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AEROSPACE MANPOWER TRANSFER TO SMALL BUSINESS ENTERPRISES

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1.0 INTRODUCTION

Many studies have been conducted over the recent past by both governmental and private groups on the problem of the unemployed engineers, scientists, and other highly skilled individuals displaced by the reduction in Federal Government aerospace budgets. The news media, public figures, professional organizations, all have lamented the tragic waste of a national resource inherent in the unemployment and underemployment of these individuals. The Federal Government, largely through the Department of Labor MDTA channel, has spent millions of dollars in programs designed to eliminate or alleviate this problem.

This extensive Federal effort, and many other related activities, has met with what can be termed as modest success, at best. Yet, the investment in dollars, in paid and volunteer staff labor, facilities, and other resources, on a per placement basis, has greatly exceeded that of even the most generous of Department of Labor programs. It was a review of these factors, coupled with an in-depth experience and knowledge of the small business community and its manpower needs, that prompted the consideration of this study.

It was postulated that small businesses, which have particularly demanding requirements for creative individuals who are well trained, should represent a logical, and perhaps relatively unexploited, labor market for the unemployed ex-aerospace professional. It was further postulated that perhaps the effective way to accomplish true transfer of technology from the aerospace effort into the private sector is through the migration of people rather than products or hardware alone. The Technology Utilization Office of the National Aeronautics and Space Administration thus decided in July of 1971 to fund a study to examine the feasibility of a program designed to effect transfer of aerospace professional

people from the ranks of the unemployed into gainful employment in the small business community. This effort was also coordinated with, and received the endorsement of, the Small Business Administration and the Manpower Administration of the United States Department of Labor.

1.2 Study Background and Purpose

The research and study effort was structured with the following primary objectives:

a. To investigate the feasibility of a program to transfer and apply aerospace technology among small businesses.

b. To identify small businesses which need or are in a position to utilize aerospace technology and those corresponding ex-aerospace professionals whose expertise meets those requirements.

c. To develop a program methodology for matching ex-aerospace professionals and small businesses according to their mutual needs.

The conduct of the study followed the normal path of a research design, review of existing data, collection of new information (largely through extensive personal interviewing), and an in-depth analysis of all resulting data. The study was carried out within those areas of critical aerospace unemployment within the State of California. These areas were the counties of San Diego, Orange, Los Angeles, and Santa Clara.

During the study, nearly 250 individuals were carefully interviewed and their counsel sought. These individuals were from a diverse range of experience and occupational backgrounds, but, in general, were associated in some manner with the small business community and/or the unemployment problem of the ex-aerospace professional. A listing and categorization of these individuals is shown on page 37 of the report. In addition to

this effort, several specific "case study" activities were undertaken in order to further verify certain conclusions. These "case study" efforts involved assisting in a number of job placements, participation in certain civic group activities, and aiding in the initial investigation of several potential technology transfers.

The inclusion in this study effort of the wide variety of individuals, agencies, organizations, and businesses has resulted in a somewhat unique overview of the multifaceted questions of technology transfer, the unemployed ex-aerospace professional, and the interrelationships of these entities with the nonaerospace business community. Thus, also included in this report are certain conclusions and the supportive research data concerning these broader questions.

1.3 Study Results and Major Findings

As a result of this program, two basic methodologies have been developed for gaining entry into the potential resource of jobs in the small business community. One methodology involves the matching of ex-aerospace professionals and small companies in accordance with their mutual needs. Inherent in this methodology is a training and indoctrination program aimed at familiarizing the ex-aerospace professional with the small company environment and providing him with the basic business orientation necessary for successful employment in this environment. Further, a program of "follow-up" counseling has been defined, which will greatly assist both the small business manager and ex-aerospace professional in satisfactorily achieving the mutual understanding necessary for a long-term relationship.

The second methodology incorporates efforts to inform and arouse interest among the nonaerospace business community toward participation in affirmative action programs that will serve the

mutual self-interests of the individuals, companies, and communities involved. This program would bring to bear the resources of the Technology Utilization effort and those organizations, both public and private, which can best serve this activity. The two program methodologies are further discussed in sections 7.0 and 8.0 of the report.

The major findings of the study are the following:

a. Nearly all present ongoing employment assistance effort is oriented toward the location of jobs rather than the creation of jobs.

b. The small business community clearly represents a potential source of employment for ex-aerospace professionals.

c. The location of job openings within the small business community requires unusual effort and skill to identify. Very little effort is presently being expended by assisting agencies or the unemployed aerospace professionals themselves toward gaining entry into this potential source of employment.

d. The qualifications of the aerospace professional for employment within the small business are strongly evidenced by the number of companies founded by such individuals.

e. A positive and receptive attitude prevails within the small business community toward the aerospace professional and the skills represented.

f. For long-term success, a program for the placement or transfer of the ex-aerospace professional within the small company should be accompanied with careful counseling, training, and indoctrination. In most cases, this counseling effort should be provided to both the small businessman and the ex-aerospace professional.

g. The volunteer and self-help organizations, such as "Experience Unlimited" and "Forty Plus," in conjunction with the Engineers, Scientists, and Technicians Program (EST Program), are providing reasonably

effective assistance for employment search within technical or aerospace related industry. Due to the scarcity of jobs in this area, significant placement has been difficult, however, this program has allowed the public Employment Service to develop certain counseling and registration capability for the professional-level job seeker.

h. Existing Department of Labor facilities, through the State-operated Employment Services, can be used to form a basic organizational structure for providing the necessary counseling, training, and indoctrination portion of a job search and matching program involving small business and the ex-aerospace professionals.

i. There is a pattern of attitudes on the part of the ex-aerospace professional of doubt and skepticism in undertaking a significant career change and functioning successfully in a small business environment where products or services are totally unrelated to the professional's past experience. This reluctance seems based on the feelings that a significant investment in education and experience might not be optimally exploited, and that the same expertise and capability is sorely needed by society and will be sought again in the near future. Thus, the job opportunities of most interest to them are technically oriented and have elements of positive contribution to society. Thus, any program of re-employment assistance for the ex-aerospace professional must recognize the need for a strong "intrinsic reward" component for the job to hold long-term interest.

j. A significant group (10 to 15 percent) of long-term unemployed ex-aerospace professionals exists which will require re-employment assistance beyond that provided by either existing or proposed programs, agencies, or other assisting organizations. These individuals appear to lack the skills, capability, attitude, or motivation to find gainful re-employment in a competitive job market.

k. Technology transfer is largely effected through the migration of aerospace people into the public sector business community.

This report describes the conduct of the feasibility study. Also, it relates the results of the research to the conclusions derived. Section 2.0 of the report describes the program conduct; section 3.0 provides an overview of NASA's Technology Transfer effort; and section 4.0 describes the current employment assistance activity. The research effort and results, as conducted relative to the manpower portion of the study, are described and presented in section 5.0. Section 6.0 of the report presents a similar description of the business portion of the investigation. The two methodologies for instigating Manpower Transfer are then presented in sections 7.0 and 8.0.

2.0 THE PROGRAM PLAN

The work under this contract consisted of an investigation of the feasibility of a program to transfer and apply aerospace technology among small businesses and the development and planning of such a program, comprised four major categories of effort:

a. Investigation and identification of small businesses, which need, or are in a position to utilize, aerospace technology.

b. Identification of a group of aerospace professionals whose individual expertise meets the needs of selected small businesses.

c. Coordination with the Department of Labor and cognizant Employment Service.

d. The development of the specific program mechanics, methods, and training to be used in the matching process.

For the purposes of this effort, aerospace technology was defined to include not only the engineering and scientific expertise, but also the administration and "intangible" disciplines, such as contracts, manufacturing organization and processes, personnel, sales and advertising, etc. Also, the small business was defined as that enterprise which has not reached a financial size to afford having a specific department or group within its organization structure that is devoted exclusively to personnel activity. It is this size company that often has a need for organizational strength, but does not take the step to fulfill that need. Thus, the company in this position is generally more open to the suggestion of obtaining assistance in the definition and fulfillment of manpower needs. Those companies with the expertise of a personnel department have generally reached the stage where they prefer to develop their own solutions to manpower and technological needs.

In order to accomplish the program goals, the effort was segregated into four principal tasks:

Task I . . . . . Determination of Research Investigation
Task II . . . . . Field Investigation and Methodology
Task III . . . . . Data Analysis and Interpretation
Task IV. . . . . Phase II Program Plan Development

Each of these principal tasks is briefly discussed below.

2.1 Task I - Determination of Research Investigation

The physical area of research was predetermined contractually to include the most critical aerospace unemployment centers of California. Thus, the urban communities of Santa Clara, Los Angeles, Orange, and San Diego Counties were chosen for the field investigation sites. The initial phase of the program included meetings with responsible personnel in the Department of Labor, California Department of Human Resources Development (HRD, Employment Services), the Small Business Administration, and the local NASA Technology Utilization officers. As a result of these discussions, the research investigation portion of the program evolved. This research area entailed the definition of a field investigation effort that would produce, as a minimum, the following data:

a. The feasibility of obtaining potential participating small businesses in a program of manpower transfer and technology utilization.

b. The methodology for efficient contact of small business.

c. The result expectations of contact with small business.

d. A definition of the profile of the available professional manpower group.

e. The development of a methodology for obtaining candidates for small business opportunities.

f. A determination of the result expectations of the contact methodology.

g. A determination of the activity and training required to cause manpower transfer to small businesses.

h. A knowledge of existing manpower programs and Employment Service facilities in order to optimize usage of such programs and facilities.

Thus, the field investigation program was divided into two major categories of research. One category of effort was the selection, contact, and interview of the managers of a large number of small businesses. The second category of activity was the contact and interviewing of members of the subject manpower group and various individuals "associated" in some manner with this group.

The criteria were defined for the small businesses to be contacted and for the particular manpower group in question. The initial criteria for the company selection were purposefully kept simple. For ease of contact, a primary criterion was established that the basic information concerning the company be available in easily obtainable literature, such as the industrial registers, the Chamber of Commerce publications, etc. Additional criteria were established that the company should have between 10 and 50 employees and not be a family-owned and operated organization. Thus, it was felt that the company could be easily contacted, be of a size commensurate with the program intents, and have a degree of flexibility not common to family-owned and operated businesses. The initial group of companies was selected from the following publications:

Orange County

Orange County Chamber of Commerce Industrial Directory

Chamber of Commerce Business Directory of Costa Mesa

Los Angeles County

Los Angeles Area Chamber of Commerce Business Directory and Buyers Guide

California Manufacturers Register

Santa Clara County

California Manufacturers Register

San Diego County

Chamber of Commerce Business Directory of San Diego

Following the contact with the initial selected companies, the selection criteria were somewhat relaxed in order to include the managers of several larger firms. It was felt that this would serve to verify the assumptions upon which the original selection criteria were based. Also, a number of interviews with company managers evolved from the normal conduct of the program without direct solicitation. Hence, a broad profile of company sizes and diverse industries was included.

It was determined that the group of ex-aerospace professionals, whose individual expertise would potentially meet the needs of the small business, would be selected from those that had become recently unemployed from aerospace or defense companies. It was further defined that individuals within this group must have been separated from their aerospace or defense jobs through a lack of work and not from voluntary, or with cause, separation. Further, the "professional" category included all salaried employees, not only engineers and scientists but also the "intangible" disciplines, such as contracts, administration, manufacturing, personnel, etc.

Additional to the members of the subject professional group of ex-aerospace employees, contact and interviews were planned with various individuals "associated" in some manner with this subject professional ex-aerospace group. This included primarily personnel of the Employment Services, Department of Labor, Small Business

Administration, private employment agencies, professional societies, placement counselors, educational institutions, civic organizations, former employers, and certain private consulting contractors. Thus, an initial list of the personnel prominent in these organizations was compiled for contact. The initial list was expanded during the conduct of the program to include additional interested individuals and organizations.

2.2 Task II - Field Investigation and Methodology

The field investigation, or research conduct, involved essentially two relatively distinct phases of activities. The first phase involved a series of carefully planned interviews and consultations with small company managers, ex-aerospace professionals, and individuals associated with the ex-aerospace professional employment problem. These interviews were conducted as unstructured discussions, since the business managers and "associated" individuals represented quite diverse backgrounds, experience, and interests relative to the topic under consideration. Since certain commonality existed between the various small business managers, a data collection instrument was used to provide a general guideline during those discussions. In addition, introduction to the business managers was first initiated by letter, later followed by a telephone conversation. A copy of the introductory letter and the data collection instrument is given on pages 97 through 99 of the Appendix. Certain of the business managers were personally visited, following the telephone interview, to obtain a more in-depth evaluation of the interviewee comments. The businesses selected for the personal visitation were those where the managers demonstrated interest, background, and ability to contribute significantly to the research results.

The company managers proved generally cooperative and interested. Considerable conversation was required, however, to

thoroughly communicate the full ramifications of the program. Thus, much care was exercised to assure that the subject program was completely understood prior to the solicitation of opinions and recommendations.

The widely diverse backgrounds and occupations of the individuals "associated" with the ex-aerospace professional employment problem precluded the usefulness of a rote questionnaire. Each of these individuals was interviewed relative to his particular subject area of expertise. Thus, certain selected questions were raised with the aim of eliciting commentary, opinion, and ideas relative to the general topic of discussion.

The interviews of the businessmen (company managers), ex-aerospace professionals, and the group of "associated" individuals were conducted by several senior members of the Ultrasystems professional staff. The interviews were organized such that the several staff members each interviewed a selection of interviewees with diverse circumstances and backgrounds. Thus, the data from the interviews that was open to interpretation was cross-correlated with the interpretations from the other staff members to assure a minimization of personal bias. Further, the interviewing Ultrasystems staff members were chosen such that diverse backgrounds and professional disciplines were represented. No significant differences were noted in interpretation of the data results from the interviews.

An additional area of investigation evolved as the program developed. This area was the activity and status of technology transfer from the aerospace and defense industry to public sector use as presently structured and supported by the NASA Office of Technology Utilization. The suggestion of the pertinency and applicability of this activity to a Phase II Program became clearly evident as the field data was collected and interpreted.

The field investigation included in-depth interviews with 247 individuals. Discussions of the subject program were held two or more times with over 30 of the interviewees. The organizations represented, and the number of individuals interviewed within each organization, are listed as follows:

United States Department of Labor	5
Small Business Administration	13
Experience Unlimited	14
California Department of Human Resources (Employment Service)	18
Commercial Employment Services	7
Other (Educational, Charitable, Civic, Political, etc.)	28
Business Managers	171

2.3 Task III - Data Analysis and Interpretation

Certain cursory data analysis occurred virtually simultaneously with the data collection. However, no formal interpretation was made until sufficient data had been gathered to provide meaningful conclusions. Thus, approximately half of the interviews were conducted prior to any specific analysis activity.

The initial data analysis resulted in three fairly distinct categories of information. A profile (age, education, salary level, etc.) of the ex-aerospace professional was developed; the effectiveness of existing job-seeking organizations and the methods was determined; and the attitudes and opinions of the independent businessman toward the question of the aerospace program and its various ramifications obtained.

The formal data analysis was performed largely through construction of a matrix structure of pertinent questions and resulting responses. Since considerable of the data was in the form of commentary, it was necessary to interpret and analyze these

discussions very carefully. In a number of cases where doubt existed in interpretation, an additional interview was held for clarification. Many surveys have been conducted in determination of the "profile" of the ex-aerospace professional. Consequently, other than the verification that there was general agreement between our findings and these surveys, little analysis effort was expended in this regard.

Following the analysis of the first data collected, the interviewing techniques were altered somewhat to obtain more specific information. Also, the interviewee list was broadened to include organizations and individuals whose contributions were then deemed pertinent. For example, the activities of several programs and organizations, such as the Skills Conversion Program, Technology Utilization's efforts, Quest, ATAC, etc. were added to the list as necessary data points to be covered.

2.4 Task IV - Phase II Program Plan Development

It became clear, as the data began to demonstrate patterns of activity and the ensuing results, that two distinct areas of void existed in the efforts of assistance to the unemployed ex-aerospace professional. First, a potental job market among the nonaerospace firms does exist and is largely being ignored. Secondly, virtually all effort presently under way is oriented toward the location of existing jobs rather than the more fundamental need, the creation of jobs.

The Phase II Program Plan Development became, in actuality, the development of two potential plans. Each plan was oriented toward a particular area of need. Thus, a program of job location and placement of the ex-aerospace professional in the nonaerospace company was developed. In addition, a program

of job creation was defined entailing the combined use of the reservoir of potential products and technology emanating from the aerospace industry, the pool of existent related professional manpower, and the unused financial resources uncovered among the nonaerospace companies. Each of these programs, and the supporting data is presented later in the report.

