can be compared to field collection and research compared to static collection.

Static collection operates overtly and may utilize both primary and secondary sources for information. It consists of gathering information from archives, files, books, newspapers, and other documentary materials.

Personnel and agencies must know and understand the requirements of the intelligence producing organization they support. They must be kept informed of shifts of Interest or of emphasis, as well as the priorities, in the collection effort. The process of supplying these requirements to the collector is called guidance.

Guidance must be furnished to the collector by the intelligence producer, just as the producer is guided by the requirements for finished intelligence given him by top-level planners or commanders who use the intelligence. To avoid wasted effort and ensure the fulfillment of informational requirements, it is essential the intelligence producers give continuous detailed and realistic guidance to the information collectors. Guidance is divided into two principal categories, initial, and follow-up.

Initial guidance is used to decide what is required, and involves listing the specifications and parameters of what is desired.

Follow-up guidance is the continuous periodic briefing of the collectors on changing or modifying requirements enabling them to direct their own collection efforts more efficiently.

Intelligence producers supply guidance to the collectors through directives and evaluations on the collection plan. The level from which the guidance comes and the level for which it is intended will usually determine which form to use. Initial guidance is usually provided through directives, and follow-up guidance is normally best furnished through evaluations and comments on the collection plan.

Directives may be as specific and limited as the PIR/IR issued by a military commander for a single operation, or as broad as a defense intelligence collection requirements manual issued by the Defense Intelligence Agency (DIA). In general, it may be said that a directive establishes the direction and scope of collection activity, whereas an evaluation is intended to focus attention on one or more narrow aspects of the target or collection effort.

Evaluations of selected reports are forwarded to the collecting agency by the Intelligence producing agency. The producer usually includes his comments on the value of the report as well as appropriate guidance for the reporting officer or agency. For this reason, most agencies try to evaluate those reports which are outstanding in some respect, or of unusual interest or value. Very often the producers evaluate reports at the specific request of the collecting agency.

We have seen that one of the major Ingredients In the collection phase of the intelligence process is the element of guidance. Without this the efforts of the collectors may be wasted. Given adequate guidance and sufficient personnel, funds, and equipment to operate effectively, the collectors themselves must provide the next essential Ingredient, coverage.

Coverage means the systematic and full exploitation of all possible sources of Information by the collectors. It implies the collecting agencies must not only exploit fully all the sources of information available to them, but they must use their Initiative to develop new sources.

Problem areas affecting the collector are:

- * Collecting facts.
- * Overcoming collection obstacles.
- * Obtaining the information the producer requires.
- * Being alert to collection items of importance to the producer.

The two basic types of coverage are:

Area coverage involves the active and systematic surveillance of an area and its inhabitants. It is normally performed in the field and used to detect and report on activities of actual or potential strategic interest. The collector serves a number of researchers within his area of responsibility. The collector is not necessarily interested in one subject. He is on the ground to collect not only what he is tasked to collect, but also anything of significance which can be collected. The collector watches his area of responsibility like the researcher watches and explores the subject. This is known as area coverage.

Target coverage is performed by researchers or analysts and involves surveillance coverage. The researcher must gather information regardless of how broad or narrow and make it productive and useful. The researcher has a much narrower field of interest than the collector.

Sources of information are means by which a collector can cover strategic information. Coverage of strategic information is achieved through sources of information and techniques used to exploit these sources. For strategic Intelligence purposes, a source of information may be defined as a person, thing, or action from which information is derived for the production of strategic intelligence.

Sources of strategic information are categorized according to two different sets of criteria. The first concerns the relationship between the source from which the information was derived and the original source of Information. When using this set of criteria we describe a source as either primary or secondary. The second criterion relates to protecting the source's identity from unauthorized disclosure. The source is classified as either confidential or open.

A primary source's information is obtained directly by any Intermediate agency in its original form without alteration. It includes:

- * Direct observations by official and unofficial observers.
- * Statements made to the primary source by subcourses, if such observations are reported accurately and in full.
- * Statements of responsible officials appearing in newspapers, on radio and television, in official publications, and similar sources.

In wartime, primary sources include:

- * Censorship intercepts.
- * Captured documents.
- * EPW interrogations.
- * Photographic reconnaissance.
- * Various secret sources through which the enemy is exposed to direct scrutiny.

Secondary source information is obtained and partially evaluated, condensed, reworked, or elaborated upon by an intermediate agency. Secondary sources include:

Books, studies, or reports made by government departments, foreign countries, newspaper correspondents, or any other individual or agency.

Field evaluations, comments, and explanations made by collecting agencies in submitting primary information (see Appendix A).

Secondary sources are often of equal or greater interest than primary sources. However, an effort should ALWAYS be made to obtain as much information as possible in its original form (see Appendix B).

Information from confidential sources is obtained without the knowledge or consent of the target country, and includes contacts with regular agencies and other sources. Information gained from confidential sources provides most of the wartime intelligence about enemy countries, because during wartime the enemy is especially anxious to conceal its activities in all fields. Confidential sources must be protected against compromise by adequate security measures.

Open sources are those sources of information the target country makes no effort to conceal. They include public documents, open broadcasts, and many official and private contacts with organizations; travelers, and newspaper people. An open source provides significant information in peacetime and cold war situations. During a war, many open sources are unavailable.

With the change in the Eastern European countries it has tended to confuse the distinction between confidential, closed, and open sources. In the Eastern European country, many things which would (even in an authoritarian state) be open are severely restricted. This doesn't mean open source do not exist in Eastern European countries. It does mean that in communist countries the collector must approach open sources in a totally different manner. Where open sources, newspapers, and periodicals are available in Eastern European countries, the collector must exploit them with caution.

There are literally hundreds of different kinds of libraries and archives throughout the world. Many of them specialize in history, geography, and the applied sciences. Researchers and analysts are encouraged to become familiar with all the sources of information available.

After the information has been collected by the intelligence producers, it must be evaluated by the analysts before processing the final product. Therefore, the collector, analyst, and researcher must evaluate each report and often each item in a report. A large portion of intelligence information is only partially true because it contains varying amounts of bias, distortion, and falsehood. These partial truths could be deliberate, but may be unintentional on the part of the reporting individual or agency.

The primary reason for the analyst's evaluation is the collector often is unsure about the validity of the report. He wishes to communicate his uncertainty to the individual who must read the report and create the mosaic of what has been collected.

In the strategic intelligence sense, evaluation includes:

- * Reliability of its source.
- * Accuracy of the information.
- * Pertinence to immediate or future value.

Reliability of a source is best determined from past performance. If previous reports from the source have been accurate, the source may be considered reliable. The consistency with which this source's reports prove to be accurate influences the degree of reliability. Ultimately the source may be considered as completely reliable. On the other hand, if the source frequently has been in error, the source must be regarded as relatively unreliable. All reports are subject to limitations, and perfect observation and flawless reporting are not to be expected. When the subject matter is complex and highly specialized, the danger of error is greater than when the subject matter is simple.

Accuracy means the probable truth of the information, based on a dependable method of judgment of a source's report. One such method is by comparison with similar-type information which may already be available in the analysts workbook. Accuracy differences could also occur between dissimilar sources.

Pertinence refers to the need to determine whether the information is of value to the producers of intelligence.

One of the main factors to be considered in evaluating source reliability is the competence of the source to furnish specific information which has been included in the report. For example, a high-ranking government official might be fully competent to furnish accurate information on the general state of the economy of the nation, but totally incompetent in supplying information on the newest military equipment.

One important factor is the evaluation of the original source of the information. The evaluation of the secondary source may be less important if the original source is known. For example, an article appearing under a byline in a newspaper should not be attributed to the paper, and the paper should not be evaluated as the source. In this case, the individual reporter or correspondent should be evaluated unless he reported on an interview with another individual and the bulk

of the article consisted of what the individual said in response to the questions asked by the correspondent.

In evaluating items of information, as in evaluating individual sources, certain criteria must be applied and the information judged on the basis of how the information measures up to the criteria established.

The probability of an item is judged by-

- * Internal consistency.
- * Consistency with other information on the same subject supplied in the past by established credible sources.
- * Completeness of detail.
- * Plausibility based on general knowledge and experience.

Reports are examined to see whether they make sense; therefore, a self-contradictory report should be viewed with caution. This is not a final and conclusive test, because an accomplished liar can tell a lie which sounds better than the truth told by an honest man. Manufactured "papermill" information will usually be constructed with unimpeachable logic, or will have a set pattern of confusion. An unsound piece of information may, if taken at face value, seem consistent and logical. By contrast, a basically sound piece of information may contain apparent contradiction which have crept in through clerical errors or imperfections in translation, observation, or transmission.

A vague and general report may be perfectly true but useless. Detailed raw intelligence which cites names and designates places can be evaluated more effectively than general statements of observations. The collector must also examine information against the background of general knowledge on the subject concerned. Information should not be rejected simply because it does not appear to be plausible.

When testing the source for reliability, the intelligence analyst must distinguish between the actual source and the conveying agency. When the originating source is not revealed, the credibility of the conveyer and the conveyer's evaluation of the originating source assume somewhat greater significance. In theory, the only absolute sources for the intelligence a analyst are his own direct observations and authentic documentary evidence. Both of these sources are seldom available.

Since optimum conditions are seldom working conditions, the analyst must begin by asking many questions. Three important ones are:

- * Is the probable source of the report the true source?
- * Has false information been released for purposes of deception?

- * Is the original source manufacturing information, that is, is the original source a "papermill"?

Suppose a field collector wants to test the professional competence of a source who is an electrical engineer. The collector can request the intelligence production people to supply him with the following data about the electrical engineer:

- * Education.
- * Professional experience.
- * Published work such as papers read before professional societies.
- * Professional standing.
- * Competence in the target country.

Trustworthiness includes the factors of loyalty, motivation, and objectivity and may change with the passage of time. A source may have divided and conflicting loyalties, loyalties may have become weakened, and motives may change. Objectivity, too, may change as bias on a certain subject increases or as sudden occur in the source's life.

Loyalty of a source may be estimated by such things as general background, habits, and national ideological orientation.

Motivation of a source in supplying information should be carefully evaluated. A source may act-

- * Under the impetus of great patriotism.
- * Through ideological attachment to a cause, for example, communism.
- * Through jealousy.
- * Because of personal gains in the form of money, promises of position, and promotion.

Objectivity is even more difficult to determine than loyalty and motivation. Every individual has certain prejudices, and there are no completely objective witnesses.

Another very important consideration in testing the reliability of the source is whether the source has access to specific information or is in close proximity to the original source.

The criteria used in testing information are:

- * Coherence.
- * Credibility.

* Confirmation.

Their use depends largely upon the quantity and nature of similar information.

Coherence of information is amplified and expanded by added details to general statements which might otherwise be quite vague. Details do not in themselves ensure correctness, but they do provide a better basis for arriving at a correct picture. Examination for coherence, to which details are an aid, is a preliminary part of testing the information, but it is not a conclusive test.

Credibility is determined by the way information fits into the general patterns of activity. It is worthy of belief if consistent with the main body of intelligence. Startling information completely contrary to the general progress of events or the behavior trends of individuals or groups becomes suspicious to the analyst. However, outright rejection would be dogmatic. The intelligence analyst's own experience in processing and his general background knowledge are especially useful with reference to credibility. The analyst must be alert for fine distinctions in behavior. This alertness should prevent him from discarding information simply because it doesn't appear to be consistent.

Confirmation of information indicates credibility and enhances usefulness. By means of this criterion new information may be confirmed, not confirmed, or contradicted. Two pieces of information containing similar data, but originating from different sources, must be compared closely for coherence down to the smallest detail if the information is to be confirmed. Minute differences do not destroy those pieces of information that can be reconciled. The compatibility of new information with known facts may aid the confirmation.

Interpretation-the final step in intelligence processing-determines the ultimate probable meaning of a known condition or development and puts it in the proper perspective.

At the strategic level there are different degrees of interpretation depending on the magnitude of the problem. The analyst may be required to interpret information with relation to the target, related targets, or to national and international considerations including all components.

Strategic intelligence analyzes and integrates all factors affecting strategic level problems. The degree to which all the sources are covered and the efficiency of the techniques used in evaluating, analyzing, and integrating the items of information gathered will determine how accurately, completely, and promptly all possible factors are indicated.

In other words, interpretation of the integrated components of strategic intelligence will incorporate knowledge of the capabilities, vulnerabilities, and probable courses of action of foreign nations. This knowledge is essential to a strategic commander in planning and executing national security measures for national survival. Interpretation consists of three steps: analysis, integration, and deduction.

Analysis is the sifting and sorting of evaluated information to separate significant elements of information. Strategic intelligence requires each item be considered separately before it is integrated into intelligence. This calls for a close examination of related items to see how they

confirm, supplement, or contradict each other and, through this process, to uncover relationships among the facts.

As applied to strategic intelligence, analysis has two main objectives: to establish items of fact, distinguish each from all others; and establish relationships among these items. This is done by reducing each report to its basic element and then critically comparing these elements with other available data.

Before integrating intelligence you must analyze the following:

Meaning of the language used. In reading a newspaper we are apt to assume the reporter used language the same as we do. Such assumptions are dangerous in intelligence, especially if foreigners are used to collect information. When other foreigners are used as translators for these reports, the dangers are compounded. A greater danger is that the same words do not mean exactly the same thing to two people. This concept is the basis of semantics, the study of the meaning of speech forms. Abstract words are more subject to this sort of misunderstanding than concrete words.

Meaning of the reports themselves. Falsified or fraudulent documents are hard to analyze, because they seldom cause as much trouble as documents that are not authentic. Because of carelessness or lack of understanding they can become a problem to the observer. This is the reason the credibility of each document must be tested individually regardless of the source, author, or items in the document.

Accuracy of the reports. The analyst must approach each item critically, looking for details that are probable and accurate. He must develop a questioning attitude especially where broad statements of fact are made, to determine the accuracy of the information. In technical fields, the utilization of qualified technicians for analysis is important. If they must decide what information needs further evaluation, expert analysts should be utilized.

Motives of the writer and the circumstances. A false report, while useless as a source of information in the usual sense, may be valuable to gauge its originator. The analyst must be able to do more than correctly select the information he will use for his report. He must see beyond the evaluation of the document and consider its relationship to other information.

Relationships among the elements of the reports. The analyst must study the facts, implications, every possible combination, and their relationship. Before this can be done, the items must be considered separately and the facts established. After the relationships have been discovered, the facts are integrated into intelligence.

Integration is the second step in determining all pertinent facts. After assembling the information, an intelligence mosaic is prepared for each subject. Integration requires logical reasoning and sound judgment. Analysis is the process of taking information apart, sorting the parts, critically comparing like items, and accepting certain elements of the subject as logically supported. Integration is the process of combining these accepted elements to form an intelligence picture. In relation, analysis selects and identifies the evidence, whereas integration marshals the evidence so conclusions may be drawn.

Analysis and integration are not always separate mental operations. The researcher doesn't consciously say, "Now I shall engage in analysis for a while," and later, "Now I shall stop analyzing and start integrating". Usually the two processes go together, although functionally, analysis must precede integration.

Taken together, analysis and integration are the heart of the intelligence process. It is the conversion of previously evaluated information into intelligence, ready to be interpreted. Analysis and integration supplement each other in producing this conversion. Making use of both inductive and deductive reasoning, they proceed from the original facts to the conclusions. Intelligence procedures are like any science, that is, they must be built upon a foundation of observed phenomena or facts. To carry the parallel with science even further, the intelligence process is meaningful only when it establishes the truth of generalization.

Dissemination of strategic intelligence is different from research. It is desirable to establish a separate organization to take care of strategic intelligence problems.

Dissemination unit. When dissemination is under separate control, machinery must be set up to coordinate it closely with research elements. The researchers, who have specialized knowledge of the subject(s) being dealt with, can be of great assistance in deciding what should be disseminated and to whom, as well as in preparing the individual reports and studies. The dissemination unit should not be allowed to burden itself or enlarge itself by developing its own miniature research organization, nor should the editors be required or permitted to prepare final reports after only cursory consultation with the researchers.

The dissemination unit serves in every respect as the publisher for the research branches. Its members should be completely familiar with the:

- * Needs of the using agencies.
- * Currency and status of the published material.
- * Publication techniques.
- * Distribution channels.

The unit should also concern itself with the exact form and format for the presentation of its materials.

When a dissemination project has been decided upon, close cooperation is essential. A tentative list of recipients is drawn up and a study made of the character and urgency of each recipient's needs. From this study the unit will be able to:

- * Set a deadline for the project.
- * Determine the project scope.
- * Know the amount of detail required.

- * Know the possibilities of graphic presentation.
- * Know the security classification.
- * Know the suitability of the various dissemination media.

A dissemination plan is a comprehensive record of what has been produced in the past, including its recipients. It can be a great help in determining what to disseminate through which channels, to which recipients, and with what urgency.

Dissemination media. Although the principal media for dissemination of intelligence are listed in the following paragraphs, it should not be assumed the list covers all means of dissemination. Conference, informal memorandums, formal oral presentations, and to some extent, projects and graphic presentations are usually handled by the researchers. Other media, including books, periodicals, special reports, cables, and short movies, are usually handled by the dissemination units.

Conferences may be between the researchers and someone in a position of authority, someone from another agency, or another researcher. They may be as simple as an immediate answer to a single question or as involved as an extended discussion of a complex question.

Informal memorandums are much like conferences, with the differences you would expect when comparing something written to something spoken. Written communication allows the writer to organize and polish his ideas and provides a more or less permanent record of his opinions and judgments. Writing takes more time than speaking, and correction of misunderstanding is more difficult.

Formal oral presentations, such as briefings, lectures, or group conferences, may be presented to higher authority or members of another agency. This medium requires thorough preparation and a mastery of the techniques of clear delivery and effective demonstration. Visual aids are often highly desirable for effectiveness.

Protects are usually the consequence of a request from outside the agency for Intelligence. These constitute a large portion of the work of strategic Intelligence researchers. The requests are generally formulated very carefully to show the subject requirement, the detail needed, and the urgency of the need. Whenever time and security permit and the subject justifies it, the project is given a wide dissemination besides being sent to the requesting agency.

Graphic presentations, such as maps, charts, graphs, and photographs, should be used as frequently and effectively as facilities and time permit.

