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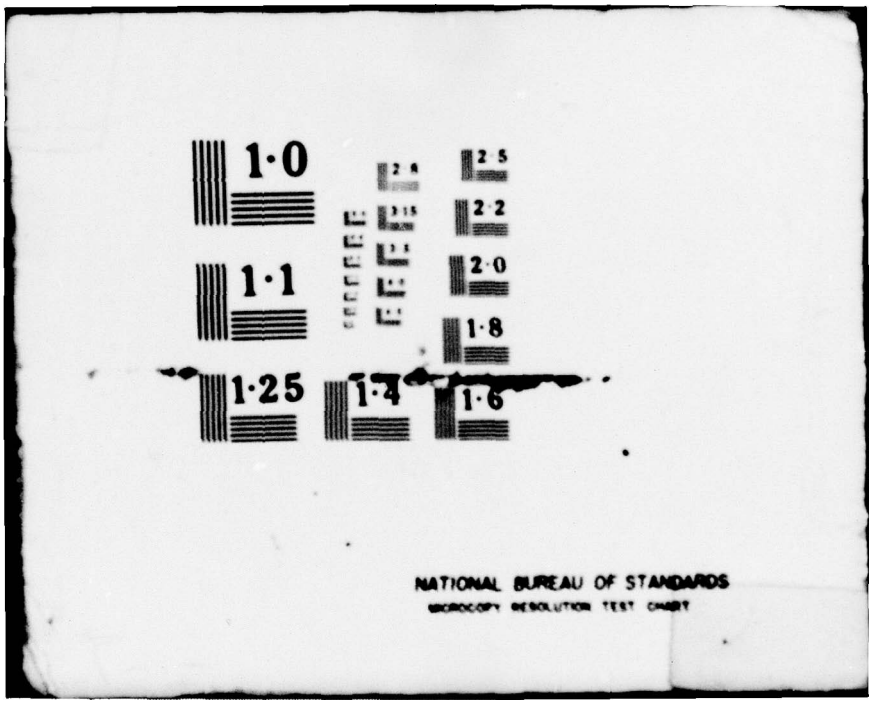
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This study analyzes the opinions and requirements of users of FTD produced Scientific and Technological (S&T) intelligence. Data was collected from a self-response survey. Respondents identified the importance of current and future functional areas of S&T intelligence, kinds of S&T intelligence, reporting formats, and dissemination methods. Discriminant analysis was used to

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identify the profiles and special needs of clients. Products were evaluated for currency and content.

Results of this investigation indicate the R&D user as the single most influential user of FTD products. The weapon systems handbook is the most important reporting format for a majority of users. The need time frame of S&T intelligence is less than two years for 71.3% of the sample. There is an overall lack of knowledge concerning the Intelligence Production Requirements System. Currency of S&T intelligence products is a problem because no collective register, known to users, identifies document currency. Continued investigation was recommended to further identify the needs and requirements of users of FTD produced S&T intelligence. Specific suggestions were made to fulfill the needs and requirements identified as lacking.

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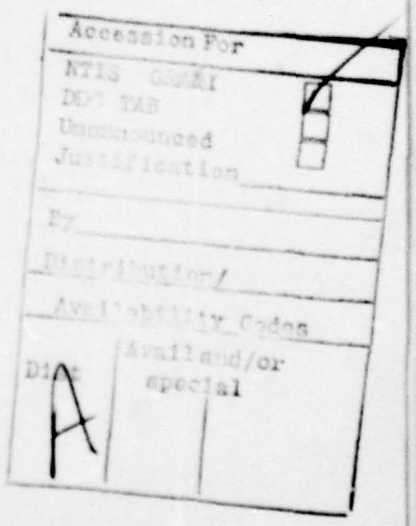
AN INVESTIGATION INTO THE MARKET STRUCTURE OF THE FOREIGN TECHNOLOGY DIVISION

THESIS

Presented to the Faculty of the School of Engineering
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science



by

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Graduate Systems Management

September 1979

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AN INVESTIGATION INTO THE MARKET STRUCTURE OF THE FOREIGN TECHNOLOGY DIVISION

I. Introduction

The Problem

The objective of this research was to identify and evaluate the needs and requirements of users of Scientific and Technical (S&T) intelligence. Relatively few government agencies have implemented marketing programs that identify consumer needs and requirements. The present climate suggests that the benefit of marketing research applied to government agencies can save resources and tax dollars. Specifically, services provided by the Foreign Technology Division (FTD), an organization within Air Force Systems Command, have been examined. The Foreign Technology Division is the recognized expert in collecting and producing Scientific and Technical intelligence for the U.S. Air Force. A further objective of this study was to derive a characteristic profile of the users of FTD-produced intelligence. These profiles can be used to make recommendations to direct the production process and create an effective match between consumer preference and product. An added benefit of the study is knowledge of the factors that characterize satisfied and dissatisfied customers. User confidence in FTD-produced documents can be observed and validated.

Defense Intelligence Agency Manual 75-1, Scientific and Technical Intelligence Production, establishes procedures for the management, processing, producing and reporting of S&T intelligence within the Department of Defense. The mission, goals and objectives of FTD are for official use only and can be found in FTD regulation 23-3, Organization and Mission. However, the basic philosophy of FTD is to reduce uncertainty for their users by supplying timely and relevant scientific and technical intelligence data. This policy influenced them to study their product and its relevancy to the consumer. Thus, FTD and its service were the prime considerations of this research effort.

A by-product of this study is the identification to the Office of Management and Budget the validity of the service FTD provides. FTD's fiscal year 1980 budget was cut along with an approximate 8% cut in all DOD S&T intelligence programs. This loss of funds was a driving force in the implementation of this research.

The basic focus of this research was the identification of the specific needs of the FTD consumer. A recent audit of FTD by the Defense Audit Service discovered excessive delays in processing formal requests for S&T intelligence information as well as some dissatisfaction among users. FTD's Plans Section (XOX) developed a questionnaire (with advice from the Department of Systems Management (ENS), Air Force Institute of Technology) to aid in identifying problem areas. A detailed discussion of the S&T intelligence users' questionnaire can be

found in Chapter III. The survey in itself was an immediate vehicle for improving the communications process between FTD and the consumer (see Appendix A).

The Product

The JCS Pub 1 defines Scientific and Technical intelligence as:

> The product resulting from collection, evaluation, analysis, and interpretation of foreign scientific and technical information which covers: (a) foreign developments in basic and applied research and applied engineering techniques; and (b) scientific and technical characteristics, capabilities, and limitations of all foreign military systems, weapons, weapon systems, and material, the research and development related thereto and the production methods employed for their manufacture [9:289].

It is apparent from this definition that the intelligence product to be evaluated is multifarious. FTD annually produces over 139 documents to satisfy mission requirements. They also produce a weekly intelligence bulletin and over 125 papers per month called quick reaction tasks. Practically all products are internally generated except for a small number which are contracted papers. The product is provided at no cost to the user except for a time delay dependent upon the complexity of the desired information. The product design is standardized and no radically new approaches to a different style of product are anticipated. FTD was not searching for a new product, but a better method of preparing and servicing an existing product. The differences between product types does not deter grouping them under the major category of intelligence documents. The content of these documents and their method of transmittal are

the products and services capable of satisfying the FTD consumers' needs and wants.

Scope and Limitations

The scope of this study covered a broad field of management disciplines. Basic to the research was the actual information derived from the survey instrument. The questions on the survey were divided into several sets. The identity of respondents was catalogued when available, and membership in larger organizations further classified each respondent into one of approximately ten groups. Each user's requirements were recorded in the computer data file and included variables such as: areas of interest, methodology desired, time requirements, usage frequency, and applications. Specific information concerning the Intelligence Production Requirements (IPR) system was also tabulated. Means of communication and data concerning further analysis efforts were also collected. Possibly the most beneficial section of the survey was Part II, which outlined user suggestions and comments for ways to better satisfy consumer needs associated with specific products.

The most pressing limitation to this study was the time element necessary to tabulate data from respondents located around the world. Initial distribution of the survey was in batches, and it was discovered that sometimes not all of the transmitted questionnaires were actually distributed to department users because of local policies. The sample data file is still being collected for further study by FTD. For purposes

of this report, the cut-off date for the data collection was 1 July 1979.

Another limitation was the nature of classified comments some respondents gave. All classified information or references to classified sources were kept out of the data base. Where users responded with two answers for questions which required a single answer, the response was either eliminated or identified as missing or with a zero. No preference was given to any one respondent, and every effort was made to eliminate possible transmission and transformation errors from the survey to the data file.

Applicability

The results of this market research effort could have far-reaching effects. Budget and resource allocation to the S&T community might be affected by identifying priorities and special requirements. Management effectiveness for the intelligence processing system might be improved. Information currently provided in products that consumers say is not needed can be eliminated. Likewise, processing of products can be streamlined by providing the consumer only what he needs. The organization-client relationship can be improved by more accurately matching consumer requirements with product outputs.

This research attempted to analyze the market structure of a government service agency. While similar studies have been done for the Department of Agriculture, Interstate Commerce Commission, and Department of Justice, more service oriented government agencies need to examine their organizational

strategies by assessing consumer preferences about existing goods and services. In this way, factors that improve communications, save resources, and provide accurate and useful services will eventually benefit the taxpayer by saving him money.

Definitions

Before reviewing the role of marketing in some government agencies, it is useful to present definitions central to marketing and management activities. A marketing problem consists of identifying the market, with its characteristics, needs and purchase patterns, and then developing products and marketing programs to meet these needs. A marketing arena exists in almost every endeavor conceived by man. In the government arena, however, there are a few special cases. With limited time and resources, the market for government goods and services is too vast to be defined precisely. For the Foreign Technology Division, the market is exclusively individuals or agencies with the appropriate security clearance and a bona fide need to know. The characteristics and needs of FTD users would be similar to those interested in S&T information in non-government concerns. One current and significant difference that distinguishes users of FTD-produced documents and publications is the price paid for information. The direct cost to any FTD user is only the delay time from the request being approved until receipt of the document. Thus, the marketing problem for FTD was to clearly identify the requirements of its

consumers. Improvement of intelligence products by efficient production became a key management objective.

Marketing is defined in many ways by various researchers. The positive and negative connotations given to marketing reflect its pervasive nature and tendency to mean different things to different people. One noted scholar in the management field, Peter Drucker, states,

> Marketing is so basic that it cannot be considered a separate function. . . . It is the whole business seen from the point of view of its final result, that is, from the customer's point of view [10:3].

Thus, marketing involves practically every human activity. As its main criterion of effectiveness, marketing measures the degree of consumer satisfaction with goods and services. As a result, marketing may be defined as a system wherein business activities of planning, pricing, promotion, and distribution act to satisfy the wants (and needs) of consumers. The Marketing Handbook defines marketing as:

> -an organized system of business activities that makes possible the flow of goods and services from production through consumption and strives to match production and consumption by representing producers to consumers and consumers to producers [11:p.1-2].

One can apply these definitions of marketing to FTD by adding one more term. That term is service. FTD provides a service along with the provision of specific documents and publications. Products provided as a result of quick reaction tasks most nearly fit this service category. The service is designed to improve a user's performance through reduction of uncertainty in a specific area with which the user is vitally

concerned.

The marketing strategy FTD has undertaken is to clearly identify their clients' needs, provide the required products and services to the consumers' satisfaction, and continue to match the consumers' desires to efficient products. Information to aid this strategy can be found in this study.

By collecting the above definitions and applying FTD and its environment to this collection, one can state that marketing involving FTD takes place as the exchange of goods and services between FTD and their clients. For this exchange to be satisfactory to the client, FTD must be fulfilling the clients' needs.

Assumptions

In outlining the assumptions made in this study, the boundaries of the marketing system and environment encompassing FTD and its users will necessarily be limited. These limitations are required to feasibly manipulate the data: all possible dimensions and characteristics of the users and FTD cannot realistically be measured. Many insights have been obtained. These views point to further areas for investigation as well as immediate tasks which can be undertaken to further satisfy the needs of FTD users.

Market research is closely tied to the decisions, goals and objectives of the decision-maker, as well as to the specific profile concerning his customers and products. To begin the process of establishing goals and objectives, a clear statement of the problems and understanding of the participants involved

is necessary. FTD has undertaken the quest for this knowledge about its users through the use of the 1979 S&T intelligence user's questionnaire. The response to this survey approached 50 percent of the total population of users of FTD products. Thus, a decision-maker evaluating this study needs to have ample confidence in the facts presented in order to accurately plan the organization's goals and objectives. A necessary assumption that aids in this planning is: provided a representative sample of organizations is available, then the typical organizational users of FTD documents and publications in the near future will not vary significantly from the available sample. If this assumption was not made, it would be useless to attempt to predict any future trends or strategy. The basic network of intelligence organizations appears relatively stable for the near future and underlies the ability to make this assumption without reservation.

Another necessary assumption is that the population of users of FTD products have made independent judgments about the survey. This allows the researcher to weight each respondent equally and not presume the data has been biased by the collusive efforts of the respondents. Each reply is taken at its face value, and any combinations of respondents constitutes aggregations of individual responses. In fact, no weightings have been used in the analysis so that management can determine the relative importance of the recommendations.

The questionnaires were distributed from a composite list of consumers who actually ordered and received FTD documents

and publications. Organizational responses were desired which could identify unique requirements of the users of S&T intelligence. The third assumption necessary deals with the experiences, beliefs, attitudes, and sensations of the individual users. One must assume that the responding individuals are cognizant that they are identifying requirements and needs consistent with their own organizational objectives. In this case, the implication is that user needs match the needs of the organization. The past requirements of individuals in the organization will usually tend to predict their future requirements. Thus, stable requirements for the near future are assumed to be similar to requirements of the recent past.

The following point is not an assumption, but more a method of strategic logic. In the analysis, specialized groups which indicate an item to be very important or moderately important represent a group of valued consumers to FTD. These special users will become the subject of management strategy and, consequently, both the users and FTD can improve communications and services. Efforts directed toward satisfying the needs of interested users will elicit more benefit than efforts directed elsewhere. This is basically selective or specialized marketing designed to maximize service to a specific group of users.

A well-founded assumption which is made in marketing is that the total error of a test market will decrease as a function of time. This is a reasonable assumption from serveral points of view and is a more general statement which combines some of the previous assumptions. More information is collected as time

passes. FTD is continuing to encourage responses to the S&T survey. Error of prediction based on these responses must be at least non-increasing and, more likely, are decreasing with respect to time. Reopening old or closed channels of communication between consumers and FTD has already decreased the possibility of FTD wrongly believing a user's needs have or have not changed. This assumption has also been verified from an empirical point of view by A. C. Neilson Company (16). The Neilson Company studied 100 test market cases to determine the odds of predicting a test's final market share (within 20%) given that the test was observed for various durations of time. The study showed that the odds after two, six and ten months of observation were 1 out of 7, 1 out of 2, and 5 out of 6, respectively. These findings explicitly identify that estimation error decreases with increased durations of market observations. Thus, for FTD to continue collecting data upon which their marketing strategies are based can only help to decrease the possibility of error.

Organization of the Study

This research is composed of five chapters with tables and forms included in the appendices plus a bibliography. Chapter I covers the nature of the problem and subject of the research. Chapter I also outlines the scope of the paper and identifies limitations and definitions as well as the assumptions used in this report. Chapter II presents a literature review of similar study efforts. Chapter III is a discussion

of the methodology relevant to this study. Also included in Chapter III is a discussion of the sample population, the survey instrument, and their validity. The analysis techniques that will be used are presented in Chapter III. Chapter IV is a discussion of the research findings and their relation to the work system. Chapter V contains the related recommendations and conclusions along with a discussion of possible future longitudinal efforts.

II. Literature Review

Related Market Research Examples

The field of marketing is relatively young when compared to other business disciplines. The present concept of marketing is less than 50 years old. However, the government has actually been involved with marketing from the time of the First Continental Congress. The name marketing may not have been used, but there was a definite relationship between citizens' desires and government services. Related market research studies in government are all too few; the reasons why more studies have not been done in this rich domain are not totally clear. Besides the youth of marketing, a likely cause is the mystifying aura attached to applied sciences in general, and market phenomena more specifically. The government has compiled and distributed data about population, industry, and agriculture for many years that is heavily used by market researchers. However, only a limited number of government agencies have implemented formal marketing programs or established marketing departments.

Before identifying these arenas of government marketing, the need for marketing programs in government will be addressed. Claxton, et al. (4), studied ten governmental organizations at the federal, provincial, and municipal levels. These organizations involved tourism, agriculture, social grants, and

libraries. The management levels within the programs were of various types, including general managers, managers of specific areas (such as advertising managers), and branch managers. The study took place over a two-year period. They discovered that seldom were consumer interests evaluated in a formal way, and in only one case was a method of market segmentation used. Secondly, they found that government program managers lacked the expertise to study user interests and, thus, were unable to communicate effectively. Government managers felt a need to be all things to all people. The last finding identified program evaluation as an area requiring continued attention. The study called for a broader view of marketing, not only in government, but also in other non-traditional areas. The implication of the report is improved management of resources through formal investigation, improved communication and continued re-evaluation of programs to better satisfy consumer (citizens') needs.

A detailed survey was administered in 1951 to a random selection of Army officers stationed in Europe (3). This investigation was similar to the FTD S&T questionnaire in length (number of variables observed), and the results were used to identify manpower needs and requirements. The mailed questionnaire was twenty-three pages long and contained 116 separate items for response on moral problems, career interest, and opinions on military efficiency methods. To convince officers of their anonymity, a separate post card was included in the survey package with instructions to mail the survey and postcard

separately and that no identification was required on the survey. This enabled the researchers to elicit only the officers' opinions from the survey and obtain certification that the officers had returned a survey. The survey response rate was 89%, and the authors concluded that within the Army officer population a consistently high rate of return could be expected. This finding originally raised the expectations of this author due to the complexity of the FTD questionnaire. On 91 short-answer questions in the Army survey, the range of "no answers" was from zero to four percent. One answer had a maximum number of "no answers" of 33 percent.