3.0 TECHNOLOGY TRANSFER

Technology transfer normally bears the connotation of a transfer of engineering development, scientific knowledge, or special manufacturing processes. However, contributions to the success of a company in realizing its full potential can very well be due to the intangible disciplines, such as finance, contracts administration, systems and procedures, sales and marketing, personnel, and so on.

For example, the use of PERT control systems, used heavily in the aerospace industry, is commonplace in many commercial industries. Also, the ability of the aerospace industry to handle complex contractual situations involving a myriad of technical specifications, schedule commitments, and financial ramifications is well known. There are many examples of aerospace expertise in these intangible disciplines that are valuable to other business, industry, and pure scientific achievements in the "civilian" realm. Techniques for business conduct have also been refined and transferred from the military and aerospace industries.

3.1 Development of Technology Transfer

The Technology Utilization Program of the National Aeronautics and Space Administration is designed to disseminate information on new knowledge resulting from NASA aerospace activities. This information is disseminated to the business, scientific, and engineering communities, as well as other government agencies and private organizations.

In 1962, NASA undertook a program to provide comprehensive bibliographic services covering the world's aerospace literature. The NASA Information Bank is maintained by the NASA Scientific and Technical Information Facility at College Park, Maryland. The facility compiles report literature in a publication entitled, *Scientific and Technical Aerospace Reports*. NASA also supports a publication

put out by the American Institute of Aeronautics and Astronautics, *The International Aerospace Abstracts*. Following a policy of decentralization, NASA has made the data bank available on computer tapes to most NASA research centers, a number of major NASA contractors, and several university contractors participating in NASA's Technology Utilization Program. Update tapes are sent either on a biweekly or monthly basis, depending upon necessity. The University of Southern California and NASA have established WESRAC, Western Research Applications Center. WESRAC is a nonprofit organization funded by NASA. It coordinates the massive technology contained in the NASA Information Bank with the needs of industry by using the resources of the University.

The NASA Office of Technology Utilization issues special publications and Tech Briefs to inform potential users outside the aerospace industry about findings and innovations reported by NASA research centers, contractors, and subcontractors. These special publications explain new concepts, designs, techniques, materials, and equipment. Some are surveys of broad fields. Some are detailed accounts of especially significant developments. The Tech Briefs are terse announcements of new solutions to old problems, or novel solutions to unusual problems. These briefs also emphasize new ideas and data which reviewers believe are likely to be useful in many different ways. They are addressed to engineers, scientists, managers, and technicians.

In the August 1917 issue of *Scientific Monthly*, Mr. William F. Durand made the statement, "May we not anticipate one of the triumphs of the twentieth century will be the making of some effective progress toward the establishment and development of a science of the use of science." This new "science of the use of science" is perhaps the most significant contribution of the aerospace and defense industries to the commercial industry and the various private and governmental organizations which serve the nation.

The effective interfacing of the administrative and intangible functions of the business with the pure technological aspects has clearly been one of the outstanding accomplishments of the aerospace and defense industries. Today, these concepts are used in some manner and degree by nearly all industry. For example, PERT analysis is common in the building trades. Management Information Systems for retail inventory control are widespread in their use, and the transportation associated with many industries has become much more efficient as a result of systems analysis. Thus, not only has the pure development of technology from aerospace enhanced immeasurably the goods and services available to the consumer, but the manner in which these products are manufactured, sold, and distributed has also in many ways been grossly affected by techniques derived from the aerospace and defense environment.

During the past decade, literally thousands of new companies, and several new industries, were born as a result of organizational efforts by people from the aerospace industry. To mention only a few, such industries as the semi-conductor, fiberglass plastic, computer peripheral, electronic office machines, medical electronics, automatic controlled machine tools, and marine electronics have been greatly accelerated in their development by the ex-aerospace entrepreneurs. Many of these have grown and thrived to become leaders in the world of commercial industry.

It is of strong interest to note that of the 171 small business managers and presidents interviewed (see section 6.0), 19 were ex-aerospace people. Seven of these managers had founded the company originally. Also, of the 171 companies, 25 had ex-aerospace professional personnel on their staff. These numbers are particularly profound, since, in general, the selection of the companies to be contacted was biased away from the highly technical type of business. A conclusion might be drawn from this that in

those geographical areas where the aerospace and defense industry has been prominent, a large percentage of the small companies are founded and operated by ex-aerospace personnel. This conclusion is not unexpected.

From the foregoing, there are two basic conclusions that can clearly be derived. First, the ex-aerospace employee has proven to be imaginative, creative, and eminently qualified to participate in the world of commercial business. Second, the transfer of technology, in the broad professional meaning, is largely due to the migration of people from the aerospace and defense industry into the realm of commercial business and other institutions.

4.0 CURRENT EMPLOYMENT ASSISTANCE ACTIVITY

The recent reduction of aerospace and defense budgets by the Federal Government has resulted in a unique circumstance among the personnel of these industries. Many of these people are underemployed or unemployed, with little prospect of returning to their former occupations. Consequently, some of these personnel have entered, and are entering, other industry. Many have accepted jobs of gross underemployment.

A number of existing ongoing programs are oriented toward this group to assist them in gaining employment demanding use of their skills. In general, the principal criterion motivating these efforts is employment rather than transfer of skills or technology. Several of these major assistance activities are briefly described:

4.1 The Special Manpower Program

This program resulted from $25,000,000 that was set aside from the Department of Labor unapportioned MDTA (Manpower Development and Training Act) funds. California was allocated $9,000,000 of these funds. These funds were used to provide special classes and training called the New-Age Schools, consultant fees to certain unemployed personnel who assisted in administration of certain of these activities, allotments for experimental programs, and to compensate employers for a certain portion of the initial unproductive time of manpower employed in jobs where a difference between background and experience and the job requirements existed. This compensation could be as much as 50 percent of the employee's salary for the first 26 weeks of employment.

Certain of the funds from this program were allocated to special workshop and training programs for ex-aerospace and defense industry employees. Classes and seminars were held in subjects

such as motivational training, job-seeking workshops, technical sales techniques, ecology engineering, small business management, marine engineering, etc. The results of these training efforts are very difficult to evaluate without specifically contacting many of the participants in these courses.

Discussion with several of the instructors of various of these courses indicates that many of the participants were able to find employment somewhat related to the course extent. However, three of the instructors interviewed expressed considerable doubt that many of the participating students found employment that was equal to the skills represented.

The results of the other activities performed under the auspices of the Special Manpower Program are equally difficult to determine without very specific research. In general, those individuals associated with HRD and the instructors and administrators of the training programs were nearly unanimous in their opinion that the Special Manpower Program had, in fact, allowed a number of ex-aerospace and defense industry personnel to find gainful employment in other industry. Thus, it is safe to state that this program served the interest of both re-employment and technology transfer.

Most of the funds for this program have been spent or allocated, and those funds remaining, if any, have been returned to the Department of Labor.

4.2 The Engineers, Scientists and Technicians (EST) Program

The EST Program is presently allotted $42,000,000 of the Department of Labor funds from fiscal years 1971 and 1972. This program provides funds for job interview travel costs, certain relocation costs, reimbursement in the event of re-employment beyond commuting distance, and salary reimbursement of the employer, up to one-third of the salary for 20 weeks, but limited to $2,000 maximum

per employee. Certain of the funds are allocated to the various Employment Service offices for administrative cost programs. The allocation is based on the number of engineers, scientists, and technicians reportedly unemployed within the jurisdiction of that particular office. The guidelines of this program are much less flexible than the Special Manpower Program. It is restricted to assisting the purely technical personnel from the aerospace and defense industries. Hence, it cannot be used to assist the administrative and intangible professionals from that industry. A copy of the fact sheet published by HRD and recent EST statistics are shown on pages 100 through 105 of the Appendix.

Each of the HRD offices in the critical aerospace unemployment areas in California has established organizations specifically to administer the EST Program. These organizations vary from as few as three people to as many as nine. The organizations are composed of ex-aerospace people who are under employment contracts to HRD and also regular full-time HRD employees who have been assigned to this specific group for the duration of the program. Both male and female counselors are used.

The activities of the EST Program administrating groups are centered mainly in evaluating the eligibility of an applicant, counseling, conducting seminars to explain the program to the applicants, handling the paperwork associated with an applicant who desires reimbursement for travel expenses or relocation; or an employer who desires to enter into a contract for salary reimbursement. Such contracts are fixed-price and with the HRD. The amount of contractual administration is minimal, and very little is required on the part of the employer to establish this agreement.

It is estimated that in California there are approximately 15,000 unemployed or underemployed aerospace professionals who would qualify for the EST Program. There are approximately 8,000 actually registered for this program. Of this 8,000, approximately 6,000

are in Southern California and 2,000 in Santa Clara County in Northern California. As of 3 March 1972, in Southern California there were a total of 5,548 registered and qualified in the EST Program. A total of approximately 9,000 engineers, scientists, and technicians have registered in the California program since its inception last April. Of this 9,000, 1,316 were placed in jobs by the program, and 2,651 found jobs on their own.

Thus far, in Southern California there have been 392 on-the-job training contracts approved and 1,666 job-search grants authorized. The total direct funds expended to date in California are approximately $1.5 million. Evaluation of the impact of this program relative to the registrants who have returned to work is very difficult, since the information fed back from this group is not very thorough. One of the outstanding contributions of this program appears to be the fact that specific organizations are established within the HRD offices to handle the displaced aerospace employee. This, in itself, offers a great deal of encouragement and assistance to the job-seeking individual.

The total $42,000,000 funding for the EST Program is broken into the following segments: $25,000,000 for special job training, institutional training, OJT (on-the-job training) binations; $5,000,000 for job-search grants; $10,000,000 for relocation assistance; and $2,000,000 for skills conversion studies. California has been budgeted $15,000,000 of the $42,000,000. Of this $15,000,000, 5.63 million dollars has been allocated. This 5.63 million dollars is divided as follows: 2.6 million dollars for job training, 0.8 million dollars for institutional training, and 2.3 million dollars for relocation and search assistance.

The principal effort of the EST Program is re-employment of the engineers, scientists, and technicians. The re-employment

emphasis is toward occupations that are very similar to their previous positions. The on-the-job training grants, however, do allow an employer to be compensated for a certain amount of reorientation and retraining of the employee. Thus, there is a certain amount of technology transfer occurring as a result of this effort.

4.3 The Skills Conversion Study

The Skills Conversion Study is the result of a contract between the National Society of Professional Engineers and the Department of Labor. The objectives of the program are to determine in the future one to three-year period the time and place that significant job positions in certain target industrial fields may become available for which unemployed or underemployed aerospace, defense, scientific, and technical personnel may become eligible. Also, the program is to determine the skill requirements of these positions and to compare them with the skills available in the pool of manpower available from the aerospace/defense industry. Further, a plan is to be developed for matching and supplementing the skills of this manpower pool to those required by the particular target industries. Finally, a plan is to be developed for motivating these target industries to make use of these scientific and technical people and to give attention to both fulfilling known future employment requirements and accelerating or creating such requirements.

Several teams of people from the aerospace/defense manpower pool were formulated to carry out this contract. Teams were formed throughout the country to study various industries for possible skill usage. The Los Angeles team has studied the health care and transportation industries. A report on the success of this effort is due to be published in March of 1972.

4.4 Experience Unlimited

Experience Unlimited is one of several self-help volunteer organizations that was organized approximately three years ago in California. A group of unemployed ex-aerospace individuals formed an organization which specifically did job searches, assisted unemployed aerospace workers in preparing resumes, and tried to assist each other in finding job openings. The organization has expanded to 19 chapters throughout the State of California. The group has been given space to operate in the various associated HRD offices and has been supplied with telephone service and desk space. A few of the people involved in the organization were placed on employment contracts with the HRD organization in an effort to provide some continuity of leadership. The organization has conducted workshops assisting in motivation and attitudinal changes in the unemployed workers and has assisted them in establishing a job-seeking program.

Experience Unlimited has concentrated its efforts almost solely on seeking re-employment. No emphasis whatsoever has been placed on technological transfer; however, they have filled many jobs in industry aside from the aerospace and defense companies. While some of the various chapters have been more successful than others, in general, the Experience Unlimited work has proven extremely valuable, from both the job-finding and attitudinal standpoints.

4.5 Emergency Employment Act

This program is intended to assist economically depressed areas and to provide jobs for approximately 150,000 persons. The jobs provided include the entire range of positions from janitorial to professional. The professional level jobs are limited to one-third of the budgetary allotments and a maximum salary of $12,000.

a year. The funds from this program have been distributed directly to cities and counties with populations in excess of 75,000. Funds are also being distributed to other agencies, such as school districts, through the administration of the Employment Services and the counties. The number of jobs being allocated to professional status is determined by the individual city, county, or other administering agency. This program is of minimal assistance to the ex-aerospace/defense unemployed or underemployed.

4.6 Use of Employment Service by Aerospace Personnel

A recent survey of aerospace personnel affected by reductions in NASA contracts, conducted by the Battelle Columbus Laboratory for the National Aeronautics and Space Administration, revealed information that is applicable. Battelle reported that 33.4 percent of the personnel surveyed had found permanent re-employment. Information on methods used by this group in seeking re-employment and the effectiveness of these methods is summarized in Table 4-1.

Table 4-1 shows the most effective methods used were direct applications to employers, friends, relatives, and help wanted advertisements. It can be seen that private and state employment agencies, though heavily used, were not reported as effective tools in finding re-employment.

The historical ineffectiveness of the State Employment Services in finding positions for unemployed aerospace professionals may be attributable to the following reasons:

TABLE 4-I. METHODS USED TO SEEK EMPLOYMENT

Methods Used to Seek Employment	Not Available	Did Not Use	Used and Found Helpful	Used But Did Not Find Helpful
Assistance from Company from Which Laid Off	59.3%	18.0%	4.7%	18.0%
Labor Unions	63.5%	32.2%	1.7%	2.6%
Professional/ Trade Organizations	45.9%	42.2%	3.2%	8.7%
Private Employment Agencies	4.0%	47.8%	10.4%	37.8%
State Employment Agencies	3.5%	32.0%	6.0%	58.5%
Friends/ Relatives	5.6%	27.2%	44.0%	23.2%
Help Wanted Ads	2.6%	19.4%	28.3%	49.7%
Direct Application to Employers	1.4%	6.8%	51.2%	40.6%

a. A sizeable percentage (approximately 32 percent) of the unemployed aerospace manpower did not attempt to use the services of the Employment Service agencies.

b. Employment Service applicant records (Form ES-511) do not list capabilities beyond educational qualifications and generalized occupational descriptions.

c. Employment Service personnel, except for a select few who have been designated "professional applicant" placement interviewers, have limited experience in working with professional applicants and minimal understanding of the professional aerospace environment. Thus, they have been unable to adequately assign descriptive occupational codes beyond that provided by the *Dictionary of Occupational Titles*.

It should be particularly noted that during the period of time in which the surveyed personnel of the Battelle study were unemployed, the Engineers, Scientists, and Technicians Program was nonexistent, and the Special Manpower Program was in its infancy. Thus, the capability of the Employment Services to assist the aerospace professional has improved substantially in recent months.

4.7 Computer-Assisted Job Matching Systems

A 1968 survey* of placement systems observed a definite trend in computer-assisted placement in both the public and private sector. Evidence of this trend is the approximately 88 Employment Service Job Banks in operation as of this date and those that are in the implementation process.

Any program being developed to match jobs to applicants must recognize this trend toward computer-assisted placement. To ensure compatibility, program design must take into consideration the characteristics and procedures of Employment Service Job Banks.

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*Auerbach Corporation Technical Note 1471-600-TN-2, *A Survey of Computer-Assisted Placement Systems*, dated January 8, 1968.

Computer-assisted placement systems can generally be classified into the following types:

a. Public systems serving unskilled applicants;

b. Public systems serving skilled and professional applicants;

c. Public systems serving all applicants; or,

d. Private systems serving professional applicants.

Employment Service Job Banks, in theory, are public systems designed to serve all applicants and operate under Bureau of Employment statutory responsibility related to:

a. Nationwide system of public Employment Services;

b. Manpower programs designed to promote maximum utilization of the Nation's manpower to relieve the effects of unemployment;

c. State Unemployment Insurance Program;

d. Federal Unemployment Compensation Program.