Books may be used as a formal, systematic medium for presenting strategic Intelligence when it is desirable to cover a whole Intelligence field or to provide reference or training material to a large number of people. Well-known examples of strategic Intelligence books are the National Intelligence Surveys and the British Naval Intelligence "Handbooks" of both World Wars.

Periodicals are printed publications issued at regular intervals and intended for wide dissemination. They contain data and discussions on relatively broad fields of intelligence and are designed to keep their authorized recipients up-to-date on the latest important developments. Many offices and agencies issue periodicals, some daily, for the use of their own personnel. These publications are generally duplicated rather than printed, and the circulation is restricted.

Special reports may be issued whenever the accumulated intelligence on a subject amounts to a substantial change or improvement in current knowledge, especially if it will be of interest or value to a number of individuals or agencies.

Cables sometimes are sent to representatives overseas to transmit spot reports on strategic intelligence and help them in their own reporting or other missions. This is done especially in time of war or crisis when the latest strategic intelligence is urgently needed for planning.

Short movies may be used to disseminate strategic intelligence especially when relatively large numbers of individuals need to be aware of the situation. What has been said about graphic aids applies to motion pictures.

Written requests. Strategic intelligence reports are disseminated in writing in the form of informal memorandums, books, assigned projects, periodicals, and special reports. Integration and interpretation are the last steps in finalizing the intelligence production.

The subject of any intelligence report should be clearly defined. The report should describe and express ideas in a logical pattern, which can be readily subdivided into its parts and related to other subjects. The report should answer questions anticipated from the reader.

An intelligence report is written for one purpose, to convey intelligence information to someone who needs to know. Every report must be clear, easy to read, and understandable.

The following must be avoided:

- * Use of excessive abbreviations.
- * Terms not commonly known.
- * Vague or ambiguous statements.
- * Generalities.
- * Repetitious statements.
- * Long, complex statements.
- * Unnecessary words.

Good report writing can be achieved by using simple sentences, correct grammar, punctuation, and proper paragraphing. Accuracy should be the most essential quality of an intelligence

report. This means any fact presented in an Intelligence report must be fully established as fact. It also means the researcher must satisfy himself with presentation of the whole battery of facts which gives the reader a true picture of the actual situation.

Though there are no standard formats for strategic intelligence reports, proper application of editorial procedures will assure the preparation of a report that will at least convey to the reader the information desired.

Graphic aids. As mentioned earlier, graphic aids cannot be overemphasized as an effective means of Intelligence preparation. If graphic aids are used, a single chart, map, diagram, sketch, tabulation, or photograph can replace a great deal of descriptive text and increase the readers comprehension.

The two areas to consider before using graphic aids are:

- * They must be soundly designed and carefully used to avoid misleading the reader.
- * They cannot be expected to tell the whole story in every case. Rather, they should be accomplished by adequate explanation text for proper understanding.

LESSON 1

PRACTICE EXERCISE

The following items will test your grasp of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answer any item incorrectly, study again that part of the lesson which contains the portion involved.

1. Which intelligence is required for the formation of policy and military plans at the National and International levels?
 - A. Counterintelligence.
 - B. Tactical Intelligence.
 - C. Strategic Intelligence.
 - D. Human Intelligence.

2. The two basic types of coverage are:
 - A. Area and target.
 - B. Static and field.
 - C. Overt and Covert.
 - D. Surveillance and field.

3. The primary reasons for the evaluation of sources of information by analysts is to determine:
 - A. Accuracy of the information.
 - B. Reliability of the source.
 - C. Pertinence of the information.
 - D. All of the above.

4. How many of the nine components of strategic intelligence should be considered alone?
 - A. One.
 - B. Five.
 - C. Nine.
 - D. None.

5. What is the composite of long-range averages and short-term weather conditions?
 - A. Humidity.
 - B. Rain.
 - C. Climate.
 - D. Tornado.

6. Which of the following criteria are used to test information?
 - A. Location of the source.
 - B. Documentary evidence.
 - C. Credibility of the information.
 - D. Motive of the source.

7. Which strategic intelligence component is probably regarded as one of the most important?
 - A. Weather.
 - B. Political.
 - C. Armed Forces.
 - D. None of the above.

8. When a source of information is obtained in its original form, it is called?
- A. Primary.
 - B. Secondary.
 - C. Open.
 - D. Confidential.

LESSON 1

PRACTICE EXERCISE

Answer Key and Feedback

<u>Item</u>	<u>Correct Answer and Feedback</u>
1.	C. Strategic Intelligence. (page 1-2).
2.	A. Area and Target. (page 1-7).
3.	D. All of the above. (page 1-9).
4.	D. None. (page 1-3).
5.	C. Climate. (page 1-4).
6.	C. Credibility of the information. (page 1-12).
7.	C. Armed Forces. (page 1-5).
8.	A. Primary. (page 1-7).

LESSON 2

GEOGRAPHY

CRITICAL TASK: NONE

OVERVIEW

LESSON DESCRIPTION:

In this lesson, you will learn how to determine surface features and attributes and determine transportation and communication components.

TERMINAL LEARNING OBJECTIVE:

- ACTIONS:** To be able to understand the importance of geography and its affects on the positioning of troops and armies.
- CONDITIONS:** You will be given narrative information and illustrations from FM 34-1 and STP 34-96B4.
- STANDARDS:** You will be able to recognize different geographical areas that may help or harm your units mission in a certain area of operation.
- REFERENCES:** The material contained in this lesson was derived from the following publications:
- FM 34-1
 - FM 34-96B4
 - STP 34-96B24-SM-TG

INTRODUCTION

It is very important to understand geography. As a strategic intelligence analyst you will obtain detailed geographic information concerning your area of interest. As an analyst you must be able to evaluate this information to determine the most beneficial geographical areas in which to maneuver your unit. Geography can help the maneuverability of a military unit but it can also hamper the maneuverability of a military unit. Without the proper knowledge of geography a strategic intelligence analyst can put his unit in great trouble.

PART A: DETERMINE SURFACE FEATURES AND ATTRIBUTES

To appreciate the science of geography, one should realize there is a positive relationship between geography and world problems. The history of the struggle among nations cannot be interpreted without understanding geography and realizing that at times geographic conditions have been causes of war. It has been said by world statesmen the geographical position of a nation is the principal factor conditioning its foreign policy and its national policy. Because of

advancements in communication, science, transportation, socioeconomic and military capabilities, nations have altered their foreign policy outlook. As new forms of technology take shape throughout the world, emerging nations become hot spots of diplomacy. The world demand for oil is one example which now affects, and will continue to affect, foreign policy.

Disregard for world geographic realities has led to the loss of wars, the drawing of indefensible national boundary lines, the splitting of natural economic and geographic units within a country, and the creation of countries which lack the economic necessities for national survival.

With the technological progress made in transportation and communication systems, political regionalism and defiance of central authority have tended to disappear, binding regions into national units. At the same time, the spreading network of fast and efficient transportation and communication systems have promoted economic regionalism, that is, the specialization of goods produced in regional areas of the nation. To some extent, this trend is now reversing itself.

Vulnerability to an economic system that is regionally located can be disastrous for a nation. It's like putting all your eggs in one basket.

Geographic location. The global geographic location of a nation determines its climate, economy, military strategy, and foreign and domestic policies. A favorable geographic location gives a country tremendous economic and strategic advantages.

A country's location may be considered in two ways:

- * Geographically by degrees, minutes, and seconds in latitude and longitude.
- * In terms of its relationship to land and water, prominent features of the continental landscape or trade routes.

Location also determines the climatic zone, amount of sunshine, flora and fauna, length of growing season, and access to world markets. For example, the United States is in an advantageous position. It has access to trade routes on both the Atlantic and Pacific oceans; friendly neighbors on its north and south borders; abundant amounts of sunshine, flora, and fauna; and a favorable agricultural growing season.

The United States has large bodies of water separating it from Europe and Asia so it is comparatively free from external pressures. However, this gap has narrowed, primarily due to technological advancement in space, economic world pressures, and the continuing arms race with many countries.

Because of location, some nations may possess any number of strategic advantages, such as:

- * Warm water ports.
- * Industrial capabilities.

- * Agricultural capabilities.
- * Raw material.
- * Trade route control.

Other nations, because of their particular strategic location in the world and possible use as stepping stones for intervention, are considered of high strategic value, especially by nations seeking future military advantages.

SIZE, SHAPE, DEPTH, AND BOUNDARIES.

Countries vary in size from the one-half square mile of Monaco to the eight and one-half million square miles of the CIS. The CIS covers one-sixth of the earth's land, whereas both the United States and China control areas almost as large as the continent of Europe. There are eight countries with over one million square miles of territory, exclusive of outlying and colonial possessions. Their approximate areas rounded in square miles are:

- * CIS -8.65 million.
- * Canada -3.85 million.
- * Communist China -3.70 million.
- ' United States -3.62 million.
- * Brazil-3.29 million.
- * Australia-2.98 million.
- * India -1.26 million.
- * Argentina -1.07 million.

Great size is a prerequisite for, but does not guarantee, great strength. Small countries usually lack the industrial and military manpower to become powerful. Small nations have both advantages and disadvantages. A homogeneous population usually results in greater cohesion and unity of the people, but national markets and resources are limited. Large nations may have a wide variety of natural resources, diversified industries, and a large domestic market. Disadvantages are heterogeneous populations, diverse languages and cultures, and difficulty in providing adequate transportation and communication facilities.

A country's shape may be classified as compact or attenuated.

A compact state approaches the form of a square or circle. Romania is an example of a compact state. Compact states have shorter lines of transportation and communication. Short penetrations by a hostile force do not greatly affect a compact state.

An attenuated state is longer than it is wide. Chile is 2,600 miles long by 100 miles wide and can be classified as an attenuated state. Attenuated states are more apt to be cut in two by centrally located invasion forces.

Depth involves both size and shape. Great depth provides easier defense by permitting mobilization of resources and manpower and the training of soldiers in areas far removed from its borders. Depth enabled Russia to trade space for time in World War II. Often depth can have advantages for both the defender and the attacker because military operations over large areas are difficult for both sides. Depth must also be considered in connection with population and resources. From the viewpoint of area alone, Canada appears to have considerable depth. However, the industry and population of Canada are concentrated in a relatively narrow corridor along the US's northern boundary.

Russia is cited as the classic example of defense in depth, since her ability to trade space for time was almost exhausted in World War II. Since World War II, Russia has pursued a policy of geographic decentralization of its industry. This was prompted by several considerations: moving some industries nearer to the source of raw materials and some of the outlying markets; reducing long rail hauls; and the desire to develop industries in previously nonindustrial areas, which were often inhabited by non-Russian ethnic minorities, in hopes it would strengthen their loyalty to the Soviet regime.

Boundaries are generally thought of as lines which set the limits of a nation's sovereignty. The strips of territory adjacent to boundaries are known as frontiers. Boundaries sometimes follow natural features such as rivers and mountain ranges, but they are often nothing more than the invisible parallels of latitude, meridians, or other mathematically determined lines. Often these lines divide natural economic areas, such as the Lorraine area of France, or they may divide ethnic groups as in several of the Balkan countries.

A nation's ability to defend itself is often dependent upon the physical location of its boundaries and frontiers. Holland and Poland are nations whose frontiers have historically offered no serious obstacles to invasion. The United States is protected on the east and west by ocean boundaries; the invasions by Arctic cold on the north, and deserts and mountains on the south. The western frontier of Russia, however, offers relatively few obstacles to invasion. Throughout history, Russia has sought to improve this situation by pushing the boundary further west.

Terrain. Intelligence on natural terrain features of the earth's surface is important to military planners in determining offensive and defensive strategy. In terms of the military planner, all terrain features that would have a direct effect on the operation must be considered. Ignorance of terrain configuration has caused battles to be lost.

Surface configurations which refer to land form (physical expression of land surface) are plains, hills, and mountains. The continuity of plains could be interrupted by hills and valleys, but flatness is the predominate characteristic. Hills are moderately high local relief areas with steep slopes and small summit areas. Mountains have high elevation, steep slopes, and narrow summit areas with relief greater than 2,000 feet.

Topography refers to the earth's configuration and includes the position of streams, rivers, lakes, roads, cities, and other relief features.

Surface materials are the composition and physical properties of the materials found on the earth's surface. These materials are rock and soil. Soil is a relatively thin covering of decomposed rock mixed with varying amounts of decayed plant and animal materials. Soils of varying thickness cover most of the land area of the earth. but in many places the bedrock is exposed.

Soils are grouped as follows:

- * Gravel.
- * Sand.
- * Silt.
- * Clay.
- * Organic.

Cross-country movement of military vehicles and personnel is dependent on the proper evaluation of the trafficability of the soil. A major consideration is the ability of the soil to support tracked and nontracked vehicles moving cross-country or along unimproved roads. This is determined not only by the composition of the soil but also by weather and drainage conditions.

Hydrology is concerned with the size, shape, and distribution of bodies of water, both surface and subsurface. Surface water encompasses all inland waters whether man-made or natural. Surface water way be of prime importance to military operations if and when surface water is contaminated during hostilities.

To the intelligence analyst, the knowledge of drainage patterns or systems is very helpful in military operations. These patterns include rivers, lakes, canals, swamps, and tidewater areas. These types of drainage present some obstruction to cross-country movement or they could become avenues when sufficiently frozen. Strategically located drainage systems have a tremendous effect upon a country's economic activity and the location of specific industries within an area.

Vegetation includes all flora growing on the surface of the earth, crops, and orchards. The vegetation cover of the earth ranges from scattered living plants in the desert, to grasses on the steppes, and to the dense jungles of the tropical rain forest.

Of all vegetation, large concentrations of trees and forest are the principal obstacles to cross-country movement. Conversely, forests can offer concealment and cover, fuel, shelter, food, and construction material.

Although cultural features are not natural to the earth's surface, they are of major importance when evaluating the terrain for military cross-country movement. Man-made features continue to dot the land and should be considered in any strategic planning.

Climate and weather. Climate and weather influence man's activities, and they have a definite effect on military operations. Climate and weather can be either advantageous or disadvantageous to the aggressor or defender, depending on the military situation. Weather, for instance, was a decisive factor during the allied landings in Normandy and the German attack in the Battle of the Bulge during World War II.

Climate. The world is divided into four major climatic regions (Figure 2-1) as follows:

Tropical rainy climates are generally located along the equatorial belt of the earth.

Dry climates occur when the evaporation rate exceeds the precipitation rate.

Humid climates are characterized by moderate temperatures and varying amounts of precipitation.

Polar climates are predominately colder regions of the earth and limited to sparse vegetation growth.

The two major nations (US and CIS) have climatic variations which add variety to their production and provide for a balanced economy. Other nations, not so fortunate, lie in climatic regions that limit their economic growth.

Weather is the day-to-day changes of the atmosphere. Weather is analyzed in terms of visibility, clouds, precipitation, temperature, and winds. The effects of weather on personnel, equipment, and supplies are a necessary adjunct to planning military operations.

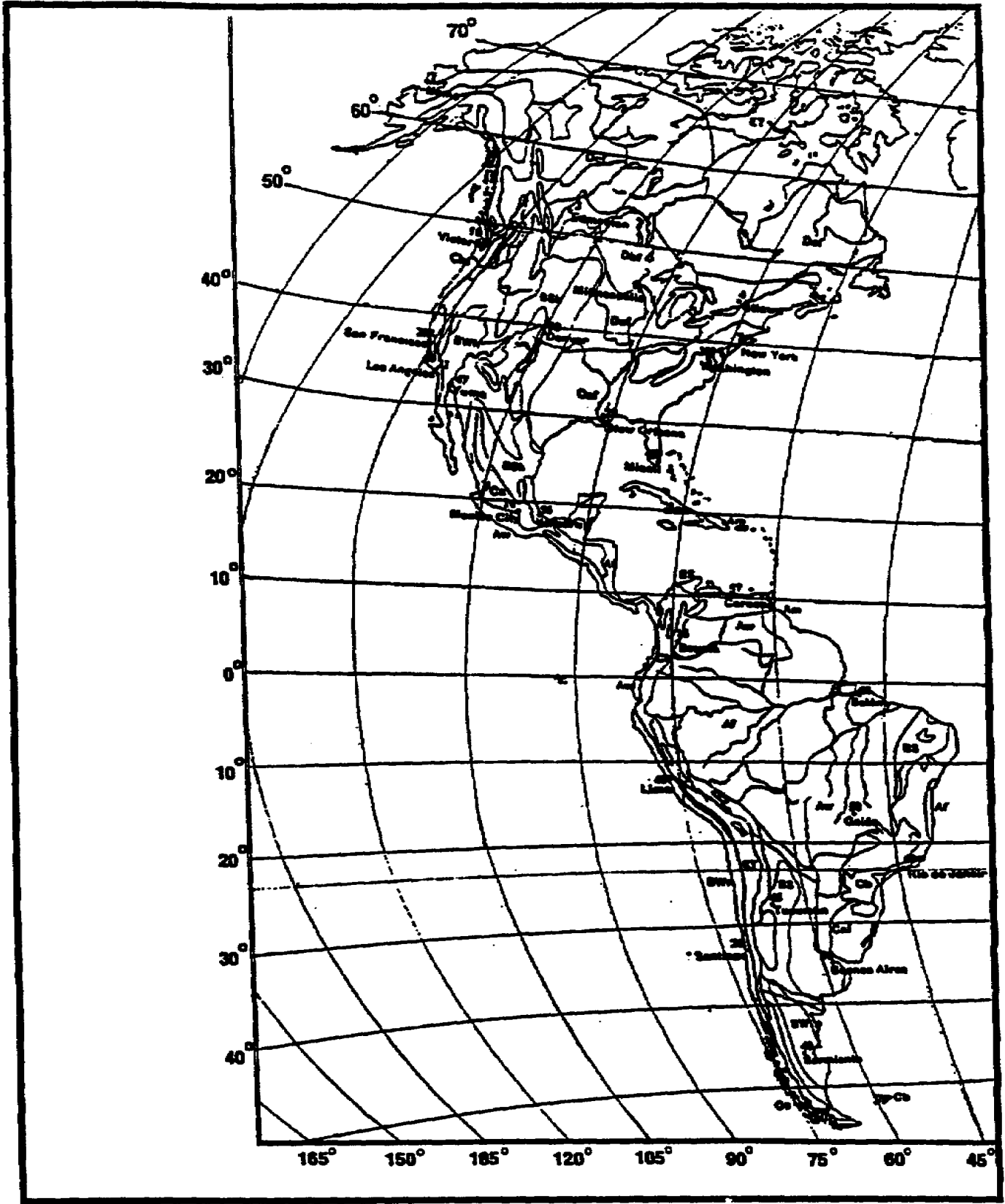


Figure 2-1. Major climatic regions (continue).