An agency that has used marketing techniques relatively early in the government arena is the General Services Agency (GSA) (15). Since 1949, GSA has been charged with disposing of items no longer used by the world's largest buyer - the Federal government. Marketing influences of merchandising, publicity, and researching potential markets have enabled GSA to increase the return on investment from 4.7 percent in 1959 to 6.7 percent in 1962 (15:29). Market conditions are researched by GSA analysts before items are placed on sale. The sale of some items may be postponed until indications point to no disruption of normal commercial marketing activities. Consolidated sales sites and selective direct mailings add to the advertising ability of GSA. Sales of real property now include suggested uses and photographs. The loss is still costly since only a fraction of the original property value is realized. However, marketing is conserving resources and saving taxpayers'

money in GSA.

The Federal Trade Commission (FTC) is another government organization involved with marketing decisions. The FTC was originally established in 1914. In 1938, the Wheeler Tea Amendment to the Act changed the view of the Commission from protection among and between businesses to protection of consumers. In 1962, the Trade Regulation Rules identified the requirements of statutes which the FTC administers. The FTC strives to assure and maintain a "fair and competitive environment" for consumers. Many authors have beseeched the FTC to heed the insights from market researchers to better serve the consumer. Suggestions that the FTC take note of the behavioral characteristics of the consumer and amend its regulatory framework accordingly have been made. Cohen pointedly notes that in ". . . broad policy terms the Commission can initially do little more than establish closer contact with the consumer [5:43]." She believes there has been an underutilization of the skills and insights of researchers in marketing and consumer behavior. Wilkie and Gardner have pointed out how marketing research can aid the public policymaker (17). They state that there is a substantial gap between information needs and the available research inputs. They suggest the research needs of the FTC can be defined, but these policymakers have yet to bridge the gap with consumer researchers and market analysts to aid in solving their problems. Identification of consumer needs by the FTC would be a first step to insure maximum utilization of tax dollars. Thus, marketing concepts and

research technology still have a fruitful area to make contributions in government policies.

The Justice Department has dealt with market research on numerous occasions. The indictment of United States Steel and Bethlehem Steel for violating the provisions of the antitrust laws governing price fixing is just one example (1). Whenever the behavior of market participants indicates collusive activity designed to influence prices and production policies, antitrust charges can arise. The resolution of the case, begun in 1962, was dependent on market research investigating the participants and their collective actions. The courts influence the market structure and act from evidence supplied by market studies to substantiate their decisions. Many times court rulings have further influenced market behavior and market research by upholding the FTC's statutes. Whether or not one agrees with the substantive claims made by the FTC, the judicial construction governs. In a case involving FTC versus Colgate-Palmolive Co. (85 S.ct 1035, 1965), the court supported the FTC's finding that the advertiser and its advertising agency had deceived potential purchasers. Thus, all advertisers must now accept responsibility for the content of commercials prepared for them by advertising agencies.

The National Science Foundation sponsored a market study in 1974 that undertook the task of answering the question of how federally-developed technology could be transferred to the commercial sector (14). A project called the NASA Automated Attendance Management System (AAMS) was developed at the Jet

Propulsion Laboratory to combat problems associated with poor attendance in schools. The market research involved a pilot test at one high school and eventually targeted (segmented) 166 schools in California to be approached with this new product. Some obstacles encountered were the high cost of the system ($132,000 with 110 classroom input units) and initial capital financing for such a high-cost, limited market system. These problems were being solved, but the patent obtained from the government took 1-1/2 years to obtain and is not exclusive to the investing company. These researchers also reported four methods for speeding technology transfer from the government to the commercial sector. While these findings were probably slanted toward private industry, they point out government interest in sponsoring market research to transfer technology to the private sector.

In 1975, the Defense Documentation Center (DDC) initiated a ten-year requirements and planning study (12). Auerbach Associates, under contract from DDC, interviewed fourteen other agencies in the field of providing technological and scientific information to develop objectives in the 1978-1988 timeframe. The results of interviews pointed out three overall perceptions:

A. DDC's primary mission was to serve the DOD RDT&E community.

B. Interagency environment role is very important.

C. Advancing the state of art in information processing is a necessary objective (12).

They discovered the marketing of DDC products and services is a two-way process: it involves education as well as obtaining

user feedback. Results indicated DDC's sole reliance on DOD technical reports for its S&T information base is at variance with the policies of the S&T information community at large. The study pointed out a need to broaden their range of services and involve the user in a feedback process to maintain good services.

The National Science Foundation (NSF) and the User Requirements Program of the Office of Science Information Services sponsored an experiment in 1976 to identify markets and suggest approaches to meet needs in the S&T information field (8). This study surveyed 274 individuals in 177 firms in Pennsylvania. The firms were stratified by size and distributed across 11 SIC codes the NSF had identified as R&D intensive. Results supported the hypothesis that there are a variety of segments of the S&T information market. The existence of various market segments suggested the need for tailored marketing programs for each of the segments. The first conclusion dealt with the concept of the buying center for S&T information needs and identified the R&D manager as the primary member. Secondly, the researchers concluded no single product (or service) will meet all the needs of firms using S&T information. The final conclusion was that while some product attributes are important to no S&T information users, there are no characteristics that are important to the whole market.

A final related study was sponsored by a National Science Foundation grant to provide data in targeting product design, distribution, and promotion efforts effectively (2).

The study was conducted by Forecasting International, Ltd. to develop a methodology for improving the knowledge about S&T information user characteristics in general rather than the provision of hard operational data for use in specific marketing programs. Nine types of information needs of S&T users were ranked. The users were 402 chemists and engineers. This project determined that it would have been financially infeasible to conduct the survey by personal interviews, and that a sufficient sample could be obtained from a self-administered questionnaire. An indication of the requirement for greater choice in format was found to be necessary in the future. Results of the analysis provided a description of six segments in both the chemist's and engineer's subsets. This finding led the researchers to conclude their methodology was applicable to market segmentation techniques and should be employed to survey the remainder of the S&T information user universe.

In summary, only preliminary use of marketing techniques in government or the field of information processing has been accomplished. What work has been done has saved valuable resources and given new insight to government agencies as to future goals and market strategies.

III. Methodology

The FTD S&T Intelligence User's Questionnaire

The FTD S&T intelligence survey was conducted from 1 April to 1 July of 1979. The text of the survey, along with instructions and the attached cover letters, can be found in Appendix A. To impart the most realistic feeling to the survey results, a composite publications and documents mailing list was derived; all individuals and organizations on this list were selected for distribution of the survey. These consumers represented over 95 percent of the universe of past FTD users.

Two methods of distribution were used. Slightly more than one-half of the surveys were distributed by a single mailing, and the remainder were distributed in person to organizations as an aid in expediting their return. A total of 644 usable surveys were returned. Responses were coded and punched on computer cards that were transferred to disc file storage in the ASD CYBER 175 computer systems in retrieval and historical reference. Table 3.1 indicates the response return percentages broken down between mailed and drop-off, as well as overall responses. The represented organizations are a subset of the individual questionnaires distributed.

Though the overall response rate is only about 21 percent, the organizational response rate of nearly 50 percent is a more

TABLE 3.1

Response Return Rates for Mailed, Drop-Off and Overall Methods of Distribution

	Sent	Returned	% Returned
MAILED			
Individuals	1769	311	17.6
Represented Organizations	482	220	45.6
DROP-OFF			
Individuals	1313	333	25.4
Represented Organizations	34	25	73.5
GRAND TOTAL			
Individuals	3082	644	20.9
Represented Organizations	516	245	47.5

realistic representation of our sample to the user population. The basic weakness of this survey, as with most mailed surveys, is the loss of control the interviewer has over the questionnaires after distribution. Time constraints did not allow for personal interviews. Yet, the dual method of distribution did allow for significant coverage and a representative sample of the universe of FTD users. A listing of the responding organizations can be found in Appendix B.

The questionnaire consisted of three pages printed front and back plus one additional page of comments. The survey was quite detailed and required approximately 45 minutes to complete. The survey consisted of 27 questions and was divided into two

parts; the first part requested information about individual requirements, the second part requested an evaluation of specific documents. To allow the respondent as much freedom of choice as possible, no instructions mandated completion of any part of the survey.

A test response was collected from eleven users prior to initial distribution. The test was conducted to validate the questions for clarity and understanding. Information gained in this test identified no problem areas requiring changes, but one respondent did indicate possible future problems with Question 1 by not identifying himself. This test was conducted in a classroom atmosphere on 8 March 1979.

The first question identified the user organization and the respondent. The second question allowed the respondents to categorize themselves, as nearly as possible, by the primary mission of their office. Questions 3 through 7 elicited both current and future importance evaluations from respondents in the topics of functional areas of aerospace S&T intelligence, kinds of intelligence, degrees of analysis, reporting format, and dissemination means, respectively. Question 8 allowed for comments about reporting format and dissemination means. Questions 9 through 21 and 23 through 25 solicited opinions and data on a variety of topics including:

(1) Timeframe of Need

(2) Location of Source

(3) Reaction Time of User

(4) User's Frequency of Use

(5) Importance of Methodology to User

(6) User's Knowledge of Intelligence Production Requirements System (IPRS)

(7) Use of Additional Analysis by Consumers

(8) Method, Purpose, and Importance of Communication to FTD Within the Past Year

(9) Contact Necessary Between User and FTD Analysts

(10) Actual Use of FTD Produced Documents

Question 22 requested the respondent indicate the importance of eleven applications of S&T intelligence to his current work. Question 27 requested the user evaluate two FTD products. It was determined in the pre-test that no single product was applicable to all users, thus the respondents were requested to identify the product they evaluated by use of the Document Short Title (DST) number. Many respondents did not evaluate specific products but merely stated "general" or "overall" for the DST number. The indicated FTD products were evaluated with questions concerning the following areas:

(1) Currency of Data

(2) Production Frequency

(3) Subjects Covered

(4) Changes in Emphasis Required

(5) Changes in Textual Content Required

(6) Changes in Textual Supplements Required

(7) Comments

A selected listing of questions for the 644 respondents, by percentage, can be found in Appendix B. Chapter IV contains

the results and discussion of the product evaluations.

Non-Respondents

The S&T intelligence user's questionnaire was directed toward a small, defined population. As such, the accuracy of the survey rests on the precision with which the sample represents the population. A considerable body of literature exists that indicates non-respondents may differ markedly from respondents in any survey sample. The problem any researcher has with non-respondents is determining the representativeness of a sample population. Even the most careful investigator is obliged to describe or explain the non-respondents and how they might prejudice the sample.

The Survey Research Center at the University of Michigan conducted a study of non-respondents to mail surveys and their implications for interpretation of questionnaire data (7). The purpose of their study was to investigate the internal functioning and effectiveness of local units of the League of Women Voters. They found that 52.1 percent of non-respondents were zero or marginal participants in the organization. These minimally involved individuals did not support the organization in any active sense. The correlation of this attitude with the non-respondent to the FTD survey is quite possible. Reasons for non-response would be purely speculative, and many hypotheses could be identified that appear reasonable.

Validity

The validity of a measuring instrument can be resolved

by asking whether or not it achieved its intended purpose (13: 86). There are many ways validity can be interpreted. The basic opinions of people regarding the feasibility of various aspects in developing and employing a questionnaire are practical inputs. FTD developed the structure of the instrument through numerous personal interviews with users and consultation with AFIT researchers. The FTD survey establishes an initial baseline for future comparisons.

The way in which the instrument has been used gives the greatest meaning to its accuracy and validity. The type of validity most applicable to the FTD questionnaire is content validity. Content validity is not predictive in nature. It depends on the adequacy with which a specified domain of content is sampled (13:87).

The S&T user requirements are the domain of interest for FTD. The sample responses from organizations, collected by the researcher, constitute a significant portion of the FTD user population. Since the consolidated documents and publications mailing list represented at least 95% of all users and the return from these users was 48%, our sample represents 46% (.95 x .48) of the total population. This is a more representative group than all voters in a national election. Given the existence of a very adequate sample, the accuracy in identifying requirements will now be addressed.

Accuracy may be defined as the degree of correlation between respondents' statements and behavior. Accuracy also involves the degree of consistency between intended and actual

behavior. The FTD surveys were analyzed to determine if any inconsistent answers or respondents existed. Three surveys were omitted from the file because these individuals identified themselves as having never used FTD intelligence information. There were two individuals who erred by answering a question indicating they would not answer the next few questions, and yet provided answers to those questions. No single question pointed to any significant problems in comprehension. One indication of this is the number of missing responses to survey questions.

Item non-response arises when a person returns a questionnaire with some questions unanswered. Craig and McCann (6) found that the extent of item non-response appeared to be independent of questionnaire length and to vary systematically with age and education. They also found that activity interest-opinion questions were less likely to be unanswered. The general number of item non-response on a survey range from 3% to 8%. The FTD survey had a 3.14% item non-response for questions dealing with single issues. For questions dealing with more than one issue (functional areas, kinds of intelligence, format, dissemination, and applications), the item non-response was 10.4%. The overall item non-response was 8.34%. These findings are consistent with the Craig and McCann research.

Another indication of the consistency of the data was obtained by comparing the opinions of early respondents with late respondents. The difference between the first 100 respondents and the last 100 respondents did not vary more than

10%. The major difference between these two groups was that the majority (44%) of the first 100 were involved in R&D, while only a minority (9%) of the last 100 indicated R&D as their primary mission. This is a reasonable difference due to the proximity of a large R&D complex to FTD, which decreased mailing times.

A further indication of the measurability of the sample is the degree of respondents' involvement. To attempt to measure this involvement, one needs to believe that an individual who has spent over 30 minutes replying to a survey and then makes a personal effort in the form of comments is involved with the subject material. Over 41% of the respondents took the time to evaluate specific products, and approximately 21% of the respondents made additional comments. The immediate result of these comments was to either add to or clarify information for the respondent or to discuss suggested areas for improvement. Both types of comments opened and increased the communication channels between the users and FTD.

Reliability

Reliability of the S&T user's survey can be evaluated by repeating the survey. Time is not available for duplication of efforts which would identify random influences that tend to make measurements different. A close approximation has already been explained in the nature of small differences between early and late respondents. The survey is also internally consistent with respect to respondents self-identification. Verification

of this was accomplished by taking identified subsets from the questionnaire and correlating or comparing their responses with questions that further identify their subset. The policy-planners and decision-makers usually prepared briefings for policy-makers and planners. The R&D subset was involved with applications of RDT&E of U.S. equipment. The military operations subset, to a large degree, prepared briefings for air crews and responded that conducting military operations was very important. The intelligence group believed targeting for intelligence collection, developing intelligence threats, and integrating information into intelligence studies important. These comparisons not only signify the internal consistency of the sample with respect to self identifying responses, but actually verify that the respondents have given considerable thought to answering the survey.

One further point needs to be made relative to the applicability of the sample to the entire S&T user community. Only 2.5% (16 individuals) that returned the survey indicated that they never used aerospace S&T intelligence (Question 13). This fact alone indicates the survey was addressed to actual users. In further describing the survey sample, 67% of the respondents indicated that they actually use and extract data from FTD-produced documents.

Analysis

Various techniques of statistical analysis were used in this study. Chapter IV outlines the findings and implications

of these tests. Current and future responses of importance were evaluated using the Student's t-test to identify differences between mean responses. Discriminant analysis was used to distinguish one subgroup from another as an aid in identification of user profiles. The subsets within the sample were also arrayed with the use of cross-tabulation techniques to identify needs of particular subsets. This allowed the researcher to selectively identify valued customers. Chapter V begins with a summary of significant findings and their implications to the management strategists and decision-makers at FTD.

IV. Findings and Results

Current Versus Future Importance

The first task in the analysis of the FTD user's survey was to determine if any change existed between evaluation of current and future importance made by the respondents. The results of such findings might allow the FTD management planners to subjectively evaluate program emphasis based on the users' opinions. If a user indicates a decrease in importance from the current time to the future for a specific variable, then FTD managers can interpret this result as indicating less effort and resources should be committed in that arena. When the sample indicates an increase in importance for a future topic, management should consider committing more effort and resources to that topic to better fulfill the users' needs. One must remember that the evaluation of differences between current and future importance is valid only for a specific topic; and when differences are identified between topics, great caution must be observed in interpretation. Users were not specifically asked to rank the variables, and for the researcher to do so would be reading between the lines of the respondents' intended meaning.

Four major areas on the survey presented questions requesting evaluation of current and future importance. These topics are the functional areas of aerospace S&T intelligence,

kinds of intelligence, reporting format and dissemination means. A complete listing of these major areas comparing current and future sample mean importance ($\bar{X}$) can be found in Appendix C. These comparisons were made using the entire sample (Table C.1), decision-makers (Table C.2), research and development respondents (Table C.3), military operations respondents (Table C.4), and intelligence respondents (Table C.5).

Functional Areas

For the total sample there were 11 functional areas differing in importance between short-term and the future. Only two of these areas increased in importance in the future. They were Anti-satellite systems and Directed Energy technology and systems. The remaining areas either decreased in importance or were equally important between current and future (see Table C.1-1).

The decision-makers indicated only three functional areas as significantly different in importance between current and future time frames. These areas were:

Bomber Aircraft Systems and Subsystems

Applied Aerospace Technologies

Directed Energy Technologies and Systems (Table C.2-1)

The implications of these differences include the current SALT II treaty discussions.

Military operators and intelligence respondents indicated a decrease in importance in all areas that were evaluated as significantly different (see Table C.4-1 and C.5-1). These

two groups did not identify anti-satellite systems or directed energy systems as different in the future. This view appears valid because they do not currently operate in these areas. Another difference from the overall sample was EW and C^3 threat simulator validation. The military operators and intelligence respondents indicated a decrease in importance in this area for the future. The military operators' opinion of applied aerospace technologies decreased in importance in the long term. The intelligence respondents' opinion of preliminary aircraft design decreased in importance in the future. Particular attention should be given these two areas because the causes behind the decrease are not clear.