In the past, in discharging these responsibilities, emphasis was primarily on job placement of work-oriented persons, principally the unemployed who came to the Employment Service seeking assistance. Emphasis today is upon the much larger consideration of rehabilitating those who are not work-oriented and attending to their development needs, so that in time they will be job-ready and able to compete in the labor market.

Job Bank files, at present, contain limited information on professional applicants with broad qualifications and, as presently organized, are inadequate to meet the needs of an aerospace manpower transfer program.

The application of computer technology to job development and placement operations requires that the system contain broad and

detailed information on both job requirements and the applicant's qualifications. Generally speaking, more information is required to describe a skilled applicant's qualifications than an unskilled one. As previously stated, the Employment Service Job Banks today are not geared to place a skilled professional outside of his primary work area, since the Employment Service records do not contain the information needed to fully describe a professional applicant's capabilities and qualifications. The needed data already exists in the personnel files of the previous aerospace employer. It is reasoned that no one knows the applicant better than the company that employed him. Information on any applicant, beyond that normally contained in application forms, resides in company personnel records, usually in the form of job assignments, work performance evaluations, salary reviews, etc. Often, this information can be expanded to include comments and references by former supervisors and colleagues still employed at the company.

One method for retrieving the desired personnel information after a job is developed and its requirements defined would be to request an aerospace company to undertake a retrieval search to identify several qualified applicants. Discussion with several aerospace companies indicated interest and willingness to participate in any program that might help in placing their laid-off employees. The extent of their participation is dependent on the effort required to identify the list of qualified applicants. Some of the companies have personnel data in a form that permits computer retrieval, but most of the data describing functional experience is in raw form requiring manual processing for extraction.

4.8 Labor Inventory Communications System (LINCS)

The LINCS system is a computer-based placement operation in use by the California Department of Human Resources for handling jobs and applicants in the professional, managerial and technical sector. The LINCS system brings the computer to bear within the placement process by providing full search of the applicant/job order files on behalf of each job (searching for applicants) and of each applicant (search for jobs). It uses a structured vocabulary of terms that describe the experience and capabilities of applicants (including education and language ability) and the type and duties of the job. The assignment of the appropriate vocabulary is done by the professional staff of HRD, based on employer job descriptions and on interviewing (or having a resume) of the applicants. The system provides the results of the search on the day after submittal. These results take two forms: (1) a brief description of each applicant that the search has found for each job order. This is given to the employer who screens the list and contacts the applicants he is interested in; (2) a list of the jobs that each applicant has matched, which is used by HRD to inform the employers of this applicant and to arrange interviews on the applicants' behalf.

In its present operation, engineers and engineering support personnel (technicians, draftsmen) constitute the second largest group of applicants using the system (administrative personnel are the largest). The system is used by only two HRD offices in California, Los Angeles and San Francisco. The system itself is used by the National Society of Professional Engineers' office in Sacramento, but the order and applicant files of HRD and NSPE are not combined; i.e., each uses it separately.

Ultrasystems, Inc. is conducting an evaluation of the results and effectiveness of the LINCS system for the Department of

Labor's Manpower Administration. The evaluation will provide data relative to the usefulness of this concept for man-job matching, especially in the professional, technical, and managerial fields. One important objective of this study is the assessment of the ability of the LINCS search logic and vocabulary to determine matches that broaden the applicant's exposure to jobs that are not exactly like jobs he already has held but for which his education and experience are related.

Preliminary data provided by the California HRD indicates that in fiscal year 1971 there were 931 placements directly attributable to LINCS searches, at an average cost of $340 per placement. This data is very preliminary and does not include the local office costs associated with the LINCS placement process nor does it include the value of other services or information provided through the LINCS system.

Of the four experimental man-job matching systems now being used by States' Employment Services (the three others are in New York, Utah, Wisconsin), LINCS is the only one, so far, dealing exclusively with professional, technical and managerial jobs and applicants.

5.0 MANPOWER PROFILES

The findings of a survey of aerospace employees affected by reductions in NASA contracts were submitted by the Columbus Laboratories of Battelle Institute on May 20, 1971. This report was prepared for NASA on Contract No. NASW-2176. The report stated that approximately 40,000 people were laid off from aerospace contractors as a result of the NASA cutbacks in the period from June 1966 to June 1970.

According to the Battelle report, of 40,000 people laid off between 1966 and 1970, 17,400 were laid off during fiscal year 1970. Several of the aerospace subcontractors that were contacted by Battelle reported that as many as one-half of their displaced workers remained unemployed. At the time of the publishing of the Battelle report (May 1971), the Department of Labor estimated that the total unemployed engineers, scientists, and technicians was approximately 30,000 throughout the United States.

In addition to the Battelle report, a number of other surveys have been conducted and "profiles" of the unemployed ex-aerospace professional defined. It was not the intent of this study to determine a manpower profile except as related to the possible transfer of skills to the small business enterprise. In the conduct of the study, however, certain basic "physical" characteristics of the group were determined, as well as those traits specifically related to the transfer question.

The research investigation portion of the study covered two essentially separate areas. One major area of investigation was concerned principally with the small business managers; and the other main area of interest encompassed the ex-aerospace professional or manpower sector. This section of the report describes the conduct and results of the investigation within this "manpower research group."

5.1 The Manpower Research Conduct

Determining the feasibility of "transferring" members of the ex-aerospace professional group to the small company environment mandated a very carefully conducted research effort. The initial reaction of the ex-aerospace professional toward such a transfer was almost always immediately positive. It was only after the full ramifications of such a "transfer" became evident that a true response was demonstrated. Thus, a major portion of the research investigation was expended in this area.

In order to determine the true posture of the ex-aerospace professional, it was deemed necessary to interrogate both the ex-aerospace professional and those who have had recent close contact with him. Direct solicitation of the ex-aerospace professional was rejected as a necessary or desirable research methodology. This decision was made partially in deference to the undesirability of confronting these unemployed individuals with yet "another survey" and also in the belief that unsolicited contact would naturally follow from the other research activity. Thus, a program was instigated to bring about unsolicited contact with the ex-aerospace professional by enlisting the support of Ultrasystems' staff members who have personal and professional contact with the aerospace community. These staff members were urged to make known our involvement with the professional's unemployment problem and our interest and willingness to provide whatever assistance possible in their job search. As a result of this program, many unemployed ex-aerospace professionals contacted us for whatever job-search information we might provide. As a result of these referrals, many contacts were, and continue to be, investigated. Approximately one-half of these contacts have resulted in discussions of sufficient depth to provide relevant study data. Additionally, many contacts with unemployed

ex-aerospace professionals resulted from the activities of the solicited interviews with individuals associated with this segment of the unemployment problem.

Interviews were actively solicited from those individuals participating in the job-search problem with the ex-aerospace professional through the responsibility of their respective organizational positions. This included staff members of the HRD, educators involved in special manpower program retraining efforts, employment agency counselors, placement and personnel directors from both industry and public institutions, officials and active members or individuals of other affiliations who have had reason to become involved.

The manpower sector research, therefore, included interviews among two distinctly different groups of individuals. One group consisted of the ex-aerospace professionals themselves, and the other group was composed of directly "associated personnel" from assisting agencies and organizations. In total, in-depth interviews relative to the manpower segment of the question were held with 75 ex-aerospace professionals who had involuntarily lost their jobs due to aerospace budget reductions, 31 directly "associated personnel," and 40 indirectly "associated personnel." Table 5-1 provides an overview of the ex-aerospace professionals interviewed and Table 5-2, a listing of the affiliations of both the directly and indirectly "associated personnel."

The interviews differed widely in format, length and content. The subjective nature of the discussion topic, together with the widely diverse backgrounds and relationship to the problem represented by the interviewees, preluded a structured interrogation. Thus, the interviews followed the format of wide ranging discussions centered around the interviewee's area of experience and expertise with specific questions appropriately interjected by the interviewers. As a result of this general

TABLE 5-1 PROFILE OF UNEMPLOYED EX-AEROSPACE PROFESSIONALS INTERVIEWED

Characteristic	Interviewees Per Category	Percent of Total
1. AGE:		
Under 30 years	3	4%
30 to 40 years	25	33%
40 to 50 years	37	49%
Over 50 years	10	14%
Total	75	100%
2. TIME UNEMPLOYED FROM AEROSPACE		
Under 1 month	42	56%
1 to 6 months	22	29%
6 to 12 months	3	4%
Over 12 months	8	11%
Total	75	100%
3. EDUCATIONAL BACKGROUND		
Advanced degree	7	9%
Bachelor's degree	45	60%
No degree	23	31%
Total	75	100%
4. AEROSPACE SALARY		
Under $12K annually	7	9%
$12K to $15K annually	46	61%
$15K to $20K annually	18	25%
Over $20K annually	4	5%
Total	75	100%
5. PROFESSIONAL CLASSIFICATION		
Technical (Including Eng. Mgmt.)	66	88%
Administrative (Contracts, Accounting, etc.)	9	12%
Total	75	100%

TABLE 5-2 ANALYSIS OF THE "ASSOCIATED PERSONNEL" INTERVIEWEES

Organization	Number of Interviewees	Percent of Total
1. Department of Labor	4	5%
2. Department of Human Resources Development (Employee Service)	18	20%
3. Small Business Administration	9	10%
4. Experience Unlimited*	13	15%
5. Forty-Plus*	2	2%
6. Chamber of Commerce	4	5%
7. Educators	5	6%
8. Public Socio-Economic Organizations	3	4%
9. Professional Societies	11	13%
10. Personnel and Placement Directors	5	6%
11. Employment Agency Counselors (Private)	7	8%
12. Industrial Organizations	2	2%
13. Consultants	3	4%
TOTAL	86	100%

* The individuals in the Experience Unlimited and Forty-Plus Organizations were all also ex-aerospace professionals but were not included in the 75 unemployed ex-aerospace professionals.

interview arrangement, it was not always possible to obtain clear answers to all pertinent questions.

5.2 The Demographic Data

The discussions with the "manpower research group," which was composed of the 75 ex-aerospace professionals and the 54 "associated personnel" (see Tables 5-1 and 5-2) centered about two principal topics of interest. First, it was deemed imperative that familiarity initially be gained relative to the mechanics and effectiveness of the ongoing activities aimed at assisting the ex-aerospace unemployed. Secondly, an evaluation was desired of the attitudes, capabilities, and pertinent education and experience background of the ex-aerospace professionals relative to their employability in the small business community. An analysis of the principal ongoing activities oriented to job-seeking assistance of the ex-aerospace unemployed appears in section 4.0 of this report.

Two well-defined groups of displaced aerospace personnel have developed within the State of California. One group is the members of the Experience Unlimited organization, and the other is the registrants of the EST Program. While many of the same individuals are registered with both groups, certain of the Experience Unlimited group have been registered for as long as two years, while the EST registration has only been accumulated during the last few months. Also, the EST registrants have purely technical backgrounds, whereas the Experience Unlimited organization has no such restriction. Nevertheless, the general manpower profile, as determined from the questions asked the various individuals comprising the "manpower research group," did not result in any discernable difference in personal characteristics between these two groups of displaced aerospace people. In fact, summarizing the findings of

these interviews into the basic unemployed ex-aerospace professional manpower profile resulted in the following characteristics (also see Table 5-1):

a. The median age is between 46 and 49.

b. Approximately 50 percent of the group is in the 35 to 50 year age category.

c. Approximately 40 percent of the registrants were professionals in their aerospace careers.

d. The median salary of the professional, or salaried, members of the group was between $14,000 and $17,000 annually.

e. Of the group that was professional in their aerospace career, approximately 70 percent were college graduates.

f. Of the 50 percent of the professionals that were college graduates, approximately 10 percent had master's degrees or Ph.D.'s.

Since the Battelle report covered the professional employee, as well as the technician and semi-skilled worker that has been laid off from aerospace, a direct comparison in all categories is difficult. However, in certain categories, the information in the report is directly applicable.

It is interesting to note that of the managers, scientists, engineers, and professional people surveyed by the Battelle report, the average salary of this entire group was $14,358 per year at the time they were laid off. It is of further interest that this same group stated in the Battelle questionnaire that they would return to work in the same geographic area for an average salary of $12,878 per year.

Of the entire group surveyed by Battelle, 33.9 percent of the unemployed group were in the professional category at the time of layoff. The average length of service with their respective

companies was 7 years. The age categories of the Battelle-surveyed group were 44.5 percent in the 35 to 49 age bracket, 37.4 percent were over 50 years of age, and 15.9 percent were in the 25 to 34 age bracket. Of the total group, bachelor degrees were held by 18.2 percent, 3.6 percent had master's degrees, 0.6 percent had Ph.D.'s, and 6.9 percent held a two-year college degree.

It is interesting to compare the results of the Battelle report to those relatable characteristics of the 75 ex-aerospace professionals interviewed in this study. Table 5-3 provides this comparison:

TABLE 5-3 EX-AEROSPACE PROFESSIONAL PROFILE COMPARISON

Characteristic	Battelle Survey	Manpower Group Survey
Percent of Manpower in 35 to 50 Age Bracket	44.8	50
Median Age (Years)	45.8	46--49
Percent College Graduates of Professionals	66	69
Average Annual Salary of Professionals at layoff (K Dollars)	14.4	14--17

Evidence was also provided in the Battelle report that a substantial number of aerospace displaced personnel have found permanent employment outside of the aerospace industry. Of the personnel surveyed by Battelle, it was reported that 33.4 percent had found permanent re-employment. Of this permanently re-employed group, 23.4 percent were re-employed in manufacturing other than aerospace,

24.2 percent in the retail trades and service business, government had absorbed 9 percent, 17.7 percent had returned to aerospace, and 25.7 percent were occupied in other categories (teaching, agriculture, private institutions, and so on). The Battelle report does not clearly distinguish between the professional and nonprofessional within these figures. If the ratio of professionals to nonprofessionals of this permanently unemployed group to the total Battelle-surveyed group (33.9 percent professionals) remained the same, then 9.3 percent of those permanently re-employed outside of aerospace would have been professionals in their aerospace career. It is likely that the percentage of professionals is actually much lower, since re-employment frequency of ex-aerospace people has been heavily biased toward the nonprofessional.

5.3 The Subjective Data

Among the groups of ex-aerospace professionals interviewed in this study, the initial reaction toward a career change to a nonaerospace, small business area was virtually unanimously positive. Only three ex-aerospace interviewees initially stated clearly that they were not interested in working for or participating in a small business. All three of these individuals had experienced direct and traumatic episodes as either employees or owners of small businesses. It is significant that of the 75 ex-aerospace professionals interviewed, 19 had intimate familiarity with small business and only three of this group were adamantly opposed to this as a new career area.

The reaction of the ex-aerospace professionals, in general, changed considerably as the ramifications of a career change to the small business environments became more evident. Thus, in order that meaningful responses be obtained, it was necessary to very carefully define and describe the small business environment to which we were referring. The fact that only 19 of the 75 ex-aerospace

interviewees had direct experience in the small business dictated that certain of the opinions and attitudes expressed were based on an imagined, rather than experienced, circumstance.

The individual characteristics searched for in the study, insofar as the ex-aerospace professional's ability to continue with his career in a small company, were attitude and adaptability. Many small businessmen have been authoritatively critical of the aerospace professional in the small business environment. These businessmen have essentially attributed this failure to an unwillingness on the part of the individual to accept the wide variety and organizational strata of the tasks performed by people in the small company. Thus, much discussion was held with the interviewees of the "manpower research group" relative to their opinions of the success probability of the ex-aerospace employee in this small company environment.

Many of the individuals in the "manpower research group" were somewhat reluctant to venture opinions or to state figures with regard to the information desired. However, since most of the individuals in this group were either ex-aerospace professionals, themselves, or were in daily contact with the ex-aerospace professional job-seeker, they had quite authoritative knowledge relative to the question of interest. Thus, it was necessary to discuss the questions at length and, in some cases, multiple discussions were held in order to better obtain the desired information.

5.3.1 The Interview Responses

From the discussions held with the "manpower research group," several questions and the attendant responses emerged as particularly pertinent to the study. Table 5-4 presents this data. As can be seen from Table 5-4, the interviewees were categorized into two main groups. These two groups are the ex-aerospace

professionals and the "associated personnel" (See Tables 5-1 and 5-2 for definitions of these two groups.).