		APPROPRIATE SYSTEMS and FOOD PRODUCTS	AREAS of UNEXPLOITED POTENTIAL	EASURES REQUIRED
POLAR	EF Ice cap	NIL	NIL	
	ET Tundra	Raindeer (Nomadic)		
COOLER HUMID	Dc Dd Subarctic	Barley, Oats, Rye. Cattle, Forage croos	* Canada, Siberia, Northern river valleys	D. F. C Stone removal Quick growing strains
	Db Continental Cool Summer	Dairy Cattle, Forage croos. Barley, Oats, Rye. Sprng wheat, Potatoes	** N Canadian praine ** Central European Russia	
	Da Continental Warm Summer	Wheet, Millet, Maize. Soybeans, Forage croos. Cattle, Sheep	* Manchuria	P. F. Flood control improved husbandry
WARMER HUMID	Cb Cc Marine West Coast	Dairy Cattle, Sheep Fodder Crops. Horticulture Wheat, Barley, Oats	*** New Zealand *** S.E. Australia	E. F. P More intensive farming
	Ca Humid Subtropical	Cattle Ranching, Wheat, Maize, Rice, Truck farming	***Uruguay ***Australia, E. coast plains	A. E. F. P Selective breeding
	Cs Mediterranean	Horticulture, Viticulture, Citrus wheat, Sheep, Goats	*** S Australia *** S. Africa ** Mediterranean Littoral	Restoration and preservation of pasture
DRY	BS Steppe	Cattle, Sheep, Fodder cross, Wheat, Maize Millet	*** USSR Steppe *** China Northern loess *** Queensland (NSW) ** N. American praline	I. F. P Selective breeding
	BW Desert	Sheep, Goats, Millet, Wheat, Date palm	*** Great American desert *** Soviet Central Asia *** Upper Egypt ** S. W. Asia River basins * Sahara NW&SE (aquifers)	Provision of water Prevention of Salinity I. F. M
TROPICAL HUMID	Aw As Savanna	Cattle, Pigs, Poultry Millet, Maize, Padi Rice, Vegetable Oils, Sugar Cane Padi Rice, Fish Faming	** Ethiopia, W. Madagascar * African savanna * Lianos and campos * Northern Australia ** S. E. Asia, Great river basins	Water conservation Fire control Diseese control Selective Breeding E. F. C
	Af Am Rain forest	Rice, Vegetable Oils, Citrus, Bananas, Coffee, Tea Cocoa, Fish Faming, Pigs, Poultry	** Malaysia ** Guinea Coast * Amazon basin * Indonesia * congo * Central america	Penetration, C Maintenance of fertility, F Mixed cropping, Bush fallowing. Water and Erosion control Disease and Weed control
NOTES: Ease of exploitation: A Agrarian reform F Fertilizers P Pasture improvement: *** Most practical C Communications I Irrigation Controlled grazing ** Possible D Drainage M Mechanization Slected species * Difficult E Erosion control Rotation with fodder crops				

Figure 2-2. Major climatic regions (continued).

Extreme temperature variations do occur and have been recorded over a 24-hour period in many areas of the world. On the steppes of Siberia these fluctuations are as much as 60 degrees.

Precipitation also varies greatly with the seasons in many places. Some areas have a wet season when it rains daily and a dry season when rain may not fall for several months.

The military strategist is concerned about the weather and looks to the strategic intelligence analyst so advantages can be taken of weather changes.

Oceanography and beaches. Oceanography is the study of the ocean and its characteristics. Strategic intelligence is particularly concerned with the tides and currents, waves and swells, sea water characteristics, and topography of the ocean bottom, bars, reefs, sedimentation, and alluvial deposits near coastal areas. The tidal range, which is the difference in water level between high and low tide, is very important in port operations and amphibious landings.

The tidal range varies widely from place to place. In nearly enclosed bodies of water, like the Mediterranean and the Baltic Seas, tides are so slight as to be almost negligible. At Cherbourg, France, however, the average tidal range is 17 feet and at Liverpool, UK, it is 29 feet. Places of greatest tidal range are usually those situated on funnel-shaped bays. The best known example of the Bay of Fundy, Nova Scotia, where the range is sometimes over 50 feet. Ships are frequently grounded by low tide and floated again at high tide in the harbors along this bay. On islands and peninsulas the tidal range varies from shore to shore. The east shore of Korea has a much smaller tidal range than the west shore.

The topography of the ocean bottom has become increasingly important to the strategic analyst, especially in connection with the growing menace of the nuclear missile submarine. Contours of subsurface ocean configurations are vital as possible launching points for submarine nuclear missile carriers.

The expression "hit the beach" became quite common place in the Pacific during World War II military operations. However, amphibious warfare became complex when needed intelligence for a successful landing was not fully realized.

As a result, some of the early landings were much costlier than the later ones. In one instance, heavy losses were experienced because it was not known a fringing underwater reef would prohibit landing boats from coming in close to shore.

Besides the information about tides and other ocean characteristics discussed in connection with oceanography, it is necessary to know the character of the underwater slope leading away from the beach, the trafficability of beach soils, and the nature of the flanking and backing terrain. The presence of rock and mud on the sea bottom may affect the landing operation, often damaging or grounding the landing craft while it is too far offshore. A gradual underwater slope may make it necessary for men and motorized equipment to proceed through water for a considerable distance, whereas a steeper slope will permit the landing craft to come closer to the beach. The soil materials of the beach determine whether or not heavy equipment can be run quickly across the beach without danger of bogging down. The terrain behind and on each

side of the beach must be studied from the viewpoint of concealment and cover, lines of communication, soil trafficability, and probable enemy defensive positions.

Another factor to be considered is ocean and sea swells. Swells are disturbances of the surface of the water under the direct influence of winds. Although swells are unbroken waves, they are usually several hundred feet long between successive crests, and their direction of travel may differ from that of the wind. This factor and other beach characteristics must be considered in overall landing operations.

Strategic areas and maps. Strategic areas are those particular aspects of a country that have high strategic importance. The loss or control of these areas could have a direct bearing on the affected country. Strategically important are:

- * Mountain features, such as the Khyber Pass.
- * Canals, such as the Suez Canal.
- * Industrial complexes, such as the Ruhr Valley.
- * Great cities, such as Moscow.
- * Agricultural areas, such as the Ukraine.
- * Great population centers, such as the Los Angeles Megalopolis.

In studying these areas of strategic importance, the intelligence analyst is concerned with the impact on these areas of economics, transportation, communication, and government. The analyst is interested in routes leading to and through these areas to determine which obstacles could confront invading forces. Technological advances in military movement make it plausible to bypass these barriers.

Maps are the principal source of terrain information. Their accuracy depends on the data used in their preparation. Maps are considered intelligence documents and the basic source of information on terrain for the strategic analyst.

Maps and terrain models used by military planners are kept up-to-date using input provided by aerial and space vehicles. The US and CIS possess the map making capability to cover the entire earth's surface. Virtually all advanced countries have fairly detailed topographical maps available. However, these countries do not have the capacity or the means to map the global surface.

Some of the methods used for terrain mapping are photographs and remote sensor imagery to include infrared and J-STARS.

Scale is an important item in map making. Ideally, a topographical map is so large every hill can be recognized. A scale of 1: 25,000 to 1: 50,000 accomplishes this very well.

Being a curved surface, the earth cannot be reproduced exactly on a flat surface. The larger the map surface the more accurate it is. However, different map projections are available to the analyst, with the choice of projection dependent upon the type and amount of error he wishes to minimize.

PART B: DETERMINE TRANSPORTATION AND COMMUNICATION COMPONENTS

Transportation systems are the arteries of a nation. The major arteries of the system are the highways, railroads, and waterways with lesser arteries being aviation, pipelines, and roads.

Transportation systems play a key role in the economy and logistical capabilities of a country. Movement of manufactured goods, agricultural products, fuels, and so on, from one region to another are vital necessities to a nation's economic development. The military intelligence analyst, in preparing terrain studies for strategic operations, carefully surveys all transportation facilities to determine what effect they could have on any future operation.

Recommendations may be made to destroy or retain a certain transportation facility depending on the type of operation being planned. Normally, military planners conduct a detailed study of each major transportation system.

The analysis of any transportation system involves the following:

- * Material being transported.
- * Transportation means.
- * Transportation routes.
- * Terminal and maintenance facilities.
- * Transportation effectiveness.

When considering any form or means of transportation, these five categories provide for the general outline of an analysis. For example, the analysis of the transportation system of the hostile country would include a study of the movement of oil from the oil fields or docks to the refinery. The analyst would determine the importance of this movement to the economy of the nation, type of vehicles or conveyance being used, and the terminal and maintenance facilities along the route, especially the loading and unloading facilities. This inquiry into the effectiveness and capabilities is supplemented with a parallel investigation of the weak points, bottlenecks, and other vulnerabilities of the system.

Important: It can readily be seen the two most important aspects of any transportation system are its capabilities and vulnerabilities.

Railroads. In countries where there are no complementary highway or road systems, railroads constitute the primary mode of transportation. Railways are particularly useful to the logistical support of a nation, because they are more suitable for long-distance travel and mass movement. They are also less susceptible to the elements of weather and other climatic

handicaps. In military operations, railways are frequently substituted as roadways for vehicles, especially where soils are untrafficable. Most railway bridges, ferries, and other structures are designed to support heavy loads and could therefore be used as a roadway for tracked vehicles and even tank movement.

Physical Characteristics. Analysts studying railway systems take into consideration the physical characteristics of a railroad, such as the composition of the roadbed, type ballast used, rails, track alignment, and other features for determining rail carrying capacities, movement, effectiveness, and maintenance requirements. Prime considerations are gauge, yards, control, and net.

Gauge. The speed at which trains can operate is determined by the condition and age of the roadbed as well as by the type train (diesel, electric, steam) using the railway system. Rail gauge is the distance between the inner edges of track. It varies from country to country and is important when it is different for adjoining countries. The standard US gauge is 4 feet 8-1/2 inches, the same used in many European countries. The CIS gauge is 5 feet while other nations use a narrow gauge system such as 3 feet 5-3/8 inches.

Yards. Of major importance to the analyst are railway junctions and terminal facilities for providing storage, loading, and unloading of material. Ordinarily, marshaling yards and engine houses are located at the junction of rail lines. These yards provide for maintenance as well as for the assembling of trains and are of high strategic importance.

Control. Modern railway systems are centrally controlled using computerized traffic control methods. The train dispatcher identifies, signals, and switches trains remotely from distances up to a hundred miles or more. There are, however, many countries which still operate railway systems using movement orders, mechanical switching devices, and signal men along the travel line.

Net. A prime consideration is the general railroad net. The routes of the different lines, the cities and areas served, and the total railway mileage are all basic items of information. The lines should be classified as single, double, or multiple-tracked. Interconnections and parallel routes permit the flow of traffic to continue even though several lines are interrupted. Double tracking does far more than double the capacity of railroad lines. On a single track much time is lost in meeting and passing trains. Double track eliminates the necessity of switching trains and greatly reduces the amount of passing that must be done. In case of damage to one track, the other track can be used temporarily for two-way traffic.

Railroads and military operations. Although there are many economic advantages to a railway system, military operations make it extremely vulnerable to enemy attack and difficult to protect. Railways are fixed in position, limited to certain types of terrain, and are difficult, if not impossible, to camouflage.

Keeping a railroad in operating condition during military operations requires a trained security force for protection from sabotage and guerrilla operations, a maintenance force, and an anti-air defense system for protection from attacking enemy air forces. Aside from bridges, tunnels, and trains en route, points of special vulnerability are the locomotive servicing facilities, marshaling yards, and signal trafficking and communication control systems.

Highways and roads. To a strategic intelligence analyst, a highway can mean anything from a narrow trail to a multilane superhighway. All necessary structures associated with movement along the transportation route, such as bridges, tunnels, and ferries are considered as integral parts of the highway net.

Highways are essential in the conduct of any major military operation. Countries like the US, with a highly developed highway net can afford to treat its backroads and trails with only minor interest, while a country with a lesser developed road net must consider all roads and trails as militarily significant.

One of the best ways of gauging the effectiveness of highway transport within a country is to study the statistics of motor transport, if issued by government or other agencies. Such statistics usually include the number and types of vehicles produced, the number in use, and the yearly mileage and tonnage of highway carriers.

Mapping of road nets. The strategic analysts first consideration is the careful mapping of the general road net indicating routes, point-to-point mileages, surfaces, widths, cities, and areas served, as well as connections with, and parallels to, other means of transport. Also, reports about individual routes should include bridges, tunnels, the state of repair and maintenance, special topographic features such as fills and cuts, and steep drops on roadsides. Fueling and repair facilities along the route should be noted in general terms. The traffic density by number, type, and kind of freight is a valuable item of information.

Some nations have highways that have been constructed for a dual purpose. These roads serve to transport economic and military materials and equipment to areas of strategic importance, or they can be used to shuttle military forces to vital border areas. The design of these roads has allowed for heavy road surfaces and load-carrying bridges. Also, these roads make underpass allowances for high-angle clearance and oversize equipment to pass and make turns.

Building materials. To the analyst, terrain makeup affects road construction and maintenance. Rock is the most important road building material which serves both as a foundation and surface material for improved roads. Sand or river gravel is the basic foundation where there is a shortage of hard rocks. In the Ukraine, even pebbles are rare because the river sources are in marshland rather than in mountains, and the roads have been paved using manufactured bricks. The north China plain is almost completely without gravel, so any surface other than unimproved earth is very expensive. Road building equipment is an important factor in the cost of roads. Backward regions find the cost of the road building, both in terms of money and human effort, prohibitive because of the huge expenditures of labor and small economic return.

Pipelines. Pipelines are generally the most vital link in an industrialized country's energy supply system because of their capacity to move liquids and gases. The overland transport of petroleum and other refined products is accomplished most economically and expeditiously by pipeline.

Crude oil Pipelines. Crude oil pipelines are used only for the movement of crude oil. The oil received directly from oil fields goes to settling tanks and refining facilities for storage and

transfer. Crude oil and refined products received from marine docking terminals are pipelined to loading points for railroad tank cars and tank trucks, or they are sent directly to refinery facilities.

Pipeline systems. A pipeline system includes the pipeline itself, the pumping and compression stations, and the storage facilities. Although pipelines can be made of almost any material which will transport a liquid gas without leakage, petroleum moves almost entirely through continuously welded steel pipe wrapped with noncorrosive materials. Pipe diameters vary in size from 6 inches to more than 40 inches.

Depending upon terrain, pipelines may be laid either underground or aboveground and may extend long distances cross-country. Pipelines also follow the alignment of roads and railroads to take advantage of stream crossings by using existing bridges or, in some cases, specially constructed pipeline suspension bridges.

Any product passing through a pipeline requires applied pressure to transport it through the system. Pumping stations are needed to increase or reduce pressure and otherwise provide for regulated movement. Stations are located from 30 to 80 miles apart depending on terrain features, pipe size, and consistency of the product. Valves are located at frequent intervals along the pipeline and at the terminals. If pipe has been laid underground, the valves along the line protrude above ground.

Storage facilities are provided at terminals and at intermediate points to permit flexibility of operations. The type, capacity, and number of tanks at one point constitute a tank farm, and the tanks may be either above or below ground. Over short distances, pipelines will handle a wide range of materials. A single pipeline can handle a number of petroleum products, with one moving behind the other for a minimum of mixing at the faces of each shipment. A pipeline built to transport liquids can also be converted to the transportation of gases.

Pipelines and military operations. Civilian pipelines can be an important potential for military support during military operations and must be considered in overall strategic planning. Military pipelines are primarily used for the movement of aviation fuel and gasoline. Other fuels, such as diesel and kerosene, can be handled as well. Permanent military pipelines to military bases and airfields are mostly underground for security purposes.

A study of a country's pipeline capabilities should include information about the following:

- * Receiving and distribution terminals.
- * Overland pipeline routes.
- * Type of liquid gases or material transported.
- * Delivery capacities.
- * Pumping station locations.
- * Storage facilities and capabilities.

- * Refinery output.
- * Repair and maintenance capabilities.

Pipelines are vulnerable to sabotage and guerrilla operations; whereas, refineries and storage facilities would be more subject to air attack in the event of hostilities.

Inland waterways. The term inland waterways applies to all rivers, canals, lakes, and inland seas. Coastal waterways are those which parallel coastlines of countries and provide sufficient shelter from coastal seas to permit the navigation of small vessels.

Purposes. When considering waterways, all facilities associated with the movement of materials are included. Some of the more important aspects of waterways are:

- * Loading and unloading terminals.
- * Dams.
- * Locks and shiplifts.
- * Bridges and aqueducts.
- * Levees and retaining barriers.

Many countries throughout the world do not have adequate land transportation systems, but have made effective use of their waterways in the movement of commerce. Probably the most well-known lakes used for commerce are the Great Lakes of the US.

Another important type of waterway is the canal. Canals are usually built to:

- * Convey ships around waterfalls or dams.
- * Connect natural waterways, lakes, and seas.
- * Link river systems together.

The Volga-Don River and canal linkup with the White, Baltic, Caspian, Azov, and Black Seas provide CIS with an economical transportation system. The Mississippi, Ohio, and Missouri Rivers are perhaps the best known river waterways in the US.

Advantages. The principal advantages of any inland waterway transportation system are:

- * Low cost of economic transportation.
- * Movement of large quantities of bulk materials and heavy items.
- * Relatively low maintenance required.

- * Use of a natural right-of-way.

Disadvantages. The main disadvantages are:

- * Water transportation is slow.
- * The depths of rivers and streams fluctuate with maximum and minimum rainfall.
- * Shifting channels and deposits of sandbars.
- * Distance between loading and unloading terminals is greater.
- * Cold climate waterways tend to freeze and halt traffic.

Strategic significance. Strategically, a waterway's most vulnerable points are its locks and shiplifts, dams, and terminal areas. Other information of strategic value would be knowledge of a country's dredging operations, navigational aids, water depths, and the type of construction used on locks, dams, and levees.

SHIPPING, PORTS, AND HARBORS.