The research and development respondents indicated 13 functional areas as different in the future, and all increased in importance. Compared with the total sample, the R&D types believed the following areas increased in importance:

Ballistic Missile Facilities and Equipment

Space Systems and Subsystems

Electro-Optical Systems

Preliminary Aircraft Design

Preliminary Aerodynamic Missile Design

Aerospace Technologies Research

EW and C^3 Threat Simulator Validation (Table C.3-1)

The overall increase in importance identified by the R&D respondents points to these individuals a primary users of FTD products.

One last item remains to be addressed concerning functional areas. The entire sample and all four major user categories indicated no significant differences for the following areas:

Offensive Ballistic Missiles

Aerodynamic Facilities

Preliminary Ballistic and Space Vehicle Design

Advanced Systems RD&T Facilities

Meteorological Sciences (Table C.1-1)

These areas might be construed as dormant for the future, but must not be neglected. Continual evaluation is imperative to identify shifts in the user community's opinions.

Kinds of Intelligence

Kinds of intelligence were also evaluated for current and future importance by the respondents. The degree of complexity of intelligence data ranges from single event to more complex integrated intelligence products. The most important topics appear to be weapon system and subsystem performance and capabilities as well as integrated warfare systems threat assessments. Evidence of this importance is derived from the large majority of individuals indicating that these three topics are either very or moderately important.

The relative changes from current to future evaluations of kinds of intelligence identify seven of the nine topics as different in the future for the total sample (Table C.1-2). Of interest here is that all items decreased in importance in

the future.

The decision-makers as a group identify only the intelligence event as different in the future (Table C.2-2). The importance of the intelligence event decreases in the future for decision-makers. The remaining eight topics were not significantly different. For the military operators (Table C.4-2), again all items decreased in importance with only the biographical/organizational and engineering and production technologies not significantly different. The intelligence respondents also indicated decreases in importance for future kinds of intelligence (Table C.5-2). Basic Technologies R&D and Engineering Technologies were the only two items where no significant differences existed in the future. This agrees with many comments on the surveys from intelligence and military respondents that FTD products are too technical and should be written such that users can more readily understand them. The military and intelligence users are driven by the same problem of having to apply intelligence data to combat situations and are not as interested in the engineering or R&D technologies as other users.

The R&D users were the only group to show significant increases in future importance for two of the nine topics (Table C.3-2). Basic Technologies R&D and Military Doctrine and Design Philosophies increased in importance to R&D respondents. The immediate problem in kinds of intelligence is that Basic Technologies R&D varies between our major groups. R&D users believe in future increased importance in

Basic Technologies, and military users place a decreased importance on the same item in the future. The department involved with R&D technologies should be aware of these two types of users. The only other major difference is that all users, except the military respondents, indicated biographical/organizational kinds of intelligence as the least important among the nine kinds of intelligence.

Reporting Format

The respondents were asked to evaluate six formats which FTD has used for their reports. If a user indicated he was unfamiliar with a particular type of format, he was eliminated from the calculations comparing current and future importance. The total sample indicated that the weapon system handbook was the overall most important format. When compared by primary mission categories, the decision-makers and R&D respondents indicated their most important format was the in-depth, comprehensive study (see Tables C.2-3 and C.3-3). The least important item for the total sample was the computer data base (Table C.1-3). The computer data base, however, did have the greatest change to increased importance in the future. As a group, the sample indicated all reporting formats will increase in importance. The weapon system acquisition threat package, computer data base, and briefing by an FTD analyst were the only formats with a true difference between current and potential importance (Table C.1-3).

The military and intelligence respondents were the only two groups that showed decreases in format importance

in the future. These decreases were not significantly different from current ratings of importance. For the military users, decreases were evident in:

In-depth, Comprehensive Study

Weapon System Acquisition Threat Package

Short Report of Specialized Subject (Table C.4-3)

For the intelligence users, a decrease in importance was evident in the future for the Weapon System Handbook reporting format (Table C.5-3). It must be emphasized that these decreases are not significantly different, but indicate special attention should be directed to investigate these areas. The intelligence users exhibited an increase in importance in the future for both the Computer Data Base and Analyst's briefing reporting formats (Table C.5-3). These increases are significantly different.

The decision-makers and R&D respondents specified significant differences for three formats. Decision-makers believed Weapon System Acquisition Threat Package and Computer Data base reporting formats would increase in potential importance (Table C.2-3). The R&D respondents argue that there is a definite difference only in the importance of the In-depth, Comprehensive Study (Table C.3-3).

In general, there are few differences between mission user segments regarding reporting formats. It appears that handbooks should be emphasized more for military operators, and comprehensive studies should be stressed for decision-makers and R&D users. The implications point to the

intelligence users as the group placing the most importance on computer data base formats. While decision-makers also believe computer data base formats are important, they are only one-fifth the size of the intelligence group.

Dissemination Means

The S&T Intelligence Users evaluated the current and potential importance of dissemination methods that influence their office needs. Six topics were evaluated:

Courier or Mail

Electrical Transmission

Briefer's Presentation

On-Line Computer Link

Off-Line Computer Tape

Off-Line Computer Printout (Question 7)

The overall results of the comparison between current and future importance denote true increases in importance for all topics except courier or mail (Table C.1-4). This verifies additional findings that products are desired more often in the near time frame and used more frequently. The courier or mail topic exhibited the highest importance rating for the average of all respondents. This corresponds to the immense volume of business FTD conducts by courier or mail. Also, the decrease for courier or mail cannot be established as a significant difference by use of the Student's t-test.

The intelligence users, as the largest subgroup, agreed with the total sample disclosures, except that the decrease in

courier or mail delivery was a true difference from current importance (Table C.5-4). Military operations respondents indicated a slight decrease in importance for briefer's presentations (Table C.4-4). The presumption here is that a lack of ability or funds to acquire the needed information in person has driven the reference to decreased importance. R&D users, consistent with their previously dicussed responses, appraised all topics as increasing in importance (Table C.3-4). They did not indicate significant differences between current and future importance in courier or mail transmittal. The decision-makers were the only group that indicated a decrease in electrical transmission, but not a large enough difference to indicate other than a random chance (i.e., not significant).

The general evidence gained from this data indicates the requirement to step up efforts for on-line computer tape dissemination methods. The largest difference from current to future importance of the six methods is found in the computer tape delivery methods. A further point needs to be addressed about courier or mail transmittal. Postage or courier dissemination should not be halted, but possibly an experiment should be devised to attempt to eliminate any increases in volume or expenses.

User Profiles

Segments of the FTD user sample were identified by evaluation of numerous cross-tabulation tables. No assumptions were made in advance as to the most valuable way of

looking at the market. Over 35 different subsets could be distinguished, and these were compared for differences. From these subsets, five major segments were large enough and distinct enough to warrant their individual evaluations. These five groups represented 77% of the sample. The remaining groups were evaluated, but their results are not presented because their small size (12 or less) compounded problems of verification. The third section of this chapter uses discriminant analysis to identify distinguishing profiles of the segments.

Before exhibiting the profiles of these five segments, it is necessary to identify their relative sizes. The first group, and largest segment, represents Air Force respondents (excluding HQ USAF users) and represented 36% of the sample. This group, like the other four subsets, is derived using major organizational affiliation. The Air Force group included all respondents associated directly with this branch of the military except HQ United States Air Force respondents. A large portion (48%) of this first segment is composed of members of Air Force Systems Command (AFSC).

The second segment was called the Unified and Specified Commands (U&S Commands). U&S Commands represented 20% of the sample and included responses from the major command headquarters. CINCSOUTH was the only headquarters not responding and not included in this group (see Appendix B). Headquarters Army and Headquarters Air Force were included in the third segment.

The third segment accounted for 7% of the sample. This segment was called the Washington, DC intelligence community. The Washington community included the State Department, Joint Chiefs of Staff (JCS), Office of the Secretary of Defense (OSD), Chief of Naval Operations (CNO), Defense Advanced Research Projects Agency (DARPA), and the Army and Air Force Headquarters mentioned above. The fourth and fifth segments include the remainder of the Washington, DC community.

The fourth segment was called the Defense Intelligence Agency (DIA) and comprised 7% of the sample. The fifth segment was identified as the Central Intelligence Agency (CIA), and this group accounted for 5% of the sample. The profiles for these last segments were distinct enough to allow for their separation. Two other groups of respondents, Navy and Army, were not homogenous enough in their responses to act as single segments. No attempt was made to weight the responses of any group, and these segments have not been combined in any mathematical manner that would distort their distinct identities.

Four topics were of immediate interest to the researcher. FTD must know what time frame is most important to their clients to better match outputs with requirements. Information on time frame was collected from Question 9 on the survey. The second topic involved the reaction time of users. Data on the clients' normally required response time was gathered from Question 12. The third topic dealt with survey respondents' actual use

(for themselves or for others) of S&T intelligence. Knowledge of topics two and three allowed FTD to determine the production schedule necessary to satisfy the requirements of a particular user, and what segment was most likely to be a user. The fourth topic concerned whether or not respondents had a working knowledge of the Intelligence Production Requirements System (IPRS).

A comparison of the time frame of need for the five segments can be seen in Table 4.1. The segment with the most immediate need of intelligence information is the U&S Commands. The segment whose needs are farthest in the future is the Washington, DC community. Interesting to note here is that AFSC (48% of the Air Force segment) actually had the most respondents (12.6%) indicating 10 years or greater. It is presumed that the large numbers of R&D personnel within AFSC account for this high percentage. When AFSC is combined with the remainder of Air Force respondents, the Air Force segment becomes the second largest group with the longest-term time frame of need. The implications of this knowledge should not be misconstrued. Every effort should be made to accommodate each time frame of need. A small number of respondents needing information based 10 years or more in the future should not necessarily imply limited resources should be allocated to that time frame. Only in light of the values input from secondary data can an accurate appraisal be made. For now, merely identifying the segments contributes information to the total system. Missing respondents were not included in

TABLE 4.1

Percent of Respondents, Described by Segments, Indicating Time Frame of Intelligence Information Needs

Segment	% 2 Years or Less	% 2-5 Years	% 5-10 Years	% 10 Years or More
Air Force	60.0	12.3	20.9	6.8
U&S Commands	87.4	6.7	1.7	4.2
Washington, DC	54.3	13.0	23.9	8.8
DIA	82.2	4.4	8.8	4.4
CIA	81.3	9.4	6.3	3.0
Total Sample	71.3	10.0	13.4	5.4

the percentage calculations.

User reaction time was the second category of information FTD needed to further identify their clients. It is assumed that if a user has a very short suspense time, he most likely uses "on hand" publications and documents to fulfill his needs. When the reaction time increases, he may be able to obtain the needed information from documents procured through quick reaction tasking in FTD. A shortfall in the design of this question is that respondents were given too much opportunity not to make a decision.

The answer "responsiveness requirements vary with no one being predominant" is a perfectly accurate classifier, but lends only limited value to a numerical analysis. For

example, Table 4.2 indicates that 51.5% of the CIA respondents have reaction times that vary. This does not disclose any definite information, but actually compounds the problem of trying to determine usable results. The only factual statement that can be made is that the response time for CIA users varies more than all other users. FTD analysts would obtain more definite information by always asking the user to identify a specific reaction time if possible.

The Washington, DC community indicates a need for the shortest reaction time. This appears to disagree with their identification of required time frame as being the longest range. However, no assumption should be made that establishes reaction time as dependent upon time frame of need. A congressman may direct an aide to provide information in less than one hour about a project 15 years in the future. Any combination of need time frame and reaction time might be plausible.

The U&S Commands also indicated a majority of users with short suspense times. The large overall percentage of respondents with short reaction times validate the necessity for FTD to provide intelligence products in a more timely manner to satisfy users. It would be speculative to attempt to identify the causes for these immediate user needs; however, the overall lack of users' knowledge and ability to make a formal request for intelligence information using the IPRS is a contributing factor.

TABLE 4.2

Percentage of Respondents Compared

by Reaction Time Available

Segment	% One Week or Less	% One Month or More	% Varies	% Missing
Air Force	43.3	24.4	29.8	2.5
U&S Commands	63.4	8.0	26.2	2.4
Washington, DC	74.5	8.6	17.0	0.0
DIA	48.9	10.6	36.2	4.3
CIA	42.5	3.0	51.5	3.0
Total Sample	48.3	17.6	31.1	3.0

Only the Air Force segment has a large group of respondents who desire FTD's reaction time to be one month or more. A necessary point here is that Air Force respondents who identify themselves as being part of the intelligence category indicate only 13% of their group has reaction times of a month or more. All these differences can lead to mass confusion. The best single solution would be to request that users identify a specific date the information they requested should be delivered to meet their suspense requirements. They should be told at the time of the request whether or not the date is plausible given FTD resources.

Data on frequency of use of intelligence information was requested from all respondents with Question 13. Respondents were asked to identify how often they used S&T

intelligence or extracted S&T intelligence for the use of others. The total sample indicated only 2.5% (16 individuals) never used S&T intelligence (see Table 4.3). This lends positive evidence to the composite mailing list as a true list of users of FTD-produced documents. This small percentage of non-users most likely have had mission changes or could be new personnel.

The Washington community has the largest percentage of frequent users (once or more per week). In general, this table on usage frequency is the most homogenous. A majority of S&T intelligence users are frequent users. One exception to this uniformity was seen when the question was broken down in greater detail. Only 30% of the Washington community uses S&T intelligence daily compared with 52% of the CIA segment's daily use of S&T intelligence.

Question 15 from the survey requested that users acknowledge whether or not they have a working knowledge of the Intelligence Production Requirements System (IPRS). This system was established by DIA to help manage the flow of requested intelligence information. New requirements are submitted on DD Form 1497 for approval. Table 4.4 shows the five segments' responses to knowledge of IPRS with missing respondents eliminated from the percentage calculations.

The overall low response to Question 15 indicates a problem that must be resolved. As expected, DIA has the largest group of users with knowledge of IPRS. No DOD-wide program exists to explain the value of this aid to intelligence

TABLE 4.3

Respondents' Indication of Their Frequency of Use of Intelligence Information

Segment	% Once or More Per Week	% Monthly or Less	% Never	% Missing
Air Force	61.2	35.5	2.1	1.2
U&S Commands	69.1	28.6	1.6	0.8
Washington, DC	74.5	25.5	0.0	0.0
DIA	70.3	25.5	2.1	2.1
CIA	72.7	27.3	0.0	0.0
Total Sample	61.7	34.5	2.5	1.2

TABLE 4.4

Respondents' Indication Whether or Not They Have a Working Knowledge of the Intelligence Production Requirements System

Segment	% Yes	% No
Air Force	32.2	67.8
U&S Commands	30.9	69.1
Washington, DC	40.0	60.0
DIA	58.7	41.3
CIA	21.2	78.8
Total Sample	37.7	62.3

users. To make the problem more difficult, only recently has DIA shifted responsibility of the management of IPRS to FTD (a producer that serves only a portion of the intelligence community).

When the users are defined more closely, the largest percentage of knowledgeable IPRS users are the Army. Seventy-four percent of Army intelligence respondents indicated knowledge of IPRS, while only 36% of Air Force intelligence respondents indicated knowledge of IPRS. This difference is explained by the Army's explicit training of its members in the use of IPRS. The DOD community that identifies its primary mission as intelligence declared 46.8% of their segment as having knowledge of the IPRS system. The reader is reminded that the above Army and Air Force users are included in the DOD segment. The non-DOD respondents (representing 43.3% of the sample) indicate only 26.4% of their segment as having a knowledge of the IPRS system.

Discriminant Profiles

Discriminant analysis was used to determine the questions that differentiated key segments of the FTD user sample. The discriminant procedures used were part of the Statistical Package for the Social Sciences (SPSS). The predictive problem in discriminant analysis is to predict to which group (segment) a subject will belong on the basis of a set of independent variables (the way the respondent answered the questionnaire). In this analysis, all variables were initially

available to enter the discriminant function. From the results of the overall discriminant function, approximately twelve variables (those with coefficients of the greatest magnitude) were identified. These variables were then analyzed in smaller sets and individually to derive the best classification function. From this classification, an observer can identify the key descriptors that maximize the differences between the collected group's answers.

To evaluate the function for predictive power, two nearly equal size segments containing known respondents (not used in the derivation of the model) were classified. A different set of respondents from the sample was used to eliminate bias that might have been created in the model-building process. There is a tendency to have more correct classification with a classification function when the same group is classified that was used to build the model. A second type of bias deals with sampling error, and is also reduced by dividing the sample. Since an adjusted R^2 is not available as in regression analysis, splitting the sample compensates in part for the number of dependent variables involved. The confusion matrix obtained by applying the classification function (estimated from the analysis sample) to the validation sample reflects the function's ability to discriminate.

The confusion matrix is really a "score sheet" for the accuracy of the classification process. The fewer the misclassifications of individuals to segments, the more distinct

or dissimilar the user groups. The Chi-square statistic (χ^2) was used in analyzing the confusion matrix to validate the results as being more than a random happening. The Chi-square statistic was also used to indicate whether or not the amount of discriminating information used in the model was significant.

Many different groups were analyzed in an attempt to identify key characteristics. Two sets of analysis will be presented that give a "big picture" view of the intelligence users served by FTD. The first groups observed were identified by self-responses to Question 2 on the survey. These four groups (Decision-makers, R&D users, Military Operations users, and Intelligence users) were individually grouped, and then a random selection function of SPSS gathered samples from the two largest groups to make the segment sizes equal. This allowed the analysts to readily evaluate the predictive ability of the model with the probability of group memberships being equal. Approximately 60 respondents were placed in each segment. The second groups evaluated were all intelligence users (from Question 2), and further distinguished either as Air Force respondents or Unified and Specified Command respondents. The Air Force respondents totaled 101 in this segment, and the U&S Command respondents totaled 80.

The key discriminators were first used to separate the four segments responding to Question 2. Only weak results were obtained in the first analysis using the classification function; the Decision-makers (DM) and R&D users also having

similar characteristics. Each group was then compared with one of the other groups, and again the discriminators predicted well between DM and Military users or DM and Intelligence users; but not well between DM and R&D users. Likewise, predictions between R&D users and Military users or R&D users and Intelligence users were more accurate than predictions between Military users and Intelligence users. To simplify the discussion and group like respondents together, an arbitrary name of Planners will be defined as respondents who answered Question 2 as DM or R&D users. The name Workers will be an arbitrary noun defining Military users and Intelligence users.