The ex-aerospace professionals were further categorized into those who were knowledgeable of small business and those who were not. This distinction was made on the basis of actual work experience coupled with an apparent understanding of the unique aspects of the small business, i.e., direct and short-range accountability to economic factors, performance of a multiplicity of tasks, appreciation and knowledge of mundane cost items, knowledge and perspective of the various disciplines comprising the total business entity, etc. Thus, work experience in the small company was not, in itself, a sufficient criterion for inclusion in the "knowledgeable of small business" group. For example, several of the ex-aerospace professionals interviewed had worked extensively within very small companies, but because the nature of their positions was such that they were little concerned with the business itself, their small-business knowledge was limited. Hence, these individuals were placed in the latter category. This division of the ex-aerospace professionals was made since the responses of the two groups to certain questions was quite different. These differences appear pertinent to the study and are discussed below.

It can be seen from Table 5-4 that the number of interviewees responding to particular questions differs from question to question. Since the discussions were largely unstructured, all questions were not posed to all interviewees. In some cases, the questions were posed, but the answers were not sufficiently clear to be considered valid data. Also, it is noteworthy that the number of respondees to questions 8 through 11 is substantially less than for the preceding questions. This was largely due to a recognition of thought trends as the study progressed and adding these questions more specifically to the discussions with the latter group

TABLE 5-4

ATTITUDE RESPONSES OF "MANPOWER RESEARCH GROUP" TO MAJOR INTERVIEW QUESTIONS

QUESTIONS AND RESPONSE CATEGORIES	INTERVIEWEE CATEGORIES							
	Ex-Aerospace Professionals (75 Total)						"Associated Personnel" (71 Total)	
	Knowledge-able of Small Business	Percent of Total	Little Knowledge Of Small Business	Percent of Total	Total Responding to Questions	Percent of Total Responding	Total Responding to Question	Percent of Total Respondees
1. OPINION TOWARD NONAEROSPACE SMALL BUSINESS MANAGERS								
a. Generally very professional	3	17%	6	13%	9	14%	47	73%
b. Generally somewhat professional	14	78%	16	35%	30	47%	13	21%
c. Not generally professional	1	5%	24	52%	25	39%	4	6%
	18	100%	46	100%	64	100%	64	100%
2. APPLICABILITY OF AEROSPACE PROFESSIONAL'S SKILLS TO NONAEROSPACE SMALL BUSINESS								
a. Directly applicable	3	17%	29	58%	32	48%	11	18%
b. Somewhat applicable	15	83%	18	36%	33	48%	43	77%
c. Not particularly applicable	--	--	3	6%	3	4%	3	5%
	18	100%	50	100%	68	100%	62	100%
3. ABILITY OF EX-AEROSPACE PROFESSIONAL TO PERMANENTLY CHANGE CAREER TO NONAEROSPACE SMALL BUSINESS								
a. Possible for most	2	11%	21	39%	23	32%	4	6%
b. Possible for some	6	32%	27	50%	33	45%	19	29%
c. Possible for only a few	11	57%	6	11%	17	23%	43	65%
	19	100%	54	100%	73	100%	66	100%
4. NECESSITY FOR ADDITIONAL TRAINING FOR EX-AEROSPACE TO WORK IN NONAEROSPACE SMALL BUSINESS								
a. Necessary	14	78%	7	13%	21	29%	45	70%
b. Helpful	3	17%	22	40%	25	34%	17	26%
c. Not necessary	1	5%	26	47%	27	37%	3	4%
	18	100%	55	100%	73	100%	65	100%
5. OPINION TOWARD AEROSPACE SMALL BUSINESS MANAGERS								
a. Generally very professional	2	12%	31	61%	33	49%	54	81%
b. Generally somewhat professional	11	69%	17	33%	28	42%	12	18%
c. Not generally professional	3	19%	3	6%	6	9%	1	1%
	16	100%	51	100%	67	100%	67	100%
6. APPLICABILITY OF AEROSPACE PROFESSIONAL SKILLS TO AEROSPACE SMALL BUSINESS								
a. Directly applicable	5	31%	44	86%	49	73%	55	85%
b. Somewhat applicable	11	69%	7	14%	18	27%	8	12%
c. Not particularly applicable	--	--	--	--	--	--	2	3%
	16	100%	51	100%	67	100%	65	100%

TABLE 5-4 CON'T

QUESTIONS AND RESPONSE CATEGORIES	INTERVIEWEE CATEGORIES							
	Ex-Aerospace Professionals (75 Total)						"Associated Personnel" (71 Total)	
	Knowledgeable of Small Business	Percent of Total	Little Knowledge of Small Business	Percent of Total	Total Responding to Questions	Percent of Total Responding	Total Responding to Question	Percent of Total Respondees
7. ABILITY OF EX-AEROSPACE PROFESSIONAL TO PERMANENTLY FOLLOW CAREER IN SMALL BUSINESS								
a. Possible for most	7	44%	48	94%	55	82%	45	74%
b. Possible for some	7	44%	3	6%	10	15%	8	13%
c. Possible for only a few	2	12%	--	--	2	3%	8	13%
	16	100%	51	100%	67	100%	61	100%
8. ABILITY OF EX-AEROSPACE PROFESSIONAL TO FOLLOW CAREER IN PUBLIC SERVICE								
a. Possible for most	9	75%	32	84%	41	82%	38	86%
b. Possible for some	3	25%	4	11%	7	14%	3	7%
c. Possible for very few	--	--	2	5%	2	4%	3	7%
	12	100%	38	100%	50	100%	44	100%
9. PRIMARY REASON FOR INDIVIDUAL ENTERING SMALLL NONAEROSPACE BUSINESS								
a. Monetary return	3	33%	12	50%	15	46%	7	21%
b. Independence	3	33%	8	34%	11	33%	23	68%
c. Accomplishment	1	11%	2	8%	3	9%	--	--
d. Other	2	23%	2	8%	4	12%	4	11%
	9	100%	24	100%	33	100%	34	100%
10. PRIMARY REASON FOR INDIVIDUAL ENTERING SMALL AEROSPACE BUSINESS								
a. Monetary return	4	45%	7	33%	11	37%	17	52%
b. Independence	2	22%	3	14%	5	17%	6	18%
c. Accomplishment	3	33%	9	43%	12	40%	8	24%
d. Other	--	--	2	10%	2	6%	2	6%
	9	100%	21	100%	30	100%	33	100%
11. PRIMARY REASON FOR INDIVIDUAL CHOOSING AEROSPACE CAREER								
a. Monetary return	2	22%	1	5%	3	10%	4	13%
b. Independence	--	--	--	--	--	--	--	--
c. Accomplishment	6	67%	17	85%	23	80%	25	84%
d. Other	1	11%	2	10%	3	10%	1	3%
	9	100%	20	100%	29	100%	30	100%

of interviewees. No apparent difference existed in the general personal characteristics, as shown in Table 5-1, of this latter group of interviewees as compared to the earlier group.

Any demographic study is highly susceptible to questions of bias, correct representation of the sample population, etc. The comparison of the ex-aerospace professionals interviewed with the Battelle study (see section 5.2) indicates close group relation, at least on the basis of the personal or "physical" criteria used. If it is assumed that the 75 professionals interviewed are a reasonably typical representation of the total ex-aerospace professional population who lost their jobs, then it is interesting to note the statistical confidence levels represented by their opinions. For example, on question 3 (Table 5-4), 73 replies were obtained and 58 percent answered with reply item (a). Applying the bi-nominal distribution confidence limits demonstrates that it is probable, to a 90 percent confidence, that at least a minimum of 52 percent of the <u>total</u> population of unemployed ex-aerospace professionals would have chosen reply item (a) if asked this same question. Further, the lowest number of replies received were for question 11. Again, assuming the 29 interviewees and their 80 percent response to answer (c) to be a reasonably typical representation, then it is probable to a 90 percent confidence that at least a minimum of 66 percent of the total population would choose reply item (c). Thus, even though the exact percentages may be questioned, the general thought trends are clearly acceptable with high confidence.

Each of the major questions and corresponding replies presented in Table 5-4 is discussed below. The numbered sections correspond to the respective questions of Table 5-4.

(1) *Opinion Toward Nonaerospace Small Business Managers*

The regard with which the small business is held by the aerospace professional is obviously not high. Although not recognized as such early in the study, these data hold the first indication of one of the basic reasons for the relative disinterest displayed by the interviewees toward the small nonaerospace business as a new career opportunity.

(2) *Applicability of Aerospace Professional Skills to Nonaerospace Small Business*

It is interesting to note that the aerospace professional considers his skills highly applicable to the small business, even though he feels the small businessman himself is, in general, not very professional. Additional associated discussion of this question with the ex-aerospace professionals indicated a general underestimation of the ability and experience necessary for successful management of the small business.

(3) *Ability of Ex-aerospace to Permanently Change Career to Nonaerospace Small Business*

This question created considerable difficulty when asked. It was necessary to explain very carefully that a permanent career change implied essentially equal satisfaction with the new career, as compared to the old. Also, it became clear immediately when discussing this question that a distinction between the "aerospace" small business was made in the interviewee's mind, and hence should be inherent to the survey. This was first indicated by the interviewees invariably asking to what type of business were we referring. As the research progressed, it became apparent that this question was crucial to the data.

It is interesting that the ex-aerospace professionals categorized as having little knowledge of the small business were the only group of the three categories with the belief that such a career change could be made. It is particularly noteworthy that the "associated personnel" group was extremely reticent to recommend such a change.

(3) *Ability of Ex-aerospace to Permanently Change Career to Nonaerospace Small Business (Continued)*

The small nonaerospace business was usually defined with examples, such as "perhaps a furniture or camper manufacturer." A small residence building contractor was also often used as an example of the small nonaerospace business. The small aerospace-oriented business was exemplified by the small electronics firm or a similar small aerospace subcontractor with which the interviewee might be familiar.

Discussion of this question with the ex-aerospace professionals gave strong indication that few have a very accurate assessment of the small business working environment. This was particularly evident from the often repeated comparison between the previous job held by the professional and the small company. The statement, "we operated just like a small company" recurred many times over in the discussions. Further conversation nearly always demonstrated that the individuals making this statement were not, in fact, familiar with many of the basic characteristics of the small business.

(4) *Necessity for Additional Training for Ex-aerospace Professionals to Work in Small Nonaerospace Business*

As with question 3, it is noteworthy that the ex-aerospace professional categorized as possessive of little knowledge of small business stands relatively alone in his opinion that additional training is not necessary. Additional discussion with the ex-aerospace professionals again indicated a general underestimation of the ability and experience necessary for successful management participation in the small business.

(5) *Opinion Toward Aerospace Small Business Managers*

The contrast in opinion toward the professionalism possessed by the managers of the small nonaerospace business (question 1), as compared to the small aerospace firm, is quite profound. It is also interesting to note the agreement between all three group categories in answering this question.

(6) *Applicability of Aerospace Professional Skills to Aerospace Small Business*

The replies to this question were highly predictable, although it is of interest to note the somewhat different weighting of answers from the group of ex-aerospace considered knowledgeable of small business.

(7) *Ability of Ex-aerospace Professionals to Permanently Follow a Career in Small Aerospace Company*

Again, as with question 6, the replies to this question were highly predictable. Discussion of this question again pointed out the fact that many of the ex-aerospace professionals fail to recognize the differences between the operation of a relatively independent group within a large firm and the small business environment.

(8) *Ability of Ex-aerospace Professional to Follow Career in Public Service*

This question was included in the research specifically to obtain the opinions of the "associated personnel" group. It is interesting to compare the replies of this group to question 8 to their replies to question 3. It is clearly evident that the "associated personnel" feel the ex-aerospace professional is much more fitted for public service than to the small nonaerospace business. Inquiry was made as to the basis for this opinion, but the replies were too varied for concise categorization. The trend of thought indicated, however, that the aerospace professional is thought to be oriented toward participation in significant "public" programs and would not be content with the relatively localized small business community. The veracity of this opinion is somewhat supported by the replies to question 11.

(9) *Primary Reason for Individual Entering Small Non-aerospace Business*

This question was included in the latter interviews to better define the reasons for an apparent lack of enthusiasm by the ex-aerospace professional toward the small nonaerospace business career.

(10) *Primary Reason for Individual Entering Small Aerospace Business*

This question was inserted to enhance the data of question 9.

(11) *Primary Reason for Individual Choosing Aerospace Career*

This question was introduced to supplement the data derived from questions 9 and 10. Comparison of the replies to questions 8, 9, 10 and 11 fairly clearly indicates the trend of opinion. It is interesting to note that there is general agreement among all three interviewee categories on these questions.

In addition to the questions presented in Table 5-4, additional thought trends and opinions were noted which are pertinent. For example, it appeared to be generally very difficult to obtain an enthusiastic reaction from the ex-aerospace professionals toward seriously discussing the nonaerospace small business. Relatively unsuccessful attempts were made to develop lines of questions that would better define this impression. This impression, of course, was not received in every case, but the trend to low-interest level was unmistakable.

In contrast to the relatively low response level received from the ex-aerospace professional toward the nonaerospace small business, the opposite reaction was most notable in discussing the aerospace business itself. Nearly without exception, each interviewee presented and enthusiastically discussed an idea for improved technology, methodology, or technical product. It is particularly noteworthy that many of the ideas expressed by the interviewees were related to "aerospace-type" problems rather than aerospace per se. For example, the solution to various ecological problems was a very popular category.

Certain other trends were noted during the research which bore only second-order relationship to the particular study subject,

but which are worthy of note. Of the 75 ex-aerospace professionals interviewed, 11 had been unemployed for over six months. With very few exceptions, these interviews proved to be very difficult. The interviewees were narrow in their thought, argumentative, generally unwilling to cooperate, even though in each case, they had made the initial contact. Interestingly, only four of these individuals were able to provide a competent resume. Most certainly, part of the reaction of this subgroup was due to the personal difficulties attendant to long-term unemployment; however, it was obvious that certain of the problems were inherent to the individuals themselves.

It should be noted, on the other hand, that a large number of underemployed ex-aerospace professionals, who were long-term aerospace unemployed, were encountered during the research. They displayed outstanding attitudes and cooperated fully in the study conduct. These individuals were not included in the 75 ex-aerospace interviewees, since they were not unemployed, per se, at that time of the discussion. These individuals were underemployed to various degrees, but were noticeably enthusiastic with their present pursuits. The occupations of these individuals were, to cite a few examples, special consultants to HRD, attendees of retraining programs, temporary consultants to various public works programs, and part-time or temporary consulting work with private companies and institutions. It was interesting, and pertinent to the study, that over 30 such "underemployed" ex-aerospace professionals were encountered during the study effort and all were consciously neglecting their job search for permanent employment. This was true even for several of these who were not receiving compensation for their efforts.

5.4 Conclusions

From the foregoing data, several significant conclusions can be drawn relative to the ex-aerospace professional; i.e.:

a. There is a general trend of low regard among the aerospace professional toward the nonaerospace small business manager.

b. The ex-aerospace professional has a tendency to overrate the applicability of his skills to the small business environment.

c. The ex-aerospace professional, in general, underates the capability of the small business manager and has an unrealistic assessment of the small business working environment.

d. The ex-aerospace professional is, in general, motivated very strongly by "intrinsic rewards" rather than "extrinsic rewards."

e. The ex-aerospace professional is imaginative, innovative, and generally a very strong personality.

f. The ex-aerospace professional is not overly receptive to a significant career change and does not believe it to be necessary; there is belief in their inherent value to society and that it is only a matter of time until significant programs requiring their services will be instigated by government agencies.

g. A group of long-term unemployed ex-aerospace professionals exist which appear to lack the skills, capability, attitude, and motivation to become re-employed in a competitive job market.

It is apparent that the ex-aerospace professional is not an easy individual to re-employ in a nonaerospace work situation. The opinion of the nonaerospace employer toward this individual is that he will "only return to aerospace if he has a chance." This opinion is not without foundation. The nonaerospace employer feels this return is due to higher wages, whereas likely due to the "intrinsic reward" motivation. In fact, it has repeatedly been verified by many organizations, such as the Merchants and Manufacturers Association, that salaries for equivalent positions are equal or even better in nonaerospace industry.

An often repeated error committed by the agencies and assisting programs aimed at gaining re-employment of this particular group of unemployed has been the assumption that an unemployed individual would "gratefully" accept nearly any job that came reasonably close to meeting his income standards. Following such a course has led to failures that have not only added to individual trauma, but has degraded and discouraged further related and valuable effort. Thus, any successful program of employment assisting activity aimed at the ex-aerospace professional group must recognize the inherent general characteristics of these individuals.

Sections 7.0 and 8.0 of the report outline two possible programs of assisting effort.