Over three-quarters of the world's international trade is carried on by ocean shipping. This is not remarkable when one considers that four-fifths of the earth's surface is covered by continuous ocean which offers no formidable barrier to transportation, except in the polar regions. The oceans are relatively free from political control, belong to no nation, and there are no rigid routes to follow as in land travel. The greatest advantage of ocean shipping is low cost; by comparison, railway haulage is far more costly per unit of weight.

The oceans are free to travel in any direction; however, most traffic movement is routed to shipping lanes. These lanes connect to the most active shipping ports in the world. The shipping lanes converge at various points on the globe due to continental shapes and the location of strategic canals.

The three most important maritime canals from the strategic point of view are the Panama, the Suez, and the Kiel. The Panama Canal connects the Atlantic and the Pacific Oceans and provides ready water communication between the east and west coasts of North and South America. The Suez is an ocean-level canal which is an integral link in the world's second most heavily traveled ocean route. The Kiel cuts across the neck of the Danish peninsula to connect the North Sea and the Baltic Sea.

Seaports are the loading and unloading transfer points for oceanic and land cargoes. A good port requires a natural harbor and easy access to a large productive and consuming hinterland. An ideal port consists of a deep, large harbor with enough adjacent level and well-drained land to build a commercial city. Information on seaports, naval bases, and shipyard facilities is essential to the analyst for estimating capacities, capabilities, and weak points of military significance.

Harbors are normally associated with ports and may be natural, and improved for the transfer of goods and supplies between ship and shore. They become part of a port facility.

Characteristics. Some of the more common characteristics associated with harbors are:

- * Breakwaters and jetties.
- * Docks and mooring facilities.
- * Navigational fairways and buoys.

With the enormous increase in modern cargo carrying capabilities of ships, especially oil tankers and ore carriers, more massive type structures have become necessary to handle these ships. Docking facilities, both on shore and off, have been improved to expedite the transfer of their cargoes.

Analyst considerations. Information collected on merchant vessels includes speed, fuel, cruising radius, gross tonnage, vessel draft, and carrying capacity of individual ships in foreign merchant fleets. The number of vessels, specialized equipment, electronic gear, form of propulsion, and state of repair must also be noted. Many ships are registered in, and carry the flag of, countries other than that of the owners. For this reason the number of flag vessels may not present a true picture of a nation's capabilities.

Shipbuilding can be classified as major construction, requiring large installations and heavy equipment. Information collected should include size and capacity of shipyards, construction and repair facilities, size and types of cranes, and expansion capabilities of the yards.

Air transportation. Aviation is a constantly developing form of transportation and assuming a greater share of the world's freight and passenger traffic. The introduction of jet aircraft has shortened travel time and greatly increased carrier capacity. In CIS, air travel is not only desirable but in many cases is a necessity because of the vast area involved. Many countries depend upon air transport, because other forms of transportation are undeveloped or geographical barriers hinder normal travel. Knowledge of civilian and military air transportation capabilities is essential in any study of a country's ability for the rapid deployment of personnel, equipment, and supplies.

A nation's industrial aircraft production capabilities usually determine its role in world transportation. The US has been a leader in providing commercial transportation aircraft to countries with little or no aircraft production abilities.

Of equal important is assessing a country's air transportation role is the availability of raw material, such as petroleum, to provide fuel to operate an air transportation system. Factors which affect a country's aircraft production, expansion, and maintenance of good air transportation systems are the:

- * Availability of ample fuel and lubricants.
- * Abundant supply of skilled labor.

- * Varied and dispersed aircraft industry.
- * Modern aircraft.
- * Airfields network.
- * Efficient communication and navigational aids.

Major civilian airfields almost invariably will be located near the cities they serve, while military airfields are located some distance away from the cities because of their requirement for greater land areas.

Modern airports require elaborate and extensive ground support personnel that far outnumber those who fly the aircraft. No aircraft can operate without the support of ground personnel. Also, a large amount of ground support equipment is necessary to control takeoffs and landings, make loading and unloading easier, and repair and maintain aircraft.

Analyst considerations. The intelligence analyst must estimate a country's aircraft capabilities based on the quantity, quality, and transportation specialization of each type aircraft. Facilities for the air and ground crew training should be studied and identified as to the number of trainees, qualities, and capabilities.

One aspect the strategic analyst cannot overlook is the research programs on air transportation the country is conducting. Special emphasis should include applied research conducted at civilian institutes and industrial research facilities.

Like other methods of transportation, grounded aircraft and airfields can be vulnerable to sabotage and guerrilla attacks. Fuel-receiving terminals and storage facilities would entail additional security measures as well as hangar and aircraft storage areas. Airborne transportation aircraft would be highly susceptible to air attack in event of hostilities.

Telecommunication. Telecommunication refers to all forms of civil and military telecommunication systems, facilities, and equipment. It further refers to the related governmental and commercial organizations that regulate and operate these systems. Telecommunication includes telephone, telegraph, teleprinter, facsimile, data transmission, radio broadcast, and television.

Various means are used to transmit the audio, video, and other media forms, such as wireless, cables, radio-relay links, tropospheric scatter links, antenna, and satellites. The amount of communication increases immensely during hostilities. One main reason is the constant movement and deployment of personnel and equipment during hostilities. Wartime conditions call for great volumes of data to be transmitted, and modern developments have made tremendous advances in the field of automatic data transmission and processing, which have added to the capacity of telecommunications.

In every country there is a complex relationship among the different forms of transportation. The railroads connect with the ocean routes and with inland waterways; and pipelines, railroads, and highways run side by side. In general, the greater the amount of parallel transportation

lines and the greater the number of interconnections between key traffic arteries, the stronger and more flexible the transportation center. The choice of the means of transportation constructed by a country depends on geography, the state of technology within the country, and the products to be transported.

The wire systems usually parallel one of the other forms of communication, either roads or railroads. This facilitates installment and maintenance. It is only natural communication nets focus and interconnect at trade centers, since trade relies on communication for its life. These factors assume greater importance in wartime.

Analyst considerations. In gathering information about various telecommunication systems, the analyst must study each method used, identify the type equipment, ranges, capacities, location, and the many other aspects of the system. Trained operational and maintenance personnel form an essential part of the system and should be included in the evaluation of the system's effectiveness.

The strategic intelligence analyst obtains from electronic and communication collection agencies huge amounts of information on telecommunication systems. The data collected usually consists of operating frequency, direction finding, signal analysis, traffic volume, countermeasure techniques, communications security, and the maintenance sequence. Technically trained personnel usually perform these duties. However, field collectors also provide valuable information in the form of visual sightings, personal contacts, maps, publications, and photographs.

Wireless telecommunication systems are vulnerable through the use of countermeasure activities that disrupt and render communications useless for periods of time. Wireless telecommunication systems are also subject to intercept at all transmission levels. Closed loop wire is considered the least vulnerable of the communication systems, if security communication practices are followed.

LESSON 2

PRACTICE EXERCISE

The following items will test your grasp of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answer any item incorrectly, study again that part of the lesson which contains the portion involved.

1. When considering the military aspects of a transportation system, the strategic intelligence analyst is interested in all of the following EXCEPT:
 - A. Means of transportation.
 - B. Cost of transportation.
 - C. Material transported.
 - D. Transportation routes.
2. Geographic location does NOT determine a country's:
 - A. Climate.
 - B. Economy.
 - C. Intellectual capability.
 - D. Military strategy.
3. What is the percentage of land Poland uses for agriculture?
 - A. 62.
 - B. 41.
 - C. 53.
 - D. 23.

4. What is the most important material used in the construction of improved roads?
 - A. Sand.
 - B. Gravel.
 - C. Rock.
 - D. Clay.
5. What is greatly increased during wartime?
 - A. Water.
 - B. Volume of telecommunication.
 - C. Security.
 - D. Transportation.
6. The most important long-haul cargo and passenger carriers in Poland are:
 - A. Polish airlines.
 - B. Highways.
 - C. Cargo ships.
 - D. Railroads.
7. Which of the following is NOT a major port of Poland?
 - A. Warsaw.
 - B. Gdansk.
 - C. Gdynia.
 - D. Szczecin.

8. A map sheet cannot be entirely accurate because:
- A. The world is too large to be accurately mapped.
 - B. Population changes too fast to be up-to-date.
 - C. Large parts of the world are poorly mapped.
 - D. It is impossible to reproduce exactly the curved surface of the earth on a flat surface.

LESSON 2

PRACTICE EXERCISE

Answer Key and Feedback

<u>Item</u>	<u>Correct Answer and Feedback</u>
1.	B. Cost of transportation. (page 2-11).
2.	C. Intellectual capability. (page 2-2).
3.	A. 62. (Appendix F-2).
4.	C. Rock. (page 2-13).
5.	B. Volume of telecommunications. (page 2-18).
6.	D. Railroad. (Appendix F-2).
7.	A. Warsaw. (Appendix F-3).
8.	D. It is Impossible to reproduce exactly the curved surface of the earth on a flat surface. (page 2-11).

LESSON 3

SOCIOECONOMIC CONDITIONS

CRITICAL TASK: NONE

OVERVIEW

LESSON DESCRIPTION:

In this lesson, you will learn how to identify and describe various components of strategic intelligence. You will become familiar with the following components of strategic intelligence: socioeconomic, political, economic, and biographic. Each component in strategic intelligence plays a very important role in the planning and testing of a military units battle plan.

TERMINAL LEARNING OBJECTIVE:

- ACTIONS:** To be able to understand the importance of the various components of strategic intelligence.
- CONDITIONS:** You will be given narrative information and illustrations from FM 34-1 and STP 34-9684.
- STANDARDS:** You will be able to recognize different components and evaluate each one to help your unit complete its primary mission. You will also be able to provide your unit with valuable information concerning the areas in which your unit may deploy.
- REFERENCES:** The material contained in this lesson was derived from the following publications:
- FM 34-1
 - FM 34-96B4
 - STP 34-96B24-SM-TG

INTRODUCTION

It is very important to understand the various components of strategic intelligence and be able to understand what makes up each component. Although each component is different in its own way, there are some similarities in the components of strategic intelligence. Each component provides different and unique information to the strategic intelligence analyst. This information enables the analyst to evaluate and disseminate the information properly. Without the proper knowledge of these components a military unit may not function properly.

PART A: DESCRIBE THE SOCIOLOGICAL COMPONENT OF STRATEGIC INTELLIGENCE

Sociology deals with groups of human beings, their numbers, culture, and relationships. It provides a means for determining the capabilities, vulnerabilities, and probable courses of action of people or a nation. Because the social component is vast in scope, only those aspects of a society which are important in determining its military potential will be considered. These are population, racial, ethnic, national, and cultural characteristics and other factors that affect a nation's society.

The political determinant concerns itself with the persons and organizations that make the actual decision to go to war. The actual bases of governmental power are the political parties, prominent political personalities, and a country's national and foreign policies. Attention is also given to the effects of the electoral process and the political and pressure groups of a country. Before political decision making, an analysis should be undertaken regarding personal and professional background and motivations of the policy makers.

Adequate political intelligence provides valuable indications concerning the probable courses of action of foreign nations. Therefore, it is necessary to constantly study the form and internal dynamics of governments, their domestic and foreign policies, their parties, institutions, administrative procedures, and political personalities.

The intelligence officer must keep in mind that in the modern world, especially in the newer countries, political factors may look very different from those which the West is accustomed.

Economy deals with the ways in which a nation satisfies its needs and the ability of the economy to support the nation's armed forces. The nation that holds the largest industrial capacity, along with the largest stockpile of strategic raw materials, has the greatest potential for winning a war. No single nation is self-sufficient. Each must rely upon other nations for certain essential items which cannot be produced at home. The strategic analysis of a nation's economy is intended to determine the strengths and weaknesses within the economic component.

Biography deals with the personalities whose fields of endeavor are spread throughout the framework of the country. Educators, scientists, military figures, and politicians are some of the types of persons of interest to the biographic intelligence collector. It is impossible to collect relevant data on every person; therefore, selection of the best target personalities is a major area of interest and an important preliminary consideration with regard to this far-reaching component.

POPULATION

A study of the world population is of major significance to strategic planners. The rate of change in population estimates varies according to time and place. Statistical information is available from the more advanced countries. However, many countries do not conduct a census of their population, so estimates are vague. It is certain population figures will continue to grow. In 1970, the world estimate was 3.6 billion people; in 1980, this figure had increased to over 4 billion.

If it does not have a change in its borders, a country's population growth is determined from a balance of three factors: births, deaths, and migration. Within set boundaries, only births and immigration increase population, and deaths and emigration decrease population. Studies of these factors permit projections of a country's future population. For these estimates to be accurate, the figures from which they are derived must be accurate.

The labor force and military manpower are the chief concerns of the strategic analyst in considering the population of a country. Knowledge of the total number of a population does not permit an accurate estimation of the labor force or military manpower, because age and sex are important determinants.

The strategic analyst must know the age-sex distribution of the population—the number of males and the number of females separately for each year of age or for narrow age groups. An analysis of a labor force ordinarily includes the population between the ages of 15 and 65, whereas the analysis of military manpower is generally restricted to males between the age of 15 and 45, with special emphasis on those between the ages of 18 and 35. Such an analysis yields an estimate of the potential labor force and potential military manpower. The actual labor force and the actual military manpower are less than the potential estimate because of physical disability, political unreliability, and numerous other considerations.

The spatial distribution and density of a nation's population, not only for the entire country, but also for specific regions within the country, are of great importance to strategic analysis. For example, a sixth of the population of Argentina is located in Buenos Aires, a fact which makes Argentina highly vulnerable to nuclear attack. The density of the population of a country has a direct bearing on the ability of the nation to feed itself. A better indicator than the ratio of persons per square mile of total land is the ratio of persons per square mile of arable land. In some parts of the world, the number of persons per square mile of arable land is extremely high. Japan, for example, has a ratio of over 1,500 persons per square mile. By contrast, the US ratio is 250 persons per square mile of arable land.

Because the size of the nation's population is one of the fundamental bases of economic and military strength, it is essential the strategic analyst be familiar with the published statistics of the country in which he is interested and he understands the basic terms of population analysis. The more advanced countries of the world either conduct a census of the population at 5 to 10-year intervals or maintain a continuous register of the population.

RACIAL, ETHNIC, AND CULTURAL CHARACTERISTICS

The strategic analyst should be thoroughly familiar with those divisions of a population which cause dissension among the people or resentment against the government in power. The most important and obvious factors are those associated with racial, ethnic, and cultural characteristics.

Race is an issue and a source of social unrest in a country that has more than one race. Confusion sometimes exists in regard to race because dividing lines cannot be defined with absolute precision. Certain groups have enough characteristics in common to be classed as a race. World scientific classification lists the three major racial groups as white (Caucasian), yellow (Mongolian), and black (Negroid). The margin of difference among races and subraces

is slight when viewed from a world standpoint. Incorrect use of the term "race" results when peoples are classed on the basis of their language, nationality, and culture. For example, the Anglo-Saxon race, semitic race, and mythical Aryan race are all misuses of the term "race".

Ethnic groups are distinguished by ancestry. These groups often maintain the language, religious traditions, and customs of their forefathers rather than accept those of the country in which they live. Almost every nation in Europe has a group of persons within its borders that maintains a foreign language heritage. For example, in Belgium the Flemings speak Dutch and the Walloons speak French.

Serious divisions exist among the newly emerging African nations because of tribal differences and foreign influence in such areas as language and religion. To most of these nations national unity is still a goal to be achieved.

Cultural groups are distinguished from each other by differences in ways of thinking and acting. These differences are more suitable than racial and national differences but are no less important. The aristocracy of a country, the educated classes, and the business community constitute a cultural group that differs sharply in goals and traditions from peasants and unskilled workers.

ENVIRONMENTAL FACTORS

The strategic analyst is interested in those environmental factors that influence the actions of the people in foreign countries. These factors include living standards, housing, health, religion, education, and public opinion. Although these factors are not inclusive, they are interrelated and determine a nation's morale and attitudes.

Living standards are not easy to ascertain. People's earnings vary among countries and cannot be compared to other countries on an international scale because of the differences in buying power. The analyst should remember the value of people's earnings differ from country to country. For instance, a worker in one country may have to work 10 hours to purchase an item, while in another he may have to work only 5 hours.

Wages can only be expressed in purchasing power for that country. The socioeconomic conditions of a country have a direct bearing on the living standards for its people and this aspect, in itself, requires extensive study.

The socioeconomic status tends to fluctuate when a country experiences increases or decreases in its active labor force. High employment is a sign of stability, but a high level of unemployment creates resentment of governmental policies.

The housing conditions of a country are an important indicator of the general welfare of its people. Working conditions, ample food supplies, and the availability of economic goods are factors that would represent satisfactory living conditions. Unsatisfactory housing is an indication of a poorly managed economic system.

Intelligence on health is concerned with the health of the general population and the effect of health conditions on military operations in the area. The efficiency and size of the labor force

and the armed forces depend on the health of the population. Strategic health intelligence includes the level of public health, effect of climate on health conditions, sanitation, common diseases of the area, insect and animal pests, development of medicine and preventives, and the level of the medical care.

Religion must be included in any strategic intelligence analysis because it has a strong influence on the behavior of a nation's people. People's customs develop over the years in connection with their religious beliefs. Customs strongly manifest themselves in spite of modern education and propaganda techniques used by governments. For instance, the religious factor was instrumental in the takeover of the Iranian government in late 1979 by Islamic religious factions.

Education is important to government because it is through education that many governments maintain control over the people. The effectiveness of a nation's manpower, both in the labor force and the armed forces, depends largely on the education of the population. Although it is possible to train illiterates to operate machines or to perform well as common soldiers, the learning process is necessarily longer and can never be complex because oral instruction cannot be supplemented by written material.

The analysis of education in a country should include:

- * Availability of primary, secondary, and higher education to persons of all classes.
- * Number and capacity of schools.
- * Technical and trade schools.
- * Military schools and military education.
- * Curriculums, methods, and quality of instruction.
- * Number of students and graduates of each level.
- * Number, training, and professional status of faculty members.

Public opinion is a factor that can greatly influence the decisions of government policy makers. It is of concern to the intelligence strategist because public opinion on any subject can affect military matters and international policy. Public opinion can manifest itself in the form of peaceful demonstrations in an attempt to attract further support. Public opinion is not static in nature. It changes depending on the happenings of the day. Skillful application by propagandists can sway public opinion in any direction especially if they have control of the communication media.