The analysis between Planners and Workers provided the basic outline for the key discriminators. The following profiles are discussed for both Planners and Workers with each of the key discriminators:

Aerodynamic Facilities - the worker segment specified more importance for aerospace facilities than the planner segment. This difference is statistically significant with $t = 2.93$, $p \leq .004$.

Anti-satellite Systems - the planners indicated anti-satellite systems as more important to their group than did the workers ($t = 1.63$, $p \leq .104$).

Directed Energy - the planners indicated directed energy technologies and systems as significantly more important to them than the workers ($t = 3.12$, $p \leq .002$).

Intelligence Event - the workers denoted significantly more importance to their offices for intelligence events than did the planners ($t = 4.49$, $p \leq .000$).

Engineering and Production Technologies - the planners specified that engineering technologies were more important to them than did the workers ($t = 2.92$, $p \leq .004$).

Electrical Transmission - dissemination by electrical transmission was more valuable (important) to workers than planners ($t = 5.80$, $p \leq .000$).

Need Time Frame - the majority of workers identified their time frame of need as 0 - 2 years or near realtime. The planners marked their time frame of need in the 2 - 5 year span ($t = 11.06$, $p \leq .000$).

Reaction Time - the workers specified the time required to acquire information as a few hours or less. The planners generally had a longer reaction time of a few days to a week ($t = 6.36$, $p \leq .000$).

Usage Frequency - the workers were heavier users of aerospace S&T intelligence than the planners. Workers generally indicated usage as several times per week while planners specified usage as once per week or less ($t = 5.96$, $p \leq .000$).

Methodology - methodology was more important to the planners than to the workers ($t = 4.19$, $p \leq .000$).

When all the above discriminators were entered into the model, a Chi-square (χ^2) value of 50.79 ($p \leq .000$) resulted.

This indicates a statistically significant amount of discriminating information was present. When these variables were analyzed in smaller sets, χ^2 only decreased to 48.672 (still a significant amount of information) with just three variables in the model. These variables were directed energy, need time frame, and anti-satellite systems. Table 4.5 exhibits the confusion matrix that resulted with these three variables in the model. Thus, the discriminant analysis exposed the variables with the greatest differences between groups. The three variable model was a very good predictor for the worker segment. The model was less effective in predicting the planner segment. One interpretation for this is that there are some similarities exhibited by planners that match them more with workers. The second discriminant results continue to verify the power of identifying variables that maximize differences between segments.

Many of the same discriminators were used to separate the Air Force Intelligence (AFI) respondents and the Unified and Specified Command Intelligence (U&SCI) respondents. The analysis between Air Force Intelligence users and U&S Command Intelligence users identified their profiles with the following key discriminators:

Preliminary Ballistic and Space Vehicle Design - the AFI users indicated space vehicle design was more important to their office than did the U&SCI users ($t = 1.85$, $p \leq .066$).

Directed Energy - although not significantly different,

TABLE 4.5

Predictive Results - 3 Variable Model

Confusion Matrix for Planners and Workers

Segment	N of Cases	Predicted Group Membership	
		Planners	Workers
Planners	59	44 74.6%	15 25.4%
Workers	63	10 15.9%	53 84.1%
79.5 percent of known cases correctly classified (χ^2 = 42.492, $p \leq .000$)			

there were still enough high and low scores to indicate that directed energy is more important to AFI ($t = 1.38$, $p \leq .171$).

EW and C^3 Threat Simulator Validation - the AFI users placed greater importance on simulator validation than did the U&SCI users. This is an unexpected difference in the opposite direction ($t = 2.73$, $p \leq .007$).

Short Report - this reporting format was the most important to U&SCI users, however not enough evidence exists to distinguish this fact statistically ($t = 0.54$, $p \leq .59$).

Courier or Mail Dissemination - the AFI users specified mail distribution as more important to their segment than the importance attached by the U&SCI users

($t = 2.40$, $p \leq .017$).

Need Time Frame - the U&SCI users needed S&T intelligence information in a closer than 0 - 2 year span than did the AFI users ($t = 1.78$, $p \leq .077$).

Methodology - methodology was more important to the AFI users than to the U&SCI users ($t = 2.40$, $p \leq .017$).

Managing Crises - U&SCI users indicated managing crises as more important to them than did the AFI users ($t = 3.78$, $p \leq .000$).

When all the above discriminators were entered into the model, a Chi-square (χ^2) value of 15.83 ($p \leq .26$) was obtained. This indicates a lesser amount of discriminating information was present than in the first analysis. When these variables were further analyzed, χ^2 decreased to 5.804 ($p \leq .122$) with two variables in the model: *EW and* C^3 Threat Simulator Validation and Short Report on a specialized subject.

Table 4.6 displays the confusion matrix that resulted with just these two variables in the model. In comparing this model with the previous model, one can see that the common discriminators are: methodology, need time frame, and directed energy. Specific differences arise where questions that relate to the particular user segment have the most meaning. Space vehicle design is currently more of an applied field and, thus, deals with intelligence users to a larger extent than it would with R&D users or decision-makers. Need time frame, although a common discriminator for both models, is not as effective in this last model. This is largely due to the

TABLE 4.6

Confusion Matrix for Air Force and Unified and Specified Command Intelligence Users

Segment	N of Cases	Predicted Group Membership	
		AFI	U&SCI
AFI	49	37 75.5%	12 24.5%
U&SCI	45	19 42.2%	26 57.8%
67.0 percent of cases correctly classified (χ^2 = 10.894, $p \leq .001$)			

similarity among intelligence users of near realtime or 0-2 year time frame of need. The similarity of intelligence users also accounts for the relative weakness of the classification function. With so few variables that differentiated well between the two segments and most of the differences weak themselves, the results are still valuable because only slight differences are needed to create planning strategies to satisfy specific users. Another indication of the homogeneity within the intelligence segment is the closeness of the AFI and U&SCI group centroids.

Product Evaluation

No specific products were identified on the survey for evaluation. This was done in order to obtain the largest number of responses without eliminating a specific product.

An area was provided for respondents to indicate the product, if any, they were evaluating. One hundred fifteen (115) distinct products were evaluated by association with their Document Short Title (DST) numbers. These products were evaluated by 269 respondents (41.8% of the sample). When the responses were tabulated, 119 evaluations were made on just 12 products. These 12 products were considered the most used items and were the main subject of this analysis. These 12 products were produced by FTD and sponsored by DIA. There were approximately 130 respondents who made general evaluations by not identifying a specific product. It is assumed that this group of respondents made their evaluations generally concerning all the products they used (or they could not remember the DST number). In total, 400 users evaluated products, or nearly two-thirds of the sample.

This discussion is organized by first giving a general overview of Question 27, Parts (1) and (2). Following this will be the 12 most used products and their evaluations. The third area identifies differences between DIA sponsored and non-DIA sponsored products. The topics evaluated were outlined in Chapter III and will be identified throughout this process.

Currency and Production Frequency. The first topic deals with the currency of products and production frequency. A majority of respondents (62.8%) indicated that routine information should be available that identifies whether or not a document is current. This point is particularly true

for the DIA sponsored products. For the non-DIA sponsored FTD products, 53.9% of the respondents desired a method that indicated product currency. More of the respondents stated non-DIA sponsored products were causing no problems with currency (42.7%) than stated DIA sponsored products caused no currency problems (32.6%). The implications surrounding product currency are numerous. Multiple causes and effects must be considered for each product. Some possible solutions to this problem are discussed in Chapter V. A compounding problem concerning product currency arises when the document is first disseminated. A limited number of respondents (24.0%) to the DIA sponsored section indicated that data in the publications should be more current when initially disseminated. Only 18.4% of the respondents who evaluated the non-DIA sponsored products indicated documents should be more current when disseminated. One can infer from this that FTD products, not sponsored by DIA, are generally more current at the time of dissemination than DIA sponsored products. The problem needs to be defined to a greater extent in order to determine why the DIA sponsored documents lag in currency.

One half of the survey respondents for both DIA and non-DIA sponsored products stated that production frequency should be determined by intelligence developments concerning the subject document. The present production frequency is on a periodic schedule (usually yearly). The next largest group of respondents (30%), again for both DIA and non-DIA sponsored products, stated that present production frequency

caused them no specific problems. The remainder of the respondents indicated a specific frequency of production they desired, ranging from once every three months to once every 24 months. The largest portion of this group indicated every 12 months for desired production frequency. These results, combined with the above currency information, indicate users are willing to hold and continue to use a document as long as they can be certain that what they have is still current or that no unusual developments have occurred which would have a bearing on the subject material. This implies that elimination of mandatory production frequencies would be acceptable to users if information about currency of data was available.

Twelve Key Products

Table 4.7 lists the twelve products evaluated by 44% of the respondents who listed specific DST numbers. The product names used in this discussion are the product short names found in the table. The product most evaluated was the Fighter Aircraft Handbook (43). The remaining products were evaluated by at least five different users. All the products identified were DIA sponsored documents produced by FTD. These products were evaluated for subject and textual content with a series of questions that requested the respondent identify if the product needed increased or reduced emphasis. The respondent was also provided the opportunity to mark if the product was adequate with regard to the question or if

TABLE 4.7

Twelve Most Evaluated Products

Document Name	Number of Times Evaluated	Percent of Those Who Evaluated Any One Product	Product Short Name
Ballistic Missile Systems Handbook - USSR & PRC (u)	11	9.2	Missile Handbook
Ballistic Missile Payloads Current and Projected - USSR & PRC (u)	5	4.2	Missile Payloads
Aircraft Handbook (Characteristics and Performance) - Freeworld (u)	5	4.2	Aircraft Handbook
Bomber Aircraft Handbook - ECC (u)	8	6.7	Bomber Aircraft
Backfire Weapon System (u)	5	4.2	Backfire W/S
Fighter Aircraft Handbook - ECC (u)	43	36.1	Fighter Aircraft
Fiddler Weapon System (u)	7	5.9	Fiddler W/S
Foxbat Weapon System (u)	6	5.0	Foxbat W/S
Flogger Weapon System (u)	5	4.2	Flogger W/S
Forger Weapon System (u)	5	4.2	Forger W/S
Reconnaissance/Surveillance Space Systems - USSR (u)	6	5.0	Space Systems
ECM/ESM Capabilities ECC (u)	13	10.9	ECM Capabilities

the product was not related to the question.

Historical development of the intelligence topic was the first point of evaluation. Overall, 78.4% of the respondents rated this area as adequate. Three products received an adequate response from 100% of the participants: these were the Backfire W/S, Fiddler W/S, and Foxbat W/S. The only product that possibly could need expanding in this area is the Forger W/S. The reader is reminded that most of these products have only five proclaimed users. It is risky to generalize about the products evaluated, but every customer is valued by FTD; those who feel changes need to be made have already been or will be contacted.

The equipment description also shows a majority of adequate responses (71.4%). The missile payloads document exhibits the largest number of adequate responses. The remainder of the responses called for increased emphasis of equipment descriptions. The facilities description does not apply to many of the products, but is considered adequate by respondents who evaluated facilities. No product stands apart from any other when evaluated for facilities.

The total system descriptions were adequate for 67.8% of the respondents. The remaining respondents wanted increased descriptions with only the Fiddler W/S having all respondents score it as adequate. Three of five evaluators for the Backfire W/S, Flogger W/S, and Forger W/S wanted increased emphasis on the total systems descriptions. The subsystem description was also ranked adequate by a majority of users. The exceptions

were Flogger W/S and Forger W/S, which again showed three of five evaluators requesting increased emphasis.

Product hardware characteristics were adequate for a majority of respondents. The only exception was the Backfire W/S, for which three of five evaluators requested increases in characteristics explanation. Facilities characteristics were considered adequate by 62.6% of the evaluators with no unusual responses to any particular product.

Performance specifications showed that evaluators took two firm positions. The Bomber Aircraft, Fiddler W/S, and Forger W/S were all ranked adequate by a large majority. Responses concerning the Flogger W/S reflected that four of five evaluators desired an increase in its performance specifications. The remaining products were generally split with half the evaluators indicating increase and half indicating adequate. The overall ranking for adequate performance specifications was 56.6%.

Employment tactics is the only subject area where evaluators more often than not chose increased emphasis rather than adequate (by 52.1%). Specifically, the Aircraft Handbook evaluators all (5) indicated increased emphasis. Two products, Missile Payloads and Foxbat W/S, had the majority of their evaluators mark adequate.

Both Deployment and Future Projections subject areas were split with half of the users indicating products as adequate and half indicating increase emphasis. The Aircraft Handbook and ECM capabilities products were evaluated with

the majority of users as desiring increased emphasis.

The textual content of the products was evaluated next with no products differing significantly from the majority. Over 80% of the evaluators indicated summary and background data as currently adequate. The evaluators also stated Conclusions and analytical rationale were adequate, but to a lesser extent (67%). The products' textual supplements all were evaluated alike with 70% or more of the respondents giving adequate as their answer. The only unique item here is with the Fighter Aircraft Handbook, 25% of the users requested reduced emphasis for graphs and curves. This agrees with many of the written comments that users want less technical emphasis and fewer graphs, which are valid only at the subject aircraft's flight levels and not useful at engagement altitudes.

The last area of evaluation is a comparison between the DIA sponsored products and the non-DIA sponsored products. Slightly more than 330 respondents evaluated the DIA sponsored products and approximately 210 users evaluated the non-DIA products. The subject area emphasis was generally equal to the previous evaluations of the twelve products. The non-DIA sponsored products exhibited 3-6% greater responses for the adequate value in the following topics:

Facilities Description
Facilities Characteristics
Employment Tactics
Deployment
Future Projections

The DIA sponsored products generally were evaluated similar to their non-DIA sponsored counterparts, except they showed 3-4% larger responses for the adequate value associated with the textual section in the following topics:

Summary

Drawings

The graphs and curves category in the textual section was the only topic evaluated with a larger percentage of respondents stating adequate by non-DIA sponsored products. The remaining categories were equally rated, usually with differences of 1% or less.

V. Conclusions and Recommendations

This thesis presents and interprets the results of the 1979 FTD S&T Intelligence User's Questionnaire. The study was essentially a market analysis in the government arena. This work differs from other related literature in that its primary interest is restricted to researching a selected set of actual product users of FTD. The approach taken was general in nature and attempted to involve all aspects of knowledge concerning the clients of FTD. A summary of the findings will be presented, followed by specific recommendations and their contributions to the organization-client relationship. The conclusion of this chapter provides suggested topics for future longitudinal efforts and proposes further research topics.

Summary of Results

The reader's initial introduction to the FTD user was presented as a comparison of respondents' appraisals of importance between current and future topics. The overall evaluations of the respondents were collected into four major mission categories and each was evaluated separately. The topics stressed as most important or changed to the largest extent for the functional areas of aerospace S&T intelligence were:

1. Directed Energy Systems
2. Defensive Radar Systems

3. Electronic Countermeasures

4. EW and C^3 Threat Simulator Validation

5. Fighter Aircraft Systems

6. Integrated Electromagnetic Systems

When the remaining topics were evaluated, they pointed toward the R&D user as the single most influential user of FTD products. The largest increases in importance for future requirements fell under the topics of Weapon System Threat Package, Computer Data Base, and Analyst's Briefings for reporting formats. The dissemination means stressed as most important were courier or mail transmission, with the largest difference for increased future importance under the on-line computer tape method of dissemination. In general, handbooks were more important to a majority of users, and comprehensive studies were most desired by R&D respondents.

The need time frame for a large majority of users (71.3%) is less than two years. This fact alone identifies a possible planning problem when compared to present guidelines directing an increased effort supporting intelligence needs for five years or more in the future.

Response time for users varied between groups, but the generally short suspenses were interpreted as a driving factor in the increased number of requests for quick reaction tasks. These short suspense times were identified as surrogates for more formal requests for intelligence information using the Intelligence Production Requirements System. The overall lack of knowledge concerning the IPRS was a surprising

fact. This should be an area of immediate attention.

Usage frequency was investigated for various clients. The Washington community of FTD users identified themselves as the most frequent customers, with the CIA using S&T intelligence daily. The R&D users are apparently more specialized and generally use intelligence information once a week or less.

Discriminant analysis was used to further identify the profile of an FTD customer. It was found that the sample population could be divided into two major groups arbitrarily named Planners and Workers. These groups consisted of specific types of respondents and were best described by time frame of need. AF and U&S Command respondents were taken from the intelligence sample and analyzed. The Air Force segment was more interested in EW and C^3 Threat Simulator Validation. The Unified and Specified Command segment was most interested in the Short Report on a specialized subject.

Lastly, the product evaluation indicated a need for improved methods of identifying currency of publications, and generally stated that products need only be updated when major changes have occurred. Twelve specific products were identified and evaluated. The DIA sponsored products were compared with the non-DIA sponsored products (both produced by FTD), and only very slight differences were observed.

In general, respondents appeared to have responded to the survey thoughtfully, with many making positive comments.

Conclusions and Recommendations

The primary contribution, with respect to this investigation, was an initial attempt to incorporate consumer needs and requirements with management strategies. Much was learned about the FTD client that before was merely speculated. This study represents a first step toward explicitly evaluating the benefits of market research for the Foreign Technology Division of Air Force Systems Command.

Recommendation #1. A marketing manager should be designated within FTD to continue future consumer evaluations. This manager would integrate secondary information with research data concerning clients. This manager should have knowledge of the FTD work system and authority to direct marketing activities. He or she would be responsible for "picking up" where this thesis stops.

Recommendation #2. Immediate attention should be directed toward developing and maintaining an information system that allows users to verify the currency of intelligence products. This effort should be initiated using FTD related products and then expanded to DOD or a national level. Possibly the library function at FTD could tabulate the titles and with further coordination the information could be disseminated to users on a periodic basis. Almost any system would be an aid and possibly would decrease the number of quick reaction tasks by informing users of current data on hand.