6.0 THE COMPANY PROFILE

The company profile was developed from the results of the interviews and discussions that were conducted with the small businessman. The contact with the small businessman was established by a telephone follow-up to the introductory letter. A copy of this letter is shown on page 97 of the Appendix.

As previously noted, the technique of interviewing the small business manager focused upon an unstructured discussion. Since the subject of discussion was one of considerable complexity, it was occasionally difficult for the business manager to grasp the full impact and the details of what such a program might entail. Thus, considerable time was necessary in order to describe to the small business manager the basic tenets of the program under discussion.

Even though the discussions were generally unstructured, and the interviews did not follow the usual survey format, specific questions were presented in a manner to generate spontaneous answers. The general theme of the conversation followed the concept of technology transfer via employment of aerospace professionals and a discussion of general business trends of the industry peculiar to the interviewee company. Following this discussion, the reaction of the manager to aerospace personnel and the possibilities of their utilization in his particular industry was pursued. The checklist used as an interview guide and for recording the interview results is shown on pages 98 and 99 of the Appendix.

Primary to the discussion with the small business manager was the determination of the opinions and recommendations of the small business manager toward a program of this type.

The results of the company interviews can be summarized as follows:

a. Small and medium size companies in nonaerospace industries can be located that represent potential participants in a manpower transfer program.

b. Companies that are closely aligned to the manufacturing type of business activity represent the most productive group for contact.

c. In general, gaining and maintaining interest by the company in a "placement" transfer program will necessitate a significant commitment of salary compensation to the employer for the initial unproductive period of the new employee's reorientation and training.

6.1 Company Categories

The initial criteria for the company selection were the following:

a. The company must be listed in one of the common industrial guides, such as the Chamber of Commerce listings, Dun & Bradstreet publications, Association directories, etc.

b. The company should have between 10 and 50 employees.

c. The company should not be a family-operated business; i.e., the company was rejected if the same surname appeared more than once in the list of management personnel.

The reason for the criterion that the company be listed in the common industrial guides was purely in the interests of efficiency. Many excellent firms, particularly the relatively new companies, are not listed in these documents. However, since there is an abundance of companies listed, the additional effort to become informed of the unlisted firms could not be justified.

The criterion of a minimum of 10 employees was arbitrarily established in order to select companies large enough to potentially support professional employees in addition to the manager.

The upper limitation of 50 employees maximum was selected in order that the companies not have a formal personnel director and administration function. It was felt that those companies with formal personnel departments have established policies and methods of operation that were not conducive to the feasibility study. Many larger firms may represent excellent prospects for manpower transfer, but the approach to these companies will, in most cases, differ somewhat from that taken with the smaller business.

The 50 employee maximum criterion was relaxed later in the survey in order to include several larger companies. Consequently, the managers of six companies with over 50 employees were interviewed. One of these companies had 450 employees and one had 150 employees. None of the managers of these six larger firms had a formal personnel department. Thus, the 50 employee maximum appeared to be needlessly restrictive.

The family-operated business was avoided, since most businesses in this category do not represent a natural growth environment for a nonfamily member. Thus, in a manpower transfer program, this type of business is probably best eliminated as a candidate.

In order to completely investigate the general concept of manpower transfer, it was apparent that a wide variety in business functions was needed. Therefore, the selection of companies included publishing, advertising, laboratory testwork, building material distribution, and other fields.

Table 6-1 presents a tabulation of the company product lines and functions. Many of the product lines and businesses were diverse, even within the categories. For example, electronic equipment manufacturers produced and distributed such items as infrared burglar alarms, complex special-order agricultural sorting equipment, and oceanographic test equipment. Recreational and

TABLE 6-1 CATEGORIES OF BUSINESS CONTACTED

	Los Angeles	Orange	Santa Clara	San Diego	Total
Industrial Supply Manufacturer	1	-	4	2	7
Sheet Metal Fabrication	2	-	2	2	6
Rubber Products Manufacturer	-	-	1	-	1
Electronic Equipment Mfg/Distributor	7	3	7	6	23
Mechanical Device Manufacturer	1	3	6	3	13
Light Fixture Manufacturer	2	1	-	-	3
Playground Equipment	1	-	2	1	4
Chemical Production & Marketing	-	-	5	2	7
Plastics	1	-	-	2	3
Recreational & Special Vehicle Equip.	1	3	4	3	11
Food Products	-	-	2	1	3
Advertising/Publishing	1	4	-	3	8
Fabrication and Machine Shop	-	1	4	3	8
Laboratory Testing	1	1	1	-	3
Detective Agency	-	-	-	1	1
Hotel	-	1	-	1	2
Recreational Park	-	-	-	1	1
Foundry and Forging Operations	-	1	3	-	4
Furniture Manufacture	4	-	1	-	5
Hunting Knife Manufacturer	-	-	-	1	1
Ceramics	-	-	3	-	3
Auto Parts	1	2	1	2	6
Medical Equipment	-	2	-	2	4
Building Materials and Supplies	4	3	3	8	18
Television Station	-	-	-	1	1
Boat Building and Parts	-	2	-	2	4
Household Products	1	1	2	1	5
Clothing Manufacturer	-	1	-	-	1
Consulting/Management Services	1	1	-	3	5
Financial/Banking	1	3	-	-	4
Employment Agency	5	1	-	-	6
TOTALS	36	33	51	51	171

special vehicle manufacturers produced and marketed such items as small motorcycles, portable motor generator units, camp trailers, and school bus bodies. Therefore, even within the categories presented, there is a great variety.

6.2 Interview Techniques

As previously mentioned, the interviews were largely conducted in an unstructured fashion. This was necessary since the subject of manpower transfer was difficult for the interviewee to initially comprehend. A number of the interviewees who appeared to be excellent prospects for later participation in the program were again interviewed with a personal visit. This was deemed necessary in order to verify that a positive reaction during the intial telephone interview would remain so when the individual was personally confronted. It was soon noted that the personal contact served to enhance the positive response and add considerably to the efficiency of the interview.

Of 171 company managers contacted, 68 were personally visited following the initial telephone conversation. The personal visit served to enhance communication and mutual understanding considerably. It also clearly demonstrated that establishing a personal acquaintanceship with the business manager and his company would prove most valuable in effecting a manpower transfer. In fact, it was concluded from these visits that the personal relationship would be a necessary ingredient to a successful manpower transfer program.

6.3 Principal Questions Posed

It was desirable to obtain as much information about the company and its management structure as possible. However, it was found during the interview that answers to many of the questions were difficult to obtain. This difficulty was, in part, due to the

proprietary nature of some of the questions. Also, certain of the questions proved to require too much time and detracted from the total interview content.

In every case, it was attempted to obtain an answer to several vital questions. These primary questions were the following:

a. What is your company's general business climate? Are sales increasing? Declining?

b. What is the interviewee's attitude toward the aerospace professional as an individual and as an employee?

c. Is the interviewee familiar with aerospace personnel?

d. Does the interviewee think aerospace skills and personnel are applicable to his business?

e. Has the interviewee been contacted by ex-aerospace professionals or assisting agencies relative to employment?

f. Does the interviewee have any suggestions or recommendations for solving the problem of the unemployment among aerospace professionals?

g. Does the interviewee think a manpower transfer program is workable?

h. Would the interviewee participate in a program of manpower transfer? If not, why not?

i. Is the interviewee familiar with NASA's Technology Utilization effort?

6.4 Major Interview Responses

Table 6-2 presents the overall statistics resulting from the company manager interviews. As can be seen from Table 6-2, the company managers have been categorized by their degree of familiarity with aerospace personnel and the skills represented. Those placed in the "Familiar" category were those individuals who had worked

TABLE 6-2 SUMMARY OF COMPANY MANAGER RESPONSES TO MAJOR INTERVIEW QUESTIONS

	Familiarity With Aerospace Personnel and Associated Skills				
	Familiar	Not Familiar	Unknown	Total	Percent of Total
I. BUSINESS CLIMATE					
Increasing Sales	28	13	16	8	33%
Steady Sales	24	11	9	44	26%
Declining Sales	14	6	11	31	18%
Company Out of Business	--	--	10	10	6%
Response Indeterminate	12	4	13	29	17%
TOTALS	78	34	59	171	100%
II. COMPANY TECHNOLOGY LEVEL					
High	33	9	14	56	33%
Medium	14	2	37	53	31%
Low	31	23	8	62	36%
TOTALS	78	34	59	171	100%
III. COMPANY SIZE					
Over 50 Employees	6	7	4	17	10%
Between 10 and 50 Employees	51	13	30	94	55%
Less than 10 Employees	13	7	3	23	13%
Response Indeterminate	8	7	22	37	22%
TOTALS	78	34	59	171	100%
IV. ATTITUDE TOWARD AEROSPACE PERSONNEL					
Positive	40	17	36	93	54%
Neutral	2	3	17	22	13%
Negative	21	10	1	32	19%
Unavailable or Indeterminate	15	4	5	24	14%
TOTALS	78	34	59	171	100%
V. HAS COMPANY BEEN CONTACTED FOR EMPLOYMENT BY EX-AEROSPACE PERSONNEL					
Yes	8	13	22	43	25%
No	56	18	12	86	50%
Response Indeterminate	14	3	25	42	25%
TOTALS	78	34	59	171	100%

TABLE 6-2 CON'T

	Familiarity with Aerospace Personnel and Associated Skills				
	Familiar	Not Familiar	Unknown	Total	Percent of Total
VI. AEROSPACE SKILLS SUITABLE TO BUSINESS					
Very Applicable	3	4	15	22	13%
Somewhat Applicable	42	3	4	49	29%
Not Applicable	20	6	2	28	16%
Indeterminate	13	21	38	72	42%
TOTALS	78	34	59	171	100%
VII. OFFERED PROGRAM SUGGESTIONS OR RECOMMENDATIONS					
Yes	9	11	1	21	12%
No	44	18	4	66	39%
Response Indeterminate	25	5	54	84	49%
TOTALS	78	34	59	171	100%
VIII. OPINION TOWARD A TRANSFER PROGRAM					
Workable	17	18	33	68	40%
Not Workable	6	3	6	15	9%
Response Indeterminate	55	13	20	88	51%
TOTALS	78	34	59	171	100%
IX. ATTITUDE TOWARD PROGRAM PARTICIPATION					
Immediate Interest	4	8	11	23	14%
Future Interest	3	15	20	38	22%
No Interest	63	5	16	84	49%
Response Indeterminate	8	6	12	26	15%
TOTALS	78	34	59	171	100%
X. REASON FOR NO INTEREST					
Company Too Small	9	1	5	15	18%
Aerospace Personnel Not Suitable	22	3	4	29	35%
Aerospace Personnel Nonperformers	4	1	4	9	11%
Poor Business Conditions	12	0	2	14	16%
Response Indeterminate	16	0	1	17	20%
TOTALS	78	34	59	171	100%
XI. FAMILIARITY WITH TECHNOLOGY UTILIZATION RESOURCES					
Very Familiar	2	1	0	3	2%
Familiar	7	1	1	9	5%
Not Familiar	40	15	38	83	49%
Indeterminate or Question Not Posed	29	17	20	76	44%
TOTALS	78	34	59	171	100%

in aerospace themselves or otherwise displayed exceptional insight into the aerospace experience. As was previously mentioned, 19 of the managers interview were ex-aerospace professionals themselves. Seven of these individuals had founded the company they headed. Further, 25 of the companies contacted had ex-aerospace professional personnel on their staff. Interestingly, only 9 of these particular 25 companies were managed by an ex-aerospace individual.

Those interviewees placed in the "Unfamiliar" category were those who clearly had had only cursory contact with the aerospace environment, or if contact had been made, did not appear to have a correct perspective of the personnel and skills. Some of these individuals professed familiarity but were judged differently.

The "Unknown" category was used for those interviewees whose aerospace familiarity was open to question, for those who were too uncommunicative to determine the familiarity, and for those who were out of business. It should be noted that perhaps 20 percent of the interviews held were extremely difficult. While most interviewees were very cooperative, a significant number displayed extreme irritation, skepticism, and animosity.

Each of the major questions of interest is discussed below:

I. BUSINESS CLIMATE

The data resulting from the responses to this question are possibly as profound as any derived from the research. To realize the full impact of this data, it must be noted that nearly all the companies selected for the surveys were small and chosen from listing publications that were one to three years old. It is also pertinent that the selection was essentially random.

Two data items are of particular interest. These are the fact that over one-half of the companies

reported steady or increasing sales, and that only 10 companies (6%) of those contacted had ceased business. Thus, it is apparent that while the general economic conditions have been poor, it has not seriously affected fairly large segments of the business community.

The indeterminate responses were largely from managers who were nonresponsive to most questions. Some managers were somewhat hostile throughout the discussions and a few (not more than 4 or 5) refused to cooperate at all. Among the hostile group (approximately 20), most made sufficient spontaneous statements to at least obtain their response to some of the questions. The hostility of these individuals appeared to emanate from one of three sources. Some had apparently had an unfortunate historical experience with a government contract or with the Employment Service. Others refused to believe that there was not some ulterior motive attached to the survey. A third group were simply noncommunicative individuals.

II. COMPANY TECHNOLOGY LEVEL

The division of the companies into the categories was made on the basis of the technical complexity of the product or service offered combined with the technical complexity of producing the product. Only those firms that inherently required a strong technical capability within their management structure were categorized as "High Technology." The definition of "Technology" was not necessarily restricted to the fields of engineering and science. For example, an accounting service firm was considered as "High Technology."

Most of the companies were categorized based on the product or service description in the literature. In a very few cases, the category was changed (both higher and lower) following discussion with the manager.

III. COMPANY SIZE

The initial criteria for company selection included a limitation to between 10 and 50 employees, according to the literature used. Later in the survey, six companies were purposefully selected with more than 50 employees. Thus, the remaining distribution resulted from the random selection process.

The "Indeterminate" response group for this question was partially due to reluctance on the interviewee's part to provide such proprietary information. Even after assurances that all data would be held in confidence and not relatable to company or individual names, a number of the interviewees were still reluctant.

IV. ATTITUDE TOWARD AEROSPACE PERSONNEL

The generally positive attitude of the interviewees toward the aerospace professional was profound. No interviewee was placed in this""Positive" category unless he expressed obvious enthusiasm toward the accomplishments of the aerospace program and confidence that the aerospace professional could "learn his business." It is interesting to note that familiarity with aerospace personnel and skills is no guarantee of a positive attitude. In fact, no correlation could be derived from the data.

The interviewee's attitude was categorized as "Negative" if he clearly expressed a prejudice toward aerospace personnel. The typical comments by these individuals were such statements as, "They (aerospace personnel) are too used to a soft life," "They are overpaid," "This business would be too fast a pace for them," "They're too used to sitting at a desk and having everything done for them," etc. A not insignificant number of these particular individuals cited case histories to support their arguments.

V. HAS COMPANY BEEN CONTACTED FOR EMPLOYMENT BY EX-AEROSPACE PERSONNEL.

All companies that had been contacted relative to employment by either an ex-aerospace professional

or any assisting agency, either private or public, was placed in the "Yes" category. The large number of firms that had never been contacted is indicative of the fact that few ex-aerospace professionals have sought employment in this particular business area.

VI. AEROSPACE SKILLS SUITABLE TO BUSINESS

The categorization of the skill applicability was based on the interviewee's estimation of the amount of training or indoctrination required to work in his particular business. As is evidenced from the results, very few of the managers felt that some training would be unnecessary. A fairly typical paraphrased comment would state, "It took me awhile to learn this business, and I doubt if anyone could walk in cold and carry their own weight."

It is particularly interesting that a large percentage of the interviewees did not know whether the skills were applicable or not. Naturally, there is some correlation between this group and the "Not Familiar" classification.

VII. OFFERED PROGRAM SUGGESTIONS OR RECOMMENDATIONS

The question was posed to the interviewees as to what they think the ex-aerospace professional should do to find a new career. The usual reply was a simple "I don't know." After further conversation, a few suggestions were made, but generally only after considerable "leading." On the other hand, a few of the interviewees became enthused over the possibility of "transferring" this manpower pool and displayed considerable imagination and interest. These few could prove very instrumental in an assistance program.

VIII. OPINION TOWARD A TRANSFER PROGRAM

A better response to a possible "manpower transfer" program was obtained by describing a possible program and asking whether or not the interviewee would consider it workable. It was found that in order to obtain a positive response at all it was necessary to describe the possible program in considerable detail. Unless the description was quite specific

and complete, the interviewee would invariably hedge his answer to the point of indetermination. Thus, several possible programs were described during the initial survey interviews. It eventually became apparent that the clearest response was obtained by describing a program that involved some assistance to the employer that hired an ex-aerospace professional to cover the initial unproductive employment period. The reaction to such a program suggestion was never a "positively workable," but more a "possibly workable," statement.