The major media through which public opinion is formed are newspapers, radio, television, and motion pictures. Along with these are many other such as books, magazines, and speeches. The relative importance of the different media varies from country to country, based on the literacy rate of the population.

For the purpose of strategic intelligence, morale may be defined as the spirit of cooperation in a common effort, the confidence in leadership, the spirit of being in the right, and being successful. Knowledge of enemy morale is vital because it reflects the success or failure of our military effort; moreover, it reflects the status of the enemy's "will to fight" on which the entire military effort of a nation rests. Morale is intimately connected with public opinion, for public opinion makes morale.

PART B: DESCRIBE THE POLITICAL COMPONENT OF STRATEGIC INTELLIGENCE

The structure and processes of any government are based upon certain principles. Written constitutions and documents will not present all facets of these principles; therefore, a careful analysis of government's past behavior is necessary for complete interpretation of its future intentions.

The most important theoretical base of a government is its constitution. In general, constitutions define the powers of a government, establish its basic framework, and define the rights of the individual under that government. A constitution may be written, as that of the US or it may be unwritten amalgamation of customs and usage, as that of Great Britain. The American system with its three branches of government is widely copied, although the powers of the branches vary in other countries.

Governments are usually divided into central, regional, and local governments. Some nations require a government structure for their colonies, possessions, dominions, mandates, and protectorates.

The provincial government corresponds to our state government, whereas local government is the government of a county, municipality, or similar political subdivision. In the US the degree of control exercised over the state governments by the federal government is relatively minor, but in countries like France and Mexico the local governments are almost completely dominated by the national government. Many of the provincial and local offices are appointive and not elective in European countries.

The operations of governmental organizations are studied to determine their efficiency, integrity, and stability. Marked inefficiency and corruption in the operations of a government, if they indicate a change from past practices, may provide an opportunity for the emergence of new political forces. If such practices have been accepted for some time, they are indicative of popular apathy. Should the government become increasingly restrictive about electoral procedures, the administration of justice, or the exercise of the basic rights and privileges of the people, it may mean the nation is embarking on a new course of action, either domestic or international.

The executive branch of government is charged with duties of carrying on the business of the nation and executing the will of the legislative bodies. Theoretically, the control of the executive branch is placed in the hands on the chief executive, but in many cases, the chief executive is often the titular head of the armed forces and, under certain circumstances, may exercise veto powers over legislation. The chief executive also is charged with conduct of foreign affairs, and although his actions may be subject to legislative approval, the initiative in such matters is held by the executive. The chief executive usually has greater powers during emergencies or when

the legislature is not in session. Tenure of office and rules of reelection of the chief executive vary from country to country. In general, the longer the term of office the more likely the chief executive will become firmly entrenched in office.

More often than not the titular chief executive is not the most important member of the government. The president of the CIS and Germany are examples of titular chief executives who have very little power. In most European countries the leader of the majority party (premier or prime minister) is actually administrator and policy maker. The premier usually holds office only as long as he holds the voting support of the legislature. Once defeated in the legislature, even on a minor bill, he resigns and a new government is formed or there is a new general election.

A legislature or parliament is the lawmaking body of a democratic government. It is the proof a democratic government is a "government by the people". The parliament acts as the people's voice and is wholly responsible to them.

No two legislatures are alike. Some states have a one-house legislature (unicameral), whereas other states have a two-house legislature (bicameral). Some countries even have a three-house legislature. In some countries, one house may be so weak the nominally bicameral legislature is really unicameral. This is true of Great Britain, where the power of the House of Lords has been gradually weakened to the point it has little to do with the control of legislation. Quite often the presiding officers of these houses and the leaders in each house of the different political parties are men who greatly influence the conduct of both domestic and foreign affairs. Legislative bodies are selected in a number of ways and for varying terms. In England, membership in the upper house is largely hereditary, whereas the members of the lower body are elected. In some countries the members of the upper body are elected by the lower body. The length of time in any office for any given administration may be limited by the constitution, or as long as the prime minister manages to retain the confidence of the legislature.

The judiciary administers justice and interprets the laws passed by the legislature at both national and local levels.

The spirit of the constitution of a nation is never exactly the same in two generations, even though there are not amendments to the constitution and the words remain exactly the same. Such changes are accomplished principally through interpretation. A good example of change through interpretation is illustrated in the interstate commerce clause of the US constitution. As formerly interpreted, the federal government had little control over the distribution of goods; as presently interpreted, the federal government has sweeping control over manufactured articles which are either shipped out of a state or shipped in from another state.

ELECTORAL SYSTEMS, POLITICAL PARTIES, PRESSURE GROUPS, AND POLICE SYSTEMS

A study of elections takes into account the following aspects:

- * Relative importance of issues and personalities.
- * Methods for focusing the issues and personalities into public attention.

- * Mechanics of the nominating process.
- * Guarantees of secrecy surrounding the actual balloting.
- * Significance of trends in the voting.

Other factors that could have a profound effect on elections are the possible use of coercion by political parties or governments, or the possible fraudulency in vote counting and ballot box stuffing. In a totalitarian state, an election does not mean the same thing as in a democratic state. Nonetheless, an election has a significance to that state which should be evaluated.

Through elections, the analyst can learn what form of control the general population has over its various branches of governments. Most countries of the world make use of the election in one manner or another. Some are free elections while others are tightly controlled with a variety of restrictions on the voting population. Some restrictions applied to voters include age, sex, literacy, property ownership, and party affiliation. In a single party country like CIS, only party members are sanctioned to vote. They can vote either for or against a candidate and there are no alternatives given to the voter.

Some countries vote for a long list of candidates, others vote for only a selected few, usually permitting those elected to choose any remaining positions to be filled. Some countries use the secret ballot, while others use only a voice vote. Still other countries use the open ballot method, which usually results in votes for favored candidates because of fear of reprisals, not because of a belief the candidate voted for was the better choice.

The study of a nation's political parties is of great importance to the strategic intelligence analyst. Evaluation must be made of the aims, programs, popular support, financial backing, limitations, and personalities of each political party in a nation. In nations having representative forms of government, there are both popular parties organized for winning elections and corresponding parliamentary or government parties responsible for the day-to-day business of government. In single-party states, the study of the internal workings of that party is at least as important as the study of the government itself.

When analyzing political parties, attention should be directed to the importance of the informal political process. Political institutions and parties in nonwestern societies, although often modeled on western patterns, may not have the same functions as in the West. The political analyst must take into account cultural values, national history, and the importance of informal relationships. How a nation's leaders emerge on the political scene is particularly important.

Political pressure groups attempt to influence the government for the advancement of particular persons or policies. The political party is the most obvious example of such a pressure group. Others include associations, factions, and cliques that exist both within and outside parties in most nations, particularly in the more democratic states. Because considerable sections of the population of most nations recognize non binding allegiance to a political party, many elements of the population may seek to promote their special interest by means of pressure groups. It is the business of strategic intelligence to identify at least the most important pressure groups, along with their aims, methods, relative power, sources of support, and leadership.

It may be useful to differentiate between pressure groups and organized special interest groups. Special interest groups are capable of acting as pressure groups when the occasion demands. Such pressure groups are almost entirely controlled by forces outside the country; therefore, It is important the analyst discover how much Influence a small but vocal group has upon the policies of a nation. Known subversive elements or organizations are of special interest to the strategic intelligence analyst.

The police and penal systems of a country, together with its secret police and border guards, are important factors in the ability of a government to maintain public order and safety. In general, political intelligence is concerned with the organization and operations of the police system, its relation to other governmental organizations, and the honesty and efficiency of its personnel. They must know the focus of police loyalties, the attitude of the public toward the police system, and the general ability of the police to preserve public order and safety. Similar requirements exist for other security and intelligence organizations.

GOVERNMENTS IN PRACTICE

Governments in practice often stray from the provisions of their constitutions. Frequently power is seized by an individual or group and constitutional guarantees ignored.

Distribution of power within a country depends on several factors:

- * History and tradition.
- * Progress of education.
- * Transportation linkup within the country.
- * Efficiency of the government.

Power structure analysis of a country must include studies of political parties, their aims, and the methods by which they hope to achieve or retain power.

Variance from the constitutional form of government often occurs when the executive branch encroaches upon the powers of the legislature and the judiciary. In many cases, the legislature is reduced to a rubber-stamp which votes unanimously for every bit of legislation initiated by the executive branch. Power over the Judicial branch is easily won by the executive branch when the right to appoint Judges lies with the executive branch.

In Europe, the minister of the interior is so important that premiers sometimes refuse to appoint anyone to that position and hold that portfolio themselves. The post is important because the interior minister controls the police. When the police are completely nationalized and owe no allegiance to local and provincial governments, other than that ordered or allowed by the national government, the control of the ministry over national life is profound. Communists in European governments invariably seek the post of interior minister because it is a key spot.

A government in practice sometimes takes whatever character the party in power decides it shall have. The rallying point for a political party is sometimes foreign relations or an internal

issue. The success of a certain party in an election may mean friendlier relations between the US and the country involved, or it may mean a program of opposition to US policies.

Political parties are sometimes divided on any or all of the following issues:

- * Religious.
- * Ethnic.
- * Cultural.
- * Economic.

The economic differences are among the most important. These differences can include taxes, inflation, recession, and other economic issues. The desire to maintain a prevailing economic system is found in every country, and when differences of political opinion are freely permitted the results are the formation of a political party.

The system of representation found in the US and Great Britain led to the establishment of two major parties. In countries like France, the constitution encouraged the formation of a multitude of parties and no one party is able to control the government. Coalitions are an essential feature of a multiparty system. In the US, party responsibility for the actions of its members and officers is small, but in Great Britain the party exercises considerable command over the members of a government under its control. Therefore, it is held responsible for the acts of its members.

The subject of personalities is most important in the political arena. For instance, a political party may grow up around the personality of its leader. The leader of a nation, no matter what the form of government, can make decisions which shape history. This is sometimes done by ignoring the provisions of the constitution, by revoking the old constitution and installing another, or by bringing about the reinterpretation of the constitution.

Tradition is highly important in influencing the changes in government that a people will approve and in determining the appeals which can be made to the people by political leaders. The British Government has instituted sweeping changes in the economy in an orderly, democratic manner which would be impossible in countries with different traditions. Several of the Latin American countries have a tradition of government change through violence and are not, therefore, particularly disturbed by a political coup.

DOMESTIC POLICY

The domestic policy of nations is not static but fluctuates with each change in administration. Most nations have a fair attachment to the domestic policy. For example, many nations are devoted to the preservation of a particular economic system that no political party can hope for success at the polls unless it advocates retention of the economic system in effect. The domestic policy of a number of nations has been historically oriented to further the cause of a particular region, a particular class, or a particular ethnic or racial group.

Domestic and foreign policy cannot be completely separated. A decision to build a strong army and navy to add force to diplomatic negotiations brings with it serious disturbances of the internal economy of a country. On the other hand, the desire to satisfy domestic manufacturers may lead to a serious rift in foreign relations with other countries because of the imposition of tariffs.

The domestic policy of a nation cannot possibly please all the conflicting interest groups which exist within the country. In a large nation like the US, it is necessary to balance the desires of one region against those of another and of one group against those of another. The existence of favored groups always creates dissension and is a possible source of internal weakness.

Every government propagandizes its citizens, partly to encourage the acceptance of the government in power and partly to fulfill the duty of the government to urge its citizens toward worthy aims, such as oil and energy conservation. The amount and the kind of propaganda, however, varies from nation to nation. Some governments seize control of the major media of communication and do not permit their citizens to weigh opposing propaganda against state propaganda. Other countries permit almost full expression of opinion by the opponents of the government. The attitude toward the principle of freedom of the press is one of the most important facets of domestic policy.

FOREIGN POLICY

Foreign policy is the policy of a nation to formulate its national needs and interests in relation to the needs and interests of other nations. Each nation pursues its own goals, but must take into account the aims and interests of other nations which are likely to be affected by its policies. Where nations differ, serious conflict of interests are plausible, and could result in strained relations. Should a nation feel these interests are vital to its national security, severance of diplomatic relations can result with the potential of war as a final alternative.

It is important to the strategic analyst the needs and interests of other nations be clearly identified. A determination can then be made as to whether these interests are compatible, subject to change, or decidedly hostile.

Factors that have a direct bearing and help shape foreign policy are:

- * Alliances.
- * Peace through deterrence.
- * Isolation.
- * Geography.
- * Propaganda.
- * Diplomacy.

All nations desire strong allies. Most foreign policy is concerned with negotiations for economic and military alliances. The pattern of alliances changes as world conditions become disturbed by international economic agreements, coups d'etat, and wars.

Since the end of World War II the world has been split into two gigantic alliances CIS,-the former Soviet Union and Eastern Europe-former Warsaw Pact satellites and the opposing forces, the North Atlantic Treaty Organization (NATO). Another large alliance is the Southeast Treaty Organization (SEATO) which is between the US and the countries located in the Far East and South Pacific.

The emergence of many so-called nonaligned countries has created new centers of economic and, in some cases, military power. These countries, to become more influential on the international scene, have vied with major powers for advanced weaponry, thereby, causing a trend in realignment of alliances.

To the international community, deterrence means the maintaining of large amounts of weaponry and military power to discourage an opponent from waging war. It is often held peace is best maintained when the distribution of power is such the strongest nations are equally balanced in power, or when the opposing combinations of allied powers are equally balanced. The basis for this reasoning is that nations are reluctant to go to war unless reasonably sure of victory; however, there are certain flaws in this argument, such as:

- * The assumption the calculation of military power is accurate.
- * The assumption foreign policy of a country is guided by reason.
- * The assumption diplomatic negotiations are conducted in honesty.

The idea of balanced powers can be a naive way of thinking. There is no way of determining if a power is truly balanced except through positive verification.

Isolation has, from time to time, been adopted by countries as the basis for foreign policy. Because of the English Channel separation, Great Britain maintained an isolationist policy in the belief the channel would insulate her from the disruptions of continental Europe. Early in this century, a large majority of the population of the US believed the Atlantic and Pacific Oceans offered protection from world political turmoils.

With the advance of modern aircraft transportation, the increasing international economic relations with other countries and fast telecommunication systems, isolation proved to be untenable.

Countries like Sweden, Switzerland, and other small countries have adopted neutrality as the major input to their foreign policy. Future world conflicts, however, may force these countries to take a different stance.

The geographic location of many nations is the prime determinant for foreign policy. History and tradition play a large part in shaping that policy. The age of sea power no longer has a

great influencing role as in the past. The space age, with the advent of satellites, missiles, and global air transportation, has altered some traditional foreign policy concepts.

The analyst studying foreign policy should be wary of the great complexity of factors that may arise in an age when geographic location of a nation is no deterrent to nuclear war possibilities.

Most nations use some form of propaganda to implement their foreign policy. This propaganda may range from comparatively harmless activities designed to promote understanding and friendly feeling among nations to vicious efforts to undermine another nation's security. Strategic intelligence is most concerned with detecting the latter form. This propaganda involves communication in the broad sense of activity designed to influence attitudes and actions of friend or foe toward advancement of a nation's strategic aims. Foreign propaganda may be open with no attempt to hide the source, or the actual source may be concealed or falsified. It may be entirely or partially true or false. Strategic intelligence must carefully analyze foreign-directed propaganda to determine its type and aims.

Diplomats have the dual function of representing their governments in foreign countries and supplying information on conditions in these countries. The influence of individual diplomats in world affairs has declined somewhat since the development of telecommunications. Formerly, diplomats had to be trusted to make momentous original decisions on policy; today, swift communication with the home country makes diplomats conveyors of opinion and executors of instructions more than molders of policy.

AGRICULTURE

More than half the world's labor force is employed in some form of farming. Large numbers still use the same tools as their ancestors, tilling the soil virtually by hand using only the simplest machines. These people practice intensive agriculture, which employs a large labor force on a small section of land. A small number of the world's farmers, such as those in the US and Canada, have mechanized their system of farming and practice extensive agriculture whereby few people cultivate such land. Intensive agriculture exists where the man-hour yields are usually low, but the per-acre yields are sometimes astonishingly high. In extensive agriculture a high yield per man-hour is normal, but the per-acre yields are often low.

The practice of agriculture is more than a way of making a living; it is an entire way of life for many people. The whole life of the farmer and the farmer's family is likely to be closely integrated with the farm itself. The way of plowing the soil, the seasons of planting, and the allocation of land for various uses are often related to traditions and ancestral practices. Innumerable superstitions and religious practices are involved in the methods of farming in backwards areas, and farmers will not readily abandon their old customs to adopt new practices which they do not and, without better education, cannot understand.

Over 99 percent of what man eats comes directly or indirectly from the soil, with fish and other sea products accounting for less than one percent. Therefore, it is necessary to make a good intelligence analysis considering the major factors which determine the amount of food produced within a nation. These factors include the amount of land devoted to farming, the land which could be developed, fertility of the soil, climate, efficiency of labor, state of technology, and the kind of crops grown.

The amount of land devoted to farming is determined by temperature, moisture, topography, soil composition, and a variety of cultural factors. In considering the agricultural potential of each nation, such an analysis can be made of land use, remembering an increase in acreage devoted to one crop is usually, and most easily, made at the expense of another.

The most fertile soils are those black soils which are found where there is a natural grass cover, as in the American great plains and in parts of the Ukraine. Such soils are largely devoted to the production of grain. Where the natural cover of the land is forest and the climate is temperate, gray-brown forest soils result which can also be raised to a high level of productivity. These lands are commonly devoted to general farming. In regions of extreme heat, soils are likely to be poor or otherwise unusable. The soils of northern Canada and Siberia are known as podzols (light gray soils which develop under northern coniferous forests) and are among the poorest in the world. Despite the luxurious growth of vegetation in tropical rain forests, the soil is ordinarily poor and will not support crop agriculture, because most of the soluble plant foods are leached from the soil by the heavy rainfall. Desert soils, however, are often highly fertile when irrigated.

Two factors of climate and weather, which are of great importance, in food production, are temperature and precipitation. These two agents are more important in determining the character of the soil than the rock from which the soil was originally derived. Each plant has a range from high to low temperatures under which it will grow and optimum temperature under which it grows best. Because of this, most of the world's wheat is grown between latitudes 30 degrees and 55 degrees north and between 20 degrees and 40 degrees south. Barley can be grown under greater extremes of dry and cold and therefore, takes the place of wheat in some places. Sorghums are important grains in Africa and parts of Asia because they can withstand hot climates and relatively little moisture. It is important to note most fertile soils (the black earths) are found in regions where the rainfall is often light and uncertain.