Recommendation #3. A training program (much like advertising) should be established to educate users as to the

purpose of the Intelligence Production Requirements System and its operating characteristics. It is possible that there are other problems with the IPRS within the intelligence community. If so, eliminating these may contribute to increased usage.

Recommendation #4. Resolve the available information concerning computer systems needed by users. This would be a good task for the new marketing manager. Specific data should be combined relating the following computer systems now in use:

1. Electronic Warfare Integrated Reprogrammable Data Base (EWIR)
2. Central Information Reference and Control (CIRC)
3. Community On-Line Intelligence Systems (COINS)

The specific needs of the users for each of these systems should be studied.

Recommendation #5. Investigate the possibility of expanding the production of short summary or executive type documents. Many users specifically stated a high importance for these types of products. These results were also confirmed by numerous personal comments.

Recommendation #6. Because many respondents indicated a decrease in importance of courier or mail dissemination means, an experiment should be made to intentionally redirect a percentage of courier or mail traffic via another dissemination channel. Cost savings may be significant and favorable consumer acceptance might be a secondary effect due to

timeliness.

Due to the volume of data, many additional recommendations and conclusions can be drawn. The volume of information available to the researcher in a marketing study like this could be studied over a long period of time. Useful extensions of this work will identify suggested longitudinal efforts and some specific recommendations of their implementation.

Suggestions for Further Research

The respondents to the FTD survey, through numerous comments and responses to questions, indicate a requirement of intelligence information on foreign employment tactics. Most of those users were military operations people who also did not want information presented in too technical a language. Specific research should be implemented to ascertain how the intelligence employment tactics of foreign countries can be made available to the United States Intelligence community.

A second suggested area of investigation would be into composite structure of the intelligence network. Many of the problems faced by this researcher were generated due to the relations between intelligence organizations being poor and many times more secretive than the information they held. No single address register exists, and the lines of authority and responsibility sometimes allow agencies to act almost independently. Most likely, this investigation would be classified,

but the benefits of knowing who works for whom and why could eliminate many redundant efforts. Also of benefit would be the ability of one service agency to identify other investigators in their field with a clear indication of how to approach these other agencies for mutual benefit.

A third suggested area involves replication of parts of this study. Data collected after a one-year period can be compared with this base line information to identify trends or changes in users' needs and requirements. Identifying all surveys distributed with serial numbers or codes and keeping accurate records of how many went to each user will begin to solve many of the problems this researcher encountered. Also by use of the records, second and third requests to non-respondents for completion of the survey can be effectively administered. Establish firm deadlines for survey return and use direct questions which require the user to make a decision. Do not structure questions which have answers that are vague or can define the complete set of responses. Include more questions identifying the user (DOD, non-DOD), and always allow respondents to remain anonymous to eliminate the doubts of reprisal and better collect honest opinions. Some specific items to include in the follow-up study should be:

1. Questions about short reports or executive summaries.
2. A larger number of categories with which respondents can identify (training, collection, DOD, non-DOD)
3. A maximum use of interval variables, eliminating all possible ambiguous answers.

4. Questions requesting the user to evaluate FTD services relative to those of other agencies in the intelligence community.

The information gained in this study has provided profiles of specific users of FTD products. These profiles can now be integrated into the production process to tailor documents to specific clients. This saves time and energy as well as provides the customer with exactly what he is requesting. Communication is a key to the performance ability of a marketing department. This market study has helped FTD to know clients better and has let these clients know that FTD cares about their needs.

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APPENDIX A

The 1979 FTD Scientific and Technological *Intelligence User's Questionnaire*

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.

REPLY TO ATTN OF: AF/IN

21 MAR 1979

SUBJECT: FTD Aerospace S&T Intelligence Users' Questionnaire

TO: Recipients of FTD Products

1. Air Force resources in general, and intelligence resources in particular, must be allocated with full attention to the benefits to be gained. I have asked the Foreign Technology Division (FTD) to take various initiatives to improve the effective use of their Scientific and Technical (S&T) intelligence products. The Aerospace S&T Intelligence Users' Questionnaire developed by FTD is one of the tools I intend to use to insure USAF intelligence resources continue to be allocated for maximum effectiveness. Results from this questionnaire on how useful FTD products are to you now, what you are receiving now that is of little value to you, and what you expect to need in the future, will be factored into management decisions on how analytical resources are to be applied to the numerous S&T intelligence functional areas.

2. Proper management of government resources is a shared responsibility of each employee, both military and civilian. To this end I urge you to give full support to responding to this questionnaire. The net result should be increased effectiveness in mission accomplishment, for you as users of intelligence as well as for us as producers of intelligence.

JAMES L. BROWN, Maj Gen, USAF
Asst Chief of Staff, Intelligence

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS FOREIGN TECHNOLOGY DIVISION (AFSC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

OFFICE OF THE COMMANDER

13 MAR 1979

SUBJECT: Aerospace S&T Intelligence Users' Questionnaire

TO: Recipients of FTD Products

1. A recent change in DIA Manual 75-1 returned to the services the responsibility for ascertaining the utility of the mechanisms used to report Scientific and Technical (S&T) intelligence. We welcome this opportunity to learn from you directly whether or not we are "cutting-it" and if not how we can improve. I'm convinced there is a need for S&T intelligence in excess of our ability to provide it. However, a recent audit by the Defense Audit Service found that many formal statements of S&T intelligence requirements (DD Form 1497, Intelligence Production Requirement) were in a state of neglect. They further found, in discussions with users, some dissatisfaction. The simple, but possibly misguided, solution by the Office of Management and Budget (OMB) was an approximate 8% cut in the FY80 budget of the DOD S&T intelligence program. If you don't need our services then such solutions are appropriate. If you do, then we need better communications to insure our efforts are responsive to those needs. We have prepared the attached questionnaire as the first step in improving that communications process.

2. I would greatly appreciate your helping us develop this information by giving serious attention to the questionnaire. Within your organization, please identify each functional unit having a unique use for intelligence, and have each such unit complete a questionnaire. In this context, if two units have different uses for intelligence, and thus would respond differently to the questionnaire, then each is a unique user of intelligence and should complete a questionnaire. Please feel free to reproduce as many copies of the questionnaire as you need.

3. Depending on responses to the questionnaire, the problems those responses surface, and the potential for improved support to our users, we may visit selected organizations to expand information on those organizations' needs. The results of your responses, in conjunction with information developed during any personal visits, will be applied as specific objectives for improving service to our users; as guidance in allocating FTD resources for maximum effectiveness; and as a basis for resource justification in program submissions. A summary of the results will be sent to you as soon as responses are compiled.

4. We have a long way to go. If you could return the questionnaires within 15 workdays of receipt it would be appreciated. Return to:

HQ FOREIGN TECHNOLOGY DIVISION (XOX)
WRIGHT-PATTERSON AFB, OH 45433

H. E. Wright, Colonel, USAF
Commander

1 Atch
Aerospace S&T Intelligence Users' Questionnaire

INSTRUCTIONS FOR COMPLETING THIS QUESTIONNAIRE

1. Each functional unit or office having a unique use for Scientific and Technical (S&T) Intelligence should complete a questionnaire. If separate units or offices have different uses for intelligence, and thus would respond differently, then each should complete a questionnaire. Reproduce additional copies as necessary. Responses should be based on your organization's needs for and applications of intelligence.

2. Please feel free to contact the Foreign Technology Division (FTD) for clarification and additional information. Contact FTD/XOX, Wright-Patterson AFB, Ohio 45433; Autovon: 787-2562; Commercial: (513) 257-2562.

3. This questionnaire is UNCLASSIFIED. If your comments are UNCLASSIFIED, please fold, staple, and mail to FTD using the address panel on the back page. If your comments are CLASSIFIED, place the necessary security markings on the questionnaire and return through SECURE channels to: FTD/XOX, Wright-Patterson AFB, Ohio 45433.

ABOUT SCIENTIFIC AND TECHNICAL INTELLIGENCE

The definition of Scientific and Technical (S&T) Intelligence, according to JCS Pub 1, is "The product resulting from the collection, evaluation, analysis, and interpretation of foreign scientific and technical information which covers: (a) foreign developments in basic and applied research and applied engineering techniques; and, (b) scientific and technical characteristics, capabilities, and limitations of all foreign military systems, weapons, weapon systems, and material, the research and development related thereto, and the production methods employed for their manufacture."

Defense Intelligence Agency Manual 75-1, Scientific and Technical Intelligence Production, establishes the procedures for the management, processing, production and reporting of S&T Intelligence within the Department of Defense.

The Foreign Technology Division (FTD) is the primary producer of S&T Intelligence in the Air Force. The Army and Navy have similar production elements. Most of FTD's published documents bear a Defense Intelligence Agency (DIA) cover. The title page will state that FTD produced or contributed to it.

Listings of published and scheduled DOD S&T Intelligence documents are contained in the Scientific and Technical Intelligence Register (STIR) and the Register of Intelligence Publications (RIP). These DIA documents are published semi-annually and are available in intelligence offices.

AEROSPACE SCIENTIFIC AND TECHNICAL (S&T) INTELLIGENCE USERS' QUESTIONNAIRE

THE FIRST PART OF THIS QUESTIONNAIRE ADDRESSES YOUR REQUIREMENTS FOR S&T INTELLIGENCE. THE SECOND PART ASKS FOR YOUR EVALUATION OF SPECIFIC DOCUMENTS PRODUCED BY THE AIR FORCE FOREIGN TECHNOLOGY DIVISION.

PART I REQUIREMENTS

1. What is your organization, office symbol, address, and telephone number?

_____

2. Which category most nearly describes the primary mission of your office?
___Policymaking, Planning, or Decisionmaking
___Research and Development (R&D)
___Military Operations
___Intelligence
___Other. Please specify _____

3. Indicate the importance to your office of the various functional areas of aerospace S&T intelligence for the present and short-term future (0-5 years) under the heading A. SHORT-TERM; and for the mid-to-long-term future (5-20 years) under the heading B. MID-TO-LONG-TERM.

A. SHORT-TERM				B. MID-TO-LONG-TERM				FUNCTIONAL AREAS OF AEROSPACE S&T INTELLIGENCE
VERY IMPORTANT	MODERATELY IMPORTANT	SOMEWHAT IMPORTANT	UNIMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	SOMEWHAT IMPORTANT	UNIMPORTANT	
___	___	___	___	___	___	___	___	Offensive Ballistic Missile Systems and Subsystems
___	___	___	___	___	___	___	___	Ballistic Missile Facilities and Equipment
___	___	___	___	___	___	___	___	Fighter Aircraft Systems and Subsystems
___	___	___	___	___	___	___	___	Bomber Aircraft Systems and Subsystems
___	___	___	___	___	___	___	___	Aerodynamic Facilities
___	___	___	___	___	___	___	___	Aerodynamic Missiles and Weapons
___	___	___	___	___	___	___	___	Space Systems and Subsystems
___	___	___	___	___	___	___	___	Antisatellite Systems
___	___	___	___	___	___	___	___	Defensive Radar Systems
___	___	___	___	___	___	___	___	Electronic Countermeasures
___	___	___	___	___	___	___	___	Electro-Optical Systems
___	___	___	___	___	___	___	___	Preliminary Aircraft Design
___	___	___	___	___	___	___	___	Preliminary Aerodynamic Missile Design
___	___	___	___	___	___	___	___	Preliminary Ballistic and Space Vehicle Design
___	___	___	___	___	___	___	___	Applied Aerospace Technologies
___	___	___	___	___	___	___	___	Directed Energy Technologies and Systems
___	___	___	___	___	___	___	___	Advanced Systems Research, Development and Test Facilities
___	___	___	___	___	___	___	___	Aerospace Technologies Research
___	___	___	___	___	___	___	___	Command, Control, and Telecommunications Systems
___	___	___	___	___	___	___	___	Integrated Warfare Systems Threat - Current and Future
___	___	___	___	___	___	___	___	Integrated Electromagnetic Systems - Current and Future
___	___	___	___	___	___	___	___	EW and C^3 Threat Simulator Validation
___	___	___	___	___	___	___	___	Meteorological Sciences

4. Indicate the importance to your office of the following kinds of intelligence. For the present and short-term future (0-5 years) check the appropriate space under the heading A. SHORT-TERM; and for the mid-to-long-term future (5-20 years) check the appropriate space under the heading B. MID-TO-LONG-TERM.

A. SHORT-TERM				B. MID-TO-LONG-TERM				KINDS OF INTELLIGENCE
VERY IMPORTANT	MODERATELY IMPORTANT	SOMEWHAT IMPORTANT	UNIMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	SOMEWHAT IMPORTANT	UNIMPORTANT	
___	___	___	___	___	___	___	___	Intelligence Event (e.g., an air show, a flight, an electronic emission)
___	___	___	___	___	___	___	___	Intelligence Target (e.g., a factory, an airfield, a a research institute)
___	___	___	___	___	___	___	___	Biographical/Organizational
___	___	___	___	___	___	___	___	Basic Technologies Research and Development
___	___	___	___	___	___	___	___	Military Doctrine and Design Philosophies
___	___	___	___	___	___	___	___	Engineering and Production Technologies
___	___	___	___	___	___	___	___	Weapon Subsystem Performance, Characteristics and Capabilities
___	___	___	___	___	___	___	___	Weapon System Performance, Characteristics and Capabilities
___	___	___	___	___	___	___	___	Integrated Warfare Systems Threat Assessments

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5. Indicate the importance to your office of each of the following degrees of intelligence analysis.

VERY IMPORTANT	MODERATELY IMPORTANT	MINIMAL IMPORTANCE	UNIMPORTANT	DEGREES OF INTELLIGENCE ANALYSIS
				Unanalyzed (i.e., unexploited single intelligence source data, such as Infrared (IR), ELINT, telemetry, photography, open literature translations, etc.)
				Partially Analyzed (i.e., exploited single intelligence source data, such as IR Data Analysis Reports, ELINT Signals Analysis Reports, Basic Imagery Interpretation Reports, HUMINT Reports, etc.)
				Fully Analyzed (i.e., finished, all-source intelligence Assessments and Estimates, such as Weapon System Studies, handbooks, etc.)

6. Indicate the importance to your office of the various formats in which the Foreign Technology Division (FTD) currently reports S&T intelligence under the heading A. CURRENT IMPORTANCE. Then, considering that the future mission of your office may be different from today's mission, and therefore your future needs may be different, check the appropriate space under the heading B. POTENTIAL IMPORTANCE. If you are not familiar with a given reporting format indicate this under the heading C. UNFAMILIAR.

A. CURRENT IMPORTANCE				B. POTENTIAL IMPORTANCE				C.	
VERY IMPORTANT	MODERATELY IMPORTANT	MINIMAL IMPORTANCE	UNIMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	MINIMAL IMPORTANCE	UNIMPORTANT	UNFAMILIAR	REPORTING FORMAT
									In-depth, Comprehensive Study
									Weapon System Handbook
									Weapon System Acquisition Threat Package
									Short Report on a Specialized Subject
									Computer Data Base
									Briefing by an FTD Analyst

7. Indicate the importance to your office of the various means by which FTD currently disseminates S&T intelligence under the heading A. CURRENT IMPORTANCE. Then considering that the future mission of your office may be different from today's mission, and therefore your future needs may be different, check the appropriate space under the heading B. POTENTIAL IMPORTANCE.

A. CURRENT IMPORTANCE				B. POTENTIAL IMPORTANCE				
VERY IMPORTANT	MODERATELY IMPORTANT	MINIMAL IMPORTANCE	UNIMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	MINIMAL IMPORTANCE	UNIMPORTANT	DISSEMINATION MEANS
								Courier or Mail
								Electrical Transmission
								Briefer's Presentation
								On-Line Computer Link
								Off-Line Computer Tape
								Off-Line Computer Printout

8. If you indicated in question 6 or question 7 that particular Reporting Formats or Dissemination Means which are not now VERY IMPORTANT have the potential to become VERY IMPORTANT, please explain briefly what factors indicate the potential increase in importance.

A. Reporting Format _____

_____

B. Dissemination Means _____

_____

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9. For what intelligence time frame does your office need S&T intelligence? Indicate the time frame of highest importance and second highest importance?

	NEAR REAL TIME	0-2 YEARS	2-5 YEARS	5-10 YEARS	10-15 YEARS	15-20 YEARS	BEYOND TWENTY YEARS
A. Highest importance	___	___	___	___	___	___	___
B. Second highest importance	___	___	___	___	___	___	___

10. How does your office get intelligence information?
___This office extracts information from intelligence products.
___Another office (e.g., the Intel Shop) provides the intelligence used in this office (skip to question 12).
___Other. Please specify_____

11. If your office extracts intelligence for the use of others, what are the missions of the organizations which actually use it?
___Policymaking, Planning, or Decisionmaking
___Research and Development (R&D)
___Military Operations
___Intelligence
___Other. Please specify_____

12. When you need aerospace S&T intelligence either for your office, or to provide to another organization, about how much time do you usually have to get the information?
___An hour or less
___Within several hours
___A day
___A few days to a week
___A month
___One to six months
___More than six months
___Responsiveness requirements vary with no one being predominant

13. How frequently does your office use aerospace S&T intelligence, or extract intelligence for the use of others?
___Daily
___Several times a week
___About once a week
___Monthly or less frequently
___Never

14. Some users of aerospace S&T intelligence ask for information on the methodology which FTD scientists and engineers use in analyzing data, drawing conclusions, and making estimates. How important is this kind of information to your office?
___Not important
___Somewhat important
___Moderately important
___Very important

15. Does your office have a working knowledge of the Intelligence Production Requirements (IPR) system? (DD Form 1497, Intelligence Production Requirement, is used to submit new requirements.)
___Yes
___No (If no, skip to question 19.)

16. Have you submitted IPRs, in one of the functional Areas in question 3, that have not been satisfactorily answered?
___Yes. If yes, please identify IPR Number if known_____
___No, never submitted an IPR in one of these functional areas.
___No, all IPRs submitted in these functional areas have been satisfied.