Following the suggestion of a possible program, an attempt was made to get the interviewees to express opinions relative to the details of such an effort. Several of the more interested and knowledgeable interviewees expressed the opinion that a 50 percent first year salary reimbursement would be required to interest most small businessmen in an employment of ex-aerospace professionals program. A few of the interviewees felt that no reimbursement would be either required or in order. Most of the interviewees were reluctant to commit to specific numbers or percentages. Thus, the definition of a workable manpower transfer placement program (see section 7.0 of the report) was derived from an extrapolation of the collective responses of the interviewees to all the questions posed and related discussion.

IX. ATTITUDE TOWARD PROGRAM PARTICIPATION

The data resulting from this question clearly demonstrates that a large gap exists between the discussion and participation phases of the program. Some of the "Future Interest" and "Indeterminate" categories were actually polite "No Interest" responses. Conversely, a few of these would also participate in a program if actually offered.

It is imperative to note that very few of the business managers contacted would be willing to entertain the employment of an ex-aerospace professional without some sort of motivation. Such motivation could assume many forms, varying from a full program of assistance, including direct salary reimbursement, to merely a well-prepared and offered

sales presentation by a job seeker. Section 7.0 of the report discusses this more thoroughly.

X. REASONS FOR NO INTEREST

In each case where the interviewee declared clearly that he would not be interested in participating in a manpower transfer program, a strong attempt was made to discover the reason. It is particularly interesting to note that by far the largest "No Interest" group was the group rated as "Familiar with Aerospace Personnel and Associated Skills." Even among this group, however, there does not appear to be any singlemost outstanding reason for their rejection. Several individuals gave their reason as a desire to remain free of government "interference," but these discussions were not sufficiently clear to define this as a distinct response.

XI. FAMILIARITY WITH TECHNOLOGY UTILIZATION RESOURCES

This question was not specifically posed during the initial interviews. Hence, many of these interviewees were necessarily placed in the "Indeterminate" category. Some of the early interviews, however, were of sufficient depth that even though the question was not directly asked, it was possible to categorize the interviewee in one of the first three classifications.

Those interviewees that knew of and had read Tech Brief publications and had knowledge of WESRAC were considered as "Very Familiar" with Technology Utilization resources. If the interviewee had heard of the activity but had never actually seen or used any of the resources, he was considered "Familiar." The remaining interviewees were placed in one of the other appropriate categories.

It is estimated that, were the 76 classified as "Indeterminate" placed in the appropriate "Degree of Familiarity" category, the distribution percentages would not appreciably change. If only the total of the 95 interviewees classified in the "Degree of Familiarity" categories is considered, then 3 percent are "Very Familiar"; 10 percent,

"Familiar"; and 87 percent are "Not Familiar." Considering the fact that 65 percent of the companies contacted were categorized as medium or high technology, it would appear that the resources of Technology Utilization should be better known. It is significant that several ex-aerospace interviewees who were managing "high" technology companies had only a very cursory knowledge of the Technology Utilization effort.

6.5 Conclusions

Several distinct and significant conclusions can be derived from the data of Table 6-2.

a. A third of the small and medium-sized companies are in a strong financial position.

b. The attitude of the managers of the small and medium-sized companies toward the aerospace professional, and the skills represented, is basically positive.

c. Little contact has been made to this segment of the business community with regard to employment of the ex-aerospace professional.

d. A strong financial posture and a positive attitude are insufficient conditions in themselves to overcome the skepticism and sales resistance of the small company manager toward a new employee hiring policy.

e. The small business manager is generally motivated by "extrinsic rewards" rather than "intrinsic rewards."

f. Few small and medium-sized businesses are aware of the resources of Technology Utilization available to them.

There is no doubt that the small business community represents a potential source of jobs for some ex-aerospace professionals. Further, it is clear that this potential source of employment is largely being ignored.

The reasons why this particular source of jobs is being ignored are easily seen. Even though the managers of many of the firms contacted clearly needed professional assistance, and even though many of these same managers had a positive attitude toward aerospace personnel, convincing him to both add the needed employee and consider the ex-aerospace employee for the job is extremely difficult. The small company manager is inherently reluctant to add any new employee, almost regardless of need, and this reluctance becomes multiplied if he is asked to consider a "stranger" from another business world. Thus, the normal job-hunting techniques have little effect for either the individual or the assisting agencies.

The approach of the small businessman to most business situations is highly skeptical. His independence has produced an attitude of quick decision making, and he is apt to believe that he is generally right. Often, his line of thought does not follow the same logic as the professional hired manager. He looks for versatility and the business that he manages often does not have a high degree of definition in its organization structure. Often there will be large overlaps of responsibility. The lack of specialized people in a small business and the need for each individual to be able to perform a wide variety of tasks is an accurate concept. The one-man company possesses, to some degree, all of the basic management disciplines necessary for the conduct of the business, even though all of these functions are often carried out by a single individual.

In order to gain entry into this potential resource of jobs, it is therefore necessary to provide the small company manager with motivation beyond that normal to the employee/employer marriage occurrence. In arriving at a motivating force that is both efficient and produces significant results, it must be kept in mind that the

sales resistance of the small company manager is very strong. This is a reflection of the low inertia of the small firm, which often makes even a small mistake prominent. Thus, in order to gain the participation of the small company manager in an innovative program, such a program must fulfill at least one of the following criteria:

a. The risk of participation must be very small

b. The risk of participation must be very clear and the potential return significant.

Sections 7.0 and 8.0 of the report discuss two possible programs aimed at gaining entry into this source of professional employment.

7.0 THE MANPOWER "TRANSFER-PLACEMENT" PROGRAM

A manpower "placement" program implies the location of existing open jobs, obtaining "job orders" from the companies with those open jobs, and then finding the proper individual to fill the "job order." This process basically describes the activity of the private employment agency and the placement sections of the public employment service and self-help organizations, such as Experience Unlimited.

These self-help organizations and the public Employment Service, partially through support from the EST Program, have gone beyond the mere placement activity. They have established some counseling service and seminars for assisting the ex-aerospace job seeker in organizing his general job search. Also, they have performed the function of job development, or job search, in an attempt to locate "job orders."

The search for the job order has proven to be a discouraging task, since so few unfilled jobs exist, particularly among the technically-oriented firms. Consequently, the ex-aerospace professional has turned his job search in alternate directions. This has also proved discouraging, since those jobs that do exist in non-aerospace industry have not been opened to the ex-aerospace job seeker. As a result of this, the activities of the job seeking ex-aerospace professional, as well as the assisting organizations and agencies, have largely turned away from these nonaerospace areas as being "too inefficient" for significant "placement."

The results of the feasibility study described herein has demonstrated that, subject to certain qualifications, some non-aerospace firms do represent possible job sources for the ex-aerospace professional. Careful selection of these firms and their possible job openings, coupled with equally careful selection and matching of the ex-aerospace professional that could fill the job opening, can result in permanent transfer, or "placement" of some of these individuals.

The study has further demonstrated that few company managers will be inclined toward program participation without initial salary compensation for the new employee. The limited resources and naturally cautious nature of the small company manager are such that even the most enlightened will not eagerly participate unless the risk is essentially removed and the initial "unproductive" learning time compensated. This compensation will vary from as little as covering only the first month of employment to as much as 50 percent of the first year's salary. The degree of compensation afforded would be based on the various circumstances surrounding the particular job and potential candidates for the opening.

This section of the report describes the basic tenets of a program of location, selection, and matching of job openings among small and medium-sized companies and transfer-placement of ex-aerospace professionals within these job openings:

7.1 The Transfer-Placement Program

The specific activities of the transfer-placement process are straightforward and can be defined as follows:

a. The selection and contact of candidate firms with potential job openings of interest;

b. The selection and categorization of the ex-aerospace professional manpower candidates;

c. The matching of the job openings with the potential manpower candidates;

d. The conduct of indoctrination seminars; and,

e. The performance of counseling service.

Steps (a), (b), and (c) outlined above are basic to essentially all placement programs, such as now followed by both public and private agencies that perform this function. The successful

placement activity involves only steps (a), (b), and (c) above, and assumes the existence of a reasonable balance between the number of job openings and candidates to fill these openings. When this balance between available jobs and candidates is nonexistent, as with the ex-aerospace professional, then additional effort is required to compensate for the inequality. Thus, not only must the total placement process be enhanced through the addition of steps (d) and (e), as outlined above, but the activities in carrying out each of the steps must be more carefully defined than normal.

7.2 The Transfer-Placement Program Activities

The subject placement process involves the location of jobs in perhaps the most difficult business one could select, i.e., the small and medium-sized firm. Also, the manpower candidates for such jobs come from a different business background. Hence, the sets of criteria used for the selection of the participating companies and corresponding manpower candidates must be very strict. Further, the conduct of indoctrination seminars and the performance of counseling service can serve to create a bridge between the different background experiences of the employer and potential employee.

Each of the specific activities of the transfer-placement process is further described below.

7.2.1 *The Selection and Contact of Candidate Firms with Potential Job Openings of Interest:*

In the interests of optimizing the program efficiency, only those firms representing the most favorable company candidates should be selected. The principal criteria defining such a company is the following:

a. The company is in a long-term expanding sales posture.

b. The company is of sufficient size and has adequate financial strength to offer long-term support to an additional professional employee.

c. The Company is manufacturing oriented or in a manufacturing aligned activity.

d. The company management has a positive attitude toward the aerospace professional and at least a cursory awareness of his skills and capabilities.

e. The company management has an interest in participation in a program of manpower transfer and a need for the addition of a professional employee.

The application of the above criteria obviously eliminates many companies from consideration. Of the 171 firms contacted during the survey part of the subject study, approximately 10 firms met all of the above listed standards. It is noteworthy that were the companies originally selected with the above restrictive criteria applied, it is estimated that at least 20 percent, or approximately 35 companies, would have been in compliance.

In applying the above criteria to the company selection, the business orientation (manufacturing, retail, service, etc.), the company size, and the product type and technical level can be closely estimated from the information supplied in the various industrial registers or Chamber of Commerce publications. Further, readily available credit data will often furnish information as to the company's general financial strength. While this data is occasionally in error, it can serve to eliminate much inefficient contact.

The company contact itself is neccesary to determine the company's possible interest level and true capability for participation. It is this initial contact that will dictate much of the success or failure of the program. Prevention, or early elimination

of the initial skepticism and doubt in the mind of the company manager, is mandatory for establishment of a good working relationship.

The initial company contact can most efficiently be made by telephone. Preceding this telephone contact with an introductory letter does not appear to be either necessary or desirable. During the conduct of the company survey portion of the subject study, 130 of the 171 company managers contacted were initially sent introductory letters. Few of the managers had read the letter, and of these, many had read it so cursorily that a lengthy explanation was required to explain the letter.

Consequently, the initial company contact should be made by a well-trained and experienced counselor. This individual should have sufficient background, experience, and personal capability to establish a rapport with the company manager that will dispel doubts, establish a mutual trust, and allow a complete presentation of the full program details. With this accomplished, the potential for the company's successful participation in the program will become apparent.

For those firms that appear to represent strong potential for program participation, the contacting counselor should establish personal confrontation with the manager. At this personal meeting, both the company and the manager can be much more accurately evaluated. Further, the potential job opening can be defined and a preliminary job description agreed upon. Also, the program and all ramifications can be thoroughly presented.

A subsequent meeting between the counselor and the company manager should be held to establish full agreement on the job description and clarify any misunderstandings that may exist. It is extremely important that these contacts be made and a rapport established between the counselor and manager prior to presenting any potential candidates for the job opening. The tenuous nature

of the employer/employee relationship that will initially exist cannot be overemphasized.

7.2.2 *The Selection and Categorization of the Ex-aerospace Professional Manpower Candidates:*

As is evident from the study data related to the ex-aerospace professional, many members of this group do not represent good candidates for placement with the small company. For example, those individuals with narrow specialized educational backgrounds and experience, unless very exceptional in other personal characteristics, would not represent high success probability candidates. Since the long-term success of a placement program, such as described herein, is heavily dependent upon few initial failures, it is mandatory to maintain strict selection criteria.

The manpower candidates selected for program participation should demonstrate the following general characteristics:

a. The individual should demonstrate a genuine interest in program participation and the possibility of establishing new and permanent career goals.

b. The individual should demonstrate a receptive attitude toward suggestion and indoctrination.

c. The indivudal should demonstrate sufficient broadness of background, flexibility of attitude, and practicality of work conduct to be conducive to the small company environment.

It is obvious from the above criteria that selection of the manpower candidates will require considerable experience and capability on the part of the counselors. As with selection of the participating company candidates, adherence to strict selection criteria and close personal contact between the candidates and counselor are mandatory.

The potential manpower candidates can be contacted through media publicity and public notices in the Employment Service

offices. Following application for program participation, the manpower candidate should be assigned a counselor and required to attend a brief seminar describing the program.

The counselors must conduct very careful interviews with the manpower candidates and categorize each individual as to the type of job openings he could potentially fill. The counselors must be prepared to make full use of former employers, personal references, etc. in order to be assured of a proper match. Obviously, participating companies and manpower candidates should be exchanged between counselors in order to optimize the matching; however, in this event, the need to re-establish the personal relationships must be recognized.

7.2.3 *The Matching of the Job Openings with the Potential Manpower Candidates:*

The matching of the job opening within a participating company and a manpower candidate will follow naturally if the original selection and categorization has been properly performed. However, since the backgrounds of the manpower candidates will generally be such that ability to reasonably fit the job description will not be obvious, certain close coordination between counselor, employer, and potential employee will be required.

Inherent to the matching process will be the negotiation and establishment of a contractual agreement with the employer. This agreement will specify the amount of salary compensation that the employer is to be reimbursed and delineate completely the job responsibilities and attendant learning opportunities to be afforded the new employee. Such a contract can be closely aligned to the basic format presently in use in the EST Program.

The level of salary reimbursement will vary depending upon the amount of initial "unproductive" time that appears justified. This, in turn, will depend upon the available candidate for

the particular job in question. There is little doubt that the response of the company managers will be much more positive if the initial month's salary is compensated. This initial month of coverage is more related to removing the risk of program participation for the company manager than to coverage of "unproductive" performance time. Negotiation and agreement must be reached prior to completion of the matching process.

7.2.4 *The Conduct of Indoctrination and Training Seminars:*

Certain basic differences exist between the work environment of the small firm as compared to the large. The versatility required in job performance and willingness to perform tasks encompassing a broad strata are only two of the most obvious characteristics of the small company. Many of the differences between work environments are very subtle and often go unrecognized by the individual with a large company experience background. This lack of recognition is responsible for many of the failures that have resulted from attempts to make this transition. The desire, for example, of the new employee from the larger firm to instill more professional business procedures into the business conduct of his new small company employer is often overwhelming. While such new procedures may be fully justified and needed, until the new employee has proven his ability to perform by the original ground rules, he strongly risks rejection if he suggests changes in those rules.

It is also important that the new professional-level employee of the small company be more conversant with the general nature of business and businessmen. Not only will such information assist him in his new career, but will allow him a better understanding of his supervisor's motivations. Thus, indoctrination into the basic disciplines of the total business entity will help reorient his

thoughts in a business direction and inform him of the necessary knowledge and skills he should strive to acquire.

The indoctrination and training seminars should involve approximately two days of instruction and workshop. Section 7.3 discusses this portion of the program in more detail.

7.2.5 *The Performance of Counseling Service:*

Many eventual failures of the employee/employer relationship could be prevented with better mutual understanding at the onset. Two characteristics of the relationship herein under discussion are additionally in opposition to a high success probability. The general lack of familiarity of the ex-aerospace professional with the small company environment, coupled with the fact that many small company managers have little experience in supervising and using professional people, creates a potentially weak bond between the two.

In addition to the enhancement and promotion of the employer/employee relationship, counseling sessions will also serve to inform the counselor as to the progress of the ex-aerospace professional in the new work environment and the degree of fulfillment of the original employment agreement by the company. The counselor will also be able to offer suggestions to both the employer and employee that can serve the best interests of the company and employee.