The efficiency of labor is determined primarily by the political, economic, and psychological pressures on the existing society, by the tools at man's disposal, his education, and his health. Labor that does not have the proper machinery or is suppressed politically, economically, and psychologically is often extremely slow. Education is a great factor in the difference between the amount of time spent by American farmers and Chinese farmers at their jobs.

Agricultural technology is not confined to the development of new machinery. It changes the pattern of land use and limits the amount of soil depletion. Modern technology also has taught the farmer to rotate his crops and has developed superior plants and seeds. The analyst should report a country's technological advances in agriculture. Many authorities are of the opinion the food supply of the world may be increased more easily and effectively by improved farming practices rather than through the expansion of tilled land.

The kinds of crops grown on the land have an important bearing on the yield per acre and the total food supply. The best way to measure food quantity is in terms of calories, or energy-producing units. A pound of sugar contains 1,805 calories, and many pounds of sugar can be produced on a single acre of land.

An Ideal individual diet contains from 2,500 to 3,000 calories per day, a standard which is attained by only a small portion of the world's population. In general, the most efficient way of producing sufficient calories is to grow only grains, as they give the best return of calories per acre. When crops are fed to animals instead of being eaten directly, the resulting caloric value of the milk and meat is only 10 to 20 percent of that of the crops fed to animals.

In analyzing the strategic posture of a nation's agriculture, a country that can produce a large amount of food without using a large labor force can release a greater percentage of workers to the production of steel, coal, manufactured goods, and weapons. A nation with the ability to stockpile important foods, such as wheat, grain, and animal products, has the advantage in case of crop failure or war. In nations that practice intensive agriculture, the pressure of the population upon the food supply can reduce the people to little more than a subsistence level and one that quickly becomes a starvation level when crops fail or war interrupts production.

INDUSTRY

The greatest indicator of a nation's economic potential is its industrial assets. It is, therefore, critically important a survey be conducted of a country's industrial facilities. Listed below are the major industries considered by the analyst to be of high strategic importance:

- * Iron, steel, and nonferrous metals.
- * Hydroelectric, thermal power, and nuclear electric.
- * Electronics.
- * Petroleum.
- * Aircraft and missile.
- * Chemical.
- * Machinery and equipment.
- * Motor vehicle.
- * Shipbuilding.
- * Munitions.

Steel production has risen in socialist and communist nations, but declined sharply in the US, western Europe, and Japan. Figure 3-1 shows changes in steel production by country from 1973.

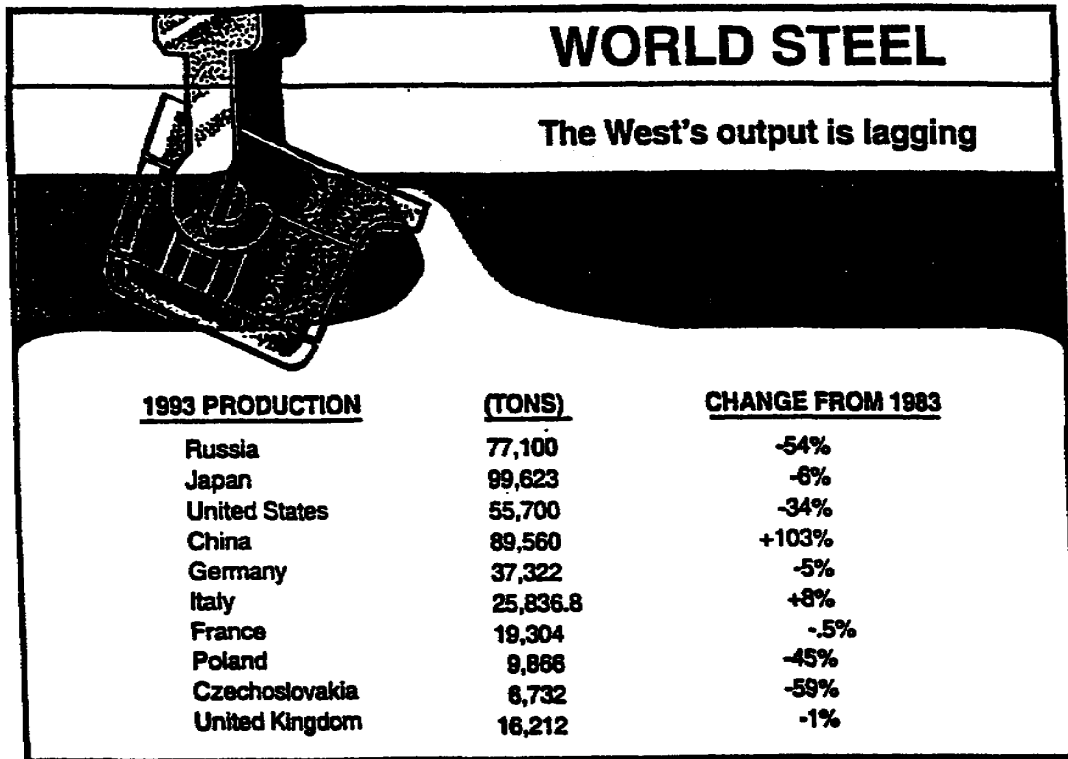


Figure 3-1. Steel.

A study must be made of the economic resources needed to support an industrial complex. Some of the determinants required are:

The number and quality of persons capable of taking part in industrial production (engineers, managers, skilled, and unskilled laborers).

The number and kinds of factories which the country possesses, especially if needed during a crisis.

The amount of raw material at its disposal and the amount of strategic and critical material stockpiled.

The five main ingredients for a successful industrial program are:

- * Availability of raw materials.
- * Ample energy sources.
- * A pool of skilled and unskilled laborers.
- * Trained managers and supervisors.
- * Capital assets.

Industrial raw materials may be grouped into four main categories:

- * Fuels, such as coal and petroleum.
- * Metals, such as iron ore and bauxite.
- * Nonmetallic minerals, such as salt and sulphur.
- * Animal and vegetable products, such as hides and timber.

Raw materials are so important to a nation's economy that any strategic analysis must include an estimate of the total amounts used and their source. If the source is from outside the country, its mode of transportation must be determined. A knowledge of the amount of raw materials at the disposal of a nation is useful in determining the amount of equipment produced.

The principal energy sources for operating an enterprising industrial system are a nation's natural resources. These resources can be from water or fossil fuels. Ample water provides hydroelectric power. It is supplemented by oil and coal for thermal power plant generation of electricity. Nuclear thermal power plants have yet to be a major source of energy for many nations.

Some nations have large deposits of coal and oil, while other are forced to trade, buy, or negotiate for these raw materials. Those countries with large requirements for oil must, through necessity, continually negotiate with other nations to maintain a stable economy.

With an adequate labor force of skilled and unskilled people, a country can have an effective industrial program. Within this labor force, the ratio of skilled to unskilled will vary in direct proportion to the amount of scientific, technological, and educational development within a country.

Countries with an industrial capability also have complementary educational systems for the training of people to fill the ever growing labor market. The industrial growth and efficiency of American industry are due largely to the managerial abilities of American businessmen. Countries like Germany and Japan, which have reindustrialized, have adopted management programs similar to American standards and in some cases have increased their gross national product (GNP).

Production of manufactured goods requires much organizational ability. This ability can only be developed slowly and cannot be instantly created by a command. Often, even illiterates can be trained to do assembly line work in a short time, but the training of managers to set up and direct a plant is a long and difficult process. Countries which begin a large-scale program of industrialization find it advantageous to call in foreign managers until their own citizens are trained in the duties of management. A major function of management is the encouragement of technological advances.

Stores of money and precious metals constitute an important part of the capital assets of any nation, but a far more important part is made up of capital goods. These are the goods which are used in the production of items to be consumed. Every nation must decide how much of its production will be devoted to the production of capital goods and how much to consumer goods. The decision is often difficult and sometimes harsh. In the CIS, the decision to concentrate on the manufacture of capital goods instead of consumer goods has played an important part in the emergence of the CIS as an industrial nation, but it has demanded heavy sacrifices from the citizens of the CIS. A nation which has a large quantity of capital goods can quickly expand the production of consumer goods whenever it becomes necessary, but a nation which has few capital goods must manufacture them before beginning the manufacture of consumer goods.

The location of industry depends on several factors. The most important of these are power supply, raw materials, labor supply and housing, markets, and transportation. Besides these factors, climate, tariffs, trade agreements, availability of capital, progress of invention, water supply, security against air attacks, and such intangibles as the value of the name of a particular city (such as, Paris to the dressmaking industry) also enter into the location of industry. All factors are interrelated, and the location of a plant is seldom determined by any one factor. Quite often industries are located close to the source of raw materials. However, in the case of aluminum, the power requirements are so great the plant location is primarily based on the power supply. It is easier to move the raw materials to the plant than to provide power at the source of the raw materials. In analyzing each country, the strategic intelligence analyst tries to discover the actual location of industry, largely in connection with the study of vulnerabilities. Knowledge of the factors which decide where particular plants are located will be helpful in finding these plants, particularly in countries where travel is largely denied to foreign nationals.

PART C: DESCRIBE THE ECONOMIC COMPONENT OF STRATEGIC INTELLIGENCE

Trade among nations is a necessity, because no country is totally economically self-sufficient. Products from one country are sold to another primarily because that country has a need for the products. In exchange, other products are purchased to satisfy the demands of the seller nation. Any disruption of the normal trade channels immediately creates serious problems. The disruption of trade in times of peace or war is one of the major aims of economic warfare.

Some of the means a country may use to interrupt trade may be through:

- * Trade embargoes.
- * Tariff implementations.

- * Currency manipulations.

- * Political pressure.

A fundamental objective of strategic intelligence is to identify those items a nation must import to bolster its industry and single out those items it sells to pay for the imports. The CIS trades with western countries to obtain much needed strategic materials, but in many instances it is a means to obtain new technological advances produced by industry. Some countries use trade as a tool to actively intervene in another country's affairs. Other countries make trade agreements with less economically advanced nations, for raw materials in exchange for manufactured goods.

An analysis should also be made of both imports and exports of a country to determine its potential in economic warfare. Additionally, the financial trade arrangements a nation conducts on the international scene are an area requiring careful study by the analyst.

Strategic materials are those items which are of key importance to industry and the armed forces but which cannot be produced within the country in sufficient quantities to supply emergency needs. The more advanced nations usually have a problem of stockpiling in an attempt to build up supplies of critical materials. See Tables 1 and 2.

Table 1. US and World Reserve and Cumulative Demand to the Year 2000
(All Data Rounded to Two Significant Figures)

2000	US Reserve	US 1983-2000 Demand	World Reserve	World 1983- Demand
Antimony	90,000 st	440,000 st	4 million st	1 million st
Arsenic	50 kt	310 kt	1 million Mt	590 kt
Asbestos	4 Mt	5.6 Mt	110 Mt	110 Mt
Barite	11 million st	60 million st	160 million st	150 million st
Bauxite (Contained Al)	8 Mt	100 Mt	4.4 Gt	400 Gt
Beryllium	28,000 st	6,900 st	420,000 st	12,000 st
Bismuth	20 million lb	43 million lb	200 million lb	170 million lb
Boron (Bo)	120 million st	7.8 million st	360 million st	22 million st
Bromine	25 billion lb	5.9 billion lb	adequate	15 billion lb
Cadmium	90 kt	75 kt	560 kt	350 kt
Cesium	0	300 st	110,000 st	520 st
Chromium	0	7.9 million st	360 million st	74 million st
Cobalt	0	390 million lb	8 billion lb	1.2 billion lb
Columbium	0	200 million lb	9 billion lb	870 million lb
Copper	57 mt	31 Mt	340 Mt	170 Mt
Corundum	0	17,000 st	7 million st	540,000 st
Diamonds, industrial stones	0	60 million ct	600 million ct	460 million ct
Diatomite	250 million st	10 million st	800 million st	29 million st
Feldspar	adequate	13 million st	adequate	72 million st
Fluorspar	36 million st	12 million st	850 million st	110 million st
Gallium	2 million kg	290 kg	110 million kg	740,000 kg
Garnet	5 million st	550,000 st	8.1 million st	860,000 st
Germanium	450 kg	990 kg	adequate	2.8 million kg
Gold	80 million tr oz	52 million tr oz	1.3 billion tr oz	670 million tr oz
Graphite crystalline flake	0	400,000 st	15 million st	7.8 million st
Gypsum	800 million st	480 million st	2.6 billion st	1.9 billion st
Hafnium	80,000 st	1,400 st	460,000 st	2,700 st
Helium	240 billion cu ft	29 million cu ft	240 billion cu ft	41 billion cu ft
Indium	7 million tr oz	14 million tr oz	54 million tr oz	40 million tr oz
Iodine	550 million lb	150 million lb	5.9 billion lb	660 million lb
Iron ore (contained Fe)	3.7 billion st	900 million st	72 billion st	9.9 billion st
Kyanite	adequate	2.1 million st	adequate	11 million st
Lead	21 Mt	12 Mt	95 Mt	61 Mt
Lithium	400,000 st	64,000 st	2.1 million st	180,000 st

Mining Engineering, April 1986, p. 246.

Table 1. US and World Reserve and Cumulative Demand to the Year 2000
(All Data Rounded to Two Significant Figures)(Continued)

2000	US Reserve	US 1983-2000 Demand	World Reserve	World 1983- Demand
Magnesite (contained Mg)	10 million st	14 million st	2.8 billion st	110 million st
Manganese	0	14 million st	1 billion st	170 million st
Mercury	140,000 fl	700,000 fl	4 million fl	3.7 million fl
Mica (sheet)	0	29 million lb	adequate	190 million lb
Molybdenum	6 million lb	1.1 billion lb	12 billion lb	3.6 billion lb
Nickel	300,000 st	3.8 million st	58 million st	18 million st
Peat	700 million st	27 million st	adequate	81.5 billion st
Perlite	50 million st	11 million st	700 million st	35 million st
Phosphate	1.4 billion Gt	700 Mt	14 Gt	3.2 Gt
Platinum-group metals	1 million tr oz	34 million tr oz	1 billion tr oz	130 million tr oz
Potash (K ₂ O equivalent)	95 Mt	110 Mt	9.1 Gt	590 Mt
Pumice	adequate	13 million st	adequate	260 million st
Rare Earths (REO) and Yttrium (Y ₂ O ₃)	4.9 Mt	460 kt	45 Mt	810 kt
Rhenium	2 million lb	190,000 lb	6.4 million lb	340,000 lb
Rubidium	0	49,000 lb	4.4 million lb	91,000 lb
Salt	adequate	833 million st	adequate	4.2 billion st
Sand and Gravel	adequate	14 billion st	adequate	adequate
Scandium	230 t	770 kg	770 t	14 t
Selenium	12 kt	10 kt	80 kt	28 kt
Silicon alloys	adequate	18 billion st	adequate	adequate
Silver	920 million tr oz	1.9 billion tr oz	7.9 billion tr oz	5.4 billion tr oz
Soda ash	26 billion st	130 million st	26 billion st	720 million st
Stone	adequate	18 billion st	adequate	adequate
Strontium	0	450,000 st	7.5 million st	1.2 million st
Sulfur	160 Mt	250 Mt	1.3 Gt	1.3 Gt
Talc	150 million st	28 million st	350 million st	210 million st
Tantalum	0	27 million lb	60 million lb	43 million lb
Tellurium	3.7 kt	2.5 kt	22 kt	4.5 kt
Thallium	70,000 lb	48,000 lb	830,000 lb	450,000 lb
Thorium	220 kt	770 kt	1.1 Mt	6.5 kt
Tin	20 kt	700 kt	3.1 Mt	3.9 Mt
Titanium	8.1 million st	11 million st	190 million st	42 million st
Tungsten	150 kt	230 kt	2.8 Mt	970 kt
Vanadium	190,000 st	130,000 st	4.8 million st	870,000 st
Vermiculite	25 million st	6.3 million st	50 million st	11 million st
Zinc	22 Mt	19 Mt	170 Mt	130 Mt
Zirconium	4 million st	1.3 million st	23 million st	5.2 million st

Table 2. US Net Import Reliance In 1978 as a Percent of Apparent Consumption.

<u>Commodity</u>	<u>Percent Reliance</u>	<u>Country or Countries Providing 25 Percent or More of US Imports during Period 1974-1977</u>
antimony	48	Republic of South Africa, Mexico
asbestos	84	Canada
barite	40	Peru
bauxite-alumina	93	Jamaica, Australia
cadmium	66	---
chromium	92	Republic of South Africa
cobalt	97	Zaire
columbium (niobium)	100	Brazil
copper	19	Canada
corundum	100	Republic of South Africa
industrial diamonds	100	Republic of South Africa
fluorspar	82	Mexico
gold	54	Canada
gypsum	34	Canada
ilmenite	39	Canada, Australia
iron ore	29	Canada, Venezuela
lead	11	Canada
manganese	98	Brazil, Gabon
mercury	57	---
mica (sheet)	100	India
nickel	77	Canada
platinum group metals	91	Republic of South Africa, CIS
potash	61	Canada
silver	41	Canada
strontium	100	Mexico
tantalum	97	Thailand
tin	81	Malaysia
tungsten	50	---
vanadium	27	Republic of South Africa, Chile
zinc	62	Canada

Net Import Reliance = Imports - Exports + Adjustments for Government and Industry Stock Changes.

Source: US Bureau of Mines, 1979.

In the US, large numbers of items ranging from nickel to industrial diamonds are stockpiled. These stockpiled items are maintained at specific levels to assure an adequate supply at all times. Most items stockpiled are assumed to be raw materials. However, other items like manufactured goods should not be overlooked. These include machine tools, rifles, and so on, which are stored for emergency purposes.

A healthy economy is an indication of a well-organized governmental structure. Usually any major controls on the economy are governmentally imposed, but in some countries the wealth and influence of a single person or group of persons is such they exercise great influence over the economy. There is, however, a tendency for such persons to attempt to gain control of the government as well, thereby making it easier to control the economy.

A certain amount of governmental control over the economy is necessary. In some countries the government is conceived as a regulating body which reconciles the interests of producer and consumer, employer and employee, and different industries, with the majority of economic decisions being left to private enterprise. In communist countries, however, the government makes all important economic decisions and assumes the responsibility of management.