17. Indicate your confidence in the design, effectiveness, and responsiveness of the IPR system.
___Full confidence
___Basic confidence, slight reservation
___Moderate confidence
___Some confidence, much reservation
___No confidence
___No opinion

18. Are there intelligence production requirements which you or your organization have not submitted on one of the functional areas listed in question 3 because they are presumed to be unanswerable?
___No
___Yes. Please elaborate_____

19. Is it necessary for your office to perform additional analysis on the S&T intelligence you receive in order to satisfy your needs?

___No additional analysis required (skip to question 22).
___Yes. I integrate S&T intelligence with other technical data and analyse this in light of my job requirements.
___Yes, for other reasons. Please specify_____

20. If it is necessary for your office to perform additional analysis, indicate the most important factor requiring you to do so.

___To integrate data not considered by, or not available to, the producing agency
___To verify analysis and conclusions
___To evaluate against conclusions from other intelligence agencies
___To perform higher-order functional activity(e.g., war gaming, force planning, etc.
___Other
___Please specify_____

21. If it is necessary for your office to do additional analysis, do you think FTD could do the required analysis for you to your satisfaction?

___Yes
___No

22. Indicate the importance to your office of the S&T intelligence you now work with to each of the following applications.

IMPORTANCE				
VERY IMPORTANT	MODERATELY IMPORTANT	SOMEWHAT IMPORTANT	NOT APPLICABLE	INTELLIGENCE APPLICATIONS
___	___	___	___	Preparing Studies and Briefings for Policymakers
___	___	___	___	Preparing Studies and Briefings for Planners
___	___	___	___	Preparing Studies and Briefings for Military Staffs
___	___	___	___	Preparing Briefings for Aircrews
___	___	___	___	Conducting Other Military Operations
___	___	___	___	RDT&E of US Equipment
___	___	___	___	Procuring US Equipment
___	___	___	___	Integration into Intelligence Studies
___	___	___	___	Developing Intelligence Threats
___	___	___	___	Targeting for Intelligence Collection
___	___	___	___	Managing Crises
___	___	___	___	Other. Please specify_____

23. If your office uses FTD-produced intelligence has your office communicated with the producing office at FTD within the past year?

___Yes
___No (skip to question 25.)

24. If your answer to question 23 was Yes:

a. How did your office communicate with the producing office or analyst at FTD?

___Unclassified telephone
___Secure telephone
___Message
___Letter
___Personal Conference
___A combination of these
___Other. Please specify_____

b. What was the purpose for communicating with the producing office or analyst at FTD?

___Provide feedback on usefulness and areas needing improvement
___Verify currency of FTD-produced document
___Clarify intelligence in FTD-produced document
___Clarify intelligence requirement for benefit of the analyst
___Request more detail
___Other. Please specify_____

c. In your judgment, how important was the exchange between your office and the FTD analyst in terms of benefit to your office's needs?

___Very important
___Moderately important
___Somewhat important
___Unimportant

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25. How much contact do you think should take place between the FTD analyst and your office?

___Daily
___Weekly
___Monthly
___One time for short projects, several times for longer ones
___No contact necessary
___Other. Please specify_____

PART II DOCUMENT EVALUATION

THE FOLLOWING QUESTIONS DEAL WITH THE UTILITY OF THE STUDIES, HANDBOOKS, AND OTHER INTELLIGENCE DOCUMENTS WHICH FTD PRODUCES, AND WITH WAYS WHICH THEY SHOULD BE CHANGED TO BETTER SATISFY YOUR OFFICE'S NEEDS.

26. Does your office actually use - extract data from - FTD produced documents?

___Yes (go to question 27.)
___No (the remainder of the questionnaire is not applicable to you. Thanks for your cooperation and help. If your comments are CLASSIFIED, place the necessary security markings on the questionnaire and return through appropriate SECURE channels to FTD/XOX, WPAFB, OH 45433. If your comments are UNCLASSIFIED, please fold, staple, and mail to FTD using the address panel on the back page.)

27. Please evaluate two specific FTD products - first, a DIA-sponsored study or handbook; and second, an FTD product sponsored by an agency other than DIA (e.g., FTD-initiated Technical Briefs, Basic Imagery Interpretation Reports (BIIRS), IR Data Analysis Reports; or a product sponsored by national-level, departmental (USAF), AFSC, or other non-DIA agencies). For this purpose, two columns have been provided for responses to each of the following questions: one column for evaluating a DIA-sponsored FTD product (Column A.), and one column for an FTD product sponsored by an agency other than DIA (Column B.). (Note: If you are able to identify an FTD product in only one sponsor category, please respond for that product; in that case, you may elect to respond for a second FTD product in the same category.)

A. Which one of the DIA-sponsored FTD* studies or handbooks most nearly addresses the subject in which your office has the greatest need for S&T intelligence? Enter the Short Title* and date: DGT-_____/____ ____ ____. Responses pertaining to this document should
Short Title Year Month Day
be made in Column A.

*(The agency producing DIA products is identified in a statement on the title page; the document Short Title, an alphanumeric which begins DGT-, is shown on the cover in the upper right-hand corner.)

B. Which non-DIA-sponsored FTD product most nearly addresses the subject in which your office has the greatest need for S&T intelligence? Enter the Title and a numerical identifier:

_____/_____ ___. Responses pertaining to this
Title Numerical Identifier
document should be made in Column B.

Concerning the documents you identified in A. or B. above, how should FTD make changes which would significantly contribute to satisfying your office's needs?

(1) Currency of Data

A. DIA	B. Non-DIA	
___	___	Make information more current when document is disseminated
___	___	Provide a routine mechanism for determining whether information in the document is still current or is outdated
___	___	Currency of data causes no specific problem
___	___	Other improvement to currency. Please specify_____

_____

(2) Production Frequency

Change production frequency to:

A. DIA	B. Non-DIA	
___	___	3 months
___	___	6 months
___	___	12 months
___	___	24 months
___	___	As determined by intelligence developments on the subject
___	___	Present production frequency causes no specific problems
___	___	Other improvement to production frequency. Please specify_____

_____

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(3) Subjects Covered

(a) Add the following subjects (please specify).

A. DIA _____

B. Non-DIA _____

(b) Delete the following subjects (please specify).

A. DIA _____

B. Non-DIA _____

(c) Present subjects covered are adequate.

___A. In DIA product
___B. In Non-DIA product

(4) Emphasis. In the document subject areas shown, should the emphasis (degree of detail) be increased or decreased?

A. DIA				B. NON-DIA				
INCREASE	DECREASE	ADEQUATE	NOT COVERED	INCREASE	DECREASE	ADEQUATE	NOT COVERED	DOCUMENT SUBJECT AREA
___	___	___	___	___	___	___	___	Historical Development
___	___	___	___	___	___	___	___	Equipment Description
___	___	___	___	___	___	___	___	Facilities Description
___	___	___	___	___	___	___	___	Total System Description
___	___	___	___	___	___	___	___	Subsystem Description
___	___	___	___	___	___	___	___	Hardware Characteristics
___	___	___	___	___	___	___	___	Facilities Characteristics
___	___	___	___	___	___	___	___	Performance Specifications
___	___	___	___	___	___	___	___	Employment Tactics
___	___	___	___	___	___	___	___	Deployment
___	___	___	___	___	___	___	___	Future Projections
___	___	___	___	___	___	___	___	Other. Please specify _____

(5) Textual Content. Should the textual content be expanded, reduced, or is it now adequate?

A. DIA			B. NON-DIA			
EXPAND	REDUCE	NOW ADEQUATE	EXPAND	REDUCE	NOW ADEQUATE	TEXTUAL CONTENT
___	___	___	___	___	___	Summary
___	___	___	___	___	___	Background Data
___	___	___	___	___	___	Analytical Rationale
___	___	___	___	___	___	Conclusions

(6) Textual Supplements. Should the current emphasis on the textual supplements listed below be increased, decreased, or are they now adequate?

A. DIA			B. NON-DIA			
INCREASE	DECREASE	NOW ADEQUATE	INCREASE	DECREASE	NOW ADEQUATE	TEXTUAL SUPPLEMENT
___	___	___	___	___	___	Photo Illustrations
___	___	___	___	___	___	Drawings
___	___	___	___	___	___	Graphs and Curves
___	___	___	___	___	___	Tables
___	___	___	___	___	___	Appendices

(7) Additional Comments. If there is additional information about FTD products which could help us to improve our S&T intelligence support to your office or your organization, please comment here or in a separate memo to FTD/XOX.

THANK YOU FOR YOUR COOPERATION AND HELP IN COMPLETING THIS QUESTIONNAIRE.
If your comments are CLASSIFIED, place the necessary security markings on the questionnaire and return through appropriate SECURE channels to: FTD/XOX, WPAFB, OH 45433. If your comments are UNCLASSIFIED, please fold, staple, and mail to FTD using the address panel on the back page.

APPENDIX B

Summary of Responses to Selected Questions from the 1979 FTD Scientific and Technological Intelligence Users Questionnaire

AD-A076 207 AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOO--ETC F/G 5/2
AN INVESTIGATION INTO THE MARKET STRUCTURE OF THE FOREIGN TECHN--ETC(U)
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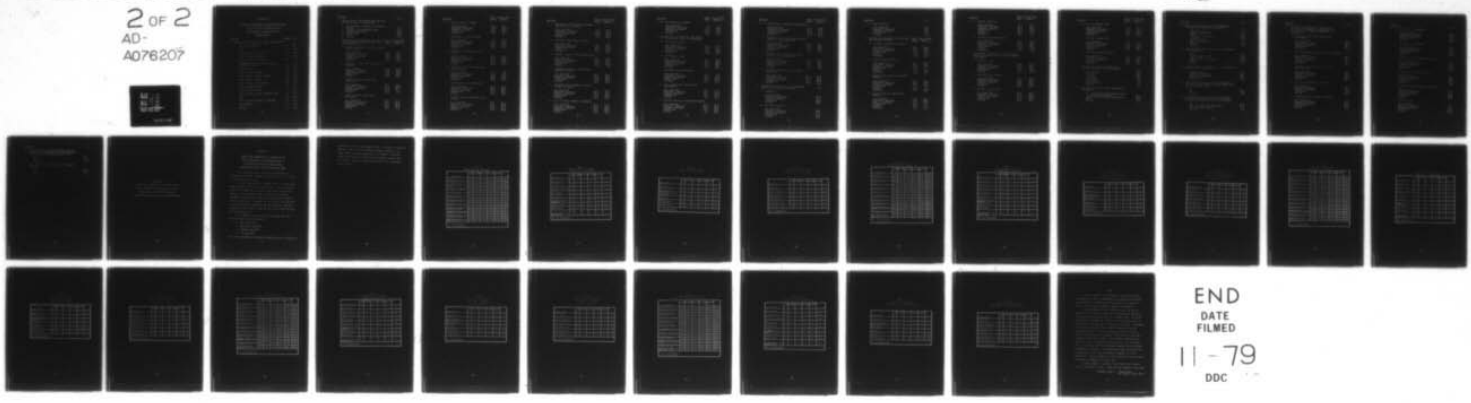

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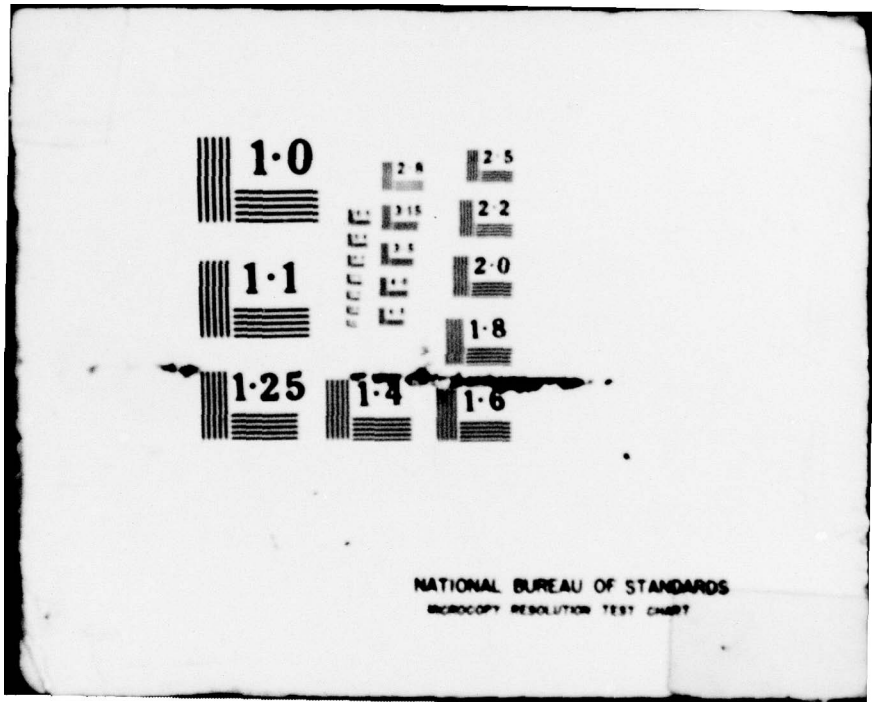
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2·5
NATIONAL BUREAU OF STANDARDS

APPENDIX B

Summary of Responses to Selected Questions from the 1979 FTD Scientific and Technological Intelligence Users Questionnaire

Question	Number	%
1. Organizations represented in the sample(N=644)		
Air Force (general)	230	35.7
Army	57	8.8
Central Intelligence Agency	33	5.1
Chief of Naval Operations	5	0.8
Defense Intelligence Agency	47	7.3
Commander in Chief (CINC), Aerospace Defense Command	15	2.3
HQ Air Force	12	1.9
CINC, Atlantic Command	17	2.6
CINC, Military Airlift Command	4	0.6
CINC, Pacific Command	45	7.0
CINC, Strategic Air Command	19	3.0
CINC, European Command	24	3.7
Joint Chiefs of Staff	5	0.8
Joint Strategic Target Planning Staff	4	0.6
Navy	82	12.8
Office of the Secretary of Defense	16	2.5
Miscellaneous	17	2.6
Missing	12	1.9

Question	%
2. Which category most nearly describes the primary mission of your office?	
A. Policymaking, Planning, or Decision-making	9.8
B. Research and Development (R&D)	21.4
C. Military Operations	9.0
D. Intelligence	55.3
E. Other	3.4
F. Missing	1.1

3. Indicate the importance to your office of the following functional areas of S&T intelligence.	Short Term %	Mid-to-Long Term %
A. Offensive ballistic missile systems and subsystems		
Very important	21.7	20.5
Moderately important	12.0	13.7
Somewhat important	22.5	21.3
Unimportant	33.9	34.2
Missing	9.0	10.4
B. Ballistic missile facilities and equipment		
Very important	11.6	11.6
Moderately important	13.5	13.4
Somewhat important	23.8	22.8
Unimportant	39.9	40.2
Missing	11.2	12.0
C. Fighter aircraft systems and subsystems		
Very important	45.5	40.4
Moderately important	17.4	18.8
Somewhat important	12.4	13.7
Unimportant	16.3	17.7
Missing	8.4	9.5
D. Bomber aircraft systems and subsystems		
Very important	34.0	31.4
Moderately important	22.5	21.0
Somewhat important	16.9	18.8
Unimportant	18.2	19.6
Missing	8.4	9.3

Question		Short Term %	Mid-to-Long Term %
3.	K. Electro-optical systems		
	Very important	28.0	27.0
	Moderately important	25.8	24.2
	Somewhat important	20.5	21.9
	Unimportant	18.2	18.2
	Missing	7.6	8.7
	L. Preliminary aircraft design		
	Very important	9.9	11.0
	Moderately important	14.1	14.3
	Somewhat important	23.3	21.1
	Unimportant	40.4	41.3
	Missing	12.3	12.3
	M. Preliminary aerodynamic missile design		
	Very important	11.0	12.9
	Moderately important	14.9	13.8
	Somewhat important	21.7	20.0
	Unimportant	40.5	41.0
	Missing	11.8	12.3
	N. Preliminary ballistic and space vehicle design		
	Very important	9.5	9.8
	Moderately important	8.7	9.0
	Somewhat important	18.8	16.8
	Unimportant	51.4	51.9
	Missing	11.6	12.6
	O. Applied aerospace technologies		
	Very important	10.4	11.0
	Moderately important	16.8	16.6
	Somewhat important	30.6	28.3
	Unimportant	31.4	32.9
	Missing	10.9	11.2
	P. Directed energy technologies and systems		
	Very important	15.5	19.3
	Moderately important	15.1	13.4
	Somewhat important	23.4	23.0
	Unimportant	36.0	33.9
	Missing	9.9	10.6

Question		Short Term %	Mid-to-Long Term %
3. Q.	Advanced systems research, development and test facilities		
	Very important	11.6	13.0
	Moderately important	18.0	17.2
	Somewhat important	29.8	28.1
	Unimportant	30.7	31.2
	Missing	9.8	10.4
R.	Aerospace technologies research		
	Very important	9.3	11.5
	Moderately important	16.0	15.1
	Somewhat important	26.6	25.9
	Unimportant	35.7	35.1
	Missing	12.4	12.4
S.	Command, control & telecommunications		
	Very important	34.0	31.4
	Moderately important	24.4	23.1
	Somewhat important	19.4	19.9
	Unimportant	13.7	15.8
	Missing	8.5	9.8
T.	Integrated warfare systems threat - current and future		
	Very important	39.0	35.6
	Moderately important	20.7	22.4
	Somewhat important	14.8	14.9
	Unimportant	15.1	15.8
	Missing	10.6	11.3
U.	Integrated electromagnetic systems - current and future		
	Very important	25.3	23.9
	Moderately important	23.8	21.6
	Somewhat important	18.2	19.4
	Unimportant	21.4	21.9
	Missing	11.3	13.2
V.	EW & C^3 threat simulator validation		
	Very important	24.5	23.8
	Moderately important	17.4	15.5
	Somewhat important	18.3	18.8
	Unimportant	29.2	30.3
	Missing	10.6	11.6