The counseling sessions should occur weekly for the first month of the placement and involve a minimum of an hour of separate discussions with each of the employee and employer. A joint session involving the employee, employer, and the counselor will probably prove desirable at least twice during the first month. The frequency of the counseling sessions should decrease rapidly following the first month. Few of the placements should be so tenuous as to require more than one or two follow-up meetings after

the initial month of employment. However, the counselor should be available for further brief consultation should it be desirable on the part of either of the parties involved.

7.3 Training and Indoctrination

Inherent in the Transfer-Placement Program should be certain brief training and indoctrination of the ex-aerospace professional. Since most of these individuals will have little, if any, small company experience, it will enhance the success probability considerably if they are familiarized somewhat with the differences in work environment. Further, providing the individual with a basic understanding and perspective of the various elements of the business will improve his performance and enhance his ability for additional self-education. Also, as previously mentioned, many of the differences in work environment between the large and small company are very subtle. Recognition of these differences is important to early success of the placement.

The training and indoctrination program must begin with a program information seminar. This seminar would present to potential manpower candidates the details of the placement program and a few of the major ramifications of a small company career. For those individuals who continue with the program, subsequent training effort will provide the desired familiarity, indoctrination, and basic business orientation.

It is noteworthy that Ultrasystems has experienced very positive results in providing consulting services to small business through the use of ex-aerospace professionals as consultants. With very brief indoctrination and familiarization sessions, many of these individuals have proven their ability to learn very quickly and independently and to apply imagination toward the solution to the small firm's problems. From this effort, experience demonstrates that lengthy training sessions are neither necessary nor desirable.

Rather, the training and indoctrination program should be very brief, emphasize sources of additional information, and point out those areas where added self-study might prove useful.

The basic contents of the training and indoctrination portion of the placement program are the following:

a. A program introductory and description seminar;

b. A small company familiarization seminar covering the following principal topics:

(1) The basic characteristics of the small firm

(2) The unique aspects of the work environment

(3) A brief review of the basic disciplines comprising the total business entity, i.e., sales, marketing, manufacturing, financial;

(4) A familiarization and review of the typical income statement and balance sheet.

c. A case history workshop.

Each of these training and indoctrination sessions is further discussed below.

7.3.1 *A Program Introductory and Description Seminar:*

Those ex-aerospace professionals who register for participation in the program should be required to attend an introductory seminar describing the basic tenets of the program. Further, certain of the ramifications of a small company career should be presented. This session should not exceed more than one hour of information presentation and an additional short question and answer period.

7.3.2 *A Small Company Familiarization Seminar (One Day):*

The principal purpose of this session is to remind the manpower candidates of certain aspects of the small company environment and familiarize him with certain aspects of the business with which he may come in contact. Not more than one day should be necessary for this presentation. The following discusses the major topics to be covered.

a. The basic characteristics of the small firm:

This session will cover the various important aspects of the typical small firm such as financial structure, credit limitations, backlog turnover, typical customer relationships, and market coverage. These various aspects should be compared to the equivalent entities in the large firm.

b. The unique aspects of the work environment:

The multiplicity of tasks performed by the small company employee and the need for versatility in both action and attitude would be presented here. Case histories and typical examples can best demonstrate this subject.

c. A brief review of the basic disciplines comprising the total business entity, i.e., sales, marketing, financial:

Each of the various separate entities of the typical small company should be briefly discussed and the interrelation pointed out. Many of the potential manpower candidates will have had only cursory previous contact with some of the other business activities. This session will serve to broaden the candidate's viewpoint and job philosophy. Easily available and readable reference lists covering the various business disciplines should be provided.

d. Familiarization and review of the typical income statement and balance sheet:

Few employees of the large firm have had the need or opportunity to review the final accounting documents of the business. A brief presentation and line item review can quickly provide the manpower candidate with a new insight and new curiosity toward the small company.

7.3.3 *A Case History Workshop (One Day):*

As a final orientation, a one-day session would be held where a typical small firm would be discussed and reviewed in a case history fashion. In this manner, the manpower candidates can obtain a brief opportunity to become mentally involved in a hypothetical business situation and excercise their abilities and knowledge without genuine business risk. This mental involvement can serve to additionally reorient the individual's perspective and condition his thinking to the small company environment.

7.4 Organization of the Transfer-Placement Program

In section 4.0 of the report, it was stated that the public Employment Services, through the EST Program, have established certain organizational and counseling services for the benefit of certain of the ex-aerospace unemployed. The EST Program, among other benefits, also offers on-the-job training salary reimbursement to the employer, if justified. Thus, the Transfer-Placement Program described herein somewhat represents an extension of this EST Program. The principal differences between the EST and the Transfer-Placement Program are the following:

a. The benefits and organization of the EST Program are such that the program best serves the job search for a position similar to the job candidate's former position. The Transfer-Placement Program stresses the location and placement of a job candidate where the new position requires skills similar to the former position.

b. The EST Program is oriented to the ex-aerospace engineer, scientist, and technician (see Appendix page 100 for this definition). The Transfer-Placement Program proposes an expansion of this definition to include all ex-aerospace professional level employees.

c. The EST Program does not provide sufficient on-the-job-training reimbursement to be attractive to the employer for the professional level employee. The Transfer-Placement Program proposes increased flexibility to allow consideration of up to 50 percent of the first year's salary.

d. The EST Program allows only limited counseling with the manpower candidate and virtually no training or reorientation. The Transfer-Placement Program proposes that a brief seminar and reorientation training program be included and counseling be extended to the employer and continue after the employment commences.

The activity of the EST Program has produced a means of contact with the ex-aerospace professional, a methodology of registration, and established organizations of individuals experienced in the problems of manpower placement. Many of these individuals are ex-aerospace professionals who have worked under contract to the State Employment Services.

It is obvious that these same EST Program organizations could form the basic foundations for a Transfer-Placement Program. During the conduct of this survey, several such EST Program organizations were observed which could carry out such a program were the resources available.

The Transfer-Placement Program could, therefore, be defined in sufficient detail such that, with certain central organizing functions established, the existing EST Program groups could be oriented to conduct such an effort. The basic organizational core could be created from those individuals now working the EST Program effort who have the somewhat unique combination of aerospace/

small company/manpower program experience backgrounds. A number of such individuals were encountered during the study who had gained this unique "experience triad," either through volunteer organization work or consulting effort to the Employment Services.

7.5 The Transfer-Placement Program Cost

The dynamics of the unemployed manpower group and the general economic climate preclude a completely accurate prediction of the efficiency with which such a program may operate. The general profile of the ex-aerospace professionals who are becoming unemployed at any particular time may differ from the profile at another time. The equally variable economy will affect the "transfer" possibilities accordingly.

Certain precedents and recent success levels in similar programs do allow some predictability. During the conduct of the study, close attention was given to the various methods used by individuals in the "placement" activity and to their various success results. In addition, three specific job opportunities arose and, to the extent possible within the framework of the study effort, a transfer-placement was attempted in all three cases. Two of the three jobs were filled. Thus, certain program cost extrapolations can be estimated.

Any program cost estimate must necessarily be limited herein to only those cost elements considered as "direct field" costs. Administration of funds, use of existing government facilities, time and effort invested by public officials, etc. are cost items requiring considerable detailed investigation beyond the scope of this effort.

It is estimated that the initial salary levels for transfer-placement candidates would average $12,000 annually. Further, it is predicted that, in order to interest significant numbers of employer participants, the on-the-job-training salary reimbursement will average one-third of the first year's salary. Thus, the average

employer reimbursement cost per transfer-placement will be approximately $4,000.

The counseling, training, and original company contacting will require considerable direct field effort. It is estimated that an experienced field counselor will not be able to effectively handle more than three or four transfer-placement cases at any one time. Thus, the direct field effort will average between $500 and $1,000 per transfer-placement. Thus, the direct field effort, together with the salary reimbursement, will cost between $4,000 and $5,000 per successful transfer-placement. If program start-up, administration, and overhead costs were to prove equal to the direct costs, then a transfer-placement cost will average approximately $9,000.

Cursory estimates of placement costs for professional level employees for other programs have varied from $2,000 to as high as $12,000. A private employment agency will charge between 10 and 20 percent of the first year's salary to merely telephonically locate a new employee, and then they will only perform this in a job-rich environment. Those private agencies that perform the additional functions of counseling and careful matching, such as discussed herein, charge fees that will often exceed the transfer-placement cost estimates.

8.0 A CIVIC/GOVERNMENTAL COALITION PROGRAM

During the conduct of the study, a number of interesting circumstances and interviewee responses were repeatedly observed. The repetition of these findings led to the following pertinent conclusions:

a. The majority of small business managers hold the aerospace program and the aerospace employee in very high esteem.

b. Over one-third of the firms in the small business community are in a strong financial posture. Consequently, many of these firms have idle financial reserves, either liquid or in the form of borrowing ability.

c. There is a pattern of attitudes on the part of the ex-aerospace professional of doubt and skepticism in undertaking a significant career change and functioning successfully in a small business environment where products or services are totally unrelated to the professional's past experience.

d. Very few company managers are aware of the Technology Utilization resources available to them.

In addition to the above listed specific findings, other pertinent data emerged. Prominent of these is the deep concern among community leaders, both public and private, toward the extensive loss of one of the Nation's most valuable resources, namely, the highly trained and competent ex-aerospace professional. It is clearly recognized by these community leaders that the underemployment, or unemployment, of these individuals has existing and future serious economic ramifications. Naturally, the communities where the aerospace industry has been predominent are the first to feel and, hence, recognize the seriousness of this resource loss.

This concern manifests itself in many ways. In those communities where the aerospace industry has been a major factor, large groups of volunteer workers from nearly all segments of the

economic and social community have emerged to offer whatever assistance they can. Industry leaders have combined forces and formed organizations specifically to suggest and implement programs among themselves. Public officials have formed commissions and committees comprised of community leaders, with the goals of finding means of gainfully using this manpower resource. Existing institutions, both public and private, have offered their facilities and staffs to make whatever contribution is pertinent and appropriate. The potential strength represented by these civic organizations, and the possibilities for gaining additional forces toward solving this economic problem, are most impressive and significant.

Consequently, an affirmative action program using the combined forces of the government-sponsored efforts with the unified civic organizations is a definite possibility and one that may hold the only genuine key to a rapid recovery. This section suggests a few of the basic tenets of such a program.

8.1 An Example Community

It is interesting to note that San Diego County was perhaps the first major aerospace industrial area of significance to experience a sharp decline in aerospace unemployment. The decline in this area began in the early 1960's, fully five years ahead of the other principal depressed areas. It is further significant that the physical attraction of San Diego as a desirable living area is such that many of the aerospace employees in the San Diego area refused to leave, even though they became unemployed with no immediate prospects of re-employment. Consequently, it was necessary for San Diego to confront a problem of serious professional level unemployment essentially as a complete and somewhat isolated economic entity. Many aerospace industrial areas throughout the country are now faced with an identical situation.

The scope of this study did not allow for a concentration of effort on any one particular industrial area. However, because of the uniqueness of the San Diego community, some additional emphasis was placed toward discussion of the aerospace unemployment problem and its solution with its civic and industrial leaders.

During discussions with over 20 San Diego County community leaders, a single theme was repeatedly proffered as the only true solution to the loss of a major industry that involved large numbers of "specialized" professional people. This solution clearly emphasized and held as its fundamental premise that new industry and new economic directions must be found by the community which will bring about the creation of jobs. While the San Diego community still has significant aerospace unemployment, the industrial complexion has clearly been diversified and turned in other directions, new industry has been attracted, and a Model City program is well under way. It is obvious that the community leaders of this area are justly proud of their accomplishments in applying this solution.

8.2 Barriers to Solution

As with any problem, the barriers preventing its dissolution must be carefully observed. There is no clearly apparent reason why a highly capable and skilled group of people should not find immediate re-employment in an always talent-starved industrial community. This is particularly true when many numbers of this group are willing to become underemployed or accept lower salary levels than their experience and capability might warrant. There is a need in the business community for this manpower resource. A few of the major barriers to its use are the following:

a. In an economic depression, even healthy industry tends to be reticent to add professional-level employees.

b. Industry strongly tends to hire new employees with a specific experience-oriented criteria rather than with a specific skill criteria.

c. Industrial leaders consistently underestimate the versatility of professional level people, even though they themselves will attack new problems with a strong air of authority.

d. There is a persistent misconception among other industry that the aerospace professional is very highly specialized when, in fact, compared to most other industry professionals, the aerospace professional is generally less specialized.

e. There is a prevalent mythology among nonaerospace industry that the aerospace employee is overpaid. While this has been true in certain isolated cases, authoritative data exists that demonstrates that equivalent positions within nonaerospace, as compared to the aerospace industry, pay equivalent salaries.

f. Leaders of nonaerospace industry know very little about the skills, talents, capabilities, experience, and education of the aerospace professional. They are also very reluctant to take the time to learn of these attributes.

g. Leaders of nonaerospace industry know very little about the useful new technology and resources available to them as a result of the aerospace program.

The pattern of reasoning that has led to the existence of these barriers is essentially twofold: (1) the economic recession has created an atmosphere of extreme caution among even the unaffected businesses; (2) a general ignorance exists of the aerospace "by-products," both in the form of people and technological achievements that could be of interest to their particular industries.

Combining the pertinent conclusions expressed in the introduction to this section (page 87) with the barriers to the solution listed above, several possible areas of activity are apparent. If a large segment of the small business community is in a healthy economic posture, the same is probably true for other segments of nonaerospace industry. Thus, if the leaders in these business areas can be encouraged to move ahead, even slightly, with expansion plans now deferred, the collective economic expansion can be very significant.

Further, if nonaerospace industry leaders can be persuaded to spend the time and effort to discuss their employment needs with possible candidates from the aerospace unemployed manpower field, many of these individuals will find new careers with all the attributes, including the "intrinsic rewards," of their former positions. The nonaerospace businessman obviously has a positive attitude toward the aerospace professional. However, misconception and myth have prevented serious consideration of the aerospace professional as an employee in his particular industry. During the conduct of the study, several industry leaders admitted that their industry clearly needed "new blood." Merely getting the industrial leaders to give the ex-aerospace professional an interview will produce very significant results.

Many of the companies contacted during the study complied with an interesting combination of criteria. These criteria were the following:

a. The company manager was confronted with that most difficult of all management problems; i.e., what should his company do next?

b. The company was in an increasing sales and strong financial condition.

c. The company possessed unused financial resources.

d. The company management held a positive attitude toward the ex-aerospace professional.

e. The company operated in a medium or high technical area.

Companies that comply with the above criteria represent excellent candidates for the "transfer" of aerospace technology. The encouragement of these companies to look to these new product areas and make use of the unique manpower circumstance that presently exist can do much to stimulate the private financing of the economic recovery.

Several pertinent circumstances are therefore evident. A body of underemployed ex-aerospace professionals exists which seeks opportunity to again practice their profession. Private financial resources are available which are being withheld from all but the most conservative investment entities. The general economy and existing unemployment levels indicate the need for additional economic stimulus. Many public sector problems exist which lend themselves to solution through the application of existing technologies. These facts combine to indicate that gaining additional private capital support toward the solution to certain of these public sector problems is timely and worthy of additional address.

Many products and services resulting from aerospace technology have found and will continue to find their way naturally into the commercial marketplace. Most of these products and services have been the result of ex-aerospace people turning entrepreneur and commercially exploiting their particular technical expertise. Conversely, many valuable, significant, and commercially viable applications of technology lie dormant for lack of sponsorship by a technically-oriented entrepreneur. For this group of technology applications, additional effort must be applied.

8.3 A Civic/Governmental Program

Certain important ongoing activities, sponsored and supported by the Federal Government, are making steady, but slow, progress toward solving the employment problems and improving the general economic conditions. While there are no instantaneous solutions to these problems, it is clear that pointed and efficient attack from several different directions can cause convergence and bring about recovery much quicker. The existence of the various civic groups, committees, commissions, boards, societies, etc. is a fact. Proper exploitation and direction of their potentially formidable strength is not. In order that these various civic groups be efficient and significant in their accomplishment, each should develop a plan of effort that optimizes the use of their particular unique strength and attacks the problem in a direction for which significant accomplishment is realizable. Suggested considerations for a program of civic/governmental effort in coalition are the following:

a. A detailed review of previous studies, programs, and relevant activity should be made in order that those unsuccessful or inefficient pursuits be avoided.

b. An introspective and careful evaluation of the strengths and weaknesses of the particular subject group should be performed. This should involve an evaluation of the group members' backgrounds, personal associations, time availability, and self-interests. Also, physical facilities available should be inventoried and evaluated.

c. The support and participation of local public and private individuals concerned with the question of professional unemployment should be encouraged, their counsel sought, and their advice heeded. This should include the managements of private professional employment agencies, as well as the State Employment Services.

d. A particular segment, or segments, of the problem should be isolated for attack. The areas of most dire need and probably best served by civic groups are the following:

(1) Encouragement of nonaerospace industry to seriously look to the ex-aerospace professional as a potential employee; i.e., let them at least interview for the jobs.