The extent of government controls over the economy has increased generally throughout the last century, more so during the last 30 years. Some factors which have contributed to this trend include:

- * The general movement toward big business.
- * An increasing perception of the economic element in war.
- * Attempts to control the fluctuations of the business cycle.
- * An increasing social awareness.

In countries where complete direction of the economy is not the province of government, effective control can be gained by the government through credit control, the manipulation of taxes, import and export controls, allocation of materials, price fixing, and a number of other measures. Credit control is an especially potent item of control, and the power to tax still carries with it the power to destroy.

Wars are more often won by the weight of a nation's heavy industry than the weight of its military power. This is why a detailed analysis of the complete economy of foreign nations is a primary concern of strategic intelligence.

PART D: DESCRIBE THE BIOGRAPHIC COMPONENT OF STRATEGIC INTELLIGENCE

Biographic intelligence is the study of individual foreign personalities presently or potentially important in their nations. In any country, especially the developing nations of the world, it is possible for an obscure bureaucrat to rapidly rise to a position of national prominence. Biographic intelligence is very broad in scope, covering the personalities from all the other components of strategic intelligence.

The people who contribute to research and development in military, scientific, or other fields, or those who hold back a nation in any area, are those on whom we collect biographic intelligence. Data are also collected on personalities not directly associated with any of the other components. Educators, low-level officials, and so on, may be selected as intelligence targets because of a determined potential which they are known or believed to possess.

The major problem confronting the intelligence collector is the selection of the "right" people on whom to collect this needed data. Because there is no firm guide for this selection process, the collector must make the determination based on all available information concerning persons of present or potential interest within a target nation.

Figure 3-2 gives you a suggested format on how to develop a personality file. Using this as a guide, develop a hypothetical or real personality file on an appropriate person for training purposes.

This figure is to be used to develop a personality file, for example, on commanders who are general officers. This information is considered necessary because of the influence a commander can exert on the military tactics and disposition of his command. A suggested format is listed below:

- a. Date of birth.
- b. Place of birth.
- c. Civilian education.
- d. Military education.
- e. Foreign language(s).
- f. Medical history (psychiatric treatment).
- g. Personality traits.
- h. Foreign travel.

FROM:
ANNEX K TO STANAG 2077
(EDITION No. 3)

Figure 3-2. Biography.

LESSON 3

Practice Exercise

The following items will test your grasp of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answer any item incorrectly, study again that part of the lesson which contains the portion involved.

1. The population growth of a nation is determined from a balance of:
 - A. Fluctuation in the crude rate of natural increase.
 - B. Births, deaths, and migration.
 - C. Births and emigration.
 - D. Fluctuations in the net reproduction rate.

2. In considering the education factor, the strategic analyst:
 - A. Places little or no value on the degree of education of the armed forces.
 - B. Is concerned with the educational means used by the government to control the people.
 - C. Is interested primarily in the education of the labor force technicians.
 - D. Disregards statistics pertaining to the literacy of the population.

3. To be effective, a strong foreign policy must:
 - A. Have a strong legislature.
 - B. Be self supporting.
 - C. Be backed by strong armed services.
 - D. Have a large foreign aid program.

4. The real political power in Poland is held by:
 - A. Catholic church.
 - B. Labor unions.
 - C. People's councils.
 - D. Communist Party.

5. Economic activity in Poland are controlled by the:
 - A. Labor union.
 - B. Party and government.
 - C. Consumer based.
 - D. A function of the military.

6. Polish foreign trade is mostly conducted with:
 - A. CIS.
 - B. US.
 - C. COMECON.
 - D. NATO.

7. Polish industry is:
 - A. Stimulated at the expense of other economic sectors.
 - B. Supports other economic sectors.
 - C. World famous for high quality.
 - D. Only one of the many successful economic sectors.

8. Biographic intelligence is:
- A. Very narrow and specific in scope.
 - B. Very broad in scope.
 - C. Used only with the military.
9. What is the major problem confronting the strategic intelligence analyst concerning biographical intelligence?
- A. What information to collect.
 - B. Where to collect the information.
 - C. When to collect information.
 - D. Whom to collect information on.
10. Poland's three-level formal court system includes all of the following EXCEPT:
- A. Social courts.
 - B. Supreme court.
 - C. Provincial courts.
 - D. County courts.

LESSON 3

PRACTICE EXERCISE

ANSWER KEY AND FEEDBACK

<u>Item</u>	<u>Correct Answer and Feedback</u>
1.	B. Births, deaths, and migration. (page 3-3)
2.	B. Is concerned with the educational means used by the government to control the people. (page 3-5)
3.	C. Be backed by a strong armed forces. (page 3-11)
4.	D. Communist party. (page F-1)
5.	B. Party and government control. (page F-2)
6.	C. COMECON. (page F-2)
7.	A. Is stimulated at the expense of other economic sectors. (page F-2)
8.	B. Very broad in scope. (page 3-23)
9.	D. Whom to collect information on. (page 3-24)
10.	A. Social courts. (page F-2)

LESSON 4

SCIENTIFIC AND ARMED FORCES INTELLIGENCE

CRITICAL TASK: 301-336-3604
301-336-4605

OVERVIEW

LESSON DESCRIPTION:

In this lesson, you will learn understand and define the importance of scientific intelligence and armed forces intelligence.

TERMINAL LEARNING OBJECTIVE:

- ACTIONS:** To be able to understand the importance of scientific and armed forces intelligence to military forces.
- CONDITIONS:** You will be given narrative information and illustrations from FM 34-1 and STP 34-96B4.
- STANDARDS:** You will be able to recognize the many factors affecting the mission of military forces. You will also be able to perform strategic intelligence duties.
- REFERENCES:** The material contained in this lesson was derived from the following publications:
- FM 34-1
 - STP 34-96B4
 - STP 34-96B24-SM-TG

INTRODUCTION

It is very important to understand the importance of scientific and armed forces intelligence and how they relate to your job as a strategic intelligence analyst. In the past, intelligence was mostly centered around gathering information on the enemy's forces but today, the main focus of intelligence activities are centered around gathering information that pertains to scientific research. It is because of this change that you must be aware of what scientific intelligence encompasses and how it relates to armed forces intelligence.

PART A: DEFINE SCIENTIFIC INTELLIGENCE

More and more, scientific and technological capabilities are becoming the decisive factors in determining the strategic position of a nation. The objective of military groups within a country has been to improve upon the development and availability of weapon systems more powerful than those of an enemy, rather than possession of a greater number of the same kind of forces.

The development of nuclear weapons has brought about a magnitude of warfare that has overshadowed any single previous weapons development.

International policies differ when two nations compete for the opportunity to aid an underdeveloped country in building up its economy. One nation's motives may be to gain a foothold to establish itself politically, thereby influencing that nation's future policy outlook. For humanitarian reasons, another may wish to raise the country's standard of living and create new markets for its products. Whatever the reasons, superior technology will be a swaying factor.

CAPABILITIES, SECURITY, AND RESEARCH OF SCIENTIFIC INTELLIGENCE

Science and technology are tangible factors measured in terms of ideas, designs, techniques, and prototypes rather than by mass production of goods. Almost all nations conduct scientific research programs they hope will culminate in a technological advancement for the benefit of the country. The pursuit of a scientific effort by a country does not mean it is involved in a threat role; however, when the effort is applied to military use it could pose a very significant threat.

No single nation can have a monopoly on a scientific breakthrough for long. Sooner or later other nations will master the technology.

Security procedures vary from nation to nation regarding security of technological developments. Countries with open societies, such as that of Europe and the US, are more susceptible to industrial and military security compromise. Countries like the CIS and Eastern European countries hold their development programs under the most stringent security measures.

A nation which has been secluded or unaware of developments may take several or more years to develop the needed expertise. Diplomatic negotiation or new trade agreements could open the way for exploitation. The US renewal of diplomatic relations with mainland China after 30 years of Chinese isolation is a good example.

In view of rapid developments being made in strategic weapon systems, namely nuclear, many underdeveloped nations are also acquiring the means to develop nuclear weapons while others are actively and openly seeking this capability.

Every field of scientific endeavor uses both pure and applied research. Pure research is performed with little thought of any practical end because the goal is the discovery and understanding of the laws of nature. Applied research attempts to develop discoveries and processes pure research into useful products.

The applied researcher receives much more attention than the basic researcher because of his obvious contributions to civilization. The true significance of a discovery in pure science is fully apparent only to experts in the field. Many years may pass before a discovery in pure science is translated into a usable article.

TECHNOLOGY AND THE SCIENCES

Technology links science with other components of a nation's strategic situation. The state of

technology in a given field determines the importance of the scientific and technological factors in a nation's strategic capability, vulnerability, or probable course of action. Many aspects of a nation's technology are covered in other components of strategic intelligence. Nevertheless, because a nation's technological capability in any one field builds upon many others, the entire range of science and technology should be considered by the analyst when making a scientific intelligence estimate.

Scientific intelligence is concerned with the capability of new technology. This depends on the ability of a nation to mobilize scientific manpower as much as it depends on the existence of that trained manpower in the first place. The institutions for management of scientific effort are a very important factor in scientific intelligence.

Some interesting contrasts arise when comparing management in the American and CIS scientific communities. Research, development, and production of strategic weapons in the US are parceled out to various manufacturers, universities, government laboratories, and other institutions. Each of these contractors usually depends on other services or the manufacture of other products. The scientific community in the CIS, in contrast, is characterized by centralization of authority. It assigns responsibility to a single purpose agency for the complete development and production of a new weapons system. There is no problem of precedents for such centralized authority, because every economic enterprise in the former Soviet Union (except some that involve only a few individuals) is a part of the national government.

The centralized organization has obvious advantages when the need is for rapid development of equipment for which the technology is fairly clear. This was one of the reasons for the success of the American "Manhattan Project" in the development of the atomic bomb. It is also one of the reasons the typical CIS lead time is currently estimated to be one-half that of the US. The dispersed organization provides a variety of information which should produce more new and unexpected technology than the centralized effort and permit a free exercise of imagination by many different experts.

The sciences have traditionally been distinguished by the type of natural phenomena with which they deal.

The physical sciences are concerned with the behavior of nonliving matter. The two most familiar are physics, which concentrates on the behavior of matter in terms of its mass and movement; and chemistry, which concentrates on the behavior of matter in terms of its molecular structure. These two sciences of strategic importance include astronomy, particularly in the technology of astronautics; meteorology, the science of weather prediction and control; and geology, the study of the earth and its mineral resources.

The social sciences are concerned with the behavior of living organisms, especially in relation to the behavior of groups of which they are part. Psychology, for example, concentrates on the behavior of the human mind, sociology on the behavior of groups of human beings, and economics on the organization of sources of wealth. A capability in the social sciences is particularly important to a nation's propaganda effort; in fact, it increases the potential for waging all types of unconventional warfare.

Nearly all the foregoing types of biological, chemical, psychological, and physical sciences are intimately related to the field of medicine. It is vitally important strategic intelligence be gathered to determine whether other countries have new drugs, vaccines, medical techniques, and medical equipment. This not only ensures our country is protected but also prevents our friends or potential friends from losing faith in our capabilities to protect them from disease.

ESSENTIAL ELEMENTS OF SCIENTIFIC INFORMATION

The basic objective of scientific intelligence is to gather knowledge of each nation's capability of mobilizing its scientists and engineers for the production of new technology, plus the vulnerability of this scientific effort and its probable course in the future. If the analyst could obtain all of the essential elements of information as they pertain to all fields of science, he would be able to construct a fairly complete and accurate scientific intelligence estimate. However; the intelligence reports the analyst prepares at any given time will usually have to concentrate on the few essential elements of information pertaining to those fields of science that affect the particular strategic decision facing his commander.

The essential elements of scientific information the strategic analyst takes into consideration are:

- * Educated and trained manpower.
- * Support sources.
- * Scientific and technological advances.
- * New product introduction.

The basic resource for the scientific and technological capability is educated manpower. The analyst must determine the level of training of current scientists in the nation he is studying, and the rate at which new scientists and engineers are being educated. These data are often available in national propaganda, because most nations like to boast about their scientific capability. In many countries the information is recorded in the national census, but great care must be taken by the analyst to determine whether the statistics of the different nations are comparable. Graduate engineers in the CIS, for example, include a great many people trained in a single speciality without the breadth of education required of the graduate of the typical US university. In any country only a few people possess the intelligence necessary for outstanding scientific research. There is no reason to believe the citizens of any given country are more intelligent than those of any other. Scientific leadership comes to those nations that recognize intelligence among children and effectively encourage them to enter scientific pursuits.

The source of support for science and technology will give some indication of the quality, type, and amount of technology being accomplished. Research personnel at a university, a foundation, or a government scientific agency are likely to be accustomed to considerable freedom in pursuing their own "pure-research". Personnel supported by an operational government agency or by a business enterprise are likely to have experience at meeting deadlines and producing designs and prototypes. They are also usually familiar with the problems of managing a scientific

effort. A high degree of mobility among the various research operations gives a nation's scientific manpower a breadth of experience in all of these aspects of research.

The strategic intelligence analyst is concerned with the advances in science which find application in the civilian economic sphere, as well as those turned to military advantage. This is true not only because of the importance of economic intelligence, but because many specific developments which have become important to the armed forces were first used in industry. For example, the development of radar sprang directly from radio, and the construction of tanks and most other military vehicles has been based on the technology developed by mass production of cars and trucks for the domestic market.

In the US during recent years, the new military and space technologies have become the most important source of new industrial products for the private market. This has not only contributed to the economic capability of the US, but has also given this country some advantages in the competition for business in the underdeveloped countries. Among the most notable results from defense and space research are nuclear electric generating plants, microelectronic circuitry, miniaturized electronic equipment, and automatic computerized systems of various types.

The appearance of the finished products of a new technology is the most conclusive indication of a scientific and technological capability. Once a new development has reached the hardware stage it is often announced to the world, not only because of the difficulty of maintaining secrecy but because the propaganda value may be tremendous. At this point the analyst is provided with many different sources of information. However, the appearance of new technology should not be taken by itself as a sufficient indicator of a nation's capability of mobilizing scientific effort.

Even if a scientific capability is indicated by the appearance of new equipment, this alone should not be taken as an indication the probable course of action will be mass production. The rapidity of today's technological changes in the real world can and does have a profound effect on any mass production program.

SCIENTIFIC MANAGEMENT

The management of the scientific effort in a nation will have much to do with the lead time required to produce a new technology.

An important factor in evaluating management is the type of organization that directs the scientific effort. A large research agency, with considerable freedom in pursuing a broad objective and dealing with policymakers on a fairly high level, should be able to produce scientific results faster than the equivalent scientific manpower who are subdivided and report to policy-making official at lower levels.

Another way of analyzing this factor would be to check on the scientific awareness and ability of those who are in policy-making positions in a given scientific effort. A further analysis should disclose if these officials have a scientific background and are acquainted with the technical problems associated with new technology or if they are simply delegates of national policymakers.

Dissemination of new scientific findings is a responsibility shared by both scientists and management. The ability of scientists to build on each other's work depends on the quality, speed, and circulation of publications containing results of their work. The quality of cataloging the individual papers, including use of electronic computers for retrieval of information that has been cataloged, is also an important factor in this evaluation. In science, as in practically any other field, the new patterns of thinking are set by a relatively small number of intellectual leaders. Biographies of the men and women who hold any promise of becoming leaders of science will be extremely valuable, particularly for the estimating of probable courses of future scientific effort.

The operation of most scientific apparatuses requires specialists who can be quickly trained. Fortunately for the US, the dependency of the economy upon mass production and maintenance of machines has made many men familiar with the basic principles of operation of mechanical and electrical apparatus. The large number of technicians is an important element in the strategic situation of the US. One concern of scientific intelligence, therefore, is to estimate the number and capabilities of the technicians in various fields who may be available to a nation in the event of war. Attitudes of government leaders toward scientific endeavors will determine the amount of government support.

The economic and social rewards accorded scientists will greatly affect the strength of the scientific community.

The prestige accorded scientists by the public is probably greater in the CIS than in any other country. As a result, many bright students are drawn into science who might otherwise have entered different fields. In many other countries somewhat the reverse situation applies, because scientists are poorly paid and virtually unknown except to fellow workers. This discourages people who might otherwise prepare for a scientific career.

SCIENTIFIC INFORMATION SOURCES

In preparing a scientific report the strategic analyst must have at his disposal a reliable catalog of up-to-date scientific information. In this regard, a continued effort must be made by intelligence specialists to keep up with new sources of scientific information as it becomes available. Unless the facts have been continuously cataloged, they become difficult to assemble from regular libraries. Scientific intelligence is still being assembled largely from open sources, in spite of the secrecy involved in production of many modern weapon systems.

A few sources of scientific information available to the analyst are:

- * Scientific papers.
- * Scientific journals.
- * Scientific conferences.
- * Amateur scientists.

Scientific papers are often available in unclassified publications, but their significance for development of a new weapon system is not fully appreciated. Basic research paper results can often be inferred by scientific specialists in other countries. The restriction of the free flow of scientific information relating to pure science might do more to retard a nation's own scientific effort than that of its competitors.

Scientific journals from many nations provide information of current overall scientific thinking. Many scientists strive to have their ideas published to enhance their fame or to become a known figure in their country. Some of these publications have information of strategic value.

Scientific meetings are encouraged by the international character of science. It is through these conferences and inspection tours that scientists become acquainted with each other. Scientists of all nations can name the important specialists in their own field no matter which country they come from.

Amateur scientists all over the world are engaged in a hobby-like fashion in scientific exploration. Most conduct their activities without the benefit of outside support. In the US and other western countries, various kinds of technicians and mechanics work at their particular trade. For example, one of the leading designers of the magnetron tube used in radars was a radio "ham" who was a mechanic by trade.

The objective of scientific intelligence is to provide an estimate of-

- * A nation's capability to mobilize its scientists and engineers for the production of new technology.
- * The vulnerabilities of this scientific effort.
- * A nation's probable course in the future. Technology is a factor to be considered in all of the other components of strategic intelligence and depends not only on a nation's brainpower, but also on its management abilities for making use of its brainpower.

The analyst who makes a scientific intelligence estimate should be an expert in the field he is evaluating. When the scientific effort under study includes some of the leaders in that particular field, it is difficult even for the expert to appreciate the full significance of their work. Experience in the particular scientific field should also provide the analyst with a biographical knowledge of the important personalities in the field.