Question	Short Term %	Mid-to-Long Term %
3. W. Meteorological Sciences		
Very important	5.0	4.0
Moderately important	9.6	10.1
Somewhat important	23.0	22.4
Unimportant	51.2	51.2
Missing	11.2	12.3
4. Indicate the importance to your office of the following kinds of intelligence?		
A. Intelligence Event		
Very important	33.1	25.3
Moderately important	24.4	22.2
Somewhat important	20.2	21.6
Unimportant	15.5	22.2
Missing	6.8	8.7
B. Intelligence Target		
Very important	23.1	18.8
Moderately important	18.9	18.5
Somewhat important	20.3	20.8
Unimportant	28.0	30.7
Missing	9.6	11.2
C. Biographical/Organizational		
Very important	8.9	7.5
Moderately important	14.1	13.0
Somewhat important	32.0	29.0
Unimportant	33.7	37.7
Missing	11.3	12.7
D. Basic Technologies Research and Development		
Very important	14.1	17.5
Moderately important	24.7	21.3
Somewhat important	32.1	30.3
Unimportant	21.1	22.7
Missing	7.9	8.5
E. Military Doctrine & Design Philosophies		
Very important	21.4	21.0
Moderately important	28.6	25.8
Somewhat important	26.2	26.1
Unimportant	14.4	16.5
Missing	9.3	10.7

Question	Short Term %	Mid-to-Long Term %
4. F. Engineering & Production Technologies		
Very important	12.6	13.5
Moderately important	19.9	18.3
Somewhat important	29.0	27.2
Unimportant	27.8	29.3
Missing	10.7	11.6
G. Weapon Subsystem Performance, Characteristics and Capabilities		
Very important	46.6	41.1
Moderately important	21.1	22.5
Somewhat important	15.5	14.9
Unimportant	9.5	12.3
Missing	7.3	9.2
H. Weapon System Performance, Characteristics and Capabilities		
Very important	57.6	51.2
Moderately important	20.2	20.7
Somewhat important	9.3	12.0
Unimportant	7.0	9.3
Missing	5.9	6.8
I. Integrated Warfare Systems Threat Assessments		
Very important	46.1	40.5
Moderately important	20.2	20.3
Somewhat important	15.7	18.0
Unimportant	10.6	11.5
Missing	7.5	9.6
5. Indicate the importance of the following degrees of intelligence analysis.		%
A. Unanalyzed		
Very important		18.8
Moderately important		17.5
Somewhat important		32.0
Unimportant		28.0
Missing		3.7
B. Partially Analyzed		
Very important		26.6
Moderately important		37.1
Somewhat important		21.3
Unimportant		11.3
Missing		3.7

Question		%
5. C.	Fully Analyzed	
	Very important	70.0
	Moderately important	18.2
	Somewhat important	7.8
	Unimportant	2.0
	Missing	2.0

6.	Indicate the importance of the following reporting formats.	Short Term %	Mid-to-Long Term %
A.	In-depth, Comprehensive Study		
	Very important	40.4	40.4
	Moderately important	22.4	20.8
	Somewhat important	16.6	14.8
	Unimportant	5.3	4.0
	Missing	6.4	8.5
	Unfamiliar	9.0	11.5
B.	Weapon System Handbook		
	Very important	49.7	46.4
	Moderately important	25.6	25.2
	Somewhat important	8.7	7.5
	Unimportant	4.8	3.7
	Missing	4.7	8.5
	Unfamiliar	6.5	8.7
C.	Weapon System Acquisition Threat Package		
	Very important	23.1	24.1
	Moderately important	21.6	21.0
	Somewhat important	13.7	10.6
	Unimportant	8.9	7.0
	Missing	9.3	9.0
	Unfamiliar	23.4	28.4
D.	Short Report on a Specialized Subject		
	Very important	33.4	32.8
	Moderately important	27.8	26.9
	Somewhat important	20.2	17.7
	Unimportant	4.5	4.7
	Missing	5.0	6.7
	Unfamiliar	9.2	11.3

Question	Short Term %	Mid-to-Long Term %
6. E. Computer Data Base		
Very important	8.9	13.0
Moderately important	11.6	11.3
Somewhat important	18.6	15.8
Unimportant	25.9	17.5
Missing	10.6	7.1
Unfamiliar	24.4	35.1
F. Briefing by an FTD Analyst		
Very important	18.2	19.7
Moderately important	17.5	18.0
Somewhat important	19.3	18.0
Unimportant	16.8	10.1
Missing	8.9	6.8
Unfamiliar	19.4	27.3
7. Indicate the importance to your office of the various means by which FTD disseminates intelligence.		
A. Courier or Mail		
Very important	48.3	43.5
Moderately important	24.2	24.2
Somewhat important	12.3	12.7
Unimportant	6.7	7.6
Missing	8.5	12.0
B. Electrical Transmission		
Very important	31.2	30.4
Moderately important	22.5	24.5
Somewhat important	13.8	12.1
Unimportant	20.7	20.5
Missing	11.8	12.4
C. Briefer's Presentation		
Very important	16.6	16.9
Moderately important	17.9	18.8
Somewhat important	21.7	22.0
Unimportant	31.5	29.7
Missing	12.3	12.6

Question	Short Term %	Mid-to-Long Term %
7. D. On-Line Computer Link		
Very important	8.1	15.2
Moderately important	6.4	9.5
Somewhat important	9.3	11.2
Unimportant	58.9	49.5
Missing	17.4	14.6
E. Off-Line Computer Tape		
Very important	3.4	5.7
Moderately important	6.4	10.4
Somewhat important	10.1	12.9
Unimportant	62.2	56.1
Missing	18.0	14.9
F. Off-Line Computer Printout		
Very important	5.3	7.8
Moderately important	9.0	13.2
Somewhat important	14.8	15.5
Unimportant	53.8	49.3
Missing	17.2	14.3

9. In what intelligence timeframe does your office require S&T intelligence?	%
Near realtime	39.1
0-2 years	28.9
2-5 years	9.5
5-10 years	12.7
10-15 years	3.4
15-20 years	1.1
Beyond 20 years	.6
Missing	4.7

10. How does your office obtain intelligence information?	
This office extracts information from intelligence products	59.5
Another office provides intelligence	24.1
Other	14.1
Missing	2.3

Question	%
12. When you need aerospace S&T intelligence, how much reaction time do you have?	
One hour or less	3.9
Within several hours	7.1
One day	6.4
A few days to one week	30.9
One month	9.3
One to 6 months	7.6
More than 6 months	.8
Varies	31.1
Missing	3.0
13. How frequently does your office use aerospace S&T intelligence?	
Daily	23.4
Several times a week	22.8
Once a week	15.5
Monthly or less frequently	34.5
Never	2.5
Missing	1.2
14. How important is information on the methodology used by FTD to your office?	
Not important	37.1
Somewhat important	26.2
Moderately important	18.5
Very important	16.9
Missing	1.2
15. Does your office have a working knowledge of the Intelligence Production Requirements (IPR) system (DD Form 1497)?	
Yes	36.6
No	60.6
Missing	2.8
19. Is it necessary for your office to perform additional analysis on the S&T intelligence you receive in order to satisfy your needs?	
No	42.8
Yes, integrate with other data	47.7
Yes, for other reasons	7.8
Missing	1.7

Question	%
22. Indicate the importance to your office of the S&T intelligence you now work with to each of the following intelligence applications.	
A. Preparing studies and briefings for policymakers	
Very important	28.6
Moderately important	14.1
Somewhat important	13.7
Unimportant	33.7
Missing	9.9
B. Preparing studies and briefings for planners	
Very important	25.6
Moderately important	18.3
Somewhat important	17.7
Unimportant	27.6
Missing	10.7
C. Preparing studies and briefings for military staffs	
Very important	28.1
Moderately important	21.1
Somewhat important	16.8
Unimportant	23.3
Missing	10.7
D. Preparing briefings for aircrews	
Very important	13.2
Moderately important	8.2
Somewhat important	7.1
Unimportant	59.0
Missing	12.4
E. Conducting other military operations	
Very important	7.9
Moderately important	10.6
Somewhat important	14.3
Unimportant	53.9
Missing	13.4

Question		%
22.	F. RDT&E of U.S. equipment	
	Very important	23.0
	Moderately important	11.3
	Somewhat important	7.9
	Unimportant	47.2
	Missing	10.6
	G. Procuring U.S. equipment	
	Very important	12.4
	Moderately important	10.1
	Somewhat important	9.6
	Unimportant	55.4
	Missing	12.4
	H. Integration into intelligence studies	
	Very important	21.6
	Moderately important	17.9
	Somewhat important	15.4
	Unimportant	34.9
	Missing	10.2
	I. Developing intelligence threats	
	Very important	31.2
	Moderately important	16.8
	Somewhat important	14.6
	Unimportant	27.6
	Missing	9.8
	J. Targeting for intelligence collection	
	Very important	13.7
	Moderately important	13.0
	Somewhat important	12.9
	Unimportant	48.6
	Missing	11.8
	K. Managing crises	
	Very important	9.0
	Moderately important	6.7
	Somewhat important	12.7
	Unimportant	59.2
	Missing	12.4

Question	%
23. If your office uses FTD-produced data, has your office communicated with the producing office within FTD during the last year?	
Yes	40.7
No	56.1
Missing	3.3
26. Does your office actually use FTD-produced documents?	
Yes	62.0
No	31.1
Missing	7.0

APPENDIX C

Sample Mean Comparisons of Current Versus Future Importance for Functional Areas of Intelligence, Kinds of Intelligence, Reporting Formats, and Dissemination Means

APPENDIX C

Sample Mean Comparisons of Current Versus Future Importance for Functional Areas of Intelligence, Kinds of Intelligence, Reporting Formats, and Dissemination Means

The following tables compare the sample means of current versus future responses for Questions 2, 3, 4, 6 and 7 on the FTD user's survey.

The same individual was evaluated for his current and future responses by use of a paired t-test. The correlation between all comparisons of current and future was positive, making the use of paired samples effective. Extraneous influences on the variable that was measured were reduced by the use of pairing. The number of cases varies from question to question because respondents who did not answer both the current and future parts of any one topic were eliminated for that particular test.

The Student's t-test was used to evaluate the data. Responses were coded arbitrarily as:

1 = Very Important

2 = Moderately Important

3 = Somewhat Important

4 = Not Important

This scoring technique required the quantification of subjective

preferences, which is inherently risky. It should be realized that the scale is at best ordinal in nature; however, the large sample size and comparison of two equally structured scales allow the use of statistical techniques without loss of accuracy. Relative differences were the only meaningful facts utilized.

TABLE C.1-1

Comparison of Functional Areas
Sample Means ($\bar{X}$) for Total Sample

FUNCTIONAL AREAS	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
Offensive Missile Systems	567	2.77	1.19	2.77	1.18	.16
Ballistic Missile Facilities	568	3.04	1.06	3.03	1.07	.66
Fighter Aircraft Systems	577	2.01	1.16	2.10	1.17	-3.76**
Bomber Aircraft Systems	577	2.23	1.15	2.30	1.16	-3.07*
Aerodynamic Facilities	550	3.12	1.01	3.14	1.01	-1.28
Aerodynamic Missiles/Weapons	563	2.14	1.18	2.22	1.19	-3.20**
Space Systems and Subsystems	571	2.80	1.14	2.80	1.14	0
Anti-satellite Systems	565	2.88	1.19	2.84	1.22	2.00*
Defensive Radar Systems	567	2.05	1.15	2.12	1.16	-3.20**
Electronic Countermeasures	583	1.93	1.07	2.02	1.10	-3.71**
Electro-Optical Systems	582	2.31	1.10	2.35	1.10	-1.80
Preliminary Aircraft Design	553	3.08	1.04	3.07	1.06	.17
Preliminary Missile Design	555	3.04	1.07	3.02	1.10	.81
Preliminary Space Vehicle Dsgn	554	3.28	1.01	3.27	1.04	.28
Applied Aerospace Technologies	561	2.92	1.00	2.94	1.02	-.90
Directed Energy Systems	563	2.88	1.11	2.80	1.16	3.80**
Advanced Systems RDT&E	568	2.88	1.02	2.87	1.05	.40
Aerospace Technologies Research	551	3.00	1.01	2.97	1.04	1.90
Command, CTL, & Telecomm. Sys.	573	2.13	1.08	2.23	1.11	-4.13**
Integrated Warfare Sys Threat	561	2.06	1.13	2.13	1.13	-2.78*
Integrated Electomagnetic Sys.	552	2.41	1.14	2.46	1.14	-2.30*
EW&C^3 Threat Validation	560	2.58	1.20	2.63	1.21	-2.03*
Meteorological Sciences	558	3.36	.88	3.37	.87	-.74

* $p < .05$ (two-tailed test)
** $p \leq .001$ (two-tailed test)

TABLE C.1-2

Comparison of Kinds of Intelligence

Sample Means ($\bar{X}$) for Total Sample

KINDS OF INTELLIGENCE	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
INTELLIGENCE EVENT	581	2.20	1.10	2.45	1.13	-9.02**
INTELLIGENCE TARGET	563	2.60	1.17	2.71	1.15	-4.40**
BIOGRAPHICAL/ORGANIZATIONAL	554	3.02	.97	3.11	.95	-4.17**
BASIC TECHNOLOGIES	576	2.65	1.00	2.63	1.06	.82
MILITARY DOCTRINE	564	2.37	1.01	2.42	1.04	-2.53*
ENGINEERING & PRODUCTION TECHNOLOGIES	558	2.80	1.04	2.82	1.06	-1.20
WEAPON SUBSYSTEM P&C	577	1.87	1.03	1.98	1.08	-5.17**
WEAPON SYSTEM P&C	590	1.64	.94	1.78	1.02	-6.06**
INTEGRATED WARFARE SYSTEMS THREAT ASSESSMENT	575	1.90	1.06	2.01	1.08	-4.31**

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.1-3
Comparison of Reporting Format
Sample Means ($\bar{X}$) for Total Sample

		CURRENT		FUTURE		
REPORTING FORMAT	N	$\bar{X}$	SD	$\bar{X}$	SD	t
COMPREHENSIVE STUDY	507	1.81	.92	1.78	.91	1.59
WEAPON SYSTEM HANDBOOK	532	1.62	.84	1.61	.82	.45
WEAPON SYSTEM ACQUISITION THREAT PACKAGE	398	2.06	.99	2.00	1.00	2.35*
SHORT REPORT	521	1.93	.90	1.92	.92	.18
COMPUTER DATA BASE	363	2.83	1.05	2.66	1.13	5.36**
FTD ANALYST BRIEFING	417	2.38	1.06	2.26	1.05	4.33**

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.1-4

Comparison of Dissemination Methods

Sample Means ($\bar{X}$) for Total Sample

		CURRENT		FUTURE		
DISSEMINATION MEANS	N	$\bar{X}$	SD	$\bar{X}$	SD	t
COURIER OR MAIL	556	1.76	.96	1.79	.95	-1.81
ELECTRICAL TRANSMISSION	543	2.29	1.18	2.23	1.15	3.18*
BRIEFERS PRESENTATION	541	2.81	1.12	2.71	1.12	4.61**
ON-LINE COMPUTER LINK	515	3.44	1.00	3.10	1.19	9.95**
OFF-LINE COMPUTER TAPE	510	3.61	.80	3.40	.94	7.37**
OFF-LINE COMPUTER PRINTOUT	518	3.42	.92	3.23	1.02	7.31**

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.2-1

Comparison of Functional Areas
Sample Means (X) for Policy Making or
Decision Making Respondents

FUNCTIONAL AREAS	N	CURRENT		FUTURE		t
		X	SD	X	SD	
Offensive Missile Systems	54	2.52	1.27	2.41	1.20	1.18
Ballistic Missile Facilities	51	2.92	1.16	2.90	1.12	.23
Fighter Aircraft Systems	54	2.22	1.14	2.13	1.18	1.22
Bomber Aircraft Systems	54	2.20	1.16	2.07	1.11	1.99*
Aerodynamic Facilities	52	3.23	1.02	3.21	1.04	.44
Aerodynamic Missiles/Weapons	55	2.27	1.11	2.20	1.16	1.07
Space Systems and Subsystems	52	2.65	1.12	2.52	1.09	1.73
Antisatellite Systems	53	2.62	1.18	2.53	1.19	1.40
Defensive Radar Systems	55	2.07	1.17	2.05	1.15	.33
Electronic Countermeasures	56	1.95	1.09	1.93	1.02	.30
Electro-Optical Systems	54	2.33	1.08	2.24	1.05	1.40
Preliminary Aircraft Design	52	2.96	1.12	2.87	1.14	1.22
Preliminary Missile Design	52	2.92	1.12	2.85	1.20	1.00
Preliminary Space Vehicle Dsgn	51	3.12	1.07	3.02	1.09	1.22
Applied Aerospace Technologies	52	2.71	1.11	2.58	1.09	2.00*
Directed Energy Systems	54	2.61	1.07	2.43	1.09	2.47*
Advanced Systems RDT&E	53	2.77	.95	2.68	1.03	1.94
Aerospace Technologies Research	51	2.76	1.09	2.65	1.18	1.77
Command, CTL, & Telecomm. Sys.	56	1.98	1.07	2.04	1.04	-.68
Integrated Warfare Sys Threat	52	2.08	1.10	2.10	1.07	-.20
Integrated Electomagnetic Sys.	49	2.27	1.06	2.27	1.06	0
EW&C^3 Threat Validation	53	2.40	1.17	2.32	1.19	1.43
Meteorological Sciences	51	3.10	.90	3.12	.89	-.27

* $p \leq .051$ (two-tailed test)
** $p < .001$ (two-tailed test)

TABLE C.2-2

Comparison of Kinds of Intelligence Sample Means ($\bar{X}$) for Policy Making or Decision Making Respondents

KINDS OF INTELLIGENCE	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
INTELLIGENCE EVENT	53	2.47	1.19	2.64	1.16	-2.13*
INTELLIGENCE TARGET	51	2.67	1.23	2.73	1.23	- .72
BIOGRAPHICAL/ORGANIZATIONAL	50	3.18	.87	3.26	.85	-1.43
BASIC TECHNOLOGIES	54	2.65	1.07	2.61	1.11	.63
MILITARY DOCTRINE	55	2.20	.95	2.16	.98	.57
ENGINEERING & PRODUCTION TECHNOLOGIES	51	2.57	1.22	2.71	1.21	- 1.55
WEAPON SUBSYSTEM P&C	53	1.98	1.03	2.00	1.07	- .27
WEAPON SYSTEM P&C	57	1.75	.95	1.79	.96	- .53
INTEGRATED WARFARE SYSTEMS THREAT ASSESSMENT	54	1.83	.99	2.04	1.03	-1.96