(2) Encouragement of nonaerospace industry to move ahead with at least part of their possible expansion plans.

(3) Garner the support of the news media to discuss, enlighten, advertise, and stimulate community thought and activity. Collect and present success stories and maintain a high interest level within the community.

(4) Encourage nonaerospace industry to investigate and become informed of resources available from the Technology Utilization effort.

(5) Encourage the successful firm to consider expansion of their products or services through use of the Technology Utilization program or possible ideas of some of the ex-aerospace professionals. Ask them to talk to the ex-aerospace man.

One of the primary tasks that is required in every community is a simple centralizing and coordinating activity. The businessman and the ex-aerospace professional soon grow weary, and wary, of the "over assistance" that results from more than one group attacking the same problem segment. Also, it is unlikely that two groups are equally qualified for a particular task. Thus, the inefficiency tends to multiply toward ineffectiveness.

The above suggestions are only a few of the many important and needed projects that could be undertaken. Many of the past programs, and a few of the present, have ignored certain fundamental characteristics of the ex-aerospace professional and the potential

employer of this individual. If some of this can be avoided, at least a portion of the reason for this and other similar studies will have been satisfied.

APPENDIX

August 5, 1971

Mr. John Smith, President
Acme Furniture Company
100 West Second Street
City of Industry, California

Dear Mr. Smith:

Ultrasystems, Inc. has recently been awarded a contract by the National Aeronautics and Space Administration to investigate the possibility of assisting small business firms through the utilization of the professional manpower that has recently become available due to the reduction of the NASA budgets. As you are undoubtedly aware, these budget reductions have reached the point where the professional manpower is no longer being fully absorbed by other industry. This, together with the fact that many smaller firms could use certain of these professionally trained people if they were selected and initially trained properly, has prompted NASA, the Small Business Administration, and the Department of Labor to cooperate in instigating this effort. A brief Abstract describing the program is enclosed for your perusal.

Obviously, any methodology developed for assisting small business through use of these professional personnel would be meaningless without the strong input of the small businessman himself. Thus, we have selected a number of companies, such as yours, from which we would like to solicit opinions and recommendations in developing the program.

The experience of your company with regard to using aerospace trained personnel, your comments as to the applicability of such a background to your industry, the thoughts you may have regarding the feasibility of an effort such as this, are a few of the topics we would like to discuss with you. Toward this end, we would like to contact you by telephone within a few days. We feel that a telephone discussion will suffice; however, should your interest in the program dictate, we will be pleased to arrange a personal meeting at your convenience.

Very truly yours,

Ultrasystems, Inc.

Malcolm K. Green
Member, Professional Staff

MKG/vk

Enclosure

ULTRASYSTEMS, INC.
500 NEWPORT CENTER DRIVE • NEWPORT BEACH, CALIFORNIA 92660 • 714-644-4100

INITIAL COMPANY INTERVIEW INFORMATION CHECKLIST

NAME OF COMPANY_____

STREET ADDRESS_____

CITY_____ ZIP_____ PHONE NO._____

INDIVIDUAL CONTACTED (Interviewee)_____

TITLE OF INTERVIEWEE_____

PRODUCT OR SERVICE OFFERED_____

APPROXIMATE SIZE OF COMPANY_____

NAME OF ULTRASYSTEMS' INTERVIEWER_____

DATE OF INTERVIEW_____ (Telephone)____(Personal)____

THE FOLLOWING QUESTIONS SHOULD BE ANSWERED DURING THE INTERVIEW TO THE EXTENT POSSIBLE.

A. HAS COMPANY EVER BEEN CONTACTED BY AGENCY? YES_____ NO_____ WHO_____

1. AGE OF COMPANY_____
2. LEGAL ORGANIZATION: (Partnership)____ (Corporation - private, public) ____ (Single proprietorship)____ (Other_____) _____
3. ARE PRESENT MANAGEMENT OWNERS?_____
4. WHO FOUNDED COMPANY?_____
5. HOW MANY "PROFESSIONAL" PEOPLE ARE IN THE COMPANY?_____
   WHAT ARE THEIR JOBS?_____
6. IS COMPANY GROWING OR DECLINING IN SALES?_____
7. WHAT ARE THE COMPANY'S FUTURE PLANS?_____
   _____
8. WHAT DOES THE INTERVIEWEE THINK OF AEROSPACE PROFESSIONALS?_____
   _____
9. IS THE INTERVIEWEE FAMILIAR WITH AEROSPACE PERSONNEL?_____
   _____
10. DOES THE INTERVIEWEE HAVE ANY RECOMMENDATIONS FOR SOLVING THE PROBLEM?_____
    _____
11. DOES THE INTERVIEWEE THINK SUCH A PROGRAM CAN WORK?_____
    WHY?_____
    _____
12. DOES THE COMPANY APPEAR TO BE A GOOD PROSPECT FOR PHASE II PROGRAM PARTICIPATION?_____
    WHY?_____
    _____

INTERVIEWEE COMMENTS:

INTERVIEWER COMMENTS:

ENGINEERS, SCIENTISTS AND TECHNICIANS PROGRAM (ESTP)

Fact Sheet

GENERAL

A program to offer special reemployment assistance to engineers, scientists, and technicians laid off from aerospace and defense employment will be operated in 14 areas where there has been significant unemployment to this group.

The primary purpose of this program is to accelerate effective and productive utilization of currently under-used technological talent, increase employment opportunities, and speed up job finding for unemployed scientists, engineers, and technicians from defense and aerospace industries.

There will be five basic elements of the program: Job Promotion, Job Search Grants, Relocation Grants, Training and Skill Conversion Studies.

This program will be administered by the Department of Human Resources Development.

ELIGIBILITY OF AREAS

The areas in California eligible for this program are: Santa Clara, Los Angeles, Orange and San Diego Counties.

ELIGIBILITY OF INDIVIDUALS, GENERAL

To be eligible for participation in this program, an individual

a. Must have been previously employed as a scientist, engineer, or technician for at least 12 out of the last 24 months by aerospace or defense companies in the defined target areas whose local business, service or product was derived largely (at least 40%) from defense or aerospace and which have had employment cutbacks due to contract reductions, cancellations, terminations, etc.

   or

   Must have had substantial attachment of 24 months or more within the last five years in aerospace or defense companies as defined above in the target areas.

   NOTE: A person is eligible if he worked for a qualified company in the target area but resided outside. He is also eligible if he resided in the target area but worked for a qualifying company located outside the target area.

b. Must currently be separated from such employment because of lack of work, and not due to voluntary leaving without good cause.

c. Must be unemployed or, if employed, be employed in stopgap work that pays substantially less than he earned in his qualifying employment and that does not utilize his capabilities as evidenced by his training, skills, and accomplishments.

d. Must, to receive job search grant, relocation grant, or training, have thoroughly canvassed all possible employment opportunities within his commuting area and not have refused to accept referral to or offer of reasonable suitable work.

If there is a question of the applicant's previous employment category, the local EST unit staff will make a decision relying on their knowledge and experience in occupational classification techniques.

JOB DEVELOPMENT AND PROMOTION

An EST unit will be established in designated field offices for the following purposes:

a. To register applicants.

b. To provide orientation to applicants and to facilitate their participation in the various aspects of the program.

c. To provide facilities and service to enable applicants to develop their own jobs.

d. To establish the eligibility of each applicant for the various services of the program: Job search, relocation grants, and OJT and institutional training.

JOB SEARCH GRANTS

1. General

Funds are provided to assist a qualified individual to travel for a job interview(s) outside of the local commuting area. Funds are not included for carfare or other costs in applying for work locally.

2. Eligibility

To be eligible for assistance in traveling to an out-of-area job interview, an individual must meet the following eligibility criteria:

a. Must have been certified by the EST unit as having met all of the general eligibility criteria.

b. Must have identified a specific and suitable job lead and needs the assistance to travel in search of a job outside of the normal commuting area.

c. Must have a job lead with a firm or organization which will not provide costs of travel to the interview.

d. Must have planned an interview in a job search area with known job opportunities.

e. Must apply for advance assistance.

JOB SEARCH GRANTS (continued)

3. Amounts of Job Search Assistance Authorized

Subject to a ceiling of $500 per individual applicant, assistance for transportation, meals, lodging and incidentals will be provided to an individual who travels to conduct a search for employment in an area with known job opportunities. An applicant may be granted assistance for more than one job search effort subject to the above ceiling.

4. Action After Job Search

Within five days following return of the applicant from the travel, he should submit an account of his search for work and the result of the (a) specific job searchs made; (b) name of the firm(s); and (c) the outcome of the interview(s) if known.

RELOCATION GRANTS

1. General

An allowance will be made for the cost of moving an individual's household goods if he is eligible for assistance under this program and has received an offer of suitable work. Relocation assistance will be provided only if the individual relocates his household outside of his present commuting area.

2. Eligibility

In addition to the general program eligibility criteria, an individual must:

a. have a definite job offered and provisionally accepted from a firm or organization outside normal commuting range

b. have job commitment from a firm or organization which does not normally provide relocation assistance to new employees

c. have certified to the EST unit that he is unable to accept the job without a relocation grant

3. Amounts of Relocation Assistance Authorized

Eighty percent of the cost of moving an individual's household goods may be allowed up to an overall cost of $1,500, or a total net allowable of $1,200.

TRAINING AND RETRAINING

1. Scope

Training programs developed under the Engineers, Scientists and Technicians program should be geared to immediate employment prospects and the use of on-the-job training is considered to be the most appropriate means of training assistance. The intent of this training plan for unemployed engineers, scientists and technicians is to utilize the most appropriate elements of the existing manpower training programs with specific amendments relating to the generally high academic level of the persons being trained coupled with the design of a new manpower mechanism specifically geared to the training needs of engineers, scientists and technicians.

Institutional training will be confined to the less-than-class basis referral procedure. Institutional training will be approved only when there is a strong prospect for employment after training and where such training is required to enable the trainee to meet the employment criteria.

Hire First

The employer must agree to hire the engineer, scientist or technician prior to the start of training.

2. On-the-Job Training (OJT)

a. Eligible Individuals

To be eligible for on-the-job training an individual must have been certified by the EST unit as having met all of the general eligibility criteria.

b. Eligible Employers

All public and private profit and non-profit organizations are eligible to participate in this program.

c. Eligible Occupations

The eligible trainees under this program will all be highly qualified and trained individuals. Therefore, the following criteria must be met in order for an occupation to be eligible under this program:

(1) All occupations with an annual salary of at least $8,00 per annum, excluding fringe benefits, are eligible occupations, provided that, the occupations for a particular engineer, scientist or technician is not an occupation in which the participant worked in at any time during his last two years of employment or provided that the occupation is not in the same basic industry as the engineer, scientist or technician was working in at the time he held such occupation. Therefore, an electrical engineer from the aerospace industry would not be eligible for on-the-job training as an electrical engineer in the aerospace industry, but would be eligible in other industries, businesses or government.

TRAINING AND RETRAINING (continued)

c. Eligible Occupations (continued)

(2) All occupations must be approved as eligible by the State Employment Service.

(3) Priority should be given to referring participants to occupations related to their previous experience or training.

d. Payments

The reimbursement will be computed by multiplying the weekly salary by one-third times the number of weeks. The maximum reimbursement will be $2,000. Payments for periods less than one week should be prorated accordingly.

e. Length of Training

The maximum allowable period of time over which reimbursement will be paid will be 20 weeks.

4. Institutional Training

a. In those instances where State ES agencies determine that an enrollee would have a strong possibility of securing suitable employment with the provision of brief periods of academic instruction, a proposal may be developed to offer such academic training on an individual referral basis. It is anticipated that a relatively small number of referrals will be necessary in this area and that this method of training will be held to an absolute minimum.

b. Eligibility

To be eligible for institutional training an individual must

(1) have been certified by the EST unit as having met all of the general eligibility criteria, and

(2) have demonstrated that such training is required to enable the trainee to meet the employment criteria, and

(3) have a strong prospect for employment after training.

c. State agencies should limit the total cost of instruction and payment of allowances to $2500 per enrollee and the length of training to six months or less. Enrollees in this special program will be eligible for MDTA allowances.

State of California
Department of
Human Resources Development
Report 512-TMRP

Research and Statistics
February 17, 1972

TECHNOLOGY MOBILIZATION AND REEMPLOYMENT ACTIVITIES

From commencement of the Technology Mobilization and Reemployment (TMRP) for Engineers, Scientists and Technicians (EST) in April, 1971, through December 31, 1971, 11,090 unemployed aerospace and defense workers were registered in the program in California. Owing to a heavy concentration of aerospace and defense related industries in Los Angeles County, 49.3 percent of the 11,090 applicants were registered there; Orange County accounted for 17.3 percent; San Diego County, for 13.0 percent; Santa Clara County, for 19.2 percent; and the balance of state, 1.2 percent. Of this number, 59.9 percent were engineers, 5.8 percent were scientists, and 34.3 percent were technicians. 31.9 percent had been unemployed for under 15 weeks, 62.4 percent for 15-104 weeks, and 5.7 percent for 105 weeks or more. Out of this total, 8.5 percent received Job Search Grants, 1.1 percent were given Relocation Grants, and 2.5 percent were enrolled in Institutional Training. ES placed 9.6 percent (1,070) of the applicants in jobs, including enrollees in OJT and OJT-Coupled Trainings. Of these 1,070 individuals, 48.6 percent had an anticipated annual salary of under $10,000, 51.2 percent were to earn $10,000-$24,999, and .2 percent expected to gross $25,000 and over. 21.6 percent (2,397) of those registered found their own jobs. Of these, an annual salary of under $10,000 was in prospect for 39.2 percent, $10,000-$24,999 for 53.4 percent and $25,000 and over for .3 percent. Salary information on 7.1 percent of those finding their own jobs was not available. Of the total 11,090 applicants, 1.1 percent were under 25 years of age, 85.1 percent were 25-54 years old, and 13.8 percent were 55 and over. Of the 7,285 engineers and scientists registered, 2.3 percent had an educational attainment of a high school diploma or less; 24.3 percent an associate degree, technical training-no college, or some college-no degree; and 73.4 percent have a bachelor's, master's or doctor's degree.

TECHNOLOGY MOBILIZATION AND REEMPLOYMENT ACTIVITIES
State and Selected Labor Market Areas
April - December 1971

	State Total	Los Angeles	Anaheim, Santa Ana, Garden Grove	San Diego	San Jose	Balance of State
Applicants Registered	11,090	5,464	1,920	1,439	2,134	133
A. Occupation						
Engineer	6,641	3,586	1,140	598	1,223	94
Scientist	644	297	99	42	201	5
Technician	3,805	1,581	681	799	710	34
B. Age						
Under 25	119	44	19	20	36	0
25-54	9,442	4,579	1,673	1,213	1,853	124
55 and over	1,529	841	228	206	245	9
C. Weeks Since Loss of Job						
Under 15	3,540	1,749	494	581	704	12
15-104	6,918	3,442	1,312	781	1,278	105
105 and over	632	273	114	77	152	16
D. Educational Attainment (Scientists & Eng. Only)						
High School Diploma or Less	168	109	17	16	25	1
Associate Degree, Tech-no college, or College-no degree	1,770	1,075	341	96	248	10
Bachelor's, Master's, or Doctorate	5,347	2,699	881	528	1,151	88
Individuals Enrolled in Institutional Training	275	72	77	43	83	0
Individuals Receiving Job Search Grant	946	387	132	323	104	0
Individuals Receiving Relocation Grant	121	49	25	30	17	0
Individuals Placed (Includes OJT-Coupled & OJT Training)	1,070	631	123	203	112	1
Anticipated Annual Salary						
Under $10,000	520	273	72	115	60	0
$10,000-$24,999	548	356	51	88	52	1
$25,000 and over	2	2	0	0	0	0
Individuals Finding Own Job	2,397	1,215	432	403	347	0
Anticipated Annual Salary						
Under $10,000	939	507	155	149	128	0
$10,000-$24,999	1,279	701	273	137	168	0
$25,000 and over	8	7	1	0	0	0
Information not available	171	0	3	117	51	0

SOURCE: Weekly EST Activities Report, DE 6364A