The production of scientific intelligence should be a continuous effort. It requires a constant scanning both of the open publications and periodic intelligence reports for clues on new technological capability. With the heavy investment in research and development in the industrial nations today and the resulting rapid rate of technological change, scientific intelligence must be current to be of value.

It must be kept in mind the technology of new weapon systems has completely changed the scale of international warfare, even within the last few years. Any large concentration of military

power has become a military risk because of the speed with which an area can be devastated by nuclear weapons. As a result, military units have had to base their tactics on dispersion and mobility.

PART B: DEFINE ARMED FORCES INTELLIGENCE

Armed forces intelligence is knowledge pertaining to the capabilities and vulnerabilities of foreign military forces. This knowledge is required by national planners to formulate an adequate national defense in peacetime. It also forms the basis for military operations in wartime. It assists in determining feasible national objectives. It produces a large volume of basic military intelligence on nations, as well as estimates of their probable courses of action. The total effort devoted to armed forces intelligence is massive and reflects the involvement of the US on a global basis.

The armed forces component is the last in this series of introductory studies on strategic intelligence. All the previous discussions in this subcourse have been a prelude to factors that will affect strategic planning for use of military forces. Under sociological aspects, considerable attention was paid to military manpower. In the scientific component, a major emphasis is on the development of new weapons and defenses.

Attention must be given to all military forces, such as militarized security forces as well as paramilitary and semimilitary forces, which often have a ready capacity to aid the regular armed forces. To perform its function, armed forces intelligence must examine every aspect of the makeup of a nation.

In almost every country the control of the armed forces is given, by the constitution or other basic charter, to the executive branch of the government. The chief executive is often the commander-in-chief. A basic task of armed forces intelligence is to determine where the ultimate control of the armed forces of a given country lies and what influences the military, political, or other factors have on the process of control.

Controls over the armed forces of a nation may, or may not, be written into law. The US Constitution restricts the President (Commander-in-Chief) from making war without the approval of Congress. The actual control over a nation's armed forces, however, is not always the same as that prescribed by a country's constitution. Chief executives can often make war without recourse to constitutional provisions. The executive power may be dominated by a political party which seeks a war with a certain neighbor, or may be influenced by a group of industrialists and exporters who seek to avoid war. In some countries, leaders may have the deciding voice in internal and foreign policy decisions. Such Influence may be direct, such as a takeover by a military junta, or it may be indirect with power lying not in the hands of constitutionally installed officials, but in the hands of "extralegal" military men who rule behind the facade of the government.

One factor in the control of the defense establishment is the attitude of the people of the country toward the armed forces. Although this factor will vary with the type of government involved, a population opposed to the armed forces is seldom helpful to either the armed forces or the government.

In a totalitarian state such as the CIS, the regime carefully works to insulate the military forces from the effects of any popular views which might be contrary to party control of the armed forces. Massive indoctrination programs are continuously under way for this purpose. So important is the reliability of the armed forces to the communist party of the CIS that political indoctrination and political loyalty to the party are of uppermost concern. The armed forces of the CIS serves the communist party, not the people of the CIS. To help ensure the armed forces of the CIS will give unquestioned obedience to the communist party, there is a military section which operates from the central committee of the party through the main political administration of the armed forces. This section reaches down to the individuals in the lower units of the armed forces. It should be emphasized that from the very beginning of the former Red Army, the close political control of the armed forces by the party has been carried out in accordance with the former Soviet doctrine.

Support of the armed forces is more than a financial matter, although financial support is a primary concern of the strategic intelligence researcher. If financial support is available to fulfill all needs, the armed forces might expand and set up research organizations to conduct various studies they consider important. When financial support is limited, the researcher must recognize such expenditures will drastically decrease. Nearly all available funds will be used for personnel and equipment. Many countries, including communist countries, do not make figures available on the amount of financial support provided the public in their budget reports. In all countries, however, there are hidden items which require skilled strategic intelligence interpretation to relate them to military expenditures. For example, weapons research might be classified with general scientific research; any expenditures may be classified as "police" monies. Much of the information on these subjects is available only through covert sources, but the information is of such long-range importance its collection must be a continuous process.

Many governments have the power to spend large amounts of money without public accounting. Some of these expenditures may be programmed for economic projects, but in reality they are tagged for military use. Military roads and railroads are often built under the guise of economic improvements. This use of funds by many countries is more widespread than believed. Therefore, the strategic analyst must be on a constant vigil to detect a country's trend.

Expenditures for military purposes normally are directly related to the extent to which a country feels threatened by potential enemies, or may be dictated by expansionist sentiments within the country itself. Between the two world wars, the US spent relatively little money on its armed forces, because there was no apparent threat from aggression until the 1930s. There was also the common belief our boundaries were well secured by oceans to the east and west and friendly nations to the north and south. The realization has been apparent for some time the oceans no longer constitute barriers against attack. Intercontinental ballistic missiles can transgress continents and oceans. They have nuclear capability for vast destruction.

Military heroes often acquire great personal popularity which is reflected in a nation's ability to maintain control over its armed forces. In some countries such a hero's popularity is put to useful purposes, but in others, usually of a totalitarian nature, the achievement of mass popularity by military officers is considered a threat to political control.

In countries where the armed forces are not accorded great public esteem, civilian control is likely to be firmly established, but the efficiency of national defense may be impaired. In some

countries the appropriations granted the military establishment are greatly influenced by the degree of public esteem of the armed forces. The opinion of the public toward members of the armed forces may be a factor in encouraging or discouraging capable persons from pursuing a military career.

FOREIGN ARMED FORCES SIZE AND STRENGTH

Whenever an examination is made of the size of a foreign military force, the following issues are considered:

- * Present size of the armed forces.
- * Number of military-trained reserves.
- * Number of internal security forces.
- * Number of paramilitary forces.
- * Number of potential conscripts.

The examination of armed forces must differentiate between potential and actual military manpower, because armed forces differ widely from country to country. Computations should be made by an actual count of the numbers of tactical or strategic units. The size of the army, for instance, is measured both by the number of personnel in the army and by a breakdown by corps, divisions, battalions, or whatever other designation a country may use. The navy and air force units should be computed in the same manner. The researcher must be careful when noting the numerical size of a unit. A battalion size unit for one country may represent a certain number of personnel, while in another country it may represent a completely different number.

It must be determined if the units are at, above, or below their authorized strength. They should be considered separately for each military service. Reserves should be divided into the following categories:

- * Those engaged in active training throughout the year.
- * Those trained for short periods only.
- * Those who receive no training at all. A further consideration may be the division of reservists into two groups-voluntary members, and those who are required to serve in the reserve by law. Various militia and home guard units should be considered as similar to the reserves.

In some countries where the possibilities of internal upheaval exist, internal security forces are used to maintain government control over the populace. These forces are organized on a military pattern, receive military training, and armed with conventional weapons. In wartime they can be used at regular military formations. Therefore, in determining their size they must be given equal consideration with the regular armed forces, with difference only to the larger size of the regular armed forces.

In Eastern European countries, semimilitary or paramilitary organizations are used by the government for control. Semimilitary groups, for instance, are used to protect industrial complexes and have been used in the past to suppress local attempts to overthrow the communist-run regime. These groups receive military training, are armed with light weapons, and could, in an emergency situation, be incorporated into regular units. Paramilitary organizations whose chief functions are the preparation of youths for military service, protection of state property, and service as an adjunct to the security police also receive specialized military training. They may be armed with light weapons on a permanent basis. Both semimilitary and paramilitary organizations must be considered in a strategic intelligence estimate as a part of the military establishment of the country under discussion.

The potential manpower pool of a nation consists of those subject to military service through conscription. A certain percentage of the manpower of military age must be deducted to include:

- * Those needed in industry and agriculture.
- * Those not healthy enough for service in the armed forces.
- * Those who have political beliefs which challenge those of the state and perhaps make them more friendly to the enemy than to their own government.
- * Those who escape military service for a variety of reasons. The determination of the number of men who can actually be mustered into service through conscription is one of the most difficult tasks confronting the analyst. Fortunately, pinpoint exactness is rarely necessary, and reasonable estimates will usually be sufficient for the purpose of strategic intelligence.

In considering the size of the armed forces, the element of time must always be kept in mind. It takes time to expand the armed forces, even though the expansion is made by abruptly recalling reservists to duty or hastily activating militia units. In many cases the effective size of the armed forces at a particular moment depends on the degree of readiness of the services to receive large contingents of new untrained men.

The strength of the armed forces depends partly on size. However, large forces are not always strong, for there are many other factors which are demonstrably more important than sheer numbers. Among these, the most significant are:

- * Quality and quantity of weapon systems and equipment.
- * The level of leadership ability.
- * Military training programs.
- * Overall military morale.

Military power is measured in terms of quality and quantity of weapon systems and their supporting equipment. To the strategic analyst, the numbers and disposition of these weapons are the most decisive factors in modern warfare. It is the one area where accurate intelligence

must be gathered in both peacetime and wartime. Presently the development can sharply change the whole course of warfare. Strategic intelligence analysts must constantly watch for the development of new weapons and the strategy and tactics which evolve concerning the use of these weapons.

Leadership is a complex and not completely understood quality involving intellectual, moral, and physical factors. Leadership evaluation includes a study of the capabilities of the high command and the quality of staff work from the highest levels down to the small unit leader.

The training program of any military force often can reveal a great deal about that organization's projected way of fighting a war. Examination of a training program includes a study of the field training of troops in the active forces and reserves, as well as the schools set up for military education. All major countries maintain service academies for officer training. Military instruction is given in high schools, colleges, and universities. Military training is compulsory in secondary schools and colleges in the CIS, with the aim of making every college graduate a competent officer. Among the most important training exercises are large-scale maneuvers, because they sometimes feature the inauguration of new weapons and novel tactics. These exercises should be observed carefully for such developments as well as for confirmation of older trends.

The morale of the armed forces is closely related to the morale of the general population. It is affected by internal politics and world events in somewhat the same way as that of the general population. If the government in power is unpopular with the general population, it often happens the morale of the armed forces is low. Military morale is often affected by the way personnel are chosen for service. The strategic analyst should be careful to identify favored and unfavored units in a branch of the service, because the morale of these units will undoubtedly be different. Morale is not determined by one factor but by a series of factors.

ORDER OF BATTLE INTELLIGENCE

Much of the information gathered about foreign armed forces is done by OB specialists. OB intelligence concerns enemy units, including their strength, identification, disposition, organization, equipment, tactics, combat effectiveness, history, and personal data about their key officers, as well as electronic technical data.

Each branch of service is treated separately. This information is gathered by strategic intelligence personnel during peacetime in as great detail as possible and put into a form that will be available for immediate use in case of war.

A part of this information is issued in OB handbooks. The handbook may be consulted for information about the armed forces of a nation. For example, if in combat a certain unit is identified in the enemy front line, the OB handbook can be consulted to find details of the unit's history, the number of men usually assigned, and the number and types of weapons the unit may have. The gathering of this type of information is among the most important in armed forces intelligence.

The aim of OB intelligence is to obtain as much information as possible about each unit of a foreign armed force. Information to be processed includes:

- * Home stations.
- * Training stations.
- * Nomenclature and numbering of units.
- * Uniforms and distinctive markings worn by different services and organizations.
- * Vehicles and weapons assigned each unit.

In many cases, the simplest item of information proves to be of vital importance in making unit identifications under battle conditions. If the strategic OB specialists do their work well in peacetime, the combat OB section will be more efficient in wartime.

The command structure of the armed services is given special attention. The chain of command and the real function of each link of that chain is examined. As much biographical information as possible is gathered about senior officers. How those officers have conducted battles in the past is useful in anticipating their moves in future battles. In other instances, knowledge of their personal lives can be valuable. For example, the political preferences of high-ranking officers may not be the same as those of the civilian politicians in power. This fact can be of utmost importance in conducting feelers for peace negotiations.

The disposition of the armed forces of a foreign nation must be watched carefully at all times. Aggressive moves may be signaled by a shifting of forces immediately preceding the aggression. A favorite way of strengthening diplomatic pressure against a weak neighboring nation is to move troops near the border and hold maneuvers in frontier areas. If the peacetime intelligence concerning the disposition of armed forces is accurate, the analyst will be able to estimate closely the time which will elapse before an attack of any given strength can be launched. The approximate location and direction of such an attack can also be estimated. The preparation of new defenses, the building of new airports and naval bases, and even the construction of housing facilities for the services are valuable elements of information to be gathered on the disposition of forces.

As far as possible, location of headquarters and territorial boundaries of the different organizations should be determined, beginning with higher headquarters and working down to the lowest practical tactical and administrative levels.

STRATEGIC TECHNICAL INTELLIGENCE

Strategic technical intelligence is concerned with foreign technological developments and the performance and operational capabilities of foreign weapons and other materials, which have a practical and potential application for military purposes.

Technical Intelligence is broad and includes all technical aspects of foreign military materials. Highly qualified technical experts are needed to analyze the materials within their own particular field of interest.

Strategic technical intelligence encompasses a wide variety of material categories ranging from weapon systems to military clothing. The overall objective is to provide technical data vital to national, scientific, and technical agencies and the military departments of all these services. Besides studying foreign materials, the technical analyst performs a most important function on a worldwide basis by collecting, analyzing, and processing intercepted electromagnetic emissions. Emissions from foreign sources, such as telecommunication, electronics, data link, and others, can be associated with specific equipment or weapon systems. Intercepted data analysis reveals such characteristics as frequencies, repetition rates, operating modes and many other parameters for exploitation by the analyst. The processed data provide extremely valuable information about a country's capabilities and vulnerabilities.

STRATEGY, LOGISTICS, AND CIVIL DEFENSE

The study and analysis of the strategy and logistics of a foreign armed force is a continuous task for the analyst. As countries develop and improve their economic position in the world, social standards and the country's political outlook undergo changes. These factors are the basis on which the strategy of the armed forces is planned.

Strategy varies from country to country and includes other factors like geography, vulnerability, and efficiency of the country. Most countries have devised some form of strategic defensive plans, while others rely on defensive support through an alliance.

The US and the CIS, strive for strategic dominance. The former Soviet doctrinal concept was eventual conversion of the world to communism. On behalf of the free world countries, the US is using political strategy and military balance to impede any attempts by the former Soviets to subjugate other nations. With the military balance of power in nuclear weapons swinging strategically more favorable in the Soviet direction, the US must constantly work on new strategies to cope with the world conditions and avoid direct confrontation.

No military power can maneuver successfully without careful consideration of logistical problems involved. Logistic support for armed forces should be well planned to sustain continued operation in the event of war.

Modern warfare will entail a military power on the defensive, not only to have a force in being, but a secondary or reserve back-up force ready in case of attack by an aggressor. In the case of sudden nuclear attack, the defensive force in being would probably become the decisive survival factor.

Logistics in modern warfare, whether it be nuclear or conventional, will require rapid resupply of equipment and personnel as near to real-time as possible. Industry, in most cases, will not have sufficient time to gear up and produce the necessary supplies and equipment the defensive force will need to sustain a full counteroperation.

It is essential storage of military supplies and equipment be maintained in hardened sites or strategically dispersed to minimize destruction.

A military power on the offensive would probably be backed up by a detailed logistical plan considering all contingencies. All phases of military activities, including production,

procurement, storage, transportation, distribution, maintenance, and personnel movement must be allowed for if the military operation is to be successful.

Civil defense programs should be included in any strategic intelligence assessment, particularly in view of a nuclear exchange. Of primary concern to the strategic analyst is the construction of hardened command posts to provide for the survivability of government officials and key leadership personnel who would be needed to continue the war-fighting capabilities. Hardened sites are also necessary for skilled industrial workers, scientists, and managerial personnel. It is estimated the former Soviet Union built at least 20,000 blast-resistant shelters for their key personnel and civilian workers. These shelters have been built near Moscow and other major industrial cities.

LESSON 4

Practice Exercise

The following items will test your grasp of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answer any item incorrectly, study again that part of the lesson which contains the portion involved.

1. Scientific developments evolve so quickly in modern times that constant changes must be made to bring intelligence up-to-date. Which of the following statements is correct:
 - A. Applied research makes use of the discoveries of pure research.
 - B. The presence of a scientific research program in a country is ipso facto a military threat.
 - C. Scientific and technological outputs are measured by quantity.
 - D. Scientific and technological development require only applied research.
2. Scientists have a direct effect on a country's technology. Which of the following statements is correct:
 - A. The rewards given to scientists will affect the strength of the scientific community.
 - B. Scientific leaders of a country determine the nation's course of action.
 - C. Most national policy makers have a scientific background.
 - D. Scientific knowledge and ability are not important for scientific policy makers.
3. The sciences use technology as a link with the other strategic intelligence components. Which of the following statements is correct:
 - A. A centralized organization has the disadvantage of slow development of ideas.
 - B. Biological sciences are concerned with the study of living organisms in relation to the group.
 - C. Physical sciences are concerned with living matter.
 - D. The lead time of the CIS is considered to be about one-half that of the United States.

4. Which of the following is true concerning the control of a nation's armed forces and its military expenditures?
- A. Chief executives can never make war without the consent of the legislature.
 - B. Financial support of a foreign country's armed forces is of no interest to the strategic intelligence researcher.
 - C. Military expenditures are related to both fear of attack and aggressive intentions.
 - D. Public accounting is required by all countries if they spend monies for military use.
5. What is a country's strategy base on?
- A. Geographic location.
 - B. Political outlook.
 - C. Economic conditions.
 - D. Military status.
 - E. All of the above.
6. Civil defense means:
- A. Training civilians to work in industry.
 - B. Providing civilians with arms to defend themselves.
 - C. Constructing hardened shelters for protection against nuclear attack.
 - D. Helping civilians dig foxholes.

LESSON 4

PRACTICE EXERCISE

ANSWER KEY AND FEEDBACK

<u>Item</u>	<u>Correct Answer and Feedback</u>
1.	A. Applied research makes use of the discoveries of pure research. (page 4-2)
2.	A. The rewards given to scientists will affect the strength of the scientific community. (page 4-6)
3.	D. The lead time of the CIS is considered to be about one-half that of the United States. (page 4-3)
4.	D. Public accounting is required by all countries If they spend monies for military use. (page 4-9)
5.	E. All of the above. (page 4-14)
6.	C. Constructing hardened shelters for protection from nuclear attack. (page 4-15)