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.2-3

Comparison of Reporting Format

Sample Means ($\bar{X}$) for Policy Making or

Decision Making Respondents

REPORTING FORMAT	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
COMPREHENSIVE STUDY	43	1.65	.92	1.51	.83	1.63
WEAPON SYSTEM HANDBOOK	48	1.83	.91	1.75	.84	1.43
WEAPON SYSTEM ACQUISITION THREAT PACKAGE	39	2.13	1.06	1.95	1.00	2.48*
SHORT REPORT	51	1.90	.94	1.84	.93	.90
COMPUTER DATA BASE	41	2.56	1.10	2.37	1.14	2.08*
FTD ANALYST BRIEFING	47	2.09	1.00	2.00	.96	1.00

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.2-4

Comparison of Dissemination Methods

Sample Means ($\bar{X}$) for Policy Making or

Decision Making Respondents

		CURRENT		FUTURE		
DISSEMINATION MEANS	N	$\bar{X}$	SD	$\bar{X}$	SD	t
COURIER OR MAIL	53	1.66	.96	1.72	.99	- .90
ELECTRICAL TRANSMISSION	50	2.58	1.20	2.60	1.16	- .26
BRIEFERS PRESENTATION	53	2.55	1.07	2.40	1.06	1.93
ON-LINE COMPUTER LINK	45	3.44	.79	3.24	.88	2.66*
OFF-LINE COMPUTER TAPE	45	3.33	.98	3.20	1.01	1.77
OFF-LINE COMPUTER PRINTOUT	47	3.38	.77	3.26	.82	1.95

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.3-1

Comparison of Functional Areas

Sample Means ($\bar{X}$) for Research and Development Respondents

FUNCTIONAL AREAS	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
Offensive Missile Systems	116	3.10	1.12	3.04	1.13	1.83
Ballistic Missile Facilities	113	3.40	.99	3.34	1.00	2.14*
Fighter Aircraft Systems	123	2.22	1.19	2.16	1.20	1.62
Bomber Aircraft Systems	122	2.54	1.15	2.44	1.20	2.40*
Aerodynamic Facilities	115	3.30	.94	3.26	.97	1.52
Aerodynamic Missiles/Weapons	117	2.30	1.22	2.26	1.23	1.15
Space Systems and Subsystems	117	2.79	1.13	2.71	1.18	1.99*
Antisatellite Systems	116	2.83	1.25	2.72	1.30	2.47*
Defensive Radar Systems	114	2.14	1.23	2.01	1.19	2.99*
Electronic Countermeasures	123	1.97	1.07	1.86	1.05	3.08*
Electro-Optical Systems	123	2.24	1.10	2.13	1.11	2.38*
Preliminary Aircraft Design	111	3.23	.92	3.07	1.09	3.18*
Preliminary Missile Design	107	3.03	1.03	2.91	1.16	2.63*
Preliminary Space Vehicle Dsgn	109	3.22	1.09	3.17	1.13	1.28
Applied Aerospace Technologies	113	2.26	1.01	2.23	1.02	.82
Directed Energy Systems	115	2.70	1.19	2.49	1.20	3.56**
Advanced Systems RDT&E	116	2.52	1.08	2.50	1.09	1.00
Aerospace Technologies Research	112	2.73	1.02	2.64	1.06	2.41*
Command, CTL, & Telecomm. Sys.	118	2.12	1.13	2.08	1.16	1.29
Integrated Warfare Sys Threat	119	2.08	1.08	1.99	1.09	2.27*
Integrated Electomagnetic Sys.	115	2.19	1.12	2.15	1.13	1.22
EW&C^3 Threat Validation	115	2.45	1.22	2.33	1.21	2.72*
Meteorological Sciences	113	3.24	.95	3.25	.92	- .22

* $p < .05$ (two-tailed test)

** $p < .001$ (two-tailed test)

TABLE C.3-2

Comparison of Kinds of Intelligence Sample Means ($\bar{X}$) for Research and Development Respondents

KINDS OF INTELLIGENCE	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
INTELLIGENCE EVENT	120	2.48	1.17	2.58	1.17	-1.83
INTELLIGENCE TARGET	116	3.13	1.01	3.07	1.05	1.62
BIOGRAPHICAL/ORGANIZATIONAL	112	3.41	.80	3.41	.80	0
BASIC TECHNOLOGIES	126	2.25	.95	2.12	.98	2.96*
MILITARY DOCTRINE	113	2.45	.99	2.36	1.00	2.17*
ENGINEERING & PRODUCTION TECHNOLOGIES	114	2.59	1.04	2.57	1.02	.38
WEAPON SUBSYSTEM P&C	124	1.77	1.00	1.80	1.03	- .94
WEAPON SYSTEM P&C	127	1.71	.99	1.76	1.01	-1.54
INTEGRATED WARFARE SYSTEMS THREAT ASSESSMENT	126	1.91	1.06	1.86	1.02	1.54

*p < .05 (two-tailed test)
**p < .001(two-tailed test)

TABLE C.3-3

Comparison of Reporting Format

Sample Means ($\bar{X}$) for Research

and Development Respondents

REPORTING FORMAT	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
COMPREHENSIVE STUDY	105	1.27	.90	1.68	.89	1.99*
WEAPON SYSTEM HANDBOOK	103	1.91	.90	1.86	.88	1.68
WEAPON SYSTEM ACQUISITION THREAT PACKAGE	88	1.94	.96	1.88	.98	1.35
SHORT REPORT	105	1.79	.84	1.78	.90	.18
COMPUTER DATA BASE	71	2.82	.99	2.75	1.04	1.30
FTD ANALYST BRIEFING	95	1.99	1.01	1.93	1.02	1.28

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.3-4

Comparison of Dissemination Methods

Sample Means ($\bar{X}$) for Research and

Development Respondents

		CURRENT		FUTURE		
DISSEMINATION MEANS	N	$\bar{X}$	SD	$\bar{X}$	SD	t
COURIER OR MAIL	114	2.00	1.09	1.97	1.05	.62
ELECTRICAL TRANSMISSION	108	2.78	1.18	2.65	1.20	3.10*
BRIEFERS PRESENTATION	116	2.42	1.22	2.29	1.22	2.60*
ON-LINE COMPUTER LINK	105	3.48	.95	3.19	1.11	4.37**
OFF-LINE COMPUTER TAPE	102	3.59	.76	3.45	.86	2.39*
OFF-LINE COMPUTER PRINTOUT	105	3.30	1.00	3.19	1.06	2.31*

*$p < .05$ (two-tailed test)
**$p < .001$ (two-tailed test)

TABLE C.4-1

Comparison of Functional Areas
Sample Means ($\bar{X}$) for Military Operations
Respondents

FUNCTIONAL AREAS	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
Offensive Missile Systems	47	2.85	1.30	2.84	1.24	- .63
Ballistic Missile Facilities	47	3.00	1.19	2.99	1.17	1.00
Fighter Aircraft Systems	49	2.00	1.21	2.33	1.20	-3.06*
Bomber Aircraft Systems	48	2.29	1.17	2.58	1.15	-2.72*
Aerodynamic Facilities	45	3.22	1.60	3.31	.95	-1.16
Aerodynamic Missiles/Weapons	48	2.25	1.23	2.54	1.24	-3.47**
Space Systems and Subsystems	49	2.98	1.22	3.04	1.19	-1.00
Antisatellite Systems	48	2.98	1.25	2.90	1.26	1.07
Defensive Radar Systems	49	1.94	1.13	2.18	1.11	-3.06*
Electronic Countermeasures	50	1.80	1.11	2.12	1.22	-3.06*
Electro-Optical Systems	50	2.42	1.20	2.62	1.14	-2.47*
Preliminary Aircraft Design	48	3.60	.77	3.67	.66	- .72
Preliminary Missile Design	49	3.43	.87	3.53	.77	-1.40
Preliminary Space Vehicle Dsgn	48	3.58	.82	3.60	.82	- .27
Applied Aerospace Technologies	48	3.21	1.07	3.40	.98	-2.28*
Directed Energy Systems	48	3.44	.85	3.44	.92	0
Advanced Systems RDT&E	38	3.38	.91	3.40	.96	- .33
Aerospace Technologies Research	48	3.56	.71	3.50	.77	1.14
Command, CTL, & Telecomm. Sys.	50	2.14	1.07	2.32	1.12	-2.64*
Integrated Warfare Sys Threat	49	2.02	1.13	2.14	1.16	-1.77
Integrated Electomagnetic Sys.	49	2.49	1.19	2.57	1.19	-1.66
EW&C[3] Threat Validation	50	2.62	1.24	2.80	1.29	-2.64*
Meteorological Sciences	52	3.21	1.07	3.33	.96	-1.35

* $p < .05$ (two-tailed test)
** $p < .001$ (two-tailed test)

TABLE C.4-2

Comparison of Kinds of Intelligence

Sample Means ($\bar{X}$) for Military Operations Respondents

KINDS OF INTELLIGENCE	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
INTELLIGENCE EVENT	52	2.67	1.17	2.87	1.14	-2.64*
INTELLIGENCE TARGET	49	2.84	1.28	3.06	1.11	-2.86*
BIOGRAPHICAL/ORGANIZATIONAL	47	3.11	.98	3.28	.93	-1.83
BASIC TECHNOLOGIES	49	3.10	.92	3.20	.89	-2.34*
MILITARY DOCTRINE	49	2.53	1.12	2.67	1.11	-2.45*
ENGINEERING & PRODUCTION TECHNOLOGIES	49	3.20	.89	3.31	.80	-1.53
WEAPON SUBSYSTEM P&C	51	2.04	1.06	2.25	1.09	-2.85*
WEAPON SYSTEM P&C	51	1.76	.99	2.02	1.10	-3.06*
INTEGRATED WARFARE SYSTEMS THREAT ASSESSMENT	50	1.92	1.05	2.14	1.09	-2.67*

*p < .05 (two-tailed test)
**p < .001(two-tailed test)

TABLE C.4-3

Comparison of Reporting Format

Sample Means ($\bar{X}$) for Military

Operations Respondents

REPORTING FORMAT	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
COMPREHENSIVE STUDY	42	2.19	1.04	2.33	1.10	-1.78
WEAPON SYSTEM HANDBOOK	47	1.83	.99	1.81	1.04	.37
WEAPON SYSTEM ACQUISITION THREAT PACKAGE	36	2.22	1.10	2.28	1.11	- .57
SHORT REPORT	47	2.28	.93	2.40	.99	-1.29
COMPUTER DATA BASE	25	3.28	1.02	3.20	1.19	.46
FTD ANALYST BRIEFING	33	2.91	1.10	2.76	1.12	2.39*

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.4-4

Comparison of Dissemination Methods

Sample Means ($\bar{X}$) for Military

Operations Respondents

		CURRENT		FUTURE		
DISSEMINATION MEANS	N	$\bar{X}$	SD	$\bar{X}$	SD	t
COURIER OR MAIL	50	1.82	.94	1.88	.98	-1.35
ELECTRICAL TRANSMISSION	47	2.36	1.19	2.28	1.19	1.43
BRIEFERS PRESENTATION	47	3.15	.96	3.19	.95	-1.43
ON-LINE COMPUTER LINK	44	3.43	1.04	3.16	1.22	2.29*
OFF-LINE COMPUTER TAPE	42	3.52	.94	3.33	1.03	2.44*
OFF-LINE COMPUTER PRINTOUT	45	3.44	1.04	3.27	1.07	2.43*

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.5-1

Comparison of Functional Areas

Sample Means ($\bar{X}$) for Intelligence Respondents

FUNCTIONAL AREAS	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
Offensive Missile Systems	326	2.69	1.17	2.72	1.17	-1.19
Ballistic Missile Facilities	322	2.94	1.03	2.95	1.06	- .22
Fighter Aircraft Systems	327	1.88	1.14	2.03	1.16	-4.17**
Bomber Aircraft Systems	329	2.09	1.12	2.23	1.14	-4.43**
Aerodynamic Facilities	315	2.99	1.03	3.03	1.02	-1.70
Aerodynamic Missiles/Weapons	319	2.03	1.15	2.14	1.16	-3.28*
Space Systems and Subsystems	327	2.79	1.14	2.83	1.12	-1.48
Antisatellite Systems	324	2.92	1.16	2.93	1.17	- .25
Defensive Radar Systems	326	2.00	1.11	2.15	1.15	-4.33*
Electronic Countermeasures	329	1.91	1.05	2.06	1.10	-4.47**
Electro-Optical Systems	329	2.31	1.09	2.40	1.09	-3.14*
Preliminary Aircraft Design	319	2.93	1.07	2.98	1.07	-2.03*
Preliminary Missile Design	323	2.97	1.08	2.98	1.09	- .50
Preliminary Space Vehicle Dsgn	322	3.25	1.01	3.28	1.02	-1.03
Applied Aerospace Technologies	324	2.96	.95	2.99	.97	-1.61
Directed Energy Systems	320	2.91	1.09	2.87	1.13	1.36
Advanced Systems RDT&E	326	2.92	.99	2.93	1.02	- .61
Aerospace Technologies Research	315	3.04	.99	3.04	1.00	0
Command, CTL, & Telecomm. Sys.	325	2.16	1.08	2.30	1.10	-4.35*
Integrated Warfare Sys Threat	318	2.02	1.14	2.15	1.15	-3.84*
Integrated Electomagnetic Sys.	315	2.47	1.14	2.56	1.13	-2.80*
EW&C^3 Threat Validation	317	2.66	1.19	2.76	1.18	-3.13*
Meteorological Sciences	317	3.46	.80	3.46	.80	0

* $p < .05$ (two-tailed test)

** $p \leq .001$ (two-tailed test)

TABLE C.S-2

Comparison of Kinds of Intelligence

Sample Means ($\bar{X}$) for Intelligence Respondents

KINDS OF INTELLIGENCE	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
INTELLIGENCE EVENT	330	1.95	.97	2.28	1.08	-8.30**
INTELLIGENCE TARGET	323	2.33	1.13	2.49	1.14	-4.48**
BIOGRAPHICAL/ORGANIZATIONAL	321	2.83	.99	2.95	.99	-3.80**
BASIC TECHNOLOGIES	323	2.72	.98	2.74	1.04	- .59
MILITARY DOCTRINE	323	2.32	1.00	2.42	1.04	-3.41**
ENGINEERING & PRODUCTION TECHNOLOGIES	321	2.81	1.00	2.82	1.05	- .40
WEAPON SUBSYSTEM P&C	323	1.85	1.03	1.98	1.08	-4.35**
WEAPON SYSTEM P&C	328	1.54	.90	1.72	1.01	-5.16**
INTEGRATED WARFARE SYSTEMS THREAT ASSESSMENT	321	1.87	1.06	2.00	1.09	-4.01**

*$p \leq .05$ (two-tailed test)
**$p \leq .001$ (two-tailed test)

TABLE C.5-3

Comparison of Reporting Format

Sample Means ($\bar{X}$) for Intelligence Respondents

REPORTING FORMAT	N	CURRENT $\bar{X}$	CURRENT SD	FUTURE $\bar{X}$	FUTURE SD	t
COMPREHENSIVE STUDY	300	1.79	.90	1.78	.88	.58
WEAPON SYSTEM HANDBOOK	313	1.47	.75	1.48	.73	- .42
WEAPON SYSTEM ACQUISITION THREAT PACKAGE	217	2.06	.96	2.00	.97	1.70
SHORT REPORT	298	1.91	.88	1.89	.87	.53
COMPUTER DATA BASE	212	2.84	1.05	2.62	1.14	5.16**
FTD ANALYST BRIEFING	220	2.53	1.03	2.39	1.02	3.58**

*p < .05 (two-tailed test)
**p < .001 (two-tailed test)

TABLE C.5-4

Comparison of Dissemination Methods

Sample Means ($\bar{X}$) for Intelligence Respondents

		CURRENT		FUTURE		
DISSEMINATION MEANS	N	$\bar{X}$	SD	$\bar{X}$	SD	t
COURIER OR MAIL	316	1.67	.86	1.71	.87	-2.43*
ELECTRICAL TRANSMISSION	315	2.05	1.10	1.99	1.05	2.31*
BRIEFERS PRESENTATION	302	2.94	1.06	2.85	1.06	3.40**
ON-LINE COMPUTER LINK	299	3.42	1.04	3.01	1.25	8.22**
OFF-LINE COMPUTER TAPE	298	3.65	.77	3.41	.94	6.21**
OFF-LINE COMPUTER PRINTOUT	299	3.44	.90	3.23	1.02	5.98**

*$p < .05$ (two-tailed test)
**$p \leq .001$ (two-tailed test)

Vita

Jesse F. Jenkins, Jr. was born in San Antonio, Texas on January 12, 1948. He graduated from Highlands High School in San Antonio in 1966 and from the University of Texas at Austin in 1970 with a Bachelor's Degree in Mathematics.

After attending Officer Training School, he went to Mather Air Force Base, California for Undergraduate Navigator Training and received his wings on 23 August 1972. His first operational assignment was in the C-130 aircraft at Pope Air Force Base, North Carolina. During his tour there, he upgraded to Instructor Navigator and Squadron Standardization and Evaluation Officer. One of his many assignments while at Pope Air Force Base was in support of the return of the POW's and their flight out of Hanoi. He was later transferred to Eglin AFB as a Fire Control Officer on the AC-130 in October 1975. The summer of 1976 he attended Squadron Officers School at Montgomery, Alabama. He became Wing Scheduling Officer for the gunships in 1977 and was awarded a Regular Air Force commission. Captain Jenkins was then assigned to the Air Force Institute of Technology in June, 1978.

Captain Jenkins is married to the former Patsy Louise Davis of San Antonio, Texas. They have one daughter, Tracy Dawn.

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